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ALLEN & MAJOR ASSOCIATES, INC.

January 7, 2026

Town of Hingham Planning Board
c/o Emily Wentworth
Community Planning Director
210 Central Street
Hingham, MA 02043

A&M Project #: 1179-20A
Re: Office Building
55 Industrial Park Road
Hingham, MA

Dear Ms. Wentworht, Chair Shriver, and members of the Board,

Allen & Major (A&M) has prepared this letter providing a summary of drainage calculations associated with the request for a modification to the Site Plan Review and A3 Special permit at 55 Industrial Park Road.

The summary below is intended to supersede the related portion of Section 1 of the Drainage Report Narrative submitted with the original applications and reviewed by the Town's consultant. The drainage design is as shown on the Site Development Drawings as submitted for review.

Proposed Conditions

The stormwater runoff analysis of the existing and proposed conditions includes an estimate of the peak rate of runoff from various rainfall events. Peak runoff rates were developed using TR55 Urban Hydrology for Small Watersheds, developed by the U.S. Department of Commerce, Engineering Division and the HydroCAD computer program. Further, the analysis has been prepared in accordance with the MassDEP and the town of Hingham requirements and standard engineering practices. The peak rate of runoff has been estimated for each watershed during the 2, 10, and 100-year storm events.

The proposed stormwater management system for the site consists of catch basins, drain manholes, roof drains, underground piping, and underground infiltration chambers. These systems have been designed in accordance with the MA DEP Stormwater Management Policy to recharge groundwater and reduce rate of runoff from the parcel. The existing stormwater basins onsite are to be removed. The existing underground chambers will be retained for future use if the banked parking is constructed.

Study Point #1 has an infiltration chamber system. All of these systems are designed to retain and infiltrate stormwater. Overflow from these systems is directed towards the wetlands area that is modeled as Study Point 1.

The stormwater runoff model indicates that the proposed site development reduces the rate of runoff during all storm events at the identified points of analysis. The following table provide a summary of the estimated peak rate, in Cubic Feet per Second (CFS) and total runoff volume, in cubic-feet (CF) at the Study Point for each of the design storm events.

Peak Flow Rates

Study Point #1 (Flow to Wetland Boundary)

	2-Year 3.24 inches	10-Year 4.90 inches	100-Year 8.92 inches
Existing Runoff (CFS)	1.65	5.00	10.72
Proposed Runoff (CFS)	1.63	5.00	10.48
% REDUCTION	1.2%	0%	2.2%

Total Volumes

Study Point #1 (Flow to Wetland Boundary)

	2-Year 3.24 inches	10-Year 4.90 inches	100-Year 8.92 inches
Existing Runoff (CF)	7,787	18,321	38,648
Proposed Runoff (CF)	6,733	17,335	38,167
% REDUCTION	13.5%	5.4%	1.2%

A&M has also revised the applicable Drainage calculation sheets to confirm compliance with the Massachusetts Stormwater Handbook for Required Recharge Volume and Drawdown time per the attached.

If you have any additional questions, or require additional information, please contact my office.

Very Truly Yours,

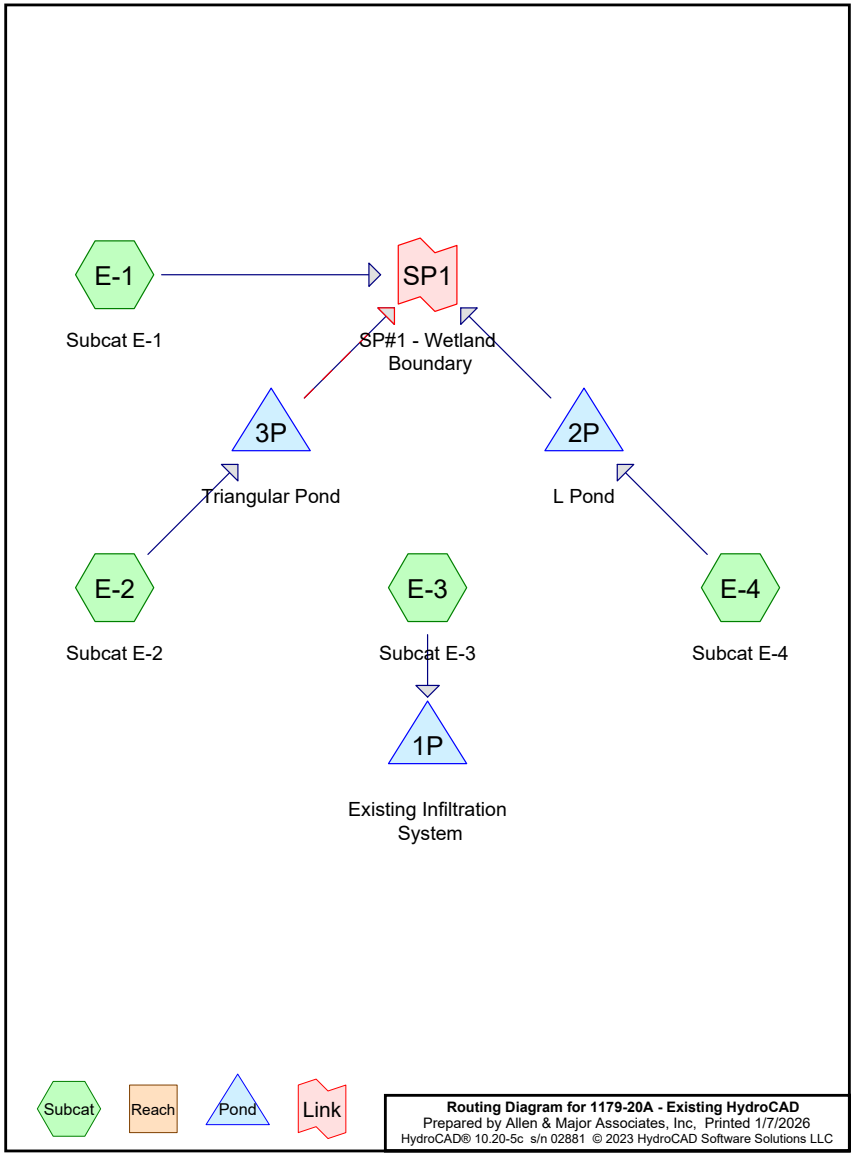
ALLEN & MAJOR ASSOCIATES, INC.

Digitally signed by Philip Cordeiro
Date: 2026.01.07 14:34:36-05'00'

Philip Cordeiro, P.E.
Branch Manager

Enclosure Existing HydroCAD Analysis, dated January 7, 2026
Existing Watershed Plan
Proposed HydroCAD Analysis, dated January 7, 2026
Proposed Watershed Plan
DEP Standard Calc, dated January 7, 2026

cc: File



Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
16,675	61	>75% Grass cover, Good, HSG B (E-1, E-2, E-4)
32,452	98	Paved parking, HSG B (E-1, E-2, E-4)
11,479	98	Roofs, HSG B (E-1, E-2, E-3)
57,780	55	Woods, Good, HSG B (E-1, E-2, E-4)

Summary for Subcatchment E-1: Subcat E-1

Runoff = 1.20 cfs @ 12.20 hrs, Volume= 5,247 cf, Depth= 0.87"
Routed to Link SP1 : SP#1 - Wetland Boundary

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.36"

Area (sf)	CN	Description
11,374	61	>75% Grass cover, Good, HSG B
17,153	98	Paved parking, HSG B
4,119	98	Roofs, HSG B
39,628	55	Woods, Good, HSG B
72,274	69	Weighted Average
51,002		70.57% Pervious Area
21,272		29.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	50	0.0400	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.28"
3.0	178	0.0400	1.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	36	0.0300	3.52		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.2	27	0.1000	2.21		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
12.6	291	Total			

Summary for Subcatchment E-2: Subcat E-2

Runoff = 1.08 cfs @ 12.16 hrs, Volume= 3,997 cf, Depth= 1.67"
Routed to Pond 3P : Triangular Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.36"

Area (sf)	CN	Description
2,960	61	>75% Grass cover, Good, HSG B
14,056	98	Paved parking, HSG B
3,329	98	Roofs, HSG B
8,415	55	Woods, Good, HSG B
28,760	82	Weighted Average
11,375		39.55% Pervious Area
17,385		60.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0500	0.10		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.28"
1.2	83	0.0500	1.12		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.4	172	0.0100	2.03		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.0	15	0.0200	6.42	5.04	**Pipe Channel, D-E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.0	8	0.0500	3.35		**Shallow Concentrated Flow, E-F** Grassed Waterway Kv= 15.0 fps
11.0	328	Total			

Summary for Subcatchment E-3: Subcat E-3

Runoff = 0.30 cfs @ 12.09 hrs, Volume= 1,050 cf, Depth= 3.13"
Routed to Pond 1P : Existing Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.36"

Area (sf)	CN	Description
4,031	98	Roofs, HSG B
4,031		100.00% Impervious Area

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

Summary for Subcatchment E-4: Subcat E-4

Runoff = 0.10 cfs @ 12.17 hrs, Volume= 525 cf, Depth= 0.47"
Routed to Pond 2P : L Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.36"

Area (sf)	CN	Description
2,342	61	>75% Grass cover, Good, HSG B
1,243	98	Paved parking, HSG B
9,737	55	Woods, Good, HSG B
13,322	60	Weighted Average
12,079		90.67% Pervious Area
1,243		9.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	50	0.1200	0.14		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.28"
0.5	30	0.0333	0.91		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.2	20	0.0500	1.57		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.5	20	0.0010	0.64		**Shallow Concentrated Flow, D-E** Paved Kv= 20.3 fps
1.1	80	0.0300	1.21		**Shallow Concentrated Flow, E-F** Short Grass Pasture Kv= 7.0 fps
8.2	200	Total			

Summary for Pond 1P: Existing Infiltration System

Inflow Area = 4,031 sf,100.00% Impervious, Inflow Depth = 3.13" for 2-Year event
Inflow = 0.30 cfs @ 12.09 hrs, Volume= 1,050 cf
Outflow = 0.02 cfs @ 11.05 hrs, Volume= 1,050 cf, Atten= 93%, Lag= 0.0 min
Discarded = 0.02 cfs @ 11.05 hrs, Volume= 1,050 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 148.24' @ 13.41 hrs Surf.Area= 863 sf Storage= 422 cf

Plug-Flow detention time= 161.8 min calculated for 1,049 cf (100% of inflow)
Center-of-Mass det. time= 161.6 min (917.0 - 755.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	147.40'	689 cf	**19.17'W x 45.00'L x 3.21'H Field A** 2,767 cf Overall - 1,044 cf Embedded = 1,723 cf x 40.0% Voids
#2A	147.90'	1,044 cf	**Cultec R-280HD** x 24 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 4 rows
		1,733 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	147.40'	**1.020 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.02 cfs @ 11.05 hrs HW=147.43' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Pond 1P: Existing Infiltration System - Chamber Wizard Field A

Chamber Model = Cultec R-280HD (Cultec Recharger® 280HD)
Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf
Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap
Row Length Adjustment= +1.00' x 6.07 sf x 4 rows

47.0" Wide + 6.0" Spacing = 53.0" C-C Row Spacing

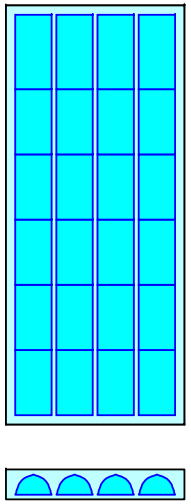
6 Chambers/Row x 7.00' Long +1.00' Row Adjustment = 43.00' Row Length +12.0" End Stone x 2 = 45.00' Base Length
4 Rows x 47.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 19.17' Base Width
6.0" Stone Base + 26.5" Chamber Height + 6.0" Stone Cover = 3.21' Field Height

24 Chambers x 42.5 cf +1.00' Row Adjustment x 6.07 sf x 4 Rows = 1,044.3 cf Chamber Storage

2,767.2 cf Field - 1,044.3 cf Chambers = 1,722.8 cf Stone x 40.0% Voids = 689.1 cf Stone Storage

Chamber Storage + Stone Storage = 1,733.5 cf = 0.040 af
Overall Storage Efficiency = 62.6%
Overall System Size = 45.00' x 19.17' x 3.21'

24 Chambers
102.5 cy Field
63.8 cy Stone



Summary for Pond 2P: L Pond

Inflow Area = 13,322 sf, 9.33% Impervious, Inflow Depth = 0.47" for 2-Year event
Inflow = 0.10 cfs @ 12.17 hrs, Volume= 525 cf
Outflow = 0.02 cfs @ 14.51 hrs, Volume= 525 cf, Atten= 85%, Lag= 140.9 min
Discarded = 0.02 cfs @ 14.51 hrs, Volume= 525 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link SP1 : SP#1 - Wetland Boundary

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 148.32' @ 14.51 hrs Surf.Area= 637 sf Storage= 163 cf

Plug-Flow detention time= 125.5 min calculated for 525 cf (100% of inflow)
Center-of-Mass det. time= 125.4 min (1,041.3 - 915.9)

Volume	Invert	Avail.Storage	Storage Description
#1	148.00'	1,674 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
148.00	369	0	0
149.00	1,197	783	783
149.50	1,667	716	1,499
149.60	1,837	175	1,674

Device	Routing	Invert	Outlet Devices
#1	Discarded	148.00'	**1.020 in/hr Exfiltration over Surface area**
#2	Primary	149.50'	**5.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.02 cfs @ 14.51 hrs HW=148.32' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.00' (Free Discharge)
↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 3P: Triangular Pond

Inflow Area = 28,760 sf, 60.45% Impervious, Inflow Depth = 1.67" for 2-Year event
Inflow = 1.08 cfs @ 12.16 hrs, Volume= 3,997 cf
Outflow = 0.56 cfs @ 12.40 hrs, Volume= 3,890 cf, Atten= 48%, Lag= 14.7 min
Discarded = 0.03 cfs @ 12.40 hrs, Volume= 1,350 cf
Primary = 0.53 cfs @ 12.40 hrs, Volume= 2,540 cf
Routed to Link SP1 : SP#1 - Wetland Boundary
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link SP1 : SP#1 - Wetland Boundary

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 147.66' @ 12.40 hrs Surf.Area= 1,156 sf Storage= 1,190 cf

Plug-Flow detention time= 165.4 min calculated for 3,890 cf (97% of inflow)
Center-of-Mass det. time= 150.1 min (988.6 - 838.5)

Volume	Invert	Avail.Storage	Storage Description
#1	145.10'	1,767 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.10	1	0	0
146.00	232	105	105
147.00	709	471	575
148.00	1,388	1,049	1,624
148.10	1,467	143	1,767

Device	Routing	Invert	Outlet Devices
#1	Discarded	145.10'	**1.020 in/hr Exfiltration over Surface area**
#2	Primary	147.00'	**6.0" Round Culvert** L= 30.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 147.00' / 145.00' S= 0.0667 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Secondary	148.00'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.03 cfs @ 12.40 hrs HW=147.66' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.53 cfs @ 12.40 hrs HW=147.66' (Free Discharge)
↑**2=Culvert** (Inlet Controls 0.53 cfs @ 2.72 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.10' (Free Discharge)
↑**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link SP1: SP#1 - Wetland Boundary

Inflow Area = 114,356 sf, 34.89% Impervious, Inflow Depth = 0.82" for 2-Year event
Inflow = 1.65 cfs @ 12.22 hrs, Volume= 7,787 cf
Primary = 1.65 cfs @ 12.22 hrs, Volume= 7,787 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Summary for Subcatchment E-1: Subcat E-1

Runoff = 3.10 cfs @ 12.19 hrs, Volume= 12,317 cf, Depth= 2.05"
Routed to Link SP1 : SP#1 - Wetland Boundary

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.12"

Area (sf)	CN	Description
11,374	61	>75% Grass cover, Good, HSG B
17,153	98	Paved parking, HSG B
4,119	98	Roofs, HSG B
39,628	55	Woods, Good, HSG B
72,274	69	Weighted Average
51,002		70.57% Pervious Area
21,272		29.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	50	0.0400	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.28"
3.0	178	0.0400	1.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	36	0.0300	3.52		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.2	27	0.1000	2.21		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
12.6	291	Total			

Summary for Subcatchment E-2: Subcat E-2

Runoff = 2.07 cfs @ 12.15 hrs, Volume= 7,637 cf, Depth= 3.19"
Routed to Pond 3P : Triangular Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.12"

Area (sf)	CN	Description
2,960	61	>75% Grass cover, Good, HSG B
14,056	98	Paved parking, HSG B
3,329	98	Roofs, HSG B
8,415	55	Woods, Good, HSG B
28,760	82	Weighted Average
11,375		39.55% Pervious Area
17,385		60.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0500	0.10		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.28"
1.2	83	0.0500	1.12		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.4	172	0.0100	2.03		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.0	15	0.0200	6.42	5.04	**Pipe Channel, D-E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.0	8	0.0500	3.35		**Shallow Concentrated Flow, E-F** Grassed Waterway Kv= 15.0 fps
11.0	328	Total			

Summary for Subcatchment E-3: Subcat E-3

Runoff = 0.45 cfs @ 12.09 hrs, Volume= 1,640 cf, Depth= 4.88"
Routed to Pond 1P : Existing Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.12"

Area (sf)	CN	Description
4,031	98	Roofs, HSG B
4,031		100.00% Impervious Area

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

Summary for Subcatchment E-4: Subcat E-4

Runoff = 0.40 cfs @ 12.13 hrs, Volume= 1,523 cf, Depth= 1.37"
Routed to Pond 2P : L Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.12"

Area (sf)	CN	Description
2,342	61	>75% Grass cover, Good, HSG B
1,243	98	Paved parking, HSG B
9,737	55	Woods, Good, HSG B
13,322	60	Weighted Average
12,079		90.67% Pervious Area
1,243		9.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	50	0.1200	0.14		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.28"
0.5	30	0.0333	0.91		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.2	20	0.0500	1.57		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.5	20	0.0010	0.64		**Shallow Concentrated Flow, D-E** Paved Kv= 20.3 fps
1.1	80	0.0300	1.21		**Shallow Concentrated Flow, E-F** Short Grass Pasture Kv= 7.0 fps
8.2	200	Total			

Summary for Pond 1P: Existing Infiltration System

Inflow Area = 4,031 sf,100.00% Impervious, Inflow Depth = 4.88" for 10-Year event
Inflow = 0.45 cfs @ 12.09 hrs, Volume= 1,640 cf
Outflow = 0.02 cfs @ 9.85 hrs, Volume= 1,640 cf, Atten= 96%, Lag= 0.0 min
Discarded = 0.02 cfs @ 9.85 hrs, Volume= 1,640 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 148.75' @ 14.64 hrs Surf.Area= 863 sf Storage= 783 cf

Plug-Flow detention time= 321.2 min calculated for 1,638 cf (100% of inflow)
Center-of-Mass det. time= 321.2 min (1,068.8 - 747.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	147.40'	689 cf	**19.17'W x 45.00'L x 3.21'H Field A** 2,767 cf Overall - 1,044 cf Embedded = 1,723 cf x 40.0% Voids
#2A	147.90'	1,044 cf	**Cultec R-280HD** x 24 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 4 rows
		1,733 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	147.40'	**1.020 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.02 cfs @ 9.85 hrs HW=147.43' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Pond 1P: Existing Infiltration System - Chamber Wizard Field A

Chamber Model = Cultec R-280HD (Cultec Recharger® 280HD)
Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf
Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap
Row Length Adjustment= +1.00' x 6.07 sf x 4 rows

47.0" Wide + 6.0" Spacing = 53.0" C-C Row Spacing

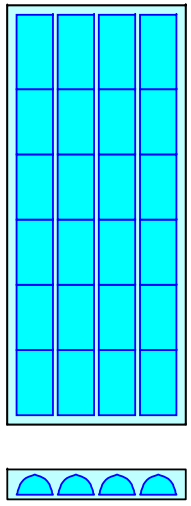
6 Chambers/Row x 7.00' Long +1.00' Row Adjustment = 43.00' Row Length +12.0" End Stone x 2 = 45.00' Base Length
4 Rows x 47.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 19.17' Base Width
6.0" Stone Base + 26.5" Chamber Height + 6.0" Stone Cover = 3.21' Field Height

24 Chambers x 42.5 cf +1.00' Row Adjustment x 6.07 sf x 4 Rows = 1,044.3 cf Chamber Storage

2,767.2 cf Field - 1,044.3 cf Chambers = 1,722.8 cf Stone x 40.0% Voids = 689.1 cf Stone Storage

Chamber Storage + Stone Storage = 1,733.5 cf = 0.040 af
Overall Storage Efficiency = 62.6%
Overall System Size = 45.00' x 19.17' x 3.21'

24 Chambers
102.5 cy Field
63.8 cy Stone



Summary for Pond 2P: L Pond

Inflow Area = 13,322 sf, 9.33% Impervious, Inflow Depth = 1.37" for 10-Year event
Inflow = 0.40 cfs @ 12.13 hrs, Volume= 1,523 cf
Outflow = 0.03 cfs @ 15.52 hrs, Volume= 1,523 cf, Atten= 93%, Lag= 203.3 min
Discarded = 0.03 cfs @ 15.52 hrs, Volume= 1,523 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link SP1 : SP#1 - Wetland Boundary

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 148.98' @ 15.52 hrs Surf.Area= 1,179 sf Storage= 757 cf

Plug-Flow detention time= 346.2 min calculated for 1,523 cf (100% of inflow)
Center-of-Mass det. time= 346.0 min (1,221.7 - 875.7)

Volume	Invert	Avail.Storage	Storage Description
#1	148.00'	1,674 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
148.00	369	0	0
149.00	1,197	783	783
149.50	1,667	716	1,499
149.60	1,837	175	1,674

Device	Routing	Invert	Outlet Devices
#1	Discarded	148.00'	**1.020 in/hr Exfiltration over Surface area**
#2	Primary	149.50'	**5.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.03 cfs @ 15.52 hrs HW=148.98' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.00' (Free Discharge)
↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 3P: Triangular Pond

Inflow Area = 28,760 sf, 60.45% Impervious, Inflow Depth = 3.19" for 10-Year event
Inflow = 2.07 cfs @ 12.15 hrs, Volume= 7,637 cf
Outflow = 2.20 cfs @ 12.25 hrs, Volume= 7,522 cf, Atten= 0%, Lag= 5.5 min
Discarded = 0.03 cfs @ 12.23 hrs, Volume= 1,518 cf
Primary = 0.83 cfs @ 12.25 hrs, Volume= 5,410 cf
Routed to Link SP1 : SP#1 - Wetland Boundary
Secondary = 1.34 cfs @ 12.25 hrs, Volume= 594 cf
Routed to Link SP1 : SP#1 - Wetland Boundary

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 148.23' @ 12.25 hrs Surf.Area= 1,467 sf Storage= 1,767 cf

Plug-Flow detention time= 100.3 min calculated for 7,511 cf (98% of inflow)
Center-of-Mass det. time= 92.1 min (912.0 - 819.9)

Volume	Invert	Avail.Storage	Storage Description
#1	145.10'	1,767 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.10	1	0	0
146.00	232	105	105
147.00	709	471	575
148.00	1,388	1,049	1,624
148.10	1,467	143	1,767

Device	Routing	Invert	Outlet Devices
#1	Discarded	145.10'	**1.020 in/hr Exfiltration over Surface area**
#2	Primary	147.00'	**6.0" Round Culvert** L= 30.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 147.00' / 145.00' S= 0.0667 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Secondary	148.00'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.03 cfs @ 12.23 hrs HW=148.18' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.82 cfs @ 12.25 hrs HW=148.22' (Free Discharge)
2=Culvert (Inlet Controls 0.82 cfs @ 4.19 fps)

Secondary OutFlow Max=1.27 cfs @ 12.25 hrs HW=148.23' (Free Discharge)
3=Broad-Crested Rectangular Weir (Weir Controls 1.27 cfs @ 1.12 fps)

Summary for Link SP1: SP#1 - Wetland Boundary

Inflow Area = 114,356 sf, 34.89% Impervious, Inflow Depth = 1.92" for 10-Year event
Inflow = 5.00 cfs @ 12.24 hrs, Volume= 18,321 cf
Primary = 5.00 cfs @ 12.24 hrs, Volume= 18,321 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Summary for Subcatchment E-1: Subcat E-1

Runoff = 6.65 cfs @ 12.18 hrs, Volume= 25,839 cf, Depth= 4.29"
Routed to Link SP1 : SP#1 - Wetland Boundary

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.93"

Area (sf)	CN	Description
11,374	61	>75% Grass cover, Good, HSG B
17,153	98	Paved parking, HSG B
4,119	98	Roofs, HSG B
39,628	55	Woods, Good, HSG B
72,274	69	Weighted Average
51,002		70.57% Pervious Area
21,272		29.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	50	0.0400	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.28"
3.0	178	0.0400	1.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	36	0.0300	3.52		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.2	27	0.1000	2.21		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
12.6	291	Total			

Summary for Subcatchment E-2: Subcat E-2

Runoff = 3.69 cfs @ 12.15 hrs, Volume= 13,885 cf, Depth= 5.79"
Routed to Pond 3P : Triangular Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.93"

Area (sf)	CN	Description
2,960	61	>75% Grass cover, Good, HSG B
14,056	98	Paved parking, HSG B
3,329	98	Roofs, HSG B
8,415	55	Woods, Good, HSG B
28,760	82	Weighted Average
11,375		39.55% Pervious Area
17,385		60.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0500	0.10		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.28"
1.2	83	0.0500	1.12		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.4	172	0.0100	2.03		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.0	15	0.0200	6.42	5.04	**Pipe Channel, D-E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.0	8	0.0500	3.35		**Shallow Concentrated Flow, E-F** Grassed Waterway Kv= 15.0 fps
11.0	328	Total			

Summary for Subcatchment E-3: Subcat E-3

Runoff = 0.70 cfs @ 12.09 hrs, Volume= 2,583 cf, Depth= 7.69"
Routed to Pond 1P : Existing Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.93"

Area (sf)	CN	Description
4,031	98	Roofs, HSG B
4,031		100.00% Impervious Area

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

Summary for Subcatchment E-4: Subcat E-4

Runoff = 1.06 cfs @ 12.12 hrs, Volume= 3,642 cf, Depth= 3.28"
Routed to Pond 2P : L Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.93"

Area (sf)	CN	Description
2,342	61	>75% Grass cover, Good, HSG B
1,243	98	Paved parking, HSG B
9,737	55	Woods, Good, HSG B
13,322	60	Weighted Average
12,079		90.67% Pervious Area
1,243		9.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	50	0.1200	0.14		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.28"
0.5	30	0.0333	0.91		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.2	20	0.0500	1.57		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.5	20	0.0010	0.64		**Shallow Concentrated Flow, D-E** Paved Kv= 20.3 fps
1.1	80	0.0300	1.21		**Shallow Concentrated Flow, E-F** Short Grass Pasture Kv= 7.0 fps
8.2	200	Total			

Summary for Pond 1P: Existing Infiltration System

Inflow Area = 4,031 sf,100.00% Impervious, Inflow Depth = 7.69" for 100-Year event
Inflow = 0.70 cfs @ 12.09 hrs, Volume= 2,583 cf
Outflow = 0.02 cfs @ 8.50 hrs, Volume= 2,271 cf, Atten= 97%, Lag= 0.0 min
Discarded = 0.02 cfs @ 8.50 hrs, Volume= 2,271 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 149.87' @ 15.96 hrs Surf.Area= 863 sf Storage= 1,470 cf

Plug-Flow detention time= 541.8 min calculated for 2,271 cf (88% of inflow)
Center-of-Mass det. time= 484.5 min (1,225.8 - 741.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	147.40'	689 cf	**19.17'W x 45.00'L x 3.21'H Field A** 2,767 cf Overall - 1,044 cf Embedded = 1,723 cf x 40.0% Voids
#2A	147.90'	1,044 cf	**Cultec R-280HD** x 24 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 4 rows
		1,733 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	147.40'	**1.020 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.02 cfs @ 8.50 hrs HW=147.43' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Pond 1P: Existing Infiltration System - Chamber Wizard Field A

Chamber Model = Cultec R-280HD (Cultec Recharger® 280HD)
Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf
Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap
Row Length Adjustment= +1.00' x 6.07 sf x 4 rows

47.0" Wide + 6.0" Spacing = 53.0" C-C Row Spacing

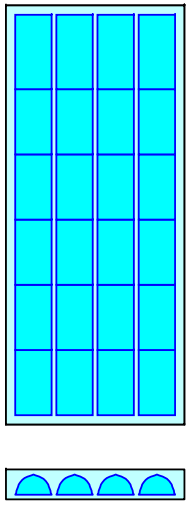
6 Chambers/Row x 7.00' Long +1.00' Row Adjustment = 43.00' Row Length +12.0" End Stone x 2 = 45.00' Base Length
4 Rows x 47.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 19.17' Base Width
6.0" Stone Base + 26.5" Chamber Height + 6.0" Stone Cover = 3.21' Field Height

24 Chambers x 42.5 cf +1.00' Row Adjustment x 6.07 sf x 4 Rows = 1,044.3 cf Chamber Storage

2,767.2 cf Field - 1,044.3 cf Chambers = 1,722.8 cf Stone x 40.0% Voids = 689.1 cf Stone Storage

Chamber Storage + Stone Storage = 1,733.5 cf = 0.040 af
Overall Storage Efficiency = 62.6%
Overall System Size = 45.00' x 19.17' x 3.21'

24 Chambers
102.5 cy Field
63.8 cy Stone



Summary for Pond 2P: L Pond

Inflow Area = 13,322 sf, 9.33% Impervious, Inflow Depth = 3.28" for 100-Year event
Inflow = 1.06 cfs @ 12.12 hrs, Volume= 3,642 cf
Outflow = 0.21 cfs @ 12.63 hrs, Volume= 3,517 cf, Atten= 80%, Lag= 30.6 min
Discarded = 0.04 cfs @ 12.63 hrs, Volume= 2,762 cf
Primary = 0.17 cfs @ 12.63 hrs, Volume= 755 cf
Routed to Link SP1 : SP#1 - Wetland Boundary

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 149.56' @ 12.63 hrs Surf.Area= 1,763 sf Storage= 1,595 cf

Plug-Flow detention time= 379.3 min calculated for 3,512 cf (96% of inflow)
Center-of-Mass det. time= 360.8 min (1,209.5 - 848.7)

Volume	Invert	Avail.Storage	Storage Description
#1	148.00'	1,674 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
148.00	369	0	0
149.00	1,197	783	783
149.50	1,667	716	1,499
149.60	1,837	175	1,674

Device	Routing	Invert	Outlet Devices
#1	Discarded	148.00'	**1.020 in/hr Exfiltration over Surface area**
#2	Primary	149.50'	**5.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.04 cfs @ 12.63 hrs HW=149.56' (Free Discharge)
↑└**1=Exfiltration** (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.17 cfs @ 12.63 hrs HW=149.56' (Free Discharge)
↑└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.17 cfs @ 0.60 fps)

Summary for Pond 3P: Triangular Pond

Inflow Area = 28,760 sf, 60.45% Impervious, Inflow Depth = 5.79" for 100-Year event
Inflow = 3.69 cfs @ 12.15 hrs, Volume= 13,885 cf
Outflow = 4.10 cfs @ 12.20 hrs, Volume= 13,764 cf, Atten= 0%, Lag= 2.9 min
Discarded = 0.03 cfs @ 12.05 hrs, Volume= 1,710 cf
Primary = 0.89 cfs @ 12.20 hrs, Volume= 9,067 cf
Routed to Link SP1 : SP#1 - Wetland Boundary
Secondary = 3.17 cfs @ 12.20 hrs, Volume= 2,986 cf
Routed to Link SP1 : SP#1 - Wetland Boundary

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 148.40' @ 12.20 hrs Surf.Area= 1,467 sf Storage= 1,767 cf

Plug-Flow detention time= 64.3 min calculated for 13,745 cf (99% of inflow)
Center-of-Mass det. time= 59.8 min (862.8 - 803.1)

Volume	Invert	Avail.Storage	Storage Description
#1	145.10'	1,767 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.10	1	0	0
146.00	232	105	105
147.00	709	471	575
148.00	1,388	1,049	1,624
148.10	1,467	143	1,767

Device	Routing	Invert	Outlet Devices
#1	Discarded	145.10'	**1.020 in/hr Exfiltration over Surface area**
#2	Primary	147.00'	**6.0" Round Culvert** L= 30.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 147.00' / 145.00' S= 0.0667 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Secondary	148.00'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.03 cfs @ 12.05 hrs HW=148.19' (Free Discharge)
↑└**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

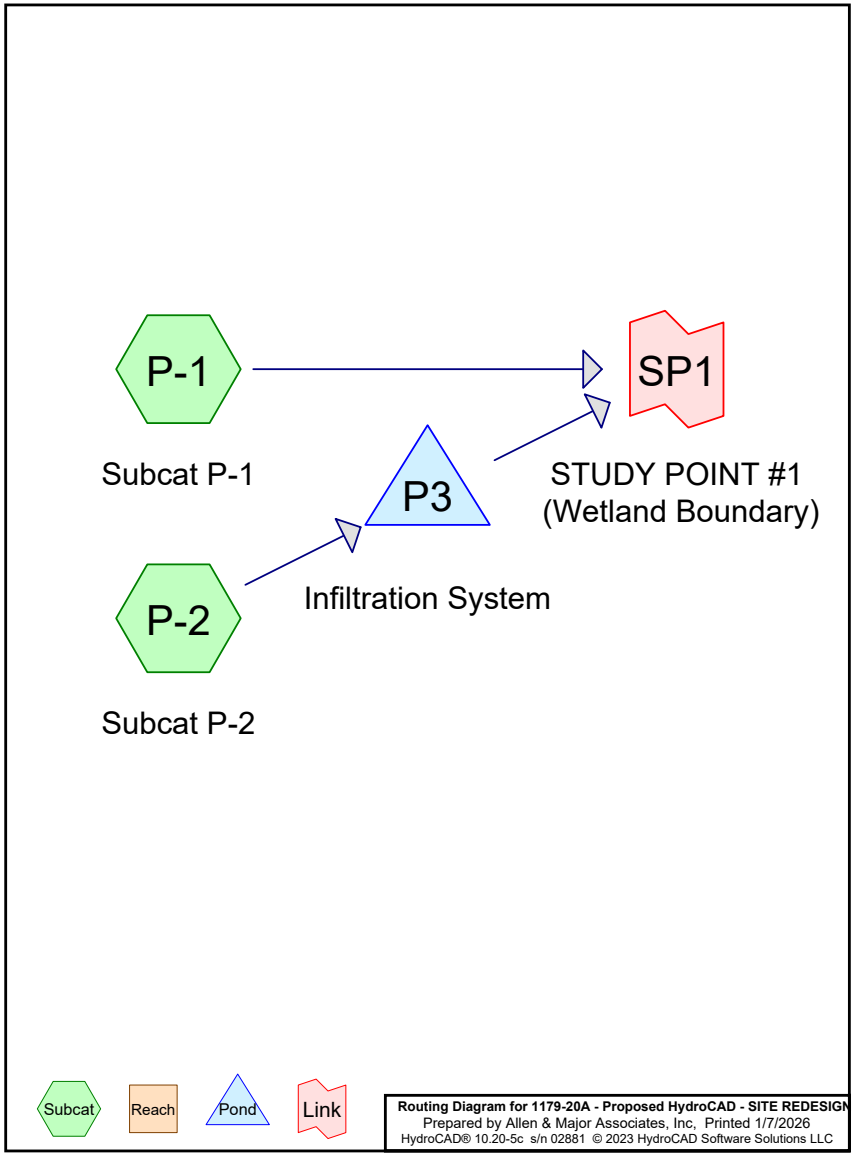
Primary OutFlow Max=0.89 cfs @ 12.20 hrs HW=148.40' (Free Discharge)
↑└**2=Culvert** (Inlet Controls 0.89 cfs @ 4.56 fps)

Secondary OutFlow Max=3.17 cfs @ 12.20 hrs HW=148.40' (Free Discharge)
↑└**3=Broad-Crested Rectangular Weir** (Weir Controls 3.17 cfs @ 1.58 fps)

Summary for Link SP1: SP#1 - Wetland Boundary

Inflow Area = 114,356 sf, 34.89% Impervious, Inflow Depth = 4.06" for 100-Year event
Inflow = 10.72 cfs @ 12.19 hrs, Volume= 38,648 cf
Primary = 10.72 cfs @ 12.19 hrs, Volume= 38,648 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs



Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
40,746	61	>75% Grass cover, Good, HSG B (P-1, P-2)
17,734	98	Paved parking, HSG B (P-1, P-2)
11,815	98	Roofs, HSG B (P-1, P-2)
48,091	55	Woods, Good, HSG B (P-1, P-2)

Summary for Subcatchment P-1: Subcat P-1

Runoff = 0.70 cfs @ 12.21 hrs, Volume= 3,876 cf, Depth= 0.51"
Routed to Link SP1 : STUDY POINT #1 (Wetland Boundary)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.36"

Area (sf)	CN	Description
37,074	61	>75% Grass cover, Good, HSG B
7,267	98	Paved parking, HSG B
12	98	Roofs, HSG B
46,632	55	Woods, Good, HSG B
90,985	61	Weighted Average
83,706		92.00% Pervious Area
7,279		8.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	50	0.0800	0.12		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.28"
0.6	45	0.0666	1.29		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
2.9	145	0.0138	0.82		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.6	121	0.0270	3.34		**Shallow Concentrated Flow, D-E** Paved Kv= 20.3 fps
0.0	24	0.5100	32.40	25.44	**Pipe Channel, E-F** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
11.1	385	Total			

Summary for Subcatchment P-2: Subcat P-2

Runoff = 1.70 cfs @ 12.09 hrs, Volume= 5,500 cf, Depth= 2.41"
Routed to Pond P3 : Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.36"

Area (sf)	CN	Description
3,672	61	>75% Grass cover, Good, HSG B
10,467	98	Paved parking, HSG B
11,803	98	Roofs, HSG B
1,459	55	Woods, Good, HSG B
27,401	91	Weighted Average
5,131		18.73% Pervious Area
22,270		81.27% Impervious Area

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

Summary for Pond P3: Infiltration System

Inflow Area = 27,401 sf, 81.27% Impervious, Inflow Depth = 2.41" for 2-Year event
Inflow = 1.70 cfs @ 12.09 hrs, Volume= 5,500 cf
Outflow = 0.96 cfs @ 12.22 hrs, Volume= 5,500 cf, Atten= 44%, Lag= 8.0 min
Discarded = 0.03 cfs @ 9.15 hrs, Volume= 2,643 cf
Primary = 0.93 cfs @ 12.22 hrs, Volume= 2,857 cf
Routed to Link SP1 : STUDY POINT #1 (Wetland Boundary)

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 147.47' @ 12.22 hrs Surf.Area= 1,260 sf Storage= 1,764 cf
Flood Elev= 148.95' Surf.Area= 1,260 sf Storage= 2,557 cf

Plug-Flow detention time= 192.7 min calculated for 5,500 cf (100% of inflow)
Center-of-Mass det. time= 192.6 min (993.3 - 800.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	145.50'	990 cf	**28.00'W x 45.00'L x 3.21'H Field A** 4,043 cf Overall - 1,567 cf Embedded = 2,476 cf x 40.0% Voids
#2A	146.00'	1,567 cf	**Cultec R-280HD** x 36 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 6 rows
		2,557 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	145.50'	**1.020 in/hr Exfiltration over Surface area**
#2	Primary	146.70'	**12.0" Round Culvert** L= 15.2' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 146.70' / 146.62' S= 0.0053 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#3	Device 2	147.40'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#4	Device 2	146.65'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.03 cfs @ 9.15 hrs HW=145.54' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.90 cfs @ 12.22 hrs HW=147.47' (Free Discharge)
└**2=Culvert** (Passes 0.90 cfs of 1.29 cfs potential flow)
  └**3=Broad-Crested Rectangular Weir** (Weir Controls 0.19 cfs @ 0.71 fps)
  └**4=Orifice/Grate** (Orifice Controls 0.71 cfs @ 3.62 fps)

Pond P3: Infiltration System - Chamber Wizard Field A

Chamber Model = Cultec R-280HD (Cultec Recharger® 280HD)
Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf
Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap
Row Length Adjustment= +1.00' x 6.07 sf x 6 rows

47.0" Wide + 6.0" Spacing = 53.0" C-C Row Spacing

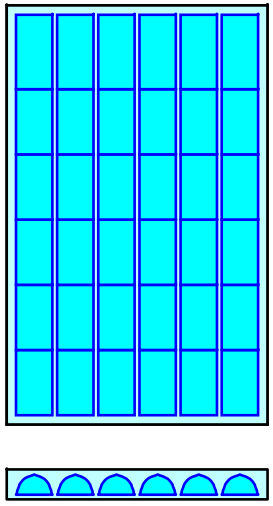
6 Chambers/Row x 7.00' Long +1.00' Row Adjustment = 43.00' Row Length +12.0" End Stone x 2 = 45.00' Base Length
6 Rows x 47.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 28.00' Base Width
6.0" Stone Base + 26.5" Chamber Height + 6.0" Stone Cover = 3.21' Field Height

36 Chambers x 42.5 cf +1.00' Row Adjustment x 6.07 sf x 6 Rows = 1,566.5 cf Chamber Storage

4,042.5 cf Field - 1,566.5 cf Chambers = 2,476.0 cf Stone x 40.0% Voids = 990.4 cf Stone Storage

Chamber Storage + Stone Storage = 2,556.9 cf = 0.059 af
Overall Storage Efficiency = 63.3%
Overall System Size = 45.00' x 28.00' x 3.21'

36 Chambers
149.7 cy Field
91.7 cy Stone



Summary for Link SP1: STUDY POINT #1 (Wetland Boundary)

Inflow Area = 118,386 sf, 24.96% Impervious, Inflow Depth = 0.68" for 2-Year event
Inflow = 1.63 cfs @ 12.22 hrs, Volume= 6,733 cf
Primary = 1.63 cfs @ 12.22 hrs, Volume= 6,733 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Summary for Subcatchment P-1: Subcat P-1

Runoff = 2.69 cfs @ 12.17 hrs, Volume= 10,931 cf, Depth= 1.44"
Routed to Link SP1 : STUDY POINT #1 (Wetland Boundary)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.12"

Area (sf)	CN	Description
37,074	61	>75% Grass cover, Good, HSG B
7,267	98	Paved parking, HSG B
12	98	Roofs, HSG B
46,632	55	Woods, Good, HSG B
90,985	61	Weighted Average
83,706		92.00% Pervious Area
7,279		8.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	50	0.0800	0.12		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.28"
0.6	45	0.0666	1.29		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
2.9	145	0.0138	0.82		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.6	121	0.0270	3.34		**Shallow Concentrated Flow, D-E** Paved Kv= 20.3 fps
0.0	24	0.5100	32.40	25.44	**Pipe Channel, E-F** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
11.1	385	Total			

Summary for Subcatchment P-2: Subcat P-2

Runoff = 2.82 cfs @ 12.09 hrs, Volume= 9,359 cf, Depth= 4.10"
Routed to Pond P3 : Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.12"

Area (sf)	CN	Description
3,672	61	>75% Grass cover, Good, HSG B
10,467	98	Paved parking, HSG B
11,803	98	Roofs, HSG B
1,459	55	Woods, Good, HSG B
27,401	91	Weighted Average
5,131		18.73% Pervious Area
22,270		81.27% Impervious Area

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

Summary for Pond P3: Infiltration System

Inflow Area = 27,401 sf, 81.27% Impervious, Inflow Depth = 4.10" for 10-Year event
Inflow = 2.82 cfs @ 12.09 hrs, Volume= 9,359 cf
Outflow = 2.36 cfs @ 12.14 hrs, Volume= 9,359 cf, Atten= 16%, Lag= 3.4 min
Discarded = 0.03 cfs @ 7.55 hrs, Volume= 2,955 cf
Primary = 2.33 cfs @ 12.14 hrs, Volume= 6,404 cf
Routed to Link SP1 : STUDY POINT #1 (Wetland Boundary)

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 147.84' @ 12.15 hrs Surf.Area= 1,260 sf Storage= 2,075 cf
Flood Elev= 148.95' Surf.Area= 1,260 sf Storage= 2,557 cf

Plug-Flow detention time= 134.1 min calculated for 9,359 cf (100% of inflow)
Center-of-Mass det. time= 134.0 min (920.0 - 786.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	145.50'	990 cf	**28.00'W x 45.00'L x 3.21'H Field A** 4,043 cf Overall - 1,567 cf Embedded = 2,476 cf x 40.0% Voids
#2A	146.00'	1,567 cf	**Cultec R-280HD** x 36 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 6 rows
		2,557 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	145.50'	**1.020 in/hr Exfiltration over Surface area**
#2	Primary	146.70'	**12.0" Round Culvert** L= 15.2' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 146.70' / 146.62' S= 0.0053 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#3	Device 2	147.40'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#4	Device 2	146.65'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.03 cfs @ 7.55 hrs HW=145.53' (Free Discharge)
↑└**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=2.32 cfs @ 12.14 hrs HW=147.83' (Free Discharge)
↑└**2=Culvert** (Barrel Controls 2.32 cfs @ 3.25 fps)
↑└**3=Broad-Crested Rectangular Weir** (Passes < 3.38 cfs potential flow)
└**4=Orifice/Grate** (Passes < 0.91 cfs potential flow)

Pond P3: Infiltration System - Chamber Wizard Field A

Chamber Model = Cultec R-280HD (Cultec Recharger® 280HD)
Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf
Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap
Row Length Adjustment= +1.00' x 6.07 sf x 6 rows

47.0" Wide + 6.0" Spacing = 53.0" C-C Row Spacing

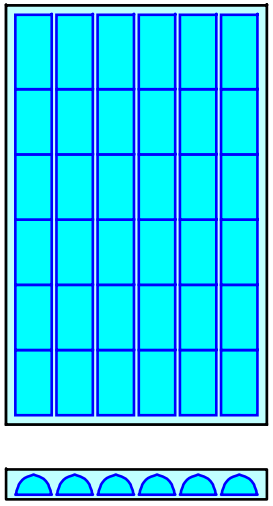
6 Chambers/Row x 7.00' Long +1.00' Row Adjustment = 43.00' Row Length +12.0" End Stone x 2 = 45.00' Base Length
6 Rows x 47.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 28.00' Base Width
6.0" Stone Base + 26.5" Chamber Height + 6.0" Stone Cover = 3.21' Field Height

36 Chambers x 42.5 cf +1.00' Row Adjustment x 6.07 sf x 6 Rows = 1,566.5 cf Chamber Storage

4,042.5 cf Field - 1,566.5 cf Chambers = 2,476.0 cf Stone x 40.0% Voids = 990.4 cf Stone Storage

Chamber Storage + Stone Storage = 2,556.9 cf = 0.059 af
Overall Storage Efficiency = 63.3%
Overall System Size = 45.00' x 28.00' x 3.21'

36 Chambers
149.7 cy Field
91.7 cy Stone



Summary for Link SP1: STUDY POINT #1 (Wetland Boundary)

Inflow Area = 118,386 sf, 24.96% Impervious, Inflow Depth = 1.76" for 10-Year event
Inflow = 5.00 cfs @ 12.16 hrs, Volume= 17,335 cf
Primary = 5.00 cfs @ 12.16 hrs, Volume= 17,335 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Summary for Subcatchment P-1: Subcat P-1

Runoff = 6.86 cfs @ 12.16 hrs, Volume= 25,714 cf, Depth= 3.39"
Routed to Link SP1 : STUDY POINT #1 (Wetland Boundary)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.93"

Area (sf)	CN	Description
37,074	61	>75% Grass cover, Good, HSG B
7,267	98	Paved parking, HSG B
12	98	Roofs, HSG B
46,632	55	Woods, Good, HSG B
90,985	61	Weighted Average
83,706		92.00% Pervious Area
7,279		8.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	50	0.0800	0.12		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.28"
0.6	45	0.0666	1.29		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
2.9	145	0.0138	0.82		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.6	121	0.0270	3.34		**Shallow Concentrated Flow, D-E** Paved Kv= 20.3 fps
0.0	24	0.5100	32.40	25.44	**Pipe Channel, E-F** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
11.1	385	Total			

Summary for Subcatchment P-2: Subcat P-2

Runoff = 4.58 cfs @ 12.09 hrs, Volume= 15,654 cf, Depth= 6.86"
Routed to Pond P3 : Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.93"

Area (sf)	CN	Description
3,672	61	>75% Grass cover, Good, HSG B
10,467	98	Paved parking, HSG B
11,803	98	Roofs, HSG B
1,459	55	Woods, Good, HSG B
27,401	91	Weighted Average
5,131		18.73% Pervious Area
22,270		81.27% Impervious Area

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

Summary for Pond P3: Infiltration System

Inflow Area = 27,401 sf, 81.27% Impervious, Inflow Depth = 6.86" for 100-Year event
Inflow = 4.58 cfs @ 12.09 hrs, Volume= 15,654 cf
Outflow = 3.66 cfs @ 12.15 hrs, Volume= 15,654 cf, Atten= 20%, Lag= 3.9 min
Discarded = 0.03 cfs @ 5.55 hrs, Volume= 3,201 cf
Primary = 3.63 cfs @ 12.15 hrs, Volume= 12,453 cf
Routed to Link SP1 : STUDY POINT #1 (Wetland Boundary)

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 148.68' @ 12.15 hrs Surf.Area= 1,260 sf Storage= 2,543 cf
Flood Elev= 148.95' Surf.Area= 1,260 sf Storage= 2,557 cf

Plug-Flow detention time= 92.3 min calculated for 15,632 cf (100% of inflow)
Center-of-Mass det. time= 93.0 min (865.8 - 772.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	145.50'	990 cf	**28.00'W x 45.00'L x 3.21'H Field A** 4,043 cf Overall - 1,567 cf Embedded = 2,476 cf x 40.0% Voids
#2A	146.00'	1,567 cf	**Cultec R-280HD** x 36 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 6 rows
		2,557 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	145.50'	**1.020 in/hr Exfiltration over Surface area**
#2	Primary	146.70'	**12.0" Round Culvert** L= 15.2' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 146.70' / 146.62' S= 0.0053 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#3	Device 2	147.40'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#4	Device 2	146.65'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.03 cfs @ 5.55 hrs HW=145.53' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=3.63 cfs @ 12.15 hrs HW=148.67' (Free Discharge)
└**2=Culvert** (Inlet Controls 3.63 cfs @ 4.62 fps)
  └**3=Broad-Crested Rectangular Weir** (Passes < 19.11 cfs potential flow)
  └**4=Orifice/Grate** (Passes < 1.26 cfs potential flow)

Pond P3: Infiltration System - Chamber Wizard Field A

Chamber Model = Cultec R-280HD (Cultec Recharger® 280HD)
Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf
Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap
Row Length Adjustment= +1.00' x 6.07 sf x 6 rows

47.0" Wide + 6.0" Spacing = 53.0" C-C Row Spacing

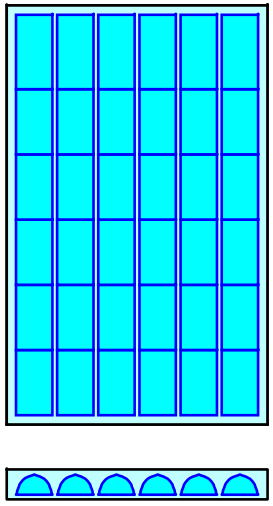
6 Chambers/Row x 7.00' Long +1.00' Row Adjustment = 43.00' Row Length +12.0" End Stone x 2 = 45.00' Base Length
6 Rows x 47.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 28.00' Base Width
6.0" Stone Base + 26.5" Chamber Height + 6.0" Stone Cover = 3.21' Field Height

36 Chambers x 42.5 cf +1.00' Row Adjustment x 6.07 sf x 6 Rows = 1,566.5 cf Chamber Storage

4,042.5 cf Field - 1,566.5 cf Chambers = 2,476.0 cf Stone x 40.0% Voids = 990.4 cf Stone Storage

Chamber Storage + Stone Storage = 2,556.9 cf = 0.059 af
Overall Storage Efficiency = 63.3%
Overall System Size = 45.00' x 28.00' x 3.21'

36 Chambers
149.7 cy Field
91.7 cy Stone



Summary for Link SP1: STUDY POINT #1 (Wetland Boundary)

Inflow Area = 118,386 sf, 24.96% Impervious, Inflow Depth = 3.87" for 100-Year event
Inflow = 10.48 cfs @ 12.16 hrs, Volume= 38,167 cf
Primary = 10.48 cfs @ 12.16 hrs, Volume= 38,167 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Allen & Major Associates, Inc.			Computation Sheet	
Title	***MA DEP Standard Calculations***		By	SMF
Project	*Office Building/Office Parks*		Chk'd	
Location	55 Industrial Park Road		Apprv'd	
Date	October 16, 2024			
Revised	January 7, 2026			

Stormwater Recharge/Water Quality Volume Table

Rv = F * Impervious Area

Rv *= Required Recharge Volume, expressed in ft^3, cubic yards or acre-feet*

F *= Target Depth Factor associated with each Hydraulic Soil Group*

Impervious Area *= pavement & rooftop area on site*

A_{WQ} *= Required Water Quality Treatment Volume, expressed in ft^3*

D_{WQ} *= Water Quality Depth*

A_{IMP} *= Impervious Area (excluding non-metal roofs)*

					Recharge Required			***Water Quality Volume Required***	
Watershed (Pond 1)	**Area (Sq. Ft.)**	**Landscaped**	**Impervious Area (Square Feet)**						
			HSG A (F=.6)	**HSG B (F=.35)**	***F Avg. (Inches)***	***Impervious Area (Feet)***	***Rv*** (ft^3)	D_{WQ} *(Inch)*	A_{WQ}
P-1	90,985	83,706	0	7,279	0.4	7,279	212	1.0	607
P-2	27,401	5,131	0	22,270	0.4	22,270	650	1.0	1,856
Total	**118,386**	**88,837**	**0**	**29,549**		**29,549**	**862**		**2,462**

Stormwater Recharge Summary

Rv = F * Impervious Area

Rv *= Required Recharge Volume, expressed in ft^3, cubic yards or acre-feet*

F *= Target Depth Factor associated with each Hydraulic Soil Group*

Impervious Area *= pavement & rooftop area on site*

	Required (cf)	***Provided (cf)***	
ARv =	***650***	***2,543***	***Infiltration Cambers (P-2)***
ARv =	***650***	***2,543***	***Total***

Water Quality Volume

A_{WQ} *= Required Water Quality Treatment Volume, expressed in ft^3*

D_{WQ} *= Water Quality Depth*

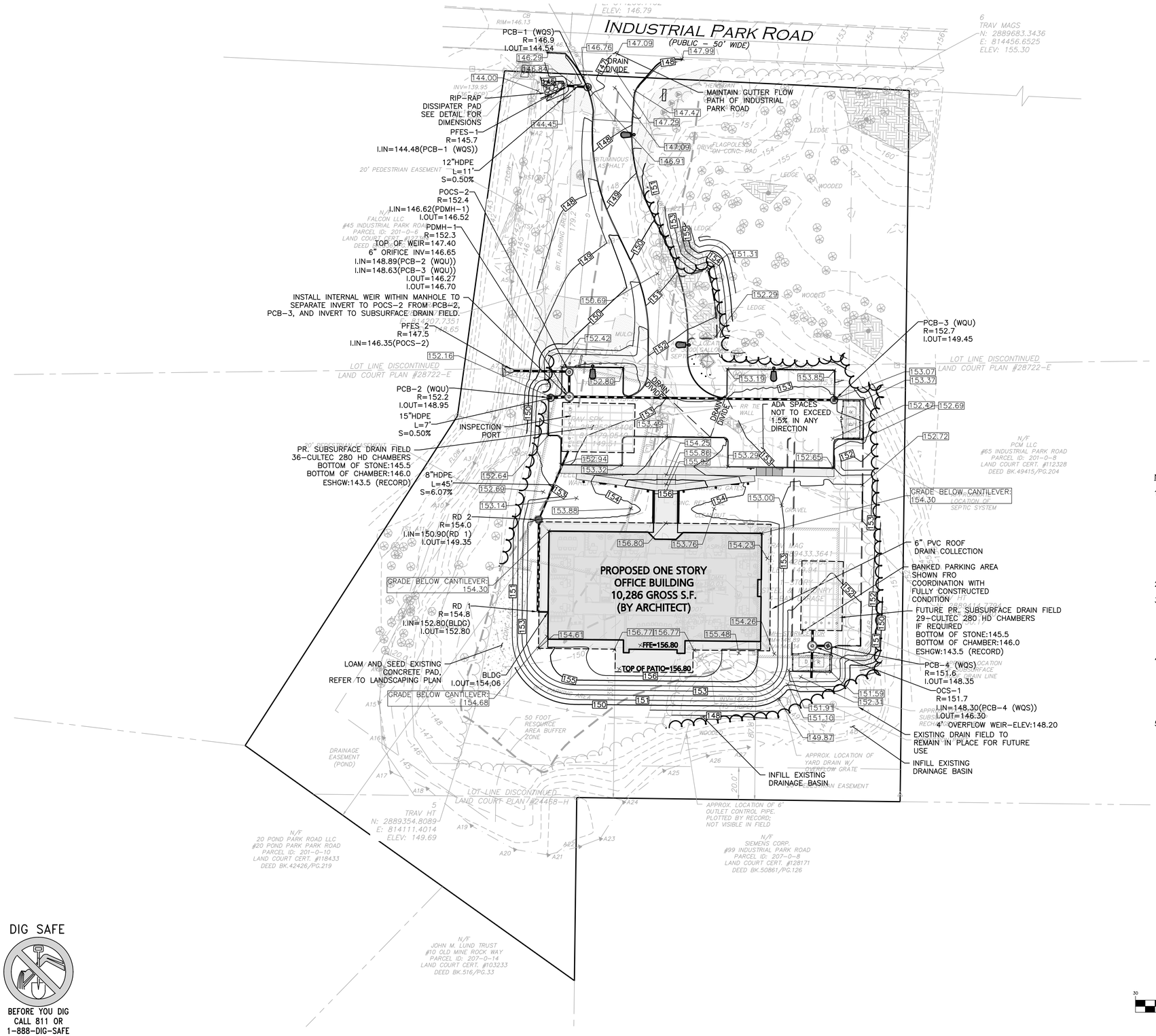
A_{IMP} *= Impervious Area (excluding non-metal roofs)*

	Required (cf)	***Provided (cf)***	
A_{WQ} =	***1,856***	***2,543***	***Infiltration Cambers (P-2)***
A_{WQ} =	***1,856***	***2,543***	***Total***

Draindown Within 72 Hours

$Time_{drawdown}$=(Rv) (1/Design Infiltration Rate in inches per hour) (Conversion for inches to feet) (1/bottom area in feet)

Infiltration Chambers (HSG B)	
Infiltration Rate (in/Hr)=	1.02
Bottom Area (ft^2) =	1,350
Infiltration Volume (ft^3) =	1,002
$Time_{drawdown}$ (Hours)=	8.73



LEGEND

- DRAIN MANHOLE (DMH)
- CATCH BASIN (CB)
- CATCH BASIN – DOUBLE GRATE
- OUTLET CONTROL (OCS)
- DIVERSION WEIR
- WATER QUALITY UNIT (WQU)
- AREA DRAIN (AD)
- FLARED END SECTION (FES)
- DRAIN LINE
- RIPRAP OUTFALL
- HEADWALL
- 5' CONTOUR (4500)
- 1' CONTOUR (4410)
- SPOT GRADE (×4365.00)
- INFILTRATION SYSTEM
- INFILTRATION PIPE
- DETENTION PIPE
- UNDERDRAIN (UD)
- FLOW DIRECTION

NOTES:

1. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR IT'S REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
2. ALL ELEVATIONS REFER TO NAVD 88.
3. THE INFORMATION SHOWN ON THIS PLAN IS THE SOLE PROPERTY OF ALLEN & MAJOR ASSOCIATES, INC. IT'S INTENDED USE IS TO PROVIDE INFORMATION. ANY ALTERATION, MISUSE, OR RECALCULATION OF INFORMATION OR DATA WITHOUT THE EXPRESSED, WRITTEN CONSENT OF ALLEN & MAJOR ASSOCIATES, INC. IS STRICTLY PROHIBITED.
4. THE CONTRACTOR SHALL CONTACT "DIGSAFE" AND THE TOWN OF HINGHAM DEPARTMENT OF PUBLIC WORKS AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION WORK TO REQUEST THE LOCATION OF THE EXISTING UTILITIES.

   DIGSAFE: 1–800–344–7233
   HINGHAM DEPT. OF PUBLIC WORKS: 1–781–741–1430
5. PIPE DIMENSIONS ARE MEASURED FROM CENTER TO CENTER OF EACH STRUCTURE.

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

DIG SAFE

BEFORE YOU DIG
CALL 811 OR
1–888–DIG–SAFE
1–888–344–7233

M:\PROJECTS\1179–20A\CIVIL\DRAWINGS\CURRENT\C–1179–20A_GRADING & DRAINAGE.DWG

ISSUED FOR PERMIT MODIFICATION
FEBRUARY 13, 2025
REV. 6 – DECEMBER 18, 2025

PROFESSIONAL ENGINEER FOR
ALLEN & MAJOR ASSOCIATES, INC.

REV	DATE	DESCRIPTION
6	12-18-2025	ISSUED FOR PERMIT MODIFICATION
5	07-31-2025	ISSUED FOR PERMIT MODIFICATION
4	07-11-2025	ISSUED FOR PERMIT MODIFICATION
3	01-09-2025	PER REVIEW COMMENTS
2	12-23-2024	PER REVIEW COMMENTS
1	11-12-2024	PER MASSDEP INITIAL REVIEW

APPLICANT\OWNER:

FIFTY-FIVE SAXON HINGHAM LLC
25 RECREATION PARK DRIVE, SUITE 204
HINGHAM, MA 02043

PROJECT:

OFFICE BUILDING
55 INDUSTRIAL
PARK ROAD
HINGHAM, MA

PROJECT NO.	1179-20A	DATE:	02/13/2025
SCALE:	1" = 30'	DWG. NAME:	C-1179-20
DESIGNED BY:	PLC	CHECKED BY:	PLC

PREPARED BY:

ALLEN & MAJOR ASSOCIATES, INC.
civil engineering ◆ land surveying
environmental consulting ◆ landscape architecture
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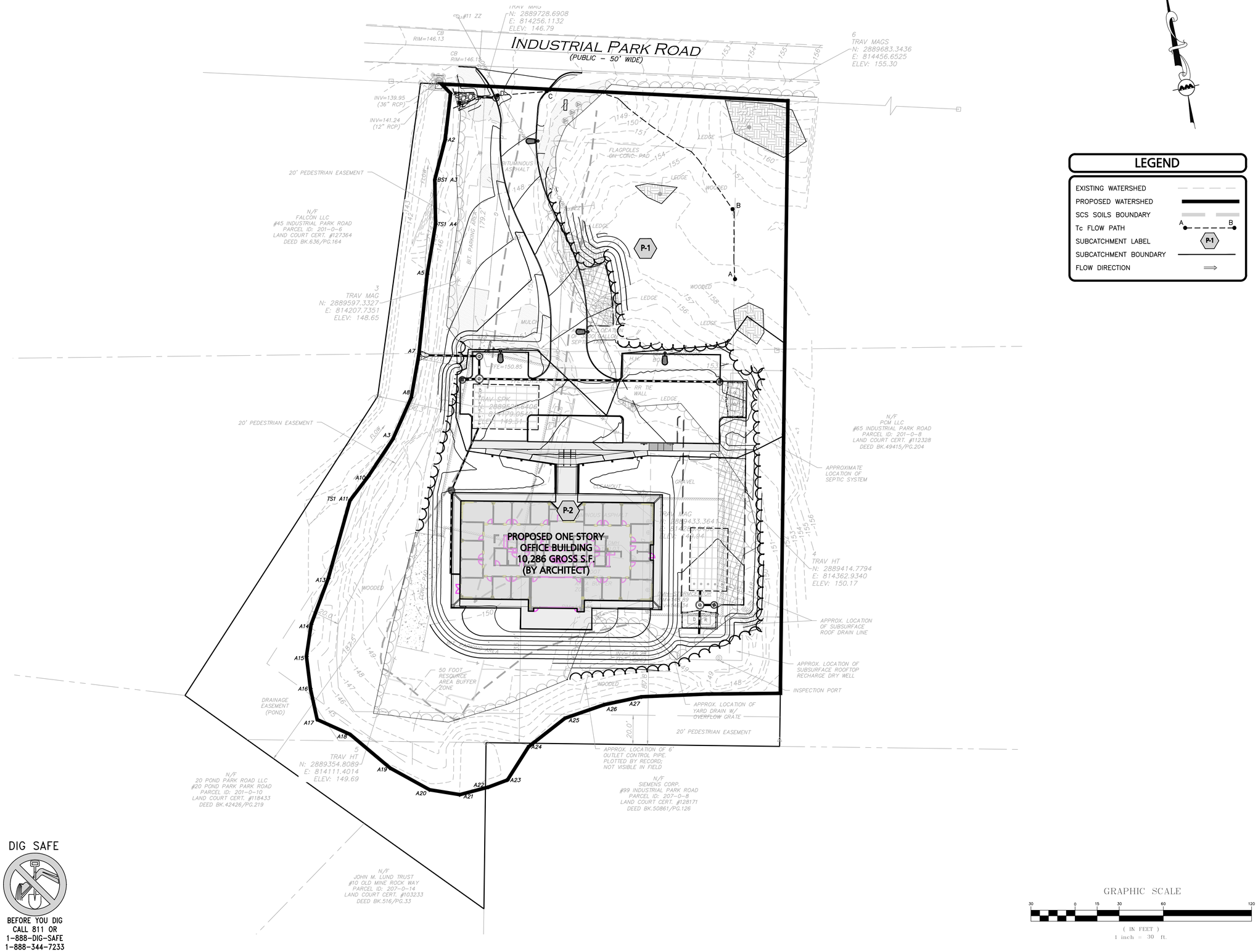
TEL: (508) 923-1010
FAX: (508) 923-6309
WOBURN, MA ◆ LAKEVILLE, MA ◆ MANCHESTER, NH

DRAWING TITLE:

GRADING & DRAINAGE PLAN

SHEET No.

C-104



LEGEND

- EXISTING WATERSHED
- PROPOSED WATERSHED
- SCS SOILS BOUNDARY
- Tc FLOW PATH (A – B)
- SUBCATCHMENT LABEL (P-1)
- SUBCATCHMENT BOUNDARY
- FLOW DIRECTION

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

DIG SAFE

BEFORE YOU DIG
CALL 811 OR
1-888-DIG-SAFE
1-888-344-7233

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ISSUED FOR PERMIT MODIFICATION
FEBRUARY 13, 2025
REV. 6 - DECEMBER 18, 2025

PROFESSIONAL ENGINEER FOR
ALLEN & MAJOR ASSOCIATES, INC.

REV	DATE	DESCRIPTION
6	12-18-2025	ISSUED FOR PERMIT MODIFICATION
5	07-31-2025	ISSUED FOR PERMIT MODIFICATION
4	07-11-2025	ISSUED FOR PERMIT MODIFICATION
3	01-09-2025	PER REVIEW COMMENTS
2	12-23-2024	PER REVIEW COMMENTS
1	11-12-2024	PER MASSDEP INITIAL REVIEW

APPLICANT\OWNER:
FIFTY-FIVE SAXON HINGHAM LLC
25 RECREATION PARK DRIVE, SUITE 204
HINGHAM, MA 02043

PROJECT:
OFFICE BUILDING
55 INDUSTRIAL
PARK ROAD
HINGHAM, MA

PROJECT NO.	1179-20A	DATE:	02/13/2025
SCALE:	1" = 30'	DWG. NAME:	C-1179-20
DESIGNED BY:	PLC	CHECKED BY:	PLC

PREPARED BY:

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DRAWING TITLE:
PROPOSED WATERSHED PLAN

SHEET No.
PWS-1