

APPENDIX B-3C

RFP # 2025-12

BEACON ISLAND PHASE 3
Packaged Wastewater Treatment Plant
and
Fire Pump House and Marine Inlet

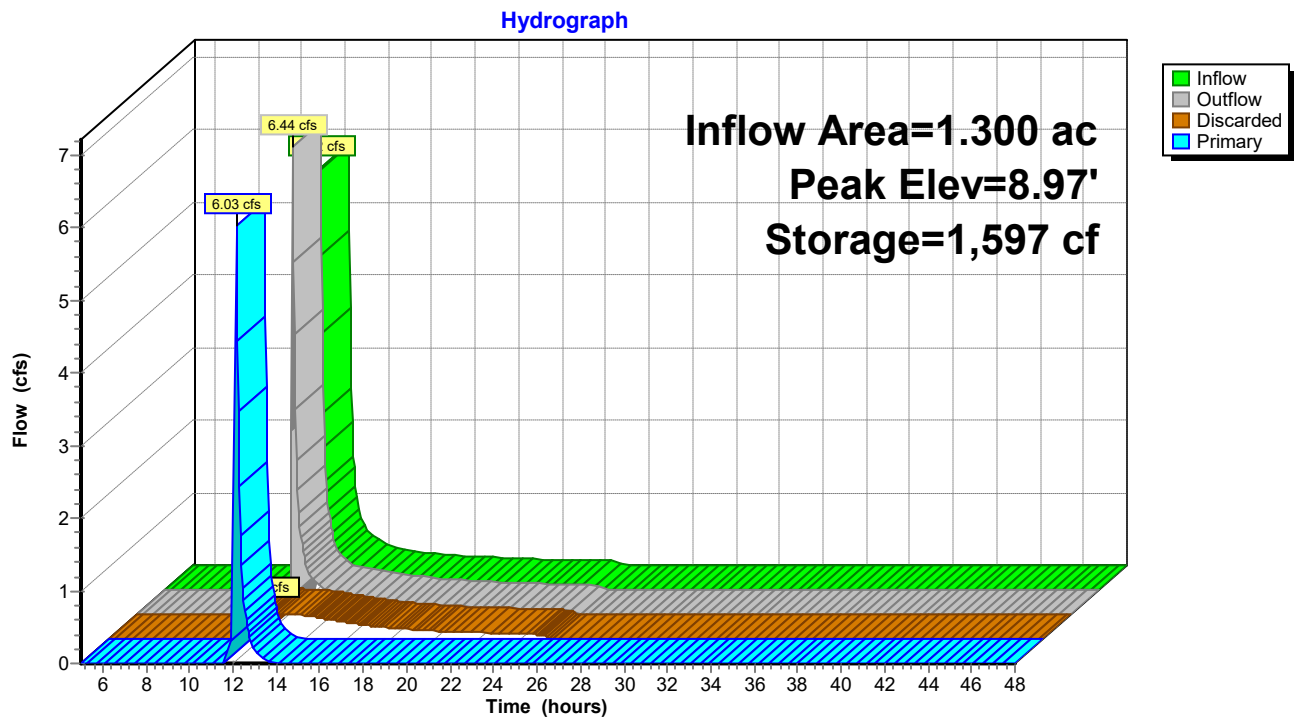
REFERENCE DOCUMENTS (3 of 5)

Reference Documents

Beacon Island Phase 3 Program

- NYSDEC Article 11 and 15 Permits. Dated 11/10/22 - Page 1
- State Pollutant Discharge Elimination System (SPDES) Permit. Dated 10/1/23 - Page 21
- Stormwater Pollution Protection Plan (SWPPP). Dated 6/20/22 - Page 59
- Soil Management Plan. Dated 10/23/22 - Page 564
- Landfill Closure Certification Report. Dated 10/21/24 - Page 634
- Geotechnical Engineering Report. Dated 2/2/2023 - Page 659
- Army Corps of Engineers Permit. Date 4/10/23 - Page 779
- Community Air Monitoring Plan (CAMP). Dated 10/23/22 – Page 806

Pond 4P: Infiltration Basin #2



18641.00-Proposed Condition_Chambers_CULVERTS Type II 24-hr 100-Year Rainfall=6.11"

Prepared by McFarland Johnson

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Summary for Pond 5P: Sedimentation Basin #1

Inflow Area = 1.200 ac, 37.50% Impervious, Inflow Depth = 2.08" for 100-Year event
 Inflow = 3.95 cfs @ 12.02 hrs, Volume= 0.208 af
 Outflow = 4.02 cfs @ 12.04 hrs, Volume= 0.191 af, Atten= 0%, Lag= 1.1 min
 Primary = 4.02 cfs @ 12.04 hrs, Volume= 0.191 af

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 12.31' @ 12.04 hrs Surf.Area= 632 sf Storage= 930 cf

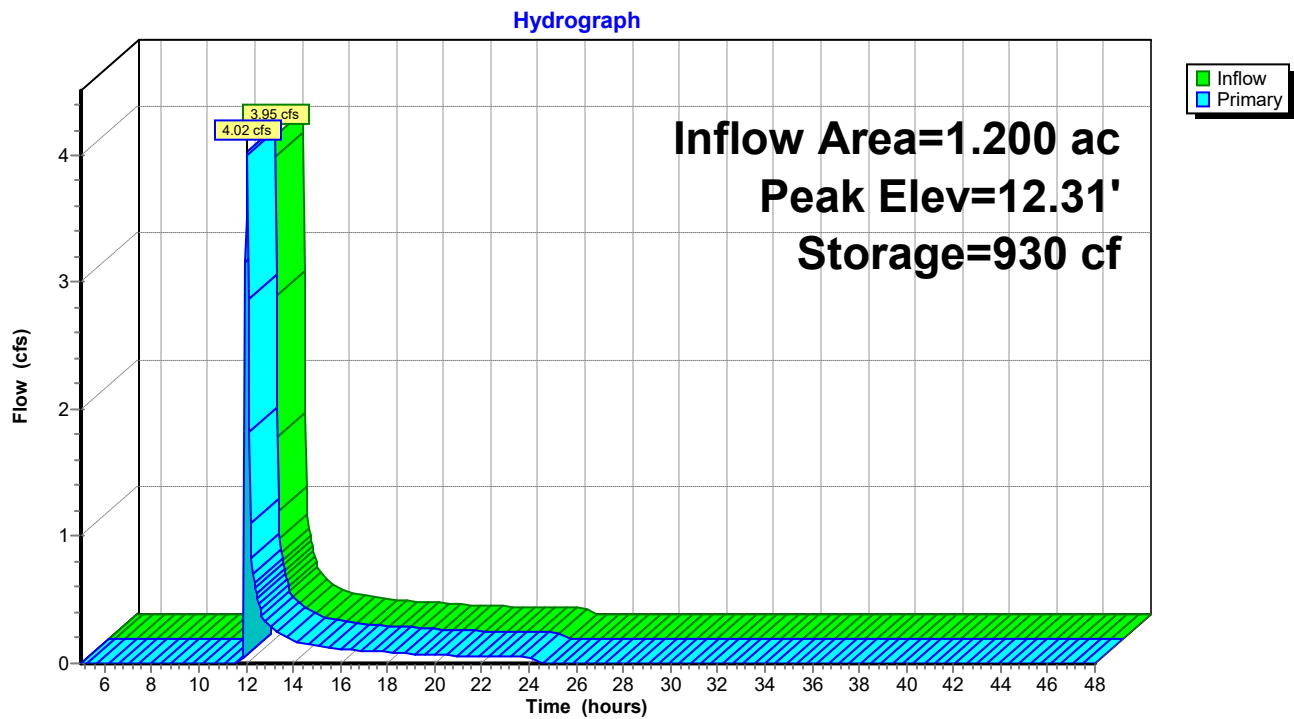
Plug-Flow detention time= 59.3 min calculated for 0.191 af (92% of inflow)
 Center-of-Mass det. time= 15.9 min (876.3 - 860.4)

Volume	Invert	Avail.Storage	Storage Description		
#1	9.00'	1,058 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
9.00	41	25.8	0	0	41
10.00	150	46.7	90	90	167
11.00	320	66.6	230	320	355
12.00	550	86.4	430	749	608
12.50	687	96.2	309	1,058	758

Device	Routing	Invert	Outlet Devices
#1	Primary	12.00'	Channel/Reach using Reach 12R: Sediment Basin Overflow

Primary OutFlow Max=3.89 cfs @ 12.04 hrs HW=12.30' (Free Discharge)
 ↑ **1=Channel/Reach** (Channel Controls 3.89 cfs @ 1.16 fps)

Pond 5P: Sedimentation Basin #1



Summary for Pond 16P: Sedimentation Basin #2

Inflow Area = 1.300 ac, 57.69% Impervious, Inflow Depth = 3.18" for 100-Year event
 Inflow = 5.76 cfs @ 12.12 hrs, Volume= 0.345 af
 Outflow = 5.75 cfs @ 12.13 hrs, Volume= 0.305 af, Atten= 0%, Lag= 0.8 min
 Primary = 5.75 cfs @ 12.13 hrs, Volume= 0.305 af

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 9.30' @ 12.13 hrs Surf.Area= 970 sf Storage= 1,979 cf

Plug-Flow detention time= 79.9 min calculated for 0.305 af (89% of inflow)
 Center-of-Mass det. time= 21.8 min (865.8 - 843.9)

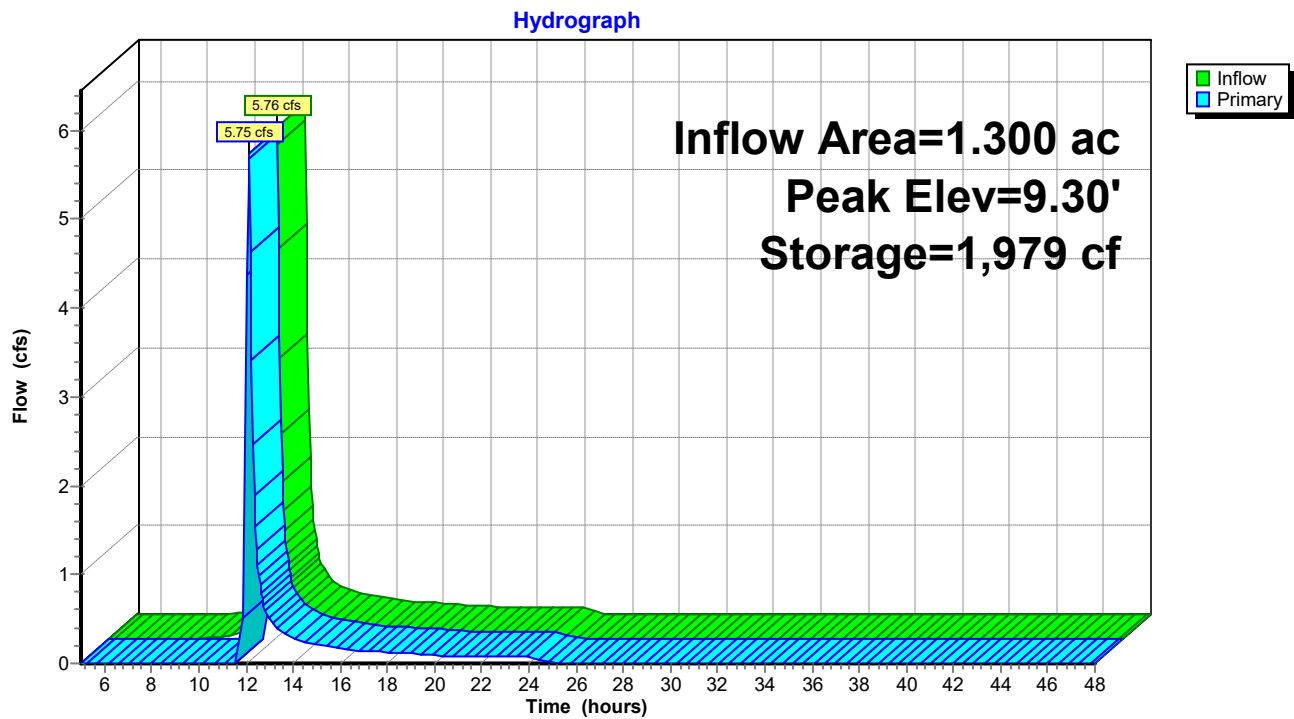
Volume	Invert	Avail.Storage	Storage Description		
#1	5.80'	2,389 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
5.80	224	80.0	0	0	224
6.00	257	83.0	48	48	266
7.00	438	98.0	344	392	500
8.00	650	113.0	541	932	773
9.00	892	128.0	768	1,700	1,085
9.70	1,079	139.0	689	2,389	1,337

Device	Routing	Invert	Outlet Devices
#1	Primary	9.00'	Channel/Reach using Reach 17R: Sediment Basin Overflow

Primary OutFlow Max=5.60 cfs @ 12.13 hrs HW=9.30' (Free Discharge)

↑ **1=Channel/Reach** (Channel Controls 5.60 cfs @ 1.17 fps)

Pond 16P: Sedimentation Basin #2

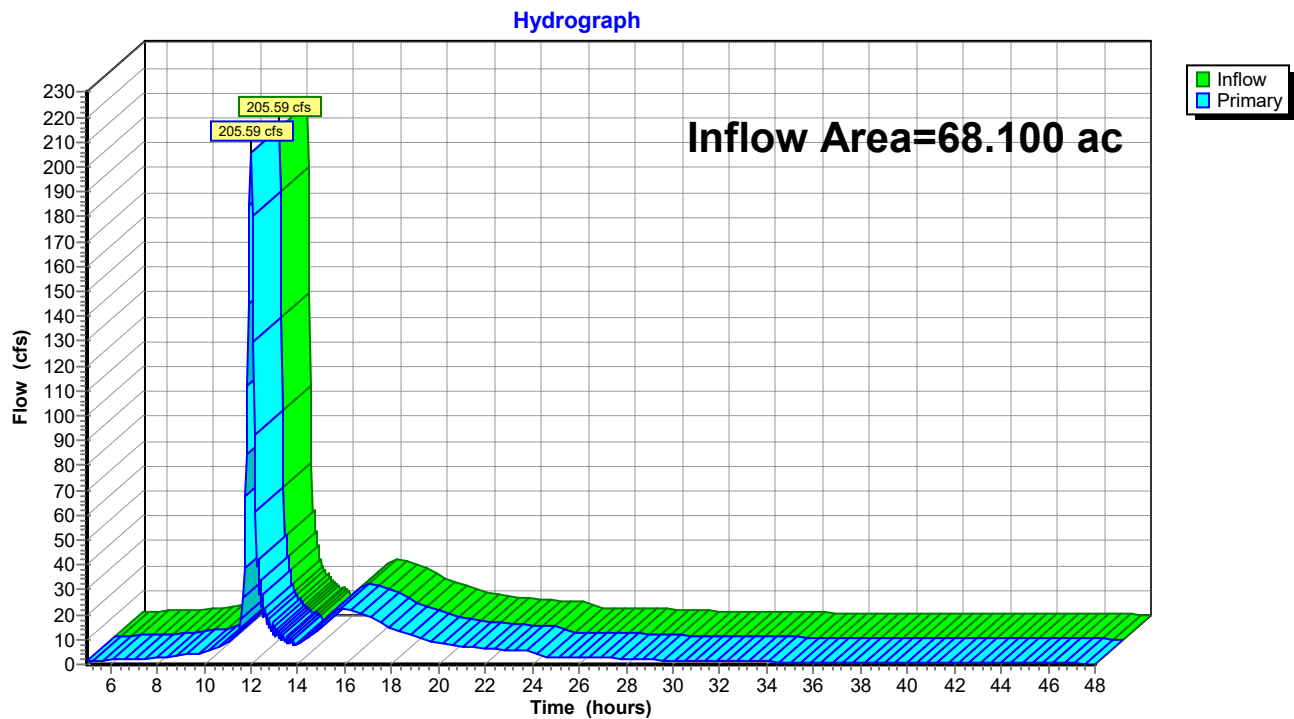


Summary for Pond AP-1: Analysis Point #1

Inflow Area = 68.100 ac, 20.36% Impervious, Inflow Depth > 3.95" for 100-Year event
Inflow = 205.59 cfs @ 12.00 hrs, Volume= 22.396 af
Primary = 205.59 cfs @ 12.00 hrs, Volume= 22.396 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs

Pond AP-1: Analysis Point #1

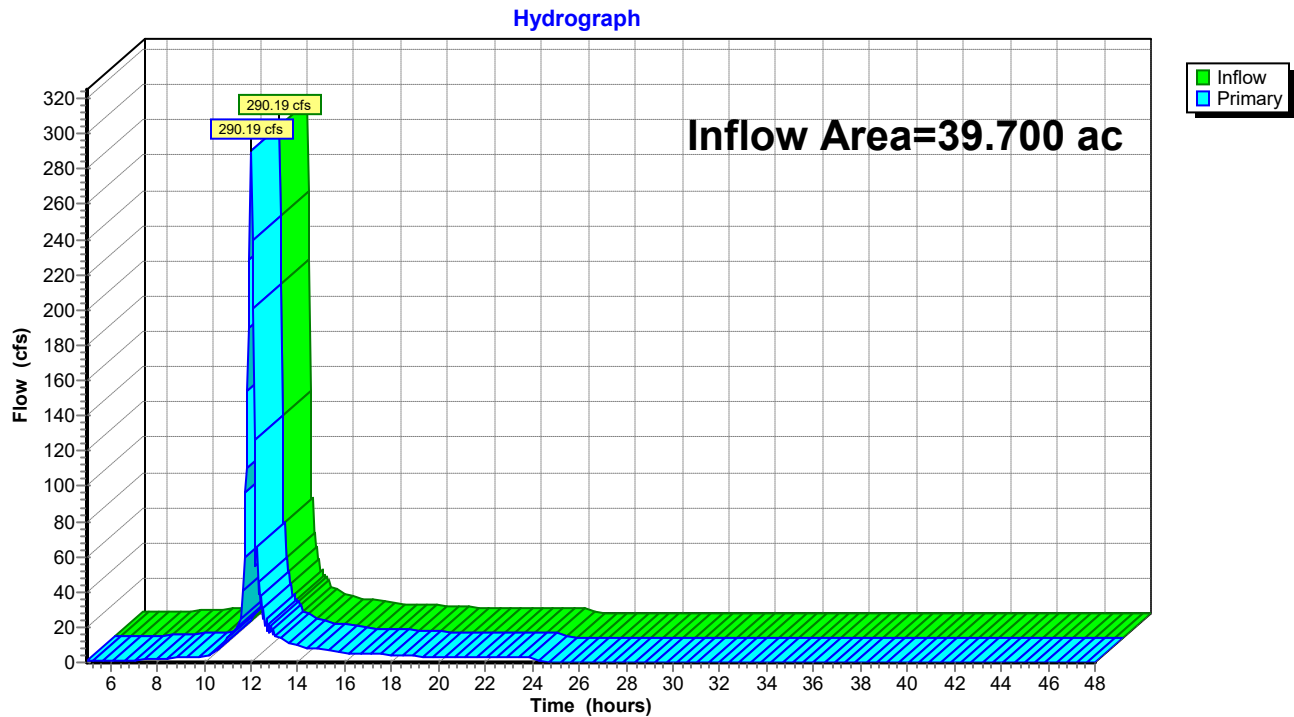


Summary for Pond AP-2: Analysis Point #2

Inflow Area = 39.700 ac, 23.10% Impervious, Inflow Depth > 4.88" for 100-Year event
Inflow = 290.19 cfs @ 12.00 hrs, Volume= 16.144 af
Primary = 290.19 cfs @ 12.00 hrs, Volume= 16.144 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs

Pond AP-2: Analysis Point #2

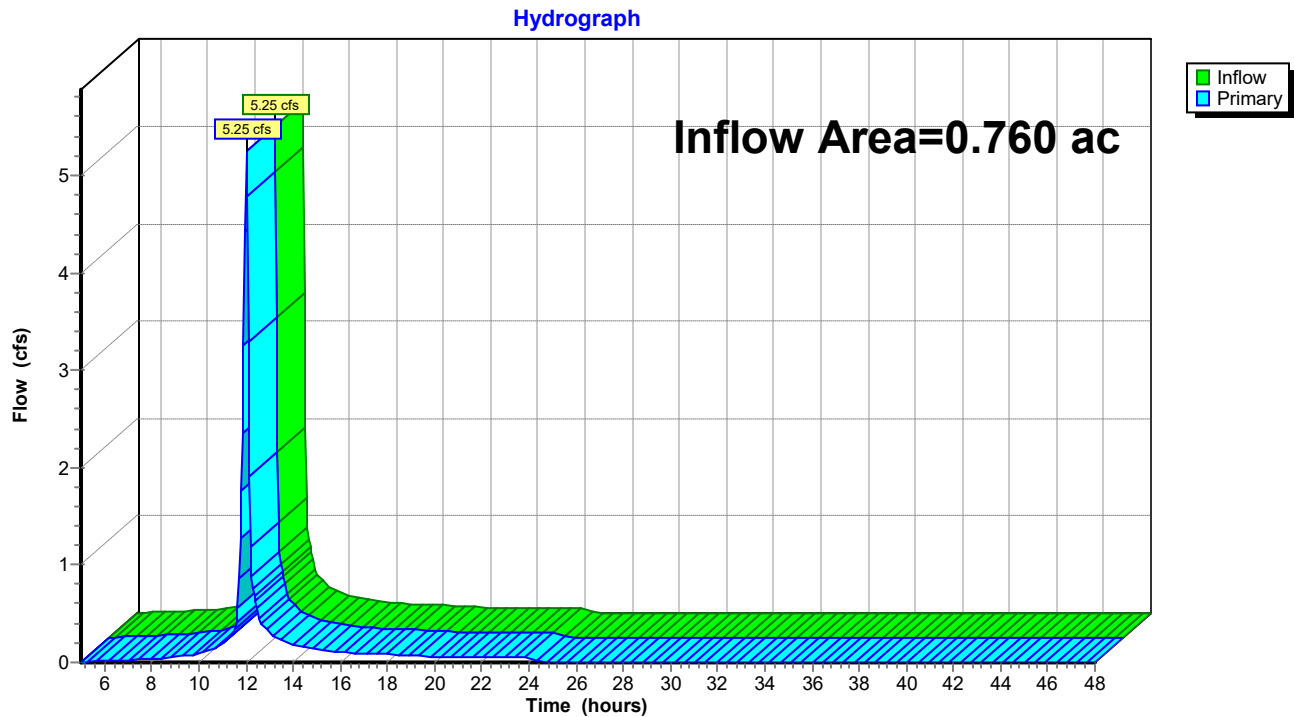


Summary for Pond AP-3: Analysis Point #3

Inflow Area = 0.760 ac, 78.95% Impervious, Inflow Depth > 4.51" for 100-Year event
Inflow = 5.25 cfs @ 12.01 hrs, Volume= 0.286 af
Primary = 5.25 cfs @ 12.01 hrs, Volume= 0.286 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs

Pond AP-3: Analysis Point #3



18641.00-Proposed Condition_Chambers_CULVERTS Type II 24-hr 100-Year Rainfall=6.11"

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Summary for Pond C-1: Chamber Series 1

Inflow Area = 10.300 ac, 66.70% Impervious, Inflow Depth > 5.60" for 100-Year event
 Inflow = 84.97 cfs @ 11.98 hrs, Volume= 4.805 af
 Outflow = 95.05 cfs @ 12.00 hrs, Volume= 4.444 af, Atten= 0%, Lag= 1.4 min
 Discarded = 0.29 cfs @ 12.00 hrs, Volume= 0.351 af
 Primary = 60.22 cfs @ 12.00 hrs, Volume= 3.951 af
 Secondary = 34.55 cfs @ 12.00 hrs, Volume= 0.143 af

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 14.63' @ 12.00 hrs Surf.Area= 24,954 sf Storage= 35,013 cf

Plug-Flow detention time= 141.1 min calculated for 4.438 af (92% of inflow)
 Center-of-Mass det. time= 101.1 min (864.7 - 763.5)

Volume	Invert	Avail.Storage	Storage Description
#1B	6.00'	11,722 cf	37.08'W x 227.97'L x 5.50'H Field B 46,496 cf Overall - 17,192 cf Embedded = 29,305 cf x 40.0% Voids
#2B	6.75'	17,192 cf	ADS_StormTech MC-3500 d +Cap x 155 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 155 Chambers in 5 Rows Cap Storage= +14.9 cf x 2 x 5 rows = 149.0 cf
#3	13.25'	6,100 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		35,013 cf	Total Available Storage

Storage Group B created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
13.25	600	0	0
13.75	4,900	1,375	1,375
14.00	8,200	1,638	3,013
14.25	16,500	3,088	6,100

Device	Routing	Invert	Outlet Devices
#1	Discarded	6.00'	0.500 in/hr Exfiltration over Surface area
#2	Primary	10.00'	36.0" Round Culvert L= 55.9' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.00' / 7.59' S= 0.0431 ' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#3	Secondary	14.24'	50.0' long x 0.7' breadth Concrete Curb Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 Coef. (English) 2.76 2.82 2.93 3.09 3.18 3.22 3.27 3.30 3.32 3.31 3.32

Discarded OutFlow Max=0.29 cfs @ 12.00 hrs HW=14.61' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.29 cfs)

Primary OutFlow Max=60.19 cfs @ 12.00 hrs HW=14.63' (Free Discharge)

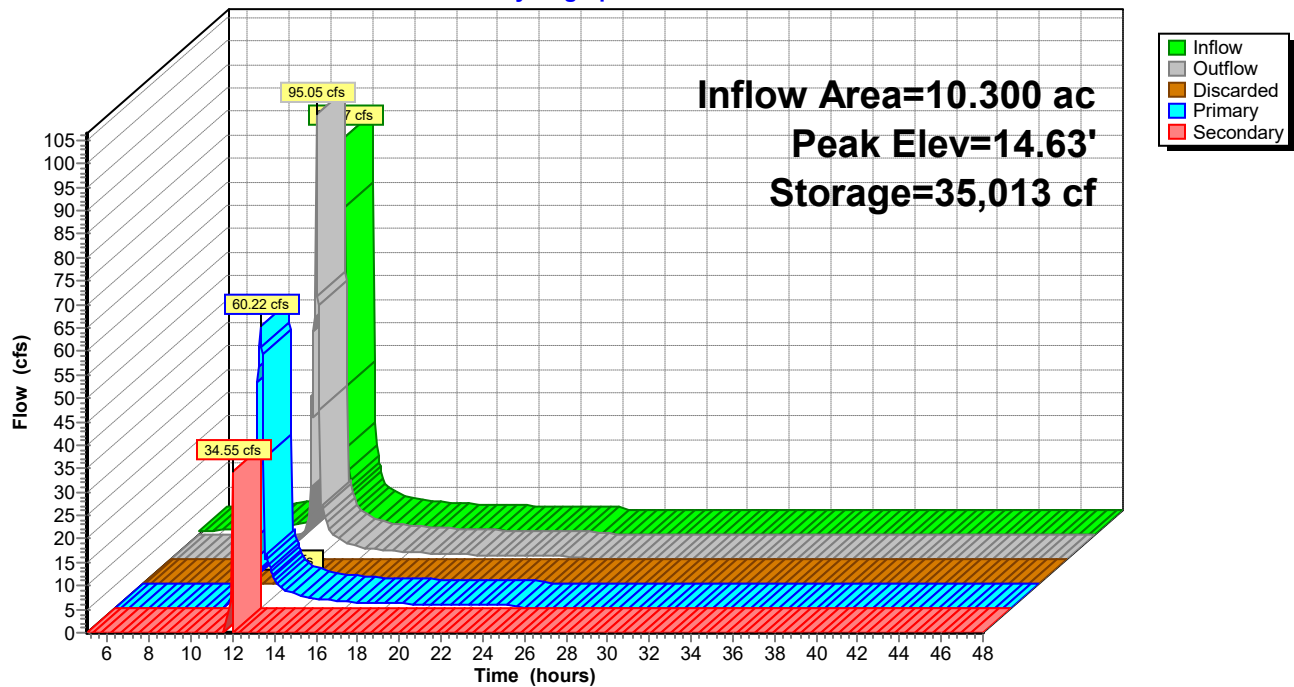
↑**2=Culvert** (Inlet Controls 60.19 cfs @ 8.52 fps)

Secondary OutFlow Max=34.34 cfs @ 12.00 hrs HW=14.63' (Free Discharge)

↑**3=Concrete Curb** (Weir Controls 34.34 cfs @ 1.76 fps)

Pond C-1: Chamber Series 1

Hydrograph



18641.00-Proposed Condition_Chambers_CULVERTS Type II 24-hr 100-Year Rainfall=6.11"

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Summary for Pond C-4: Chamber Series 4

Inflow Area = 8.900 ac, 0.00% Impervious, Inflow Depth > 5.34" for 100-Year event
 Inflow = 69.96 cfs @ 11.99 hrs, Volume= 3.959 af
 Outflow = 56.32 cfs @ 12.04 hrs, Volume= 3.628 af, Atten= 20%, Lag= 3.3 min
 Discarded = 0.19 cfs @ 12.03 hrs, Volume= 0.264 af
 Primary = 56.13 cfs @ 12.04 hrs, Volume= 3.364 af
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 15.22' @ 12.04 hrs Surf.Area= 16,391 sf Storage= 26,993 cf

Plug-Flow detention time= 137.4 min calculated for 3.627 af (92% of inflow)
 Center-of-Mass det. time= 92.3 min (865.1 - 772.9)

Volume	Invert	Avail.Storage	Storage Description
#1B	6.00'	8,911 cf	29.92'W x 213.63'L x 5.50'H Field B 35,151 cf Overall - 12,874 cf Embedded = 22,277 cf x 40.0% Voids
#2B	6.75'	12,874 cf	ADS_StormTech MC-3500 d +Cap x 116 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 116 Chambers in 4 Rows Cap Storage= +14.9 cf x 2 x 4 rows = 119.2 cf
#3	14.10'	8,015 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		29,800 cf	Total Available Storage

Storage Group B created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
14.10	400	0	0
14.60	2,400	700	700
14.80	6,300	870	1,570
15.10	10,000	2,445	4,015
15.50	10,000	4,000	8,015

Device	Routing	Invert	Outlet Devices
#1	Discarded	6.00'	0.500 in/hr Exfiltration over Surface area
#2	Primary	11.00'	36.0" Round Culvert L= 24.3' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 11.00' / 9.42' S= 0.0650 ' / S= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#3	Secondary	15.50'	100.0' long x 0.5' breadth Wharf Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.19 cfs @ 12.03 hrs HW=15.16' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=55.90 cfs @ 12.04 hrs HW=15.20' (Free Discharge)

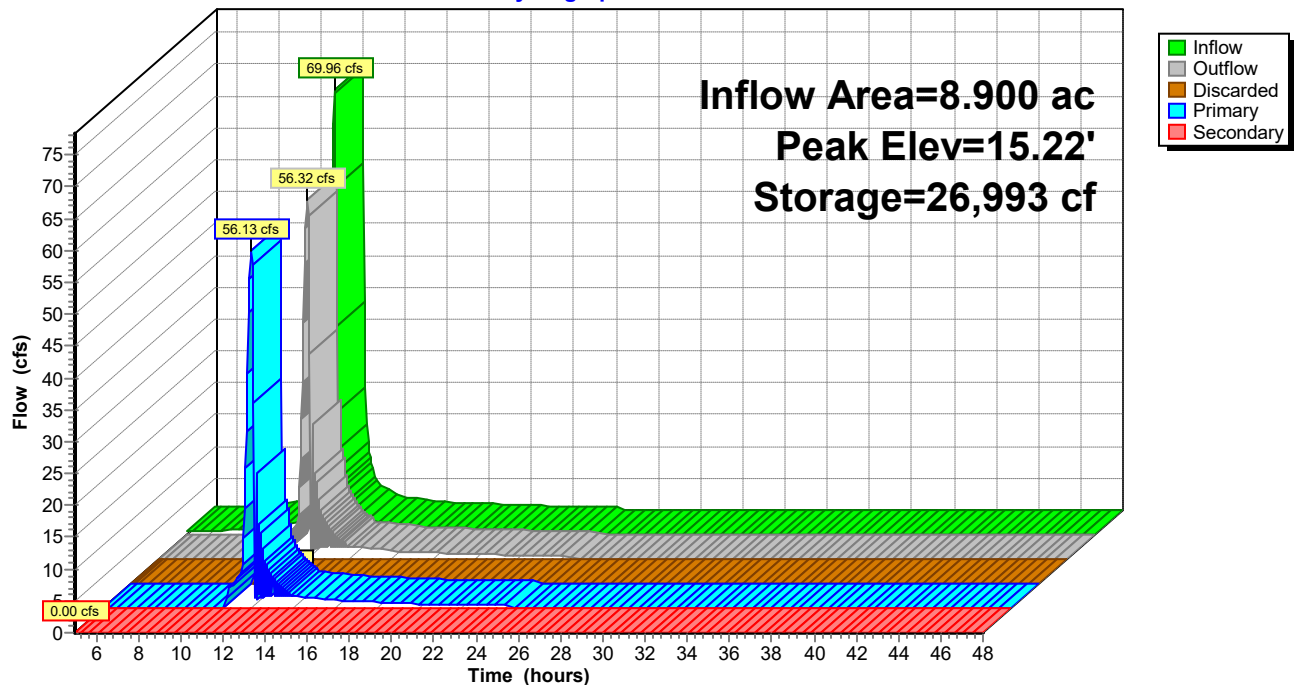
↑**2=Culvert** (Inlet Controls 55.90 cfs @ 7.91 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=6.01' (Free Discharge)

↑**3=Wharf** (Controls 0.00 cfs)

Pond C-4: Chamber Series 4

Hydrograph



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Summary for Pond C-5: Chamber Series 5

Inflow Area = 5.200 ac, 0.00% Impervious, Inflow Depth > 5.34" for 100-Year event
 Inflow = 41.34 cfs @ 11.98 hrs, Volume= 2.313 af
 Outflow = 30.89 cfs @ 12.05 hrs, Volume= 2.057 af, Atten= 25%, Lag= 3.9 min
 Discarded = 0.42 cfs @ 12.05 hrs, Volume= 0.401 af
 Primary = 30.47 cfs @ 12.05 hrs, Volume= 1.656 af
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 15.35' @ 12.05 hrs Surf.Area= 18,202 sf Storage= 26,138 cf

Plug-Flow detention time= 242.1 min calculated for 2.054 af (89% of inflow)
 Center-of-Mass det. time= 188.6 min (961.1 - 772.5)

Volume	Invert	Avail.Storage	Storage Description
#1B	6.00'	7,757 cf	28.50'W x 168.47'L x 6.75'H Field B 32,409 cf Overall - 13,016 cf Embedded = 19,393 cf x 40.0% Voids
#2B	6.75'	13,016 cf	ADS_StormTech MC-4500 b +Cap x 120 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 120 Chambers in 3 Rows Cap Storage= +39.5 cf x 2 x 3 rows = 237.0 cf
#3	14.60'	7,420 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		28,193 cf	Total Available Storage

Storage Group B created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
14.60	200	0	0
14.80	1,000	120	120
15.00	10,000	1,100	1,220
15.50	14,800	6,200	7,420

Device	Routing	Invert	Outlet Devices
#1	Discarded	6.00'	1.000 in/hr Exfiltration over Surface area
#2	Primary	12.60'	36.0" Round Culvert L= 62.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 12.60' / 12.29' S= 0.0049 ' S= 0.0049 ' Cc= 0.900 n= 0.013 Cast iron, coated, Flow Area= 7.07 sf
#3	Secondary	15.50'	100.0' long x 0.5' breadth Wharf Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.42 cfs @ 12.05 hrs HW=15.35' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.42 cfs)

Primary OutFlow Max=30.43 cfs @ 12.05 hrs HW=15.35' (Free Discharge)

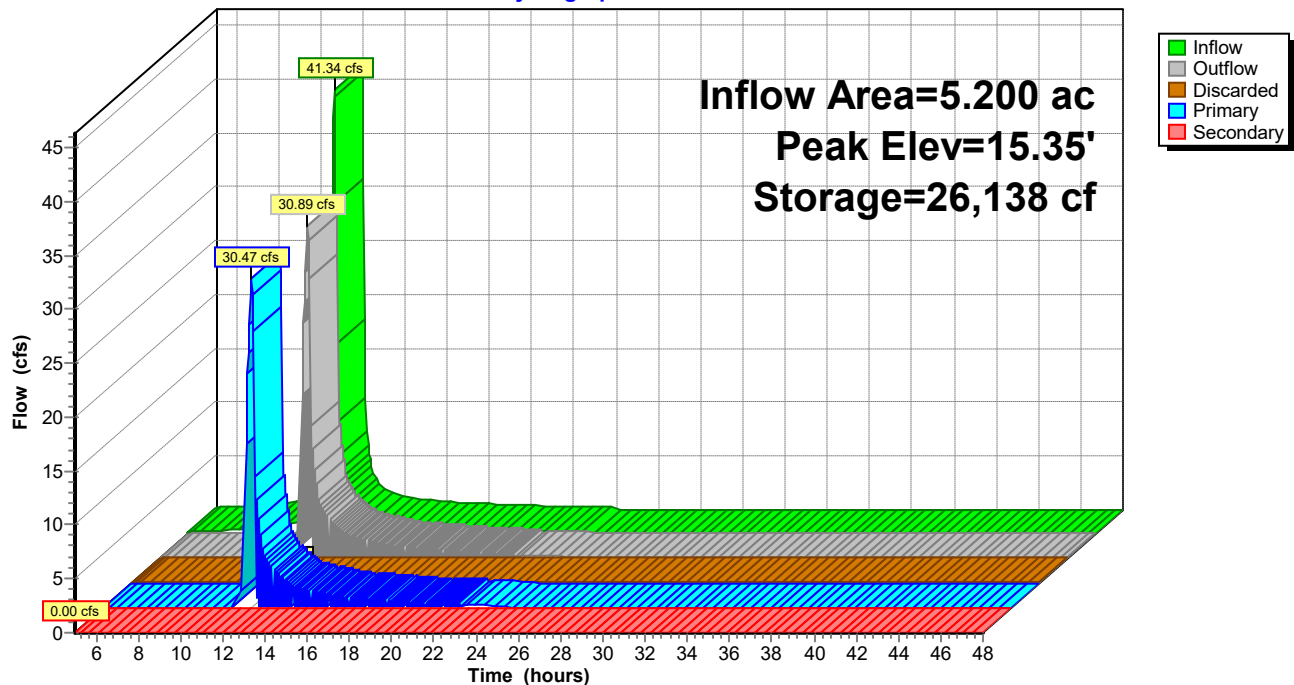
↑**2=Culvert** (Barrel Controls 30.43 cfs @ 5.87 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=6.01' (Free Discharge)

↑**3=Wharf** (Controls 0.00 cfs)

Pond C-5: Chamber Series 5

Hydrograph



Appendix C

Water Quality and Runoff Reduction Volume Calculations

Is this project subject to Chapter 10 of the NYS Design Manual (i.e. WQv is equal to post-development 1 year runoff volume)?.....

No

Design Point:

P=

1.20

inch

Manually enter P, Total Area and Impervious Cover.

Breakdown of Subcatchments

Catchment Number	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (ft ³)	Description
1	10.30	10.20	99%	0.94	42,055	
2	5.50	5.30	96%	0.92	21,884	
3	11.00	10.60	96%	0.92	43,769	
4	8.90	8.60	97%	0.92	35,505	
5	5.20	4.90	94%	0.90	20,258	
6	11.80	11.60	98%	0.93	47,846	
7	8.70	8.40	97%	0.92	34,681	
8	2.90	2.00	69%	0.67	8,437	
9	5.80	3.10	53%	0.53	13,361	
10	0.00	0.00				
Subtotal (1-30)	76.70	65.89	86%	0.82	273,874	Subtotal 1
Total	76.70	65.89	86%	0.82	273,874	Initial WQv

Identify Runoff Reduction Techniques By Area

Technique	Total Contributing Area	Contributing Impervious Area	Notes
	(Acre)	(Acre)	
Conservation of Natural Areas	4.00	0.00	minimum 10,000 sf
Riparian Buffers	0.00	0.00	maximum contributing length 75 feet to 150 feet
Filter Strips	0.00	0.00	
Tree Planting	0.00	0.00	Up to 100 sf directly connected impervious area may be subtracted per tree
Total	4.00	0.00	

Recalculate WQv after application of Area Reduction Techniques

	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Runoff Coefficient Rv	WQv (ft ³)
"<<Initial WQv"	76.70	65.89	86%	0.82	273,874
Subtract Area	-4.00	0.00			
WQv adjusted after Area Reductions	72.70	65.89	91%	0.87	273,007
Disconnection of Rooftops		0.00			
Adjusted WQv after Area Reduction and Rooftop Disconnect	72.70	65.89	91%	0.87	273,007
WQv reduced by Area Reduction techniques					868

Total Water Quality Volume Calculation

$$WQv(\text{acre-feet}) = [(P)(Rv)(A)] / 12$$

Additional Subcatchments						
Catchment Number	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (ft ³)	Description
11	4.00	0.00	0%	0.05	868	Conservation of Natural Areas
12	0.00	0.00				
13	1.10	0.45	41%	0.42	1,995	Infiltration Basin
14	1.10	0.55	50%	0.50	2,386	Infiltration Basin
15	0.10	0.05	50%	0.50	217	Dry Swale
16	0.00	0.00				
17	0.30	0.14	47%	0.47	612	Dry Swale
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
Subtotal	6.60	1.19	18%	0.21	6,077	Subtotal

Total Water Quality Volume Calculation

$$WQv(\text{acre-feet}) = [(P)(Rv)(A)] / 12$$

All Subcatchments						
Catchment	Total Area (Acres)	Impervious Cover (Acres)	Percent Impervious %	Runoff Coefficient Rv	WQv (ft ³)	Description
1	10.30	10.20	0.99	0.94	42055.46	
2	5.50	5.30	0.96	0.92	21,884	
3	11.00	10.60	0.96	0.92	43768.91	
4	8.90	8.60	0.97	0.92	35505.30	
5	5.20	4.90	0.94	0.90	20257.76	
6	11.80	11.60	0.98	0.93	47846.49	
7	8.70	8.40	0.97	0.92	34681.11	
8	2.90	2.00	0.69	0.67	8437.12	
9	5.80	3.10	0.53	0.53	13360.58	
10	0.00	0.00				
11	4.00	0.00	0.00	0.05	867.57	Conservation of Natural Areas
12	0.00	0.00				
13	1.10	0.45	0.41	0.42	1995.41	Infiltration Basin
14	1.10	0.55	0.50	0.50	2385.82	Infiltration Basin
15	0.10	0.05	0.50	0.50	216.89	Dry Swale
16	0.00	0.00				
17	0.30	0.14	0.47	0.47	611.64	Dry Swale
18						
19						
20						
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30						

Runoff Reduction Volume and Treated volumes						
	Runoff Reduction Techniques/Standard SMPs		Total Contributing Area	Total Contributing Impervious Area	WQv Reduced (RRv)	WQv Treated
			(acres)	(acres)	cf	cf
Area/Volume Reduction	Conservation of Natural Areas	RR-1	4.00	0.00		
	Sheetflow to Riparian Buffers/Filter Strips	RR-2	0.00	0.00		
	Tree Planting/Tree Pit	RR-3	0.00	0.00		
	Disconnection of Rooftop Runoff	RR-4		0.00		
	Vegetated Swale	RR-5	0.00	0.00	0	
	Rain Garden	RR-6	0.00	0.00	0	
	Stormwater Planter	RR-7	0.00	0.00	0	
	Rain Barrel/Cistern	RR-8	0.00	0.00	0	
	Porous Pavement	RR-9	0.00	0.00	0	
	Green Roof (Intensive & Extensive)	RR-10	0.00	0.00	0	
Standard SMPs w/RRv Capacity	Infiltration Trench	I-1	0.00	0.00	0	0
	Infiltration Basin	I-2	26.60	24.70	62378	7042
	Dry Well	I-3	0.00	0.00	0	0
	Underground Infiltration System	I-4				
	Bioretention & Infiltration Bioretention	F-5	0.00	0.00	0	0
	Dry swale	O-1	0.40	0.19	87	766
Standard SMPs	Micropool Extended Detention (P-1)	P-1				21798.000
	Wet Pond (P-2)	P-2				
	Wet Extended Detention (P-3)	P-3				
	Multiple Pond system (P-4)	P-4				
	Pocket Pond (p-5)	P-5				
	Surface Sand filter (F-1)	F-1				
	Underground Sand filter (F-2)	F-2				
	Perimeter Sand Filter (F-3)	F-3				
	Organic Filter (F-4)	F-4				181790.000
	Shallow Wetland (W-1)	W-1				
	Extended Detention Wetland (W-2)	W-2				
	Pond/Wetland System (W-3)	W-3				
	Pocket Wetland (W-4)	W-4				
	Wet Swale (O-2)	O-2				
Totals by Area Reduction →			4.00	0.00	868	
Totals by Volume Reduction →			0.00	0.00	0	
Totals by Standard SMP w/RRV →			27.00	24.89	62466	7808
Totals by Standard SMP →			0.00	0.00		203588
Totals (Area + Volume + all SMPs) →			31.00	24.89	63,333	211,396
	Impervious Cover v	error				

Minimum RRv

Enter the Soils Data for the site		
Soil Group	Acres	S
A	2.30	55%
B		40%
C		30%
D	70.40	20%
Total Area	72.7	
Calculate the Minimum RRv		
S =	0.21	
Impervious =	65.89	acre
Precipitation	1.195	in
Rv	0.95	
Minimum RRv	57,313	ft ³
	1.32	af

Planning

Practice	Description	Application
Preservation of Undisturbed Areas	Delineate and place into permanent conservation undisturbed forests, native vegetated areas, riparian corridors, wetlands, and natural terrain.	Considered & Applied
Preservation of Buffers	Define, delineate and preserve naturally vegetated buffers along perennial streams, rivers, shorelines and wetlands.	Considered & Not Applied
Reduction of Clearing and Grading	Limit clearing and grading to the minimum amount needed for roads, driveways, foundations, utilities and stormwater management facilities.	Considered & Applied
Locating Development in Less Sensitive Areas	Avoid sensitive resource areas such as floodplains, steep slopes, erodible soils, wetlands, mature forests and critical habitats by locating development to fit the terrain in areas that will create the least impact.	Considered & Applied
Open Space Design	Use clustering, conservation design or open space design to reduce impervious cover, preserve more open space and protect water resources.	N/A
Soil Restoration	Restore the original properties and porosity of the soil by deep till and amendment with compost to reduce the generation of runoff and enhance the runoff reduction performance of post construction practices.	N/A
Roadway Reduction	Minimize roadway widths and lengths to reduce site impervious area	Considered & Applied
Sidewalk Reduction	Minimize sidewalk lengths and widths to reduce site impervious area	Considered & Applied
Driveway Reduction	Minimize driveway lengths and widths to reduce site impervious area	N/A
Cul-de-sac Reduction	Minimize the number of cul-de-sacs and incorporate landscaped areas to reduce their impervious cover.	N/A
Building Footprint Reduction	Reduce the impervious footprint of residences and commercial buildings by using alternate or taller buildings while maintaining the same floor to area ratio.	Considered & Applied
Parking Reduction	Reduce imperviousness on parking lots by eliminating unneeded spaces, providing compact car spaces and efficient parking lanes, minimizing stall dimensions, using porous pavement surfaces in overflow parking areas, and using multi-storied parking decks where appropriate.	Considered & Applied

NOI QUESTIONS

#	NOI Question	Reported Value	
		cf	af
28	Total Water Quality Volume (WQv) Required	273874	6.287
30	Total RRV Provided	63333	1.454
31	Is RRV Provided $\geq$ WQv Required?	No	
32	Minimum RRV	57313	1.316
32a	Is RRV Provided $\geq$ Minimum RRV Required?	Yes	
33a	Total WQv Treated	211396	4.853
34	Sum of Volume Reduced & Treated	274729	6.307
34	Sum of Volume Reduced and Treated	274729	6.307
35	Is Sum RRV Provided and WQv Provided $\geq$ WQv Required?	Yes	

Apply Peak Flow Attenuation			
36	Channel Protection	<i>Cpv</i>	
37	Overbank	<i>Qp</i>	
37	Extreme Flood Control	<i>Qf</i>	
	Are Quantity Control requirements met?	Yes	Plan Completed

Infiltration Basin Worksheet

Design Point:							
Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (ft ³)	Precipitation (in)	Description
1	10.30	10.20	0.99	0.94	42055.46	1.20	
Enter Impervious Area Reduced by Disconnection of Practice		0.00	99%	0.94	42,055	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.					0	ft ³	
Pretreatment Techniques to Prevent Clogging							
Infiltration Rate			1.50	in/hour	Okay		
Pretreatment Sizing			25	% WQv	25% minimum; 50% if >2 in/hr 100% if >5in/hour		
Pretreatment Required Volume			10,514	ft ³			
Pretreatment Provided			11,000	ft ³			
Pretreatment Techniques utilized			Other				
Size An Infiltration Basin							
Design Volume	42,055	ft ³	WQv				
Basal Area Required	42,055	ft ²	Infiltration practices shall be designed to exfiltrate the entire WQv through the floor of each practice.				
Basal Area Provided	23,609	ft ²					
Design Depth	1.00	ft					
Volume Provided	23,609	ft ³	Storage Volume provided in infiltration basin area (not including pretreatment).				
Determine Runoff Reduction							
RRv	21,248	ft ³	90% of the storage provided in the basin or WQv whichever is smaller				
Volume Treated	20,807	ft ³	This is the portion of the WQv that is not reduced/infiltrated				
Sizing v			The infiltration basin must provide storage equal to or greater than the WQv of the contributing area.				

Infiltration Basin Worksheet

Design Point:							
Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (ft ³)	Precipitation (in)	Description
4	8.90	8.60	0.97	0.92	35505.30	1.20	
Enter Impervious Area Reduced by Disconnection of Practices		0.00	97%	0.92	35,505	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.					0	ft ³	
Pretreatment Techniques to Prevent Clogging							
Infiltration Rate			0.80	in/hour	Okay		
Pretreatment Sizing			25	% WQv	25% minimum; 50% if >2 in/hr 100% if >5in/hour		
Pretreatment Required Volume			8,876	ft ³			
Pretreatment Provided			10,000	ft ³			
Pretreatment Techniques utilized			Other				
Size An Infiltration Basin							
Design Volume	35,505	ft ³	WQv				
Basal Area Required	35,505	ft ²	Infiltration practices shall be designed to exfiltrate the entire WQv through the floor of each practice.				
Basal Area Provided	20,516	ft ²					
Design Depth	1.00	ft					
Volume Provided	20,516	ft ³	Storage Volume provided in infiltration basin area (not including pretreatment.				
Determine Runoff Reduction							
RRv	18,464	ft³	90% of the storage provided in the basin or WQv whichever is smaller				
Volume Treated	17,041	ft ³	This is the portion of the WQv that is not reduced/infiltrated				
Sizing v			The infiltration basin must provide storage equal to or greater than the WQv of the contributing area.				

Infiltration Basin Worksheet

Design Point:							
Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (ft ³)	Precipitation (in)	Description
5	5.20	4.90	0.94	0.90	20257.76	1.20	
Enter Impervious Area Reduced by Disconnection of Practices			94%	0.90	20,258	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						ft ³	
Pretreatment Techniques to Prevent Clogging							
Infiltration Rate			0.50	in/hour	Okay		
Pretreatment Sizing			25	% WQv	25% minimum; 50% if >2 in/hr 100% if >5in/hour		
Pretreatment Required Volume			5,064	ft ³			
Pretreatment Provided			5,100	ft ³			
Pretreatment Techniques utilized			Other				
Size An Infiltration Basin							
Design Volume	20,258	ft ³	WQv				
Basal Area Required	20,258	ft ²	Infiltration practices shall be designed to exfiltrate the entire WQv through the floor of each practice.				
Basal Area Provided	20,473	ft ²					
Design Depth	1.00	ft					
Volume Provided	20,473	ft ³	Storage Volume provided in infiltration basin area (not including pretreatment.				
Determine Runoff Reduction							
RRv	18,426	ft³	90% of the storage provided in the basin or WQv whichever is smaller				
Volume Treated	1,832	ft ³	This is the portion of the WQv that is not reduced/infiltrated				
Sizing v	OK		The infiltration basin must provide storage equal to or greater than the WQv of the contributing area.				

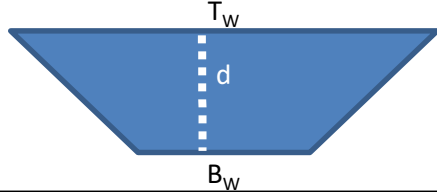
Infiltration Basin Worksheet

Design Point:							
Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (ft ³)	Precipitation (in)	Description
13	1.10	0.45	0.41	0.42	1995.41	1.20	Infiltration Basin
Enter Impervious Area Reduced by Disconnection of Practices			41%	0.42	1,995	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						ft ³	
Pretreatment Techniques to Prevent Clogging							
Infiltration Rate			4.50	in/hour	Okay		
Pretreatment Sizing			50	% WQv	25% minimum; 50% if >2 in/hr 100% if >5in/hour		
Pretreatment Required Volume			998	ft ³			
Pretreatment Provided			1,058	ft ³			
Pretreatment Techniques utilized			Sedimentation Basin				
Size An Infiltration Basin							
Design Volume	1,995	ft ³	WQv				
Basal Area Required	512	ft ²	Infiltration practices shall be designed to exfiltrate the entire WQv through the floor of each practice.				
Basal Area Provided	639	ft ²					
Design Depth	3.90	ft					
Volume Provided	2,492	ft ³	Storage Volume provided in infiltration basin area (not including pretreatment.				
Determine Runoff Reduction							
RRv	1,995	ft³	90% of the storage provided in the basin or WQv whichever is smaller				
Volume Treated	0	ft ³	This is the portion of the WQv that is not reduced/infiltrated				
Sizing v	OK		The infiltration basin must provide storage equal to or greater than the WQv of the contributing area.				

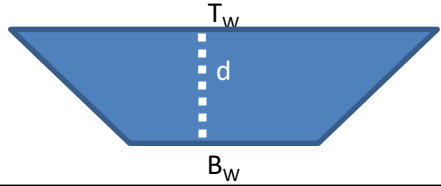
Infiltration Basin Worksheet

Design Point:							
Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (ft ³)	Precipitation (in)	Description
14	1.10	0.55	0.50	0.50	2385.82	1.20	Infiltration Basin
Enter Impervious Area Reduced by Disconnection of Practice		0.00	50%	0.50	2,386	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.					0	ft ³	
Pretreatment Techniques to Prevent Clogging							
Infiltration Rate			12.00	in/hour	Okay		
Pretreatment Sizing			100	% WQv	25% minimum; 50% if >2 in/hr 100% if >5in/hour		
Pretreatment Required Volume			2,386	ft ³			
Pretreatment Provided			2,389	ft ³			
Pretreatment Techniques utilized			Sedimentation Basin				
Size An Infiltration Basin							
Design Volume	2,386	ft ³	WQv				
Basal Area Required	612	ft ²	Infiltration practices shall be designed to exfiltrate the entire WQv through the floor of each practice.				
Basal Area Provided	640	ft ²					
Design Depth	3.90	ft					
Volume Provided	2,494	ft ³	Storage Volume provided in infiltration basin area (not including pretreatment).				
Determine Runoff Reduction							
RRv	2,245	ft ³	90% of the storage provided in the basin or WQv whichever is smaller				
Volume Treated	141	ft ³	This is the portion of the WQv that is not reduced/infiltrated				
Sizing v	OK		The infiltration basin must provide storage equal to or greater than the WQv of the contributing area.				

Dry Swale Worksheet

Design Point:							
Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (ft ³)	Precipitation (in)	Description
15	0.10	0.05	0.50	0.50	216.89	1.20	Dry Swale
Enter Impervious Area Reduced by Disconnection of Rooftops		0.00	50%	0.50	217	<<WQv after adjusting for Disconnected Rooftops	
Pretreatment Provided					Pretreatment Technique		
Pretreatment (10% of WQv)			22	ft ³			
Calculate Available Storage Capacity							
Bottom Width	1	ft	Design with a bottom width no greater than eight feet to avoid potential gullyng and channel braiding, but no less than two feet				
Side Slope (X:1)	2	Okay	Channels shall be designed with moderate side slopes (flatter than 3:1) for most conditions. 2:1 is the absolute maximum side slope				
Longitudinal Slope	0%	Okay	Maximum longitudinal slope shall be 4%				
Flow Depth	0.75	ft	Maximum ponding depth of one foot at the mid-point of the channel, and a maximum depth of 18" at the end point of the channel (for storage of the WQv)				
Top Width	4	ft					
Area	1.88	sf					
Minimum Length	104	ft					
Actual Length	105	ft					
End Point Depth check	1.00	Okay	A maximum depth of 18" at the end point of the channel (for storage of the WQv)				
Storage Capacity	219	ft ³					
Soil Group (HSG)			A				
Runoff Reduction							
Is the Dry Swale contributing flow to another practice?			No	Select Practice			
RRv	87	ft³	Runoff Reduction equals 40% in HSG A and B and 20% in HSG C and D up to the WQv				
Volume Treated	129	ft ³	This is the difference between the WQv calculated and the runoff reduction achieved in the swale				
Volume Directed	0	ft ³	This volume is directed another practice				
Volume V	Okay		Check to be sure that channel is long enough to store WQv				

Dry Swale Worksheet

Design Point:							
Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (ft ³)	Precipitation (in)	Description
17	0.30	0.14	0.47	0.47	611.64	1.20	Dry Swale
Enter Impervious Area Reduced by Disconnection of Rooftops		0.00	47%	0.47	612	<<WQv after adjusting for Disconnected Rooftops	
Pretreatment Provided					Pretreatment Technique		
Pretreatment (10% of WQv)			61	ft ³			
Calculate Available Storage Capacity							
Bottom Width	2	ft	Design with a bottom width no greater than eight feet to avoid potential gullyng and channel braiding, but no less than two feet				
Side Slope (X:1)	3	Okay	Channels shall be designed with moderate side slopes (flatter than 3:1) for most conditions. 2:1 is the absolute maximum side slope				
Longitudinal Slope	3%	Okay	Maximum longitudinal slope shall be 4%				
Flow Depth	1	ft	Maximum ponding depth of one foot at the mid-point of the channel, and a maximum depth of 18" at the end point of the channel (for storage of the WQv)				
Top Width	8	ft					
Area	5.00	sf					
Minimum Length	110	ft					
Actual Length	115	ft					
End Point Depth check	1.50	Okay	A maximum depth of 18" at the end point of the channel (for storage of the WQv)				
Storage Capacity	636	ft ³					
Soil Group (HSG)			D				
Runoff Reduction							
Is the Dry Swale contributing flow to another practice?			No	Select Practice			
RRv	127	ft³	Runoff Reduction equals 40% in HSG A and B and 20% in HSG C and D up to the WQv				
Volume Treated	484	ft ³	This is the difference between the WQv calculated and the runoff reduction achieved in the swale				
Volume Directed	0	ft ³	This volume is directed another practice				
Volume V	Okay		Check to be sure that channel is long enough to store WQv				

Conservation of Natural Areas

Design Point:							
Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (ft ³)	Precipitation (in)	Description
11	4.00	0.00	0.00	0.05	867.57	1.20	Conservation of Natural Areas
Design Elements							
Is Contiguous Area ≥ 10,000 ft ² ?						Yes	
Will limits of disturbance be clearly shown on all construction drawings and marked in field/project development site with structural barriers?						Yes	
Is the Conservation area located in an acceptable conservation easement instrument that ensures perpetual protection of proposed area?						Yes	
Does the easement specify how the natural area vegetation will be managed and boundaries will be marked?						Yes	
Does the conservation area receive runoff from other contributing areas?						No	
Does Conservation Area drain to a Design Point?						Yes	
Is Sheet Flow to Riparian Buffer or another area based practice already being Used for this area?						No	
Are All Criteria in Section 5.3.1 Met?				Yes			
Area Reduction Adjustments							
<i>Subtract</i>	<i>4.00</i>	<i>Acres from Total Area</i>					
<i>Subtract</i>	<i>0.00</i>	<i>Acres from Total Impervious Area</i>					

Date: 1/18/2022
Project: Port of Albany
Location: Albany, NY
Prepared For: Natalie Olivieri

Purpose: To calculate the water quality flow rate (Qwq) over a given site area. In this situation the WQv to be analyzed is the runoff produced by the first 1.2 inch(es) of rainfall, per Fig 4.1 of the New York State Stormwater Management Design Manual

Reference: United States Department of Agriculture Natural Resources Conservation Service TR-55 Manual, New York State Stormwater Management Design Manual - 2015

Formulas:

$$WQ_v = \frac{(P)(R_v)(A)}{12}$$

$$R_v = (0.05 + 0.009(I))$$

$$CN = 1000 / [10 + 5P + 10Qa - 10(Qa^2 + 1.25QaP)^{1/2}]$$

$$Qwq = (q_u)(A)(Qa)$$

Structure:	WQU 1	Structure:	WQU 2	Structure:	WQU 3
P	1.20 in.	P	1.20 in.	P	1.20 in.
A	10.300 ac	A	5.500 ac	A	11.000 ac
I	99.03 %	I	96.36 %	I	96.36 %
t _c	10.0 min.	t _c	10.0 min.	t _c	10.4 min.
t _c	0.167 hr.	t _c	0.167 hr.	t _c	0.173 hr.
R _v	0.941	R _v	0.917	R _v	0.917
43% WQv	0.413 ac-ft	90% WQv	0.504 ac-ft	90% WQv	1.009 ac-ft
43% WQv	18003.65 ft ³	90% WQv	21971.66 ft ³	90% WQv	43938.97 ft ³
Qa	1.129 in.	Qa	1.101 in.	Qa	1.100 in.
CN	97.00	CN	94.00	CN	95.00
I _a	0.062	I _a	0.128	I _a	0.105
I _a /P	0.052	I _a /P	0.107	I _a /P	0.088
q _u	1000 (csm/in)	q _u	1000 (csm/in)	q _u	1000 (csm/in)
A	0.01609 miles ²	A	0.00859 miles ²	A	0.01719 miles ²
Qwq	7.81 cfs	Qwq	9.46 cfs	Qwq	18.91 cfs

Date: 1/18/2022
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Reference: United States Department of Agriculture Natural Resources Conservation Service TR-55 Manual, New York State Stormwater Management Design Manual - 2015

Formulas:

$$WQv = \frac{(P)(R_v)(A)}{12}$$

$$R_v = (0.05 + 0.009(I))$$

$$CN = 1000 / [10 + 5P + 10Qa - 10(Qa^2 + 1.25QaP)^{1/2}]$$

$$Qwq = (q_u)(A)(Qa)$$

Structure: WQU 4

P	1.20	in.
A	8.900	ac
I	96.63	%
t _c	10.0	min.
t _c	0.167	hr.
R _v	0.92	
42% WQv	0.342	ac-ft
42% WQv	14912.10	ft ³
Qa	1.104	in.
CN	94.00	
I _a	0.128	
I _a /P	0.107	
q _u	1000	(csm/in)
A	0.01391	miles ²
Qwq	6.44	cfs

Structure: WQU 6

P	1.20	in.
A	11.800	ac
I	98.31	%
t _c	10.0	min.
t _c	0.167	hr.
R _v	0.935	
90% WQv	1.103	ac-ft
90% WQv	48059.75	ft ³
Qa	1.122	in.
CN	96.00	
I _a	0.083	
I _a /P	0.069	
q _u	1000	(csm/in)
A	0.01844	miles ²
Qwq	20.69	cfs

Date: 1/18/2022
Project: Port of Albany
Location: Albany, NY
Prepared For: Natalie Olivieri

Purpose: To calculate the water quality flow rate (Qwq) over a given site area. In this situation the WQv to be analyzed is the runoff produced by the first 1.2 inch(es) of rainfall, per Fig 4.1 of the New York State Stormwater Management Design Manual

Reference: United States Department of Agriculture Natural Resources Conservation Service TR-55 Manual, New York State Stormwater Management Design Manual - 2015

Formulas:

$$WQv = \frac{(P)(R_v)(A)}{12}$$

$$R_v = (0.05 + 0.009(I))$$

$$CN = 1000 / [10 + 5P + 10Qa - 10(Qa^2 + 1.25QaP)^{1/2}]$$

$$Qwq = (q_u)(A)(Qa)$$

Structure: WQU 7

P	1.20	in.
A	8.700	ac
I	96.55	%
t _c	10.5	min.
t _c	0.175	hr.
R _v	0.919	
90% WQv	0.800	ac-ft
90% WQv	34826.22	ft ³
Qa	1.103	in.
CN	96.00	
I _a	0.083	
I _a /P	0.069	
q _u	1000	(csm/in)
A	0.01359	miles ²
Qwq	14.99	cfs

Analyze Gravity Network - Drainage Area 1

Analysis Result

AEP: 1/2

ProfileReport

Line	Pipe	Pipe Diameter	Pipe Flow	Velocity	Pipe Slope	Performance	Structure
1	DP1	3.00'	26.218 cubic	14.802 ft/s	3.50%	Flooded	DV-1
2	JP-1A	3.00'	26.250 cubic	7.277 ft/s	0.50%	Flooded	J-1
3	DP1-1	3.00'	22.911 cubic	7.031 ft/s	0.50%	Flooded	DS1-1
4	DP1-2	3.00'	23.222 cubic	7.056 ft/s	0.50%	Surcharge	DS1-2
5	DP1-3	3.00'	23.805 cubic	7.101 ft/s	0.50%	Surcharge	DS1-3
6	DP1-4	3.00'	23.946 cubic	7.118 ft/s	0.50%	Surcharge	DS1-4
7	DP1-5	3.00'	23.913 cubic	7.109 ft/s	0.50%	Surcharge	DS1-5
8	DP1-6	3.00'	21.904 cubic	6.950 ft/s	0.50%	Surcharge	DS1-6
9	DP1-7	2.50'	19.124 cubic	6.713 ft/s	0.50%	Surcharge	DS1-7
10	DP1-8	2.50'	16.379 cubic	6.468 ft/s	0.50%	Surcharge	DS1-8
11	DP1-9	2.50'	14.354 cubic	6.256 ft/s	0.50%	Surcharge	DS1-9
12	DP1-10	2.50'	14.063 cubic	6.224 ft/s	0.50%	Surcharge	DS1-10
13	DP1-11	2.50'	12.360 cubic	6.018 ft/s	0.50%	Surcharge	DS1-11
14	DP1-12	2.00'	8.023 cubic f	5.410 ft/s	0.50%	Surcharge	DS1-12
15	DP1-13	1.50'	4.009 cubic f	4.549 ft/s	0.50%	Surcharge	DS1-13
16	DP1-14	1.50'	3.460 cubic f	4.382 ft/s	0.50%	Normal	DS1-14

Start Over

ApplyCancelHelp

DP 1

HGL Up	10.90'
HGL Down	8.94'
EGL Up	14.30'
EGL Down	12.35'
Invert Up	10.00'
Invert Down	8.04'

DV-1

Structure Type	Manhole
Rim Elevation	13.96'
HGL	14.30'
EGL	14.30'

Analyze Gravity Network - Drainage Area 1

Analysis Result

AEP: 1/10

ProfileReport

Line	Pipe	Pipe Diameter	Pipe Flow	Velocity	Pipe Slope	Performance	Structure
1	DP1	3.00'	41.089 cubic	16.777 ft/s	3.50%	Flooded	DV-1
2	JP-1A	3.00'	41.175 cubic	8.041 ft/s	0.50%	Flooded	J-1
3	DP1-1	3.00'	36.190 cubic	7.840 ft/s	0.50%	Flooded	DS1-1
4	DP1-2	3.00'	36.636 cubic	7.860 ft/s	0.50%	Flooded	DS1-2
5	DP1-3	3.00'	37.438 cubic	7.896 ft/s	0.50%	Surcharge	DS1-3
6	DP1-4	3.00'	37.539 cubic	7.908 ft/s	0.50%	Surcharge	DS1-4
7	DP1-5	3.00'	37.435 cubic	7.895 ft/s	0.50%	Surcharge	DS1-5
8	DP1-6	3.00'	34.180 cubic	7.744 ft/s	0.50%	Surcharge	DS1-6
9	DP1-7	2.50'	29.766 cubic	7.282 ft/s	0.50%	Surcharge	DS1-7
10	DP1-8	2.50'	25.419 cubic	7.126 ft/s	0.50%	Flooded	DS1-8
11	DP1-9	2.50'	22.253 cubic	6.943 ft/s	0.50%	Flooded	DS1-9
12	DP1-10	2.50'	21.767 cubic	6.910 ft/s	0.50%	Flooded	DS1-10
13	DP1-11	2.50'	19.095 cubic	6.710 ft/s	0.50%	Flooded	DS1-11
14	DP1-12	2.00'	12.356 cubic	5.992 ft/s	0.50%	Flooded	DS1-12
15	DP1-13	1.50'	6.157 cubic f	5.017 ft/s	0.50%	Flooded	DS1-13
16	DP1-14	1.50'	5.305 cubic f	4.863 ft/s	0.50%	Flooded	DS1-14

Start Over

ApplyCancelHelp

DP 1

HGL Up	11.13'
HGL Down	9.18'
EGL Up	15.51'
EGL Down	13.55'
Invert Up	10.00'
Invert Down	8.04'

DV-1

Structure Type	Manhole
Rim Elevation	13.96'
HGL	15.51'
EGL	15.51'

Analyze Gravity Network - Drainage Area 2

Analysis Result

AEP: 1/2

ProfileReport

Line	Pipe	Pipe Diameter	Pipe Flow	Velocity	Pipe Slope	Performance	Structure
1	DS2	2.50'	17.264 cubic	6.504 ft/s	0.49%	Normal	J-2
2	JP-2	2.50'	17.294 cubic	7.321 ft/s	0.67%	Normal	DS2
3	DP2-3	2.00'	6.111 cubic f	5.038 ft/s	0.50%	Surcharge	DS2-3
4	DP2-4	1.50'	1.972 cubic f	3.764 ft/s	0.50%	Surcharge	DS2-4
5	DP2-1	2.00'	8.461 cubic f	5.483 ft/s	0.50%	Surcharge	DS2-1
6	DP2-2	1.50'	4.832 cubic f	4.760 ft/s	0.50%	Surcharge	DS2-2

Start Over

ApplyCancelHelp

DS2

HGL Up	9.26'
HGL Down	9.11'
EGL Up	9.92'
EGL Down	9.77'
Invert Up	7.93'
Invert Down	7.78'

J-2

Structure Type	<none>
Rim Elevation	15.00'
HGL	10.07'
EGL	10.07'

[illegible]

Analysis Result

AEP: 1/2

Profile

Report

Line	Pipe	Pipe Diameter	Pipe Flow	Velocity	Pipe Slope	Performance	Structure	
1	DP3	3.00'	30.945 cubic	7.572 ft/s	0.50%	✓ Normal	JM-3B	
2	JP-3E	3.00'	30.986 cubic	7.574 ft/s	0.50%	✓ Normal	DS3	
3	DP3-15	2.00'	9.982 cubic f	5.696 ft/s	0.50%	⚠ Surcharge	DS3-15	
4	DP3-16	2.00'	6.872 cubic f	5.197 ft/s	0.50%	⚠ Surcharge	DS3-16	
5	DP3-17	1.50'	3.591 cubic f	6.326 ft/s	1.33%	⚠ Surcharge	DS3-17	
6	DP3-18	1.50'	2.869 cubic f	4.171 ft/s	0.50%	✓ Normal	DS3-18	
7	DP3-19	1.50'	4.895 cubic f	4.784 ft/s	0.50%	⚠ Surcharge	DS3-19	
8	DP3-20	1.50'	3.479 cubic f	4.388 ft/s	0.50%	⚠ Surcharge	DS3-20	
9	DP3-1	2.50'	16.137 cubic	7.337 ft/s	0.71%	⚠ Surcharge	DS3-1	
10	DP3-2	2.00'	13.260 cubic	7.955 ft/s	1.00%	⚠ Surcharge	DS3-2	
11	DP3-3	2.00'	11.621 cubic	7.698 ft/s	1.00%	⚠ Surcharge	DS3-3	
12	DP3-13	1.50'	1.907 cubic f	3.729 ft/s	0.50%	✓ Normal	DS3-13	
13	DP3-14	1.00'	1.181 cubic f	3.350 ft/s	0.50%	✓ Normal	DS3-14	
14	DP3-4	2.00'	9.494 cubic f	5.642 ft/s	0.50%	✓ Normal	DS3-4	
15	DP3-5	2.00'	7.871 cubic f	5.384 ft/s	0.50%	✓ Normal	DS3-5	
16	DP3-6	2.00'	6.221 cubic f	5.062 ft/s	0.50%	✓ Normal	DS3-6	
17	DP3-7	1.50'	4.448 cubic f	4.667 ft/s	0.50%	✓ Normal	DS3-7	
18	DP3-8	1.50'	3.351 cubic f	4.345 ft/s	0.50%	✓ Normal	DS3-8	
19	DP3-9	1.50'	2.488 cubic f	4.013 ft/s	0.50%	✓ Normal	DS3-9	
20	DP3-10	1.50'	1.807 cubic f	3.673 ft/s	0.50%	✓ Normal	DS3-10	
21	DP3-12	1.00'	0.411 cubic f	2.503 ft/s	0.50%	✓ Normal	DS3-12	
22	DP3-11	1.00'	0.946 cubic f	3.159 ft/s	0.50%	✓ Normal	DS3-11	

DP3

HGL Up	10.48'
HGL Down	10.36'
EGL Up	11.38'
EGL Down	11.25'
Invert Up	8.80'
Invert Down	8.67'

JM-3B

Structure Type	Manhole
Rim Elevation	15.40'
HGL	11.61'
EGL	11.61'

Start Over

Apply

Cancel

Help

Analysis Result								AEP: 1/10		Profile	Report
Line	Pipe	Pipe Diameter	Pipe Flow	Velocity	Pipe Slope	Performance	Structure				
1	DP3	3.00'	48.079 cubic	8.219 ft/s	0.50%	✓ Normal	JM-3B				
2	JP-3E	3.00'	48.136 cubic	8.220 ft/s	0.50%	✓ Normal	DS3				
3	DP3-15	2.00'	15.473 cubic	6.218 ft/s	0.50%	⚠ Surcharge	DS3-15				
4	DP3-16	2.00'	10.617 cubic	5.794 ft/s	0.50%	✗ Flooded	DS3-16				
5	DP3-17	1.50'	5.530 cubic f	7.104 ft/s	1.33%	✗ Flooded	DS3-17				
6	DP3-18	1.50'	4.400 cubic f	4.655 ft/s	0.50%	⚠ Surcharge	DS3-18				
7	DP3-19	1.50'	7.530 cubic f	5.187 ft/s	0.50%	✗ Flooded	DS3-19				
8	DP3-20	1.50'	5.336 cubic f	4.869 ft/s	0.50%	✗ Flooded	DS3-20				
9	DP3-1	2.50'	25.295 cubic	8.181 ft/s	0.71%	⚠ Surcharge	DS3-1				
10	DP3-2	2.00'	20.712 cubic	8.749 ft/s	1.00%	⚠ Surcharge	DS3-2				
11	DP3-3	2.00'	18.115 cubic	8.536 ft/s	1.00%	⚠ Surcharge	DS3-3				
12	DP3-13	1.50'	2.940 cubic f	4.198 ft/s	0.50%	⚠ Surcharge	DS3-13				
13	DP3-14	1.00'	1.812 cubic f	3.717 ft/s	0.50%	⚠ Surcharge	DS3-14				
14	DP3-4	2.00'	14.773 cubic	6.195 ft/s	0.50%	⚠ Surcharge	DS3-4				
15	DP3-5	2.00'	12.222 cubic	5.978 ft/s	0.50%	⚠ Surcharge	DS3-5				
16	DP3-6	2.00'	9.638 cubic f	5.663 ft/s	0.50%	⚠ Surcharge	DS3-6				
17	DP3-7	1.50'	6.885 cubic f	5.116 ft/s	0.50%	⚠ Surcharge	DS3-7				
18	DP3-8	1.50'	5.181 cubic f	4.837 ft/s	0.50%	⚠ Surcharge	DS3-8				
19	DP3-9	1.50'	3.841 cubic f	4.501 ft/s	0.50%	⚠ Surcharge	DS3-9				
20	DP3-10	1.50'	2.788 cubic f	4.139 ft/s	0.50%	⚠ Surcharge	DS3-10				
21	DP3-12	1.00'	0.631 cubic f	2.826 ft/s	0.50%	⚠ Surcharge	DS3-12				
22	DP3-11	1.00'	1.451 cubic f	3.528 ft/s	0.50%	⚠ Surcharge	DS3-11				

DP3

HGL Up	11.11'
HGL Down	10.99'
EGL Up	12.16'
EGL Down	12.04'
Invert Up	8.80'
Invert Down	8.67'

JM-3B

Structure Type	Manhole
Rim Elevation	15.40'
HGL	12.59'
EGL	12.59'

Start Over

Apply

Cancel

Help

[illegible]

Analyze Gravity Network - Drainage Area 4

Analysis Result

Line	Pipe	Pipe Diameter	Pipe Flow	Velocity	Pipe Slope	Performance	Structure
1	DP4	3.00'	39.442 cubic	16.590 ft/s	3.50%	✖ Flooded	DV-4
2	JP-4D	3.00'	39.489 cubic	13.528 ft/s	2.00%	✖ Flooded	J-5
3	JP-4E	3.00'	39.616 cubic	7.984 ft/s	0.50%	✖ Flooded	DS4
4	DP4-3	2.00'	15.613 cubic	6.243 ft/s	0.50%	✖ Flooded	DS4-3
5	DP4-4	2.00'	8.782 cubic f	5.369 ft/s	0.46%	✖ Flooded	DS4-4
6	DP4-5	1.50'	6.577 cubic f	5.060 ft/s	0.50%	✖ Flooded	DS4-5
7	DP4-6	1.50'	4.836 cubic f	6.094 ft/s	0.96%	✖ Flooded	DS4-6
9	DP4-7	2.00'	17.128 cubic	6.288 ft/s	0.50%	✖ Flooded	DS4-7
10	DP4-8	2.00'	11.006 cubic	5.842 ft/s	0.50%	✖ Flooded	DS4-8
11	DP4-1	1.50'	7.059 cubic f	5.440 ft/s	0.57%	✖ Flooded	DS4-1
12	DP4-2	1.00'	3.119 cubic f	5.392 ft/s	0.97%	✖ Flooded	DS4-2

AEP: 1/10

Profile Report

DP4

HGL Up	12.11'
HGL Down	11.26'
EGL Up	16.39'
EGL Down	15.54'
Invert Up	11.00'
Invert Down	10.15'

DV-4

Structure Type	Manhole
Rim Elevation	15.37'
HGL	16.39' ✖
EGL	16.39' ✖

Start Over

Apply Cancel Help

Analyze Gravity Network - Drainage Area 5

Analysis Result AEP: 1/2 Profile Report

Line	Pipe	Pipe Diameter	Pipe Flow	Velocity	Pipe Slope	Performance	Structure
1	DP5	3.00'	14.640 cubic f	6.239 ft/s	0.50%	✓ Normal	DV-5
2	DP5-4	1.50'	3.963 cubic f	8.186 ft/s	2.51%	⚠ Surcharged	DSS-4
3	DP5-5	1.50'	3.561 cubic f	4.414 ft/s	0.50%	⚠ Surcharged	DSS-5
4	DP5-6	1.50'	2.984 cubic f	4.215 ft/s	0.50%	⚠ Surcharged	DSS-6
5	DP5-7	1.00'	1.762 cubic f	3.694 ft/s	0.50%	⚠ Surcharged	DSS-7
6	IS 5-2	2.00'	10.652 cubic f	5.798 ft/s	0.50%	⚠ Surcharged	DSS
7	DP5-1	2.00'	11.072 cubic f	5.850 ft/s	0.50%	⚠ Surcharged	DSS-1
8	DP5-2	2.00'	10.862 cubic f	5.824 ft/s	0.50%	✗ Flooded	DSS-2
9	DP5-3	2.00'	8.456 cubic f	5.477 ft/s	0.50%	✗ Flooded	DSS-3

DP5	
HGL Up	13.70'
HGL Down	13.39'
EGL Up	14.30'
EGL Down	13.99'
Invert Up	12.60'
Invert Down	12.29'

DV-5	
Structure Type	Grate inlet
Rim Elevation	17.62'
HGL	14.30'
EGL	14.30'

Start Over Apply Cancel Help

Analysis Result

AEP: 1/10

Profile

Report

Line	Pipe	Pipe Diameter	Pipe Flow	Velocity	Pipe Slope	Performance	Structure
1	DP5	3.00'	22.607 cubic	7.007 ft/s	0.50%	Normal	DV-5
2	DP5-4	1.50'	6.153 cubic f	9.242 ft/s	2.51%	Surcharge	DS5-4
3	DP5-5	1.50'	5.499 cubic f	4.901 ft/s	0.50%	Surcharge	DS5-5
4	DP5-6	1.50'	4.588 cubic f	4.702 ft/s	0.50%	Surcharge	DS5-6
5	DP5-7	1.00'	2.703 cubic f	3.962 ft/s	0.50%	Surcharge	DS5-7
6	IS 5-2	2.00'	16.445 cubic	6.277 ft/s	0.50%	Surcharge	DS5
7	DP5-1	2.00'	17.044 cubic	6.288 ft/s	0.50%	Flooded	DS5-1
8	DP5-2	2.00'	16.702 cubic	6.283 ft/s	0.50%	Flooded	DS5-2
9	DP5-3	2.00'	12.968 cubic	6.044 ft/s	0.50%	Flooded	DS5-3

DP5	
HGL Up	14.00'
HGL Down	13.68'
EGL Up	14.76'
EGL Down	14.45'
Invert Up	12.60'
Invert Down	12.29'

DV-5	
Structure Type	Grate inlet
Rim Elevation	17.62'
HGL	14.97'
EGL	14.97'

Start Over

Apply

Cancel

Help

Analysis Result

AEP: 1/2

Profile

Report

Line	Pipe	Pipe Diameter	Pipe Flow	Velocity	Pipe Slope	Performance	Structure
1	DP6	3.00'	31.765 cubic	7.618 ft/s	0.50%	Normal	JM-6A
2	JP-6E	3.00'	31.820 cubic	7.621 ft/s	0.50%	Normal	DS6
3	DP6-1	3.00'	30.573 cubic	7.550 ft/s	0.50%	Normal	DS6-1
4	DP6-2	3.00'	28.195 cubic	7.406 ft/s	0.50%	Normal	DS6-2
5	DP6-3	3.00'	26.141 cubic	7.270 ft/s	0.50%	Normal	DS6-3
6	DP6-4	3.00'	26.008 cubic	7.261 ft/s	0.50%	Normal	DS6-4
7	DP6-13	1.50'	2.396 cubic f	8.464 ft/s	4.14%	Surcharge	DS6-13
8	DP6-5	3.00'	23.739 cubic	7.096 ft/s	0.50%	Normal	DS6-5
9	DP6-6	3.00'	20.873 cubic	6.863 ft/s	0.50%	Normal	DS6-6
10	DP6-7	2.50'	17.671 cubic	6.588 ft/s	0.50%	Normal	DS6-7
11	DP6-8	2.50'	14.393 cubic	6.261 ft/s	0.50%	Normal	DS6-8
12	DP6-9	2.50'	13.518 cubic	6.160 ft/s	0.50%	Normal	DS6-9
13	DP6-10	2.50'	12.286 cubic	6.008 ft/s	0.50%	Normal	DS6-10
14	DP6-11	2.00'	10.578 cubic	5.789 ft/s	0.50%	Normal	DS6-11
15	DP6-12	1.50'	5.114 cubic f	5.014 ft/s	0.55%	Surcharge	DS6-12
16	DP6-14	1.50'	1.715 cubic f	8.104 ft/s	4.84%	Surcharge	DS6-14

DP6	
HGL Up	9.50'
HGL Down	9.29'
EGL Up	10.40'
EGL Down	10.19'
Invert Up	7.79'
Invert Down	7.57'

JM-6A	
Structure Type	<none>
Rim Elevation	17.98'
HGL	10.74'
EGL	10.74'

Start Over

Apply

Cancel

Help

Analysis Result

AEP: 1/10

Profile

Report

Line	Pipe	Pipe Diameter	Pipe Flow	Velocity	Pipe Slope	Performance	Structure
1	DP6	3.00'	49.209 cubic	8.233 ft/s	0.50%	Normal	JM-6A
2	JP-6E	3.00'	49.287 cubic	8.234 ft/s	0.50%	Normal	DS6
3	DP6-1	3.00'	47.358 cubic	8.208 ft/s	0.50%	Surcharge	DS6-1
4	DP6-2	3.00'	43.904 cubic	8.127 ft/s	0.50%	Surcharge	DS6-2
5	DP6-3	3.00'	40.609 cubic	8.021 ft/s	0.50%	Surcharge	DS6-3
6	DP6-4	3.00'	40.336 cubic	8.011 ft/s	0.50%	Surcharge	DS6-4
7	DP6-13	1.50'	3.675 cubic f	9.579 ft/s	4.14%	Surcharge	DS6-13
8	DP6-5	3.00'	36.644 cubic	7.861 ft/s	0.50%	Surcharge	DS6-5
9	DP6-6	3.00'	32.096 cubic	7.636 ft/s	0.50%	Surcharge	DS6-6
10	DP6-7	2.50'	27.101 cubic	7.201 ft/s	0.50%	Surcharge	DS6-7
11	DP6-8	2.50'	22.273 cubic	6.944 ft/s	0.50%	Surcharge	DS6-8
12	DP6-9	2.50'	20.868 cubic	6.847 ft/s	0.50%	Surcharge	DS6-9
13	DP6-10	2.50'	18.899 cubic	6.694 ft/s	0.50%	Surcharge	DS6-10
14	DP6-11	2.00'	16.246 cubic	6.270 ft/s	0.50%	Flooded	DS6-11
15	DP6-12	1.50'	7.842 cubic f	5.438 ft/s	0.55%	Flooded	DS6-12
16	DP6-14	1.50'	2.630 cubic f	9.188 ft/s	4.84%	Surcharge	DS6-14

DP6	
HGL Up	10.15'
HGL Down	9.94'
EGL Up	11.21'
EGL Down	10.99'
Invert Up	7.79'
Invert Down	7.57'

JM-6A	
Structure Type	<none>
Rim Elevation	17.98'
HGL	11.79'
EGL	11.79'

Start Over

Apply

Cancel

Help

Analyze Gravity Network - Drainage Area 7

Analysis Result

AEP: 1/2

ProfileReport

Line	Pipe	Pipe Diameter	Pipe Flow	Velocity	Pipe Slope	Performance	Structure	
1	DP7	3.00'	23.333 cubic	7.064 ft/s	0.50%	Normal	JM-7A	
2	JP-7E	3.00'	23.428 cubic	7.072 ft/s	0.50%	Normal	DS7	
3	DP7-1	2.00'	9.069 cubic f	5.579 ft/s	0.50%	Surcharge	DS7-1	
4	DP7-2	2.00'	9.243 cubic f	5.605 ft/s	0.50%	Normal	DS7-2	
5	DP7-3	2.00'	8.515 cubic f	5.492 ft/s	0.50%	Normal	DS7-3	
6	DP7-4	2.00'	7.954 cubic f	5.398 ft/s	0.50%	Normal	DS7-4	
7	DP7-5	2.00'	6.997 cubic f	5.222 ft/s	0.50%	Normal	DS7-5	
8	DP7-6	2.00'	6.803 cubic f	5.183 ft/s	0.50%	Normal	DS7-6	
9	DP7-7	2.00'	6.353 cubic f	5.090 ft/s	0.50%	Normal	DS7-7	
10	DP7-8	1.00'	0.725 cubic f	2.938 ft/s	0.50%	Normal	DS7-8	
11	DP7-9	1.50'	4.632 cubic f	4.713 ft/s	0.50%	Normal	DS7-9	
12	DP7-10	1.50'	2.031 cubic f	3.795 ft/s	0.50%	Normal	DS7-10	
13	DP7-11	2.50'	14.891 cubic	6.315 ft/s	0.50%	Surcharge	DS7-11	
14	DP7-12	2.50'	14.289 cubic	6.249 ft/s	0.50%	Normal	DS7-12	
15	DP7-13	2.50'	13.324 cubic	6.137 ft/s	0.50%	Normal	DS7-13	
16	DP7-14	2.50'	11.724 cubic	5.940 ft/s	0.50%	Normal	DS7-14	
17	DP7-15	2.00'	10.385 cubic	5.764 ft/s	0.50%	Normal	DS7-15	
18	DP7-16	2.00'	9.391 cubic f	5.628 ft/s	0.50%	Normal	DS7-16	
19	DP7-17	2.00'	7.082 cubic f	5.240 ft/s	0.50%	Normal	DS7-17	
20	DP7-18	1.50'	4.704 cubic f	4.727 ft/s	0.50%	Normal	DS7-18	
21	DP7-19	1.50'	2.494 cubic f	4.022 ft/s	0.50%	Normal	DS7-19	
22	DP7-20	1.50'	1.843 cubic f	3.694 ft/s	0.50%	Normal	DS7-20	

Start Over

ApplyCancelHelp

DP7

HGL Up	12.21'
HGL Down	12.04'
EGL Up	12.99'
EGL Down	12.82'
Invert Up	10.79'
Invert Down	10.62'

JM-7A

Structure Type	<none>
Rim Elevation	19.21'
HGL	13.22'
EGL	13.22'

Analyze Gravity Network - Drainage Area 7

Analysis Result

AEP: 1/10

ProfileReport

Line	Pipe	Pipe Diameter	Pipe Flow	Velocity	Pipe Slope	Performance	Structure	
1	DP7	3.00'	36.341 cubic	7.847 ft/s	0.50%	Normal	JM-7A	
2	JP-7E	3.00'	36.473 cubic	7.853 ft/s	0.50%	Normal	DS7	
3	DP7-1	2.00'	14.091 cubic	6.146 ft/s	0.50%	Surcharge	DS7-1	
4	DP7-2	2.00'	14.333 cubic	6.164 ft/s	0.50%	Surcharge	DS7-2	
5	DP7-3	2.00'	13.152 cubic	6.068 ft/s	0.50%	Surcharge	DS7-3	
6	DP7-4	2.00'	12.242 cubic	5.980 ft/s	0.50%	Surcharge	DS7-4	
7	DP7-5	2.00'	10.731 cubic	5.808 ft/s	0.50%	Surcharge	DS7-5	
8	DP7-6	2.00'	10.525 cubic	5.782 ft/s	0.50%	Surcharge	DS7-6	
9	DP7-7	2.00'	9.798 cubic f	5.685 ft/s	0.50%	Surcharge	DS7-7	
10	DP7-8	1.00'	1.112 cubic f	3.297 ft/s	0.50%	Surcharge	DS7-8	
11	DP7-9	1.50'	7.115 cubic f	5.141 ft/s	0.50%	Surcharge	DS7-9	
12	DP7-10	1.50'	3.115 cubic f	4.263 ft/s	0.50%	Surcharge	DS7-10	
13	DP7-11	2.50'	23.425 cubic	7.016 ft/s	0.50%	Surcharge	DS7-11	
14	DP7-12	2.50'	22.427 cubic	6.954 ft/s	0.50%	Surcharge	DS7-12	
15	DP7-13	2.50'	20.839 cubic	6.845 ft/s	0.50%	Surcharge	DS7-13	
16	DP7-14	2.50'	18.260 cubic	6.646 ft/s	0.50%	Surcharge	DS7-14	
17	DP7-15	2.00'	16.160 cubic	6.267 ft/s	0.50%	Surcharge	DS7-15	
18	DP7-16	2.00'	14.574 cubic	6.182 ft/s	0.50%	Surcharge	DS7-16	
19	DP7-17	2.00'	10.964 cubic	5.839 ft/s	0.50%	Surcharge	DS7-17	
20	DP7-18	1.50'	7.266 cubic f	5.152 ft/s	0.50%	Surcharge	DS7-18	
21	DP7-19	1.50'	3.840 cubic f	4.507 ft/s	0.50%	Surcharge	DS7-19	
22	DP7-20	1.50'	2.826 cubic f	4.154 ft/s	0.50%	Surcharge	DS7-20	

Start Over

ApplyCancelHelp

DP7

HGL Up	12.66'
HGL Down	12.49'
EGL Up	13.62'
EGL Down	13.45'
Invert Up	10.79'
Invert Down	10.62'

JM-7A

Structure Type	<none>
Rim Elevation	19.21'
HGL	14.20'
EGL	14.20'

Appendix D

Stormwater Practice Specifications

Chamber

StormTech MC-3500 Specifications

Storage Volume Per Chamber

	Bare Chamber Storage ft ³ (m ³)	Chamber and Stone Foundation Depth in. (mm)			
		9 in (230 mm)	12 in (300 mm)	15 in (375 mm)	18 in (450 mm)
Chamber	109.9 (3.11)	175.0 (4.96)	179.9 (5.09)	184.9 (5.24)	189.9 (5.38)
End Cap	14.9 (0.42)	45.1 (1.28)	46.6 (1.32)	48.3 (1.37)	49.9 (1.41)

Note: Assumes 6" (150 mm) row spacing, 40% stone porosity, 12" (300 mm) stone above and includes the bare chamber/end cap volume.

Amount of Stone Per Chamber

English Tons (yds ³)	Stone Foundation Depth			
	9 in	12 in	15 in	18 in
Chamber	8.5 (6.0)	9.1 (6.5)	9.7 (6.9)	10.4 (7.4)
End Cap	3.9 (2.8)	4.1 (2.9)	4.3 (3.1)	4.5 (3.2)
Metric Kilograms (m ³)	230 mm	300 mm	375 mm	450 mm
Chamber	7711 (4.6)	8255 (5.0)	8800 (5.3)	9435 (5.7)
End Cap	3538 (2.1)	3719 (2.2)	3901 (2.4)	4082 (2.5)

Note: Assumes 12" (300 mm) of stone above and 6" (150 mm) row spacing and 6" (150 mm) of perimeter stone in front of end caps.

Volume Excavation Per Chamber yd³ (m³)

	Stone Foundation Depth			
	9 in (230 mm)	12 in (300 mm)	15 in (375mm)	18 in (450 mm)
Chamber	11.9 (9.1)	12.4 (9.5)	12.8 (9.8)	13.3 (10.2)
End Cap	4.0 (3.1)	4.1 (3.3)	4.3 (3.3)	4.4 (3.4)

Note: Assumes 6" (150 mm) of separation between chamber rows and 24" (600 mm) of cover. The volume of excavation will vary as depth of cover increases.

Working on a project?

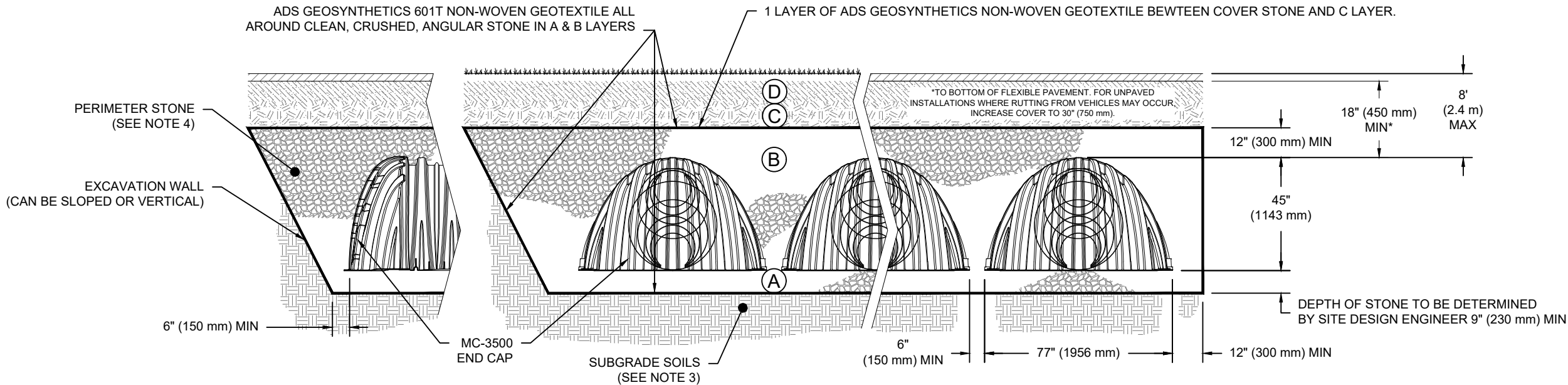
Visit us at www.stormtech.com and utilize the Design Tool



ACCEPTABLE FILL MATERIALS: STORMTECH MC-3500 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145 ¹ A-1, A-2-4, A-3 OR AASHTO M43 ¹ 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43 ¹ 3, 4	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43 ¹ 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. ^{2,3}

- PLEASE NOTE:
- THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
 - STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
 - WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
 - ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



*FOR COVER DEPTHS GREATER THAN 8.0' (2.4 m) PLEASE CONTACT STORMTECH

NOTES:

- CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 45x76 DESIGNATION SS.
- MC-3500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
- PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
- REQUIREMENTS FOR HANDLING AND INSTALLATION:
 - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
 - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
 - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 500 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

MC-3500

STANDARD CROSS SECTION

DATE: 05-10-19

DRAWN: KR

CHECKED: KR

PROJECT #:

DESCRIPTION

DATE

DRWN

CHKD

StormTech
Detention • Retention • Water Quality

70 INWOOD ROAD, SUITE 3 | ROCKY HILL | CT | 06067
860-529-8188 | 888-892-2694 | WWW.STORMTECH.COM

4640 TRUEMAN BLVD
HILLIARD, OH 43026

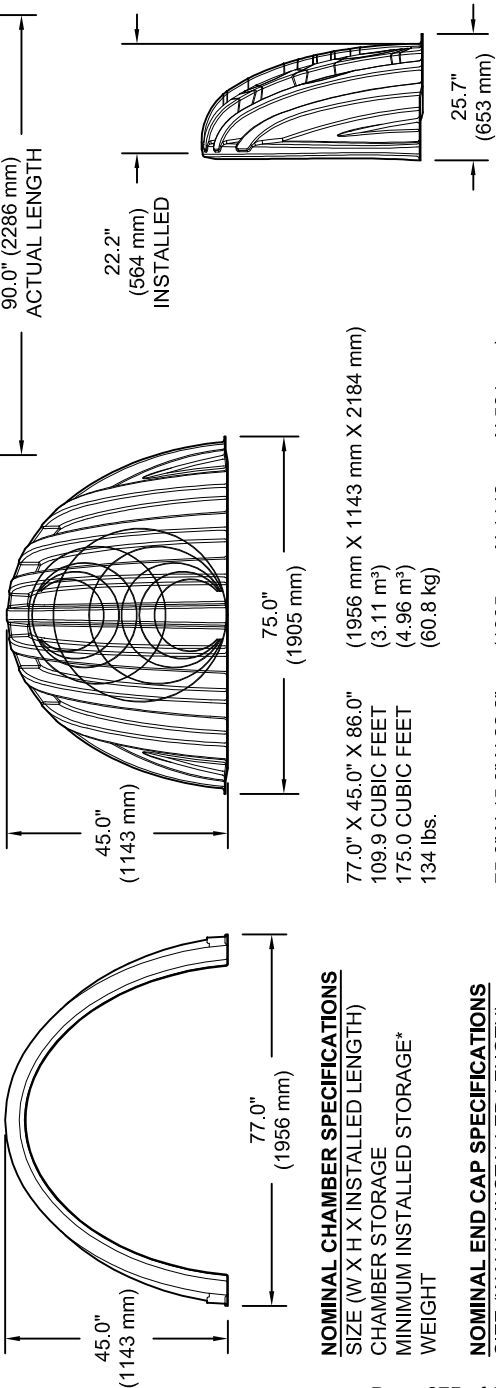
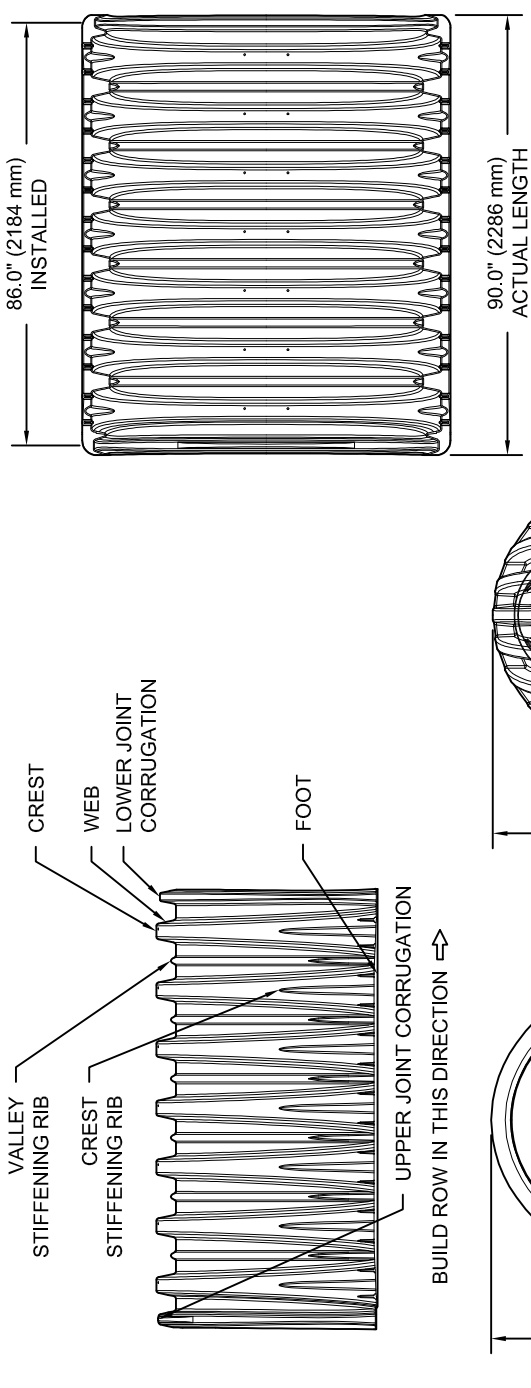
ADS
ADVANCED DRAINAGE SYSTEMS, INC.

1 SHEET
OF 1

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER OR OTHER PROJECT REPRESENTATIVE. THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.

MC-3500 TECHNICAL SPECIFICATION

NTS



NOMINAL CHAMBER SPECIFICATIONS

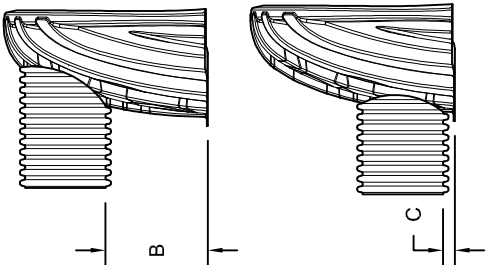
SIZE (W X H X INSTALLED LENGTH) CHAMBER STORAGE MINIMUM INSTALLED STORAGE* WEIGHT	77.0" X 45.0" X 86.0" 109.9 CUBIC FEET 175.0 CUBIC FEET 134 lbs.	(1956 mm X 1143 mm X 2184 mm) (3.11 m³) (4.96 m³) (60.8 kg)
SIZE (W X H X INSTALLED LENGTH) END CAP STORAGE MINIMUM INSTALLED STORAGE* WEIGHT	75.0" X 45.0" X 22.2" 14.9 CUBIC FEET 45.1 CUBIC FEET 49 lbs.	(1905 mm X 1143 mm X 564 mm) (0.42 m³) (1.28 m³) (22.2 kg)

*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION, 6" (152 mm) OF STONE BETWEEN CHAMBERS, 6" (152 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY

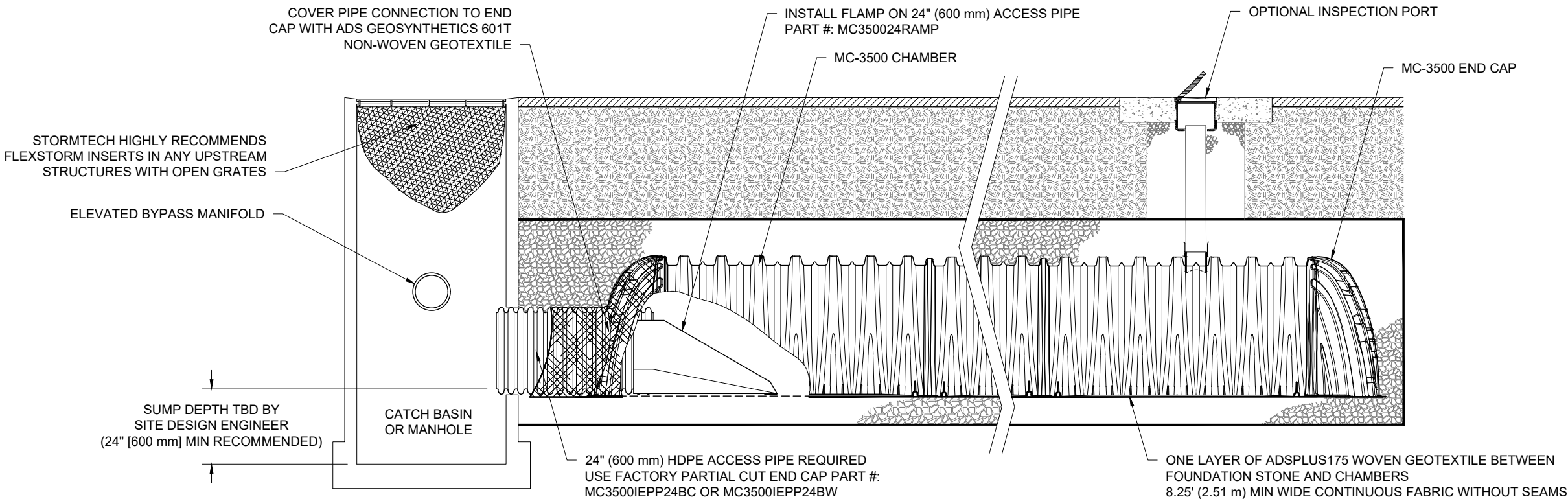
STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
END CAPS WITH A WELDED CROWN PLATE END WITH "C"
END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"

PART #	STUB	B	C
MC3500IEPP06T	6" (150 mm)	33.21" (844 mm)	---
MC3500IEPP06B		---	0.66" (17 mm)
MC3500IEPP08T	8" (200 mm)	31.16" (791 mm)	---
MC3500IEPP08B		---	0.81" (21 mm)
MC3500IEPP10T	10" (250 mm)	29.04" (738 mm)	---
MC3500IEPP10B		---	0.93" (24 mm)
MC3500IEPP12T	12" (300 mm)	26.36" (670 mm)	---
MC3500IEPP12B		---	1.35" (34 mm)
MC3500IEPP15T	15" (375 mm)	23.39" (594 mm)	---
MC3500IEPP15B		---	1.50" (38 mm)
MC3500IEPP18TC			
MC3500IEPP18TW	18" (450 mm)	20.03" (509 mm)	---
MC3500IEPP18BC		---	1.77" (45 mm)
MC3500IEPP18BW			
MC3500IEPP24TC			
MC3500IEPP24TW	24" (600 mm)	14.48" (368 mm)	---
MC3500IEPP24BC		---	2.06" (52 mm)
MC3500IEPP24BW			
MC3500IEPP30BC	30" (750 mm)	---	2.75" (70 mm)

NOTE: ALL DIMENSIONS ARE NOMINAL



CUSTOM PRECORED INVERTS ARE AVAILABLE UPON REQUEST.
INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-3500 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.



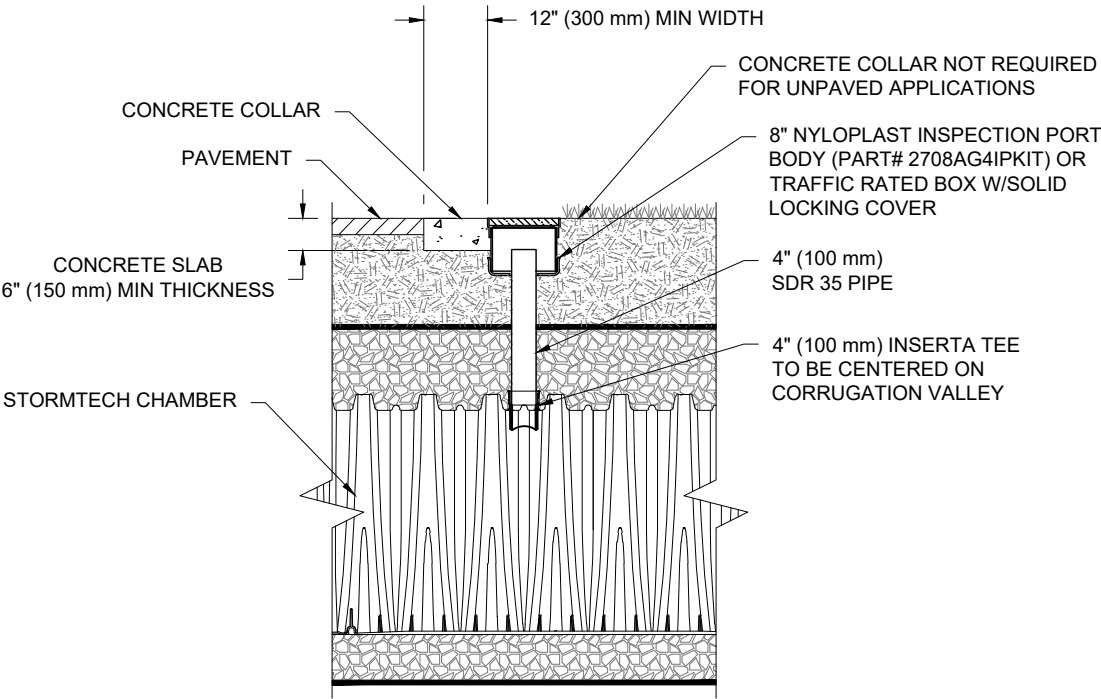
MC-3500 ISOLATOR ROW PLUS DETAIL
NTS

INSPECTION & MAINTENANCE

- STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
 - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
 - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
 - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
 - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
 - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
 - B. ALL ISOLATOR PLUS ROWS
 - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
 - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
 - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
 - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
 - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
 - B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
 - C. VACUUM STRUCTURE SUMP AS REQUIRED
- STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.
- STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



NOTE:
INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION VALLEY.

4" PVC INSPECTION PORT DETAIL
(MC SERIES CHAMBER)

NTS

MC-3500			
ISOLATOR ROW PLUS DETAILS			
DATE: 08/26/20	DRAWN: ALI		
PROJECT #: ----	CHECKED: ALI		
DATE	DRWN	CHKD	DESCRIPTION
 520 CROMWELL AVENUE ROCKY HILL CT 06067 860-528-8188 888-892-2694 WWW.STORMTECH.COM			
4640 TRUEJMAN BLVD HILLIARD, OH 43026			
 ADVANCED DRAINAGE SYSTEMS, INC.			
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1	SHEET OF		1

MC-4500 CHAMBER

Designed to meet the most stringent industry performance standards for superior structural integrity while providing designers with a cost-effective method to save valuable land and protect water resources. The StormTech system is designed primarily to be used under parking lots, thus maximizing land usage for private (commercial) and public applications. StormTech chambers can also be used in conjunction with Green Infrastructure, thus enhancing the performance and extending the service life of these practices.

STORMTECH MC-4500 CHAMBER

(not to scale)

Nominal Chamber Specifications

Size (L x W x H)

52" x 100" x 60"

1321 mm x 2540 mm x 1524 mm

Chamber Storage

106.5 ft³ (3.01 m³)

Min. Installed Storage*

162.6 ft³ (4.60 m³)

Weight

Nominal 125 lbs (56.7 kg)

Shipping

7 chambers/pallet

5 end caps/pallet

11 pallets/truck

*Assumes a minimum of 12" (300 mm) of stone above, 9" (230 mm) of stone below chambers, 9" (230 mm) of stone between chambers/end caps and 40% stone porosity.

STORMTECH MC-4500 END CAP

(not to scale)

Nominal End Cap Specifications

Size (L x W x H)

38" x 90" x 61"

965 mm x 2286 mm x 1549 mm

End Cap Storage

39.5 ft³ (1.12 m³)

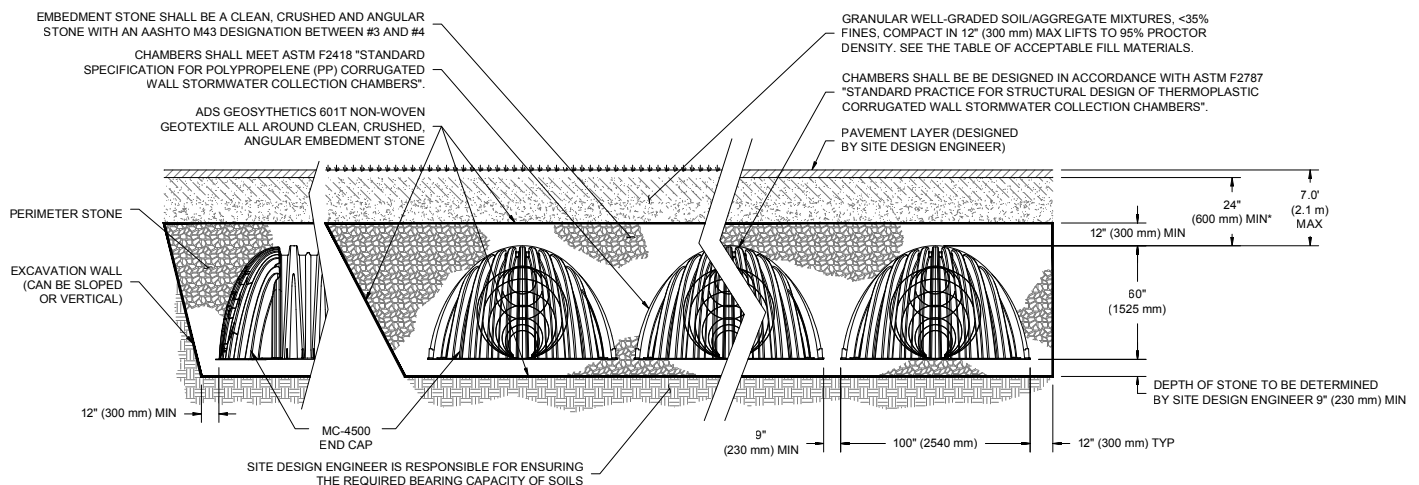
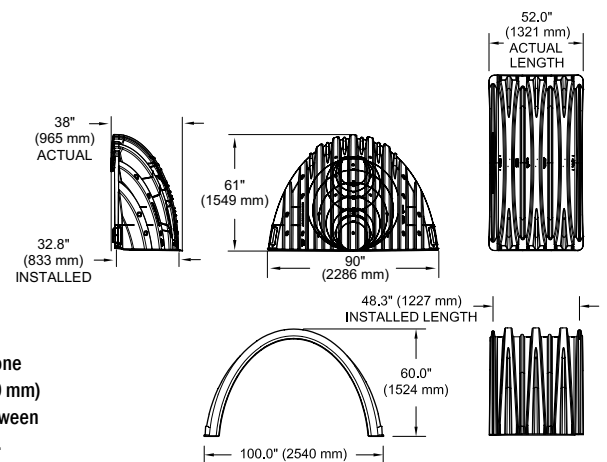
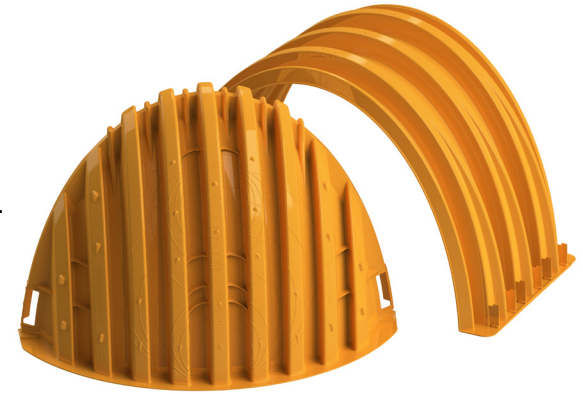
Min. Installed Storage*

115.3 ft³ (3.26 m³)

Weight

Nominal 90.0 lbs (40.8 kg)

*Assumes a minimum of 12" (300 mm) of stone above, 9" (230 mm) of stone below, 12" (300 mm) of stone perimeter, 9" (230 mm) of stone between chambers/end caps and 40% stone porosity.



*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 30" (750 mm).

MC-4500 CHAMBER SPECIFICATIONS

STORAGE VOLUME PER CHAMBER FT³ (M³)

	Bare Chamber Storage ft ³ (m ³)	Chamber and Stone Foundation Depth in. (mm)			
		9" (230 mm)	12" (300 mm)	15" (375 mm)	18" (450 mm)
MC-4500 Chamber	106.5 (3.01)	162.6 (4.60)	166.3 (4.71)	169.9 (4.81)	173.6 (4.91)
MC-4500 End Cap	39.5 (1.12)	115.3 (3.26)	118.6 (3.36)	121.9 (3.45)	125.2 (3.54)

Note: Assumes 9" (230 mm) row spacing, 40% stone porosity, 12" (300 mm) stone above and includes the bare chamber/end cap volume. End cap volume assumes 12" (300 mm) stone perimeter in front of end cap.

AMOUNT OF STONE PER CHAMBER

ENGLISH TONS (yds ³)	Stone Foundation Depth			
	9"	12"	15"	18"
MC-4500 Chamber	7.4 (5.2)	7.8 (5.5)	8.3 (5.9)	8.8 (6.2)
MC-4500 End Cap	9.8 (7.0)	10.2 (7.3)	10.6 (7.6)	11.1 (7.9)
METRIC KILOGRAMS (m ³)	230 mm	300 mm	375 mm	450 mm
MC-4500 Chamber	6713 (4.0)	7076 (4.2)	7529 (4.5)	7983 (4.7)
MC-4500 End Cap	8890 (5.3)	9253 (5.5)	9616 (5.8)	10069 (6.0)

Note: Assumes 12" (300 mm) of stone above and 9" (230 mm) row spacing and 12" (300 mm) of perimeter stone in front of end caps.

VOLUME EXCAVATION PER CHAMBER YD³ (M³)

	Stone Foundation Depth			
	9" (230 mm)	12" (300 mm)	15" (375mm)	18" (450 mm)
MC-4500 Chamber	10.5 (8.0)	10.8 (8.3)	11.2 (8.5)	11.5 (8.8)
MC-4500 End Cap	9.7 (7.4)	10.0 (7.6)	10.3 (7.9)	10.6 (8.1)

Note: Assumes 9" (230 mm) of separation between chamber rows, 12" (300 mm) of perimeter in front of the end caps, and 24" (600 mm) of cover. The volume of excavation will vary as depth of cover increases.



Working on a project?
Visit us at www.stormtech.com
and utilize the StormTech Design Tool

For more information on the StormTech MC-4500 Chamber and other ADS products, please contact our Customer Service Representatives at 1-800-821-6710

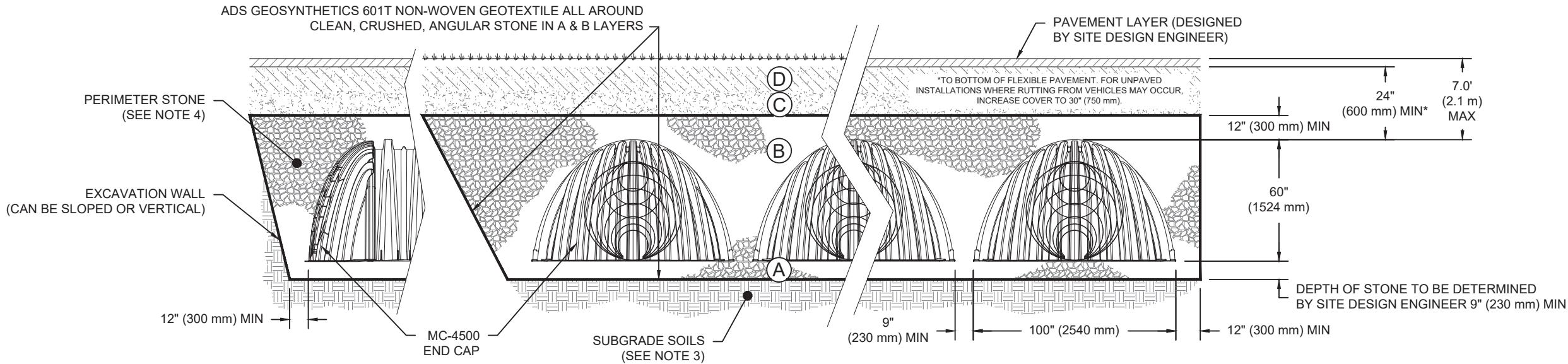
THE MOST **ADVANCED** NAME IN WATER MANAGEMENT SOLUTIONS™

Advanced Drainage Systems, Inc.
4640 Trueman Blvd., Hilliard, OH 43026
1-800-821-6710 www.ads-pipe.com

ACCEPTABLE FILL MATERIALS: STORMTECH MC-4500 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
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B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43 ¹ 3, 4	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43 ¹ 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. ^{2,3}

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 - STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
 - WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
 - ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



*FOR COVER DEPTHS GREATER THAN 7.0' (2.1 m) PLEASE CONTACT STORMTECH

NOTES:

- CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 60x101
- MC-4500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
- PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
- REQUIREMENTS FOR HANDLING AND INSTALLATION:
 - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
 - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
 - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 500 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

MC-4500

STANDARD CROSS SECTION

DATE: 05-10-19

DRAWN: KR

CHECKED: KR

PROJECT #:

DESCRIPTION

DATE

CHKD



70 INWOOD ROAD, SUITE 3 | ROCKY HILL | CT | 06067
860-529-8188 | 888-892-2694 | WWW.STORMTECH.COM



4640 TRUEMAN BLVD
HILLIARD, OH 43026

1

SHEET

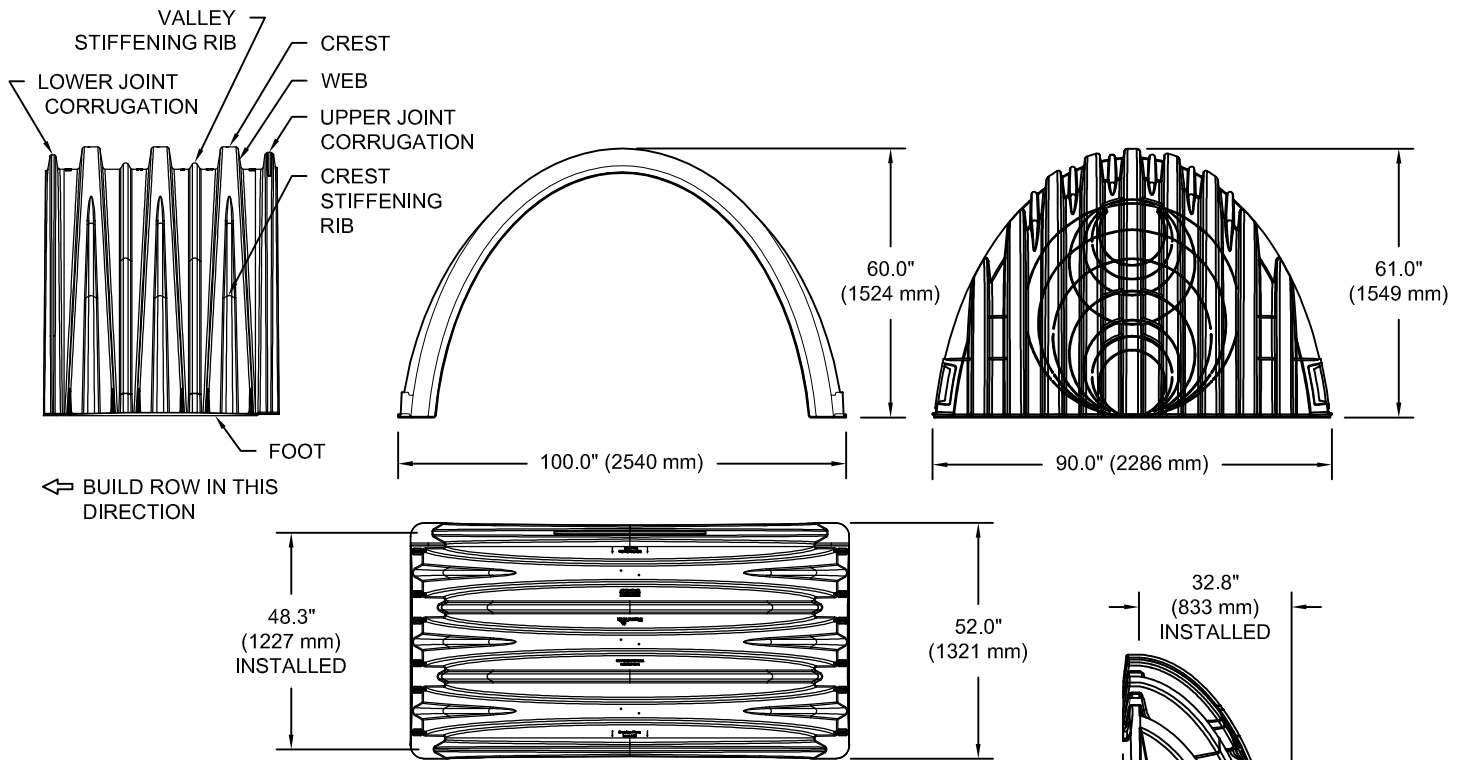
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OF

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER OR OTHER PROJECT REPRESENTATIVE. THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.

MC-4500 TECHNICAL SPECIFICATION

NTS



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	100.0\" X 60.0\" X 48.3\"	(2540 mm X 1524 mm X 1227 mm)
CHAMBER STORAGE	106.5 CUBIC FEET	(3.01 m ³)
MINIMUM INSTALLED STORAGE*	162.6 CUBIC FEET	(4.60 m ³)
WEIGHT (NOMINAL)	125.0 lbs.	(56.7 kg)

NOMINAL END CAP SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	90.0\" X 61.0\" X 32.8\"	(2286 mm X 1549 mm X 833 mm)
END CAP STORAGE	39.5 CUBIC FEET	(1.12 m ³)
MINIMUM INSTALLED STORAGE*	115.3 CUBIC FEET	(3.26 m ³)
WEIGHT (NOMINAL)	90 lbs.	(40.8 kg)

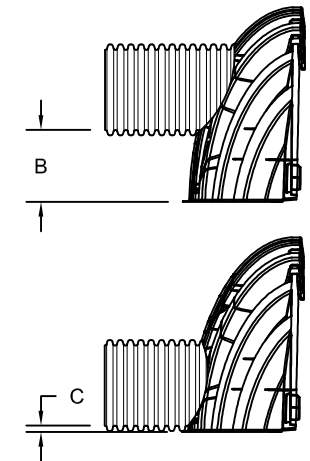
*ASSUMES 12\" (305 mm) STONE ABOVE, 9\" (229 mm) STONE FOUNDATION AND BETWEEN CHAMBERS, 12\" (305 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY.

PARTIAL CUT HOLES AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
 PARTIAL CUT HOLES AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
 END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"

PART #	STUB	B	C
MC4500IEPP06T	6\" (150 mm)	42.54\" (1081 mm)	---
MC4500IEPP06B		---	0.86\" (22 mm)
MC4500IEPP08T	8\" (200 mm)	40.50\" (1029 mm)	---
MC4500IEPP08B		---	1.01\" (26 mm)
MC4500IEPP10T	10\" (250 mm)	38.37\" (975 mm)	---
MC4500IEPP10B		---	1.33\" (34 mm)
MC4500IEPP12T	12\" (300 mm)	35.69\" (907 mm)	---
MC4500IEPP12B		---	1.55\" (39 mm)
MC4500IEPP15T	15\" (375 mm)	32.72\" (831 mm)	---
MC4500IEPP15B		---	1.70\" (43 mm)
MC4500IEPP18T	18\" (450 mm)	29.36\" (746 mm)	---
MC4500IEPP18TW		---	1.97\" (50 mm)
MC4500IEPP18B			
MC4500IEPP18BW			
MC4500IEPP24T	24\" (600 mm)	23.05\" (585 mm)	---
MC4500IEPP24TW		---	2.26\" (57 mm)
MC4500IEPP24B			
MC4500IEPP24BW			
MC4500IEPP30BW	30\" (750 mm)	---	2.95\" (75 mm)
MC4500IEPP36BW	36\" (900 mm)	---	3.25\" (83 mm)
MC4500IEPP42BW	42\" (1050 mm)	---	3.55\" (90 mm)

NOTE: ALL DIMENSIONS ARE NOMINAL

Page 380 of 831



CUSTOM PRECORED INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24\" (300-600 mm) SIZE ON SIZE AND 15-48\" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-4500 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10\" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.

Jellyfish[®] Filter

Stormwater Treatment



The experts you need to solve your stormwater challenges



Contech is the leader in stormwater solutions, helping engineers, contractors and owners with infrastructure and land development projects throughout North America.

With our responsive team of stormwater experts, local regulatory expertise and flexible solutions, Contech is the trusted partner you can count on for stormwater management solutions.

Your Contech Team



STORMWATER CONSULTANT

It's my job to recommend the best solution to meet permitting requirements.



STORMWATER DESIGN ENGINEER

I work with consultants to design the best approved solution to meet your project's needs.



REGULATORY MANAGER

I understand the local stormwater regulations and what solutions will be approved.



SALES ENGINEER

I make sure our solutions meet the needs of the contractor during construction.



Setting new standards in Stormwater Treatment – Jellyfish® Filter

The Jellyfish Filter has been tested in the field and laboratory, and has received approval from numerous stormwater regulatory agencies.

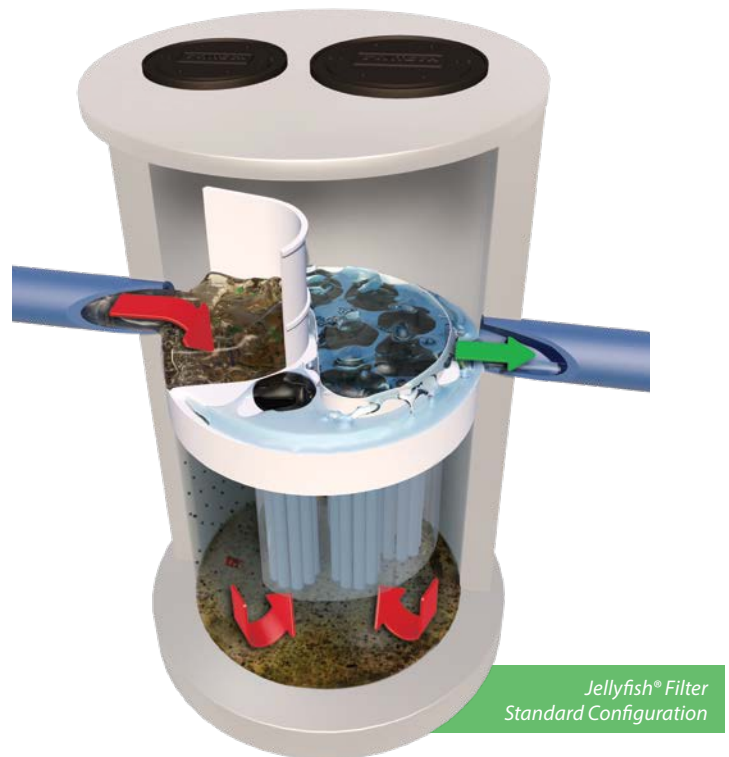
The Jellyfish Filter is a stormwater quality treatment technology featuring high flow pretreatment and membrane filtration in a compact stand-alone system. Jellyfish removes floatables, trash, oil, debris, TSS, fine silt-sized particles, and a high percentage of particulate-bound pollutants; including phosphorus, nitrogen, metals and hydrocarbons. The high surface area membrane cartridges, combined with up-flow hydraulics, frequent, passive backwashing, and rinseable/reusable cartridges ensure long-lasting performance.

Jellyfish® Filter

How the Jellyfish® Filter Treats Stormwater

Tested in the field and laboratory ...

- Stormwater enters the Jellyfish through the inlet pipe and traps floating pollutants behind the maintenance access wall and below the cartridge deck.
- Water is conveyed below the cartridge deck where a separation skirt around the cartridges isolates oil, trash and debris outside the filtration zone.
- Water is directed to the filtration zone and up through the top of the cartridge where it exits via the outlet pipe.
- The membrane filters provide a very large surface area to effectively remove fine sand and silt-sized particles, and a high percentage of particulate-bound pollutants such as nitrogen, phosphorus, metals, and hydrocarbons while ensuring long-lasting treatment.
- As influent flow subsides, the water in the backwash pool flows back into the lower chamber. This passive backwash extends cartridge life.
- The draindown cartridge(s) located outside the backwash pool enables water levels to balance.

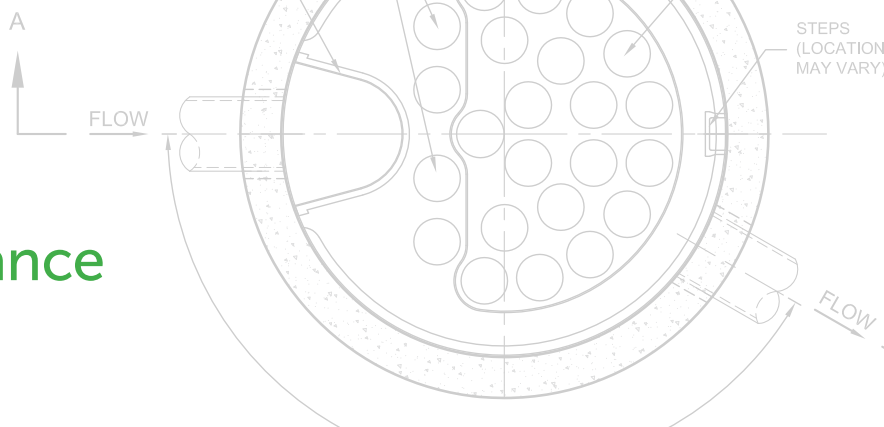


Learn More:
www.ContechES.com/jellyfish



Pretreat bioretention or infiltration with Jellyfish to extend service life.

Jellyfish® Filter Performance Testing Results



APPLICATION TIPS

- The Peak Diversion Jellyfish provides treatment and high-flow bypass in one structure, eliminating the need for a separate bypass structure.
- LID and GI are complemented by filtration solutions, as they help keep sites free from fine sediments that can impede performance, remove unsightly trash, and provide a single point of maintenance.
- Selecting a filter with a long maintenance cycle and low maintenance cost will result in healthy waterways and happy property owners.



The pleated tentacles of the Jellyfish® Filter provide a large surface area for pollutant removal.

POLLUTANT OF CONCERN	% REMOVAL
Total Trash	99%
Total Suspended Solids (TSS)	89%
Total Phosphorus (TP)	59%
Total Nitrogen (TN)	51%
Total Copper (TCu)	> 50%
Total Zinc (TZn)	> 50%



Sources:

TARP II Field Study – 2012 JF 4-2-1 Configuration
MRDC Floatables Testing – 2008 JF6-6-1 Configuration

Jellyfish® Filter Features and Benefits

FEATURE	BENEFITS
High surface area membrane filtration	Low flux rate promotes cake filtration and slows membrane occlusion
High design treatment flow rate per cartridge (up to 80 gpm (5 L/s))	Compact system with a small footprint, lower construction cost
Low driving head (typically 18 inches or less (457 mm))	Design flexibility, lower construction cost
Lightweight cartridges with passive backwash	Easy maintenance and low life-cycle cost



The Jellyfish Filter can be configured in a manhole, catch basin, or vault.

Select Jellyfish® Filter Certifications and Verifications

The Jellyfish Filter has been reviewed by numerous state and federal programs, including:

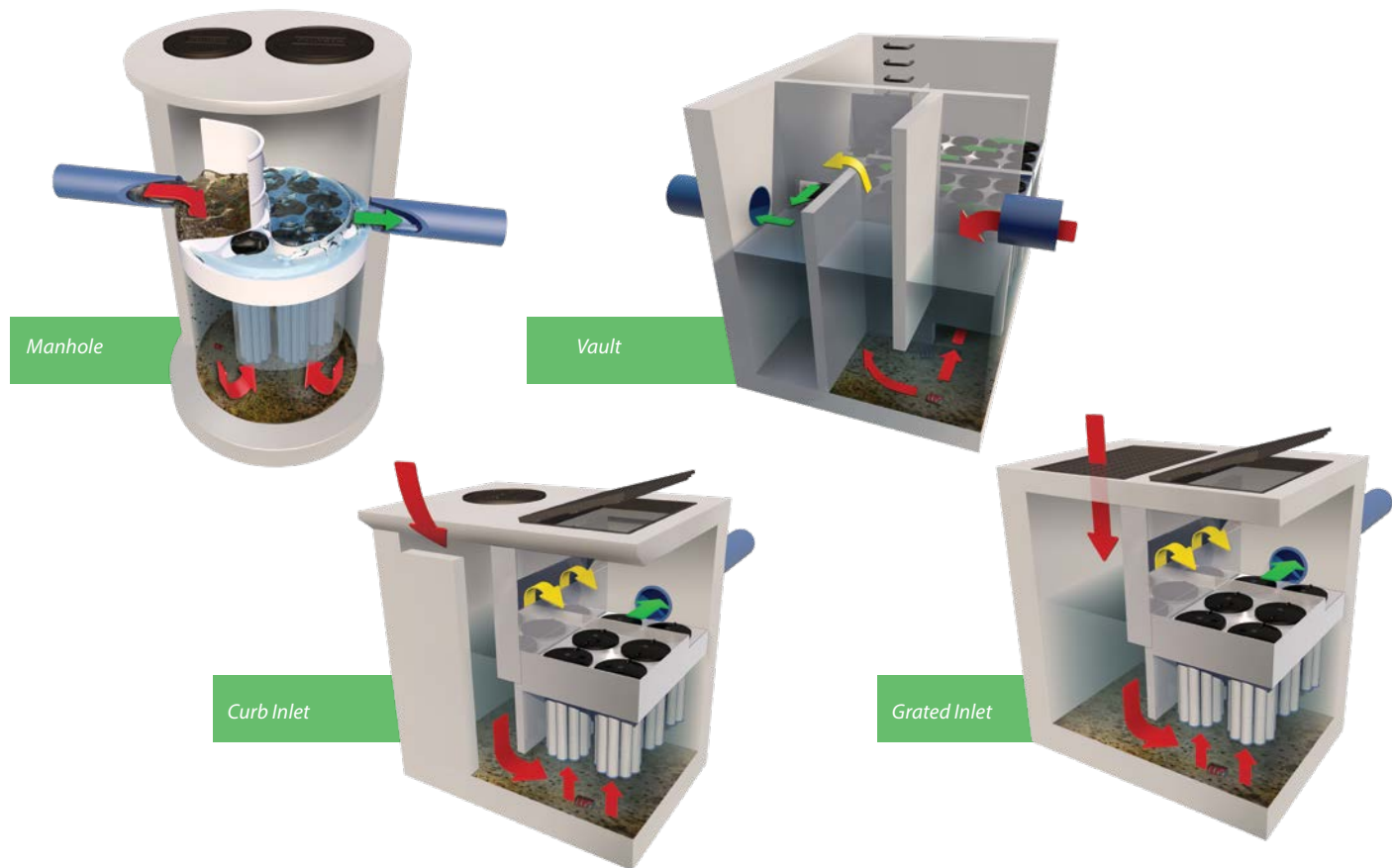
- Washington State Department of Ecology (TAPE) GULD – BASIC, Phosphorus
- Virginia Department of Environmental Quality (VA DEQ)
- Texas Commission of Environmental Quality (TCEQ)
- Canada ISO 14034 Environmental Management – Environmental Technology Verification (ETV)
- Philadelphia Water District (PWD)
- Maryland Department of the Environment (MD DOE)



Jellyfish® Filter Configurations

Multiple system configurations to optimize your site

The Jellyfish Filter can be manufactured in a variety of configurations: manhole, catch basin, vault, fiberglass tank, or custom configurations. Typically, 18 inches (457 mm) of driving head is designed into the system. For low drop sites, the designed driving head can be less.



Jellyfish® Filter Maintenance

- Jellyfish Filter cartridges are light weight and reusable
- Maintenance of the filter cartridges is performed by removing, rinsing and reusing the cartridge tentacles.
- Vacuum extraction of captured pollutants in the sump is recommended at the same time.
- Full cartridge replacement intervals differ by site due to varying pollutant loading and type, and maintenance frequency. Replacement is anticipated every 2-5 years.
- Contech® has created a network of Certified Maintenance Providers to provide maintenance on stormwater BMP's.



The Jellyfish® Filter tentacle is light and easy to clean.

A partner you can rely on



STORMWATER
SOLUTIONS



PIPE
SOLUTIONS



STRUCTURES
SOLUTIONS

Few companies offer the wide range of high-quality stormwater resources you can find with us — state-of-the-art products, decades of expertise, and all the maintenance support you need to operate your system cost-effectively.

THE CONTECH WAY

Contech® Engineered Solutions provides innovative, cost-effective site solutions to engineers, contractors, and developers on projects across North America. Our portfolio includes bridges, drainage, erosion control, retaining wall, sanitary sewer and stormwater management products.

TAKE THE NEXT STEP

For more information: www.ContechES.com

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Appendix E

NRCS Soils Report



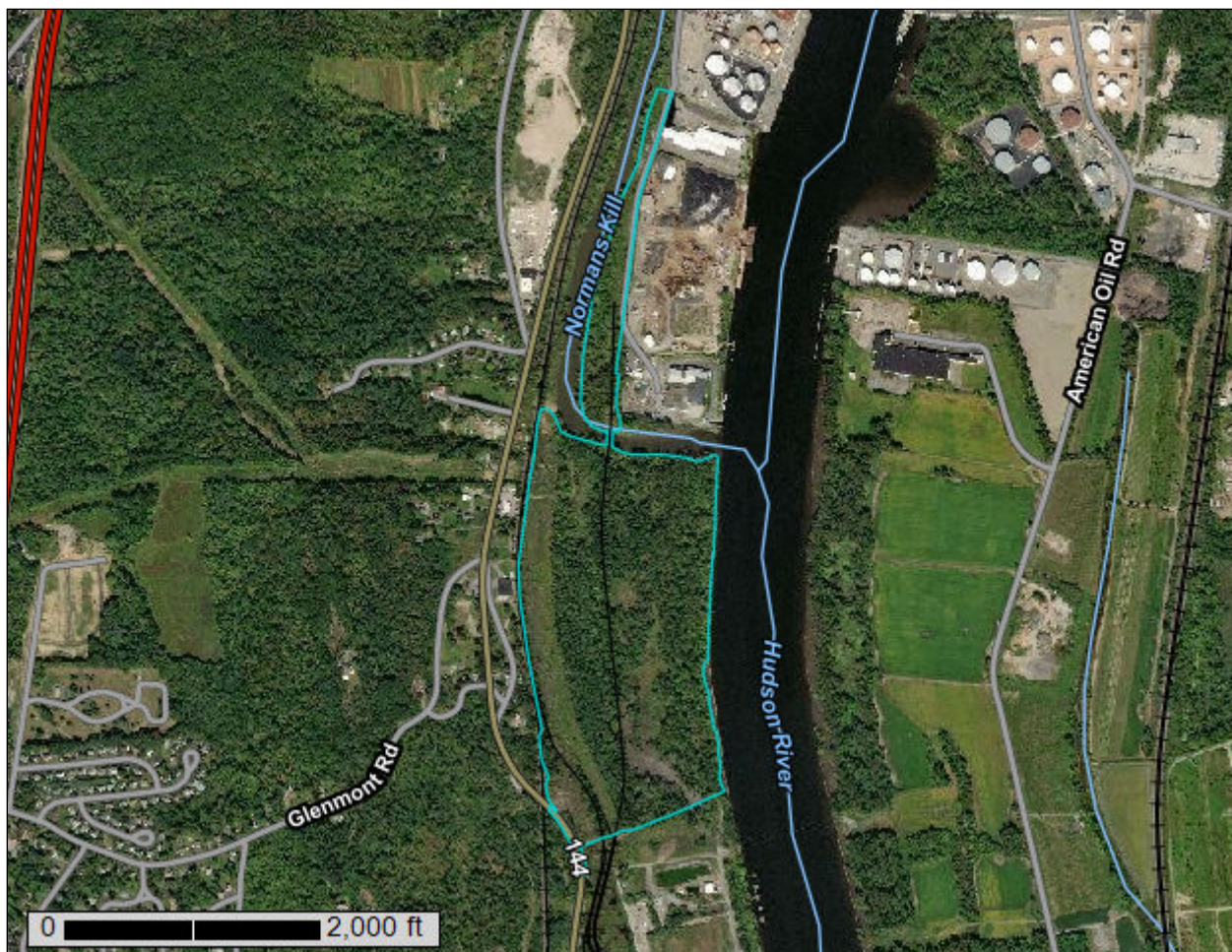
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for **Albany County, New York**



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

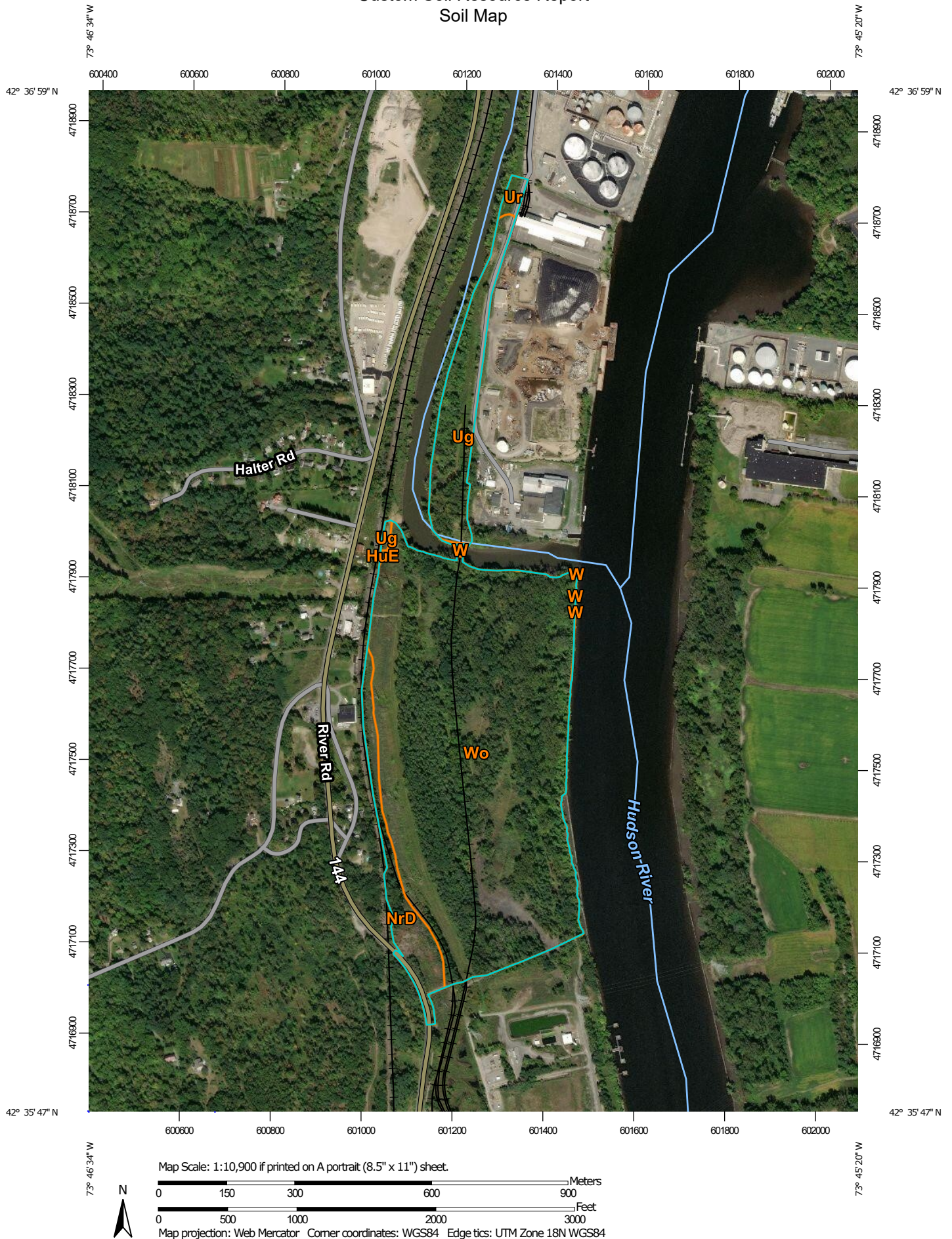
Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Albany County, New York

Survey Area Data: Version 19, Aug 29, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 1, 2014—Sep 22, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
HuE	Hudson silt loam, 25 to 45 percent slopes	0.1	0.1%
NrD	Nassau very channery silt loam, hilly, very rocky	7.2	6.7%
Ug	Udorthents, loamy	11.6	10.7%
Ur	Urban land	0.8	0.8%
W	Water	0.1	0.1%
Wo	Wayland soils complex, non-calcareous substratum, 0 to 3 percent slopes, frequently flooded	88.7	81.7%
Totals for Area of Interest		108.6	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Albany County, New York

HuE—Hudson silt loam, 25 to 45 percent slopes

Map Unit Setting

National map unit symbol: 9pg8
Elevation: 300 to 1,800 feet
Mean annual precipitation: 36 to 41 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 100 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition

Hudson and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hudson

Setting

Landform: Lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Riser
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Clayey and silty glaciolacustrine deposits

Typical profile

H1 - 0 to 11 inches: silt loam
H2 - 11 to 16 inches: silty clay loam
H3 - 16 to 31 inches: silty clay
H4 - 31 to 60 inches: clay

Properties and qualities

Slope: 25 to 45 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C/D
Ecological site: F144AY018NY - Moist Lake Plain
Hydric soil rating: No

Minor Components

Unnamed soils

Percent of map unit: 5 percent

Unadilla

Percent of map unit: 5 percent

Hydric soil rating: No

Colonie

Percent of map unit: 3 percent

Hydric soil rating: No

Udifuluents

Percent of map unit: 1 percent

Hydric soil rating: No

Fluvaquents

Percent of map unit: 1 percent

Landform: Flood plains

Hydric soil rating: Yes

NrD—Nassau very channery silt loam, hilly, very rocky

Map Unit Setting

National map unit symbol: 9ph1

Elevation: 600 to 1,800 feet

Mean annual precipitation: 36 to 41 inches

Mean annual air temperature: 45 to 48 degrees F

Frost-free period: 100 to 170 days

Farmland classification: Not prime farmland

Map Unit Composition

Nassau, hilly, and similar soils: 70 percent

Minor components: 30 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nassau, Hilly

Setting

Landform: Benches, ridges, till plains

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Channery loamy till derived mainly from local slate or shale

Typical profile

H1 - 0 to 8 inches: very channery silt loam

H2 - 8 to 16 inches: very channery silt loam

H3 - 16 to 20 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 25 percent

Depth to restrictive feature: 10 to 20 inches to lithic bedrock

Drainage class: Somewhat excessively drained

Custom Soil Resource Report

Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 1.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: D

Ecological site: F144AY033MA - Shallow Dry Till Uplands

Hydric soil rating: No

Minor Components

Rock outcrop

Percent of map unit: 9 percent

Hydric soil rating: Unranked

Manlius

Percent of map unit: 8 percent

Hydric soil rating: No

Unnamed soils

Percent of map unit: 8 percent

Lordstown

Percent of map unit: 5 percent

Hydric soil rating: No

Ug—Udorthents, loamy

Map Unit Setting

National map unit symbol: 9pj1

Elevation: 0 to 1,640 feet

Mean annual precipitation: 36 to 41 inches

Mean annual air temperature: 45 to 48 degrees F

Frost-free period: 100 to 170 days

Farmland classification: Not prime farmland

Map Unit Composition

Udorthents, loamy, and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Loamy

Typical profile

H1 - 0 to 4 inches: loam

H2 - 4 to 70 inches: channery loam

Properties and qualities

Slope: 0 to 8 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high
(0.06 to 5.95 in/hr)

Depth to water table: About 36 to 72 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Available water supply, 0 to 60 inches: Low (about 5.5 inches)

Minor Components

Unnamed soils

Percent of map unit: 10 percent

Ur—Urban land

Map Unit Setting

National map unit symbol: 9pj8

Mean annual precipitation: 36 to 41 inches

Mean annual air temperature: 45 to 48 degrees F

Frost-free period: 100 to 170 days

Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Typical profile

H1 - 0 to 6 inches: variable

Minor Components

Unnamed soils

Percent of map unit: 10 percent

Udorthents

Percent of map unit: 5 percent

Hydric soil rating: No

W—Water

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Wo—Wayland soils complex, non-calcareous substratum, 0 to 3 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2srgt

Elevation: 160 to 1,970 feet

Mean annual precipitation: 31 to 70 inches

Mean annual air temperature: 43 to 52 degrees F

Frost-free period: 105 to 180 days

Farmland classification: Not prime farmland

Map Unit Composition

Wayland and similar soils: 60 percent

Wayland, very poorly drained, and similar soils: 30 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wayland

Setting

Landform: Flood plains

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Silty and clayey alluvium derived from interbedded sedimentary rock

Typical profile

Ap - 0 to 9 inches: silt loam

Bg - 9 to 21 inches: silt loam

Cg1 - 21 to 28 inches: silt loam

Cg2 - 28 to 47 inches: silt loam

Cg3 - 47 to 54 inches: silt loam

Cg4 - 54 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)

Depth to water table: About 0 to 6 inches

Custom Soil Resource Report

Frequency of flooding: FrequentNone
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 13.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Description of Wayland, Very Poorly Drained

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Silty and clayey alluvium derived from interbedded sedimentary rock

Typical profile

A - 0 to 9 inches: mucky silt loam
Bg - 9 to 21 inches: silt loam
Cg1 - 21 to 28 inches: silt loam
Cg2 - 28 to 47 inches: silt loam
Cg3 - 47 to 54 inches: silt loam
Cg4 - 54 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: NoneFrequent
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 13.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Holderton

Percent of map unit: 10 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear

Custom Soil Resource Report

Hydric soil rating: No

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Custom Soil Resource Report

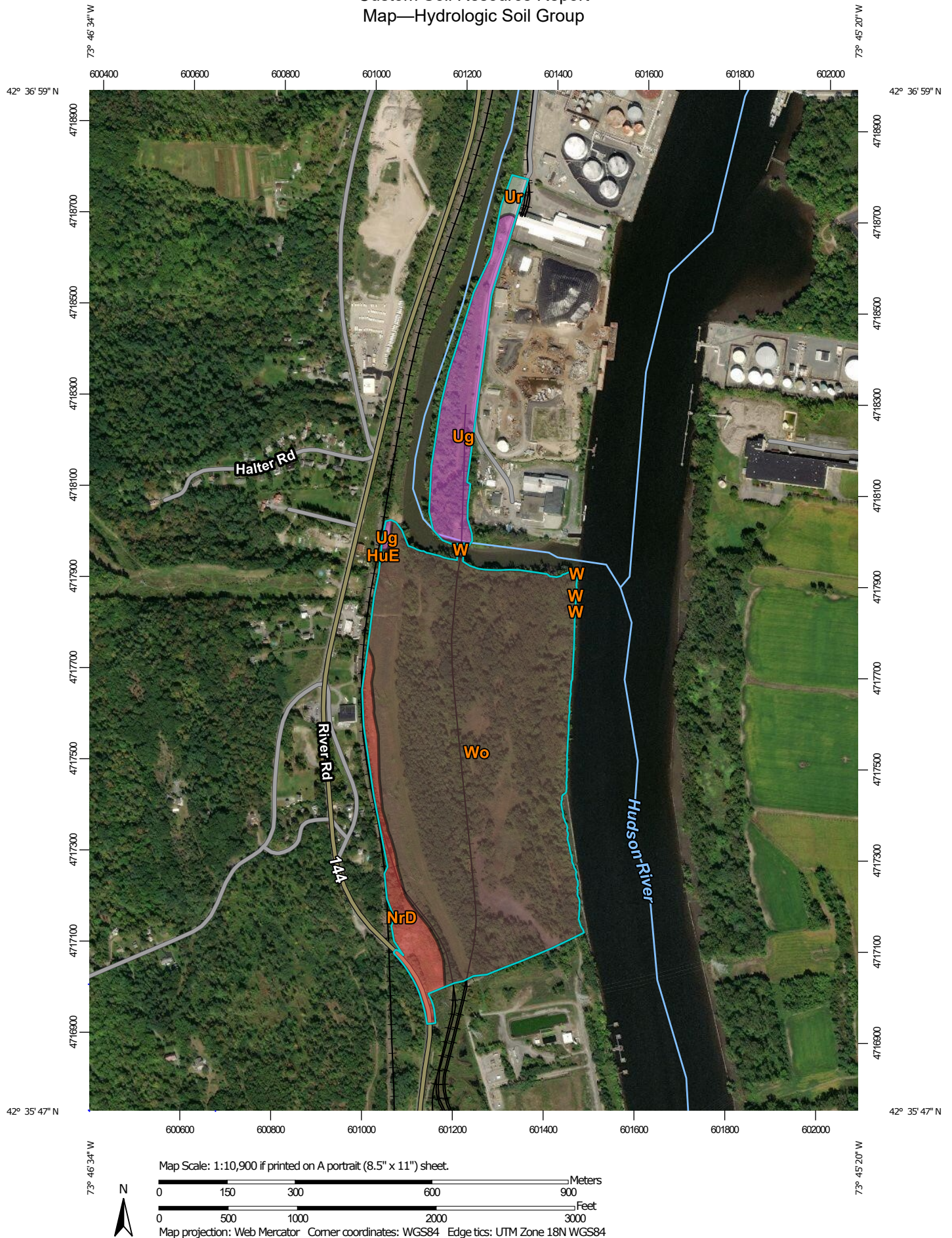
Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Custom Soil Resource Report

Map—Hydrologic Soil Group



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points

 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Albany County, New York

Survey Area Data: Version 19, Aug 29, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 1, 2014—Sep 22, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
HuE	Hudson silt loam, 25 to 45 percent slopes	C/D	0.1	0.1%
NrD	Nassau very channery silt loam, hilly, very rocky	D	7.2	6.7%
Ug	Udorthents, loamy	A	11.6	10.7%
Ur	Urban land		0.8	0.8%
W	Water		0.1	0.1%
Wo	Wayland soils complex, non-calcareous substratum, 0 to 3 percent slopes, frequently flooded	B/D	88.7	81.7%
Totals for Area of Interest			108.6	100.0%

Rating Options—Hydrologic Soil Group*Aggregation Method: Dominant Condition**Component Percent Cutoff: None Specified**Tie-break Rule: Higher*

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Appendix F

Infiltration Test Results



June 7, 2022

McFarland-Johnson, Inc.
66 Railroad Place – Suite 402
Saratoga Springs, NY 12866

Attn: Mr. Steven Boisvert, P.E.
p: (518) 580-9380
e: sboisvert@mjinc.com

Re: Infiltration Testing
Proposed Marmen Manufacturing Facility
Port of Albany, NY
Terracon Project No. JB215020

Dear Mr. Boisvert:

This report presents the results of the supplemental subsurface investigation and infiltration testing program completed by Terracon at the referenced site.

A total of 21 test borings (IT-1 thru IT-15, along with IT-1A, IT-7A, IT-8A, IT-10A, IT-10B and IT-12A) were completed as part of the investigation, with their locations and depths specified by McFarland-Johnson. Individual subsurface logs for each borehole are attached herewith, along with a subsurface investigation plan(s) indicating their locations.

Infiltration tests were performed adjacent to each of these test borings and were numbered correspondingly. The tests were conducted using 4-inch diameter PVC pipe in general accord with the guidelines in Appendix D of the NYS Stormwater Management Design Manual. Results of this testing are presented for your use on the attached infiltration test data sheets, along with a tabular summary.

We appreciate the opportunity to be of service on this project. Please contact us at your convenience if you have any questions or if anything further is needed.

Respectfully,
Terracon Consultants – NY, Inc.

John S. Hutchison, P.E.
Senior Geotechnical Engineer

Joseph Robichaud, Jr., P.E.
Principal / Office Manager

Attachments: - Subsurface investigation plan(s)
- Test boring logs
- Infiltration test results summary table
- Infiltration test data sheets

Terracon Consultants – NY, Inc. 30 Corporate Circle, Suite 201 Albany, NY 12203
p (518) 266-0310 f (518) 266-9238 terracon.com

Environmental



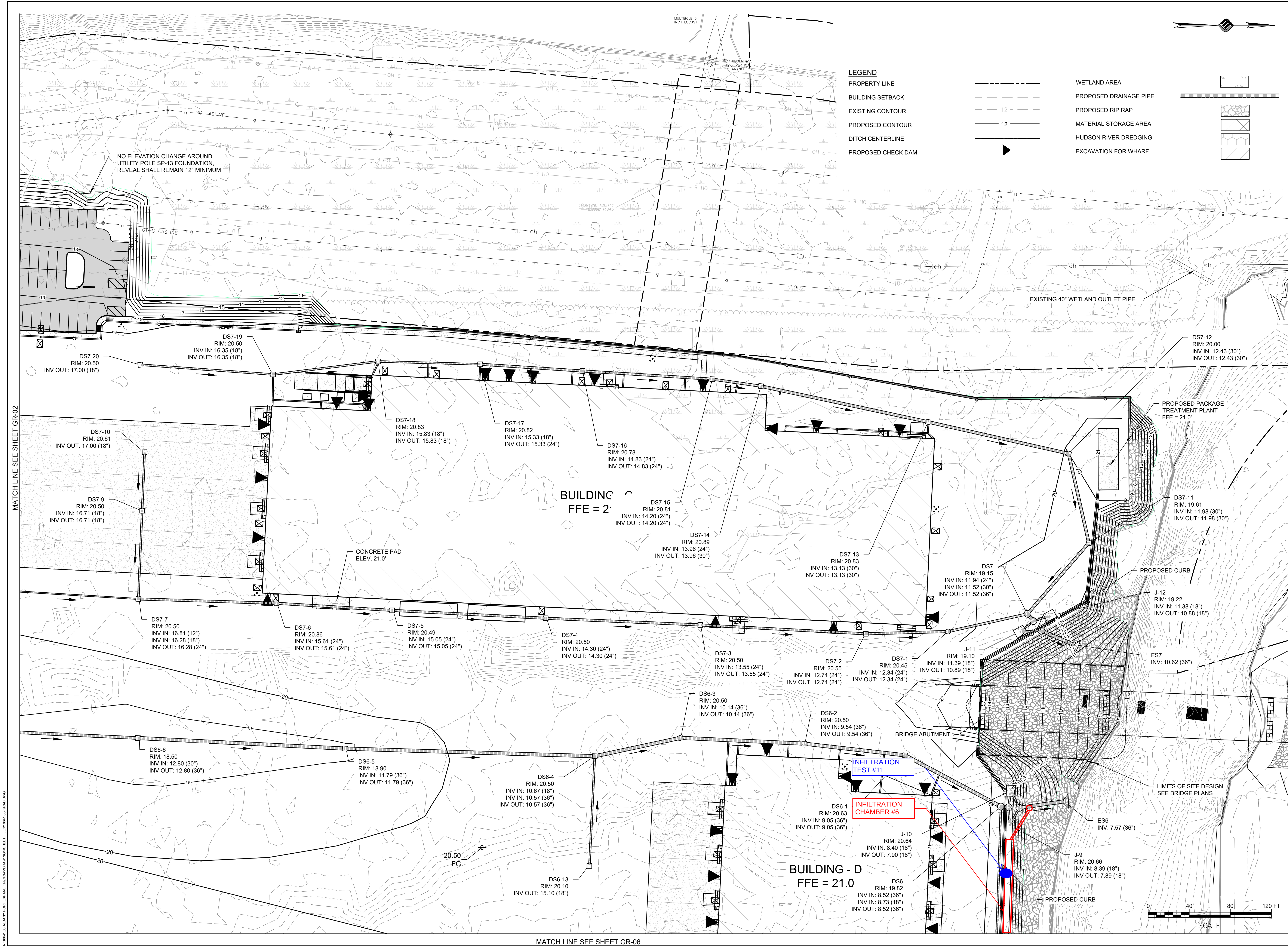
Facilities



Geotechnical



Materials





McFarland Johnson
60 RAILROAD PLACE
SUITE 402
SARATOGA SPRINGS, NEW YORK 12866
P:518-580-9380 F:518-580-9383
SaratogaROM@mjinc.com

PROJECT MILESTONE
FINAL DESIGN PLANS

NO.	DATE	DESCRIPTION

CLIENT:
ALBANY PORT DISTRICT COMMISSION

PROJECT:
**ALBANY, NEW YORK
PORT OF ALBANY EXPANSION SITE**

DRAWN	JES
DESIGNED	NSO
CHECKED	AJF
SCALE	AS SHOWN
DATE	04/19/2022
PROJECT	18641.00

**FOR REVIEW
NOT FOR
CONSTRUCTION**

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECT OR SUPERVISORY DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ARCHITECT, LANDSCAPE ARCHITECT, OR LAND SURVEYOR, TO ALTER AN ITEM IN ANY WAY. IF AN ITEM BEARING THE STAMP OF A LICENSED PROFESSIONAL IS ALTERED, THE ALTERING ENGINEER, ARCHITECT, LANDSCAPE ARCHITECT, OR LAND SURVEYOR SHALL STAMP THE DOCUMENT AND INCLUDE THE NOTATION "ALTERED BY" FOLLOWED BY THEIR SIGNATURE, THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

DRAWING TITLE
GRADING & DRAINAGE

DRAWING NUMBER
GR-03

NOTED: 10 ALBANY PORT EXPANSION DRAWING SHEET 15 OF 15 (15 OF 15) 10/19/2022

LEGEND

PROPERTY LINE

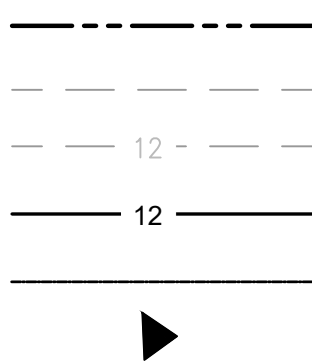
BUILDING SETBACK

EXISTING CONTOUR

PROPOSED CONTOUR

DITCH CENTERLINE

PROPOSED CHECK DAM



WETLAND AREA

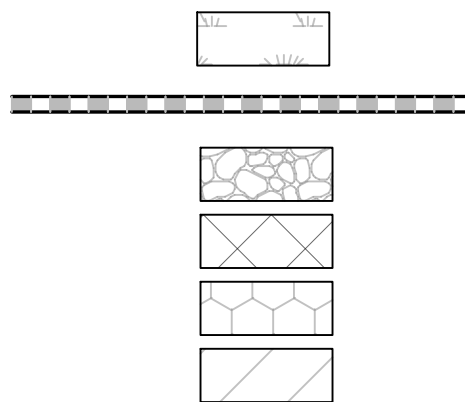
PROPOSED DRAINAGE PIPE

PROPOSED RIP RAP

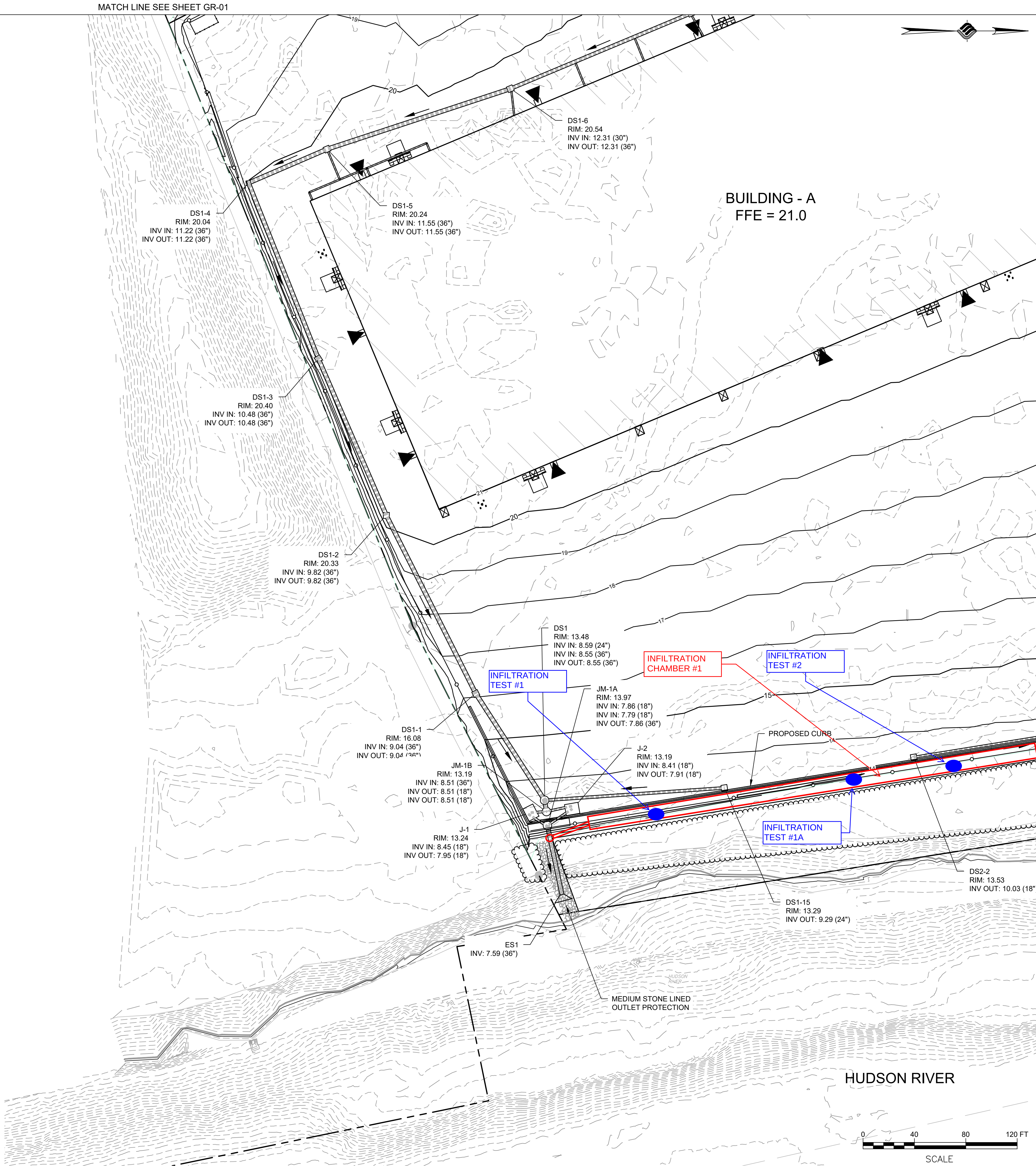
MATERIAL STORAGE AREA

HUDSON RIVER DREDGING

EXCAVATION FOR WHARF



MATCH LINE SEE SHEET GR-01



BUILDING - A
FFE = 21.0

HUDSON RIVER

SCALE

McFarland Johnson
60 RAILROAD PLACE
SUITE 402
SARATOGA SPRINGS, NEW YORK 12866
P: 518-580-9380 F: 518-580-9383
SaratogaROM@mjinc.com

PROJECT MILESTONE

FINAL DESIGN PLANS

NO.	DATE	DESCRIPTION

CLIENT:
ALBANY PORT DISTRICT COMMISSION

ALBANY, NEW YORK

PROJECT:
PORT OF ALBANY EXPANSION SITE

DRAWN	JES
DESIGNED	NSO
CHECKED	AJF
SCALE	AS SHOWN
DATE	04/19/2022
PROJECT	18641.00

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CONSTRUCTION**

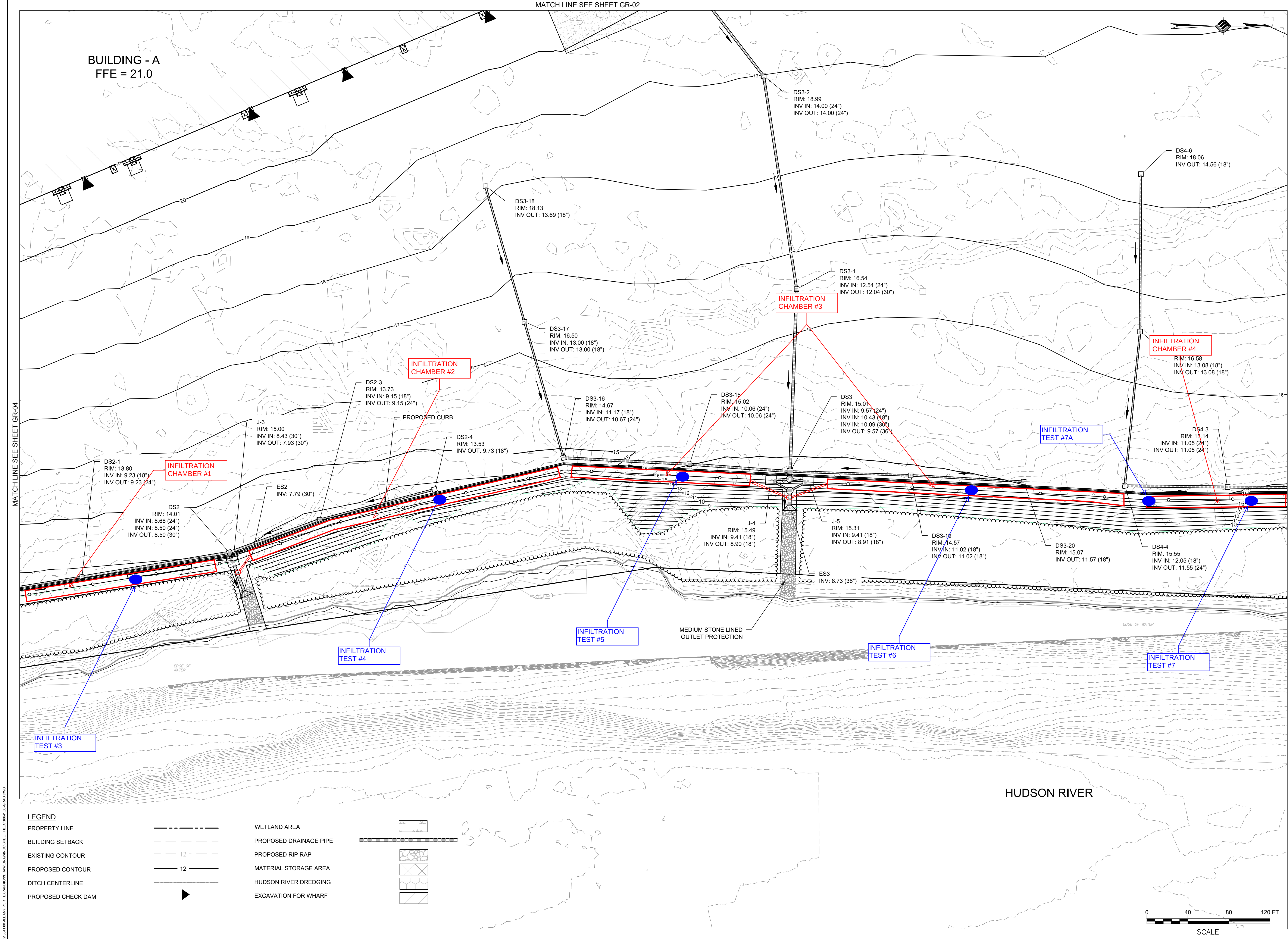
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DRAWING TITLE

**GRADING &
DRAINAGE**

DRAWING NUMBER

GR-04





McFarland Johnson
60 RAILROAD PLACE
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SaratogaROM@mjinc.com

PROJECT MILESTONE
FINAL DESIGN PLANS

NO.	DATE	DESCRIPTION

CLIENT: **ALBANY PORT DISTRICT COMMISSION**
ALBANY, NEW YORK
PROJECT: **PORT OF ALBANY EXPANSION SITE**

DRAWN	JES
DESIGNED	NSO
CHECKED	AJF
SCALE	AS SHOWN
DATE	04/19/2022
PROJECT	18641.00

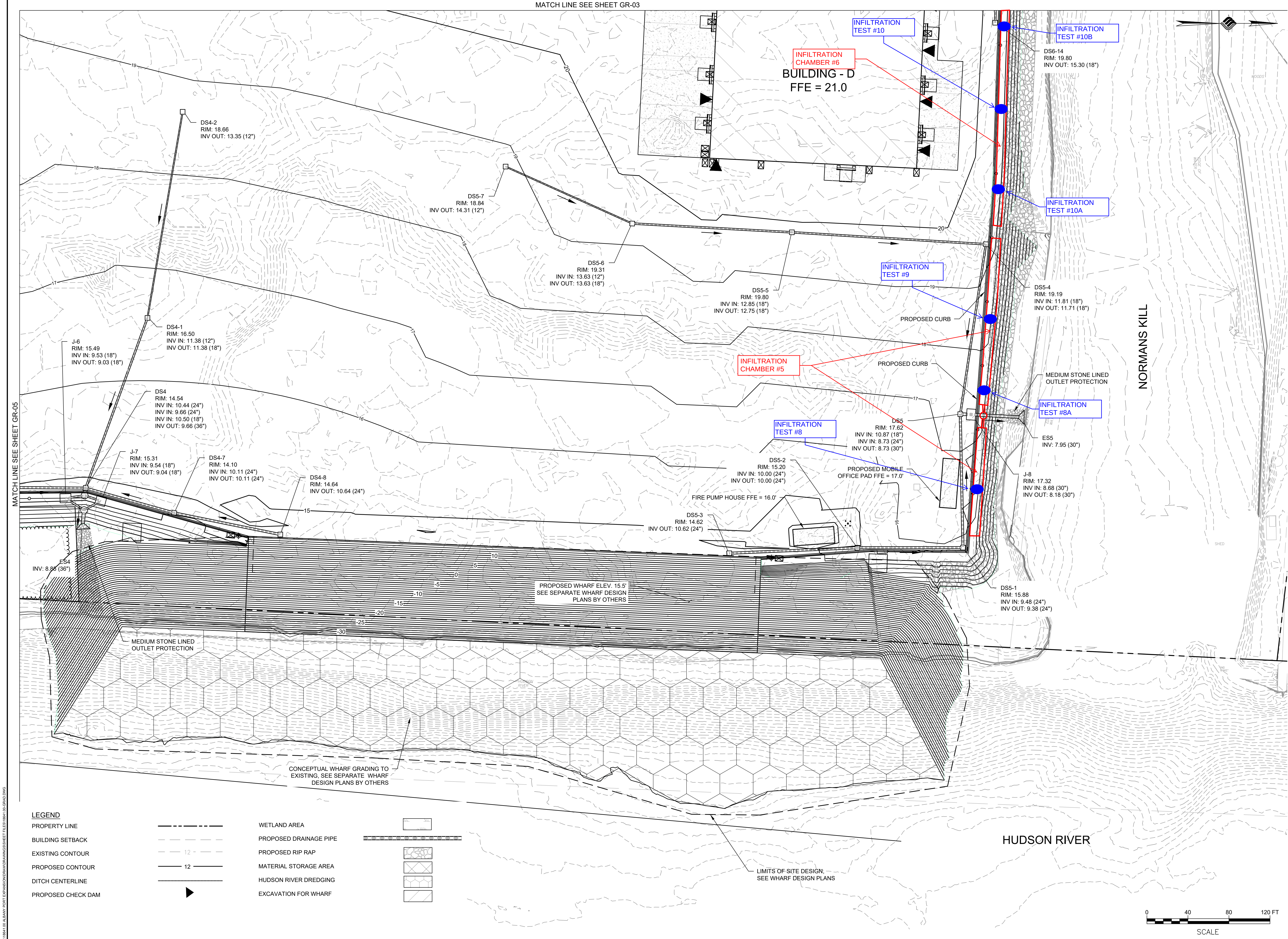
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NOT FOR
CONSTRUCTION**

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECT DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ARCHITECT, LANDSCAPE ARCHITECT, OR LAND SURVEYOR, TO ALTER AN ITEM IN ANY WAY. IF AN ITEM BEARING THE STAMP OF A LICENSED PROFESSIONAL IS ALTERED, THE ALTERING ENGINEER, ARCHITECT, LANDSCAPE ARCHITECT, OR LAND SURVEYOR SHALL STAMP THE DOCUMENT AND INCLUDE THE NOTATION "ALTERED BY" FOLLOWED BY THEIR SIGNATURE, THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

DRAWING TITLE
GRADING & DRAINAGE

DRAWING NUMBER
GR-05

24 OF 67





McFarland Johnson
60 RAILROAD PLACE
SUITE 402
SARATOGA SPRINGS, NEW YORK 12866
P:518-580-9380 F:518-580-9383
SaratogaROM@mjinc.com

PROJECT MILESTONE
FINAL DESIGN PLANS

NO.	DATE	DESCRIPTION

CLIENT:
ALBANY PORT DISTRICT COMMISSION

ALBANY, NEW YORK

PROJECT:
PORT OF ALBANY EXPANSION SITE

DRAWN	JES
DESIGNED	NSO
CHECKED	AJF
SCALE	AS SHOWN
DATE	04/19/2022
PROJECT	18641.00

**FOR REVIEW
NOT FOR
CONSTRUCTION**

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECT DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ARCHITECT, LANDSCAPE ARCHITECT, OR LAND SURVEYOR, TO ALTER AN ITEM IN ANY WAY. IF AN ITEM BEARING THE STAMP OF A LICENSED PROFESSIONAL IS ALTERED, THE ALTERING ENGINEER, ARCHITECT, LANDSCAPE ARCHITECT, OR LAND SURVEYOR SHALL STAMP THE DOCUMENT AND INCLUDE THE NOTATION "ALTERED BY" FOLLOWED BY THEIR SIGNATURE, THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

DRAWING TITLE

GRADING & DRAINAGE

DRAWING NUMBER

GR-06

25 OF 67



McFarland Johnson
60 RAILROAD PLACE
SUITE 402
SARATOGA SPRINGS, NEW YORK 12866
P:518-580-9380 F:518-580-9383
SaratogaROM@mjinc.com

PROJECT MILESTONE
FINAL DESIGN PLANS

NO.	DATE	DESCRIPTION

CLIENT:
ALBANY PORT DISTRICT COMMISSION

ALBANY, NEW YORK

PROJECT:
NORMANSKILL ST. REHAB

DRAWN	JES
DESIGNED	NSO
CHECKED	AJF
SCALE	1"=40'
DATE	APRIL 2022
PROJECT	18641.00

**FOR REVIEW
NOT FOR
CONSTRUCTION**

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECT DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ARCHITECT, LANDSCAPE ARCHITECT, OR LAND SURVEYOR, TO ALTER AN ITEM IN ANY WAY. IF AN ITEM BEARING THE STAMP OF A LICENSED PROFESSIONAL IS ALTERED, THE ALTERING ENGINEER, ARCHITECT, LANDSCAPE ARCHITECT, OR LAND SURVEYOR SHALL STAMP THE DOCUMENT AND INCLUDE THE NOTATION "ALTERED BY" FOLLOWED BY THEIR SIGNATURE, THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

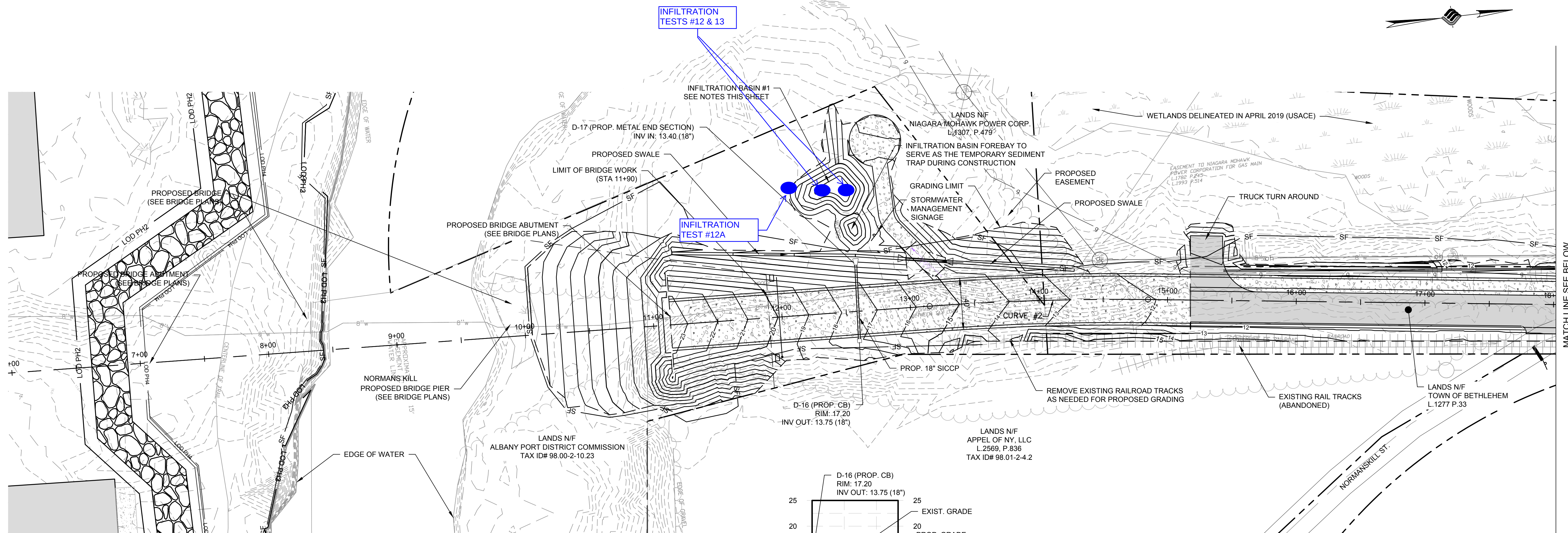
DRAWING TITLE

**GRADING, DRAINAGE,
EROSION AND
SEDIMENT CONTROL**

DRAWING NUMBER

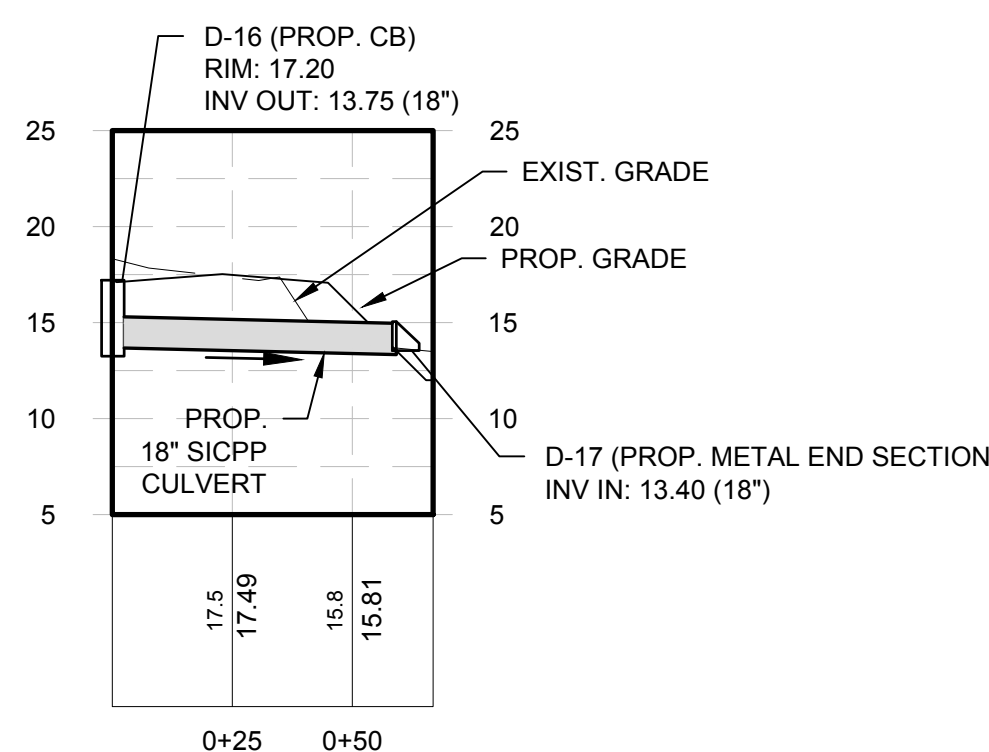
GR-01

10 OF 16

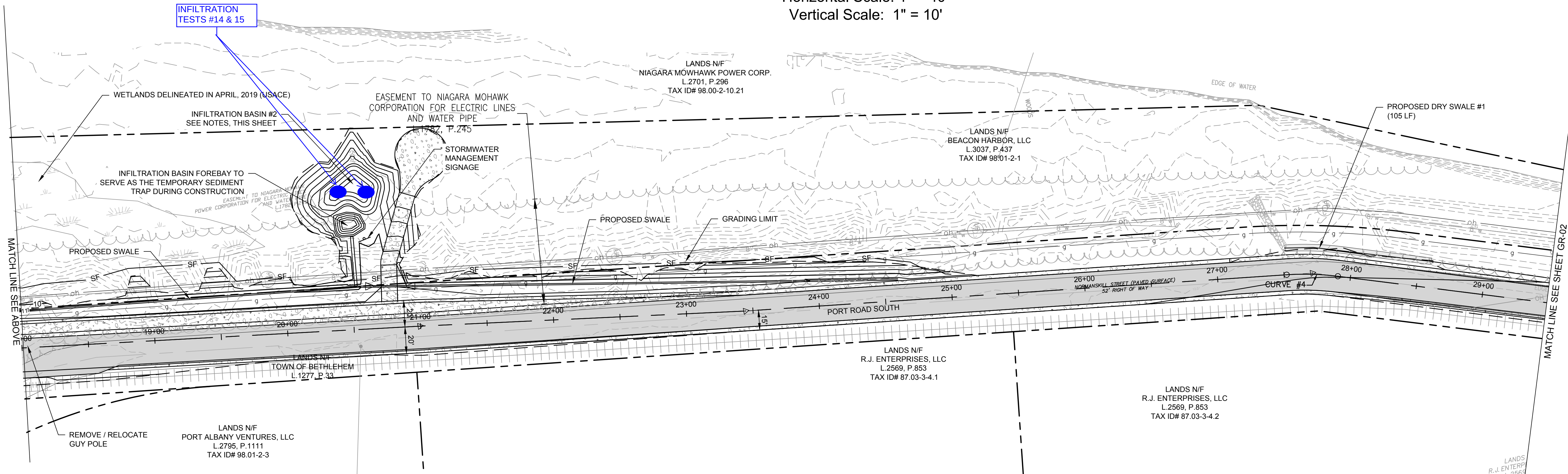


LEGEND	
PROPERTY LINE	---
PROPOSED BOX BEAM GUIDE RAIL	—●—●—●—●—●—●—●—●—●—
DITCH CENTERLINE	—+—+—+—+—+—+—+—+—+—
WETLAND AREA	
SECURITY FENCE	—○—○—○—○—○—○—○—○—○—
SILT FENCE	—SF—SF—SF—SF—SF—SF—SF—SF—SF—
CATCH BASIN	
EXISTING OVERHEAD ELECTRIC	—OH—OH—OH—OH—OH—OH—OH—OH—OH—
EXISTING GAS LINE	—G—G—G—G—G—G—G—G—G—
EXISTING WATERLINE	—W—W—W—W—W—W—W—W—W—
PROPOSED PAVEMENT	
PROPOSED CONCRETE	
RIP-RAP WATER EMBANKMENT STABILIZATION	

D-16 TO D-17
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 10'



- NOTES:
- UPSTREAM CONSTRUCTION SHALL BE COMPLETED AND STABILIZED BEFORE CONNECTION TO A DOWNSTREAM INFILTRATION FACILITY. A DENSE AND VIGOROUS VEGETATIVE COVER SHALL BE ESTABLISHED OVER THE CONTRIBUTING PERVIOUS DRAINAGE AREAS BEFORE RUNOFF CAN BE ACCEPTED INTO THE FACILITY.
 - PROPOSED INFILTRATION BASINS SHALL BE OWNED, OPERATED AND MAINTAINED BY THE PORT OF ALBANY AND BE ACCESSIBLE BY THE TOWN FOR INSPECTION.



BORING LOG NO. IT-1

Page 1 of 1

PROJECT: Proposed Marmen Manufacturing Facility

CLIENT: McFarland Johnson
Saratoga Springs, NY

SITE: River Road
Glenmont, NY

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 42.6002° Longitude: -73.7632° Approximate Surface Elev.: 16.6 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	ORGANIC CONTENT (%)	WATER CONTENT (%)
		DEPTH 0.3' TOPSOIL ELEVATION (Ft.) 16.5+/-				21	4-11-21-48 N=32		
		3.5' FILL - SILTY SAND (SM) , rootlets, coal, and cinders noted, black, dense to very dense 13+/-				24	42-50-35-17 N=85		
		FILL - COAL ASH , wood and roots noted, black, loose to medium dense	5			21	3-5-4-3 N=9		
						21	3-3-2-4 N=5		
		Becomes gray w/ crushed stone and slag	10			22	6-6-17-37 N=23		
		11.0' SILT (ML) , shells noted, gray to brown, medium stiff to stiff 5.5+/-				19	17-7-9-5 N=16		
		Silt and clay bands noted 12-14'				19	3-3-2-1 N=5		
		14.0' Boring Terminated at 14 Feet 2.5+/-							

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
2 1/4" ID HSA

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).

Notes:

Logged by: JCH
- 4" PVC infiltration test pipe set at depth of 10.0' alongside test boring

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

Approx. ground surface elev. furnished by client

WATER LEVEL OBSERVATIONS

No free water observed

Terracon

30 Corporate Cir Ste 201
Albany, NY

Page 424 of 831

Boring Started: 05-11-2022

Boring Completed: 05-11-2022

Drill Rig: CME-750X

Driller: J. Lamm

Project No.: JB215020

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL JB215020 PORT OF ALBANY MA.GPJ TERRACON_DATATEMPLATE.GDT 6/7/22

BORING LOG NO. IT-2

Page 1 of 1

PROJECT: Proposed Marmen Manufacturing Facility

CLIENT: McFarland Johnson
Saratoga Springs, NYSITE: River Road
Glenmont, NY

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 42.6011° Longitude: -73.7634° Approximate Surface Elev.: 15.3 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	ORGANIC CONTENT (%)	WATER CONTENT (%)
		DEPTH ELEVATION (Ft.)							
		1.0 TOPSOIL 14.5+/-				18	2-3-4-5 N=7		
		2.0 FILL - SANDY SILT (ML) , roots noted, gray, medium stiff 13.5+/-				17	8-8-11-13 N=19		
		FILL - SILTY SAND (SM) , wood, brick, and coal fragments noted, gray, very loose to medium dense	5			22	6-7-7-8 N=14		
		8.5 7+/-				15	6-3-3-2 N=6		
		10.0 SANDY SILT (ML) , organics and sand seams noted, gray, loose 5.5+/-	10			14	1-2-2-1 N=4		
		SILT (ML) , gray, soft				24	2-1-1-2 N=2		
		12.0 3.5+/-							
		Boring Terminated at 12 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
2 1/4" ID HSASee [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Logged by: JCH
- 4" PVC infiltration test pipe set at depth of 9.0' alongside test boringAbandonment Method:
Boring backfilled with soil cuttings upon completion.See [Supporting Information](#) for explanation of symbols and abbreviations.

Approx. ground surface elev. furnished by client

WATER LEVEL OBSERVATIONS

No free water observed

Terracon

30 Corporate Cir Ste 201
Albany, NY

Page 426 of 831

Boring Started: 05-11-2022

Boring Completed: 05-11-2022

Drill Rig: CME-750X

Driller: J. Lamm

Project No.: JB215020

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL JB215020 PORT OF ALBANY MA.GPJ TERRACON_DATATEMPLATE.GDT 6/7/22

BORING LOG NO. IT-3

Page 1 of 1

PROJECT: Proposed Marmen Manufacturing Facility

CLIENT: McFarland Johnson
Saratoga Springs, NYSITE: River Road
Glenmont, NY

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 42.6017° Longitude: -73.7636° Approximate Surface Elev.: 10.8 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	ORGANIC CONTENT (%)	WATER CONTENT (%)
		0.5 TOPSOIL 10.5+/-				6	1-2-2-2 N=4		
		3.0 FILL - SILTY SAND (SM) , wood chips and organics noted, brown, loose to medium dense 8+/-				17	4-3-7-4 N=10		
		SILT (ML) , mottled, occasional sand and clay bands, brown, medium stiff to stiff	5			22	3-3-3-3 N=6		
		8.0 3+/-				18	3-3-3-3 N=6		
		Boring Terminated at 8 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
2 1/4" ID HSASee [Exploration and Testing Procedures](#) for a
description of field and laboratory procedures
used and additional data (if any).

Notes:

Logged by: JCH
- 4" PVC infiltration test pipe set at depth of 4.5' alongside test
boringAbandonment Method:
Boring backfilled with soil cuttings upon completion.See [Supporting Information](#) for explanation of
symbols and abbreviations.

Approx. ground surface elev. furnished by client

WATER LEVEL OBSERVATIONS

No free water observed

Terracon30 Corporate Cir Ste 201
Albany, NY

Page 426 of 831

Boring Started: 05-12-2022

Boring Completed: 05-12-2022

Drill Rig: CME-750X

Driller: J. Lamm

Project No.: JB215020

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL - JB215020 PORT OF ALBANY MA.GPJ TERRACON_DATATEMPLATE.GDT 6/7/22

BORING LOG NO. IT-4

Page 1 of 1

PROJECT: Proposed Marmen Manufacturing Facility

CLIENT: McFarland Johnson
Saratoga Springs, NY

SITE: River Road
Glenmont, NY

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 42.6022° Longitude: -73.7638° Approximate Surface Elev.: 12.8 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	ORGANIC CONTENT (%)	WATER CONTENT (%)
		DEPTH ELEVATION (Ft.)							
		FILL - SANDY SILT WITH GRAVEL (ML) , with clayey bands, wood, coal pieces, and roots noted, gray, soft to medium stiff				14	1-1-2-2 N=3		
						19	2-3-4-5 N=7		
						19	4-3-3-4 N=6		
						17	4-4-3-3 N=7		
						18	4-3-3-4 N=6		
		VARVED SILT AND CLAY (CL-ML) , mottled, rootlets noted, orange to brown, medium stiff							
		SILT WITH SAND (ML) , sand seams noted, brown, medium stiff							
		Boring Terminated at 10 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
2 1/4" ID HSA

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Logged by: JCH
- 4" PVC infiltration test pipe set at depth of 6.5' alongside test boring

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

Approx. ground surface elev. furnished by client

WATER LEVEL OBSERVATIONS

No free water observed

Terracon

30 Corporate Cir Ste 201

Albany, NY

Page 427 of 831

Boring Started: 05-11-2022

Boring Completed: 05-11-2022

Drill Rig: CME-750X

Driller: J. Lamm

Project No.: JB215020

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL JB215020 PORT OF ALBANY MA.GPJ TERRACON_DATATEMPLATE.GDT 6/7/22

BORING LOG NO. IT-5

Page 1 of 1

PROJECT: Proposed Marmen Manufacturing Facility

CLIENT: McFarland Johnson
Saratoga Springs, NYSITE: River Road
Glenmont, NY

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 42.6027° Longitude: -73.7638° Approximate Surface Elev.: 9.1 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	ORGANIC CONTENT (%)	WATER CONTENT (%)
		DEPTH ELEVATION (Ft.)							
		FILL - SANDY SILT (ML) , pieces of wood noted, gray, soft				19	1-1-1-2 N=2		
		3.0 6+/-				18	1-3-5-3 N=8		
		4.0 SILT (ML) , gray, medium stiff 5+/- POORLY GRADED SAND (SP) , brown, loose 3+/-	5			19	2-1-3-3 N=4		
		6.0							
		Boring Terminated at 6 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
2 1/4" ID HSASee [Exploration and Testing Procedures](#) for a
description of field and laboratory procedures
used and additional data (if any).

Notes:

Logged by: JCH
- 4" PVC infiltration test pipe set at depth of 2.5' alongside test
boringAbandonment Method:
Boring backfilled with soil cuttings upon completion.See [Supporting Information](#) for explanation of
symbols and abbreviations.

Approx. ground surface elev. furnished by client

WATER LEVEL OBSERVATIONS

No free water observed

Terracon30 Corporate Cir Ste 201
Albany, NY

Page 428 of 831

Boring Started: 05-11-2022

Boring Completed: 05-11-2022

Drill Rig: CME-750X

Driller: J. Lamm

Project No.: JB215020

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL - JB215020 PORT OF ALBANY MA.GPJ TERRACON_DATATEMPLATE.GDT 6/7/22

BORING LOG NO. IT-6

Page 1 of 1

PROJECT: Proposed Marmen Manufacturing Facility

CLIENT: McFarland Johnson
Saratoga Springs, NYSITE: River Road
Glenmont, NY

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 42.6034° Longitude: -73.7638° Approximate Surface Elev.: 10.7 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	ORGANIC CONTENT (%)	WATER CONTENT (%)
		SILTY CLAY (CL-ML) , rootlets noted, gray, soft to medium stiff Organics noted 2-4' 4.0 6.5+/-	5			14	1-1-2-2 N=3		
		SILT WITH SAND (ML) , brown, soft to medium stiff 8.0 2.5+/-				19	2-3-4-3 N=7		
		Sand lens from 7-8' Boring Terminated at 8 Feet				19	2-1-2-2 N=3		
						19	3-3-2-3 N=5		

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
2 1/4" ID HSASee [Exploration and Testing Procedures](#) for a
description of field and laboratory procedures
used and additional data (if any).

Notes:

Logged by: JCH
- 4" PVC infiltration test pipe set at depth of 4.0' alongside test
boringAbandonment Method:
Boring backfilled with soil cuttings upon completion.See [Supporting Information](#) for explanation of
symbols and abbreviations.

Approx. ground surface elev. furnished by client

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
30 Corporate Cir Ste 201
Albany, NY

Boring Started: 05-11-2022

Boring Completed: 05-11-2022

Drill Rig: CME-750X

Driller: J. Lamm

Project No.: JB215020

BORING LOG NO. IT-7

Page 1 of 1

PROJECT: Proposed Marmen Manufacturing Facility

CLIENT: McFarland Johnson
Saratoga Springs, NYSITE: River Road
Glenmont, NY

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 42.6041° Longitude: -73.7637° Approximate Surface Elev.: 9.6 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	ORGANIC CONTENT (%)	WATER CONTENT (%)
		2.0 VARVED SILT AND CLAY (CL-ML) , rootlets noted, gray, soft 7.5+/-				12	WH-1-2-2 N=3		
		SILT (ML) , roots and rootlets noted, brown, medium stiff				19	2-2-2-2 N=4		
		5.5 4+/-	5			19	2-2-2-1 N=4		
		6.0 POORLY GRADED SAND (SP) , brown, very loose 3.5+/- Boring Terminated at 6 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
2 1/4" ID HSASee [Exploration and Testing Procedures](#) for a
description of field and laboratory procedures
used and additional data (if any).

Notes:

Logged by: JCH
WH = Weight of Hammer
- 4" PVC infiltration test pipe set at depth of 3.0' alongside test
boringAbandonment Method:
Boring backfilled with soil cuttings upon completion.See [Supporting Information](#) for explanation of
symbols and abbreviations.
Approx. ground surface elev. furnished by client

WATER LEVEL OBSERVATIONS

No free water observed

Terracon30 Corporate Cir Ste 201
Albany, NY

Page 430 of 831

Boring Started: 05-12-2022

Boring Completed: 05-12-2022

Drill Rig: CME-750X

Driller: J. Lamm

Project No.: JB215020

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL - JB215020 PORT OF ALBANY MA.GPJ TERRACON_DATATEMPLATE.GDT 6/7/22

BORING LOG NO. IT-8

Page 1 of 1

PROJECT: Proposed Marmen Manufacturing Facility

CLIENT: McFarland Johnson
Saratoga Springs, NYSITE: River Road
Glenmont, NY

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 42.6069° Longitude: -73.7637° Approximate Surface Elev.: 12.4 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	ORGANIC CONTENT (%)	WATER CONTENT (%)
		TOPSOIL 2.5 10+/-			X	17	1-2-2-4 N=4		
		FILL - SILTY SAND (SM) , mottled, trace gravel, brown, medium dense 6.5 6+/-	5		X	19	4-6-6-6 N=12		
		SILTY CLAY (CL-ML) , rootlets noted, gray to brown, medium stiff 8.0 4.5+/-			X	12	7-11-6-6 N=17		
		SILT (ML) , gray, medium stiff 10.0 2.5+/-			X	19	7-5-3-3 N=8		
		Boring Terminated at 10 Feet	10		X	19	2-3-3-3 N=6		

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
2 1/4" ID HSASee [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).

Notes:

Logged by: JCH
- 4" PVC infiltration test pipe set at depth of 6.0' alongside test boringAbandonment Method:
Boring backfilled with soil cuttings upon completion.See [Supporting Information](#) for explanation of symbols and abbreviations.

Approx. ground surface elev. furnished by client

WATER LEVEL OBSERVATIONS

No free water observed

Terracon30 Corporate Cir Ste 201
Albany, NY

Page 431 of 831

Boring Started: 05-10-2022

Boring Completed: 05-10-2022

Drill Rig: CME-750X

Driller: J. Lamm

Project No.: JB215020

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL JB215020 PORT OF ALBANY MA.GPJ TERRACON_DATATEMPLATE.GDT 6/7/22

BORING LOG NO. IT-9

Page 1 of 1

PROJECT: Proposed Marmen Manufacturing Facility

CLIENT: McFarland Johnson
Saratoga Springs, NYSITE: River Road
Glenmont, NY

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 42.6069° Longitude: -73.7643° Approximate Surface Elev.: 13.6 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	ORGANIC CONTENT (%)	WATER CONTENT (%)
		DEPTH ELEVATION (Ft.)							
		SILTY SAND (SM) , rootlets and organics noted, brown, very loose to medium dense				12	1-1-2-2 N=3		
						19	3-3-4-4 N=7		
		5.0 8.5+/-	5			18	7-6-6-7 N=12		
		SILT WITH SAND (ML) , organics noted, brown, stiff Grades to banded silt with sand				21	6-7-6-8 N=13		
		8.0 5.5+/-				24	2-3-2-3 N=5		
		SILT (ML) , brown, medium stiff							
		10.0 3.5+/-	10						
		Boring Terminated at 10 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
2 1/4" ID HSASee [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Logged by: JCH
- 4" PVC infiltration test pipe set at depth of 7.0' alongside test boringAbandonment Method:
Boring backfilled with soil cuttings upon completion.See [Supporting Information](#) for explanation of symbols and abbreviations.

Approx. ground surface elev. furnished by client

WATER LEVEL OBSERVATIONS

No free water observed

Terracon30 Corporate Cir Ste 201
Albany, NY

Page 432 of 831

Boring Started: 05-12-2022

Boring Completed: 05-12-2022

Drill Rig: CME-750X

Driller: J. Lamm

Project No.: JB215020

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL JB215020 PORT OF ALBANY MA.GPJ TERRACON_DATATEMPLATE.GDT 6/7/22

BORING LOG NO. IT-10

Page 1 of 1

PROJECT: Proposed Marmen Manufacturing Facility

CLIENT: McFarland Johnson
Saratoga Springs, NY

SITE: River Road
Glenmont, NY

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 42.6070° Longitude: -73.7650° Approximate Surface Elev.: 17.3 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	ORGANIC CONTENT (%)	WATER CONTENT (%)
		DEPTH ELEVATION (Ft.)							
		No recovery 0-2' SILT WITH SAND (ML) , mottled, trace gravel, rootlets noted, brown, medium stiff to stiff				0	1-2-2-2 N=4		
						12	2-3-2-4 N=5		
		Silty sand seam noted 5.5-6' Grades to brownish gray	5			22	5-5-4-6 N=9		
						19	5-4-5-5 N=9		
		9.0 8.5+/-				12	2-3-3-4 N=6		
		SILTY CLAY (CL-ML) , sand lenses noted, gray, medium stiff	10			22	3-3-5-5 N=8		
		12.0 5.5+/-				24	4-4-4-2 N=8		
		SILT (ML) , gray, medium stiff							
		14.0 3.5+/-							
		Boring Terminated at 14 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
2 1/4" ID HSA

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).

Notes:

Logged by: JCH
- 4" PVC infiltration test pipe set at depth of 11.0' alongside test boring

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

Approx. ground surface elev. furnished by client

WATER LEVEL OBSERVATIONS

No free water observed

Terracon

30 Corporate Cir Ste 201
Albany, NY

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Boring Started: 05-12-2022

Boring Completed: 05-12-2022

Drill Rig: CME-750X

Driller: J. Lamm

Project No.: JB215020

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL JB215020 PORT OF ALBANY MA.GPJ TERRACON_DATATEMPLATE.GDT 6/7/22

BORING LOG NO. IT-11

Page 1 of 1

PROJECT: Proposed Marmen Manufacturing Facility

CLIENT: McFarland Johnson
Saratoga Springs, NY

SITE: River Road
Glenmont, NY

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 42.6070° Longitude: -73.7656° Approximate Surface Elev.: 15.4 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	ORGANIC CONTENT (%)	WATER CONTENT (%)
		DEPTH 0.5 TOPSOIL SILT WITH SAND (ML) , rootlets noted, mottled, orange to brown, soft to very stiff Gravelly seams noted 4-7' 7.0 SILT (ML) , gray to brown, medium stiff to very stiff 12.0	ELEVATION (Ft.) 15+/- 8.5+/- 3.5+/-			19 21 18 19 24 24	WH-1-2-2 N=3 1-1-2-3 N=3 2-3-5-9 N=8 12-17-18-13 N=35 4-5-5-5 N=10 5-4-3-2 N=7		
		Boring Terminated at 12 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
2 1/4" ID HSA

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Logged by: JCH
- 4" PVC infiltration test pipe set at depth of 9.0' alongside test boring

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

Approx. ground surface elev. furnished by client

WATER LEVEL OBSERVATIONS

No free water observed

Terracon

30 Corporate Cir Ste 201
Albany, NY

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Boring Started: 05-12-2022

Boring Completed: 05-12-2022

Drill Rig: CME-750X

Driller: J. Lamm

Project No.: JB215020

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL JB215020 PORT OF ALBANY MA.GPJ TERRACON_DATATEMPLATE.GDT 6/7/22

BORING LOG NO. IT-12

Page 1 of 1

PROJECT: Proposed Marmen Manufacturing Facility

CLIENT: McFarland Johnson
Saratoga Springs, NY

SITE: River Road
Glenmont, NY

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 42.6084° Longitude: -73.7665° Approximate Surface Elev.: 14 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	ORGANIC CONTENT (%)	WATER CONTENT (%)
		0.5 TOPSOIL 13.5+/-				12	WH-2-3-4 N=5		
		FILL - SANDY SILT (ML) , shell fragments, wood, and rootlets noted, brown, medium stiff							
		7.0 7+/-	5			24	3-3-4-7 N=7		
		FILL - SILT (ML) , wood and coal fragments noted, gray, medium stiff				24	4-5-3-7 N=8		
		9.0 5+/-							
		Boring Terminated at 9 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
2 1/4" ID HSA

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Logged by: JCH
WH = Weight of Hammer
- 4" PVC infiltration test pipe set at depth of 6.0' alongside test boring

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

Approx. ground surface elev. furnished by client

WATER LEVEL OBSERVATIONS

No free water observed

Terracon

30 Corporate Cir Ste 201
Albany, NY

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Boring Started: 05-10-2022

Boring Completed: 05-10-2022

Drill Rig: CME-750X

Driller: J. Lamm

Project No.: JB215020

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL JB215020 PORT OF ALBANY MA.GPJ TERRACON_DATATEMPLATE.GDT 6/7/22

BORING LOG NO. IT-13

Page 1 of 1

PROJECT: Proposed Marmen Manufacturing Facility

CLIENT: McFarland Johnson
Saratoga Springs, NY

SITE: River Road
Glenmont, NY

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 42.6085° Longitude: -73.7665° Approximate Surface Elev.: 14.6 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	ORGANIC CONTENT (%)	WATER CONTENT (%)
		DEPTH ELEVATION (Ft.)							
		SANDY SILT (ML) , trace gravel and rootlets noted, brown, medium stiff				8	WH-2-4-3 N=6		
			5						
		7.0 SILTY SAND (SM) , trace gravel and rootlets noted, gray, loose	7.5+/-			24	3-3-4-4 N=7		
		9.0 SANDY SILT (ML) , trace gravel and wood noted, gray, medium stiff	5.5+/-			18	4-4-5-3 N=9		
		11.0 SANDY SILT (ML) , trace gravel and wood noted, gray, medium stiff	3.5+/-			21	1-1-3-4 N=4		
		Boring Terminated at 11 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
2 1/4" ID HSA

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Logged by: JCH
WH = Weight of Hammer
- 4" PVC infiltration test pipe set at depth of 6.5' alongside test boring

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

Approx. ground surface elev. furnished by client

WATER LEVEL OBSERVATIONS

No free water observed

Terracon

30 Corporate Cir Ste 201
Albany, NY

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Boring Started: 05-10-2022

Boring Completed: 05-10-2022

Drill Rig: CME-750X

Driller: J. Lamm

Project No.: JB215020

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL - JB215020 PORT OF ALBANY MA.GPJ TERRACON_DATATEMPLATE.GDT 6/7/22

BORING LOG NO. IT-14

Page 1 of 1

PROJECT: Proposed Marmen Manufacturing Facility

CLIENT: McFarland Johnson
Saratoga Springs, NY

SITE: River Road
Glenmont, NY

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 42.6106° Longitude: -73.7662° Approximate Surface Elev.: 5.8 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	ORGANIC CONTENT (%)	WATER CONTENT (%)
		DEPTH ELEVATION (Ft.)							
		0.5' TOPSOIL 5.5+/- 2.0' SANDY SILT (ML) , rootlets noted, brown 4+/- 3.0' SILTY CLAY (CL-ML) , roots noted, orange to brown 3+/- Boring Terminated at 3 Feet				12			
						12			

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Logged by: JCH
- 4" PVC infiltration test pipe set at depth of 1.0' alongside test boring

Abandonment Method:
Boring backfilled with excavation spoils upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

Approx. ground surface elev. furnished by client

WATER LEVEL OBSERVATIONS

No free water observed

Terracon

30 Corporate Cir Ste 201
Albany, NY

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Boring Started: 05-12-2022

Boring Completed: 05-12-2022

Drill Rig: Hand Auger

Driller: J. Lamm

Project No.: JB215020

BORING LOG NO. IT-15

Page 1 of 1

PROJECT: Proposed Marmen Manufacturing Facility

CLIENT: McFarland Johnson
Saratoga Springs, NY

SITE: River Road
Glenmont, NY

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 42.6107° Longitude: -73.7662° Approximate Surface Elev.: 5.8 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	ORGANIC CONTENT (%)	WATER CONTENT (%)
		DEPTH ELEVATION (Ft.)							
		0.5 TOPSOIL 5.5+/-			Hand	15			
		1.5 SILT (ML) , rootlets noted, brown 4.5+/-			Hand	12			
		3.0 SILTY CLAY (CL-ML) , sand seams noted, brown 3+/-							
		Boring Terminated at 3 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Logged by: JCH
- 4" PVC infiltration test pipe set at depth of 1.0' alongside test boring

Abandonment Method:
Boring backfilled with excavation spoils upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

Approx. ground surface elev. furnished by client

WATER LEVEL OBSERVATIONS

No free water observed

Terracon

30 Corporate Cir Ste 201
Albany, NY

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Boring Started: 05-12-2022

Boring Completed: 05-12-2022

Drill Rig: Hand Auger

Driller: J. Lamm

Project No.: JB215020

BORING LOG NO. IT-1A

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PROJECT: Proposed Marmen Manufacturing Facility

CLIENT: McFarland Johnson
Saratoga Springs, NY

SITE: River Road
Glenmont, NY

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 42.6007° Longitude: -73.7634° Approximate Surface Elev.: 14.3 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	ORGANIC CONTENT (%)	WATER CONTENT (%)
		DEPTH ELEVATION (Ft.)							
		FILL - SILTY SAND WITH GRAVEL (SM) , black, medium dense to very dense 3.5 11+/-			X	18	2-3-11-14 N=14		
		FILL - COAL ASH , rootlets noted, black, loose to medium dense 9.0 5.5+/-	5		X	21	25-27-25-10 N=52		
		FILL - POORLY GRADED SAND (SP) , black, very loose 11.0 3.5+/-	10		X	5	7-5-3-3 N=8		
					X	19	4-2-3-2 N=5		
					X	19	1-1-2-1 N=3		
		Boring Terminated at 11 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
2 1/4" ID HSA

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Logged by: JCH
- 4" PVC infiltration test pipe set at depth of 8.0' alongside test boring

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

Approx. ground surface elev. furnished by client

WATER LEVEL OBSERVATIONS

No free water observed

Terracon

30 Corporate Cir Ste 201
Albany, NY

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Boring Started: 05-17-2022

Boring Completed: 05-17-2022

Drill Rig: CME-750X

Driller: J. Lamm

Project No.: JB215020

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL JB215020 PORT OF ALBANY MA.GPJ TERRACON_DATATEMPLATE.GDT 6/7/22

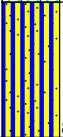
BORING LOG NO. IT-7A

Page 1 of 1

PROJECT: Proposed Marmen Manufacturing Facility

CLIENT: McFarland Johnson
Saratoga Springs, NY

SITE: River Road
Glenmont, NY

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 42.6039° Longitude: -73.7638° Approximate Surface Elev.: 11.2 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	ORGANIC CONTENT (%)	WATER CONTENT (%)
		DEPTH	ELEVATION (Ft.)						
		SILTY CLAY (CL-ML) , gray, soft	2.5			12	2-1-2-3 N=3		
		SANDY SILT (ML) , brown, medium stiff	8.5+/-			19	2-3-3-4 N=6		
						19	2-2-3-2 N=5		
						19	2-3-3-2 N=6		
		Boring Terminated at 8 Feet	3+/-						

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
2 1/4" ID HSA

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).

Notes:

Logged by: JCH
- 4" PVC infiltration test pipe set at depth of 5.0' alongside test boring

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

Approx. ground surface elev. furnished by client

WATER LEVEL OBSERVATIONS

No free water observed

Terracon

30 Corporate Cir Ste 201
Albany, NY

Page 440 of 831

Boring Started: 05-17-2022

Boring Completed: 05-17-2022

Drill Rig: CME-750X

Driller: J. Lamm

Project No.: JB215020

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL - JB215020 PORT OF ALBANY MA.GPJ TERRACON_DATATEMPLATE.GDT 6/7/22

BORING LOG NO. IT-8A

Page 1 of 1

PROJECT: Proposed Marmen Manufacturing Facility

CLIENT: McFarland Johnson
Saratoga Springs, NY

SITE: River Road
Glenmont, NY

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 42.6069° Longitude: -73.7641° Approximate Surface Elev.: 14.8 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	ORGANIC CONTENT (%)	WATER CONTENT (%)
		SILTY SAND (SM) , sand seams noted, brown, very loose to loose				15	WH-1-1-1 N=2		
		4.5 10.5+/-				18	4-4-5-4 N=9		
		6.0 SILT (ML) , mottled, brown, medium stiff 9+/-	5			22	3-2-4-7 N=6		
		SILTY SAND (SM) , gray clayey bands noted, brown, medium dense				22	12-14-9-10 N=23		
		8.0 7+/-				24	1-2-2-2 N=4		
		SILT (ML) , gray, soft	10			24	3-1-2-1 N=3		
		12.0 3+/-							
		Boring Terminated at 12 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
2 1/4" ID HSA

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Logged by: JCH
- 4" PVC infiltration test pipe set at depth of 7.0' alongside test boring

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

Approx. ground surface elev. furnished by client

WATER LEVEL OBSERVATIONS

No free water observed

Terracon

30 Corporate Cir Ste 201
Albany, NY

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Boring Started: 05-16-2022

Boring Completed: 05-16-2022

Drill Rig: CME-750X

Driller: J. Lamm

Project No.: JB215020

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL JB215020 PORT OF ALBANY MA.GPJ TERRACON_DATATEMPLATE.GDT 6/7/22

BORING LOG NO. IT-10A

Page 1 of 1

PROJECT: Proposed Marmen Manufacturing Facility

CLIENT: McFarland Johnson
Saratoga Springs, NY

SITE: River Road
Glenmont, NY

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 42.6070° Longitude: -73.7650° Approximate Surface Elev.: 17.4 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	ORGANIC CONTENT (%)	WATER CONTENT (%)
		DEPTH ELEVATION (Ft.)							
		0.5' TOPSOIL 17+/-				15	WH/12"-2-3 N=2		
		SANDY SILT (ML) , rootlets noted, brown, soft to stiff				19	4-5-5-6 N=10		
		Gray clayey bands 3-3.5'				24	3-4-4-4 N=8		
		Brown sandy bands 4-6'				21	5-7-6-5 N=13		
		7.5' SILTY CLAY (CL-ML) , gray, soft to stiff 10+/-				24	3-2-4-3 N=6		
		Varved 7.5-8'				24	1-1-2-1 N=3		
		14.0' Sand seams noted 12-14' 3.5+/-				24	1-2-2-2 N=4		
		Boring Terminated at 14 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
2 1/4" ID HSA

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Logged by: JCH
- 4" PVC infiltration test pipe set at depth of 11.0' alongside test boring

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

Approx. ground surface elev. furnished by client

WATER LEVEL OBSERVATIONS

No free water observed

Terracon

30 Corporate Cir Ste 201
Albany, NY

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Boring Started: 05-16-2022

Boring Completed: 05-16-2022

Drill Rig: CME-750X

Driller: J. Lamm

Project No.: JB215020

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL - JB215020 PORT OF ALBANY MA.GPJ TERRACON_DATATEMPLATE.GDT 6/7/22

BORING LOG NO. IT-10B

Page 1 of 1

PROJECT: Proposed Marmen Manufacturing Facility

CLIENT: McFarland Johnson
Saratoga Springs, NY

SITE: River Road
Glenmont, NY

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 42.6070° Longitude: -73.7653° Approximate Surface Elev.: 16.7 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	ORGANIC CONTENT (%)	WATER CONTENT (%)
		DEPTH ELEVATION (Ft.)							
		No recovery 0-2' VARVED SILT AND CLAY (CL-ML) , rootlets noted, gray, soft to stiff				0	WH-1-2-3 N=3		
						14	4-4-5-5 N=9		
		6.0 10.5+/-	5						
		SANDY SILT (ML) , brown, stiff to very stiff				21	5-4-5-6 N=9		
						22	4-6-13-15 N=19		
		10.5 6+/-	10			22	13-9-6-6 N=15		
		SILT (ML) , mottled, brown, stiff				24	4-5-4-3 N=9		
		13.0 3.5+/-							
		Boring Terminated at 13 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
2 1/4" ID HSA

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).

Notes:

Logged by: JCH
- 4" PVC infiltration test pipe set at depth of 9.5' alongside test boring

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

Approx. ground surface elev. furnished by client

WATER LEVEL OBSERVATIONS

No free water observed

Terracon

30 Corporate Cir Ste 201
Albany, NY

Page 473 of 831

Boring Started: 05-16-2022

Boring Completed: 05-16-2022

Drill Rig: CME-750X

Driller: J. Lamm

Project No.: JB215020

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL JB215020 PORT OF ALBANY MA.GPJ TERRACON_DATATEMPLATE.GDT 6/7/22

BORING LOG NO. IT-12A

Page 1 of 1

PROJECT: Proposed Marmen Manufacturing Facility

CLIENT: McFarland Johnson
Saratoga Springs, NY

SITE: River Road
Glenmont, NY

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 42.6083° Longitude: -73.7665° Approximate Surface Elev.: 12.7 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	ORGANIC CONTENT (%)	WATER CONTENT (%)
		0.5 TOPSOIL 12+/-							
		2.0 FILL - SILT WITH SAND (ML) , organics and roots noted, brown 10.5+/-							
		4.0 FILL - SANDY SILT (ML) , brick noted, orange to brown 8.5+/-							
		SILTY SAND (SM) , mottled, shell fragments and rootlets noted, orange to brown 4.5+/-	5						
		8.0 Boring Terminated at 8 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Logged by: JCH
- 4" PVC infiltration test pipe set at depth of 4.0' alongside test boring

Abandonment Method:
Boring backfilled with excavation spoils upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

Approx. ground surface elev. furnished by client

WATER LEVEL OBSERVATIONS

No free water observed

Terracon

30 Corporate Cir Ste 201
Albany, NY

Page 474 of 831

Boring Started: 05-17-2022

Boring Completed: 05-17-2022

Drill Rig: Hand Auger

Driller: J. Lamm

Project No.: JB215020

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL JB215020 PORT OF ALBANY MA.GPJ TERRACON_DATATEMPLATE.GDT 6/7/22

Port of Albany Expansion Site
Infiltration Test Summary Table

Test #	Location				EG Elev. * (ft)	Test Depth (ft)	Test Elev.	Test Date	Results ** (in/hr)
	Northing	Easting	Lat	Long					
IT-1	1373126.03	690476.39	N042° 36' 00.83"	W073° 45' 47.69"	16.6	10.0	6.6	5/12/2022	1.7
IT-1A	1373285.45	690441.73	N042° 36' 02.41"	W073° 45' 48.14"	14.3	8.0	6.3	5/18/2022	1.7
IT-2	1373428.1	690427.42	N042° 36' 03.82"	W073° 45' 48.31"	15.3	9.0	6.3	5/12/2022	0
IT-3	1373669.92	690372.95	N042° 36' 06.21"	W073° 45' 49.01"	10.8	4.5	6.3	5/13/2022	0.2
IT-4	1373828.59	690333.82	N042° 36' 07.78"	W073° 45' 49.51"	12.8	6.5	6.3	5/12/2022	0.2
IT-5	1374016.28	690316.2	N042° 36' 09.64"	W073° 45' 49.73"	9.1	2.5	6.6	5/12/2022	-0.2
IT-6	1374286.56	690329.4	N042° 36' 12.31"	W073° 45' 49.52"	10.7	4.0	6.7	5/13/2022	0
IT-7	1374550.28	690339.68	N042° 36' 14.91"	W073° 45' 49.35"	9.6	3.0	6.6	5/13/2022	1.2
IT-7A	1374449.39	690328.11	N042° 36' 13.92"	W073° 45' 49.52"	11.2	5.0	6.2	5/18/2022	0.5
IT-8	1375558.9	690328.24	N042° 36' 24.88"	W073° 45' 49.39"	12.4	6.0	6.4	5/12/2022	2.6
IT-8A	1375555.8	690230.63	N042° 36' 24.86"	W073° 45' 50.69"	14.8	7.0	7.8	5/18/2022	0.4
IT-9	1375569.02	690181.72	N042° 36' 24.99"	W073° 45' 51.35"	13.6	7.0	6.6	5/13/2022	0.1
IT-10	1375581.89	689989.53	N042° 36' 25.13"	W073° 45' 53.91"	17.3	11.0	6.3	5/13/2022	1.2
IT-10A	1375579.21	690067.6	N042° 36' 25.10"	W073° 45' 52.87"	17.4	11.0	6.4	5/18/2022	0
IT-10B	1375586.34	689908.31	N042° 36' 25.18"	W073° 45' 55.00"	16.7	9.5	7.2	5/18/2022	0
IT-11	1375587.41	689824.53	N042° 36' 25.20"	W073° 45' 56.12"	15.4	9.0	6.4	5/12/2022	0.1
IT-12	1376092.03	689570.93	N042° 36' 30.21"	W073° 45' 59.45"	14.0	6.0	8.0	5/13/2022	0.5
IT-12A	1376065.55	689567.77	N042° 36' 29.95"	W073° 45' 59.50"	12.7	4.0	8.7	5/18/2022	8.6
IT-13	1376115.27	689572.99	N042° 36' 30.44"	W073° 45' 59.42"	14.6	6.5	8.1	5/13/2022	0.1
IT-14	1376905.51	689652.3	N042° 36' 38.24"	W073° 45' 58.27"	5.8	1.0	4.8	5/13/2022	12.4
IT-15	1376922.65	689655.08	N042° 36' 38.41"	W073° 45' 58.23"	5.8	1.0	4.8	5/13/2022	>24

* Note EG elevations may have changed from the tree clearing work.

** Represents result of final trial at each location.

INFILTRATION TEST RESULTS					
PROJECT: Proposed Marmen Manufacturing Facility			PROJECT NO. JB215020		
PROJECT LOCATION: t/o Bethlehem, NY			TEST DATE: May 12 and 13, 2022		
WEATHER: M. Sunny 70°-80° F			TESTER: J. Hutchison, et al.		
Test Location	Test Depth (feet)	Trial No.	Water Drop (ft)	Elapsed Time (min)	Infiltration Rate (inches/hour)
IT-1	10.0	1	0.12	60	1.4
		2	0.12	60	1.4
		3	0.15	60	1.8
		4	0.14	60	1.7
		NOTE: Infiltration rate during final trial run = 1.7 inches per hour			
IT-2	9.0	1	0.07	60	0.8
		2	0.00	60	0.0
		3	-	-	-
		4	-	-	-
		NOTE: Infiltration rate during final trial run = 0.0 inches per hour			
IT-3	4.5	1	0.02	60	0.2
		2	-	-	-
		3	-	-	-
		4	-	-	-
		NOTE: Infiltration rate during final trial run = 0.2 inches per hour			

Notes:

- 1) Testing was conducted in general accord with the "Infiltration Testing Requirements" outlined in Appendix D of the New York State Stormwater Management Design Manual.
- 2) Infiltration tests were located alongside companion test borings numbered correspondingly.

SOIL CLASSIFICATION AT TEST DEPTH

Test Location IT-1 – Fill (coal ash w/ crushed stone and slag)

Test Location IT-2 – Sandy silt (ML)

Test Location IT-3 – Silt (ML)

INFILTRATION TEST RESULTS					
PROJECT: Proposed Marmen Manufacturing Facility			PROJECT NO. JB215020		
PROJECT LOCATION: t/o Bethlehem, NY			TEST DATE: May 12 and 13, 2022		
WEATHER: M. Sunny 70°-80° F			TESTER: J. Hutchison, et al.		
Test Location	Test Depth (feet)	Trial No.	Water Drop (ft)	Elapsed Time (min)	Infiltration Rate (inches/hour)
IT-4	6.5	1	0.06	60	0.7
		2	0.02	60	0.2
		3	-	-	-
		4	-	-	-
		NOTE: Infiltration rate during final trial run = 0.2 inches per hour			
IT-5	2.5	1	0.02	60	0.8
		2	-0.02	60	-0.2
		3	-	-	-
		4	-	-	-
		NOTE: Infiltration rate during final trial run = -0.2 inches per hour			
IT-6	4.0	1	0.00	60	0.0
		2	-	-	-
		3	-	-	-
		4	-	-	-
		NOTE: Infiltration rate during final trial run = 0.0 inches per hour			

Notes:

- 1) Testing was conducted in general accord with the "Infiltration Testing Requirements" outlined in Appendix D of the New York State Stormwater Management Design Manual.
- 2) Infiltration tests were located alongside companion test borings numbered correspondingly.

SOIL CLASSIFICATION AT TEST DEPTH

Test Location IT-4 – Silt and clay (CL-ML)

Test Location IT-5 – Silt (ML)

Test Location IT-6 – Silt w/ sand (ML)

INFILTRATION TEST RESULTS					
PROJECT: Proposed Marmen Manufacturing Facility			PROJECT NO. JB215020		
PROJECT LOCATION: t/o Bethlehem, NY			TEST DATE: May 12 and 13, 2022		
WEATHER: M. Sunny 70°-80° F			TESTER: J. Hutchison, et al.		
Test Location	Test Depth (feet)	Trial No.	Water Drop (ft)	Elapsed Time (min)	Infiltration Rate (inches/hour)
IT-7	3.0	1	0.14	60	1.7
		2	0.22	60	2.6
		3	0.10	60	1.2
		4	-	-	-
		NOTE: Infiltration rate during final trial run = 1.2 inches per hour			
IT-8	6.0	1	0.29	60	3.5
		2	0.23	60	2.8
		3	0.23	60	2.8
		4	0.22	60	2.6
		NOTE: Infiltration rate during final trial run = 2.6 inches per hour			
IT-9	7.0	1	0.01	60	0.1
		2	0.01	60	0.1
		3	0.01	60	0.1
		4	0.01	60	0.1
		NOTE: Infiltration rate during final trial run = 0.1 inches per hour			

Notes:

- 1) Testing was conducted in general accord with the "Infiltration Testing Requirements" outlined in Appendix D of the New York State Stormwater Management Design Manual.
- 2) Infiltration tests were located alongside companion test borings numbered correspondingly.

SOIL CLASSIFICATION AT TEST DEPTH

Test Location IT-7 – Silt (ML)

Test Location IT-8 – Silty sand (SM)

Test Location IT-9 – Silt with sand (ML)