ENGINEERING A BETTER TOMORROW
ENGINEERING | SITE WORK | LAND SURVEYING

September 18, 2017

Mr. Craig Dixon, Chairman
New Bedford Conservation Commission
New Bedford City Hall
133 Williams Street
New Bedford, MA 02744

RE: Response Letter
Notice of Intent – NWD Trucking (SE49-0751)
100 Duchaine Blvd. – New Bedford, Massachusetts

Dear Mr. Nixon,

We have enclosed a response letter, revised HydroCAD calculations and a revised Site Plan in response to the comment letter prepared by Nitsch Engineering dated July 14, 2017 in regards to their review of the Site Plans and attached documents.

We trust the attachments noted above and included herewith will provide the necessary documentation to address their comments. If you should have any questions, please feel free to contact us.

Very Truly Yours,

FARLAND CORPORATION, INC.

Christian A. Farland

Christian A. Farland , P.E., LEED AP
Principal Engineer and President

Nitsch Engineering Comments

Comment #1:

The applicant has revised the design of the underground infiltration facility to provide 2 feet of separation between seasonal high groundwater and the bottom of the system.

Farland Corp. concurs with this statement

Comment #2:

A CDS water quality unit was added to the plans to treat the water generated by the existing parking lot. The Applicant has not provided sizing information for this unit. Also, the unit was placed outside the existing parking lot adjacent to the wetlands pocket on the south side of the site. The unit is well within 25 feet of the wetlands line. A detail of this unit has been added to the plans. Sizing information should be provided.

Sizing information for this unit has been attached with this response.

Comment #3:

The proposed discharge from the CDS unit, including rip-rap pads, should be shown on the plans. The current plan does not show a discharge pipe or rip-rap pad. The applicant has indicated that no rip-rap or discharge pipes are proposed.

The CDS unit was to be placed along the existing discharge pipe that connects CB-9 with the existing BVW to treat stormwater prior to discharge to the BVW. The location of the unit has been changed to allow for a more appropriate point of discharge with a rip-rap pad.

Comment #4:

Revised hydrologic calculations were submitted to include the reaches and ponds. With regards to the calculations we have the following comments:

a.) The existing conditions hydrologic calculations show the pipe flowing from CB-9 surcharged during the 10-year storm in the existing and proposed condition.

b.) The storm piping from existing CB-8 and CB-9 has been upgraded to 18-inch pipes on the plans. The calculations still show a surcharge from the pipe discharging from CB-9.

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a.) A substitute discharge pipe has been added to CB-9 to allow for the stormwater associated with a 10-yr storm to be handled more adequately.

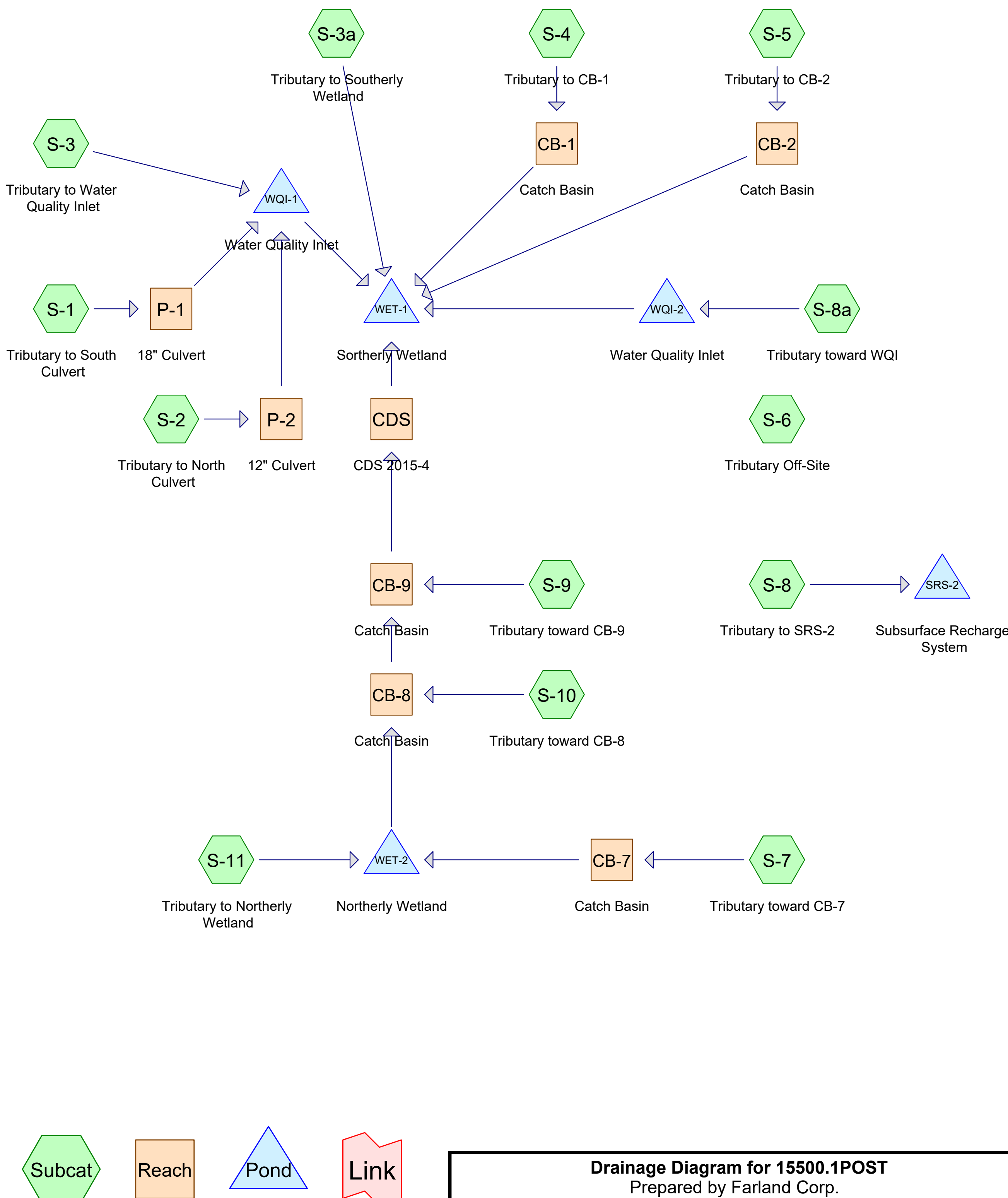
b.) See response above

Comment #5:

Pipe sizing calculations were prepared using the Rational Method. However, the results of these calculations show all pipes flowing freely, which is not consistent with the hydrologic calculations submitted.

HydroCAD calculations have been revised to reflect upgraded conditions for the proposed stormwater treatment, and to allow for free flowing pipes.

If you have any questions or require any further information please contact this office at (508) 717-3479.



Drainage Diagram for 15500.1POST
Prepared by Farland Corp.
HydroCAD® 8.50 s/n 002159 © 2007 HydroCAD Software Solutions LLC

Summary for Subcatchment S-1: Tributary to South Culvert

Runoff = 0.75 cfs @ 12.14 hrs, Volume= 0.064 af, Depth= 1.06"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
	25,975	70	Woods, Good, HSG C
	3,300	74	>75% Grass cover, Good, HSG C
*	2,300	98	Roadway
	31,575	72	Weighted Average
	29,275		Pervious Area
	2,300		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.1360	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
3.5	220	0.0430	1.04		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.1	270	Total			

Summary for Subcatchment S-10: Tributary toward CB-8

Runoff = 2.83 cfs @ 12.08 hrs, Volume= 0.226 af, Depth= 3.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	37,250	98	Paved Parking
	37,250		Impervious Area

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

Summary for Subcatchment S-11: Tributary to Northerly Wetland

Runoff = 1.92 cfs @ 12.09 hrs, Volume= 0.137 af, Depth= 1.63"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	1,175	98	Roadway
*	15,750	98	Wetland
	27,025	70	Woods, Good, HSG C
	43,950	81	Weighted Average
	27,025		Pervious Area
	16,925		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	14	0.0200	0.96		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.40"
4.7	36	0.1100	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
1.1	70	0.0420	1.02		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.0	120	Total			

Summary for Subcatchment S-2: Tributary to North Culvert

Runoff = 0.81 cfs @ 12.12 hrs, Volume= 0.065 af, Depth= 1.11"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
	24,350	70	Woods, Good, HSG C
	3,875	74	>75% Grass cover, Good, HSG C
*	2,425	98	Roadway
	30,650	73	Weighted Average
	28,225		Pervious Area
	2,425		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.1100	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
1.8	170	0.0940	1.53		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.9	220	Total			

Summary for Subcatchment S-3: Tributary to Water Quality Inlet

Runoff = 2.03 cfs @ 12.09 hrs, Volume= 0.145 af, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	7,500	98	Water Quality Inlet
*	14,700	98	Roadway
	11,350	70	Woods, Good, HSG C
	33,550	89	Weighted Average
	11,350		Pervious Area
	22,200		Impervious Area

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

Summary for Subcatchment S-3a: Tributary to Southerly Wetland

Runoff = 1.06 cfs @ 12.09 hrs, Volume= 0.076 af, Depth= 1.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	9,465	98	Wetland
*	1,527	98	Roadway
	9,498	70	Woods, Good, HSG C
	20,490	85	Weighted Average
	9,498		Pervious Area
	10,992		Impervious Area

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

Summary for Subcatchment S-4: Tributary to CB-1

Runoff = 0.11 cfs @ 12.08 hrs, Volume= 0.009 af, Depth= 3.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	1,450	98	Roadway
	1,450		Impervious Area

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

Summary for Subcatchment S-5: Tributary to CB-2

Runoff = 0.11 cfs @ 12.08 hrs, Volume= 0.008 af, Depth= 3.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
	1,400	98	Paved parking & roofs
	1,400		Impervious Area

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

Summary for Subcatchment S-6: Tributary Off-Site

Runoff = 1.12 cfs @ 12.08 hrs, Volume= 0.087 af, Depth= 3.06"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	14,625	98	Paved Parking
	335	74	>75% Grass cover, Good, HSG C
	14,960	97	Weighted Average
	335		Pervious Area
	14,625		Impervious Area

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

Summary for Subcatchment S-7: Tributary toward CB-7

Runoff = 1.07 cfs @ 12.08 hrs, Volume= 0.086 af, Depth= 3.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	14,125	98	Paved Parking
	14,125		Impervious Area

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

Summary for Subcatchment S-8: Tributary to SRS-2

Runoff = 2.12 cfs @ 12.08 hrs, Volume= 0.170 af, Depth= 3.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	28,000	98	Rooftop
	28,000		Impervious Area

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

Summary for Subcatchment S-8a: Tributary toward WQI

Runoff = 0.99 cfs @ 12.08 hrs, Volume= 0.076 af, Depth= 2.95"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	10,000	98	Paved Parking
	940	74	>75% Grass cover, Good, HSG C
*	2,535	98	Water Quality Inlet
	13,475	96	Weighted Average
	940		Pervious Area
	12,535		Impervious Area

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

Summary for Subcatchment S-9: Tributary toward CB-9

Runoff = 3.46 cfs @ 12.08 hrs, Volume= 0.276 af, Depth= 3.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	45,550	98	Paved Parking
	45,550		Impervious Area

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

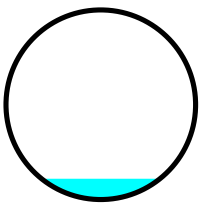
Summary for Reach CB-1: Catch Basin

Inflow Area = 0.033 ac,100.00% Impervious, Inflow Depth = 3.17" for 2-yr event
Inflow = 0.11 cfs @ 12.08 hrs, Volume= 0.009 af
Outflow = 0.11 cfs @ 12.09 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 1.52 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.51 fps, Avg. Travel Time= 0.5 min

Peak Storage= 1 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 4.41 cfs

15.0" Diameter Pipe, n= 0.013
Length= 15.0' Slope= 0.0047 '/'
Inlet Invert= 76.37', Outlet Invert= 76.30'



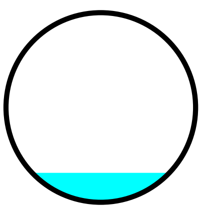
Summary for Reach CB-2: Catch Basin

Inflow Area = 0.032 ac,100.00% Impervious, Inflow Depth = 3.17" for 2-yr event
Inflow = 0.11 cfs @ 12.08 hrs, Volume= 0.008 af
Outflow = 0.11 cfs @ 12.09 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 1.38 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 0.45 fps, Avg. Travel Time= 1.8 min

Peak Storage= 4 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.05 cfs

12.0" Diameter Pipe, n= 0.025 Corrugated metal
Length= 48.0' Slope= 0.0123 '/'
Inlet Invert= 76.09', Outlet Invert= 75.50'



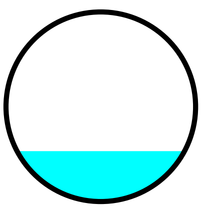
Summary for Reach CB-7: Catch Basin

Inflow Area = 0.324 ac,100.00% Impervious, Inflow Depth = 3.17" for 2-yr event
Inflow = 1.07 cfs @ 12.08 hrs, Volume= 0.086 af
Outflow = 1.07 cfs @ 12.09 hrs, Volume= 0.086 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 6.43 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.10 fps, Avg. Travel Time= 0.5 min

Peak Storage= 11 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.26'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 6.98 cfs

12.0" Diameter Pipe, n= 0.013
Length= 66.0' Slope= 0.0383 '/'
Inlet Invert= 78.71', Outlet Invert= 76.18'



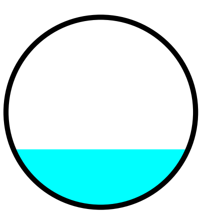
Summary for Reach CB-8: Catch Basin

Inflow Area = 2.188 ac, 71.65% Impervious, Inflow Depth = 2.25" for 2-yr event
Inflow = 3.11 cfs @ 12.09 hrs, Volume= 0.411 af
Outflow = 3.10 cfs @ 12.09 hrs, Volume= 0.411 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 3.84 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.46 fps, Avg. Travel Time= 0.9 min

Peak Storage= 61 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.61'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 15.45 cfs

24.0" Diameter Pipe, n= 0.013
Length= 75.0' Slope= 0.0047 '/'
Inlet Invert= 75.45', Outlet Invert= 75.10'



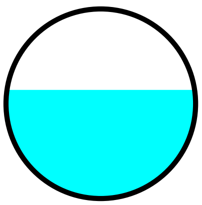
Summary for Reach CB-9: Catch Basin

Inflow Area = 3.234 ac, 80.82% Impervious, Inflow Depth = 2.55" for 2-yr event
Inflow = 6.55 cfs @ 12.09 hrs, Volume= 0.687 af
Outflow = 6.53 cfs @ 12.09 hrs, Volume= 0.687 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 3.51 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.28 fps, Avg. Travel Time= 1.4 min

Peak Storage= 206 cf @ 12.09 hrs, Average Depth at Peak Storage= 1.15'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 10.45 cfs

24.0" Diameter Pipe, n= 0.010
Length= 110.9' Slope= 0.0013 '/'
Inlet Invert= 75.29', Outlet Invert= 75.15'



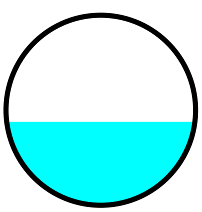
Summary for Reach CDS: CDS 2015-4

Inflow Area = 3.234 ac, 80.82% Impervious, Inflow Depth = 2.55" for 2-yr event
Inflow = 6.53 cfs @ 12.09 hrs, Volume= 0.687 af
Outflow = 6.53 cfs @ 12.10 hrs, Volume= 0.687 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 4.92 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.76 fps, Avg. Travel Time= 0.5 min

Peak Storage= 64 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.88'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 16.39 cfs

24.0" Diameter Pipe, n= 0.010 PVC, smooth interior
Length= 48.3' Slope= 0.0031 '/'
Inlet Invert= 75.15', Outlet Invert= 75.00'



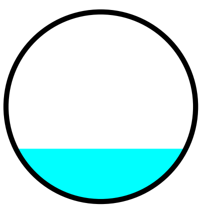
Summary for Reach P-1: 18" Culvert

Inflow Area = 0.725 ac, 7.28% Impervious, Inflow Depth = 1.06" for 2-yr event
Inflow = 0.75 cfs @ 12.14 hrs, Volume= 0.064 af
Outflow = 0.75 cfs @ 12.14 hrs, Volume= 0.064 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 1.89 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.76 fps, Avg. Travel Time= 0.8 min

Peak Storage= 15 cf @ 12.14 hrs, Average Depth at Peak Storage= 0.42'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 4.49 cfs

18.0" Diameter Pipe, n= 0.025 Corrugated metal
Length= 37.0' Slope= 0.0068 '/'
Inlet Invert= 84.57', Outlet Invert= 84.32'



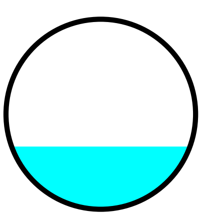
Summary for Reach P-2: 12" Culvert

Inflow Area = 0.704 ac, 7.91% Impervious, Inflow Depth = 1.11" for 2-yr event
Inflow = 0.81 cfs @ 12.12 hrs, Volume= 0.065 af
Outflow = 0.81 cfs @ 12.12 hrs, Volume= 0.065 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 3.62 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.44 fps, Avg. Travel Time= 0.5 min

Peak Storage= 9 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.33'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.49 cfs

12.0" Diameter Pipe, n= 0.025 Corrugated metal
Length= 42.0' Slope= 0.0355 '/'
Inlet Invert= 84.18', Outlet Invert= 82.69'



Summary for Pond SRS-2: Subsurface Recharge System

Inflow Area = 0.643 ac,100.00% Impervious, Inflow Depth = 3.17" for 2-yr event
Inflow = 2.12 cfs @ 12.08 hrs, Volume= 0.170 af
Outflow = 1.58 cfs @ 12.15 hrs, Volume= 0.170 af, Atten= 25%, Lag= 4.2 min
Discarded = 0.02 cfs @ 6.40 hrs, Volume= 0.041 af
Primary = 1.57 cfs @ 12.15 hrs, Volume= 0.129 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 80.92' @ 12.15 hrs Surf.Area= 3,162 sf Storage= 956 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 49.1 min (804.2 - 755.1)

Volume	Invert	Avail.Storage	Storage Description
#1	80.30'	1,887 cf	**17.00'W x 186.00'L x 2.00'H Prismatoid** 6,324 cf Overall - 1,606 cf Embedded = 4,718 cf x 40.0% Voids
#2	80.80'	1,606 cf	**32.1"W x 12.0"H x 7.50'L Cultec C-100** x 115 Inside #1
		3,493 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	80.30'	**0.270 in/hr Exfiltration over Surface area**
#2	Primary	80.50'	**6.0" x 6.0' long Culvert X 5.00** CMP, square edge headwall, Ke= 0.500 Outlet Invert= 80.44' S= 0.0100 '/' Cc= 0.900 n= 0.013

Discarded OutFlow Max=0.02 cfs @ 6.40 hrs HW=80.32' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=1.56 cfs @ 12.15 hrs HW=80.92' (Free Discharge)
└─**2=Culvert** (Barrel Controls 1.56 cfs @ 2.37 fps)

Summary for Pond WET-1: Sortherly Wetland

Inflow Area = 6.278 ac, 61.12% Impervious, Inflow Depth = 1.67" for 2-yr event
Inflow = 7.80 cfs @ 12.09 hrs, Volume= 0.876 af
Outflow = 3.87 cfs @ 12.30 hrs, Volume= 0.825 af, Atten= 50%, Lag= 12.4 min
Discarded = 0.05 cfs @ 12.30 hrs, Volume= 0.072 af
Primary = 3.82 cfs @ 12.30 hrs, Volume= 0.752 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 75.76' @ 12.30 hrs Surf.Area= 7,683 sf Storage= 9,567 cf

Plug-Flow detention time= 111.7 min calculated for 0.824 af (94% of inflow)
Center-of-Mass det. time= 80.3 min (877.6 - 797.3)

Volume	Invert	Avail.Storage	Storage Description
#1	74.00'	37,115 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
74.00	3,200	0	0
76.00	8,300	11,500	11,500
78.00	13,300	21,600	33,100
78.50	2,760	4,015	37,115

Device	Routing	Invert	Outlet Devices
#1	Discarded	74.00'	**0.270 in/hr Exfiltration over Surface area**
#2	Primary	74.57'	**24.0" x 60.0' long Culvert** CMP, projecting, no headwall, Ke= 0.900 Outlet Invert= 74.53' S= 0.0007 '/' Cc= 0.900 n= 0.013

Discarded OutFlow Max=0.05 cfs @ 12.30 hrs HW=75.76' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=3.82 cfs @ 12.30 hrs HW=75.76' (Free Discharge)
└─**2=Culvert** (Barrel Controls 3.82 cfs @ 2.82 fps)

Summary for Pond WET-2: Northerly Wetland

Inflow Area = 1.333 ac, 53.47% Impervious, Inflow Depth = 2.00" for 2-yr event
Inflow = 2.99 cfs @ 12.09 hrs, Volume= 0.222 af
Outflow = 0.93 cfs @ 12.49 hrs, Volume= 0.222 af, Atten= 69%, Lag= 24.4 min
Discarded = 0.06 cfs @ 12.43 hrs, Volume= 0.037 af
Primary = 0.87 cfs @ 12.50 hrs, Volume= 0.185 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 76.31' @ 12.43 hrs Surf.Area= 9,080 sf Storage= 2,713 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 28.3 min (833.7 - 805.4)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	21,600 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
76.00	8,300	0	0
78.00	13,300	21,600	21,600

Device	Routing	Invert	Outlet Devices
#1	Primary	75.78'	**24.0" x 130.0' long Culvert** CMP, square edge headwall, Ke= 0.500 Outlet Invert= 75.43' S= 0.0027 '/' Cc= 0.900 n= 0.015 Corrugated PE, smooth interior
#2	Discarded	76.00'	**0.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.06 cfs @ 12.43 hrs HW=76.31' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.87 cfs @ 12.50 hrs HW=76.31' TW=75.87' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.87 cfs @ 1.98 fps)

Summary for Pond WQI-1: Water Quality Inlet

Inflow Area = 2.199 ac, 28.11% Impervious, Inflow Depth = 1.50" for 2-yr event
Inflow = 3.47 cfs @ 12.10 hrs, Volume= 0.274 af
Outflow = 0.35 cfs @ 13.22 hrs, Volume= 0.158 af, Atten= 90%, Lag= 67.0 min
Discarded = 0.04 cfs @ 13.22 hrs, Volume= 0.072 af
Primary = 0.31 cfs @ 13.22 hrs, Volume= 0.086 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 79.05' @ 13.22 hrs Surf.Area= 6,786 sf Storage= 6,252 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 206.3 min (1,041.9 - 835.6)

Volume	Invert	Avail.Storage	Storage Description
#1	78.00'	9,440 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
78.00	5,080	0	0
79.00	6,700	5,890	5,890
79.50	7,500	3,550	9,440

Device	Routing	Invert	Outlet Devices
#1	Discarded	78.00'	**0.270 in/hr Exfiltration over Surface area**
#2	Primary	79.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.04 cfs @ 13.22 hrs HW=79.05' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.31 cfs @ 13.22 hrs HW=79.05' TW=75.40' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 0.31 cfs @ 0.58 fps)

Summary for Pond WQI-2: Water Quality Inlet

Inflow Area = 0.309 ac, 93.02% Impervious, Inflow Depth = 2.95" for 2-yr event
Inflow = 0.99 cfs @ 12.08 hrs, Volume= 0.076 af
Outflow = 0.07 cfs @ 13.23 hrs, Volume= 0.040 af, Atten= 93%, Lag= 68.6 min
Discarded = 0.02 cfs @ 13.23 hrs, Volume= 0.030 af
Primary = 0.06 cfs @ 13.23 hrs, Volume= 0.010 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 77.91' @ 13.23 hrs Surf.Area= 2,478 sf Storage= 1,990 cf

Plug-Flow detention time= 371.9 min calculated for 0.040 af (52% of inflow)
Center-of-Mass det. time= 257.2 min (1,029.6 - 772.3)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	3,564 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.00	1,892	0	0
78.00	2,535	2,214	2,214
78.50	2,866	1,350	3,564

Device	Routing	Invert	Outlet Devices
#1	Discarded	77.00'	**0.270 in/hr Exfiltration over Surface area**
#2	Primary	77.90'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.02 cfs @ 13.23 hrs HW=77.91' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.06 cfs @ 13.23 hrs HW=77.91' TW=75.40' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.06 cfs @ 0.26 fps)

Summary for Subcatchment S-1: Tributary to South Culvert

Runoff = 1.54 cfs @ 12.13 hrs, Volume= 0.124 af, Depth= 2.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
	25,975	70	Woods, Good, HSG C
	3,300	74	>75% Grass cover, Good, HSG C
*	2,300	98	Roadway
	31,575	72	Weighted Average
	29,275		Pervious Area
	2,300		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.1360	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
3.5	220	0.0430	1.04		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.1	270	Total			

Summary for Subcatchment S-10: Tributary toward CB-8

Runoff = 4.01 cfs @ 12.08 hrs, Volume= 0.325 af, Depth= 4.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
*	37,250	98	Paved Parking
	37,250		Impervious Area

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

Summary for Subcatchment S-11: Tributary to Northerly Wetland

Runoff = 3.32 cfs @ 12.09 hrs, Volume= 0.236 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
*	1,175	98	Roadway
*	15,750	98	Wetland
	27,025	70	Woods, Good, HSG C
	43,950	81	Weighted Average
	27,025		Pervious Area
	16,925		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	14	0.0200	0.96		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.40"
4.7	36	0.1100	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
1.1	70	0.0420	1.02		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.0	120	Total			

Summary for Subcatchment S-2: Tributary to North Culvert

Runoff = 1.62 cfs @ 12.12 hrs, Volume= 0.125 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
	24,350	70	Woods, Good, HSG C
	3,875	74	>75% Grass cover, Good, HSG C
*	2,425	98	Roadway
	30,650	73	Weighted Average
	28,225		Pervious Area
	2,425		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.1100	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
1.8	170	0.0940	1.53		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.9	220	Total			

Summary for Subcatchment S-3: Tributary to Water Quality Inlet

Runoff = 3.15 cfs @ 12.09 hrs, Volume= 0.230 af, Depth= 3.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
*	7,500	98	Water Quality Inlet
*	14,700	98	Roadway
	11,350	70	Woods, Good, HSG C
	33,550	89	Weighted Average
	11,350		Pervious Area
	22,200		Impervious Area

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

Summary for Subcatchment S-3a: Tributary to Southerly Wetland

Runoff = 1.74 cfs @ 12.09 hrs, Volume= 0.125 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
*	9,465	98	Wetland
*	1,527	98	Roadway
	9,498	70	Woods, Good, HSG C
	20,490	85	Weighted Average
	9,498		Pervious Area
	10,992		Impervious Area

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

Summary for Subcatchment S-4: Tributary to CB-1

Runoff = 0.16 cfs @ 12.08 hrs, Volume= 0.013 af, Depth= 4.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
*	1,450	98	Roadway
	1,450		Impervious Area

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

Summary for Subcatchment S-5: Tributary to CB-2

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 4.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
	1,400	98	Paved parking & roofs
	1,400		Impervious Area

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

Summary for Subcatchment S-6: Tributary Off-Site

Runoff = 1.60 cfs @ 12.08 hrs, Volume= 0.127 af, Depth= 4.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
*	14,625	98	Paved Parking
	335	74	>75% Grass cover, Good, HSG C
	14,960	97	Weighted Average
	335		Pervious Area
	14,625		Impervious Area

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

Summary for Subcatchment S-7: Tributary toward CB-7

Runoff = 1.52 cfs @ 12.08 hrs, Volume= 0.123 af, Depth= 4.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
*	14,125	98	Paved Parking
	14,125		Impervious Area

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

Summary for Subcatchment S-8: Tributary to SRS-2

Runoff = 3.02 cfs @ 12.08 hrs, Volume= 0.244 af, Depth= 4.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
*	28,000	98	Rooftop
	28,000		Impervious Area

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

Summary for Subcatchment S-8a: Tributary toward WQI

Runoff = 1.43 cfs @ 12.08 hrs, Volume= 0.112 af, Depth= 4.33"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
*	10,000	98	Paved Parking
	940	74	>75% Grass cover, Good, HSG C
*	2,535	98	Water Quality Inlet
	13,475	96	Weighted Average
	940		Pervious Area
	12,535		Impervious Area

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

Summary for Subcatchment S-9: Tributary toward CB-9

Runoff = 4.91 cfs @ 12.08 hrs, Volume= 0.398 af, Depth= 4.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
*	45,550	98	Paved Parking
	45,550		Impervious Area

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

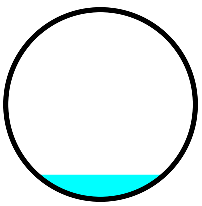
Summary for Reach CB-1: Catch Basin

Inflow Area = 0.033 ac,100.00% Impervious, Inflow Depth = 4.56" for 10-yr event
Inflow = 0.16 cfs @ 12.08 hrs, Volume= 0.013 af
Outflow = 0.16 cfs @ 12.08 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 1.69 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.56 fps, Avg. Travel Time= 0.4 min

Peak Storage= 1 cf @ 12.08 hrs, Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 4.41 cfs

15.0" Diameter Pipe, n= 0.013
Length= 15.0' Slope= 0.0047 '/'
Inlet Invert= 76.37', Outlet Invert= 76.30'



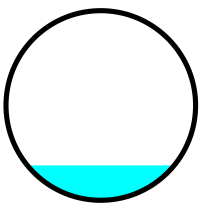
Summary for Reach CB-2: Catch Basin

Inflow Area = 0.032 ac,100.00% Impervious, Inflow Depth = 4.56" for 10-yr event
Inflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af
Outflow = 0.15 cfs @ 12.09 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 1.53 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.50 fps, Avg. Travel Time= 1.6 min

Peak Storage= 5 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.18'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.05 cfs

12.0" Diameter Pipe, n= 0.025 Corrugated metal
Length= 48.0' Slope= 0.0123 '/'
Inlet Invert= 76.09', Outlet Invert= 75.50'



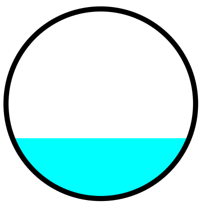
Summary for Reach CB-7: Catch Basin

Inflow Area =	0.324 ac,100.00% Impervious,	Inflow Depth =	4.56"	for 10-yr event	
Inflow =	1.52 cfs @	12.08 hrs, Volume=	0.123 af		
Outflow =	1.52 cfs @	12.09 hrs, Volume=	0.123 af,	Atten= 0%,	Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 7.10 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.34 fps, Avg. Travel Time= 0.5 min

Peak Storage= 14 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.32'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 6.98 cfs

12.0" Diameter Pipe, n= 0.013
Length= 66.0' Slope= 0.0383 '/'
Inlet Invert= 78.71', Outlet Invert= 76.18'



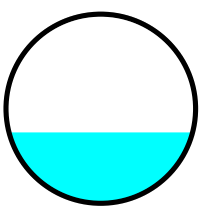
Summary for Reach CB-8: Catch Basin

Inflow Area =	2.188 ac, 71.65% Impervious,	Inflow Depth =	3.49"	for 10-yr event	
Inflow =	4.59 cfs @	12.09 hrs, Volume=	0.636 af		
Outflow =	4.58 cfs @	12.10 hrs, Volume=	0.636 af,	Atten= 0%,	Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 4.29 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.65 fps, Avg. Travel Time= 0.8 min

Peak Storage= 80 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.75'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 15.45 cfs

24.0" Diameter Pipe, n= 0.013
Length= 75.0' Slope= 0.0047 '/'
Inlet Invert= 75.45', Outlet Invert= 75.10'



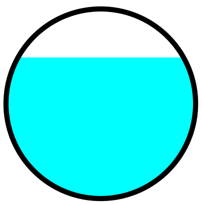
Summary for Reach CB-9: Catch Basin

Inflow Area = 3.234 ac, 80.82% Impervious, Inflow Depth = 3.83" for 10-yr event
Inflow = 9.46 cfs @ 12.09 hrs, Volume= 1.033 af
Outflow = 9.43 cfs @ 12.10 hrs, Volume= 1.033 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 3.76 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.44 fps, Avg. Travel Time= 1.3 min

Peak Storage= 278 cf @ 12.10 hrs, Average Depth at Peak Storage= 1.49'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 10.45 cfs

24.0" Diameter Pipe, n= 0.010
Length= 110.9' Slope= 0.0013 '/'
Inlet Invert= 75.29', Outlet Invert= 75.15'



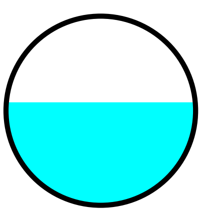
Summary for Reach CDS: CDS 2015-4

Inflow Area = 3.234 ac, 80.82% Impervious, Inflow Depth = 3.83" for 10-yr event
Inflow = 9.43 cfs @ 12.10 hrs, Volume= 1.033 af
Outflow = 9.43 cfs @ 12.10 hrs, Volume= 1.033 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 5.40 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.98 fps, Avg. Travel Time= 0.4 min

Peak Storage= 84 cf @ 12.10 hrs, Average Depth at Peak Storage= 1.09'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 16.39 cfs

24.0" Diameter Pipe, n= 0.010 PVC, smooth interior
Length= 48.3' Slope= 0.0031 '/'
Inlet Invert= 75.15', Outlet Invert= 75.00'



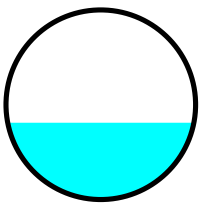
Summary for Reach P-1: 18" Culvert

Inflow Area = 0.725 ac, 7.28% Impervious, Inflow Depth = 2.05" for 10-yr event
Inflow = 1.54 cfs @ 12.13 hrs, Volume= 0.124 af
Outflow = 1.54 cfs @ 12.14 hrs, Volume= 0.124 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 2.30 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.88 fps, Avg. Travel Time= 0.7 min

Peak Storage= 25 cf @ 12.14 hrs, Average Depth at Peak Storage= 0.61'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 4.49 cfs

18.0" Diameter Pipe, n= 0.025 Corrugated metal
Length= 37.0' Slope= 0.0068 '/'
Inlet Invert= 84.57', Outlet Invert= 84.32'



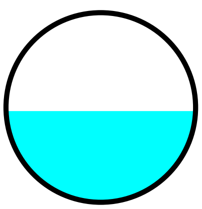
Summary for Reach P-2: 12" Culvert

Inflow Area = 0.704 ac, 7.91% Impervious, Inflow Depth = 2.12" for 10-yr event
Inflow = 1.62 cfs @ 12.12 hrs, Volume= 0.125 af
Outflow = 1.62 cfs @ 12.12 hrs, Volume= 0.125 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 4.36 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.66 fps, Avg. Travel Time= 0.4 min

Peak Storage= 16 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.48'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.49 cfs

12.0" Diameter Pipe, n= 0.025 Corrugated metal
Length= 42.0' Slope= 0.0355 '/'
Inlet Invert= 84.18', Outlet Invert= 82.69'



Summary for Pond SRS-2: Subsurface Recharge System

Inflow Area = 0.643 ac,100.00% Impervious, Inflow Depth = 4.56" for 10-yr event
Inflow = 3.02 cfs @ 12.08 hrs, Volume= 0.244 af
Outflow = 2.23 cfs @ 12.15 hrs, Volume= 0.244 af, Atten= 26%, Lag= 4.2 min
Discarded = 0.02 cfs @ 4.36 hrs, Volume= 0.043 af
Primary = 2.21 cfs @ 12.15 hrs, Volume= 0.202 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 81.04' @ 12.15 hrs Surf.Area= 3,162 sf Storage= 1,250 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 40.4 min (789.1 - 748.7)

Volume	Invert	Avail.Storage	Storage Description
#1	80.30'	1,887 cf	**17.00'W x 186.00'L x 2.00'H Prismatoid**
			6,324 cf Overall - 1,606 cf Embedded = 4,718 cf x 40.0% Voids
#2	80.80'	1,606 cf	**32.1"W x 12.0"H x 7.50'L Cultec C-100** x 115 Inside #1
		3,493 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	80.30'	**0.270 in/hr Exfiltration over Surface area**
#2	Primary	80.50'	**6.0" x 6.0' long Culvert X 5.00**
			CMP, square edge headwall, Ke= 0.500
			Outlet Invert= 80.44' S= 0.0100 '/' Cc= 0.900 n= 0.013

Discarded OutFlow Max=0.02 cfs @ 4.36 hrs HW=80.32' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=2.21 cfs @ 12.15 hrs HW=81.04' (Free Discharge)
└─**2=Culvert** (Barrel Controls 2.21 cfs @ 2.60 fps)

Summary for Pond WET-1: Sortherly Wetland

Inflow Area = 6.278 ac, 61.12% Impervious, Inflow Depth = 2.89" for 10-yr event
Inflow = 11.46 cfs @ 12.10 hrs, Volume= 1.510 af
Outflow = 7.61 cfs @ 12.44 hrs, Volume= 1.458 af, Atten= 34%, Lag= 20.7 min
Discarded = 0.06 cfs @ 12.44 hrs, Volume= 0.078 af
Primary = 7.55 cfs @ 12.44 hrs, Volume= 1.380 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 76.31' @ 12.44 hrs Surf.Area= 9,068 sf Storage= 14,169 cf

Plug-Flow detention time= 82.2 min calculated for 1.458 af (97% of inflow)
Center-of-Mass det. time= 62.0 min (856.4 - 794.4)

Volume	Invert	Avail.Storage	Storage Description
#1	74.00'	37,115 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
74.00	3,200	0	0
76.00	8,300	11,500	11,500
78.00	13,300	21,600	33,100
78.50	2,760	4,015	37,115

Device	Routing	Invert	Outlet Devices
#1	Discarded	74.00'	**0.270 in/hr Exfiltration over Surface area**
#2	Primary	74.57'	**24.0" x 60.0' long Culvert** CMP, projecting, no headwall, Ke= 0.900 Outlet Invert= 74.53' S= 0.0007 '/' Cc= 0.900 n= 0.013

Discarded OutFlow Max=0.06 cfs @ 12.44 hrs HW=76.31' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=7.55 cfs @ 12.44 hrs HW=76.31' (Free Discharge)
2=Culvert (Barrel Controls 7.55 cfs @ 3.48 fps)

Summary for Pond WET-2: Northerly Wetland

Inflow Area = 1.333 ac, 53.47% Impervious, Inflow Depth = 3.24" for 10-yr event
Inflow = 4.84 cfs @ 12.09 hrs, Volume= 0.360 af
Outflow = 1.70 cfs @ 12.43 hrs, Volume= 0.360 af, Atten= 65%, Lag= 20.8 min
Discarded = 0.06 cfs @ 12.37 hrs, Volume= 0.049 af
Primary = 1.64 cfs @ 12.43 hrs, Volume= 0.310 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 76.51' @ 12.37 hrs Surf.Area= 9,566 sf Storage= 4,524 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 31.9 min (828.1 - 796.2)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	21,600 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
76.00	8,300	0	0
78.00	13,300	21,600	21,600

Device	Routing	Invert	Outlet Devices
#1	Primary	75.78'	**24.0" x 130.0' long Culvert** CMP, square edge headwall, Ke= 0.500 Outlet Invert= 75.43' S= 0.0027 '/' Cc= 0.900 n= 0.015 Corrugated PE, smooth interior
#2	Discarded	76.00'	**0.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.06 cfs @ 12.37 hrs HW=76.51' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=1.64 cfs @ 12.43 hrs HW=76.50' TW=76.02' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.64 cfs @ 2.38 fps)

Summary for Pond WQI-1: Water Quality Inlet

Inflow Area = 2.199 ac, 28.11% Impervious, Inflow Depth = 2.61" for 10-yr event
Inflow = 6.13 cfs @ 12.10 hrs, Volume= 0.478 af
Outflow = 2.96 cfs @ 12.32 hrs, Volume= 0.361 af, Atten= 52%, Lag= 12.9 min
Discarded = 0.04 cfs @ 12.32 hrs, Volume= 0.077 af
Primary = 2.91 cfs @ 12.32 hrs, Volume= 0.284 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 79.24' @ 12.32 hrs Surf.Area= 7,081 sf Storage= 7,532 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 101.4 min (923.3 - 821.9)

Volume	Invert	Avail.Storage	Storage Description
#1	78.00'	9,440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
78.00	5,080	0	0
79.00	6,700	5,890	5,890
79.50	7,500	3,550	9,440

Device	Routing	Invert	Outlet Devices
#1	Discarded	78.00'	**0.270 in/hr Exfiltration over Surface area**
#2	Primary	79.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.04 cfs @ 12.32 hrs HW=79.24' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=2.91 cfs @ 12.32 hrs HW=79.24' TW=76.26' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 2.91 cfs @ 1.22 fps)

Summary for Pond WQI-2: Water Quality Inlet

Inflow Area = 0.309 ac, 93.02% Impervious, Inflow Depth = 4.33" for 10-yr event
Inflow = 1.43 cfs @ 12.08 hrs, Volume= 0.112 af
Outflow = 0.78 cfs @ 12.20 hrs, Volume= 0.074 af, Atten= 45%, Lag= 7.2 min
Discarded = 0.02 cfs @ 12.20 hrs, Volume= 0.031 af
Primary = 0.76 cfs @ 12.20 hrs, Volume= 0.043 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 77.96' @ 12.20 hrs Surf.Area= 2,510 sf Storage= 2,117 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 147.4 min (910.7 - 763.4)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	3,564 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.00	1,892	0	0
78.00	2,535	2,214	2,214
78.50	2,866	1,350	3,564

Device	Routing	Invert	Outlet Devices
#1	Discarded	77.00'	**0.270 in/hr Exfiltration over Surface area**
#2	Primary	77.90'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.02 cfs @ 12.20 hrs HW=77.96' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.76 cfs @ 12.20 hrs HW=77.96' TW=76.11' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 0.76 cfs @ 0.62 fps)

Project: 100 Duchaine Boulevard
Location: New Bedford, MA
Prepared For: Farland Corp.

CONTECH ENGINEERED SOLUTIONS

Purpose: To calculate the water quality flow rate (WQF) over a given site area. In this situation the WQF is derived from the first 1/2" of runoff from the contributing impervious surface.

Reference: Massachusetts Dept. of Environmental Protection Wetlands Program / United States Department of Agriculture Natural Resources Conservation Service TR-55 Manual

Procedure: Determine unit peak discharge using Figure 1 or 2. Figure 2 is in tabular form so is preferred. Using the tc, read the unit peak discharge (qu) from Figure 1 or Table in Figure 2. qu is expressed in the following units: cfs/mi^2/watershed inches (csm/in).

Compute Q Rate using the following equation:

Q = (qu) (A) (WQV)

where:

Q = flow rate associated with first 1/2" of runoff
qu = the unit peak discharge, in csm/in.
A = impervious surface drainage area (in square miles)
WQV = water quality volume in watershed inches (1/2" in this case)

Structure Name	Impv. (acres)	A (miles^2)	t_c (min)	t_c (hr)	WQV (in)	qu (csm/in.)	Q (cfs)
CDS	1.90	0.0029697	6.0	0.100	0.50	752.00	1.12

CONTECH ENGINEERED SOLUTIONS

CDS TECHNOLOGIES

CDS ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION BASED ON THE RATIONAL RAINFALL METHOD

100 DUCHAINE BOULEVARD
NEW BEDFORD, MA

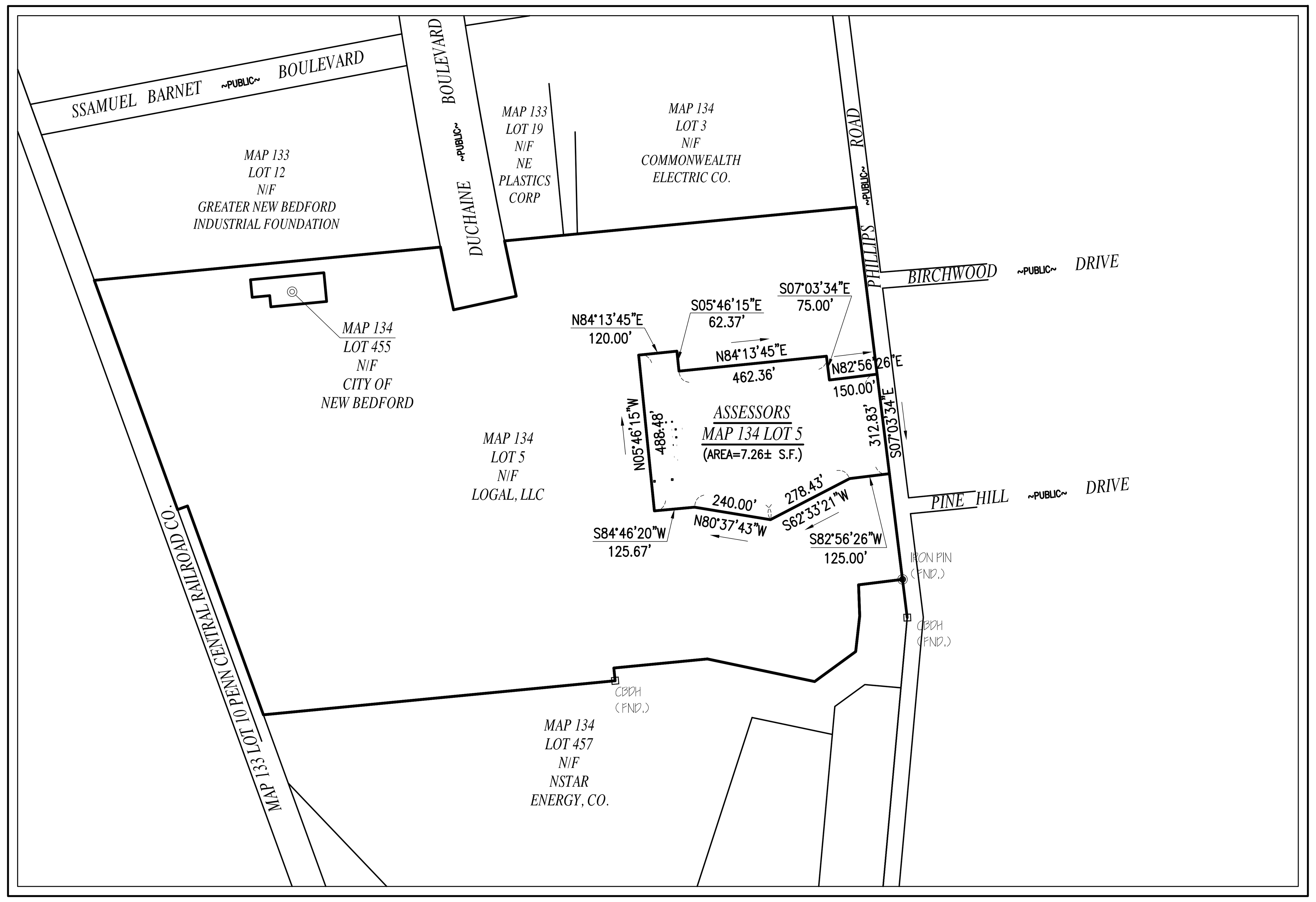
Area	**1.90 ac**	Unit Site Designation	**CDS**
Weighted C	**0.9**	Rainfall Station #	**69**
t_c	**6 min**		
CDS Model	**2015-4**	CDS Treatment Capacity	**1.4 cfs**

Rainfall Intensity[1] (in/hr)	Percent Rainfall Volume[1]	Cumulative Rainfall Volume	Total Flowrate (cfs)	Treated Flowrate (cfs)	Incremental Removal (%)
0.02	10.2%	10.2%	0.03	0.03	10.2
0.04	9.6%	19.8%	0.07	0.07	9.6
0.06	9.4%	29.3%	0.10	0.10	9.2
0.08	7.7%	37.0%	0.14	0.14	7.5
0.10	8.6%	45.6%	0.17	0.17	8.2
0.12	6.3%	51.9%	0.21	0.21	5.9
0.14	4.7%	56.5%	0.24	0.24	4.3
0.16	4.6%	61.2%	0.27	0.27	4.3
0.18	3.5%	64.7%	0.31	0.31	3.2
0.20	4.3%	69.1%	0.34	0.34	3.9
0.25	8.0%	77.1%	0.43	0.43	6.9
0.30	5.6%	82.7%	0.51	0.51	4.7
0.35	4.4%	87.0%	0.60	0.60	3.5
0.40	2.5%	89.5%	0.68	0.68	2.0
0.45	2.5%	92.1%	0.77	0.77	1.9
0.50	1.4%	93.5%	0.86	0.86	1.0
0.75	5.0%	98.5%	1.28	1.28	2.9
1.00	1.0%	99.5%	1.71	1.40	0.4
1.50	0.0%	99.5%	2.57	1.40	0.0
2.00	0.0%	99.5%	3.42	1.40	0.0
3.00	0.5%	100.0%	5.13	1.40	0.1
					89.8
				Removal Efficiency Adjustment[2] =	6.5%
				Predicted % Annual Rainfall Treated =	93.0%
				Predicted Net Annual Load Removal Efficiency =	**83.4%**

1 - Based on 10 years of hourly precipitation data from NCDC Station 770, Boston WSFO AP, Suffolk County, MA
2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

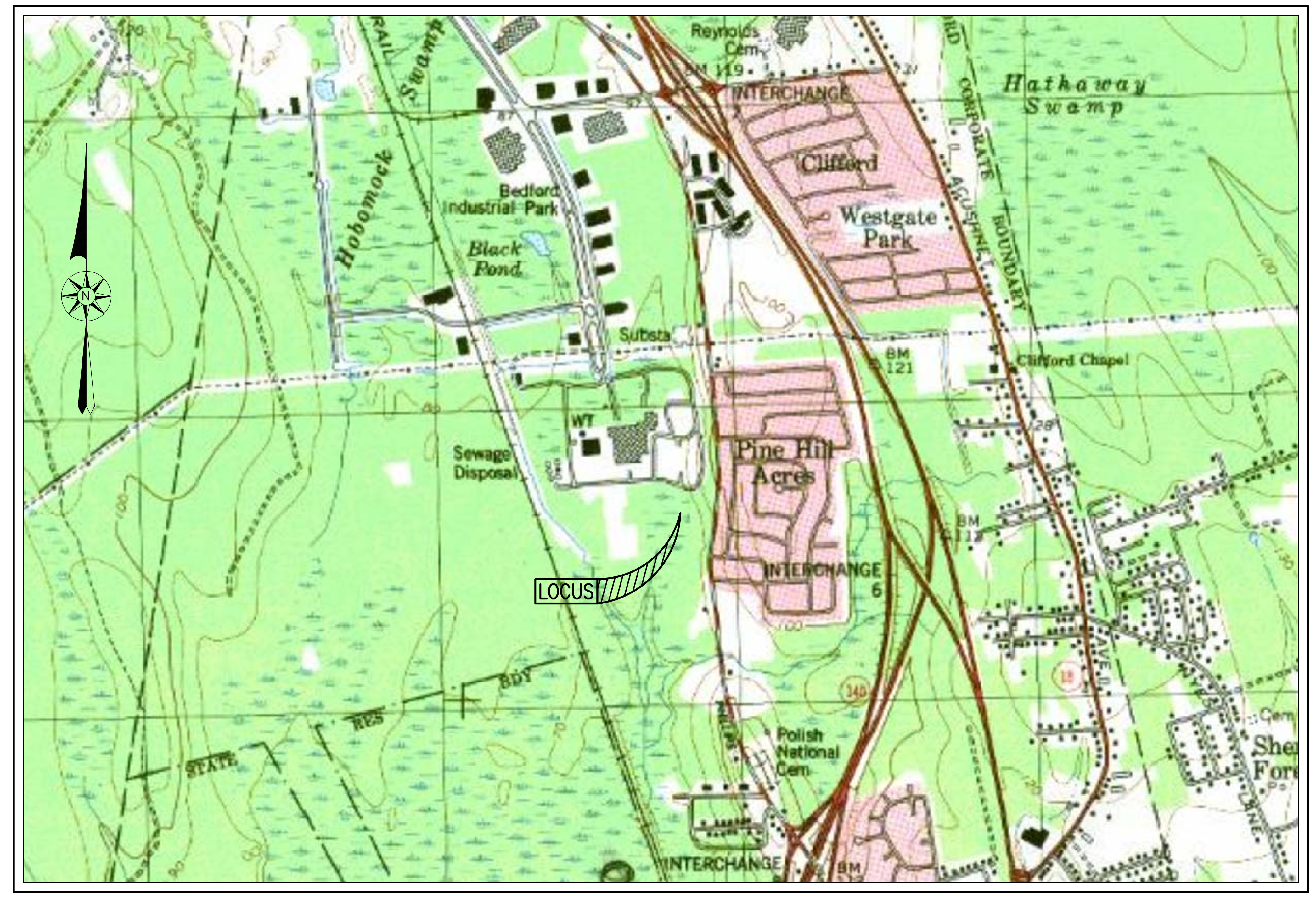
SITE PLAN

DUCHAINE BOULEVARD
ASSESSORS MAP #134 LOT #5
NEW BEDFORD, MASSACHUSETTS



— OVERALL SITE MAP —

SCALE: 1"=300'



—AREA MAP—

SCALE: 1"=1,000'±

– ZONING DATA –

DISTRICT: INDUSTRIAL C

DESCRIPTION	REQUIRED	EXISTING	PROVIDED
LOT AREA	0 S.F.	7.26± AC	7.26± AC
LOT FRONTAGE	0 FT	312.83 FT	312.83 FT
FRONT SETBACK	25 FT	N/A FT	602± FT
SIDE SETBACK	25 FT	N/A FT	28.9± FT
REAR SETBACK	25 FT	N/A FT	30.0± FT
BUILDING HEIGHT (MAXIMUM)	100 FT	N/A FT	<100 FT
BUILDING COVERAGE (MAXIMUM)	50 %	N/A %	11.3± %
LOT COVERAGE (MAXIMUM)	80 %	41.5± %	58.4± %

– PARKING & LOADING REQUIREMENTS –

PRINCIPAL USE: FOOD PACKAGING & DISTRIBUTION

(FOR PARKING REGULATION PURPOSES: BUSINESS ENGAGED IN WAREHOUSING & DISTRIBUTION)

REQUIREMENT	REQURIED	PROVIDED
1 SPACE PER 1,500 S.F. OF G.F.A. UP TO 15,000 S.F. THEREAFTER, ON ADDITIONAL SPACE FOR EACH 5,000 S.F. OR PORTION THEREOF IN EXCESS OF 15,000 S.F., PLUS ONE SPACE FOR EACH VEHICLE UTILIZED IN THE BUSINESS.	33 SPACES	67 SPACES
WHEN 26–50 TOTAL PARKING SPACES ARE PROVIDED, 2 MUST BE ACCESSIBLE SPACES. ONE IN EVERY EIGHT ACCESSIBLE SPACES, BUT NOT LESS THAN ONE, SHALL BE VAN ACCESSIBLE	2 ACCESSIBLE, 1 VAN ACCESSIBLE	2 ACCESSIBLE, 1 VAN ACCESSIBLE
TWO (2) LOADING SPACES FOR EACH BUILDING CONTAINING 10,000 S.F. OF GROSS FLOOR AREA. THEREAFTER, ONE (1) ADDITIONAL LOADING SPACE SHALL BE REQUIRED FOR EACH FIFTEEN (15) FEET OF DOCK, PLATFORM, OR OPENING IN THE BUILDING WHERE THE LOADING OR UNLOADING OF COMMODITIES IS INTENDED TO OCCUR.	16 LOADING DOCKS	16 LOADING DOCKS

– INDEX –

RECORD OWNER:
ASSESSORS MAP 134 LOT 5
SMRE 100, LLC
C/O RUBERTO, ISREAL & WEINER, P.C.
255 STATE STREET, 7TH FLOOR
BOSTON, MA 02109
LC CERT# 24201
LC PLAN# 36318D

REVISIONS

1	4/6/17	CONSERVATION COMMISSION
2	5/4/17	ADDITIONAL FIELD WORK
3	7/10/17	CONSERVATION COMMISSION
4	9/18/17	CONSERVATION COMMISSION

COMMONWEALTH OF MASSACHUSETTS
CHRISTIAN ALBERT FARLAND
No. 47544
CIVIL
REGISTERED PROFESSIONAL ENGINEER

www.FarlandCorp.com
401 COUNTY STREET
NEW BEDFORD, MA 02740
P.508.717.3479
OFFICES IN:
- TAUNTON
- MARLBOROUGH
- WARWICK, RI

DRAWN BY: MJW
DESIGNED BY: CAF
CHECKED BY: CAF

SITE PLAN
100 DUCHAINE BOULEVARD
ASSESSORS MAP 134 LOT 5
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR:
PARALLEL PRODUCTS OF NEW ENGLAND
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

FEBRUARY 14, 2017
SCALE: AS NOTED
JOB NO. 15-500.1
LATEST REVISION: SEPTEMBER 18, 2017

COVER

SHEET 1 OF 8

GENERAL CONSTRUCTION NOTES

1. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AND STRUCTURES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF VARIOUS UTILITY COMPANIES AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANY, ANY GOVERNING PERMITTING AUTHORITY, AND "DIG SAFE" AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION WORK TO REQUEST EXACT FIELD LOCATION OF UTILITIES INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLAN.
2. PROPERTY LINE INFORMATION TAKEN FROM:
   - PLAN ENTITLED: "PLAN OF LAND IN NEW BEDFORD, MASS., SURVEYED FOR POLAROID CORPORATION", DATED JUNE 10, 1969 BY TIBBETS ENGINEERING CORP. (PLAN BOOK 81, PAGE 78), AND
   - LAND COURT PLAN 36318C, ENTITLED "SUBDIVISION PLAN OF LAND IN NEW BEDFORD", BY CULLINAN ENGINEERING CO., INC., SURVEYORS, DATED JANUARY 6, 2009 (LAND COURT CERTIFICATE OF TITLE NO. 22029).
3. TOPOGRAPHIC SURVEY PERFORMED BY THOMPSON FARLAND, INC. IN SEPTEMBER 2015.
4. WETLAND DELINEATION BY FARLAND CORP. IN JANUARY 2016.
5. VERTICAL ELEVATIONS REFER TO THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 AND HORIZONTAL LOCATIONS REFER TO THE NORTH AMERICAN DATUM (NAD) OF 1983.
6. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE STATE AND LOCAL STANDARDS AND REGULATIONS.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL CONTROL POINTS AND BENCH MARKS NECESSARY FOR THE WORK.
8. WHERE PROPOSED PAVEMENT AND WALKS ARE TO MEET EXISTING, THE CONTRACTOR SHALL SAWCUT A NEAT LINE AND MATCH GRADE. SEAL ALL JOINTS WITH HOT BITUMINOUS ASPHALT JOINT SEALER.
9. CURBING TO BE AS INDICATED ON THE PLANS.
10. ALL EXISTING TREES, SHRUBS AND GROUND COVER WHERE NATURAL GRADE IS TO BE RETAINED SHALL BE KEPT IN THEIR EXISTING STATE UNLESS REMOVAL IS REQUIRED FOR CONSTRUCTION PURPOSES.
11. ALL AREAS DISTURBED BY CONSTRUCTION AND NOT TO BE PAVED OR OTHERWISE TREATED AS NOTED ON PLAN SHALL BE TREATED WITH 4" OF LOAM, SEEDED AND HAY MULCHED FOR EROSION CONTROL.
12. SITE IMPROVEMENTS SHALL CONFORM TO A.D.A. SPECIFICATIONS.
13. LIGHTING SHALL BE DIRECTED ON SITE AND AWAY FROM TRAFFIC INTERFERENCE.
14. TEST PITS AND/OR BORINGS WERE TAKEN FOR THE PURPOSE OF DESIGN AND SHOW CONDITIONS AT BORING POINTS ONLY. THEY DO NOT NECESSARILY SHOW THE NATURE OF ALL MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION.
15. THE CONTRACTOR SHALL PROTECT AND/OR CAP OFF ALL EXISTING ON–SITE UTILITY SERVICES ACCORDING TO THE LOCAL AUTHORITY'S SPECIFICATIONS. SERVICES SHALL BE CAPPED OFF WHERE SAME ENTER THE PERIMETER OF THE PROPERTY LINE.
16. CONTRACTOR SHALL THOROUGHLY FAMILIARIZE THEMSELVES WITH ALL CONSTRUCTION DOCUMENTS, SPECIFICATIONS AND SITE CONDITIONS PRIOR TO BIDDING AND PRIOR TO CONSTRUCTION.
17. ANY DISCREPANCIES BETWEEN DRAWINGS, SPECIFICATIONS AND SITE CONDITIONS SHALL BE REPORTED IMMEDIATELY TO THE OWNER'S REPRESENTATIVE FOR CLARIFICATION AND RESOLUTION PRIOR TO BIDDING OR CONSTRUCTION.
18. THESE PLANS ARE PERMITTING PLANS AND SHALL NOT TO BE USED FOR CONSTRUCTION. A FINAL SET OF STAMPED PLANS FOR CONSTRUCTION WILL BE ISSUED AFTER RECEIVING FINAL APPROVAL FROM THE LOCAL AND/OR STATE DEPARTMENTS.
19. ANY MINOR MODIFICATIONS (AS DETERMINED BY THE CITY ENGINEER) TO THE INFORMATION SHOWN ON THE APPROVED SITE PLANS SHALL BE SUBMITTED TO THE CITY ENGINEER AS A MINOR PLAN REVISION FOR APPROVAL PRIOR TO WORK BEING PERFORMED.
20. ANY WORK AND MATERIAL WITHIN THE CITY RIGHT–OF–WAY SHALL CONFORM TO THE CITY OF NEW BEDFORD REQUIREMENTS.
21. ALL HANDICAP PARKING, RAMPS, AND ACCESS SHALL CONFORM TO AAB & MAAB REQUIREMENTS.
22. ALL EROSION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO CONSTRUCTION. EROSION CONTROL SHALL CONFORM TO CITY OF NEW BEDFORD CONSERVATION COMMISSION REQUIREMENTS AS STATED IN THE ORDER OF CONDITIONS.
23. ALL PAVEMENT MARKINGS AND SIGNS SHALL CONFORM TO MUTCD REQUIREMENTS.
24. THE CONTRACTOR SHALL OBTAIN A STREET DISTURBANCE & OBSTRUCTION PERMIT PRIOR TO ANY CONSTRUCTION WITHIN THE RIGHT OF WAY.
25. ALL WATER AND SEWER MATERIAL AND CONSTRUCTION SHALL CONFORM TO THE CITY OF NEW BEDFORD REQUIREMENTS.
26. ALL WATER AND SEWER CONSTRUCTION SHALL BE INSPECTED BY THE CITY OF NEW BEDFORD BEFORE BEING BACKFILLED.
27. THE CITY SHALL BE NOTIFIED AT LEAST 24 HOURS PRIOR TO THE REQUIRED INSPECTIONS.

CONSTRUCTION SEQUENCING NOTES

1. CONSTRUCT TEMPORARY AND PERMANENT EROSION CONTROL FACILITIES. EROSION CONTROL FACILITIES SHALL BE INSTALLED PRIOR TO ANY EARTH MOVING.
2. TREE PROTECTION FENCE SHALL BE INSTALLED AND APPROVED BY THE OWNER REPRESENTATIVE PRIOR TO ANY EARTH MOVING.
3. ALL PERMANENT DITCHES AND SWALES ARE TO BE STABILIZED WITH VEGETATION OR RIP RAP PRIOR TO DIRECTING RUNOFF TO THEM.
4. CLEAR CUT, DEMOLISH AND DISPOSE OF EXISTING SITE ELEMENTS NOT TO REMAIN.
5. STORMWATER SHALL NOT BE DIRECTED TOWARDS THE INFILTRATION BASINS UNTIL THE ENTIRE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.
6. GRADE AND GRAVEL ALL PAVED AREAS. ALL PROPOSED PAVED AREAS SHALL BE STABILIZED IMMEDIATELY AFTER GRADING.
7. BEGIN ALL PERMANENT AND TEMPORARY SEEDING AND MULCHING. ALL CUT AND FILL SLOPES SHALL BE SEEDED AND MULCHED IMMEDIATELY AFTER THEIR CONSTRUCTION.
8. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, SILT FENCES AND MULCH AND SEED AS REQUIRED.
9. FINISH PAVING ALL HARD SURFACE AREAS.
10. INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES.
11. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
12. REMOVE TEMPORARY EROSION CONTROL MEASURES.
13. THE CONSTRUCTION SEQUENCE SHALL BE CONFINED TO THE LIMIT OF WORK AS SHOWN ON THE DRAWINGS.
14. UPON COMPLETION OF CONSTRUCTION THE OWNER SHALL AGREE TO MAINTAIN AND CLEAN ALL DRAINAGE STRUCTURES AS REQUIRED.

SITE PREPARATION NOTES

1. WITHIN THE LIMIT OF WORK LINE AS NOTED ON THE SITE PLANS, REMOVE AND DISCARD ALL CONCRETE PAVEMENT, BITUMINOUS CONCRETE PAVEMENT, BRICK PAVEMENT, TOP SOIL, MULCH, TRASH, DEAD TREES AND STUMPS, SHRUBBERY, CHAIN LINK FENCE POSTS, RAILS, FABRIC, GATES, FOOTINGS AND ALL APPURTENANCES, BOLLARDS, POSTS, CONCRETE FOOTINGS AND FOUNDATIONS, WALLS AND CURBS UNLESS OTHERWISE NOTED.
2. THE OWNER'S REPRESENTATIVE SHALL BE CONSULTED AND WILL REVIEW THE WORK ON SITE WITH THE CONTRACTOR BEFORE ANY WORK SHALL COMMENCE.
3. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS IN THE FIELD AND REPORT ANY DISCREPANCIES BETWEEN PLANS AND ACTUAL CONDITIONS TO THE OWNER'S REPRESENTATIVE PRIOR TO STARTING WORK.
4. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO EXISTING CONDITIONS TO REMAIN THAT ARE DUE TO CONTRACTOR OPERATIONS.
5. ALL ITEMS TO BE REMOVED THAT ARE NOT STOCKPILED FOR LATER REUSE ON THE PROJECT OR DELIVERED TO THE OWNER SHALL BE LEGALLY DISPOSED OF OFF SITE BY THE CONTRACTOR.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS EFFORTS OF THE DEMOLITION WITH ALL TRADES.
7. THE CONTRACTOR SHALL COORDINATE ALL ADJUSTMENT OR ABANDONMENT OF UTILITIES WITH THE RESPECTIVE UTILITY COMPANY.
8. THE CONTRACTOR SHALL MAINTAIN OR ADJUST TO NEW FINISH GRADES AS NECESSARY ALL UTILITY AND SITE STRUCTURES SUCH AS LIGHT POLES, SIGN POLES, MANHOLES, CATCH BASINS, HAND HOLES, WATER AND GAS GATES, HYDRANTS, ETC., FROM MAINTAINED UTILITY AND SITE SYSTEMS UNLESS OTHERWISE NOTED OR DIRECTED BY THE OWNER'S REPRESENTATIVE.

UTILITY AND GRADING NOTES

1. ALL ON–SITE STORM DRAINAGE PIPES SHALL BE HIGH DENSITY POLYETHYLENE PIPE (HDPE) OR RCP, UNLESS NOTED OTHERWISE.
2. HDPE PIPE SHALL CONFORM WITH AASHTO DESIGNATIONS M294 AND M252, SHALL BE MANUFACTURED WITH HIGH DENSITY POLYETHYLENE PLASTIC AND SHALL BE ADS N–12 PIPE AS MANUFACTURED BY ADVANCE DRAINAGE SYSTEM, INC. OR HANCOR HI Q PIPE AS MANUFACTURED BY HANCOR, INC. OR APPROVED EQUAL UNLESS OTHERWISE NOTED OR DETAILED.
3. BEFORE THE DEVELOPMENT SITE IS GRADED, THE AREA OF THE DRAINAGE BASINS SHOULD BE FENCED OFF TO PREVENT HEAVY EQUIPMENT FROM COMPACTING THE UNDERLYING SOIL.
4. WHERE PROPOSED GRADES MEET EXISTING GRADES, CONTRACTOR SHALL BLEND GRADES TO PROVIDE A SMOOTH TRANSITION BETWEEN EXISTING AND NEW WORK. PONDING AT TRANSITION AREAS WILL NOT BE ALLOWED.
5. CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM ALL BUILDING FOUNDATIONS AND STRUCTURES.
6. MAXIMUM SLOPE IN DISTURBED AREAS SHALL NOT EXCEED 3:1 , UNLESS OTHERWISE NOTED.
7. CONTRACTOR SHALL VERIFY EXISTING GRADES AND NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES.
8. CONTRACTOR SHALL ADJUST UTILITY ELEMENT MEANT TO BE FLUSH WITH GRADE THAT IS AFFECTED BY SITE WORK OR GRADE CHANGES, WHETHER SPECIFICALLY NOTED ON PLANS OR NOT.
9. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE OWNER'S REPRESENTATIVE FOR RESOLUTION OF THE CONFLICT.
10. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF ALL GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.
11. THE LOCATION, SIZE, DEPTH AND SPECIFICATIONS FOR CONSTRUCTION OF PRIVATE UTILITY SERVICES SHALL BE INSTALLED ACCORDING TO THE REQUIREMENTS PROVIDED BY AND APPROVED BY THE RESPECTIVE UTILITY COMPANY (GAS, TELEPHONE AND ELECTRICAL). FINAL DESIGN AND LOCATIONS AT THE BUILDING WILL BE PROVIDED BY THE ARCHITECT. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THE UTILITY CONNECTIONS WITH THE RESPECTIVE COMPANIES PRIOR TO ANY UTILITY CONSTRUCTION.

LAYOUT AND MATERIAL NOTES

1. CONTRACTOR SHALL THOROUGHLY FAMILIARIZE THEMSELVES WITH ALL CONSTRUCTION DOCUMENTS, SPECIFICATIONS AND SITE CONDITIONS PRIOR TO BIDDING AND PRIOR TO CONSTRUCTION.
2. ANY DISCREPANCIES BETWEEN DRAWINGS, SPECIFICATIONS AND SITE CONDITIONS SHALL BE REPORTED IMMEDIATELY TO THE OWNER'S REPRESENTATIVE FOR CLARIFICATION AND RESOLUTION PRIOR TO BIDDING OR CONSTRUCTION.
3. SEE ARCHITECTURAL DRAWINGS FOR EXACT BUILDING DIMENSIONS AND ALL DETAILS CONTIGUOUS TO THE BUILDING INCLUDING SIDEWALKS, RAMPS, UTILITY ENTRANCE LOCATIONS, WALL PACKS, CONCRETE DOOR PADS, ROOF DRAINS, ETC.
4. ACCESSIBLE CURB RAMPS SHALL BE PER THE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD AND THE AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES, WHICHER IS MORE STRINGENT.
5. THE FOLLOWING LAYOUT CRITERIA SHALL CONTROL UNLESS OTHERWISE NOTED ON THE PLAN:
   ALL DIMENSIONS ARE TO OUTSIDE FACE OF BUILDING.
   ALL DIMENSIONS ARE TO FACE OF CURB AT GUTTER LINE.
   ALL DIMENSIONS ARE TO CENTER OF PAVEMENT MARKINGS.
   ALL TIES TO PROPERTY LINES ARE PERPENDICULAR TO THE PROPERTY LINE UNLESS OTHERWISE NOTED.

GENERAL PLANTING NOTES

1. ALL PLANT MATERIAL SHALL CONFORM TO THE STANDARDS OF THE AMERICAN ASSOCIATION OF NURSERYMEN OR THE PLANT MATERIAL WILL BE UNACCEPTABLE. ALL PLANT MATERIAL SHALL BE TRUE TO SPECIES, VARIETY, SIZE AND BE CERTIFIED DISEASE AND INSECT FREE. THE OWNER AND/OR THE LANDSCAPE ARCHITECT RESERVES THE RIGHT TO APPROVE ALL PLANT MATERIAL ON SITE PRIOR TO INSTALLATION.
2. ALL PLANT MATERIAL SHALL BE PROPERLY GUYED, STAKED, WRAPPED, AND PLANTED IN CONFORMANCE WITH THE TYPICAL PLANTING DETAILS. GUY WIRES SHALL BE ATTACHED TO THE TREE AT A HEIGHT OF TWO–THIRDS THE HEIGHT OF THE TREE AND SHOULD BE LOCATED AT POINTS SO AS NOT TO SPLIT THE TRUNK OF MULTI–STEMMED TREES. PROVIDE THREE STAKES PER TREE UNLESS NOTED OTHERWISE INSTALL ALL PLANT MATERIAL ON UNDISTURBED GRADE. PROVIDE BURLAP WRAPPING WITH A 50% OVERLAP. CUT AND REMOVE BURLAP FROM TOP ONE–THIRD OF THE ROOT BALL.
3. PROVIDE PLANTING PITS AS INDICATED ON PLANTING DETAILS. BACKFILL PLANTING PITS WITH ONE PART EACH OF TOP SOIL, PEAT MOSS, AND PARENT MATERIAL. IF WET SOIL CONDITIONS EXIST THEN PLANTING PITS SHALL BE EXCAVATED AN ADDITIONAL 12" AND FILLED WITH SAND.
4. NEWLY INSTALLED PLANT MATERIAL SHALL BE WATERED AT THE TIME OF INSTALLATION AND SHALL BE SUBSEQUENTLY FLOODED TWICE WITHIN TWENTY–FOUR (24) HOURS OF PLANTING. REGULAR WATERING SHALL BE PROVIDED TO ENSURE THE ESTABLISHMENT, GROWTH AND SURVIVAL OF ALL PLANTS.
5. ALL PLANT MATERIAL SHALL BE GUARANTEED FOR ONE YEAR AFTER THE DATE OF FINAL ACCEPTANCE. ANY PLANT MATERIAL THAT DIES WITHIN THAT TIME PERIOD SHALL BE REMOVED, INCLUDING THE STUMP, AND REPLACED WITH MATERIAL OF SIMILAR SIZE AND SPECIES AT THE EXPENSE OF THE DEVELOPER. THE REPLACED PLANT MATERIAL SHALL BE GUARANTEED FOR ONE YEAR AFTER THE REPLACEMENT DATE.
6. THE LANDSCAPE CONTRACTOR SHALL PROVIDE A MINIMUM 4" LAYER OF TOPSOIL IN ALL LAWN AREAS AND A MINIMUM OF 6" OF TOPSOIL IN ALL PLANTING AREAS. A FULL SOIL ANALYSIS SHALL BE CONDUCTED AFTER CONSTRUCTION AND PRIOR TO PLANTING TO DETERMINE THE EXTENT OF SOIL AMENDMENT REQUIRED.
7. ALL DISTURBED LAWN AREAS SHALL BE STABILIZED WITH EITHER SOD OR SEED AS INDICATED ON THE LANDSCAPE PLANS. SEED SHALL CONSIST OF THE MIXTURE LISTED IN THE GENERAL SEEDING NOTES. ALL DISTURBED LAWN AREAS SHALL BE TOP SOILED, LIMED, FERTILIZED, AND FINE GRADED PRIOR TO LAWN INSTALLATION.
8. ALL PLANTING BEDS SHALL RECEIVE 3" OF SHREDDED PINE, CEDAR OR HEMLOCK BARK.
9. ALL SHRUB MASSES SHALL BE PLANTED IN CONTINUOUS MULCHED BEDS.
10. ALL TREES ARE TO BE GUYED, 3 EACH, UNLESS OTHERWISE NOTED ON PLAN.
11. ALL DECIDUOUS TREES ARE TO BE WRAPPED, WITH TREE WRAP, UP TO THE FIRST BRANCHING AND SECURED.
12. THE LANDSCAPE CONTRACTOR IS TO PERFORM ALL CONTRACTED WORK IN A REASONABLE PERIOD OF CONTINUOUS WORK.
13. THE LANDSCAPE CONTRACTOR IS TO MAINTAIN PLANT MATERIAL WHILE THE PROJECT IS UNDERWAY AND FOR A PERIOD OF TWO WEEKS AFTER THE COMPLETION OF THE PROJECT UNLESS OTHERWISE SPECIFIED.
14. THE CONTRACTOR IS TO CLEAN UP AND REMOVE ANY DEBRIS FROM THE SITE, CAUSED BY THE LANDSCAPE CONTRACTOR.
15. ALL PLANTING SHALL BE CONDUCTED, WEATHER PERMITTING, DURING ONE OF THE FOLLOWING SEASONAL PERIODS: MARCH 15–MAY 15 & SEPTEMBER 15–NOVEMBER 15.
16. PLANTED TREES SHALL BE 2–2.5 INCH CALIPER DIAMETER AT THE THREE FOOT RISE, OR FROM THE TOP OF THE BURLAP AND BALL.

SOIL EROSION AND SEDIMENT CONTROL NOTES

1. THE CONSERVATION COMMISSION SHALL BE NOTIFIED, AT LEAST 72 HOURS PRIOR TO ANY LAND DISTURBANCE.
2. A COPY OF THE SOIL EROSION AND SEDIMENT CONTROL PLAN MUST BE MAINTAINED ON THE PROJECT SITE DURING CONSTRUCTION.
3. SOIL EROSION AND SEDIMENT CONTROL PRACTICES IN THE PLAN SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.
4. ALL APPLICABLE SOIL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE IN PLACE PRIOR TO ANY DEMOLITION GRADING OPERATIONS AND/OR INSTALLATION OF PROPOSED STRUCTURES OR UTILITIES.
5. ALL APPLICABLE SOIL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE LEFT IN PLACE UNTIL CONSTRUCTION IS COMPLETED AND/OR THE AREA IS STABILIZED.
6. ALL SOIL EROSION AND SEDIMENT CONTROL STRUCTURES SHALL BE INSPECTED AND MAINTAINED ON A REGULAR BASIS AND AFTER EVERY STORM EVENT.
7. THE MAINTENANCE OF SOIL EROSION AND SEDIMENT CONTROL MEASURES AND FACILITIES DURING AND IMMEDIATELY AFTER CONSTRUCTION RESTS WITH THE GENERAL CONTRACTOR. UPON ACCEPTANCE OF THE PROJECT, THE OWNER SHALL BECOME RESPONSIBLE FOR MAINTENANCE OF ANY REMAINING MEASURES AND FACILITIES.
8. OFF SITE SEDIMENT DISTURBANCE MAY REQUIRE ADDITIONAL CONTROL MEASURES TO BE DETERMINED BY THE ENGINEER.
9. THE CONSERVATION COMMISSION AND/OR ENGINEER MAY REQUIRE ADDITIONAL SOIL EROSION MEASURES TO BE INSTALLED, AS DIRECTED BY THE DISTRICT INSPECTOR.
10. ADJOINING PROPERTIES SHALL BE PROTECTED FROM EXCAVATION AND FILLING OPERATIONS AT ALL TIMES.
11. THE CONTRACTOR SHALL UTILIZE ALL METHODS NECESSARY TO PREVENT BLOWING AND MOVEMENT OF DUST FROM THE EXPOSED SOIL SURFACES.
12. PAVED ROADWAYS MUST BE KEPT CLEAN AT ALL TIMES.
13. A CRUSHED STONE TIRE CLEANING PAD WILL BE INSTALLED WHEREVER A CONSTRUCTION ENTRANCE EXISTS. SEE LOCATION DETAIL ON PLAN.
14. ALL CATCH BASIN INLETS SHALL BE PROTECTED DURING CONSTRUCTION AS DETAILED ON THE PLAN, IF APPLICABLE.
15. ALL STORM DRAINAGE OUTLETS SHALL BE PROTECTED AS REQUIRED HEREON BEFORE DISCHARGE POINTS BECOME OPERATIONAL.
16. THE SITE SHALL AT ALL TIMES BE GRADED AND MAINTAINED SUCH THAT ALL STORMWATER RUNOFF IS DIVERTED TO SOIL EROSION AND SEDIMENT CONTROL FACILITIES.
17. LAND AREAS EXPOSED AT ANY ONE TIME AND THE LENGTH OF EXPOSURE SHALL BE KEPT TO A PRACTICAL MINIMUM. THEY SHALL BE LEFT IN A NEAT AND FINISHED APPEARANCE AND PROTECTED FROM EROSION.
18. ANY DISTURBED AREA THAT WILL BE LEFT EXPOSED FOR MORE THAN SIXTY (60) DAYS AND NOT SUBJECT TO CONSTRUCTION TRAFFIC SHALL IMMEDIATELY RECEIVE A TEMPORARY SEEDING AND FERTILIZATION. IF THE SEASON PROHIBITS TEMPORARY SEEDING, THE DISTRIBUTED AREA SHALL BE MULCHED.
19. ALL CRITICAL AREAS SUBJECT TO EROSION SHALL RECEIVE A TEMPORARY SEEDING AND BE MULCHED IN ACCORDANCE WITH THE SPECIFICATIONS IMMEDIATELY FOLLOWING ROUGH GRADING.
20. IMMEDIATELY AFTER COMPLETION OF STRIPPING AND STOCKPILING OF TOPSOIL, SEED THE STOCKPILE WITH ANNUAL RYE GRASS. STABILIZE TOPSOIL STOCKPILES WITH STRAW MULCH FOR PROTECTION IF THE SEASON DOES NOT PERMIT THE APPLICATION AND ESTABLISHMENT OF TEMPORARY SEEDING.
21. SOIL STOCKPILES ARE NOT TO BE LOCATED WITHIN FIFTY (50) FEET OF WETLANDS, THE FLOODPLAIN, SLOPE, ROADWAY OR DRAINAGE FACILITIES. THE BASE OF ALL STOCKPILES SHALL BE PROTECTED BY A HAY BALE BARRIER OR SEDIMENT FENCE. LOCATIONS ARE DELINEATED ON THE PLAN.
22. MAXIMUM SIDE SLOPES OF ALL EXPOSED SURFACES SHALL NOT BE CONSTRUCTED STEEPER THAN 3:1 UNLESS OTHERWISE APPROVED BY THE DISTRICT.
23. ALL AREAS NOT STABILIZED BY CONSTRUCTION, SODDING OR LANDSCAPING SHALL BE SEEDED AND STABILIZED IN ACCORDANCE WITH THE SEEDING AND MULCHING SPECIFICATIONS.
24. MULCHING IS REQUIRED ON ALL SEEDED AREAS TO INSURE AGAINST EROSION BEFORE GRASS IS ESTABLISHED TO PROMOTE EARLIER VEGETATIVE COVER.
25. ALL DEWATERING OPERATIONS MUST DISCHARGE DIRECTLY INTO A SEDIMENT FILTRATION DEVICE. THE SEDIMENT FILTER MUST BE CAPABLE OF FILTERING THE SEDIMENT AND BE PLACED SO AS NOT TO CAUSE EROSION OF THE DOWNSTREAM AREA.

LEGEND

EXISTING		PROPOSED
101	CONTOUR LINE	101
x101.1	SPOT GRADE	+101.1
EOP	EDGE OF PAVEMENT	EOP
VGC	VERTICAL GRANITE CURB	VGC
SGC	SLOPED GRANITE CURB	SGC
VCC	VERTICAL CONCRETE CURB	VCC
BCC	BITUMINOUS CONCRETE CURB	BCC
CCB	CAPE COD BERM	CCB
	STONE WALL	
	CHAIN LINK FENCE	
	IRON FENCE	
	POST & RAIL FENCE	
	STOCKADE FENCE	
	GUARD RAIL	
	HAY BALES	
—W— — — —W— — —	WATER LINE	—W— — — —W— — —
	FIRE HYDRANT	
	POST INDICATOR VALVE	
	WATER GATE	
	WATER METER PIT	
	IRRIGATION HAND HOLE	
	WELL	
—S—	SEWER LINE	
	SEWER MANHOLE	
—G—	GAS LINE	
	GAS METER	
	GAS GATE	
—D—	DRAIN LINE	
	DRAIN MANHOLE	
	CATCH BASIN	
—OHW—	OVERHEAD WIRES	
—ETC—	ELECTRIC, TELEPHONE & CABLE	
	UTILITY POLE	
	GUY WIRE	

DETAIL NUMBER

1 / 2 SAMPLE DETAIL

NOT TO SCALE

NUMBER REFERENCES WHAT SHEET THE DETAIL IS ON

REVISIONS

1	4/6/17	CONSERVATION COMMISSION
2	5/4/17	ADDITIONAL FIELD WORK
3	7/10/17	CONSERVATION COMMISSION
4	9/18/17	CONSERVATION COMMISSION

COMMONWEALTH OF MASSACHUSETTS CHRISTIAN ALBERT FARLAND No. 47544 CIVIL REGISTERED PROFESSIONAL ENGINEER

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NEW BEDFORD, MA 02740
P.508.717.3479
OFFICES IN:
●TAUNTON
●MARLBOROUGH
●WARWICK, RI

DRAWN BY: MJW
DESIGNED BY: CAF
CHECKED BY: CAF

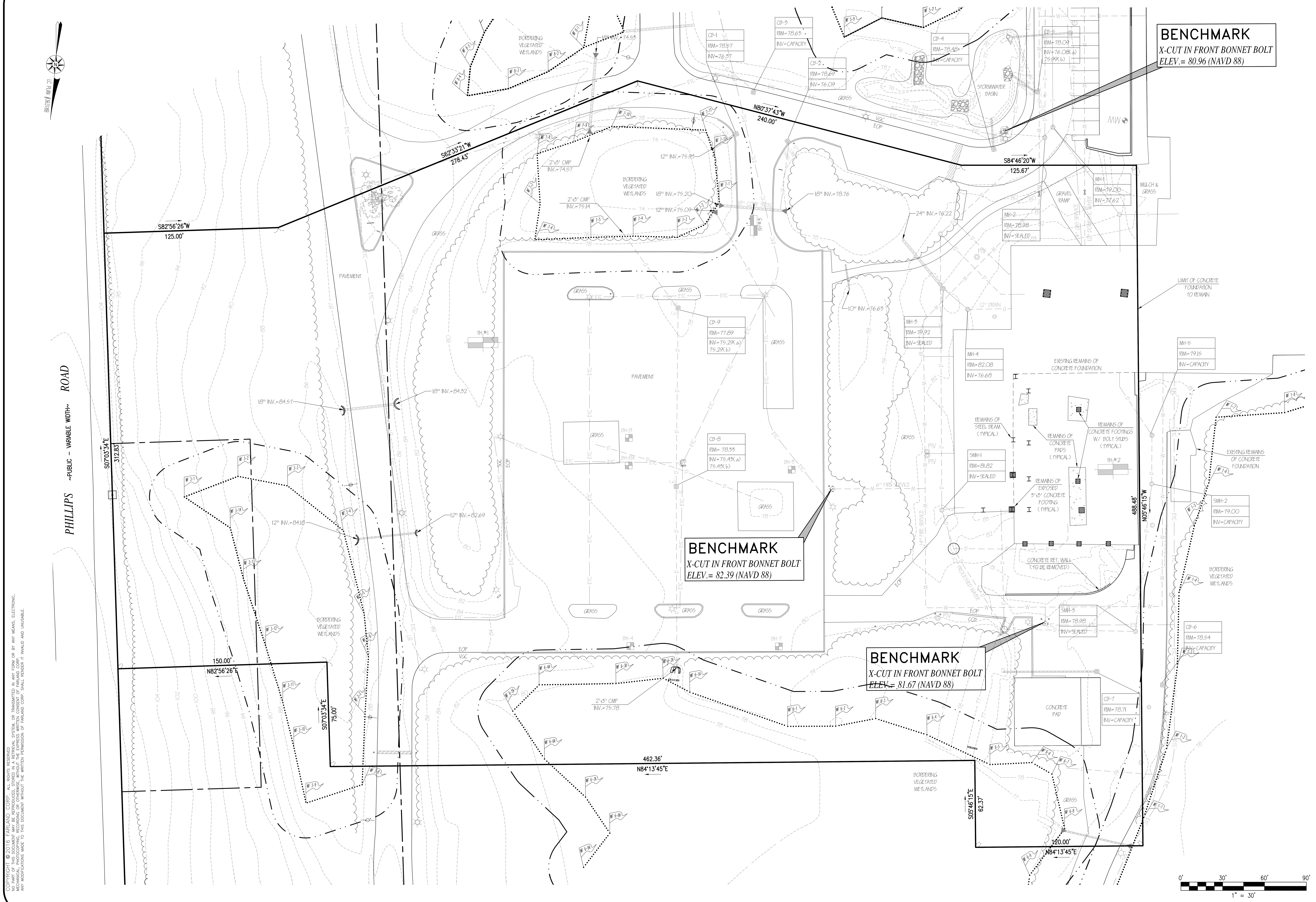
SITE PLAN
— 100 DUCHAINE BOULEVARD —
ASSESSORS MAP 134 LOT 5
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: PARALLEL PRODUCTS OF NEW ENGLAND
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

FEBRUARY 14, 2017
SCALE: N.T.S.
JOB NO. 15–500.1
LATEST REVISION: SEPTEMBER 18, 2017

NOTES & LEGEND

SHEET 2 OF 8



REVISIONS		
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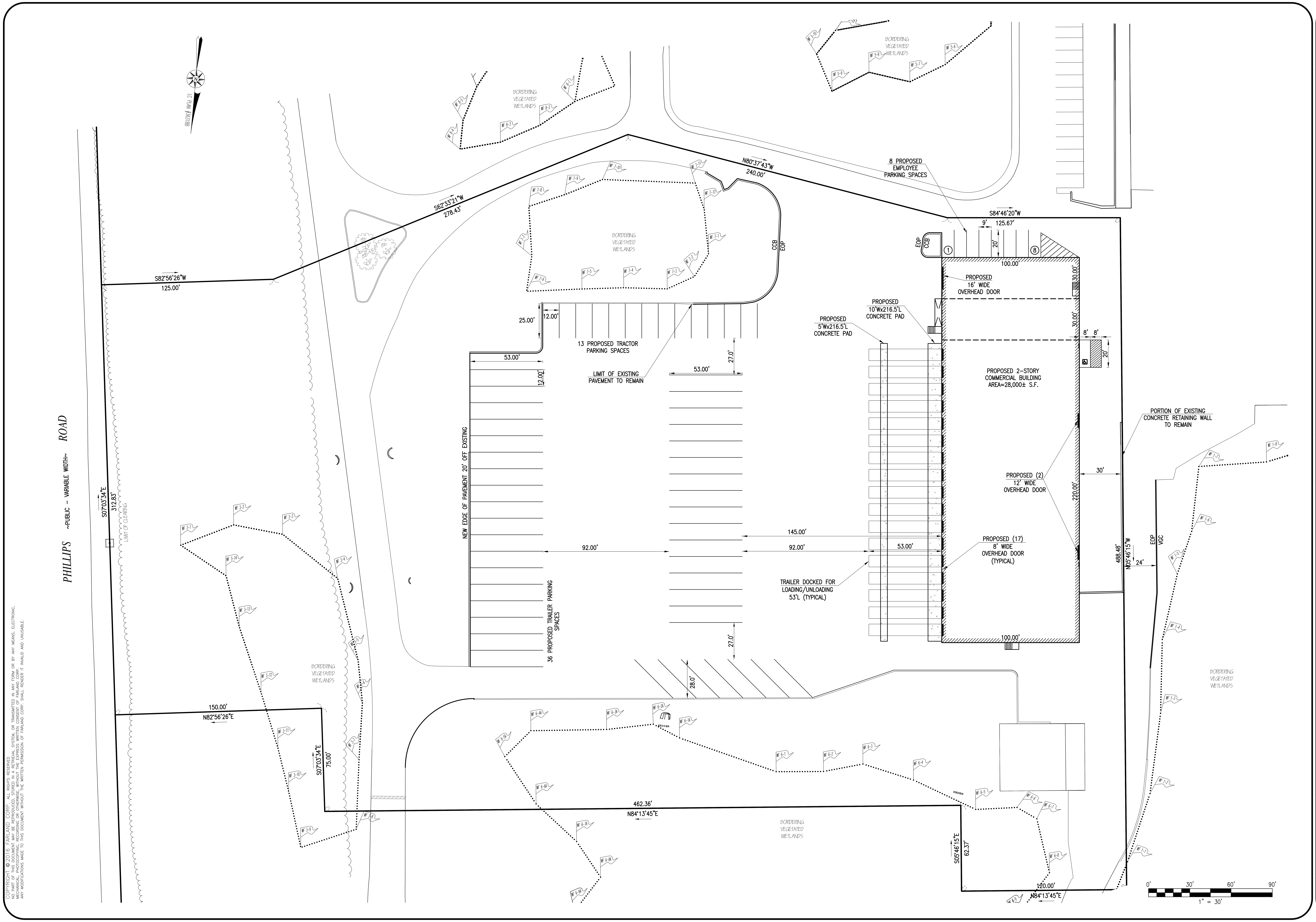
FEBRUARY 14, 2017
SCALE: 1"=30'
JOB NO. 15-500.1
LATEST REVISION: SEPTEMBER 18, 2017
EXISTING CONDITIONS
SHEET 3 OF 8



REVISIONS

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SITE PLAN

100 DUCHAINE BOULEVARD

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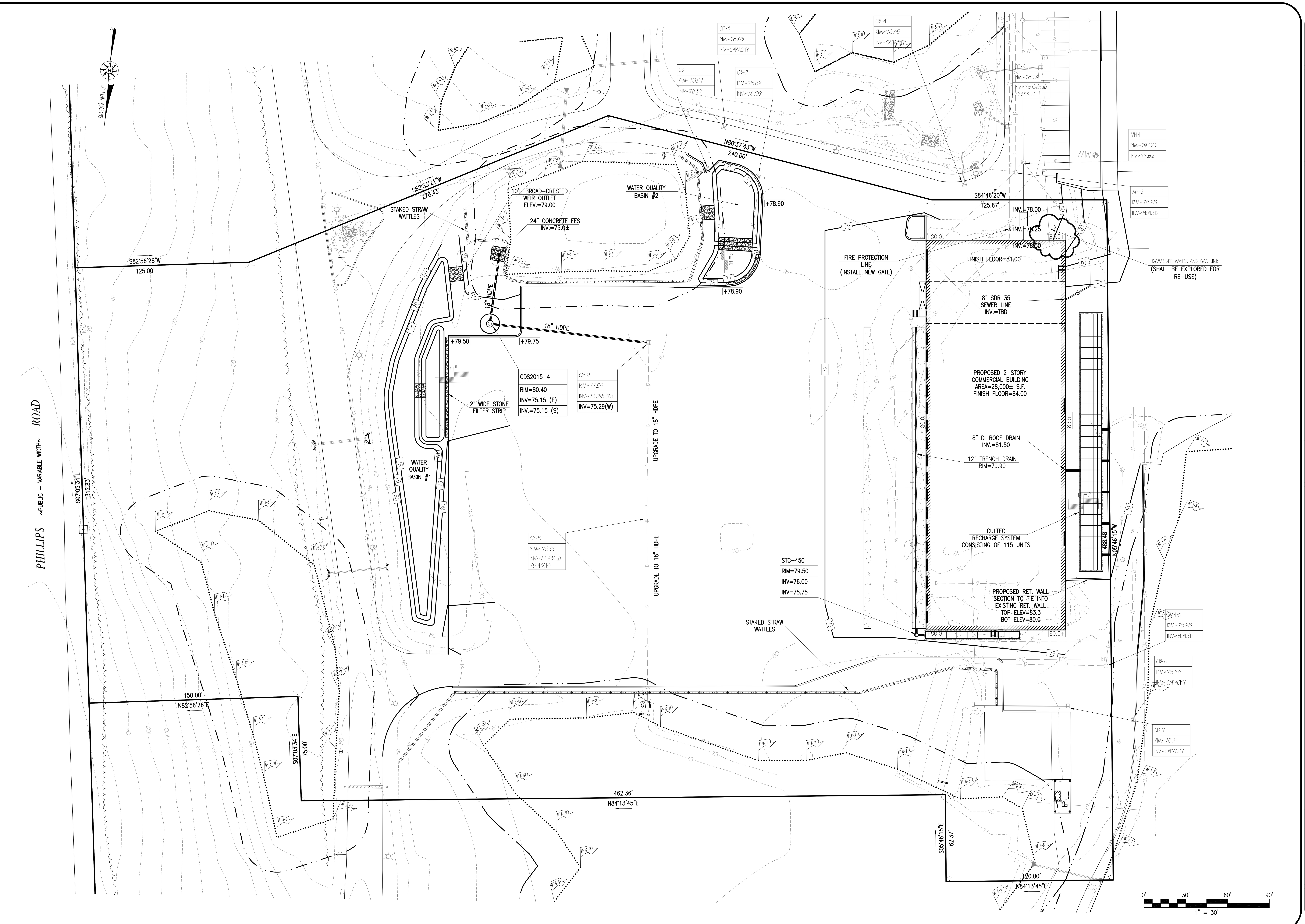
LAYOUT



SITE PLAN

100 DUCHAINE BOULEVARD

ASSESSORS MAP 134 LOT 5
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: PARALLEL PRODUCTS OF NEW ENGLAND
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SEPTEMBER 18, 2017

UTILITIES & GRADING

SHEET 5 OF 8

Luminaire Schedule				
Symbol	Qty	Label	Arrangement	Description
	6	GLEON-AF-04-LED-E1-T4W-7060	SINGLE	McGraw-Edison- GLEON-AF-04-LED-E1-T4W-7060
	1	GLEON-AF-04-LED-E1-T4W-7060-D	BACK-BACK	McGraw- Edison- GLEON-AF-04-LED-E1-T4W-7060
	8	GWC-AF-02-LED-E1-T4FT-7050-12	SINGLE	McGraw Edison- GWC-AF-02-LED-E1-T4FT-7050-1200

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Back and Side of Building	Illuminance	Fc	1.90	4.5	0.1	19.00	45.00
Parking Lot	Illuminance	Fc	1.99	7.2	0.3	6.63	24.00

25' Poles 2.5' Base

Wall Packs- 20' MH

REFLEXLIGHTING

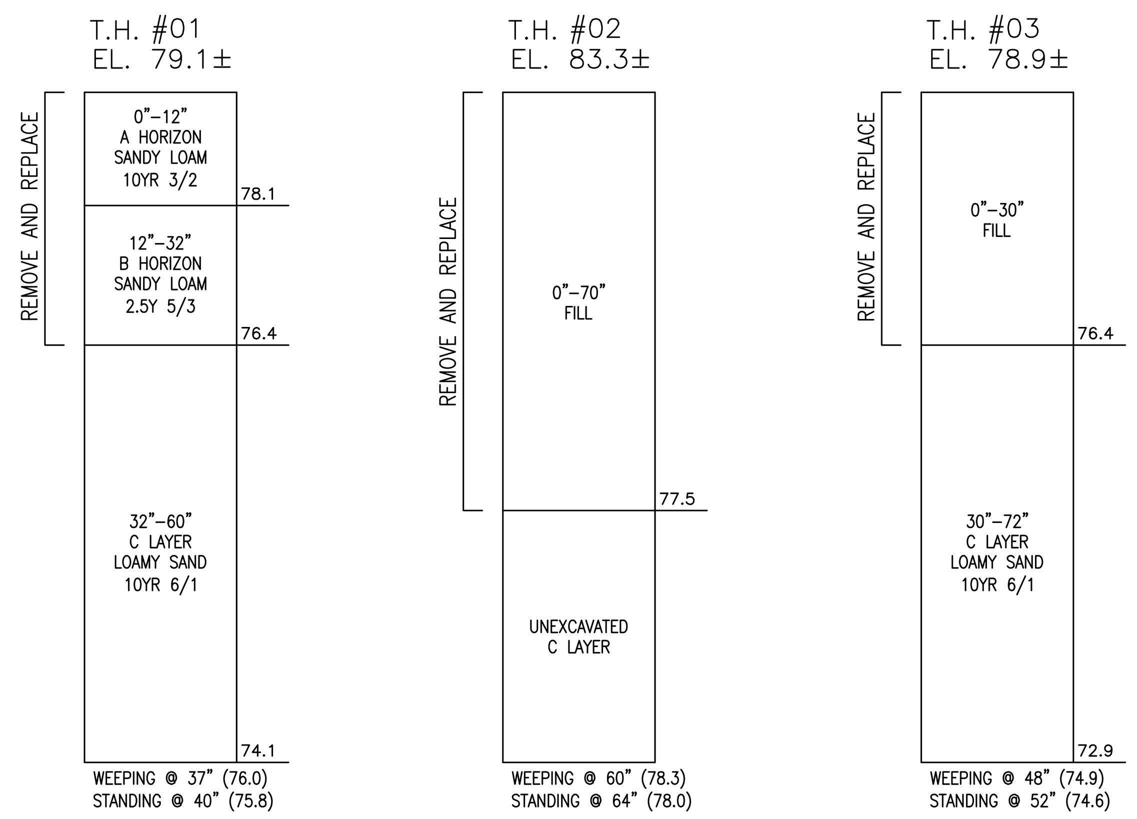
NOTES:

Calculated light levels and visualizations are based on specific information that has been supplied to Reflex Lighting. Any differences in luminaire installation, lighted area geometry and obstructions in the lighted area may produce different results from the predicted values. Normal tolerances of voltage, lamp output, and ballast and luminaire manufacture will affect results.

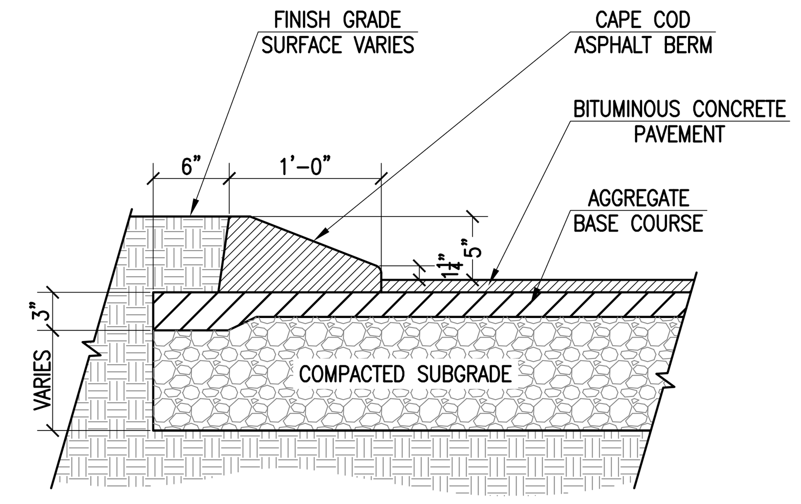
Drawn By: Ryan Thomson
Checked By:
Date:1/13/2017
Scale:

10 Duhaine Blvd New Bedford, MA

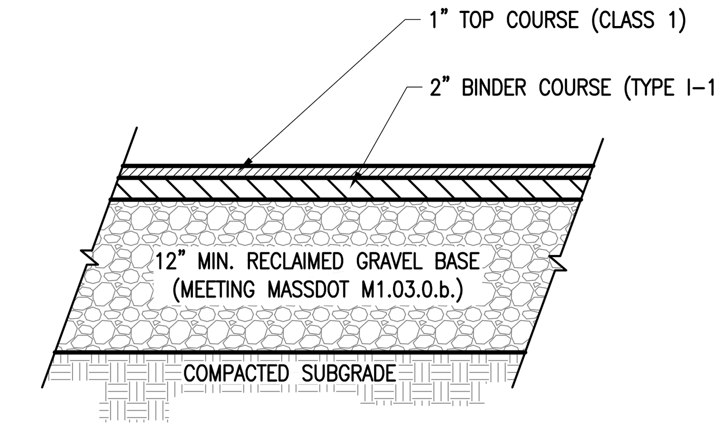
Page 1 of 1



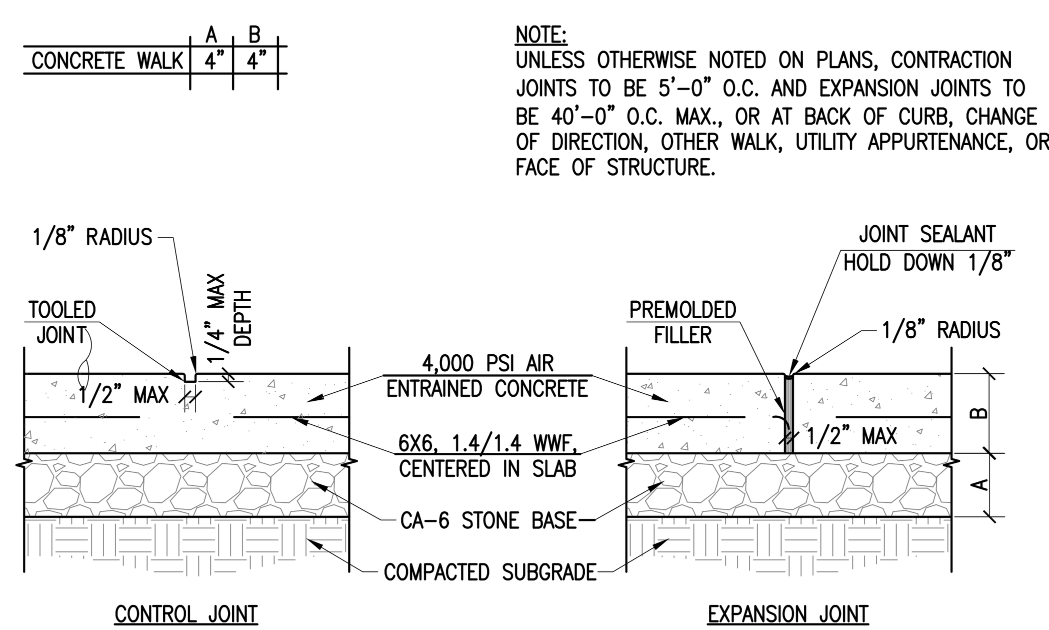
1/7 SOIL PROFILES
NOT TO SCALE



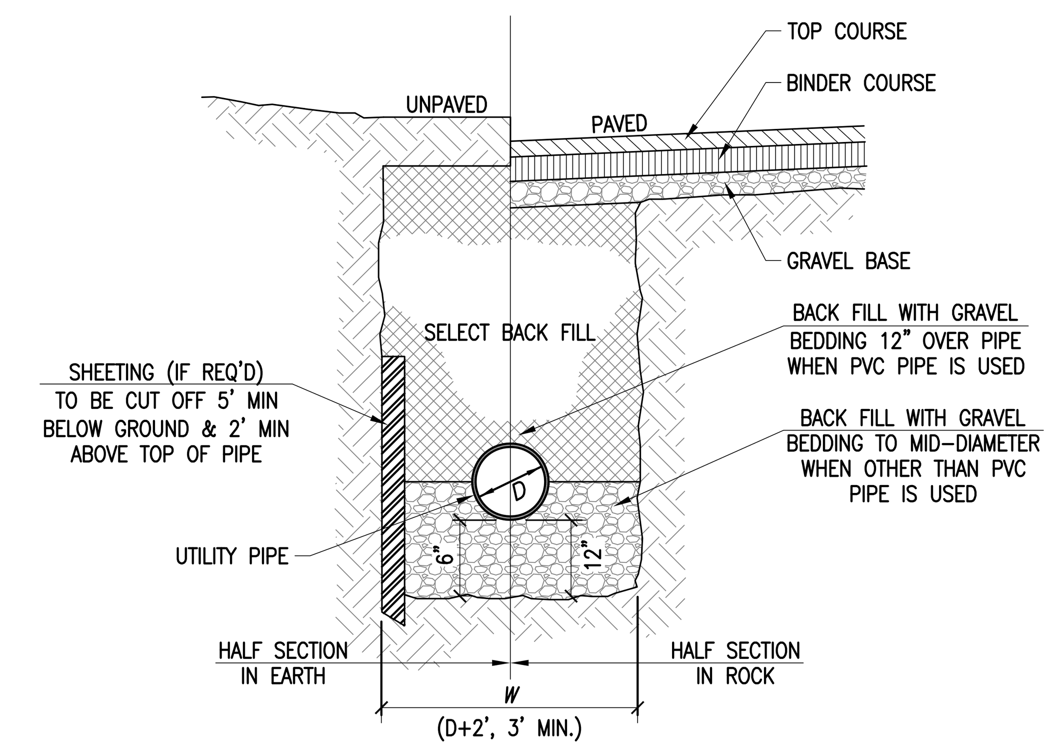
2/7 BITUMINIOUS CONCRETE CAPE COD BERM
NOT TO SCALE



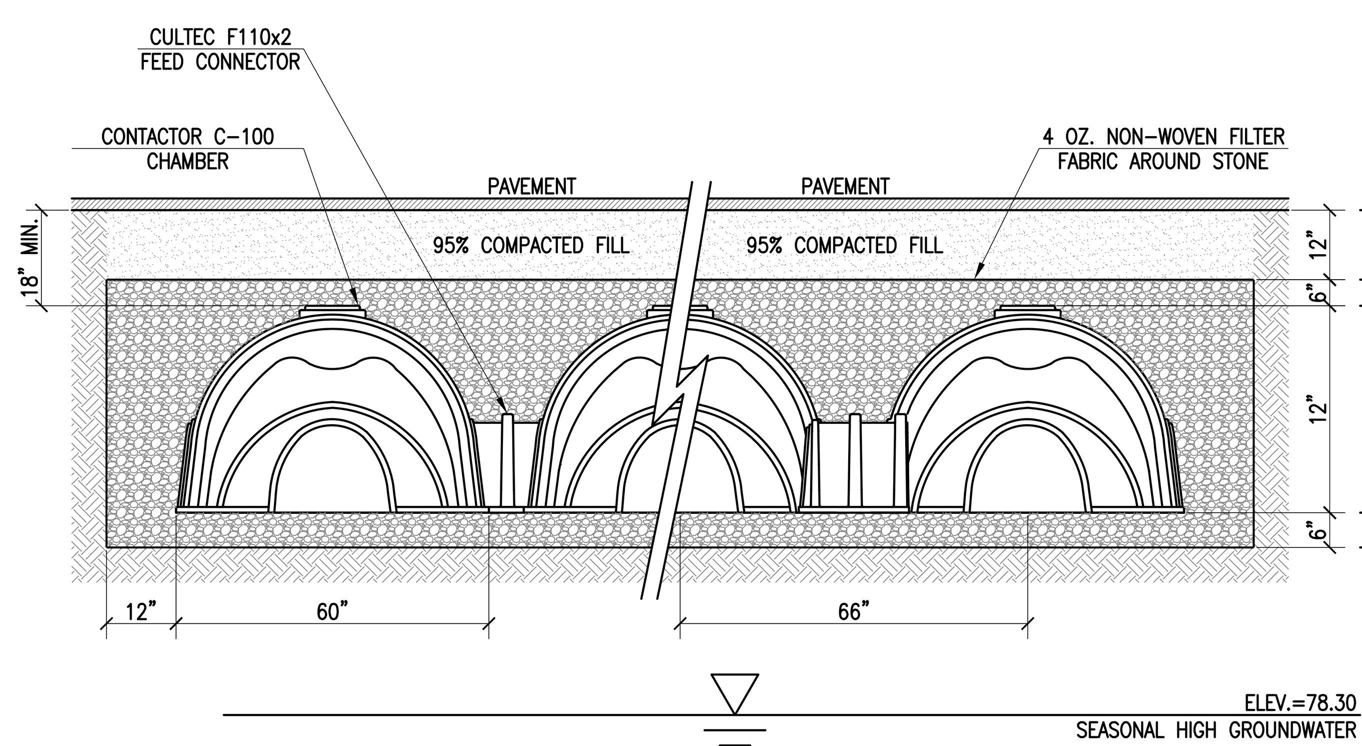
3/7 BITUMINIOUS CONCRETE PAVEMENT – RECLAIMED
NOT TO SCALE



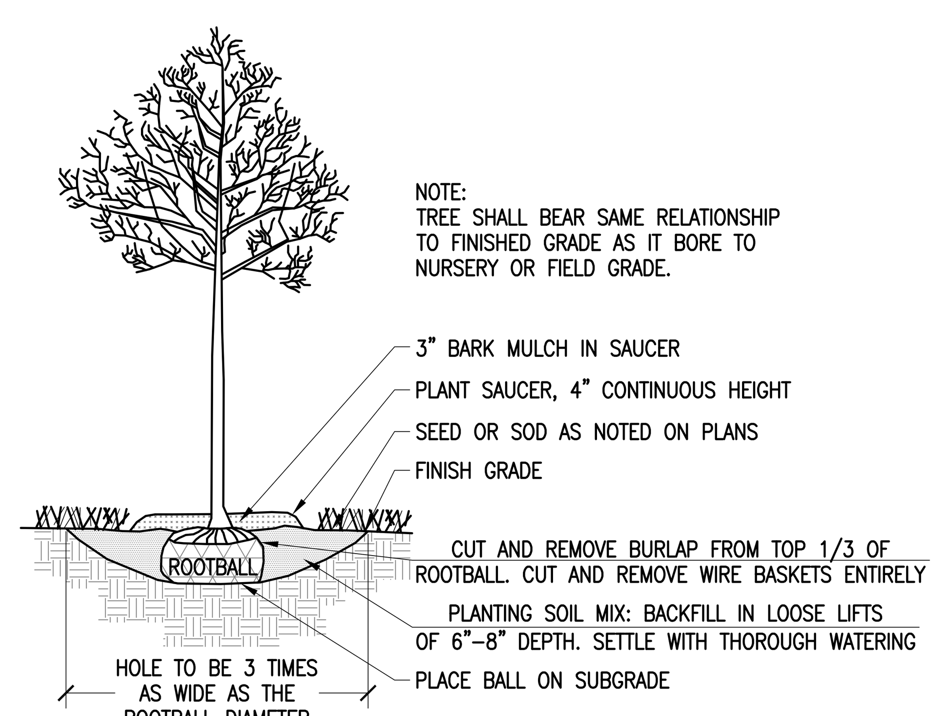
4/7 CONCRETE PAVEMENT SIDEWALK
NOT TO SCALE



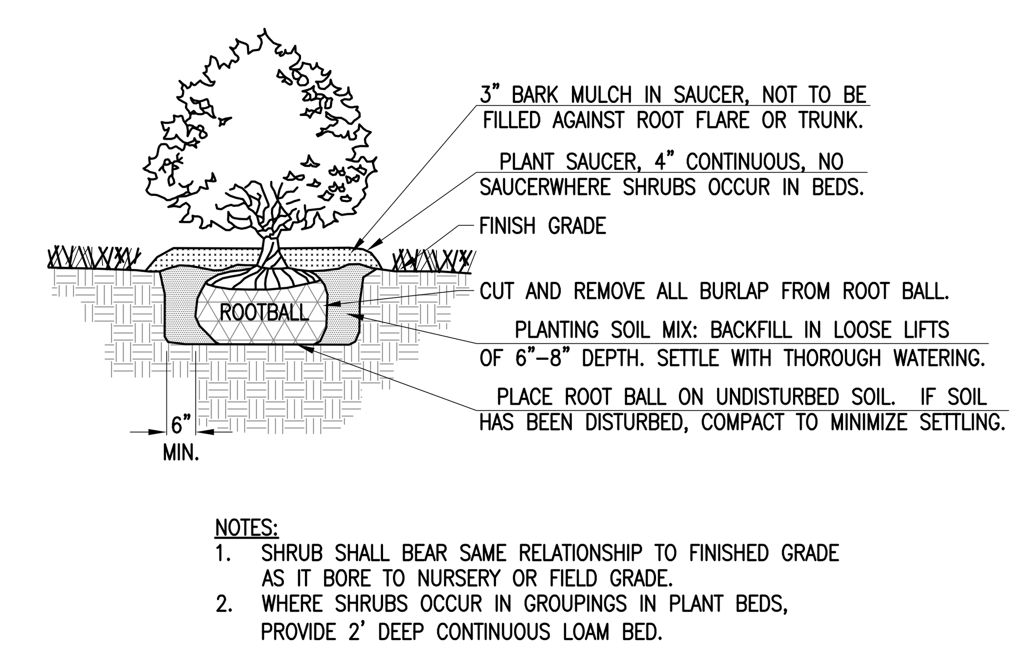
5/7 UTILITY TRENCH
NOT TO SCALE



6/7 CULTEC CONTACTOR C–100 CROSS SECTION
NOT TO SCALE



7/7 TREE PLANTING
NOT TO SCALE



8/7 SHRUB PLANTING
NOT TO SCALE

REVISIONS

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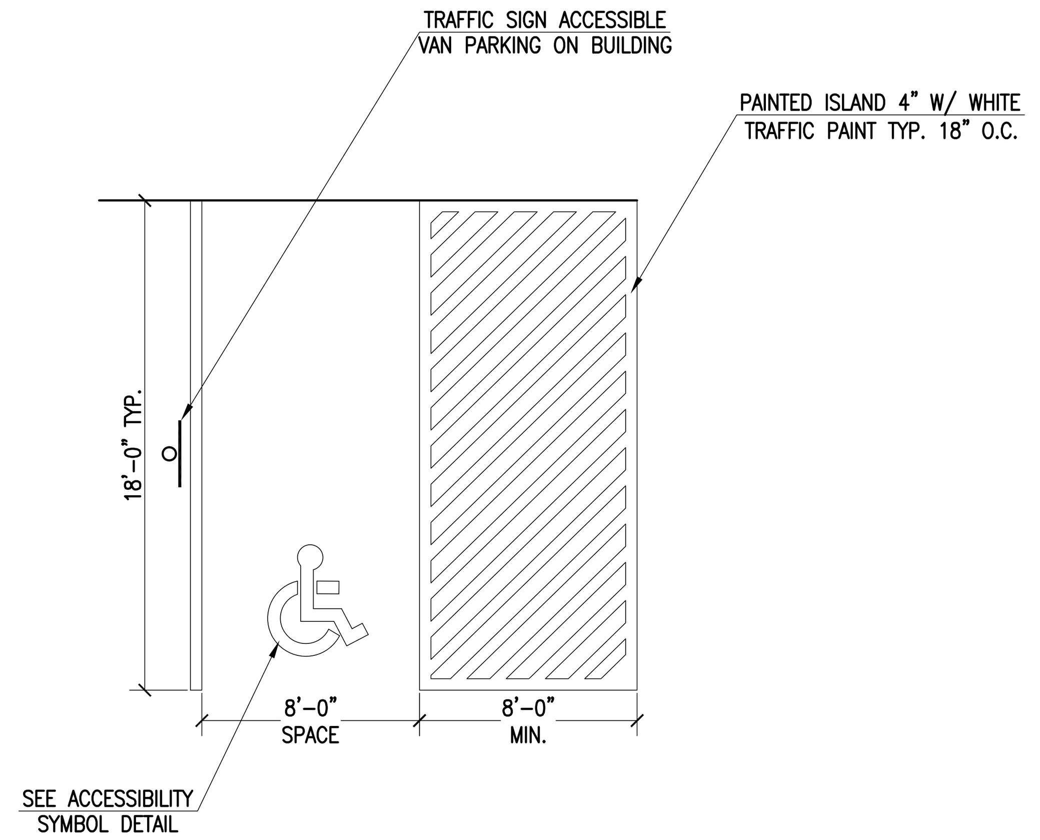
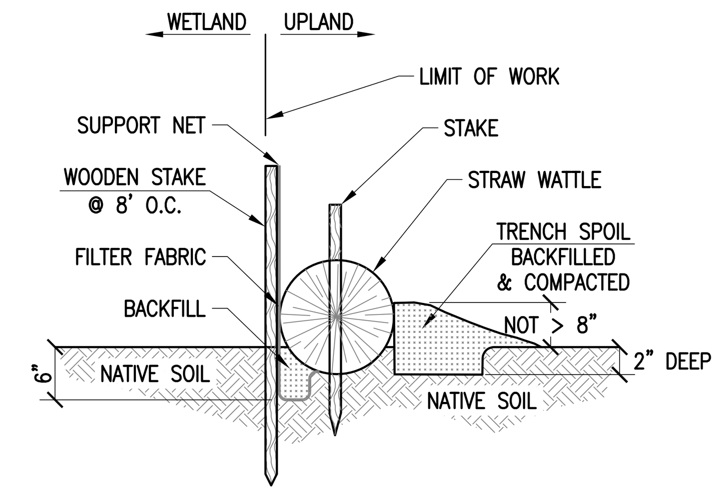
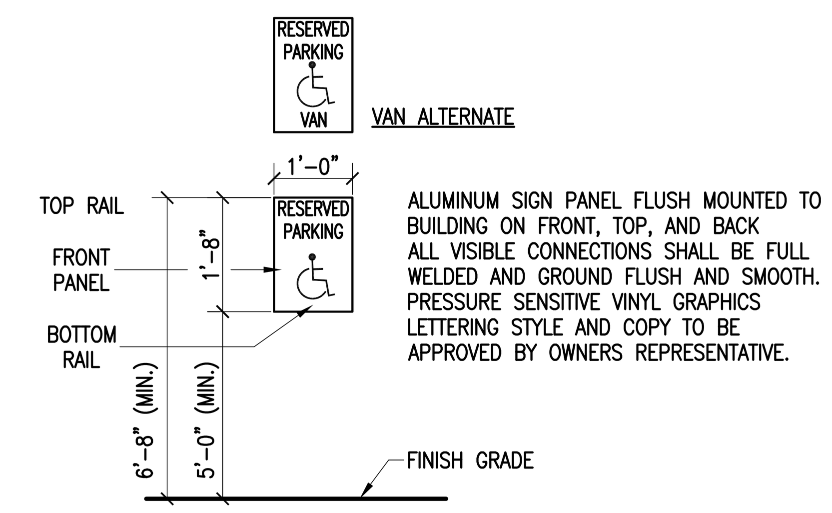
DETAILS
SHEET 7 OF 8



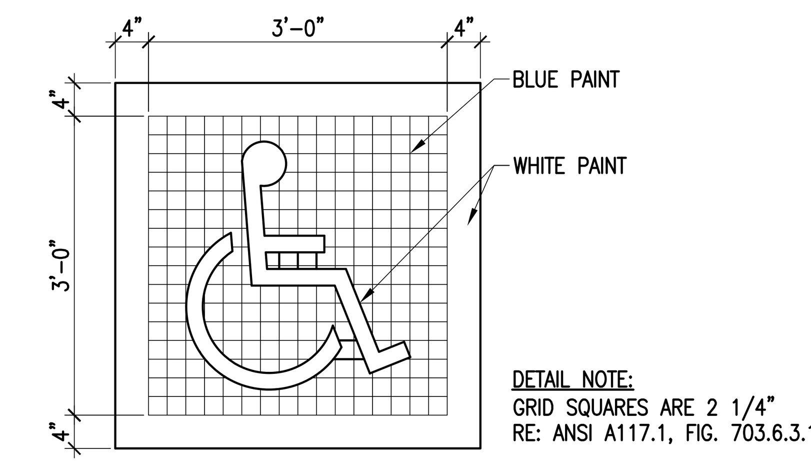
9 / 8 ACCESSIBLE PARKING LAYOUT
NOT TO SCALE



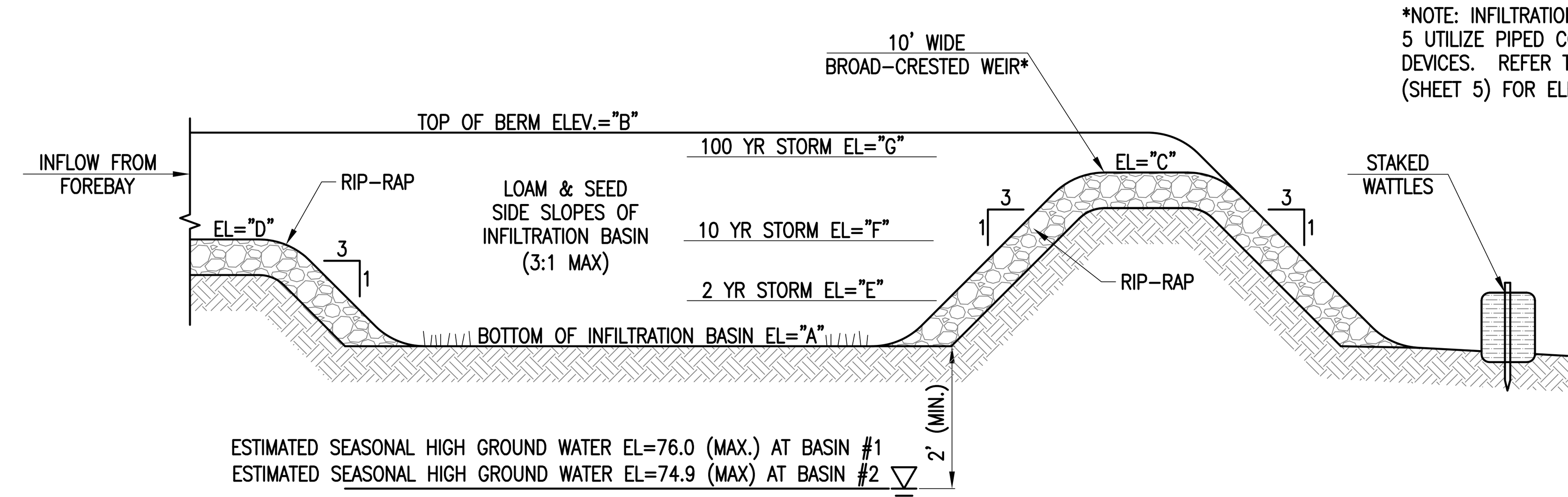
10 / 8 STAKED STRAW WATTLE WITH SILT FENCE
NOT TO SCALE



11 / 8 ACCESSIBLE PARKING SIGN
NOT TO SCALE

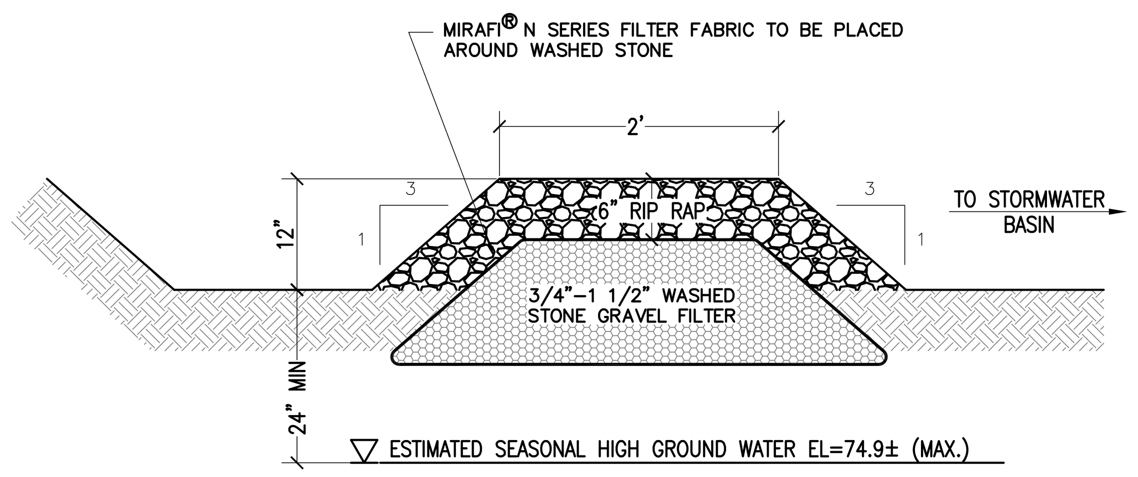


12 / 8 ACCESSIBLE PARKING SYMBOL
NOT TO SCALE



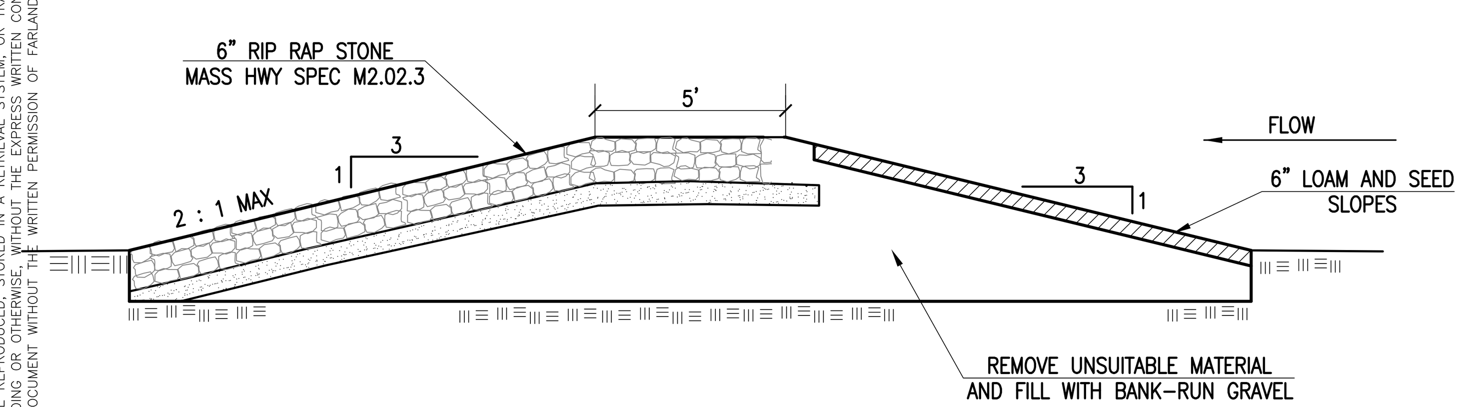
*NOTE: INFILTRATION BASINS 1B, 1D, 3, 4, AND 5 UTILIZE PIPED CONDUIT OUTLET CONTROL DEVICES. REFER TO GRADING & UTILITY PLAN (SHEET 5) FOR ELEVATION DETAILS.

WATER QUALITY BASIN	"A"	"B"	"C"	"D"	"E"	"F"	"G"
1	78.00	79.50	79.00	79.50	78.77	79.04	79.18
2	77.00	78.50	77.90	78.90	77.91	77.96	78.02

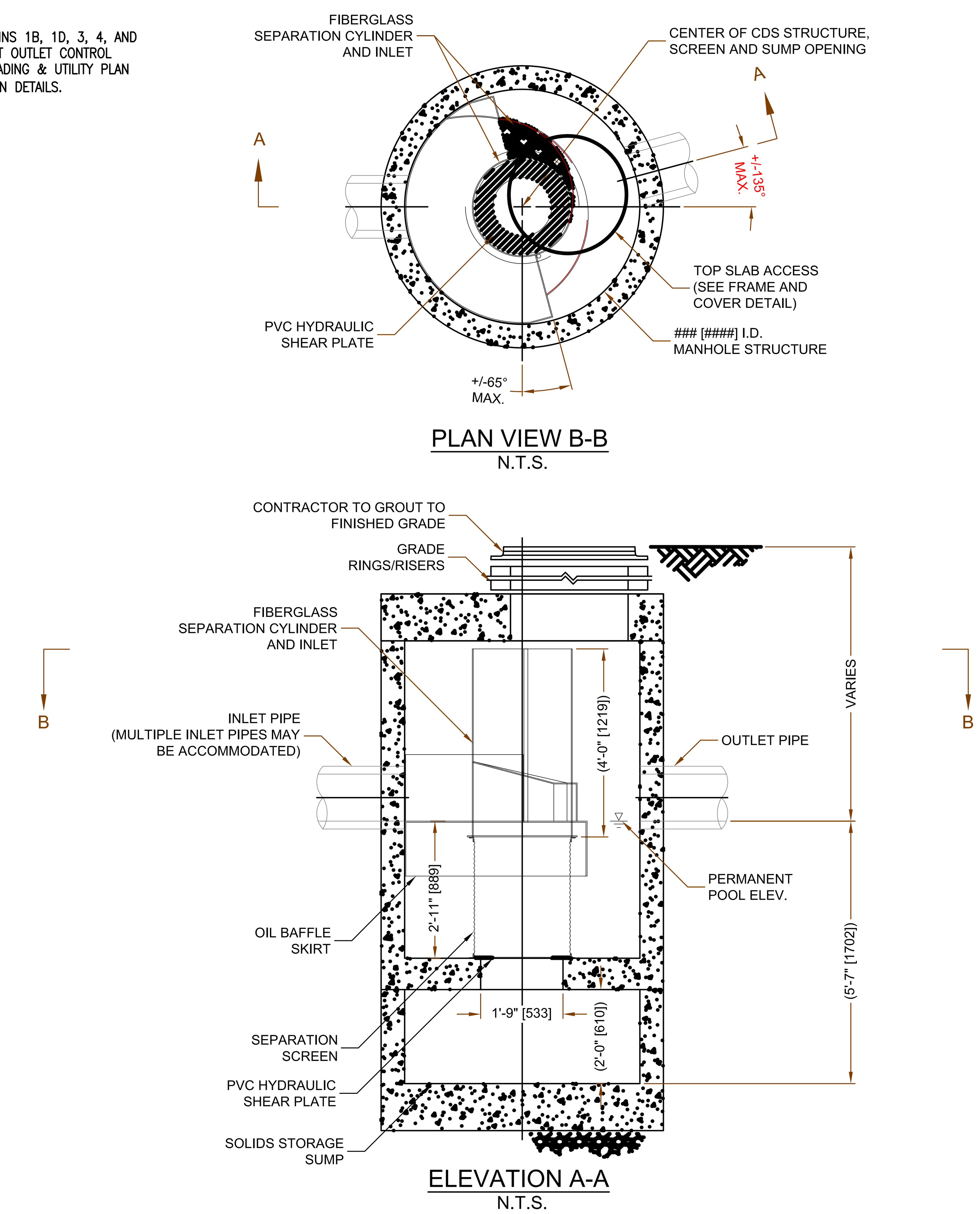


13 / 8 SEDIMENT FOREBAY W/ GRAVEL FILTER
NOT TO SCALE

14 / 8 DETENTION BASIN
NOT TO SCALE



15 / 8 OVERFLOW SPILLWAY DETAIL
NOT TO SCALE



16 / 8 CDS2025-5-C INLINE CDS SEPARATOR
NOT TO SCALE

REVISIONS

1	4/6/17	CONSERVATION COMMISSION
2	5/4/17	ADDITIONAL FIELD WORK
3	7/10/17	CONSERVATION COMMISSION
4	9/18/17	CONSERVATION COMMISSION

COMMONWEALTH OF MASSACHUSETTS
CHRISTIAN ALBERT FARLAND
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●WARWICK, RI

DRAWN BY: MJW
DESIGNED BY: CAF
CHECKED BY: CAF

SITE PLAN

100 DUCHAINE BOULEVARD
ASSESSORS MAP 134 LOT 5
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR:
PARALLEL PRODUCTS OF NEW ENGLAND
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

FEBRUARY 14, 2017
SCALE: N.T.S.
JOB NO. 15-500.1
LATEST REVISION: SEPTEMBER 18, 2017

DETAILS CONT.

SHEET 8 OF 8