ENGINEERING, INC.
ENGINEERS
SURVEYORS

SUPPLEMENTAL STORMWATER REPORT

For

"6 Chapel Lane Site Development"

6 Chapel Lane
Wareham, MA

Prepared for

6 Chapel Lane, LLC
19 Depot Street
Wareham, MA 02571

Prepared by

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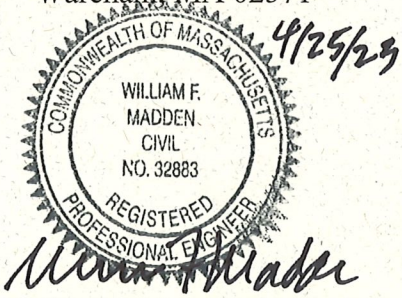

April 24, 2023
G.A.F. Job No.: 20-9499

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DRAINAGE NARRATIVE

This Supplemental Stormwater Report has been prepared in response to the second engineering peer review. It has been requested that the unmitigated lawn area which totals 0.43 acres after construction be analyzed in separate components rather than as a single area as was previously modeled. The pre-development condition was similarly divided into separate portions of the property to analyze the drainage characteristics for three separate portions of the property.

The following revised drainage areas are shown on the enclosed watershed maps and listed for comparison in the Summary Table.

Pre-development watershed 1S is the existing lawn area which is nearest to Chapel Lane and retained on the property. This area is compared with post-development watershed 4S which is the northeast portion of lawn which is lower than the northern access drive and very small in area.

Pre-development and post-development watersheds 2S are the existing and remaining portions of the property on the south and southwest with a design point on the abutting property line of the project proponent.

Pre-development and post-development watersheds 3S is the small area of the property in the southeast corner which directs runoff to the east and is unchanged by the proposed development.

The stormwater management system design has not been revised. Minor changes to the elevation 15 contour adjacent to the westerly property line have been made as requested in the second peer review. This grading change has been accounted for in the post-development runoff calculations for watershed 2S.

The revised calculations indicate a reduction in runoff for the three unmitigated lawn areas as quantified in the summary that follows..

Drainage Summary

Table 1 – Pre-Development vs. Post-Development (1S/4S)

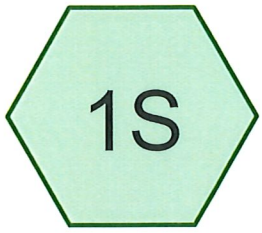
Storm Event	Pre		Post		Pre vs. Post changes	
	Peak Discharge (cfs)	Volume (ac-ft.)	Peak Discharge (cfs)	Volume (ac-ft.)	Peak Discharge (cfs)	Volume (ac-ft.)
2 yr	0	0.001	0	0	0	-0.001
10 yr	0.05	0.011	0	0.001	-0.05	-0.010
25 yr	0.14	0.022	0.01	0.003	-0.13	-0.019
100 yr	0.44	0.043	0.05	0.006	-0.39	-0.037

Table 2 – Pre-Development vs. Post-Development (2S/2S)

Storm Event	Pre		Post		Pre vs. Post changes	
	Peak Discharge (cfs)	Volume (ac-ft.)	Peak Discharge (cfs)	Volume (ac-ft.)	Peak Discharge (cfs)	Volume (ac-ft.)
2 yr	0	0.001	0	0	0	-0.001
10 yr	0.04	0.010	0.01	0.005	-0.03	-0.005
25 yr	0.11	0.019	0.06	0.012	-0.05	-0.007
100 yr	0.36	0.039	0.20	0.026	-0.16	-0.013

Table 3 – Pre-Development vs. Post-Development (3S/3S)

Storm Event	Pre		Post		Pre vs. Post changes	
	Peak Discharge (cfs)	Volume (ac-ft.)	Peak Discharge (cfs)	Volume (ac-ft.)	Peak Discharge (cfs)	Volume (ac-ft.)
2 yr	0	0.001	0	0.001	0	0
10 yr	0.03	0.003	0.03	0.003	0	0
25 yr	0.06	0.005	0.06	0.005	0	0
100 yr	0.11	0.008	0.11	0.008	0	0



North Central

South SW

Southeast

Subcat Reach Pond Link

Routing Diagram for 9499PRE REV2
Prepared by GAF Engineering, Inc, Printed 4/21/2023

Project Notes

Rainfall events imported from "9499POST.hcp"

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2 Year Storm	Type III 24-hr		Default	24.00	1	3.44	2
2	10 Year Storm	Type III 24-hr		Default	24.00	1	5.04	2
3	25 Year Storm	Type III 24-hr		Default	24.00	1	6.04	2
4	100 Year Storm	Type III 24-hr		Default	24.00	1	7.58	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.781	39	>75% Grass cover, Good, HSG A (1S, 2S, 3S)
0.039	98	Conc. Pad & Fndn (1S, 2S)
0.011	96	Gravel surface, HSG A (3S)
0.831	**42**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.792	HSG A	1S, 2S, 3S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.039	Other	1S, 2S
0.831		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.781	0.000	0.000	0.000	0.000	0.781	>75% Grass cover, Good	1S, 2S, 3S
0.000	0.000	0.000	0.000	0.039	0.039	Conc. Pad & Fndn	1S, 2S
0.011	0.000	0.000	0.000	0.000	0.011	Gravel surface	3S
0.792	**0.000**	**0.000**	**0.000**	**0.039**	**0.831**	**TOTAL AREA**	

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: North Central Runoff Area=18,200 sf 5.21% Impervious Runoff Depth=0.03"
Flow Length=144' Tc=5.8 min CN=42 Runoff=0.00 cfs 0.001 af

Subcatchment 2S: South SW Runoff Area=16,150 sf 4.59% Impervious Runoff Depth=0.03"
Flow Length=144' Tc=8.1 min CN=42 Runoff=0.00 cfs 0.001 af

Subcatchment 3S: Southeast Runoff Area=1,830 sf 0.00% Impervious Runoff Depth=0.26"
Tc=6.0 min CN=53 Runoff=0.00 cfs 0.001 af

Total Runoff Area = 0.831 ac Runoff Volume = 0.003 af Average Runoff Depth = 0.04"
95.33% Pervious = 0.792 ac 4.67% Impervious = 0.039 ac

Summary for Subcatchment 1S: North Central

Runoff = 0.00 cfs @ 16.75 hrs, Volume= 0.001 af, Depth= 0.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Storm Rainfall=3.44"

	Area (sf)	CN	Description
*	948	98	Conc. Pad & Fndn
	17,252	39	>75% Grass cover, Good, HSG A
	18,200	42	Weighted Average
	17,252		94.79% Pervious Area
	948		5.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	50	0.0300	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.44"
1.2	94	0.0070	1.35		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
5.8	144	Total			

Summary for Subcatchment 2S: South SW

Runoff = 0.00 cfs @ 16.82 hrs, Volume= 0.001 af, Depth= 0.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Storm Rainfall=3.44"

	Area (sf)	CN	Description
*	741	98	Conc. Pad & Fndn
	15,409	39	>75% Grass cover, Good, HSG A
	16,150	42	Weighted Average
	15,409		95.41% Pervious Area
	741		4.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	50	0.0140	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.44"
1.8	94	0.0030	0.88		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
8.1	144	Total			

Summary for Subcatchment 3S: Southeast

Runoff = 0.00 cfs @ 12.34 hrs, Volume= 0.001 af, Depth= 0.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Storm Rainfall=3.44"

Area (sf)	CN	Description
460	96	Gravel surface, HSG A
1,370	39	>75% Grass cover, Good, HSG A
1,830	53	Weighted Average
1,830		100.00% Pervious Area

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

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: North Central Runoff Area=18,200 sf 5.21% Impervious Runoff Depth=0.32"
Flow Length=144' Tc=5.8 min CN=42 Runoff=0.05 cfs 0.011 af

Subcatchment 2S: South SW Runoff Area=16,150 sf 4.59% Impervious Runoff Depth=0.32"
Flow Length=144' Tc=8.1 min CN=42 Runoff=0.04 cfs 0.010 af

Subcatchment 3S: Southeast Runoff Area=1,830 sf 0.00% Impervious Runoff Depth=0.88"
Tc=6.0 min CN=53 Runoff=0.03 cfs 0.003 af

Total Runoff Area = 0.831 ac Runoff Volume = 0.024 af Average Runoff Depth = 0.35"
95.33% Pervious = 0.792 ac 4.67% Impervious = 0.039 ac

Summary for Subcatchment 1S: North Central

Runoff = 0.05 cfs @ 12.37 hrs, Volume= 0.011 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Storm Rainfall=5.04"

	Area (sf)	CN	Description
*	948	98	Conc. Pad & Fndn
	17,252	39	>75% Grass cover, Good, HSG A
	18,200	42	Weighted Average
	17,252		94.79% Pervious Area
	948		5.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	50	0.0300	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.44"
1.2	94	0.0070	1.35		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
5.8	144	Total			

Summary for Subcatchment 2S: South SW

Runoff = 0.04 cfs @ 12.41 hrs, Volume= 0.010 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Storm Rainfall=5.04"

	Area (sf)	CN	Description
*	741	98	Conc. Pad & Fndn
	15,409	39	>75% Grass cover, Good, HSG A
	16,150	42	Weighted Average
	15,409		95.41% Pervious Area
	741		4.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	50	0.0140	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.44"
1.8	94	0.0030	0.88		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
8.1	144	Total			

Summary for Subcatchment 3S: Southeast

Runoff = 0.03 cfs @ 12.11 hrs, Volume= 0.003 af, Depth= 0.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Storm Rainfall=5.04"

Area (sf)	CN	Description
460	96	Gravel surface, HSG A
1,370	39	>75% Grass cover, Good, HSG A
1,830	53	Weighted Average
1,830		100.00% Pervious Area

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

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: North Central Runoff Area=18,200 sf 5.21% Impervious Runoff Depth=0.63"
Flow Length=144' Tc=5.8 min CN=42 Runoff=0.14 cfs 0.022 af

Subcatchment 2S: South SW Runoff Area=16,150 sf 4.59% Impervious Runoff Depth=0.63"
Flow Length=144' Tc=8.1 min CN=42 Runoff=0.11 cfs 0.019 af

Subcatchment 3S: Southeast Runoff Area=1,830 sf 0.00% Impervious Runoff Depth=1.39"
Tc=6.0 min CN=53 Runoff=0.06 cfs 0.005 af

Total Runoff Area = 0.831 ac Runoff Volume = 0.046 af Average Runoff Depth = 0.67"
95.33% Pervious = 0.792 ac 4.67% Impervious = 0.039 ac

Summary for Subcatchment 1S: North Central

Runoff = 0.14 cfs @ 12.14 hrs, Volume= 0.022 af, Depth= 0.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Storm Rainfall=6.04"

	Area (sf)	CN	Description
*	948	98	Conc. Pad & Fndn
	17,252	39	>75% Grass cover, Good, HSG A
	18,200	42	Weighted Average
	17,252		94.79% Pervious Area
	948		5.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	50	0.0300	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.44"
1.2	94	0.0070	1.35		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
5.8	144	Total			

Summary for Subcatchment 2S: South SW

Runoff = 0.11 cfs @ 12.28 hrs, Volume= 0.019 af, Depth= 0.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Storm Rainfall=6.04"

	Area (sf)	CN	Description
*	741	98	Conc. Pad & Fndn
	15,409	39	>75% Grass cover, Good, HSG A
	16,150	42	Weighted Average
	15,409		95.41% Pervious Area
	741		4.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	50	0.0140	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.44"
1.8	94	0.0030	0.88		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
8.1	144	Total			

Summary for Subcatchment 3S: Southeast

Runoff = 0.06 cfs @ 12.10 hrs, Volume= 0.005 af, Depth= 1.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Storm Rainfall=6.04"

Area (sf)	CN	Description
460	96	Gravel surface, HSG A
1,370	39	>75% Grass cover, Good, HSG A
1,830	53	Weighted Average
1,830		100.00% Pervious Area

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

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: North Central Runoff Area=18,200 sf 5.21% Impervious Runoff Depth=1.25"
Flow Length=144' Tc=5.8 min CN=42 Runoff=0.44 cfs 0.043 af

Subcatchment 2S: South SW Runoff Area=16,150 sf 4.59% Impervious Runoff Depth=1.25"
Flow Length=144' Tc=8.1 min CN=42 Runoff=0.36 cfs 0.039 af

Subcatchment 3S: Southeast Runoff Area=1,830 sf 0.00% Impervious Runoff Depth=2.30"
Tc=6.0 min CN=53 Runoff=0.11 cfs 0.008 af

Total Runoff Area = 0.831 ac Runoff Volume = 0.090 af Average Runoff Depth = 1.30"
95.33% Pervious = 0.792 ac 4.67% Impervious = 0.039 ac

Summary for Subcatchment 1S: North Central

Runoff = 0.44 cfs @ 12.11 hrs, Volume= 0.043 af, Depth= 1.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Storm Rainfall=7.58"

	Area (sf)	CN	Description
*	948	98	Conc. Pad & Fndn
	17,252	39	>75% Grass cover, Good, HSG A
	18,200	42	Weighted Average
	17,252		94.79% Pervious Area
	948		5.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	50	0.0300	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.44"
1.2	94	0.0070	1.35		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
5.8	144	Total			

Summary for Subcatchment 2S: South SW

Runoff = 0.36 cfs @ 12.14 hrs, Volume= 0.039 af, Depth= 1.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Storm Rainfall=7.58"

	Area (sf)	CN	Description
*	741	98	Conc. Pad & Fndn
	15,409	39	>75% Grass cover, Good, HSG A
	16,150	42	Weighted Average
	15,409		95.41% Pervious Area
	741		4.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	50	0.0140	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.44"
1.8	94	0.0030	0.88		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
8.1	144	Total			

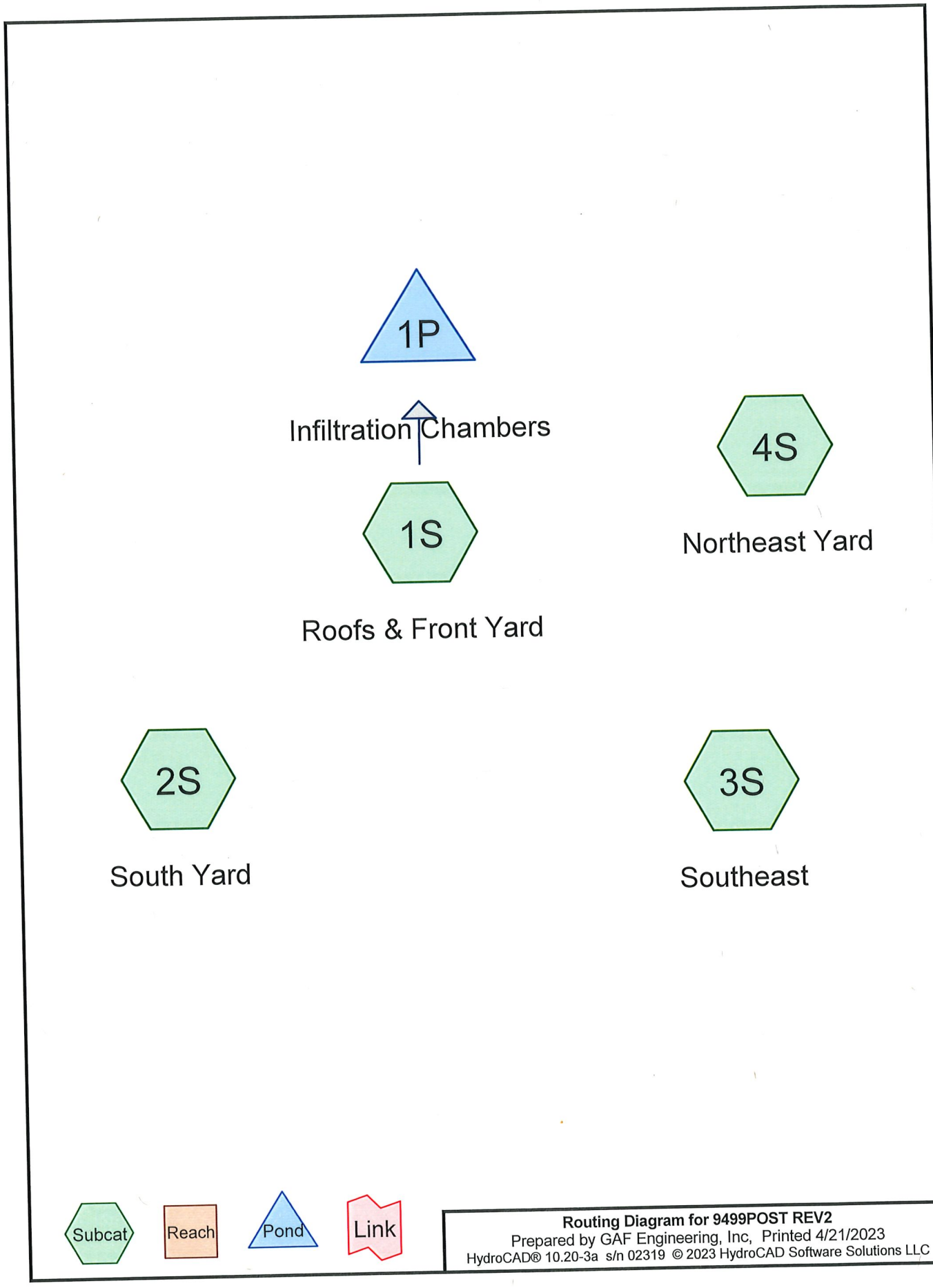
Summary for Subcatchment 3S: Southeast

Runoff = 0.11 cfs @ 12.10 hrs, Volume= 0.008 af, Depth= 2.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Storm Rainfall=7.58"

Area (sf)	CN	Description
460	96	Gravel surface, HSG A
1,370	39	>75% Grass cover, Good, HSG A
1,830	53	Weighted Average
1,830		100.00% Pervious Area

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


1P
Infiltration Chambers
4S
1S
Northeast Yard
Roofs & Front Yard
2S
3S
South Yard
Southeast
Subcat
Reach
Pond
Link
Routing Diagram for 9499POST REV2
Prepared by GAF Engineering, Inc, Printed 4/21/2023
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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2 Year Storm	Type III 24-hr		Default	24.00	1	3.44	2
2	10 Year Storm	Type III 24-hr		Default	24.00	1	5.04	2
3	25 Year Storm	Type III 24-hr		Default	24.00	1	6.04	2
4	100 Year Storm	Type III 24-hr		Default	24.00	1	7.58	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.531	39	>75% Grass cover, Good, HSG A (1S, 2S, 3S, 4S)
0.011	96	Gravel surface, HSG A (3S)
0.184	98	Parking Lot (1S)
0.105	98	Roofs (1S)
0.831	**60**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.542	HSG A	1S, 2S, 3S, 4S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.289	Other	1S
0.831		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.531	0.000	0.000	0.000	0.000	0.531	>75% Grass cover, Good	1S, 2S, 3S, 4S
0.011	0.000	0.000	0.000	0.000	0.011	Gravel surface	3S
0.000	0.000	0.000	0.000	0.184	0.184	Parking Lot	1S
0.000	0.000	0.000	0.000	0.105	0.105	Roofs	1S
0.542	**0.000**	**0.000**	**0.000**	**0.289**	**0.831**	**TOTAL AREA**	

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Roofs & Front Yard Runoff Area=17,584 sf 71.57% Impervious Runoff Depth=1.66"
Tc=6.0 min CN=81 Runoff=0.78 cfs 0.056 af

Subcatchment 2S: South Yard Runoff Area=13,596 sf 0.00% Impervious Runoff Depth=0.01"
Flow Length=110' Tc=7.7 min CN=39 Runoff=0.00 cfs 0.000 af

Subcatchment 3S: Southeast Runoff Area=1,830 sf 0.00% Impervious Runoff Depth=0.26"
Tc=6.0 min CN=53 Runoff=0.00 cfs 0.001 af

Subcatchment 4S: Northeast Yard Runoff Area=3,170 sf 0.00% Impervious Runoff Depth=0.01"
Tc=6.0 min CN=39 Runoff=0.00 cfs 0.000 af

Pond 1P: Infiltration Chambers Peak Elev=11.92' Storage=279 cf Inflow=0.78 cfs 0.056 af
Outflow=0.34 cfs 0.056 af

Total Runoff Area = 0.831 ac Runoff Volume = 0.057 af Average Runoff Depth = 0.82"
65.22% Pervious = 0.542 ac 34.78% Impervious = 0.289 ac

Summary for Subcatchment 1S: Roofs & Front Yard

Runoff = 0.78 cfs @ 12.09 hrs, Volume= 0.056 af, Depth= 1.66"
Routed to Pond 1P : Infiltration Chambers

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Storm Rainfall=3.44"

	Area (sf)	CN	Description
*	8,000	98	Parking Lot
*	4,584	98	Roofs
	5,000	39	>75% Grass cover, Good, HSG A
	17,584	81	Weighted Average
	5,000		28.43% Pervious Area
	12,584		71.57% Impervious Area

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

Summary for Subcatchment 2S: South Yard

Runoff = 0.00 cfs @ 23.04 hrs, Volume= 0.000 af, Depth= 0.01"
Routed to nonexistent node 2P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Storm Rainfall=3.44"

Area (sf)	CN	Description
13,596	39	>75% Grass cover, Good, HSG A
13,596		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	50	0.0100	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.44"
0.5	60	0.0130	1.84		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
7.7	110	Total			

Summary for Subcatchment 3S: Southeast

Runoff = 0.00 cfs @ 12.34 hrs, Volume= 0.001 af, Depth= 0.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Storm Rainfall=3.44"

Area (sf)	CN	Description
460	96	Gravel surface, HSG A
1,370	39	>75% Grass cover, Good, HSG A
1,830	53	Weighted Average
1,830		100.00% Pervious Area

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

Summary for Subcatchment 4S: Northeast Yard

Runoff = 0.00 cfs @ 23.06 hrs, Volume= 0.000 af, Depth= 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Storm Rainfall=3.44"

Area (sf)	CN	Description
3,170	39	>75% Grass cover, Good, HSG A
3,170		100.00% Pervious Area

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

Summary for Pond 1P: Infiltration Chambers

Inflow Area = 0.404 ac, 71.57% Impervious, Inflow Depth = 1.66" for 2 Year Storm event
Inflow = 0.78 cfs @ 12.09 hrs, Volume= 0.056 af
Outflow = 0.34 cfs @ 12.32 hrs, Volume= 0.056 af, Atten= 57%, Lag= 13.7 min
Discarded = 0.34 cfs @ 12.32 hrs, Volume= 0.056 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 11.92' @ 12.32 hrs Surf.Area= 1,651 sf Storage= 279 cf

Plug-Flow detention time= 4.4 min calculated for 0.056 af (100% of inflow)
Center-of-Mass det. time= 4.3 min (840.3 - 836.0)

Volume	Invert	Avail.Storage	Storage Description
#1	11.50'	1,588 cf	**13.00'W x 127.00'L x 3.00'H Prismatoid** 4,953 cf Overall - 983 cf Embedded = 3,970 cf x 40.0% Voids
#2	12.50'	983 cf	**Cultec R-150XLHD** x 36 Inside #1 Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap Row Length Adjustment= +0.75' x 2.65 sf x 3 rows
		2,571 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	11.50'	**8.270 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.34 cfs @ 12.32 hrs HW=11.92' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.34 cfs)

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Roofs & Front Yard Runoff Area=17,584 sf 71.57% Impervious Runoff Depth=3.02"
Tc=6.0 min CN=81 Runoff=1.43 cfs 0.102 af

Subcatchment 2S: South Yard Runoff Area=13,596 sf 0.00% Impervious Runoff Depth=0.21"
Flow Length=110' Tc=7.7 min CN=39 Runoff=0.01 cfs 0.005 af

Subcatchment 3S: Southeast Runoff Area=1,830 sf 0.00% Impervious Runoff Depth=0.88"
Tc=6.0 min CN=53 Runoff=0.03 cfs 0.003 af

Subcatchment 4S: Northeast Yard Runoff Area=3,170 sf 0.00% Impervious Runoff Depth=0.21"
Tc=6.0 min CN=39 Runoff=0.00 cfs 0.001 af

Pond 1P: Infiltration Chambers Peak Elev=12.73' Storage=940 cf Inflow=1.43 cfs 0.102 af
Outflow=0.38 cfs 0.102 af

Total Runoff Area = 0.831 ac Runoff Volume = 0.111 af Average Runoff Depth = 1.61"
65.22% Pervious = 0.542 ac 34.78% Impervious = 0.289 ac

Summary for Subcatchment 1S: Roofs & Front Yard

Runoff = 1.43 cfs @ 12.09 hrs, Volume= 0.102 af, Depth= 3.02"
Routed to Pond 1P : Infiltration Chambers

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Storm Rainfall=5.04"

	Area (sf)	CN	Description
*	8,000	98	Parking Lot
*	4,584	98	Roofs
	5,000	39	>75% Grass cover, Good, HSG A
	17,584	81	Weighted Average
	5,000		28.43% Pervious Area
	12,584		71.57% Impervious Area

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

Summary for Subcatchment 2S: South Yard

Runoff = 0.01 cfs @ 12.50 hrs, Volume= 0.005 af, Depth= 0.21"
Routed to nonexistent node 2P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Storm Rainfall=5.04"

Area (sf)	CN	Description
13,596	39	>75% Grass cover, Good, HSG A
13,596		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	50	0.0100	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.44"
0.5	60	0.0130	1.84		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
7.7	110	Total			

Summary for Subcatchment 3S: Southeast

Runoff = 0.03 cfs @ 12.11 hrs, Volume= 0.003 af, Depth= 0.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Storm Rainfall=5.04"

Area (sf)	CN	Description
460	96	Gravel surface, HSG A
1,370	39	>75% Grass cover, Good, HSG A
1,830	53	Weighted Average
1,830		100.00% Pervious Area

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

Summary for Subcatchment 4S: Northeast Yard

Runoff = 0.00 cfs @ 12.47 hrs, Volume= 0.001 af, Depth= 0.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Storm Rainfall=5.04"

Area (sf)	CN	Description
3,170	39	>75% Grass cover, Good, HSG A
3,170		100.00% Pervious Area

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

Summary for Pond 1P: Infiltration Chambers

Inflow Area = 0.404 ac, 71.57% Impervious, Inflow Depth = 3.02" for 10 Year Storm event
Inflow = 1.43 cfs @ 12.09 hrs, Volume= 0.102 af
Outflow = 0.38 cfs @ 12.46 hrs, Volume= 0.102 af, Atten= 73%, Lag= 22.6 min
Discarded = 0.38 cfs @ 12.46 hrs, Volume= 0.102 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 12.73' @ 12.46 hrs Surf.Area= 1,651 sf Storage= 940 cf

Plug-Flow detention time= 13.9 min calculated for 0.102 af (100% of inflow)
Center-of-Mass det. time= 13.8 min (832.6 - 818.7)

Volume	Invert	Avail.Storage	Storage Description
#1	11.50'	1,588 cf	**13.00'W x 127.00'L x 3.00'H Prismatoid** 4,953 cf Overall - 983 cf Embedded = 3,970 cf x 40.0% Voids
#2	12.50'	983 cf	**Cultec R-150XLHD** x 36 Inside #1 Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap Row Length Adjustment= +0.75' x 2.65 sf x 3 rows
		2,571 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	11.50'	**8.270 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.38 cfs @ 12.46 hrs HW=12.73' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.38 cfs)

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Roofs & Front Yard Runoff Area=17,584 sf 71.57% Impervious Runoff Depth=3.92"
Tc=6.0 min CN=81 Runoff=1.84 cfs 0.132 af

Subcatchment 2S: South Yard Runoff Area=13,596 sf 0.00% Impervious Runoff Depth=0.46"
Flow Length=110' Tc=7.7 min CN=39 Runoff=0.06 cfs 0.012 af

Subcatchment 3S: Southeast Runoff Area=1,830 sf 0.00% Impervious Runoff Depth=1.39"
Tc=6.0 min CN=53 Runoff=0.06 cfs 0.005 af

Subcatchment 4S: Northeast Yard Runoff Area=3,170 sf 0.00% Impervious Runoff Depth=0.46"
Tc=6.0 min CN=39 Runoff=0.01 cfs 0.003 af

Pond 1P: Infiltration Chambers Peak Elev=13.18' Storage=1,451 cf Inflow=1.84 cfs 0.132 af
Outflow=0.41 cfs 0.132 af

Total Runoff Area = 0.831 ac Runoff Volume = 0.151 af Average Runoff Depth = 2.19"
65.22% Pervious = 0.542 ac 34.78% Impervious = 0.289 ac

Summary for Subcatchment 1S: Roofs & Front Yard

Runoff = 1.84 cfs @ 12.09 hrs, Volume= 0.132 af, Depth= 3.92"
Routed to Pond 1P : Infiltration Chambers

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Storm Rainfall=6.04"

	Area (sf)	CN	Description
*	8,000	98	Parking Lot
*	4,584	98	Roofs
	5,000	39	>75% Grass cover, Good, HSG A
	17,584	81	Weighted Average
	5,000		28.43% Pervious Area
	12,584		71.57% Impervious Area

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

Summary for Subcatchment 2S: South Yard

Runoff = 0.06 cfs @ 12.36 hrs, Volume= 0.012 af, Depth= 0.46"
Routed to nonexistent node 2P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Storm Rainfall=6.04"

Area (sf)	CN	Description
13,596	39	>75% Grass cover, Good, HSG A
13,596		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	50	0.0100	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.44"
0.5	60	0.0130	1.84		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
7.7	110	Total			

Summary for Subcatchment 3S: Southeast

Runoff = 0.06 cfs @ 12.10 hrs, Volume= 0.005 af, Depth= 1.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Storm Rainfall=6.04"

Area (sf)	CN	Description
460	96	Gravel surface, HSG A
1,370	39	>75% Grass cover, Good, HSG A
1,830	53	Weighted Average
1,830		100.00% Pervious Area

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

Summary for Subcatchment 4S: Northeast Yard

Runoff = 0.01 cfs @ 12.34 hrs, Volume= 0.003 af, Depth= 0.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Storm Rainfall=6.04"

Area (sf)	CN	Description
3,170	39	>75% Grass cover, Good, HSG A
3,170		100.00% Pervious Area

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

Summary for Pond 1P: Infiltration Chambers

Inflow Area = 0.404 ac, 71.57% Impervious, Inflow Depth = 3.92" for 25 Year Storm event
Inflow = 1.84 cfs @ 12.09 hrs, Volume= 0.132 af
Outflow = 0.41 cfs @ 12.51 hrs, Volume= 0.132 af, Atten= 78%, Lag= 25.2 min
Discarded = 0.41 cfs @ 12.51 hrs, Volume= 0.132 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 13.18' @ 12.51 hrs Surf.Area= 1,651 sf Storage= 1,451 cf

Plug-Flow detention time= 21.8 min calculated for 0.132 af (100% of inflow)
Center-of-Mass det. time= 21.8 min (833.1 - 811.3)

Volume	Invert	Avail.Storage	Storage Description
#1	11.50'	1,588 cf	**13.00'W x 127.00'L x 3.00'H Prismatoid** 4,953 cf Overall - 983 cf Embedded = 3,970 cf x 40.0% Voids
#2	12.50'	983 cf	**Cultec R-150XLHD** x 36 Inside #1 Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap Row Length Adjustment= +0.75' x 2.65 sf x 3 rows
		2,571 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	11.50'	**8.270 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.41 cfs @ 12.51 hrs HW=13.17' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.41 cfs)

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Roofs & Front Yard Runoff Area=17,584 sf 71.57% Impervious Runoff Depth=5.35"
Tc=6.0 min CN=81 Runoff=2.49 cfs 0.180 af

Subcatchment 2S: South Yard Runoff Area=13,596 sf 0.00% Impervious Runoff Depth=0.99"
Flow Length=110' Tc=7.7 min CN=39 Runoff=0.20 cfs 0.026 af

Subcatchment 3S: Southeast Runoff Area=1,830 sf 0.00% Impervious Runoff Depth=2.30"
Tc=6.0 min CN=53 Runoff=0.11 cfs 0.008 af

Subcatchment 4S: Northeast Yard Runoff Area=3,170 sf 0.00% Impervious Runoff Depth=0.99"
Tc=6.0 min CN=39 Runoff=0.05 cfs 0.006 af

Pond 1P: Infiltration Chambers Peak Elev=14.07' Storage=2,285 cf Inflow=2.49 cfs 0.180 af
Outflow=0.45 cfs 0.180 af

Total Runoff Area = 0.831 ac Runoff Volume = 0.220 af Average Runoff Depth = 3.17"
65.22% Pervious = 0.542 ac 34.78% Impervious = 0.289 ac

Summary for Subcatchment 1S: Roofs & Front Yard

Runoff = 2.49 cfs @ 12.09 hrs, Volume= 0.180 af, Depth= 5.35"
Routed to Pond 1P : Infiltration Chambers

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Storm Rainfall=7.58"

	Area (sf)	CN	Description
*	8,000	98	Parking Lot
*	4,584	98	Roofs
	5,000	39	>75% Grass cover, Good, HSG A
	17,584	81	Weighted Average
	5,000		28.43% Pervious Area
	12,584		71.57% Impervious Area

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

Summary for Subcatchment 2S: South Yard

Runoff = 0.20 cfs @ 12.15 hrs, Volume= 0.026 af, Depth= 0.99"
Routed to nonexistent node 2P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Storm Rainfall=7.58"

Area (sf)	CN	Description
13,596	39	>75% Grass cover, Good, HSG A
13,596		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	50	0.0100	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.44"
0.5	60	0.0130	1.84		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
7.7	110	Total			

Summary for Subcatchment 3S: Southeast

Runoff = 0.11 cfs @ 12.10 hrs, Volume= 0.008 af, Depth= 2.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Storm Rainfall=7.58"

Area (sf)	CN	Description
460	96	Gravel surface, HSG A
1,370	39	>75% Grass cover, Good, HSG A
1,830	53	Weighted Average
1,830		100.00% Pervious Area

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

Summary for Subcatchment 4S: Northeast Yard

Runoff = 0.05 cfs @ 12.13 hrs, Volume= 0.006 af, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Storm Rainfall=7.58"

Area (sf)	CN	Description
3,170	39	>75% Grass cover, Good, HSG A
3,170		100.00% Pervious Area

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

Summary for Pond 1P: Infiltration Chambers

Inflow Area = 0.404 ac, 71.57% Impervious, Inflow Depth = 5.35" for 100 Year Storm event
Inflow = 2.49 cfs @ 12.09 hrs, Volume= 0.180 af
Outflow = 0.45 cfs @ 12.54 hrs, Volume= 0.180 af, Atten= 82%, Lag= 27.3 min
Discarded = 0.45 cfs @ 12.54 hrs, Volume= 0.180 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 14.07' @ 12.54 hrs Surf.Area= 1,651 sf Storage= 2,285 cf

Plug-Flow detention time= 34.4 min calculated for 0.180 af (100% of inflow)
Center-of-Mass det. time= 34.4 min (836.9 - 802.5)

Volume	Invert	Avail.Storage	Storage Description
#1	11.50'	1,588 cf	**13.00'W x 127.00'L x 3.00'H Prismatoid** 4,953 cf Overall - 983 cf Embedded = 3,970 cf x 40.0% Voids
#2	12.50'	983 cf	**Cultec R-150XLHD** x 36 Inside #1 Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap Row Length Adjustment= +0.75' x 2.65 sf x 3 rows
		2,571 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	11.50'	**8.270 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.45 cfs @ 12.54 hrs HW=14.07' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.45 cfs)

CHAPEL LANE

EOP

APPROX. LOC. OF EX. GAS MAIN

APPROX. LOC. OF EX. 6" C.I. WATER MAIN

TC=15.0
BC=14.8
UP #145/3

UP #145/2

TC=16.3
BC=15.9

6" PCC

OHW

W

EOP

TC=16.8
BC=16.5

UP #145

MAP 43
LOTS 1036, 1037.A,
1039, 1040.A, 1041.A
TOTAL AREA=36,180± S.F.
0.83± ACRES

2S

1S

2S

1S

2S

3S

L=50'
S=1.4%
TIME=6.3 MINS.

FLOW

L=50'
S=3%
TIME=4.6 MINS.

L=94'
S=0.7%
TIME=1.2 MINS.

Tc FLOW PATH

TP-1

TP-2

TP-3

REMAINS OF EX. CONC. FND. WALL

EX. CONC. PAD

EX. CONC. FOUNDATION

L=94'
S=0.3%
TIME=1.8 MINS.

Tc FLOW PATH

PRE-DEVELOPMENT
SCALE: 1"=10'
0 10 20 40

H:\GAF DRAWINGS\2020 DRAWINGS\20-9499 (BEAUCHEMIN)\9499dwg\[9499_3-DUPLEXES-REV-3.dwg

REV.	DATE	BY	APP'D	DESCRIPTION
2	4/24/23	JMP	WFM	PER PEER REVIEW COMMENTS
1	3/14/23	JMP	WFM	NO CHANGE THIS SHEET

DATE: NOV. 14, 2022
DRAWN BY: JMP
CHECKED BY: RJR
JOB NO.: 20-9499
SCALE: 1" = 10'

APPROVED BY:

COMMONWEALTH OF MASSACHUSETTS
WILLIAM F. MADDEN
CIVIL
NO. 39865
REGISTERED PROFESSIONAL ENGINEER

G.A.F. ENGINEERING, INC.
PROFESSIONAL ENGINEERS & LAND SURVEYORS
266 MAIN STREET – WAREHAM, MA 02571
TEL: (508) 295-6600 FAX: (508) 295-6634
E-MAIL: info@gafenginc.com

PRE-DEVELOPMENT
WATERSHED PLAN

6 CHAPEL LANE WAREHAM, MA

PREPARED FOR:

6 CHAPEL LANE, LLC

19 DEPOT STREET WAREHAM, MA

JOB NO.: 20-9499

DWG.
1 OF 2

CHAPEL LANE

PROP. 6" DIA. INSP. PORT WITH 6" NDS POLYOLEFIN POP-UP DRAINAGE EMITTER IN INSPECTION PORT, SET TOP OF EMITTER TO FINISHED GRADE

APPROX. LOC. OF EX. GAS MAIN

APPROX. LOC. OF EX. 6" C.I. WATER MAIN

MATCH INTO EX. SIDEWALK LINE & GRADE (TYP.)

PROP. WATER QUALITY CB-1
RIM=15.20
12" INV.=12.70

12" INV.=12.50 (TYP.)

PROP. 12" ADS N-12
L=22', S=0.9%

6" INV.=12.50

PROP. 3 ROWS OF 12 CULTEC RECHARGER 150XLHD CHAMBERS W/2' OF STONE ON ALL SIDES (SEE DETAIL)

PROP. 6" DIA. INSP. PORT (TYP. OF 3)

PROP. WATER QUALITY CB-2
RIM=16.00
12" INV.=13.00

PROP. 12" ADS N-12
L=7', S=7.1%

PROP. 12" ADS N-12 HEADER (TYP.)

SEE NOTE 5 (TYP.)

C.O. (TYP.)

PROP. DOWNSPOUT (TYP.)

PROP. TWO-FAMILY DWELL.
UNITS 1 & 2
T/O/F=18.75
F.F.E.=19.8±

PROP. 6" ADS N-12 ROOF DRAIN, S=1.0% MIN. (TYP.)

PROP. TWO-FAMILY DWELL.
UNITS 3 & 4
(FIRST FLOOR UNIT 3 AFFORDABLE UNIT)
T/O/F=18.75
F.F.E.=19.8±

GRADE TO DRAIN

PROP. TWO-FAMILY DWELL.
UNITS 5 & 6
(SECOND FLOOR UNIT 6 AFFORDABLE UNIT)
T/O/F=18.75
F.F.E.=19.8±

L=60'
S=1.3%
TIME=0.5 MINS.

L=50'
S=1.0%
TIME=7.2 MINS.

FLOW

Tc FLOW PATH

SEE SITE OVERIVEW PLAN FOR CONTINUATION OF PROPOSED SEWER MAIN (SHEET 4)

POST-DEVELOPMENT

SCALE: 1"=10'

0 10 20 40

NOTES:

1. REFER TO ARCHITECTURAL PLANS PREPARED BY OTHERS FOR ALL PROPOSED TWO FAMILY DWELLING UNITS DIMENSIONS, CONSTRUCTION NOTES AND DETAILS. CONTRACTOR SHALL CONFIRM TOP OF FOUNDATION AND FINISHED FLOOR ELEVATIONS WITH OWNER PRIOR TO CONSTRUCTION.
2. ALL PROPOSED WATER QUALITY CATCH BASINS SHALL HAVE A TEMPORARY SILT SACK INSTALLED IN THEM AS SOON AS THE STRUCTURE IS SET. CONTRACTOR SHALL EMPTY WHEN NEEDED AND REMOVE & DISPOSE OF THE SILT SACKS AT THE COMPLETION OF CONSTRUCTION.
3. PROPOSED WATER QUALITY CATCH BASIN 1 AND WATER QUALITY CATCH BASIN 2 SHALL BE A FIRST DEFENSE FDHC-3 UNIT FROM HYDRO INTERNATIONAL OR AN APPROVED EQUAL.
4. REFER TO ARCHITECTURAL PLANS BY OTHERS FOR FINAL LOCATIONS, SIZES AND COMPLETE CONSTRUCTION DETAILS ON THE PROPOSED DOWNSPOUTS.
5. WATER MAIN/SERVICES SHALL BE INSTALLED A MINIMUM OF 1' BELOW ALL PROPOSED DRAINAGE AND ROOF DRAINAGE PIPES AND 5' MINIMUM BELOW GRADE.
6. PROVIDE CLEAN OUTS WITH H.D.C.I. FRAME AND COVER TO GRADE, COVER TO READ 'DRAIN'.
7. LOAM AND SEED ALL DISTURBED AREAS.

REV.	DATE	BY	APP'D	DESCRIPTION
2	4/24/23	JMP	WFM	PER PEER REVIEW COMMENTS, REV. GRADING
1	3/14/23	JMP	WFM	PER INITIAL PEER REVIEW/SITE PLAN LAYOUT

DATE: NOV. 14, 2022
DRAWN BY: JMP
CHECKED BY: RJR
JOB NO.: 20-9499
SCALE: 1" = 10'

APPROVED BY:

APPROVED BY: 4/26/23

COMMONWEALTH OF MASSACHUSETTS WILLIAM F. MADDEN JR. NO. 39885 REGISTERED PROFESSIONAL ENGINEER

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POST-DEVELOPMENT WATERSHED PLAN

6 CHAPEL LANE
WAREHAM, MA

PREPARED FOR:
6 CHAPEL LANE, LLC
19 DEPOT STREET
WAREHAM, MA

JOB NO.: 20-9499

DWG. 2 OF 2

H:\GAF DRAWINGS\2020 DRAWINGS\20-9499 (BEAUCHEMIN)\9499\dwg\9499_3-DUPLEXES-REV-3.dwg