



City of Portsmouth, New Hampshire

Site Plan Application Checklist

This site plan application checklist is a tool designed to assist the applicant in the planning process and for preparing the application for Planning Board review. A pre-application conference with a member of the planning department is strongly encouraged as additional project information may be required depending on the size and scope. The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all site plan review requirements. Please refer to the Site Plan review regulations for full details.

Applicant Responsibilities (Section 2.5.2): Applicable fees are due upon application submittal along with required attachments. The application shall be complete as submitted and provide adequate information for evaluation of the proposed site development. Waiver requests must be submitted in writing with appropriate justification.

Name of Owner/Applicant: Banfield Realty, LLC Date Submitted: 12/30/2020

Phone Number: (603) 479-3666 E-mail: rob@graham-consult.com

Site Address: 375 Banfield Road Map: 266 Lot: 7

Zoning District: Industrial Lot area: 651,747 sq. ft.

Application Requirements			
<input checked="" type="checkbox"/>	Required Items for Submittal	Item Location (e.g. Page or Plan Sheet/Note #)	Waiver Requested
<input checked="" type="checkbox"/>	Fully executed and signed Application form. (2.5.2.3)		N/A
<input checked="" type="checkbox"/>	All application documents, plans, supporting documentation and other materials provided in digital Portable Document Format (PDF). (2.5.2.8)		N/A

Site Plan Review Application Required Information			
<input checked="" type="checkbox"/>	Required Items for Submittal	Item Location (e.g. Page/line or Plan Sheet/Note #)	Waiver Requested
<input type="checkbox"/>	Statement that lists and describes "green" building components and systems. (2.5.3.1A)		
<input checked="" type="checkbox"/>	Gross floor area and dimensions of all buildings and statement of uses and floor area for each floor. (2.5.3.1B)		N/A
<input checked="" type="checkbox"/>	Tax map and lot number, and current zoning of all parcels under Site Plan Review. (2.5.3.1C)	C1 & C2	N/A
<input checked="" type="checkbox"/>	Owner's name, address, telephone number, and signature. Name, address, and telephone number of applicant if different from owner. (2.5.3.1D)	C1 & C2	N/A

Site Plan Review Application Required Information

<input checked="" type="checkbox"/>	Required Items for Submittal	Item Location (e.g. Page/line or Plan Sheet/Note #)	Waiver Requested
<input checked="" type="checkbox"/>	Names and addresses (including Tax Map and Lot number and zoning districts) of all direct abutting property owners (including properties located across abutting streets) and holders of existing conservation, preservation or agricultural preservation restrictions affecting the subject property. (2.5.3.1E)	COVER SHEET	N/A
<input checked="" type="checkbox"/>	Names, addresses and telephone numbers of all professionals involved in the site plan design. (2.5.3.1F)	COVER SHEET	N/A
<input checked="" type="checkbox"/>	List of reference plans. (2.5.3.1G)	C1	N/A
<input checked="" type="checkbox"/>	List of names and contact information of all public or private utilities servicing the site. (2.5.3.1H)	COVER SHEET	N/A

Site Plan Specifications

<input checked="" type="checkbox"/>	Required Items for Submittal	Item Location (e.g. Page/line or Plan Sheet/Note #)	Waiver Requested
<input checked="" type="checkbox"/>	Full size plans shall not be larger than 22 inches by 34 inches with match lines as required, unless approved by the Planning Director. Submittals shall be a minimum of 11 inches by 17 inches as specified by Planning Dept. staff. (2.5.4.1A)	Required on all plan sheets	N/A
<input checked="" type="checkbox"/>	Scale: Not less than 1 inch = 60 feet and a graphic bar scale shall be included on all plans. (2.5.4.1B)	Required on all plan sheets	N/A
<input checked="" type="checkbox"/>	GIS data should be referenced to the coordinate system New Hampshire State Plane, NAD83 (1996), with units in feet. (2.5.4.1C)		N/A
<input checked="" type="checkbox"/>	Plans shall be drawn to scale. (2.5.4.1D)	Required on all plan sheets	N/A
<input checked="" type="checkbox"/>	Plans shall be prepared and stamped by a NH licensed civil engineer. (2.5.4.1D)	ALL SHEETS	N/A
<input checked="" type="checkbox"/>	Wetlands shall be delineated by a NH certified wetlands scientist and so stamped. (2.5.4.1E)	C1	N/A
<input checked="" type="checkbox"/>	Title (name of development project), north point, scale, legend. (2.5.4.2A)	COVER SHEET	N/A
<input checked="" type="checkbox"/>	Date plans first submitted, date and explanation of revisions. (2.5.4.2B)	ALL SHEETS	N/A
<input checked="" type="checkbox"/>	Individual plan sheet title that clearly describes the information that is displayed. (2.5.4.2C)	Required on all plan sheets	N/A
<input checked="" type="checkbox"/>	Source and date of data displayed on the plan. (2.5.4.2D)	C1	N/A

Site Plan Specifications

<input checked="" type="checkbox"/>	Required Items for Submittal	Item Location (e.g. Page/line or Plan Sheet/Note #)	Waiver Requested
<input checked="" type="checkbox"/>	A note shall be provided on the Site Plan stating: "All conditions on this Plan shall remain in effect in perpetuity pursuant to the requirements of the Site Plan Review Regulations." (2.5.4.2E)	C2 NOTE #15	N/A
<input checked="" type="checkbox"/>	Plan sheets submitted for recording shall include the following notes: a. "This Site Plan shall be recorded in the Rockingham County Registry of Deeds." b. "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." (2.13.3)	C2 NOTES #16 & 17	N/A
<input checked="" type="checkbox"/>	Plan sheets showing landscaping and screening shall also include the following additional notes: a. "The property owner and all future property owners shall be responsible for the maintenance, repair and replacement of all required screening and landscape materials." b. "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." c. "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." (2.13.4)	L1 NOTES # 19, 20, & 21	N/A

Site Plan Specifications – Required Exhibits and Data

<input checked="" type="checkbox"/>	Required Items for Submittal	Item Location (e.g. Page/line or Plan Sheet/Note #)	Waiver Requested
	1. Existing Conditions: (2.5.4.3A)		
<input checked="" type="checkbox"/>	a. Surveyed plan of site showing existing natural and built features;	C1	
<input checked="" type="checkbox"/>	b. Zoning boundaries;	C1	
<input checked="" type="checkbox"/>	c. Dimensional Regulations;	C1	
<input checked="" type="checkbox"/>	d. Wetland delineation, wetland function and value assessment;	C1	
<input checked="" type="checkbox"/>	e. SFHA, 100-year flood elevation line and BFE data.	N/A	
	2. Buildings and Structures: (2.5.4.3B)		
<input type="checkbox"/>	a. Plan view: Use, size, dimensions, footings, overhangs, 1st fl. elevation;		x
<input type="checkbox"/>	b. Elevations: Height, massing, placement, materials, lighting, façade treatments;		x
<input checked="" type="checkbox"/>	c. Total Floor Area;	C2	
<input type="checkbox"/>	d. Number of Usable Floors;		x
<input type="checkbox"/>	e. Gross floor area by floor and use.		x
	3. Access and Circulation: (2.5.4.3C)		
<input checked="" type="checkbox"/>	a. Location/width of access ways within site;	C2	
<input checked="" type="checkbox"/>	b. Location of curbing, right of ways, edge of pavement and sidewalks;	C2	
<input checked="" type="checkbox"/>	c. Location, type, size and design of traffic signing (pavement markings);	C2	
<input checked="" type="checkbox"/>	d. Names/layout of existing abutting streets;	C2	
<input checked="" type="checkbox"/>	e. Driveway curb cuts for abutting prop. and public roads;	C2	
<input checked="" type="checkbox"/>	f. If subdivision; Names of all roads, right of way lines and easements noted;	N/A	
<input checked="" type="checkbox"/>	g. AASHTO truck turning templates, description of minimum vehicle allowed being a WB-50 (unless otherwise approved by TAC).	T1-T2	
	4. Parking and Loading: (2.5.4.3D)		
<input checked="" type="checkbox"/>	a. Location of off street parking/loading areas, landscaped areas/buffers;	C2	
<input checked="" type="checkbox"/>	b. Parking Calculations (# required and the # provided).	C2	
	5. Water Infrastructure: (2.5.4.3E)		
<input checked="" type="checkbox"/>	a. Size, type and location of water mains, shut-offs, hydrants & Engineering data;	C2	
<input checked="" type="checkbox"/>	b. Location of wells and monitoring wells (include protective radii).	C1	
	6. Sewer Infrastructure: (2.5.4.3F)		
<input checked="" type="checkbox"/>	a. Size, type and location of sanitary sewage facilities & Engineering data.	S1	
	7. Utilities: (2.5.4.3G)		
<input checked="" type="checkbox"/>	a. The size, type and location of all above & below ground utilities;	C2	
<input checked="" type="checkbox"/>	b. Size type and location of generator pads, transformers and other fixtures.	C2	

Site Plan Specifications – Required Exhibits and Data

<input checked="" type="checkbox"/>	Required Items for Submittal	Item Location (e.g. Page/line or Plan Sheet/Note #)	Waiver Requested
<input checked="" type="checkbox"/>	8. Solid Waste Facilities: (2.5.4.3H)		
<input checked="" type="checkbox"/>	a. The size, type and location of solid waste facilities.	C2	
	9. Storm water Management: (2.5.4.3I)		
<input checked="" type="checkbox"/>	a. The location, elevation and layout of all storm-water drainage.	C3	
	10. Outdoor Lighting: (2.5.4.3J)		
<input checked="" type="checkbox"/>	a. Type and placement of all lighting (exterior of building, parking lot and any other areas of the site) and; b. photometric plan.	L2	
<input checked="" type="checkbox"/>	11. Indicate where dark sky friendly lighting measures have been implemented. (10.1)	L2	
	12. Landscaping: (2.5.4.3K)		
<input checked="" type="checkbox"/>	a. Identify all undisturbed area, existing vegetation and that which is to be retained;	L1	
<input checked="" type="checkbox"/>	b. Location of any irrigation system and water source.	TBD	
	13. Contours and Elevation: (2.5.4.3L)		
<input checked="" type="checkbox"/>	a. Existing/Proposed contours (2 foot minimum) and finished grade elevations.	C3	
	14. Open Space: (2.5.4.3M)		
<input checked="" type="checkbox"/>	a. Type, extent and location of all existing/proposed open space.	C2	
<input checked="" type="checkbox"/>	15. All easements, deed restrictions and non-public rights of ways. (2.5.4.3N)	C1	
<input checked="" type="checkbox"/>	16. Location of snow storage areas and/or off-site snow removal. (2.5.4.3O)	C2	
<input checked="" type="checkbox"/>	17. Character/Civic District (All following information shall be included): (2.5.4.3Q)	N/A	
	a. Applicable Building Height (10.5A21.20 & 10.5A43.30);		
	b. Applicable Special Requirements (10.5A21.30);		
	c. Proposed building form/type (10.5A43);		
	d. Proposed community space (10.5A46).		

Other Required Information

<input checked="" type="checkbox"/>	Required Items for Submittal	Item Location (e.g. Page/line or Plan Sheet/Note #)	Waiver Requested
<input checked="" type="checkbox"/>	Traffic Impact Study or Trip Generation Report, as required. <i>(Four (4) hardcopies of the full study/report and Six (6) summaries to be submitted with the Site Plan Application) (3.2.1-2)</i>	Provided by Steven Pernaw	
<input checked="" type="checkbox"/>	Indicate where Low Impact Development Design practices have been incorporated. (7.1)	DRAINAGE REPORT	
<input checked="" type="checkbox"/>	Indicate whether the proposed development is located in a wellhead protection or aquifer protection area. Such determination shall be approved by the Director of the Dept. of Public Works. (7.3.1)	NOT LOCATED IN EITHER	
<input checked="" type="checkbox"/>	Indicate where measures to minimize impervious surfaces have been implemented. (7.4.3)		
<input checked="" type="checkbox"/>	Calculation of the maximum effective impervious surface as a percentage of the site. (7.4.3.2)		
<input checked="" type="checkbox"/>	Stormwater Management and Erosion Control Plan. <i>(Four (4) hardcopies of the full plan/report and Six (6) summaries to be submitted with the Site Plan Application) (7.4.4.1)</i>		

Final Site Plan Approval Required Information

<input checked="" type="checkbox"/>	Required Items for Submittal	Item Location (e.g. Page/line or Plan Sheet/Note #)	Waiver Requested
<input checked="" type="checkbox"/>	All local approvals, permits, easements and licenses required, including but not limited to: <ul style="list-style-type: none"> a. Waivers; b. Driveway permits; c. Special exceptions; d. Variances granted; e. Easements; f. Licenses. (2.5.3.2A)		
<input checked="" type="checkbox"/>	Exhibits, data, reports or studies that may have been required as part of the approval process, including but not limited to: <ul style="list-style-type: none"> a. Calculations relating to stormwater runoff; b. Information on composition and quantity of water demand and wastewater generated; c. Information on air, water or land pollutants to be discharged, including standards, quantity, treatment and/or controls; d. Estimates of traffic generation and counts pre- and post-construction; e. Estimates of noise generation; f. A Stormwater Management and Erosion Control Plan; g. Endangered species and archaeological / historical studies; h. Wetland and water body (coastal and inland) delineations; i. Environmental impact studies. (2.5.3.2B)		

Final Site Plan Approval Required Information

<input checked="" type="checkbox"/>	Required Items for Submittal	Item Location (e.g. Page/line or Plan Sheet/Note #)	Waiver Requested
<input type="checkbox"/>	A document from each of the required private utility service providers indicating approval of the proposed site plan and indicating an ability to provide all required private utilities to the site. (2.5.3.2D)	PENDING	
<input checked="" type="checkbox"/>	A list of any required state and federal permit applications required for the project and the status of same. (2.5.3.2E)	C2 PERMITS PENDING	

Applicant's Signature: Joseph Coronati^{HR} Date: 12/29/2020

JONES & BEACH ENGINEERS INC.

85 Portsmouth Avenue, PO Box 219, Stratham, NH 03885
603.772.4746 - JonesandBeach.com

May 14, 2021

Portsmouth Planning Board
Attn: Dexter Legg
1 Junkins Avenue, Suite 3rd Floor
Portsmouth, NH 03801

**RE: Response Letter 2 – TAC Comments
375 Banfield Road, Portsmouth, NH
Tax Map 266, Lot 7
JBE Project No. 19190.2**

Dear Mr. Legg,

We are in receipt of comments from Jillian Harris dated March 1, 2021 and April 5, 2021. Review comments are listed below with our responses in bold.

- 1. The proposed parking configuration is not in compliance with the City's Zoning Ordinance. Per Section 10.1113.20 off-street parking cannot be located between a principal building and the street nor can it be located in the front yard setback. This application cannot proceed as presented without a variance.*

RESPONSE: We have modified the parking layout and moved the building to no longer require parking or an aisle way in the front of the building.
- 2. The stopping sight distance is met at the proposed driveway location, which means that a vehicle traveling on Banfield Road will have enough time and distance to be able to come to a complete stop without colliding with a truck exiting the site. However, this is not a desirable condition, having to require vehicles to come to a complete stop to allow for entering trucks. It would be preferable if the intersection sight distance could also be provided, which is over 675 feet. Intersection sight distance provides enough time and distance for approaching vehicles to slow to 70 percent of their travel speed when a truck is exiting the driveway.*

RESPONSE: See response from Steve Pernaw.
- 3. The driveway throat should be painted or a mountable surface used to delineate the large radius that is required for trucks, so that smaller vehicles do not use that area, as they should be approaching Banfield Road at a 90-degree angle.*

RESPONSE: The driveway throat has been painted to delineate the large radius that is required for trucks.

4. *Large trucks exiting the site will have to use the entire width of the driveway to do so. This will cause a blockage of the site driveway to any traffic attempting to enter the driveway at the same time.*

RESPONSE: There will have to be some coordination as trucks enter and cars exit, but this will be a very rare. If we can widen the driveway, then we could reduce this situation, but this would result in additional buffer impact.

5. *According to the turning paths shown on sheet T1, large trucks turning right from the site driveway will not be able to start their turn at the position indicated on Sheet T2. The right turn path should be replotted to show the truck following the same path as on Sheet T1.*

RESPONSE: The right turn path has been replotted to show the truck following the same path as on Sheet T1.

6. *Adding 50 truck trips a day will approximately double the amount of truck traffic currently on Banfield Rd. The current plans for the scheduled reconstruction of the roadway by the City will need to be modified at the expense of the applicant in order to accommodate this extra truck traffic. Wider shoulders, the road bed and the pavement thickness will all have to be engineered. The applicant will need to hire a third-party engineer of the City's choosing to start the design process. The applicant will be responsible for any changes necessary in the reconstruction of the road that are over and above what the City had already planned including permitting for wider shoulders if necessary.*

RESPONSE: See response from Steve Pernaw.

7. *The area that is polluted with fill should be clearly delineated on the existing features plan. Once the site layout is finalized, a third-party engineer experienced in regulated soils should be required to review the drainage design to ensure that no additional measures are necessary to "clean up" the site to the degree necessary to ensure that ground water is not leaching pollutants into the adjacent wetland any longer.*

RESPONSE: See attached map from Wilcox and Barton delineating fill areas.

8. *Please show truck turning paths for rear corner in driveway lot. It is not clear how trucks will turn around on site.*

RESPONSE: Truck turning paths for rear corner have been added to the plans.

9. *The previous design had wetland buffer impacts beyond just the project entrance. Are there additional wetland impacts associated with drainage or septic design for this project?*

RESPONSE: All wetland buffer impacts are calculated on Sheet C3 of the revised plan set.

10. *Please add the limits of the buried landfill as previously requested.*

RESPONSE: The limits of the buried landfill have been added to the plans.

Included with this response letter are the following:

1. Two (2) Revised Full Size Plan Set Folded.
2. One (1) Revised Half Size Plan Set Folded.
3. Four (4) Revised Drainage Analysis
4. Stephen G. Pernaw & Company, Inc. Traffic Memorandum
5. Wilcox & Barton Limits of Fill Exhibit Plan

Thank you very much for your time.

Very truly yours,
JONES & BEACH ENGINEERS, INC.



Joseph Coronati
Vice President

cc: Rob Graham, Banfield Realty, LLC (letter and plans via email)
Jim Gove, Gove Environmental Services (letter and plans via email)
Bill Wilcox (letter and plans via email)
Peter Britz, City of Portsmouth (letter and plans via email)

MEMORANDUM

Ref: 2058A

To: Robert Graham
Banfield Realty, LLC

From: Stephen G. Pernaw, P.E., PTOE

Subject: Proposed Industrial Warehouse Building - Response to Comments
Portsmouth, New Hampshire

Date: May 17, 2021

On December 28, 2020 our office published a “trip generation analysis” memorandum for the proposed industrial warehouse building that will be constructed at 375 Banfield Road in Portsmouth, New Hampshire. We are now in receipt of two City comments from a recent TAC meeting that we were asked to respond. We offer the following responses:

TAC Comment 2: *“The stopping sight distance is met at the proposed driveway location, which means that a vehicle traveling on Banfield Road will have enough time and distance to be able to come to a complete stop without colliding with a truck exiting the site. However, this is not a desirable condition, having to require vehicles to come to a complete stop to allow for entering trucks. It would be preferable if the intersection sight distance could also be provided, which is over 675 feet. Intersection sight distance provides enough time and distance for approaching vehicles to slow to 70 percent of their travel speed when a truck is exiting the driveway.”*

SGP Response: Sheet H1 indicates that there is over 500+ feet of Intersection Sight Distance (ISD) available for the left-turn departure movement from the proposed site driveway. This exceeds the calculated distance required of 441.0-feet for passenger cars. This sheet also indicates that there is at least 347-feet of ISD for the right-turn departure movement (limited by extent of field survey), and that additional sight distance is available beyond the survey limit. This compares well with the calculated distance of 382.2-feet for passenger cars.

Providing sufficient stopping sight distance is essential for safety reasons; whereas the need for a major-road vehicle to slow to accommodate the occasional departure by a minor-road vehicle is an “everyday” occurrence at most intersections that is more related to driver convenience than safety. For this reason, providing ISD it is considered preferable, but not essential. Given the available sight distances at the proposed driveway, we do not expect that any vehicles on Banfield Road will need to come to a complete stop on a regular basis due to the proposed site driveway.

TAC Comment 6: *“Adding 50 truck trips a day will approximately double the amount of truck traffic currently on Banfield Rd. The current plans for the scheduled reconstruction of the roadway by the City will need to be modified at the expense of the applicant in order to accommodate this extra truck traffic. Wider shoulders, the road bed and the pavement thickness will all have to be engineered. The applicant will need to hire a third-party engineer of the City’s choosing to start the design process. The applicant will be responsible for any changes necessary in the reconstruction of the road that are over and above what the City had already planned including permitting for wider shoulders if necessary.”*

SGP Response: This is not correct for two reasons. First, the 50-truck estimate appears to come from Table 1B in our December memorandum. That volume represents the higher of the two truck estimates given (for warehousing; not manufacturing), and it pertains to the daily number of trucks using the site driveway. It is reasonable to expect that these trucks will travel to/from both points east and west on Banfield Road. If the truck trips were distributed equally by direction, then the net increase on Banfield Road would be +25 truck trips per day. It should also be noted that the previous businesses at this industrial site likely generated truck trips as well. This means that the net impact on truck trips on Banfield Road due to the proposed building is less than is indicated in Table 1B in our December memorandum.

Second, the City seems to infer that Banfield Road currently carries only 50 trucks per day (i.e., doubling of the truck volume). The basis for that estimate has not been provided. For illustration purposes, our office previously conducted traffic counts on Banfield Road at the Saint Patrick Academy driveway on two separate weekdays in November 2019. During the six-hour count period (7-9 AM, 2-6 PM), 38 trucks (Wednesday 6 hours) and 42 trucks (Thursday 6 hours) traveled on Banfield Road, east of the Academy. Another recent traffic count conducted by our office on Peverly Hill Road (south of NH33) in September 2020 revealed that approximately 45% of the daily truck volume occurred during those six specific hours. From this it is reasonable to conclude that Banfield Road carries approximately 90 trucks per day, and that truck traffic from the subject site increases that by +25 trucks per day (using no allowance for previous businesses on the site). Under post-development conditions, trucks from the subject site will account for approximately 22% of the total truck volume ($25/[90+25]$) on Banfield Road.

Attachments

Stephen G. Pernaw & Company, Inc.

Attachment 1

P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1978A
Town/State: Portsmouth, NH

File Name : 1978A_INT_A_Wed_AM_&_PM 11-13-2019
Site Code : 1978A
Start Date : 11/13/2019
Page No : 1

Groups Printed- CARS - TRUCKS

Start Time	Banfield Road From East				Existing Site Driveway From South				Banfield Road From West				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
07:00 AM	21	5	0	26	1	1	0	2	3	28	0	31	59
07:15 AM	38	3	0	41	3	2	0	5	4	53	0	57	103
07:30 AM	38	15	0	53	6	2	0	8	7	64	0	71	132
07:45 AM	50	37	0	87	38	24	0	62	38	90	0	128	277
Total	147	60	0	207	48	29	0	77	52	235	0	287	571
08:00 AM	44	11	0	55	22	8	0	30	5	80	0	85	170
08:15 AM	49	2	0	51	2	2	0	4	2	56	0	58	113
08:30 AM	49	0	0	49	2	1	0	3	0	50	0	50	102
08:45 AM	38	1	0	39	0	2	0	2	2	72	0	74	115
Total	180	14	0	194	26	13	0	39	9	258	0	267	500
02:00 PM	56	1	0	57	1	0	0	1	0	45	0	45	103
02:15 PM	45	4	0	49	0	0	0	0	3	59	0	62	111
02:30 PM	54	15	0	59	16	8	0	24	13	50	0	63	156
02:45 PM	47	13	0	60	22	8	0	30	11	43	0	54	144
Total	202	33	0	235	39	16	0	55	27	197	0	224	514
03:00 PM	54	5	0	59	9	3	0	12	0	45	0	45	116
03:15 PM	67	3	0	70	1	2	0	3	2	68	0	70	143
03:30 PM	88	4	0	92	5	0	0	5	0	56	0	56	153
03:45 PM	71	11	0	82	7	3	0	10	6	54	0	60	152
Total	280	23	0	303	22	8	0	30	8	223	0	231	564
04:00 PM	81	7	0	88	15	3	0	18	2	57	0	59	165
04:15 PM	75	1	0	76	6	6	0	12	0	63	0	63	151
04:30 PM	68	2	0	70	1	3	0	4	1	84	0	85	159
04:45 PM	73	0	0	73	4	1	0	5	1	59	0	60	138
Total	297	10	0	307	26	13	0	39	4	263	0	267	613
05:00 PM	81	2	0	83	1	2	0	3	0	81	0	81	167
05:15 PM	93	0	0	93	2	3	0	5	2	60	0	62	160
05:30 PM	62	0	0	62	1	0	0	1	1	47	0	48	111
05:45 PM	47	0	0	47	2	1	0	3	1	62	0	63	113
Total	283	2	0	285	6	6	0	12	4	250	0	254	551
Grand Total	1389	142	0	1531	167	85	0	252	104	1426	0	1530	3313
Apprch %	90.7	9.3	0		66.3	33.7	0		6.8	93.2	0		
Total %	41.9	4.3	0	46.2	5	2.6	0	7.6	3.1	43	0	46.2	
CARS	1367	141	0	1508	166	85	0	251	102	1412	0	1514	3273
% CARS	98.4	99.3	0	98.5	99.4	100	0	99.6	98.1	99	0	99	98.8
TRUCKS	22	1	0	23	1	0	0	1	2	14	0	16	40
% TRUCKS	1.6	0.7	0	1.5	0.6	0	0	0.4	1.9	1	0	1	1.2

Stephen G. Pernaw & Company, Inc.

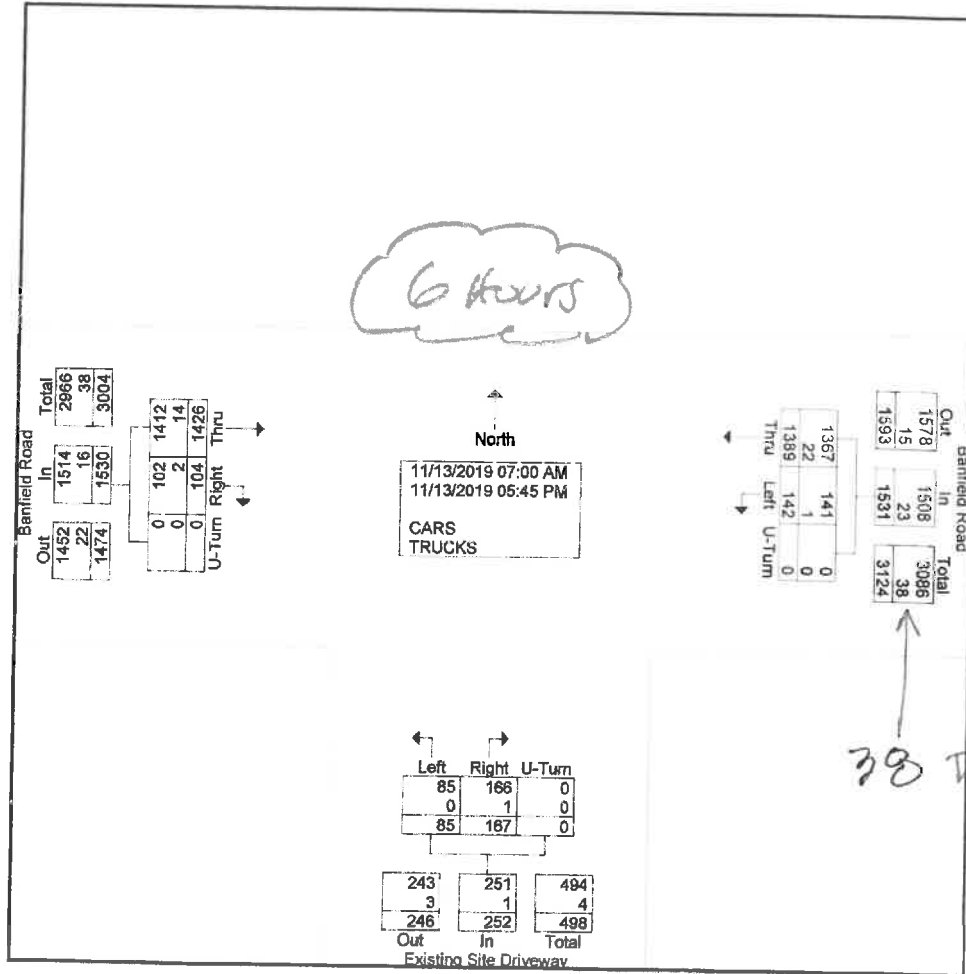
P.O. Box 1721

Concord, New Hampshire 03302

Attachment 2

Weather: Clear
 Collected By: MV
 Job Number: 1978A
 Town/State: Portsmouth, NH

File Name : 1978A_INT_A_Wed_AM_&_PM 11-13-2019
 Site Code : 1978A
 Start Date : 11/13/2019
 Page No : 2



Stephen G. Pernaw & Company, Inc.

P.O. Box 1721
Concord, New Hampshire 03302

File Name : 1978A_INT_A_Thurs_AM_&_PM 11-14-2019
Site Code : 1978A
Start Date : 11/14/2019
Page No : 1

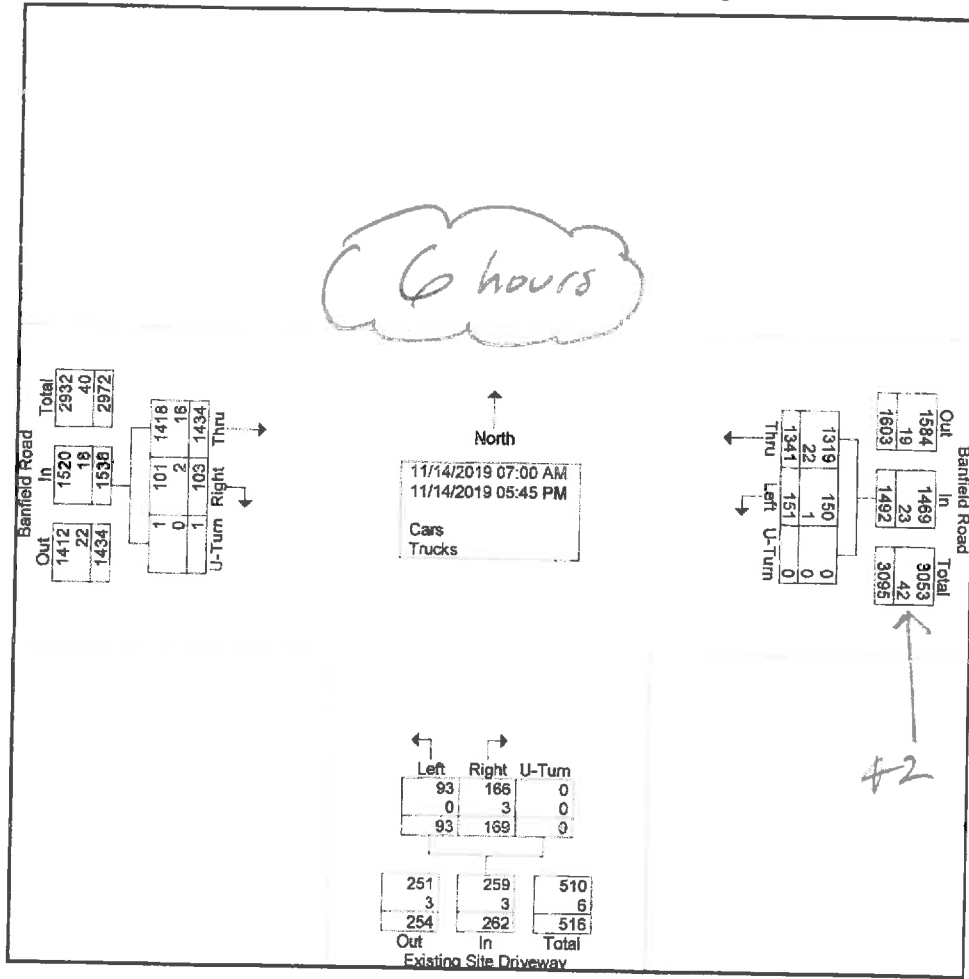
Groups Printed- Cars - Trucks

Start Time	Banfield Road From East				Existing Site Driveway From South				Banfield Road From West				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
07:00 AM	27	2	0	29	0	1	0	1	2	25	0	27	57
07:15 AM	33	4	0	37	1	1	0	2	3	56	0	59	98
07:30 AM	34	13	0	47	4	6	0	10	11	56	0	67	124
07:45 AM	32	45	0	77	53	22	0	75	29	103	0	132	284
Total	126	64	0	190	58	30	0	88	45	240	0	285	563
08:00 AM	40	14	0	54	18	9	0	27	7	68	0	75	156
08:15 AM	43	2	0	45	1	3	0	4	2	55	0	57	106
08:30 AM	48	1	0	49	1	1	0	2	1	65	0	66	117
08:45 AM	46	1	0	47	3	1	0	4	0	58	0	58	109
Total	177	18	0	195	23	14	0	37	10	246	0	256	488
02:00 PM	50	1	0	51	1	0	0	1	0	57	0	57	109
02:15 PM	65	9	0	74	2	0	0	2	3	50	0	53	129
02:30 PM	51	16	0	67	15	8	0	23	10	58	0	68	158
02:45 PM	48	19	0	67	25	22	0	47	27	46	0	73	187
Total	214	45	0	259	43	30	0	73	40	211	0	251	583
03:00 PM	67	4	0	71	10	4	0	14	0	54	1	55	140
03:15 PM	74	1	0	75	1	0	0	1	0	67	0	67	143
03:30 PM	98	2	0	100	8	2	0	10	1	54	0	55	165
03:45 PM	68	1	0	69	5	1	0	6	1	56	0	57	132
Total	307	8	0	315	24	7	0	31	2	231	1	234	580
04:00 PM	71	5	0	76	3	4	0	7	2	58	0	60	143
04:15 PM	72	2	0	74	7	2	0	9	2	81	0	83	146
04:30 PM	66	4	0	70	5	1	0	6	1	70	0	71	147
04:45 PM	67	2	0	69	2	0	0	2	0	68	0	68	139
Total	276	13	0	289	17	7	0	24	5	257	0	262	575
05:00 PM	77	0	0	77	0	2	0	2	1	77	0	78	157
05:15 PM	67	3	0	70	4	3	0	7	0	63	0	63	140
05:30 PM	56	0	0	56	0	0	0	0	0	55	0	55	111
05:45 PM	41	0	0	41	0	0	0	0	0	54	0	54	95
Total	241	3	0	244	4	5	0	9	1	249	0	250	503
Grand Total	1341	151	0	1492	169	93	0	262	103	1434	1	1538	3292
Apprch %	89.9	10.1	0		64.5	35.5	0		6.7	93.2	0.1		
Total %	40.7	4.6	0	45.3	5.1	2.8	0	8	3.1	43.6	0	46.7	
Cars	1319	150	0	1469	166	93	0	259	101	1418	1	1520	3248
% Cars	98.4	99.3	0	98.5	98.2	100	0	98.9	98.1	98.9	100	98.8	98.7
Trucks	22	1	0	23	3	0	0	3	2	16	0	18	44
% Trucks	1.6	0.7	0	1.5	1.8	0	0	1.1	1.9	1.1	0	1.2	1.3

Stephen G. Pernaw & Company, Inc.

P.O. Box 1721
Concord, New Hampshire 03302

File Name : 1978A_INT_A_Thurs_AM_ & PM 11-14-2019
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Page No : 2



Automatic Traffic Recorder Count - Peverly Hill Road, Portsmouth, NH (South of NH Route 33)
Wednesday, September 30, 2020

Period Beginning	CARS		TRUCKS		TOTAL		TOT	Period Beginning	CARS		TRUCKS		TOTAL		TOT
	SB	NB	SB	NB	SB	NB			SB	NB	SB	NB	SB	NB	
12:00 AM	6	3	0	0	6	3	9	12:00 PM	98	80	10	10	108	90	198
12:15 AM	5	2	0	0	5	2	7	12:15 PM	88	86	3	2	91	88	179
12:30 AM	4	1	0	0	4	1	5	12:30 PM	92	81	8	2	100	83	183
12:45 AM	2	2	0	0	2	2	4	12:45 PM	88	66	2	3	90	69	159
1:00 AM	0	1	0	0	0	1	1	1:00 PM	75	81	4	2	79	83	162
1:15 AM	2	0	0	0	2	0	2	1:15 PM	79	74	4	3	83	77	160
1:30 AM	1	1	0	0	1	1	2	1:30 PM	79	76	8	6	87	82	169
1:45 AM	1	1	0	1	1	2	3	1:45 PM	100	80	3	8	103	88	191
2:00 AM	1	0	1	0	2	0	2	2:00 PM	94	68	8	6	102	74	176
2:15 AM	1	1	0	0	1	1	2	2:15 PM	92	79	6	6	98	85	183
2:30 AM	1	0	0	0	1	0	1	2:30 PM	107	68	5	5	112	73	185
2:45 AM	1	1	0	0	1	1	2	2:45 PM	110	102	3	7	113	109	222
3:00 AM	1	2	0	1	1	3	4	3:00 PM	113	90	7	2	120	92	212
3:15 AM	0	0	0	0	0	0	0	3:15 PM	89	81	3	5	92	86	178
3:30 AM	0	0	0	1	0	1	1	3:30 PM	91	91	8	6	99	97	196
3:45 AM	3	0	0	0	3	0	3	3:45 PM	94	68	3	2	97	70	167
4:00 AM	1	1	0	0	1	1	2	4:00 PM	93	110	0	3	93	113	206
4:15 AM	1	2	0	0	1	2	3	4:15 PM	99	111	2	1	101	112	213
4:30 AM	1	0	0	0	1	0	1	4:30 PM	86	92	5	0	91	92	183
4:45 AM	4	4	1	0	5	4	9	4:45 PM	110	82	4	5	114	87	201
5:00 AM	6	2	1	0	7	2	9	5:00 PM	89	100	2	0	91	100	191
5:15 AM	17	4	0	0	17	4	21	5:15 PM	100	71	2	0	102	71	173
5:30 AM	9	10	1	0	10	10	20	5:30 PM	79	76	1	1	80	77	157
5:45 AM	20	3	1	1	21	4	25	5:45 PM	76	48	0	0	76	48	124
6:00 AM	13	13	3	1	16	14	30	6:00 PM	72	55	0	0	72	55	127
6:15 AM	17	7	0	0	17	7	24	6:15 PM	60	40	0	0	60	40	100
6:30 AM	26	11	3	2	29	13	42	6:30 PM	49	40	0	1	49	41	90
6:45 AM	63	22	4	1	67	23	90	6:45 PM	58	32	0	0	58	32	90
7:00 AM	50	27	5	0	55	27	82	7:00 PM	31	43	0	0	31	43	74
7:15 AM	76	33	4	3	80	36	116	7:15 PM	33	25	0	0	33	25	58
7:30 AM	91	41	2	7	93	48	141	7:30 PM	29	21	0	0	29	21	50
7:45 AM	150	73	8	6	158	79	237	7:45 PM	20	19	0	1	20	20	40
8:00 AM	76	72	4	6	80	78	158	8:00 PM	21	23	0	0	21	23	44
8:15 AM	69	61	4	3	73	64	137	8:15 PM	16	19	0	0	16	19	35
8:30 AM	71	36	2	7	73	43	116	8:30 PM	17	23	0	0	17	23	40
8:45 AM	91	72	3	7	94	79	173	8:45 PM	20	13	0	0	20	13	33
9:00 AM	71	54	1	2	72	56	128	9:00 PM	15	9	1	0	16	9	25
9:15 AM	68	43	7	2	75	45	120	9:15 PM	11	6	0	0	11	6	17
9:30 AM	65	50	4	7	69	57	126	9:30 PM	6	9	0	0	6	9	15
9:45 AM	86	45	1	2	87	47	134	9:45 PM	12	11	2	0	14	11	25
10:00 AM	80	44	7	0	87	44	131	10:00 PM	3	11	0	0	3	11	14
10:15 AM	79	60	8	6	87	66	153	10:15 PM	5	7	0	0	5	7	12
10:30 AM	64	51	2	1	66	52	118	10:30 PM	1	1	0	0	1	1	2
10:45 AM	85	53	7	3	92	56	148	10:45 PM	2	7	0	0	2	7	9
11:00 AM	79	51	7	3	86	54	140	11:00 PM	5	5	0	0	5	5	10
11:15 AM	77	60	7	4	84	64	148	11:15 PM	2	5	0	0	2	5	7
11:30 AM	81	61	6	9	87	70	157	11:30 PM	9	4	0	0	9	4	13
11:45 AM	93	71	7	9	100	80	180	11:45 PM	2	7	0	0	2	7	9
	1809	1152	111	95					2720	2396	104	87			
7:30 - 8:30 AM Peak Hour								404	269	673					
								4:00 - 5:00 PM Peak Hour				399	404	803	

$\frac{74+108}{397} = 45\%$

DAILY TRAFFIC VOLUME = 8,474 vehicles per day
 DAILY TRUCK VOLUME = 397 trucks per day

PLAN REFERENCES:

1. "PLAN OF LAND IN PORTSMOUTH, N.H. OWNED BY PERRYVILLE CONSTRUCTION AND JOHN WAPOLA COMPANY, INC." DATED DECEMBER 15, 1978. PREPARED BY FRANCIS BARRETT, A.L.A. 5117.
2. "SUBDIVISION PLAN FOR JOHN WAPOLA COMPANY, INC. 200' WIDE ROAD 7 BANFIELD ROAD, PORTSMOUTH, N.H." DATED OCTOBER 11, 1988. A.L.A.C. 20132.
3. "LOT LINE ADJUSTMENT, JOHN WAPOLA COMPANY, INC. AND CITY OF PORTSMOUTH" DATED NOVEMBER 9, 1995. A.L.A.C. 20005.
4. "LOT LINE REVISION PLAN, DANIEL DRIVE, BANFIELD, A PORTSMOUTH ROAD, PORTSMOUTH, N.H." DATED DECEMBER 25, 2015. COMPILED BY DAVID COLLIER AND ASSOCIATES, PORTSMOUTH, N.H.
5. "BOUNDARY PLAN, TAX MAP REG. LOT A" DATED JUNE 1997. PREPARED BY LITTLE OZER SURVEY COMPANY, ROLLA, MISSOURI.
6. "PLAN OF LAND FOR 200' WIDE ROAD 7 BANFIELD ROAD, BANFIELD, PORTSMOUTH, N.H." DATED MAY 5, 2008. PREPARED BY FRANK'S COMPANY, INC. FRANK, ILLINOIS.

SOIL NOTES:

THIS MAP PRODUCT IS FROM THE TECHNICAL SERVICES OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR INFORMATIONAL REQUIREMENTS OF THE 24 HOUR ALTERATION OF TRAFFIC SIGNALS. IT WAS PRODUCED BY A PROFESSIONAL SOIL SCIENTIST, AND IS NOT A PRODUCT OF THE USDA NATIONAL RESOURCE CONSERVATION SERVICE. THERE IS A REPORT THAT ACCOMPANIES THIS MAP.

THE LITE BROWNS OGD, BROWNIE TILLS SOILS WAS DETERMINED BY 10-10-2005 AND 2008 SURVEY AREA IS LOCATED ON BANFIELD ROAD, PORTSMOUTH, N.H.

USDA NRC'S COUNTY 574 THE NEW HAMPSHIRE STATE-NEW HAMPSHIRE SOILS LEGEND, URBAN MICE SURVEY, N.H. ISSUE 9 10, JANUARY 2011, THE NUMBER LEGEND WAS ADDED TO IDENTIFY THE CORRECT SOIL COMPONENTS OF THE SAMPLES.

HYDROLOGIC SOIL GROUP FROM GREAT VALLEY FOR NEW HAMPSHIRE SOILS, SECTION 6 OF SOIL SURVEY OF NEW HAMPSHIRE, SPECIAL PUBLICATION NO. 3, SEPTEMBER, 2009

SOIL ELEM.	SOIL MAP NAME	SOIL ELEM.	HYDROLOGIC SOIL GRP.
30	CLAYSTONE SL.	848	B
100	UNSATURATED, DRY SUBSTRATE	308	B
102	" " " " " "	303	B
118	UNSATURATED MUD	843	B
400	UNSATURATED GRAVELLY	101	A
815	ROCKY SILT	111	A
608	DECOMPOSED PG.	840	B
100	URBAN LANE - MUDS CENTER	760/40	B/A
300	RESIDUAL SILT, SANDILLY	892	B

REL = FINE SANDY LOAM SILT = GRAVELLY SANDY LOAM

SLOPE PHASE
0-2% 0 10-25% 0
2-10% 0 25-50% 0

GRAPHIC SCALE



1 INCH = 120 FEET
1:240 = 60 FEET

NOTES:

1. THE LIMITS OF THE PLAN IS TO SHOW THE EXISTING INDUSTRIAL LOT BOUNDARY.
2. THE EXISTING INDUSTRIAL LOT BOUNDARY IS 100' WIDE AND 200' DEEP. THE EXISTING BUILDING FOOTPRINT IS APPROXIMATELY 100' BY 100'.
3. THE UTILITY LOCATIONS SHOWN HEREIN WERE DETERMINED BY VISUAL INSPECTION AND SHOULD BE CONSIDERED APPROXIMATE IN LOCATION AND DEPTH. THE USER SHOULD VERIFY THE LOCATION AND DEPTH OF UTILITIES PRIOR TO ANY CONSTRUCTION.
4. THE SUBJECT PARCEL IS NOT LOCATED WITHIN A FLOOD HAZARD ZONE AS SHOWN ON THE FLOOD HAZARD ZONE MAP OF PORTSMOUTH, N.H. DATED 11/15/10.
5. BASES OF BEARING: HORIZONTAL = PLACES IN CAPITAL = MAGNETIC.
6. SURVEY DATA WERE OBTAINED FROM RECORD DRAWINGS AND FIELD SURVEY.
7. ALL MONUMENTS AND MARKERS REFER TO THE 1983 ADJUSTED MERIDIAN.
8. THE TAX MAP AND LOT NUMBERS ARE BASED ON THE 2008 TAX MAP.
9. RESEARCH WAS PERFORMED AT THE OFFICE OF THE COUNTY REGISTER OF DEEDS.
10. THIS SURVEY IS NOT A GUARANTEE TO THE ACCURACY OF THE INFORMATION SHOWN HEREIN. THE USER SHOULD VERIFY THE INFORMATION SHOWN HEREIN PRIOR TO ANY CONSTRUCTION.
11. ANY USE OF THIS PLAN AND OR INFORMATION HEREIN IS AT THE USER'S RISK. THE USER SHOULD VERIFY THE INFORMATION SHOWN HEREIN PRIOR TO ANY CONSTRUCTION.
12. THE LIMITS OF JURISDICTION OF THIS SURVEY ARE LIMITED TO THE AREA SHOWN ON THE PLAN. THE USER SHOULD VERIFY THE LOCATION AND DEPTH OF UTILITIES PRIOR TO ANY CONSTRUCTION.
13. THE LIMITS OF JURISDICTION OF THIS SURVEY ARE LIMITED TO THE AREA SHOWN ON THE PLAN. THE USER SHOULD VERIFY THE LOCATION AND DEPTH OF UTILITIES PRIOR TO ANY CONSTRUCTION.
14. SURVEY BEARING IS 200' BY 100' AND ARE NOT TO BE USED TO LOCATE THE PARCELS SHOWN ON THE PLAN.
15. 35 FOOT WIDE RIGHT-OF-WAY IS SHOWN IN THE PLAN AND IS BASED ON THE 2008 TAX MAP.

CERTIFICATION:

I CERTIFY THAT THE PLAN WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT I AM A LICENSED PROFESSIONAL SURVEYOR IN THE STATE OF NEW HAMPSHIRE AND THAT I AM A MEMBER IN GOOD STANDING OF THE NATIONAL BOARD OF SURVEYING AND MAPPING. I AM NOT PROVIDING THIS SERVICE AS AN EMPLOYEE OF A CORPORATION, FIRM, OR OTHER ENTITY AND I AM NOT PROVIDING THIS SERVICE AS AN EMPLOYEE OF A CORPORATION, FIRM, OR OTHER ENTITY.

I CERTIFY THAT THE SURVEY PLAN IS NOT A VIOLATION OF ANY STATE OR FEDERAL STATUTE, RULE, OR REGULATION AND THAT I AM NOT PROVIDING THIS SERVICE AS AN EMPLOYEE OF A CORPORATION, FIRM, OR OTHER ENTITY.

DAVID M. COLLIER, L.L.S. 892
ON BEHALF OF JONES & BEACH ENGINEERS, INC.

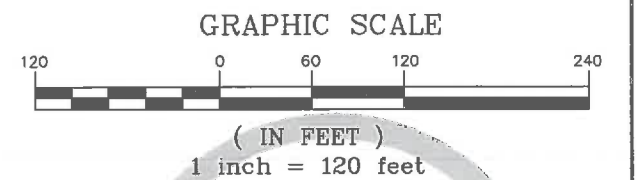
Plan Name: EXISTING CONDITIONS PLAN
Project: INDUSTRIAL WAREHOUSE
Owner of Record: BANFIELD REALTY LLC
304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

LEGEND

- APPROXIMATE SUBJECT PROPERTY BOUNDARY
- APPROXIMATE ABUTTING PROPERTY LINES
- BOREHOLE OR TEST PIT OBSERVATION (2020)
- OBSERVATION WITH MANMADE DEBRIS IN SOIL PROFILE (2020)
- ⊗ SOIL BORING
- ▨ UPLAND FILL AREA (RANSOM 2008). FILL THICKNESS UP TO 4 FEET.
- ▩ LOWLAND FILL AREA (RANSOM 2008). FILL THICKNESS UP TO 6.5 FEET.

NOTES

1. DATA SUPERIMPOSED ON EXISTING CONDITIONS PLAN, SHEET C-1 DATED 11/3/20, REVISED 1/18/21, BY JONES & BEACH ENGINEERS, INC.



Wilcox & Barton INC.
CIVIL - ENVIRONMENTAL - GEOTECHNICAL

LIMITS OF FILL

DATE	SCALE	FILE
April 16, 2020	GRAPHIC	Master Plan
APPROVED BY	DRAWN BY	REVISED
WRW	CMH	January 27, 2021
CLIENT	JOB NUMBER	
Banfield Realty, LLC	BANF0004	
LOCATION	DRAWING NUMBER	
375 Banfield Road Tax Map 266, Lot 7 Portsmouth, New Hampshire		

MAP 266 LOT 84
TAX MAP FOR BANFIELD REALTY
100 CAMPUS DRIVE, SUITE 1
PORTSMOUTH, N.H. 03801
ON 10/18/2020



REV.	DATE	REVISION	BY
7	1/18/21	REVISED PER CONSERVATION COMMISSION COMMENTS	DJM
6	12/30/20	ISSUED TO PLANNING BOARD	DJM
5	11/17/20	REVISED PROFILE	DJM
4	11/16/20	ADDED RIGHT DISTANCE PROFILE	DJM
3	11/16/20	ISSUED TO TECHNICAL ADVISORY COMMITTEE	DJM
REV.	DATE	REVISION	BY

REV.	DATE	REVISION	BY
7	1/18/21	REVISED PER CONSERVATION COMMISSION COMMENTS	DJM
6	12/30/20	ISSUED TO PLANNING BOARD	DJM
5	11/17/20	REVISED PROFILE	DJM
4	11/16/20	ADDED RIGHT DISTANCE PROFILE	DJM
3	11/16/20	ISSUED TO TECHNICAL ADVISORY COMMITTEE	DJM
REV.	DATE	REVISION	BY

J/B Jones & Beach Engineers, Inc.
Civil Engineering Services
88 Portsmouth Ave.
PO Box 819
Portsmouth, NH 03804
603-772-3759
FAX: 603-778-2257
E-MAIL: J.BES@JONESANDBEACH.COM

Plan Name: EXISTING CONDITIONS PLAN
Project: INDUSTRIAL WAREHOUSE
Owner of Record: BANFIELD REALTY LLC
304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

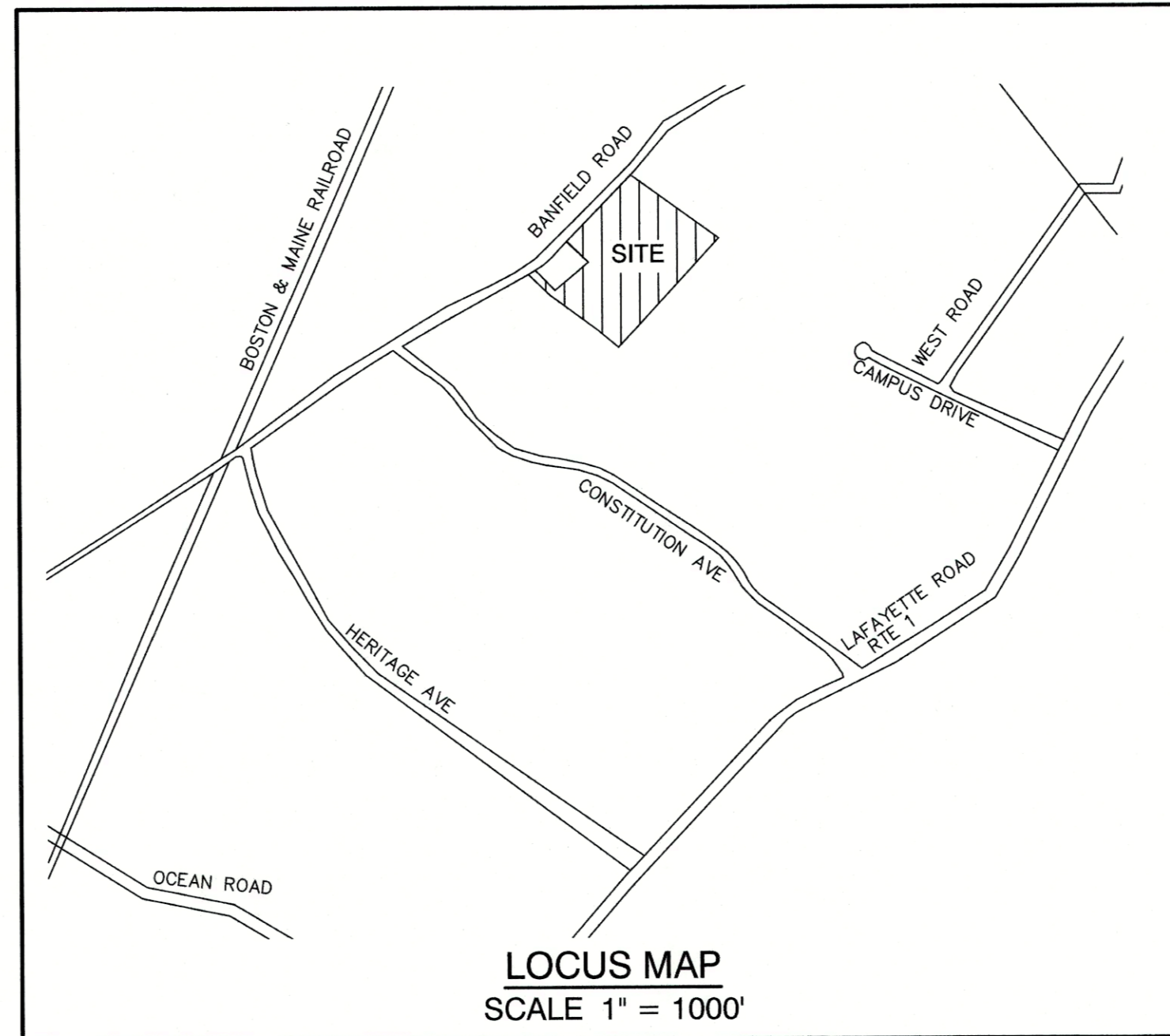
COMMERCIAL SITE PLAN "INDUSTRIAL WAREHOUSE"

TAX MAP 266, LOT 7

375 BANFIELD ROAD, PORTSMOUTH, NH

GENERAL LEGEND

EXISTING	PROPOSED	DESCRIPTION
---	---	PROPERTY LINES
---	---	SETBACK LINES
---	---	CENTERLINE
---	---	FRESHWATER WETLANDS LINE
---	---	TIDAL WETLANDS LINE
---	---	STREAM CHANNEL
---	---	TREE LINE
---	---	STONEWALL
---	---	BARBED WIRE
---	---	FENCE
---	---	STOCKADE FENCE
---	---	SOIL BOUNDARY
---	---	AQUIFER PROTECTION LINE
---	---	FLOOD PLAIN LINE
---	---	ZONELINE
---	---	EASEMENT
---	---	MAJOR CONTOUR
---	---	MINOR CONTOUR
---	---	EDGE OF PAVEMENT
---	---	VERTICAL GRANITE CURB
---	---	SLOPE GRANITE CURB
---	---	CAPE COD BERM
---	---	POURED CONCRETE CURB
---	---	SILT FENCE
---	---	DRAINAGE LINE
---	---	SEWER LINE
---	---	SEWER FORCE MAIN
---	---	GAS LINE
---	---	WATER LINE
---	---	WATER SERVICE
---	---	OVERHEAD ELECTRIC
---	---	UNDERGROUND ELECTRIC
---	---	GUARDRAIL
---	---	UNDERDRAIN
---	---	FIRE PROTECTION LINE
---	---	THRUST BLOCK
---	---	IRON PIPE/IRON ROD
---	---	DRILL HOLE
---	---	IRON ROD/DRILL HOLE
---	---	STONE/GRANITE BOUND
---	---	SPOT GRADE
---	---	PAVEMENT SPOT GRADE
---	---	CURB SPOT GRADE
---	---	BENCHMARK (TBM)
---	---	DOUBLE POST SIGN
---	---	SINGLE POST SIGN
---	---	WELL
---	---	TEST PIT
---	---	FAILED TEST PIT
---	---	MONITORING WELL
---	---	PERC TEST
---	---	PHOTO LOCATION
---	---	TREES AND BUSHES
---	---	UTILITY POLE
---	---	LIGHT POLES
---	---	DRAIN MANHOLE
---	---	SEWER MANHOLE
---	---	HYDRANT
---	---	WATER GATE
---	---	WATER SHUT OFF
---	---	REDUCER
---	---	SINGLE GRATE CATCH BASIN
---	---	DOUBLE GRATE CATCH BASIN
---	---	TRANSFORMER
---	---	CULVERT W/MINGWALLS
---	---	CULVERT W/FLARED END SECTION
---	---	CULVERT W/STRAIGHT HEADWALL
---	---	STONE CHECK DAM
---	---	DRAINAGE FLOW DIRECTION
---	---	4K SEPTIC AREA
---	---	WETLAND IMPACT
---	---	VEGETATED FILTER STRIP
---	---	RIPRAP
---	---	OPEN WATER
---	---	FRESHWATER WETLANDS
---	---	TIDAL WETLANDS
---	---	STABILIZED CONSTRUCTION ENTRANCE
---	---	CONCRETE
---	---	GRAVEL
---	---	SNOW STORAGE
---	---	RETAINING WALL



SHEET INDEX

CS	COVER SHEET
C1	EXISTING CONDITIONS PLAN
DM1	DEMOLITION PLAN
C2	SITE PLAN
C3	GRADING AND DRAINAGE PLAN
C4	UTILITY PLAN
L1	LANDSCAPE PLAN
L2	LIGHTING PLAN
S1	EFFLUENT DISPOSAL DESIGN
D1-D7	DETAIL SHEETS
E1	EROSION AND SEDIMENT CONTROL DETAILS
H1-H2	HIGHWAY ACCESS PLAN
T1-T4	TRUCK TURNING PLAN

CIVIL ENGINEER / SURVEYOR
JONES & BEACH ENGINEERS, INC.
 85 PORTSMOUTH AVENUE
 PO BOX 219
 STRATHAM, NH 03885
 (603) 772-4746
 CONTACT: JOSEPH CORONATI
 JCORONATI@JONESANDBEACH.COM

LANDSCAPE DESIGNER
LM LAND DESIGN
 11 SOUTH ROAD
 BRENTWOOD, NH 03833
 CONTACT: LISE MCNAUGHTON
 (603) 770-7728
 LMLANDDESIGN@GMAIL.COM

WETLAND AND SOIL CONSULTANT
GOVE ENVIRONMENTAL SERVICES, INC.
 8 CONTINENTAL DRIVE BUILDING 2 UNIT H
 EXETER, NH 03833
 (603) 778-0644
 CONTACT: JAMES GOVE
 JGOVE@GESINC.BIZ

ELECTRIC
EVERSOURCE ENERGY
 74 OLD DOVER ROAD
 ROCHESTER, NH 03867
 CONTACT: NICHOLAI KOSKO
 (603) 555-5334

TELEPHONE
CONSOLIDATED COMMUNICATIONS
 1575 GREENLAND ROAD
 GREENLAND, NH 03840
 CONTACT: JOE CONSIDINE
 (603) 427-5525

CABLE TV
COMCAST COMMUNICATION CORPORATION
 334-B CALEF HIGHWAY
 EPPING, NH 03402-2325
 (603) 679-5695

PROJECT PARCEL
 CITY OF PORTSMOUTH
 TAX MAP 266, LOT 7

TOTAL LOT AREA
 651,747 S.F.
 14.98 ACRES

APPROVED - PORTSMOUTH, NH
 PLANNING BOARD

DATE:

F:\CADD\MASTER STANDARD\dwg\JB-LAYOUTS.dwg 3/12/2015 3:27:29 PM EDT

Design: JAC	Draft: DJM	Date: 04/21/20
Checked: JAC	Scale: AS NOTED	Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		
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8	2/17/21	REVISED PER CITY COMMENTS	DJM
7	1/18/21	REVISED PER CONSERVATION COMMISSION COMMENTS	DJM
REV.	DATE	REVISION	BY

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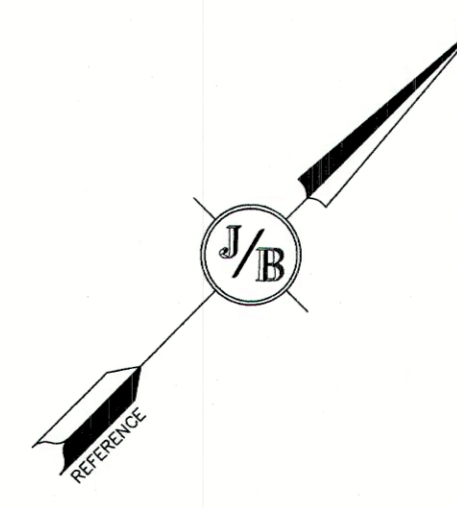
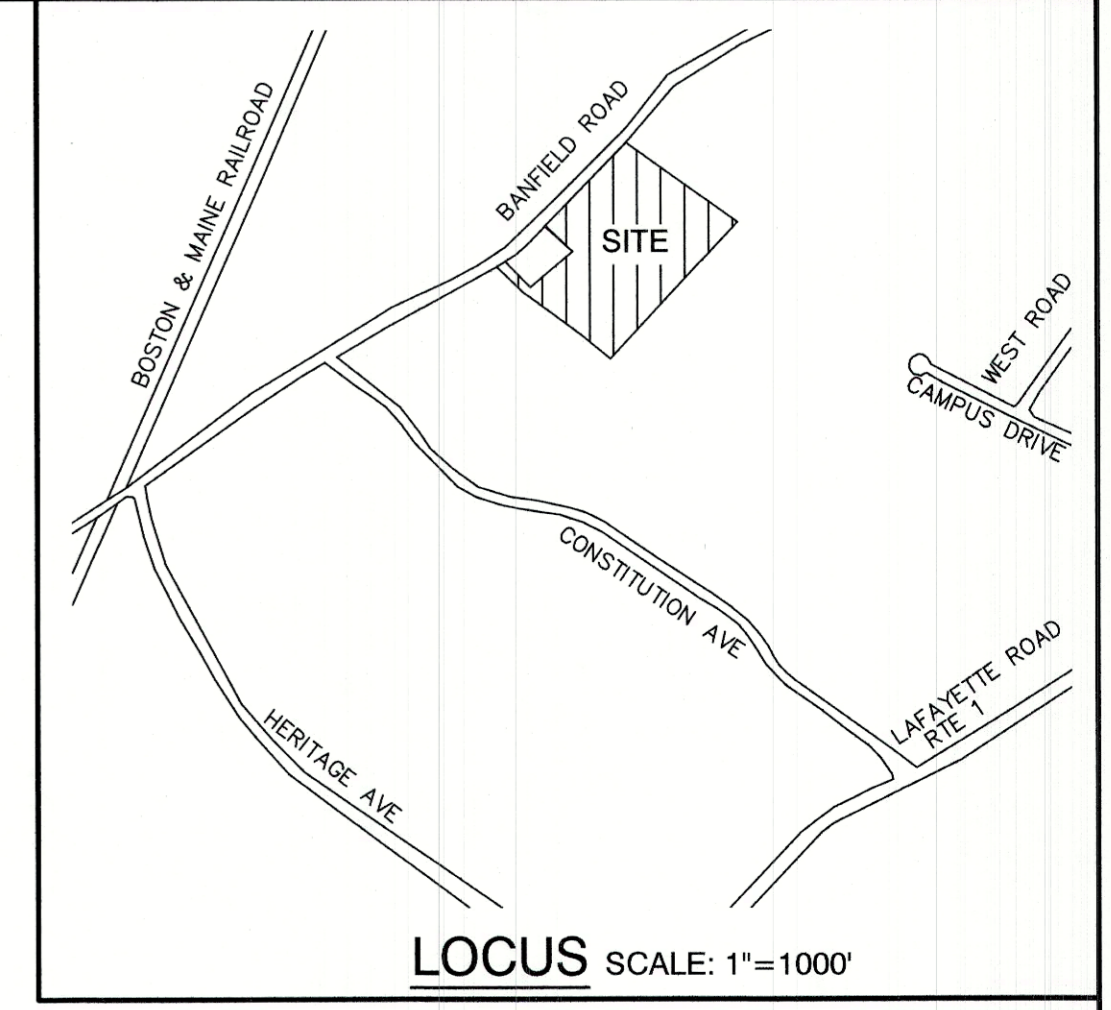
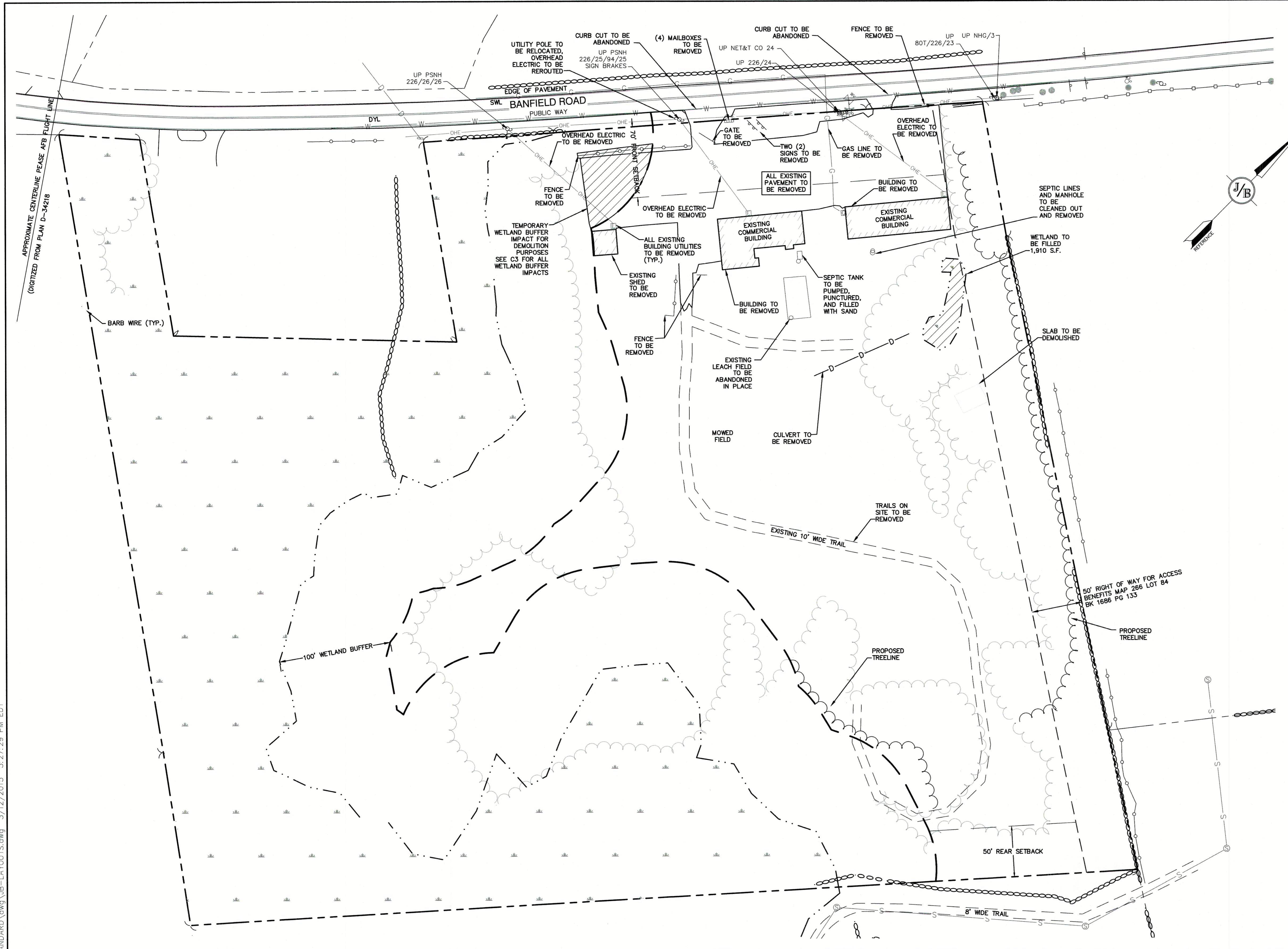
J/B Jones & Beach Engineers, Inc.
Civil Engineering Services

85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
 603-772-4746 FAX: 603-772-0227
 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	COVER SHEET
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

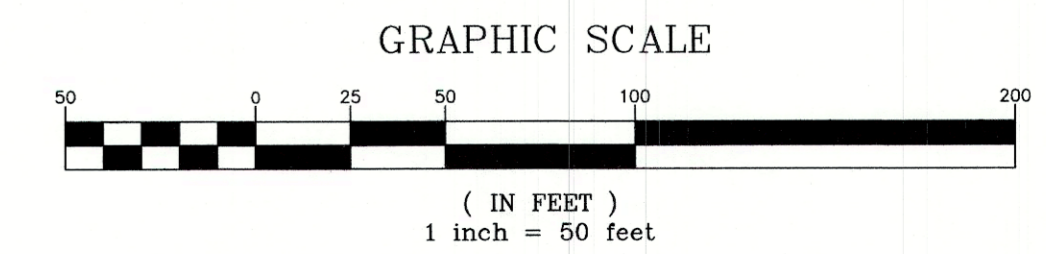
DRAWING No.	CS
SHEET 1 OF 23	JBE PROJECT NO. 19190.2

INDUSTRIAL WAREHOUSE, PORTSMOUTH, NH
 REVISION 11 - 5/17/21



DEMOLITION NOTES:

- THIS PLAN IS INTENDED TO PROVIDE MINIMUM GUIDELINES FOR SITE DEMOLITION. IT SHOULD BE NOTED THAT ALL MANMADE FEATURES, PAVEMENT, SIGNS, POLES, CURBING, CONCRETE WALKS, UTILITIES, ETC., SHALL BE REMOVED AS NECESSARY TO CONSTRUCT WORK, UNLESS OTHERWISE NOTED TO REMAIN. THROUGHOUT THE CONSTRUCTION PROCESS, THE CONTRACTOR SHALL INFORM THE ENGINEER IMMEDIATELY OF ANY FIELD DISCREPANCIES FROM DATA AS SHOWN ON DESIGN PLANS. THIS INCLUDES ANY UNFORESEEN CONDITIONS, SUBSURFACE OR OTHERWISE FOR EVALUATION AND RECOMMENDATIONS. ANY CONTRADICTION BETWEEN ITEMS OF THIS PLAN/PLAN SET, OR BETWEEN THE PLANS AND ON-SITE CONDITIONS MUST BE RESOLVED BEFORE RELATED CONSTRUCTION HAS BEEN INITIATED.
- WETLAND IMPACTS SHALL NOT OCCUR UNTIL ALL PERMITS HAVE BEEN ACQUIRED AND IMPACT MITIGATION REQUIREMENTS HAVE BEEN SATISFIED.
- PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR IS REQUIRED TO HAVE THE PROJECT LAND SURVEYOR STAKE OR FLAG CLEARING LIMITS. A MINIMUM OF 48 HOURS NOTICE IS REQUIRED. CLEARING LIMITS ARE THE EDGE OF THE PROPERTY AND THE LIMITS OF WORK.
- ALL EXISTING STRUCTURES WITHIN THE CONSTRUCTION AREA, UNLESS OTHERWISE NOTED TO REMAIN, SHALL BE REMOVED AND DISPOSED OF OFF-SITE IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL GUIDELINES. ANY BURNING ON-SITE SHALL BE SUBJECT TO LOCAL ORDINANCES.
- THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL CONTAMINATED MATERIAL LOCATED IN THE AREA OF EXISTING LEACHFIELDS IN ACCORDANCE WITH LOCAL AND STATE REGULATIONS.
- ALL CURBING, CONCRETE, PAVEMENT, BUILDINGS AND SUBBASE MATERIALS LOCATED WITHIN PROPOSED LANDSCAPED AREAS SHALL BE REMOVED AND REPLACED WITH LOAM MATERIALS SUITABLE FOR LANDSCAPING IN ACCORDANCE WITH TECHNICAL SPECIFICATIONS. (SEE ALSO LANDSCAPE PLAN).
- THE CONTRACTOR SHALL OBTAIN TREE CLEARING PERMIT FROM LOCAL AND STATE AUTHORITIES PRIOR TO START OF CONSTRUCTION (IF REQUIRED).
- IN AREAS WHERE CONSTRUCTION IS PROPOSED ADJACENT TO ABUTTING PROPERTIES, THE CONTRACTOR SHALL INSTALL ORANGE CONSTRUCTION FENCING ALONG PROPERTY LINES IN ALL AREAS WHERE SILT FENCING IS NOT REQUIRED.
- EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO CONSTRUCTION AND ANY EARTH MOVING OPERATIONS. SILT FENCE SHALL BE INSTALLED AT THE LIMITS OF IMPACT AREAS ACCORDING TO THE DETAILS SHOWN ON SHEET E1.
- EXCAVATED MATERIALS WILL BE PLACED WITHIN UPLAND AREAS AS FILL MATERIAL OR HAULED OFF-SITE FOR DISPOSAL IN AN APPROPRIATE UPLAND LOCATION.



PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 266, LOT 7

TOTAL LOT AREA
651,747 S.F.
14.96 ACRES

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85 Portsmouth Ave. PO Box 219 Stratham, NH 03885

Civil Engineering Services

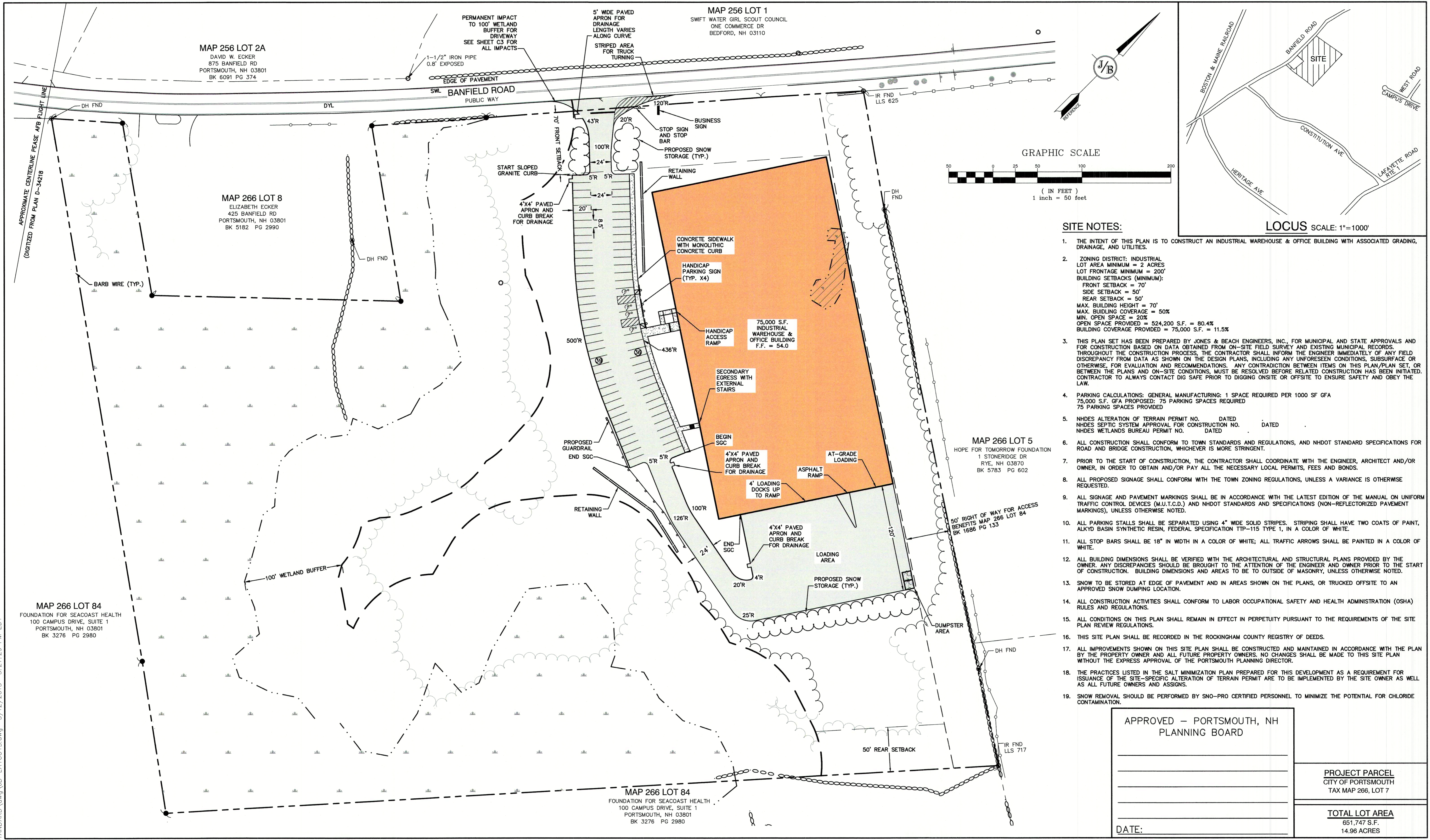
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DEMOLITION PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.

DM-1

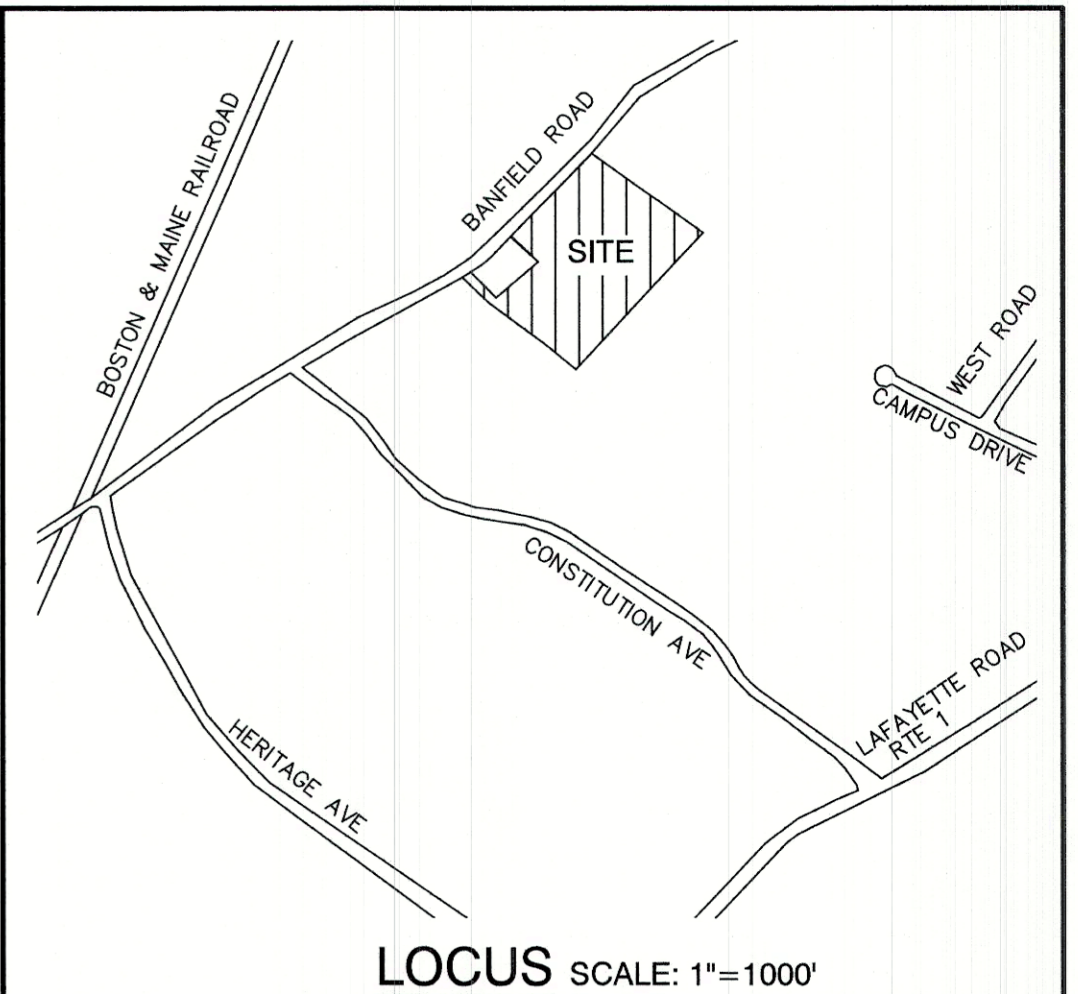
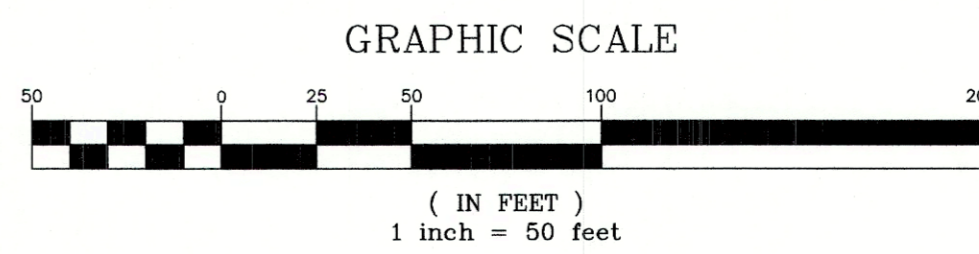
SHEET 3 OF 23
JBE PROJECT NO. 19190.2



MAP 256 LOT 2A
DAVID W. ECKER
875 BANFIELD RD
PORTSMOUTH, NH 03801
BK 6091 PG 374

MAP 266 LOT 8
ELIZABETH ECKER
425 BANFIELD RD
PORTSMOUTH, NH 03801
BK 5182 PG 2990

MAP 256 LOT 1
SWIFT WATER GIRL SCOUT COUNCIL
ONE COMMERCE DR
BEDFORD, NH 03110



SITE NOTES:

- THE INTENT OF THIS PLAN IS TO CONSTRUCT AN INDUSTRIAL WAREHOUSE & OFFICE BUILDING WITH ASSOCIATED GRADING, DRAINAGE, AND UTILITIES.
- ZONING DISTRICT: INDUSTRIAL LOT AREA MINIMUM = 2 ACRES LOT FRONTAGE MINIMUM = 200' BUILDING SETBACKS (MINIMUM): FRONT SETBACK = 70' SIDE SETBACK = 50' REAR SETBACK = 50' MAX. BUILDING HEIGHT = 70' MAX. OPEN SPACE = 20% OPEN SPACE PROVIDED = 524,200 S.F. = 80.4% BUILDING COVERAGE PROVIDED = 75,000 S.F. = 11.5%
- THIS PLAN SET HAS BEEN PREPARED BY JONES & BEACH ENGINEERS, INC., FOR MUNICIPAL AND STATE APPROVALS AND FOR CONSTRUCTION BASED ON DATA OBTAINED FROM ON-SITE FIELD SURVEY AND EXISTING MUNICIPAL RECORDS. THROUGHOUT THE CONSTRUCTION PROCESS, THE CONTRACTOR SHALL INFORM THE ENGINEER IMMEDIATELY OF ANY FIELD DISCREPANCY FROM DATA AS SHOWN ON THE DESIGN PLANS, INCLUDING ANY UNFORESEEN CONDITIONS, SUBSURFACE OR OTHERWISE, FOR EVALUATION AND RECOMMENDATIONS. ANY CONTRADICTION BETWEEN ITEMS ON THIS PLAN/PLAN SET, OR BETWEEN THE PLANS AND ON-SITE CONDITIONS, MUST BE RESOLVED BEFORE RELATED CONSTRUCTION HAS BEEN INITIATED. CONTRACTOR TO ALWAYS CONTACT DIG SAFE PRIOR TO DIGGING ONSITE OR OFFSITE TO ENSURE SAFETY AND OBEY THE LAW.
- PARKING CALCULATIONS: GENERAL MANUFACTURING: 1 SPACE REQUIRED PER 1000 SF GFA 75,000 S.F. GFA PROPOSED: 75 PARKING SPACES REQUIRED 75 PARKING SPACES PROVIDED
- NHDES ALTERATION OF TERRAIN PERMIT NO. DATED NHDES SEPTIC SYSTEM APPROVAL FOR CONSTRUCTION NO. DATED NHDES WETLANDS BUREAU PERMIT NO. DATED
- ALL CONSTRUCTION SHALL CONFORM TO TOWN STANDARDS AND REGULATIONS, AND NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, WHICHEVER IS MORE STRINGENT.
- PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER, ARCHITECT AND/OR OWNER, IN ORDER TO OBTAIN AND/OR PAY ALL THE NECESSARY LOCAL PERMITS, FEES AND BONDS.
- ALL PROPOSED SIGNAGE SHALL CONFORM WITH THE TOWN ZONING REGULATIONS, UNLESS A VARIANCE IS OTHERWISE REQUESTED.
- ALL SIGNAGE AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.) AND NHDOT STANDARDS AND SPECIFICATIONS (NON-REFLECTORIZED PAVEMENT MARKINGS), UNLESS OTHERWISE NOTED.
- ALL PARKING STALLS SHALL BE SEPARATED USING 4" WIDE SOLID STRIPES. STRIPING SHALL HAVE TWO COATS OF PAINT, ALKYD BASIN SYNTHETIC RESIN, FEDERAL SPECIFICATION TTP-115 TYPE 1, IN A COLOR OF WHITE.
- ALL STOP BARS SHALL BE 18" IN WIDTH IN A COLOR OF WHITE; ALL TRAFFIC ARROWS SHALL BE PAINTED IN A COLOR OF WHITE.
- ALL BUILDING DIMENSIONS SHALL BE VERIFIED WITH THE ARCHITECTURAL AND STRUCTURAL PLANS PROVIDED BY THE OWNER. ANY DISCREPANCIES SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND OWNER PRIOR TO THE START OF CONSTRUCTION. BUILDING DIMENSIONS AND AREAS TO BE TO OUTSIDE OF MASONRY, UNLESS OTHERWISE NOTED.
- SNOW TO BE STORED AT EDGE OF PAVEMENT AND IN AREAS SHOWN ON THE PLANS, OR TRUCKED OFFSITE TO AN APPROVED SNOW DUMPING LOCATION.
- ALL CONSTRUCTION ACTIVITIES SHALL CONFORM TO LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) RULES AND REGULATIONS.
- ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW 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.
- THE PRACTICES LISTED IN THE SALT MINIMIZATION PLAN PREPARED FOR THIS DEVELOPMENT AS A REQUIREMENT FOR ISSUANCE OF THE SITE-SPECIFIC ALTERATION OF TERRAIN PERMIT ARE TO BE IMPLEMENTED BY THE SITE OWNER AS WELL AS ALL FUTURE OWNERS AND ASSIGNS.
- SNOW REMOVAL SHOULD BE PERFORMED BY SNO-PRO CERTIFIED PERSONNEL TO MINIMIZE THE POTENTIAL FOR CHLORIDE CONTAMINATION.

MAP 266 LOT 5
HOPE FOR TOMORROW FOUNDATION
1 STONERIDGE DR
RYE, NH 03870
BK 5783 PG 602

MAP 266 LOT 84
FOUNDATION FOR SEACOAST HEALTH
100 CAMPUS DRIVE, SUITE 1
PORTSMOUTH, NH 03801
BK 3276 PG 2980

MAP 266 LOT 84
FOUNDATION FOR SEACOAST HEALTH
100 CAMPUS DRIVE, SUITE 1
PORTSMOUTH, NH 03801
BK 3276 PG 2980

APPROVED - PORTSMOUTH, NH
PLANNING BOARD

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 266, LOT 7

TOTAL LOT AREA
651,747 S.F.
14.96 ACRES

DATE:

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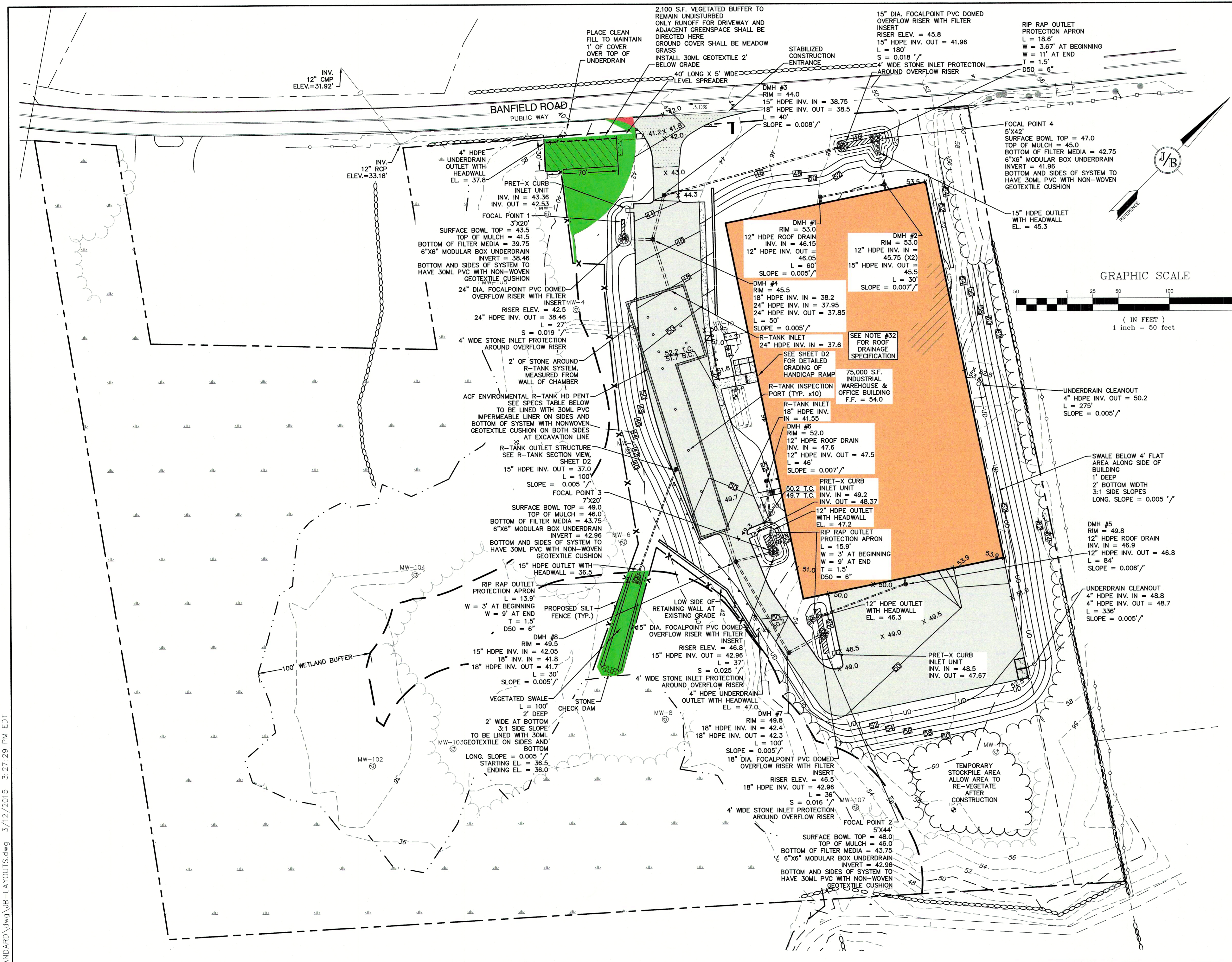
603-772-4746 FAX: 603-772-0227 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	SITE PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.

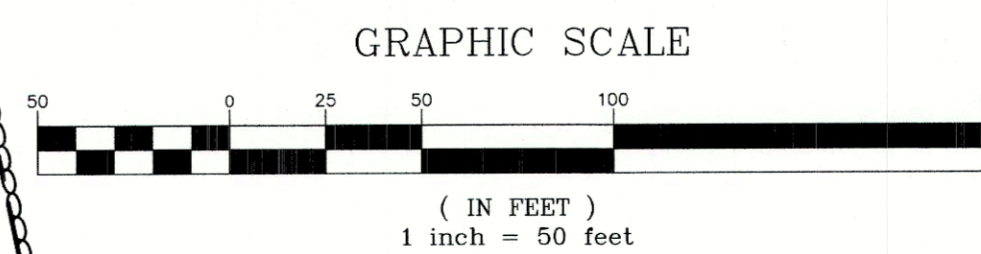
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SHEET 4 OF 23
JBE PROJECT NO. 19190.2



GRADING AND DRAINAGE NOTES:

- UNDERGROUND FACILITIES, UTILITIES AND STRUCTURES HAVE BEEN PLOTTED FROM FIELD OBSERVATION AND THEIR LOCATION MUST BE CONSIDERED APPROXIMATE ONLY. NEITHER JONES & BEACH ENGINEERS, INC., NOR ANY OF THEIR EMPLOYEES TAKE RESPONSIBILITY FOR THE LOCATION OF ANY UNDERGROUND STRUCTURES AND/OR UTILITIES NOT SHOWN THAT MAY EXIST. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE ALL UNDERGROUND STRUCTURES AND/OR UTILITIES LOCATED PRIOR TO EXCAVATION WORK BY CALLING 888-DIG-SAFE (888-344-7233).
- VERTICAL DATUM: NAVD88.
- ALL BENCHMARKS AND TOPOGRAPHY SHOULD BE FIELD VERIFIED BY THE CONTRACTOR.
- SITE GRADING SHALL NOT PROCEED UNTIL EROSION CONTROL MEASURES HAVE BEEN INSTALLED. SEE CONSTRUCTION SEQUENCE ON SHEET E1.
- PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR IS REQUIRED TO HAVE THE PROJECT'S LAND SURVEYOR STAKE OR FLAG CLEARING LIMITS. A MINIMUM OF 48 HOURS NOTICE IS REQUIRED.
- ALL ROOF DRAINS FROM BUILDING SHALL END 5' OUTSIDE THE BUILDING LIMITS AS SHOWN ON PLAN AND SHALL BE PROVIDED WITH A TEMPORARY PLUG AND WITNESS AT THE END. ALL EXTERIOR ROOF DOWNSPOUTS ARE TO BE INSTALLED WITH OVERFLOW DEVICES.
- ALL SWALES AND DETENTION PONDS ARE TO BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
- PROPOSED RIM ELEVATIONS OF DRAINAGE STRUCTURES ARE APPROXIMATE. FINAL ELEVATIONS ARE TO BE SET FLUSH WITH FINISH GRADES.
- ALL SWALES AND ANY SLOPES GREATER THAN 3:1 SHALL BE STABILIZED WITH NORTH AMERICAN GREEN S75 EROSION CONTROL BLANKETS (OR AN EQUIVALENT APPROVED IN WRITING BY THE ENGINEER), UNLESS OTHERWISE SPECIFIED.
- ALL DRAINAGE AND SANITARY STRUCTURE INTERIOR DIAMETERS (4" MIN) SHALL BE DETERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON THESE PLANS. CATCH BASINS SHALL HAVE 3" DEEP SUMP WITH GREASE HOODS, UNLESS OTHERWISE NOTED.
- ALL DRAINAGE STRUCTURES SHALL BE PRECAST, UNLESS OTHERWISE SPECIFIED. SEE SHEETS D2-D6 FOR DRAINAGE DETAILS.
- ALL DRAINAGE STRUCTURES AND STORMWATER PIPES SHALL MEET HEAVY DUTY TRAFFIC H20 LOADING AND SHALL BE INSTALLED ACCORDINGLY.
- IN AREAS WHERE CONSTRUCTION IS PROPOSED ADJACENT TO ABUTTING PROPERTIES, THE CONTRACTOR SHALL INSTALL ORANGE CONSTRUCTION FENCING ALONG PROPERTY LINES IN ALL AREAS WHERE SILT FENCING IS NOT REQUIRED.
- ALL DRAINAGE PIPE SHALL BE NON-PERFORATED ADS N-12 OR APPROVED EQUAL.
- STONE INLET PROTECTION SHALL BE PLACED AT ALL CATCH BASINS. SEE DETAIL WITHIN THE DETAIL SHEETS.
- LAND DISTURBING ACTIVITIES SHALL NOT COMMENCE UNTIL APPROVAL TO DO SO HAS BEEN RECEIVED BY ALL GOVERNING AUTHORITIES. THE GENERAL CONTRACTOR SHALL STRICTLY ADHERE TO THE EPA SWPPP DURING CONSTRUCTION OPERATIONS.
- NO LAND CLEARING OR GRADING SHALL BEGIN UNTIL ALL EROSION CONTROL MEASURES HAVE BEEN INSTALLED.
- ALL SHOULDER AREAS SHALL BE SEEDDED AS SPECIFIED WITHIN 3 DAYS OF FINAL GRADING.
- EXPOSED CONSTRUCTION STOP FOR LONGER THAN 3 DAYS, THE SITE SHALL BE SEEDDED AS SPECIFIED.
- MAINTAIN EROSION CONTROL MEASURES AFTER EACH RAIN EVENT OF 0.5" OR GREATER IN A 24 HOUR PERIOD AND AT LEAST ONCE A WEEK.
- THIS PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE, AS THE GENERAL CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SEDIMENT FROM LEAVING THE SITE.
- CONSTRUCTION VEHICLES SHALL UTILIZE THE STABILIZED CONSTRUCTION ENTRANCE TO THE EXTENT POSSIBLE THROUGHOUT CONSTRUCTION.
- IF INSTALLATION OF STORM DRAINAGE SYSTEM SHOULD BE INTERRUPTED BY WEATHER OR NIGHTFALL, THE PIPE ENDS SHALL BE COVERED WITH FILTER FABRIC.
- THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO TAKE WHATEVER MEANS NECESSARY TO ESTABLISH PERMANENT SOIL STABILIZATION.
- SEDIMENT SHALL BE REMOVED FROM ALL SEDIMENT BASINS BEFORE THEY ARE 25% FULL.
- ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.
- ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED, IF DEEMED NECESSARY BY ON-SITE INSPECTION BY ENGINEER AND/OR REGULATORY OFFICIALS.
- ALL CULVERT OR DRAINPIPE OUTLETS ARE TO HAVE CONCRETE HEADWALLS UNLESS OTHERWISE STATED.
- AREA OF DISTURBANCE = 225,000 S.F.
AREA OF IMPACT TO 100' WETLAND BUFFER: SEE BELOW
AREA OF WETLAND FILL = 1,910 S.F.
- EXISTING IMPERVIOUS SURFACE = 38,200 S.F.
PROPOSED IMPERVIOUS SURFACE = 128,000 S.F.
- ALL STORMWATER TREATMENT, DETENTION, AND BIOFILTRATION PRACTICES TO BE LINED TO RESTRICT INFILTRATION AS SPECIFIED
- ROOF TO BE SPLIT INTO FOUR QUADRANTS FOR DRAINAGE, EACH SLOPED INTO SEPARATE GUTTER. GUTTERS TO BE SLOPED TOWARD ROOF DRAINS AT DEPICTED LOCATIONS.



WETLAND BUFFER IMPACT LEGEND

	= PERMANENT IMPACT (85 S.F. FOR CORNER OF DRIVEWAY)
	= TEMPORARY IMPACT (3,350 S.F. EXISTING ASPHALT AND BUILDING REMOVAL, 140 S.F. FOR CORNER OF DRIVEWAY, 4,420 S.F. FOR STORMWATER MANAGEMENT = 7,910 S.F. TOTAL)

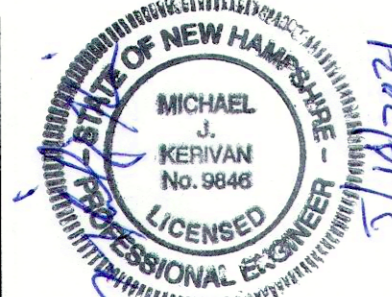
R-TANK SPECS

TOP OF FILL	>47.07, < 52.41 (20"-84" ALLOWED)
TOP OF STONE COVER	45.41
TOP OF CHAMBER	44.41
BOTTOM OF CHAMBER	37.2
BOTTOM OF STONE BASE	36.95
CHAMBERS PER ROW, SECTION 1	30
# OF ROWS, SECTION 1	43
CHAMBERS PER ROW, SECTION 2	70
# OF ROWS, SECTION 2	20
LENGTH, SECTION 1	74.37'
WIDTH, SECTION 1	60.43'
LENGTH, SECTION 2	168.21'
WIDTH, SECTION 2	30.25'

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 266, LOT 7

TOTAL LOT AREA
651,747 S.F.
14.96 ACRES

Design: JAC | Draft: DJM | Date: 04/21/20
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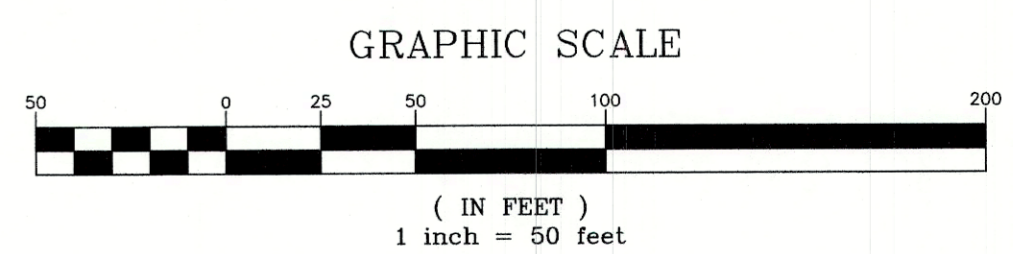
Plan Name: **GRADING AND DRAINAGE PLAN**
 Project: **INDUSTRIAL WAREHOUSE**
375 BANFIELD ROAD, PORTSMOUTH, NH 03801
 Owner of Record: **BANFIELD REALTY LLC**
304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No. **C3**
 SHEET 5 OF 23
 JBE PROJECT NO. 19190.2



UTILITY NOTES:

- PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER, ARCHITECT AND/OR OWNER, IN ORDER TO OBTAIN AND/OR PAY ALL THE NECESSARY LOCAL PERMITS, CONNECTION FEES AND BONDS.
- THE CONTRACTOR SHALL PROVIDE A MINIMUM NOTICE OF FOURTEEN (14) DAYS TO ALL CORPORATIONS, COMPANIES AND/OR LOCAL AUTHORITIES OWNING OR HAVING A JURISDICTION OVER UTILITIES RUNNING TO, THROUGH OR ACROSS PROJECT AREAS PRIOR TO DEMOLITION AND/OR CONSTRUCTION ACTIVITIES.
- THE LOCATION, SIZE, DEPTH AND SPECIFICATIONS FOR CONSTRUCTION OF PROPOSED PRIVATE UTILITY SERVICES SHALL BE TO THE STANDARDS AND REQUIREMENTS OF THE RESPECTIVE UTILITY COMPANY (ELECTRIC, TELEPHONE, CABLE TELEVISION, FIRE ALARM, GAS, WATER, AND SEWER).
- A PRECONSTRUCTION MEETING SHALL BE HELD WITH THE OWNER, ENGINEER, ARCHITECT, CONTRACTOR, LOCAL OFFICIALS, AND ALL PROJECT-RELATED UTILITY COMPANIES (PUBLIC AND PRIVATE) PRIOR TO START OF CONSTRUCTION.
- ALL CONSTRUCTION SHALL CONFORM TO THE TOWN STANDARDS AND REGULATIONS, AND NHDES STANDARDS AND SPECIFICATIONS, WHICHEVER ARE MORE STRINGENT, UNLESS OTHERWISE SPECIFIED.
- ALL CONSTRUCTION ACTIVITIES SHALL CONFORM TO LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) RULES AND REGULATIONS.
- BUILDING TO BE SERVICED BY UNDERGROUND UTILITIES UNLESS OTHERWISE NOTED.
- THE CONTRACTOR IS TO VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITY STUBS PRIOR TO CONSTRUCTION AND DISCONNECT ALL EXISTING SERVICE CONNECTIONS AT THEIR RESPECTIVE MAINS IN ACCORDANCE WITH THE RESPECTIVE UTILITY COMPANY'S STANDARDS AND SPECIFICATIONS. ENGINEER TO BE NOTIFIED.
- AS-BUILT PLANS SHALL BE SUBMITTED TO DEPARTMENT OF PUBLIC WORKS.
- INVERTS AND SHELVES: MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT, CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW AT CHANGES IN DIRECTION. THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE THROUGH CHANNEL UNDERLAYMENT OF INVERT, AND SHELF SHALL CONSIST OF BRICK MASONRY.
- FRAMES AND COVERS: MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30 INCH DIA. CLEAR OPENING. THE WORD "SEWER" OR "DRAIN" SHALL BE CAST INTO THE CENTER OF THE UPPER FACE OF EACH COVER WITH RAISED, 3" LETTERS.
- SHALLOW MANHOLE: IN LIEU OF A CONE SECTION, WHEN MANHOLE DEPTH IS LESS THAN 6 FEET, A REINFORCED CONCRETE SLAB COVER MAY BE USED HAVING AN ECCENTRIC ENTRANCE OPENING AND CAPABLE OF SUPPORTING H20 LOADS.
- CONTRACTOR SHALL PLACE 2" WIDE METAL WIRE IMPREGNATED RED PLASTIC WARNING TAPE OVER ENTIRE LENGTH OF ALL GRAVITY SEWERS, SERVICES, AND FORCE MAINS.
- PROPOSED RIM ELEVATIONS OF DRAINAGE AND SANITARY MANHOLES ARE APPROXIMATE. FINAL ELEVATIONS ARE TO BE SET FLUSH WITH FINISH GRADES. ADJUST ALL OTHER RIM ELEVATIONS OF MANHOLES, WATER GATES, GAS GATES AND OTHER UTILITIES TO FINISH GRADE AS SHOWN ON THE GRADING AND DRAINAGE PLAN.
- ALL WATER MAINS AND SERVICE PIPES SHALL HAVE A MINIMUM 12" VERTICAL AND 24" HORIZONTAL SEPARATION TO MANHOLES, OR CONTRACTOR SHALL INSTALL BOARD INSULATION FOR FREEZING PROTECTION.
- WATER MAINS SHALL BE HYDROSTATICALLY PRESSURE TESTED FOR LEAKAGE PRIOR TO ACCEPTANCE. WATERMAINS SHALL BE TESTED AT 1.5 TIMES THE WORKING PRESSURE OR 150 PSI, WHICHEVER IS GREATER. TESTING SHALL BE CONDUCTED IN ACCORDANCE WITH SECTION 4 OF AWWA STANDARD C 600. WATERMAINS SHALL BE DISINFECTED AFTER THE ACCEPTANCE OF THE PRESSURE AND LEAKAGE TESTS ACCORDING TO AWWA STANDARD C 651.
- ALL WATER AND SANITARY LEADS TO BUILDING(S) SHALL END 5' OUTSIDE THE BUILDING LIMITS AS SHOWN ON PLANS AND SHALL BE PROVIDED WITH A TEMPORARY PLUG AND WITNESS AT END.
- IF THE BUILDING IS REQUIRED TO HAVE A SPRINKLER SYSTEM, A PRECONSTRUCTION MEETING SHALL BE HELD BETWEEN THE CONTRACTOR, OWNER, ARCHITECT AND THE LOCAL FIRE DEPARTMENT PRIOR TO THE INSTALLATION.
- THRUST BLOCKS SHALL BE PROVIDED AT ALL BENDS, TEES, MECHANICAL JOINTS AND FIRE HYDRANTS.
- DIMENSIONS ARE SHOWN TO CENTERLINE OF PIPE OR FITTING.
- THE CONTRACTOR SHALL HAVE THE APPROVAL OF ALL GOVERNING AGENCIES HAVING JURISDICTION OVER FIRE PROTECTION SYSTEM PRIOR TO INSTALLATION.
- CONTRACTOR TO FURNISH SHOP DRAWINGS FOR UTILITY RELATED ITEMS TO ENSURE CONFORMANCE WITH THE PLANS AND SPECIFICATIONS. SHOP DRAWINGS SHOULD BE SENT IN TRIPPLICATE TO THE DESIGN ENGINEER FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
- EXISTING UTILITIES SHALL BE DIGSAFED BEFORE CONSTRUCTION.
- ALL WATER LINES SHOULD HAVE TESTABLE BACKFLOW PREVENTERS AT THE ENTRANCE TO EACH BUILDING.
- ALL WATER AND SANITARY LEADS TO BUILDING(S) SHALL END AT RIGHT OF WAY AS SHOWN ON PLANS AND SHALL BE PROVIDED WITH A TEMPORARY PLUG AND WITNESS AT END.
- LIGHTING CONDUIT SHALL BE SCHEDULE 40 PVC, AND SHALL BE INSTALLED IN CONFORMANCE WITH THE NATIONAL ELECTRIC CODE. CONTRACTOR SHALL PROVIDE EXCAVATION AND BACKFILL.
- ALL TRENCHING, PIPE LAYING, AND BACKFILLING SHALL BE IN ACCORDANCE WITH FEDERAL OSHA REGULATIONS.



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Design: JAC	Draft: DJM	Date: 04/21/20
Checked: JAC	Scale: AS-NOTED	Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		
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J/B Jones & Beach Engineers, Inc.

85 Portsmouth Ave. PO Box 219 Stratham, NH 03885

Civil Engineering Services

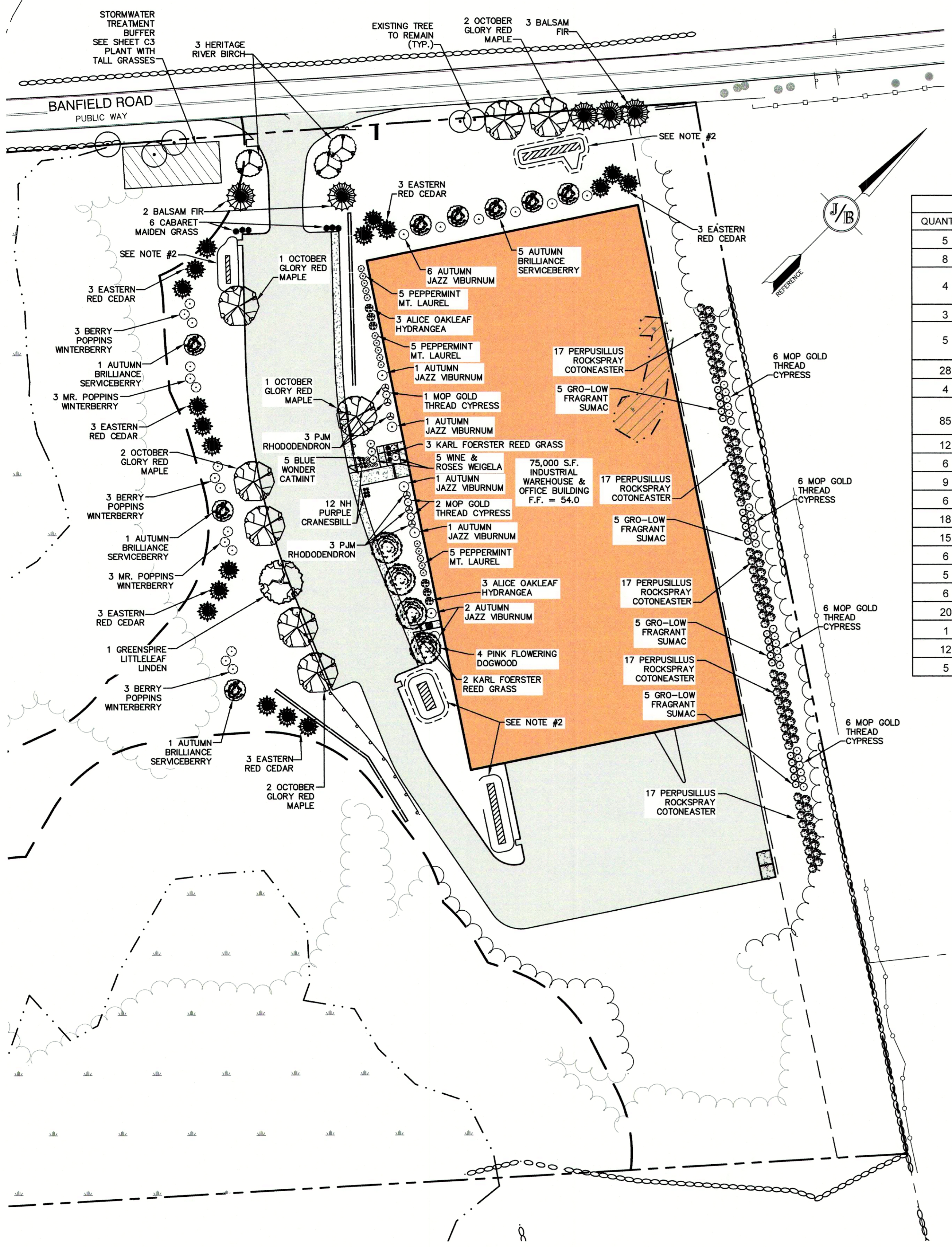
603-772-4746 FAX: 603-772-0227 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	UTILITY PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

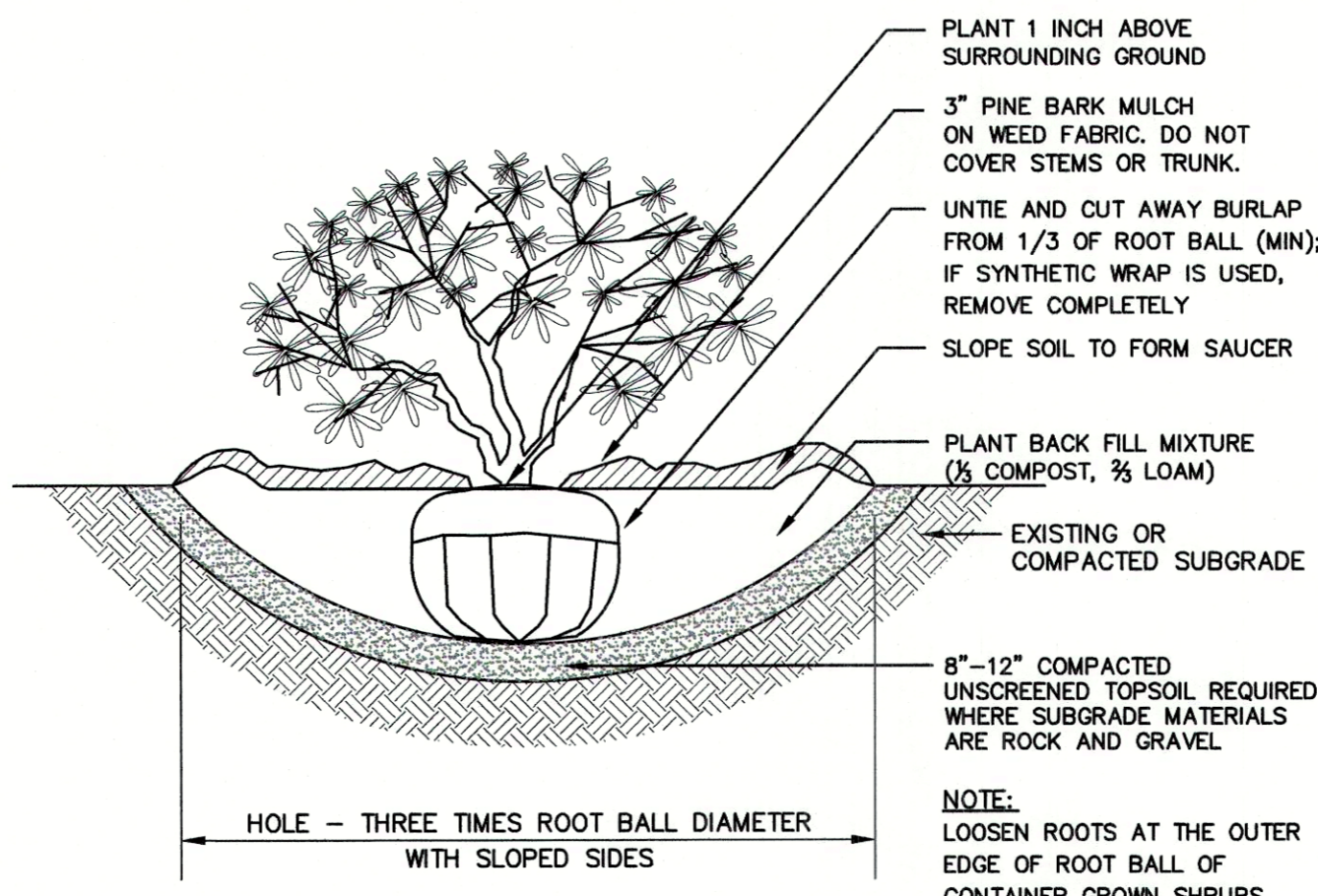
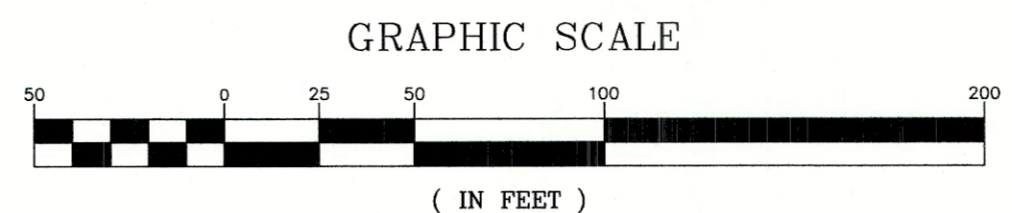
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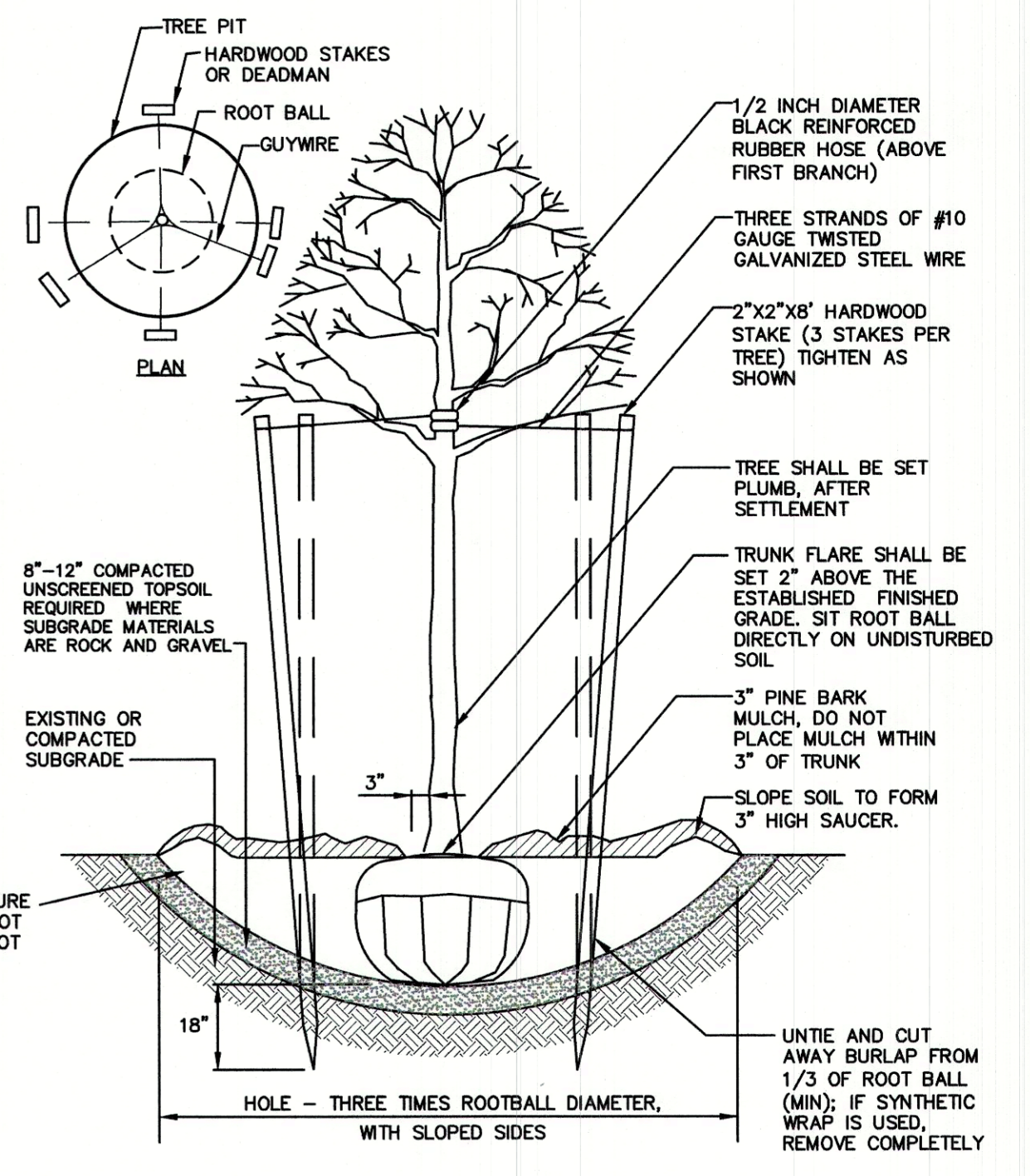
SHEET 6 OF 23
JBE PROJECT NO. 19190.2



PLANT LIST			
QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE
5	ABIES BALSAMEA	BALSAM FIR	8-10 FT. HT.
8	ACER RUBRUM 'OCTOBER GLORY'	OCTOBER GLORY RED MAPLE	3.5" CALIPER
4	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE'	AUTUMN BRILLIANCE SERVICEBERRY	15 GALLON
3	BETULA NIGRA 'CULLY HERITAGE'	HERITAGE RIVER BIRCH	10 FT. HT. MULT
5	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER'	KARL FOERSTER REED GRASS	2 GALLON
28	CHAMAECYPARIS PISIFERA 'MOP'	MOP GOLD THREAD CYPRESS	3 GALLON
4	CORNUS FLORIDA F. RUBRA	PINK FLOWERING DOGWOOD	2.5" CALIPER
85	COTONEASTER HORIZONTALIS 'PERPUSILLUS'	PERPUSILLUS ROCKSPRAY COTONEASTER	2 GALLON
12	GERANIUM SANGUINEUM 'NH PURPLE'	NH PURPLE CRANESBILL	1 Gallon
6	HYDRANGEA QUERCIFOLIA 'ALICE'	ALICE OAKLEAF HYDRANGEA	5 GALLON
9	ILEX VERTICILLATA 'FARROWBOP'	BERRY POPPINS WINTERBERRY	5 GALLON
6	ILEX VERTICILLATA 'FARROWMRP'	MR. POPPINS WINTERBERRY	5 GALLON
18	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	6-7 FT. HT.
15	KALMIA LATIFOLIA 'PEPPERMINT'	PEPPERMINT MT LAUREL	5 GALLON
6	MISCANTHUS SINENSIS 'CABARET'	CABARET MAIDEN GRASS	2 GALLON
5	NEPETA X FAASSENII 'BLUE WONDER'	BLUE WONDER CATMINT	1 GALLON
6	RHODODENDRON 'PJM'	PJM RHODODENDRON	5 GALLON
20	RHUS AROMATICA 'GRO-LOW'	GRO-LOW FRAGRANT SUMAC	3 GALLON
1	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LITTLELEAF LINDEN	3.5" CALIPER
12	VIBURNUM DENTATA 'AUTUMN JAZZ'	AUTUMN JAZZ VIBURNUM	5 GALLON
5	WEIGELA FLORIDA 'ALEXANDRA'	WINE & ROSES WEIGELA	3 GALLON



SHRUB PLANTING
NOT TO SCALE

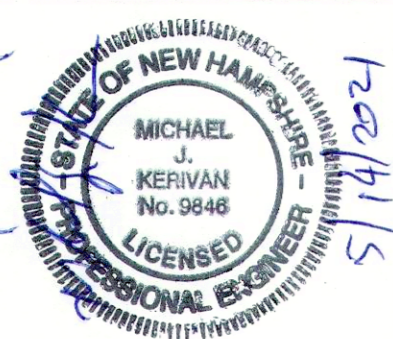


TREE PLANTING (FOR TREES UNDER 4" CALIPER)
NOT TO SCALE

- LANDSCAPE NOTES:**
- THE CONTRACTOR SHALL LOCATE AND VERIFY THE EXISTENCE OF ALL UTILITIES PRIOR TO STARTING WORK.
 - FOCAL POINT STORMWATER TREATMENT AREAS TO BE PLANTED WITH PERENNIAL GRASSES, CONEFLOWERS, DAYLILIES, BUTTERFLY MILKWEED, BEE BALM, BLUE FLAG IRIS, AND JOE PYE WEED. PLANT IN RANDOM GROUPINGS OF 10-12 PLANTS APPROXIMATELY 3 FEET ON CENTER.
 - THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTINGS SHOWN ON THE DRAWINGS.
 - ALL MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE CURRENT AMERICAN STANDARD FOR NURSERY STOCK PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
 - PLANTS SHALL BE SUBJECT TO INSPECTION AND APPROVAL AT THE PLACE OF GROWTH, UPON DELIVERY OR AT THE JOB SITE WHILE WORK IS ON-GOING FOR CONFORMITY TO SPECIFIED QUALITY, SIZE AND VARIETY.
 - PLANTS FURNISHED IN CONTAINERS SHALL HAVE THE ROOTS WELL ESTABLISHED IN THE SOIL MASS AND SHALL HAVE AT LEAST ONE (1) GROWING SEASON. ROOT-BOUND PLANTS OR INADEQUATELY SIZED CONTAINERS TO SUPPORT THE PLANT MAY BE DEEMED UNACCEPTABLE.
 - ALL WORK AND PLANTS SHALL BE DONE, INSTALLED AND DETAILED IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.
 - ALL PLANTS SHALL BE WATERED THOROUGHLY TWICE DURING THE FIRST 24-HOUR PERIOD AFTER PLANTING. ALL PLANTS SHALL BE WATERED WEEKLY, OR MORE OFTEN IF NECESSARY, DURING THE FIRST GROWING SEASON.
 - ALL LANDSCAPE AREAS TO BE GRASS COMMON TO REGION, EXCEPT FOR INTERIOR LANDSCAPED ISLANDS OR WHERE OTHER PLANT MATERIAL IS SPECIFIED.
 - ALL TREES AND SHRUBS SHALL BE PLANTED IN MULCH BEDS WITH EDGE STRIPS TO SEPARATE TURF GRASS AREAS.
 - THE CONTRACTOR SHALL REMOVE WEEDS, ROCKS, CONSTRUCTION ITEMS, ETC. FROM ANY LANDSCAPE AREA SO DESIGNATED TO REMAIN, WHETHER ON OR OFF-SITE. GRASS SEED OR PINE BARK MULCH SHALL BE APPLIED AS DEPICTED ON PLANS.
 - FINISHED GRADES IN LANDSCAPED ISLANDS SHALL BE INSTALLED SO THAT THEY ARE 1" HIGHER THAN THE TOP OF THE SURROUNDING CURB.
 - ALL LANDSCAPING SHALL MEET THE TOWN STANDARDS AND REGULATIONS.
 - EXISTING TREES TO REMAIN SHALL BE PROTECTED WITH TEMPORARY SNOW FENCING AT THE DRILLINE OF THE TREE. THE CONTRACTOR SHALL NOT STORE VEHICLES OR MATERIALS WITHIN THE LANDSCAPED AREAS. ANY DAMAGE TO EXISTING TREES, SHRUBS OR LAWN SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
 - ALL MULCH AREAS SHALL RECEIVE A 3" LAYER OF SHREDDED PINE BARK MULCH OVER A 10 MIL WEED MAT EQUAL TO "WEEDBLOCK" BY EASY GARDENER OR DEWITT WEED BARRIER.
 - ALL LANDSCAPED AREAS SHALL HAVE SELECT MATERIALS REMOVED TO A DEPTH OF AT LEAST 9" BELOW FINISH GRADE. THE RESULTING VOID IS TO BE FILLED WITH A MINIMUM OF 9" HIGH-QUALITY SCREENED LOAM AMENDED WITH 3" OF AGED ORGANIC COMPOST.
 - THIS PLAN IS INTENDED FOR LANDSCAPING PURPOSES ONLY. REFER TO CIVIL/SITE DRAWINGS FOR OTHER SITE CONSTRUCTION INFORMATION.
 - IRRIGATION PIPING SYSTEM SHALL BE REVIEWED AND APPROVED BY OWNER AND ENGINEER PRIOR TO INSTALLATION.
 - 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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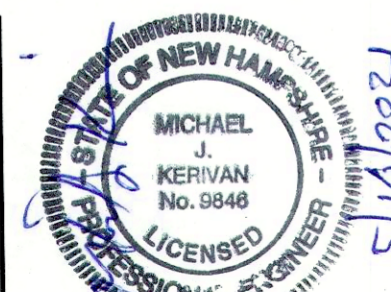
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J/B Jones & Beach Engineers, Inc.
 Civil Engineering Services
 85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
 603-772-4746 FAX: 603-772-0227 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: **LANDSCAPE PLAN**
 Project: **INDUSTRIAL WAREHOUSE**
375 BANFIELD ROAD, PORTSMOUTH, NH 03801
 Owner of Record: **BANFIELD REALTY LLC**
304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No. **L1**
 SHEET 7 OF 23
 JBE PROJECT NO. 19190.2

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REV.	DATE	REVISION	BY

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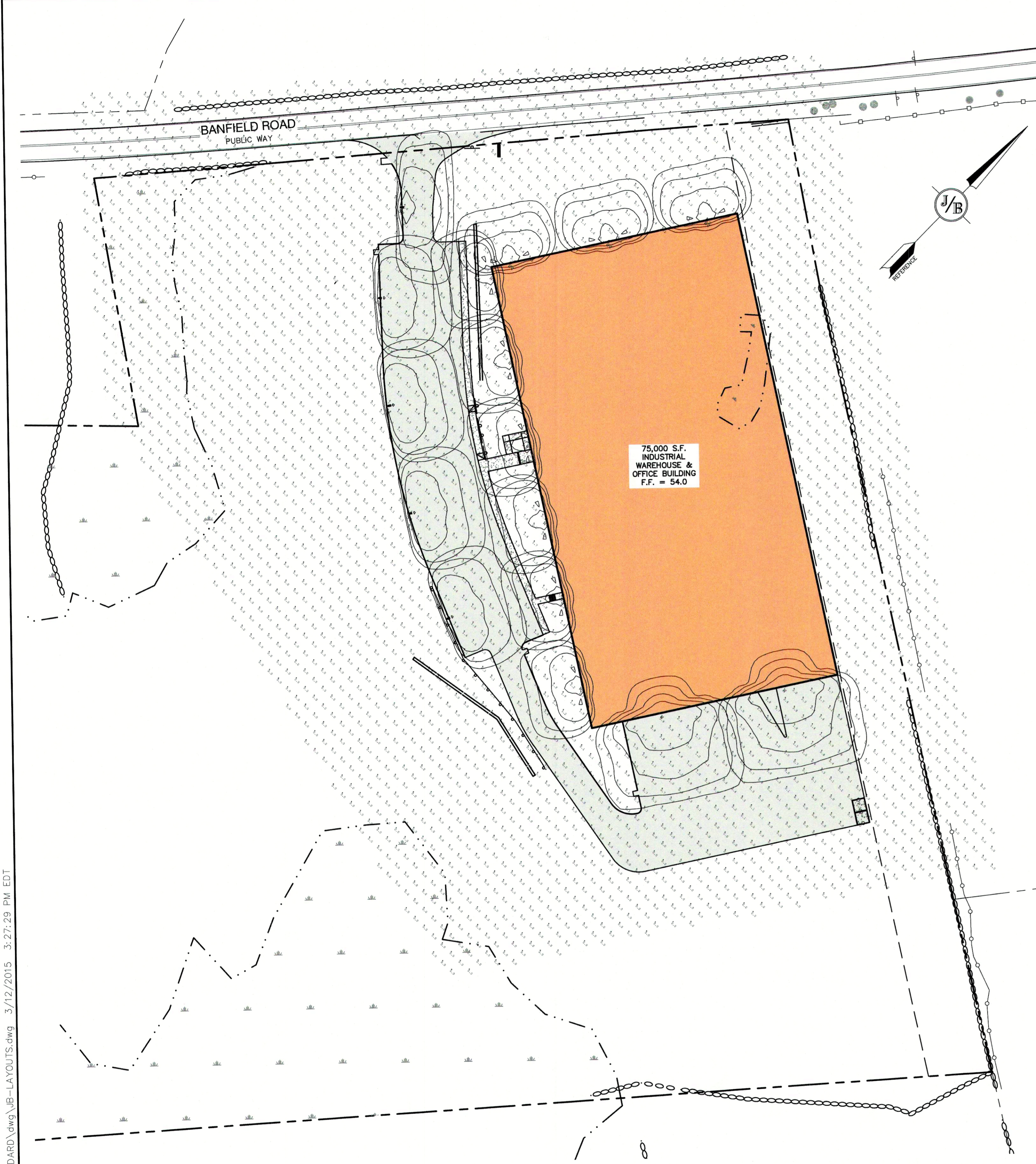
J/B Jones & Beach Engineers, Inc.

85 Portsmouth Ave. PO Box 219 Stratham, NH 03885

Civil Engineering Services
 603-772-4748
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 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: **LIGHTING PLAN**
 Project: **INDUSTRIAL WAREHOUSE**
375 BANFIELD ROAD, PORTSMOUTH, NH 03801
 Owner of Record: **BANFIELD REALTY LLC**
304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No. **L2**
 SHEET 8 OF 23
 JBE PROJECT NO. 19190.2



McGraw-Edison

DESCRIPTION
 The Galeon™ LED luminaire delivers exceptional performance in a highly scalable, low-profile design. Patented, high-efficiency AccuLED Optics™ system provides uniform and energy conscious illumination to walkways, parking lots, roadways, building areas and security lighting applications. (IP66 rated and UL/CUL Listed for wet locations).

SPECIFICATION FEATURES
Construction
 Extruded aluminum driver enclosure thermally isolated from Light Squares for optimal thermal performance. Heavy-wall, die-cast aluminum end caps enclose housing and die-cast aluminum heat sinks. A unique, patent pending interlocking housing and heat sink provides scalability with superior structural rigidity. 3G vibration tested and rated. Optional tool-less hardware available for ease of entry into electrical chamber. Housing is IP66 rated.

Optics
 Patented, high-efficiency injection-molded AccuLED Optics technology. Optics are precisely designed to shape the distribution maximizing efficiency and application spacing. AccuLED Optics create consistent distributions with the scalability to meet customized application requirements. Offered standard in 4000K (+/- 276K) CCT 70 CRI. Optional 3000K, 5000K and 6000K CCT.

Electrical
 LED drivers are mounted to removable tray assembly for ease of maintenance. 120-277V 50/60Hz, 347V 60Hz or 480V 60Hz operation. 480V is compatible for use with 480V Wye systems only. Standard with 0-10V dimming. Shipped standard with Eaton proprietary circuit module designed to withstand 1kV of transient line surge. The Galeon LED luminaire is suitable for operation in -40°C to 40°C ambient environments. For applications with ambient temperatures exceeding 40°C, specify the HA (High Ambient) option. Light Squares are IP66 rated. Greater than 90% lumens maintenance expected at 60,000 hours. Available in standard 1A drive current and optional 800mA, 800mA and 1000mA drive currents (nominal).

Mounting
STANDARD ARM MOUNT
 Extruded aluminum arm includes internal bolt guides allowing for easy positioning of fixture during mounting. When mounting two or more luminaires at 90° and 120° apart, the EA extended arm may be required. Refer to the arm mounting requirement table. Round pole adapter included. For wall mounting, specify wall mount bracket option. **QUICK MOUNT ARM:** Adapter is bolted directly to the pole. Quick mount arm slide into place on the adapter and is secured via two screws, facilitating quick and easy installation. The versatile, patent pending, quick mount arm accommodates multiple drill patterns ranging from 1-1/2" to 4-7/8". Removal of the door on the quick mount arm enables wiring of the fixture without having to access the driver compartment. A knock-out enables round pole mounting.

Finish
 Housing finished in super durable TGIC polyester powder coat paint. 2.5 mil nominal thickness for superior protection against fade and wear. Heat sink is powder coated black. Standard housing colors include black, bronze, grey, white, dark platinum and graphite metallic. RAL and custom color matches available.

Warranty
 Five-year warranty.

1-10 Light Squares Solid State LED AREA/SITE LUMINAIRE

CERTIFICATION DATA
 UL Listed (ULC) Location Listed (ISO 9001) IAPET LMBD Compliant (UL) (ULC) DesignLights Consortium™ Qualified™

ENERGY DATA
 Electronic LED Driver
 0.9 Power Factor
 <20% Total Harmonic Distortion
 120-277V 50/60Hz
 347V & 480V 60Hz
 40°C Min. Temperature
 50°C Max. Temperature
 60°C Max. Temperature (HA Option)

DRILLING PATTERN

DIMENSION DATA

Number of Light Squares	"A" Width	"B" Standard Arm Length	"C" Optional Arm Length	Weight with Arm (kg)	EPA with Arm (ft-lb)
1-4	18-1/2" (468mm)	7" (178mm)	10" (254mm)	33 (73.8 kg)	0.86
5-6	21-5/8" (548mm)	7" (178mm)	10" (254mm)	44 (97.0 kg)	1.07
7-8	21-5/8" (548mm)	7" (178mm)	13" (330mm)	58 (128.3 kg)	1.52
9-10	29-3/4" (757mm)	7" (178mm)	16" (406mm)	63 (139.2 kg)	1.52

NOTES: 1. Optional arm lengths to be used when mounting two luminaires at 90° on a single pole. 2. EPA calculated with optional arm length.

FACN Fixing Device Wholesale
 www.designlights.org
 TDS60020EN
 January 17, 2019 2:39 PM

McGraw-Edison

DESCRIPTION
 The Galeon™ Wall LED luminaire's appearance is complementary with the Galeon area and site luminaires bringing a modern architectural style to lighting applications. Flexible mounting options accommodate all surfaces in both an upward and downward configuration. The Galeon family of LED products deliver exceptional performance with patented, high-efficiency AccuLED Optics™, providing uniform and energy conscious lighting for parking lots, building and security lighting applications.

SPECIFICATION FEATURES
Construction
 Drive enclosure thermally isolated from optics for optimal thermal performance. Heavy wall aluminum housing die-cast with integral external heat sinks to provide superior structural rigidity and an IP66 rated housing. Overall construction passes a 1.8G vibration test to ensure mechanical integrity. **LIGHTING:** Specifically with the UPL option for inverted mount upright housing with additional protections to maintain IP rating.

Optics
 Choice of three patented, high-efficiency AccuLED Optics. The optics are precisely designed to shape the distribution maximizing efficiency and application spacing. AccuLED Optics create consistent distributions with the scalability to meet customized application requirements. Offered standard in 4000K (+/- 276K) CCT and minimum 70 CRI. Optional 3000K, 5000K and 6000K CCT. Greater than 90% lumens maintenance expected at 60,000 hours. Available in standard 1A drive current and optional 800mA, 800mA and 1000mA drive currents.

Electrical
 LED drivers are mounted for ease of maintenance. 120-277V 50/60Hz, 347V or 480V 60Hz operation. 480V is compatible for use with 480V Wye systems only. Drivers are provided standard with 0-10V dimming. An optional Eaton proprietary surge protection module is available and designed to withstand 1kV of transient line surge. The Galeon Wall LED luminaire is suitable for operation in -40°C to 40°C ambient environments. For applications with ambient temperatures exceeding 40°C, specify the HA (High Ambient) option. Emergency egress options for 20°C ambient environments and occupancy sensor available.

Mounting
 Gasketed and zinc plated rigid steel mounting attachment fits directly to 4" box or wall with the Galeon Wall "Hook-N-Lock" mechanism for quick installation. Secured with two captive corrosion resistant black oxide coated allen head set screws which are concealed but accessible from bottom of fixture.

Finish
 Housing finished in super durable TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Standard colors include black, bronze, grey, white, dark platinum and graphite metallic. RAL and custom color matches available. Consult the McGraw-Edison Architectural Colors brochure for the complete selection.

Warranty
 Five-year warranty.

1-2 Light Squares Solid State LED WALL MOUNT LUMINAIRE

CERTIFICATION DATA
 UL Listed (ULC) Location Listed (ISO 9001) IAPET LMBD Compliant (UL) (ULC) DesignLights Consortium™ Qualified™

ENERGY DATA
 Electronic LED Driver
 0.9 Power Factor
 <20% Total Harmonic Distortion
 120-277V 50/60Hz
 347V & 480V 60Hz
 40°C Min. Temperature
 50°C Max. Temperature
 60°C Max. Temperature (HA Option)

DRILLING PATTERN

DIMENSIONS

HOOK-N-LOCK MOUNTING

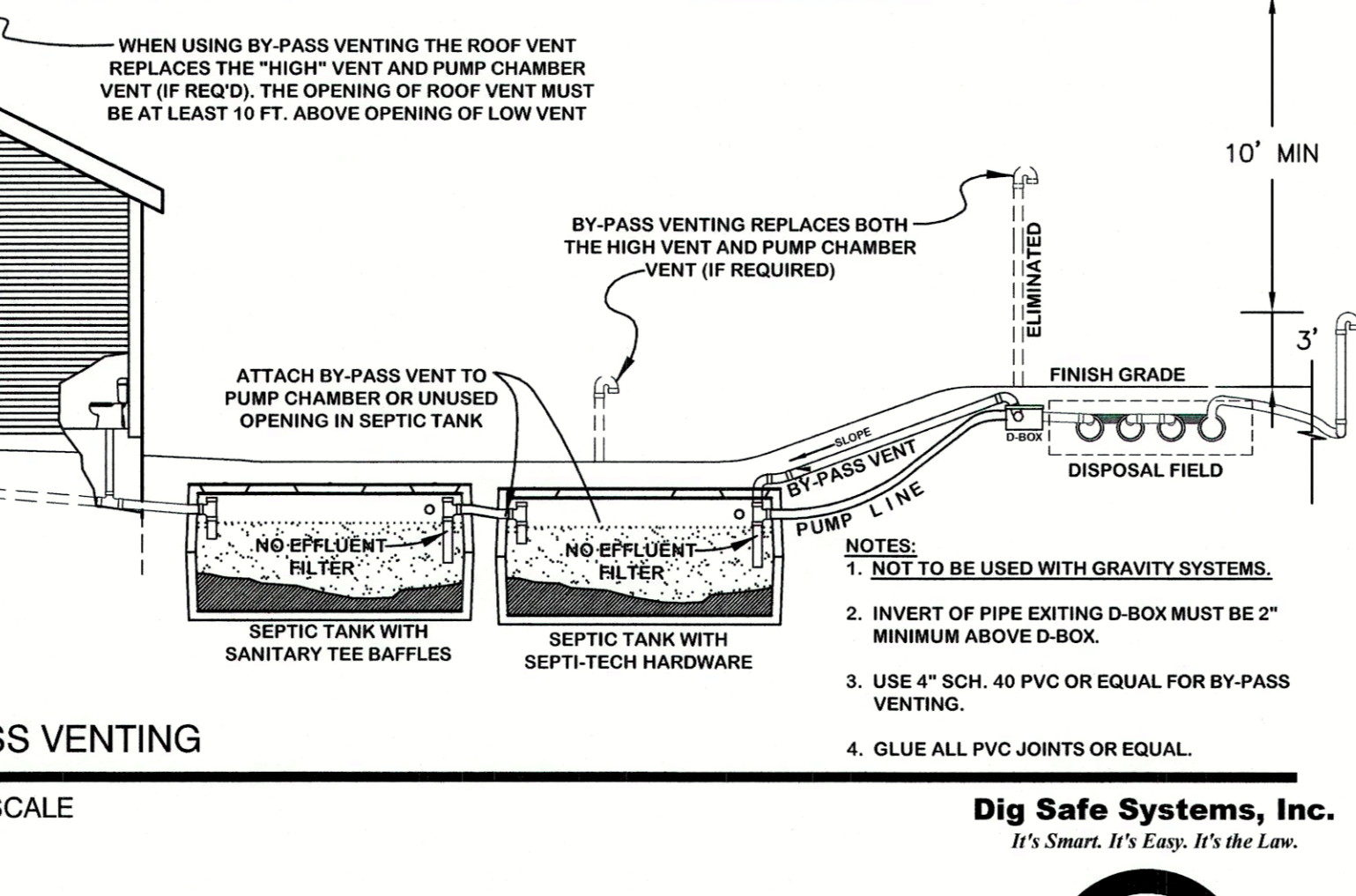
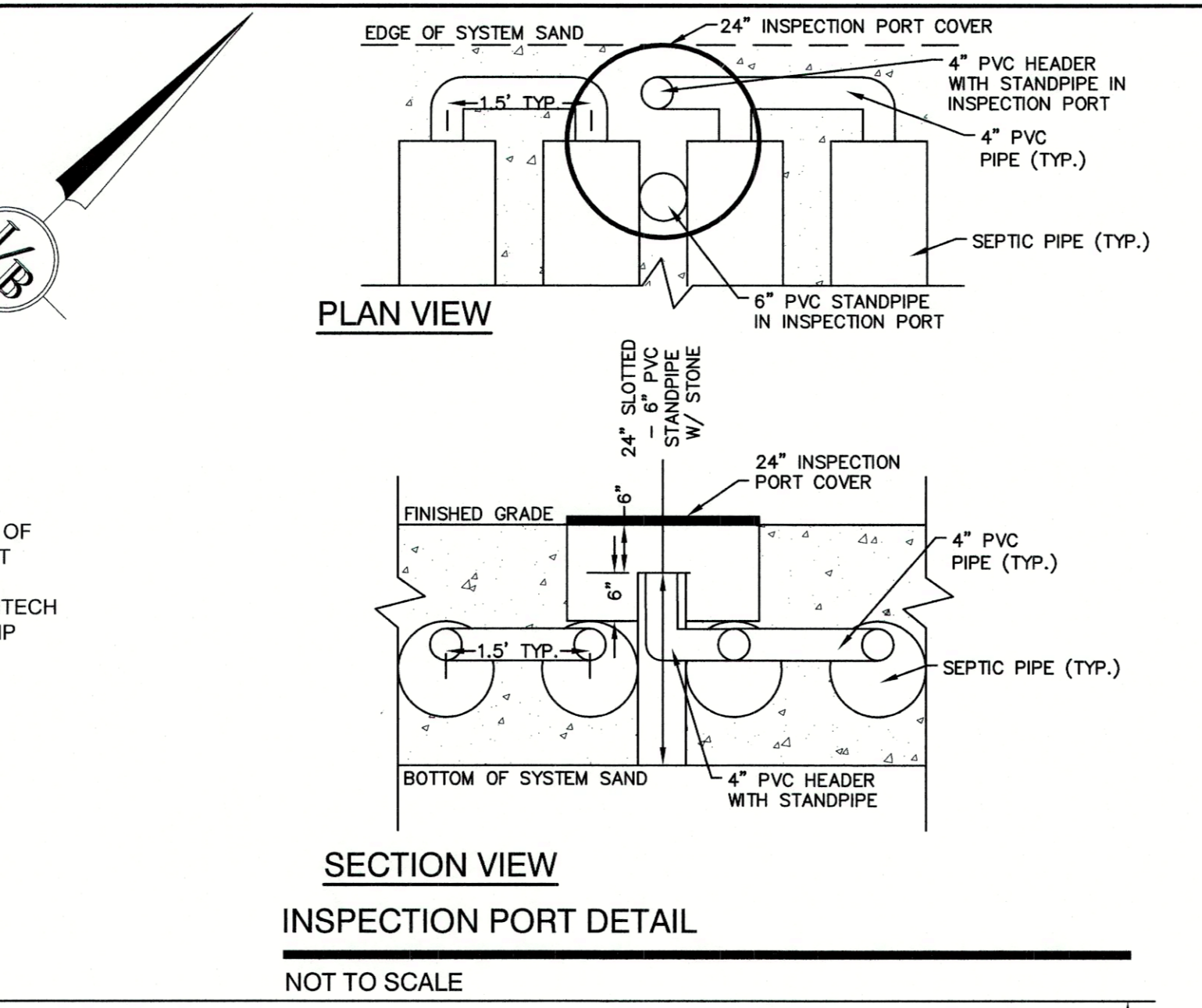
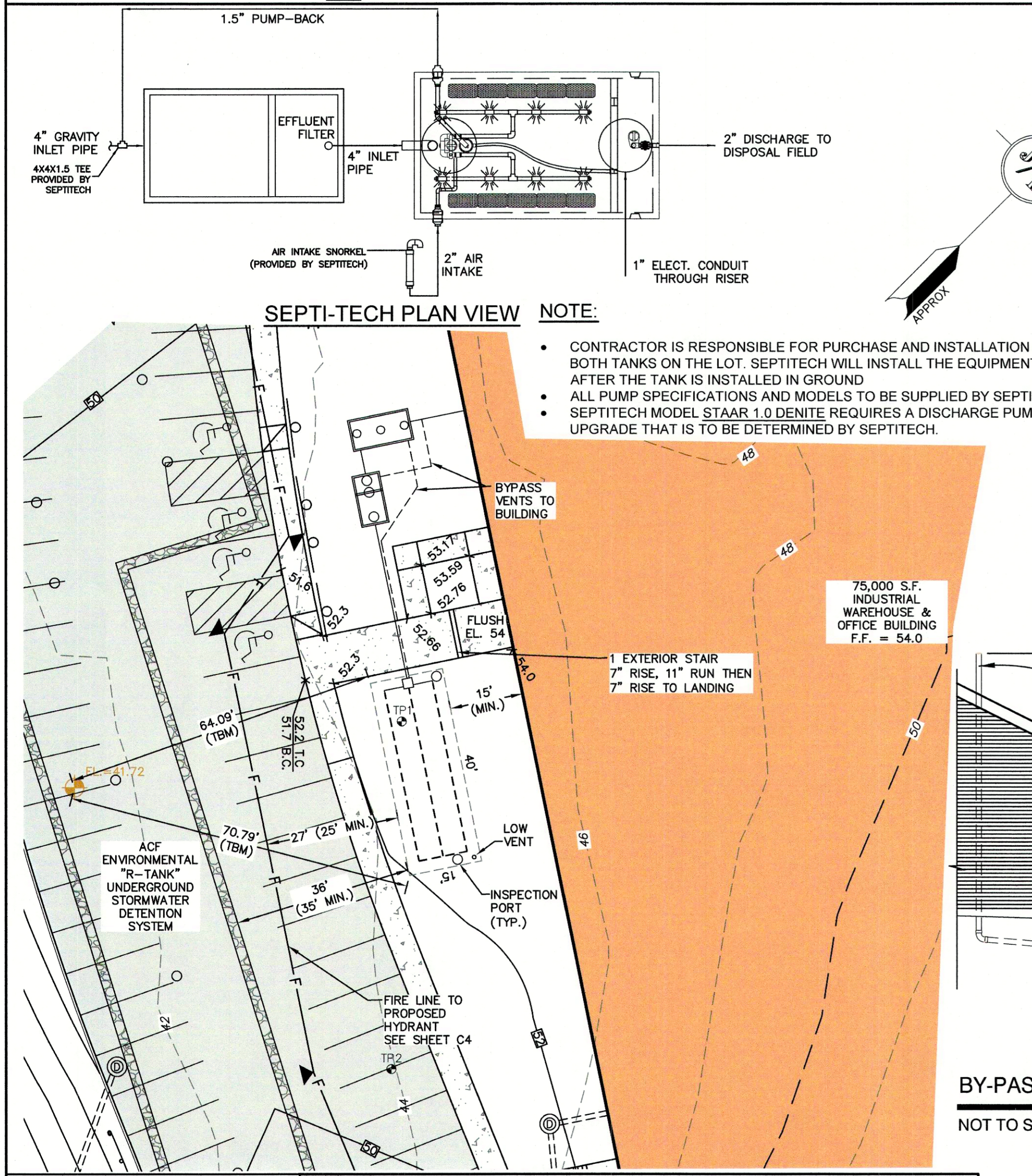
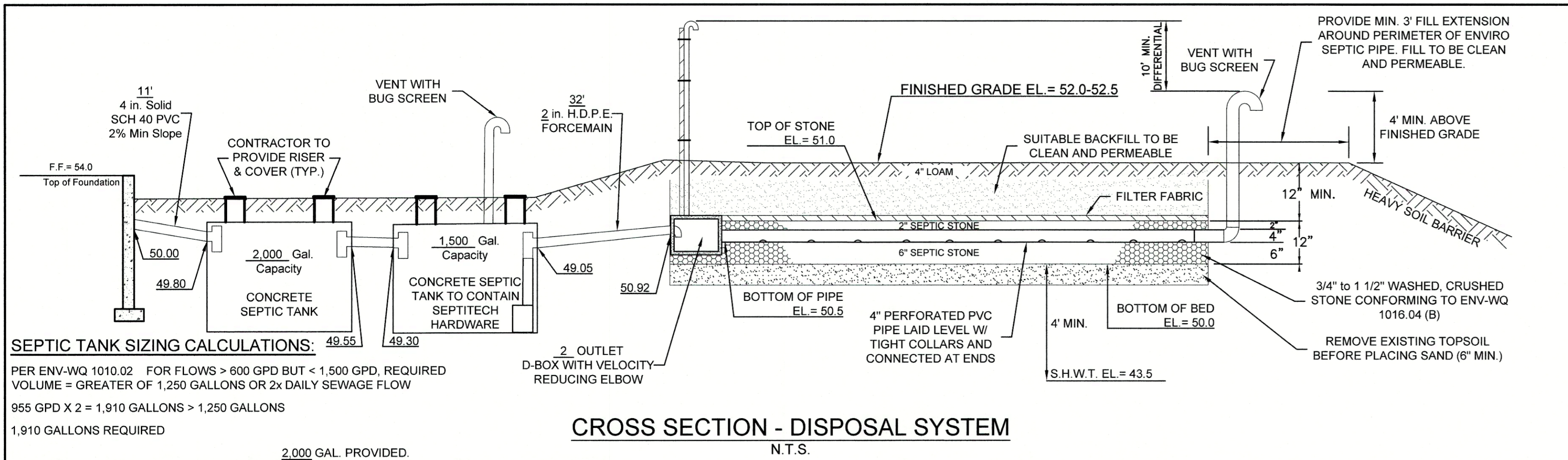
BATTERY BACKUP AND THRU-BRANCH BACK BOX

FACN Fixing Device Wholesale
 www.designlights.org
 TDS60120EN
 June 21, 2018 4:07 PM

Luminaire Schedule

Symbol	Qty	Label	Arrangement	Description
	1	S3	SINGLE	GLEON-AF-01-LED-E1-SL3-HSS/ SSS4A20SFN1 (20' AFG)
	4	S4	SINGLE	GLEON-AF-01-LED-E1-SL4-HSS/ SSS4A20SFN1 (20' AFG)
	2	W	SINGLE	GWC-AF-02-LED-E1-T4FT/ WALL MTD 20' AFG
	9	W4	SINGLE	GWC-AF-01-LED-E1-SL4-600/ WALL MTD 15' AFG

- ### LIGHTING AND ELECTRICAL NOTES:
- SITE ELECTRICAL CONTRACTOR SHALL COORDINATE LOCATION OF EASEMENTS, UNDERGROUND UTILITIES AND DRAINAGE BEFORE DRILLING POLE BASES.
 - CONTRACTOR SHALL INSTALL PROPOSED LIGHT POLES ACCORDING TO TOWN REGULATIONS.
 - ALL OUTDOOR LIGHTING SYSTEMS SHALL BE EQUIPPED WITH TIMERS TO REDUCE ILLUMINATION LEVELS TO NON-OPERATIONAL VALUES PER TOWN REGULATIONS.
 - LIGHTING CONDUIT SHALL BE SCHEDULE 40 PVC, AND SHALL BE INSTALLED IN CONFORMANCE WITH THE NATIONAL ELECTRICAL CODE. CONTRACTOR SHALL PROVIDE EXCAVATION AND BACKFILL.
 - ILLUMINATION READINGS SHOWN ARE BASED ON A TOTAL LLF OF 0.75 AT GRADE. ILLUMINATION READINGS SHOWN ARE IN UNITS OF FOOT-CANDELES.
 - LIGHTING CALCULATIONS SHOWN ARE NOT A SUBSTITUTE FOR INDEPENDENT ENGINEERING ANALYSIS OF LIGHTING SYSTEM AND SAFETY.
 - ALL LIGHTING FIXTURES SHALL BE FULL CUT-OFF DARK-SKY COMPLIANT, UNLESS OTHERWISE NOTED.
 - NL INDICATES THAT THIS LUMINAIRE SHALL BE ON A NIGHT LIGHT CIRCUIT. FL INDICATES THAT THIS LUMINAIRE SHALL BE A FLOOD LIGHT FIXTURE. MOUNTING BRACKET FOR THIS FL FIXTURE SHALL BE MOUNTED 25' ABOVE BOTTOM OF POLE BASE FOR ALL LIGHT POLES. THESE DESIGNATIONS INDICATE WHAT PHASE LIGHTS ARE WIRED TO (TYP).
 - THE PROPOSED LIGHTING CALCULATIONS AND DESIGN WAS PERFORMED BY CHARRON, INC., P.O. BOX 4550, MANCHESTER, NH 03108, ATTENTION KEN SWEENEY. ALL LIGHTS SHOULD BE PURCHASED FROM THIS COMPANY OR ONE OF THEIR SUPPLIERS, OR AN EQUAL LIGHTING DESIGN SHOULD BE SUBMITTED FOR REVIEW IF EQUAL SUBSTITUTIONS ARE PROPOSED BY THE CONTRACTOR OR OWNER.



TEST PIT LOGS

PERFORMED BY: JOSEPH CORONATI, JONES & BEACH ENGINEERS, INC. SSD# 1716

TEST PIT #1	DESCRIPTION
0'-8"	LOAM
8'-18"	10YR 4/4 DARK YELLOWISH BROWN FINE SANDY LOAM GRANULAR, FRIABLE
18'-90"	10YR 5/6 YELLOWISH BROWN SILTY LOAM FIRM

SHWT = 18"
ROOTS = 18"
H₂O @ 32"
NO REFUSAL OBSERVED

TEST PIT, DATE: APRIL 8, 2020
PERC. TEST, DATE: APRIL 8, 2020
16 MIN./INCH

STONE & PIPE DESIGN CALCULATIONS

WAREHOUSE: 70 EMPLOYEES = 700 GPD (10 GPD / PERSON, PER ENV-WQ 1008-1)
OFFICE WITH CAFETERIA: 17 EMPLOYEES = 255 GPD (15 GPD / PERSON, PER ENV-WQ 1008-1)

955 GPD @ 16 MIN./INCH = 2,148 S.F. REQUIRED PER ENV-WQ 1016-1.
2,148 S.F. x 75% PRE-TREATMENT REDUCTION = 537 S.F. REQUIRED.

600 S.F. PROVIDED (SEE DIMENSIONS BELOW)

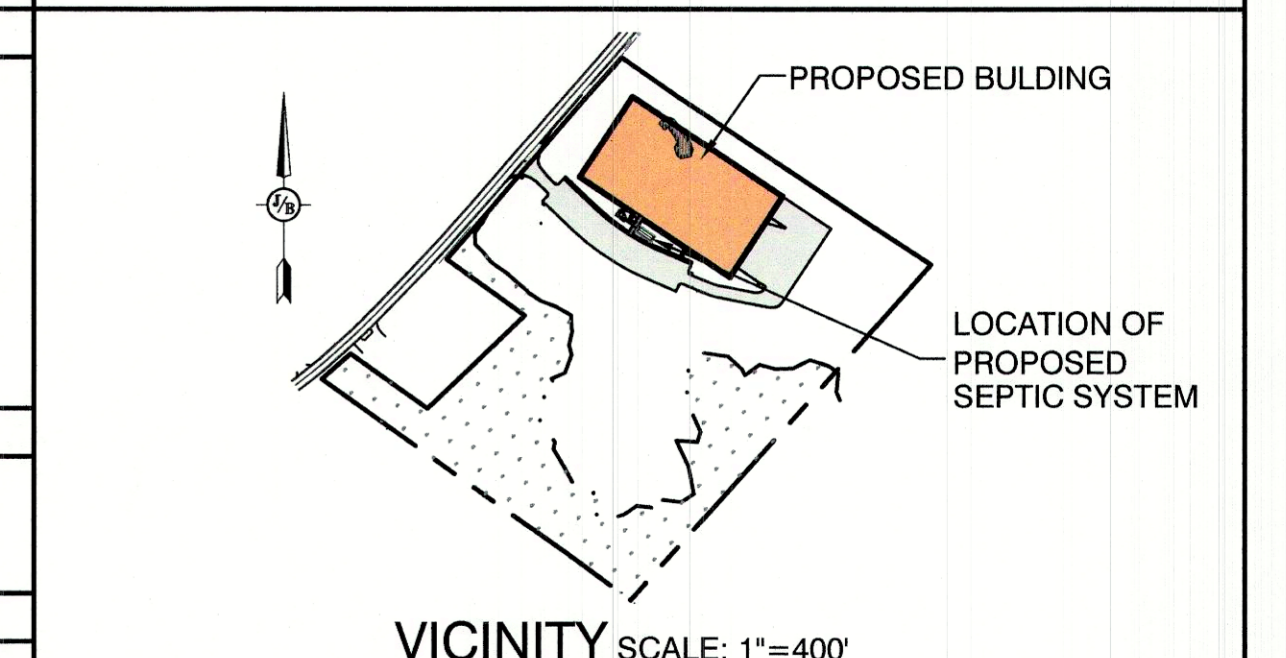
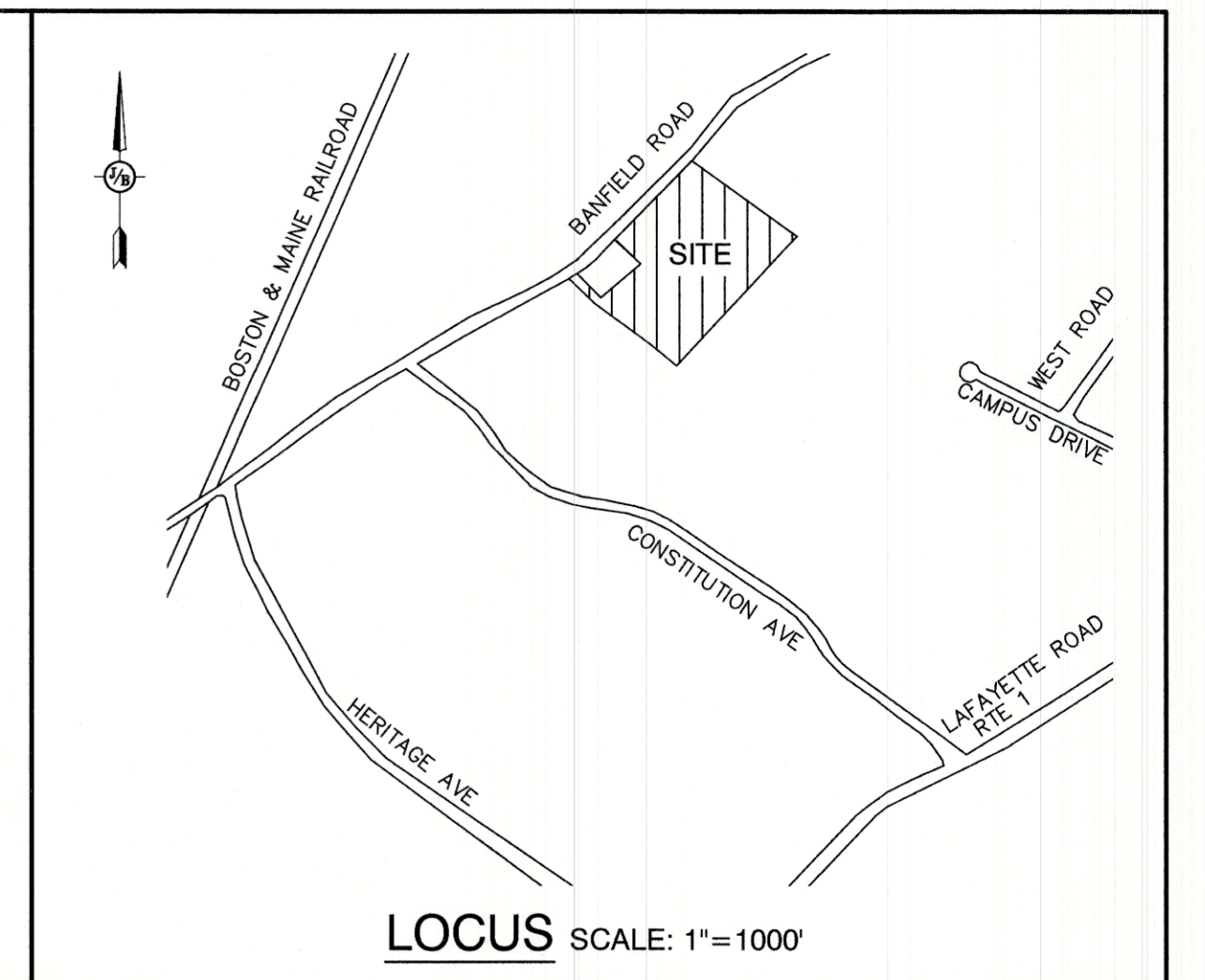
BED DIMENSIONS 40' x 15'

DESIGN INTENT

THE BOTTOM OF THE EFFLUENT DISPOSAL SYSTEM (E.D.S.) SHALL BE CONSTRUCTED AT ELEVATION 50.00. THIS IS APPROXIMATELY 5.00 FT ABOVE ORIGINAL GROUND ON THE HIGH CONTOUR (45.00) OF THE DESIGNED E.D.S. (ENV-WQ-1003.13(aa))

GENERAL NOTES

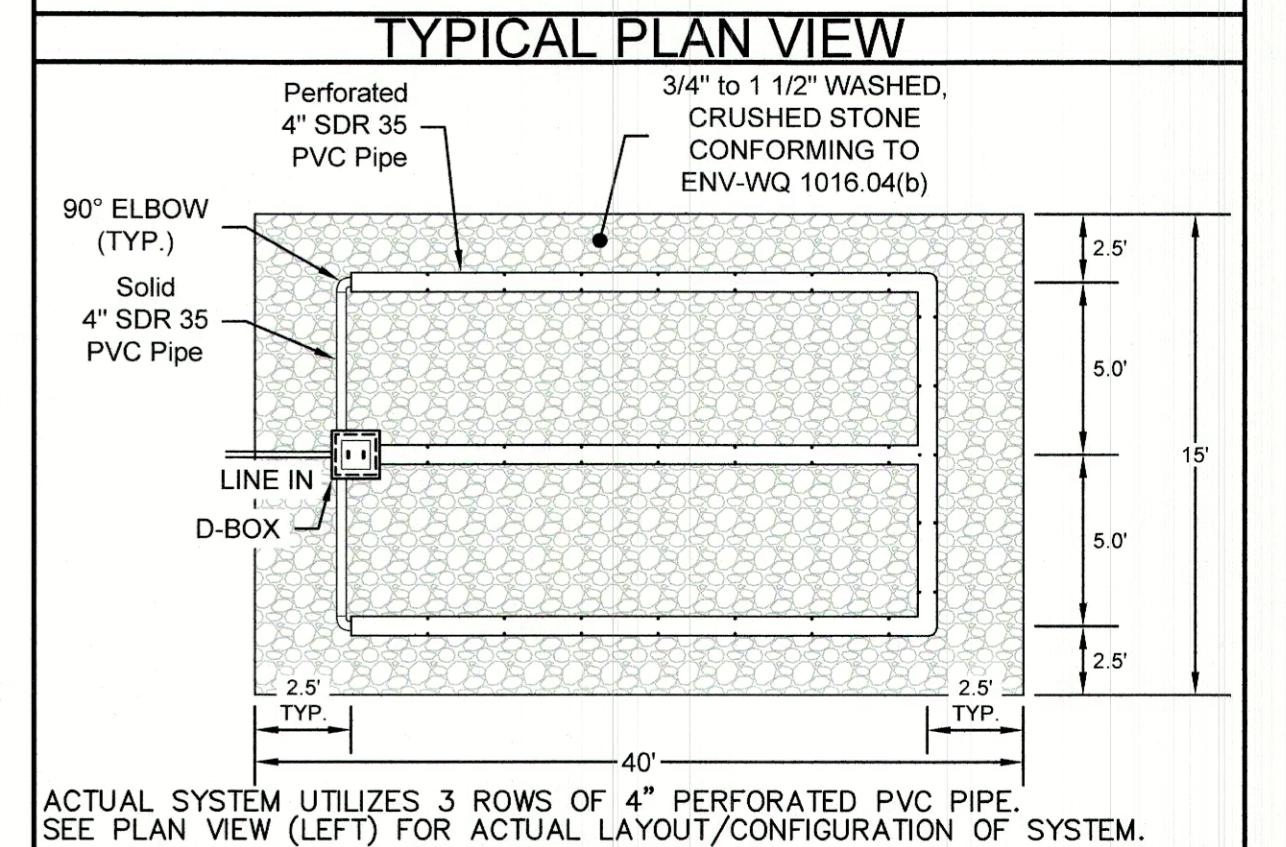
- CONTRACTOR TO VERIFY ALL ELEVATIONS IN FIELD PRIOR TO CONSTRUCTION. CONTRACTOR TO NOTIFY DESIGNER OF ANY ABNORMAL CONDITIONS (HARDPAN OR SATURATED SOILS, LEDGE, ETC.) FOUND WHEN EXCAVATING PRIOR TO INSTALLATION OF THE SYSTEM.
- PER ENV-WQ 1016.03, CONTRACTOR IS TO PROTECT THE NATURAL ABSORPTION QUALITIES OF THE SOIL. DO NOT COMPACT OR DRIVE OVER THE AREA WITH EQUIPMENT AND PROTECT OPEN EXCAVATION TO PREVENT THE ENTRANCE OF SILT AND DEBRIS.
- FILL TO BE MEDIUM TO COURSE-TEXTURED SAND (0.5mm-2.0mm).
- REMOVE TOPSOIL BEFORE PLACING FILL.
- 4 INCH THICK LOAM & SEED AROUND PERIMETER OF FILL.
- CONTRACTOR TO INSTALL A VENT WHEN PROVIDING MORE THAN 18" OF COVER.
- VENTING IS REQUIRED FOR PUMP SYSTEMS
- VENTING IS REQUIRED FOR PUMP SYSTEMS
- SYSTEM WILL BE REPLACED IN SAME LOCATION IN CASE OF FAILURE.
- JOINTS ARE TO BE BELLED PVC OR STANDARD SLIP COLLARS
- PER ENV-WQ 1010.11, THE FIRST COMPARTMENT IN MULTI-COMPARTMENT SEPTIC TANKS MUST EQUAL AT LEAST 2/3 OF THE REQUIRED VOLUME.
- PER ENV-WQ 1010.10, EXCEPTING LEDGE TANKS, THE LIQUID DEPTH OF THE SEPTIC TANK IS TO BE AT LEAST 40"
- THE OUTLET Baffle SHALL BE A VENTED TEE WHICH SHALL EXTEND TO A DISTANCE BELOW THE SURFACE EQUAL TO 40% OF THE LIQUID DEPTH AND SHALL EXTEND ABOVE THE LIQUID LINE TO NOT LESS THAN ONE INCH FROM THE TOP OF THE TANK.
- ALL CONNECTIONS BETWEEN A SEPTIC TANK AND THE PIPES LEADING TO AND EXITING FROM THE SEPTIC TANK SHALL BE SEALED WITH A WATERTIGHT, FLEXIBLE JOINT CONNECTOR THAT: (1) WILL ACCOMMODATE NORMAL MOVEMENT OF THE SEPTIC TANK WITHOUT LEAKING OR BREAKING; AND (2) HAS BEEN CERTIFIED BY ITS MANUFACTURER OR DISTRIBUTOR AS MEETING OR EXCEEDING THE APPLICABLE STANDARD IN ASTM C 1644-06, SECTION 7.
- CONTRACTOR TO PROVIDE RISERS FOR TANKS WITH MORE THAN 12" OF COVER.
- IF GARBAGE GRINDERS ARE DESIRED, SEPTIC TANK SHALL BE 50% LARGER.
- CITY OF PORTSMOUTH REQUIRES BED BOTTOM INSPECTION.
- PVC PIPING TO BE SUPPLIED BY: ELIMINATOR SYSTEMS INC. (603) 868-2242) OR EQUAL.
- 2,000 GALLON SEPTIC TANK & D-BOX TO BE SUPPLIED BY: SHEA CONCRETE, (800-896-7432) OR EQUAL.
- ADVANCED NITRATE TREATMENT SYSTEM AND 1,500 GAL. CONCRETE SEPTIC TANK TO BE SUPPLIED BY: SEPTITECH / BIO-MICROBICS MAINE INC., 207-333-6940. PRODUCT MAY NOT BE SUBSTITUTED WITHOUT FIRST CONTACTING THE DESIGNER.
- ROCKINGHAM COUNTY SOIL CONSERVATION SERVICE SOIL TYPE: ELDRIDGE
- ANY CHANGES TO SEPTIC TANK, BUILDING OR WELL LOCATION/ORIENTATION WILL REQUIRE AN AS-BUILT PLAN TO BE PROVIDED BY THE DESIGNER PRIOR TO NHDES FINAL INSPECTION.
- PER ENV-WQ 1004.10, SYSTEMS OVER 2,500 GPD ARE TO BE INSPECTED BY DESIGNER.
- PER ENV-WQ 1003.13(a)(3) THERE ARE NO KNOWN BURIAL SITES OR CEMETERIES ON THE LOT WITHIN 100' OF ANY COMPONENT OF THE ISDS.
- 50' SETBACK FROM POORLY DRAINED SOILS
- DISTANCE FROM SEWER PIPE TO SURFACE WATER, OPEN DRAINAGE, VERY POORLY DRAINED SOIL, AN OPEN LOOP GEOTHERMAL WELL, OR A PRIVATE ON-SITE WELL SHALL BE 75 FT. THIS MAY BE REDUCED TO 50 FT IF SDR26 OR EQUIVALENT IS USED IN ACCORDANCE WITH ENV-WQ 1008.04(c)(1).
- DISTANCE FROM SEPTIC TANK TO SURFACE WATER, OPEN DRAINAGE, VERY POORLY DRAINED SOIL, AN OPEN LOOP GEOTHERMAL WELL, OR A PRIVATE ON-SITE WELL SHALL BE 75 FT. THIS MAY BE REDUCED TO 50 FT IF THE SEPTIC TANK IS EITHER MADE FROM PLASTIC OR COATED WITH A SEALANT TO PREVENT INFILTRATION AND EXFILTRATION IN ACCORDANCE WITH ENV-WQ 1008.04(c)(2).



REFERENCES

APPROVAL FOR CONSTRUCTION IS VALID FOR 4 YEARS FROM DATE OF ISSUE

- PREV. CONSTRUCTION APPROVAL #CA1998009388 ISSUED: 06/03/1998.
- SUBDIVISION APPROVAL: LARGER THAN 5 ACRES.



OWNER NOTES

- KNOW THE LOCATION OF YOUR SEPTIC TANK AND LEACHING AREA.
- INSPECT YOUR SEPTIC TANK YEARLY. HAVE THE SEPTIC TANK PUMPED AS NEEDED BUT AT LEAST ONCE EVERY THREE YEARS.
- DO NOT FLUSH BULKY ITEMS SUCH AS DIAPERS, SANITARY PADS OR BABY WIPES.
- DO NOT FLUSH TOXIC CHEMICALS SUCH AS PAINT THINNERS, DRANO, PESTICIDES, OR CHLORINE. AS THEY MAY KILL THE NECESSARY BACTERIA IN THE SEPTIC TANK.
- REPAIR LEAKING FIXTURES IN THE BUILDING PROMPTLY.
- BE CONSERVATIVE WITH WATER USE, SPREAD OUT USE OVER TIME, AND USE WATER-REDUCING FIXTURES WHENEVER AND WHEREVER POSSIBLE. TOO MUCH USE IN A SHORT TIME CAN OVERLOAD THE SYSTEM, WHICH MAY LEAD TO FAILURE.
- MOW YOUR LEACHING AREA REGULARLY. PREVENT DEEP-ROOTED TREES AND SHRUBS FROM GROWING ON AND ADJACENT TO YOUR LEACHING AREA.
- NO VEHICULAR TRAVEL, LIVESTOCK TRAVEL, OR SNOW REMOVAL IN AREA OF SYSTEM.

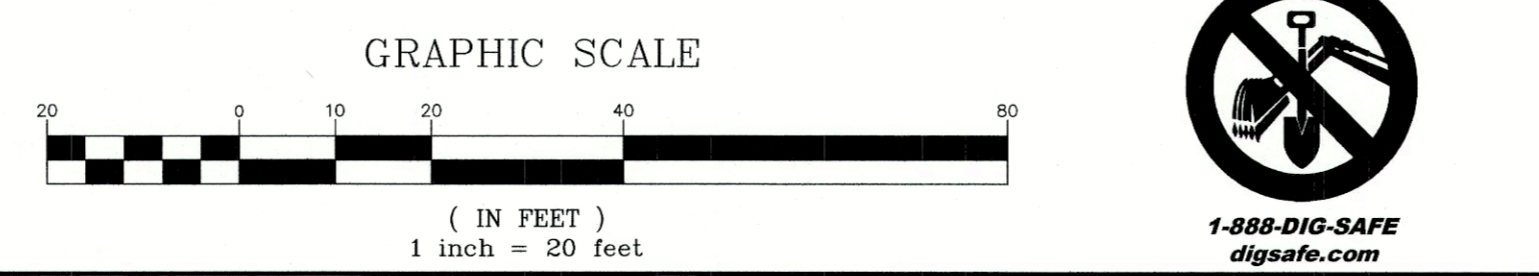
WETLANDS ON-SITE WERE DELINEATED BY: GOVE ENVIRONMENTAL SERVICES, INC. 8 CONTINENTAL DRIVE, UNIT H EXETER, NH 03833

DATE: SPRING, 2020

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 266, LOT 7
R.C.R.D. BK. 6081 PG. 2150
TOTAL LOT AREA: 14.96 ACRES

- CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTING THE SEPTIC PLAN FROM THE NHDES APPROVED PLAN

- THE BUILDER/SITE CONTRACTOR IS RESPONSIBLE TO CONFIRM THE ZONING DIMENSIONAL REQUIREMENTS AND SETBACK LINE REQUIREMENTS PRIOR TO INITIATING CONSTRUCTION OF THE PROPOSED BUILDING AND SEPTIC SYSTEM. THE ZONING ORDINANCE OF THE MUNICIPALITY IS TO BE COMPLIED WITH. THE BUILDER/SITE CONTRACTOR IS ALSO RESPONSIBLE TO CONTACT THE MUNICIPALITY REGARDING INSPECTIONS PRIOR TO AND DURING CONSTRUCTION, I.E. LOCATION AND BED-BOTTOM INSPECTIONS.



Design: JAC Draft: DJM Date: 04/21/20
Checked: JAC Scale: 1" = 20' Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.DWG

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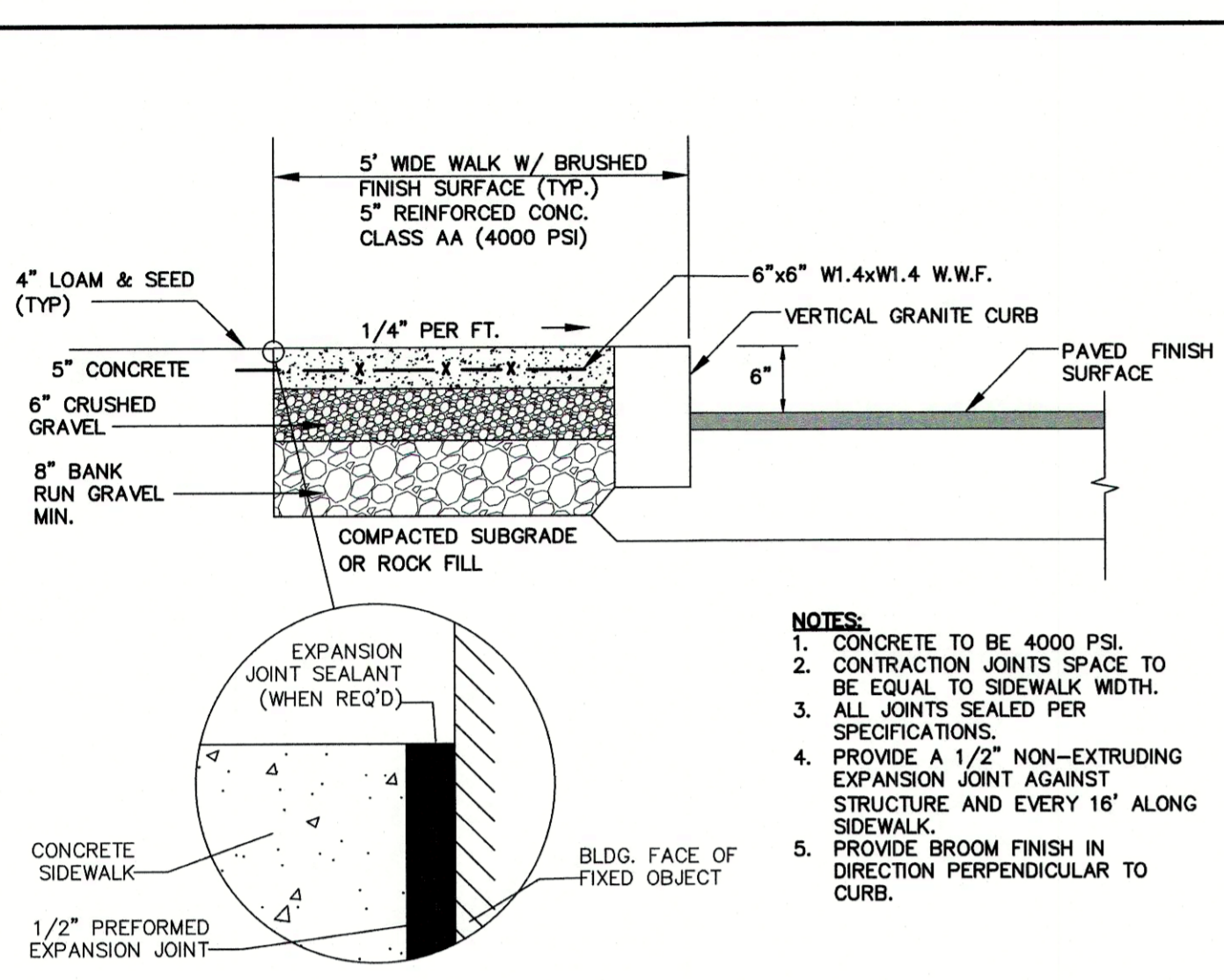
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J/B Jones & Beach Engineers, Inc.
Civil Engineering Services

85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
603-772-4746 FAX: 603-772-0227 E-MAIL: JBE@JONESANDBEACH.COM

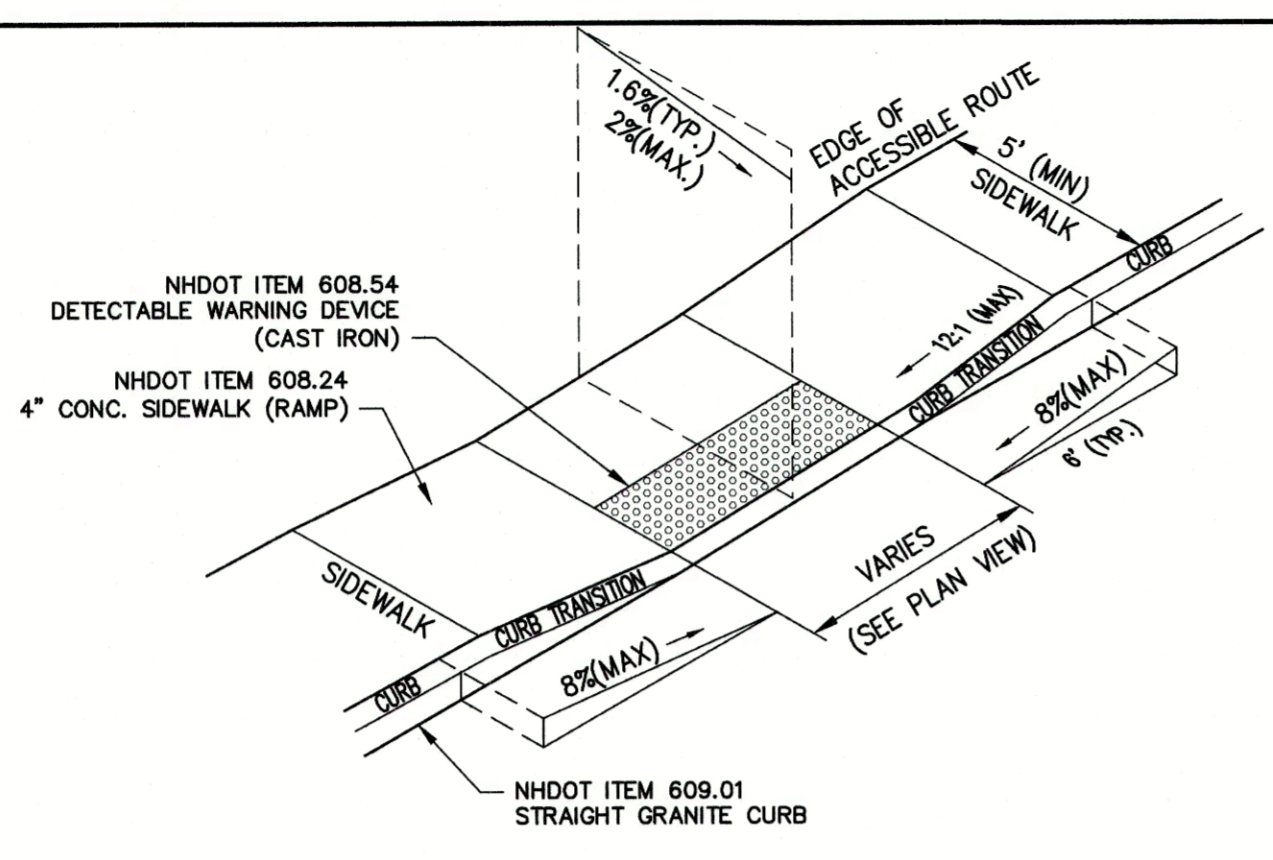
Plan Name:	EFFLUENT DISPOSAL DESIGN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No. **S1**
SHEET 9 OF 23
JBE PROJECT NO. 19190.2



CONCRETE SIDEWALK W/ VERTICAL GRANITE CURB

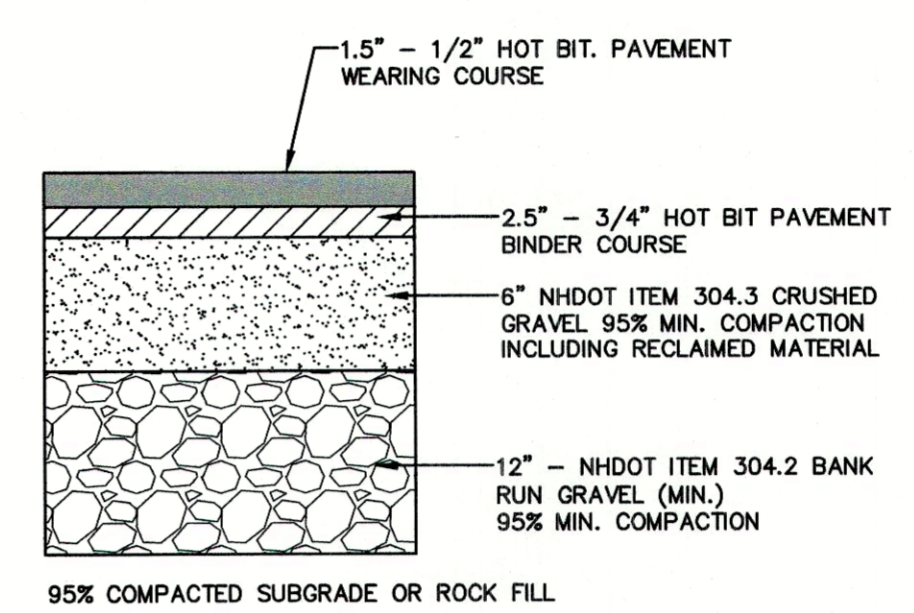
NOT TO SCALE



ACCESSIBLE CURB RAMP (TYPE 'A')

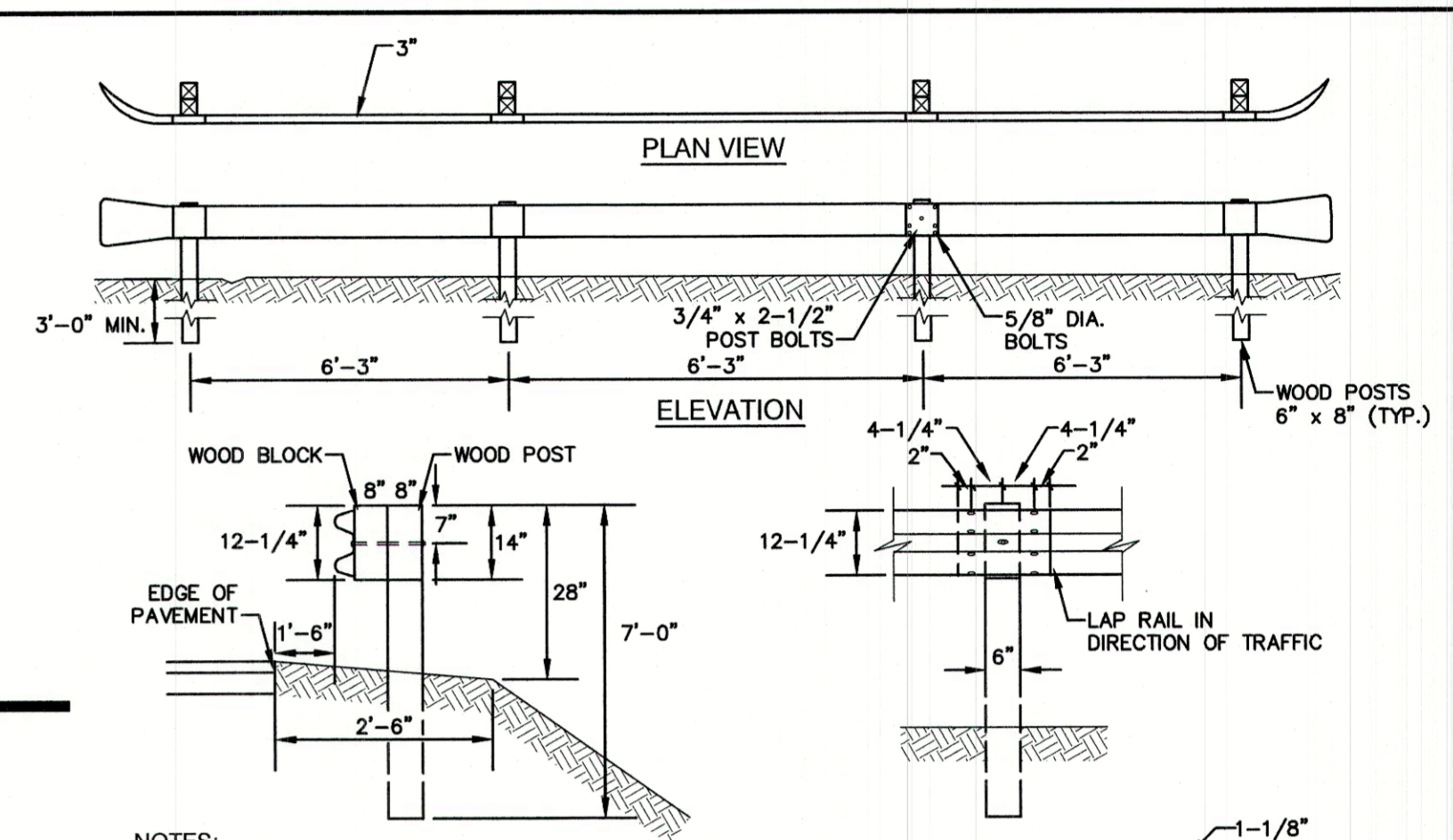
NOT TO SCALE

- NOTES:**
1. THE MAXIMUM ALLOWABLE CROSS SLOPE OF ACCESSIBLE ROUTE (SIDEWALK) AND CURB SHALL BE 1.5%.
 2. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
 3. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE (SIDEWALK) CURB RAMPS SHALL BE 8%.
 4. A MINIMUM OF 4 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (i.e., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.).
 5. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
 6. BASE OF RAMP SHALL BE GRADED TO PREVENT PONDING.
 7. SEE TYPICAL SECTION FOR RAMP CONSTRUCTION.



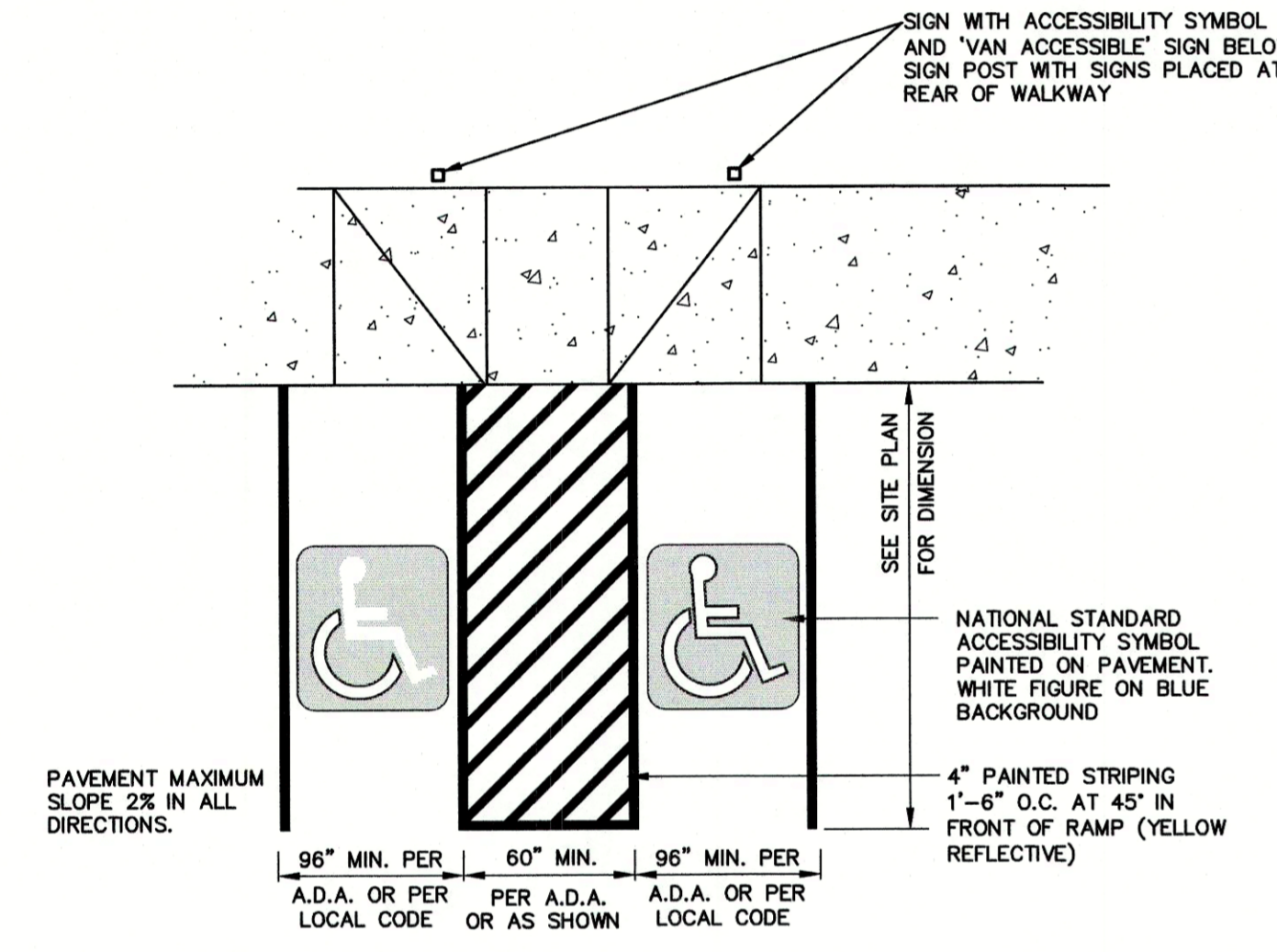
TYPICAL BITUMINOUS PAVEMENT

NOT TO SCALE



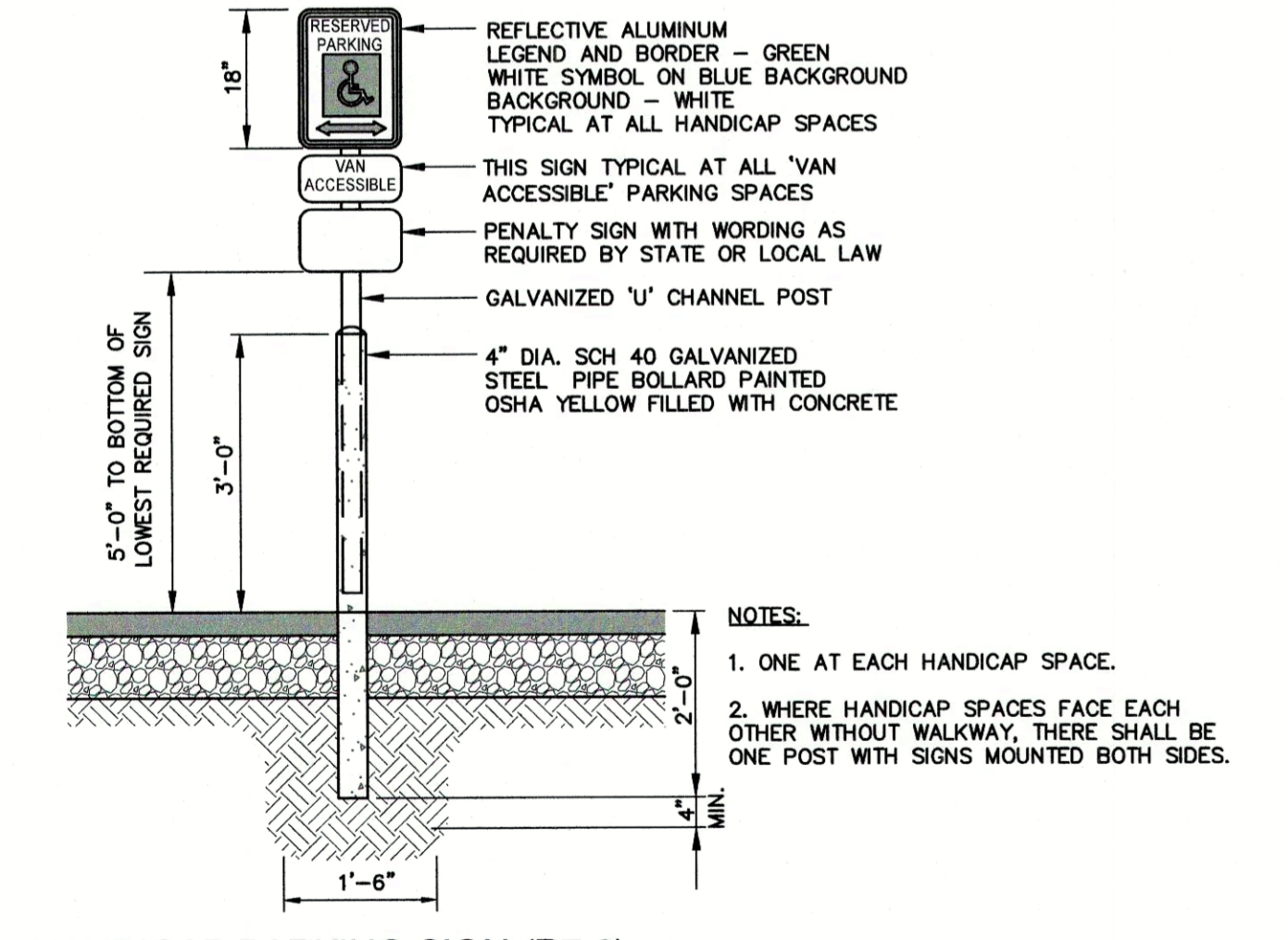
GUARD RAIL (CORE-TEN)

NOT TO SCALE



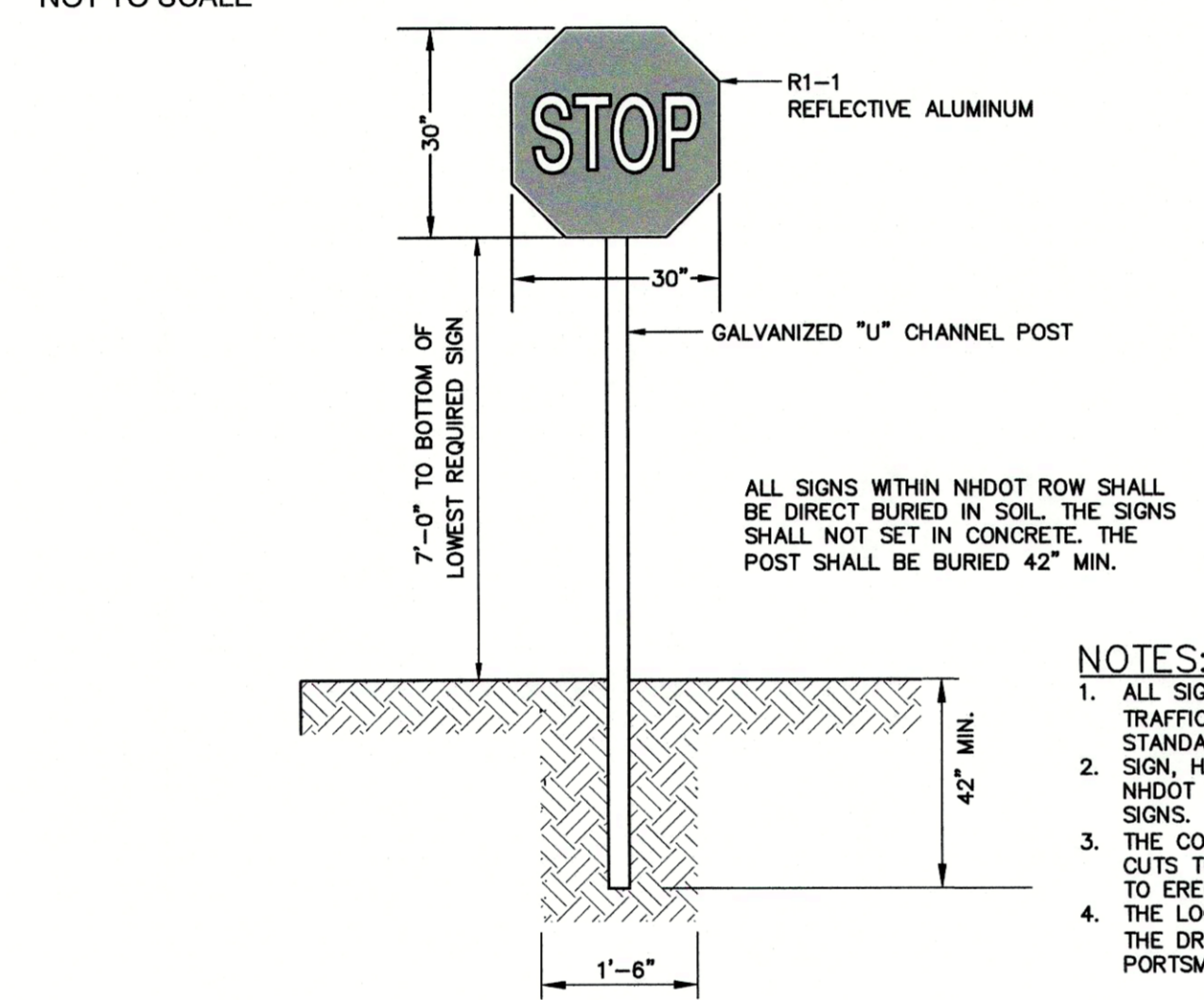
HANDICAP PARKING LAYOUT

NOT TO SCALE



HANDICAP PARKING SIGN (R7-8)

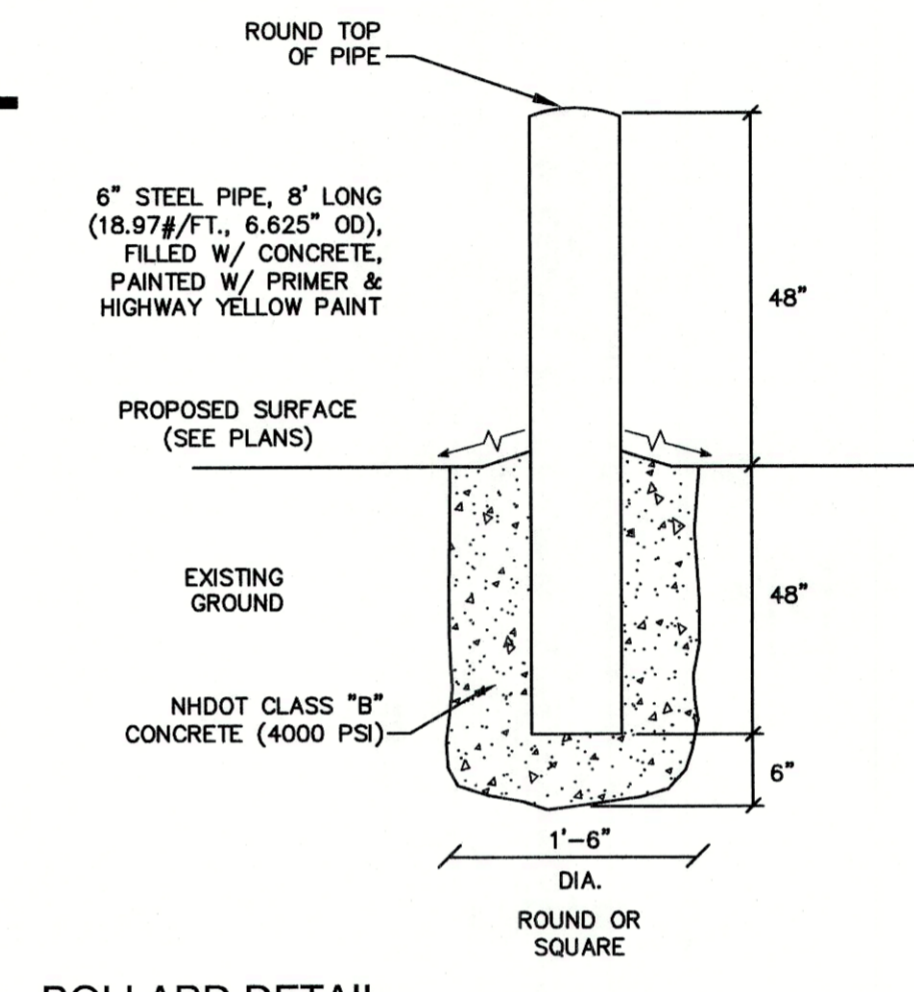
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STOP SIGN (R1-1)

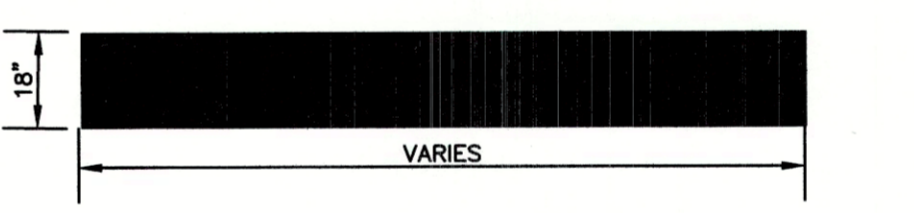
NOT TO SCALE

- NOTES:**
1. ALL SIGNAGE SHALL BE TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS AND NHDOT STANDARDS.
 2. SIGN, HARDWARE, AND INSTALLATION TO CONFORM TO 2016 NHDOT STANDARD SPECIFICATION, SECTION 615 - TRAFFIC SIGNS.
 3. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS/CATALOG CUTS TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ERECTING SIGNS.
 4. THE LOCATION OF THE SIGNS SHALL BE AS INDICATED ON THE DRAWINGS AND/OR AS DIRECTED BY THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS.



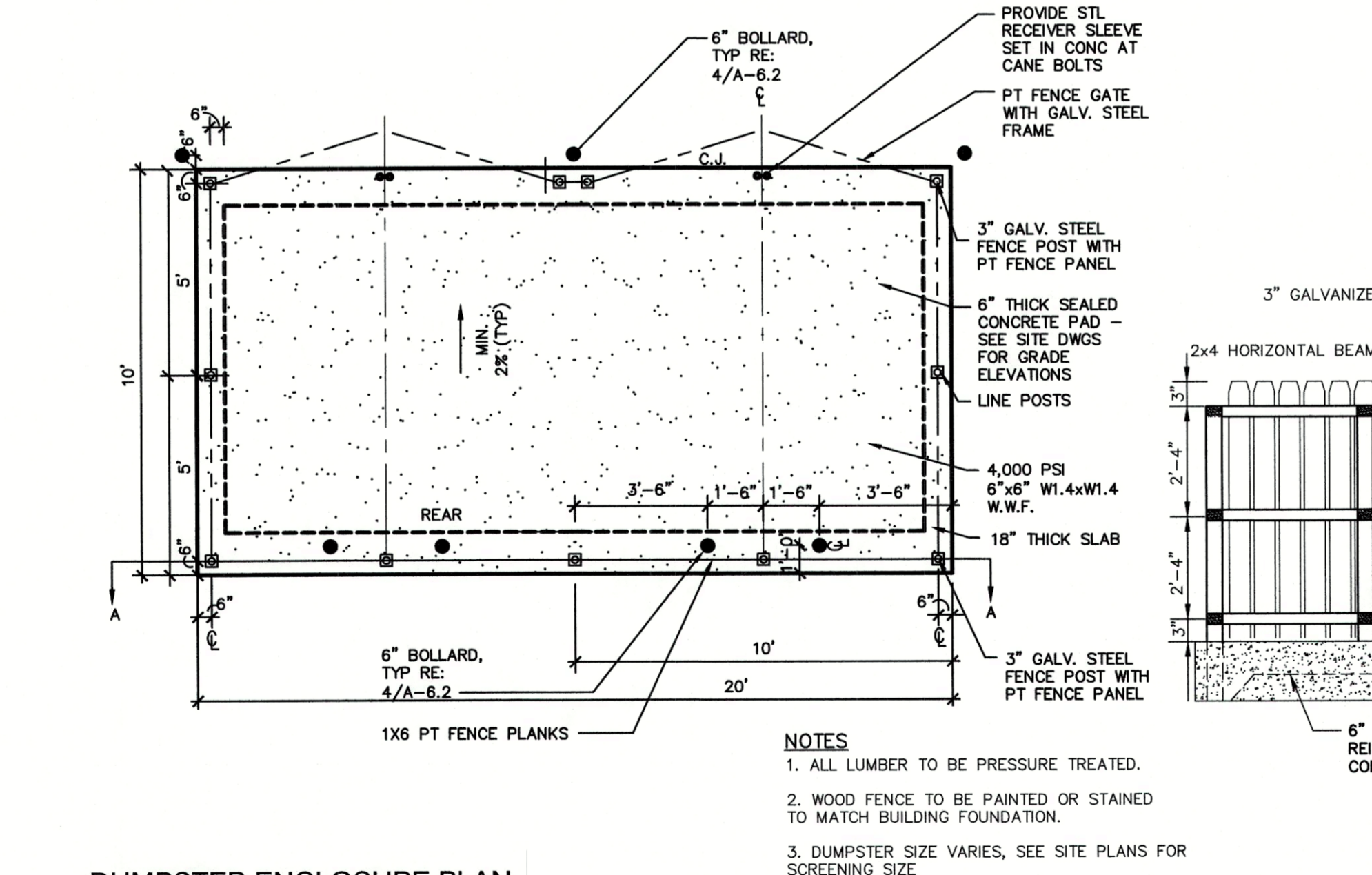
BOLLARD DETAIL

NOT TO SCALE



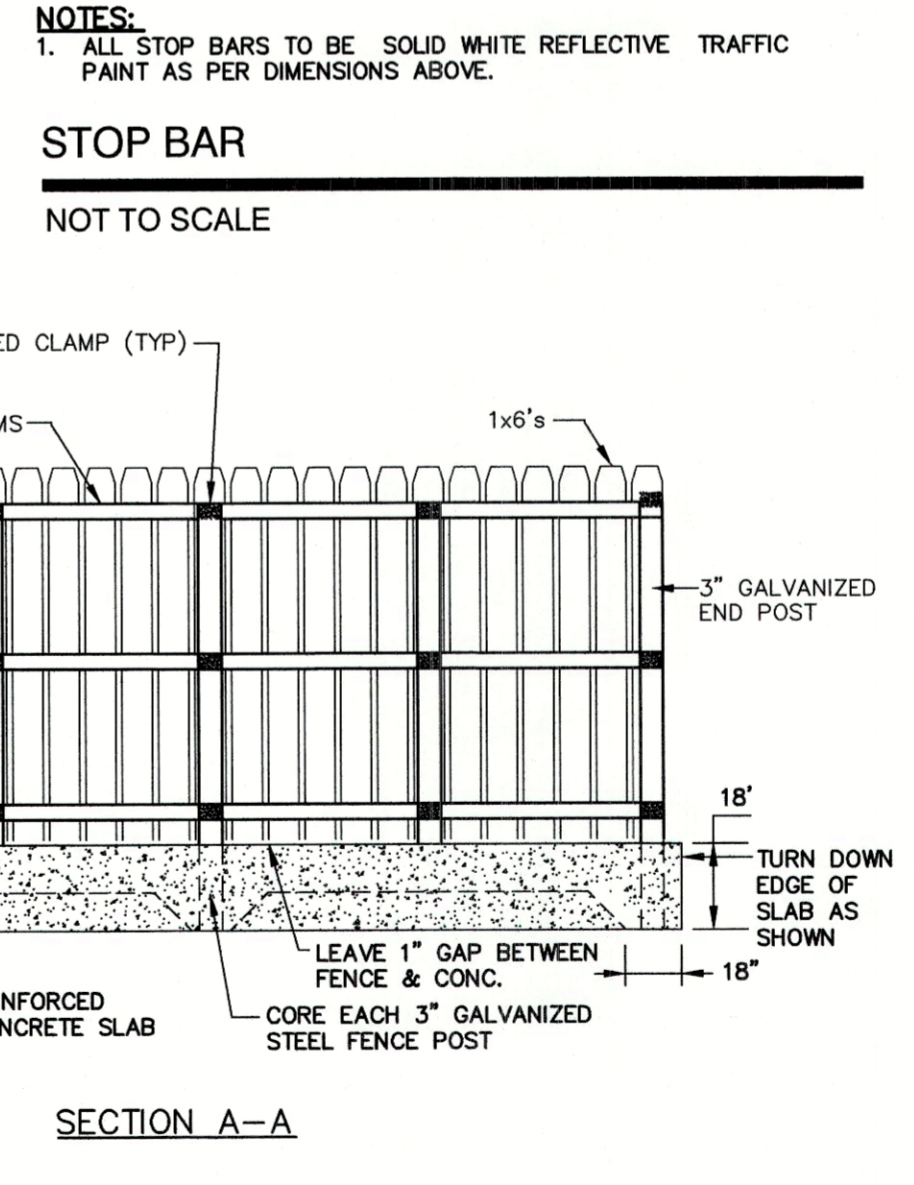
STOP BAR

NOT TO SCALE



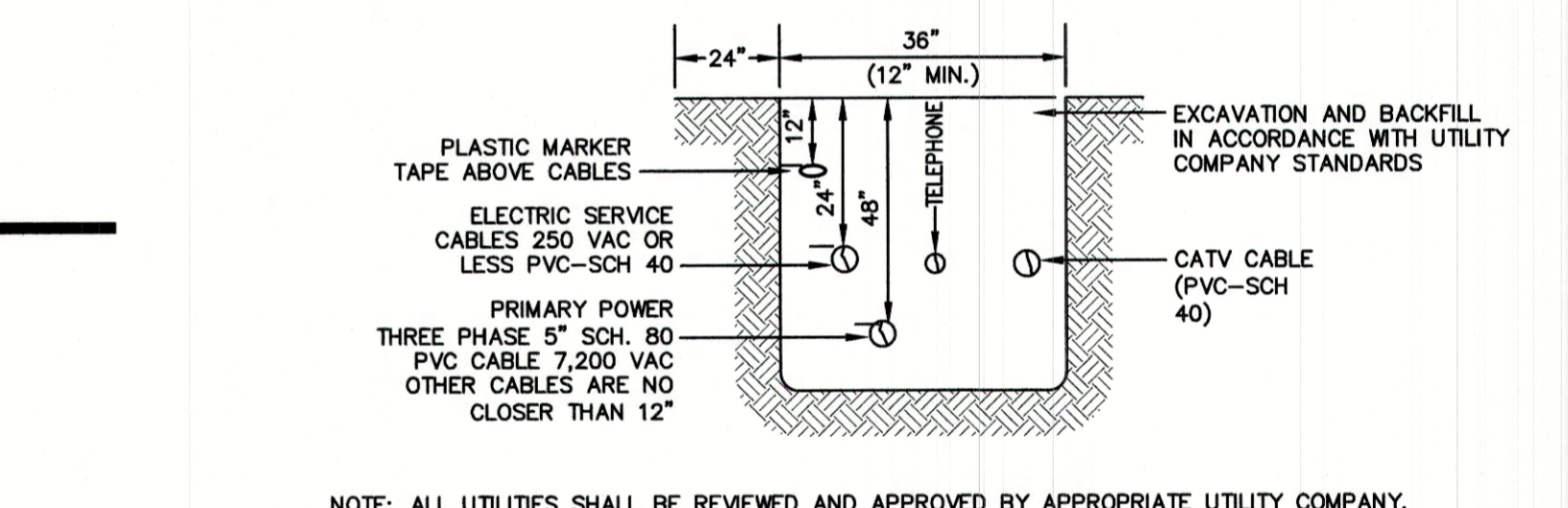
DUMPSTER ENCLOSURE PLAN

NOT TO SCALE



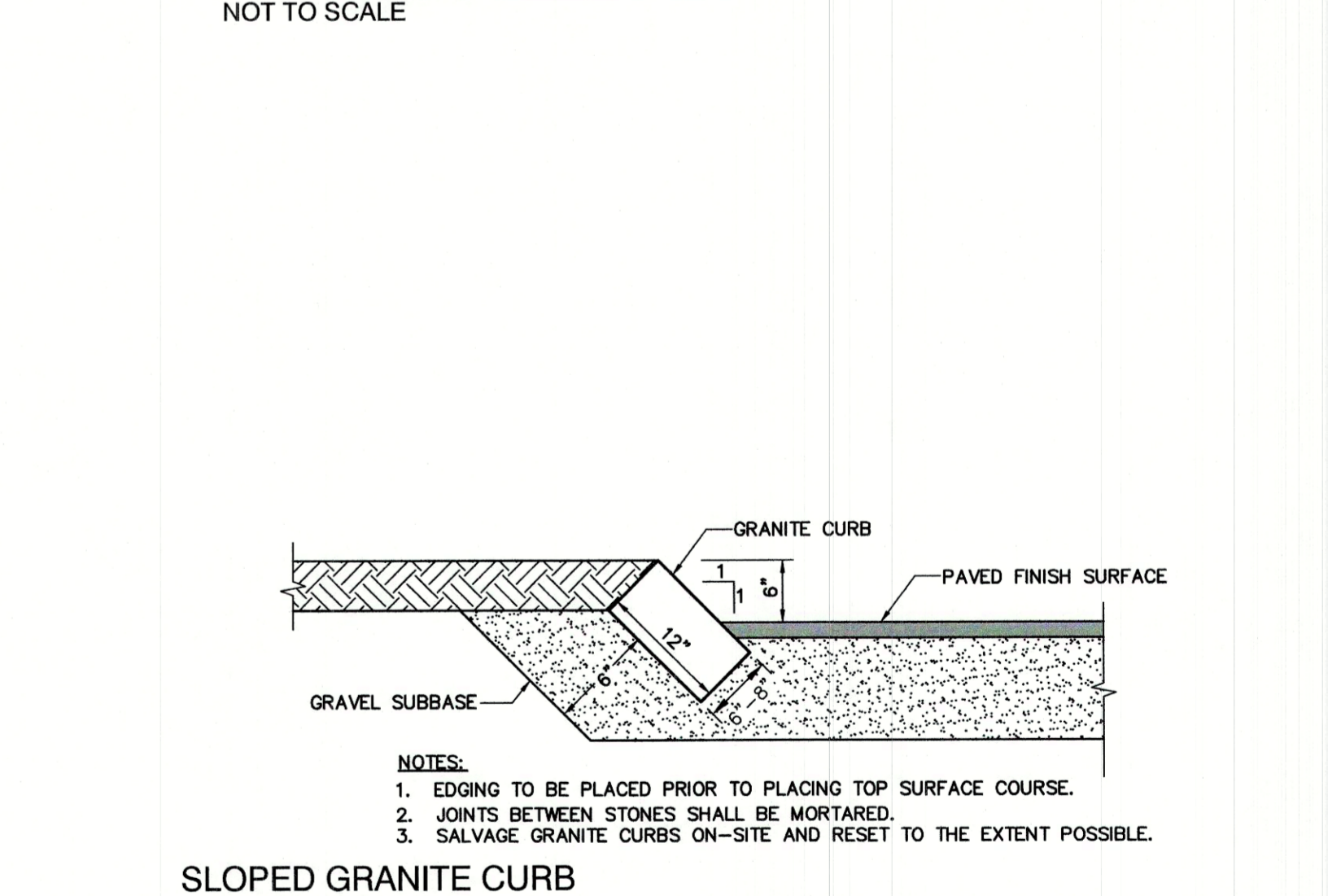
SECTION A-A

NOT TO SCALE



UTILITY TRENCH

NOT TO SCALE

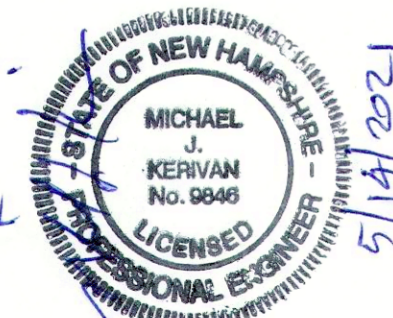


SLOPED GRANITE CURB

NOT TO SCALE

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Checked: JAC	Scale: AS NOTED	Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		
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Civil Engineering Services

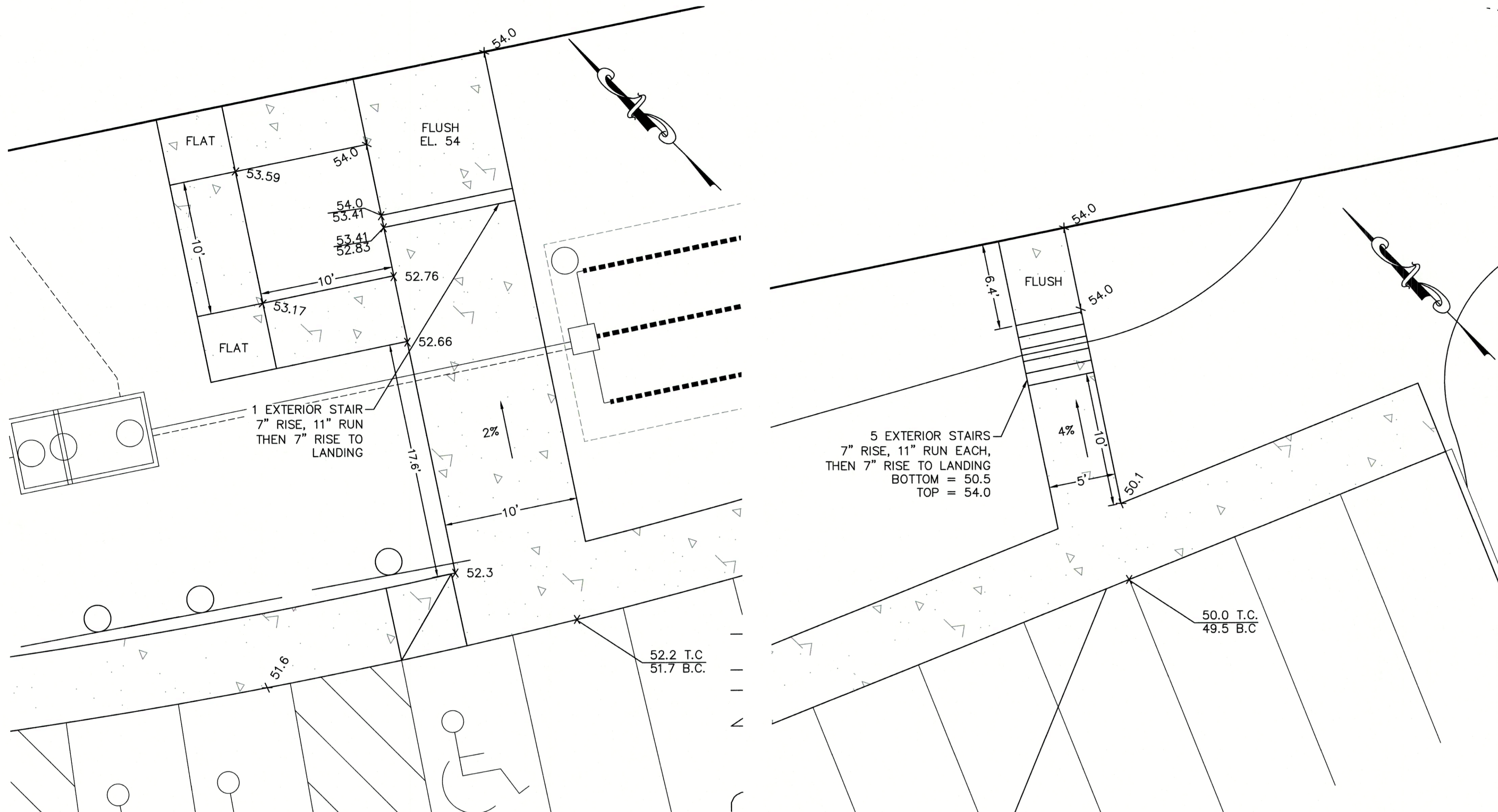
603-772-4746 FAX: 603-772-0227 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL SHEET
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.

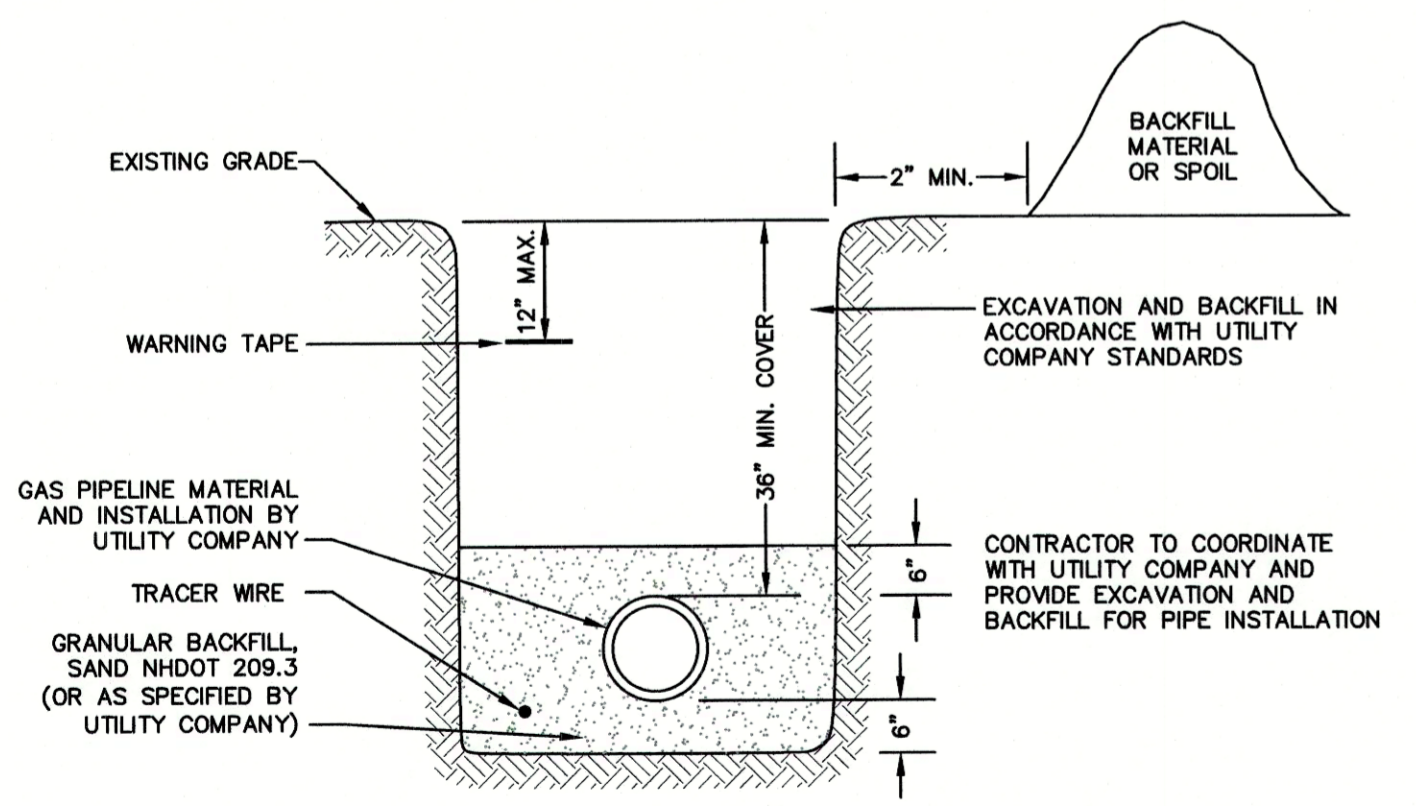
D1

SHEET 10 OF 23
JBE PROJECT NO. 19190.2



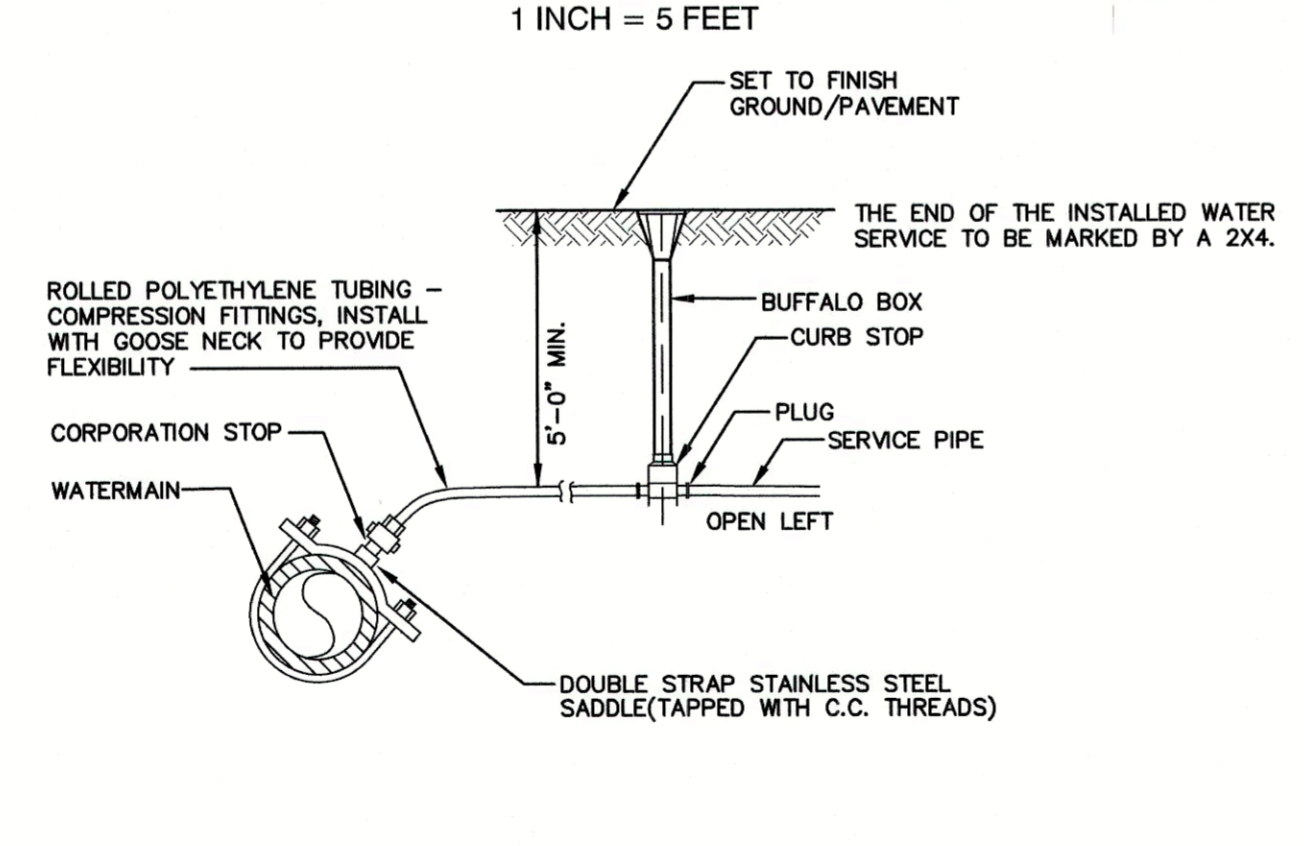
NOTES:
 1. RAMP TO CONTAIN 6"x6" W1.4xW1.4 W.W.F. EXTENDING INTO FOOTING.
 2. RAMP TO BE OF CONTRASTING COLOR TO WALK AND PAVEMENT.

MAIN ENTRANCE DETAIL
 1 INCH = 5 FEET

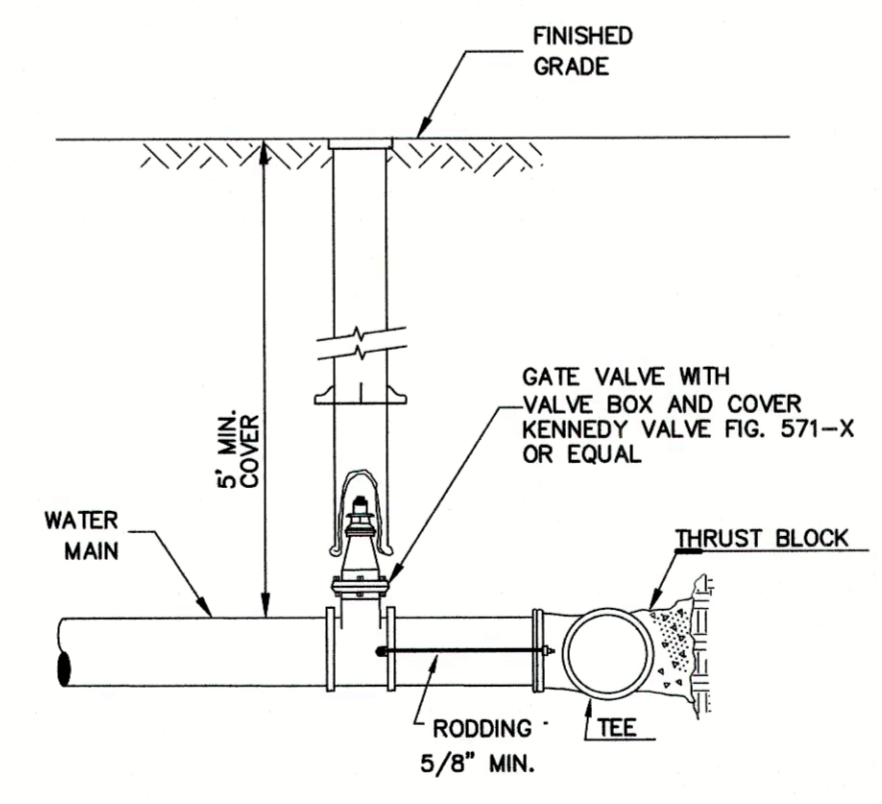


GAS TRENCH
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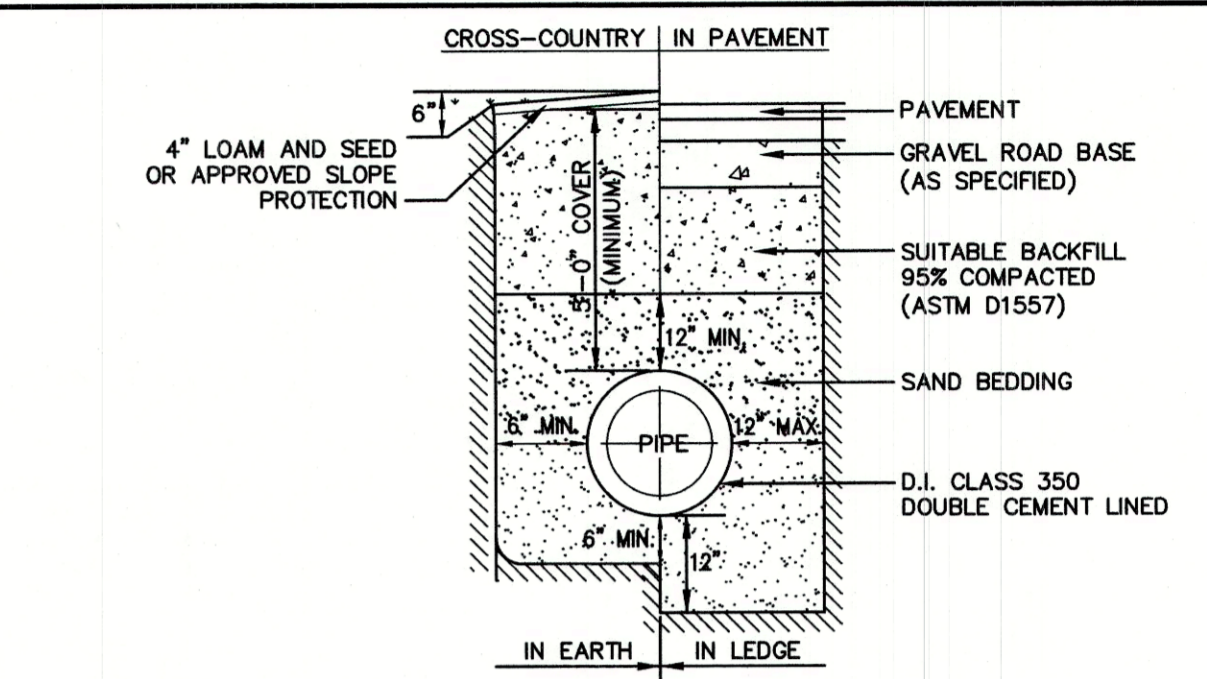
SECONDARY EGRESS DETAIL
 1 INCH = 5 FEET



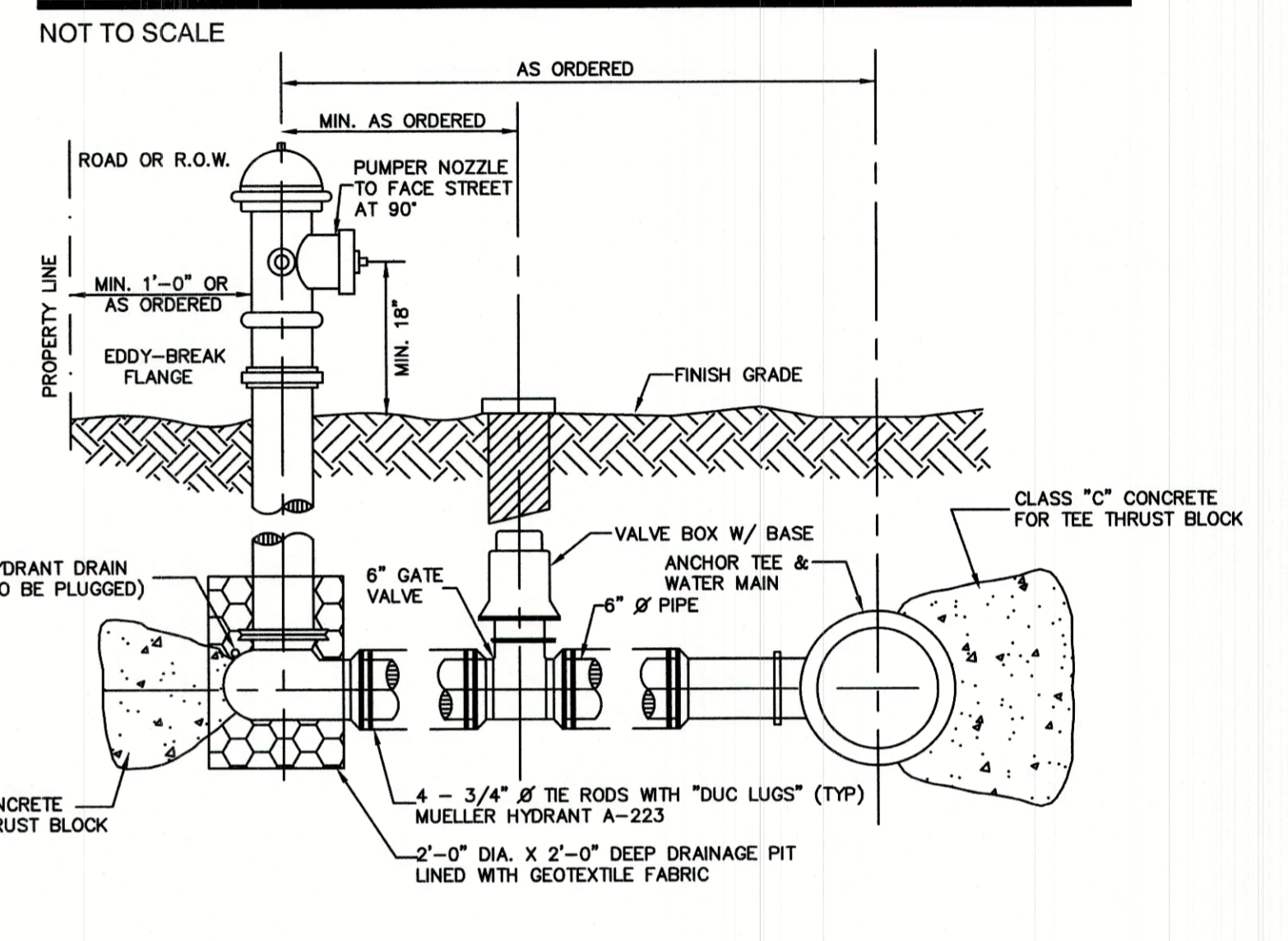
WATER SERVICE CONNECTION-POLYETHYLENE
 NOT TO SCALE



BURIED GATE VALVE DETAIL
 NOT TO SCALE



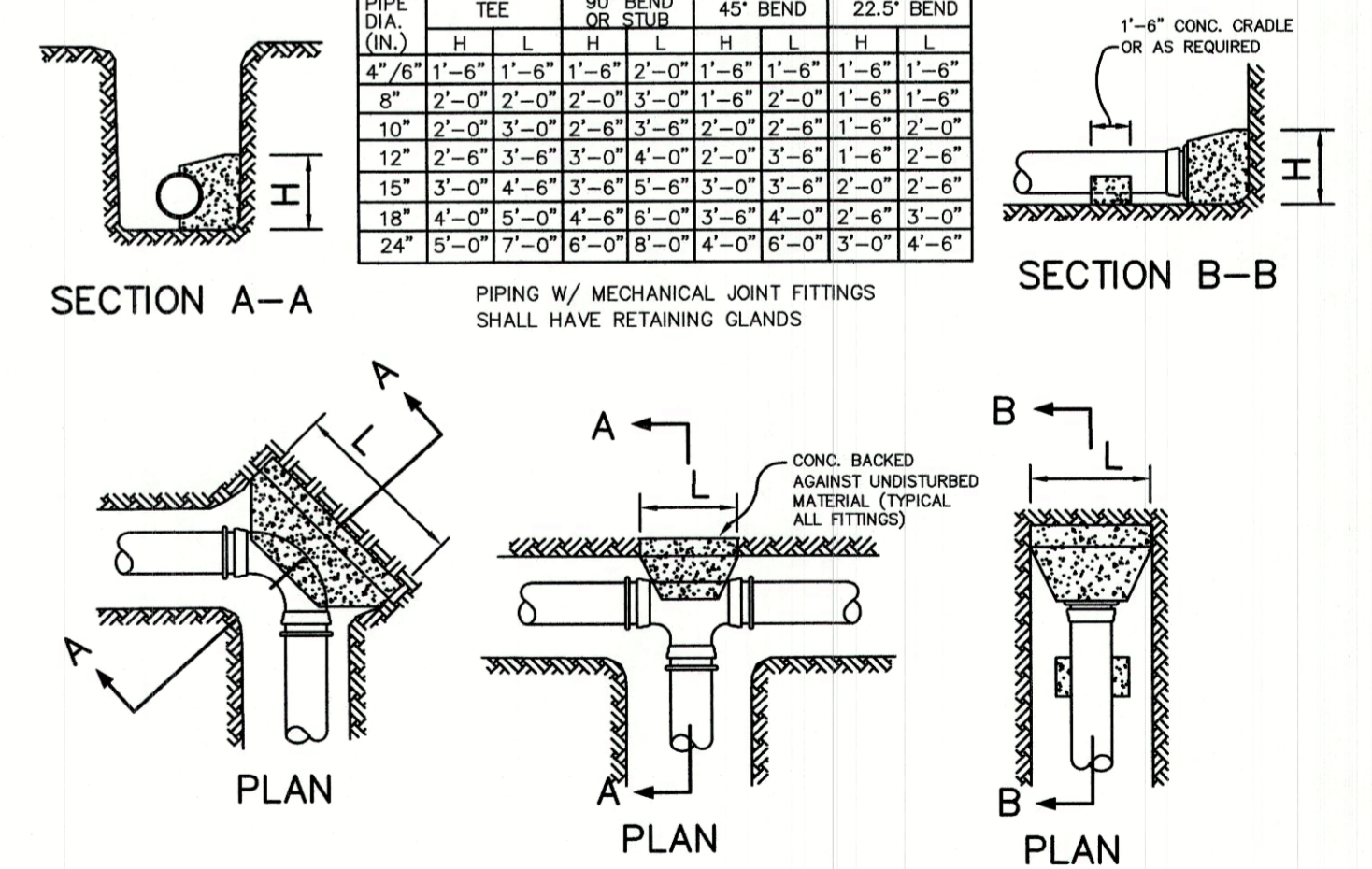
WATER SYSTEM TRENCH



- NOTES:**
- ALL PIPE FITTINGS TO BE D.I. PRESSURE CLASS 350, THICKNESS CLASS 52.
 - HYDRANT TO BE PAINTED RED WITH WHITE "REFLECTOR" PAINT ON BONNET.
 - MECHANICAL JOINTS SHALL HAVE MEGALUG RETAINING LANDS AS MADE BY EBBA OR APPROVED EQUAL.
 - STEAMER NOZZLE TO BE "STORCH" TYPE.
 - NATIONAL STANDARD THREAD.

HYDRANT INSTALLATION
 NOT TO SCALE

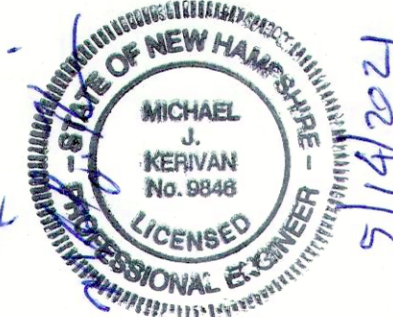
PIPE DIA. (IN.)	CONCRETE THRUST BLOCK DIMENSIONS							
	TEE		90° BEND OR STUB		45° BEND		22.5° BEND	
4"/6"	1'-6"	1'-6"	1'-6"	2'-0"	1'-6"	1'-6"	1'-6"	1'-6"
8"	2'-0"	2'-0"	2'-0"	3'-0"	1'-6"	2'-0"	1'-6"	1'-6"
10"	2'-0"	3'-0"	2'-6"	3'-6"	2'-0"	2'-6"	1'-6"	2'-0"
12"	2'-6"	3'-6"	3'-0"	4'-0"	2'-0"	3'-6"	1'-6"	2'-6"
15"	3'-0"	4'-6"	3'-6"	5'-6"	3'-0"	3'-6"	2'-0"	2'-6"
18"	4'-0"	5'-0"	4'-6"	6'-0"	3'-6"	4'-0"	2'-6"	3'-0"
24"	5'-0"	7'-0"	6'-0"	8'-0"	4'-0"	6'-0"	3'-0"	4'-6"



THRUST BLOCK DETAILS
 NOT TO SCALE

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5/14/2021			

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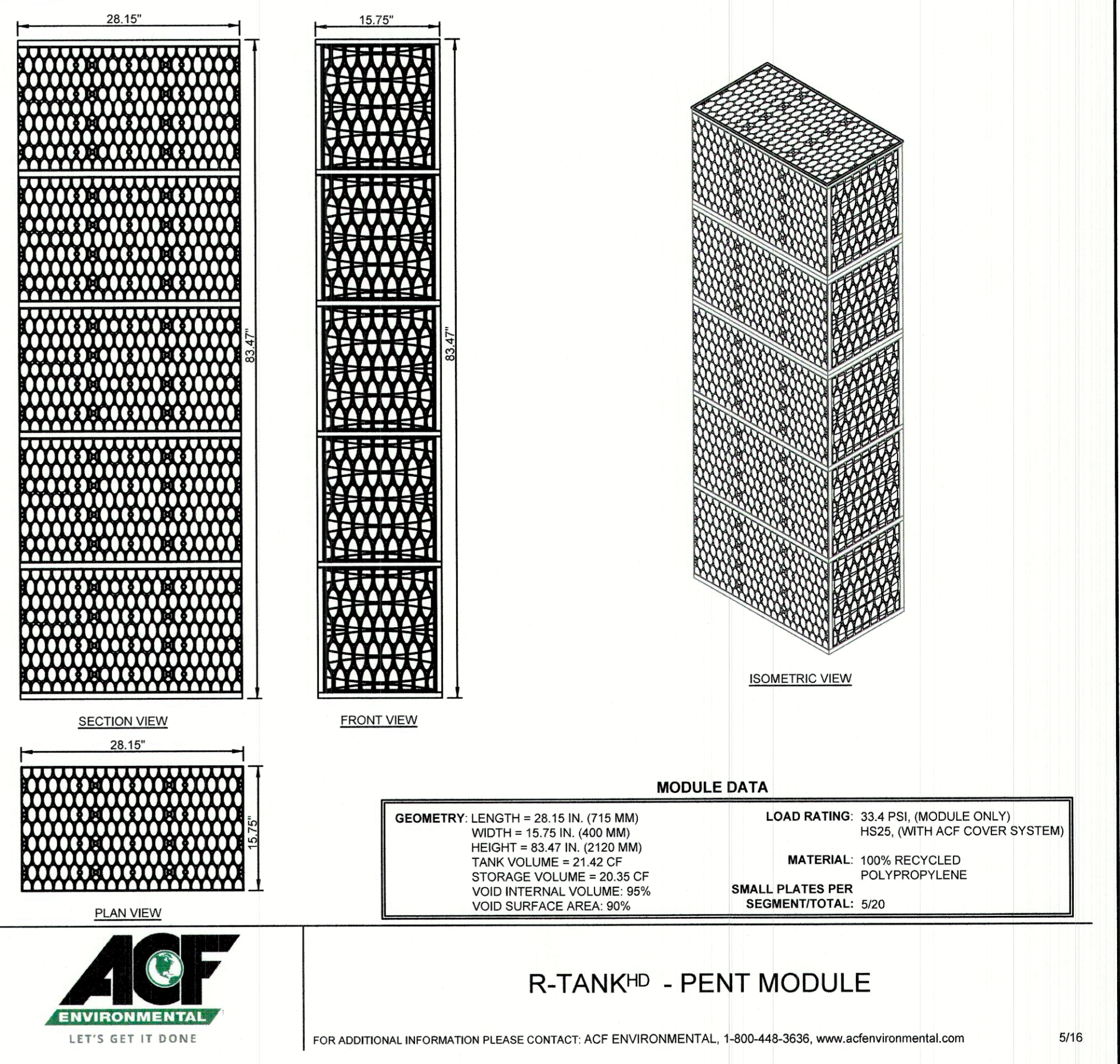
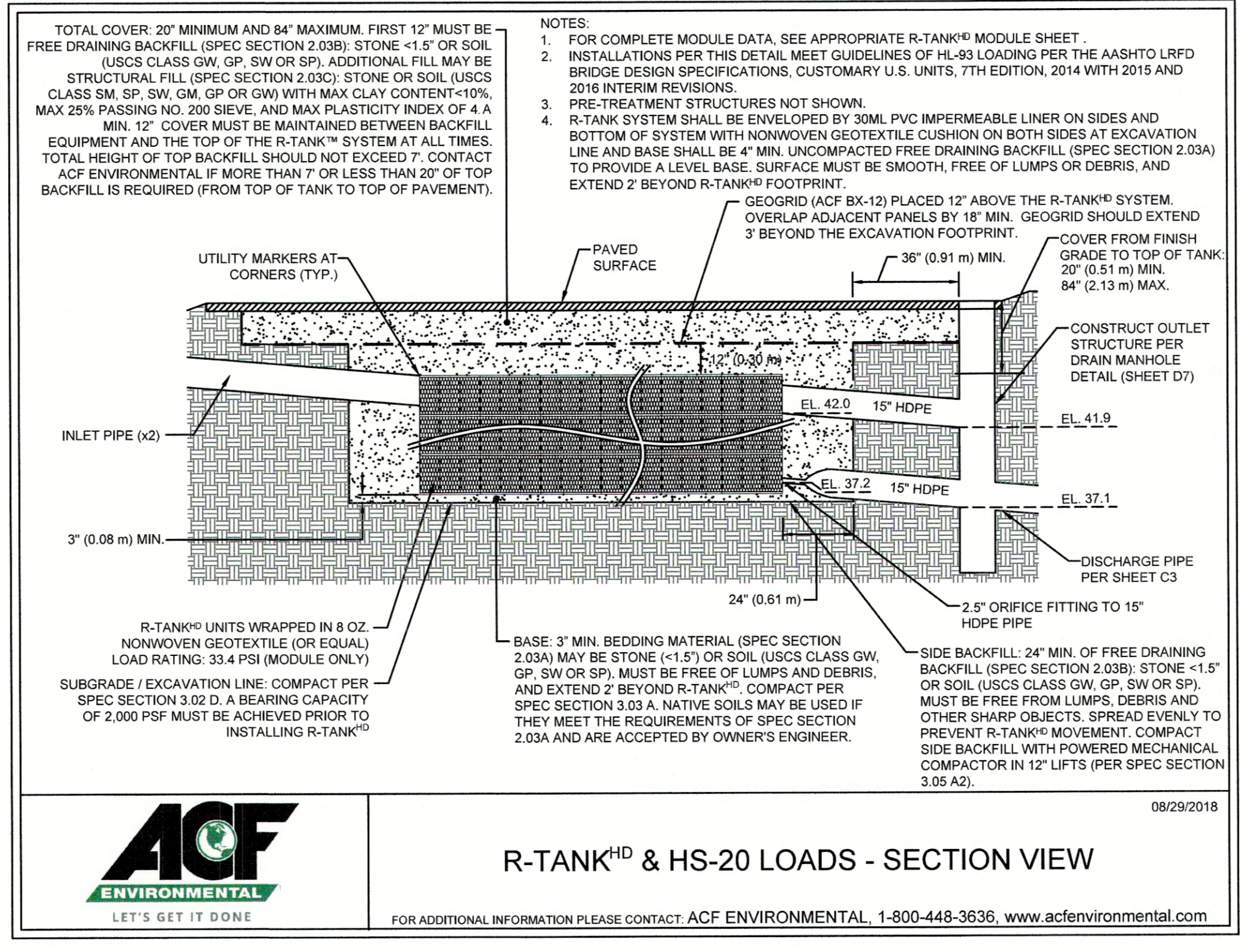
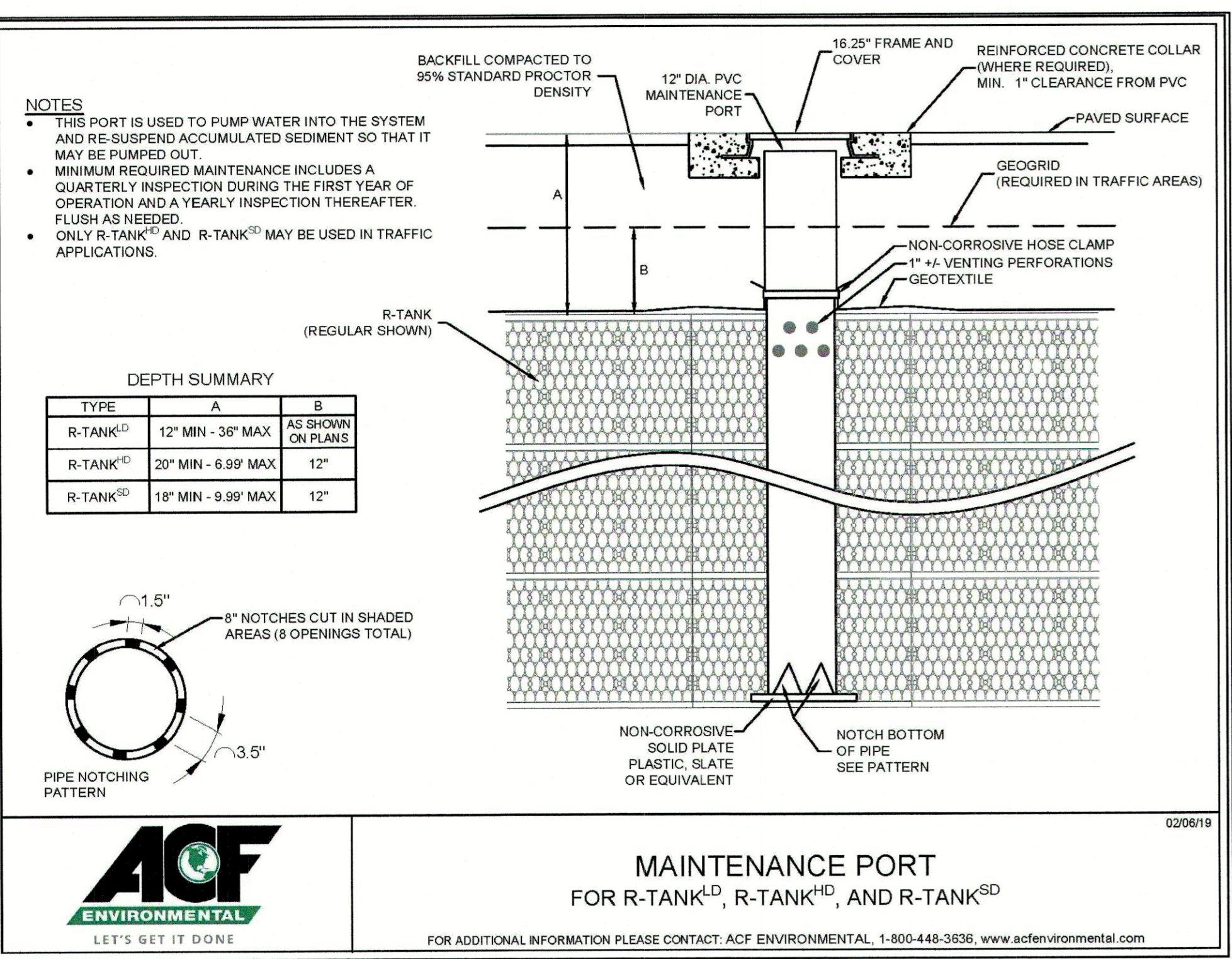
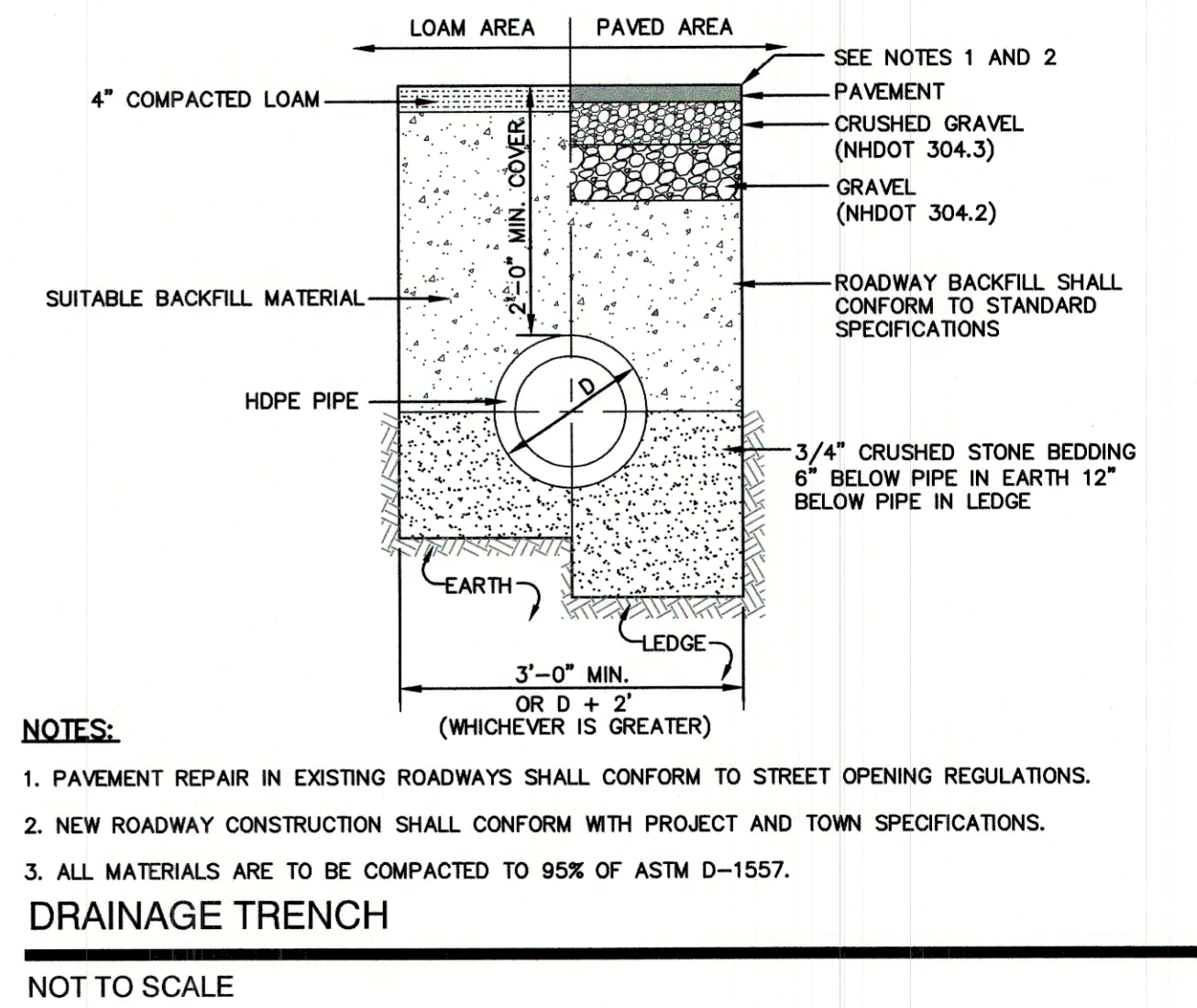
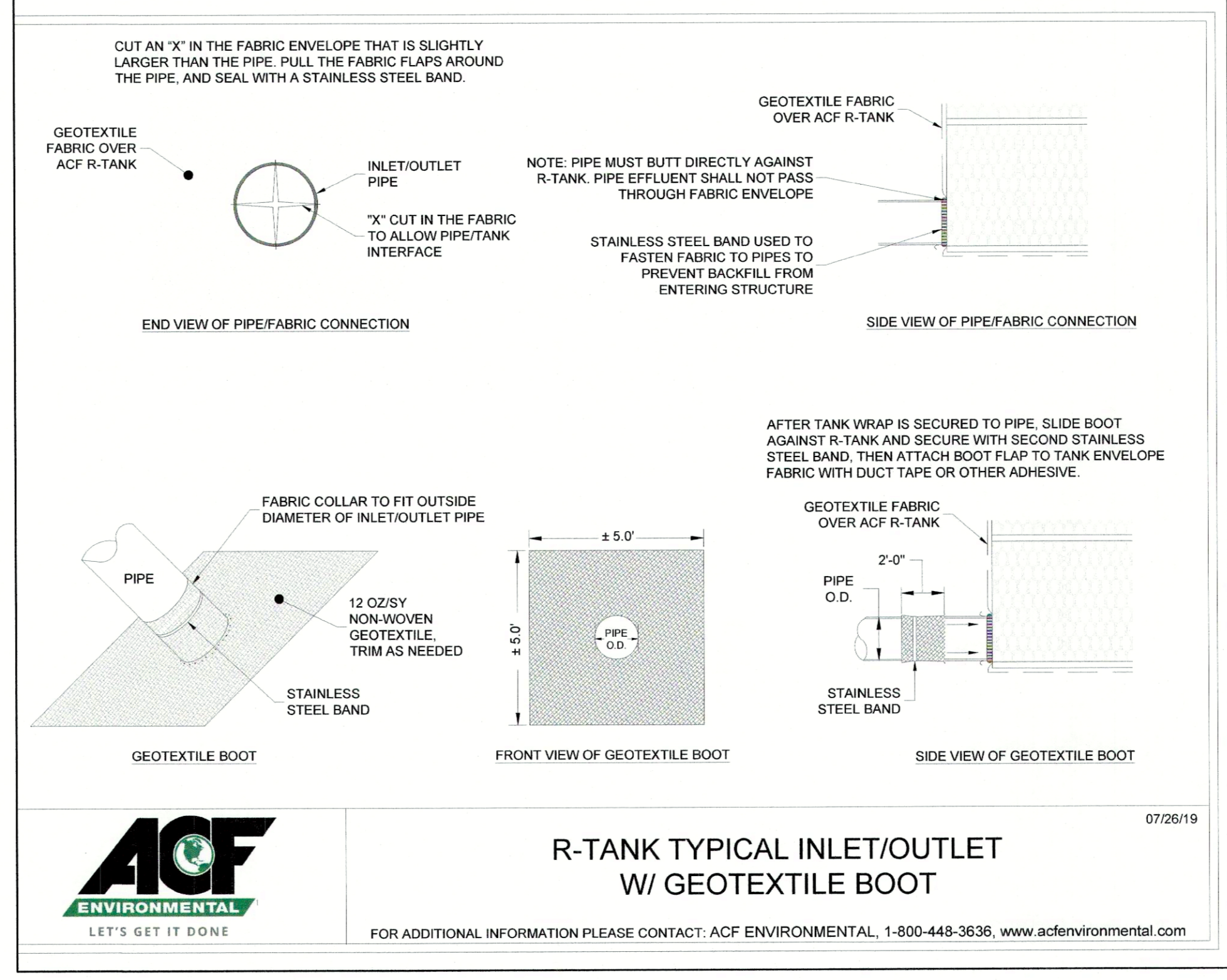
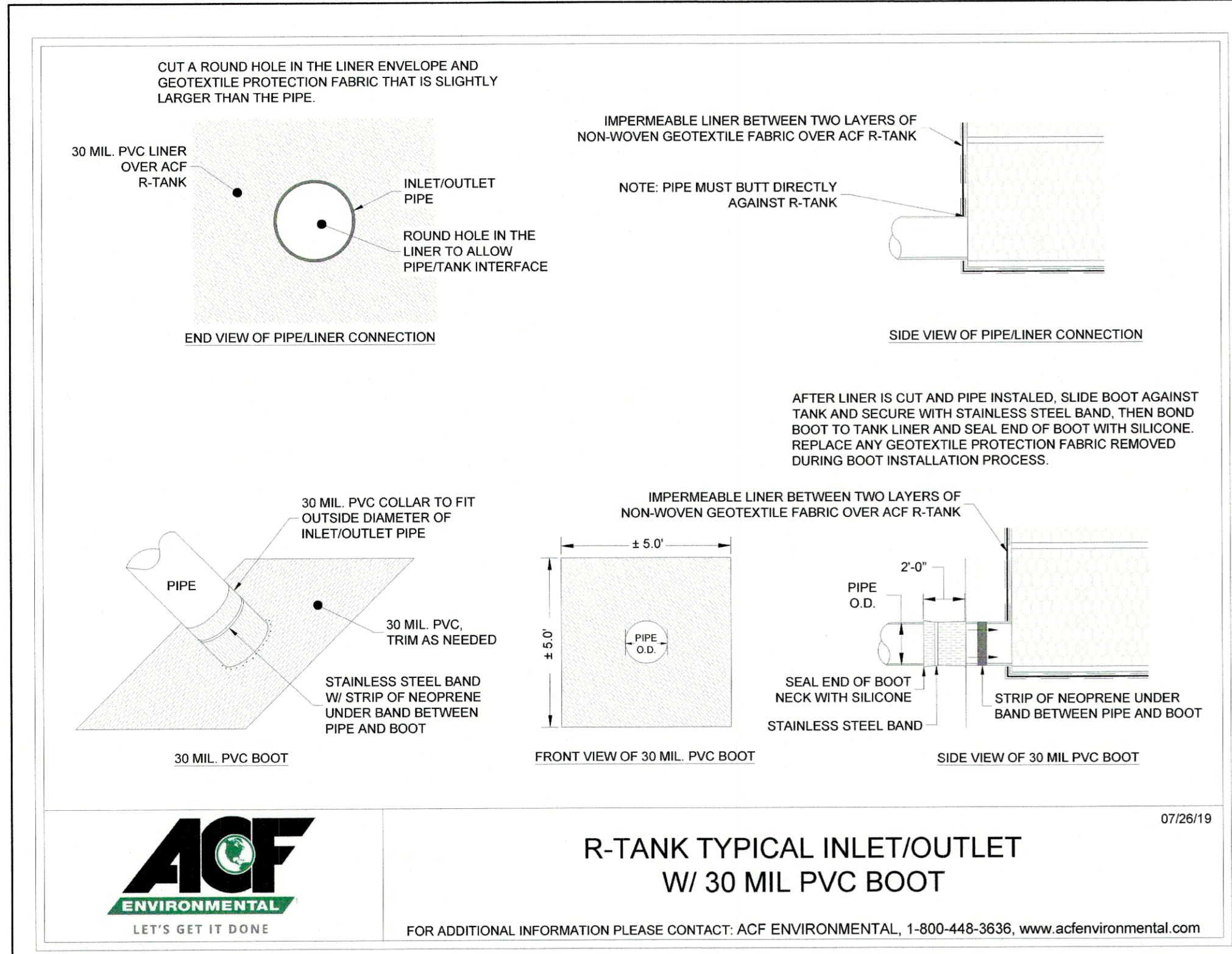
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DRAWING No.

D2

SHEET 11 OF 23
 JBE PROJECT NO. 19190.2



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7	1/18/21	REVISED PER CONSERVATION COMMISSION COMMENTS	DJM

Designed and Produced in NH

J/B Jones & Beach Engineers, Inc.

85 Portsmouth Ave. Civil Engineering Services 603-772-4746
 PO Box 219 Stratham, NH 03885 FAX: 603-772-0227
 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL SHEET
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

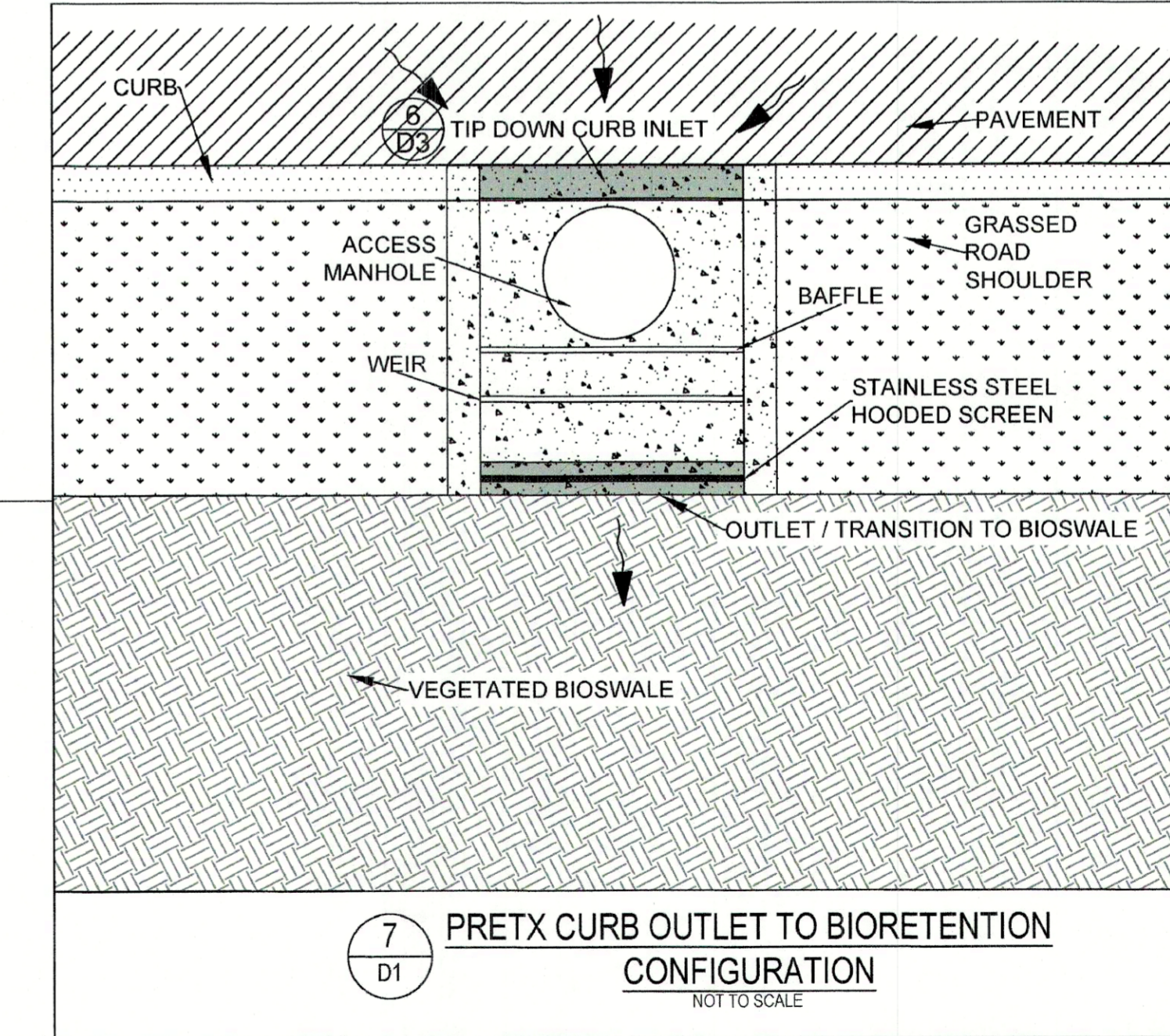
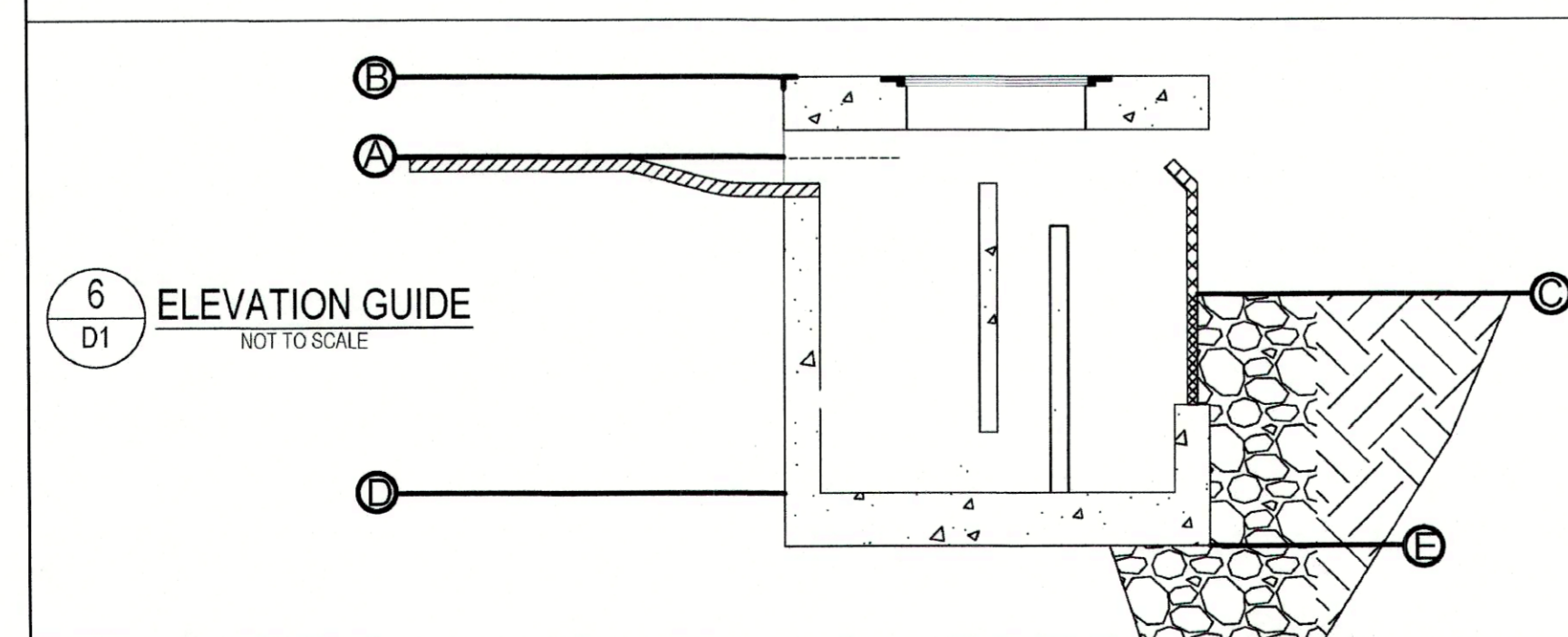
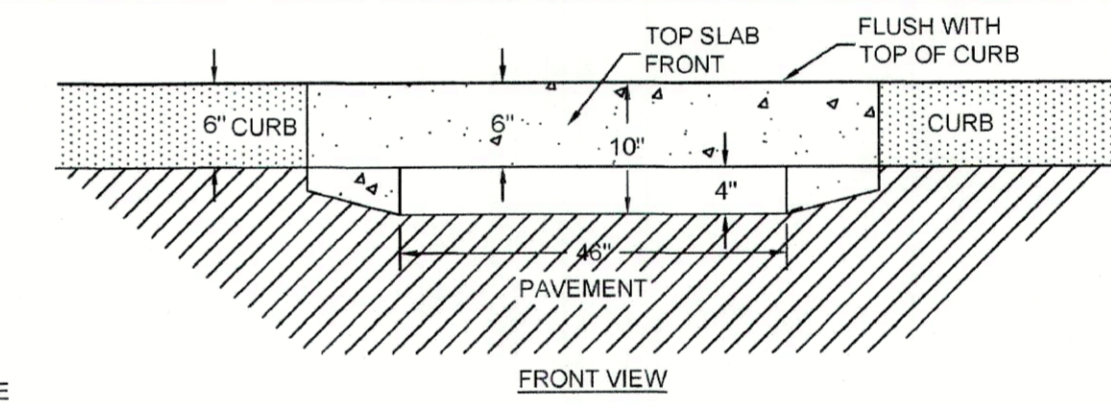
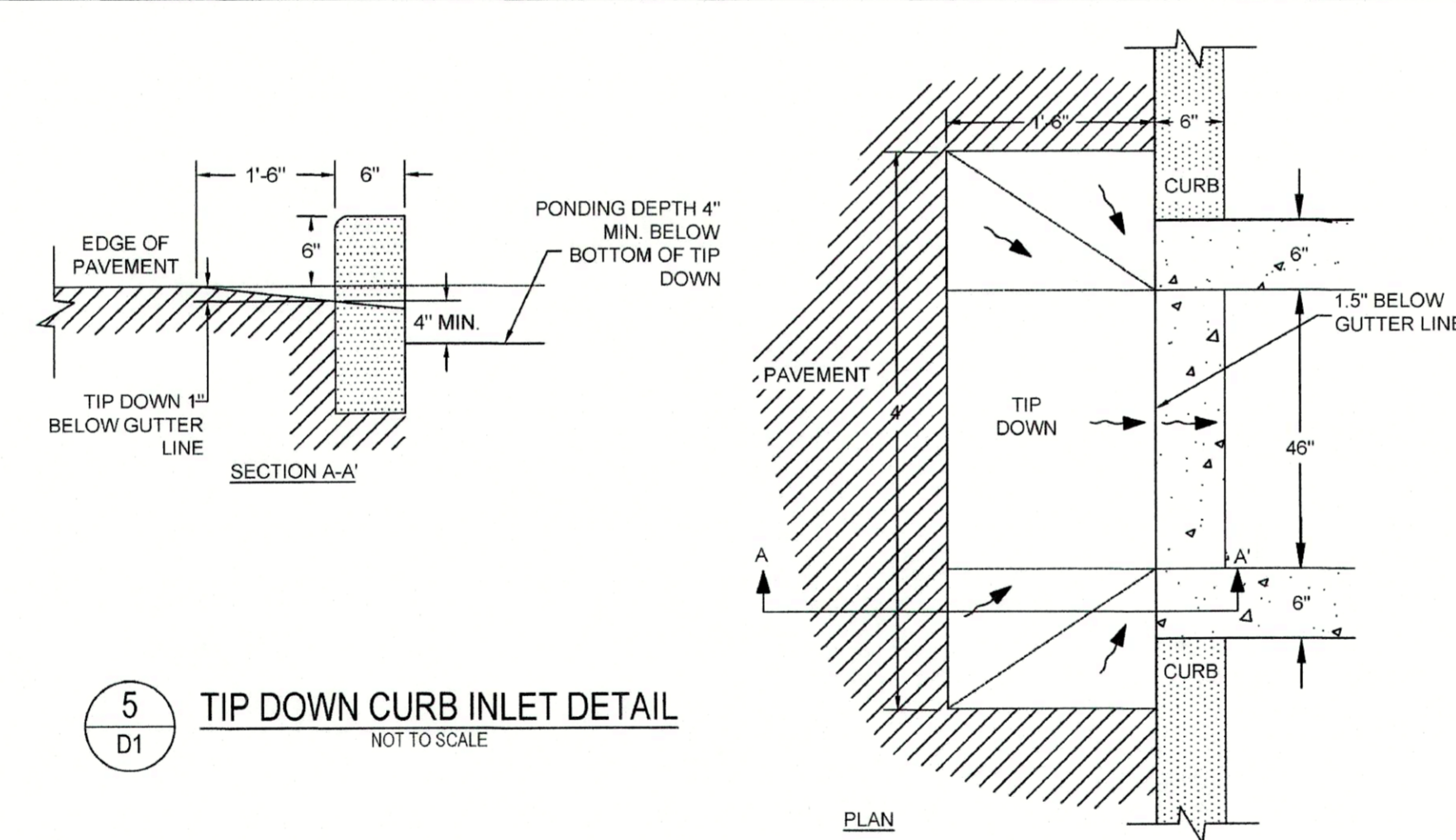
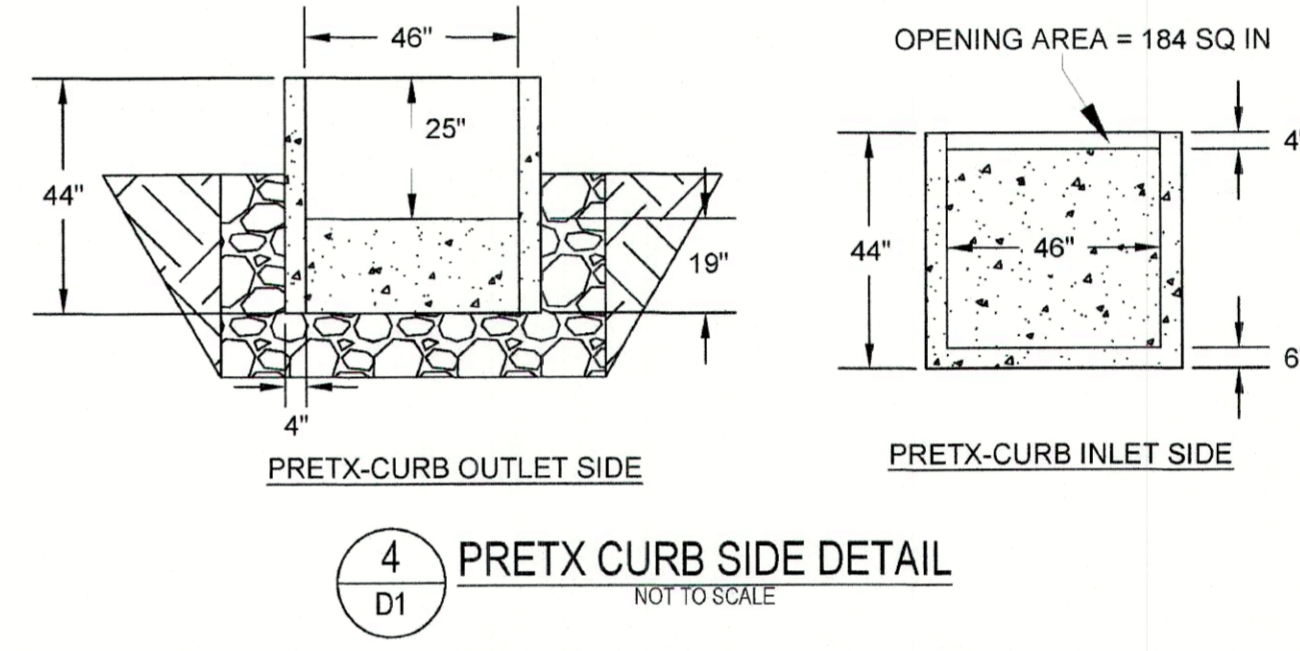
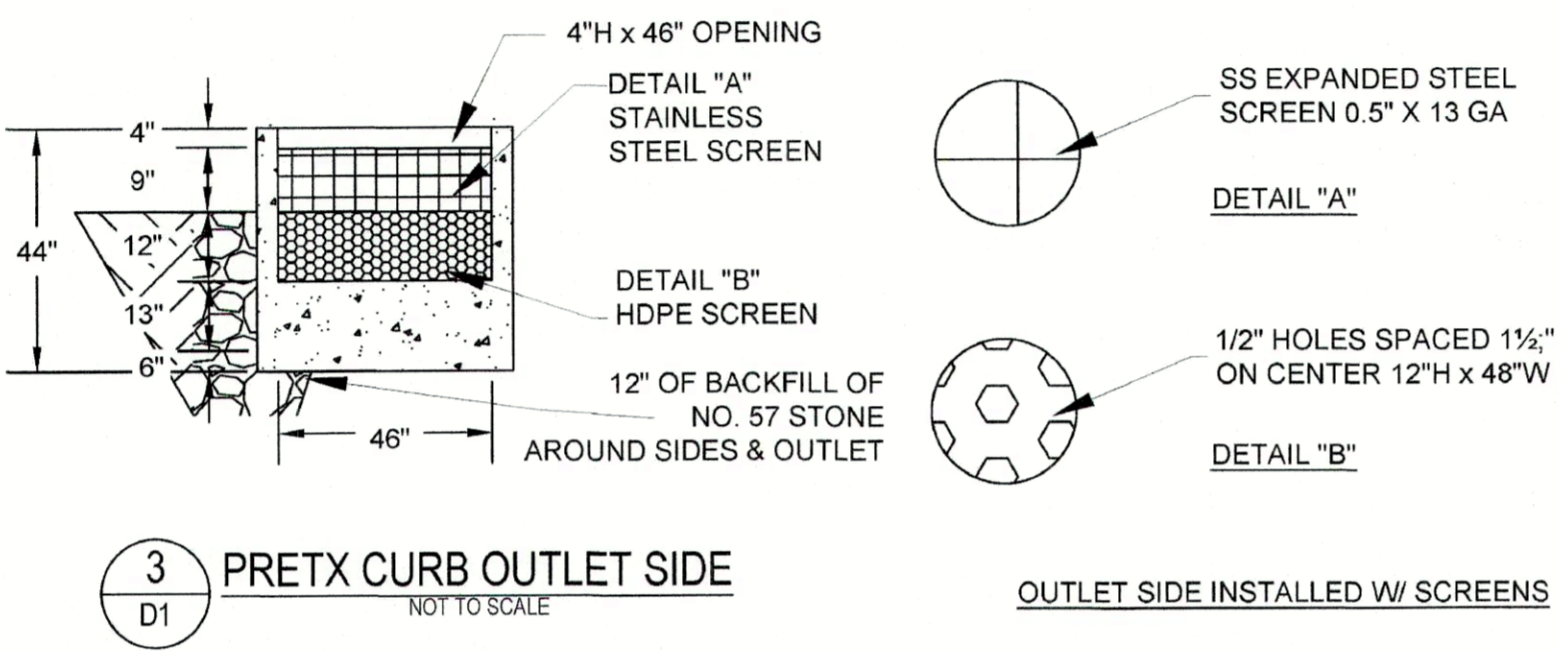
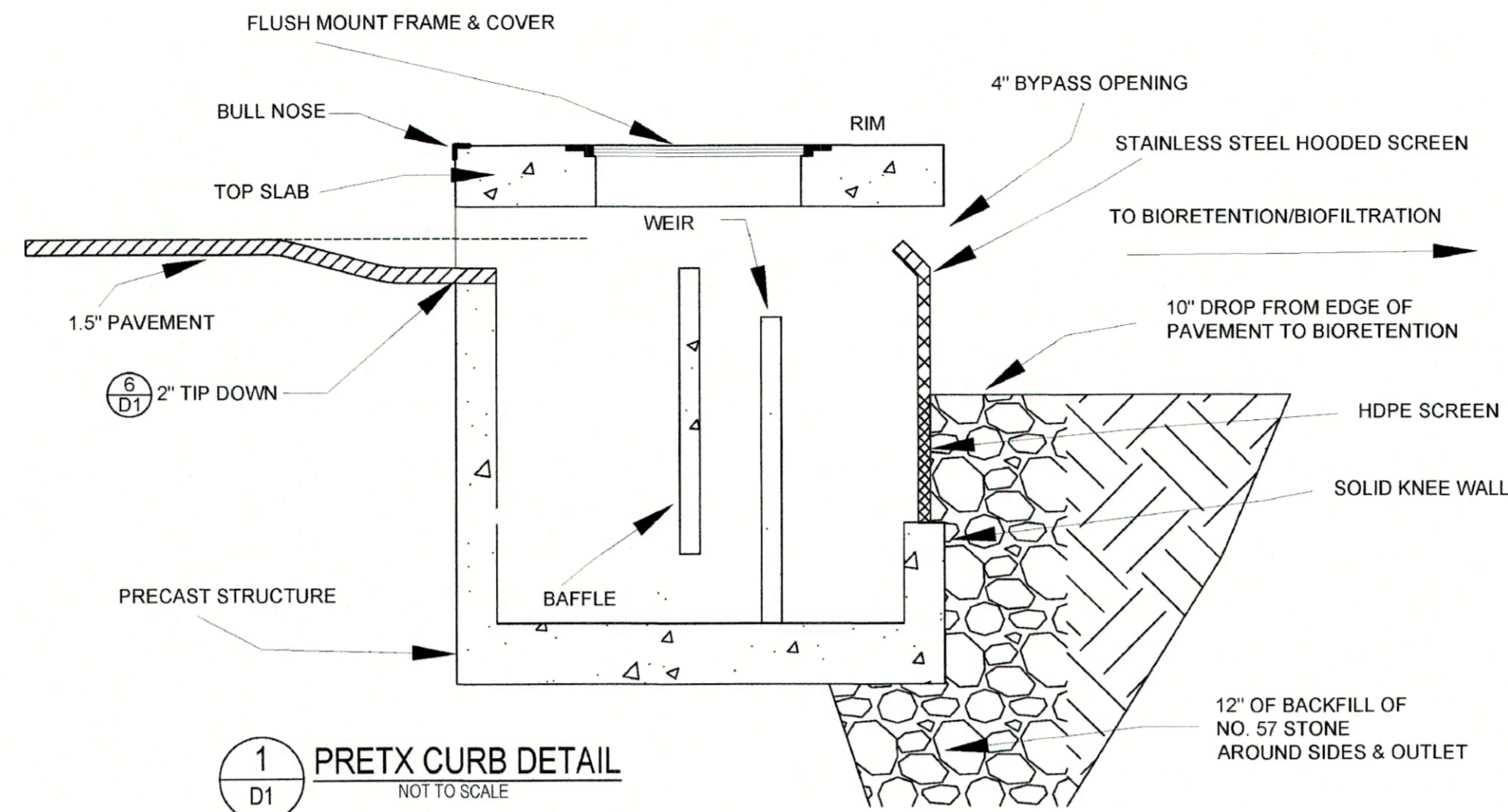
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SHEET 12 OF 23
JBE PROJECT NO. 19190.2

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- PRE-TX SPECIFICATIONS**
- A. GENERAL**
1. PRE-TX SYSTEMS ARE A PRE-FILTER AND CRITICAL MAINTENANCE DEVICE THAT EXTENDS THE OPERATING LIFE AND REDUCES THE MAINTENANCE BURDEN OF BIORETENTION SYSTEMS, RAIN GARDENS, BIOSWALES AND OTHER TYPES OF SURFACE BEST MANAGEMENT PRACTICES BY FILTERING OUT SEDIMENT, TRASH AND DEBRIS AT THE INLET.
- B. PRODUCTS**
1. PRE-TX IS AVAILABLE IN 3 MODELS THAT MANAGE MOST BIORETENTION INLET CONFIGURATIONS: CURB, DROP, AND IN-LINE.
 2. PRE-TX-CURB IS FOR EDGE OF PAVEMENT RUNOFF AT A CURB CUT IN LIEU OF A STONE SPREADER.
 3. PRE-TX-DROP IS FOR USE AS A DROP INLET CONFIGURATION ALONG A CURB LINE AND WOULD BE INSTALLED WITH A STANDARD DROP INLET GRATE.
 4. PRE-TX-IN-LINE IS FOR USE WITH SUBSURFACE INLET AND OUTLET PIPE.
 5. PRE-TX IS SIZED TO PRETREAT WATER QUALITY FLOWS AND BYPASS LARGER FLOWS THAT HAVE MINIMAL TRASH AND DEBRIS. PRE-TX CAN BE USED BOTH IN RETROFIT OR NEW INSTALLATIONS.
 6. ACCEPTABLE SYSTEM SUPPLIER
 CONVERGENT WATER TECHNOLOGIES, INC. OR ITS AUTHORIZED VALUE-ADDED RESELLER
 (800) 711-5428
 WWW.CONVERGENTWATER.COM
- C. SUBMITTALS**
1. SUBMIT PROPOSED LAYOUT DRAWINGS. DRAWINGS SHALL INCLUDE TYPICAL SECTION DETAILS ANNOTED WITH SYSTEM ELEVATIONS (E.G., RIM, PIPE INVERTS, OUTSIDE BOTTOM OF STRUCTURE, ETC.).
 2. SUBMIT MATERIAL CERTIFICATES FOR FRAMES AND COVERS.
 3. ANY PROPOSED EQUAL ALTERNATE PRODUCT SUBSTITUTION TO THIS SPECIFICATION MUST BE SUBMITTED FOR REVIEW AND APPROVED PRIOR TO BID OPENING.
- D. EXECUTION**
1. ALL PUBLIC STORM DRAINAGE SYSTEMS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE DEPARTMENT OF TRANSPORTATION STANDARDS AND SPECIFICATIONS AND ACCORDING TO LOCAL MUNICIPAL REGULATIONS.
 2. ALL STORM DRAINAGE SYSTEM CONSTRUCTION IS SUBJECT TO INSPECTION AND APPROVAL BY THE PROJECT ENGINEER.
 3. THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER A MINIMUM OF TWO FULL BUSINESS DAYS PRIOR TO THE START OF CONSTRUCTION.
 4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING AND OBTAINING APPROVAL FROM DIG-SAFE AND DETERMINING THE LOCATION OF AN UNDERGROUND UTILITIES PRIOR TO THE START OF CONSTRUCTION EXCAVATION AND SHALL NOTIFY THE PROJECT ENGINEER OF ANY POTENTIAL CONFLICTS.
 5. TO PROTECT STORMWATER FLOW CONTROL AND QUALITY TREATMENT FACILITIES FROM SEDIMENTATION, THEY SHALL BE CONNECTED TO THE STORM CONVEYANCE SYSTEM ONLY AFTER ALL SITE WORK, ROAD CONSTRUCTION, UTILITY WORK AND LANDSCAPING ARE IN PLACE IN ALL AREAS ABOVE AND UPSTREAM OF THE FACILITY.
 6. THE EXISTING STORM SEWER SYSTEM SHALL STAY ISOLATED FROM THE NEW SYSTEM UNTIL THE NEW SYSTEM IS CLEANED, AND APPROVED FOR USE. THERE SHALL BE NO DEBRIS IN THE LINES OR FURTHER CLEANING WILL BE REQUIRED PRIOR TO ACCEPTANCE.
 7. PROVIDE A 1/8" MINIMUM GAP BETWEEN THE KNOCKOUT WALL AND THE OUTSIDE OF THE PIPE. AFTER THE PIPE IS INSTALLED, FILL THE GAP WITH JOINT MORTAR.
 8. THE OPENING SHALL BE MEASURED AT THE TOP OF THE PRECAST BASE SECTION.
 9. ALL PICKUP HOLES SHALL BE GROUNDED FULL AFTER THE BASIN HAS BEEN PLACED.
 10. STANDARD CURB INLETS AND TYPINGS SHALL BE PRECAST CONCRETE OR ASPHALT.
 11. PIPE ENDS SHALL BE FLUSH WITH THE INNER WALL OR 1" MAXIMUM INTRUSION. MASONRY, CINDER BLOCKS, OR SIMILAR MATERIALS MAY BE USED TO ADJUST THE RISERS TO GRADE PRIOR TO GROUTING.
 12. GROUTING SHALL BE SUFFICIENT TO PREVENT LEAKS BETWEEN THE PRECAST COMPONENTS OF THE COMPLETED STRUCTURE & SHALL BE PERFORMED INSIDE, BETWEEN & OUTSIDE OF ALL RISERS, JOINTS & PIPE PENETRATIONS.
 13. MANHOLES TO BE CONSTRUCTED IN ACCORDANCE WITH AASHTO M-199 UNLESS OTHERWISE SHOWN ON PLANS OR NOTED IN THE STANDARD SPECIFICATIONS.
 14. ALL REINFORCED CAST IN PLACE CONCRETE SHALL BE CLASS 4000. ALL PRECAST CONCRETE SHALL BE CLASS 4000.
 15. PRECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCKOUTS. KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MINIMUM.
 16. MATING SURFACES OF MANHOLE RINGS AND COVERS SHALL BE FINISHED TO ASSURE NON-ROCKING FIT WITH ANY COVER POSITIONS.
- E. CONSTRUCTION AND SEQUENCING**
1. EXAMINATION
 A. VERIFY LAYOUT AND ORIENTATION OF PRE-TX SYSTEM AREA INCLUDING EDGE OF PAVEMENT, TIP DOWN, CURBS AND SIDEWALK, BIOFILTRATION SYSTEM, AND CONNECTION TO PIPE PENETRATIONS.
 B. VERIFY EXCAVATION BASE IS READY TO RECEIVE WORK AND EXCAVATIONS, DIMENSIONS, AND ELEVATIONS ARE AS INDICATED ON DRAWINGS.
2. PREPARATION
 A. CALL DIG SAFE AND RECEIVE APPROVAL BEFORE PERFORMING WORK.
 B. REQUEST UNDERGROUND UTILITIES TO BE LOCATED AND MARKED WITHIN AND SURROUNDING CONSTRUCTION AREAS.
 C. IDENTIFY REQUIRED LINES, LEVELS, CONTOURS, AND DATUM.
 D. CLEAR AND GRUB THE PROPOSED PRE-TX SYSTEM AREA.
3. EXCAVATION AND INSTALLATION
 A. THE FOLLOWING CONSTRUCTION SEQUENCE IS TO BE USED AS A GENERAL GUIDELINE. COORDINATE WITH THE OWNER AND ENGINEERS FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
 B. INSTALL TEMPORARY EROSION AND SEDIMENT CONTROLS TO DIVERT STORM WATER AWAY FROM THE PRE-TX SYSTEM AREA.
 C. EXCAVATE TO THE BOTTOM INVERT OF THE SYSTEM.
 D. TO MINIMIZE COMPACTION OF ADJACENT BIOFILTRATION SYSTEMS, WORK EXCAVATORS OR BACKHOES FROM THE SIDES TO EXCAVATE THE PRE-TX SYSTEM AREA TO ITS APPROPRIATE DEPTH AND DIMENSIONS.
 E. ROUGH GRADE THE PRE-TX SYSTEM AREA DURING GENERAL CONSTRUCTION. EXCAVATE THE PRE-TX SYSTEM FACILITIES TO WITHIN 1 FOOT OF STRUCTURE BOTTOM.
 F. PLACE 1 FOOT BED OF COARSE STONE TO ELEVATION OF BASE OF STRUCTURE.
 G. ESTABLISH ELEVATIONS FOR ADJACENT CURBS, EDGE OF PAVEMENT AND TIP DOWN, SIDEWALK, PIPE INVERTS FOR INLETS AND OUTLETS AS INDICATED ON DRAWINGS.
4. INSTALLATION
 A. PLACE THE PRECAST SYSTEM TO NECESSARY ELEVATION.
 B. VERIFY ELEVATIONS FOR ADJACENT CURBS, EDGE OF PAVEMENT, PAVEMENT GRADING FOR INLET GRATE FOR PRE-TX-DROP, SIDEWALK, PIPE INVERTS FOR INLETS AND OUTLETS, OUTLET INVERT FOR KNEE WALL.
 C. FOR PRE-TX-SURFACE:
 a. VERIFY ELEVATIONS FOR ADJACENT CURBS.
 b. VERIFY EDGE OF PAVEMENT TIP DOWN PAVEMENT GRADING FOR INLET GRATE.
 c. VERIFY CURB ELEVATION IN RELATION TO PAVEMENT AND TIP DOWN.
 d. VERIFY OUTLET INVERT FOR KNEE WALL IN RELATION TO FILTER MEDIA.
 D. FOR PRE-TX-DROP:
 a. VERIFY ALL INLET PIPES ENTER THE STRUCTURE UPSTREAM OF BAFFLE.
 b. VERIFY FRAME AND GRATE OFFSET ON INLET SIDE AND UPSTREAM OF BAFFLE.
 c. VERIFY CURB LOCATION WITH RESPECT TO FRAME AND GRATE ORIENTATION.
 E. INSTALL BAFFLES, WEIR, AND SCREENS AS INDICATED ON DRAWINGS.
 F. VERIFY MAINTENANCE ACCESS THROUGH GRATE OR COVER AND CLEARANCE FOR VEHICLE.
 G. INSTALL TOP OF STRUCTURE LEVEL WITH ADJACENT CURB OR SIDEWALK AS PER MANUFACTURERS SPECIFICATIONS. ENGINEER FIELD VISIT REQUIRED PRIOR TO BACKFILLING.
5. BACKFILLING
 A. BACKFILL WITH APPROVED SOIL AND STONE TO THE DESIGN GRADE AS SPECIFIED IN THE DRAWINGS.
 B. BACKFILL WITH 12" OF NO. 57 STONE AROUND REAR, LEFT, AND RIGHT SIDES TO LEVEL WITH TOP OF HDPE SCREEN.
 C. BACKFILL WITH BIORETENTION SOIL MIX BEYOND STONE BACKFILL TO EQUAL ELEVATION OF THE TOP OF HDPE SCREEN.
 D. DO NOT BACKFILL SOIL OR STONE AGAINST STAINLESS SCREEN.
 E. DO NOT COMPACT ADJACENT FILTRATION SYSTEM SOIL WITH MECHANICAL EQUIPMENT.
 F. STABILIZE ALL REMAINING DISTURBED AREAS AND SIDE SLOPES WITH SEEDING, HYDROSEEDING, AND/OR EROSION CONTROL BLANKETS AS INDICATED ON DRAWINGS.
6. CLEAN UP
 A. AFTER COMPLETION OF THE WORK, REMOVE AND PROPERLY DISPOSE ALL DEBRIS, CONSTRUCTION MATERIALS, RUBBISH, EXCESS SOIL, ETC. FROM THE PROJECT SITE. REPAIR PROMPTLY ANY IDENTIFIED DEFICIENCIES AND LEAVE THE PROJECT SITE IN A CLEAN AND SATISFACTORY CONDITION.



PRE-TX-CURB ELEVATION GUIDE		
POINT	DESCRIPTION	ELEV.
A	EDGE OF PAVEMENT	PER PLAN
B	OUTSIDE TOP SLAB	8" ABOVE A
C	TOP OF BIOFILTRATION	PER PLAN
D	SUMP INVERT	36" BELOW A
E	OUTSIDE BOTTOM	42" BELOW A

D-1 PRE-TX CURB INLET PRETREATMENT DETAIL



TO FIND A VALUE ADDED RESELLER IN YOUR AREA VISIT
 WWW.CONVERGENTWATER.COM/STORMWATER-PRODUCTS
 OR CONTACT CONVERGENT WATER TECHNOLOGIES AT
 1.800.711.5428



REVISED: 11/2018; ELEVATION DETAILS ADDED; CHECKED BY: RR

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 Civil Engineering Services

85 Portsmouth Ave. PO Box 219 Stratham, NH 03885

603-772-4746
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 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL SHEET
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Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

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STRUCTURE DIAMETER (IN.)	DEBRIS CAPACITY (CU FT)	FILTERED FLOWRATE (GFS)	BYPASS FLOWRATE (GFS)
12	0.66	1.7	1.0
15	1.0	2.1	1.3
18	1.2	2.3	1.4
24	2.8	3.9	2.2
30	2.8	3.9	2.2

NOTES:
 1. MATERIAL:
 A) SUPPORT FLANGE: ALUMINUM ALLOY PLATE, 6000 SERIES
 B) STORMSOCK: WOVEN POLYPROPYLENE GEOTEXTILE
 C) EXPANSION RING: ALUMINUM ALLOY CHANNEL, 6000 SERIES
 D) HARDWARE: STAINLESS STEEL
 2. RECOMMENDED MINIMUM VAULT DEPTH: 2-IN BELOW STORMSOCK
 3. USE ONLY WITH FABCO REPLACEABLE STORMSOCK

GENERAL INSTALLATION:
 ADJUST THE TURNBUCKLE DOWN TO GIVE THE SMALLEST RING DIAMETER AND LOCATE THE EXPANSION RING INTO THE HARCO STRUCTURE MINIMUM OF 6-IN DOWN FROM THE TOP OPENING AS SHOWN. BEGIN OPENING THE TURNBUCKLE UNTIL THE EXPANSION RING IS SELF SUPPORTING. THEN VERIFY THE RING IS LEVEL AND PLUMB TO THE HARCO STRUCTURE USING A CALIBRATED TORQUE WRENCH. CONTINUE TO OPEN THE TURNBUCKLE TO GIVEN TORQUE (MODEL SPECIFIC). DO NOT OVER TIGHTEN. INSTALL THE STORMSOCK ASSEMBLY DIRECTLY ON THE SUPPORT RING.

ACF BEEHIVE OVERFLOW FILTER STRUCTURE DETAILS

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FOCALPOINT HP PERFORMANCE SPECIFICATION:

HIGH PERFORMANCE MEDIA
 HIGH PERFORMANCE MEDIA MUST MEET A MINIMUM OF 100" PER HOUR INFILTRATION RATE.

HIGH PERFORMANCE STRUCTURAL UNDERDRAIN
 MUST HAVE A MINIMUM OF 16 SQUARE INCHES OF ORIFICE OPENING PER SQUARE FOOT. MUST MEET H2O LOADING REQUIREMENTS. MUST BE MODULAR IN NATURE AND ASSEMBLED ON SITE. MUST HAVE MINIMUM 10% INTERLOCK VOID SPACE.

PLANT COMPONENT
 SUPPLIER SHALL PROVIDE LIST OF ACCEPTABLE PLANTS. IF PLANTS ARE NOT INCLUDED IN THE LANDSCAPE CONTRACT/PLANS, SITE CONTRACTOR SHALL PROVIDE PLANTS. PLANTS SHALL BE INSTALLED AT THE TIME THE SYSTEM IS COMMISSIONED FOR USE. PLANTING OUTSIDE THIS TIME REQUIRES APPROVAL BY THE ENGINEER AND LANDSCAPE ARCHITECT OF RECORD. SEE FOCALPOINT INSTALLATION GUIDE FOR PLANT SPACING, PLANTING PROCEDURES ETC.

FOCALPOINT HP CONSTRUCTION GUIDE	
A	FOCALPOINT LENGTH SEE PLANS
B	# UNDERDRAIN LONG SEE PLANS
C	FOCALPOINT WIDTH SEE PLANS
D	# UNDERDRAIN WIDE SEE PLANS
E	WATER QUALITY VOLUME VARIES
F	OVERFLOW ELEVATION SEE PLANS
G	OUTLET FLOWLINE SEE PLANS
H	TOP OF MULCH SEE PLANS
I	TOP OF GABION (OPTIONAL) NO GABION
J	UNDERDRAIN HEIGHT SEE PLANS

FOCALPOINT HP CONSTRUCTION GUIDE

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FOCALPOINT HP DETAILED CROSS SECTION

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FOCALPOINT HP SECTION X-X

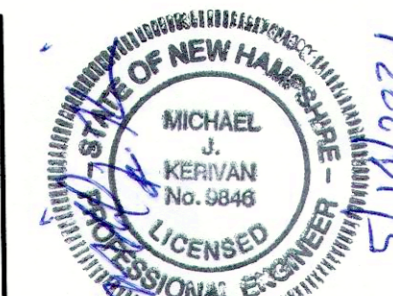
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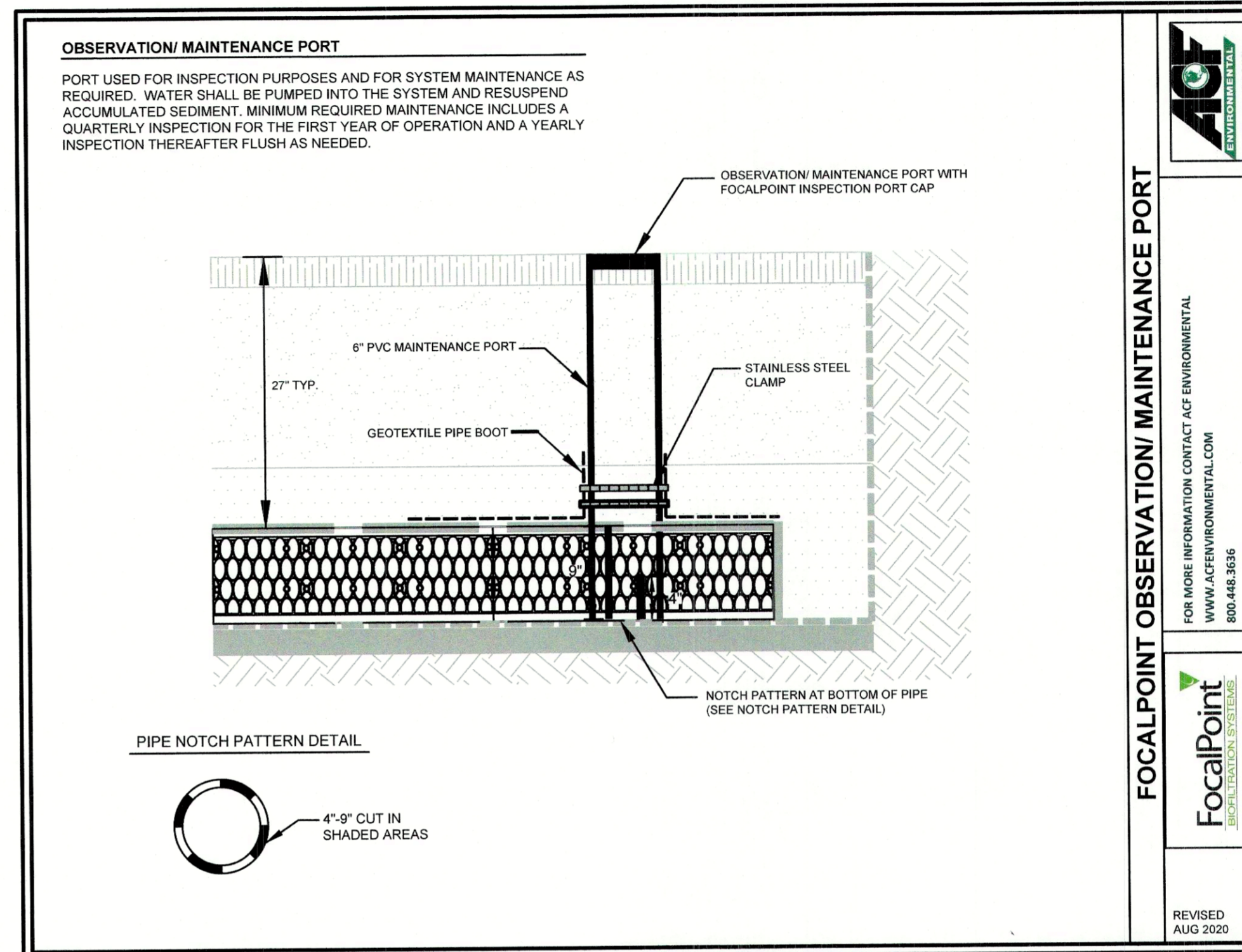
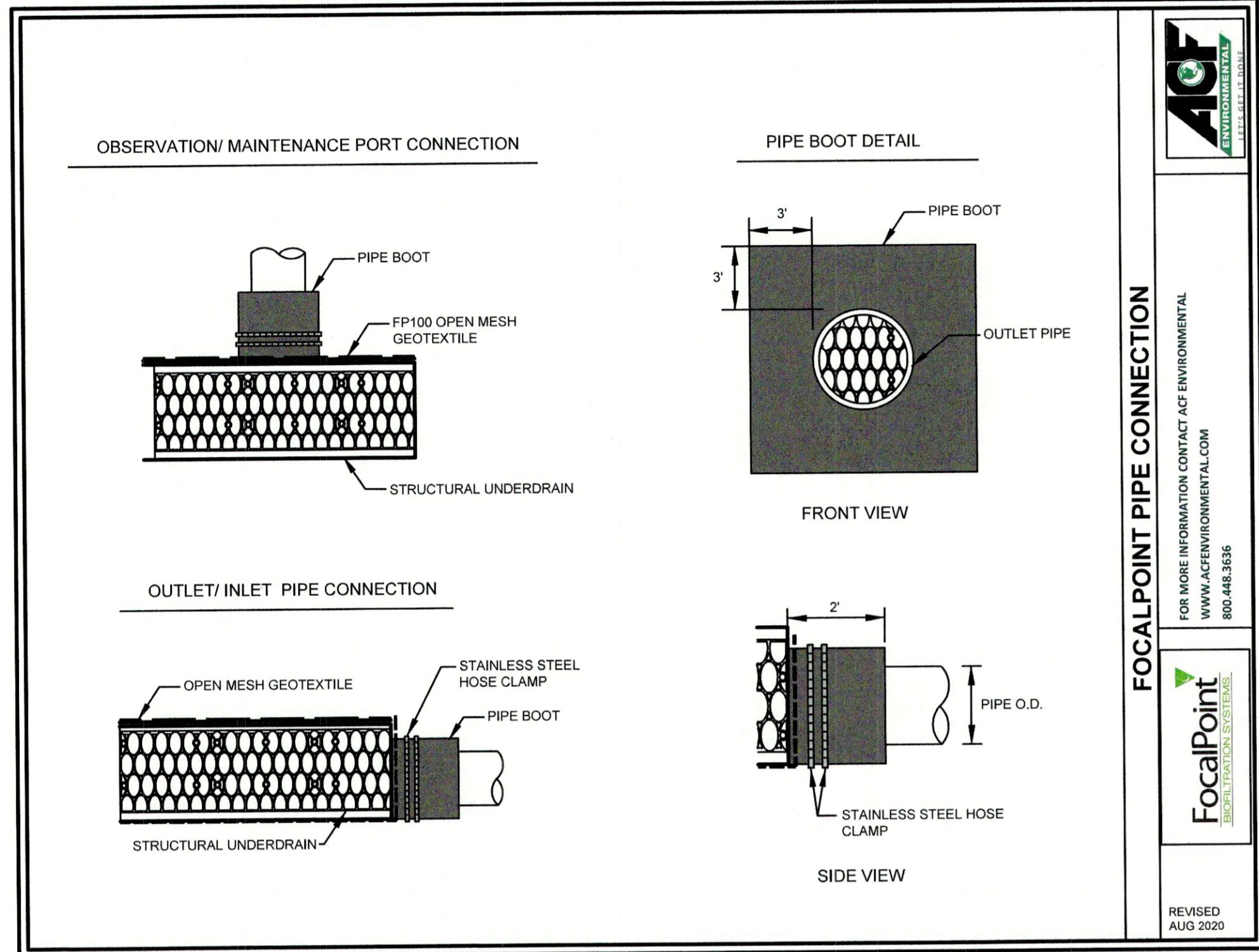
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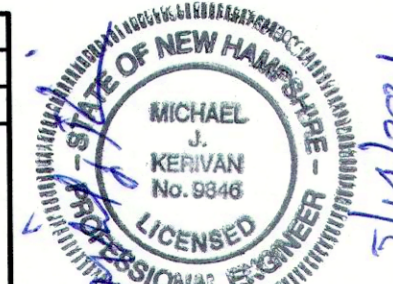
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SHEET 14 OF 23
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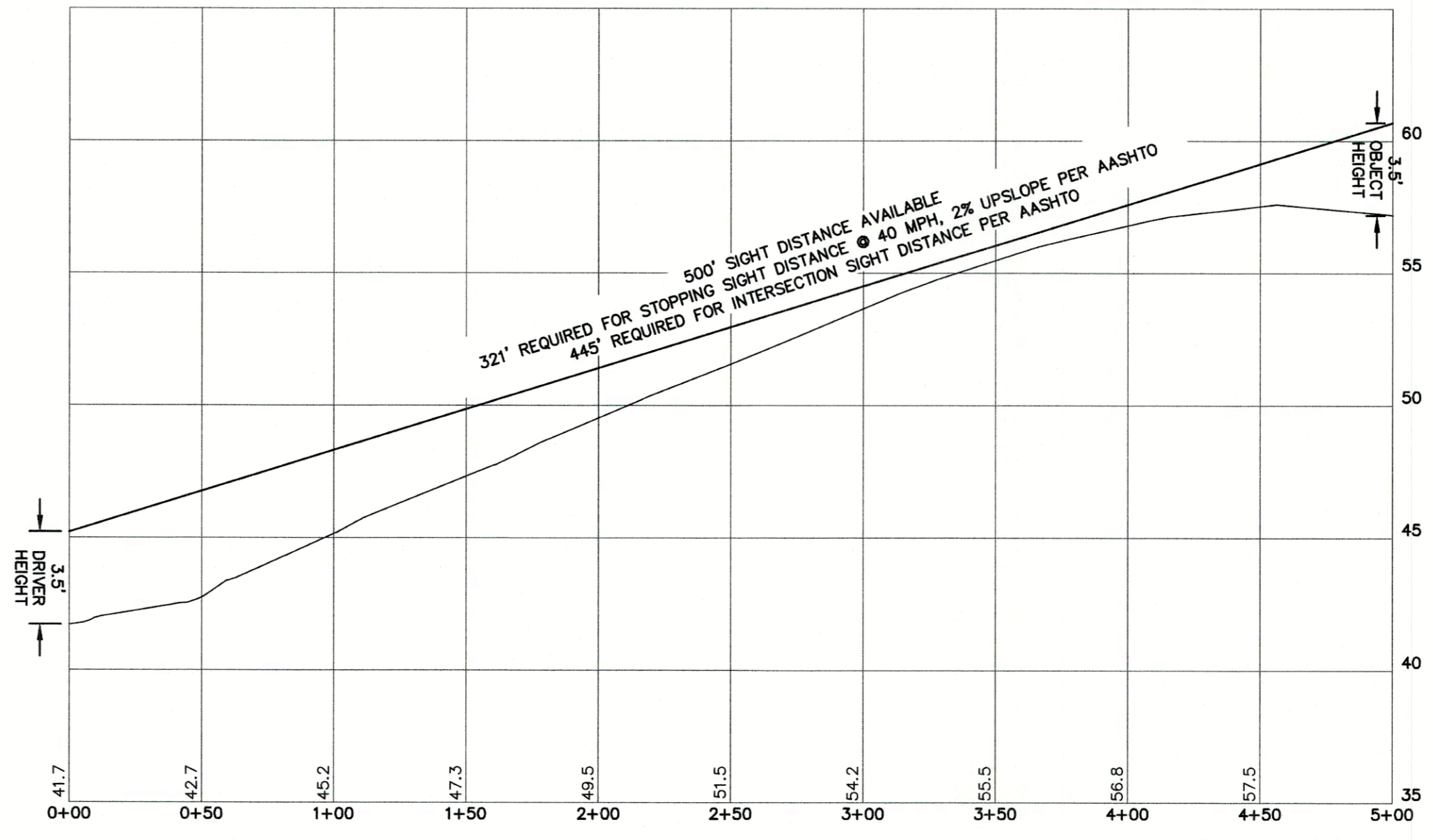
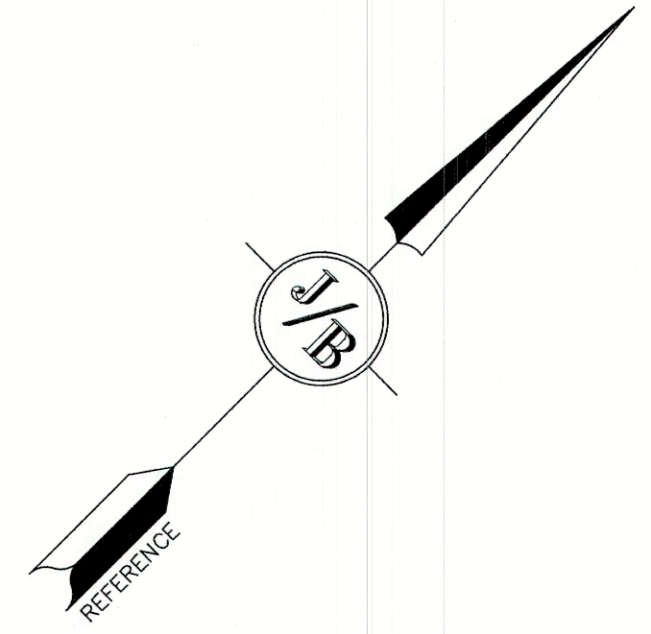
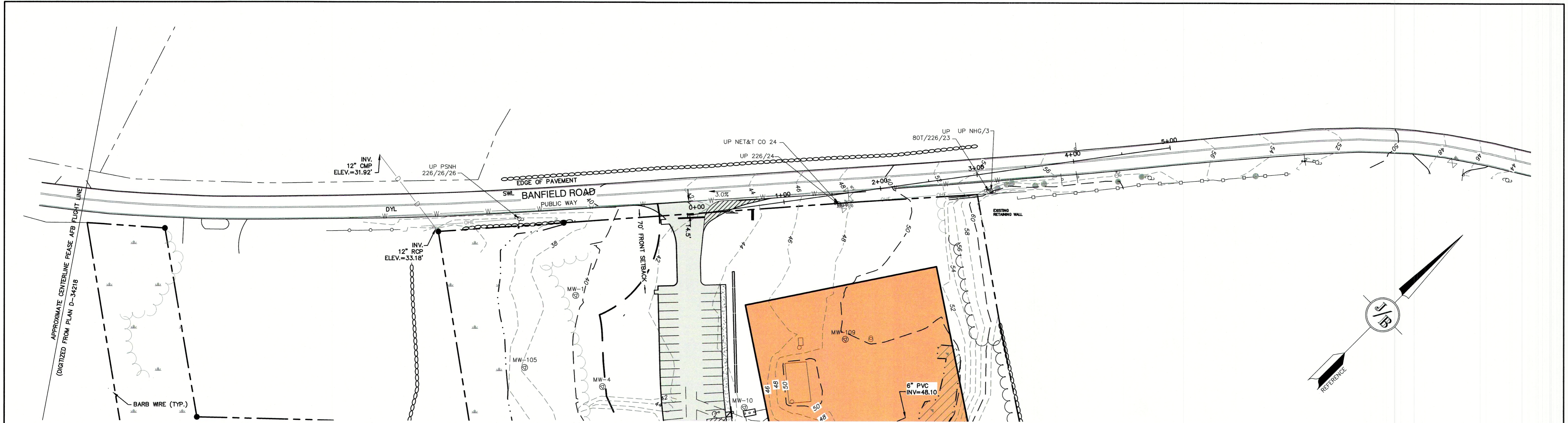
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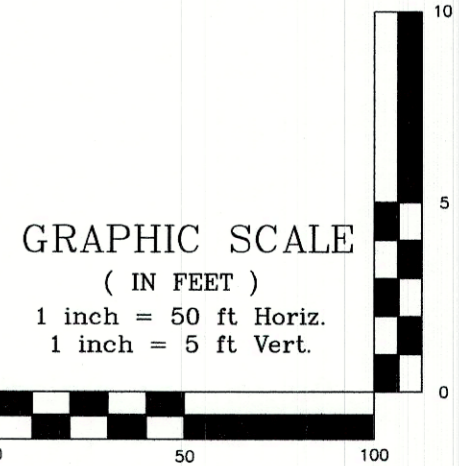
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SHEET 15 OF 23
JBE PROJECT NO. 19190.2



INTERSECTION SIGHT DISTANCE PROFILE



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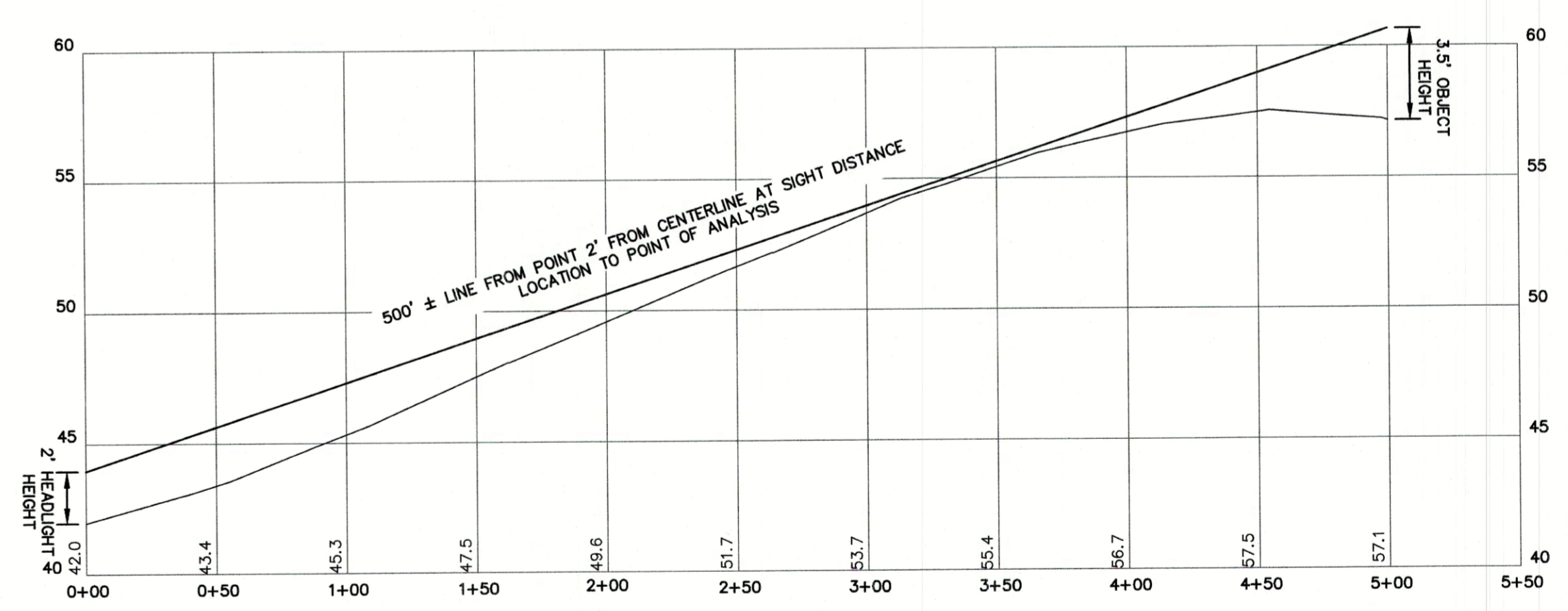
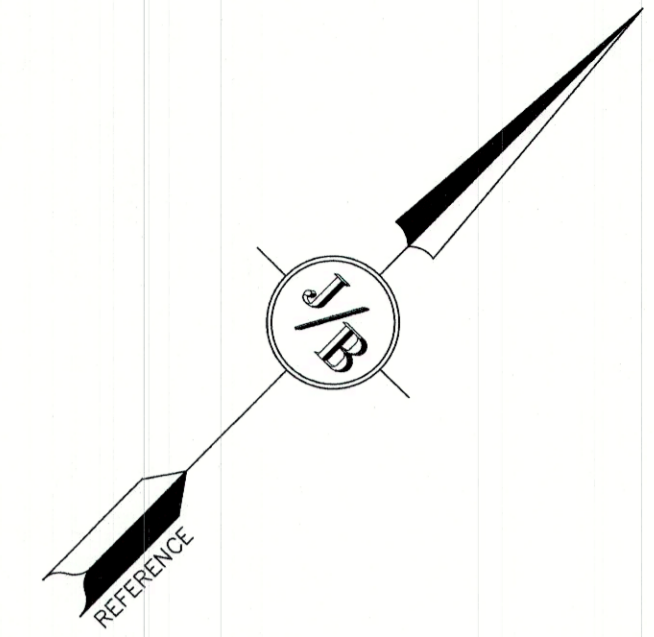
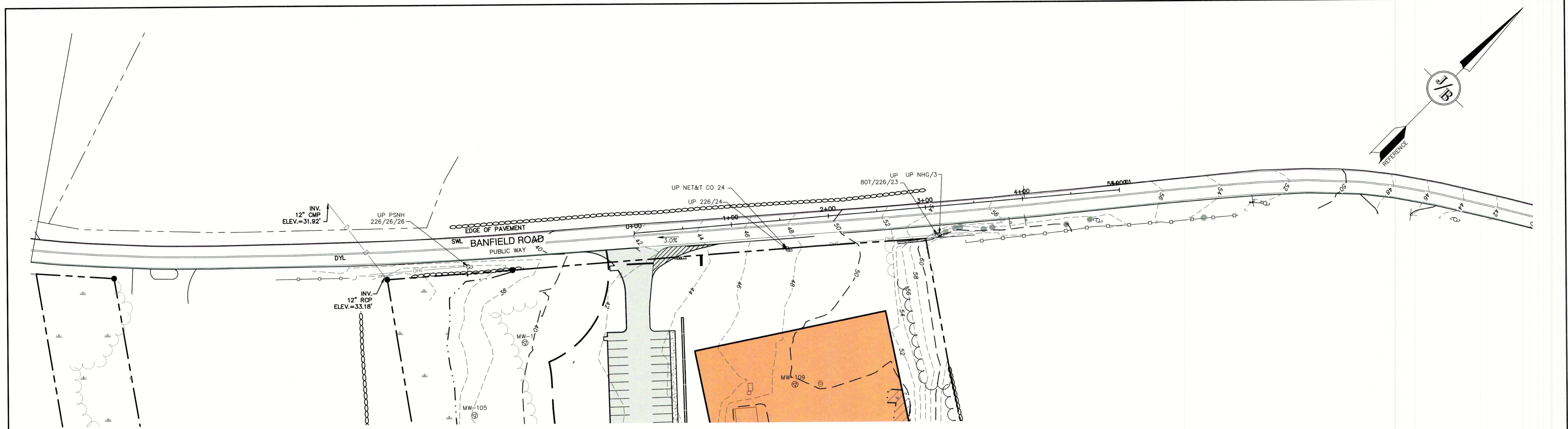
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Plan Name:	HIGHWAY ACCESS PLAN
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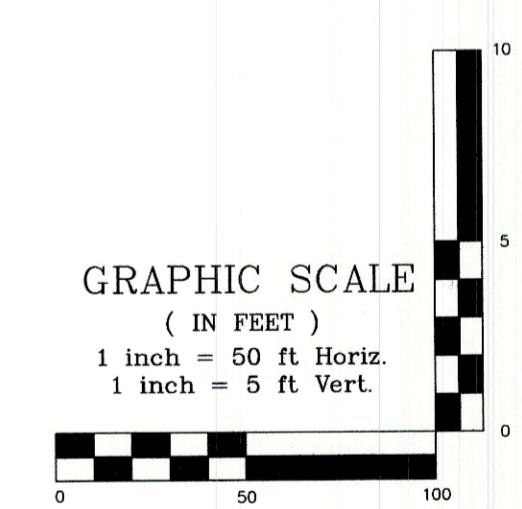
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SHEET 18 OF 23
JBE PROJECT NO. 19190.2

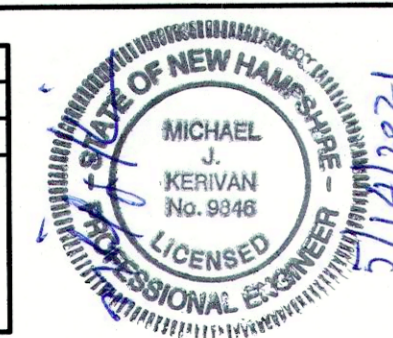


SIGHT DISTANCE PROFILE ALONG BANFIELD ROAD



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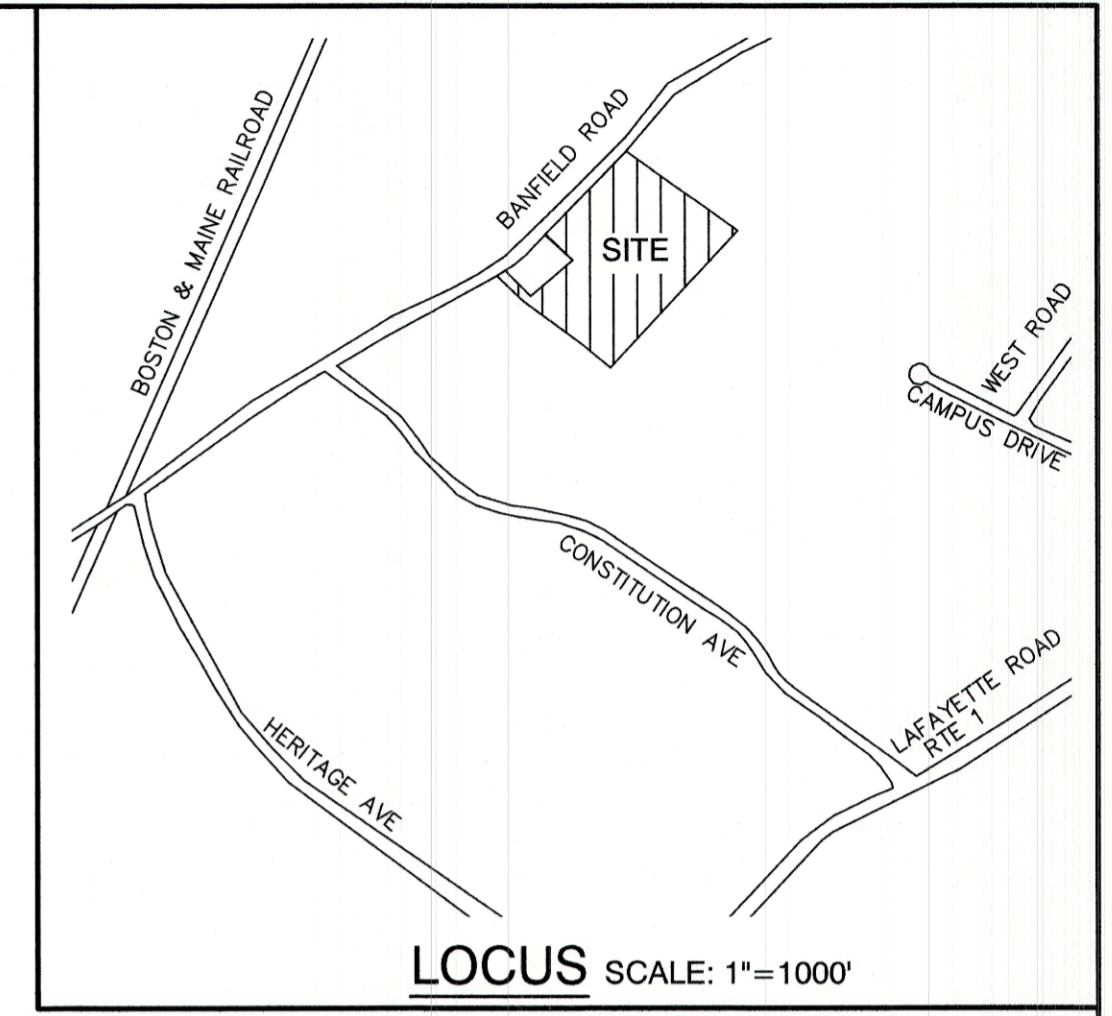
Civil Engineering Services

85 Portsmouth Ave. PO Box 219 Stratham, NH 03885

603-772-4746 FAX: 603-772-0227 E-MAIL: JBE@JONESANDBEACH.COM

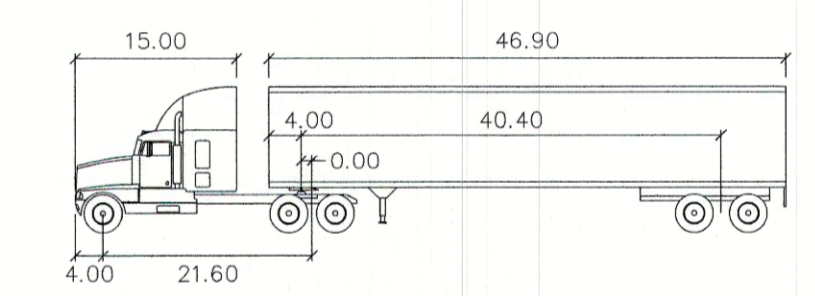
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Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.	H2
SHEET 19 OF 23	JBE PROJECT NO. 19190.2



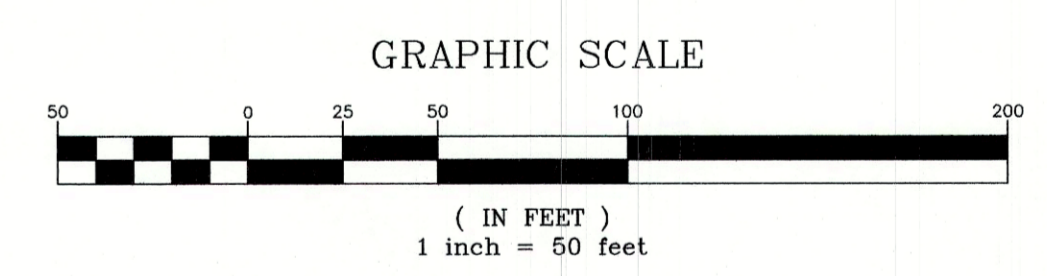
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- FRONT TIRES
- REAR TIRES
- VEHICLE BODY



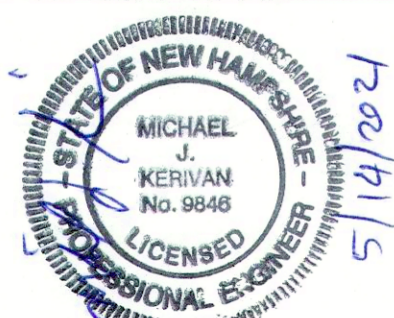
WB-62

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Trailer Track	: 8.50		



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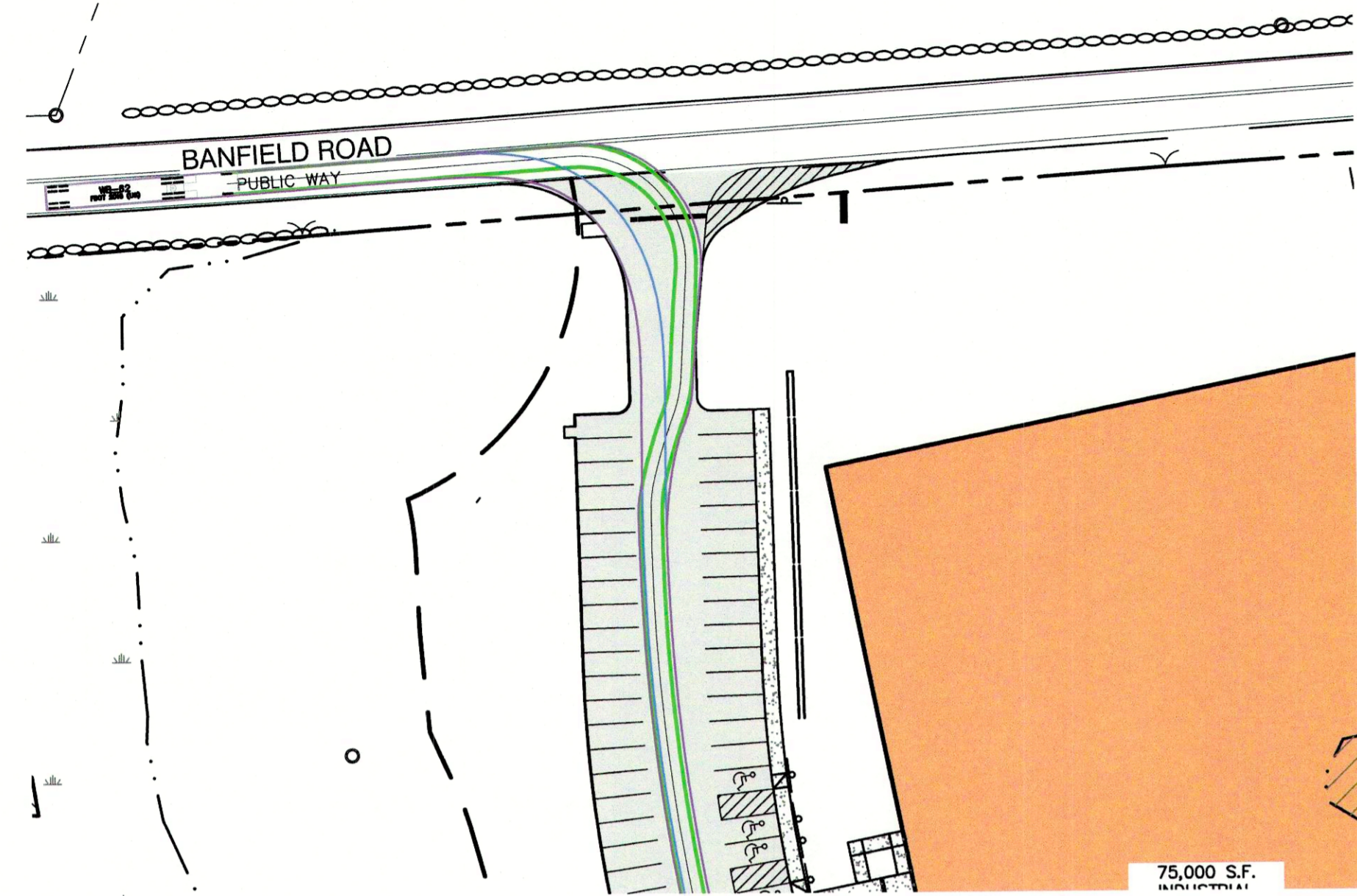
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Plan Name:	OVERVIEW TRUCK TURNING PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

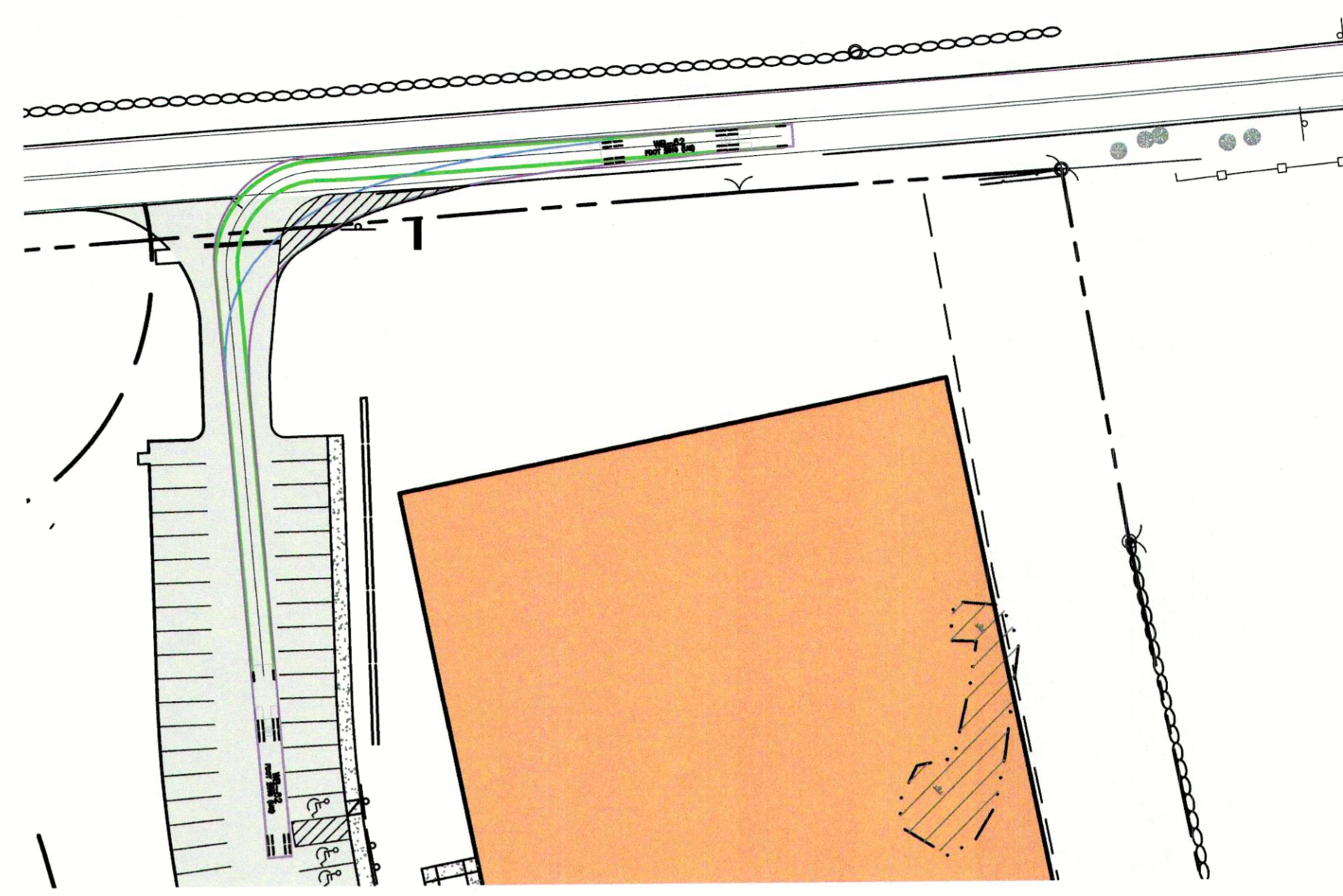
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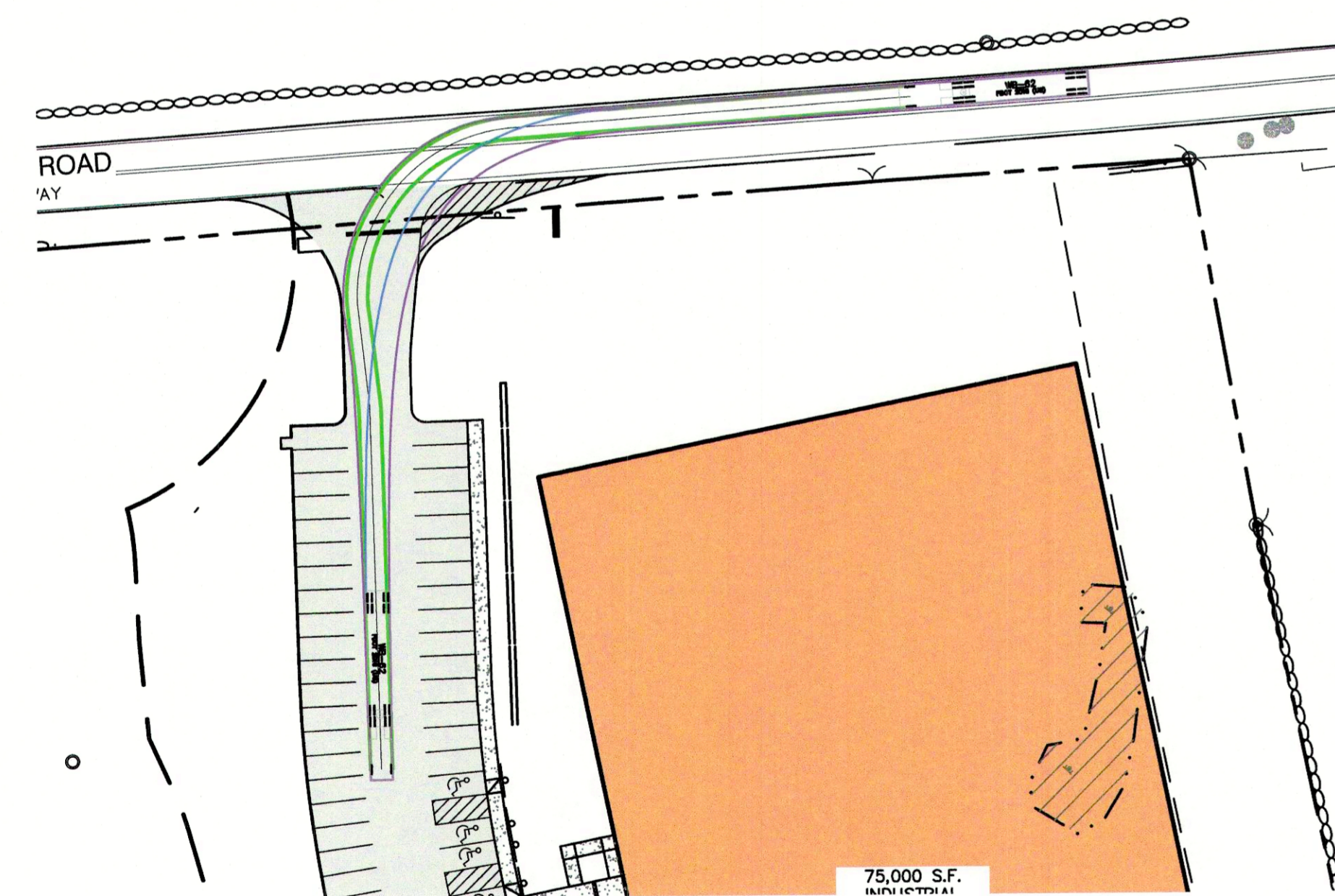
SHEET 20 OF 23
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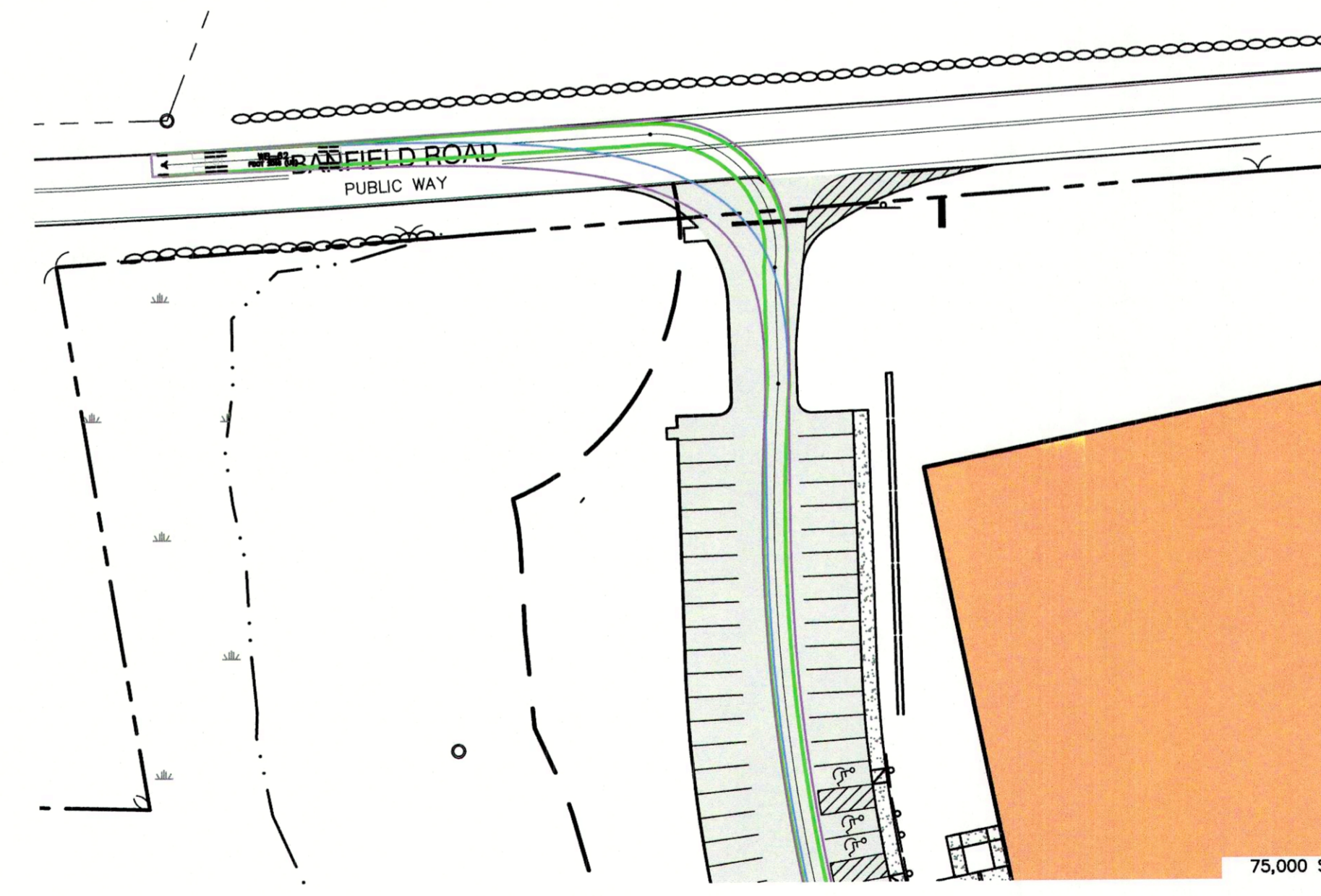
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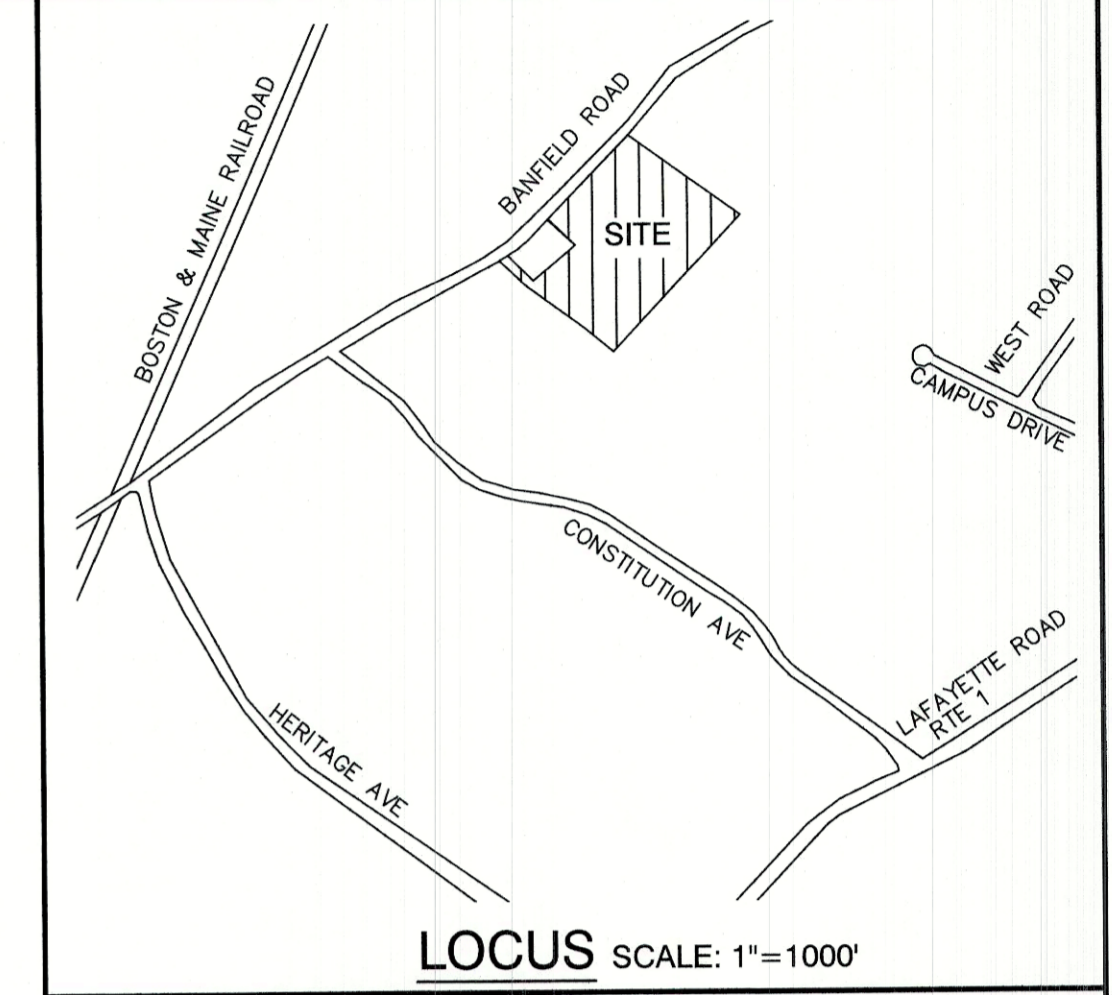
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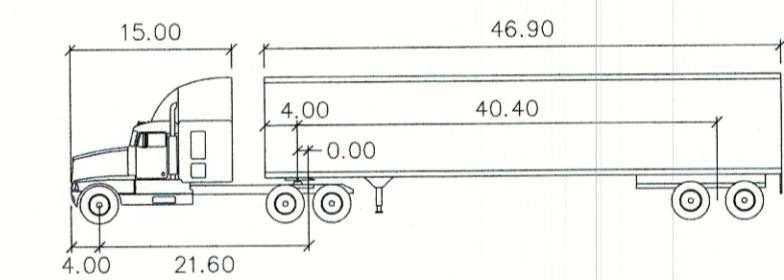


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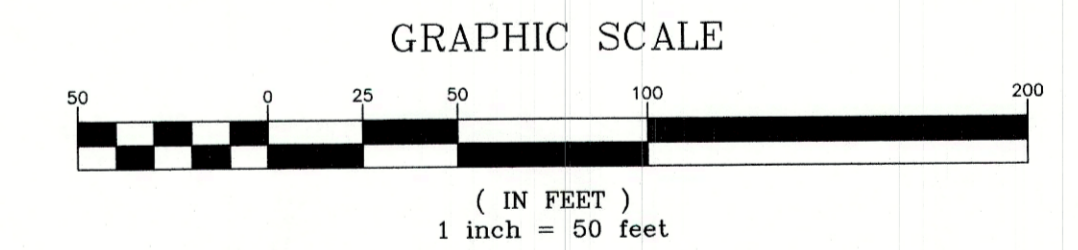
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- REAR TIRES
- VEHICLE BODY



WB-62

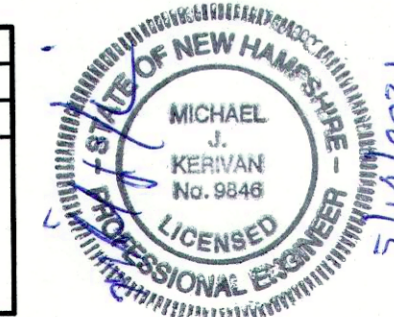
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Trailer Width	: 8.50
Tractor Track	: 8.00
Trailer Track	: 8.50

	feet
Lock to Lock Time	: 6.0
Steering Angle	: 31.9
Articulating Angle	: 70.0



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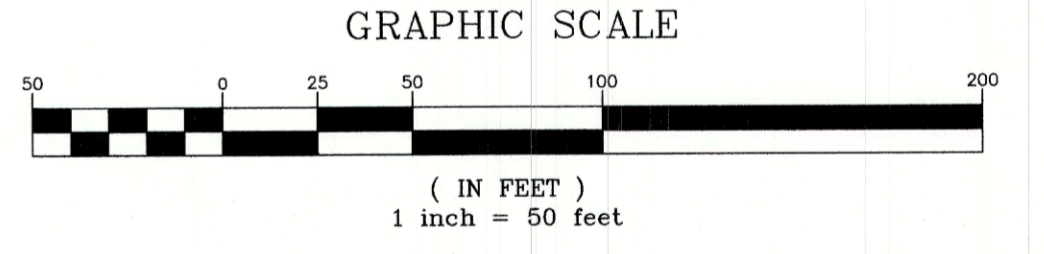
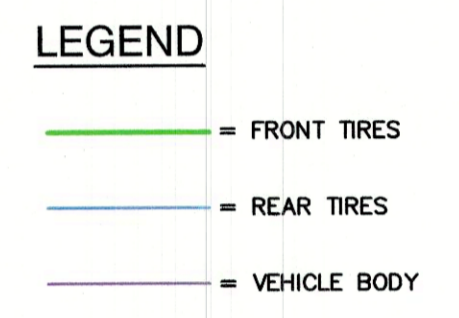
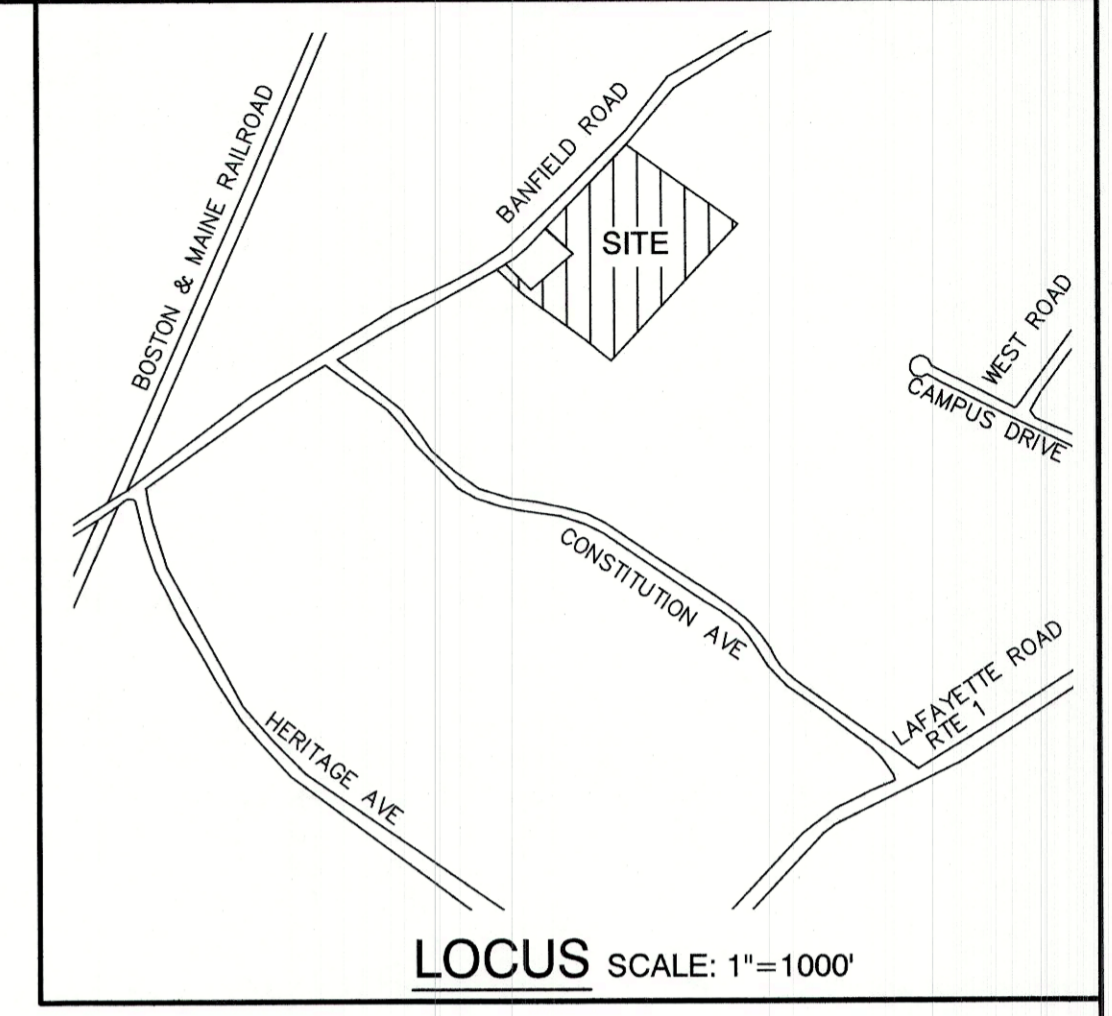
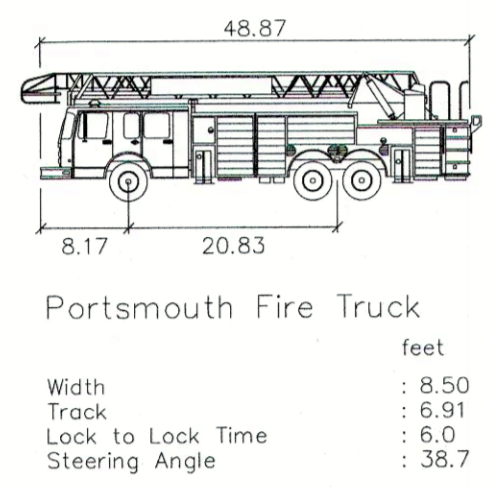
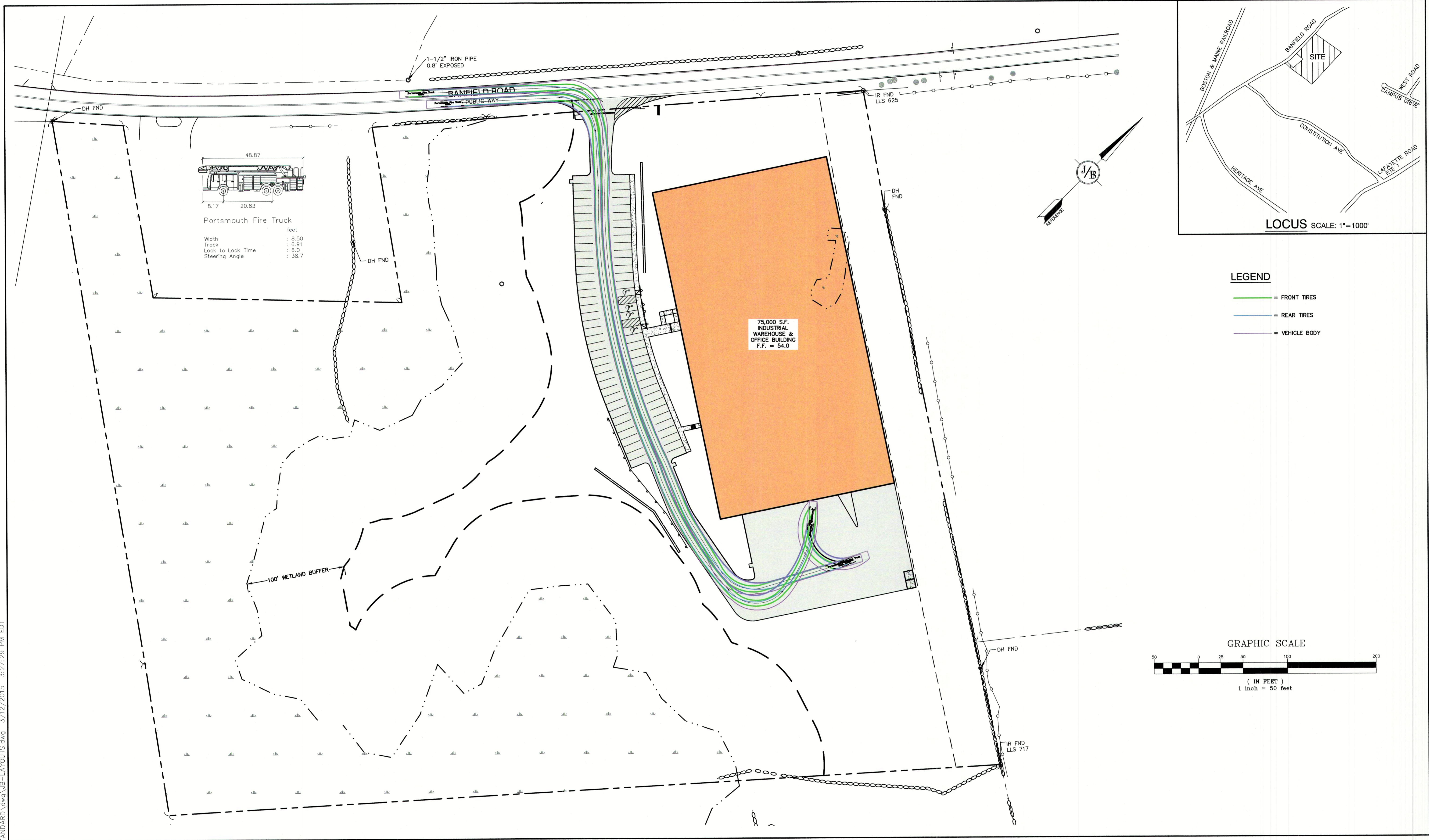
603-772-4746 FAX: 603-772-0227 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL TRUCK TURNING PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.

T2

SHEET 21 OF 23
JBE PROJECT NO. 19190.2



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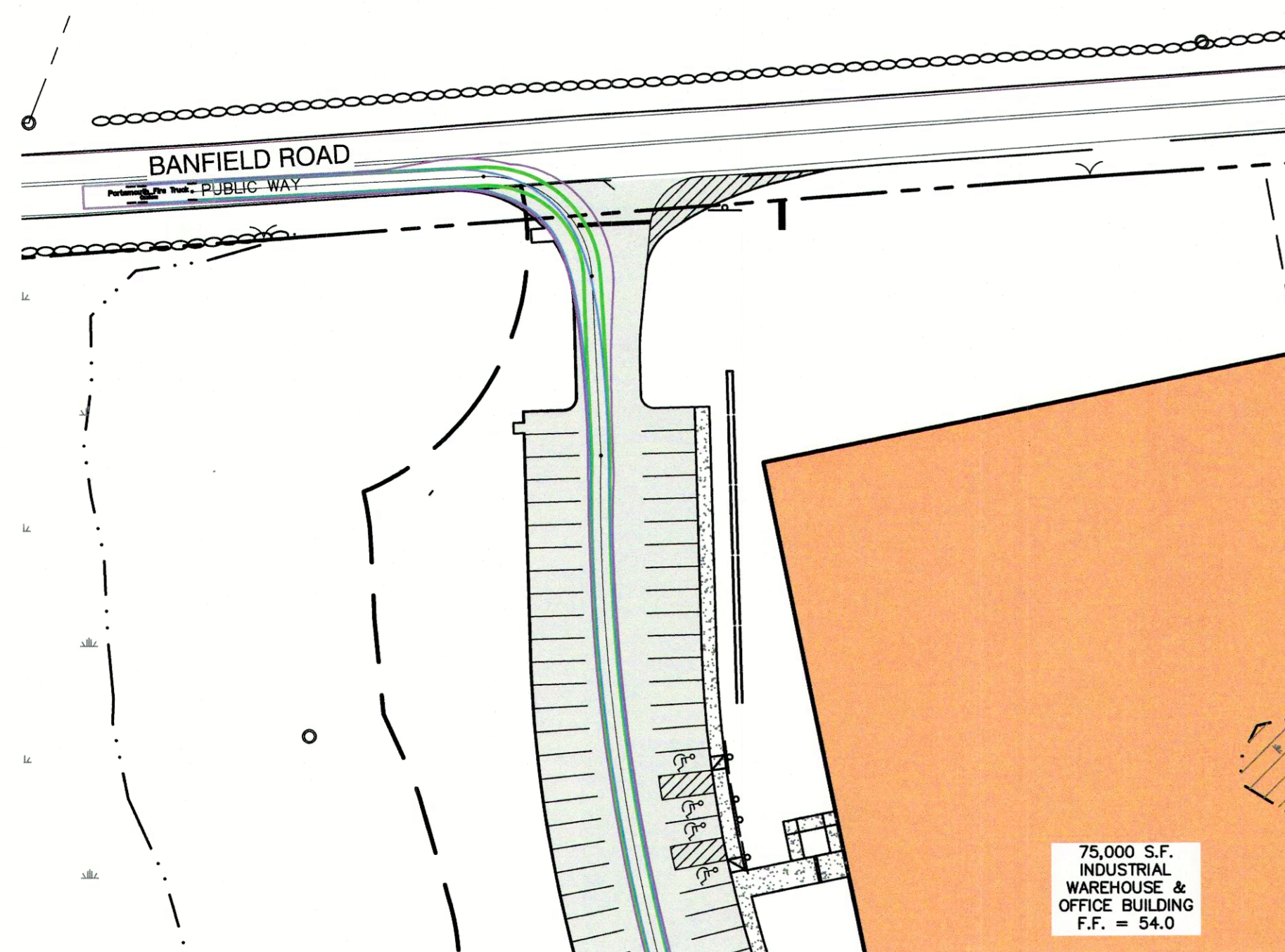
603-772-4746
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Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

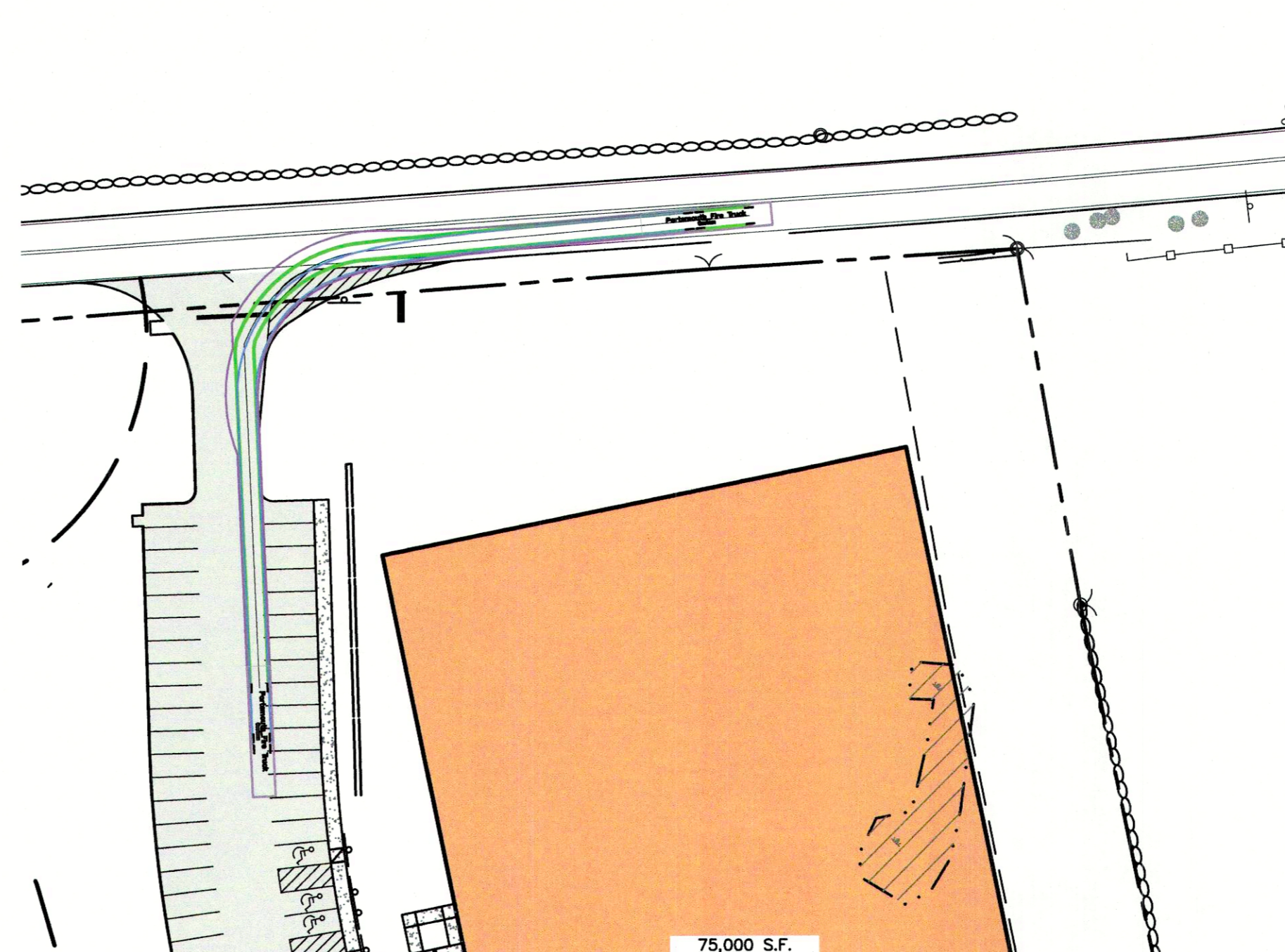
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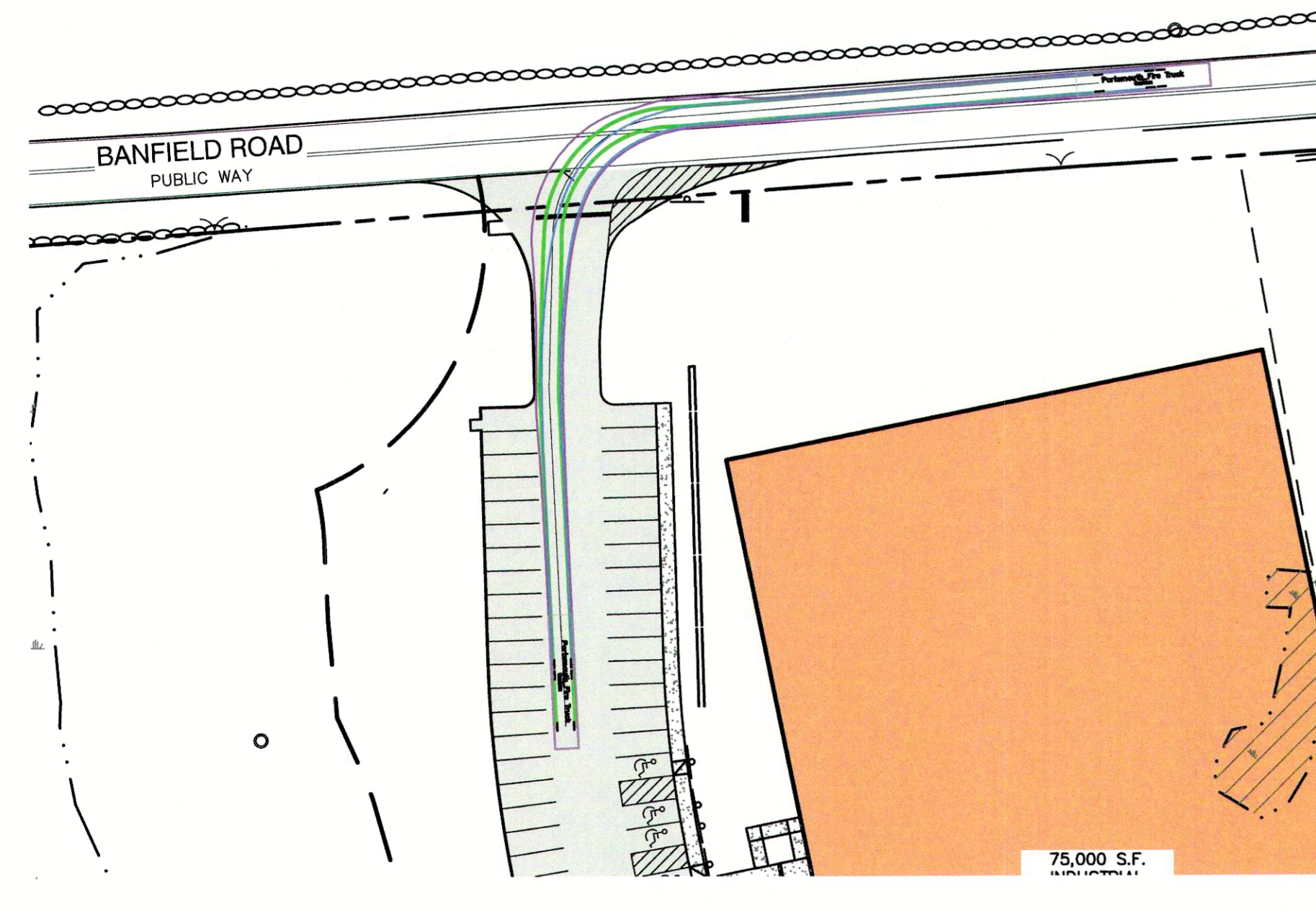
SHEET 22 OF 23
 JBE PROJECT NO. 19190.2



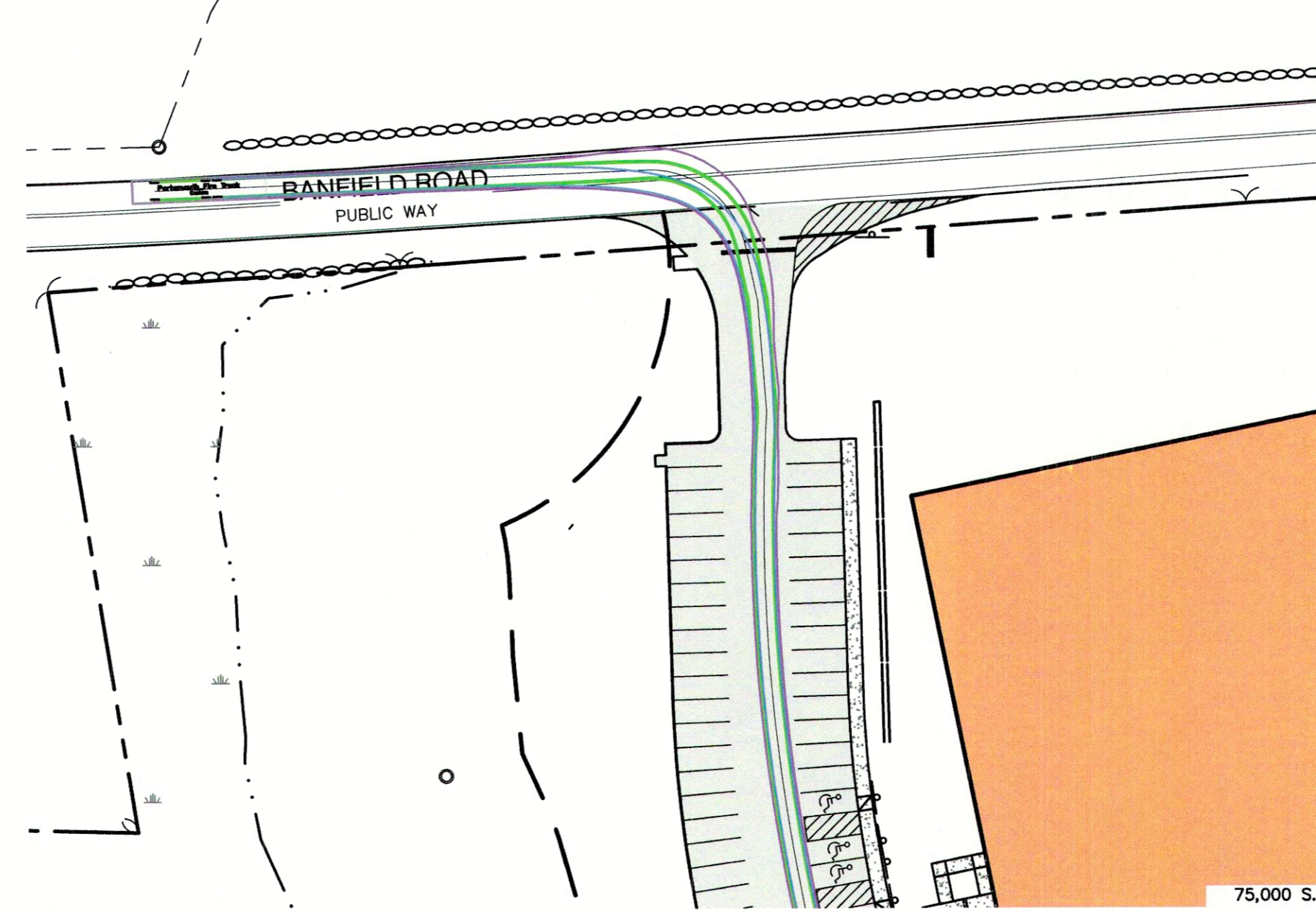
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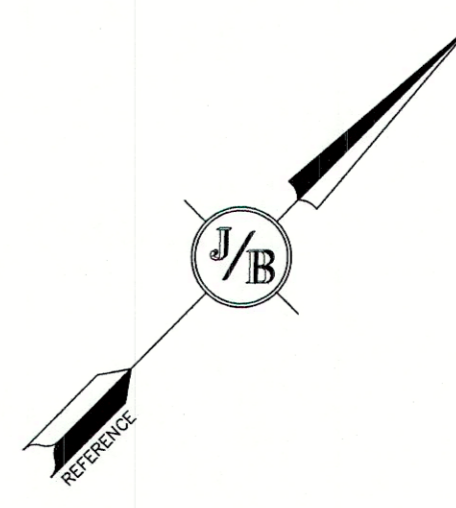
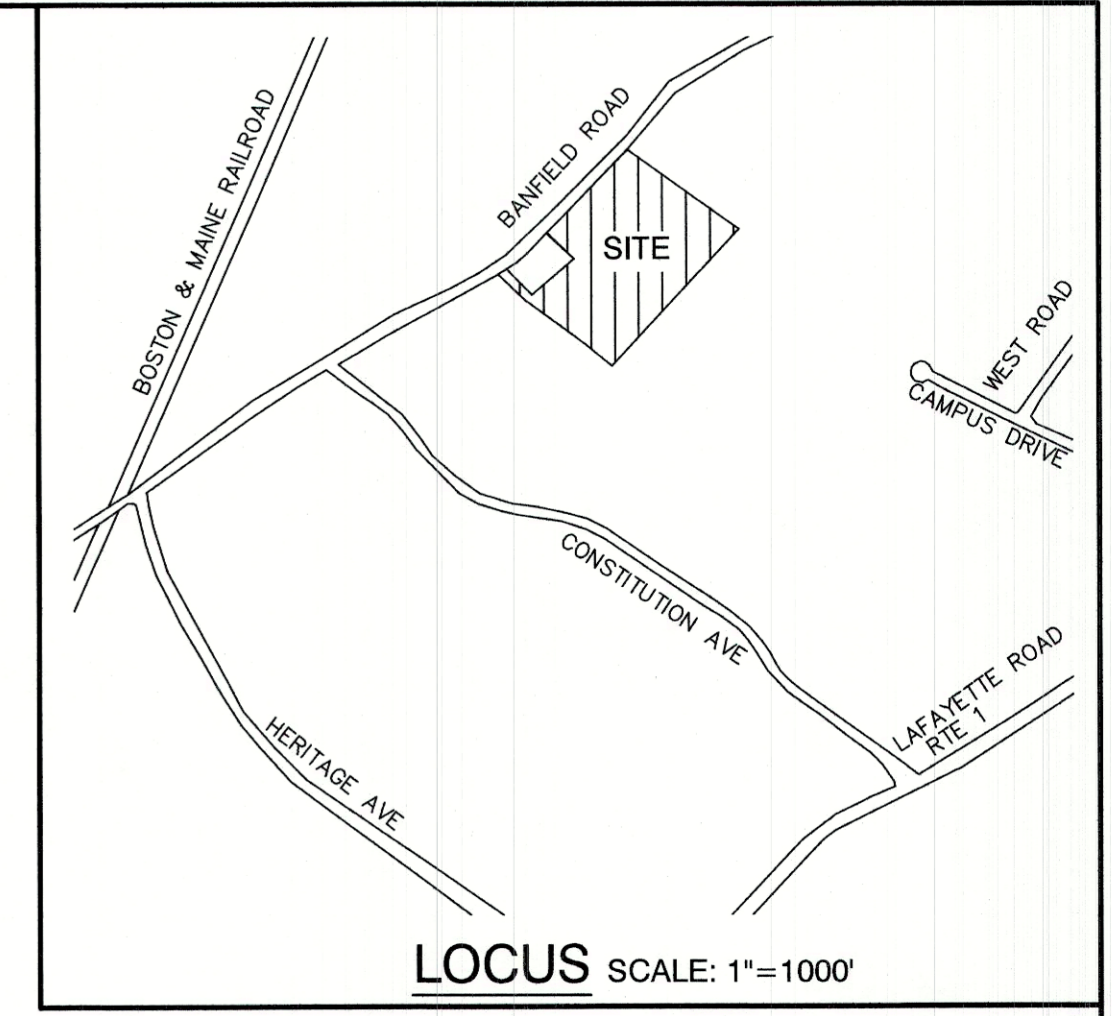
RIGHT TURN OUT PLAN



LEFT TURN IN PLAN

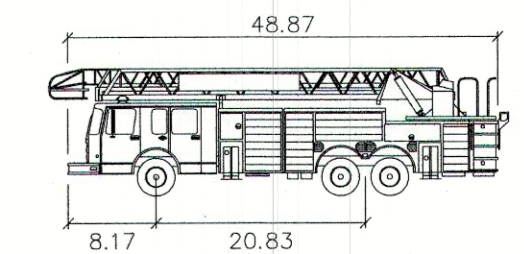


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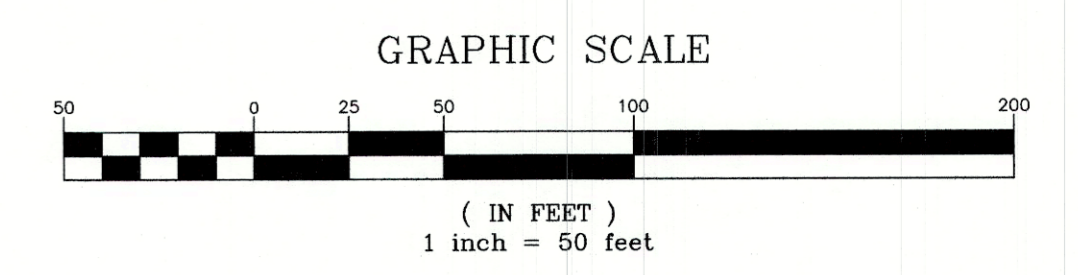


LEGEND

- FRONT TIRES
- REAR TIRES
- VEHICLE BODY

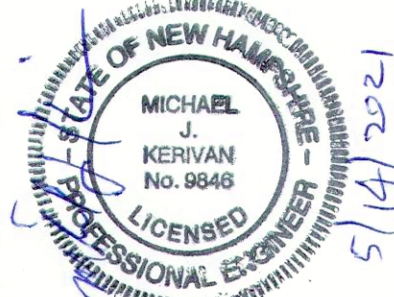


Portsmouth Fire Truck
 Width : 8.50
 Track : 6.91
 Lock to Lock Time : 6.0
 Steering Angle : 38.7



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Plan Name:	DETAIL TRUCK TURNING PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.

T4

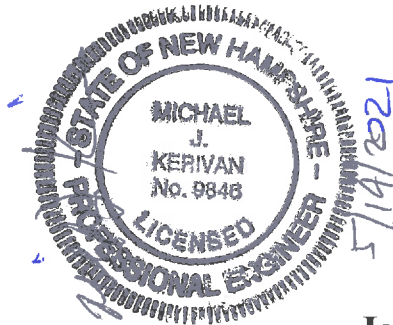
SHEET 23 OF 23
JBE PROJECT NO. 19190.2

DRAINAGE ANALYSIS
SEDIMENT AND EROSION CONTROL PLAN

**375 Banfield Road
Portsmouth, NH 03801
Tax Map 266, Lot 7**

Prepared for:

**Banfield Realty, LLC
304 Maplewood Ave.
Portsmouth, NH 03801**



Prepared by:
Jones & Beach Engineers, Inc.
85 Portsmouth Avenue
P.O. Box 219
Stratham, NH 03885
(603) 772-4746
December 30, 2020
REVISED February 17, 2021
REVISED May 17, 2021
JBE Project No. 19190.2

EXECUTIVE SUMMARY

Banfield Realty, LLC proposes to construct a 75,000 S.F. industrial warehouse building on a 14.96-acre parcel of land located at 375 Banfield Road in Portsmouth, NH. Currently the parcel consists of two commercial buildings with an associated accessory shed and parking. The existing buildings and parking with their associated utilities are to be removed so the new development can occur.

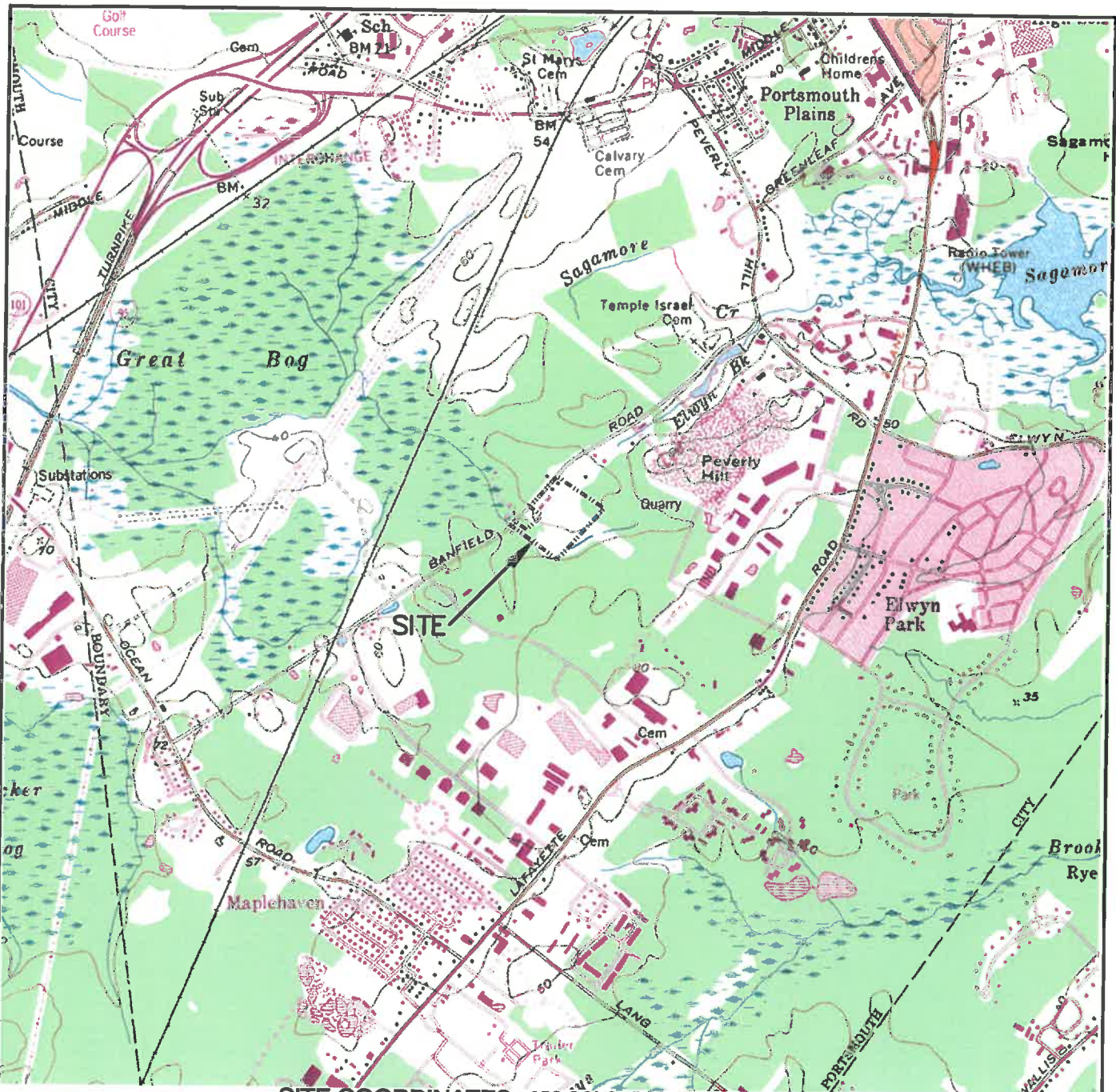
A drainage analysis of the entire site was conducted for the purpose of estimating the peak rate of stormwater runoff and to subsequently design adequate drainage structures. Two models were compiled, one for the area in its existing (pre-construction) condition, and a second for its proposed (post-construction) condition. The analysis was conducted using data for the 2 Year – 24 Hour (3.71”), 10 Year – 24 Hour (5.64”), 25 Year – 24 Hour (7.14”), and 50 Year – 24 Hour (8.57”) storm events using the USDA SCS TR-20 method within the HydroCAD Stormwater Modeling System environment. This data was taken from the Extreme Precipitation Tables developed by the Northeast Regional Climate Center (NRCC), and the values have been increased by 15% due to the project being within the Coastal/Great Bay Region. A summary of the existing and proposed conditions peak rates of runoff is as follows:

Analysis Point	2 Year		10 Year		25 Year		50 Year	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Analysis Point #1	2.82	2.51	9.93	6.75	16.83	10.63	24.06	18.56
Analysis Point #2	0.00	0.00	0.02	0.01	0.12	0.05	0.39	0.19

The project site is located in the Industrial (I) Zoning District. The existing topography is such that runoff for the majority of the site (Subcatchment 1) flows into a major wetland (Analysis Point 1) which ultimately drains to a cross-street 12” culvert. Runoff from the undeveloped western corner (Subcatchment 2) sheet flows directly into an abutting lot (Analysis Point 2). The proposed development results in a decrease in the peak flow rate to both Analysis Points during all analyzed storms.

The proposed site development consists of the aforementioned industrial warehouse building with associated parking, utilities, and septic system. The same 2 Analysis Points were used in the Post Development Analysis. Runoff from most of the developed portions of the site will be treated with ACF Focal Point biofiltration systems and then detained in the ACF R-Tank subsurface detention basin before being discharged through a vegetated swale into Analysis Point 1. The exception to that is for the driveway that will be discharged through a level spreader into a Developed Area Buffer, designed per NHDES standards for stormwater treatment. Runoff from the periphery of the site will maintain its existing flow pattern.

The use of Best Management Practices per the NHDES Stormwater Manual have been applied to the design of this drainage system and will be observed during all stages of construction. All land disturbed during construction will be stabilized within thirty days of groundbreaking and abutting property owners will suffer minimal adversity resultant of this development.



SITE COORDINATES: 43° 02' 34" N, 70° 47' 23" W

GRAPHIC SCALE



(IN FEET)

1 inch = 2000ft.

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 Stratham, NH 03885 E-Mail: JBE@jonesandbeach.com

Drawing Name:	USGS
Project:	INDUSTRIAL WAREHOUSE
Project Site:	375 BANFIELD ROAD, PORTSMOUTH, NH

DRAWING No.	USGS1
SHEET 1 OF 1	
JBE PROJECT No.	19190.2

TABLE OF CONTENTS

Executive Summary

USGS Quadrangle

1.0	Rainfall Characteristics	Page 1
2.0	Existing Conditions Analysis	Page 1
3.0	Proposed Conditions Analysis	Page 1
4.0	Sediment & Erosion Control Best Management Practices	Pages 2-6
5.0	Conclusion	Page 6

Appendix I Existing Conditions Analysis

- 2 Year - 24 Hour Summary
- 10 Year - 24 Hour Complete
- 25 Year - 24 Hour Summary
- 50 Year - 24 Hour Complete

Appendix II Proposed Conditions Analysis

- 2 Year - 24 Hour Summary
- 10 Year - 24 Hour Complete
- 25 Year - 24 Hour Summary
- 50 Year - 24 Hour Complete

Appendix III Charts, Graphs, and Calculations

Enclosed: Sheet W1 Existing Conditions Watershed Plan
Sheet W2 Proposed Conditions Watershed Plan

1.0 RAINFALL CHARACTERISTICS

This drainage report includes an existing conditions analysis of the area involved in the proposed development, as well as a proposed condition, or post-construction analysis, of the same location. These analyses were accomplished using the USDA SCS TR-20 Method within the HydroCAD Stormwater Modeling System. The curve numbers were developed using the SCS TR-55 Runoff Curve numbers for Urban Areas. A Type III SCS 24-hour rainfall distribution was utilized in analyzing the data for the 2 Year – 24 Hour (3.71"), 10 Year – 24 Hour (5.64"), 25 Year – 24 Hour (7.14"), and 50 Year – 24 Hour (8.57") storm events. This data was taken from the Extreme Precipitation Tables developed by the Northeast Regional Climate Center (NRCC), and the values have been increased by 15% due to the project being within the Coastal/Great Bay Region.

The proposed peak rates of runoff will be reduced from the existing condition, thereby minimizing any potential for a negative impact on abutting properties or erosion of the wetland system. This is accomplished through treatment of stormwater runoff and attenuation of peak flows resulting from storm events.

2.0 EXISTING CONDITIONS ANALYSIS

The subject parcel consists of two commercial buildings and an accessory shed with associated parking. Behind this development, there are foot trails, lawns, woods, and two separate wetlands; one of which encumbers a large portion of the property and has an associated 100' buffer and another small, isolated wetland. The existing buildings are serviced by City water, natural gas, overhead electric, and an on-site septic system. The existing topography of the site features a hill on the north side with a sharp dropoff to relatively level ground around the major wetland system.

In the existing condition, the aforementioned hill divides the site into two subcatchments. Subcatchment 1 consists of developed area, lawn, and woods, runoff from all of which flows directly into the major wetland. Subcatchment 2 consists of a small area of forest and lawn on the opposite slope of the hill from which runoff flows to the abutter's property.

Existing soil types were determined through a Site-Specific Soil Survey conducted by a Certified Soil Scientist. These soils are categorized into Hydrologic Soil Groups (HSG) A, C, and D.

3.0 PROPOSED CONDITIONS ANALYSIS

The addition of the proposed impervious parking areas and the 75,000 S.F. industrial warehouse building causes an increase in the curve number (C_n) and a decrease in the time of concentration (T_c), the result being a potential increase in peak rates of runoff from the site. The construction of the parking lot, industrial warehouse building, catch basins, focal points, R-Tank, and associated grading, split the site into 13 subcatchments. The site will be graded such that runoff from most of the developed areas of the site will receive treatment through ACF Focal Point biofiltration systems. All runoff treated by the biofiltration system will then be directed into a lined R-Tank subsurface detention system for attenuation before being discharged into a vegetated swale which leads Analysis Point 1. The driveway will runoff through a level spreader into a Developed Area Buffer per NHDES standards for stormwater treatment. The undeveloped remainder of the site will maintain its existing flow pattern.

The peak flow rates to Analysis Point 2 are decreased as the site grading leads to a smaller portion of land being sloped in that direction, all of which is to remain undisturbed with this development.

4.0 SEDIMENT & EROSION CONTROL BEST MANAGEMENT PRACTICES

The proposed site development is protected from erosion and the roadways and abutting properties are protected from sediment by the use of Best Management Practices as outlined in the NHDES Stormwater Manual. Any area disturbed by construction will be re-stabilized within 30 days and abutting properties and wetlands will suffer minimal adversity resultant of this development. All drainage structures will be constructed and stabilized prior to having runoff directed to them.

4.1 Silt Fence / Construction Fence

The plan set delineates the location of silt fence for sediment control. Sheet E1 – Erosion and Sediment Control Details, has the specifications for installation of the silt fence. This is necessary in areas where there is adjacent property or wetlands downslope of the area of development. In areas where the limits of construction need to be emphasized to operators, construction fence for added visibility will be installed. Orange construction fence will be VISI Perimeter Fence by Conwed Plastic Fencing, or equal. The four-foot fencing to be installed using six-foot posts at least two feet in the ground at a spacing of six to eight feet.

4.2 Stabilized Construction Entrance

A temporary gravel construction entrance provides an area where mud can be dislodged from tires before the vehicle leaves the construction site to reduce the amount of mud and sediment transported onto paved municipal and state roads. The stone size for the pad should be between 3-inch coarse aggregate, and the pad itself constructed to a minimum length of 50 feet for the full width of the access road. The aggregate should be placed at least six inches thick. A plan view and profile are shown on Sheet E1.

4.3 Environmental Dust Control

Dust will be controlled on the site by the use of multiple Best Management Practices. Mulching and temporary seeding will be the first line of protection to be utilized where problems occur. If dust problems are not solved by these applications, the use of water can be applied. Dump trucks hauling material from the construction site will be covered with a tarpaulin.

4.4 Vegetated Stabilization

All areas that are disturbed during construction will be stabilized with vegetated material within 30 days of breaking ground. Construction will be managed in such a manner that erosion is prevented and that no abutting property will be subjected to any siltation, unless otherwise permitted. All areas to be planted with grass for long-term cover will follow the specification on Sheet E1 using seeding mixture C.

4.5 Temporary Sediment Traps

Temporary Sediment Traps are small temporary ponding areas that are formed by excavation or by constructing an earthen embankment across a drainage way and providing a stabilized outlet. These structures intercept sediment-laden runoff from small, disturbed areas and detain it long enough for the majority of the sediment to settle out into the sump of the trap.

4.6 Riprap Outlet Protection

Riprap Outlet Protection will be provided at the outlet of all culverts that discharge runoff into the environment (as opposed to a catch basin). The riprap outlet protection has been designed with the equations provided in the NHDES Stormwater Manual depending on inlet or outlet control. Details of the protection design can be found on Sheet E1 – Erosion & Sediment Control Details.

4.7 Catch Basins

A catch basin is a pre-cast concrete structure intended for the capture of stormwater utilized in streets and parking areas. Grease hoods attached to the outlet pipe of the structures allow for the capture of grease, oils, and other floatable solids from runoff, thereby minimizing their presence in the subsequent discharge.

4.8 Construction Sequence

1. Prior to the start of *any* activity, it is the responsibility of the site's Developer (or Owner) to file a Notice of Intent (NOI) form and a copy of one (shared) Stormwater Pollution Prevention Plan (SWPPP) with the U.S. Environmental Protection Agency (EPA) in order to gain coverage under the NPDES General Permit for Stormwater Discharges from Construction Activities. A pre-construction meeting shall be held prior to the start of construction to discuss the SWPPP and all associated responsibilities. Participants shall include the developer (or owner), the General Contractor, the Site Contractor, and the Engineer.
2. Cut and remove trees in construction area as required or directed.
3. Install silt fencing, and construction entrances prior to the start of earthwork. These shall be maintained until the final pavement surfacing and landscaping areas are established.
4. Clear, cut, grub, and dispose of debris in approved facilities. This includes any required demolition of existing structures, utilities, etc.
5. Construct and/or install temporary sediment basin(s) as required. These facilities shall be installed and stabilized prior to directing runoff to them.
6. Strip loam and pavement, or reclaim existing pavement within limits of work per the recommendations of the project engineer and stockpile excess material. Stabilize stockpile as necessary.

7. Perform preliminary site grading in accordance with the plans, including the construction of any stormwater detention/retention ponds, drainage swales, retaining walls, and sound walls.
8. Prepare building pad(s) to enable building construction to begin.
9. Install the sewer and drainage systems first, then any other utilities in accordance with the plans and details. Any conflicts between utilities are to be resolved with the involvement and approval of the engineer.
10. Install inlet protection at all catch basins as they are constructed, in accordance with the details.
11. All swales and drainage structures are to be constructed and stabilized prior to having runoff directed to them.
12. Daily, or as required, construct temporary berms, drainage ditches, check dams, sediment traps, etc., to prevent erosion on the site and prevent any siltation of abutting waters and/or property.
13. Perform final fine grading, including placement of any "select" subgrade materials.
14. Pave all parking lots and roadways with initial base course.
15. Perform all remaining site construction (i.e. building, curbing, utility connections, etc.).
16. Loam and seed all disturbed areas and install any required sediment and erosion control facilities (i.e. riprap, erosion control blankets, etc.).
17. Finish paving all roadways and parking areas with finish course.
18. Complete permanent seeding and landscaping.
19. Remove temporary erosion control measures after seeding areas have been 85% established and site improvements are complete. Smooth and re-vegetate all disturbed areas.
20. Clean site and all drainage structures, pipes, and sumps of all silt and debris.
21. Install all painted pavement markings and signage per the plans and details.
22. Upon completion of construction, it is the responsibility of the contractor to notify any relevant permitting agencies that the construction has been finished in a satisfactory manner.

4.9 Temporary Erosion Control Measures

1. The smallest practical area of land shall be exposed at any one time. At no time shall an area in excess of that required for construction be exposed.

2. Erosion, sediment and detention measures shall be installed as shown on the plans and at locations as required, or directed by the engineer.
3. All disturbed areas (including pond areas below the proposed waterline) shall be returned to proposed grades and elevations. Disturbed areas shall be loamed with a minimum of 6" of loam and seeded with seed mixture "C" at a rate not less than 1.10 pounds of seed per 1,000 square feet of area (48 lbs. per acre).
4. Silt fences and other barriers shall be inspected every seven days and within 24 hours of a rainfall of 0.5" or greater. All damaged areas shall be repaired, and sediment deposits shall periodically be removed and properly disposed of.
5. After all disturbed areas have been stabilized, the temporary erosion control measures are to be removed and the area disturbed by the removal smoothed and revegetated.
6. Areas must be seeded and mulched within 3 days of final grading, or temporarily stabilized within 14 days of initial disturbance of soil.
7. All proposed vegetated areas not stabilized by or are disturbed after October 15th must be protected with North American Green S75 erosion control blankets (or an equivalent approved in writing by the engineer) and seeded with winter rye or oats at a rate of 2.50 pounds per 1,000 square feet of area (108.90 lbs. per acre). Unstabilized swales shall be protected with erosion control blankets appropriate to the design flow conditions and seeded to the same specification. Placement of blankets shall not occur over accumulated snow.
8. An area shall be considered stable if one of the following has occurred:
 - a. Base course gravels have been installed in areas to be paved;
 - b. A minimum of 85% vegetated growth has been established;
 - c. A minimum of 3" or non-erosive material such as stone or riprap has been installed; or
 - d. Erosion control blankets have been properly installed.
9. After October 15th where work has stopped for the season, incomplete roadway or parking surfaces shall be protected with a minimum of 3" of crushed gravel meeting NHDOT Item 304.3.
10. In order to ensure the stability of the site and effective implementation of the sediment and erosion control measures specified in the plans for the duration of construction, the contractor shall be in strict compliance with the inspection and maintenance requirements to those called for in the SWPPP.

4.10 Inspection and Maintenance Schedule

4.26.1 Temporary Best Management Practices

Silt Fencing

During the construction process, all silt fencing will be inspected during and after storm events to ensure that the fence still has integrity and is not allowing sediment to pass. Any section of fence that has failed or is failing is to be replaced immediately, overlapping adjacent fence sections by at least one foot. If the problem persists, measures such as additional fencing (i.e. double) or the addition of hay-bales on the project side of the fence line should be considered. Sediment is to be removed from behind the fencing if found to be deeper than six inches and disposed of properly.

Swales

Sediment build-up in swales will be removed if it is deeper than six inches and disposed of properly.

Sediment Traps

Sediment traps are to be inspected once per week and after every precipitation event. Sediment is to be removed from the traps if it is deeper than six inches and disposed of properly. The lip of the outlet crest should be maintained so as to provide an even, level edge so as to promote sheet flow out of the structure so as to minimize the potential for erosion downstream from the structure. Any erosion must be repaired and stabilized immediately.

4.26.2 Permanent Best Management Practices

Catch Basins

Sediment and debris is to be removed from catch basin sumps semi-annually (as well as from sumps below the inlet of culverts). Grease hoods are to be wiped clean and the rags disposed of properly. Debris obscuring the grate inlet should also be removed.

Drainage Swales

Sediment build-up in swales is to be removed if it is deeper than six inches, and any debris also removed. Areas where vegetation has not become established or has died should be reseeded. If this fails, additional loam and seed may be required. *Fertilizers should be utilized only as a last resort.* Mowing should be performed at least once a year, but not shorter than four inches, and all grass clippings removed.

5.0 CONCLUSION

This proposed site development located at 375 Banfield Road in Portsmouth, NH will have minimal adverse effect on abutting infrastructures, properties, and wetlands by way of stormwater runoff or siltation. Appropriate steps will be taken to eliminate erosion and sedimentation; these will be accomplished through the construction of a drainage system consisting of site grading, curbing, catch basins, ACF Focal Point biofiltration systems, a treatment buffer, and subsurface detention with a downstream vegetated swale. The use of Best Management Practices developed by the State of New Hampshire have been utilized in the design of this system and their application will be enforced throughout the construction process.

A site specific, terrain alteration permit (RSA 485:A-17) is required for this site plan due to the area of disturbance being greater than 100,000 square-feet.

Respectfully Submitted,
JONES & BEACH ENGINEERS, INC.

A handwritten signature in black ink that reads "Daniel Meditz". The signature is written in a cursive, flowing style with a long horizontal stroke at the end.

Daniel Meditz, E.I.T
Project Engineer

APPENDIX I

EXISTING CONDITIONS DRAINAGE ANALYSIS

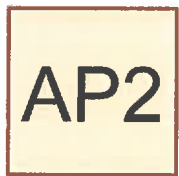
Summary 2 YEAR
Complete 10 YEAR
Summary 25 YEAR
Complete 50 YEAR



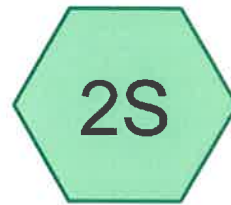
Wetlands



Subcatchment 1S



Map 266 Lot 5



Subcatchment 2S



Routing Diagram for 19190-EXISTING_AoT

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.601	39	>75% Grass cover, Good, HSG A (1S, 2S)
0.786	74	>75% Grass cover, Good, HSG C (1S)
0.045	80	>75% Grass cover, Good, HSG D (1S)
0.389	65	Brush, Good, HSG C (1S)
0.033	96	Gravel surface, HSG D (1S)
0.010	98	Paved parking, HSG A (1S)
0.715	98	Paved parking, HSG D (1S)
0.166	98	Roofs, HSG D (1S)
2.453	30	Woods, Good, HSG A (1S, 2S)
2.318	70	Woods, Good, HSG C (1S)
0.141	77	Woods, Good, HSG D (1S)
0.050	32	Woods/grass comb., Good, HSG A (1S)
1.059	72	Woods/grass comb., Good, HSG C (1S)
10.766	56	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
5.113	HSG A	1S, 2S
0.000	HSG B	
4.552	HSG C	1S
1.101	HSG D	1S
0.000	Other	
10.766		TOTAL AREA

19190-EXISTING_AoT

Type III 24-hr 2 Yr 24 Hr (+15%) Rainfall=3.71"

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment1S

Runoff Area=420,946 sf 9.22% Impervious Runoff Depth>0.58"
Flow Length=864' Tc=27.0 min CN=59 Runoff=2.82 cfs 0.463 af

Subcatchment2S: Subcatchment2S

Runoff Area=48,019 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=323' Tc=14.7 min CN=33 Runoff=0.00 cfs 0.000 af

Reach AP1: Wetlands

Inflow=2.82 cfs 0.463 af
Outflow=2.82 cfs 0.463 af

Reach AP2: Map 266 Lot 5

Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Total Runoff Area = 10.766 ac Runoff Volume = 0.463 af Average Runoff Depth = 0.52"
91.72% Pervious = 9.875 ac 8.28% Impervious = 0.891 ac

19190-EXISTING_AoT

Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.64"

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment1S

Runoff Area=420,946 sf 9.22% Impervious Runoff Depth>1.60"
Flow Length=864' Tc=27.0 min CN=59 Runoff=9.93 cfs 1.289 af

Subcatchment2S: Subcatchment2S

Runoff Area=48,019 sf 0.00% Impervious Runoff Depth>0.11"
Flow Length=323' Tc=14.7 min CN=33 Runoff=0.02 cfs 0.010 af

Reach AP1: Wetlands

Inflow=9.93 cfs 1.289 af
Outflow=9.93 cfs 1.289 af

Reach AP2: Map 266 Lot 5

Inflow=0.02 cfs 0.010 af
Outflow=0.02 cfs 0.010 af

Total Runoff Area = 10.766 ac Runoff Volume = 1.300 af Average Runoff Depth = 1.45"
91.72% Pervious = 9.875 ac 8.28% Impervious = 0.891 ac

19190-EXISTING_AoT

Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.64"

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Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 9.93 cfs @ 12.42 hrs, Volume= 1.289 af, Depth> 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.64"

Area (sf)	CN	Description
7,231	98	Roofs, HSG D
31,165	98	Paved parking, HSG D
416	98	Paved parking, HSG A
19,112	39	>75% Grass cover, Good, HSG A
53,727	39	>75% Grass cover, Good, HSG A
26,447	39	>75% Grass cover, Good, HSG A
72,824	30	Woods, Good, HSG A
2,193	32	Woods/grass comb., Good, HSG A
6,121	77	Woods, Good, HSG D
46,133	72	Woods/grass comb., Good, HSG C
100,976	70	Woods, Good, HSG C
25,142	74	>75% Grass cover, Good, HSG C
9,094	74	>75% Grass cover, Good, HSG C
16,936	65	Brush, Good, HSG C
1,295	80	>75% Grass cover, Good, HSG D
679	80	>75% Grass cover, Good, HSG D
1,455	96	Gravel surface, HSG D
420,946	59	Weighted Average
382,134		90.78% Pervious Area
38,812		9.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	31	0.0500	0.13		Sheet Flow, Grass: Dense n= 0.240 P2= 3.23"
2.7	20	0.0500	0.12		Sheet Flow, Grass: Dense n= 0.240 P2= 3.23"
4.5	49	0.2400	0.18		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.23"
4.1	124	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.2	111	0.0500	1.57		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.5	105	0.0500	3.60		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.1	94	0.0400	1.40		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
9.0	330	0.0150	0.61		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
27.0	864	Total			

19190-EXISTING_AoT

Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.64"

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Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 0.02 cfs @ 15.07 hrs, Volume= 0.010 af, Depth> 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.64"

Area (sf)	CN	Description
34,026	30	Woods, Good, HSG A
13,993	39	>75% Grass cover, Good, HSG A
48,019	33	Weighted Average
48,019		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	72	0.0300	0.19		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
5.4	28	0.0500	0.09		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.23"
1.7	113	0.0500	1.12		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.2	110	0.1000	1.58		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
14.7	323	Total			

Summary for Reach AP1: Wetlands

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

Inflow Area = 9.664 ac, 9.22% Impervious, Inflow Depth > 1.60" for 10 Yr 24 Hr(+15%) event
 Inflow = 9.93 cfs @ 12.42 hrs, Volume= 1.289 af
 Outflow = 9.93 cfs @ 12.42 hrs, Volume= 1.289 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Reach AP2: Map 266 Lot 5

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

Inflow Area = 1.102 ac, 0.00% Impervious, Inflow Depth > 0.11" for 10 Yr 24 Hr(+15%) event
 Inflow = 0.02 cfs @ 15.07 hrs, Volume= 0.010 af
 Outflow = 0.02 cfs @ 15.07 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

19190-EXISTING_AoT

Type III 24-hr 25 Yr 24 Hr(+15% Rainfall=7.14"

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment1S

Runoff Area=420,946 sf 9.22% Impervious Runoff Depth>2.59"
Flow Length=864' Tc=27.0 min CN=59 Runoff=16.83 cfs 2.083 af

Subcatchment2S: Subcatchment2S

Runoff Area=48,019 sf 0.00% Impervious Runoff Depth>0.40"
Flow Length=323' Tc=14.7 min CN=33 Runoff=0.12 cfs 0.037 af

Reach AP1: Wetlands

Inflow=16.83 cfs 2.083 af
Outflow=16.83 cfs 2.083 af

Reach AP2: Map 266 Lot 5

Inflow=0.12 cfs 0.037 af
Outflow=0.12 cfs 0.037 af

Total Runoff Area = 10.766 ac Runoff Volume = 2.120 af Average Runoff Depth = 2.36"
91.72% Pervious = 9.875 ac 8.28% Impervious = 0.891 ac

19190-EXISTING_AoT

Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.57"

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment1S

Runoff Area=420,946 sf 9.22% Impervious Runoff Depth>3.63"
Flow Length=864' Tc=27.0 min CN=59 Runoff=24.06 cfs 2.920 af

Subcatchment2S: Subcatchment2S

Runoff Area=48,019 sf 0.00% Impervious Runoff Depth>0.81"
Flow Length=323' Tc=14.7 min CN=33 Runoff=0.39 cfs 0.075 af

Reach AP1: Wetlands

Inflow=24.06 cfs 2.920 af
Outflow=24.06 cfs 2.920 af

Reach AP2: Map 266 Lot 5

Inflow=0.39 cfs 0.075 af
Outflow=0.39 cfs 0.075 af

Total Runoff Area = 10.766 ac Runoff Volume = 2.995 af Average Runoff Depth = 3.34"
91.72% Pervious = 9.875 ac 8.28% Impervious = 0.891 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 24.06 cfs @ 12.39 hrs, Volume= 2.920 af, Depth> 3.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.57"

Area (sf)	CN	Description
7,231	98	Roofs, HSG D
31,165	98	Paved parking, HSG D
416	98	Paved parking, HSG A
19,112	39	>75% Grass cover, Good, HSG A
53,727	39	>75% Grass cover, Good, HSG A
26,447	39	>75% Grass cover, Good, HSG A
72,824	30	Woods, Good, HSG A
2,193	32	Woods/grass comb., Good, HSG A
6,121	77	Woods, Good, HSG D
46,133	72	Woods/grass comb., Good, HSG C
100,976	70	Woods, Good, HSG C
25,142	74	>75% Grass cover, Good, HSG C
9,094	74	>75% Grass cover, Good, HSG C
16,936	65	Brush, Good, HSG C
1,295	80	>75% Grass cover, Good, HSG D
679	80	>75% Grass cover, Good, HSG D
1,455	96	Gravel surface, HSG D
420,946	59	Weighted Average
382,134		90.78% Pervious Area
38,812		9.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	31	0.0500	0.13		Sheet Flow, Grass: Dense n= 0.240 P2= 3.23"
2.7	20	0.0500	0.12		Sheet Flow, Grass: Dense n= 0.240 P2= 3.23"
4.5	49	0.2400	0.18		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.23"
4.1	124	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.2	111	0.0500	1.57		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.5	105	0.0500	3.60		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.1	94	0.0400	1.40		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
9.0	330	0.0150	0.61		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
27.0	864	Total			

19190-EXISTING_AoT

Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.57"

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Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 0.39 cfs @ 12.42 hrs, Volume= 0.075 af, Depth> 0.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.57"

Area (sf)	CN	Description
34,026	30	Woods, Good, HSG A
13,993	39	>75% Grass cover, Good, HSG A
48,019	33	Weighted Average
48,019		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	72	0.0300	0.19		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
5.4	28	0.0500	0.09		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.23"
1.7	113	0.0500	1.12		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.2	110	0.1000	1.58		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
14.7	323	Total			

Summary for Reach AP1: Wetlands

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

Inflow Area = 9.664 ac, 9.22% Impervious, Inflow Depth > 3.63" for 50 Yr 24 Hr(+15%) event
 Inflow = 24.06 cfs @ 12.39 hrs, Volume= 2.920 af
 Outflow = 24.06 cfs @ 12.39 hrs, Volume= 2.920 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Reach AP2: Map 266 Lot 5

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

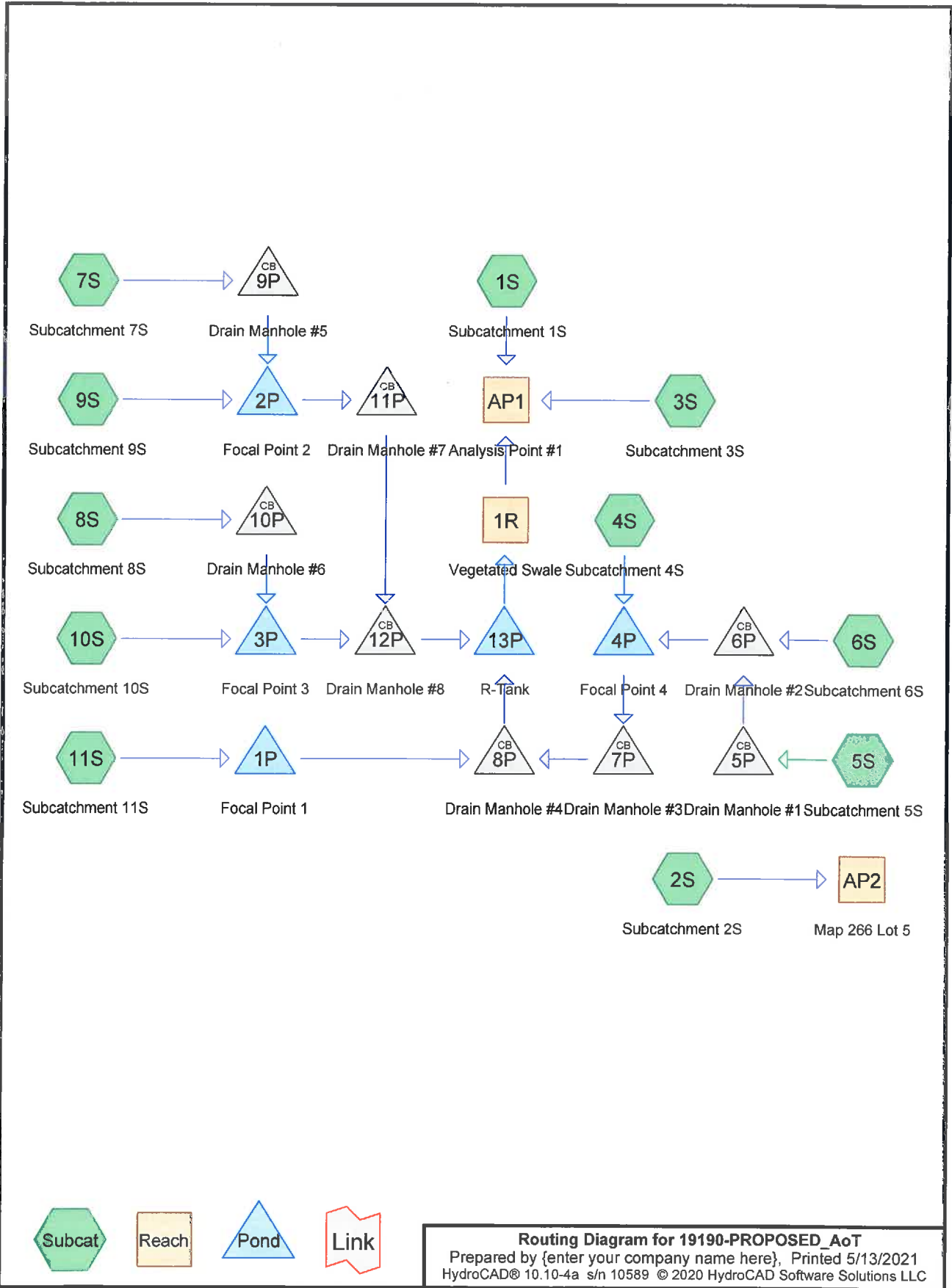
Inflow Area = 1.102 ac, 0.00% Impervious, Inflow Depth > 0.81" for 50 Yr 24 Hr(+15%) event
 Inflow = 0.39 cfs @ 12.42 hrs, Volume= 0.075 af
 Outflow = 0.39 cfs @ 12.42 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

APPENDIX II

PROPOSED CONDITIONS DRAINAGE ANALYSIS

Summary 2 YEAR
Complete 10 YEAR
Summary 25 YEAR
Complete 50 YEAR



19190-PROPOSED_AoT

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.661	39	>75% Grass cover, Good, HSG A (1S, 2S, 4S, 9S, 10S, 11S)
0.575	74	>75% Grass cover, Good, HSG C (1S, 10S, 11S)
0.641	80	>75% Grass cover, Good, HSG D (1S, 3S, 4S, 11S)
0.746	98	Paved parking, HSG A (9S, 10S, 11S)
0.313	98	Paved parking, HSG C (10S, 11S)
0.164	98	Paved parking, HSG D (3S, 11S)
1.205	98	Roofs, HSG A (5S, 6S, 7S, 8S)
0.271	98	Roofs, HSG C (5S, 6S, 7S, 8S)
0.245	98	Roofs, HSG D (5S, 6S)
1.501	30	Woods, Good, HSG A (1S, 2S, 4S)
2.292	70	Woods, Good, HSG C (1S)
0.051	77	Woods, Good, HSG D (1S)
1.101	72	Woods/grass comb., Good, HSG C (1S)
10.766	68	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
5.113	HSG A	1S, 2S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S
0.000	HSG B	
4.552	HSG C	1S, 5S, 6S, 7S, 8S, 10S, 11S
1.101	HSG D	1S, 3S, 4S, 5S, 6S, 11S
0.000	Other	
10.766		TOTAL AREA

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Type III 24-hr 2 Yr 24 Hr(+15%) Rainfall=3.71"

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1S	Runoff Area=224,391 sf 0.00% Impervious Runoff Depth>0.76" Flow Length=646' Tc=32.6 min CN=63 Runoff=2.08 cfs 0.325 af
Subcatchment 2S: Subcatchment 2S	Runoff Area=27,616 sf 0.00% Impervious Runoff Depth=0.00" Flow Length=223' Tc=11.9 min CN=32 Runoff=0.00 cfs 0.000 af
Subcatchment 3S: Subcatchment 3S	Runoff Area=15,195 sf 18.21% Impervious Runoff Depth>2.03" Flow Length=176' Tc=8.0 min CN=83 Runoff=0.77 cfs 0.059 af
Subcatchment 4S: Subcatchment 4S	Runoff Area=33,970 sf 0.00% Impervious Runoff Depth>0.19" Flow Length=225' Tc=17.6 min CN=48 Runoff=0.03 cfs 0.012 af
Subcatchment 5S: Subcatchment 5S	Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>3.47" Tc=6.0 min CN=98 Runoff=1.52 cfs 0.125 af
Subcatchment 6S: Subcatchment 6S	Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>3.47" Tc=6.0 min CN=98 Runoff=1.52 cfs 0.125 af
Subcatchment 7S: Subcatchment 7S	Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>3.47" Tc=6.0 min CN=98 Runoff=1.52 cfs 0.125 af
Subcatchment 8S: Subcatchment 8S	Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>3.47" Tc=6.0 min CN=98 Runoff=1.52 cfs 0.125 af
Subcatchment 9S: Subcatchment 9S	Runoff Area=54,147 sf 45.38% Impervious Runoff Depth>0.91" Flow Length=471' Tc=19.6 min CN=66 Runoff=0.79 cfs 0.094 af
Subcatchment 10S: Subcatchment 10S	Runoff Area=19,625 sf 68.74% Impervious Runoff Depth>2.55" Flow Length=170' Tc=7.7 min CN=89 Runoff=1.24 cfs 0.096 af
Subcatchment 11S: Subcatchment 11S	Runoff Area=19,032 sf 65.45% Impervious Runoff Depth>1.96" Flow Length=195' Tc=6.0 min CN=82 Runoff=0.98 cfs 0.071 af
Reach 1R: Vegetated Swale	Avg. Flow Depth=0.33' Max Vel=0.27 fps Inflow=0.27 cfs 0.277 af n=0.150 L=100.0' S=0.0050' Capacity=11.89 cfs Outflow=0.27 cfs 0.275 af
Reach AP1: Analysis Point #1	Inflow=2.51 cfs 0.658 af Outflow=2.51 cfs 0.658 af
Reach AP2: Map 266 Lot 5	Inflow=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af
Pond 1P: Focal Point 1	Peak Elev=41.99' Storage=115 cf Inflow=0.98 cfs 0.071 af Outflow=0.86 cfs 0.071 af
Pond 2P: Focal Point 2	Peak Elev=46.24' Storage=213 cf Inflow=1.85 cfs 0.219 af Outflow=1.75 cfs 0.219 af

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Type III 24-hr 2 Yr 24 Hr(+15%) Rainfall=3.71"

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Pond 3P: Focal Point 3 Peak Elev=47.69' Storage=641 cf Inflow=2.74 cfs 0.220 af
Outflow=2.00 cfs 0.220 af

Pond 4P: Focal Point 4 Peak Elev=45.89' Storage=483 cf Inflow=3.04 cfs 0.262 af
Outflow=2.62 cfs 0.262 af

Pond 5P: Drain Manhole #1 Peak Elev=46.97' Inflow=1.52 cfs 0.125 af
12.0" Round Culvert n=0.013 L=60.0' S=0.0050 '/ Outflow=1.52 cfs 0.125 af

Pond 6P: Drain Manhole #2 Peak Elev=46.60' Inflow=3.04 cfs 0.249 af
15.0" Round Culvert n=0.013 L=30.0' S=0.0067 '/ Outflow=3.04 cfs 0.249 af

Pond 7P: Drain Manhole #3 Peak Elev=39.95' Inflow=2.62 cfs 0.262 af
18.0" Round Culvert n=0.013 L=40.0' S=0.0075 '/ Outflow=2.62 cfs 0.262 af

Pond 8P: Drain Manhole #4 Peak Elev=39.95' Inflow=3.48 cfs 0.333 af
24.0" Round Culvert n=0.013 L=50.0' S=0.0050 '/ Outflow=3.48 cfs 0.333 af

Pond 9P: Drain Manhole #5 Peak Elev=47.57' Inflow=1.52 cfs 0.125 af
12.0" Round Culvert n=0.013 L=84.0' S=0.0060 '/ Outflow=1.52 cfs 0.125 af

Pond 10P: Drain Manhole #6 Peak Elev=48.28' Inflow=1.52 cfs 0.125 af
12.0" Round Culvert n=0.013 L=46.0' S=0.0065 '/ Outflow=1.52 cfs 0.125 af

Pond 11P: Drain Manhole #7 Peak Elev=43.19' Inflow=1.75 cfs 0.219 af
18.0" Round Culvert n=0.013 L=100.0' S=0.0050 '/ Outflow=1.75 cfs 0.219 af

Pond 12P: Drain Manhole #8 Peak Elev=42.87' Inflow=3.71 cfs 0.439 af
18.0" Round Culvert n=0.013 L=30.0' S=0.0050 '/ Outflow=3.71 cfs 0.439 af

Pond 13P: R-Tank Peak Elev=39.95' Storage=24,001 cf Inflow=7.17 cfs 0.772 af
Outflow=0.27 cfs 0.277 af

Total Runoff Area = 10.766 ac Runoff Volume = 1.156 af Average Runoff Depth = 1.29"
72.65% Pervious = 7.821 ac 27.35% Impervious = 2.945 ac

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Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.64"

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1S	Runoff Area=224,391 sf 0.00% Impervious Runoff Depth>1.91" Flow Length=646' Tc=32.6 min CN=63 Runoff=6.04 cfs 0.821 af
Subcatchment 2S: Subcatchment 2S	Runoff Area=27,616 sf 0.00% Impervious Runoff Depth>0.08" Flow Length=223' Tc=11.9 min CN=32 Runoff=0.01 cfs 0.004 af
Subcatchment 3S: Subcatchment 3S	Runoff Area=15,195 sf 18.21% Impervious Runoff Depth>3.75" Flow Length=176' Tc=8.0 min CN=83 Runoff=1.40 cfs 0.109 af
Subcatchment 4S: Subcatchment 4S	Runoff Area=33,970 sf 0.00% Impervious Runoff Depth>0.84" Flow Length=225' Tc=17.6 min CN=48 Runoff=0.37 cfs 0.054 af
Subcatchment 5S: Subcatchment 5S	Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>5.40" Tc=6.0 min CN=98 Runoff=2.32 cfs 0.194 af
Subcatchment 6S: Subcatchment 6S	Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>5.40" Tc=6.0 min CN=98 Runoff=2.32 cfs 0.194 af
Subcatchment 7S: Subcatchment 7S	Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>5.40" Tc=6.0 min CN=98 Runoff=2.32 cfs 0.194 af
Subcatchment 8S: Subcatchment 8S	Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>5.40" Tc=6.0 min CN=98 Runoff=2.32 cfs 0.194 af
Subcatchment 9S: Subcatchment 9S	Runoff Area=54,147 sf 45.38% Impervious Runoff Depth>2.17" Flow Length=471' Tc=19.6 min CN=66 Runoff=2.08 cfs 0.224 af
Subcatchment 10S: Subcatchment 10S	Runoff Area=19,625 sf 68.74% Impervious Runoff Depth>4.38" Flow Length=170' Tc=7.7 min CN=89 Runoff=2.08 cfs 0.165 af
Subcatchment 11S: Subcatchment 11S	Runoff Area=19,032 sf 65.45% Impervious Runoff Depth>3.65" Flow Length=195' Tc=6.0 min CN=82 Runoff=1.82 cfs 0.133 af
Reach 1R: Vegetated Swale	Avg. Flow Depth=0.47' Max Vel=0.33 fps Inflow=0.53 cfs 0.431 af n=0.150 L=100.0' S=0.0050 ' Capacity=11.89 cfs Outflow=0.53 cfs 0.429 af
Reach AP1: Analysis Point #1	Inflow=6.75 cfs 1.359 af Outflow=6.75 cfs 1.359 af
Reach AP2: Map 266 Lot 5	Inflow=0.01 cfs 0.004 af Outflow=0.01 cfs 0.004 af
Pond 1P: Focal Point 1	Peak Elev=42.71' Storage=317 cf Inflow=1.82 cfs 0.133 af Outflow=1.57 cfs 0.131 af
Pond 2P: Focal Point 2	Peak Elev=46.99' Storage=530 cf Inflow=3.46 cfs 0.418 af Outflow=3.30 cfs 0.418 af

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Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.64"

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Pond 3P: Focal Point 3	Peak Elev=48.18' Storage=921 cf Inflow=4.38 cfs 0.358 af Outflow=4.04 cfs 0.358 af
Pond 4P: Focal Point 4	Peak Elev=46.13' Storage=629 cf Inflow=4.72 cfs 0.442 af Outflow=4.78 cfs 0.442 af
Pond 5P: Drain Manhole #1	Peak Elev=47.71' Inflow=2.32 cfs 0.194 af 12.0" Round Culvert n=0.013 L=60.0' S=0.0050 ' /' Outflow=2.32 cfs 0.194 af
Pond 6P: Drain Manhole #2	Peak Elev=47.11' Inflow=4.64 cfs 0.387 af 15.0" Round Culvert n=0.013 L=30.0' S=0.0067 ' /' Outflow=4.64 cfs 0.387 af
Pond 7P: Drain Manhole #3	Peak Elev=42.19' Inflow=4.78 cfs 0.442 af 18.0" Round Culvert n=0.013 L=40.0' S=0.0075 ' /' Outflow=4.78 cfs 0.442 af
Pond 8P: Drain Manhole #4	Peak Elev=42.18' Inflow=6.18 cfs 0.573 af 24.0" Round Culvert n=0.013 L=50.0' S=0.0050 ' /' Outflow=6.18 cfs 0.573 af
Pond 9P: Drain Manhole #5	Peak Elev=47.90' Inflow=2.32 cfs 0.194 af 12.0" Round Culvert n=0.013 L=84.0' S=0.0060 ' /' Outflow=2.32 cfs 0.194 af
Pond 10P: Drain Manhole #6	Peak Elev=48.73' Inflow=2.32 cfs 0.194 af 12.0" Round Culvert n=0.013 L=46.0' S=0.0065 ' /' Outflow=2.32 cfs 0.194 af
Pond 11P: Drain Manhole #7	Peak Elev=43.90' Inflow=3.30 cfs 0.418 af 18.0" Round Culvert n=0.013 L=100.0' S=0.0050 ' /' Outflow=3.30 cfs 0.418 af
Pond 12P: Drain Manhole #8	Peak Elev=43.65' Inflow=7.29 cfs 0.776 af 18.0" Round Culvert n=0.013 L=30.0' S=0.0050 ' /' Outflow=7.29 cfs 0.776 af
Pond 13P: R-Tank	Peak Elev=42.18' Storage=42,763 cf Inflow=13.15 cfs 1.349 af Outflow=0.53 cfs 0.431 af

Total Runoff Area = 10.766 ac Runoff Volume = 2.286 af Average Runoff Depth = 2.55"
72.65% Pervious = 7.821 ac 27.35% Impervious = 2.945 ac

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Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.64"

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Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 6.04 cfs @ 12.49 hrs, Volume= 0.821 af, Depth> 1.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.64"

Area (sf)	CN	Description
17,375	39	>75% Grass cover, Good, HSG A
33,619	30	Woods, Good, HSG A
19,910	74	>75% Grass cover, Good, HSG C
99,843	70	Woods, Good, HSG C
47,938	72	Woods/grass comb., Good, HSG C
3,491	80	>75% Grass cover, Good, HSG D
2,215	77	Woods, Good, HSG D
224,391	63	Weighted Average
224,391		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	100	0.0600	0.18		Sheet Flow, Grass: Dense n= 0.240 P2= 3.23"
1.3	78	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
22.1	468	0.0050	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
32.6	646	Total			

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 0.01 cfs @ 15.34 hrs, Volume= 0.004 af, Depth> 0.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.64"

Area (sf)	CN	Description
22,122	30	Woods, Good, HSG A
5,494	39	>75% Grass cover, Good, HSG A
27,616	32	Weighted Average
27,616		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0400	0.15		Sheet Flow, Grass: Dense n= 0.240 P2= 3.23"
1.1	123	0.1300	1.80		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
11.9	223	Total			

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Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.64"

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Summary for Subcatchment 3S: Subcatchment 3S

Runoff = 1.40 cfs @ 12.11 hrs, Volume= 0.109 af, Depth> 3.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.64"

Area (sf)	CN	Description
2,767	98	Paved parking, HSG D
12,428	80	>75% Grass cover, Good, HSG D
15,195	83	Weighted Average
12,428		81.79% Pervious Area
2,767		18.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.0400	0.23		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
0.4	33	0.0400	1.40		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	43	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
8.0	176	Total			

Summary for Subcatchment 4S: Subcatchment 4S

Runoff = 0.37 cfs @ 12.34 hrs, Volume= 0.054 af, Depth> 0.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.64"

Area (sf)	CN	Description
14,449	39	>75% Grass cover, Good, HSG A
9,642	30	Woods, Good, HSG A
9,879	80	>75% Grass cover, Good, HSG D
33,970	48	Weighted Average
33,970		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	41	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.23"
2.4	27	0.3300	0.18		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.23"
1.1	17	0.3300	0.25		Sheet Flow, Grass: Dense n= 0.240 P2= 3.23"
2.7	85	0.0050	0.52	3.13	Trap/Vee/Rect Channel Flow, Bot.W=3.00' D=1.00' Z= 3.0 ' Top.W=9.00' n= 0.150 Sheet flow over Short Grass
0.9	55	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps

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Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.64"

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17.6 225 Total

Summary for Subcatchment 5S: Subcatchment 5S

Runoff = 2.32 cfs @ 12.09 hrs, Volume= 0.194 af, Depth> 5.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.64"

Area (sf)	CN	Description
11,448	98	Roofs, HSG A
3,233	98	Roofs, HSG C
4,069	98	Roofs, HSG D
18,750	98	Weighted Average
18,750		100.00% Impervious Area

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

Summary for Subcatchment 6S: Subcatchment 6S

Runoff = 2.32 cfs @ 12.09 hrs, Volume= 0.194 af, Depth> 5.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.64"

Area (sf)	CN	Description
11,834	98	Roofs, HSG A
293	98	Roofs, HSG C
6,623	98	Roofs, HSG D
18,750	98	Weighted Average
18,750		100.00% Impervious Area

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

Summary for Subcatchment 7S: Subcatchment 7S

Runoff = 2.32 cfs @ 12.09 hrs, Volume= 0.194 af, Depth> 5.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.64"

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Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.64"

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Area (sf)	CN	Description
18,108	98	Roofs, HSG A
642	98	Roofs, HSG C
18,750	98	Weighted Average
18,750		100.00% Impervious Area

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

Summary for Subcatchment 8S: Subcatchment 8S

Runoff = 2.32 cfs @ 12.09 hrs, Volume= 0.194 af, Depth> 5.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.64"

Area (sf)	CN	Description
11,115	98	Roofs, HSG A
7,635	98	Roofs, HSG C
18,750	98	Weighted Average
18,750		100.00% Impervious Area

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

Summary for Subcatchment 9S: Subcatchment 9S

Runoff = 2.08 cfs @ 12.29 hrs, Volume= 0.224 af, Depth> 2.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.64"

Area (sf)	CN	Description
24,571	98	Paved parking, HSG A
29,576	39	>75% Grass cover, Good, HSG A
54,147	66	Weighted Average
29,576		54.62% Pervious Area
24,571		45.38% Impervious Area

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Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.64"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	38	0.0200	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.23"
2.2	39	0.3300	0.30		Sheet Flow, Grass: Dense n= 0.240 P2= 3.23"
5.7	177	0.0050	0.52	3.13	Trap/Vee/Rect Channel Flow, Bot.W=3.00' D=1.00' Z= 3.0 ' Top.W=9.00' n= 0.150 Sheet flow over Short Grass
0.6	37	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.2	180	0.0140	2.40		Shallow Concentrated Flow, Paved Kv= 20.3 fps
19.6	471	Total			

Summary for Subcatchment 10S: Subcatchment 10S

Runoff = 2.08 cfs @ 12.11 hrs, Volume= 0.165 af, Depth> 4.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.64"

Area (sf)	CN	Description
153	98	Paved parking, HSG A
13,337	98	Paved parking, HSG C
1,022	39	>75% Grass cover, Good, HSG A
5,113	74	>75% Grass cover, Good, HSG C
19,625	89	Weighted Average
6,135		31.26% Pervious Area
13,490		68.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	36	0.0200	0.10		Sheet Flow, Grass: Dense n= 0.240 P2= 3.23"
0.2	6	0.0100	0.60		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.23"
0.8	58	0.0200	1.24		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.23"
0.4	70	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
7.7	170	Total			

Summary for Subcatchment 11S: Subcatchment 11S

Runoff = 1.82 cfs @ 12.09 hrs, Volume= 0.133 af, Depth> 3.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.64"

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Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.64"

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Area (sf)	CN	Description
7,767	98	Paved parking, HSG A
319	98	Paved parking, HSG C
4,370	98	Paved parking, HSG D
4,431	39	>75% Grass cover, Good, HSG A
30	74	>75% Grass cover, Good, HSG C
2,115	80	>75% Grass cover, Good, HSG D
19,032	82	Weighted Average
6,576		34.55% Pervious Area
12,456		65.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	37	0.0200	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
0.6	63	0.0400	1.66		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.23"
0.4	95	0.0400	4.06		Shallow Concentrated Flow, Paved Kv= 20.3 fps
5.4	195	Total, Increased to minimum Tc = 6.0 min			

Summary for Reach 1R: Vegetated Swale

Inflow Area = 4.632 ac, 62.21% Impervious, Inflow Depth > 1.12" for 10 Yr 24 Hr(+15%) event
 Inflow = 0.53 cfs @ 16.34 hrs, Volume= 0.431 af
 Outflow = 0.53 cfs @ 16.40 hrs, Volume= 0.429 af, Atten= 0%, Lag= 3.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
 Max. Velocity= 0.33 fps, Min. Travel Time= 5.1 min
 Avg. Velocity = 0.25 fps, Avg. Travel Time= 6.7 min

Peak Storage= 160 cf @ 16.40 hrs
 Average Depth at Peak Storage= 0.47' , Surface Width= 4.82'
 Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 11.89 cfs

2.00' x 2.00' deep channel, n= 0.150 Sheet flow over Short Grass
 Side Slope Z-value= 3.0 ' / ' Top Width= 14.00'
 Length= 100.0' Slope= 0.0050 ' / '
 Inlet Invert= 36.50', Outlet Invert= 36.00'



Summary for Reach AP1: Analysis Point #1

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

Inflow Area = 10.132 ac, 29.07% Impervious, Inflow Depth > 1.61" for 10 Yr 24 Hr(+15%) event
 Inflow = 6.75 cfs @ 12.47 hrs, Volume= 1.359 af
 Outflow = 6.75 cfs @ 12.47 hrs, Volume= 1.359 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP2: Map 266 Lot 5

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

Inflow Area = 0.634 ac, 0.00% Impervious, Inflow Depth > 0.08" for 10 Yr 24 Hr(+15%) event
 Inflow = 0.01 cfs @ 15.34 hrs, Volume= 0.004 af
 Outflow = 0.01 cfs @ 15.34 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Pond 1P: Focal Point 1

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=1)

Inflow Area = 0.437 ac, 65.45% Impervious, Inflow Depth > 3.65" for 10 Yr 24 Hr(+15%) event
 Inflow = 1.82 cfs @ 12.09 hrs, Volume= 0.133 af
 Outflow = 1.57 cfs @ 12.15 hrs, Volume= 0.131 af, Atten= 14%, Lag= 3.6 min
 Primary = 1.57 cfs @ 12.15 hrs, Volume= 0.131 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
 Peak Elev= 42.71' @ 12.15 hrs Surf.Area= 559 sf Storage= 317 cf

Plug-Flow detention time= 15.1 min calculated for 0.131 af (98% of inflow)
 Center-of-Mass det. time= 5.6 min (816.5 - 810.9)

Volume	Invert	Avail.Storage	Storage Description
#1	39.25'	53 cf	3.00'W x 20.00'L x 2.25'H Focal Point Area 1 Z=1.0 267 cf Overall x 20.0% Voids
#2	41.50'	641 cf	Surface Bowl (Prismatic) Listed below (Recalc)
		694 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
41.50	60	0	0
43.50	581	641	641

Device	Routing	Invert	Outlet Devices
#1	Primary	38.46'	24.0" Round Culvert L= 27.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 38.46' / 37.95' S= 0.0189 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

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#2	Device 3	39.25'	100.000 in/hr Exfiltration over Surface area	Phase-In= 0.10'
#3	Device 1	38.46'	6.0" W x 6.0" H Vert. Orifice/Grate	C= 0.600 Limited to weir flow at low heads
#4	Device 1	42.50'	24.0" Vert. Orifice/Grate	C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.57 cfs @ 12.15 hrs HW=42.71' TW=39.76' (Dynamic Tailwater)

- 1=Culvert (Passes 1.57 cfs of 20.52 cfs potential flow)
- 3=Orifice/Grate (Passes 1.29 cfs of 2.07 cfs potential flow)
- 2=Exfiltration (Exfiltration Controls 1.29 cfs)
- 4=Orifice/Grate (Orifice Controls 0.27 cfs @ 1.56 fps)

Summary for Pond 2P: Focal Point 2

Inflow Area =	1.673 ac, 59.43% Impervious, Inflow Depth > 3.00"	for 10 Yr 24 Hr(+15%) event
Inflow =	3.46 cfs @ 12.11 hrs, Volume=	0.418 af
Outflow =	3.30 cfs @ 12.18 hrs, Volume=	0.418 af, Atten= 5%, Lag= 3.9 min
Primary =	3.30 cfs @ 12.18 hrs, Volume=	0.418 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
 Peak Elev= 46.99' @ 12.17 hrs Surf.Area= 1,001 sf Storage= 530 cf

Plug-Flow detention time= 1.2 min calculated for 0.418 af (100% of inflow)
 Center-of-Mass det. time= 1.2 min (808.8 - 807.6)

Volume	Invert	Avail.Storage	Storage Description
#1	43.75'	152 cf	5.00'W x 44.00'L x 2.25'H Focal Point Area 1 Z=1.0 758 cf Overall x 20.0% Voids
#2	46.00'	1,113 cf	Surface Bowl (Prismatic) Listed below (Recalc)
		1,264 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
46.00	220	0	0
47.00	542	381	381
48.00	921	732	1,113

Device	Routing	Invert	Outlet Devices
#1	Primary	42.96'	18.0" Round Culvert L= 36.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 42.96' / 42.40' S= 0.0156 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 3	43.75'	100.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#3	Device 1	42.96'	6.0" W x 6.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.50'	18.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.28 cfs @ 12.18 hrs HW=46.98' TW=43.81' (Dynamic Tailwater)

- 1=Culvert (Passes 3.28 cfs of 11.96 cfs potential flow)
- 3=Orifice/Grate (Orifice Controls 2.14 cfs @ 8.57 fps)
- 2=Exfiltration (Passes 2.14 cfs of 2.31 cfs potential flow)
- 4=Orifice/Grate (Orifice Controls 1.14 cfs @ 2.35 fps)

Summary for Pond 3P: Focal Point 3

Inflow Area = 0.881 ac, 84.01% Impervious, Inflow Depth > 4.88" for 10 Yr 24 Hr(+15%) event
 Inflow = 4.38 cfs @ 12.10 hrs, Volume= 0.358 af
 Outflow = 4.04 cfs @ 12.14 hrs, Volume= 0.358 af, Atten= 8%, Lag= 2.4 min
 Primary = 4.04 cfs @ 12.14 hrs, Volume= 0.358 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
 Peak Elev= 48.18' @ 12.14 hrs Surf.Area= 914 sf Storage= 921 cf

Plug-Flow detention time= 1.9 min calculated for 0.358 af (100% of inflow)
 Center-of-Mass det. time= 1.9 min (768.5 - 766.6)

Volume	Invert	Avail.Storage	Storage Description
#1	43.75'	93 cf	7.00'W x 20.00'L x 2.25'H Focal Point Z=1.0 467 cf Overall x 20.0% Voids
#2	46.00'	1,446 cf	Surface Bowl (Prismatic) Listed below (Recalc)
		1,539 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
46.00	140	0	0
48.00	577	717	717
49.00	880	729	1,446

Device	Routing	Invert	Outlet Devices
#1	Primary	42.96'	15.0" Round Culvert L= 37.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 42.96' / 42.05' S= 0.0246 ' S= 0.0246 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 3	43.75'	100.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#3	Device 1	42.96'	6.0" W x 6.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	47.50'	15.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.95 cfs @ 12.14 hrs HW=48.17' TW=43.60' (Dynamic Tailwater)

- 1=Culvert (Passes 3.95 cfs of 9.97 cfs potential flow)
- 3=Orifice/Grate (Passes 2.10 cfs of 2.57 cfs potential flow)
- 2=Exfiltration (Exfiltration Controls 2.10 cfs)
- 4=Orifice/Grate (Orifice Controls 1.85 cfs @ 2.78 fps)

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Summary for Pond 4P: Focal Point 4

[90] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 1.641 ac, 52.47% Impervious, Inflow Depth > 3.23" for 10 Yr 24 Hr(+15%) event
 Inflow = 4.72 cfs @ 12.09 hrs, Volume= 0.442 af
 Outflow = 4.78 cfs @ 12.11 hrs, Volume= 0.442 af, Atten= 0%, Lag= 1.3 min
 Primary = 4.78 cfs @ 12.11 hrs, Volume= 0.442 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
 Peak Elev= 46.13' @ 12.11 hrs Surf.Area= 1,092 sf Storage= 629 cf

Plug-Flow detention time= 1.1 min calculated for 0.442 af (100% of inflow)
 Center-of-Mass det. time= 1.1 min (767.9 - 766.8)

Volume	Invert	Avail.Storage	Storage Description
#1	42.75'	145 cf	5.00'W x 42.00'L x 2.25'H Focal Point Z=1.0 726 cf Overall x 20.0% Voids
#2	45.00'	1,206 cf	Surface Bowl (Prismatic) Listed below (Recalc)
		1,351 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
45.00	210	0	0
46.00	598	404	404
47.00	1,005	802	1,206

Device	Routing	Invert	Outlet Devices
#1	Primary	41.96'	15.0" Round Culvert L= 180.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 41.96' / 38.75' S= 0.0178 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 3	42.75'	100.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#3	Device 1	41.96'	6.0" W x 6.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	45.80'	15.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.61 cfs @ 12.11 hrs HW=46.11' TW=40.07' (Dynamic Tailwater)

- 1=Culvert (Passes 4.61 cfs of 8.76 cfs potential flow)
- 3=Orifice/Grate (Orifice Controls 2.38 cfs @ 9.51 fps)
- 2=Exfiltration (Passes 2.38 cfs of 2.51 cfs potential flow)
- 4=Orifice/Grate (Weir Controls 2.24 cfs @ 1.83 fps)

Summary for Pond 5P: Drain Manhole #1

Inflow Area = 0.430 ac, 100.00% Impervious, Inflow Depth > 5.40" for 10 Yr 24 Hr(+15%) event
 Inflow = 2.32 cfs @ 12.09 hrs, Volume= 0.194 af
 Outflow = 2.32 cfs @ 12.09 hrs, Volume= 0.194 af, Atten= 0%, Lag= 0.0 min
 Primary = 2.32 cfs @ 12.09 hrs, Volume= 0.194 af

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 47.71' @ 12.09 hrs

Flood Elev= 53.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	46.05'	12.0" Round Culvert L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 46.05' / 45.75' S= 0.0050 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.26 cfs @ 12.09 hrs HW=47.64' TW=47.06' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 2.26 cfs @ 2.88 fps)**Summary for Pond 6P: Drain Manhole #2**

Inflow Area =	0.861 ac, 100.00% Impervious, Inflow Depth > 5.40"	for 10 Yr 24 Hr(+15%) event
Inflow =	4.64 cfs @ 12.09 hrs, Volume=	0.387 af
Outflow =	4.64 cfs @ 12.09 hrs, Volume=	0.387 af, Atten= 0%, Lag= 0.0 min
Primary =	4.64 cfs @ 12.09 hrs, Volume=	0.387 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 47.11' @ 12.09 hrs

Flood Elev= 53.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	45.50'	15.0" Round Culvert L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 45.50' / 45.30' S= 0.0067 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.52 cfs @ 12.09 hrs HW=47.06' TW=46.08' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 4.52 cfs @ 3.68 fps)**Summary for Pond 7P: Drain Manhole #3**

Inflow Area =	1.641 ac, 52.47% Impervious, Inflow Depth > 3.23"	for 10 Yr 24 Hr(+15%) event
Inflow =	4.78 cfs @ 12.11 hrs, Volume=	0.442 af
Outflow =	4.78 cfs @ 12.11 hrs, Volume=	0.442 af, Atten= 0%, Lag= 0.0 min
Primary =	4.78 cfs @ 12.11 hrs, Volume=	0.442 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 42.19' @ 16.33 hrs

Flood Elev= 44.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	38.50'	18.0" Round Culvert L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 38.50' / 38.20' S= 0.0075 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.62 cfs @ 12.11 hrs HW=40.07' TW=39.60' (Dynamic Tailwater)

←1=Culvert (Inlet Controls 4.62 cfs @ 2.62 fps)

Summary for Pond 8P: Drain Manhole #4

Inflow Area = 2.078 ac, 55.20% Impervious, Inflow Depth > 3.31" for 10 Yr 24 Hr(+15%) event
 Inflow = 6.18 cfs @ 12.12 hrs, Volume= 0.573 af
 Outflow = 6.18 cfs @ 12.12 hrs, Volume= 0.573 af, Atten= 0%, Lag= 0.0 min
 Primary = 6.18 cfs @ 12.12 hrs, Volume= 0.573 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
 Peak Elev= 42.18' @ 16.34 hrs
 Flood Elev= 45.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	37.85'	24.0" Round Culvert L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 37.85' / 37.60' S= 0.0050 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=6.00 cfs @ 12.12 hrs HW=39.62' TW=39.34' (Dynamic Tailwater)

←1=Culvert (Inlet Controls 6.00 cfs @ 2.04 fps)

Summary for Pond 9P: Drain Manhole #5

Inflow Area = 0.430 ac, 100.00% Impervious, Inflow Depth > 5.40" for 10 Yr 24 Hr(+15%) event
 Inflow = 2.32 cfs @ 12.09 hrs, Volume= 0.194 af
 Outflow = 2.32 cfs @ 12.09 hrs, Volume= 0.194 af, Atten= 0%, Lag= 0.0 min
 Primary = 2.32 cfs @ 12.09 hrs, Volume= 0.194 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
 Peak Elev= 47.90' @ 12.09 hrs
 Flood Elev= 49.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	46.80'	12.0" Round Culvert L= 84.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 46.80' / 46.30' S= 0.0060 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.26 cfs @ 12.09 hrs HW=47.87' TW=46.80' (Dynamic Tailwater)

←1=Culvert (Inlet Controls 2.26 cfs @ 2.88 fps)

Summary for Pond 10P: Drain Manhole #6

Inflow Area = 0.430 ac, 100.00% Impervious, Inflow Depth > 5.40" for 10 Yr 24 Hr(+15%) event
 Inflow = 2.32 cfs @ 12.09 hrs, Volume= 0.194 af
 Outflow = 2.32 cfs @ 12.09 hrs, Volume= 0.194 af, Atten= 0%, Lag= 0.0 min
 Primary = 2.32 cfs @ 12.09 hrs, Volume= 0.194 af

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 48.73' @ 12.10 hrs

Flood Elev= 52.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	47.50'	12.0" Round Culvert L= 46.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 47.50' / 47.20' S= 0.0065 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.36 cfs @ 12.09 hrs HW=48.67' TW=48.05' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 2.36 cfs @ 3.00 fps)

Summary for Pond 11P: Drain Manhole #7

Inflow Area = 1.673 ac, 59.43% Impervious, Inflow Depth > 3.00" for 10 Yr 24 Hr(+15%) event
 Inflow = 3.30 cfs @ 12.18 hrs, Volume= 0.418 af
 Outflow = 3.30 cfs @ 12.18 hrs, Volume= 0.418 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.30 cfs @ 12.18 hrs, Volume= 0.418 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 43.90' @ 12.15 hrs

Flood Elev= 49.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	42.30'	18.0" Round Culvert L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 42.30' / 41.80' S= 0.0050 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.32 cfs @ 12.18 hrs HW=43.81' TW=43.53' (Dynamic Tailwater)

↑1=Culvert (Outlet Controls 3.32 cfs @ 2.32 fps)

Summary for Pond 12P: Drain Manhole #8

Inflow Area = 2.554 ac, 67.91% Impervious, Inflow Depth > 3.65" for 10 Yr 24 Hr(+15%) event
 Inflow = 7.29 cfs @ 12.15 hrs, Volume= 0.776 af
 Outflow = 7.29 cfs @ 12.15 hrs, Volume= 0.776 af, Atten= 0%, Lag= 0.0 min
 Primary = 7.29 cfs @ 12.15 hrs, Volume= 0.776 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 43.65' @ 12.15 hrs

Flood Elev= 49.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	41.70'	18.0" Round Culvert L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 41.70' / 41.55' S= 0.0050 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

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Primary OutFlow Max=7.28 cfs @ 12.15 hrs HW=43.65' TW=39.51' (Dynamic Tailwater)

1=Culvert (Barrel Controls 7.28 cfs @ 4.15 fps)

Summary for Pond 13P: R-Tank

Inflow Area = 4.632 ac, 62.21% Impervious, Inflow Depth > 3.49" for 10 Yr 24 Hr(+15%) event
 Inflow = 13.15 cfs @ 12.13 hrs, Volume= 1.349 af
 Outflow = 0.53 cfs @ 16.34 hrs, Volume= 0.431 af, Atten= 96%, Lag= 252.5 min
 Primary = 0.53 cfs @ 16.34 hrs, Volume= 0.431 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 42.18' @ 16.34 hrs Surf.Area= 9,582 sf Storage= 42,763 cf

Plug-Flow detention time= 421.4 min calculated for 0.431 af (32% of inflow)

Center-of-Mass det. time= 249.2 min (1,034.7 - 785.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	36.95'	3,703 cf	60.43'W x 74.37'L x 8.21'H Field A 36,879 cf Overall - 27,621 cf Embedded = 9,257 cf x 40.0% Voids
#2A	37.20'	26,240 cf	ACF R-Tank HD 5 x 1290 Inside #1 Inside= 15.7"W x 83.5"H => 8.67 sf x 2.35'L = 20.3 cf Outside= 15.7"W x 83.5"H => 9.13 sf x 2.35'L = 21.4 cf 1290 Chambers in 43 Rows
#3B	36.95'	4,708 cf	30.25'W x 168.21'L x 8.21'H Field B 41,746 cf Overall - 29,977 cf Embedded = 11,770 cf x 40.0% Voids
#4B	37.20'	28,478 cf	ACF R-Tank HD 5 x 1400 Inside #3 Inside= 15.7"W x 83.5"H => 8.67 sf x 2.35'L = 20.3 cf Outside= 15.7"W x 83.5"H => 9.13 sf x 2.35'L = 21.4 cf 1400 Chambers in 20 Rows
		63,129 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	37.00'	15.0" Round Culvert L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 37.00' / 36.50' S= 0.0050 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	37.20'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	42.00'	15.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.53 cfs @ 16.34 hrs HW=42.18' TW=36.97' (Dynamic Tailwater)

1=Culvert (Passes 0.53 cfs of 9.96 cfs potential flow)

2=Orifice/Grate (Orifice Controls 0.36 cfs @ 10.64 fps)

3=Orifice/Grate (Orifice Controls 0.16 cfs @ 1.46 fps)

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Type III 24-hr 25 Yr 24 Hr(+15%) Rainfall=7.14"

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1S	Runoff Area=224,391 sf 0.00% Impervious Runoff Depth>2.98" Flow Length=646' Tc=32.6 min CN=63 Runoff=9.69 cfs 1.281 af
Subcatchment 2S: Subcatchment 2S	Runoff Area=27,616 sf 0.00% Impervious Runoff Depth>0.34" Flow Length=223' Tc=11.9 min CN=32 Runoff=0.05 cfs 0.018 af
Subcatchment 3S: Subcatchment 3S	Runoff Area=15,195 sf 18.21% Impervious Runoff Depth>5.15" Flow Length=176' Tc=8.0 min CN=83 Runoff=1.91 cfs 0.150 af
Subcatchment 4S: Subcatchment 4S	Runoff Area=33,970 sf 0.00% Impervious Runoff Depth>1.56" Flow Length=225' Tc=17.6 min CN=48 Runoff=0.84 cfs 0.101 af
Subcatchment 5S: Subcatchment 5S	Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>6.90" Tc=6.0 min CN=98 Runoff=2.94 cfs 0.247 af
Subcatchment 6S: Subcatchment 6S	Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>6.90" Tc=6.0 min CN=98 Runoff=2.94 cfs 0.247 af
Subcatchment 7S: Subcatchment 7S	Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>6.90" Tc=6.0 min CN=98 Runoff=2.94 cfs 0.247 af
Subcatchment 8S: Subcatchment 8S	Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>6.90" Tc=6.0 min CN=98 Runoff=2.94 cfs 0.247 af
Subcatchment 9S: Subcatchment 9S	Runoff Area=54,147 sf 45.38% Impervious Runoff Depth>3.30" Flow Length=471' Tc=19.6 min CN=66 Runoff=3.24 cfs 0.342 af
Subcatchment 10S: Subcatchment 10S	Runoff Area=19,625 sf 68.74% Impervious Runoff Depth>5.84" Flow Length=170' Tc=7.7 min CN=89 Runoff=2.73 cfs 0.219 af
Subcatchment 11S: Subcatchment 11S	Runoff Area=19,032 sf 65.45% Impervious Runoff Depth>5.04" Flow Length=195' Tc=6.0 min CN=82 Runoff=2.49 cfs 0.184 af
Reach 1R: Vegetated Swale	Avg. Flow Depth=0.98' Max Vel=0.49 fps Inflow=2.39 cfs 0.886 af n=0.150 L=100.0' S=0.0050 '/ Capacity=11.89 cfs Outflow=2.39 cfs 0.884 af
Reach AP1: Analysis Point #1	Inflow=10.63 cfs 2.314 af Outflow=10.63 cfs 2.314 af
Reach AP2: Map 266 Lot 5	Inflow=0.05 cfs 0.018 af Outflow=0.05 cfs 0.018 af
Pond 1P: Focal Point 1	Peak Elev=42.91' Storage=398 cf Inflow=2.49 cfs 0.184 af Outflow=2.40 cfs 0.181 af
Pond 2P: Focal Point 2	Peak Elev=47.31' Storage=717 cf Inflow=4.85 cfs 0.589 af Outflow=4.76 cfs 0.589 af

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Type III 24-hr 25 Yr 24 Hr(+15%) Rainfall=7.14"

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Pond 3P: Focal Point 3 Peak Elev=48.40' Storage=1,063 cf Inflow=5.64 cfs 0.467 af
Outflow=5.30 cfs 0.467 af

Pond 4P: Focal Point 4 Peak Elev=46.24' Storage=705 cf Inflow=6.24 cfs 0.596 af
Outflow=6.18 cfs 0.596 af

Pond 5P: Drain Manhole #1 Peak Elev=48.79' Inflow=2.94 cfs 0.247 af
12.0" Round Culvert n=0.013 L=60.0' S=0.0050 '/' Outflow=2.94 cfs 0.247 af

Pond 6P: Drain Manhole #2 Peak Elev=47.82' Inflow=5.89 cfs 0.495 af
15.0" Round Culvert n=0.013 L=30.0' S=0.0067 '/' Outflow=5.89 cfs 0.495 af

Pond 7P: Drain Manhole #3 Peak Elev=42.72' Inflow=6.18 cfs 0.596 af
18.0" Round Culvert n=0.013 L=40.0' S=0.0075 '/' Outflow=6.18 cfs 0.596 af

Pond 8P: Drain Manhole #4 Peak Elev=42.71' Inflow=8.56 cfs 0.777 af
24.0" Round Culvert n=0.013 L=50.0' S=0.0050 '/' Outflow=8.56 cfs 0.777 af

Pond 9P: Drain Manhole #5 Peak Elev=48.28' Inflow=2.94 cfs 0.247 af
12.0" Round Culvert n=0.013 L=84.0' S=0.0060 '/' Outflow=2.94 cfs 0.247 af

Pond 10P: Drain Manhole #6 Peak Elev=49.33' Inflow=2.94 cfs 0.247 af
12.0" Round Culvert n=0.013 L=46.0' S=0.0065 '/' Outflow=2.94 cfs 0.247 af

Pond 11P: Drain Manhole #7 Peak Elev=45.13' Inflow=4.76 cfs 0.589 af
18.0" Round Culvert n=0.013 L=100.0' S=0.0050 '/' Outflow=4.76 cfs 0.589 af

Pond 12P: Drain Manhole #8 Peak Elev=44.62' Inflow=9.90 cfs 1.056 af
18.0" Round Culvert n=0.013 L=30.0' S=0.0050 '/' Outflow=9.90 cfs 1.056 af

Pond 13P: R-Tank Peak Elev=42.70' Storage=47,095 cf Inflow=18.29 cfs 1.833 af
Outflow=2.39 cfs 0.886 af

Total Runoff Area = 10.766 ac Runoff Volume = 3.284 af Average Runoff Depth = 3.66"
72.65% Pervious = 7.821 ac 27.35% Impervious = 2.945 ac

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Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.57"

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1S	Runoff Area=224,391 sf 0.00% Impervious Runoff Depth>4.09" Flow Length=646' Tc=32.6 min CN=63 Runoff=13.45 cfs 1.757 af
Subcatchment 2S: Subcatchment 2S	Runoff Area=27,616 sf 0.00% Impervious Runoff Depth>0.73" Flow Length=223' Tc=11.9 min CN=32 Runoff=0.19 cfs 0.038 af
Subcatchment 3S: Subcatchment 3S	Runoff Area=15,195 sf 18.21% Impervious Runoff Depth>6.52" Flow Length=176' Tc=8.0 min CN=83 Runoff=2.39 cfs 0.189 af
Subcatchment 4S: Subcatchment 4S	Runoff Area=33,970 sf 0.00% impervious Runoff Depth>2.37" Flow Length=225' Tc=17.6 min CN=48 Runoff=1.39 cfs 0.154 af
Subcatchment 5S: Subcatchment 5S	Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>8.32" Tc=6.0 min CN=98 Runoff=3.54 cfs 0.299 af
Subcatchment 6S: Subcatchment 6S	Runoff Area=18,750 sf 100.00% impervious Runoff Depth>8.32" Tc=6.0 min CN=98 Runoff=3.54 cfs 0.299 af
Subcatchment 7S: Subcatchment 7S	Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>8.32" Tc=6.0 min CN=98 Runoff=3.54 cfs 0.299 af
Subcatchment 8S: Subcatchment 8S	Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>8.32" Tc=6.0 min CN=98 Runoff=3.54 cfs 0.299 af
Subcatchment 9S: Subcatchment 9S	Runoff Area=54,147 sf 45.38% impervious Runoff Depth>4.46" Flow Length=471' Tc=19.6 min CN=66 Runoff=4.42 cfs 0.462 af
Subcatchment 10S: Subcatchment 10S	Runoff Area=19,625 sf 68.74% Impervious Runoff Depth>7.24" Flow Length=170' Tc=7.7 min CN=89 Runoff=3.35 cfs 0.272 af
Subcatchment 11S: Subcatchment 11S	Runoff Area=19,032 sf 65.45% Impervious Runoff Depth>6.40" Flow Length=195' Tc=6.0 min CN=82 Runoff=3.12 cfs 0.233 af
Reach 1R: Vegetated Swale	Avg. Flow Depth=1.43' Max Vel=0.61 fps Inflow=5.51 cfs 1.351 af n=0.150 L=100.0' S=0.0050 1' Capacity=11.89 cfs Outflow=5.50 cfs 1.349 af
Reach AP1: Analysis Point #1	Inflow=18.54 cfs 3.295 af Outflow=18.54 cfs 3.295 af
Reach AP2: Map 266 Lot 5	Inflow=0.19 cfs 0.038 af Outflow=0.19 cfs 0.038 af
Pond 1P: Focal Point 1	Peak Elev=43.41' Storage=645 cf Inflow=3.12 cfs 0.233 af Outflow=3.02 cfs 0.230 af
Pond 2P: Focal Point 2	Peak Elev=47.60' Storage=925 cf Inflow=6.15 cfs 0.761 af Outflow=6.28 cfs 0.761 af

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Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.57"

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Pond 3P: Focal Point 3 Peak Elev=48.63' Storage=1,231 cf Inflow=6.84 cfs 0.570 af
Outflow=6.25 cfs 0.570 af

Pond 4P: Focal Point 4 Peak Elev=46.45' Storage=862 cf Inflow=7.76 cfs 0.751 af
Outflow=7.16 cfs 0.751 af

Pond 5P: Drain Manhole #1 Peak Elev=50.08' Inflow=3.54 cfs 0.299 af
12.0" Round Culvert n=0.013 L=60.0' S=0.0050 ' Outflow=3.54 cfs 0.299 af

Pond 6P: Drain Manhole #2 Peak Elev=48.69' Inflow=7.07 cfs 0.597 af
15.0" Round Culvert n=0.013 L=30.0' S=0.0067 ' Outflow=7.07 cfs 0.597 af

Pond 7P: Drain Manhole #3 Peak Elev=43.48' Inflow=7.16 cfs 0.751 af
18.0" Round Culvert n=0.013 L=40.0' S=0.0075 ' Outflow=7.16 cfs 0.751 af

Pond 8P: Drain Manhole #4 Peak Elev=43.41' Inflow=10.17 cfs 0.981 af
24.0" Round Culvert n=0.013 L=50.0' S=0.0050 ' Outflow=10.17 cfs 0.981 af

Pond 9P: Drain Manhole #5 Peak Elev=48.83' Inflow=3.54 cfs 0.299 af
12.0" Round Culvert n=0.013 L=84.0' S=0.0060 ' Outflow=3.54 cfs 0.299 af

Pond 10P: Drain Manhole #6 Peak Elev=49.95' Inflow=3.54 cfs 0.299 af
12.0" Round Culvert n=0.013 L=46.0' S=0.0065 ' Outflow=3.54 cfs 0.299 af

Pond 11P: Drain Manhole #7 Peak Elev=46.60' Inflow=6.28 cfs 0.761 af
18.0" Round Culvert n=0.013 L=100.0' S=0.0050 ' Outflow=6.28 cfs 0.761 af

Pond 12P: Drain Manhole #8 Peak Elev=45.73' Inflow=12.16 cfs 1.331 af
18.0" Round Culvert n=0.013 L=30.0' S=0.0050 ' Outflow=12.16 cfs 1.331 af

Pond 13P: R-Tank Peak Elev=43.38' Storage=52,778 cf Inflow=22.01 cfs 2.312 af
Outflow=5.51 cfs 1.351 af

Total Runoff Area = 10.766 ac Runoff Volume = 4.300 af Average Runoff Depth = 4.79"
72.65% Pervious = 7.821 ac 27.35% Impervious = 2.945 ac

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Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.57"

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Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 13.45 cfs @ 12.47 hrs, Volume= 1.757 af, Depth> 4.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.57"

Area (sf)	CN	Description
17,375	39	>75% Grass cover, Good, HSG A
33,619	30	Woods, Good, HSG A
19,910	74	>75% Grass cover, Good, HSG C
99,843	70	Woods, Good, HSG C
47,938	72	Woods/grass comb., Good, HSG C
3,491	80	>75% Grass cover, Good, HSG D
2,215	77	Woods, Good, HSG D
224,391	63	Weighted Average
224,391		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	100	0.0600	0.18		Sheet Flow, Grass: Dense n= 0.240 P2= 3.23"
1.3	78	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
22.1	468	0.0050	0.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
32.6	646	Total			

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 0.19 cfs @ 12.41 hrs, Volume= 0.038 af, Depth> 0.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.57"

Area (sf)	CN	Description
22,122	30	Woods, Good, HSG A
5,494	39	>75% Grass cover, Good, HSG A
27,616	32	Weighted Average
27,616		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0400	0.15		Sheet Flow, Grass: Dense n= 0.240 P2= 3.23"
1.1	123	0.1300	1.80		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
11.9	223	Total			

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Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.57"

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Summary for Subcatchment 3S: Subcatchment 3S

Runoff = 2.39 cfs @ 12.11 hrs, Volume= 0.189 af, Depth> 6.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.57"

Area (sf)	CN	Description
2,767	98	Paved parking, HSG D
12,428	80	>75% Grass cover, Good, HSG D
15,195	83	Weighted Average
12,428		81.79% Pervious Area
2,767		18.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.0400	0.23		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
0.4	33	0.0400	1.40		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	43	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
8.0	176	Total			

Summary for Subcatchment 4S: Subcatchment 4S

Runoff = 1.39 cfs @ 12.27 hrs, Volume= 0.154 af, Depth> 2.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.57"

Area (sf)	CN	Description
14,449	39	>75% Grass cover, Good, HSG A
9,642	30	Woods, Good, HSG A
9,879	80	>75% Grass cover, Good, HSG D
33,970	48	Weighted Average
33,970		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	41	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.23"
2.4	27	0.3300	0.18		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.23"
1.1	17	0.3300	0.25		Sheet Flow, Grass: Dense n= 0.240 P2= 3.23"
2.7	85	0.0050	0.52	3.13	Trap/Vee/Rect Channel Flow, Bot.W=3.00' D=1.00' Z= 3.0 '/' Top.W=9.00' n= 0.150 Sheet flow over Short Grass
0.9	55	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps

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Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.57"

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17.6 225 Total

Summary for Subcatchment 5S: Subcatchment 5S

Runoff = 3.54 cfs @ 12.09 hrs, Volume= 0.299 af, Depth> 8.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.57"

Area (sf)	CN	Description
11,448	98	Roofs, HSG A
3,233	98	Roofs, HSG C
4,069	98	Roofs, HSG D
18,750	98	Weighted Average
18,750		100.00% Impervious Area

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

Summary for Subcatchment 6S: Subcatchment 6S

Runoff = 3.54 cfs @ 12.09 hrs, Volume= 0.299 af, Depth> 8.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.57"

Area (sf)	CN	Description
11,834	98	Roofs, HSG A
293	98	Roofs, HSG C
6,623	98	Roofs, HSG D
18,750	98	Weighted Average
18,750		100.00% Impervious Area

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

Summary for Subcatchment 7S: Subcatchment 7S

Runoff = 3.54 cfs @ 12.09 hrs, Volume= 0.299 af, Depth> 8.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.57"

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Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.57"

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Area (sf)	CN	Description
18,108	98	Roofs, HSG A
642	98	Roofs, HSG C
18,750	98	Weighted Average
18,750		100.00% Impervious Area

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

Summary for Subcatchment 8S: Subcatchment 8S

Runoff = 3.54 cfs @ 12.09 hrs, Volume= 0.299 af, Depth> 8.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.57"

Area (sf)	CN	Description
11,115	98	Roofs, HSG A
7,635	98	Roofs, HSG C
18,750	98	Weighted Average
18,750		100.00% Impervious Area

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

Summary for Subcatchment 9S: Subcatchment 9S

[47] Hint: Peak is 141% of capacity of segment #3

Runoff = 4.42 cfs @ 12.27 hrs, Volume= 0.462 af, Depth> 4.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.57"

Area (sf)	CN	Description
24,571	98	Paved parking, HSG A
29,576	39	>75% Grass cover, Good, HSG A
54,147	66	Weighted Average
29,576		54.62% Pervious Area
24,571		45.38% Impervious Area

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Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.57"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	38	0.0200	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.23"
2.2	39	0.3300	0.30		Sheet Flow, Grass: Dense n= 0.240 P2= 3.23"
5.7	177	0.0050	0.52	3.13	Trap/Vee/Rect Channel Flow, Bot.W=3.00' D=1.00' Z= 3.0 '/' Top.W=9.00' n= 0.150 Sheet flow over Short Grass
0.6	37	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.2	180	0.0140	2.40		Shallow Concentrated Flow, Paved Kv= 20.3 fps
19.6	471	Total			

Summary for Subcatchment 10S: Subcatchment 10S

Runoff = 3.35 cfs @ 12.11 hrs, Volume= 0.272 af, Depth> 7.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.57"

Area (sf)	CN	Description
153	98	Paved parking, HSG A
13,337	98	Paved parking, HSG C
1,022	39	>75% Grass cover, Good, HSG A
5,113	74	>75% Grass cover, Good, HSG C
19,625	89	Weighted Average
6,135		31.26% Pervious Area
13,490		68.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	36	0.0200	0.10		Sheet Flow, Grass: Dense n= 0.240 P2= 3.23"
0.2	6	0.0100	0.60		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.23"
0.8	58	0.0200	1.24		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.23"
0.4	70	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
7.7	170	Total			

Summary for Subcatchment 11S: Subcatchment 11S

Runoff = 3.12 cfs @ 12.09 hrs, Volume= 0.233 af, Depth> 6.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.57"

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Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.57"

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Area (sf)	CN	Description
7,767	98	Paved parking, HSG A
319	98	Paved parking, HSG C
4,370	98	Paved parking, HSG D
4,431	39	>75% Grass cover, Good, HSG A
30	74	>75% Grass cover, Good, HSG C
2,115	80	>75% Grass cover, Good, HSG D
19,032	82	Weighted Average
6,576		34.55% Pervious Area
12,456		65.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	37	0.0200	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
0.6	63	0.0400	1.66		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.23"
0.4	95	0.0400	4.06		Shallow Concentrated Flow, Paved Kv= 20.3 fps
5.4	195	Total, Increased to minimum Tc = 6.0 min			

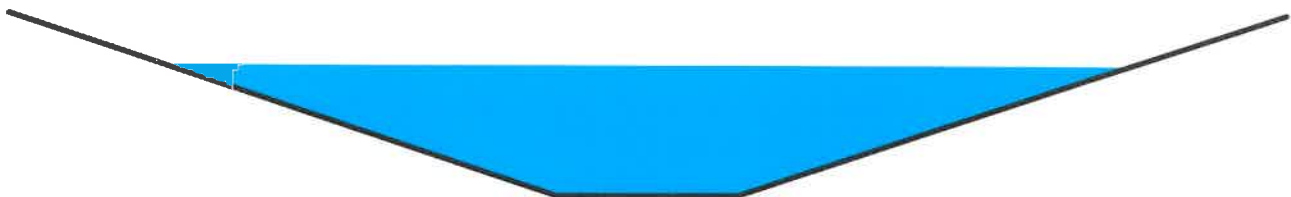
Summary for Reach 1R: Vegetated Swale

Inflow Area = 4.632 ac, 62.21% Impervious, Inflow Depth > 3.50" for 50 Yr 24 Hr(+15%) event
 Inflow = 5.51 cfs @ 12.74 hrs, Volume= 1.351 af
 Outflow = 5.50 cfs @ 12.78 hrs, Volume= 1.349 af, Atten= 0%, Lag= 2.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
 Max. Velocity= 0.61 fps, Min. Travel Time= 2.7 min
 Avg. Velocity= 0.30 fps, Avg. Travel Time= 5.5 min

Peak Storage= 901 cf @ 12.78 hrs
 Average Depth at Peak Storage= 1.43', Surface Width= 10.59'
 Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 11.89 cfs

2.00' x 2.00' deep channel, n= 0.150 Sheet flow over Short Grass
 Side Slope Z-value= 3.0 ' / ' Top Width= 14.00'
 Length= 100.0' Slope= 0.0050 ' / '
 Inlet Invert= 36.50', Outlet Invert= 36.00'



Summary for Reach AP1: Analysis Point #1

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

Inflow Area = 10.132 ac, 29.07% Impervious, Inflow Depth > 3.90" for 50 Yr 24 Hr(+15%) event
 Inflow = 18.54 cfs @ 12.52 hrs, Volume= 3.295 af
 Outflow = 18.54 cfs @ 12.52 hrs, Volume= 3.295 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP2: Map 266 Lot 5

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

Inflow Area = 0.634 ac, 0.00% Impervious, Inflow Depth > 0.73" for 50 Yr 24 Hr(+15%) event
 Inflow = 0.19 cfs @ 12.41 hrs, Volume= 0.038 af
 Outflow = 0.19 cfs @ 12.41 hrs, Volume= 0.038 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Pond 1P: Focal Point 1

Inflow Area = 0.437 ac, 65.45% Impervious, Inflow Depth > 6.40" for 50 Yr 24 Hr(+15%) event
 Inflow = 3.12 cfs @ 12.09 hrs, Volume= 0.233 af
 Outflow = 3.02 cfs @ 12.11 hrs, Volume= 0.230 af, Atten= 3%, Lag= 1.1 min
 Primary = 3.02 cfs @ 12.11 hrs, Volume= 0.230 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
 Peak Elev= 43.41' @ 12.72 hrs Surf.Area= 742 sf Storage= 645 cf

Plug-Flow detention time= 16.5 min calculated for 0.229 af (99% of inflow)
 Center-of-Mass det. time= 8.6 min (803.8 - 795.2)

Volume	Invert	Avail.Storage	Storage Description
#1	39.25'	53 cf	3.00'W x 20.00'L x 2.25'H Focal Point Area 1 Z=1.0 267 cf Overall x 20.0% Voids
#2	41.50'	641 cf	Surface Bowl (Prismatic) Listed below (Recalc)
		694 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
41.50	60	0	0
43.50	581	641	641

Device	Routing	Invert	Outlet Devices
#1	Primary	38.46'	24.0" Round Culvert L= 27.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 38.46' / 37.95' S= 0.0189 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 3	39.25'	100.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#3	Device 1	38.46'	6.0" W x 6.0" H Vert. Orifice/Grate C= 0.600

#4 Device 1 42.50' Limited to weir flow at low heads
24.0" Vert. Orifice/Grate C= 0.600
 Limited to weir flow at low heads

Primary OutFlow Max=2.96 cfs @ 12.11 hrs HW=43.01' TW=41.67' (Dynamic Tailwater)

- 1=Culvert (Passes 2.96 cfs of 13.87 cfs potential flow)
- 3=Orifice/Grate (Orifice Controls 1.40 cfs @ 5.59 fps)
- 2=Exfiltration (Passes 1.40 cfs of 1.48 cfs potential flow)
- 4=Orifice/Grate (Orifice Controls 1.56 cfs @ 2.44 fps)

Summary for Pond 2P: Focal Point 2

[90] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 1.673 ac, 59.43% Impervious, Inflow Depth > 5.46" for 50 Yr 24 Hr(+15%) event
 Inflow = 6.15 cfs @ 12.13 hrs, Volume= 0.761 af
 Outflow = 6.28 cfs @ 12.22 hrs, Volume= 0.761 af, Atten= 0%, Lag= 5.4 min
 Primary = 6.28 cfs @ 12.22 hrs, Volume= 0.761 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
 Peak Elev= 47.60' @ 12.17 hrs Surf.Area= 1,230 sf Storage= 925 cf

Plug-Flow detention time= 1.4 min calculated for 0.761 af (100% of inflow)
 Center-of-Mass det. time= 1.4 min (802.3 - 800.9)

Volume	Invert	Avail.Storage	Storage Description
#1	43.75'	152 cf	5.00'W x 44.00'L x 2.25'H Focal Point Area 1 Z=1.0 758 cf Overall x 20.0% Voids
#2	46.00'	1,113 cf	Surface Bowl (Prismatic) Listed below (Recalc)
		1,264 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
46.00	220	0	0
47.00	542	381	381
48.00	921	732	1,113

Device	Routing	Invert	Outlet Devices
#1	Primary	42.96'	18.0" Round Culvert L= 36.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 42.96' / 42.40' S= 0.0156 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 3	43.75'	100.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#3	Device 1	42.96'	6.0" W x 6.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.50'	18.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.21 cfs @ 12.22 hrs HW=47.57' TW=46.03' (Dynamic Tailwater)

- 1=Culvert (Passes 6.21 cfs of 8.33 cfs potential flow)
- 3=Orifice/Grate (Orifice Controls 1.49 cfs @ 5.97 fps)
- 2=Exfiltration (Passes 1.49 cfs of 2.82 cfs potential flow)
- 4=Orifice/Grate (Orifice Controls 4.72 cfs @ 3.51 fps)

Summary for Pond 3P: Focal Point 3

Inflow Area = 0.881 ac, 84.01% Impervious, Inflow Depth > 7.77" for 50 Yr 24 Hr(+15%) event
 Inflow = 6.84 cfs @ 12.10 hrs, Volume= 0.570 af
 Outflow = 6.25 cfs @ 12.13 hrs, Volume= 0.570 af, Atten= 9%, Lag= 2.1 min
 Primary = 6.25 cfs @ 12.13 hrs, Volume= 0.570 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
 Peak Elev= 48.63' @ 12.13 hrs Surf.Area= 1,048 sf Storage= 1,231 cf

Plug-Flow detention time= 2.1 min calculated for 0.569 af (100% of inflow)
 Center-of-Mass det. time= 2.1 min (760.2 - 758.1)

Volume	Invert	Avail.Storage	Storage Description
#1	43.75'	93 cf	7.00'W x 20.00'L x 2.25'H Focal Point Z=1.0 467 cf Overall x 20.0% Voids
#2	46.00'	1,446 cf	Surface Bowl (Prismatic) Listed below (Recalc)
		1,539 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
46.00	140	0	0
48.00	577	717	717
49.00	880	729	1,446

Device	Routing	Invert	Outlet Devices
#1	Primary	42.96'	15.0" Round Culvert L= 37.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 42.96' / 42.05' S= 0.0246 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 3	43.75'	100.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#3	Device 1	42.96'	6.0" W x 6.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	47.50'	15.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.18 cfs @ 12.13 hrs HW=48.60' TW=45.58' (Dynamic Tailwater)

- 1=Culvert (Passes 6.18 cfs of 8.11 cfs potential flow)
- 3=Orifice/Grate (Orifice Controls 2.09 cfs @ 8.37 fps)
- 2=Exfiltration (Passes 2.09 cfs of 2.41 cfs potential flow)
- 4=Orifice/Grate (Orifice Controls 4.08 cfs @ 3.57 fps)

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Summary for Pond 4P: Focal Point 4

Inflow Area = 1.641 ac, 52.47% Impervious, Inflow Depth > 5.49" for 50 Yr 24 Hr(+15%) event
 Inflow = 7.76 cfs @ 12.09 hrs, Volume= 0.751 af
 Outflow = 7.16 cfs @ 12.12 hrs, Volume= 0.751 af, Atten= 8%, Lag= 1.8 min
 Primary = 7.16 cfs @ 12.12 hrs, Volume= 0.751 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
 Peak Elev= 46.45' @ 12.13 hrs Surf.Area= 1,224 sf Storage= 862 cf

Plug-Flow detention time= 1.3 min calculated for 0.750 af (100% of inflow)
 Center-of-Mass det. time= 1.3 min (769.9 - 768.6)

Volume	Invert	Avail.Storage	Storage Description
#1	42.75'	145 cf	5.00'W x 42.00'L x 2.25'H Focal Point Z=1.0 726 cf Overall x 20.0% Voids
#2	45.00'	1,206 cf	Surface Bowl (Prismatic) Listed below (Recalc)
		1,351 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
45.00	210	0	0
46.00	598	404	404
47.00	1,005	802	1,206

Device	Routing	Invert	Outlet Devices
#1	Primary	41.96'	15.0" Round Culvert L= 180.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 41.96' / 38.75' S= 0.0178 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 3	42.75'	100.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#3	Device 1	41.96'	6.0" W x 6.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	45.80'	15.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.94 cfs @ 12.12 hrs HW=46.43' TW=42.91' (Dynamic Tailwater)

1=Culvert (Passes 6.94 cfs of 7.48 cfs potential flow)
 3=Orifice/Grate (Orifice Controls 2.26 cfs @ 9.04 fps)
 2=Exfiltration (Passes 2.26 cfs of 2.81 cfs potential flow)
 4=Orifice/Grate (Orifice Controls 4.68 cfs @ 3.81 fps)

Summary for Pond 5P: Drain Manhole #1

Inflow Area = 0.430 ac, 100.00% Impervious, Inflow Depth > 8.32" for 50 Yr 24 Hr(+15%) event
 Inflow = 3.54 cfs @ 12.09 hrs, Volume= 0.299 af
 Outflow = 3.54 cfs @ 12.09 hrs, Volume= 0.299 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.54 cfs @ 12.09 hrs, Volume= 0.299 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

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Peak Elev= 50.08' @ 12.09 hrs

Flood Elev= 53.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	46.05'	12.0" Round Culvert L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 46.05' / 45.75' S= 0.0050 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.44 cfs @ 12.09 hrs HW=49.88' TW=48.55' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 3.44 cfs @ 4.38 fps)

Summary for Pond 6P: Drain Manhole #2

Inflow Area = 0.861 ac, 100.00% Impervious, Inflow Depth > 8.32" for 50 Yr 24 Hr(+15%) event
 Inflow = 7.07 cfs @ 12.09 hrs, Volume= 0.597 af
 Outflow = 7.07 cfs @ 12.09 hrs, Volume= 0.597 af, Atten= 0%, Lag= 0.0 min
 Primary = 7.07 cfs @ 12.09 hrs, Volume= 0.597 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 48.69' @ 12.09 hrs

Flood Elev= 53.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	45.50'	15.0" Round Culvert L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 45.50' / 45.30' S= 0.0067 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=6.88 cfs @ 12.09 hrs HW=48.55' TW=46.38' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 6.88 cfs @ 5.61 fps)

Summary for Pond 7P: Drain Manhole #3

Inflow Area = 1.641 ac, 52.47% Impervious, Inflow Depth > 5.49" for 50 Yr 24 Hr(+15%) event
 Inflow = 7.16 cfs @ 12.12 hrs, Volume= 0.751 af
 Outflow = 7.16 cfs @ 12.12 hrs, Volume= 0.751 af, Atten= 0%, Lag= 0.0 min
 Primary = 7.16 cfs @ 12.12 hrs, Volume= 0.751 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 43.48' @ 12.70 hrs

Flood Elev= 44.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	38.50'	18.0" Round Culvert L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 38.50' / 38.20' S= 0.0075 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=7.11 cfs @ 12.12 hrs HW=42.91' TW=41.79' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 7.11 cfs @ 4.02 fps)

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Summary for Pond 8P: Drain Manhole #4

Inflow Area = 2.078 ac, 55.20% Impervious, Inflow Depth > 5.67" for 50 Yr 24 Hr(+15%) event
 Inflow = 10.17 cfs @ 12.11 hrs, Volume= 0.981 af
 Outflow = 10.17 cfs @ 12.11 hrs, Volume= 0.981 af, Atten= 0%, Lag= 0.0 min
 Primary = 10.17 cfs @ 12.11 hrs, Volume= 0.981 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 43.41' @ 12.73 hrs

Flood Elev= 45.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	37.85'	24.0" Round Culvert L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 37.85' / 37.60' S= 0.0050 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=10.01 cfs @ 12.11 hrs HW=41.72' TW=41.01' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 10.01 cfs @ 3.19 fps)**Summary for Pond 9P: Drain Manhole #5**

Inflow Area = 0.430 ac, 100.00% Impervious, Inflow Depth > 8.32" for 50 Yr 24 Hr(+15%) event
 Inflow = 3.54 cfs @ 12.09 hrs, Volume= 0.299 af
 Outflow = 3.54 cfs @ 12.09 hrs, Volume= 0.299 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.54 cfs @ 12.09 hrs, Volume= 0.299 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 48.83' @ 12.10 hrs

Flood Elev= 49.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	46.80'	12.0" Round Culvert L= 84.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 46.80' / 46.30' S= 0.0060 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.43 cfs @ 12.09 hrs HW=48.75' TW=47.40' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 3.43 cfs @ 4.37 fps)**Summary for Pond 10P: Drain Manhole #6**

Inflow Area = 0.430 ac, 100.00% Impervious, Inflow Depth > 8.32" for 50 Yr 24 Hr(+15%) event
 Inflow = 3.54 cfs @ 12.09 hrs, Volume= 0.299 af
 Outflow = 3.54 cfs @ 12.09 hrs, Volume= 0.299 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.54 cfs @ 12.09 hrs, Volume= 0.299 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 49.95' @ 12.10 hrs

Flood Elev= 52.00'

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Device	Routing	Invert	Outlet Devices
#1	Primary	47.50'	12.0" Round Culvert L= 46.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 47.50' / 47.20' S= 0.0065 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.45 cfs @ 12.09 hrs HW=49.84' TW=48.51' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 3.45 cfs @ 4.39 fps)

Summary for Pond 11P: Drain Manhole #7

Inflow Area = 1.673 ac, 59.43% Impervious, Inflow Depth > 5.46" for 50 Yr 24 Hr(+15%) event
 Inflow = 6.28 cfs @ 12.22 hrs, Volume= 0.761 af
 Outflow = 6.28 cfs @ 12.22 hrs, Volume= 0.761 af, Atten= 0%, Lag= 0.0 min
 Primary = 6.28 cfs @ 12.22 hrs, Volume= 0.761 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 46.60' @ 12.16 hrs

Flood Elev= 49.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	42.30'	18.0" Round Culvert L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 42.30' / 41.80' S= 0.0050 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=6.01 cfs @ 12.22 hrs HW=46.03' TW=45.23' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 6.01 cfs @ 3.40 fps)

Summary for Pond 12P: Drain Manhole #8

Inflow Area = 2.554 ac, 67.91% Impervious, Inflow Depth > 6.25" for 50 Yr 24 Hr(+15%) event
 Inflow = 12.16 cfs @ 12.15 hrs, Volume= 1.331 af
 Outflow = 12.16 cfs @ 12.15 hrs, Volume= 1.331 af, Atten= 0%, Lag= 0.0 min
 Primary = 12.16 cfs @ 12.15 hrs, Volume= 1.331 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 45.73' @ 12.15 hrs

Flood Elev= 49.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	41.70'	18.0" Round Culvert L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 41.70' / 41.55' S= 0.0050 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=12.11 cfs @ 12.15 hrs HW=45.70' TW=41.38' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 12.11 cfs @ 6.85 fps)

Summary for Pond 13P: R-Tank

Inflow Area = 4.632 ac, 62.21% Impervious, Inflow Depth > 5.99" for 50 Yr 24 Hr(+15%) event
 Inflow = 22.01 cfs @ 12.13 hrs, Volume= 2.312 af
 Outflow = 5.51 cfs @ 12.74 hrs, Volume= 1.351 af, Atten= 75%, Lag= 36.6 min
 Primary = 5.51 cfs @ 12.74 hrs, Volume= 1.351 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
 Peak Elev= 43.38' @ 12.74 hrs Surf.Area= 9,582 sf Storage= 52,778 cf

Plug-Flow detention time= 242.9 min calculated for 1.351 af (58% of inflow)
 Center-of-Mass det. time= 127.5 min (909.1 - 781.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	36.95'	3,703 cf	60.43'W x 74.37'L x 8.21'H Field A 36,879 cf Overall - 27,621 cf Embedded = 9,257 cf x 40.0% Voids
#2A	37.20'	26,240 cf	ACF R-Tank HD 5 x 1290 Inside #1 Inside= 15.7"W x 83.5"H => 8.67 sf x 2.35'L = 20.3 cf Outside= 15.7"W x 83.5"H => 9.13 sf x 2.35'L = 21.4 cf 1290 Chambers in 43 Rows
#3B	36.95'	4,708 cf	30.25'W x 168.21'L x 8.21'H Field B 41,746 cf Overall - 29,977 cf Embedded = 11,770 cf x 40.0% Voids
#4B	37.20'	28,478 cf	ACF R-Tank HD 5 x 1400 Inside #3 Inside= 15.7"W x 83.5"H => 8.67 sf x 2.35'L = 20.3 cf Outside= 15.7"W x 83.5"H => 9.13 sf x 2.35'L = 21.4 cf 1400 Chambers in 20 Rows
		63,129 cf	Total Available Storage

Storage Group A created with Chamber Wizard
 Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	37.00'	15.0" Round Culvert L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 37.00' / 36.50' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	37.20'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	42.00'	15.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.51 cfs @ 12.74 hrs HW=43.38' TW=37.93' (Dynamic Tailwater)

- 1=Culvert (Passes 5.51 cfs of 10.89 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.38 cfs @ 11.24 fps)
- 3=Orifice/Grate (Orifice Controls 5.13 cfs @ 4.18 fps)

APPENDIX III

Charts, Graphs, and Calculations

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	New Hampshire
Location	
Longitude	70.790 degrees West
Latitude	43.042 degrees North
Elevation	0 feet
Date/Time	Mon, 12 Oct 2020 09:17:23 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.82	1.04	1yr	0.71	0.98	1.22	1.57	2.04	2.67	2.94	1yr	2.37	2.83	3.24	3.96	4.58	1yr
2yr	0.32	0.50	0.62	0.81	1.02	1.30	2yr	0.88	1.18	1.52	1.94	2.50	3.23	3.59	2yr	2.86	3.45	3.96	4.71	5.36	2yr
5yr	0.37	0.58	0.73	0.98	1.25	1.61	5yr	1.08	1.47	1.89	2.44	3.15	4.09	4.61	5yr	3.62	4.43	5.07	5.97	6.74	5yr
10yr	0.41	0.65	0.82	1.12	1.45	1.89	10yr	1.25	1.73	2.24	2.90	3.77	4.90	5.57	10yr	4.34	5.35	6.13	7.16	8.03	10yr
25yr	0.48	0.76	0.97	1.34	1.78	2.34	25yr	1.53	2.15	2.78	3.64	4.76	6.21	7.15	25yr	5.50	6.87	7.87	9.09	10.12	25yr
50yr	0.54	0.86	1.10	1.54	2.08	2.76	50yr	1.79	2.53	3.30	4.34	5.69	7.45	8.64	50yr	6.59	8.31	9.50	10.90	12.07	50yr
100yr	0.60	0.97	1.25	1.77	2.42	3.26	100yr	2.09	2.98	3.92	5.18	6.81	8.92	10.46	100yr	7.90	10.05	11.49	13.08	14.39	100yr
200yr	0.68	1.10	1.43	2.05	2.83	3.85	200yr	2.44	3.52	4.63	6.16	8.13	10.69	12.65	200yr	9.46	12.16	13.89	15.69	17.16	200yr
500yr	0.80	1.32	1.72	2.49	3.49	4.78	500yr	3.01	4.39	5.79	7.74	10.29	13.60	16.27	500yr	12.03	15.65	17.86	19.98	21.68	500yr

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.44	0.59	0.73	0.89	1yr	0.63	0.87	0.92	1.33	1.67	2.24	2.55	1yr	1.99	2.45	2.88	3.17	3.91	1yr
2yr	0.32	0.49	0.60	0.81	1.00	1.19	2yr	0.86	1.16	1.37	1.82	2.34	3.08	3.48	2yr	2.72	3.35	3.85	4.58	5.11	2yr
5yr	0.35	0.54	0.67	0.92	1.17	1.41	5yr	1.01	1.38	1.61	2.12	2.73	3.82	4.24	5yr	3.38	4.08	4.76	5.59	6.30	5yr
10yr	0.39	0.60	0.74	1.03	1.33	1.60	10yr	1.15	1.57	1.81	2.39	3.06	4.41	4.93	10yr	3.91	4.74	5.52	6.49	7.28	10yr
25yr	0.44	0.67	0.84	1.19	1.57	1.91	25yr	1.36	1.86	2.10	2.76	3.54	4.75	6.00	25yr	4.20	5.77	6.78	7.92	8.80	25yr
50yr	0.49	0.74	0.92	1.32	1.78	2.18	50yr	1.54	2.13	2.35	3.08	3.94	5.37	6.95	50yr	4.75	6.68	7.91	9.22	10.17	50yr
100yr	0.54	0.82	1.03	1.48	2.03	2.48	100yr	1.75	2.42	2.63	3.42	4.36	6.04	8.04	100yr	5.35	7.73	9.24	10.74	11.76	100yr
200yr	0.60	0.90	1.14	1.66	2.31	2.83	200yr	1.99	2.77	2.94	3.78	4.81	6.78	9.31	200yr	6.00	8.95	10.79	12.52	13.61	200yr
500yr	0.70	1.04	1.34	1.94	2.76	3.39	500yr	2.38	3.31	3.42	4.32	5.49	7.89	11.30	500yr	6.99	10.86	13.26	15.37	16.49	500yr

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.29	0.44	0.54	0.72	0.89	1.08	1yr	0.77	1.06	1.26	1.74	2.20	3.01	3.16	1yr	2.66	3.04	3.61	4.39	5.08	1yr
2yr	0.34	0.52	0.64	0.86	1.07	1.27	2yr	0.92	1.24	1.48	1.96	2.51	3.45	3.71	2yr	3.05	3.57	4.10	4.85	5.67	2yr
5yr	0.40	0.62	0.77	1.05	1.34	1.62	5yr	1.15	1.59	1.88	2.53	3.24	4.36	4.96	5yr	3.86	4.77	5.40	6.38	7.17	5yr
10yr	0.47	0.72	0.89	1.25	1.61	1.98	10yr	1.39	1.93	2.28	3.10	3.94	5.37	6.20	10yr	4.75	5.96	6.80	7.85	8.76	10yr
25yr	0.58	0.88	1.09	1.56	2.05	2.57	25yr	1.77	2.51	2.95	4.06	5.13	7.84	8.31	25yr	6.94	7.99	9.09	10.34	11.41	25yr
50yr	0.67	1.02	1.27	1.83	2.46	3.13	50yr	2.12	3.06	3.59	4.99	6.28	9.81	10.40	50yr	8.68	10.00	11.34	12.71	13.95	50yr
100yr	0.79	1.19	1.49	2.16	2.96	3.81	100yr	2.55	3.72	4.36	6.14	7.71	12.28	13.01	100yr	10.87	12.51	14.13	15.66	17.06	100yr
200yr	0.92	1.39	1.76	2.55	3.55	4.65	200yr	3.07	4.55	5.32	7.56	9.46	15.41	16.29	200yr	13.63	15.66	17.64	19.29	20.88	200yr
500yr	1.14	1.70	2.19	3.18	4.53	6.04	500yr	3.91	5.90	6.91	9.98	12.44	20.81	21.93	500yr	18.42	21.08	23.64	25.40	27.27	500yr

RIP RAP CALCULATIONS

Industrial Warehouse
375 Banfield Road
Portsmouth, NH 03801

Jones & Beach Engineers, Inc.

P.O. Box 219
Stratham, NH 03885
28-Apr-21

Rip Rap equations were obtained from the *Stormwater Management and Erosion Control Handbook for Urban and Developing Areas in New Hampshire*.

Aprons are sized for the 25-Year storm event.

TAILWATER < HALF THE D_o

$$L_a = (1.8 \times Q) / D_o^{3/2} + (7 \times D_o)$$

$$W = L_a + (3 \times D_o) \text{ or defined channel width}$$

$$d_{50} = (0.02 \times Q^{4/3}) / (T_w \times D_o)$$

Culvert or Catch Basin (Sta. No.)	Tailwater (Feet) T _w	Discharge (C.F.S.) Q	Diameter of Pipe D _o	Length of Rip Rap L _a (feet)	Width of Rip Rap W (feet)	d ₅₀ -Median Stone Rip Rap d50 (feet)
				#DIV/0!	#DIV/0!	#DIV/0!
				#DIV/0!	#DIV/0!	#DIV/0!

TAILWATER > HALF THE D_o

$$L_a = (3.0 \times Q) / D_o^{3/2} + (7 \times D_o)$$

$$W = (0.4 \times L_a) + (3 \times D_o) \text{ or defined channel width}$$

$$d_{50} = (0.02 \times Q^{4/3}) / (T_w \times D_o)$$

Culvert or Catch Basin (Sta. No.)	Tailwater (Feet) T _w	Discharge (C.F.S.) Q	Diameter of Pipe D _o	Length of Rip Rap L _a (feet)	Width of Rip Rap W (feet)	d ₅₀ -Median Stone Rip Rap d50 (feet)
15" HDPE (Pond 13P)	0.64	2.39	1.25	13.9	9	0.08
12" HDPE (Pond 9P)	0.9	2.94	1	15.8	9	0.09
12" HDPE (Pond 10P)	0.84	2.95	1	15.9	9	0.10
15" HDPE (Pond 6P)	1.25	4.57	1.25	18.6	11	0.10

Table 7-24 -- Recommended Rip Rap Gradation Ranges				
d_{50} Size =	0.25	Feet	3	Inches
% of Weight Smaller Than the Given d_{50} Size	Size of Stone (Inches)			
	From	To		
100%	5	6		
85%	4	5		
50%	3	5		
15%	1	2		

Table 7-24 -- Recommended Rip Rap Gradation Ranges				
d_{50} Size =	0.5	Feet	6	Inches
% of Weight Smaller Than the Given d_{50} Size	Size of Stone (Inches)			
	From	To		
100%	9	12		
85%	8	11		
50%	6	9		
15%	2	3		



SITE-SPECIFIC SOIL SURVEY REPORT

375 Banfield Road
Portsmouth, NH
GES # 2020032

1. MAPPING STANDARDS

Site-Specific Soil Mapping Standards for New Hampshire and Vermont. SSSNNE Special Publication No. 3, Version 5.0, December 2017. This map product is within the technical standards of the National Cooperative Soil Survey. It is a special product, intended for the submission to NH DES Alteration of Terrain. It was produced by a professional soil scientist and is not a product of the USDA Natural Resource Conservation Service.

Hydrologic Soil Group was determined using SSSNNE Special Publication No. 5, Ksat Values for New Hampshire Soils, September 2009.

High Intensity Soil Survey (HISS) Symbols were determined using SSSNNE Special Publication No. 1, High Intensity Soil Maps for New Hampshire, December 2017.

2. DATE SOIL MAP PRODUCED

Field work conducted on 20 July 2020.

Test pits by Jones & Beach on April 8, 2020, were used to assist in the preparation of the soil map.

3. GEOGRAPHIC LOCATION AND SIZE OF SITE

Approximately 16 acres. Tax map 266, Lot 7. The site is located in Portsmouth, NH.

4. PURPOSE OF THE SOIL MAP

The preparation of this map was requested by Jones & Beach Engineers. The purpose was to meet the requirements of NH Alteration of Terrain. Also provided is a conversion to HISS map units in the Soil Identification Legend.

5. SOIL IDENTIFICATION LEGEND

This map product is within the technical standards of the National Cooperative Soil Survey. It is a special purpose product, intended for infiltration requirements by the NH DES Alteration of Terrain Bureau. It was produced by a professional soil scientist, and is not a product of the USDA Natural Resources Conservation Service.

The site specific soil survey field work was conducted 07-20-2020 and was prepared by James P. Gove, CSS # 004, Gove Environmental Services, Inc. The survey area is located on Banfield Road, Portsmouth, NH.

Soils were identified with the New Hampshire State-wide Numerical Soils Legend, USDA NRCS, Durham, NH. Issue # 10, January 2011. The numeric legend was amended to identify the correct soil components of the complex.

Hydrologic Soil Group from Ksat Values for New Hampshire Soils, Society of Soil Scientists of New England, Special Publication No. 5, September, 2009.

Hydrologic soil groups were estimated for disturbed soil map units 100, 100H, 400, 599, 900.

SSSM SYM.	SSS MAP NAME	HISS SYM.	HYDROLOGIC SOIL GRP.	
38	Eldridge fsl	343	C	
100	Udorthents, wet substratum	363	C	
100H	Udorthents, wet substratum, hydric	563	D	
115	Scarboro muck		643	D
400	Udorthents, gravelly	161	A	
510	Hoosic gsl	111	A	
538	Squamscott fsl	543	C	
599	Urban Land – Hoosic Complex		761/161	D/A
900	Endoaquents, gravelly	561	D	

fsl = fine sandy loam gsl = gravelly sandy loam

SLOPE PHASE:

0-8%	B	8-15%	C	15-25%	D
25%+	E				

Note: Map symbols 100, 100H, 400, 599, and 900 represent man-disturbed areas that were excavated, filled or graded.

SLOPE PHASE:

0-8%	B	8-15%	C	15-25%	D
25%+	E				

6. SOIL MAP UNIT DESCRIPTIONS



ELDRIDGE FSL (38) IS A SOIL THAT HAS DEVELOPED WITH LOAM OR SANDY OVERLAYING SILTS AND CLAYS. Based upon the test pits, the depth to seasonal high water table is 18” to 24”. The mineral restrictive layer of silt loam begins at the same depth as the estimated seasonal high water table.

UDORTHENTS, WET SUBSTRATUM (100) AND UDORTHENTS, WET SUBSTRATUM, HYDRIC (100H) REPRESENT MAP UNITS WHERE FILL WAS PLACED OVER HYDRIC SOILS. The map unit 100 is no longer wetland, but have wetland soils buried 2 to 3 feet below the soil surface. Some of the fill was non-soil debris. The map unit 100H represents similar disturbance of filling, but is still wetlands with hydric soils near the surface (see photo below).



SCARBORO MUCK (115B) IS LOCATED ON THE LARGE, FLAT WETLAND AREA THAT LIES TO THE SOUTH OF THE PROPERTY. It appears that some of the muck areas were filled in the distant past (see 100 and 100H). There is over 16 inches of sapric organic over the underlying mineral soils (see photo below).



UDORTHENTS, GRAVELLY REPRESENT THE GRAVEL PIT THAT WAS PRESENT ON THE SITE. This is a shale dominated area that was excavated and graded. Along the northern boundary is a cut face that shows the depth of the original pit. The gravel material came from the Hoosic soil area that is still present. The soil boundary of this unit is intermixed with the Eldridge and would expect inclusions of each within the other map unit (see photo below).





HOOSIC GRAVELLY SANDY LOAM (510) IS FOUND IN THE HILL ON THE EASTERN PORTION OF THE SIRE. While much of the topsoil was removed from these map units, the basic substratum is still intact, with sandy textures, shale rock fragments and extremely deep water tables (see photo below).



SQUAMSCOTT FINE SANDY LOAM (538) REPRESENTS THE OTHER NATURAL WETLAND ON THE SITE. These are poorly drained soils with loam/sand textures over silt/clay textures. The seasonal water table is at the surface, but does drop over the course of the summer.



URBAN LAND – HOOSIC COMPLEX (599) REPRESENTS AREAS OF BUILDING AND PAVEMENT OVER THE EXCAVATED PIT AREA. Much of this map unit is impervious, but the soils around the impervious areas have the sand shale material of the original pit area.

ENDOQUENTS, GRAVELLY (900) IS AN AREA OF EXCAVATION THAT HAS DEVELOPED INTO A WETLAND. This area is at the base of the cut face of the pit and captures water during the spring. It has a pipe outlet. The area has a short hydroperiod but, by definition in the soil standards, has a hydrologic soil group of D (see photo below).



7. RESPONSIBLE SOIL SCIENTIST

James P. Gove, C.S.S. #004



8. OTHER DISTINGUISHING FEATURES OF SITE

It is clear that a significant amount of soil disturbance took place on the site. The entire top of the hill was flattened and graded. Some of the side slopes are spoil piles or steep excavated or filled areas. In the southern portion of the site, fill was placed over wetlands years ago. Some of the trees on the fill are 60 years old. The fill was not clean but had non-soil material mixed in (see photo below).



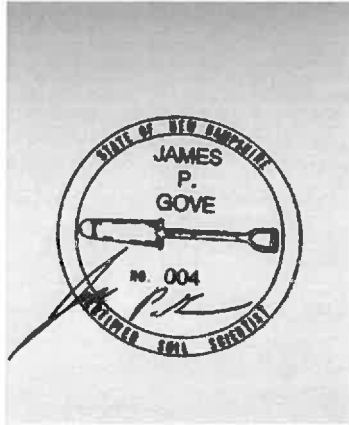
9. LIMITING INCLUSIONS

Obviously this is a mixed site of soil disturbance from man. Due to the disturbance, expectations of soils from one map unit will be found in another map unit. The only true clean map units are the wetlands that were flagged and located, and that is only for the natural wetland areas. The disturbed wetland areas (110H) has mounds of debris within the map units.



10. SPECIAL FEATURE SYMBOLS

None used



07-23-2020

STORMWATER MANAGEMENT OPERATION AND MAINTENANCE MANUAL

Prepared for:

**Banfield Realty, LLC
Map 266, Lot 7
375 Banfield Road
Portsmouth, NH**

**Prepared by:
Jones & Beach Engineers, Inc.
85 Portsmouth Avenue
P.O. Box 219
Stratham, NH 03885
Phone: (603) 772-4746
December 30, 2020
Revised May 17, 2021
JBE Project No. 19190.2**

Inspection and Maintenance of Facilities and Property

A. Maintenance of Common Facilities or Property

1. Banfield Realty, LLC, future owners and assigns are responsible to perform the maintenance obligations or hire a Professional Engineer to review the site on an annual basis for maintenance and certification of the stormwater system. Banfield Realty, LLC, future owners and assigns shall keep receipts and records of all maintenance companies hired throughout the year to submit along with the following form. Permanent stormwater BMPs shall be inspected annually following construction and the annual report and certification shall be submitted to the City by December 31st of each year. The Inspection and Maintenance records must be provided to NH Department of Environmental Services upon request.

B. General Inspection and Maintenance Requirements

1. Temporary and permanent stormwater and sediment and erosion control facilities to be maintained on the site include, but are not limited to, the following:
 - a. Silt fencing
 - b. Temporary diversion and swales
 - c. Construction entrances
 - d. Drain manholes
 - e. Culverts
 - f. Vegetated Treatment Swale
 - g. Vegetation and landscaping
 - h. Parking lots and roadways
 - i. Convergent PRETX Pretreatment
 - j. ACF Environmental R-Tank Underground Detention System
 - k. ACF Environmental Focal Point Biofiltration System
 - l. Riprap inlet and outlet protection aprons
2. Maintenance of temporary measures shall follow the following schedule:
 - a. The general contractor shall strictly adhere to the Stormwater Pollution Prevention Plan (SWPPP) during construction operations.
 - b. During the construction process, all silt fencing will be **inspected during and after storm events** to ensure that the fence still has integrity and is not allowing sediment to pass. Any section of fence that has failed or is failing is to be replaced immediately, overlapping adjacent fence sections by at least one foot. If the problem persists, measures such as additional fencing (i.e. double) or the addition of haybales on the project side of the fence line should be considered. Sediment is to be removed from behind the fencing if found to be deeper than six inches and disposed of properly.
 - c. Sediment is to be removed from behind diversions if found to be deeper than six inches and disposed of properly.

- d. Culvert inlet protection measures should be **inspected once per week** and after every major storm event. Sediment accumulations around the stone should be removed if they are deeper than six inches. If extensive amounts of sediment appear to have become trapped within the gravel filter stone such that proper operation of the structure has become impractical, the stone should be cleaned or otherwise replaced.
 - e. The stabilized construction entrance(s) shall be **inspected weekly** and after every rain event in order to ensure that the pad(s) are not becoming choked with sediment. Additional stone shall be added if required.
 - f. All construction debris and trash shall be removed from the site at the completion of construction and disposed of properly.
 - g. Once construction has been completed, the contractor is to remove all temporary erosion control measures and, if necessary, smooth and revegetated the areas disturbed by the removal.
3. Maintenance of permanent measures shall follow the following schedule:
- a. Normal winter roadway and parking lot maintenance including plowing and snow removal.
 - b. Road and parking lot sweeping at the end of every winter, preferably at the start of the spring rain season.
 - c. **Inspection** of culvert inlets and outlets at least **once per month** during the rainy season (March to November). Any debris is to be removed and disposed of properly.
 - d. **Annual inspection** of the site for erosion, destabilization, settling, and sloughing. Any needed repairs are to be conducted immediately.
 - e. Annual inspection of drain manholes to determine if they need to be cleaned. Manholes should be cleaned of any material upon inspection. Manholes can be cleaned either manually or by specially designed equipment including, but not limited to, bucket loaders and vacuum pumps. Before any materials can be disposed, it is necessary to perform a detailed chemical analysis to determine if the materials meet the EPA criteria for hazardous waste. This will help determine how the materials should be stored, treated, and disposed. Grease hoods are to be wiped clean and the rags disposed of properly. Debris obscuring the grate inlet should also be removed.
 - f. **Annual inspection** of site's vegetation and landscaping. Any areas that are bare shall be reseeded and mulched with hay or, if the case is extreme, loamed and seeded or sodded to ensure adequate vegetative cover. Landscape specimens shall be replaced in kind if they are found to be dead or dying.

- g. Permanent stone check dams should be **inspected annually** in order to ensure that they are in good condition. Any sediment accumulated behind them shall be removed if it is deeper than six inches.
- h. Rock riprap should be **inspected annually** and after every major storm event in order to ensure that it has not been displaced, undermined, or otherwise damaged. Displaced rock should be replaced, or additional rock added in order to maintain the structure(s) in their undamaged state. Woody vegetation should not be allowed to become established in riprap areas, and/or any debris removed from the void spaces between the rocks. If the riprap is adjacent to a stream or other waterbody, the water should be kept clear of obstructions, debris, and sediment deposits.
- i. **Convergent PRETX Pretreatment:**

See attached Convergent inspection and maintenance guidance document.
- j. **ACF Environmental R-Tank Underground Detention System:**

See attached ACF Environmental inspection and maintenance guidance document.
- k. **ACF Environmental Focal Point Biofiltration System:**

See attached ACF Environmental inspection and maintenance guidance document.
- l. **Vegetated Swale:**

Inspect annually for erosion, sediment accumulation, vegetation loss, and presence of invasive species. Perform periodic mowing; frequency depends on location and type of grass. Do not cut shorter than Water Quality Flow depth (maximum 4-inches). Remove debris and accumulated sediment, based on inspection. Repair eroded areas, remove invasive species and dead vegetation, and reseed with applicable grass mix as warranted by inspection.

Annual Operations and Maintenance Report

Banfield Realty, LLC, future owners and assigns are responsible to perform the maintenance obligations or hire a Professional Engineer to review the site on an annual basis for maintenance and certification of the stormwater system. Banfield Realty, LLC, future owners and assigns shall keep receipts and records of all maintenance companies hired throughout the year to submit along with the following form. Permanent stormwater BMPs shall be inspected annually following construction and the annual report and certification shall be submitted to the City by December 31st of each year. The Inspection and Maintenance records must be provided to NH Department of Environmental Services upon request.

Construction Activity	Date of Inspection	Who Inspected	Findings of Inspector
Drain Manhole #1			
Drain Manhole #2			
Drain Manhole #3			
Drain Manhole #4			
Drain Manhole #5			
Drain Manhole #6			

Drain Manhole #7			
Drain Manhole #8			
Culverts			
Vegetation and landscaping			
Parking lots and roadways			
Vegetated Swale			
Convergent PRETX Pretreatment			

ACF R-Tank			
ACF Focal Point #1			
ACF Focal Point #2			
ACF Focal Point #3			
ACF Focal Point #4			
Rip-Rap Inlet and Outlet Protection Aprons			

Other:			
Other:			
Other:			

See attached sample forms as a guideline.

Any inquiries in regards to the design, function, and/or maintenance of any one of the above-mentioned facilities or tasks shall be directed to the project engineer:

Jones & Beach Engineers, Inc.
85 Portsmouth Avenue
P.O. Box 219
Stratham, NH 03885

T#: (603) 772-4746
F#: (603) 772-0227

Commitment to maintenance requirements

I agree to complete and/or observe all of the required maintenance practices and their respective schedules as outlined above.

Owner's Name

Print Name

Title

Date



PRETX OPERATION AND MAINTENANCE GUIDE



PRETX™ BIOFILTER PRETREATMENT OPERATION AND MAINTENANCE GUIDANCE



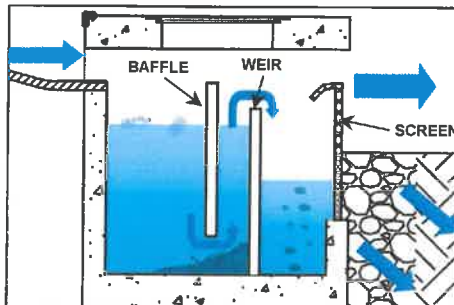
PRETX systems provide pretreatment of sediment and debris prior to filtration and infiltration. Maintenance of PRETX pretreatment catch basins is simple and typically uses a standard vactor truck for cleaning. Simply remove the manhole cover and vactor out debris from within the sump and clean internal components by pressure washing. PRETX units are comprised of an outer precast concrete shell and consist of HDPE and stainless-steel internals that are resistant to rust and rot from corrosive winter runoff. Ideal tools include camera, shovel, hoe/rake, manhole pick, and tape measure. Appropriate Personal Protective Equipment (PPE) should be used in accordance with local authority or company procedures.

Routine annual inspections and periodic maintenance is required for the effective operation of PRETX systems. The Responsible Parties should maintain PRETX systems in accordance with the minimum design standards. This page provides guidance on maintenance activities that are typically required for PRETX systems, along with a suggested frequency for each activity. Individual systems may have more, or less, frequent maintenance needs, depending upon a variety of factors including land use intensity, seasonality, the occurrence of large storm events, overly wet or dry (i.e., drought) regional hydrologic conditions, and any changes or redevelopment in the upstream land use.

Activity	Frequency
<p>NOTE: A properly functioning PRETX system will trap floatables such as bottles, cups, and leaves within the first sump area behind the baffle. Settleables such as sand, saturated leaves and trash will fall to the bottom of the sump area behind the weir wall. Lastly, removal of smaller debris such as cigarettes, grass clippings, etc. will be removed by the screened outlet.</p>	Annual Inspection
Cleaning of PRETX systems is best conducted by a vactor truck with pressure washing for removal of accumulated sediment, trash, and debris.	
Remove maintenance cover and inspect for accumulation of trash and debris.	
Inspect for floatables behind baffle wall and remove as needed by vactor.	
Inspect for settleable behind weir wall and remove as needed by vactor.	
Inspect outlet screen for accumulated debris and clean as needed by pressure wash.	
Check the inlet area (curb throat or drop inlet grate) and surrounding pavement area immediately upstream for sediment deposition, weed growth, etc. Remove as needed with a broom and shovel or by vactor.	
Check to insure the PRETX system drains to the outvert level completely after storm events.	As Needed
This process is to be repeated until proper drainage and function has been restored.	
Repair or replace any damaged structural parts, inlets, outlets, grates.	



TOP VIEW WITH COVER REMOVED



SIDE VIEW OF TRASH AND DEBRIS ACCUMULATION



REAR VIEW OF OUTLET SCREEN

CHECKLIST FOR OPERATION & MAINTENANCE PRETX™ BIOFILTER PRETREATMENT



Location:

Inspector:

Date:

Time:

Site Conditions:

Date Since Last Rain Event:

NOTE: A properly functioning PRETX system will trap floatables such as bottles, cups, and leaves within the first sump area behind the baffle. Settleables such as sand, saturated leaves and trash will fall to the bottom of the sump area behind the weir wall. Lastly, removal of smaller debris such as cigarettes, grass clippings, etc. will be removed by the screened outlet.

Inspection Items	Satisfactory (S) or Unsatisfactory (U)		Comments/Corrective Action
1. Remove maintenance cover to allow for visual inspection	S	U	
2. Complete drainage of PRETX system to outvert elevation after storm flow ceases	S	U	
3. Proper grading and drainage to PRETX inlet and outlet, no evidence of short-circuit or bypass of flow around or under structure	S	U	
4. Accumulation of settleable trash and debris within PRETX sump is 6" or less	S	U	
5. Sump area is empty of floatable trash and debris. Excessive accumulation of floatables will bypass baffle wall.	S	U	
6. Outlet screen is clear of debris	S	U	
7. Clogging and function of inlet/outlet components	S	U	
8. Cracking, spalling, or deterioration of concrete	S	U	
9. Nuisance vegetation, animal burrows, or settling of structure	S	U	
10. Undesirable odors	S	U	
11. Complaints from residents	S	U	
12. Public hazards noted	S	U	
13.	S	U	
14.	S	U	
15.	S	U	

Corrective Action Needed	Due Date
1.	
2.	
3.	
4.	
5.	



FocalPoint

BIOFILTRATION SYSTEMS

HIGH PERFORMANCE MODULAR BIOFILTRATION SYSTEM (HPMBS)

Operations & Maintenance





GENERAL DESCRIPTION

The following general specifications describe the general operations and maintenance requirements for the FocalPoint® High Performance Modular Biofiltration System (HPMBS). The system utilizes physical, chemical and biological mechanisms of a soil, plant and microbe complex to remove pollutants typically found in urban stormwater runoff. The treatment system is a fully equipped, modular, constructed in place system designed to treat contaminated runoff.

Stormwater enters the FocalPoint® HPMBS, is filtered by the High Flow Biofiltration Media and passes through to the underdrain/storage system where the treated water is detained, retained or infiltrated to sub-soils, prior to discharge to the storm sewer system of any remaining flow.

Higher flows bypass the FocalPoint® HPMBS via a downstream inlet or other overflow conveyance. Maintenance is a simple, inexpensive and safe operation that does not require confined space entry, pumping or vacuum equipment, or specialized tools. Properly trained landscape personnel can effectively maintain FocalPoint® HPMBS by following instructions in this manual.



BASIC OPERATIONS

FocalPoint® is a modular, high performance biofiltration system that often works in tandem with other integrated management practices (IMP). Contaminated stormwater runoff enters the biofiltration bed through a conveyance swale, planter box, or directly through a curb cut or false inlet. Energy is dissipated by a rock or vegetative dissipation device and is absorbed by a 3-inch layer of aged, double shredded hardwood mulch, with fines removed, (when specified) on the surface of the biofiltration media.

As the water passes through the mulch layer, most of the larger sediment particles and heavy metals are removed through sedimentation and chemical reactions with the organic material in the mulch. Water passes through the biofiltration media where the finer particles are removed and numerous chemical reactions take place to immobilize and capture pollutants in the soil media.

The cleansed water passes into the underdrain/storage system and remaining flows are directed to a storm sewer system or other appropriate discharge point. Once the pollutants are in the soil, bacteria begin to break down and metabolize the materials and the plants begin to uptake and metabolize the pollutants. Some pollutants such as heavy metals, which are chemically bound to organic particles in the mulch, are released over time as the organic matter decomposes to release the metals to the feeder roots of the plants and the cells of the bacteria in the soil where they remain and are recycled. Other pollutants such as phosphorus are chemically bound to the soil particles and released slowly back to the plants and bacteria and used in their metabolic processes. Nitrogen goes through a variety of very complex biochemical processes where it can ultimately end up in the plant/bacteria biomass, turned to nitrogen gas or dissolves back into the water column as nitrates depending on soil temperature, pH and the availability of oxygen. The pollutants ultimately are retained in the mulch, soil and biomass with some passing out of the system into the air or back into the water.

DESIGN AND INSTALLATION

Each project presents different scopes for the use of FocalPoint® HPMBS. To ensure the safe and specified function of this stormwater BMP, Convergent Water Technologies and/or its Value Added Resellers (VAR) review each application before supply. Information and design assistance is available to the design engineer during the planning process. Correct FocalPoint® sizing is essential to optimum performance. The engineer shall submit calculations for approval by the local jurisdiction when required. The contractor and/or VAR is responsible for the correct installation of FocalPoint® HPMBS units as described in approved plans. A comprehensive installation manual is available at www.convergentwater.com.





MAINTENANCE

Why Maintain?

All stormwater treatment systems require maintenance for effective operation. This necessity is often incorporated in your property's permitting process as a legally binding BMP maintenance agreement. Other reasons for maintenance include:

- Avoid legal challenges from your jurisdiction's maintenance enforcement program.
- Prolong the lifespan of your FocalPoint® HPMBS.
- Avoid costly repairs.
- Help reduce pollutant loads leaving your property.

Simple maintenance of the FocalPoint® HPMBS is required to continue effective pollutant removal from stormwater runoff before any discharge into downstream waters. This procedure will also extend the longevity of the living biofiltration system. The unit will recycle and accumulate pollutants within the biomass, but may also be subjected to other materials entering the surface of the system. This may include trash, silt and leaves etc. which will be contained above the mulch and/or biofiltration media layer. Too much silt may inhibit the FocalPoint's® HPMBS flow rate, which is a primary reason for system maintenance. Removal of accumulated silt/sediment and/or replacement of the mulch layer (when specified), is an important activity that prevents over accumulation of such silt/sediment.

When to Maintain?

Convergent Water Technologies and/or its VAR includes a 1-year maintenance plan with each system purchased. Annual included maintenance consists of two (2) scheduled maintenance visits. Additional maintenance may be necessary depending on sediment and trash loading (by Owner or at additional cost). The start of the maintenance plan begins when the system is activated for full operation. Full operation is defined as when the site is appropriately stabilized, the unit is installed and activated (by VAR), i.e., when mulch (if specified) and plantings are added.

Activation should be avoided until the site is fully stabilized (full landscaping, grass cover, final paving and street sweeping completed). Maintenance visits are scheduled seasonally; the spring visit aims to clean up after winter loads including salts and sands. The fall visit helps the system by removing excessive leaf litter.

A first inspection to determine if maintenance is necessary should be performed at least twice annually after storm events of greater than (1) one inch total depth (subject to regional climate). Please refer to the maintenance checklist for specific conditions that indicate if maintenance is necessary.

It has been found that in regions which receive between 30-50 inches of annual rainfall, (2) two visits are generally required. Regions with less rainfall often only require (1) one visit per annum. Varying land uses can affect maintenance frequency.



Some sites may be subjected to extreme sediment or trash loads, requiring more frequent maintenance visits. This is the reason for detailed notes of maintenance actions per unit, helping the VAR/Maintenance contractor and Owner predict future maintenance frequencies, reflecting individual site conditions.

Owners must promptly notify the VAR/Maintenance contractor of any damage to the plant(s), which constitute(s) an integral part of the biofiltration technology. Owners should also advise other landscape or maintenance contractors to leave all maintenance of the FocalPoint® HPMBs to the VAR/Maintenance contractor (i.e. no pruning or fertilizing).

EXCLUSION OF SERVICES

It is the responsibility of the owner to provide adequate irrigation when necessary to the plant(s) in the FocalPoint® HPMBs.

Clean up due to major contamination such as oils, chemicals, toxic spills, etc. will result in additional costs and are not covered under the VAR/Maintenance contractor maintenance contract. Should a major contamination event occur, the Owner must block off the outlet pipe of the FocalPoint® (where the cleaned runoff drains to, such as drop-inlet) and block off the point where water enters of the FocalPoint® HPMBs. The VAR/Maintenance contractor should be informed immediately.

MAINTENANCE VISIT SUMMARY

Each maintenance visit consists of the following simple tasks (detailed instructions below).

1. Inspection of FocalPoint® HPMBs and surrounding area
2. Removal of debris, trash and mulch
3. Mulch replacement
4. Plant health evaluation (including measurements) and pruning or replacement as necessary
5. Clean area around FocalPoint® HPMBs
6. Complete paperwork, including date stamped photos of the tasks listed above.

MAINTENANCE TOOLS, SAFETY EQUIPMENT AND SUPPLIES

Ideal tools include: camera, bucket, shovel, broom, pruners, hoe/rake, and tape measure. Appropriate Personal Protective Equipment (PPE) should be used in accordance with local or company procedures. This may include impervious gloves where the type of trash is unknown, high visibility clothing and barricades when working in close proximity to traffic and also safety hats and shoes.



MAINTENANCE VISIT PROCEDURE

Inspection of FocalPoint® HPMBs and surrounding area

Record individual unit before maintenance with photograph (numbered). Record on Maintenance Report (see example in this document) the following:

<input type="checkbox"/> Standing Water	yes no	<input type="checkbox"/> Damage to HPMBs System to Overflow conveyance	yes no
<input type="checkbox"/> Is Bypass Inlet Clear?	yes no		yes no

Removal of Silt / Sediment / Clay

Dig out silt (if any) and mulch and remove trash & foreign items.

<input type="checkbox"/> Silt / Clay Found?	yes no	<input type="checkbox"/> Leaves?	yes no
<input type="checkbox"/> Cups / Bags Found?	yes no	<input type="checkbox"/> Volume of material removed _____	(volume or weight)

Removal of debris, trash and mulch

After removal of mulch and debris, measure distance from the top of the FocalPoint® HPMBs engineered media soil to the flow line elevation of the adjacent overflow conveyance. If this distance is greater than that specified on the plans (typ. 6" - 12"), add media (not top soil or other) to recharge to the distance specified.

Distance to media surface to flow line of overflow conveyance (inches) _____

of Buckets of Media Added _____

Mulch Replacement

Most maintenance visits require only replacement mulch (if utilized) which must be, aged, double shredded hardwood mulch with fines removed. For smaller projects, one cubic foot of mulch will cover four square feet of biofiltration bed, and for larger projects, one cubic yard of mulch will cover 108 square feet of biofiltration bed. Some visits may require additional FocalPoint® HPMBs engineered soil media available from the VAR/Contractor.

- Add double shredded, aged hardwood mulch which has been screened to remove fines, evenly across the entire biofiltration media bed to a depth of 3".
- Clean accumulated sediment from energy dissipation system at the inlet to the FocalPoint® HPMBs to allow for entry of trash during a storm event.

Plant health evaluation and pruning or replacement as necessary

Examine the plant's health and replace if dead or dying.
Prune as necessary to encourage growth in the correct directions

<input type="checkbox"/> Height above Grate (feet) _____	<input type="checkbox"/> Health	alive dead
<input type="checkbox"/> Width at Widest point (feet) _____	<input type="checkbox"/> Damage to Plant	yes no

Clean area around FocalPoint® HPMBs

- Clean area around unit and remove all refuse to be disposed of appropriately.

Complete paperwork

- Deliver Maintenance Report and photographs as appropriate.
- Some jurisdictions may require submission of maintenance reports in accordance with approvals.
- It is the responsibility of the Owner to comply with local regulations.



FocalPoint Warranty

Seller warrants goods sold hereunder against defects in materials and workmanship only, for a period of (1) year from date the Seller activates the system into service. Seller makes no other warranties, express or implied.

Seller's liability hereunder shall be conditioned upon the Buyer's installation, maintenance, and service of the goods in strict compliance with the written instructions and specifications provided by the Seller. Any deviation from Seller's instructions and specifications or any abuse or neglect shall void warranties.

In the event of any claim upon Seller's warranty, the burden shall be upon the Buyer to prove strict compliance with all instructions and specifications provided by the Seller.

Seller's liability hereunder shall be limited only to the cost or replacement of the goods. Buyer agrees that Seller shall not be liable for any consequential losses arising from the purchase, installation, and/or use of the goods.



Maintenance Checklist

Element	Problem	What To Check	Should Exist	Action
Inlet	Excessive sediment or trash accumulation	Accumulation of sediment or trash impair free flow of water into FocalPoint	Inlet free of obstructions allowing free flow into FocalPoint System	Sediments or trash should be removed
Mulch Cover	Trash and floatable debris accumulation	Excessive trash or debris accumulation.	Minimal trash or other debris on mulch cover	Trash and debris should be removed and mulch cover raked level. Ensure that bark nugget
Mulch Cover	Ponding of water on mulch cover	Ponding in unit could be indicative of clogging due to excessive fine sediment accumulation or spill of petroleum oils	Stormwater should drain freely and evenly over mulch cover.	Contact VAR for advice.
Plants	Plants not growing, or in poor condition	Soil/mulch too wet, evidence of spill. Pest infestation. Vandalism to plants.	Plants should be healthy and pest free.	Contact VAR for advice.
Plants	Plant growth excessive	Plants should be appropriate to the species and location of FocalPoint		Trim/prune plants in accordance with typical landscaping and



R-TANK OPERATION, INSPECTION & MAINTENANCE

Operation

Your ACF R-Tank System has been designed to function in conjunction with the engineered drainage system on your site, the existing municipal infrastructure, and/or the existing soils and geography of the receiving watershed. Unless your site included certain unique and rare features, the operation of your R-Tank System will be driven by naturally occurring systems and will function autonomously. However, upholding a proper schedule of Inspection & Maintenance is critical to ensuring continued functionality and optimum performance of the system.

Inspection

Both the R-Tank and all stormwater pre-treatment features incorporated into your site must be inspected regularly. Inspection frequency for your system must be determined based on the contributing drainage area, but should never exceed one year between inspections (six months during the first year of operation).

Inspections may be required more frequently for pre-treatment systems. You should refer to the manufacturer requirements for the proper inspection schedule.

With the right equipment your inspection and measurements can be accomplished from the surface without physically entering any confined spaces. If your inspection does require confined space entry, you **MUST** follow all local/regional requirements as well as OSHA standards.

R-Tank Systems may incorporate Inspection Ports, Maintenance Ports, and/or adjoining manholes. Each of these features are easily accessed by removing the lid at the surface. With the cover removed, a visual inspection can be performed to identify sediment deposits within the structure. Using a flashlight, ALL access points should be examined to complete a thorough inspection.

Inspection Ports

Usually located centrally in the R-Tank System, these perforated columns are designed to give the user a base-line sediment depth across the system floor.

Maintenance Ports

Usually located near the inlet and outlet connections, you'll likely find deeper deposits of heavier sediments when compared to the Inspection Ports.

Manholes

Most systems will include at least two manholes - one at the inlet and another at the outlet. There may be more than one location where stormwater enters the system, which would result in additional manholes to inspect.

Bear in mind that these manholes often include a sump below the invert of the pipe connecting to the R-Tank. These sumps are designed to capture sediment before it reaches the R-Tank, and they should be kept clean to ensure they function properly. However, existence of sediment in the sump does **NOT** necessarily mean sediment has accumulated in the R-Tank.

After inspecting the bottom of the structure, use a mirror on a pole (or some other device) to check for sediment or debris in the pipe connecting to the R-Tank.

R-TANK OPERATION INSPECTION & MAINTENANCE

If sediment or debris is observed in any of these structures, you should determine the depth of the material. This is typically accomplished with a stadia rod, but you should determine the best way to obtain the measurement.

All observations and measurements should be recorded on an Inspection Log kept on file. We've included a form you can use at the end of this guideline.

Maintenance

The R-Tank System should be back-flushed once sediment accumulation has reached 6" or 15% of the total system height. Use the chart below as a guideline to determine the point at which maintenance is required on your system.

R-Tank Unit	Height	Max Sediment Dept
Mini	9.5"	1.5"
Single	17"	3"
Double	34"	5"
Triple	50"	6"
Quad	67"	6"
Pent	84"	6"

Before any maintenance is performed on your system, be sure to plug the outlet pipe to prevent contamination of the adjacent systems.

To back-flush the R-Tank, water is pumped into the system through the Maintenance Ports as rapidly as possible. Water should be pumped into ALL Maintenance Ports. The turbulent action of the water moving through the R-Tank will suspend sediments which may then be pumped out.

If your system includes an Outlet Structure, this will be the ideal location to pump contaminated water out of the system. However, removal of back-flush water may be accomplished through the Maintenance Ports, as well.

For systems with large footprints that would require extensive volumes of water to properly flush the system, you should consider performing your maintenance within 24 hours of a rain event. Stormwater entering the system will aid in the suspension of sediments and reduce the volume of water required to properly flush the system.

Once removed, sediment-laden water may be captured for disposal or pumped through a Dirtbag™ (if permitted by the locality).



2831 Cardwell Road
Richmond, Virginia, 23234
800.448.3636
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acfenvironmental.com

Step-By-Step Inspection & Maintenance Routine

1) Inspection

- a. Inspection Port
 - i. Remove Cap
 - ii. Use flashlight to detect sediment deposits
 - iii. If present, measure sediment depth with stadia rod
 - iv. Record results on Maintenance Log
 - v. Replace Cap
- b. Maintenance Port/s
 - i. Remove Cap
 - ii. Use flashlight to detect sediment deposits
 - iii. If present, measure sediment depth with stadia rod
 - iv. Record results on Maintenance Log
 - v. Replace Cap
 - vi. Repeat for ALL Maintenance Ports
- c. Adjacent Manholes
 - i. Remove Cover
 - ii. Use flashlight to detect sediment deposits
 - iii. If present, measure sediment depth with stadia rod, accounting for depth of sump (if present)
 - iv. Inspect pipes connecting to R-Tank
 - v. Record results on Maintenance Log
 - vi. Replace Cover
 - vii. Repeat for ALL Manholes that connect to the R-Tank

2) Maintenance

- a. Plug system outlet to prevent discharge of back-flush water
- b. Determine best location to pump out back-flush water
- c. Remove Cap from Maintenance Port
- d. Pump water as rapidly as possible (without over-topping port) into system until at least 1" of water covers system bottom
- e. Replace Cap
- f. Repeat at ALL Maintenance Ports
- g. Pump out back-flush water to complete back-flushing
- h. Vacuum all adjacent structures and any other structures or stormwater pre-treatment systems that require attention
- i. Sediment-laden water may be captured for disposal or pumped through a Dirtbag™.
- j. Replace any remaining Caps or Covers
- k. Record the back-flushing event in your Maintenance Log with any relevant specifics



R-Tank Maintenance Log

Company Responsible
for Maintenance:

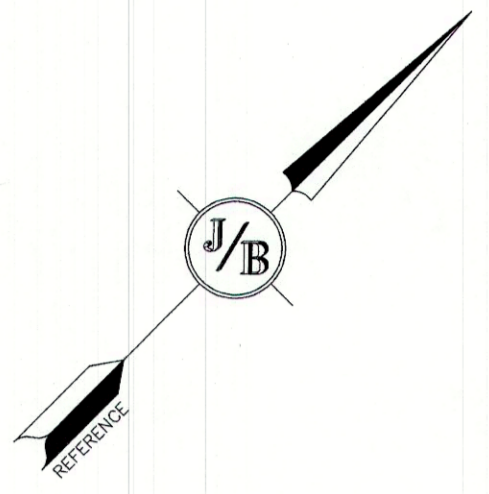
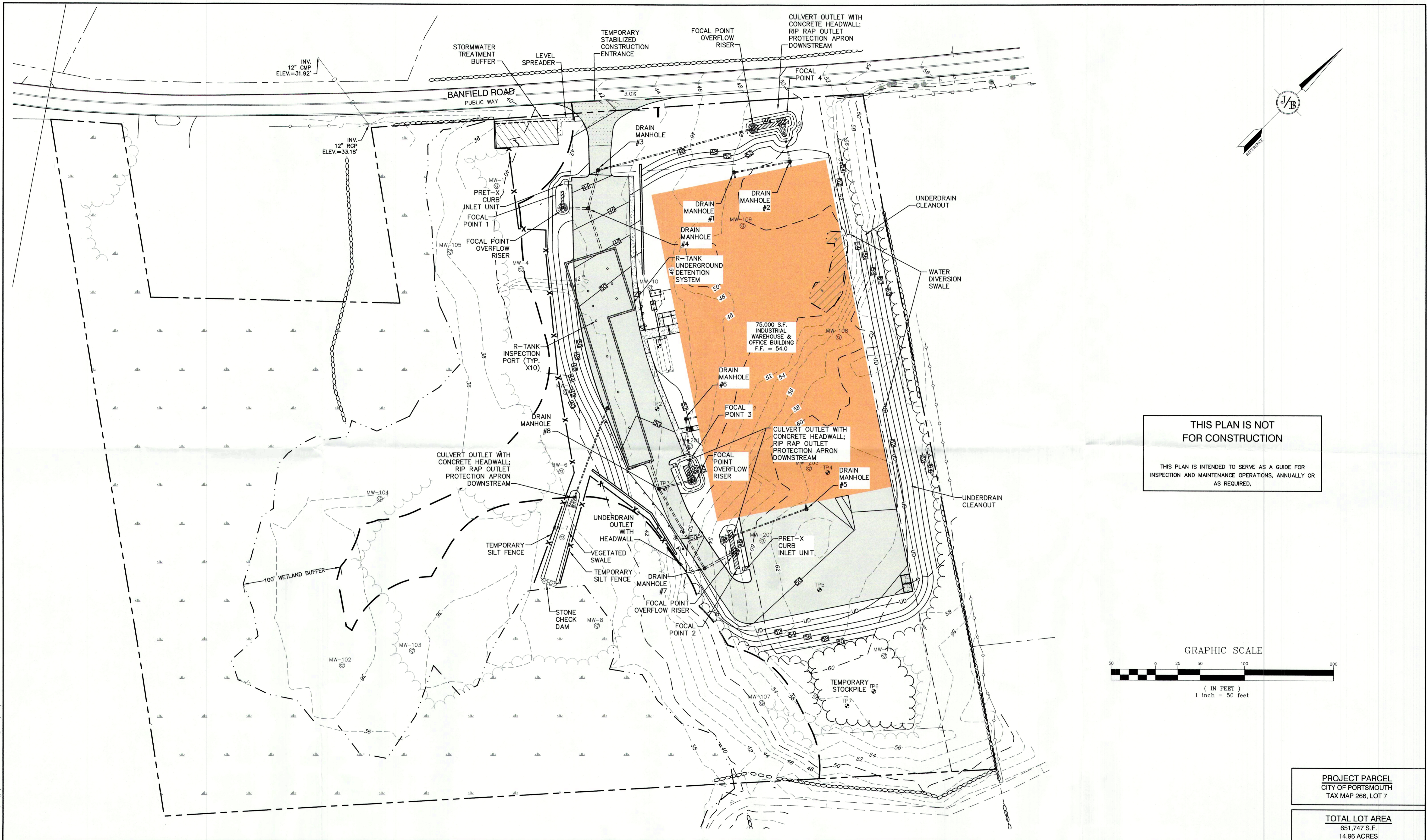
Contact:

Phone Number:

System Owner:

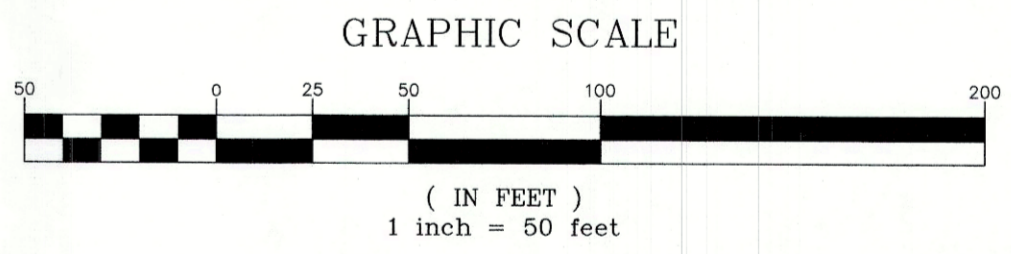
Date	Location	Depth to Bottom	Depth to Sediment	Sediment Depth	Observations/Notes	Initials

For more information about our products, contact Inside Sales at 800.448.3636 or email at info@acfenv.com



**THIS PLAN IS NOT
FOR CONSTRUCTION**

THIS PLAN IS INTENDED TO SERVE AS A GUIDE FOR
INSPECTION AND MAINTENANCE OPERATIONS, ANNUALLY OR
AS REQUIRED.



PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 266, LOT 7

TOTAL LOT AREA
651,747 S.F.
14.96 ACRES

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Design: JAC	Draft: DJM	Date: 04/21/20
Checked: JAC	Scale: AS-NOTED	Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM JONES & BEACH ENGINEERS, INC. (JBE). ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO JBE.

REV.	DATE	REVISION	BY
0	5/3/21	REVISED PER NEW LAYOUT	DJM
0	1/27/21	ISSUED FOR REVIEW	DJM

Designed and Produced in NH

J/B Jones & Beach Engineers, Inc.

Civil Engineering Services

85 Portsmouth Ave. PO Box 219 Stratham, NH 03885

603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: **BMP LOCATION PLAN**

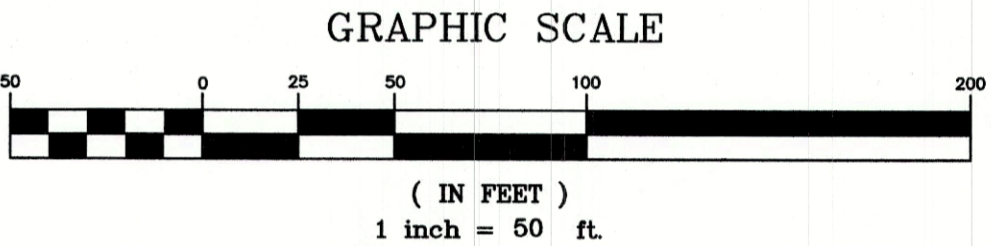
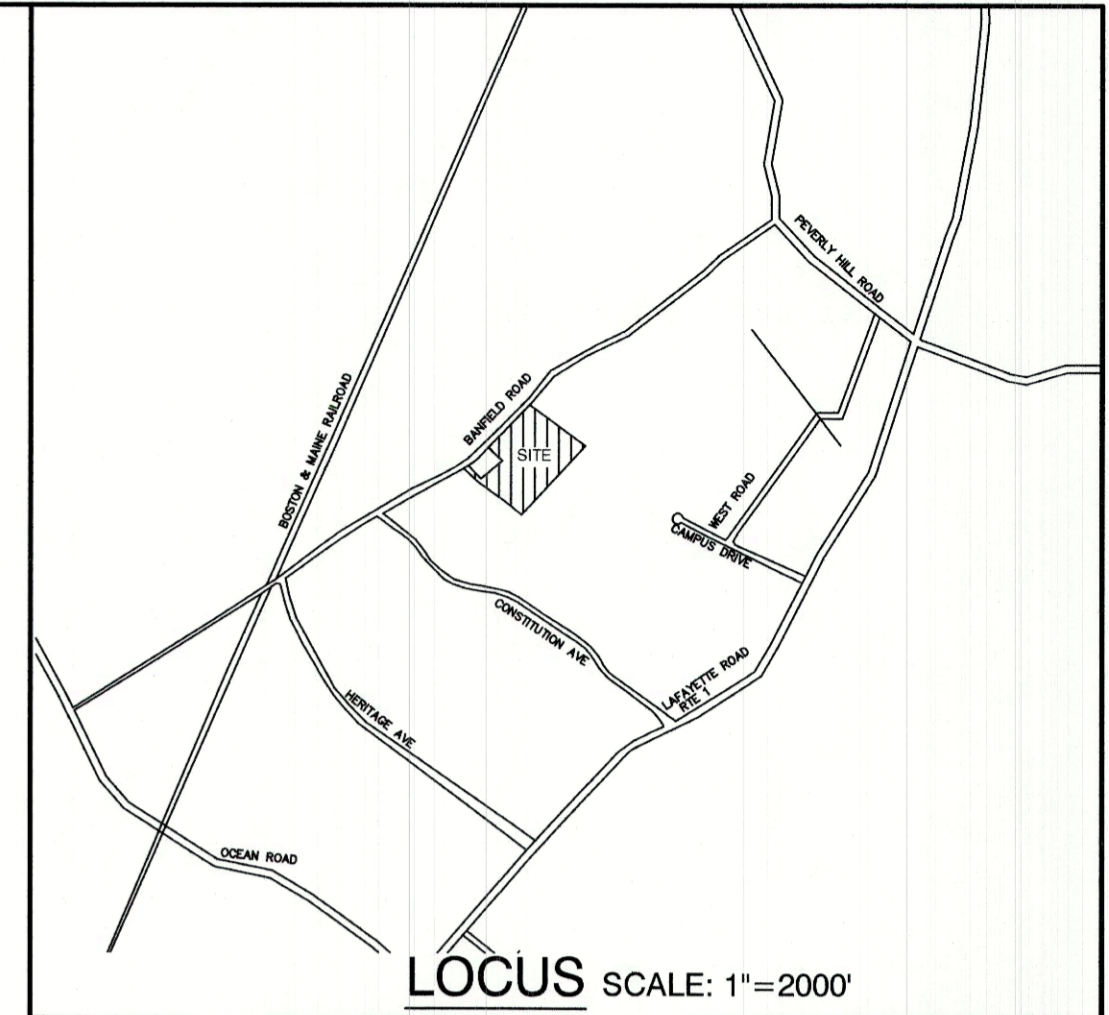
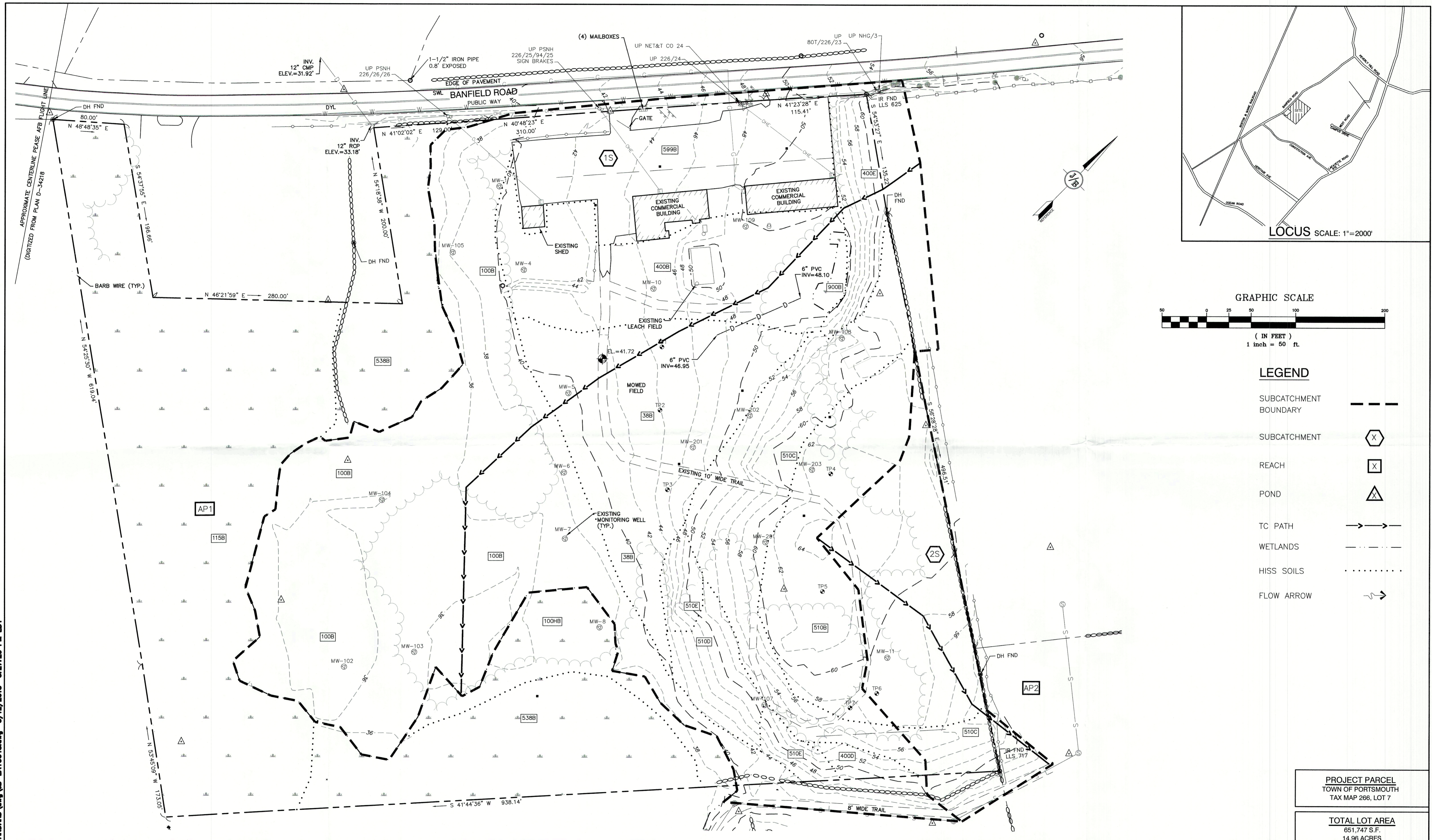
Project: **INDUSTRIAL WAREHOUSE
375 BANFIELD ROAD, PORTSMOUTH, NH 03801**

Owner of Record: **BANFIELD REALTY LLC
304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801**

DRAWING No.

BMP

SHEET 1 OF 1
JBE PROJECT NO. 19190.2



LEGEND

- SUBCATCHMENT BOUNDARY
- SUBCATCHMENT
- REACH
- POND
- TC PATH
- WETLANDS
- HISS SOILS
- FLOW ARROW

PROJECT PARCEL
TOWN OF PORTSMOUTH
TAX MAP 286, LOT 7

TOTAL LOT AREA
651,747 S.F.
14.96 ACRES

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Design: JAC	Draft: DJM	Date: 04/21/20
Checked: JAC	Scale: AS-NOTED	Project No.: 19190.2
Drawing Name: 19190-PLAN.dwg		
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REV.	DATE	REVISION	BY
2	5/17/21	REVISED PER CITY COMMENTS	DJM
2	5/3/21	REVISED PER CITY COMMENTS	DJM
1	2/17/21	REVISED PER CITY COMMENTS	DJM
0	12/30/20	ISSUED FOR REVIEW	DJM

Designed and Produced in NH

J/B Jones & Beach Engineers, Inc.
Civil Engineering Services

85 Portsmouth Ave. PO Box 219 Stratham, NH 03885

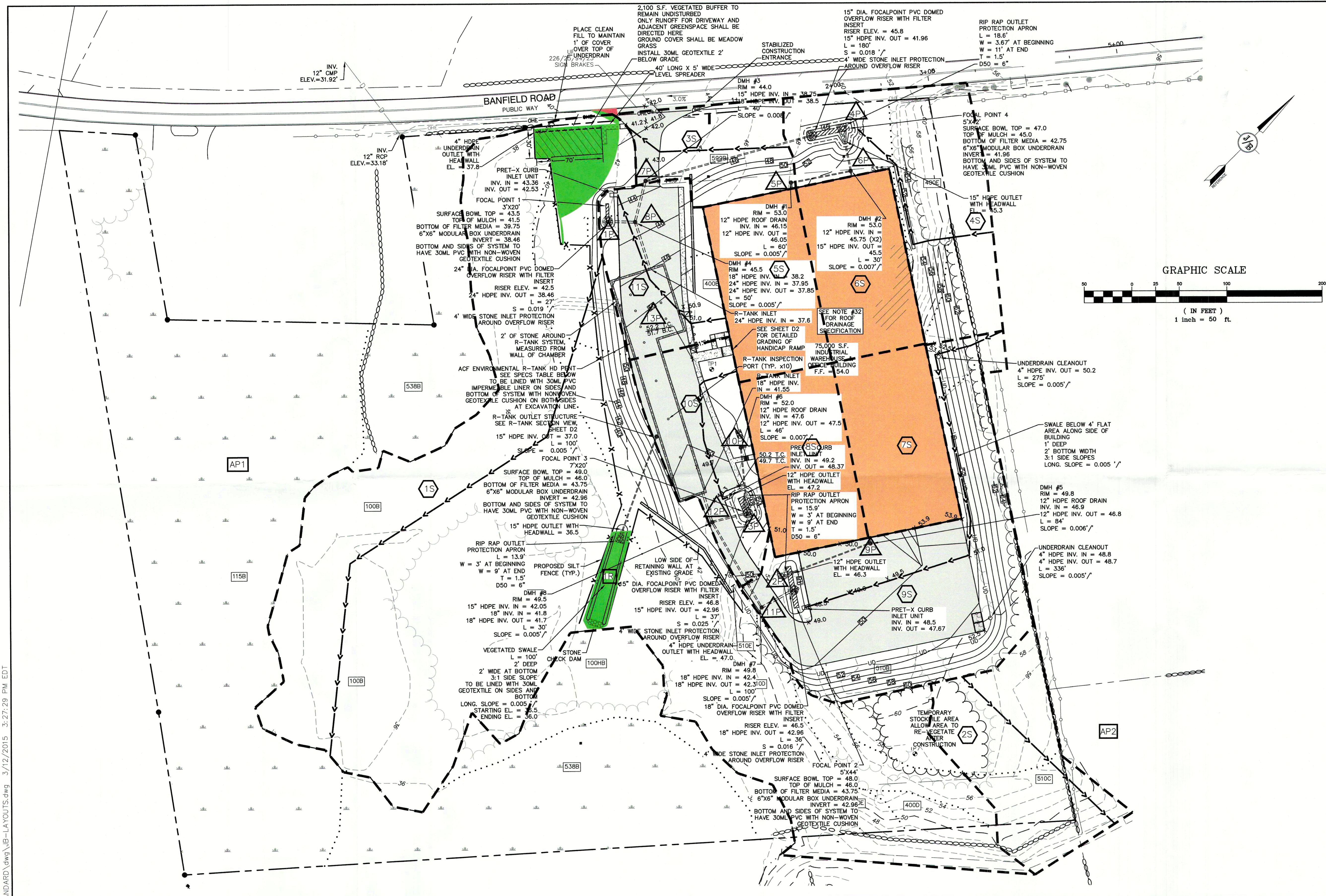
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	EXISTING WATERSHED PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.

W1

SHEET 1 OF 2
JBE PROJECT NO. 19190.2



LEGEND

SUBCATCHMENT BOUNDARY	---
SUBCATCHMENT	(X)
REACH	(X)
POND	(X)
TC PATH	→
WETLANDS	---
HISS SOILS
FLOW ARROW	→

PROJECT PARCEL
TOWN OF PORTSMOUTH
TAX MAP 266, LOT 7

TOTAL LOT AREA
651,747 S.F.
14.96 ACRES

Design: JAC Draft: DJM Date: 04/21/20
 Checked: JAC Scale: AS-NOTED Project No.: 19190.2
 Drawing Name: 19190-PLAN.dwg

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REV.	DATE	REVISION	BY
3	5/17/21	REVISED PER CITY COMMENTS	DJM
2	5/3/21	REVISED PER CITY COMMENTS	DJM
1	2/17/21	REVISED PER CITY COMMENTS	DJM
0	12/30/20	ISSUED FOR REVIEW	DJM

Designed and Produced in NH

J/B Jones & Beach Engineers, Inc.
Civil Engineering Services

85 Portsmouth Ave. PO Box 219 Stratham, NH 03885 603-772-4746 FAX: 603-772-0227 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: **PROPOSED WATERSHED PLAN**

Project: **INDUSTRIAL WAREHOUSE**
375 BANFIELD ROAD, PORTSMOUTH, NH 03801

Owner of Record: **BANFIELD REALTY LLC**
304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.
W2

SHEET 2 OF 2
JBE PROJECT NO. 19190.2

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