



ENGINEERING A BETTER TOMORROW

ENGINEERING / SITE WORK / LAND SURVEYING

April 10, 2017

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

**RE: Response Letter
NWD Trucking – 100 Duchaine Blvd.
New Bedford, Massachusetts**

Dear Mr. Nixon,

We have enclosed a response letter, HydroCAD Reports, supporting documents and revised plans in response to the comment letter prepared by Nitsch Engineering dated March 20, 2017 in regards to their review of the Site Plans.

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 project is described as both redevelopment and new development. Per the Standards, new areas of impervious surface need to meet the Standards while existing impervious surfaces need to meet to the maximum extent practicable.

Stormwater runoff from all new impervious areas and some existing impervious areas has been designed to fully comply with the Standards. Where full compliance is not feasible, some runoff from portions of the existing impervious area has been designed to meet the Standards to the maximum extent practicable.

Comment #2:

Test hole logs were not provided and it does not appear that test holes were performed on the property. Therefore, we are unable to confirm the soil texture or determine seasonal high groundwater evaluations. Consistent with the Standards, a Licensed Soil Evaluator should perform test holes in the areas of the infiltration and detention facilities to determine soil texture and confirm seasonal high ground water evaluation.

Test holes have been performed by a certified soil evaluator at each of the infiltration and detention facilities to determine soil texture and confirm seasonal high groundwater elevations.

Comment #3:

There are two existing catch basins located in the existing parking area. These catch basins collect water from a substantial portion of the existing parking lot and also collect water from additional paved areas that are adjacent to the proposed building including the trailer dock area. These catch basins discharge directly into the wetlands located to the north of the project. It is unclear when the catch basins were installed or whether they have sumps to collect solids. We recommend that additional treatment be provided in the existing drainage system or that treatment be provided for stormwater generated by the trailer dock area.

A proprietary separator unit has been proposed between the catch basins and the discharge toward the B.V.W. The unit is sized to provide water quality treatment for the entire subcatchment areas of the catch basins.

Comment #4:

Hydrologic calculations were provided. However, these calculations only included information regarding the subcatchment areas and not the proposed ponds or summary reaches. This information should be provided so we can confirm the peak flows as well

as the performance of the proposed detention and infiltration basins. The calculations do not include enough information to verify whether the facilities are sized properly.

HydroCAD Reports of all subcatchment areas including ponds and reaches are attached.

Comment #5:

There is not enough information to determine whether or not the proposed classified as a Land Use with Higher Potential Pollutant Loads (LUHPPL). The Standards list a variety of uses, including fleet storage areas, as LUHPPLs. The Applicant should verify whether or not the proposed use is a LUHPPL.

The proposed use qualifies as a Land Use with Higher Potential Pollutant Load. The project has been designed to meet the Standard #5.

Comment #6:

The water quality volume calculations including sizing information for 0.5 inches over the impervious area. If the use is LUHPPL, the volume required is 1-inch over the impervious area.

The water quality volume calculations have been revised to reflect the LUHPPL requirement of 1-inch over impervious area.

Comment #7:

The water quality volume must be provided in the sediment forebays. The water quality volume calculations include the volume provided in the main area of the basins, which cannot be included. They also include the volume provided in the underground recharge facility, which cannot be provided since this facility infiltrates water generated by the building roof and does not treat stormwater generated by areas that are used by vehicles.

FC disagrees with the assessment that the required water quality volume must be provided in the sediment forebays, prior to discharge to the infiltrative area of the detention basin. The Massachusetts Stormwater Handbook requires structural stormwater BMPs to be sized to capture the required water quality volume to achieve Standard 4. Infiltration Basins achieve 80% TSS removal when they are designed to provide storage and exfiltration of the required recharge volume and treatment of the required water quality volume, provided it is combined with adequate pretreatment (sediment forebay). Because the required water quality volume is based on the total contributing impervious area, including roof area, water quality

volume must be provided for runoff from the roof. Calculations have been revised to demonstrate that each basin is adequately sized for the water quality volume generated by its own contributing area.

Comment #8:

It appears that stormwater routed to the water quality basin located to the west of the parking lot is routed to the main area of the basin and not the sediment forebay. It does not appear that the sediment forebay collects any water. There is a filter strip between the parking area and the basin. The filter strip should be located between the parking area and the sediment forebay.

The sediment forebay at this basin has been revised to collect all runoff from the impervious areas prior to discharge to the basin.

Comment #9:

The water quality basin should be numbered consistent with the calculations.

The calculations have been revised to reflect the correct numbering.

Comment #10:

There does not appear to be a discharge mechanism from the basin located to the east of the parking area.

The basin to the east of the parking area incorporates a 10 Ft long broad crested weir to serve as an outlet control structure.

Comment #11:

There is 174,000 square feet of pavement associated with the project. Only 24,000 square feet of this pavement is routed to the water quality basins. Therefore, 150,000 square feet of pavement is not receiving adequate treatment.

A proposed proprietary stormwater separator has been designed to provide adequate treatment for runoff from a majority of the parking and loading area. Much of the impervious area on-site is existing. The treatment provided in the basins and the separator unit represents the maximum feasible treatment for this site.

Comment #12:

We recommend that the Applicant sweep the parking areas twice per year including the spring. This should be added to the Operations and Maintenance Plan.

The O&M Plan has been revised to reflect this request and is attached.

Comment #13:

We recommend that the seasonal high groundwater elevation, once it is obtained, be added to the infiltration field detail.

The seasonal high groundwater elevations have been investigated and are reported within the Soil Logs on Detail Sheet 7.

Comment #14:

We cannot verify the storm elevations shown in the detention basin cross-section.

Storm elevations on the Detail Sheet have been corrected to reflect the post-development conditions shown in the HydroCAD calcs.

Comment #15:

Consistent with the Standards, we recommend that a foot of freeboard be provided between the 100-year storm peak elevation and the top of the berm elevation in the basins.

The top of berm elevations have been designed to provide maximum feasible freeboard.

Comment #16:

The detention basin detail shows seasonal high groundwater elevation at 95, which is incorrect.

The seasonal high groundwater elevation has been revised to reflect the correct conditions.

Comment #17:

We recommend pipe sizing calculations be prepared for the existing piping since additional flow is being directed toward these pipes.

Pipe sizing calculations have been completed and are attached.

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



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Long Term Operation and Maintenance Plan

Site Plan 100 Duchaine Boulevard New Bedford, MA 02745

February 14, 2017
Revised: April 6, 2017

Owner:

LOGAL, LLC
c/o Eric Decosta
100 Duchaine Boulevard
New Bedford, MA 02745

Prepared For:

Eric Decosta
LOGAL, LLC
100 Duchaine Boulevard
New Bedford, MA 02745

Prepared By:

Christian A. Farland, P.E.
Farland Corp.
Project No. 15-500.1

Street Sweeping

The parking lot will be inspected and maintained by the owner.

It shall be the responsibility of the owner to:

Inspections:

Inspect sediment deposit accumulations on the parking lots quarterly.

Maintenance:

Sweep parking lots twice annually. One of the bi-annual sweepings is to be scheduled during the early spring months to clear sediment, sand and debris left behind following the winter accumulation.

Dispose of the accumulated sediment and hydrocarbons in accordance with local, state, and federal guidelines and regulations.

Stone/ Rip Rap Areas

The owner of the rip rap areas shall be the owner.

The rip rap areas are to be inspected and maintained by the owner.

It shall be the responsibility of the owner to:

Inspections:

Inspect the rip rapped areas quarterly.

Maintenance:

Remove accumulated sediment, trash, leaves and debris at least annually. Check for signs of erosion and repair as need. Replace any damaged areas with new rip rap of the same size.

Dispose of the accumulated sediment and hydrocarbons in accordance with local, state, and federal guidelines and regulations.

Infiltration Basin

The owner of the basins shall be the owner.

The basins are to be inspected and maintained by the owner.

It shall be the responsibility of the owner to:

Inspections:

Inspect to basins quarterly and after major storms (>3.2" of rain in 24 hours)

Inspect fore-bay quarterly.

Inspect basins for settlement, subsidence, erosion, cracking or tree growth on the embankment, condition of stone; sediment accumulation around the outlet or within the basin; and erosion within the basin and banks.

Inspect outlet structures and/ or outlet pipes for evidence of clogging, sediment deposits or signs of erosion around the structure/ pipe.

Ensure that the basins are operating as designed. If inspection shows that a basin fails to fully drain within 72 hours following a storm event, then the responsible party shall retain a Registered Professional Civil Engineer licensed in the state of Massachusetts to assess the reason for infiltration/ detention failure and recommend corrective action for restoring the intended functions. For a wet pond, fully drained means that the ponding level in the basin is at or below the lowest elevation of the outlet structure. For an infiltration basin, fully drained means that there is no ponding occurring in the infiltration basin.

Inspect emergency spillways for signs of erosion.

Maintenance:

When mowing the basin and forebay, mow the buffer area, side slopes, and basin bottom. Remove grass clippings and accumulated debris. Mow three times per year in May, July and September.

Remove accumulated trash, leaves, debris in basin and forebay every month between April and November of each year. Inspect areas in

February of each year, if possible, to determine whether the aforementioned services are required.

If the infiltration basin is ponding in areas or not infiltrating as designed, use deep tilling to break up clogged surfaces, and re-vegetate immediately.

Replace stone in forebay and at all pipe ends once every five (5) years or when sediment depth is excessive.

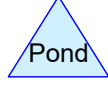
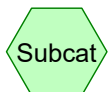
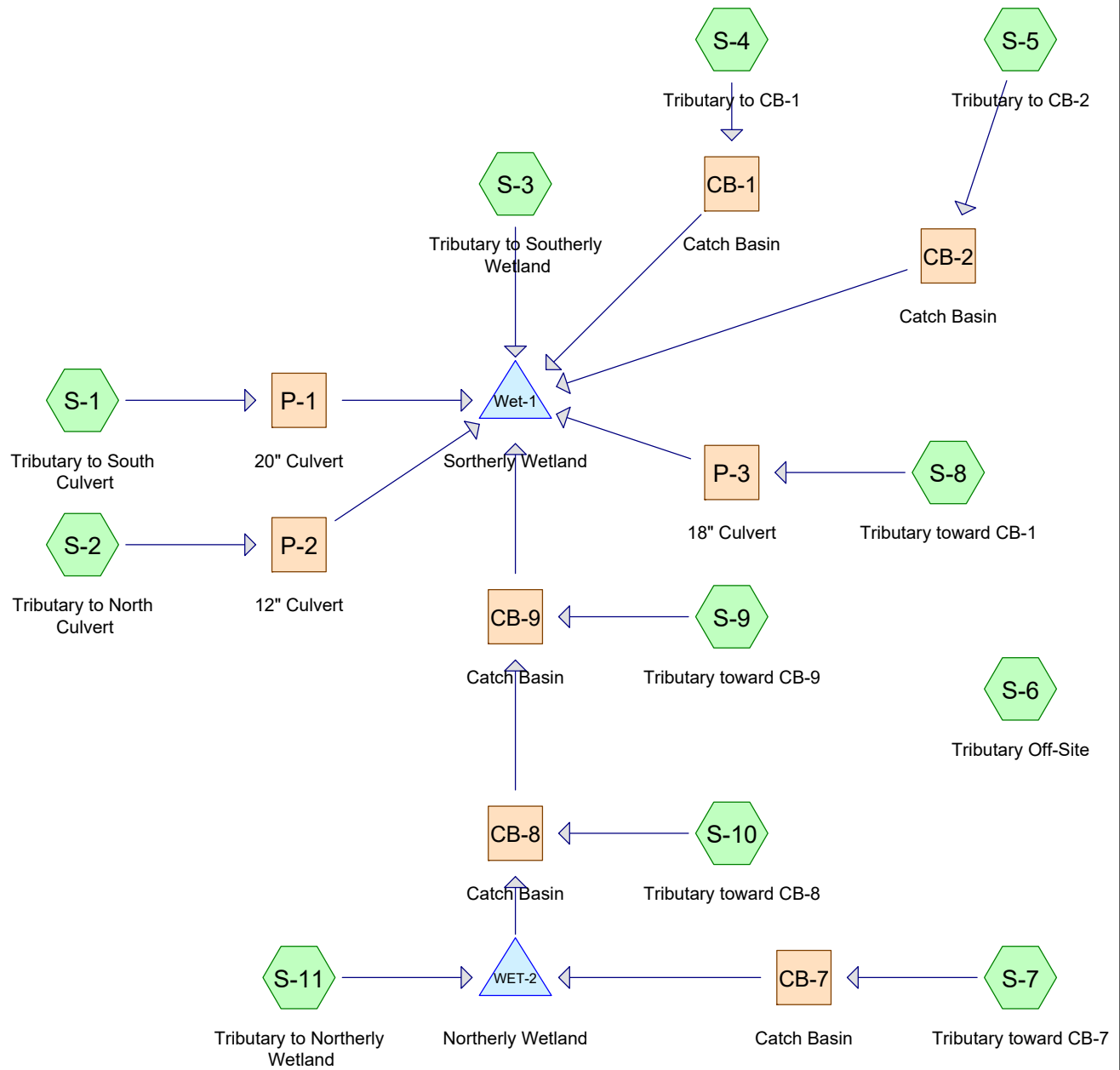
Do not store snow in basin area.

Remove sediment from the basin and forebay as necessary and at least once every 5 years but wait until the floor of the basin is thoroughly dry. After removing sediment, replace any vegetation damaged during clean-out by either re-seeding or re-sodding.

Dispose of the accumulated sediment and hydrocarbons in accordance with local, state, and federal guidelines and regulations.

Drain Lines

After construction, the drain lines shall be inspected after every major storm for the first few months to ensure proper functions. Presence of accumulated sand and silt would indicate more frequent maintenance of the pre-treatment devices is required. Thereafter, the drain lines shall be inspected at least once per year. Accumulated silt shall be removed by a vacuum truck or other method preferred.



Drainage Diagram for 15500.1PRE
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15500.1PRE

Type III 24-hr 2-yr Rainfall=3.40"

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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 = 2.43 cfs @ 12.08 hrs, Volume= 0.194 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
* 31,200	98	Paved Parking
850	86	<50% Grass cover, Poor, HSG C
32,050	98	Weighted Average
850		Pervious Area
31,200		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-11: Tributary to Northerly Wetland

Runoff = 1.95 cfs @ 12.09 hrs, Volume= 0.139 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"

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Type III 24-hr 2-yr Rainfall=3.40"

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	Area (sf)	CN	Description
*	1,175	98	Roadway
*	15,750	98	Wetland
	27,675	70	Woods, Good, HSG C
	44,600	81	Weighted Average
	27,675		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 Southerly Wetland

Runoff = 1.80 cfs @ 12.14 hrs, Volume= 0.146 af, Depth= 1.56"

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"

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Type III 24-hr 2-yr Rainfall=3.40"

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	Area (sf)	CN	Description
*	9,475	98	Wetland
*	7,775	98	Roadway
	31,750	70	Woods, Good, HSG C
	49,000	80	Weighted Average
	31,750		Pervious Area
	17,250		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	30	0.0360	1.41		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.40"
2.1	20	0.2450	0.16		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.40"
7.1	300	0.0200	0.71		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
9.6	350	Total			

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

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 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
*	1,950	98	Roadway
	1,950		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 = 0.08 cfs @ 12.08 hrs, Volume= 0.006 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
	1,000	98	Paved parking & roofs
	1,000		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-6: Tributary Off-Site

Runoff = 2.43 cfs @ 12.08 hrs, Volume= 0.186 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
*	28,050	98	Paved Parking
	4,125	86	<50% Grass cover, Poor, HSG C
	825	89	Gravel roads, HSG C
	33,000	96	Weighted Average
	4,950		Pervious Area
	28,050		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 = 1.35 cfs @ 12.08 hrs, Volume= 0.103 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
*	15,000	98	Paved Parking
	3,350	86	<50% Grass cover, Poor, HSG C
	18,350	96	Weighted Average
	3,350		Pervious Area
	15,000		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-8: Tributary toward CB-1

Runoff = 1.70 cfs @ 12.09 hrs, Volume= 0.121 af, Depth= 1.70"

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"

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Type III 24-hr 2-yr Rainfall=3.40"

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	Area (sf)	CN	Description
*	1,050	98	Paved Parking
	20,000	86	<50% Grass cover, Poor, HSG C
	16,100	77	Woods, Poor, HSG C
	37,150	82	Weighted Average
	36,100		Pervious Area
	1,050		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

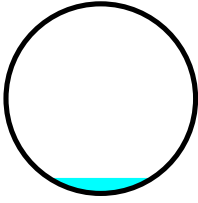
Runoff = 2.78 cfs @ 12.08 hrs, Volume= 0.217 af, Depth= 3.06"

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
*	33,416	98	Paved Parking
	3,684	86	<50% Grass cover, Poor, HSG C
	37,100	97	Weighted Average
	3,684		Pervious Area
	33,416		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 BasinInflow Area = 0.045 ac, 100.00% Impervious, Inflow Depth = 3.17" for 2-yr event
Inflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af
Outflow = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.1 minRouting by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 3.16 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.07 fps, Avg. Travel Time= 0.2 minPeak Storage= 1 cf @ 12.08 hrs, Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 11.06 cfs15.0" Diameter Pipe, n= 0.013
Length= 15.0' Slope= 0.0293 '
Inlet Invert= 76.37', Outlet Invert= 75.93'

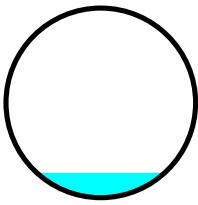
**Summary for Reach CB-2: Catch Basin**

Inflow Area = 0.023 ac, 100.00% Impervious, Inflow Depth = 3.17" for 2-yr event
Inflow = 0.08 cfs @ 12.08 hrs, Volume= 0.006 af
Outflow = 0.08 cfs @ 12.09 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 1.24 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 0.41 fps, Avg. Travel Time= 1.9 min

Peak Storage= 3 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.13'
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'

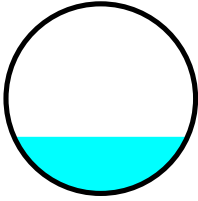
**Summary for Reach CB-7: Catch Basin**

Inflow Area = 0.421 ac, 81.74% Impervious, Inflow Depth = 2.95" for 2-yr event
Inflow = 1.35 cfs @ 12.08 hrs, Volume= 0.103 af
Outflow = 1.35 cfs @ 12.09 hrs, Volume= 0.103 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= 6.87 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.24 fps, Avg. Travel Time= 0.5 min

Peak Storage= 13 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.30'
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'



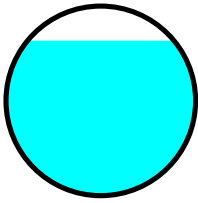
Summary for Reach CB-8: Catch Basin

Inflow Area = 2.181 ac, 66.45% Impervious, Inflow Depth = 2.19" for 2-yr event
Inflow = 2.43 cfs @ 12.08 hrs, Volume= 0.397 af
Outflow = 2.43 cfs @ 12.09 hrs, Volume= 0.397 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 3.53 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.55 fps, Avg. Travel Time= 0.8 min

Peak Storage= 51 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.82'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.43 cfs

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



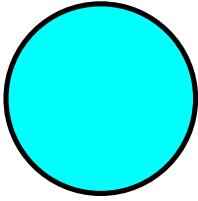
Summary for Reach CB-9: Catch Basin

Inflow Area = 3.033 ac, 73.08% Impervious, Inflow Depth = 2.43" for 2-yr event
Inflow = 5.20 cfs @ 12.09 hrs, Volume= 0.614 af
Outflow = 1.85 cfs @ 11.84 hrs, Volume= 0.614 af, Atten= 64%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 2.48 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.33 fps, Avg. Travel Time= 0.8 min

Peak Storage= 51 cf @ 11.85 hrs, Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 1.71 cfs

12.0" Diameter Pipe, n= 0.013
Length= 65.0' Slope= 0.0023 '
Inlet Invert= 75.29', Outlet Invert= 75.14'

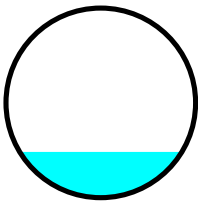
**Summary for Reach P-1: 20" Culvert**

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= 1.87 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.75 fps, Avg. Travel Time= 0.8 min

Peak Storage= 15 cf @ 12.14 hrs, Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 1.67', Capacity at Bank-Full= 5.95 cfs

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

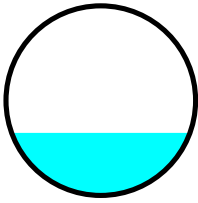
**Summary for Reach P-2: 12" Culvert**

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'



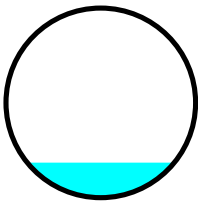
Summary for Reach P-3: 18" Culvert

Inflow Area = 0.853 ac, 2.83% Impervious, Inflow Depth = 1.70" for 2-yr event
 Inflow = 1.70 cfs @ 12.09 hrs, Volume= 0.121 af
 Outflow = 1.70 cfs @ 12.09 hrs, Volume= 0.121 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= 7.59 fps, Min. Travel Time= 0.2 min
 Avg. Velocity = 2.71 fps, Avg. Travel Time= 0.5 min

Peak Storage= 17 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.28'
 Bank-Full Depth= 1.50', Capacity at Bank-Full= 22.89 cfs

18.0" Diameter Pipe, n= 0.013
 Length= 75.0' Slope= 0.0475 '
 Inlet Invert= 78.76', Outlet Invert= 75.20'



Summary for Pond Wet-1: Sortherly Wetland

Inflow Area = 6.507 ac, 43.23% Impervious, Inflow Depth = 1.90" for 2-yr event
 Inflow = 6.84 cfs @ 12.12 hrs, Volume= 1.028 af
 Outflow = 4.04 cfs @ 12.39 hrs, Volume= 0.976 af, Atten= 41%, Lag= 16.5 min
 Discarded = 0.05 cfs @ 12.39 hrs, Volume= 0.072 af
 Primary = 3.99 cfs @ 12.39 hrs, Volume= 0.904 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 75.79' @ 12.39 hrs Surf.Area= 7,756 sf Storage= 9,787 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 70.0 min (885.6 - 815.6)

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

15500.1PRE

Type III 24-hr 2-yr Rainfall=3.40"

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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 @ 12.39 hrs HW=75.79' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.05 cfs)**Primary OutFlow** Max=3.99 cfs @ 12.39 hrs HW=75.79' (Free Discharge)↑**2=Culvert** (Barrel Controls 3.99 cfs @ 2.86 fps)**Summary for Pond WET-2: Northerly Wetland**

Inflow Area =	1.445 ac, 50.71% Impervious, Inflow Depth = 2.01" for 2-yr event
Inflow =	3.29 cfs @ 12.09 hrs, Volume= 0.242 af
Outflow =	1.03 cfs @ 12.54 hrs, Volume= 0.242 af, Atten= 69%, Lag= 26.9 min
Discarded =	0.06 cfs @ 12.43 hrs, Volume= 0.039 af
Primary =	0.97 cfs @ 12.54 hrs, Volume= 0.203 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 76.37' @ 12.43 hrs Surf.Area= 9,233 sf Storage= 3,271 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 33.4 min (842.6 - 809.3)

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	Discarded	76.00'	0.270 in/hr Exfiltration over Surface area
#2	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

Discarded OutFlow Max=0.06 cfs @ 12.43 hrs HW=76.37' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.06 cfs)**Primary OutFlow** Max=0.97 cfs @ 12.54 hrs HW=76.37' TW=75.99' (Dynamic Tailwater)↑**2=Culvert** (Outlet Controls 0.97 cfs @ 1.90 fps)

15500.1PRE

Type III 24-hr 10-yr Rainfall=4.80"

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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 = 3.45 cfs @ 12.08 hrs, Volume= 0.280 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
* 31,200	98	Paved Parking
850	86	<50% Grass cover, Poor, HSG C
32,050	98	Weighted Average
850		Pervious Area
31,200		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-11: Tributary to Northerly Wetland

Runoff = 3.37 cfs @ 12.09 hrs, Volume= 0.240 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"

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Type III 24-hr 10-yr Rainfall=4.80"

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	Area (sf)	CN	Description
*	1,175	98	Roadway
*	15,750	98	Wetland
	27,675	70	Woods, Good, HSG C
	44,600	81	Weighted Average
	27,675		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 Southerly Wetland

Runoff = 3.18 cfs @ 12.13 hrs, Volume= 0.255 af, Depth= 2.72"

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"

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Type III 24-hr 10-yr Rainfall=4.80"

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	Area (sf)	CN	Description
*	9,475	98	Wetland
*	7,775	98	Roadway
	31,750	70	Woods, Good, HSG C
	49,000	80	Weighted Average
	31,750		Pervious Area
	17,250		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	30	0.0360	1.41		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.40"
2.1	20	0.2450	0.16		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.40"
7.1	300	0.0200	0.71		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
9.6	350	Total			

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

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.017 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
*	1,950	98	Roadway
	1,950		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= 0.009 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
	1,000	98	Paved parking & roofs
	1,000		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-6: Tributary Off-Site

Runoff = 3.49 cfs @ 12.08 hrs, Volume= 0.274 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
*	28,050	98	Paved Parking
	4,125	86	<50% Grass cover, Poor, HSG C
	825	89	Gravel roads, HSG C
	33,000	96	Weighted Average
	4,950		Pervious Area
	28,050		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 = 1.94 cfs @ 12.08 hrs, Volume= 0.152 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
*	15,000	98	Paved Parking
	3,350	86	<50% Grass cover, Poor, HSG C
	18,350	96	Weighted Average
	3,350		Pervious Area
	15,000		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-8: Tributary toward CB-1

Runoff = 2.90 cfs @ 12.09 hrs, Volume= 0.206 af, Depth= 2.90"

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"

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Type III 24-hr 10-yr Rainfall=4.80"

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	Area (sf)	CN	Description
*	1,050	98	Paved Parking
	20,000	86	<50% Grass cover, Poor, HSG C
	16,100	77	Woods, Poor, HSG C
	37,150	82	Weighted Average
	36,100		Pervious Area
	1,050		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 = 3.97 cfs @ 12.08 hrs, Volume= 0.316 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
*	33,416	98	Paved Parking
	3,684	86	<50% Grass cover, Poor, HSG C
	37,100	97	Weighted Average
	3,684		Pervious Area
	33,416		Impervious Area

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

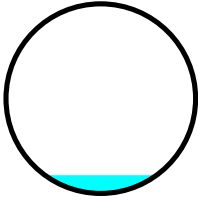
Summary for Reach CB-1: Catch Basin

Inflow Area = 0.045 ac, 100.00% Impervious, Inflow Depth = 4.56" for 10-yr event
 Inflow = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af
 Outflow = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
 Max. Velocity= 3.52 fps, Min. Travel Time= 0.1 min
 Avg. Velocity = 1.18 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.08 hrs, Average Depth at Peak Storage= 0.12'
 Bank-Full Depth= 1.25', Capacity at Bank-Full= 11.06 cfs

15.0" Diameter Pipe, n= 0.013
 Length= 15.0' Slope= 0.0293 '
 Inlet Invert= 76.37', Outlet Invert= 75.93'

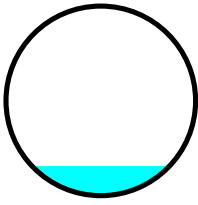
**Summary for Reach CB-2: Catch Basin**

Inflow Area = 0.023 ac, 100.00% Impervious, Inflow Depth = 4.56" for 10-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= 0.4 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= 0.16'
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'

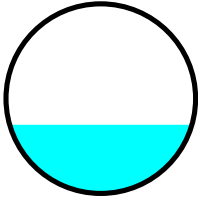
**Summary for Reach CB-7: Catch Basin**

Inflow Area = 0.421 ac, 81.74% Impervious, Inflow Depth = 4.33" for 10-yr event
Inflow = 1.94 cfs @ 12.08 hrs, Volume= 0.152 af
Outflow = 1.94 cfs @ 12.09 hrs, Volume= 0.152 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= 7.60 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.50 fps, Avg. Travel Time= 0.4 min

Peak Storage= 17 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.36'
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'

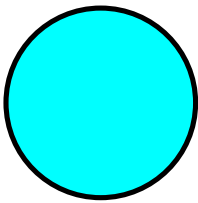
**Summary for Reach CB-8: Catch Basin**

Inflow Area = 2.181 ac, 66.45% Impervious, Inflow Depth = 3.41" for 10-yr event
Inflow = 3.46 cfs @ 12.12 hrs, Volume= 0.620 af
Outflow = 2.62 cfs @ 12.03 hrs, Volume= 0.620 af, Atten= 24%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 3.53 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.74 fps, Avg. Travel Time= 0.7 min

Peak Storage= 59 cf @ 12.04 hrs, Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.43 cfs

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

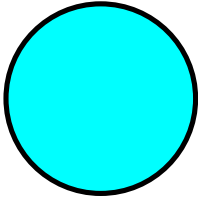
**Summary for Reach CB-9: Catch Basin**

Inflow Area = 3.033 ac, 73.08% Impervious, Inflow Depth = 3.70" for 10-yr event
Inflow = 6.40 cfs @ 12.08 hrs, Volume= 0.936 af
Outflow = 1.85 cfs @ 11.72 hrs, Volume= 0.936 af, Atten= 71%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 2.48 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.48 fps, Avg. Travel Time= 0.7 min

Peak Storage= 51 cf @ 11.73 hrs, Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 1.71 cfs

12.0" Diameter Pipe, n= 0.013
Length= 65.0' Slope= 0.0023 '
Inlet Invert= 75.29', Outlet Invert= 75.14'

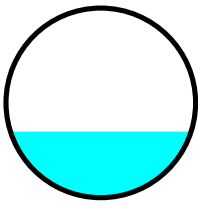
**Summary for Reach P-1: 20" Culvert**

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= 2.29 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.87 fps, Avg. Travel Time= 0.7 min

Peak Storage= 25 cf @ 12.14 hrs, Average Depth at Peak Storage= 0.58'
Bank-Full Depth= 1.67', Capacity at Bank-Full= 5.95 cfs

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

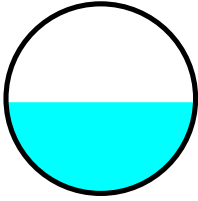
**Summary for Reach P-2: 12" Culvert**

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'



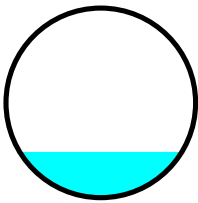
Summary for Reach P-3: 18" Culvert

Inflow Area = 0.853 ac, 2.83% Impervious, Inflow Depth = 2.90" for 10-yr event
 Inflow = 2.90 cfs @ 12.09 hrs, Volume= 0.206 af
 Outflow = 2.90 cfs @ 12.09 hrs, Volume= 0.206 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= 8.87 fps, Min. Travel Time= 0.1 min
 Avg. Velocity = 3.05 fps, Avg. Travel Time= 0.4 min

Peak Storage= 24 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.36'
 Bank-Full Depth= 1.50', Capacity at Bank-Full= 22.89 cfs

18.0" Diameter Pipe, n= 0.013
 Length= 75.0' Slope= 0.0475 '
 Inlet Invert= 78.76', Outlet Invert= 75.20'



Summary for Pond Wet-1: Sortherly Wetland

Inflow Area = 6.507 ac, 43.23% Impervious, Inflow Depth = 3.08" for 10-yr event
 Inflow = 11.01 cfs @ 12.11 hrs, Volume= 1.671 af
 Outflow = 6.46 cfs @ 12.32 hrs, Volume= 1.618 af, Atten= 41%, Lag= 12.6 min
 Discarded = 0.05 cfs @ 12.32 hrs, Volume= 0.077 af
 Primary = 6.41 cfs @ 12.32 hrs, Volume= 1.540 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 76.15' @ 12.32 hrs Surf.Area= 8,671 sf Storage= 12,759 cf

Plug-Flow detention time= 75.7 min calculated for 1.617 af (97% of inflow)
 Center-of-Mass det. time= 57.9 min (878.9 - 821.1)

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

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Type III 24-hr 10-yr Rainfall=4.80"

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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 @ 12.32 hrs HW=76.15' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.05 cfs)**Primary OutFlow** Max=6.41 cfs @ 12.32 hrs HW=76.15' (Free Discharge)↑**2=Culvert** (Barrel Controls 6.41 cfs @ 3.31 fps)**Summary for Pond WET-2: Northerly Wetland**

Inflow Area =	1.445 ac, 50.71% Impervious, Inflow Depth = 3.25" for 10-yr event
Inflow =	5.31 cfs @ 12.09 hrs, Volume= 0.392 af
Outflow =	1.87 cfs @ 12.74 hrs, Volume= 0.392 af, Atten= 65%, Lag= 39.2 min
Discarded =	0.06 cfs @ 12.45 hrs, Volume= 0.052 af
Primary =	1.81 cfs @ 12.74 hrs, Volume= 0.340 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 76.64' @ 12.45 hrs Surf.Area= 9,905 sf Storage= 5,842 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 40.6 min (839.2 - 798.6)

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	Discarded	76.00'	0.270 in/hr Exfiltration over Surface area
#2	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

Discarded OutFlow Max=0.06 cfs @ 12.45 hrs HW=76.64' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.06 cfs)**Primary OutFlow** Max=1.84 cfs @ 12.74 hrs HW=76.59' TW=76.19' (Dynamic Tailwater)↑**2=Culvert** (Outlet Controls 1.84 cfs @ 2.27 fps)

Summary for Subcatchment S-1: Tributary to South Culvert

Runoff = 2.93 cfs @ 12.13 hrs, Volume= 0.231 af, Depth= 3.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

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 = 5.05 cfs @ 12.08 hrs, Volume= 0.415 af, Depth= 6.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

Area (sf)	CN	Description
* 31,200	98	Paved Parking
850	86	<50% Grass cover, Poor, HSG C
32,050	98	Weighted Average
850		Pervious Area
31,200		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-11: Tributary to Northerly Wetland

Runoff = 5.70 cfs @ 12.09 hrs, Volume= 0.410 af, Depth= 4.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

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Type III 24-hr 100-yr Rainfall=7.00"

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	Area (sf)	CN	Description
*	1,175	98	Roadway
*	15,750	98	Wetland
	27,675	70	Woods, Good, HSG C
	44,600	81	Weighted Average
	27,675		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 = 3.04 cfs @ 12.11 hrs, Volume= 0.231 af, Depth= 3.94"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	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 Southerly Wetland

Runoff = 5.44 cfs @ 12.13 hrs, Volume= 0.440 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

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Type III 24-hr 100-yr Rainfall=7.00"

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	Area (sf)	CN	Description
*	9,475	98	Wetland
*	7,775	98	Roadway
	31,750	70	Woods, Good, HSG C
	49,000	80	Weighted Average
	31,750		Pervious Area
	17,250		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	30	0.0360	1.41		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.40"
2.1	20	0.2450	0.16		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.40"
7.1	300	0.0200	0.71		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
9.6	350	Total			

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

Runoff = 0.31 cfs @ 12.08 hrs, Volume= 0.025 af, Depth= 6.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	Area (sf)	CN	Description
*	1,950	98	Roadway
	1,950		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 = 0.16 cfs @ 12.08 hrs, Volume= 0.013 af, Depth= 6.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	Area (sf)	CN	Description
	1,000	98	Paved parking & roofs
	1,000		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-6: Tributary Off-Site

Runoff = 5.16 cfs @ 12.08 hrs, Volume= 0.412 af, Depth= 6.52"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	Area (sf)	CN	Description
*	28,050	98	Paved Parking
	4,125	86	<50% Grass cover, Poor, HSG C
	825	89	Gravel roads, HSG C
	33,000	96	Weighted Average
	4,950		Pervious Area
	28,050		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 = 2.87 cfs @ 12.08 hrs, Volume= 0.229 af, Depth= 6.52"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	Area (sf)	CN	Description
*	15,000	98	Paved Parking
	3,350	86	<50% Grass cover, Poor, HSG C
	18,350	96	Weighted Average
	3,350		Pervious Area
	15,000		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-8: Tributary toward CB-1

Runoff = 4.84 cfs @ 12.09 hrs, Volume= 0.349 af, Depth= 4.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

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Type III 24-hr 100-yr Rainfall=7.00"

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	Area (sf)	CN	Description
*	1,050	98	Paved Parking
	20,000	86	<50% Grass cover, Poor, HSG C
	16,100	77	Woods, Poor, HSG C
	37,150	82	Weighted Average
	36,100		Pervious Area
	1,050		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

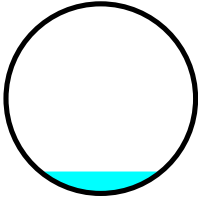
Runoff = 5.83 cfs @ 12.08 hrs, Volume= 0.471 af, Depth= 6.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	Area (sf)	CN	Description
*	33,416	98	Paved Parking
	3,684	86	<50% Grass cover, Poor, HSG C
	37,100	97	Weighted Average
	3,684		Pervious Area
	33,416		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 BasinInflow Area = 0.045 ac, 100.00% Impervious, Inflow Depth = 6.76" for 100-yr event
Inflow = 0.31 cfs @ 12.08 hrs, Volume= 0.025 af
Outflow = 0.31 cfs @ 12.08 hrs, Volume= 0.025 af, Atten= 0%, Lag= 0.0 minRouting by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 3.94 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.32 fps, Avg. Travel Time= 0.2 minPeak Storage= 1 cf @ 12.08 hrs, Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 11.06 cfs15.0" Diameter Pipe, n= 0.013
Length= 15.0' Slope= 0.0293 '
Inlet Invert= 76.37', Outlet Invert= 75.93'

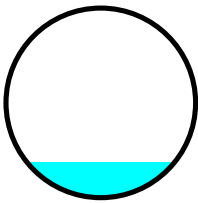
**Summary for Reach CB-2: Catch Basin**

Inflow Area = 0.023 ac, 100.00% Impervious, Inflow Depth = 6.76" for 100-yr event
Inflow = 0.16 cfs @ 12.08 hrs, Volume= 0.013 af
Outflow = 0.16 cfs @ 12.09 hrs, Volume= 0.013 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= 1.55 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.51 fps, Avg. Travel Time= 1.6 min

Peak Storage= 5 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.19'
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'

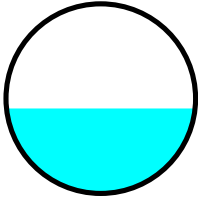
**Summary for Reach CB-7: Catch Basin**

Inflow Area = 0.421 ac, 81.74% Impervious, Inflow Depth = 6.52" for 100-yr event
Inflow = 2.87 cfs @ 12.08 hrs, Volume= 0.229 af
Outflow = 2.87 cfs @ 12.08 hrs, Volume= 0.229 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= 8.44 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.82 fps, Avg. Travel Time= 0.4 min

Peak Storage= 22 cf @ 12.08 hrs, Average Depth at Peak Storage= 0.45'
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'

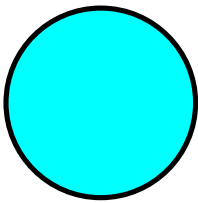
**Summary for Reach CB-8: Catch Basin**

Inflow Area = 2.181 ac, 66.45% Impervious, Inflow Depth = 5.43" for 100-yr event
Inflow = 6.90 cfs @ 12.11 hrs, Volume= 0.987 af
Outflow = 2.63 cfs @ 11.94 hrs, Volume= 0.987 af, Atten= 62%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 3.53 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.97 fps, Avg. Travel Time= 0.6 min

Peak Storage= 59 cf @ 11.95 hrs, Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.43 cfs

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

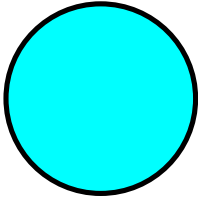
**Summary for Reach CB-9: Catch Basin**

Inflow Area = 3.033 ac, 73.08% Impervious, Inflow Depth = 5.77" for 100-yr event
Inflow = 8.26 cfs @ 12.08 hrs, Volume= 1.458 af
Outflow = 1.85 cfs @ 11.61 hrs, Volume= 1.458 af, Atten= 78%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 2.48 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.68 fps, Avg. Travel Time= 0.6 min

Peak Storage= 51 cf @ 11.62 hrs, Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 1.71 cfs

12.0" Diameter Pipe, n= 0.013
Length= 65.0' Slope= 0.0023 '
Inlet Invert= 75.29', Outlet Invert= 75.14'

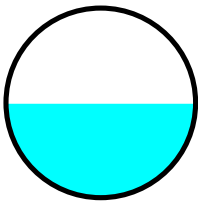
**Summary for Reach P-1: 20" Culvert**

Inflow Area = 0.725 ac, 7.28% Impervious, Inflow Depth = 3.83" for 100-yr event
Inflow = 2.93 cfs @ 12.13 hrs, Volume= 0.231 af
Outflow = 2.93 cfs @ 12.13 hrs, Volume= 0.231 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= 2.71 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.00 fps, Avg. Travel Time= 0.6 min

Peak Storage= 40 cf @ 12.13 hrs, Average Depth at Peak Storage= 0.83'
Bank-Full Depth= 1.67', Capacity at Bank-Full= 5.95 cfs

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

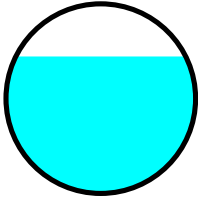
**Summary for Reach P-2: 12" Culvert**

Inflow Area = 0.704 ac, 7.91% Impervious, Inflow Depth = 3.94" for 100-yr event
Inflow = 3.04 cfs @ 12.11 hrs, Volume= 0.231 af
Outflow = 3.04 cfs @ 12.12 hrs, Volume= 0.231 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= 5.00 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.91 fps, Avg. Travel Time= 0.4 min

Peak Storage= 26 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.72'
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'



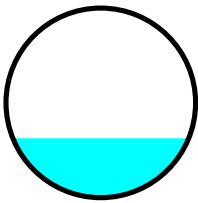
Summary for Reach P-3: 18" Culvert

Inflow Area = 0.853 ac, 2.83% Impervious, Inflow Depth = 4.92" for 100-yr event
 Inflow = 4.84 cfs @ 12.09 hrs, Volume= 0.349 af
 Outflow = 4.84 cfs @ 12.09 hrs, Volume= 0.349 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= 10.27 fps, Min. Travel Time= 0.1 min
 Avg. Velocity = 3.43 fps, Avg. Travel Time= 0.4 min

Peak Storage= 35 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.47'
 Bank-Full Depth= 1.50', Capacity at Bank-Full= 22.89 cfs

18.0" Diameter Pipe, n= 0.013
 Length= 75.0' Slope= 0.0475 '
 Inlet Invert= 78.76', Outlet Invert= 75.20'



Summary for Pond Wet-1: Sortherly Wetland

Inflow Area = 6.507 ac, 43.23% Impervious, Inflow Depth = 5.07" for 100-yr event
 Inflow = 18.01 cfs @ 12.11 hrs, Volume= 2.748 af
 Outflow = 10.27 cfs @ 12.30 hrs, Volume= 2.694 af, Atten= 43%, Lag= 11.3 min
 Discarded = 0.06 cfs @ 12.30 hrs, Volume= 0.084 af
 Primary = 10.21 cfs @ 12.30 hrs, Volume= 2.610 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 76.68' @ 12.30 hrs Surf.Area= 9,988 sf Storage= 17,675 cf

Plug-Flow detention time= 59.7 min calculated for 2.693 af (98% of inflow)
 Center-of-Mass det. time= 48.8 min (889.1 - 840.4)

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

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Type III 24-hr 100-yr Rainfall=7.00"

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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 @ 12.30 hrs HW=76.68' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.06 cfs)**Primary OutFlow** Max=10.21 cfs @ 12.30 hrs HW=76.68' (Free Discharge)↑**2=Culvert** (Barrel Controls 10.21 cfs @ 3.84 fps)**Summary for Pond WET-2: Northerly Wetland**

Inflow Area = 1.445 ac, 50.71% Impervious, Inflow Depth = 5.31" for 100-yr event
 Inflow = 8.56 cfs @ 12.09 hrs, Volume= 0.639 af
 Outflow = 3.34 cfs @ 12.32 hrs, Volume= 0.639 af, Atten= 61%, Lag= 14.0 min
 Discarded = 0.07 cfs @ 12.32 hrs, Volume= 0.067 af
 Primary = 3.27 cfs @ 12.32 hrs, Volume= 0.572 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 76.89' @ 12.32 hrs Surf.Area= 10,525 sf Storage= 8,376 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 46.8 min (834.3 - 787.5)

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

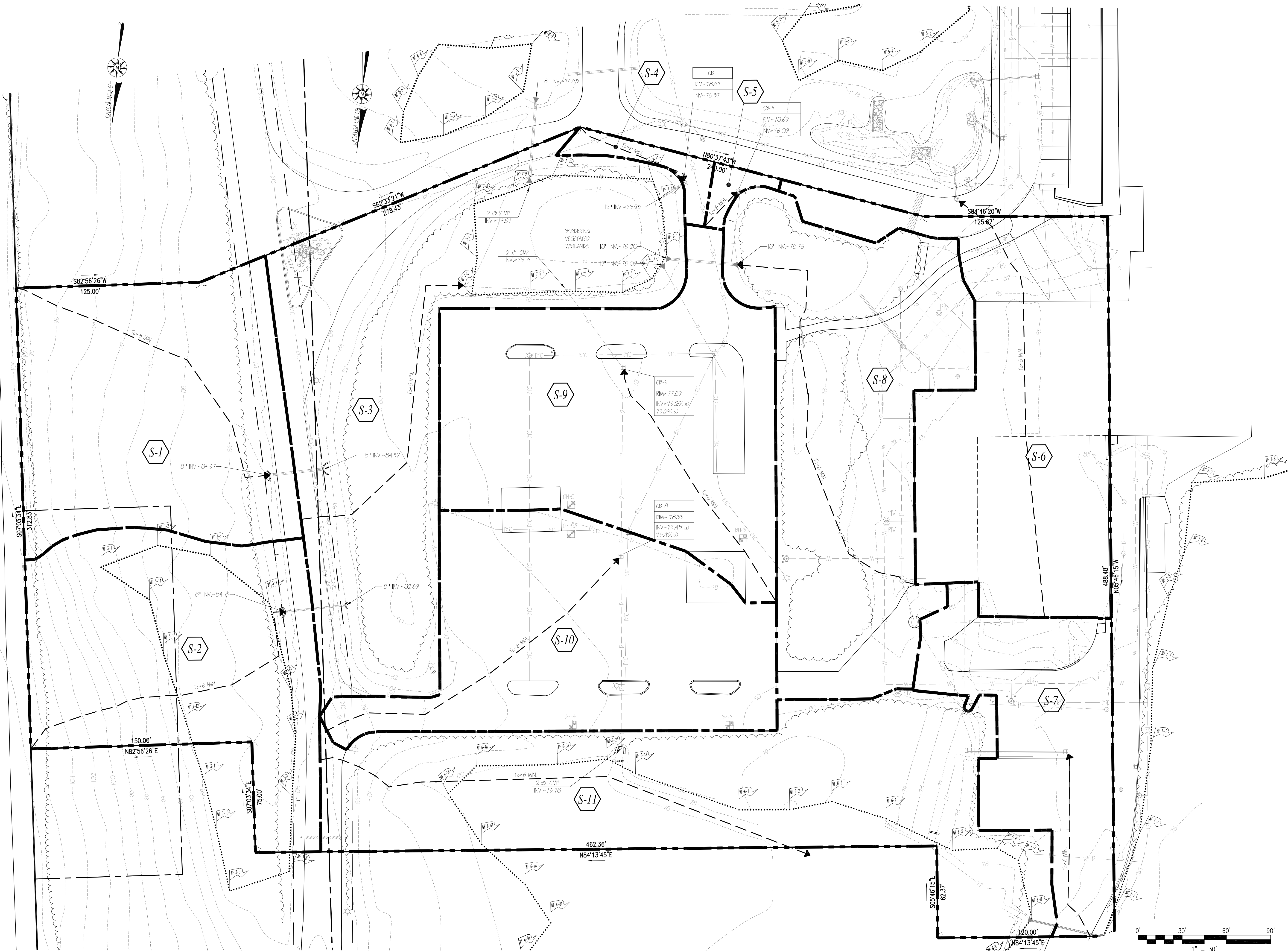
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
76.00	8,300	0	0
78.00	13,300	21,600	21,600

Device	Routing	Invert	Outlet Devices
#1	Discarded	76.00'	0.270 in/hr Exfiltration over Surface area
#2	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

Discarded OutFlow Max=0.07 cfs @ 12.32 hrs HW=76.89' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.07 cfs)**Primary OutFlow** Max=3.27 cfs @ 12.32 hrs HW=76.89' TW=76.45' (Dynamic Tailwater)↑**2=Culvert** (Outlet Controls 3.27 cfs @ 2.65 fps)

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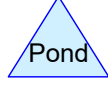
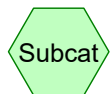
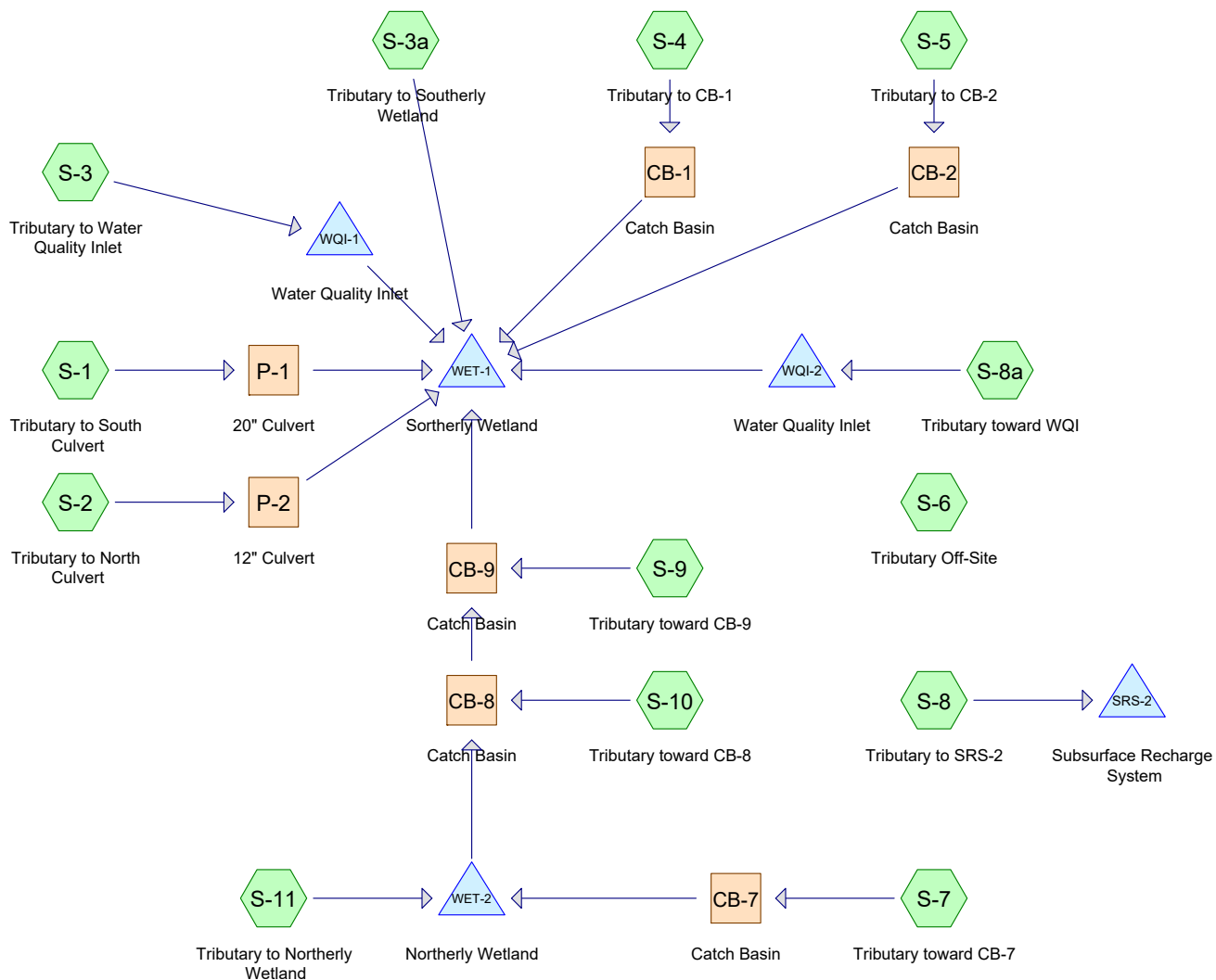
DRAWN BY: MJW
DESIGNED BY: CAF
CHECKED BY: CAF

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: 1"=30'
JOB NO. 15-500.1
LATEST REVISION:

PRE-SUBCATCHMENT
SHEET 5A OF 8



Drainage Diagram for 15500.1POST
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Type III 24-hr 2-yr Rainfall=3.40"

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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"

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Type III 24-hr 2-yr Rainfall=3.40"

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	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"

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Type III 24-hr 2-yr Rainfall=3.40"

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	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

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Type III 24-hr 2-yr Rainfall=3.40"

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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

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Type III 24-hr 2-yr Rainfall=3.40"

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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

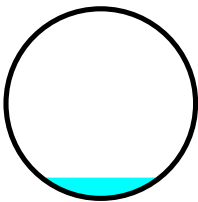
[52] Hint: Inlet/Outlet conditions not evaluated

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**

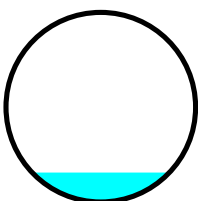
[52] Hint: Inlet/Outlet conditions not evaluated

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

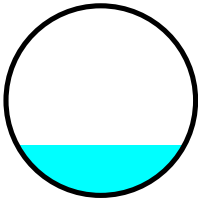
[52] Hint: Inlet/Outlet conditions not evaluated

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**

[52] Hint: Inlet/Outlet conditions not evaluated

[55] Hint: Peak inflow is 116% of Manning's capacity

[76] Warning: Detained 0.002 af (Pond w/culvert advised)

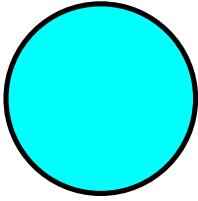
[80] Warning: Exceeded Pond WET-2 by 0.27' @ 12.07 hrs (1.07 cfs 0.010 af)

Inflow Area = 2.188 ac, 71.65% Impervious, Inflow Depth = 2.25" for 2-yr event
Inflow = 2.83 cfs @ 12.08 hrs, Volume= 0.410 af
Outflow = 2.61 cfs @ 12.06 hrs, Volume= 0.410 af, Atten= 8%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 3.53 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.58 fps, Avg. Travel Time= 0.8 min

Peak Storage= 59 cf @ 12.07 hrs, Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.43 cfs

12.0" 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

[52] Hint: Inlet/Outlet conditions not evaluated

[55] Hint: Peak inflow is 237% of Manning's capacity

[76] Warning: Detained 0.061 af (Pond w/culvert advised)

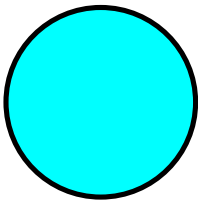
[63] Warning: Exceeded Reach CB-8 INLET depth by 0.44' @ 13.17 hrs

Inflow Area = 3.234 ac, 80.82% Impervious, Inflow Depth = 2.55" for 2-yr event
Inflow = 5.93 cfs @ 12.06 hrs, Volume= 0.686 af
Outflow = 2.68 cfs @ 11.92 hrs, Volume= 0.686 af, Atten= 55%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 3.63 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.84 fps, Avg. Travel Time= 0.7 min

Peak Storage= 59 cf @ 11.93 hrs, Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.50 cfs

12.0" Diameter Pipe, n= 0.013
Length= 75.0' Slope= 0.0049 '/
Inlet Invert= 75.29', Outlet Invert= 74.92'



Summary for Reach P-1: 20" Culvert

[52] Hint: Inlet/Outlet conditions not evaluated

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= 1.87 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.75 fps, Avg. Travel Time= 0.8 min

Peak Storage= 15 cf @ 12.14 hrs, Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 1.67', Capacity at Bank-Full= 5.95 cfs

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Type III 24-hr 2-yr Rainfall=3.40"

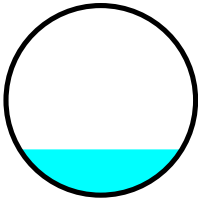
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20.0" Diameter Pipe, n= 0.025 Corrugated metal

Length= 37.0' Slope= 0.0068 '/'

Inlet Invert= 84.57', Outlet Invert= 84.32'



Summary for Reach P-2: 12" Culvert

[52] Hint: Inlet/Outlet conditions not evaluated

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

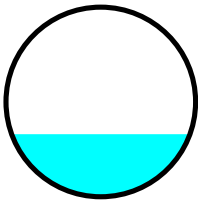
Peak Storage= 9 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.33'

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 = 1.01 cfs @ 12.24 hrs, Volume= 0.108 af, Atten= 52%, Lag= 9.2 min
Discarded = 0.01 cfs @ 5.30 hrs, Volume= 0.030 af
Primary = 1.00 cfs @ 12.24 hrs, Volume= 0.078 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 80.82' @ 12.24 hrs Surf.Area= 2,074 sf Storage= 3,437 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 127.7 min (882.8 - 755.1)

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Type III 24-hr 2-yr Rainfall=3.40"

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Volume	Invert	Avail.Storage	Storage Description
#1	78.50'	1,825 cf	17.00'W x 122.00'L x 3.75'H Prismaoid 7,778 cf Overall - 3,215 cf Embedded = 4,562 cf x 40.0% Voids
#2	79.00'	3,215 cf	52.6"W x 34.0"H x 7.50'L Cultec R-V8 x 48 Inside #1
		5,040 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	78.50'	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=0.01 cfs @ 5.30 hrs HW=78.54' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.01 cfs)**Primary OutFlow** Max=1.00 cfs @ 12.24 hrs HW=80.82' (Free Discharge)↑**2=Culvert** (Barrel Controls 1.00 cfs @ 2.13 fps)**Summary for Pond WET-1: Sortherly Wetland**

[62] Warning: Exceeded Reach CB-2 OUTLET depth by 0.12' @ 12.57 hrs

[62] Warning: Exceeded Reach CB-9 OUTLET depth by 0.23' @ 13.20 hrs

Inflow Area = 6.278 ac, 61.12% Impervious, Inflow Depth = 1.75" for 2-yr event
 Inflow = 5.26 cfs @ 12.11 hrs, Volume= 0.918 af
 Outflow = 3.48 cfs @ 12.47 hrs, Volume= 0.867 af, Atten= 34%, Lag= 21.4 min
 Discarded = 0.05 cfs @ 12.47 hrs, Volume= 0.073 af
 Primary = 3.43 cfs @ 12.47 hrs, Volume= 0.794 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 75.69' @ 12.47 hrs Surf.Area= 7,519 sf Storage= 9,078 cf

Plug-Flow detention time= 108.2 min calculated for 0.866 af (94% of inflow)

Center-of-Mass det. time= 77.6 min (874.8 - 797.2)

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

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Type III 24-hr 2-yr Rainfall=3.40"

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Discarded OutFlow Max=0.05 cfs @ 12.47 hrs HW=75.69' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.05 cfs)**Primary OutFlow** Max=3.43 cfs @ 12.47 hrs HW=75.69' (Free Discharge)↑**2=Culvert** (Barrel Controls 3.43 cfs @ 2.73 fps)**Summary for Pond WET-2: Northerly Wetland**

[87] Warning: Oscillations may require Finer Routing or smaller dt

[62] Warning: Exceeded Reach CB-7 OUTLET depth by 0.05' @ 12.58 hrs

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 = 0.94 cfs @ 12.55 hrs, Volume= 0.222 af, Atten= 68%, Lag= 27.9 min
 Discarded = 0.06 cfs @ 12.43 hrs, Volume= 0.038 af
 Primary = 0.88 cfs @ 12.55 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= 76.35' @ 12.43 hrs Surf.Area= 9,178 sf Storage= 3,070 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 33.4 min (838.7 - 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=76.35' (Free Discharge)↑**2=Exfiltration** (Exfiltration Controls 0.06 cfs)**Primary OutFlow** Max=0.89 cfs @ 12.55 hrs HW=76.34' TW=75.98' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 0.89 cfs @ 1.84 fps)**Summary for Pond WQI-1: Water Quality Inlet**

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Type III 24-hr 2-yr Rainfall=3.40"

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Inflow Area = 0.770 ac, 66.17% Impervious, Inflow Depth = 2.26" for 2-yr event
 Inflow = 2.03 cfs @ 12.09 hrs, Volume= 0.145 af
 Outflow = 0.04 cfs @ 18.00 hrs, Volume= 0.068 af, Atten= 98%, Lag= 354.9 min
 Discarded = 0.04 cfs @ 18.00 hrs, Volume= 0.068 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 78.77' @ 18.00 hrs Surf.Area= 6,330 sf Storage= 4,401 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 350.3 min (1,159.0 - 808.7)

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 @ 18.00 hrs HW=78.77' (Free Discharge)
 ↳1=Exfiltration (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=78.00' TW=74.00' (Dynamic Tailwater)
 ↳2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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)

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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=75.58' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Weir Controls 0.06 cfs @ 0.26 fps)

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Type III 24-hr 10-yr Rainfall=4.80"

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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"

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Type III 24-hr 10-yr Rainfall=4.80"

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	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"

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Type III 24-hr 10-yr Rainfall=4.80"

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	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

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Type III 24-hr 10-yr Rainfall=4.80"

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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

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Type III 24-hr 10-yr Rainfall=4.80"

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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

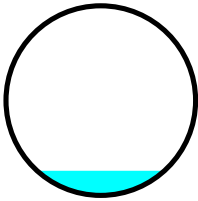
[52] Hint: Inlet/Outlet conditions not evaluated

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**

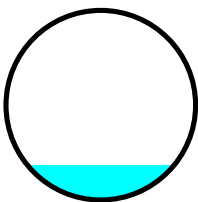
[52] Hint: Inlet/Outlet conditions not evaluated

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'



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Type III 24-hr 10-yr Rainfall=4.80"

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Summary for Reach CB-7: Catch Basin

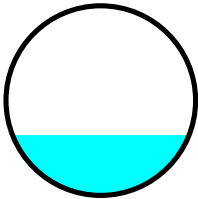
[52] Hint: Inlet/Outlet conditions not evaluated

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

[52] Hint: Inlet/Outlet conditions not evaluated

[55] Hint: Peak inflow is 165% of Manning's capacity

[76] Warning: Detained 0.020 af (Pond w/culvert advised)

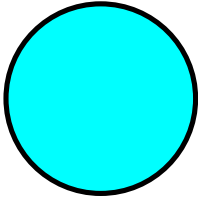
[80] Warning: Exceeded Pond WET-2 by 0.19' @ 12.02 hrs (0.89 cfs 0.007 af)

Inflow Area = 2.188 ac, 71.65% Impervious, Inflow Depth = 3.48" for 10-yr event
Inflow = 4.01 cfs @ 12.08 hrs, Volume= 0.634 af
Outflow = 2.60 cfs @ 12.01 hrs, Volume= 0.634 af, Atten= 35%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 3.53 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.77 fps, Avg. Travel Time= 0.7 min

Peak Storage= 59 cf @ 12.02 hrs, Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.43 cfs

12.0" 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

[52] Hint: Inlet/Outlet conditions not evaluated

[55] Hint: Peak inflow is 293% of Manning's capacity

[76] Warning: Detained 0.143 af (Pond w/culvert advised)

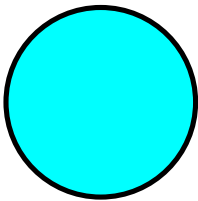
[63] Warning: Exceeded Reach CB-8 INLET depth by 0.49' @ 14.44 hrs

Inflow Area = 3.234 ac, 80.82% Impervious, Inflow Depth = 3.83" for 10-yr event
Inflow = 7.34 cfs @ 12.08 hrs, Volume= 1.032 af
Outflow = 2.67 cfs @ 11.78 hrs, Volume= 1.032 af, Atten= 64%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 3.63 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.05 fps, Avg. Travel Time= 0.6 min

Peak Storage= 59 cf @ 11.79 hrs, Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.50 cfs

12.0" Diameter Pipe, n= 0.013
Length= 75.0' Slope= 0.0049 '/
Inlet Invert= 75.29', Outlet Invert= 74.92'



Summary for Reach P-1: 20" Culvert

[52] Hint: Inlet/Outlet conditions not evaluated

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= 2.29 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.87 fps, Avg. Travel Time= 0.7 min

Peak Storage= 25 cf @ 12.14 hrs, Average Depth at Peak Storage= 0.58'
Bank-Full Depth= 1.67', Capacity at Bank-Full= 5.95 cfs

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Type III 24-hr 10-yr Rainfall=4.80"

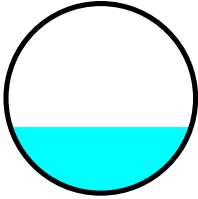
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20.0" Diameter Pipe, n= 0.025 Corrugated metal
Length= 37.0' Slope= 0.0068 '/'
Inlet Invert= 84.57', Outlet Invert= 84.32'



Summary for Reach P-2: 12" Culvert

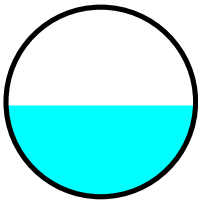
[52] Hint: Inlet/Outlet conditions not evaluated

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 = 2.47 cfs @ 12.14 hrs, Volume= 0.182 af, Atten= 18%, Lag= 3.3 min
Discarded = 0.01 cfs @ 3.66 hrs, Volume= 0.031 af
Primary = 2.46 cfs @ 12.14 hrs, Volume= 0.152 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 81.09' @ 12.14 hrs Surf.Area= 2,074 sf Storage= 3,834 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 98.2 min (846.9 - 748.7)

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Volume	Invert	Avail.Storage	Storage Description
#1	78.50'	1,825 cf	17.00'W x 122.00'L x 3.75'H Prismaoid 7,778 cf Overall - 3,215 cf Embedded = 4,562 cf x 40.0% Voids
#2	79.00'	3,215 cf	52.6"W x 34.0"H x 7.50'L Cultec R-V8 x 48 Inside #1
		5,040 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	78.50'	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=0.01 cfs @ 3.66 hrs HW=78.54' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.01 cfs)**Primary OutFlow** Max=2.46 cfs @ 12.14 hrs HW=81.09' (Free Discharge)↑**2=Culvert** (Barrel Controls 2.46 cfs @ 2.67 fps)**Summary for Pond WET-1: Sortherly Wetland**

[62] Warning: Exceeded Reach CB-2 OUTLET depth by 0.36' @ 12.44 hrs

[62] Warning: Exceeded Reach CB-9 OUTLET depth by 0.28' @ 14.47 hrs

Inflow Area = 6.278 ac, 61.12% Impervious, Inflow Depth = 2.89" for 10-yr event
 Inflow = 7.64 cfs @ 12.14 hrs, Volume= 1.512 af
 Outflow = 5.14 cfs @ 12.38 hrs, Volume= 1.460 af, Atten= 33%, Lag= 14.5 min
 Discarded = 0.05 cfs @ 12.38 hrs, Volume= 0.078 af
 Primary = 5.09 cfs @ 12.38 hrs, Volume= 1.382 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 75.96' @ 12.38 hrs Surf.Area= 8,191 sf Storage= 11,148 cf

Plug-Flow detention time= 82.5 min calculated for 1.460 af (97% of inflow)

Center-of-Mass det. time= 62.7 min (866.0 - 803.3)

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

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Discarded OutFlow Max=0.05 cfs @ 12.38 hrs HW=75.96' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.05 cfs)**Primary OutFlow** Max=5.09 cfs @ 12.38 hrs HW=75.96' (Free Discharge)↑**2=Culvert** (Barrel Controls 5.09 cfs @ 3.08 fps)**Summary for Pond WET-2: Northerly Wetland**

[87] Warning: Oscillations may require Finer Routing or smaller dt

[62] Warning: Exceeded Reach CB-7 OUTLET depth by 0.30' @ 12.60 hrs

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 = 1.75 cfs @ 12.78 hrs, Volume= 0.360 af, Atten= 64%, Lag= 41.6 min
 Discarded = 0.06 cfs @ 12.47 hrs, Volume= 0.050 af
 Primary = 1.69 cfs @ 12.78 hrs, Volume= 0.309 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 76.61' @ 12.47 hrs Surf.Area= 9,821 sf Storage= 5,511 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 41.5 min (837.7 - 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 @ 12.47 hrs HW=76.61' (Free Discharge)↑**2=Exfiltration** (Exfiltration Controls 0.06 cfs)**Primary OutFlow** Max=1.69 cfs @ 12.78 hrs HW=76.56' TW=76.17' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 1.69 cfs @ 2.21 fps)**Summary for Pond WQI-1: Water Quality Inlet**

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Inflow Area = 0.770 ac, 66.17% Impervious, Inflow Depth = 3.58" for 10-yr event
 Inflow = 3.15 cfs @ 12.09 hrs, Volume= 0.230 af
 Outflow = 0.21 cfs @ 13.63 hrs, Volume= 0.116 af, Atten= 93%, Lag= 92.6 min
 Discarded = 0.04 cfs @ 13.63 hrs, Volume= 0.076 af
 Primary = 0.17 cfs @ 13.63 hrs, Volume= 0.040 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 79.04' @ 13.63 hrs Surf.Area= 6,757 sf Storage= 6,129 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 256.9 min (1,052.7 - 795.8)

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 @ 13.63 hrs HW=79.04' (Free Discharge)
 ↗**1=Exfiltration** (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.17 cfs @ 13.63 hrs HW=79.04' TW=75.66' (Dynamic Tailwater)
 ↗**2=Broad-Crested Rectangular Weir** (Weir Controls 0.17 cfs @ 0.47 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)

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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=75.89' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Weir Controls 0.76 cfs @ 0.62 fps)

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Summary for Subcatchment S-1: Tributary to South Culvert

Runoff = 2.93 cfs @ 12.13 hrs, Volume= 0.231 af, Depth= 3.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

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 = 5.87 cfs @ 12.08 hrs, Volume= 0.482 af, Depth= 6.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

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 = 5.61 cfs @ 12.09 hrs, Volume= 0.404 af, Depth= 4.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

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Type III 24-hr 100-yr Rainfall=7.00"

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	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 = 3.04 cfs @ 12.11 hrs, Volume= 0.231 af, Depth= 3.94"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	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 = 4.90 cfs @ 12.08 hrs, Volume= 0.366 af, Depth= 5.71"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

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Type III 24-hr 100-yr Rainfall=7.00"

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	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 = 2.82 cfs @ 12.09 hrs, Volume= 0.206 af, Depth= 5.25"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	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 = 0.23 cfs @ 12.08 hrs, Volume= 0.019 af, Depth= 6.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	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 = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af, Depth= 6.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

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 = 2.35 cfs @ 12.08 hrs, Volume= 0.190 af, Depth= 6.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

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 = 2.23 cfs @ 12.08 hrs, Volume= 0.183 af, Depth= 6.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

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

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Type III 24-hr 100-yr Rainfall=7.00"

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

Runoff = 4.41 cfs @ 12.08 hrs, Volume= 0.362 af, Depth= 6.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

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 = 2.11 cfs @ 12.08 hrs, Volume= 0.168 af, Depth= 6.52"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

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 = 7.18 cfs @ 12.08 hrs, Volume= 0.589 af, Depth= 6.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

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

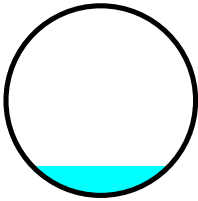
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.033 ac, 100.00% Impervious, Inflow Depth = 6.76" for 100-yr event
Inflow = 0.23 cfs @ 12.08 hrs, Volume= 0.019 af
Outflow = 0.23 cfs @ 12.08 hrs, Volume= 0.019 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= 1.89 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.62 fps, Avg. Travel Time= 0.4 min

Peak Storage= 2 cf @ 12.08 hrs, Average Depth at Peak Storage= 0.19'
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**

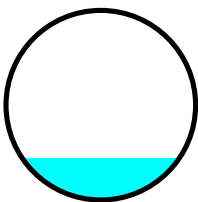
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.032 ac, 100.00% Impervious, Inflow Depth = 6.76" for 100-yr event
Inflow = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af
Outflow = 0.22 cfs @ 12.09 hrs, Volume= 0.018 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 1.71 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.56 fps, Avg. Travel Time= 1.4 min

Peak Storage= 6 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.22'
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

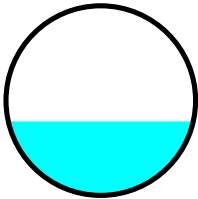
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.324 ac, 100.00% Impervious, Inflow Depth = 6.76" for 100-yr event
Inflow = 2.23 cfs @ 12.08 hrs, Volume= 0.183 af
Outflow = 2.23 cfs @ 12.08 hrs, Volume= 0.183 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= 7.89 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.64 fps, Avg. Travel Time= 0.4 min

Peak Storage= 19 cf @ 12.08 hrs, Average Depth at Peak Storage= 0.39'
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**

[52] Hint: Inlet/Outlet conditions not evaluated

[55] Hint: Peak inflow is 304% of Manning's capacity

[76] Warning: Detained 0.142 af (Pond w/culvert advised)

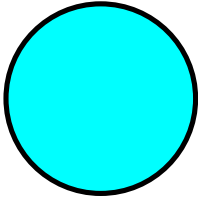
[80] Warning: Exceeded Pond WET-2 by 0.10' @ 11.92 hrs (0.64 cfs 0.003 af)

Inflow Area = 2.188 ac, 71.65% Impervious, Inflow Depth = 5.50" for 100-yr event
Inflow = 7.40 cfs @ 12.10 hrs, Volume= 1.003 af
Outflow = 2.61 cfs @ 11.91 hrs, Volume= 1.003 af, Atten= 65%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 3.53 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.99 fps, Avg. Travel Time= 0.6 min

Peak Storage= 59 cf @ 11.92 hrs, Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.43 cfs

12.0" 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

[52] Hint: Inlet/Outlet conditions not evaluated

[55] Hint: Peak inflow is 384% of Manning's capacity

[76] Warning: Detained 0.287 af (Pond w/culvert advised)

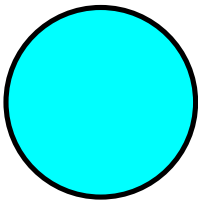
[63] Warning: Exceeded Reach CB-8 INLET depth by 0.55' @ 16.71 hrs

Inflow Area = 3.234 ac, 80.82% Impervious, Inflow Depth = 5.91" for 100-yr event
Inflow = 9.62 cfs @ 12.08 hrs, Volume= 1.592 af
Outflow = 2.70 cfs @ 11.67 hrs, Volume= 1.592 af, Atten= 72%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 3.63 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.30 fps, Avg. Travel Time= 0.5 min

Peak Storage= 59 cf @ 11.68 hrs, Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.50 cfs

12.0" Diameter Pipe, n= 0.013
Length= 75.0' Slope= 0.0049 '/
Inlet Invert= 75.29', Outlet Invert= 74.92'



Summary for Reach P-1: 20" Culvert

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.725 ac, 7.28% Impervious, Inflow Depth = 3.83" for 100-yr event
Inflow = 2.93 cfs @ 12.13 hrs, Volume= 0.231 af
Outflow = 2.93 cfs @ 12.13 hrs, Volume= 0.231 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= 2.71 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.00 fps, Avg. Travel Time= 0.6 min

Peak Storage= 40 cf @ 12.13 hrs, Average Depth at Peak Storage= 0.83'
Bank-Full Depth= 1.67', Capacity at Bank-Full= 5.95 cfs

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Type III 24-hr 100-yr Rainfall=7.00"

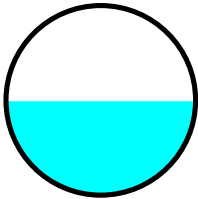
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20.0" Diameter Pipe, n= 0.025 Corrugated metal
Length= 37.0' Slope= 0.0068 '/'
Inlet Invert= 84.57', Outlet Invert= 84.32'



Summary for Reach P-2: 12" Culvert

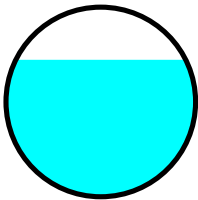
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.704 ac, 7.91% Impervious, Inflow Depth = 3.94" for 100-yr event
Inflow = 3.04 cfs @ 12.11 hrs, Volume= 0.231 af
Outflow = 3.04 cfs @ 12.12 hrs, Volume= 0.231 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= 5.00 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 1.91 fps, Avg. Travel Time= 0.4 min

Peak Storage= 26 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.72'
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 = 6.76" for 100-yr event
Inflow = 4.41 cfs @ 12.08 hrs, Volume= 0.362 af
Outflow = 3.63 cfs @ 12.14 hrs, Volume= 0.300 af, Atten= 18%, Lag= 3.3 min
Discarded = 0.01 cfs @ 2.31 hrs, Volume= 0.031 af
Primary = 3.62 cfs @ 12.14 hrs, Volume= 0.269 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 81.36' @ 12.14 hrs Surf.Area= 2,074 sf Storage= 4,195 cf

Plug-Flow detention time= 152.6 min calculated for 0.300 af (83% of inflow)
Center-of-Mass det. time= 81.6 min (824.6 - 743.0)

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Volume	Invert	Avail.Storage	Storage Description
#1	78.50'	1,825 cf	17.00'W x 122.00'L x 3.75'H Prismaoid 7,778 cf Overall - 3,215 cf Embedded = 4,562 cf x 40.0% Voids
#2	79.00'	3,215 cf	52.6"W x 34.0"H x 7.50'L Cultec R-V8 x 48 Inside #1
		5,040 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	78.50'	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=0.01 cfs @ 2.31 hrs HW=78.54' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.01 cfs)**Primary OutFlow** Max=3.61 cfs @ 12.14 hrs HW=81.36' (Free Discharge)↑**2=Culvert** (Barrel Controls 3.61 cfs @ 3.68 fps)**Summary for Pond WET-1: Sortherly Wetland**

[62] Warning: Exceeded Reach CB-1 OUTLET depth by 0.05' @ 12.41 hrs

[63] Warning: Exceeded Reach CB-2 INLET depth by 0.25' @ 12.41 hrs

[63] Warning: Exceeded Reach CB-9 INLET depth by 0.17' @ 12.38 hrs

Inflow Area = 6.278 ac, 61.12% Impervious, Inflow Depth = 4.90" for 100-yr event
 Inflow = 13.72 cfs @ 12.12 hrs, Volume= 2.564 af
 Outflow = 8.74 cfs @ 12.38 hrs, Volume= 2.511 af, Atten= 36%, Lag= 15.3 min
 Discarded = 0.06 cfs @ 12.38 hrs, Volume= 0.084 af
 Primary = 8.68 cfs @ 12.38 hrs, Volume= 2.426 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 76.46' @ 12.38 hrs Surf.Area= 9,457 sf Storage= 15,608 cf

Plug-Flow detention time= 62.9 min calculated for 2.511 af (98% of inflow)

Center-of-Mass det. time= 50.8 min (867.4 - 816.7)

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

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Discarded OutFlow Max=0.06 cfs @ 12.38 hrs HW=76.46' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.06 cfs)**Primary OutFlow** Max=8.68 cfs @ 12.38 hrs HW=76.46' (Free Discharge)↑**2=Culvert** (Barrel Controls 8.68 cfs @ 3.64 fps)**Summary for Pond WET-2: Northerly Wetland**

[87] Warning: Oscillations may require Finer Routing or smaller dt

[62] Warning: Exceeded Reach CB-7 OUTLET depth by 0.46' @ 12.52 hrs

Inflow Area = 1.333 ac, 53.47% Impervious, Inflow Depth = 5.28" for 100-yr event
 Inflow = 7.84 cfs @ 12.09 hrs, Volume= 0.587 af
 Outflow = 2.97 cfs @ 12.33 hrs, Volume= 0.587 af, Atten= 62%, Lag= 14.8 min
 Discarded = 0.07 cfs @ 12.33 hrs, Volume= 0.065 af
 Primary = 2.90 cfs @ 12.33 hrs, Volume= 0.521 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 76.85' @ 12.33 hrs Surf.Area= 10,413 sf Storage= 7,909 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 48.4 min (834.5 - 786.1)

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=0.07 cfs @ 12.33 hrs HW=76.85' (Free Discharge)↑**2=Exfiltration** (Exfiltration Controls 0.07 cfs)**Primary OutFlow** Max=2.90 cfs @ 12.33 hrs HW=76.85' TW=76.45' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 2.90 cfs @ 2.48 fps)**Summary for Pond WQI-1: Water Quality Inlet**

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Inflow Area = 0.770 ac, 66.17% Impervious, Inflow Depth = 5.71" for 100-yr event
 Inflow = 4.90 cfs @ 12.08 hrs, Volume= 0.366 af
 Outflow = 1.96 cfs @ 12.30 hrs, Volume= 0.251 af, Atten= 60%, Lag= 13.1 min
 Discarded = 0.04 cfs @ 12.30 hrs, Volume= 0.081 af
 Primary = 1.91 cfs @ 12.30 hrs, Volume= 0.169 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 79.18' @ 12.30 hrs Surf.Area= 6,989 sf Storage= 7,127 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 135.8 min (919.0 - 783.2)

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 @ 12.30 hrs HW=79.18' (Free Discharge)
 ↗1=Exfiltration (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=1.91 cfs @ 12.30 hrs HW=79.18' TW=76.45' (Dynamic Tailwater)
 ↗2=Broad-Crested Rectangular Weir (Weir Controls 1.91 cfs @ 1.06 fps)

Summary for Pond WQI-2: Water Quality Inlet

Inflow Area = 0.309 ac, 93.02% Impervious, Inflow Depth = 6.52" for 100-yr event
 Inflow = 2.11 cfs @ 12.08 hrs, Volume= 0.168 af
 Outflow = 2.00 cfs @ 12.11 hrs, Volume= 0.130 af, Atten= 5%, Lag= 1.6 min
 Discarded = 0.02 cfs @ 12.11 hrs, Volume= 0.033 af
 Primary = 1.99 cfs @ 12.11 hrs, Volume= 0.097 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 78.02' @ 12.11 hrs Surf.Area= 2,546 sf Storage= 2,256 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 101.6 min (856.5 - 755.0)

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

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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 @ 12.11 hrs HW=78.02' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.02 cfs)**Primary OutFlow** Max=1.99 cfs @ 12.11 hrs HW=78.02' TW=76.13' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Weir Controls 1.99 cfs @ 0.85 fps)



WATER QUALITY VOLUME CALCULATIONS SITE PLAN – 100 DUCHAINE BOULEVARD

REQUIRED VOLUME:

*Water Quality Volume Required = $(1.0"/12) \times (\text{Total Impervious Area})$

*Water Quality Volume Required = $(1.0"/12) \times (174,501 \text{ sf}) = \underline{14,542 \text{ c.f.}}$

PROVIDED:

Subsurface Recharge System:

- Cumulative Volume below the lowest outlet (elev=78.0) = 5,040 c.f.

Water Quality Basin #1:

- Cumulative Volume below the lowest outlet (elev=79.0) = 7,337 c.f.

Water Quality Basin #2:

- Cumulative Volume below the lowest outlet (elev=77.9) = 2,214 c.f.

Total Water Quality Volume Provided = 14,591 c.f.

14,591 c.f. (Provided) >>> 14,542 c.f. (Required)

SUBSURFACE RECHARGE SYSTEM:

REQUIRED:

Water Quality Volume Required = $(1.0"/12) \times (28,000 \text{ sf}) = 2,334 \text{ c.f.}$

PROVIDED:

Cumulative Volume below the lowest outlet (elev.=78.0) = 5,040 c.f.

WATER QUALITY BASIN #1:

REQUIRED:

Water Quality Volume Required = $(1.0"/12) \times (14,700 \text{ sf}) = 1,225 \text{ c.f.}$

PROVIDED:

Cumulative Volume below the lowest outlet (elev.=79.0) = 7,337 c.f.

WATER QUALITY BASIN #2:

REQUIRED:

Water Quality Volume Required = $(1.0"/12) \times (10,000 \text{ sf}) = 834 \text{ c.f.}$

PROVIDED:

Cumulative Volume below the lowest outlet (elev.=77.9) = 2,214 c.f.



ENGINEERING A BETTER TOMORROW
ENGINEERING | SITE WORK | LAND SURVEYING

PIPE CAPACITY CALCULATIONS

10 YEAR STORM EVENT													
Pipe Description				Draiage Area (Acres)			Comp. C-Value	CA	Time of Concentration (min)			I (in./hr)	Qc=CI ^A (cfs)
Length #	DA #	From	To	Total	Imperv. C=0.90	Pervious C=0.30			Inlet	Drain	Total		

DRAINAGE PIPES

1		HW-N	CB-8										1.69	(HYDROCAD)
2		CB-8	CB-9	0.855	0.855	0.000	0.90	0.770	10	0.79	10.79	4.3	5.00	
3		CB-9	CDS	1.901	1.901	0.000	0.90	1.711	10	0.23	10.23	4.3	7.36	
4		CDS	HW-S	1.901	1.901	0.000	0.90	1.711	10	0.00	10.00	4.3	7.36	
5		CB-1	WET	0.033	0.033	0.000	0.90	0.030	10	0.09	10.09	4.3	0.13	

Length #	Pipe Diameter (in)	Pipe Material (n-value)	Slope (ft./ft.)	Length (ft)	Full Flow			Current Flow				Pipe capacity	
					Vf (ft/sec)	Qf (cfs)	Vc (ft/sec)	Qc (cfs)	Qc/Qf	d/D (in.)	Flow Depth in pipe (in)	Flow capacity check	

DRAINAGE PIPES

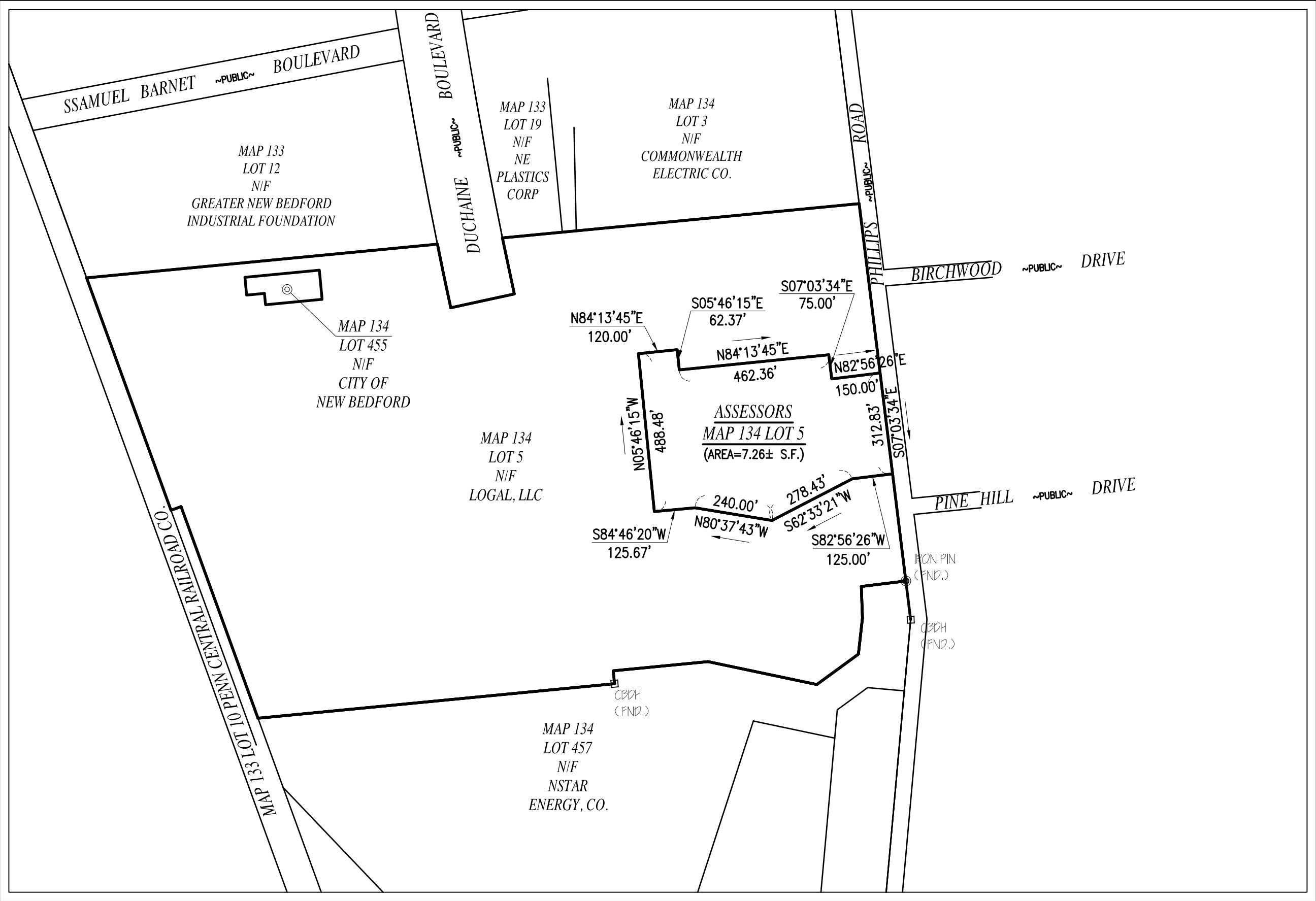
1	24	0.013	0.0027	129	3.74	11.75	2.75	1.69	0.14	0.3	6.2	OK!	
2	24	0.013	0.0011	125	2.39	7.50	2.62	5.00	0.67	0.6	14.2	OK!	
3	24	0.013	0.0023	53	3.45	10.85	3.80	7.36	0.68	0.6	14.3	OK!	
4	24	0.013	0.0200	2	10.18	31.99	8.51	7.36	0.23	0.3	7.8	OK!	
5	12	0.013	0.0275	16	7.52	5.91	2.91	0.13	0.02	0.1	1.1	OK!	

S I T E P L A N

DUCHAINE BOULEVARD

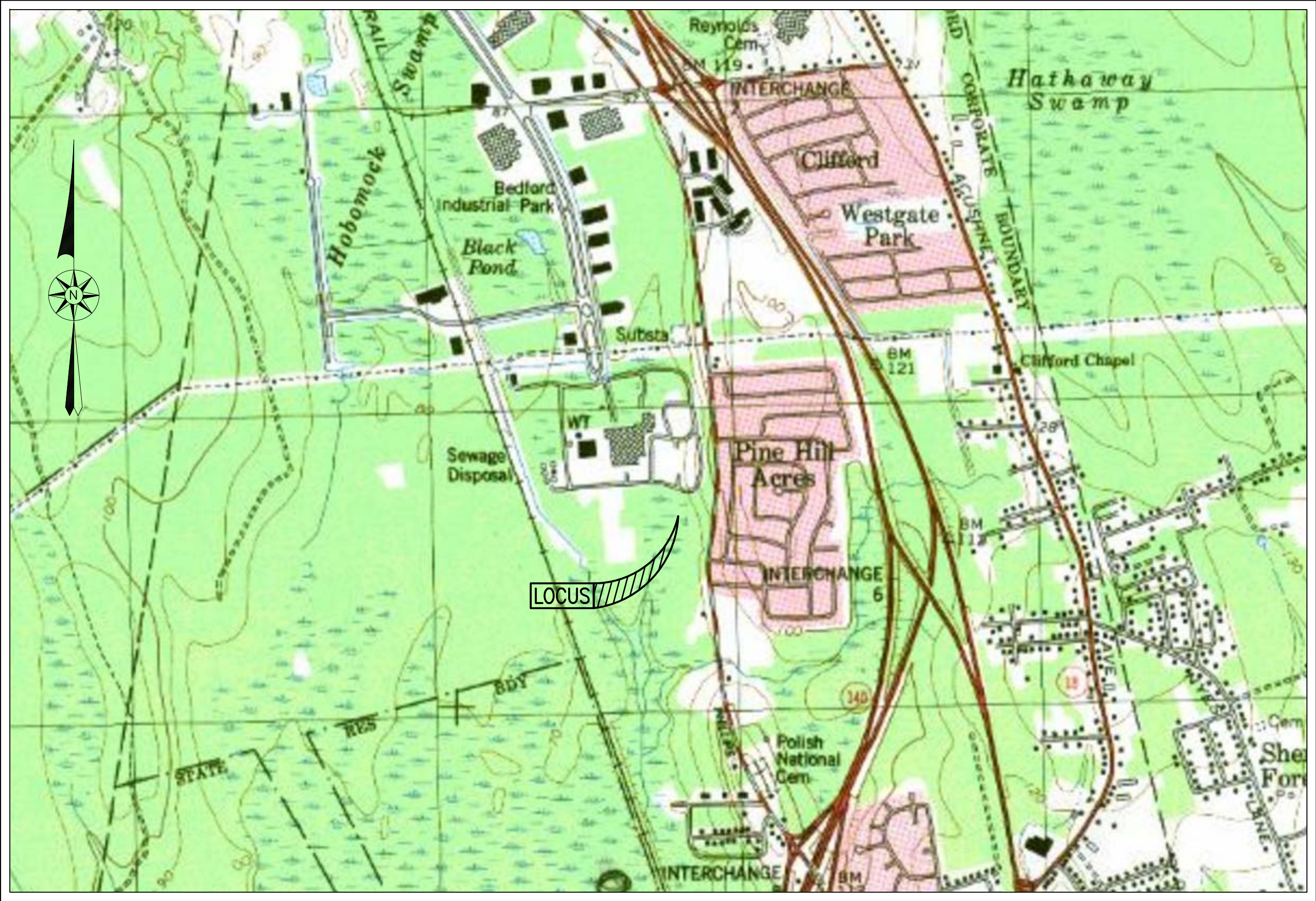
ASSESSORS MAP #134 LOT #5

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 %	41.9± %	58.4± %
— PARKING & LOADING REQUIREMENTS —			
PRINCIPAL USE: FOOD PACKAGING & DISTRIBUTION			
(FOR PARKING REGULATION PURPOSES: BUSINESS ENGAGED IN WAREHOUSING & DISTRIBUTION)			
REQUIREMENT	REQUIRED	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	


— I N D E X —			
SHEET	DESCRIPTION	SHEET	DESCRIPTION
1	COVER	5	UTILITIES & GRADING
2	NOTES & LEGEND	6	LIGHTING
3	EXISTING CONDITIONS	7-8	DETAILS
4	LAYOUT		

RECORD OWNER:
ASSESSORS MAP 134 LOT 5
LOCAL, LLC
C/O ERIC DACOSTA
100 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745
LC CERT# 23339
LC PLAN# 36318C

REVISIONS

1	4/6/17	CONSERVATION COMMISSION

SEAL OF THE PROFESSIONAL ENGINEER
CHRISTIAN ALBERT FARLAND
No. 47544
MASSACHUSETTS
REGISTERED PROFESSIONAL ENGINEER
1998



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• 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

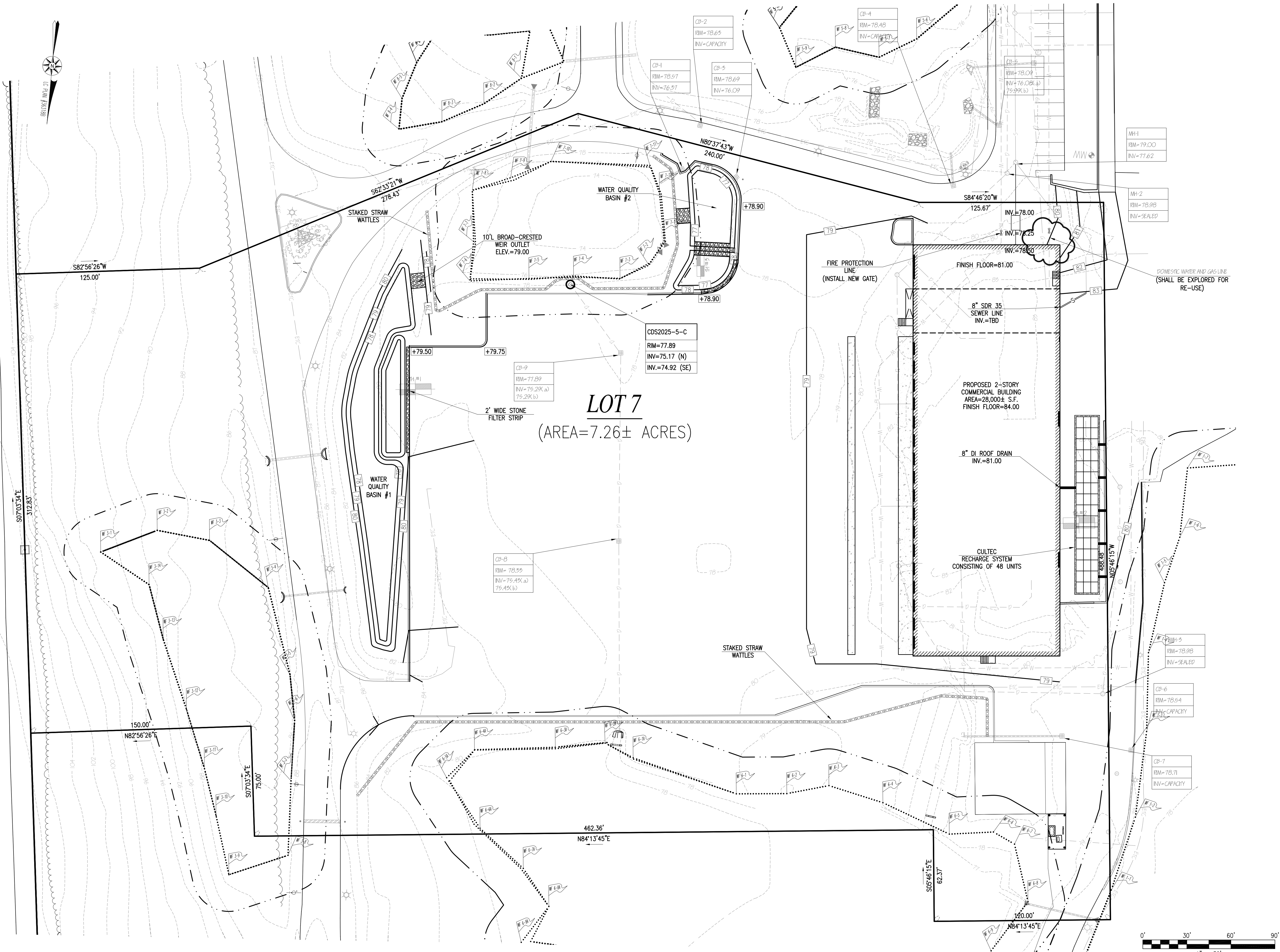
LATEST REVISION:
APRIL 6, 2017

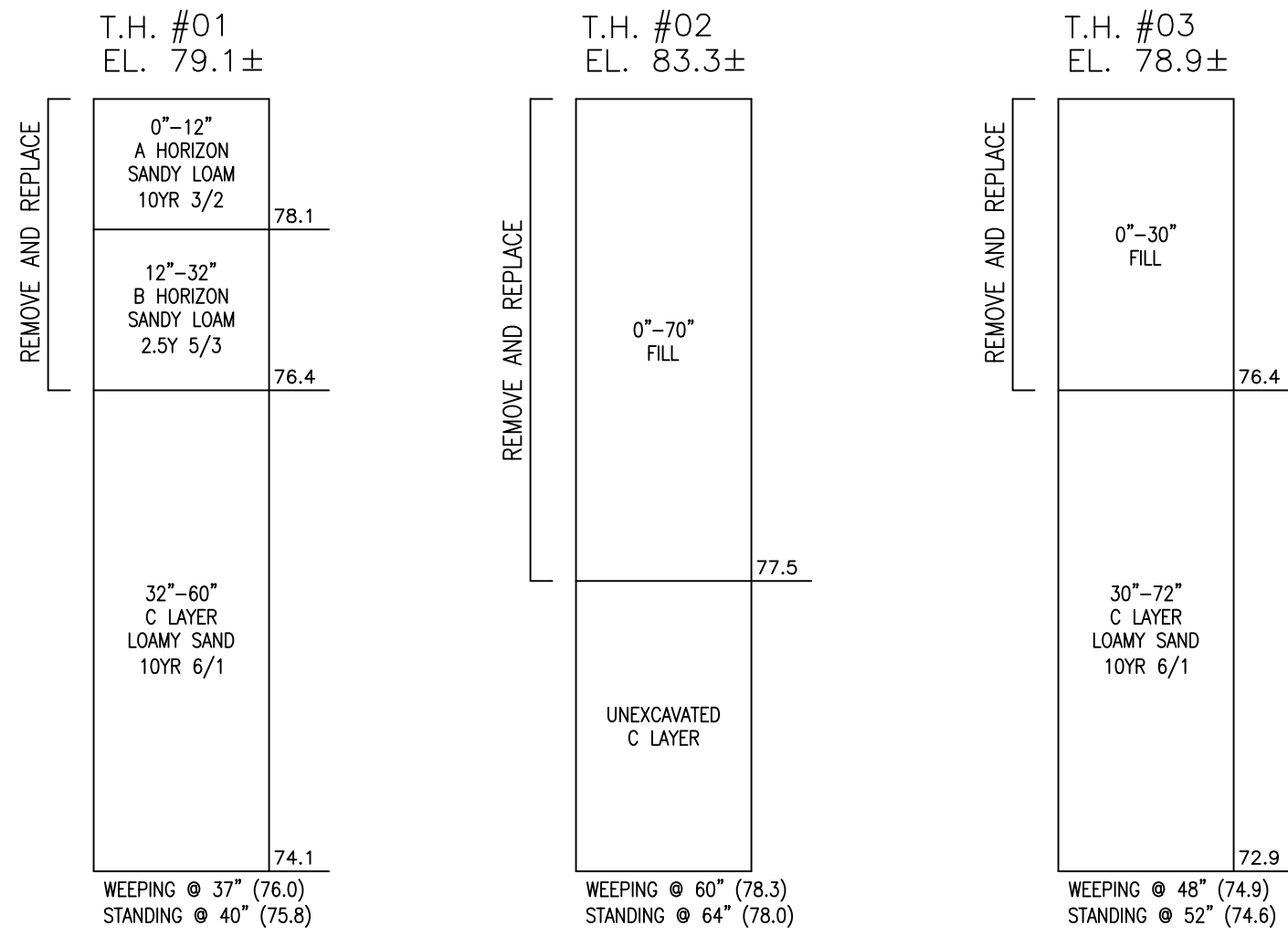
COVER

SHEET 1 OF 8

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PHILLIPS ROAD
~PUBLIC - VARIABLE WIDTH~

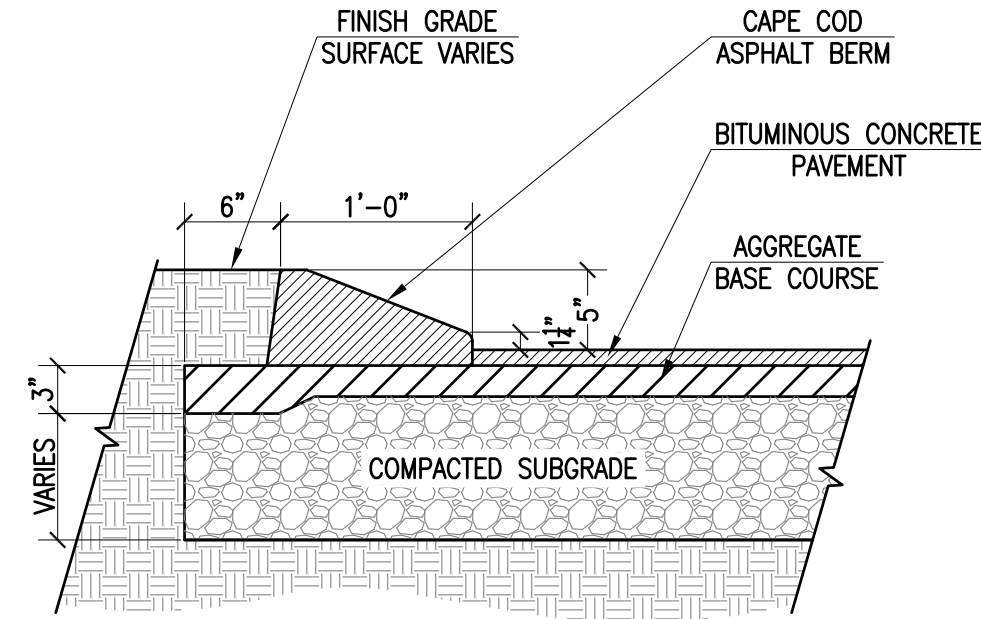




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SOIL PROFILES

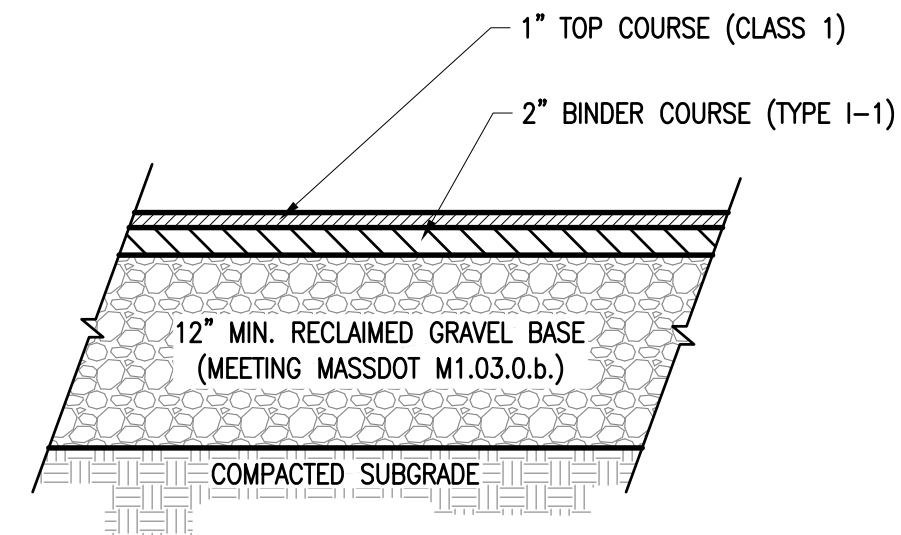
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2
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BITUMINOUS CONCRETE CAPE COD BERM

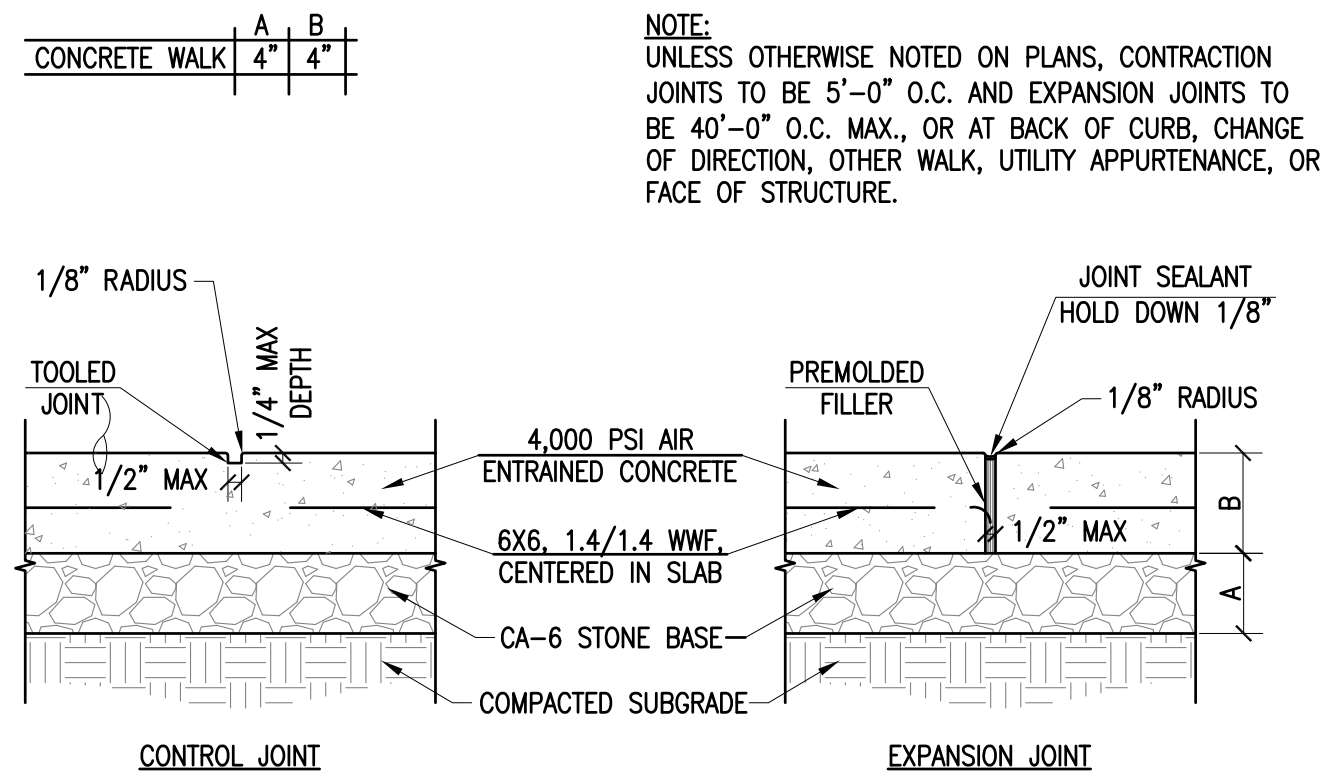
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3
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BITUMINOUS CONCRETE PAVEMENT - RECLAIMED

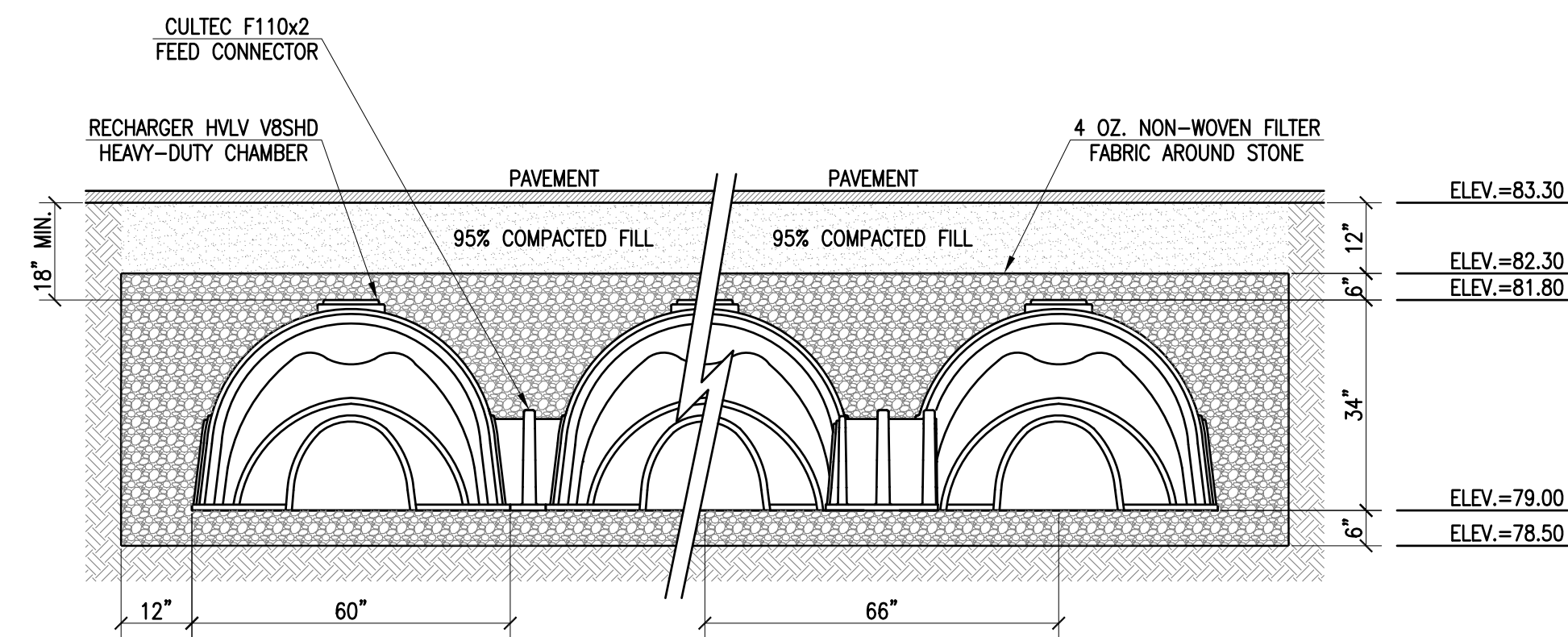
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CONCRETE PAVEMENT SIDEWALK

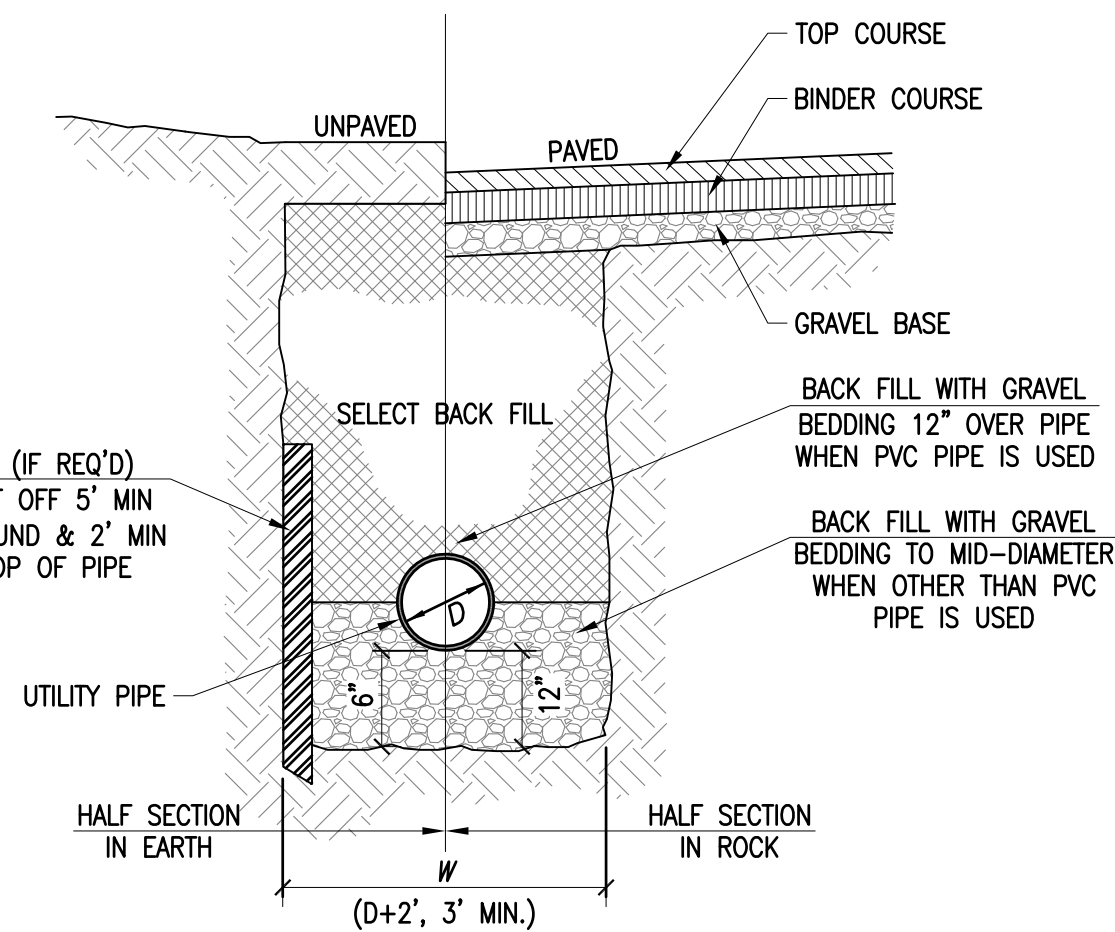
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8
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CULTEC RECHARGER V8HD HEAVY DUTY CROSS SECTION

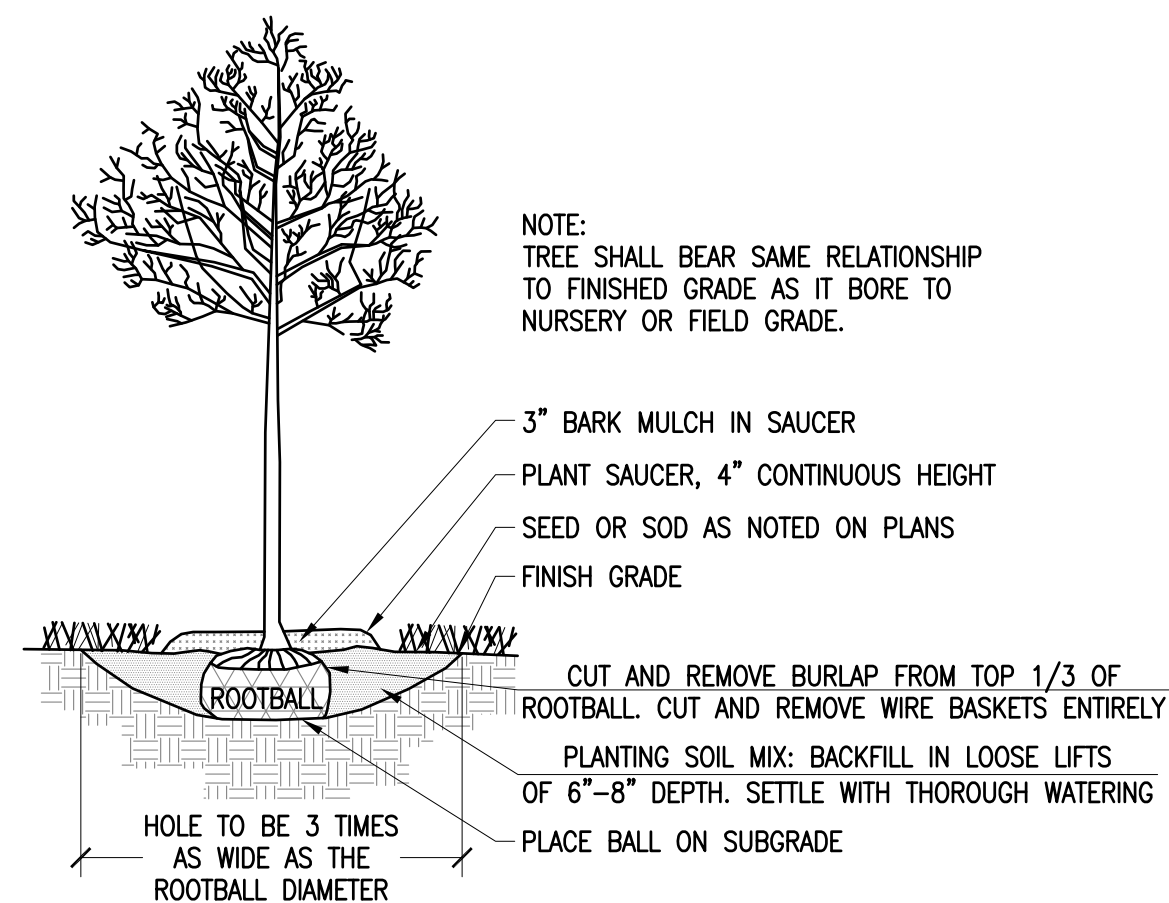
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5
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UTILITY TRENCH

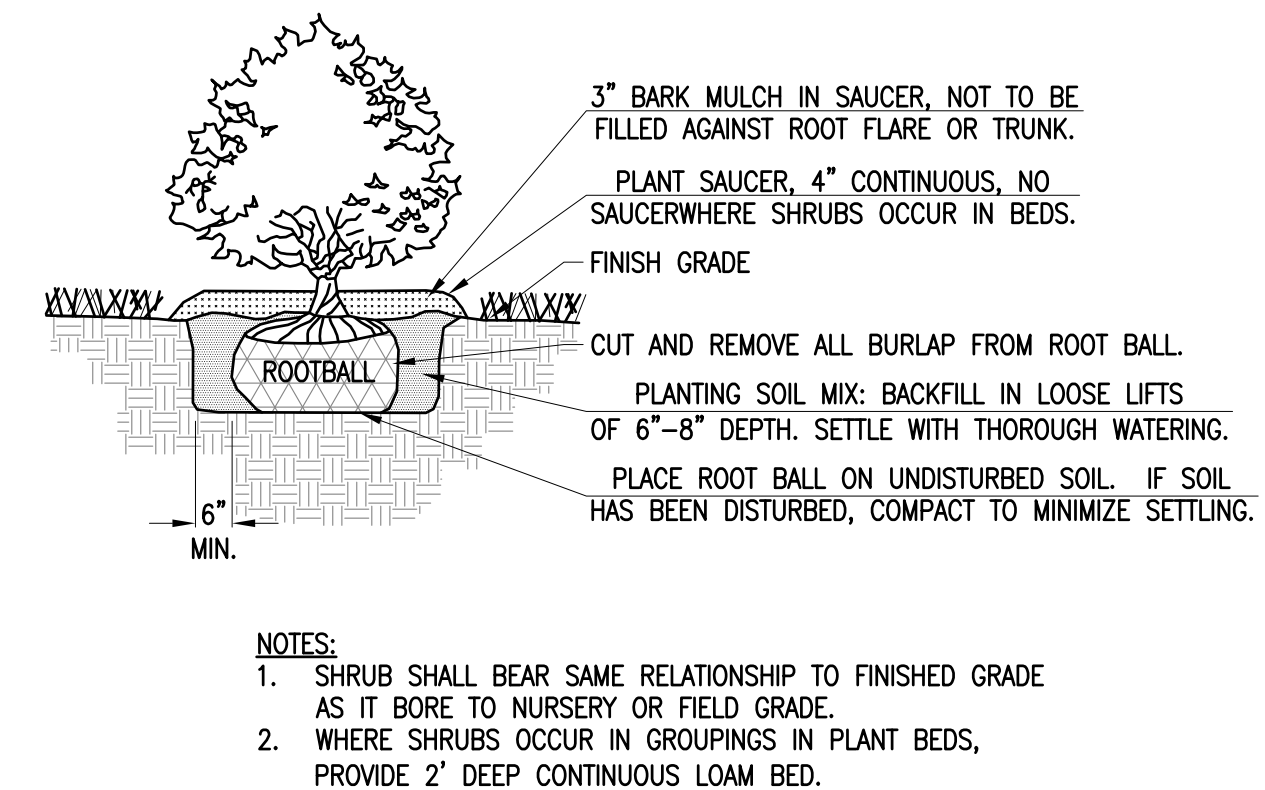
NOT TO SCALE



9
7

TREE PLANTING

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10
7

SHRUB PLANTING

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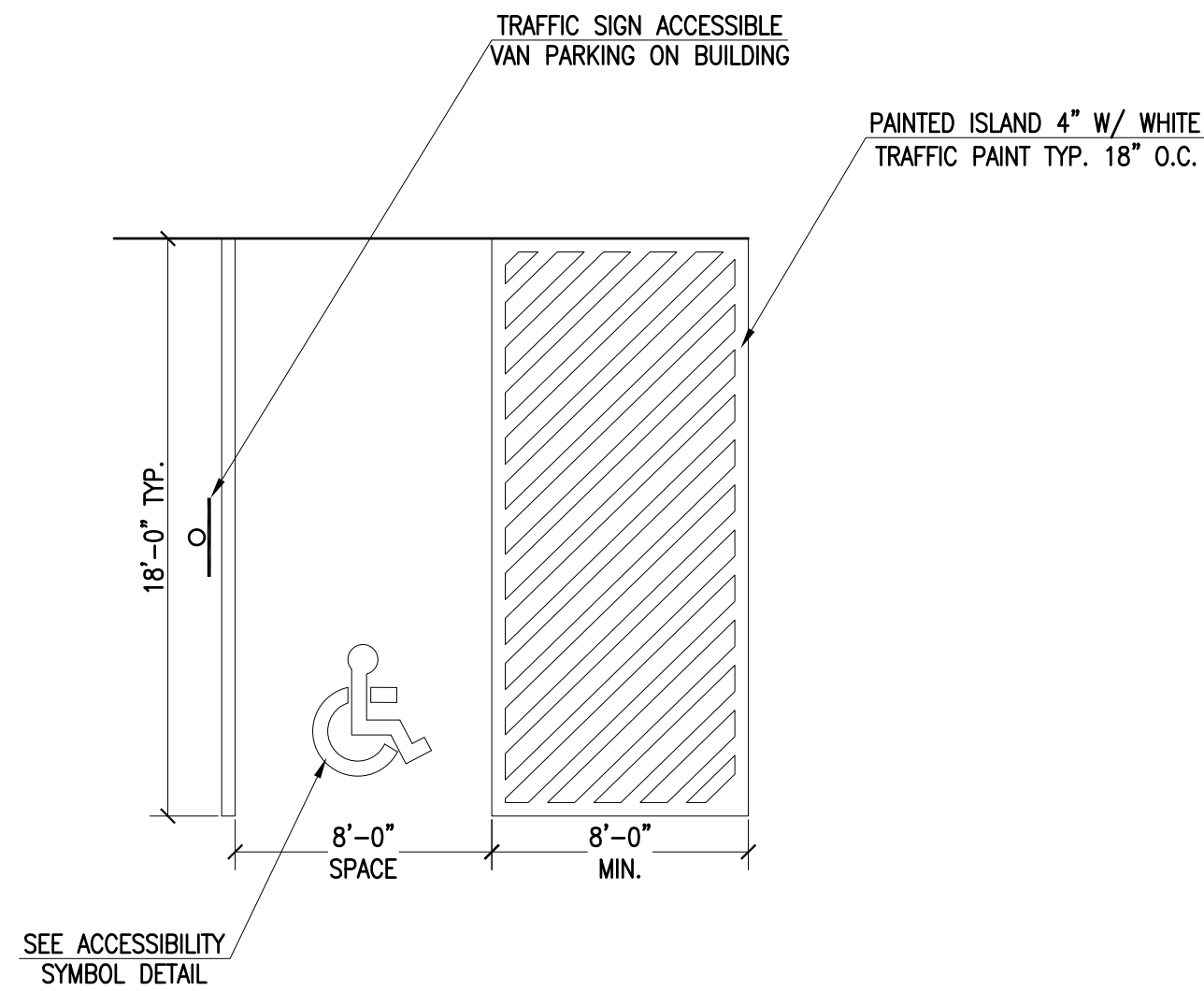
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SITE PLAN
— 100 DUCHAINE BOULEVARD —
ASSESSORS MAP 134 LOT 5
NEW BEDFORD, MASSACHUSETTS

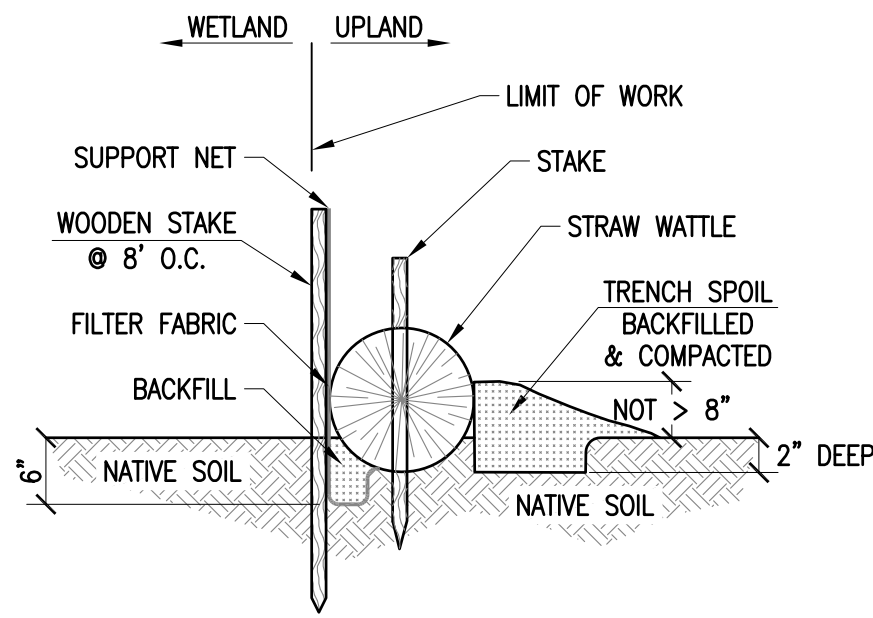
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FEBRUARY 14, 2017
SCALE: N.T.S.
JOB NO. 15-500.1
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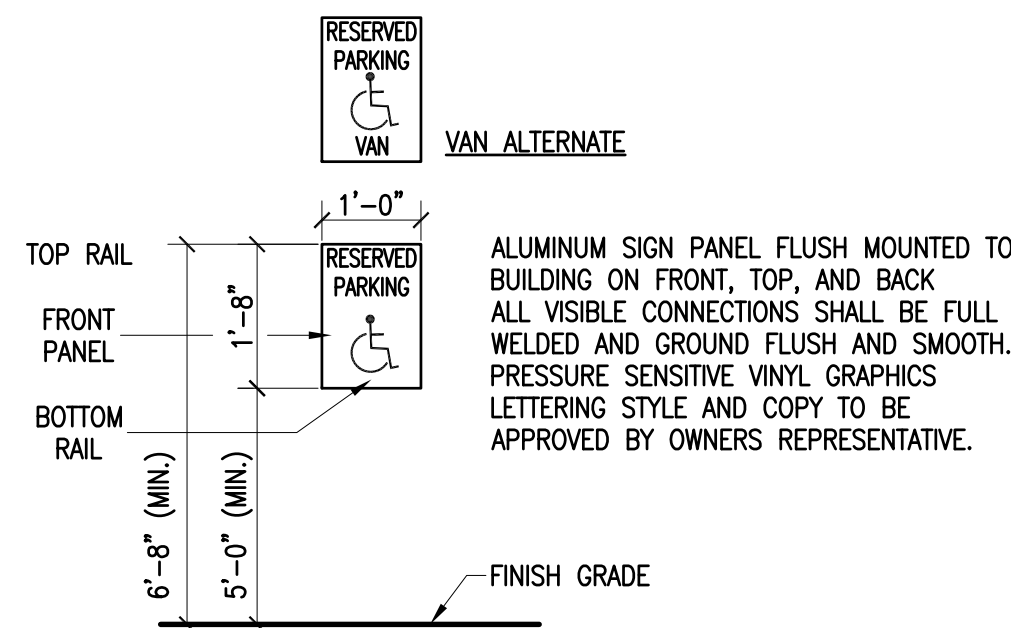
DETAIL
SHEET 7 OF 8



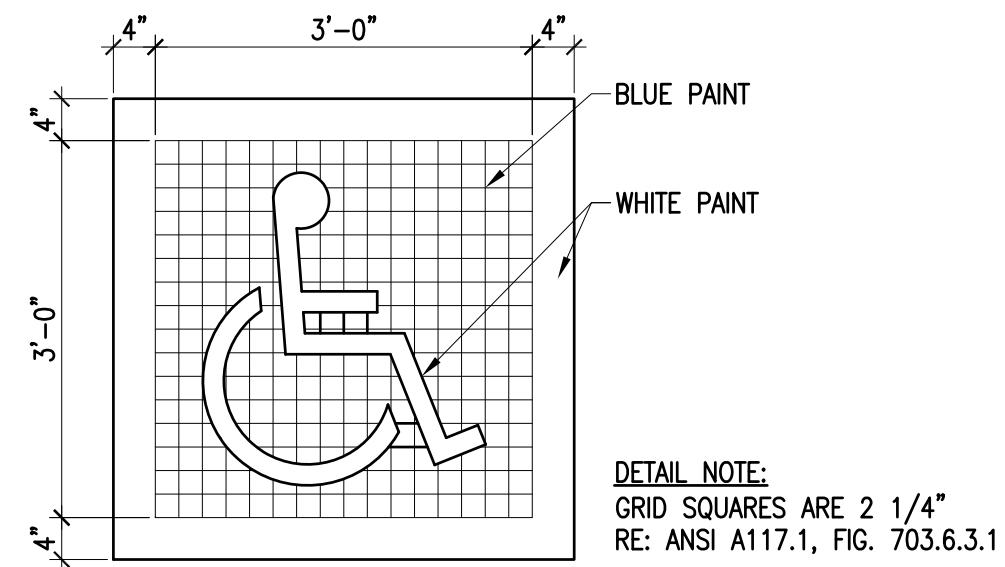
10 ACCESSIBLE PARKING LAYOUT
8 NOT TO SCALE



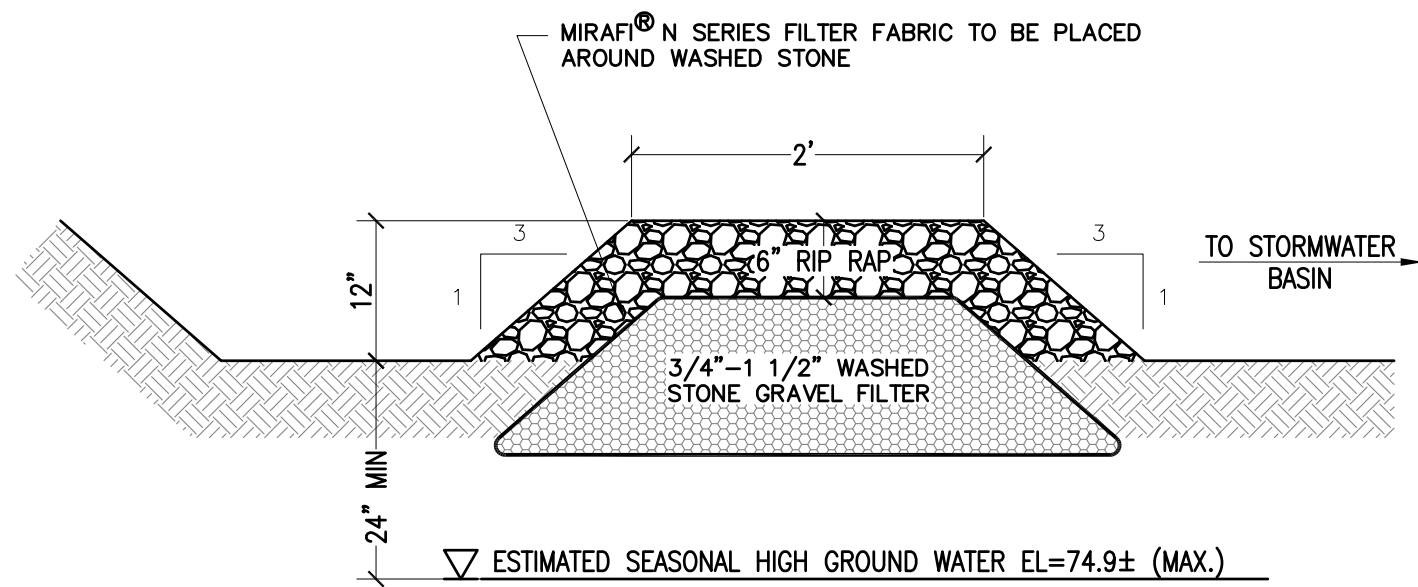
15 STAKED STRAW WATTLE WITH SILT FENCE
8 NOT TO SCALE



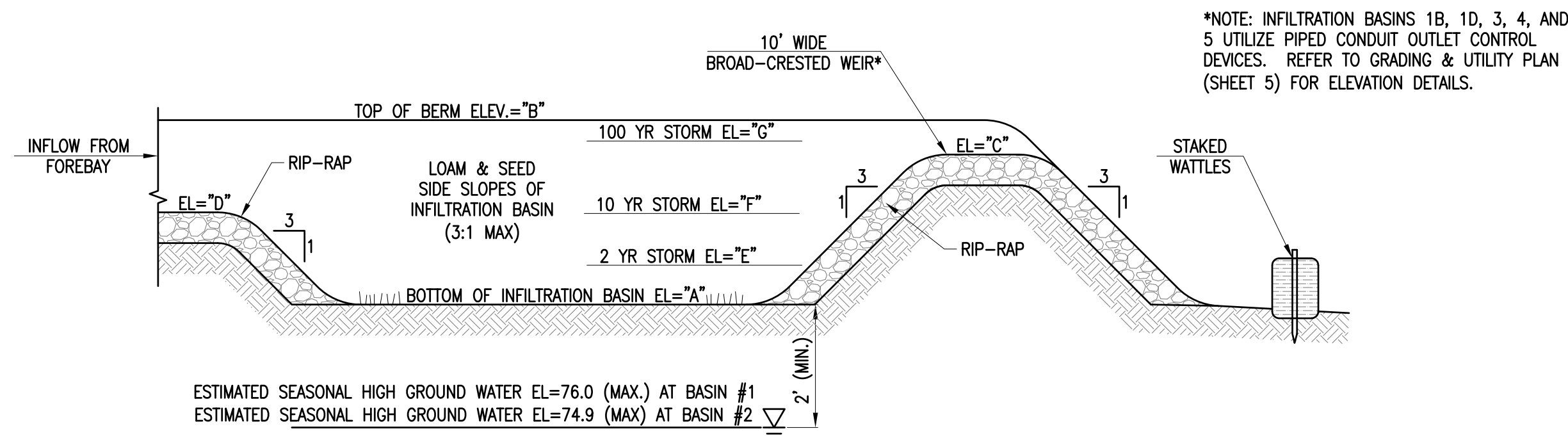
12 ACCESSIBLE PARKING SIGN
8 NOT TO SCALE



13 ACCESSIBLE PARKING SYMBOL
8 NOT TO SCALE

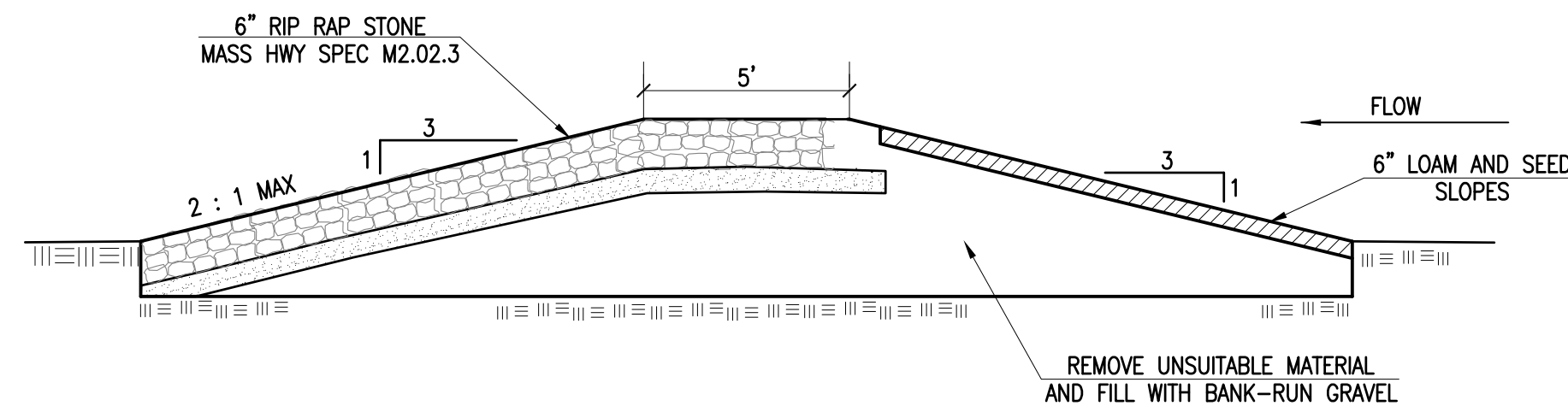


16 SEDIMENT FOREBAY W/ GRAVEL FILTER
8 NOT TO SCALE



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

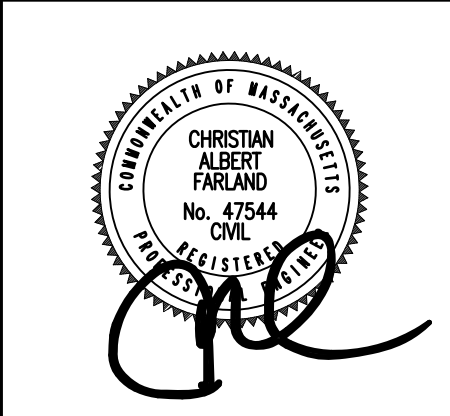
18 DETENTION BASIN
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19 OVERFLOW SPILLWAY DETAIL
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DETAIL
SHEET 8 OF 8