



Deer Street Associates, LLP
Development Design Approval Package
Lot 6 (181 Hill Street) / Map 138 Lot 62
Foundry Place and Hill Street
Portsmouth, NH

REVISIONS		
No.	Description	DATE
1	7/5/17 TAC Hearing Comments	8/18/17

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August 21, 2017

GeoInsight Project 8090-000

Ms. Juliet T. H. Walker
Planning Director (Chair)
City of Portsmouth Technical Advisory Committee
City Hall, 3rd Floor
1 Junkins Avenue
Portsmouth, NH 03801

RE: Deer Street Associates, LLP
Lot 6 Design Approval
Foundry Place and Hill Street
181 Hill Street, Tax Map 138 Lot 62
Portsmouth, NH 03801

Ms. Walker and TAC Members:

On behalf of Deer Street Associates, LLP (DSA) GeoInsight, Inc. (GeoInsight) is pleased to submit to the City of Portsmouth (the City) Technical Advisory Committee (TAC) the enclosed updated design package for the September 5, 2017 public hearing continuation for Lot 6 of the DSA project.

Named "The Residences at Foundry Place," the Lot 6 phase of the project requires demolition of existing structures at 181 Hill Street (under a current permit application and not part the Site Plan review) and redevelopment of the property into a mixed-use, four-story building with a Penthouse. The new building will provide interior parking garages on two levels, retail space on the ground floor, office space on the first floor, and 43 residential units on the second, third, fourth, and penthouse floors. This letter, and the attached documents and plan set, provide updated and additional information intended to assist with the TAC's continued review of the project.

TAC members presented a written list of topics and comments regarding the Lot 6 design to DSA on June 30, 2017 from. The list formed the basis of discussion at the July 5, 2017 hearing, and DSA team representatives also recorded notes based upon the hearing discussions.

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Since the July 5, 2017 TAC hearing, DSA team members have had numerous additional meetings with City representatives to address design changes and requests from the City.

Attachment A includes a color-coded summary Table A that describes the resolution (green) or pending actions (yellow) of the topics of discussion at the previous hearing. We expect that the items listed in Table A that are highlighted in yellow, as well as new changes made to the design, will form the basis of the September hearing discussions.

Additional new information for consideration as part of the overall design package is included on the plans and in the submittal Attachments. Following is a summary of plan updates and revisions since the July 5, 2017 TAC public hearing, and new information added. As demonstrated by Table A, the project team is confident we have addressed the previous TAC comments.

SUMMARY OF PLAN REVISIONS and UPDATED INFORMATION

1. Revised Hill Street Sidewalk and On-Street Parking Layout – Sheet C3.0

The layout for the sidewalk and on-street parking on the Hill Street side of the building was revised in accordance with recommendations by TAC representatives at a meeting held on July 26, 2017.

2. Redesigned Drainage and Grading at Redlon-Johnson Property Line – Sheets C4.0 and C4.1

The sidewalk grades and layout on the Redlon-Johnson side of the building (Map 125/Lot 14) were redesigned to keep the entire sidewalk, stormwater management, and soil retention on the DSA property. This revision eliminates the need for easements with the abutter.

3. Retaining Walls Added at Redlon-Johnson Property Line – Sheets C3.0 and C8.1

To support the revised drainage and grading described above, a retaining structure was added along the common property line with Redlon-Johnson parcel (Map 125/Lot 14). A new detail sheet was added to illustrate the configuration.

4. Grading and Drainage Plan Refinements – Sheets C4.0, C4.1 and C8.0

Minor grade changes were made around the perimeter of the building, and the size of the on-site stormwater detention basin was increased to receive and detain potential groundwater that may collect in the sub-slab drainage system sump.

5. Revised Stormwater Report – Attachment C

The project stormwater report was updated to reflect the minor changes in grading and drainage design as noted above.

6. Hill Street Existing Sewer Revisions – Sheets C2.0 and C5.0

The Utility Plan was revised to show the removal of a portion of the existing combined sewer line and the end-of-line sewer manhole (SMH 1486 on plan sheet X5) and the



proposed construction a new end-of-line (CS) sewer manhole just upgradient of the service connection to 319 Hanover Street per a meeting with DPW staff on August 27, 2017.

7. Hill Street Fire Hydrant to Remain – Sheet C5.0

With the Hill Street sidewalk revisions noted above, the existing Hill Street fire hydrant is expected to be left in-place and adjusted to line and grade as needed.

8. Added Sub-Slab Drainage Detail – Sheet C7.4

A detail of the sub-slab drainage system sump and pump system has been provided.

9. Added Waterproof Membrane to Sub-Slab Drainage System – Sheet C7.4

To significantly minimize, if not eliminate, discharge groundwater into the municipal storm drain, a waterproofing membrane was added beneath the sub-slab drainage system, and is shown in a new detail.

10. Off-Site Improvements for Hill Hanover Group Property – Sheet C5.1

The off-site improvements plan for the Hill Hanover Group site (Map 125/Lot 14) was redesigned based on several coordination meetings between Geolnsight, DPW and Eversource.

11. Easement Modifications – Sheet E4

The proposed easement plan was revised to eliminate easements previously proposed on the Redlon-Johnson parcel (Map 125/Lot 16) and to show adjustments in off-site easements on the Heinemann (Map 125/Lot 14) and Hill Hanover (Map 138/Lot 36) properties. These changes are also described in the Easement Summary Table (Attachment B).

12. Architectural Plans – Sheets A2.01T, A2.02T

The building height has increased by two feet as allowed for a penthouse. As a result, changes were made to the exterior building lighting design. Also, the extent of future potential solar panels on roof are shown, and very slight adjustments were made to a few of the windows on the east and west elevations to comply with IBC Building Code fire separation requirements.

13. Landscape Plans – Sheets L1, L2 and L3

Modifications to the streetscape along Foundry Place were made and include adding benches, changing the locations of landscaping area, and adding a bicycle rack per request of the City.

14. Traffic Evaluation and Mitigation Information

Gorrill Palmer, traffic consultant to DSA, prepared a “Mitigation Methodology and Evaluation Memo” that includes mitigation cost information, which is presented as Attachment F, along with previously submitted traffic related information.



15. Updated Conceptual Construction Sequence Document Figures

To address TAC comments minor revisions have been made to the figures accompanying the Conceptual Construction Sequence Document. These figures are included in Attachment G. The document narrative and accompanying figures will continue to be dynamic as both the City and DSA refine and coordinate construction schedules. We anticipate the need for additional meetings between the DSA construction team and City's construction team once all approvals are secured and the construction timeline is finalized.

Attachments H through K were previously submitted to TAC and have not be modified, but were included again for ease of reference by all being in one package.

The DSA team appreciates the opportunity to work with the TAC and interested members of the public on this project. If you have questions about the information in this cover letter or attached materials, please contact us at (603) 314-0820.

Sincerely,
GEOINSIGHT, INC.



Michael C. Penney, P.E.
Senior Engineer/Senior Associate

Enc.

ATTACHMENT A

**TABLE A: Resolution Summary of
July 5, 2017 Hearing Comments**

TABLE A
RESOLUTION SUMMARY of JULY 5, 2017 TAC HEARING COMMENTS

Color Code:		Addressed/ Corrected
		Change in progress or confirmation needed

Comment #	Comment	Status	Reponse
1	City will not enforce time limit on Hill Street parking spaces	Accepted by DSA	No further action required
2	Describe anticipated uses for ___ total parking spaces	Addressed	Detailed at TAC Hearing: 50 spaces total = 3 on-street, short-term public; 16 in Hill Street garage, 14 of which held by Hill Hanover group and 2 for bldg office or residential, and 31 in Foundry Place garage (mix of residential and retail in daytime, residential at night)
3	Width of Hill Street	Resolved	Followed recommendations by TAC representatives based upon July 26, 2017 meeting, see Sheet 3.0
4	Incorrect scale bar on C3.0	Corrected	See Sheet C3.0
5	No need for "Blind Driveway" sign on Foundry Place	Addressed	Signs removed from Sheet C3.0 per TAC recommendation
6	No Need for crosswalk across driveway	Addressed	Crosswalk removed from Sheet C3.0 per TAC recommendation
7	Striping on driveway ramp not centered	Corrected	See sheet C3.0
8	Radius of corners of driveway can be reduced	Addressed	Reduced western radius to 12' per TAC recommendation; Sheet C3.0
9	Silt sock interferes with staging and parking	Addressed	Silt sock relocated, Sheet C6.1
10	Stop signs should be 30"	Corrected	See Sheet C7.1
11	Show parking easement for lot 14 on E4	Addressed	Easement included, see Sheet E4
12	On Sheet SQNC.3, move barrier on Lot 4 towards Lot 3 for bank parking space use	Addressed	Barrier moved, see Sheet SQNC.3
13	Are parking spaces shown on SQNC.4-6 on lot 4 being removed to create the driveway?	Addressed	No: parking spaces will remain, traffic arrows were moved to show actual traffic pattern, see SQNC.4-6
14	Reconstruct entire Hill Street Section	Addressed	Portion of Hill Street on Lot 6 will be fully reconstructed per meeting with DPW on 8/9/17; portion of Hill Street located off-site to be milled and overlaid, after Hill Hanover approval, because no electrical utilities are required to be installed in the street; see Sheets C2.0 and C3.0.
15	New sewer manhole on Hill Street may be needed	Addressed	New sewer manhole to be constructed 2' upstream of the last sewer service on the existing sewer per DPW request at 7/27/17 meeting, see Sheets C2.0 and C5.0
16	Existing hydrant on Hill Street is the end of the main, relocated hydrant will require all fittings to be cut, and the main extended	Addressed	New sidewalk layout allows for use of existing hydrant, reconfiguration of water line not required; see Sheet C5.0
17	Proposed electric and comm lines for Heinemann and Last Chance Garage may need to be routed around existing sewer	Addressed	Per 7/27/17 meeting with DPW, notes added to Sheet C5.1 describing that final new electric and comm locations to be determined upon location of sewer line by the City
18	Coordinate alignment of sewer connection to Foundry Place	Addressed	Alignments coordinated with Tighe & Bond, final coordination to take place after Planning Board approval
19	Power to Hill Street properties to come from pole on Hanover Street	Resolved	Based upon meeting with DPW on 8/9/17, power to 319 Hill Street to come from relocated pole on Hill Street, power & comm to 339 and 329 Hill Street to come underground from pole on Hanover Street, see Sheet C5.1

TABLE A
RESOLUTION SUMMARY of JULY 5, 2017 TAC HEARING COMMENTS

20	Confirm with utilities that manholes on sheet SE2.3 are adequate for their needs	In Progress	Awaiting final confirmation by EBS
21	Two fire department connections required for lot 6	Addressed	See Sheets A1.01 T and A1.02 T, labeled "FDC"
22	Key switches to be installed adjacent to garage doors for FD access	Agreed	Typical for this type of building, to be covered in building construction specifications
23	Key boxes to be installed at Hill Street and Foundry Place	Agreed	Typical for this type of building, to be covered in building construction specifications
24	Master keying required	Agreed	Typical for this type of building, to be covered in building construction specifications
25	Façade modulation requirements only satisfied if Hill Street is considered frontage	Addressed	Foundry Place is frontage for building, issue resolved with TAC representatives at meeting on 8/26/17
26	Confirm building height and roof appurtenance calculations	Addressed	See sheet C4.2 for average grade calculation, resolved with TAC representatives at meeting on 8/26/17
27	Confirm façade glazing percentage	Resolved	Resolved with TAC representatives at meeting on 8/26/17
28	Façade type not permitted if Hill Street side is considered frontage	Resolved	Foundry Place is Frontage
29	Incentive overlay district requires 14' sidewalk along Hill Street	Resolved	14' only required if Hill Street is frontage; Foundry Place is frontage so requirement is not applicable
30	Demonstrate that municipal drainage system can handle load from sub-slab dewatering	Addressed	Waterproofing added to eliminate nearly all flow, and sump discharges to detention basin; see Sheet C7.4
31	Do not include courtyard as open space	Corrected	See Sheet C3.2
32	Include stormwater detention detail	Corrected	See Sheet C7.3
33	All systems should meet LEED requirements	Resolved	Construction not intended to pursue LEED rating, but many features are equivalent, refer to previous narrative provided by JSA
34	Improve landscaping on Hill Street side	Addressed	See sheet L1 and L2
35	Do not count area behind transformer as community space	Addressed	Eliminated per TAC recommendations, see Sheet C3.1
36	Fix label on open space plan	Corrected	See Sheet C3.2
37	How will landscape strip along #191 be maintained?	Addressed	Landscape strip is Lot 6 property and will be maintained by Lot 6 owner
38	Include bike racks near retail portions of building	Agreed	DSA will work with Planning Staff to resolve final location for bike racks
39	See Site Plan review regs for required language for Site Plan and Landscape Plan notes	Addressed	Notes added to architectural and landscaping cover sheets
40	Foundation Drain requires permit, and surcharge fee. Sump pump design needs to be submitted	Addressed	Waterproofing added and sump discharges to detention basin to likely eliminate discharge from sump; see Sheet C7.4
41	Temporary construction dewatering discharge permit required for construction dewatering	Agreed	Permit will be obtained if off-site discharge is needed
42	Testing of groundwater may be required for connection to City drain	Agreed	Groundwater testing results will be obtained if off-site discharge is needed
43	Show how drainage along Redlon and Johnson PL connects to drain	Resolved	New sidewalk construction design created to capture water on Lot 6 and convey it to on-site storm drain, see Sheet C3.2
44	Stormwater is directed to Redlon and Johnson property, this may need to be directed into stormwater system	Resolved	See comment for Item 43, new retaining wall and sidewalk configuration will be used to capture stormwater on-site; see Sheet C3.2
45	Provide detail of detention system	Addressed	See Sheet C7.3

ATTACHMENT B

Summary of Easements / Access Requirements

LOT 6 LIST OF PROPOSED EASEMENTS / TEMPORARY ACCESS

LOT 6	Type	From	To	Purpose	Description
LOT 6	Easement	DSA Lot 2	DSA Lot 6	Temporary Parking	During Construction
LOT 6	Easement	Kearsarge Mill	DSA Lot 6	Temporary Construction	Equipment Operation, Materials Laydown, Temporary Disturbance
LOT 6	Easement	Kearsarge Mill	DSA Lot 6	Permanent Maintenance	Exterior Cleaning & Repair
LOT 6	Services Access	Kearsarge Mill	Eversource	Construction	Buried Utility Construction
LOT 6	Services Access	Kearsarge Mill	Verizon/AT&T	Construction	Buried Utility Construction
LOT 6	Services Access	Kearsarge Mill	Comcast/Fairpoint	Construction	Buried Utility Construction
LOT 6	Services Access	Sommers	Eversource	Construction	Buried Utility Construction
LOT 6	Services Access	Sommers	Verizon/AT&T	Construction	Buried Utility Construction
LOT 6	Services Access	Sommers	Comcast/Fairpoint	Construction	Buried Utility Construction

ATTACHMENT C

Updated Stormwater Management Report

**STORMWATER MANAGEMENT PLAN
PROPOSED SITE DEVELOPMENT
181 HILL STREET
PORTSMOUTH, NH 03801
MAP 138 LOT 62**



Prepared For:

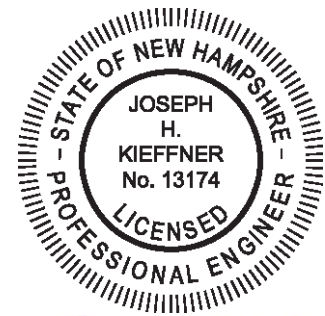
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June 15, 2017 **Revised 08/18/2017**

GeoInsight Project 8090-000



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APPENDIX B	Groundwater Level Estimate Evaluation
APPENDIX C	Pre-Development Conditions Model
APPENDIX D	Post-Development Conditions Model
APPENDIX E	Pipe Design
APPENDIX F	Operation and Maintenance Plan
APPENDIX G	Long Term Operation and Maintenance Plan
APPENDIX H	Existing Watershed Plan
APPENDIX I	Proposed Watershed Plan
APPENDIX J	Erosion and Sedimentation Control Plan

**STORMWATER MANAGEMENT PLAN
PROPOSED SITE DEVELOPMENT
181 HILL STREET
PORTSMOUTH, NH 03801**

1.1 INTRODUCTION

The applicant proposes to redevelop 181 Hill St., located in Portsmouth, NH (the site, refer to Figure 1) to include a new building with residential, retail, and commercial uses. The project also consists of associated infrastructure including driveways, parking, landscaping, drainage facilities and utilities. Drainage associated with the site redevelopment will be collected and routed through best management practice controls sized to address the local stormwater regulations and provide detention prior to discharge to the City of Portsmouth (the City) municipal stormdrain system.

1.2 SITE LOCATION AND DESCRIPTION

The area of the project site is approximately 22,540 ft². Existing elevations range from a high of approximately 19 feet along the southern corner of the site at the property line of Heinemann Publishing, to a low of approximately 11 feet at the northern corner at the property line of Redlon and Johnson. There are currently two 2-story residential duplexes, and two large 2-story storage buildings on the site (refer to Figure 2). These existing buildings and associated infrastructure will be demolished to facilitate the redevelopment.

The Natural Resource Conservation Service Soil Survey for Rockingham County does not have hydrologic soil group data for the site. Soil borings and associated sampling conducted at the site indicated that the soil on the site is a combination of fill and native material comprised of loamy sand, with properties of an Hydrologic Soil Group (HSG) A type soil, with a layer of native clay below (refer to Appendix A). The site is not located in a flood zone, as indicated on the FEMA FIRM map (refer to Figure 3).

1.3 EXISTING SITE CONDITIONS

The pre-development condition consists of two watershed areas contributing to two study points. Study Point #1 (SP-1) consists of overland flow into a catch basin east of the site on Hill Street, which drains into the Deer Street Drainage System. Study Point #2 (SP-2) consists of overland flow to the northwest corner of the site, which ultimately flows into a drainage inlet on what is currently the lot for the proposed Foundry Place Garage. This inlet drains to the City's existing combined sewer. Existing surfaces include building roofs, grassed lawns, hard-packed un-paved driveway and parking areas, street pavement, and concrete. The total area of existing impervious surfaces on the site is 19,386 ft², 86% of the total site area. Refer to Appendix H for the existing

watershed plan.

Contributing areas to the existing conditions SP-1 and SP-2 are detailed in the following tables.

Watershed	Cover Area and Area (ft ²)				
	Grass cover	Woods/Grass Combo	Roofs	Pavement	Gravel
EWA-1	3,154	0	3,008	2,340	7,293
EWA-2	0	1,266	5,479	0	0

Study Point	Watershed Area	Area (ft ²)	Tc(min)	CN
SP-1	EWA-1	15,795	5	85
SP-2	EWA-2	6,745	5	88

1.4 PROPOSED SITE CONDITIONS

The applicant proposes to develop the site into a mixed use 4-story building plus a penthouse that will occupy most of the property footprint. The project consists of the construction of the building, as well as associated infrastructure including driveways, landscaping, drainage facilities and utilities. Drainage will be managed through a series of roof drains, courtyard drains, underground detentions basins, street gutters, and catch basins. The entirety of the lot will be disturbed during construction. New impervious area will include roadways, driveways, sidewalk, and roof tops totaling to an approximate area of 21,673 ft², which is an increase of approximately 13 percent over the existing impervious area (reference Appendix I).

The approved utility design of the City’s proposed Foundry Place roadway provides one storm drain connection for the site, which will connect to Deer Street drain system. This connection will receive onsite stormwater from the entire roof and courtyard area, as well as overflow from water that drains to the planters from two trench drains on the northeast side of the site. This flow, with the exception of the overflow from the planters, will be conveyed to a 8-ft x 4-ft x 76-ft underground detention structure before entering the Foundry Place drainage connection. Runoff from Hill Street and the proposed adjacent sidewalk will flow in the same general path as the existing flow conditions, which leads to a catch basin inlet on Hill Street and eventually flows to Bridge Street. The walkway and sidewalk on the northwest side of the site will flow to catch basins in the proposed Foundry Place roadway which will convey water to the Brewster Street Storm drain.

The proposed stormwater model analyzed flow into the same city storm drain systems as the existing model above. SP-1 is composed of four individual sub-watersheds, which accounts for all the water that drains into the Deer Street system from the site. SP-1 receives flow from the proposed detention basin and PWA-1,3, and 4. SP-2 is located near the western corner of the site, and receives flow from PWA-5. This relatively miniscule flow drains overland to a proposed inlet on the proposed Foundry Place roadway. The study points are summarized in the following table:

Study Point	Watershed Area	Area (ft²)	Tc	CN
SP-1	PWA-1	641	5	98
	PWA-2	16,149	5	98
	PWA-3	3,894	5	95
	PWA-4	544	5	98
SP-2	PWA-5	1,312	5	96

The drainage from the Deer Street drainage system empties into North Mill Pond, a tidally influenced body of water. The mean higher high water (MHHW) level of the Piscataqua River, which influences the level of North Mill Pond, is 4.4 feet above NAVD, per the City of Portsmouth’s Climate Change Vulnerability Assessment and Adaptation Plan. This MHHW value affects the existing drainage system on Deer Street, which has an invert mostly below an elevation of 2 feet. This MHHW value is not expected to affect the proposed drainage system for the proposed site development during dry weather, which connects the drainage system in Foundry Place at an elevation of 5.90 feet. The backwater effect on the drainage system during higher intensity rainstorms at high tide is unknown and is not analyzed or discussed in this report. The building entrance elevations of the new building will be set at or above 11.69 feet and the garage entrance is set at 11.7 which are above 11.5 feet, the elevation of the theoretical 100-year storm surge occurring at high tide, provided in the Climate Change Vulnerability Assessment and Adaptation Plan.

1.4.1 Imperviousness

The total impervious area on the proposed site, including pavement, rooftops, and the courtyard comprises approximately 98% of the total property area. The courtyard will be landscaped but cannot provide infiltration because of the subsurface garage underneath. The following table shows the total area of each type of impervious surface:

Surface	Area (ft²)	Percent Impervious (%)
Pavement	5,884	26
Roofs	16,149	72

1.4.2 Infiltration Analysis

Several borings were performed on the Site (and adjacent DSA sites) to analyze subsurface conditions including groundwater elevations. The soil characteristics were typical of urban fill and, consequently, did not show visual characteristics to estimate an average seasonal high water elevation (refer to Appendix A). Therefore, to obtain an approximate estimated seasonal high water elevation, the Modified Frimpter Method was used. This method takes observed water levels and adds an increase based on nearby wells with seasonal high data. The analysis estimates that the seasonal high water table could occasionally rise within 3 ft to 4 ft of the surface, which does not allow for adequately sized infiltrating stormwater BMP's while providing sufficient room for pavement (refer to Appendix B). The NHDES Stormwater Manual states to provide a minimum of one foot of native soil plus two feet of filtering soil above the seasonal high groundwater for infiltration practices. This thickness cannot be reasonably obtained due to the close proximity of existing and proposed City streets and the urban environment. The borings also show the existence of a relatively shallow clay soil layer and areas of bedrock which could prevent proper infiltration. For these reasons stormwater infiltration is not considered reasonably feasible at this site.

1.4.3 Site Data for Stormwater Modeling

The values in the previous tables were calculated in HydroCAD using a Type III 24-hr storm event specific to Portsmouth, NH. The Cornell/NECC extreme 24-hr rainfall values were used in the model and are shown in the table below. The flows were calculated using the TR-20 method and static routing between points.

Storm	24-hr Rainfall (in)
2-YR	3.20
10-YR	4.86
25-YR	6.16
50-YR	7.37

1.4.4 Peak Discharge Comparison

The proposed site detention structure attenuates the post-development peak flow to the Deer Street storm drain to remain equal to or less than the existing flow for the 2, 10, 25, and 50-YR storms. The change in watershed area and required detention significantly reduce the overall post-development flow rates below the existing rate as shown in the following tables.

Although the foundation will be waterproofed, the projected flows to Deer Street (Study Point SP-1) include the projected foundation flow from a foundation drain sump pump as a worst case

scenario (i.e., the waterproofing fails). The calculated pump rate from the groundwater rise during a 50-year storm event is estimated to be approximately of 0.16 cfs (71.8 gpm), which would be a short-term condition (i.e., several days). The sump pump will lift collected groundwater to the detention system to keep the total post-development flow below or equal to the existing conditions flow rate. It should be noted that the sump pump will be in-place as a back-up system, and is not expected to receive water unless the liner system leaks.

Study Point 1 – Flow Rates to Deer Street Storm Drain (ft³/sec):

Flow Condition	Storm Event			
	2-YR	10-YR	25-YR	50-YR
Pre-Development	0.77	1.41	1.92	2.39
Post-Development	0.77	1.39	1.92	2.36

Study Point 2 – Flow Rates to Brewster Street Storm Drain via Foundry Place (ft³/sec):

Flow Condition	Storm Event			
	2-YR	10-YR	25-YR	50-YR
Pre-Development	0.37	0.65	0.87	1.07
Post-Development	0.09	0.14	0.18	0.22

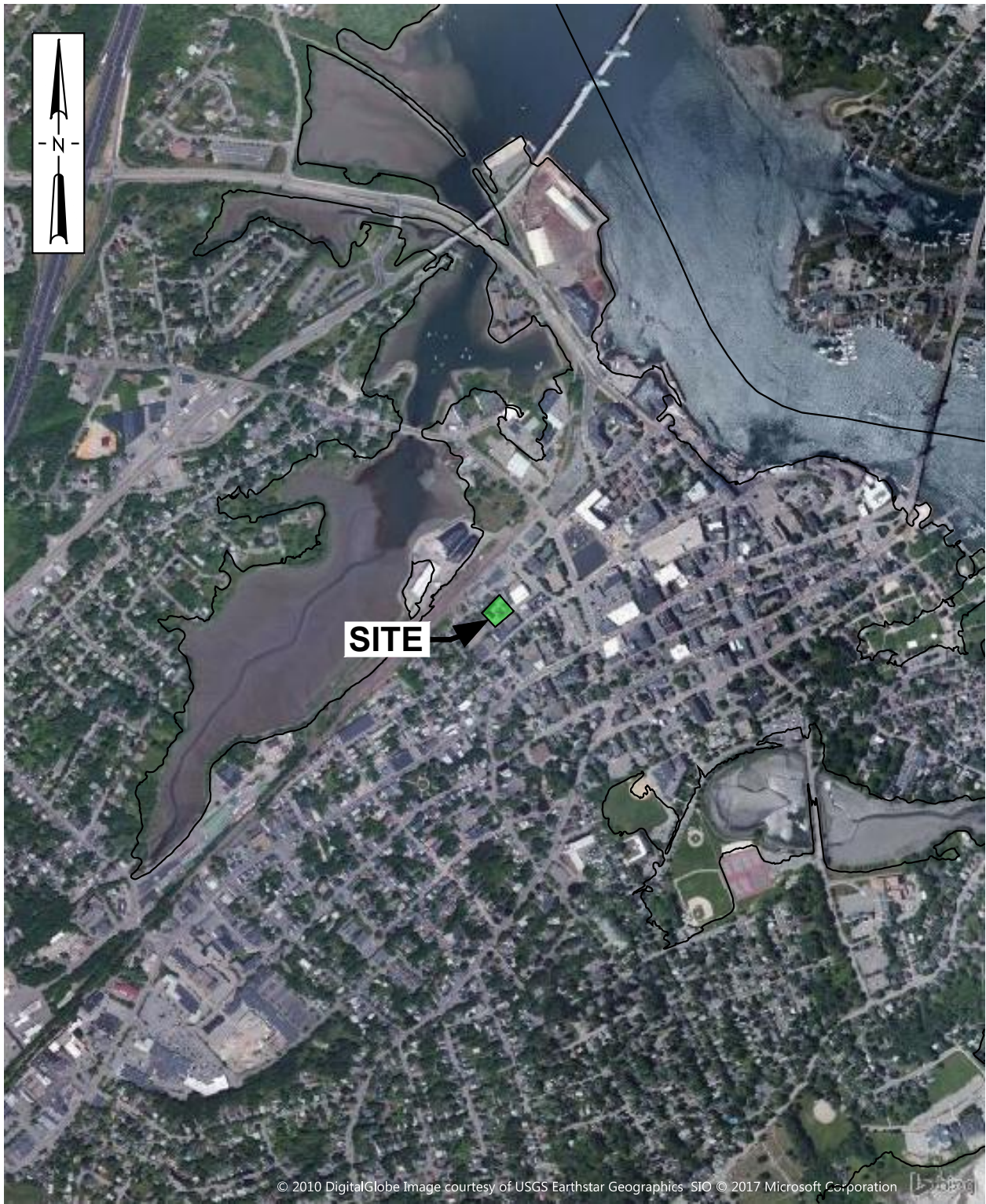
Total Site Run-Off Comparison (ft³/sec):

Flow Condition	Storm Event			
	2-YR	10-YR	25-YR	50-YR
Pre-Development	1.15	2.07	2.79	3.46
Post-Development	0.86	1.52	2.07	2.55

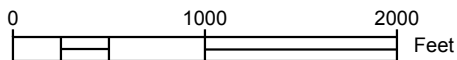
1.5 FINDINGS

Due to the increase in impervious cover, a detention system is required to reduce the peak flow to Deer Street to the pre-development peak flow. The post-development drainage scheme was designed to direct all the flow from the roof, courtyard, and foundation sump pump to the detention structure, and to make the post-development peak flow equal to or less than the pre-development peak flow for the 2, 10, 25, and 50-YR storms for both study points. A small amount of flow from sidewalks on the northwest side of the site will be directed to the curb inlets along Foundry Place, which flows to the Brewster Street drain. This peak flow is calculated to be much less than the pre-development peak flow.

FIGURES



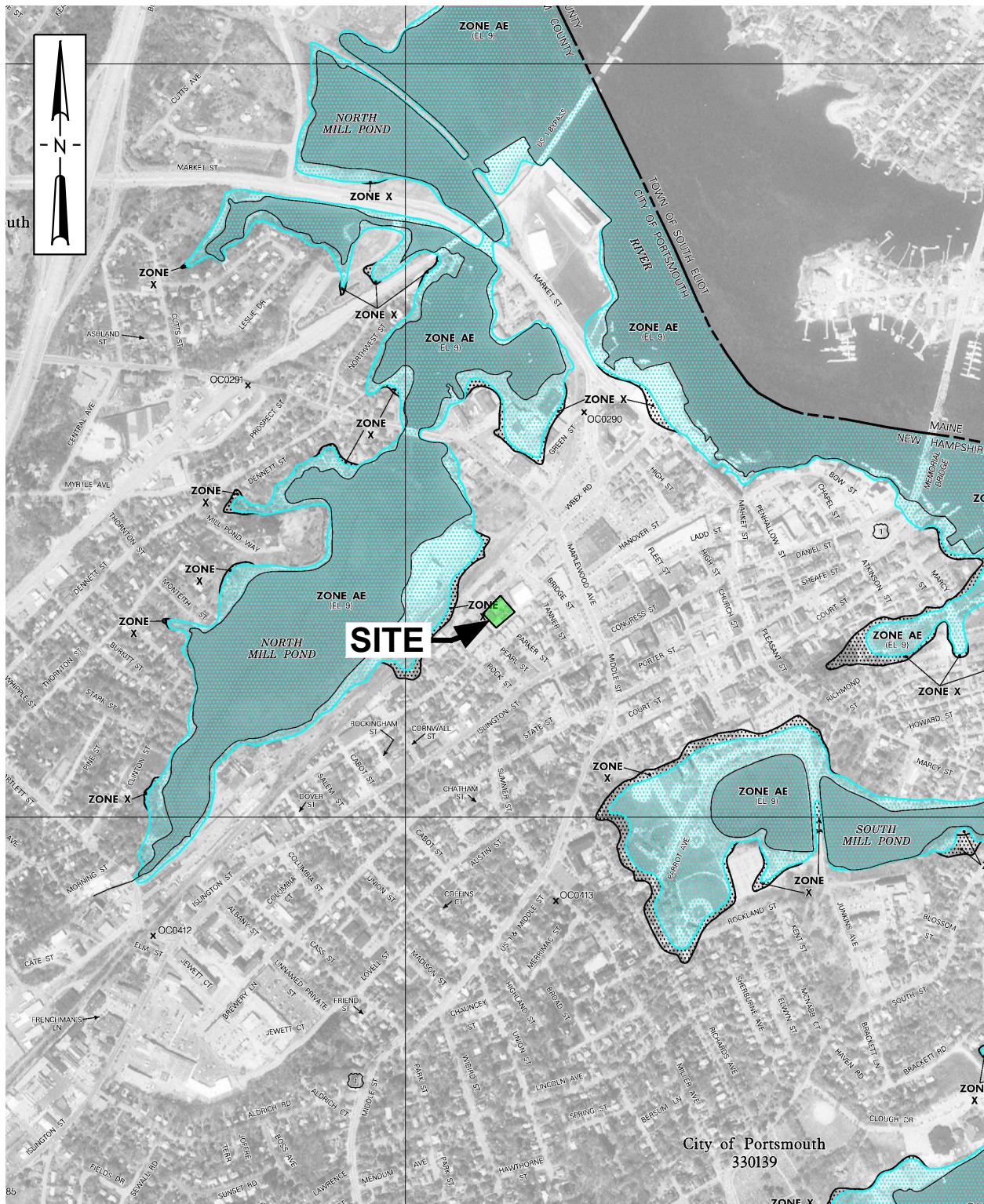
SOURCE:
 USGS EARTHSTAR GEOGRAPHICS



CLIENT: DEER STREET ASSOCIATES AND DEVELOPMENT CORP.			
PROJECT: DEER STREET DEVELOPMENTS LOTS 6			
TITLE: ORTHO MAP			
DESIGNED: ARC	DRAWN: ARC	CHECKED: MCP	APPROVED: JHK
SCALE: 1" = 1000'	DATE: 1/12/17	FILE NO.: 8090LOCUS	PROJECT NO.: 8090-001

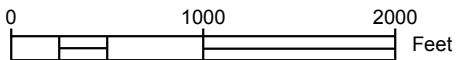


FIGURE NO.: 1



SOURCE:

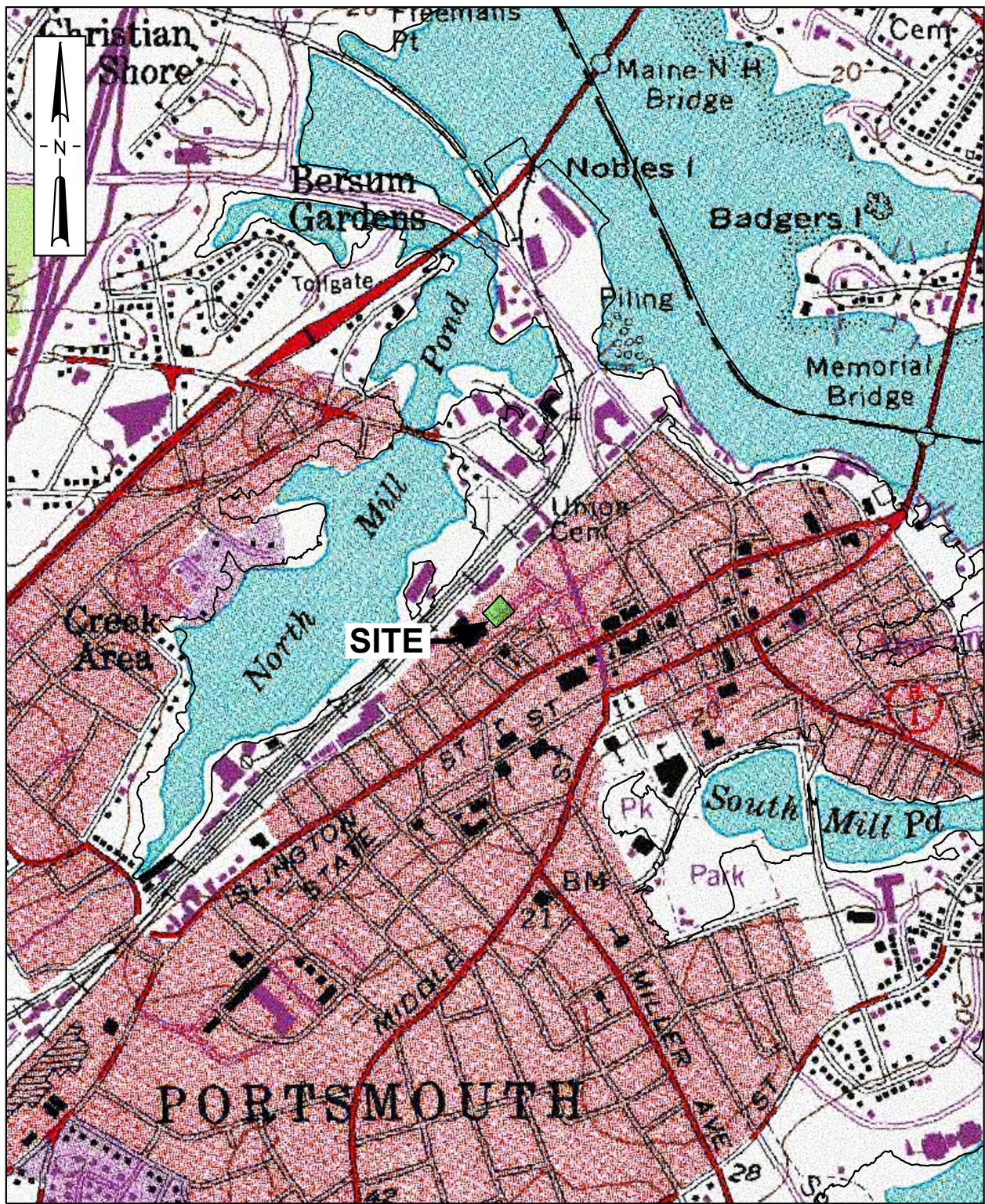
FIRM PANEL 33015C0259E. MAY 17, 2005



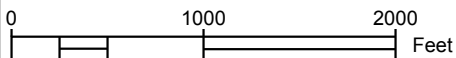
CLIENT:		DEER STREET ASSOCIATES AND DEVELOPMENT CORP.	
PROJECT:		DEER STREET DEVELOPMENTS LOT 6	
TITLE:		FEMA FIRM MAP	
DESIGNED:	DRAWN:	CHECKED:	APPROVED:
ARC	ARC	MCP	JHK
SCALE:	DATE:	FILE NO.:	PROJECT NO.:
1" = 1000'	1/12/17	8090LOCUS	8090-001



FIGURE NO.: 2



SOURCE:
USGS QUAD FOR PORTSMOUTH



CLIENT:		DEER STREET ASSOCIATES AND DEVELOPMENT CORP.	
PROJECT:		DEER STREET DEVELOPMENTS LOT 6	
TITLE: USGS QUAD MAP			
DESIGNED:	DRAWN:	CHECKED:	APPROVED:
ARC	ARC	MCP	JHK
SCALE:	DATE:	FILE NO.:	PROJECT NO.:
1" = 1000'	1/12/17	8090LOCUS	8090-001



FIGURE NO.:
3

APPENDIX A
BORING LOGS



GeoInsight
Environmental Strategy & Engineering

SOIL BORING LOG

Client: Deer Street Associates
Project: Deer Street Development
Location: Portsmouth, NH

Boring Identification: B-108
Sheet: 1 of 2
Checked By: BTN
Project Number: 8090

Drilling Company: Technical Drilling Services, Inc. **Boring Location:**
Foreman: Gary **Ground Surface Elevation:** 17 ft **Datum:**
GeoInsight Engineer/Geologist: ATS **Date Started:** 10/27/16 **Date Completed:** 10/27/16

DRILLING METHOD	SAMPLER	GROUNDWATER MEASUREMENTS			
Vehicle: Truck	Type: SS (auto)	Date	Depth (ft)	Reference	Stabilization
Model: CME	Hammer (lb): 140	10/27/2016	12	Ground Surface	After Drilling
Method: HSA/4" Casing w/ Drive & Wash	Fall (in): 30				

DEPTH (ft)	SAMPLE INFORMATION				SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE
	#	Pen/Rec (in)	Depth (ft)	Blows/6"				
0	S1	24-6	0-2	4	S1: Loose, brown, fine to coarse SAND and GRAVEL, trace Silt, damp.	FILL	<1	1
1				6				
				4				
				2				
2	S2	24/6	2-4	2	S2: Similar to S1, except trace Brick particles.	FILL	<1	1
3				2				
				2				
				2				
4	S3	24/0	4-6	2	S3: No recovery. Auger cuttings similar to S2.	FILL	<1	1
5				1				
				1				
				2				
6	S4	24/12	6-8	2	S4: Loose, brown, fine to coarse SAND, little Silt, trace Gravel and Brick particles, damp.	FILL	<1	1
7				3				
				2				
				4				
8	S5	24/14	8-10	6	S5: Medium dense, brown, fine to coarse SAND, little Gravel, trace Silt, damp.	FILL	<1	1
9				11				
				16				
				17				
10	S6	24/16	10-12	13	S6: Medium dense, brown, fine to coarse SAND, little Silt, trace Gravel, tip of sampler wet.	NATIVE GLACIAL TILL	<1	2
11				13				
				14				
				14				
12	S7	24/16	12-14	13	S7: Similar to S6, except medium dense and wet.	NATIVE GLACIAL TILL	<1	2
13				13				
				12				
				11				
14					S8: Dense, light brown, fine to coarse SAND, little Gravel and Silt, wet.	NATIVE GLACIAL TILL	<1	2
15								
16								
17								
18	S8	24/12	18-20	21	S8: Dense, light brown, fine to coarse SAND, little Gravel and Silt, wet.	NATIVE GLACIAL TILL	<1	2
19				20				
				16				
				8				

GRANULAR SOILS		COHESIVE SOILS		NOTES
Blows/ft.	Density	Blows/ft.	Consistency	
0-4	V. LOOSE	<2	V. SOFT	1. Composite laboratory sample B108A collected. 2. Grab laboratory sample B108B collected. 3. Temporary groundwater monitoring well installed.
5-10	LOOSE	2-4	SOFT	
11-30	M. DENSE	4-8	M. STIFF	
31-50	DENSE	8-15	STIFF	
>50	V. DENSE	15-30	V. STIFF	
		>30	HARD	



GeoInsight
Environmental Strategy & Engineering

SOIL BORING LOG

Client: Deer Street Associates
Project: Deer Street Development
Location: Portsmouth, NH

Boring Identification: B-108
Sheet: 2 of 2
Checked By: BTN
Project Number: 8090

Drilling Company: Technical Drilling Services, Inc. **Boring Location:**
Foreman: Gary **Ground Surface Elevation:** 17 ft **Datum:**
GeoInsight Engineer/Geologist: ATS **Date Started:** 10/27/16 **Date Completed:** 10/27/16

DRILLING METHOD	SAMPLER	GROUNDWATER MEASUREMENTS			
Vehicle: Truck	Type: SS (auto)	Date	Depth (ft)	Reference	Stabilization
Model: CME	Hammer (lb): 140	10/27/2016	12	Ground Surface	After Drilling
Method: HSA/4" Casing w/ Drive & Wash	Fall (in): 30				

DEPTH (ft)	SAMPLE INFORMATION				SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE	
	#	Pen/Rec (in)	Depth (ft)	Blows/6"					
20					S9: Medium dense, light brown, fine to medium SAND, trace Gravel and Silt, wet.	NATIVE GLACIAL TILL			
21									
22									
23	S9	24/14	23-25	33					
				12					
24				13					
				12					
25									
26									
27									
28	S10	12/10	28-29	22	S10: Very dense, light brown, fine to medium SAND, trace Gravel and Silt, wet. Fractured Rock in tip of sampler.	BEDROCK			
				42					
29				50/0"	End of Boring - 29 feet. Practical roller bit refusal on probable Bedrock.				
30									
31									
32									
33									
34									
35									
36									
37									
38									
39									
40									

GRANULAR SOILS		COHESIVE SOILS		NOTES
Blows/ft.	Density	Blows/ft.	Consistency	
0-4	V. LOOSE	<2	V. SOFT	
5-10	LOOSE	2-4	SOFT	
11-30	M. DENSE	4-8	M. STIFF	
31-50	DENSE	8-15	STIFF	
>50	V. DENSE	15-30	V. STIFF	
		>30	HARD	



GeoInsight
Environmental Strategy & Engineering

SOIL BORING LOG

Client: Deer Street Associates
Project: Deer Street Development
Location: Portsmouth, NH

Boring Identification: B-109
Sheet: 1 of 2
Checked By: BTN
Project Number: 8090

Drilling Company: Technical Drilling Services, Inc. **Boring Location:**
Foreman: Gary **Ground Surface Elevation:** 18 ft **Datum:**
GeoInsight Engineer/Geologist: ATS **Date Started:** 10/27/16 **Date Completed:** 10/27/16

DRILLING METHOD	SAMPLER	GROUNDWATER MEASUREMENTS			
Vehicle: Truck	Type: SS (auto)	Date	Depth (ft)	Reference	Stabilization
Model: CME	Hammer (lb): 140	10/27/2016	10	Ground Surface	After Drilling
Method: HSA/4" Casing w/ Drive & Wash	Fall (in): 30				

DEPTH (ft)	SAMPLE INFORMATION				SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE
	#	Pen/Rec (in)	Depth (ft)	Blows/6"				
0	S1	24/12	0-2	12	S1: Medium dense, brown to dark brown, fine to coarse SAND, some Gravel, trace Silt and Asphalt particles, damp.	FILL	<1	1
1				7				
				7				
				7				
2	S2	24/8	2-4	5	S2: Loose, light brown, fine to medium SAND, trace Gravel and Silt, damp.	FILL	<1	1
3				4				
				3				
				4				
4	S3	10/8	4-4.8	15	S3: Very dense, gray, fine to coarse SAND and GRAVEL, trace Silt, damp.	FILL	<1	1
5				55/4"				
6								
7								
8	S4	24/12	8-10	7	S4: Dense, brown, fine to coarse SAND, trace Gravel and Silt, damp.	FILL	<1	1
9				14				
				17				
				20				
10	S5	24/12	10-12	14	S5: Dense, light brown, fine to medium SAND, little Gravel, trace Silt, wet.	NATIVE GLACIAL TILL		2
11				22				
12				14				
13				12				
15	S6	24/12	15-17	4	S6: Medium dense, gray/brown, fine to coarse SAND, little Gravel and Silt, wet.	NATIVE GLACIAL TILL		
16				6				
17				8				
18				12				
19								
20								

GRANULAR SOILS		COHESIVE SOILS		NOTES
Blows/ft.	Density	Blows/ft.	Consistency	
0-4	V. LOOSE	<2	V. SOFT	1. Composite laboratory sample B109A collected. 2. Grab laboratory sample B109B collected.
5-10	LOOSE	2-4	SOFT	
11-30	M. DENSE	4-8	M. STIFF	
31-50	DENSE	8-15	STIFF	
>50	V. DENSE	15-30	V. STIFF	
		>30	HARD	



GeoInsight
Environmental Strategy & Engineering

SOIL BORING LOG

Client: Deer Street Associates
Project: Deer Street Development
Location: Portsmouth, NH

Boring Identification: B-109
Sheet: 2 of 2
Checked By: BTN
Project Number: 8090

Drilling Company: Technical Drilling Services, Inc. **Boring Location:**
Foreman: Gary **Ground Surface Elevation:** 18 ft **Datum:**
GeoInsight Engineer/Geologist: ATS **Date Started:** 10/27/16 **Date Completed:** 10/27/16

DRILLING METHOD	SAMPLER	GROUNDWATER MEASUREMENTS			
Vehicle: Truck	Type: SS (auto)	Date	Depth (ft)	Reference	Stabilization
Model: CME	Hammer (lb): 140	10/27/2016	10	Ground Surface	After Drilling
Method: HSA/4" Casing w/ Drive & Wash	Fall (in): 30				

DEPTH (ft)	SAMPLE INFORMATION				SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE
	#	Pen/Rec (in)	Depth (ft)	Blows/6"				
20	S7	15/10	20-21.3	20	S7: Very dense, gray/brown, fine to coarse SAND and GRAVEL, trace Silt. Fractured Rock in tip of sampler.	NATIVE GLACIAL TILL		
21				33				
22				50/5"				
23					End of Boring - 22 feet. Auger refusal on probable Bedrock.	BEDROCK		
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40	GRANULAR SOILS		COHESIVE SOILS				NOTES	
	Blows/ft.	Density	Blows/ft.	Consistency				
	0-4	V. LOOSE	<2	V. SOFT				
	5-10	LOOSE	2-4	SOFT				
	11-30	M. DENSE	4-8	M. STIFF				
	31-50	DENSE	8-15	STIFF				
	>50	V. DENSE	15-30	V. STIFF				
			>30	HARD				



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SOIL BORING LOG

Project: Bridge Street Development
 Location: Deer St & Bridge St, Portsmouth, NH
 Drilling Co.: Northern Drilling
 Foreman: Tim Tucker
 GeoInsight Eng./Geol: ATS

Boring I.D.: **B-3**
 Sheet: 1 Of: 2
 Project Number: 7462
 Chkd. By: BTN
 Boring Location: See Plan
 Ground Surface Elevation: ~17 ft Datum:
 Date Started: 11/7/2014 Date Completed: 11/10/2014

DRILLING METHOD		SAMPLER		GROUND WATER READINGS				
Vehicle:	ATV	Type:	Split Spoon	DATE	DEPTH	REFERENCE	STABILIZATION	
Model:	Mobile B-48	Hammer(lb):	140	11/10/2014	11.1	Ground Surface	5 hours	
Method:	Drive & Wash (4")	Fall (in):	30 (auto)					
DEPTH (ft)	SAMPLE				SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE
	NO.	REC/PEN (in)	DEPTH (ft)	BLOWS/6"				
0	S1	12/24	0-2	6	S1: Loose, black/brown, fine to coarse SAND, little Gravel, trace Silt	Gravelly SAND (FILL)	<1	
				5				
				3				
				2				
				2				
5	S2	2/24	2-4	1	S2: Loose, brown/black, fine to coarse SAND and SILT, trace Gravel and miscellaneous debris (brick).	Silty SAND (FILL)	<1	
				2				
				2				
				2				
				2				
10	S3	12/24	4-6	2	S3: Loose, tan, fine to medium SAND, some Gravel, trace Silt.	Gravelly SAND (FILL)	<1	
				2				
				5				
				9				
				15				
15	S4	12/24	6-8	5	S4: Medium dense, tan, fine to medium SAND, little Silt, trace Gravel.	Silty SAND (FILL)	<1	
				5				
				11				
				32				
				50/1"				
	S5	1/1	8-8.1	50/1"	S5: Rock in tip of sampler.			
					Note: Roller bit past boulder from 8.1 to 9 feet.			
					Note: Cannot drive casing past 8.1 feet. Roller bit to termination depth of boring (open hole). Return wash water consists of brown sand.	(POSSIBLE NATIVE)		
					Note: Change to native soil estimated based upon nearby test borings.			

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/ft.	DENSITY	BLOWS/ft.	CONSISTENCY
0-4	V. LOOSE	<2	V. SOFT
5-10	LOOSE	2-4	SOFT
11-30	M. DENSE	5-8	M. STIFF
31-50	DENSE	9-15	STIFF
>50	V. DENSE	16-30	V. STIFF
		>30	HARD

Notes:
 1. Soil samples field screened using a MiniRae2000 photoionization detector calibrated to read as benzene.
 2. Temporary groundwater monitoring well installed in borehole.



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SOIL BORING LOG

Project: Bridge Street Development
 Location: Deer St & Bridge St, Portsmouth, NH
 Drilling Co.: Northern Drilling
 Foreman: Tim Tucker
 GeolInsight Eng./Geol: ATS

Boring I.D.: **B-3**
 Sheet: 2 Of: 2
 Project Number: 7462
 Chkd. By: BTN
 Boring Location: See Plan
 Ground Surface Elevation: ~17 ft Datum:
 Date Started: 11/7/2014 Date Completed: 11/10/2014

DRILLING METHOD		SAMPLER		GROUND WATER READINGS			
Vehicle:	ATV	Type:	Split Spoon	DATE	DEPTH	REFERENCE	STABILIZATION
Model:	Mobile B-48	Hammer(lb):	140	11/10/2014	11.1	Ground Surface	5 hours
Method:	Drive & Wash (4")	Fall (in):	30 (auto)				

DEPTH (ft)	SAMPLE				SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE
	NO.	REC/PEN (in)	DEPTH (ft)	BLOWS/6"				
20					Note: Roller bit to termination depth of boring.	(POSSIBLE NATIVE)		
25								
30					Note: Drill action indicates increased soil density and/or gravel content at 29.5 feet.			
35					Apparent rock encountered at 31.5 feet. Roller bit to 33.5 feet. Dark gray rock particles in wash water.	PROBABLE BEDROCK		
				End of Boring - 33.5 feet.				

GRANULAR SOILS		COHESIVE SOILS		Notes:
BLOWS/ft.	DENSITY	BLOWS/ft.	CONSISTENCY	
0-4	V. LOOSE	<2	V. SOFT	
5-10	LOOSE	2-4	SOFT	
11-30	M. DENSE	5-8	M. STIFF	
31-50	DENSE	9-15	STIFF	
>50	V. DENSE	16-30	V. STIFF	
		>30	HARD	



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SOIL BORING LOG

Project: Bridge Street Development
 Location: Deer St & Bridge St, Portsmouth, NH
 Drilling Co.: Northern Drilling
 Foreman: Tim Tucker
 GeoInsight Eng./Geol: ATS

Boring I.D.: **B-9**
 Sheet: 1 Of: 1
 Project Number: 7462
 Chkd. By: BTN
 Boring Location: See Plan
 Ground Surface Elevation: ~ 18 ft Datum:
 Date Started: Date Completed:

DRILLING METHOD		SAMPLER		GROUND WATER READINGS					
Vehicle:	ATV	Type:	Split Spoon	DATE	DEPTH	REFERENCE	STABILIZATION		
Model:	Mobile B-48	Hammer(lb):	140		Unknown (see note)				
Method:	Drive & Wash (4")	Fall (in):	30 (auto)						
DEPTH (ft)	SAMPLE				SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE	
	NO.	REC/PEN (in)	DEPTH (ft)	BLOWS/6"					
0	S1	20/24	0-2	6	S1: Loose, dark brown/black, fine to coarse SAND, some fine Gravel, trace Silt.	Gravelly SAND (FILL)	<1		
				4					
				3					
				3					
				3					
5	S2	12/24	2-4	2	S2: Medium dense, brown, Clayey SILT. Possible large Gravel/Cobble 3-4 feet.	Gravelly SAND (FILL)	<1		
				3					
				21					
				68					
				33					
10	S3	8/24	4-6	48	S3: Very dense, tan, fine to coarse SAND and GRAVEL, trace Silt.	PROBABLE BEDROCK	<1		
				33					
				24					
				25					
				22					
15	S4	20/24	6-8	22	S4: Dense, tan, fine SAND and SILT, trace fine Gravel.	PROBABLE BEDROCK	<1		
				21					
				15					
				12					
				12					
	S5	0/1	8-8.1	50/1"	S5: No recovery.				
					Apparent rock encountered at 8.1 feet. Roller bit to 9.1 feet. Dark gray rock particles in wash water.				
					End of Boring - 9.1 feet.				

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/ft.	DENSITY	BLOWS/ft.	CONSISTENCY
0-4	V. LOOSE	<2	V. SOFT
5-10	LOOSE	2-4	SOFT
11-30	M. DENSE	5-8	M. STIFF
31-50	DENSE	9-15	STIFF
>50	V. DENSE	16-30	V. STIFF
		>30	HARD

Notes:
 1. Soil samples field screened using a MiniRae2000 photoionization detector calibrated to read as benzene.
 2. Borehole not left open long enough to record groundwater level. Water in borehole not indicative of groundwater level due to the drilling method employed.



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SOIL BORING LOG

Project: Bridge Street Development
 Location: Deer St & Bridge St, Portsmouth, NH
 Drilling Co.: Northern Drilling
 Foreman: Tim Tucker
 GeoInsight Eng./Geol: ATS

Boring I.D.: **B-10**
 Sheet: 1 Of: 1
 Project Number: 7462
 Chkd. By: BTN
 Boring Location: See Plan
 Ground Surface Elevation: ~ 16 ft Datum:
 Date Started: Date Completed:

DRILLING METHOD		SAMPLER		GROUND WATER READINGS				
Vehicle:	ATV	Type:	Split Spoon	DATE	DEPTH	REFERENCE	STABILIZATION	
Model:	Mobile B-48	Hammer(lb):	140		Unknown (see note)			
Method:	Drive & Wash (4")	Fall (in):	30 (auto)					
DEPTH (ft)	SAMPLE				SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE
	NO.	REC/PEN (in)	DEPTH (ft)	BLOWS/6"				
0	S1	12/24	0-2	1	S1: Very loose, brown, fine SAND and SILT, trace fine Gravel and fine Roots.	Silty SAND (FILL)	<1	
				1				
				2				
				1				
	S2	1/24	2-4	2				
				1				
5	S3	24/24	4-6	5	S3: Very Stiff, tan, Silty CLAY.	(GLACIAL TILL)		
				9				
				10				
				12				
	S4	22/24	6-8	14				
				15				
10	S5	22/24	8-10	3	S5: Stiff, brown/gray, Silty CLAY.			
				4				
				8				
				14				
15	S6	12/24	14-16	65	S6: Very dense, brown, GRAVEL, trace fine to medium Sand and Silt.			
				38				
				33				
				47				
				Apparent rock encountered at 17 feet. Roller bit to 18 feet. Dark gray rock particles in wash water.	PROBABLE BEDROCK			
				End of Boring - 18 feet.				

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/ft.	DENSITY	BLOWS/ft.	CONSISTENCY
0-4	V. LOOSE	<2	V. SOFT
5-10	LOOSE	2-4	SOFT
11-30	M. DENSE	5-8	M. STIFF
31-50	DENSE	9-15	STIFF
>50	V. DENSE	16-30	V. STIFF
		>30	HARD

Notes:
 1. Soil samples field screened using a MiniRae2000 photoionization detector calibrated to read as benzene.
 2. Borehole not left open long enough to record groundwater level. Water in borehole not indicative of groundwater level due to the drilling method employed.

APPENDIX B
GROUND WATER LEVEL EVALUATION



GeoInsight®

Environmental Strategy & Engineering
Practical in Nature

December 16, 2016

GeoInsight Project 8090-000

Ania Rogers
Deer Street Associates
P.O. Box 100
York Harbor, ME 03911

Re: Groundwater Elevation Evaluation
Deer Street Development
Deer Street and Maplewood Avenue
Portsmouth, New Hampshire

Mrs. Rogers:

GeoInsight, Inc. (GeoInsight) prepared this letter for Deer Street Associates (DSA) to present the results of a seasonal high groundwater evaluation related to the proposed Deer Street development west of the intersection of Deer Street and Maplewood Avenue in Portsmouth, New Hampshire (the Site).

As part of GeoInsight's stormwater management design for the project, estimation of the seasonal high water table elevation is necessary. Based upon subsurface investigations performed by GeoInsight at the Site, near-surface soil conditions generally consist of a layer of fill placed over a native organic deposit and/or native marine fines deposit.

Estimation of seasonal high groundwater table is typically determined by observing the overburden soils for presence of iron concentrations or depletions (i.e., "mottles"). The mottles are created when soil is saturated for extended periods. Where static depths to groundwater were recorded in the subsurface explorations conducted at the Site (i.e., where monitoring wells were installed the borings), the depth to water was typically recorded near the top the native marine fines layer, and ranged from approximately 8 to 9 feet below ground surface (bgs). Soils above the observed water table generally included man-placed miscellaneous fill materials. In most cases, determination of the seasonal high water table is not possible in miscellaneous fill materials due to the general miscellaneous nature of the fill, which makes distinguishing soil mottles unreliable; or soil mottles may not be present.

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200 Court Street, 2nd Floor
Middletown, CT 06457-3341
Tel (860) 894-1022
Fax (860) 894-1023



As one alternative to direct observation of soil mottles, groundwater levels can be monitored for extended periods of time to determine the typical seasonal high water table elevation. Subsurface explorations at the Site performed by GeoInsight were conducted in November 2014 and October 2014, which are typically not periods where seasonal high groundwater tables are most often present; therefore, another alternate method of seasonal high water table estimation was considered necessary. As such, GeoInsight performed an evaluation of the probable seasonal high water table elevation using a modification of the Frimpter Method.

The Frimpter Method is an estimation approach that considers the well-established seasonal fluctuation of groundwater levels at nearby U.S. Geological Society (USGS) monitoring wells and uses that data to relate water levels recorded at a given site (and a certain time period) to potential maximum groundwater levels at that site. This method is considered acceptable by the Massachusetts Department of Environmental Protection due to the Massachusetts-specific study that was performed to develop the method. While the Frimpter Method is not a recognized seasonal high water table estimation method by the New Hampshire Department of Environmental Services (NHDES), GeoInsight considered the method to be technically reasonable for this Site-specific evaluation.

GeoInsight conducted a modified Frimpter Method to calculate the probable estimated seasonal high water table (PESHWT) at the Site. Rather than using USGS monitoring well data, GeoInsight used groundwater level measurements collected by others from a nearby property located approximately 750 feet northwest of the Site (203 Maplewood Avenue). The 203 Maplewood Avenue data included a total of 26 water level measurements collected between 2006 and 2016. Using this relatively robust set of data, we statistically reduced the information to determine a theoretical increase to the water levels observed at the DSA Site. The PESHWT increase was applied to on-Site groundwater elevation data collected from four temporary groundwater monitoring wells on November 10, 2014 and October 24-25, 2016 (refer to Figure 1 for approximate on-Site well locations). The resulting statistical increase in water levels to the Site wells are summarized in Table 1, below.

Table 1 – Summary of Modified Frimpter Method Evaluation					
Exploration Identification	Ground Surface Elevation (feet)	Date of Groundwater Level Observation	Observed Groundwater Elevation (feet)	Estimated Increase in Seasonal High Water Table Above Observed Elevation (feet)	Estimated Elevation of Probable High Water Table (feet)
B-101	14.0	10-24-16	5.7	3.8	9.5
B-103	13.1	10-25-16	4.8	3.8	8.6
B-1	11.0	11-10-14	3.6	3.9	7.5
B-8	10.0	11-10-14	4.9	3.9	8.8

GeoInsight also reviewed other groundwater monitoring well data recorded in environmental reports for nearby properties obtained from the NHDES online OneStop database to further evaluate the PESHWT data presented above. Specifically, we reviewed water table fluctuations



at three other nearby properties, in addition to the 203 Maplewood property. The reviewed data is summarized in Table 2, below.

Table 2 – Summary of Nearby Water Table Fluctuation Data		
Property Address (Portsmouth, NH)	Number of Dates Groundwater Level Measurements Recorded	Maximum Observed Water Table Fluctuation (feet)
31 Raynes Avenue	4	1.4
233 Vaughan Street	6	3.0
Maplewood Ave & Route 1	2	0.9
203 Maplewood Ave	26	3.5

Based upon the above-referenced groundwater table fluctuation data recorded at nearby properties, the maximum recorded water table fluctuation of approximately 3.5 feet compares reasonably-well to the Site-specific modified Frimpter Method evaluation results presented in Table 1. Therefore, GeoInsight recommends using the PESHWT elevations presented in Table 1 for design of stormwater management structures at the Site.

GeoInsight appreciates the opportunity to be of service to DSA. If you have questions about this letter or any other matter, please contact the undersigned at (603) 314-0820.

Sincerely,
GEOINSIGHT, INC.

Brian T. Nereson, P.E.
Senior Project Engineer

Michael C. Penney, P.E., L.S.P.
Senior Engineer/Principal

Attachments: Figure 1 – Temporary Monitoring Well Locations

8090 Water Level Estimate Evaluation.docx

Note: Analysis based on modified Frimpter method (modified to use nearby groundwater level data)
 Note: Water levels may or may not be tidally influenced

Project Name Deer Street Development
 Project No. 8090
 Date 11/14/2016
 Analyst BTN

Exploration ID	Date	Sc	Well Measurement Date]	203 Maplewood Ave Well Data			Range of Water (Owr)	Sr	Sh	Est Increase from Obsevation Date (ft)	Ground El	GW EI
				GW Depth (Owc)	Max Recorded Level (Owmax)	Min Recorded Level						
B-101	10/24/2016	8.34	10/6/2016	8.23	5.62	8.3	2.68	3.9	4.5	3.8	14	9.5
B-103	10/25/2016	8.34	10/6/2016	8.23	5.62	8.3	2.68	3.9	4.5	3.8	13.1	8.6
B-1	11/10/2014	7.4	10/2/2014	8.88	6.06	8.9	2.84	3.9	3.5	3.9	11	7.5
B-8	11/10/2014	5.1	10/2/2014	8.88	6.06	8.9	2.84	3.9	1.2	3.9	10	8.8

^^GW depths interpolated between measured well data

^^90% confidence

$$S_h = S_c - (S_r / O_w r_r) (O_w c - O_w \max)$$

Sc = measured depth to water at the site

Sh = estimated depth to probable high water at the site

Owc = measured depth to water in the observation well used to correlate with water levels at the site

Owmax = depth to recorded maximum water level at the observation well which was used to correlate with the water levels at the site

Sr = range of water level where the site is located. Values of range with varying exceedance probabilities selected from figure below

Owr = recorded upper limit of annual range of water level at the observation well which is used to correlate with water levels at the site

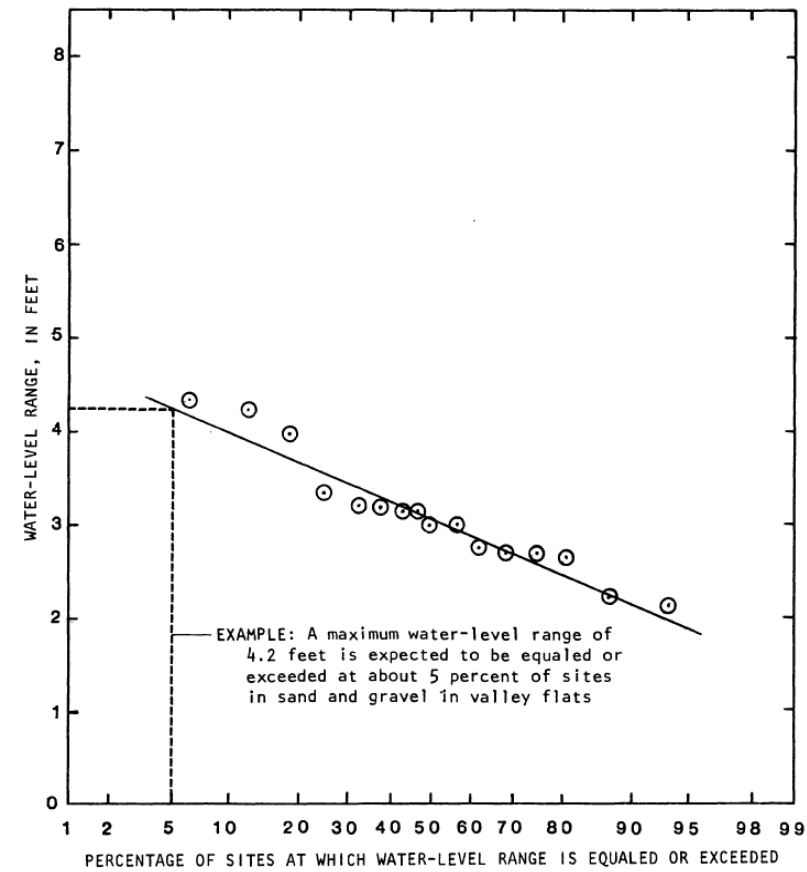
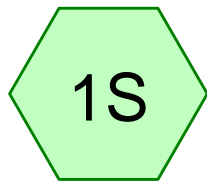


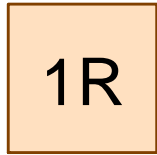
Figure 12.--Probability of water-level range in sand and gravel in valley flats

APPENDIX C

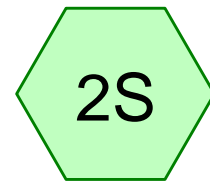
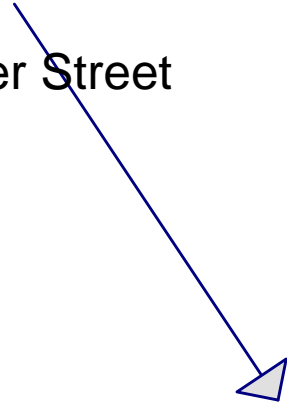
PRE-DEVELOPMENT CONDITIONS MODEL



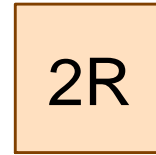
EWA-1



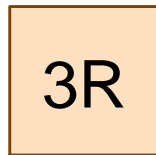
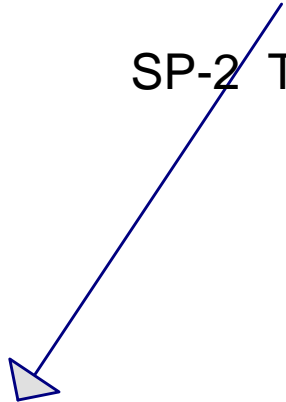
SP-1 To Deer Street



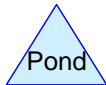
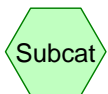
EWA-2



SP-2 To Combined Sewer



Total Pre-Dev Runoff



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Page 2

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
3,154	39	>75% Grass cover, Good, HSG A (1S)
7,293	96	Gravel surface, HSG A (1S)
2,340	98	Pavement, HSG A (1S)
8,487	98	Roofs, HSG A (1S, 2S)
1,266	43	Woods/grass comb., Fair, HSG A (2S)
22,540	86	TOTAL AREA

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Page 3

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
22,540	HSG A	1S, 2S
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
22,540		TOTAL AREA

8090 Existing Watershed Lot 6

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Page 4

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Sub Num
3,154	0	0	0	0	3,154	>75% Grass cover, Good	
7,293	0	0	0	0	7,293	Gravel surface	
2,340	0	0	0	0	2,340	Pavement	
8,487	0	0	0	0	8,487	Roofs	
1,266	0	0	0	0	1,266	Woods/grass comb., Fair	
22,540	0	0	0	0	22,540	TOTAL AREA	

Summary for Subcatchment 1S: EWA-1

Runoff = 0.77 cfs @ 12.08 hrs, Volume= 2,313 cf, Depth= 1.76"

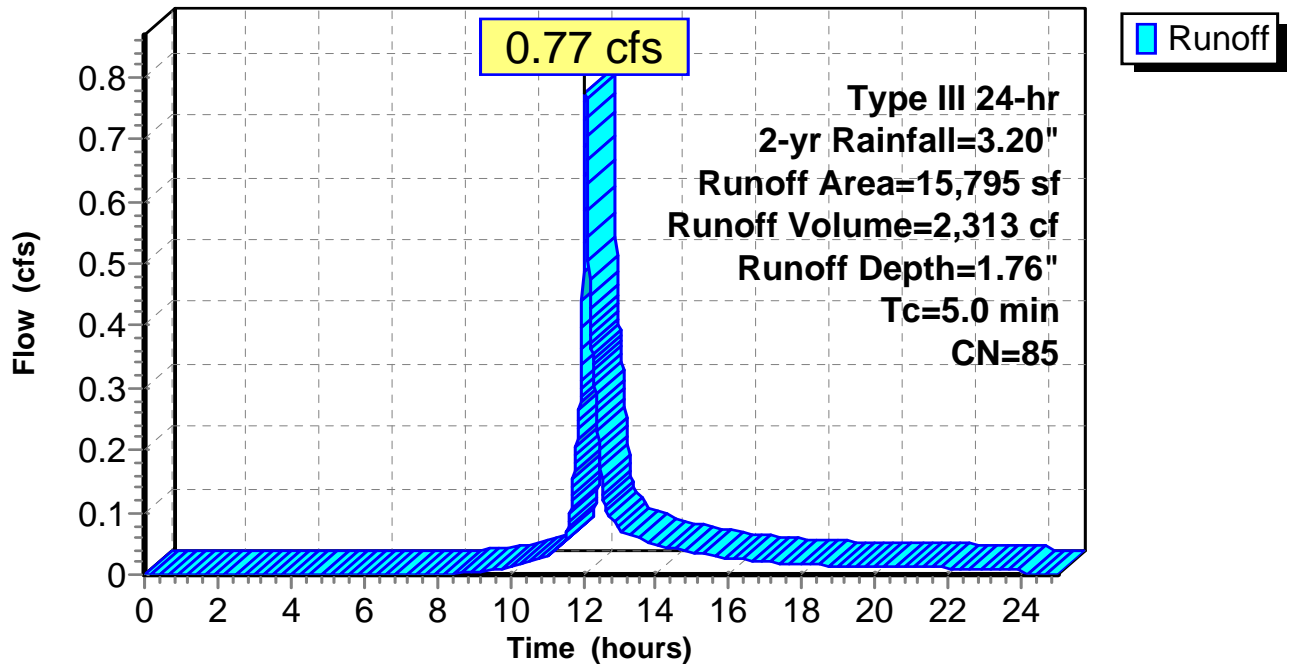
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-yr Rainfall=3.20"

Area (sf)	CN	Description
3,008	98	Roofs, HSG A
* 2,340	98	Pavement, HSG A
3,154	39	>75% Grass cover, Good, HSG A
* 7,293	96	Gravel surface, HSG A
15,795	85	Weighted Average
10,447		66.14% Pervious Area
5,348		33.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 1S: EWA-1

Hydrograph



Summary for Subcatchment 2S: EWA-2

Runoff = 0.37 cfs @ 12.07 hrs, Volume= 1,122 cf, Depth= 2.00"

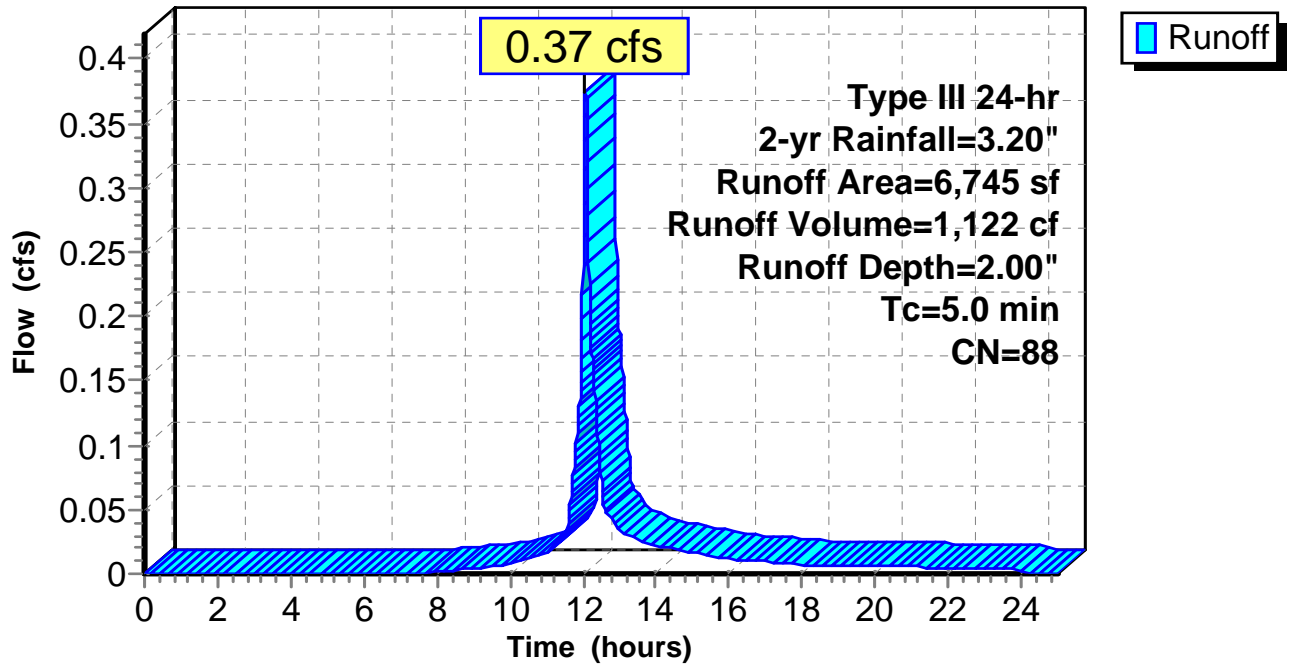
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-yr Rainfall=3.20"

Area (sf)	CN	Description
1,266	43	Woods/grass comb., Fair, HSG A
5,479	98	Roofs, HSG A
6,745	88	Weighted Average
1,266		18.77% Pervious Area
5,479		81.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 2S: EWA-2

Hydrograph



Summary for Reach 1R: SP-1 To Deer Street

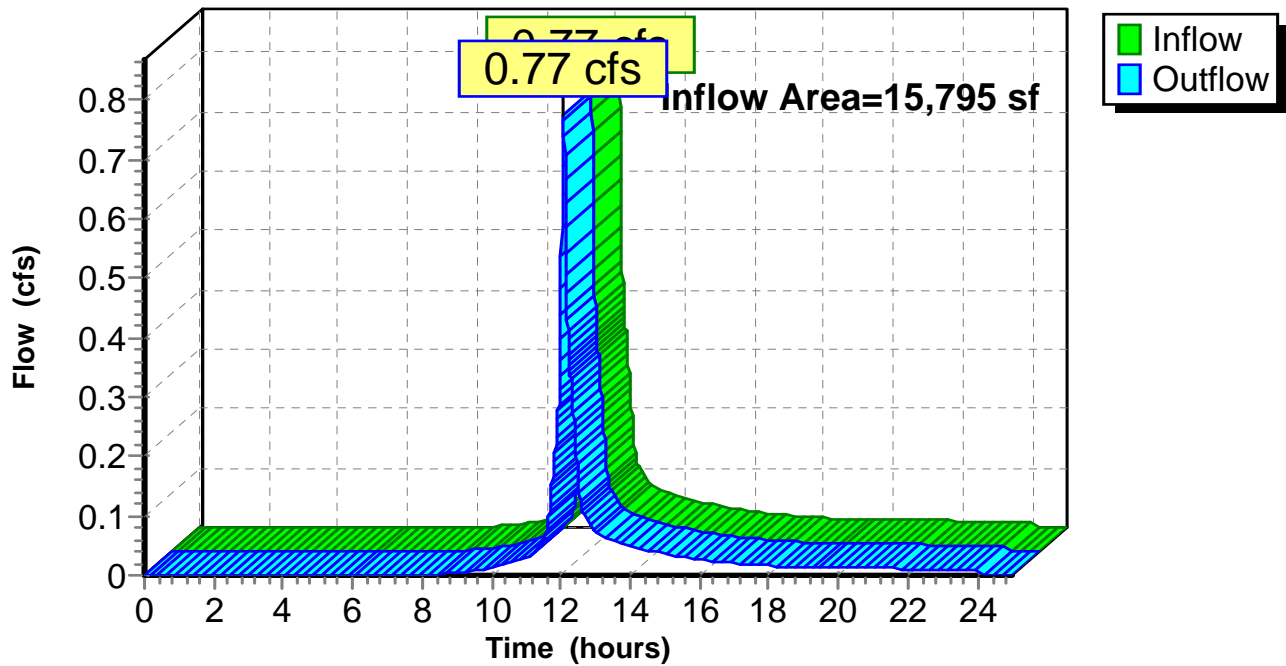
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 15,795 sf, 33.86% Impervious, Inflow Depth = 1.76" for 2-yr event
Inflow = 0.77 cfs @ 12.08 hrs, Volume= 2,313 cf
Outflow = 0.77 cfs @ 12.08 hrs, Volume= 2,313 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs

Reach 1R: SP-1 To Deer Street

Hydrograph



Summary for Reach 2R: SP-2 To Combined Sewer

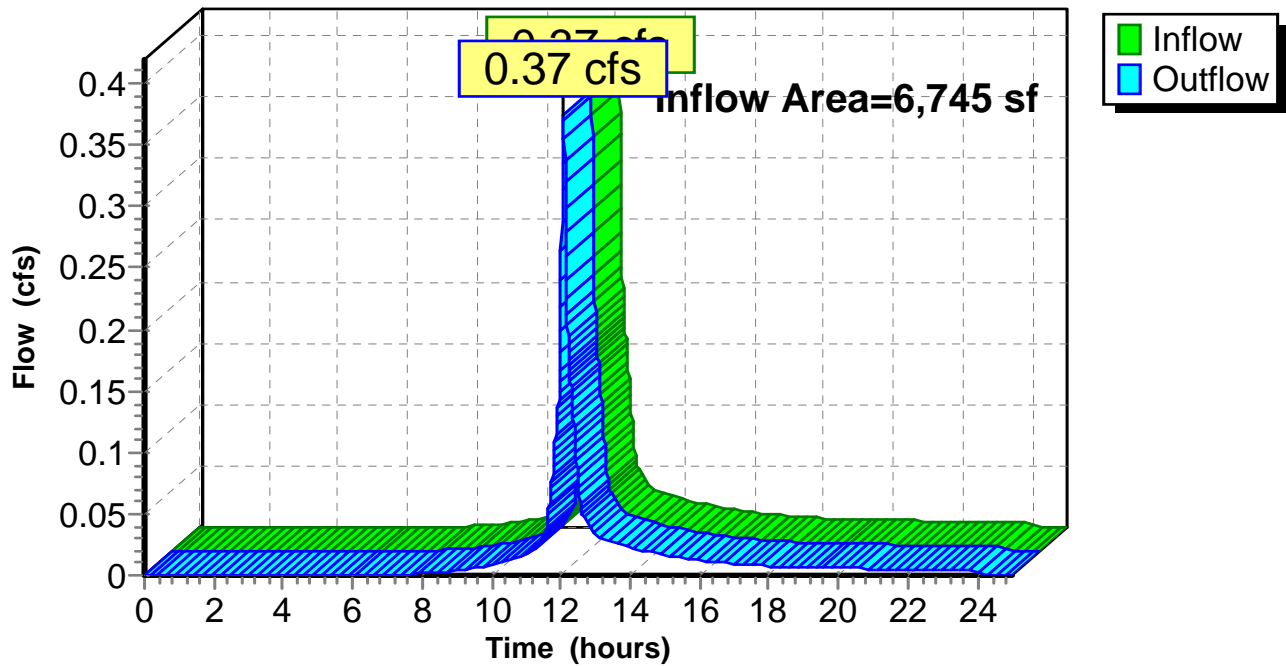
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 6,745 sf, 81.23% Impervious, Inflow Depth = 2.00" for 2-yr event
Inflow = 0.37 cfs @ 12.07 hrs, Volume= 1,122 cf
Outflow = 0.37 cfs @ 12.07 hrs, Volume= 1,122 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs

Reach 2R: SP-2 To Combined Sewer

Hydrograph



Summary for Reach 3R: Total Pre-Dev Runoff

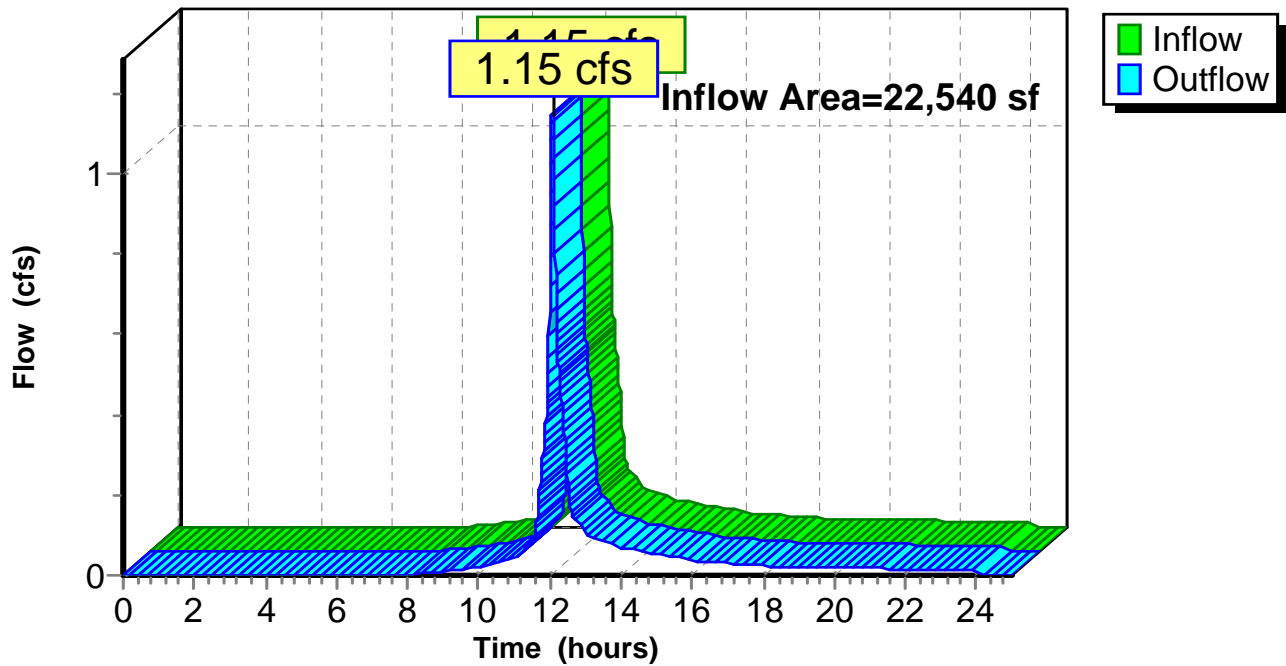
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 22,540 sf, 48.03% Impervious, Inflow Depth = 1.83" for 2-yr event
Inflow = 1.15 cfs @ 12.07 hrs, Volume= 3,436 cf
Outflow = 1.15 cfs @ 12.07 hrs, Volume= 3,436 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs

Reach 3R: Total Pre-Dev Runoff

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.86"

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Time span=0.00-25.00 hrs, dt=0.01 hrs, 2501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: EWA-1 Runoff Area=15,795 sf 33.86% Impervious Runoff Depth=3.24"
Tc=5.0 min CN=85 Runoff=1.41 cfs 4,263 cf

Subcatchment 2S: EWA-2 Runoff Area=6,745 sf 81.23% Impervious Runoff Depth=3.54"
Tc=5.0 min CN=88 Runoff=0.65 cfs 1,988 cf

Reach 1R: SP-1 To Deer Street Inflow=1.41 cfs 4,263 cf
Outflow=1.41 cfs 4,263 cf

Reach 2R: SP-2 To Combined Sewer Inflow=0.65 cfs 1,988 cf
Outflow=0.65 cfs 1,988 cf

Reach 3R: Total Pre-Dev Runoff Inflow=2.07 cfs 6,251 cf
Outflow=2.07 cfs 6,251 cf

Total Runoff Area = 22,540 sf Runoff Volume = 6,251 cf Average Runoff Depth = 3.33"
51.97% Pervious = 11,713 sf 48.03% Impervious = 10,827 sf

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Type III 24-hr 25-yr Rainfall=6.16"

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Time span=0.00-25.00 hrs, dt=0.01 hrs, 2501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: EWA-1 Runoff Area=15,795 sf 33.86% Impervious Runoff Depth=4.45"
Tc=5.0 min CN=85 Runoff=1.92 cfs 5,862 cf

Subcatchment 2S: EWA-2 Runoff Area=6,745 sf 81.23% Impervious Runoff Depth=4.78"
Tc=5.0 min CN=88 Runoff=0.87 cfs 2,687 cf

Reach 1R: SP-1 To Deer Street Inflow=1.92 cfs 5,862 cf
Outflow=1.92 cfs 5,862 cf

Reach 2R: SP-2 To Combined Sewer Inflow=0.87 cfs 2,687 cf
Outflow=0.87 cfs 2,687 cf

Reach 3R: Total Pre-Dev Runoff Inflow=2.79 cfs 8,549 cf
Outflow=2.79 cfs 8,549 cf

Total Runoff Area = 22,540 sf Runoff Volume = 8,549 cf Average Runoff Depth = 4.55"
51.97% Pervious = 11,713 sf 48.03% Impervious = 10,827 sf

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Type III 24-hr 50-yr Rainfall=7.37"

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Time span=0.00-25.00 hrs, dt=0.01 hrs, 2501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: EWA-1 Runoff Area=15,795 sf 33.86% Impervious Runoff Depth=5.61"
Tc=5.0 min CN=85 Runoff=2.39 cfs 7,380 cf

Subcatchment 2S: EWA-2 Runoff Area=6,745 sf 81.23% Impervious Runoff Depth=5.95"
Tc=5.0 min CN=88 Runoff=1.07 cfs 3,346 cf

Reach 1R: SP-1 To Deer Street Inflow=2.39 cfs 7,380 cf
Outflow=2.39 cfs 7,380 cf

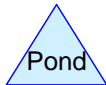
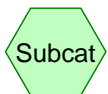
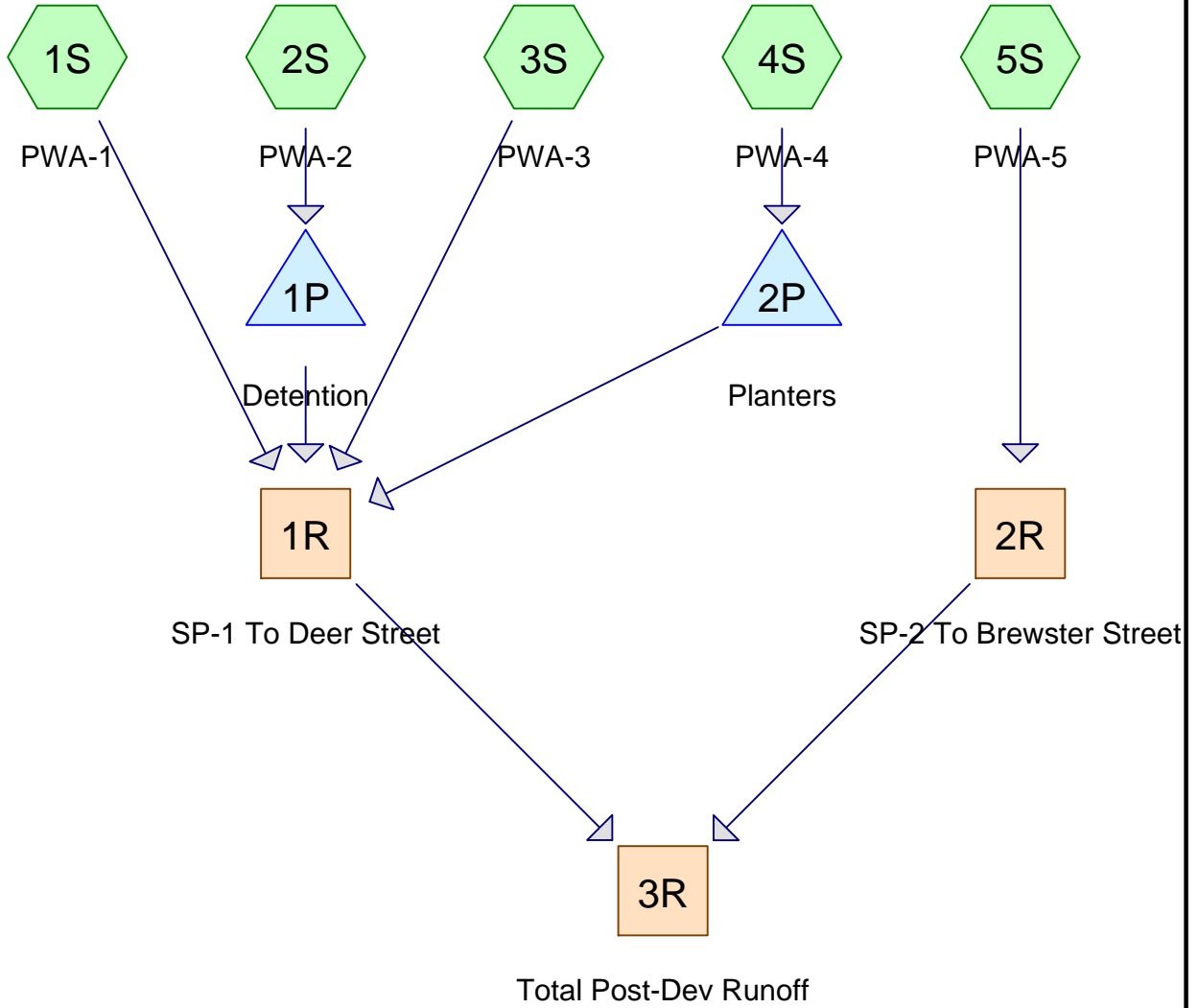
Reach 2R: SP-2 To Combined Sewer Inflow=1.07 cfs 3,346 cf
Outflow=1.07 cfs 3,346 cf

Reach 3R: Total Pre-Dev Runoff Inflow=3.46 cfs 10,726 cf
Outflow=3.46 cfs 10,726 cf

Total Runoff Area = 22,540 sf Runoff Volume = 10,726 cf Average Runoff Depth = 5.71"
51.97% Pervious = 11,713 sf 48.03% Impervious = 10,827 sf

APPENDIX D

POST-DEVELOPMENT CONDITIONS MODEL



8090 Proposed Watershed Lot 6

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Page 2

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
507	69	50-75% Grass cover, Fair, HSG B (3S, 5S)
1,143	98	Brick Sidewalk (5S)
4,741	98	Paved parking, HSG A (1S, 3S, 4S)
16,149	98	Roofs, HSG A (2S)
22,540	97	TOTAL AREA

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Page 3

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
20,890	HSG A	1S, 2S, 3S, 4S
507	HSG B	3S, 5S
0	HSG C	
0	HSG D	
1,143	Other	5S
22,540		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover
0	507	0	0	0	507	50-75% Grass cover, Fair
0	0	0	0	1,143	1,143	Brick Sidewalk
4,741	0	0	0	0	4,741	Paved parking
16,149	0	0	0	0	16,149	Roofs
20,890	507	0	0	1,143	22,540	TOTAL AREA

Sub
Num

Summary for Subcatchment 1S: PWA-1

Runoff = 0.05 cfs @ 12.07 hrs, Volume= 159 cf, Depth= 2.97"

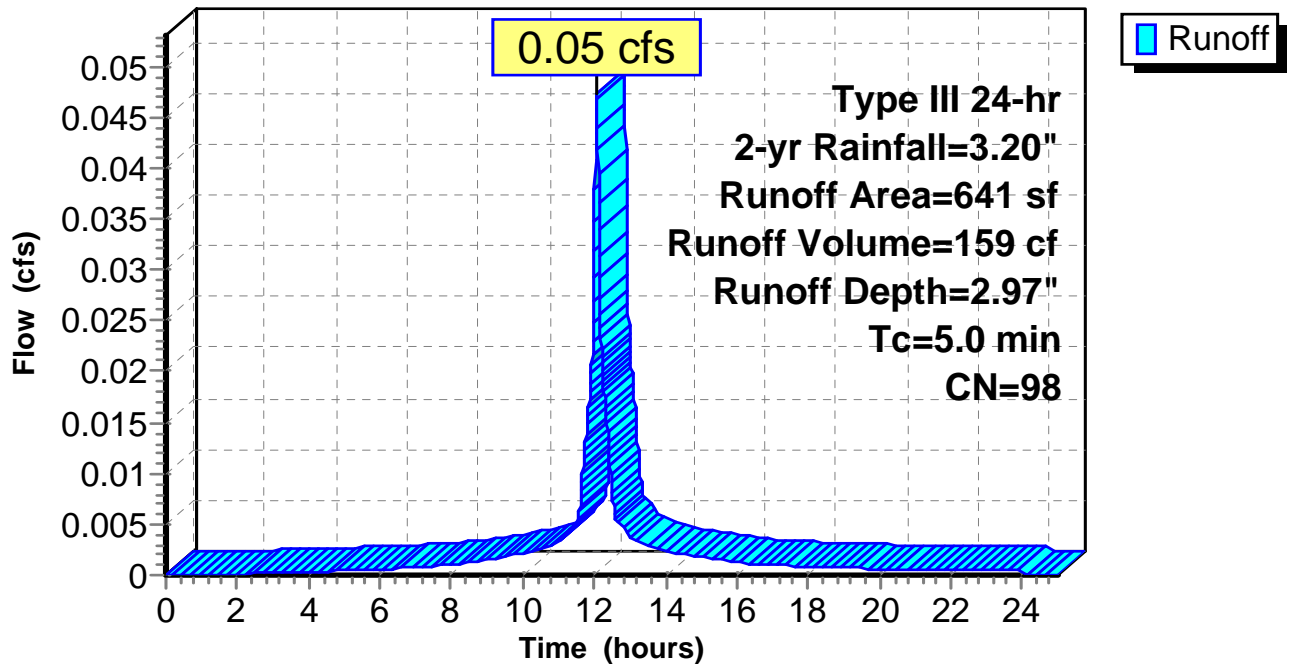
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-yr Rainfall=3.20"

Area (sf)	CN	Description
641	98	Paved parking, HSG A
641		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 1S: PWA-1

Hydrograph



Summary for Subcatchment 2S: PWA-2

Runoff = 1.19 cfs @ 12.07 hrs, Volume= 3,993 cf, Depth= 2.97"

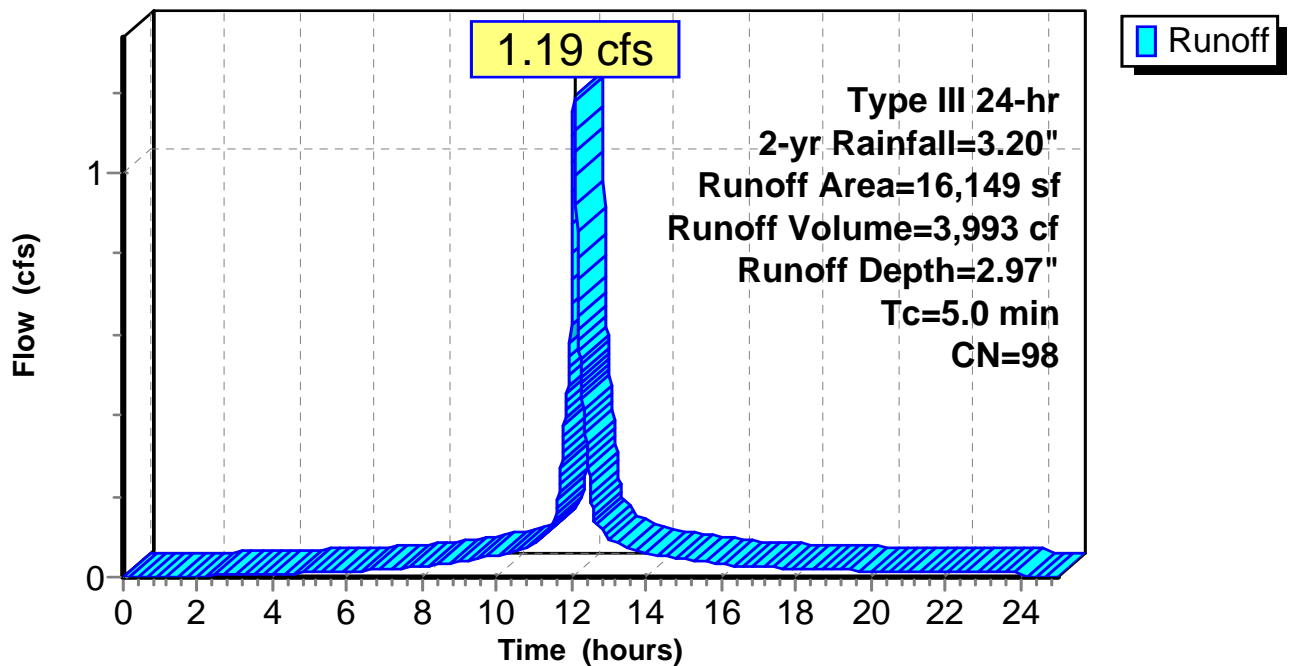
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-yr Rainfall=3.20"

Area (sf)	CN	Description
16,149	98	Roofs, HSG A
16,149		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 2S: PWA-2

Hydrograph



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Type III 24-hr 2-yr Rainfall=3.20"

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Summary for Subcatchment 3S: PWA-3

Runoff = 0.27 cfs @ 12.07 hrs, Volume= 858 cf, Depth= 2.64"

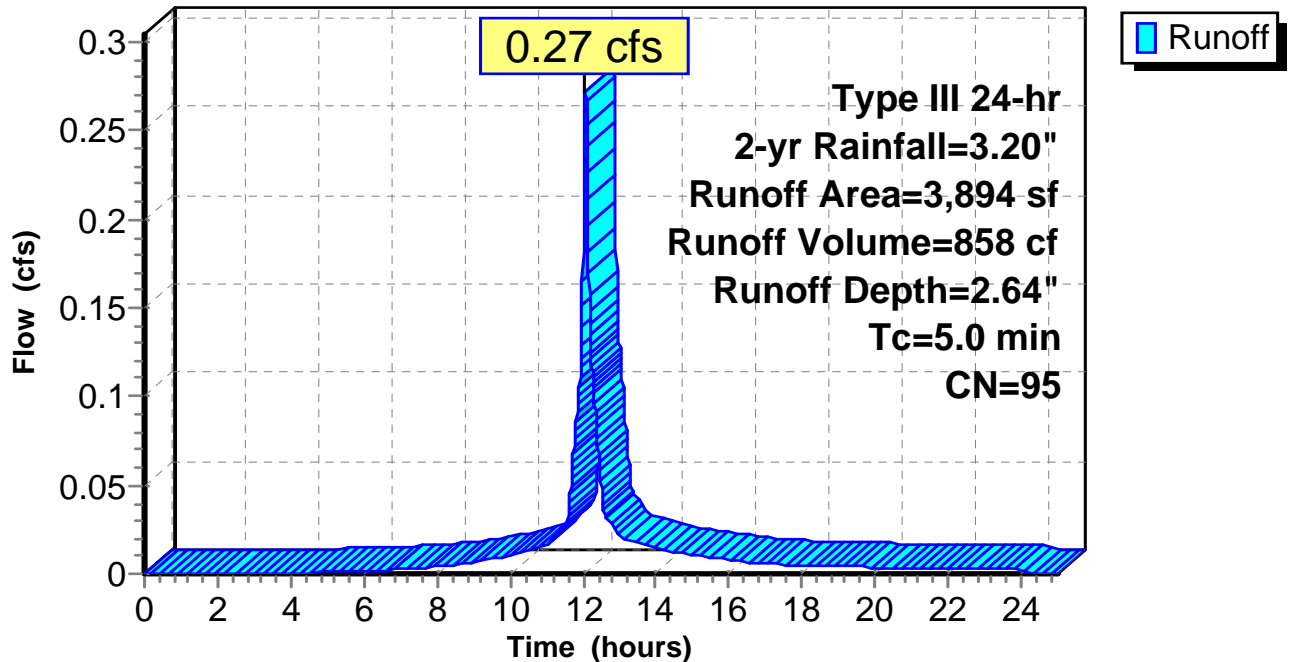
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.20"

Area (sf)	CN	Description
3,556	98	Paved parking, HSG A
338	69	50-75% Grass cover, Fair, HSG B
3,894	95	Weighted Average
338		8.68% Pervious Area
3,556		91.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 3S: PWA-3

Hydrograph



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Type III 24-hr 2-yr Rainfall=3.20"

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Summary for Subcatchment 4S: PWA-4

Runoff = 0.04 cfs @ 12.07 hrs, Volume= 135 cf, Depth= 2.97"

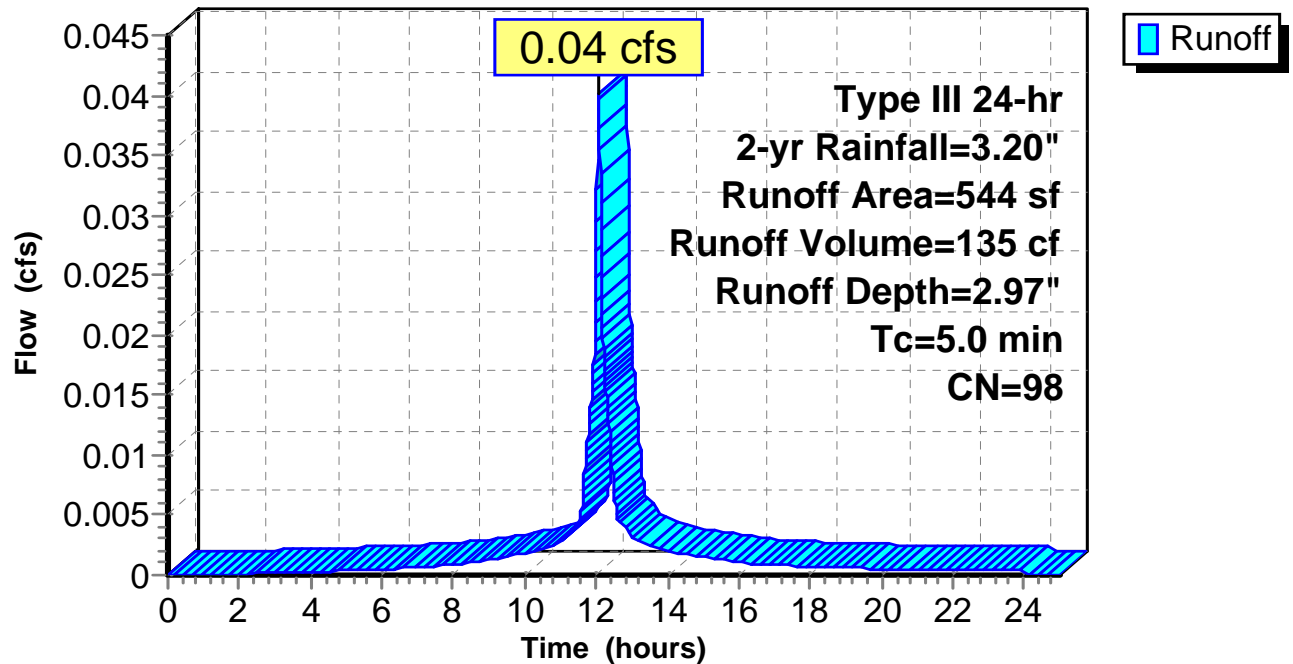
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.20"

Area (sf)	CN	Description
544	98	Paved parking, HSG A
544		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4S: PWA-4

Hydrograph



Summary for Subcatchment 5S: PWA-5

Runoff = 0.09 cfs @ 12.07 hrs, Volume= 278 cf, Depth= 2.54"

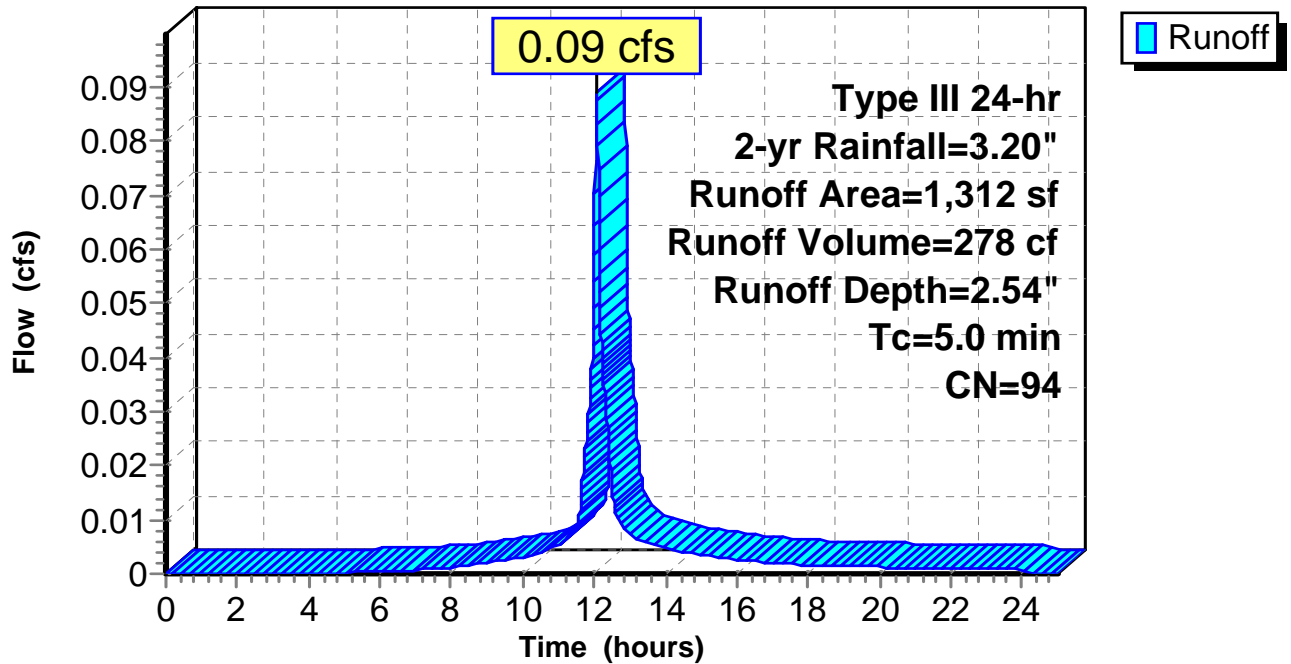
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-yr Rainfall=3.20"

Area (sf)	CN	Description
* 1,143	98	Brick Sidewalk
169	69	50-75% Grass cover, Fair, HSG B
1,312	94	Weighted Average
169		12.88% Pervious Area
1,143		87.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 5S: PWA-5

Hydrograph



Summary for Reach 1R: SP-1 To Deer Street

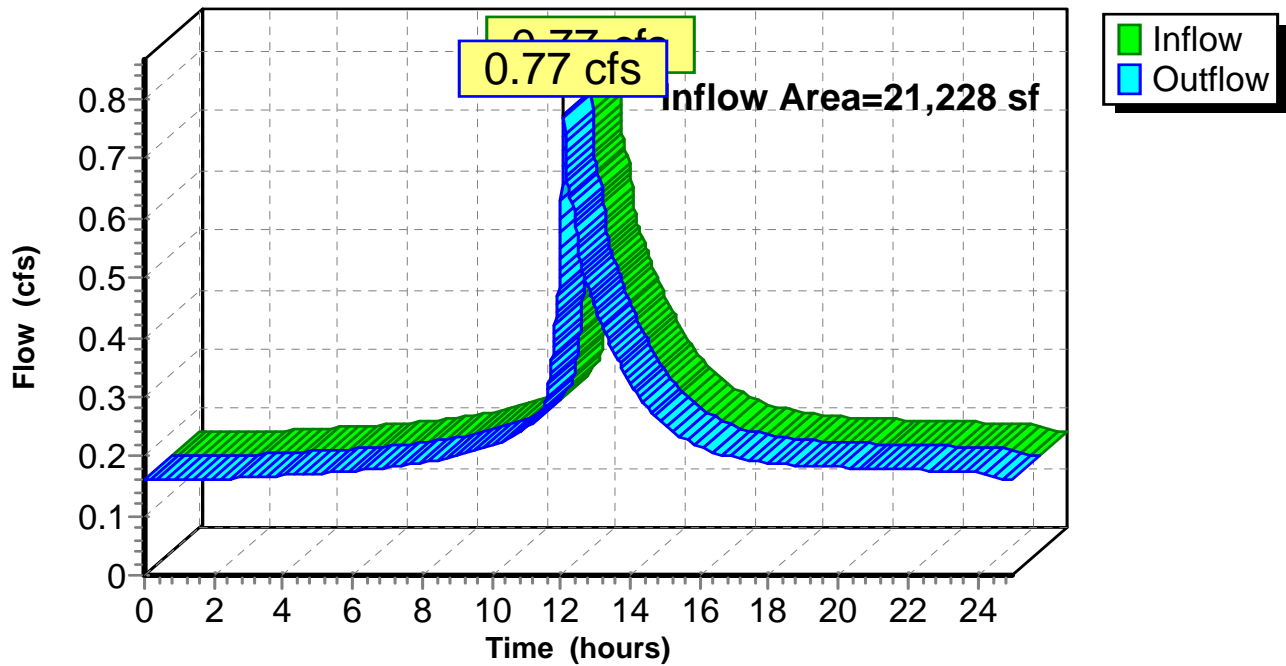
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 21,228 sf, 98.41% Impervious, Inflow Depth > 11.05" for 2-yr event
Inflow = 0.77 cfs @ 12.08 hrs, Volume= 19,548 cf
Outflow = 0.77 cfs @ 12.08 hrs, Volume= 19,548 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs

Reach 1R: SP-1 To Deer Street

Hydrograph



Summary for Reach 2R: SP-2 To Brewster Street

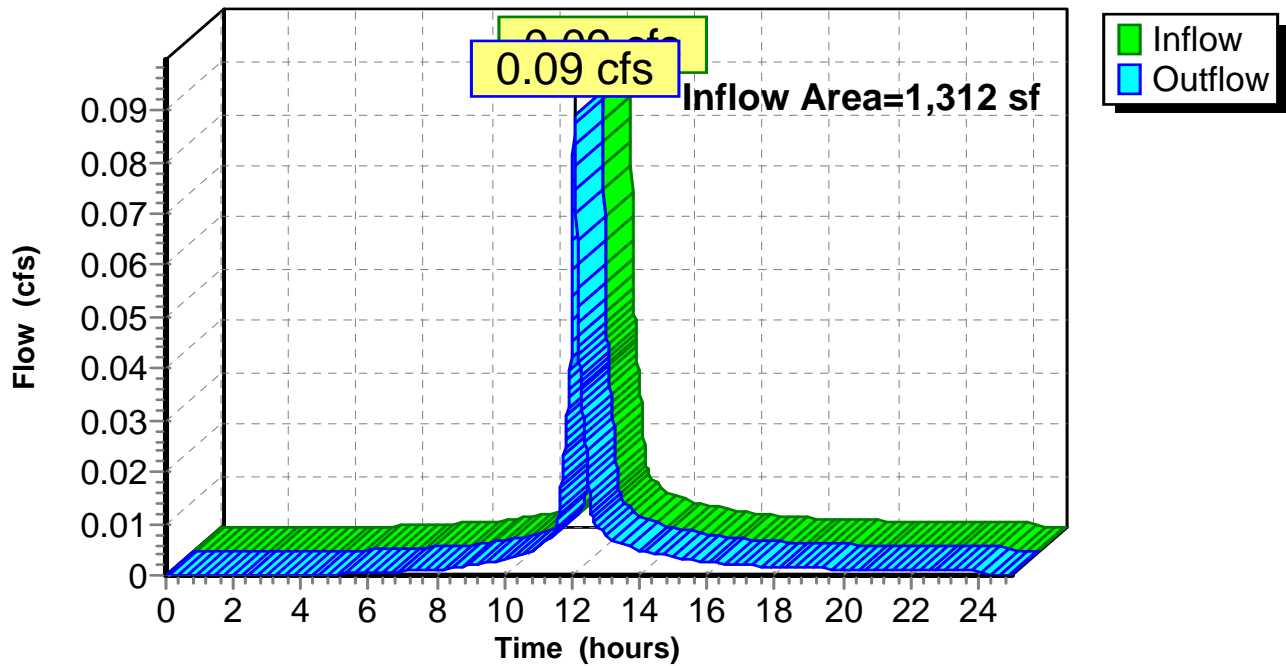
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1,312 sf, 87.12% Impervious, Inflow Depth = 2.54" for 2-yr event
Inflow = 0.09 cfs @ 12.07 hrs, Volume= 278 cf
Outflow = 0.09 cfs @ 12.07 hrs, Volume= 278 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs

Reach 2R: SP-2 To Brewster Street

Hydrograph



Summary for Reach 3R: Total Post-Dev Runoff

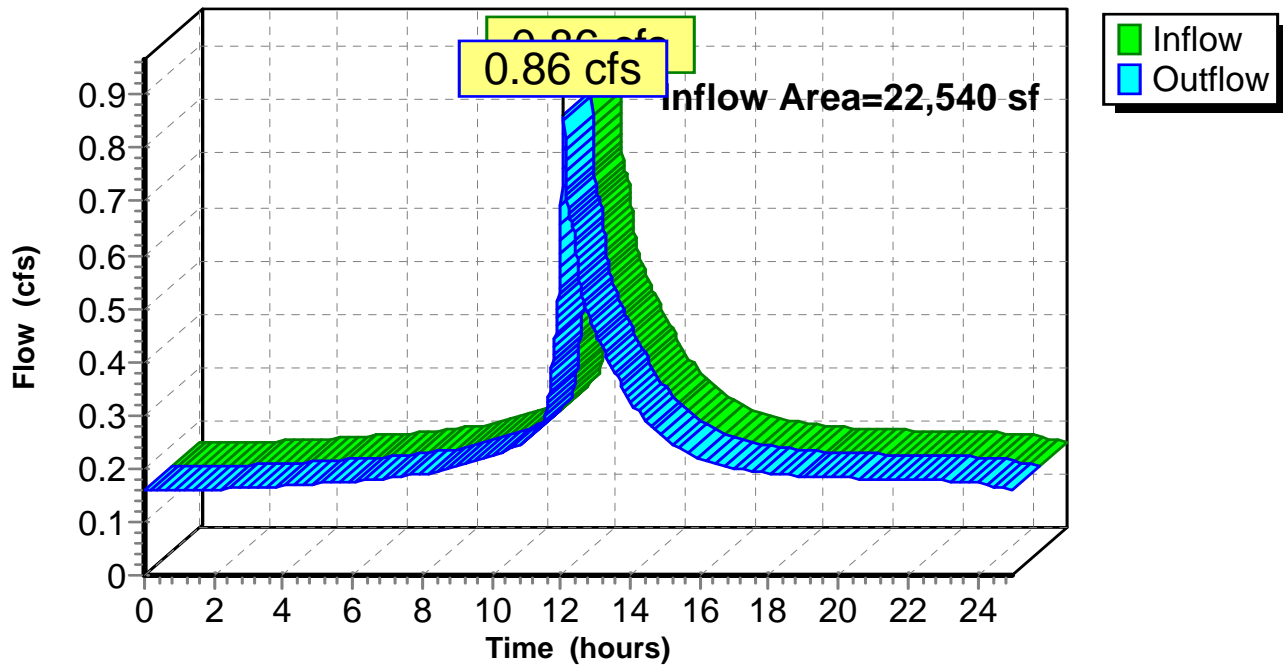
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 22,540 sf, 97.75% Impervious, Inflow Depth > 10.56" for 2-yr event
Inflow = 0.86 cfs @ 12.08 hrs, Volume= 19,826 cf
Outflow = 0.86 cfs @ 12.08 hrs, Volume= 19,826 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs

Reach 3R: Total Post-Dev Runoff

Hydrograph



Summary for Pond 1P: Detention

Inflow Area = 16,149 sf, 100.00% Impervious, Inflow Depth > 13.67" for 2-yr event
 Inflow = 1.35 cfs @ 12.07 hrs, Volume= 18,399 cf, Incl. 0.16 cfs Base Flow
 Outflow = 0.51 cfs @ 12.38 hrs, Volume= 18,397 cf, Atten= 62%, Lag= 18.3 min
 Primary = 0.51 cfs @ 12.38 hrs, Volume= 18,397 cf

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs / 3
 Starting Elev= 7.99' Surf.Area= 622 sf Storage= 212 cf
 Peak Elev= 9.80' @ 12.38 hrs Surf.Area= 622 sf Storage= 1,338 cf (1,126 cf above start)

Plug-Flow detention time= 26.5 min calculated for 18,184 cf (99% of inflow)
 Center-of-Mass det. time= 8.9 min (760.1 - 751.2)

Volume	Invert	Avail.Storage	Storage Description
#1	7.65'	2,432 cf	8.00'W x 76.00'L x 4.00'H PrismaToid
#2	7.62'	85 cf	6.00'D x 6.00'H Vertical Cone/Cylinder x 0.5
		2,517 cf	Total Available Storage

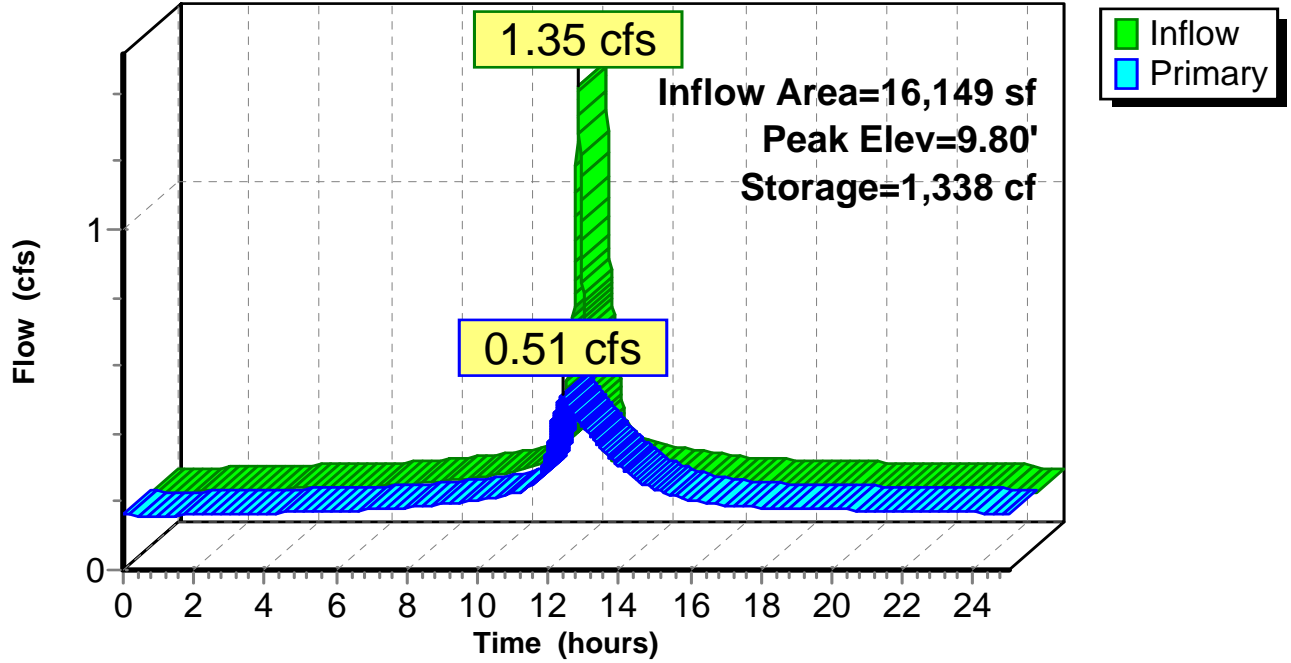
Device	Routing	Invert	Outlet Devices
#1	Primary	7.52'	12.0" Round RCP_Round 12" L= 125.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.52' / 6.90' S= 0.0050 '/ Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	7.62'	3.6" Vert. Orifice/Grate C= 0.600
#3	Device 1	9.70'	5.0" Vert. Orifice/Grate C= 0.600
#4	Device 1	10.50'	3.5" Vert. Orifice/Grate C= 0.600
#5	Device 1	11.64'	5.0' long Sharp-Crested Rectangular Weir 0 End Contraction(s)

Primary OutFlow Max=0.51 cfs @ 12.38 hrs HW=9.80' (Free Discharge)

- 1=RCP_Round 12" (Passes 0.51 cfs of 3.95 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.48 cfs @ 6.86 fps)
- 3=Orifice/Grate (Orifice Controls 0.03 cfs @ 1.07 fps)
- 4=Orifice/Grate (Controls 0.00 cfs)
- 5=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: Detention

Hydrograph



8090 Proposed Watershed Lot 6

Type III 24-hr 2-yr Rainfall=3.20"

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Stage-Area-Storage for Pond 1P: Detention

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
7.62	0	8.68	641	9.74	1,301
7.64	0	8.70	654	9.76	1,313
7.66	7	8.72	666	9.78	1,326
7.68	19	8.74	679	9.80	1,338
7.70	32	8.76	691	9.82	1,350
7.72	44	8.78	703	9.84	1,363
7.74	56	8.80	716	9.86	1,375
7.76	69	8.82	728	9.88	1,388
7.78	81	8.84	741	9.90	1,400
7.80	94	8.86	753	9.92	1,413
7.82	106	8.88	766	9.94	1,425
7.84	119	8.90	778	9.96	1,438
7.86	131	8.92	791	9.98	1,450
7.88	144	8.94	803	10.00	1,462
7.90	156	8.96	815	10.02	1,475
7.92	168	8.98	828	10.04	1,487
7.94	181	9.00	840	10.06	1,500
7.96	193	9.02	853	10.08	1,512
7.98	206	9.04	865	10.10	1,525
8.00	218	9.06	878	10.12	1,537
8.02	231	9.08	890	10.14	1,550
8.04	243	9.10	903	10.16	1,562
8.06	256	9.12	915	10.18	1,574
8.08	268	9.14	927	10.20	1,587
8.10	280	9.16	940	10.22	1,599
8.12	293	9.18	952	10.24	1,612
8.14	305	9.20	965	10.26	1,624
8.16	318	9.22	977	10.28	1,637
8.18	330	9.24	990	10.30	1,649
8.20	343	9.26	1,002	10.32	1,662
8.22	355	9.28	1,015	10.34	1,674
8.24	367	9.30	1,027	10.36	1,686
8.26	380	9.32	1,039	10.38	1,699
8.28	392	9.34	1,052	10.40	1,711
8.30	405	9.36	1,064	10.42	1,724
8.32	417	9.38	1,077	10.44	1,736
8.34	430	9.40	1,089	10.46	1,749
8.36	442	9.42	1,102	10.48	1,761
8.38	455	9.44	1,114	10.50	1,774
8.40	467	9.46	1,126	10.52	1,786
8.42	479	9.48	1,139	10.54	1,798
8.44	492	9.50	1,151	10.56	1,811
8.46	504	9.52	1,164	10.58	1,823
8.48	517	9.54	1,176	10.60	1,836
8.50	529	9.56	1,189	10.62	1,848
8.52	542	9.58	1,201	10.64	1,861
8.54	554	9.60	1,214	10.66	1,873
8.56	567	9.62	1,226	10.68	1,885
8.58	579	9.64	1,238	10.70	1,898
8.60	591	9.66	1,251	10.72	1,910
8.62	604	9.68	1,263	10.74	1,923
8.64	616	9.70	1,276	10.76	1,935
8.66	629	9.72	1,288	10.78	1,948

8090 Proposed Watershed Lot 6

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Type III 24-hr 2-yr Rainfall=3.20"

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Stage-Area-Storage for Pond 1P: Detention (continued)

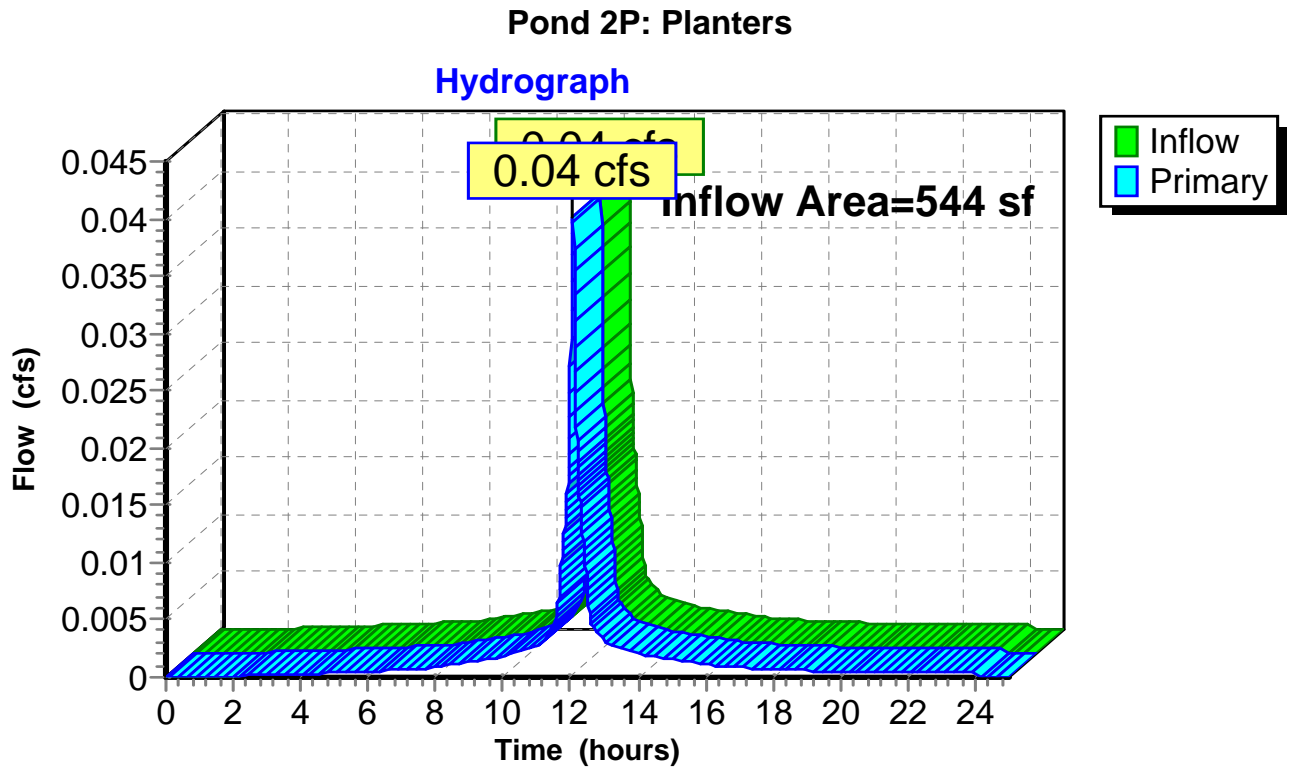
Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
10.80	1,960	11.86	2,492	12.92	2,507
10.82	1,973	11.88	2,492	12.94	2,507
10.84	1,985	11.90	2,493	12.96	2,507
10.86	1,997	11.92	2,493	12.98	2,508
10.88	2,010	11.94	2,493	13.00	2,508
10.90	2,022	11.96	2,493	13.02	2,508
10.92	2,035	11.98	2,494	13.04	2,509
10.94	2,047	12.00	2,494	13.06	2,509
10.96	2,060	12.02	2,494	13.08	2,509
10.98	2,072	12.04	2,494	13.10	2,509
11.00	2,085	12.06	2,495	13.12	2,510
11.02	2,097	12.08	2,495	13.14	2,510
11.04	2,109	12.10	2,495	13.16	2,510
11.06	2,122	12.12	2,496	13.18	2,511
11.08	2,134	12.14	2,496	13.20	2,511
11.10	2,147	12.16	2,496	13.22	2,511
11.12	2,159	12.18	2,496	13.24	2,511
11.14	2,172	12.20	2,497	13.26	2,512
11.16	2,184	12.22	2,497	13.28	2,512
11.18	2,197	12.24	2,497	13.30	2,512
11.20	2,209	12.26	2,498	13.32	2,513
11.22	2,221	12.28	2,498	13.34	2,513
11.24	2,234	12.30	2,498	13.36	2,513
11.26	2,246	12.32	2,498	13.38	2,513
11.28	2,259	12.34	2,499	13.40	2,514
11.30	2,271	12.36	2,499	13.42	2,514
11.32	2,284	12.38	2,499	13.44	2,514
11.34	2,296	12.40	2,500	13.46	2,515
11.36	2,309	12.42	2,500	13.48	2,515
11.38	2,321	12.44	2,500	13.50	2,515
11.40	2,333	12.46	2,500	13.52	2,515
11.42	2,346	12.48	2,501	13.54	2,516
11.44	2,358	12.50	2,501	13.56	2,516
11.46	2,371	12.52	2,501	13.58	2,516
11.48	2,383	12.54	2,502	13.60	2,517
11.50	2,396	12.56	2,502	13.62	2,517
11.52	2,408	12.58	2,502		
11.54	2,421	12.60	2,502		
11.56	2,433	12.62	2,503		
11.58	2,445	12.64	2,503		
11.60	2,458	12.66	2,503		
11.62	2,470	12.68	2,504		
11.64	2,483	12.70	2,504		
11.66	2,489	12.72	2,504		
11.68	2,489	12.74	2,504		
11.70	2,490	12.76	2,505		
11.72	2,490	12.78	2,505		
11.74	2,490	12.80	2,505		
11.76	2,491	12.82	2,506		
11.78	2,491	12.84	2,506		
11.80	2,491	12.86	2,506		
11.82	2,491	12.88	2,506		
11.84	2,492	12.90	2,507		

Summary for Pond 2P: Planters

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 544 sf, 100.00% Impervious, Inflow Depth = 2.97" for 2-yr event
Inflow = 0.04 cfs @ 12.07 hrs, Volume= 135 cf
Primary = 0.04 cfs @ 12.07 hrs, Volume= 135 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs



8090 Proposed Watershed Lot 6

Type III 24-hr 10-yr Rainfall=4.86"

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Time span=0.00-25.00 hrs, dt=0.01 hrs, 2501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 1S: PWA-1	Runoff Area=641 sf 100.00% Impervious Runoff Depth=4.62" Tc=5.0 min CN=98 Runoff=0.07 cfs 247 cf
Subcatchment 2S: PWA-2	Runoff Area=16,149 sf 100.00% Impervious Runoff Depth=4.62" Tc=5.0 min CN=98 Runoff=1.83 cfs 6,222 cf
Subcatchment 3S: PWA-3	Runoff Area=3,894 sf 91.32% Impervious Runoff Depth=4.28" Tc=5.0 min CN=95 Runoff=0.43 cfs 1,389 cf
Subcatchment 4S: PWA-4	Runoff Area=544 sf 100.00% Impervious Runoff Depth=4.62" Tc=5.0 min CN=98 Runoff=0.06 cfs 210 cf
Subcatchment 5S: PWA-5	Runoff Area=1,312 sf 87.12% Impervious Runoff Depth=4.17" Tc=5.0 min CN=94 Runoff=0.14 cfs 456 cf
Reach 1R: SP-1 To Deer Street	Inflow=1.39 cfs 22,469 cf Outflow=1.39 cfs 22,469 cf
Reach 2R: SP-2 To Brewster Street	Inflow=0.14 cfs 456 cf Outflow=0.14 cfs 456 cf
Reach 3R: Total Post-Dev Runoff	Inflow=1.52 cfs 22,925 cf Outflow=1.52 cfs 22,925 cf
Pond 1P: Detention	Peak Elev=10.41' Storage=1,718 cf Inflow=1.99 cfs 20,628 cf Outflow=1.02 cfs 20,624 cf
Pond 2P: Planters	Inflow=0.06 cfs 210 cf Primary=0.06 cfs 210 cf

Total Runoff Area = 22,540 sf Runoff Volume = 8,524 cf Average Runoff Depth = 4.54"
2.25% Pervious = 507 sf 97.75% Impervious = 22,033 sf

8090 Proposed Watershed Lot 6

Type III 24-hr 25-yr Rainfall=6.16"

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Time span=0.00-25.00 hrs, dt=0.01 hrs, 2501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 1S: PWA-1 Runoff Area=641 sf 100.00% Impervious Runoff Depth=5.92"
Tc=5.0 min CN=98 Runoff=0.09 cfs 316 cf

Subcatchment 2S: PWA-2 Runoff Area=16,149 sf 100.00% Impervious Runoff Depth=5.92"
Tc=5.0 min CN=98 Runoff=2.32 cfs 7,969 cf

Subcatchment 3S: PWA-3 Runoff Area=3,894 sf 91.32% Impervious Runoff Depth=5.57"
Tc=5.0 min CN=95 Runoff=0.55 cfs 1,808 cf

Subcatchment 4S: PWA-4 Runoff Area=544 sf 100.00% Impervious Runoff Depth=5.92"
Tc=5.0 min CN=98 Runoff=0.08 cfs 268 cf

Subcatchment 5S: PWA-5 Runoff Area=1,312 sf 87.12% Impervious Runoff Depth=5.46"
Tc=5.0 min CN=94 Runoff=0.18 cfs 596 cf

Reach 1R: SP-1 To Deer Street Inflow=1.92 cfs 24,762 cf
Outflow=1.92 cfs 24,762 cf

Reach 2R: SP-2 To Brewster Street Inflow=0.18 cfs 596 cf
Outflow=0.18 cfs 596 cf

Reach 3R: Total Post-Dev Runoff Inflow=2.07 cfs 25,358 cf
Outflow=2.07 cfs 25,358 cf

Pond 1P: Detention Peak Elev=10.89' Storage=2,017 cf Inflow=2.48 cfs 22,375 cf
Outflow=1.41 cfs 22,369 cf

Pond 2P: Planters Inflow=0.08 cfs 268 cf
Primary=0.08 cfs 268 cf

Total Runoff Area = 22,540 sf Runoff Volume = 10,958 cf Average Runoff Depth = 5.83"
2.25% Pervious = 507 sf 97.75% Impervious = 22,033 sf

8090 Proposed Watershed Lot 6

Type III 24-hr 50-yr Rainfall=7.37"

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Time span=0.00-25.00 hrs, dt=0.01 hrs, 2501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 1S: PWA-1 Runoff Area=641 sf 100.00% Impervious Runoff Depth=7.13"
Tc=5.0 min CN=98 Runoff=0.11 cfs 381 cf

Subcatchment 2S: PWA-2 Runoff Area=16,149 sf 100.00% Impervious Runoff Depth=7.13"
Tc=5.0 min CN=98 Runoff=2.78 cfs 9,596 cf

Subcatchment 3S: PWA-3 Runoff Area=3,894 sf 91.32% Impervious Runoff Depth=6.77"
Tc=5.0 min CN=95 Runoff=0.66 cfs 2,198 cf

Subcatchment 4S: PWA-4 Runoff Area=544 sf 100.00% Impervious Runoff Depth=7.13"
Tc=5.0 min CN=98 Runoff=0.09 cfs 323 cf

Subcatchment 5S: PWA-5 Runoff Area=1,312 sf 87.12% Impervious Runoff Depth=6.66"
Tc=5.0 min CN=94 Runoff=0.22 cfs 728 cf

Reach 1R: SP-1 To Deer Street Inflow=2.35 cfs 26,897 cf
Outflow=2.35 cfs 26,897 cf

Reach 2R: SP-2 To Brewster Street Inflow=0.22 cfs 728 cf
Outflow=0.22 cfs 728 cf

Reach 3R: Total Post-Dev Runoff Inflow=2.55 cfs 27,625 cf
Outflow=2.55 cfs 27,625 cf

Pond 1P: Detention Peak Elev=11.32' Storage=2,285 cf Inflow=2.94 cfs 24,002 cf
Outflow=1.69 cfs 23,995 cf

Pond 2P: Planters Inflow=0.09 cfs 323 cf
Primary=0.09 cfs 323 cf

Total Runoff Area = 22,540 sf Runoff Volume = 13,226 cf Average Runoff Depth = 7.04"
2.25% Pervious = 507 sf 97.75% Impervious = 22,033 sf

APPENDIX E

PIPE DESIGN



Computation Sheet

Title: Rational Method Pipe Sizing Spreadsheet
Project: Deer Street Development - Lot 6
Date: June 16, 2017
Project Number: 8090
Storm Event: 10-Year Storm
Cc-factor: 1.00

Location: Portsmouth, NH
Designed By: ARC
Checked By: MCP
Revised: August 18, 2017

LOCATION			DRAINAGE AREA				RUNOFF		FLOW IN PIPE													
Description	From	To	(Acres)				(cfs)		PIPE				FULL FLOW		DESIGN FLOW		Angle	Hydraulic Radius	PIPE % FULL			
			Area Ac	Runoff Coeff., Cc	Increment CA	Sum CA	Duration (Tc)	Intensity (In/Hr)	Design Flow	Diam (In.)	Length (Ft.)	Slope (Ft./Ft.)	Manning Coeff.	Capacity (Cfs)	Velocity (Fps)	Depth (Ft.)				Velocity (Fps.)	Time In Section	
PCA Areas																						
PWA-2	RD-1	DET/OCS-1	0.371	0.90	0.33		5.0	4.9	1.99	12	6	0.0104	0.012	3.9	5.0	0.51	5.0	0.0	3.10	0.25	51	
		OCS-1	Flow taken from HydrOcad Model 10-Yr Event						1.02		12	125	0.005	0.012	2.7	3.5	0.42	3.2	0.7	2.82	0.22	38
PWA-4	TD-2	PDMH-1	0.013	0.90	0.01		5.0	4.9	0.05	6	40	0.02	0.012	0.9	4.4	0.11	3.0	0.2	1.95	0.07	6	
	PDMH-1	CITY PDMH1			0.00	0.34	5.0	4.9	1.67	12	14	0.0145	0.012	4.7	5.9	0.41	5.4	0.0	2.78	0.22	36	

APPENDIX F

OPERATIONS AND MAINTENANCE PLAN

OPERATION AND MAINTENANCE PLAN

In accordance with the standards set forth by the United States Department of Environmental Protection, GeoInsight has prepared the following O&M plan for the stormwater management system that will be implemented for the proposed development.

This plan is broken in to two major sections. The first section describes construction-related erosion and sedimentation controls. The second section is devoted to a post-development O&M plan.

CONSTRUCTION ACTIVITIES

1. Contact the City's Engineering Department at least three (3) days prior to start of construction.
2. Install filter tubes, hay bales, and/or construction fencing as shown on the Erosion and Sediment Control Plan, which can be found in the site plan package.
3. Site access shall be achieved only from the designated temporary construction entrance.
4. All erosion control measures shall be inspected weekly and after all rainfall events, and shall be maintained, repaired, or replaced as required or at the direction of the owner's engineer, the City's Engineer, or the City's Conservation Agent.
5. Sediment accumulation up gradient of the silt socks greater than 6 inches in depth shall be removed and disposed of in accordance with all applicable regulations.
6. Sediment accumulation on all adjacent catch basin inlets shall be removed and the silt sack replaced if torn or damaged.
7. The contractor shall comply with the General Conditions and Erosion Notes as shown on the Site Development Plans.

POST-DEVELOPMENT ACTIVITIES

Refer to “Long Term Operations and Maintenance Plan”

APPENDIX G

LONG TERM OPERATIONS AND MAINTENANCE PLAN

LONG TERM OPERATIONS AND MAINTENANCE PROGRAM

August 18, 2017

This Long Term Operations and Maintenance Program Plan has been prepared in accordance with the New Hampshire Stormwater Handbook issued by the Department of Environmental Services (DES) for the *Residences at Foundry Place*, a mixed use building located on Foundry Place, Portsmouth, NH. Upon a period beginning twelve months after the completion of the project, all structural BMP's shall be inspected twice annually, once in April and once in November. The inspection shall be performed as indicated below:

Snow Storage / Removal

Snow plowed from the proposed driveways and walkways will be placed or disposed of in accordance with the policy developed by NHDES. All snow in areas requiring removal will be removed and hauled off site.

De-icing

Salt for de-icing on the paved areas during the winter months shall be limited to the minimum amount practicable. Sand containing the minimum amount of calcium chloride (or approved equivalent) needed for handling may be applied as part of the routine winter maintenance activities.

Trench/Strip Drains

The trench/strip drains shall be inspected at least twice annually, once in April and once in November and after the first storm event following any landscape/vegetation maintenance in the court yard area. Any and all debris and/or sediments shall be removed from the units and be disposed of at an approved offsite location in accordance with all applicable local, state, and federal regulations.

Subsurface Detention System

The subsurface detention system shall be inspected at least twice annually, once in April and once in November and after the first storm event following landscape/vegetation maintenance in the court yard area. Any and all debris and/or sediments shall be removed from the units and be disposed of at an approved offsite location in accordance with all applicable local, state, and federal regulations.

Vegetated Areas

All vegetated areas on the site shall be stabilized and maintained to control erosion. Any disturbed areas shall be re-seeded as soon as practicable.

OSHA Regulations

Work within any drainage structures shall performed in accordance with the latest Occupational Safety and Health Administration (OSHA) regulations, and only by individuals with appropriate OSHA certification.

Maintenance Responsibilities

All post-construction stormwater-related maintenance activities shall be documented and kept on file and made available to the proper City and State authorities upon request.

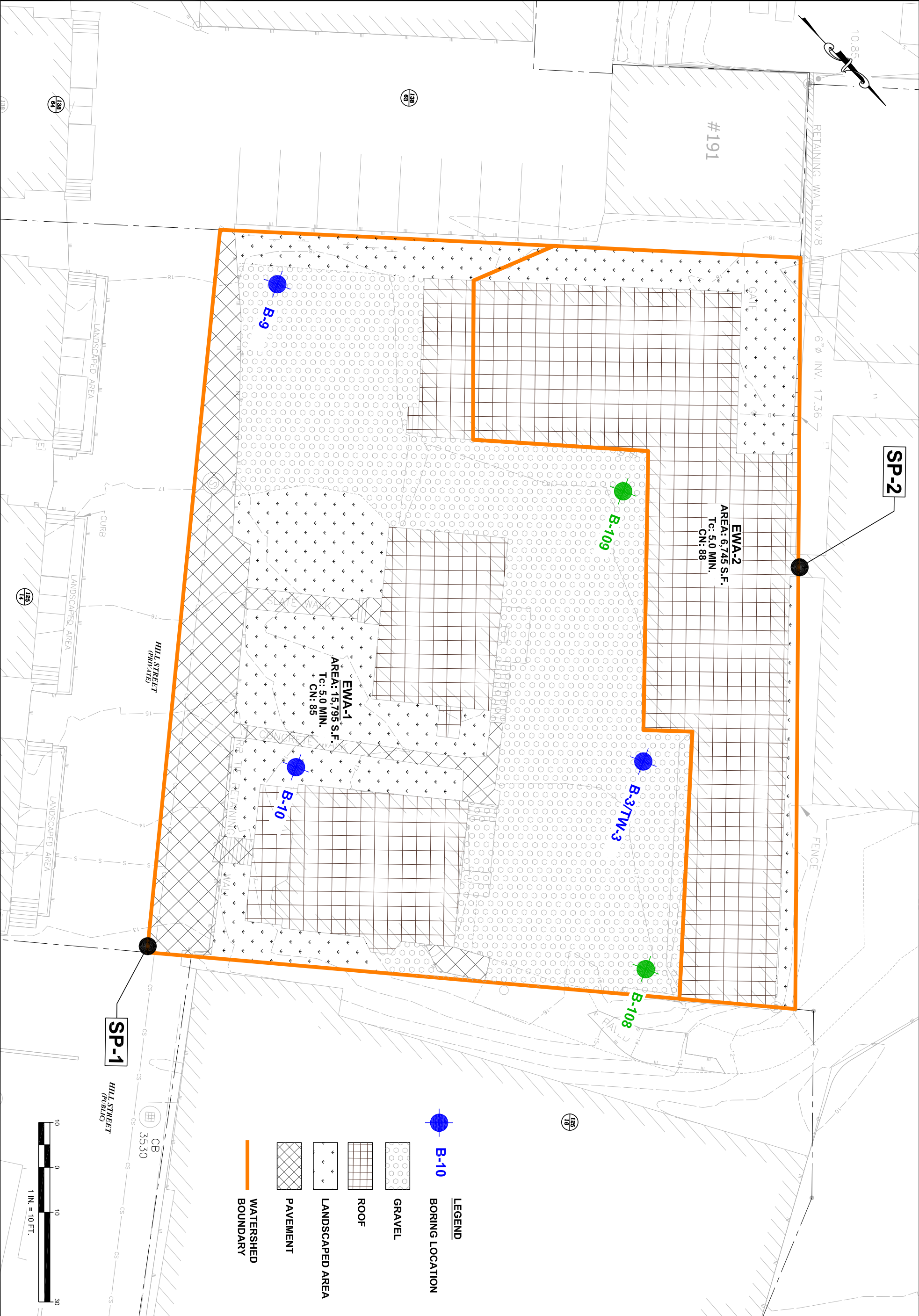
Transfer of Ownership

If ownership of the property is transferred, the new owner(s) shall become the responsible party(ies).

Estimated Operations and Maintenance Budget

It is anticipated that the stormwater system including the subsurface detention structure will be maintained by the operator. An annual budget of \$750 a year should be specified in the owner's documents for operations and maintenance of the obligations.

APPENDIX H
EXISTING WATERSHED PLAN



PREPARED BY:



GeoInsight
Practical in Nature
 888 GRANITE STREET, SUITE 500
 PORTSMOUTH, NH 03850
 PH: (603) 314-0800 FAX: (603) 314-0821
 Email: info@geoinsight.com
www.geoinsight.com

OWNER/APPLICANT:
DEER STREET ASSOCIATES
 7 BANKS ROCK ROAD
 YORK HARBOR, ME 03911
 PH: (207) 363-3540

**DEER STREET ASSOCIATES
 DEER STREET DEVELOPMENT - LOT 6
 PORTSMOUTH, NH**

NO.	DATE	DESCRIPTION
1	08/18/17	REVISED ON VALUES

DWG SCALE: 1" = 10'
 DATE ISSUED: 08/18/17 CHECKED BY: JHK
 PROJECT #: 8090 APPROVED BY: MCP

DRAWING TITLE:
EXISTING WATERSHED PLAN

DRAWING #:
H 1.0

APPENDIX I
PROPOSED WATERSHED PLAN



Geolnsight
Practical in Nature
 100 GARDNER STREET, SUITE 200
 PORTSMOUTH, NH 03801
 PH: (603) 314-4000 FAX: (603) 314-4001
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 P.O. BOX 100
 YORK HARBOR, ME 03911
 PH: (207) 363-3540

**DEER STREET ASSOCIATES
 RESIDENCES AT FOUNDRY PLACE
 PORTSMOUTH, NH**

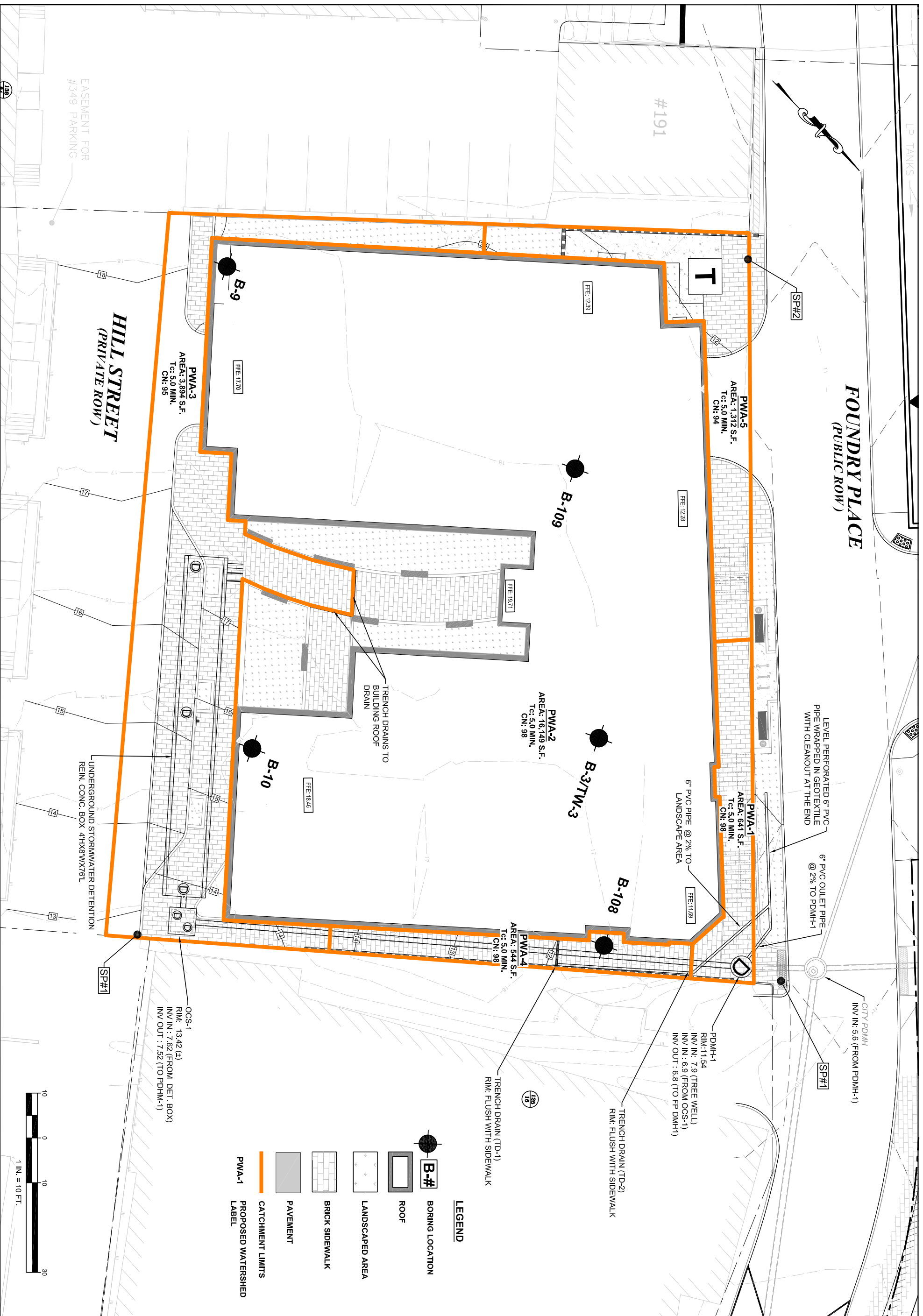
REVISIONS		
NO.	DATE	DESCRIPTION
1	08/18/17	REVISED PWAS

DWG SCALE: 1" = 10'
 DATE ISSUED: 08/18/17 CHECKED BY: JJK
 PROJECT #: 0800 APPROVED BY: MGP

DRAWING TITLE:

**PROPOSED
 WATERSHED
 AREAS**

H2.0



APPENDIX J

EROSION AND SEDIMENTATION CONTROL PLAN



EXTEND SILT SOCKS AS NEEDED TO TRAP SEDIMENT IN LOCATIONS DOWNSTREAM OF NEW SLOPES.

EXTEND SILT SOCKS AS NEEDED TO TRAP SEDIMENT IN LOCATIONS DOWNSTREAM OF NEW SLOPES.

CONSTRUCTION ENTRANCE. PRELIMINARY LOCATION SHOWN. FINAL LOCATION TO BE COORDINATED WITH CITY GARAGE AND BUILDING 3 CONSTRUCTION.

INSTALL SILT SOCK AT LOCATIONS WHERE STORMWATER IS ABLE TO FLOW OVER DISTURBED SOILS AND TO OFF SITE LOCATIONS AS REQUIRED TO CONTROL STORMWATER FLOWS ON SITE TO PREVENT OFF SITE FLOWS.

- LEGEND:**
- 12" Ø SILT SOCK
 - SILT SOCK
 - CONSTRUCTION ENTRANCE
 - CE
 - LIMIT OF WORK
 - TEMPORARY CONSTRUCTION FENCE
 - CONSTRUCTION STAGING/PARKING

- ABBREVIATIONS:**
- G: GAS
 - SS: SANITARY SEWER
 - W: WATER

- NOTES:**
1. SILT SOCKS TO REMAIN UNTIL CONSTRUCTION IS COMPLETE.
 2. CONSTRUCTION ENTRANCE ON FOUNDRY PLACE TO BE COORDINATED W/ CITY GARAGE CONSTRUCTION.

TEMPORARY CONSTRUCTION PERMIT PLANS - NOT FOR CONSTRUCTION



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 www.jसानc.com

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 GEOTECH & CIVIL
 MANCHESTER, NEW HAMPSHIRE

GREENMAN-PEDERSEN, INC.
 LANDSCAPE ARCHITECT
 PORTSMOUTH, NEW HAMPSHIRE

JSN ASSOCIATES, INC.
 STRUCTURAL ENGINEER
 PORTSMOUTH, NEW HAMPSHIRE

ENGINEERED SYSTEMS INC.
 MEP ENGINEER
 WORUEN, MASSACHUSETTS

ENGINEERED BUILDING SYSTEMS
 ELECTRICAL ENGINEER
 DERRY, NEW HAMPSHIRE

**RESIDENCES AT
 FOUNDRY PLACE,
 LOT 6: 181 HILL ST,
 ASSESSORS MAP
 138 LOT 62**
 PORTSMOUTH, NH 03801

OWNER:
Deer Street Associates
 7 BANKS ROCK ROAD
 YORK HARBOR, ME



Scale: 3/17/2017
 Date: 14837.03
 Project Number:

NO.	DESCRIPTION	DATE
1	TAC PUBLIC HEARING 04/15/2017	
2	TAC PUBLIC HEARING 02/12/2017	

SITE PLAN REVIEW

EROSION & SEDIMENT CONTROL PLAN

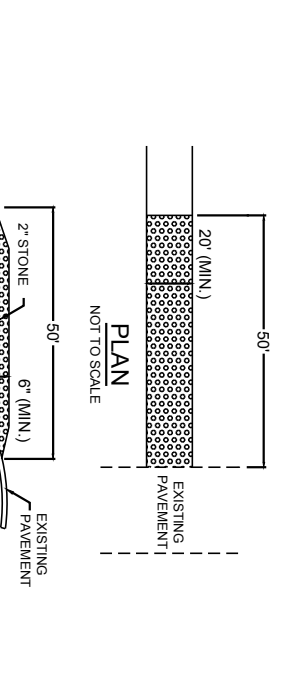
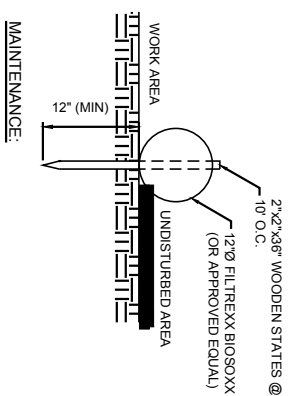
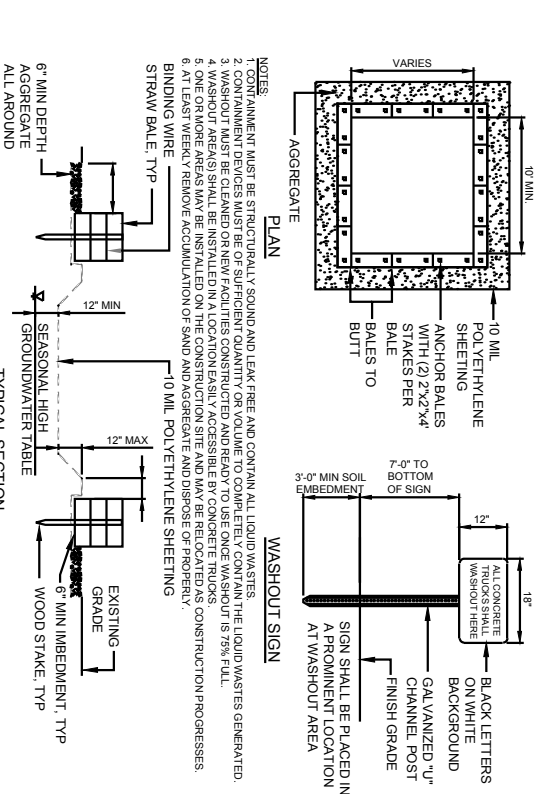
C6.0

GENERAL EROSION CONTROL NOTES

1. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL INSTALL ALL EROSION AND SEDIMENT CONTROL DEVICES AS SHOWN ON THE PLAN. CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH THE TERMS AND CONDITIONS OF THE CONSTRUCTION GENERAL PERMIT ISSUED BY THE EPA AND THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) SUBMITTED WITH THE PERMIT DOCUMENTS.
2. THE CONTRACTOR IS RESPONSIBLE FOR THE TIMELY INSPECTION, MAINTENANCE, AND/OR REPLACEMENT OF ALL TEMPORARY AND PERMANENT EROSION CONTROL DEVICES TO ENSURE PROPER OPERATION THROUGHOUT THE LIFE OF THE CONSTRUCTION PROJECT OR UNTIL IT IS ACCEPTED BY THE OWNER. THE OWNER IS RESPONSIBLE THEREAFTER.
3. NO DUST WILL BE ALLOWED ON OR OFF THE WORK SITE. CONTRACTOR MUST CONDUCT CONTINUOUS EFFORTS TO CONTROL DUST. LACK OF SUFFICIENT DUST CONTROL COULD CAUSE THE PROJECT TO BE STOPPED UNTIL ISSUES ARE RESOLVED. CONTRACTOR TO PAY ALL PENALTIES RESULTING PLUS \$1000 OFFENSE AS DETERMINED BY CITY.
4. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO CLEAN ROADS CONTROL DUST AND TAKE ALL NECESSARY MEASURES TO ENSURE THAT THE SITE AND ALL ADJACENT ROADS BE MAINTAINED IN A MUD AND DUST-FREE CONDITION AT ALL TIMES THROUGHOUT THE LIFE OF THE CONTRACT. DUST CONTROL SHALL INCLUDE, BUT IS NOT LIMITED TO, CAREFUL USE OF WATER, CALCIUM CHLORIDE, AND/OR CRUSHED STONE OR COARSE GRAVEL AS CONTROL BMPs.
5. ALL PROPOSED CONSTRUCTION ENTRANCES SHALL BE CONSTRUCTED AS SHOWN ON THE PLANS AND DETAILS. ALL VEHICLE TRAFFIC ENTERING OR EXITING THE WORK AREA SHALL PASS OVER THE CONSTRUCTION ENTRANCES TO REDUCE THE TRACKING OR FLOWING OF SEDIMENT ONTO THE SURROUNDING ROADWAYS UNTIL THE SITE IS STABILIZED.
6. THE CONTRACTOR SHALL INSTALL ALL PERIMETER SEDIMENT CONTROL BARRIERS AS SHOWN ON THE EROSION CONTROL PLAN. SILT FENCE OR SILT SOCK SHALL ALSO BE INSTALLED AROUND ANY SOIL STOCKPILE AREAS. THE CONTRACTOR SHALL STABILIZE DISTURBED AREAS AS QUICKLY AS PRACTICABLE. AREAS DAMAGED DURING CONSTRUCTION SHALL BE RESEDED, RESEEDED, OR OTHERWISE STABILIZED OR RESTORED TO THEIR ORIGINAL STATE. TREES AND OTHER EXISTING VEGETATION SHALL BE RETAINED WHEREVER FEASIBLE.
7. THE CONTRACTOR MAY USE TEMPORARY SEDIMENTATION AND/OR INFILTRATION BASINS ON THE SITE DURING CONSTRUCTION. THESE STRUCTURES SHOULD BE STRATEGICALLY LOCATED AND SIZED COMMENSURATE WITH THE PHASE OF CONSTRUCTION. THE CONTRACTOR SHALL REMOVE AND STABILIZE THESE STRUCTURES WHEN NO LONGER REQUIRED.
8. TEMPORARY COVERINGS OR OTHER APPROVED STABILIZATION METHOD SHALL BE APPLIED TO ANY DISTURBED AREAS (INCLUDING SOIL STOCKPILE AREAS) THAT HAVE NOT YET REACHED FINISHED GRADE AS SOON AS POSSIBLE, BUT NOT MORE THAN FOURTEEN (14) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS TEMPORARILY CEASED, UNLESS THE ACTIVITY IS TO RESUME WITHIN TWENTY-ONE (21) DAYS.
9. PERMANENT VEGETATIVE COVER SHALL BE APPLIED TO ALL DISTURBED SOIL AREAS THAT HAVE REACHED FINISHED LANDSCAPE GRADE AS SOON AS POSSIBLE, BUT NOT MORE THAN FOURTEEN (14) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS PERMANENTLY CEASED. THE RECOMMENDED PERMANENT SEEDING DATES ARE APRIL 1 TO JUNE 15 AND AUGUST 15 TO OCTOBER 1. WHERE AREAS HAVE REACHED FINISHED GRADE AND ARE NOT INTENDED TO BE VEGETATED, TEMPORARY TYPERS OR OTHER STABILIZING COVERS MAY BE PLACED.
10. AREAS WHICH HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED SHOULD BE MULCHED IMMEDIATELY FOLLOWING SEEDING IN ADDITION TO AREAS WHICH CANNOT BE SEEDED WITHIN THE RECOMMENDED SEEDING DATES AND ANY SOIL STOCKPILE AREAS. TEMPORARY MULCHING SHOULD BE PERFORMED AS SOON AS POSSIBLE, BUT NOT MORE THAN FOURTEEN (14) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS TEMPORARILY CEASED UNLESS THE ACTIVITY IS TO RESUME WITHIN TWENTY-ONE (21) DAYS. STRAW OR HAY MULCH, WOOD FIBER MULCH, AND HYDROMULCH ARE RECOMMENDED MULCHES.
11. IF SEEDING CANNOT BE COMPLETED IMMEDIATELY OR WITHIN THE RECOMMENDED SEEDING DATES, USE THE TEMPORARY MULCHING MEASURE TO PROTECT THE SITE AND DELAY SEEDING UNTIL THE NEXT RECOMMENDED SEEDING PERIOD.
12. WHERE TEMPORARY COVERS ARE USED OVER STOCKPILES AND/OR DISTURBED SOIL AREAS, THE COVERS SHALL BE SUFFICIENTLY ANCHORED AGAINST WIND. THE CONTRACTOR MUST ANTICIPATE AND MANAGE RUNOFF FROM SUCH COVERINGS.
13. ANY EXISTING OR PROPOSED CATCH BASINS THAT MAY BE SUBJECT TO SEDIMENTATION PROCESSES SHALL HAVE SILT SOCKS INSTALLED TO PREVENT SEDIMENT FROM ENTERING THE PROPOSED STORM DRAINAGE SYSTEM PRIOR TO PERMANENT STABILIZATION OF THE DISTURBED SITE. THE PROPER INLET PROTECTION DEVICES SHALL BE INSTALLED WHERE STORM DRAIN INLETS ARE TO BE MADE OPERATIONAL BEFORE PERMANENT STABILIZATION OF ANY DISTURBED DRAINAGE AREA.
14. ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE CONSTRUCTED IN ACCORDANCE WITH THE NHDOT STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGES AND THE NEW HAMPSHIRE STORMWATER MANUAL, VOL. 3 AND OTHER APPLICABLE REGULATIONS.
15. WASTE DISPOSAL MATERIALS WHICH COULD BE A POTENTIAL SOURCE OF STORM WATER POLLUTION SUCH AS GASOLINE, DIESEL FUEL, HYDRAULIC OIL, ETC., SHALL BE STORED AT THE END OF EACH DAY IN A STORAGE TRAILER OR COVERED LOCATION, OR TAKEN OFF-SITE AND PROPERLY DISPOSED OF. ALL TYPES OF WASTE GENERATED AT THIS SITE SHALL BE DISPOSED OF IN A MANNER CONSISTENT WITH STATE LAW AND/OR REGULATIONS.
16. GOOD HOUSEKEEPING: THE PROJECT SITE SHALL PROVIDE FOR THE MINIMIZATION OF EXPOSURE OF CONSTRUCTION DEBRIS (INCLUDING, BUT NOT LIMITED TO, INSULATION, WIRING, PAINTS AND PAINT CANS, SOLVENTS, WALL BOARD, ETC.) TO PRECIPITATION BY MEANS OF DISPOSAL AND/OR PROPER SHELTER OR COVER. IN ADDITION, CONSTRUCTION WASTE MUST BE PROPERLY DISPOSED OF IN ORDER TO AVOID EXPOSURE TO PRECIPITATION AT THE END OF EACH WORKING DAY.
17. REPAIRS OR REPLACEMENT OF DRAINAGE STRUCTURES, SWALES, OR OTHER DRAINAGE ELEMENTS SHOULD BE DONE WITHIN 12 HRS OF NOTIFICATION OF A DEFICIENCY REPORTS. IF AN EMERGENCY SITUATION IS IMMINENT THEN REPAIR/REPLACEMENT MUST BE DONE IMMEDIATELY TO AVERT FAILURE OR IMPACT TO NEARBY RESIDENTS.
18. IMMEDIATELY PRIOR TO THE END OF CONSTRUCTION OR ACCEPTANCE BY THE OWNER, THE CONTRACTOR SHALL INSPECT ALL ON-SITE STORMWATER MANAGEMENT FACILITIES AND CLEAN AND FLUSH AS NECESSARY AND REQUESTED BY THE ENGINEER AND/OR THE OWNER.
19. THE CONTRACTOR OR NOMINEE WILL BE THE PARTY RESPONSIBLE FOR THE INSPECTION, MAINTENANCE, AND REQUIRED DOCUMENTATION OF ALL STORMWATER STRUCTURES UNTIL FORMAL PROJECT COMPLETION.

PROJECT SPECIFIC CONSTRUCTION SEQUENCING:

- DESCRIBED BELOW ARE THE MAJOR CONSTRUCTION ACTIVITIES ANTICIPATED. THEY ARE PRESENTED IN THE ORDER (OR SEQUENCE) THEY ARE EXPECTED TO BEGIN, BUT EACH ACTIVITY WILL NOT NECESSARILY BE COMPLETED BEFORE THE NEXT BEGINS. ALSO, THESE ACTIVITIES COULD OCCUR IN A DIFFERENT ORDER IF NECESSARY TO MAINTAIN ADEQUATE EROSION AND SEDIMENTATION CONTROL. ALL ACTIVITIES AND THE TIMEFRAME (BEGINNING AND ENDING DATES) SHALL BE RECORDED BY THE CONTRACTOR:
1. CONTRACTOR TO REVIEW ALL APPLICABLE LOCAL, STATE AND FEDERAL PERMITS.
 2. REVIEW AND CERTIFY THE STORMWATER POLLUTION PREVENTION PLAN.
 3. INSTALL TEMPORARY CONSTRUCTION FENCING.
 4. INSTALL STABILIZED CONSTRUCTION ENTRANCE.
 5. INSTALL EROSION CONTROL MEASURES PRIOR TO EARTH MOVING OPERATIONS.
 6. DEMOLITION AND DEMOLISH EXISTING STRUCTURES AND UTILITIES AFTER UTILITY APPROVAL.
 7. BEGIN ROUGH GRADING, TEMPORARY EARTH SUPPORT, AND EARTHWORK OPERATIONS FOR FOUNDATION AND UTILITY CONSTRUCTION.
 8. CONSTRUCT BUILDING FOUNDATION AND EXTERIOR WALLS TO ABOVE PROPOSED GRADES.
 9. CONSTRUCT CONCRETE BOX DETENTION AND DRAINAGE FACILITIES.
 10. CONSTRUCT SANITARY SEWER STRUCTURES AND CONNECTING FACILITIES.
 11. FINISH BUILDING STRUCTURE CONSTRUCTION.
 12. SLOPES SHALL BE STABILIZED IMMEDIATELY AFTER GRADING. ALL DISTURBED AREAS SHALL BE STABILIZED NO LATER THAN 12 HOURS AFTER CONSTRUCTION ACTIVITIES CEASE. IF EARTHWORK TEMPORARILY CEASES ON A PORTION OF OR ON THE ENTIRE SITE, AND WILL NOT RESUME WITHIN 24-DAYS, THE AREA SHALL BE STABILIZED. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
A. A BASE COURSE GRAVELS HAS BEEN INSTALLED IN AREAS TO BE PAVED;
B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
C. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP-RAP HAS BEEN INSTALLED; OR
D. EROSION CONTROL BLANKETS OR TEMPORARY TYPING HAVE BEEN PROPERLY INSTALLED.
 13. INSTALL AND CONNECT ALL UNDERGROUND UTILITIES.
 14. CONSTRUCT ROADWAYS, DRIVEWAYS, AND HARDSCAPE ACCORDING TO THE PLAN. ALL SLOPES SHALL BE STABILIZED IMMEDIATELY AFTER GRADING.
 15. SURFACE TREATMENT OF ALL DISTURBED AREAS NOT BUILT UPON, PAVED OR OTHERWISE LANDSCAPED SHALL BE TREATED WITH 4" OF LOAM AND SEED.
 16. INSPECT AND MAINTAIN ALL EROSION AND SEDIMENTATION CONTROL MEASURES CONSISTENT WITH THE PROCEDURE AND SCHEDULE OULINED IN THE STORMWATER POLLUTION PREVENTION PLAN.
 17. COMPLETE PERMANENT SEEDING AND LANDSCAPING, AND OTHER SURFACE STABILIZATION.
 18. REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER ALL AREAS ARE STABILIZED WITH A SUITABLE STAND OF GRASS, PAVEMENT COMPACTED GRAVELS, OR OTHER INTENDED FINAL COVERINGS.



- FILTER SOCK INSTALLATION DETAIL**
NOT TO SCALE
1. FILTER SOCK SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE MADE IMMEDIATELY.
 2. IF THE FABRIC SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, REPLACE PROMPTLY.
 3. SEDIMENT DEPOSITS SHALL BE INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACH APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.
 4. SEDIMENT DEPOSITS SHALL BE REMOVED WITH FILTER SOCK UPON COMPLETION OF CONSTRUCTION ACTIVITIES.
 5. IF ANCHORING THE FILTER SOCK IS NOT POSSIBLE USING STAKES, SUCH AS ON PAVED AREAS, USE SAND BAGS, MASONRY BLOCKS, OR OTHER REMOVABLE WEIGHTS TO KEEP SOCK IN PLACE AT INTENDED LOCATION.
- STABILIZED CONSTRUCTION ENTRANCE**
NOT TO SCALE
1. REPAIR FOR BAG REMOVAL FROM INLET (REBAR NOT INCLUDED).
 2. OPTIONAL OVERFLOW.
 3. SILT SOCK.
 4. DUMP LOOPS (REBAR NOT INCLUDED).
 5. CURB OPENINGS.
 6. CURB.
 7. FOAM.
 8. EXPANSION RESTRAINT.
 9. SECTION VIEW OF PROFILE VIEW OF INSTALLED FILTER SOCK.

PROPERTIES	TEST METHOD	UNITS
GRAV TENSILE STRENGTH	ASTM D-4632	300 LBS
GRAV TENSILE ELONGATION	ASTM D-4632	20 %
FLUORESCENCE	ASTM D-553	120 LBS
TEAR STRENGTH	ASTM D-553	120 LBS
TRAPZEDD TEAR	ASTM D-453	120 LBS
UV RESISTANCE	ASTM D-4355	80 %
APPARENT OPENING SIZE	ASTM D-4751	40 US SIEVE
FLOW RATE	ASTM D-4491	40 GAL/MIN/50 FT
PERMITIVITY	ASTM D-4491	0.55 SEC-1

REGULAR FLOW SILT SACK
(FOR AREAS OF LOW TO MODERATE PRECIPITATION AND RUN-OFF)

EROSION CONTROL NOTES & DETAILS

SILT SACK INSTALLATION DETAIL
NOT TO SCALE

PERMIT PLANS - NOT FOR CONSTRUCTION

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ENGINEERED SYSTEMS INC.
MFP ENGINEER
WOOLUN, MASSACHUSETTS

ENGINEERED BUILDING SYSTEMS
ELECTRICAL ENGINEER
DERRY, NEW HAMPSHIRE

**RESIDENCES AT
FOUNDRY PLACE,
LOT 6: 181 HILL ST,
ASSESSORS MAP
138 LOT 62**

PORTSMOUTH, NH 03801

OWNER:
Deer Street Associates

7 BANKS ROCK ROAD
YORK HARBOR, ME

A. E. Seal: **JOSEPH H. KIEFER**
No. 10174
LICENSED PROFESSIONAL ENGINEER

Scale:
3/17/2017
14837.03

NO.	DESCRIPTION	DATE
1	TAC PUBLIC HEARING	6/15/2017
2	TAC PUBLIC HEARING	8/21/2017

REVISIONS

SITE PLAN REVIEW

**EROSION &
SEDIMENT
CONTROL
DETAILS**

C6.1

ATTACHMENT D

Architectural Supplemental Pages

RESIDENCES AT FOUNDRY PLACE, LOT #6
181 HILL STREET, ASSESSORS MAP 138, LOT 62
LIGHTING COMPLIANCE TO SITE PLAN
REVIEW REGULATIONS
ORIGINAL SUBMISSION 06-15-2017
REVISED SUBMISSION 08-21-2017

SUBMITTED BY J & M LIGHTING DESIGN, INC
207-967-5223
jmlight2@roadrunner.com

CITY OF PORTSMOUTH, NEW HAMPSHIRE
SITE PLAN REVIEW REGULATIONS



Adopted by Planning Board: December 17, 2009
Amended: February 18, 2016

SITE PLAN REVIEW REGULATIONS

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SECTION 10.2 COMPLIANCE WITH ZONING ORDINANCE	51
SECTION 10.3 LIGHTING PLAN.....	51
SECTION 10.4 LAMPS.....	52

Article 10 Outdoor Lighting

Section 10.1 General Provisions

All projects submitted for Site Plan Review shall provide dark sky friendly outdoor lighting according to these regulations in order to:

- (a) Permit reasonable uses of outdoor lighting for night-time safety, utility, security, productivity, enjoyment and commerce;
- (b) Minimize glare, obtrusive light, and artificial sky glow by limiting outdoor lighting that is misdirected, excessive, or unnecessary;
- (c) Conserve energy and resources to the greatest extent possible.

DESIGNER’S COMMENTS 06-05-2017: Project follows the above provisions.

Section 10.2 Compliance with Zoning Ordinance

All projects shall comply with the outdoor lighting dark sky friendly standards provided in the Zoning Ordinance.

DESIGNER’S COMMENTS 06-05-2017: Project is not completely in compliance. West well is over by .07 foot-candles from ordinance criteria of 0.50 average foot-candles.

Section 10.3 Lighting Plan

1. When a proposed project includes outdoor lighting, the Site Plan shall include a lighting plan which shall show:
 - (a) The location on the site where outdoor lighting fixtures (both pole and mounted) will be installed.

DESIGNER'S COMMENTS 06-15-2017: See all architectural elevations for the building mounted luminaires

- (b) Scaled plans indicating the location of outdoor lighting fixtures on the site, the height of each fixture, the types of outdoor lighting proposed, and the level of wattage and initial lumens for all light sources.

DESIGNER'S COMMENTS 06-15-2017: See attached schedule for compliance verification. "Delivered lumens" values have been used for the calculations.

- (c) A description of the outdoor lighting fixtures including but not limited to manufacturer's catalog descriptions and drawings. The required plans and descriptions shall be sufficiently complete to enable the Planning Board to readily determine compliance with the requirements of this regulation.

DESIGNER'S COMMENTS 06-15-2017: See attached catalog pages, photometric report and in some cases photometric template for all fixtures specified

- (d) A photometric (iso-lux) plan indicating levels of illumination, in foot candles, at ground level.

DESIGNER'S COMMENTS 06-15-2017: See attached plots Foundry Place first floor and Hill Street second floor for illumination levels Calculation values are presented on 5'-0" centers and carried out to 2 decimal places. These values are initial foot-candles. Iso-lux contours have been provided to illustrate the light of a full moon with no atmospheric particulates, at 0.20 foot-candles a value usually used for minimum security lighting and an arbitrary 1.00 foot-candles.

- 2. The maintained horizontal illuminance standards set by the Illuminating Engineering Society of North America (IESNA) shall be observed.

DESIGNER'S COMMENTS 06-15-2017:

The following publications were used as references for the design

RP-33-2014 "Lighting for Exterior Environments"

RP-08-2014 "Roadway Lighting"

RP-20-2014 revised "Lighting for Parking Facilities"

IES 10th Edition Handbook.

- 3. Should any outdoor light fixture, or the type of light source therein, be changed after the building permit has been issued an amended site plan approval shall be required.

Section 10.4 Lamps (LED SOURCES) (08-21-2017)

1. Lamp types shall be selected for optimum color rendering as measured by their color rendering index (CRI), as listed by the lamp manufacturer.

DESIGNER'S COMMENTS 08-21-2017: All lamps (LED sources) used have a CRI of 80 or above.

2. Lamps with a color rendering index lower than 50 are not permitted. This requirement shall not apply to decorative lighting which may include colored lamps, such as holiday lighting.

DESIGNER'S COMMENTS 08-21-2017: Project follows this criteria with all lamps (LED sources) having a CRI above 80.

3. Commercial lighting shall meet minimum IESNA illumination levels while not exceeding IESNA uniformity ratios and average illuminance recommendations.

North side sidewalk during business hours till 11:00 P.M.

Illumination levels shall be:

- 2.74 average foot-candles
- 5.60 Maximum foot-candles
- 0.5 Minimum foot-candles
- 5.48:1 Average/minimum
- 11.20:1 Maximum/minimum

These illumination levels DO NOT include contribution from City Standard Decorative pole luminaires.

West well dusk to dawn.

Illumination levels shall be:

- 0.57 average foot-candles
- 2.50 Maximum foot-candles
- 0.1 Minimum foot-candles
- 5.70:1 Average/minimum
- 25.00:1 Maximum/minimum

West side (ADDED 08-21-2017)

Illumination levels shall be:

- 0.47 average foot-candles
- 1.31 Maximum foot-candles
- 0.06 Minimum foot-candles
- 7.83:1 Average/minimum
- 21.83:1 Maximum/minimum

East Path during business hours till 11:00 P.M.

Illumination levels shall be:

1.08 average foot-candles
2.1 Maximum foot-candles
0.7 Minimum foot-candles
1.54:1 Average/minimum
3.00:1 Maximum/Minimum

After 11:00 P.M. 2 luminaires shall be on a separate circuit and shut-off to comply with the 0.50 average requirement

South side sidewalk

Illumination levels shall be:

2.18 average foot-candles
5.0 Maximum foot-candles
0.5 Minimum foot-candles
4.36:1 Average/minimum
10.0:1 Maximum/Minimum

Courtyard Walkway

Illumination levels shall be:

4.0 average foot-candles
9.6 Maximum foot-candles
2.2 Minimum foot-candles
1.82:1 Average/minimum
4.36:1 Maximum/Minimum

At 11:00 P.M. single luminaire shall be left on to reduce illumination level to under 0.50 average foot-candles.

RESIDENCES AT FOUNDRY PLACE, LOT #6
181 HILL STREET, ASSESSORS MAP 138, LOT 62
LIGHTING COMPLIANCE TO ZONING
ORDINANCE OUTDOOR LIGHTING
ORIGINAL SUBMISSION 06-15-2017
REVISED SUBMISSION 08-21-2017

SUBMITTED BY J & M LIGHTING DESIGN, INC
207-967-5223
jmlight2@roadrunner.com

CITY OF PORTSMOUTH, NEW HAMPSHIRE

ZONING ORDINANCE



Adopted by Portsmouth City Council: December 21, 2009
Effective Date: January 1, 2010

As Amended Through: January 9, 2017

Table of Articles and Sections

ARTICLE 11 SITE DEVELOPMENT STANDARDS

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Section 10.1140 Outdoor Lighting

10.1141 Purpose

The purpose of this section is to enhance public safety and welfare by providing for adequate and appropriate outdoor lighting, providing for lighting that will complement the character of the City, reduce glare, minimize light trespass, reduce the cost and waste of unnecessary energy consumption, and prevent the degradation of the night sky.

10.1142 General Requirement and Applicability

10.1142.10 All public and private new or replacement outdoor lighting installed in the City of Portsmouth shall be in conformance with the requirements established by this Ordinance.

DESIGNER COMMENTS 06-15-2017: Project shall follow all provisions of the ordinance, except 1. The west well is .07 foot-candles over the ordinance value of 0.50.

10.1142.20 Any luminaire that does not conform to the standards of this Ordinance but was lawfully in place prior to the adoption of these standards shall be permitted to remain. However, any luminaire that replaces a nonconforming luminaire, or any nonconforming luminaire that is moved, must meet the standards of this Ordinance.

DESIGNER COMMENTS 06-15-2017: No existing luminaires are on this project.

10.1142.30 The following types of lighting are exempt from the requirements of this section:

10.1142.31 All temporary lighting required for construction projects related to road construction and repair, installation of sewer and water facilities, and other public infrastructure.

10.1142.32 All temporary emergency lighting needed by the police or fire departments or other emergency services, as well as all vehicular luminaires.

10.1142.33 State or Federal regulated lighting such as airports, towers

Article 11 Site Development Standards
requiring lighting, highway signage and traffic signals, etc.

10.1142.34 Low wattage or low voltage temporary decorative lighting used for holidays, festivals and special events, provided they do not pose a safety or nuisance problem due to light trespass or glare.

DESIGNER COMMENTS 06-15-2017:
Items 10.1142.31, 10.1142.32, 10.142.33 are exempt from this submittal. 10.1142.34 shall be on the project at some-time but not designed or submitted as part of this submission.

10.1143 Total Outdoor Light Output Allowance

10.1143.10 Total outdoor light output for a parcel shall not exceed the lumen limits given in the following table. Values in this table are upper limits and not design goals; design goals should be the lowest levels that meet requirements of the task.

Zoning Districts	Maximum Mean Lumens Per Net Acre
Airport District (AIR)	Exempt
All Business Districts, except within the Historic District All Industrial Districts Airport Industrial, Pease Industrial, Airport Business Commercial	300,000
All Residential Districts All Mixed Residential Districts All Conservation Districts Historic District	55,000

10.1143.20 The total lumens shall be 100 percent of the lumens from outdoor light fixtures installed on grade, on poles, and on the top or sides of buildings or other structures.

DESIGNER'S COMMENTS 06-15-2017: Project is in the Business District (CD5-District) allowing 300,000 mean lumens.

Lighting in the indoor garages are not part of the defined outdoor light fixtures per 10.1143.40b.

10.1143.30 "Net acres" shall mean the total parcel area excluding the area of (a) proposed and existing streets within the parcel, and (b) sports playing fields exempted from the lumens per acre cap under Section 10.1143.50.

DESIGNER'S COMMENTS 06-15-2017: Net acres for LOT #6 is 0.517 acres x 300,000 lumens allowance = 155,100 allowed lumens. There are no sport playing fields on this project. Our net lumens equal 16,000 lumens under the allotted value, we are in compliance.

Lighting in the indoor garages are not part of the “Net Acres” lumen count per 10.1143.40b

10.1143.40 Outdoor lighting fixtures meeting one of the following conditions shall not be counted in determining the total light output:

- (a) Full cut-off fixtures installed under canopies, building overhangs, or roof eaves.

DESIGNER’S COMMENTS 06-15-2017: Full-cut-off is a deprecated term. The Illuminating Engineering Society (IES) has replaced the designation by the “BUG” rating. All luminaires used have upward component of U = “0”

The following fixtures are included in net lumen acre lumens values.

Type JAW	at 1,047	x 7 =	7,329
Type JBW	at 74	x 54 =	3,996
Type JFW-m	at 160	x 8 =	1,280
Type JFW-s	at 131	x 6 =	786
Type JHP			
run #3 & #6	at 1,950	x 2 =	3,900
run #1, #2, #4, #5	at 1,190	x 4 =	4,760
			22,051 total lumens
			Allowance is 155,100 project is under allowance

The following luminaires are NOT included due to a BUG rating of U-0 [Full cut-off].

- Type JCW
- Type JCW-R
- Type JDW
- Type JER
- Type JGW

- (b) Light fixtures shielded by the canopy, building overhang, or roof eaves in such a manner that no lamp or vertical element of a lens or diffuser is visible from off-site.

DESIGNER’S COMMENTS 06-15-2017: Garage fixtures meet the criteria of protected by building above and are not included in the net lumen quantity

10.1143.50 Sports venue lighting is exempt from any lumens per acre standard for the playing field only.

DESIGNER’S COMMENTS 06-15-2017: There are no sports venue lighting on this project.

10.1144 Luminaire Design and Height

- 10.1144.10 Any luminaire with a lamp or lamps rated at a total of more than 1,800 lumens (and any flood or spot luminaires of more than 900 lumens) shall be a full-cutoff fixture and shall not emit any direct light above a horizontal plane passing through the lowest part of the light-emitting luminaire

DESIGNER'S COMMENTS 06-15-2017: All luminaires used on this project have a lumen output of under 1,800 lumens. Luminaires that do not have a BUG rating of "U0" [full-cut-off classification]

TYPE JAW

TYPE JFW-s

TYPE JFW-m

TYPE JHP #1, #2, #4, #5

All under 1,800 lumens

TYPE JHP #3 & JHP #6

These 2 units have a lumen output of 1,950 lumens, 150 lumens over criteria.

- 10.1144.20 Any luminaire, regardless of lumen rating, shall be equipped with whatever additional shielding, lenses, or cutoff devices are required to prevent light trespass onto any residential property that adjoins or is directly across a street, highway or stream from the lot on which the luminaire is located, and to prevent glare perceptible to persons on such residential property.

DESIGNER'S COMMENTS 06-15-2017: TYPE JAW shall be visible from off site. All luminaires used on this project shall use luminaires that restrict the light to the Lot #6 property depending on the viewers elevation in relation to the fixture.

- 10.1144.30 Building façades may be illuminated with low intensity lighting as follows:

- 10.1144.21 The light source for the building façade illumination shall be concealed.

DESIGNER'S COMMENTS 06-15-2017: Building facades shall be illuminated down-ward by the shielded luminaires mounted to the building. At the courtyard on the first floor, grills at the garage shall be illuminated from cantilevered luminaires mounted above the grills. TYPE JGW. These illuminated vertical surfaces on the west side of the courtyard are shielded from view by the building wing to the east. Residential properties to the southeast might see some luminance depending on color of the grating. Luminaires shall be enclosed and are classified flood or spot luminaires with a lumen output of under 900 lumens

- 10.1144.22 Building entrances may be illuminated using recessed lighting in overhangs and soffits, or by use of spotlighting focused on the building entrances with the light source

concealed (e.g., in landscaped areas).

DESIGNER'S COMMENTS 06-15-2017: On the North side of the building along Foundry Place commercial entrances use recess luminaires.

10.1144.23 Direct lighting of limited exterior building areas is permitted when necessary for security purposes.

DESIGNER'S COMMENTS 06-15-2017: There shall be no lighting for security purposes. Lighting for security shall be designed luminaires in this project.

10.1144.40 Increased lighting interrupts or changes the natural duration of night light and can prevent some trees from going into dormancy, thereby making them more susceptible to winter weather and can decrease their effectiveness in tolerating pollution.

10.1144.41 Wherever possible, placement of lighting should be done in such a way as to direct light away from trees.

DESIGNER'S COMMENTS 06-15-2017: In the courtyard lighting shall illuminate some of the plantings as part of the design to make the courtyard inviting. The courtyard is blocked by the east and west wings of the building.

On the rest of the building west, north and east lighting shall be directed away from the trees when possible. Trees and light placement are being coordinated by the responsible design disciplines.

10.1144.42 When lighting will be directed at trees, high pressure sodium lamps and any incandescent lamps are not allowed.

DESIGNER'S COMMENTS 06-15-2017: In the courtyard lighting shall be in the trees. All lighting shall follow the ordinance by the use of LED 3,000 k, with a CRI of over 80 to be in compliance with the provisions of the section.

10.1144.43 When planting trees where supplemental lighting already exists, trees shall be selected that have low sensitivity to light.

DESIGNER'S COMMENTS 06-15-2017: SEE NARRATIVE ON LANDSCAPE PLAN.

10.1144.50 A flood or spot luminaire with a lamp or lamps rated at 900 lumens or less may be used without restriction to light distribution, provided that it is aimed, directed, or focused so as not to cause direct light from the luminaire to be directed toward any residential property that adjoins or is directly across a street, highway or stream from the lot on which the luminaire is located, or to create glare perceptible to persons operating motor vehicles on public ways.

DESIGNER'S COMMENTS 06-15-2017:

TYPE JGW shall be directed toward the project building and not focused off property

10.1144.60 The maximum mounting height of a luminaire shall be 20 feet above grade except as follows:

10.1144.61 Flood or spot luminaires with a lamp or lamps rated at 900 lumens or less, and other luminaires with a lamp or lamps rated at a total of 1800 lumens or less, may be used without restriction to mounting height.

DESIGNER'S COMMENTS 06-15-2017: We have luminaires installed above 20'-0" on the balconies and decks, but they have a lumen output of 74 lumens (TYPE JBW). The project complies with this requirement.

10.1144.62 Luminaires used for public-roadway illumination may be installed at a maximum height of 25 feet and may be positioned at that height up to the edge of any bordering property.

DESIGNER'S COMMENTS 06-15-2017: There are no luminaires used for public roadway illumination. In compliance.

10.1144.63 Luminaires used primarily for sign illumination may be mounted at any height to a maximum of 25 feet, regardless of lumen rating.

DESIGNER'S COMMENTS 06-15-2017: Sign Lighting is not part of this submission.

10.1144.64 Luminaires used for athletic fields are exempt from the height limitations.

DESIGNER'S COMMENTS 06-15-2017: There are no athletic fields on this project. In compliance

10.1145 Hours of Operation

10.1145.10 Outdoor lighting shall not be illuminated between 11:00 p.m. and 6:00 a.m. with the following exceptions:

10.1145.11 If the use is being operated, such as a business open to customers, or where employees are working or where an institution or place of public assembly is conducting an activity, normal illumination shall be allowed during the activity and for not more than one hour after the activity ceases.

DESIGNER'S COMMENTS 06-15-2017: This project is primarily

residential property. On the north side of the building Ground floor is commercial space

10.1145.12 Low level lighting sufficient for the security of persons or property on the lot may be in operation between 11:00 p.m. and 6:00 am, provided the average illumination on the ground or on any vertical surface is not greater than 0.5 foot-Candles

DESIGNER'S COMMENTS 06-15-2017: See photometric plan for foot-candle illustrating compliance.

10.1146 Recreational Facilities

10.1146.10 Any light source permitted by this Ordinance may be used for lighting of outdoor recreational facilities (public or private), such as, but not limited to, football fields, soccer fields, baseball fields, softball fields, tennis courts, or show areas, provided all of the following conditions are met:

10.1146.11 All fixtures used for lighting recreational fields and facilities shall be full-cutoff fixtures.

10.1146.12 All lighting installations shall be designed to achieve no greater than the minimal illuminance levels for the activity as recommended by the Illuminating Engineering Society of North America (IESNA).

10.1146.13 All events shall be scheduled so as to complete all activity before or as near to 11:00 pm as practical, but under no circumstances shall any illumination of the playing field, court, or track be permitted after 11:00 pm except to conclude a scheduled event that was in progress before 11:00 pm and circumstances prevented concluding before 11:00 pm.

DESIGNER'S COMMENTS 06-15-2017: Does not apply. There are no outdoor recreational facilities on this project.

10.1147 Outdoor Display Lots

10.1147.10 Any light source permitted by this Ordinance may be used for lighting of outdoor display lots as defined by this Ordinance, provided that both of the following conditions are met:

10.1147.11 All fixtures used for lighting the display lots shall be full-cutoff fixtures.

10.1147.12 All lighting installations shall be designed to achieve no greater than the minimal illuminance levels for the activity as recommended by the Illuminating Engineering Society of North America (IESNA).

DESIGNER'S COMMENTS 06-15-2017: Does not apply. There are no Outdoor Display Lots on this project.

10.1148 Temporary Outdoor Lighting

10.1148.10 Any temporary outdoor lighting that conforms to the requirements of this Ordinance shall be allowed. Nonconforming temporary outdoor lighting may be permitted by the Board of Adjustment after considering:

- (a) the public and/or private benefits that will result from the temporary lighting;
- (b) any annoyance or safety problems that may result from the use of the temporary lighting; and
- (c) the duration of the temporary nonconforming lighting.

10.1148.20 The applicant shall submit a detailed description of the proposed temporary nonconforming lighting to the Board of Adjustment and shall comply with all procedures for special exceptions as stated in Article 2.

DESIGNER'S COMMENTS 06-15-2017: Project does not anticipate temporary lighting at this submission except for lighting for the holiday season.

10.1149 Prohibitions

The following uses and types of lighting are prohibited:

- 10.1149.10 The use of laser source light or any similar high intensity light for outdoor advertising or entertainment, when projected above the horizontal.
- 10.1149.20 The operation of searchlights except by civil authorities for public safety.
- 10.1149.30 The nighttime use of white or white strobe lighting on communication towers unless written proof of FAA requirement is provided.

DESIGNER'S COMMENTS 06-15-2017: Project shall be in conformance with section.

FOUNDRY PLACE ELEVATION 0 (12'-3-3/8" ACTUAL ELEVATION)
ALL LIGHT LEVELS INITIAL HORIZONTAL FOOT-CANDLES

J & M LIGHTING DESIGN, INC
207-067-5223
jmlight2@roadrunner.com
JUNE 15, 2017

Luminaire Definition(s)

JAW

CL-ADA-XL-LED15-4K-EBU-SGR 102063649CHI-031

Filename	102063649CHI-031.ies
Lumens Per Lamp	N.A.
Number of Lamps	1
Total Lamp Lumens	N.A.
Arrangement Lamp Lumens	N.A.
Arrangement Luminaire Lumens	2094
Luminaire Lumens	2094
Luminaire Efficiency (%)	N.A.
Total Light Loss Factor	0.400
Luminaire Watts	10
Arrangement Watts	10
Arrangement	SINGLE
Arm Length	0
Offset	0
Road Classification	Type IV, Very Short, N.A. (deprecated)
Upward Waste Light Ratio	0.50

Luminaire Classification System (LCS)	Lumens	% Lamp	% Luminaire
LCS-FL	51.5	N.A.	2.5
LCS-FM	307.5	N.A.	14.7
LCS-FH	361.4	N.A.	17.3
LCS-FVH	203.4	N.A.	9.7
LCS-BL	13.4	N.A.	0.6
LCS-BM	43.7	N.A.	2.1
LCS-BH	40.6	N.A.	1.9
LCS-BVH	22.0	N.A.	1.1
LCS-UL	225.7	N.A.	10.8
LCS-UH	824.4	N.A.	39.4
Total	2093.6	N.A.	100.0
BUG Rating	B0-U4-G2		
Indoor Classification	General Diffuse		
LER	209		

JCW

AEL12-10W 4000K

Filename	AEL12-10W-4000K.ies
Lumens Per Lamp	N.A.
Number of Lamps	28
Total Lamp Lumens	N.A.
Arrangement Lamp Lumens	N.A.
Arrangement Luminaire Lumens	726
Luminaire Lumens	726
Luminaire Efficiency (%)	N.A.
Total Light Loss Factor	0.800
Luminaire Watts	10.8
Arrangement Watts	10.8
Arrangement	SINGLE
Arm Length	0
Offset	0
Road Classification	Type III, Very Short, N.A. (deprecated)
Upward Waste Light Ratio	0.00

Luminaire Classification System (LCS)	Lumens	% Lamp	% Luminaire
LCS-FL	133.9	N.A.	18.4
LCS-FM	398.4	N.A.	54.9

Luminaire Definition(s) - Cont.

LCS-FH	117.9	N.A.	16.2
LCS-FVH	4.5	N.A.	0.6
LCS-BL	19.0	N.A.	2.6
LCS-BM	33.5	N.A.	4.6
LCS-BH	17.0	N.A.	2.3
LCS-BVH	1.7	N.A.	0.2
LCS-UL	0.0	N.A.	0.0
LCS-UH	0.0	N.A.	0.0
Total	725.9	N.A.	100.0
BUG Rating	B0-U0-G0		
Indoor Classification	Direct		
LER	67		

JCW-R

AEL12-10W 4000K REDUCED

Filename	AEL12-10W-4000K.ies		
Lumens Per Lamp	N.A.		
Number of Lamps	28		
Total Lamp Lumens	N.A.		
Arrangement Lamp Lumens	N.A.		
Arrangement Luminaire Lumens	726		
Luminaire Lumens	726		
Luminaire Efficiency (%)	N.A.		
Total Light Loss Factor	0.560		
Luminaire Watts	7		
Arrangement Watts	7		
Arrangement	SINGLE		
Arm Length	0		
Offset	0		
Road Classification	Type III, Very Short, N.A. (deprecated)		
Upward Waste Light Ratio	0.00		

Luminaire Classification System (LCS)	Lumens	% Lamp	% Luminaire
LCS-FL	133.9	N.A.	18.4
LCS-FM	398.4	N.A.	54.9
LCS-FH	117.9	N.A.	16.2
LCS-FVH	4.5	N.A.	0.6
LCS-BL	19.0	N.A.	2.6
LCS-BM	33.5	N.A.	4.6
LCS-BH	17.0	N.A.	2.3
LCS-BVH	1.7	N.A.	0.2
LCS-UL	0.0	N.A.	0.0
LCS-UH	0.0	N.A.	0.0
Total	725.9	N.A.	100.0
BUG Rating	B0-U0-G0		
Indoor Classification	Direct		
LER	104		

JDW

1403201050-001 MOD# AEL36-14W 4000K

Filename	AEL36-15W-4000K.IES		
Lumens Per Lamp	N.A.		
Number of Lamps	1		
Total Lamp Lumens	N.A.		
Arrangement Lamp Lumens	N.A.		
Arrangement Luminaire Lumens	1213		

Luminaire Definition(s) - Cont.

Luminaire Lumens	1213
Luminaire Efficiency (%)	N.A.
Total Light Loss Factor	0.800
Luminaire Watts	14.1
Arrangement Watts	14.1
Arrangement	SINGLE
Arm Length	0
Offset	0
Road Classification	Type II, Very Short, N.A. (deprecated)
Upward Waste Light Ratio	0.00

Luminaire Classification System (LCS)	Lumens	% Lamp	% Luminaire
LCS-FL	271.9	N.A.	22.4
LCS-FM	568.7	N.A.	46.9
LCS-FH	117.9	N.A.	9.7
LCS-FVH	6.3	N.A.	0.5
LCS-BL	108.6	N.A.	9.0
LCS-BM	114.2	N.A.	9.4
LCS-BH	24.4	N.A.	2.0
LCS-BVH	1.1	N.A.	0.1
LCS-UL	0.0	N.A.	0.0
LCS-UH	0.0	N.A.	0.0
Total	1213.1	N.A.	100.0
BUG Rating	B0-U0-G0		
Indoor Classification	Direct		
LER	86		

JER

1020-B1-S-10-LRTD4-9020-M2-30KS-80-NCSM

Filename	1020-B1-S-10-LRTD4-9020-M2-30KS-80.IES
Lumens Per Lamp	N.A.
Number of Lamps	1
Total Lamp Lumens	N.A.
Arrangement Lamp Lumens	N.A.
Arrangement Luminaire Lumens	1037
Luminaire Lumens	1037
Luminaire Efficiency (%)	N.A.
Total Light Loss Factor	1.000
Luminaire Watts	21.1
Arrangement Watts	21.1
Arrangement	SINGLE
Arm Length	0
Offset	0
Road Classification	Type V, Very Short, N.A. (deprecated)
Upward Waste Light Ratio	0.00

Luminaire Classification System (LCS)	Lumens	% Lamp	% Luminaire
LCS-FL	192.5	N.A.	18.6
LCS-FM	287.3	N.A.	27.7
LCS-FH	36.7	N.A.	3.5
LCS-FVH	1.9	N.A.	0.2
LCS-BL	192.5	N.A.	18.6
LCS-BM	287.3	N.A.	27.7
LCS-BH	36.7	N.A.	3.5
LCS-BVH	1.9	N.A.	0.2
LCS-UL	0.0	N.A.	0.0
LCS-UH	0.0	N.A.	0.0
Total	1036.8	N.A.	100.0

Luminaire Definition(s) - Cont.

BUG Rating	B1-U0-G0
Indoor Classification	Direct
LER	49

Luminaire Location(s)

Luminaire Locations

Project Name : Project_1
 Coordinates in Feet

Lum. No.	Label	Aiming Point										Status
		X	Y	Z	Orient	Tilt	Roll	Spin	X	Y	Z	
2	JCW	216.821	115.548	11.22	0	0	0	0	216.821	115.548	11.22	On
4	JCW	214.808	124.795	11.22	0	0	0	0	214.808	124.795	11.22	On
5	JER	218.989	133.293	13.56	94.535	0	0	0	218.989	133.293	13.56	On
6	JDW	89.929	140.529	8.11	95.381	0	0	0	89.929	140.529	8.11	On
7	JDW	101.202	141.528	8.11	95.381	0	0	0	101.202	141.528	8.11	On
8	JAW	108.214	142.13	6.85	96.027	0	0	0	108.214	142.13	6.85	On
9	JER	219.068	142.415	13.56	94.535	0	0	0	219.068	142.415	13.56	On
10	JAW	118.617	143.032	6.85	96.027	0	0	0	118.617	143.032	6.85	On
11	JER	112.877	143.846	13.56	94.535	0	0	0	112.877	143.846	13.56	On
12	JAW	134.021	144.52	6.85	96.027	0	0	0	134.021	144.52	6.85	On
15	JAW	158.995	146.651	6.85	96.027	0	0	0	158.995	146.651	6.85	On
16	JAW	173.963	148.077	6.85	96.027	0	0	0	173.963	148.077	6.85	On
17	JER	166.438	149.001	13.56	94.535	0	0	0	166.438	149.001	13.56	On
18	JER	199.816	152.564	13.56	94.535	0	0	0	199.816	152.564	13.56	On
19	JER	209.729	153.42	13.56	94.535	0	0	0	209.729	153.42	13.56	On
20	JER	218.911	154.052	13.56	94.535	0	0	0	218.911	154.052	13.56	On
3	JCW-R	63.381	118.462	8.18	180	0	0	0	63.381	118.462	8.18	On

Summary By Label

Project Name : Project_1

<u>Label</u>	<u>On</u>	<u>Off</u>	<u>Total</u>
JAW	5	0	5
JCW	2	0	2
JCW-R	1	0	1
JDW	2	0	2
JER	7	0	7

Galileo ADA

4" PROJECTION LED SCONCE

ANY Shape Diffuser

may include Perfex and/or Shield

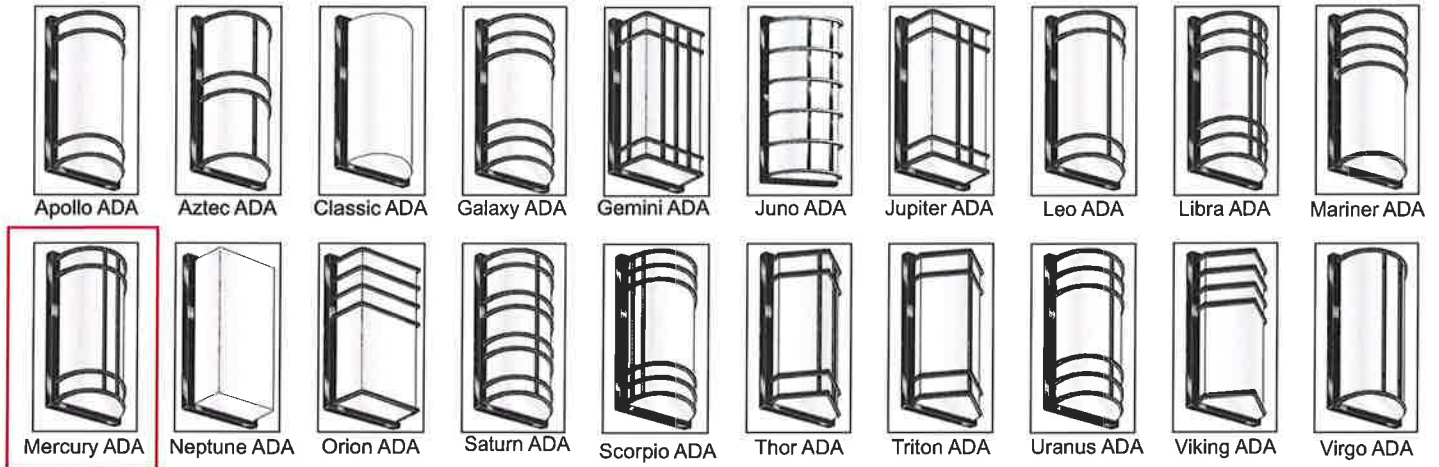
We reserve the right to revise the design or components of any product without notice.

CATALOG #	BASIC-R-XL1-ME-LED-10W-3K-EBU-D7-SGR-OQT-TOP ONLY	TYPE JAW
PROJECT/LOCATION	LOT #6	
APPROVED BY	JMLD	

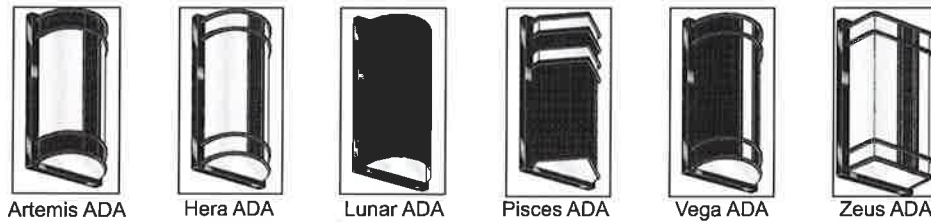
SPECIFICATIONS

- BACKPLATE — 16 Ga. aluminum (AL).
- BACKBOX — 16 Ga. aluminum (AL) with wire access on four sides and back through 7/8" dia. KO flattened water tight (Optional for surface conduit entry or standard with emergency battery).
- CAGE — Modular design using 3/8" or 1/2" Square extruded aluminum bars (SQB) permanently secured by hidden means to the frame. Standard configurations shown. Custom spacing available.
- DIFFUSER — White translucent, fully enclosed non-yellowing 100% virgin acrylic, .125 Thick (1/8"). Optional Clear (CTB) top and/or bottom — CTB is Standard with Uplight and/or Downlight; Opaque (OQTB) top and/or bottom; or Open (ONTB) top and/or bottom — Dry Location Only.
- FASTENERS — Stainless steel tamperproof screws —(2) To secure lens in place.
- FINISH — Corrosion and Weather resistant, extremely durable pre-treated oven baked polyester powder.
- GASKETING — High Temp., non-aging black EPDM and/or neoprene rubber around the entire lens perimeter & rear wire entrance hole to protect against dust, moisture & outside contaminants.
- MOUNTING — Use (4) or (6) 5/16" diameter holes for 1/4" diameter bolts for outdoor or indoor. 7/8" KO in Center for Wire Access. Must derate lamping for horizontal.
- PERFEX/SHIELD — PX: Perforated Aluminum Panel Insert with 1/16" dia. holes. SHLD: Solid Aluminum Opaque Shield (lamp/watt limits). Specify Finish if choosing Perfex or Shield.
- WALL WASH — CTB is Standard with Uplight or/and Downlight. For wall wash patterns specify: UP (Uplight) or DN (Downlight) or UP/DN (Up and Downlight).
- COMPLIANCE — Built to comply with U.S. and Canadian safety standards. Suitable for wet locations.

Galileo Basic R/Basic T: Round/Rectangular or Triangular Diffuser with No Perfex, No Shield



Galileo Signature: Any Shape Diffuser with Perfex (Consult Factory: May Require Lower Wattage)

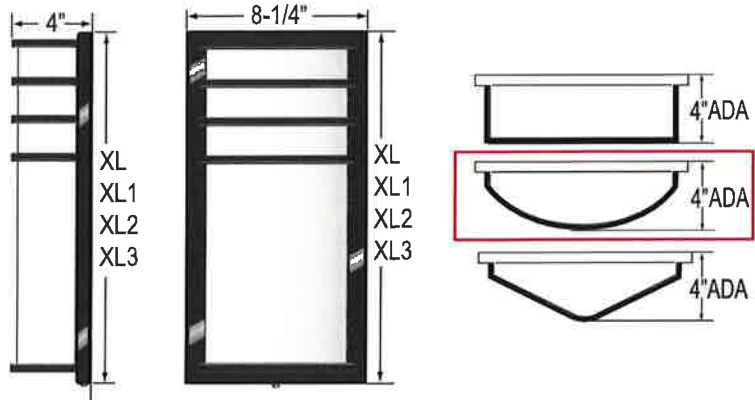


Galileo Elite: Any Shape Diffuser with Shield (Consult Factory: May Require Lower Wattage)



Galileo ADA

4" PROJECTION LED SCONCE
 ANY Shape Diffuser
 may include Perfix and/or Shield



LAMP TYPE/QTY/WATTAGE ¹					
Visit www.eclipselightinginc.com for available IES files					
Fixture Size		XL	XL1	XL2	XL3
Dimensions - W x H x D		8 1/4" x 18" x 4"	8 1/4" x 21" x 4"	8 1/4" x 26 1/4" x 4"	8 1/4" x 30" x 4"
Light Emitting Diode	LED	15w	20w 10	25w	25w
Light Emitting Diode ^{4b} Uplight/Downlight Clear Top/Bottom (CTB) Standard with UP/DN	UP/DN	5w			

**Consult Factory for CFL, Linear Fluorescent, HID, and Induction Lamping*

ORDERING GUIDE: Series **BASIC^R** Size **XL1** Lamp/Qty/Watt **ME-LED10W** Color Temp **3K** Voltage: Primary/Emergency **EBU-D7** Finish **SGR** Options **OQT - TOP ONLY**

SERIES

Refer to Index Page—Choose any rectangular, round or triangular model from Basic R, Basic T, Elite or Signature Series.

SIZE

- XL = 8.25" Wide x 18" Tall x 4" Deep
- XL1 = 8.25" Wide x 21" Tall x 4" Deep
- XL2 = 8.25" Wide x 26" Tall x 4" Deep
- XL3 = 8.25" Wide x 30" Tall x 4" Deep

LAMP TYPE/QUANTITY/WATTAGE

Refer to Above Chart

LED COLOR TEMPERATURE

- 3K = ±3000K Range
- 4K = ±4000K Range
- 5K = ±5000K Range

VOLTAGE

- 120 = 120 Volts
- 277 = 277 Volts
- 347 = 347 Volts
- EBU = Universal Volt (120-277v) Electronic Driver
- 2EBU = Two Universal Drivers

STANDARD PAINTED FINISH

- BK = Black Finish
- BZ = Bronze Finish — Standard
- PNA = Painted Natural Aluminum
- SGR = Silver Gray
- WH = White Finish

CUSTOM ORDER PAINTED FINISH

- CC = Custom Color (Provide Specs)
- CH = Corvel Chrome
- HBA = Hand Brushed Aluminum w/ Clear Coat

OPTIONS

- 9002 = Tamperproof Screwdriver
- ATBS = Aluminum Top & Bottom Shield (No Light)
- BB = 2" Backbox For EL or Surface Conduit
- CM = Ceiling Mount⁵
- CR = Custom Requirements
- CTB = Clear Top & Bottom (Standard with Up/Downlight)^{4b}
- FUS = Single Fusing
- DFUS = Double Fusing
- GTD = Generator Transfer Device (Bodine)
- GV = Gravura Custom Engraving
- HM = Horizontal Mount⁶
- OQTB = Opaque Top & Bottom (reduces light transmission)
- ONTB = Open Top & Bottom — Indoor only

LED OPTIONS

- BL1 = Bi-Level Light (High/Low) — Single AC Input Feed, with Switch Sensor (Required)
- BL2 = Bi-Level Light (High/Low) — Wired for Dual AC Input Feeds
- D7 = 0-10V low-voltage LED Dimming (100-30% Standard, Consult Factory for Other)
- MSE = Motion Sensor External² — Single circuit-all on, all off Specify Finish: White (WH)/Bronze (BZ)
- MSE2 = Motion Sensor External² — Dual circuit, half on half off Specify Finish: White (WH)/Bronze (BZ)
- MSI1 = Motion Sensor Integral^{4c} (Microwave) — Single Circuit: OFF / ALL-ON
- MSI2 = Motion Sensor Integral^{4c} (Microwave) — Single Circuit: HALF-ON / ALL-ON

EMERGENCY OPTIONS^{3,4a}

No onsite Emergency Power (AC or DC) is provided
 Specify Fixture Voltage: 120V or 277V Power Feed
 A=120V or B=277V

LED Emergency Battery

*CONSULT FACTORY for Remote LED Emergency Battery Options

NOTES:

- Consult Factory with requests regarding lamp sources including LED, color temp, wattages or voltages not shown.
- Backbox (BB) Required (where text bold and Note² shown)
- Consult Factory for additional Emergency Battery options not shown
- Consult Factory: May Require Lower Wattage or Backbox
- Max mounting height of fixture is 10' (10 feet)
- Clear Top and Bottom (CTB) is Standard with Uplight and/or Downlight (UP/DN)
- Consult Factory for other Voltage.
- Battery Available as Integral or Remote - Specify REL for Remote option (ie. EL1 = Integral; REL1 = Remote)
- Due to form and fit, final selection of the Battery Pack under discretion of Factory



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
1	DRAWING DESIGNATION	DESCRIPTION	MANUFACTURER	CATALOG NUMBER	MOUNTING	LAMP SOURCE	COLOR TEMP	CRI	WATTS	VOLTS	BEAM SPREAD	LAMP LUMENS	DELIVERED LUMENS *1	CURRENT RATING	DIMMING PROTOCOL	DIMMING THRESHOLD	CONTROL CONCEPT	COLOR	BUG RATING	DLC	UL LISTED	TOTAL QTY	LED REPLACEABLE	NOTES	PHOTOMETRIC FILE
2																									
3	JAW	CUT-OFF WALKWAY	ECLIPSE	BASIC-R-XL1-ME-AD-LED10W-3K-EBU-D7-SGR-OQT-TOP ONLY	SEE ARCHITECTURAL ELEVATIONS FOR MOUNTING HEIGHTS	LED	3,000 k	84	10	120	NA	NA	1046.8	AC	0-10V	DOWN TO 10%	FOUNDRY PLACE ON DUSK TO DAWN, AT THE COURTYARD FIXTURE OFF FROM 11:00 P.M. TILL DAWN	(SGR) SILVER GRAY	B-0; U-4; G-2	NO	WET	6	YES		102063649CHI-031 - 20 WATT PRO-RATA TO 10 WATTS TO BE UNDER THE 1,800 LUMEN CRITERIA
4	JBW	RECESS STEP LIGHT	WAC LIGHTING	WL-LED300-C-WT	RECESS IN WALL 2'-6" AFF TO BOTTOM OF EYELID	LED	3,000 k	85	3.9	120	NA	NA	74	AC	ELV	DOWN TO 10%	DIMMABLE AT EACH RESIDENCE AT DOOR TO DECK	(WT) WHITE	B-0; U-0; G-0	NO	WET	54	YES	MOUNT ON A BLOCK TO REDUCE PENETRATION INTO INSULATION	WL-LED300-C-WT.IES
5	JCW	WALL MOUNT ABOVE DOORS OR ON EAST SIDE	LUMINAIRE	AEL 12-10W-3000-120-277-DP-SVH-A/B	MOUNT UTILITY DOORS, PEOPLE DOOR TO GARAGE ON 1ST LEVEL AND ON EAST SIDE OF BUILDING WALKWAYS - SEE ARCHITECTURAL ELEVATIONS FOR MOUNTING HEIGHTS	LED	3,000 k	82	10.8	120-277	NA	NA	747	AC	ON/OFF	NA	ON-OFF ONLY DUSK TO DAWN	(SVH) HAMMERTONE SILVER	B-0; U-0; G-0	NO	WET	4	YES	FIXTURES ARE MOUNTED ON 1" BACKBOX SURFACE MOUNTED ON WALL	AEL12-10W-4000K.ies (LLI-14257-1) lumens adjusted for 3k
6	JCW-R	WALL MOUNT ABOVE DOORS	LUMINAIRE	AEL 12-7W-3000 K-120-DP-SVH-A/B	MOUNT UTILITY DOORS ON WEST SIDE FOUNDRY PLACE - SEE ARCHITECTURAL ELEVATIONS FOR MOUNTING HEIGHTS	LED	3,000 k	82	7	120-277	NA	NA	406.56	AC	ON/OFF	NA	ON-OFF ONLY DUSK TO DAWN	(SVH) HAMMERTONE SILVER	B-0; U-0; G-0	NO	WET	6	YES	FIXTURES ARE MOUNTED ON 1" BACKBOX SURFACE MOUNTED ON WALL	AEL12-10W-4000K.ies (LLI-14257-1) lumens adjusted for 3k, adjusted 30% lower watts & lumens (x.70)
7	JCW-R	WALL MOUNT	LUMINAIRE	AEL 12-7W-3000 K-120-DP-SVH-A/B	MOUNT ON WEST SIDE HILL STREET - SEE ARCHITECTURAL ELEVATIONS FOR MOUNTING HEIGHTS	LED	3,000 k	82	7	120-277	NA	NA	406.56	AC	ON/OFF	NA	ON-OFF ONLY DUSK TO DAWN	(SVH) HAMMERTONE SILVER	B-0; U-0; G-0	NO	WET	6	YES	FIXTURES ARE MOUNTED ON 1" BACKBOX SURFACE MOUNTED ON WALL	AEL12-10W-4000K.ies (LLI-14257-1) lumens adjusted for 3k, adjusted 30% lower watts & lumens (x.70)
8	JDW	WALL MOUNT ABOVE GARAGE	LUMINAIRE	AEL 36-15-3000-120-277-DP-SVH-DIM A/B	MOUNT ABOVE GARAGE DOORS - SEE ARCHITECTURAL ELEVATIONS FOR MOUNTING HEIGHTS	LED	3,000 k	82	14.1	120-277	NA	NA	1248	AC	0-10V	DOWN TO 10%	NORTH SIDE GARAGE VEHICLE ENTRANCE ON DUSK TO DAWN - SOUTH SIDE GARAGE VEHICLE ENTRANCE LIGHTS ON WHEN OWNERS ARE USING THE FACILITY	(SVH) HAMMERTONE SILVER	B-0; U-0; G-0	NO	WET	4	YES	FIXTURES ARE MOUNTED ON 1" BACKBOX SURFACE MOUNTED ON WALL	AEL36-15W-4000K.IES CALCULATION LUMENS AT 1,213 FOR 3,000 k
9	JER	RECESS LIGHTS AT CANOPIES	USAI LIGHTING	1020-W-B1-S-10-LRTD4-9020-M2-30KS-80-NCSM-120-DIML2-CB27	RECESS IN CEILING OF CANOPIES	LED	3,000 k	80	21.1	120	80	1,500	1,037	AC	0-10V	DOWN TO 10%	ON DUSK TO DAWN	WHITE	B-1 U-0: G-0	ENERGY STAR	WET	7	YES		1020-B1-S-10-LRTD4-9020-M2-30KS-80.IES (228892)
10	JFW-m	SOUTH SIDE WALKWAY	BEGA	22372-19522-BZ	RECESS IN WALL - SEE ARCHITECTURAL ELEVATIONS FOR MOUNTING HEIGHTS	LED	3,000 k	85	12.8	120	NA	NA	160	AC	0-10V	DOWN TO 10%	ON DUSK TO DAWN	(BZ) BRONZE	B-0; U-1: G-0	NO	WET	8	YES		
11	JFW-s	SOUTH SIDE WALKWAY	BEGA	22272-BZ	RECESS IN WALL - SEE ARCHITECTURAL ELEVATIONS FOR MOUNTING HEIGHTS	LED	3,000 k	85	12.05	120	NA	NA	131	AC	0-10V	DOWN TO 10%	ON DUSK TO DAWN	BRONZE	B-0; U-1: G-0	NO	WET	6	YES		22272.IES (L12131401)
12	JGW	GARAGE GRILL SCREENS LIGHT	BEACHSIDE	L-011-S-120V-8W-SP-BGS-PR-SGCM1	WALL MOUNT - SEE ARCHITECTURAL ELEVATIONS FOR MOUNTING HEIGHTS	LED	3,000 k	90	8	120	55	NA	500	AC	TRAILING EDGE DIMMERS	DOWN TO 20%	ON DUSK TO 11:00 p.m.	BRASS PATINA	FLOOD	NO	WET	7	YES	SORAA LAMP SM16GA-07-10D-830-03	
13	JHP RUN #1	CANTENARY COURTYARD	SELUX	LALC-R55-CL-5G150-10-30-SV-120-HL20-JMLD-HS	PENDENT MOUNTED OFF CATENARY STAINLESS CABLE 5/16" DIA. PROVIDED AND INSTALL BY DIVISION #5 CONTRACTOR	LED	3,000 k	80	15	120	NA	4463	1190	AC	HI-LO	HI-100%-LO-20%	DUSK TO 11:00 p.m. HIGH, THAN LOW TO DAWN	(SV) SILVER	B-2; U-1; G-1	NO	WET	1		HI-LO SWITCHING 4 CONDUCTORS	LALC-R56S-CL-X-5G450-30-XX-120.IES - COMPUTER GENERATED PHOTOMETRY BY PHOTOPIA
14	JHP RUN #2	CANTENARY COURTYARD	SELUX	LALC-R55-CL-5G150-25-30-SV-120-HL20-JMLD-HS	PENDENT MOUNTED OFF CATENARY STAINLESS CABLE 5/16" DIA. PROVIDED AND INSTALL BY DIVISION #5 CONTRACTOR	LED	3,000 k	80	15	120	NA	4463	1190	AC	HI-LO	HI-100%-LO-20%	DUSK TO 11:00 p.m. HIGH, THAN LOW TO DAWN	(SV) SILVER	B-2; U-1; G-1	NO	WET	1		HI-LO SWITCHING 4 CONDUCTORS	LALC-R56S-CL-X-5G450-30-XX-120.IES - COMPUTER GENERATED PHOTOMETRY BY PHOTOPIA
15	JHP RUN #3	CANTENARY COURTYARD	SELUX	LALC-DB-FL-5G150-10-30-SV-120-HL20-JMLD-HS	PENDENT MOUNTED OFF CATENARY STAINLESS CABLE 5/16" DIA. PROVIDED AND INSTALL BY DIVISION #5 CONTRACTOR	LED	3,000 k	80	15	120	NA	3981	1950	AC	HI-LO	HI-100%-LO-20%	DUSK TO 11:00 p.m. HIGH, THAN LOW TO DAWN	(SV) SILVER	B-1; U-3; G-2	NO	WET	1		HI-LO SWITCHING 4 CONDUCTORS	LALC-DB-FL-X-5G450-30-XX-120.IES - 11528333.01A

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
1	DRAWING DESIGNATION	DESCRIPTION	MANUFACTURER	CATALOG NUMBER	MOUNTING	LAMP SOURCE	COLOR TEMP	CRI	WATTS	VOLTS	BEAM SPREAD	LAMP LUMENS	DELIVERED LUMENS *1	CURRENT RATING	DIMING PROTOCOL	DIMING THRESHOLD	CONTROL CONCEPT	COLOR	BUG RATING	DLC	UL LISTED	TOTAL QTY	LED REPLACEABLE	NOTES	PHOTOMETRIC FILE
2																									
16	JHP RUN #4	CANTENARY COURTYARD	SELUX	LALC-R55-CL-5G150-15-30-SV-120-HL20-JMLD-HS	PENDENT MOUNTED OFF CATENARY STAINLESS CABLE 5/16" DIA. PROVIDED AND INSTALL BY DIVISION #5 CONTRACTOR	LED	3,000 k	80	15	120	NA	4463	1190	AC	HI-LO	HI-100%-LO-20%	DUSK TO 11:00 p.m. HIGH, THAN LOW TO DAWN	(SV) SILVER	B-2; U-1; G-1	NO	WET	1		HI-LO SWITCHING 4 CONDUCTORS	LALC-R56S-CL-X-5G450-30-XX-120.IES - COMPUTER GENERATED PHOTOMETRY BY PHOTOPIA
17	JHP RUN #5	CANTENARY COURTYARD	SELUX	LALC-R55-CL-5G150-20-30-SV-120-HL20-JMLD-HS	PENDENT MOUNTED OFF CATENARY STAINLESS CABLE 5/16" DIA. PROVIDED AND INSTALL BY DIVISION #5 CONTRACTOR	LED	3,000 k	80	15	120	NA	4463	1190	AC	HI-LO	HI-100%-LO-20%	DUSK TO 11:00 p.m. HIGH, THAN LOW TO DAWN	(SV) SILVER	B-2; U-1; G-1	NO	WET	1		HI-LO SWITCHING 4 CONDUCTORS	LALC-R56S-CL-X-5G450-30-XX-120.IES - COMPUTER GENERATED PHOTOMETRY BY PHOTOPIA
18	JHP RUN #6	CANTENARY COURTYARD	SELUX	LALC-DB-FL-5G150-10-30-SV-120-HL20-JMLD-HS	PENDENT MOUNTED OFF CATENARY STAINLESS CABLE 5/16" DIA. PROVIDED AND INSTALL BY DIVISION #5 CONTRACTOR	LED	3,000 k	80	15	120	NA	3981	1950	AC	HI-LO	HI-100%-LO-20%	DUSK TO 11:00 p.m. HIGH, THAN LOW TO DAWN	(SV) SILVER	B-1; U-3; G-2	NO	WET	1		HI-LO SWITCHING 4 CONDUCTORS	LALC-DB-FL-X-5G450-30-XX-120.IES - 11528333.01A
19																									
20			*1 = delivered lumens used for "NET Acres" lumen values																						

HILL STREET - COURTYARD ILLUMINATION LEVELS
COURTYARD ELEVATION 5.07 FEET ABOVE FOUNDRY PLACE ELEVATION.
CALCULATIONS ON HILL STREET ON A SLOPE PLANE RUNNING EAST TO TOP
ELEVATION OF EAST SIDE PATH
ALL LIGHT LEVELS INITIAL HORIZONTAL FOOT-CANDLES

J & M LIGHTING DESIGN, INC
207-967-5223
jmlight2@roadrunner.com
JUNE 15, 2017

Luminaire Definition(s)

JAW

CL-ADA-XL-LED15-4K-EBU-SGR 102063649CHI-031

Filename	102063649CHI-031.ies
Lumens Per Lamp	N.A.
Number of Lamps	1
Total Lamp Lumens	N.A.
Arrangement Lamp Lumens	N.A.
Arrangement Luminaire Lumens	2094
Luminaire Lumens	2094
Luminaire Efficiency (%)	N.A.
Total Light Loss Factor	0.400
Luminaire Watts	10
Arrangement Watts	10
Arrangement	SINGLE
Arm Length	0
Offset	0
Road Classification	Type IV, Very Short, N.A. (deprecated)
Upward Waste Light Ratio	0.50

Luminaire Classification System (LCS)	Lumens	% Lamp	% Luminaire
LCS-FL	51.5	N.A.	2.5
LCS-FM	307.5	N.A.	14.7
LCS-FH	361.4	N.A.	17.3
LCS-FVH	203.4	N.A.	9.7
LCS-BL	13.4	N.A.	0.6
LCS-BM	43.7	N.A.	2.1
LCS-BH	40.6	N.A.	1.9
LCS-BVH	22.0	N.A.	1.1
LCS-UL	225.7	N.A.	10.8
LCS-UH	824.4	N.A.	39.4
Total	2093.6	N.A.	100.0
BUG Rating	B0-U4-G2		
Indoor Classification	General Diffuse		
LER	209		

JCW

AEL12-10W 4000K

Filename	AEL12-10W-4000K.ies
Lumens Per Lamp	N.A.
Number of Lamps	28
Total Lamp Lumens	N.A.
Arrangement Lamp Lumens	N.A.
Arrangement Luminaire Lumens	726
Luminaire Lumens	726
Luminaire Efficiency (%)	N.A.
Total Light Loss Factor	0.800
Luminaire Watts	10.8
Arrangement Watts	10.8
Arrangement	SINGLE
Arm Length	0
Offset	0
Road Classification	Type III, Very Short, N.A. (deprecated)
Upward Waste Light Ratio	0.00

Luminaire Classification System (LCS)	Lumens	% Lamp	% Luminaire
LCS-FL	133.9	N.A.	18.4
LCS-FM	398.4	N.A.	54.9

Luminaire Definition(s) - Cont.

LCS-FH	117.9	N.A.	16.2
LCS-FVH	4.5	N.A.	0.6
LCS-BL	19.0	N.A.	2.6
LCS-BM	33.5	N.A.	4.6
LCS-BH	17.0	N.A.	2.3
LCS-BVH	1.7	N.A.	0.2
LCS-UL	0.0	N.A.	0.0
LCS-UH	0.0	N.A.	0.0
Total	725.9	N.A.	100.0
BUG Rating	B0-U0-G0		
Indoor Classification	Direct		
LER	67		

JCW-R

AEL12-10W 4000K

Filename	AEL12-10W-4000K.ies		
Lumens Per Lamp	N.A.		
Number of Lamps	28		
Total Lamp Lumens	N.A.		
Arrangement Lamp Lumens	N.A.		
Arrangement Luminaire Lumens	726		
Luminaire Lumens	726		
Luminaire Efficiency (%)	N.A.		
Total Light Loss Factor	0.400		
Luminaire Watts	5.4		
Arrangement Watts	5.4		
Arrangement	SINGLE		
Arm Length	0		
Offset	0		
Road Classification	Type III, Very Short, N.A. (deprecated)		
Upward Waste Light Ratio	0.00		

Luminaire Classification System (LCS)	Lumens	% Lamp	% Luminaire
LCS-FL	133.9	N.A.	18.4
LCS-FM	398.4	N.A.	54.9
LCS-FH	117.9	N.A.	16.2
LCS-FVH	4.5	N.A.	0.6
LCS-BL	19.0	N.A.	2.6
LCS-BM	33.5	N.A.	4.6
LCS-BH	17.0	N.A.	2.3
LCS-BVH	1.7	N.A.	0.2
LCS-UL	0.0	N.A.	0.0
LCS-UH	0.0	N.A.	0.0
Total	725.9	N.A.	100.0
BUG Rating	B0-U0-G0		
Indoor Classification	Direct		
LER	134		

JDW

1403201050-001 MOD# AEL36-14W 4000K

Filename	AEL36-15W-4000K.IES		
Lumens Per Lamp	N.A.		
Number of Lamps	1		
Total Lamp Lumens	N.A.		
Arrangement Lamp Lumens	N.A.		
Arrangement Luminaire Lumens	1213		

Luminaire Definition(s) - Cont.

Luminaire Lumens	1213
Luminaire Efficiency (%)	N.A.
Total Light Loss Factor	0.800
Luminaire Watts	14.1
Arrangement Watts	14.1
Arrangement	SINGLE
Arm Length	0
Offset	0
Road Classification	Type II, Very Short, N.A. (deprecated)
Upward Waste Light Ratio	0.00

Luminaire Classification System (LCS)	Lumens	% Lamp	% Luminaire
LCS-FL	271.9	N.A.	22.4
LCS-FM	568.7	N.A.	46.9
LCS-FH	117.9	N.A.	9.7
LCS-FVH	6.3	N.A.	0.5
LCS-BL	108.6	N.A.	9.0
LCS-BM	114.2	N.A.	9.4
LCS-BH	24.4	N.A.	2.0
LCS-BVH	1.1	N.A.	0.1
LCS-UL	0.0	N.A.	0.0
LCS-UH	0.0	N.A.	0.0
Total	1213.1	N.A.	100.0
BUG Rating	B0-U0-G0		
Indoor Classification	Direct		
LER	86		

JFW-m 22 372

Filename	22372.IES
Lumens Per Lamp	N.A.
Number of Lamps	1
Total Lamp Lumens	N.A.
Arrangement Lamp Lumens	N.A.
Arrangement Luminaire Lumens	160
Luminaire Lumens	160
Luminaire Efficiency (%)	N.A.
Total Light Loss Factor	0.800
Luminaire Watts	14.11
Arrangement Watts	14.11
Arrangement	SINGLE
Arm Length	0
Offset	0
Road Classification	Type II, Very Short, N.A. (deprecated)
Upward Waste Light Ratio	0.04

Luminaire Classification System (LCS)	Lumens	% Lamp	% Luminaire
LCS-FL	24.0	N.A.	15.0
LCS-FM	100.9	N.A.	63.0
LCS-FH	25.1	N.A.	15.7
LCS-FVH	4.0	N.A.	2.5
LCS-BL	0.0	N.A.	0.0
LCS-BM	0.0	N.A.	0.0
LCS-BH	0.0	N.A.	0.0
LCS-BVH	0.0	N.A.	0.0
LCS-UL	2.4	N.A.	1.5
LCS-UH	3.8	N.A.	2.4
Total	160.2	N.A.	100.0

Luminaire Definition(s) - Cont.

BUG Rating B0-U1-G0
 Indoor Classification Direct
 LER 11

JFW-s

22 272

Filename 22272.IES
 Lumens Per Lamp N.A.
 Number of Lamps 1
 Total Lamp Lumens N.A.
 Arrangement Lamp Lumens N.A.
 Arrangement Luminaire Lumens 131
 Luminaire Lumens 131
 Luminaire Efficiency (%) N.A.
 Total Light Loss Factor 0.800
 Luminaire Watts 12.05
 Arrangement Watts 12.05
 Arrangement SINGLE
 Arm Length 0
 Offset 0
 Road Classification Type II, Very Short, N.A. (deprecated)
 Upward Waste Light Ratio 0.04

Luminaire Classification System (LCS)	Lumens	% Lamp	% Luminaire
LCS-FL	14.8	N.A.	11.3
LCS-FM	77.3	N.A.	59.0
LCS-FH	28.8	N.A.	22.0
LCS-FVH	4.6	N.A.	3.5
LCS-BL	< 0.05	N.A.	0.0
LCS-BM	< 0.05	N.A.	0.0
LCS-BH	< 0.05	N.A.	0.0
LCS-BVH	< 0.05	N.A.	0.0
LCS-UL	2.0	N.A.	1.5
LCS-UH	3.4	N.A.	2.6
Total	130.9	N.A.	100.0

BUG Rating B0-U1-G0
 Indoor Classification Direct
 LER 11

JGW

E8-2W-A-FL

Filename IES_E8-2W-A-FL.IES
 Lumens Per Lamp N.A.
 Number of Lamps 1
 Total Lamp Lumens N.A.
 Arrangement Lamp Lumens N.A.
 Arrangement Luminaire Lumens 54
 Luminaire Lumens 54
 Luminaire Efficiency (%) N.A.
 Total Light Loss Factor 0.800
 Luminaire Watts 2.26
 Arrangement Watts 2.26
 Arrangement SINGLE
 Arm Length 0
 Offset 0
 Road Classification Type V, Very Short, N.A. (deprecated)

Luminaire Definition(s) - Cont.

Upward Waste Light Ratio	0.00		
Luminaire Classification System (LCS)	Lumens	% Lamp	% Luminaire
LCS-FL	21.0	N.A.	39.1
LCS-FM	5.0	N.A.	9.4
LCS-FH	0.7	N.A.	1.4
LCS-FVH	0.1	N.A.	0.1
LCS-BL	21.0	N.A.	39.1
LCS-BM	5.0	N.A.	9.4
LCS-BH	0.7	N.A.	1.4
LCS-BVH	0.1	N.A.	0.1
LCS-UL	0.0	N.A.	0.0
LCS-UH	0.0	N.A.	0.0
Total	53.6	N.A.	100.0
BUG Rating	B0-U0-G0		
Indoor Classification	Direct		
LER	24		

JHP-FROSTED

LALC-DB-FL-X-5G450-30-XX-120

Filename	LALC-DB-FL-X-5G450-30-XX-120.ies
Lumens Per Lamp	N.A.
Number of Lamps	1
Total Lamp Lumens	N.A.
Arrangement Lamp Lumens	N.A.
Arrangement Luminaire Lumens	3981
Luminaire Lumens	3981
Luminaire Efficiency (%)	N.A.
Total Light Loss Factor	0.264
Luminaire Watts	14.2
Arrangement Watts	14.2
Arrangement	SINGLE
Arm Length	0
Offset	0
Road Classification	Type V, Very Short, N.A. (deprecated)
Upward Waste Light Ratio	0.07

Luminaire Classification System (LCS)	Lumens	% Lamp	% Luminaire
LCS-FL	406.9	N.A.	10.2
LCS-FM	854.1	N.A.	21.5
LCS-FH	454.1	N.A.	11.4
LCS-FVH	140.3	N.A.	3.5
LCS-BL	406.9	N.A.	10.2
LCS-BM	854.1	N.A.	21.5
LCS-BH	454.1	N.A.	11.4
LCS-BVH	140.3	N.A.	3.5
LCS-UL	161.7	N.A.	4.1
LCS-UH	108.1	N.A.	2.7
Total	3980.6	N.A.	100.0
BUG Rating	B1-U3-G2		
Indoor Classification	Direct		
LER	280		

JHP-CLEAR v

LALC-R5S-CL-X-5G450-30-XX-120

Filename	LALC-R5S-CL-X-5G450-30-XX-120.ies
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Luminaire Definition(s) - Cont.

Lumens Per Lamp	N.A.
Number of Lamps	1
Total Lamp Lumens	N.A.
Arrangement Lamp Lumens	N.A.
Arrangement Luminaire Lumens	4463
Luminaire Lumens	4463
Luminaire Efficiency (%)	N.A.
Total Light Loss Factor	0.246
Luminaire Watts	14.2
Arrangement Watts	14.2
Arrangement	SINGLE
Arm Length	0
Offset	0
Road Classification	Type VS, Short, N.A. (deprecated)
Upward Waste Light Ratio	0.00

Luminaire Classification System (LCS)	Lumens	% Lamp	% Luminaire
LCS-FL	201.1	N.A.	4.5
LCS-FM	1029.3	N.A.	23.1
LCS-FH	988.5	N.A.	22.1
LCS-FVH	13.2	N.A.	0.3
LCS-BL	201.0	N.A.	4.5
LCS-BM	1028.7	N.A.	23.0
LCS-BH	988.1	N.A.	22.1
LCS-BVH	13.3	N.A.	0.3
LCS-UL	< 0.05	N.A.	0.0
LCS-UH	0.0	N.A.	0.0
Total	4463.2	N.A.	100.0
BUG Rating	B2-U1-G1		
Indoor Classification	Direct		
LER	314		

Luminaire Location(s)

Luminaire Locations

Project Name : Project_1

Coordinates in Feet

Lum. No.	Label	Aiming Point											Status
		X	Y	Z	Orient	Tilt	Roll	Spin	X	Y	Z		
37	JCW-R	164.826	108.444	11.22	0	0	0	0	164.826	108.444	11.22	On	
40	JCW-R	164.826	123.38	11.22	0	0	0	0	164.826	123.38	11.22	On	
41	JCW-R	164.826	139.37	11.22	0	0	0	0	164.826	139.37	11.22	On	
42	JCW	162.598	149.318	11.22	0	0	0	0	162.598	149.318	11.22	On	
1	JDW	39.567	52.554	15.33	270	0	0	0	39.567	52.554	15.33	On	
2	JDW	50.375	52.554	15.33	270	0	0	0	50.375	52.554	15.33	On	
3	JCW	60.864	56.999	12.78	0	0	0	0	60.864	56.999	12.78	On	
4	JFW-m	75.265	61.913	7.06	0	0	0	0	75.265	61.913	7.06	On	
12	JFW-m	125.5	63.5	6.73	270	0	0	0	125.5	63.5	6.73	On	
13	JFW-m	133	63.5	6.26	270	0	0	0	133	63.5	6.26	On	
14	JFW-m	140.5	63.5	5.89	270	0	0	0	140.5	63.5	5.89	On	
15	JFW-m	148	63.5	5.51	270	0	0	0	148	63.5	5.51	On	
16	JFW-m	155.5	63.5	5.14	270	0	0	0	155.5	63.5	5.14	On	
17	JFW-m	163	63.5	4.92	270	0	0	0	163	63.5	4.92	On	
21	JCW-R	164.826	71.223	11.22	0	0	0	0	164.826	71.223	11.22	On	
31	JCW-R	164.826	89.172	11.22	0	0	0	0	164.826	89.172	11.22	On	
35	JGW	77.271	102.389	11.53	180	45	0	0	77.271	102.389	11.53	On	
5	JFW-s	90	63.5	6.34	270	0	0	0	90	63.5	6.34	On	
6	JFW-s	94.5	63.5	6.34	270	0	0	0	94.5	63.5	6.34	On	
7	JFW-s	99	63.5	6.34	270	0	0	0	99	63.5	6.34	On	
8	JFW-s	103.5	63.5	6.34	270	0	0	0	103.5	63.5	6.34	On	
9	JFW-s	108	63.5	6.34	270	0	0	0	108	63.5	6.34	On	
10	JFW-s	112.5	63.5	6.34	270	0	0	0	112.5	63.5	6.34	On	
11	JFW-m	118	63.5	7.06	270	0	0	0	118	63.5	7.06	On	
22	JGW	77.271	71.93	11.53	180	45	0	0	77.271	71.93	11.53	On	
24	JGW	77.271	77.891	11.53	180	45	0	0	77.271	77.891	11.53	On	
25	JGW	77.271	83.79	11.53	180	45	0	0	77.271	83.79	11.53	On	
30	JGW	77.271	88.297	11.53	180	45	0	0	77.271	88.297	11.53	On	
32	JGW	77.271	94.076	11.53	180	45	0	0	77.271	94.076	11.53	On	
34	JGW	77.271	96.466	11.53	180	45	0	0	77.271	96.466	11.53	On	
29	JAW	116.219	86.958	11.22	180	0	0	0	116.219	86.958	11.22	On	
18	JHP-CLEAR v	83.482	64.656	11.65	90	0	0	0	83.482	64.656	11.65	On	
39	JHP-FROSTED	88.715	115.135	11.65	326.283	0	0	0	88.715	115.135	11.65	On	
46	JHP-CLEAR v	90.323	101.82	11.65	90	0	0	0	90.323	101.82	11.65	On	
45	JHP-CLEAR v	89.788	90.517	11.65	90	0	0	0	89.788	90.517	11.65	On	
43	JHP-CLEAR v	96.229	74.328	11.65	90	0	0	0	96.229	74.328	11.65	On	
44	JHP-FROSTED	110.809	83.629	11.65	90	0	0	0	110.809	83.629	11.65	On	

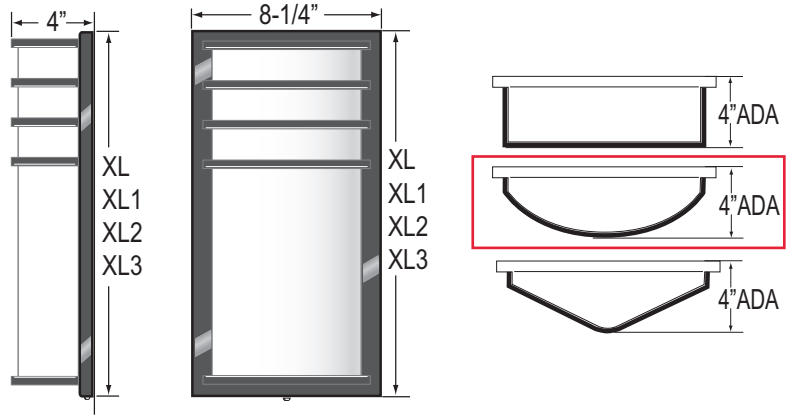
Summary By Label

Project Name : Project_1

Label	On	Off	Total
JAW	1	0	1
JCW	2	0	2
JCW-R	5	0	5
JDW	2	0	2
JFW-m	8	0	8
JFW-s	6	0	6
JGW	7	0	7
JHP-FROSTED	2	0	2
JHP-CLEAR v	4	0	4

Galileo ADA

4" PROJECTION LED SCONCE
 ANY Shape Diffuser
 may include Perfix and/or Shield



LAMP TYPE/QUANTITY/WATTAGE ¹					
Visit www.eclipselightinginc.com for available IES files					
Fixture Size		XL	XL1	XL2	XL3
Dimensions - W x H x D		8 1/4" x 18" x 4"	8 1/4" x 21" x 4"	8 1/4" x 26 1/4" x 4"	8 1/4" x 30" x 4"
Light Emitting Diode	LED	15w	20w 10	25w	25w
Light Emitting Diode ² Uplight/Downlight Clear Top/Bottom (CTB) Standard with UP/DN	UP/DN	5w			
*Consult Factory for CFL, Linear Fluorescent, HID, and Induction Lamping					

ORDERING GUIDE: Series **BASIC R** Size **XL1** Lamp/Qty/Watt **ME-LED10W** Color Temp **3K** Voltage: Primary/Emergency **EBU-D7** Finish **SGR** Options **QQT - TOP ONLY**

SERIES

Refer to Index Page—Choose any rectangular, round or triangular model from Basic R, Basic T, Elite or Signature Series.

SIZE

- XL = 8.25" Wide x 18" Tall x 4" Deep
- XL1 = 8.25" Wide x 21" Tall x 4" Deep
- XL2 = 8.25" Wide x 26" Tall x 4" Deep
- XL3 = 8.25" Wide x 30" Tall x 4" Deep

LAMP TYPE/QUANTITY/WATTAGE

Refer to Above Chart

LED COLOR TEMPERATURE

- 3K = ±3000K Range
- 4K = ±4000K Range
- 5K = ±5000K Range

VOLTAGE

- 120 = 120 Volts
- 277 = 277 Volts
- 347 = 347 Volts
- EBU = Universal Volt (120-277v) Electronic Driver
- 2EBU = Two Universal Drivers

STANDARD PAINTED FINISH

- BK = Black Finish
- BZ = Bronze Finish — Standard
- PNA = Painted Natural Aluminum
- SGR = Silver Gray
- WH = White Finish

CUSTOM ORDER PAINTED FINISH

- CC = Custom Color (Provide Specs)
- CH = Corvel Chrome
- HBA = Hand Brushed Aluminum w/ Clear Coat

OPTIONS

- 9002 = Tamperproof Screwdriver
- ATBS = Aluminum Top & Bottom Shield (No Light)
- BB = 2" Backbox For EL or Surface Conduit
- CM = Ceiling Mount⁶
- CR = Custom Requirements
- CTB = Clear Top & Bottom (Standard with Up/Downlight)⁴
- FUS = Single Fusing
- DFUS = Double Fusing
- GTD = Generator Transfer Device (Bodine)
- GV = Gravura Custom Engraving
- HM = Horizontal Mount⁶
- OQTB = Opaque Top & Bottom (reduces light transmission)
- ONTB = Open Top & Bottom — Indoor only

LED OPTIONS

- BL1 = Bi-Level Light (High/Low)
 - Single AC Input Feed, with Switch Sensor (Required)
- BL2 = Bi-Level Light (High/Low)
 - Wired for Dual AC Input Feeds
- D7 = 0-10V low-voltage LED Dimming (100-30% Standard, Consult Factory for Other)
- MSE = Motion Sensor External³
 - Single circuit-all on, all off
 - Specify Finish: White (WH)/Bronze (BZ)
- MSE2 = Motion Sensor External³
 - Dual circuit, half on half off
 - Specify Finish: White (WH)/Bronze (BZ)
- MSI1 = Motion Sensor Integral² (Microwave)
 - Single Circuit:-OFF / ALL-ON
- MSI2 = Motion Sensor Integral² (Microwave)
 - Single Circuit: HALF-ON / ALL-ON

EMERGENCY OPTIONS^{3 5}

No onsite Emergency Power (AC or DC) is provided
 Specify Fixture Voltage: 120V or 277V Power Feed
 A=120V or B=277V

LED Emergency Battery

*CONSULT FACTORY for Remote LED Emergency Battery Options

NOTES:

- ¹ Consult Factory with requests regarding lamp sources including LED, color temp, wattages or voltages not shown.
- ² Backbox (BB) Required (where text bold and Note² shown)
- ³ Consult Factory for additional Emergency Battery options not shown
- ⁴ Consult Factory: May Require Lower Wattage or Backbox
- ⁵ Max mounting height of fixture is 10' (10 feet)
- ⁶ Clear Top and Bottom (CTB) is Standard with Uplight and/or Downlight (UP/DN)
- ⁷ Consult Factory for other Voltage.
- ⁸ Battery Available as Integral or Remote - Specify REL for Remote option (ie. EL1 = Integral; REL1 = Remote)
- ⁹ Due to form and fit, final selection of the Battery Pack under discretion of Factory

06-15-2017



TYPE JAW

REDUCE LUMEN
OUTPUT USE A FACTOR
OF .40 FOR ACTUAL LUMEN
OUTPUT.

IES ROAD REPORT

PHOTOMETRIC FILENAME : 102063649CHI-031.IES

DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002
 [TEST] 102063649CHI-031
 [TESTDATE] 2/13/2017
 [TESTLAB] INTERTEK
 [ISSUEDATE]
 [MANUFAC] ECLIPSE LIGHTING INC
 [LUMCAT] CL-ADA-XL-LED15-4K-EBU-SGR
 [LUMINAIRE] WALL PACK
 [LAMP] LED
 [TOTALLUMINAIRELUMENS] 2095.5

CHARACTERISTICS

IES Classification	Type IV
Longitudinal Classification	Very Short
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	2094
Downward Total Efficiency	N.A. (absolute)
Total Luminaire Efficiency	N.A. (absolute)
Luminaire Efficacy Rating (LER)	108
Total Luminaire Watts	19.3 10 WATTS
Ballast Factor	1.00
Upward Waste Light Ratio	0.50
Maximum Candela	507.54
Maximum Candela Angle	360H 87.5V
Maximum Candela (<90 Degrees Vertical)	507.54
Maximum Candela Angle (<90 Degrees Vertical)	360H 87.5V
Maximum Candela At 90 Degrees Vertical	507.37 (24.2% Luminaire Lumens)
Maximum Candela from 80 to <90 Degrees Vertical	507.54 (24.2% Luminaire Lumens)
Cutoff Classification (deprecated)	N.A. (absolute)

IES ROAD REPORT
PHOTOMETRIC FILENAME : 102063649CHI-031.IES

LUMINAIRE CLASSIFICATION SYSTEM (LCS)

	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	51.5	N.A.	2.5
FM - Front-Medium (30-60)	307.5	N.A.	14.7
FH - Front-High (60-80)	361.4	N.A.	17.3
FVH - Front-Very High (80-90)	203.4	N.A.	9.7
BL - Back-Low (0-30)	13.4	N.A.	0.6
BM - Back-Medium (30-60)	43.7	N.A.	2.1
BH - Back-High (60-80)	40.6	N.A.	1.9
BVH - Back-Very High (80-90)	22.0	N.A.	1.1
UL - Uplight-Low (90-100)	225.7	N.A.	10.8
UH - Uplight-High (100-180)	824.4	N.A.	39.4
Total	2093.6	N.A.	100.0
BUG Rating	B0-U4-G2		

IES ROAD REPORT
PHOTOMETRIC FILENAME : 102063649CHI-031.IES

CANDELA TABULATION

Vert. Angles	Horizontal Angles									
	<u>0.0</u>	<u>22.5</u>	<u>45.0</u>	<u>67.5</u>	<u>90.0</u>	<u>112.5</u>	<u>135.0</u>	<u>157.5</u>	<u>180.0</u>	<u>202.5</u>
0.0	27.91	27.91	27.91	27.91	27.91	27.91	27.91	27.91	27.91	27.91
2.5	33.48	33.23	31.69	30.21	28.79	27.70	27.15	27.14	27.30	27.14
5.0	44.47	43.37	40.22	36.19	31.83	28.38	26.73	26.47	26.65	26.47
7.5	59.29	57.17	51.77	44.64	36.28	29.44	26.24	25.78	25.77	25.78
10.0	75.96	73.09	65.22	54.56	41.86	30.83	25.69	25.12	24.95	25.12
12.5	94.62	90.65	79.93	65.38	48.19	32.48	25.07	24.35	24.03	24.35
15.0	114.80	109.33	95.62	76.83	54.75	34.35	24.30	23.58	23.23	23.58
17.5	135.64	128.39	111.89	88.73	61.67	36.42	23.51	22.69	22.38	22.69
20.0	156.78	147.93	128.13	100.78	68.64	38.53	22.62	21.72	21.34	21.72
22.5	176.62	167.54	144.21	112.77	75.82	40.75	21.70	20.66	20.10	20.66
25.0	197.74	187.11	160.29	124.62	82.98	42.95	20.70	19.50	18.98	19.50
27.5	218.18	206.38	176.12	136.39	90.05	45.11	19.64	18.36	17.85	18.36
30.0	239.56	225.35	191.92	147.91	96.96	47.28	18.56	17.19	16.77	17.19
32.5	260.18	244.04	207.39	159.10	103.74	49.40	17.45	16.04	15.71	16.04
35.0	279.10	262.15	222.21	169.98	110.35	51.41	16.36	14.86	14.56	14.86
37.5	298.20	279.61	236.48	180.34	116.68	53.38	15.29	13.65	13.40	13.65
40.0	317.50	296.40	250.27	190.40	122.69	55.23	14.17	12.45	12.17	12.45
42.5	335.41	312.54	263.56	200.13	128.47	56.96	13.03	11.30	11.07	11.30
45.0	353.15	328.30	276.48	209.44	134.03	58.50	11.90	10.16	9.90	10.16
47.5	368.87	343.51	288.84	218.37	139.35	60.04	10.77	8.98	8.79	8.98
50.0	383.96	357.82	300.61	226.83	144.38	61.44	9.67	7.81	7.65	7.81
52.5	398.84	371.35	311.74	234.75	149.06	62.80	8.57	6.71	6.56	6.71
55.0	412.94	384.34	322.32	242.31	153.41	63.97	7.47	5.64	5.50	5.64
57.5	426.43	396.63	332.19	249.29	157.42	64.99	6.39	4.62	4.47	4.62
60.0	438.80	407.70	341.28	255.74	161.10	65.83	5.33	3.65	3.55	3.65
62.5	449.69	417.82	349.60	261.58	164.40	66.61	4.30	2.79	2.85	2.79
65.0	459.82	427.27	357.49	267.02	167.43	67.28	3.34	2.08	2.32	2.08
67.5	469.53	435.96	364.65	272.05	170.18	67.87	2.50	1.61	2.11	1.61
70.0	478.15	443.75	370.88	276.43	172.57	68.35	1.83	1.55	0.00	1.55
72.5	485.83	450.51	376.27	280.12	174.54	68.76	1.39	0.00	0.00	0.00
75.0	492.51	456.31	380.95	283.26	176.19	69.17	1.38	0.00	0.00	0.00
77.5	497.95	461.16	384.82	285.80	177.46	69.55	1.41	0.00	0.00	0.00
80.0	501.93	464.81	387.72	287.55	178.34	69.99	1.41	0.00	0.00	0.00
82.5	504.54	467.42	389.72	288.79	178.85	70.35	1.43	0.00	0.00	0.00
85.0	506.46	469.17	391.13	289.61	179.18	70.59	1.44	0.00	0.00	0.00
87.5	507.54	470.20	392.02	290.20	179.43	70.78	1.43	0.00	0.00	0.00
90.0	507.37	470.00	392.01	290.57	180.13	71.38	1.45	0.00	0.00	0.00
92.5	506.52	469.22	391.50	290.77	180.79	71.98	1.47	0.00	0.00	0.00
95.0	505.31	468.25	390.87	290.43	180.79	72.05	1.47	0.00	0.00	0.00
97.5	503.54	466.55	389.68	289.85	180.69	72.05	1.47	0.00	0.00	0.00
100.0	500.76	463.94	387.77	288.80	180.38	71.92	1.46	0.00	0.00	0.00
102.5	496.64	460.32	384.89	287.09	179.71	71.71	1.46	0.00	0.00	0.00
105.0	491.72	455.73	381.23	284.80	178.68	71.65	1.45	1.74	0.00	1.74
107.5	485.65	450.02	376.80	281.91	177.25	71.52	1.68	1.72	2.41	1.72
110.0	478.01	443.15	371.25	278.27	175.46	71.30	2.23	1.74	2.37	1.74
112.5	469.05	435.14	364.98	274.01	173.13	71.05	2.96	2.08	2.47	2.08
115.0	459.54	426.57	358.16	269.24	170.64	70.67	3.80	2.70	2.90	2.70
117.5	449.60	417.60	350.88	264.15	167.94	70.23	4.74	3.45	3.51	3.45
120.0	438.58	407.57	342.77	258.66	164.85	69.62	5.72	4.31	4.31	4.31
122.5	426.42	396.29	333.59	252.43	161.24	68.83	6.73	5.26	5.24	5.26
125.0	412.97	383.96	323.72	245.26	157.12	67.82	7.73	6.22	6.14	6.22
127.5	398.87	370.91	313.23	237.67	152.86	66.68	8.73	7.20	7.05	7.20
130.0	384.15	357.34	302.08	229.89	148.34	65.50	9.76	8.19	7.97	8.19

IES ROAD REPORT
PHOTOMETRIC FILENAME : 102063649CHI-031.IES

CANDELA TABULATION - (Cont.)

132.5	368.77	342.98	290.46	221.66	143.47	64.12	10.80	9.23	8.95	9.23
135.0	352.41	328.04	278.12	212.84	138.20	62.63	11.87	10.32	10.06	10.32
137.5	334.89	312.30	265.32	203.48	132.65	60.99	12.90	11.40	11.22	11.40
140.0	316.85	295.96	251.84	193.80	126.98	59.38	13.93	12.49	12.31	12.49
142.5	298.50	279.18	237.96	183.81	120.98	57.49	14.94	13.52	13.38	13.52
145.0	279.94	261.64	223.61	173.20	114.62	55.40	15.96	14.57	14.43	14.57
147.5	259.84	243.48	208.28	162.08	107.80	53.32	16.98	15.63	15.57	15.63
150.0	238.93	224.51	192.85	150.89	100.93	51.09	17.95	16.69	16.70	16.69
152.5	218.10	205.51	177.22	139.33	93.97	48.83	18.91	17.74	17.78	17.74
155.0	197.57	186.63	161.35	127.48	86.85	46.47	19.85	18.71	18.84	18.71
157.5	176.51	167.18	145.27	115.56	79.62	44.03	20.75	19.69	19.67	19.69
160.0	154.50	146.96	128.56	103.16	72.20	41.64	21.65	20.59	20.52	20.59
162.5	133.25	126.82	111.87	90.70	64.89	39.11	22.44	21.38	21.41	21.38
165.0	112.56	107.55	95.36	78.63	57.64	36.66	23.19	22.16	22.20	22.16
167.5	92.29	88.43	79.45	66.93	50.46	34.25	23.92	22.86	22.90	22.86
170.0	72.94	70.37	64.59	55.66	43.67	32.03	24.54	23.53	23.54	23.53
172.5	55.96	54.39	50.92	45.00	37.50	29.95	25.07	24.08	24.08	24.08
175.0	41.31	40.68	39.04	35.93	32.12	28.10	25.48	24.65	24.63	24.65
177.5	30.51	30.47	30.13	29.36	28.17	26.75	25.66	25.16	25.21	25.16
180.0	26.17	26.17	26.17	26.17	26.17	26.17	26.17	26.17	26.17	26.17

Vert. Horizontal Angles

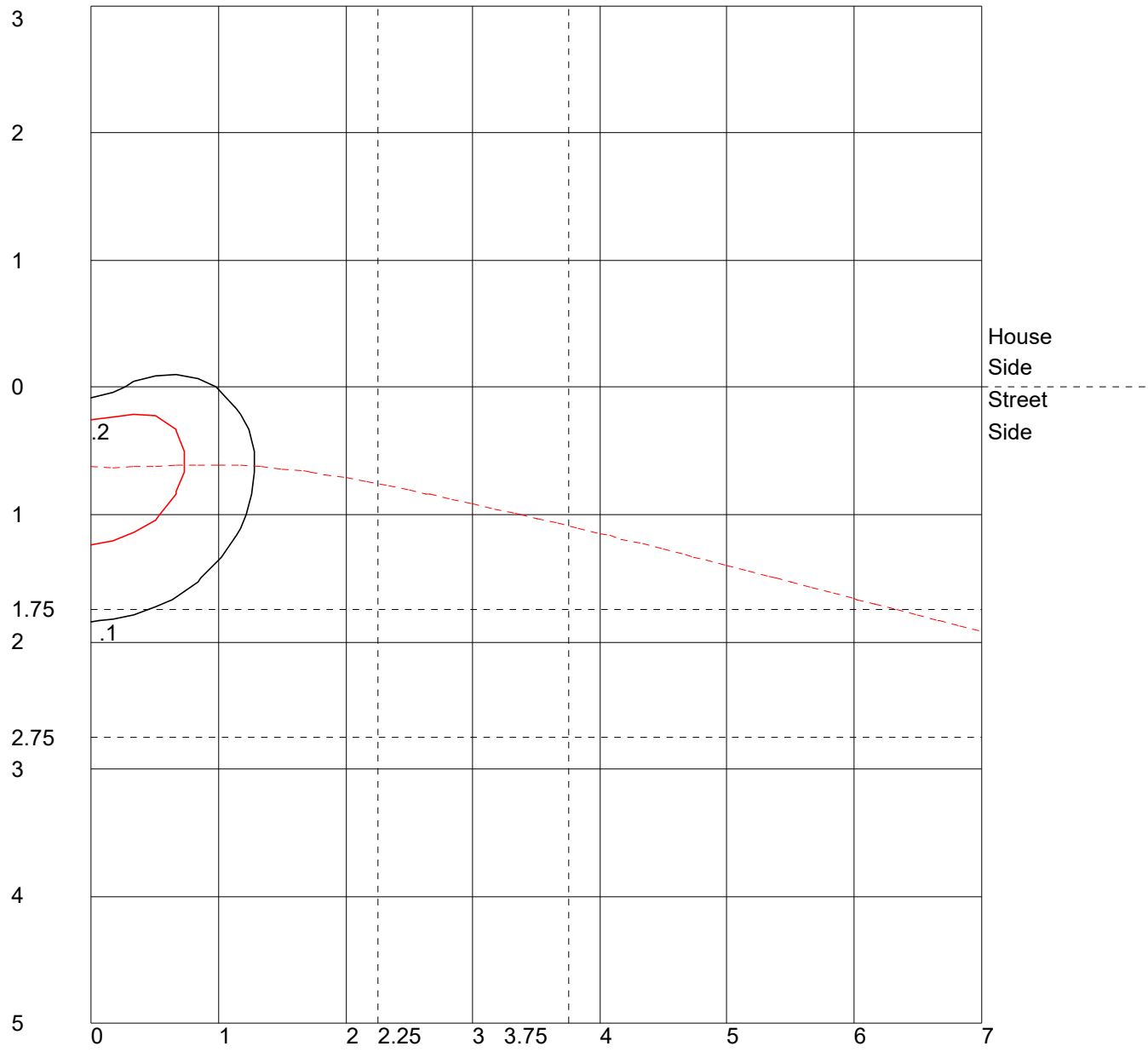
	225.0	247.5	270.0	292.5	315.0	337.5	360.0
0.0	27.91	27.91	27.91	27.91	27.91	27.91	27.91
2.5	27.15	27.70	28.79	30.21	31.69	33.23	33.48
5.0	26.73	28.38	31.83	36.19	40.22	43.37	44.47
7.5	26.24	29.44	36.28	44.64	51.77	57.17	59.29
10.0	25.69	30.83	41.86	54.56	65.22	73.09	75.96
12.5	25.07	32.48	48.19	65.38	79.93	90.65	94.62
15.0	24.30	34.35	54.75	76.83	95.62	109.33	114.80
17.5	23.51	36.42	61.67	88.73	111.89	128.39	135.64
20.0	22.62	38.53	68.64	100.78	128.13	147.93	156.78
22.5	21.70	40.75	75.82	112.77	144.21	167.54	176.62
25.0	20.70	42.95	82.98	124.62	160.29	187.11	197.74
27.5	19.64	45.11	90.05	136.39	176.12	206.38	218.18
30.0	18.56	47.28	96.96	147.91	191.92	225.35	239.56
32.5	17.45	49.40	103.74	159.10	207.39	244.04	260.18
35.0	16.36	51.41	110.35	169.98	222.21	262.15	279.10
37.5	15.29	53.38	116.68	180.34	236.48	279.61	298.20
40.0	14.17	55.23	122.69	190.40	250.27	296.40	317.50
42.5	13.03	56.96	128.47	200.13	263.56	312.54	335.41
45.0	11.90	58.50	134.03	209.44	276.48	328.30	353.15
47.5	10.77	60.04	139.35	218.37	288.84	343.51	368.87
50.0	9.67	61.44	144.38	226.83	300.61	357.82	383.96
52.5	8.57	62.80	149.06	234.75	311.74	371.35	398.84
55.0	7.47	63.97	153.41	242.31	322.32	384.34	412.94
57.5	6.39	64.99	157.42	249.29	332.19	396.63	426.43
60.0	5.33	65.83	161.10	255.74	341.28	407.70	438.80
62.5	4.30	66.61	164.40	261.58	349.60	417.82	449.69
65.0	3.34	67.28	167.43	267.02	357.49	427.27	459.82
67.5	2.50	67.87	170.18	272.05	364.65	435.96	469.53
70.0	1.83	68.35	172.57	276.43	370.88	443.75	478.15
72.5	1.39	68.76	174.54	280.12	376.27	450.51	485.83
75.0	1.38	69.17	176.19	283.26	380.95	456.31	492.51
77.5	1.41	69.55	177.46	285.80	384.82	461.16	497.95

IES ROAD REPORT
PHOTOMETRIC FILENAME : 102063649CHI-031.IES

CANDELA TABULATION - (Cont.)

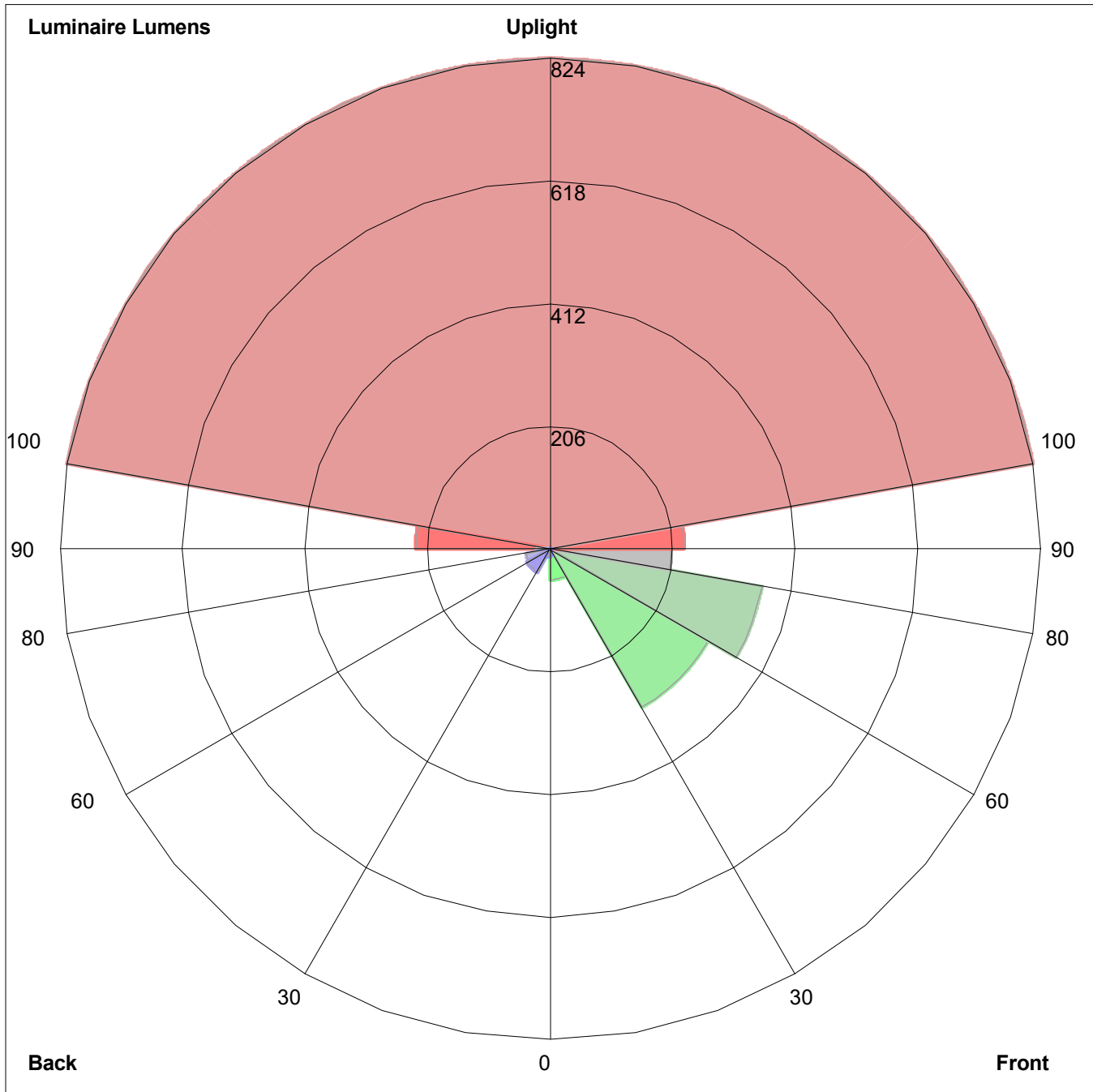
80.0	1.41	69.99	178.34	287.55	387.72	464.81	501.93
82.5	1.43	70.35	178.85	288.79	389.72	467.42	504.54
85.0	1.44	70.59	179.18	289.61	391.13	469.17	506.46
87.5	1.43	70.78	179.43	290.20	392.02	470.20	507.54
90.0	1.45	71.38	180.13	290.57	392.01	470.00	507.37
92.5	1.47	71.98	180.79	290.77	391.50	469.22	506.52
95.0	1.47	72.05	180.79	290.43	390.87	468.25	505.31
97.5	1.47	72.05	180.69	289.85	389.68	466.55	503.54
100.0	1.46	71.92	180.38	288.80	387.77	463.94	500.76
102.5	1.46	71.71	179.71	287.09	384.89	460.32	496.64
105.0	1.45	71.65	178.68	284.80	381.23	455.73	491.72
107.5	1.68	71.52	177.25	281.91	376.80	450.02	485.65
110.0	2.23	71.30	175.46	278.27	371.25	443.15	478.01
112.5	2.96	71.05	173.13	274.01	364.98	435.14	469.05
115.0	3.80	70.67	170.64	269.24	358.16	426.57	459.54
117.5	4.74	70.23	167.94	264.15	350.88	417.60	449.60
120.0	5.72	69.62	164.85	258.66	342.77	407.57	438.58
122.5	6.73	68.83	161.24	252.43	333.59	396.29	426.42
125.0	7.73	67.82	157.12	245.26	323.72	383.96	412.97
127.5	8.73	66.68	152.86	237.67	313.23	370.91	398.87
130.0	9.76	65.50	148.34	229.89	302.08	357.34	384.15
132.5	10.80	64.12	143.47	221.66	290.46	342.98	368.77
135.0	11.87	62.63	138.20	212.84	278.12	328.04	352.41
137.5	12.90	60.99	132.65	203.48	265.32	312.30	334.89
140.0	13.93	59.38	126.98	193.80	251.84	295.96	316.85
142.5	14.94	57.49	120.98	183.81	237.96	279.18	298.50
145.0	15.96	55.40	114.62	173.20	223.61	261.64	279.94
147.5	16.98	53.32	107.80	162.08	208.28	243.48	259.84
150.0	17.95	51.09	100.93	150.89	192.85	224.51	238.93
152.5	18.91	48.83	93.97	139.33	177.22	205.51	218.10
155.0	19.85	46.47	86.85	127.48	161.35	186.63	197.57
157.5	20.75	44.03	79.62	115.56	145.27	167.18	176.51
160.0	21.65	41.64	72.20	103.16	128.56	146.96	154.50
162.5	22.44	39.11	64.89	90.70	111.87	126.82	133.25
165.0	23.19	36.66	57.64	78.63	95.36	107.55	112.56
167.5	23.92	34.25	50.46	66.93	79.45	88.43	92.29
170.0	24.54	32.03	43.67	55.66	64.59	70.37	72.94
172.5	25.07	29.95	37.50	45.00	50.92	54.39	55.96
175.0	25.48	28.10	32.12	35.93	39.04	40.68	41.31
177.5	25.66	26.75	28.17	29.36	30.13	30.47	30.51
180.0	26.17	26.17	26.17	26.17	26.17	26.17	26.17

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINANCE



Distance In Units Of Mounting Height
 Values Based On 22 Foot Mounting Height
 1/2 Maximum Candela Trace Shown As Dashed Curve
 (+) = Maximum Candela Point

LUMINAIRE CLASSIFICATION SYSTEM (LCS) GRAPH



Luminaire Lumens:
 Front: Low=51.5, Medium=307.5, High=361.4, Very High=203.4
 Back: Low=13.4, Medium=43.7, High=40.6, Very High=22.0
 Uplight: Low=225.7, High=824.4

BUG Rating : B0-U4-G2

**IES ROAD REPORT****PHOTOMETRIC FILENAME : WL-LED300-C-WT.IES****DESCRIPTIVE INFORMATION (From Photometric File)**

IESNA:LM-63-2001

[TEST]

[TESTLAB] WAC LIGHTING PHOTOMETRIC LAB

[TESTDATE] 2011-10-28

[ISSUE DATE] 18-FEB-2001

[NEARFIELD]

[LAMPPOSITION] 0,0

[OTHER] EVERFINE

[MANUFAC] WAC LIGHTING

[LUMCAT] WL-LED300-C-WT

[LUMINAIRE] recessed light

[LAMPCAT] LED

[LAMP] SAMSUNG LED

CHARACTERISTICS

IES Classification	N.A.
Longitudinal Classification	N.A.
Lumens Per Lamp	271 (1 lamp)
Total Lamp Lumens	271
Luminaire Lumens	74
Downward Total Efficiency	27 %
Total Luminaire Efficiency	27 %
Luminaire Efficacy Rating (LER)	19
Total Luminaire Watts	3.9
Ballast Factor	1.00
Upward Waste Light Ratio	0.00
Maximum Candela	49.6
Maximum Candela Angle	270H 50V
Maximum Candela (<90 Degrees Vertical)	49.6
Maximum Candela Angle (<90 Degrees Vertical)	270H 50V
Maximum Candela At 90 Degrees Vertical	0 (0.0% Lamp Lumens)
Maximum Candela from 80 to <90 Degrees Vertical	2.2 (0.8% Lamp Lumens)
Cutoff Classification (deprecated)	Full Cutoff

IES ROAD REPORT
PHOTOMETRIC FILENAME : WL-LED300-C-WT.IES

LUMINAIRE CLASSIFICATION SYSTEM (LCS)

	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	9.7	3.6	13.1
FM - Front-Medium (30-60)	23.3	8.6	31.5
FH - Front-High (60-80)	4.6	1.7	6.3
FVH - Front-Very High (80-90)	0.3	0.1	0.4
BL - Back-Low (0-30)	9.4	3.5	12.7
BM - Back-Medium (30-60)	21.8	8.1	29.5
BH - Back-High (60-80)	4.5	1.7	6.1
BVH - Back-Very High (80-90)	0.4	0.1	0.5
UL - Uplight-Low (90-100)	0.0	0.0	0.0
UH - Uplight-High (100-180)	0.0	0.0	0.0
Total	74.0	27.4	100.0
BUG Rating	B0-U0-G0		

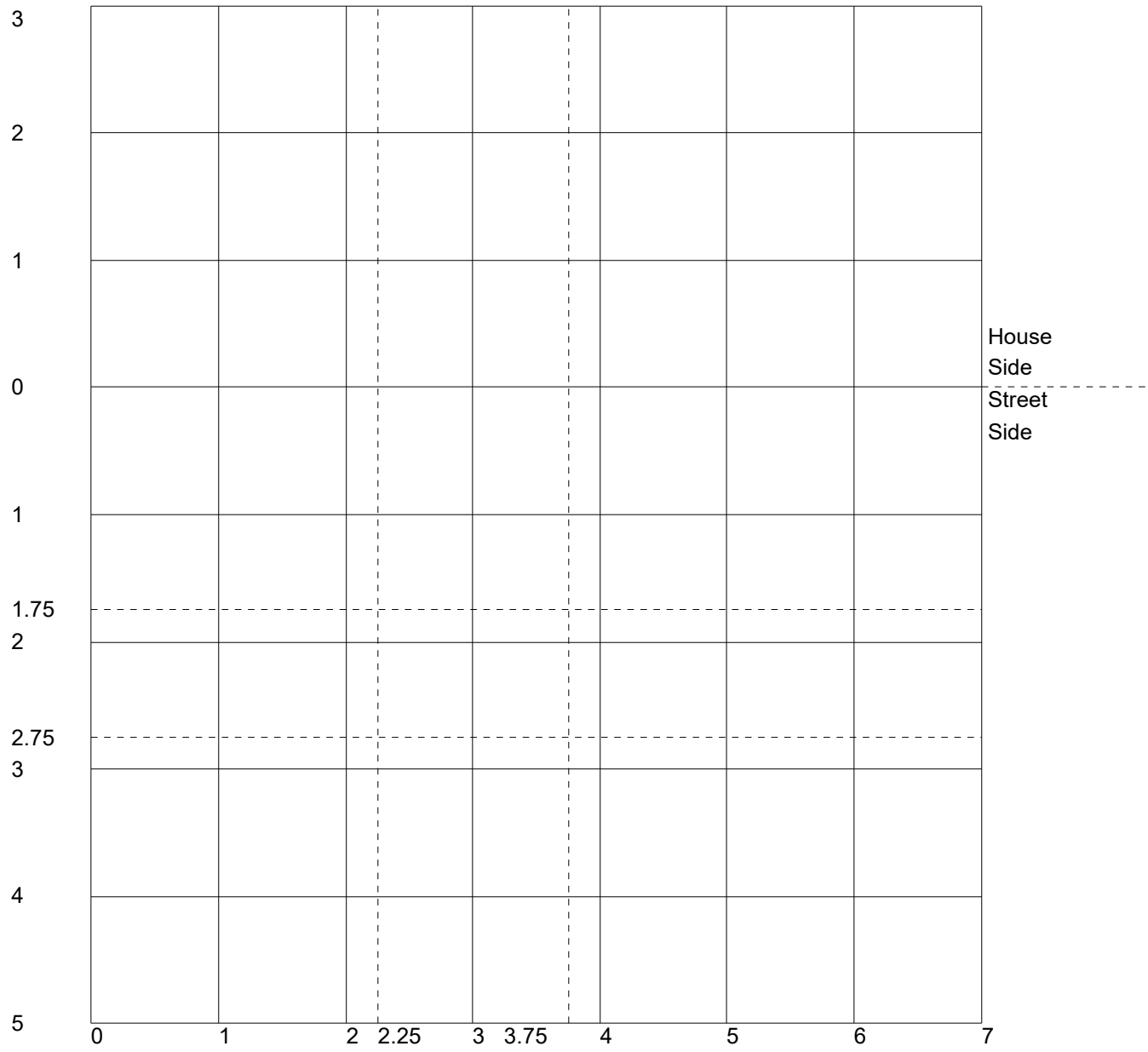
IES ROAD REPORT
PHOTOMETRIC FILENAME : WL-LED300-C-WT.IES

CANDELA TABULATION

Vert. Angles	Horizontal Angles									
	<u>0</u>	<u>30</u>	<u>60</u>	<u>90</u>	<u>120</u>	<u>150</u>	<u>180</u>	<u>210</u>	<u>240</u>	<u>270</u>
0	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9
5	22.8	22.1	22.1	21.4	22.0	22.0	22.7	22.6	22.7	22.7
10	22.5	21.4	20.9	19.9	20.8	21.1	22.4	22.3	22.9	25.1
15	22.0	20.3	19.5	18.1	19.3	19.9	21.9	21.9	25.4	29.8
20	21.4	19.1	17.8	16.4	17.5	18.5	21.1	22.2	28.9	34.4
25	20.5	17.7	16.2	14.7	15.9	17.0	20.2	23.1	32.2	38.5
30	19.5	16.1	14.5	13.2	14.2	15.3	19.1	24.1	35.1	42.2
35	18.0	14.4	13.0	11.9	12.8	13.7	17.8	24.3	37.4	44.9
40	16.1	12.6	11.5	10.6	11.4	12.1	15.8	23.7	38.8	47.0
45	13.8	10.9	10.3	9.5	10.2	10.5	13.6	22.2	39.8	48.9
50	11.4	9.2	9.0	8.3	9.0	9.0	11.1	17.5	39.7	49.6
55	9.0	7.7	7.8	7.2	7.8	7.6	8.9	10.7	34.8	45.5
60	6.9	6.2	6.7	6.1	6.7	6.3	6.9	6.6	18.5	22.0
65	5.3	5.0	5.5	5.0	5.6	5.0	5.3	4.6	7.8	7.9
70	4.1	3.7	4.4	3.8	4.4	3.9	4.1	3.2	4.3	3.6
75	2.8	2.6	3.2	2.7	3.3	2.7	2.9	1.9	2.4	2.0
80	1.6	1.5	2.1	1.6	2.2	1.6	1.9	1.0	1.3	0.8
85	0.6	0.5	0.9	0.6	1.1	0.6	0.8	0.2	0.3	0.1
90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

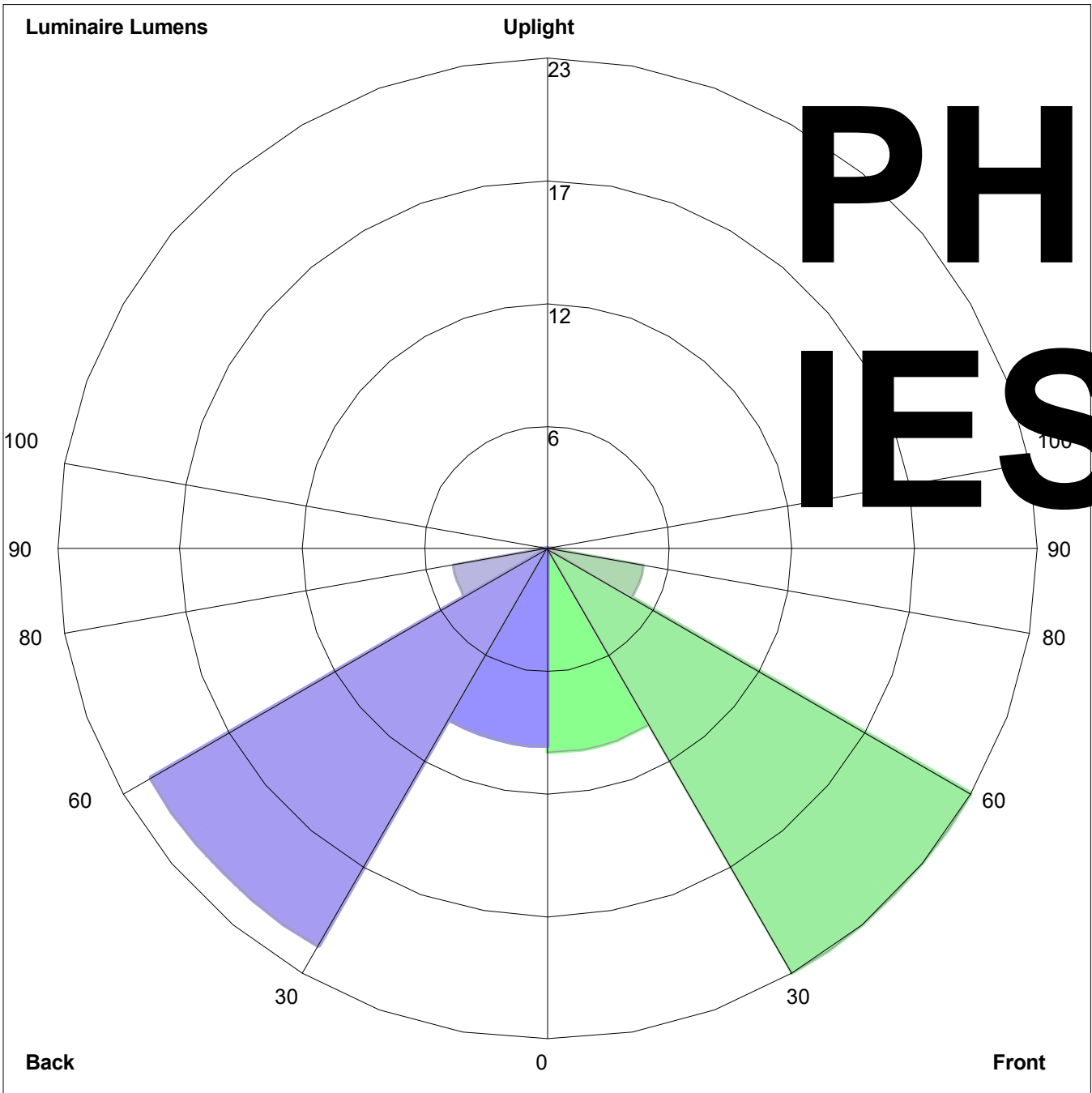
Vert. Angles	Horizontal Angles		
	<u>300</u>	<u>330</u>	<u>360</u>
0	22.9	22.9	22.9
5	22.7	22.6	22.8
10	23.1	22.3	22.5
15	26.1	22.6	22.0
20	30.0	24.2	21.4
25	33.7	25.9	20.5
30	37.1	27.5	19.5
35	39.8	28.2	18.0
40	41.6	28.1	16.1
45	43.0	26.9	13.8
50	43.5	22.3	11.4
55	40.2	13.0	9.0
60	22.6	7.3	6.9
65	8.6	4.9	5.3
70	4.5	3.2	4.1
75	2.5	1.9	2.8
80	1.2	0.9	1.6
85	0.3	0.2	0.6
90	0.0	0.0	0.0

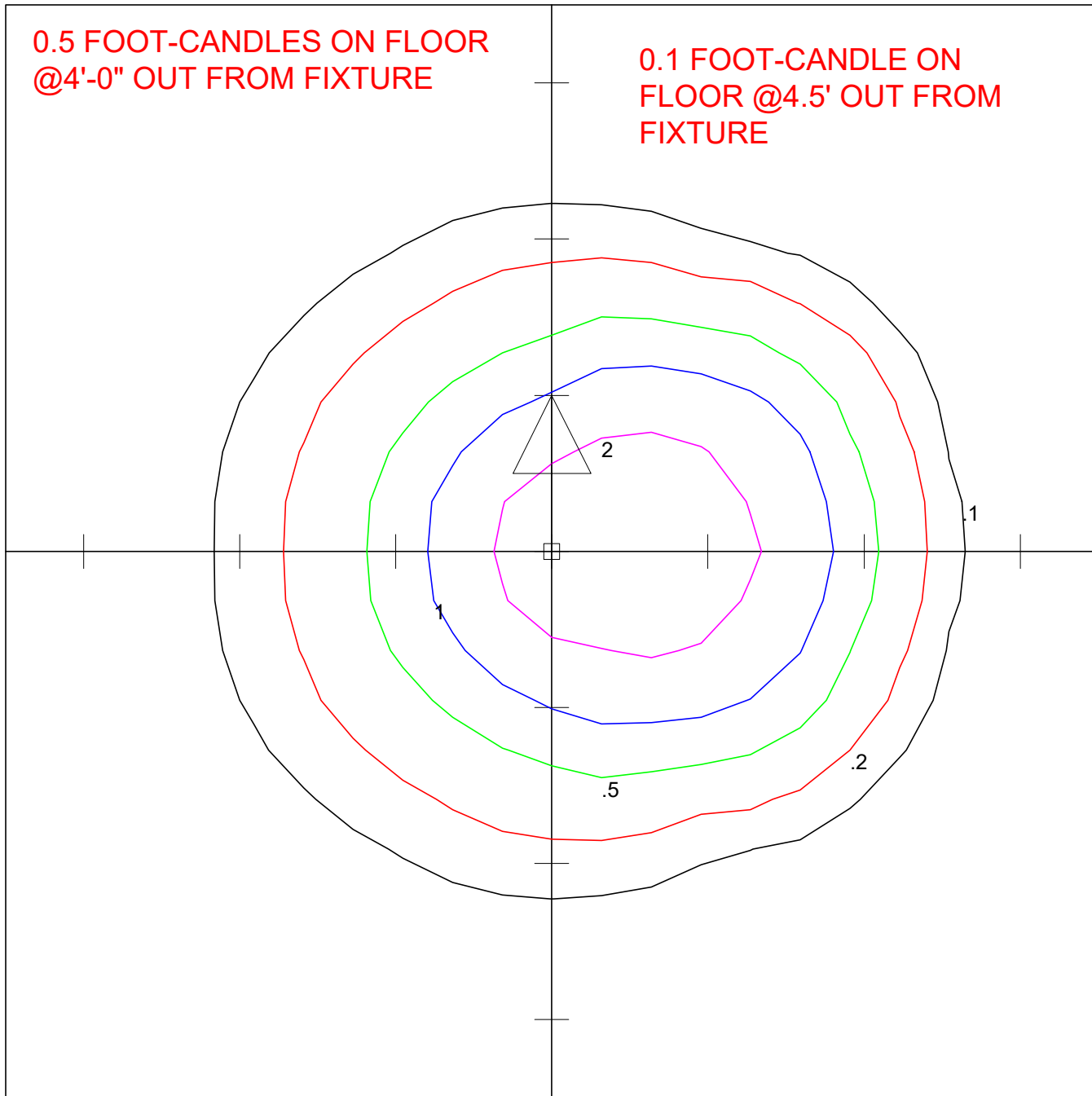
ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINANCE



Distance In Units Of Mounting Height
Values Based On 22 Foot Mounting Height

PHOTO LUMINES





WAC LIGHTING
WL-LED300-C-WT
recessed light
SAMSUNG LED

MOUNTING HEIGHT 2'-6"

Horizontal Footcandles
Scale: 1 Inch = 2 Ft.
Light Loss Factor = 0.80
Lumens Per Lamp = 271
Total Lamp Lumens = 271
Mounting Height = 2.50 Ft
Maximum Calculated Value = 3.62 Fc
Arrangement: Single

PHOTOMETRIC FILENAME : WL-LED300-C-WT.IES

DESCRIPTIVE INFORMATION (From Photometric File)

WAC LIGHTING
WL-LED300-C-WT
recessed light
SAMSUNG LED

TEMPLATE SPECIFICATION

Horizontal Footcandles
Scale: 1 Inch = 2 Ft.
Light Loss Factor = 0.80
Lumens Per Lamp = 271
Total Lamp Lumens = 271
Mounting Height = 2.50 Ft
Maximum Calculated Value = 3.62 Fc
Arrangement: Single

LUMINAIRE LAYOUT INFORMATION

<u>#</u>	<u>X</u>	<u>Y</u>	<u>Z</u>	<u>Orient</u>	<u>Tilt</u>	<u>Roll</u>	<u>Spin</u>	<u>Tilt Correction</u>
1	0.00	0.00	2.50	90.00	0.00	0.00	0.00	1.00

06-15-2017

Model: WL-LED300

LEDme® Step Light

WAC LIGHTING

Responsible Lighting®



Fixture Type:

JBW

Catalog Number:

SEE BELOW

Project:

Location:

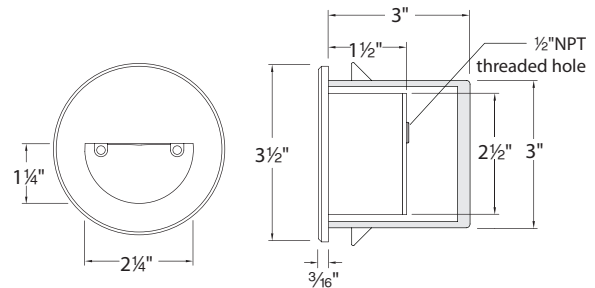
EXTERIOR DECKS

PRODUCT DESCRIPTION

Circular scoop LEDme® Step Light. Designed for safety and style on stairways, patios, decks, balcony areas, walkways and building perimeters. Features an architectural design. Energy efficient for long-lasting indoor and outdoor lighting solutions. Creates an attractive, romantic impression at night. Colored lights can be used for way finding.

FEATURES

- Direct wiring, no driver needed
- Low profile, flush to wall aesthetics with no visible hardware
- 40,000 hour rated life
- Balanced lighting, free of shadows with minimum glare
- Up to 200 fixtures can be connected in parallel
- Replaceable LED module
- 5 year WAC Lighting product warranty



ORDER NUMBER

Model	Light Color	Finish	Lumens
WL-LED300 120V	C White	BN* Brushed Nickel	30
		BZ Bronze	33
		WT White	74
	AM Amber	BN* Brushed Nickel	19
		BZ Bronze	21
		WT White	38
	RD Red	BN* Brushed Nickel	2
		BZ Bronze	2
		WT White	4
	BL Blue	BN* Brushed Nickel	3
		BZ Bronze	4
		WT White	8

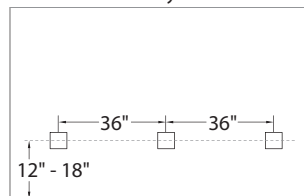
*Brushed Nickel Finish is for interior use only

WL-LED300 - **C** - **WT**

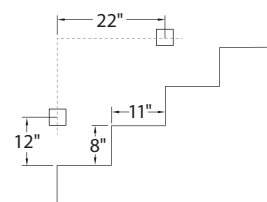
Example: WL-LED300-C-WT

SPACING RECOMMENDATIONS FOR OPTIMAL LIGHT DISTRIBUTION

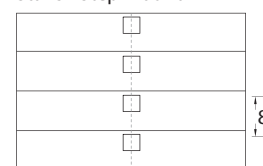
Corridors / Hallways



Stairs - Wall Mount



Stairs - Step Mount



Mount in center of stair as close to the upper tread as possible. For best results use one light per step for steps narrower than 5'.

wacighting.com

Phone (800) 526.2588

Fax (800) 526.2585

Headquarters/Eastern Distribution Center

44 Harbor Park Drive

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1750 Archibald Avenue

Ontario, CA 91760

ARCHITECTURAL EGRESS

Vandal Resistant

AEL Full Cut-Off LED



WALL MOUNT
LED

Fixture Type	Date
Job Name	Approved By
Catalog Number	

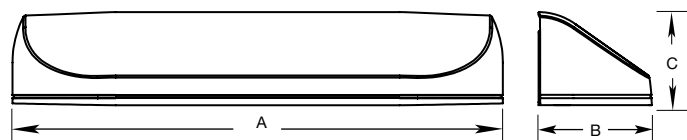
SPECIFICATIONS

- Description** The Architectural Egress Luminaire combines a unique, patented design shaped with high performance, full cut-off optics to achieve completely unobtrusive illumination of a space or path of egress. When mounted over a doorway, the fixture is perceived as an element of the building structure and, additionally, provides water protection in the form of a drip cap over the doorway. Multiple lengths are available to match a given door opening and our unique quick mount system facilitates installation and maintenance.
- Housing** Marine grade heat treated extruded aluminum. Chemically primed and finished with robotically applied polyester powder coat.
- Wall Mount** Marine grade heat treated extruded aluminum. Chemically primed and finished with robotically applied polyester powder coat. Designed to provide quick mounting to housing and secured with (2) captive stainless steel TORX® head screws.
- Lens Frame** Marine grade heat treated extruded aluminum, clear anodized. Secured to fixture via integral concealed hinge and (3) captive stainless steel TORX® head screws.
- Lens** UV stabilized diffused extruded polycarbonate.
- End Caps** Die-cast marine grade aluminum continuously welded to housing. All welds ground smooth.
- Reflector** Electrostatically brightened anodized aluminum PVD coated and absolutely color-free of iridescence. Shaped to provide full cutoff, LED point dispersion and maximum efficiency.
- Drivers** Constant current drivers at 350mA. High output version utilizes 700mA.
- LED** Samsung LM561B+ Series @ 3000K, 3500K, 4000K, or 5000K and 82 CRI wired in parallel-series. L₇₀ projected life of 130,000 hours at 50°C. Tested in accordance with LM-80. Ten year warranty on LED boards against operational defects.
- Gaskets** Closed cell self-adhesive neoprene to provide watertight seal between fixture and wall and between fixture and lens frame.
- UL Listing** U.L., C.U.L., Wet standard.
- Lifetime Warranty** Luminaire LED Incorporated will repair or replace any fixture damaged due to vandalism for the lifetime of the installation.



DIMENSIONAL DATA

	A	B	C
AEL 12	20.79	5.40	3.60
AEL 24	32.04	5.40	3.60
AEL 36	43.29	5.40	3.60
AEL 48	54.75	5.40	3.60
AEL 72	78.75	5.40	3.60



ARCHITECTURAL EGRESS

Vandal Resistant

Fixture Type

AEL Full Cut-Off LED

ORDERING INFORMATION

SERIES	LED	CCT	VOLTS	LENS	COLOR	OPTIONS		TX/SD
AEL 12	12" - 10W	3000K	120-277	DP	BKH	DIM	EMBDA	
AEL 24	24" - 10W	3500K	347		BZH	A/B	EMB310	
AEL 36	24" - 20W	4000K			SVH	2B	EMB310ST	
AEL 48	36" - 15W	5000K			WOP	PC	EMB20R	
AEL 72	36" - 30W				PCP	GLR	EMB125R	
	48" - 20W				CUST	OCC	EMB250R	
	48" - 35W						ST/SC	
	72" - 30W							
	72" - 55W							

OPTIONS

LENS	DP = Diffused Polycarbonate.
COLORS	BKH = Black (Hammerstone) BZH = Bronze (Hammerstone) SVH = Silver (Hammerstone) WOP = White (Textured White) PCP = Black (Prime Coat Paintable) CUST = Custom Color (Consult Factory)
DIM	0-10V dimming driver. N/A with AEL12. 10% at lowest level.
A/B	Aluminum surface back box. Finished with polyester powder coat to match the fixture.
PC	Photoelectric switch.
2B	(2) LED drivers for independent LED based operation. N/A with AEL12. N/A with the OCC option.
GLR	Fuse and fuse holder.
EMB310	1000 lumen self-contained, 90 minute emergency battery pack. Available for 36", 48" and 72" lengths only. 0°C (32°F) to 55°C (131°F). Not available in 347V.
EMB310ST	1000 lumen self-testing, self-contained, 90 minute emergency battery pack. Available for 36", 48" and 72" lengths only. 0°C (32°F) to 55°C (131°F). Not available in 347V.
EMB20R	Remote mounted micro inverter that will operate a 25W maximum load for 90 minutes. 0°C (32°F) to 45°C (113°F).
EMB125R	Remote inverter that will operate a 125W maximum load for 90 minutes. 20°C (68°F) to 30°C (86°F). Not available in 347V.
EMB250R	Remote inverter that will operate a 250W maximum load for 90 minutes. 20°C (68°F) to 30°C (86°F). Not available in 347V.
EMBDA	Two drivers and two emergency battery packs self-contained within fixture for independent light engine operation. Each battery pack will operate each light engine for a minimum of 90 minutes. Available in the 72" length only. Not available in 347V.
OCC	Passive infrared sensor mounted in machine hole in end cap. Maximum coverage of 10' radius from 8' height.
ST/SC	Slotted screws instead of TORX® head.
TX/SD	TORX® head bit.

ARCHITECTURAL EGRESS

Vandal Resistant

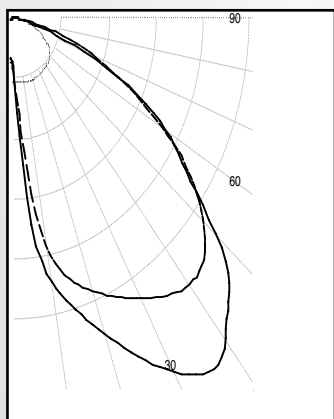
Fixture Type

AEL Full Cut-Off LED

PHOTOMETRIC DATA

Model	Watts	Input Watts	Delivered Lumens			
			3000K	3500K	4000K	5000K
AEL 12	10W	10.8W	747	760	784	807
AEL 24	10W	9.4W	832	847	873	899
AEL 24	20W	17.6W	1557	1585	1634	1682
AEL 36	15W	14.9W	1248	1271	1310	1348
AEL 36	30W	26.3W	2995	3049	3143	3237
AEL 48	20W	18.8W	1935	1969	2030	2090
AEL 48	35W	35.2W	3616	3682	3796	3909
AEL 72	30W	27.9W	3162	3217	3317	3417
AEL 72	55W	52.2W	5911	6017	6203	6389

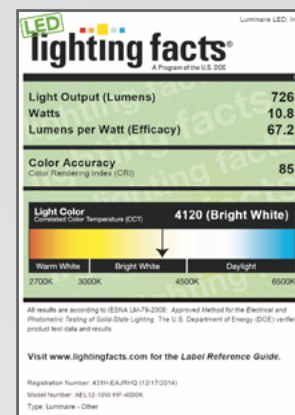
MODEL AEL12-10W-4000K
Delivered Lumens: 726 Lumens



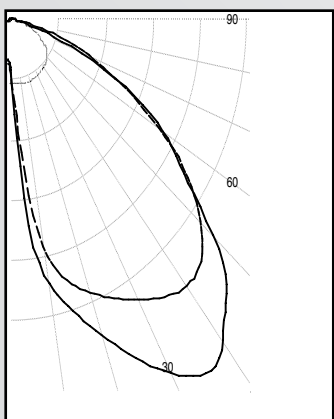
IES FILE: AEL12-10W-4000K
Total Power: 10.8W

Zone	Lumens	% Lamps
0 - 30	153	21.1
0 - 40	287	39.5
0 - 60	585	80.6
60 - 90	726	100.0
0 - 90	439	60.5
90 -180	0	0.0
0 - 180	726	100.0

Testing was performed in accordance with IES LM-79-08
Bug Rating: B0U0G0



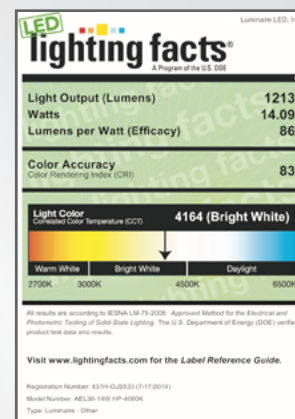
MODEL AEL36-15W-4000K
Delivered Lumens: 1213 Lumens



IES FILE: AEL36-15W-4000K
Total Power: 14.09W

Zone	Lumens	% Lamps
0 - 30	381	31.4
0 - 40	635	52.3
0 - 60	1063	87.7
60 - 90	150	12.3
0 - 90	1213	100.0
90 -180	0	0.0
0 - 180	1213	100.0

Testing was performed in accordance with IES LM-79-08
Bug Rating: B0U1G0



ARCHITECTURAL EGRESS

Vandal Resistant

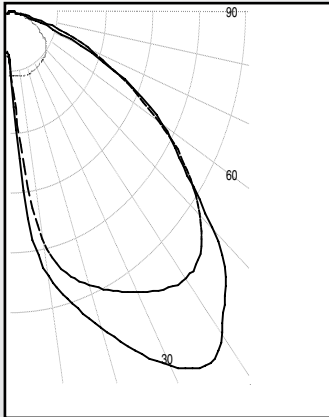
Fixture Type

AEL Full Cut-Off LED

PHOTOMETRIC DATA

MODEL AEL36-30W-4000K

Delivered Lumens: 2911 Lumens



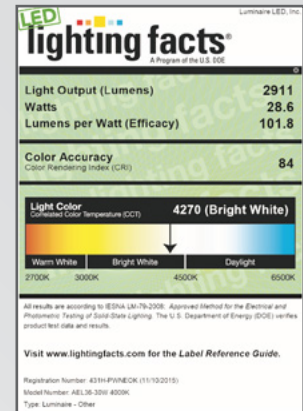
IES FILE: AEL36-30W-4000K

Total Power: 28.6W

Testing was performed in accordance with IES LM-79-08

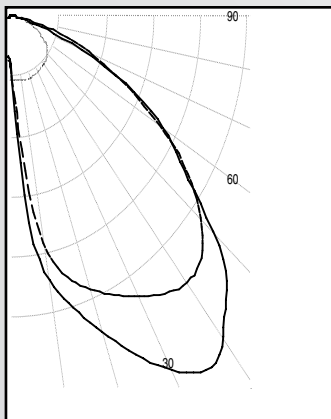
Bug Rating: B0U0G0

Zone	Lumens	% Lamps
0 - 30	754	25.9
0 - 40	1308	44.9
0 - 60	2417	83.0
60 - 90	494	17.0
0 - 90	2911	100.0
90 - 180	0	0.0
0 - 180	2911	100.0



MODEL AEL72-30W-4000K

Delivered Lumens: 3072 Lumens



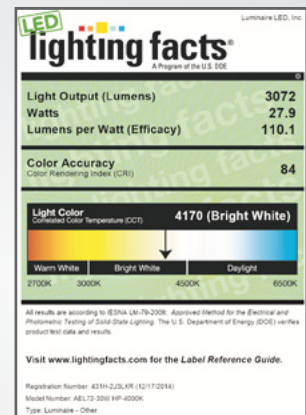
IES FILE: AEL72-30W-4000K

Total Power: 27.09W

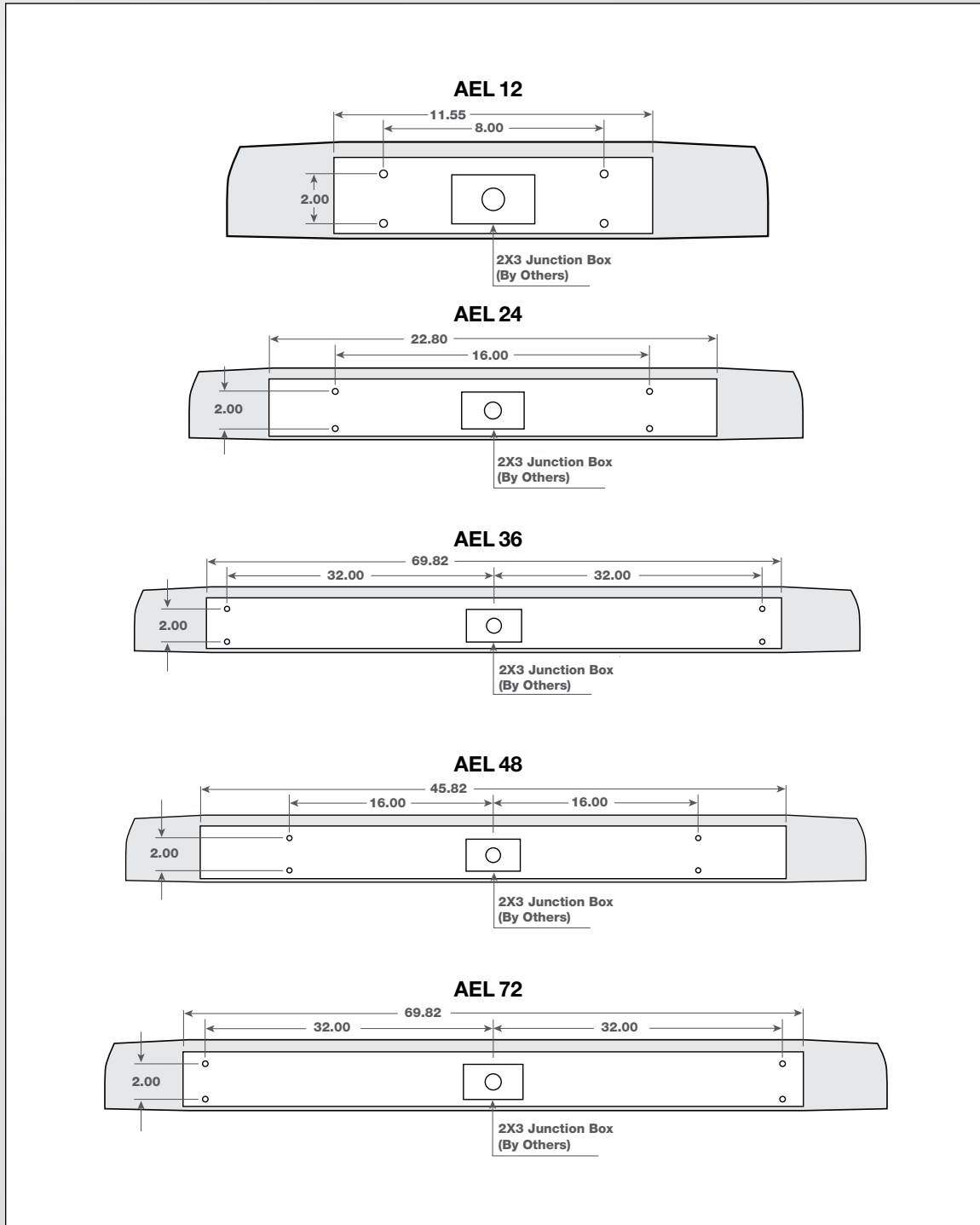
Testing was performed in accordance with IES LM-79-08

Bug Rating: B1U0G1

Zone	Lumens	% Lamps
0 - 30	771	25.1
0 - 40	1353	44.1
0 - 60	2529	82.3
60 - 90	3072	100.0
0 - 90	1718	17.7
90 - 180	542	0.0
0 - 180	3072	100.0



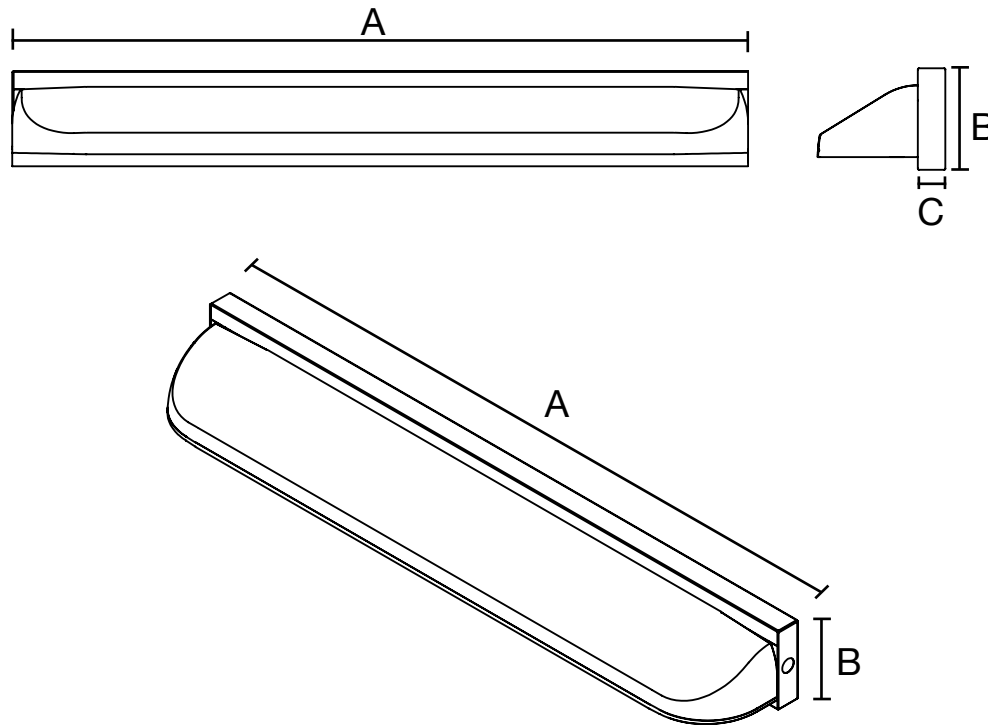
MOUNTING PLATE DETAILS



ALUMINUM BACKBOX DETAIL

A/B Detail

	A	B	C
AEL 12 Backbox	20.80	5.20	1.50
AEL 24 Backbox	31.48	5.20	1.50
AEL 36 Backbox	43.30	5.20	1.50
AEL 48 Backbox	54.75	5.20	1.50
AEL 72 Backbox	78.75	5.20	1.50



**IES ROAD REPORT****PHOTOMETRIC FILENAME : AEL12-10W-4000K.IES****DESCRIPTIVE INFORMATION (From Photometric File)**

IESNA:LM-63-2002

[TEST] LLI-14257-1

[TESTLAB] LightLab International (www.LightLabInt.com)

[MANUFAC] Luminaire LED, Inc., Edison, New Jersey, 08817

[LUMCAT] AEL12-10W 4000K

[LUMINAIRE] Luminaire LED Architectural Egress Luminaire. Cat No:AEL12-10W 4000K

[MORE] Painted extruded aluminum body with endcaps and a horizontal finely etched planar glass diffuser 2.5"x10.4".

[MORE] Two piece aluminum asymmetric reflector with single 1 x 28 array of LEDs spaced at 0.38".

[MORE] LED strip screws to black extruded heat sink. Luminaire extents ~ 5-1/2 x 21 x 3-1/2".

[MORE] One integral Thomas Research Products LED12W-16-C0700 100-277V 50/60Hz driver.

[MORE] Tested wall mount position at 120V.

[OTHER] Absolute test - lamp lumens value set to -1

[MORE] NA conventions used for C0 plane alignment and C-plane rotation direction.

[MORE] The sample was tested at a distance of 8m.

[MORE] This IES file created by LightLab/LSA Report program version 3.804a.

[DATE] This file created: Thursday, 23 October 2014 3:27:26 PM

[ISSUE DATE] Thursday, 23 October 2014 3:27:26 PM

CHARACTERISTICS

IES Classification	Type III
Longitudinal Classification	Very Short
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	726
Downward Total Efficiency	N.A. (absolute)
Total Luminaire Efficiency	N.A. (absolute)
Luminaire Efficacy Rating (LER)	67
Total Luminaire Watts	10.8
Ballast Factor	1.00
Upward Waste Light Ratio	0.00
Maximum Candela	540.37
Maximum Candela Angle	0H 36.5V
Maximum Candela (<90 Degrees Vertical)	540.37
Maximum Candela Angle (<90 Degrees Vertical)	0H 36.5V
Maximum Candela At 90 Degrees Vertical	0 (0.0% Luminaire Lumens)
Maximum Candela from 80 to <90 Degrees Vertical	32.97 (4.5% Luminaire Lumens)
Cutoff Classification (deprecated)	N.A. (absolute)

IES ROAD REPORT
PHOTOMETRIC FILENAME : AEL12-10W-4000K.IES

LUMINAIRE CLASSIFICATION SYSTEM (LCS)

	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	133.9	N.A.	18.4
FM - Front-Medium (30-60)	398.4	N.A.	54.9
FH - Front-High (60-80)	117.9	N.A.	16.2
FVH - Front-Very High (80-90)	4.5	N.A.	0.6
BL - Back-Low (0-30)	19.0	N.A.	2.6
BM - Back-Medium (30-60)	33.5	N.A.	4.6
BH - Back-High (60-80)	17.0	N.A.	2.3
BVH - Back-Very High (80-90)	1.7	N.A.	0.2
UL - Uplight-Low (90-100)	0.0	N.A.	0.0
UH - Uplight-High (100-180)	0.0	N.A.	0.0
Total	725.9	N.A.	100.0
BUG Rating	B0-U0-G0		

IES ROAD REPORT
PHOTOMETRIC FILENAME : AEL12-10W-4000K.IES

CANDELA TABULATION

Vert. Angles	Horizontal Angles									
	<u>0.0</u>	<u>10.0</u>	<u>20.0</u>	<u>22.5</u>	<u>30.0</u>	<u>40.0</u>	<u>45.0</u>	<u>50.0</u>	<u>60.0</u>	<u>67.5</u>
0.0	79.53	79.53	79.53	79.53	79.53	79.53	79.53	79.53	79.53	79.53
0.5	87.05	87.12	86.53	86.60	86.09	85.09	84.57	84.14	82.87	82.06
1.0	95.76	95.51	94.48	94.39	93.26	91.25	90.17	89.11	86.67	84.91
1.5	106.04	105.63	103.77	103.42	101.52	98.27	96.40	94.63	90.74	87.76
2.0	117.91	117.27	114.75	114.14	111.03	106.28	103.65	100.74	95.15	91.02
2.5	131.94	130.87	127.62	126.53	122.30	115.37	111.65	107.93	100.09	94.39
3.0	147.96	146.62	141.76	140.51	134.91	125.65	120.91	115.64	105.36	98.08
3.5	165.77	163.90	157.90	156.36	149.02	137.10	130.76	124.18	111.11	102.16
4.0	184.70	182.69	175.24	173.48	164.58	149.96	141.97	133.70	117.46	106.28
4.5	204.39	201.90	193.47	191.35	180.82	163.38	153.89	143.97	124.18	110.66
5.0	223.86	220.94	211.83	209.54	197.73	177.83	166.53	154.85	131.48	115.53
5.5	242.25	239.21	229.87	227.15	214.68	192.68	180.10	166.67	139.25	120.43
6.0	258.70	255.97	246.37	243.84	230.88	207.66	193.75	178.80	147.45	125.90
6.5	273.52	270.62	261.67	258.98	246.28	222.25	207.57	191.21	155.96	131.42
7.0	286.29	283.64	275.04	272.62	260.42	236.20	221.12	203.73	165.15	137.43
7.5	297.55	294.96	286.86	284.39	272.82	249.20	234.05	216.10	174.49	143.66
8.0	307.12	304.61	297.09	294.96	283.91	261.13	246.30	228.07	184.12	150.02
8.5	315.59	313.17	306.24	304.18	293.78	272.28	257.61	239.69	194.09	156.83
9.0	322.97	320.39	314.18	312.10	302.58	281.81	268.12	250.52	203.71	163.82
9.5	329.26	326.95	321.02	319.17	310.11	290.70	277.59	260.49	213.23	171.00
10.0	334.62	332.60	327.08	325.34	316.77	298.56	286.24	269.86	222.87	178.28
10.5	339.39	337.63	332.35	330.68	322.65	305.54	293.92	278.22	232.04	185.69
11.0	344.11	342.02	337.02	335.47	327.94	311.88	300.75	285.94	240.84	193.01
11.5	348.10	346.20	341.46	339.92	332.65	317.59	307.17	293.02	249.33	200.53
12.0	352.16	350.23	345.30	344.03	336.86	322.42	312.76	299.39	257.29	207.85
12.5	356.11	354.13	349.18	347.95	340.82	326.84	317.75	305.27	264.58	214.99
13.0	360.04	358.14	353.05	351.60	344.45	331.03	322.55	310.48	271.49	222.15
13.5	363.76	362.10	356.79	355.23	347.96	334.76	326.65	315.20	277.77	228.86
14.0	367.83	365.88	360.50	359.03	351.42	338.42	330.36	319.29	283.52	235.29
14.5	371.84	369.90	364.36	362.58	354.75	341.80	333.83	323.14	288.71	241.45
15.0	375.96	373.81	368.10	366.19	358.10	344.84	337.06	326.79	293.46	247.25
15.5	379.91	378.09	371.92	370.00	361.53	347.95	340.37	329.92	297.79	252.65
16.0	384.27	382.00	375.81	373.73	364.97	351.03	343.08	332.98	301.64	257.68
16.5	388.69	386.08	379.45	377.50	368.41	353.93	345.83	335.49	305.04	262.55
17.0	392.84	390.29	383.43	381.35	371.84	356.82	348.53	338.03	308.10	266.96
17.5	397.01	394.47	387.16	385.08	375.40	359.76	350.88	340.22	310.84	271.26
18.0	401.32	398.41	390.91	388.87	378.70	362.72	353.15	342.26	313.41	275.17
18.5	405.42	402.64	394.72	392.52	382.40	365.43	355.77	344.10	315.91	278.86
19.0	409.78	406.76	398.61	396.45	385.82	368.22	357.91	346.06	318.10	282.27
19.5	413.77	410.90	402.59	399.75	389.15	371.03	359.99	347.79	320.13	285.62
20.0	418.20	415.18	406.17	403.91	392.49	373.60	362.14	349.81	321.97	288.57
20.5	422.56	419.37	410.19	407.56	395.87	376.10	364.29	351.68	323.77	291.47
21.0	427.06	423.52	413.99	411.20	399.12	378.67	366.44	353.50	325.35	293.96
21.5	431.38	427.88	417.98	415.06	402.48	381.02	368.55	355.46	326.86	296.34
22.0	436.13	432.50	421.97	418.71	405.85	383.68	370.81	357.36	328.30	298.49
22.5	441.01	437.00	426.23	422.68	409.16	385.94	372.95	359.21	329.46	300.38
23.0	445.95	441.55	430.17	426.60	412.50	388.42	375.15	361.11	330.68	302.20
23.5	450.63	446.41	434.39	430.58	415.82	390.79	377.32	363.09	331.89	303.66
24.0	455.69	451.16	438.49	434.52	419.04	393.31	379.52	365.05	333.00	305.03
24.5	460.49	455.63	442.61	438.59	422.37	395.65	381.76	366.81	334.06	306.22
25.0	465.43	460.58	446.93	442.90	425.79	398.24	384.03	368.55	335.13	307.06
25.5	470.14	465.29	451.18	446.98	429.35	400.66	385.99	370.22	336.07	307.98
26.0	475.08	469.83	455.46	451.10	432.79	403.07	387.85	371.93	336.92	308.79

IES ROAD REPORT
PHOTOMETRIC FILENAME : AEL12-10W-4000K.IES

CANDELA TABULATION - (Cont.)

26.5	479.71	474.47	459.86	455.31	436.12	405.73	389.88	373.69	337.97	309.42
27.0	484.20	478.85	463.95	459.58	439.64	408.16	391.88	375.02	338.82	309.98
27.5	488.52	483.40	468.48	463.67	443.01	410.56	393.79	376.71	339.91	310.49
28.0	493.10	487.71	472.64	467.94	446.40	413.34	395.79	378.24	340.55	310.89
28.5	497.18	491.77	476.86	472.02	449.80	415.73	397.78	379.71	341.28	311.35
29.0	501.30	496.04	480.71	476.09	453.24	418.37	399.80	381.25	342.35	311.51
29.5	505.41	500.08	484.62	479.90	456.27	420.97	401.66	382.39	342.91	311.90
30.0	509.50	503.94	488.54	483.60	459.70	423.53	403.65	384.00	343.86	312.04
30.5	513.36	507.82	492.34	487.17	462.88	425.93	405.66	385.49	344.46	312.22
31.0	516.92	511.45	495.90	490.49	466.08	428.45	407.60	386.84	345.14	312.32
31.5	520.52	515.06	499.57	494.00	469.07	430.95	409.57	388.13	345.46	312.26
32.0	523.53	518.53	502.84	496.95	472.09	433.34	411.46	389.55	345.89	312.17
32.5	526.77	521.90	506.23	500.09	474.98	435.69	413.56	390.97	346.11	312.14
33.0	529.61	524.97	509.24	503.00	477.66	437.84	415.35	392.47	346.48	311.88
33.5	532.24	527.79	512.18	505.49	480.29	440.13	417.29	393.74	346.71	311.57
34.0	534.85	530.19	514.83	508.14	482.71	442.15	419.20	395.15	346.91	311.08
34.5	537.02	532.44	517.28	510.63	485.28	444.06	420.93	396.57	346.83	310.48
35.0	538.42	534.21	519.38	512.63	487.43	445.92	422.51	397.65	346.82	309.74
35.5	539.69	535.69	521.10	514.37	489.31	447.73	424.04	398.81	346.70	308.75
36.0	540.31	536.72	522.58	515.91	491.23	449.50	425.62	400.03	346.38	307.92
36.5	540.37	537.26	523.79	517.13	492.84	451.28	426.98	400.87	345.95	307.03
37.0	539.79	537.47	524.43	518.09	494.20	452.80	428.10	401.96	345.42	305.97
37.5	538.54	536.81	524.60	518.54	495.31	454.36	429.46	402.74	344.82	305.18
38.0	536.60	535.67	524.39	518.59	496.28	455.59	430.64	403.54	344.22	304.33
38.5	533.91	533.48	523.44	518.15	496.86	456.74	431.60	404.11	343.56	303.63
39.0	530.35	530.65	522.27	517.54	497.31	457.88	432.52	404.36	342.98	303.01
39.5	526.79	527.19	520.35	516.17	497.27	458.61	433.12	404.82	342.44	302.23
40.0	522.53	523.15	517.82	514.26	496.68	459.31	433.70	404.84	341.97	301.49
40.5	517.78	518.79	514.46	511.74	495.72	459.69	434.02	404.65	341.69	300.79
41.0	513.39	514.44	510.69	508.59	494.29	459.68	434.18	404.41	341.44	300.05
41.5	509.20	509.85	506.44	504.83	492.55	459.67	434.18	404.15	340.89	299.27
42.0	505.14	505.47	502.23	500.70	490.17	459.12	433.84	403.80	340.57	298.56
42.5	501.43	501.36	497.58	496.27	487.29	458.36	433.25	403.21	340.27	297.68
43.0	497.87	497.42	493.11	491.89	484.08	457.30	432.30	402.64	339.99	297.07
43.5	494.21	493.76	488.88	487.35	480.27	455.86	431.09	401.90	339.67	296.16
44.0	490.68	490.27	484.64	483.03	476.30	453.81	429.58	401.27	339.15	295.16
44.5	487.34	486.90	480.79	478.85	471.96	451.29	427.73	400.24	338.78	294.38
45.0	483.65	483.29	476.98	474.63	467.73	448.38	425.92	399.35	338.15	293.36
45.5	479.80	479.63	473.05	470.58	463.35	444.90	423.79	398.27	337.59	292.17
46.0	475.34	475.65	469.33	466.74	459.08	440.92	421.38	396.97	336.97	290.90
46.5	470.80	471.56	465.34	462.77	455.00	436.75	418.74	395.44	335.93	289.68
47.0	465.86	466.65	461.09	458.70	450.88	432.15	415.88	393.87	334.93	288.35
47.5	459.91	461.46	456.65	454.60	446.83	427.50	412.67	391.96	333.76	286.83
48.0	453.53	455.65	451.85	450.16	442.57	422.60	409.08	389.67	332.48	285.28
48.5	446.19	449.23	446.56	445.11	438.31	417.67	405.08	387.54	331.17	283.51
49.0	438.15	441.94	440.89	439.90	433.77	412.77	401.11	384.80	329.73	281.73
49.5	429.32	434.00	434.59	434.21	429.13	407.78	396.85	381.78	327.98	279.77
50.0	419.81	425.33	427.75	427.89	424.33	403.04	392.31	378.61	326.07	277.86
50.5	409.66	415.83	420.14	421.06	418.71	398.25	387.73	374.87	323.85	275.79
51.0	399.55	405.90	412.11	413.74	412.82	393.39	383.13	371.17	321.50	273.70
51.5	389.48	395.94	403.25	405.54	406.48	388.52	378.47	366.93	318.94	271.63
52.0	379.99	386.11	393.78	396.75	399.68	383.43	373.59	362.29	316.19	269.38
52.5	371.07	376.62	384.17	387.60	392.17	378.43	368.63	357.58	313.41	267.15
53.0	363.01	367.79	374.55	378.25	384.28	373.14	363.76	352.43	310.38	264.86
53.5	354.90	359.46	365.29	368.88	375.85	367.49	358.35	347.29	307.19	262.50
54.0	347.93	351.82	356.43	359.64	366.79	361.73	353.08	341.96	303.91	259.88

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CANDELA TABULATION - (Cont.)

54.5	341.20	344.59	348.22	350.93	357.45	355.45	347.86	336.54	300.45	257.36
55.0	334.76	337.62	340.14	342.67	348.05	348.69	341.89	331.06	296.90	254.45
55.5	328.92	331.23	332.69	334.81	338.81	341.87	335.93	325.31	293.16	251.46
56.0	322.94	325.28	325.52	327.33	329.79	334.64	329.65	319.51	289.01	248.32
56.5	317.28	319.21	318.87	320.19	321.20	326.94	322.91	313.63	284.83	244.97
57.0	311.96	313.39	312.43	313.51	312.97	318.96	316.18	307.85	280.31	241.81
57.5	306.04	307.56	306.22	306.89	305.15	310.77	309.05	301.84	275.69	238.33
58.0	300.66	301.79	300.31	300.49	297.62	302.38	301.74	295.61	270.70	234.59
58.5	295.11	296.10	294.12	294.06	290.44	293.84	294.23	289.39	265.64	230.90
59.0	289.28	290.24	288.31	287.90	283.53	285.25	286.32	282.95	260.37	226.90
59.5	283.30	284.09	282.27	281.65	276.63	277.11	278.32	276.20	254.97	222.92
60.0	277.07	278.06	276.21	275.38	269.93	268.96	270.53	268.94	249.40	218.69
60.5	270.64	271.72	270.03	268.89	263.63	261.17	262.45	262.05	243.74	214.42
61.0	264.03	265.12	263.81	262.49	256.96	253.61	254.53	254.59	238.01	210.02
61.5	257.11	258.28	257.32	255.78	250.56	246.19	246.55	247.22	232.22	205.47
62.0	250.00	250.93	250.63	249.03	243.96	239.09	238.98	239.61	226.37	200.87
62.5	242.28	243.56	243.46	242.05	237.57	231.99	231.31	231.95	220.36	196.12
63.0	234.53	235.84	236.40	234.82	230.98	225.14	223.96	224.28	214.41	191.29
63.5	226.40	227.81	228.82	227.56	224.22	218.60	216.77	216.89	208.27	186.39
64.0	217.61	219.51	220.97	220.13	217.20	211.60	209.63	209.42	202.00	181.30
64.5	208.85	210.73	212.86	212.27	210.20	204.84	202.76	202.13	195.71	176.00
65.0	199.33	201.80	204.71	204.07	202.99	198.01	195.67	195.01	189.43	170.85
65.5	189.87	192.50	196.27	195.83	195.45	191.33	188.86	187.81	183.01	165.64
66.0	180.19	182.85	187.47	187.31	188.13	184.33	182.17	180.90	176.47	160.27
66.5	169.96	173.12	178.47	178.75	180.21	177.64	175.51	174.15	170.09	154.96
67.0	159.72	163.06	169.34	170.01	172.29	170.63	168.85	167.33	163.52	149.57
67.5	149.04	152.79	160.03	161.09	164.29	163.62	162.12	160.76	157.13	144.20
68.0	138.83	142.64	150.36	151.99	156.21	156.72	155.45	154.32	150.71	138.79
68.5	128.83	132.45	140.74	142.71	147.92	149.82	148.88	147.71	144.21	133.39
69.0	118.60	122.58	131.25	133.30	139.64	142.79	142.02	141.43	138.07	128.09
69.5	109.30	112.90	122.05	124.16	131.29	135.77	135.73	135.15	131.96	122.74
70.0	100.42	104.07	112.81	115.26	122.80	128.53	129.10	128.90	125.80	117.43
70.5	92.10	95.58	104.12	106.91	114.68	121.70	122.43	122.59	119.95	112.23
71.0	84.68	87.73	95.83	98.96	106.43	114.56	116.05	116.49	114.13	107.07
71.5	77.46	80.48	88.28	90.98	98.78	107.56	109.56	110.33	108.47	101.77
72.0	71.00	73.73	81.12	83.64	91.26	100.80	103.27	104.39	102.93	96.84
72.5	64.89	67.53	74.89	76.62	84.28	94.01	96.97	98.58	97.37	91.98
73.0	59.17	61.69	68.93	70.41	77.64	87.49	90.67	92.74	92.23	86.92
73.5	54.24	56.49	63.17	64.47	71.58	81.20	84.73	86.95	86.89	82.18
74.0	49.54	51.70	57.54	59.01	65.65	75.11	78.84	81.41	81.85	77.61
74.5	45.20	47.05	52.51	54.16	60.27	69.41	73.29	75.93	76.99	73.07
75.0	41.25	43.03	47.85	49.62	55.35	63.94	67.86	70.96	72.18	68.61
75.5	37.58	39.21	43.94	45.15	50.71	58.88	62.67	65.83	67.65	64.37
76.0	34.11	35.55	39.92	41.26	46.51	54.34	58.02	60.95	63.04	60.30
76.5	30.95	32.46	36.28	37.58	42.31	49.81	53.33	56.53	58.84	56.29
77.0	28.25	29.53	33.06	34.26	38.69	45.69	48.99	52.03	54.60	52.39
77.5	25.45	26.72	29.95	31.06	35.18	41.86	44.99	47.97	50.63	48.67
78.0	23.38	24.21	27.19	28.25	31.93	38.16	41.18	44.09	46.72	45.14
78.5	20.94	21.87	24.47	25.48	29.07	34.96	37.63	40.19	42.98	41.74
79.0	18.93	19.67	22.15	22.98	26.27	31.65	34.33	36.85	39.47	38.44
79.5	16.91	17.68	19.95	20.81	23.75	28.70	31.16	33.42	36.21	35.16
80.0	15.20	15.65	17.93	18.54	21.30	26.00	28.35	30.51	32.97	32.14
80.5	13.53	14.13	16.00	16.50	19.06	23.27	25.46	27.52	30.00	29.40
81.0	12.09	12.50	14.25	14.73	17.00	20.88	22.97	24.81	27.10	26.61
81.5	10.65	11.02	12.54	13.14	15.06	18.66	20.53	22.19	24.39	23.95
82.0	9.42	9.72	10.96	11.42	13.29	16.50	18.24	19.86	21.85	21.47

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CANDELA TABULATION - (Cont.)

82.5	8.17	8.41	9.61	10.08	11.70	14.55	16.14	17.57	19.41	19.17
83.0	7.24	7.50	8.42	8.66	10.28	12.74	14.12	15.41	17.19	17.05
83.5	6.03	6.42	7.23	7.48	8.79	10.98	12.40	13.47	14.95	14.89
84.0	5.12	5.47	6.24	6.36	7.45	9.44	10.55	11.62	13.04	12.93
84.5	4.27	4.61	5.27	5.35	6.17	7.96	9.04	9.94	11.27	11.14
85.0	3.61	3.68	4.35	4.38	5.29	6.66	7.58	8.36	9.47	9.47
85.5	2.98	3.05	3.53	3.68	4.29	5.49	6.32	6.88	7.90	7.94
86.0	2.25	2.53	2.75	2.84	3.33	4.46	5.20	5.73	6.54	6.47
86.5	2.10	1.93	2.26	2.33	2.59	3.47	4.00	4.35	5.19	5.26
87.0	1.45	1.58	1.73	1.80	2.04	2.58	3.15	3.54	3.98	4.08
87.5	1.21	1.18	1.39	1.24	1.48	1.83	2.19	2.46	3.05	3.04
88.0	1.07	0.87	0.91	0.93	1.02	1.45	1.62	1.66	2.16	2.27
88.5	0.62	0.62	0.80	0.63	0.73	1.05	0.95	1.25	1.47	1.57
89.0	0.43	0.41	0.46	0.46	0.41	0.78	0.63	0.68	0.90	1.03
89.5	0.31	0.23	0.30	0.30	0.23	0.26	0.37	0.35	0.39	0.52
90.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Vert. Angles	Horizontal Angles									
	<u>70.0</u>	<u>80.0</u>	<u>90.0</u>	<u>100.0</u>	<u>110.0</u>	<u>112.5</u>	<u>120.0</u>	<u>130.0</u>	<u>135.0</u>	<u>140.0</u>
0.0	79.53	79.53	79.53	79.53	79.53	79.53	79.53	79.53	79.53	79.53
0.5	81.75	80.66	79.56	78.45	77.32	77.07	76.26	75.47	75.13	74.75
1.0	84.22	81.89	79.61	77.45	75.44	74.94	73.63	72.20	71.58	70.97
1.5	86.79	83.17	79.63	76.47	73.69	73.04	71.26	69.41	68.65	67.89
2.0	89.58	84.46	79.68	75.58	72.11	71.31	69.23	67.03	66.14	65.38
2.5	92.56	85.85	79.77	74.76	70.63	69.69	67.36	65.00	64.04	63.28
3.0	95.74	87.29	79.84	73.96	69.26	68.27	65.77	63.28	62.34	61.49
3.5	99.04	88.76	79.94	73.15	68.07	67.02	64.36	61.84	60.87	60.04
4.0	102.66	90.21	80.02	72.39	66.92	65.84	63.14	60.59	59.63	58.78
4.5	106.45	91.79	80.08	71.68	65.92	64.77	62.11	59.51	58.54	57.75
5.0	110.49	93.35	80.16	71.02	64.97	63.84	61.06	58.57	57.58	56.80
5.5	114.74	94.99	80.24	70.35	64.17	62.95	60.24	57.68	56.68	55.96
6.0	119.14	96.66	80.30	69.72	63.33	62.20	59.44	56.91	55.96	55.18
6.5	123.86	98.41	80.42	69.18	62.66	61.51	58.76	56.22	55.26	54.47
7.0	128.76	100.22	80.58	68.62	62.01	60.86	58.11	55.59	54.61	53.85
7.5	133.93	102.07	80.72	68.18	61.41	60.24	57.55	55.03	54.04	53.21
8.0	139.35	104.05	80.86	67.66	60.91	59.75	57.03	54.49	53.47	52.67
8.5	145.07	106.06	81.00	67.25	60.42	59.26	56.57	53.96	52.98	52.07
9.0	150.87	108.07	81.15	66.82	59.97	58.83	56.14	53.50	52.48	51.59
9.5	156.92	110.22	81.29	66.41	59.54	58.43	55.69	53.07	51.98	51.11
10.0	163.22	112.40	81.40	66.02	59.12	57.98	55.33	52.67	51.57	50.67
10.5	169.53	114.68	81.53	65.60	58.70	57.55	54.95	52.27	51.13	50.18
11.0	176.01	116.91	81.60	65.17	58.37	57.26	54.57	51.88	50.72	49.79
11.5	182.55	119.24	81.70	64.80	57.98	56.89	54.22	51.50	50.34	49.36
12.0	189.15	121.60	81.79	64.40	57.64	56.53	53.89	51.12	49.98	48.94
12.5	195.72	124.03	81.85	64.10	57.28	56.20	53.53	50.77	49.60	48.52
13.0	202.26	126.41	81.91	63.74	56.96	55.87	53.19	50.40	49.19	48.10
13.5	208.65	128.80	81.96	63.41	56.64	55.57	52.88	50.04	48.81	47.71
14.0	214.80	131.31	81.99	63.06	56.37	55.22	52.55	49.69	48.43	47.32
14.5	220.78	133.81	81.99	62.69	56.04	54.95	52.18	49.34	48.05	46.84
15.0	226.50	136.27	81.98	62.39	55.70	54.63	51.89	48.99	47.66	46.46
15.5	232.10	138.86	82.00	62.01	55.41	54.33	51.55	48.66	47.26	45.97
16.0	237.37	141.48	81.97	61.71	55.08	53.99	51.25	48.26	46.89	45.56
16.5	242.47	144.18	81.95	61.33	54.77	53.68	50.92	47.87	46.41	45.02
17.0	247.38	146.92	81.92	60.97	54.39	53.34	50.60	47.47	46.00	44.54
17.5	252.01	149.72	81.90	60.64	54.07	52.98	50.25	47.08	45.54	44.02

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CANDELA TABULATION - (Cont.)

18.0	256.47	152.54	81.82	60.29	53.73	52.65	49.86	46.63	45.09	43.50
18.5	260.63	155.40	81.81	59.99	53.38	52.32	49.50	46.27	44.57	42.94
19.0	264.59	158.36	81.78	59.62	53.04	51.96	49.12	45.76	44.04	42.36
19.5	268.28	161.28	81.72	59.28	52.74	51.59	48.73	45.30	43.55	41.77
20.0	271.73	164.16	81.72	58.99	52.39	51.29	48.35	44.80	42.97	41.22
20.5	274.99	167.08	81.66	58.65	52.06	50.91	47.95	44.30	42.41	40.57
21.0	278.06	170.00	81.64	58.31	51.73	50.56	47.58	43.75	41.82	39.89
21.5	280.89	172.90	81.58	58.01	51.42	50.23	47.13	43.22	41.23	39.19
22.0	283.43	175.72	81.53	57.75	51.08	49.87	46.77	42.63	40.59	38.49
22.5	285.80	178.60	81.51	57.43	50.76	49.58	46.32	42.04	39.95	37.76
23.0	287.99	181.39	81.43	57.10	50.44	49.23	45.92	41.54	39.28	36.90
23.5	289.93	184.17	81.38	56.76	50.09	48.88	45.49	40.90	38.53	36.12
24.0	291.67	186.84	81.33	56.46	49.74	48.51	45.06	40.27	37.85	35.29
24.5	293.23	189.48	81.23	56.17	49.40	48.17	44.59	39.67	37.04	34.44
25.0	294.57	192.06	81.17	55.86	49.06	47.81	44.14	38.99	36.23	33.56
25.5	295.66	194.62	81.12	55.58	48.71	47.46	43.68	38.33	35.50	32.69
26.0	296.63	196.94	81.07	55.24	48.37	47.06	43.17	37.64	34.67	31.83
26.5	297.43	199.40	81.02	54.95	48.04	46.70	42.72	36.95	33.85	31.05
27.0	298.18	201.71	80.93	54.65	47.68	46.30	42.19	36.19	33.02	30.25
27.5	298.83	203.97	80.90	54.36	47.31	45.94	41.65	35.44	32.25	29.53
28.0	299.46	206.14	80.81	54.02	46.97	45.53	41.13	34.68	31.42	28.81
28.5	299.92	208.19	80.74	53.73	46.59	45.11	40.62	33.94	30.63	28.17
29.0	300.28	210.18	80.69	53.39	46.18	44.69	40.03	33.14	29.92	27.54
29.5	300.56	212.03	80.57	53.11	45.78	44.28	39.51	32.37	29.18	27.03
30.0	300.69	213.78	80.49	52.81	45.43	43.83	38.89	31.62	28.52	26.59
30.5	300.80	215.49	80.40	52.47	45.07	43.38	38.33	30.88	27.94	26.11
31.0	300.83	216.94	80.23	52.10	44.65	42.98	37.76	30.16	27.35	25.69
31.5	300.75	218.27	80.07	51.82	44.22	42.56	37.22	29.48	26.85	25.41
32.0	300.58	219.40	79.89	51.51	43.87	42.12	36.74	28.83	26.39	25.23
32.5	300.32	220.29	79.76	51.18	43.44	41.61	36.23	28.21	25.94	25.01
33.0	299.96	221.03	79.58	50.85	42.98	41.16	35.82	27.63	25.51	24.83
33.5	299.38	221.52	79.41	50.50	42.56	40.71	35.45	27.08	25.15	24.54
34.0	298.69	221.92	79.22	50.18	42.14	40.19	34.96	26.60	24.89	24.14
34.5	297.82	222.21	79.05	49.83	41.67	39.69	34.44	26.19	24.66	23.80
35.0	296.96	222.41	78.92	49.48	41.18	39.25	33.80	25.78	24.48	23.61
35.5	295.94	222.60	78.74	49.13	40.69	38.72	33.03	25.42	24.29	23.39
36.0	294.99	222.76	78.63	48.82	40.24	38.13	32.15	25.09	23.90	23.17
36.5	293.95	223.00	78.53	48.48	39.78	37.61	31.19	24.73	23.54	23.07
37.0	293.01	223.20	78.36	48.13	39.28	37.08	30.29	24.42	23.26	22.88
37.5	292.14	223.42	78.24	47.77	38.81	36.50	29.45	24.11	23.02	22.72
38.0	291.32	223.57	78.06	47.43	38.30	35.94	28.67	23.83	22.81	22.59
38.5	290.54	223.68	77.95	47.08	37.80	35.38	28.03	23.45	22.65	22.44
39.0	289.86	223.71	77.84	46.76	37.30	34.82	27.45	23.11	22.46	22.34
39.5	289.15	223.65	77.70	46.37	36.74	34.26	26.90	22.81	22.32	22.19
40.0	288.39	223.45	77.60	46.04	36.25	33.63	26.37	22.56	22.11	22.09
40.5	287.64	223.16	77.45	45.66	35.71	33.04	25.89	22.32	21.94	21.97
41.0	286.91	222.78	77.30	45.31	35.15	32.45	25.36	22.13	21.80	21.90
41.5	286.08	222.26	77.15	44.95	34.62	31.85	24.94	21.93	21.67	21.78
42.0	285.27	221.74	77.01	44.59	34.07	31.26	24.48	21.74	21.53	21.73
42.5	284.34	221.08	76.85	44.25	33.49	30.67	24.05	21.54	21.42	21.68
43.0	283.47	220.34	76.67	43.87	32.97	30.04	23.70	21.37	21.30	21.62
43.5	282.48	219.45	76.48	43.51	32.41	29.47	23.32	21.20	21.20	21.56
44.0	281.50	218.51	76.25	43.10	31.83	28.92	22.95	21.08	21.12	21.52
44.5	280.41	217.39	76.02	42.70	31.25	28.35	22.66	20.92	21.00	21.52
45.0	279.24	216.27	75.77	42.34	30.67	27.77	22.32	20.74	20.94	21.46
45.5	278.01	215.06	75.52	41.97	30.15	27.25	22.03	20.61	20.86	21.45

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CANDELA TABULATION - (Cont.)

46.0	276.69	213.67	75.23	41.54	29.59	26.71	21.71	20.48	20.75	21.44
46.5	275.28	212.16	74.88	41.12	29.04	26.23	21.42	20.34	20.71	21.41
47.0	273.72	210.54	74.61	40.73	28.49	25.68	21.19	20.22	20.64	21.39
47.5	271.97	208.90	74.26	40.32	27.88	25.22	20.95	20.11	20.57	21.37
48.0	270.08	207.10	73.92	39.90	27.35	24.74	20.71	19.98	20.53	21.37
48.5	268.14	205.40	73.52	39.45	26.81	24.26	20.45	19.91	20.48	21.38
49.0	266.23	203.66	73.20	39.03	26.30	23.86	20.24	19.79	20.45	21.41
49.5	264.21	201.83	72.77	38.59	25.80	23.40	20.01	19.72	20.40	21.39
50.0	262.19	199.94	72.37	38.12	25.29	23.03	19.78	19.61	20.36	21.43
50.5	260.08	198.14	71.93	37.66	24.77	22.60	19.52	19.51	20.31	21.44
51.0	258.00	196.17	71.46	37.21	24.35	22.21	19.37	19.42	20.27	21.43
51.5	255.87	194.21	70.99	36.74	23.92	21.86	19.16	19.39	20.26	21.46
52.0	253.68	192.19	70.49	36.23	23.42	21.49	18.92	19.28	20.22	21.47
52.5	251.45	190.10	69.95	35.75	23.02	21.10	18.74	19.21	20.24	21.46
53.0	249.25	187.95	69.41	35.23	22.58	20.79	18.57	19.13	20.17	21.52
53.5	246.89	185.68	68.86	34.72	22.17	20.47	18.39	19.07	20.19	21.52
54.0	244.39	183.33	68.23	34.18	21.78	20.18	18.22	19.04	20.15	21.55
54.5	241.81	180.88	67.60	33.68	21.42	19.89	18.04	18.96	20.09	21.53
55.0	239.13	178.37	66.92	33.17	21.01	19.56	17.88	18.88	20.11	21.57
55.5	236.33	175.75	66.25	32.60	20.67	19.25	17.70	18.81	20.06	21.56
56.0	233.35	173.02	65.53	32.09	20.26	18.94	17.53	18.73	20.03	21.54
56.5	230.27	170.28	64.78	31.52	19.94	18.66	17.38	18.66	20.03	21.54
57.0	227.04	167.45	64.01	31.00	19.64	18.39	17.18	18.63	19.94	21.51
57.5	223.67	164.63	63.19	30.46	19.28	18.12	17.01	18.53	19.91	21.47
58.0	220.21	161.75	62.33	29.87	18.95	17.84	16.87	18.45	19.86	21.43
58.5	216.64	158.75	61.45	29.33	18.61	17.60	16.67	18.37	19.78	21.40
59.0	213.02	155.76	60.56	28.73	18.29	17.32	16.52	18.31	19.76	21.29
59.5	209.32	152.71	59.62	28.14	18.01	17.03	16.38	18.17	19.67	21.25
60.0	205.46	149.58	58.63	27.56	17.66	16.80	16.21	18.03	19.58	21.13
60.5	201.52	146.40	57.68	26.98	17.31	16.55	16.05	18.01	19.47	21.08
61.0	197.48	143.18	56.60	26.40	17.04	16.28	15.84	17.86	19.34	20.97
61.5	193.31	139.84	55.55	25.80	16.71	15.98	15.69	17.74	19.20	20.86
62.0	189.08	136.51	54.42	25.20	16.42	15.74	15.49	17.60	19.08	20.75
62.5	184.71	133.08	53.30	24.60	16.10	15.45	15.36	17.44	18.93	20.56
63.0	180.20	129.67	52.12	24.02	15.81	15.20	15.17	17.30	18.78	20.39
63.5	175.65	126.19	50.99	23.41	15.50	14.93	14.96	17.18	18.61	20.19
64.0	171.02	122.74	49.76	22.79	15.20	14.70	14.74	16.96	18.41	20.01
64.5	166.28	119.20	48.53	22.21	14.87	14.43	14.54	16.75	18.21	19.74
65.0	161.50	115.64	47.32	21.61	14.61	14.14	14.33	16.54	18.00	19.50
65.5	156.65	112.11	46.04	21.03	14.28	13.88	14.12	16.31	17.78	19.24
66.0	151.77	108.54	44.77	20.43	13.96	13.64	13.89	16.13	17.47	18.95
66.5	146.86	104.95	43.51	19.83	13.65	13.31	13.70	15.88	17.24	18.63
67.0	141.88	101.33	42.19	19.26	13.33	13.03	13.42	15.58	16.95	18.34
67.5	136.86	97.74	40.89	18.65	13.03	12.78	13.19	15.34	16.63	17.99
68.0	131.87	94.21	39.60	18.05	12.68	12.45	12.94	15.05	16.33	17.64
68.5	126.87	90.62	38.26	17.51	12.42	12.18	12.67	14.75	15.98	17.26
69.0	121.85	87.16	36.92	16.94	12.10	11.88	12.41	14.42	15.66	16.87
69.5	116.89	83.59	35.64	16.36	11.77	11.55	12.10	14.14	15.25	16.47
70.0	111.93	80.11	34.30	15.81	11.42	11.29	11.84	13.78	14.93	16.07
70.5	107.11	76.66	32.98	15.23	11.12	10.98	11.50	13.42	14.50	15.60
71.0	102.21	73.24	31.68	14.66	10.76	10.66	11.25	13.07	14.13	15.22
71.5	97.39	69.87	30.35	14.14	10.46	10.35	10.89	12.69	13.73	14.73
72.0	92.71	66.56	29.14	13.57	10.10	10.03	10.60	12.32	13.30	14.28
72.5	88.02	63.31	27.83	13.04	9.78	9.69	10.27	11.90	12.83	13.81
73.0	83.46	60.07	26.52	12.48	9.40	9.37	9.91	11.50	12.43	13.33
73.5	78.97	56.93	25.34	11.95	9.09	9.06	9.58	11.13	11.97	12.83

IES ROAD REPORT
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CANDELA TABULATION - (Cont.)

74.0	74.54	53.88	24.11	11.43	8.74	8.70	9.24	10.71	11.53	12.36
74.5	70.25	50.87	22.88	10.90	8.45	8.35	8.89	10.32	11.08	11.84
75.0	66.06	47.93	21.69	10.40	8.04	8.01	8.54	9.95	10.60	11.35
75.5	62.03	45.05	20.55	9.90	7.70	7.72	8.19	9.50	10.17	10.89
76.0	58.04	42.26	19.41	9.37	7.34	7.34	7.83	9.00	9.70	10.40
76.5	54.26	39.57	18.24	8.89	7.02	6.98	7.44	8.63	9.25	9.87
77.0	50.57	37.00	17.16	8.42	6.65	6.66	7.12	8.19	8.80	9.41
77.5	47.00	34.45	16.10	7.92	6.30	6.27	6.72	7.76	8.34	8.93
78.0	43.57	31.98	15.05	7.45	5.98	5.98	6.40	7.33	7.89	8.44
78.5	40.28	29.66	13.98	6.99	5.63	5.63	6.02	6.94	7.44	7.98
79.0	37.14	27.37	13.03	6.49	5.32	5.30	5.66	6.52	7.00	7.52
79.5	34.11	25.19	12.04	6.09	4.94	4.98	5.33	6.14	6.56	7.09
80.0	31.20	23.08	11.13	5.68	4.64	4.65	5.00	5.76	6.17	6.59
80.5	28.44	21.04	10.21	5.22	4.31	4.37	4.61	5.37	5.77	6.19
81.0	25.83	19.14	9.31	4.84	4.01	4.03	4.31	5.01	5.36	5.77
81.5	23.32	17.26	8.49	4.42	3.70	3.70	4.00	4.62	4.99	5.34
82.0	20.91	15.54	7.66	3.99	3.42	3.44	3.68	4.29	4.62	4.98
82.5	18.65	13.90	6.90	3.66	3.14	3.15	3.37	3.94	4.23	4.57
83.0	16.53	12.33	6.11	3.31	2.81	2.83	3.12	3.62	3.93	4.24
83.5	14.51	10.85	5.41	2.94	2.57	2.60	2.84	3.35	3.58	3.87
84.0	12.63	9.44	4.74	2.70	2.34	2.35	2.55	3.02	3.28	3.54
84.5	10.88	8.13	4.12	2.29	2.08	2.14	2.34	2.81	3.04	3.23
85.0	9.22	6.91	3.53	1.99	1.87	1.94	2.11	2.46	2.76	2.99
85.5	7.72	5.83	2.99	1.72	1.62	1.68	1.91	2.27	2.54	2.75
86.0	6.36	4.77	2.49	1.50	1.51	1.48	1.70	2.10	2.25	2.49
86.5	5.09	3.88	2.05	1.28	1.28	1.33	1.52	1.88	2.05	2.30
87.0	4.01	3.02	1.66	1.08	1.16	1.16	1.34	1.71	1.87	2.06
87.5	3.03	2.29	1.30	0.90	0.99	1.01	1.20	1.54	1.66	1.82
88.0	2.21	1.74	0.99	0.73	0.82	0.89	1.06	1.18	1.12	1.07
88.5	1.55	1.23	0.81	0.59	0.67	0.68	0.64	0.51	0.30	0.23
89.0	1.01	0.86	0.53	0.39	0.29	0.31	0.12	0.02	0.04	0.05
89.5	0.53	0.49	0.31	0.12	0.06	0.04	0.03	0.05	0.02	0.04
90.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Vert. Angles **Horizontal Angles**

	<u>150.0</u>	<u>157.5</u>	<u>160.0</u>	<u>170.0</u>	<u>180.0</u>
0.0	79.53	79.53	79.53	79.53	79.53
0.5	74.23	73.81	73.78	73.65	73.55
1.0	70.13	69.56	69.46	69.23	69.07
1.5	66.84	66.16	66.07	65.68	65.56
2.0	64.19	63.49	63.38	62.92	62.82
2.5	62.02	61.34	61.18	60.73	60.60
3.0	60.31	59.58	59.40	58.99	58.83
3.5	58.82	58.17	58.04	57.50	57.41
4.0	57.58	56.88	56.74	56.28	56.12
4.5	56.51	55.86	55.67	55.11	55.05
5.0	55.57	54.89	54.72	54.22	54.06
5.5	54.72	54.01	53.83	53.36	53.15
6.0	53.92	53.24	53.01	52.53	52.35
6.5	53.22	52.48	52.31	51.72	51.57
7.0	52.53	51.80	51.60	51.04	50.84
7.5	51.89	51.19	50.92	50.30	50.12
8.0	51.31	50.54	50.33	49.69	49.49
8.5	50.73	49.94	49.69	49.03	48.78
9.0	50.15	49.34	49.14	48.45	48.17

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CANDELA TABULATION - (Cont.)

9.5	49.65	48.82	48.52	47.82	47.57
10.0	49.12	48.24	47.99	47.20	46.97
10.5	48.61	47.73	47.45	46.66	46.37
11.0	48.15	47.17	46.89	46.11	45.77
11.5	47.62	46.67	46.36	45.46	45.17
12.0	47.16	46.13	45.79	44.89	44.57
12.5	46.66	45.58	45.22	44.28	43.96
13.0	46.24	44.99	44.66	43.65	43.28
13.5	45.67	44.40	44.04	43.01	42.57
14.0	45.17	43.85	43.48	42.35	41.90
14.5	44.65	43.24	42.84	41.70	41.22
15.0	44.11	42.65	42.21	41.01	40.48
15.5	43.58	42.02	41.56	40.35	39.83
16.0	43.00	41.35	40.91	39.61	39.07
16.5	42.42	40.77	40.22	38.85	38.29
17.0	41.84	40.03	39.58	38.09	37.51
17.5	41.21	39.38	38.83	37.27	36.64
18.0	40.56	38.60	38.00	36.40	35.71
18.5	39.90	37.84	37.22	35.46	34.81
19.0	39.20	36.99	36.39	34.52	33.79
19.5	38.49	36.18	35.50	33.53	32.79
20.0	37.68	35.28	34.58	32.59	31.77
20.5	36.85	34.40	33.63	31.59	30.78
21.0	36.04	33.41	32.69	30.60	29.85
21.5	35.14	32.46	31.75	29.69	28.95
22.0	34.24	31.52	30.82	28.87	28.19
22.5	33.29	30.64	29.94	28.08	27.49
23.0	32.40	29.80	29.15	27.39	26.81
23.5	31.55	29.04	28.40	26.80	26.30
24.0	30.69	28.31	27.74	26.28	25.81
24.5	29.84	27.67	27.20	25.82	25.39
25.0	29.11	27.08	26.60	25.47	25.02
25.5	28.42	26.63	26.21	25.13	24.76
26.0	27.78	26.12	25.79	24.84	24.55
26.5	27.21	25.79	25.43	24.58	24.23
27.0	26.72	25.39	25.14	24.39	24.10
27.5	26.25	25.18	24.86	24.21	23.92
28.0	25.86	24.90	24.64	24.05	23.81
28.5	25.53	24.71	24.45	23.92	23.73
29.0	25.28	24.49	24.29	23.83	23.56
29.5	25.13	24.28	24.09	23.73	23.48
30.0	24.91	24.15	23.97	23.61	23.40
30.5	24.67	23.99	23.84	23.53	23.40
31.0	24.33	23.81	23.76	23.49	23.35
31.5	24.11	23.71	23.64	23.43	23.33
32.0	23.90	23.61	23.57	23.38	23.28
32.5	23.78	23.51	23.50	23.36	23.30
33.0	23.63	23.44	23.44	23.36	23.26
33.5	23.54	23.40	23.37	23.38	23.25
34.0	23.36	23.32	23.34	23.38	23.35
34.5	23.27	23.29	23.33	23.41	23.34
35.0	23.19	23.24	23.29	23.45	23.43
35.5	23.12	23.24	23.29	23.46	23.46
36.0	23.02	23.20	23.30	23.51	23.53
36.5	22.98	23.21	23.31	23.59	23.63
37.0	22.90	23.24	23.31	23.65	23.69

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CANDELA TABULATION - (Cont.)

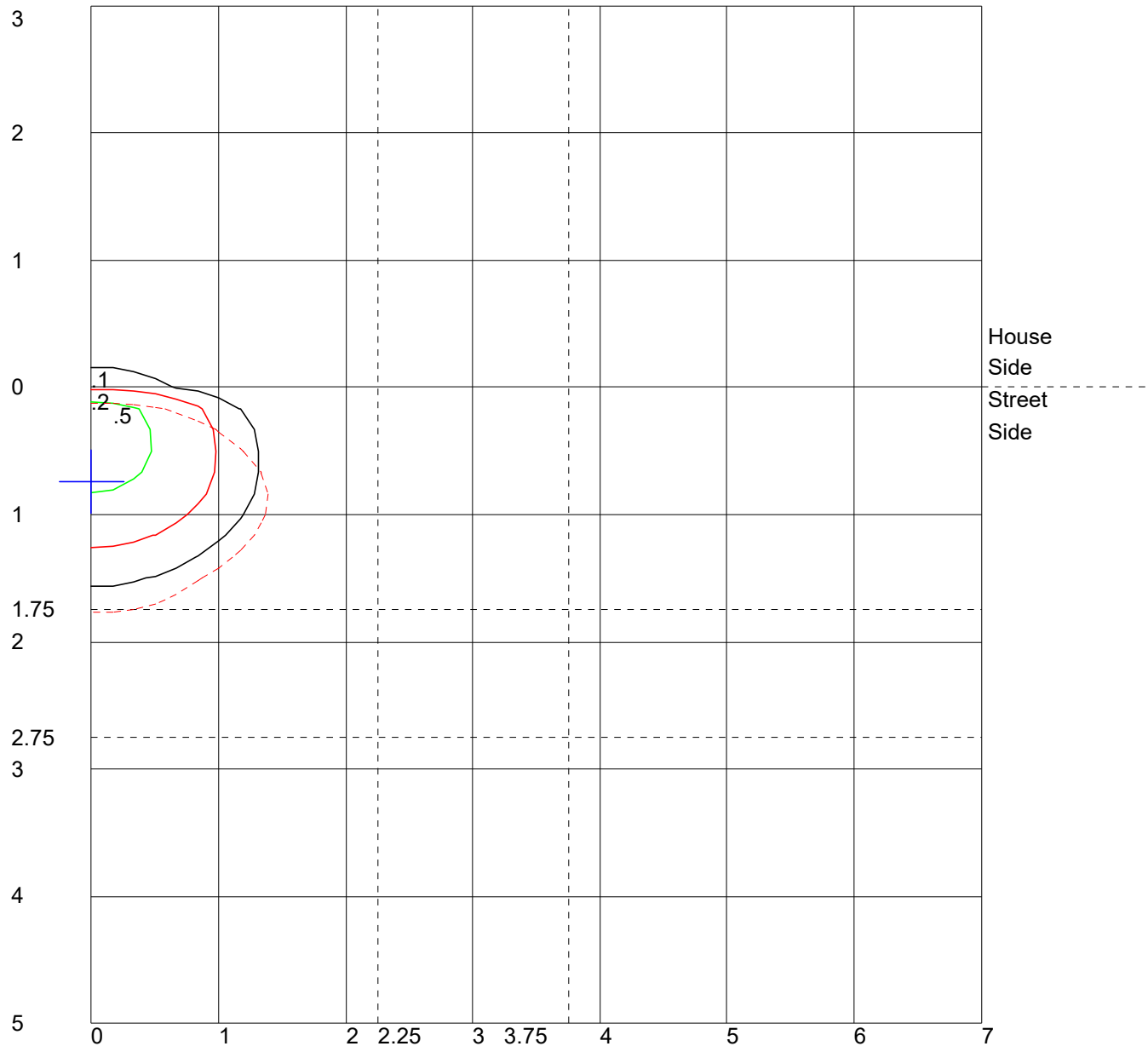
37.5	22.86	23.20	23.31	23.72	23.82
38.0	22.82	23.25	23.39	23.85	23.92
38.5	22.76	23.26	23.39	23.97	24.02
39.0	22.76	23.31	23.47	24.07	24.21
39.5	22.73	23.35	23.53	24.19	24.35
40.0	22.73	23.45	23.62	24.31	24.47
40.5	22.71	23.49	23.70	24.45	24.65
41.0	22.72	23.53	23.79	24.58	24.78
41.5	22.73	23.64	23.87	24.71	24.94
42.0	22.75	23.66	23.98	24.90	25.21
42.5	22.78	23.78	24.10	25.06	25.31
43.0	22.84	23.88	24.22	25.22	25.55
43.5	22.88	23.97	24.35	25.37	25.69
44.0	22.91	24.12	24.41	25.52	25.95
44.5	23.00	24.21	24.57	25.73	26.12
45.0	23.03	24.33	24.73	25.92	26.33
45.5	23.11	24.44	24.86	26.12	26.56
46.0	23.18	24.59	24.99	26.31	26.77
46.5	23.25	24.70	25.19	26.53	27.01
47.0	23.37	24.88	25.30	26.72	27.15
47.5	23.43	25.03	25.47	26.92	27.40
48.0	23.52	25.14	25.61	27.11	27.58
48.5	23.65	25.25	25.75	27.26	27.82
49.0	23.67	25.39	25.89	27.45	28.01
49.5	23.80	25.53	26.05	27.60	28.22
50.0	23.89	25.65	26.17	27.83	28.38
50.5	23.95	25.77	26.34	28.01	28.57
51.0	24.05	25.95	26.45	28.20	28.78
51.5	24.11	26.03	26.60	28.32	28.93
52.0	24.24	26.15	26.70	28.53	29.10
52.5	24.33	26.25	26.82	28.66	29.28
53.0	24.39	26.40	26.95	28.81	29.50
53.5	24.41	26.47	27.08	28.91	29.55
54.0	24.51	26.60	27.16	29.00	29.73
54.5	24.57	26.64	27.23	29.16	29.83
55.0	24.61	26.74	27.35	29.26	29.93
55.5	24.63	26.77	27.39	29.33	30.03
56.0	24.68	26.78	27.47	29.35	30.06
56.5	24.71	26.83	27.46	29.41	30.13
57.0	24.68	26.85	27.48	29.45	30.16
57.5	24.68	26.84	27.42	29.44	30.09
58.0	24.62	26.84	27.46	29.37	30.11
58.5	24.63	26.79	27.43	29.36	30.06
59.0	24.57	26.73	27.37	29.29	29.98
59.5	24.53	26.62	27.25	29.20	29.86
60.0	24.42	26.54	27.19	29.08	29.73
60.5	24.32	26.39	27.06	28.89	29.56
61.0	24.19	26.24	26.87	28.74	29.35
61.5	24.04	26.06	26.72	28.50	29.13
62.0	23.89	25.92	26.49	28.26	28.93
62.5	23.68	25.65	26.22	27.98	28.61
63.0	23.46	25.45	26.00	27.68	28.28
63.5	23.18	25.17	25.68	27.38	27.94
64.0	22.96	24.82	25.35	26.97	27.62
64.5	22.64	24.49	25.00	26.62	27.18
65.0	22.39	24.13	24.66	26.20	26.73

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CANDELA TABULATION - (Cont.)

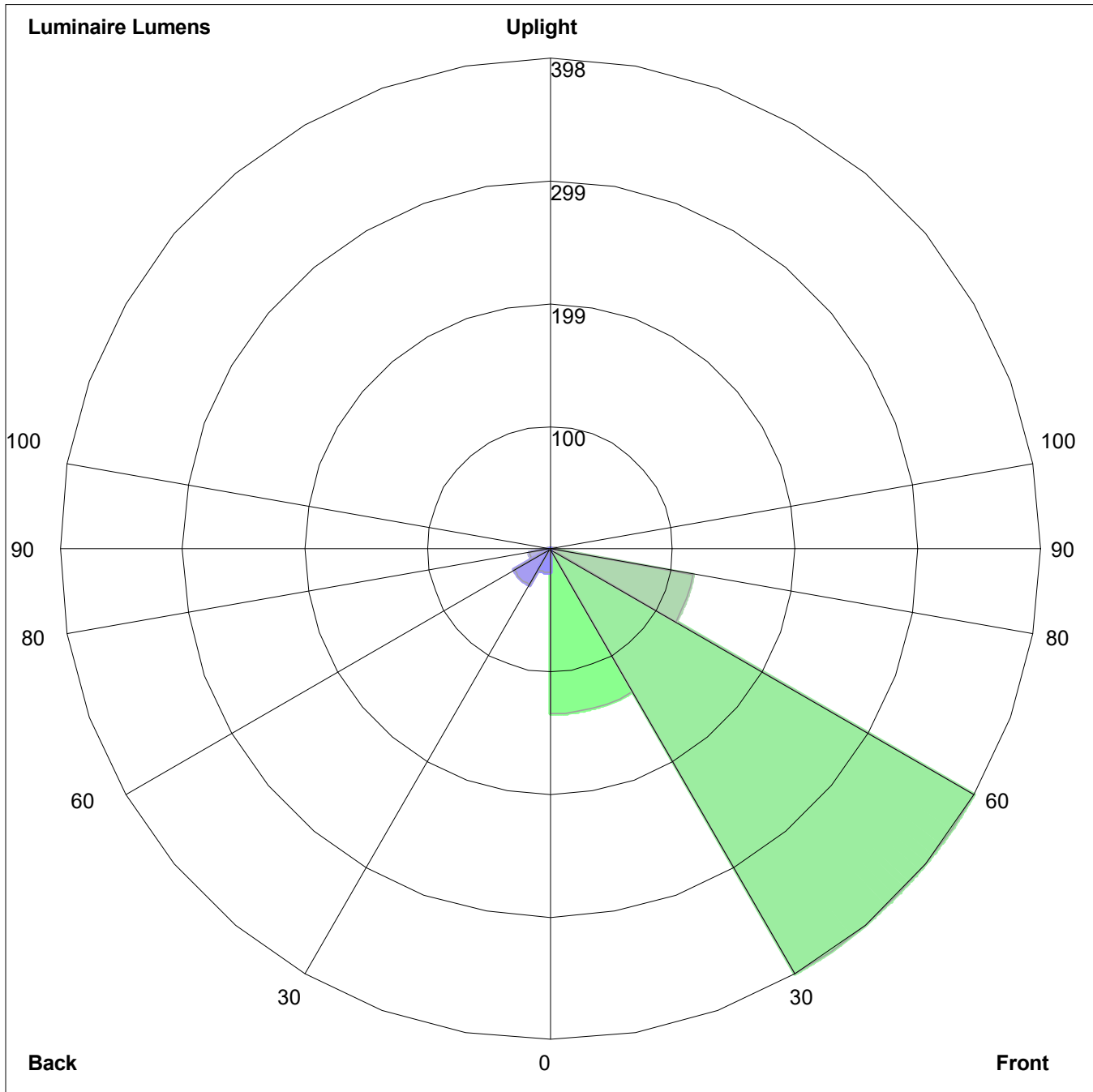
65.5	22.05	23.77	24.28	25.76	26.24
66.0	21.66	23.34	23.81	25.25	25.77
66.5	21.32	22.93	23.38	24.79	25.30
67.0	20.89	22.45	22.96	24.27	24.75
67.5	20.51	22.00	22.43	23.78	24.27
68.0	20.06	21.52	21.92	23.25	23.73
68.5	19.58	21.00	21.45	22.68	23.15
69.0	19.11	20.49	20.88	22.11	22.59
69.5	18.62	19.96	20.34	21.55	22.01
70.0	18.14	19.40	19.78	20.96	21.39
70.5	17.65	18.89	19.22	20.34	20.77
71.0	17.09	18.31	18.66	19.71	20.14
71.5	16.59	17.74	18.06	19.11	19.48
72.0	16.05	17.17	17.50	18.49	18.88
72.5	15.53	16.57	16.90	17.90	18.25
73.0	14.97	15.95	16.32	17.23	17.61
73.5	14.43	15.39	15.72	16.62	16.92
74.0	13.84	14.81	15.06	15.92	16.27
74.5	13.30	14.20	14.48	15.33	15.62
75.0	12.75	13.63	13.89	14.68	15.00
75.5	12.23	13.05	13.27	14.06	14.34
76.0	11.64	12.45	12.65	13.40	13.65
76.5	11.12	11.85	12.07	12.73	13.03
77.0	10.55	11.28	11.47	12.16	12.39
77.5	9.97	10.72	10.89	11.54	11.76
78.0	9.48	10.13	10.33	10.94	11.15
78.5	8.95	9.53	9.73	10.30	10.55
79.0	8.41	9.01	9.19	9.77	9.95
79.5	7.91	8.45	8.64	9.15	9.40
80.0	7.44	7.94	8.11	8.62	8.81
80.5	6.97	7.47	7.59	8.09	8.30
81.0	6.52	6.97	7.13	7.57	7.70
81.5	6.03	6.50	6.64	7.07	7.21
82.0	5.62	6.04	6.17	6.57	6.72
82.5	5.22	5.61	5.73	6.14	6.24
83.0	4.84	5.20	5.31	5.69	5.83
83.5	4.45	4.82	4.93	5.27	5.41
84.0	4.10	4.46	4.56	4.91	5.04
84.5	3.78	4.12	4.20	4.56	4.66
85.0	3.49	3.81	3.87	4.23	4.34
85.5	3.21	3.55	3.64	3.95	4.07
86.0	2.99	3.32	3.38	3.70	3.82
86.5	2.72	3.03	3.09	3.41	3.51
87.0	2.49	2.76	2.83	2.96	3.02
87.5	1.85	1.74	1.70	1.79	1.82
88.0	1.03	0.76	0.70	0.55	0.45
88.5	0.08	0.07	0.06	0.06	0.02
89.0	0.02	0.03	0.02	0.03	0.03
89.5	0.05	0.02	0.00	0.05	0.04
90.0	0.00	0.00	0.00	0.00	0.00

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINANCE



Distance In Units Of Mounting Height
 Values Based On 22 Foot Mounting Height
 1/2 Maximum Candela Trace Shown As Dashed Curve
 (+) = Maximum Candela Point

LUMINAIRE CLASSIFICATION SYSTEM (LCS) GRAPH



Luminaire Lumens:
Front: Low=133.9, Medium=398.4, High=117.9, Very High=4.5
Back: Low=19.0, Medium=33.5, High=17.0, Very High=1.7
Uplight: Low=0.0, High=0.0

BUG Rating : B0-U0-G0

ARCHITECTURAL EGRESS

Vandal Resistant

AEL Full Cut-Off LED



WALL MOUNT
LED

Fixture Type	Date
Job Name	Approved By
Catalog Number	

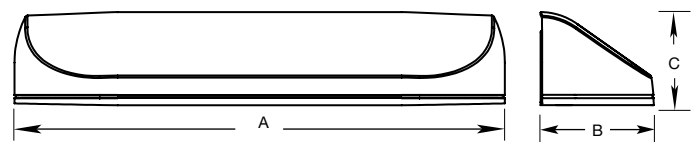
SPECIFICATIONS

- Description** The Architectural Egress Luminaire combines a unique, patented design shaped with high performance, full cut-off optics to achieve completely unobtrusive illumination of a space or path of egress. When mounted over a doorway, the fixture is perceived as an element of the building structure and, additionally, provides water protection in the form of a drip cap over the doorway. Multiple lengths are available to match a given door opening and our unique quick mount system facilitates installation and maintenance.
- Housing** Marine grade heat treated extruded aluminum. Chemically primed and finished with robotically applied polyester powder coat.
- Wall Mount** Marine grade heat treated extruded aluminum. Chemically primed and finished with robotically applied polyester powder coat. Designed to provide quick mounting to housing and secured with (2) captive stainless steel TORX® head screws.
- Lens Frame** Marine grade heat treated extruded aluminum, clear anodized. Secured to fixture via integral concealed hinge and (3) captive stainless steel TORX® head screws.
- Lens** UV stabilized diffused extruded polycarbonate.
- End Caps** Die-cast marine grade aluminum continuously welded to housing. All welds ground smooth.
- Reflector** Electrostatically brightened anodized aluminum PVD coated and absolutely color-free of iridescence. Shaped to provide full cutoff, LED point dispersion and maximum efficiency.
- Drivers** Constant current drivers at 350mA. High output version utilizes 700mA.
- LED** Samsung LM561B+ Series @ 3000K, 3500K, 4000K, or 5000K and 82 CRI wired in parallel-series. L₇₀ projected life of 130,000 hours at 50°C. Tested in accordance with LM-80. Ten year warranty on LED boards against operational defects.
- Gaskets** Closed cell self-adhesive neoprene to provide watertight seal between fixture and wall and between fixture and lens frame.
- UL Listing** U.L., C.U.L., Wet standard.
- Lifetime Warranty** Luminaire LED Incorporated will repair or replace any fixture damaged due to vandalism for the lifetime of the installation.



DIMENSIONAL DATA

	A	B	C
AEL 12	20.79	5.40	3.60
AEL 24	32.04	5.40	3.60
AEL 36	43.29	5.40	3.60
AEL 48	54.75	5.40	3.60
AEL 72	78.75	5.40	3.60



ARCHITECTURAL EGRESS

Vandal Resistant

Fixture Type

AEL Full Cut-Off LED

ORDERING INFORMATION

REDUCE LUMEN OUTPUT AND WATTAGE

SERIES	LED	CCT	VOLTS	LENS	COLOR	OPTIONS		TX/SD
AEL 12	12" - 10W	3000K	120-277	DP	BKH	DIM	EMBDA	
AEL 24	24" - 10W	3500K	347		BZH	A/B	EMB310	
AEL 36	24" - 20W	4000K			SVH	2B	EMB310ST	
AEL 48	36" - 15W	5000K			WOP	PC	EMB20R	
AEL 72	36" - 30W				PCP	GLR	EMB125R	
	48" - 20W				CUST	OCC	EMB250R	
	48" - 35W						ST/SC	
	72" - 30W							
	72" - 55W							

OPTIONS

LENS	DP = Diffused Polycarbonate.
COLORS	BKH = Black (Hammerstone) BZH = Bronze (Hammerstone) SVH = Silver (Hammerstone) WOP = White (Textured White) PCP = Black (Prime Coat Paintable) CUST = Custom Color (Consult Factory)
DIM	0-10V dimming driver. N/A with AEL12. 10% at lowest level.
A/B	Aluminum surface back box. Finished with polyester powder coat to match the fixture.
PC	Photoelectric switch.
2B	(2) LED drivers for independent LED based operation. N/A with AEL12. N/A with the OCC option.
GLR	Fuse and fuse holder.
EMB310	1000 lumen self-contained, 90 minute emergency battery pack. Available for 36", 48" and 72" lengths only. 0°C (32°F) to 55°C (131°F). Not available in 347V.
EMB310ST	1000 lumen self-testing, self-contained, 90 minute emergency battery pack. Available for 36", 48" and 72" lengths only. 0°C (32°F) to 55°C (131°F). Not available in 347V.
EMB20R	Remote mounted micro inverter that will operate a 25W maximum load for 90 minutes. 0°C (32°F) to 45°C (113°F).
EMB125R	Remote inverter that will operate a 125W maximum load for 90 minutes. 20°C (68°F) to 30°C (86°F). Not available in 347V.
EMB250R	Remote inverter that will operate a 250W maximum load for 90 minutes. 20°C (68°F) to 30°C (86°F). Not available in 347V.
EMBDA	Two drivers and two emergency battery packs self-contained within fixture for independent light engine operation. Each battery pack will operate each light engine for a minimum of 90 minutes. Available in the 72" length only. Not available in 347V.
OCC	Passive infrared sensor mounted in machine hole in end cap. Maximum coverage of 10' radius from 8' height.
ST/SC	Slotted screws instead of TORX® head.
TX/SD	TORX® head bit.

ARCHITECTURAL EGRESS

Vandal Resistant

Fixture Type

AEL Full Cut-Off LED

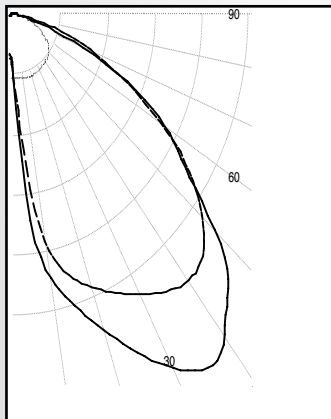
PHOTOMETRIC DATA

7 WATTS 406.56

Model	Watts	Input Watts	Delivered Lumens			
			3000K	3500K	4000K	5000K
AEL 12	10W	10.8W	747	760	784	807
AEL 24	10W	9.4W	832	847	873	899
AEL 24	20W	17.6W	1557	1585	1634	1682
AEL 36	15W	14.9W	1248	1271	1310	1348
AEL 36	30W	26.3W	2995	3049	3143	3237
AEL 48	20W	18.8W	1935	1969	2030	2090
AEL 48	35W	35.2W	3616	3682	3796	3909
AEL 72	30W	27.9W	3162	3217	3317	3417
AEL 72	55W	52.2W	5911	6017	6203	6389

MODEL AEL12-10W-4000K

Delivered Lumens: 726 Lumens



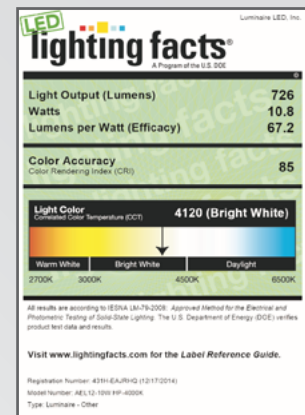
IES FILE: AEL12-10W-4000K

Total Power: 10.8W

Testing was performed in accordance with IES LM-79-08

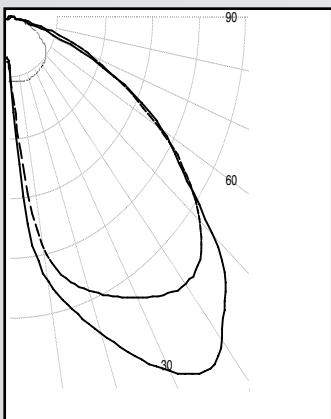
Bug Rating: B0U0G0

Zone	Lumens	% Lamps
0 - 30	153	21.1
0 - 40	287	39.5
0 - 60	585	80.6
60 - 90	726	100.0
0 - 90	439	60.5
90 -180	0	0.0
0 - 180	726	100.0



MODEL AEL36-15W-4000K

Delivered Lumens: 1213 Lumens



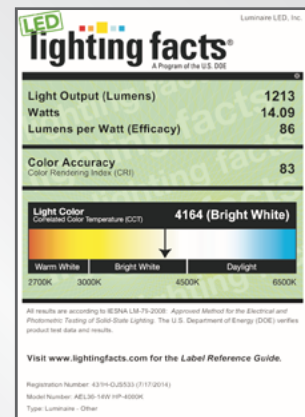
IES FILE: AEL36-15W-4000K

Total Power: 14.09W

Testing was performed in accordance with IES LM-79-08

Bug Rating: B0U1G0

Zone	Lumens	% Lamps
0 - 30	381	31.4
0 - 40	635	52.3
0 - 60	1063	87.7
60 - 90	150	12.3
0 - 90	1213	100.0
90 -180	0	0.0
0 - 180	1213	100.0



ARCHITECTURAL EGRESS

Vandal Resistant

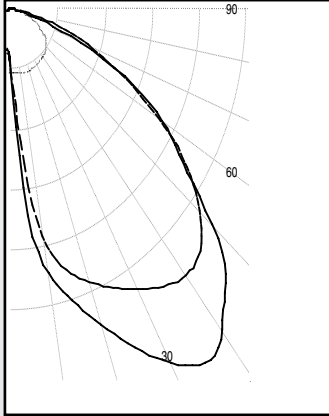
Fixture Type

AEL Full Cut-Off LED

PHOTOMETRIC DATA

MODEL AEL36-30W-4000K

Delivered Lumens: 2911 Lumens



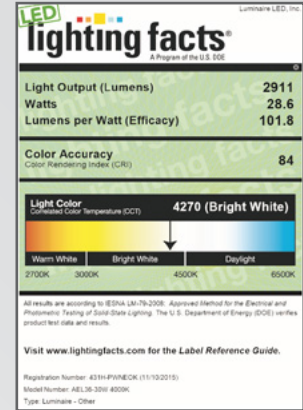
IES FILE: AEL36-30W-4000K

Total Power: 28.6W

Testing was performed in accordance with IES LM-79-08

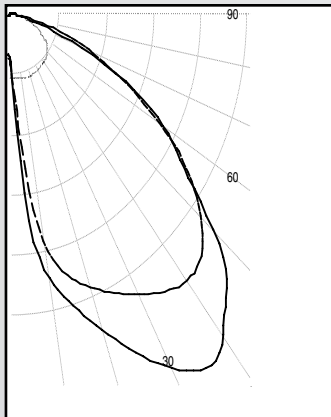
Bug Rating: B0U0G0

Zone	Lumens	% Lamps
0 - 30	754	25.9
0 - 40	1308	44.9
0 - 60	2417	83.0
60 - 90	494	17.0
0 - 90	2911	100.0
90 - 180	0	0.0
0 - 180	2911	100.0



MODEL AEL72-30W-4000K

Delivered Lumens: 3072 Lumens



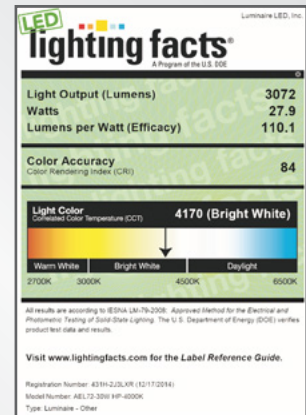
IES FILE: AEL72-30W-4000K

Total Power: 27.09W

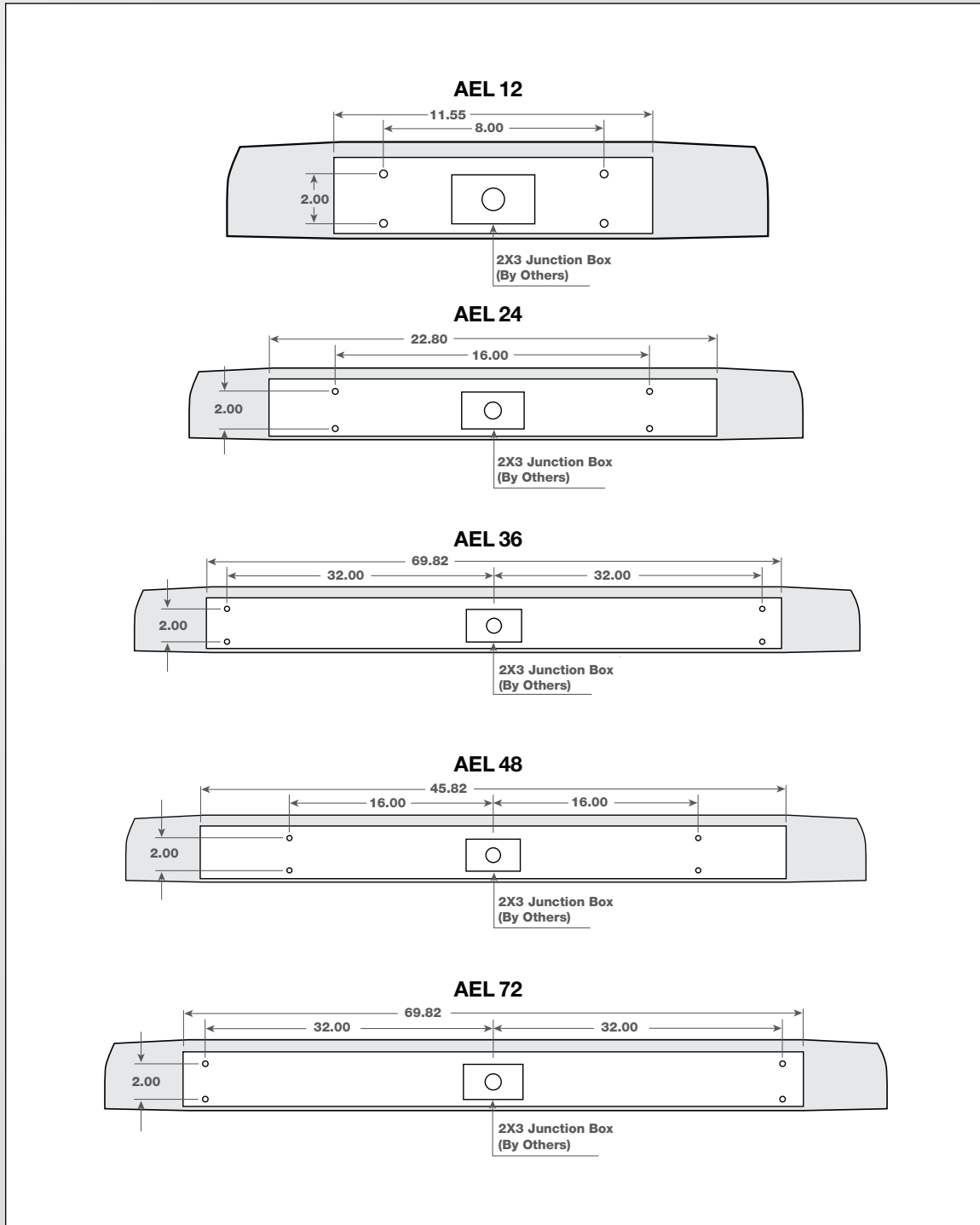
Testing was performed in accordance with IES LM-79-08

Bug Rating: B1U0G1

Zone	Lumens	% Lamps
0 - 30	771	25.1
0 - 40	1353	44.1
0 - 60	2529	82.3
60 - 90	3072	100.0
0 - 90	1718	17.7
90 - 180	542	0.0
0 - 180	3072	100.0



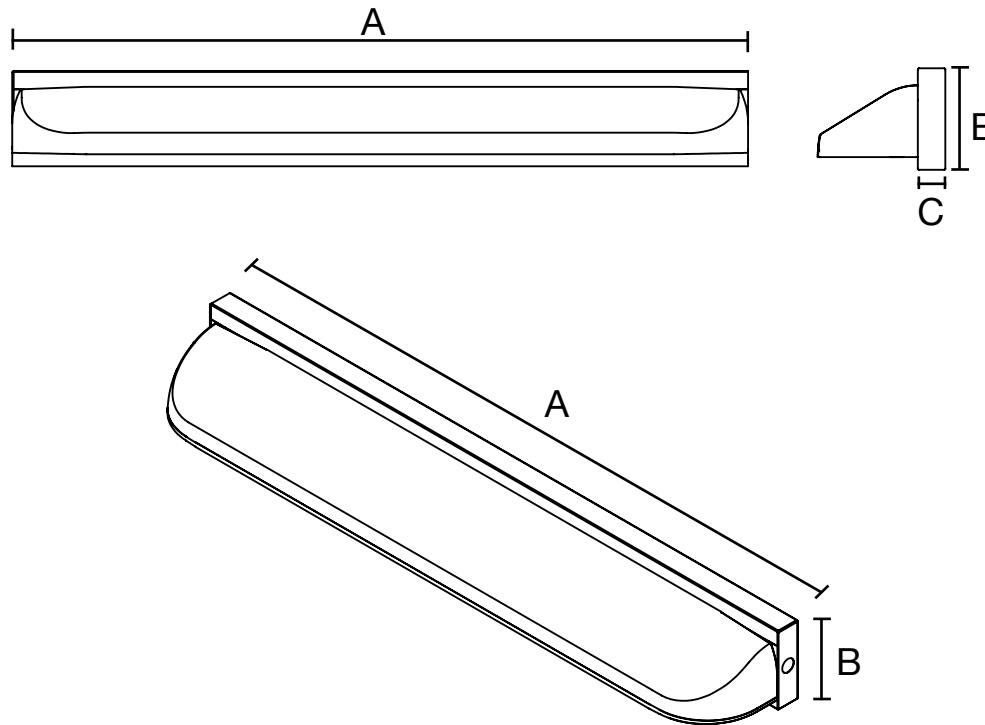
MOUNTING PLATE DETAILS



ALUMINUM BACKBOX DETAIL

A/B Detail

	A	B	C
AEL 12 Backbox	20.80	5.20	1.50
AEL 24 Backbox	31.48	5.20	1.50
AEL 36 Backbox	43.30	5.20	1.50
AEL 48 Backbox	54.75	5.20	1.50
AEL 72 Backbox	78.75	5.20	1.50





REDUCED OUTPUT USE X .56
MULTIPLIER TO ALL VALUES

IES ROAD REPORT

PHOTOMETRIC FILENAME : AEL12-10W-4000K.IES

DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002

[TEST] LLI-14257-1

[TESTLAB] LightLab International (www.LightLabInt.com)

[MANUFAC] Luminaire LED, Inc., Edison, New Jersey, 08817

[LUMCAT] AEL12-10W 4000K

[LUMINAIRE] Luminaire LED Architectural Egress Luminaire. Cat No:AEL12-10W 4000K

[MORE] Painted extruded aluminum body with endcaps and a horizontal finely etched planar glass diffuser 2.5"x10.4".

[MORE] Two piece aluminum asymmetric reflector with single 1 x 28 array of LEDs spaced at 0.38".

[MORE] LED strip screws to black extruded heat sink. Luminaire extents ~ 5-1/2 x 21 x 3-1/2".

[MORE] One integral Thomas Research Products LED12W-16-C0700 100-277V 50/60Hz driver.

[MORE] Tested wall mount position at 120V.

[OTHER] Absolute test - lamp lumens value set to -1

[MORE] NA conventions used for C0 plane alignment and C-plane rotation direction.

[MORE] The sample was tested at a distance of 8m.

[MORE] This IES file created by LightLab/LSA Report program version 3.804a.

[DATE] This file created: Thursday, 23 October 2014 3:27:26 PM

[ISSUE DATE] Thursday, 23 October 2014 3:27:26 PM

CHARACTERISTICS

IES Classification	Type III
Longitudinal Classification	Very Short
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	726
Downward Total Efficiency	N.A. (absolute)
Total Luminaire Efficiency	N.A. (absolute)
Luminaire Efficacy Rating (LER)	67
Total Luminaire Watts	10.8 7 WATTS
Ballast Factor	1.00
Upward Waste Light Ratio	0.00
Maximum Candela	540.37
Maximum Candela Angle	0H 36.5V
Maximum Candela (<90 Degrees Vertical)	540.37
Maximum Candela Angle (<90 Degrees Vertical)	0H 36.5V
Maximum Candela At 90 Degrees Vertical	0 (0.0% Luminaire Lumens)
Maximum Candela from 80 to <90 Degrees Vertical	32.97 (4.5% Luminaire Lumens)
Cutoff Classification (deprecated)	N.A. (absolute)

IES ROAD REPORT
PHOTOMETRIC FILENAME : AEL12-10W-4000K.IES

LUMINAIRE CLASSIFICATION SYSTEM (LCS)

	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	133.9	N.A.	18.4
FM - Front-Medium (30-60)	398.4	N.A.	54.9
FH - Front-High (60-80)	117.9	N.A.	16.2
FVH - Front-Very High (80-90)	4.5	N.A.	0.6
BL - Back-Low (0-30)	19.0	N.A.	2.6
BM - Back-Medium (30-60)	33.5	N.A.	4.6
BH - Back-High (60-80)	17.0	N.A.	2.3
BVH - Back-Very High (80-90)	1.7	N.A.	0.2
UL - Uplight-Low (90-100)	0.0	N.A.	0.0
UH - Uplight-High (100-180)	0.0	N.A.	0.0
Total	725.9	N.A.	100.0
BUG Rating	B0-U0-G0		

IES ROAD REPORT
PHOTOMETRIC FILENAME : AEL12-10W-4000K.IES

CANDELA TABULATION

Vert. Angles	Horizontal Angles									
	<u>0.0</u>	<u>10.0</u>	<u>20.0</u>	<u>22.5</u>	<u>30.0</u>	<u>40.0</u>	<u>45.0</u>	<u>50.0</u>	<u>60.0</u>	<u>67.5</u>
0.0	79.53	79.53	79.53	79.53	79.53	79.53	79.53	79.53	79.53	79.53
0.5	87.05	87.12	86.53	86.60	86.09	85.09	84.57	84.14	82.87	82.06
1.0	95.76	95.51	94.48	94.39	93.26	91.25	90.17	89.11	86.67	84.91
1.5	106.04	105.63	103.77	103.42	101.52	98.27	96.40	94.63	90.74	87.76
2.0	117.91	117.27	114.75	114.14	111.03	106.28	103.65	100.74	95.15	91.02
2.5	131.94	130.87	127.62	126.53	122.30	115.37	111.65	107.93	100.09	94.39
3.0	147.96	146.62	141.76	140.51	134.91	125.65	120.91	115.64	105.36	98.08
3.5	165.77	163.90	157.90	156.36	149.02	137.10	130.76	124.18	111.11	102.16
4.0	184.70	182.69	175.24	173.48	164.58	149.96	141.97	133.70	117.46	106.28
4.5	204.39	201.90	193.47	191.35	180.82	163.38	153.89	143.97	124.18	110.66
5.0	223.86	220.94	211.83	209.54	197.73	177.83	166.53	154.85	131.48	115.53
5.5	242.25	239.21	229.87	227.15	214.68	192.68	180.10	166.67	139.25	120.43
6.0	258.70	255.97	246.37	243.84	230.88	207.66	193.75	178.80	147.45	125.90
6.5	273.52	270.62	261.67	258.98	246.28	222.25	207.57	191.21	155.96	131.42
7.0	286.29	283.64	275.04	272.62	260.42	236.20	221.12	203.73	165.15	137.43
7.5	297.55	294.96	286.86	284.39	272.82	249.20	234.05	216.10	174.49	143.66
8.0	307.12	304.61	297.09	294.96	283.91	261.13	246.30	228.07	184.12	150.02
8.5	315.59	313.17	306.24	304.18	293.78	272.28	257.61	239.69	194.09	156.83
9.0	322.97	320.39	314.18	312.10	302.58	281.81	268.12	250.52	203.71	163.82
9.5	329.26	326.95	321.02	319.17	310.11	290.70	277.59	260.49	213.23	171.00
10.0	334.62	332.60	327.08	325.34	316.77	298.56	286.24	269.86	222.87	178.28
10.5	339.39	337.63	332.35	330.68	322.65	305.54	293.92	278.22	232.04	185.69
11.0	344.11	342.02	337.02	335.47	327.94	311.88	300.75	285.94	240.84	193.01
11.5	348.10	346.20	341.46	339.92	332.65	317.59	307.17	293.02	249.33	200.53
12.0	352.16	350.23	345.30	344.03	336.86	322.42	312.76	299.39	257.29	207.85
12.5	356.11	354.13	349.18	347.95	340.82	326.84	317.75	305.27	264.58	214.99
13.0	360.04	358.14	353.05	351.60	344.45	331.03	322.55	310.48	271.49	222.15
13.5	363.76	362.10	356.79	355.23	347.96	334.76	326.65	315.20	277.77	228.86
14.0	367.83	365.88	360.50	359.03	351.42	338.42	330.36	319.29	283.52	235.29
14.5	371.84	369.90	364.36	362.58	354.75	341.80	333.83	323.14	288.71	241.45
15.0	375.96	373.81	368.10	366.19	358.10	344.84	337.06	326.79	293.46	247.25
15.5	379.91	378.09	371.92	370.00	361.53	347.95	340.37	329.92	297.79	252.65
16.0	384.27	382.00	375.81	373.73	364.97	351.03	343.08	332.98	301.64	257.68
16.5	388.69	386.08	379.45	377.50	368.41	353.93	345.83	335.49	305.04	262.55
17.0	392.84	390.29	383.43	381.35	371.84	356.82	348.53	338.03	308.10	266.96
17.5	397.01	394.47	387.16	385.08	375.40	359.76	350.88	340.22	310.84	271.26
18.0	401.32	398.41	390.91	388.87	378.70	362.72	353.15	342.26	313.41	275.17
18.5	405.42	402.64	394.72	392.52	382.40	365.43	355.77	344.10	315.91	278.86
19.0	409.78	406.76	398.61	396.45	385.82	368.22	357.91	346.06	318.10	282.27
19.5	413.77	410.90	402.59	399.75	389.15	371.03	359.99	347.79	320.13	285.62
20.0	418.20	415.18	406.17	403.91	392.49	373.60	362.14	349.81	321.97	288.57
20.5	422.56	419.37	410.19	407.56	395.87	376.10	364.29	351.68	323.77	291.47
21.0	427.06	423.52	413.99	411.20	399.12	378.67	366.44	353.50	325.35	293.96
21.5	431.38	427.88	417.98	415.06	402.48	381.02	368.55	355.46	326.86	296.34
22.0	436.13	432.50	421.97	418.71	405.85	383.68	370.81	357.36	328.30	298.49
22.5	441.01	437.00	426.23	422.68	409.16	385.94	372.95	359.21	329.46	300.38
23.0	445.95	441.55	430.17	426.60	412.50	388.42	375.15	361.11	330.68	302.20
23.5	450.63	446.41	434.39	430.58	415.82	390.79	377.32	363.09	331.89	303.66
24.0	455.69	451.16	438.49	434.52	419.04	393.31	379.52	365.05	333.00	305.03
24.5	460.49	455.63	442.61	438.59	422.37	395.65	381.76	366.81	334.06	306.22
25.0	465.43	460.58	446.93	442.90	425.79	398.24	384.03	368.55	335.13	307.06
25.5	470.14	465.29	451.18	446.98	429.35	400.66	385.99	370.22	336.07	307.98
26.0	475.08	469.83	455.46	451.10	432.79	403.07	387.85	371.93	336.92	308.79

IES ROAD REPORT
PHOTOMETRIC FILENAME : AEL12-10W-4000K.IES

CANDELA TABULATION - (Cont.)

26.5	479.71	474.47	459.86	455.31	436.12	405.73	389.88	373.69	337.97	309.42
27.0	484.20	478.85	463.95	459.58	439.64	408.16	391.88	375.02	338.82	309.98
27.5	488.52	483.40	468.48	463.67	443.01	410.56	393.79	376.71	339.91	310.49
28.0	493.10	487.71	472.64	467.94	446.40	413.34	395.79	378.24	340.55	310.89
28.5	497.18	491.77	476.86	472.02	449.80	415.73	397.78	379.71	341.28	311.35
29.0	501.30	496.04	480.71	476.09	453.24	418.37	399.80	381.25	342.35	311.51
29.5	505.41	500.08	484.62	479.90	456.27	420.97	401.66	382.39	342.91	311.90
30.0	509.50	503.94	488.54	483.60	459.70	423.53	403.65	384.00	343.86	312.04
30.5	513.36	507.82	492.34	487.17	462.88	425.93	405.66	385.49	344.46	312.22
31.0	516.92	511.45	495.90	490.49	466.08	428.45	407.60	386.84	345.14	312.32
31.5	520.52	515.06	499.57	494.00	469.07	430.95	409.57	388.13	345.46	312.26
32.0	523.53	518.53	502.84	496.95	472.09	433.34	411.46	389.55	345.89	312.17
32.5	526.77	521.90	506.23	500.09	474.98	435.69	413.56	390.97	346.11	312.14
33.0	529.61	524.97	509.24	503.00	477.66	437.84	415.35	392.47	346.48	311.88
33.5	532.24	527.79	512.18	505.49	480.29	440.13	417.29	393.74	346.71	311.57
34.0	534.85	530.19	514.83	508.14	482.71	442.15	419.20	395.15	346.91	311.08
34.5	537.02	532.44	517.28	510.63	485.28	444.06	420.93	396.57	346.83	310.48
35.0	538.42	534.21	519.38	512.63	487.43	445.92	422.51	397.65	346.82	309.74
35.5	539.69	535.69	521.10	514.37	489.31	447.73	424.04	398.81	346.70	308.75
36.0	540.31	536.72	522.58	515.91	491.23	449.50	425.62	400.03	346.38	307.92
36.5	540.37	537.26	523.79	517.13	492.84	451.28	426.98	400.87	345.95	307.03
37.0	539.79	537.47	524.43	518.09	494.20	452.80	428.10	401.96	345.42	305.97
37.5	538.54	536.81	524.60	518.54	495.31	454.36	429.46	402.74	344.82	305.18
38.0	536.60	535.67	524.39	518.59	496.28	455.59	430.64	403.54	344.22	304.33
38.5	533.91	533.48	523.44	518.15	496.86	456.74	431.60	404.11	343.56	303.63
39.0	530.35	530.65	522.27	517.54	497.31	457.88	432.52	404.36	342.98	303.01
39.5	526.79	527.19	520.35	516.17	497.27	458.61	433.12	404.82	342.44	302.23
40.0	522.53	523.15	517.82	514.26	496.68	459.31	433.70	404.84	341.97	301.49
40.5	517.78	518.79	514.46	511.74	495.72	459.69	434.02	404.65	341.69	300.79
41.0	513.39	514.44	510.69	508.59	494.29	459.68	434.18	404.41	341.44	300.05
41.5	509.20	509.85	506.44	504.83	492.55	459.67	434.18	404.15	340.89	299.27
42.0	505.14	505.47	502.23	500.70	490.17	459.12	433.84	403.80	340.57	298.56
42.5	501.43	501.36	497.58	496.27	487.29	458.36	433.25	403.21	340.27	297.68
43.0	497.87	497.42	493.11	491.89	484.08	457.30	432.30	402.64	339.99	297.07
43.5	494.21	493.76	488.88	487.35	480.27	455.86	431.09	401.90	339.67	296.16
44.0	490.68	490.27	484.64	483.03	476.30	453.81	429.58	401.27	339.15	295.16
44.5	487.34	486.90	480.79	478.85	471.96	451.29	427.73	400.24	338.78	294.38
45.0	483.65	483.29	476.98	474.63	467.73	448.38	425.92	399.35	338.15	293.36
45.5	479.80	479.63	473.05	470.58	463.35	444.90	423.79	398.27	337.59	292.17
46.0	475.34	475.65	469.33	466.74	459.08	440.92	421.38	396.97	336.97	290.90
46.5	470.80	471.56	465.34	462.77	455.00	436.75	418.74	395.44	335.93	289.68
47.0	465.86	466.65	461.09	458.70	450.88	432.15	415.88	393.87	334.93	288.35
47.5	459.91	461.46	456.65	454.60	446.83	427.50	412.67	391.96	333.76	286.83
48.0	453.53	455.65	451.85	450.16	442.57	422.60	409.08	389.67	332.48	285.28
48.5	446.19	449.23	446.56	445.11	438.31	417.67	405.08	387.54	331.17	283.51
49.0	438.15	441.94	440.89	439.90	433.77	412.77	401.11	384.80	329.73	281.73
49.5	429.32	434.00	434.59	434.21	429.13	407.78	396.85	381.78	327.98	279.77
50.0	419.81	425.33	427.75	427.89	424.33	403.04	392.31	378.61	326.07	277.86
50.5	409.66	415.83	420.14	421.06	418.71	398.25	387.73	374.87	323.85	275.79
51.0	399.55	405.90	412.11	413.74	412.82	393.39	383.13	371.17	321.50	273.70
51.5	389.48	395.94	403.25	405.54	406.48	388.52	378.47	366.93	318.94	271.63
52.0	379.99	386.11	393.78	396.75	399.68	383.43	373.59	362.29	316.19	269.38
52.5	371.07	376.62	384.17	387.60	392.17	378.43	368.63	357.58	313.41	267.15
53.0	363.01	367.79	374.55	378.25	384.28	373.14	363.76	352.43	310.38	264.86
53.5	354.90	359.46	365.29	368.88	375.85	367.49	358.35	347.29	307.19	262.50
54.0	347.93	351.82	356.43	359.64	366.79	361.73	353.08	341.96	303.91	259.88

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CANDELA TABULATION - (Cont.)

54.5	341.20	344.59	348.22	350.93	357.45	355.45	347.86	336.54	300.45	257.36
55.0	334.76	337.62	340.14	342.67	348.05	348.69	341.89	331.06	296.90	254.45
55.5	328.92	331.23	332.69	334.81	338.81	341.87	335.93	325.31	293.16	251.46
56.0	322.94	325.28	325.52	327.33	329.79	334.64	329.65	319.51	289.01	248.32
56.5	317.28	319.21	318.87	320.19	321.20	326.94	322.91	313.63	284.83	244.97
57.0	311.96	313.39	312.43	313.51	312.97	318.96	316.18	307.85	280.31	241.81
57.5	306.04	307.56	306.22	306.89	305.15	310.77	309.05	301.84	275.69	238.33
58.0	300.66	301.79	300.31	300.49	297.62	302.38	301.74	295.61	270.70	234.59
58.5	295.11	296.10	294.12	294.06	290.44	293.84	294.23	289.39	265.64	230.90
59.0	289.28	290.24	288.31	287.90	283.53	285.25	286.32	282.95	260.37	226.90
59.5	283.30	284.09	282.27	281.65	276.63	277.11	278.32	276.20	254.97	222.92
60.0	277.07	278.06	276.21	275.38	269.93	268.96	270.53	268.94	249.40	218.69
60.5	270.64	271.72	270.03	268.89	263.63	261.17	262.45	262.05	243.74	214.42
61.0	264.03	265.12	263.81	262.49	256.96	253.61	254.53	254.59	238.01	210.02
61.5	257.11	258.28	257.32	255.78	250.56	246.19	246.55	247.22	232.22	205.47
62.0	250.00	250.93	250.63	249.03	243.96	239.09	238.98	239.61	226.37	200.87
62.5	242.28	243.56	243.46	242.05	237.57	231.99	231.31	231.95	220.36	196.12
63.0	234.53	235.84	236.40	234.82	230.98	225.14	223.96	224.28	214.41	191.29
63.5	226.40	227.81	228.82	227.56	224.22	218.60	216.77	216.89	208.27	186.39
64.0	217.61	219.51	220.97	220.13	217.20	211.60	209.63	209.42	202.00	181.30
64.5	208.85	210.73	212.86	212.27	210.20	204.84	202.76	202.13	195.71	176.00
65.0	199.33	201.80	204.71	204.07	202.99	198.01	195.67	195.01	189.43	170.85
65.5	189.87	192.50	196.27	195.83	195.45	191.33	188.86	187.81	183.01	165.64
66.0	180.19	182.85	187.47	187.31	188.13	184.33	182.17	180.90	176.47	160.27
66.5	169.96	173.12	178.47	178.75	180.21	177.64	175.51	174.15	170.09	154.96
67.0	159.72	163.06	169.34	170.01	172.29	170.63	168.85	167.33	163.52	149.57
67.5	149.04	152.79	160.03	161.09	164.29	163.62	162.12	160.76	157.13	144.20
68.0	138.83	142.64	150.36	151.99	156.21	156.72	155.45	154.32	150.71	138.79
68.5	128.83	132.45	140.74	142.71	147.92	149.82	148.88	147.71	144.21	133.39
69.0	118.60	122.58	131.25	133.30	139.64	142.79	142.02	141.43	138.07	128.09
69.5	109.30	112.90	122.05	124.16	131.29	135.77	135.73	135.15	131.96	122.74
70.0	100.42	104.07	112.81	115.26	122.80	128.53	129.10	128.90	125.80	117.43
70.5	92.10	95.58	104.12	106.91	114.68	121.70	122.43	122.59	119.95	112.23
71.0	84.68	87.73	95.83	98.96	106.43	114.56	116.05	116.49	114.13	107.07
71.5	77.46	80.48	88.28	90.98	98.78	107.56	109.56	110.33	108.47	101.77
72.0	71.00	73.73	81.12	83.64	91.26	100.80	103.27	104.39	102.93	96.84
72.5	64.89	67.53	74.89	76.62	84.28	94.01	96.97	98.58	97.37	91.98
73.0	59.17	61.69	68.93	70.41	77.64	87.49	90.67	92.74	92.23	86.92
73.5	54.24	56.49	63.17	64.47	71.58	81.20	84.73	86.95	86.89	82.18
74.0	49.54	51.70	57.54	59.01	65.65	75.11	78.84	81.41	81.85	77.61
74.5	45.20	47.05	52.51	54.16	60.27	69.41	73.29	75.93	76.99	73.07
75.0	41.25	43.03	47.85	49.62	55.35	63.94	67.86	70.96	72.18	68.61
75.5	37.58	39.21	43.94	45.15	50.71	58.88	62.67	65.83	67.65	64.37
76.0	34.11	35.55	39.92	41.26	46.51	54.34	58.02	60.95	63.04	60.30
76.5	30.95	32.46	36.28	37.58	42.31	49.81	53.33	56.53	58.84	56.29
77.0	28.25	29.53	33.06	34.26	38.69	45.69	48.99	52.03	54.60	52.39
77.5	25.45	26.72	29.95	31.06	35.18	41.86	44.99	47.97	50.63	48.67
78.0	23.38	24.21	27.19	28.25	31.93	38.16	41.18	44.09	46.72	45.14
78.5	20.94	21.87	24.47	25.48	29.07	34.96	37.63	40.19	42.98	41.74
79.0	18.93	19.67	22.15	22.98	26.27	31.65	34.33	36.85	39.47	38.44
79.5	16.91	17.68	19.95	20.81	23.75	28.70	31.16	33.42	36.21	35.16
80.0	15.20	15.65	17.93	18.54	21.30	26.00	28.35	30.51	32.97	32.14
80.5	13.53	14.13	16.00	16.50	19.06	23.27	25.46	27.52	30.00	29.40
81.0	12.09	12.50	14.25	14.73	17.00	20.88	22.97	24.81	27.10	26.61
81.5	10.65	11.02	12.54	13.14	15.06	18.66	20.53	22.19	24.39	23.95
82.0	9.42	9.72	10.96	11.42	13.29	16.50	18.24	19.86	21.85	21.47

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CANDELA TABULATION - (Cont.)

82.5	8.17	8.41	9.61	10.08	11.70	14.55	16.14	17.57	19.41	19.17
83.0	7.24	7.50	8.42	8.66	10.28	12.74	14.12	15.41	17.19	17.05
83.5	6.03	6.42	7.23	7.48	8.79	10.98	12.40	13.47	14.95	14.89
84.0	5.12	5.47	6.24	6.36	7.45	9.44	10.55	11.62	13.04	12.93
84.5	4.27	4.61	5.27	5.35	6.17	7.96	9.04	9.94	11.27	11.14
85.0	3.61	3.68	4.35	4.38	5.29	6.66	7.58	8.36	9.47	9.47
85.5	2.98	3.05	3.53	3.68	4.29	5.49	6.32	6.88	7.90	7.94
86.0	2.25	2.53	2.75	2.84	3.33	4.46	5.20	5.73	6.54	6.47
86.5	2.10	1.93	2.26	2.33	2.59	3.47	4.00	4.35	5.19	5.26
87.0	1.45	1.58	1.73	1.80	2.04	2.58	3.15	3.54	3.98	4.08
87.5	1.21	1.18	1.39	1.24	1.48	1.83	2.19	2.46	3.05	3.04
88.0	1.07	0.87	0.91	0.93	1.02	1.45	1.62	1.66	2.16	2.27
88.5	0.62	0.62	0.80	0.63	0.73	1.05	0.95	1.25	1.47	1.57
89.0	0.43	0.41	0.46	0.46	0.41	0.78	0.63	0.68	0.90	1.03
89.5	0.31	0.23	0.30	0.30	0.23	0.26	0.37	0.35	0.39	0.52
90.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Vert. Angles	Horizontal Angles									
	<u>70.0</u>	<u>80.0</u>	<u>90.0</u>	<u>100.0</u>	<u>110.0</u>	<u>112.5</u>	<u>120.0</u>	<u>130.0</u>	<u>135.0</u>	<u>140.0</u>
0.0	79.53	79.53	79.53	79.53	79.53	79.53	79.53	79.53	79.53	79.53
0.5	81.75	80.66	79.56	78.45	77.32	77.07	76.26	75.47	75.13	74.75
1.0	84.22	81.89	79.61	77.45	75.44	74.94	73.63	72.20	71.58	70.97
1.5	86.79	83.17	79.63	76.47	73.69	73.04	71.26	69.41	68.65	67.89
2.0	89.58	84.46	79.68	75.58	72.11	71.31	69.23	67.03	66.14	65.38
2.5	92.56	85.85	79.77	74.76	70.63	69.69	67.36	65.00	64.04	63.28
3.0	95.74	87.29	79.84	73.96	69.26	68.27	65.77	63.28	62.34	61.49
3.5	99.04	88.76	79.94	73.15	68.07	67.02	64.36	61.84	60.87	60.04
4.0	102.66	90.21	80.02	72.39	66.92	65.84	63.14	60.59	59.63	58.78
4.5	106.45	91.79	80.08	71.68	65.92	64.77	62.11	59.51	58.54	57.75
5.0	110.49	93.35	80.16	71.02	64.97	63.84	61.06	58.57	57.58	56.80
5.5	114.74	94.99	80.24	70.35	64.17	62.95	60.24	57.68	56.68	55.96
6.0	119.14	96.66	80.30	69.72	63.33	62.20	59.44	56.91	55.96	55.18
6.5	123.86	98.41	80.42	69.18	62.66	61.51	58.76	56.22	55.26	54.47
7.0	128.76	100.22	80.58	68.62	62.01	60.86	58.11	55.59	54.61	53.85
7.5	133.93	102.07	80.72	68.18	61.41	60.24	57.55	55.03	54.04	53.21
8.0	139.35	104.05	80.86	67.66	60.91	59.75	57.03	54.49	53.47	52.67
8.5	145.07	106.06	81.00	67.25	60.42	59.26	56.57	53.96	52.98	52.07
9.0	150.87	108.07	81.15	66.82	59.97	58.83	56.14	53.50	52.48	51.59
9.5	156.92	110.22	81.29	66.41	59.54	58.43	55.69	53.07	51.98	51.11
10.0	163.22	112.40	81.40	66.02	59.12	57.98	55.33	52.67	51.57	50.67
10.5	169.53	114.68	81.53	65.60	58.70	57.55	54.95	52.27	51.13	50.18
11.0	176.01	116.91	81.60	65.17	58.37	57.26	54.57	51.88	50.72	49.79
11.5	182.55	119.24	81.70	64.80	57.98	56.89	54.22	51.50	50.34	49.36
12.0	189.15	121.60	81.79	64.40	57.64	56.53	53.89	51.12	49.98	48.94
12.5	195.72	124.03	81.85	64.10	57.28	56.20	53.53	50.77	49.60	48.52
13.0	202.26	126.41	81.91	63.74	56.96	55.87	53.19	50.40	49.19	48.10
13.5	208.65	128.80	81.96	63.41	56.64	55.57	52.88	50.04	48.81	47.71
14.0	214.80	131.31	81.99	63.06	56.37	55.22	52.55	49.69	48.43	47.32
14.5	220.78	133.81	81.99	62.69	56.04	54.95	52.18	49.34	48.05	46.84
15.0	226.50	136.27	81.98	62.39	55.70	54.63	51.89	48.99	47.66	46.46
15.5	232.10	138.86	82.00	62.01	55.41	54.33	51.55	48.66	47.26	45.97
16.0	237.37	141.48	81.97	61.71	55.08	53.99	51.25	48.26	46.89	45.56
16.5	242.47	144.18	81.95	61.33	54.77	53.68	50.92	47.87	46.41	45.02
17.0	247.38	146.92	81.92	60.97	54.39	53.34	50.60	47.47	46.00	44.54
17.5	252.01	149.72	81.90	60.64	54.07	52.98	50.25	47.08	45.54	44.02

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CANDELA TABULATION - (Cont.)

18.0	256.47	152.54	81.82	60.29	53.73	52.65	49.86	46.63	45.09	43.50
18.5	260.63	155.40	81.81	59.99	53.38	52.32	49.50	46.27	44.57	42.94
19.0	264.59	158.36	81.78	59.62	53.04	51.96	49.12	45.76	44.04	42.36
19.5	268.28	161.28	81.72	59.28	52.74	51.59	48.73	45.30	43.55	41.77
20.0	271.73	164.16	81.72	58.99	52.39	51.29	48.35	44.80	42.97	41.22
20.5	274.99	167.08	81.66	58.65	52.06	50.91	47.95	44.30	42.41	40.57
21.0	278.06	170.00	81.64	58.31	51.73	50.56	47.58	43.75	41.82	39.89
21.5	280.89	172.90	81.58	58.01	51.42	50.23	47.13	43.22	41.23	39.19
22.0	283.43	175.72	81.53	57.75	51.08	49.87	46.77	42.63	40.59	38.49
22.5	285.80	178.60	81.51	57.43	50.76	49.58	46.32	42.04	39.95	37.76
23.0	287.99	181.39	81.43	57.10	50.44	49.23	45.92	41.54	39.28	36.90
23.5	289.93	184.17	81.38	56.76	50.09	48.88	45.49	40.90	38.53	36.12
24.0	291.67	186.84	81.33	56.46	49.74	48.51	45.06	40.27	37.85	35.29
24.5	293.23	189.48	81.23	56.17	49.40	48.17	44.59	39.67	37.04	34.44
25.0	294.57	192.06	81.17	55.86	49.06	47.81	44.14	38.99	36.23	33.56
25.5	295.66	194.62	81.12	55.58	48.71	47.46	43.68	38.33	35.50	32.69
26.0	296.63	196.94	81.07	55.24	48.37	47.06	43.17	37.64	34.67	31.83
26.5	297.43	199.40	81.02	54.95	48.04	46.70	42.72	36.95	33.85	31.05
27.0	298.18	201.71	80.93	54.65	47.68	46.30	42.19	36.19	33.02	30.25
27.5	298.83	203.97	80.90	54.36	47.31	45.94	41.65	35.44	32.25	29.53
28.0	299.46	206.14	80.81	54.02	46.97	45.53	41.13	34.68	31.42	28.81
28.5	299.92	208.19	80.74	53.73	46.59	45.11	40.62	33.94	30.63	28.17
29.0	300.28	210.18	80.69	53.39	46.18	44.69	40.03	33.14	29.92	27.54
29.5	300.56	212.03	80.57	53.11	45.78	44.28	39.51	32.37	29.18	27.03
30.0	300.69	213.78	80.49	52.81	45.43	43.83	38.89	31.62	28.52	26.59
30.5	300.80	215.49	80.40	52.47	45.07	43.38	38.33	30.88	27.94	26.11
31.0	300.83	216.94	80.23	52.10	44.65	42.98	37.76	30.16	27.35	25.69
31.5	300.75	218.27	80.07	51.82	44.22	42.56	37.22	29.48	26.85	25.41
32.0	300.58	219.40	79.89	51.51	43.87	42.12	36.74	28.83	26.39	25.23
32.5	300.32	220.29	79.76	51.18	43.44	41.61	36.23	28.21	25.94	25.01
33.0	299.96	221.03	79.58	50.85	42.98	41.16	35.82	27.63	25.51	24.83
33.5	299.38	221.52	79.41	50.50	42.56	40.71	35.45	27.08	25.15	24.54
34.0	298.69	221.92	79.22	50.18	42.14	40.19	34.96	26.60	24.89	24.14
34.5	297.82	222.21	79.05	49.83	41.67	39.69	34.44	26.19	24.66	23.80
35.0	296.96	222.41	78.92	49.48	41.18	39.25	33.80	25.78	24.48	23.61
35.5	295.94	222.60	78.74	49.13	40.69	38.72	33.03	25.42	24.29	23.39
36.0	294.99	222.76	78.63	48.82	40.24	38.13	32.15	25.09	23.90	23.17
36.5	293.95	223.00	78.53	48.48	39.78	37.61	31.19	24.73	23.54	23.07
37.0	293.01	223.20	78.36	48.13	39.28	37.08	30.29	24.42	23.26	22.88
37.5	292.14	223.42	78.24	47.77	38.81	36.50	29.45	24.11	23.02	22.72
38.0	291.32	223.57	78.06	47.43	38.30	35.94	28.67	23.83	22.81	22.59
38.5	290.54	223.68	77.95	47.08	37.80	35.38	28.03	23.45	22.65	22.44
39.0	289.86	223.71	77.84	46.76	37.30	34.82	27.45	23.11	22.46	22.34
39.5	289.15	223.65	77.70	46.37	36.74	34.26	26.90	22.81	22.32	22.19
40.0	288.39	223.45	77.60	46.04	36.25	33.63	26.37	22.56	22.11	22.09
40.5	287.64	223.16	77.45	45.66	35.71	33.04	25.89	22.32	21.94	21.97
41.0	286.91	222.78	77.30	45.31	35.15	32.45	25.36	22.13	21.80	21.90
41.5	286.08	222.26	77.15	44.95	34.62	31.85	24.94	21.93	21.67	21.78
42.0	285.27	221.74	77.01	44.59	34.07	31.26	24.48	21.74	21.53	21.73
42.5	284.34	221.08	76.85	44.25	33.49	30.67	24.05	21.54	21.42	21.68
43.0	283.47	220.34	76.67	43.87	32.97	30.04	23.70	21.37	21.30	21.62
43.5	282.48	219.45	76.48	43.51	32.41	29.47	23.32	21.20	21.20	21.56
44.0	281.50	218.51	76.25	43.10	31.83	28.92	22.95	21.08	21.12	21.52
44.5	280.41	217.39	76.02	42.70	31.25	28.35	22.66	20.92	21.00	21.52
45.0	279.24	216.27	75.77	42.34	30.67	27.77	22.32	20.74	20.94	21.46
45.5	278.01	215.06	75.52	41.97	30.15	27.25	22.03	20.61	20.86	21.45

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CANDELA TABULATION - (Cont.)

46.0	276.69	213.67	75.23	41.54	29.59	26.71	21.71	20.48	20.75	21.44
46.5	275.28	212.16	74.88	41.12	29.04	26.23	21.42	20.34	20.71	21.41
47.0	273.72	210.54	74.61	40.73	28.49	25.68	21.19	20.22	20.64	21.39
47.5	271.97	208.90	74.26	40.32	27.88	25.22	20.95	20.11	20.57	21.37
48.0	270.08	207.10	73.92	39.90	27.35	24.74	20.71	19.98	20.53	21.37
48.5	268.14	205.40	73.52	39.45	26.81	24.26	20.45	19.91	20.48	21.38
49.0	266.23	203.66	73.20	39.03	26.30	23.86	20.24	19.79	20.45	21.41
49.5	264.21	201.83	72.77	38.59	25.80	23.40	20.01	19.72	20.40	21.39
50.0	262.19	199.94	72.37	38.12	25.29	23.03	19.78	19.61	20.36	21.43
50.5	260.08	198.14	71.93	37.66	24.77	22.60	19.52	19.51	20.31	21.44
51.0	258.00	196.17	71.46	37.21	24.35	22.21	19.37	19.42	20.27	21.43
51.5	255.87	194.21	70.99	36.74	23.92	21.86	19.16	19.39	20.26	21.46
52.0	253.68	192.19	70.49	36.23	23.42	21.49	18.92	19.28	20.22	21.47
52.5	251.45	190.10	69.95	35.75	23.02	21.10	18.74	19.21	20.24	21.46
53.0	249.25	187.95	69.41	35.23	22.58	20.79	18.57	19.13	20.17	21.52
53.5	246.89	185.68	68.86	34.72	22.17	20.47	18.39	19.07	20.19	21.52
54.0	244.39	183.33	68.23	34.18	21.78	20.18	18.22	19.04	20.15	21.55
54.5	241.81	180.88	67.60	33.68	21.42	19.89	18.04	18.96	20.09	21.53
55.0	239.13	178.37	66.92	33.17	21.01	19.56	17.88	18.88	20.11	21.57
55.5	236.33	175.75	66.25	32.60	20.67	19.25	17.70	18.81	20.06	21.56
56.0	233.35	173.02	65.53	32.09	20.26	18.94	17.53	18.73	20.03	21.54
56.5	230.27	170.28	64.78	31.52	19.94	18.66	17.38	18.66	20.03	21.54
57.0	227.04	167.45	64.01	31.00	19.64	18.39	17.18	18.63	19.94	21.51
57.5	223.67	164.63	63.19	30.46	19.28	18.12	17.01	18.53	19.91	21.47
58.0	220.21	161.75	62.33	29.87	18.95	17.84	16.87	18.45	19.86	21.43
58.5	216.64	158.75	61.45	29.33	18.61	17.60	16.67	18.37	19.78	21.40
59.0	213.02	155.76	60.56	28.73	18.29	17.32	16.52	18.31	19.76	21.29
59.5	209.32	152.71	59.62	28.14	18.01	17.03	16.38	18.17	19.67	21.25
60.0	205.46	149.58	58.63	27.56	17.66	16.80	16.21	18.03	19.58	21.13
60.5	201.52	146.40	57.68	26.98	17.31	16.55	16.05	18.01	19.47	21.08
61.0	197.48	143.18	56.60	26.40	17.04	16.28	15.84	17.86	19.34	20.97
61.5	193.31	139.84	55.55	25.80	16.71	15.98	15.69	17.74	19.20	20.86
62.0	189.08	136.51	54.42	25.20	16.42	15.74	15.49	17.60	19.08	20.75
62.5	184.71	133.08	53.30	24.60	16.10	15.45	15.36	17.44	18.93	20.56
63.0	180.20	129.67	52.12	24.02	15.81	15.20	15.17	17.30	18.78	20.39
63.5	175.65	126.19	50.99	23.41	15.50	14.93	14.96	17.18	18.61	20.19
64.0	171.02	122.74	49.76	22.79	15.20	14.70	14.74	16.96	18.41	20.01
64.5	166.28	119.20	48.53	22.21	14.87	14.43	14.54	16.75	18.21	19.74
65.0	161.50	115.64	47.32	21.61	14.61	14.14	14.33	16.54	18.00	19.50
65.5	156.65	112.11	46.04	21.03	14.28	13.88	14.12	16.31	17.78	19.24
66.0	151.77	108.54	44.77	20.43	13.96	13.64	13.89	16.13	17.47	18.95
66.5	146.86	104.95	43.51	19.83	13.65	13.31	13.70	15.88	17.24	18.63
67.0	141.88	101.33	42.19	19.26	13.33	13.03	13.42	15.58	16.95	18.34
67.5	136.86	97.74	40.89	18.65	13.03	12.78	13.19	15.34	16.63	17.99
68.0	131.87	94.21	39.60	18.05	12.68	12.45	12.94	15.05	16.33	17.64
68.5	126.87	90.62	38.26	17.51	12.42	12.18	12.67	14.75	15.98	17.26
69.0	121.85	87.16	36.92	16.94	12.10	11.88	12.41	14.42	15.66	16.87
69.5	116.89	83.59	35.64	16.36	11.77	11.55	12.10	14.14	15.25	16.47
70.0	111.93	80.11	34.30	15.81	11.42	11.29	11.84	13.78	14.93	16.07
70.5	107.11	76.66	32.98	15.23	11.12	10.98	11.50	13.42	14.50	15.60
71.0	102.21	73.24	31.68	14.66	10.76	10.66	11.25	13.07	14.13	15.22
71.5	97.39	69.87	30.35	14.14	10.46	10.35	10.89	12.69	13.73	14.73
72.0	92.71	66.56	29.14	13.57	10.10	10.03	10.60	12.32	13.30	14.28
72.5	88.02	63.31	27.83	13.04	9.78	9.69	10.27	11.90	12.83	13.81
73.0	83.46	60.07	26.52	12.48	9.40	9.37	9.91	11.50	12.43	13.33
73.5	78.97	56.93	25.34	11.95	9.09	9.06	9.58	11.13	11.97	12.83

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CANDELA TABULATION - (Cont.)

74.0	74.54	53.88	24.11	11.43	8.74	8.70	9.24	10.71	11.53	12.36
74.5	70.25	50.87	22.88	10.90	8.45	8.35	8.89	10.32	11.08	11.84
75.0	66.06	47.93	21.69	10.40	8.04	8.01	8.54	9.95	10.60	11.35
75.5	62.03	45.05	20.55	9.90	7.70	7.72	8.19	9.50	10.17	10.89
76.0	58.04	42.26	19.41	9.37	7.34	7.34	7.83	9.00	9.70	10.40
76.5	54.26	39.57	18.24	8.89	7.02	6.98	7.44	8.63	9.25	9.87
77.0	50.57	37.00	17.16	8.42	6.65	6.66	7.12	8.19	8.80	9.41
77.5	47.00	34.45	16.10	7.92	6.30	6.27	6.72	7.76	8.34	8.93
78.0	43.57	31.98	15.05	7.45	5.98	5.98	6.40	7.33	7.89	8.44
78.5	40.28	29.66	13.98	6.99	5.63	5.63	6.02	6.94	7.44	7.98
79.0	37.14	27.37	13.03	6.49	5.32	5.30	5.66	6.52	7.00	7.52
79.5	34.11	25.19	12.04	6.09	4.94	4.98	5.33	6.14	6.56	7.09
80.0	31.20	23.08	11.13	5.68	4.64	4.65	5.00	5.76	6.17	6.59
80.5	28.44	21.04	10.21	5.22	4.31	4.37	4.61	5.37	5.77	6.19
81.0	25.83	19.14	9.31	4.84	4.01	4.03	4.31	5.01	5.36	5.77
81.5	23.32	17.26	8.49	4.42	3.70	3.70	4.00	4.62	4.99	5.34
82.0	20.91	15.54	7.66	3.99	3.42	3.44	3.68	4.29	4.62	4.98
82.5	18.65	13.90	6.90	3.66	3.14	3.15	3.37	3.94	4.23	4.57
83.0	16.53	12.33	6.11	3.31	2.81	2.83	3.12	3.62	3.93	4.24
83.5	14.51	10.85	5.41	2.94	2.57	2.60	2.84	3.35	3.58	3.87
84.0	12.63	9.44	4.74	2.70	2.34	2.35	2.55	3.02	3.28	3.54
84.5	10.88	8.13	4.12	2.29	2.08	2.14	2.34	2.81	3.04	3.23
85.0	9.22	6.91	3.53	1.99	1.87	1.94	2.11	2.46	2.76	2.99
85.5	7.72	5.83	2.99	1.72	1.62	1.68	1.91	2.27	2.54	2.75
86.0	6.36	4.77	2.49	1.50	1.51	1.48	1.70	2.10	2.25	2.49
86.5	5.09	3.88	2.05	1.28	1.28	1.33	1.52	1.88	2.05	2.30
87.0	4.01	3.02	1.66	1.08	1.16	1.16	1.34	1.71	1.87	2.06
87.5	3.03	2.29	1.30	0.90	0.99	1.01	1.20	1.54	1.66	1.82
88.0	2.21	1.74	0.99	0.73	0.82	0.89	1.06	1.18	1.12	1.07
88.5	1.55	1.23	0.81	0.59	0.67	0.68	0.64	0.51	0.30	0.23
89.0	1.01	0.86	0.53	0.39	0.29	0.31	0.12	0.02	0.04	0.05
89.5	0.53	0.49	0.31	0.12	0.06	0.04	0.03	0.05	0.02	0.04
90.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Vert. Angles **Horizontal Angles**

	<u>150.0</u>	<u>157.5</u>	<u>160.0</u>	<u>170.0</u>	<u>180.0</u>
0.0	79.53	79.53	79.53	79.53	79.53
0.5	74.23	73.81	73.78	73.65	73.55
1.0	70.13	69.56	69.46	69.23	69.07
1.5	66.84	66.16	66.07	65.68	65.56
2.0	64.19	63.49	63.38	62.92	62.82
2.5	62.02	61.34	61.18	60.73	60.60
3.0	60.31	59.58	59.40	58.99	58.83
3.5	58.82	58.17	58.04	57.50	57.41
4.0	57.58	56.88	56.74	56.28	56.12
4.5	56.51	55.86	55.67	55.11	55.05
5.0	55.57	54.89	54.72	54.22	54.06
5.5	54.72	54.01	53.83	53.36	53.15
6.0	53.92	53.24	53.01	52.53	52.35
6.5	53.22	52.48	52.31	51.72	51.57
7.0	52.53	51.80	51.60	51.04	50.84
7.5	51.89	51.19	50.92	50.30	50.12
8.0	51.31	50.54	50.33	49.69	49.49
8.5	50.73	49.94	49.69	49.03	48.78
9.0	50.15	49.34	49.14	48.45	48.17

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CANDELA TABULATION - (Cont.)

9.5	49.65	48.82	48.52	47.82	47.57
10.0	49.12	48.24	47.99	47.20	46.97
10.5	48.61	47.73	47.45	46.66	46.37
11.0	48.15	47.17	46.89	46.11	45.77
11.5	47.62	46.67	46.36	45.46	45.17
12.0	47.16	46.13	45.79	44.89	44.57
12.5	46.66	45.58	45.22	44.28	43.96
13.0	46.24	44.99	44.66	43.65	43.28
13.5	45.67	44.40	44.04	43.01	42.57
14.0	45.17	43.85	43.48	42.35	41.90
14.5	44.65	43.24	42.84	41.70	41.22
15.0	44.11	42.65	42.21	41.01	40.48
15.5	43.58	42.02	41.56	40.35	39.83
16.0	43.00	41.35	40.91	39.61	39.07
16.5	42.42	40.77	40.22	38.85	38.29
17.0	41.84	40.03	39.58	38.09	37.51
17.5	41.21	39.38	38.83	37.27	36.64
18.0	40.56	38.60	38.00	36.40	35.71
18.5	39.90	37.84	37.22	35.46	34.81
19.0	39.20	36.99	36.39	34.52	33.79
19.5	38.49	36.18	35.50	33.53	32.79
20.0	37.68	35.28	34.58	32.59	31.77
20.5	36.85	34.40	33.63	31.59	30.78
21.0	36.04	33.41	32.69	30.60	29.85
21.5	35.14	32.46	31.75	29.69	28.95
22.0	34.24	31.52	30.82	28.87	28.19
22.5	33.29	30.64	29.94	28.08	27.49
23.0	32.40	29.80	29.15	27.39	26.81
23.5	31.55	29.04	28.40	26.80	26.30
24.0	30.69	28.31	27.74	26.28	25.81
24.5	29.84	27.67	27.20	25.82	25.39
25.0	29.11	27.08	26.60	25.47	25.02
25.5	28.42	26.63	26.21	25.13	24.76
26.0	27.78	26.12	25.79	24.84	24.55
26.5	27.21	25.79	25.43	24.58	24.23
27.0	26.72	25.39	25.14	24.39	24.10
27.5	26.25	25.18	24.86	24.21	23.92
28.0	25.86	24.90	24.64	24.05	23.81
28.5	25.53	24.71	24.45	23.92	23.73
29.0	25.28	24.49	24.29	23.83	23.56
29.5	25.13	24.28	24.09	23.73	23.48
30.0	24.91	24.15	23.97	23.61	23.40
30.5	24.67	23.99	23.84	23.53	23.40
31.0	24.33	23.81	23.76	23.49	23.35
31.5	24.11	23.71	23.64	23.43	23.33
32.0	23.90	23.61	23.57	23.38	23.28
32.5	23.78	23.51	23.50	23.36	23.30
33.0	23.63	23.44	23.44	23.36	23.26
33.5	23.54	23.40	23.37	23.38	23.25
34.0	23.36	23.32	23.34	23.38	23.35
34.5	23.27	23.29	23.33	23.41	23.34
35.0	23.19	23.24	23.29	23.45	23.43
35.5	23.12	23.24	23.29	23.46	23.46
36.0	23.02	23.20	23.30	23.51	23.53
36.5	22.98	23.21	23.31	23.59	23.63
37.0	22.90	23.24	23.31	23.65	23.69

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PHOTOMETRIC FILENAME : AEL12-10W-4000K.IES

CANDELA TABULATION - (Cont.)

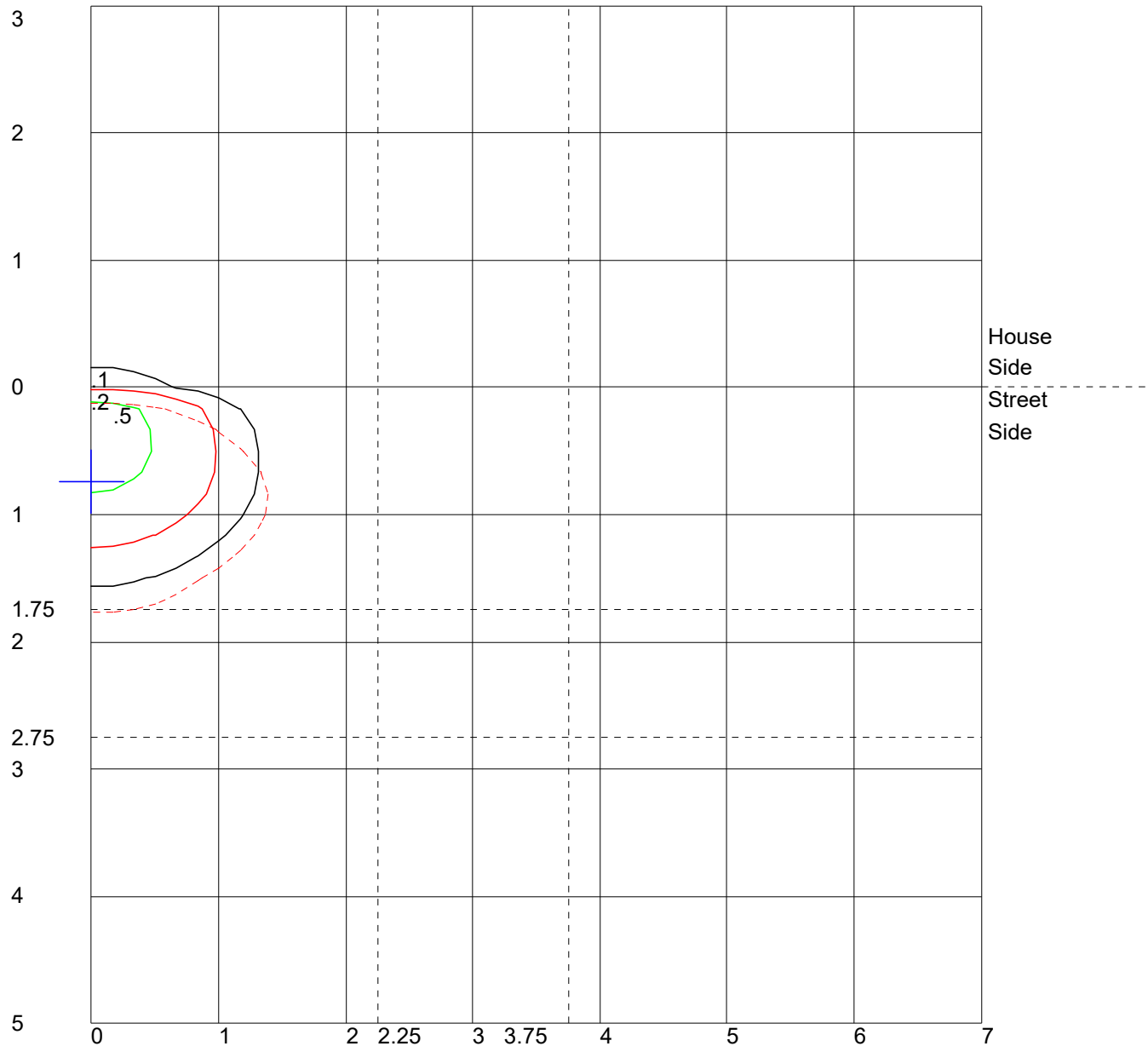
37.5	22.86	23.20	23.31	23.72	23.82
38.0	22.82	23.25	23.39	23.85	23.92
38.5	22.76	23.26	23.39	23.97	24.02
39.0	22.76	23.31	23.47	24.07	24.21
39.5	22.73	23.35	23.53	24.19	24.35
40.0	22.73	23.45	23.62	24.31	24.47
40.5	22.71	23.49	23.70	24.45	24.65
41.0	22.72	23.53	23.79	24.58	24.78
41.5	22.73	23.64	23.87	24.71	24.94
42.0	22.75	23.66	23.98	24.90	25.21
42.5	22.78	23.78	24.10	25.06	25.31
43.0	22.84	23.88	24.22	25.22	25.55
43.5	22.88	23.97	24.35	25.37	25.69
44.0	22.91	24.12	24.41	25.52	25.95
44.5	23.00	24.21	24.57	25.73	26.12
45.0	23.03	24.33	24.73	25.92	26.33
45.5	23.11	24.44	24.86	26.12	26.56
46.0	23.18	24.59	24.99	26.31	26.77
46.5	23.25	24.70	25.19	26.53	27.01
47.0	23.37	24.88	25.30	26.72	27.15
47.5	23.43	25.03	25.47	26.92	27.40
48.0	23.52	25.14	25.61	27.11	27.58
48.5	23.65	25.25	25.75	27.26	27.82
49.0	23.67	25.39	25.89	27.45	28.01
49.5	23.80	25.53	26.05	27.60	28.22
50.0	23.89	25.65	26.17	27.83	28.38
50.5	23.95	25.77	26.34	28.01	28.57
51.0	24.05	25.95	26.45	28.20	28.78
51.5	24.11	26.03	26.60	28.32	28.93
52.0	24.24	26.15	26.70	28.53	29.10
52.5	24.33	26.25	26.82	28.66	29.28
53.0	24.39	26.40	26.95	28.81	29.50
53.5	24.41	26.47	27.08	28.91	29.55
54.0	24.51	26.60	27.16	29.00	29.73
54.5	24.57	26.64	27.23	29.16	29.83
55.0	24.61	26.74	27.35	29.26	29.93
55.5	24.63	26.77	27.39	29.33	30.03
56.0	24.68	26.78	27.47	29.35	30.06
56.5	24.71	26.83	27.46	29.41	30.13
57.0	24.68	26.85	27.48	29.45	30.16
57.5	24.68	26.84	27.42	29.44	30.09
58.0	24.62	26.84	27.46	29.37	30.11
58.5	24.63	26.79	27.43	29.36	30.06
59.0	24.57	26.73	27.37	29.29	29.98
59.5	24.53	26.62	27.25	29.20	29.86
60.0	24.42	26.54	27.19	29.08	29.73
60.5	24.32	26.39	27.06	28.89	29.56
61.0	24.19	26.24	26.87	28.74	29.35
61.5	24.04	26.06	26.72	28.50	29.13
62.0	23.89	25.92	26.49	28.26	28.93
62.5	23.68	25.65	26.22	27.98	28.61
63.0	23.46	25.45	26.00	27.68	28.28
63.5	23.18	25.17	25.68	27.38	27.94
64.0	22.96	24.82	25.35	26.97	27.62
64.5	22.64	24.49	25.00	26.62	27.18
65.0	22.39	24.13	24.66	26.20	26.73

IES ROAD REPORT
PHOTOMETRIC FILENAME : AEL12-10W-4000K.IES

CANDELA TABULATION - (Cont.)

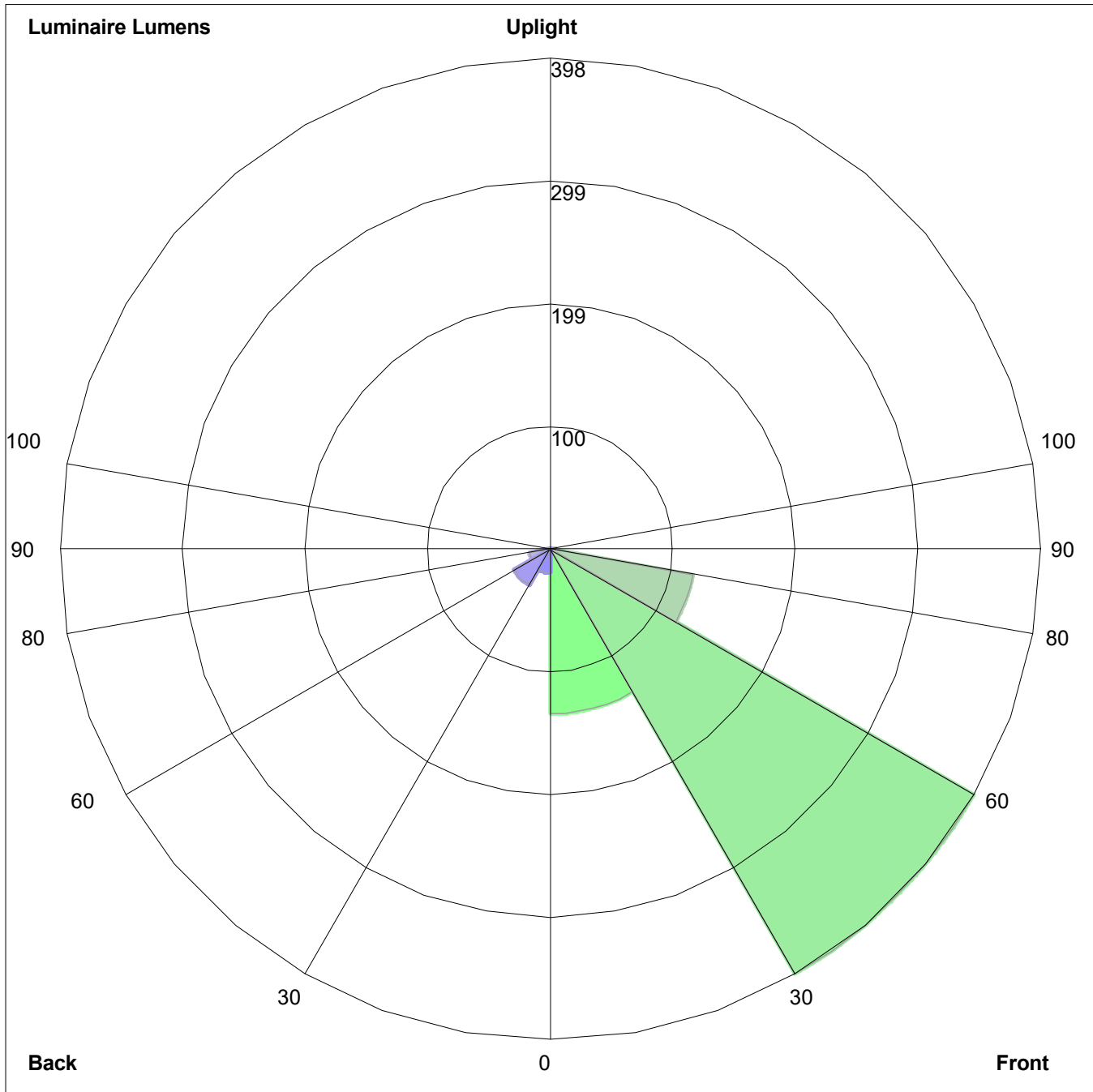
65.5	22.05	23.77	24.28	25.76	26.24
66.0	21.66	23.34	23.81	25.25	25.77
66.5	21.32	22.93	23.38	24.79	25.30
67.0	20.89	22.45	22.96	24.27	24.75
67.5	20.51	22.00	22.43	23.78	24.27
68.0	20.06	21.52	21.92	23.25	23.73
68.5	19.58	21.00	21.45	22.68	23.15
69.0	19.11	20.49	20.88	22.11	22.59
69.5	18.62	19.96	20.34	21.55	22.01
70.0	18.14	19.40	19.78	20.96	21.39
70.5	17.65	18.89	19.22	20.34	20.77
71.0	17.09	18.31	18.66	19.71	20.14
71.5	16.59	17.74	18.06	19.11	19.48
72.0	16.05	17.17	17.50	18.49	18.88
72.5	15.53	16.57	16.90	17.90	18.25
73.0	14.97	15.95	16.32	17.23	17.61
73.5	14.43	15.39	15.72	16.62	16.92
74.0	13.84	14.81	15.06	15.92	16.27
74.5	13.30	14.20	14.48	15.33	15.62
75.0	12.75	13.63	13.89	14.68	15.00
75.5	12.23	13.05	13.27	14.06	14.34
76.0	11.64	12.45	12.65	13.40	13.65
76.5	11.12	11.85	12.07	12.73	13.03
77.0	10.55	11.28	11.47	12.16	12.39
77.5	9.97	10.72	10.89	11.54	11.76
78.0	9.48	10.13	10.33	10.94	11.15
78.5	8.95	9.53	9.73	10.30	10.55
79.0	8.41	9.01	9.19	9.77	9.95
79.5	7.91	8.45	8.64	9.15	9.40
80.0	7.44	7.94	8.11	8.62	8.81
80.5	6.97	7.47	7.59	8.09	8.30
81.0	6.52	6.97	7.13	7.57	7.70
81.5	6.03	6.50	6.64	7.07	7.21
82.0	5.62	6.04	6.17	6.57	6.72
82.5	5.22	5.61	5.73	6.14	6.24
83.0	4.84	5.20	5.31	5.69	5.83
83.5	4.45	4.82	4.93	5.27	5.41
84.0	4.10	4.46	4.56	4.91	5.04
84.5	3.78	4.12	4.20	4.56	4.66
85.0	3.49	3.81	3.87	4.23	4.34
85.5	3.21	3.55	3.64	3.95	4.07
86.0	2.99	3.32	3.38	3.70	3.82
86.5	2.72	3.03	3.09	3.41	3.51
87.0	2.49	2.76	2.83	2.96	3.02
87.5	1.85	1.74	1.70	1.79	1.82
88.0	1.03	0.76	0.70	0.55	0.45
88.5	0.08	0.07	0.06	0.06	0.02
89.0	0.02	0.03	0.02	0.03	0.03
89.5	0.05	0.02	0.00	0.05	0.04
90.0	0.00	0.00	0.00	0.00	0.00

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINANCE



Distance In Units Of Mounting Height
 Values Based On 22 Foot Mounting Height
 1/2 Maximum Candela Trace Shown As Dashed Curve
 (+) = Maximum Candela Point

LUMINAIRE CLASSIFICATION SYSTEM (LCS) GRAPH



Luminaire Lumens:
Front: Low=133.9, Medium=398.4, High=117.9, Very High=4.5
Back: Low=19.0, Medium=33.5, High=17.0, Very High=1.7
Uplight: Low=0.0, High=0.0

BUG Rating : B0-U0-G0

ARCHITECTURAL EGRESS

Vandal Resistant

AEL Full Cut-Off LED



WALL MOUNT
LED

Fixture Type	Date
Job Name	Approved By
Catalog Number	

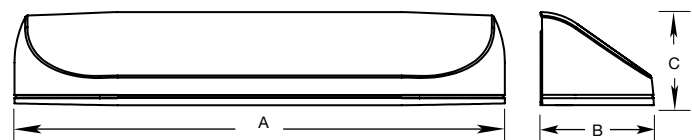
SPECIFICATIONS

- Description** The Architectural Egress Luminaire combines a unique, patented design shaped with high performance, full cut-off optics to achieve completely unobtrusive illumination of a space or path of egress. When mounted over a doorway, the fixture is perceived as an element of the building structure and, additionally, provides water protection in the form of a drip cap over the doorway. Multiple lengths are available to match a given door opening and our unique quick mount system facilitates installation and maintenance.
- Housing** Marine grade heat treated extruded aluminum. Chemically primed and finished with robotically applied polyester powder coat.
- Wall Mount** Marine grade heat treated extruded aluminum. Chemically primed and finished with robotically applied polyester powder coat. Designed to provide quick mounting to housing and secured with (2) captive stainless steel TORX® head screws.
- Lens Frame** Marine grade heat treated extruded aluminum, clear anodized. Secured to fixture via integral concealed hinge and (3) captive stainless steel TORX® head screws.
- Lens** UV stabilized diffused extruded polycarbonate.
- End Caps** Die-cast marine grade aluminum continuously welded to housing. All welds ground smooth.
- Reflector** Electrostatically brightened anodized aluminum PVD coated and absolutely color-free of iridescence. Shaped to provide full cutoff, LED point dispersion and maximum efficiency.
- Drivers** Constant current drivers at 350mA. High output version utilizes 700mA.
- LED** Samsung LM561B+ Series @ 3000K, 3500K, 4000K, or 5000K and 82 CRI wired in parallel-series. L₇₀ projected life of 130,000 hours at 50°C. Tested in accordance with LM-80. Ten year warranty on LED boards against operational defects.
- Gaskets** Closed cell self-adhesive neoprene to provide watertight seal between fixture and wall and between fixture and lens frame.
- UL Listing** U.L., C.U.L., Wet standard.
- Lifetime Warranty** Luminaire LED Incorporated will repair or replace any fixture damaged due to vandalism for the lifetime of the installation.



DIMENSIONAL DATA

	A	B	C
AEL 12	20.79	5.40	3.60
AEL 24	32.04	5.40	3.60
AEL 36	43.29	5.40	3.60
AEL 48	54.75	5.40	3.60
AEL 72	78.75	5.40	3.60



ARCHITECTURAL EGRESS

Vandal Resistant

Fixture Type

AEL Full Cut-Off LED

ORDERING INFORMATION

SERIES	LED	CCT	VOLTS	LENS	COLOR	OPTIONS	TX/SD
AEL 12	12" - 10W	3000K	120-277	DP	BKH	DIM	EMBDA
AEL 24	24" - 10W	3500K	347		BZH	A/B	EMB310
AEL 36	24" - 20W	4000K			SVH	2B	EMB310ST
AEL 48	36" - 15W	5000K			WOP	PC	EMB20R
AEL 72	36" - 30W				PCP	GLR	EMB125R
	48" - 20W				CUST	OCC	EMB250R
	48" - 35W						ST/SC
	72" - 30W						
	72" - 55W						

OPTIONS

LENS	DP = Diffused Polycarbonate.
COLORS	BKH = Black (Hammerstone) BZH = Bronze (Hammerstone) SVH = Silver (Hammerstone) WOP = White (Textured White) PCP = Black (Prime Coat Paintable) CUST = Custom Color (Consult Factory)
DIM	0-10V dimming driver. N/A with AEL12. 10% at lowest level.
A/B	Aluminum surface back box. Finished with polyester powder coat to match the fixture.
PC	Photoelectric switch.
2B	(2) LED drivers for independent LED based operation. N/A with AEL12. N/A with the OCC option.
GLR	Fuse and fuse holder.
EMB310	1000 lumen self-contained, 90 minute emergency battery pack. Available for 36", 48" and 72" lengths only. 0°C (32°F) to 55°C (131°F). Not available in 347V.
EMB310ST	1000 lumen self-testing, self-contained, 90 minute emergency battery pack. Available for 36", 48" and 72" lengths only. 0°C (32°F) to 55°C (131°F). Not available in 347V.
EMB20R	Remote mounted micro inverter that will operate a 25W maximum load for 90 minutes. 0°C (32°F) to 45°C (113°F).
EMB125R	Remote inverter that will operate a 125W maximum load for 90 minutes. 20°C (68°F) to 30°C (86°F). Not available in 347V.
EMB250R	Remote inverter that will operate a 250W maximum load for 90 minutes. 20°C (68°F) to 30°C (86°F). Not available in 347V.
EMBDA	Two drivers and two emergency battery packs self-contained within fixture for independent light engine operation. Each battery pack will operate each light engine for a minimum of 90 minutes. Available in the 72" length only. Not available in 347V.
OCC	Passive infrared sensor mounted in machine hole in end cap. Maximum coverage of 10' radius from 8' height.
ST/SC	Slotted screws instead of TORX® head.
TX/SD	TORX® head bit.

ARCHITECTURAL EGRESS

Vandal Resistant

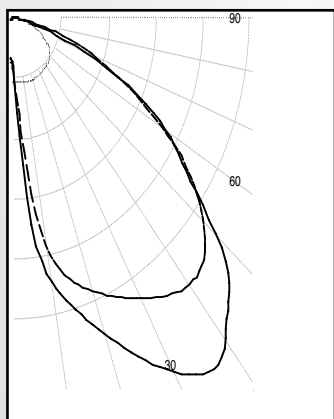
Fixture Type

AEL Full Cut-Off LED

PHOTOMETRIC DATA

Model	Watts	Input Watts	Delivered Lumens			
			3000K	3500K	4000K	5000K
AEL 12	10W	10.8W	747	760	784	807
AEL 24	10W	9.4W	832	847	873	899
AEL 24	20W	17.6W	1557	1585	1634	1682
AEL 36	15W	14.9W	1248	1271	1310	1348
AEL 36	30W	26.3W	2995	3049	3143	3237
AEL 48	20W	18.8W	1935	1969	2030	2090
AEL 48	35W	35.2W	3616	3682	3796	3909
AEL 72	30W	27.9W	3162	3217	3317	3417
AEL 72	55W	52.2W	5911	6017	6203	6389

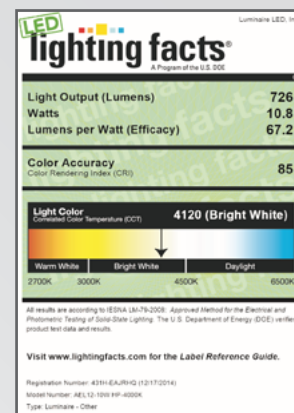
MODEL AEL12-10W-4000K
Delivered Lumens: 726 Lumens



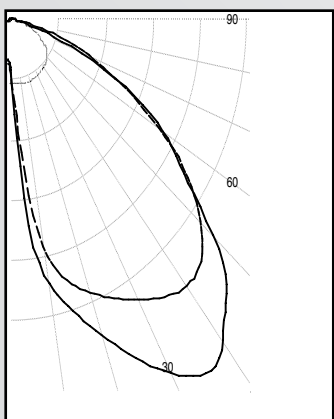
IES FILE: AEL12-10W-4000K
Total Power: 10.8W

Zone	Lumens	% Lamps
0 - 30	153	21.1
0 - 40	287	39.5
0 - 60	585	80.6
60 - 90	726	100.0
0 - 90	439	60.5
90 -180	0	0.0
0 - 180	726	100.0

Testing was performed in accordance with IES LM-79-08
Bug Rating: B0U0G0



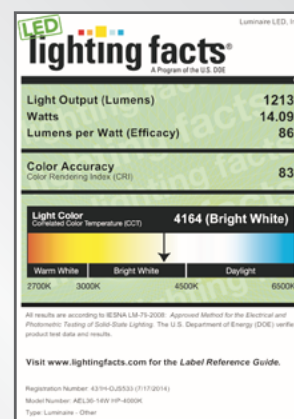
MODEL AEL36-15W-4000K
Delivered Lumens: 1213 Lumens



IES FILE: AEL36-15W-4000K
Total Power: 14.09W

Zone	Lumens	% Lamps
0 - 30	381	31.4
0 - 40	635	52.3
0 - 60	1063	87.7
60 - 90	150	12.3
0 - 90	1213	100.0
90 -180	0	0.0
0 - 180	1213	100.0

Testing was performed in accordance with IES LM-79-08
Bug Rating: B0U1G0



ARCHITECTURAL EGRESS

Vandal Resistant

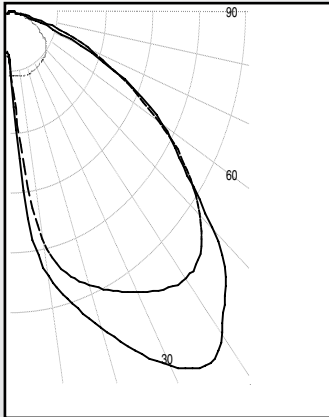
Fixture Type

AEL Full Cut-Off LED

PHOTOMETRIC DATA

MODEL AEL36-30W-4000K

Delivered Lumens: 2911 Lumens



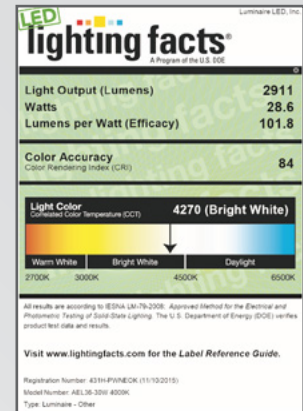
IES FILE: AEL36-30W-4000K

Total Power: 28.6W

Testing was performed in accordance with IES LM-79-08

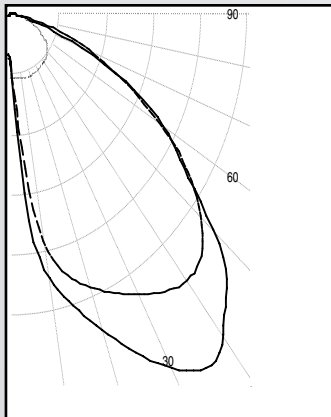
Bug Rating: B0U0G0

Zone	Lumens	% Lamps
0 - 30	754	25.9
0 - 40	1308	44.9
0 - 60	2417	83.0
60 - 90	494	17.0
0 - 90	2911	100.0
90 - 180	0	0.0
0 - 180	2911	100.0



MODEL AEL72-30W-4000K

Delivered Lumens: 3072 Lumens



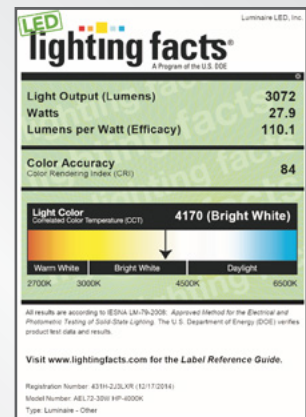
IES FILE: AEL72-30W-4000K

Total Power: 27.09W

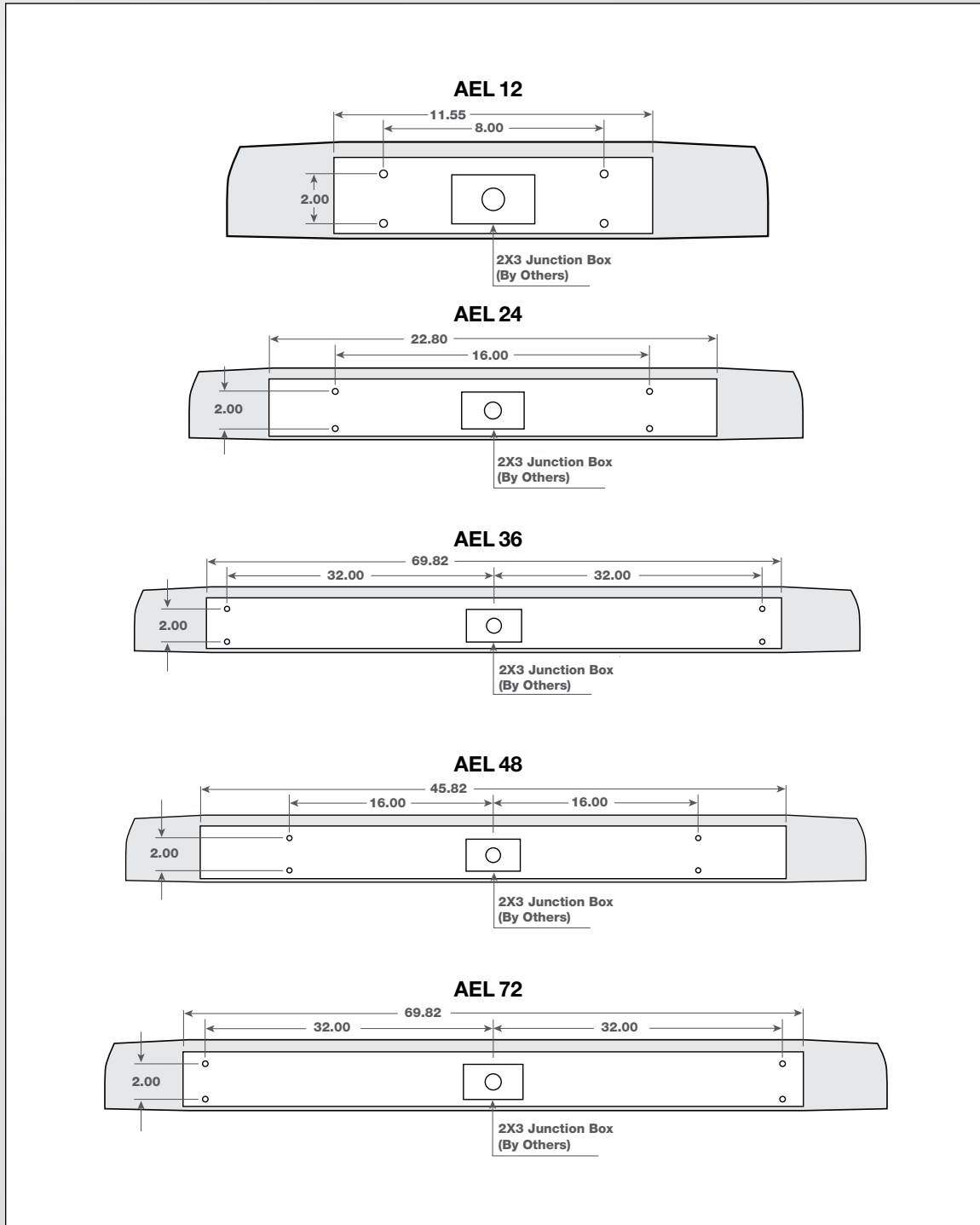
Testing was performed in accordance with IES LM-79-08

Bug Rating: B1U0G1

Zone	Lumens	% Lamps
0 - 30	771	25.1
0 - 40	1353	44.1
0 - 60	2529	82.3
60 - 90	3072	100.0
0 - 90	1718	17.7
90 - 180	542	0.0
0 - 180	3072	100.0



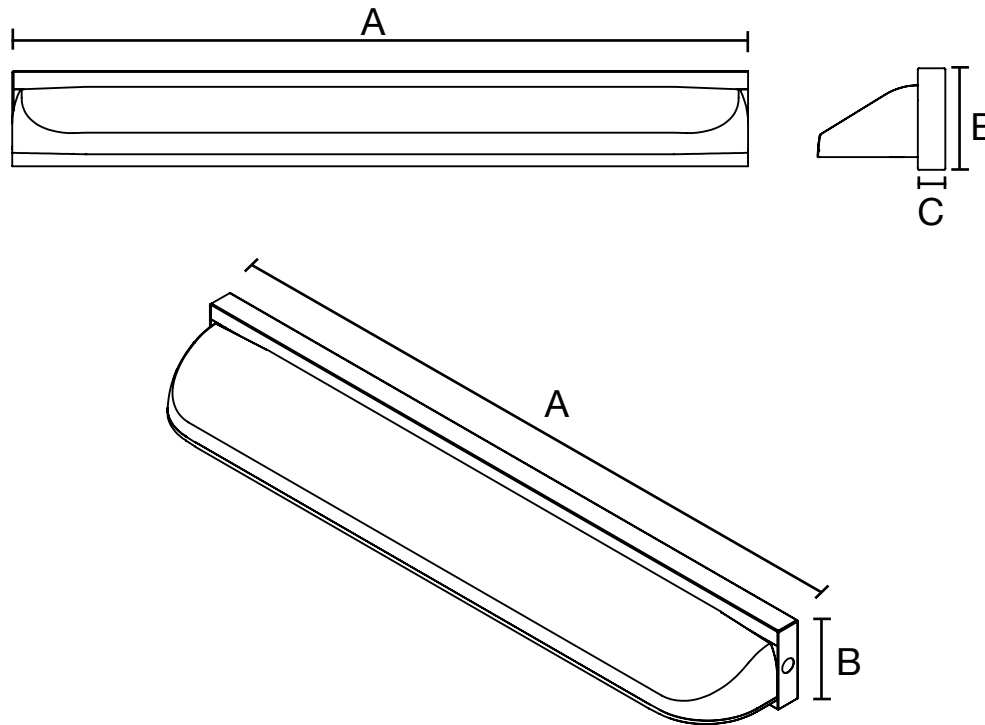
MOUNTING PLATE DETAILS



ALUMINUM BACKBOX DETAIL

A/B Detail

	A	B	C
AEL 12 Backbox	20.80	5.20	1.50
AEL 24 Backbox	31.48	5.20	1.50
AEL 36 Backbox	43.30	5.20	1.50
AEL 48 Backbox	54.75	5.20	1.50
AEL 72 Backbox	78.75	5.20	1.50



**IES ROAD REPORT****PHOTOMETRIC FILENAME : AEL36-15W-4000K.IES****DESCRIPTIVE INFORMATION (From Photometric File)**

IESNA:LM-63-2002

[TEST]

[TESTLAB]Intertek

[ISSUEDATE] 4/ 2/2014

[MANUFAC]LUMINAIRE LED, INC.

[LUMCAT]1403201050-001 MOD# AEL36-14W 4000K

[LUMINAIRE]EGRESS LED LUMINAIRE

[LAMP]LED

[LAMP]NA. LUMINAIRE OUTPUT = 1212 LMS

[OTHER]120.08 VAC, 127.08 mA, 14.088 W, 0.9232 PF

CHARACTERISTICS

IES Classification	Type II
Longitudinal Classification	Very Short
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	1213
Downward Total Efficiency	N.A. (absolute)
Total Luminaire Efficiency	N.A. (absolute)
Luminaire Efficacy Rating (LER)	86
Total Luminaire Watts	14.1
Ballast Factor	1.00
Upward Waste Light Ratio	0.00
Maximum Candela	848.9
Maximum Candela Angle	360H 37.5V
Maximum Candela (<90 Degrees Vertical)	848.9
Maximum Candela Angle (<90 Degrees Vertical)	360H 37.5V
Maximum Candela At 90 Degrees Vertical	0 (0.0% Luminaire Lumens)
Maximum Candela from 80 to <90 Degrees Vertical	36.6 (3.0% Luminaire Lumens)
Cutoff Classification (deprecated)	N.A. (absolute)

IES ROAD REPORT
PHOTOMETRIC FILENAME : AEL36-15W-4000K.IES

LUMINAIRE CLASSIFICATION SYSTEM (LCS)

	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	271.9	N.A.	22.4
FM - Front-Medium (30-60)	568.7	N.A.	46.9
FH - Front-High (60-80)	117.9	N.A.	9.7
FVH - Front-Very High (80-90)	6.3	N.A.	0.5
BL - Back-Low (0-30)	108.6	N.A.	9.0
BM - Back-Medium (30-60)	114.2	N.A.	9.4
BH - Back-High (60-80)	24.4	N.A.	2.0
BVH - Back-Very High (80-90)	1.1	N.A.	0.1
UL - Uplight-Low (90-100)	0.0	N.A.	0.0
UH - Uplight-High (100-180)	0.0	N.A.	0.0
Total	1213.1	N.A.	100.0
BUG Rating	B0-U0-G0		

IES ROAD REPORT
PHOTOMETRIC FILENAME : AEL36-15W-4000K.IES

CANDELA TABULATION

Vert. Angles	Horizontal Angles									
	<u>0.0</u>	<u>22.5</u>	<u>45.0</u>	<u>67.5</u>	<u>90.0</u>	<u>112.5</u>	<u>135.0</u>	<u>157.5</u>	<u>180.0</u>	<u>202.5</u>
0.0	451.8	451.8	451.8	451.8	451.8	451.8	451.8	451.8	451.8	451.8
2.5	527.6	524.9	518.9	510.2	493.0	419.0	361.7	335.3	328.1	335.3
5.0	604.5	595.9	578.5	547.2	491.0	376.0	316.8	299.0	295.2	299.0
7.5	644.7	633.8	614.7	575.1	488.1	341.6	294.0	283.8	281.6	283.8
10.0	670.8	658.8	636.7	594.1	484.3	316.3	281.3	273.0	270.6	273.0
12.5	690.9	677.8	652.0	607.2	479.4	298.0	271.7	262.7	259.7	262.7
15.0	702.8	692.8	665.5	615.9	472.8	283.8	262.6	251.1	247.0	251.1
17.5	711.2	704.7	677.8	621.3	463.7	271.5	251.5	237.3	232.8	237.3
20.0	720.1	712.7	687.8	624.0	451.7	259.4	238.2	221.7	216.4	221.7
22.5	739.3	725.3	693.2	624.2	437.2	246.2	221.8	202.9	195.1	202.9
25.0	766.0	745.5	695.2	620.1	420.7	231.2	203.2	180.9	168.7	180.9
27.5	791.2	768.3	696.8	611.4	400.7	214.0	183.5	157.1	143.2	157.1
30.0	815.3	790.5	701.0	599.2	377.2	195.3	164.0	135.9	125.7	135.9
32.5	835.0	806.0	702.6	581.0	351.1	176.6	145.1	120.1	114.7	120.1
35.0	847.8	814.9	694.7	554.4	327.8	160.0	125.8	108.8	107.0	108.8
37.5	848.9	812.2	676.7	523.1	308.4	146.7	107.9	99.7	101.4	99.7
40.0	834.2	792.9	642.6	496.5	286.3	134.0	92.8	91.3	96.6	91.3
42.5	804.9	755.3	599.6	474.7	255.6	119.0	81.5	83.8	92.3	83.8
45.0	763.5	702.6	556.8	444.6	219.0	102.3	72.8	76.6	87.9	76.6
47.5	707.2	641.0	517.1	401.7	183.3	85.5	65.8	69.8	82.7	69.8
50.0	633.6	571.9	478.4	349.7	153.0	70.5	59.2	63.3	77.4	63.3
52.5	554.5	498.1	434.8	296.2	130.1	58.5	52.6	57.2	71.9	57.2
55.0	484.4	426.2	385.7	248.6	114.4	49.7	46.3	51.5	66.3	51.5
57.5	419.9	359.1	332.6	210.9	102.6	43.2	40.2	46.2	60.3	46.2
60.0	357.2	299.5	279.1	182.5	91.0	37.7	34.4	41.0	53.9	41.0
62.5	293.8	248.0	230.0	158.4	78.2	32.5	29.5	35.8	47.5	35.8
65.0	231.6	202.3	187.7	135.1	65.5	27.5	24.9	30.8	40.9	30.8
67.5	174.5	162.0	152.0	111.4	54.1	22.6	20.7	25.9	34.2	25.9
70.0	127.0	126.6	121.7	89.6	43.9	18.2	16.9	21.2	28.0	21.2
72.5	90.8	95.8	95.7	70.2	34.7	14.1	13.3	16.9	22.0	16.9
75.0	64.4	70.4	73.1	53.6	26.4	10.4	9.9	12.6	16.5	12.6
77.5	44.5	50.1	53.4	39.5	19.0	7.3	7.0	9.2	11.7	9.2
80.0	29.4	34.0	36.6	27.5	12.5	4.4	4.5	6.1	7.9	6.1
82.5	17.9	21.2	22.7	17.4	7.2	2.1	2.5	3.7	4.9	3.7
85.0	9.4	11.1	11.8	9.2	3.0	0.5	1.0	1.7	2.2	1.7
87.5	3.5	4.2	4.0	3.1	0.5	0.0	0.0	0.0	0.0	0.0
90.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
92.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
95.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
97.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
105.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
107.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
110.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
112.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
115.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
117.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
120.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
122.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
125.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
127.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
130.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

IES ROAD REPORT
PHOTOMETRIC FILENAME : AEL36-15W-4000K.IES

CANDELA TABULATION - (Cont.)

132.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
135.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
137.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
142.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
145.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
147.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
152.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
155.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
157.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
162.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
167.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
172.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
177.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Vert. Horizontal Angles

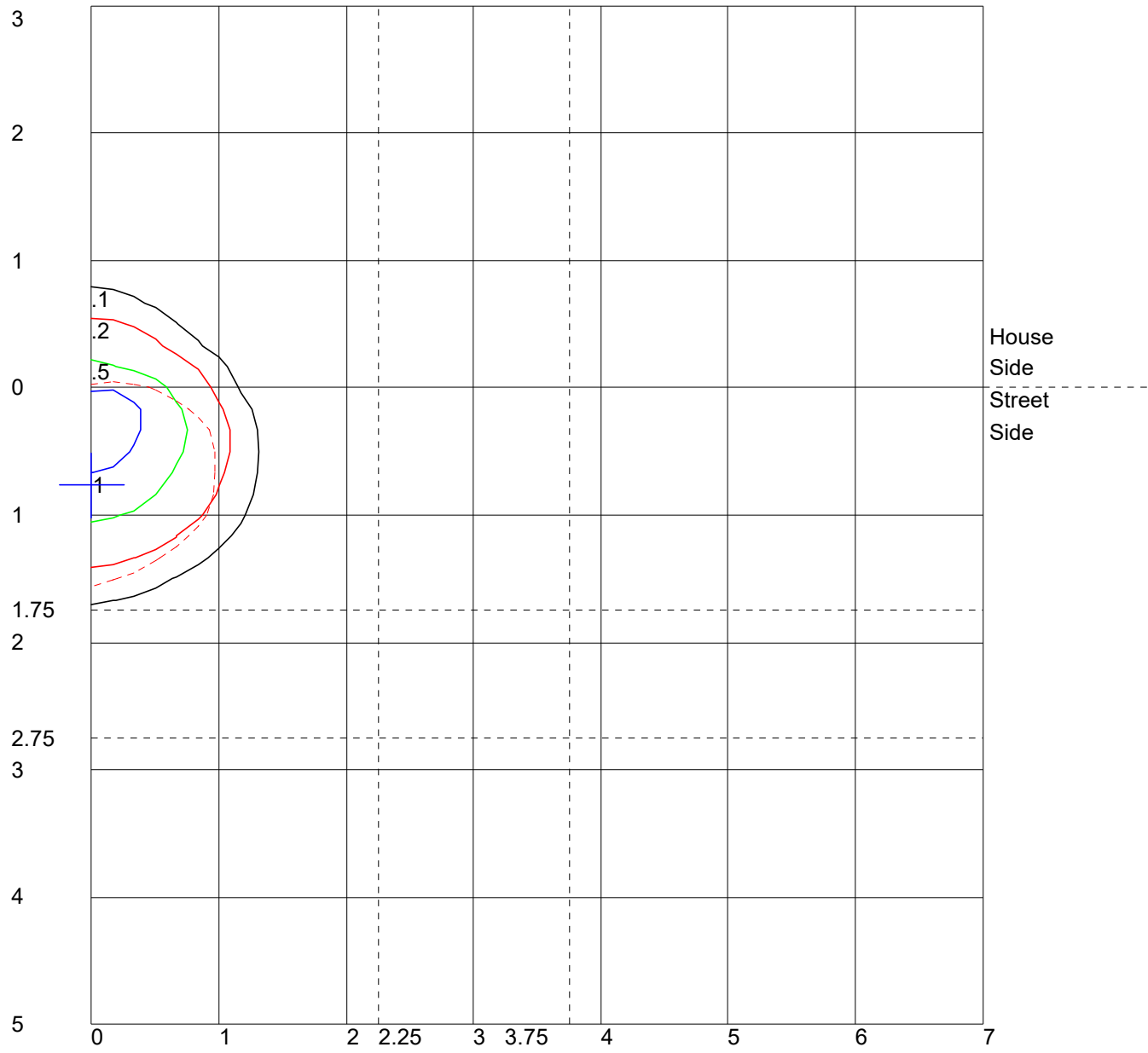
	<u>225.0</u>	<u>247.5</u>	<u>270.0</u>	<u>292.5</u>	<u>315.0</u>	<u>337.5</u>	<u>360.0</u>
0.0	451.8	451.8	451.8	451.8	451.8	451.8	451.8
2.5	361.7	419.0	493.0	510.2	518.9	524.9	527.6
5.0	316.8	376.0	491.0	547.2	578.5	595.9	604.5
7.5	294.0	341.6	488.1	575.1	614.7	633.8	644.7
10.0	281.3	316.3	484.3	594.1	636.7	658.8	670.8
12.5	271.7	298.0	479.4	607.2	652.0	677.8	690.9
15.0	262.6	283.8	472.8	615.9	665.5	692.8	702.8
17.5	251.5	271.5	463.7	621.3	677.8	704.7	711.2
20.0	238.2	259.4	451.7	624.0	687.8	712.7	720.1
22.5	221.8	246.2	437.2	624.2	693.2	725.3	739.3
25.0	203.2	231.2	420.7	620.1	695.2	745.5	766.0
27.5	183.5	214.0	400.7	611.4	696.8	768.3	791.2
30.0	164.0	195.3	377.2	599.2	701.0	790.5	815.3
32.5	145.1	176.6	351.1	581.0	702.6	806.0	835.0
35.0	125.8	160.0	327.8	554.4	694.7	814.9	847.8
37.5	107.9	146.7	308.4	523.1	676.7	812.2	848.9
40.0	92.8	134.0	286.3	496.5	642.6	792.9	834.2
42.5	81.5	119.0	255.6	474.7	599.6	755.3	804.9
45.0	72.8	102.3	219.0	444.6	556.8	702.6	763.5
47.5	65.8	85.5	183.3	401.7	517.1	641.0	707.2
50.0	59.2	70.5	153.0	349.7	478.4	571.9	633.6
52.5	52.6	58.5	130.1	296.2	434.8	498.1	554.5
55.0	46.3	49.7	114.4	248.6	385.7	426.2	484.4
57.5	40.2	43.2	102.6	210.9	332.6	359.1	419.9
60.0	34.4	37.7	91.0	182.5	279.1	299.5	357.2
62.5	29.5	32.5	78.2	158.4	230.0	248.0	293.8
65.0	24.9	27.5	65.5	135.1	187.7	202.3	231.6
67.5	20.7	22.6	54.1	111.4	152.0	162.0	174.5
70.0	16.9	18.2	43.9	89.6	121.7	126.6	127.0
72.5	13.3	14.1	34.7	70.2	95.7	95.8	90.8
75.0	9.9	10.4	26.4	53.6	73.1	70.4	64.4
77.5	7.0	7.3	19.0	39.5	53.4	50.1	44.5

IES ROAD REPORT
PHOTOMETRIC FILENAME : AEL36-15W-4000K.IES

CANDELA TABULATION - (Cont.)

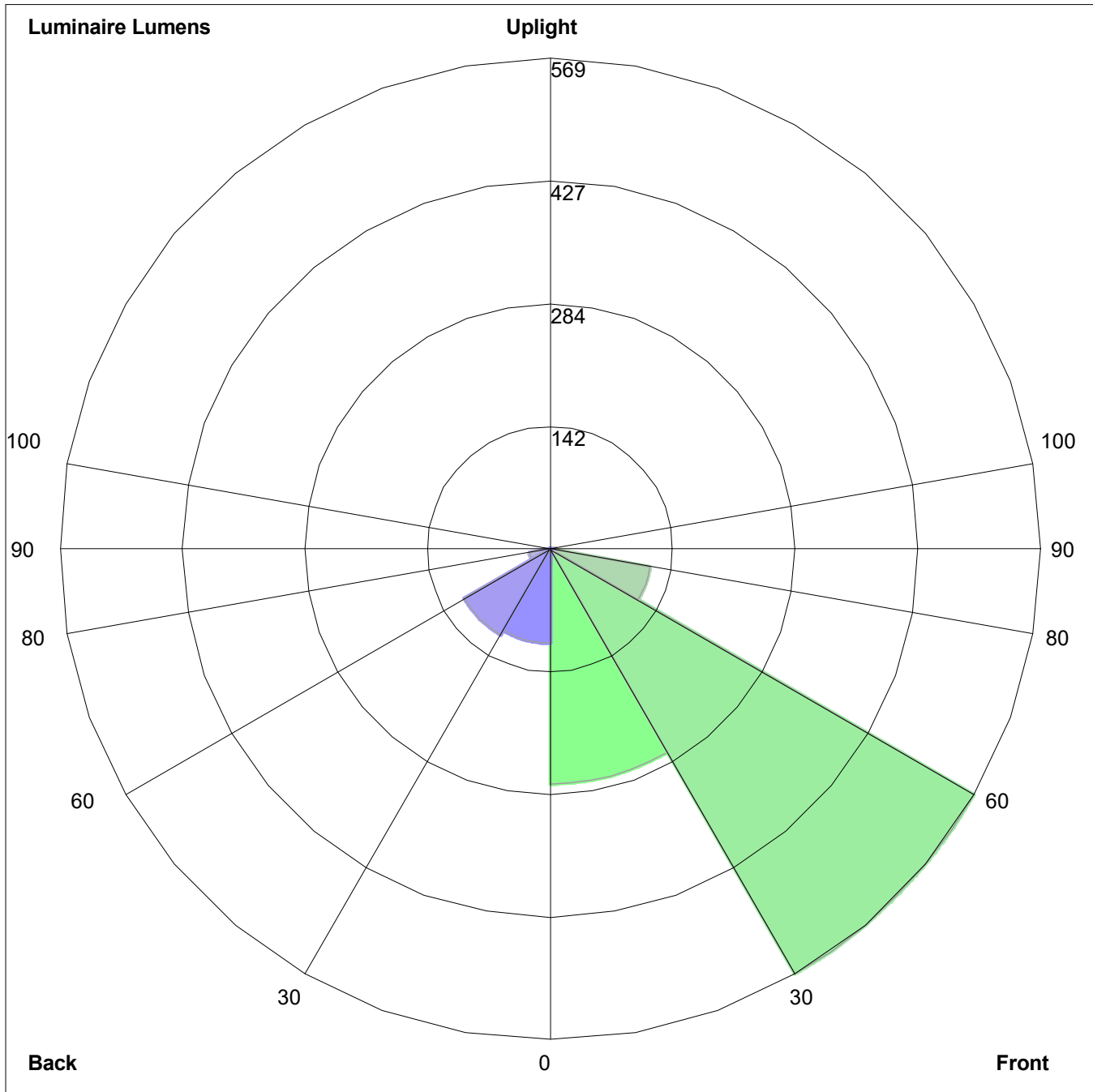
80.0	4.5	4.4	12.5	27.5	36.6	34.0	29.4
82.5	2.5	2.1	7.2	17.4	22.7	21.2	17.9
85.0	1.0	0.5	3.0	9.2	11.8	11.1	9.4
87.5	0.0	0.0	0.5	3.1	4.0	4.2	3.5
90.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
92.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
95.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
97.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
105.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
107.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
110.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
112.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
115.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
117.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
120.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
122.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
125.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
127.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
130.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
132.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
135.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
137.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
142.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
145.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
147.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
152.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
155.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
157.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
162.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
167.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
172.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
177.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINANCE



Distance In Units Of Mounting Height
 Values Based On 22 Foot Mounting Height
 1/2 Maximum Candela Trace Shown As Dashed Curve
 (+) = Maximum Candela Point

LUMINAIRE CLASSIFICATION SYSTEM (LCS) GRAPH



Luminaire Lumens:
Front: Low=271.9, Medium=568.7, High=117.9, Very High=6.3
Back: Low=108.6, Medium=114.2, High=24.4, Very High=1.1
Uplight: Low=0.0, High=0.0

BUG Rating : B0-U0-G0




1" REGRESS

PROJECT INFORMATION

PROJECT LOT #6
 DATE 06-15-2017
 TYPE JER

BeveLED Basic Recessed Downlight - Our narrow footprint housing provides an economical architectural solution while delivering high performance with LEDs.

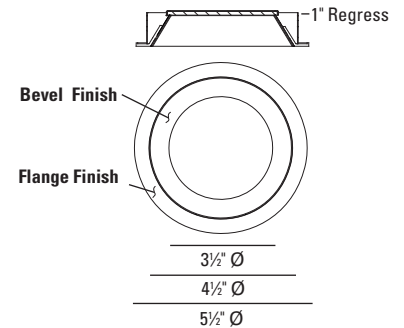
DELIVERED PERFORMANCE

BeveLED Basic DOWNLIGHT 	14 Watts	20 Watts
Color Rendering Index	80+ CRI	80+ CRI
Lumens per Watt	66	59
Source Lumens	1100	1500
Delivered Lumens	975	1250
Color Consistency	2-Step MacAdam Ellipse	

Performance based on 3000K

CCT MULTIPLIER	2700K	3000K	3500K	4000K
Color Rendering Index	80+ CRI	80+ CRI	80+ CRI	80+ CRI
Multiplier for Lumen Output	1.00	1.00	1.08	1.08

1" Regress



HOW TO SPECIFY

Ordering Example: Specify trim code and housing code to order: Example : **1020W - B1 - S - 10 - LRTD4 - 9014 - M2 - 27KS - 30 - NCSM - 277V - DIML2 - CB27**

TRIM ORDERING INFORMATION

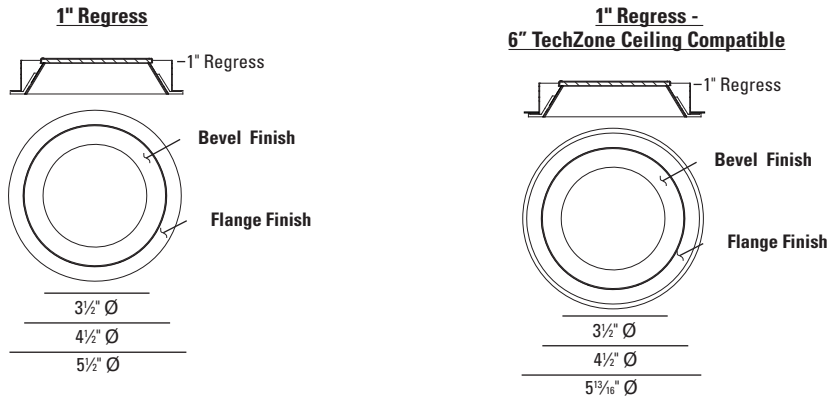
TRIM	OPTION	BEVEL STYLE	LENS	FLANGE FINISH
1020	W	B1	S	10
1020 Round Downlight 1" Regress	W Wet location ¹ TZ 6" TechZone Ceiling Compatible (NCSM only) N/A with 01 or 02 flange finishes	B1 1" Regress Bevel, Painted Die Cast Matches Flange Finish AB1 1" Regress Bevel, Black Anodized AC1 1" Regress Bevel, Clear Matte	S Solite (provided standard) F Frosted	01 Clear Matte (AC Bevel only) 02 Black Anodized (AB Bevel only) 10 White 13 Statuary Bronze 21 Black 28 Metalized Grey RAL Custom Color (specify RAL #)
¹ Wet location, use with B1 trims only.				



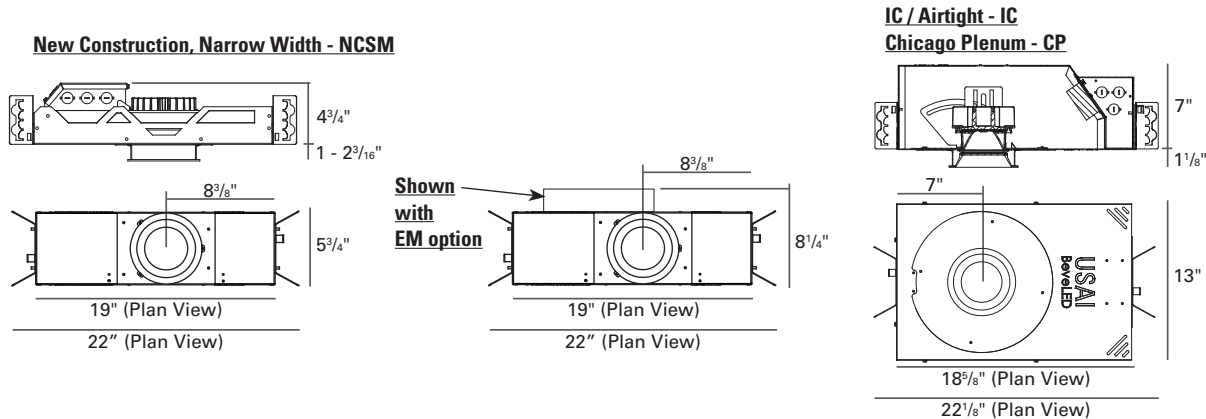
HOUSING ORDERING INFORMATION

HOUSING CODE	WATTAGE	ENGINE CODE	COLOR	REFLECTOR	HOUSING TYPE	SELECT ONE VOLTAGE	DIMMING DRIVER OPTIONS	ACCESSORIES
LRTD4	9020	M2	30 KS	80	NCSM	120	DIML2	CB27
LRTD4	9014 14W LED, 975 lumens 9020 20W LED, 1250 lumens	M2	27KS 2700K, 80+ CRI 30KS 3000K, 80+ CRI 35KS 3500K, 80+ CRI 40KS 4000K, 80+ CRI	30 30° beam 50 50° beam 80 80° beam	NCSM New Construction, Narrow Width IC Insulation-Contact Rated / Airtight ² CP Chicago Plenum ²	120V 277V	For use with 120V or 277V DIML2 0-10V dim, 10% (provided standard) DIML4 Lutron A 3-wire/ECO, 1% DIML4E Lutron 5 ECO, 5% DIML4H Lutron H ECO, 1% Fade DIML6A EldoLED 0-10V, 0.1%, logarithmic / Lutron controls DIML6B EldoLED 0-10V Linear, 0.1%, linear controls DIML6E EldoLED 0-10V, 1%, logarithmic/Lutron controls DIML6F EldoLED 0-10V, 1%, linear controls DIML7 EldoLED DALI, 0.1%	CB27 27" C-Channel Bars CB52 52" C-Channel Bars EML Emergency battery ³ EMLW Emergency battery, wet location ³ TZ 6" TechZone ceiling compatible N/A with 01 or 02 flange finishes ⁴
						120V	For use with 120V only DIML3 Lutron A 2-wire, 1% 120V only DIML19 Phase 2-wire dimming, 1% 120V only	³ NCSM housings require above ceiling access. Not for use with IC or CP housings. ⁴ With NCSM housing only
						² N/A with EM		
						2 Step MacAdam ellipse is standard for all		

TRIM INFORMATION



HOUSING INFORMATION



SPECIFICATIONS

TRIM: 4-1/2" round aperture with a 1" regressed bevel and 1/2" flange, retained by two mounting clips. Die cast aluminum bevel is self-flanged and is available in white, statuary bronze, black, and metalized grey finishes. Also available in black anodized or clear matte bevel, with self finish or with contrasting painted flange. Custom color flanges available (provide RAL#). TechZone compatible trim option is not available with "01" or "02" flange finishes.

TRIM LENS: Trim is shipped with integral solite lens standard; frosted lens available as an option.

REFLECTOR: Interchangeable precision injection molded specular polycarbonate reflector optimized for 30°, 50° or 80° beam distribution.

FIELD REPLACEABLE LIGHT ENGINE: Available in 2 lumen packages: 14W (975 delivered lumens) and 20W (1250 delivered lumens). Engine is field replaceable through the aperture without tools.

COLOR: BeveLED is available in 4 color temperatures (2700K, 3000K, 3500K, 4000K). All color options are tightly binned for fixture-to-fixture color consistency within a 2-Step MacAdam Ellipse. 80+ color rendering index provided standard.

RATED LIFE: Based on IESNA LM80-2008 50,000 hours at 70% lumen maintenance (L70).

THERMAL MANAGEMENT: Proprietary high performance aluminum die cast heatsink for maximum LED life. Ambient temperatures at fixture location should not exceed 40°C during normal operation.

FIELD REPLACEABLE DRIVER: 0-10V, 100%-10% solid state electronic constant current driver with a high power factor provided standard and sources 2mA. Specify 120V or 277V. Driver complies with IEEE C62.41 surge protection.

DIMMING OPTIONS: Multiple dimming drivers available. See compatibility chart attached. Some on-time delay may be experienced depending on control system used. Note: DIML6A and DIML6E logarithmic control are intended for use with Lutron control systems; DIML6B and DIML6F linear control are intended for use with non-Lutron controls. DIML6 drivers source 2mA.

EMERGENCY: Emergency lighting battery pack is provided with remote test switch and require above ceiling access for service. EM option is not available with IC or CP housings.

MOUNTING: Butterfly brackets and adjustable nailer bars with integral nails provided. Nailer bars are extendible from 14" to 24" centers.

HOUSING: Fabricated of 20 ga. galvanized steel with thru wire J-box, 4 in 4 out at min. 90°C, #12 AWG thru branch circuit wiring. IC rated housing rated for direct contact with insulation. NCSM with TZ option is compatible with 6" TechZone ceiling systems.

MAXIMUM CEILING THICKNESS: As per drawings above.

CEILING CUT OUT: 5-1/16" Ø

LISTINGS: Dry/Damp. Wet location option available with B1 trim only. NRTL/CSA-US tested to UL standards. IBEW union made. Energy Star Qualified under Luminaires Specification V2.0. Please see Energy Star website for exact model #s included in the listing. Please note that only B1-S-10 trims, 30° and 50° optics, and DIML2 dimming drivers are Energy Star Qualified.

WARRANTY: 5 years

NOTES:

- Not for use in corrosive environment.
- Use of pressure washer voids warranty.

PHOTOMETRICS: Consult factory or website for IES files. Tested in accordance with IESNA LM79-2008.



DIMMING DRIVER WIRING SCHEMES:

NOTES:

Wiring diagrams are examples of typical installations intended to illustrate the number of wires that must be run to fixture. These diagrams are not intended to specify all equipment necessary for a given dimming circuit. Refer to specific dimmer manufacturer's documentation for details.

**IMPORTANT SAFETY INSTRUCTIONS
- SAVE THESE INSTRUCTIONS**

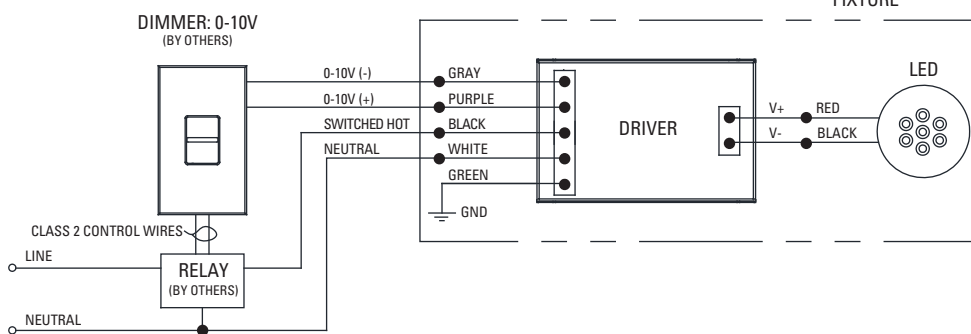
1. Keep these instructions in a safe place for future reference.
2. Only qualified electricians in accordance to local codes should install these fixtures.
3. De-energize the electrical circuit at the circuit breaker prior to installation process or servicing.
4. Make sure all connections are in accordance with the National Electrical Code and any local regulations.
5. Cap any wires not used separately (not together).

D2 / DIML2 LED: 0-10V Dimming Driver Wiring (Dims down to 10%)

D2 / DIML2 Dimmer Compatibility Chart				
Manufacturer	Product	Part Number	Dimmed Light Output Range	Qty Fixtures Per Dimmer*
120V / 277V				
Crestron	iLux dimmer expansion module	CLS-EXP-DIMFLV	100% - 10%	Use source current per fixture specification sheet to determine number of fixtures per dimmer. Max number of fixtures is limited by dimmer load rating.
Crestron	DIN Rail dimmer	DIN-4DIMFLV4	100% - 10%	
Crestron	DIN Rail analog output module	DIN-A08	100% - 10%	
Crestron	8 Channel dimmer module	GLX-DIMFLV8	100% - 10%	
Crestron	8 Channel dimmer module	GLXP-DIMFLV8	100% - 10%	
Leviton	IlumaTech dimmer	IP710-DLX	100% - 10%	
Lightolier (Philips)	Vega	V2000FAMU	100% - 10%	
Lutron	Diva	DVTV-XX	100% - 10%	

* NOTE: Refer to dimmer manufacturer's documentation for installation instructions and circuit details.

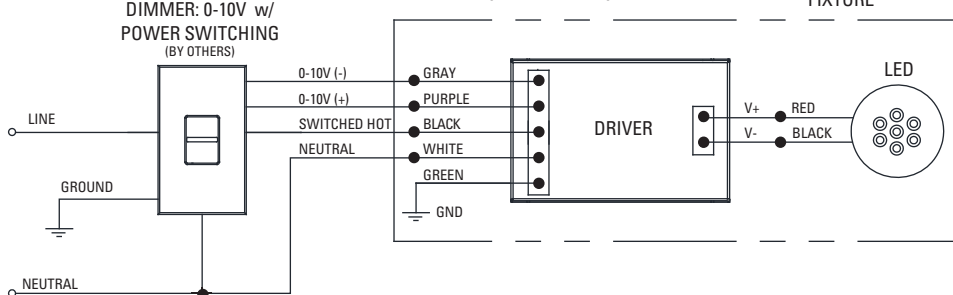
**D2 / DIML2
0-10V DIMMING W/RELAY TO SWITCH POWER**



NOTE:

If switched, non-dimming operation is desired, cap off purple and gray wires individually at installation. Do NOT cap purple and gray wires together.

**D2 / DIML2
0-10V DIMMING (NO RELAY)**



NOTE:

If switched, non-dimming operation is desired, cap off purple and gray wires individually at installation. Do NOT cap purple and gray wires together.

06-15-2017



TYPE JER

IES ROAD REPORT

PHOTOMETRIC FILENAME : 1020-B1-S-10-LRTD4-9020-M2-30KS-80.IES

DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST]228892
[TESTLAB]UL Verification Services
[ISSUEDATE] 6/14/2013
[MANUFAC]USA ILLUMINATION INC
[LUMCAT]1020-B1-S-10-LRTD4-9020-M2-30KS-80-NCSM
[LUMINAIRE]n/a
[LAMP]n/a
[LAMPCAT]n/a. LUMINAIRE OUTPUT = 1036 LMS
[OTHER]120.0VAC 0.1765A 21.13W PF=0.997

CHARACTERISTICS

IES Classification	Type V
Longitudinal Classification	Very Short
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	1037
Downward Total Efficiency	N.A. (absolute)
Total Luminaire Efficiency	N.A. (absolute)
Luminaire Efficacy Rating (LER)	49
Total Luminaire Watts	21.1
Ballast Factor	1.00
Upward Waste Light Ratio	0.00
Maximum Candela	481.9
Maximum Candela Angle	0H 0V
Maximum Candela (<90 Degrees Vertical)	481.9
Maximum Candela Angle (<90 Degrees Vertical)	0H 0V
Maximum Candela At 90 Degrees Vertical	0 (0.0% Luminaire Lumens)
Maximum Candela from 80 to <90 Degrees Vertical	8.8 (0.8% Luminaire Lumens)
Cutoff Classification (deprecated)	N.A. (absolute)

IES ROAD REPORT**PHOTOMETRIC FILENAME : 1020-B1-S-10-LRTD4-9020-M2-30KS-80.IES****LUMINAIRE CLASSIFICATION SYSTEM (LCS)**

	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	192.5	N.A.	18.6
FM - Front-Medium (30-60)	287.3	N.A.	27.7
FH - Front-High (60-80)	36.7	N.A.	3.5
FVH - Front-Very High (80-90)	1.9	N.A.	0.2
BL - Back-Low (0-30)	192.5	N.A.	18.6
BM - Back-Medium (30-60)	287.3	N.A.	27.7
BH - Back-High (60-80)	36.7	N.A.	3.5
BVH - Back-Very High (80-90)	1.9	N.A.	0.2
UL - Uplight-Low (90-100)	0.0	N.A.	0.0
UH - Uplight-High (100-180)	0.0	N.A.	0.0
Total	1036.8	N.A.	100.0
BUG Rating	B1-U0-G0		

IES ROAD REPORT

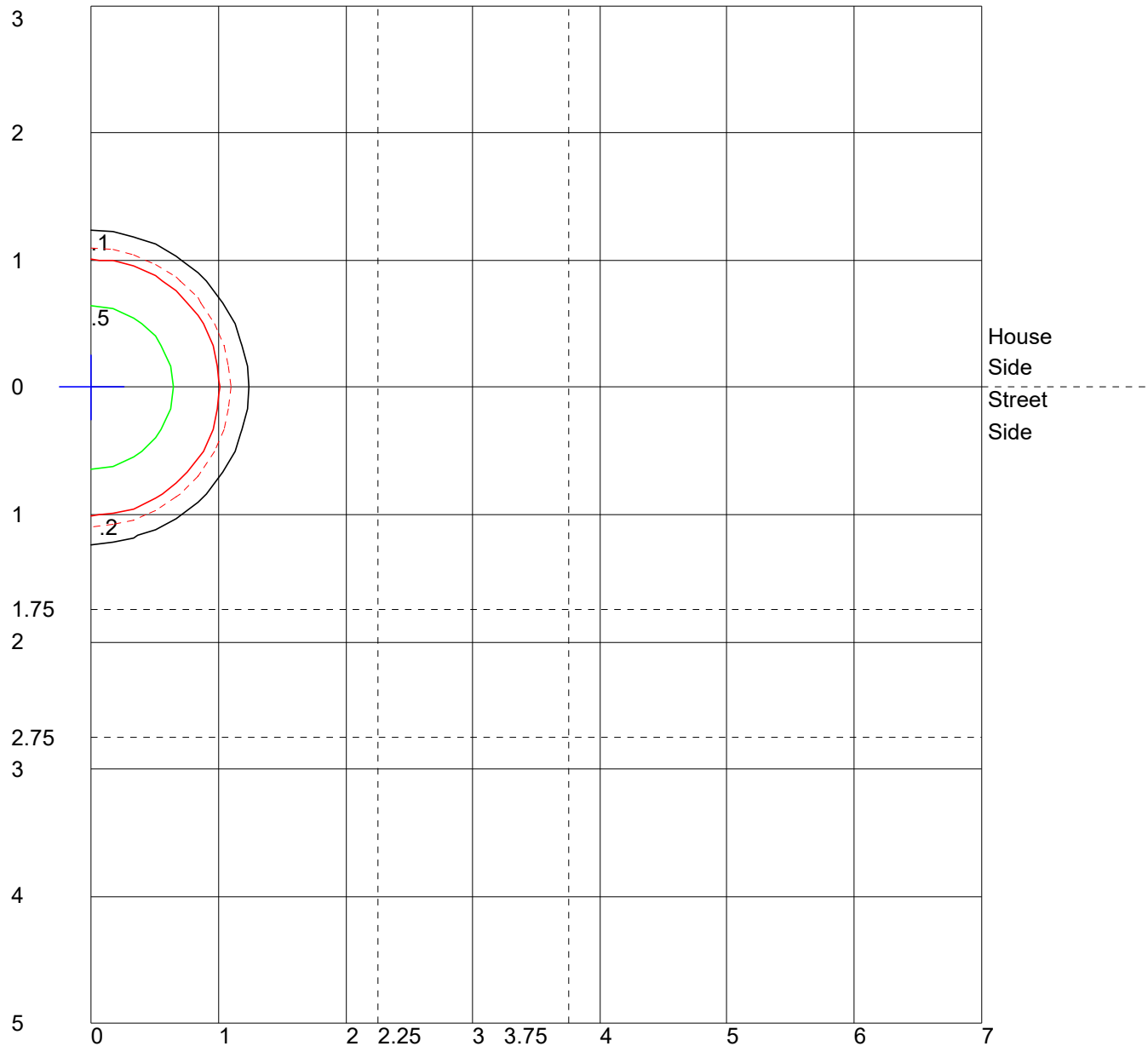
PHOTOMETRIC FILENAME : 1020-B1-S-10-LRTD4-9020-M2-30KS-80.IES

CANDELA TABULATION

Vert. Horizontal Angles
Angles

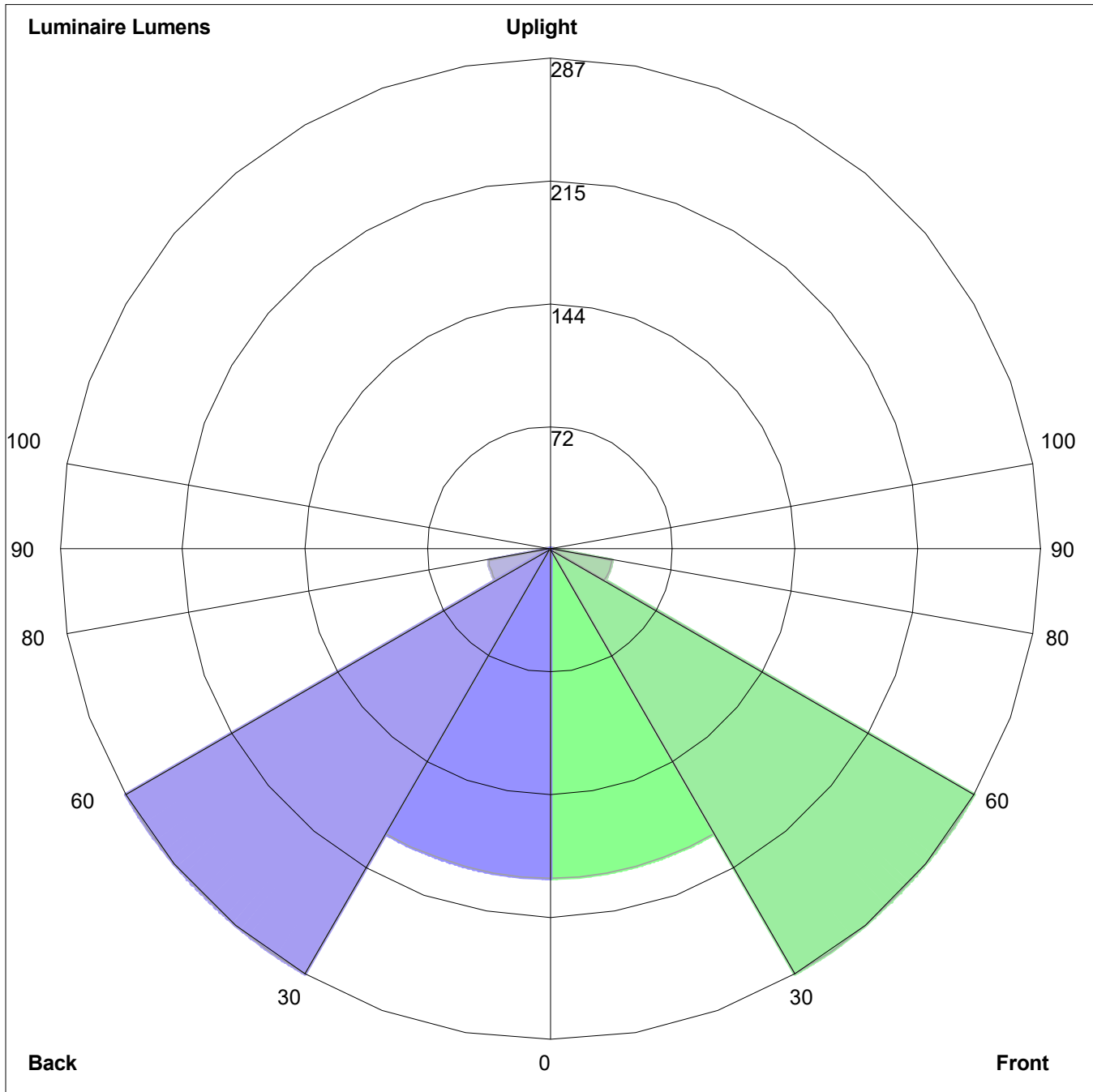
	<u>0</u>
0.0	481.9
2.5	481.6
5.0	481.1
7.5	480.3
10.0	478.9
12.5	476.6
15.0	473.0
17.5	468.2
20.0	462.6
22.5	455.6
25.0	446.8
27.5	436.0
30.0	422.8
32.5	406.9
35.0	388.5
37.5	367.1
40.0	341.7
42.5	312.1
45.0	278.1
47.5	240.6
50.0	201.6
52.5	164.0
55.0	131.5
57.5	105.3
60.0	84.5
62.5	67.6
65.0	53.6
67.5	41.7
70.0	31.6
72.5	23.2
75.0	16.3
77.5	12.0
80.0	8.8
82.5	5.8
85.0	3.2
87.5	0.9
90.0	0.0

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINANCE



Distance In Units Of Mounting Height
 Values Based On 22 Foot Mounting Height
 1/2 Maximum Candela Trace Shown As Dashed Curve
 (+) = Maximum Candela Point

LUMINAIRE CLASSIFICATION SYSTEM (LCS) GRAPH



Luminaire Lumens:
Front: Low=192.5, Medium=287.3, High=36.7, Very High=1.9
Back: Low=192.5, Medium=287.3, High=36.7, Very High=1.9
Uplight: Low=0.0, High=0.0

BUG Rating : B1-U0-G0

Recessed wall luminaires · shielded

06-15-2017

Housing: Die-cast aluminum with integral wiring compartment. Die castings are marine grade, copper free ($\leq 0.3\%$ copper content) A360.0 aluminum alloy.

Enclosure: One piece die-cast aluminum faceplate. $\frac{1}{8}$ " thick, tempered glass; clear with white translucent ceramic coating. Faceplate is secured by four (4) socket head, stainless steel, captive screws threaded into stainless steel inserts in the housing casting. Continuous high temperature O-ring gasket for weather tight operation.

Electrical: 6.5W LED luminaire, 9 total system watts, -30°C start temperature. Integral 120V through 277V electronic LED driver, 0-10V dimming. LED module(s) are available from factory for easy replacement. Standard LED color temperature is 3000K with an 85 CRI. Available in 4000K (85 CRI); add suffix K4 to order.

Note: LEDs supplied with luminaire. Due to the dynamic nature of LED technology, LED luminaire data on this sheet is subject to change at the discretion of BEGA-US. For the most current technical data, please refer to www.bega-us.com.

Finish: All BEGA standard finishes are polyester powder coat with minimum 3 mil thickness. Available in four standard BEGA colors: Black (BLK); White (WHT); Bronze (BRZ); Silver (SLV). To specify, add appropriate suffix to catalog number. Custom colors supplied on special order.

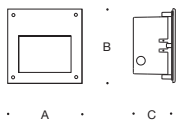
CSA certified to U.S. and Canadian standards, suitable for wet locations. Protection class IP65

Weight: 2.2 lbs.

Luminaire Lumens: 131

Tested in accordance with LM-79-08

Type:
 BEGA Product:
 Project:
 Voltage:
 Color:
 Options:
 Modified:



Recessed Luminaires · shielded light

	Lamp	A	B	C
22272	ADA 6.5W LED	5 ⁷ / ₈	5 ⁷ / ₈	4 ¹ / ₈

Recessed wall luminaires · shielded

Housing: Die-cast aluminum with integral wiring compartment. Die castings are marine grade, copper free ($\leq 0.3\%$ copper content) A360.0 aluminum alloy.

Enclosure: One piece die-cast aluminum faceplate. $\frac{1}{8}$ " thick, tempered glass; clear with white translucent ceramic coating. Faceplate is secured by four (4) socket head, stainless steel, captive screws threaded into stainless steel inserts in the housing casting. Continuous high temperature O-ring gasket for weather tight operation.

Electrical: 10.5W LED luminaire, 12.8 total system watts, -30°C start temperature. Integral 120V through 277V electronic LED driver, 0-10V dimming. LED module(s) are available from factory for easy replacement. Standard LED color temperature is 3000K with an 85 CRI. Available in 4000K (85 CRI); add suffix K4 to order.

Note: LEDs supplied with luminaire. Due to the dynamic nature of LED technology, LED luminaire data on this sheet is subject to change at the discretion of BEGA-US. For the most current technical data, please refer to www.bega-us.com.

Finish: All BEGA standard finishes are polyester powder coat with minimum 3 mil thickness. Available in four standard BEGA colors: Black (BLK); White (WHT); Bronze (BRZ); Silver (SLV). To specify, add appropriate suffix to catalog number. Custom colors supplied on special order.

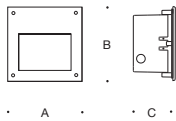
CSA certified to U.S. and Canadian standards, suitable for wet locations. Protection class IP65

Weight: 3.5 lbs.

Luminaire Lumens: 160

Tested in accordance with LM-79-08

Type:
 BEGA Product:
 Project:
 Voltage:
 Color:
 Options:
 Modified:



Recessed Luminaires · shielded light						
		Lamp	A	B	C	CPC
22372	ADA	10.5W LED	7 1/2	7 1/2	4	19522

06-15-2017



TYPE JFW-m

IES ROAD REPORT

PHOTOMETRIC FILENAME : 22372.IES

DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L09133709
[TESTLAB] LIGHT LABORATORY, INC.
[ISSUEDATE] 09/20/2013
[MANUFAC] BEGA-US
[LUMCAT] 22 372
[LUMINAIRE] 7-1/2"SQ. X 4-1/4"H. LED FIXTURE
[MORE] FROSTED LENS
[BALLASTCAT] INVENTRONICS LUC-012S070DSM
[BALLAST] INPUT: 100-277VAC, 50/60HZ, 0.2A OUTPUT: 9-17VDC, 0.07-0.7ADC
[LAMPPOSITION] 0,0
[LAMPCAT] N/A
[OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
[MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
[_INPUT] 120VAC, 14.11W
[_TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

IES Classification	Type II
Longitudinal Classification	Very Short
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	160
Downward Total Efficiency	N.A. (absolute)
Total Luminaire Efficiency	N.A. (absolute)
Luminaire Efficacy Rating (LER)	11
Total Luminaire Watts	14.11
Ballast Factor	1.00
Upward Waste Light Ratio	0.04
Maximum Candela	217.25
Maximum Candela Angle	0H 25V
Maximum Candela (<90 Degrees Vertical)	217.25
Maximum Candela Angle (<90 Degrees Vertical)	0H 25V
Maximum Candela At 90 Degrees Vertical	10.21 (6.4% Luminaire Lumens)
Maximum Candela from 80 to <90 Degrees Vertical	15.58 (9.7% Luminaire Lumens)
Cutoff Classification (deprecated)	N.A. (absolute)

IES ROAD REPORT
PHOTOMETRIC FILENAME : 22372.IES

LUMINAIRE CLASSIFICATION SYSTEM (LCS)

	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	24.0	N.A.	15.0
FM - Front-Medium (30-60)	100.9	N.A.	63.0
FH - Front-High (60-80)	25.1	N.A.	15.7
FVH - Front-Very High (80-90)	4.0	N.A.	2.5
BL - Back-Low (0-30)	0.0	N.A.	0.0
BM - Back-Medium (30-60)	0.0	N.A.	0.0
BH - Back-High (60-80)	0.0	N.A.	0.0
BVH - Back-Very High (80-90)	0.0	N.A.	0.0
UL - Uplight-Low (90-100)	2.4	N.A.	1.5
UH - Uplight-High (100-180)	3.8	N.A.	2.4
Total	160.2	N.A.	100.0
BUG Rating	B0-U1-G0		

IES ROAD REPORT
PHOTOMETRIC FILENAME : 22372.IES

CANDELA TABULATION

Vert. Angles	Horizontal Angles									
	<u>0</u>	<u>5</u>	<u>10</u>	<u>15</u>	<u>20</u>	<u>25</u>	<u>30</u>	<u>35</u>	<u>40</u>	<u>45</u>
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.57	0.58	0.58	0.57	0.56	0.55	0.53	0.51	0.49	0.47
10	2.90	2.92	2.86	2.78	2.67	2.52	2.34	2.13	1.89	1.61
15	29.06	29.35	28.40	27.11	25.24	22.96	19.93	16.16	11.67	6.52
20	131.02	131.20	124.95	117.28	106.96	93.76	77.94	60.10	40.05	30.77
25	217.25	215.09	209.54	200.43	188.47	173.81	157.33	139.72	114.67	86.46
30	211.28	210.67	210.20	209.52	208.66	207.51	206.00	191.68	166.96	140.34
35	194.91	194.52	194.44	194.75	194.59	194.81	194.99	189.90	182.51	161.44
40	173.44	173.29	173.58	173.94	174.54	175.43	174.94	173.00	166.30	151.46
45	146.24	146.41	147.36	148.27	150.09	152.12	152.14	151.84	144.85	134.42
50	113.94	114.30	115.80	118.07	121.09	123.79	126.25	126.70	122.83	112.65
55	84.95	85.38	86.93	89.01	91.68	95.11	97.95	99.27	97.21	91.35
60	59.77	60.38	62.17	63.97	66.63	69.58	71.90	72.99	73.05	68.78
65	41.88	42.46	43.70	44.81	46.77	48.89	50.95	52.06	52.10	50.13
70	29.13	29.56	30.52	31.16	32.34	33.59	34.71	35.71	35.25	33.98
75	20.59	20.91	21.39	21.83	22.23	22.73	23.39	23.38	23.04	22.01
80	15.02	15.30	15.45	15.54	15.58	15.45	15.14	14.92	15.33	13.96
85	11.54	11.84	11.82	11.65	11.31	10.73	9.90	9.01	8.04	7.03
90	10.11	10.21	10.06	9.77	9.30	8.59	7.68	6.60	5.55	4.46
95	8.91	8.75	8.73	8.47	7.99	7.32	6.50	5.53	4.62	3.75
100	6.95	7.05	6.85	6.63	6.24	5.69	5.04	4.34	3.64	3.02
105	5.40	5.42	5.37	5.13	4.77	4.40	3.90	3.41	2.94	2.48
110	4.15	4.18	4.16	3.92	3.75	3.43	3.08	2.72	2.39	2.10
115	3.21	3.22	3.21	3.12	2.92	2.70	2.49	2.25	1.98	1.77
120	2.53	2.53	2.52	2.45	2.31	2.19	2.04	1.84	1.69	1.53
125	1.99	2.00	1.99	1.95	1.88	1.79	1.66	1.56	1.43	1.31
130	1.59	1.61	1.60	1.58	1.53	1.46	1.40	1.31	1.23	1.14
135	1.32	1.31	1.30	1.27	1.25	1.22	1.17	1.11	1.05	0.98
140	1.08	1.07	1.08	1.06	1.03	1.00	0.98	0.95	0.90	0.86
145	0.91	0.91	0.90	0.89	0.88	0.86	0.83	0.80	0.77	0.73
150	0.78	0.76	0.75	0.75	0.75	0.72	0.70	0.68	0.65	0.62
155	0.61	0.61	0.62	0.62	0.61	0.60	0.59	0.58	0.55	0.52
160	0.51	0.51	0.51	0.51	0.50	0.48	0.47	0.46	0.45	0.44
165	0.41	0.41	0.41	0.41	0.41	0.40	0.39	0.38	0.37	0.37
170	0.34	0.34	0.34	0.33	0.33	0.32	0.32	0.31	0.30	0.29
175	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.23	0.23	0.23
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Vert. Angles	Horizontal Angles									
	<u>50</u>	<u>55</u>	<u>60</u>	<u>65</u>	<u>70</u>	<u>75</u>	<u>80</u>	<u>85</u>	<u>90</u>	<u>95</u>
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.45	0.42	0.39	0.36	0.33	0.29	0.26	0.22	0.00	0.00
10	1.30	0.96	0.60	0.54	0.48	0.41	0.34	0.27	0.00	0.00
15	3.01	2.49	1.93	1.33	0.69	0.55	0.45	0.33	0.00	0.00
20	22.50	12.95	3.37	2.53	1.65	0.72	0.54	0.40	0.00	0.00
25	56.61	35.17	20.93	5.89	2.63	1.44	0.62	0.45	0.00	0.00
30	107.60	70.96	38.73	20.59	3.49	2.09	0.69	0.50	0.00	0.00
35	131.08	99.67	60.27	30.62	11.81	2.49	1.04	0.53	0.00	0.00
40	130.44	96.86	65.41	35.03	15.35	2.46	1.21	0.56	0.00	0.00
45	115.23	92.49	64.25	35.44	13.30	3.55	1.30	0.61	0.00	0.00
50	104.68	81.47	54.70	30.67	10.35	3.94	1.42	0.66	0.00	0.00
55	83.92	65.46	46.11	24.94	10.31	3.78	1.49	0.67	0.00	0.00

IES ROAD REPORT
PHOTOMETRIC FILENAME : 22372.IES

CANDELA TABULATION - (Cont.)

60	61.83	51.68	36.50	21.30	9.76	3.41	1.50	0.70	0.00	0.00
65	45.31	37.56	27.60	16.68	7.67	2.97	1.48	0.73	0.00	0.00
70	30.97	26.41	19.84	12.17	5.54	2.57	1.45	0.78	0.00	0.00
75	20.34	17.72	13.03	8.25	4.15	2.24	1.37	0.80	0.00	0.00
80	12.41	10.63	7.84	5.15	3.02	1.92	1.27	0.81	0.00	0.00
85	6.08	5.12	4.14	3.05	2.21	1.65	1.18	0.78	0.00	0.00
90	3.49	2.79	2.33	2.01	1.76	1.44	1.08	0.78	0.00	0.00
95	3.00	2.43	2.04	1.75	1.52	1.28	1.00	0.74	0.00	0.00
100	2.52	2.10	1.80	1.55	1.32	1.13	0.89	0.69	0.00	0.00
105	2.12	1.83	1.59	1.38	1.17	1.00	0.81	0.64	0.00	0.00
110	1.83	1.59	1.40	1.23	1.06	0.90	0.74	0.62	0.00	0.00
115	1.58	1.40	1.24	1.09	0.95	0.81	0.68	0.57	0.00	0.00
120	1.37	1.24	1.11	0.97	0.86	0.75	0.64	0.53	0.00	0.00
125	1.20	1.09	0.98	0.88	0.78	0.68	0.58	0.49	0.00	0.00
130	1.04	0.96	0.87	0.79	0.70	0.61	0.53	0.45	0.00	0.00
135	0.92	0.86	0.77	0.70	0.63	0.56	0.49	0.43	0.00	0.00
140	0.81	0.75	0.69	0.62	0.56	0.50	0.43	0.38	0.00	0.00
145	0.69	0.64	0.60	0.55	0.51	0.45	0.40	0.36	0.00	0.00
150	0.59	0.56	0.52	0.48	0.44	0.40	0.35	0.32	0.00	0.00
155	0.49	0.47	0.44	0.41	0.38	0.34	0.31	0.28	0.00	0.00
160	0.42	0.40	0.38	0.35	0.33	0.30	0.28	0.26	0.00	0.00
165	0.35	0.34	0.32	0.30	0.28	0.27	0.25	0.23	0.00	0.00
170	0.28	0.27	0.25	0.24	0.23	0.22	0.21	0.20	0.00	0.00
175	0.23	0.22	0.22	0.21	0.21	0.20	0.20	0.19	0.00	0.00
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Vert. Angles **Horizontal Angles**

	<u>100</u>	<u>105</u>	<u>110</u>	<u>115</u>	<u>120</u>	<u>125</u>	<u>130</u>	<u>135</u>	<u>140</u>	<u>145</u>
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

IES ROAD REPORT
PHOTOMETRIC FILENAME : 22372.IES

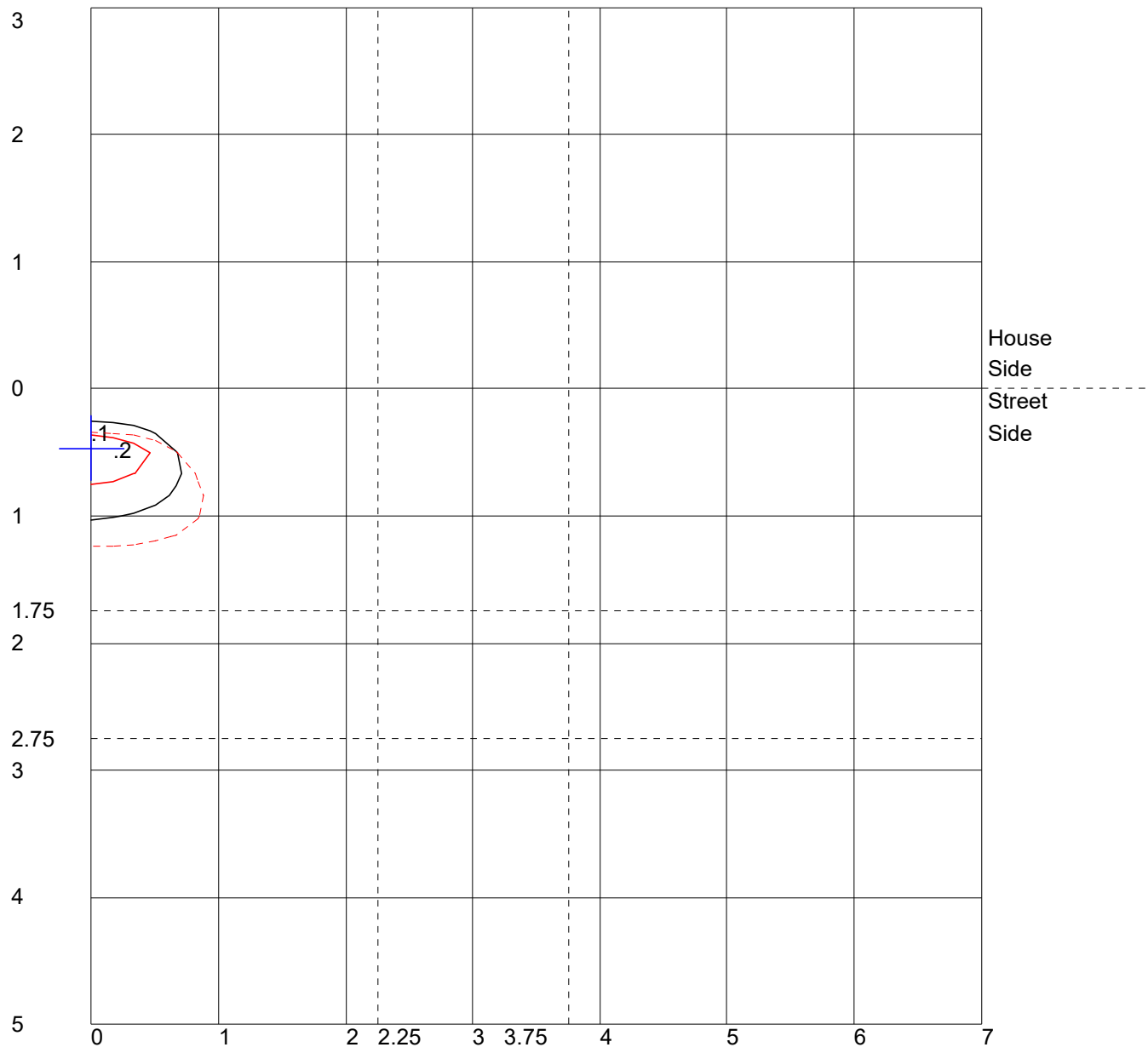
CANDELA TABULATION - (Cont.)

135	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
145	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Vert. Horizontal Angles

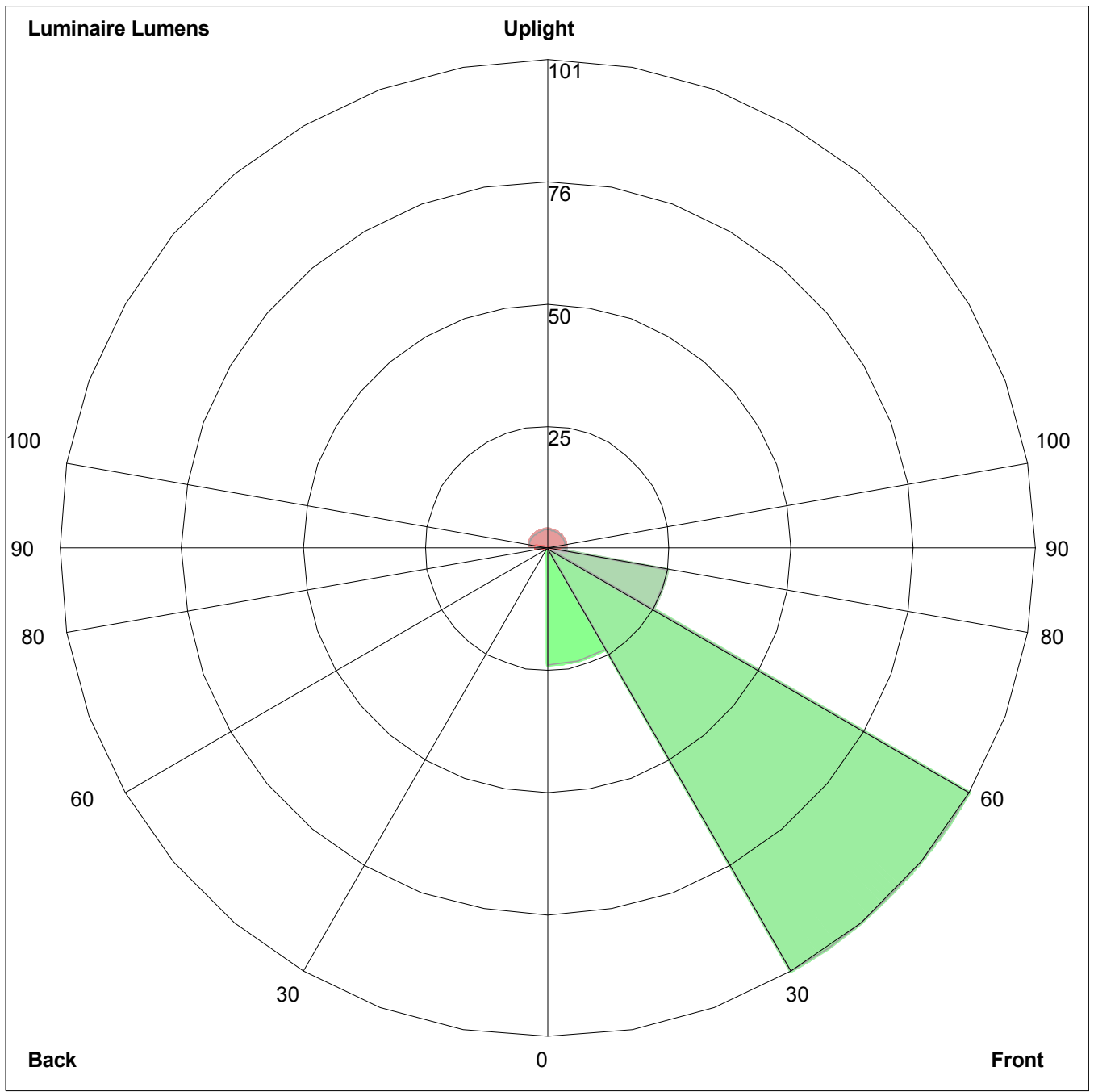
	<u>150</u>	<u>155</u>	<u>160</u>	<u>165</u>	<u>170</u>	<u>175</u>	<u>180</u>
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	0.00	0.00	0.00	0.00	0.00	0.00	0.00
125	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	0.00	0.00	0.00	0.00	0.00	0.00	0.00
145	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	0.00	0.00	0.00	0.00	0.00	0.00	0.00
155	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	0.00	0.00	0.00	0.00	0.00	0.00	0.00
165	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	0.00	0.00	0.00	0.00	0.00	0.00	0.00
175	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINANCE



Distance In Units Of Mounting Height
 Values Based On 22 Foot Mounting Height
 1/2 Maximum Candela Trace Shown As Dashed Curve
 (+) = Maximum Candela Point

LUMINAIRE CLASSIFICATION SYSTEM (LCS) GRAPH



Luminaire Lumens:
Front: Low=24.0, Medium=100.9, High=25.1, Very High=4.0
Back: Low=0.0, Medium=0.0, High=0.0, Very High=0.0
Uplight: Low=2.4, High=3.8

BUG Rating : B0-U1-G0

**IES ROAD REPORT****PHOTOMETRIC FILENAME : 22272.IES****DESCRIPTIVE INFORMATION (From Photometric File)**

IESNA:LM-63-2002
 [TEST] L12131401
 [TESTLAB] LIGHT LABORATORY, INC.
 [ISSUEDATE] 01/06/2014
 [MANUFAC] BEGA-US
 [LUMCAT] 22 272
 [LUMINAIRE] 6"SQ. X 4-1/4"H. LED FIXTURE
 [MORE] FROSTED LENS
 [BALLASTCAT] BIAS BPWXL D 6-9U-070
 [BALLAST] INPUT: 100-308VAC, 50/60HZ OUTPUT: 0-10 VDC
 [LAMPPOSITION] 0,0
 [LAMPCAT] N/A
 [OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
 [MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
 [_INPUT] 120VAC, 12.05W
 [_TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

IES Classification	Type II
Longitudinal Classification	Very Short
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	131
Downward Total Efficiency	N.A. (absolute)
Total Luminaire Efficiency	N.A. (absolute)
Luminaire Efficacy Rating (LER)	11
Total Luminaire Watts	12.05
Ballast Factor	1.00
Upward Waste Light Ratio	0.04
Maximum Candela	148.53
Maximum Candela Angle	0H 30V
Maximum Candela (<90 Degrees Vertical)	148.53
Maximum Candela Angle (<90 Degrees Vertical)	0H 30V
Maximum Candela At 90 Degrees Vertical	7.81 (6.0% Luminaire Lumens)
Maximum Candela from 80 to <90 Degrees Vertical	22.08 (16.9% Luminaire Lumens)
Cutoff Classification (deprecated)	N.A. (absolute)

IES ROAD REPORT
PHOTOMETRIC FILENAME : 22272.IES

LUMINAIRE CLASSIFICATION SYSTEM (LCS)

	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	14.8	N.A.	11.3
FM - Front-Medium (30-60)	77.3	N.A.	59.1
FH - Front-High (60-80)	28.8	N.A.	22.0
FVH - Front-Very High (80-90)	4.6	N.A.	3.5
BL - Back-Low (0-30)	< 0.05	N.A.	0.0
BM - Back-Medium (30-60)	< 0.05	N.A.	0.0
BH - Back-High (60-80)	< 0.05	N.A.	0.0
BVH - Back-Very High (80-90)	< 0.05	N.A.	0.0
UL - Uplight-Low (90-100)	2.0	N.A.	1.5
UH - Uplight-High (100-180)	3.4	N.A.	2.6
Total	130.9	N.A.	100.0
BUG Rating	B0-U1-G0		

IES ROAD REPORT
PHOTOMETRIC FILENAME : 22272.IES

CANDELA TABULATION

Vert. Angles	Horizontal Angles									
	<u>0</u>	<u>5</u>	<u>10</u>	<u>15</u>	<u>20</u>	<u>25</u>	<u>30</u>	<u>35</u>	<u>40</u>	<u>45</u>
0	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
5	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16	0.15	0.15
10	0.78	0.77	0.75	0.73	0.69	0.65	0.60	0.54	0.48	0.41
15	19.24	18.94	17.81	16.52	14.95	13.33	11.29	8.84	6.00	2.79
20	77.63	77.51	73.66	68.87	62.29	54.17	44.61	33.82	21.97	16.32
25	147.29	145.55	141.03	133.79	123.87	110.67	95.13	78.23	61.48	45.00
30	148.53	148.17	147.55	146.48	144.92	142.27	138.27	123.06	98.66	71.08
35	141.58	141.42	141.16	140.82	139.88	138.72	136.73	127.27	114.85	93.94
40	132.06	132.06	131.84	131.47	130.82	129.70	126.37	119.36	106.57	94.40
45	121.10	121.25	121.12	120.74	119.89	118.43	115.22	109.63	96.50	86.94
50	106.55	106.76	106.97	106.99	106.63	105.23	103.06	97.48	88.01	79.14
55	90.15	90.45	90.84	91.14	91.02	90.23	89.85	84.55	75.95	68.12
60	71.58	72.22	72.71	73.77	72.54	73.83	73.14	71.26	62.96	56.76
65	53.80	54.47	55.33	56.03	56.72	57.69	57.88	55.55	50.31	46.37
70	39.76	40.38	40.99	40.94	41.91	42.10	42.37	41.62	37.24	34.76
75	29.87	30.25	30.36	30.40	30.12	29.97	29.86	28.17	25.73	23.95
80	21.63	21.90	22.08	21.96	21.54	21.03	20.26	18.86	16.57	14.96
85	13.37	13.66	14.21	14.19	13.94	13.47	12.77	11.56	9.59	8.40
90	7.77	7.81	7.71	7.48	7.11	6.58	5.97	5.43	4.89	4.14
95	7.09	7.08	6.98	6.77	6.43	5.90	5.33	4.72	4.15	3.48
100	6.14	6.14	6.07	5.83	5.48	5.03	4.53	3.98	3.44	2.89
105	4.96	4.98	4.93	4.70	4.41	4.05	3.62	3.18	2.76	2.33
110	3.92	3.92	3.88	3.66	3.48	3.18	2.86	2.53	2.20	1.89
115	3.04	3.03	3.02	2.87	2.72	2.50	2.27	2.03	1.80	1.55
120	2.36	2.37	2.34	2.24	2.10	1.99	1.81	1.63	1.48	1.32
125	1.86	1.85	1.82	1.75	1.67	1.60	1.47	1.36	1.24	1.12
130	1.49	1.46	1.44	1.40	1.35	1.29	1.22	1.13	1.05	0.97
135	1.15	1.16	1.16	1.14	1.11	1.06	1.02	0.94	0.89	0.83
140	0.95	0.95	0.94	0.94	0.92	0.88	0.86	0.82	0.77	0.73
145	0.81	0.81	0.80	0.79	0.77	0.75	0.72	0.70	0.66	0.63
150	0.68	0.67	0.67	0.66	0.65	0.64	0.63	0.60	0.58	0.55
155	0.54	0.55	0.55	0.55	0.54	0.53	0.52	0.51	0.49	0.47
160	0.44	0.45	0.45	0.45	0.44	0.44	0.43	0.42	0.40	0.38
165	0.37	0.37	0.37	0.36	0.36	0.35	0.34	0.33	0.32	0.30
170	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.26	0.26	0.25
175	0.20	0.21	0.21	0.21	0.21	0.20	0.20	0.20	0.20	0.20
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Vert. Angles	Horizontal Angles									
	<u>50</u>	<u>55</u>	<u>60</u>	<u>65</u>	<u>70</u>	<u>75</u>	<u>80</u>	<u>85</u>	<u>90</u>	<u>95</u>
0	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
5	0.15	0.15	0.15	0.14	0.14	0.14	0.14	0.14	0.14	0.00
10	0.33	0.25	0.17	0.16	0.16	0.15	0.15	0.14	0.14	0.00
15	0.74	0.62	0.49	0.34	0.19	0.18	0.17	0.16	0.15	0.00
20	11.42	6.02	0.83	0.64	0.44	0.23	0.20	0.19	0.17	0.00
25	28.42	17.04	9.70	2.07	0.70	0.42	0.24	0.21	0.19	0.00
30	48.60	31.90	18.97	9.90	0.97	0.63	0.27	0.24	0.20	0.00
35	66.54	44.28	30.83	18.16	6.69	0.84	0.42	0.28	0.22	0.00
40	79.68	58.24	41.92	25.14	11.43	1.08	0.57	0.30	0.24	0.00
45	75.35	64.28	48.74	31.03	14.14	3.03	0.77	0.34	0.25	0.00
50	67.79	57.52	47.07	34.51	15.56	5.09	0.94	0.36	0.27	0.00
55	60.14	50.29	39.20	29.58	15.27	5.61	1.02	0.39	0.30	0.00

IES ROAD REPORT
PHOTOMETRIC FILENAME : 22272.IES

CANDELA TABULATION - (Cont.)

60	50.94	44.01	34.44	23.20	12.69	5.14	1.10	0.45	0.32	0.00
65	41.51	35.32	28.90	19.54	9.86	4.33	1.14	0.51	0.34	0.00
70	32.05	27.33	22.13	16.12	7.62	3.46	1.13	0.56	0.37	0.00
75	22.73	20.17	16.54	12.80	5.80	2.69	1.07	0.58	0.37	0.00
80	13.94	12.89	10.35	8.22	4.01	1.98	0.99	0.59	0.39	0.00
85	7.49	6.51	4.74	3.94	2.26	1.44	0.88	0.61	0.39	0.00
90	3.49	2.85	2.08	1.65	1.32	1.08	0.83	0.59	0.41	0.00
95	2.84	2.24	1.71	1.38	1.17	0.99	0.76	0.57	0.41	0.00
100	2.37	1.90	1.51	1.25	1.04	0.87	0.70	0.54	0.39	0.00
105	1.93	1.59	1.32	1.11	0.93	0.79	0.63	0.50	0.39	0.00
110	1.61	1.37	1.16	0.99	0.84	0.70	0.58	0.47	0.37	0.00
115	1.35	1.18	1.02	0.88	0.76	0.65	0.53	0.43	0.36	0.00
120	1.17	1.02	0.91	0.79	0.69	0.58	0.48	0.39	0.32	0.00
125	1.01	0.90	0.82	0.72	0.62	0.53	0.45	0.38	0.32	0.00
130	0.88	0.80	0.72	0.64	0.57	0.49	0.41	0.35	0.29	0.00
135	0.78	0.71	0.65	0.58	0.51	0.45	0.38	0.32	0.27	0.00
140	0.68	0.64	0.58	0.52	0.47	0.41	0.35	0.30	0.25	0.00
145	0.60	0.56	0.50	0.45	0.40	0.36	0.32	0.28	0.24	0.00
150	0.51	0.47	0.43	0.39	0.35	0.32	0.29	0.25	0.22	0.00
155	0.44	0.41	0.37	0.34	0.31	0.29	0.26	0.23	0.20	0.00
160	0.36	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.00
165	0.29	0.28	0.26	0.25	0.24	0.22	0.20	0.19	0.17	0.00
170	0.24	0.23	0.22	0.21	0.20	0.20	0.19	0.18	0.17	0.00
175	0.19	0.19	0.18	0.18	0.17	0.17	0.16	0.16	0.15	0.00
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Vert. Angles **Horizontal Angles**

	<u>100</u>	<u>105</u>	<u>110</u>	<u>115</u>	<u>120</u>	<u>125</u>	<u>130</u>	<u>135</u>	<u>140</u>	<u>145</u>
0	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

IES ROAD REPORT
PHOTOMETRIC FILENAME : 22272.IES

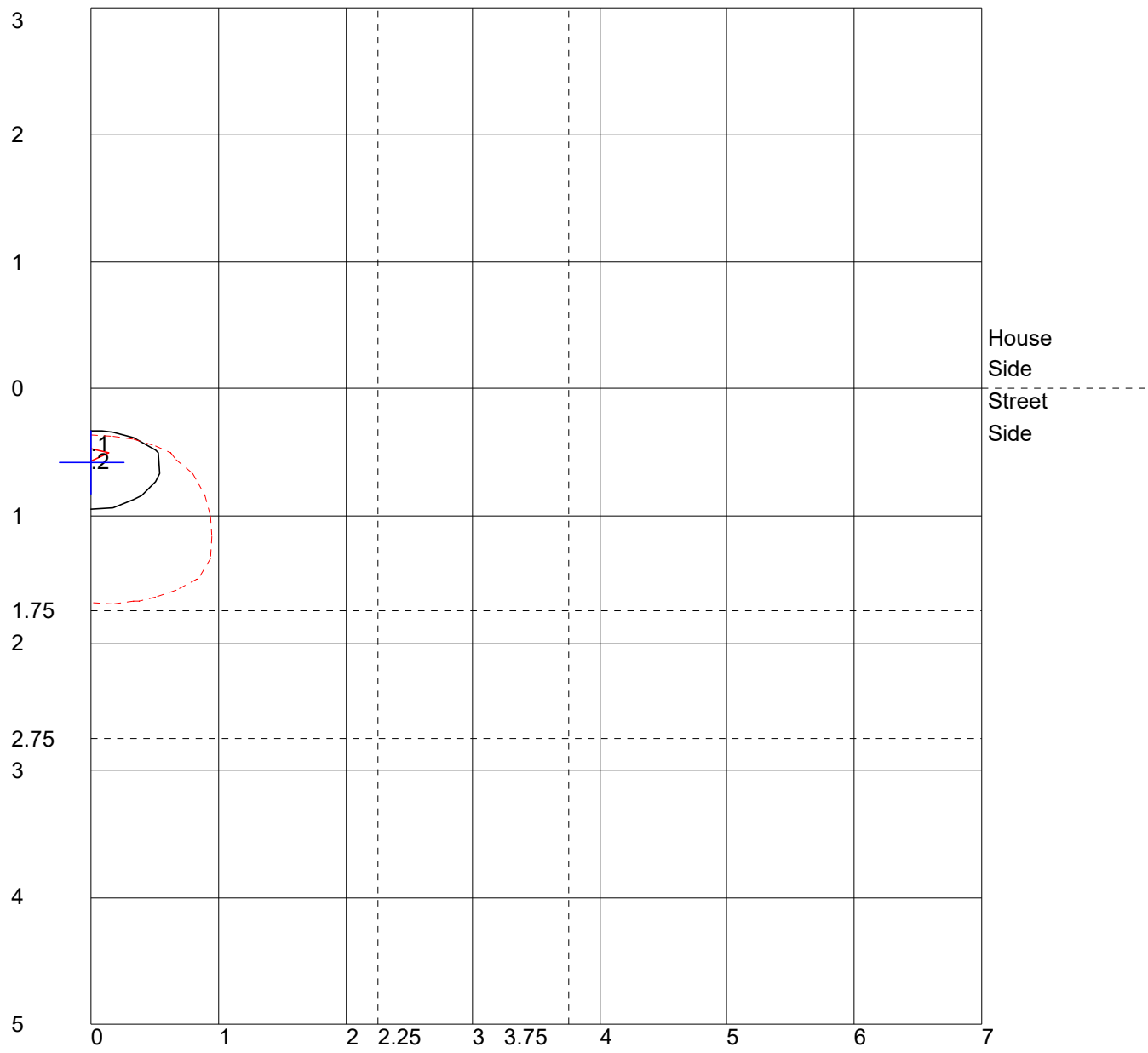
CANDELA TABULATION - (Cont.)

135	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
145	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Vert. Horizontal Angles

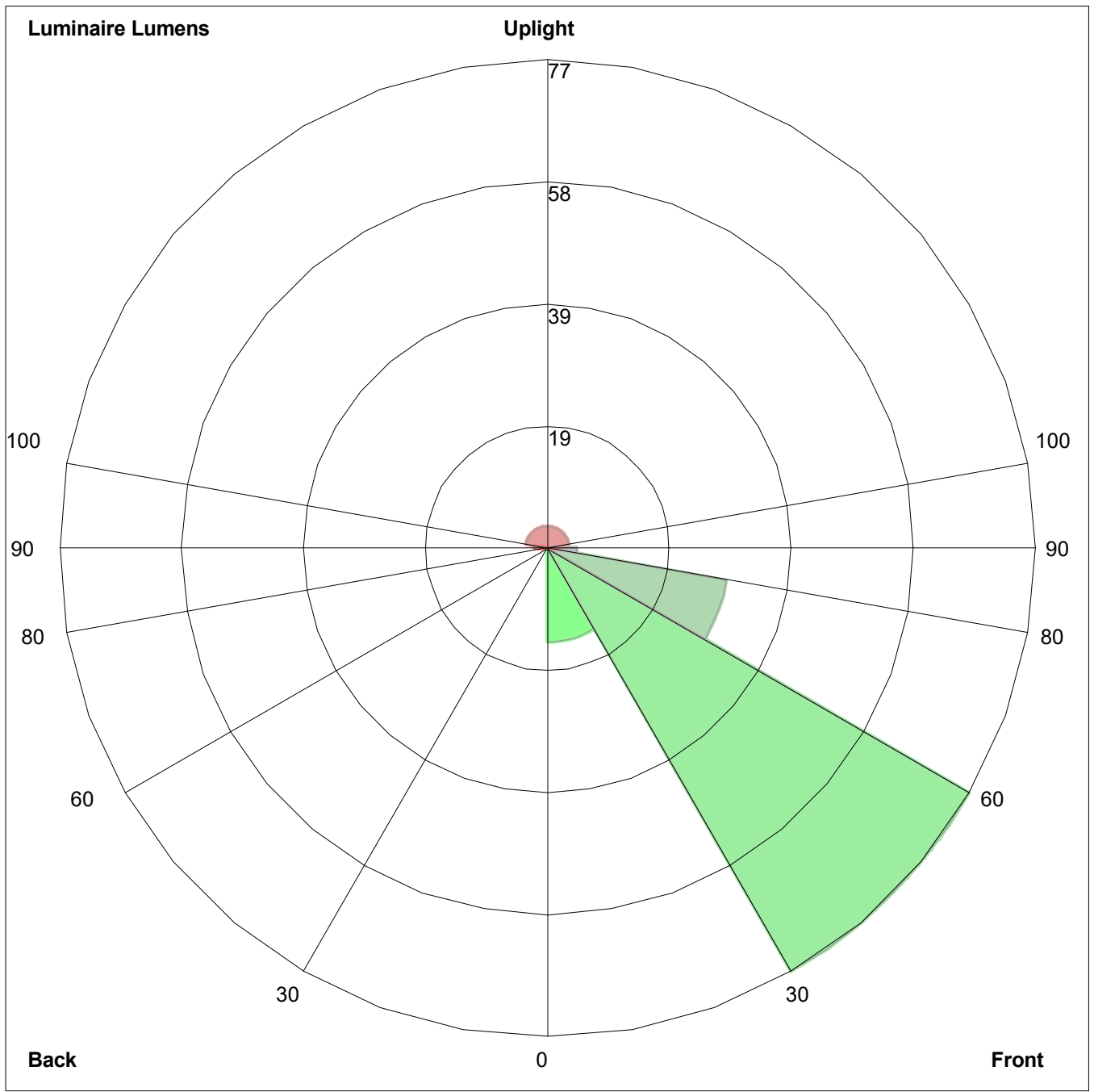
	<u>150</u>	<u>155</u>	<u>160</u>	<u>165</u>	<u>170</u>	<u>175</u>	<u>180</u>
0	0.14	0.14	0.14	0.14	0.14	0.14	0.14
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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110	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	0.00	0.00	0.00	0.00	0.00	0.00	0.00
125	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	0.00	0.00	0.00	0.00	0.00	0.00	0.00
145	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	0.00	0.00	0.00	0.00	0.00	0.00	0.00
155	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	0.00	0.00	0.00	0.00	0.00	0.00	0.00
165	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	0.00	0.00	0.00	0.00	0.00	0.00	0.00
175	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINANCE



Distance In Units Of Mounting Height
 Values Based On 22 Foot Mounting Height
 1/2 Maximum Candela Trace Shown As Dashed Curve
 (+) = Maximum Candela Point

LUMINAIRE CLASSIFICATION SYSTEM (LCS) GRAPH



Luminaire Lumens:
 Front: Low=14.8, Medium=77.3, High=28.8, Very High=4.6
 Back: Low=0.0, Medium=0.0, High=0.0, Very High=0.0
 Uplight: Low=2.0, High=3.4

BUG Rating : B0-U1-G0

CMDC / CM / SGCM

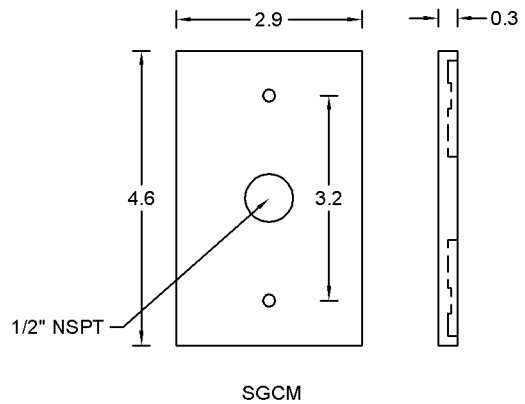
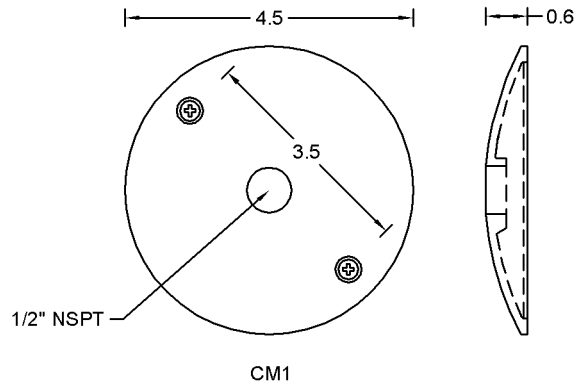
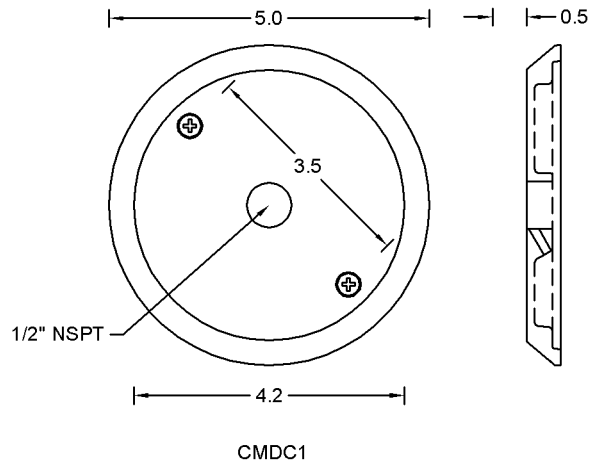
TYPE JGW MOUNTING PLATE

The CMDC, CM, and SGCM are all cast brass canopy mounts for use with Beachside's wall mounted fixtures.

- ___ **CMDC1** Die cast brass canopy mount with (1) 1/2" NSPT. Standard on L-011-CM1.
- ___ **CMDC2** Die cast brass canopy mount with (2) 1/2" NSPT. Standard on L-011-CM2.
- ___ **CMDC3** Die cast brass canopy mount with (3) 1/2" NSPT. Standard on L-011-CM2 with motion sensor accessory.
- ___ **CMDC** Die cast brass canopy mount with (1) slip hole. Standard on Beachside's L-013 and L-014 fixtures.

- ___ **CM1** Sand cast brass canopy mount with (1) 1/2" NSPT. Substitution accessory on Beachside's L-011-CM1.
- ___ **CM2** Sand cast brass canopy mount with (2) 1/2" NSPT. Substitution accessory on Beachside's L-011-CM2.
- ___ **CM3** Sand cast brass canopy mount with (3) 1/2" NSPT. Substitution accessory on Beachside's L-011-CM2 with motion sensor.
- ___ **CM** Sand cast brass canopy mount with (1) slip hole. Substitution accessory on Beachside's L-013 and L-014 fixtures.

- ___ **SGCM1** Sand cast brass rectangular canopy mount with (1) 1/2" NSPT. Substitution accessory on Beachside's wall mounted directionals.
- ___ **SGCM** Sand cast brass rectangular canopy mount with (1) slip hole. Substitution accessory on Beachside's L-013 and L-014 fixtures.



Project: _____

By: _____

Date: _____

For ordering purposes, please specify (example: CM1)

_____ Canopy Mount

06-15-2017

L-011-S TYPE JGW

The L-011-S is an unobtrusive, directional fixture on a brass riser. It can be aimed up or down and is ideal for tall ground cover.



Construction All brass components. 0.140" [3.6mm] thick brass housing. 1/2" schedule 40 brass stem.

Lens Tempered soda lime glass. Stepped to prevent pooling of water on lens.

Stem Height Custom stem heights are available upon request. Standard stem heights are:

- 8 8" [20 cm]
- 12 12" [30 cm]
- 16 16" [40 cm]
- 20 20" [51 cm]

L-011-S 12 Volts, Remote transformer required

MR16 Halogen	— BAB	20 Watt	36° flood	
GU5.3, 50 Watts max	— FMV	35 Watt	24° narrow flood	
	— EXT	50 Watt	12° spot	
	— 5W-SP	5 Watt	15° spot	320 lm
	— 5W-NFL	5 Watt	25° narrow flood	320 lm
	— 5W-FL	5 Watt	40° flood	320 lm
GU5.3, MR16 LED	— 5W-WFL	5 Watt	100° wide flood	320 lm
Cree chipset (5W)	— 7W-NFL	7 Watt	25° narrow flood	483 lm
Lumiled chipset (7W)	— 7W-FL	7 Watt	40° flood	487 lm
Soraa chipset (8W)	— 7W-WFL	7 Watt	60° wide flood	483 lm
Warm White (3000K)	— 8W-SP	8 Watt	10° spot	500 lm
	— 8W-NFL	8 Watt	25° narrow flood	525 lm
	— 8W-FL	8 Watt	36° flood	525 lm

L-011-S-120V 120 Volts
L-011-S-230V 230 Volts

MR16 LED	— 5W-NFL	5 Watt	25° narrow flood
Cree chipset, GU10	— 5W-FL	5 Watt	40° flood
Warm White (3000K)	— 5W-WFL	5 Watt	100° wide flood

MR16 LED	— 8W-SP	8 Watt	10° spot
Soraa chipset, GU10	— 8W-NFL	8 Watt	25° narrow flood
Warm White (3000K)	— 8W-FL	8 Watt	36° flood

Optical Accessories

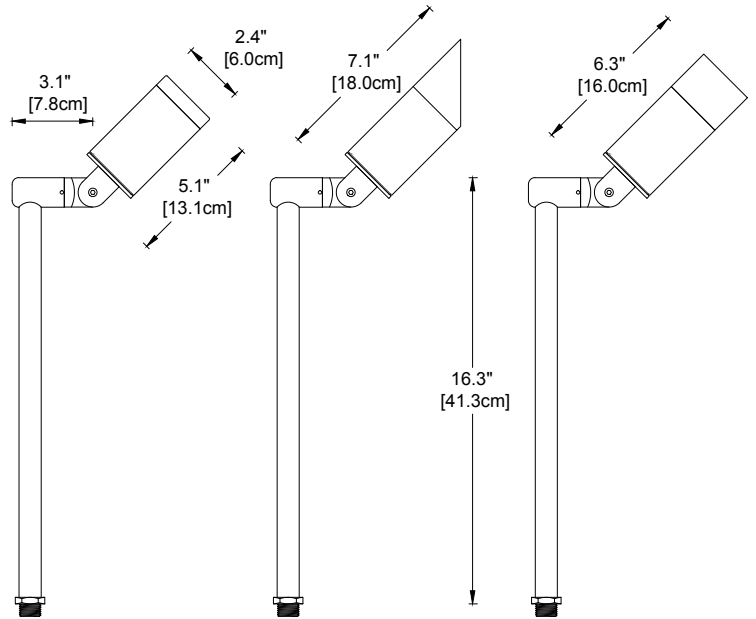
— BGS	Brass glare shield, 45° cutoff
— BGSF	Brass glare shield, full cutoff with weep hole
— FR	Frosted lens
— HL1	Honeycomb louver, 1/8" [3mm] thick
— HL2	Honeycomb louver, 1/4" [6mm] thick
— PR	Prismatic spread lens
— RT	Rectilinear spread lens
— SL	Solite lens

Mounting Accessories

1/2" male threads. Mounts into any standard j-box or:

— GS2	Heavy-duty ground spike
— GS2BC	Heavy-duty ground spike with cast brass cap
— GS3R	Heavy-duty ground spike with brass cap for telescoping fixture riser
— GS4	* Standard ground spike with cast brass cap
— JB	Cast brass junction box

* This accessory for 12 Volt fixture only.



L-011-S

L-011-S with BGS

L-011-S with BGSF

Fixtures shown with 16" stems

Finish: Unfinished is standard; no specification required. The fixture will weather to a natural patina. The patina process is natural with brass and copper. Rate of patina and eventual color is dependent upon climate and proximity to the ocean. Thus, Beachside does not guarantee any specific appearance.

Weight: 4.0 lbs [1.8 kg] with 16" stem

IP 66
 CSA Listed, file #190030
 10 year fixture warranty
 3 year warranty for MR16 LED lamps

MADE IN USA

Project	By	Date
For ordering purposes, please specify (example: L-011-S-120V-16-5W-NFL-GS2-BGS-HL1)		
L-011-S-		
Fixture	Stem Height	Lamp
		Accessory
		Accessory

MR16-GU10 7.5W



OUTPUT RANGE: VIVID SERIES 390 - 455 lumen

OUTPUT RANGE: BRILLIANT SERIES 475 - 525 lumen

BEAM ANGLE RANGE 10°, 25°, 36°, 60°

COLOR TEMPERATURE RANGE 2700K, 3000K, 4000K

APPLICATION Halogen replacement for indoor & outdoor applications



120V



GU10



DIM



POINT SOURCE OPTICS

Exceptional beam control enables unique 10° narrow spot and smooth uniform beams

Single light source, single crisp shadow

VP₃ VIVID COLOR AND VP₃ NATURAL WHITE

VIVID series provides accurate color rendering across the visible spectrum from 400nm to 700nm, with CRI/95, R9/95, Rf/90, Rg/100

Whiteness rendering matches or exceeds that of halogen and incandescent sources at 2700K and 3000K

ENERGY EFFICIENCY AND LONG LIFE

85% more energy efficient than standard halogen lamps

Typical payback of one year or less

Rated lifetime to L70: 35,000hrs

Warranty: 3yrs or 25,000hrs whichever comes first

Detailed warranty information available at soraa.com/resources/legal

CERTIFICATIONS

UL/CUL, FCC Title 47 Part 15B, RoHS



RoHS

HIGHLY COMPATIBLE

Narrow spot compatible with Soraa SNAP System accessories

Geometrically compatible with standard fixtures and suitable for damp locations

This lamp is suitable for use in fully enclosed fixtures, subject to the maximum heatsink temperature limits stated in this data sheet. A list of qualified enclosed fixtures can be found at www.soraa.com/resources

Works with trailing edge and leading edge phase cut dimmers (see www.soraa.com/resources)

INTENDED USE AND APPLICATIONS

Intended for use in GU10 compatible recessed downlights, track lighting and other indoor and outdoor applications

Soraa lamps are designed to safely turn down in any thermal environment not conducive to minimum airflow or proper ventilation

GENERAL SPECIFICATIONS

Form Factor

Width: 49.9mm (1.96")

Height: 53.5mm (2.10")

Weight: 61g

Operating Temperature

Minimum: -40°C (ambient)

Typical: 85°C - 95°C (base)

Maximum: 100°C (base)

Electrical

Wattage: 7.5W

Power factor: 0.93

Voltage: 120V +/- 12V

Frequency: 50/60Hz

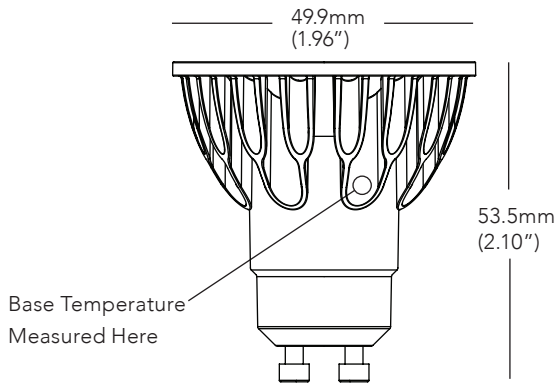
Dimming and Flicker

Dimmable to <20%

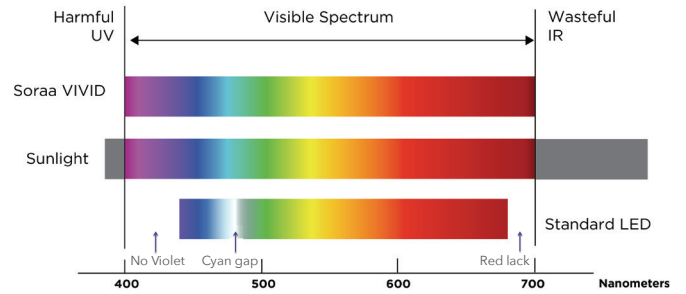
Flicker Index: <0.12

Percent Flicker: 40%

DIMENSIONS

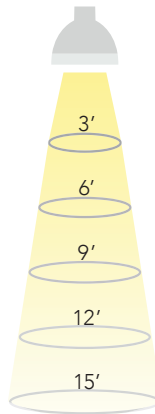


COLOR RENDERING



10 DEGREE BEAM

Beam Dia at 50% CBCP (ft)	Field Dia at 10% CBCP (ft)	Foot-candles (% of CBCP)
0.5	1.1	11.1%
1.0	2.1	2.8%
1.6	3.2	1.2%
2.1	4.2	0.7%
2.6	5.3	0.4%



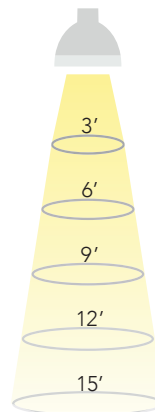
25 DEGREE BEAM

Beam Dia at 50% CBCP (ft)	Field Dia at 10% CBCP (ft)	Foot-candles (% of CBCP)
1.3	2.1	11.1%
2.7	4.1	2.8%
4.0	6.2	1.2%
5.3	8.3	0.7%
6.7	10.3	0.4%

60 DEGREE BEAM

36 DEGREE BEAM

Beam Dia at 50% CBCP (ft)	Field Dia at 10% CBCP (ft)	Foot-candles (% of CBCP)
1.9	3.1	11.1%
3.9	6.1	2.8%
5.8	9.2	1.2%
7.8	12.2	0.7%
9.7	15.3	0.4%



Beam Dia at 50% CBCP (ft)	Field Dia at 10% CBCP (ft)	Foot-candles (% of CBCP)
3.5	5.4	11.1%
6.9	10.8	2.8%
10.4	16.2	1.2%
13.9	21.6	0.7%
17.3	27.0	0.4%

Note: Footcandles may be calculated by multiplying the CBCP of the desired model number by the percentage in the tables above

SPECIFICATIONS BY MODEL NUMBER* SORAA LED MR16-GU10 7.5W

Model #	Product Code	CCT (K)	Beam Angle	Field Angle	CBCP (Cd)	Halogen Equivalent	Total Flux (Lm)	Efficacy (Lm/W)	McA	SNAP
VIVID SERIES										
SM16GA-07-10D-927-03	01111	2700	10	17	5710	50	390	52	3	YES
SM16GA-07-25D-927-03	01123	2700	25	38	2260	50	410	55	3	-
SM16GA-07-36D-927-03	01135	2700	36	54	1070	50	410	55	3	-
SM16GA-07-60D-927-03	01573	2700	60	84	420	50	410	55	3	-
SM16GA-07-10D-930-03	01115	3000	10	17	6000	50	410	55	3	YES
SM16GA-07-25D-930-03	01127	3000	25	38	2400	50	435	58	3	-
SM16GA-07-36D-930-03	01139	3000	36	54	1130	50	435	58	3	-
SM16GA-07-60D-930-03	01577	3000	60	84	440	50	435	58	3	-
SM16GA-07-10D-940-03	01117	4000	10	17	6290	50	430	57	4	YES
SM16GA-07-25D-940-03	01129	4000	25	38	2510	50	455	61	4	-
SM16GA-07-36D-940-03	01141	4000	36	54	1190	50	455	61	4	-
SM16GA-07-60D-940-03	01579	4000	60	84	460	50	455	61	4	-
BRILLIANT SERIES										
SM16GA-07-10D-827-03	01109	2700	10	17	6950	65	475	63	3	YES
SM16GA-07-25D-827-03	01121	2700	25	38	2760	65	500	67	3	-
SM16GA-07-36D-827-03	01133	2700	36	54	1310	65	500	67	3	-
SM16GA-07-60D-827-03	01571	2700	60	84	510	65	500	67	3	-
SM16GA-07-10D-830-03	01113	3000	10	17	7320	65	500	67	3	YES
SM16GA-07-25D-830-03	01125	3000	25	38	2900	65	525	70	3	-
SM16GA-07-36D-830-03	01137	3000	36	54	1370	65	525	70	3	-
SM16GA-07-60D-830-03	01575	3000	60	84	540	65	525	70	3	-

CCT: Correlated Color Temperature **McA:** White Point Accuracy in McA step **SNAP:** SORAA SNAP System Compatible

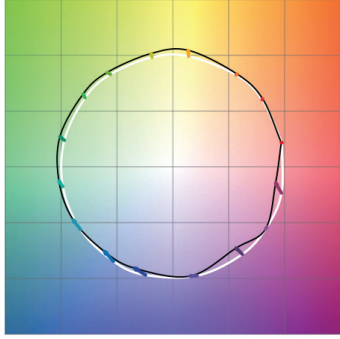
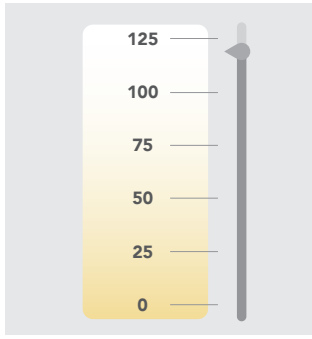
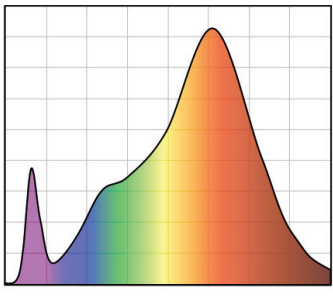
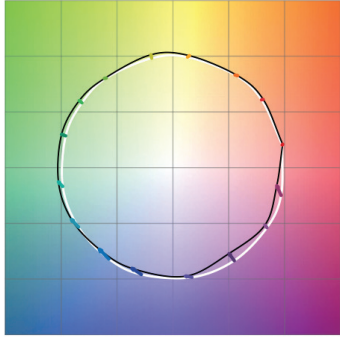
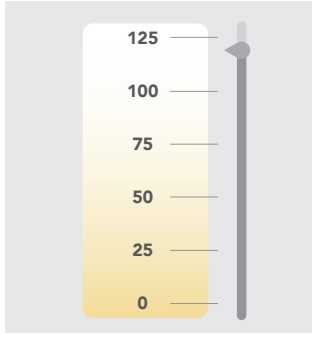
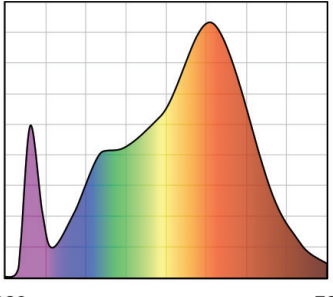
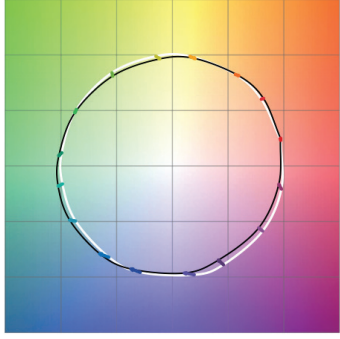
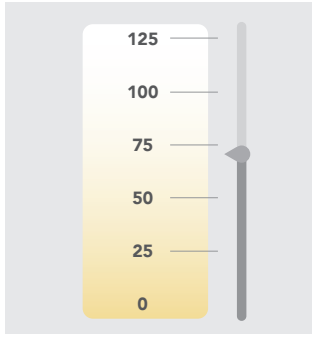
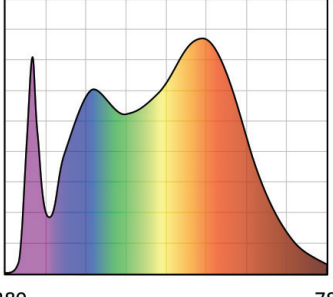
*Specifications are at stable warm operating conditions (25°C ambient)

SERIES/CCT

COLOR ACCURACY

WHITENESS INDEX

SPECTRAL POWER DISTRIBUTION

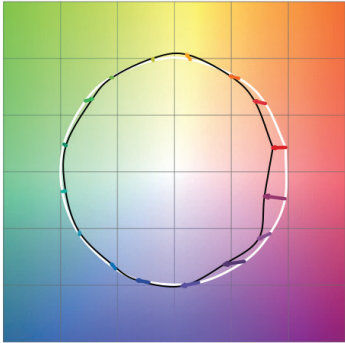
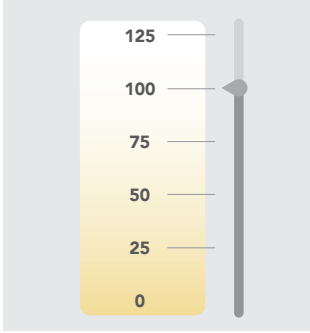
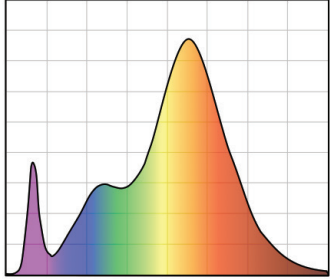
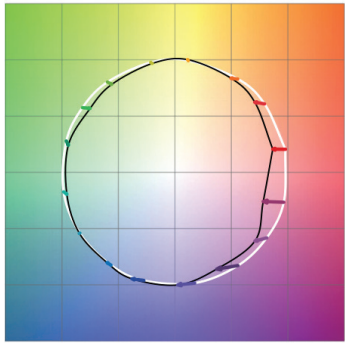
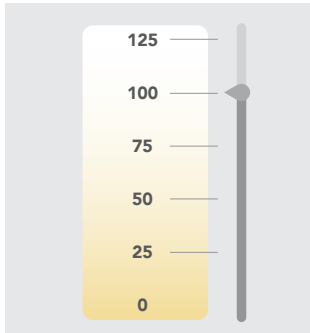
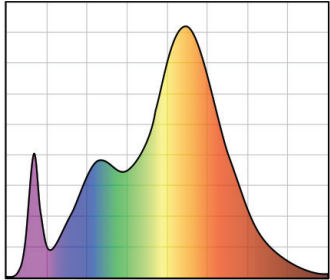
<p>VIVID 2700K</p>	 <p>Rf: 90, Rg: 100, Rfh1: 95</p>	 <p>Rw: 120</p>	 <p>380 Wavelength (nm) 780</p> <p>CRI: 95, R9: 95</p>
<p>VIVID 3000K</p>	 <p>Rf: 90, Rg: 100, Rfh1: 95</p>	 <p>Rw: 120</p>	 <p>380 Wavelength (nm) 780</p> <p>CRI: 95, R9: 95</p>
<p>VIVID 4000K</p>	 <p>Rf: 90, Rg: 100, Rfh1: 95</p>	 <p>Rw: 70</p>	 <p>380 Wavelength (nm) 780</p> <p>CRI: 95, R9: 95</p>

SERIES/CCT

COLOR ACCURACY

WHITENESS INDEX

SPECTRAL POWER DISTRIBUTION

<p>BRILLIANT 2700K</p>	 <p>Rf: 85, Rg: 92, Rfh1: 77</p>	 <p>Rw: 100</p>	 <p>Wavelength (nm) 380 780</p> <p>CRI: 85, R9: >0</p>
<p>BRILLIANT 3000K</p>	 <p>Rf: 85, Rg: 92, Rfh1: 77</p>	 <p>Rw: 100</p>	 <p>Wavelength (nm) 380 780</p> <p>CRI: 85, R9: >0</p>

Rf: TM-30 metric measuring color fidelity (whether colors are similar to those under natural light). Rf is a more accurate version of the CRI Ra. Rf is 100 for natural light.
 Rg: TM-30 metric measuring color gamut (whether colors are more saturated than under natural light). Rg is 100 for natural light.
 Rfh1: TM-30 metric measuring color fidelity for red tones. Rfh1 is a more accurate version of the CRI R9. Rfh1 is 100 for natural light.
 Rw: Soraa-developed metric to measure white fidelity. Rw measures the magnitude of excitation of whitening agents within whites. Rw is about 100 for natural light.

06-15-2017



TYPE JHP-RUN #1, 2, 4, 5

REDUCE LUMEN OUTPUT
USED A FACTOR OF .264

IES ROAD REPORT

PHOTOMETRIC FILENAME : LALC-R5S-CL-X-5G450-30-XX-120.IES

DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002
 [TESTLAB] Photopia 2017.0.2 see: www.ltioptics.com/ies
 [ISSUEDATE]
 [TESTDATE] Fri Dec 16 17:55:52 2016
 [TEST] 1
 [MANUFAC] SELUX Corporation
 [LUMCAT] LALC-R5S-CL-X-5G450-30-XX-120
 [LUMINAIRE] Formed aluminum housing, frosted lens, clear plastic encl
 [MORE] sure
 [LAMP] Seven white LEDs
 [BALLAST] Osram Optotronic #79370
 [OTHER] 25.3 C, 119.973 V, 0.277184 A, 42.5 W, 0.994118 PF, 59.9979
 [MORE] Hz
 [OTHER] This test was performed using the calibrated photodetector met
 [MORE] hod of absolute photometry.

CHARACTERISTICS

IES Classification	Type VS
Longitudinal Classification	Short
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	4463
Downward Total Efficiency	N.A. (absolute)
Total Luminaire Efficiency	N.A. (absolute)
Luminaire Efficacy Rating (LER)	105
Total Luminaire Watts	42.5 15 WATTS
Ballast Factor	1.00
Upward Waste Light Ratio	0.00
Maximum Candela	1795.909
Maximum Candela Angle	45H 65V
Maximum Candela (<90 Degrees Vertical)	1795.909
Maximum Candela Angle (<90 Degrees Vertical)	45H 65V
Maximum Candela At 90 Degrees Vertical	.234 (0.0% Luminaire Lumens)
Maximum Candela from 80 to <90 Degrees Vertical	114.221 (2.6% Luminaire Lumens)
Cutoff Classification (deprecated)	N.A. (absolute)

IES ROAD REPORT**PHOTOMETRIC FILENAME : LALC-R5S-CL-X-5G450-30-XX-120.IES****LUMINAIRE CLASSIFICATION SYSTEM (LCS)**

	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	201.1	N.A.	4.5
FM - Front-Medium (30-60)	1029.3	N.A.	23.1
FH - Front-High (60-80)	988.5	N.A.	22.1
FVH - Front-Very High (80-90)	13.2	N.A.	0.3
BL - Back-Low (0-30)	201.0	N.A.	4.5
BM - Back-Medium (30-60)	1028.7	N.A.	23.0
BH - Back-High (60-80)	988.1	N.A.	22.1
BVH - Back-Very High (80-90)	13.3	N.A.	0.3
UL - Uplight-Low (90-100)	< 0.05	N.A.	0.0
UH - Uplight-High (100-180)	0.0	N.A.	0.0
Total	4463.2	N.A.	100.0
BUG Rating	B2-U1-G1		

CANDELA TABULATION

Vert. Angles	Horizontal Angles									
	<u>0</u>	<u>5</u>	<u>15</u>	<u>25</u>	<u>35</u>	<u>45</u>	<u>55</u>	<u>65</u>	<u>75</u>	<u>85</u>
0.0	403.149	403.149	403.149	403.149	403.149	403.149	403.149	403.149	403.149	403.149
5.0	407.209	422.066	396.775	399.168	397.677	398.095	404.715	399.281	399.155	391.900
10.0	420.019	423.352	412.054	413.628	428.861	426.447	418.912	421.034	418.256	416.590
15.0	453.046	435.933	439.863	453.806	442.399	442.875	447.741	450.414	441.434	441.350
20.0	472.953	467.961	474.097	465.718	470.112	483.687	474.018	469.782	473.111	465.710
25.0	491.870	503.987	502.705	501.869	508.013	514.968	507.023	501.823	509.571	503.690
30.0	547.978	555.947	551.787	550.192	552.631	567.095	555.718	550.459	554.811	553.692
35.0	617.510	615.748	618.630	618.559	624.202	619.590	623.366	614.248	616.399	617.327
40.0	688.409	679.967	681.141	684.992	686.120	691.909	689.904	683.881	681.162	689.996
45.0	776.445	779.753	776.871	784.009	779.039	786.950	780.776	786.319	777.865	784.749
50.0	924.194	923.150	926.842	926.859	931.048	944.381	934.728	926.566	918.321	926.713
55.0	1130.306	1134.918	1139.942	1143.008	1191.556	1238.751	1198.327	1145.849	1132.361	1142.119
60.0	1369.842	1372.219	1376.567	1410.166	1472.489	1484.836	1477.485	1420.132	1378.802	1374.090
62.5	1468.976	1467.068	1483.366	1559.435	1634.235	1682.043	1638.362	1551.457	1498.448	1477.852
65.0	1563.420	1561.173	1574.748	1628.345	1721.636	1795.909	1718.127	1623.534	1566.527	1550.597
67.5	1582.817	1579.075	1565.137	1610.953	1706.557	1748.869	1703.997	1621.562	1564.201	1581.719
70.0	1108.908	1155.025	1236.834	1363.422	1521.058	1606.630	1519.901	1349.952	1233.392	1133.853
72.5	192.671	214.278	371.885	668.218	1036.619	1229.674	1032.221	678.773	382.335	234.423
75.0	64.153	66.930	92.117	173.090	350.006	529.144	355.198	176.586	95.191	67.870
77.5	45.081	48.874	64.650	109.464	164.502	185.637	166.190	111.172	64.078	51.263
80.0	32.985	35.520	41.205	63.434	85.864	114.221	82.088	63.777	41.184	35.023
82.5	25.053	24.740	27.263	32.513	42.441	72.423	41.318	33.595	26.937	25.717
85.0	17.890	17.940	17.910	19.118	22.463	36.610	23.353	19.481	17.927	17.756
87.5	7.021	8.220	7.498	7.740	9.319	11.578	9.118	6.963	7.640	7.844
90.0	0.071	0.088	0.058	0.050	0.121	0.230	0.146	0.100	0.067	0.063
95.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
105.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
110.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
115.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
120.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
125.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
130.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
135.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
140.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
145.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
150.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
155.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
160.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
165.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
170.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
175.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
180.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Vert. Angles	Horizontal Angles									
	<u>90</u>	<u>95</u>	<u>105</u>	<u>115</u>	<u>125</u>	<u>135</u>	<u>145</u>	<u>155</u>	<u>165</u>	<u>175</u>
0.0	403.149	403.149	403.149	403.149	403.149	403.149	403.149	403.149	403.149	403.149
5.0	405.722	409.109	402.660	401.967	401.641	389.210	398.717	406.290	413.060	409.752
10.0	403.838	413.687	418.824	417.350	425.741	428.360	424.430	425.917	414.159	412.091
15.0	441.726	441.576	439.312	451.880	445.490	441.254	445.348	452.532	445.444	432.587
20.0	462.536	472.318	470.167	475.183	472.589	475.467	470.091	466.161	467.247	472.000
25.0	493.298	501.493	499.238	507.913	507.341	514.893	506.982	507.003	506.142	494.794

IES ROAD REPORT
PHOTOMETRIC FILENAME : LALC-R5S-CL-X-5G450-30-XX-120.IES

CANDELA TABULATION - (Cont.)

30.0	549.365	558.746	553.270	551.578	547.848	561.933	552.088	547.055	549.953	551.115
35.0	605.627	618.020	614.445	611.199	617.063	619.737	619.691	619.327	615.363	613.217
40.0	677.582	686.262	679.821	681.346	682.891	690.673	687.632	685.773	682.661	686.270
45.0	771.253	778.446	779.837	780.263	779.335	786.140	778.442	786.657	778.997	779.469
50.0	917.987	926.157	918.651	928.868	932.698	943.846	931.211	923.789	919.716	919.361
55.0	1141.358	1140.068	1135.740	1149.157	1201.476	1242.088	1196.748	1152.916	1136.505	1135.035
60.0	1351.172	1367.044	1377.415	1417.313	1466.817	1495.926	1472.293	1417.622	1375.598	1377.043
62.5	1469.937	1476.658	1498.319	1547.564	1641.933	1681.705	1634.911	1560.521	1484.849	1467.297
65.0	1553.011	1563.988	1560.488	1618.120	1715.300	1782.134	1725.930	1625.509	1572.693	1558.541
67.5	1573.432	1569.882	1574.317	1618.789	1699.478	1747.232	1711.215	1611.558	1573.549	1578.895
70.0	1097.459	1129.471	1221.742	1360.093	1521.200	1601.672	1524.817	1360.565	1235.610	1151.742
72.5	198.298	238.141	386.007	674.358	1028.812	1225.878	1033.929	671.380	376.792	210.786
75.0	63.614	64.900	93.525	179.735	356.142	531.099	352.901	175.124	93.362	67.841
77.5	48.222	51.480	64.771	109.656	163.233	180.491	169.531	110.403	64.236	48.870
80.0	35.320	34.230	42.542	64.817	84.841	112.179	85.388	63.902	41.556	34.255
82.5	26.385	25.007	26.903	33.624	43.118	73.521	43.193	32.843	26.774	24.781
85.0	17.347	16.962	17.961	19.936	22.927	36.899	24.030	18.533	17.464	17.246
87.5	7.038	8.107	7.928	7.564	9.406	11.006	8.842	7.702	7.790	7.911
90.0	0.142	0.079	0.071	0.063	0.234	0.192	0.184	0.138	0.071	0.046
95.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
105.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
110.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
115.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
120.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
125.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
130.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
135.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
140.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
145.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
150.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
155.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
160.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
165.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
170.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
175.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
180.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Vert. Horizontal Angles
Angles

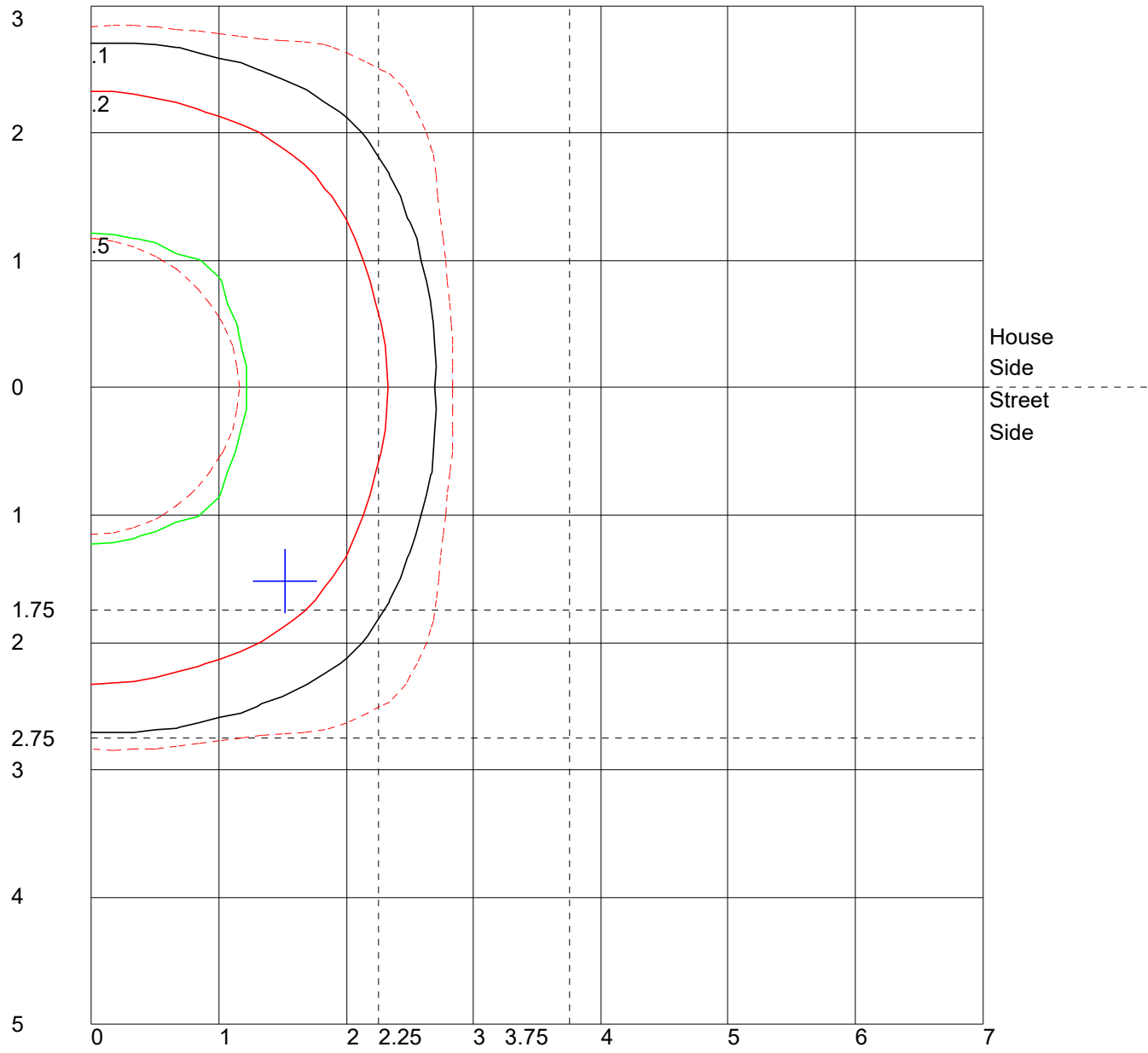
	180
0.0	403.149
5.0	405.270
10.0	427.216
15.0	439.212
20.0	474.415
25.0	491.615
30.0	546.015
35.0	608.839
40.0	687.586
45.0	782.209
50.0	910.790
55.0	1143.096
60.0	1358.715
62.5	1464.273
65.0	1553.358

IES ROAD REPORT
PHOTOMETRIC FILENAME : LALC-R5S-CL-X-5G450-30-XX-120.IES

CANDELA TABULATION - (Cont.)

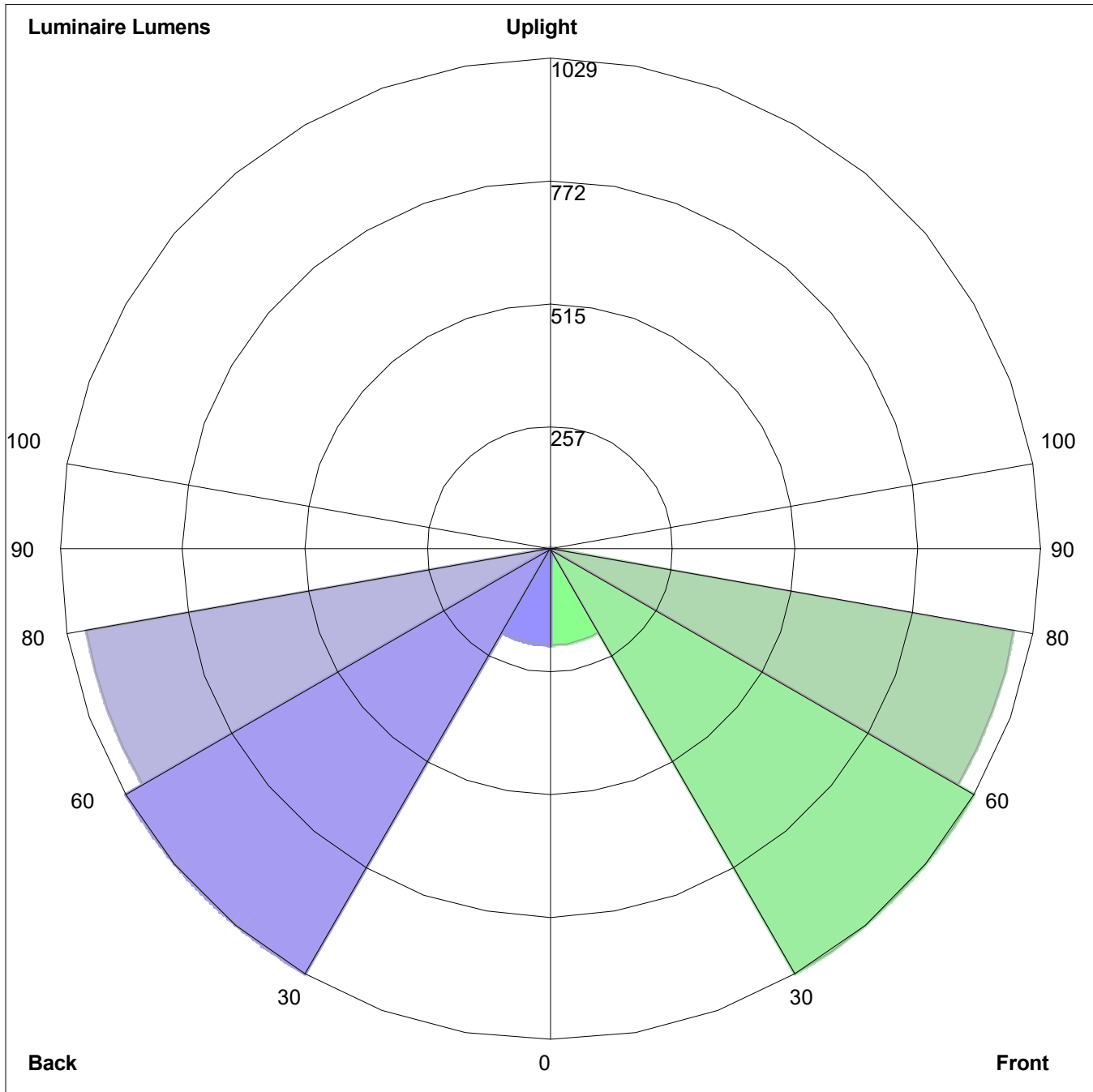
67.5	1576.961
70.0	1105.195
72.5	185.324
75.0	64.859
77.5	47.763
80.0	35.261
82.5	24.230
85.0	16.649
87.5	7.606
90.0	0.033
95.0	0.000
100.0	0.000
105.0	0.000
110.0	0.000
115.0	0.000
120.0	0.000
125.0	0.000
130.0	0.000
135.0	0.000
140.0	0.000
145.0	0.000
150.0	0.000
155.0	0.000
160.0	0.000
165.0	0.000
170.0	0.000
175.0	0.000
180.0	0.000

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINANCE



Distance In Units Of Mounting Height
 Values Based On 22 Foot Mounting Height
 1/2 Maximum Candela Trace Shown As Dashed Curve
 (+) = Maximum Candela Point

LUMINAIRE CLASSIFICATION SYSTEM (LCS) GRAPH



Luminaire Lumens:
Front: Low=201.1, Medium=1029.3, High=988.5, Very High=13.2
Back: Low=201.0, Medium=1028.7, High=988.1, Very High=13.3
Uplight: Low=0.0, High=0.0

BUG Rating : B2-U1-G1

Date: _____ Customer: _____
 Project: _____
 Type: _____ Qty: _____



Lanova LED Catenary



Order Code:

_____	LALC	Series	LALC Lanova LED catenary						
_____		Optics	R1 Type I Distribution	R2 Type II Distribution	R3 Type III Distribution	R4 Type IV Distribution	R5S Type V Square	R5R Type V Round	DB Diffuse Bowl
_____		Cylinder	CL Clear long	FL¹ ½ Frosted Long					¹ R5R or DB optics only
_____		Light Engine	5G150² 1556lm, 15W	5G250² 2477lm, 24W	5G350 3468lm, 33W	5G450 4459lm, 42W	² Not Available with DM, HL30, or HL50 [*] Based on R2 distribution and 3000K CCT		
_____		Power Cord Length	XX³						³ 1ft Increments 5' - 30'
_____		CCT	30 3000K	40 4000K	for other CCT please consult factory				
_____		Finish	WH White	BK Black	BZ Bronze	SV Silver	SP Specify Premium Color		
_____		Voltage	120	208	240	277	347^{4,5}	480^{4,5}	⁴ Not available with HL30 or HL50 ⁵ Requires stepdown transformer, 60 Hz only
_____		Options	DM Dimming (0-10V)	HL30^{6,7} Hi-Lo Switching 30-100%	HL50^{6,7} Hi-Lo Switching 50-100%	MC Mid-Run Connector	HS House Side Shield	⁶ 120, 240, and 277V Only ⁷ Not available with DM option	

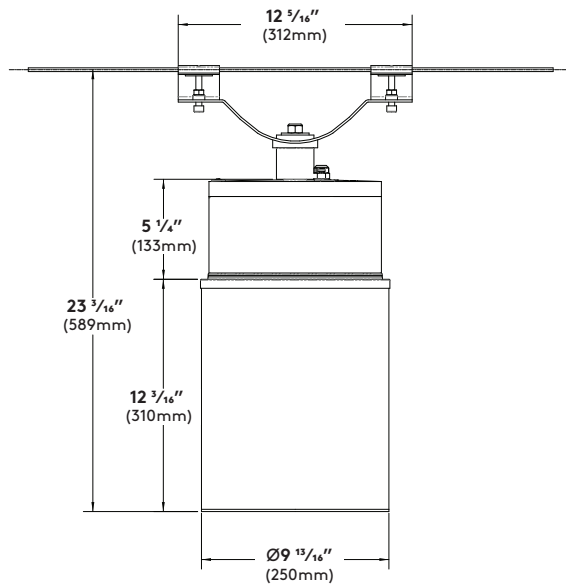
Product Modifications

Please list modification requirements for review by factory:

Approvals



Date: _____



Net Weight (19.5 lbs)
EPA = 0.68 ft²

Specifications

Luminaire Housing/Hanger

Die-cast aluminum housing made from low cop-per marine grade aluminum. Hanger bracket made from stainless steel with stainless steel hardware. Hanger Bracket provides 360° rotation and 15° tilt in either direction.

Gasketing

(not shown) Continuous UV resistant silicone gasket provides weatherproofing, dust and insect control at all fixture connections.

LED Array

(not shown) High Flux LEDs mounted to metal core PCB and attached to aluminum heat sink for maximum LED performance and life. CCT tolerance within a 3 step bin and provided with a minimum CRI of 80. LED light engine has a reported lumen maintenance of 93% at 50,000 hours. L70 calculated greater than 100,000 hours.

LED Optics

Clear or half frosted UV stabilized acrylic outer cylinder creates the optical chamber. Technical Optics (R1, R2, R3, R4, R5S and R5R) use Selux signature light pattern acrylic lens holder to secure proprietary silicone optics. Diffuser Bowl (DB) option made of highly diffuse UV stabilized acrylic hides LED source and provides a pleasant/soft light quality.

LED Driver

LEDs are driven by RoHS compliant constant current programmable LED driver. Driver includes 0-10V dimming to 10%, meets the requirements of IP66 and includes a 5 Year warranty.

Surge Protector

(not shown) Independent surge protector device designed to protect luminaire from electrical surge up to 20kA.

Power Cord

(not shown) UV resistant black SJ power cord pre-installed at factory. Please specify power cord length available in 1' increments from 5' – 30'.

Standard exterior colors are White (WH), Black (BK), Bronze (BZ), and Silver (SV). Selux premium colors (SP) are available, please specify from your Selux color selection guide.

5 Year Limited LED Luminaire Warranty -

Selux offers a 5 Year Limited Warranty to the original purchaser that the Lanova LED luminaire shall be free from defects in material and workmanship for up to five (5) years from date of shipment. This limited warranty covers the LED driver and LED array when installed and operated according to Selux instructions. For details, see "Selux Terms and Condition of Sale."

Listings and Ratings: Luminaire tested to IP65 and LM-79 standards. LEDs tested to LM-80 standards.

Luminaire suitable for ambient temperatures from 40°C (104°F) maximum to -40°C (-40°F) minimum.

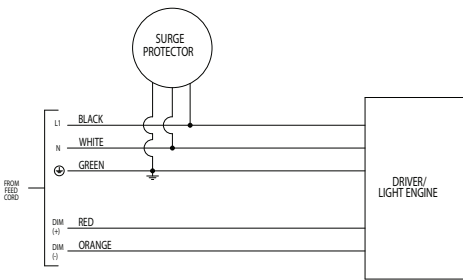
NRTL Listed (i.e. UL, CSA)

Visit selux.us for our LED End of Life recycling policy.

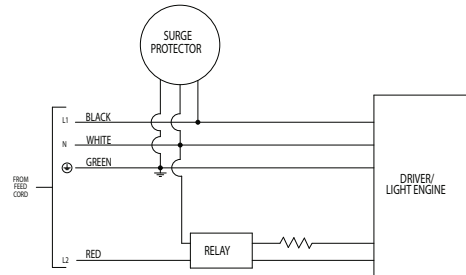
ELECTRICAL SPECIFICATIONS									
CCT	3000K/4000K								
CYLINDER	CL Cylinder Standard					FL Cylinder Standard			
OPTICS	R1, R2, R3, and R4			R5R and R5S			DB		
Light Engine/ Electrical Specs	Delivered Lumens (lm)	Wattage (W)	Efficacy (lm/W)	Delivered Lumens (lm)	Wattage (W)	Efficacy (lm/W)	Delivered Lumens (lm)	Wattage (W)	Efficacy (lm/W)
5G150	1316	14.2	92.9	1488	14.2	105.0	1327	14.2	93.5
5G250	2193	23.6	92.9	2480	23.6	105.0	2211	23.6	93.5
5G350	3070	33.1	92.9	3471	33.1	105.0	3096	33.1	93.5
5G450	3948	42.5	92.9	4463	42.5	105.0	3981	42.5	93.5

Wiring

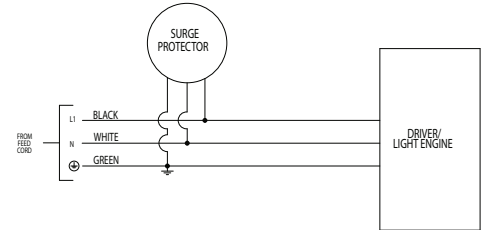
0-10V Dimming Option (DM) Wiring for 120-277V
100% light output at 10V, down to 1% light output at 0V.



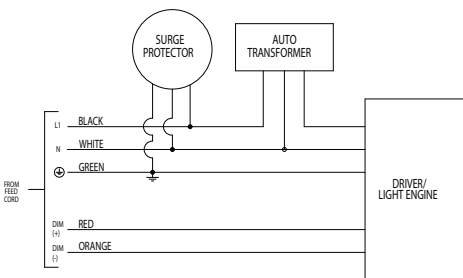
Hi-Lo Switching Option (HL30/HL50) Wiring
120/240/277V. When red is energized, light output will be at "Lo" level.



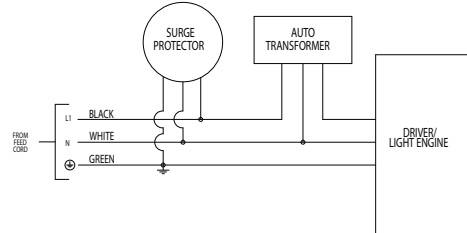
Standard Wiring for 120-277V
Standard wiring for 120-277V with no additional options.



0-10V Dimming Option (DM) Wiring for 347/480V
100% light output at 10V, down to 1% light output at 0V.



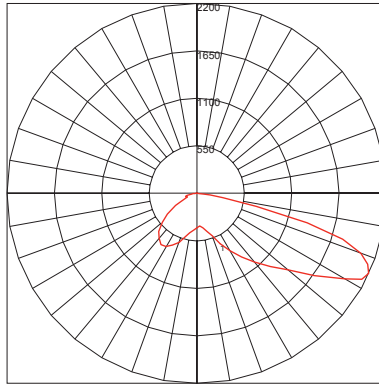
Standard Wiring for 347/480V
Standard wiring for 347/480V with no additional options.



Photometry

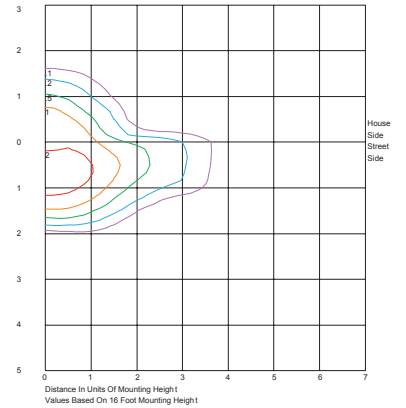
R1 / 42.5W LED / 3000K CCT

Catalog #: LALC-R1-CL-X-5G450-30-XX-120
 Maximum candela of 2200 at 65° from vertical.
 Mounting Height = 16' (4.87m)
 3948 Delivered Lumens
 93 Lumens per Watt
 B1-U1-G1



Maximum Candela = 2199.966 Located At Horizontal Angle = 75, Vertical Angle = 65
 # 1 - Vertical Plane Through Horizontal Angles (75 - 255) (Through Max. Cd.)

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINANCE

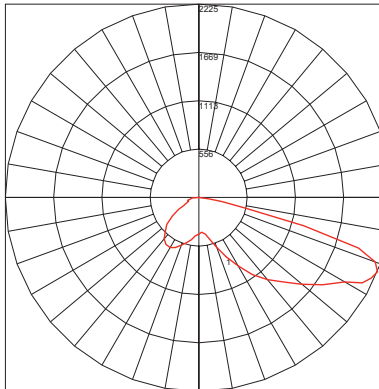


DOWNLOAD IES FILES:

<http://www.selux.us/fileadmin/us/photometry/Exterior/Lanova.zip>

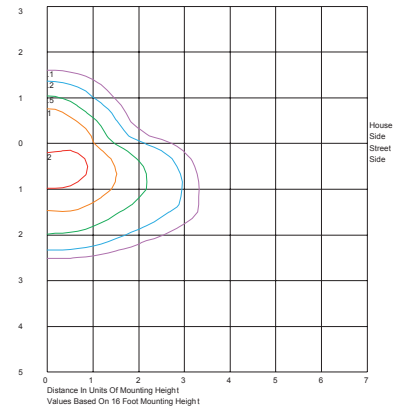
R2 / 42.5W LED / 3000K CCT

Catalog #: LALC-R2-CL-X-5G450-30-XX-120
 Maximum candela of 2225 at 67.5° from vertical.
 Mounting Height = 16' (4.87m)
 3948 Delivered Lumens
 93 Lumens per Watt
 B1-U1-G1



Maximum Candela = 2225.177 Located At Horizontal Angle = 65, Vertical Angle = 67.5
 # 1 - Vertical Plane Through Horizontal Angles (65 - 245) (Through Max. Cd.)

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINANCE

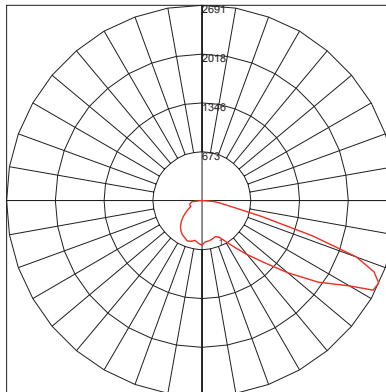


DOWNLOAD IES FILES:

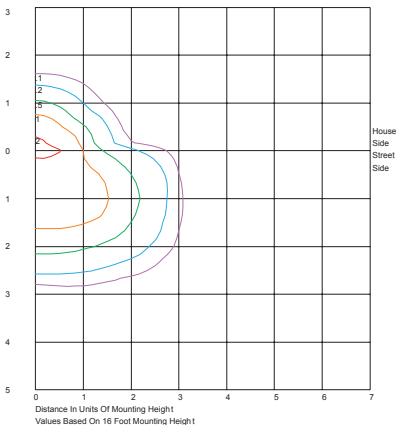
<http://www.selux.us/fileadmin/us/photometry/Exterior/Lanova.zip>

R3 / 42.5W LED / 3000K CCT

Catalog #: LALC-R3-CL-X-5G450-30-XX-120
 Maximum candela of 2691 at 65° from vertical.
 Mounting Height = 16' (4.87m)
 3948 Delivered Lumens
 93 Lumens per Watt
 B1-U1-G1



Maximum Candela = 2691.332 Located At Horizontal Angle = 45, Vertical Angle = 65
 # 1 - Vertical Plane Through Horizontal Angles (45 - 225) (Through Max. Cd.)



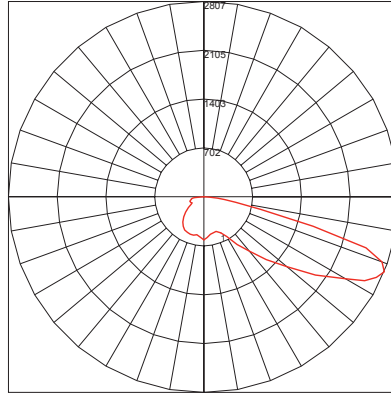
DOWNLOAD IES FILES:

<http://www.selux.us/fileadmin/us/photometry/Exterior/Lanova.zip>

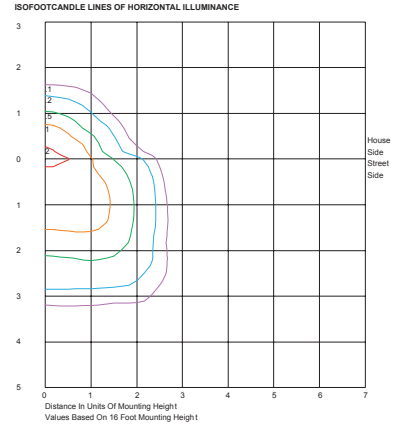
Photometry

R4 / 42.5W LED / 3000K CCT

Catalog #: LALC-R4-CL-X-5G450-30-XX-120
 Maximum candela of 2807 at 67.5° from vertical.
 Mounting Height = 16' (4.87m)
 3948 Delivered Lumens
 93 Lumens per Watt
 B1-U1-G1



Maximum Candela = 2806.707 Located At Horizontal Angle = 35, Vertical Angle = 67.5
 # 1 - Vertical Plane Through Horizontal Angles (35 - 215) (Through Max. Cd.)

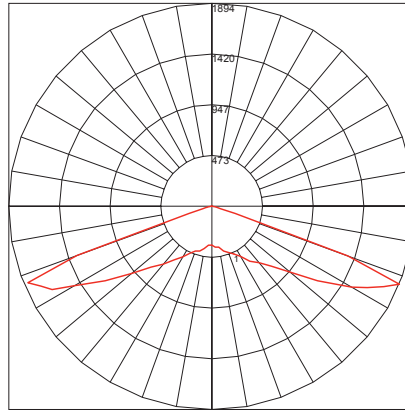


DOWNLOAD IES FILES:

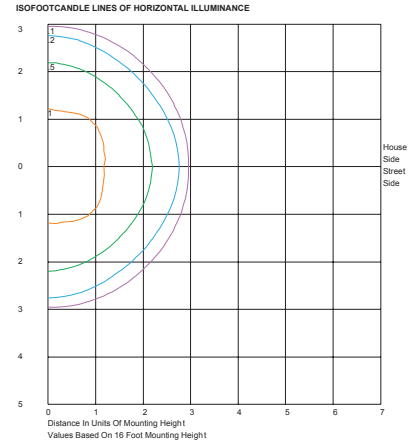
<http://www.selux.us/fileadmin/us/photometry/Exterior/Lanova.zip>

R5R/ 42.5W LED / 3000K CCT

Catalog #: LALC-R4R-CL-X-5G450-30-XX-120
 Maximum candela of 1894 at 67.5° from vertical.
 Mounting Height = 16' (4.87m)
 4463 Delivered Lumens
 105 Lumens per Watt
 B2-U1-G1



Maximum Candela = 1893.897 Located At Horizontal Angle = 0, Vertical Angle = 67.5
 # 1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)

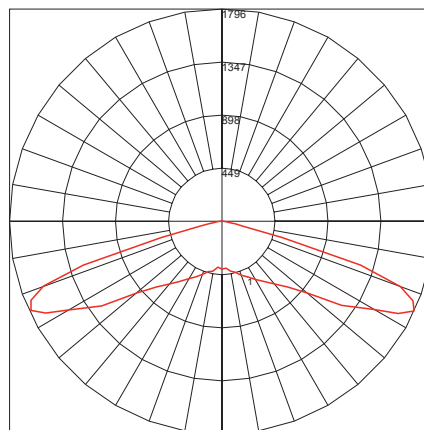


DOWNLOAD IES FILES:

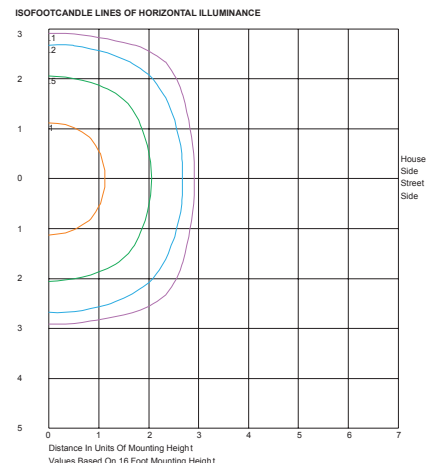
<http://www.selux.us/fileadmin/us/photometry/Exterior/Lanova.zip>

R5S/ 42.5W LED / 3000K CCT

Catalog #: LALC-R4S-CL-X-5G450-30-XX-120
 Maximum candela of 1796 at 65° from vertical.
 Mounting Height = 16' (4.87m)
 4463 Delivered Lumens
 105 Lumens per Watt
 B2-U1-G1



Maximum Candela = 1795.909 Located At Horizontal Angle = 45, Vertical Angle = 65
 # 1 - Vertical Plane Through Horizontal Angles (45 - 225) (Through Max. Cd.)



DOWNLOAD IES FILES:

<http://www.selux.us/fileadmin/us/photometry/Exterior/Lanova.zip>

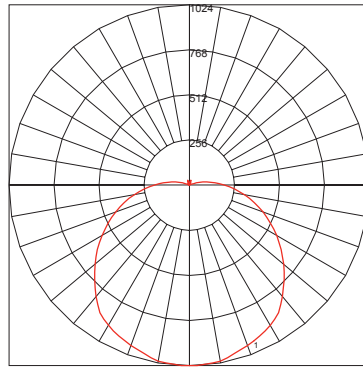
Photometry

DB / 42.5W LED / 3000K CCT

Catalog #: LALC-DB-FL-X-5G450-30-XX-120
 Maximum candela of 1024 at 2.5° from vertical.
 Mounting Height = 16' (4.87m)
 3981 Delivered Lumens
 94 Lumens per Watt
 B1-U3-G2

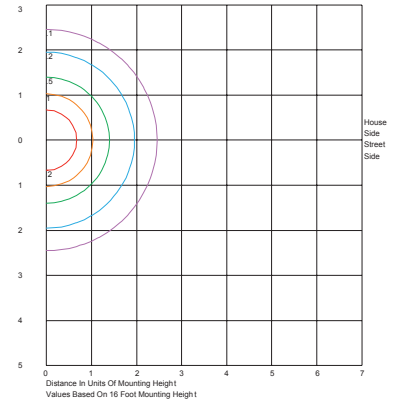
DOWNLOAD IES FILES:

<http://www.selux.us/fileadmin/us/photometry/Exterior/Lanova.zip>



Maximum Candela = 1023.981 Located At Horizontal Angle = 0, Vertical Angle = 2.5
 # 1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINANCE



Date: _____ Customer: _____
 Project: _____
 Type: _____ Qty: _____



Lanova LED Catenary



Order Code:

<u> </u>	LALC	Series	LALC Lanova LED catenary						
<u> </u>	Optics	R1 Type I Distribution	R2 Type II Distribution	R3 Type III Distribution	R4 Type IV Distribution	R5S Type V Square	R5R Type V Round	DB Diffuse Bowl	
<u> </u>	Cylinder	CL Clear long	FL¹ ½ Frosted Long	¹ R5R or DB optics only					
<u> </u>	Light Engine	5G150² 1556lm, 15W	5G250² 2477lm, 24W	5G350 3468lm, 33W	5G450 4459lm, 42W	² Not Available with DM, HL30, or HL50 [*] Based on R2 distribution and 3000K CCT			
<u> </u>	Power Cord Length	XX³						³ 1ft Increments 5' - 30'	
<u> </u>	CCT	30 3000K	40 4000K	for other CCT please consult factory					
<u> </u>	Finish	WH White	BK Black	BZ Bronze	SV Silver	SP Specify Premium Color			
<u> </u>	Voltage	120	208	240	277	347^{4,5}	480^{4,5}	⁴ Not available with HL30 or HL50 ⁵ Requires stepdown transformer, 60 Hz only	
<u> </u>	Options	DM Dimming (0-10V)	HL30^{6,7} Hi-Lo Switching 30-100%	HL50^{6,7} Hi-Lo Switching 50-100%	MC Mid-Run Connector	HS House Side Shield	⁶ 120, 240, and 277V Only ⁷ Not available with DM option		

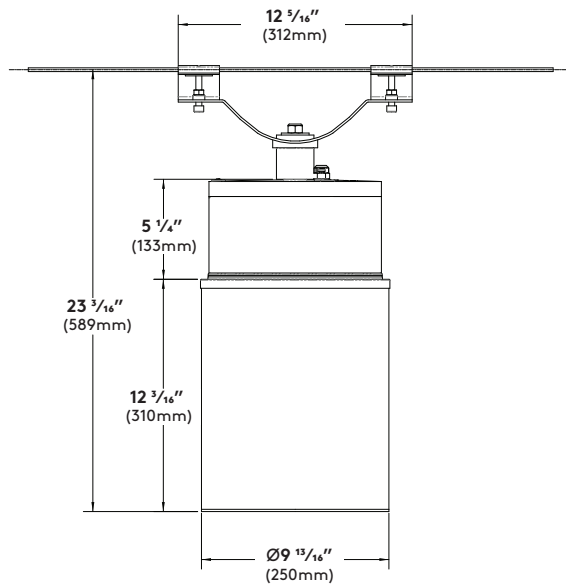
Product Modifications

Please list modification requirements for review by factory:

Approvals



Date: _____



Net Weight (19.5 lbs)
EPA = 0.68 ft²

Specifications

Luminaire Housing/Hanger

Die-cast aluminum housing made from low cop-per marine grade aluminum. Hanger bracket made from stainless steel with stainless steel hardware. Hanger Bracket provides 360° rotation and 15° tilt in either direction.

Gasketing

(not shown) Continuous UV resistant silicone gasket provides weatherproofing, dust and insect control at all fixture connections.

LED Array

(not shown) High Flux LEDs mounted to metal core PCB and attached to aluminum heat sink for maximum LED performance and life. CCT tolerance within a 3 step bin and provided with a minimum CRI of 80. LED light engine has a reported lumen maintenance of 93% at 50,000 hours. L70 calculated greater than 100,000 hours.

LED Optics

Clear or half frosted UV stabilized acrylic outer cylinder creates the optical chamber. Technical Optics (R1, R2, R3, R4, R5S and R5R) use Selux signature light pattern acrylic lens holder to secure proprietary silicone optics. Diffuser Bowl (DB) option made of highly diffuse UV stabilized acrylic hides LED source and provides a pleasant/soft light quality.

LED Driver

LEDs are driven by RoHS compliant constant current programmable LED driver. Driver includes 0-10V dimming to 10%, meets the requirements of IP66 and includes a 5 Year warranty.

Surge Protector

(not shown) Independent surge protector device designed to protect luminaire from electrical surge up to 20kA.

Power Cord

(not shown) UV resistant black SJ power cord pre-installed at factory. Please specify power cord length available in 1' increments from 5' – 30'.

Standard exterior colors are White (WH), Black (BK), Bronze (BZ), and Silver (SV). Selux premium colors (SP) are available, please specify from your Selux color selection guide.

5 Year Limited LED Luminaire Warranty -

Selux offers a 5 Year Limited Warranty to the original purchaser that the Lanova LED luminaire shall be free from defects in material and workmanship for up to five (5) years from date of shipment. This limited warranty covers the LED driver and LED array when installed and operated according to Selux instructions. For details, see "Selux Terms and Condition of Sale."

Listings and Ratings: Luminaire tested to IP65 and LM-79 standards. LEDs tested to LM-80 standards.

Luminaire suitable for ambient temperatures from 40°C (104°F) maximum to -40°C (-40°F) minimum.

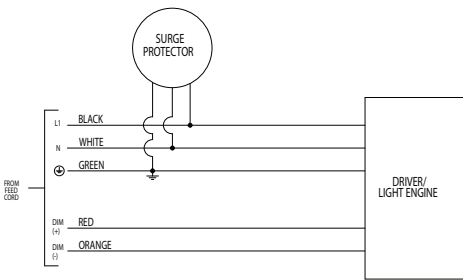
NRTL Listed (i.e. UL, CSA)

Visit selux.us for our LED End of Life recycling policy.

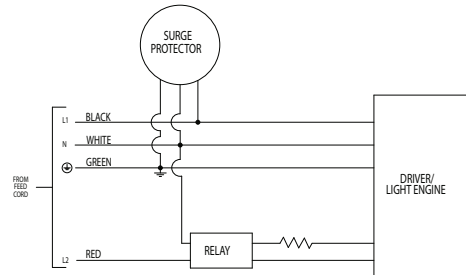
ELECTRICAL SPECIFICATIONS									
CCT	3000K/4000K								
CYLINDER	CL Cylinder Standard					FL Cylinder Standard			
OPTICS	R1, R2, R3, and R4			R5R and R5S			DB		
Light Engine/ Electrical Specs	Delivered Lumens (lm)	Wattage (W)	Efficacy (lm/W)	Delivered Lumens (lm)	Wattage (W)	Efficacy (lm/W)	Delivered Lumens (lm)	Wattage (W)	Efficacy (lm/W)
5G150	1316	14.2	92.9	1488	14.2	105.0	1327	14.2	93.5
5G250	2193	23.6	92.9	2480	23.6	105.0	2211	23.6	93.5
5G350	3070	33.1	92.9	3471	33.1	105.0	3096	33.1	93.5
5G450	3948	42.5	92.9	4463	42.5	105.0	3981	42.5	93.5

Wiring

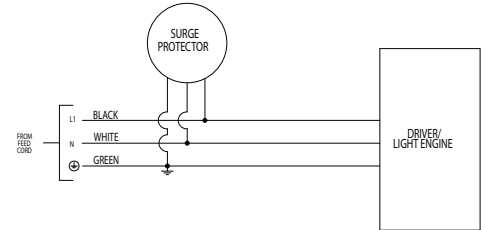
0-10V Dimming Option (DM) Wiring for 120-277V
100% light output at 10V, down to 1% light output at 0V.



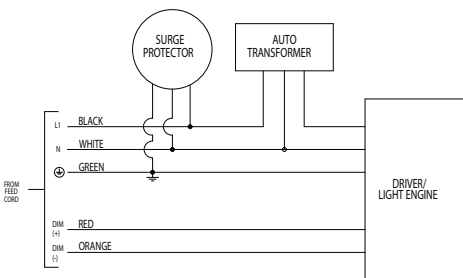
Hi-Lo Switching Option (HL30/HL50) Wiring
120/240/277V. When red is energized, light output will be at "Lo" level.



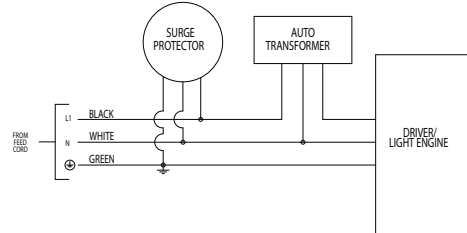
Standard Wiring for 120-277V
Standard wiring for 120-277V with no additional options.



0-10V Dimming Option (DM) Wiring for 347/480V
100% light output at 10V, down to 1% light output at 0V.



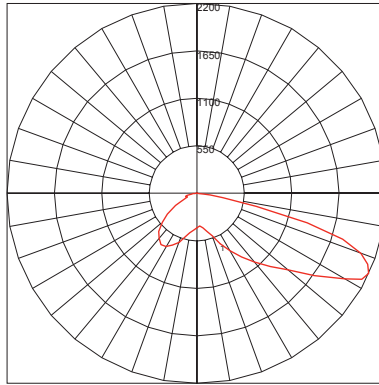
Standard Wiring for 347/480V
Standard wiring for 347/480V with no additional options.



Photometry

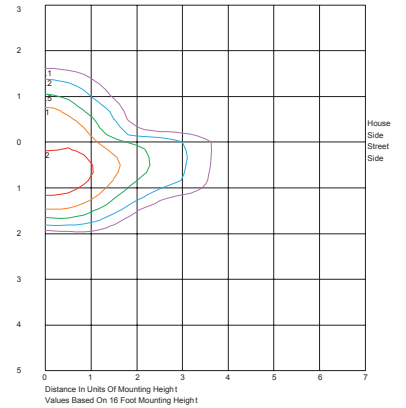
R1 / 42.5W LED / 3000K CCT

Catalog #: LALC-R1-CL-X-5G450-30-XX-120
 Maximum candela of 2200 at 65° from vertical.
 Mounting Height = 16' (4.87m)
 3948 Delivered Lumens
 93 Lumens per Watt
 B1-U1-G1



Maximum Candela = 2199.966 Located At Horizontal Angle = 75, Vertical Angle = 65
 # 1 - Vertical Plane Through Horizontal Angles (75 - 255) (Through Max. Cd.)

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINANCE

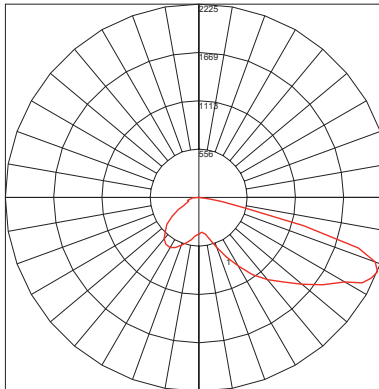


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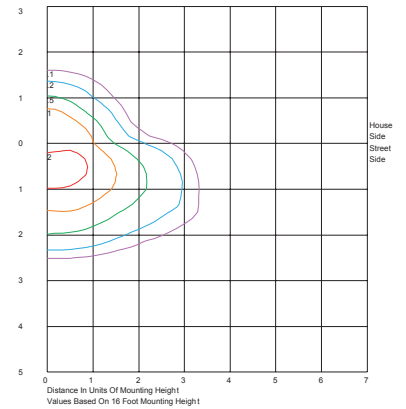
R2 / 42.5W LED / 3000K CCT

Catalog #: LALC-R2-CL-X-5G450-30-XX-120
 Maximum candela of 2225 at 67.5° from vertical.
 Mounting Height = 16' (4.87m)
 3948 Delivered Lumens
 93 Lumens per Watt
 B1-U1-G1



Maximum Candela = 2225.177 Located At Horizontal Angle = 65, Vertical Angle = 67.5
 # 1 - Vertical Plane Through Horizontal Angles (65 - 245) (Through Max. Cd.)

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINANCE

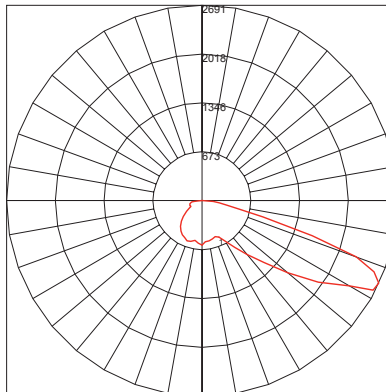


DOWNLOAD IES FILES:

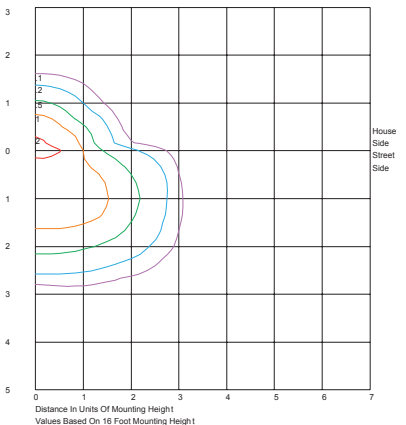
<http://www.selux.us/fileadmin/us/photometry/Exterior/Lanova.zip>

R3 / 42.5W LED / 3000K CCT

Catalog #: LALC-R3-CL-X-5G450-30-XX-120
 Maximum candela of 2691 at 65° from vertical.
 Mounting Height = 16' (4.87m)
 3948 Delivered Lumens
 93 Lumens per Watt
 B1-U1-G1



Maximum Candela = 2691.332 Located At Horizontal Angle = 45, Vertical Angle = 65
 # 1 - Vertical Plane Through Horizontal Angles (45 - 225) (Through Max. Cd.)



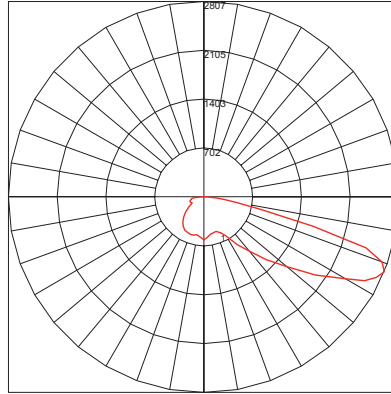
DOWNLOAD IES FILES:

<http://www.selux.us/fileadmin/us/photometry/Exterior/Lanova.zip>

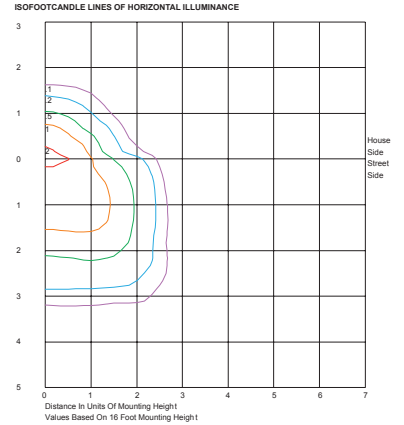
Photometry

R4 / 42.5W LED / 3000K CCT

Catalog #: LALC-R4-CL-X-5G450-30-XX-120
 Maximum candela of 2807 at 67.5° from vertical.
 Mounting Height = 16' (4.87m)
 3948 Delivered Lumens
 93 Lumens per Watt
 B1-U1-G1



Maximum Candela = 2806.707 Located At Horizontal Angle = 35, Vertical Angle = 67.5
 # 1 - Vertical Plane Through Horizontal Angles (35 - 215) (Through Max. Cd.)

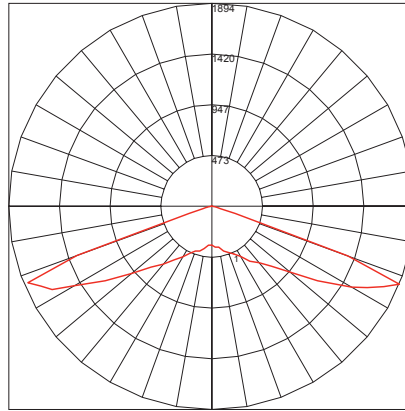


DOWNLOAD IES FILES:

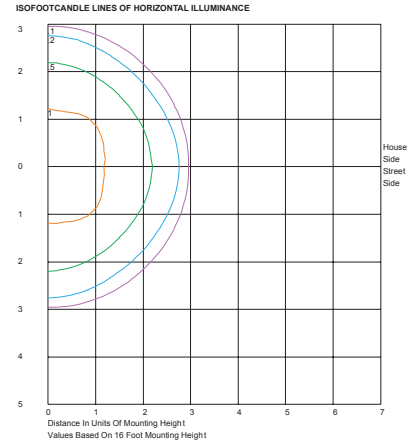
<http://www.selux.us/fileadmin/us/photometry/Exterior/Lanova.zip>

R5R/ 42.5W LED / 3000K CCT

Catalog #: LALC-R4R-CL-X-5G450-30-XX-120
 Maximum candela of 1894 at 67.5° from vertical.
 Mounting Height = 16' (4.87m)
 4463 Delivered Lumens
 105 Lumens per Watt
 B2-U1-G1



Maximum Candela = 1893.897 Located At Horizontal Angle = 0, Vertical Angle = 67.5
 # 1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)

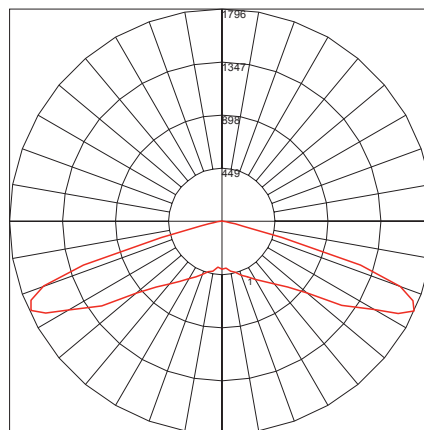


DOWNLOAD IES FILES:

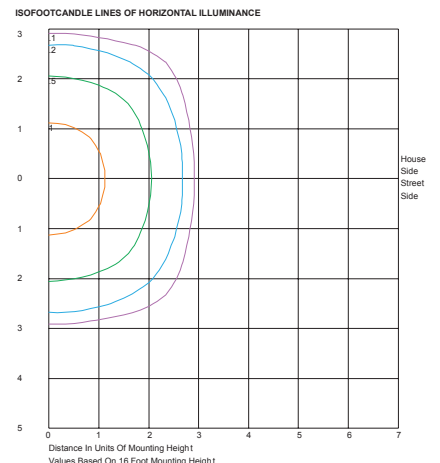
<http://www.selux.us/fileadmin/us/photometry/Exterior/Lanova.zip>

R5S/ 42.5W LED / 3000K CCT

Catalog #: LALC-R4S-CL-X-5G450-30-XX-120
 Maximum candela of 1796 at 65° from vertical.
 Mounting Height = 16' (4.87m)
 4463 Delivered Lumens
 105 Lumens per Watt
 B2-U1-G1



Maximum Candela = 1795.909 Located At Horizontal Angle = 45, Vertical Angle = 65
 # 1 - Vertical Plane Through Horizontal Angles (45 - 225) (Through Max. Cd.)



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<http://www.selux.us/fileadmin/us/photometry/Exterior/Lanova.zip>

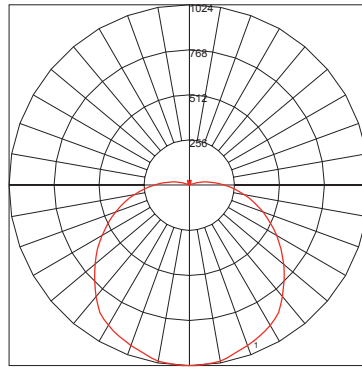
Photometry

DB / 42.5W LED / 3000K CCT

Catalog #: LALC-DB-FL-X-5G450-30-XX-120
 Maximum candela of 1024 at 2.5° from vertical.
 Mounting Height = 16' (4.87m)
 3981 Delivered Lumens
 94 Lumens per Watt
 B1-U3-G2

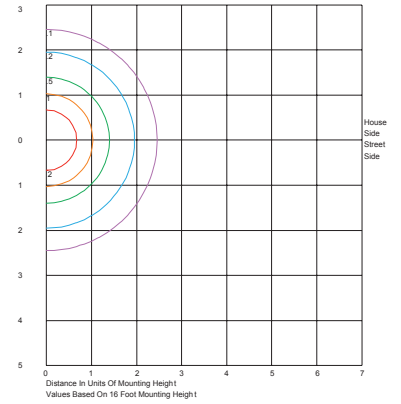
DOWNLOAD IES FILES:

<http://www.selux.us/fileadmin/us/photometry/Exterior/Lanova.zip>



Maximum Candela = 1023.981 Located At Horizontal Angle = 0, Vertical Angle = 2.5
 # 1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINANCE





REDUCE LUMEN OUTPUT
USED A FACTOR OF .264

IES ROAD REPORT

PHOTOMETRIC FILENAME : LALC-DB-FL-X-5G450-30-XX-120.IES

DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002
 [TEST] 11528333.01A
 [TESTLAB] UL Verification Services Inc.
 [ISSUEDATE] 11/23/2016
 [MANUFAC] SELUX Corporation
 [LUMCAT] LALC-DB-FL-X-5G450-30-XX-120
 [LUMINAIRE] Formed aluminum housing, frosted lens, clear plastic enclo
 [MORE] sure
 [LAMP] Seven white LEDs
 [BALLAST] Osram Optotronic #79370
 [OTHER] 25.3 C, 119.973 V, 0.277184 A, 42.5 W, 0.994118 PF, 59.9979
 [MORE] Hz
 [OTHER] This test was performed using the calibrated photodetector met
 [MORE] hod of absolute photometry.

CHARACTERISTICS

IES Classification	Type V
Longitudinal Classification	Very Short
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	3981
Downward Total Efficiency	N.A. (absolute)
Total Luminaire Efficiency	N.A. (absolute)
Luminaire Efficacy Rating (LER)	94
Total Luminaire Watts	42.5 15 WATTS
Ballast Factor	1.00
Upward Waste Light Ratio	0.07
Maximum Candela	1023.981
Maximum Candela Angle	0H 2.5V
Maximum Candela (<90 Degrees Vertical)	1023.981
Maximum Candela Angle (<90 Degrees Vertical)	0H 2.5V
Maximum Candela At 90 Degrees Vertical	196.919 (4.9% Luminaire Lumens)
Maximum Candela from 80 to <90 Degrees Vertical	319.72 (8.0% Luminaire Lumens)
Cutoff Classification (deprecated)	N.A. (absolute)

IES ROAD REPORT**PHOTOMETRIC FILENAME : LALC-DB-FL-X-5G450-30-XX-120.IES****LUMINAIRE CLASSIFICATION SYSTEM (LCS)**

	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	406.9	N.A.	10.2
FM - Front-Medium (30-60)	854.1	N.A.	21.5
FH - Front-High (60-80)	454.1	N.A.	11.4
FVH - Front-Very High (80-90)	140.3	N.A.	3.5
BL - Back-Low (0-30)	406.9	N.A.	10.2
BM - Back-Medium (30-60)	854.1	N.A.	21.5
BH - Back-High (60-80)	454.1	N.A.	11.4
BVH - Back-Very High (80-90)	140.3	N.A.	3.5
UL - Uplight-Low (90-100)	161.7	N.A.	4.1
UH - Uplight-High (100-180)	108.1	N.A.	2.7
Total	3980.6	N.A.	100.0
BUG Rating	B1-U3-G2		

IES ROAD REPORT
PHOTOMETRIC FILENAME : LALC-DB-FL-X-5G450-30-XX-120.IES

CANDELA TABULATION

Vert. Horizontal Angles

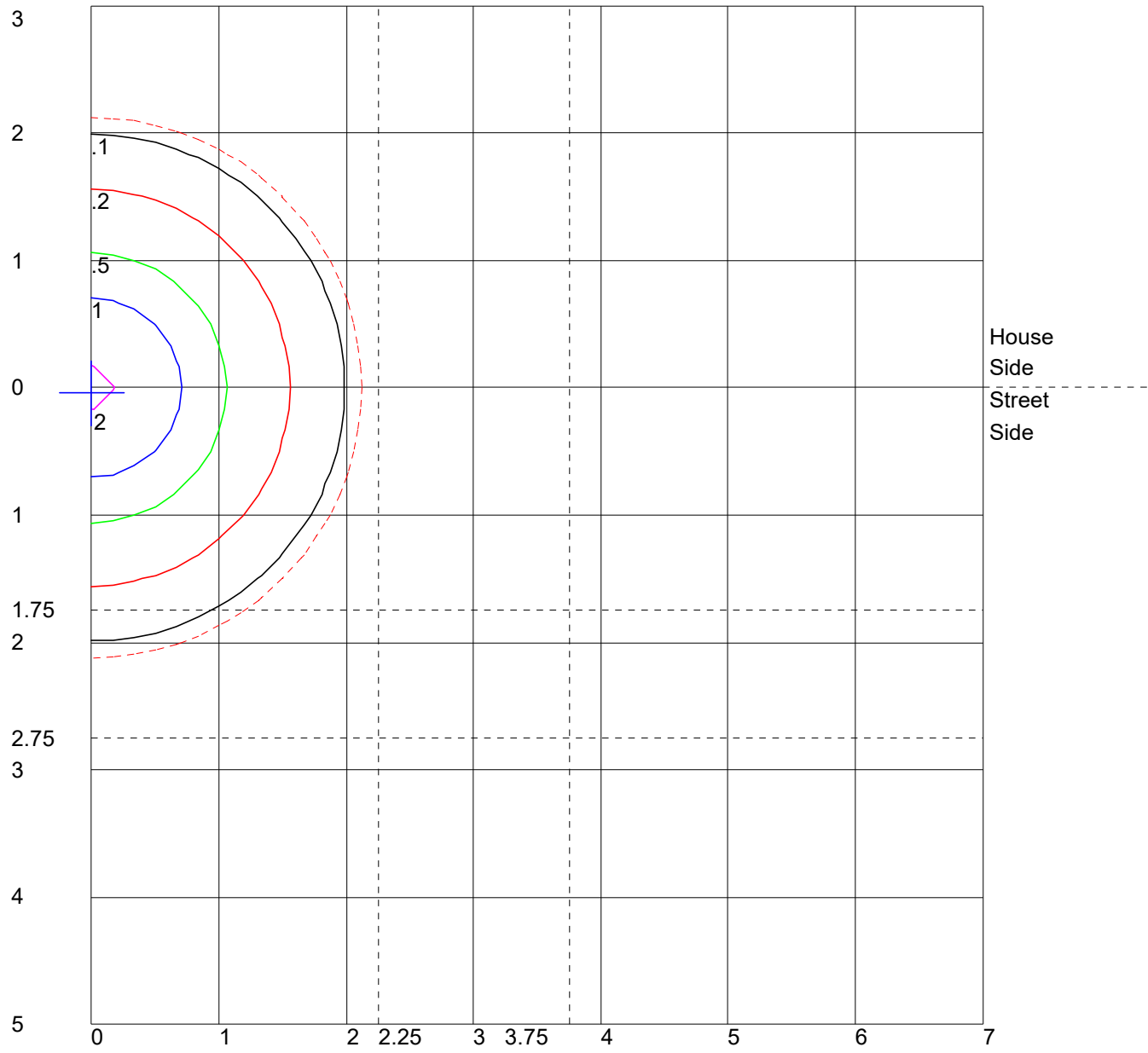
Vert. Angles	Horizontal Angles
	<u>0</u>
0.0	1023.981
2.5	1023.981
5.0	1019.462
7.5	1018.299
10.0	1014.297
12.5	1002.417
15.0	989.633
17.5	978.657
20.0	968.456
22.5	956.060
25.0	944.826
27.5	932.430
30.0	919.130
32.5	902.989
35.0	883.361
37.5	853.404
40.0	823.704
42.5	791.681
45.0	760.690
47.5	729.700
50.0	698.967
52.5	668.364
55.0	637.115
57.5	604.962
60.0	572.939
62.5	540.269
65.0	508.633
67.5	476.868
70.0	444.973
72.5	413.854
75.0	382.476
77.5	351.227
80.0	319.720
82.5	288.342
85.0	256.835
87.5	225.973
90.0	196.919
92.5	171.610
95.0	147.464
97.5	124.092
100.0	101.623
102.5	80.059
105.0	59.915
107.5	41.579
110.0	25.955
112.5	13.946
115.0	7.102
117.5	4.261
120.0	3.099
122.5	2.712
125.0	3.099
127.5	4.132
130.0	5.682

IES ROAD REPORT
PHOTOMETRIC FILENAME : LALC-DB-FL-X-5G450-30-XX-120.IES

CANDELA TABULATION - (Cont.)

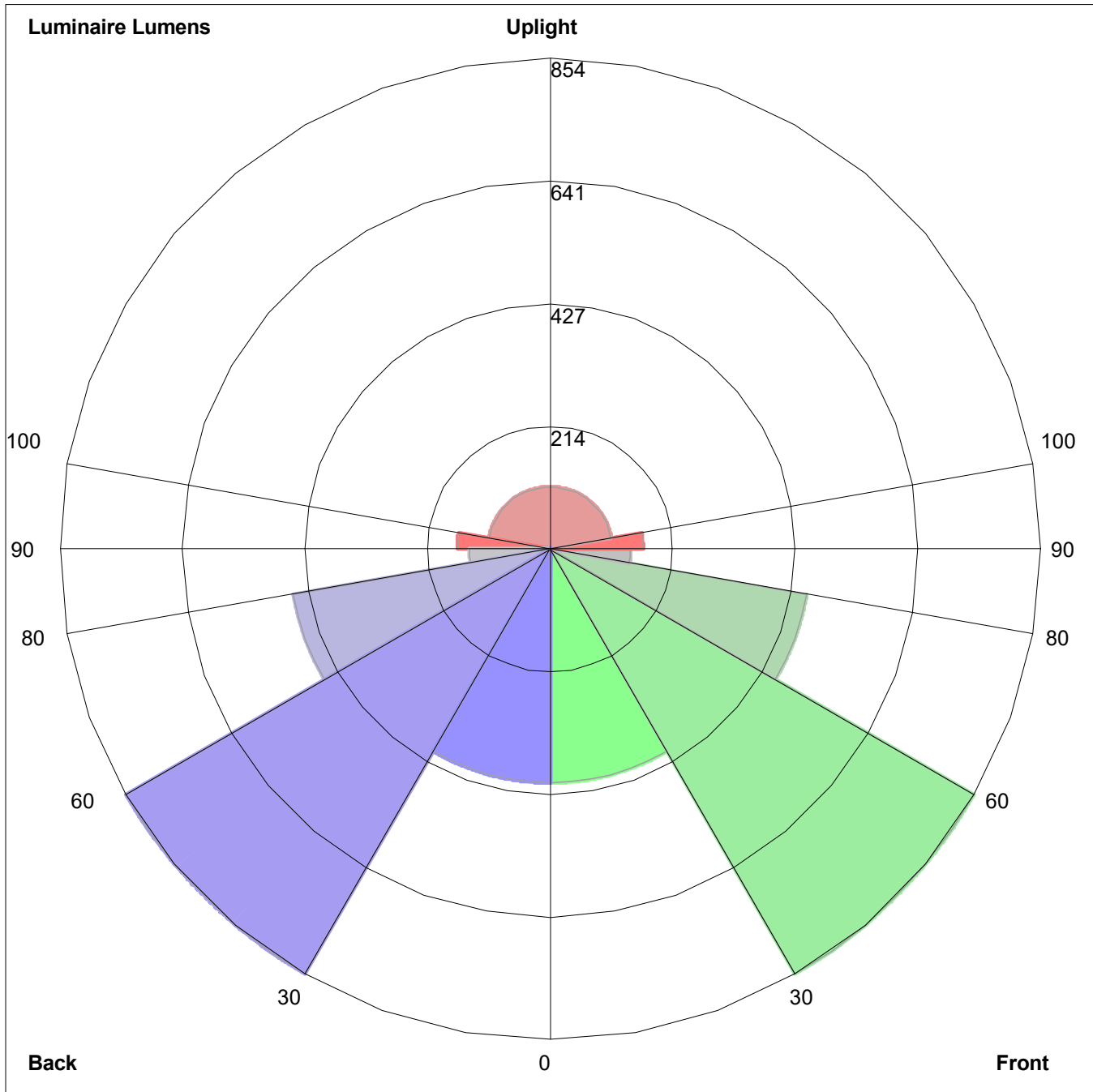
132.5	7.489
135.0	9.039
137.5	10.072
140.0	10.718
142.5	11.105
145.0	10.847
147.5	11.105
150.0	12.654
152.5	15.108
155.0	18.594
157.5	23.243
160.0	27.762
162.5	28.795
165.0	24.922
167.5	18.723
170.0	11.880
172.5	5.423
175.0	1.420
177.5	0.000
180.0	0.000

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINANCE



Distance In Units Of Mounting Height
 Values Based On 22 Foot Mounting Height
 1/2 Maximum Candela Trace Shown As Dashed Curve
 (+) = Maximum Candela Point

LUMINAIRE CLASSIFICATION SYSTEM (LCS) GRAPH



Luminaire Lumens:
Front: Low=406.9, Medium=854.1, High=454.1, Very High=140.3
Back: Low=406.9, Medium=854.1, High=454.1, Very High=140.3
Uplight: Low=161.7, High=108.1

BUG Rating : B1-U3-G2

ATTACHMENT E

Landscaping Supplemental Pages

Memo of compliance for landscaping requirements

Residences at Foundry Place
Lot #6: 181 Hill Street
Assessors Map 138 Lot 52
Portsmouth, NH

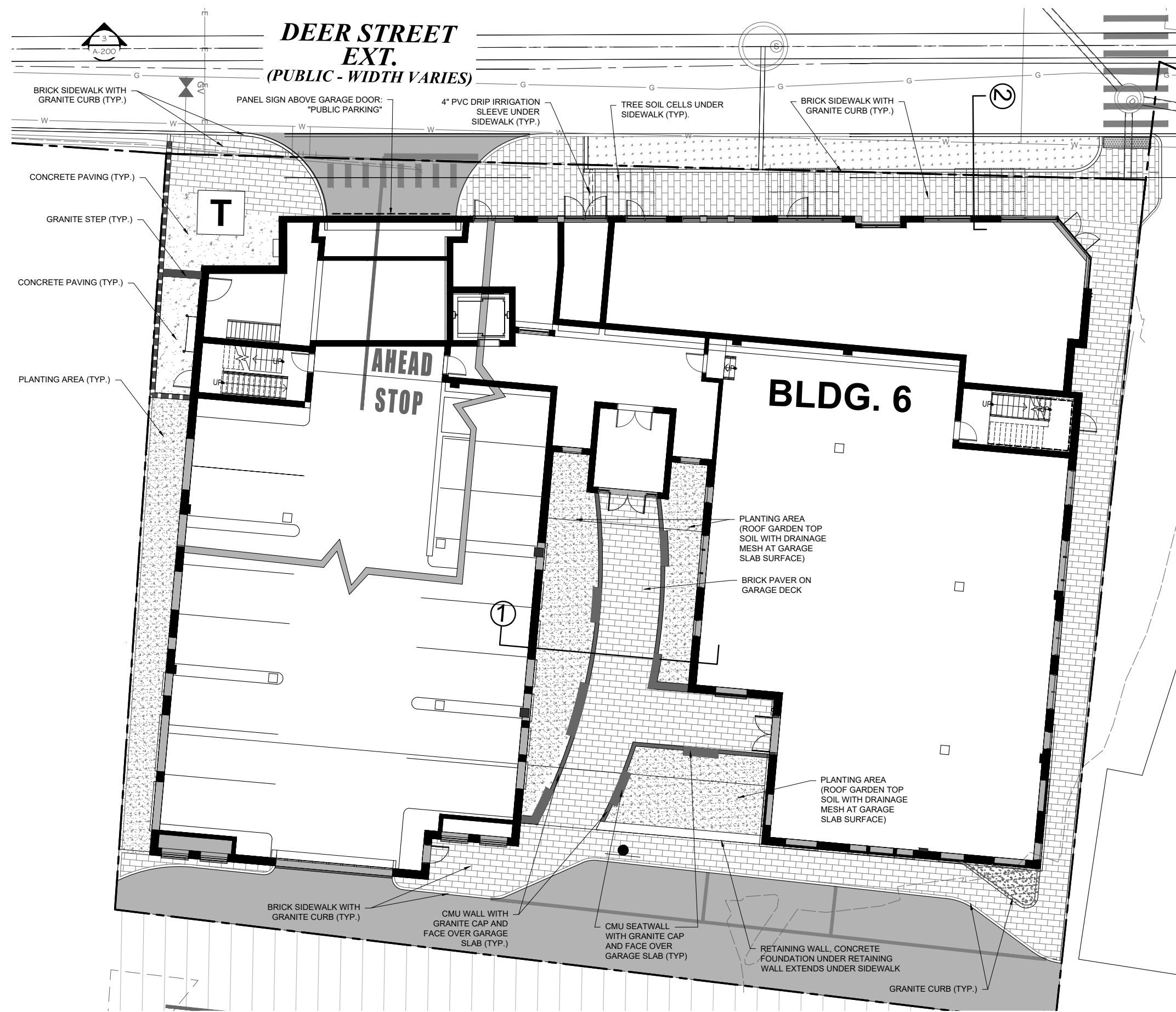
TAC and Site Plan Review submittal



Prepared by Robert A. White, RLA
GPI Greenman – Pedersen, Inc.

August 12, 2017

BUILDING 6 - HARDSCAPE and LANDSCAPE



Brick Pavers With Granite Curb At Planter

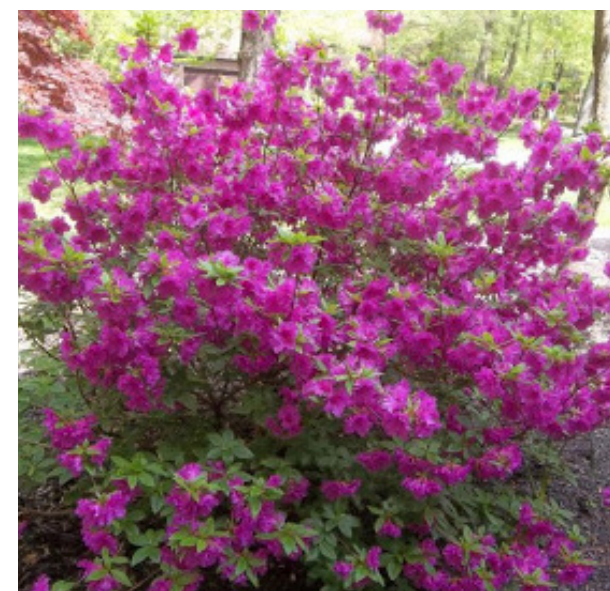


Concrete Paving



Cmu Seatwall With Granite Face And Cap

PLANTING AT COURTYARD



AZALEA x 'Karen' (Glabre Hybrid)
Azalea



CORNUS sericea 'Isanti'
Dogwood



ILEX verticillata 'Red Sprite'
Winterberry



DEUTZIA gracilis 'Nikko'
Slender Deutzia



HYDRANGEA 'Bloom Struck'
Hydrangea



DESCHAMPISA cespitosa 'Northern Lights'
Tufted Hair Grass



PANICUM virgatum 'Shenandoah'
Switchgrass



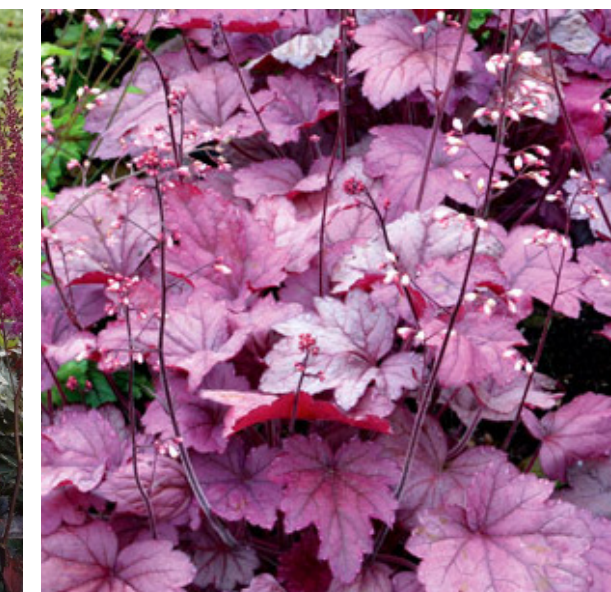
CHASMANTHIUM latifolium
Northern Sea Oats



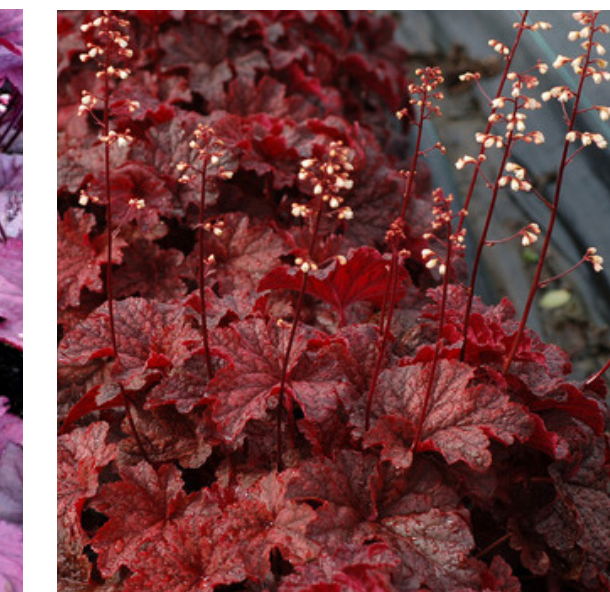
ANEMONE canadensis
Anemone



ASTILBE 'Mighty Chocolate Cherry'
Astilbe



HEUCHERA 'Georgia Plum'
Coral Bells



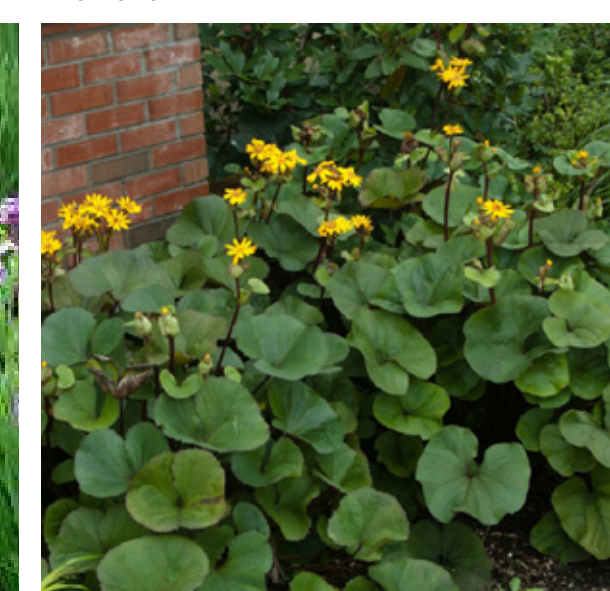
HEUCHERA 'Fire Alarm'
Coral Bells



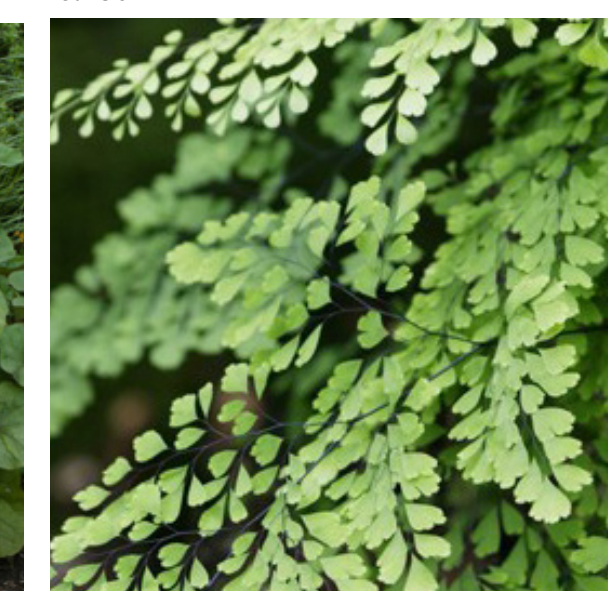
HOSTAS



IRIS versicolor
Iris Blue Flag



LIGULARIA dentata 'Othello'
Ragwort Othello



FERN adiantum ped
Maidenhair Fern



FERN athyrium f.f.
Lady Fern



FERN matte. struth.
Ostrich Fern



FERN polyst. acro.
Christmas Fern



ULMUS americana 'Princeton' American Elm



AMELANCHIER canadensis 'Shadblow'
Serviceberry

ARTICLE 6 LANDSCAPING AND SCREENING STANDARDS

SECTION 6.1 GENERAL PROVISIONS

Landscaping shall be provided that:

- (a) Defines areas for pedestrian and vehicular circulation;
- (b) Breaks up the mass of buildings and impervious areas;
- (c) Incorporates existing native vegetation and other natural features into the site design;
- (d) Micromanages and controls stormwater at its source to minimize off-site impacts;
- (e) Conserves water and reduces outside water use on the site;
- (f) Provides buffers between incompatible land-uses or sites;
- (g) Softens architectural and structural materials;
- (h) Minimizes the introduction of pollutants to the environment.

Applicant response:

The projects design has three landscape areas that integrate the above standards:

Streetscapes and pedestrian walkways: The Foundry Way sidewalk and streetscape design presents a comprehensive design that integrates downtown streetscape materials of brick sidewalks, street furniture for sitting and relaxation, bike racks to support bike mobility, and traditional lighting fixtures augmented by supplemental architectural lighting. (see lighting report).

Because of the traffic activity at the garage entrance across the street – and the desire for a streetscape that discourages pedestrian crossings except at crosswalk locations, a portion of the streetscape has a planted buffer at curbside location. This is modified from traditional downtown hardscape streetscapes to better function in a location that requires urban stormwater mitigation.

The planted buffer visually breaks up and softens the view of building and pavement, creates a shaded area for people, and the planting buffer serves as a LID stormwater facility to remove stormwater contaminants from the impervious pavement sidewalks, converts sidewalk stormwater into landscape watering, serves to visually and physically separate the busy garage driveway from the proposed residential/mixed use/single storefront building.

The east side walkway provides an initial connection walkway that can be expanded in the future to be a pedestrian promenade from the planned civic space to Hill/Autumn Streets in the event of a redevelopment plan for the Redlon Johnson building.

The sidewalks along Hill Street are a private road but are designed with layout and materials suitable for Portsmouth’s downtown with the exception of historic light poles. Conduit for those is being placed for future city placement.

Courtyard: A central courtyard is featured for the building to break the scale down to two residential blocks from Hill Street - the courtyard space over the planned parking garage is essentially a “Green Roof” with extensive plantings as a garden space for the residents, and serving to mitigate surface stormwater runoff, heat island effect of a paved area, and to be an amenity for the residents. The design of the courtyard and other area landscapes is modelled in part after the Rock Park.

Buffer areas: Along the western property border, adjacent to the Hienemann Parking lot, a planted buffer of evergreen and deciduous screening plants is proposed to separate the two areas.

SECTION 6.2 LANDSCAPING PLAN

1. A landscaping plan shall be submitted with each application for Site Plan Review showing:
 - (a) Existing and proposed vegetation including trees, shrubs and plant beds including all vegetation that shall be retained as required by the Planning Board;
 - (b) Dimensions of undisturbed areas and measures that shall be used to protect during construction existing natural features that are to be retained;
 - (c) Location of all utilities above ground and below ground and related easements;
 - (d) Required front, side, and rear yards.

2. A plant schedule shall accompany the plan that includes the following information:
 - (a) Botanical and common names;
 - (b) Planting size and size at maturity;
 - (c) Quantity;
 - (d) Growth habits (branching, crown spread, root spread);
 - (e) Tolerance to urban conditions including road salt, soil; compaction, drought, heat, and air pollution;
 - (f) Planting requirements.

Applicant response:

L2-L3 drawings present the landscape plan for the project, including the location of proposed plants. A detailed plant schedule shows the species, sizes and other requested information on the proposed planting design.

All the plants proposed are either native plants from the Portsmouth region, or regionally “vernacular”, meaning that they would be long standing plants in accepted nursery practice of the non - invasive variety such as the yews proposed for the evergreen screening. Most of the plants come from accepted NH lists of appropriate plant materials as published by UNH, DRED, and USDA Agricultural Extension Service and the UNH stormwater research center.

Streetscape: A planning border along the street creates visual and LID stormwater buffer with three elm trees for shade and scale, as a landscape border of LID plantings of stormwater appropriate shrubs and perennials with appropriate stormwater treatment soils.

Courtyard: A central courtyard creates a shady environment of native ferns, small scale understory trees with seasonal variety and interest as part of a “green roof” garden placed over the planned parking garage. The plants will store stormwater, cool the garage roof surface, and

Buffer areas: Along the southern property line, a border hedge of mixed evergreen and deciduous plants are provided.

SECTION 6.3 GENERAL REQUIREMENTS

1. Areas not occupied by buildings or other structures, parking, loading, and accessways shall be landscaped to provide visual relief from expanses of paving and buildings while providing shade and stormwater management benefits.

Streetscapes and the central courtyard and side yards are provided with landscaping and brick sidewalks and streetscapes to make them pedestrian friendly and to visually soften and break down the scale of buildings and pavements.

2. At a minimum, all yards, setbacks, and areas of open space as required by the Zoning Ordinance shall retain existing natural features or be landscaped as required herein.

Streetscapes, the side and rear yard spaces and the central courtyard are provided with landscaping and brick paving.

3. Landscaped areas shall consist of a combination of grass, flowers, vines, groundcovers, trees and/or shrubs. All planting areas shall be landscaped with a combination of climate tolerant plant material and protective groundcover. Bare soil is not permitted.

This has been provided with an extensive plant list of garden and shade canopy species.

4. Natural features, existing healthy mature trees, and other existing vegetation shall be identified on the landscaping plan and shall be retained when required by the Planning Board.

The existing site has little or no existing vegetation to be retained due to the nature of the site as a current building and parking area.

5. Existing invasive plant species shall be removed and destroyed if required by the Planning Board. Applicants shall refer to the *Prohibited Invasive Plant Species List* maintained by the NH Department of Agriculture.

Not applicable.

6. No loam or other topsoil shall be removed from the site as part of site development. Topsoil shall be appropriately stockpiled and stabilized for redistribution within new planting areas.

Not applicable.

7. Existing topography shall be maintained unless otherwise permitted by the Planning Board.

Not applicable.

Any areas disturbed during construction that will not be occupied by buildings or other structures, parking, loading, and access ways shall be replaced with a minimum of 6 inches of suitable topsoil and then shall be replanted according to the requirements herein.

The landscape beds will have a minimum of 6" of soil and in most areas - far more soil depth for garden species and trees. Trees are also supplemented with Silva cell structures to add planting soil space for growth viability.

8. Plant material and landscape maintenance procedures that incorporate water conservation techniques are preferred.

As much as possible – landscaped areas shall be the destination of stormwater runoff into planting areas for watering and stormwater mitigation.

9. All local and state requirements for yards and sight distance shall take precedence for selection and placement of landscaping features, as applicable.

Sight distances have been preserved at both garage entrances.

10. No plantings shall be placed where they may impede or interfere with existing or proposed sewer, water, natural gas lines, or power lines.

Planting locations have avoided or been co – located adjacent but not impeding utilities in all possible locations.

11. The front yard landscaping area may contain any of the following:

- (a) Public utility easements and open surface drainage easements that do not occupy more than thirty (30) percent of the required landscaped area. Such areas should be planted with perennials or groundcover so as not to interfere with utility connections;
- (b) Underground utility connections and transformers, provided that they do not encroach more than five (5) feet into the required landscaped area. Such equipment shall be landscaped to soften the visual impact.

12. Wherever appropriate, applicants shall incorporate Low Impact Development (LID) design practices and technologies in all aspects of the site’s landscaping.

There are no open drainage easements.

Locations of transformers and other utilities have been minimized and the landscape/hardscape areas have been coordinated for placement and appropriate design.

LID stormwater planting locations have been included in the project in all landscaping locations.

SECTION 6.4 PLANTING REQUIREMENTS

The purpose of planting requirements is to enhance the long-term survival prospects of the plant materials used in site landscaping. These standards are also meant to ensure that the benefits of site landscaping (buffering, aesthetic enhancement, erosion control, etc.) are realized as early after planting as possible. The following standards for planting requirements shall apply.

- (a) Planting holes for trees shall be at least two to three times the width of the root ball and shall be no deeper than the root ball.
- (b) Shrubs shall have a planting hole three to five times the width of the root ball and shall not be deeper than the root ball itself.
- (c) Evergreen trees shall be fully branched with a minimum 5-foot height at the time of planting.
- (d) Deciduous trees shall be fully branched and a minimum size of 2 inches in caliper at the time of planting
- (e) Shrubs shall be fully branched with a minimum of 2½ feet height at planting.
- (f) Existing landscaping, trees and planting materials to be retained shall be protected with a snow fence or other durable method as necessary during construction to avoid damage to root zones as well as above ground vegetation.
- (g) When appropriate for trees placed within sidewalks, tree grates shall be used to prevent excessive soil compaction and to add interest to the pavement. Tree grates shall be fabricated of a strong, durable material, installed flush with grade, and provide an expandable center opening to allow for continued tree growth.
- (h) Where applicable, tree guards shall be installed to protect the base of the tree from street activity.
- (i) Tree wells over 6 inches deep or other landscape features that have the potential to present a

falling hazard to the public shall have grates, fences or other protective measures installed.

- (j) All trees where required shall be welled and protected against change of grade.

The above requirements have been integrated into the project plans and details.

SECTION 6.5 PLANT SELECTION

1. All proposed plantings shall be appropriate for the soils, weather and environmental conditions of the site. Particular attention shall be paid to tolerance to potential road salt and other deicing treatments. Sidewalk located plants are selected for salt tolerance.
2. Plant materials shall be of specimen quality conforming to the American Standards for Nursery Stock and shall be guaranteed for at least two growing seasons.
3. Plants on the *Prohibited Invasive Plant Species List* maintained by the NH Department of Agriculture shall not be planted.
4. Trees shall be selected for growing habits that are appropriate for the location. Consideration shall be given to crown height and canopy spread at maturity so as not to interfere with buildings, structures, pedestrian and bicycle facilities, or other site features.

The above requirements have been integrated into the project plans and details.

SECTION 6.6 LANDSCAPED AREAS

1. Side slopes for all landscaped areas shall not exceed thirty-three (33) percent (3:1 slope), and shall be appropriately stabilized with vegetation.
2. Within parking areas, landscaped islands shall be provided between adjacent rows of parking and between groups of parking spaces with the goal of breaking up large contiguously paved areas. Sidewalk located plants are selected for salt tolerance.
3. Landscaped islands shall be a minimum of nine (9) feet wide or as necessary to provide adequate room for growth and so as not to interfere with access to vehicles, lines of sight, pedestrian travel, or the long-term health of the vegetation.
4. Landscaped areas shall consist of a combination of large and small trees, shrubs, perennial and/or annual flowers, and groundcover.
5. Landscaped areas shall be designed with a variety of plant species that provide seasonal variety.
6. Landscaping around building entrances, near parking spaces, and along pedestrian and bicycle ways shall not interfere or block line of sight, restrict travel, or present a hazard to personal property.
7. Any landscaping located within the safe site distance of a driveway entryway, as defined by AASHTO standards, shall be no more than 3 feet at mature height. This has been addressed in planting design
8. Areas between trees and shrubs shall be planted with groundcover spaced to cover the area within 3 years. Areas of exposed bare soil shall be avoided. Mulch shall not be considered a groundcover.
9. Pedestrian pathways made of permeable materials are encouraged where landscaping areas are of a size and shape to accommodate pedestrian passage.

The city standard for brick sidewalks uses an asphalt base thus is not permeable. However, the projects design includes trench drains for the brick sidewalks as well as openings in planter bed curbing to accept runoff and transmit it into LID stormwater planters for comparable if not superior treatment of stormwater as Permeable paving.

10.

11. Low Impact Development techniques such as rain gardens, bioretention areas, and tree boxes and other stormwater management landscaping techniques may be incorporated into landscaped areas and may replace required landscaping components as approved by the Planning Board. Same as above – LID is incorporated as an integral component of the landscape and streetscape design.

The above requirements have been integrated into the project plans and details.

SECTION 6.7 LANDSCAPING ALONG PUBLIC RIGHTS OF WAY

1. Where feasible or as required by the Planning Board, street trees may be planted along public rights-of-way with the goal of providing a tree-lined street.
2. Trees shall be spaced at a minimum of 1 tree per 30 lineal feet or farther apart if necessary to accommodate the mature crown spread of the tree. Trees shall not interfere with buildings, overhead utilities, pedestrian travel, or access to on-street parking spaces.

Both private and public street frontages have street trees planted as close to 30' spacing as utilities and design allow.

SECTION 6.8 PERIMETER LANDSCAPING

1. Parking areas shall be landscaped on the perimeter in order to soften the visual impact of the parking area while maintaining clear sight lines.
2. Landscaping between nonresidential uses is intended to provide visual relief from pavement. It may, however, encourage passage between nonresidential properties by (a) providing five (5) foot wide pedestrian pathways through landscaping elements at locations suitable for safe pedestrian circulation and (b) using landscaping materials that allow a clear sight line between properties at a height of three (3) feet.
3. A minimum nine (9) foot-wide landscaped buffer, including shade trees, between the street or accessway pavement and the sidewalk or pedestrian pathway shall be provided where adequate public right of way exists.

The above requirements have been integrated into the project plans and details.

There are no surface parking areas except three on street spaces on Hill Street. A min. 5' walkway is provided at the eastern property boundary.

ROW limitations reduce the possible area of plantings to 5-6' and less for tree wells, but every effort to landscape the project along the streets has been made.

SECTION 6.9 SCREENING

1. Where nonresidential uses and/or off-street parking facilities abut a residential zone the perimeter shall be screened to provide physical and visual separation between uses.
2. Natural screening shall consist of evergreen shrubs/trees planted in a line to form a continuous screen and growing to a height of 6 feet within 3 years. The remaining portion of the screening area shall consist of large and small trees, grass, flower beds, or other vegetative groundcover planted to fully cover the ground surface of the area within 3 years.
3. A 6-foot high fence or masonry wall may be substituted for natural screening if approved by

the Planning Board. The wall or fence shall be placed on the exterior side of any landscaping.

4. All sites shall incorporate screening measures to prevent the headlights of vehicles from shining on adjoining residential areas.
5. All mechanical installations and equipment, solid waste collection equipment, pump stations, and outdoor storage shall be screened or softened with landscaping that is appropriate for the location.

The above requirements have been integrated into the project plans and details.

SECTION 6.10 MAINTENANCE AND REPLACEMENT OF LANDSCAPING AND SCREENING

1. The property owner shall be responsible for the maintenance, repair, and replacement of all required screening and landscaping materials.
2. All required plant materials shall be tended and maintained in a healthy growing condition, replaced when necessary, and kept free of refuse and debris. All required fences and walls shall be maintained in good repair.
3. The property owner will remove and replace dead or diseased plant materials immediately with the same type, size and quantity of plant materials as originally installed, unless alternative plantings are requested, justified, and approved by the Planning Board.

The above requirements have been integrated into the project plans and details. These notes appear on the project plans.

SECTION 6.11 IRRIGATION

1. Irrigation should be minimized to the extent possible through use of native drought tolerant species and the use of landscaping that does not require permanent irrigation systems.
2. When irrigation is necessary to support the establishment and/or maintenance of landscaped areas smart controllers shall be used that limit irrigation during the day and during rain events.
3. Where appropriate, additional water conservation features including trickle and drip lines, rain barrels, cisterns or other water harvesting elements shall be used.
4. Applicants are encouraged to use recycled water for irrigation provided the harvesting and circulation systems and water quality meet the requirements of the City's Utility Ordinance and state standards.
5. Irrigation systems shall be installed and operated in accordance with the City's Utility Ordinance

The above requirements have been integrated into the project plans and details. Watering sleeves for drip irrigation and small area watering have been provided for the plant establishment period of 2-3 years but can then be disassembled or simply not used once vigorous vegetation is established.

SECTION 6.12 INNOVATIVE LANDSCAPING PRACTICES

6.12.1 Green Roofs

Applicants are encouraged to use roofing materials that have a Solar Reflective Index (SRI) of at least 29 (greater for roofs with a slope of 2:12 or more) or install vegetated roofs.

The above requirements have been integrated into the project plans and details for the green roof over the Bldg. 6 garage.

6.12.2 SOLAR ORIENTATION

Memo of compliance for landscaping requirements

Applicants are encouraged to incorporate landscaping techniques that help reduce energy consumption for heating and cooling of buildings on the site. Trees should be planted in order to provide shade on buildings and parking lots in the warm seasons and to allow solar heat during the cool seasons.

The above requirements have been integrated into the project plans and detail. Street trees along Hill Street are the most effective followed by the shade understory trees in the green roof over the parking garage courtyard. Street trees on Foundry Place will be mostly shaded by the building height.

ARTICLE 7 WATER RESOURCES STANDARDS

SECTION 7.1 LOW IMPACT DEVELOPMENT (LID)

Applicants shall incorporate Low Impact Development (LID) design practices and techniques in all aspects of the site's development.

The above requirements have been integrated into the project plans and details.

ATTACHMENT F

Gorrill Palmer Traffic Evaluation and Mitigation Information

**TEC Traffic Impact and Access Study – Peer Review
Deer Street Redevelopment
Portsmouth, New Hampshire**

Date: March 8, 2017
Subject: TEC Traffic Impact and Access Study Peer Review
Deer Street Redevelopment – Portsmouth, New Hampshire
To: Ania Rogers, GL Rogers
From: Randy Dunton / Emily Tynes, Gorrill Palmer (JN 3256)

Per the request of GL Rogers and Company, Gorrill Palmer (GP) has completed a macroscopic review of the TEC Traffic Impact and Access Study (TIAS) dated December 19, 2016 for the redevelopment of Deer Street in Portsmouth, New Hampshire. This includes a review of the general methodologies, assumptions, and conclusions of the study for consistency with generally accepted practices and standards. Overall, we find the study to be well done and completed using generally accepted practices. The following is a summary of the review for each section of the TIAS:

I. Introduction

Purpose of Study

Building Program – Based on a spreadsheet dated February 13, 2017 that was provided by GL Rogers and Company, the Building Program in the TIAS does not correspond with the most recent uses and sizes for Lots 3-6. Lot 4 now includes a drive-through ATM for the commercial bank in Building 5 and the retail in Building 5 has been specified as a pharmacy. As can be expected for a large, mixed-use development in the initial stages, there have been changes to the sizes of each uses in the Deer Street Associates (DSA) Lots 3-6. Although these changes are not anticipated to have a significant impact on the overall site impact on the existing roadway network, GP recommends including the updated Building Program for future analyses.

Site Access – The site access locations provided in the TIAS appear to be consistent with the most recent site plans for Lot 1. The site accesses for Lots 3, 4, and 5 have changed to one entrance driveway 200 feet west of Maplewood Avenue and an exit only driveway opposite Bridge Street. Additionally, Lot 6 will have a second access for 14 parking spaces on the northerly side of Hill Street.



Methodology

The methodology appears to be acceptable for evaluating the traffic operations of the proposed projects on the existing roadway network.

II. Existing Conditions

Traffic Study Area

The study area appears to be inclusive of significant intersections in the vicinity of the project.

Existing Traffic Volumes

The utilization of the October 2016 turning movement counts to estimate the existing traffic volumes appears to be reasonable. It should be noted that the month of October could be considered off peak, however with the seasonal adjustments the volumes appear to be appropriate.

Adjustments to Existing Traffic Volumes

GP agrees that a seasonal adjustment should be made to the October 2016 traffic volumes, since the peak traffic volumes typically occur during the summer months. Additionally, the methodology used to determine the seasonal adjustments to the peak hours and the results of the adjustments appear to be reasonable.

Public Transportation

The public transportation discussed appears to be inclusive of the most relevant public transportation in Downtown Portsmouth.

Crash Data

GP agrees with the use of the most recent three-year period in evaluating the crash history of the area. If available, police reports for the angled collisions and rear-end collisions or at any intersections with a high crash rate would be helpful in determining the cause of the crash patterns identified.



Summary of Crash Data

Based on a review of the crash data in Appendix E, the summary of crash data for the intersections appears to be reasonable. If the information is available, the crash history for the roadways between the study area intersections should be considered as well.

Sight Distance Measurements

Based on a review of the included intersections, the sight distance at the following locations should be considered:

- Deer Street at Lot 4 Exit Only Driveway
- Deer Street Extension at Lot 6 Driveway
- Hill Street at Lot 6 Driveway

Additionally, the New Hampshire DOT minimum required sight distance should also be considered in addition to AASHTO and mention made of how they compare.

III. Future Conditions

Currently Planned Infrastructure Projects

The infrastructure projects that were included in the No-Build and Build conditions appear to be appropriate.

Opening and Future Year Traffic Volumes

The selected opening year of 2018 appears reasonable for the first phases of the Deer Street redevelopment. The 2028 future year complies with the NHDOT standards of a 10-year future planning horizon.

Background Traffic Growth

General Ambient Growth – GP concurs with the use of the traffic volume data from permanent count stations in Portsmouth and North Hampton to estimate an ambient growth rate. The growth rate of 1.0 percent per year appears reasonable.

Route 1 Bypass Redistribution – The Route 1 Bypass redistribution methodology appears to be reasonable.



Specific Developments by Others – The addition of other developments in the background traffic appears to be reasonable.

Market Street at Russell Street Roundabout Redistribution – The redistribution of left turns to Market Street northbound appears to be reasonable.

No-Build Traffic Volumes – The methodology used to estimate the 2018 and 2028 No-Build traffic volumes appears to be reasonable.

Existing Tenant Traffic

The uses outlined in this section seem to be consistent with the existing site. GP concurs with the removal of traffic generated by the currently occupied uses. The trip generation for the two occupied uses is based on the Institute of Transportation Engineers' publication *Trip Generation*, Ninth Edition, Land Use Code (LUC) 826 – Specialty Retail and LUC 912 – Drive-In Bank. Since LUC 826 does not provide trip generation rates for the AM peak hour or the Saturday peak hour, TEC used the trip generation rates from LUC 820 – Shopping Center to estimate the trip generation during these time periods. An alternative to this method is the utilization of a ratio of AM to PM peak hours and Saturday to PM peak hours for LUC 820 to apply to the LUC 826 PM peak hour. This estimates a trip generation that is proportional to the LUC 826 PM peak hour.

For Eastern Bank, TEC based the trip generation on the number of drive-through lanes. Eastern Bank is a commercial bank and may generate fewer trip ends during a peak hour than a retail bank. Additionally, based on information provided by Eastern Bank, the drive-through has a significantly lower usage than a typical bank. GP typically recommends that the trip generation for the bank is based on both the number of drive-through lanes and the gross floor area of the bank. For this specific bank, we offer an alternative approach to better reflect the specific type of bank in the next section.

Based on the TEC TIAS, only 5,400 sf of the 7,200 sf multi-tenant building is occupied. An alternative to using LUC 826 for all three possible uses, the trip generation could be based on which of the uses are currently occupied. GP suggests the following LUCs for each use:

- Wells Fargo: LUC 911 – Walk-In Bank
- Studio 139 Frame Shop: LUC 826 – Specialty Retail
- Harbor EyeCare Center: LUC 720 – Medical/Dental Office



Site Generated Traffic Volumes

As mentioned previously, the Building Program has been modified since the December 19, 2016 submission of the TIAS. GP recommends updating the site generated traffic volumes to reflect the changes to the Building Program for future analyses.

Phase I – The assumptions used to estimate trip generation for the City parking garage appear to be reasonable. An alternative method for estimating the AM and Saturday peak hour trip generation for LUC 826 is using ratios of AM to PM trip generation rates and Saturday to PM trip generation rates from LUC 820 – Shopping Center. The trip assignment also appears to be reasonable. GP concurs with adding the Phase I traffic to the build out year and future year before adding Deer Street Associates development traffic to the study area.

Deer Street Associates Development: Phase 2-4 – The Deer Street Associates (DSA) Development phasing has been updated since the completion of the TIAS. However, since the trip generation for the DSA development has been added to the no-build traffic volumes as a whole development, the updated phasing would not impact the results of the study. As mentioned previously, GP recommends updating the trip generation for Lots 3-6 to reflect the currently proposed uses and sizes in each building for future analyses. GP reviewed the trip generation calculations provided in Appendix I and offer the following comments:

- GP concurs with the use of ITE *Trip Generation*, Ninth Edition to estimate trip generation
- Lot 3:
 - The methodology for trip generation for the residential uses appears to be reasonable
 - The methodology for trip generation for the hotel appears to be reasonable.
 - The methodology for trip generation for the retail uses appears to be reasonable. However, like in the City parking garage, an alternative to this method is the utilization of a ratio of AM to PM peak hours and Saturday to PM peak hours for LUC 820 to apply to the LUC 826 PM peak hour. This estimates a trip generation that is proportional to the LUC 826 PM peak hour.
 - Based on information from Tracy Kozak, with JSA, the bar use in Building 3 is associated with the hotel. The description for ITE LUC 310 – Hotel from *Trip Generation*, Ninth Edition states that hotels provide “supporting facilities such as restaurants, cocktail lounges, meeting and banquet rooms or convention facilities, limited recreational facilities (pool, fitness room), and/or other retail and service shops.” Based on this description, a bar could be included in a hotel use and the trip generation may not need to be calculated separately from the hotel.
 - Based on information from Tracy Kozak, with JSA, the first floor of the restaurant space is for public use and the second floor is provided for hotel guest’s use only.



Based on the ITE description above, the trip generation for the restaurant that is associated with hotel use may not need to be calculated separately from the hotel. The trip generation for the restaurant for public use would still need to be estimated. GP concurs with the methodology used to forecast trip generation for the restaurant use.

- Lot 4:
 - GP concurs with the methodology used to forecast the trip generation for the office use.
 - GP concurs with the methodology used to forecast the trip generation for the restaurant use.
 - The trip generation for the drive-up ATM that is associated with the bank in Building 5 should be included in the trip generation for Lot 4. As described previously, this is a commercial bank and is only expected to have 12 vehicles per day on average.
- Lot 5:
 - GP concurs with the methodology used to forecast the trip generation for the office space and the residential units.
 - The methodology used to forecast the trip generation for the retail space appears to be reasonable. However, the retail space has been identified as a Pharmacy, so in the future LUC 880 – Pharmacy/Drugstore without Drive-Through should be considered.
 - Although Eastern Bank in Building 5 will have a drive-through associated with it, the drive-through is not in the same building as the rest of the bank. For this reason, the trip generation may be different than that of a typical bank with a drive-through. An alternative to LUC 912 for the entire bank would be utilizing LUC 911 – Walk-In Bank for the portion of the bank in Building 5 and using information from Eastern Bank for the drive-through ATM trip generation on Lot 4.
- Lot 6:
 - GP concurs with the methodology used to forecast trip generation for both the residential units and the office space.
 - The methodology used to forecast the trip generation for the retail appears reasonable. GP offers the same alternative method for the AM and Saturday peak hour trip generation as the retail in Buildings 3 and 5.

Internal Trip Capture – GP concurs with the use of shared trip reduction for Lots 3-6. The ITE information for mixed-use trips appears to be reasonable and appropriate for this use. An alternative method for calculating an internal trip capture would be the use of the National Cooperative Highway Research Program (NCHRP) 684 Internal Trip Capture spreadsheet for the AM and PM peak hours. The NCHRP 684 spreadsheet is based on ITE information, so similar internal trip capture rates would be expected.



Transit Trips – The 1.5% reduction in trip generation for transit trips appears to be reasonable. It is our understanding that this reduction is based on the entire City of Portsmouth. The reduction may have been higher if data from only Downtown Portsmouth was utilized.

Walking and Bicycling Trips – The 8% reduction in trip generation for walking and bicycling trips appears to be reasonable. Similar to the transit trip reduction, the reduction may have been greater if only data from Downtown Portsmouth was utilized.

Pass-By Trips – GP concurs with the pass-by trips applied to the retail and restaurant uses. Not applying pass-by trips to office, hotel, and residential uses appears to be reasonable.

Deer Street Associates Development Trip Distribution – The methodology used to distribute the DSA Development trip generation appears to be reasonable. However, GP reviewed Figures 14A, 14B, and 14C and could not replicate the trip generation for Lots 3-6 based on the trip distribution.

Phases 2-4 Build Traffic Volumes – GP concurs with the methodology used to yield the 2018 and 2028 Build Conditions.

Traffic Impact Summary

The discussions of the impact of the parking garage traffic and the DSA development traffic appear to be reasonable based on the anticipated trip generation for the sites. Additional comments on the traffic impact summary are provided in Section V: Traffic Impact Analysis Summary.

IV. Mitigation Summary

Off-Site Improvements

The use of Synchro and SimTraffic computer analysis software appears to be appropriate for determining mitigation. However, it is inconsistent with the capacity analyses completed for the other development scenarios. To compare the scenarios GP recommends using the same methodology for scenarios without mitigation and the scenarios with mitigation to evaluate the impact of the mitigation on the operation of the roadway network. By doing this, you are comparing “apples to apples”.



Deer Street Parking Garage Mitigation – City of Portsmouth

The TEC TIAS recommended the following mitigation for the Deer Street parking garage:

- Deer Street, Deer Street Extension, and Bridge Street:
 - Construct Deer Street Extension
 - Provide a new sidewalk and defined curb cuts and driveway aprons on the west side of Bridge Street
 - Restripe Deer Street eastbound between Deer Street Extension and Maplewood avenue to include a westbound receiving lane, an eastbound left turn lane, and an eastbound through-right lane
 - Stripe tracking pavement markings along Deer Street through the intersection for westbound motorists on Deer Street
 - Update signage and pavement markings on Bridge Street at Islington Street to reflect the changes in layout
- Maplewood Avenue / Middle Street Corridor
 - Modify traffic signal timing and coordination along the corridor between Deer Street and State Street
 - Reestablish traffic signal coordination at the intersection of Middle Street / State Street
- Dynamic Parking Message Signs at four locations in the Downtown area
- Multi-modal Accommodations in various locations in the vicinity of the parking garage such as sidewalks, accessible ramps and driveway aprons, “sharrows” on Deer Street and Bridge Street, bicycle sharing opportunities, bicycle racks, and posted transit maps and schedules in the parking garage

The mitigation for the parking garage appears to be reasonable (exceptions noted in next section). GP reviewed the capacity and queue analysis summary tables in Section V, which show that the Phase I mitigation does maintain or improve the levels of service for most intersection approaches. Since the City has its own very capable Traffic Department, and they will be the owners of the parking garage, we did not scrutinize the mitigation associated with the parking garage as provided in the TIAS.

Deer Street Associates (DSA) Development Mitigation (Private)

The TEC TIAS recommended the following mitigation for Deer Street Associates. We have underlined those items that are discussed in more detail following the list:

- Deer Street, Deer Street Extension, and Bridge Street
 - After utility improvements and reconstruction of the sidewalk, reset northerly curb line to match City’s restriping



- Provide ADA accessible ramps on corners of the intersection of Maplewood Avenue / Deer Street that would be impacted by construction
- Provide a mill and overlay for Deer Street and Bridge Street from Maplewood Avenue to Hanover Street
- Maplewood Avenue / Middle Street Corridor
 - Install “Do Not Block Intersection” pavement markings and signage along the corridor at Deer Street, Hanover Street, Islington Street, and State Street
 - Introduce concurrent pedestrian phasing along the corridor from Deer Street to State Street
 - Replace pedestrian signal heads at Middle Street / State Street intersection
 - Install video detection along the corridor from Deer Street and State Street
 - Modify signal phasing on Middle Street northbound at Islington Street to include a protected left-turn advance phase, which will require replacing at least one signal head
 - Modify signal timing and coordination along the corridor from Deer Street to State Street
- Multi-modal Accommodations including a sidewalk on the northerly side of Deer Street, accessible ramps along the building frontage or intersection corners, secure interior bicycle racks, and posting transit maps and schedules in the DSA buildings
- A contribution to the Market Street Roundabout of approximately \$50,000
- A contribution to the Downtown Traffic Modeling Study

Typically, there is a specific accepted methodology generally used to establish mitigation associated with a specific development. First, is that a deficiency or need is identified that is created or exacerbated by the specific development. Then, mitigation is identified that addresses that deficiency. If it is an existing deficiency, the applicant typically contributes proportionately toward a larger mitigation effort, so no single development is responsible for existing deficiencies. Based on our review, some of the identified mitigation items do not appear to have followed this standard practice. Keeping the methodology in mind, those items are discussed in more detail as follows:

- Provide a mill and overlay for Deer Street and Bridge Street from Maplewood Avenue to Hanover Street – Mill and overlay appears reasonable for Deer Street in front of the site where there are impacts to curbing, striping, utilities, and minor roadway impacts. However, it is unclear from a traffic standpoint, and there is no supporting discussion in the TIAS, why DSA is being requested to pay for mill and overlay for Bridge Street.
- Install “Do Not Block Intersection” pavement markings and signage along the corridor at Deer Street, Hanover Street, Islington Street, and State Street – There is no discussion with supporting documentation as to why DSA is being requested to pay for this mitigation, other than under the general heading of “...improve traffic operations and



safety on the major adjacent corridor...” What traffic operations and safety items are trying to be addressed? Are these specific issues created by DSA? If not, why is DSA being requested to pay? Why is this not a mitigation identified for the Parking Garage as well? How much is DSA contributing to the total entering volume of these intersections?

- Introduce concurrent pedestrian phasing along the corridor from Deer Street to State Street – Switching from exclusive to concurrent pedestrian phasing can improve the capacity of an intersection, especially if the intersections are coordinated. While GP concurs with the TIAS on the positive impacts of concurrent pedestrian phasing, there was no supporting documentation or discussion as to why the DSA development is being asked to contribute toward this specific mitigation. What deficiencies specific to the DSA development are trying to be addressed? Are these specific issues created by DSA? If not, why is DSA being requested to pay? Why isn't this a mitigation identified for the Parking Garage as well, especially since a parking garage will generate more pedestrians on the adjacent roadway network than an on-site use? How much is DSA contributing to the total entering volume of these intersections?
- Replace pedestrian signal heads at Middle Street / State Street intersection – Similar to the other mitigation items identified above, there is no discussion, supporting documentation or analysis as to why the DSA development is being asked to pay or contribute toward this item or what deficiency is created specific to the DSA development that is being addressed.
- Install video detection along the corridor from Deer Street to State Street – Similar to the other items, there is no discussion, supporting documentation or analysis as to why the DSA development is being asked to pay or contribute toward this item or what deficiency that is created by the DSA development is being addressed. The TIAS states “The video detection will include an added benefit of providing real-time traffic volume counting capabilities that can be utilized as traffic monitoring for the DSA Development project;”. Why would an approved DSA Development need to be monitored after the fact? What deficiency specific to only the DSA development is being mitigated by this mitigation?
- A contribution to the Market Street Roundabout of approximately \$50,000 – A DSA contribution to the Market Street Roundabout appears to be reasonable. However, it should be proportional to the percentage increase in traffic volumes due to the DSA development traffic. The HarborCorp project was required to contribute \$50,000. That project resulted in an average increase in traffic of 6.6% during the peak hours of the build out year (2015). The DSA development results in an average increase of 3.2% during the peak hours of the build out year (2018). Since the DSA development results in a lower



average increase than the HarborCorp project, the DSA contribution to the Market Street Roundabout should be less than half of the HarborCorp contribution.

- A contribution to the Downtown Traffic Modeling Study - A contribution to the Downtown Traffic Modeling Study also appears to be reasonable. However, like the roundabout contribution, the DSA contribution to the study should be proportional to the percentage increase in Downtown traffic due to the DSA development. The DSA development increases the traffic entering or exiting the study area by approximately 5%.

Costs of mitigation: It is our recommendation that whatever mitigation is ultimately identified, a cost be determined, prior to approval, for that mitigation such that DSA knows what the “mitigation cap” is to their investment and can seek financing and plan accordingly.

Overall Comments on Mitigation Items

Based on our review, there are some mitigation items that appear appropriate. However, there are numerous mitigation items that, in our opinion, need to either be removed, reduced in scope, or cost distributed more proportionately.

It should be noted that in the Post Closing Obligations Agreement (PCOA) between the City and DSA it states that “in no event shall the City’s share of [the costs of improvements to public or intended public rights of way (other than Deer Street Extension)] exceed the sum of Fifty Thousand Dollars (\$50,000.00).” The requirements in the PCOA should be considered when determining the required mitigation and the proportional contribution by all contributing parties.

V. Traffic Impact Analysis Summary

Methodology

The overall methodology used to conduct capacity and queue analyses appears to be reasonable. However, when an intersection or approach nears capacity, the results from Synchro 9.0 become less representative of expected conditions. When the volume to capacity ratio (V/C) is equal to or greater than 1.00, the intersection is at or over capacity. The closer the V/C is to 1.00, the less representative of future conditions the results may be. There are several approaches that have a V/C of 0.95 or greater, which indicates that the results may not be completely representative of the forecast conditions in the intersection. Another method for capacity analyses would be using Synchro as well as SimTraffic computer analysis software and using the average of five SimTraffic runs to evaluate the delay per vehicle and queue lengths.



Parameters for Traffic Impact Analysis

GP concurs with the levels of service in relation to control delay per vehicle for unsignalized intersections, signalized intersections, and roundabouts.

Traffic Impact Analysis Results

The results of the capacity and queue analyses appear to be reasonable overall. GP recommends additional evaluation of intersections that have V/C's greater than or equal to 1.00 to ensure results are representative of the expected operation of the intersections.

VI. Conclusion

Overall the methods, results, and conclusions of this TIAS appear to be reasonable. Since the building program has changed since the original TIAS, future analyses should be updated to reflect the new uses. Additionally, the changes to the site accesses should be updated in future analyses. The overall mitigation items appear reasonable for the two projects with some exceptions noted herein.

**Lot 6 and Hill Street Traffic Evaluation
Deer Street Mixed Use Development
Portsmouth, New Hampshire**

Date: June 14, 2017
Subject: Lot 6 and Hill Street Traffic Evaluation
To: Ania Rogers, DSA
From: Randy Dunton, P.E., PTOE, Gorrill Palmer

Project Understanding

As part of a joint venture, DSA and the City agreed to a Traffic Impact and Access Study (TIAS) that evaluated the combined proposed City Garage and DSA development in one study. That study was completed by TEC in December 2016. In addition, DSA contracted with Gorrill Palmer (GP) to independently review (on an overall general level) the TEC study and also offer evaluations associated with just the DSA development. GP completed the independent review and summarized the findings in a memo titled “TEC Traffic Impact and Access Study – Peer Review”, dated March 8, 2017, which has been submitted to the City.

Because the DSA project is moving forward on a Lot by Lot basis, they have requested GP to evaluate the traffic impacts of just Lot 6, the first Lot in the DSA development to be submitted for City approval. The following is summary of the evaluation.

Lot 6 Trip Generation

The following uses and sizes were assumed for Lot 6 in the original TEC Traffic Impact and Access Study (TIAS) dated December 2016:

- 34 multi-family apartment units
- 4,424 sf of office space
- 1,776 sf of retail

The uses and sizes have since been refined and are now proposed as follows:

- 43 multi-family apartment units
- 4,296 sf office
- 1,867 sf retail

GP has updated the forecast Lot 6 trip generation by proportionally adjusting the trip generation from the TEC TIAS for each use. The following table summarizes the previous trip generation and the updated Lot 6 trip generation:



Lot 6 Trip Generation Summary

Use	Size	Weekday	AM Peak Hour	PM Peak Hour	Saturday	Saturday Peak Hour
TEC TIAS						
Apartments	34 Units	226	18	22	218	18
Office	4,424 sf	48	6	6	10	2
Retail	1,776 sf	78	2	4	74	8
Total		352	26	32	302	28
Updated						
Apartments	43 Units	286	23	28	276	23
Office	4,296 sf	47	6	6	10	2
Retail	1,867 sf	82	2	4	78	8
Total		415	31	38	364	33

In the TEC TIAS trip generation, reductions were applied for; people walking and biking to the site, the use of transit, and a mixed use reduction that captures shared trips between the different uses in the site. Additionally, the estimated number of pass-by trips was subtracted from the total trips to determine the primary trips. Pass-by trips are trips that are already on the roadway and decide to visit the site on their way to another location, while primary trips are new traffic that is being added to the roadway network by the development. GP forecast the updated primary trip generation by proportionally adjusting the reductions from the TEC TIAS based on the change in size of each use.

Lot 6 Primary Trip Generation Summary

Reduction	Weekday	AM Peak Hour	PM Peak Hour	Saturday	Saturday Peak Hour
TEC TIAS					
Subtotal	352	26	32	302	28
Walk/Bike	28	1	2	24	2
Transit	6	0	0	6	0
Mixed-Use	32	0	4	16	0
Pass-By	16	0	2	16	2
Total Primary	270	25	24	240	24
Updated					
Subtotal	415	31	38	364	33
Walk/Bike	33	1	2	29	2
Transit	7	0	0	7	0
Mixed-Use	38	0	5	19	0
Pass-By	19	0	2	19	2
Total Primary	318	30	29	290	29
Net Change	+48	+5	+5	+50	+5



As shown in the table, the updated trip generation is greater than the trip generation from the TEC TIAS, because two out of the three proposed uses have increased slightly in size. The primary trip generation increases from the TEC TIAS by five trip ends during each peak hour. This minor increase in trip generation is not anticipated to impact the conclusions of the original TEC TIAS. Furthermore, the minor forecasted trip generation of 30 peak hour trips ends or less would not be expected to have a measureable impact to the existing adjacent roadway network.

Hill Street Evaluation

GP was asked to evaluate the potential vehicular impact to Hill Street created by the DSA project, and more specifically as a result of Lot 6 development. It is our understanding Lot 6 will provide two levels of parking garage that are separate from each other. One access will be located off Foundry Place (public way) that accesses 31 parking spaces intended to service the Lot 6 tenants. The second parking area will be accessed via Hill Street (private way). The parking garage located off Hill Street will provide access to 16 parking spaces. Of these 16 parking spaces, 14 will provide spaces to the residential units that are located on the opposite side of Hill Street. This is a requirement of an easement for the Lot 6 property. The remaining 2 parking spaces will be provided for residences within the proposed Lot 6 building. It should be noted that as part of construction of the proposed building on Lot 6, several buildings will be razed, including two residential units which currently generate traffic and require parking. Since the Hill Street garage spaces will serve existing demand, no new vehicular trips are forecast to be generated.

In addition to the parking garage access on Hill Street, three parking spaces will be provided along Hill Street in front of Lot 6. One of these spaces will be short term (potentially 1 hour parking limit) It is expected this space will serve drivers who may be visiting the area for a short duration, inclusive of the residential units along Hill Street. The other two spaces will not have a time restriction. These spaces will not be promoted for, nor are they expected to attract those drivers visiting the non-residential uses in the area. Therefore, the increase of traffic on Hill Street as a result of these parking spaces is expected to be minimal.

Conclusions

The following is a summary of the conclusions:

- The updated primary trip generation for the proposed Lot 6 is 30 AM peak hour trip ends, 29 PM peak hour trip ends, and 29 Saturday peak hour trip ends. This is an increase from the TEC TIAS of 5 trip ends during each peak hour. This increase is not anticipated to impact the conclusions of the TEC TIAS, nor is the overall increase in traffic expected to have a measureable impact on the adjacent roadway network.
- The proposed DSA project is anticipated to have minimal impact on the existing traffic on Hill Street.

**Mitigation Methodology and Evaluation Memo
Deer Street Redevelopment
Portsmouth, New Hampshire**

Date: June 22, 2017
Subject: Mitigation Methodology and Evaluation
Deer Street Redevelopment – Portsmouth, New Hampshire
To: Ania Rogers, Steve Leonard
From: Randy Dunton / Emily Tynes, Gorrill Palmer (JN 3256)

Per your request, Gorrill Palmer (GP) has prepared this memo to address mitigation items identified in the TEC Traffic Impact and Access Study (TIAS) dated December 19, 2016 for the redevelopment of Deer Street in Portsmouth, New Hampshire. The purpose of this memo is to propose methodology and approaches to determine an appropriate contribution for Deer Street Associates (DSA) and the City Garage to mitigate traffic associated with their proposed developments.

The typical methodology for determining mitigation associated with a development includes identifying deficiencies or needs that are created or exacerbated by the development, then identifying mitigation that may improve the deficiency. If it is an existing deficiency, the development should contribute proportionally to the mitigation effort, so no one development is required to remedy an existing deficiency. It should be noted that this memo focuses on the DSA impact and that other developments in the area as well as the City would be expected to also contribute to the mitigation where appropriate.

Of special note, 46-64 Maplewood was included by TEC in the No Build traffic conditions before evaluating the impact of the City Garage and the DSA projects. It is our understanding that this project is not ahead of the DSA project in the approval process. This could potentially change the results and incorrectly lower the Level of Service (LOS) evaluations for the intersections reviewed in the Full Build Out projections for the City Garage and DSA developments.

Additionally, projects that follow the City Garage and DSA projects would be anticipated to contribute to mitigation items that are impacted by their traffic. These projects should follow similar methodology to determine their fair share contribution.



City Garage Mitigation Items Proposed by TEC

TEC proposed a variety of mitigation items for the City Garage at several locations throughout the study area. The following is a summary of the mitigation items at each location, with our comments following each item. We have stated our opinion if DSA should be responsible for contribution toward each mitigation item, and if so, have determined an appropriate contribution.

Deer Street, Deer Street Extension (now Foundry Place), and Bridge Street

City 1: Construct Foundry Place:

“Construct the Deer Street Extension [now called Foundry Place] near the existing apex of Deer Street / Bridge Street to provide access and egress for the proposed parking garage.”

Rationale: Although this item may be considered a mitigation item found in a typical traffic study, the construction of Foundry Place is directly related to the construction of the City Garage project, and therefore should not be an allocated mitigation cost.

Mitigation Item Allocation Summary

Conclusion	City Garage	DSA	46-64 Maplewood
Fair Share Percentage	100%	--	--

City 2a: Redlon & Johnson Sidewalk:

“Coordinate with the adjacent property and business operator, Redlon & Johnson, to investigate an opportunity to provide a new sidewalk (possibly with a landscape strip) and defined curb cuts and driveway aprons to create a more inviting walking environment on the west side of Bridge Street near the proposed parking garage.”

Rationale: The sidewalk is a reasonable mitigation item that should be allocated between all parties based on their pro-rata share of traffic generated. Using an average of the AM, PM, and Saturday peak hour traffic that each source is contributing to the specific area of the mitigation, we have calculated that DSA’s portion of this item should be 63.2% and the City Garage and 46-64 Maplewood is 29.2% and 7.6%, respectively.



Mitigation Item Allocation Summary

Conclusion	City Garage	DSA	46-64 Maplewood
Fair Share Percentage	29.2%	63.2%	7.6%

City 2b: Redlon & Johnson Landscape Strip

“Coordinate with the adjacent property and business operator, Redlon & Johnson, to investigate an opportunity to provide a new sidewalk (possibly with a landscape strip) and defined curb cuts and driveway aprons to create a more inviting walking environment on the west side of Bridge Street near the proposed parking garage.”

Rationale: The landscape strip does not meet the typical criteria for traffic mitigation associated with increased vehicle, pedestrian or bicycle traffic.

City 3: Restripe Deer Street:

“Restripe the Deer Street eastbound approach between the Deer Street Extension [now Foundry Place] and Maplewood Avenue, within the existing curb lines, to include a westbound receiving lane, an eastbound left-turn lane and an eastbound shared through/right-turn lane with shoulders on each roadway edge.”

Rationale: This is a reasonable mitigation item that should be allocated between all parties based on their pro-rata share of traffic generated. Using an average of the AM, PM, and Saturday peak hour traffic that each source is contributing to the specific area of the mitigation, we have calculated that DSA’s portion of this item should be 72.6% and the City Garage and 46-64 Maplewood is 19.0% and 8.4%, respectively.

Mitigation Item Allocation Summary

Conclusion	City Garage	DSA	46-64 Maplewood
Fair Share Percentage	19.0%	72.6%	8.4%

City 4: Tracking Pavement Markings:

“Stripe dashed "tracking" pavement markings along Deer Street through the intersection to provide positive guidance for westbound motorists on Deer Street as they cross Maplewood Avenue”



Rationale: This is a reasonable mitigation item that should be allocated between all parties based on their pro-rata share of traffic generated. Using an average of the AM, PM, and Saturday peak hour traffic that each source is contributing to the specific area of the mitigation, we have calculated that DSA’s portion of this item should be 73.1% and the City Garage and 46-64 Maplewood is 19.5% and 7.4%, respectively.

Mitigation Item Allocation Summary

Conclusion	City Garage	DSA	46-64 Maplewood
Fair Share Percentage	19.5%	73.1%	7.4%

City 5: Bridge Street No Left Turn Signs:

“Replace the existing 'No Left Turn' signs for the Bridge Street southbound approach to Islington Street and apply new right turn arrow and 'ONLY' pavement markings”

Rationale: This is a reasonable mitigation item that should be allocated between all parties based on their pro-rata share of traffic generated. Using an average of the AM, PM, and Saturday peak hour traffic that each source is contributing to the specific area of the mitigation, we have calculated that DSA’s portion of this item should be 65.9% and the City Garage and 46-64 Maplewood is 25.0% and 9.1%, respectively.

Mitigation Item Allocation Summary

Conclusion	City Garage	DSA	46-64 Maplewood
Fair Share Percentage	25.0%	65.9%	9.1%

Maplewood Avenue / Middle Street Corridor

City 6: City Adjust Signals for Garage Impact:

“Modify existing traffic signal timing and coordination parameters along Maplewood Avenue / Middle Street corridor between Deer Street and State Street, to optimize operations and efficiency”

Rationale: It is our opinion that the City Garage should be responsible for adjusting the signal timing to operate efficiently after their development is completed.



Mitigation Item Allocation Summary

Conclusion	City Garage	DSA	46-64 Maplewood
Fair Share Percentage	100%	--	--

City 7: Middle & State Signal Coordination:

“Reestablish traffic signal coordination at the intersection of Middle Street / State Street to allow for improved vehicle progression along the Maplewood Avenue / Middle Street corridor”

Rationale: This is a reasonable mitigation item that should be allocated between all parties based on their pro-rata share of traffic generated. Using an average of the AM, PM, and Saturday peak hour traffic that each source is contributing to the specific area of the mitigation, we have calculated that DSA’s portion of this item should be 62.4% and the City Garage and 46-64 Maplewood is 29.8% and 7.8%, respectively.

Mitigation Item Allocation Summary

Conclusion	City Garage	DSA	46-64 Maplewood
Fair Share Percentage	29.8%	62.4%	7.8%

Dynamic Parking Message Signs

City 8: Dynamic Parking Garage Signs:

“Consider additional dynamic parking garage message signs at key gateway locations within Downtown Portsmouth” (Recommendation: Install 3 New signs: 1. Maplewood Avenue southbound, north of Raynes Avenue; 2. Middle Street northbound, south of Court Street; 3. Memorial Bridge southbound, north of Bow Street. Replace 1 existing dynamic sign at Maplewood Avenue southbound, north of Russell Street)

Rationale: Dynamic Signs are typically considered “way finding” devices, and in our opinion do not meet the typical criteria for traffic mitigation associated with increased vehicle, pedestrian or bicycle traffic.



Multi-modal Accommodations

City 9: Sidewalks to Connect Garage:

“Construct a sidewalk connecting the proposed Deer Street Parking Garage to the sidewalk network along Deer Street and Bridge Street. The sidewalk should provide curbing to vertically separate vehicular and pedestrian traffic flows.”

Rationale: Although this item might be considered a mitigation item found in a typical traffic study, the construction of Foundry Place and connecting sidewalks are a stated part of the City Garage project and therefore should not be an allocated mitigation cost.

Mitigation Item Allocation Summary

Conclusion	City Garage	DSA	46-64 Maplewood
Fair Share Percentage	100%	--	--

City 10: Ramps & Driveway Aprons:

“Construct or reconstruct accessible ramps and driveway aprons along Deer Street between the proposed Deer Street Parking Garage and Maplewood Avenue to comply with Americans with Disabilities Act (ADA) standards”

Rationale: This item does not meet the typical criteria for traffic mitigation associated with increased vehicle, pedestrian or bicycle traffic.

City 11: Stripe Share-Use Markings on Deer & Bridge:

“Stripe shared-use lane markings "sharrows" along Deer Street and Bridge Street between Maplewood Avenue and Hanover Street”

Rationale: This is a reasonable mitigation item that should be allocated between all parties based on their pro-rata share of traffic generated. Using an average of the AM, PM, and Saturday peak hour traffic that each source is contributing to the specific area of the mitigation, we have calculated that DSA’s portion of this item should be 68.1% and the City Garage and 46-64 Maplewood is 23.3% and 8.6%, respectively.



Mitigation Item Allocation Summary

Conclusion	City Garage	DSA	46-64 Maplewood
Fair Share Percentage	23.3%	68.1%	8.6%

City 12: Bicycle Sharing:

“Provide opportunities for bicycle sharing at the parking garage”

Rationale: This item does not meet the typical criteria for traffic mitigation associated with increased vehicle, pedestrian or bicycle traffic.

City 13: Bicycle Racks:

“Provide bicycle racks to encourage bicycling, particularly for residents that may use the facility”

Rationale: This item does not meet the typical criteria for traffic mitigation associated with increased vehicle, pedestrian or bicycle traffic.

City 14: Public Transit Maps:

“Post COAST and Wildcat Transit maps and schedules within the parking garage to identify opportunities for visitors to utilize public transportation to/from Downtown”

Rationale: This item does not meet the typical criteria for traffic mitigation associated with increased vehicle, pedestrian or bicycle traffic.

DSA Mitigation Items Proposed by TEC

TEC proposed a variety of mitigation items for DSA at several locations throughout the study area. The following is a summary of the mitigation items at each location, with GP's comments following each item. GP has stated below our opinion if DSA should be responsible for contribution toward each mitigation item, and if so, GP has determined an appropriate contribution.



Deer Street, Deer Street Extension (now Foundry Place), and Bridge Street

DSA 1: Reset Curbs on Deer Street:

“Upon reconstruction of the sidewalk and other utility improvements along the northerly side of Deer Street specific to the new development, remove and reset the northerly curb line to provide a consistent cross-section along Deer Street, as restriped by the City’s parking garage project, while providing a standardized curb reveal for the reconstructed sidewalk along the site frontage;”

Rationale: This item does not meet the typical criteria for traffic mitigation associated with increased vehicle, pedestrian or bicycle traffic.

DSA 2: ADA Ramps at Maplewood & Deer:

“Provide updated ADA accessible ramps on the northwest and southwest corners of the Maplewood Avenue / Deer Street intersection that would be affected by the proposed sidewalk or roadway construction;”

Rationale: This item does not meet the typical criteria for traffic mitigation associated with increased vehicle, pedestrian or bicycle traffic.

DSA 3: Mill & Overlay on Deer & Bridge:

“In conjunction with the utility work for the DSA Development, provide a mill and overlay for the entire length of Deer Street and Bridge Street between Maplewood Avenue and Hanover Street”

Rationale: This item does not meet the typical criteria for traffic mitigation associated with increased vehicle, pedestrian or bicycle traffic.

Maplewood Avenue / Middle Street Corridor

DSA 4: “Do Not Block the Intersection” Pavement Markings & Signage:

“Install “Do Not Block Intersection” pavement marking and signage (R10-7) along the Maplewood Avenue / Middle Street corridor at the intersections with Deer Street, Hanover Street, Islington Street, and State Street”



Rationale: To determine if the traffic attributed to the DSA development is forecast to cause Maplewood Avenue queue lengths to exceed the available storage lengths between intersections, GP reviewed the 95th percentile queue lengths summarized in the TEC TIAS. Based on this review of the queue lengths on Maplewood Avenue at each of the intersections, there are several approaches where the 95th percentile queue lengths exceed the available storage lengths (either the length of a storage lane or the distance between intersections) with the 2018 or 2028 no-build volumes, indicating that the queue lengths are an existing condition. For example, at Deer Street, the Maplewood Avenue through lane is forecast to exceed the distance between intersections during the 2016 existing PM and Saturday peak hours.

The DSA development traffic is forecast to increase these queue lengths and exacerbate the existing condition, so an appropriate contribution by DSA would be reasonable. The contribution could be calculated based on the increase in traffic on the corridor due to the DSA development. Based on a review of the 2018 and 2028 traffic volumes, DSA contributes an average of 9.43% during the peak hours of the 2018 full build-out and an average of 8.71% during the peak hours of the 2028 full-build out, yielding an overall average of 9%. Using the same methodology, the City Garage and 46-64 Maplewood contribute approximately 3% and 1.5%, respectively.

Mitigation Item Allocation Summary

Conclusion	City Garage	DSA	46-64 Maplewood
Fair Share Percentage	3%	9%	1.5%

DSA 5: Concurrent Pedestrian Phasing at Maplewood / Middle Corridor:

“Introduce concurrent pedestrian phasing at intersections along the Maplewood Avenue / Middle Street corridor, between Deer Street and State Street.”

Rationale: Although the DSA development vehicular traffic is forecast to decrease the operation of some intersections in the corridor by one level of service, all of the intersections in the corridor are forecast to operate at an overall level of service ‘D’ or better during the 2018 full build-out condition, which is typically considered to be an acceptable level of service. During the 2028 full build-out conditions, two intersections fall to an overall level of service ‘E’ during a peak hour due to the additional development (both the City Parking Garage and DSA). Since the DSA traffic is anticipated to exacerbate an existing condition, but not create the deficiency, it would be reasonable for DSA to contribute an amount proportional to the traffic added to the corridor by their development and not be responsible for the entire cost.



In addition, the DSA development is not anticipated to add a significant amount of pedestrian traffic to the corridor, since most pedestrian traffic will stay on-site. A reduction of 8% was applied to the DSA development vehicular trip generation forecast, which indicates that an estimated 8% of site visitors will walk or bicycle to the DSA site. However, the City Parking Garage is anticipated to generate more pedestrians on the adjacent roadway network because people will park in the garage then walk to other downtown locations, whereas only the estimated 8% of DSA site visitors will be walking to and from the site. For these reasons, this item would not address a pedestrian deficiency created or exacerbated by DSA, and DSA should not be responsible for the entire cost of this item.

Similar to the previous mitigation item, an appropriate contribution by DSA for this item should be based on the traffic volumes. Based on a review of the 2018 and 2028 traffic volumes, DSA contributes an average of 9.43% during the peak hours of the 2018 full build-out and an average of 8.71% during the peak hours of the 2028 full-build out, yielding an overall average of 9%. Using the same methodology, the City Garage and 46-64 Maplewood contribute approximately 3% and 1.5%, respectively.

Mitigation Item Allocation Summary

Conclusion	City Garage	DSA	46-64 Maplewood
Fair Share Percentage	3%	9%	1.5%

DSA 6: Pedestrian Signal Heads at Middle & State:

“Replace existing pedestrian signal heads at Middle Street / State Street with new countdown pedestrian signal heads;”

Rationale: DSA is not anticipated to significantly increase the number of pedestrians on the adjacent roadway network. This proposed mitigation item does not address a deficiency that was created or exacerbated by the DSA development, since the pedestrian signal head would not necessarily improve the operation of the intersection. Therefore, it is our opinion that this item does not meet the typical criteria for traffic mitigation associated with increased vehicle, pedestrian or bicycle traffic.



DSA 7: Video Detection along the Corridor:

“Install video detection infrastructure along the Maplewood Avenue / Middle Street corridor, between Deer Street and State Street to improve detection capabilities along the coordinated corridor.”

Rationale: Similar to the previous mitigation item, this mitigation neither addresses a deficiency created by the development nor does it appear to address an existing deficiency exacerbated by the development. Therefore, it is our opinion that this item should not be the responsibility of DSA. The TEC TIAS stated that this item could act as a traffic monitoring system for the DSA development (in addition to all other developments in the area), but does not indicate why the development would need to be monitored.

DSA 8: Signal Phasing at Middle & Congress:

“Modify the vehicle signal phasing on the Middle Street northbound approach to Congress / Islington to provide a protected left-turn advance phase (with green arrow) to improve the northbound flow. This will require the replacement of one or more vehicle signal heads;”

Rationale: It is reasonable for the DSA development to be responsible for a portion of this item, since the DSA development is anticipated to increase the number of left turns on Middle Street northbound at Islington Street. Based on our review of the traffic volumes, DSA’s proportional share of traffic counts would be 62.3%. The City Garage share is 30.4% and the 46-64 Maplewood share is 7.3%

Mitigation Item Allocation Summary

Conclusion	City Garage	DSA	46-64 Maplewood
Fair Share Percentage	30.4%	62.3%	7.3%

DSA 9: DSA Signal Timing along Maplewood Corridor:

“Modify existing traffic signal timing, coordination parameters, and cycle lengths along the Maplewood Avenue / Middle Street corridor, between Deer Street and State Street, to optimize operations and efficiency in conjunction with the proposed concurrent pedestrian phasing.”

Rationale: DSA should be responsible for adjusting the signal timing to operate efficiently after their development is completed.



Mitigation Item Allocation Summary

Conclusion	City Garage	DSA	46-64 Maplewood
Fair Share Percentage	--	100%	--

Other Mitigation Items and Locations

According to the TEC study, “To enhance the walkability and bike-ability for the proposed development, TEC recommends that DSA should incorporate the following multi-modal accommodations as part of the DSA Development:”

DSA 10: Rebuild Sidewalk on North Side of Deer:

“Reconstruct the sidewalk along the northerly side of Deer Street between Deer Street Extension and Maplewood Avenue. Provide streetscape opportunities where applicable to enhance the plaza-style sidewalk along the site frontage. The sidewalk should provide curbing to vertically separate vehicular and pedestrian traffic flows”

Rationale: This item does not meet the typical criteria for traffic mitigation associated with increased vehicle, pedestrian or bicycle traffic.

DSA 11: ADA Ramps along Building Frontage:

“Construct or reconstruct accessible ramps along the building frontage, or other intersection corners, to comply with ADA standards if impacted by building construction or the intersection modifications noted above”

Rationale: This item does not meet the typical criteria for traffic mitigation associated with increased vehicle, pedestrian or bicycle traffic.

DSA 12: Secure Interior Bicycle Racks:

“Provide secure interior bicycle racks for residents or employees to encourage bicycling”

Rationale: This item does not meet the typical criteria for traffic mitigation associated with increased vehicle, pedestrian or bicycle traffic.



DSA 13: Public Transit Maps:

“Post COAST and Wildcat Transit maps and schedules within the several buildings as part of the development to identify opportunities for residents, patrons, and employees to utilize public transportation to and from Downtown.”

Rationale: This item does not meet the typical criteria for traffic mitigation associated with increased vehicle, pedestrian or bicycle traffic.

DSA 14: Market Street Roundabout Contribution:

“Provide contributory funds towards the Market Street Roundabout Project proportionally consistent with contributions made by the North End Portsmouth Development”

Rationale: A DSA contribution to the Market Street Roundabout appears to be reasonable. However, the contribution should be proportional to the percentage of traffic added to the existing volumes by the DSA development. The HarborCorp project was required to contribute \$50,000 for its increase in traffic of 6.6% during the peak hours of its 2015 build out year. The DSA development results in an increase of 3.2% during the peak hours of 2018 (the DSA build out year). Based on this information, the DSA contribution should be approximately 48.5% of HarborCorp’s contribution. The City Garage and 46-64 Maplewood contributions were determined using the same methodology.

Mitigation Item Allocation Summary

Conclusion	City Garage	DSA	46-64 Maplewood
Fair Share Percentage	15.2% of HC	48.5% of HC	4.5% of HC

DSA 15: Traffic Modeling Study Contribution:

“Provide contributory funds towards the Downtown Traffic Modeling Study Project at the discretion of the City”

Rationale: This item does not meet the typical criteria for traffic mitigation associated with increased vehicle, pedestrian or bicycle traffic.



Conclusion

We concur that some of the mitigation items discussed in the TEC TIAS would improve the operation of the study area intersections. However, for a number of items the appropriate contribution by DSA and the City Garage should be proportional to the impact the development traffic is anticipated to have on the existing roadway network. For many items, this contribution is proportional to the percent increase in traffic due to the development. The attached table summarizes the proposed allocation to the DSA project, the City Garage, and 46-64 Maplewood. Requiring a proportional contribution to mitigation items allows roadway improvement costs to be properly and reasonably allocated.



	TEC Identified Off-Site Improvements	Contribution %			Note
		City Garage	DSA	46-64 Maplewood	
	I. Not Traffic Study Mitigation Items for this Project:				
City 2b	Redlon & Johnson Landscape Strip	--	--	--	3
City 8	Dynamic Parking Garage Signs	--	--	--	1
City 10	Ramps and Driveway Aprons	--	--	--	1
City 12	Bicycle Sharing at the Garage	--	--	--	1
City 13	Bicycle Racks	--	--	--	1
City 14	Public Transit Maps	--	--	--	1
DSA 1	Reset Curbs on Deer Street	--	--	--	1
DSA 2a	ADA Ramps Maplewood & Deer (NW Corner)	--	--	--	1
DSA 2b	ADA Ramps at Maplewood & Deer (SW Corner)	--	--	--	2
DSA 3	Mill & Overlay on Deer & Bridge	--	--	--	3
DSA 6	Pedestrian Signal Heads at Middle and State Streets	--	--	--	2
DSA 7	Video Detection at maplewood and Middle Street Corridor	--	--	--	3
DSA 10	Rebuild Sidewalk on North Side of Deer	--	--	--	1
DSA 11	ADA Ramps along Building Frontage	--	--	--	1
DSA 12	Secure Interior Bicycle Racks	--	--	--	1
DSA 13	Public Transit Maps	--	--	--	1
DSA 15	Traffic Modeling Study	--	--	--	2
	II. Items Directly Related to City Garage Only:				
City 1	Construct Foundry Place	100%	--	--	6
City 6	City Adjust Signals for Garage Impacts	100%	--	--	7
City 9	Sidewalks to Connect Garage	100%	--	--	6
	III. Items Directly Related to DSA Only:				
DSA 9a	DSA Signal Timing along the Maplewood Corridor for DSA Lot 6 Impacts	--	100%	--	7
DSA 9b	DSA Signal Timing along the Maplewood Corridor for DSA Lot 3 Impacts	--	100%	--	7
DSA 9c	DSA Signal Timing along the Maplewood Corridor for DSA Lot 5 Impacts	--	100%	--	7
DSA 9d	DSA Signal Timing along the Maplewood Corridor for DSA Lot 4 Impacts	--	100%	--	7
	IV. Fair Share of Proposed Traffic Study Mitigation Items:				
City 2a	Redlon & Johnson Sidewalk	29.2%	63.2%	7.6%	4
City 3	Restripe Deer Street	19.0%	72.6%	8.4%	4
City 4	Tracking Pavement Markings	19.5%	73.1%	7.4%	4
City 5	Bridge Street No Left Turn Signs	25.0%	65.9%	9.1%	4
City 7	Middle & State Signal Coordination	29.8%	62.4%	7.8%	4
City 11	Stripe Shared Use Markings on Deer and Bridge	23.3%	68.1%	8.6%	4
DSA 4	"Do Not Block Intersection" Pavement Markings & Signage	3%	9%	1.5%	4
DSA 5	Concurrent Pedestrian Phasing at Maplewood / Middle Corridor	3%	9%	1.5%	4
DSA 8	Signal Phasing at Middle & Congress	30.4%	62.3%	7.3%	4
DSA 14	Market Street Roundabout Contribution compared to HarborCorp's	15.2%	48.5%	4.5%	5

1. Item may be completed as part of property owner's project.
2. Does not address a deficiency since the item may already exist or would not necessarily improve the operation of the intersection.
3. Does not address a deficiency created or exacerbated by the DSA development.
4. TEC and GP identified mitigation items with fair share proration.
5. Percentage of HarborCorp's contribution based on HarborCorp increase in peak hour traffic of 6.6% versus 3.2% for DSA.
6. Item is the responsibility of the City Garage.
7. Item is to be completed as part of the property owner's project.

* TEC TIAS report identified the 46-64 Maplewood project as through Planning Board approvals, and included their projected traffic in the No Build traffic counts.

ATTACHMENT G

**CONCEPTUAL CONSTRUCTION SEQUENCING REPORT WITH
UPDATED FIGURES**



GeoInsight®

Environmental Strategy & Engineering
Practical in Nature

June 16, 2017

GeoInsight Project 8090-000

Ms. Juliet T. H. Walker
Planning Director (Chair)
City of Portsmouth Technical Advisory Committee
City Hall, 3rd Floor
1 Junkins Avenue
Portsmouth, NH 03801

RE: Deer Street Associates, LLP
Conceptual Construction Sequence Document
Foundry Place and Deer Street Development
Portsmouth, NH

Ms. Walker and TAC Members:

On behalf of Deer Street Associates, LLP (DSA) and as requested by the City of Portsmouth (the City), GeoInsight, Inc. prepared this narrative for the Technical Advisory Committee (TAC) to accompany our 181 Hill Street design package for the July 5, 2017 hearing continuation. This narrative and attached materials provide conceptual information regarding the expected sequence of construction planned as part of the overall Deer Street, Bridge Street, Foundry Place and Hill Street development (the project). The purpose of this document is to assist TAC, other City representatives, and the public with a general understanding of how the project is currently likely to progress. The document also demonstrates that the sequence has already been planned sufficiently to identify that it will be achievable with minimal adverse impact to the surrounding community and properties that are located within the project area. DSA welcomes comments and continued discussion regarding the scheduling of the overall project.

For ease of simplified reference, this narrative retains the property identification nomenclature originally initiated by DSA as follows:

- Lot 1 – Proposed City Parking Garage;
- Lot 2 – Proposed Community Space;
- Lot 3 – 165 Deer Street;
- Lot 4 – 163 Deer Street;

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- Lot 5 – 157-161 Deer Street; and
- Lot 6 – 181 Hill Street.

This narrative also refers to the new roadway that will be constructed to access the City Garage as Foundry Place.

The overall aspects of the planned work are expected to include the following primary stages:

- Obtaining Permits and Approvals
- Hazardous Materials Clearance of Structures to be Demolished on Lots 1, 2, and 3
- Relocate Tenants on Lots 1, 2, and 3
- Demolition of Structures on Lots 1, 2, and 3
- Establish Parking and Construction Staging Areas on Lot 1
- Establish Parking and Construction Staging Areas on Lots 2 and 3
- Hazardous Materials Clearance of Structures to be Demolished on Lot 6
- Demolition of Structures on Lot 6
- Relocation and Separation of City Combined Sewer
- Installation of New Utilities in Foundry Place
- Install New Electric Services to Lot 6 Abutters
- Installation of New Utilities in Deer Street and Bridge Street
- Repairs to Disturbed Areas of Deer Street and Bridge Street
- Install New Electric Service to VFW and City Intersection Lights
- Remove Buried and Overhead Utilities on Lots 2 and 3
- Construction of City Garage
- Foundry Place Binder Course Paving
- Remove Buried and Overhead Utilities on Lot 6
- Construction of Lot 6 Building
- Repairs to Hill Street Pavement
- Temporarily Modify Traffic Pattern on Lot 4
- Construction of Lot 3
- Construct Lot 2 Community Space
- Temporarily Modify Traffic Pattern on Lot 4
- Hazardous Materials Clearance of Structure to be Demolished on Lot 5
- Relocate Lot 5 Tenants
- Demolition of Lot 5 Building
- Construction of Lot 5 Building
- Hazardous Materials Clearance of Structure to be Demolished on Lot 4
- Relocate Lot 4 Tenants
- Demolition of Lot 4 Building
- Construction of Lot 4 Building



The activities above are described in somewhat further detail, along with estimated construction start and duration dates, in *Attachment One - Detailed Timeline of Anticipated Foundry Place and Deer Street Development*. Certain milestone activities are also schematically illustrated in *Attachment Two – Foundry Place and Deer Street Development Sequencing Schematics*. Attachment Two also serves to better illustrate locations of possible temporary construction access and laydown areas, temporary construction fencing (where applicable), and likely construction traffic access, where applicable.

As described in Geolnsight’s separate cover letter accompanying the 181 Hill Street TAC design submittal package, a number of easements/consents/agreements will be required to coordinate and facilitate the Deer Street and Foundry Street development. This narrative and enclosures are not intended to supersede (or be in conflict with) formal easements and agreements currently expected to be necessary for the project. It is possible that there may also be future additional temporary (or permanent) agreements or easement that may benefit the coordination of work and anticipated schedules.

This narrative and enclosures were prepared in part based upon information provided by the City as of the date of this narrative. The proposed sequence of activities is fully intended to be conceptual and does not represent any guaranteed or final schedules by any parties. The City and/or DSA may need to make future construction schedule changes due to numerous considerations such as, but not limited to: changes in design by the City; unexpected results of construction bids; significant changes in construction means and methods, material prices, contractor availability, and/or tenant requirements; differing site conditions; weather events; and/or other unforeseen conditions.

Geolnsight appreciates the opportunity to work with TAC and interested members of the public on this project. If you have questions about the information in this cover letter or attached materials, please contact us at (603) 314-0820.

Sincerely,
GEOINSIGHT, INC.

Michael C. Penney, P.E.
Senior Engineer/Senior Associate



**ATTACHMENT ONE
DETAILED TIMELINE OF ANTICIPATED
FOUNDRY PLACE AND DEER STREET DEVELOPMENT**

FALL 2016 TO SPRING 2017

City of Portsmouth

Designed Foundry Place and City Garage
Obtained City Approval for Lot 1 Design
Obtained City Approval for Foundry Place Design

Deer Street Associates

Completed Hazardous Materials Clearance of Lot 2 and Lot 3 Structures
Relocated Tenants on Lots 2 and 3
Obtained Lots 2 and 3 Demolition Permits
Applied for Lot 6 Demolition Permits
Demolished Gary's Beverage
Begin temporary parking on paved portions of Lot 2 and Lot 3

SPRING 2017 TO SUMMER 2017

City of Portsmouth

Complete Hazardous Materials Clearance of Lot 1 and Lot 2 Structures
Relocate Tenant(s) on Lot 1
Obtain Lot 1 and Lot 2 Demolition Permits
Demolish Storage Building (165 R) west of Former Gary's Beverage
Demolish Lot 1 storage building (Hill Street #181R and #68A)
Establish Parking and Construction Staging Areas on Lot 1
Install Temporary Construction Barriers/Entrances around Lot 1
Relocate City Combined Sewer

Deer Street Associates

Install traffic controls around portions of Lot 2 and Lot 3
Complete Hazardous Materials Clearance of Structures to be Demolished on Lot 6
Relocated Tenants on Lot 6
Obtain Lot 6 Demolition Permit
Obtain City Approval for Lot 6 Design
Demolish Two Residential Buildings on Lot 6 (Hill Street #171 and #159)
Demolish Lot 6 Storage and Garage Buildings (#181 Hill Street)
Install Erosion Controls around Lot 6
Install Temporary Construction Barrier/Entrances around Lot 6
Establish Construction Staging Areas on Lot 2 and Lot 3 (separate from parking areas)



Construct Grading Easement on Redlon Johnson property

SUMMER 2017 TO SPRING 2018

City of Portsmouth

Install New Utilities and Utility Stubs in Foundry Place
Install New Utilities in Deer Street and Bridge Street
Install Binder Course Pavement over Repaired Areas in Deer Street and Bridge Street
Begin Construction of City Garage
Install Binder Course on Foundry Place

Eversource

Reroute Local Electrical Systems

Deer Street Associates

Install new Electric and Communications Services to Abutters southwest of Lot 6
Decommission Lot 6 Underground Utilities (stub back to Hill Street)
Relocate Utility Pole in Hill Street
Install New Electric and Communications Services to Lot 6 southeast Abutters
Decommission Lot 6 Overhead Utilities
Use Lot 3 and Lot 2 for Lot 6 Staging Areas
Begin Construction of Lot 6
Fill in Abandoned Combined City Sewer on Lot 2 and Lot 3

SPRING 2018 TO FALL 2018

City of Portsmouth

Complete City Garage Construction
Final Pavement on Foundry Place
Complete Foundry Place Garage Sidewalks
Install Temporary Sidewalks at DSA Frontage

FALL 2018 TO SPRING 2019

Deer Street Associates

Begin Construction of Lot 3 Building
Decommission Underground Utilities on Lot 3 (stub back to Deer Street)
Install New Underground Electric and Communications for VFW and City Traffic Lights
Install new transformers on Lot 4 (for Lot 4 and Lot 3)
Connect Lot 4 to New Underground Electric and Communications
Remove Overhead Utilities on Lot 2 and Lot 3
Make Initial Repairs to Hill Street Pavement Subgrade and Install Binder Course
Temporarily Modify Traffic Pattern on Lot 4 (for construction on Lot 3)





Connect Lot 6 to utilities in Foundry Place
Complete Lot 6 building
Use Portion of Lot 2 and Lot 3 for Construction Staging Areas
Connect Lot 3 to utilities in Deer Street
Temporarily Modify Traffic Pattern on Lot 4 for Lot 3 Construction

SPRING 2019 TO SPRING 2020

Deer Street Associates

Complete Lot 3 Building
Complete Lot 2 Community Space
Make Final Repairs to Hill Street Pavement (milling and overlay)
Hazardous Materials Clearance of Structure to be Demolished on Lot 5
Relocate Lot 5 Tenants
Install Erosion Controls around Lot 5
Install Traffic Controls around Lot 5
Install temporary construction barrier around Lot 5
Obtain Demolition Permit for Lot 5

SPRING 2020 TO FALL 2020

Deer Street Associates

Decommission Lot 5 Utilities (stub back to Deer Street)
Demolish Lot 5 building
Use north corner of Lot 5, north corner of Lot 4, and Lot 2 for Temporary Staging Areas
Begin Construction of Underground Garage and Building on Lot 5

FALL 2020 TO SUMMER 2021

Eversource

Connect Lot 5 transformer to new Lot 4 transformer

Deer Street Associates

Complete Lot 5 Building
Relocate Lot 4 Tenants into New Lot 5 Building

SUMMER 2021 TO FALL 2021

Deer Street Associates

Hazardous Materials Clearance of Structure to be Demolished on Lot 4
Obtain Demolition Permit for Lot 4
Modify Traffic Pattern and Controls around Lot 4
Install Erosion Controls around Lot 4





Install Temporary Construction Barrier around Lot 4
Demolition of Lot 4 Building
Decommission Utilities (stub back to Deer Street)
Begin Construction of Lot 4 Building
Use north corner of Lot 5, north corner of Lot 4, and Lot 2 for Temporary Staging Areas

FALL 2021 TO FALL 2022

Deer Street Associates

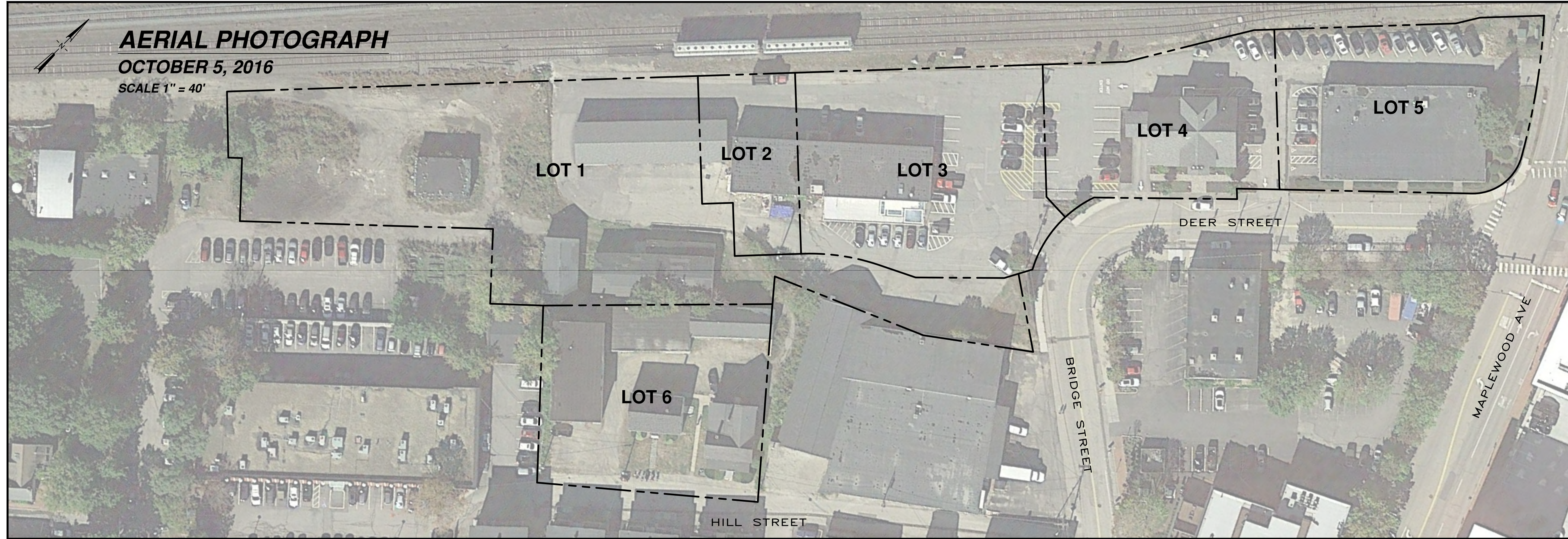
Complete Lot 4 Building
Install Erosion Controls around Lot 2
Install temporary construction barrier around Lot 2
DSA Constructs Lot 2 Proposed Community Space



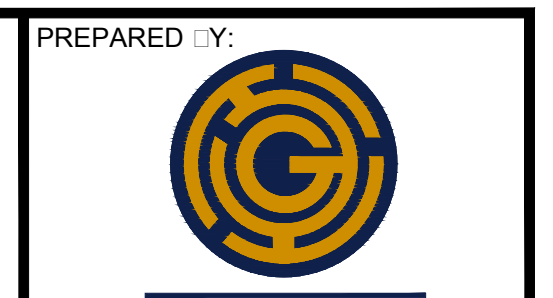


**ATTACHMENT TWO
FOUNDRY PLACE AND DEER STREET DEVELOPMENT
SEQUENCING SCHEMATICS**





AERIAL PHOTOGRAPH
OCTOBER 5, 2016
 SCALE 1" = 40'



GeoInsight
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 ENVIRONMENTAL STRATEGY AND ENGINEERING

OWNER/APPLICANT:
DEER STREET ASSOCIATES
 7 WANKS ROCK ROAD
 YORK HARBOR, ME 03911
 PH: (207) 363-3510

DEER STREET AND
FOUNDRY STREET DEVELOPMENT
CONCEPTUAL CONSTRUCTION SEQUENCING
DEER STREET ASSOCIATES
PORTSMOUTH, NH

REVISIONS	
DATE	DESCRIPTION

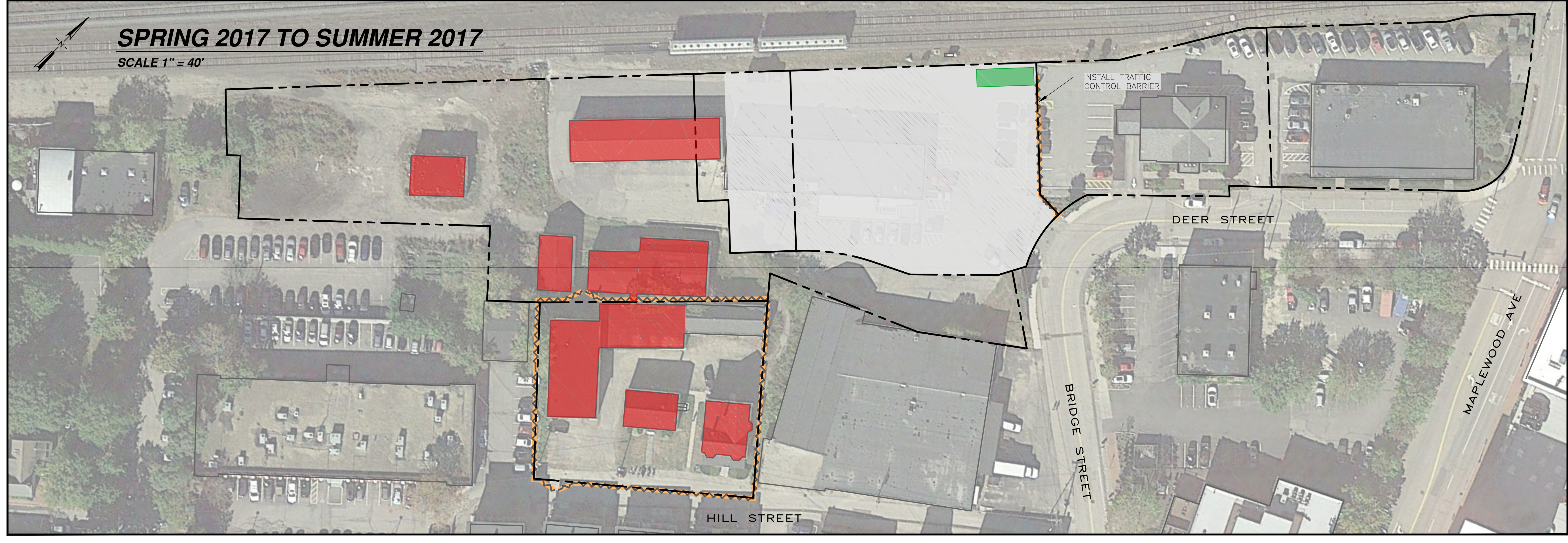
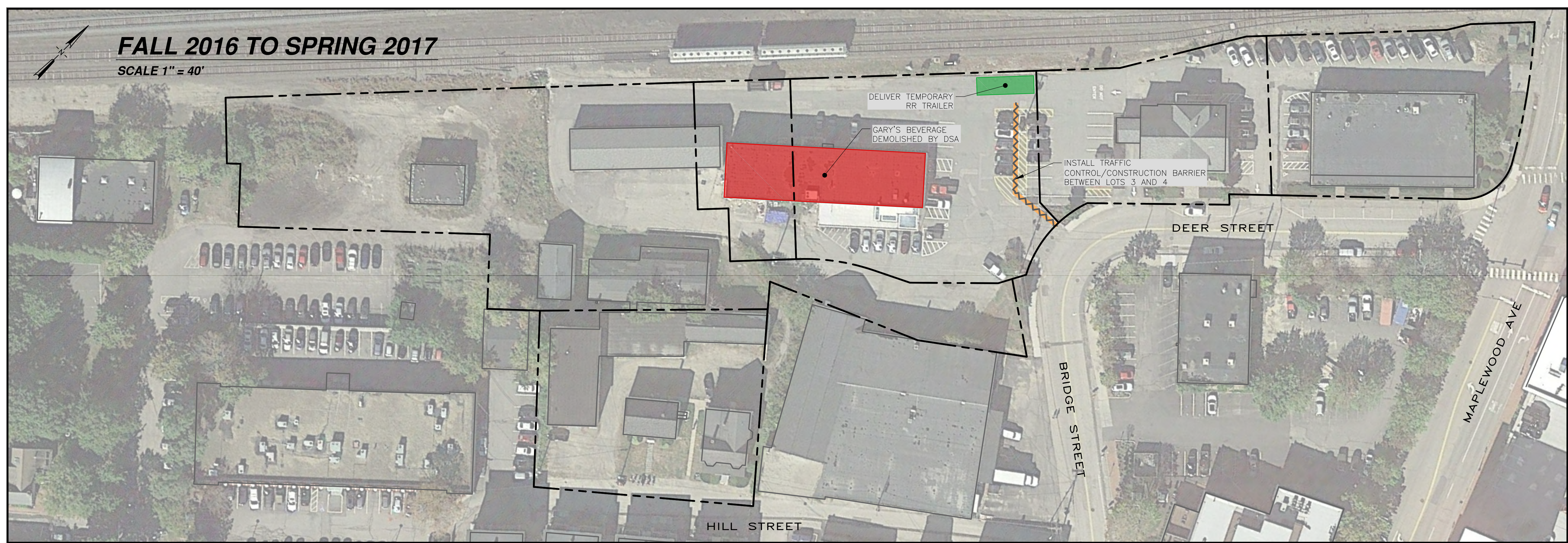
DWG SCALE: 1" = 40' PREPARED BY: STM
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	TEMPORARY CONSTRUCTION GATE

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EXISTING CONDITIONS AERIAL AND LEGEND

DRAWING #: **S NC.1**



GeoInsight
Practical in Nature
 100 GRANITE STREET, SUITE 5A
 MANCHESTER, NEW HAMPSHIRE 03101
 PH: (603) 314-0820 FAX: (603) 314-0821
 ENVIRONMENTAL STRATEGY AND ENGINEERING

OWNER/APPLICANT:
DEER STREET ASSOCIATES
 7 WANKS ROCK ROAD
 YORK HARBOR, ME 03911
 PH: (207) 363-3510

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 DEER STREET ASSOCIATES
 PORTSMOUTH, NH

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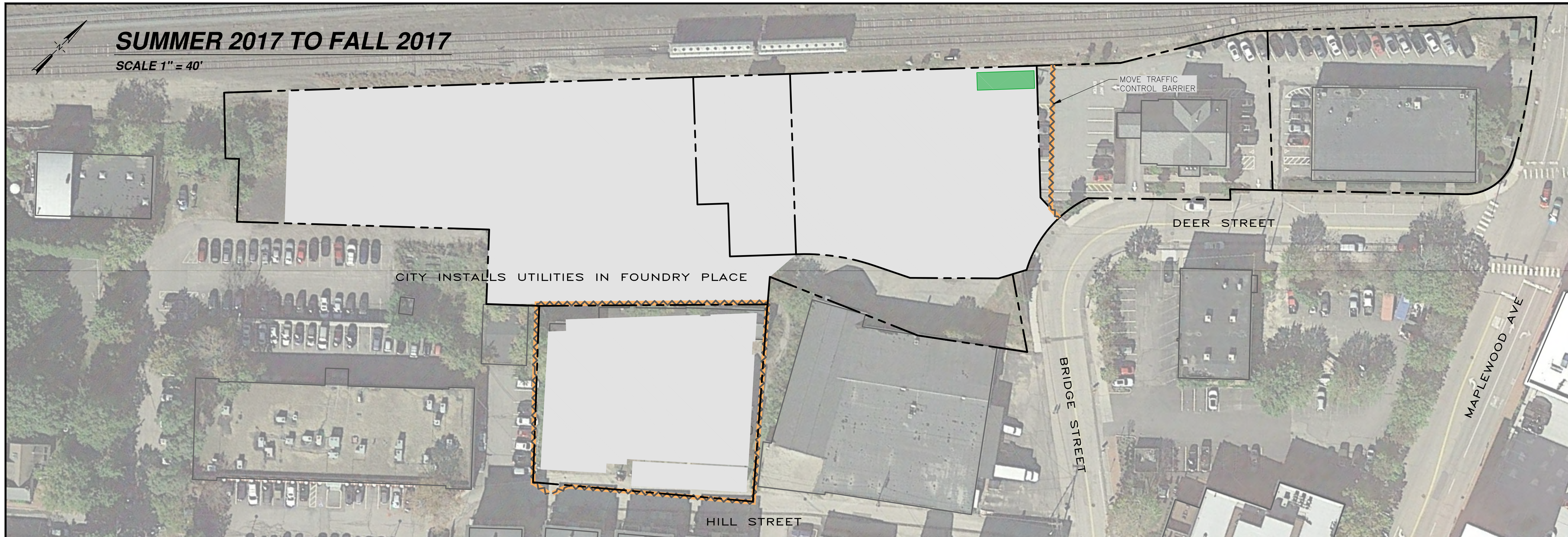
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SUMMER 2017 TO FALL 2017

SCALE 1" = 40'

CITY INSTALLS UTILITIES IN FOUNDRY PLACE

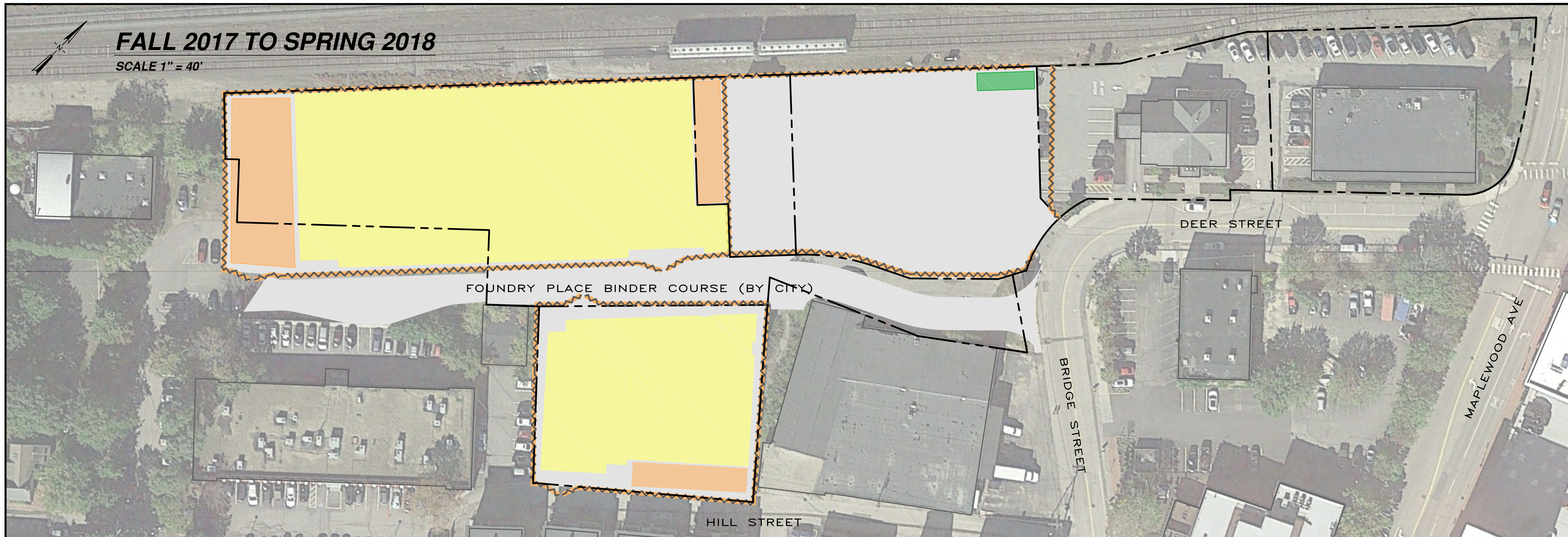
MOVE TRAFFIC CONTROL BARRIER

DEER STREET

BRIDGE STREET

HILL STREET

MAPLEWOOD AVE



FALL 2017 TO SPRING 2018

SCALE 1" = 40'

FOUNDRY PLACE BINDER COURSE (BY CITY)

DEER STREET

BRIDGE STREET

HILL STREET

MAPLEWOOD AVE



GeoInsight
Practical in Nature

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PORTSMOUTH, NH

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 PORTSMOUTH, NH

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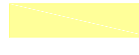






PREPARED BY:

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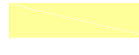








DEER STREET AND
 FOUNDRY PLACE DEVELOPMENT
 CONCEPTUAL CONSTRUCTION SEQUENCING
 DEER STREET ASSOCIATES
 PORTSMOUTH, NH

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DRAWING TITLE:

DRAWING #:

ATTACHMENT H

Building Utility Load Information

Hydrant Flow Test Report

Test Date 7/28/2014

Test Time 10:30

Location

Deer Street in front of VFW

Tested by

Atlantic Design Resources Ltd

Notes

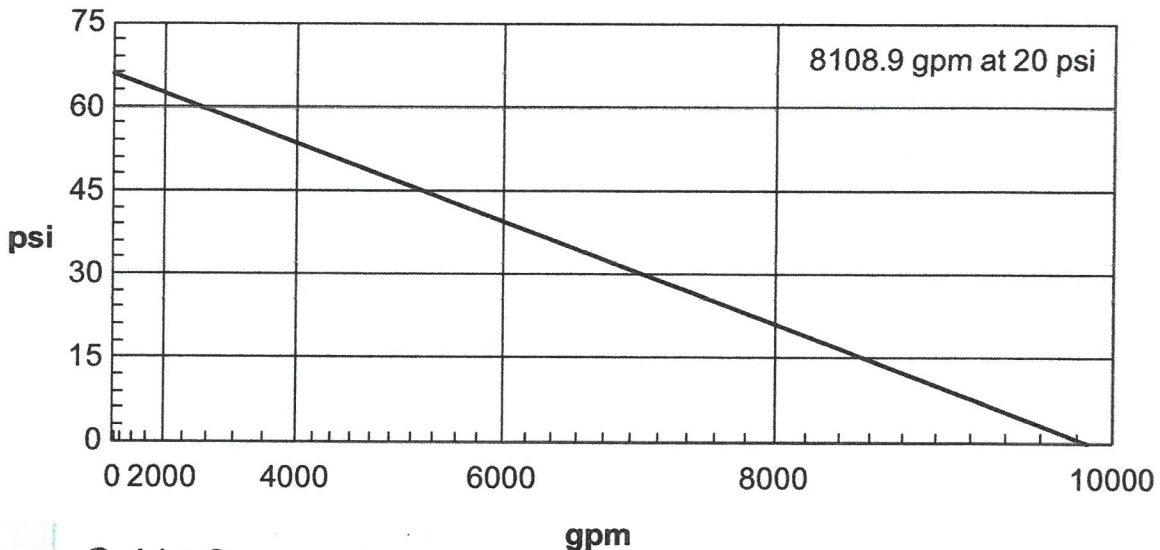
Read Hydrant

66 psi static pressure
64 psi residual pressure
3 ft hydrant elevation

Flow Hydrant(s)

Outlet	Elev	Size	C	Pitot Pressure	Flow
#1	3	4	.9	12	1489 gpm

Flow Graph



Gobbi Corporation

Joseph R. Gobbi, Jr.

Owner

P.O. Box 457

Greenland, NH 03840

P: 603-235-7842

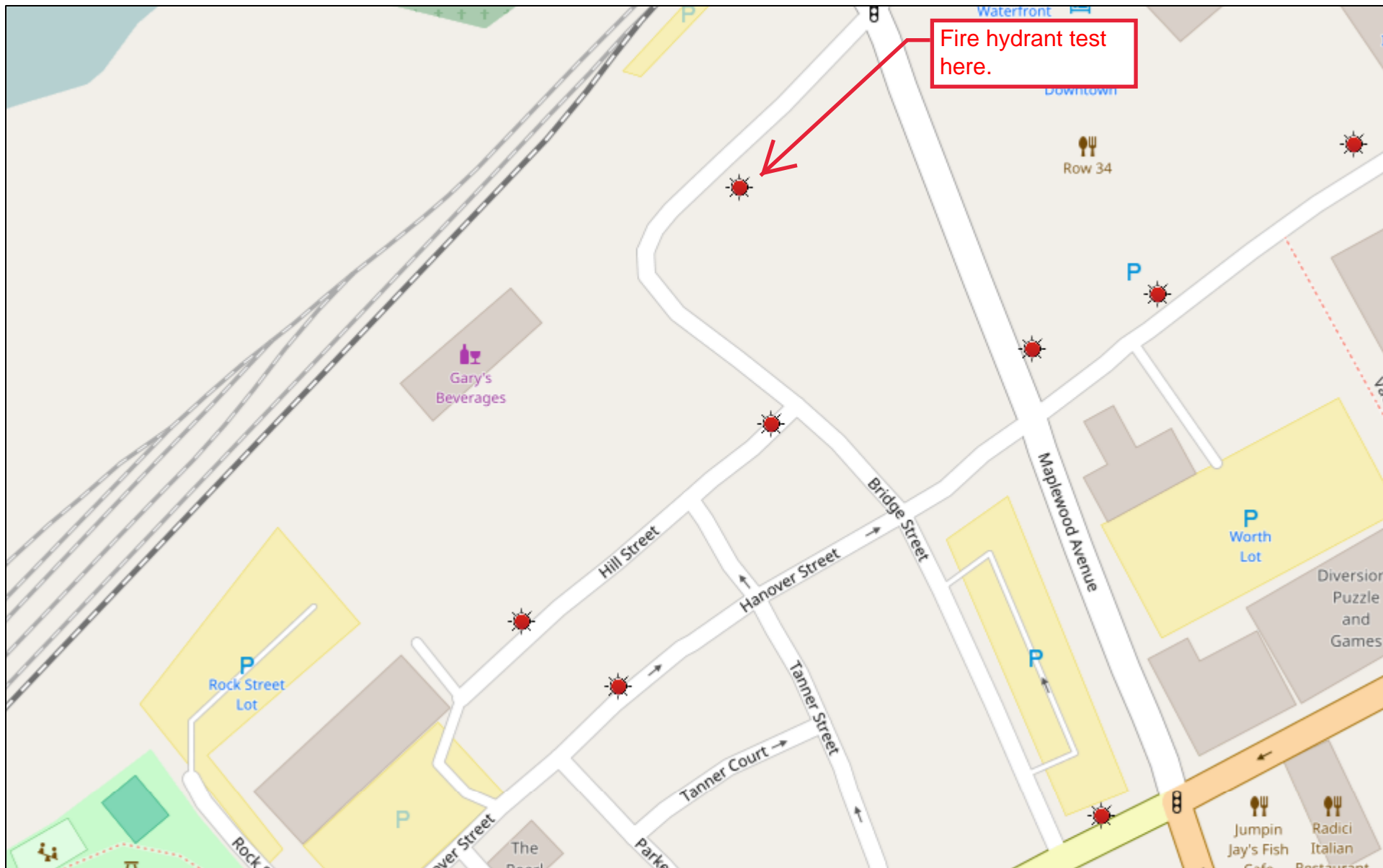
F: 603-427-1685

joegobbi@gmail.com

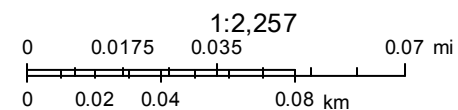
hydrant flow test program from www.igneusinc.com



Deer St_Hill St Fire Hydrants



October 23, 2016



Map data © OpenStreetMap contributors, CC-BY-SA

April 27, 2017

RE: JSA
Deer Street Associates
Building Concept
Utility Flow Rates **Lot 6**

Lot 3 Building Concept: Mixed Use – (Retail/Commercial, Business, Hotel)

Water flow rate: (Based on AWWA Table 5) 50 GPD per Bath 126 = 6,300 GPD
Sewer flow rates: (Based on Type of Establishments)
Retail Store @ 50 GPD per 1,000 SF = 550 GPD
Hotel @ 110 GPD per bedroom, 126 bedrooms = 13,860 GPD
Storm Runoff: (Based on Roof Area) = 0.538 CF/S
Gas Load: (Based on 25 BTU/SF) = 2,678,300 BTU/Hr

Lot 4 Building Concept: (Restaurants/Office)

Water flow rate: (Based on AWWA Table 5) 12 GPD per patron (2-restaurants/Office) 350 = 4,200 GPD
Sewer flow rates: (Based on Type of Establishments)
Restaurant @ 8 GPD per patron, 300 patron = 2,400 GPD
Office @ 15 GPD per employee, 50 employees = 750 GPD
Storm Runoff: (Based on Roof Area) = 0.485 CF/S
Gas Load: (Based on 25 BTU/SF) = 803,825 BTU/Hr

Lot 5 Building Concept: (Mixed Use – parking Garage/Retail/Apartments)

Water flow rate: (Based on AWWA Table 5) 50 GPD per Bath 63 = 3,150 GPD
Sewer flow rates: (Based on Type of Establishments)
Apartment @ 110 GPD per bedroom unit, 47 bedrooms = 5,170 GPD
Retail @ 50 GPD per 1,000 SF = 550 GPD
Storm Runoff: (Based on Roof Area) = 1.06 CF/S
Gas Load: (Based on 25 BTU/SF) = 1,934,950 BTU/Hr

Lot 6 Building Concept: (Apartments)

Water flow rate: (Based on AWWA Table 5) 50 GPD per Bath 63 = 3,150 GPD
Sewer flow rates: (Based on Type of Establishments)
Apartment units @ 110 GPD per bedroom unit, 43 bedrooms = 4,730 GPD
Retail @ 50 GPD per 1,000 SF = 90 GPD
Storm Runoff: (Based on Roof Area) = 0.97 CF/S
Gas Load: (Based on 25 BTU/SF) = 1,493,270 BTU/Hr

WATER USAGE CALCULATIONS

DEER STREET- PORTSMOUTH, NH - -Water/Drainage Calculation					
Building #6					
Business: 1st Flr					
Apartment Units: 43					
This calculation indicate flow rates per user group					
(note: Estimates are based on US standards for water usage and sewage strength.)					
Assumption: Business - 20 Employees					
TYPE OF ESTABLISHMENT	QUANTITY	UNIT	GALLONS/DAY	MINIMUM ALLOWABLE GPD FOR SYSTEM DESIGN	
Apartment Units	43	per guest	55	55	2365
Office, Restaurants	15	per employee	13	13	195
Business Area	2	per toilet room	500	500	1000
	0	per guest	45	45	0
	0	per employee	13	13	0
	0	per toilet room	500	500	0
Sub Total gal /day					3560
Sub Total gal/year					1299400
Sub Total CF/year					173717
Domestic Water Service - Ductile Iron Cement Lined	4" Diameter (DICL)				
Fire Water Service - Ductile Iron Cement Lined	6" Diameter (DICL) @ 750 GPM Standpipe Demand				
Storm Drain - Cast Iron	10" Diameter (C.I.)				
Sanitary Sewer - Cast Iron					

SEWAGE FLOW RATE ESTIMATING GUIDE

(Range and Typical are shown in gallons per unit)

Estimates are based on US standards for water usage and sewage strength.

Typical Wastewater Flow Rates from Commercial Sources

Source	Unit	Range	Typical
Airport	Passenger	2-4	3
Auto Service Station	Vehicle Served	7-13	10
	Employee	9-15	12
Bar	Customer	1-5	3
	Employee	10-16	13
Department Store	Toilet Room	400-600	500
	Employee	7-13	10
Industrial Building	Employee	7-16	13
(Sanitary Waste Only)			
Laundry (Self-Serve)	Machine	450-650	550
	Wash	45-55	50
Office	Employee	7-16	13
Restaurant	Meal	2-4	3
Shopping Center	Employee	7-13	10
	Parking Space	1-2	2

Typical Wastewater Flow Rates from Residential Sources

Source	Unit	Range	Typical
Apartment, High-Rise	Person	35-75	50
Low Rise	Person	50-80	65
Hotel	Guest	30-55	45
Individual Residence			
Typical Home	Person	45-90	70
Better Home	Person	60-100	80
Luxury Home	Person	75-150	95
Older Home	Person	30-60	45
Summer Cottage	Person	25-50	40
Motel			
with Kitchen	Unit	90-180	100
without kitchen	Unit	75-150	95
Mobile Home Park	Person	30-50	40

Typical Wastewater Flow Rates from Institutional Sources

Source	Unit	Range	Typical
Hospital, Medical	Bed	125-240	155
	Employee	5-15	10
Hospital, Mental Health	Bed	75-140	100
	Employee	5-15	10
Correctional Institution (Prison)	Inmate	75-150	115
	Employee	5-15	10
Rest Home	Resident	50-120	85
School, day			
w/ cafeteria, gym, & showers	Student	15-30	25
w/ cafeteria only	Student	10-20	15
no cafeteria; no gym	Student	5-17	11
School, boarding	Student	50-100	75

Typical Wastewater Flow Rates from Recreational Sources

Source	Unit	Range	Typical
Apartment, Resort	Person	50-70	60
Cabin, Resort	Person	8-50	40
Cafeteria	Customer	1-3	2
	Employee	8-12	10
Campground (developed)	Person	20-40	30
Cocktail Lounge	Seat	12-25	20
Coffee Shop	Customer	4-8	6
	Employee	8-12	10
Country Club	Member Present	60-130	100
	Employee	10-15	13
Day Camp (no meals)	Person	10-15	13
Dining Hall	Meal Served	4-10	7
Dormitory	Person	20-50	40
Hotel, Resort	Person	40-60	50
Store, Resort	Customer	1-4	3
	Employee	8-12	10
Swimming Pool	Customer	5-12	10
	Employee	8-12	10
Theatre	Seat	2-4	3
Visitor Center	Visitor	4-8	5

ATTACHMENT I

Archeological Report



MONADNOCK
ARCHAEOLOGICAL CONSULTING, LLC

116 FOX HILL ROAD ▪ STODDARD, NH 03464 ▪ 603-446-2366
WWW.MONADARCH.COM

December 12, 2014

Ms. Ania Szulc Rogers
G.L. Rogers and Company, Inc.
PO Box 100
York Harbor, ME 03911

Dear Ms. Rogers:

This letter report summarizes the results of the recently completed Phase IA Archaeological Sensitivity Assessment for the proposed mixed use/public parking garage project on Deer, Hill, and Bridge Streets in Portsmouth, New Hampshire. This study followed guidelines for archaeological surveys established by the New Hampshire Division of Historical Resources (NHDHR) and was authorized under Section 106 of the Historic Preservation Act of 1966 (P.L. 89-665), as amended, and as implemented by regulations of the Advisory Council on Historic Preservation (36 CFR Part 800).

Site Setting

The proposed project area is an irregular section of land south of North Mill Pond in an extensively developed section of Portsmouth (Figures 1-3, Plates 1-9). It is bounded on the south by Hill and Deer Streets (Plates 1, 2, 8, 9); on the north by an active railroad yard (Plates 3-5); on the east by Bridge Street and Maplewood Avenue (Plate 1); and on the west by Rock Street (Figures 1-3; Plates 6, 7). North Mill Pond is fed from the west by Hodgson Brook and is a tidal inlet of the Piscataqua River to the east. The project area evolved from tidal flats grassland with stands of scrub pine and oak with exposed bedrock in the late Holocene period to rocky pasture land at the time of European settlement.

The ten standing structures in the project area include a mix of industrial buildings associated with the railroad and the Portsmouth Steam Factory, modern commercial buildings, and two residential buildings, all of which are surrounded by asphalt parking areas and roads (Plates 1-9). The project area is underlain by soils classified as Urban Land on soil survey maps, reflecting the extensive modern and historic development and disturbance in this area, although adjacent areas are underlain by shallow, well-drained till soils. Part of the project area is on land created by filling in portions of the original mill pond in preparation for the construction of the railroad in 1841. Prior to this, the shore line was used for a number of commercial and industrial activities such as boat building, boat slips and distilleries.

Methodology

This archaeological assessment included background research, visual inspection of the project area, and preparation of this letter report. Background research included review of previous archaeological studies in the vicinity of the project area (Goodby 1999; Harrington 1981; Pinello 1989), archaeological site files at the NHDHR, historic maps (Hale 1813; Hurd 1892; Walling 1850, 1877), town histories (Adams 1825; Brewster 1869; Candee 1992), and soil survey data. Visual inspection of the project area included observation of prevailing terrain and conditions and taking of representative photographs (Plates 1-9). Martha Pinello, M.A., served as Principal Investigator and Matthew Labbe, M.A., served as Project Archaeologist.

Archaeological Context and Historic Background

There are no previously recorded Native American sites in the vicinity of the project area, although a Merrimack-like point was recovered during excavations at the Deer Street site (DS 2.8B) by archaeologists from the Strawberry Banke Museum well to the north of the project area (Goodby 1999). Given that the underlying soils in the project area are either fill from the construction of the railroad or till soils extensively disturbed by historic and modern development, intact pre-Contact Native American sites are not expected to be present.

While there are no previously recorded historic archaeological sites within the project area, background research indicated it has a long and complex history. By the late 17th century and early 18th century the vicinity of the project area had developed into a series of estates owned by Nathaniel Adams, Charles Brewster, and William Hill. To the east of the project area, Nathan Meserve built a mansion and shipyard along the south shore of the North Mill Pond in 1744. The estate was later improved by George Boyd in 1774 (Figure 4). In the years between Meserve's death at the siege of Fort Louisburg in 1758 and George Boyd's ownership, Peter Livius purchased the property. Livius received the right to dam the creek for the power "capable of turning 7 or 8 different kinds of works besides the 4 grist mills" (Candee 1992:29).

Certain street names and their persistent location give evidence of former land use, owners, and economic practices. These include Tanner, Deer, Hill, Parker, and Rock Streets. Tanner Street was named for the tanneries on the south shore of the tidal mill pond owned by the Parker family in the eighteenth and nineteenth centuries. Deer Street was named for the Deer Tavern located near Market Street; Hill and Parker are streets named for the families who owned homes and land on the streets bearing their surnames; Rock Street is named for the rocky pasture land west of Rock Street.

In 1832, George Raynes (1799-1855) purchased the estate and continued to expand the shipyard. The Raynes' shipyard was Portsmouth's largest. The mansion was razed in 1938. Evidence of the shipyard can be seen in an 1822 landscape painting by Portsmouth native Samuel Blunt (Figure 5). Shipbuilding took place on the tidal mud flats with buildings for storing supplies and tools on the shore. The rope walk and buildings associated with sail and block making were also on the shore. The rope walk is depicted on Hale's 1813 map (Figure 6). The Blunt painting clearly shows that ship building could take place along the shores of the pond and may not have been confined to the area of the ropewalk, particularly when several ships were being built at

once. Evidence of ship building has been excavated at other Portsmouth sites, including the shores of Puddle Dock, where brass and copper nails and wood shavings were excavated at the Follett Wharf site (Harrington 1981).

The arrival of the railroad in Portsmouth in the 1840s changed the landscape of the North Mill Pond's south shore. The first mills were wool and cotton spinning mills located along Islington Street. The railroad allowed industrial production to "ship" from factory to markets directly. The south side of the pond was filled in to allow for more railroad lines. The use of steam power in the 1840s also brought foundries and lumber yards with more development in the area south of North Mill Pond. The Frank Jones Brewery was located a few blocks west on the south side of Islington Street.

The project area is between two major Portsmouth thoroughfares by 1790; Islington Street, which was the main land entrance in the city, and Elm, currently known as Bridge Street. West of the project area a reference to Rock Pasture, located between Islington Street and the pond, gives evidence of the rural nature of the area before industrial development in the mid-19th century (Brewster 1859). The street patterns and names changed from those of the eighteenth and nineteenth century due to general evolution of the community and the nature of their new place and roles in it.

During the nineteenth century, the land between Islington Street and the south shore of the North Mill Pond was owned by merchants whose homes lined it. The project area includes a portion of the Portsmouth Steam Factory, later the Kearsage Knitting Mill, and the seat of Nathaniel Adams, the Portsmouth annalist. Charles Brewster wrote of graves and flat stones being found when the steam factory drain was excavated in 1847. The flat stones may have been grave stones or "stone pavers" quarried in Durham and laid throughout Portsmouth in the 1790s to provide dry walking surfaces. There is a tale of an inquiry about the grave and a workman is said to have replied, on being cleaned off, the following inscription was found: "Here lies Mrs. ZERVIAH, wife of Mr. WILLIAM PARKER, Died August 18, 1718, Aged 53years" (<http://www.seacoastnh.com/brewster/23.html> Accessed 4.30.2014). Brewster adds credibility to this story as he grew up and lived in the neighborhood in 1847.

The historic maps illustrate the great change in the project area between 1813 and 1904 (Figures 6-11). It is expected excavation in the project area would encounter changes in the landscape from rural pasture, shoreline industries and trades, to the back lots and garden space of homes, and then factory and railroad assisted disturbances.

The Hale Map (Figure 6) created after the 1813 fire in Portsmouth depicts streets, buildings, and areas of particular note such as the limits of the devastating fire. This map has proven to be fairly accurate in its representation of the physical and architectural features of Portsmouth.

The shoreline of the North Mill Pond from the period of settlement until the construction of the railroad in 1841 was a combination of domestic lots with timber-lined slips at Bridge Street and work areas on the tidal flats. Ship building along the tidal mudflats, tanneries, and distilleries were among the industries documented in the project area. During the eighteenth and nineteenth centuries three estates, were the homes of Charles Brewster, William Hill and Nathaniel Adams,

ringed the southern shore of the mill pond. A portion of the former Adams estate is within the project area. All of these similar elements, including dwellings with access to the waterfront, outbuildings, paths, gardens and fences.

The 1850 map of Portsmouth (Figure 7) provides a revealing contrast to the 1813 map (Figure 6), as it illustrates the changes to the project area once the railroad was constructed in the 1840s. The project area includes the rail yard, a portion of the Portsmouth Steam Factory complex, and buildings and associated lots on the north side of Deer Street.

The 1877 Bird's eye view and city maps of Portsmouth (Figures 8, 9) depict buildings, streets, and the rail yard within the project area. The Portsmouth Steam Factory is the large building complex just west of the project area. The adjacent buildings within the project area also part of the Steam Mill. These buildings were reorganized as the Kearsage Mill and later a foundry, then the Portsmouth Machine Company (Figure 10). Residential buildings with shops and trade establishments are in the northeastern section of the project area.

The 1904 Sanborn Insurance map (Figure 11) was produced to depict properties with fire insurance; consequently the buildings are depicted by building materials, the number of stories and their use. The buildings depicted on this map include: a furniture storage building, one-story building and a second two story building with a one story ell, as well as the Boston and Maine Railroad freight building, a platform and "GW" storage.

The project area is situated at the western end of Portsmouth's Italian immigrant community. Italian immigrants were drawn to the region as railroad workers, quarry men, and masons. This influx of began with large groups of single men in the late nineteenth and early twentieth century. They were followed by family members as finances allowed. The western end of the Italian neighborhood included houses serving as single family and boarding residences as well as work places for men and women. Bakeries, shops, and clubs were established, particularly at the intersection of Deer and Market Streets east of the project area (Gumprecht 2014).

In addition to the changes described above, additional changes are indicated in a history of Portsmouth Fire Department that records a number of fires in the project area since the early nineteenth century (Portsmouth Fire Department 2014). Apart from occasional fires, the project area remained relatively stable during the 20th century until a federal urban renewal program in the 1970-1980s slated the North End for demolition and redevelopment. The vacant spaces within the project area are in part the result of the failed Urban Renewal project where demolition was not followed by redevelopment (Gumprecht 2014). Extensive alterations to this part of Portsmouth resulted from demolition and relocation of buildings along Deer, Hill, and Bridge Streets as well as on Maplewood Avenue. As a result, modern structures are often located alongside the earlier buildings, while many older buildings were demolished and not rebuilt.

Recommendations and Conclusion

The project area has evidence of commercial, industrial, and residential development from the late eighteenth through the early twentieth century, which remains today in the streetscape and

standing structures. While significant portion of the project area are composed of 19th century fill from the construction of the railroad (Figures 6, 7), and others have undergone extensive disturbance from modern development, cultural resources are likely to remain buried within portions of the project area at the site of standing structures and in the locations of razed buildings and changed street patterns. These resources may provide information regarding the landscape of urban lots and transformation of a neighborhood from tidal stream and pond to an industrial center for the city of Portsmouth. The impact to these potential resources is dependent on the nature of the plans for redevelopment. Once specific impacts to the proposed project are identified, potential impacts to archaeological resources, if any, can be identified and a plan for additional investigation be developed.

Martha Pinello, M.A.
Principal Investigator

References Cited

- Adams, Nathaniel
1825 *Annals of Portsmouth, New Hampshire*.
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& Cline.

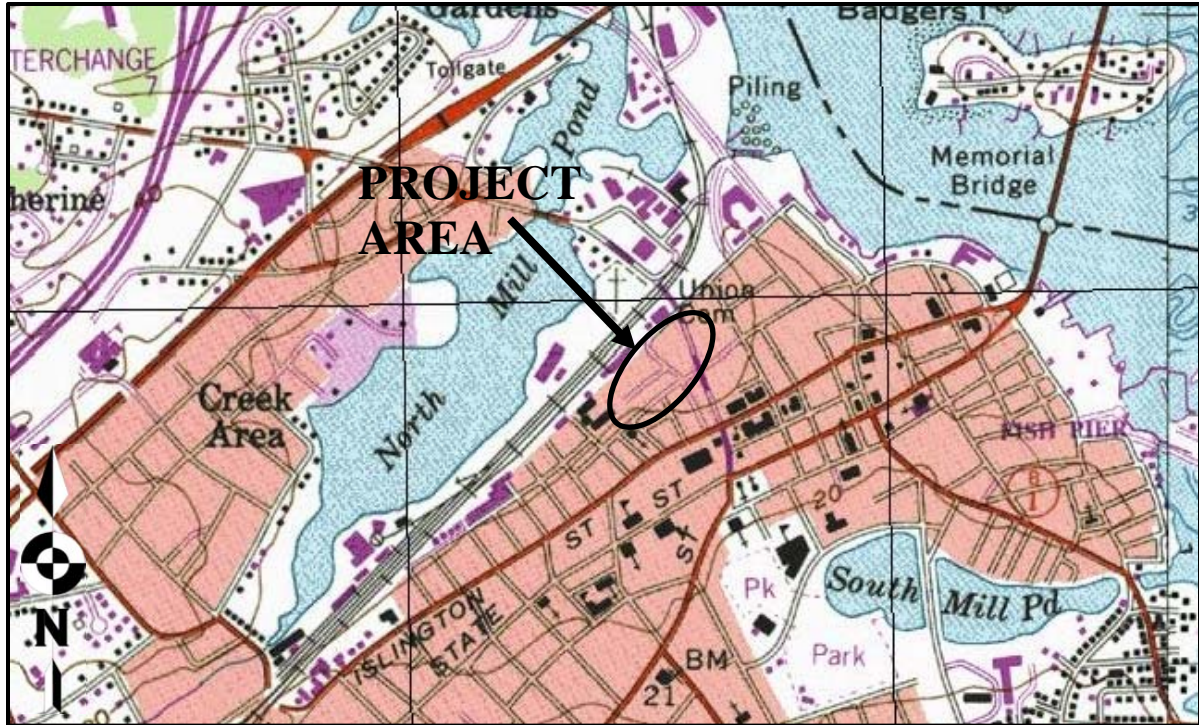


Figure 1. Project Area on USGS Portsmouth Quadrangle (1:24,000)

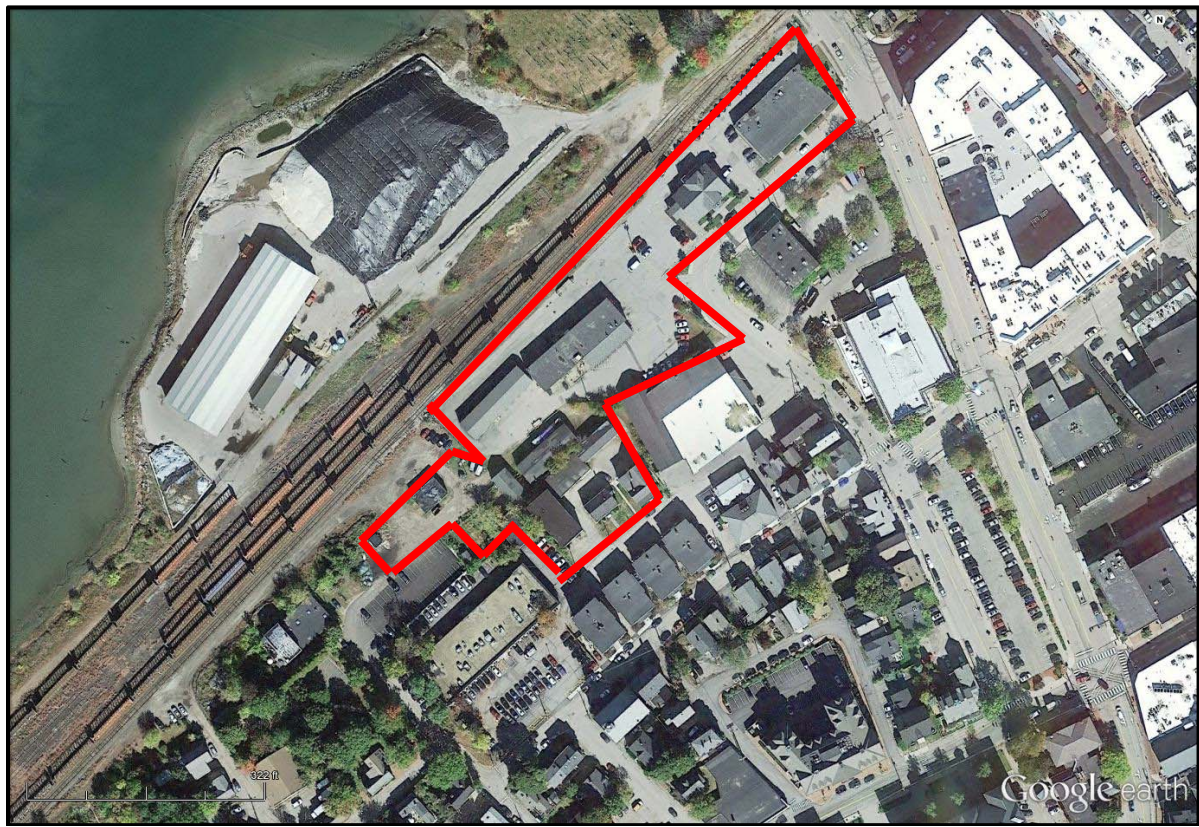


Figure 2. Project Area on Aerial Photograph Showing Extensive Development

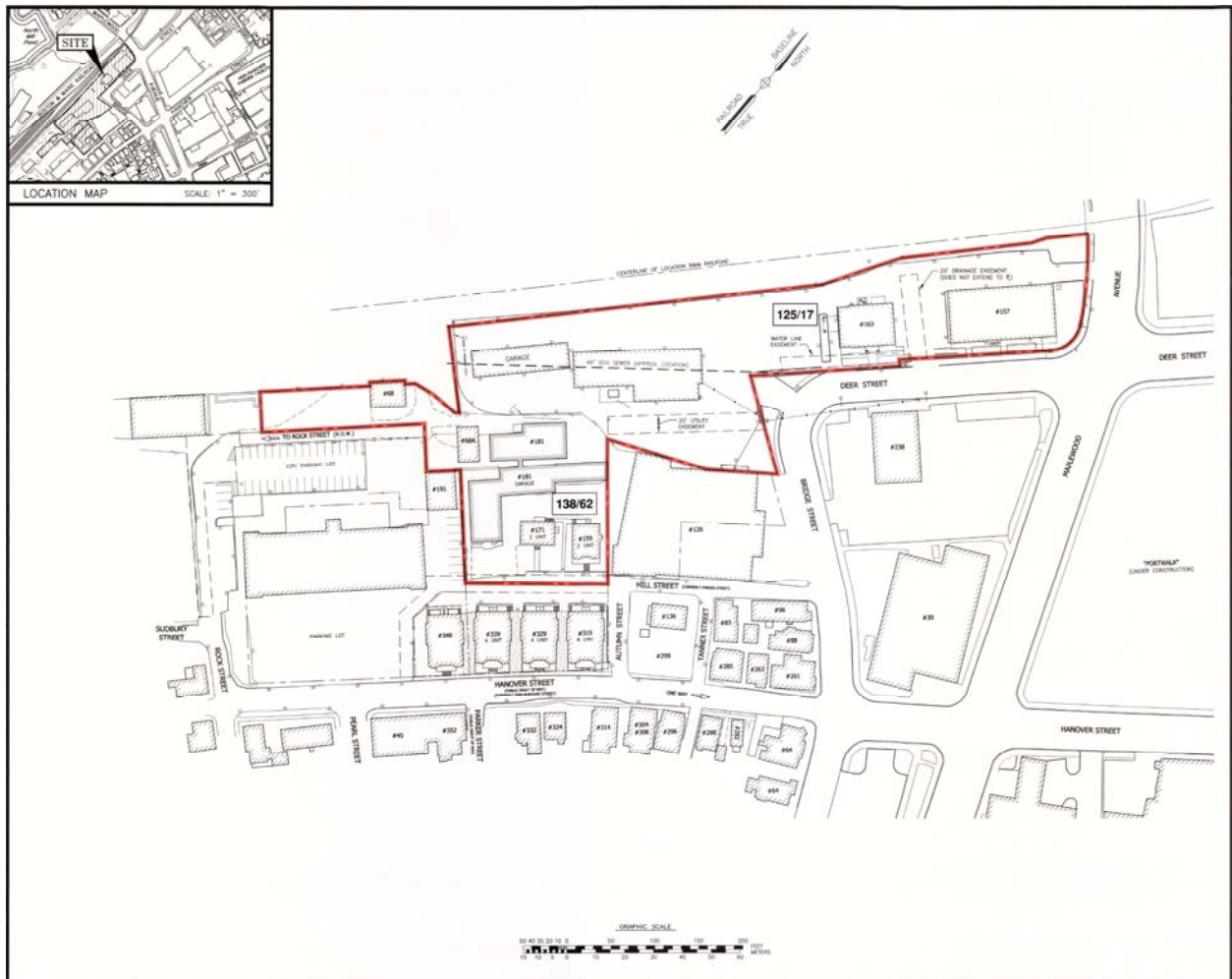


Figure 3. Project Area Existing Conditions and Boundaries



Figure 4. The South West Prospect of the Seat of Colonel George Boyd of Portsmouth, New Hampshire, 1744. Private Collection.



Figure 5. John S. Blunt (American, 1798-1835), North Mill Pond, Portsmouth, NH, circa 1822. Private Collection.

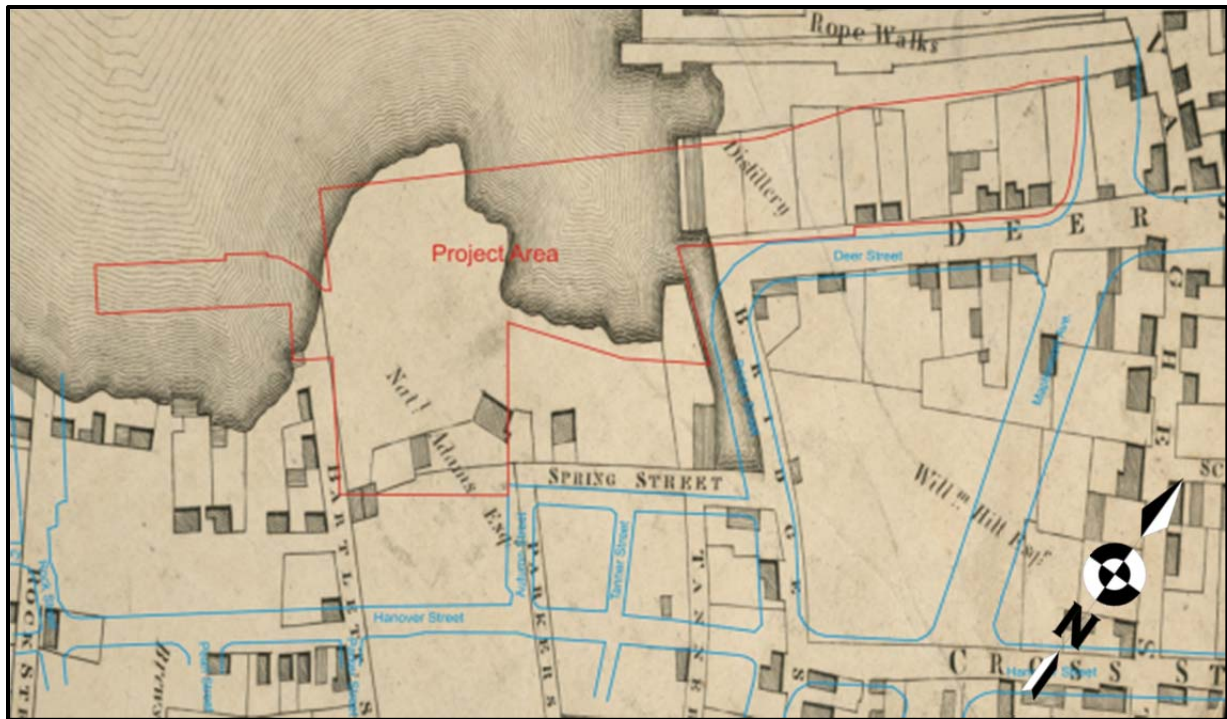


Figure 6. 1813 Map of Portsmouth with Project Boundaries Projected in Red and Modern Streets in Blue Overlay (Approximate Scale 1" = 200'; Hale 1813).

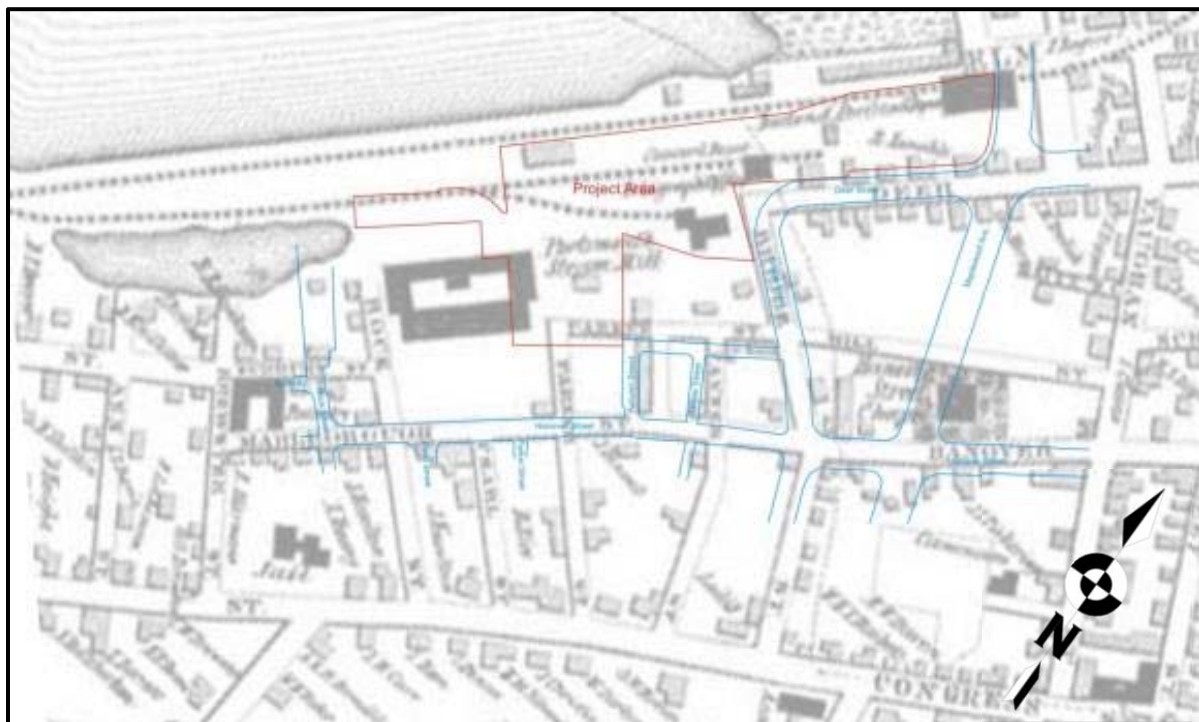


Figure 7. 1850 Map of Portsmouth with Project Boundaries in Red and Modern Streets in Blue Overlay (Approximate Scale 1" = 250'; Walling 1850).

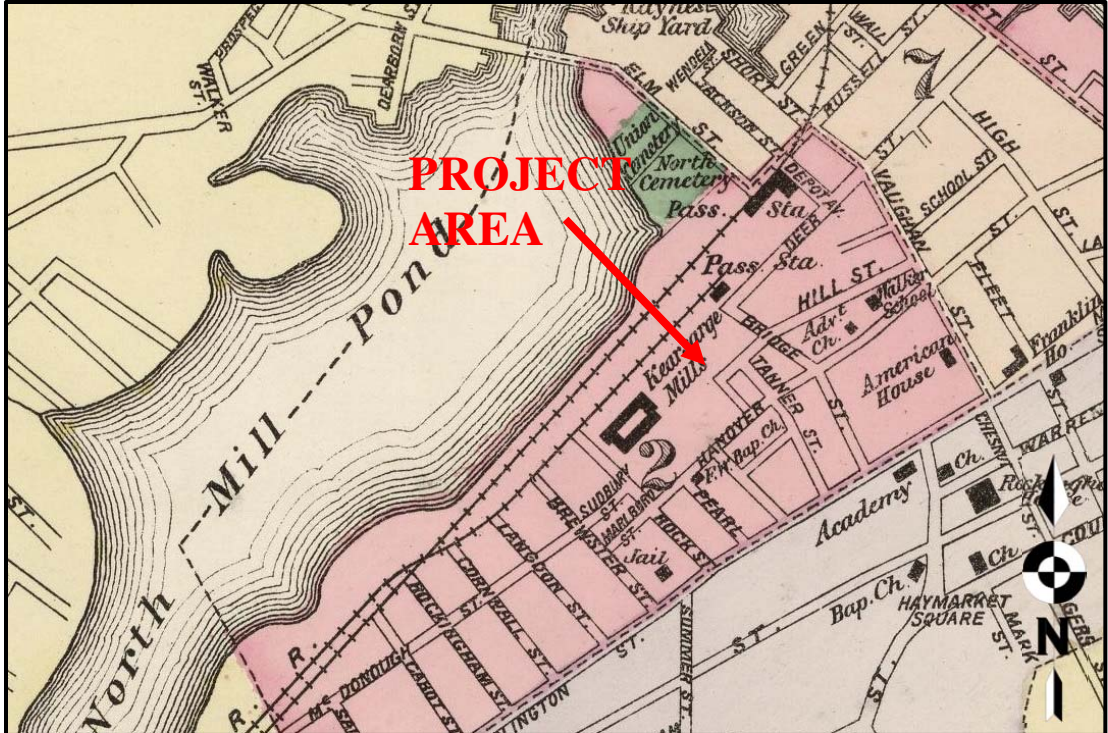


Figure 8. Project Area on 1877 Map of Portsmouth (Approximate Scale 1" = 400'; Walling 1877).

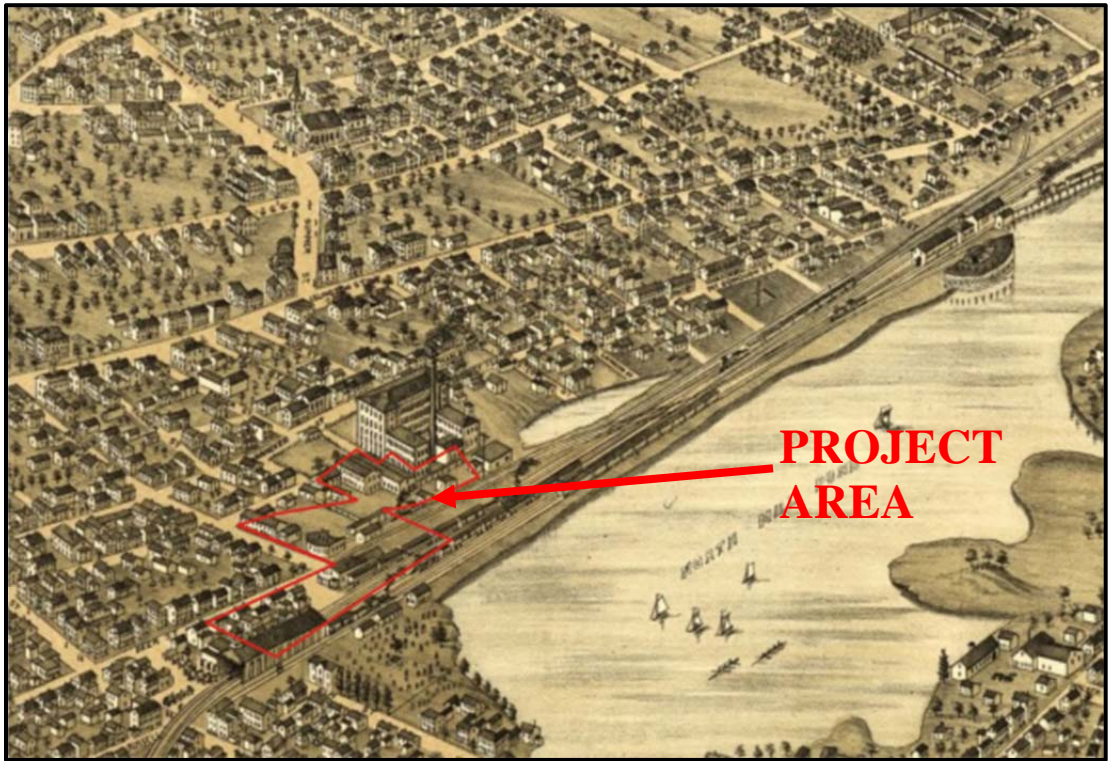


Figure 9. Project Area on 1877 Bird's Eye view of Portsmouth, View South (Ruger 1877)

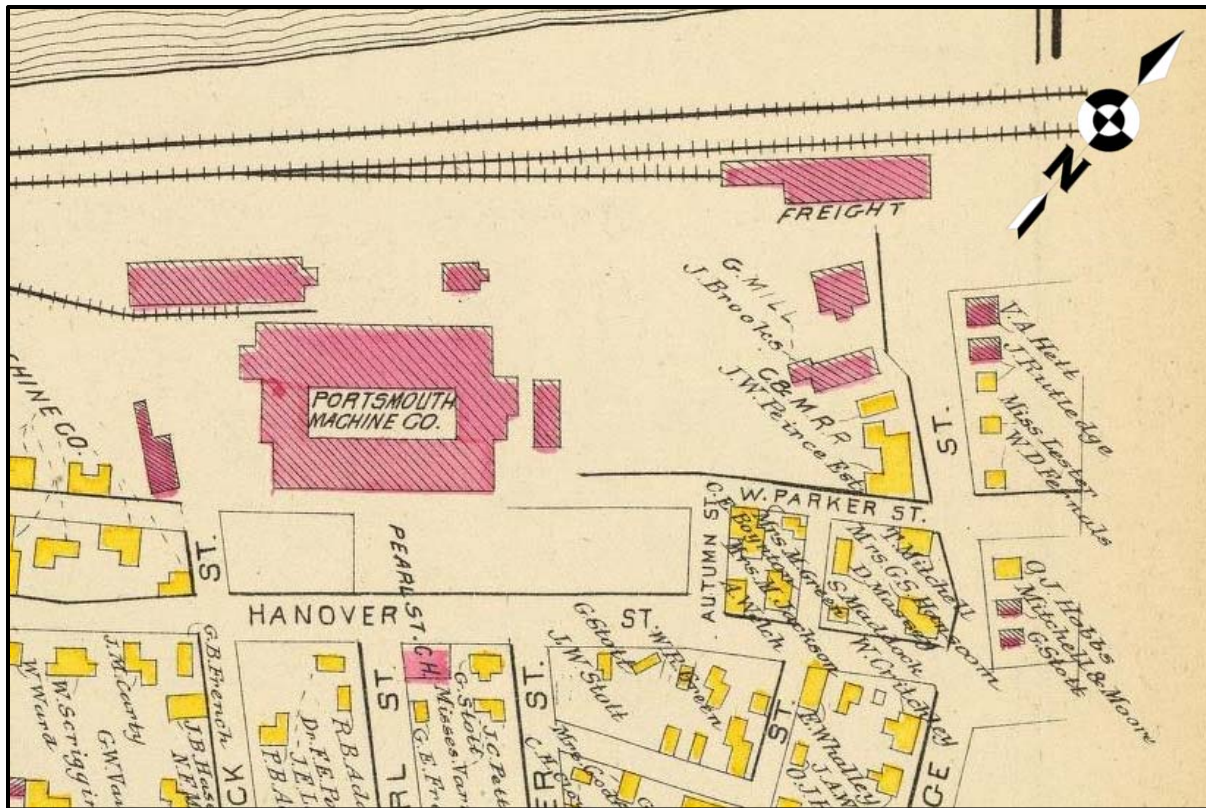


Figure 10. Project Area on 1892 Map of Portsmouth (Approximate Scale 1" = 150'; Hurd 1892)

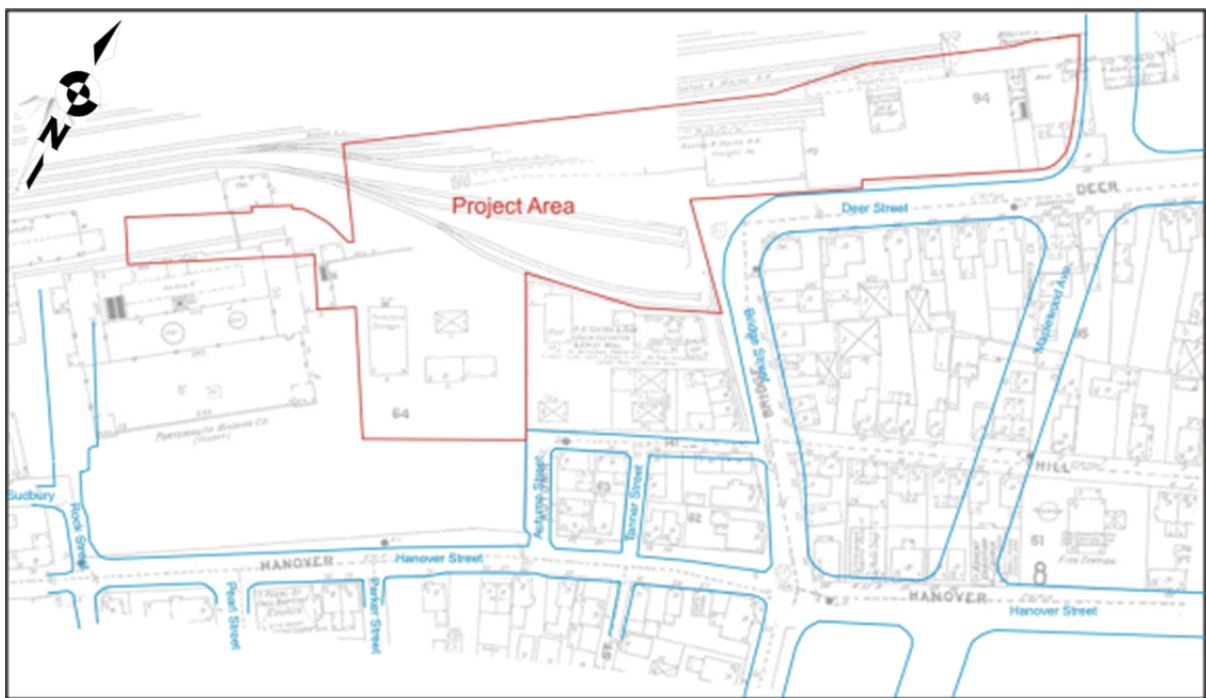


Figure 11. Project Area on 1904 Sanborn Insurance Map (Approximate Scale 1" = 175').



Plate 1. Northeastern Corner of the Project Area, Showing the Intersection of Deer Street and Maplewood Avenue, View West.



Plate 2. Gary's Beverages, 165 Deer Street, South Façade and Parking Lot, View Northwest.



Plate 3. Commercial Buildings and Parking Lot, View West. Note the railcars and tracks to the northwest of the image.



Plate 4. Brick Structure and Parking Lot with Railroad in Background, View North. This structure may be depicted on the 1850 map of Portsmouth as part of the railroad complex.



Plate 5. West Façade of Commercial Building, View East. The railroad tracks are to the north. This photograph was taken north of the structure in Plate 4 above. Note the brick building to the south.



Plate 6. Rock Street Community Garden South of the Rock Street Right of Way, View South. The building to the south in the background is not in the project area.



Plate 7. Fenced Storage Area East of the Rock Street Community Garden, South of the Rock Street Right-of-Way, View South. The brick building is not in the project area, but the two wooden structures are in the project area.



Plate 8. Hill Street, View West. The yellow dwelling and green garage on the north side of the street are in the project area. The brick building at the center of the picture, part of the Portsmouth Steam Factory, is not in the project area.



Plate 9. Hill Street, View Northwest. The three wooden structures in the image are in the project area.

ATTACHMENT J

Sustainable Strategies Summary



Deer Street Development
Site Plan Review 08-10-2017
Sustainable Strategies Summary – Lot 6

ENERGY

The project's primary focus for sustainability is energy conservation. Top priority is given towards design and engineering strategies which will reduce the building's carbon footprint well beyond what is required by code, in effort to approach as closely as possible, net zero energy usage. Project Goal is to achieve minimum 50% Energy Use Index (EUI) Reduction beyond code compliance (IECC2009) using the following strategies:

- Utilize energy modeling to analyze effective design scenarios. The attached energy model demonstrates project parameters and goals with corresponding design strategies and anticipated performance of **54% energy use reduction.**
- Provide highly enhanced thermal envelope, with additional insulation, triple glazed windows, and reduced air infiltration.
 - Roof: Proposed = r61.1 (code minimum = r21.9)
 - Walls: Proposed = r35.7 (code minimum = r18.3)
 - Floor slab on grade: Proposed = f0.36 (code maximum = f0.73)
 - Fenestration: Proposed = u0.25 (code maximum = u0.35); proposed average shgc0.3 (code maximum = shgc0.4)
 - Air infiltration: Proposed = 0.13achnat/2.0ach50 (code maximum = 0.47achnat/7.0ach50)
- Achieve Energy Star certifications and associated rebates.
- Use Heat Recovery for all ventilation.
- Commission energy using systems; air infiltration testing.
- LED lighting throughout.
- Renewable Energy
 - Solar Hot Water system for residential spaces.
 - Accommodate for future on-site Solar Electric photovoltaic array for portion of electric needs.
- Building Operations
 - Use industry tools to annually monitor and benchmark buildings.
 - Train staff on proper building operation with comprehensive Facilities Staff Training and Systems Manuals.
- Reduce Low level ozone (smog)
 - Provide safe and secure bicycle storage within building's covered parking levels.
 - Use low-VOC and regionally sourced products for construction and operation.

SITE

- Redevelop a brownfield qualified site with soils removal and containment strategies.
- Prevent Erosion / Sedimentation of neighboring waterways by meeting NH-DEP wetlands & EPA SWWPP requirements.

WATER

- Protect water quality – engineered storm water systems
- Conserve Water -- Target 30% reduction in fixtures water use over building code, meeting EPACT 2005.

MATERIALS & RESOURCES

- Minimize waste (during construction and operation)
- Use regional materials

INDOOR ENVIRONMENTAL QUALITY

- Thermal comfort -- Meet ASHRAE 55 Thermal Comfort Code. Address thermal envelope per above.
- Provide multiple zones of heating and cooling in each apartment.
- Indoor air quality (before and during occupancy)
 - Meet ASHRAE 62 Ventilation Code in all occupied spaces.
 - Meet LEED IEQ credit requirements.
 - Utilize hypoallergenic building materials and establish ongoing maintenance & cleaning products program using hypoallergenic products.
- Views / connection to outdoors -- Provide views to outdoors for every regularly occupied space.
- Daylighting -- Achieve Daylight Factor of 2% minimum for every regularly occupied space.
- Individual controls -- Provide individual controls for temperature and lighting.

RESILIENT BUILDINGS

— GROUP —

Superior energy performance

Energy Modeling Results

Deer Street – Apartments (LOT 6)

Preliminary 3-22-17

Schematic Design Energy Modeling was performed for the proposed Deer Street Apartments (Lot 6) using NREL's Energy-10 modeling program. TMY Weather files for Concord, NH were used. Assumptions were based on Schematic Design drawings dated 1/17/17 and emailed notes from JSA Architects. 2 models were run to demonstrate NH State Energy Code and 50% Savings Target: Code (IECC 2009) and "As-Proposed" (Option B). For the baseline IECC 2009, Climate Zone 5 prescriptive measures were used. The assumptions used for both modeling runs are described in the table below.

The "As-Proposed per 1-17-17 Drawings" **design reduces total energy USE by 54%** and energy COST by 38% over the "code-compliant" building.

The first table below describes the assumptions used for the 2 models. The results of the modeling are shown in the second table. The colored charts depict the Energy Use Intensities (EUI's) of the IECC 2009 vs. "As-Proposed" models and the energy cost per square foot (by use) of the same two model runs.

Assumptions:

	Per IECC 2009 (Climate Zone 5)	As-Proposed	Potential further options
Size: SF/Floor and # of floors	10,997 SF/Floor 5 stories	same	same
Wall Construction	2x6 steel studs with R13 Fiberglass batts and R7.5 continuous foam exterior R eff = 18.3	2x6 steel studs with 3" closed cell SPF, gyp board sheathing, 3.7" Hunter Xci Ply panels and brick or fiber cement siding. R eff = 35.7	
Roof Construction	Flat roof with 4" XPS R eff = 21.9	Flat roof with 12" XPS c.i. R eff = 61.1	
Floor Construction	Slab on grade – no insulation required F Factor = 0.73	Slab on Grade with R10 XPS under entire slab F Factor = 0.36	
Windows Type and amount	Fixed Double (sizes vary) 90 south / 87 east / 56 north / 84 west (equivalent)	Fixed Triple (sizes vary) 90 south / 87 east / 56 north / 84 west (equivalent)	Lessen amount of east and west glass
Window Shading	none	none	Recessed face of glazing at southerly exposures
Glazing (U / SHGC / VLT)	U=0.35 assembly SHGC = 0.40	U=0.25 assembly SHGC = 0.30 on North, 0.2 on East and West, 0.4	

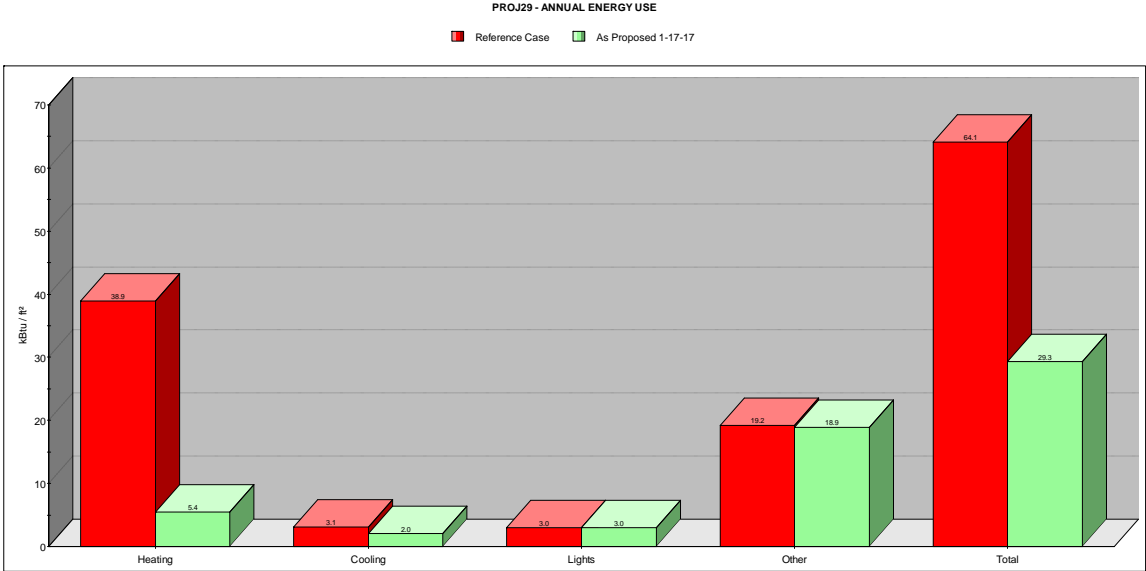
	VLT = n/a	on South VLT = n/a	
Infiltration	0.47ACH nat / 7.0ACH50 (No req. in code. Used IECC2009 = 7.0 for residential)	Reduced to 0.133ACHnat. / 2.0ACH50.	
HVAC System	Gas Furnaces w/ DX Cooling	same	
Heat Efficiency / Cool Efficiency	80 AFUE Boiler 10.7 SEER (9.7 EER)	92 AFUE 14.0 EER	
Economizer for cooling?	NO	Yes, Fixed Dry Bulb (60 deg)	Enthalpy Control
Mechanical Ventilation	3,500 CFM with no HRV.	3,500 CFM via 50% effective ERV	Increase HRV Effectiveness
Occupied Schedule	Continuous for Heating, Cooling and "other" loads	Same	Same Add Setback and Setup Lower DHW and Plug Loads
Heating T'stat	70 deg, no setback	Same	70 deg, setback to 66 deg
Cooling T'stat	78 deg, no setup	Same	78 deg, setup to 80 deg
Lighting Load (w/sf)	0.2 W/SF (Residential)	Same	Same plus OCCUPANCY SENSORS in Common spaces
Daylight Dimming	none	none	none

Hot Water loads / Plug Loads / # of people	0.66 W/SF hot water 0.36 W/SF plug loads 137 people	All Same	Switch to HP DHW, Solar
Solar Hot Water	none	none	YES
Solar Electric	none	none	none
Assumed Gas Costs	\$1.00 / therm Confirm gas price	same	same
Assumed Electric Costs	\$0.10 / KWH and \$10.00 / KW demand charge	same	same

RESULTS

	Per Code (IECC 2009)	As Proposed	Potential further options
Energy Use (KBTU's)	3,526,499	1,610,645 (54% savings)	
Energy Use Intensity (EUI) KBTU/SF/Year	64.1	29.3	
Energy Cost (\$/Year)	60,932	37,646 (38% savings)	
CO2 Emissions (pounds)	651,075	403,527	
Heating Energy (KBTU's)	2,137,957	299,289	

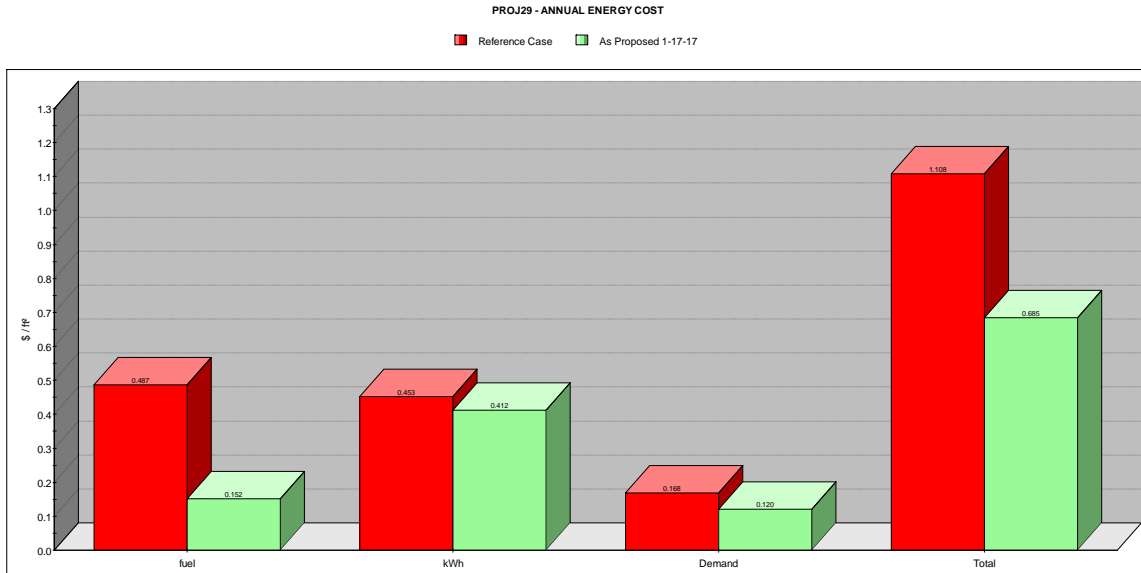
Electric Energy (KWH's)	249,302	226,682	reduced KWH from PV
Peak Electric (KW)	141.1	82.2	
Interior Lighting (KWH's)	43,206	43,206	
Exterior Lighting (KWH's)	4,711	4,711	
Heat Load (MMBTUH)	1.65	0.83	
Cooling Load (MMBTUH)	1.0	0.73	



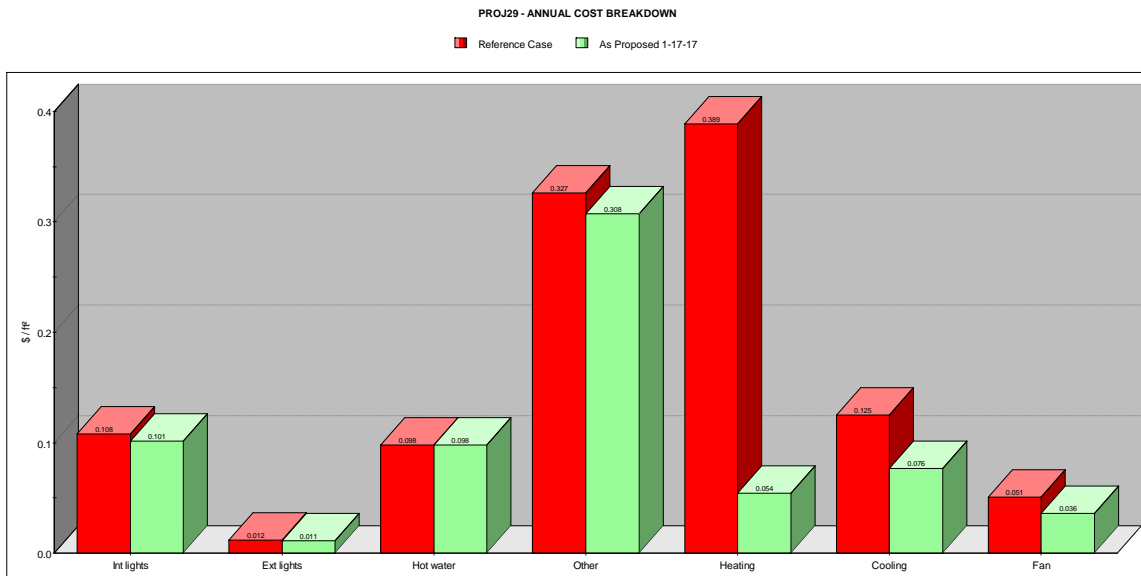
Energy Use: IECC 2009 vs. As-Proposed

6 Dixon Avenue, Suite 201, Concord, New Hampshire 03301 – 603-226-1009 –
www.ResilientBuildingsGroup.com

Resilient Buildings Group is a majority-owned, for-profit subsidiary of The Jordan Institute, a 501(c)3 non-profit organization.



Energy Cost: IECC 2009 vs. As-Proposed



Annual Energy Cost Breakdown

6 Dixon Avenue, Suite 201, Concord, New Hampshire 03301 – 603-226-1009 –
www.ResilientBuildingsGroup.com

Resilient Buildings Group is a majority-owned, for-profit subsidiary of The Jordan Institute, a 501(c)3 non-profit organization.

ATTACHMENT K

List of Utility Providers, Contacts and Site Permits Required



Deer Street Development, Lot 6

Site Plan Review, 02-13-2017

Utilities Providers

WATER & SEWER:	CITY OF PORTSMOUTH CONTACT: DAVE DESFOSSES PHONE: (603) 427-1530
ELECTRIC:	EVERSOURCE ENERGY CONTACT: NICK KOSKO PHONE: 603) 332-4227 EXT. 5555334
TELEPHONE/DATA:	FAIRPOINT COMMUNICATIONS CONTACT: JOSEPH CONSIDINE PHONE: (603) 427-5525
CABLE/DATA:	COMCAST CONTACT: MIKE COLLINS PHONE: 603) 679-5695 EXT. 1037
GAS:	UNITIL CONTACT: DAVID BEAULIEU PHONE: (603) 329-5144

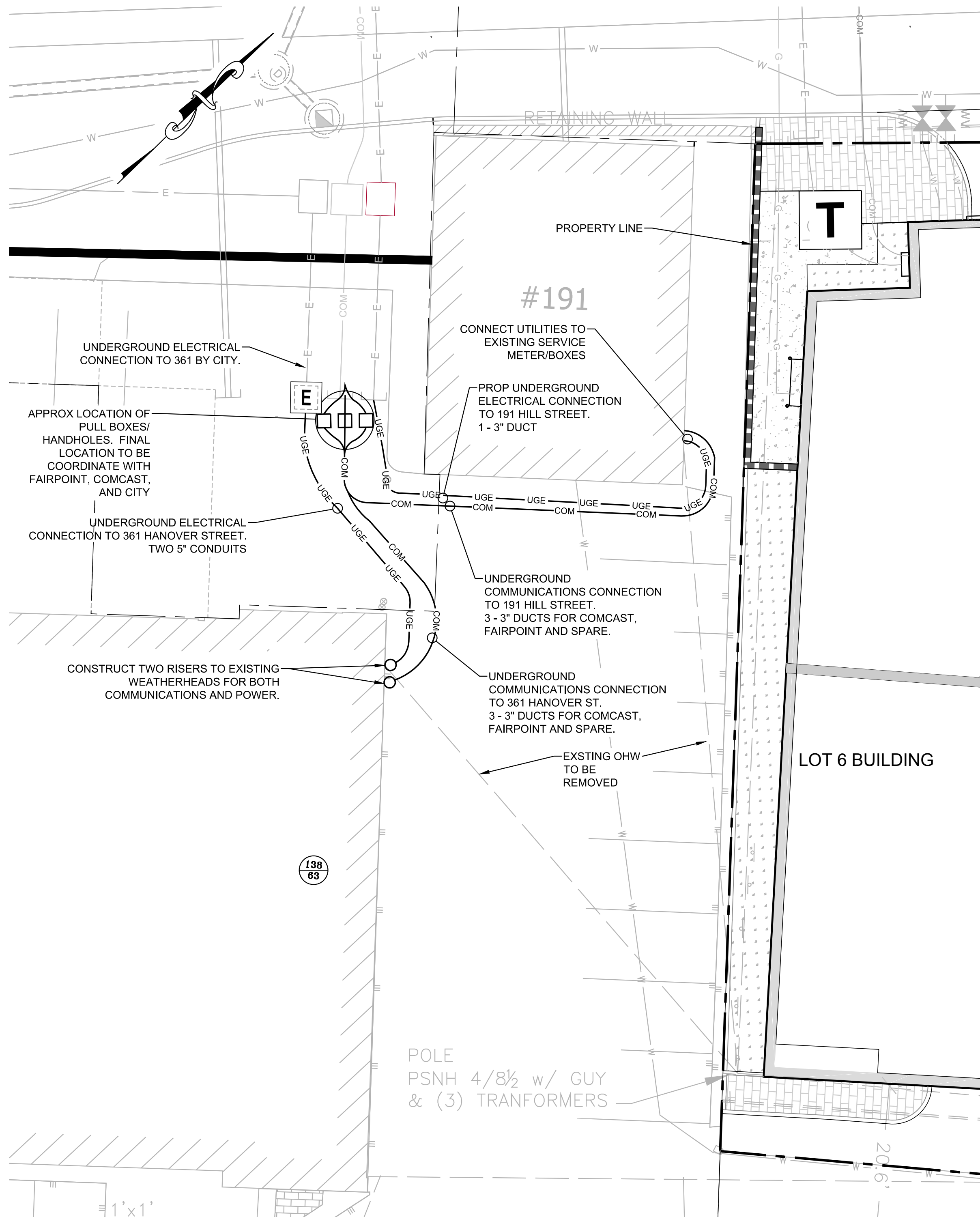
Site Permits

City of Portsmouth permits

- Driveway Permit
- Stormwater Permit
- Sewer Permit
- Water Permit
- Temporary Construction Dewatering Discharge Permit

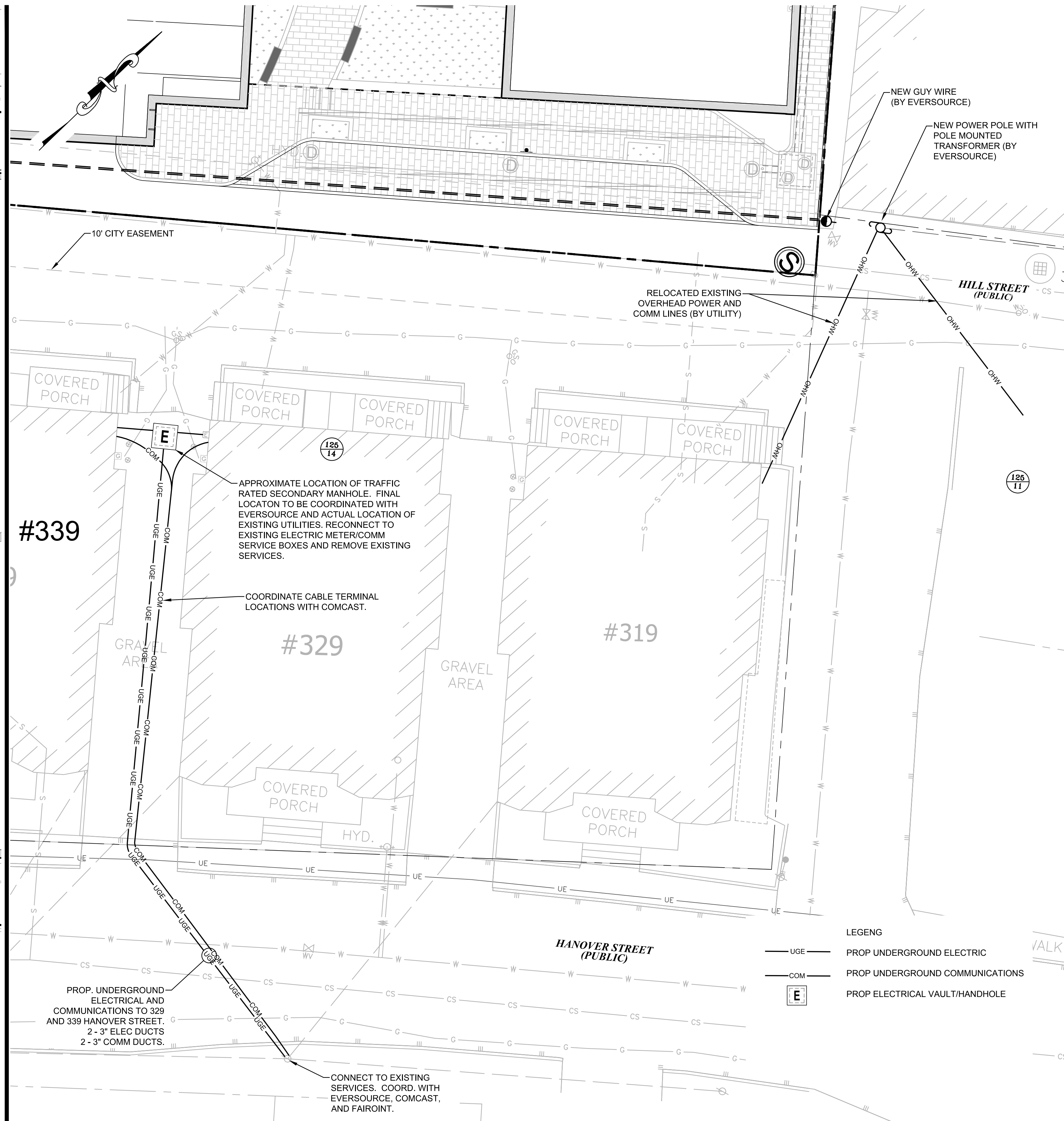
Federal Permit

- EPA NPDES Construction General Permit (single permit covers all DSA lots 2-6)



KEARSARGE MILL CONDOMINIUMS LOT OFFSITE
ELECTRICAL IMPROVEMENTS
ASSESSOR'S MAP 138, LOT 63

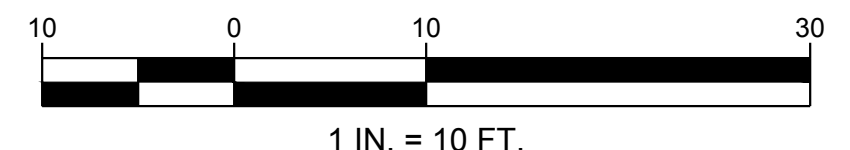
- UTILITY NOTES:**
- SEE ELECTRICAL SHEET SERIES "SE" FOR ELECTRICAL AND COMMUNICATION DETAILS.
 - THE CONTRACTOR SHALL COORDINATE UTILITY INSTALLATION WITH APPROPRIATE UTILITY, AFFECTED LAND OWNERS, AND THE CITY DPW.
 - THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UTILITIES BY CONDUCTING TEST PITS AS NEED TO LOCATE THE PROPOSED UTILITIES PER APPLICABLE REGULATORY AND UTILITY REQUIREMENTS.
 - THE CONTRACTOR SHALL PROVIDE AND INSTALL THE DUCTS FROM THE POLE TO THE SERVICE METER CONNECTION AND THE ELECTRICAL CONTRACTOR WILL PROVIDE AND INSTALL THE CONDUCTORS FROM THE POLE TO THE BUILDING CONNECTION.
 - THE ELECTRICAL POWER AND COMMUNICATION DUCTS SHALL BE INSTALLED IN ACCORDANCE WITH UTILITY SPECIFICATIONS. IT SHALL BE COMPOSED OF A MATERIAL WHICH IS ACCEPTABLE TO THE UTILITY AND THE INSTALLATION AND PIPE SHALL BE IN CONFORMANCE WITH GOOD ENGINEERING PRACTICES AND IN ACCORD THE REQUIREMENTS OF LAW.
 - THE ELECTRICAL POWER DUCTS SHALL HAVE A MINIMUM GROUND COVER OF THREE (3) FEET IN VEHICULAR TRAVEL WAYS AND TWO FEET IN OTHER AREAS UNLESS AUTHORIZED IN WRITING BY THE UTILITY.
 - PROPOSED LOCATIONS ARE APPROXIMATE, AND FINAL LOCATIONS WILL BE LOCATED IN THE FIELD AFTER EXISTING UTILITIES LOCATIONS HAVE BEEN DETERMINED BY TEST PITS. FINAL LOCATION TO BE COORDINATED AND APPROVED BY THE APPROPRIATE UTILITY PROVIDER.



HILL STREET OFFSITE ELECTRICAL IMPROVEMENTS
ASSESSOR'S MAP 125, LOT 14 AND 15

LEGEND

— UGE —	PROP UNDERGROUND ELECTRIC
— COM —	PROP UNDERGROUND COMMUNICATIONS
[E]	PROP ELECTRICAL VAULT/HANDHOLE



273 CORPORATE DRIVE
PORTSMOUTH, NH 03801
T 603.436.2551
F 603.436.6973
www.jsainc.com

GEOSIGHT, INC.
GEOTECH & CIVIL
MANCHESTER, NEW HAMPSHIRE

GREENMAN-PEDERSEN, INC.
LANDSCAPE ARCHITECT
PORTSMOUTH, NEW HAMPSHIRE

JSN ASSOCIATES, INC.
STRUCTURAL ENGINEER
PORTSMOUTH, NEW HAMPSHIRE

ENGINEERED SYSTEMS INC.
MPFP ENGINEER
WOBURN, MASSACHUSETTS

ENGINEERED BUILDING SYSTEMS
ELECTRICAL ENGINEER
DERRY, NEW HAMPSHIRE

**RESIDENCES AT
FOUNDRY PLACE,
LOT 6: 181 HILL ST,
ASSESSORS MAP
138 LOT 62**
PORTSMOUTH, NH 03801

OWNER:
Deer Street Associates

7 BANKS ROCK ROAD
YORK HARBOR, ME



Scale: **1"=10'**
Date: **3/17/2017**
Project Number: **14837.03**

REVISIONS		
NO.	DESCRIPTION	DATE
1	TAC PUBLIC HEARING	6/15/2017
2	TAC PUBLIC HEARING	8/21/2017
3	TAC SUPPLEMENT	9/18/2017

SITE PLAN REVIEW

**OFF SITE
ELECTRICAL
IMPROVEMENTS
PLAN**

C5.1

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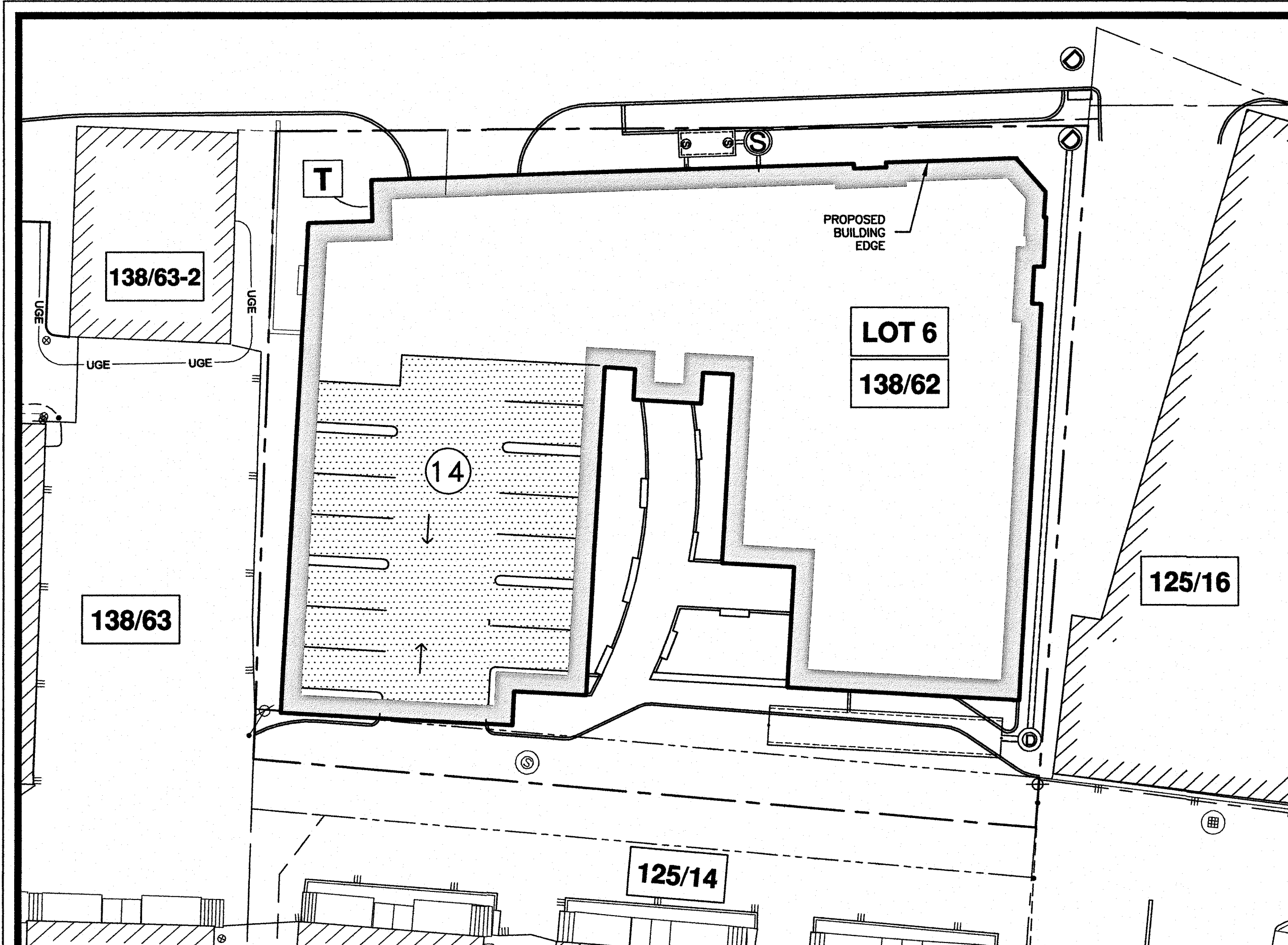
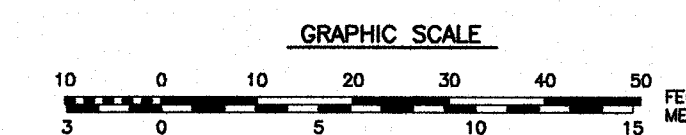
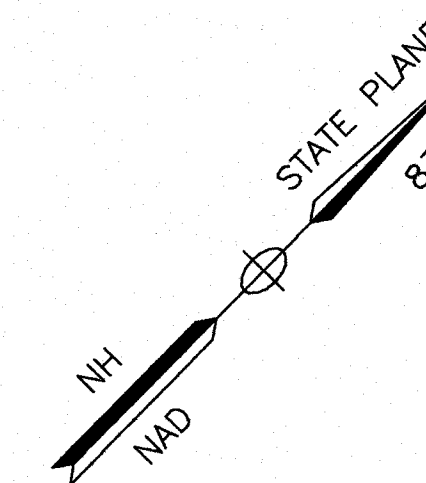
PERMIT PLANS - NOT FOR CONSTRUCTION



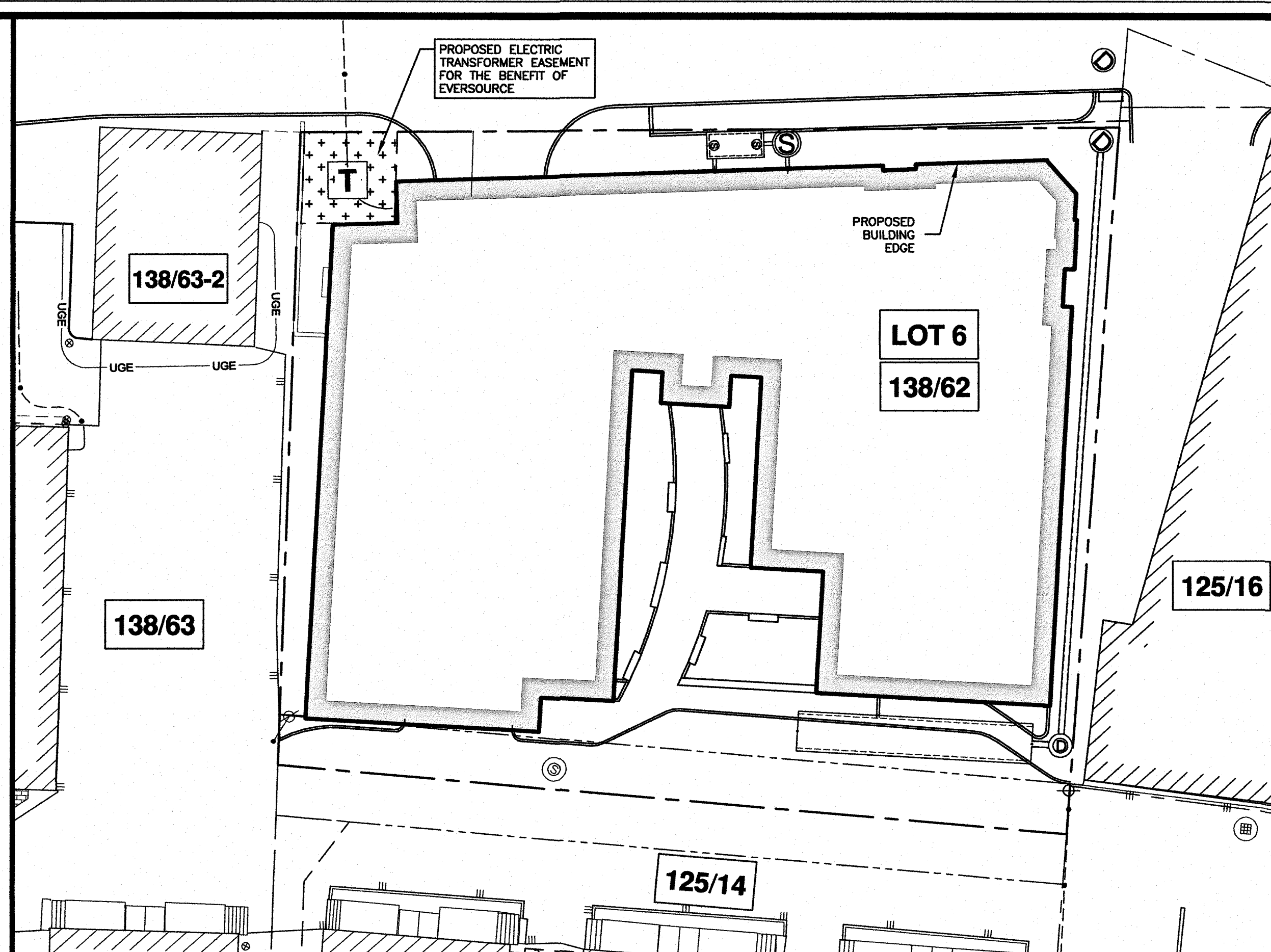
AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NOTES:

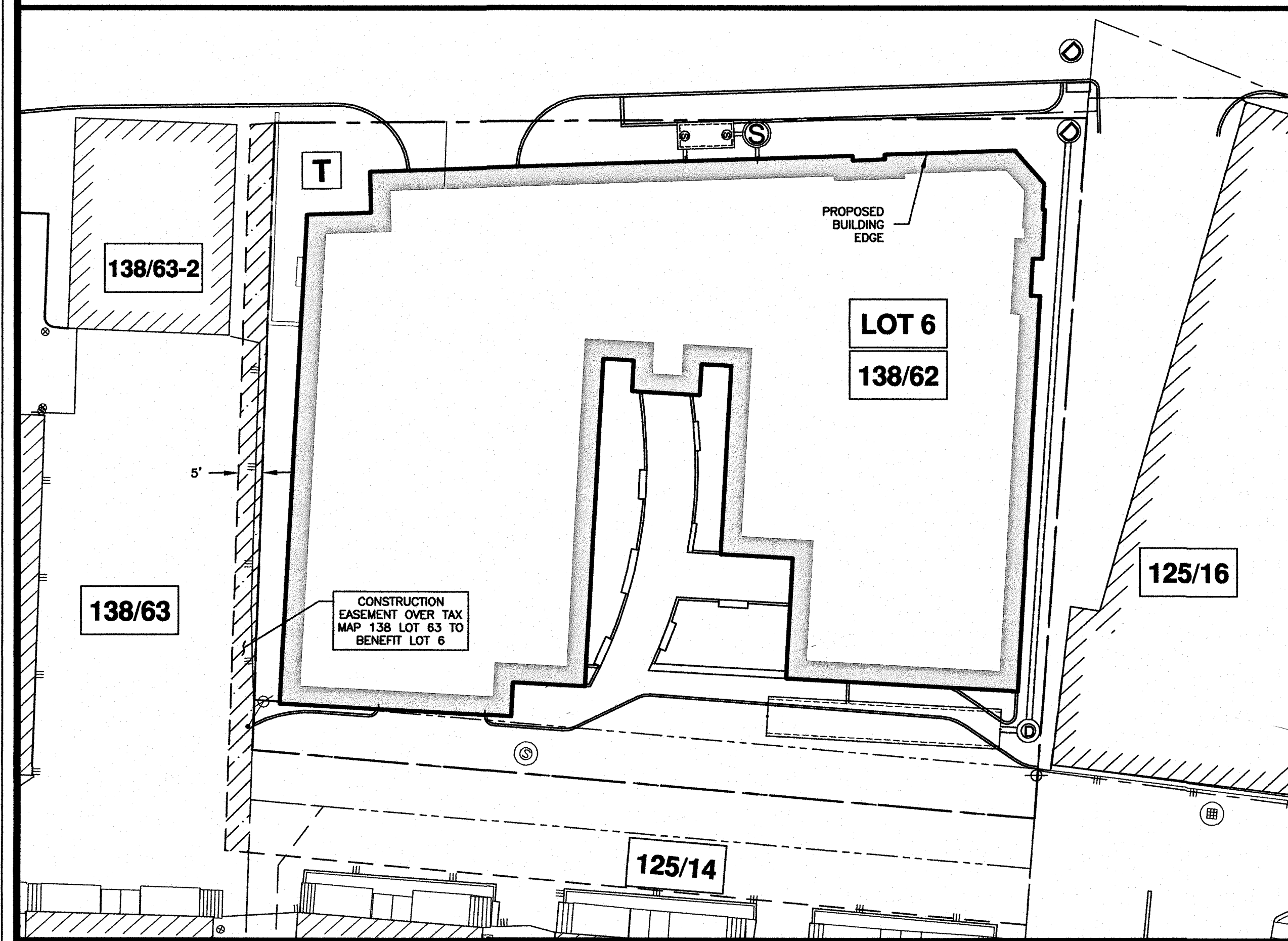
- 1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAPS AS MAP 138 LOT 62.
- 2) OWNER:
DEER STREET ASSOCIATES
PO BOX 100
YORK HARBOR, ME 03911
3395/2669, 5534/2077, & 5453/138
D-39699
- 3) THE PURPOSE OF THIS PLAN IS TO SHOW PROPOSED EASEMENTS FOR REVIEW AND APPROVAL FOR TAX MAP 138-62 (SUBDIVISION LOT 6).



PARKING EASEMENT TO TAX MAP 125 LOT 14



ELECTRIC EASEMENT (TRANSFORMER) TO EVERSOURCE

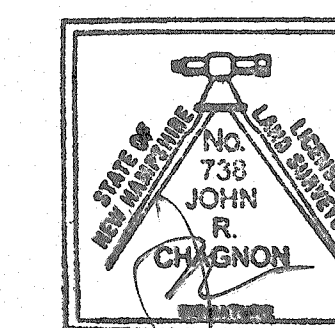


CONSTRUCTION EASEMENTS

**DEER STREET ASSOCIATES
FOUNDRY PLACE
PORTSMOUTH, NH**

NO.	DESCRIPTION	DATE
3	REMOVED ELECTRIC EASEMENTS	9/15/17
2	PARKING & CONSTRUCTION EASEMENTS	8/10/17
1	ISSUED FOR REVIEW	6/16/17
0	ISSUED FOR COMMENT	5/26/17

REVISIONS



SCALE: 1"=20' MAY 2017

**EASEMENT PLAN
TAX MAP 138 LOT 62
SUBDIVISION LOT 6**

E4

RESIDENCES AT FOUNDRY PLACE, LOT 6: 181 HILL ST, ASSESSORS MAP 138 LOT 62

**RESIDENCES AT
FOUNDRY PLACE,
LOT 6: 181 HILL ST,
ASSESSORS MAP
138 LOT 62**

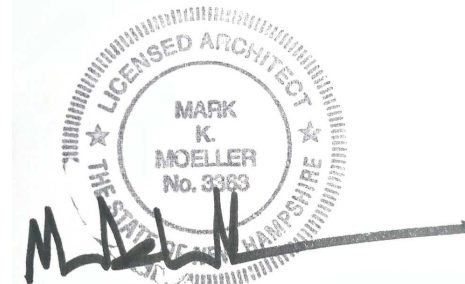
PORTSMOUTH, NH 03801

OWNER:

Deer Street Associates

7 BANKS ROCK ROAD
YORK HARBOR, ME

A / E Seal:



Scale: **3/32" = 1'-0"**
Date: **3/17/2017**
Project Number: **14837.03**

REVISIONS

NO.	DESCRIPTION	DATE
1	TAC PUBLIC HEARING	6/15/2017
2	TAC PUBLIC HEARING	8/21/2017



DRAWING SHEET LIST		3/17/2017	6/15/2017	8/21/2017
SHEET NO.	NAME			
COVER SHEETS				
T.01 T	COVER SHEET		•	•
T.02 T	ZONING ORDINANCE REQUIREMENTS		•	•
CIVIL				
X5	EXISTING CONDITIONS SITE PLAN			•
C1.0	GENERAL NOTES SHEET 1 OF 2		•	•
C1.1	GENERAL NOTES SHEET 2 OF 2		•	•
C2.0	DEMOLITION PLAN		•	•
C3.0	SITE PLAN		•	•
C3.1	SITE PLAN - BUILDING HEIGHT INCENTIVE CALCULATION		•	•
C3.2	OPEN SPACE PLAN		•	•
C4.0	GRADING & DRAINAGE PLAN		•	•
C4.1	GRADING DETAIL		•	•
C4.2	AVERAGE GRADE PLANE CALCULATION		•	•
C5.0	UTILITIES PLAN		•	•
C5.1	OFFSITE ELECTRICAL IMPROVEMENTS PLAN		•	•
C6.0	EROSION & SEDIMENT CONTROL PLAN		•	•
C6.1	DRAINAGE & EROSION CONTROL DETAILS		•	•
C7.0	TRAFFIC AND PAVEMENT DETAILS		•	•
C7.1	STANDARD DETAILS		•	•
C7.2	STANDARD DETAILS		•	•
C7.3	STANDARD DETAILS		•	•
C7.4	STANDARD DETAILS		•	•
C8.0	DRAIN PROFILES AND CROSS-SECTIONS		•	•
E4	EASEMENT PLAN		•	•
C3.1-	LAYOUT & MATERIALS PLAN		•	•
C3.2-	SITE PLAN - INCENTIVE COMMUNITY SPACE CALCULATION		•	•
C3.3	PROPOSED EASEMENT PLAN (PRELIMINARY)		•	•
SITE ELECTRIC				
SE1.1	BUILDING #6 ELECTRICAL & COMMUNICATION PLAN		•	•
SE1.2	BUILDING #6 LIGHTING PLAN		•	•
SE1.3	BUILDING #6 PHOTOMETRIC PLAN		•	•
SE1.4	SITE STREET LIGHTING PLAN		•	•
SE2.1	SITE ELECTRICAL DETAILS		•	•
SE2.2	SITE ELECTRICAL DETAILS		•	•
SE2.3	SITE ELECTRICAL DETAILS		•	•
SE3.1	SITE ELECTRICAL PLAN		•	•
SE3.2	SITE COMMUNICATION PLAN		•	•
SED1.1	SITE ELECTRICAL DEMOLITION PLAN - EXISTING CONDITIONS		•	•
SE1.4-	ELECTRIC METERING LOCATIONS		•	•
LANDSCAPE				
L1	MATERIALS PLAN		•	•
L2	PLANTING PLAN AND DETAILS		•	•
L3	DETAILS AND SECTIONS		•	•
L-1	OVERALL HARDSCAPE PLAN (OFFSITE)		•	•
L-2	OVERALL LANDSCAPE PLAN (OFFSITE)		•	•
ARCHITECTURE				
A1.01 T	GROUND LEVEL (FOUNDRY PL) PLAN		•	•
A1.02 T	LEVEL 1 FLOOR (HILL ST) PLAN		•	•
A1.03 T	ROOF PLAN		•	•
A2.01 T	EXTERIOR ELEVATIONS		•	•
A2.02 T	EXTERIOR ELEVATIONS		•	•
A2.03 T	EXTERIOR ELEVATIONS		•	•
A3.00 T	3D VIEWS		•	•

SITE PLAN REVIEW AUGUST 21, 2017

NOTE:
1. ALL CONDITIONS ON THIS PLAN SET SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.

CITY OF PORTSMOUTH PLANNING BOARD	
CHAIRPERSON	DATE

SITE PLAN REVIEW

COVER SHEET

T.01 T

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Residences at Foundry Place - Area and Use Summary

June 15, 2017	
Building Name	Use

AREA ANALYSIS								
Ground Floor (below grade) Area SF	1st Floor Area SF	2nd Floor Area SF	3rd Floor Area SF	4th Floor Area SF	Penthouse Area SF	Total Gross Floor Area - to inside face of exterior wall	Total Unit Count	

Building 6 (development incentive 10.5A47.10)	
Parking Garage	
Parking easement for Hill Hanover Group	
Multi-Family Dwelling	
Multi-Family Decks / Balconies	
Office	
Retail Sales	
total area	

Building 6								
16,364	5,156						0	
	3,097	13,969	13,969	12,964	6,023		43	
		511	631	819	3,647		0	
	4,296						0	
	1,867						0	
16,364	14,416	14,480	14,600	13,783	9,670	83,313	43	

Residences at Foundry Place - Parking Summary

June 15, 2017	
Building Name	Use

PARKING ANALYSIS									
Parking required - Downtown Overlay District 10.1115.20	Parking required - Development Incentive 10.5A47.10	Downtown overlay district - 10.1115.23	Total parking spaces required	Parking spaces provided on site	Parking spaces provided at Municipal Garage (see references below)	Total parking spaces provided	Surplus Parking Spaces		
Spaces per residential unit	Quantity	Spaces per residential unit	Quantity	Reduction = 4 parking spaces	Quantity	Quantity	Quantity	Quantity	Quantity

Building 6 (development incentive 10.5A47.10)	
Parking Garages	
Parking easement for Hill Hanover Group	
Exterior parking	
Multi-Family Dwelling	
Multi-Family Decks / Balconies	
Office	
Retail Sales	
total area	

Building 6									
0	0	0	0	0	0	33	0	0	0
0	14	0	0	0	0	14	0	0	0
0	0	0	0	0	0	3	0	0	0
0	0	1.00	43	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	14	0	43	(4.00)	53	50	15	65	12

New Municipal Foundry Place Parking Garage	
Reference City/DSA Post Closing Obligations Agreement & Parking Agreement documents dated 9/09/2016, and per Section 10.1113.111 Municipal Garage Spaces qualify as "off-street parking" as held by City Legal Department.	
DSA Parking Garage spaces - interior	58
DSA Flex Parking Spaces - exterior / interior	10
Total spaces	68

PORTSMOUTH CHARACTER ZONING - D5 - DEER STREET LOT 6 - 181 HILL STREET		
	PER CD5	PROPOSED
BUILDING PLACEMENT - PRINCIPAL BUILDING*		
MAXIMUM PRINCIPAL FRONT YARD	5 FT	> 5 FT
MAXIMUM SECONDARY FRONT YARD	5 FT	> 5 FT
SIDE YARD	NR	NR
MINIMUM REAR YARD	GREATER OF 5 FT FROM REAR LOT LINE OR 10 FT FROM CENTER LINE OF ALLEY	5 FT
* EXCEPT FOR ITEMS LISTED UNDER SECTION 10.5A42.12		
BUILDING AND LOT OCCUPATION		
MAXIMUM BUILDING BLOCK LENGTH	225 FT	152
MAXIMUM FAÇADE MODULATION LENGTH	100 FT	60 FT
MAXIMUM ENTRANCE SPACING	50 FT	MAX <50 FT
MAXIMUM BUILDING COVERAGE	95%	73%
MAXIMUM BUILDING FOOTPRINT (INCLUDES INCREASED FOOTPRINT INCENTIVE)	20,000 SF	16,364
MINIMUM LOT AREA	NR	NR
MINIMUM LOT AREA PER DWELLING UNIT	NR	NR
MINIMUM OPEN SPACE	5%	18%
BUILDING FORM - PRINCIPAL BUILDING		
*BUILDING HEIGHT (INCLUDES INCREASED HEIGHT INCENTIVE)	50 FT + 10 FT + 2 FT	61 FT 10 INCHES
BUILDING STORIES (INCLUDES INCREASED HEIGHT INCENTIVE)	4 STORIES + 1 STORY	4 STORIES + PENTHOUSE
MAXIMUM FINISHED FLOOR SURFACE OF GROUND FLOOR ABOVE SIDEWALK GRADE	36 INCHES	< 36 INCHES
MINIMUM GROUND STORY HEIGHT	12 FT	18 FT 11 INCH
MINIMUM SECOND STORY HEIGHT	10 FT	11 FT
FAÇADE GLAZING		
SHOPFRONT FAÇADE	70% MIN.	72%
OTHER FAÇADE TYPES	20% MIN TO 50% MAX	33%
ROOF TYPE	FLAT, GABLE, HIP, GAMBREL, MANSARD	FLAT
ROOF PITCH, IF ANY	FLAT	FLAT
TOTAL OUTDOOR LIGHT OUTPUT ALLOWANCE 10.1143.10 - BUSINESS DISTRICTS - MAX MEAN LUMENS / NET ACRE	300,000	LESS THAN 300,000 - SEE LIGHTING REPORT ATTACHMENT

* BUILDING HEIGHT + INCENTIVE HEIGHT + 2 FEET FOR PENTHOUSE LEVEL PER MAP 10.5A21B BUILDING HEIGHT STANDARDS



ARCHITECTS
INTERIORS
PLANNERS

273 CORPORATE DRIVE
PORTSMOUTH, NH 03801
T 603.436.2551
F 603.436.6973
www.jsainc.com

GEOSIGHT, INC.
GEOTECH & CIVIL
MANCHESTER, NEW HAMPSHIRE

GREENMAN-PEDERSEN, INC.
LANDSCAPE ARCHITECT
PORTSMOUTH, NEW HAMPSHIRE

JSN ASSOCIATES, INC.
STRUCTURAL ENGINEER
PORTSMOUTH, NEW HAMPSHIRE

ENGINEERED SYSTEMS INC.
MPFP ENGINEER
WOBBURN, MASSACHUSETTS

ENGINEERED BUILDING SYSTEMS
ELECTRICAL ENGINEER
DERRY, NEW HAMPSHIRE

RESIDENCES AT FOUNDRY PLACE, LOT 6: 181 HILL ST, ASSESSORS MAP 138 LOT 62

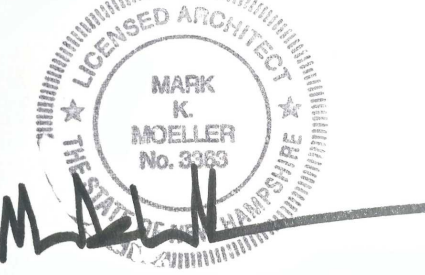
PORTSMOUTH, NH 03801

OWNER:

Deer Street Associates

7 BANKS ROCK ROAD
YORK HARBOR, ME

A / E Seal:



Scale:
Date: **3/17/2017**
Project Number: **14837.03**

REVISIONS		
NO.	DESCRIPTION	DATE
1	TAC PUBLIC HEARING	6/15/2017
2	TAC PUBLIC HEARING	8/21/2017

SITE PLAN REVIEW

ZONING ORDINANCE REQUIREMENTS

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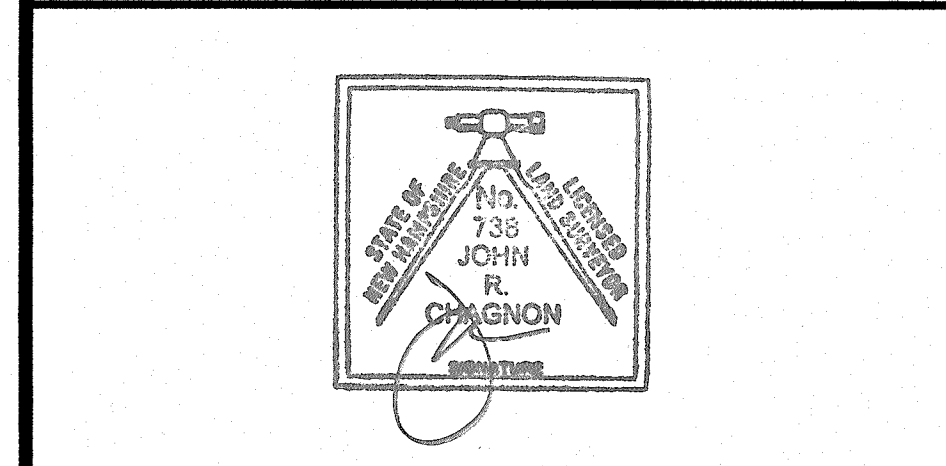


AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2815

- NOTES:**
- 1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 138 AS LOT 62.
 - 2) OWNERS OF RECORD:
DEER STREET ASSOCIATES
PO BOX 100
YORK HARBOR, ME
3395/2669, 5534/2077, 5453/138
 - 3) PARCEL IS NOT IN A FLOOD HAZARD ZONE AS SHOWN ON FIRM PANEL 330150295E, EFFECTIVE DATE MAY 17, 2005.
 - 4) EXISTING LOT AREAS:
22,538 S.F.
0.5174 ACRES
 - 5) PARCEL IS LOCATED IN THE CDS CHARACTER BASED ZONING DISTRICT.
 - 6) DIMENSIONAL REQUIREMENTS:
SEE ZONING ORDINANCE
 - 7) THE PURPOSE OF THIS PLAN IS TO SHOW THE EXISTING CONDITIONS ON THE SUBJECT PARCELS.
 - 8) HORIZONTAL DATUM AND BASIS OF BEARING IS NEW HAMPSHIRE STATE PLANE NAD83(2011). BASIS OF HORIZONTAL DATUM IS RTK GPS OBSERVATIONS.
 - 9) VERTICAL DATUM IS MEAN SEA LEVEL-NAVD88. BASIS OF VERTICAL DATUM IS NGS PID 0C0290 - B 2 1923, ELEVATION 19.55.
 - 10) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.
 - 11) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

DEER STREET ASSOCIATES, INC.
SITE REDEVELOPMENT
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	ELECTRIC, WATER, EASEMENTS	8/10/17
1	ADD SPOT ELEVATIONS ON LOT 1	4/6/17
0	ISSUED FOR COMMENT	11/14/16



SCALE: 1" = 20' OCTOBER 2016

EXISTING CONDITIONS
SITE PLAN

X5

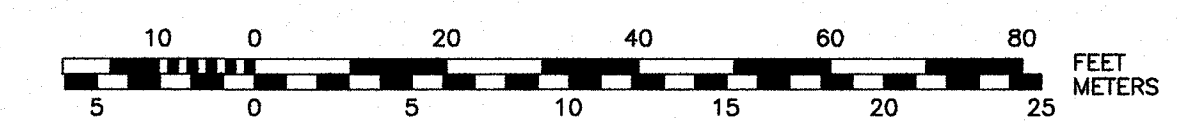
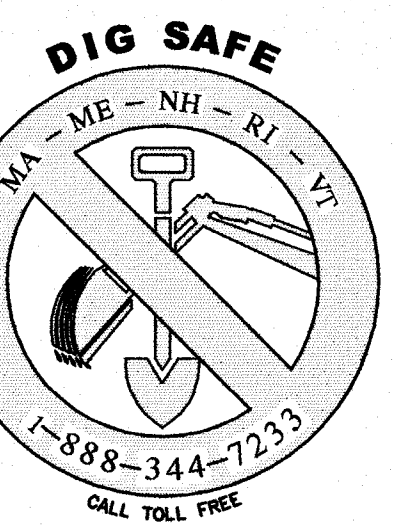
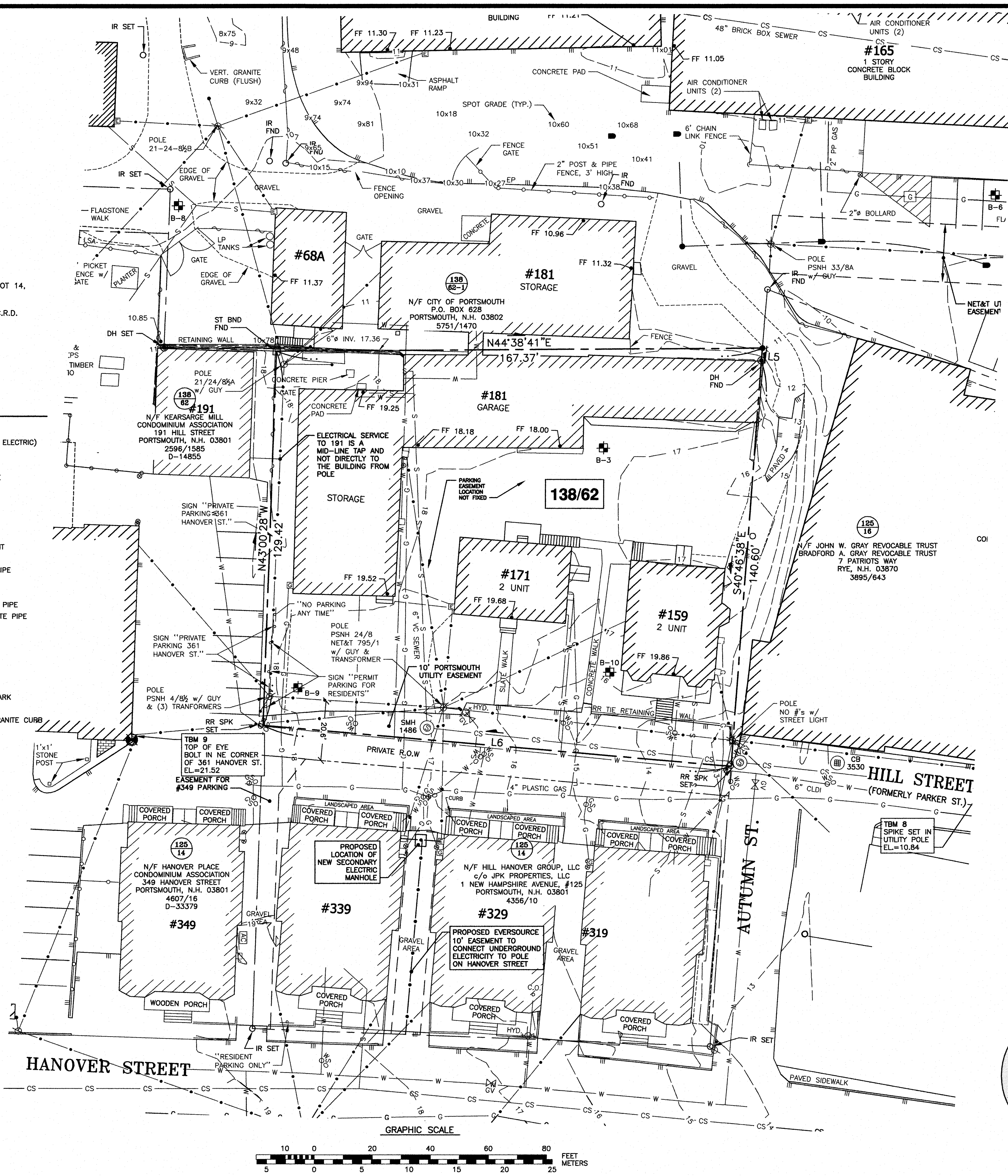
LENGTH TABLE

LINE	BEARING	DISTANCE
L5	S40°13'28"E	4.32'
L6	S50°00'27"W	161.76'

- EASEMENT AND RESTRICTION NOTES:**
- 1) SUBJECT PARCEL IS SUBJECT TO A PARKING EASEMENT FOR THE BENEFIT OF TAX MAP 125 LOT 14. LOCATION IS NOT FIXED. SEE R.C.R.D. 5518/2747 & 5518/2759.
 - 2) SUBJECT PARCEL IS SUBJECT TO A UTILITY EASEMENT TO THE CITY OF PORTSMOUTH. SEE R.C.R.D. 5518/2759.
 - 3) SEE ALSO PARTIAL RELEASE OF PARKING RELOCATION RIGHTS, R.C.R.D. 5751/1463.
 - 4) SEE ALSO TEMPORARY ENCROACHMENT EASEMENT DEED, R.C.R.D. 5751/1485.
 - 5) SUBJECT PARCEL IS SUBJECT TO A PRIVATE RIGHT OF WAY.

LEGEND:

- | | | | |
|---------------|------------------------------|---------|------------------------------|
| N/F | NOW OR FORMERLY | +O+HYD | HYDRANT |
| RP | RECORD OF PROBATE | GW/E | METER (GAS, WATER, ELECTRIC) |
| RCRD | ROCKINGHAM COUNTY | ⊞ | CATCH BASIN |
| | REGISTRY OF DEEDS | ⊙ | TELEPHONE MANHOLE |
| | MAP 11 / LOT 21 | ⊕ | SEWER MANHOLE |
| RR SPK FND | RAILROAD SPIKE FOUND/SET | ⊖ | DRAIN MANHOLE |
| IR FND | IRON ROD FOUND/SET | ⊗ | TEST BORING |
| IP FND | IRON PIPE FOUND/SET | ⊘ | AIR CONDITIONER UNIT |
| DH FND | DRILL HOLE FOUND/SET | ⊙ | SIGNS |
| CONC BND w/DH | CONCRETE BOUND w/ DRILL HOLE | AC | ASBESTOS CEMENT PIPE |
| ST BND w/DH | STONE BOUND w/DRILL HOLE | CI | CAST IRON PIPE |
| FM | FORCE MAIN | DI | DUCTILE IRON PIPE |
| S | SEWER LINE | PVC | POLYVINYL CHLORIDE PIPE |
| G | GAS LINE | RCPC | REINFORCED CONCRETE PIPE |
| D | STORM DRAIN | VC | VITRIFIED CLAY PIPE |
| W | WATER LINE | PP | PLASTIC PIPE |
| UE | UNDERGROUND ELECTRIC | EL | ELEVATION |
| OE | OVERHEAD ELECTRIC/WIRES | EP | EDGE OF PAVEMENT |
| CLF | CHAIN LINK FENCE | FF | FINISHED FLOOR |
| C | CONTOUR | INV. | INVERT |
| 100 | SPOT ELEVATION | TBM | TEMPORARY BENCHMARK |
| 97x3 | EDGE OF PAVEMENT (EP) | TYP. | TYPICAL |
| U | UTILITY POLE (w/ GUY) | VGC/SGC | VERTICAL/SLOPED GRANITE CURB |
| SO | SHUT OFF (GAS / WATER) | CCB | CAPE COD BERM |
| GV | GATE VALVE | AG | ABOVE GRADE |
| ⊕ | BOLLARD | | |



GENERAL CONSTRUCTION NOTES

- THESE PLANS ARE BASED ON THE "EXISTING CONDITIONS SITE PLAN" PRODUCED BY AMBIT ENGINEERING, INC. WITH AN INITIAL ISSUED DATE OF 11/14/16 AND "FOUNDRY PLACE PARKING GARAGE" BY TIGHE AND BOND, INC WITH AN ISSUE DATE OF 07/28/2017. SEE THE EXISTING CONDITION SITE PLAN FOR BENCHMARK INFORMATION AND THE FOUNDRY PLACE PARKING GARAGE PLAN SET FOR FOUNDRY PLACE DETAILS.
- THE CONTRACTOR SHALL VERIFY THE PROPOSED LAYOUT IN RELATIONSHIP TO THE EXISTING SITE SURVEY. THE CONTRACTOR SHALL ALSO VERIFY ALL DIMENSIONS, SITE CONDITIONS, AND MATERIAL SPECIFICATIONS AND SHALL NOTIFY THE OWNER AND ENGINEER OF ANY ERRORS, OMISSIONS OR DISCREPANCIES BEFORE COMMENCING OR PROCEEDING WITH CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS, INSPECTIONS, BONDS, ETC., AND OTHER APPROVAL RELATED ITEMS. NO CONSTRUCTION SHALL COMMENCE UNTIL SUCH PERMITS HAVE BEEN SECURED.
- METHODS AND MATERIALS USED IN THE CONSTRUCTION OF IMPROVEMENTS FOR THIS PROJECT SHALL CONFORM TO THE CURRENT CONSTRUCTION STANDARDS AND SPECIFICATIONS OF THE NHDOT, STATE, AND CITY OF PORTSMOUTH REGULATIONS, SPECIFICATIONS, AND ORDINANCES, UTILITY EASEMENTS, AND APPLICABLE CODES.
- CONTRACTOR TO CONFIRM AND VERIFY THE VALIDITY, LOCATION, MATERIAL, AND AVAILABILITY TO USE EXISTING UTILITIES ON OR NEAR THE PROJECT SITE PROPERTY. CONTRACTOR TO LOCATE EXISTING UTILITIES AND CONFIRM SAID UTILITIES WITH ALL APPLICABLE MUNICIPALITIES AND UTILITY COMPANIES PRIOR TO ANY CONSTRUCTION. ONCE UTILITIES HAVE BEEN CONFIRMED IN THE FIELD BY CONTRACTOR AND VERIFIED BY APPLICABLE MUNICIPALITY AND UTILITY COMPANY AND CONNECTION HAS BEEN APPROVED BY ENTITY, ONLY THEN SHALL THE CONTRACTOR CONSTRUCT AND UTILIZE THESE UTILITIES. CONTRACTOR TO IMMEDIATELY INFORM THE ENGINEER OF RECORD OF ANY DEVIATIONS TO PLANS.
- THE CONTRACTOR SHALL MAKE EXPLORATORY EXCAVATIONS AND LOCATE ANY EXISTING UTILITIES SUFFICIENTLY AHEAD OF CONSTRUCTION TO PERMIT REVISIONS TO PLANS IF NECESSARY. THE EXISTENCE AND/OR LOCATION OF UTILITIES SHOWN ON THESE PLANS MAY BE ONLY APPROXIMATELY CORRECT AND THE CONTRACTOR IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES SHOWN HEREON AND ANY OTHER EXISTING UTILITIES NOT OF RECORD OR NOT SHOWN ON THESE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING, AT HIS EXPENSE, ANY EXISTING UTILITIES DAMAGED DURING CONSTRUCTION.
- THE CONTRACTOR SHALL NOTIFY OPERATORS WHO MAINTAIN UNDERGROUND UTILITY LINES IN THE AREA OF PROPOSED EXCAVATION AT LEAST THREE WORKING DAYS, BUT NOT MORE THAN TEN WORKING DAYS, PRIOR TO COMMENCEMENT OF EXCAVATION OR DEMOLITION. ALL WATER, SEWER, ELECTRIC, AND OTHER UTILITIES SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION.
- RELOCATION OF ANY UTILITIES SHALL BE AT THE CONTRACTOR'S EXPENSE AND COMPLETED WITH THE UTILITY WORK. THE OWNER AND ENGINEER SHALL BE NOTIFIED IN WRITING AS TO THE RELOCATIONS REQUIRED AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING, WITH MATCHING MATERIALS, ANY PAVEMENT, WALKS, CURBS, ETC., THAT MUST BE CUT OR THAT ARE DAMAGED DURING CONSTRUCTION.
- AN APPROVED SET OF PLANS AND ALL APPLICABLE PERMITS MUST BE AVAILABLE AT THE CONSTRUCTION SITE AT ALL TIMES.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THESE DOCUMENTS AND SUBSEQUENT ISSUED PLAN REVISIONS. ANY DEVIATIONS FROM THESE DOCUMENTS SHALL REQUIRE NOTIFICATION TO THE ENGINEER PRIOR TO THE COMMENCEMENT OF CONSTRUCTING ANY CHANGE. THE CONTRACTOR WILL OTHERWISE BE WORKING AT HIS OR HER OWN RISK.
- ALL WATER, DRAIN, AND SEWER CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH CITY OF PORTSMOUTH RULES, SPECIFICATIONS, AND REGULATIONS.
- GROUNDWATER SHALL BE TEMPORARILY LOWERED TO A MINIMUM OF 2' BELOW EXCAVATIONS. CONTRACTOR SHALL REPAIR ADVERSE IMPACTS FROM REMOVAL OF SOIL AT ITS OWN EXPENSE.
- DISCHARGE FROM DEWATERING ACTIVITIES SHALL BE INFILTRATED ONSITE. IF DISCHARGE IS UNABLE TO BE INFILTRATED THEN CONTRACTOR SHALL OBTAIN A DEWATERING PERMIT FROM THE CITY TO DISCHARGE INTO THE CITY'S STORM DRAIN OR SEWER, OR PROPERLY TRANSPORT AND DISPOSE OF OFFSITE PER FEDERAL, STATE AND LOCAL REGULATIONS.
- THE CONTRACTOR SHALL PHASE DEMOLITION AND CONSTRUCTION AS REQUIRED TO PROVIDE CONTINUOUS UTILITY SERVICE AND ACCESS TO EXISTING BUSINESSES AND HOMES THROUGHOUT THE CONSTRUCTION PERIOD. IF A TEMPORARY DISCONNECT OF UTILITIES OR ACCESS IS REQUIRED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER, THE OWNER, AND THE PLACE OF BUSINESS OR HOME OWNER 3 DAYS PRIOR TO THE DAY OF THE DISCONNECTION.
- ALL MATERIALS AND CONSTRUCTION SHALL CONFORM WITH APPLICABLE FEDERAL, STATE, AND CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS SPECIFICATIONS, LATEST REVISIONS.
- THE CONTRACTOR SHALL PAY ALL COSTS NECESSARY FOR TEMPORARY PARTITIONING, BARRICADING, FENCING, SECURITY, AND SAFETY DEVICES REQUIRED FOR THE MAINTENANCE OF A CLEAN AND SAFE CONSTRUCTION SITE.
- THE CONTRACTOR SHALL MAINTAIN AS-BUILT PLANS WITH ALL UPDATED INFORMATION ON THE PROJECT SITE AND INPUT INFORMATION TO A DIGITAL/ELECTRONIC FORMAT AT LEAST MONTHLY. AS-BUILT INFORMATION MUST BE FORWARDED TO THE OWNER AND ENGINEER MONTHLY FOR APPROVAL, AND BE USED TO PREPARE A FINISHED SET OF PLANS.

EROSION CONTROL NOTES:

- SEE SHEET C6.1 FOR GENERAL EROSION AND SEDIMENT CONTROL NOTES AND DETAILS.

DEMOLITION NOTES:

- THE DEMOLITION PLAN OR THE EXISTING CONDITIONS SITE PLAN DOES NOT NECESSARILY DEPICT THE EXACT LOCATION AND SIZE OF ALL UTILITIES WHICH MAY EXIST AT THE TIME OF DEMOLITION INSIDE OR OUTSIDE OF EXISTING OR PROPOSED BUILDINGS, ON THE SUBJECT PROPERTY, WITHIN THE STREET ROW, OR ON ABUTTING LOTS.
- THE CONTRACTOR SHALL VERIFY LOCATION OF EXISTING UTILITIES. REQUEST FOR MARKINGS CAN BE MADE BY CALLING DIG-SAFE AT 1-888-344-7233, AND THE CITY OF PORTSMOUTH DPW AT 603-427-1530 AT LEAST 72 HOURS PRIOR TO EXCAVATION. STREET OPENING PERMITS SHOULD ALSO BE FILED AT THAT TIME.
- THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE AND ARE NOT GUARANTEED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL FIELD VERIFY THE SIZE AND EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE THEMSELVES WITH THE CONDITIONS OF ALL PERMIT APPROVALS.
- EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF ANY CLEARING OR DEMOLITION ACTIVITIES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION AND OFF-SITE DISPOSAL OF MATERIALS REQUIRED TO COMPLETE THE WORK, EXCEPT FOR WORK NOTED TO BE COMPLETED BY OTHERS.
- ALL EXISTING UTILITY SERVICE CONNECTIONS TO BUILDING BEING REMOVED SHALL BE ABANDONED UNLESS NOTED OTHERWISE. THE WATER AND SEWER SERVICES SHALL BE CUT AND CAPPED AT THE MAIN IN THE STREET BY THE CONTRACTOR IN ACCORDANCE WITH THE CITY OF PORTSMOUTH STANDARDS. THE EXISTING GAS, ELECTRIC AND/OR CATV INSTALLATION AND ABANDONMENT OF EXISTING CONNECTIONS SHALL BE COORDINATED BY THE CONTRACTOR WITH THE RESPECTIVE COMPANIES.
- ALL MATERIALS SCHEDULED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE SPECIFIED BY THE OWNER. THE CONTRACTOR SHALL DISPOSE OF ALL MATERIALS OFF-SITE IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, ORDINANCES, AND CODES.
- FINAL DEMARCATION POINTS FOR GAS, ELECTRIC, TELEPHONE, AND COMMUNICATION SERVICE ENTRANCES ARE SUBJECT TO APPROVALS OF EACH PROVIDER.
- THE CONTRACTOR SHALL COORDINATE WITH THE OWNER REGARDING ANY COURTESY ABUTTER NOTIFICATIONS THAT MAY BE WARRANTED.
- THE CONTRACTOR SHALL SAWCUT AND REMOVE PAVEMENT FOR UTILITY CONSTRUCTION OR REMOVAL AND CONSTUCT TRENCH PATCH AFTER INSTALLATION.
- NO TRENCHES ARE ALLOWED TO REMAIN OPEN OVERNIGHT. ALL TRENCHES SHALL BE BACKFILLED AT THE END OF THE WORK DAY OR COVERED WITH STEEL PLATES PER STATE AND LOCAL REGULATIONS AND SPECIFICATIONS. IF STEEL PLATES ARE USED, THE TOTAL LENGTH OF PLATES IN THE TRAVELED WAY SHALL BE LIMITED TO 50'.
- PAVEMENT REMOVAL LIMITS ARE SHOWN FOR CONTRACTOR'S CONVENIENCE. ADDITIONAL PAVEMENT REMOVAL MAY BE REQUIRED DEPENDING ON THE CONTRACTOR'S OPERATION. CONTRACTOR TO VERIFY FULL LIMITS OF PAVEMENT REMOVAL PRIOR TO BID.
- THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING STRUCTURES, CONCRETE PADS, UTILITIES AND PAVEMENT WITHIN THE WORK LIMITS SHOWN UNLESS SPECIFICALLY IDENTIFIED TO REMAIN. ITEMS TO BE REMOVED INCLUDE BUT ARE NOT LIMITED TO: CONCRETE, PAVEMENT, CURBS, LIGHTING, MANHOLES, CATCH BASINS, UNDERGROUND PIPING, POLES, SIGNS, FENCES, RAMPS, WALLS, BOLLARDS, TREES AND LANDSCAPING AS MAY BE APPLICABLE.
- REMOVE TREES AND BRUSH AS REQUIRED FOR COMPLETION OF WORK. CONTRACTOR SHALL GRUB AND REMOVE ALL STUMPS WITHIN LIMITS OF WORK AND DISPOSE OF OFF SITE IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS.
- CONTRACTOR SHALL PROTECT ALL PROPERTY MONUMENTATION THROUGHOUT DEMOLITION AND CONSTRUCTION OPERATIONS. THE CONTRACTOR SHALL EMPLOY A LICENSED SURVEYOR TO REPLACE ANY DISTURBED MONUMENTATION.

GENERAL UTILITY NOTES:

- COORDINATE WORK WITH OTHER CONTRACTORS AS MAY BE APPLICABLE, ALSO COORDINATE ALL UTILITY WORK WITH THE OWNER AND THE APPROPRIATE UTILITY COMPANY.
 - WATER & SEWER: CITY OF PORTSMOUTH
CONTACT: DAVE DESFOSSÉS
PHONE: (603) 427-1530
 - ELECTRIC: EVERSOURCE ENERGY
CONTACT: NICK KOSKO
PHONE: (603) 332-4227 EXT. 5555334
 - TELEPHONE/DATA: FAIRPOINT COMMUNICATIONS
CONTACT: JOSEPH CONSIDINE
PHONE: (603) 427-5525
 - CABLE/DATA: COMCAST
CONTACT: MIKE COLLINS
PHONE: (603) 679-5695 EXT. 1037
 - GAS: UNITIL
CONTACT: DAVID BEAULIEU
PHONE: (603) 294-5144
- PROPOSED GAS LINE AND ELECTRIC, TELEPHONE AND CABLE (ETC) CONDUIT LOCATIONS AND CONFIGURATIONS ARE APPROXIMATE. PRIOR TO CONSTRUCTION CONTRACTOR TO COORDINATE FINAL LOCATION, MATERIALS AND SPECIFICATIONS WITH INDIVIDUAL UTILITY COMPANIES.
- WHERE SANITARY SEWERS CROSS WATER MAINS, THE SEWER SHALL BE LAID AT SUCH AN ELEVATION THAT THE CROWN OF THE SEWER IS AT LEAST 18 INCHES BELOW THE INVERT OF THE WATER MAIN. IF THE ELEVATION OF THE SEWER CANNOT BE VARIED TO MEET THIS REQUIREMENT, THE WATER MAIN SHALL BE RELOCATED TO PROVIDE THIS SEPARATION OR CONSTRUCTED WITH MECHANICAL-JOINT PIPE FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE SEWER. ONE FULL LENGTH OF WATER MAIN SHALL BE CENTERED OVER THE SEWER SO THAT BOTH JOINTS WILL BE AS FAR FROM THE SEWER AS POSSIBLE. WHENEVER IT IS IMPOSSIBLE TO OBTAIN VERTICAL SEPARATION AS STIPULATED ABOVE, BOTH THE WATER MAIN AND THE SEWER MAIN SHALL BE ENCASED IN CONCRETE FOR A MINIMUM DISTANCE OF 10 FEET FROM THE CROSSING POINT OF THE OTHER PIPE AS MEASURED NORMALLY FROM ALL POINTS ALONG THE PIPE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL CONTROL POINTS AND BENCHMARKS NECESSARY FOR THE WORK.
- ALL EXISTING UTILITY SERVICES LOCATED WITHIN THE WORK AREA ARE TO BE CUT, CAPPED AND ABANDONED AT HE MAIN (OR SOURCE) OR AS DIRECTED BY THE DEPARTMENT OF PUBLIC WORKS OR APPLICABLE UTILITY PROVIDER.
- ALL UTILITIES SHOWN ON THIS SITE ARE TO THE EXTERIOR OF THE BUILDING FOUNDATION ONLY. UTILITIES THROUGH THE FOUNDATION, ABOVE FG AND CONNECTED TO THE BUILDING, AND INSIDE THE BUILDING ARE THE RESPONSIBILITY OF THE MECHANICAL AND/ OR PLUMBING ENGINEER AND LOCATED IN THE BUILDING PLANS.
- ALL UTILITY WORK PERFORMED WITHIN RIGHT-OF-WAY SHALL BE PERFORMED BY A CONTRACTOR LICENSED BY THE CITY OF PORTSMOUTH AND WHO HAS OBTAINED A PERMIT FOR SUCH WORK FROM THE DPW, IF REQUIRED.
- ALL DEBRIS SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS AND NOT BE ALLOWED TO ACCUMULATE FOR MORE THAN THREE CONSECUTIVE DAYS. SITE SHALL BE KEPT FREE AND CLEAR OF ALL DEBRIS AND TRASH AT ALL TIMES. ALL DEBRIS SHALL BE STORED IN SEGREGATED RECYCLING TOTES/ BINS/ CONTAINERS AND TRANSPORTED TO AN APPROPRIATE RECYCLING CENTER.
- CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ALL UTILITIES AS SHOWN ON THESE PLANS IN ACCORDANCE WITH THE APPROPRIATE UTILITY COMPANY SPECIFICATIONS AND STANDARDS FOR CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING SPECIFICATIONS OF MATERIALS AND INSTALLATION PROCEDURES AND INSTALL IN ACCORDANCE WITH APPLICABLE REGULATIONS.
- THE CONTRACTOR IS RESPONSIBLE TO CONTACT AND DETERMINE, COORDINATE AND SCHEDULE ALL NECESSARY INSPECTIONS AND MONITORING WITH ALL APPROPRIATE UTILITY COMPANIES.
- THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND PAYING FOR ANY PERMITS AND/OR CONNECTION FEES REQUIRED TO PERFORM THE WORK.
- ALL ELEVATIONS SHOWN ARE IN REFERENCE TO THE PROJECT BENCHMARK AND MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR SITE RESTORATION AND CLEAN UP UPON COMPLETION OF ITS WORK.
- WATER AND SEWER TESTING SHALL CONFORM TO CITY OF PORTSMOUTH REGULATIONS, REQUIREMENTS, AND SPECIFICATIONS. COORDINATE TESTING OF SEWER AND WATER LINE CONSTRUCTION WITH THE CITY OF PORTSMOUTH.
- ALL MECHANICAL JOINTS TO BE MEGALUG SERIES 1100 INSTALLED IN ACCORDING WITH MANUFACTURER RECOMMENDATIONS OR APPROVED EQUAL.
- ALL SEWER AND WATER PIPE MATERIALS, STRUCTURES, APPURTENANCES AND INSTALLATION SHALL BE IN ACCORDANCE TO THE CITY OF PORTSMOUTH CONSTRUCTION SPECIFICATIONS AND REQUIREMENTS.
- ALL GRAVITY SEWER PIPE SHALL BE PVC (SDR35) AND BE GREEN IN COLOR.

- ALL WATER MAIN AND SERVICE PIPE SHALL BE DUCTILE IRON CEMENT LINED (DICL) CLASS 52.
- ALL HYDRANTS, VALVES, AND FITTINGS SHALL MEET CITY OF PORTSMOUTH SPECIFICATIONS AND REQUIREMENTS.
- THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, COVERS, PLATES, ANCILLARY MATERIALS AND HARDWARE, AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER INSTALLATION COMPLETE AND OPERATIONAL AND ACCEPTABLE TO THE CITY OF PORTSMOUTH AND PRIVATE UTILITIES.
- WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION SHALL BE FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.
- TRENCH AREAS FOR THE CONSTRUCTION OF THE UNDERGROUND UTILITIES ARE TO BE REPATCHED WITH SAME MATERIAL AT THE SAME DEPTH AS THE EXISTING MATERIAL, SEE UTILITY TRENCH DETAIL. THE AREAS OF TRENCHING SHALL BE NATURALLY SAW-CUT AND THE NEW REPATCHING MATERIAL SHALL BE PROPERLY SEALED IN ACCORDANCE WITH THE PLAN DETAILS AND THE CITY OF PORTSMOUTH SPECIFICATIONS AND REQUIREMENTS.
- DURING EXCAVATION AND CONSTRUCTION OF PIPES AND STRUCTURES, TRENCHES MUST BE ADEQUATELY BRACED AND PROTECTED AGAINST CAVE-IN.
- SEE ELECTRICAL PLANS FOR ADDITIONAL UTILITY NOTES.
- CONTRACTOR SHALL COORDINATE ALL FINAL APPROVALS ASSOCIATED WITH GAS, ELECTRIC, TELEPHONE, & CABLE WITH APPROPRIATE UTILITY PROVIDER.



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**RESIDENCES AT
FOUNDRY PLACE,
LOT 6: 181 HILL ST,
ASSESSORS MAP
138 LOT 62**
PORTSMOUTH, NH 03801

OWNER:

Deer Street Associates

7 BANKS ROCK ROAD
YORK HARBOR, ME

A / E Seal:



Scale:
Date: **3/17/2017**
Project Number: **14837.03**

REVISIONS		
NO.	DESCRIPTION	DATE
1	TAC PUBLIC HEARING	6/15/2017
2	TAC PUBLIC HEARING	8/21/2017

SITE PLAN REVIEW

**GENERAL
NOTES
SHEET 1 OF 2**

C1.0

PROJECT NOTES:

1. PROPERTY LOCATION: 181 HILL STREET
PORTSMOUTH, NH 03801
2. ASSESSORS MAP: MAP 138, LOT 62
3. ZONE: CHARACTER DISTRICT 5
4. USE: OFFICE, RESIDENTIAL, RETAIL
5. OWNER/APPLICANT: DEER STREET ASSOCIATES
7 BANKS ROCK ROAD
YORK HARBOR, ME 03911
TEL: (207) 363-3540
6. CIVIL & GEOTECH: GEOINSIGHT, INC.
186 GRANITE STREET, 3RD FLOOR SUITE A
MANCHESTER, NH 03101
TEL: (603) 314-0820
7. ARCHITECT: JSA INC.
273 CORPORATE DRIVE, SUITE 100
PORTSMOUTH, NH 03801
TEL: (603) 436-2551
8. LANDSCAPE ARCHITECT: GREENMAN - PEDERSEN, INC.
21 DANIELS STREET
PORTSMOUTH, NH 03801
TEL: (802) 359-4070
9. STRUCTURAL: JSN ASSOCIATES, INC.
1 AUTUMN STREET
PORTSMOUTH, NH 03801
TEL: (603) 433-8639
10. MPFP ENGINEER ENGINEERED SYSTEMS, INC.
237 LEXINGTON STREET, SUITE 207
WOBURN, MA 01801
TEL: (781) 569-6520
11. ELECTRICAL ENGINEER: ENGINEERED BUILDING SYSTEMS, INC.
22 MANCHESTER RD, SUITE 8-A
DERRY, NH 03038
TEL: (603) 870-9009
12. LAND SURVEYOR: AMBIT ENGINEERING, INC.
200 GRIFFIN RD, UNIT 3
PORTSMOUTH, NH 03801
TEL: (603) 430-9282
13. EXISTING CONDITIONS INFORMATION SHOWN IN THESE PLANS IS BASED ON THE PLAN TITLED "EXISTING CONDITIONS SITE PLAN" BY AMBIT ENGINEERING, INC. WITH DATE OF NOVEMBER 14, 2016.
14. ELEVATIONS ARE BASED ON THE MEAN SEA LEVEL, NORTH AMERICAN VERTICAL DATUM (NAVD-88).
15. FOR BENCHMARK INFORMATION SEE "EXISTING CONDITIONS SITE PLAN" BY AMBIT ENGINEERING, INC. WITH DATE OF NOVEMBER 14, 2016.
16. PARCELS ARE NOT IN A FLOOD HAZARD ZONE AS SHOWN ON FIRM PANEL 33015C0259E. MAY 17, 2005.
17. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXECUTE THE NPDES CONSTRUCTION GENERAL PERMIT NOI AND SWPPP AND PROVIDE A COPY TO THE CITY OF PORTSMOUTH.
18. UPON COMPLETION OF CONSTRUCTION ACTIVITIES, CONTRACTOR SHALL PREPARE AND SUBMIT AS-BUILT MYLARS AND DIGITAL FORMAT (.DWG FILE) ON DISK TO THE ENGINEER FOR REVIEW. AS-BUILTS SHALL BE PREPARED AND CERTIFIED BY A NEW HAMPSHIRE LICENSED LAND SURVEYOR OR PROFESSIONAL ENGINEER AND CONFORM TO THE CITY OF PORTSMOUTH STANDARDS.
19. ALL WATER AND SEWER CONSTRUCTION ACTIVITIES MUST BE PERFORMED BY A LICENSED CITY DRAIN LAYER. ALL TESTING RESULTS FOR THE UTILITIES

- AND SERVICE TIE CARDS ARE REQUIRED TO BE SUBMITTED TO THE CITY OF PORTSMOUTH DPW.
20. THE CONTRACTOR IS RESPONSIBLE TO OBTAIN THE FOLLOWING LOCAL PERMITS FROM THE CITY PRIOR TO CONSTRUCTION ACTIVITIES:
 - 20.1. SEWER CONNECTION PERMIT
 - 20.2. WATER CONNECTION PERMIT
 - 20.3. STORMWATER PERMIT
 - 20.4. DRIVEWAY PERMIT
 - 20.5. TEMPORARY DEWATERING PERMIT
 21. THE CONTRACTOR SHALL REFER TO FORCOMING REPORTS REGARDING SITE GEOTECHNICAL AND ENVIRONMENTAL CONDITIONS, TO BE PROVIDED BY THE OWNER.

GRADING AND DRAINAGE NOTES:

1. A DUST EMISSION CONTROL PLAN SHALL BE DEVELOPED AND IMPLEMENTED BY THE CONTRACTOR IF CONDITIONS WARRANT. ALL STORM DRAIN PIPES SHALL BE ADS HP STORM UNLESS NOTED OTHERWISE.
2. CONTRACTOR SHALL PROVIDE A FINISH PAVEMENT SURFACE AND LAWN AREAS FREE OF LOW SPOTS AND PONDING AREAS. CRITICAL AREAS INCLUDE BUILDING ENTRANCES, EXITS, RAMPS, AND LOADING DOCK AREAS ADJACENT TO THE BUILDING.
3. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE 6" OF LOAM WITH SEED, FERTILIZER AND MULCH.
4. ALL STORM DRAIN CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE NHDOT'S STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, LATEST EDITION.
5. SEE GEOTECHNICAL REPORT PREPARED BY GEOINSIGHT, INC. FOR SOIL FILL MATERIAL AND COMPACTION REQUIREMENTS.
6. ALL DRAIN PIPE SHALL MEET THE FOLLOWING SPECIFICATIONS.
 - ALL ROOF DRAINS SHALL BE CAST IRON UP TO BUILDING CONNECTION. SEE BUILDING PLUMBING PLANS (BY OTHERS) FOR CONTINUATION UNDER BUILDING.
 - ALL CATCH BASIN DRAINS SHALL BE 12" Ø OR LARGER AND SHALL BE ADS HP STORM. IF THE COVER IN TRAFFIC AREAS IS LESS THAN 2', CLASS V RCP SHALL BE USED. ALL MANHOLES, CATCH BASINS, VALVE BOXES, CURB BOXES, ETC WITHIN THE LIMIT OF WORK TO FINISH GRADE SHALL BE ADJUSTED TO FINISH GRADE.
7. CONTRACTOR SHALL VERIFY EXISTING INVERT ELEVATIONS IN FIELD PRIOR TO CONSTRUCTION AND SHALL NOTIFY THE OWNER'S CONSTRUCTION REPRESENTATIVE IF ELEVATIONS DIFFER FROM PLAN.

SITE NOTES

1. EXTERIOR PAVEMENT MARKINGS SHALL BE INSTALLED AS SHOWN, INCLUDING PARKING SPACES, STOP BARS, PAINTED ISLANDS, AND CENTERLINES. ALL MARKINGS SHALL BE WHITE UNLESS NOTED OTHERWISE. ALL THERMOPLASTIC PAVEMENT MARKINGS INCLUDING LEGENDS, ARROWS, CROSSWALKS, AND STOP BARS SHALL MEET THE AASHTO M249 REQUIREMENTS. ALL PAINTED PAVEMENT MARKINGS SHALL MEET THE REQUIREMENTS OF AASHTO M248 TYPE "F".
2. ALL PAVEMENT MARKINGS, ROADWAY SIGNAGE SHALL CONFORM TO THE REQUIREMENTS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", THE AMERICANS WITH DISABILITIES ACT, AND "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS", LATEST EDITIONS.
3. STOP BARS SHALL BE EIGHTEEN (18) INCHES WIDE, WHITE THERMOPLASTIC AND CONFORM TO CURRENT MUTCD STANDARDS.
4. EDGE, LANE, AND CENTERLINES SHALL BE FOUR (4) INCH WIDE LINES.
5. EDGE AND LANE DEMARCATION LINES SHALL BE PAINTED WHITE.
6. LANE DEMARCATION MARKINGS SEPARATING OPPOSING TRAFFIC DIRECTIONS SHALL BE PAINTED YELLOW.
7. PAINTED ISLANDS SHALL BE FOUR (4) INCH WIDE DIAGONAL LINES AT 3'-0" O.C. BORDERED BY FOUR (4) INCH WIDE LINES.
8. THE CONTRACTOR SHALL EMPLOY A NEW HAMPSHIRE LICENSED ENGINEER/SURVEYOR TO DETERMINE ALL LINES AND GRADES.
9. ALL WORK SHALL CONFORM THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS STANDARD SPECIFICATIONS.
10. CONTRACTOR TO PROVIDE BACKFILL AND COMPACTION AT CURB LINE AFTER CONCRETE FORMS FOR SIDEWALKS AND PADS HAVE BEEN STRIPPED.

CIVIL ABBREVIATIONS

ADD	ADDITIONAL INFORMATION
APPROX.	APPROXIMATE
BIT CONC	BITUMINOUS CONCRETE
BC	BOTTOM OF CURB
BH	BORING HOLE
BLDG	BUILDING
BOW	BOTTOM OF WALL
BOT	BOTTOM
DPW	CITY DEPARTMENT OF PUBLIC WORKS
CO	CLEAN OUT
CONC	CONCRETE
CY	CUBIC YARD
DICL	DUCTILE IRON CEMENT LINED PIPE
DSYL	DOUBLE SOLID YELLOW CENTER LINE
ECB	EXISTING CATCH BASIN
EDMH	EXISTING DRAIN MANHOLE
ELE	ELEVATION
EOP	EDGE OF PAVEMENT
ESMH	EXISTING SEWER MANHOLE
ETC	ELECTRIC TELEPHONE CABLE
EX	EXISTING
FE	FLANGED END
FT	FEET
GFA	GROSS FLOOR AREA
GV	GATE VALVE
HDPE	HIGH DENSITY POLYETHYLENE
HP	HIGH POINT
HYD	HYDRANT
INV	INVERT
LOC.	LOCATION
LOW	LIMIT OF WORK
MJ	MECHANICAL JOINT
N/F	NOW OR FORMERLY
OHW	OVER HEAD WIRE
PC	POINT OF CURVATURE
PCB	PROPOSED CATCH BASIN
PDMH	PROPOSED DRAIN MANHOLE
PFES	PROPOSED FLARED END SECTION
PGT	PROPOSED GREASE TRAP
PHW	PROPOSED HEADWALL
POS	PROPOSED OUTLET STRUCTURE
PSMH	PROPOSED SEWER MANHOLE
PROP	PROPOSED
PT	POINT OF TANGENCY
PVC	PIPE POLYVINYL CHLORIDE PIPE
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
RET	RETAINING
ROW	RIGHT OF WAY
SC	STORM CEPTOR
SF	SQUARE FEET
SGC	SLOPED GRANITE CURB
STA	STATION
SSWL	SINGLE SOLID WHITE LINE
SSYL	SINGLE SOLID YELLOW LINE
SDWL	SINGLE DASHED WHITE LINE
SDYL	SINGLE DASHED YELLOW LINE
SYL	SOLID YELLOW LINE
SY	SQUARE YARD
TBM	TEMPORARY BENCH MARK
TC	TOP OF CURB
TOW	TOP OF WALL
TP	TEST PIT
TYP	TYPICAL
UGE	UNDER GROUND ELECTRIC
UP	UTILITY POLE
VGC	VERTICAL GRANITE CURB
W/	WITH

PLAN LEGEND

	PROPERTY LINE
	SETBACK LINE
	ABUTTING PROPERTY LINE
	PROPOSED BUILDING
	CURB
	RETAINING WALL
	TRAFFIC ARROWS
	PARKING SPACE COUNT
	PROPOSED DRAIN MANHOLE
	PROPOSED CATCH BASIN
	PROPOSED STORM DRAIN
	PROP. SPOT GRADE
	PROPOSED SEWER MANHOLE
	PROPOSED SANITARY SEWER LINE
	PROPOSED WATER MAIN
	PROPOSED WATER VALVE
	PROPOSED HYDRANT
	PROPOSED GAS LINE
	PROPOSED GAS VALVE
	PROPOSED UNDERGROUND POWER
	PROPOSED UNDERGROUND COMMUNICATIONS
	PROPOSED TRANSFORMER
	EXISTING GRADE
	PROPOSED GRADE
	PROPOSED ELECTRICAL HANDHOLE
	SEE EXISTING CONDITIONS SITE PLAN FOR EXISTING CONDITION SYMBOLS AND LEGEND



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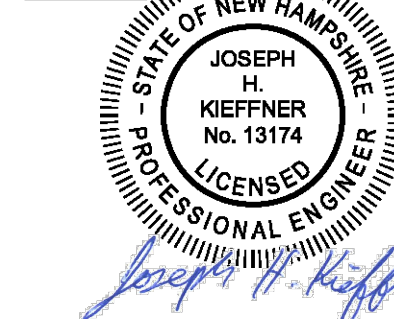
**RESIDENCES AT
FOUNDRY PLACE,
LOT 6: 181 HILL ST,
ASSESSORS MAP
138 LOT 62**
PORTSMOUTH, NH 03801

OWNER:

Deer Street Associates

7 BANKS ROCK ROAD
YORK HARBOR, ME

A / E Seal:



Scale:
Date: **3/17/2017**
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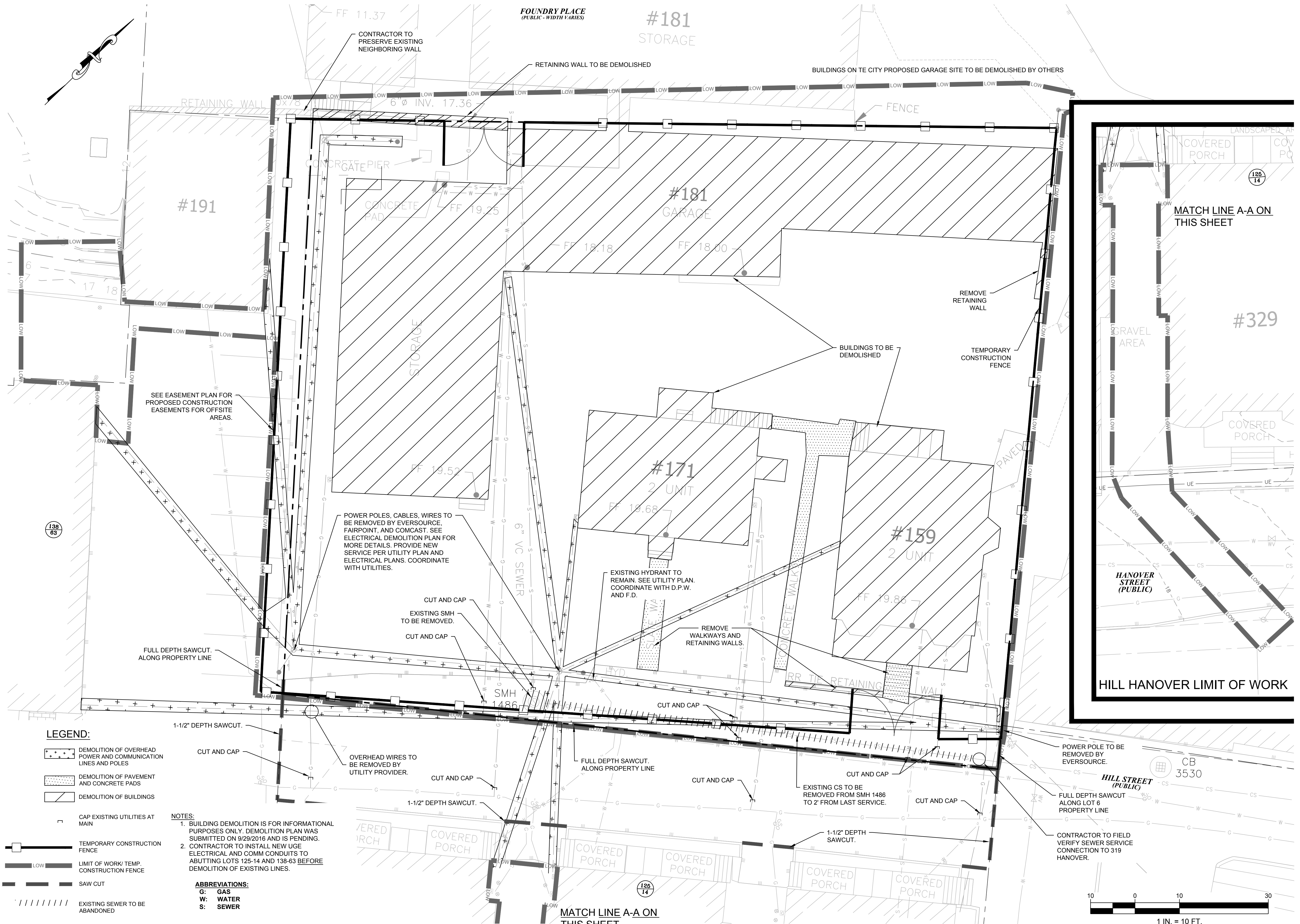
REVISIONS		
NO.	DESCRIPTION	DATE
1	TAC PUBLIC HEARING	6/15/2017
2	TAC PUBLIC HEARING	8/21/2017

SITE PLAN REVIEW

**GENERAL
NOTES
SHEET 2 OF 2**

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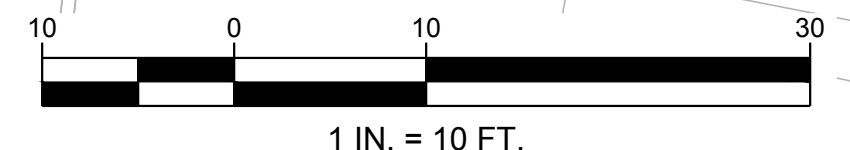
PERMIT PLANS - NOT FOR CONSTRUCTION



- LEGEND:**
- DEMOLITION OF OVERHEAD POWER AND COMMUNICATION LINES AND POLES
 - DEMOLITION OF PAVEMENT AND CONCRETE PADS
 - DEMOLITION OF BUILDINGS
 - CAP EXISTING UTILITIES AT MAIN
 - TEMPORARY CONSTRUCTION FENCE
 - LIMIT OF WORK/ TEMP. CONSTRUCTION FENCE
 - SAW CUT
 - EXISTING SEWER TO BE ABANDONED

- NOTES:**
1. BUILDING DEMOLITION IS FOR INFORMATIONAL PURPOSES ONLY. DEMOLITION PLAN WAS SUBMITTED ON 9/29/2016 AND IS PENDING.
 2. CONTRACTOR TO INSTALL NEW USE ELECTRICAL AND COMM CONDUITS TO ABUTTING LOTS 125-14 AND 138-63 BEFORE DEMOLITION OF EXISTING LINES.

- ABBREVIATIONS:**
- G: GAS
 - W: WATER
 - S: SEWER



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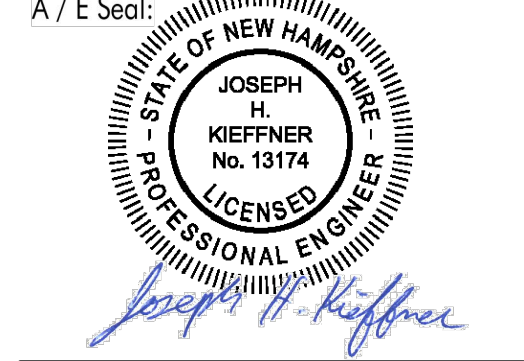
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**RESIDENCES AT
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 LOT 6: 181 HILL ST,
 ASSESSORS MAP
 138 LOT 62**
 PORTSMOUTH, NH 03801

OWNER:
 Deer Street Associates

7 BANKS ROCK ROAD
 YORK HARBOR, ME



Scale: 1"=10'
 Date: 3/17/2017
 Project Number: 14837.03

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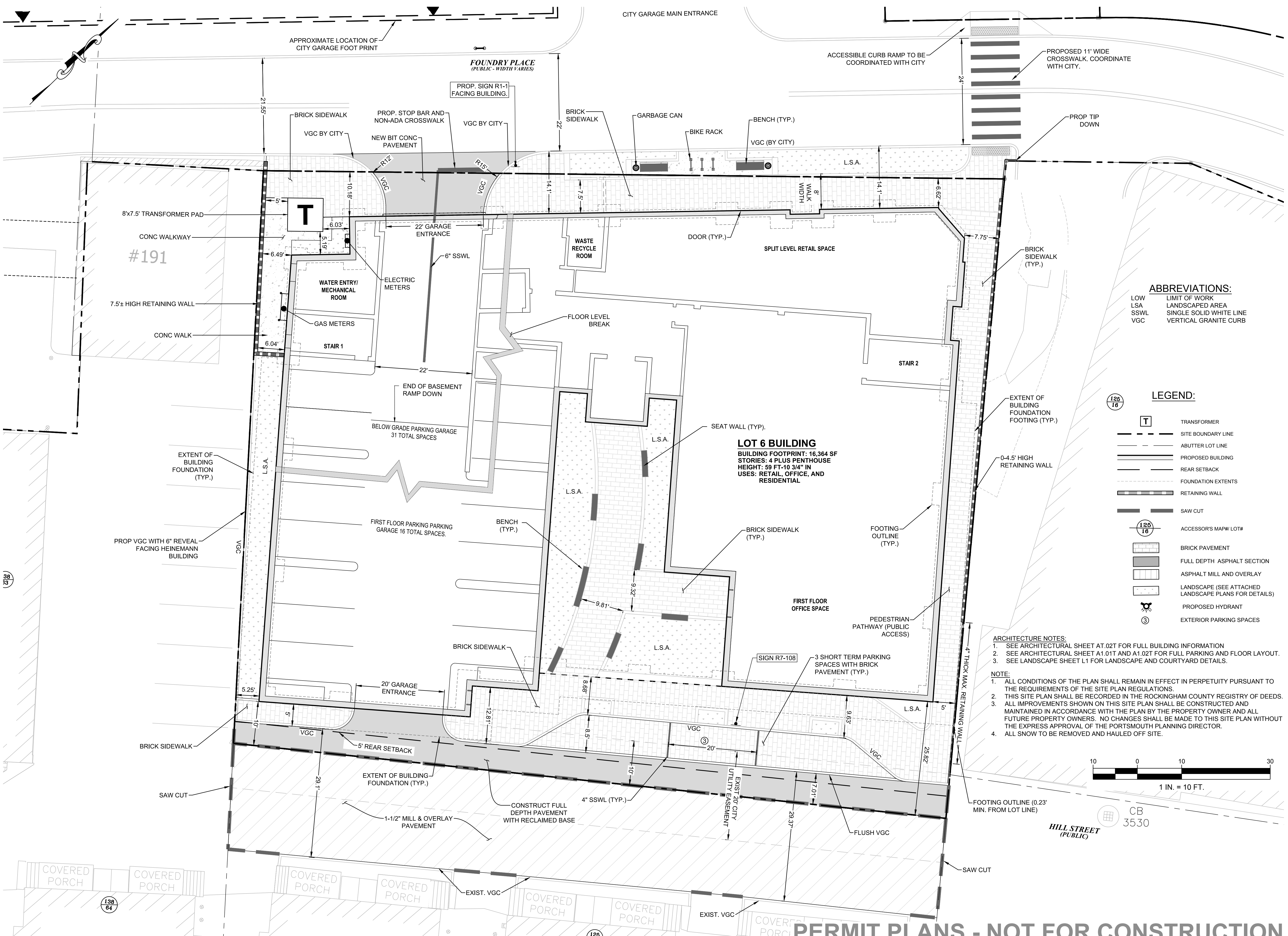
SITE PLAN REVIEW

**DEMOLITION
 PLAN**

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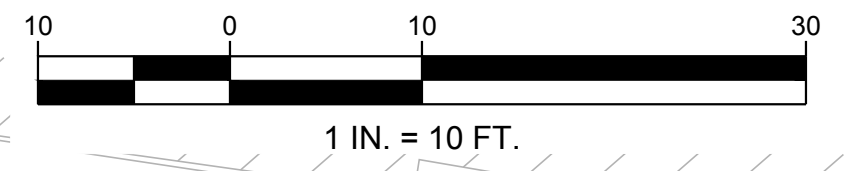
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38
38

138
64

126
17



- ABBREVIATIONS:**
- LOW LIMIT OF WORK
 - LSA LANDSCAPED AREA
 - SSWL SINGLE SOLID WHITE LINE
 - VGC VERTICAL GRANITE CURB
- LEGEND:**
- T** TRANSFORMER
 - SITE BOUNDARY LINE
 - - - ABUTTER LOT LINE
 - PROPOSED BUILDING
 - REAR SETBACK
 - FOUNDATION EXTENTS
 - RETAINING WALL
 - SAW CUT
 - (126/16) ACCESSOR'S MAP# / LOT#
 - [Pattern] BRICK PAVEMENT
 - [Pattern] FULL DEPTH ASPHALT SECTION
 - [Pattern] ASPHALT MILL AND OVERLAY
 - [Pattern] LANDSCAPE (SEE ATTACHED LANDSCAPE PLANS FOR DETAILS)
 - [Symbol] PROPOSED HYDRANT
 - (3) EXTERIOR PARKING SPACES

LOT 6 BUILDING
 BUILDING FOOTPRINT: 16,364 SF
 STORIES: 4 PLUS PENTHOUSE
 HEIGHT: 59 FT-10 3/4" IN
 USES: RETAIL, OFFICE, AND RESIDENTIAL

- ARCHITECTURE NOTES:**
- SEE ARCHITECTURAL SHEET A1.02T FOR FULL BUILDING INFORMATION
 - SEE ARCHITECTURAL SHEET A1.01T AND A1.02T FOR FULL PARKING AND FLOOR LAYOUT.
 - SEE LANDSCAPE SHEET L1 FOR LANDSCAPE AND COURTYARD DETAILS.
- NOTE:**
- ALL CONDITIONS OF THE PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REGULATIONS.
 - THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
 - ALL IMPROVEMENTS SHOWN ON THIS SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.
 - ALL SNOW TO BE REMOVED AND HAULED OFF SITE.

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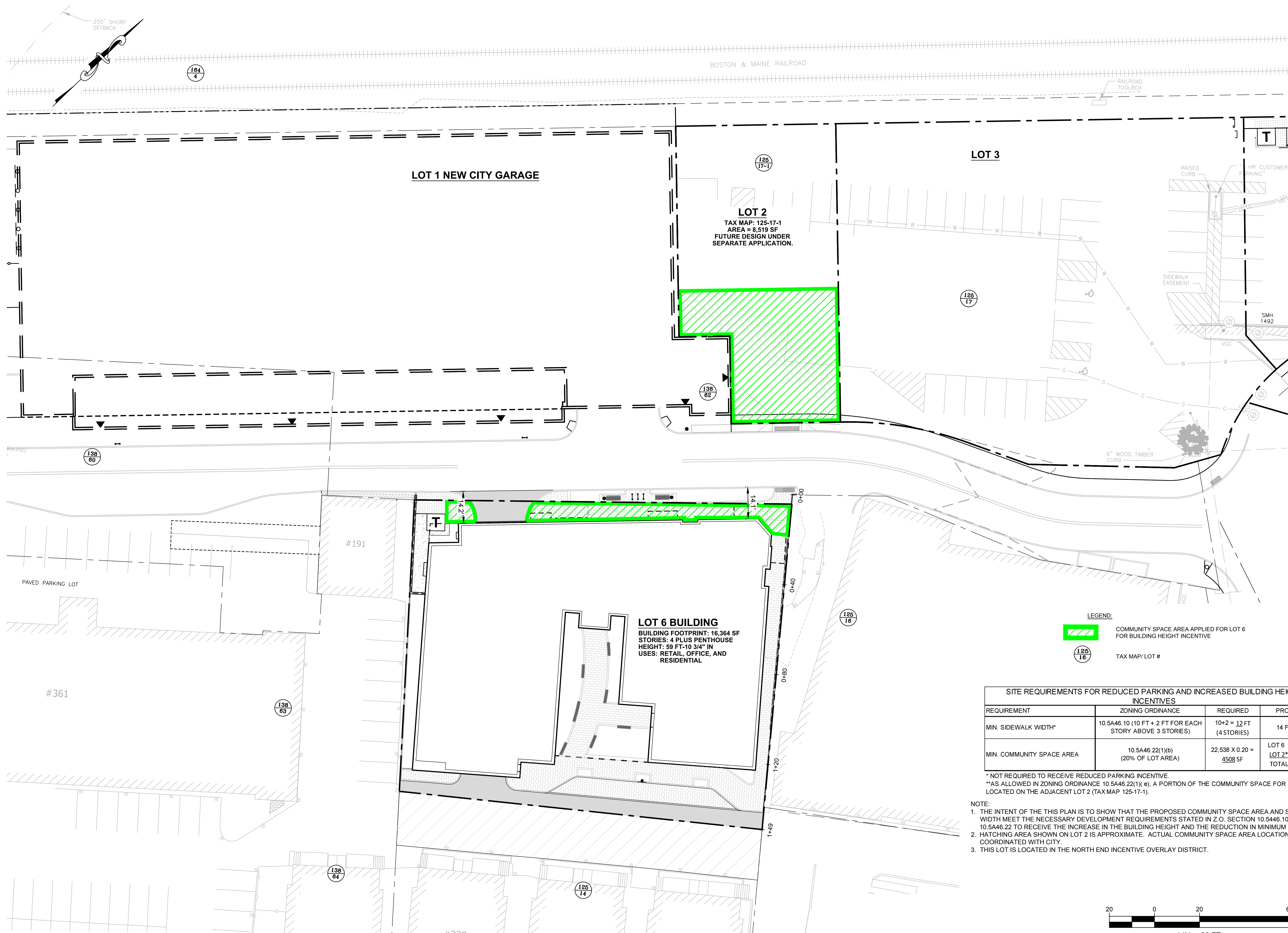
SITE PLAN REVIEW

SITE PLAN

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LOT 1 NEW CITY GARAGE

LOT 2
 TAX MAP: 125-17-1
 AREA = 8,519 SF
 FUTURE DESIGN UNDER
 SEPARATE APPLICATION.

LOT 3

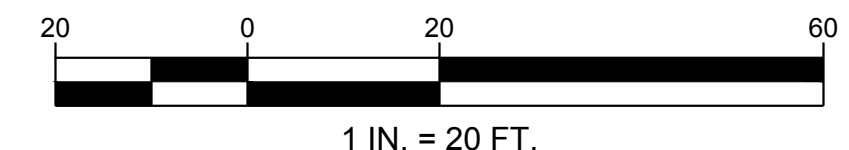
LOT 6 BUILDING
 BUILDING FOOTPRINT: 16,364 SF
 STORIES: 4 PLUS PENTHOUSE
 HEIGHT: 59 FT-10 3/4" IN
 USES: RETAIL, OFFICE, AND
 RESIDENTIAL

LEGEND:
 COMMUNITY SPACE AREA APPLIED FOR LOT 6 FOR BUILDING HEIGHT INCENTIVE
 TAX MAP/ LOT #

SITE REQUIREMENTS FOR REDUCED PARKING AND INCREASED BUILDING HEIGHT INCENTIVES			
REQUIREMENT	ZONING ORDINANCE	REQUIRED	PROVIDED
MIN. SIDEWALK WIDTH*	10.5A46.10 (10 FT + 2 FT FOR EACH STORY ABOVE 3 STORIES)	10+2 = 12 FT (4 STORIES)	14 FT MIN.
MIN. COMMUNITY SPACE AREA	10.5A46.22(1)(b) (20% OF LOT AREA)	22,538 X 0.20 = 4508 SF	LOT 6 1134 SF LOT 2** 3374 SF TOTAL 4508 SF

* NOT REQUIRED TO RECEIVE REDUCED PARKING INCENTIVE.
 **AS ALLOWED IN ZONING ORDINANCE 10.5A46.22(1)(e), A PORTION OF THE COMMUNITY SPACE FOR LOT 6 IS LOCATED ON THE ADJACENT LOT 2 (TAX MAP 125-17-1).

- NOTE:**
1. THE INTENT OF THIS PLAN IS TO SHOW THAT THE PROPOSED COMMUNITY SPACE AREA AND SIDEWALK WIDTH MEET THE NECESSARY DEVELOPMENT REQUIREMENTS STATED IN Z.O. SECTION 10.5446.10 AND 10.5A46.22 TO RECEIVE THE INCREASE IN THE BUILDING HEIGHT AND THE REDUCTION IN MINIMUM PARKING.
 2. HATCHING AREA SHOWN ON LOT 2 IS APPROXIMATE. ACTUAL COMMUNITY SPACE AREA LOCATION IS TO BE COORDINATED WITH CITY.
 3. THIS LOT IS LOCATED IN THE NORTH END INCENTIVE OVERLAY DISTRICT.



PERMIT PLANS - NOT FOR CONSTRUCTION



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 ELECTRICAL ENGINEER
 DERRY, NEW HAMPSHIRE

**RESIDENCES AT
 FOUNDRY PLACE,
 LOT 6: 181 HILL ST,
 ASSESSORS MAP
 138 LOT 62**
 PORTSMOUTH, NH 03801

OWNER:
Deer Street Associates

7 BANKS ROCK ROAD
 YORK HARBOR, ME



Scale: 1"=20'
 Date: 3/17/2017
 Project Number: 14837.03

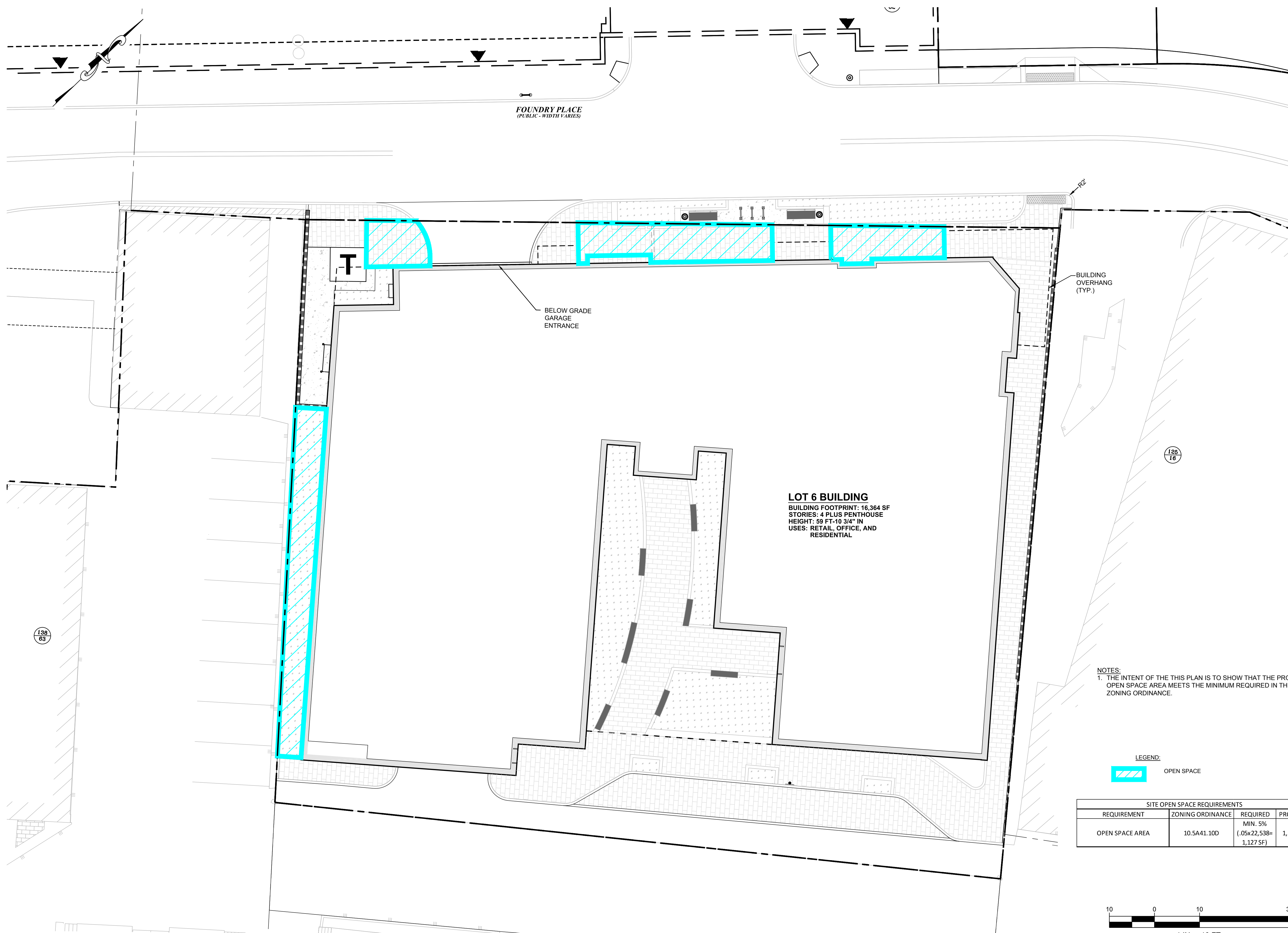
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1	TAC PUBLIC HEARING	6/15/2017
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SITE PLAN REVIEW

**DEVELOPMENT
 INCENTIVES
 PLAN**


C3.1

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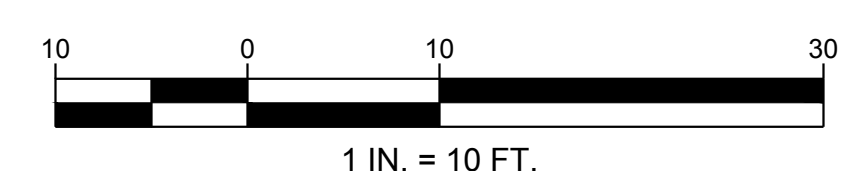


LOT 6 BUILDING
 BUILDING FOOTPRINT: 16,364 SF
 STORIES: 4 PLUS PENTHOUSE
 HEIGHT: 59 FT-10 3/4" IN
 USES: RETAIL, OFFICE, AND RESIDENTIAL

NOTES:
 1. THE INTENT OF THIS PLAN IS TO SHOW THAT THE PROPOSED OPEN SPACE AREA MEETS THE MINIMUM REQUIRED IN THE ZONING ORDINANCE.

LEGEND:
 OPEN SPACE

SITE OPEN SPACE REQUIREMENTS			
REQUIREMENT	ZONING ORDINANCE	REQUIRED	PROVIDED
OPEN SPACE AREA	10.5A41.10D	MIN. 5% (.05x22,538= 1,127 SF)	1,135 SF



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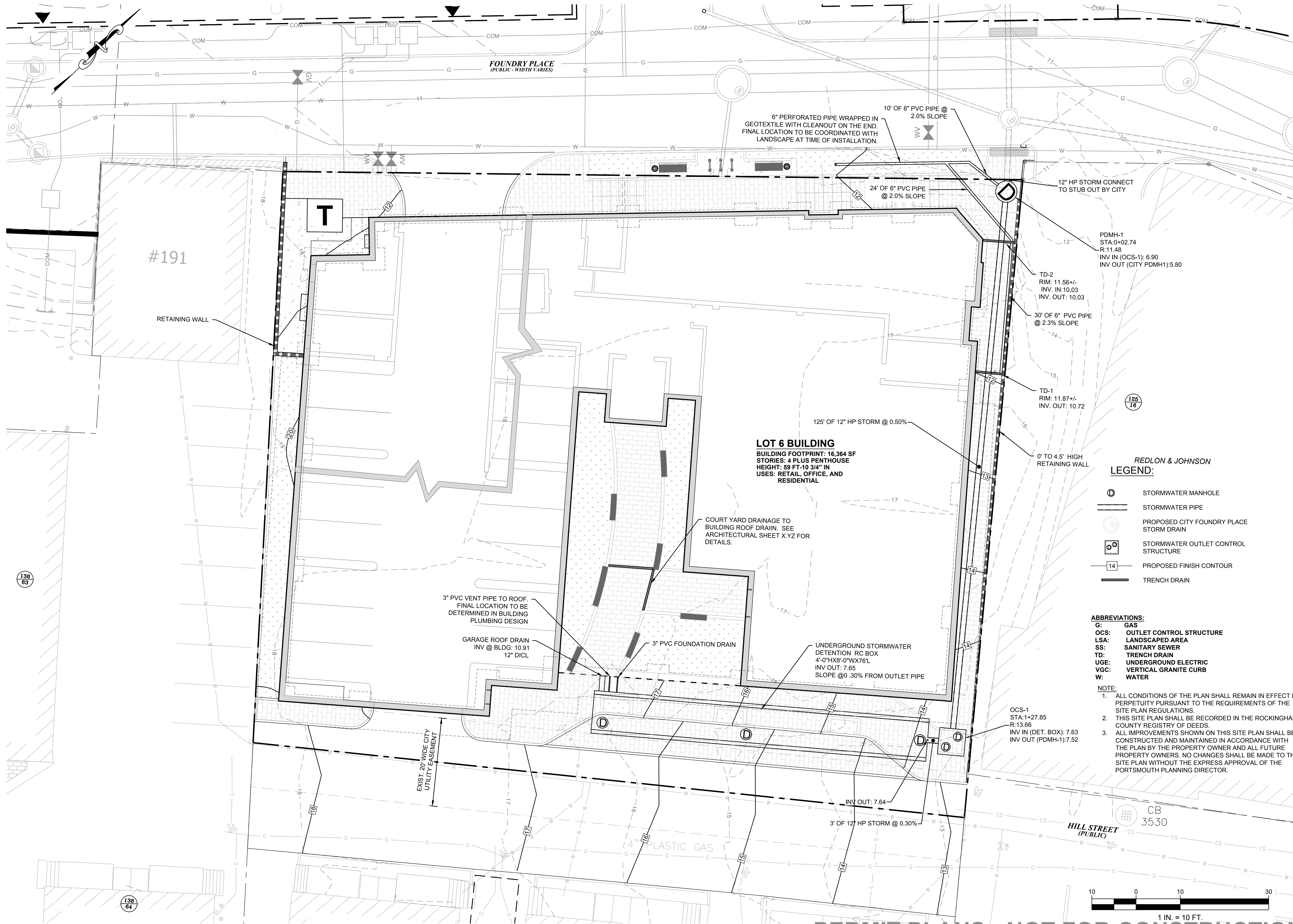
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**SITE PLAN REVIEW
 OPEN SPACE
 PLAN**

C3.2

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LOT 6 BUILDING
 BUILDING FOOTPRINT: 16,364 SF
 STORIES: 4 PLUS PENTHOUSE
 HEIGHT: 59 FT-10 3/4" IN
 USES: RETAIL, OFFICE, AND RESIDENTIAL

**REDLON & JOHNSON
 LEGEND:**

- STORMWATER MANHOLE
- STORMWATER PIPE
- PROPOSED CITY FOUNDRY PLACE STORM DRAIN
- STORMWATER OUTLET CONTROL STRUCTURE
- PROPOSED FINISH CONTOUR
- TRENCH DRAIN

ABBREVIATIONS:
 G: GAS
 OCS: OUTLET CONTROL STRUCTURE
 LSA: LANDSCAPED AREA
 SS: SANITARY SEWER
 TD: TRENCH DRAIN
 UGE: UNDERGROUND ELECTRIC
 VGC: VERTICAL GRANITE CURB
 W: WATER

- NOTE:**
- ALL CONDITIONS OF THE PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REGULATIONS.
 - THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
 - ALL IMPROVEMENTS SHOWN ON THIS SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.

HILL STREET (PUBLIC)
 CB 35.30

10 0 10 30
 1 IN. = 10 FT.

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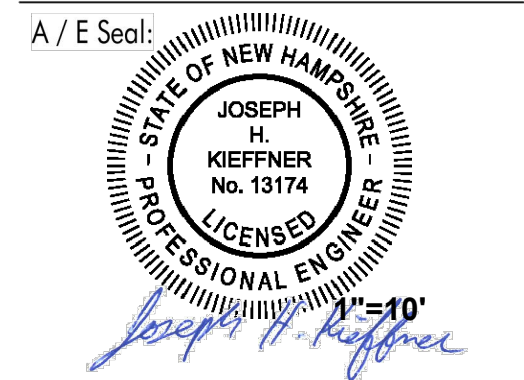
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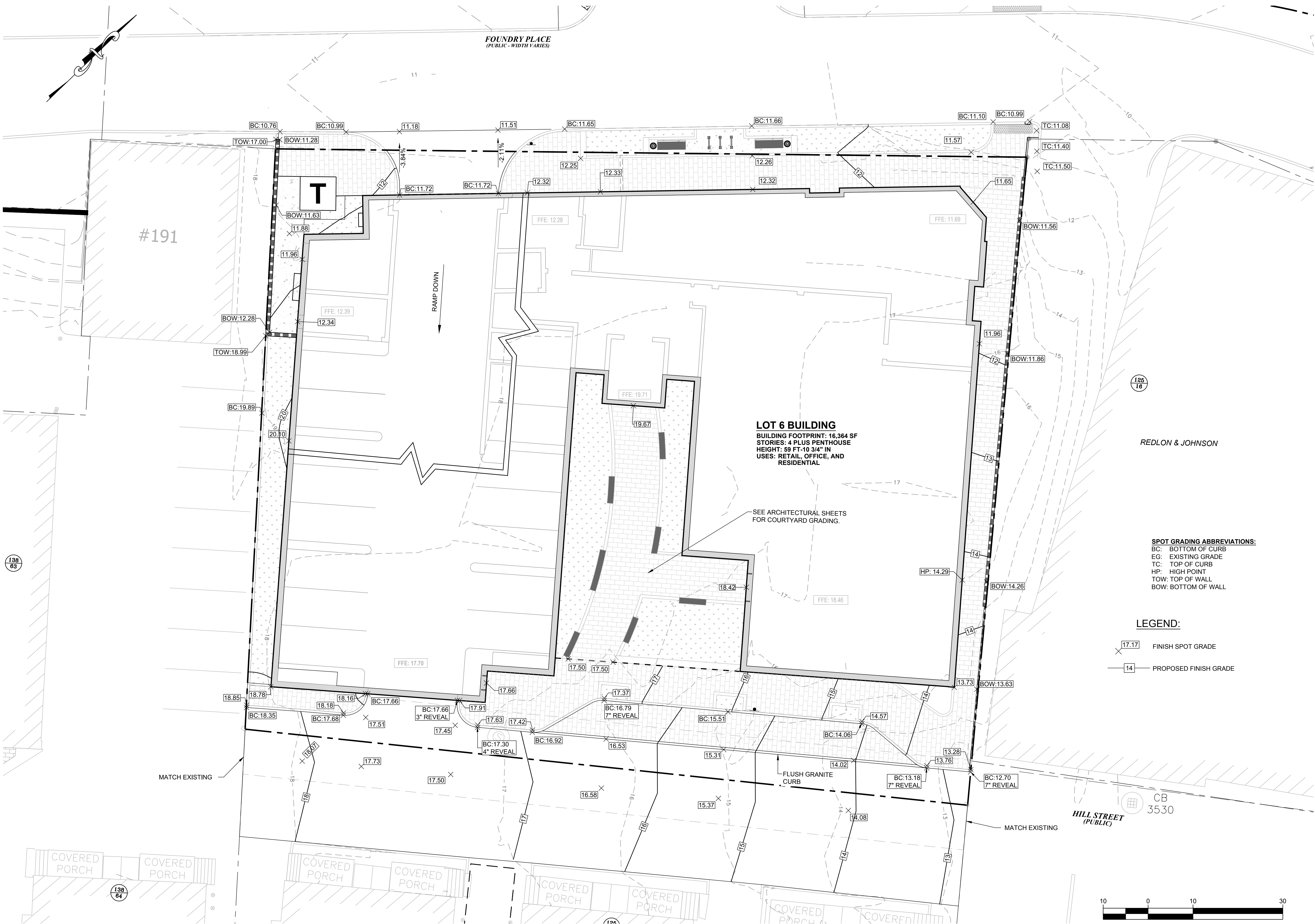
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1	TAC PUBLIC HEARING	6/15/2017
2	TAC PUBLIC HEARING	8/21/2017

SITE PLAN REVIEW

**GRADING
 AND
 DRAINAGE
 PLAN**

C4.0



FOUNDRY PLACE
(PUBLIC - WIDTH VARIES)

#191

LOT 6 BUILDING
 BUILDING FOOTPRINT: 16,364 SF
 STORIES: 4 PLUS PENTHOUSE
 HEIGHT: 59 FT-10 3/4" IN
 USES: RETAIL, OFFICE, AND
 RESIDENTIAL

SEE ARCHITECTURAL SHEETS
 FOR COURTYARD GRADING.

REDLON & JOHNSON

SPOT GRADING ABBREVIATIONS:
 BC: BOTTOM OF CURB
 EG: EXISTING GRADE
 TC: TOP OF CURB
 HP: HIGH POINT
 TOW: TOP OF WALL
 BOW: BOTTOM OF WALL

LEGEND:

- X 17.17 FINISH SPOT GRADE
- 14 PROPOSED FINISH GRADE

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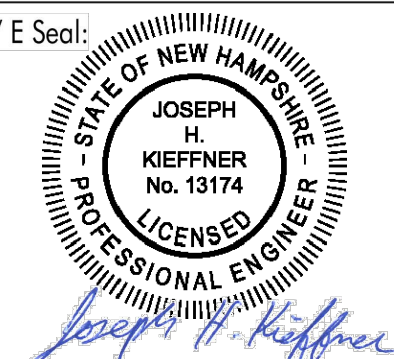
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OWNER:

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7 BANKS ROCK ROAD
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A / E Seal:



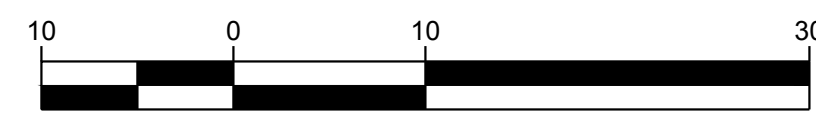
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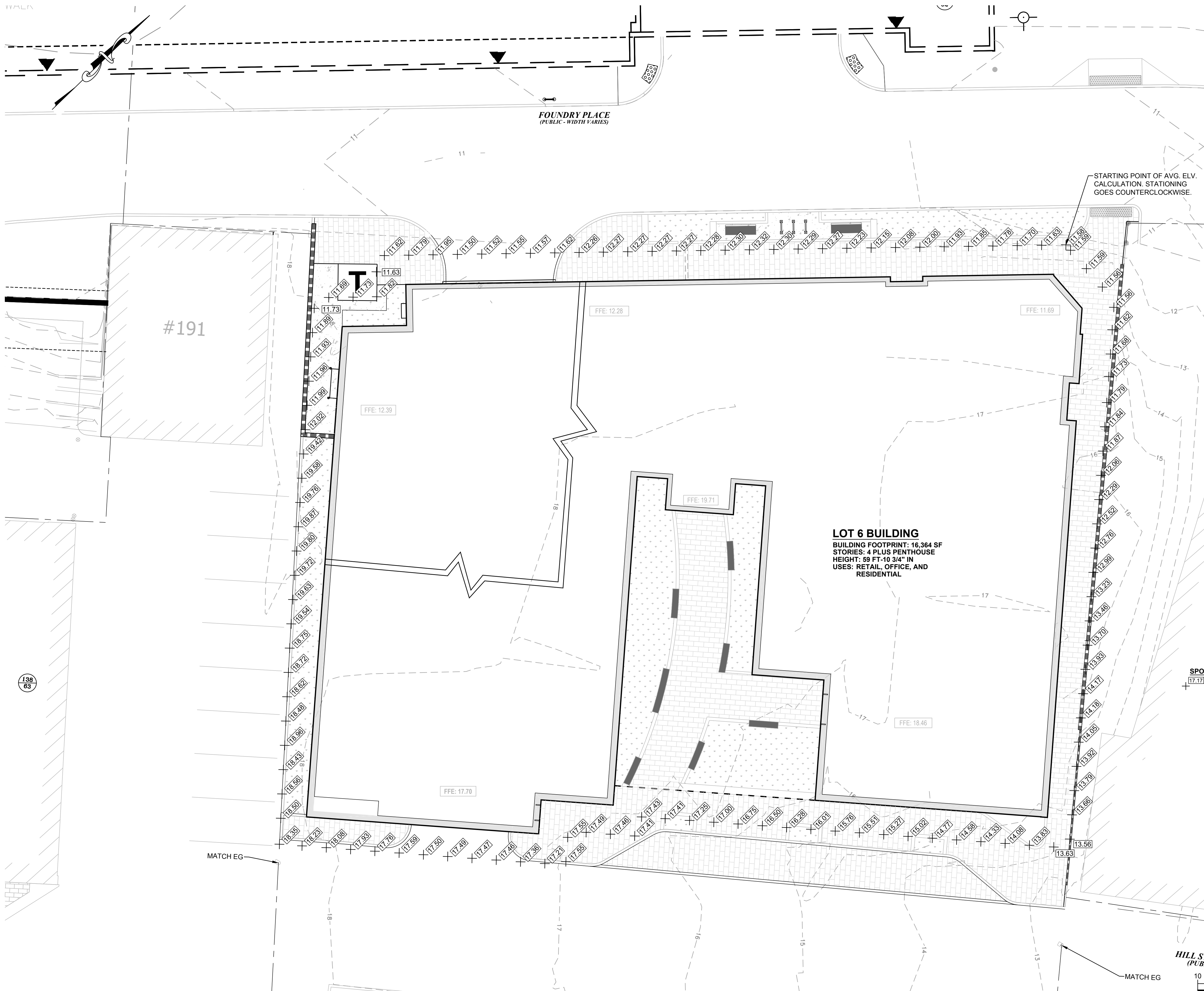
SITE PLAN REVIEW

**GRADING
 DETAIL**



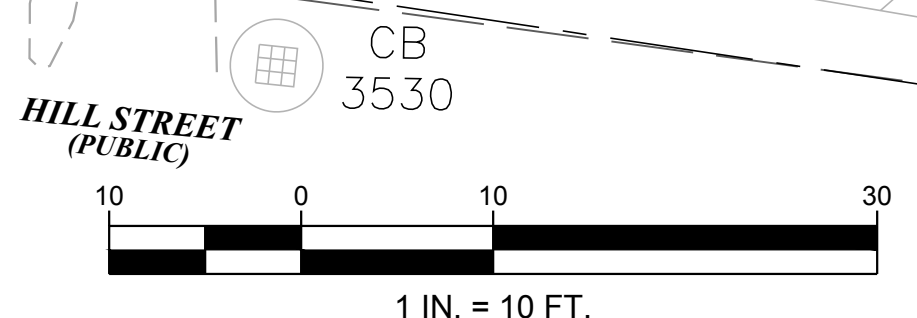
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C4.1



STATION	ELEVATION	STATION	ELEVATION
0+00	11.58	2+90	17.93
0+05	11.63	2+95	17.76
0+10	11.70	3+00	17.59
0+15	11.78	3+05	17.50
0+20	11.85	3+10	17.49
0+25	11.93	3+15	17.47
0+30	12.00	3+20	17.46
0+35	12.08	3+25	17.36
0+40	12.15	3+30	17.21
0+45	12.23	3+35	17.55
0+50	12.27	3+40	17.55
0+55	12.29	3+45	17.49
0+60	12.30	3+50	17.46
0+65	12.32	3+55	17.41
0+70	12.30	3+60	17.43
0+75	12.28	3+65	17.41
0+80	12.27	3+70	17.25
0+85	12.27	3+75	17.00
0+90	12.27	3+80	16.75
0+95	12.27	3+85	16.50
1+00	12.26	3+90	16.28
1+05	11.62	3+95	16.01
1+10	11.57	4+00	15.76
1+15	11.55	4+05	15.51
1+20	11.52	4+10	15.27
1+25	11.50	4+15	15.02
1+30	11.95	4+20	14.77
1+35	11.79	4+25	14.58
1+40	11.62	4+30	14.33
1+45	11.63	4+35	14.08
1+50	11.82	4+40	13.83
1+55	11.73	4+45	13.63
1+60	11.69	4+50	13.56
1+65	11.73	4+55	13.66
1+70	11.89	4+60	13.79
1+75	11.93	4+65	13.92
1+80	11.96	4+70	14.05
1+85	11.99	4+75	14.18
1+90	12.02	4+80	14.17
1+95	19.42	4+85	13.93
2+00	19.58	4+90	13.70
2+05	19.76	4+95	13.46
2+10	19.87	5+00	13.23
2+15	19.80	5+05	12.99
2+20	19.72	5+10	12.76
2+25	19.63	5+15	12.52
2+30	19.54	5+20	12.29
2+35	18.75	5+25	12.06
2+40	18.72	5+30	11.87
2+45	18.62	5+35	11.84
2+50	18.48	5+40	11.79
2+55	18.47	5+45	11.73
2+60	18.43	5+50	11.68
2+65	18.56	5+55	11.62
2+70	18.50	5+60	11.56
2+75	18.35	5+65	11.56
2+80	18.23	5+70	11.59
2+85	18.08	5+75	11.59
AVERAGE:		14.52	

SPOT GRADING ABBREVIATIONS:
 [Symbol] SPOT GRADE



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 ASSESSORS MAP
 138 LOT 62**
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7 BANKS ROCK ROAD
 YORK HARBOR, ME



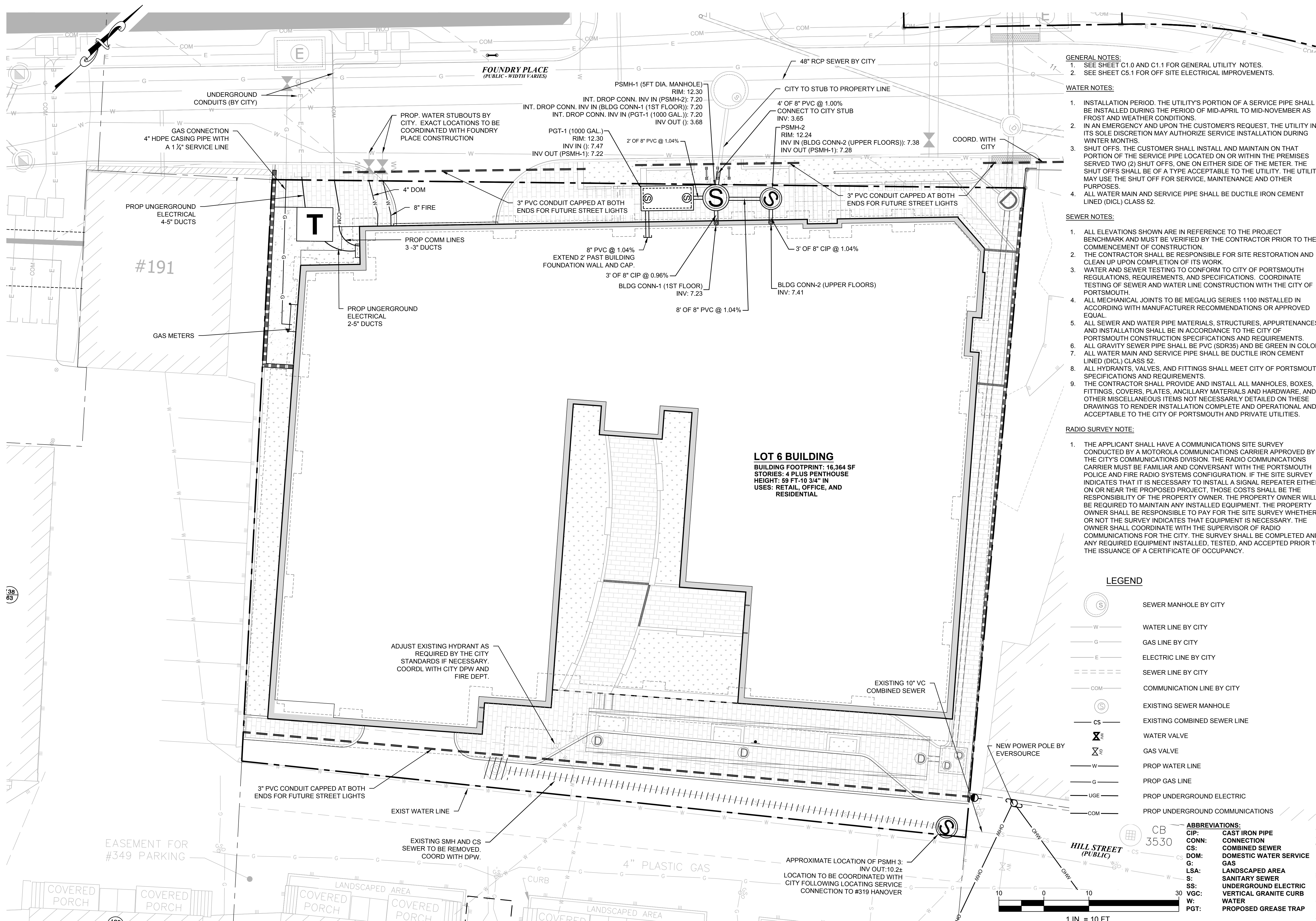
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SITE PLAN REVIEW

**AVERAGE
 GRADE
 PLANE
 CALCULATION**

C4.2



GENERAL NOTES:
 1. SEE SHEET C1.0 AND C1.1 FOR GENERAL UTILITY NOTES.
 2. SEE SHEET C5.1 FOR OFF SITE ELECTRICAL IMPROVEMENTS.

WATER NOTES:
 1. INSTALLATION PERIOD. THE UTILITY'S PORTION OF A SERVICE PIPE SHALL BE INSTALLED DURING THE PERIOD OF MID-APRIL TO MID-NOVEMBER AS FROST AND WEATHER CONDITIONS.
 2. IN AN EMERGENCY AND UPON THE CUSTOMER'S REQUEST, THE UTILITY IN ITS SOLE DISCRETION MAY AUTHORIZE SERVICE INSTALLATION DURING WINTER MONTHS.
 3. SHUT OFFS. THE CUSTOMER SHALL INSTALL AND MAINTAIN ON THAT PORTION OF THE SERVICE PIPE LOCATED ON OR WITHIN THE PREMISES SERVED TWO (2) SHUT OFFS, ONE ON EITHER SIDE OF THE METER. THE SHUT OFFS SHALL BE OF A TYPE ACCEPTABLE TO THE UTILITY. THE UTILITY MAY USE THE SHUT OFF FOR SERVICE, MAINTENANCE AND OTHER PURPOSES.
 4. ALL WATER MAIN AND SERVICE PIPE SHALL BE DUCTILE IRON CEMENT LINED (DICT) CLASS 52.

SEWER NOTES:
 1. ALL ELEVATIONS SHOWN ARE IN REFERENCE TO THE PROJECT BENCHMARK AND MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
 2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SITE RESTORATION AND CLEAN UP UPON COMPLETION OF ITS WORK.
 3. WATER AND SEWER TESTING TO CONFORM TO CITY OF PORTSMOUTH REGULATIONS, REQUIREMENTS, AND SPECIFICATIONS. COORDINATE TESTING OF SEWER AND WATER LINE CONSTRUCTION WITH THE CITY OF PORTSMOUTH.
 4. ALL MECHANICAL JOINTS TO BE MEGALUG SERIES 1100 INSTALLED IN ACCORDING WITH MANUFACTURER RECOMMENDATIONS OR APPROVED EQUAL.
 5. ALL SEWER AND WATER PIPE MATERIALS, STRUCTURES, APPURTENANCES AND INSTALLATION SHALL BE IN ACCORDANCE TO THE CITY OF PORTSMOUTH CONSTRUCTION SPECIFICATIONS AND REQUIREMENTS.
 6. ALL GRAVITY SEWER PIPE SHALL BE PVC (SDR35) AND BE GREEN IN COLOR.
 7. ALL WATER MAIN AND SERVICE PIPE SHALL BE DUCTILE IRON CEMENT LINED (DICT) CLASS 52.
 8. ALL HYDRANTS, VALVES, AND FITTINGS SHALL MEET CITY OF PORTSMOUTH SPECIFICATIONS AND REQUIREMENTS.
 9. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, COVERS, PLATES, ANCILLARY MATERIALS AND HARDWARE, AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER INSTALLATION COMPLETE AND OPERATIONAL AND ACCEPTABLE TO THE CITY OF PORTSMOUTH AND PRIVATE UTILITIES.

RADIO SURVEY NOTE:
 1. THE APPLICANT SHALL HAVE A COMMUNICATIONS SITE SURVEY CONDUCTED BY A MOTOROLA COMMUNICATIONS CARRIER APPROVED BY THE CITY'S COMMUNICATIONS DIVISION. THE RADIO COMMUNICATIONS CARRIER MUST BE FAMILIAR AND CONVERSANT WITH THE PORTSMOUTH POLICE AND FIRE RADIO SYSTEMS CONFIGURATION. IF THE SITE SURVEY INDICATES THAT IT IS NECESSARY TO INSTALL A SIGNAL REPEATER EITHER ON OR NEAR THE PROPOSED PROJECT, THOSE COSTS SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER. THE PROPERTY OWNER WILL BE REQUIRED TO MAINTAIN ANY INSTALLED EQUIPMENT. THE PROPERTY OWNER SHALL BE RESPONSIBLE TO PAY FOR THE SITE SURVEY WHETHER OR NOT THE SURVEY INDICATES THAT EQUIPMENT IS NECESSARY. THE OWNER SHALL COORDINATE WITH THE SUPERVISOR OF RADIO COMMUNICATIONS FOR THE CITY. THE SURVEY SHALL BE COMPLETED AND ANY REQUIRED EQUIPMENT INSTALLED, TESTED, AND ACCEPTED PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.

LOT 6 BUILDING
 BUILDING FOOTPRINT: 16,364 SF
 STORIES: 4 PLUS PENTHOUSE
 HEIGHT: 59 FT-10 3/4" IN
 USES: RETAIL, OFFICE, AND RESIDENTIAL

LEGEND

- SEWER MANHOLE BY CITY
- WATER LINE BY CITY
- GAS LINE BY CITY
- ELECTRIC LINE BY CITY
- SEWER LINE BY CITY
- COMMUNICATION LINE BY CITY
- EXISTING SEWER MANHOLE
- EXISTING COMBINED SEWER LINE
- WATER VALVE
- GAS VALVE
- PROP WATER LINE
- PROP GAS LINE
- PROP UNDERGROUND ELECTRIC
- PROP UNDERGROUND COMMUNICATIONS

ABBREVIATIONS:
 CIP: CAST IRON PIPE CONNECTION
 CS: COMBINED SEWER
 DOM: DOMESTIC WATER SERVICE
 G: GAS
 LSA: LANDSCAPED AREA
 S: SANITARY SEWER
 SS: UNDERGROUND ELECTRIC
 VGC: VERTICAL GRANITE CURB
 W: WATER
 PGT: PROPOSED GREASE TRAP

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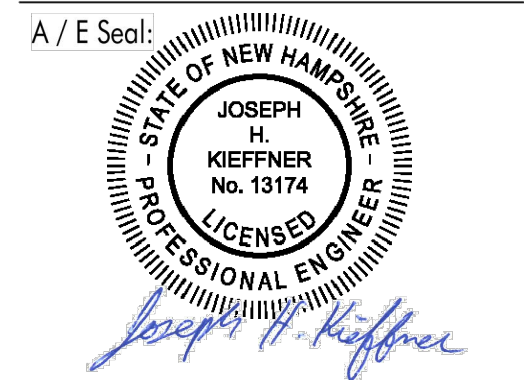
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 PORTSMOUTH, NH 03801

OWNER:
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7 BANKS ROCK ROAD
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Scale: 1"=10'
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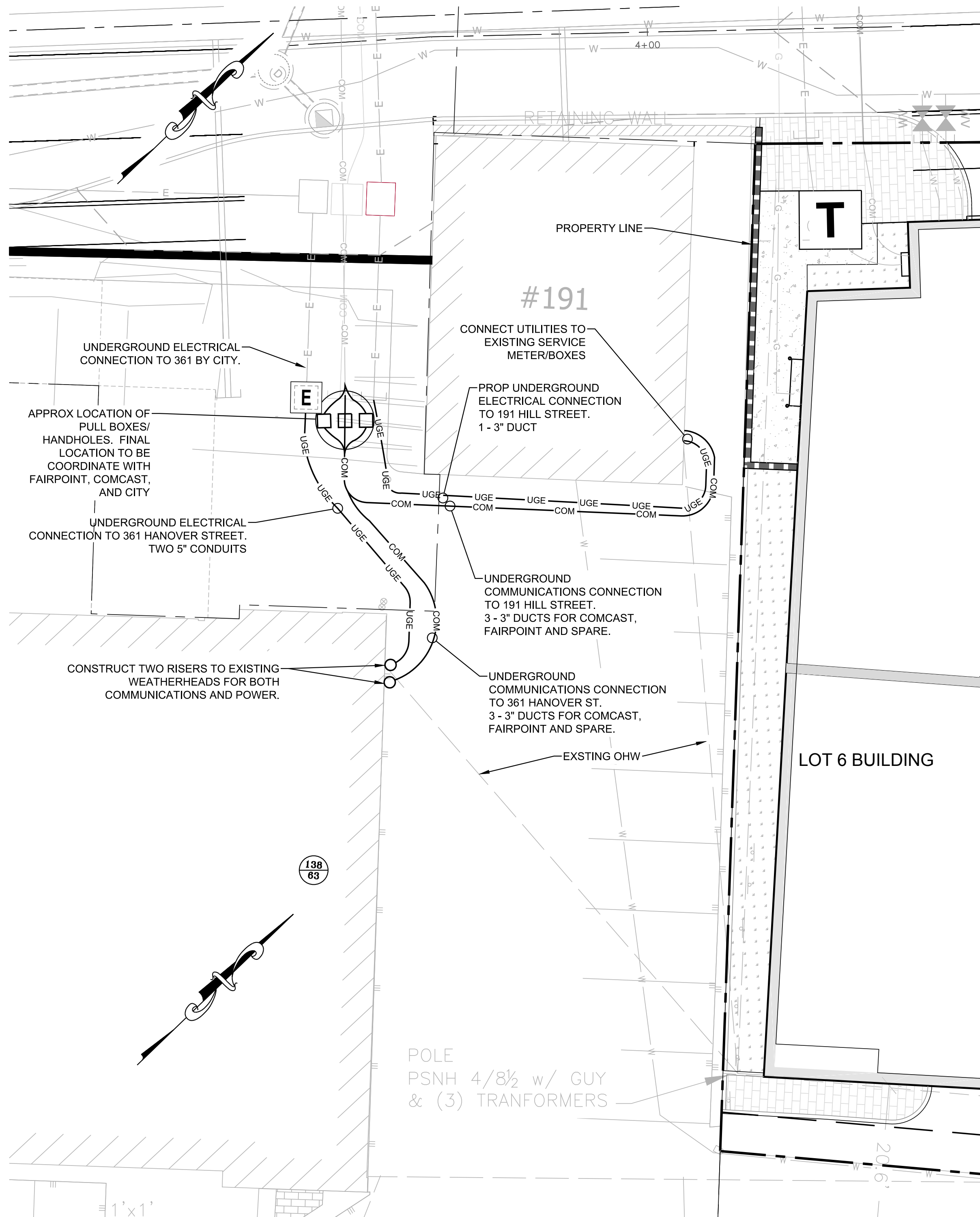
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SITE PLAN REVIEW

**UTILITIES
 PLAN**

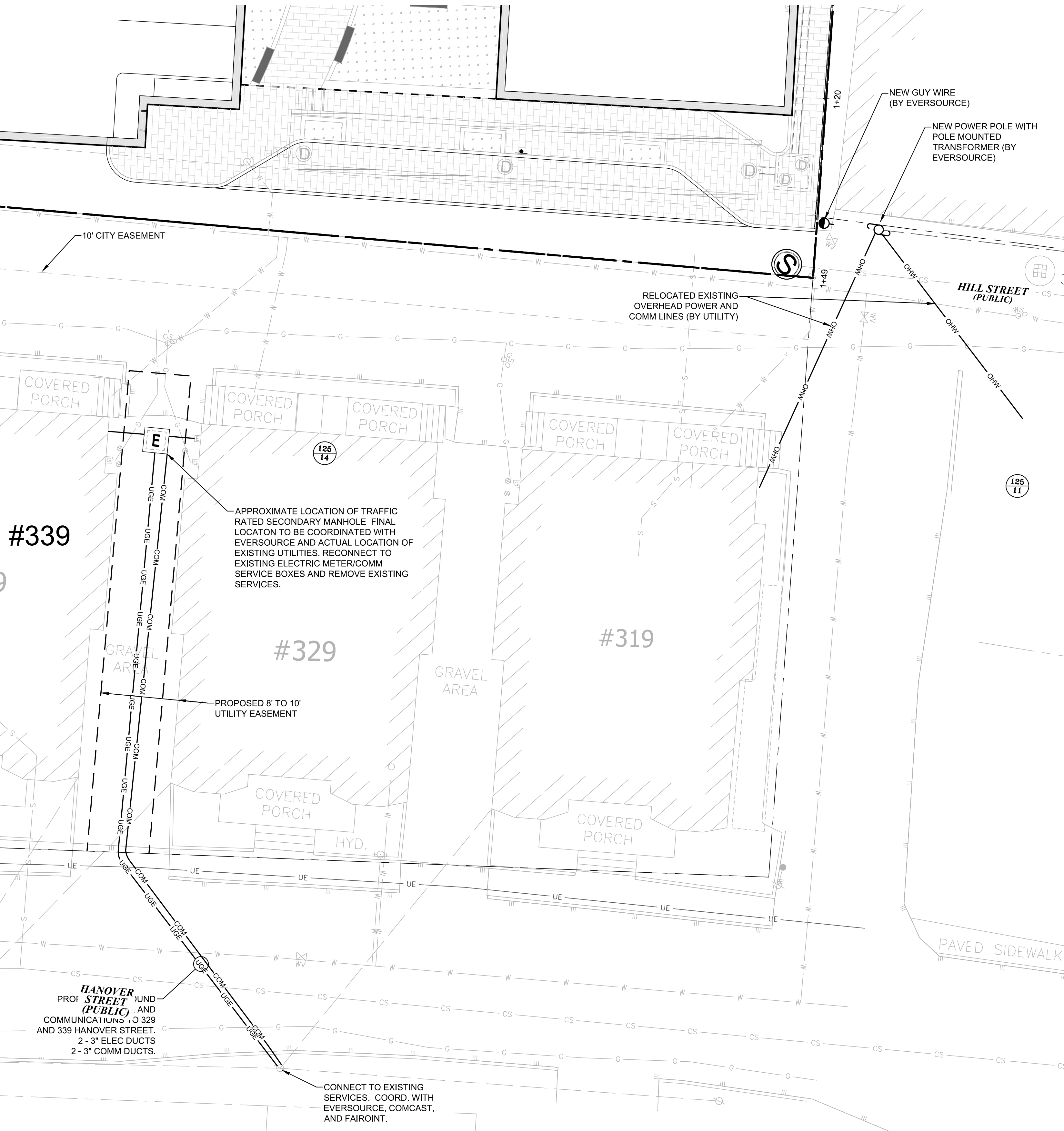
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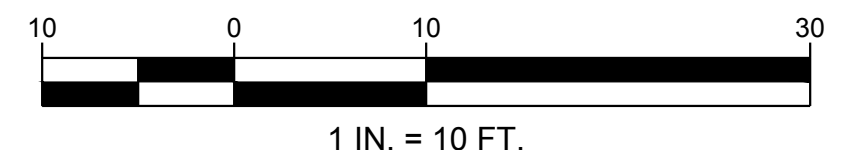


KEARSARGE MILL CONDOMINIUMS LOT OFFSITE ELECTRICAL IMPROVEMENTS
ASSESSOR'S MAP 138, LOT 63

- UTILITY NOTES:**
- SEE ELECTRICAL SHEET SERIES "SE" FOR ELECTRICAL AND COMMUNICATION DETAILS.
 - THE CONTRACTOR SHALL COORDINATE UTILITY INSTALLATION WITH APPROPRIATE UTILITY, AFFECTED LAND OWNERS, AND THE CITY DPW.
 - THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UTILITIES BY CONDUCTING TEST PITS AS NEED TO LOCATE THE PROPOSED UTILITIES PER APPLICABLE REGULATORY AND UTILITY REQUIREMENTS.
 - THE CONTRACTOR SHALL PROVIDE AND INSTALL THE DUCTS FROM THE POLE TO THE SERVICE METER CONNECTION AND THE ELECTRICAL CONTRACTOR WILL PROVIDE AND INSTALL THE CONDUCTORS FROM THE POLE TO THE BUILDING CONNECTION.
 - THE ELECTRICAL POWER AND COMMUNICATION DUCTS SHALL BE INSTALLED IN ACCORDANCE WITH UTILITY SPECIFICATIONS. IT SHALL BE COMPOSED OF A MATERIAL WHICH IS ACCEPTABLE TO THE UTILITY AND THE INSTALLATION AND PIPE SHALL BE IN CONFORMANCE WITH GOOD ENGINEERING PRACTICES AND IN ACCORD THE REQUIREMENTS OF LAW.
 - THE ELECTRICAL POWER DUCTS SHALL HAVE A MINIMUM GROUND COVER OF THREE (3) FEET IN VEHICULAR TRAVEL WAYS AND TWO FEET IN OTHER AREAS UNLESS AUTHORIZED IN WRITING BY THE UTILITY.
 - PROPOSED LOCATIONS ARE APPROXIMATE, AND FINAL LOCATIONS WILL BE LOCATED IN THE FIELD AFTER EXISTING UTILITIES LOCATIONS HAVE BEEN DETERMINED BY TEST PITS. FINAL LOCATION TO BE COORDINATED AND APPROVED BY THE APPROPRIATE UTILITY PROVIDER.



HILL STREET OFFSITE ELECTRICAL IMPROVEMENTS
ASSESSOR'S MAP 125, LOT 14 AND 15



PERMIT PLANS - NOT FOR CONSTRUCTION

JSA
ARCHITECTS
INTERIORS
PLANNERS

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SITE PLAN REVIEW

**OFF SITE
ELECTRICAL
IMPROVEMENTS
PLAN**

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HILL HANOVER LIMIT OF WORK SHEET C6.0

TEMPORARY CONSTRUCTION PERMIT PLANS - NOT FOR CONSTRUCTION



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**RESIDENCES AT
FOUNDRY PLACE,
LOT 6: 181 HILL ST,
ASSESSORS MAP
138 LOT 62**
PORTSMOUTH, NH 03801

OWNER:
Deer Street Associates

7 BANKS ROCK ROAD
YORK HARBOR, ME



Scale:
Date: **3/17/2017**
Project Number: **14837.03**

REVISIONS		
NO.	DESCRIPTION	DATE
1	TAC PUBLIC HEARING	6/15/2017
2	TAC PUBLIC HEARING	8/21/2017

SITE PLAN REVIEW

**EROSION &
SEDIMENT
CONTROL
PLAN**

C6.0

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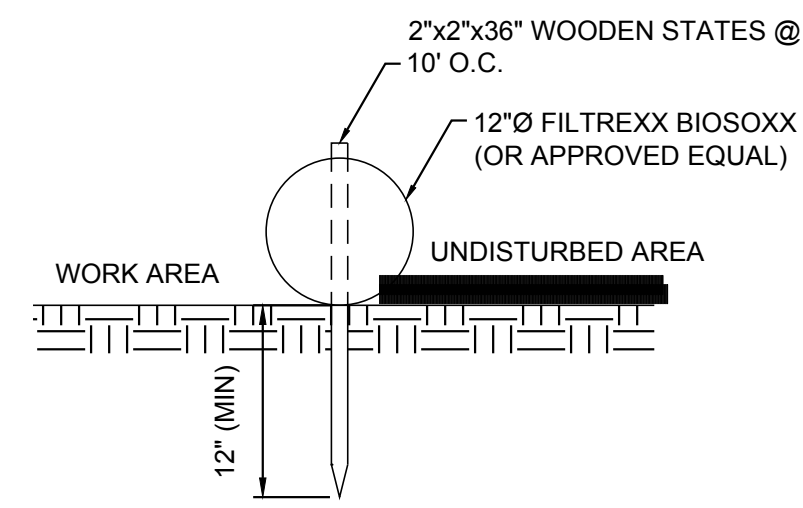
GENERAL EROSION CONTROL NOTES

- PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL INSTALL ALL EROSION AND SEDIMENT CONTROL DEVICES AS SHOWN ON THE PLAN. CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH THE TERMS AND CONDITIONS OF THE CONSTRUCTION GENERAL PERMIT ISSUED BY THE EPA AND THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) SUBMITTED WITH THE PERMIT DOCUMENTS.
- THE CONTRACTOR IS RESPONSIBLE FOR THE TIMELY INSPECTION, MAINTENANCE, AND/OR REPLACEMENT OF ALL TEMPORARY AND PERMANENT EROSION CONTROL DEVICES TO ENSURE PROPER OPERATION THROUGHOUT THE LIFE OF THE CONSTRUCTION PROJECT OR UNTIL IT IS ACCEPTED BY THE OWNER. THE OWNER IS RESPONSIBLE THEREAFTER.
- NO DUST WILL BE ALLOWED ON OR OFF THE WORK SITE. CONTRACTOR MUST CONDUCT CONTINUOUS EFFORTS TO CONTROL DUST. LACK OF SUFFICIENT DUST CONTROL COULD CAUSE THE PROJECT TO BE STOPPED UNTIL ISSUES ARE RESOLVED. CONTRACTOR TO PAY ALL PENALTIES RESULTING PLUS \$100/ OFFENSE AS DETERMINED BY CITY.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CLEAN ROADS, CONTROL DUST, AND TAKE ALL NECESSARY MEASURES TO ENSURE THAT THE SITE AND ALL ADJACENT ROADS BE MAINTAINED IN A MUD AND DUST-FREE CONDITION AT ALL TIMES THROUGHOUT THE LIFE OF THE CONTRACT. DUST CONTROL SHALL INCLUDE, BUT IS NOT LIMITED TO, CAREFUL USE OF WATER, CALCIUM CHLORIDE, AND/OR CRUSHED STONE OR COARSE GRAVEL AS CONTROL BMPs.
- ALL PROPOSED CONSTRUCTION ENTRANCES SHALL BE CONSTRUCTED AS SHOWN ON THE PLANS AND DETAILS. ALL VEHICLE TRAFFIC ENTERING OR EXITING THE WORK AREA SHALL PASS OVER THE CONSTRUCTION ENTRANCES TO REDUCE THE TRACKING OR FLOWING OF SEDIMENT ONTO THE SURROUNDING ROADWAYS UNTIL THE SITE IS STABILIZED.
- THE CONTRACTOR SHALL INSTALL ALL PERIMETER SEDIMENT CONTROL BARRIERS AS SHOWN ON THE EROSION CONTROL PLAN. SILT FENCE OR SILT SOCK SHALL ALSO BE INSTALLED AROUND ANY SOIL STOCKPILE AREAS. THE CONTRACTOR SHALL STABILIZE DISTURBED AREAS AS QUICKLY AS PRACTICABLE. AREAS DAMAGED DURING CONSTRUCTION SHALL BE RESODDED, RESEEDED, OR OTHERWISE STABILIZED OR RESTORED TO THEIR ORIGINAL STATE. TREES AND OTHER EXISTING VEGETATION SHALL BE RETAINED WHEREVER FEASIBLE.
- THE CONTRACTOR MAY USE TEMPORARY SEDIMENTATION AND/ OR INFILTRATION BASINS ON THE SITE DURING CONSTRUCTION. THESE STRUCTURES SHOULD BE STRATEGICALLY LOCATED AND SIZED COMMENSURATE WITH THE PHASE OF CONSTRUCTION. THE CONTRACTOR SHALL REMOVE AND STABILIZE THESE STRUCTURES WHEN NO LONGER REQUIRED.
- TEMPORARY COVERINGS OR OTHER APPROVED STABILIZATION METHOD SHALL BE APPLIED TO ANY DISTURBED AREAS (INCLUDING SOIL STOCKPILE AREAS) THAT HAVE NOT YET REACHED FINISHED GRADE AS SOON AS POSSIBLE, BUT NOT MORE THAN FOURTEEN (14) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS TEMPORARILY CEASED, UNLESS THE ACTIVITY IS TO RESUME WITHIN TWENTY-ONE (21) DAYS.
- PERMANENT VEGETATIVE COVER SHALL BE APPLIED TO ALL DISTURBED SOIL AREAS THAT HAVE REACHED FINISHED LANDSCAPE GRADE AS SOON AS POSSIBLE, BUT NOT MORE THAN FOURTEEN (14) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS PERMANENTLY CEASED. THE RECOMMENDED PERMANENT SEEDING DATES ARE APRIL 1 TO JUNE 15 AND AUGUST 15 TO OCTOBER 1. WHERE AREAS HAVE REACHED FINISHED GRADE AND ARE NOT INTENDED TO BE VEGETATED, TEMPORARY TARPS OR OTHER STABILIZING COVERS MAY BE PLACED.
- AREAS WHICH HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED SHOULD BE MULCHED IMMEDIATELY FOLLOWING SEEDING IN ADDITION TO AREAS WHICH CANNOT BE SEEDED WITHIN THE RECOMMENDED SEEDING DATES AND ANY SOIL STOCKPILE AREAS. TEMPORARY MULCHING SHOULD BE PERFORMED AS SOON AS POSSIBLE, BUT NOT MORE THAN FOURTEEN (14) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS TEMPORARILY CEASED UNLESS THE ACTIVITY IS TO RESUME WITHIN TWENTY-ONE (21) DAYS. STRAW OR HAY MULCH, WOOD FIBER MULCH, AND HYDROMULCH ARE RECOMMENDED MULCHES.
- IF SEEDING CANNOT BE COMPLETED IMMEDIATELY OR WITHIN THE RECOMMENDED SEEDING DATES, USE THE TEMPORARY MULCHING MEASURE TO PROTECT THE SITE AND DELAY SEEDING UNTIL THE NEXT RECOMMENDED SEEDING PERIOD.
- WHERE TEMPORARY COVERS ARE USED OVER STOCKPILES AND/ OR DISTURBED SOIL AREAS, THE COVERS SHALL BE SUFFICIENTLY ANCHORED AGAINST WIND. THE CONTRACTOR MUST ANTICIPATE AND MANAGE RUNOFF FROM SUCH COVERINGS.
- ANY EXISTING OR PROPOSED CATCH BASINS THAT MAY BE SUBJECT TO SEDIMENTATION PROCESSES SHALL HAVE SILT SOCKS INSTALLED TO PREVENT SEDIMENT FROM ENTERING THE PROPOSED STORM DRAINAGE SYSTEM PRIOR TO PERMANENT STABILIZATION OF THE DISTURBED SITE. THE PROPER INLET PROTECTION DEVICES SHALL BE INSTALLED WHERE STORM DRAIN INLETS ARE TO BE MADE OPERATIONAL BEFORE PERMANENT STABILIZATION OF ANY DISTURBED DRAINAGE AREA.
- ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE CONSTRUCTED IN ACCORDANCE WITH THE NHDOT STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGES AND THE NEW HAMPSHIRE STORMWATER MANUAL VOL. 3 AND OTHER APPLICABLE REGULATIONS.
- WASTE DISPOSAL: MATERIALS WHICH COULD BE A POTENTIAL SOURCE OF STORM WATER POLLUTION SUCH AS GASOLINE, DIESEL FUEL, HYDRAULIC OIL, ETC., SHALL BE STORED AT THE END OF EACH DAY IN A STORAGE TRAILER OR COVERED LOCATION, OR TAKEN OFF-SITE AND PROPERLY DISPOSED OF. ALL TYPES OF WASTE GENERATED AT THIS SITE SHALL BE DISPOSED OF IN A MANNER CONSISTENT WITH STATE LAW AND/OR REGULATIONS.
- GOOD HOUSEKEEPING: THE PROJECT SITE SHALL PROVIDE FOR THE MINIMIZATION OF EXPOSURE OF CONSTRUCTION DEBRIS (INCLUDING, BUT NOT LIMITED TO, INSULATION, WIRING, PAINTS AND PAINT CANS, SOLVENTS, WALL BOARD, ETC.) TO PRECIPITATION BY MEANS OF DISPOSAL AND/OR PROPER SHELTER OR COVER. IN ADDITION, CONSTRUCTION WASTE MUST BE PROPERLY DISPOSED OF IN ORDER TO AVOID EXPOSURE TO PRECIPITATION AT THE END OF EACH WORKING DAY.
- REPAIRS OR REPLACEMENT OF DRAINAGE STRUCTURES, SWALES, OR OTHER DRAINAGE ELEMENTS SHOULD BE DONE WITHIN 12 HRS OF NOTIFICATION OF A DEFICIENCY REPORTS. IF AN EMERGENCY SITUATION IS IMMINENT THEN REPAIR/REPLACEMENT MUST BE DONE IMMEDIATELY TO AVERT FAILURE OR IMPACT TO NEARBY RESIDENTS.
- IMMEDIATELY PRIOR TO THE END OF CONSTRUCTION OR ACCEPTANCE BY THE OWNER, THE CONTRACTOR SHALL INSPECT ALL ON-SITE STORMWATER MANAGEMENT FACILITIES AND CLEAN AND FLUSH AS NECESSARY AND REQUESTED BY THE ENGINEER AND/ OR THE OWNER.
- THE CONTRACTOR OR NOMINEE WILL BE THE PARTY RESPONSIBLE FOR THE INSPECTION, MAINTENANCE, AND REQUIRED DOCUMENTATION OF ALL STORMWATER STRUCTURES UNTIL FORMAL PROJECT COMPLETION.

PROJECT SPECIFIC CONSTRUCTION SEQUENCING:

DESCRIBED BELOW ARE THE MAJOR CONSTRUCTION ACTIVITIES ANTICIPATED. THEY ARE PRESENTED IN THE ORDER (OR SEQUENCE) THEY ARE EXPECTED TO BEGIN, BUT EACH ACTIVITY WILL NOT NECESSARILY BE COMPLETED BEFORE THE NEXT BEGINS. ALSO, THESE ACTIVITIES COULD OCCUR IN A DIFFERENT ORDER IF NECESSARY TO MAINTAIN ADEQUATE EROSION AND SEDIMENTATION CONTROL. ALL ACTIVITIES AND THE TIMEFRAME (BEGINNING AND ENDING DATES) SHALL BE RECORDED BY THE CONTRACTOR:

- CONTRACTOR TO REVIEW ALL APPLICABLE LOCAL, STATE AND FEDERAL PERMITS.
- REVIEW AND CERTIFY THE STORMWATER POLLUTION PREVENTION PLAN.
- INSTALL TEMPORARY CONSTRUCTION FENCING.
- INSTALL STABILIZED CONSTRUCTION ENTRANCE.
- INSTALL EROSION CONTROL MEASURES PRIOR TO EARTH MOVING OPERATIONS.
- DECOMMISSION AND DEMOLISH EXISTING STRUCTURES AND UTILITIES AFTER UTILITY APPROVAL.
- BEGIN ROUGH GRADING, TEMPORARY EARTH SUPPORT, AND EARTHWORK OPERATIONS FOR FOUNDATION AND UTILITY CONSTRUCTION.
- CONSTRUCT BUILDING FOUNDATION AND EXTERIOR WALLS TO ABOVE PROPOSED GRADES.
- CONSTRUCT CONCRETE BOX DETENTION AND DRAINAGE FACILITIES.
- CONSTRUCT SANITARY SEWER STRUCTURES AND CONNECTING FACILITIES.
- FINISH BUILDING STRUCTURE CONSTRUCTION.
- SLOPES SHALL BE STABILIZED IMMEDIATELY AFTER GRADING. ALL DISTURBED AREAS SHALL BE STABILIZED NO LATER THAN 12-HOURS AFTER CONSTRUCTION ACTIVITIES CEASE. IF EARTHWORK TEMPORARILY CEASES ON A PORTION OF OR ON THE ENTIRE SITE, AND WILL NOT RESUME WITHIN 21-DAYS, THE AREA SHALL BE STABILIZED. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
 - BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
 - A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
 - A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP-RAP HAS BEEN INSTALLED; OR
 - EROSION CONTROL BLANKETS OR TEMPORARY TARPING HAVE BEEN PROPERLY INSTALLED.
- INSTALL AND CONNECT ALL UNDERGROUND UTILITIES.
- CONSTRUCT ROADWAYS, DRIVEWAYS, AND HARDSCAPE ACCORDING TO THE PLAN. ALL SLOPES SHALL BE STABILIZED IMMEDIATELY AFTER GRADING.
- SURFACE TREATMENT OF ALL DISTURBED AREAS NOT BUILT UPON, PAVED OR OTHERWISE LANDSCAPED SHALL BE TREATED WITH 4" OF LOAM AND SEED.
- INSPECT AND MAINTAIN ALL EROSION AND SEDIMENTATION CONTROL MEASURES CONSISTENT WITH THE PROCEDURE AND SCHEDULE OUTLINED IN THE STORMWATER POLLUTION PREVENTION PLAN.
- COMPLETE PERMANENT SEEDING AND LANDSCAPING, AND OTHER SURFACE STABILIZATION.
- REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER ALL AREAS ARE STABILIZED WITH A SUITABLE STAND OF GRASS, PAVEMENT COMPACTED GRAVELS, OR OTHER INTENDED FINAL COVERINGS.

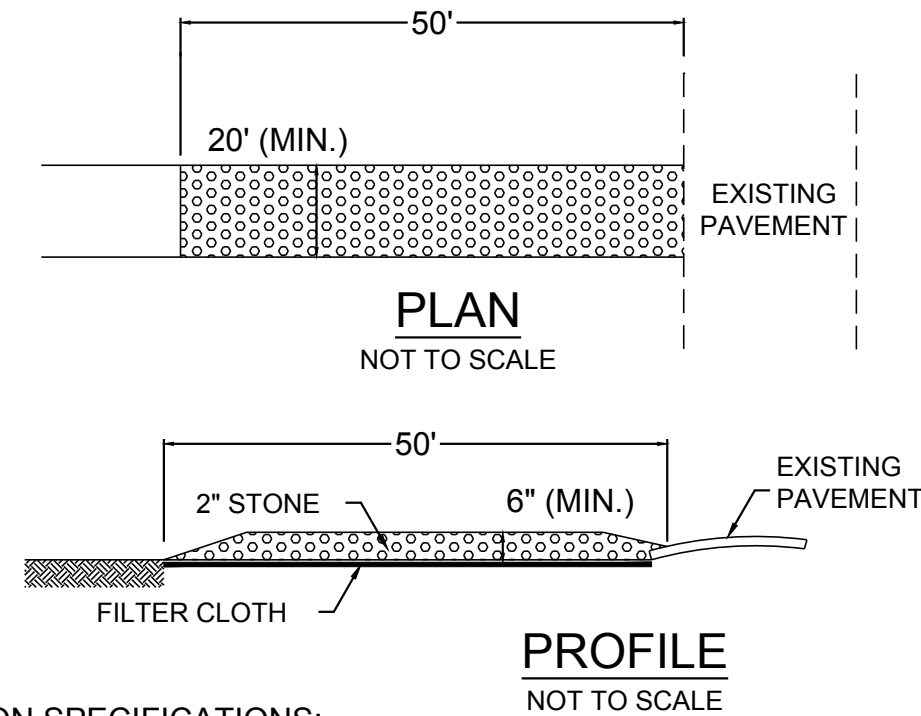


MAINTENANCE:

- FILTER SOCK SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE MADE IMMEDIATELY.
- IF THE FABRIC SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, REPLACE PROMPTLY.
- SEDIMENT DEPOSITS SHALL BE INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACH APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.
- SEDIMENT DEPOSITS SHALL BE REMOVED WITH FILTER SOCK UPON COMPLETION OF CONSTRUCTION ACTIVITIES.
- IF ANCHORING THE FILTER SOCK IS NOT POSSIBLE USING STAKES, SUCH AS ON PAVED AREAS, USE SAND BAGS, MASONRY BLOCKS, OR OTHER REMOVABLE WEIGHTS TO KEEP SOCK IN PLACE AT INTENDED LOCATION

FILTER SOCK INSTALLATION DETAIL

NOT TO SCALE

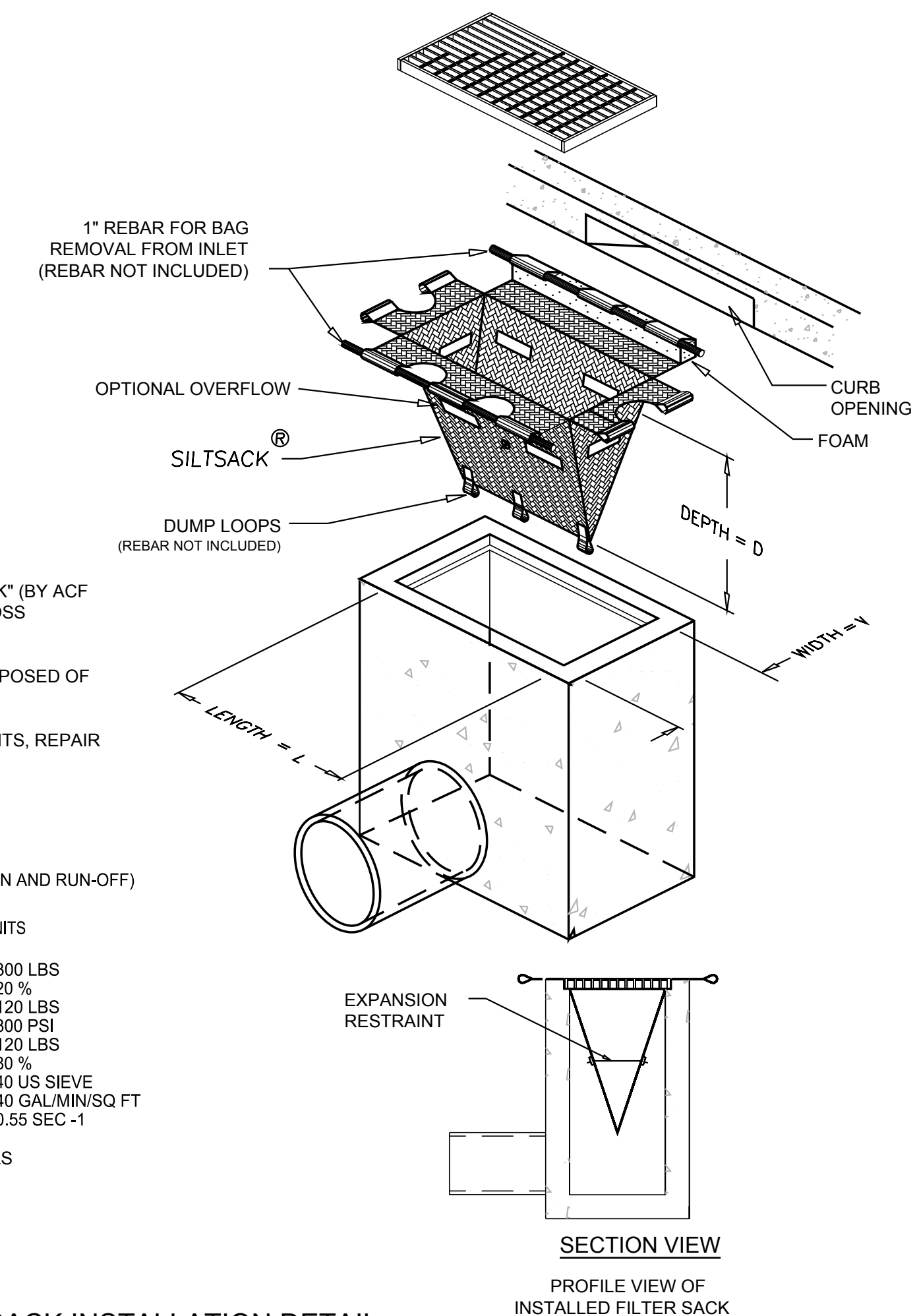


CONSTRUCTION SPECIFICATIONS:

- USE 2" DIAMETER STONE OR RECLAIMED/RECYCLED CONCRETE EQUIVALENT.
- RECOMMENDED LENGTH GREATER THAN 50 FEET WHERE PRACTICAL.
- THICKNESS NOT LESS THAN 6 INCHES.
- 10 FOOT MINIMUM WIDTH, BUT NOT LESS THAN FULL WIDTH AT POINTS WHERE INGRESS AND EGRESS OCCUR.
- FILTER CLOTH SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
- SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WILL BE PERMITTED.
- ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-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 RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
- PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED BY THE CONTRACTOR.
- REMOVE STABILIZED CONSTRUCTION ENTRANCE PRIOR TO PLACEMENT OF BITUMINOUS CONCRETE PAVEMENT.

STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE



NOTES:

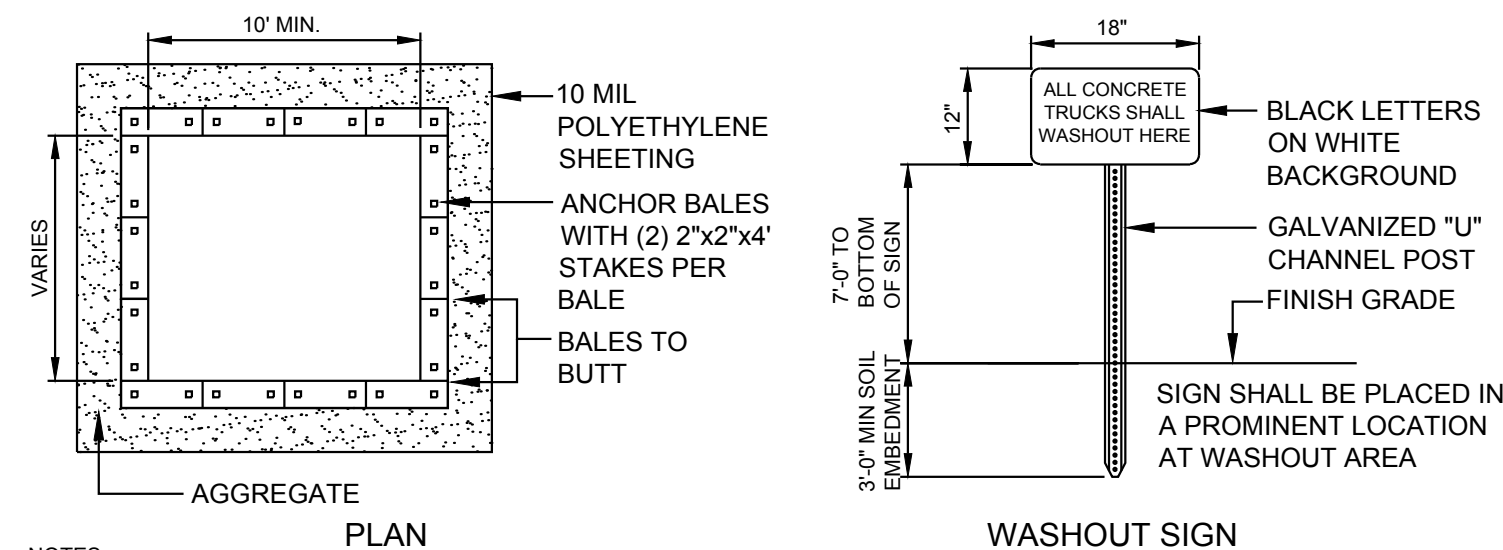
- CATCH BASIN PROTECTION TO BE "SILTSACK" (BY ACF ENVIRONMENTAL) OR "STREAM GUARD" (BY FOSS ENVIRONMENTAL SERVICES) OR EQUAL.
- INSERT TO BE EMPTIED AND PROPERLY DISPOSED OF WHEN IT IS 1/2 FULL OF SEDIMENT.
- INSPECT INSERT AFTER ALL RAINFALL EVENTS, REPAIR AND MAINTAIN AS REQUIRED.

REGULAR FLOW SILTSACK

(FOR AREAS OF LOW TO MODERATE PRECIPITATION AND RUN-OFF)

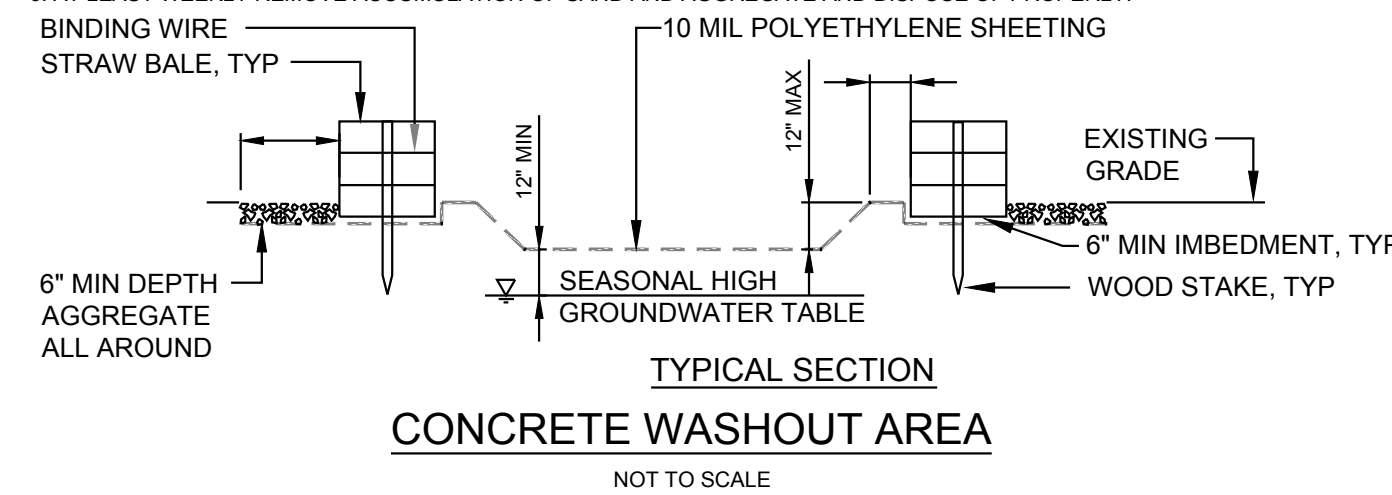
PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	300 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20 %
PUNCTURE	ASTM D-4933	120 LBS
MULLEN BURST	ASTM D-3786	800 PSI
TRAPEZOID TEAR	ASTM D-4533	120 LBS
UV RESISTANCE	ASTM D-4355	80 %
APPARENT OPENING SIZE	ASTM D-4751	40 US SIEVE
FLOW RATE	ASTM D-4491	40 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	0.55 SEC -1

EROSION CONTROL NOTES & DETAILS



NOTES:

- CONTAINMENT MUST BE STRUCTURALLY SOUND AND LEAK FREE AND CONTAIN ALL LIQUID WASTES.
- CONTAINMENT DEVICES MUST BE OF SUFFICIENT QUANTITY OR VOLUME TO COMPLETELY CONTAIN THE LIQUID WASTES GENERATED.
- WASHOUT MUST BE CLEANED OR NEW FACILITIES CONSTRUCTED AND READY TO USE ONCE WASHOUT IS 75% FULL.
- WASHOUT AREA(S) SHALL BE INSTALLED IN A LOCATION EASILY ACCESSIBLE BY CONCRETE TRUCKS.
- ONE OR MORE AREAS MAY BE INSTALLED ON THE CONSTRUCTION SITE AND MAY BE RELOCATED AS CONSTRUCTION PROGRESSES.
- AT LEAST WEEKLY REMOVE ACCUMULATION OF SAND AND AGGREGATE AND DISPOSE OF PROPERLY.



CONCRETE WASHOUT AREA

NOT TO SCALE

I:\09090\DWG\CIVIL\09090-LOT-6-DETAILS.dwg



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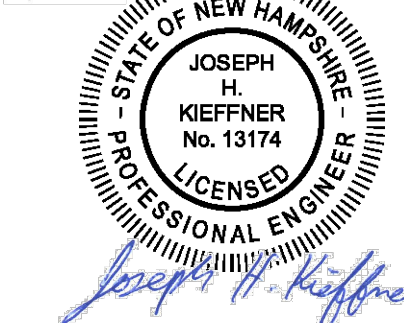
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7 BANKS ROCK ROAD
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A / E Seal:



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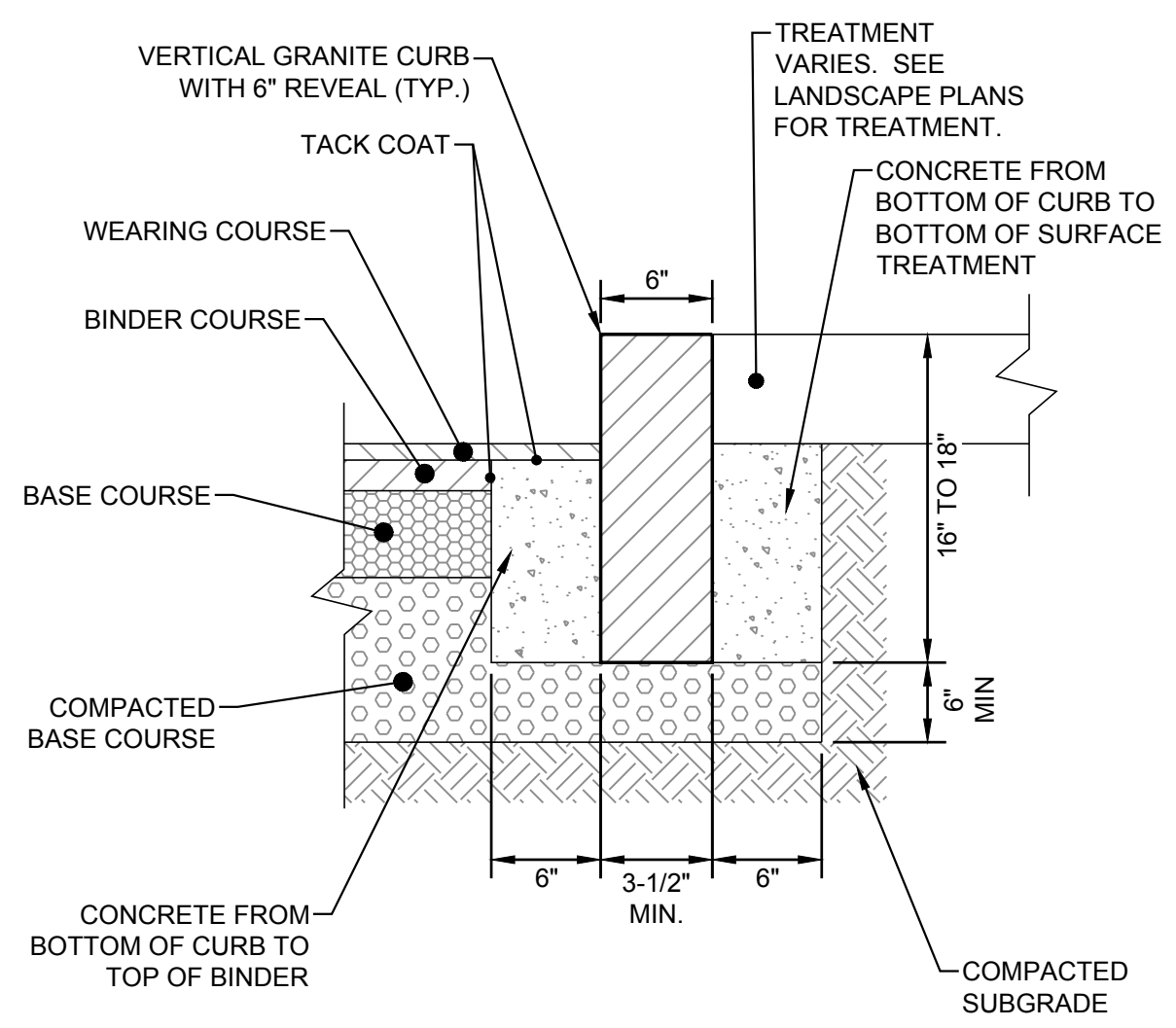
SITE PLAN REVIEW

**EROSION &
SEDIMENT
CONTROL
DETAILS**

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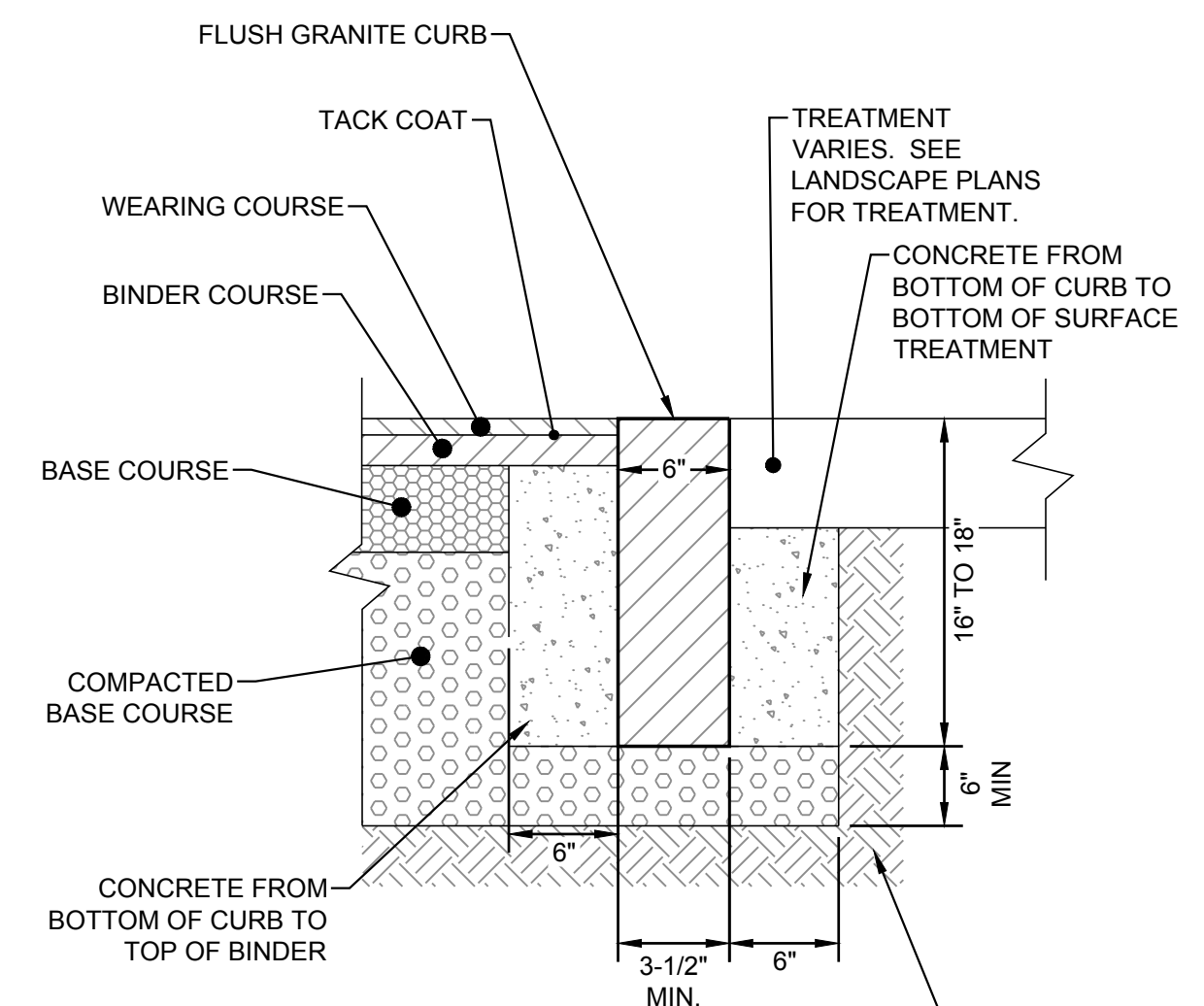
PERMIT PLANS - NOT FOR CONSTRUCTION



CURB RADIUS TABLE	
RADIUS	MAX. LENGTH
< 21'	USE CURVED CURB
21'	3'
22' - 28'	4'
29' - 35'	5'
36' - 42'	6'
43' - 49'	7'
50' - 56'	8'
57' - 60'	9'
> 60'	10'

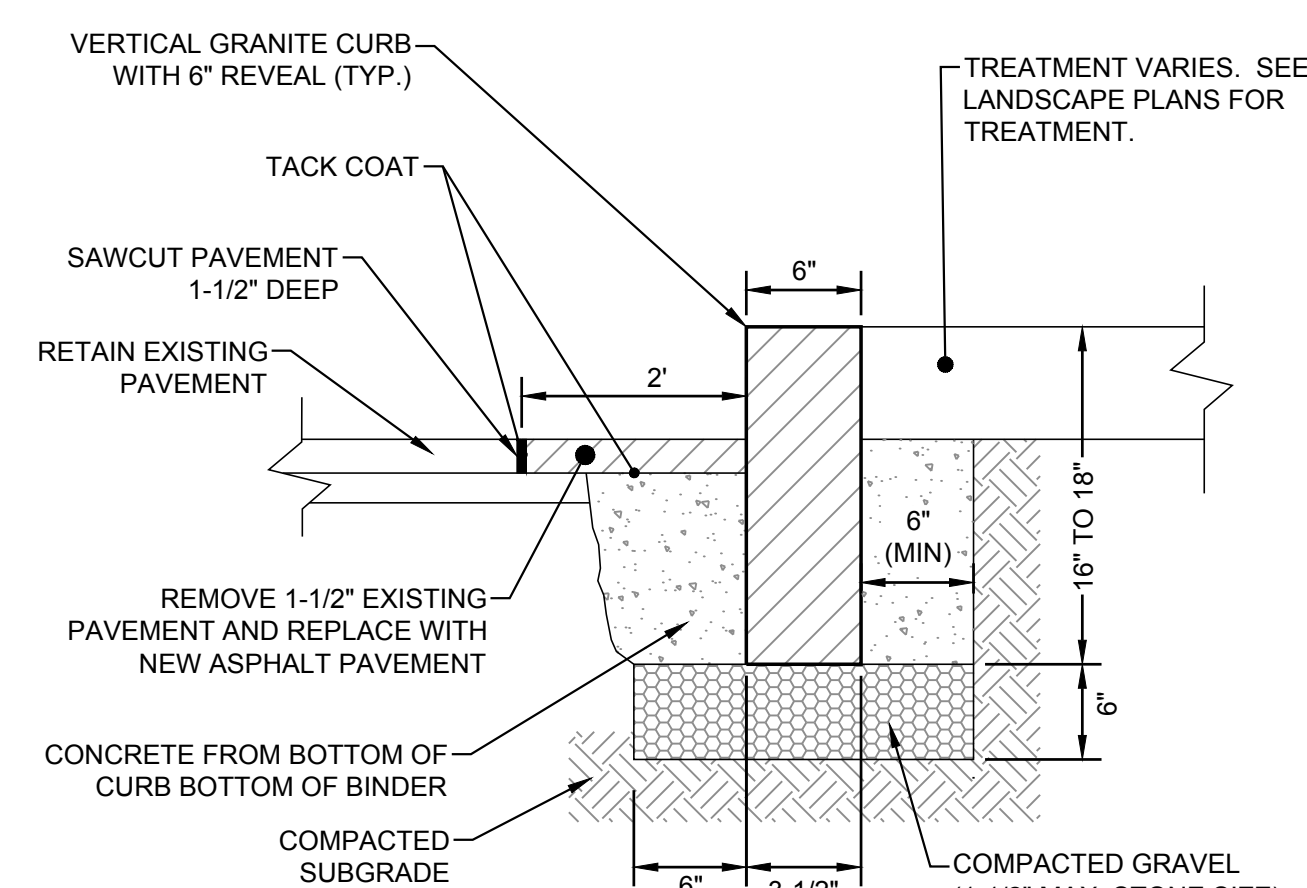
- NOTES:
1. REVEAL IS 6" UNLESS NOTED OTHERWISE. REVEAL IS 0" AT PEDESTRIAN SIDEWALK (CURB) RAMPS.
 2. SEE SITE PLAN(S) FOR PROPOSED VERTICAL GRANITE CURB (VGC) LOCATIONS
 3. CONCRETE SHALL BE 4000 PSI AT 28 DAYS
 4. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH
 5. MINIMUM LENGTH OF STRAIGHT CURB STONES - 3'
 6. MAXIMUM LENGTH OF STRAIGHT CURB STONES - 10'
 7. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES - SEE CHART
 8. ALL RADII LESS THAN 21' SHALL HAVE CURVED SECTIONS
 9. SEE TYPICAL PAVEMENT DETAIL THIS SHEET FOR PAVEMENT REQUIREMENTS.

1 VERTICAL GRANITE CURB
N.T.S.



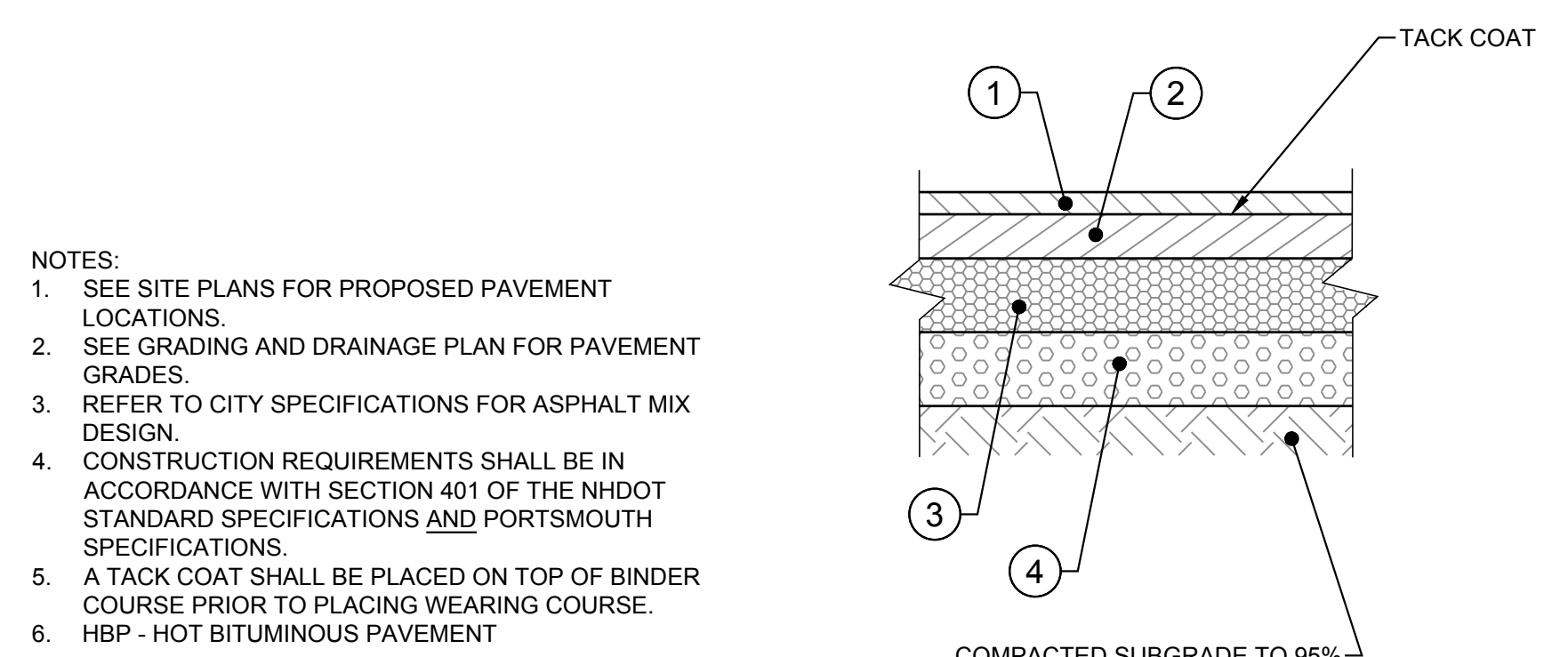
- NOTES:
1. CONCRETE SHALL BE 4000 PSI AT 28 DAYS
 2. SEE TYPICAL PAVEMENT DETAIL THIS SHEET FOR PAVEMENT REQUIREMENTS.

2 FLUSH GRANITE CURB
N.T.S.



- NOTES:
1. REVEAL IS 6" (TYP.) UNLESS NOTED OTHERWISE. REVEAL IS 0" AT PEDESTRIAN SIDEWALK (CURB) RAMPS.
 2. SEE SITE PLAN(S) FOR PROPOSED VERTICAL GRANITE CURB (VGC) LOCATIONS.
 3. CLEAN AND COAT VERTICAL FACE OF EXISTING PAVEMENT AT SAWCUT LINE WITH A TACK COAT PRIOR TO PLACING WEARING COURSE.
 4. FOR RADIUS DETAILS SEE VERTICAL GRANITE CURB DETAIL - THIS SHEET.

3 VERTICAL GRANITE CURB IN EXISTING PAVEMENT
N.T.S.

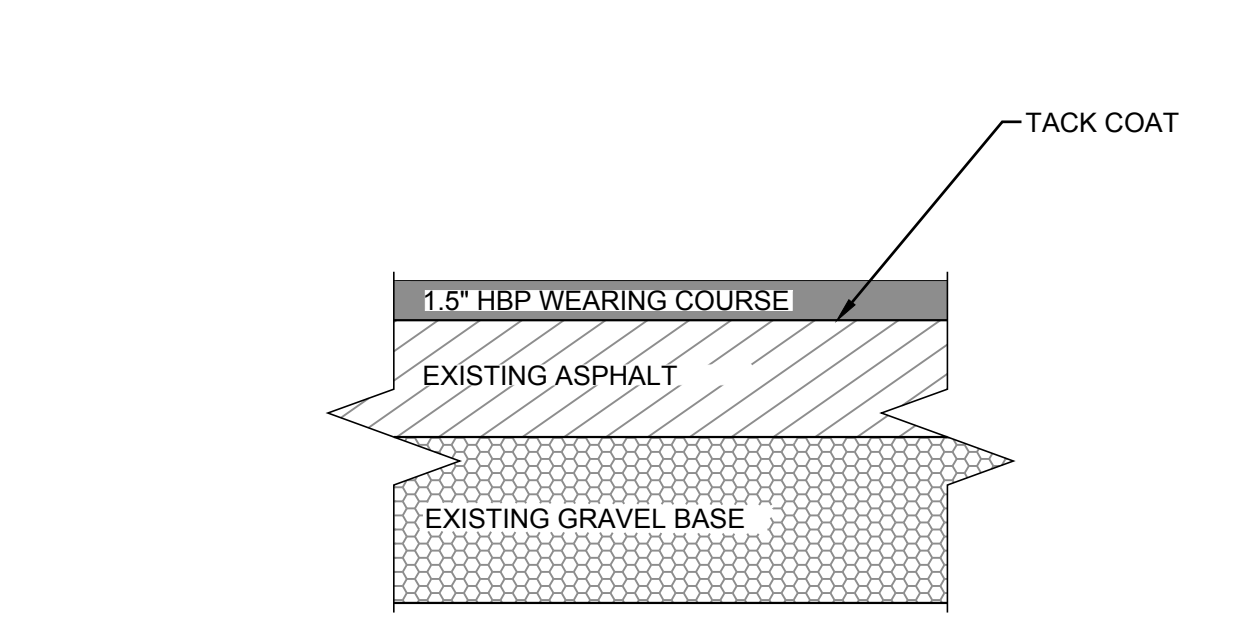


- NOTES:
1. SEE SITE PLANS FOR PROPOSED PAVEMENT LOCATIONS.
 2. SEE GRADING AND DRAINAGE PLAN FOR PAVEMENT GRADES.
 3. REFER TO CITY SPECIFICATIONS FOR ASPHALT MIX DESIGN.
 4. CONSTRUCTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH SECTION 401 OF THE NHDOT STANDARD SPECIFICATIONS AND PORTSMOUTH SPECIFICATIONS.
 5. A TACK COAT SHALL BE PLACED ON TOP OF BINDER COURSE PRIOR TO PLACING WEARING COURSE.
 6. HBP - HOT BITUMINOUS PAVEMENT

- STANDARD PAVEMENT MATERIALS
1. 1.5" - HBP SURFACE COURSE (3/8" NHDOT SECTION 401)
 2. 3.5" - HBP BINDER COURSE (3/4" NHDOT SECTION 401)
 3. 8" - CRUSHED GRAVEL BASE (NHDOT ITEM 304.3)
 4. 12" - BANK RUN GRAVEL SUBBASE (NHDOT ITEM 304.2)

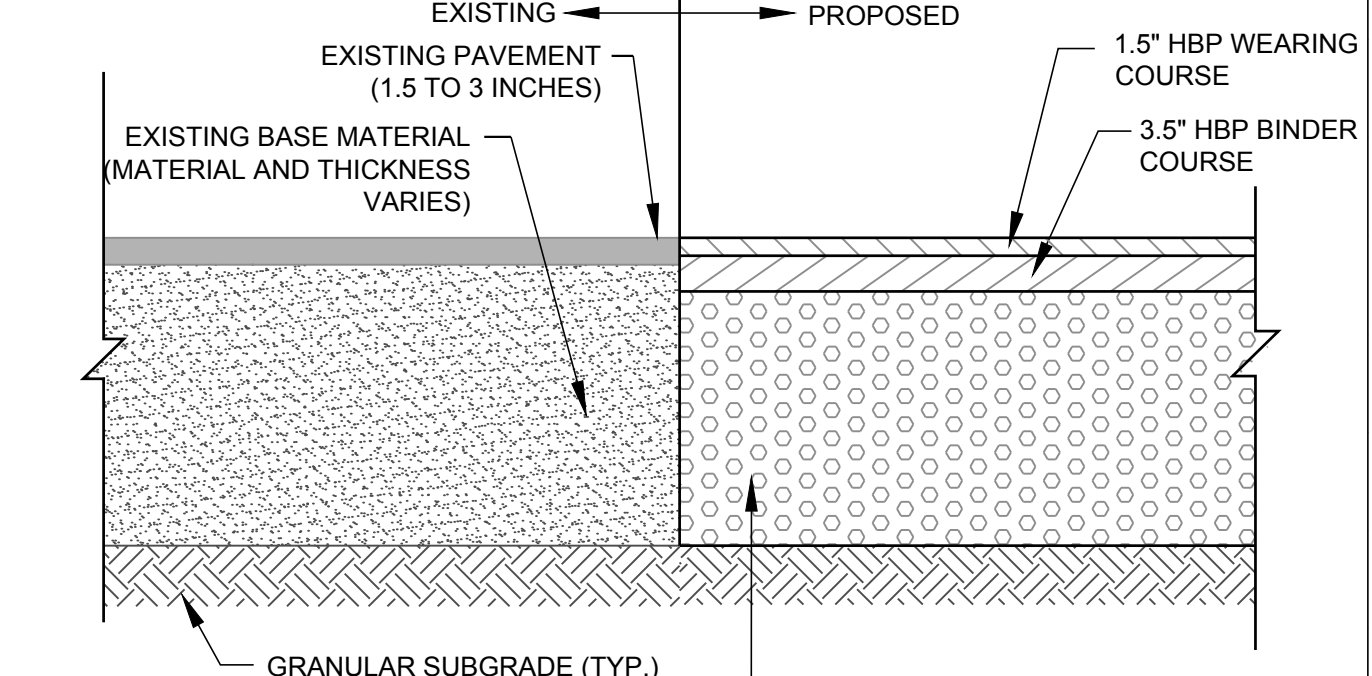
AGGREGATE COURSE MATERIALS NHDOT SECTION 304			
ITEM NO.	304.2	304.3	304.4
SIEVE SIZE	% PASSING BY WEIGHT		
6"	100	---	---
3"	100	---	---
2"	---	95 - 100	100
1"	---	55 - 85	---
#4	25 - 70	27 - 52	45 - 75
#200	0 - 12	0 - 12	0 - 5

4 STANDARD BITUMINOUS PAVEMENT SECTION
N.T.S.



- NOTE:
- TACK COAT - PROVIDE EMULSIFIED ASPHALT WHICH CONFORMS TO THE REQUIREMENTS OF THE STATE SPECIFICATIONS, DILUTED WITH ONE PART WATER TO ONE PART ASPHALT FOLLOWING AASHTO M140/ASTM D997, OR AASHTO M208/ASTM D2397, SS-1H, CSS-1, OR CSS-1H. TACK COAT SHALL BE APPLIED AT A RATE OF 0.04-0.08 GAL/YD².

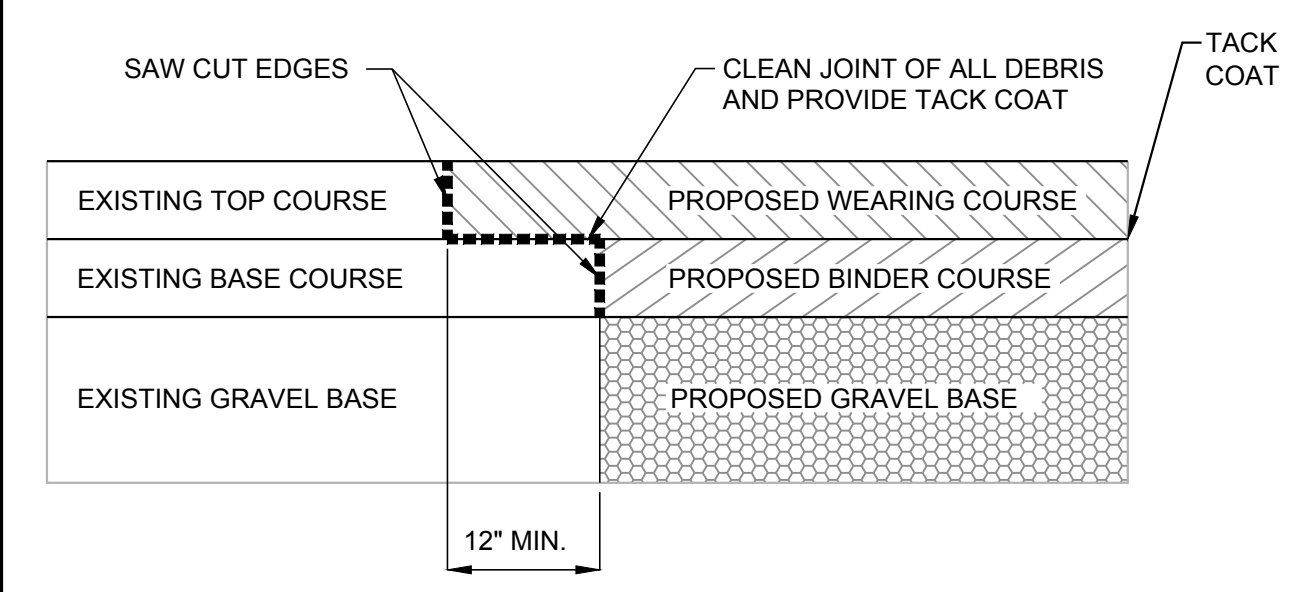
5 MILL AND OVERLAY PAVEMENT DETAIL
N.T.S.



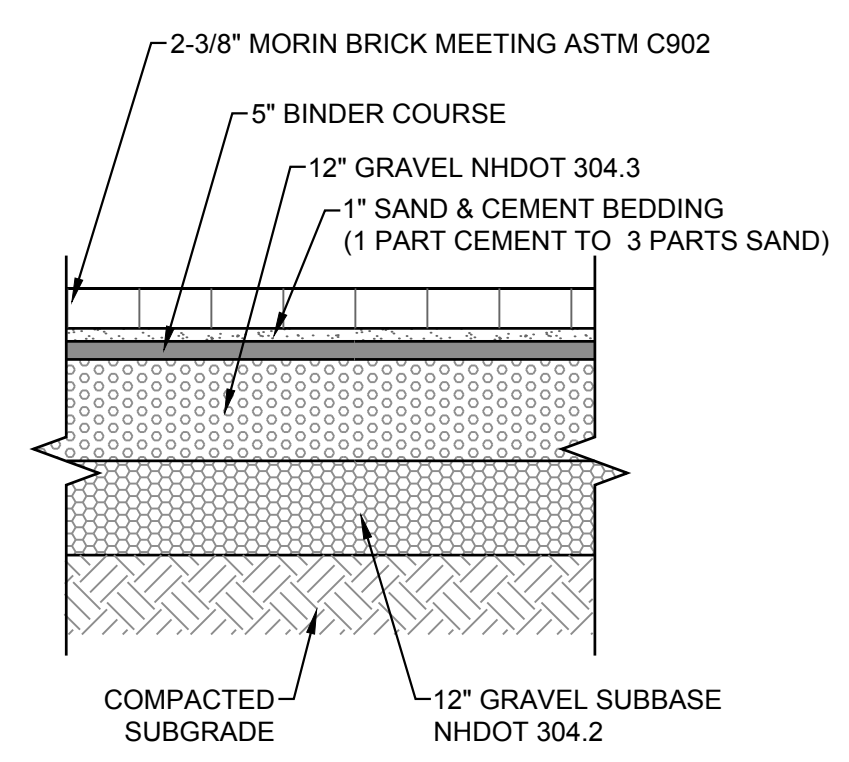
- NOTES:
1. CONTRACTOR SHALL REMOVE HARD SPOTS PRIOR TO RECONSTRUCTING ROADWAY PAVEMENTS.
 2. REMOVE CLAY MATERIAL IF NECESSARY TO OBTAIN A MIN. OF 12" THICK BASE.
 3. RECLAIMED BASE SHALL MEET THE MATERIAL AND CONSTRUCTION REQUIREMENTS OF NHDOT 306 AND CITY SPECIFICATIONS.
 4. CONTRACTOR SHALL ADD STONE AS REQUIRED TO MEET THE NHDOT SPECIFICATIONS.

6 ROADWAY SECTION WITH RECLAIMED BASE
N.T.S.

- NOTE:
- TACK COAT - PROVIDE EMULSIFIED ASPHALT WHICH CONFORMS TO THE REQUIREMENTS OF THE STATE SPECIFICATIONS, DILUTED WITH ONE PART WATER TO ONE PART ASPHALT FOLLOWING AASHTO M140/ASTM D997, OR AASHTO M208/ASTM D2397, SS-1H, CSS-1, OR CSS-1H.

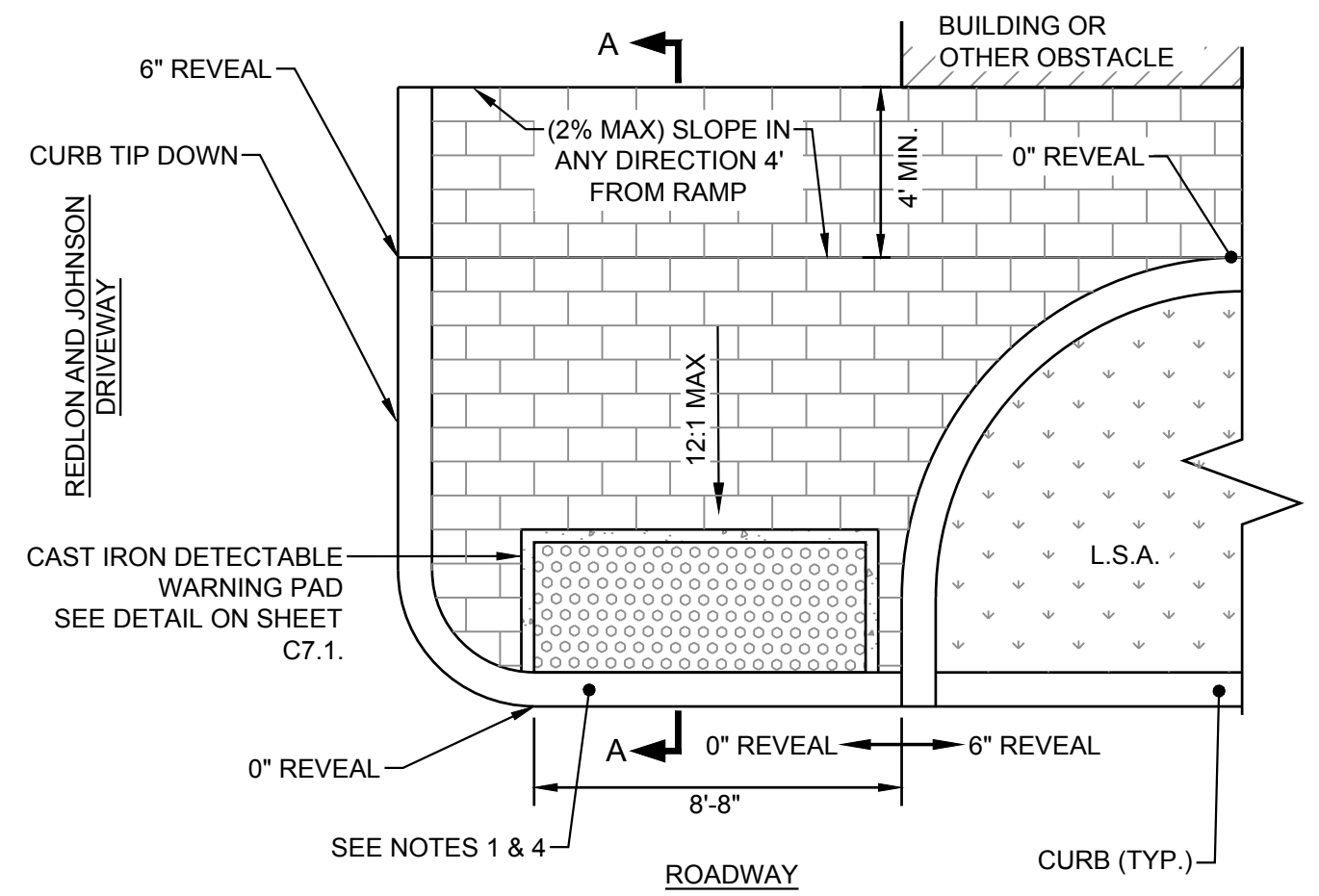


7 PAVEMENT CUT KEY DETAIL
N.T.S.



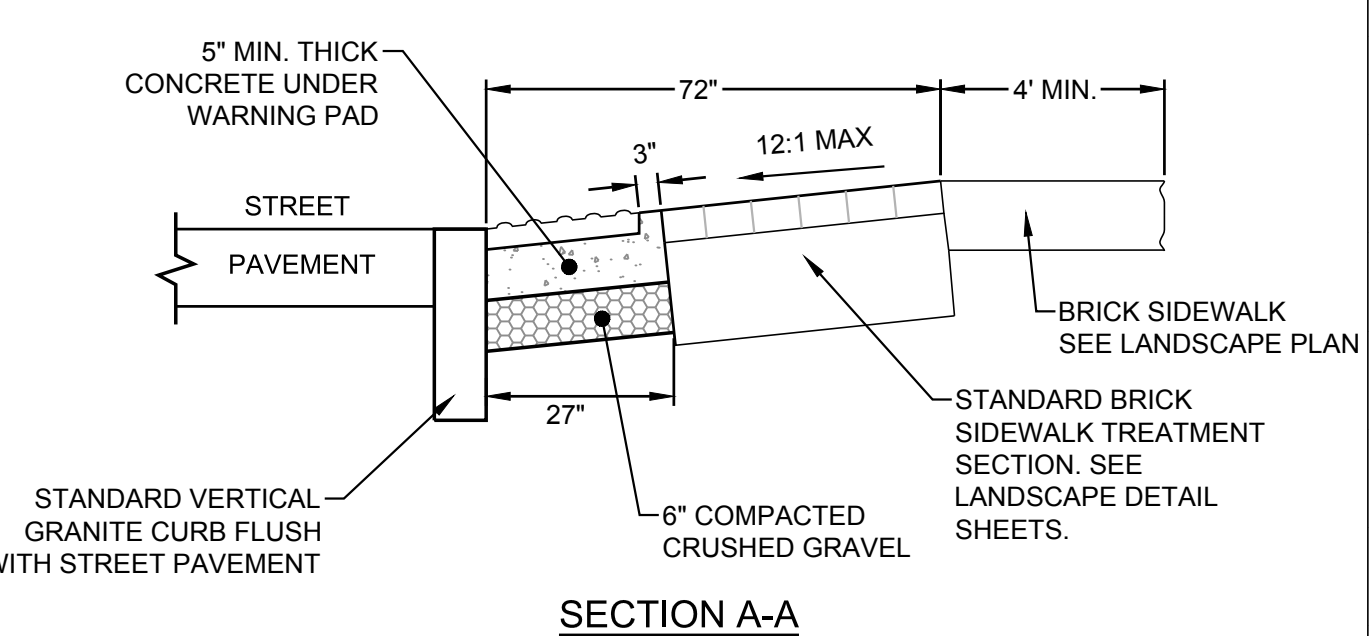
- NOTES:
- BRICK PAVERS SHALL CONFORM TO ASTM C902 "PEDESTRIAN AND LIGHT TRAFFIC BRICK"
 - PAVERS SHALL BE TYPE 1, CLASS SX

8 VEHICULAR PAVER SECTION
N.T.S.



- ACCESSIBLE CURB RAMP NOTES:
1. RAMPS SHALL BE IN CONSTRUCTED IN ACCORDANCE WITH THE AMERICANS WITH DISABILITIES ACT AND STATE AND LOCAL REQUIREMENTS.
 2. FOR ROADWAY CURB MATERIALS AND INSTALLATION DETAILS, SEE THIS SHEET.
 3. FOR SIDEWALK DETAILS, SEE LANDSCAPE SHEETS.
 4. DETECTABLE WARNING PANELS SHALL BE THE FULL WIDTH OF THE LANDING, BLENDED TRANSITION, OR CURB RAMP.
 5. THE ROWS OF TRUNCATED DOMES SHALL BE ALIGNED PERPENDICULAR TO THE GRADE BREAK BETWEEN THE RAMP, BLENDED TRANSITION, OR LANDING AND THE STREET.
 6. WARNING PAD SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS.

9 ACCESSIBLE CURB RAMP DETAIL
N.T.S.



SECTION A-A



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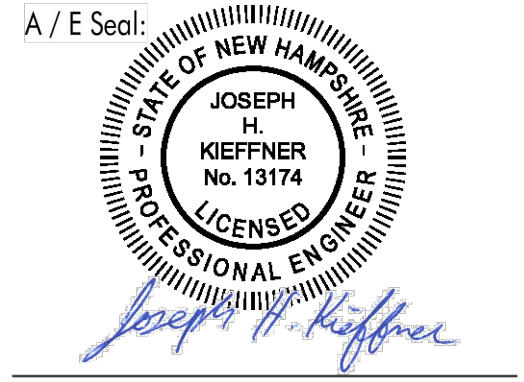
ENGINEERED SYSTEMS INC.
MPFF ENGINEER
WOBURN, MASSACHUSETTS

ENGINEERED BUILDING SYSTEMS
ELECTRICAL ENGINEER
DERRY, NEW HAMPSHIRE

**RESIDENCES AT
FOUNDRY PLACE,
LOT 6: 181 HILL ST,
ASSESSORS MAP
138 LOT 62**
PORTSMOUTH, NH 03801

OWNER:
Deer Street Associates

7 BANKS ROCK ROAD
YORK HARBOR, ME



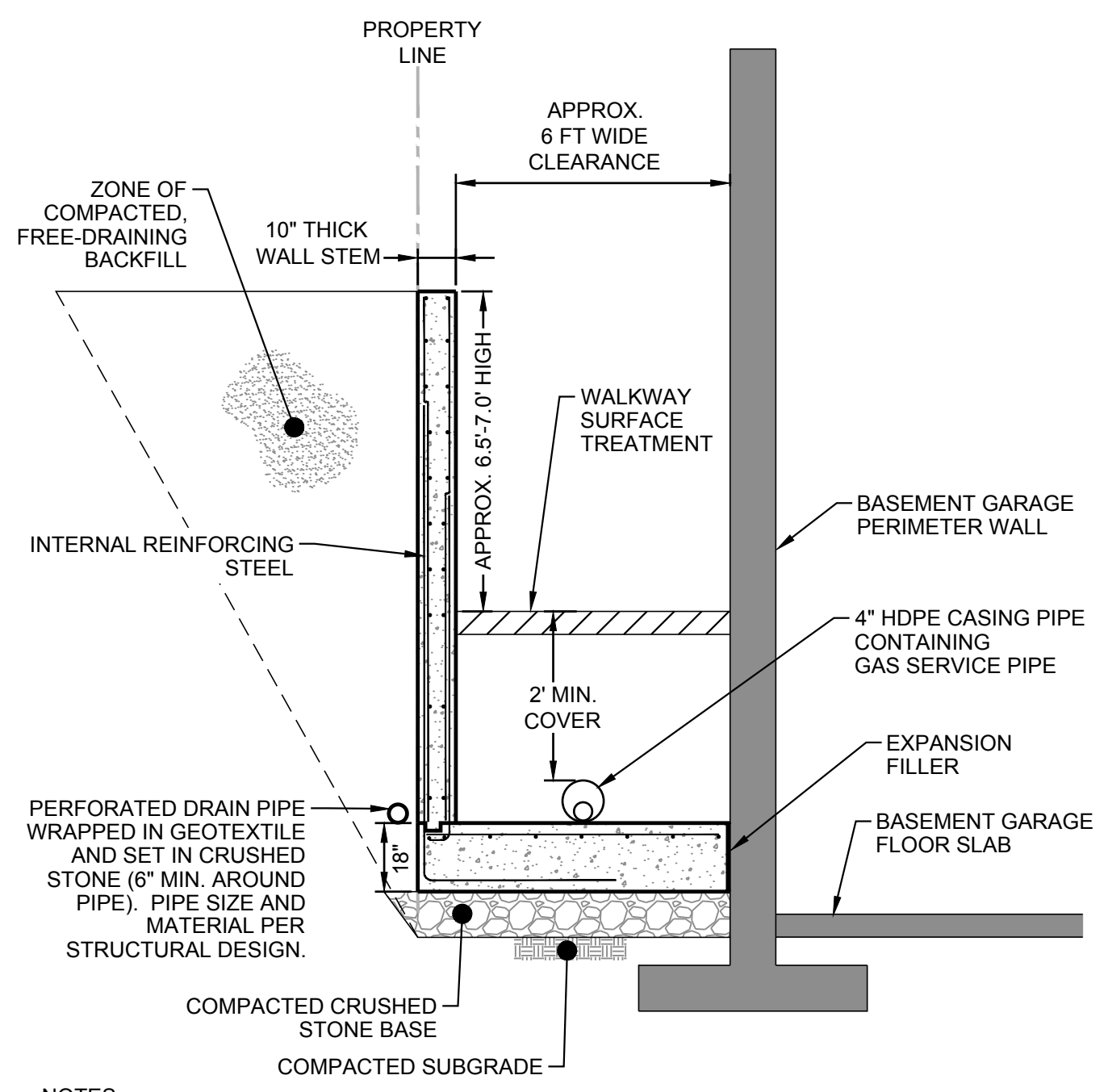
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Date: 3/17/2017
Project Number: 14837.03

REVISIONS		
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1	TAC PUBLIC HEARING	6/15/2017
2	TAC PUBLIC HEARING	8/21/2017

SITE PLAN REVIEW

**STANDARD
DETAILS**

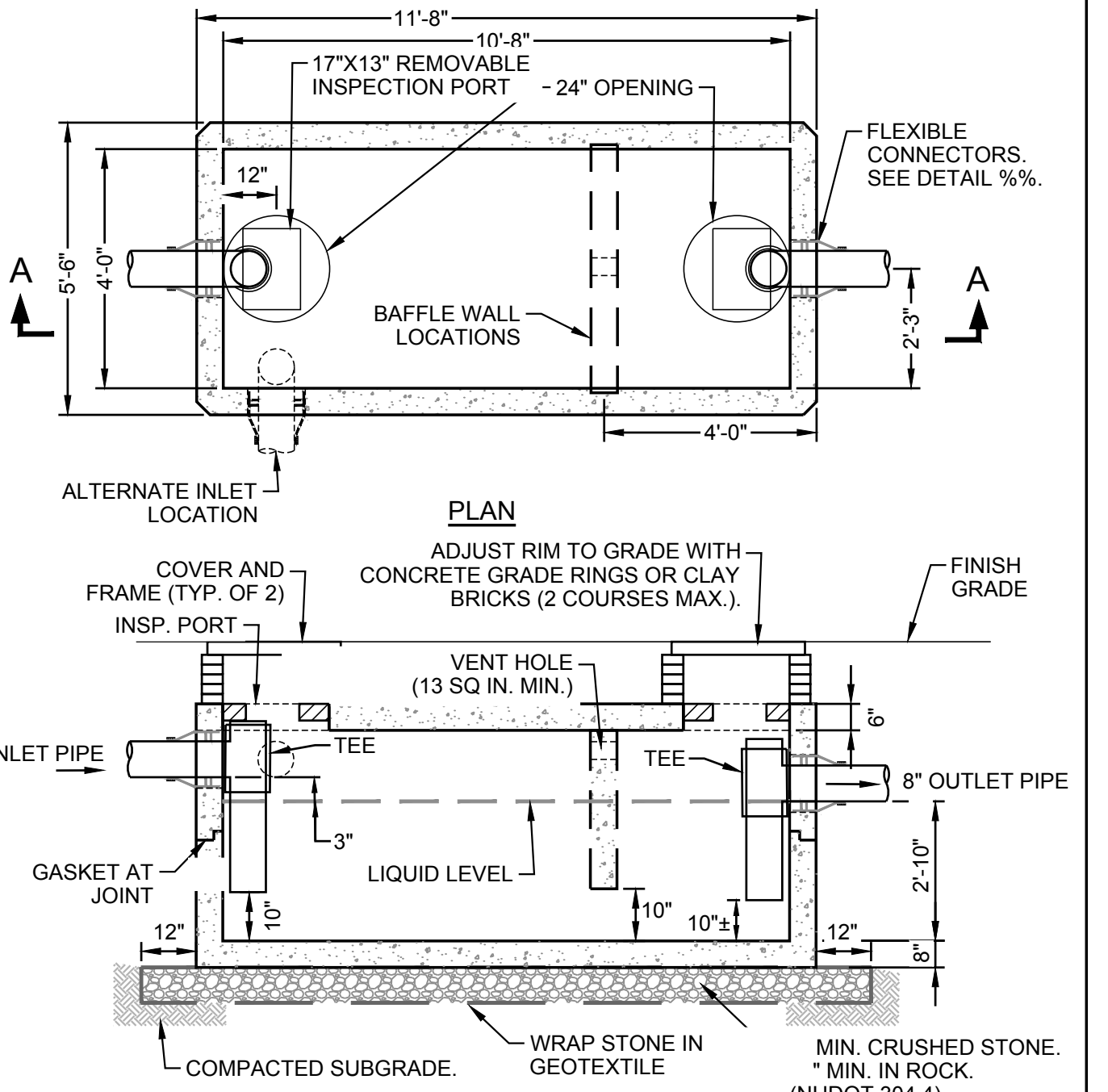
C7.0



- NOTES:**
- EXCAVATION AND BACKFILL FOR WALL TO OCCUR WITHIN TEMPORARY CONSTRUCTION EASEMENT.
 - GARAGE WILL INCLUDE A PERIMETER FOUNDATION DRAIN.
 - DIMENSIONS AND INFORMATION SHOWN ARE APPROXIMATE.
 - WALL SHALL REQUIRE A STRUCTURAL DESIGN.
 - TEXTURE VISIBLE FACE TO IMITATE GRANITE BLOCKS.

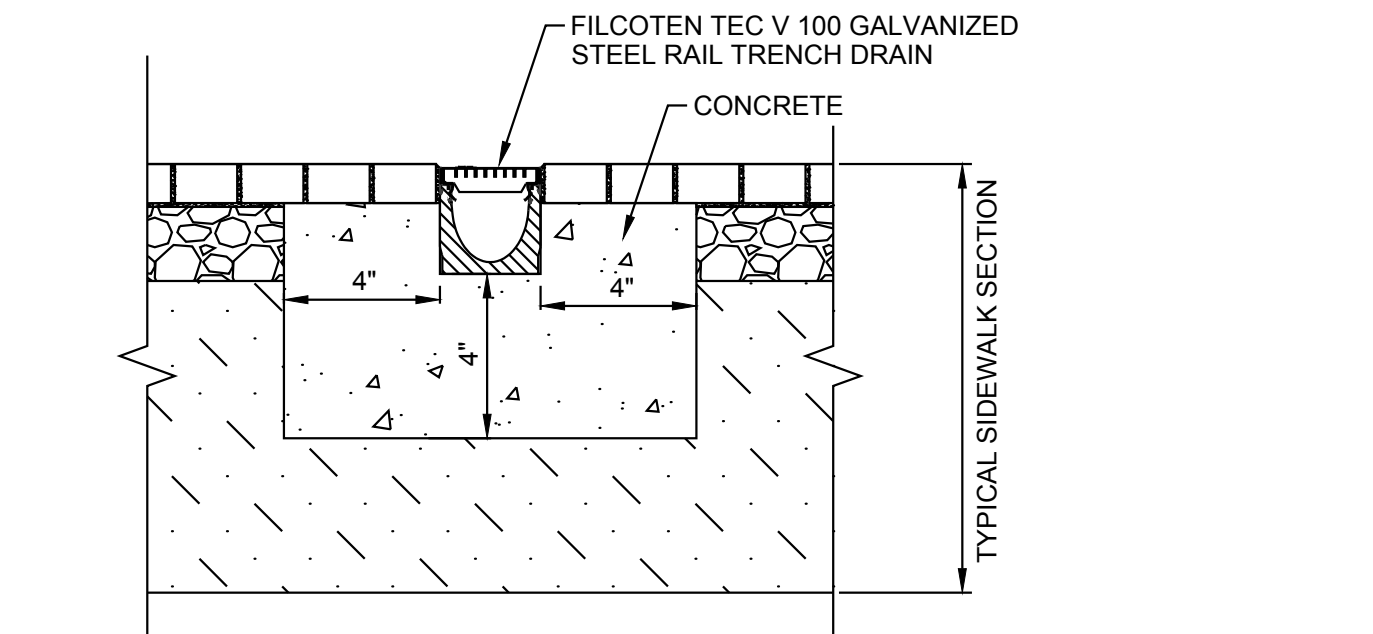
- GAS SERVICE NOTES:**
- CASING PIPE SHALL BE INSTALLED WHEN SERVICE PIPE IS WITHIN 1' OF STRUCTURE FOOTING.
 - CASING/SLEEVE MATERIAL SHALL BE HDPE DR-11 GAS PIPE APPROVED BY UNITIL.
 - CASING SLEEVE SHALL BE INSTALLED WHERE SERVICE RISER PENETRATES THROUGH PAVED SERVICE TREATMENT.
 - CASING PIPE SHALL BE INSTALLED USING TYPICAL GAS TRENCH MATERIAL.
 - CARRIER RISER PIPE SHALL BE MADE OF ANODELESS MATERIAL.

10 CAST-IN-PLACE RETAINING WALL DETAIL
N.T.S.



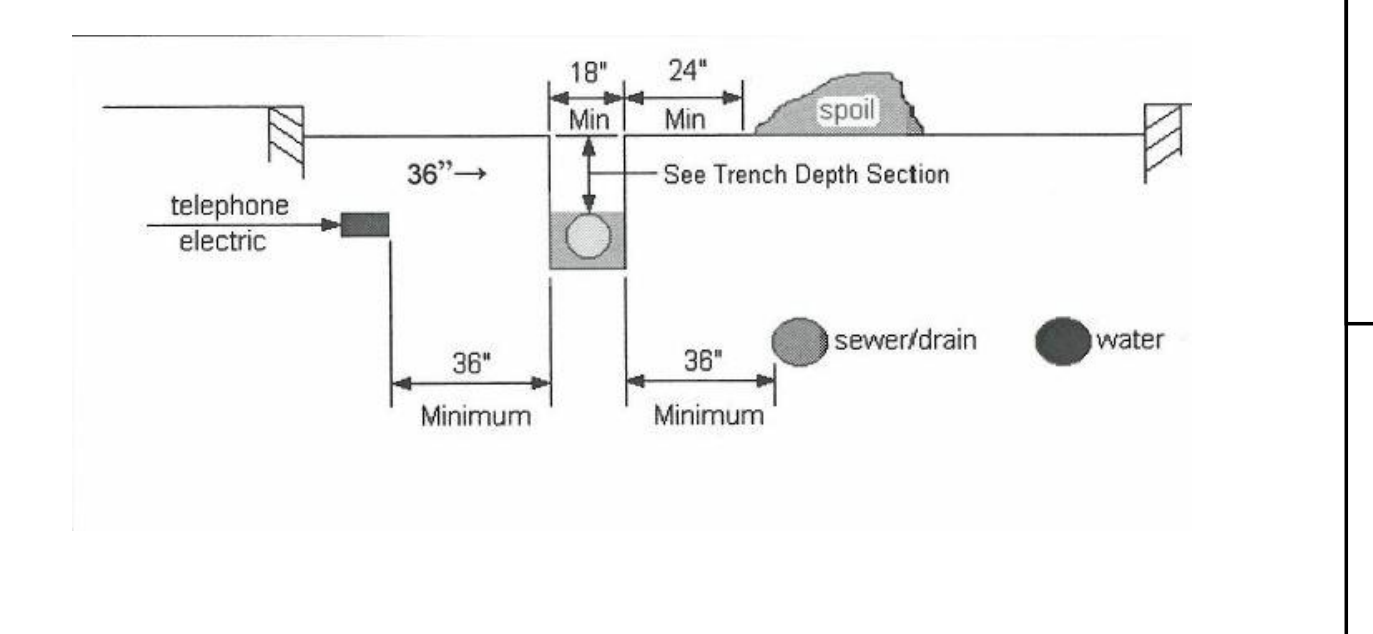
- GREASE INTERCEPTOR NOTES**
- GREASE TRAP SHALL BE HS20-44 LOAD RATED.
 - INTERCEPTOR DESIGN SHALL CONFORM TO ASTM C1613, NHDES, AND CITY OF PORTSMOUTH REQUIREMENTS AND SPECIFICATIONS.
 - GREASE TRAP SHALL HAVE A MIN. OF 2 INTERIOR BAFFLES OR TEES OR COMBINATION THEREOF.
 - REINFORCEMENT: AS REQUIRED FOR WATER, SOIL, TRAFFIC, AND HYDRAULIC PRESSURE LOADING.
 - GREASE TRAP BY CONCRETE SYSTEMS, INC. (CSI) OR EQUAL.
 - COVER AND FRAME TO MEET MUNICIPAL STANDARD FOR SANITARY SEWER GEOTEXTILE SHALL BE MIRAFI 600X.
 - TANK PIPING AND TEE DIAMETERS SHALL MATCH CONNECTING PIPES. MATERIAL SHALL BE PVC SDR 35.
 - PIPING RISERS SHALL BE BRACED WITH A MINIMUM OF TWO 1/4" X 1-1/2" S.S. STRAP W/ S.S. EXPANSION ANCHORS.
 - INSPECTION PORTS SHALL BE REMOVABLE AND MATERIAL SHALL BE S.S. OR 6061 ALUMINUM.

11 1000 GALLON PRECAST GREASE INTERCEPTOR DETAIL
N.T.S.

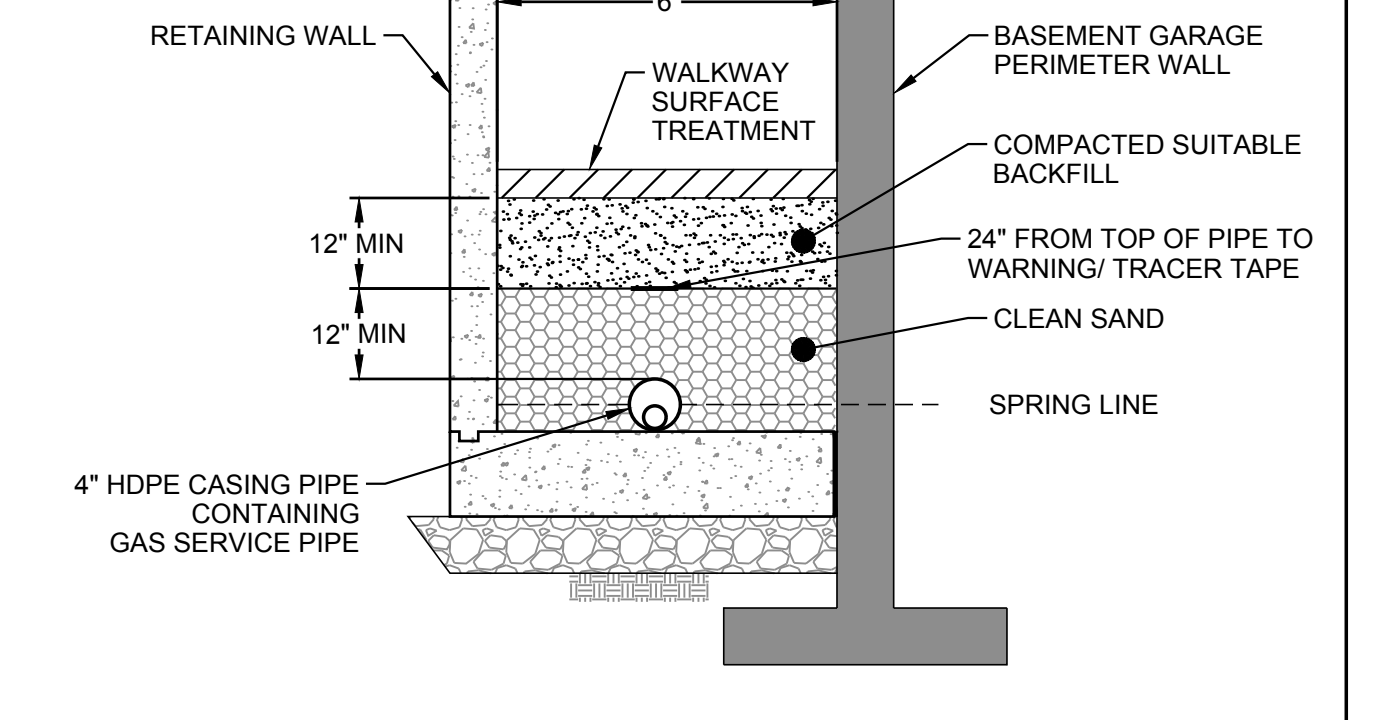


- NOTES:**
- CONCRETE SHALL BE 4000 PSI AT 28 DAYS
 - GRATE SHALL BE HEEL PROOF AND BE CLASS C LOAD RATED PER EN 1433.
 - TRENCH SYSTEM SHALL BE INSTALLED PER THE MANUFACTURER'S DIRECTIONS AND SPECIFICATIONS

15 TYPICAL TRENCH DRAIN SECTION
N.T.S.

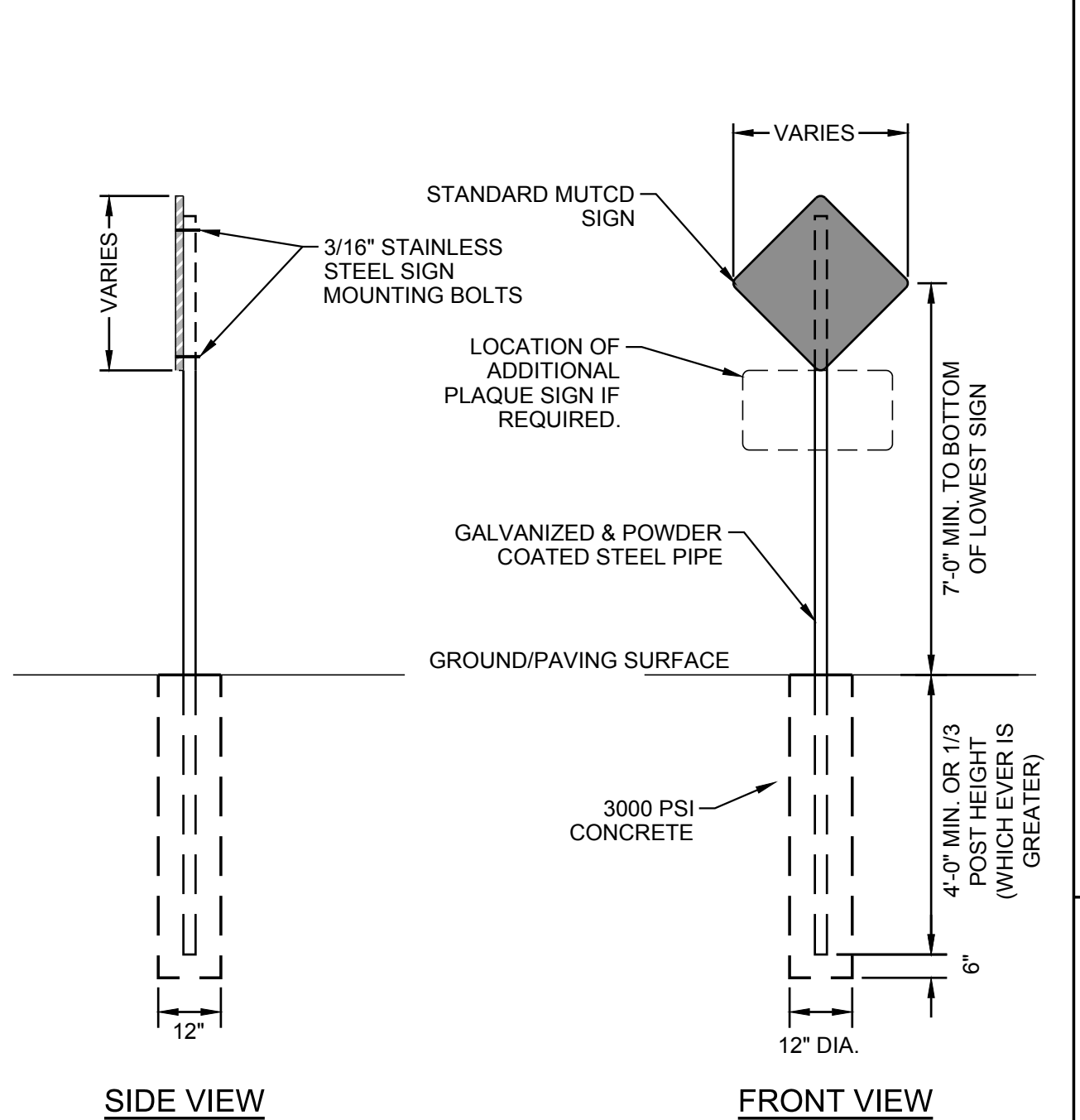


12 SIGN POST DETAILS
N.T.S.

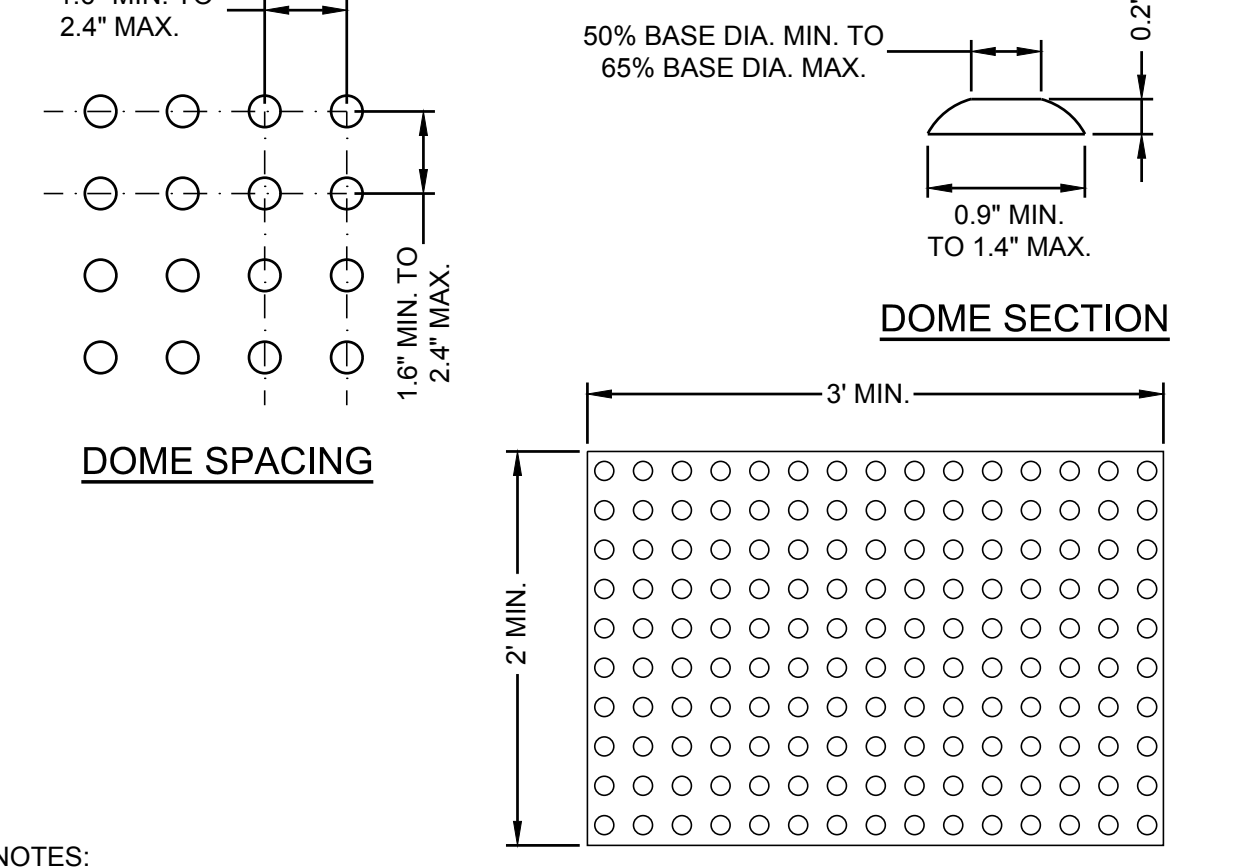


- NOTES:**
- GAS PIPE SHALL BE INSTALLED PER UTILITY AND STANDARDS AND SPECIFICATIONS.
 - COORDINATE ALL INSTALLATIONS WITH UNITIL AND CITY OR PORTSMOUTH.
 - TRENCH PROTECTION SHALL BE PROVIDED TO MEET APPLICABLE STATE AND O.S.H.A. SAFETY STANDARDS. ALL SUCH PROTECTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
 - "S" = TRENCH PROTECTION WALL WIDTH

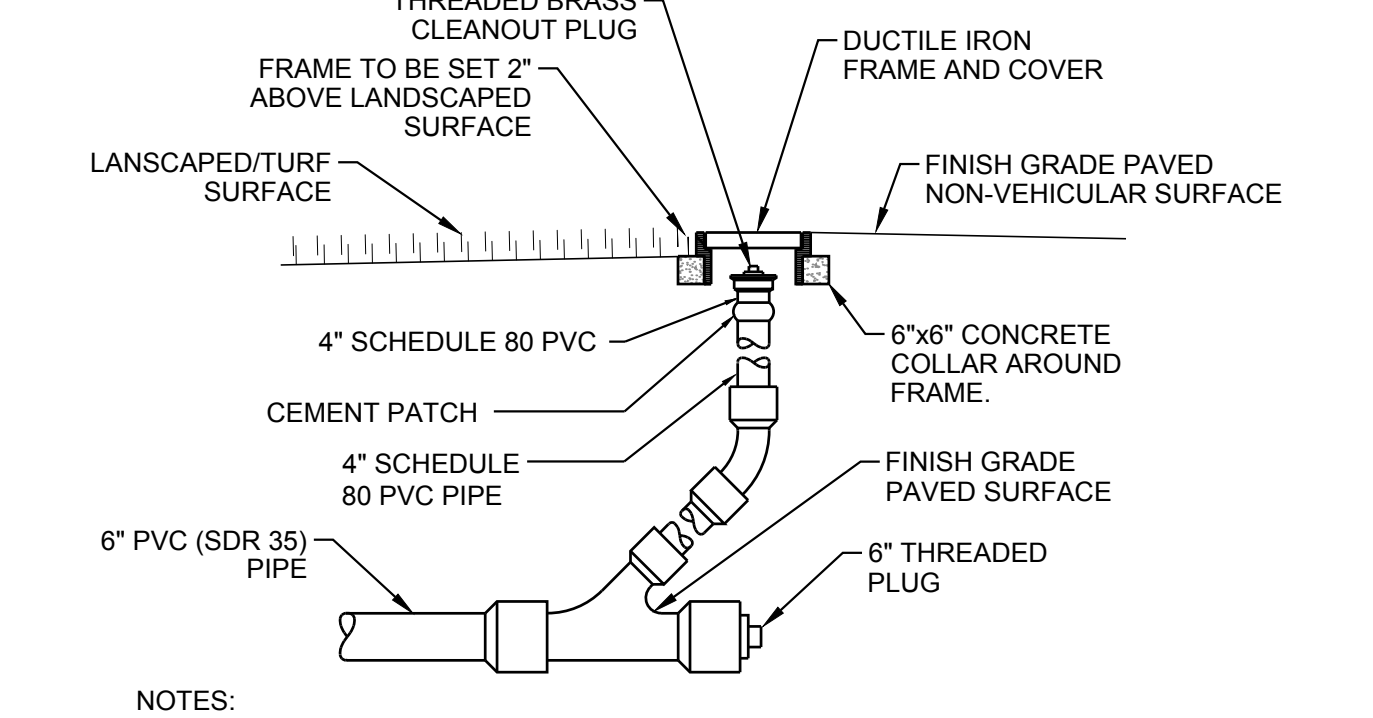
17 TYPICAL GAS SERVICE TRENCH DETAIL
N.T.S.



- SIGN POST NOTES:**
- ALL SIGNS SHALL COMPLY WITH U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION'S "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES", LOCAL CODES AND AS SPECIFIED.
 - MOUNT SIGNS TO POST IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
 - SIGN MATERIALS AND CONSTRUCTION SHALL BE IN CONFORMANCE WITH NHDOT STANDARD SPECIFICATIONS AND LOCAL REQUIREMENTS.
 - STEEL POSTS
 - STEEL POST SHALL BE SCHEDULE 40 WITH O.D. OF 2.375"
 - STEEL POSTS SHALL CONFORM TO ASTM A-499, GRADE 60) OR ASTM A 576, GRADE 1070-1080.
 - COATINGS SHALL BE IN ACCORDANCE TO NHDOT STANDARD SPECIFICATION SECTION 708, DUPLEX COATINGS - POWDER COATING OVER GALVANIZING
 - GALVANIZED SURFACE SHALL BE PREPARED FOR POWDER COATING PER ASTM D7803
 - WEIGHT BE 2.5 LBS/FT MINIMUM.
 - 3/8" HOLES SHALL BE DRILLED OR PUNCHED BEFORE COATINGS ARE APPLIED. HOLES SHALL BEGIN 1" FROM TOP OF POSTS AND CONTINUE AT 1" CENTERS FOR THE ENTIRE LENGTH OF POSTS.
 - POST SHALL BE POWDER COATED GLOSS BLACK.

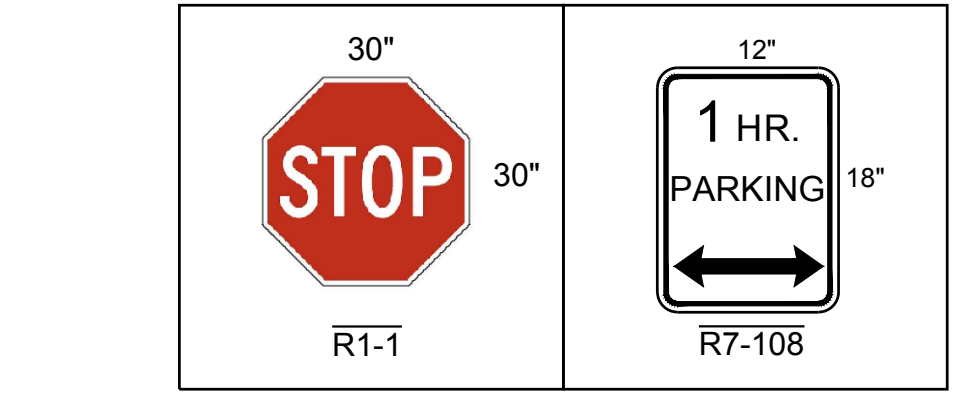


14 CROSSWALK STRIPING DETAILS
N.T.S.

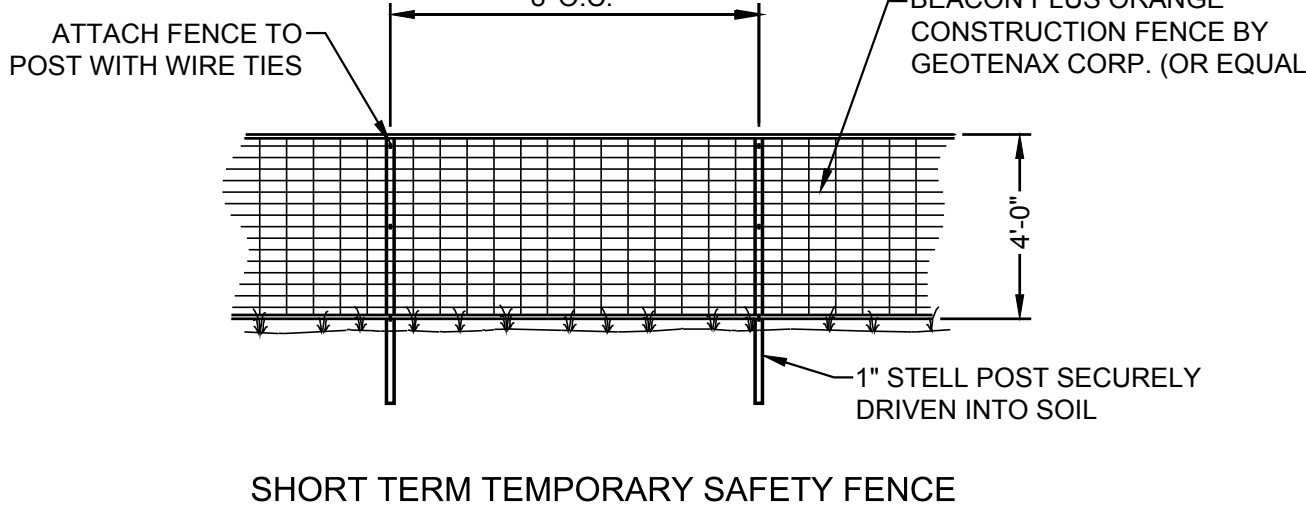


- NOTES:**
- COVER SHALL HAVE "DRAIN" LETTERING CAST INTO COVER. LETTERING SHALL BE 1" HIGH

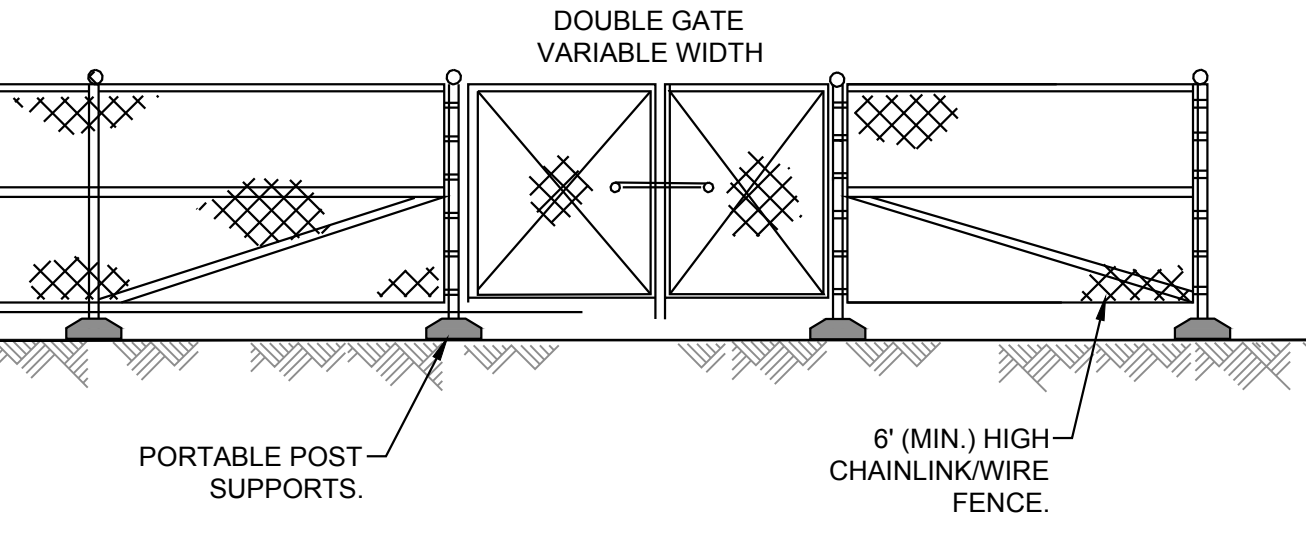
16 CLEANOUT DETAIL
N.T.S.



18 TRAFFIC SIGN LEGEND
N.T.S.



SHORT TERM TEMPORARY SAFETY FENCE



LONG TERM TEMPORARY CONSTRUCTION FENCE

19 TEMPORARY CONSTRUCTION FENCE
N.T.S.

- NOTES:**
- CONTRACTOR MAY USE CAST-IN-PLACE SUPPORTS IF DESIRED.
 - FENCE LAYOUT AND DESIGN TO BE PROVIDED BY CONTRACTOR.

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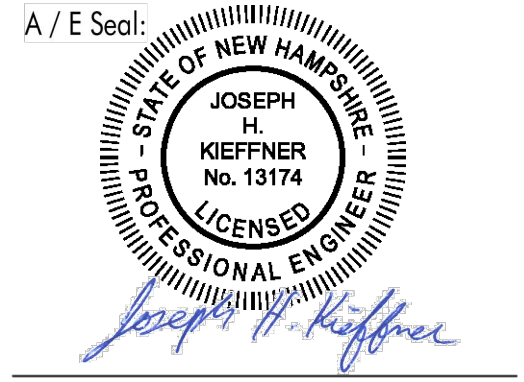
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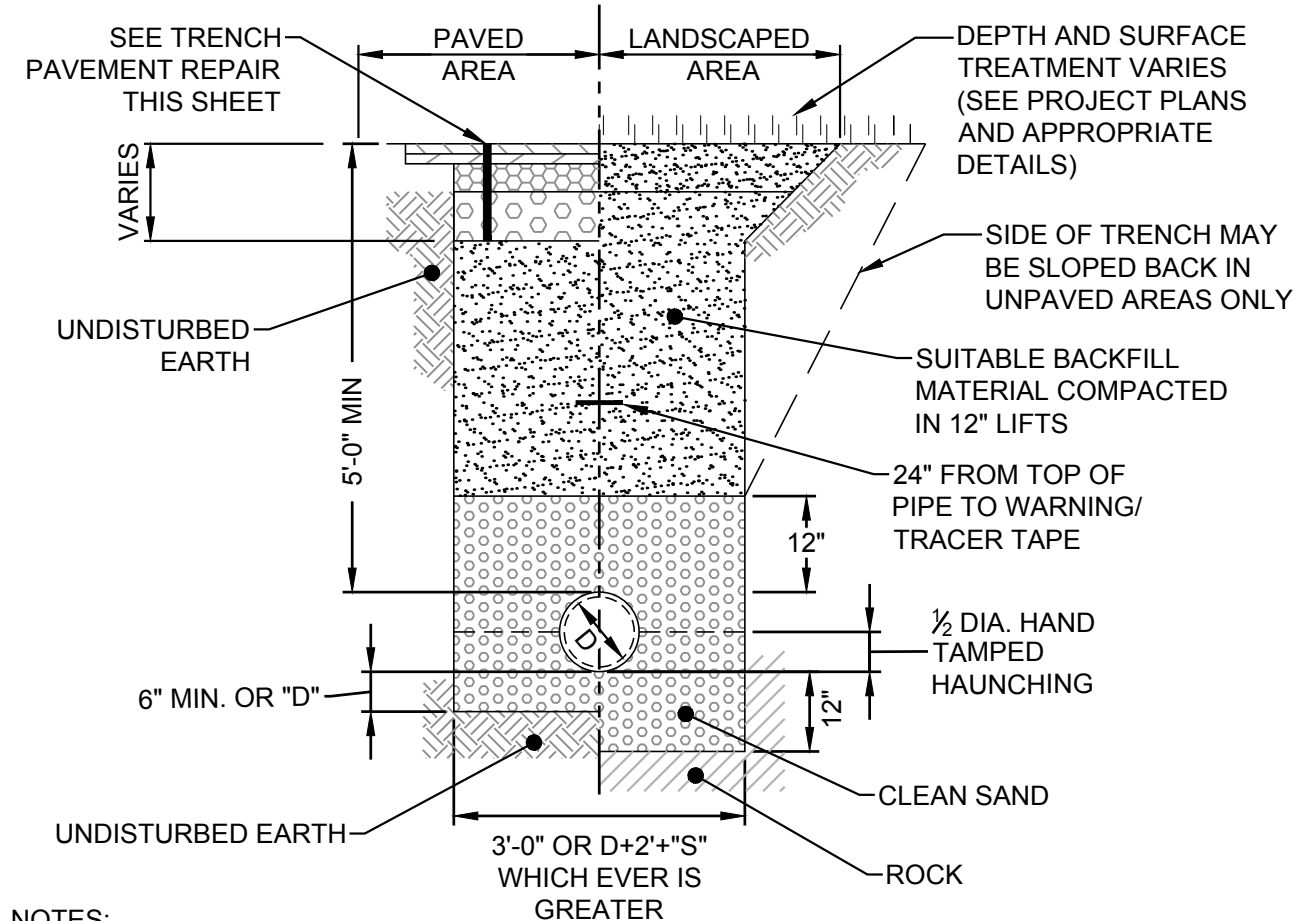


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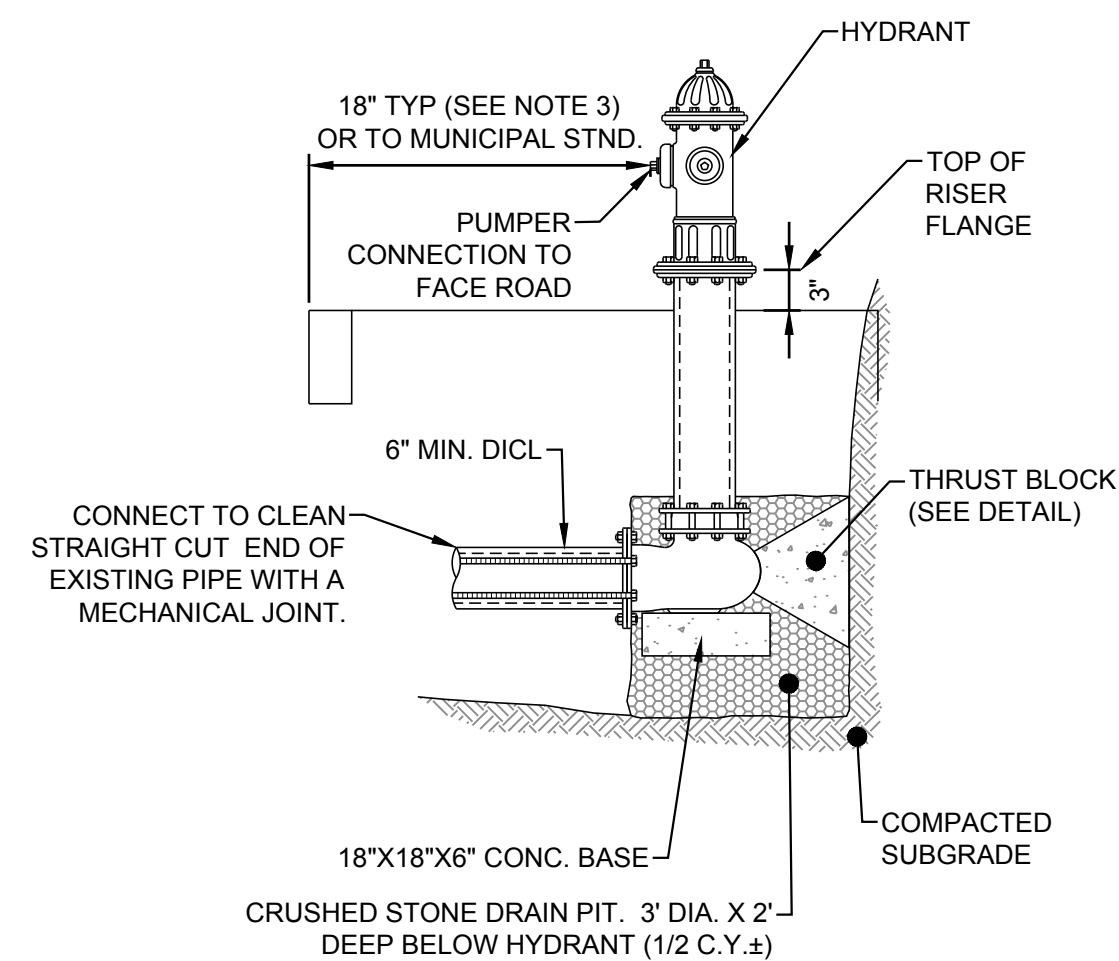
SITE PLAN REVIEW
**STANDARD
DETAILS**

C7.1



- NOTES:
1. WATER MAIN SHALL BE INSTALLED PER THE MUNICIPAL STANDARDS AND SPECIFICATIONS.
 2. DOMESTIC WATER SERVICE AND FIRE SERVICE MAIN MAY BE PLACED IN A SINGLE TRENCH WITH 3" CENTER TO CENTER SEPARATION OR A MIN. OF 2' CLEAR SPACE BETWEEN PIPES WHICH EVER IS GREATER.
 3. TRENCH PROTECTION SHALL BE PROVIDED TO MEET APPLICABLE STATE AND O.S.H.A. SAFETY STANDARDS. ALL SUCH PROTECTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
 4. "S" = TRENCH PROTECTION WALL WIDTH

20 TYPICAL DI WATER MAIN AND PVC FORCEMAIN TRENCH DETAIL
N.T.S.



- NOTES:
1. MECHANICAL JOINTS TO BE MEGALUG SERIES 1100 INSTALLED IN ACCORDING WITH MANUFACTURER RECOMMENDATIONS OR APPROVED EQUAL.
 2. HYDRANT IN SIDEWALK AREAS TO BE LOCATED TO PROVIDE MINIMUM CLEAR SIDEWALK PASSAGE WIDTH OF 3 FEET AT HYDRANT.

21 EXISTING HYDRANT ADJUSTMENT DETAIL
N.T.S.

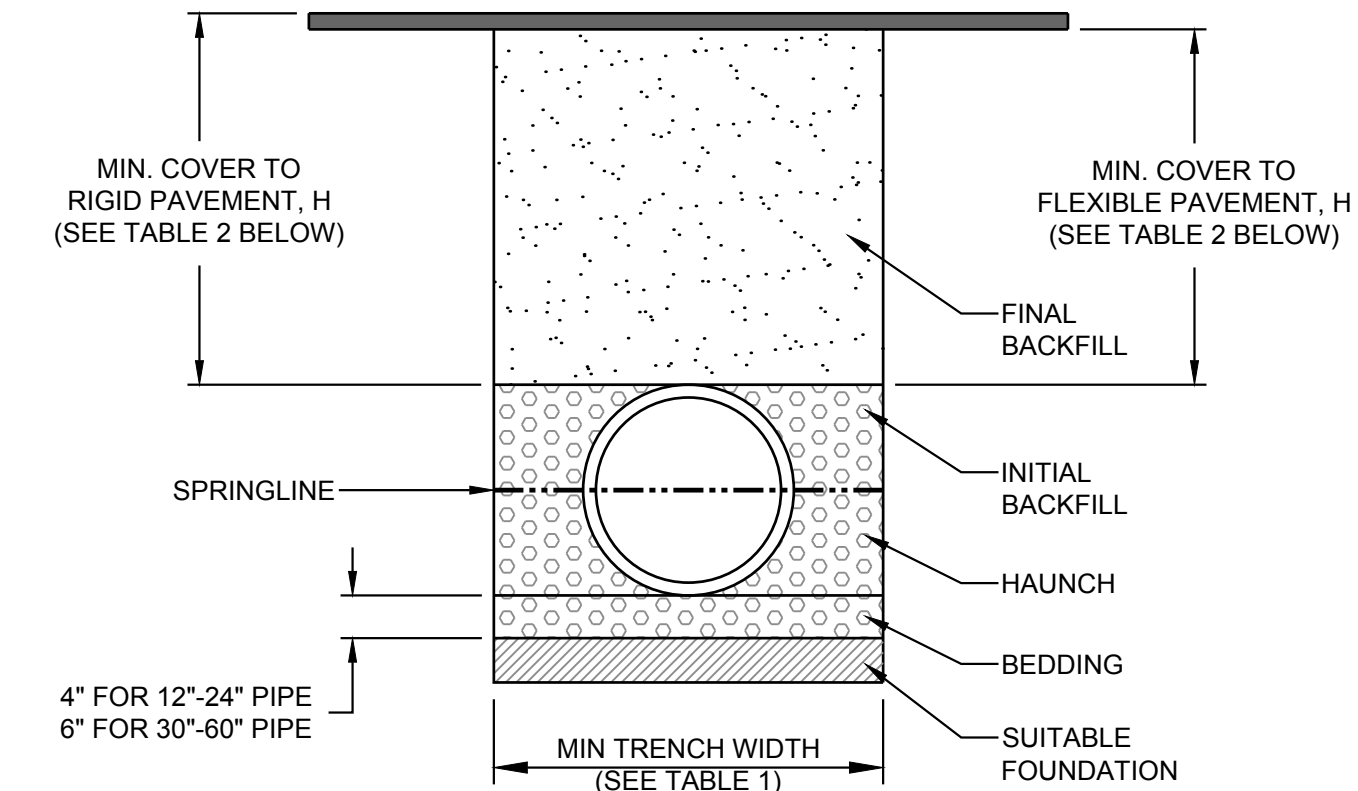


TABLE 1, RECOMMENDED MINIMUM TRENCH WIDTHS

PIPE DIAM.	MIN. TRENCH WIDTH
12"	30"
15"	34"
18"	39"
24"	48"
30"	56"
36"	64"
42"	72"
48"	80"
60"	96"

TABLE 2, MINIMUM RECOMMENDED COVER BASED ON VEHICLE LOADING CONDITIONS

PIPE DIAM.	SURFACE LIVE LOADING CONDITION	
	H-25	HEAVY CONSTRUCTION (75T AXLE LOAD)*
12" - 48"	12"	48"
60"	24"	60"

* VEHICLES IN EXCESS OF 75T MAY REQUIRE ADDITIONAL COVER

TABLE 3, MAXIMUM COVER FOR ADS HP STORM PIPE, ft

PIPE DIA	CLASS						
	CLASS I COMPACTED	95%	90%	85%	95%	90%	95%
12"	41	28	21	16	20	16	16
15"	42	29	21	16	21	16	16
18"	44	30	21	16	22	17	16
24"	37	26	18	14	19	14	14
30"	39	27	19	14	19	15	14
36"	28	20	14	10	14	11	10
42"	30	21	14	10	15	11	10
48"	29	20	14	9	14	10	10
60"	29	20	14	9	14	10	9

FILL HEIGHT TABLE GENERATED USING AASHTO SECTION 12. LOAD RESISTANCE FACTOR DESIGN (LRFD) PROCEDURE WITH THE FOLLOWING ASSUMPTIONS:
NO HYDROSTATIC PRESSURE
UNIT WEIGHT OF SOIL (γs) = 120 PCF

NOTES:

1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321. "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS". LATEST ADDITION, WITH THE EXCEPTION THAT THE INITIAL BACKFILL MAY EXTEND TO THE CROWN OF THE PIPE. SOIL CLASSIFICATIONS ARE PER THE LATEST VERSION OF ASTM D2321. CLASS I/IV MATERIALS (MH, CH) AS DEFINED IN PREVIOUS VERSIONS OF ASTM D2321 ARE NOT APPROPRIATE BACKFILL MATERIALS.

2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.

3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUIABLE MATERIAL AS SPECIFIED BY THE ENGINEER, AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.

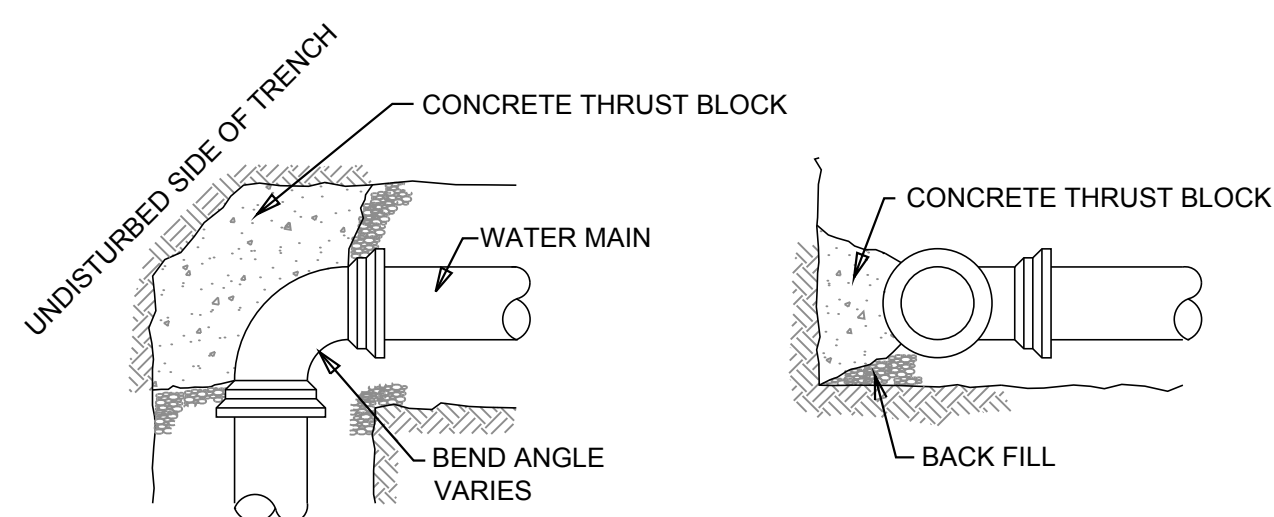
4. BEDDING: SUIABLE MATERIAL SHALL BE CLASS I, II, III, OR IV. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. COMPACTION SHALL BE SPECIFIED BY THE ENGINEER IN ACCORDANCE WITH TABLE 3 FOR THE APPLICABLE FILL HEIGHTS LISTED. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" FOR 12"-24" DIAMETER PIPE, 6" FOR 30"-60" DIAMETER PIPE. THE MIDDLE 1/3 BENEATH THE PIPE INVERT SHALL BE LOOSELY PLACED. PLEASE NOTE, CLASS IV MATERIAL HAS LIMITED APPLICATION AND CAN BE DIFFICULT TO PLACE AND COMPACT; USE ONLY WITH THE APPROVAL OF A SOIL EXPERT.

5. INITIAL BACKFILL: SUIABLE MATERIAL SHALL BE CLASS I, II, III, OR IV IN THE PIPE ZONE EXTENDING TO THE CROWN OF THE PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION. COMPACTION SHALL BE SPECIFIED BY THE ENGINEER IN ACCORDANCE WITH TABLE 3 FOR THE APPLICABLE FILL HEIGHTS LISTED.

6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOTATION. FOR TRAFFIC APPLICATIONS, CLASS I OR II MATERIAL COMPACTED TO 90% SPD AND CLASS III COMPACTED TO 95% SPD IS REQUIRED. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" UP TO 48" DIAMETER PIPE AND 24" OF COVER FOR 60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.

7. FOR ADDITIONAL INFORMATION SEE TECHNICAL NOTE 2.04 IN SECTION 8 OF THE ADS DRAINAGE HANDBOOK.

26 TYPICAL HP STORM TRENCH DETAIL
N.T.S.

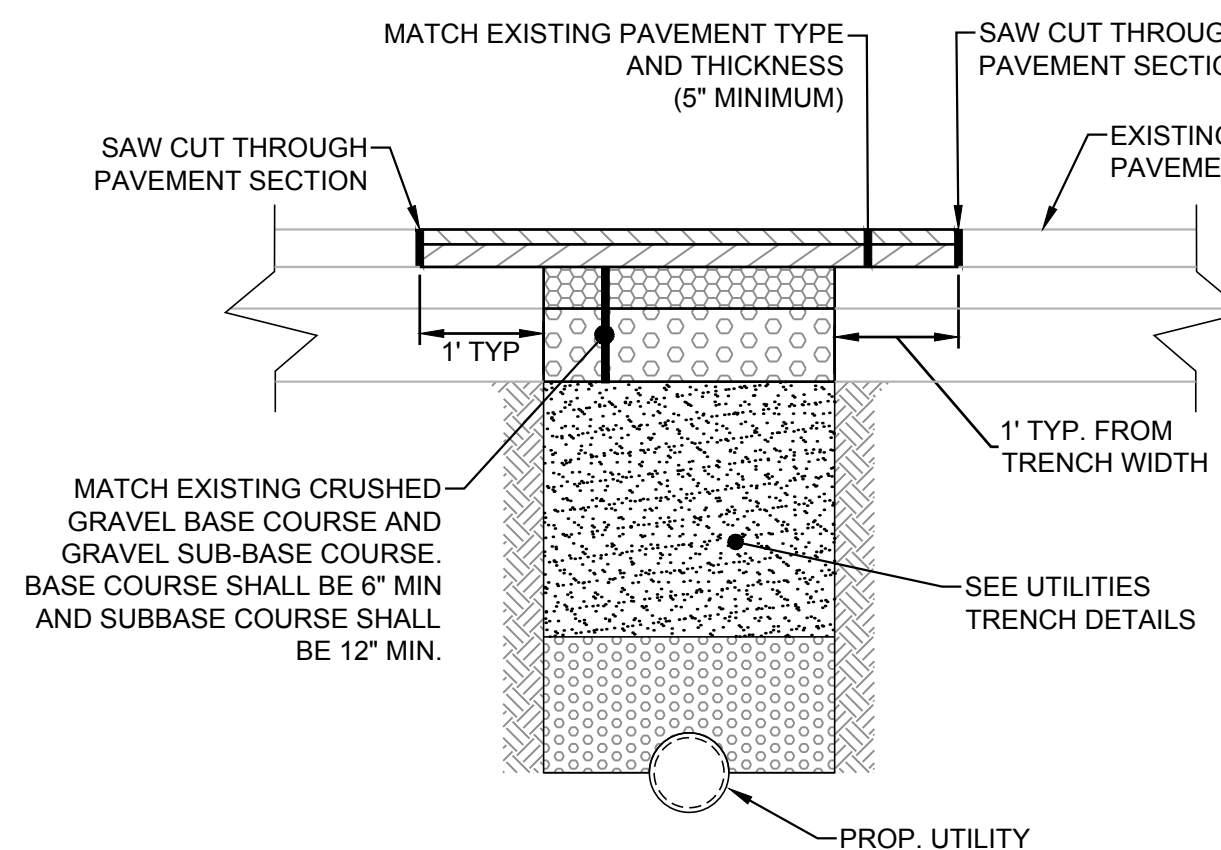


- NOTES:
1. ALL WATER MAIN FITTINGS, BENDS, TEES, PLUGS ETC. SHALL BE RESTRAINED W/ THRUST BLOCKS EXCEPT WHERE NOTED.
 2. ALL THRUST BLOCKS & COLLARS SHALL BE INSTALLED SO THAT THEY BEAR AGAINST UNDISTURBED EARTH.
 3. SIZE OF CONCRETE THRUST BLOCKS SHALL BE AS NOTED BELOW.
 4. MINIMUM COMPRESSIVE STRENGTH OF THRUST BLOCK CONCRETE SHALL BE 3,000 P.S.I.
 5. KEEP CONCRETE CLEAR OF MECHANICAL JOINTS.
 6. THE BELOW PREDICATED ON A WATER PRESSURE OF 225 PSI AND A SOIL RESISTANCE OF 2000 PSF (TILL). FOR OTHER SOILS THE VALUES IN THE BELOW TABLE SHALL BE MULTIPLIED BY:

SOFT CLAY	4
SAND	2
SAND & GRAVEL	1.33
SHALE	0.4

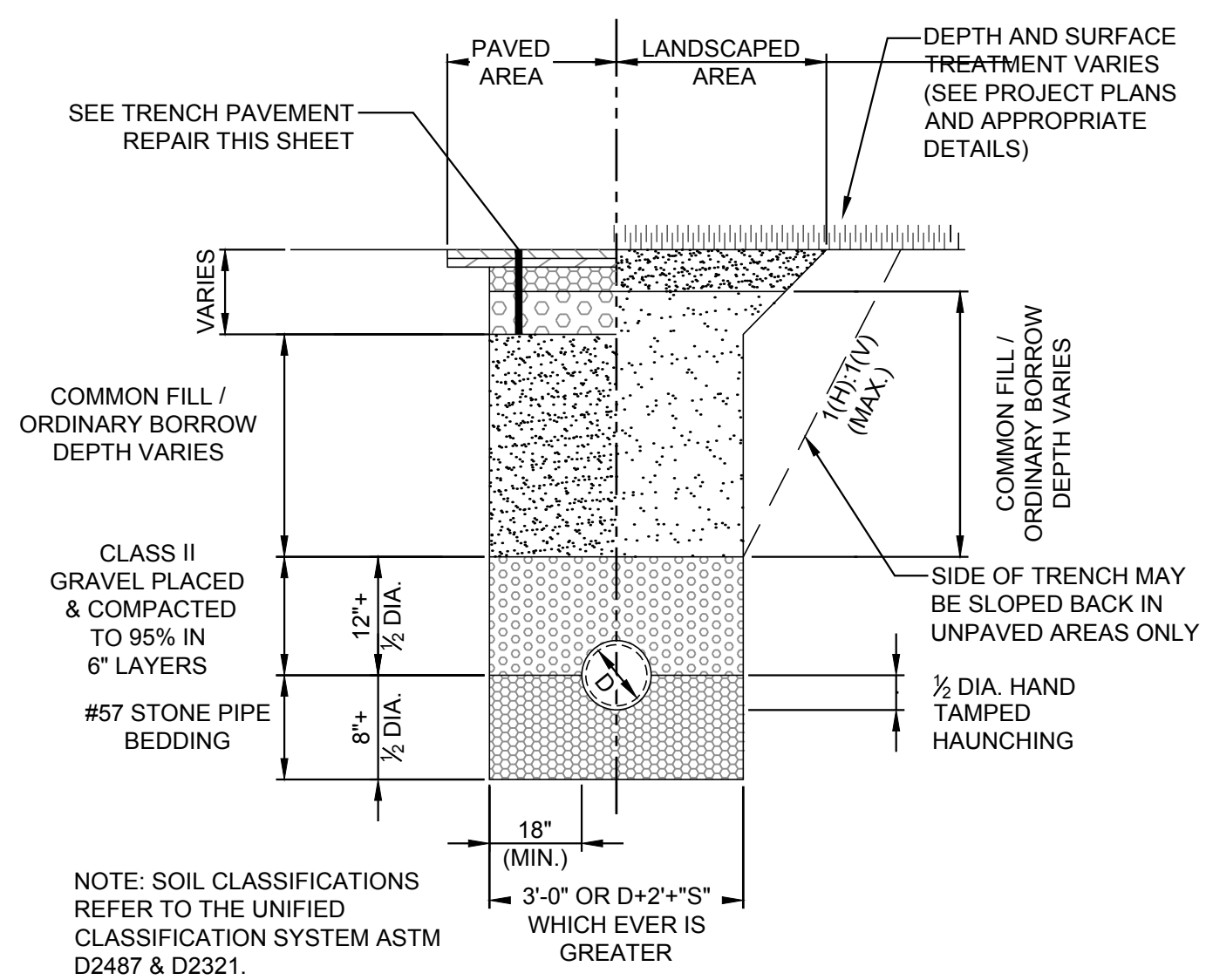
PIPE DIAMETER	MINIMUM THRUST BLOCK BEARING AREAS			
	90° BEND (SQ. FT.)	45° BEND (SQ. FT.)	22.5° BEND (SQ. FT.)	TEES, PLUGS, CAPS & HYDRANTS (SQ.FT.)
6"	5	3	2	4
8"	8	5	3	6
10"	13	7	4	9
12"	18	10	5	13

22 TYPICAL THRUST BLOCK DETAIL
N.T.S.

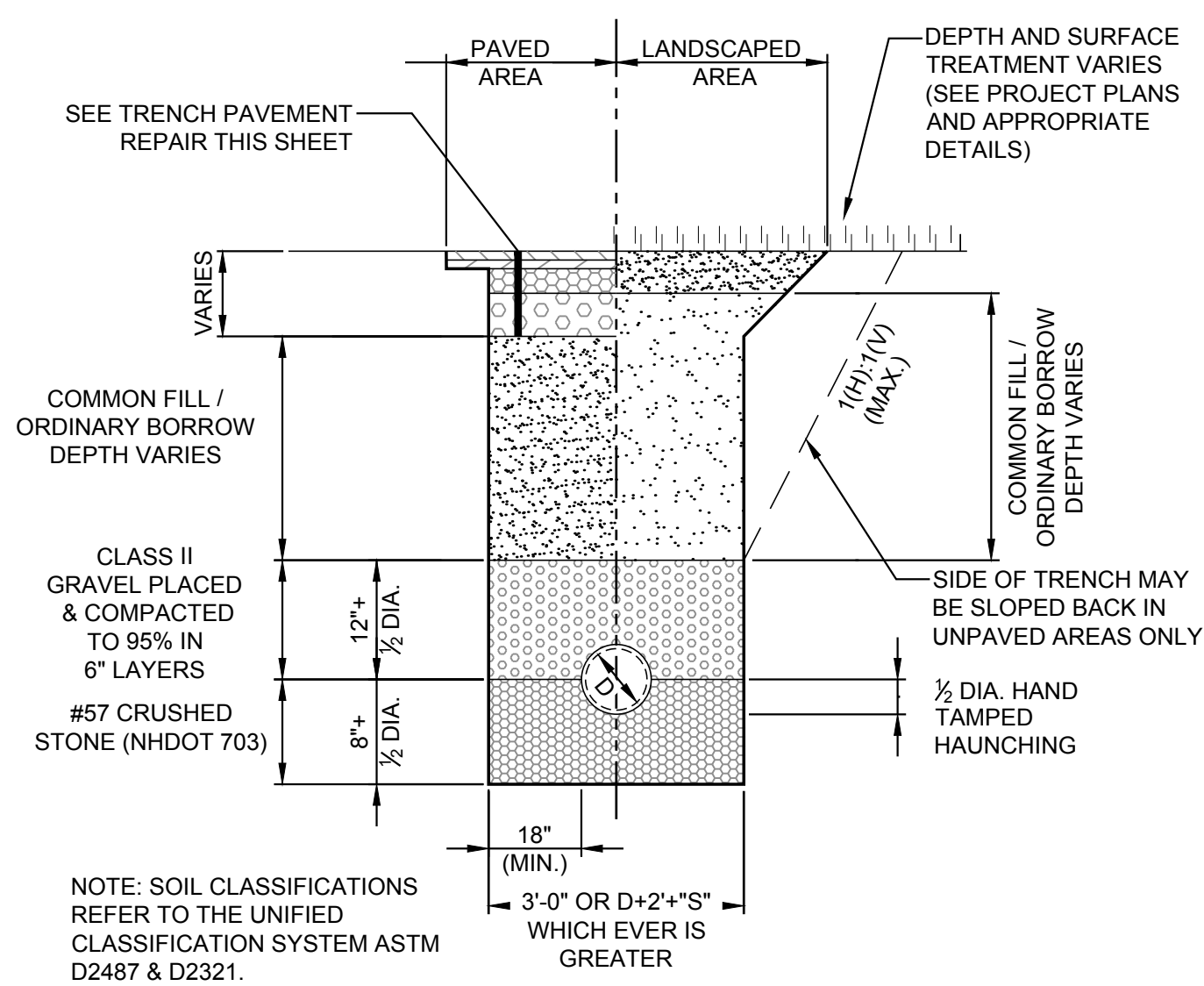


- NOTES:
1. REFER TO MUNICIPAL SPECIFICATIONS FOR ASPHALT MIX DESIGN.
 2. CONSTRUCTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH SECTION 401 OF THE NHDOT STANDARD SPECIFICATIONS AND MUNICIPAL SPECIFICATIONS.
 3. A TACK COAT SHALL BE PLACED ON CLEANED AND STRAIGHT VERTICAL SAWCUT SURFACE PRIOR TO PLACING BINDER AND WEARING COURSE.
 4. TAC COAT SHALL BE RS-1 EMULSION PER NHDOT AND MUNICIPAL SPECIFICATIONS.
 5. A TACK COAT SHALL BE PLACED ON TOP OF BINDER COURSE OF PRIOR TO PLACING WEARING COURSE.

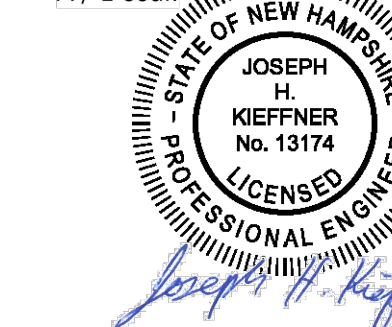
23 TYPICAL UTILITY TRENCH PERMANENT PAVEMENT REPAIR DETAIL
N.T.S.



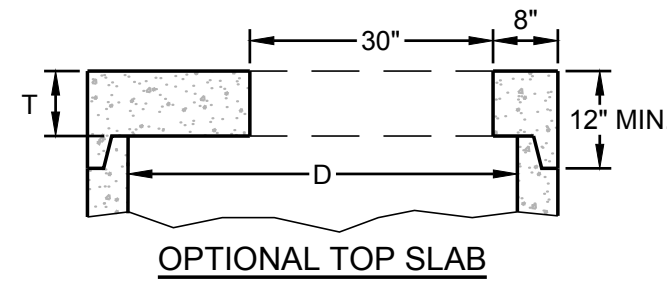
24 TYPICAL STORM DRAIN TRENCH DETAIL
N.T.S.



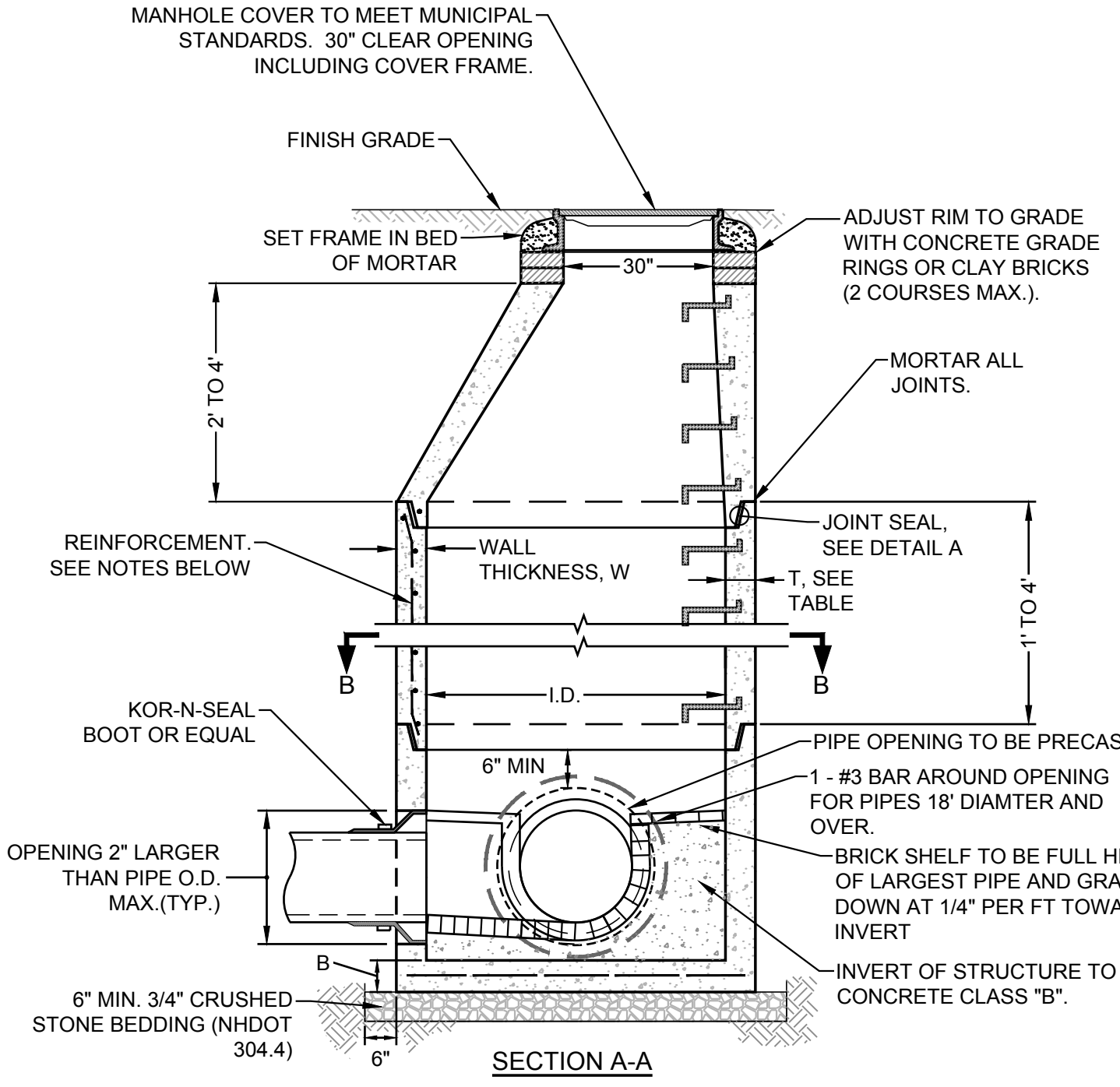
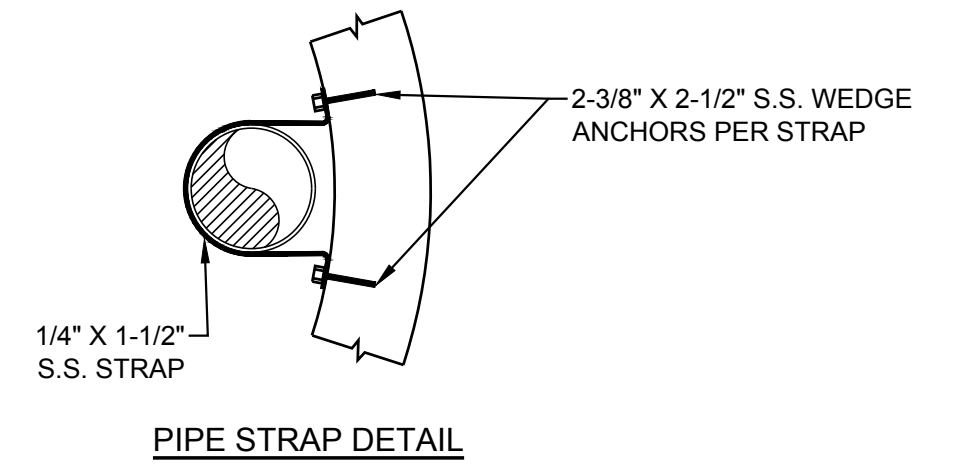
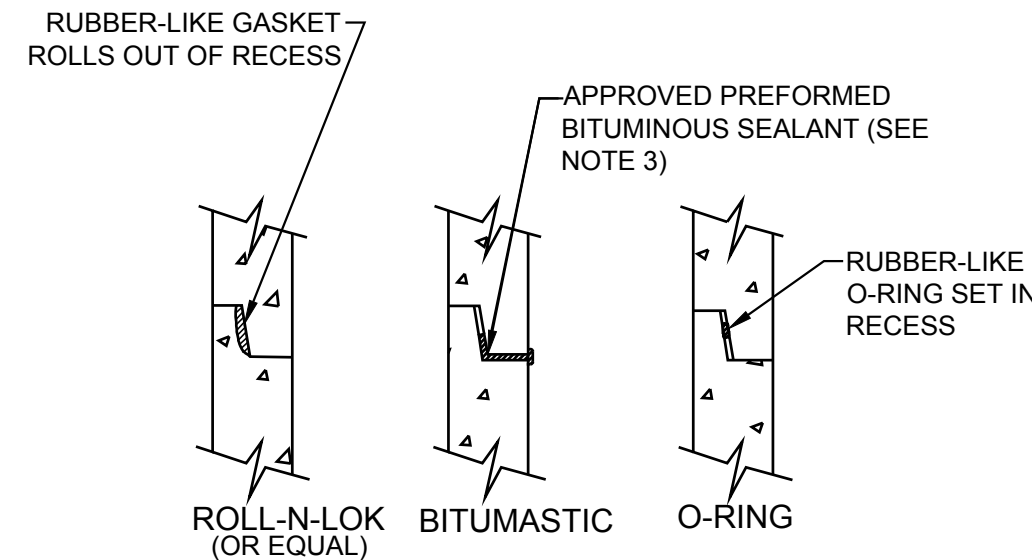
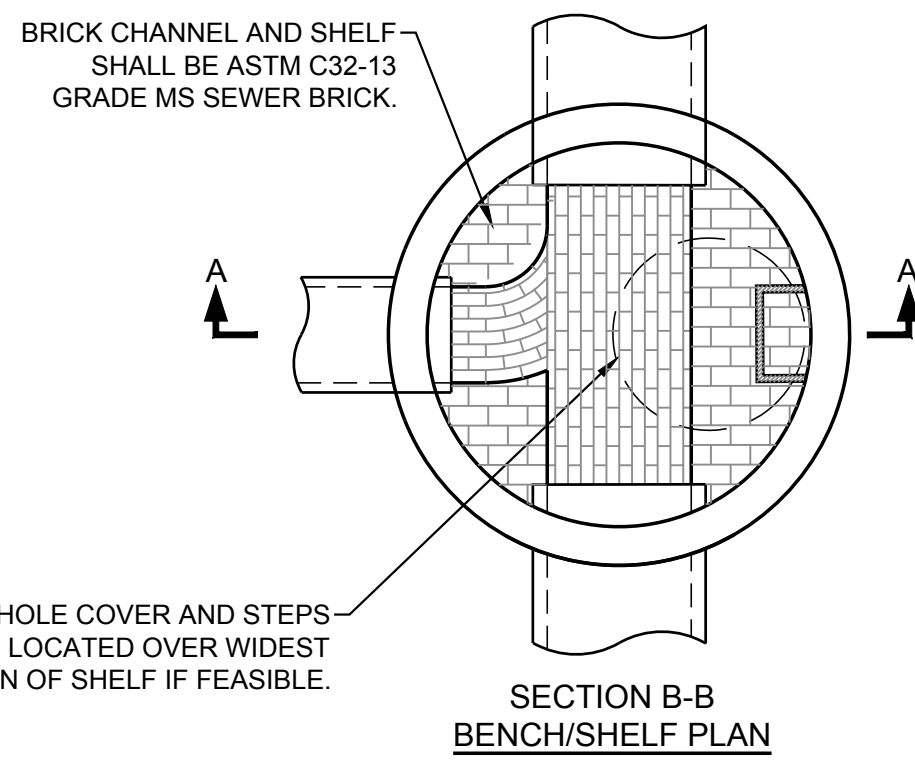
25 TYPICAL SANITARY SEWER TRENCH DETAIL
N.T.S.



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1	TAC PUBLIC HEARING	6/15/2017
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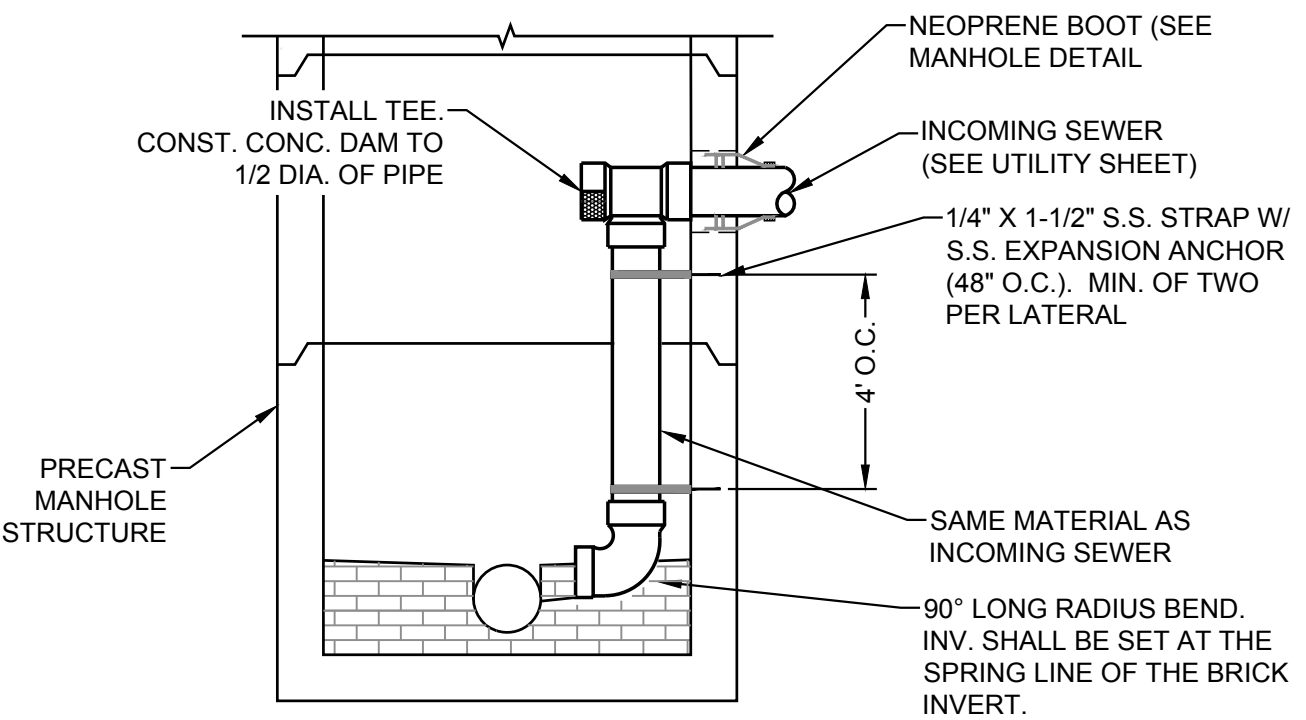


MINIMUM DIMENSIONS FOR INNER DIAMETER, I.D.			
I.D. (IN)	W (IN)	B (IN)	T (IN)
48	5	6	8
60	6	8	8
72	7	8	8
84	9	10	10
96	9	10	12
108	10	10	12
120	11	10	12



- NOTES:
- MANHOLE I.D. SHALL BE 48\"/>
 - THESE MANHOLE DETAILS TO BE USED FOR BOTH SANITARY SEWER AND STORM DRAIN MANHOLES.
 - PRECAST MANHOLES SHALL CONFORM TO AASHTO M199/ASTM C478 SPECIFICATIONS.
 - REINFORCEMENT:
 - DEFORMED BARS SHALL CONFORM TO ASTM A-615 GRADE 60.
 - WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185
 - ALL SECTIONS SHALL BE 4,000 PSI CONCRETE.
 - REIN. STEEL SHALL HAVE 1\"/>
 - THE TONGUE AND THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER LINEAR FOOT.
 - THE STRUCTURES SHALL BE DESIGNED FOR HS 20-44 LOADING.
 - CRUSHED STONE BEDDING SHALL CONFORM TO NHDOT 304.4.
 - PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
 - OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3\"/>
 - ALL STRUCTURES SHALL HAVE A MINIMUM OF 12\"/>
 - SANITARY SEWER MANHOLES SHALL HAVE AN EXTERIOR ASPHALTIC WATER PROOF COATING APPLIED (2 COATS MIN.).
 - BASE SHALL BE A SINGLE POUR MONOLITHIC SECTION TO A MINIMUM OF 6\"/>
 - INVERTS AND SHELVES:
 - BRICK SHALL BE ASTM C32-13 GRADE MS SEWER BRICK.
 - BRICK SHELVES SHALL BE CONSTRUCTED TO CONFORM TO THE SIZE OF THE PIPE AND FLOW.
 - AT CHANGES IN DIRECTION, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE TANGENT TO WALL OF THE PIPE.
 - SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPED TO DRAIN TOWARD THE CHANNEL
 - INVERTS AND SHELVES SHALL ONLY BE PLACED AFTER LEAKAGE TESTS ARE PERFORMED.
 - FRAMES AND COVERS:
 - FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN
 - 4\"/>
 - STORM DRAIN COVERS SHALL HAVE \"DRAIN\" CAST INTO THE CENTER OF EACH COVER.
 - LEAKAGE TEST SHALL CONFORM TO MUNICIPAL SPECIFICATIONS.
 - ALL GASKETS, SEALANTS, MORTAR, ETC. SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND SPECIFICATIONS.

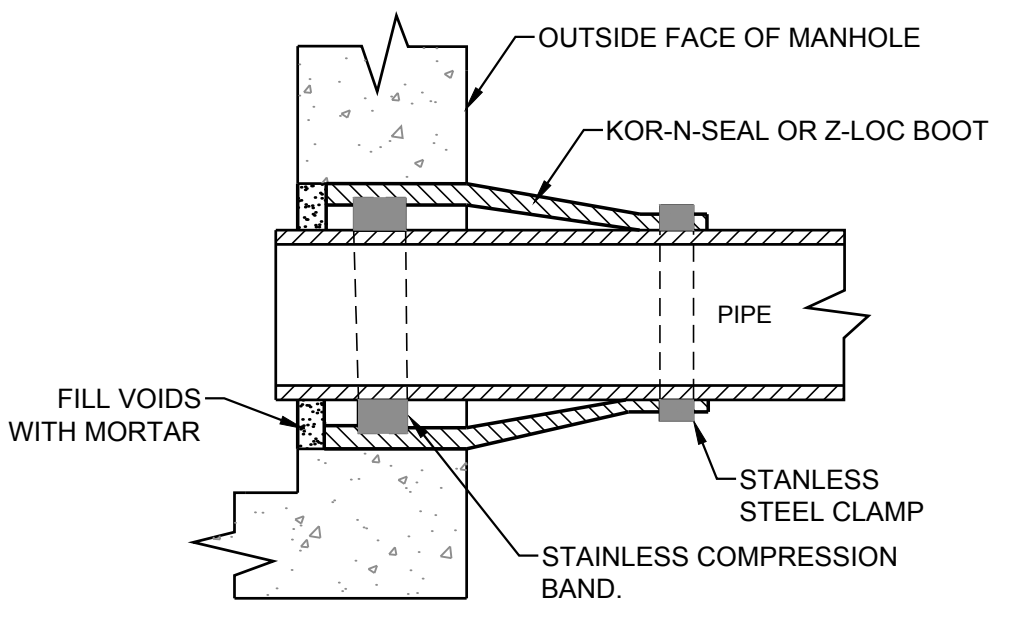
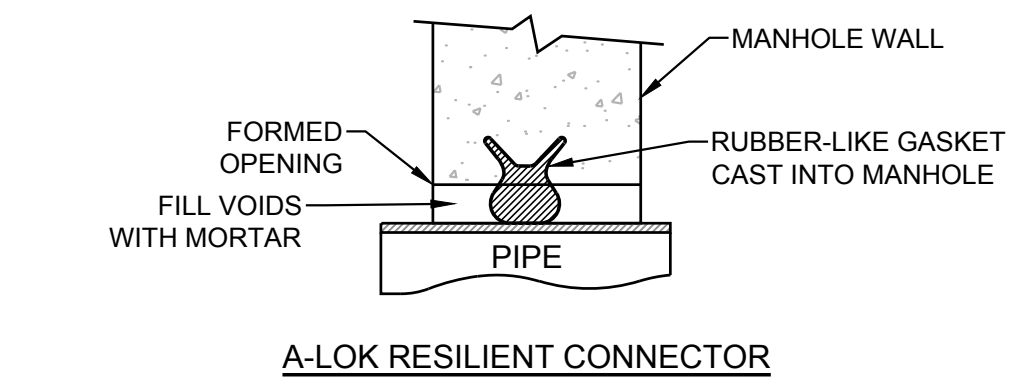
- NOTES:
- FOR BITUMASTIC TYPE JOINTS THE AMOUNT OF SEALANT SHALL BE SUFFICIENT TO FILL AT LEAST 75% OF THE JOINT CAVITY.
 - HORIZONTAL JOINT SEAL SHALL BE PREFORMED BITUMASTIC SEALANT OR RUBBER-LIKE O-RING AND INSTALLED ACCORDING TO THE MANUFACTURER'S WRITTEN INSTRUCTIONS AND SPECIFICATIONS.
 - HORIZONTAL JOINTS BETWEEN THE SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE PER THE CITY OF PORTSMOUTH STANDARD AND SHALL BE SEALED FOR WATERTIGHTNESS USING A DOUBLE ROW OF ELASTOMERIC OR MASTIC-LIKE GASKET.



- NOTE:
- INTERIOR MANHOLE DROP SHALL ONLY BE INSTALLED IN 5' DIA. OR LARGER MANHOLES.
 - DROP CONNECTION SHALL BE USED WHERE THE INCOMING PIPE INVERT IS 24\"/>
 - DROP PIPE AND FITTINGS SHALL BE THE SAME MATERIAL AND DIAMETER OF INCOMING PIPE.
 - ALL HARDWARE SHALL BE STAINLESS STEEL (S.S.).
 - STAINLESS STEEL SHALL BE TYPE 304 FOR STORM WATER STRUCTURES AND TYPE 316 FOR SANITARY SEWER STRUCTURES.
 - DROP PIPE INVERT ELEVATIONS:
 - WHEN DROP PIPE DIA. IS EQUAL TO THE MANHOLE OUTLET PIPE THEN THE DROP INVERT SHALL BE 0.1' ABOVE OUTLET INVERT.
 - WHEN DROP PIPE DIA. IS LESS THEN OUTLET PIPE DIA. THEN DROP INVERT SHALL BE SET AT THE MID POINT OF THE BRICK SHELF.
 - SEE TYPICAL MANHOLE DETAIL FOR MANHOLE CONSTRUCTION.

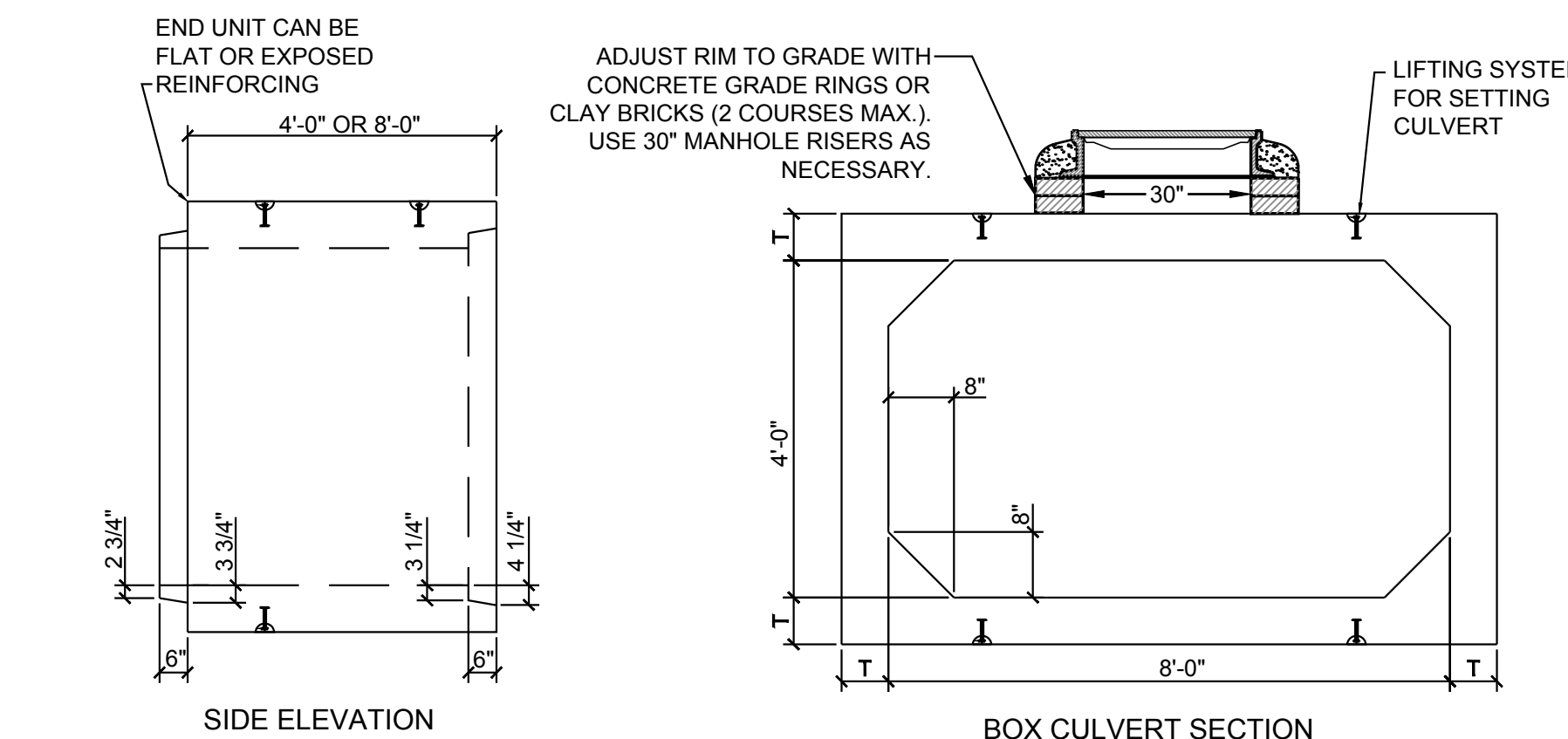
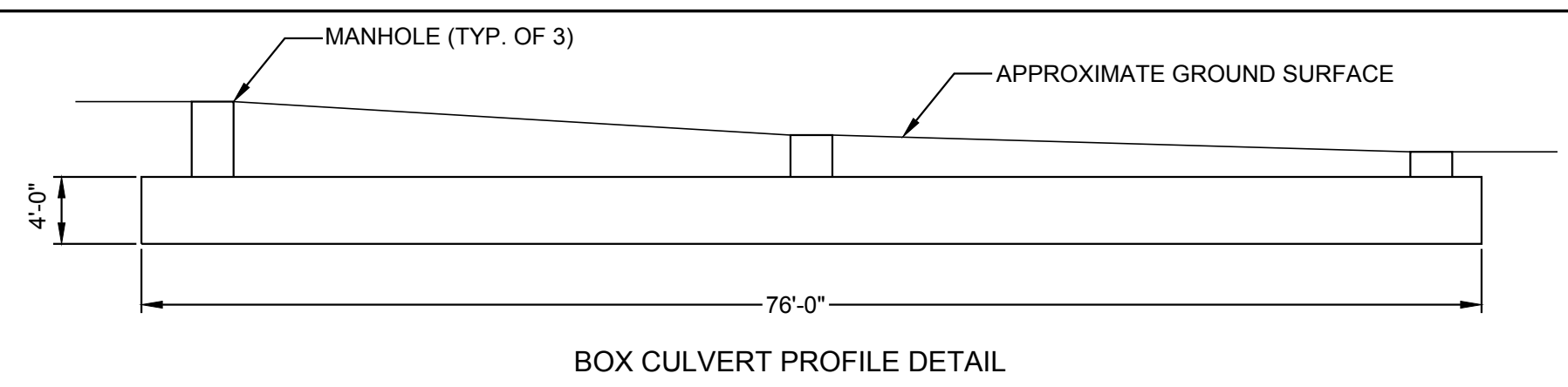
27 TYPICAL PRECAST CONCRETE JUNCTION MANHOLE N.T.S.

28 TYPICAL MANHOLE INTERIOR MANHOLE DROP CONNECTION N.T.S.

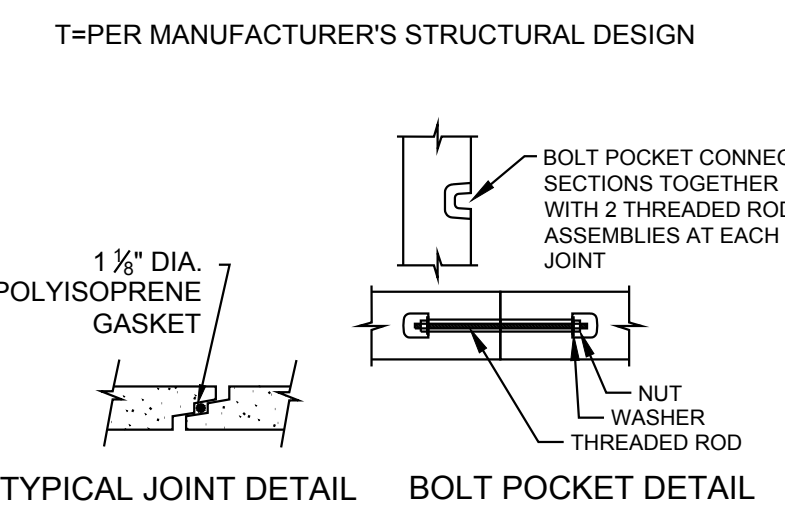


- NOTE:
- SEALS SHALL CONFORM TO ASTM C923.
 - STAINLESS STEEL SHALL BE TYPE 304.
 - CONNECTOR SEALS SHALL BE INSTALLED PER MANUFACTURER'S WRITTEN SPECIFICATIONS AND INSTRUCTIONS.
 - PIPE TO MANHOLE JOINTS SHALL BE PER CITY OF PORTSMOUTH STANDARDS.

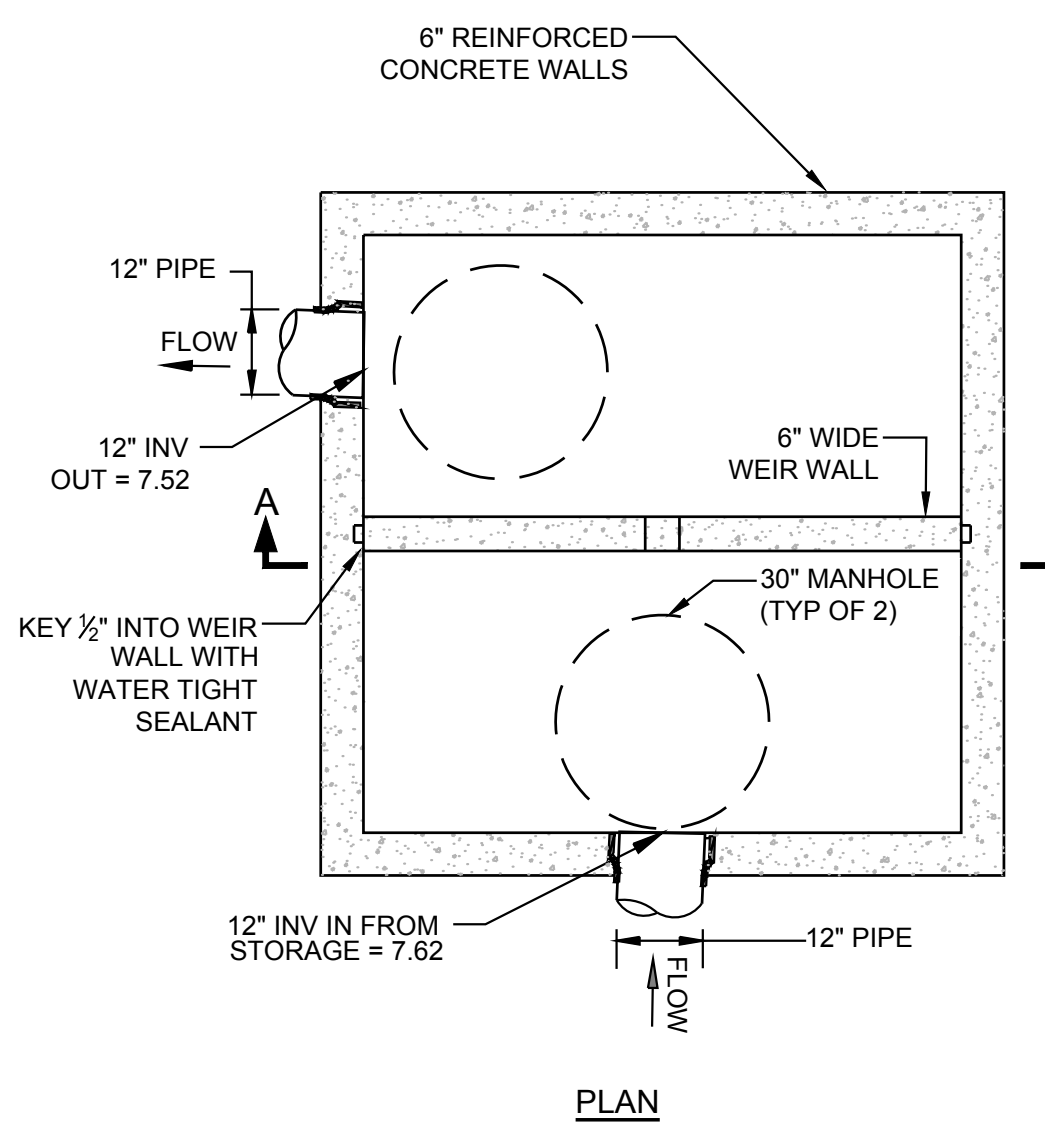
29 PIPE CONNECTION TO PRECAST MANHOLE STRUCTURES N.T.S.



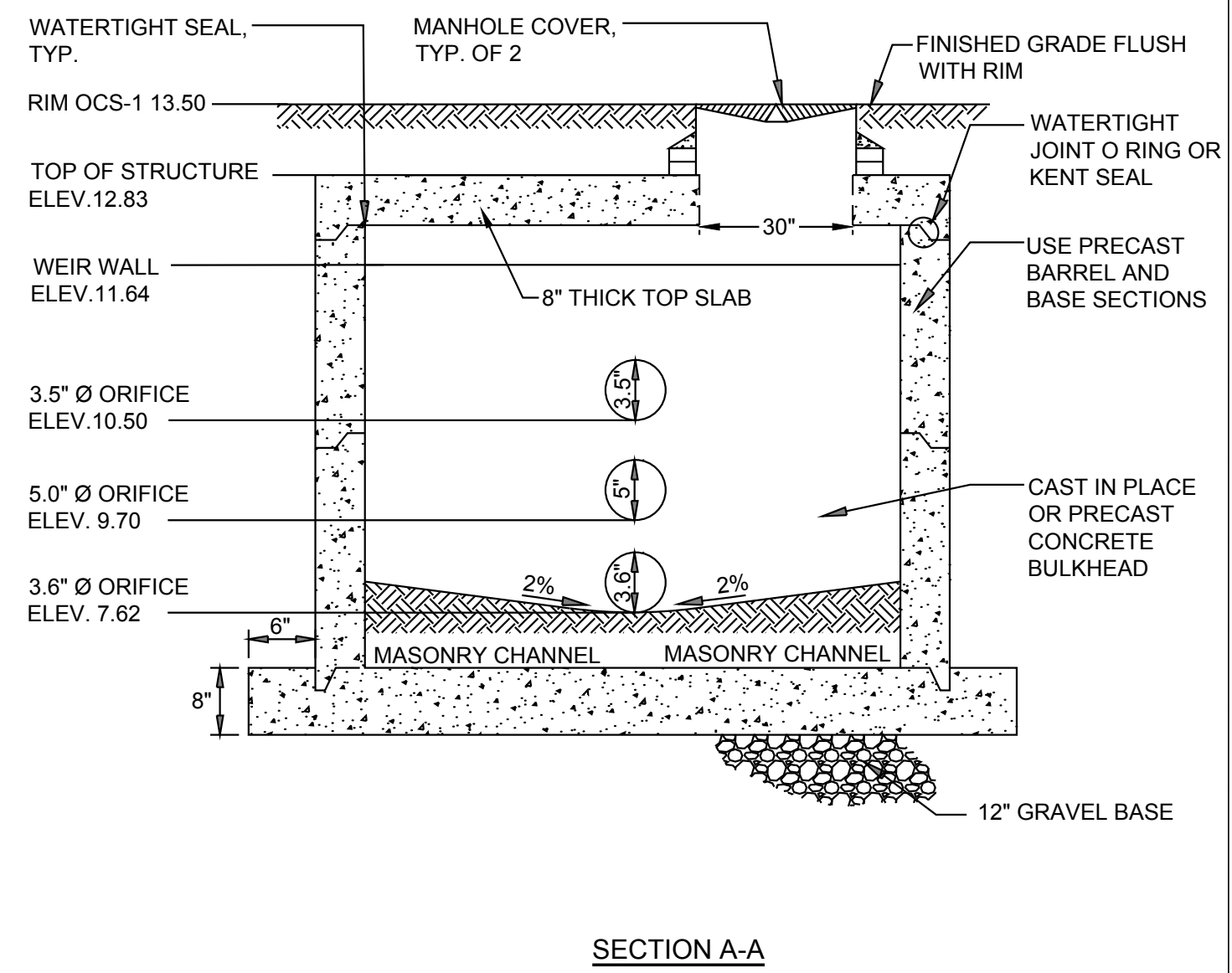
- NOTES:
- BOX CULVERT SHALL BE DESIGNED FOR HS-20-44 LOADING AND TO PREVENT FLOTATION IF FULLY SUBMERGED.
 - CULVERT SHALL CONFORM TO AASHTO M273
 - ALL SECTIONS TO BE JOINED WITH SS 304 FASTENERS. HARDWARE TO BE DESIGNED BY THE PRECAST MANUFACTURER. CONCRETE DESIGN STRENGTH SHALL BE 5000 PSI.
 - REINFORCEMENT:
 - DEFORMED BARS SHALL CONFORM TO ASTM A-615 GRADE 60.
 - WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185 - GRADE 70
 - REFER TO DETAIL 29 FOR PIPE CONNECTION DETAIL.
 - MANHOLES TO BE PLACED AT ALL PIPE CONNECTIONS.
 - SEE PLAN FOR MANHOLE ENTRANCE LOCATIONS.
 - THE STRUCTURE SHALL BE DESIGNED FOR HS 20-44 LOADING.



30 8'x4'x76' DETENTION BOX DETAIL N.T.S.



- NOTES:
- PRECAST BOX STRUCTURE SHALL CONFORM TO ASTM C913 SPECIFICATIONS.
 - SEE DETAIL TITLE PIPE CONNECTION TO PRECAST MANHOLE STRUCTURES (THIS SHEET).
 - REINFORCEMENT:
 - DEFORMED BARS SHALL CONFORM TO ASTM A-615 GRADE 60.
 - WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185-GRADE 70
 - ALL SECTIONS SHALL BE 5,000 PSI CONCRETE.
 - REIN. STEEL SHALL HAVE 1\"/>
 - THE STRUCTURE SHALL BE DESIGNED FOR HS 20-44 LOADING AND TO PREVENT FLOTATION IF FULLY SUBMERGED.
 - CRUSHED STONE BEDDING SHALL CONFORM TO NHDOT 304.4.
 - PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
 - OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3\"/>



- NOTES:
- PRECAST BOX STRUCTURE SHALL CONFORM TO ASTM C913 SPECIFICATIONS.
 - SEE DETAIL TITLE PIPE CONNECTION TO PRECAST MANHOLE STRUCTURES (THIS SHEET).
 - REINFORCEMENT:
 - DEFORMED BARS SHALL CONFORM TO ASTM A-615 GRADE 60.
 - WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185-GRADE 70
 - ALL SECTIONS SHALL BE 5,000 PSI CONCRETE.
 - REIN. STEEL SHALL HAVE 1\"/>
 - THE STRUCTURE SHALL BE DESIGNED FOR HS 20-44 LOADING AND TO PREVENT FLOTATION IF FULLY SUBMERGED.
 - CRUSHED STONE BEDDING SHALL CONFORM TO NHDOT 304.4.
 - PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
 - OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3\"/>

31 6'x6' OUTLET CONTROL STRUCTURE N.T.S.



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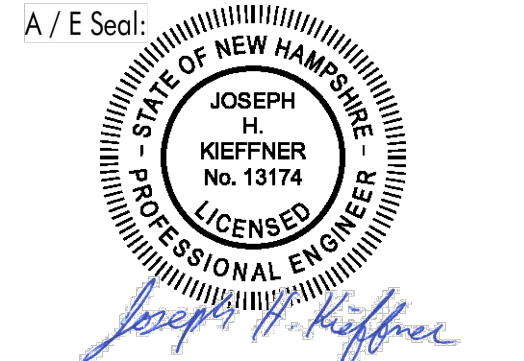
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MPFF ENGINEER
WOBBURN, MASSACHUSETTS

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ELECTRICAL ENGINEER
DERRY, NEW HAMPSHIRE

**RESIDENCES AT
FOUNDRY PLACE,
LOT 6: 181 HILL ST,
ASSESSORS MAP
138 LOT 62**
PORTSMOUTH, NH 03801

OWNER:
Deer Street Associates

7 BANKS ROCK ROAD
YORK HARBOR, ME



Scale:
Date: **3/17/2017**
Project Number: **14837.03**

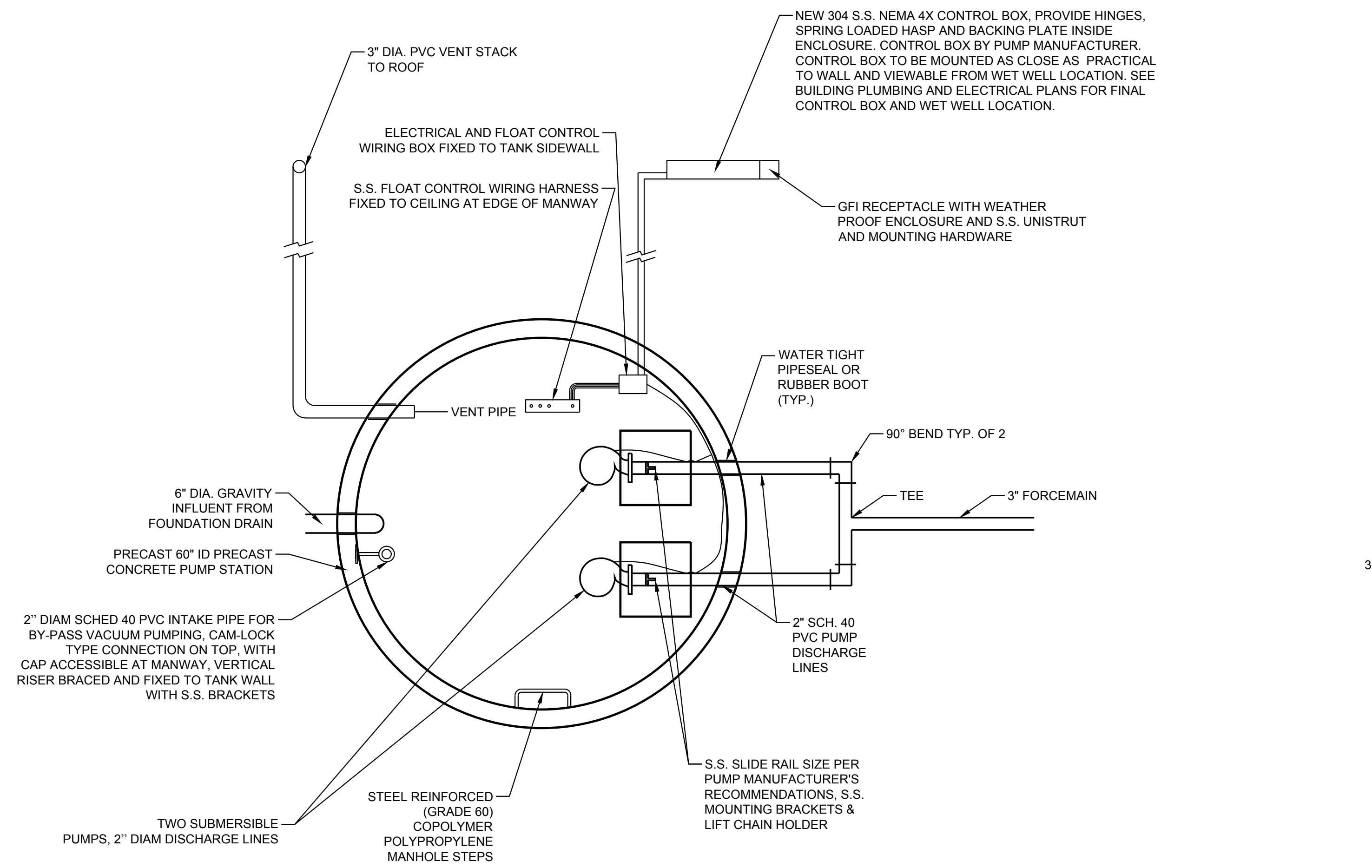
REVISIONS		
NO.	DESCRIPTION	DATE
1	TAC PUBLIC HEARING	6/15/2017
2	TAC PUBLIC HEARING	8/21/2017

SITE PLAN REVIEW

**STANDARD
DETAILS**

C7.3

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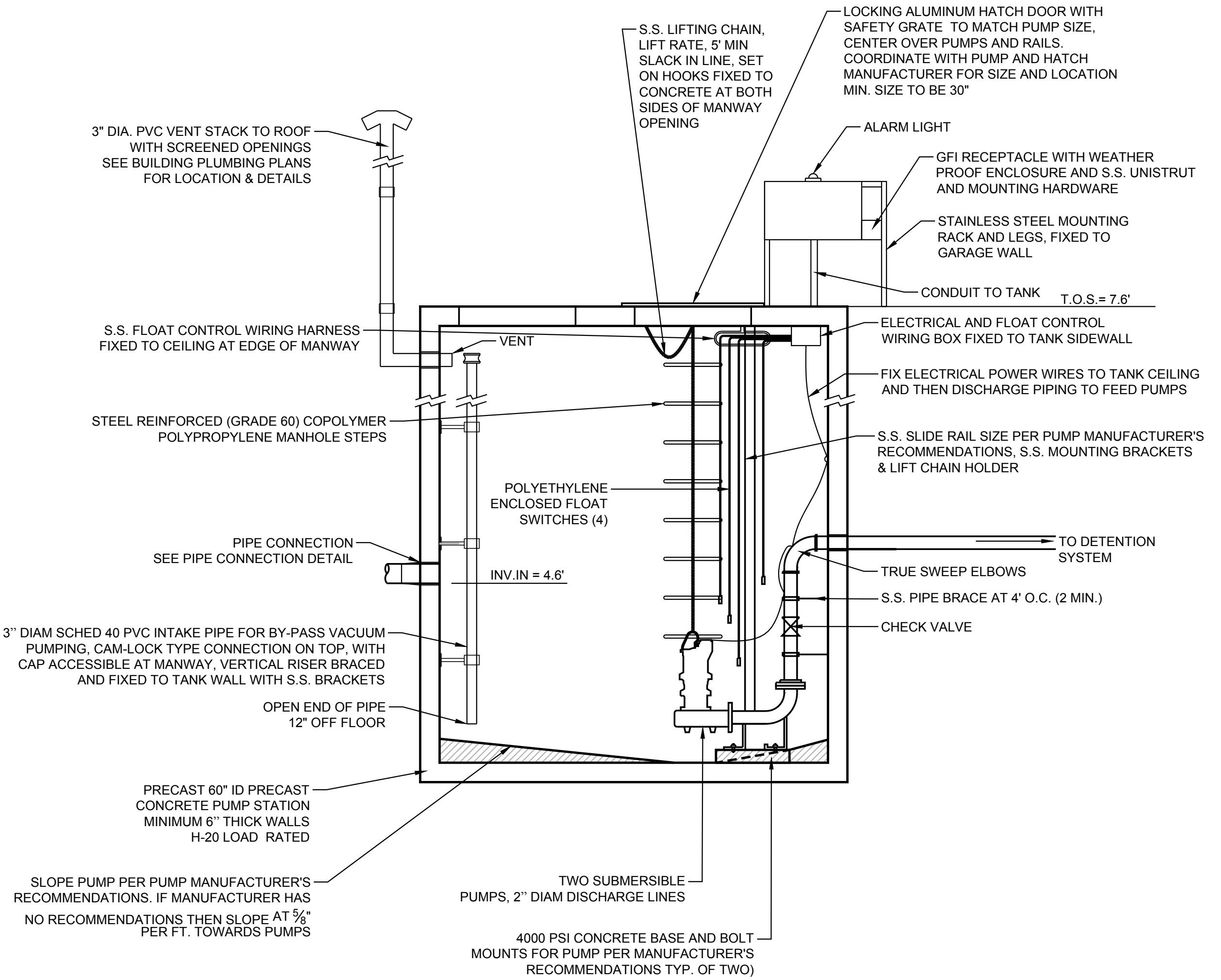


PLAN

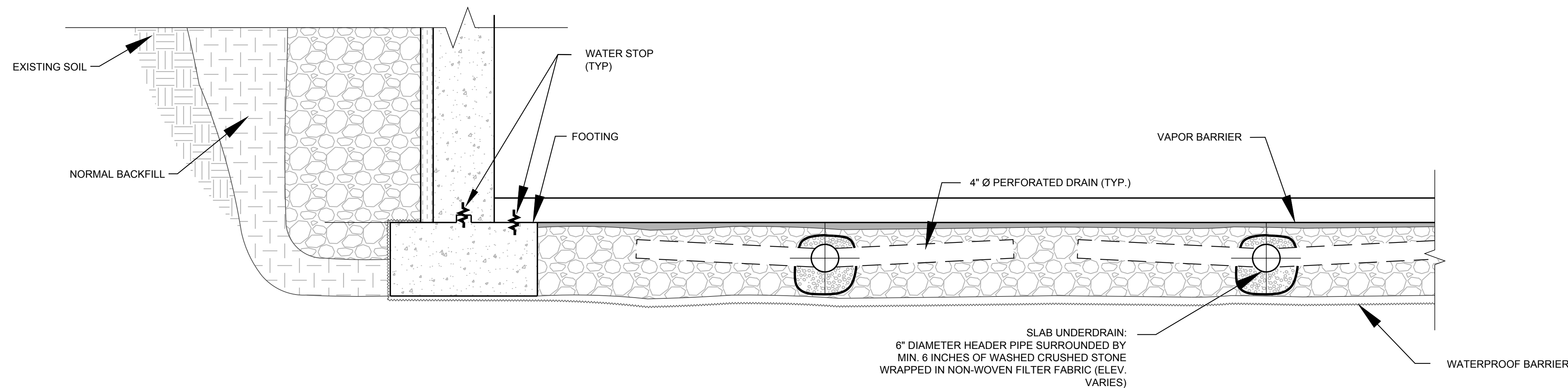
SUMP PUMP NOTES:

- ALL HARDWARE IN WETWELL SHALL BE 304 STAINLESS STEEL.
- ALL JOINTS SEALED WITH BUTYL RUBBER JOINT SEALANT FILLING AT LEAST 75% OF CAVITY WITH CONSEAL CS-202 OR EQUAL.
- MASTERSAL 615 APPLIED TO THE EXTERIOR OF ALL CONCRETE STRUCTURES ACCORDING TO THE MANUFACTURERS SPECIFICATIONS AND INSTRUCTIONS.
- WETWELL AND ACCESS HATCHES SHALL BE H20 LOAD RATED.
- CONTRACTOR TO COORDINATE ACCESS HATCH LOCATIONS WITH PUMP MANUFACTURER TO ALLOW FOR THE FREE REMOVAL AND INSTALLATION OF PUMPS.
- DISCHARGE PIPING TO FORCEMAIN SHALL BE DICL CLASS 52 WITH FLANGED ENDS.
- FORCEMAIN
 - SHALL BE MECHANICAL JOINT OR PUSH-ON JOINT TYPE
 - MATERIAL SHALL BE EITHER DICL CLASS 52 OR PVC SDR21, CELL CLASS 12454, MEETING ASTM D2241.
- ALL JOINTS SHALL BE RESTRAINED EITHER BY MECHANICAL JOINTS OR JOINT RESTRAINTS (EBAA IRON SERIES 1100 MEGALUG OR APPROVED EQUAL).
- GROUNDWATER SHALL BE DEWATERED TO A MINIMUM DEPTH OF 2' BELOW EXCAVATION.
- DUPLEX PUMP SYSTEM SHALL BE DESIGNED UPON THE FOLLOWING INFORMATION:
 PUMP FLOW RATE: 80 GPM @ APPROXIMATELY 13' TDH
 POWER SUPPLY: 208 VOLT 3-PHASE POWER
 PUMP SHALL ALTERNATE RUNS.
 CASING SHALL BE EXPLOSION PROOF.

32 SUMP PUMP DETAIL
N.T.S.



SECTION



33 SUB SLAB DRAIN SECTION
N.T.S.



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ELECTRICAL ENGINEER
DERRY, NEW HAMPSHIRE

**RESIDENCES AT
FOUNDRY PLACE,
LOT 6: 181 HILL ST,
ASSESSORS MAP
138 LOT 62**
PORTSMOUTH, NH 03801

OWNER:
Deer Street Associates

7 BANKS ROCK ROAD
YORK HARBOR, ME



Scale:
Date: **3/17/2017**
Project Number: **14837.03**

REVISIONS		
NO.	DESCRIPTION	DATE
1	TAC PUBLIC HEARING	6/15/2017
2	TAC PUBLIC HEARING	8/21/2017

SITE PLAN REVIEW

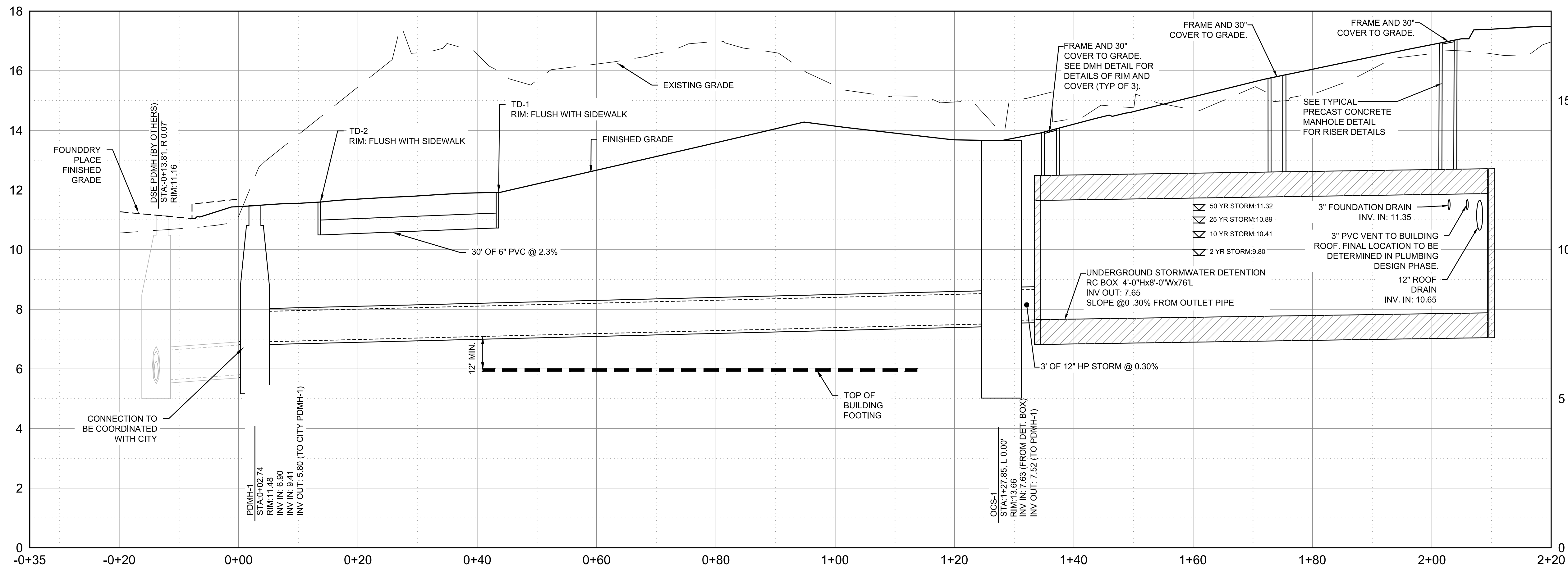
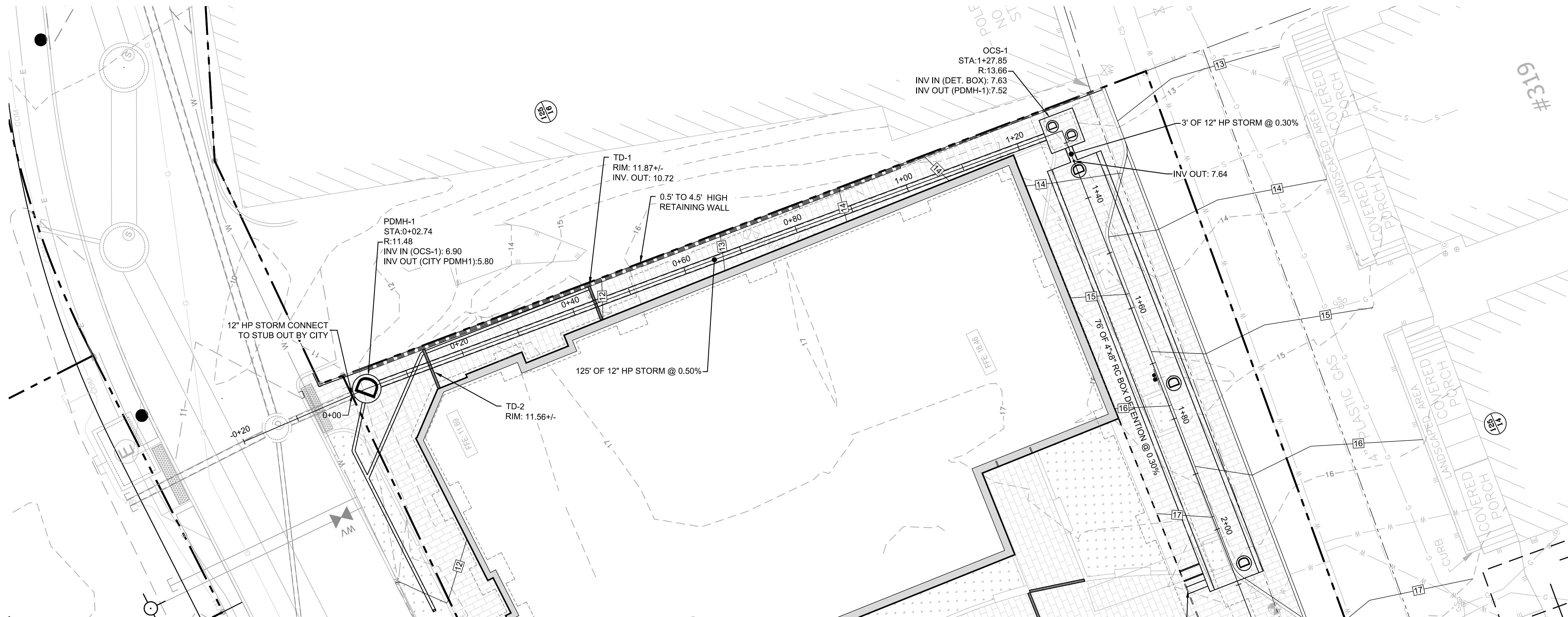
**STANDARD
DETAILS**

C7.4

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PERMIT PLANS - NOT FOR CONSTRUCTION

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LOT 6 DRAIN
 HORIZONTAL SCALE: 1"=10'
 VERTICAL SCALE: 1"=2'

PERMIT PLANS - NOT FOR CONSTRUCTION



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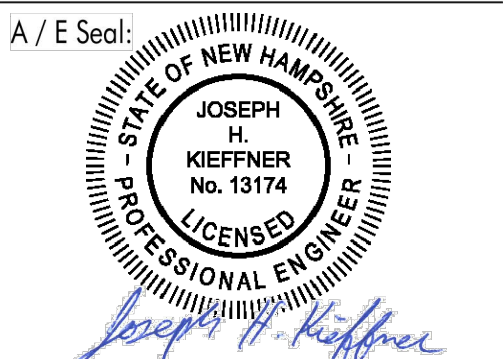
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**RESIDENCES AT
 FOUNDRY PLACE,
 LOT 6: 181 HILL ST,
 ASSESSORS MAP
 138 LOT 62**
 PORTSMOUTH, NH 03801

OWNER:
Deer Street Associates

7 BANKS ROCK ROAD
 YORK HARBOR, ME



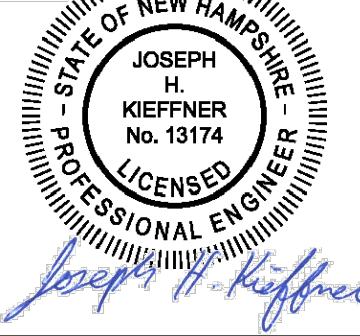
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 Date: 3/17/2017
 Project Number: 14837.03

REVISIONS		
NO.	DESCRIPTION	DATE
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2	TAC PUBLIC HEARING	8/21/2017

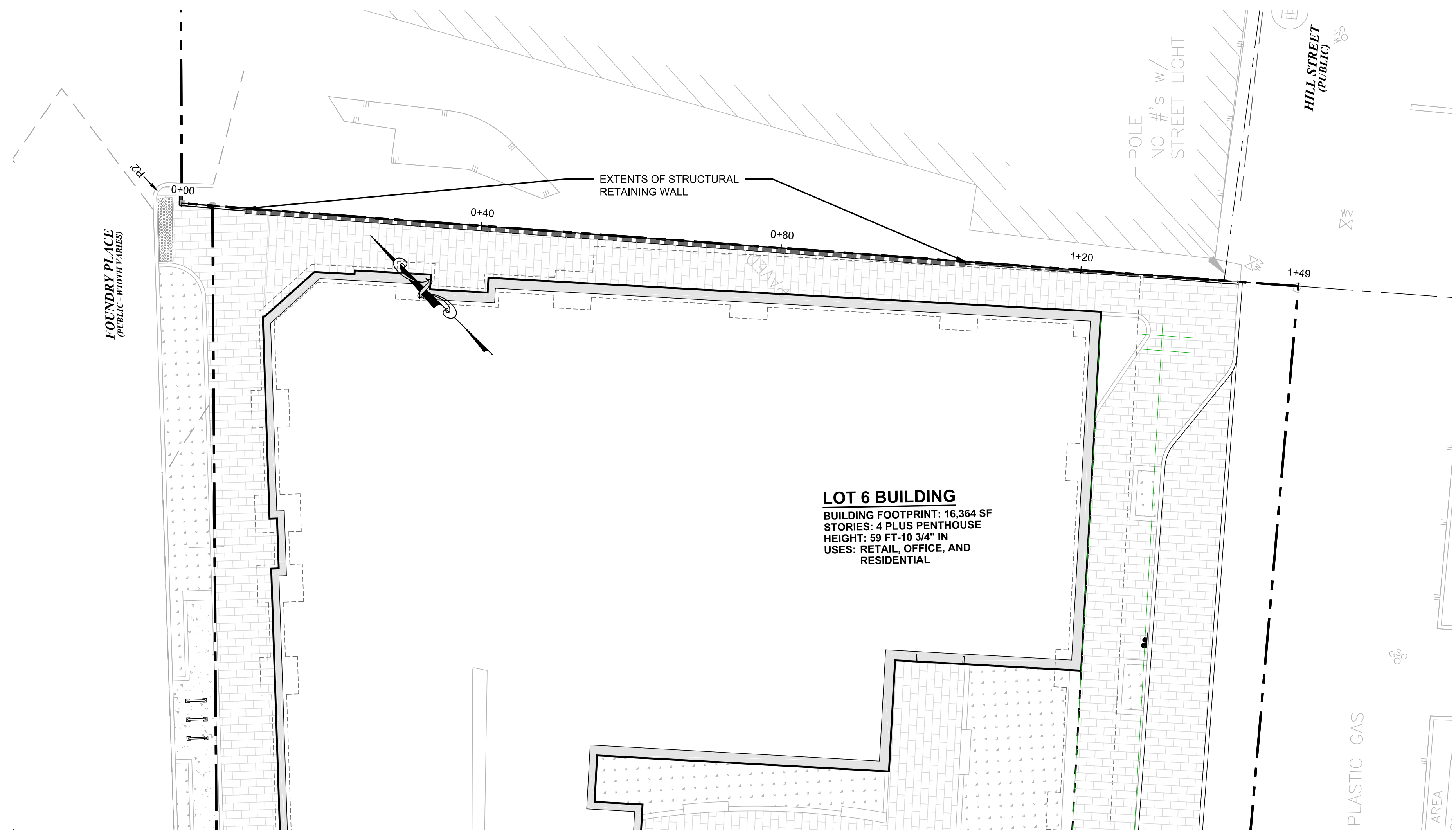
SITE PLAN REVIEW

**DRAIN PLAN
 & PROFILES
 AND CROSS-
 SECTIONS**

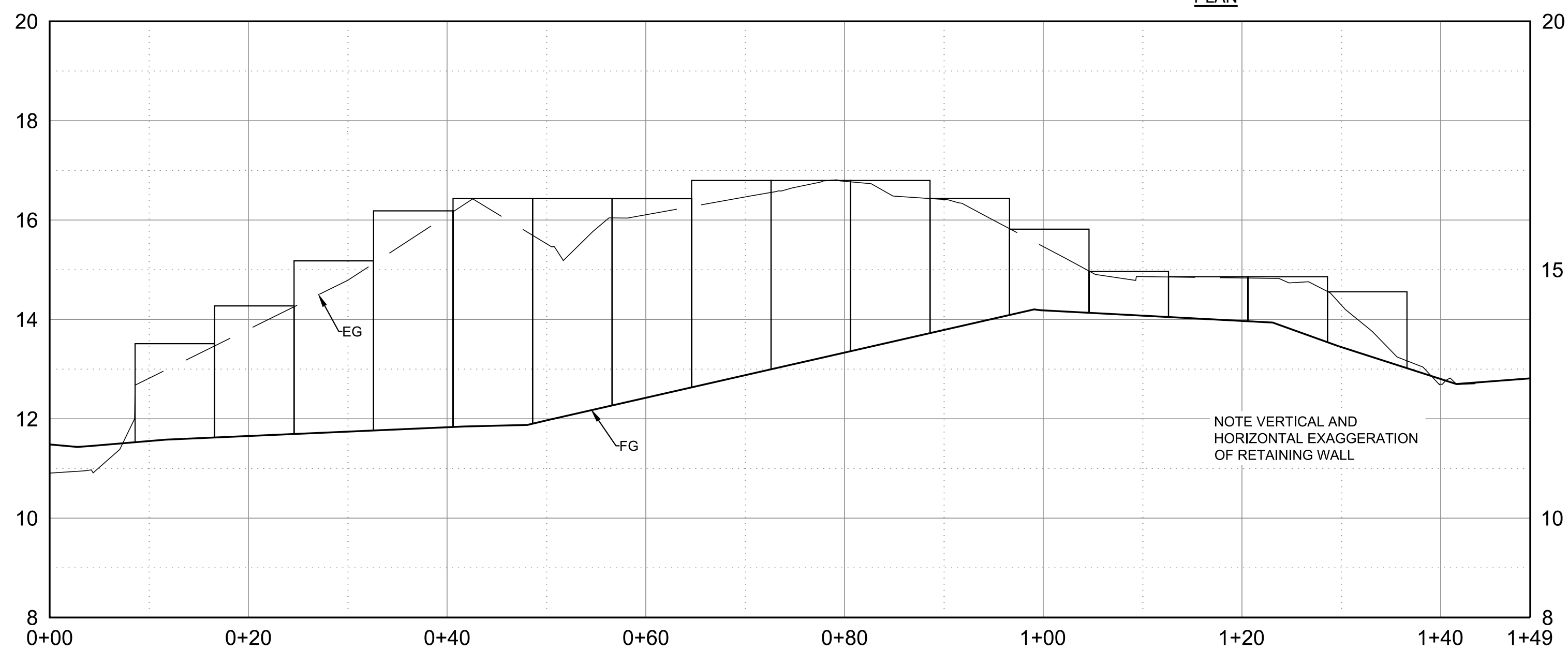
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REVISIONS		
NO.	DESCRIPTION	DATE
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2	TAC PUBLIC HEARING	8/21/2017



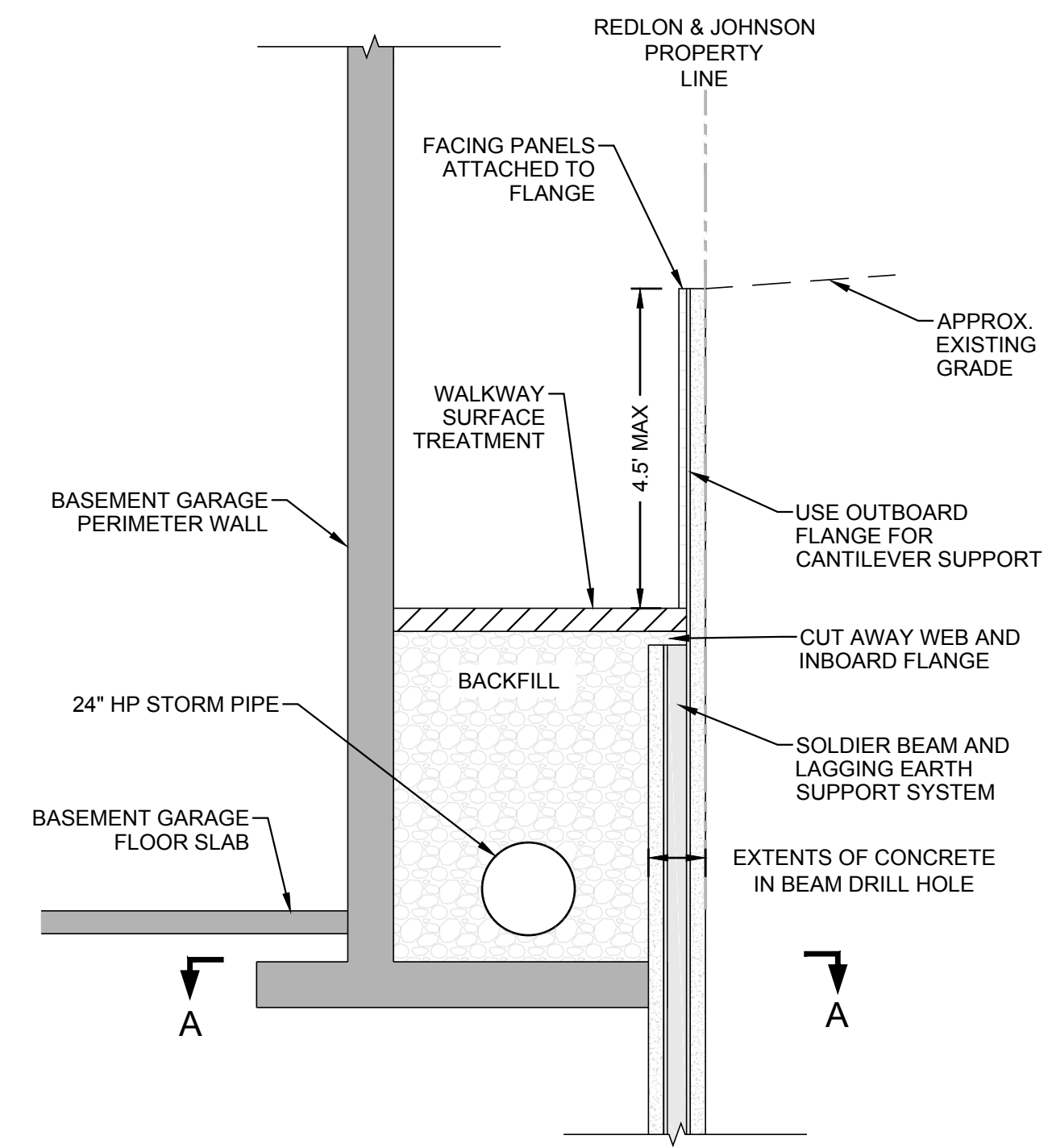
PLAN



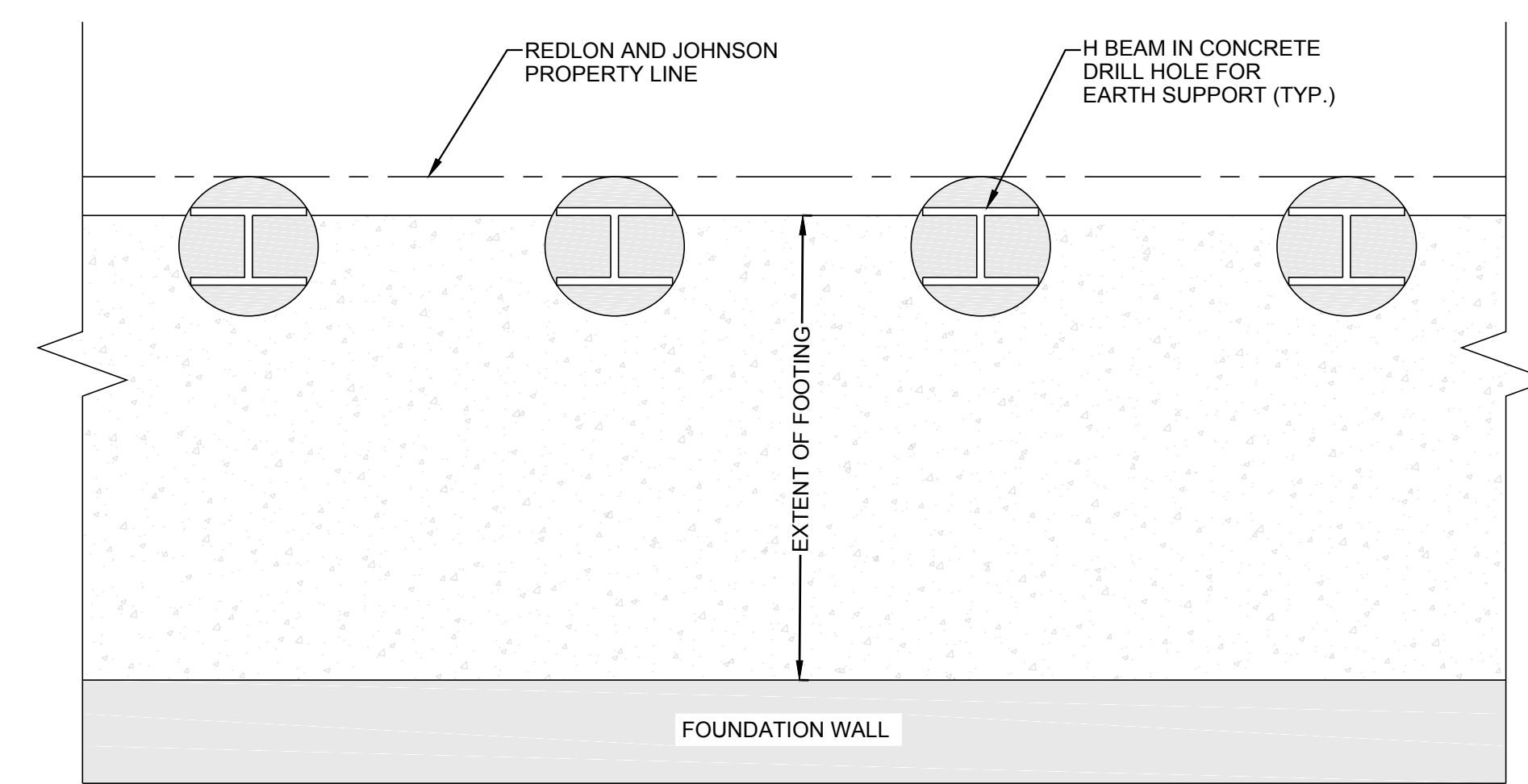
RETAINING WALL ALIGNMENT
HORIZONTAL SCALE: 1"=10'
VERTICAL SCALE: 1"=2'

NOTE:

- WHERE AREAS OF RETENTION ARE GREATER THAN 18", WALL SHALL BE CONSTRUCTED BY ATTACHING PANELS TO THE OUTBOARD FLANGE OF THE SOLDIER BEAM PILE (THE INBOARD FLANGE AND THE WEB WILL BE CUT AWAY). THE PANELS WILL BE COMPRISED OF PRECAST CONCRETE, METAL, OR PRESSURE TREATED WOOD.
- WHERE AREAS OF RETENTION ARE LESS THAN 18", WALL SHALL BE CONSTRUCTED OF PUSH IN PANELS OR MANUALLY EXCAVATED AND INSTALLED PANELS.
- A HAND RAILING SHALL BE INSTALLED ALONG THE ENTIRE LENGTH OF THE TOP OF THE RETAINING WALL.



TYPICAL SECTION



PLAN A-A

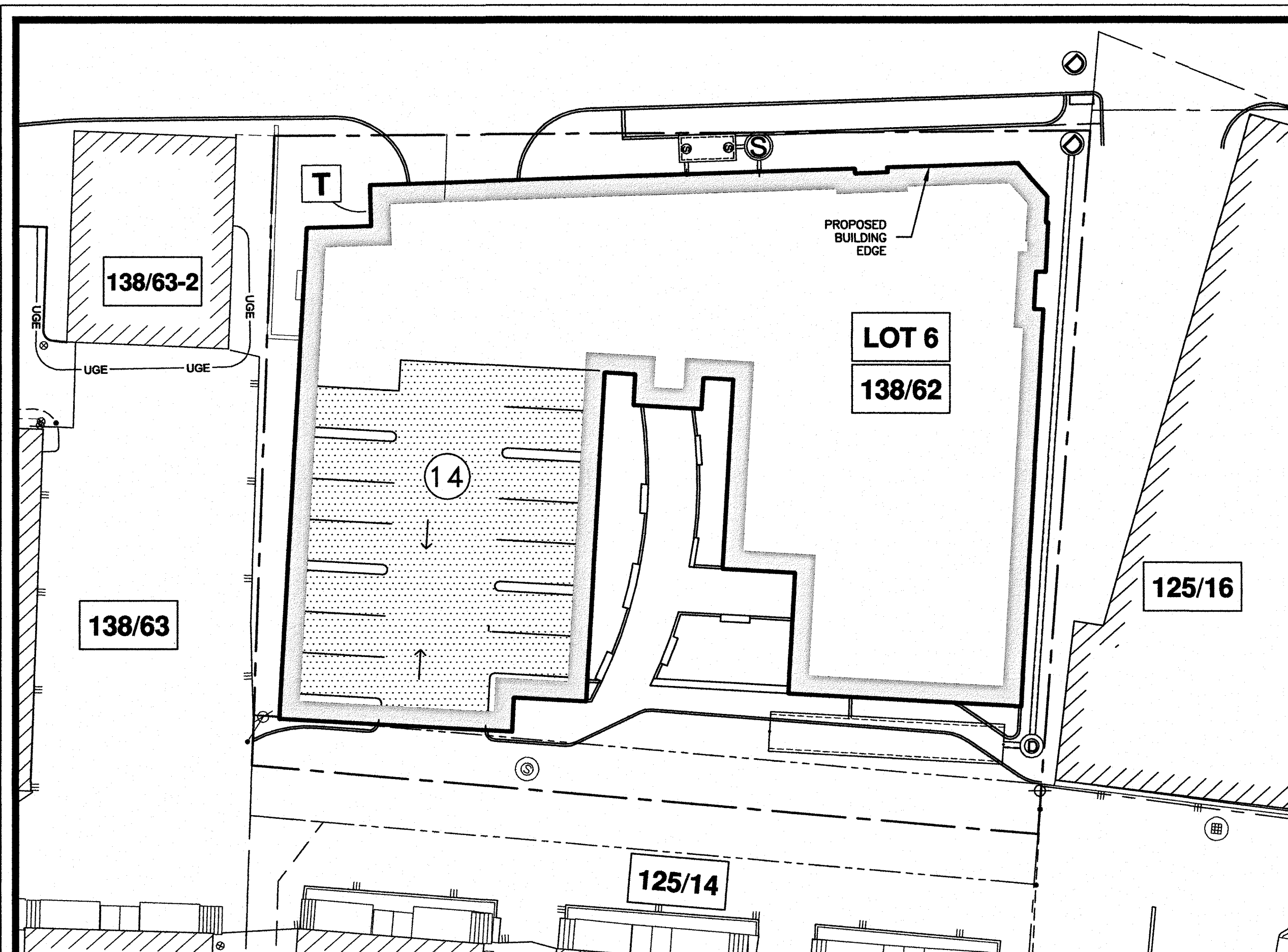
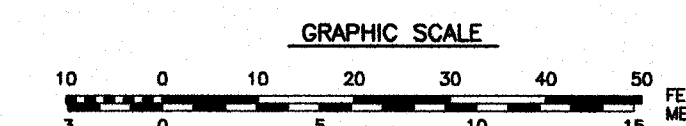
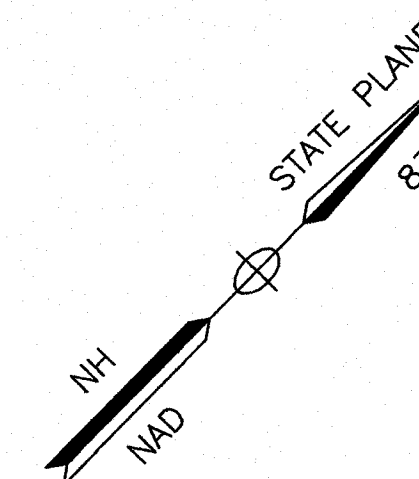
34 RETAINING WALL DETAIL
N.T.S.



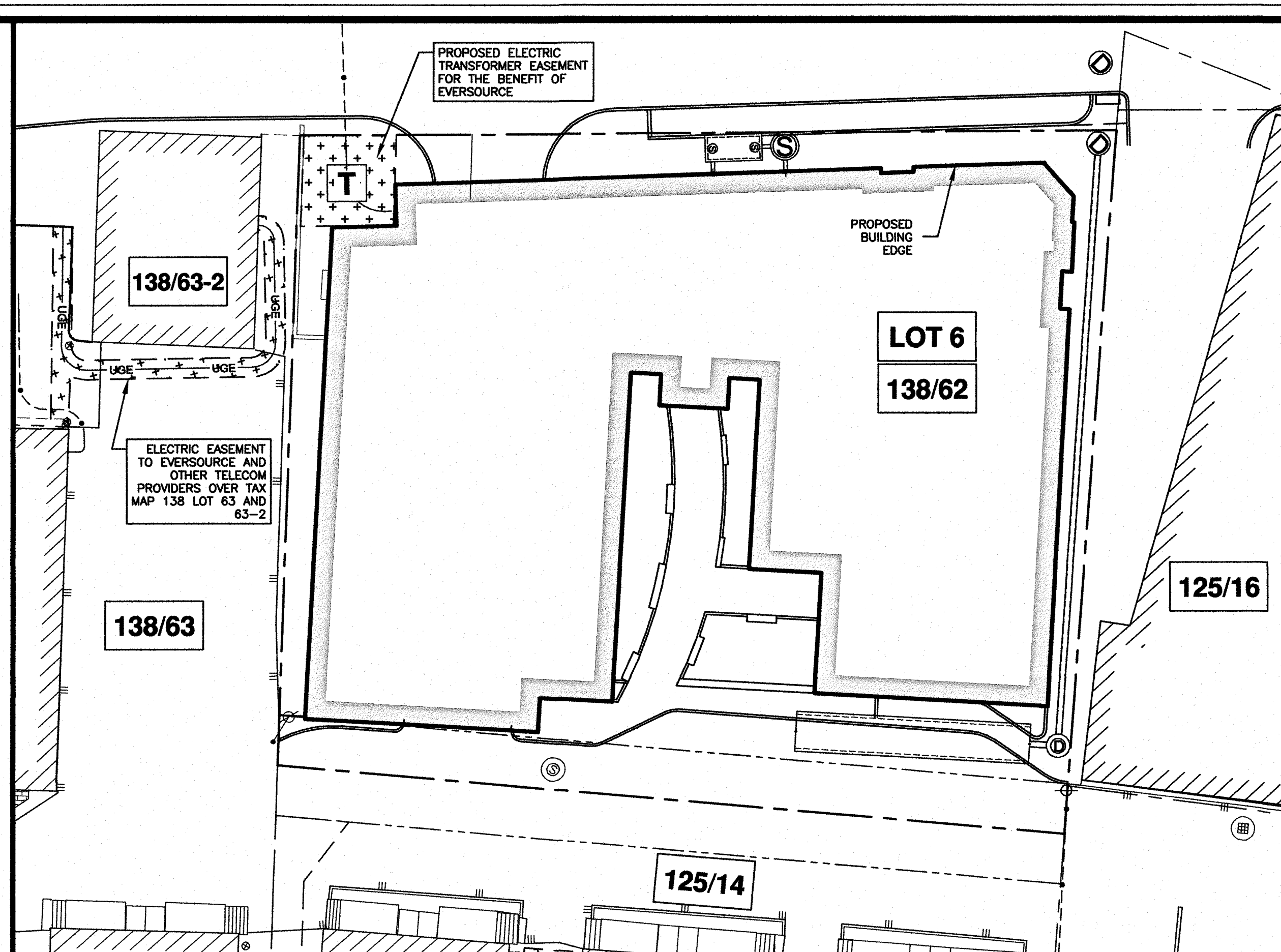
AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-8282
Fax (603) 436-2315

NOTES:

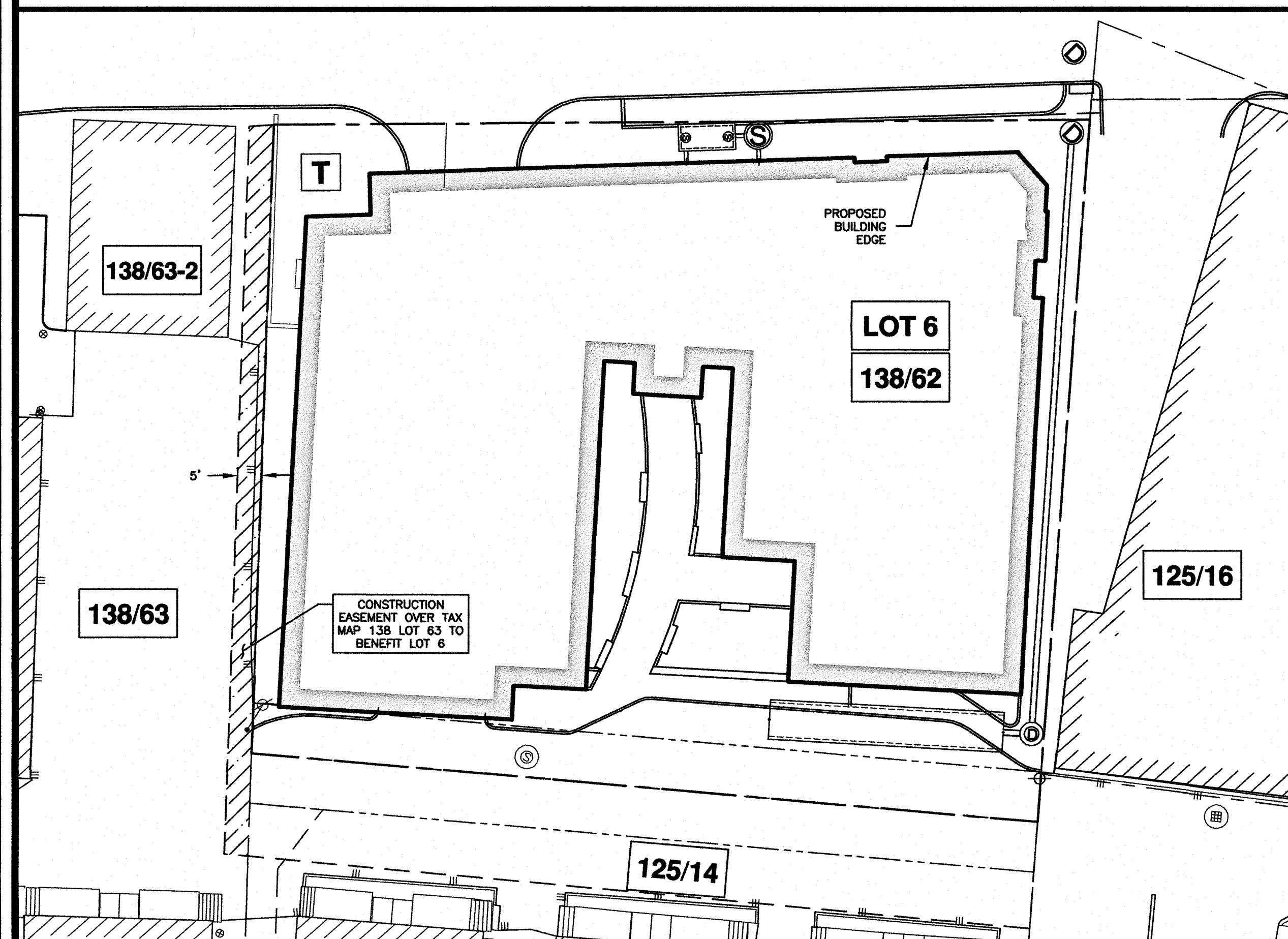
- 1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAPS AS MAP 138 LOT 62.
- 2) OWNER:
DEER STREET ASSOCIATES
PO BOX 100
YORK HARBOR, ME 03911
3395/2669, 5534/2077, & 5453/138
D-39699
- 3) THE PURPOSE OF THIS PLAN IS TO SHOW PROPOSED EASEMENTS FOR REVIEW AND APPROVAL FOR TAX MAP 138-62 (SUBDIVISION LOT 6).



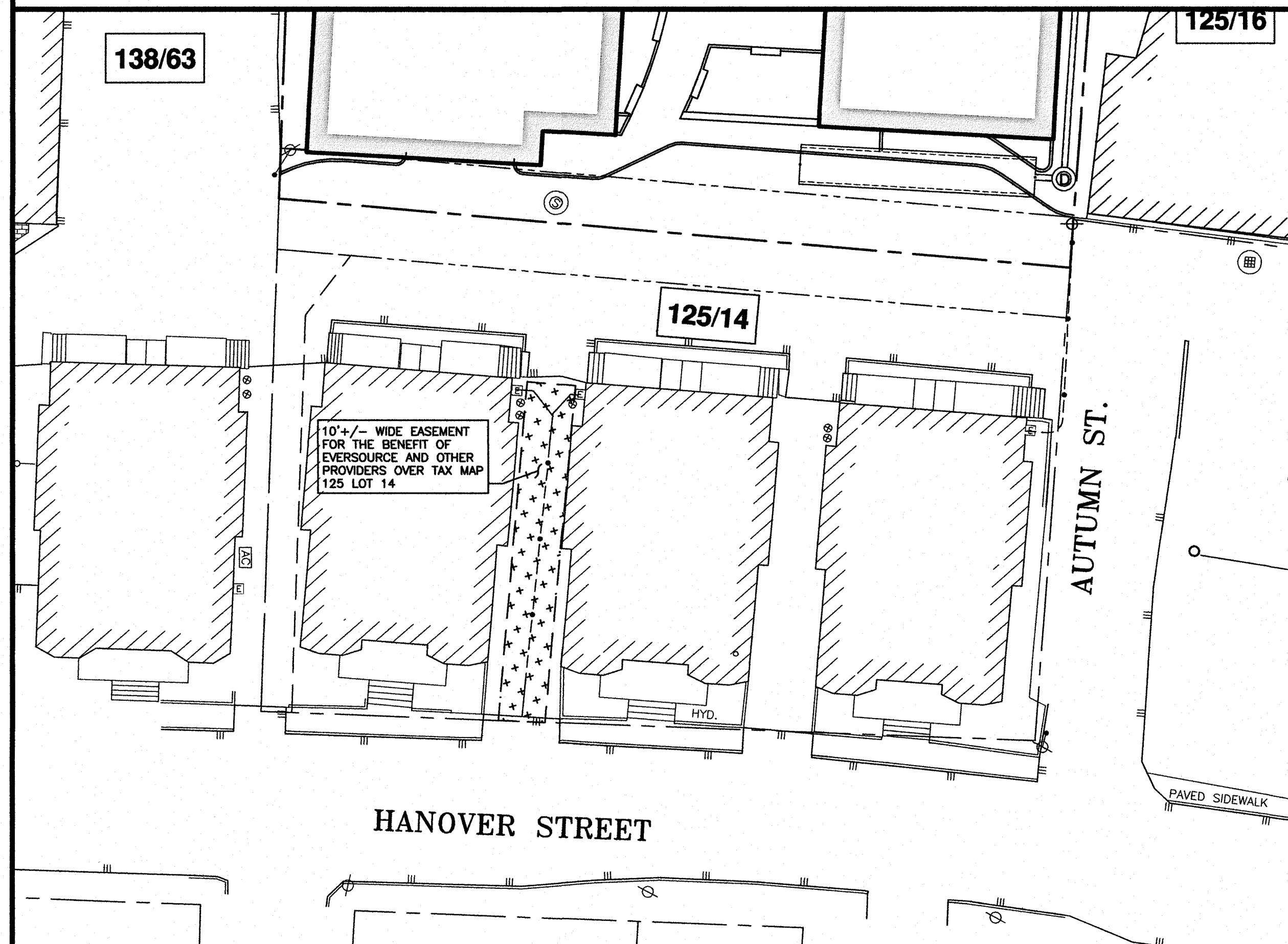
PARKING EASEMENT TO TAX MAP 125 LOT 14



ELECTRIC EASEMENT TO EVERSOURCE AND OTHER TELECOM PROVIDERS



CONSTRUCTION EASEMENTS

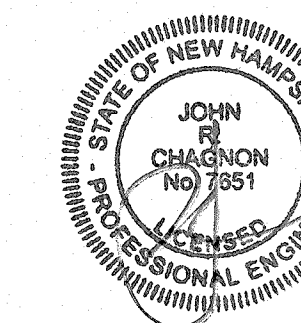


ELECTRIC EASEMENT TO EVERSOURCE AND OTHER TELECOM PROVIDERS

**DEER STREET ASSOCIATES
FOUNDARY PLACE
PORTSMOUTH, NH**

NO.	DESCRIPTION	DATE
2	PARKING & CONSTRUCTION EASEMENTS	8/10/17
1	ISSUED FOR REVIEW	6/16/17
0	ISSUED FOR COMMENT	5/26/17

REVISIONS



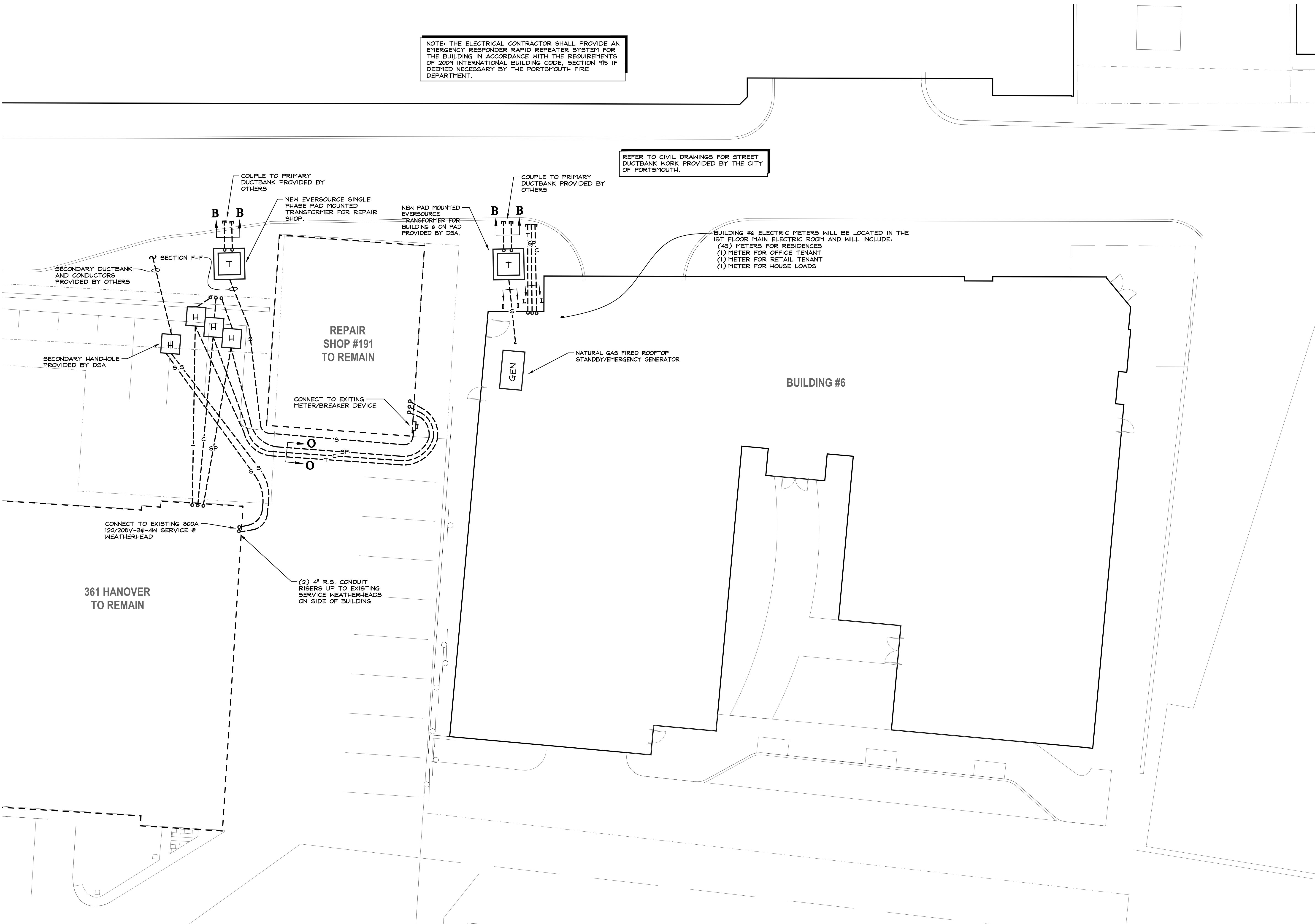
SCALE: 1"=20' MAY 2017

**EASEMENT PLAN
TAX MAP 138 LOT 62
SUBDIVISION LOT 6**

E4

NOTE: THE ELECTRICAL CONTRACTOR SHALL PROVIDE AN EMERGENCY RESPONDER RAPID REPEATER SYSTEM FOR THE BUILDING IN ACCORDANCE WITH THE REQUIREMENTS OF 2009 INTERNATIONAL BUILDING CODE, SECTION 915 IF DEEMED NECESSARY BY THE PORTSMOUTH FIRE DEPARTMENT.

REFER TO CIVIL DRAWINGS FOR STREET DUCTBANK WORK PROVIDED BY THE CITY OF PORTSMOUTH.



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RESIDENCES AT
FOUNDRY PLACE,
LOT 6: 181 HILL
STREET, ASSESSORS
MAP 138 LOT 62

PORTSMOUTH, NH 03801

Deer Street Associates



Scale: 1"=10'
Date: 3/17/2017
Project Number: 14837.03

REVISIONS		
NO.	DESCRIPTION	DATE
1	TAC PUBLIC HEARING	6/15/2017
2	TAC PUBLIC HEARING	8/21/2017

SITE PLAN REVIEW

BUILDING #6
ELECTRICAL &
COMMUNICATION
PLAN

SE1.1

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RESIDENCES AT
FOUNDRY PLACE,
LOT 6: 181 HILL
STREET, ASSESSORS
MAP 138 LOT 62

PORTSMOUTH, NH 03801

Deer Street Associates



Scale: 1"=40'
Date: 3/17/2017
Project Number: 14837.03

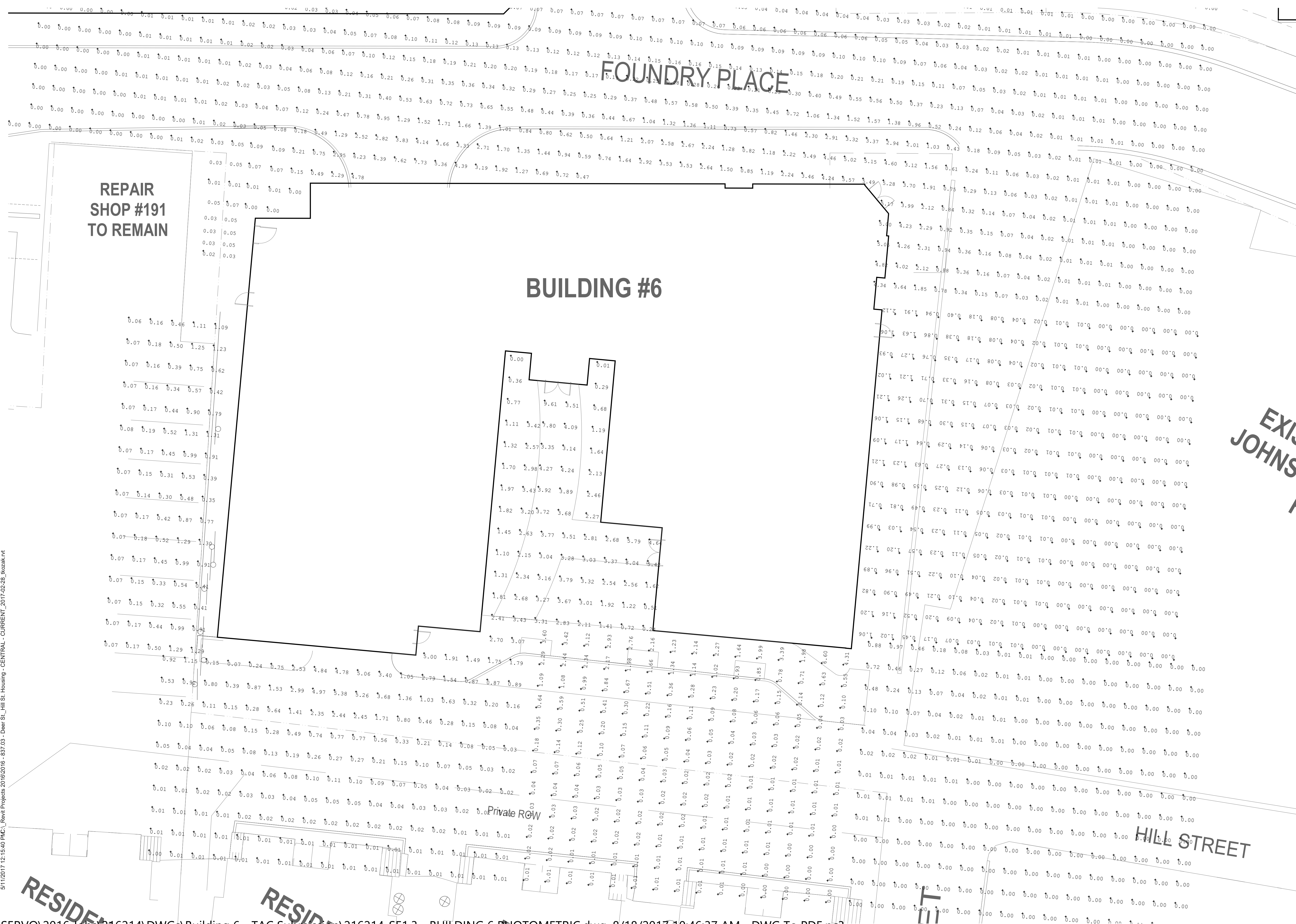
REVISIONS		
NO.	DESCRIPTION	DATE
1	TAC PUBLIC HEARING	6/15/2017
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SITE PLAN REVIEW

BUILDING #6
PHOTOMETRIC
PLAN

SE1.3

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ELECTRICAL ENGINEER
DERRY, NEW HAMPSHIRE

RESIDENCES AT
FOUNDRY PLACE,
LOT 6: 181 HILL
STREET, ASSESSORS
MAP 138 LOT 62

PORTSMOUTH, NH 03801

Deer Street Associates



Scale: 1"=40'
Date: 3/17/2017
Project Number: 14837.03

REVISIONS		
NO.	DESCRIPTION	DATE
1	TAC PUBLIC HEARING	6/15/2017
2	TAC PUBLIC HEARING	8/21/2017

SITE PLAN REVIEW

SITE STREET
LIGHTING PLAN

SE1.4

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2-1 1/2" UNDERGROUND
CONDUITS FOR STREET
LIGHTING PROVIDED BY
CITY OF PORTSMOUTH.

NEW CITY FEEDER CONNECTION FOR
STREET LIGHTS & CONTROLS ON
FOUNDRY PLACE, ROCK ST & HILL ST

NEW CONDUIT FOR FUTURE CITY
STREET LIGHTING. CUT IN AND SWEEP
TO NEW BASES BY OTHERS

UNDERGROUND CONDUIT
AND CIRCUITRY PROVIDED
BY DSA

FUTURE CITY OF
PORTSMOUTH STREET
LIGHTING (TYPICAL)

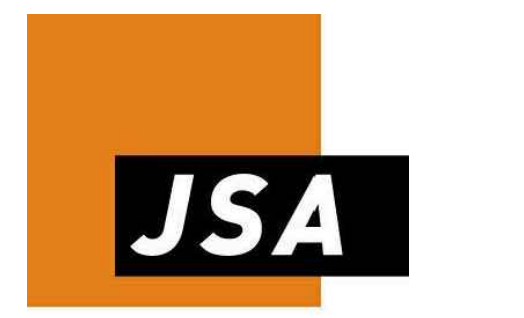
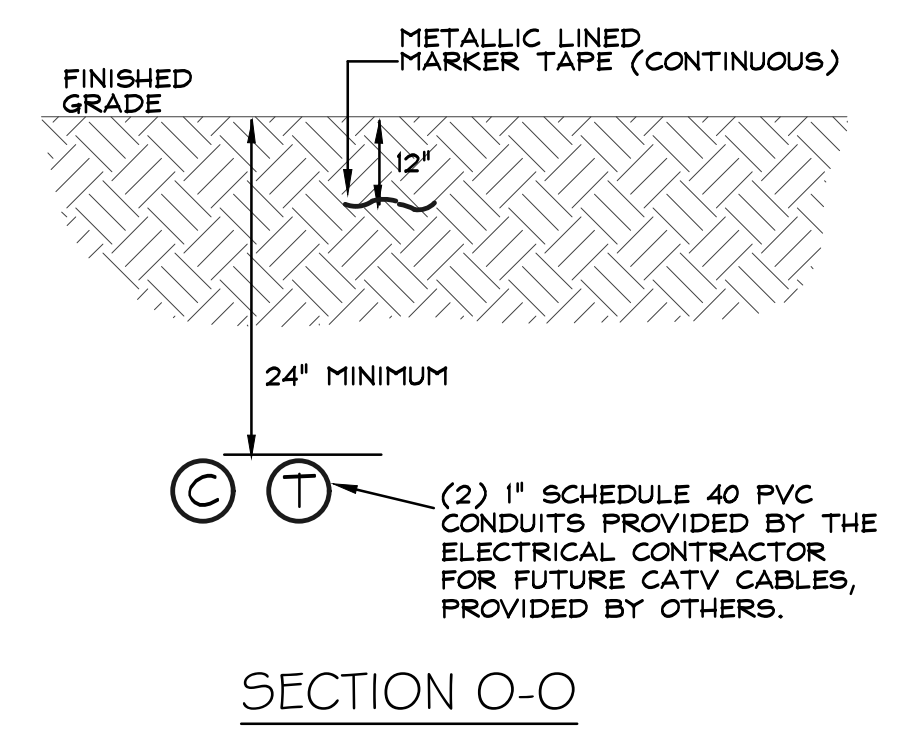
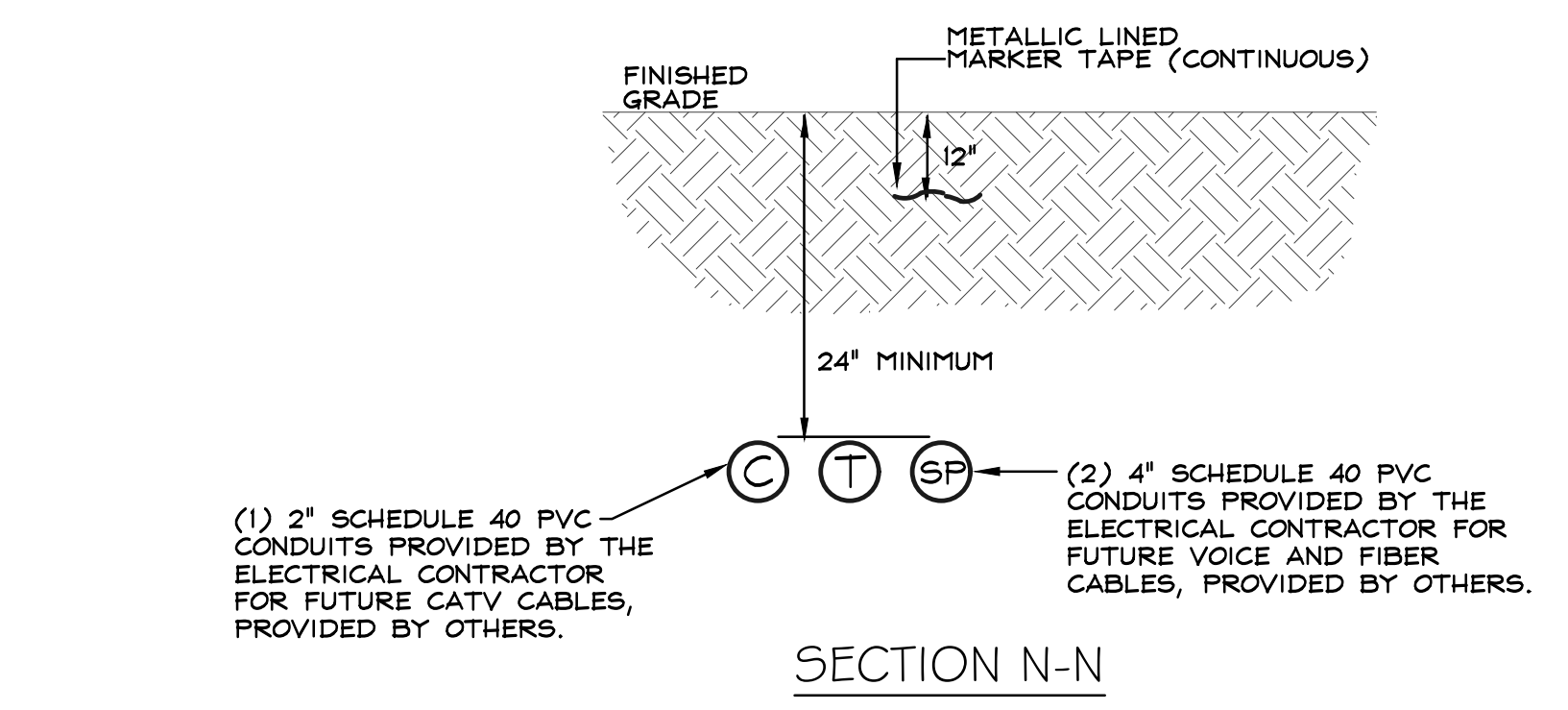
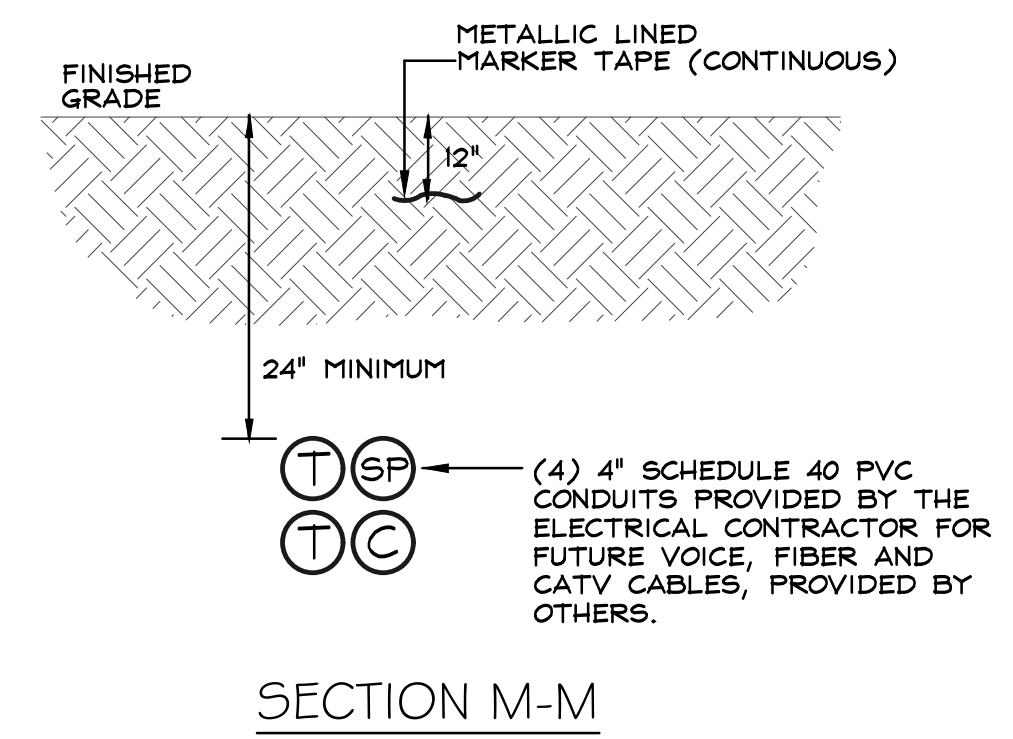
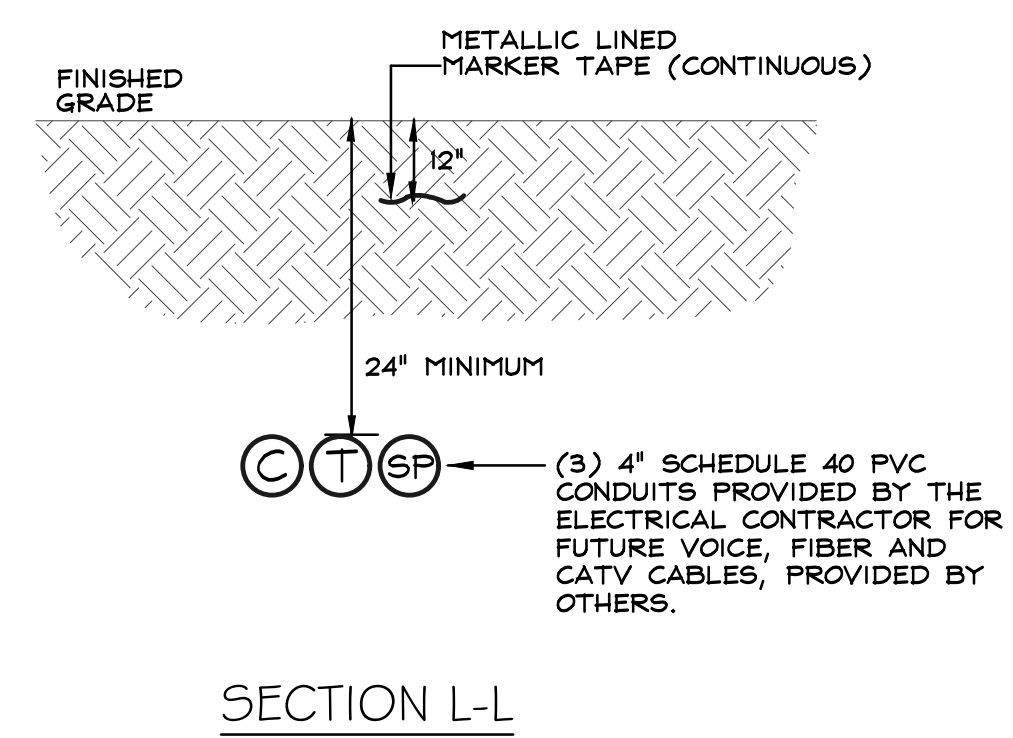
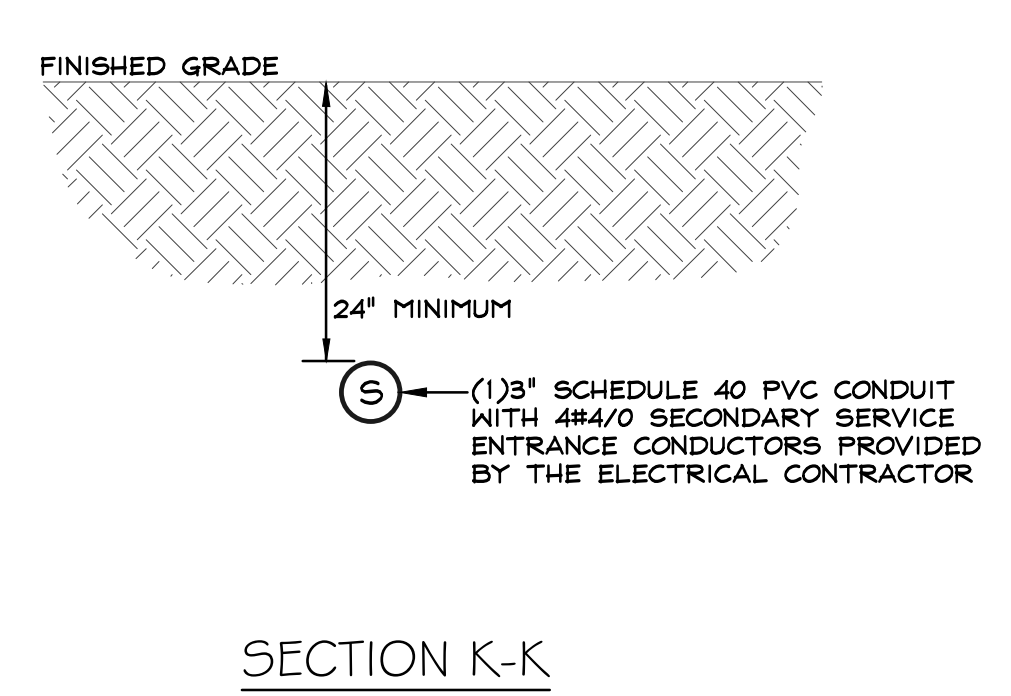
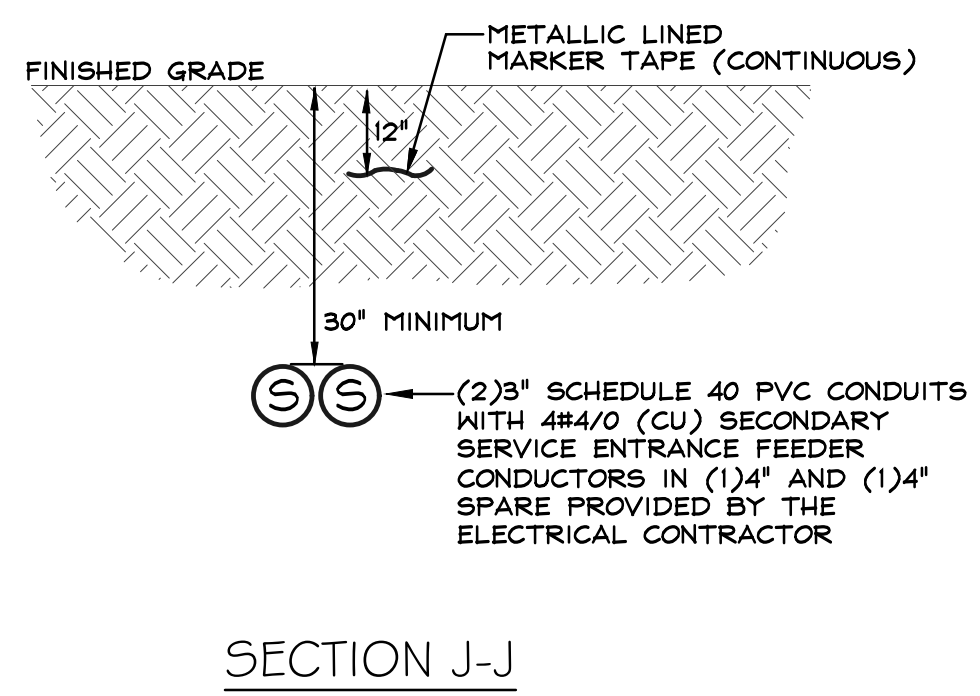
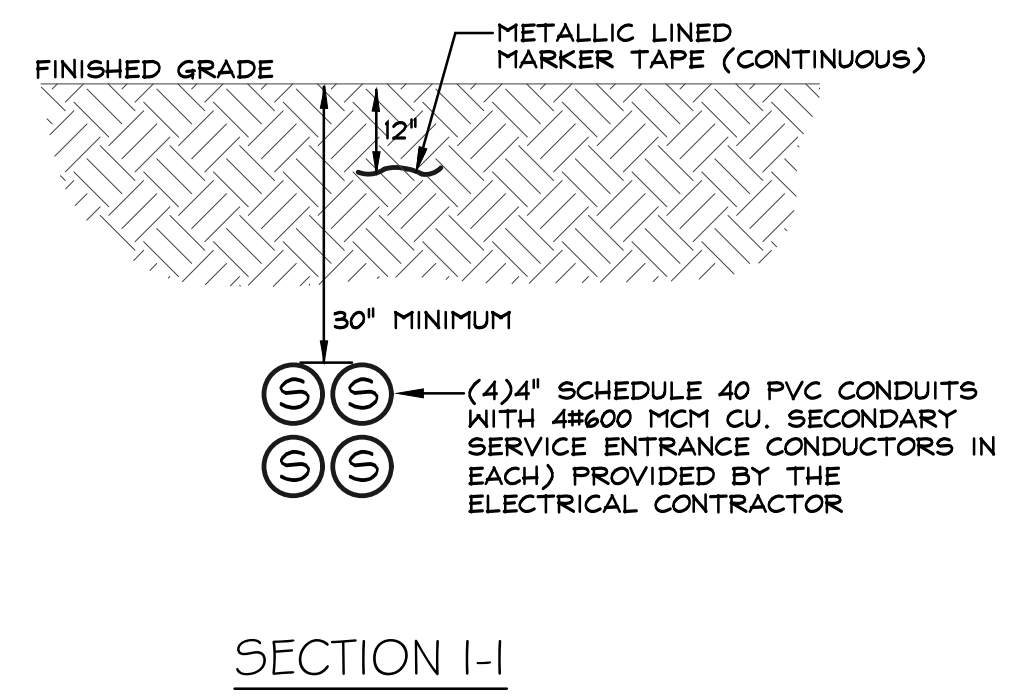
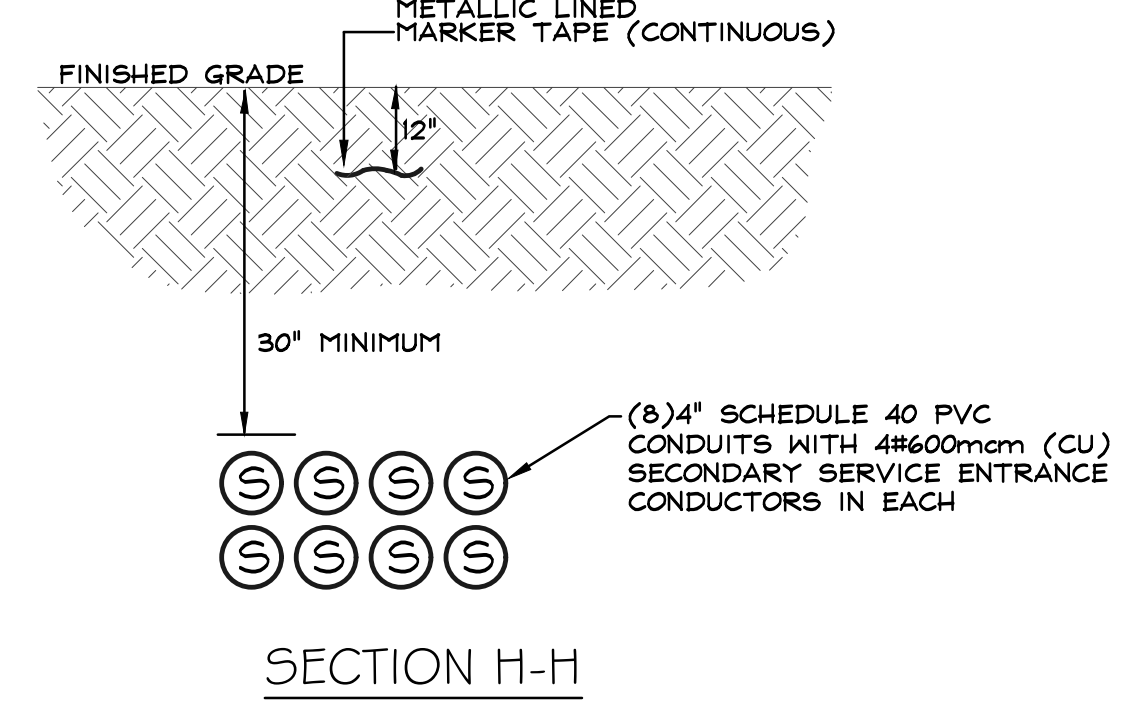
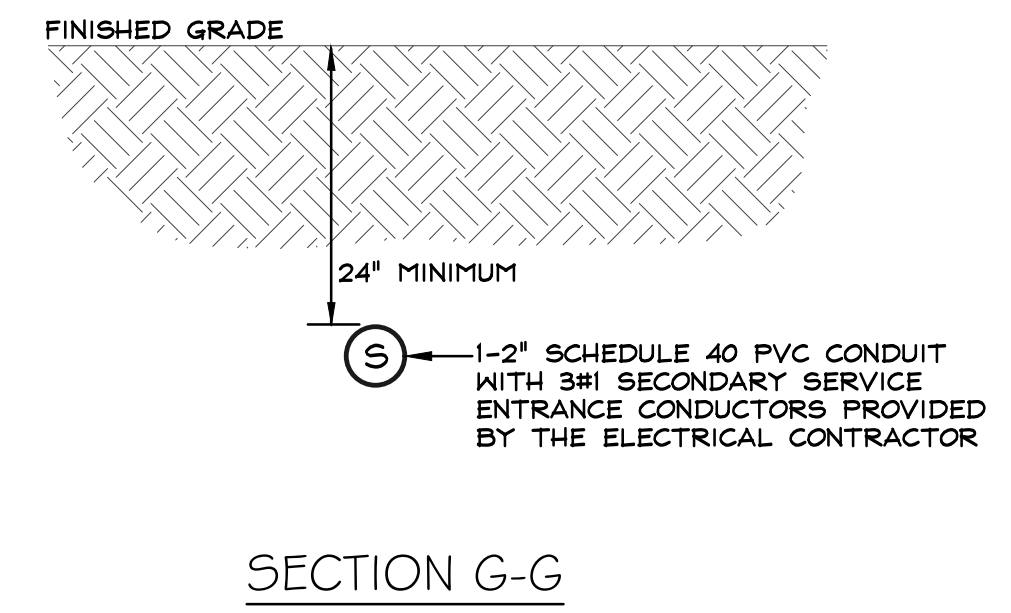
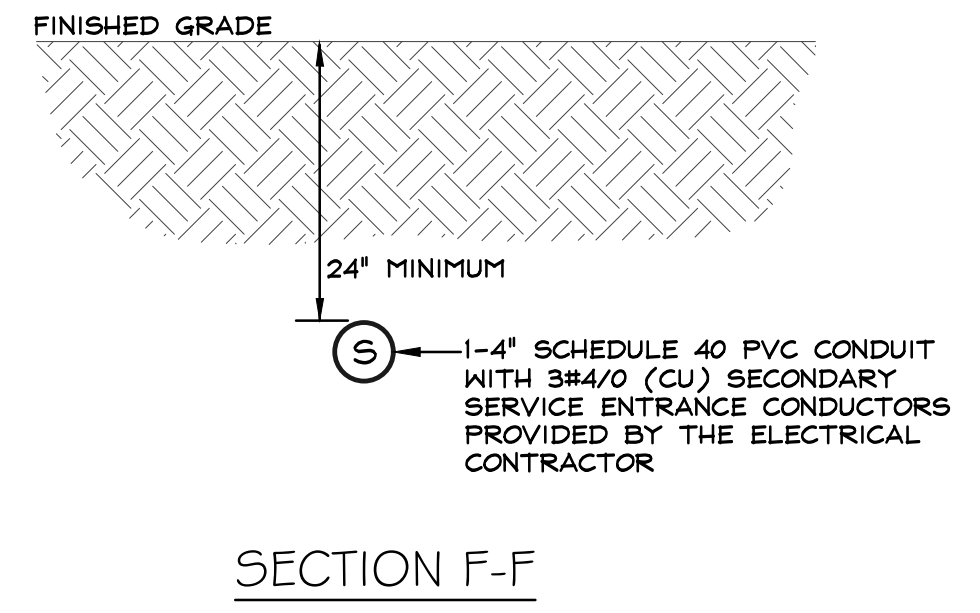
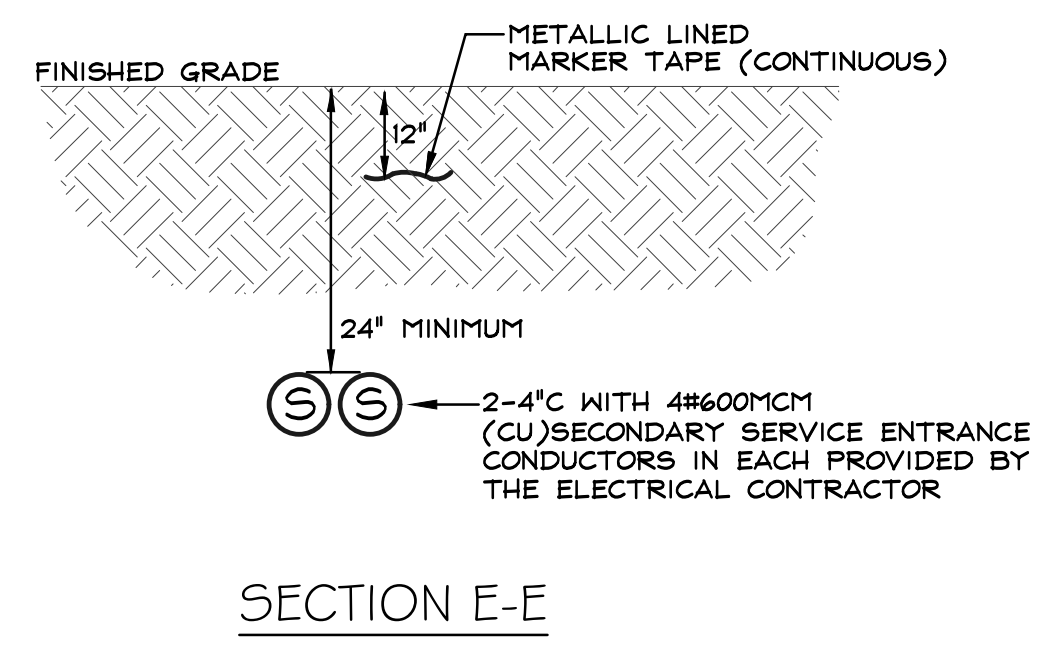
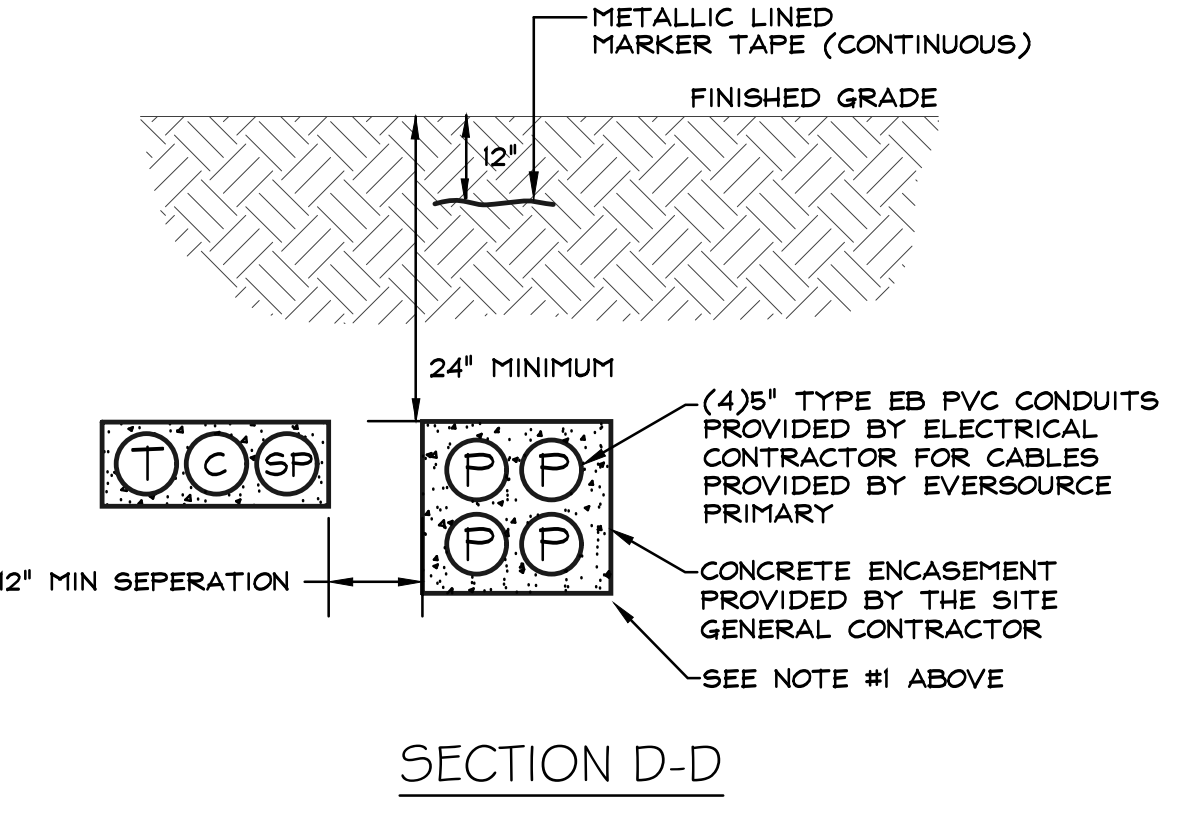
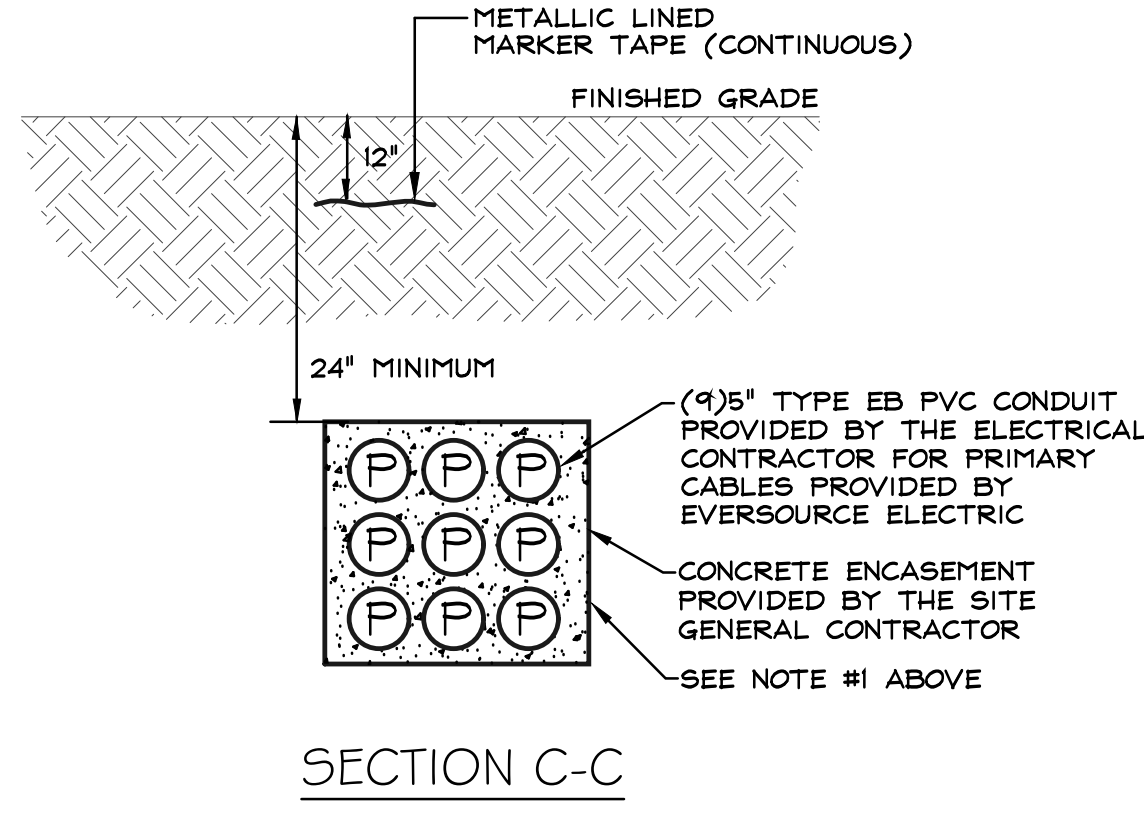
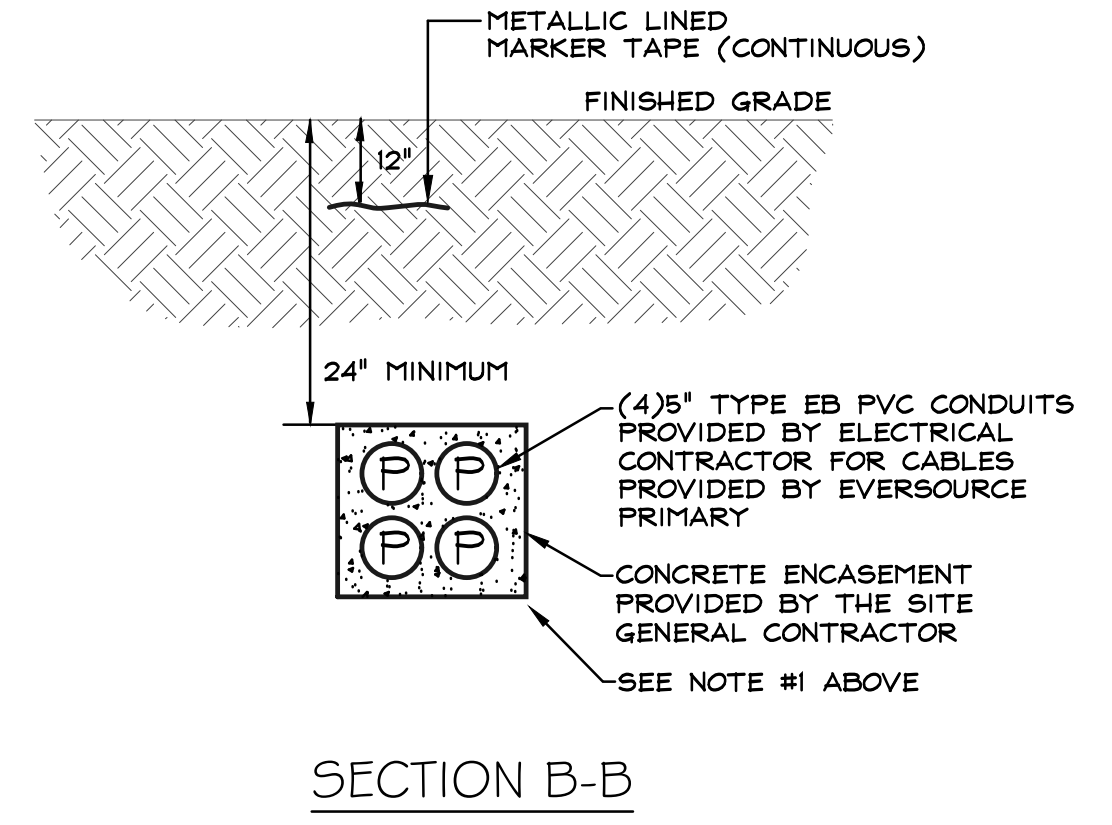
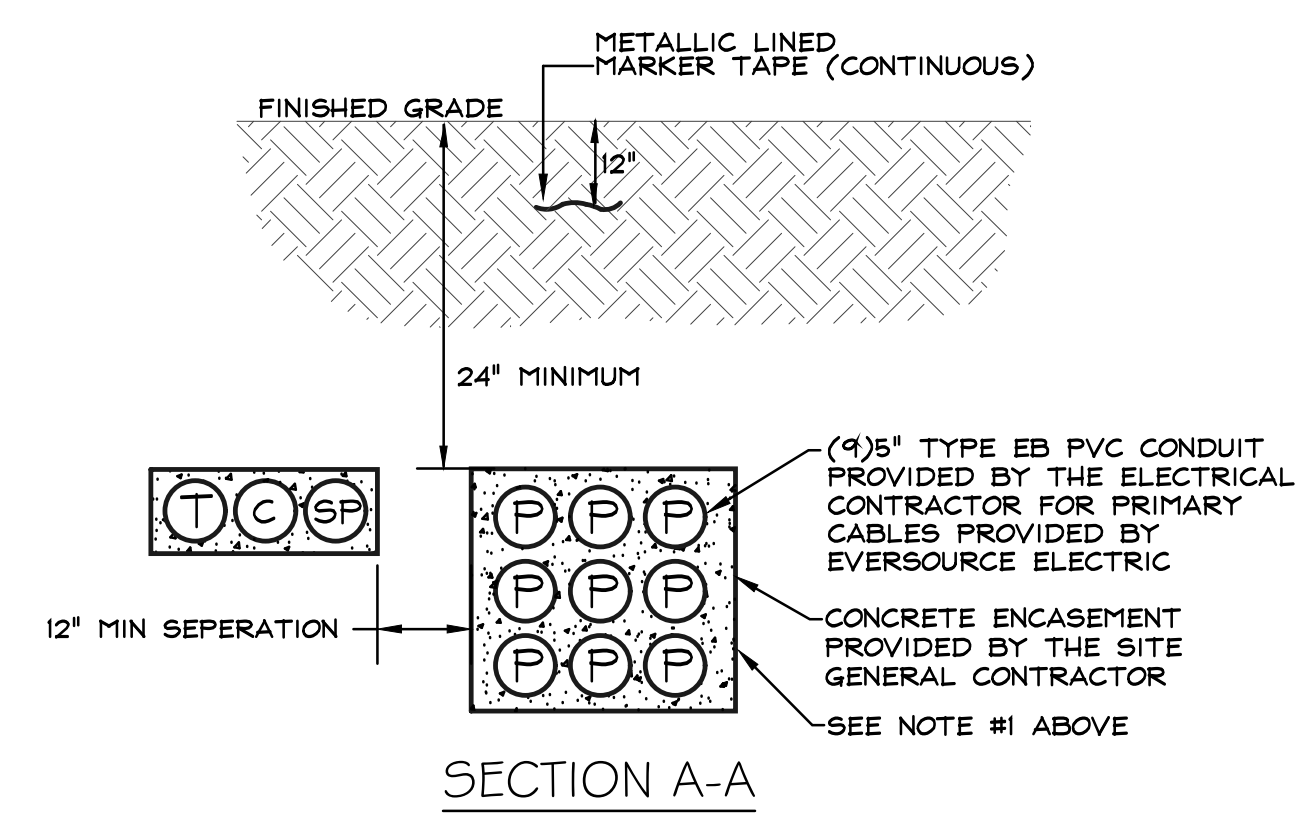
UNDERGROUND CONDUIT
AND CIRCUITRY PROVIDED
BY CITY OF PORTSMOUTH

EXISTING LIGHTING
CONTROLLER

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UNDERGROUND CONDUIT BANK DETAILS

NOTES:
 1. CONCRETE ENCASUREMENT OF UNDERGROUND DUCT BANKS SHALL BE PROVIDED BY THE SITE OR GENERAL CONTRACTOR IN ACCORDANCE WITH LOCAL UTILITY COMPANY STANDARDS.
 2. ALL SCHEDULE 40 PVC RACEWAYS UTILIZED SHALL BE UL LISTED ELECTRICAL CONDUITS.
 3. ALL UNDERGROUND CONDUIT BANKS AND CABLING SHALL COMPLY WITH EVERSOURCE, FAIRPOINT, COMCAST AND BAYRING RULES, REGULATIONS AND DESIGN STANDARDS.



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JSN ASSOCIATES, INC.
 STRUCTURAL ENGINEER
 PORTSMOUTH, NEW HAMPSHIRE

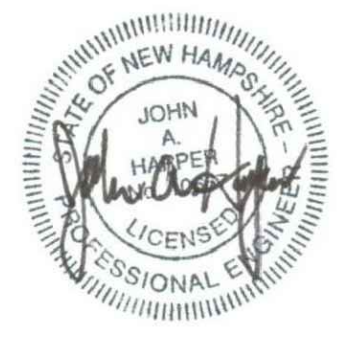
ENGINEERED SYSTEMS INC.
 MPPF ENGINEER
 WOBURN, MASSACHUSETTS

ENGINEERED BUILDING SYSTEMS
 ELECTRICAL ENGINEER
 DERRY, NEW HAMPSHIRE

RESIDENCES AT
 FOUNDRY PLACE,
 LOT 6: 181 HILL
 STREET, ASSESSORS
 MAP 138 LOT 62

PORTSMOUTH, NH 03801

Deer Street Associates



Scale:
 Date: 3/17/2017
 Project Number: 14837.03

REVISIONS		
NO.	DESCRIPTION	DATE
1	TAC PUBLIC HEARING	6/15/2017
2	TAC PUBLIC HEARING	8/21/2017

SITE PLAN REVIEW

SITE
 ELECTRICAL
 DETAILS

SE2.1

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PORTSMOUTH, NEW HAMPSHIRE

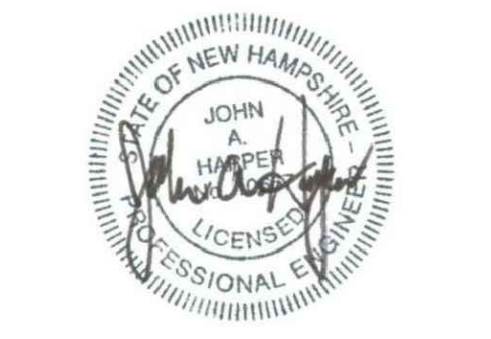
ENGINEERED SYSTEMS INC.
MFPF ENGINEER
WOBURN, MASSACHUSETTS

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ELECTRICAL ENGINEER
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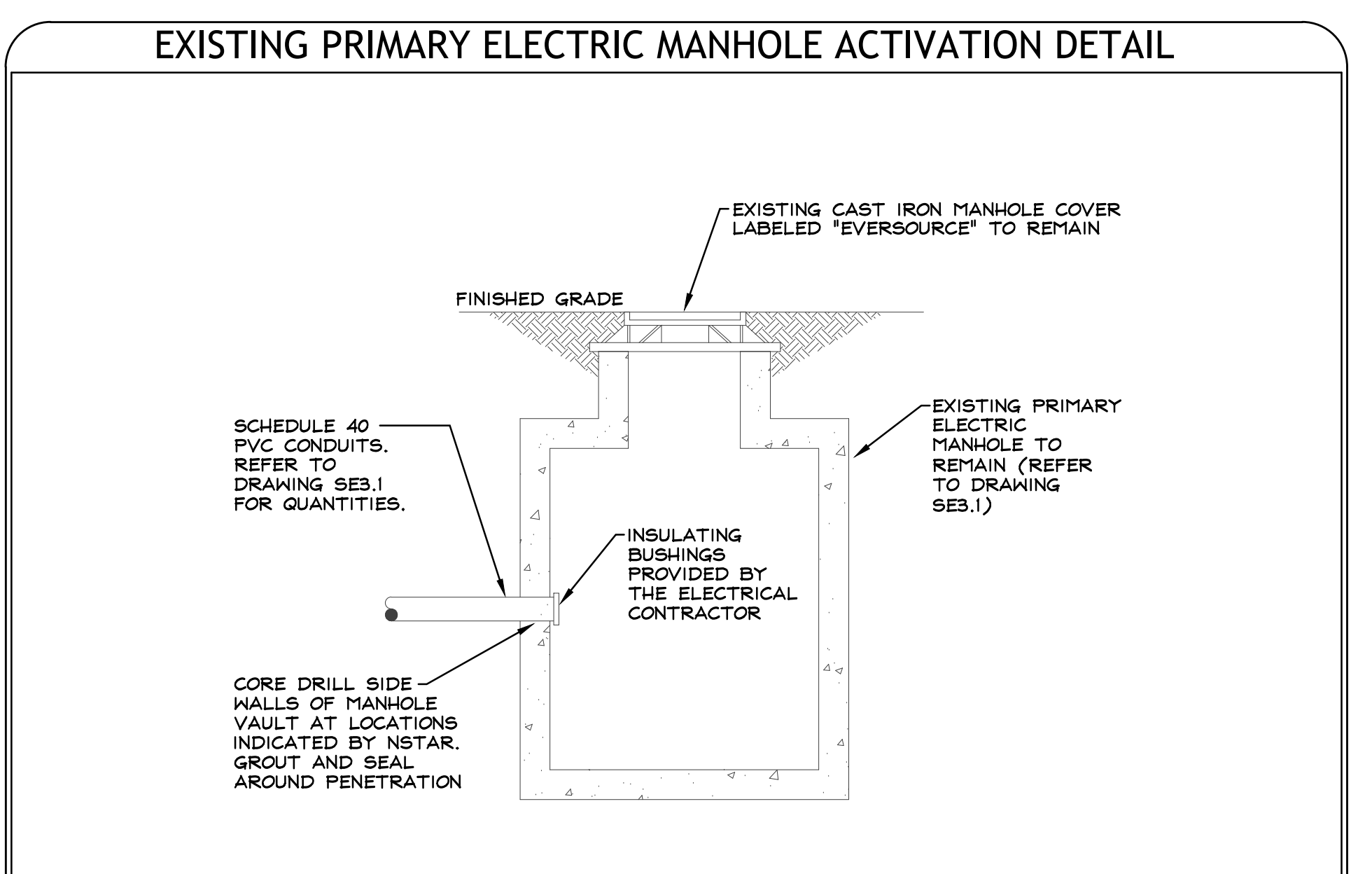
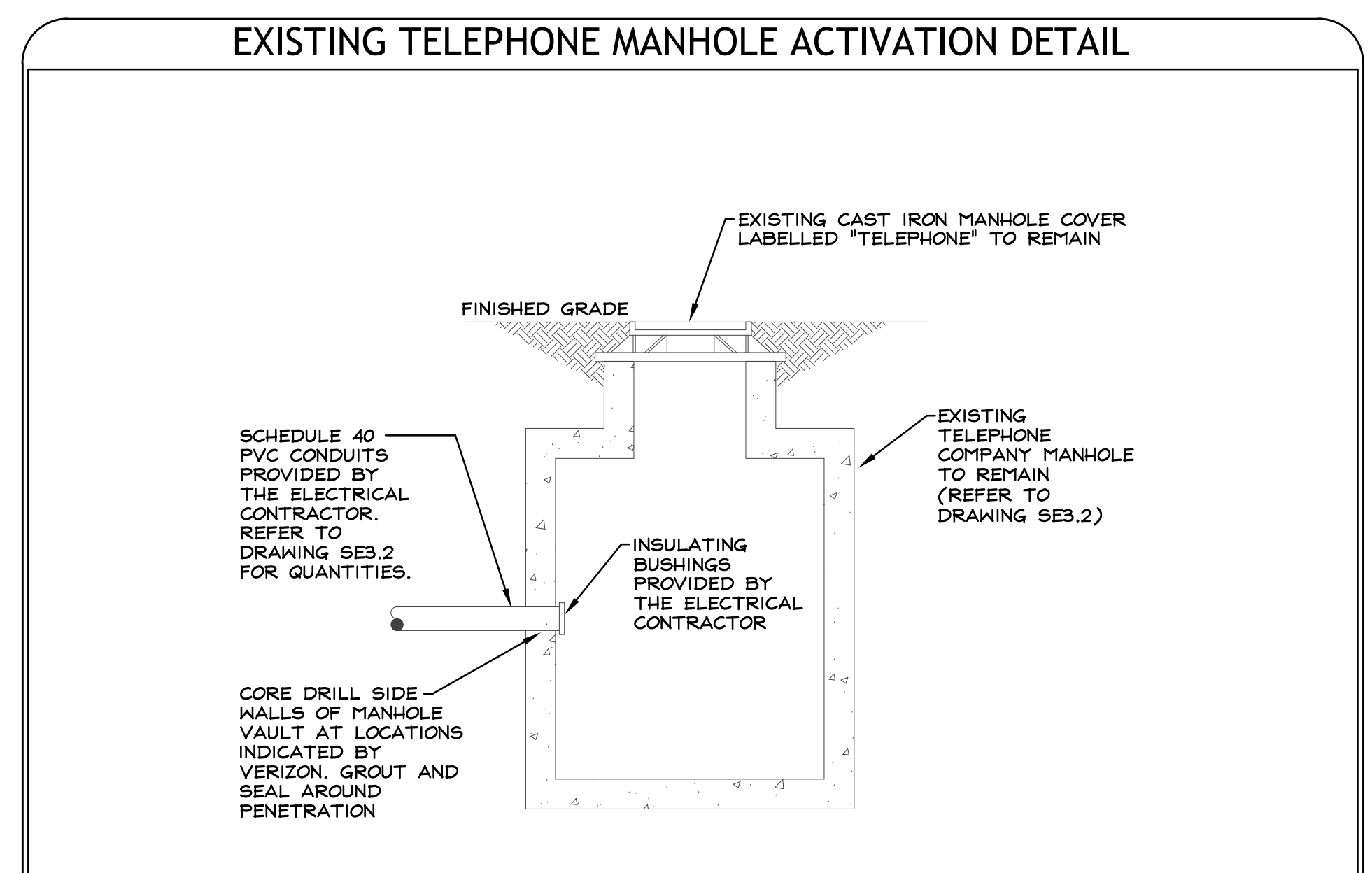
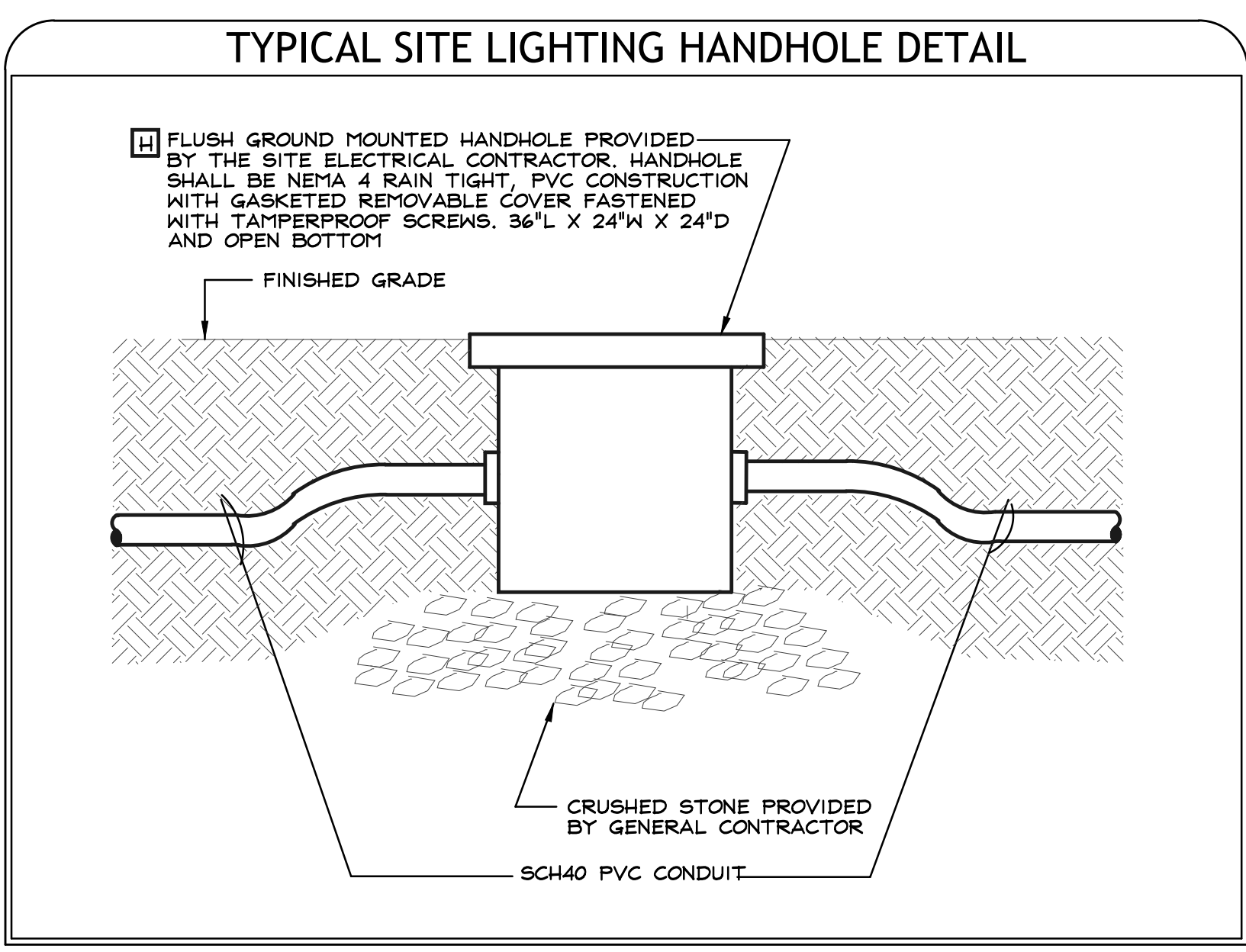
REVISIONS		
NO.	DESCRIPTION	DATE
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SITE PLAN REVIEW

SITE
ELECTRICAL
DETAILS

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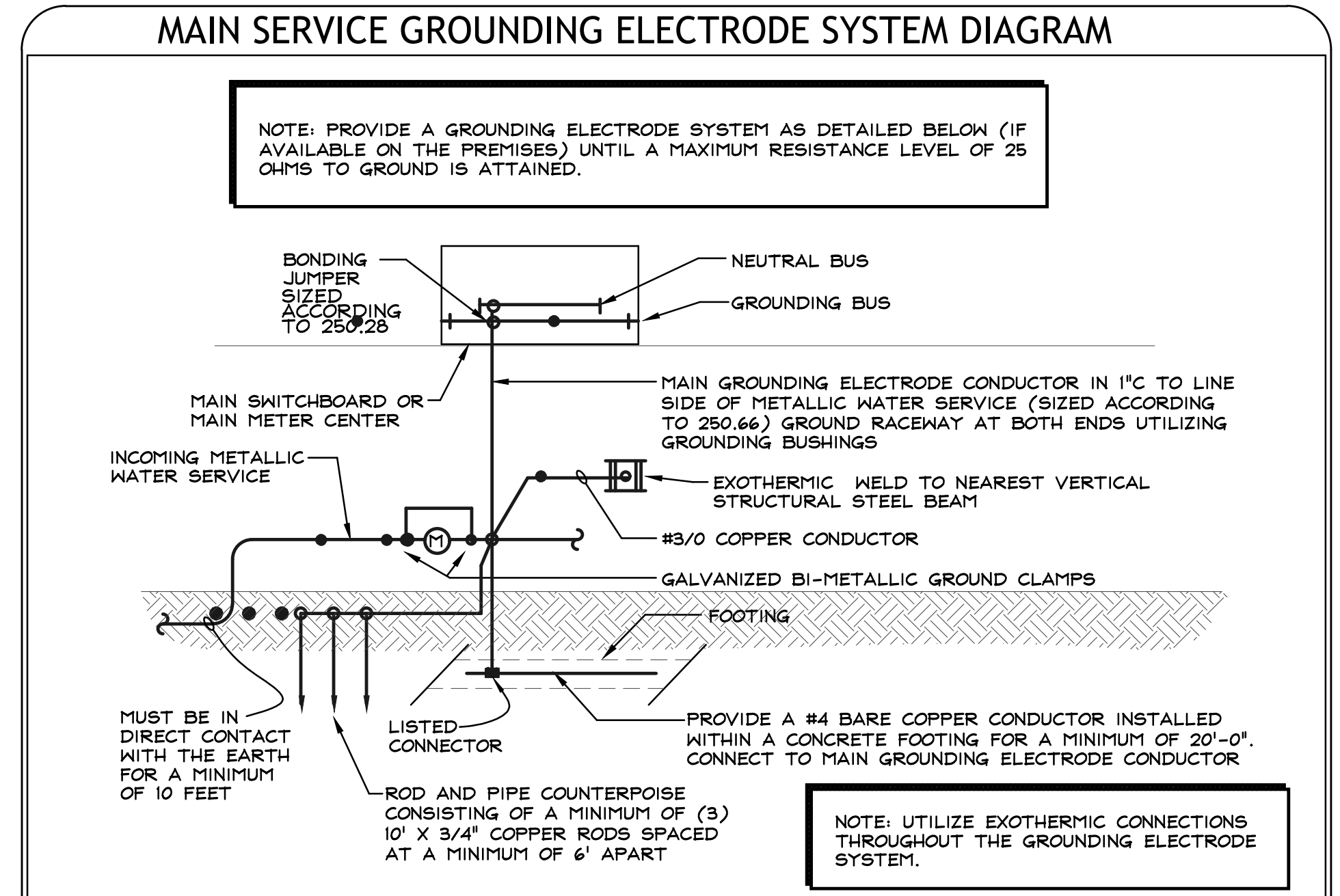
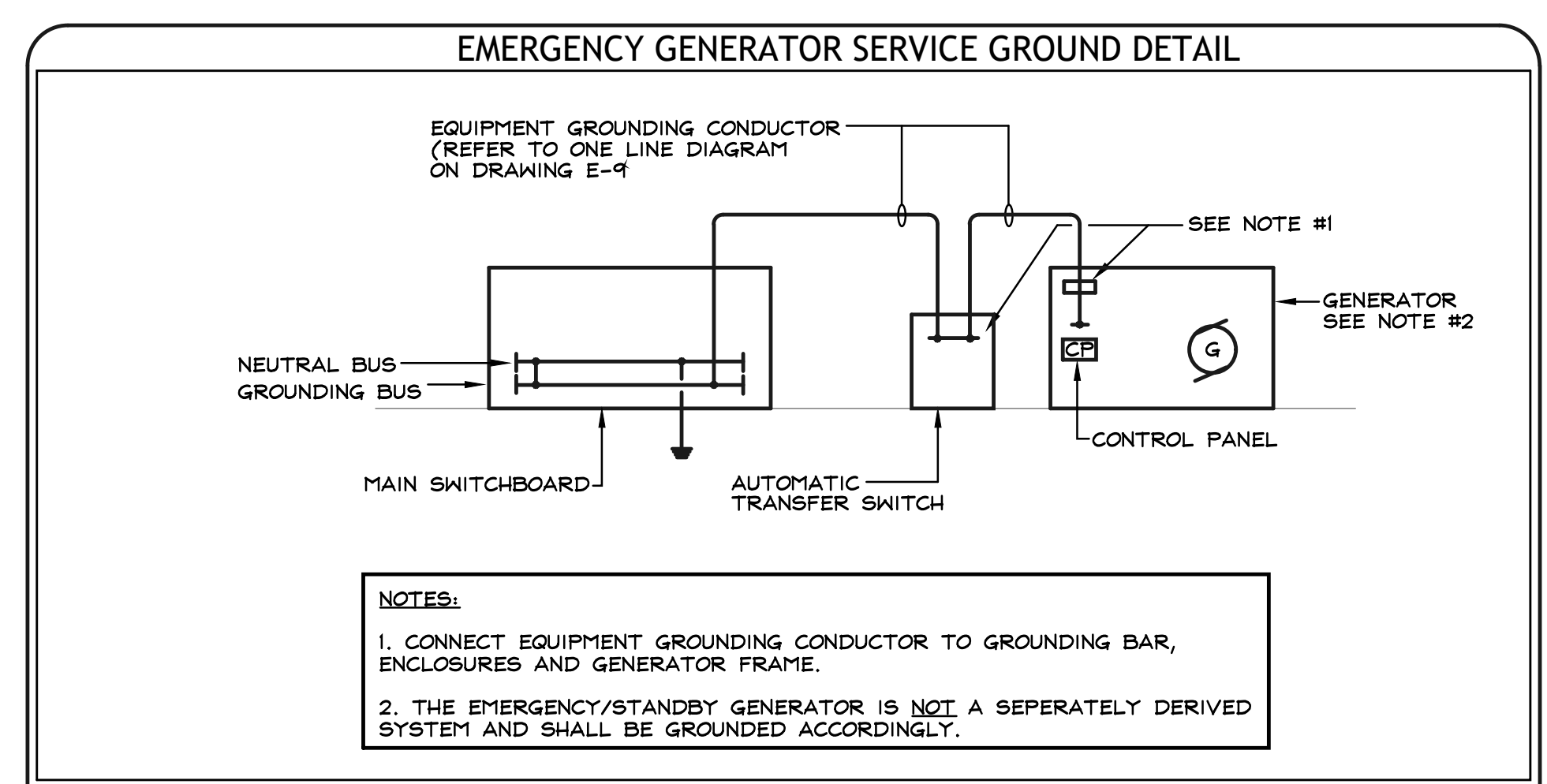
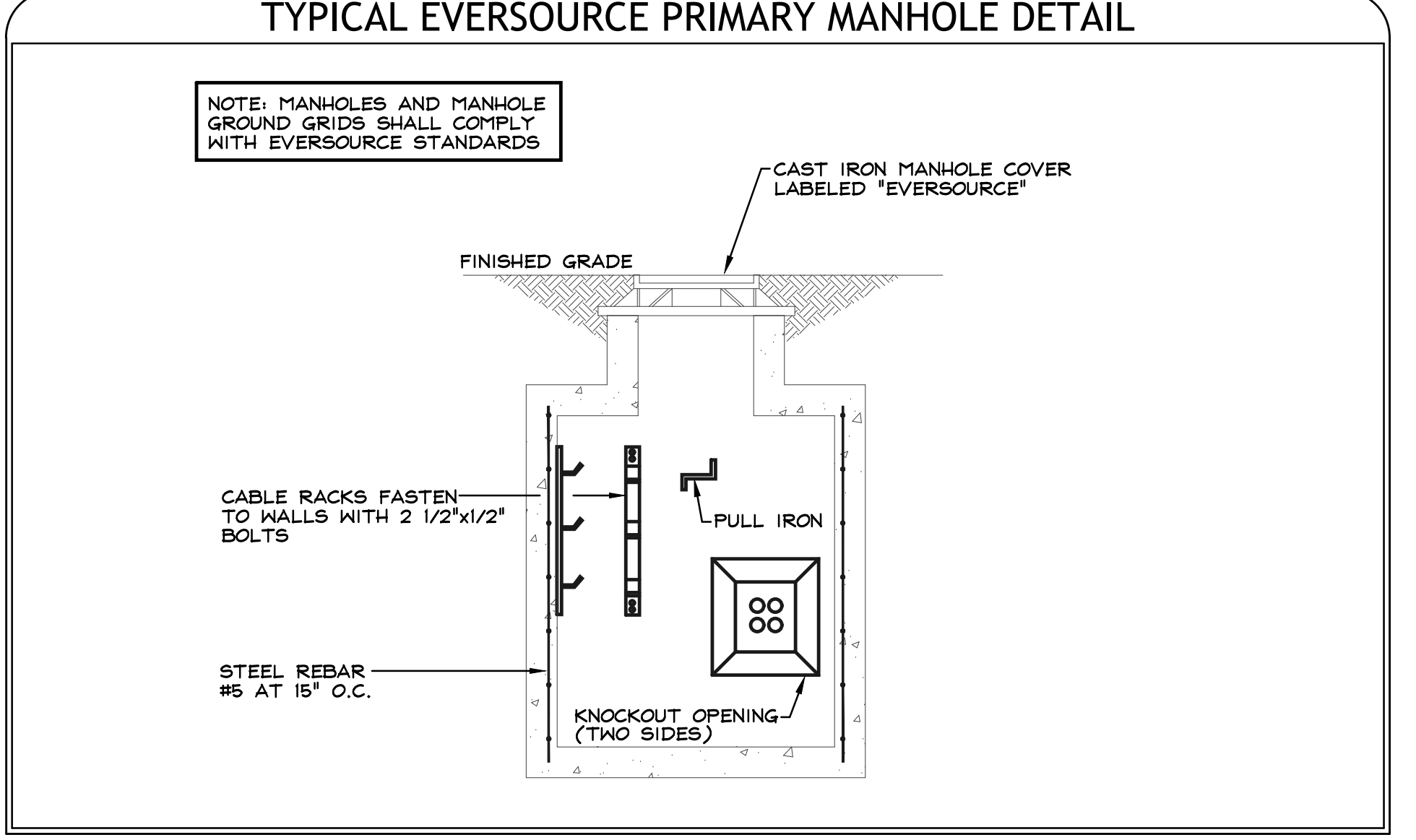
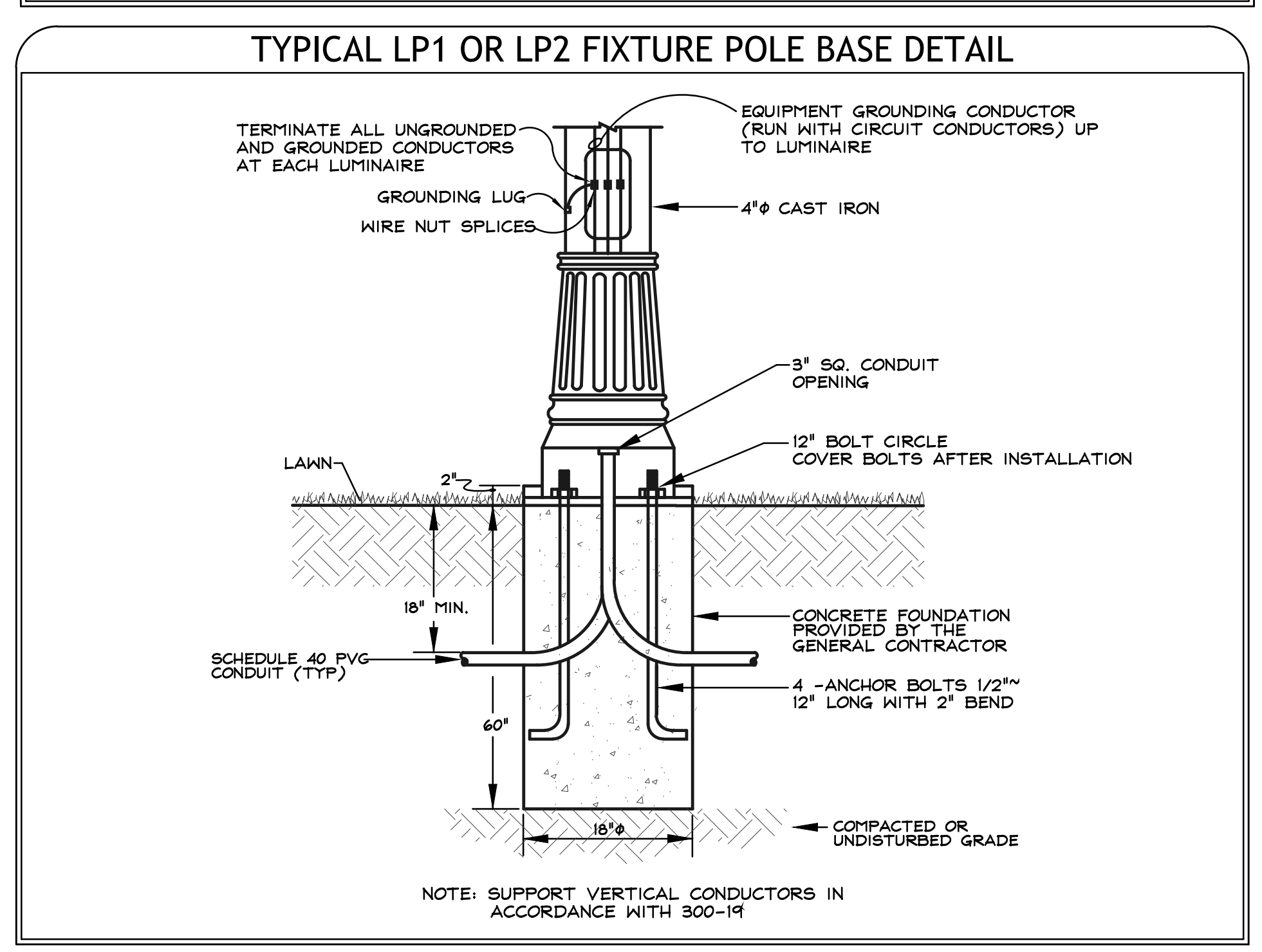


BUILDING 6 - ELECTRICAL LOAD CALCULATIONS

Engineered Building Systems, Inc.
Consulting Engineers

DEER STREET DEVELOPMENT - B6
43 UNITS + RETAIL + OFFICE
PRELIMINARY TOTAL BUILDING CALCULATIONS
USING OPTIONAL CALCULATION METHOD 220.84

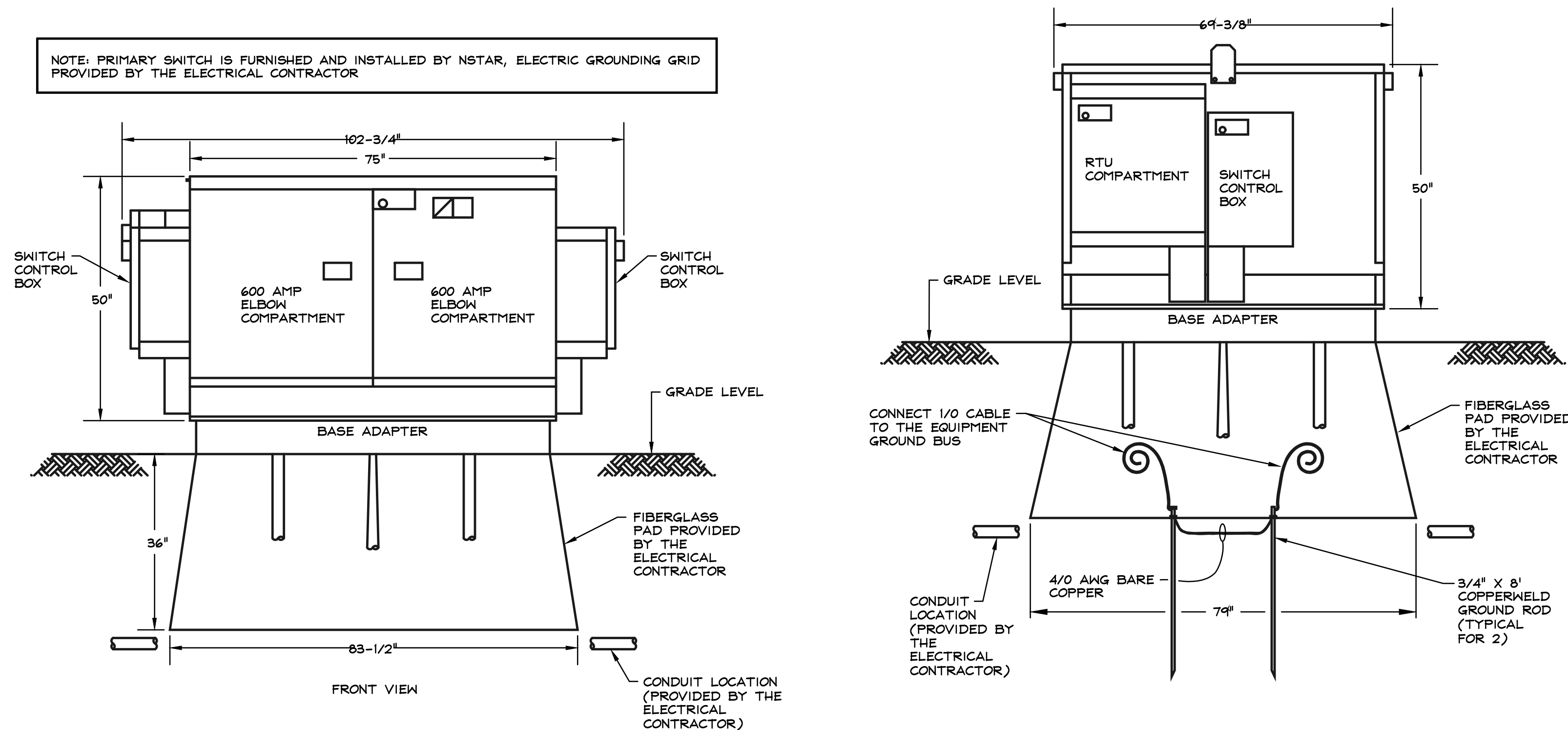
DWELLING UNIT LOADS	DEMAND KW
General Lighting load (220-12) = 2.7 KW unit x 43 Units = 116.1	116.1
Small Appliance 220-52(a)(b) = 3.0 KW unit x 43 Units = 129.0	129.0
Fixed Appliance Load (220-53) = 2.7 KW x 43 Units = 116.1	116.1
Clothes Dryer (Common) (220-54) = 5.0 KW x 43 Units = 215.0	215.0
Range/Cooktop (Electric) (220-55) = 8.0 KW x 43 Units = 344.0	328.0
Heating System (Electric) (220.60) = -0 KW unit x 43 Units =	-0-
Air Conditioning Load (Electric) = 4.0 KW x 43 Units = 172.0	172.0
Hot Water (Gas Central) = -0 KW x 43 Units = 0.0	-0-
Ventilation Systems = 0.5 KW x 43 Units = 21.5	21.5
Subtotal Dwelling Electrical Load =	1113.7
1113.7 KW x 27% =	300.7
NON-DWELLING UNIT LOADS	DEMAND KW
Exterior Lighting 3.0 KW @ 100% =	3.0
Lighting 16.0 KW @ 100% =	16.0
1 Elevator 40.0 KW @ 100% =	40.0
Miscellaneous 10.0 KW @ 100% =	10.0
Ventilation Systems 8.0 KW @ 100% =	8.0
Heat Load -0 KW @ 0% =	-0-
Fire Pump Load -0 KW @ 0% =	-0-
A/C Load 20 Tons x 1.5 KW =	30.0
Laundry Load 0.0 KW @ 0% =	-0-
Subtotal Non-Dwelling Unit Electrical Load	107.0
OFFICE ELECTRICAL LOADS	DEMAND KW
3,000 SQ. FT. x 12w/sq. ft.	36.0
RETAIL ELECTRICAL LOADS	DEMAND KW
1,800 SQ. FT. x 20w/sq. ft.	36.0
Total Building Demand Load	480.7
479.7 KW @ 208 Volts, 3 Phase = 1331 AMPS	
Recommend Minimum 1600 Ampere Service @ 120/208 Volts, 3 Phase, 4 Wire	



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EVERSOURCE PRIMARY SWITCH BOX DETAIL

NOTE: PRIMARY SWITCH IS FURNISHED AND INSTALLED BY NSTAR, ELECTRIC GROUNDING GRID PROVIDED BY THE ELECTRICAL CONTRACTOR

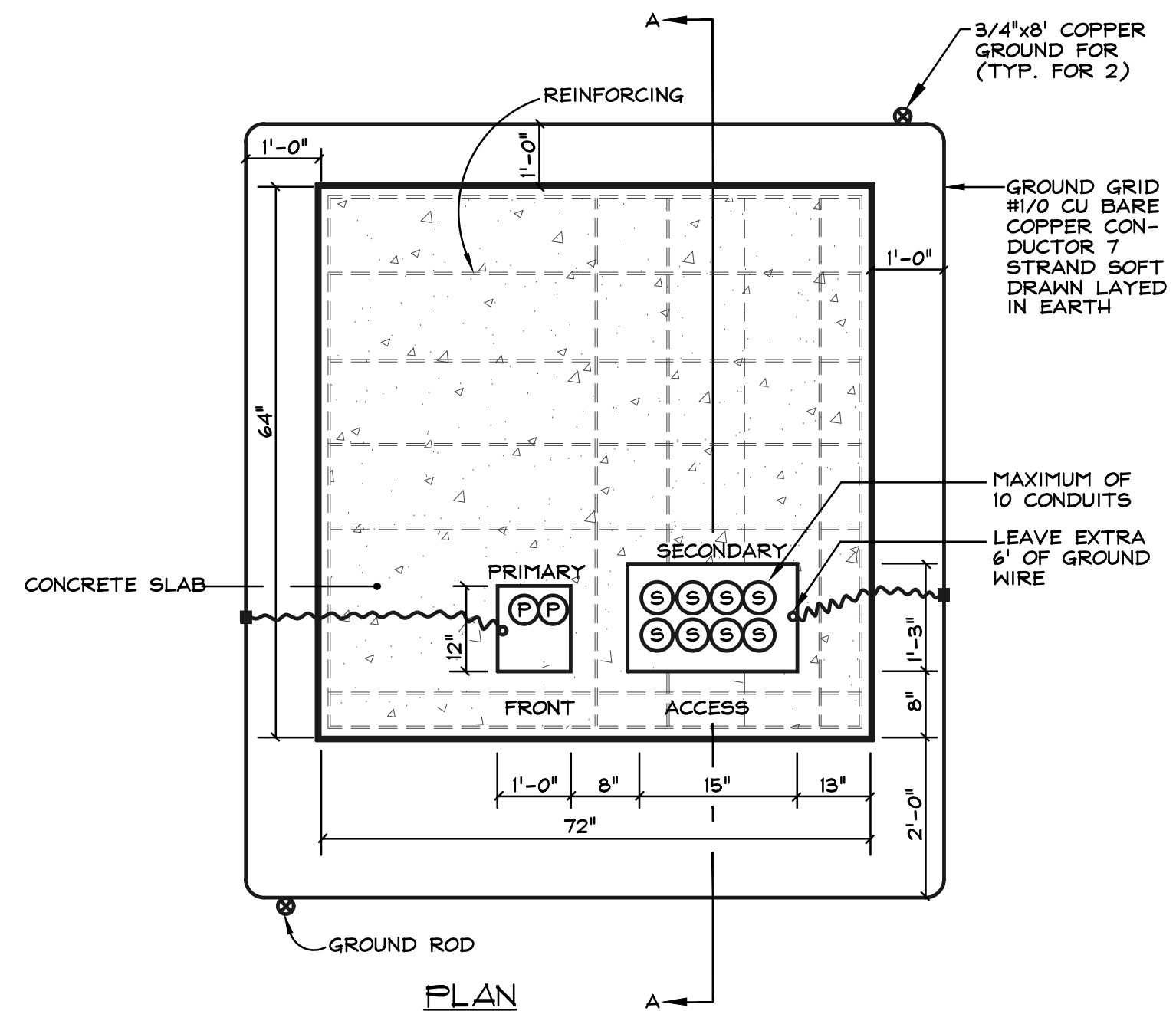


EVERSOURCE DISTRIBUTION TRANSFORMER PAD DETAIL

PAD CONSTRUCTION NOTES

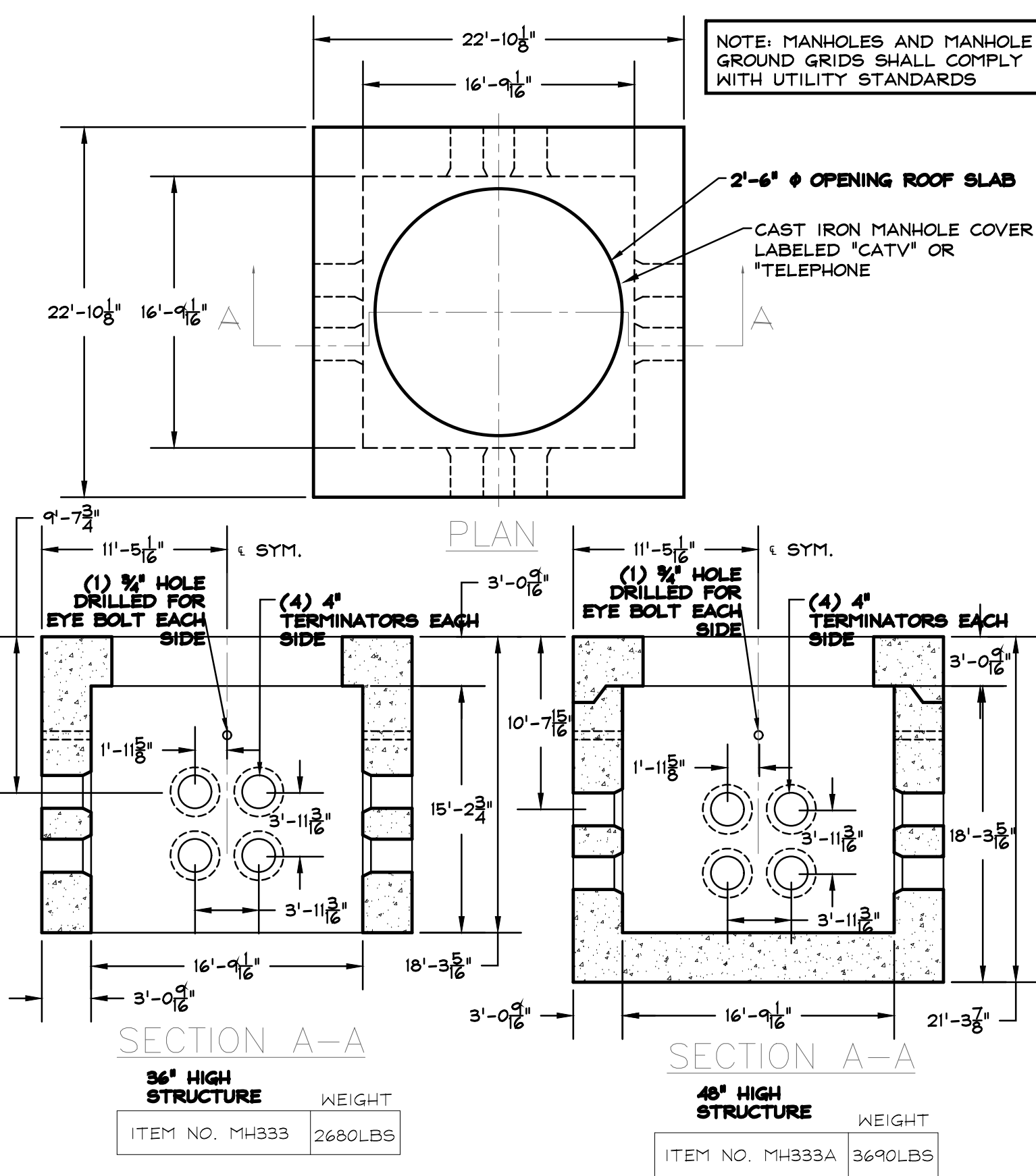
1. NO ABOVE GROUND STRUCTURES, SHRUBS, ETC. SHALL BE INSTALLED WITHIN 4 FEET OF PAD AND WITHIN 6 FEET OF TRANSFORMER DOORS.
2. PRIMARY CONDUIT SWEEPS TO BE 5" STEEL PIPES T.&C.
3. FOR PAD MOUNTED TRANSFORMERS LARGER THAN 1000 KVA, INCREASE THE WIDTH OF THE PAD FROM 7'-2" TO 10' AND THE DEPTH FROM 6'-5" TO 9'.
4. THE GENERAL CONTRACTOR MUST CALL EVERSOURCE ENERGY PRIOR TO POURING PAD.
5. TRANSFORMER PAD MUST BE LOCATED 15' FROM EGRESS DOORS OR OPERABLE WINDOWS.

PAD MATERIAL:
CONCRETE, 4000 PSI MIX, NOT MORE THAN 5 1/2 GALLONS OF WATER PER BAG OF CEMENT.



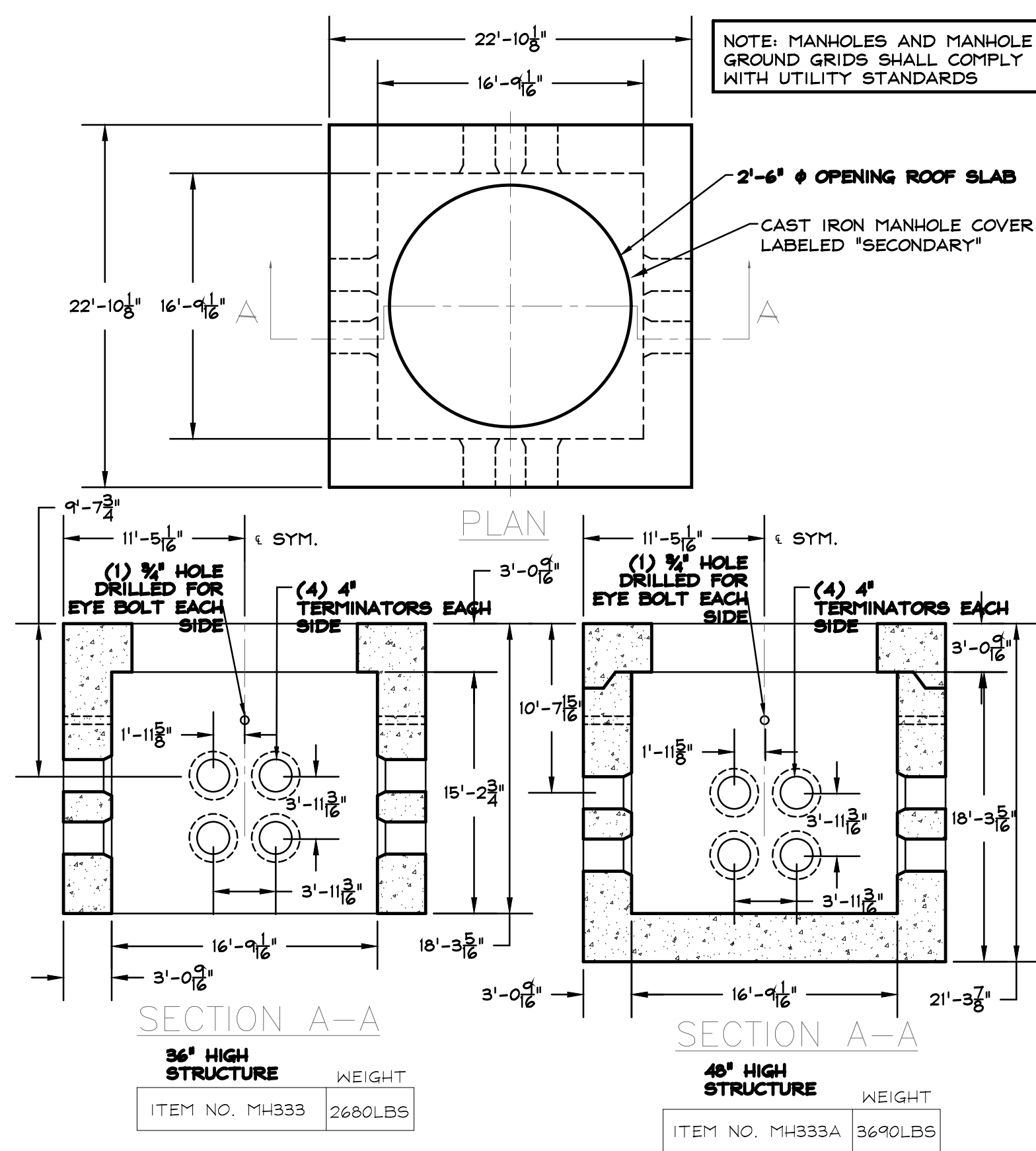
TYPICAL CATV AND TELEPHONE HANDHOLE DETAIL

NOTE: MANHOLES AND MANHOLE GROUND GRIDS SHALL COMPLY WITH UTILITY STANDARDS



TYPICAL SECONDARY HANDHOLE DETAIL

NOTE: MANHOLES AND MANHOLE GROUND GRIDS SHALL COMPLY WITH UTILITY STANDARDS



SECTION A-A

36" HIGH STRUCTURE	WEIGHT
ITEM NO. MH333	2680LBS

SECTION A-A

48" HIGH STRUCTURE	WEIGHT
ITEM NO. MH333A	3690LBS

- NOTES:
1. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS.
 2. STEEL REINFORCEMENT CONFORMS TO ASTM A615, GRADE 60. MINIMUM STEEL COVER 1".
 3. DESIGN LOADING: AASHTO H20-44, 0 TO 5 FEET COVER.
 4. OPTIONAL OPENINGS AVAILABLE BY SPECIAL ORDER.

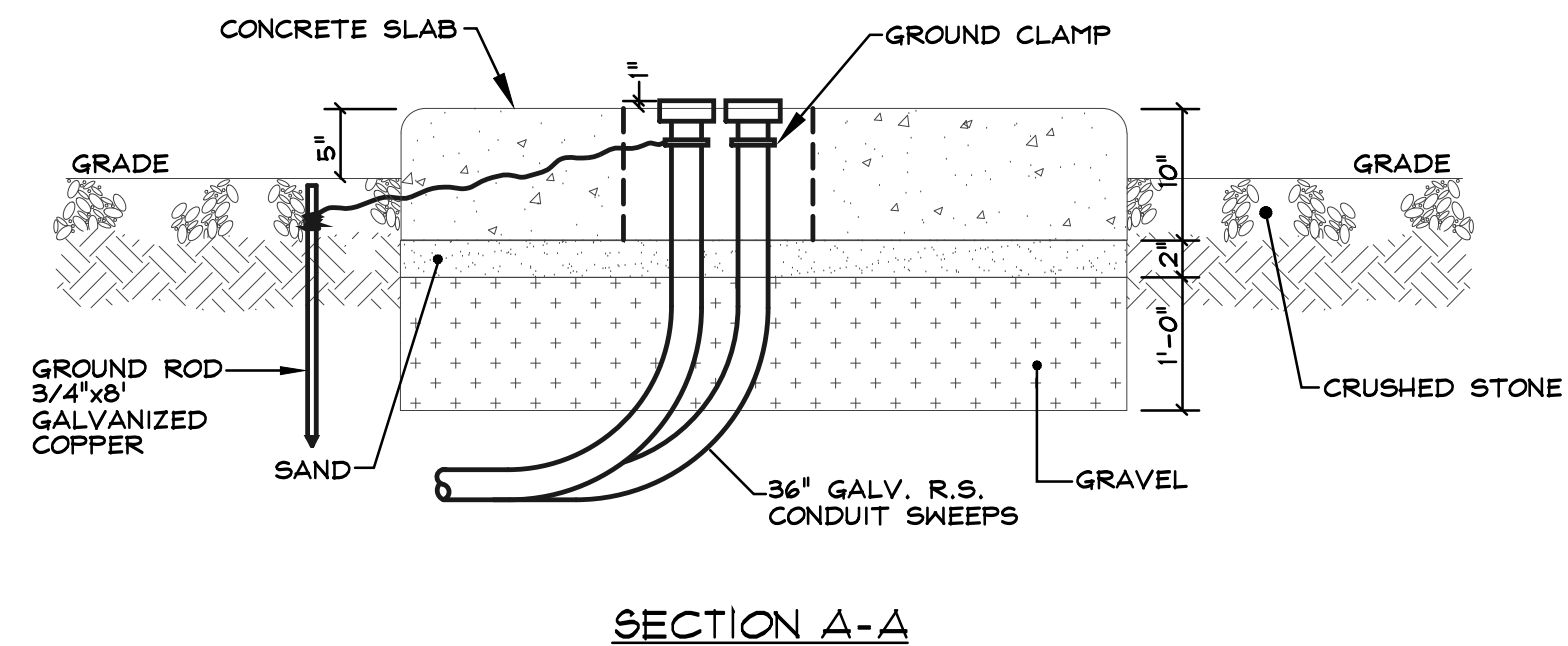
SECTION A-A

36" HIGH STRUCTURE	WEIGHT
ITEM NO. MH333	2680LBS

SECTION A-A

48" HIGH STRUCTURE	WEIGHT
ITEM NO. MH333A	3690LBS

- NOTES:
1. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS.
 2. STEEL REINFORCEMENT CONFORMS TO ASTM A615, GRADE 60. MINIMUM STEEL COVER 1".
 3. DESIGN LOADING: AASHTO H20-44, 0 TO 5 FEET COVER.
 4. OPTIONAL OPENINGS AVAILABLE BY SPECIAL ORDER.



SECTION A-A



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LANDSCAPE ARCHITECT
PORTSMOUTH, NEW HAMPSHIRE

JSN ASSOCIATES, INC.
STRUCTURAL ENGINEER
PORTSMOUTH, NEW HAMPSHIRE

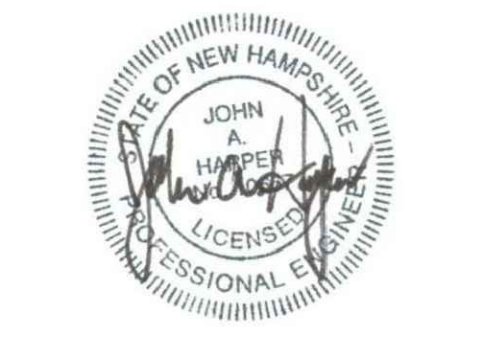
ENGINEERED SYSTEMS INC.
MPPF ENGINEER
WOBURN, MASSACHUSETTS

ENGINEERED BUILDING SYSTEMS
ELECTRICAL ENGINEER
DERRY, NEW HAMPSHIRE

RESIDENCES AT
FOUNDRY PLACE,
LOT 6: 181 HILL
STREET, ASSESSORS
MAP 138 LOT 62

PORTSMOUTH, NH 03801

Deer Street Associates



Scale:
Date: 3/17/2017
Project Number: 14837.03

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1	TAC PUBLIC HEARING	6/15/2017
2	TAC PUBLIC HEARING	8/21/2017

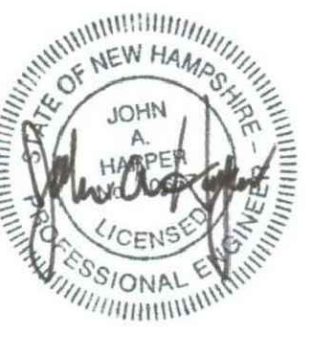
SITE PLAN REVIEW

SITE
ELECTRICAL
DETAILS

SE2.3

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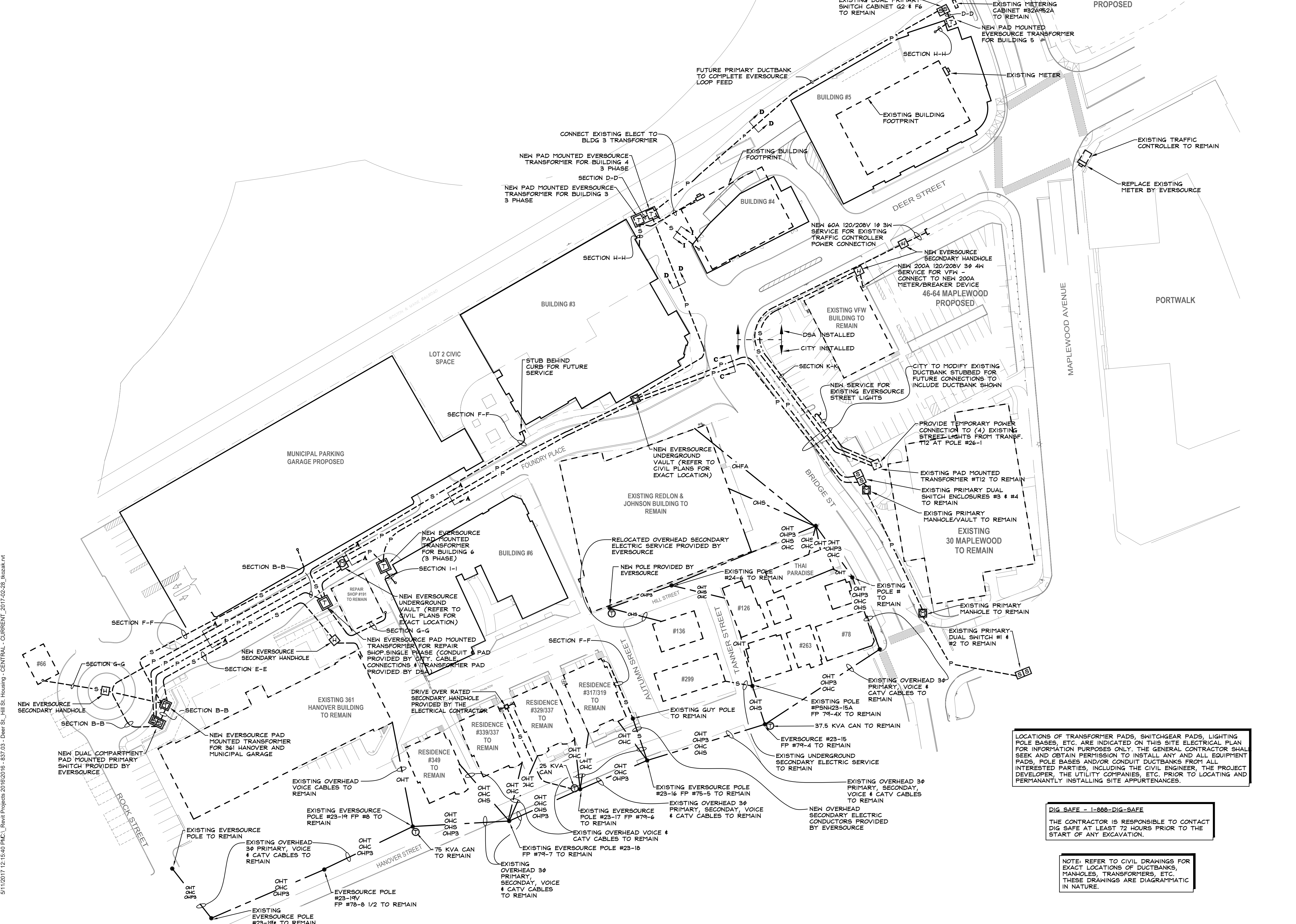
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 Date: 3/17/2017
 Project Number: 14837.03

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NO.	DESCRIPTION	DATE
1	TAC PUBLIC HEARING	6/15/2017
2	TAC PUBLIC HEARING	8/21/2017

SITE PLAN REVIEW

SITE ELECTRICAL PLAN

SE3.1



LOCATIONS OF TRANSFORMER PADS, SWITCHGEAR PADS, LIGHTING POLE BASES, ETC. ARE INDICATED ON THIS SITE ELECTRICAL PLAN FOR INFORMATION PURPOSES ONLY. THE GENERAL CONTRACTOR SHALL SEEK AND OBTAIN PERMISSION TO INSTALL ANY AND ALL EQUIPMENT PADS, POLE BASES AND/OR CONDUIT DUCTBANKS FROM ALL INTERESTED PARTIES, INCLUDING THE CIVIL ENGINEER, THE PROJECT DEVELOPER, THE UTILITY COMPANIES, ETC. PRIOR TO LOCATING AND PERMANENTLY INSTALLING SITE APPURTENANCES.

DIG SAFE - 1-888-DIG-SAFE
 THE CONTRACTOR IS RESPONSIBLE TO CONTACT DIG SAFE AT LEAST 72 HOURS PRIOR TO THE START OF ANY EXCAVATION.

NOTE: REFER TO CIVIL DRAWINGS FOR EXACT LOCATIONS OF DUCTBANKS, MANHOLES, TRANSFORMERS, ETC. THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE.

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ARCHITECTS
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ENGINEERED BUILDING SYSTEMS
ELECTRICAL ENGINEER
DERRY, NEW HAMPSHIRE

RESIDENCES AT
FOUNDRY PLACE,
LOT 6: 181 HILL
STREET, ASSESSORS
MAP 138 LOT 62

PORTSMOUTH, NH 03801

Deer Street Associates



Scale: 1"=40'
Date: 3/17/2017
Project Number: 14837.03

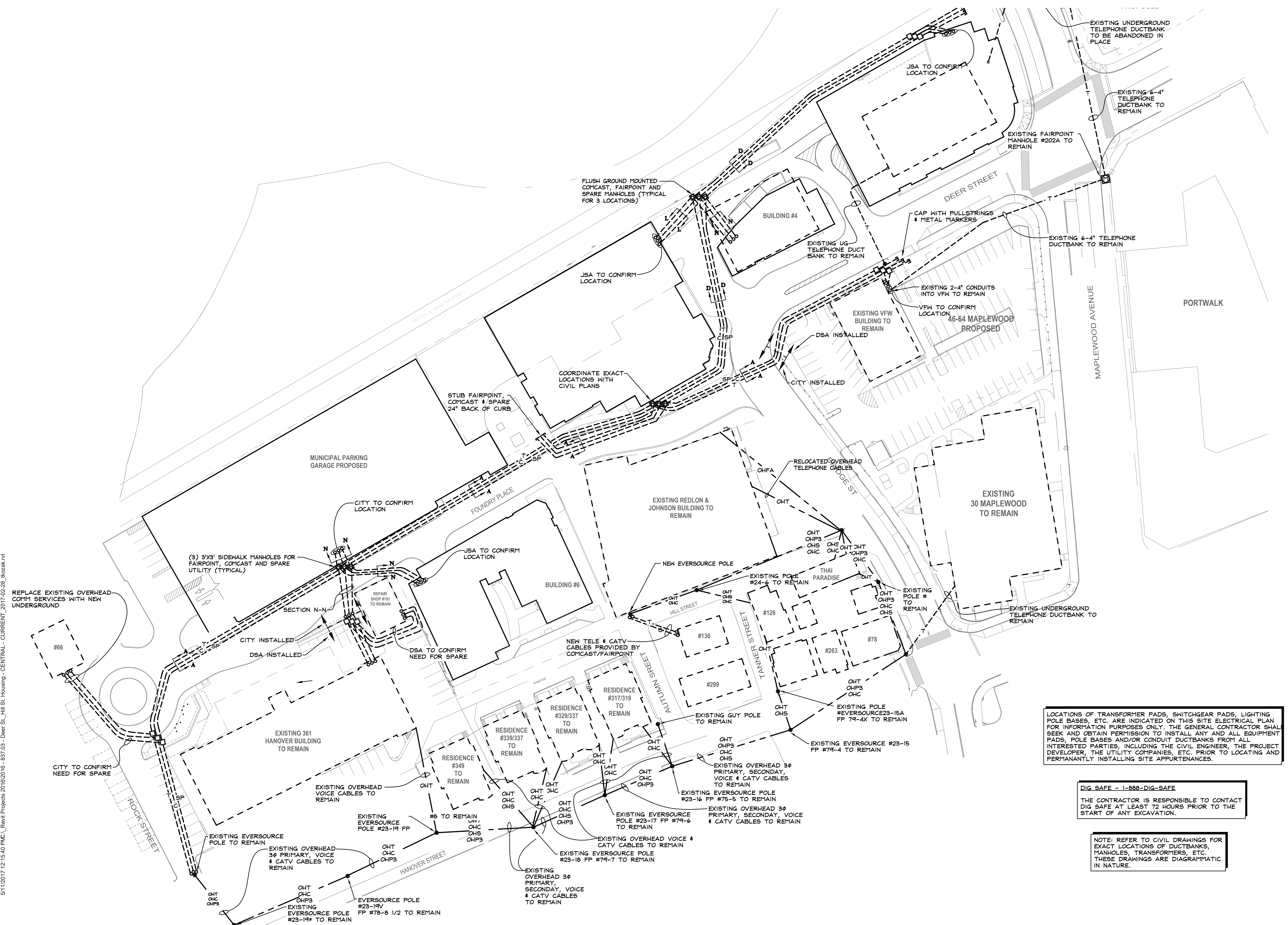
REVISIONS		
NO.	DESCRIPTION	DATE
1	TAC PUBLIC HEARING	6/15/2017
2	TAC PUBLIC HEARING	8/21/2017

SITE PLAN REVIEW

SITE COMMUNICATION PLAN

SE3.2

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LOCATIONS OF TRANSFORMER PADS, SWITCHGEAR PADS, LIGHTING POLE BASES, ETC. ARE INDICATED ON THIS SITE ELECTRICAL PLAN FOR INFORMATION PURPOSES ONLY. THE GENERAL CONTRACTOR SHALL SEEK AND OBTAIN PERMISSION TO INSTALL ANY AND ALL EQUIPMENT PADS, POLE BASES AND/OR CONDUIT DUCTBANKS FROM ALL INTERESTED PARTIES, INCLUDING THE CIVIL ENGINEER, THE PROJECT DEVELOPER, THE UTILITY COMPANIES, ETC. PRIOR TO LOCATING AND PERMANENTLY INSTALLING SITE APPURTENANCES.

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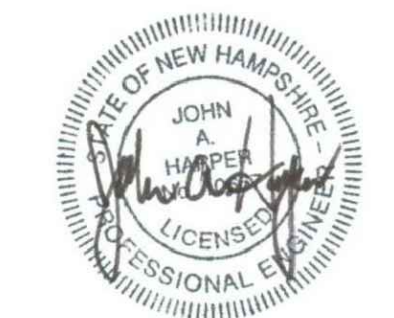
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MFPF ENGINEER
WOBURN, MASSACHUSETTS

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DERRY, NEW HAMPSHIRE

RESIDENCES AT
FOUNDRY PLACE,
LOT 6: 181 HILL
STREET, ASSESSORS
MAP 138 LOT 62

PORTSMOUTH, NH 03801

Deer Street Associates



Scale: 1"=40'
Date: 3/17/2017
Project Number: 14837.03

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NO.	DESCRIPTION	DATE
1	TAC PUBLIC HEARING	6/15/2017
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SITE PLAN REVIEW

SITE ELECTRICAL
DEMOTION PLAN
- EXISTING
CONDITIONS

SED1.1

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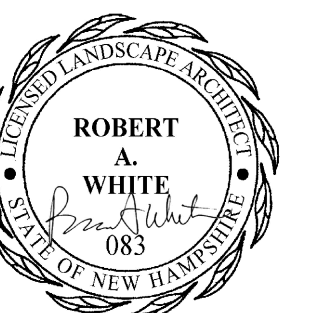
RESIDENCES AT
FOUNDRY PLACE,
LOT 6: 181 HILL STREET,
ASSESSORS MAP
138 LOT 62
PORTSMOUTH, NH 03801

OWNER:

Deer Street Associates

7 BANKS ROCK ROAD
YORK HARBOR, ME

A / E
Seal:



Scale: As indicated
Date: 3/17/2017
Project Number: 14837.03

REVISIONS

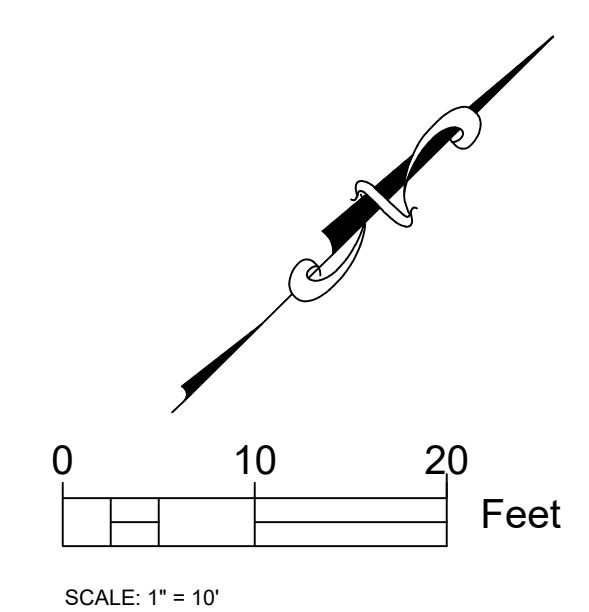
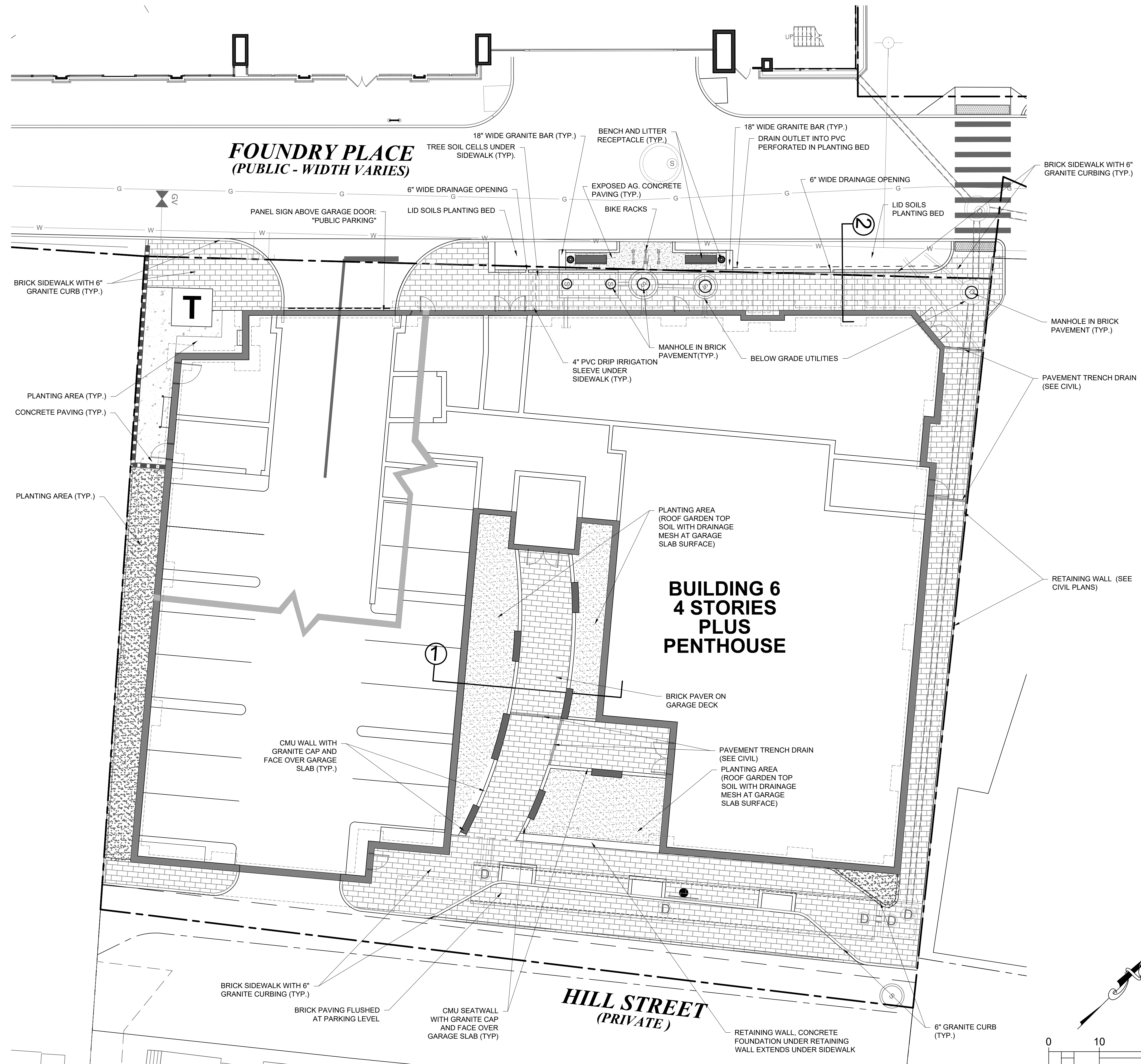
NO.	DESCRIPTION	DATE
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SITE PLAN REVIEW

MATERIALS
PLAN

L1

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RESIDENCES AT
FOUNDRY PLACE,
LOT 6: 181 HILL STREET,
ASSESSORS MAP
138 LOT 62
PORTSMOUTH, NH 03801

OWNER:

Deer Street Associates

7 BANKS ROCK ROAD
YORK HARBOR, ME

A / E
Seal:



Scale: As indicated
Date: 3/17/2017
Project Number: 14837.03

REVISIONS		
NO.	DESCRIPTION	DATE
1	TAC PUBLIC HEARING	6/15/2017
2	TAC PUBLIC HEARING	8/21/2017

SITE PLAN REVIEW

PLANTING PLAN

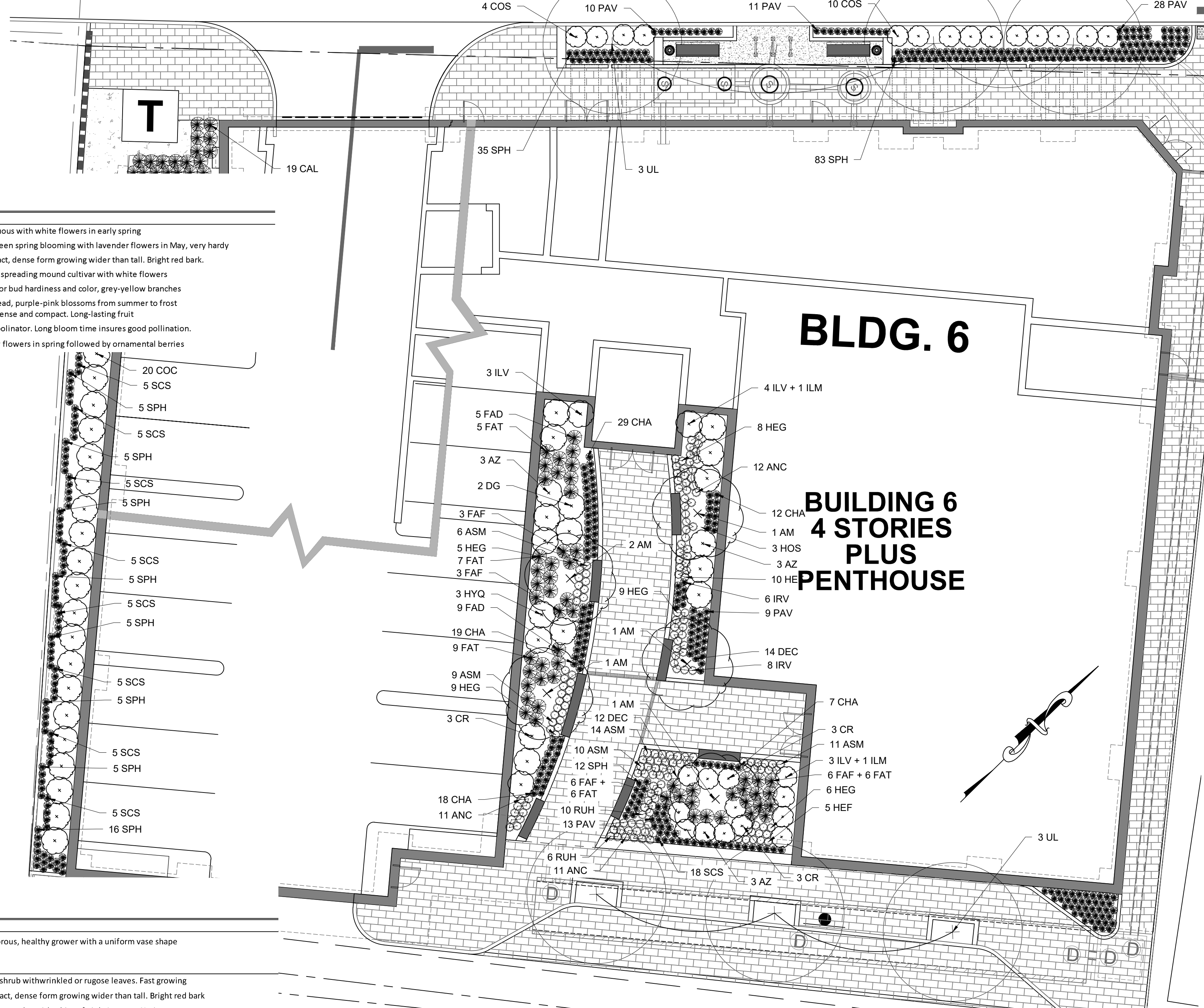
L2

LOT 6 - Courtyard

Symbol	Scientific Name	Common Name	Size	Spacing	Mature Height	Crown Spread	Growth Habit	TOLERANCES						Notes
								Drought	Poor Drainage	Alkaline Soil	Salt	Air Pollution	Shade	
<i>Shrubs</i>														
AM	AMELANCHIER Canadensis multi-stem	Serviceberry, Shadbowl	8-10' ht.	see plan	16-24'	8'	Oval	moderate	moderate	moderate	moderate	tolerant	moderate	Deciduous with white flowers in early spring
AZ	AZALEA x 'Karen' (Gable Hybrid)	Karen Azalea	3-4' ht	see plan	2-4'	3-4'	Spreading	moderate	moderate	moderate	moderate	tolerant	moderate	Evergreen spring blooming with lavender flowers in May, very hardy
CR	CORNUS sericea 'Isanti'	Dogwood, Isanti Red-Osier	3-4' ht	see plan	4-5'	5-7'	Mounded	moderate	moderate	moderate	moderate	tolerant	moderate	Compact, dense form growing wider than tall. Bright red bark.
DG	DEUTZIA gracilis 'Nikko'	slender deutzia	3-4' ht	see plan	1-2'	2-5'	Mounded	moderate	moderate	moderate	moderate	tolerant	moderate	Dense spreading mound cultivar with white flowers
FN	FORSYTHIA 'Northern Gold'	Forsythia	3-4' ht	see plan	6-8'	6-8'	Upright	moderate	moderate	moderate	moderate	tolerant	moderate	superior bud hardness and color, grey-yellow branches
HYQ	HYDRANGEA 'Bloom Struck'	Hydrangea	3-4' ht	see plan	3-4'	3-4'	Mounded	moderate	moderate	moderate	moderate	tolerant	tolerant	Mophead, purple-pink blossoms from summer to frost
JV	ILEX verticillata 'Red Sprite' (female)	Winterberry 'Red Sprite'	3-4' ht	see plan	3-4'	3-4'	Rounded	intolerant	tolerant	moderate	moderate	tolerant	moderate	Very dense and compact. Long-lasting fruit
ILM	ILEX verticillata 'Jim Dandy' (male)	Winterberry	3-4' ht	see plan	4-5'	5-6'	Rounded	intolerant	tolerant	moderate	moderate	tolerant	moderate	Male pollinator. Long bloom time insures good pollination.
LB	LINDERA benzoin	Spicebush	3-4' ht	see plan	8-10'	8-10'	Rounded	tolerant	tolerant	moderate	moderate	tolerant	tolerant	Yellow flowers in spring followed by ornamental berries

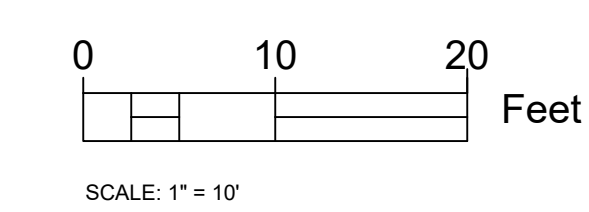
Planting Schedule

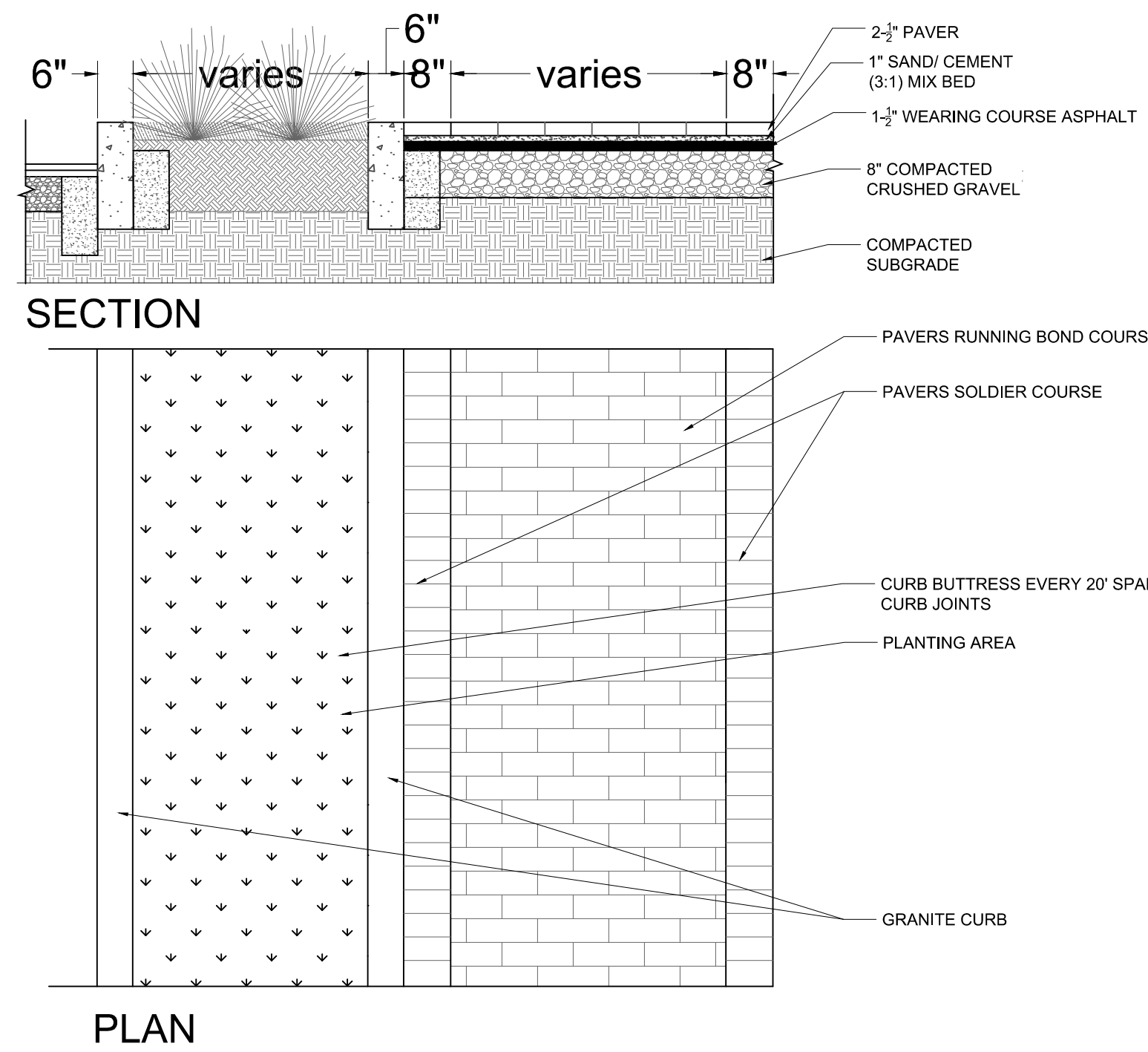
Symbol	Scientific Name	Common Name	Size	Spacing	Mature Height	Crown Spread	Growth Habit	TOLERANCES						Notes
								Drought	Poor Drainage	Alkaline Soil	Salt	Air Pollution	Shade	
<i>Trees</i>														
UA	ULMUS americana 'Princeton'	American Elm 'Princeton'	2-2.5' cal.	see plan	30-40'	24'	Vase	tolerant	tolerant	tolerant	Moderate	tolerant	moderate	A vigorous, healthy grower with a uniform vase shape
<i>Shrubs</i>														
ALR	ALNUS rugosa	Speckled Alder	3-4' ht	see plan	15-25'	15-25'	multi-trunked	intolerant	tolerant	moderate	moderate	tolerant	moderate	large shrub with wrinkled or rugose leaves. Fast growing
COS	CORNUS sericea 'Artic Fire'	Dogwood, Artic-Fire Red-Osier	3-4' ht	see plan	3-4'	3-4'	Rounded	intolerant	tolerant	moderate	moderate	tolerant	moderate	Compact, dense form growing wider than tall. Bright red bark
COX	CORNUS sericea 'Cardinal'	Dogwood, Cardinal Red-Osier	3-4' ht	see plan	8-10'	8-10'	Rounded	intolerant	tolerant	moderate	moderate	tolerant	moderate	Red stem color with a hint of pink. Improve Native
GAB	GAYLUSSACIA baccata	Black Huckleberry	3-4' ht	see plan	1-3'	1-3'	Upright	tolerant	moderate	moderate	moderate	tolerant	moderate	The purple-black berries ripen in late summer
ILV	ILEX verticillata 'Red Sprite' (female)	Winterberry 'Red Sprite'	3-4' ht	see plan	3-4'	3-4'	Rounded	intolerant	tolerant	moderate	moderate	tolerant	moderate	Very dense and compact. Long-lasting fruit
ILM	ILEX verticillata 'Jim Dandy' (male)	Winterberry	3-4' ht	see plan	4-5'	5-6'	Rounded	intolerant	tolerant	moderate	moderate	tolerant	moderate	Male pollinator. Long bloom time insures good pollination.
LIB	LINDERA benzoin	Spicebush	3-4' ht	see plan	8-10'	8-10'	Rounded	tolerant	tolerant	moderate	moderate	tolerant	tolerant	Yellow flowers in spring followed by ornamental red berries.
SPA	SPIRAEA alba	White Meadowsweet	3-4' ht	see plan	3-4'	3-4'	Mounded	intolerant	tolerant	moderate	moderate	tolerant	moderate	Common to wet meadow edges, white flowers in summer
SPT	SPIRAEA tormentosa	Meadowsweet	3-4' ht	see plan	2-4'	3-5'	Mounded	intolerant	tolerant	moderate	moderate	tolerant	intolerant	Common to wet meadow edges, white flowers in summer
<i>Ornamental Grasses</i>														
CAL	CALAMAGROSTIS acutiflora 'Karl Foerster'	Feather Reed Grass	1 gal.	18" o.c.	3-5'	1.5-2'	Upright	moderate	tolerant	moderate	moderate	tolerant	moderate	Strong upright habit with showy flowers
CCO	CAREX comosa	Long-hair Sedge	1 gal.	18" o.c.	2-4'	2'	Fountain like	intolerant	tolerant	moderate	moderate	tolerant	intolerant	Attractive seedheads. Very adaptable, grows well in damp soil
CCR	CAREX crinita	Fringed Sedge	1 gal.	18" o.c.	2-3'	2'	Upright	intolerant	tolerant	moderate	moderate	tolerant	moderate	Evergreen sedge with short creeping rhizomes
CAV	Carex vulpinoidea	Fox sedge	1 gal.	18" o.c.	2-3'	2'	Clump	intolerant	tolerant	moderate	moderate	tolerant	moderate	The seedheads mature in late summer and resemble fox tails
ELP	ELEOCHARIS palustris	Marsh Spikerush	1 gal.	18" o.c.	2-3'	2'	Upright	intolerant	tolerant	moderate	moderate	tolerant	intolerant	Sedge that forms dense rhizomatous mats in shallow waters
JUE	JUNCUS effusus	Common Rush	1 gal.	18" o.c.	3-4'	2'	Upright	intolerant	tolerant	moderate	moderate	tolerant	intolerant	Easily grown in moist to wet soils, including standing water to 4"
PAV	PANICUM virgatum 'Shenandoah'	Switch Grass	2 gal.	18" o.c.	3-4'	2-3'	Upright	intolerant	tolerant	moderate	moderate	tolerant	moderate	Green leaves in early summer turning to dark red
SCS	SCHIZACHYRIUM scoparium	Little bluestem	1 gal.	18" o.c.	1-2'	1-2'	Clump	moderate	tolerant	moderate	moderate	tolerant	intolerant	Finely textured clumping grass with a blue-green summer color
SPH	SPOROBOLUS heterolepis	Prairie Dropseed	1 gal.	18" o.c.	2-3'	2-3'	Clump	moderate	tolerant	moderate	moderate	tolerant	intolerant	Foliage turns golden with orange hues in fall
<i>Perennials</i>														
ACH	ACHILLEA 'Moonshine'	'Moonshine' yarrow	1 gal.	18" o.c.	1-2'	1'	Clusters	tolerant	moderate	moderate	moderate	tolerant	intolerant	Carefree and generous bloomers, yarrow has tight clusters of deep yellow
ASC	ASTILBE chinenses	Astilbe visions in pink	1 gal.	18" o.c.	1'	1'	Clump	moderate	tolerant	moderate	moderate	tolerant	moderate	Light pink flower plumes against a coarsely textured, blue-green foliage
CAP	CALTHA palustris	Marsh marigold	1 gal.	18" o.c.	8-12"	8-12"	Clump	intolerant	tolerant	moderate	moderate	tolerant	moderate	Bright yellow buttercup flowers early spring, found in marshes and wet
CHG	CHELONE glabra	Turtlehead	1 gal.	18" o.c.	2-4'	1-2'	Upright	intolerant	tolerant	moderate	moderate	tolerant	moderate	Spikes of elegant white flowers top shiny green foliage in late summer
DIE	DICENTRA eximia 'Luxuriant'	Bleeding Heart	1 gal.	18" o.c.	12-18"	12-18"	Clump	moderate	tolerant	moderate	moderate	tolerant	moderate	Pink flowers on 12-15" spikes, cutleaf blue-green foliage
COM	COREOPSIS verticillata 'Moonbeam'	Tickseed, Moonbeam	1 gal.	18" o.c.	1.5-2'	1.5-2'	Clump	tolerant	moderate	moderate	moderate	tolerant	intolerant	Creamy yellow flowers from summer to fall on threadleaf foliage
ECP	ECHINACEA purpurea	Purple Coneflower	1 gal.	18" o.c.	2-5'	1.5-2'	Upright	tolerant	moderate	moderate	moderate	tolerant	moderate	Large, daisy-like flowers that bloom all summer
LOC	LOBELIA cardinalis	Cardinal Flower	1 gal.	18" o.c.	2-3'	1-2'	Upright	intolerant	tolerant	moderate	moderate	tolerant	moderate	Perennial forb common to wet meadows
MOD	MONARDA didyma 'Marshall's Delight'	Marshall's Delight Bee Balm	1 gal.	18" o.c.	2-4'	2-3'	Upright	moderate	tolerant	moderate	moderate	tolerant	moderate	True medium pink flowers top the stout
NEF	NEPETA x faassenii 'Walker's Low'	Walker's Low Catmint	1 gal.	18" o.c.	1-2'	1.5-3'	Clump	tolerant	intolerant	moderate	moderate	tolerant	tolerant	Spikes of lavender-blue flowers cover the silvery-green mounds in late spring
RUH	RUDBECKIA hirta	Black-eyed Susan	1 gal.	18" o.c.	2-3'	1-2'	Clump	moderate	moderate	moderate	moderate	tolerant	moderate	A showy wildflower
SAS	SALVIA x silvestris 'Mainacht'	Salvia May Night	1 gal.	18" o.c.	1.5-2'	1-1.5'	Clump	tolerant	moderate	moderate	moderate	tolerant	intolerant	Long bloomer with deep dark violet-blue flowers
SAN	SALVIA nemerosa 'Wesuwe'	Salvia Vesuvius	1 gal.	18" o.c.	1-1.5'	1.5-2'	Clump	tolerant	moderate	moderate	moderate	tolerant	intolerant	Softly hairy, scented leaves. Will flower twice if cut to ground after first flowerin



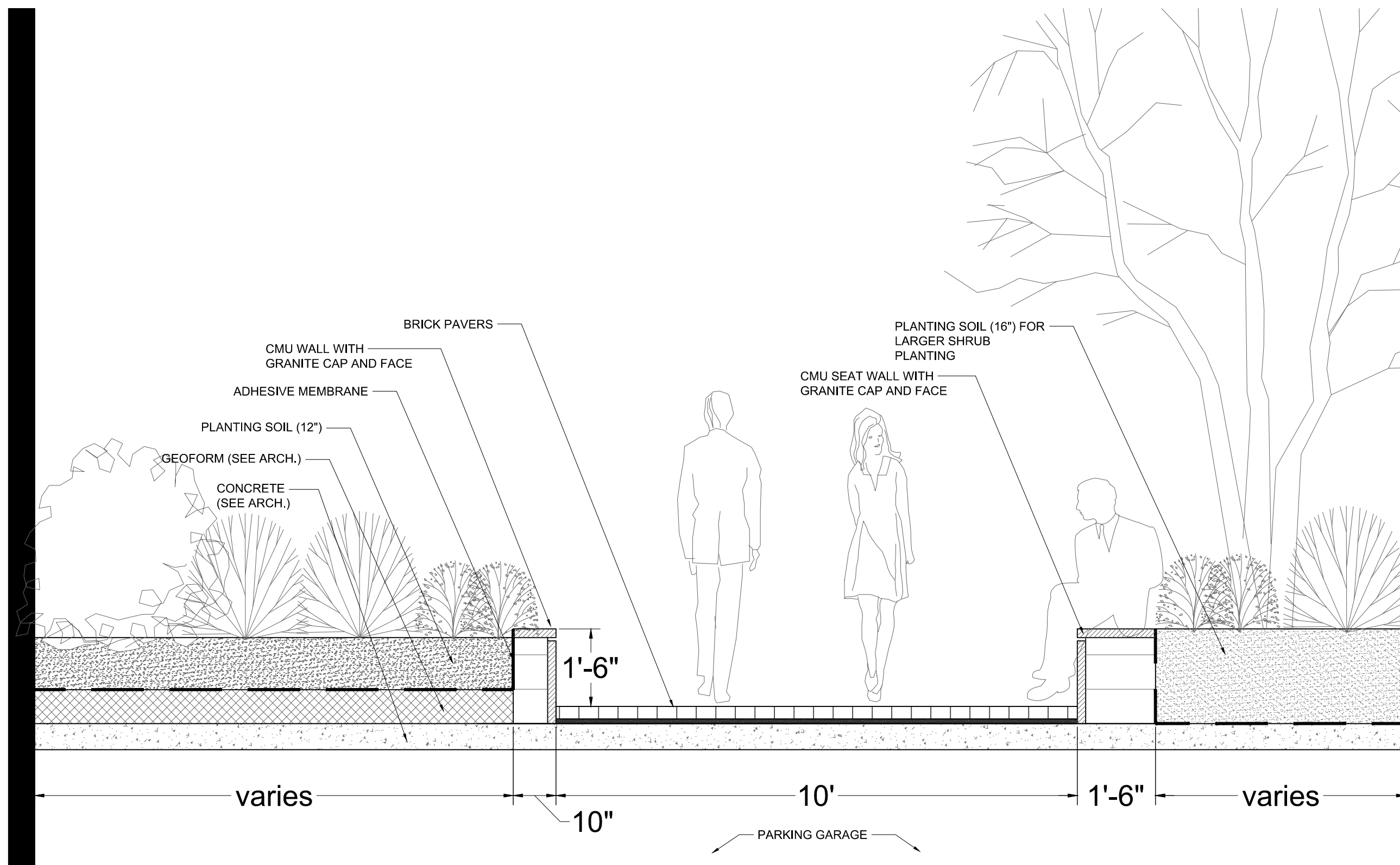
LANDSCAPE NOTES

- The property owner and all future property owners shall be responsible for the maintenance, repair and replacement of all required screening and landscape materials.
- All required plant materials shall be tended and maintained in a healthy growing condition, replaced when necessary, and kept free of refuse and debris. All required fences and walls shall be maintained in good repair.
- The property owner shall be responsible to remove and replace dead or diseased plant materials immediately with the same type, size and quantity of plant materials as originally installed, unless alternative plantings are requested, justified and approved by the Planning Board or Planning Director.

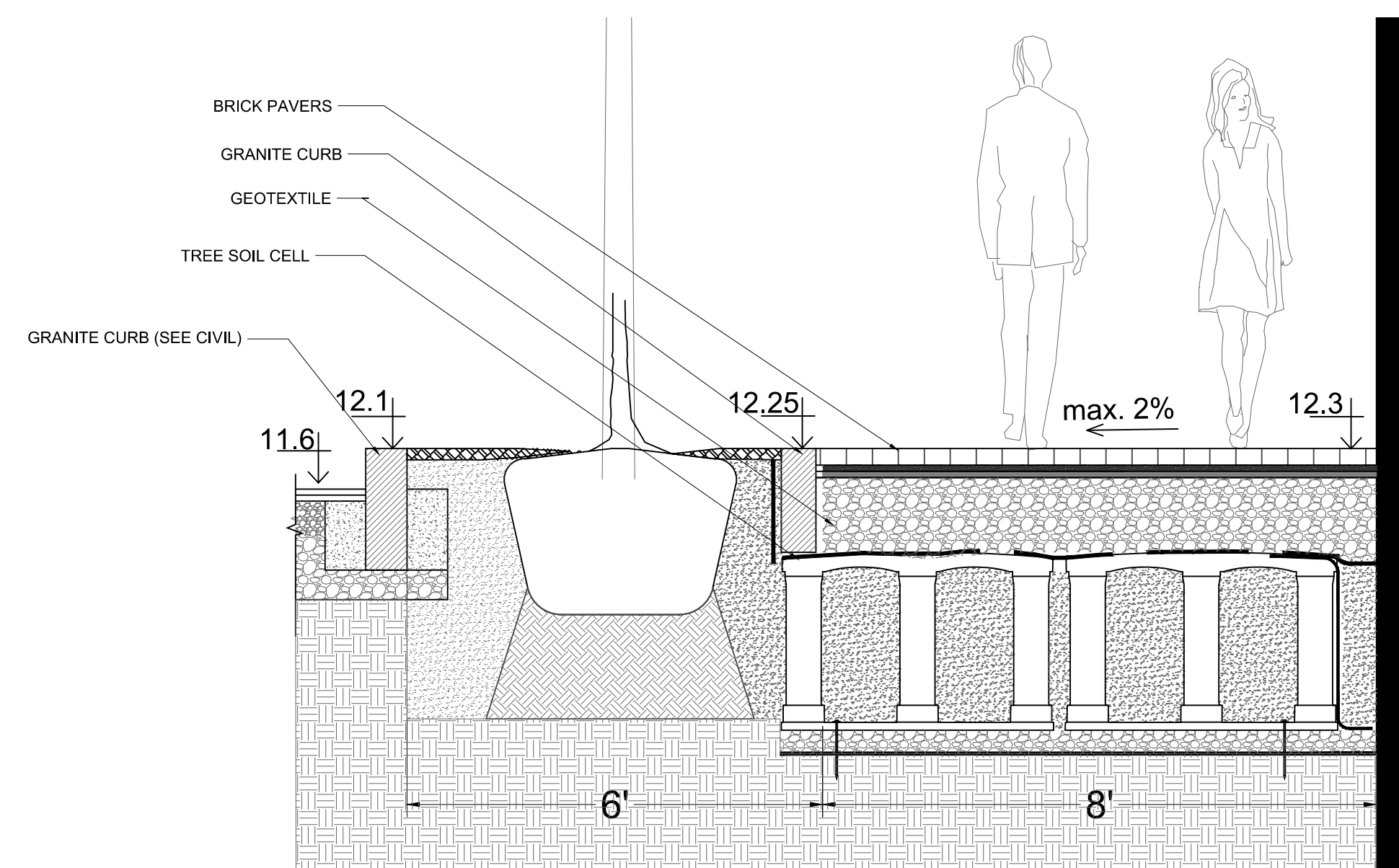




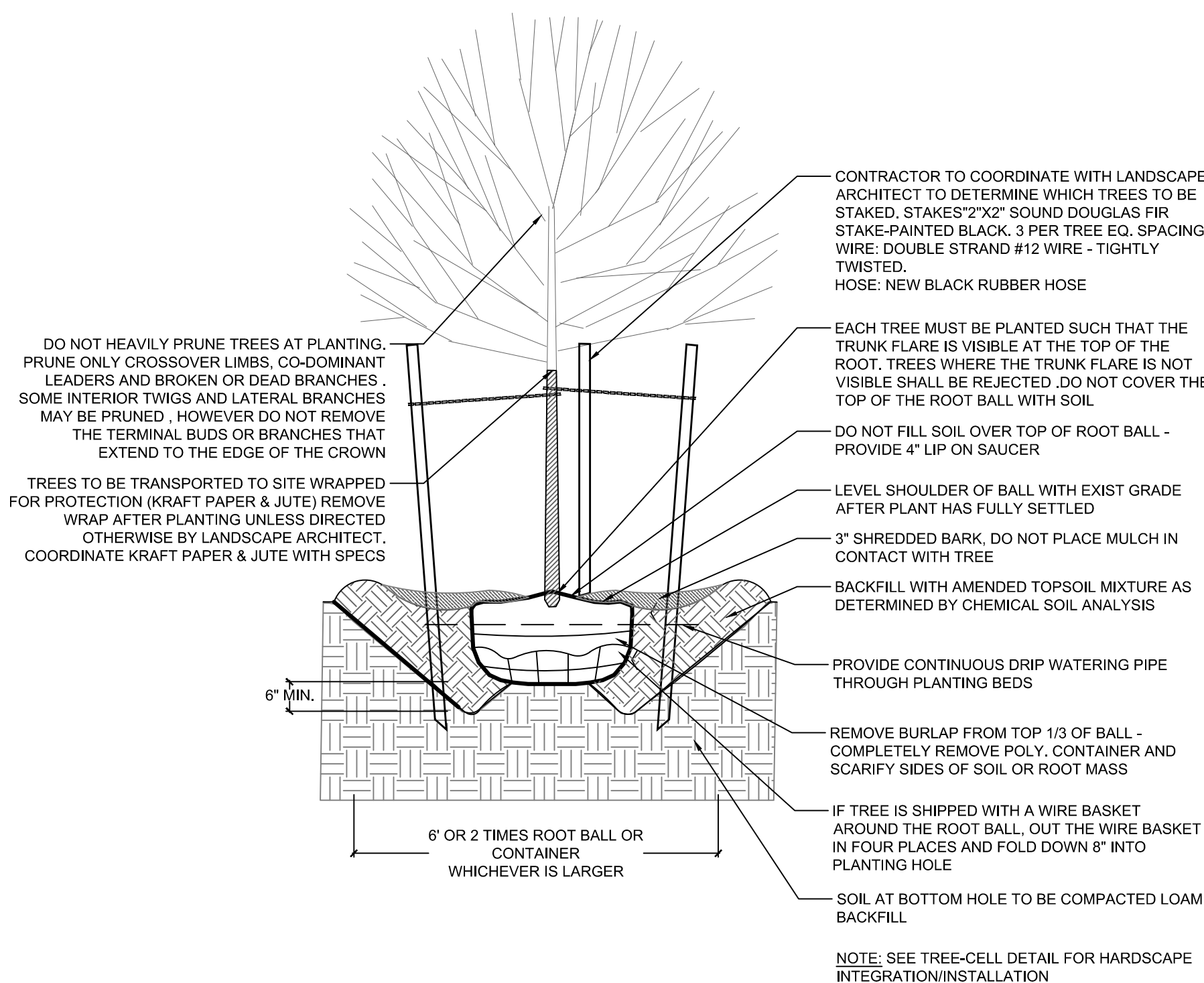
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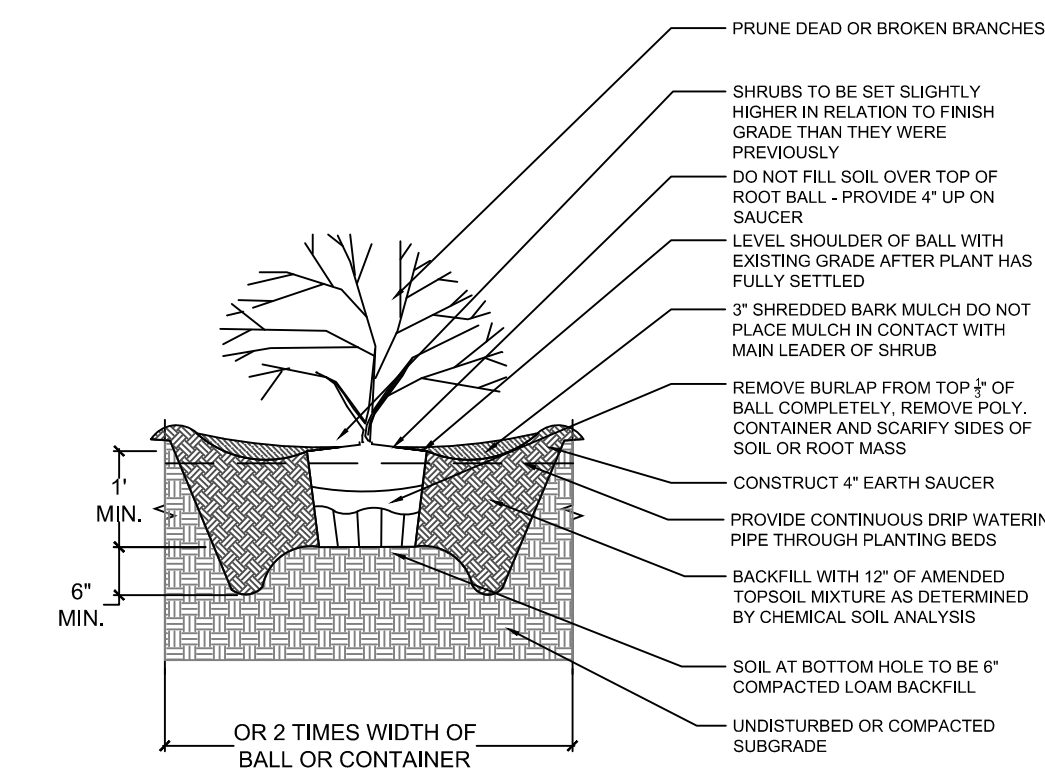
3 Section 1-1 Through Courtyard
Scale 6"=1'-0"



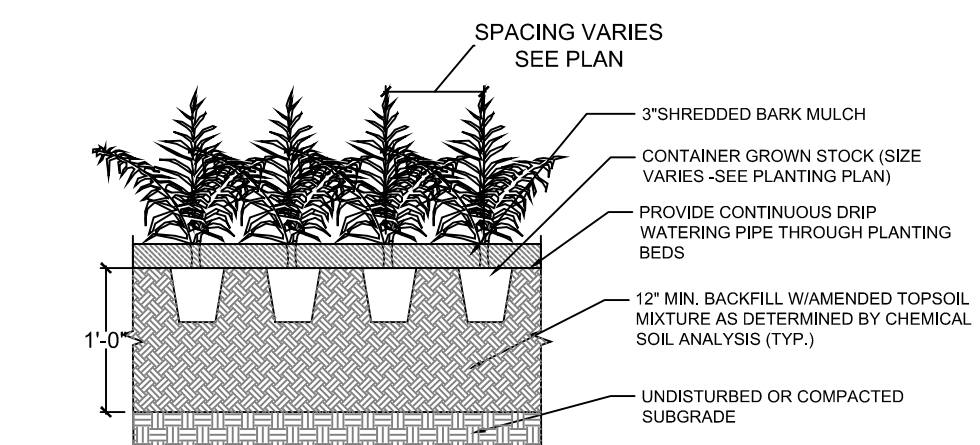
2 Section 2-2 Through Streetscape
Scale 6"=1'-0"



4 Tree Planting Detail
nts



5 Shrub Planting Detail
nts



6 Perennial Planting Detail
nts



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LOT 6: 181 HILL STREET,
ASSESSORS MAP
138 LOT 62
PORTSMOUTH, NH 03801

OWNER:

Deer Street Associates

7 BANKS ROCK ROAD
YORK HARBOR, ME

A / E
Seal:



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REVISIONS

NO.	DESCRIPTION	DATE
1	TAC PUBLIC HEARING	6/15/2017
2	TAC PUBLIC HEARING	8/21/2017

SITE PLAN REVIEW

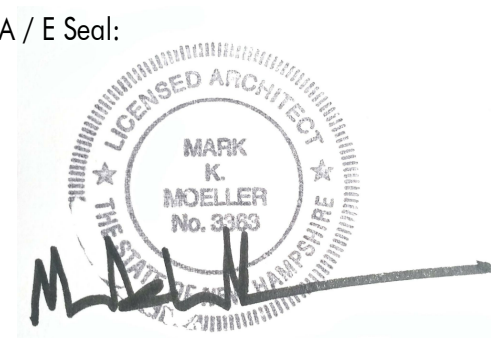
DETAILS AND SECTIONS

L3

**RESIDENCES AT
 FOUNDRY PLACE,
 LOT 6: 181 HILL ST,
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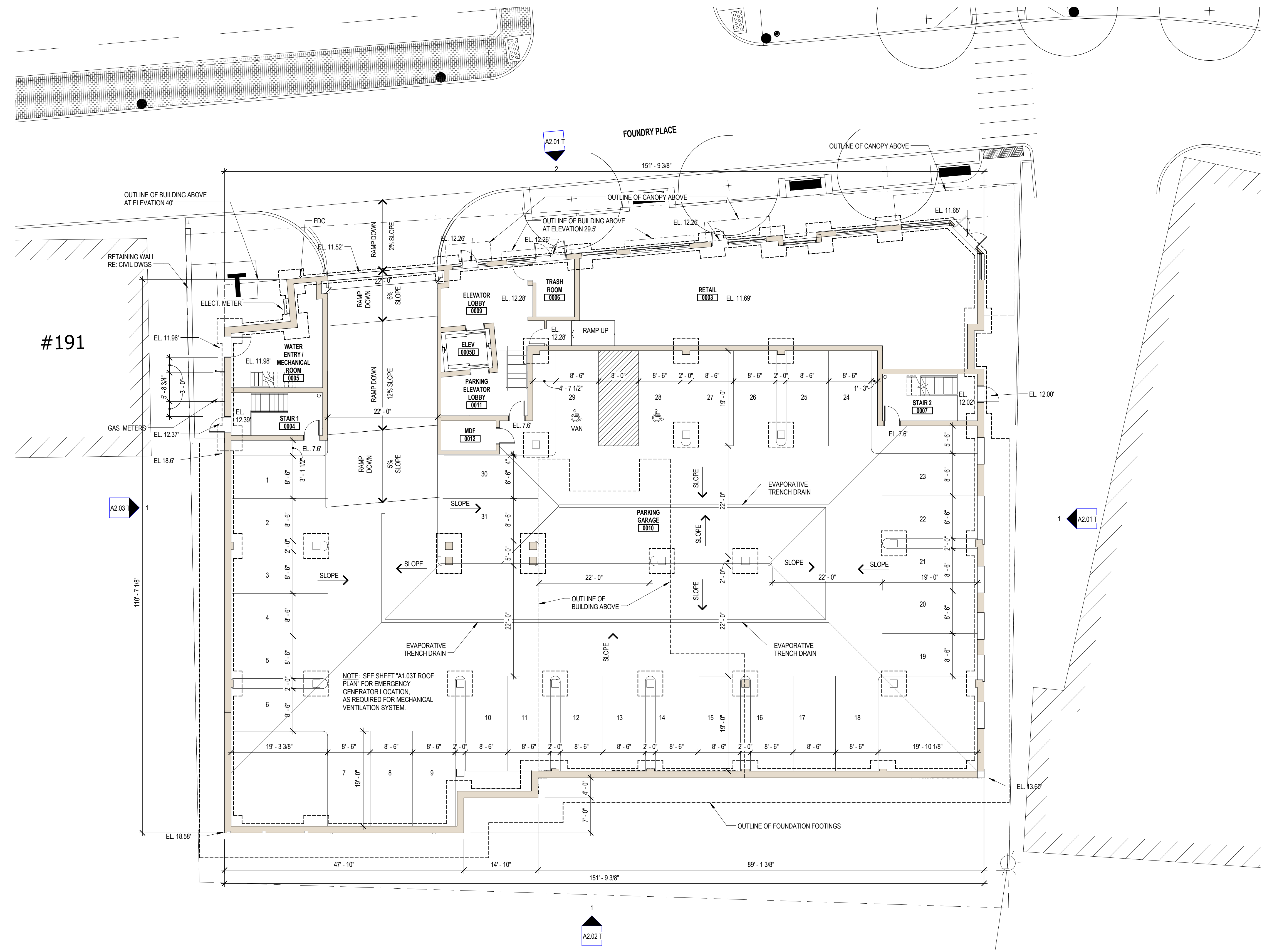


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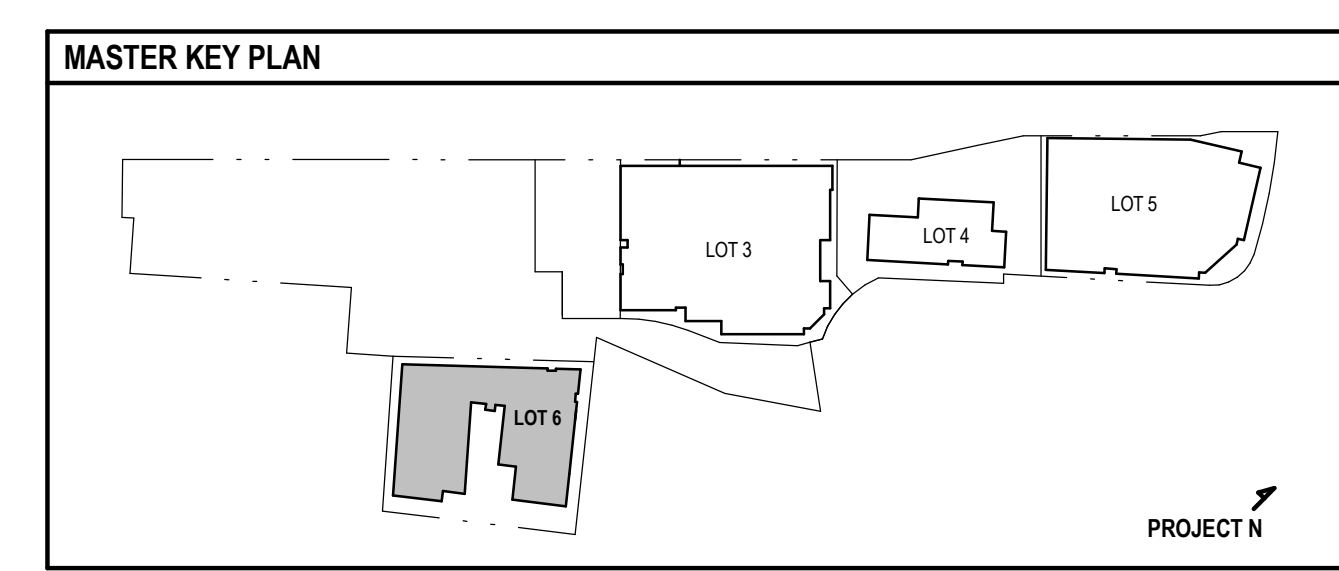
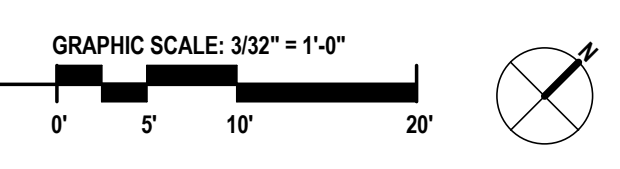
**SITE PLAN REVIEW
 GROUND LEVEL
 (FOUNDRY PL)
 PLAN**

A1.01 T



NOTES:
 1. KNOX BOXES TO BE LOCATED AT ALL EXTERIOR ENTRY DOORS. KEYING TO BE COORDINATED WITH PORTSMOUTH FIRE DEPART REQUIREMENTS.

1 GROUND LEVEL (FOUNDRY PL)
 3/32" = 1'-0"



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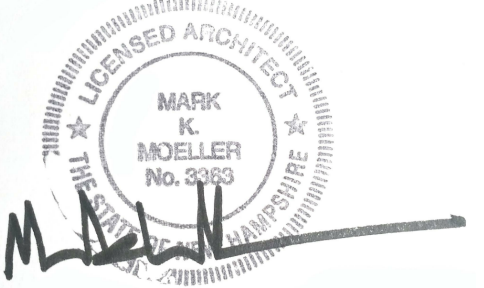
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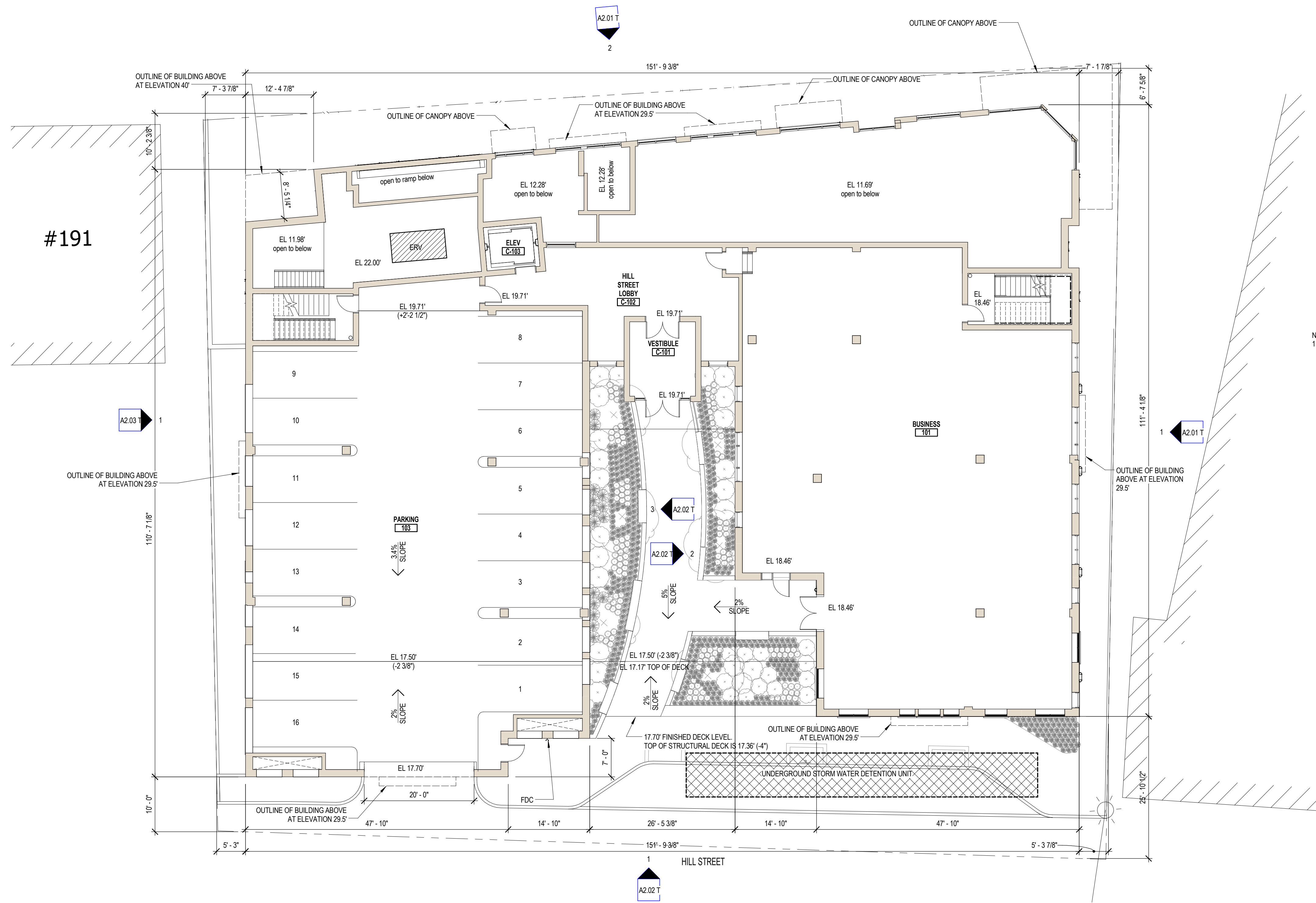
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SITE PLAN REVIEW

LEVEL 1 FLOOR
(HILL ST) PLAN

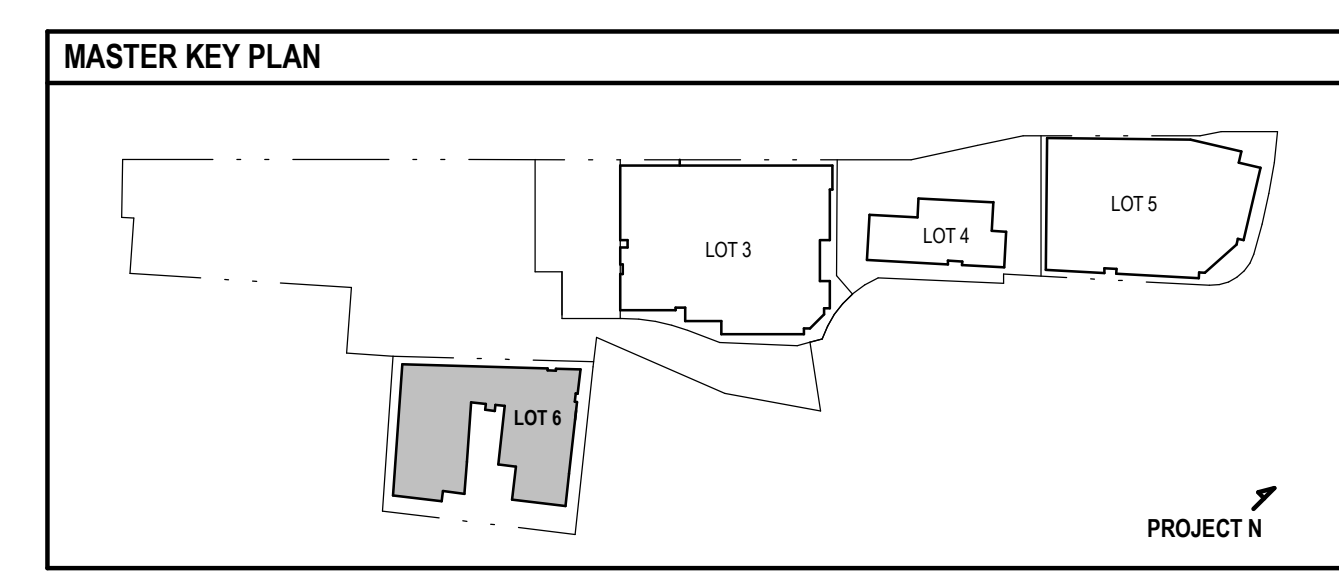
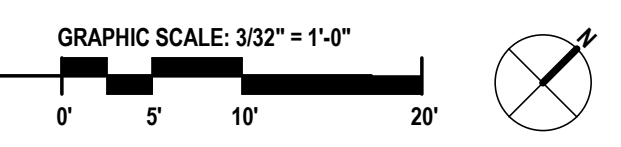
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1 GROUND LEVEL (HILL STREET)
3/32" = 1'-0"



PROJECT N

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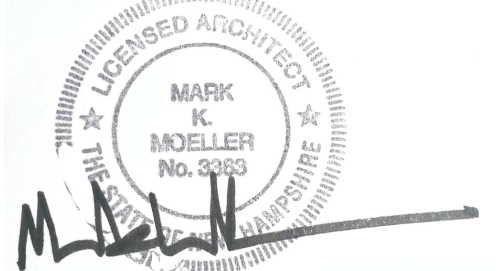
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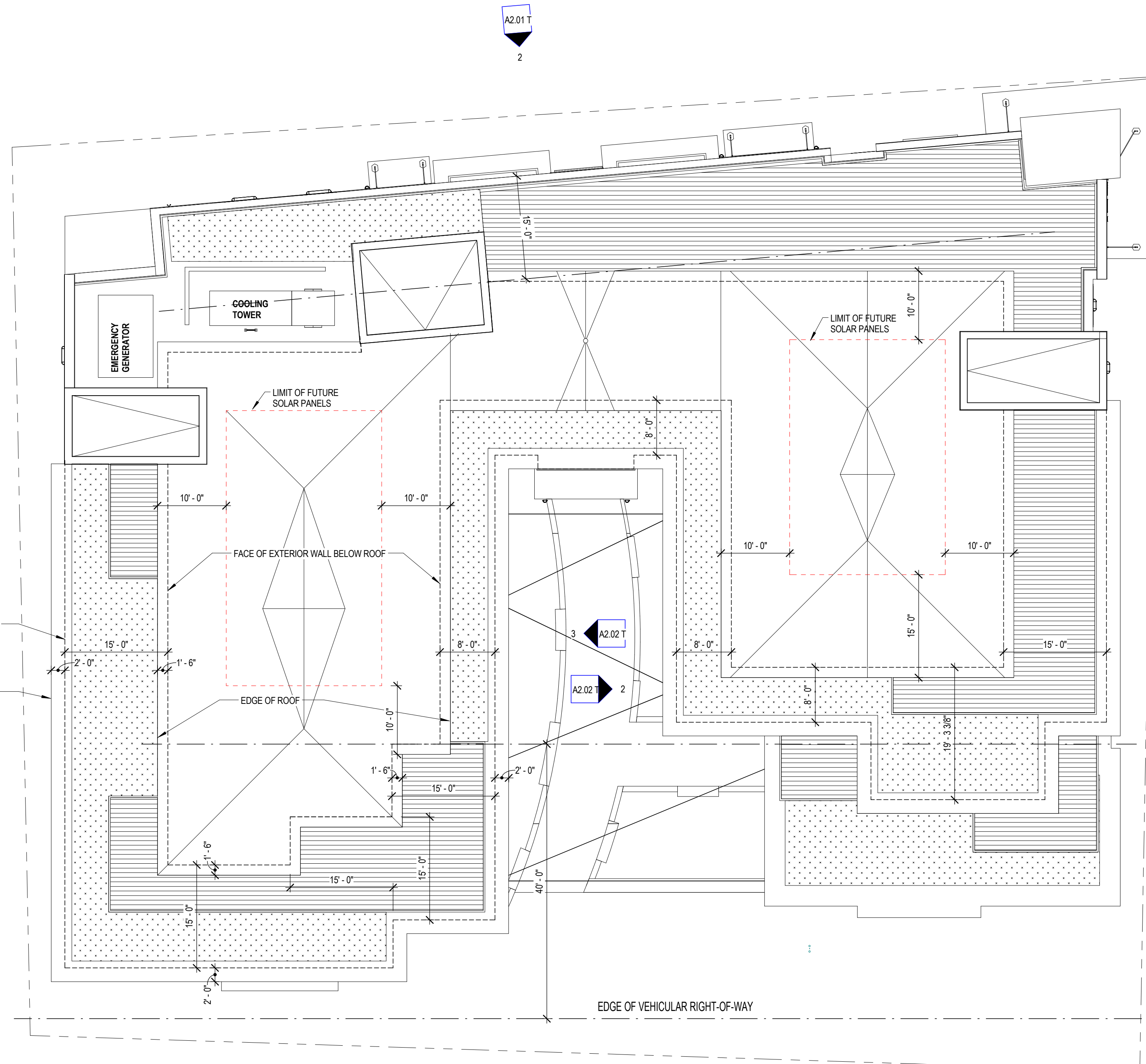
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SITE PLAN REVIEW

ROOF PLAN

A1.03 T

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A2.03 T 1

A2.01 T 1

A2.02 T 3

A2.02 T 2

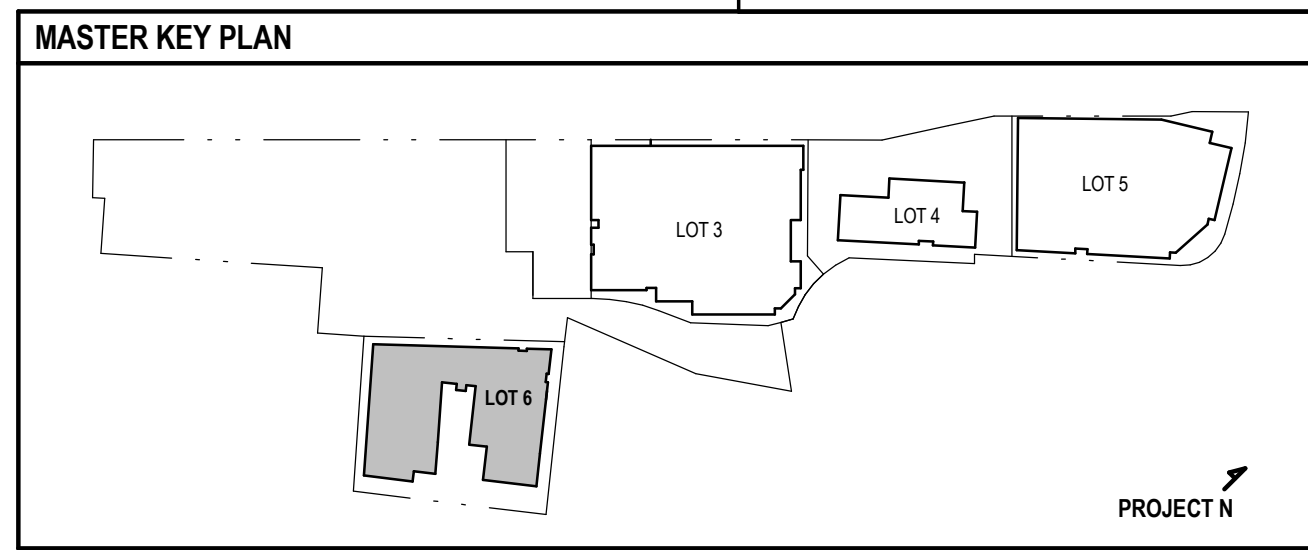
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1 ROOF LEVEL
3/32" = 1'-0"

GRAPHIC SCALE: 3/32" = 1'-0"
0' 5' 10' 20'



ROOF LEGEND	
	AREA OF PROPOSED GREEN ROOF PLANTINGS
	AREA OF ROOF TERRACES



PROJECT N

8/17/2017 11:08:59 A.M.C:_Revit Projects 2016\2016 - 837.03 - Deer St - Lot 6 - CENTRAL - CURRENT - 2017-06-06_mpa.rvt



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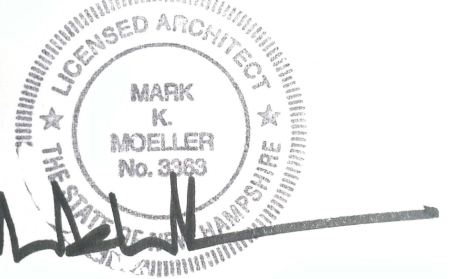
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Scale: **1/8" = 1'-0"**
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REVISIONS

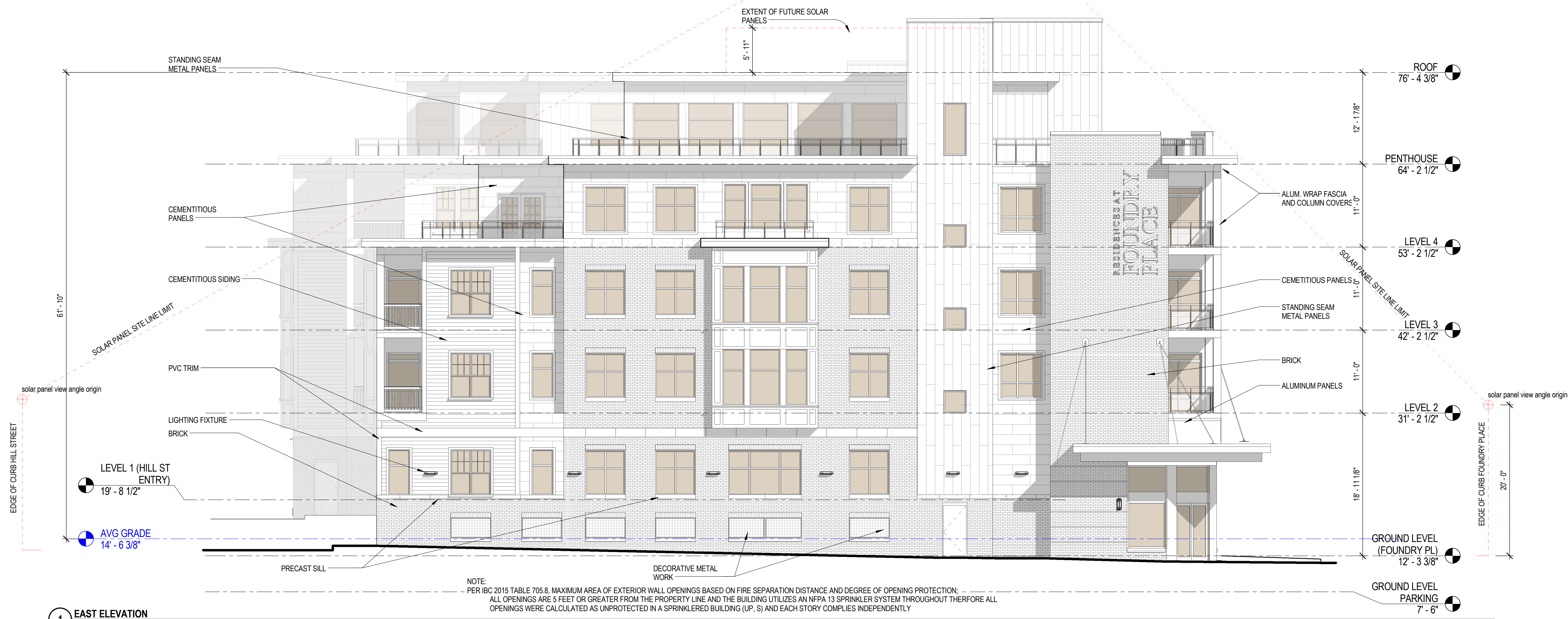
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SITE PLAN REVIEW

EXTERIOR
ELEVATIONS

A2.01 T

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1 EAST ELEVATION
1/8" = 1'-0"



2 NORTH ELEVATION (FOUNDRY PLACE)
1/8" = 1'-0"

8/17/2017 11:09:15 A.M. \\Revit Projects 2016\2016 - 837.03 - Deer St - Lot 6 - CENTRAL - CURRENT - 2017-06-06_mparma.rvt



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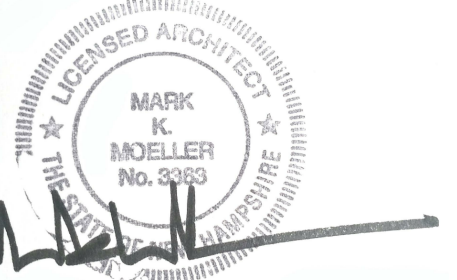
**RESIDENCES AT
FOUNDRY PLACE,
LOT 6: 181 HILL ST,
ASSESSORS MAP
138 LOT 62**
PORTSMOUTH, NH 03801

OWNER:

Deer Street Associates

7 BANKS ROCK ROAD
YORK HARBOR, ME

A / E Seal:



Scale: **1/8" = 1'-0"**
Date: **3/17/2017**
Project Number: **14837.03**

REVISIONS		
NO.	DESCRIPTION	DATE
1	TAC PUBLIC HEARING	6/15/2017
2	TAC PUBLIC HEARING	8/21/2017

SITE PLAN REVIEW

**EXTERIOR
ELEVATIONS**

A2.02 T

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1 SOUTH ELEVATION (HILL STREET)
1/8" = 1'-0"



3 COURTYARD EAST ELEVATION
1/8" = 1'-0"



2 COURTYARD WEST ELEVATION
1/8" = 1'-0"

8/18/2017 10:38:47 A.M.C:_Revit Projects 2016\2016 - 837.03 - Deer St - Lot 6 - CENTRAL - CURRENT - 2017-06-06_mparma.rvt



ARCHITECTS
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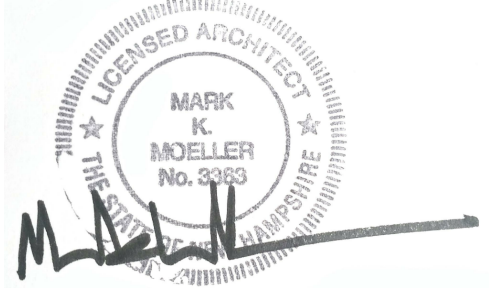
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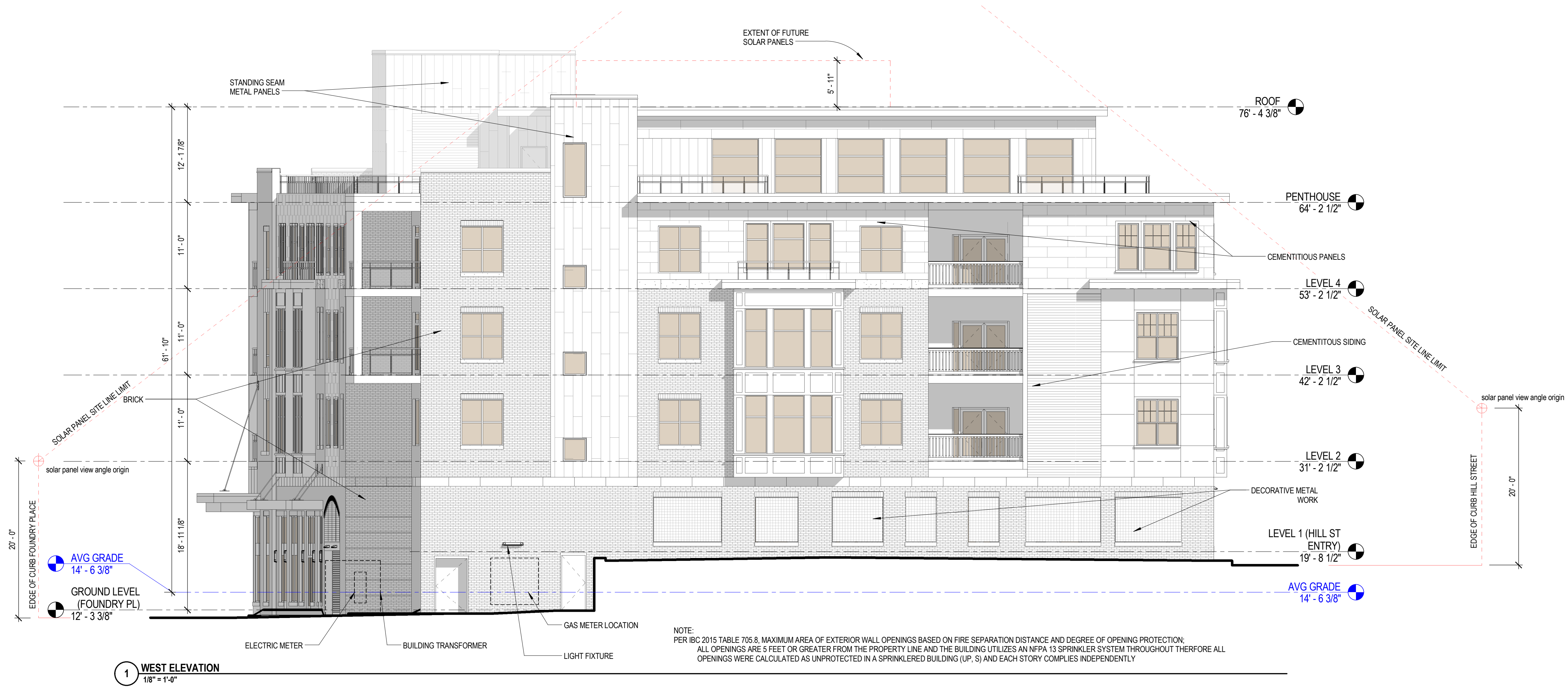
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SITE PLAN REVIEW

**EXTERIOR
ELEVATIONS**

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1 WEST ELEVATION
1/8" = 1'-0"



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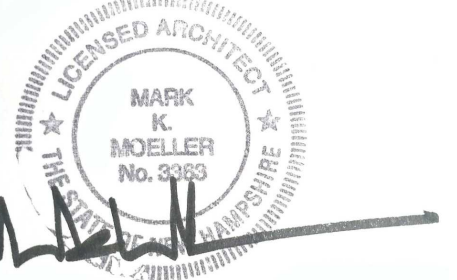
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SITE PLAN REVIEW

3D VIEWS

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1-HILL STREET



2- FOUNDRY PLACE