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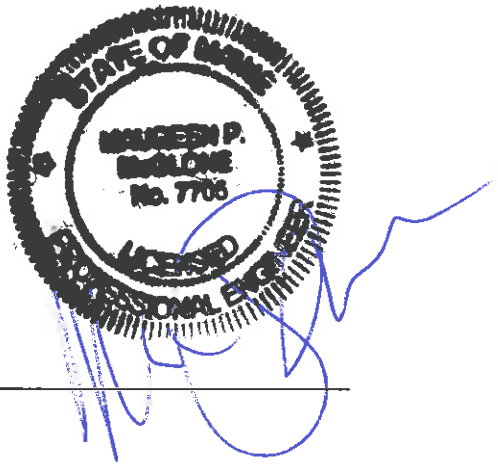
Academy for Active Learners
Stormwater Management Report



Date:	December 01, 2015
To:	Academy for Active Learners
From:	Maureen P. McGlone, P.E.
Peer Review:	Stephen J. Bradstreet, P.E.
Location:	134 Warren Avenue, Portland, Maine

List of Appendices:

Appendix A: Post Construction Stormwater Compliance Requirements
Appendix B: Stormwater BMP Inspection and Maintenance Requirements
Appendix C: Stormwater Quality Calculations
Appendix D: Pre Development Hydro CAD Calculations
Appendix E: Post Development Hydro CAD Calculations

Existing Conditions:

The site is a 56,622 SF (1.30 acre) lot located on the south side of Warren Avenue, adjacent to Keeley's Catering. The parcel is rectangular in shape and is primarily vegetated (wooded/scrub brush) on the southern 1/2 of the site and gravel parking with some grass on the northern 1/2 of the site adjacent to Warren Avenue. The northern portion is currently being used as overflow parking for Keeley's Catering and is fairly flat but sloping gently in a southerly direction. The more wooded southern portion of the site includes a steep bank sloping to the railroad tracks south of the site. Stormwater runoff from the site flows down the embankment then off-site and onto the rear of the abutting Keeley property.

Proposed Development:

The applicant, Delta Realty, proposes to construct a 1 story daycare building with a playground. The site will have 31 total parking spaces (including accessible parking), a playground, and landscaped areas. The proposed building, pavement and sidewalk areas will increase the impervious area (gravel parking lot) from 11,800 SF to 24,404 SF.

Stormwater Management – Basic Standards:

Erosion and sedimentation control measures are detailed within the design plans. Good housekeeping practices will be in accordance with Maine DEP Best Management Practices. A post construction

stormwater management plan is provided in ***Appendix A***. Stormwater BMP inspection and maintenance requirements are provided in ***Appendix B***.

Stormwater Management – Quality (General Standards):

The existing site is currently a mix of grass and vegetated (wooded/scrub brush) with a gravel parking area (11,800 SF) which is considered impervious surface. The site currently drains to the southwest corner of the property which then drains onto the adjacent Keeley property. The site's new impervious area is now 12,604 SF. For water quality treatment, the site design incorporates a roof dripline filter system along the rear of the building. This system will capture roof runoff and is comprised of a 42-inch thick x 5-foot wide layer of 3/4" crushed stone running along the length of the building. The beneath the stone is a 12-inch thick structural backfill layer for filtration of the roof runoff. A 6-inch perforated underdrain pipe sits in stone above the foundation footer and discharges to an R-Tank system below the parking area that will be used for detention during larger storm events. A Nyloplast structure with beehive grate is connected to the discharge piping and will capture bypass volume from the larger storm events for storage. A grass underdrained soil filter is included on the western edge of the parking area for treatment of a portion of the parking lot runoff. The grass channel includes an 18-inch thick soil filter over a 14-inch thick layer of course sand with a 6-inch perforated underdrain pipe. A Nyloplast structure with beehive grate is connected to the underdrain discharge piping and transports volume from the larger storms to the R-Tank detention system. Lastly, a 3-foot wide x 27-inch thick stone underdrained filter (construction similar to the roof dripline) is being proposed on the south edge of the parking lot to capture and treat runoff from the remainder of the parking area. A Nyloplast structure is included to connect the system to the R-Tanks during larger storm events. Calculations have been included in Appendix C.

Stormwater Management – Quantity (Flooding Standards):

The use of the R-Tanks will detain the stormwater runoff to below pre-development conditions. The proposed detention system connects all three treatment systems and is sited beneath the pavement in the rear of the building. The additional storage is required for site stormwater capacity reasons. Stormwater from the R-Tanks will flow into an outlet control structure that will control the flow with orifices and a weir. The stormwater then discharges to a rip rap slope and down the embankment to follow the current drainage path to the southwest corner of the site. During larger storm events the Nyloplast structures identified above will collect the additional stormwater and direct it into the R-Tank system for detention.

Hydraulic Analysis:

Stormwater runoff calculations for quantity were made using the HydroCAD 10.0 computer program, which is based on the Soil Conservation Service's TR-20 methodology. Runoff hydrographs are generated based on a standard Type III 24 hour storm.

Six storm events were modeled as follows:

1. 1" storm: The 1" storm event was analyzed to simulate a heavy weather event that would typically happen multiple times over a given year and may impact the CSO frequency and volume.

2. 1.6" storm: The 1.6" storm event was analyzed to simulate a heavy weather event that would typically happen multiple times over a given year. The 1.6" storm is being used to determine stormwater credits as part of the City's Stormwater Impact fee.
3. 2-year frequency flood event: 3.10" rainfall
4. 10-year frequency flood event: 4.60" rainfall
5. 25-year frequency flood event: 5.80" rainfall
6. 100-year frequency flood event: 8.10" rainfall

Runoff Curve numbers were determined based on land coverage and hydro-geological soil type B. Times of concentration were developed based on runoff flow paths for each subarea and shown on the Pre and Post-Development plans. A minimum Tc of 6 minutes was set in the HydroCAD model.

Peak runoff flow rates and runoff volumes are provided at the analysis point, which is identified on the Pre and Post-Development plans.

Storm Event	PRE-Development Peak Runoff RATES cubic feet per second (CFS)
	Analysis Point A
1" Storm	0.01
1.6" Storm	0.17
2 Year Frequency Storm	1.00
10 Year Frequency Storm	2.08
25 Year Frequency Storm	3.01
100 Year Frequency Storm	4.85

Storm Event	POST-Development Peak Runoff RATES cubic feet per second (CFS)
	Analysis Point A
1" Storm	0.01
1.6" Storm	0.17
2 Year Frequency Storm	1.02
10 Year Frequency Storm	2.02
25 Year Frequency Storm	2.60
100 Year Frequency Storm	3.98

Storm Event	PRE-Development Runoff VOLUMES acre feet (AF) volume of water 1' deep over one acre
	Analysis Point A
1" Storm	0.002
1.6" Storm	0.016
2 Year Frequency Storm	0.087
10 Year Frequency Storm	0.184
25 Year Frequency Storm	0.271
100 Year Frequency Storm	0.452

Storm Event	POST-Development Runoff VOLUMES acre feet (AF) volume of water 1' deep over one acre
	Analysis Point A
1" Storm	0.003
1.6" Storm	0.019
2 Year Frequency Storm	0.090
10 Year Frequency Storm	0.185
25 Year Frequency Storm	0.269
100 Year Frequency Storm	0.444

APPENDIX A

Post Construction Stormwater Compliance Requirements

Academy for Active Learners
134 Warren Avenue
Portland, Maine

Ransom Consulting, Inc.
Project 151.06127

Academy for Active Learners Post-Construction Stormwater Compliance Requirements

The Applicant shall maintain the BMPs in accordance with the approved plan and shall demonstrate compliance with the plan as follows:

(a) *Inspections.* The owner or operator of a BMP shall hire a qualified post-construction stormwater inspector to at least annually, inspect the BMPs, including but not limited to any parking areas, catch basins, drainage swales, detention basins and ponds, pipes and related structures, in accordance with all municipal and state inspection, cleaning and maintenance requirements of the approved post-construction stormwater management plan.

(b) *Maintenance and repair.* If the BMP requires maintenance, repair or replacement to function as intended by the approved post-construction stormwater management plan, the owner or operator of the BMP shall take corrective action(s) to address the deficiency or deficiencies as soon as possible after the deficiency is discovered and shall provide a record of the deficiency and corrective action(s) to the department of public services ("DPS") in the annual report.

(c) *Annual report.* The owner or operator of a BMP or a qualified post-construction stormwater inspector hired by that person, shall, on or by June 30 of each year, provide a completed and signed certification to DPS in a form provided by DPS, certifying that the person has inspected the BMP(s) and that they are adequately maintained and functioning as intended by the approved post-construction stormwater management plan, or that they require maintenance or repair, including the record of the deficiency and corrective action(s) taken.

(d) *Filing fee.* Any persons required to file and annual certification under this section shall include with the annual certification a filing fee established by DPS to pay the administrative and technical costs of review of the annual certification.

(e) *Right of entry.* In order to determine compliance with this article and with the post-construction stormwater management plan, DPS may enter upon property at reasonable hours with the consent of the owner, occupant or agent to inspect the BMPs.

APPENDIX B

Stormwater BMP Inspection and Maintenance Log

Academy for Active Learners
134 Warren Avenue
Portland, Maine

RANSOM Consulting, Inc.

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Academy for Active Learners
Stormwater Inspection and Maintenance Plan

Inspection and Maintenance Contract:

Long-term inspection and maintenance by a DEP approved stormwater maintenance inspector shall be regularly provided under a five-year binding inspection and maintenance contract that must be renewed prior to contract expiration. A legal agreement shall be established with responsibility for inspection and maintenance and should list specific maintenance responsibilities (including timetables) as well as provide for funding for the long-term inspection and maintenance. Debris and sediment buildup shall be removed from the forebay, basin, stone filter, or paver system as needed.

Inspection schedule:

During the first year of operation, filtration BMPs shall be inspected twice annually and following major storm events. Thereafter, the filter should be inspected every six months to ensure that it is draining within 48 hours following a 1-inch storm. Additionally, a storm that fills the system to overflow should be monitored to confirm in drains in no less than 36 hours and within 60 hours.

Vegetated Soil Filter:

Maintenance criteria for the vegetated soil filter are as follows:

- Debris and sediment buildup shall be removed from the vegetated soil filter system as needed. The removed sediments should be disposed in an appropriate manner.
- Mowing of the grassed basin can occur semi-annually to a height of no less than 6 inches. If mowing is desired only hand-held or push-mowers shall be used (no tractors).
- Any bare areas or erosion rills shall be repaired with new media filter or sandy loam then seeded and mulched. Fertilization of the filter area should be avoided unless abslolutely necessary to establish vegetation.
- Harvesting and pruning of excessive growth will need to be done occasionally. Weeding to control unwanted or invasive plants may also be necessary. Add new mulch only as necessary.

- Maintaining good grass cover will minimize clogging with fine sediments and if ponding exceeds 48 hours, the top of the filter bed must be tilled to reestablish the soil's filtration capacity.
- Should water pond on the surface of the filter bed for longer than 72 hours, the top several inches of the filter shall be replaced with fresh material. The removed material shall be disposed properly.

R-Tank Stormwater Detention:

Inspection and Maintenance of the R-Tank shall be in accordance with the manufacturer's recommended practices to provide the performance required by the design. The R-Tank system includes inspection ports and maintenance ports, each of which has a cover at the surface. A visual inspection of all ports should be used to determine the depth of sediments deposited in the R-Tank system. The system should be back-flushed once the sediment accumulation has reached the manufacturer's limits. Once removed, sediment-laden water must be disposed of properly.

Roof Dripline Filter:

The roof dripline filter bed is part of the stormwater management plan and requires maintenance similar to the vegetated soil filter basin. Debris and sediment buildup shall be removed from the stone filter bed system as needed and shall be properly disposed. The filter bed must not be paved over or altered in any way.

Parking Lot Stone Filter:

The parking lot stone filter bed is part of the stormwater management plan and requires maintenance similar to the vegetated soil filter basin. Debris and sediment buildup shall be removed from the stone filter bed system as needed and shall be properly disposed. The filter bed must not be paved over or altered in any way.

Academy for Active Learners: Stormwater BMP Inspection Log

The City of Portland, ME requires ongoing annual inspections to ensure the proper maintenance and operation of stormwater management facilities. Inspections must be conducted by third parties qualified by the City.

A. General Information

Use only one Cover Sheet per site with as many specific structural BMP Inspection Report attachments as needed. Attach required color digital photos of site, structures and devices as applicable with captions.

Project Name:	**Academy for Active Learners**	**Inspection Date:**	
Parcel Map, Block and Lot:		**Current Weather:**	
BMP Owner:	**Delta Realty**	**Date / Amount Last Precip:**	
Owner Mailing Address:	**380 Warren Avenue** **Portland, Maine**		
Owner Phone #:		**3PI Mailing Address:**	
Owner Email:		**Inspector Name:**	
		Inspector Phone #:	
		Inspector Email:	

B. Inspection Report Attachments

Please document the number of each structural BMP type found at this site in the blank spaces provided below. Use additional Attachments if / as needed and submit all Attachments together with the Cover Sheet as a single report.

BMP Type	Number BMPs at site
Vegetated Areas	1
Stormdrain Outlets	1
Stormdrain Structures: Overflow Control and Catch Basin	4
Stone Fiter	2
R-Tank Subsurface Detention-Infiltration System	1

Other (describe	

C. Inspection Results

FAIL** ☐

** If any one item on an Inspection Report attachment is coded as "Work Needed" then entire BMP fails inspection.

** If a site has multiple BMPs and one fails inspection, mark as "Fail" until all BMPs pass inspection.

Note: Applicable BMP Inspection Reports and confirmatory color digital photos summarizing required repairs must be submitted to the City following completion of the preliminary inspection. A re-inspection and certification must be completed within 60 days of the failed preliminary report. It is recommended that the inspector be part of the repair / maintenance process to ensure that repairs are performed properly.

PASS ☐

Note: a qualified professional (as determined by the City) must sign below and include all applicable Inspection Report attachments and confirmatory digital color photos with captions.

D. Professional Certification (as qualified by City of Portland Stormwater Program Coordinator)

To be completed only when all BMPs at this site are functioning as designed with no outstanding maintenance issues.

I, _____, as a duly qualified third party inspector attest that a thorough inspection has been completed for ALL applicable BMPs that are associated with this particular site. All inspected structural BMPs are performing as designed and intended and are in compliance with the provisions of the City Portland's Standards

Signature: _____

Date: _____

Form Adapted from the City of South Portland's Annual Structural BMP Inspection Report Cover Sheet

Owner: Delta Realty	**Operator:**
Location & Parcel Id:	**Inspector:**
	Date:

General Information	**Observations**
Inspection duration (hours)	
Days since last precipitation	
Quantity of last precipitation (in)	
Type of inspection	
Storm event	
Current weather	
Photos taken	☐ Yes ☐ No ☐ NA
Nearby natural resources	☐ Yes ☐ No ☐ NA
Copy of ESC plan	☐ Yes ☐ No ☐ NA
MEDEP Permit # (*if applicable*)	
General info notes	

Vegetated Areas	**Observations**
Condition of slopes and embankment is good	☐ Yes ☐ No ☐ NA
No bare areas (< 90% covered) with sparse growth	☐ Yes ☐ No ☐ NA
Armored areas have no rill erosion or the flow diverted to onsite areas can withstand concentrated flows	☐ Yes ☐ No ☐ NA
Vegetated area notes	

Stormdrain outlets	**Observations**
Accumulated sediments and debris at the outlet and within the conduit have been removed.	☐ Yes ☐ No ☐ NA
Erosion damage at the outlet have been repaired	☐ Yes ☐ No ☐ NA
Outlet notes	

Stormdrain Structures (Require inspection TWICE per year)	**Observations**
Accumulated sediments from inflow channels, pipes and sumps between basins have been removed and legally disposed of.	☐ Yes ☐ No ☐ NA
Floating debris and floating oils have been removed.	☐ Yes ☐ No ☐ NA
Debris and Sediment Removed From Outlet Control Structure	☐ Yes ☐ No ☐ NA

Other Comments	**Observations**
Corrective action needed	☐ Yes ☐ No ☐ NA
If corrective action in needed, please explain detail	
Verbal notification provided to responsible party	☐ Yes ☐ No
Verbal notification contact	
Follow up required	☐ Yes ☐ No
Final comment notes	

Photos (*use additional pages as needed*)
Review Notes
Date Reviewed: Reviewed by: Date entered: Date edited: Edited by:

APPENDIX C

Stormwater Quality Calculations

Academy of Active Learners
134 Warren Avenue
Portland, Maine

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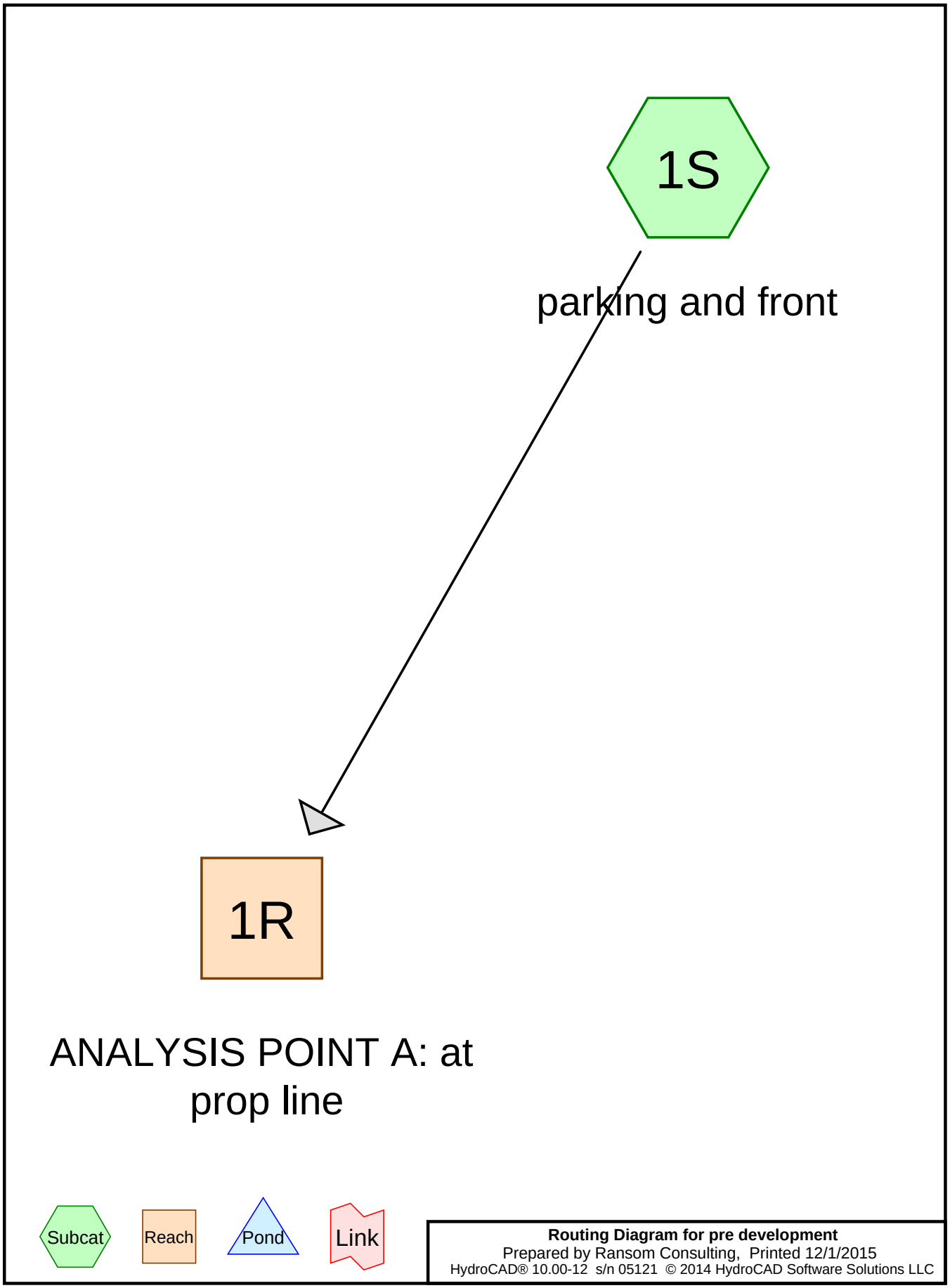
Project 151.06127

APPENDIX D

Pre-Development Stormwater Calculations

Academy for Active Learners
134 Warren Avenue
Portland, Maine

Ransom Consulting, Inc.
Project 151.06127



Routing Diagram for pre development
Prepared by Ransom Consulting, Printed 12/1/2015

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.677	79	<50% Grass cover, Poor, HSG B (1S)
0.147	56	Brush, Fair, HSG B (1S)
0.271	98	Gravel parking lot (1S)
0.205	60	Woods, Fair, HSG B (1S)
1.300	**77**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
1.029	HSG B	1S
0.000	HSG C	
0.000	HSG D	
0.271	Other	1S
1.300		**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
0.000	0.677	0.000	0.000	0.000	0.677	<50% Grass cover, Poor	1S
0.000	0.147	0.000	0.000	0.000	0.147	Brush, Fair	1S
0.000	0.000	0.000	0.000	0.271	0.271	Gravel parking lot	1S
0.000	0.205	0.000	0.000	0.000	0.205	Woods, Fair	1S
0.000	**1.029**	**0.000**	**0.000**	**0.271**	**1.300**	**TOTAL AREA**	

Time span=3.00-15.00 hrs, dt=0.01 hrs, 1201 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: parking and front Runoff Area=56,622 sf 20.84% Impervious Runoff Depth>0.02"
Flow Length=419' Tc=26.7 min CN=77 Runoff=0.01 cfs 0.002 af

Reach 1R: ANALYSISPOINT A: at prop line Inflow=0.01 cfs 0.002 af
Outflow=0.01 cfs 0.002 af

Total Runoff Area = 1.300 ac Runoff Volume = 0.002 af Average Runoff Depth = 0.02"
79.16% Pervious = 1.029 ac 20.84% Impervious = 0.271 ac

Summary for Subcatchment 1S: parking and front

Runoff = 0.01 cfs @ 12.79 hrs, Volume= 0.002 af, Depth> 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-inch Rainfall=1.00"

	Area (sf)	CN	Description
*	11,800	98	Gravel parking lot
	29,504	79	<50% Grass cover, Poor, HSG B
	6,403	56	Brush, Fair, HSG B
	8,915	60	Woods, Fair, HSG B
	56,622	77	Weighted Average
	44,822		79.16% Pervious Area
	11,800		20.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.1	188	0.0100	0.14		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.00"
0.2	33	0.1700	2.89		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.1	17	0.2600	2.55		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
4.3	181	0.0200	0.71		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
26.7	419	Total			

Summary for Reach 1R: ANALYSIS POINT A: at prop line

Inflow Area = 1.300 ac, 20.84% Impervious, Inflow Depth > 0.02" for 1-inch event
Inflow = 0.01 cfs @ 12.79 hrs, Volume= 0.002 af
Outflow = 0.01 cfs @ 12.79 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2

Time span=3.00-15.00 hrs, dt=0.01 hrs, 1201 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: parking and front Runoff Area=56,622 sf 20.84% Impervious Runoff Depth>0.15"
Flow Length=419' Tc=26.7 min CN=77 Runoff=0.17 cfs 0.016 af

Reach 1R: ANALYSISPOINT A: at prop line Inflow=0.17 cfs 0.016 af
Outflow=0.17 cfs 0.016 af

Total Runoff Area = 1.300 ac Runoff Volume = 0.016 af Average Runoff Depth = 0.15"
79.16% Pervious = 1.029 ac 20.84% Impervious = 0.271 ac

Summary for Subcatchment 1S: parking and front

Runoff = 0.17 cfs @ 12.49 hrs, Volume= 0.016 af, Depth> 0.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs
Type III 24-hr 1.6-inch Rainfall=1.60"

	Area (sf)	CN	Description
*	11,800	98	Gravel parking lot
	29,504	79	<50% Grass cover, Poor, HSG B
	6,403	56	Brush, Fair, HSG B
	8,915	60	Woods, Fair, HSG B
	56,622	77	Weighted Average
	44,822		79.16% Pervious Area
	11,800		20.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.1	188	0.0100	0.14		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.00"
0.2	33	0.1700	2.89		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.1	17	0.2600	2.55		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
4.3	181	0.0200	0.71		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
26.7	419	Total			

Summary for Reach 1R: ANALYSIS POINT A: at prop line

Inflow Area = 1.300 ac, 20.84% Impervious, Inflow Depth > 0.15" for 1.6-inch event
Inflow = 0.17 cfs @ 12.49 hrs, Volume= 0.016 af
Outflow = 0.17 cfs @ 12.49 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2

Time span=3.00-15.00 hrs, dt=0.01 hrs, 1201 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: parking and front Runoff Area=56,622 sf 20.84% Impervious Runoff Depth>0.80"
Flow Length=419' Tc=26.7 min CN=77 Runoff=1.00 cfs 0.087 af

Reach 1R: ANALYSISPOINT A: at prop line Inflow=1.00 cfs 0.087 af
Outflow=1.00 cfs 0.087 af

Total Runoff Area = 1.300 ac Runoff Volume = 0.087 af Average Runoff Depth = 0.80"
79.16% Pervious = 1.029 ac 20.84% Impervious = 0.271 ac

Summary for Subcatchment 1S: parking and front

Runoff = 1.00 cfs @ 12.40 hrs, Volume= 0.087 af, Depth> 0.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	11,800	98	Gravel parking lot
	29,504	79	<50% Grass cover, Poor, HSG B
	6,403	56	Brush, Fair, HSG B
	8,915	60	Woods, Fair, HSG B
	56,622	77	Weighted Average
	44,822		79.16% Pervious Area
	11,800		20.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.1	188	0.0100	0.14		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.00"
0.2	33	0.1700	2.89		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.1	17	0.2600	2.55		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
4.3	181	0.0200	0.71		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
26.7	419	Total			

Summary for Reach 1R: ANALYSIS POINT A: at prop line

Inflow Area = 1.300 ac, 20.84% Impervious, Inflow Depth > 0.80" for 2-Year event
Inflow = 1.00 cfs @ 12.40 hrs, Volume= 0.087 af
Outflow = 1.00 cfs @ 12.40 hrs, Volume= 0.087 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2

Time span=3.00-15.00 hrs, dt=0.01 hrs, 1201 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: parking and front Runoff Area=56,622 sf 20.84% Impervious Runoff Depth>1.70"
Flow Length=419' Tc=26.7 min CN=77 Runoff=2.08 cfs 0.184 af

Reach 1R: ANALYSISPOINT A: at prop line Inflow=2.08 cfs 0.184 af
Outflow=2.08 cfs 0.184 af

Total Runoff Area = 1.300 ac Runoff Volume = 0.184 af Average Runoff Depth = 1.70"
79.16% Pervious = 1.029 ac 20.84% Impervious = 0.271 ac

Summary for Subcatchment 1S: parking and front

Runoff = 2.08 cfs @ 12.37 hrs, Volume= 0.184 af, Depth> 1.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
*	11,800	98	Gravel parking lot
	29,504	79	<50% Grass cover, Poor, HSG B
	6,403	56	Brush, Fair, HSG B
	8,915	60	Woods, Fair, HSG B
	56,622	77	Weighted Average
	44,822		79.16% Pervious Area
	11,800		20.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.1	188	0.0100	0.14		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.00"
0.2	33	0.1700	2.89		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.1	17	0.2600	2.55		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
4.3	181	0.0200	0.71		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
26.7	419	Total			

Summary for Reach 1R: ANALYSIS POINT A: at prop line

Inflow Area = 1.300 ac, 20.84% Impervious, Inflow Depth > 1.70" for 10-Year event
Inflow = 2.08 cfs @ 12.37 hrs, Volume= 0.184 af
Outflow = 2.08 cfs @ 12.37 hrs, Volume= 0.184 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2

Time span=3.00-15.00 hrs, dt=0.01 hrs, 1201 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: parking and front Runoff Area=56,622 sf 20.84% Impervious Runoff Depth>2.51"
Flow Length=419' Tc=26.7 min CN=77 Runoff=3.01 cfs 0.271 af

Reach 1R: ANALYSISPOINT A: at prop line Inflow=3.01 cfs 0.271 af
Outflow=3.01 cfs 0.271 af

Total Runoff Area = 1.300 ac Runoff Volume = 0.271 af Average Runoff Depth = 2.51"
79.16% Pervious = 1.029 ac 20.84% Impervious = 0.271 ac

Summary for Subcatchment 1S: parking and front

Runoff = 3.01 cfs @ 12.37 hrs, Volume= 0.271 af, Depth> 2.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	11,800	98	Gravel parking lot
	29,504	79	<50% Grass cover, Poor, HSG B
	6,403	56	Brush, Fair, HSG B
	8,915	60	Woods, Fair, HSG B
	56,622	77	Weighted Average
	44,822		79.16% Pervious Area
	11,800		20.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.1	188	0.0100	0.14		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.00"
0.2	33	0.1700	2.89		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.1	17	0.2600	2.55		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
4.3	181	0.0200	0.71		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
26.7	419	Total			

Summary for Reach 1R: ANALYSIS POINT A: at prop line

Inflow Area = 1.300 ac, 20.84% Impervious, Inflow Depth > 2.51" for 25-Year event
Inflow = 3.01 cfs @ 12.37 hrs, Volume= 0.271 af
Outflow = 3.01 cfs @ 12.37 hrs, Volume= 0.271 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2

Time span=3.00-15.00 hrs, dt=0.01 hrs, 1201 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: parking and front Runoff Area=56,622 sf 20.84% Impervious Runoff Depth>4.17"
Flow Length=419' Tc=26.7 min CN=77 Runoff=4.85 cfs 0.452 af

Reach 1R: ANALYSISPOINT A: at prop line Inflow=4.85 cfs 0.452 af
Outflow=4.85 cfs 0.452 af

Total Runoff Area = 1.300 ac Runoff Volume = 0.452 af Average Runoff Depth = 4.17"
79.16% Pervious = 1.029 ac 20.84% Impervious = 0.271 ac

Summary for Subcatchment 1S: parking and front

Runoff = 4.85 cfs @ 12.37 hrs, Volume= 0.452 af, Depth> 4.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.10"

	Area (sf)	CN	Description
*	11,800	98	Gravel parking lot
	29,504	79	<50% Grass cover, Poor, HSG B
	6,403	56	Brush, Fair, HSG B
	8,915	60	Woods, Fair, HSG B
	56,622	77	Weighted Average
	44,822		79.16% Pervious Area
	11,800		20.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.1	188	0.0100	0.14		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.00"
0.2	33	0.1700	2.89		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.1	17	0.2600	2.55		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
4.3	181	0.0200	0.71		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
26.7	419	Total			

Summary for Reach 1R: ANALYSIS POINT A: at prop line

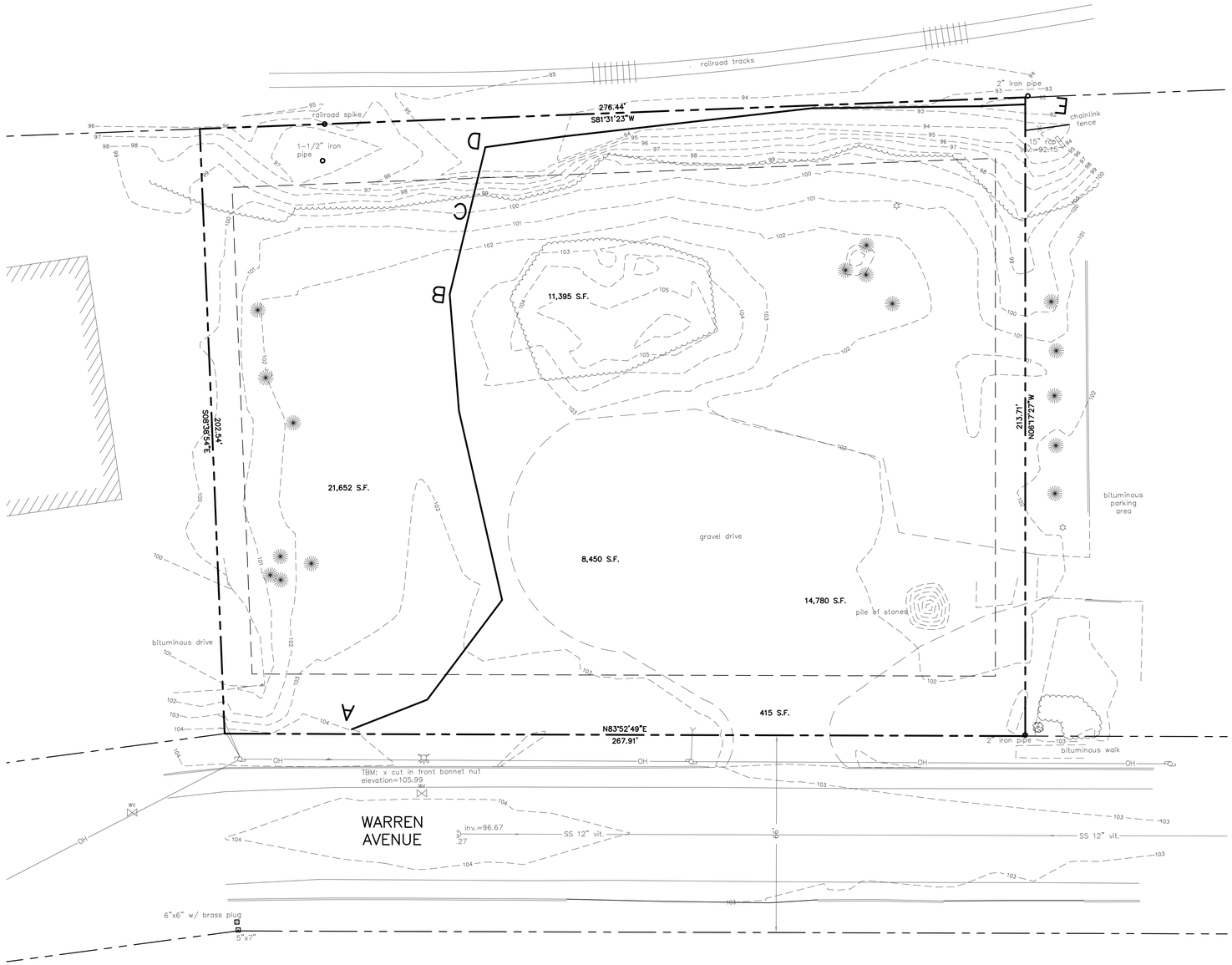
Inflow Area = 1.300 ac, 20.84% Impervious, Inflow Depth > 4.17" for 100-Year event
Inflow = 4.85 cfs @ 12.37 hrs, Volume= 0.452 af
Outflow = 4.85 cfs @ 12.37 hrs, Volume= 0.452 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2

NORTH

GENERAL NOTES:

1. SITE AREA: 52,383 SF OR 1.20 ACRES
2. IMPERVIOUS AREA: 11,800 S.F. GRAVEL PARKING
3. LANDSCAPED AREA: 44,822 S.F. GRASS AND WOODLAND



DRAINAGE LEGEND

- SUBCATCHMENT LABEL
- POND LABEL
- REACH LABEL
- REACH PATH
- TIME OF CONCENTRATION (TC) PATH
- SUBCATCHMENT DIVIDE
- SOIL BOUNDARY
- POA#1 POINT OF ANALYSIS

SCALE

0 10 20 40

SCALE in FEET
1"=20'

Site:

PROPOSED BUILDING ACADEMY FOR ACTIVE LEARNERS

134 WARREN AVENUE
PORTLAND, MAINE

Prepared for:

DELTA REALTY
380 WARREN AVENUE
PORTLAND, MAINE

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PRE-DEVELOPMENT STORMWATER PLAN

No.	Revision/Issue	Date
A	PRELIMINARY REVIEW	12/01/15

Design by: MPM	Checked by: SJB
Drawn by: JAR	Approved by: SJB
Project: 151.06127	Date: OCTOBER 2015

Sheet No: SWP-100

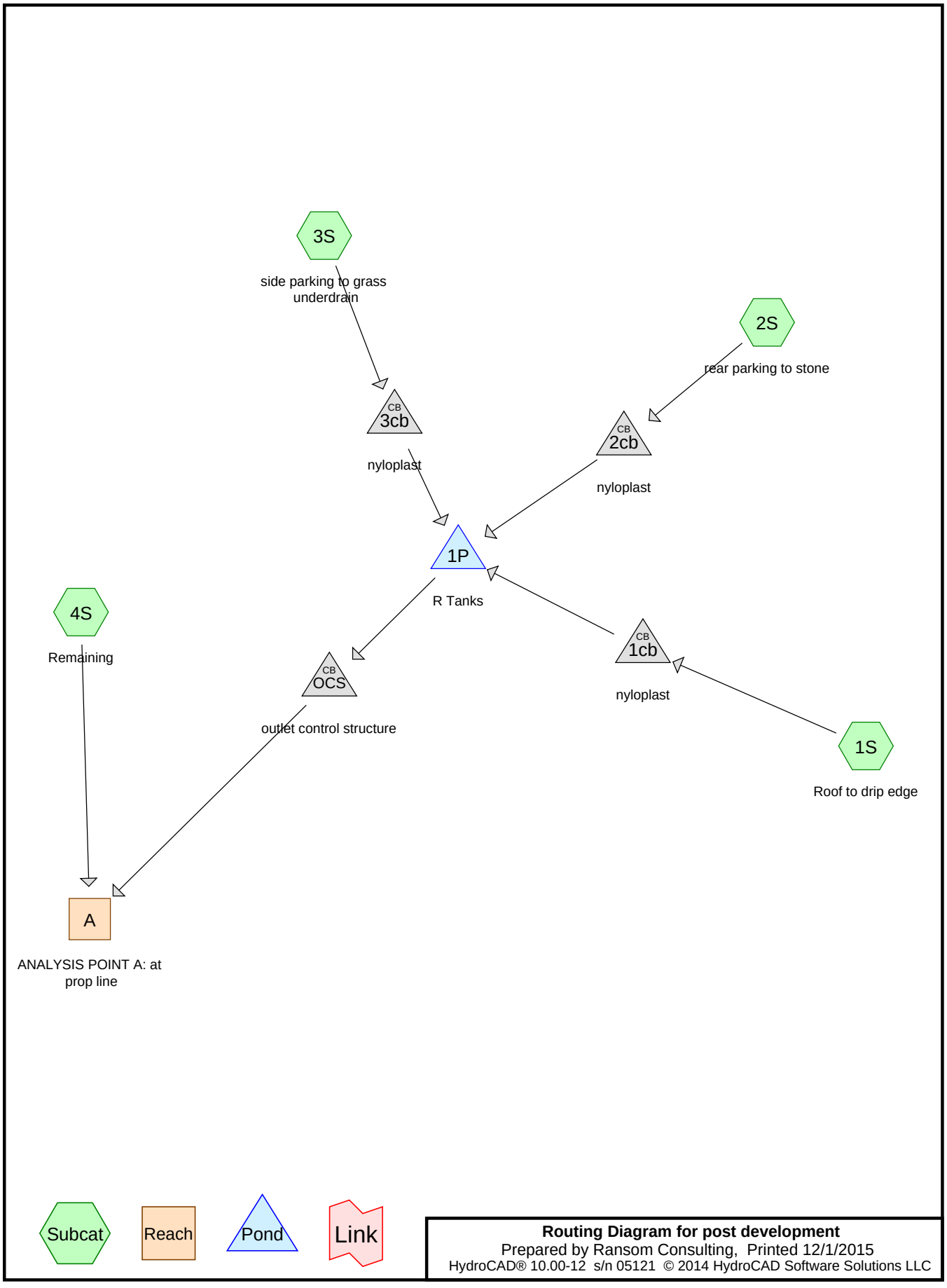
Sheet 1 of 2

APPENDIX E

Post-Development Stormwater Calculations

Academy for Active Learners
134 Warren Avenue
Portland, Maine

Ransom Consulting, Inc.
Project 151.06127



Routing Diagram for post development
Prepared by Ransom Consulting, Printed 12/1/2015

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.325	61	>75% Grass cover, Good, HSG B (2S, 3S, 4S)
0.144	98	Paved parking & roofs (2S)
0.216	98	Paved parking, HSG B (3S)
0.190	98	Unconnected pavement, HSG B (1S, 4S)
0.140	55	Woods, Good, HSG B (2S, 3S, 4S)
0.010	30	drip edge stone (1S)
0.010	30	drip strip (2S)
0.254	69	playground/woodchips (4S)
1.290	**77**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.872	HSG B	1S, 2S, 3S, 4S
0.000	HSG C	
0.000	HSG D	
0.418	Other	1S, 2S, 4S
1.290		**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
0.000	0.325	0.000	0.000	0.000	0.325	>75% Grass cover, Good	2S, 3S, 4S
0.000	0.216	0.000	0.000	0.000	0.216	Paved parking	3S
0.000	0.000	0.000	0.000	0.144	0.144	Paved parking & roofs	2S
0.000	0.190	0.000	0.000	0.000	0.190	Unconnected pavement	1S, 4S
0.000	0.140	0.000	0.000	0.000	0.140	Woods, Good	2S, 3S, 4S
0.000	0.000	0.000	0.000	0.010	0.010	drip edge stone	1S
0.000	0.000	0.000	0.000	0.010	0.010	drip strip	2S
0.000	0.000	0.000	0.000	0.254	0.254	playground/woodchips	4S
0.000	**0.872**	**0.000**	**0.000**	**0.418**	**1.290**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1cb	97.25	96.00	25.0	0.0500	0.013	6.0	0.0	0.0
2	1P	95.25	95.00	25.0	0.0100	0.013	12.0	0.0	0.0
3	2cb	95.75	95.25	20.0	0.0250	0.013	6.0	0.0	0.0
4	3cb	97.25	96.75	10.0	0.0500	0.013	6.0	0.0	0.0

Time span=3.00-15.00 hrs, dt=0.01 hrs, 1201 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Roof to drip edge Runoff Area=8,450 sf 94.83% Impervious Runoff Depth>0.38"
Tc=6.0 min CN=94 Runoff=0.11 cfs 0.006 af

Subcatchment2S: rear parking to stone Runoff Area=11,395 sf 55.17% Impervious Runoff Depth>0.03"
Tc=6.0 min CN=79 Runoff=0.01 cfs 0.001 af

Subcatchment3S: side parking to grass Runoff Area=14,710 sf 64.00% Impervious Runoff Depth>0.09"
Tc=6.0 min CN=84 Runoff=0.04 cfs 0.003 af

Subcatchment4S: Remaining Runoff Area=21,652 sf 1.27% Impervious Runoff Depth=0.00"
Flow Length=492' Tc=38.9 min CN=65 Runoff=0.00 cfs 0.000 af

Reach A: ANALYSISPOINT A: at prop line Inflow=0.01 cfs 0.003 af
Outflow=0.01 cfs 0.003 af

Pond 1cb: nyloplast Peak Elev=97.45' Inflow=0.11 cfs 0.006 af
6.0" Round Culvert n=0.013 L=25.0' S=0.0500 '/' Outflow=0.11 cfs 0.006 af

Pond 1P: R Tanks Peak Elev=95.34' Storage=302 cf Inflow=0.15 cfs 0.010 af
12.0" Round Culvert n=0.013 L=25.0' S=0.0100 '/' Outflow=0.01 cfs 0.003 af

Pond 2cb: nyloplast Peak Elev=95.80' Inflow=0.01 cfs 0.001 af
6.0" Round Culvert n=0.013 L=20.0' S=0.0250 '/' Outflow=0.01 cfs 0.001 af

Pond 3cb: nyloplast Peak Elev=97.37' Inflow=0.04 cfs 0.003 af
6.0" Round Culvert n=0.013 L=10.0' S=0.0500 '/' Outflow=0.04 cfs 0.003 af

Pond OCS: outlet control structure Peak Elev=95.26' Inflow=0.01 cfs 0.003 af
Outflow=0.01 cfs 0.003 af

Total Runoff Area = 1.290 ac Runoff Volume = 0.010 af Average Runoff Depth = 0.09"
57.32% Pervious = 0.740 ac 42.68% Impervious = 0.551 ac

Summary for Subcatchment 1S: Roof to drip edge

Runoff = 0.11 cfs @ 12.09 hrs, Volume= 0.006 af, Depth> 0.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-inch Rainfall=1.00"

	Area (sf)	CN	Description
	8,013	98	Unconnected pavement, HSG B
*	437	30	drip edge stone
	8,450	94	Weighted Average
	437		5.17% Pervious Area
	8,013		94.83% Impervious Area
	8,013		100.00% Unconnected

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

Summary for Subcatchment 2S: rear parking to stone

Runoff = 0.01 cfs @ 12.35 hrs, Volume= 0.001 af, Depth> 0.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-inch Rainfall=1.00"

	Area (sf)	CN	Description
	6,287	98	Paved parking & roofs
	1,650	61	>75% Grass cover, Good, HSG B
*	420	30	drip strip
	3,038	55	Woods, Good, HSG B
	11,395	79	Weighted Average
	5,108		44.83% Pervious Area
	6,287		55.17% Impervious Area

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

Summary for Subcatchment 3S: side parking to grass underdrain

Runoff = 0.04 cfs @ 12.12 hrs, Volume= 0.003 af, Depth> 0.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-inch Rainfall=1.00"

Area (sf)	CN	Description
9,414	98	Paved parking, HSG B
4,835	61	>75% Grass cover, Good, HSG B
461	55	Woods, Good, HSG B
14,710	84	Weighted Average
5,296		36.00% Pervious Area
9,414		64.00% Impervious Area

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

Summary for Subcatchment 4S: Remaining

Runoff = 0.00 cfs @ 3.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-inch Rainfall=1.00"

	Area (sf)	CN	Description
	7,692	61	>75% Grass cover, Good, HSG B
	275	98	Unconnected pavement, HSG B
*	11,065	69	playground/woodchips
	2,620	55	Woods, Good, HSG B
	21,652	65	Weighted Average
	21,377		98.73% Pervious Area
	275		1.27% Impervious Area
	275		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.4	120	0.0020	0.07		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.00"
4.7	125	0.0040	0.44		**Shallow Concentrated Flow, B-C PLAYGROUND** Short Grass Pasture Kv= 7.0 fps
0.4	47	0.0700	1.85		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.2	23	0.2000	2.24		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
4.2	177	0.0200	0.71		**Shallow Concentrated Flow, E-F** Woodland Kv= 5.0 fps
38.9	492	Total			

Summary for Reach A: ANALYSIS POINT A: at prop line

Inflow Area = 1.290 ac, 42.68% Impervious, Inflow Depth > 0.03" for 1-inch event
Inflow = 0.01 cfs @ 14.21 hrs, Volume= 0.003 af
Outflow = 0.01 cfs @ 14.21 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2

Summary for Pond 1cb: nyloplast

Inflow Area = 0.194 ac, 94.83% Impervious, Inflow Depth > 0.38" for 1-inch event
Inflow = 0.11 cfs @ 12.09 hrs, Volume= 0.006 af
Outflow = 0.11 cfs @ 12.09 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.0 min
Primary = 0.11 cfs @ 12.09 hrs, Volume= 0.006 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 97.45' @ 12.09 hrs
Flood Elev= 103.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	97.25'	**6.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 97.25' / 96.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.11 cfs @ 12.09 hrs HW=97.45' TW=95.15' (Dynamic Tailwater)
↑└**1=Culvert** (Inlet Controls 0.11 cfs @ 1.53 fps)

Summary for Pond 1P: R Tanks

Inflow Area = 0.793 ac, 68.63% Impervious, Inflow Depth > 0.14" for 1-inch event
Inflow = 0.15 cfs @ 12.10 hrs, Volume= 0.010 af
Outflow = 0.01 cfs @ 14.22 hrs, Volume= 0.003 af, Atten= 90%, Lag= 127.1 min
Primary = 0.01 cfs @ 14.22 hrs, Volume= 0.003 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 95.34' @ 14.22 hrs Surf.Area= 1,762 sf Storage= 302 cf
Flood Elev= 97.70' Surf.Area= 1,762 sf Storage= 2,998 cf

Plug-Flow detention time= 127.8 min calculated for 0.003 af (28% of inflow)
Center-of-Mass det. time= 72.6 min (831.2 - 758.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	95.00'	1,098 cf	**23.69'W x 74.37'L x 2.69'H Field A** 4,745 cf Overall - 2,000 cf Embedded = 2,745 cf x 40.0% Voids
#2A	95.25'	1,900 cf	**ACF R-Tank HD 1.0** x 450 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 15 Rows of 30 Chambers
		2,998 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	95.25'	**12.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900

Inlet / Outlet Invert= 95.25' / 95.00' S= 0.0100 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.01 cfs @ 14.22 hrs HW=95.34' TW=95.26' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 0.01 cfs @ 0.70 fps)

Summary for Pond 2cb: nyloplast

Inflow Area = 0.262 ac, 55.17% Impervious, Inflow Depth > 0.03" for 1-inch event
Inflow = 0.01 cfs @ 12.35 hrs, Volume= 0.001 af
Outflow = 0.01 cfs @ 12.35 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min
Primary = 0.01 cfs @ 12.35 hrs, Volume= 0.001 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 95.80' @ 12.35 hrs
Flood Elev= 98.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	95.75'	**6.0" Round Culvert**
			L= 20.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 95.75' / 95.25' S= 0.0250 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.01 cfs @ 12.35 hrs HW=95.80' TW=95.27' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 0.01 cfs @ 0.74 fps)

Summary for Pond 3cb: nyloplast

Inflow Area = 0.338 ac, 64.00% Impervious, Inflow Depth > 0.09" for 1-inch event
Inflow = 0.04 cfs @ 12.12 hrs, Volume= 0.003 af
Outflow = 0.04 cfs @ 12.12 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min
Primary = 0.04 cfs @ 12.12 hrs, Volume= 0.003 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 97.37' @ 12.12 hrs
Flood Elev= 101.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	97.25'	**6.0" Round Culvert**
			L= 10.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 97.25' / 96.75' S= 0.0500 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.04 cfs @ 12.12 hrs HW=97.37' TW=95.17' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 0.04 cfs @ 1.16 fps)

Summary for Pond OCS: outlet control structure

Inflow Area = 0.793 ac, 68.63% Impervious, Inflow Depth > 0.04" for 1-inch event
Inflow = 0.01 cfs @ 14.22 hrs, Volume= 0.003 af
Outflow = 0.01 cfs @ 14.21 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min
Primary = 0.01 cfs @ 14.21 hrs, Volume= 0.003 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 95.26' @ 14.21 hrs
Flood Elev= 100.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	97.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Primary	95.25'	**18.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#3	Primary	95.00'	**1.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.01 cfs @ 14.21 hrs HW=95.26' TW=0.00' (Dynamic Tailwater)
- **1=Sharp-Crested Rectangular Weir**(Controls 0.00 cfs)
- **2=Orifice/Grate** (Orifice Controls 0.00 cfs @ 0.27 fps)
- **3=Orifice/Grate** (Orifice Controls 0.01 cfs @ 2.23 fps)

Time span=3.00-15.00 hrs, dt=0.01 hrs, 1201 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Roof to drip edge Runoff Area=8,450 sf 94.83% Impervious Runoff Depth>0.81"
Tc=6.0 min CN=94 Runoff=0.23 cfs 0.013 af

Subcatchment2S: rear parking to stone Runoff Area=11,395 sf 55.17% Impervious Runoff Depth>0.20"
Tc=6.0 min CN=79 Runoff=0.07 cfs 0.004 af

Subcatchment3S: side parking to grass Runoff Area=14,710 sf 64.00% Impervious Runoff Depth>0.33"
Tc=6.0 min CN=84 Runoff=0.18 cfs 0.009 af

Subcatchment4S: Remaining Runoff Area=21,652 sf 1.27% Impervious Runoff Depth>0.01"
Flow Length=492' Tc=38.9 min CN=65 Runoff=0.00 cfs 0.000 af

Reach A: ANALYSISPOINT A: at prop line Inflow=0.17 cfs 0.019 af
Outflow=0.17 cfs 0.019 af

Pond 1cb: nyloplast Peak Elev=97.55' Inflow=0.23 cfs 0.013 af
6.0" Round Culvert n=0.013 L=25.0' S=0.0500 '/' Outflow=0.23 cfs 0.013 af

Pond 1P: R Tanks Peak Elev=95.51' Storage=552 cf Inflow=0.48 cfs 0.027 af
12.0" Round Culvert n=0.013 L=25.0' S=0.0100 '/' Outflow=0.17 cfs 0.019 af

Pond 2cb: nyloplast Peak Elev=95.91' Inflow=0.07 cfs 0.004 af
6.0" Round Culvert n=0.013 L=20.0' S=0.0250 '/' Outflow=0.07 cfs 0.004 af

Pond 3cb: nyloplast Peak Elev=97.51' Inflow=0.18 cfs 0.009 af
6.0" Round Culvert n=0.013 L=10.0' S=0.0500 '/' Outflow=0.18 cfs 0.009 af

Pond OCS: outlet control structure Peak Elev=95.35' Inflow=0.17 cfs 0.019 af
Outflow=0.17 cfs 0.019 af

Total Runoff Area = 1.290 ac Runoff Volume = 0.027 af Average Runoff Depth = 0.25"
57.32% Pervious = 0.740 ac 42.68% Impervious = 0.551 ac

Summary for Subcatchment 1S: Roof to drip edge

Runoff = 0.23 cfs @ 12.09 hrs, Volume= 0.013 af, Depth> 0.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs
Type III 24-hr 1.6-inch Rainfall=1.60"

	Area (sf)	CN	Description
	8,013	98	Unconnected pavement, HSG B
*	437	30	drip edge stone
	8,450	94	Weighted Average
	437		5.17% Pervious Area
	8,013		94.83% Impervious Area
	8,013		100.00% Unconnected

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

Summary for Subcatchment 2S: rear parking to stone

Runoff = 0.07 cfs @ 12.11 hrs, Volume= 0.004 af, Depth> 0.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs
Type III 24-hr 1.6-inch Rainfall=1.60"

	Area (sf)	CN	Description
	6,287	98	Paved parking & roofs
	1,650	61	>75% Grass cover, Good, HSG B
*	420	30	drip strip
	3,038	55	Woods, Good, HSG B
	11,395	79	Weighted Average
	5,108		44.83% Pervious Area
	6,287		55.17% Impervious Area

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

Summary for Subcatchment 3S: side parking to grass underdrain

Runoff = 0.18 cfs @ 12.10 hrs, Volume= 0.009 af, Depth> 0.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs
Type III 24-hr 1.6-inch Rainfall=1.60"

Area (sf)	CN	Description
9,414	98	Paved parking, HSG B
4,835	61	>75% Grass cover, Good, HSG B
461	55	Woods, Good, HSG B
14,710	84	Weighted Average
5,296		36.00% Pervious Area
9,414		64.00% Impervious Area

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

Summary for Subcatchment 4S: Remaining

Runoff = 0.00 cfs @ 14.91 hrs, Volume= 0.000 af, Depth> 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs
Type III 24-hr 1.6-inch Rainfall=1.60"

	Area (sf)	CN	Description
	7,692	61	>75% Grass cover, Good, HSG B
	275	98	Unconnected pavement, HSG B
*	11,065	69	playground/woodchips
	2,620	55	Woods, Good, HSG B
	21,652	65	Weighted Average
	21,377		98.73% Pervious Area
	275		1.27% Impervious Area
	275		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.4	120	0.0020	0.07		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.00"
4.7	125	0.0040	0.44		**Shallow Concentrated Flow, B-C PLAYGROUND** Short Grass Pasture Kv= 7.0 fps
0.4	47	0.0700	1.85		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.2	23	0.2000	2.24		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
4.2	177	0.0200	0.71		**Shallow Concentrated Flow, E-F** Woodland Kv= 5.0 fps
38.9	492	Total			

Summary for Reach A: ANALYSIS POINT A: at prop line

Inflow Area = 1.290 ac, 42.68% Impervious, Inflow Depth > 0.18" for 1.6-inch event
Inflow = 0.17 cfs @ 12.43 hrs, Volume= 0.019 af
Outflow = 0.17 cfs @ 12.43 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2

Summary for Pond 1cb: nyloplast

Inflow Area = 0.194 ac, 94.83% Impervious, Inflow Depth > 0.81" for 1.6-inch event
Inflow = 0.23 cfs @ 12.09 hrs, Volume= 0.013 af
Outflow = 0.23 cfs @ 12.09 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min
Primary = 0.23 cfs @ 12.09 hrs, Volume= 0.013 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 97.55' @ 12.09 hrs
Flood Elev= 103.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	97.25'	**6.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 97.25' / 96.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.23 cfs @ 12.09 hrs HW=97.55' TW=95.37' (Dynamic Tailwater)
↑└**1=Culvert** (Inlet Controls 0.23 cfs @ 1.87 fps)

Summary for Pond 1P: R Tanks

Inflow Area = 0.793 ac, 68.63% Impervious, Inflow Depth > 0.41" for 1.6-inch event
Inflow = 0.48 cfs @ 12.09 hrs, Volume= 0.027 af
Outflow = 0.17 cfs @ 12.43 hrs, Volume= 0.019 af, Atten= 65%, Lag= 20.4 min
Primary = 0.17 cfs @ 12.43 hrs, Volume= 0.019 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 95.51' @ 12.43 hrs Surf.Area= 1,762 sf Storage= 552 cf
Flood Elev= 97.70' Surf.Area= 1,762 sf Storage= 2,998 cf

Plug-Flow detention time= 71.1 min calculated for 0.019 af (69% of inflow)
Center-of-Mass det. time= 39.8 min (789.6 - 749.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	95.00'	1,098 cf	**23.69'W x 74.37'L x 2.69'H Field A** 4,745 cf Overall - 2,000 cf Embedded = 2,745 cf x 40.0% Voids
#2A	95.25'	1,900 cf	**ACF R-Tank HD 1.0** x 450 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 15 Rows of 30 Chambers
		2,998 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	95.25'	**12.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900

Inlet / Outlet Invert= 95.25' / 95.00' S= 0.0100 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.17 cfs @ 12.43 hrs HW=95.51' TW=95.35' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 0.17 cfs @ 1.57 fps)

Summary for Pond 2cb: nyloplast

Inflow Area = 0.262 ac, 55.17% Impervious, Inflow Depth > 0.20" for 1.6-inch event
Inflow = 0.07 cfs @ 12.11 hrs, Volume= 0.004 af
Outflow = 0.07 cfs @ 12.11 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min
Primary = 0.07 cfs @ 12.11 hrs, Volume= 0.004 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 95.91' @ 12.11 hrs
Flood Elev= 98.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	95.75'	**6.0" Round Culvert**
			L= 20.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 95.75' / 95.25' S= 0.0250 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.07 cfs @ 12.11 hrs HW=95.91' TW=95.39' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 0.07 cfs @ 1.36 fps)

Summary for Pond 3cb: nyloplast

Inflow Area = 0.338 ac, 64.00% Impervious, Inflow Depth > 0.33" for 1.6-inch event
Inflow = 0.18 cfs @ 12.10 hrs, Volume= 0.009 af
Outflow = 0.18 cfs @ 12.10 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.0 min
Primary = 0.18 cfs @ 12.10 hrs, Volume= 0.009 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 97.51' @ 12.10 hrs
Flood Elev= 101.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	97.25'	**6.0" Round Culvert**
			L= 10.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 97.25' / 96.75' S= 0.0500 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.17 cfs @ 12.10 hrs HW=97.51' TW=95.38' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 0.17 cfs @ 1.72 fps)

Summary for Pond OCS: outlet control structure

Inflow Area = 0.793 ac, 68.63% Impervious, Inflow Depth > 0.28" for 1.6-inch event
Inflow = 0.17 cfs @ 12.43 hrs, Volume= 0.019 af
Outflow = 0.17 cfs @ 12.43 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.0 min
Primary = 0.17 cfs @ 12.43 hrs, Volume= 0.019 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 95.35' @ 12.43 hrs
Flood Elev= 100.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	97.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Primary	95.25'	**18.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#3	Primary	95.00'	**1.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.17 cfs @ 12.43 hrs HW=95.35' TW=0.00' (Dynamic Tailwater)
- **1=Sharp-Crested Rectangular Weir**(Controls 0.00 cfs)
- **2=Orifice/Grate** (Orifice Controls 0.15 cfs @ 1.01 fps)
- **3=Orifice/Grate** (Orifice Controls 0.01 cfs @ 2.67 fps)

Time span=3.00-15.00 hrs, dt=0.01 hrs, 1201 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Roof to drip edge Runoff Area=8,450 sf 94.83% Impervious Runoff Depth>2.00"
Tc=6.0 min CN=94 Runoff=0.53 cfs 0.032 af

Subcatchment2S: rear parking to stone Runoff Area=11,395 sf 55.17% Impervious Runoff Depth>0.93"
Tc=6.0 min CN=79 Runoff=0.38 cfs 0.020 af

Subcatchment3S: side parking to grass Runoff Area=14,710 sf 64.00% Impervious Runoff Depth>1.22"
Tc=6.0 min CN=84 Runoff=0.63 cfs 0.034 af

Subcatchment4S: Remaining Runoff Area=21,652 sf 1.27% Impervious Runoff Depth>0.32"
Flow Length=492' Tc=38.9 min CN=65 Runoff=0.13 cfs 0.013 af

Reach A: ANALYSISPOINT A: at prop line Inflow=1.02 cfs 0.090 af
Outflow=1.02 cfs 0.090 af

Pond 1cb: nyloplast Peak Elev=97.82' Inflow=0.53 cfs 0.032 af
6.0" Round Culvert n=0.013 L=25.0' S=0.0500 '/' Outflow=0.53 cfs 0.032 af

Pond 1P: R Tanks Peak Elev=95.89' Storage=1,121 cf Inflow=1.55 cfs 0.087 af
12.0" Round Culvert n=0.013 L=25.0' S=0.0100 '/' Outflow=1.00 cfs 0.077 af

Pond 2cb: nyloplast Peak Elev=96.18' Inflow=0.38 cfs 0.020 af
6.0" Round Culvert n=0.013 L=20.0' S=0.0250 '/' Outflow=0.38 cfs 0.020 af

Pond 3cb: nyloplast Peak Elev=97.95' Inflow=0.63 cfs 0.034 af
6.0" Round Culvert n=0.013 L=10.0' S=0.0500 '/' Outflow=0.63 cfs 0.034 af

Pond OCS: outlet control structure Peak Elev=95.60' Inflow=1.00 cfs 0.077 af
Outflow=1.00 cfs 0.077 af

Total Runoff Area = 1.290 ac Runoff Volume = 0.101 af Average Runoff Depth = 0.93"
57.32% Pervious = 0.740 ac 42.68% Impervious = 0.551 ac

Summary for Subcatchment 1S: Roof to drip edge

Runoff = 0.53 cfs @ 12.08 hrs, Volume= 0.032 af, Depth> 2.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	8,013	98	Unconnected pavement, HSG B
*	437	30	drip edge stone
	8,450	94	Weighted Average
	437		5.17% Pervious Area
	8,013		94.83% Impervious Area
	8,013		100.00% Unconnected

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

Summary for Subcatchment 2S: rear parking to stone

Runoff = 0.38 cfs @ 12.09 hrs, Volume= 0.020 af, Depth> 0.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	6,287	98	Paved parking & roofs
	1,650	61	>75% Grass cover, Good, HSG B
*	420	30	drip strip
	3,038	55	Woods, Good, HSG B
	11,395	79	Weighted Average
	5,108		44.83% Pervious Area
	6,287		55.17% Impervious Area

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

Summary for Subcatchment 3S: side parking to grass underdrain

Runoff = 0.63 cfs @ 12.09 hrs, Volume= 0.034 af, Depth> 1.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
9,414	98	Paved parking, HSG B
4,835	61	>75% Grass cover, Good, HSG B
461	55	Woods, Good, HSG B
14,710	84	Weighted Average
5,296		36.00% Pervious Area
9,414		64.00% Impervious Area

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

Summary for Subcatchment 4S: Remaining

Runoff = 0.13 cfs @ 12.66 hrs, Volume= 0.013 af, Depth> 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	7,692	61	>75% Grass cover, Good, HSG B
	275	98	Unconnected pavement, HSG B
*	11,065	69	playground/woodchips
	2,620	55	Woods, Good, HSG B
	21,652	65	Weighted Average
	21,377		98.73% Pervious Area
	275		1.27% Impervious Area
	275		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.4	120	0.0020	0.07		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.00"
4.7	125	0.0040	0.44		**Shallow Concentrated Flow, B-C PLAYGROUND** Short Grass Pasture Kv= 7.0 fps
0.4	47	0.0700	1.85		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.2	23	0.2000	2.24		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
4.2	177	0.0200	0.71		**Shallow Concentrated Flow, E-F** Woodland Kv= 5.0 fps
38.9	492	Total			

Summary for Reach A: ANALYSIS POINT A: at prop line

Inflow Area = 1.290 ac, 42.68% Impervious, Inflow Depth > 0.84" for 2-Year event
Inflow = 1.02 cfs @ 12.19 hrs, Volume= 0.090 af
Outflow = 1.02 cfs @ 12.19 hrs, Volume= 0.090 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2

Summary for Pond 1cb: nyloplast

Inflow Area = 0.194 ac, 94.83% Impervious, Inflow Depth > 2.00" for 2-Year event
Inflow = 0.53 cfs @ 12.08 hrs, Volume= 0.032 af
Outflow = 0.53 cfs @ 12.08 hrs, Volume= 0.032 af, Atten= 0%, Lag= 0.0 min
Primary = 0.53 cfs @ 12.08 hrs, Volume= 0.032 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 97.82' @ 12.08 hrs
Flood Elev= 103.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	97.25'	**6.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 97.25' / 96.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.53 cfs @ 12.08 hrs HW=97.82' TW=95.79' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.53 cfs @ 2.72 fps)

Summary for Pond 1P: R Tanks

Inflow Area = 0.793 ac, 68.63% Impervious, Inflow Depth > 1.32" for 2-Year event
Inflow = 1.55 cfs @ 12.09 hrs, Volume= 0.087 af
Outflow = 1.00 cfs @ 12.19 hrs, Volume= 0.077 af, Atten= 35%, Lag= 5.8 min
Primary = 1.00 cfs @ 12.19 hrs, Volume= 0.077 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 95.89' @ 12.18 hrs Surf.Area= 1,762 sf Storage= 1,121 cf
Flood Elev= 97.70' Surf.Area= 1,762 sf Storage= 2,998 cf

Plug-Flow detention time= 43.1 min calculated for 0.077 af (88% of inflow)
Center-of-Mass det. time= 27.0 min (763.6 - 736.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	95.00'	1,098 cf	**23.69'W x 74.37'L x 2.69'H Field A** 4,745 cf Overall - 2,000 cf Embedded = 2,745 cf x 40.0% Voids
#2A	95.25'	1,900 cf	**ACF R-Tank HD 1.0** x 450 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 15 Rows of 30 Chambers
		2,998 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	95.25'	**12.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900

Inlet / Outlet Invert= 95.25' / 95.00' S= 0.0100 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.00 cfs @ 12.19 hrs HW=95.89' TW=95.60' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 1.00 cfs @ 2.66 fps)

Summary for Pond 2cb: nyloplast

Inflow Area = 0.262 ac, 55.17% Impervious, Inflow Depth > 0.93" for 2-Year event
Inflow = 0.38 cfs @ 12.09 hrs, Volume= 0.020 af
Outflow = 0.38 cfs @ 12.09 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min
Primary = 0.38 cfs @ 12.09 hrs, Volume= 0.020 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 96.18' @ 12.11 hrs
Flood Elev= 98.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	95.75'	**6.0" Round Culvert**
			L= 20.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 95.75' / 95.25' S= 0.0250 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.38 cfs @ 12.09 hrs HW=96.17' TW=95.81' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 0.38 cfs @ 2.88 fps)

Summary for Pond 3cb: nyloplast

Inflow Area = 0.338 ac, 64.00% Impervious, Inflow Depth > 1.22" for 2-Year event
Inflow = 0.63 cfs @ 12.09 hrs, Volume= 0.034 af
Outflow = 0.63 cfs @ 12.09 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min
Primary = 0.63 cfs @ 12.09 hrs, Volume= 0.034 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 97.95' @ 12.09 hrs
Flood Elev= 101.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	97.25'	**6.0" Round Culvert**
			L= 10.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 97.25' / 96.75' S= 0.0500 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.63 cfs @ 12.09 hrs HW=97.95' TW=95.80' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 0.63 cfs @ 3.22 fps)

Summary for Pond OCS: outlet control structure

Inflow Area = 0.793 ac, 68.63% Impervious, Inflow Depth > 1.16" for 2-Year event
Inflow = 1.00 cfs @ 12.19 hrs, Volume= 0.077 af
Outflow = 1.00 cfs @ 12.19 hrs, Volume= 0.077 af, Atten= 0%, Lag= 0.0 min
Primary = 1.00 cfs @ 12.19 hrs, Volume= 0.077 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 95.60' @ 12.19 hrs
Flood Elev= 100.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	97.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Primary	95.25'	**18.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#3	Primary	95.00'	**1.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.00 cfs @ 12.19 hrs HW=95.60' TW=0.00' (Dynamic Tailwater)
- **1=Sharp-Crested Rectangular Weir**(Controls 0.00 cfs)
- **2=Orifice/Grate** (Orifice Controls 0.98 cfs @ 1.89 fps)
- **3=Orifice/Grate** (Orifice Controls 0.02 cfs @ 3.58 fps)

Time span=3.00-15.00 hrs, dt=0.01 hrs, 1201 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Roof to drip edge Runoff Area=8,450 sf 94.83% Impervious Runoff Depth>3.24"
Tc=6.0 min CN=94 Runoff=0.83 cfs 0.052 af

Subcatchment2S: rear parking to stone Runoff Area=11,395 sf 55.17% Impervious Runoff Depth>1.89"
Tc=6.0 min CN=79 Runoff=0.76 cfs 0.041 af

Subcatchment3S: side parking to grass Runoff Area=14,710 sf 64.00% Impervious Runoff Depth>2.30"
Tc=6.0 min CN=84 Runoff=1.15 cfs 0.065 af

Subcatchment4S: Remaining Runoff Area=21,652 sf 1.27% Impervious Runoff Depth>0.92"
Flow Length=492' Tc=38.9 min CN=65 Runoff=0.38 cfs 0.038 af

Reach A: ANALYSISPOINT A: at prop line Inflow=2.02 cfs 0.185 af
Outflow=2.02 cfs 0.185 af

Pond 1cb: nyloplast Peak Elev=98.27' Inflow=0.83 cfs 0.052 af
6.0" Round Culvert n=0.013 L=25.0' S=0.0500 '/' Outflow=0.83 cfs 0.052 af

Pond 1P: R Tanks Peak Elev=96.21' Storage=1,582 cf Inflow=2.73 cfs 0.158 af
12.0" Round Culvert n=0.013 L=25.0' S=0.0100 '/' Outflow=1.90 cfs 0.146 af

Pond 2cb: nyloplast Peak Elev=96.82' Inflow=0.76 cfs 0.041 af
6.0" Round Culvert n=0.013 L=20.0' S=0.0250 '/' Outflow=0.76 cfs 0.041 af

Pond 3cb: nyloplast Peak Elev=98.97' Inflow=1.15 cfs 0.065 af
6.0" Round Culvert n=0.013 L=10.0' S=0.0500 '/' Outflow=1.15 cfs 0.065 af

Pond OCS: outlet control structure Peak Elev=95.79' Inflow=1.90 cfs 0.146 af
Outflow=1.90 cfs 0.146 af

Total Runoff Area = 1.290 ac Runoff Volume = 0.197 af Average Runoff Depth = 1.83"
57.32% Pervious = 0.740 ac 42.68% Impervious = 0.551 ac

Summary for Subcatchment 1S: Roof to drip edge

Runoff = 0.83 cfs @ 12.08 hrs, Volume= 0.052 af, Depth> 3.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
	8,013	98	Unconnected pavement, HSG B
*	437	30	drip edge stone
	8,450	94	Weighted Average
	437		5.17% Pervious Area
	8,013		94.83% Impervious Area
	8,013		100.00% Unconnected

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

Summary for Subcatchment 2S: rear parking to stone

Runoff = 0.76 cfs @ 12.09 hrs, Volume= 0.041 af, Depth> 1.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
	6,287	98	Paved parking & roofs
	1,650	61	>75% Grass cover, Good, HSG B
*	420	30	drip strip
	3,038	55	Woods, Good, HSG B
	11,395	79	Weighted Average
	5,108		44.83% Pervious Area
	6,287		55.17% Impervious Area

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

Summary for Subcatchment 3S: side parking to grass underdrain

Runoff = 1.15 cfs @ 12.09 hrs, Volume= 0.065 af, Depth> 2.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
9,414	98	Paved parking, HSG B
4,835	61	>75% Grass cover, Good, HSG B
461	55	Woods, Good, HSG B
14,710	84	Weighted Average
5,296		36.00% Pervious Area
9,414		64.00% Impervious Area

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

Summary for Subcatchment 4S: Remaining

Runoff = 0.38 cfs @ 12.58 hrs, Volume= 0.038 af, Depth> 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
	7,692	61	>75% Grass cover, Good, HSG B
	275	98	Unconnected pavement, HSG B
*	11,065	69	playground/woodchips
	2,620	55	Woods, Good, HSG B
	21,652	65	Weighted Average
	21,377		98.73% Pervious Area
	275		1.27% Impervious Area
	275		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.4	120	0.0020	0.07		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.00"
4.7	125	0.0040	0.44		**Shallow Concentrated Flow, B-C PLAYGROUND** Short Grass Pasture Kv= 7.0 fps
0.4	47	0.0700	1.85		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.2	23	0.2000	2.24		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
4.2	177	0.0200	0.71		**Shallow Concentrated Flow, E-F** Woodland Kv= 5.0 fps
38.9	492	Total			

Summary for Reach A: ANALYSIS POINT A: at prop line

Inflow Area = 1.290 ac, 42.68% Impervious, Inflow Depth > 1.72" for 10-Year event
Inflow = 2.02 cfs @ 12.19 hrs, Volume= 0.185 af
Outflow = 2.02 cfs @ 12.19 hrs, Volume= 0.185 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2

Summary for Pond 1cb: nyloplast

Inflow Area = 0.194 ac, 94.83% Impervious, Inflow Depth > 3.24" for 10-Year event
Inflow = 0.83 cfs @ 12.08 hrs, Volume= 0.052 af
Outflow = 0.83 cfs @ 12.08 hrs, Volume= 0.052 af, Atten= 0%, Lag= 0.0 min
Primary = 0.83 cfs @ 12.08 hrs, Volume= 0.052 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 98.27' @ 12.08 hrs
Flood Elev= 103.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	97.25'	**6.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 97.25' / 96.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.83 cfs @ 12.08 hrs HW=98.27' TW=96.08' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.83 cfs @ 4.23 fps)

Summary for Pond 1P: R Tanks

Inflow Area = 0.793 ac, 68.63% Impervious, Inflow Depth > 2.39" for 10-Year event
Inflow = 2.73 cfs @ 12.09 hrs, Volume= 0.158 af
Outflow = 1.90 cfs @ 12.17 hrs, Volume= 0.146 af, Atten= 31%, Lag= 5.2 min
Primary = 1.90 cfs @ 12.17 hrs, Volume= 0.146 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 96.21' @ 12.17 hrs Surf.Area= 1,762 sf Storage= 1,582 cf
Flood Elev= 97.70' Surf.Area= 1,762 sf Storage= 2,998 cf

Plug-Flow detention time= 34.5 min calculated for 0.146 af (92% of inflow)
Center-of-Mass det. time= 23.0 min (750.9 - 727.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	95.00'	1,098 cf	**23.69'W x 74.37'L x 2.69'H Field A** 4,745 cf Overall - 2,000 cf Embedded = 2,745 cf x 40.0% Voids
#2A	95.25'	1,900 cf	**ACF R-Tank HD 1.0** x 450 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 15 Rows of 30 Chambers
		2,998 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	95.25'	**12.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900

Inlet / Outlet Invert= 95.25' / 95.00' S= 0.0100 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.90 cfs @ 12.17 hrs HW=96.21' TW=95.79' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.90 cfs @ 2.45 fps)

Summary for Pond 2cb: nyloplast

Inflow Area = 0.262 ac, 55.17% Impervious, Inflow Depth > 1.89" for 10-Year event
Inflow = 0.76 cfs @ 12.09 hrs, Volume= 0.041 af
Outflow = 0.76 cfs @ 12.09 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.0 min
Primary = 0.76 cfs @ 12.09 hrs, Volume= 0.041 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 96.82' @ 12.10 hrs
Flood Elev= 98.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	95.75'	**6.0" Round Culvert**
			L= 20.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 95.75' / 95.25' S= 0.0250 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.75 cfs @ 12.09 hrs HW=96.80' TW=96.09' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 0.75 cfs @ 3.84 fps)

Summary for Pond 3cb: nyloplast

Inflow Area = 0.338 ac, 64.00% Impervious, Inflow Depth > 2.30" for 10-Year event
Inflow = 1.15 cfs @ 12.09 hrs, Volume= 0.065 af
Outflow = 1.15 cfs @ 12.09 hrs, Volume= 0.065 af, Atten= 0%, Lag= 0.0 min
Primary = 1.15 cfs @ 12.09 hrs, Volume= 0.065 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 98.97' @ 12.09 hrs
Flood Elev= 101.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	97.25'	**6.0" Round Culvert**
			L= 10.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 97.25' / 96.75' S= 0.0500 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=1.14 cfs @ 12.09 hrs HW=98.97' TW=96.09' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.14 cfs @ 5.83 fps)

Summary for Pond OCS: outlet control structure

Inflow Area = 0.793 ac, 68.63% Impervious, Inflow Depth > 2.21" for 10-Year event
Inflow = 1.90 cfs @ 12.17 hrs, Volume= 0.146 af
Outflow = 1.90 cfs @ 12.17 hrs, Volume= 0.146 af, Atten= 0%, Lag= 0.0 min
Primary = 1.90 cfs @ 12.17 hrs, Volume= 0.146 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 95.79' @ 12.17 hrs
Flood Elev= 100.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	97.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Primary	95.25'	**18.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#3	Primary	95.00'	**1.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.90 cfs @ 12.17 hrs HW=95.79' TW=0.00' (Dynamic Tailwater)
- **1=Sharp-Crested Rectangular Weir**(Controls 0.00 cfs)
- **2=Orifice/Grate** (Orifice Controls 1.87 cfs @ 2.50 fps)
- **3=Orifice/Grate** (Orifice Controls 0.02 cfs @ 4.17 fps)

Time span=3.00-15.00 hrs, dt=0.01 hrs, 1201 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Roof to drip edge Runoff Area=8,450 sf 94.83% Impervious Runoff Depth>4.24"
Tc=6.0 min CN=94 Runoff=1.07 cfs 0.069 af

Subcatchment2S: rear parking to stone Runoff Area=11,395 sf 55.17% Impervious Runoff Depth>2.75"
Tc=6.0 min CN=79 Runoff=1.07 cfs 0.060 af

Subcatchment3S: side parking to grass Runoff Area=14,710 sf 64.00% Impervious Runoff Depth>3.21"
Tc=6.0 min CN=84 Runoff=1.57 cfs 0.090 af

Subcatchment4S: Remaining Runoff Area=21,652 sf 1.27% Impervious Runoff Depth>1.53"
Flow Length=492' Tc=38.9 min CN=65 Runoff=0.62 cfs 0.063 af

Reach A: ANALYSISPOINT A: at prop line Inflow=2.60 cfs 0.269 af
Outflow=2.60 cfs 0.269 af

Pond 1cb: nyloplast Peak Elev=98.78' Inflow=1.07 cfs 0.069 af
6.0" Round Culvert n=0.013 L=25.0' S=0.0500 '/' Outflow=1.07 cfs 0.069 af

Pond 1P: R Tanks Peak Elev=96.52' Storage=2,039 cf Inflow=3.71 cfs 0.219 af
12.0" Round Culvert n=0.013 L=25.0' S=0.0100 '/' Outflow=2.32 cfs 0.206 af

Pond 2cb: nyloplast Peak Elev=97.76' Inflow=1.07 cfs 0.060 af
6.0" Round Culvert n=0.013 L=20.0' S=0.0250 '/' Outflow=1.07 cfs 0.060 af

Pond 3cb: nyloplast Peak Elev=100.24' Inflow=1.57 cfs 0.090 af
6.0" Round Culvert n=0.013 L=10.0' S=0.0500 '/' Outflow=1.57 cfs 0.090 af

Pond OCS: outlet control structure Peak Elev=95.92' Inflow=2.32 cfs 0.206 af
Outflow=2.32 cfs 0.206 af

Total Runoff Area = 1.290 ac Runoff Volume = 0.282 af Average Runoff Depth = 2.62"
57.32% Pervious = 0.740 ac 42.68% Impervious = 0.551 ac

Summary for Subcatchment 1S: Roof to drip edge

Runoff = 1.07 cfs @ 12.08 hrs, Volume= 0.069 af, Depth> 4.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	8,013	98	Unconnected pavement, HSG B
*	437	30	drip edge stone
	8,450	94	Weighted Average
	437		5.17% Pervious Area
	8,013		94.83% Impervious Area
	8,013		100.00% Unconnected

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

Summary for Subcatchment 2S: rear parking to stone

Runoff = 1.07 cfs @ 12.09 hrs, Volume= 0.060 af, Depth> 2.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	6,287	98	Paved parking & roofs
	1,650	61	>75% Grass cover, Good, HSG B
*	420	30	drip strip
	3,038	55	Woods, Good, HSG B
	11,395	79	Weighted Average
	5,108		44.83% Pervious Area
	6,287		55.17% Impervious Area

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

Summary for Subcatchment 3S: side parking to grass underdrain

Runoff = 1.57 cfs @ 12.09 hrs, Volume= 0.090 af, Depth> 3.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
9,414	98	Paved parking, HSG B
4,835	61	>75% Grass cover, Good, HSG B
461	55	Woods, Good, HSG B
14,710	84	Weighted Average
5,296		36.00% Pervious Area
9,414		64.00% Impervious Area

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

Summary for Subcatchment 4S: Remaining

Runoff = 0.62 cfs @ 12.58 hrs, Volume= 0.063 af, Depth> 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	7,692	61	>75% Grass cover, Good, HSG B
	275	98	Unconnected pavement, HSG B
*	11,065	69	playground/woodchips
	2,620	55	Woods, Good, HSG B
	21,652	65	Weighted Average
	21,377		98.73% Pervious Area
	275		1.27% Impervious Area
	275		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.4	120	0.0020	0.07		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.00"
4.7	125	0.0040	0.44		**Shallow Concentrated Flow, B-C PLAYGROUND** Short Grass Pasture Kv= 7.0 fps
0.4	47	0.0700	1.85		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.2	23	0.2000	2.24		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
4.2	177	0.0200	0.71		**Shallow Concentrated Flow, E-F** Woodland Kv= 5.0 fps
38.9	492	Total			

Summary for Reach A: ANALYSIS POINT A: at prop line

Inflow Area = 1.290 ac, 42.68% Impervious, Inflow Depth > 2.50" for 25-Year event
Inflow = 2.60 cfs @ 12.25 hrs, Volume= 0.269 af
Outflow = 2.60 cfs @ 12.25 hrs, Volume= 0.269 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2

Summary for Pond 1cb: nyloplast

Inflow Area = 0.194 ac, 94.83% Impervious, Inflow Depth > 4.24" for 25-Year event
Inflow = 1.07 cfs @ 12.08 hrs, Volume= 0.069 af
Outflow = 1.07 cfs @ 12.08 hrs, Volume= 0.069 af, Atten= 0%, Lag= 0.0 min
Primary = 1.07 cfs @ 12.08 hrs, Volume= 0.069 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 98.78' @ 12.08 hrs
Flood Elev= 103.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	97.25'	**6.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 97.25' / 96.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=1.07 cfs @ 12.08 hrs HW=98.77' TW=96.29' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.07 cfs @ 5.43 fps)

Summary for Pond 1P: R Tanks

Inflow Area = 0.793 ac, 68.63% Impervious, Inflow Depth > 3.31" for 25-Year event
Inflow = 3.71 cfs @ 12.09 hrs, Volume= 0.219 af
Outflow = 2.32 cfs @ 12.19 hrs, Volume= 0.206 af, Atten= 38%, Lag= 6.4 min
Primary = 2.32 cfs @ 12.19 hrs, Volume= 0.206 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 96.52' @ 12.18 hrs Surf.Area= 1,762 sf Storage= 2,039 cf
Flood Elev= 97.70' Surf.Area= 1,762 sf Storage= 2,998 cf

Plug-Flow detention time= 30.8 min calculated for 0.206 af (94% of inflow)
Center-of-Mass det. time= 21.3 min (743.9 - 722.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	95.00'	1,098 cf	**23.69'W x 74.37'L x 2.69'H Field A** 4,745 cf Overall - 2,000 cf Embedded = 2,745 cf x 40.0% Voids
#2A	95.25'	1,900 cf	**ACF R-Tank HD 1.0** x 450 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 15 Rows of 30 Chambers
		2,998 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	95.25'	**12.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900

Inlet / Outlet Invert= 95.25' / 95.00' S= 0.0100 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.32 cfs @ 12.19 hrs HW=96.52' TW=95.92' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 2.32 cfs @ 2.95 fps)

Summary for Pond 2cb: nyloplast

Inflow Area = 0.262 ac, 55.17% Impervious, Inflow Depth > 2.75" for 25-Year event
Inflow = 1.07 cfs @ 12.09 hrs, Volume= 0.060 af
Outflow = 1.07 cfs @ 12.09 hrs, Volume= 0.060 af, Atten= 0%, Lag= 0.0 min
Primary = 1.07 cfs @ 12.09 hrs, Volume= 0.060 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 97.76' @ 12.10 hrs
Flood Elev= 98.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	95.75'	**6.0" Round Culvert**
			L= 20.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 95.75' / 95.25' S= 0.0250 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=1.07 cfs @ 12.09 hrs HW=97.73' TW=96.31' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 1.07 cfs @ 5.45 fps)

Summary for Pond 3cb: nyloplast

Inflow Area = 0.338 ac, 64.00% Impervious, Inflow Depth > 3.21" for 25-Year event
Inflow = 1.57 cfs @ 12.09 hrs, Volume= 0.090 af
Outflow = 1.57 cfs @ 12.09 hrs, Volume= 0.090 af, Atten= 0%, Lag= 0.0 min
Primary = 1.57 cfs @ 12.09 hrs, Volume= 0.090 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 100.24' @ 12.09 hrs
Flood Elev= 101.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	97.25'	**6.0" Round Culvert**
			L= 10.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 97.25' / 96.75' S= 0.0500 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=1.56 cfs @ 12.09 hrs HW=100.24' TW=96.30' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.56 cfs @ 7.96 fps)

Summary for Pond OCS: outlet control structure

Inflow Area = 0.793 ac, 68.63% Impervious, Inflow Depth > 3.11" for 25-Year event
Inflow = 2.32 cfs @ 12.19 hrs, Volume= 0.206 af
Outflow = 2.32 cfs @ 12.19 hrs, Volume= 0.206 af, Atten= 0%, Lag= 0.0 min
Primary = 2.32 cfs @ 12.19 hrs, Volume= 0.206 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 95.92' @ 12.19 hrs
Flood Elev= 100.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	97.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Primary	95.25'	**18.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#3	Primary	95.00'	**1.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=2.32 cfs @ 12.19 hrs HW=95.92' TW=0.00' (Dynamic Tailwater)
- **1=Sharp-Crested Rectangular Weir**(Controls 0.00 cfs)
- **2=Orifice/Grate** (Orifice Controls 2.29 cfs @ 3.05 fps)
- **3=Orifice/Grate** (Orifice Controls 0.02 cfs @ 4.50 fps)

Time span=3.00-15.00 hrs, dt=0.01 hrs, 1201 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Roof to drip edge Runoff Area=8,450 sf 94.83% Impervious Runoff Depth>6.16"
Tc=6.0 min CN=94 Runoff=1.52 cfs 0.100 af

Subcatchment2S: rear parking to stone Runoff Area=11,395 sf 55.17% Impervious Runoff Depth>4.49"
Tc=6.0 min CN=79 Runoff=1.69 cfs 0.098 af

Subcatchment3S: side parking to grass Runoff Area=14,710 sf 64.00% Impervious Runoff Depth>5.04"
Tc=6.0 min CN=84 Runoff=2.37 cfs 0.142 af

Subcatchment4S: Remaining Runoff Area=21,652 sf 1.27% Impervious Runoff Depth>2.89"
Flow Length=492' Tc=38.9 min CN=65 Runoff=1.15 cfs 0.120 af

Reach A: ANALYSISPOINT A: at prop line Inflow=3.98 cfs 0.444 af
Outflow=3.98 cfs 0.444 af

Pond 1cb: nyloplast Peak Elev=100.17' Inflow=1.52 cfs 0.100 af
6.0" Round Culvert n=0.013 L=25.0' S=0.0500 '/' Outflow=1.52 cfs 0.100 af

Pond 1P: R Tanks Peak Elev=97.66' Storage=2,972 cf Inflow=5.58 cfs 0.339 af
12.0" Round Culvert n=0.013 L=25.0' S=0.0100 '/' Outflow=3.38 cfs 0.325 af

Pond 2cb: nyloplast Peak Elev=100.54' Inflow=1.69 cfs 0.098 af
6.0" Round Culvert n=0.013 L=20.0' S=0.0250 '/' Outflow=1.69 cfs 0.098 af

Pond 3cb: nyloplast Peak Elev=103.80' Inflow=2.37 cfs 0.142 af
6.0" Round Culvert n=0.013 L=10.0' S=0.0500 '/' Outflow=2.37 cfs 0.142 af

Pond OCS: outlet control structure Peak Elev=96.37' Inflow=3.38 cfs 0.325 af
Outflow=3.38 cfs 0.325 af

Total Runoff Area = 1.290 ac Runoff Volume = 0.459 af Average Runoff Depth = 4.27"
57.32% Pervious = 0.740 ac 42.68% Impervious = 0.551 ac

Summary for Subcatchment 1S: Roof to drip edge

Runoff = 1.52 cfs @ 12.08 hrs, Volume= 0.100 af, Depth> 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.10"

	Area (sf)	CN	Description
	8,013	98	Unconnected pavement, HSG B
*	437	30	drip edge stone
	8,450	94	Weighted Average
	437		5.17% Pervious Area
	8,013		94.83% Impervious Area
	8,013		100.00% Unconnected

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

Summary for Subcatchment 2S: rear parking to stone

Runoff = 1.69 cfs @ 12.09 hrs, Volume= 0.098 af, Depth> 4.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.10"

	Area (sf)	CN	Description
	6,287	98	Paved parking & roofs
	1,650	61	>75% Grass cover, Good, HSG B
*	420	30	drip strip
	3,038	55	Woods, Good, HSG B
	11,395	79	Weighted Average
	5,108		44.83% Pervious Area
	6,287		55.17% Impervious Area

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

Summary for Subcatchment 3S: side parking to grass underdrain

Runoff = 2.37 cfs @ 12.09 hrs, Volume= 0.142 af, Depth> 5.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.10"

Area (sf)	CN	Description
9,414	98	Paved parking, HSG B
4,835	61	>75% Grass cover, Good, HSG B
461	55	Woods, Good, HSG B
14,710	84	Weighted Average
5,296		36.00% Pervious Area
9,414		64.00% Impervious Area

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

Summary for Subcatchment 4S: Remaining

Runoff = 1.15 cfs @ 12.57 hrs, Volume= 0.120 af, Depth> 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.10"

	Area (sf)	CN	Description
	7,692	61	>75% Grass cover, Good, HSG B
	275	98	Unconnected pavement, HSG B
*	11,065	69	playground/woodchips
	2,620	55	Woods, Good, HSG B
	21,652	65	Weighted Average
	21,377		98.73% Pervious Area
	275		1.27% Impervious Area
	275		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.4	120	0.0020	0.07		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.00"
4.7	125	0.0040	0.44		**Shallow Concentrated Flow, B-C PLAYGROUND** Short Grass Pasture Kv= 7.0 fps
0.4	47	0.0700	1.85		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.2	23	0.2000	2.24		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
4.2	177	0.0200	0.71		**Shallow Concentrated Flow, E-F** Woodland Kv= 5.0 fps
38.9	492	Total			

Summary for Reach A: ANALYSIS POINT A: at prop line

Inflow Area = 1.290 ac, 42.68% Impervious, Inflow Depth > 4.13" for 100-Year event
Inflow = 3.98 cfs @ 12.25 hrs, Volume= 0.444 af
Outflow = 3.98 cfs @ 12.25 hrs, Volume= 0.444 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2

Summary for Pond 1cb: nyloplast

Inflow Area = 0.194 ac, 94.83% Impervious, Inflow Depth > 6.16" for 100-Year event
Inflow = 1.52 cfs @ 12.08 hrs, Volume= 0.100 af
Outflow = 1.52 cfs @ 12.08 hrs, Volume= 0.100 af, Atten= 0%, Lag= 0.0 min
Primary = 1.52 cfs @ 12.08 hrs, Volume= 0.100 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 100.17' @ 12.10 hrs
Flood Elev= 103.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	97.25'	**6.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 97.25' / 96.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=1.52 cfs @ 12.08 hrs HW=100.09' TW=96.84' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.52 cfs @ 7.75 fps)

Summary for Pond 1P: R Tanks

Inflow Area = 0.793 ac, 68.63% Impervious, Inflow Depth > 5.13" for 100-Year event
Inflow = 5.58 cfs @ 12.09 hrs, Volume= 0.339 af
Outflow = 3.38 cfs @ 12.20 hrs, Volume= 0.325 af, Atten= 39%, Lag= 6.7 min
Primary = 3.38 cfs @ 12.20 hrs, Volume= 0.325 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 97.66' @ 12.19 hrs Surf.Area= 1,762 sf Storage= 2,972 cf
Flood Elev= 97.70' Surf.Area= 1,762 sf Storage= 2,998 cf

Plug-Flow detention time= 26.6 min calculated for 0.325 af (96% of inflow)
Center-of-Mass det. time= 19.2 min (734.5 - 715.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	95.00'	1,098 cf	**23.69'W x 74.37'L x 2.69'H Field A** 4,745 cf Overall - 2,000 cf Embedded = 2,745 cf x 40.0% Voids
#2A	95.25'	1,900 cf	**ACF R-Tank HD 1.0** x 450 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 15 Rows of 30 Chambers
		2,998 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	95.25'	**12.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900

Inlet / Outlet Invert= 95.25' / 95.00' S= 0.0100 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.39 cfs @ 12.20 hrs HW=97.65' TW=96.37' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 3.39 cfs @ 4.31 fps)

Summary for Pond 2cb: nyloplast

Inflow Area = 0.262 ac, 55.17% Impervious, Inflow Depth > 4.49" for 100-Year event
Inflow = 1.69 cfs @ 12.09 hrs, Volume= 0.098 af
Outflow = 1.69 cfs @ 12.09 hrs, Volume= 0.098 af, Atten= 0%, Lag= 0.0 min
Primary = 1.69 cfs @ 12.09 hrs, Volume= 0.098 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 100.54' @ 12.10 hrs
Flood Elev= 98.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	95.75'	**6.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 95.75' / 95.25' S= 0.0250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=1.69 cfs @ 12.09 hrs HW=100.43' TW=96.88' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 1.69 cfs @ 8.61 fps)

Summary for Pond 3cb: nyloplast

Inflow Area = 0.338 ac, 64.00% Impervious, Inflow Depth > 5.04" for 100-Year event
Inflow = 2.37 cfs @ 12.09 hrs, Volume= 0.142 af
Outflow = 2.37 cfs @ 12.09 hrs, Volume= 0.142 af, Atten= 0%, Lag= 0.0 min
Primary = 2.37 cfs @ 12.09 hrs, Volume= 0.142 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 103.80' @ 12.09 hrs
Flood Elev= 101.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	97.25'	**6.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 97.25' / 96.75' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=2.37 cfs @ 12.09 hrs HW=103.78' TW=96.87' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 2.37 cfs @ 12.06 fps)

Summary for Pond OCS: outlet control structure

Inflow Area = 0.793 ac, 68.63% Impervious, Inflow Depth > 4.91" for 100-Year event
Inflow = 3.38 cfs @ 12.20 hrs, Volume= 0.325 af
Outflow = 3.38 cfs @ 12.20 hrs, Volume= 0.325 af, Atten= 0%, Lag= 0.0 min
Primary = 3.38 cfs @ 12.20 hrs, Volume= 0.325 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-15.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 96.37' @ 12.20 hrs
Flood Elev= 100.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	97.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Primary	95.25'	**18.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#3	Primary	95.00'	**1.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=3.38 cfs @ 12.20 hrs HW=96.37' TW=0.00' (Dynamic Tailwater)
- **1=Sharp-Crested Rectangular Weir**(Controls 0.00 cfs)
- **2=Orifice/Grate** (Orifice Controls 3.35 cfs @ 4.47 fps)
- **3=Orifice/Grate** (Orifice Controls 0.03 cfs @ 5.54 fps)

NORTH

GENERAL NOTES:

1. SITE AREA: 56,622 SF OR 1.30 ACRES

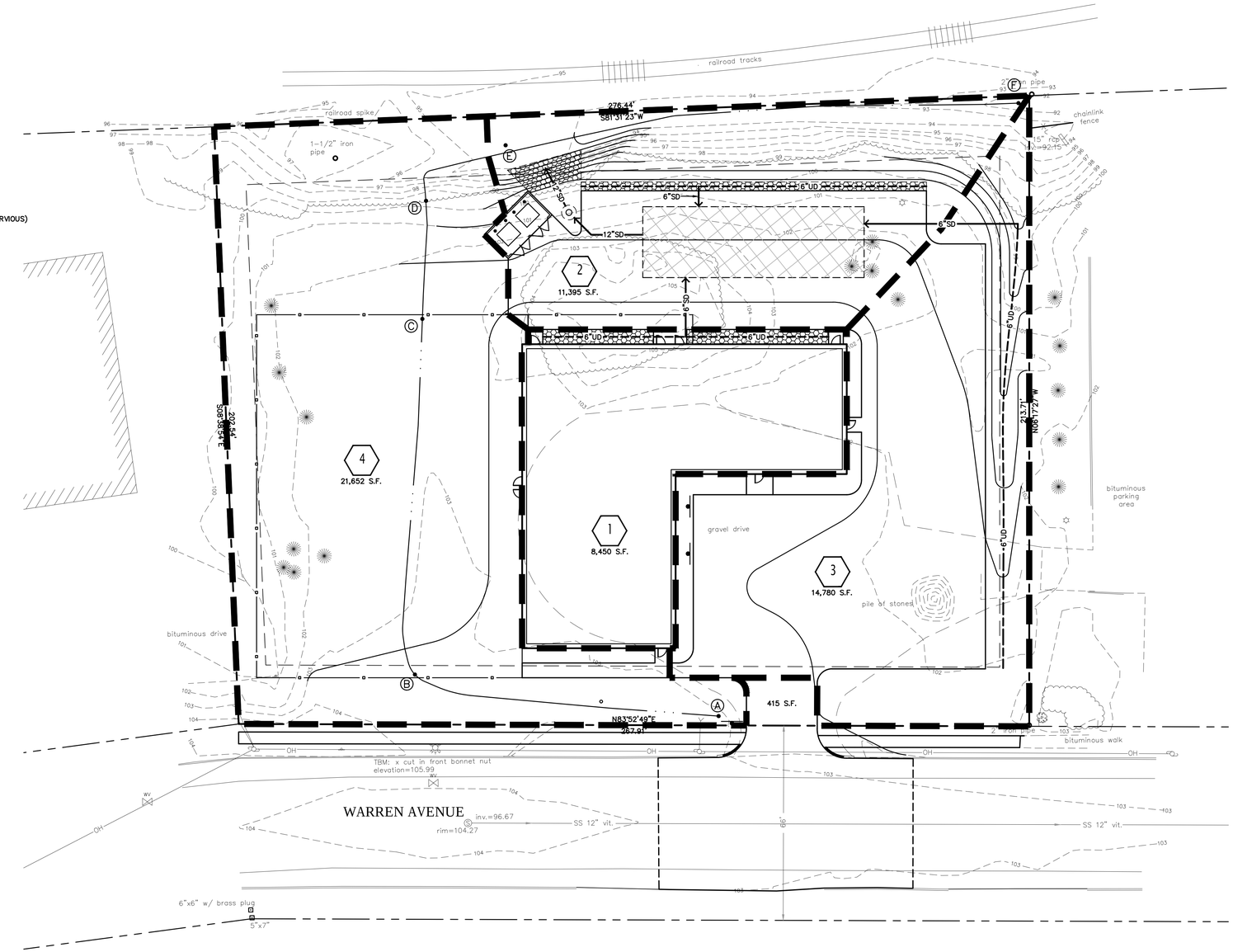
2. IMPERVIOUS AREA:
   - SUBCATCHMENT 1: 8,013 S.F. BUILDING/PAVING
   - SUBCATCHMENT 2: 6,287 S.F.
   - SUBCATCHMENT 3: 9,414 S.F.
   - SUBCATCHMENT 4: 275 S.F.
   - DRIVEWAY: 415 S.F.

3. LANDSCAPED AREA:
   - SUBCATCHMENT 1: 437 S.F.
   - SUBCATCHMENT 2: 5,108 S.F.
   - SUBCATCHMENT 3: 5,296 S.F.
   - SUBCATCHMENT 4: 21,377 S.F.

4. DEVELOPED AREA: 42,550 S.F. (24,404 S.F. IMPERVIOUS; 18,146 S.F. NON-IMPERVIOUS)

5. TREATMENT OF IMPERVIOUS AREA:
   - TOTAL NEW IMPERVIOUS = 12,604 S.F.
   - TREATED NEW IMPERVIOUS = 12,604 S.F.
   - % TREATED = 100% > 95%

6. TREATMENT OF DEVELOPED AREA:
   - TOTAL DEVELOPED AREA = 42,550 S.F.
   - TREATED DEVELOPED = 35,588 S.F.
   - UNTREATED DEVELOPED = 6,962 S.F.
   - % TREATED = 84% > 80%



DRAINAGE LEGEND

- SUBCATCHMENT LABEL
- POND LABEL
- REACH LABEL
- REACH PATH
- TIME OF CONCENTRATION (TC) PATH
- SUBCATCHMENT DIVIDE
- SOIL BOUNDARY
- AP 1 — ANALYSIS POINT
- DIRECTION OF FLOW

SCALE

0 10 20 40

SCALE in FEET
1"=20'

Site:

PROPOSED BUILDING ACADEMY FOR ACTIVE LEARNERS

134 WARREN AVENUE
PORTLAND, MAINE

Prepared for:

DELTA REALTY
380 WARREN AVENUE
PORTLAND, MAINE

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POST-DEVELOPMENT STORMWATER PLAN

No.	Revision/Issue	Date
A	PRELIMINARY REVIEW	12/01/15

Design by: MPM	Checked by: SJB
Drawn by: JAR	Approved by: SJB
Project: 151.06127	Date: OCTOBER 2015

Sheet No: SWP-101

Sheet 2 of 2