Erosion Control & Stormwater Management Plan

Del's Service Center

North Kinney Coulee Road
La Crosse, WI

Del's Service Center
Repair-Towing-Recovery

Borton CONSTRUCTION

Prepared By:

JEWELL associates engineers, inc.

December 18th, 2025

Project Contacts

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Onalaska, Wisconsin 54650

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Jewell Associates Engineers
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Design Engineer: TRAVIS NOEL, EIT
Jewell Associates Engineers
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Del's
Service Center
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Borton
CONSTRUCTION

JEWELL
associates engineers, inc.
Engineers - Surveyors - Architects

Table of Contents

Appendices

Project Background

The Del's Service Center consists of the new construction of a commercial business including driveways, parking lot, and stormwater management. The project is located at parcel 17-10575-063 along North Kinney Coulee Road in the City of La Crosse, La Crosse County, Wisconsin. Refer to Appendix A for the Construction Plans for the project.

Existing Site Information

The existing site consists of 1.96 acres that is currently grassland. Existing ground slopes range from approximately 1-5% and the with no predominate soil type. Ground water elevations were approximately 703.00. No wetlands are present. Stormwater from the site generally drains to the south to the municipal stormwater system via an existing manhole on site. USGS Web soil Survey was used to determine Hydraulic soil conditions (Appendix B). Soil borings and test pits were conducted at proposed basin locations (Appendix H).

Proposed Site Information

The site includes three interconnected bioretention basins, a culvert, three manholes, and associated drainage paths. The basins are designed to operate dynamically, allowing water to flow between them and fill concurrently. Each basin is in a different soil type based on the Geotech report with different soil characteristics. The minimum separation distance between the bottom of the basins to groundwater is 7.68'.

Table 1. Bioretention Basin Summary

Basin	Soil Type	Native Infiltration Rate	Bottom of Basin	Ground Water Elevation
A	Sand	3.60	712.00	703.42
B	Silty Sand	1.63	710.50	702.82
C	Sandy Lean Clay	0.07	712.25	703.02

Basin A connects to Basin B via 15" Culvert. Basin B and Basin A each have an outlet structure which are linked with 12" Pipes. This includes CB-3 which is connected to the municipal stormwater system at a higher elevation. This configuration ensures Basins B and C fill before any runoff exits the site, maximizing on-site treatment.

Erosion Control

Erosion control for the project will be accomplished using best management practices (BMPs) during construction and permanent stabilization methods once grading is completed.

Temporary BMPs shall be installed before ground is disturbed and remain in place until site stabilization is complete. Temporary BMPs shall be inspected at a minimum of once per week and after every rain event greater than 0.5 inches. Any defects found during inspection shall be repaired within 24 hours.

Temporary BMPs that will be used include silt fence, temporary ditch checks, and temporary sediment basins.

Stone tracking pads shall be installed where construction traffic exits the site to prevent sediment from tracking onto adjacent roads. Tracking pads shall be monitored for effectiveness and additional stone shall be added as required.

Culvert pipe ditch checks shall be installed on the upland side of culvert pipes that receive construction site runoff as shown on the plans. Silt fence shall be installed downgradient of disturbed areas where runoff leaves the site via sheet flow. Silt fence will be monitored, and sediment will be removed once it reaches one half of the height of the geotextile fabric. Any defective silt fence found during inspection shall be replaced as required.

Temporary ditch checks shall be installed in proposed channels as shown on the plans. Ditch checks shall be monitored, and sediment will be removed when it reaches one half of the height of the ditch check. Any defective ditch checks found during inspection shall be replaced as required.

Permanent stabilization methods shall be installed once grading is completed and include erosion control mat, riprap aprons, and seeding, fertilizer, and mulch. Seed, fertilizer, and mulch shall be installed on disturbed areas that are not stabilized with riprap, gravel, or pavement. After placement seed shall be monitored to ensure plant growth and watered as required. Seed shall be WisDOT 40 at 2lbs/1000SF. Mulch shall be placed at 90lbs/1000 SF.

Erosion control mat shall be installed in channels once grading of the channels and seeding has been completed. Erosion control mat shall also be installed on slopes 4H:1V or steeper. Erosion control mat shall be installed per the manufacturers recommendation and be inspected and replaced as required.

Riprap aprons shall be installed at pipe outfalls and were channels discharge into storm water management basins. Seed, fertilizer, and mulch shall be installed on disturbed areas that are not stabilized with riprap, gravel, or pavement. After placement seed shall be monitored to ensure plant growth and watered as required.

A concrete washout pit or container will also be located on site. The washout shall be adequately sized and located away from any storm water features. Washouts shall be inspected daily for leaks or damages. Wash water and solids shall be removed and recycled once hardened or at 75% capacity.

The Universal Soil Loss Equation (USLE) Calculation Tool was used to analyze soil loss from sheet and rill erosion for the site. Areas of the site graded to slopes of 20 percent or greater will be seeded and covered with erosion matting within 7 days of the initial disturbance. Flatter disturbed areas that may be disturbed for a longer duration will be protected with silt fence. Areas will receive seed, fertilizer, and mulch. The USLE calculations for the site indicated that the designed erosion control measures will meet soil loss requirements. Refer to Appendix B: Universal Soil Loss Equation.

Stormwater Management Performance Standards

A review of applicable stormwater management regulations was performed to determine the required performance standards for the stormwater management system. Where multiple reviewing authorities

had varying performance standards, the more stringent standard was applied. The stormwater management system was designed based on the following performance standards:

Peak Runoff Rate Reduction

Requirement. By design, BMPs shall be employed to maintain or reduce the 1-year, 24-hour and the 2-year, 24-hour post-construction peak runoff discharge rates to the 1-year, 24-hour and the 2-year, 24-hour pre-development peak runoff discharge rates respectively, or to the maximum extent practicable. The runoff curve numbers in Table 2. shall be used to represent the actual pre-development condition.

-Wisconsin Administrative Code, Chapter NR 151.12(5)(b)(1)

By design, BMPs shall be employed to maintain or reduce the two-year, 24-hour; and the ten-year, 24-hour post-construction peak runoff discharge rates to the two-year, 24-hour; and the ten-year, 24-hour pre-development peak runoff discharge rates respectively, or to the maximum extent practicable. The runoff curve numbers in Table 2. shall be used to represent the actual pre-development conditions. Peak discharges shall be calculated using TR-55 runoff curve number methodology, Atlas 14 precipitation depths, and the appropriate NRCS Wisconsin MSE3 or MSE4 precipitation distribution. Where the pre-development condition is a combination of woodland, grassland, or cropland, the runoff curve number should be pro-rated by area.

-La Crosse, WI Code of Ordinances, Sec 105-61 (b)(4)(b)(1)(B)

Total Suspended Solids (TSS) Reduction

For new development, by design, reduce to the maximum extent practicable, the total suspended solids load by 80%, based on an average annual rainfall, as compared to no runoff management controls. No person shall be required to exceed an 80% total suspended solids reduction to meet the requirements of this subdivision.

Table 2. TSS Reduction Standards

Development Type	***TSS Reduction***
New Development	*80 percent*
In-fill ≥ 5 acres	*80 percent*
In-fill < 5 acres on or after October 1, 2012	*80 percent*
Redevelopment	*40 percent of load from parking areas and roads*
In-fill < 5 acres and before October 1, 2012	*40 percent*

-Wisconsin Administrative Code, Chapter NR 151.12(5)(a)(1)

-La Crosse, WI Code of Ordinances, Sec 105-61 (b)(4)(a)(1)(B)

Infiltration

b. Infiltrate sufficient runoff volume so that the post-development infiltration volume shall be at least 60% of the pre-development infiltration volume, based on an average annual rainfall. However, when designing appropriate infiltration systems to meet this requirement, no more than 2% of the project site is required as an effective infiltration area.

-Wisconsin Administrative Code, Chapter NR 151.12(5)(c)2.b.

Moderate imperviousness. For development with more than 40 percent and up to 80 percent connected imperviousness, such as medium and high density residential, multi-family development, industrial and institutional development, and office parks, infiltrate sufficient runoff volume so that the post-development infiltration volume shall be at least 75 percent of the pre-development infiltration volume, based on an average annual rainfall. However, when designing appropriate infiltration systems to meet this requirement, no more than two percent of the postconstruction site is required as an effective infiltration area.

-La Crosse, WI Code of Ordinances, Sec 105-61 (b)(4)(d)(1)(B)

Thermal Control

Thermal impacts were evaluated for the proposed stormwater management system. The site does not discharge to any adjacent surface waters, and all overflow is routed to the municipal storm sewer system. The proposed stormwater ponds function as bio-infiltration basins, which reduce surface discharge volumes and promote subsurface infiltration. As a result, the project is not expected to cause thermal impacts to receiving waters.

Stormwater Management Methods & Modeling.

Stormwater modeling was performed using HydroCAD to model peak rate calculations and WinSLAMM to model TSS reduction. Refer to Appendix C for the HydroCAD Modeling Results and Appendix D for the WinSLAMM Modeling Results.

Stormwater Management Modeling Results

Peak Runoff Rate Reduction

Peak rate calculations were performed for the site. Peak runoff rates for the post-development site were maintained or reduced to the maximum extent practical for the 1, 2, 10, 25, and 100 year-24 hour events compared to predevelopment. Refer to Table 1 for the results of the runoff rate analysis.

Table 1. Peak Runoff Rates

Storm Event	Existing (CFS)	Proposed (CFS)	Change (CFS)	Proposed No Control
1 year – 24 hour peak runoff rate	0.26	0.49	0.23	3.74
2 year – 24 hour peak runoff rate	0.48	0.59	0.11	4.45
10 year – 24 hour peak runoff rate	1.76	1.38	-0.38	7.34
25 year – 24 hour peak runoff rate	3.03	1.85	-1.18	9.70
100 year – 24 hour peak runoff rate	5.72	3.49	-2.23	14.28

TSS Reduction

The results of the WinSLAMM modeling showed an 81.57% reduction in total suspended solids for the site, meeting the 80% TSS reduction performance standard for new development.

Infiltration

Infiltration calculations are included in the WinSLAMM results summary with a calculated stay on percentage of 94.3%. Total annual rainfall volume on the site is 205,082 cu ft with a predevelopment runoff volume of 2,812 cu ft and a post development runoff volume of 24,406 cu ft.

$$\%\text{ of Pre Dev Infiltrated} = \frac{Annual\ Rainfall\ Volume - Post\ Dev\ Runoff}{Annual\ Rainfall\ Volume - Pre\ Dev\ Runoff} = \frac{205{,}082-14{,}406}{205{,}082-2{,}812} = \frac{190{,}676}{202{,}270} = 94.3\%$$

Anticipated Construction Sequence

(All dates listed are approximate. Actual construction timelines and sequencing will be determined by the contractor based on site conditions, scheduling, and coordination with project stakeholders.)

1. Install temporary Erosion Control BMP's including silt fence, tracking pad, and check ditch check at locations indicated on plans. (March 1 ,2026)
2. Break ground, strip and stockpile topsoil, rough grade site including foundation, swales, and pond. (March 2, 2026 – April 1, 2026). Pond locations to be used as temporary sediment basin. Temporarily stabilize stockpiles and disturbed areas once at grade.
3. Building construction. (April 2026 – October 2026)
4. Final grading for driveway, walking path, foundation construction. Final Grade Site. Stabilize all finished grade areas with topsoil, seed (WisDOT 40 2lbs/1000SF), fertilizer and straw mulch (90lbs/1000 SF). Install culvert checks, ditch checks, and emat as shown. (April 1, 2026 – July 20, 2026)
5. Pond Construction and install culverts. (August 2026)
6. Permanently stabilize all areas with topsoil, seed (WisDOT 40 2lbs/1000SF), fertilizer and straw mulch (90lbs/1000 SF). and repair any previously stabilized areas as needed. (September 1, 2026).
7. Remove all temporary erosion control measures once vegetation is established. (November 1, 2026)

Del's Service Center
North Kinney Coulee Road
La Crosse, WI

Appendix A

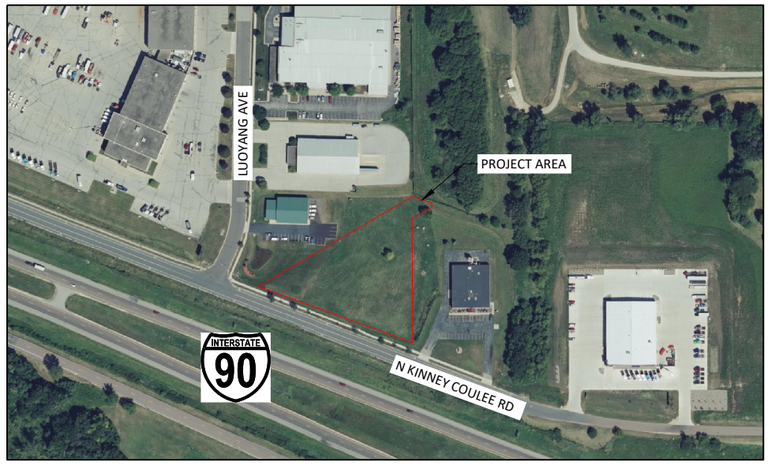
CONSTRUCTION PLANS

CONSTRUCTION PLANS FOR

DEL'S SERVICE CENTER

CITY OF LA CROSSE
LA CROSSE COUNTY, WISCONSIN

DRAWING INDEX



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OWNER
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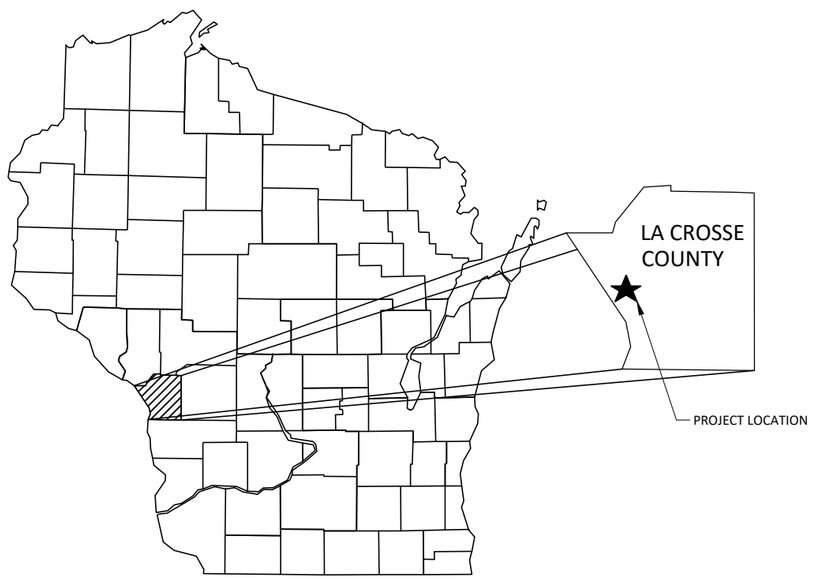
221 MAIN STREET
ONALASKA WI 54650

PROJECT OVERVIEW

SCALE: NOT TO SCALE



DIGGERS HOTLINE
Dial 811 or (800) 242-8511
www.DiggersHotline.com

THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING UTILITY PROPERTY DURING CONSTRUCTION OPERATIONS AS OUTLINED IN THE SPECIFICATIONS. DIGGER'S HOTLINE NUMBER IS 1-800-242-8511. THESE UTILITIES LOCATED WITHIN THE PROJECT LIMITS OR IMMEDIATELY ADJACENT TO THE PROJECT CONSTRUCTION LIMITS ARE MEMBERS OF DIGGER'S HOTLINE.

Del's Service Center
Repair-Towing-Recovery

Borton CONSTRUCTION

JEWELL
560 Sunrise Drive
Spring Green, WI 53588
phone: 608-588-7484

Del's Service Center
Repair-Towing-Recovery

Borton CONSTRUCTION

Del's Service Center
La Crosse, WI

Design

12-18-2025

No.	Description	Date

Drawing Name
TITLE SHEET

Project number	Sheet number
BD5010	C0.0

PLOT BY: TNOEL 12/18/2025

CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	154,474.35	468,752.41	713.84	CP
2	154,636.88	468,915.69	716.94	CP/MAG
3	154,348.78	469,098.25	714.91	CP
50	154,343.86	468,896.15	715.92	BM / CHIS X IN CONCRETE BACK OF CURB
51	154,386.88	468,967.34	717.02	BM / BURY BOLT HYDRANT
10000	154,474.39	468,752.41	713.83	MON/REB .75IN
10001	154,496.59	468,691.13	713.39	IRON PIPE PIN / 1IN
10002	154,348.74	469,098.23	714.90	MON/REB 0.75IN
10003	154,675.46	469,096.58	717.43	IRON PIPE PIN / 1IN
10004	154,705.85	469,148.78	719.90	IRON PIPE PIN / 1IN
10005	154,716.42	469,148.60	720.39	IRON PIPE PIN / 1IN
10006	154,734.44	469,098.69	719.82	IRON PIPE PIN / 1IN

17-10687-260
DEBOER FAMILY LIVING TRUST
2946 LUOYANG AVE

17-10575-62
HICKORY POINT HOLDINGS LLC
4003 KINNEY COULEE RD

17-10575-63
PROJECT LOCATION

LUOYANG AVE

N KINNEY COULEE ROAD

INTERSTATE 90

IP #10006
IP #10005
IP #10004
IP #10003
IP #10001

CP #1
CP #2
CP #3

GAS LINE EASEMENT 50'

15'

SETBACK 40'

PROPERTY LINE

GAS LINE

BURIED POWER LINE CORRIDOR #10000

STORM SEWER

WATER MH

SANITARY MAIN

WATERMAIN

SAN MH

SW MH

FIRE HYDRANT AND VALVE

BM #50

BM #51

MON #10002

WATER VALVE

N

0' 20' 40'

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Del's Service Center
Repair-Towing-Recovery

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Del's Service Center
La Crosse, WI

Design

12-18-2025

No.	Description	Date

Drawing Name
EXISTING SITE

Project number BD5010

Sheet number C1.0

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PLOT BY: TNOEL 12/18/2025

CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	154,474.35	468,752.41	713.84	CP
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17-10575-63
PROJECT LOCATION

17-10575-62
HICKORY POINT HOLDINGS LLC
4003 KINNEY COULEE RD

LUOYANG AVE

N KINNEY COULEE ROAD

INTERSTATE 90

IP #10001
IP #10000
IP #10003
IP #10004
IP #10005
IP #10006
CP #1
CP #2
CP #3
BM #50
BM #51
MON #10002
WATER VALVE
FIRE HYDRANT AND VALVE
SW MH
SAN MH
WATER MH
STORM SEWER
SANITARY MAIN
WATERMAIN
BURIED POWER LINE CORRIDOR
GAS LINE
GAS LINE EASEMENT 50'
PROPERTY LINE
SETBACK 40'
15'

N
0' 20' 40'

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Drawing Name
EXISTING SITE

Project number BD5010

Sheet number C1.1

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LUOYANG AVE

17-10687-260
DEBOER FAMILY LIVING TRUST
2946 LUOYANG AVE

17-10575-62
HICKORY POINT HOLDINGS LLC
4003 KINNEY COULEE RD

PROPOSED BUILDING
FFE:716.50

CP #2

GAS LINE EASEMENT
50'

CB-1

CB-2

CB-3

DRAINAGE FLOWLINE

15'

2' BERM

PROPERTY LINE

GAS LINE

BURIED
POWER LINE
CORRIDOR

MON #10000

CP #1

BASIN A

BASIN B

BASIN C

24'

SETBACK
40'

40'

50'

STORM SEWER

WATER MH

REMOVE AND REPLACE
SIDEWALK AS NEEDED
TO MATCH EXISTING

CONCRETE
PAVEMENT
APRON

SANITARY MAIN

WATERMAIN

FIRE HYDRANT
AND VALVE

BM #51

SAN MH

SW MH

BM #50

N KINNEY COULEE ROAD

MON #10002

CP #3

WATER VALVE

INTERSTATE
90

N

0' 20' 40'

Legend

PROPERTY LINE	
SETBACK/EASEMENTS	
CENTER LINE	
ELECTRIC	E
GAS	G
SANITARY SEWER	SAN
WATER	W
WATER VALVE	WV
STORM SEWER	SS
UTILITY PEDESTAL	
CONCRETE	
ASPHALT	
BUILDING	
RIP RAP	
TREE	
CONTROL POINT	
BENCHMARK	

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Drawing Name
PROPOSED SITE

Project number BD5010

Sheet number C2.0

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17-10687-260
DEBOER FAMILY LIVING TRUST
2946 LUOYANG AVE

N KINNEY COULEE ROAD

GAS LINE
GAS LINE EASEMENT
50'
PROPERTY LINE
CP #1
MON #10000
SLOPE INTERCEPT
MATCH:714.00
2' BERM
MATCH:713.99
MATCH:714.65
MATCH:715.76
MATCH:713.91
FG:715.50
715
FG:715.50
STORM SEWER
BIORETENTION
BASIN A
SEE SHEET C3.3
FG:714.00
DRAINAGE FLOWLINE
1.18%
FG:714.75
MATCH:715.98
FG:715.20
FG:715.20
FG:715.20
FG:715.65
PIPE INV: 712.75
23.00'
10.00'
2.00%
R3.00'
FG:715.66
2.48%
REMOVE AND REPLACE
SIDEWALK AS NEEDED
TO MATCH EXISTING
MATCH:714.81
MATCH:715.70
FG:716.00
FG:715.42
FG:715.51
FG:715.75
3.00%
8.20%
2.06%
24'
1.15%
CONCRETE PAVEMENT
FG:715.90
FG:715.90
FG:715.90
MATCH:716.13
FG:716.50
2.00%
1.68%
716
CP #2
1.44%
CONCRETE
PAVEMENT
APRON
FG:715.56
FG:715.65
FG:716.00
FG:716.08
R3.00'
FG:716.17
FG:716.50
MATCH:717.35
MATCH:715.91
PROPERTY LINE
MATCH:715.01
MATCH:715.83
PIPE INV: 712.50
5.99%
1.50%
ADA STALL
AND SIGN
1.50%
DRAINAGE FLOWLINE
0.82%
0.82%
FG:716.85
FG:716.28
REMOVE AND REPLACE
SIDEWALK AS NEEDED
TO MATCH EXISTING
5'
FG:716.42
FG:716.42
FG:716.42
MATCH:716.04
FIBER OPTIC
WATERMAIN
CONCRETE
SIDEWALK
SANITARY MAIN
BURIED
POWER LINE
CORRIDOR
MATCH:716.14
1.52%
8.50%
2.12%
2.43%
RIM:715.95
41.90'
FG:716.40
717
PROPOSED BUILDING
FFE:716.50
2.62%
0.92%
MATCH:716.21
10'
2.30%
0.50%
BIORETENTION
BASIN B
SEE SHEET C3.4
1.77%
FG:716.13
2.30%
FG:716.60
1.17%
CONCRETE
PATIO 10' x 20'

N
0' 10' 20'

Legend

- PROPERTY LINE
- SETBACK/EASEMENTS
- CENTER LINE
- ELECTRIC (E)
- GAS (G)
- SANITARY SEWER (SAN)
- WATER (W)
- WATER VALVE (WV)
- STORM SEWER (SS)
- UTILITY PEDESTAL
- CONCRETE
- ASPHALT
- BUILDING
- RIP RAP
- TREE
- CONTROL POINT
- BENCHMARK

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No.	Description	Date

Drawing Name
GRADING PLAN

Project number	Sheet number
BD5010	C2.1

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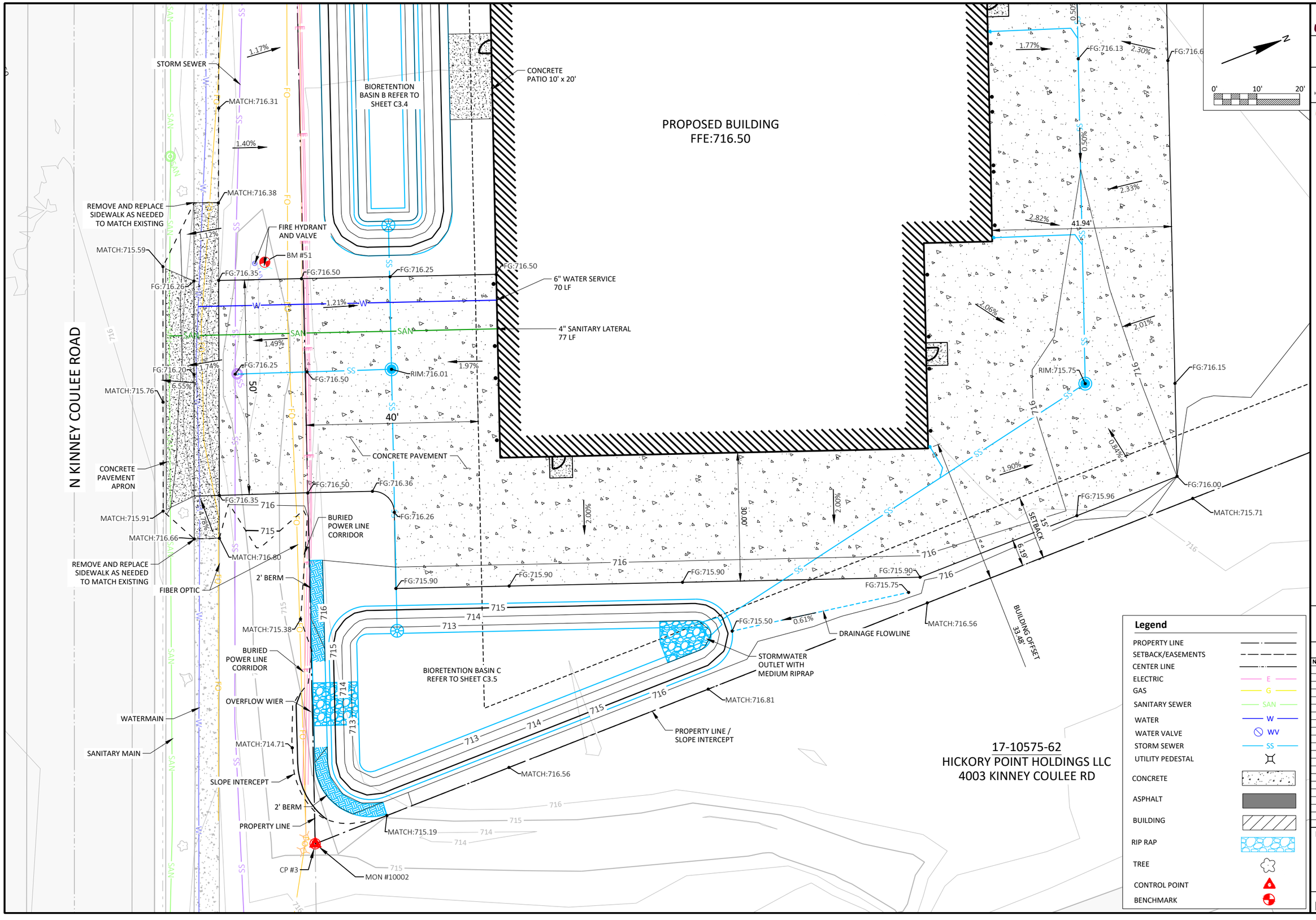

Legend

- PROPERTY LINE
- SETBACK/EASEMENTS
- CENTER LINE
- ELECTRIC (E)
- GAS (G)
- SANITARY SEWER (SAN)
- WATER (W)
- WATER VALVE (WV)
- STORM SEWER (SS)
- UTILITY PEDESTAL
- CONCRETE
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No.	Description	Date

Drawing Name
GRADING PLAN

Project number BD5010

Sheet number C2.2

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17-10687-260
DEBOER FAMILY LIVING TRUST
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17-10575-62
HICKORY POINT HOLDINGS LLC
4003 KINNEY COULEE RD

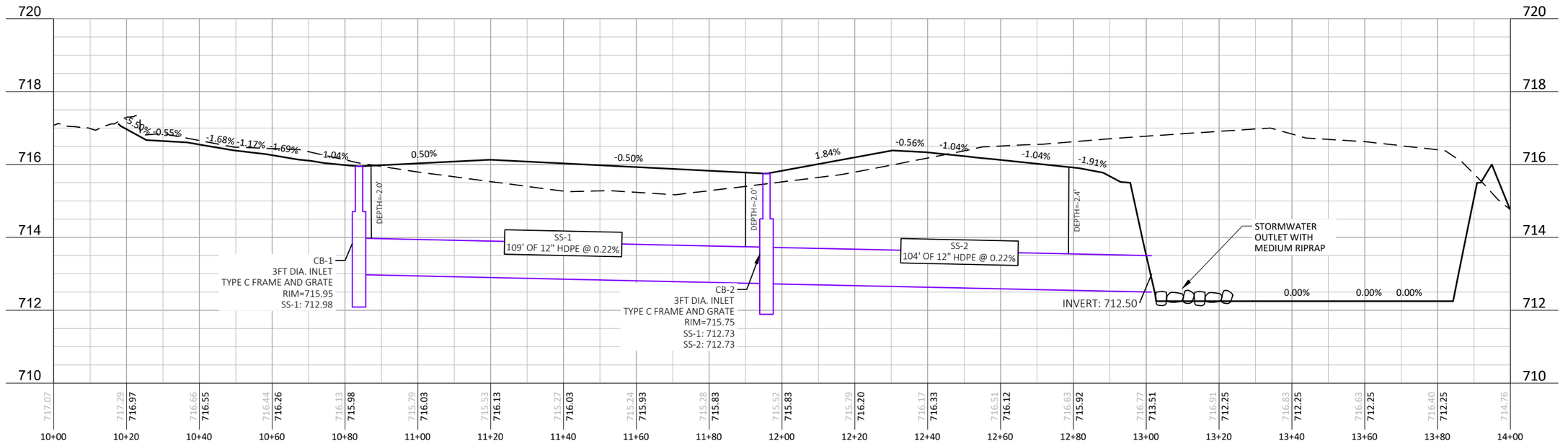
GAS LINE EASEMENT 50'

CB-1
11+00
SS-1
CB-2
12+00
SS-2
13+90

DRAINAGE FLOWLINE
DRAINAGE FLOWLINE
CONCRETE PAVEMENT
PROPERTY LINE
STORMWATER OUTLET WITH MEDIUM RIPRAP

PROPOSED BUILDING
FFE:716.50

N
0' 15 30'



JEWELL
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Spring Green, WI 53588
phone: 608-588-7484

Del's Service Center
Repair-Towing-Recovery

Borton CONSTRUCTION

Del's Service Center
La Crosse, WI

Design

12-18-2025

No.	Description	Date

Drawing Name
STORMWATER PLAN & PROFILE

Project number BD5010
Sheet number C3.0

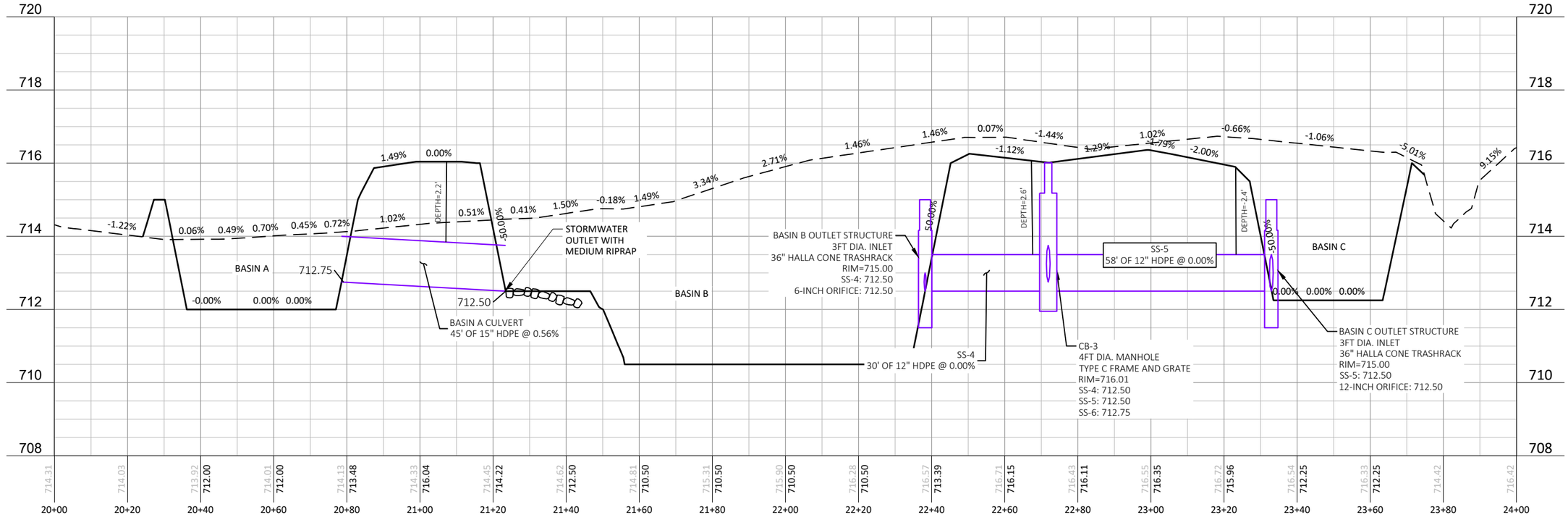
S:\Projects\BD5010 Borton Const - Dels Service Center Site Design\Drawings\DWG\BD5010_C3.0 STORMWATER.dwg.

PLOT BY: TNOEL 12/18/2025

PROPOSED BUILDING
FFE:716.50

CONCRETE PAVEMENT
2' WIDE BERM
SLOPE INTERCEPT
CONCRETE PATIO 10' x 20'
6" WATER SERVICE 70 LF
4" SANITARY LATERAL 77 LF
STORMWATER OUTLET WITH MEDIUM RIPRAP
BASIN A
BASIN A CULVERT
BASIN B OUTLET STRUCTURE
BASIN B
BASIN C
BASIN C OUTLET STRUCTURE
BURIED POWER LINE CORRIDOR
PROPERTY LINE
STORM SEWER
FIRE HYDRANT AND VALVE
EXISTING STRUCTURE
EX WEST 18-INCH
EX EAST 18-INCH
FIBER OPTIC
WATER VALVE
WATERMAIN
SANITARY MAIN
SANITARY MANHOLE
CONCRETE PAVEMENT APRON
REMOVE AND REPLACE SIDEWALK AS NEEDED TO MATCH EXISTING
N KINNEY COULEE ROAD

17-10575-62
HICKORY POINT HOLDINGS LLC
4003 KINNEY COULEE RD



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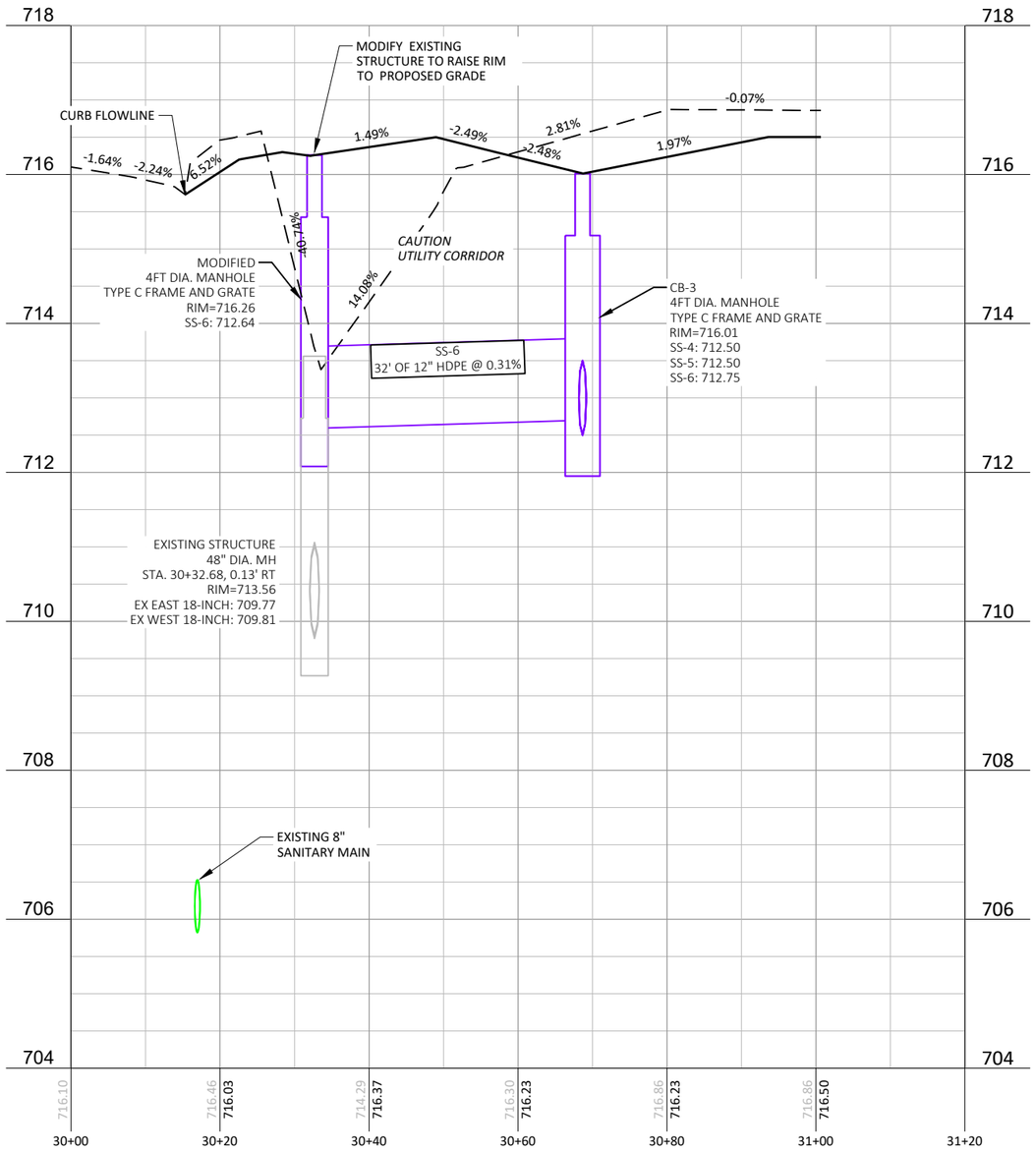
12-18-2025

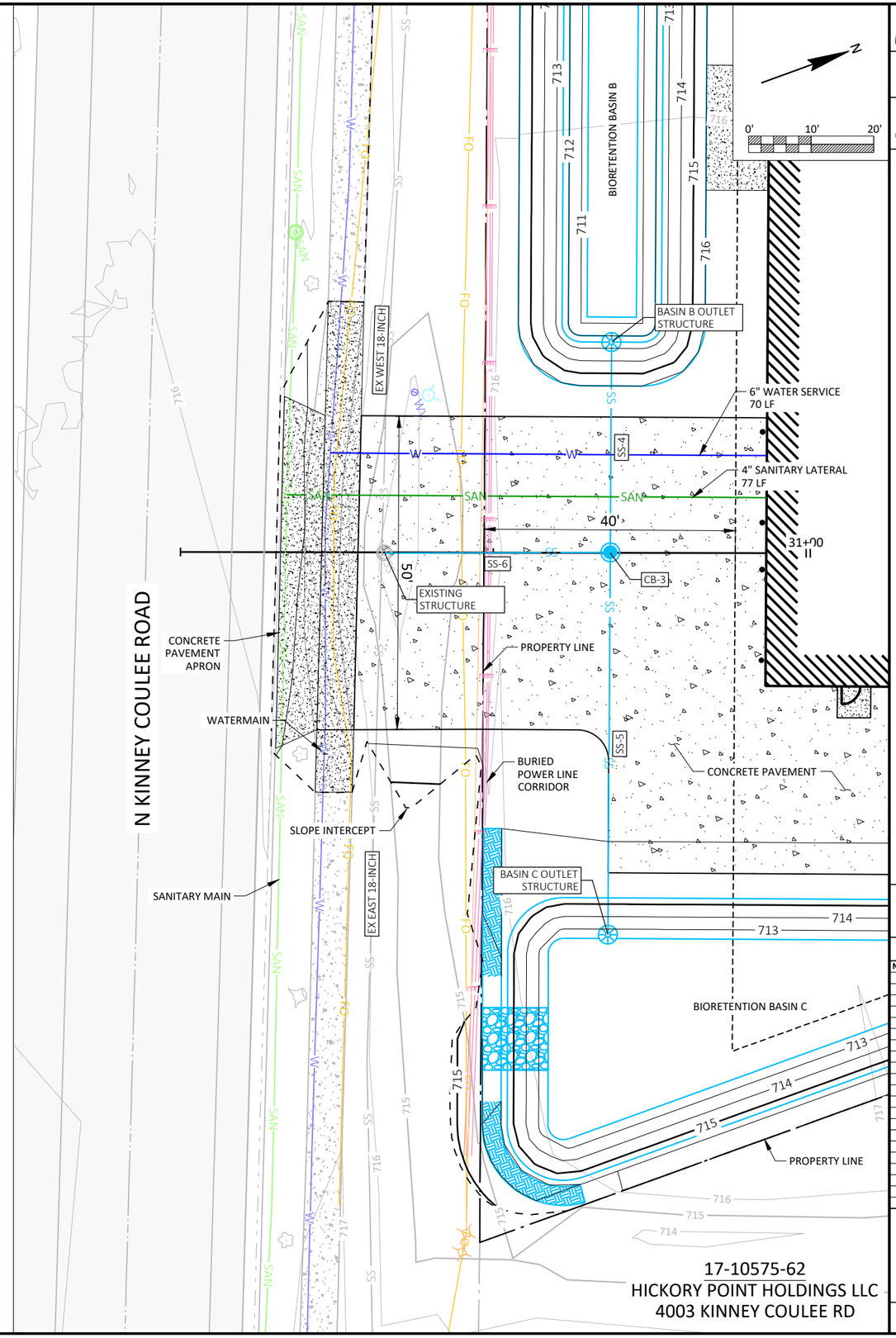
No.	Description	Date

Drawing Name
STORMWATER PLAN & PROFILE

Project number BD5010
Sheet number C3.1

S:\Projects\BD5010 Borton Const - Dels Service Center Site Design\Drawings\DWG\BD5010_C3.0 STORMWATER.dwg.





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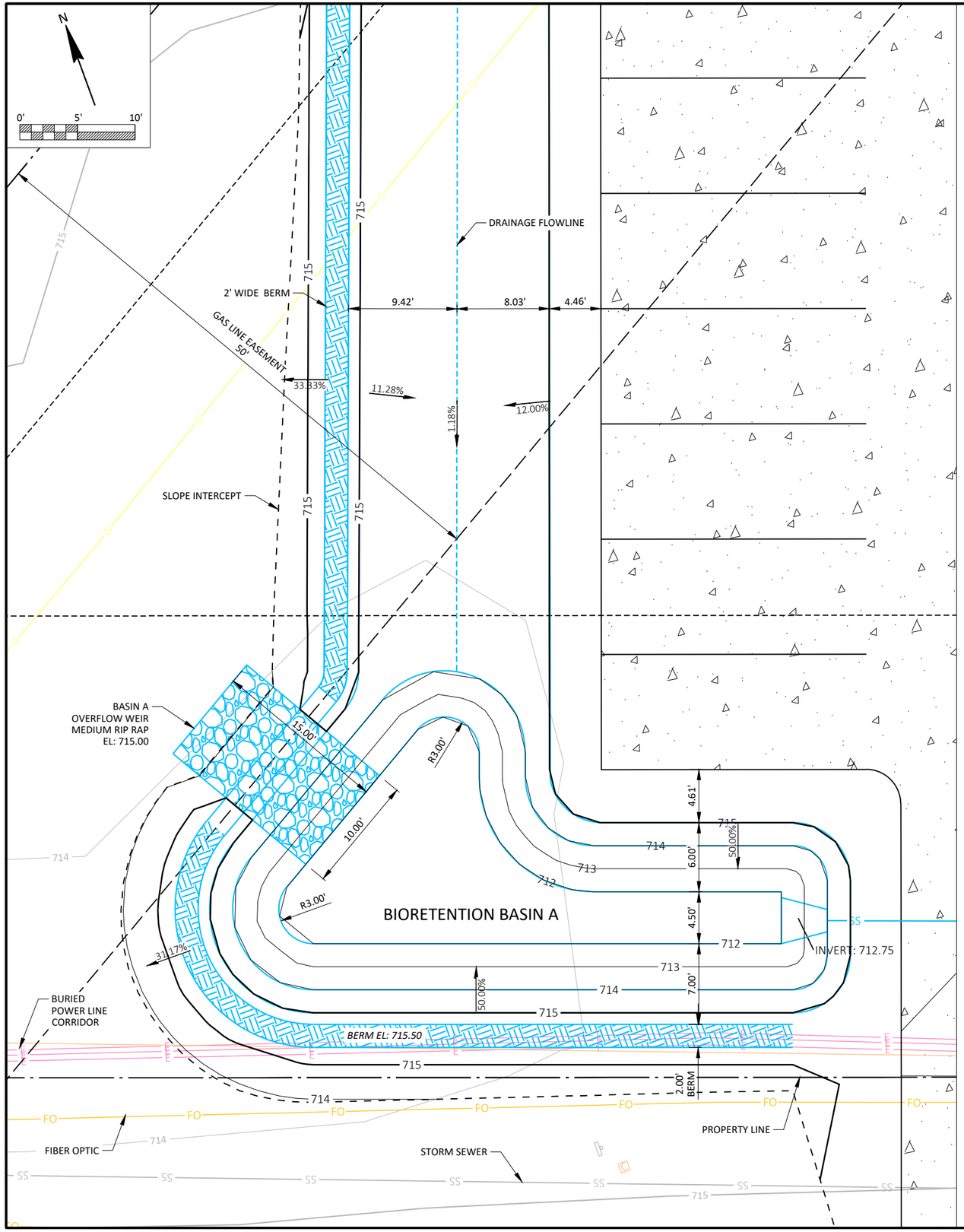
12-18-2025

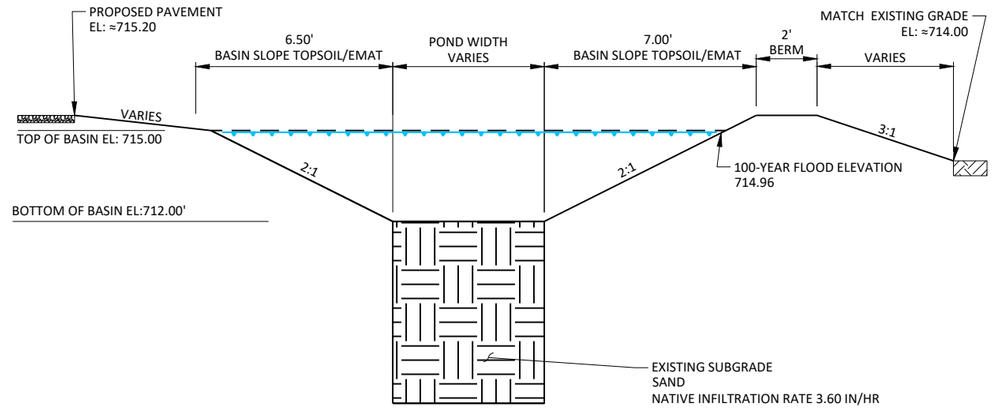
No.	Description	Date

Drawing Name
STORMWATER PLAN & PROFILE

Project number	Sheet number
BD5010	C3.2

PLOT BY: TNOEL 12/18/2025

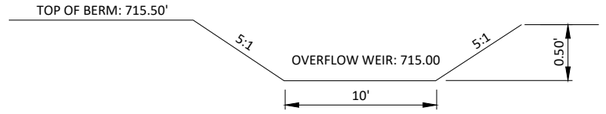




GROUNDWATER ELEVATION: ≈703.42

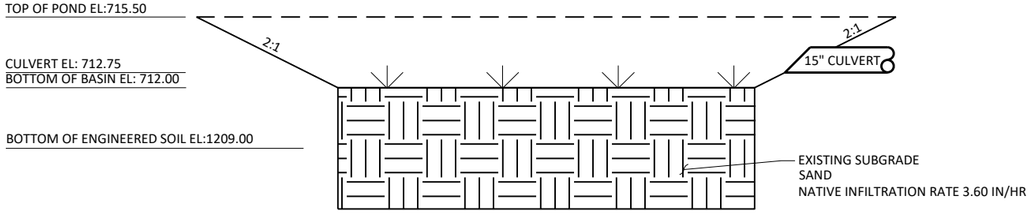
TYPICAL BASIN SECTION

SCALE:NTS



WEIR PROFILE

SCALE:NTS



OUTLET STRUCTURE

SCALE:NTS

NOTES:

1. PLACE ENGINEERED SOIL AFTER CONTRIBUTING AREAS HAVE BEEN STABILIZED.
2. MINIMIZE COMPACTION OF THE SUBGRADE OF BIORETENTION BASINS TO THE MAXIMUM EXTENT PRACTICAL.
3. MONITOR AND WATER PLANTS AS REQUIRED TO ESTABLISH ADEQUATE VEGETATION.

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Design

12-18-2025

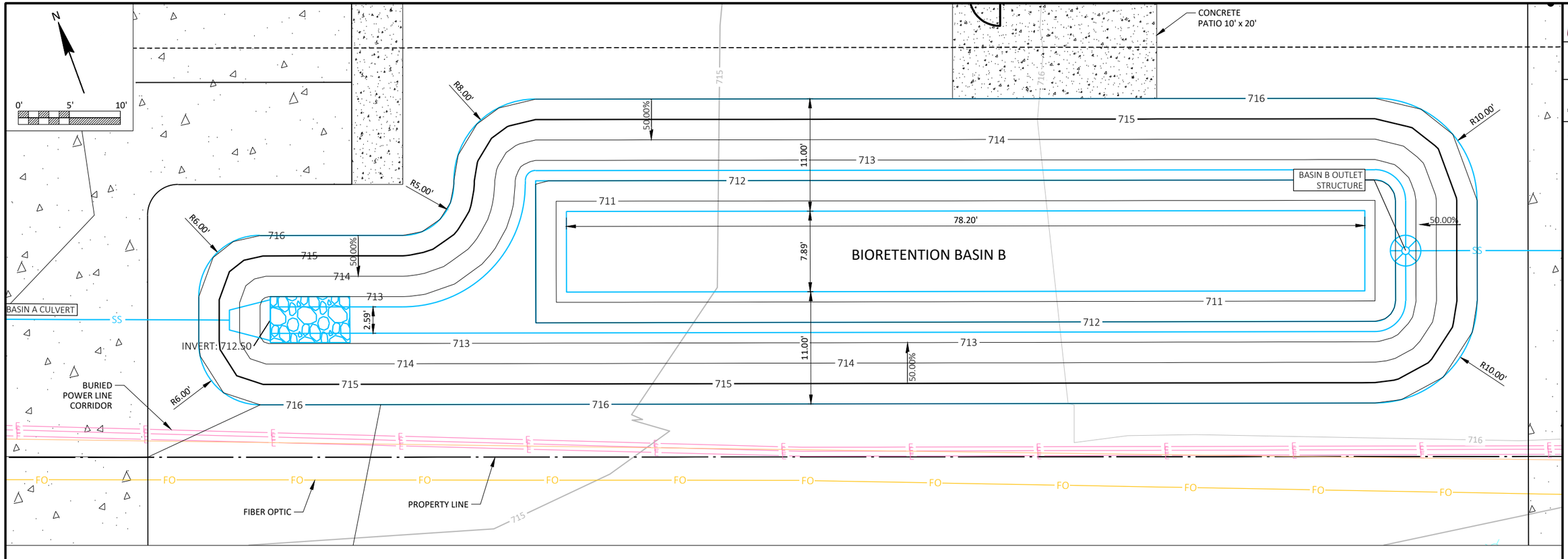
No.	Description	Date

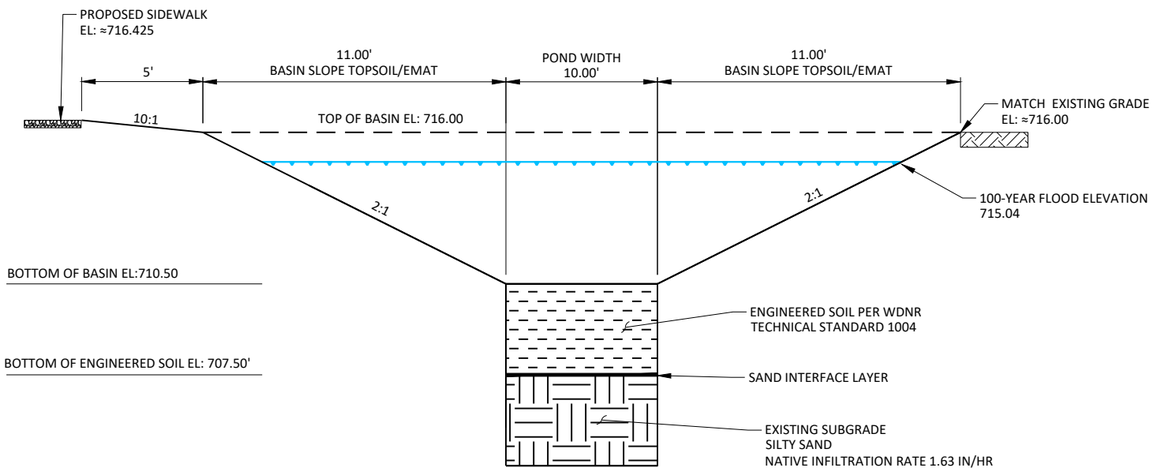
Drawing Name

STORMWATER BASIN DETAILS

Project number	Sheet number
BD5010	C3.3

S:\Projects\BD5010 Borton Const - Dels Service Center Site Design\Drawings\DWG\BD5010_C3.0 STORMWATER.dwg.

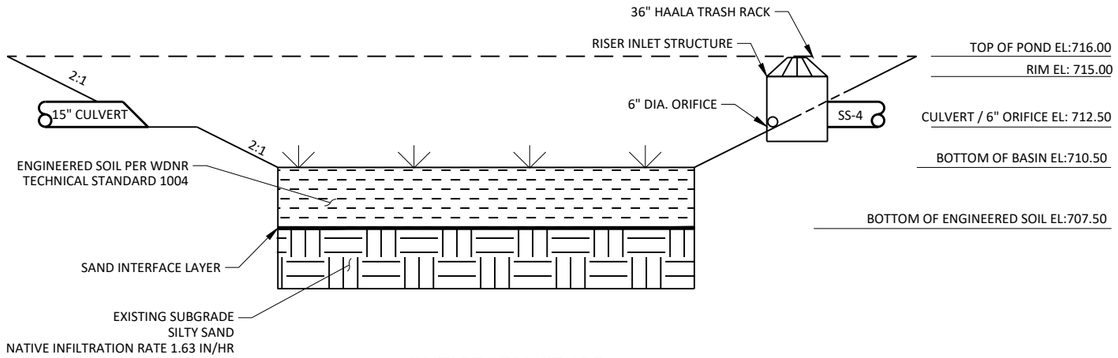




GROUNDWATER ELEVATION: ≈702.82

TYPICAL BASIN SECTION

SCALE:NTS



OUTLET STRUCTURE

SCALE:NTS

NOTES:

1. PLACE ENGINEERED SOIL AFTER CONTRIBUTING AREAS HAVE BEEN STABILIZED.
2. MINIMIZE COMPACTION OF THE SUBGRADE OF BIORETENTION BASINS TO THE MAXIMUM EXTENT PRACTICAL.
3. MONITOR AND WATER PLANTS AS REQUIRED TO ESTABLISH ADEQUATE VEGETATION.

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La Crosse, WI

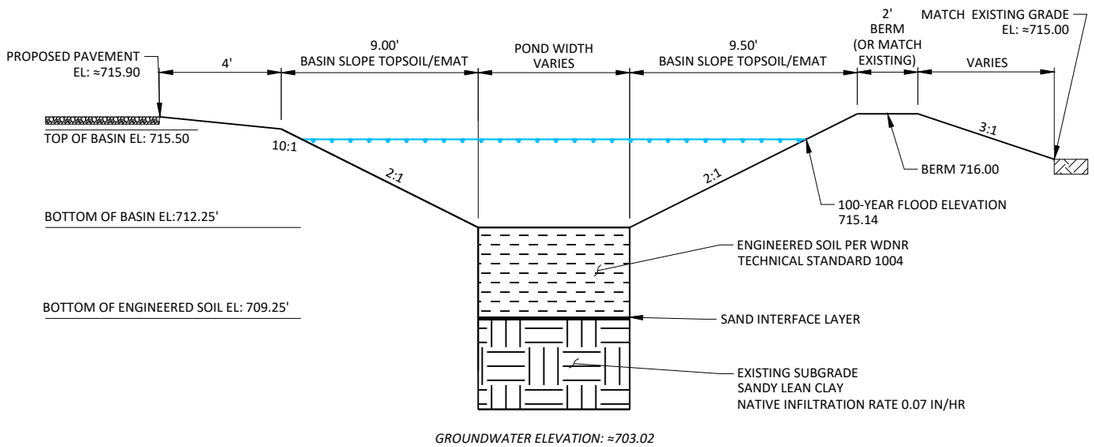
Design

12-18-2025

No.	Description	Date

Drawing Name
STORMWATER BASIN DETAILS

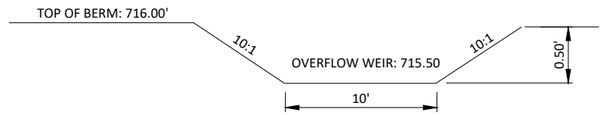
Project number	Sheet number
BD5010	C3.4



GROUNDWATER ELEVATION: ≈703.02

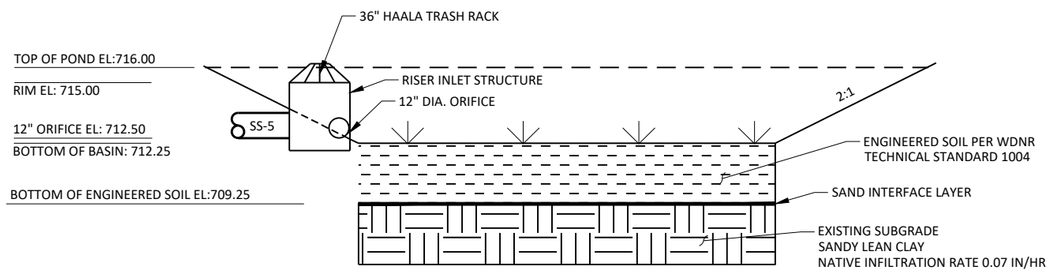
TYPICAL BASIN SECTION

SCALE:NTS



WEIR PROFILE

SCALE:NTS

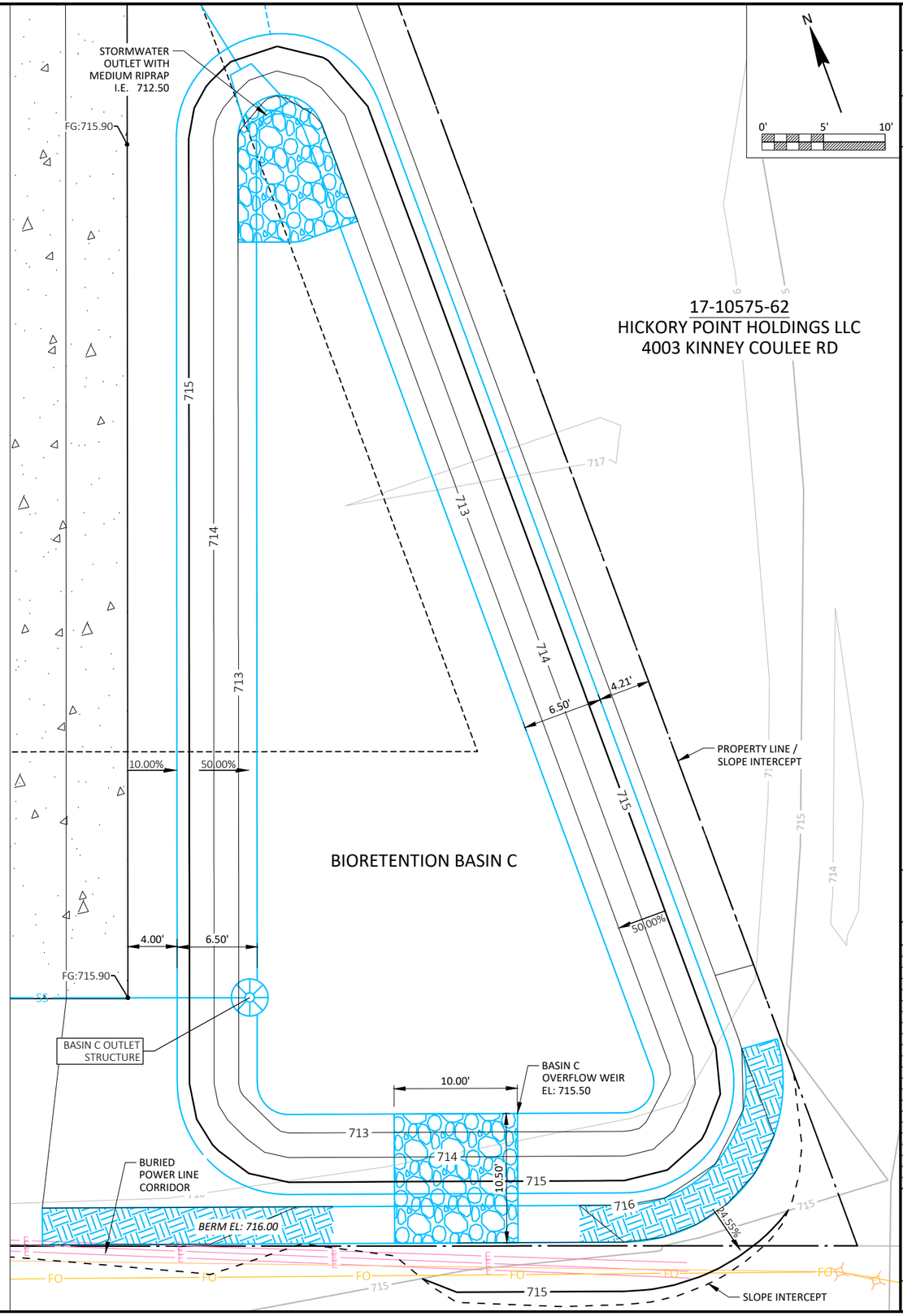


OUTLET STRUCTURE

SCALE:NTS

NOTES:

1. PLACE ENGINEERED SOIL AFTER CONTRIBUTING AREAS HAVE BEEN STABILIZED.
2. MINIMIZE COMPACTION OF THE SUBGRADE OF BIORETENTION BASINS TO THE MAXIMUM EXTENT PRACTICAL.
3. MONITOR AND WATER PLANTS AS REQUIRED TO ESTABLISH ADEQUATE VEGETATION.



17-10575-62
HICKORY POINT HOLDINGS LLC
4003 KINNEY COULEE RD

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Spring Green, WI 53588
phone: 608-588-7484

Del's Service Center
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Del's Service Center
La Crosse, WI

Design

12-18-2025

No.	Description	Date

Drawing Name
STORMWATER BASIN DETAILS

Project number	Sheet number
BD5010	C3.5

PLOT BY: TNOEL 12/18/2025

ANTICIPATED CONSTRUCTION SEQUENCE

(All dates provided are estimates. Actual construction timelines and sequencing will be determined by the contractor based on site conditions, scheduling, and coordination with project stakeholders.)

1. Install temporary Erosion Control BMP's including silt fence, tracking pad, and check ditch check at locations indicated on plans. (March 1 ,2026)
2. Break ground, strip and stockpile topsoil, rough grade site including foundation, swales, and pond. (March 2, 2026 - April 1, 2026). Pond locations to be used as temporary sediment basin. Temporarily stabilize stockpiles and disturbed areas once at grade.
3. Building construction. (April 2026 - October 2026)
4. Final grading for driveway, walking path, foundation construction. Final Grade Site. Stabilize all finished grade areas with topsoil, seed (WisDOT 40 2lbs/1000SF), fertilizer and straw mulch (90lbs/1000 SF). Install culvert checks, ditch checks, and emat as shown. (April 1, 2026 - July 20, 2026)
5. Pond Construction and install culverts. (August 2026)
6. Permanently stabilize all areas with topsoil, seed (WisDOT 40 2lbs/1000SF), fertilizer and straw mulch (90lbs/1000 SF). and repair any previously stabilized areas as needed. (September 1, 2026).
7. Remove all temporary erosion control measures once vegetation is established. (November 1, 2026)

17-10687-260
DEBOER FAMILY LIVING TRUST
2946 LUOYANG AVE

17-10575-62
HICKORY POINT HOLDINGS LLC
4003 KINNEY COULEE RD

SOIL / MATERIAL STOCKPILE
SILT FENCE
INLET PROTECTION
INLET PROTECTION
CONCRETE CLEAN OUT
RELOCATE AS NEEDED
AND DISPOSE OFFSITE
PROPOSED BUILDING
FFE:716.50
USLE STEP 1
85' @ 2.0%
3/01/26 - 4/01/26
USLE STEP 2
10' @ 5.0%
4/01/26 - 11/01/26
DITCH CHECK
DITCH CHECK
SILT FENCE
EMAT ALL SLOPES
4:1 OR GREATER
BASINS MAY BE EXCAVATED FIRST
DURING CONSTRUCTION FUNCTION
AS TEMPORARY SEDIMENT BASIN
EMAT ALL SLOPES
4:1 OR GREATER
EMAT ALL SLOPES
4:1 OR GREATER
BIORETENTION
BASIN A
BIORETENTION
BASIN B
BIORETENTION
BASIN C
INLET PROTECTION
INLET PROTECTION
TRACKING PAD
SILT FENCE
N KINNEY COULEE ROAD

0' 15' 30'

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12-18-2025

No.	Description	Date

Drawing Name
EROSION CONTROL

Project number	Sheet number
BD5010	C4.0

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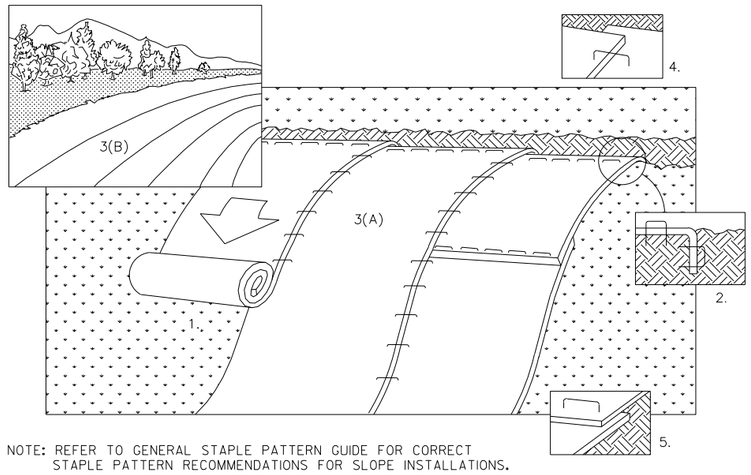
General Notes

1. Construct and maintain erosion control measures in accordance with Wisconsin DNR and local requirements.
2. Install erosion control practices prior to initiating other land disturbing activities.
3. Inspect erosion control measures weekly and after every rainfall event exceeding 0.5 inches within 24 hours. Repair to erosion control measures shall occur within 24 hours of inspection.
4. Erosion control is the responsibility of the contractor or landowner until site is stabilized. Additional erosion control measures, as requested by regulatory agents or owner's engineer, shall be installed within 24 hours.
5. Install tracking controls to prevent sediment from being tracked onto adjacent roadways. Sediment in the roadway shall be removed by street cleaning (not hydraulic flushing) before the end of each work day.
6. Install inlet filters prior to construction or immediately after inlets are installed and maintained until site is stabilized. Remove accumulated sediment when it reaches 1/3 to 1/2 of the device depth.
7. Divert channelized runoff from adjacent land around disturbed areas.
8. Install perimeter control around stockpiles and stabilize stockpiles that will remain inactive for 7 days or longer.
9. Temporarily stabilize disturbed areas that will remain inactive for 14 days.
10. Permanently stabilize any portion of the site within 7 days of reaching final grade.
11. Install and maintain a concrete washout. Chute washwater may not be dumped on the ground.
12. De-watering shall conform to DNR Technical Standard 1061 and may not increase erosion.
13. Remove accumulated sediment from ditch checks and stone weepers when it reaches 1/2 of the device height.
14. Remove all erosion control measures once all disturbed areas are vegetated.

Temporary Stabilization			
	Lbs per acre	Lbs per 1,000 ft2	Season
Summer Oats	130	3	Spring-Summer
Cereal Rye	130	3	Fall
Winter Wheat	130	3	Fall
Annual Ryegrass	80	2	Spring-Fall
Straw Mulch	4,000	90	Year-round
Wood Chip Mulch	12,000	270	Year-round

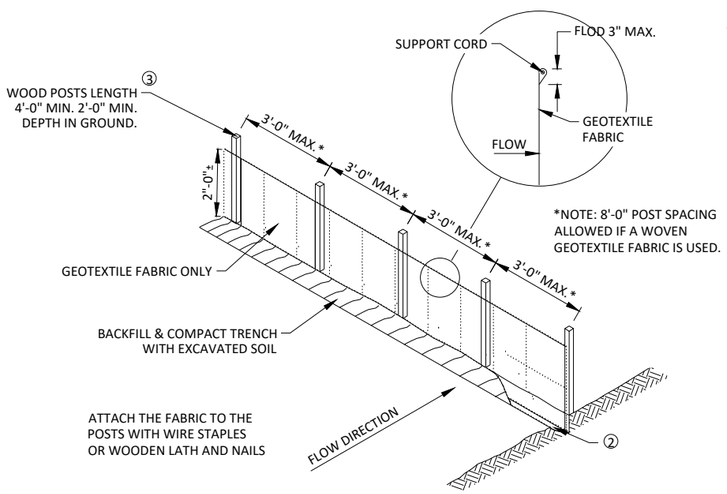
Permanent Stabilization		
	Lbs per acre	Lbs per 1,000 ft2
WisDOT #40 Turf Grass	90	2
WisDOT #70 Native Mix	18	0.4
Madison Parks Mix	180	4
Phosphorus-Free Fertilizer	150	3.4
Straw Mulch	4,000	90
Wood Chip Mulch	12,000	270



NOTE: REFER TO GENERAL STAPLE PATTERN GUIDE FOR CORRECT STAPLE PATTERN RECOMMENDATIONS FOR SLOPE INSTALLATIONS.

1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING APPLICATION OF FERTILIZER AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
3. ROLL THE BLANKETS (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2" OVERLAP.
5. WHEN BLANKETS MUST BE SPLICED DOWN THE SLOPE, PLACE BLANKETS END OVER END (SHINGLE STYLE) WITH APPROXIMATELY 4" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART.
6. ALL BLANKETS MUST BE SECURELY FASTENED TO THE SLOPE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS RECOMMENDED BY THE MANUFACTURER.

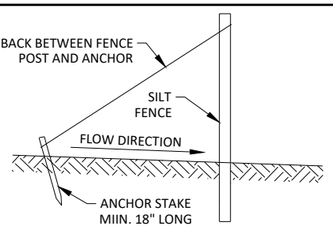
EROSION MAT



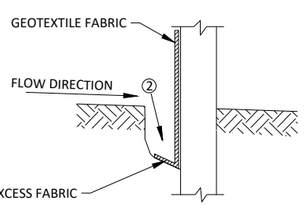
*NOTE: 8'-0" POST SPACING ALLOWED IF A WOVEN GEOTEXTILE FABRIC IS USED.

NOTE: ADDITIONAL POST DEPTH OR TIE BACKS MAY BE REQUIRED IN UNSTABLE SOILS

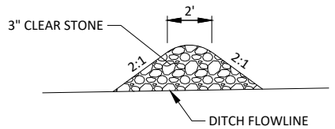
SILT FENCE



SILT FENCE TIE BACK
(WHEN REQUIRED BY THE ENGINEER)

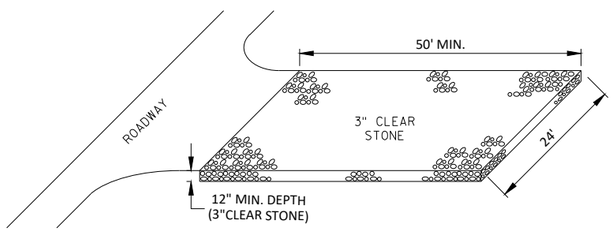


TRENCH DETAIL

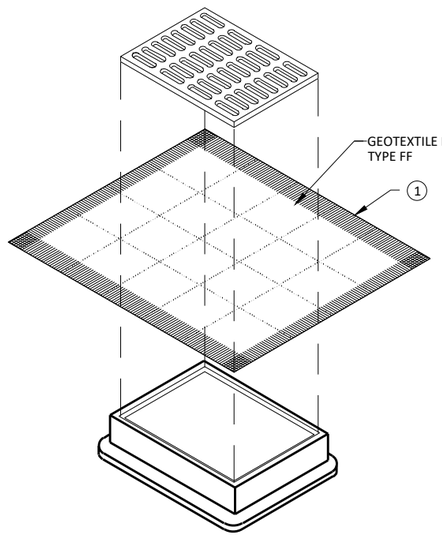


NOTE: THE CENTER OF THE DITCH CHECK SHOULD BE 6-INCHES LOWER THAN THE SIDES.

TEMPORARY DITCH CHECK



TRACKING PAD



INLET PROTECTION, TYPE B (WITHOUT CURB BOX)

(CAN BE INSTALLED IN ANY INLET WITHOUT A CURB BOX)

INLET PROTECTION

JEWELL
560 Sunrise Drive
Spring Green, WI 53588
phone: 608-588-7484

Del's Service Center
Repair-Towing-Recovery

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Design

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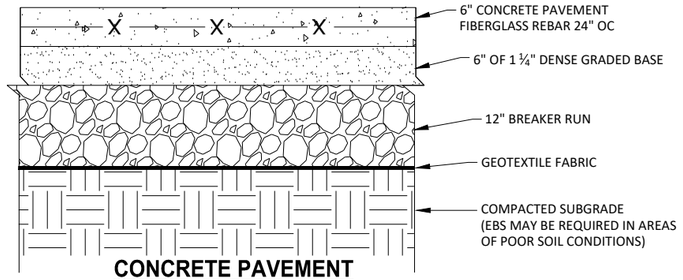
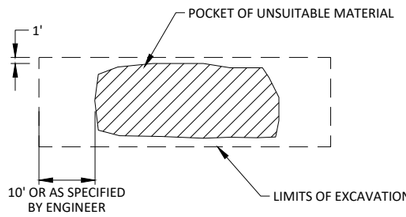
EROSION CONTROL DETAILS

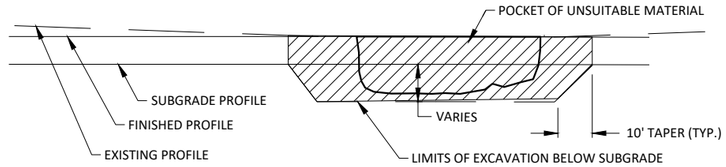
Project number **BD5010**
Sheet number **C5.0**



CONCRETE PAVEMENT



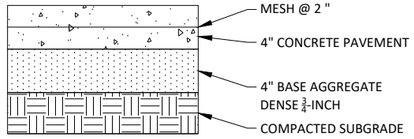
PLAN VIEW



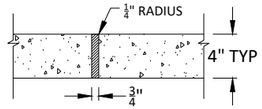
PROFILE VIEW

1. EXACT LOCATION OF E.B.S. (EXCAVATION BELOW SUBGRADE) SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.
2. E.B.S. AREA TO BE BACKFILLED WITH MATERIAL ACCEPTABLE TO THE ENGINEER. BACKFILL MUST BE HOMOGENEOUS WITH ADJOINING FILL MATERIAL.

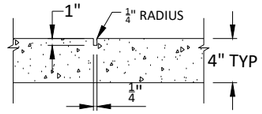
EXCAVATION BELOW SUBGRADE



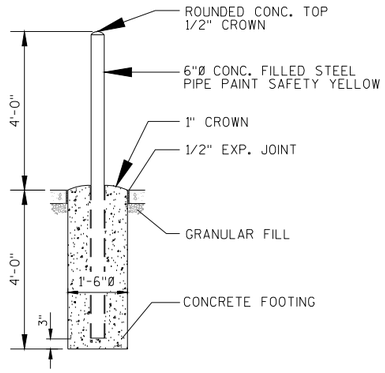
TYPICAL SIDEWALK SECTION



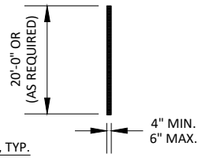
AT EXPANSION JOINTS



AT CONTRACTION JOINTS



BOLLARD

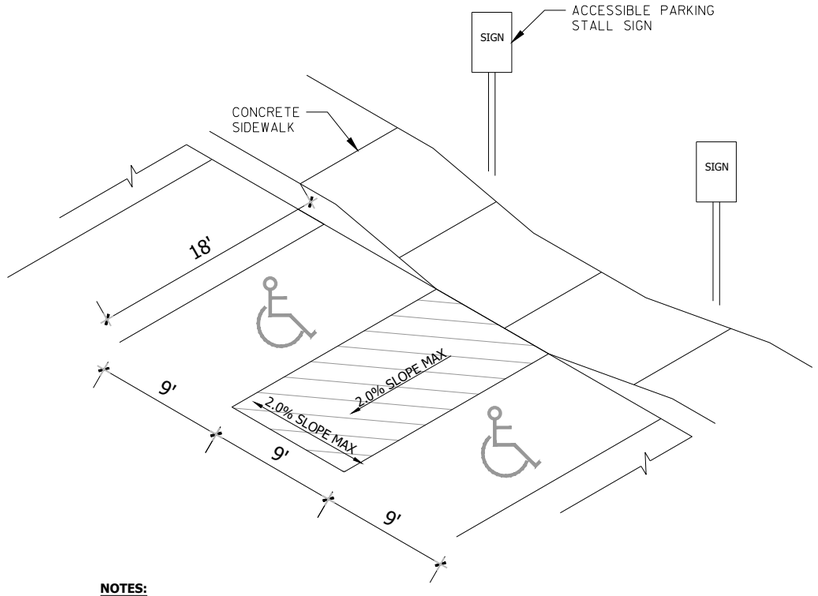


PAVEMENT STRIPING, TYP.

NOTE:

USE NON-REFLECTIVE WHITE PAINT, TYP. BUT USE YELLOW PAINT ON CONCRETE OR OTHER MATERIALS IF WHITE PAINT DOES NOT PROVIDE SUFFICIENT CONTRAST.

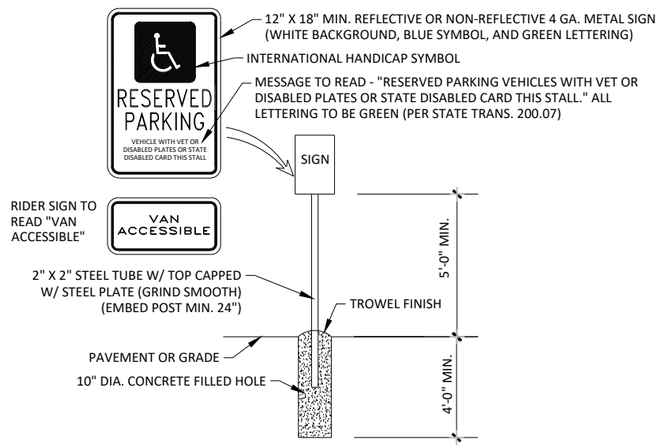
PAVEMENT MARKING



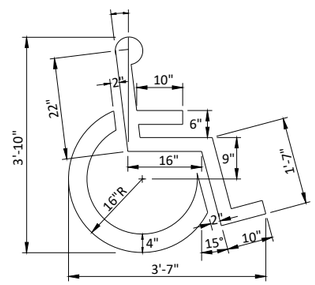
NOTES:

1. MAXIMUM SLOPE AT ALL HANDICAP ACCESSIBLE WALKS 1:20. MAXIMUM SLOPE AT HANDICAP ACCESSIBLE RAMP 1:12. RAMPS OVERCOMING MORE THAN 6" CHANGE IN ELEVATION TO HAVE HANDRAILS ON BOTH SIDES.
2. ALL DRIVEWAYS, CURB ADJACENT TO DRIVEWAYS, AND SIDEWALK CONSTRUCTION WITHIN THE PUBLIC RIGHT-OF-WAY, SHALL BE COMPLETED IN ACCORDANCE WITH LOCAL AND STATE CODES.
3. ALL PARKING STALLS SHALL BE STRIPED WITH WHITE OR YELLOW STRIPES A MINIMUM OF 4" WIDE. ACCESSIBLE STALLS SHALL BE MARKED BY AN APPROVED SIGN. ACCESS AISLES SHALL BE PAINTED WITH CROSS HATCHING.

ACCESSIBLE PARKING STALLS



ACCESSIBLE PARKING STALL SIGN



PAINT: THE PAINT SHALL BE WHITE TRAFFIC PAINT CONFORMING TO THE WISCONSIN STATE HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.

STRIPING: PRIOR TO APPLICATION OF STRIPING PAINT, ASPHALT SURFACES SHOULD BE CLEANED OF MATERIAL THAT WOULD PREVENT ADHERENCE OF PAINT. PAINT SHALL BE APPLIED ONLY TO A DRY SURFACE USING EITHER TEMPLATE OF STRIPING MACHINE; STRIPES SHALL BE 4" WIDE OF UNIFORM WEIGHT WITH NO "SKIPS" OR BARE SPOTS. FINISHED STRIPING SHALL BE APPROVED BY THE ARCHITECT.

HANDICAP PARKING SYMBOL

JEWELL
560 Sunrise Drive
Spring Green, WI 53588
phone: 608-588-7484

Del's Service Center
Repair-Towing-Recovery

Borton CONSTRUCTION

Del's Service Center
La Crosse, WI

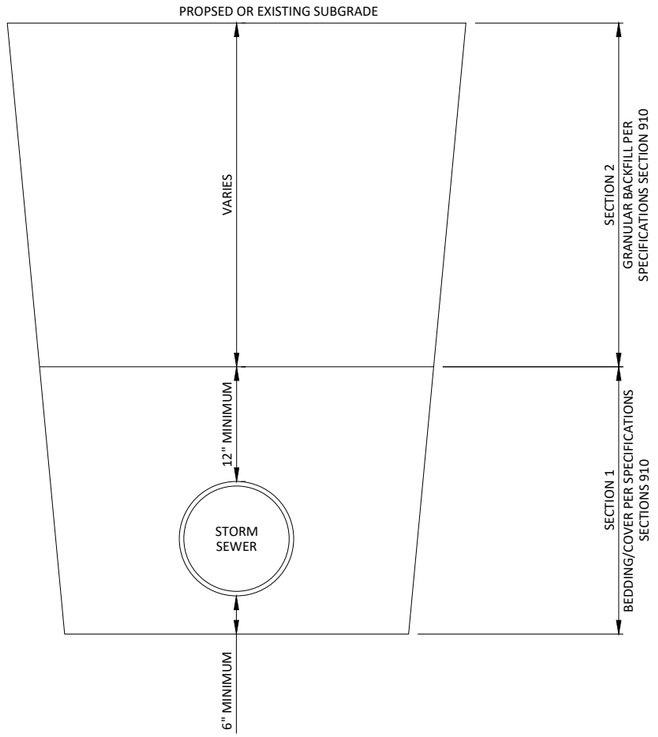
Design

12-18-2025

No.	Description	Date

Drawing Name
PAVEMENT DETAILS

Project number	Sheet number
BD5010	C5.1



NOTES:

1. STANDARD TRENCH COMPACTION
   DEPOSIT BACKFILL MATERIAL IN ALL TRENCHES AND EXCAVATIONS IMMEDIATELY AFTER PLACING SEWER PIPE IN A WAY THAT CAUSES NO DAMAGE TO THE PIPE. FILL THE TRENCH SIMULTANEOUSLY ON BOTH SIDES OF THE SEWER WITHOUT CAUSING INJURIOUS SIDE PRESSURES. ALL BACKFILL MATERIAL SHALL BE PLACED IN LIFTS NOT TO EXCEED 8" BEFORE COMPACTION UNLESS AUTHORIZED BY THE ENGINEER DUE TO THE CHARACTER OF THE MATERIAL AND THE COMPACTING EQUIPMENT. EACH LIFT SHALL BE MECHANICALLY COMPACTED TO THE REQUIRED DENSITY PRIOR TO PLACING SUCCEEDING LIFTS OF BACKFILL MATERIAL.

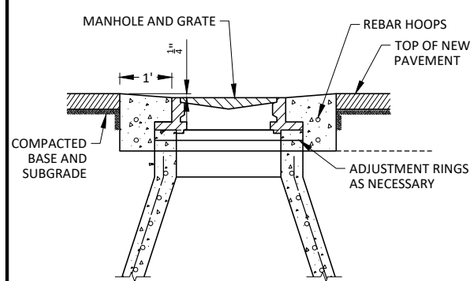
2. SECTION 1:
   MECHANICALLY COMPACTED BEDDING AS REQUIRED BY THE SPECIFICATIONS.
   COMPACTION ACHIEVED WITH SMALLER PLATE COMPACTOR.

3. SECTION 2:
   COMPACTION OF BACKFILL WITH BOMAG OR HOE-PAC OR SIMILAR EQUIPMENT SHALL NOT BEGIN UNTIL THE DEPTH OF BACKFILL MATERIAL IS TWO (2) FEET ABOVE THE TOP OF PIPE.

4. IF UNSTABLE MATERIAL EXISTS AT BOTTOM OF TRENCH AN ADDITIONAL 6" OF BEDDING SHALL BE ADDED UNDER THE PIPE.

5. IF PIPE TRENCH IS IN ROCK A MINIMUM OF 8" OF BEDDING UNDER THE PIPE IS REQUIRED.

STORM SEWER TRENCH DETAIL



NOTES:

1. ADJUST MANHOLES UPWARD WITH ADUSTING RINGS UNDER FRAME
2. ADJUST MANHOLES DOWNWARD BY REMOVING CONE AND BARELL SECTIONS OF LENGTH REQUIRED TO MATCH GREADE
3. SLOPE MANHOLE FRAME AS REQUIRED TO MATCH SLOPE OF STREET
4. CONSTRUCT CONCRETE COLLAR OF CLASS GENERAL CONCRETE OR APPROVED EQUAL

MANHOLE ADJUSTMENT DETAIL

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS, AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

PRECAST REINFORCED CONCRETE CONE TOPS (ECCENTRIC OR CONCENTRIC) MAY BE USED ON CONCRETE BLOCK STRUCTURES. THE CONE TOPS SHALL BE INSTALLED ON A BED OF MORTAR. CONCRETE BLOCK STRUCTURES ARE ONLY AS APPROVED BY VILLAGE ENGINEER.

ECCENTRIC CONE TOPS MAY BE USED ON ALL STRUCTURES, AND CONCENTRIC CONE TOPS SHALL BE USED ONLY ON STRUCTURES 5 FEET OR LESS IN DEPTH, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

FLAT TOPS SHALL BE USED IF NECESSARY TO MEET ELEVATION REQUIREMENTS. THE FLAT TOP SHALL BE CHOSEN TO ACCOMMODATE THE SPECIFIED FRAME AND GRATE.

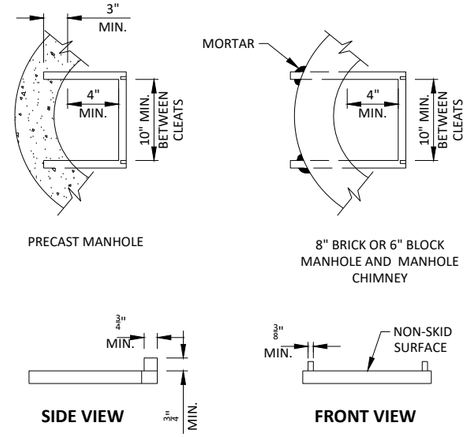
STEPS MEETING THE FOLLOWING REQUIREMENTS SHALL BE INSTALLED IN ALL STRUCTURES OVER 5 FEET IN DEPTH: 16 INCH C-C MAXIMUM SPACING; PROJECT A MINIMUM CLEAR DISTANCE OF 4 INCHES FROM THE WALL AT THE POINT OF EMBEDMENT; MINIMUM LENGTH OF 10 INCHES; MINIMUM WALL EMBEDMENT OF 3 INCHES; AND BE CAPABLE OF SUPPORTING A CONCENTRATED LOAD OF 300 LBS.

ALL BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 2 INCHES CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

PRECAST REINFORCED CONCRETE RISERS MAY BE PLACED WITH TONGUE UP OR DOWN.

ALL PRECAST INLETS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF AASHTO DESIGNATION M 199.

ALL STRUCTURES SHALL BE PLACED ON A BED OF 8" OF BASE AGGREGATE DENSE AS AS SHOWN ON MANHOLE DETAIL.



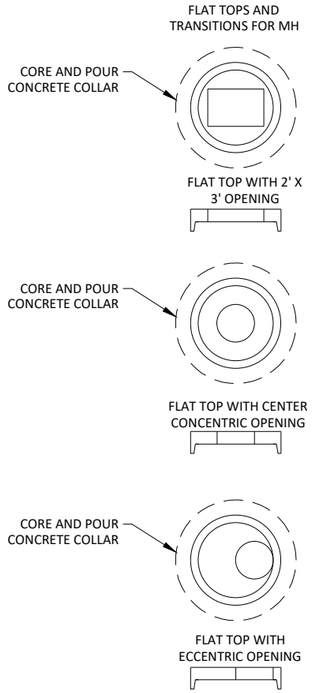
PROVIDE CERTIFIED TEST DATA THAT THE STEPS CAN WITHSTAND AN 800-POUND VERTICAL LOAD WITHOUT MORE THAN 3/8-INCH PERMANENT SET WHEN TESTED IN ACCORDANCE WITH SECTION 10 A.S.T.M. C498.

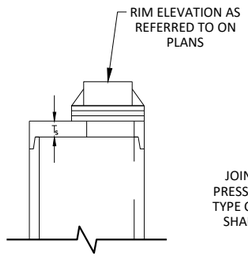
PROVIDE CERTIFIED TEST DATA THAT THE INSTALLED STEPS CAN WITHSTAND A HORIZONTAL LOAD OF 400 POUNDS WITH THE LOAD APPLIED OVER A WIDTH OF 3 1/2" AND CENTERED ON THE RUNG.

STEPS MUST BE EQUALLY SPACED VERTICALLY IN THE ASSEMBLED MANHOLE AT A MAXIMUM DISTANCE OF 16" ON CENTER.

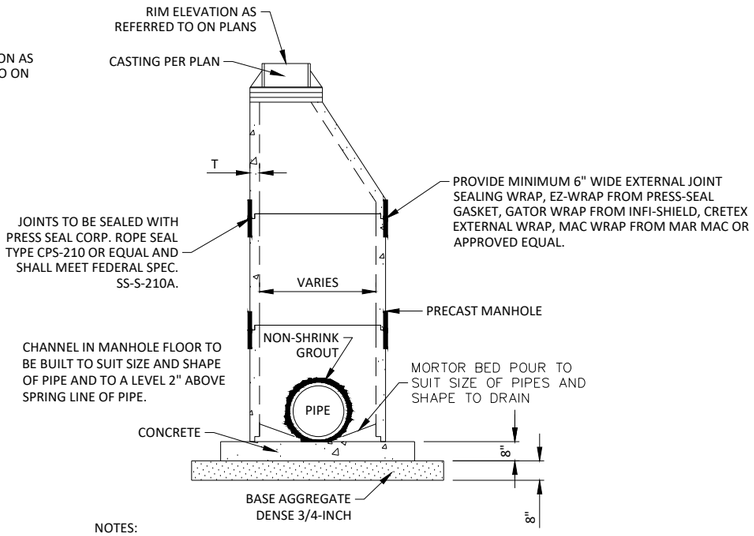
PLASTIC STEPS TO E INSTALLED AT 16" O.C. AND SHALL CONFORM TO ASTM F783 BY M.A. INDUSTRIES OR EQUAL. SEE SPECIFICATIONS.

MANHOLE STEPS DETAIL





SIZE	T. MIN.	T. MIN.
48"	5"	8"
60"	6"	8"
72"	7"	10"
84"	7"	12"
96"	9"	12"



NOTES:
CONCRETE ADJUSTING RINGS SHALL NOT BE ALLOWED.

ADJUSTING RINGS SHALL BE MADE WATERTIGHT IN ACCORDANCE WITH SECTION 920 OF THE SPECIFICATIONS.

CONCRETE AND STEEL REINFORCEMENT SHALL CONFORM TO DESIGNATION C-478 REQUIREMENTS OF ASTM SPECIFICATIONS.

PLASTIC STEPS TO BE INSTALLED AT 16" O.C. AND SHALL CONFORM TO ASTM F783 BY M.A. INDUSTRIES OR EQUAL. SEE SPECIFICATIONS.

TYPICAL STORM SEWER MANHOLE

JEWELL
560 Sunrise Drive
Spring Green, WI 53588
phone: 608-588-7484

Del's Service Center
Repair-Towing-Recovery

Borton CONSTRUCTION

Del's Service Center
La Crosse, WI

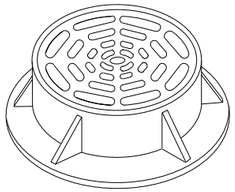
Design

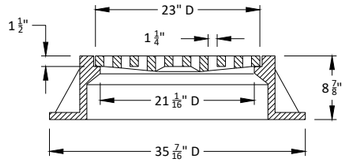
12-18-2025

No.	Description	Date

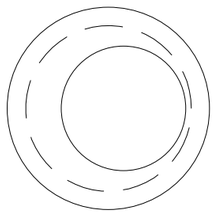
Drawing Name
STORMWATER DETAILS

Project number	Sheet number
BD5010	C5.2

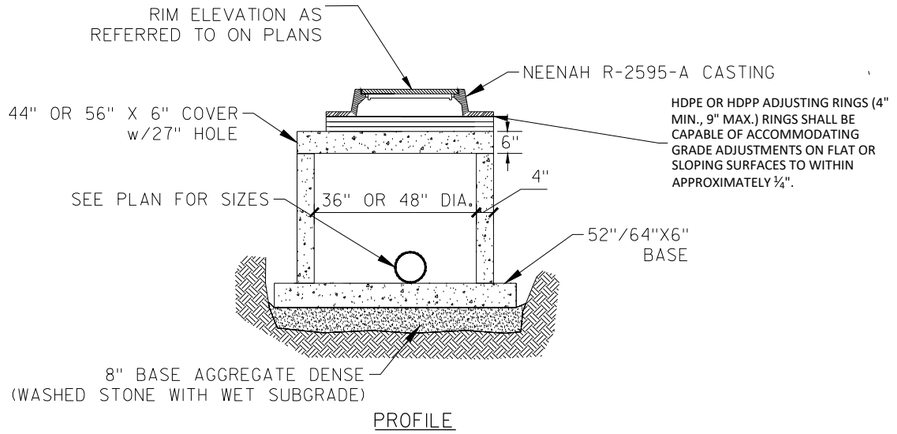




TYPE "C" FRAME AND GRATE

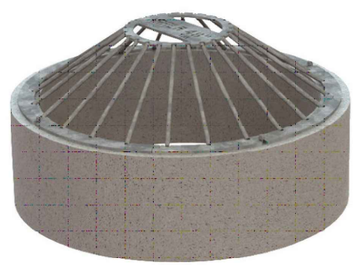


PLAN



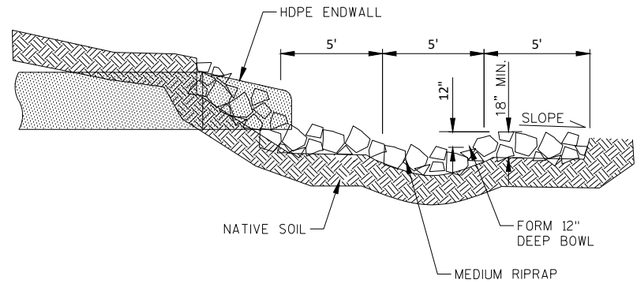
PROFILE

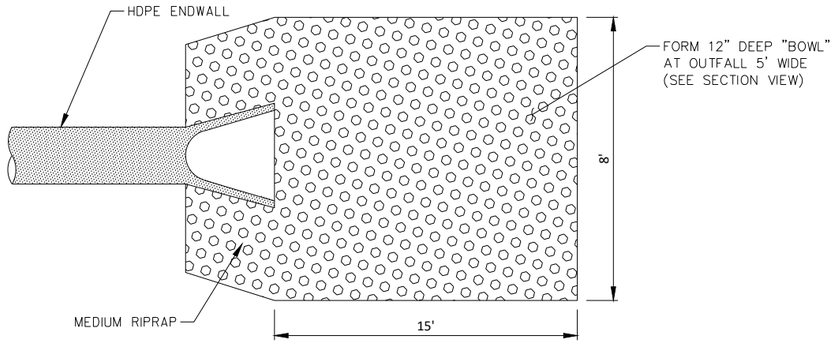
STORMWATER INLET



36" ID HAALA CONE GRATE TRASHRACK

(OR APPROVED EQUAL)





ENDWALL RIP RAP DETAIL

JEWELL
560 Sunrise Drive
Spring Green, WI 53588
phone: 608-588-7484

Del's Service Center
Repair-Towing-Recovery

Borton CONSTRUCTION

Del's Service Center
La Crosse, WI

Design

12-18-2025

No.	Description	Date

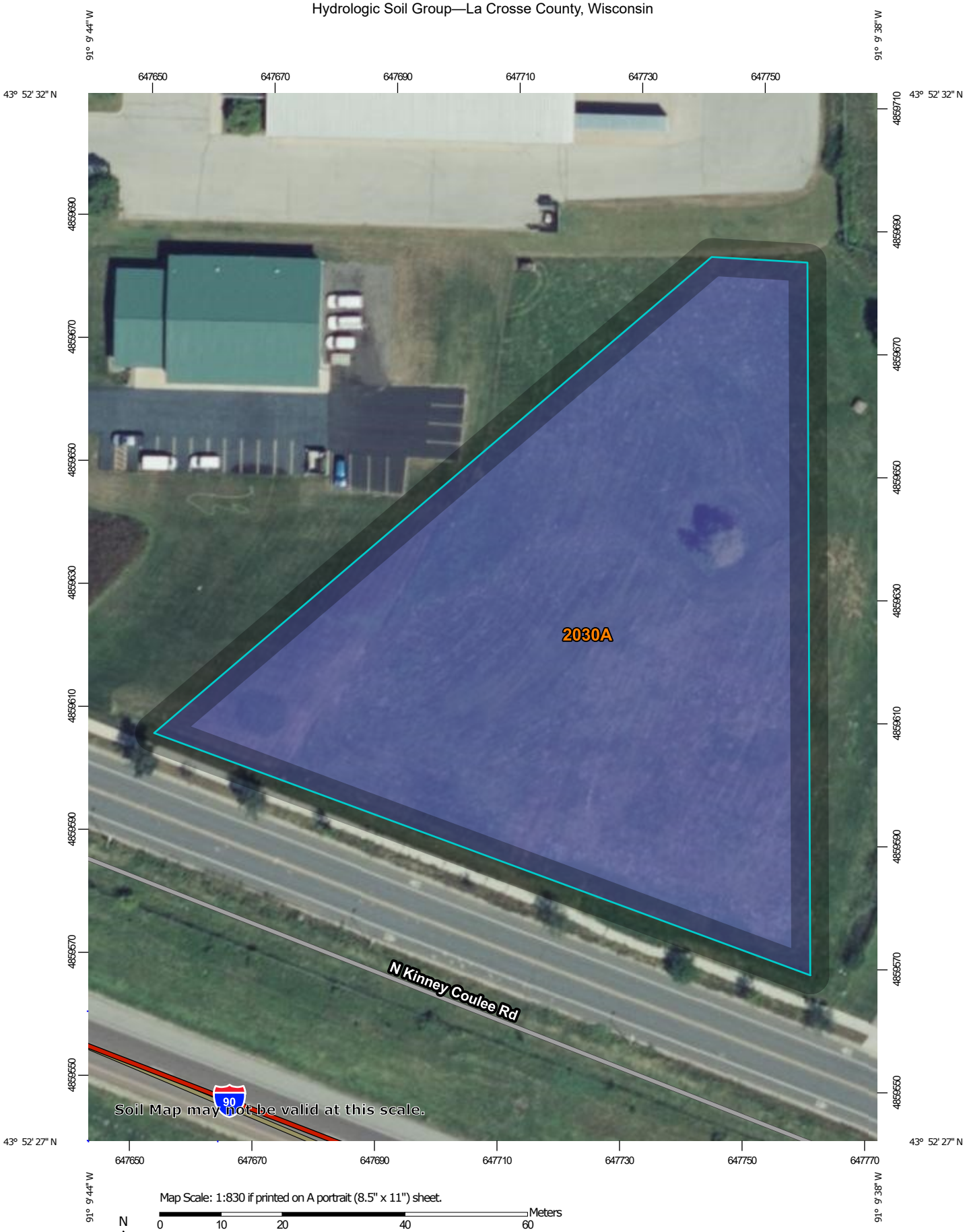
Drawing Name
STORMWATER DETAILS

Project number	Sheet number
BD5010	C5.3

Del's Service Center
North Kinney Coulee Road
La Crosse, WI

Appendix B

USGS WEB SOIL SURVEY



Map Scale: 1:830 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 10 20 40 60

Feet: 0 40 80 160 240

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: La Crosse County, Wisconsin
Survey Area Data: Version 24, Sep 10, 2025

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

Date(s) aerial images were photographed: Jul 31, 2020—Sep 2, 2020

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
2030A	Udorthents and Udipsamments, cut or fill	B	1.7	100.0%
Totals for Area of Interest			**1.7**	**100.0%**

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Del's Service Center
North Kinney Coulee Road
La Crosse, WI

Appendix C

HYDROCAD MODELING RESULTS

- EXISTING MODELING
- PROPOSED MODELING

Site Drainage Areas

0. WEST

Proposed	SQFT	ACRE
Building	0	0.000
Pavement	11080	0.254
Grass	3743	0.086
Gravel	0	0.000
Sidewalk	140	0.003
Pond	376	0.009
TOTAL	**15339**	0.352

1. CENTER

Proposed	SQFT	ACRE
Building	0	0.000
Pavement	1034	0.024
Grass	7441	0.171
Gravel	0	0.000
Sidewalk	290	0.007
Pond	792	0.018
TOTAL	**9557**	0.219

2. EAST

Proposed	SQFT	ACRE
Building	15992	0.367
Pavement	14149	0.325
Grass	17366	0.399
Gravel	0	0.000
Sidewalk	104	0.002
Pond	1485	0.034
TOTAL	**49096**	1.127

3. SOUTH

Proposed	SQFT	ACRE
Building	0	0.000
Pavement	2900	0.067
Grass	7034	0.161
Gravel	0	0.000
Sidewalk	1489	0.034
Pond	0	0.000
TOTAL	**11423**	0.262

PROPOSED SITE TOTAL

Proposed	SQFT	ACRE
Building	15992	0.367
Pavement	29163	0.669
Grass	35584	0.817
Gravel	0	0.000
Sidewalk	2023	0.046
Pond	2653	0.061
	85415	1.961

55% Impervious

Existing Site

Proposed	SQFT	ACRE
Building	0	0.000
Pavement	0	0.000
Grass	83414	1.915
Gravel	0	0.000
Sidewalk	2001	0.046
Pond	0	0.000
TOTAL	**85415**	1.961

2.3% Impervious

Site Changes

Proposed	SQFT	ACRE
Building	15992	0.367
Pavement	29163	0.669
Grass	-47830	-1.098
Gravel	0	0.000
Sidewalk	22	0.001
Pond	2653	0.061
	0	0.000

PLOT BY: TNOEL 12/18/2025

CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	154,474.35	468,752.41	713.84	CP
2	154,636.88	468,915.69	716.94	CP/MAG
3	154,348.78	469,098.25	714.91	CP
50	154,343.86	468,896.15	715.92	BM / CHIS X IN CONCRETE BACK OF CURB
51	154,386.88	468,967.34	717.02	BM / BURY BOLT HYDRANT
10000	154,474.39	468,752.41	713.83	MON/REB .75IN
10001	154,496.59	468,691.13	713.39	IRON PIPE PIN / 1IN
10002	154,348.74	469,098.23	714.90	MON/REB 0.75IN
10003	154,675.46	469,096.58	717.43	IRON PIPE PIN / 1IN
10004	154,705.85	469,148.78	719.90	IRON PIPE PIN / 1IN
10005	154,716.42	469,148.60	720.39	IRON PIPE PIN / 1IN
10006	154,734.44	469,098.69	719.82	IRON PIPE PIN / 1IN

17-10687-260
DEBOER FAMILY LIVING TRUST
2946 LUOYANG AVE

LUOYANG AVE

N KINNEY COULEE ROAD

INTERSTATE 90

17-10575-63
PROJECT LOCATION

17-10575-62
HICKORY POINT HOLDINGS LLC
4003 KINNEY COULEE RD

EXISTING TC: 20.2 MIN
415 LF @ 1.2%

GAS LINE EASEMENT 50'

15'

SETBACK 40'

15'

IP #10001
IP #10003
IP #10004
IP #10005
IP #10006

MON #10000
MON #10002
CP #1
CP #2
CP #3
BM #50
BM #51

N
0' 20' 40'

Existing Site

Proposed	SQFT	ACRE
Building	0	0.000
Pavement	0	0.000
Grass	83414	1.915
Gravel	0	0.000
Sidewalk	2001	0.046
Pond	0	0.000
TOTAL	**85415**	1.961

JEWELL
560 Sunrise Drive
Spring Green, WI 53588
phone: 608-588-7484

Del's Service Center
Repair-Towing-Recovery

Borton CONSTRUCTION

Del's Service Center
La Crosse, WI

Design

12-18-2025

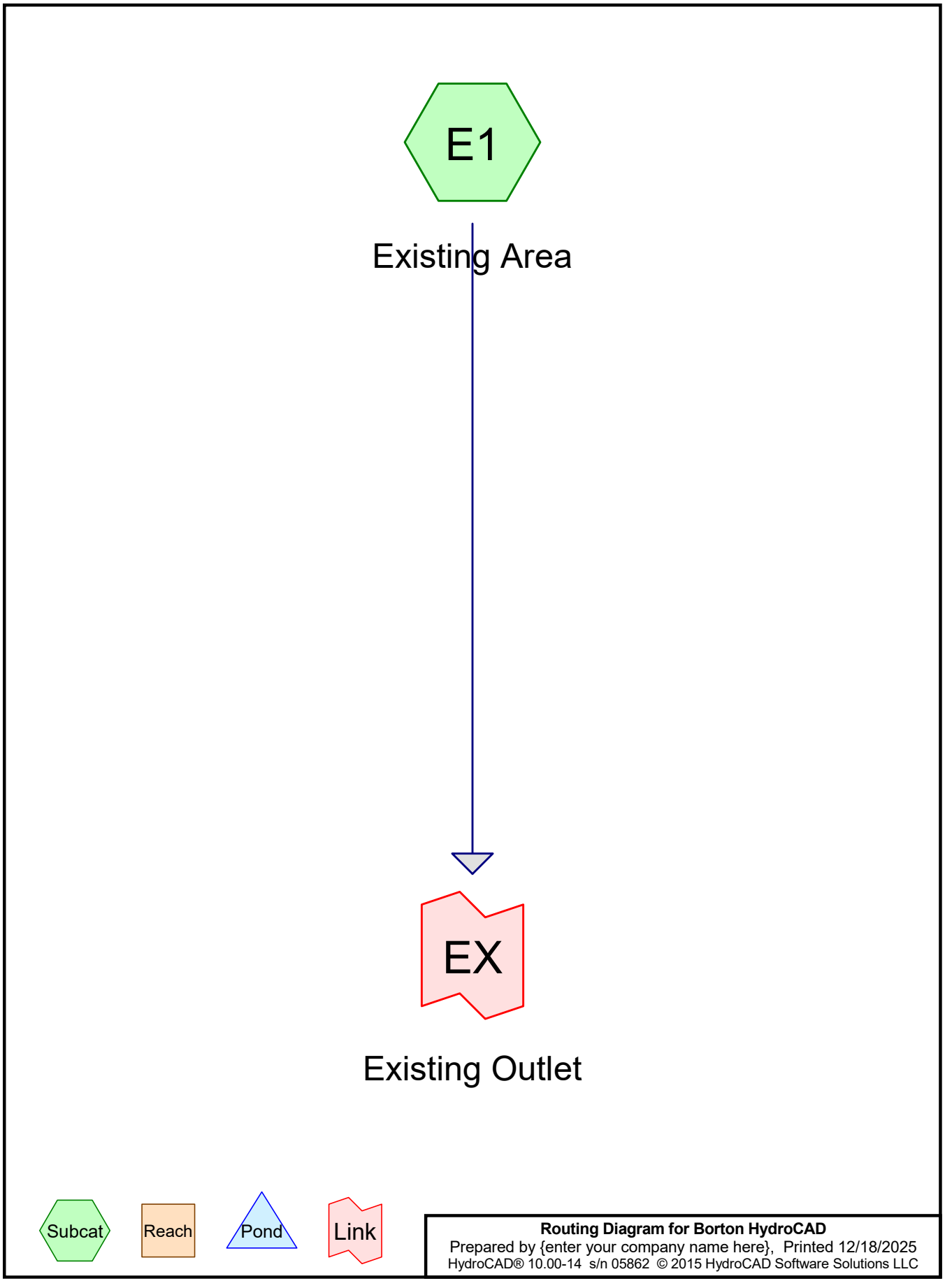
No.	Description	Date

Drawing Name
EXISTING WATERSHED

Project number BD5010

Sheet number SW 1

S:\Projects\BD5010 Borton Const - Dols Service Center Site Design\Drawings\DWG\BD5010_C1.0 EXISTING.dwg.



Routing Diagram for Borton HydroCAD
Prepared by {enter your company name here}, Printed 12/18/2025

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.915	61	>75% Grass cover, Good, HSG B (E1)
0.046	98	Unconnected pavement, HSG B (E1)
1.961	**62**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
1.961	HSG B	E1
0.000	HSG C	
0.000	HSG D	
0.000	Other	
1.961		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	1.915	0.000	0.000	0.000	1.915	>75% Grass cover, Good	E1
0.000	0.046	0.000	0.000	0.000	0.046	Unconnected pavement	E1
0.000	**1.961**	**0.000**	**0.000**	**0.000**	**1.961**	**TOTAL AREA**	

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment E1: Existing Area Runoff Area=85,415 sf 2.34% Impervious Runoff Depth>0.27"
Flow Length=415' Tc=20.2 min UI Adjusted CN=WQ Runoff=0.26 cfs 0.043 af

Link EX: Existing Outlet Inflow=0.26 cfs 0.043 af
Primary=0.26 cfs 0.043 af

Total Runoff Area = 1.961 ac Runoff Volume = 0.043 af Average Runoff Depth = 0.27"
97.66% Pervious = 1.915 ac 2.34% Impervious = 0.046 ac

Summary for Subcatchment E1: Existing Area

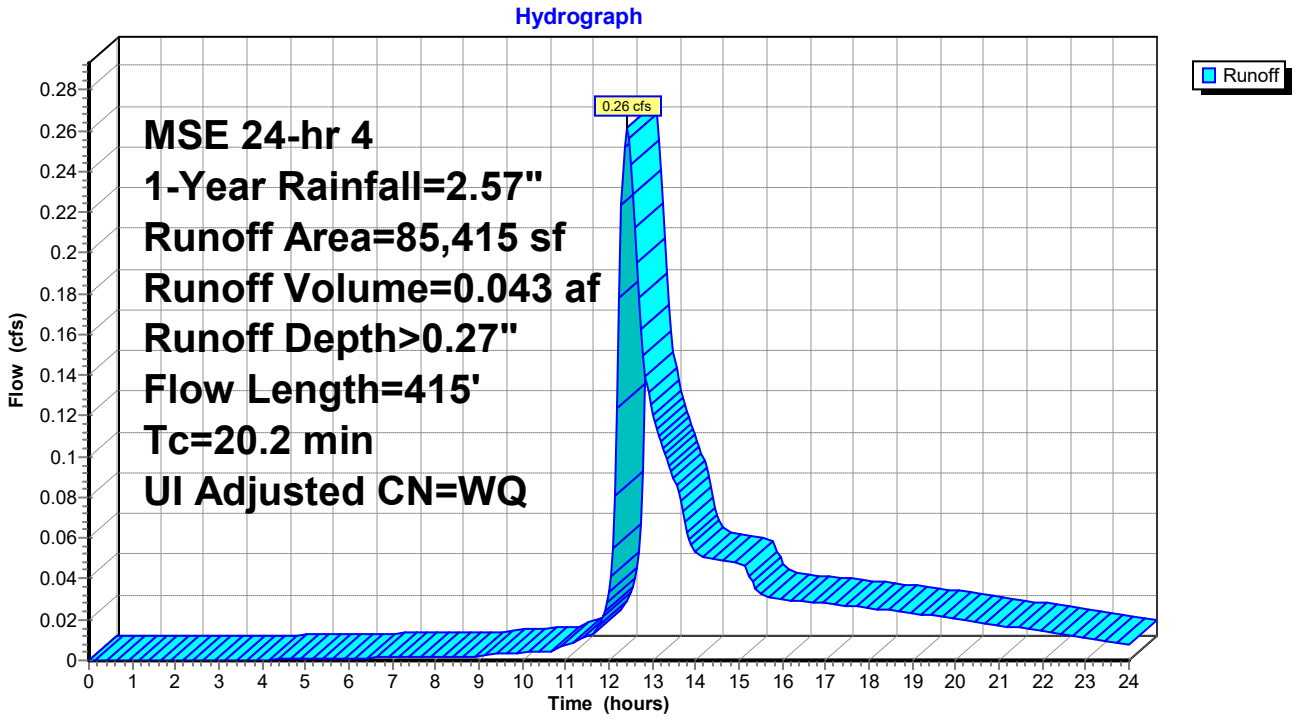
Runoff = 0.26 cfs @ 12.41 hrs, Volume= 0.043 af, Depth> 0.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.57"

Area (sf)	CN	Adj	Description
83,414	61	61	>75% Grass cover, Good, HSG B
2,001	98	98	Unconnected pavement, HSG B
85,415			Weighted Average
83,414			97.66% Pervious Area
2,001			2.34% Impervious Area
2,001			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.3	150	0.0120	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.94"
2.9	265	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
20.2	415	Total			

Subcatchment E1: Existing Area

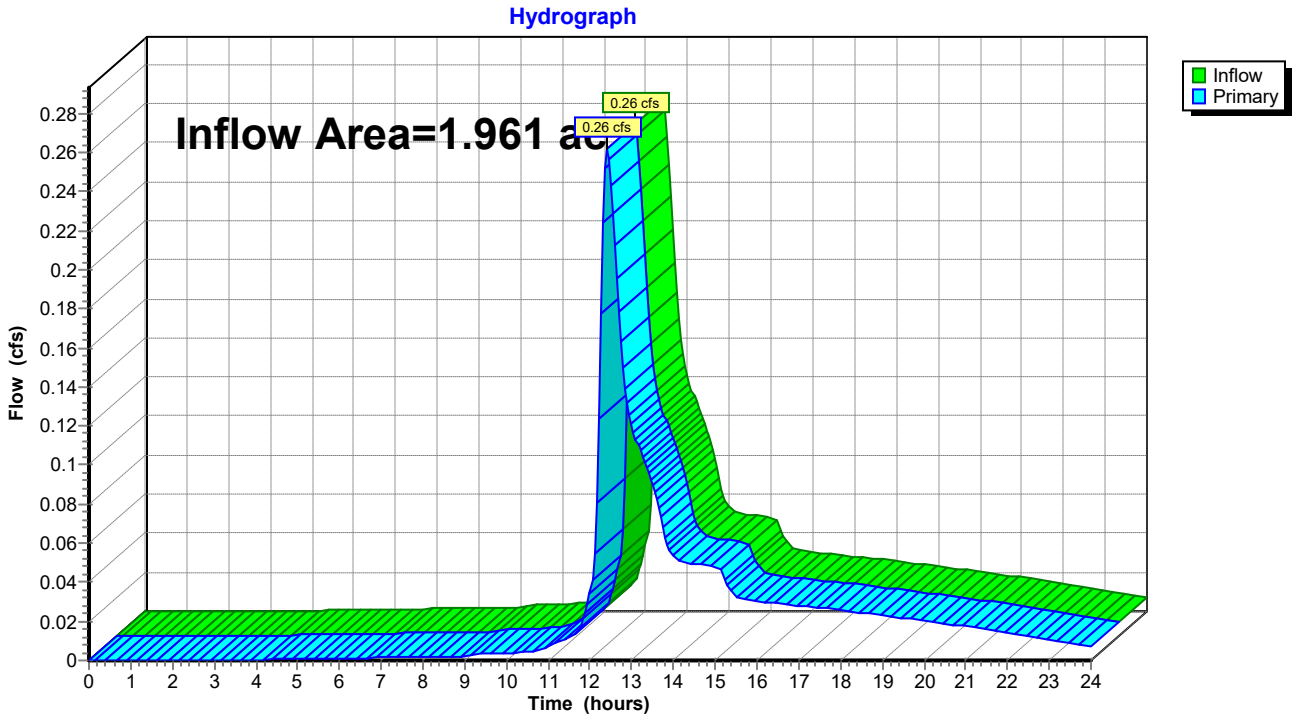


Summary for Link EX: Existing Outlet

Inflow Area = 1.961 ac, 2.34% Impervious, Inflow Depth > 0.27" for 1-Year event
Inflow = 0.26 cfs @ 12.41 hrs, Volume= 0.043 af
Primary = 0.26 cfs @ 12.41 hrs, Volume= 0.043 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link EX: Existing Outlet



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment E1: Existing Area Runoff Area=85,415 sf 2.34% Impervious Runoff Depth>0.40"
Flow Length=415' Tc=20.2 min UI Adjusted CN=WQ Runoff=0.48 cfs 0.065 af

Link EX: Existing Outlet Inflow=0.48 cfs 0.065 af
Primary=0.48 cfs 0.065 af

Total Runoff Area = 1.961 ac Runoff Volume = 0.065 af Average Runoff Depth = 0.40"
97.66% Pervious = 1.915 ac 2.34% Impervious = 0.046 ac

Summary for Subcatchment E1: Existing Area

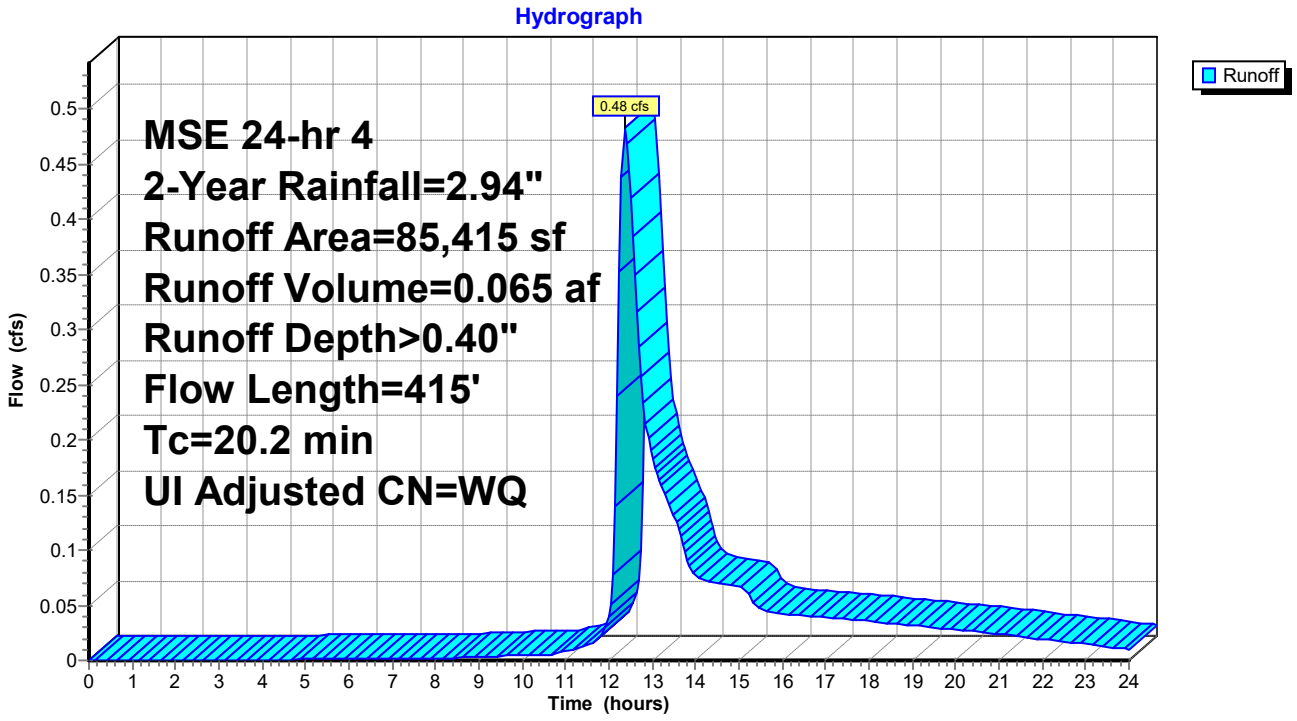
Runoff = 0.48 cfs @ 12.38 hrs, Volume= 0.065 af, Depth> 0.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.94"

Area (sf)	CN	Adj	Description
83,414	61	61	>75% Grass cover, Good, HSG B
2,001	98	98	Unconnected pavement, HSG B
85,415			Weighted Average
83,414			97.66% Pervious Area
2,001			2.34% Impervious Area
2,001			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.3	150	0.0120	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.94"
2.9	265	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
20.2	415	Total			

Subcatchment E1: Existing Area

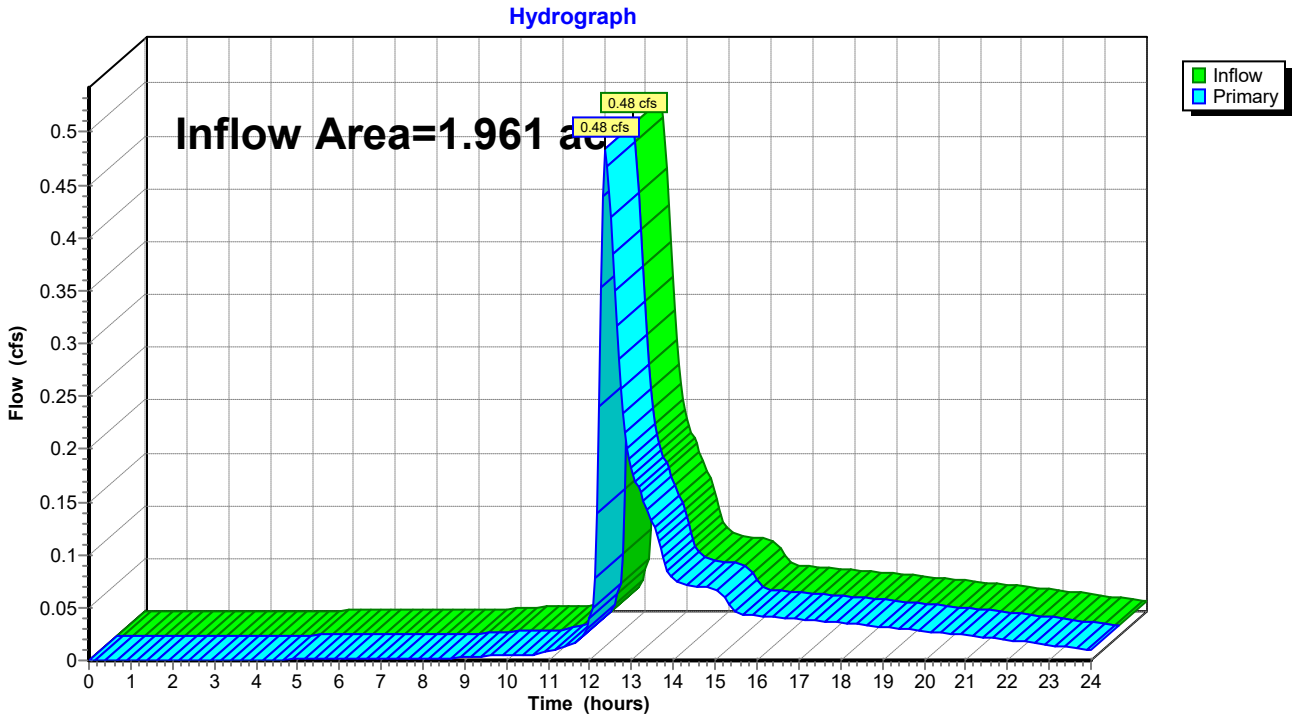


Summary for Link EX: Existing Outlet

Inflow Area = 1.961 ac, 2.34% Impervious, Inflow Depth > 0.40" for 2-Year event
Inflow = 0.48 cfs @ 12.38 hrs, Volume= 0.065 af
Primary = 0.48 cfs @ 12.38 hrs, Volume= 0.065 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link EX: Existing Outlet



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment E1: Existing Area Runoff Area=85,415 sf 2.34% Impervious Runoff Depth>1.05"
Flow Length=415' Tc=20.2 min UI Adjusted CN=WQ Runoff=1.76 cfs 0.172 af

Link EX: Existing Outlet Inflow=1.76 cfs 0.172 af
Primary=1.76 cfs 0.172 af

Total Runoff Area = 1.961 ac Runoff Volume = 0.172 af Average Runoff Depth = 1.05"
97.66% Pervious = 1.915 ac 2.34% Impervious = 0.046 ac

Summary for Subcatchment E1: Existing Area

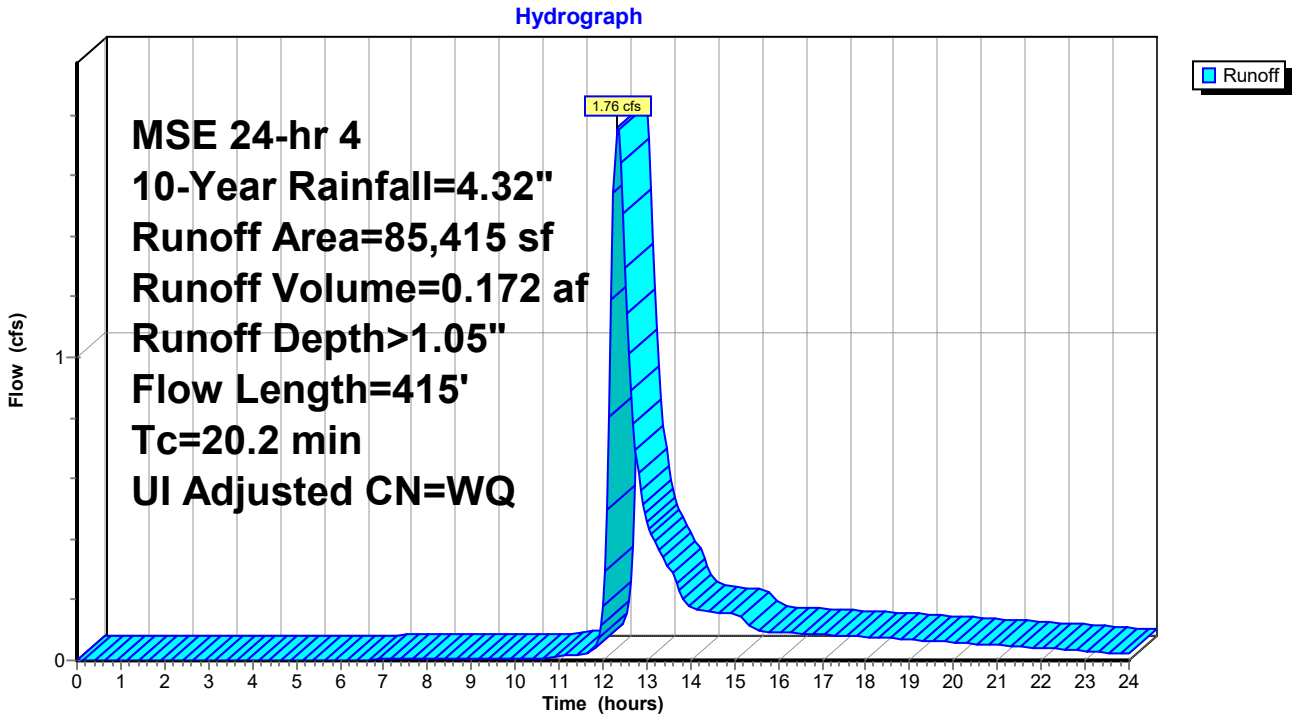
Runoff = 1.76 cfs @ 12.33 hrs, Volume= 0.172 af, Depth> 1.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=4.32"

Area (sf)	CN	Adj	Description
83,414	61	61	>75% Grass cover, Good, HSG B
2,001	98	98	Unconnected pavement, HSG B
85,415			Weighted Average
83,414			97.66% Pervious Area
2,001			2.34% Impervious Area
2,001			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.3	150	0.0120	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.94"
2.9	265	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
20.2	415	Total			

Subcatchment E1: Existing Area

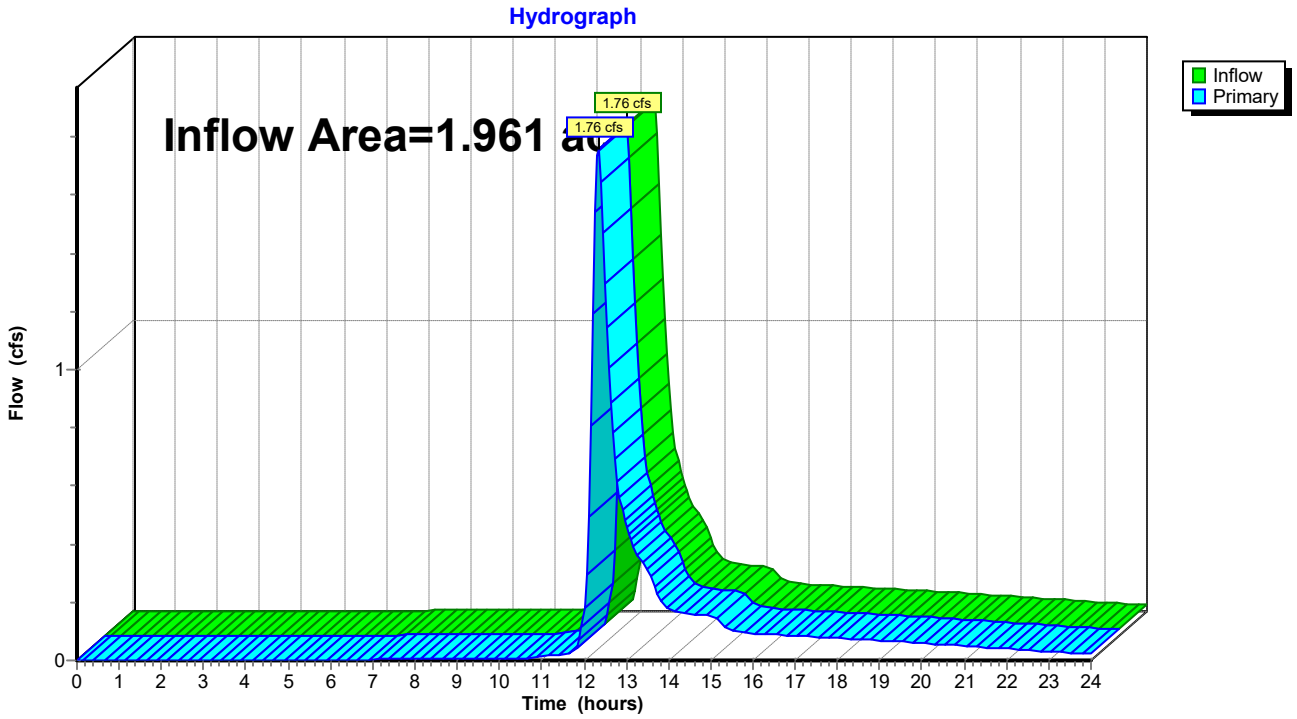


Summary for Link EX: Existing Outlet

Inflow Area = 1.961 ac, 2.34% Impervious, Inflow Depth > 1.05" for 10-Year event
Inflow = 1.76 cfs @ 12.33 hrs, Volume= 0.172 af
Primary = 1.76 cfs @ 12.33 hrs, Volume= 0.172 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link EX: Existing Outlet



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment E1: Existing Area Runoff Area=85,415 sf 2.34% Impervious Runoff Depth>1.68"
Flow Length=415' Tc=20.2 min UI Adjusted CN=WQ Runoff=3.03 cfs 0.274 af

Link EX: Existing Outlet Inflow=3.03 cfs 0.274 af
Primary=3.03 cfs 0.274 af

Total Runoff Area = 1.961 ac Runoff Volume = 0.274 af Average Runoff Depth = 1.68"
97.66% Pervious = 1.915 ac 2.34% Impervious = 0.046 ac

Summary for Subcatchment E1: Existing Area

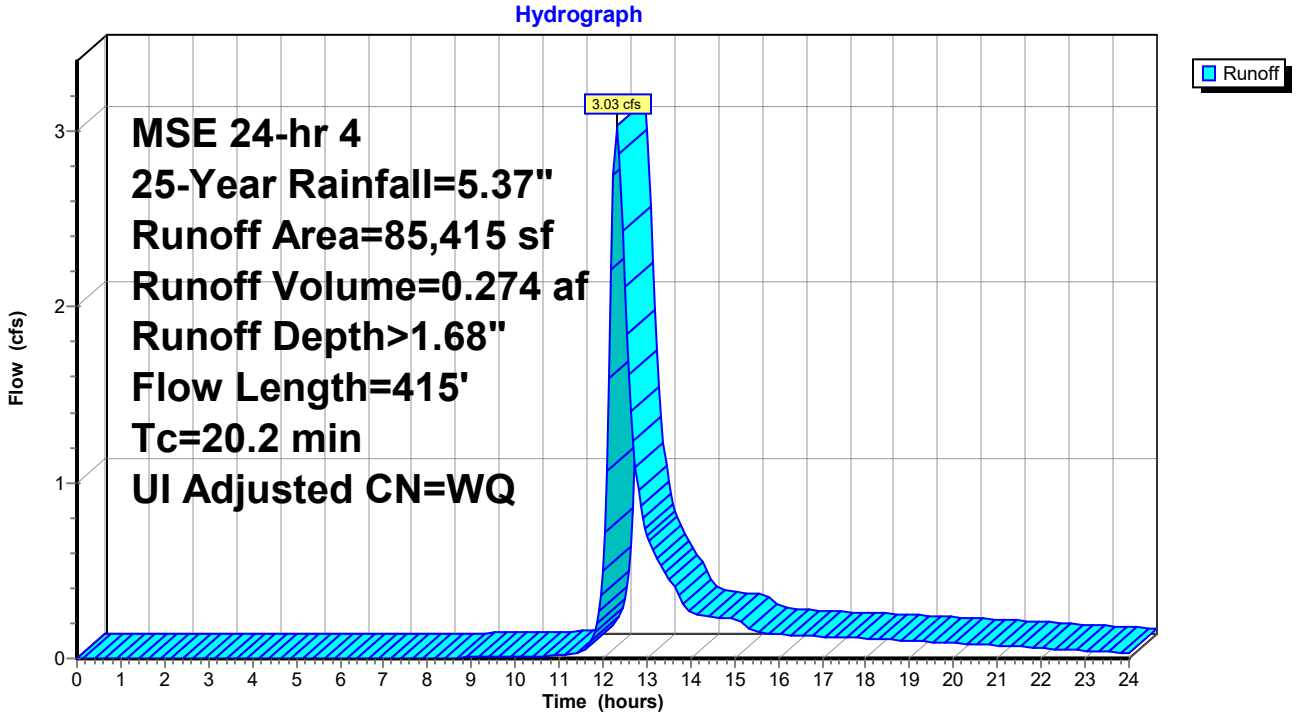
Runoff = 3.03 cfs @ 12.32 hrs, Volume= 0.274 af, Depth> 1.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 25-Year Rainfall=5.37"

Area (sf)	CN	Adj	Description
83,414	61	61	>75% Grass cover, Good, HSG B
2,001	98	98	Unconnected pavement, HSG B
85,415			Weighted Average
83,414			97.66% Pervious Area
2,001			2.34% Impervious Area
2,001			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.3	150	0.0120	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.94"
2.9	265	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
20.2	415	Total			

Subcatchment E1: Existing Area

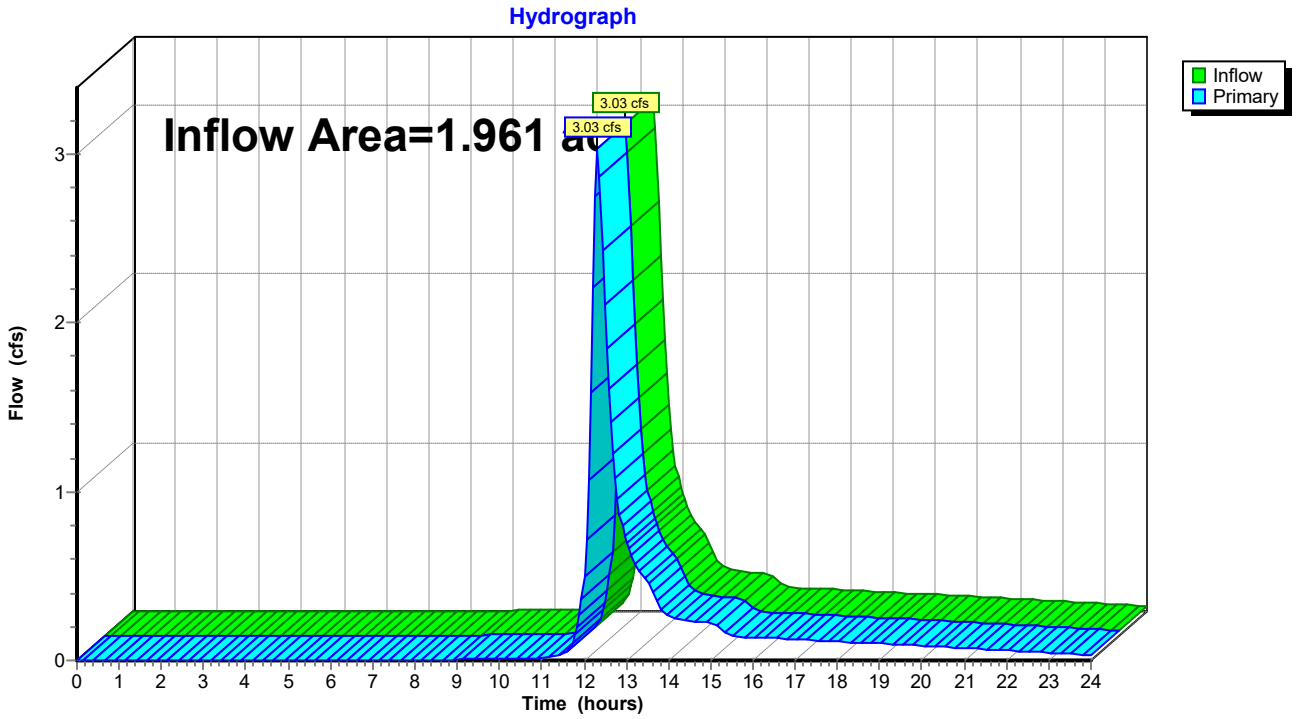


Summary for Link EX: Existing Outlet

Inflow Area = 1.961 ac, 2.34% Impervious, Inflow Depth > 1.68" for 25-Year event
Inflow = 3.03 cfs @ 12.32 hrs, Volume= 0.274 af
Primary = 3.03 cfs @ 12.32 hrs, Volume= 0.274 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link EX: Existing Outlet



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment E1: Existing Area Runoff Area=85,415 sf 2.34% Impervious Runoff Depth>3.02"
Flow Length=415' Tc=20.2 min UI Adjusted CN=WQ Runoff=5.72 cfs 0.493 af

Link EX: Existing Outlet Inflow=5.72 cfs 0.493 af
Primary=5.72 cfs 0.493 af

Total Runoff Area = 1.961 ac Runoff Volume = 0.493 af Average Runoff Depth = 3.02"
97.66% Pervious = 1.915 ac 2.34% Impervious = 0.046 ac

Summary for Subcatchment E1: Existing Area

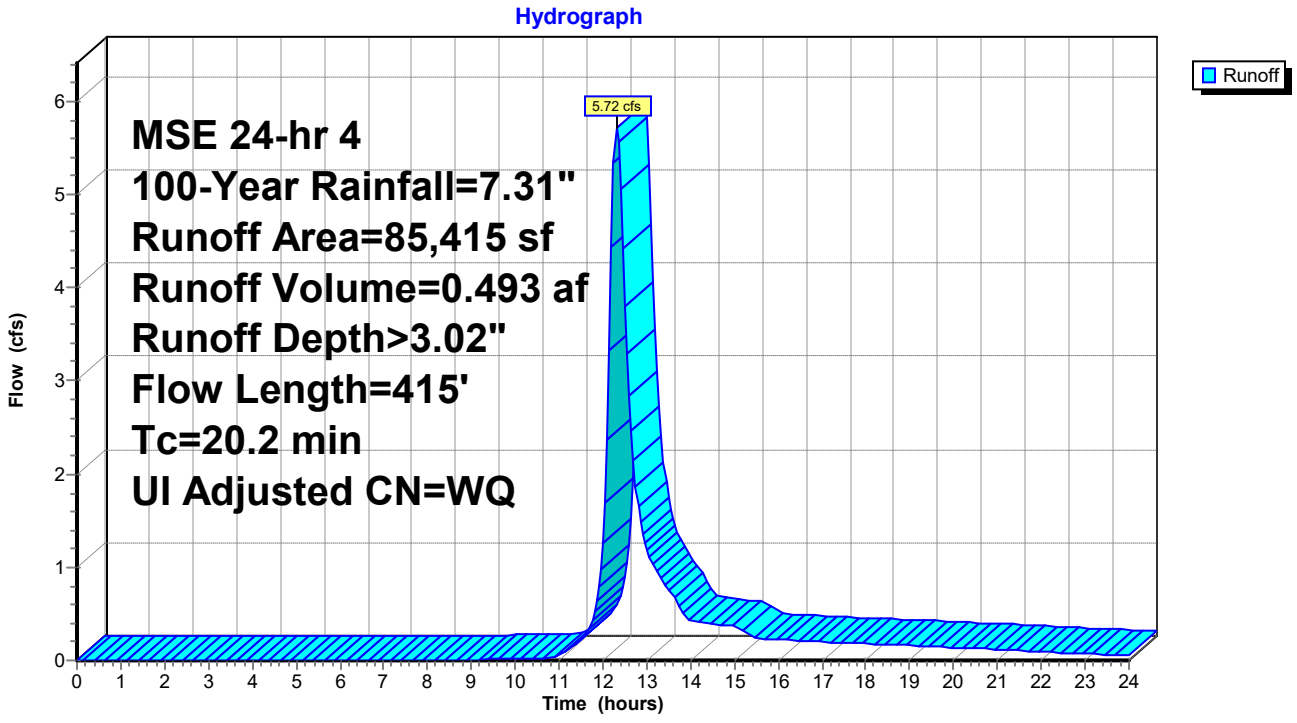
Runoff = 5.72 cfs @ 12.31 hrs, Volume= 0.493 af, Depth> 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=7.31"

Area (sf)	CN	Adj	Description
83,414	61	61	>75% Grass cover, Good, HSG B
2,001	98	98	Unconnected pavement, HSG B
85,415			Weighted Average
83,414			97.66% Pervious Area
2,001			2.34% Impervious Area
2,001			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.3	150	0.0120	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.94"
2.9	265	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
20.2	415	Total			

Subcatchment E1: Existing Area

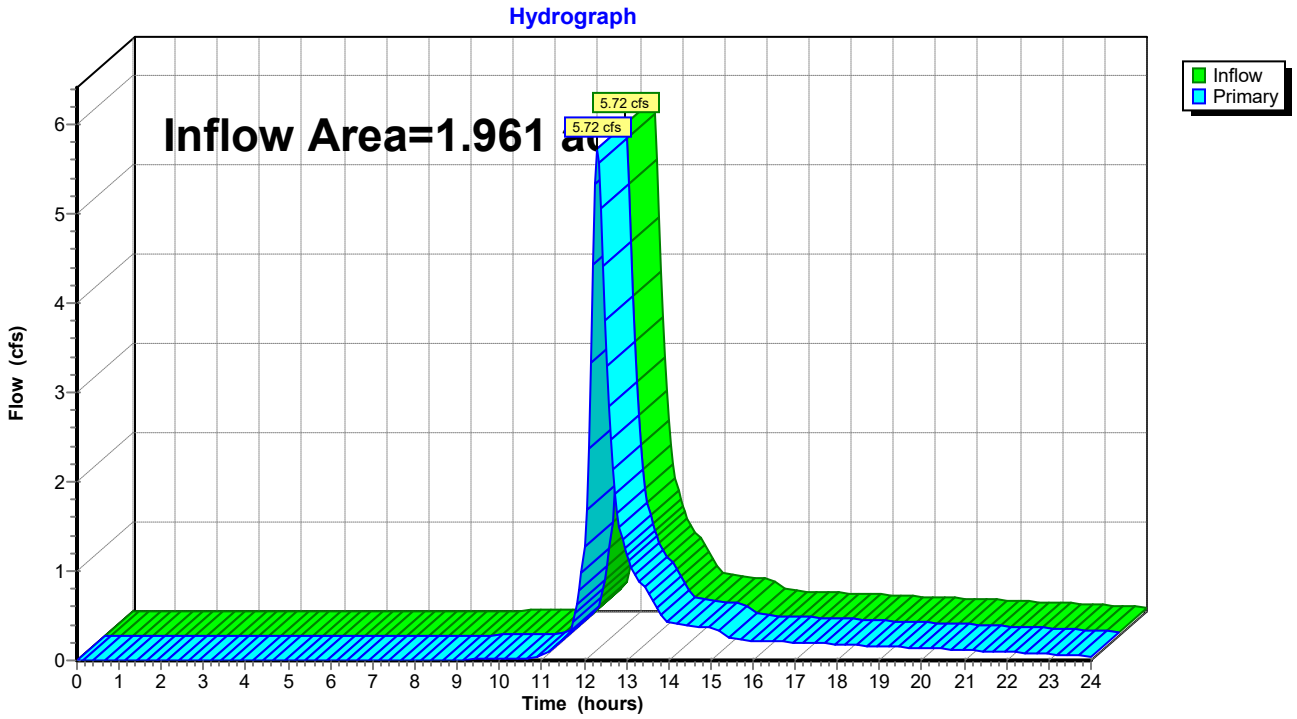


Summary for Link EX: Existing Outlet

Inflow Area = 1.961 ac, 2.34% Impervious, Inflow Depth > 3.02" for 100-Year event
Inflow = 5.72 cfs @ 12.31 hrs, Volume= 0.493 af
Primary = 5.72 cfs @ 12.31 hrs, Volume= 0.493 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link EX: Existing Outlet



PLOT BY: TNOEL 12/18/2025

LUOYANG AVE

17-10687-260
DEBOER FAMILY LIVING TRUST
2946 LUOYANG AVE

17-10575-62
HICKORY POINT HOLDINGS LLC
4003 KINNEY COULEE RD

N KINNEY COULEE ROAD

INTERSTATE 90

P0-WEST

P1-CENTER

P2-EAST

P3-SOUTH

PROPOSED BUILDING

BASIN A

BASIN B

BASIN C

24'

16

50'

40'

15'

N

0' 20' 40'

PROPOSED SITE TOTAL		
Proposed	**SQFT**	**ACRE**
Building	15992	0.367
Pavement	28649	0.658
Grass	36001	0.826
Gravel	0	0.000
Sidewalk	2120	0.049
Pond	2653	0.061
	85415	1.961

S:\Projects\BD5010 Borton Const - Dels Service Center Site Design\Drawings\DWG\BD5010_SW AREAS.dwg,

JEWELL
560 Sunrise Drive
Spring Green, WI 53588
phone: 608-588-7484

Del's Service Center
Repair-Towing-Recovery

Borton CONSTRUCTION

Del's Service Center
La Crosse, WI

Design

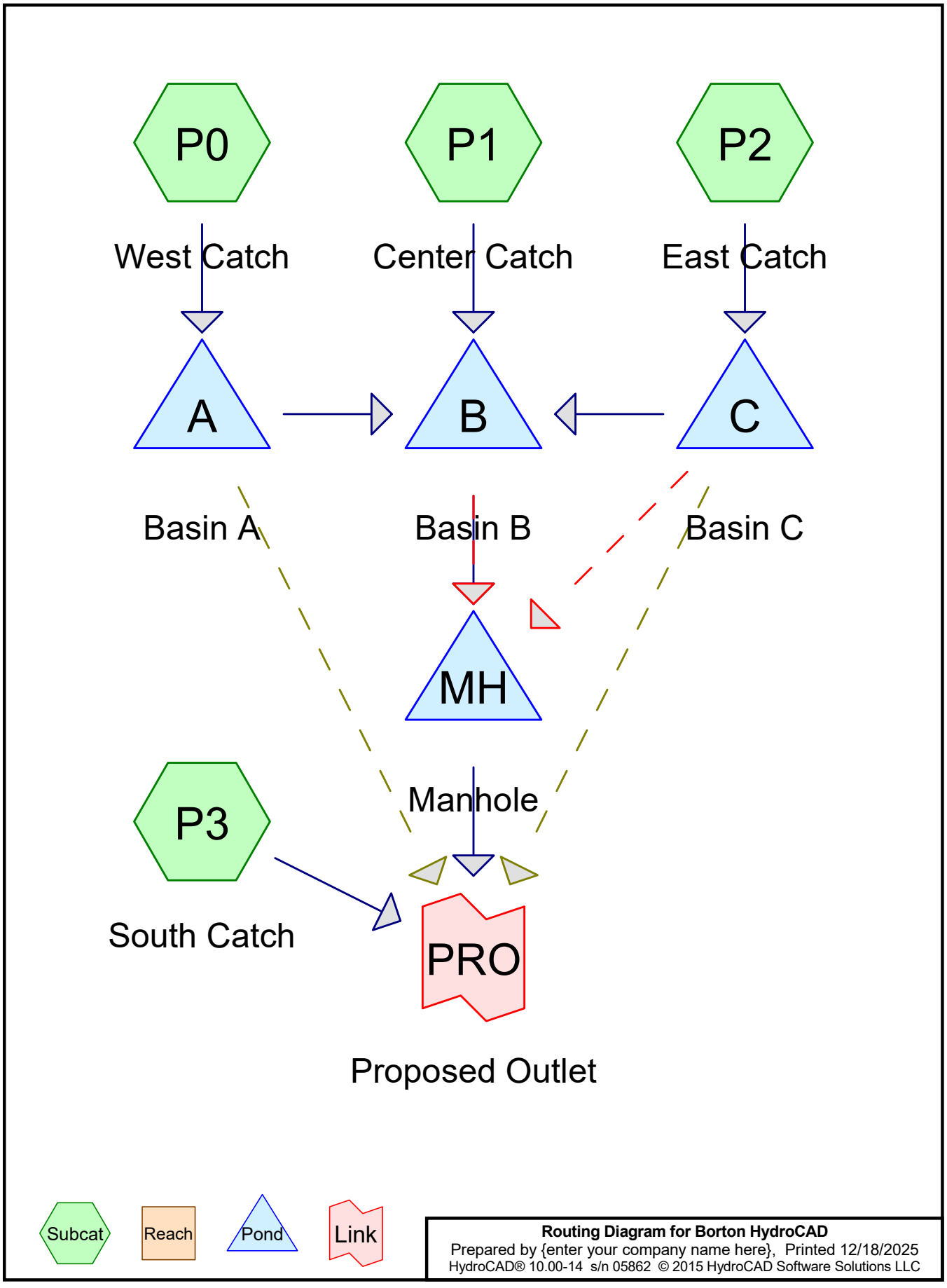
12-18-2025

No.	Description	Date

Drawing Name
PROPOSED WATERSHED

Project number BD5010

Sheet number SW 2



Routing Diagram for Borton HydroCAD

Prepared by {enter your company name here}, Printed 12/18/2025

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.817	61	>75% Grass cover, Good, HSG B (P0, P1, P2, P3)
0.669	98	Paved parking, HSG B (P0, P1, P2, P3)
0.367	98	Roofs, HSG B (P2)
0.046	98	Unconnected pavement, HSG B (P0, P1, P2, P3)
0.061	98	Water Surface, HSG B (P0, P1, P2)
1.961	**83**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
1.961	HSG B	P0, P1, P2, P3
0.000	HSG C	
0.000	HSG D	
0.000	Other	
1.961		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.817	0.000	0.000	0.000	0.817	>75% Grass cover, Good	P0, P1, P2, P3
0.000	0.669	0.000	0.000	0.000	0.669	Paved parking	P0, P1, P2, P3
0.000	0.367	0.000	0.000	0.000	0.367	Roofs	P2
0.000	0.046	0.000	0.000	0.000	0.046	Unconnected pavement	P0, P1, P2, P3
0.000	0.061	0.000	0.000	0.000	0.061	Water Surface	P0, P1, P2
0.000	**1.961**	**0.000**	**0.000**	**0.000**	**1.961**	**TOTAL AREA**	

Pipe Listing (selected 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	A	712.75	712.50	45.0	0.0056	0.010	15.0	0.0	0.0

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment P0: West Catch Runoff Area=15,339 sf 75.60% Impervious Runoff Depth>1.82"
Tc=6.0 min CN=WQ Runoff=0.86 cfs 0.053 af

Subcatchment P1: Center Catch Runoff Area=9,557 sf 22.14% Impervious Runoff Depth>0.69"
Tc=6.0 min CN=WQ Runoff=0.17 cfs 0.013 af

Subcatchment P2: East Catch Runoff Area=49,096 sf 64.63% Impervious Runoff Depth>1.59"
Tc=6.0 min CN=WQ Runoff=2.37 cfs 0.149 af

Subcatchment P3: South Catch Runoff Area=11,423 sf 38.42% Impervious Runoff Depth>1.03"
Tc=6.0 min CN=WQ Runoff=0.34 cfs 0.023 af

Pond A: Basin A Peak Elev=713.16' Storage=581 cf Inflow=0.86 cfs 0.053 af
Discarded=0.05 cfs 0.039 af Primary=0.59 cfs 0.014 af Tertiary=0.00 cfs 0.000 af Outflow=0.64 cfs 0.053 af

Pond B: Basin B Peak Elev=713.12' Storage=2,969 cf Inflow=2.34 cfs 0.161 af
Discarded=0.07 cfs 0.063 af Primary=0.39 cfs 0.060 af Secondary=0.00 cfs 0.000 af Outflow=0.46 cfs 0.123 af

Pond C: Basin C Peak Elev=713.19' Storage=1,567 cf Inflow=2.37 cfs 0.149 af
s 0.005 af Primary=1.63 cfs 0.134 af Secondary=0.00 cfs 0.000 af Tertiary=0.00 cfs 0.000 af Outflow=1.63 cfs 0.139 af

Pond MH: Manhole Peak Elev=713.07' Storage=8 cf Inflow=0.39 cfs 0.060 af
Outflow=0.42 cfs 0.060 af

Link PRO: Proposed Outlet Inflow=0.49 cfs 0.082 af
Primary=0.49 cfs 0.082 af

Total Runoff Area = 1.961 ac Runoff Volume = 0.238 af Average Runoff Depth = 1.46"
41.66% Pervious = 0.817 ac 58.34% Impervious = 1.144 ac

Summary for Subcatchment P0: West Catch

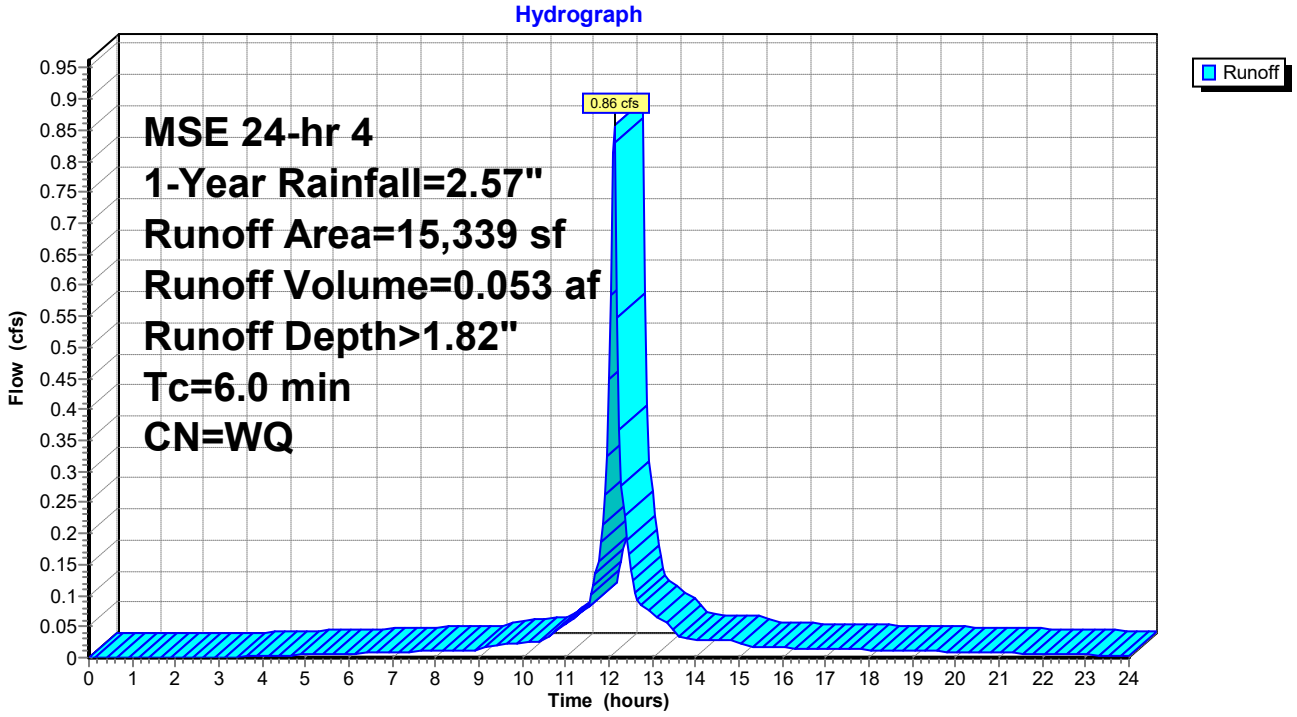
Runoff = 0.86 cfs @ 12.13 hrs, Volume= 0.053 af, Depth> 1.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.57"

Area (sf)	CN	Description
0	98	Roofs, HSG B
11,080	98	Paved parking, HSG B
140	98	Unconnected pavement, HSG B
3,743	61	>75% Grass cover, Good, HSG B
376	98	Water Surface, HSG B
15,339		Weighted Average
3,743		24.40% Pervious Area
11,596		75.60% Impervious Area
140		1.21% Unconnected

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

Subcatchment P0: West Catch



Summary for Subcatchment P1: Center Catch

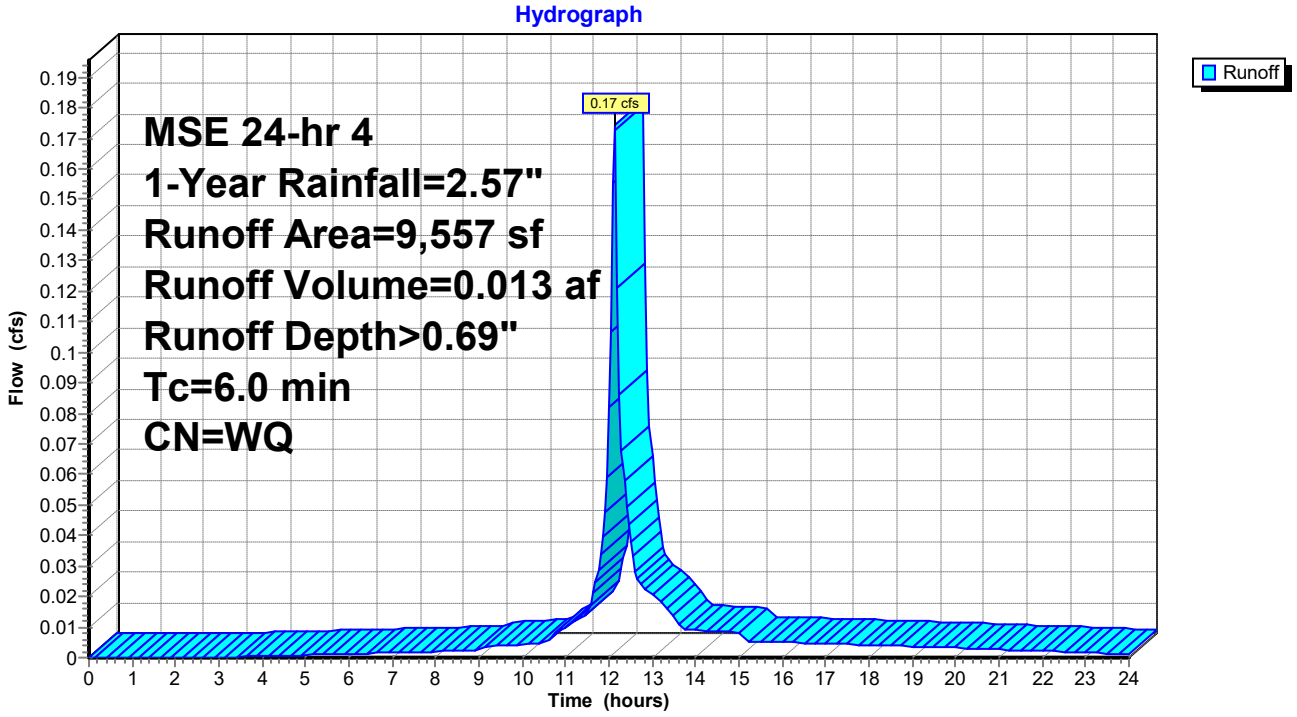
Runoff = 0.17 cfs @ 12.14 hrs, Volume= 0.013 af, Depth> 0.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.57"

Area (sf)	CN	Description
0	98	Roofs, HSG B
1,034	98	Paved parking, HSG B
290	98	Unconnected pavement, HSG B
7,441	61	>75% Grass cover, Good, HSG B
792	98	Water Surface, HSG B
9,557		Weighted Average
7,441		77.86% Pervious Area
2,116		22.14% Impervious Area
290		13.71% Unconnected

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

Subcatchment P1: Center Catch



Summary for Subcatchment P2: East Catch

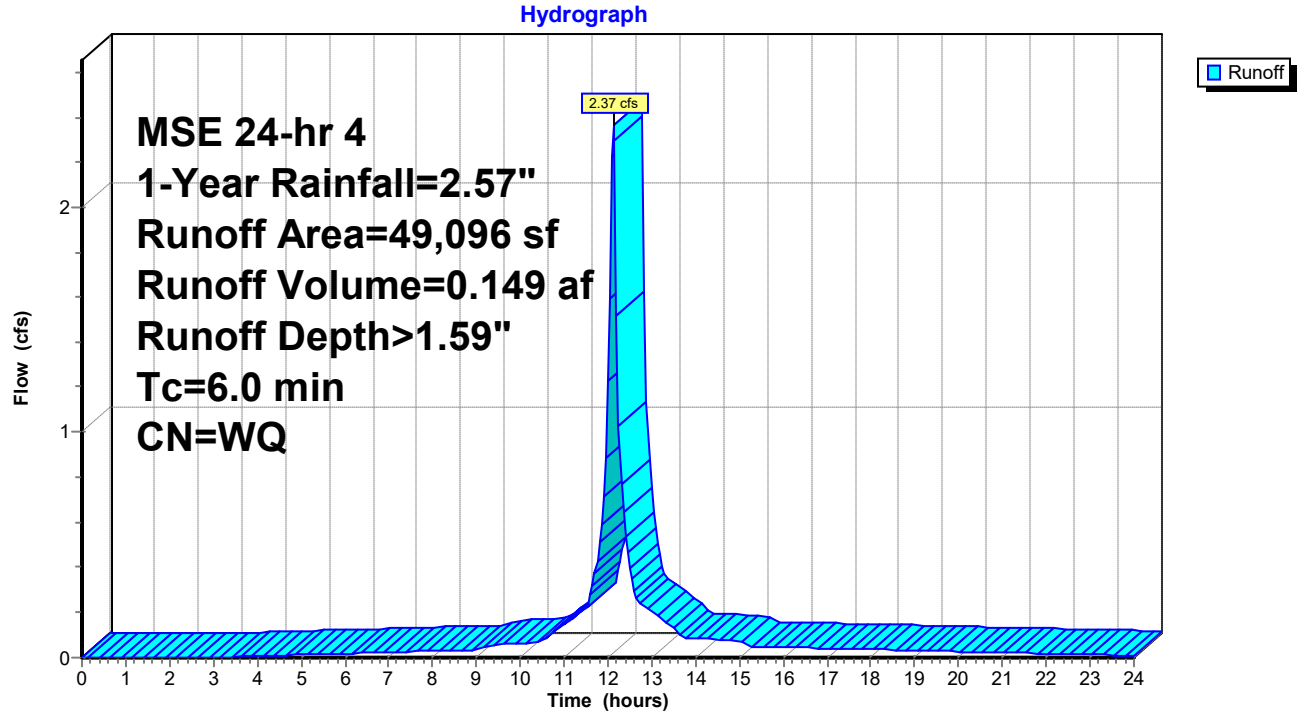
Runoff = 2.37 cfs @ 12.13 hrs, Volume= 0.149 af, Depth> 1.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.57"

Area (sf)	CN	Description
15,992	98	Roofs, HSG B
14,149	98	Paved parking, HSG B
104	98	Unconnected pavement, HSG B
17,366	61	>75% Grass cover, Good, HSG B
1,485	98	Water Surface, HSG B
49,096		Weighted Average
17,366		35.37% Pervious Area
31,730		64.63% Impervious Area
104		0.33% Unconnected

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

Subcatchment P2: East Catch



Summary for Subcatchment P3: South Catch

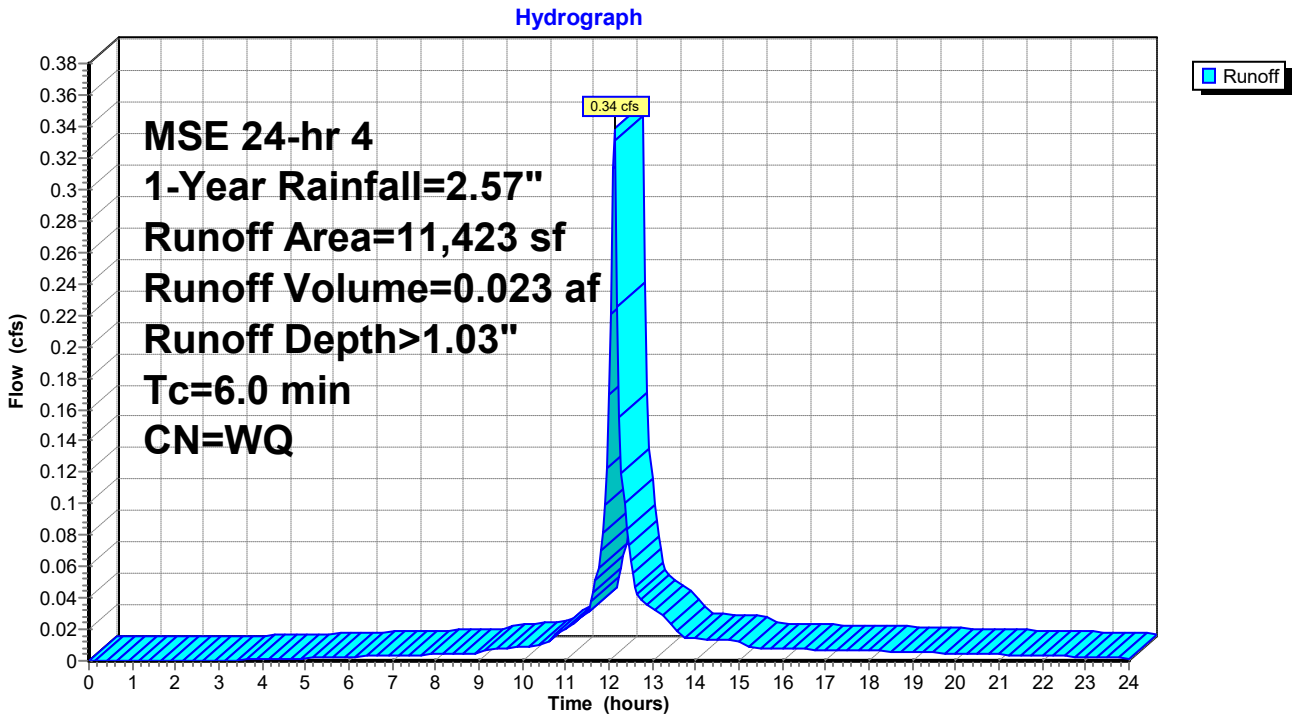
Runoff = 0.34 cfs @ 12.13 hrs, Volume= 0.023 af, Depth> 1.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.57"

Area (sf)	CN	Description
2,900	98	Paved parking, HSG B
7,034	61	>75% Grass cover, Good, HSG B
1,489	98	Unconnected pavement, HSG B
11,423		Weighted Average
7,034		61.58% Pervious Area
4,389		38.42% Impervious Area
1,489		33.93% Unconnected

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

Subcatchment P3: South Catch



Summary for Pond A: Basin A

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=50)

Inflow Area = 0.352 ac, 75.60% Impervious, Inflow Depth > 1.82" for 1-Year event
Inflow = 0.86 cfs @ 12.13 hrs, Volume= 0.053 af
Outflow = 0.64 cfs @ 12.19 hrs, Volume= 0.053 af, Atten= 25%, Lag= 3.9 min
Discarded = 0.05 cfs @ 12.19 hrs, Volume= 0.039 af
Primary = 0.59 cfs @ 12.19 hrs, Volume= 0.014 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 713.16' @ 12.19 hrs Surf.Area= 640 sf Storage= 581 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 62.1 min (824.7 - 762.6)

Volume	Invert	Avail.Storage	Storage Description
#1	712.00'	4,058 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
712.00	376	111.0	0	0	376
714.00	877	139.0	1,218	1,218	987
715.00	2,457	287.0	1,601	2,819	6,008
715.50	2,500	300.0	1,239	4,058	6,633

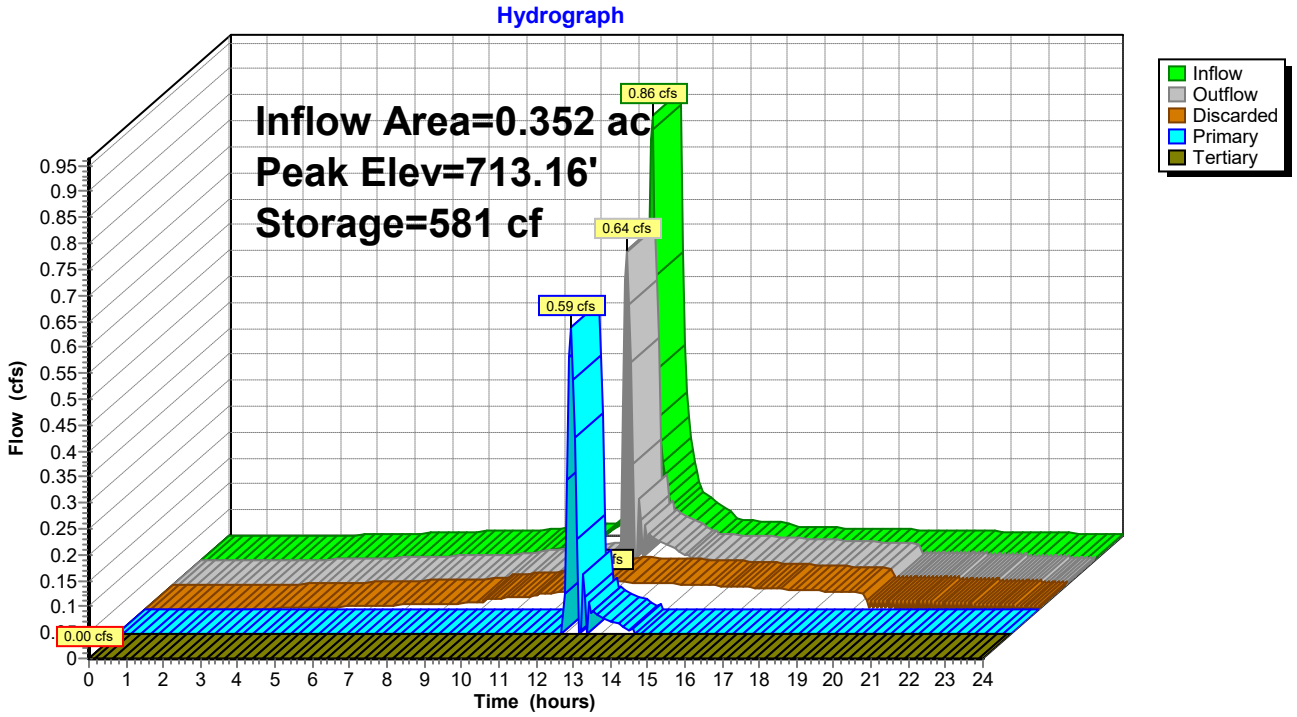
Device	Routing	Invert	Outlet Devices
#1	Discarded	712.00'	**3.600 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#2	Tertiary	715.00'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Primary	712.75'	**15.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 712.75' / 712.50' S= 0.0056 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf

Discarded OutFlow Max=0.05 cfs @ 12.19 hrs HW=713.15' (Free Discharge)
1=Exfiltration (Controls 0.05 cfs)

Primary OutFlow Max=0.58 cfs @ 12.19 hrs HW=713.15' TW=712.49' (Dynamic Tailwater)
3=Culvert (Inlet Controls 0.58 cfs @ 1.70 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=712.00' TW=0.00' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond A: Basin A



Summary for Pond B: Basin B

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=24)
[80] Warning: Exceeded Pond A by 0.12' @ 16.15 hrs (0.00 cfs 0.003 af)
[80] Warning: Exceeded Pond C by 0.02' @ 12.40 hrs (0.32 cfs 0.002 af)

Inflow Area =	1.699 ac,	61.41% Impervious,	Inflow Depth >	1.13"	for 1-Year event
Inflow =	2.34 cfs @	12.19 hrs,	Volume=	0.161 af	
Outflow =	0.46 cfs @	12.50 hrs,	Volume=	0.123 af,	Atten= 81%, Lag= 18.5 min
Discarded =	0.07 cfs @	12.57 hrs,	Volume=	0.063 af	
Primary =	0.39 cfs @	12.50 hrs,	Volume=	0.060 af	
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 713.12' @ 12.57 hrs Surf.Area= 1,737 sf Storage= 2,969 cf
Flood Elev= 715.25' Surf.Area= 2,874 sf Storage= 7,831 cf

Plug-Flow detention time= 191.8 min calculated for 0.123 af (76% of inflow)
Center-of-Mass det. time= 116.1 min (937.2 - 821.2)

Volume	Invert	Avail.Storage	Storage Description
#1	710.50'	10,160 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
710.50	617	172.0	0	0	617
711.00	792	180.0	351	351	858
712.00	1,167	194.0	973	1,325	1,314
712.50	1,460	246.0	655	1,980	3,139
716.00	3,342	291.0	8,179	10,160	5,279

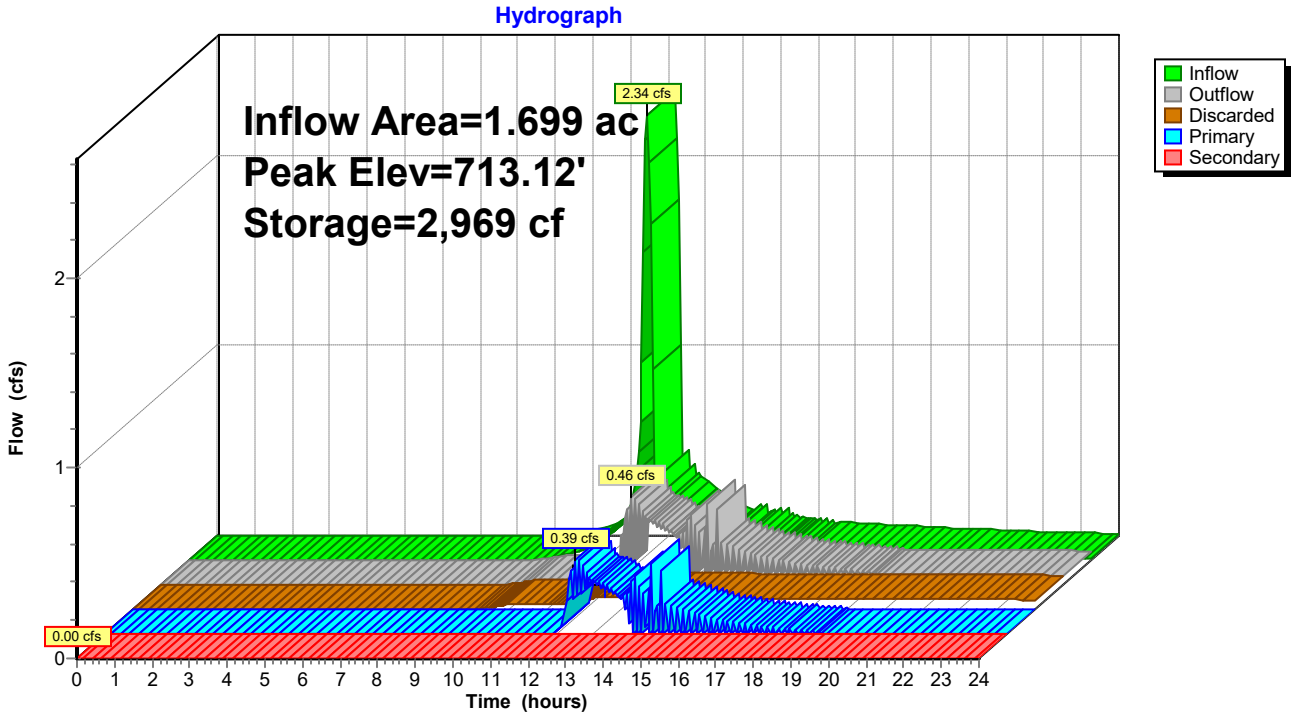
Device	Routing	Invert	Outlet Devices
#1	Discarded	710.50'	**1.630 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#2	Primary	712.50'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Secondary	715.00'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.07 cfs @ 12.57 hrs HW=713.12' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.07 cfs)

Primary OutFlow Max=0.17 cfs @ 12.50 hrs HW=713.10' TW=713.07' (Dynamic Tailwater)
↑—**2=Orifice/Grate** (Orifice Controls 0.17 cfs @ 0.87 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=710.50' TW=712.00' (Dynamic Tailwater)
↑—**3=Orifice/Grate** (Controls 0.00 cfs)

Pond B: Basin B



Summary for Pond C: Basin C

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=24)

Inflow Area = 1.127 ac, 64.63% Impervious, Inflow Depth > 1.59" for 1-Year event
Inflow = 2.37 cfs @ 12.13 hrs, Volume= 0.149 af
Outflow = 1.63 cfs @ 12.20 hrs, Volume= 0.139 af, Atten= 31%, Lag= 4.4 min
Discarded = 0.00 cfs @ 12.20 hrs, Volume= 0.005 af
Primary = 1.63 cfs @ 12.20 hrs, Volume= 0.134 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 713.19' @ 12.20 hrs Surf.Area= 1,856 sf Storage= 1,567 cf

Plug-Flow detention time= 100.9 min calculated for 0.139 af (93% of inflow)
Center-of-Mass det. time= 65.2 min (830.9 - 765.7)

Volume	Invert	Avail.Storage	Storage Description
#1	712.25'	8,517 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
712.25	1,485	200.0	0	0	1,485
712.50	1,586	203.0	384	384	1,594
715.50	2,917	241.0	6,654	7,038	3,092
716.00	3,000	250.0	1,479	8,517	3,465

Device	Routing	Invert	Outlet Devices
#1	Discarded	712.25'	**0.070 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#2	Primary	712.50'	**12.0" Vert. Orifice/Grate** C= 0.600
#3	Secondary	715.00'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Tertiary	715.50'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

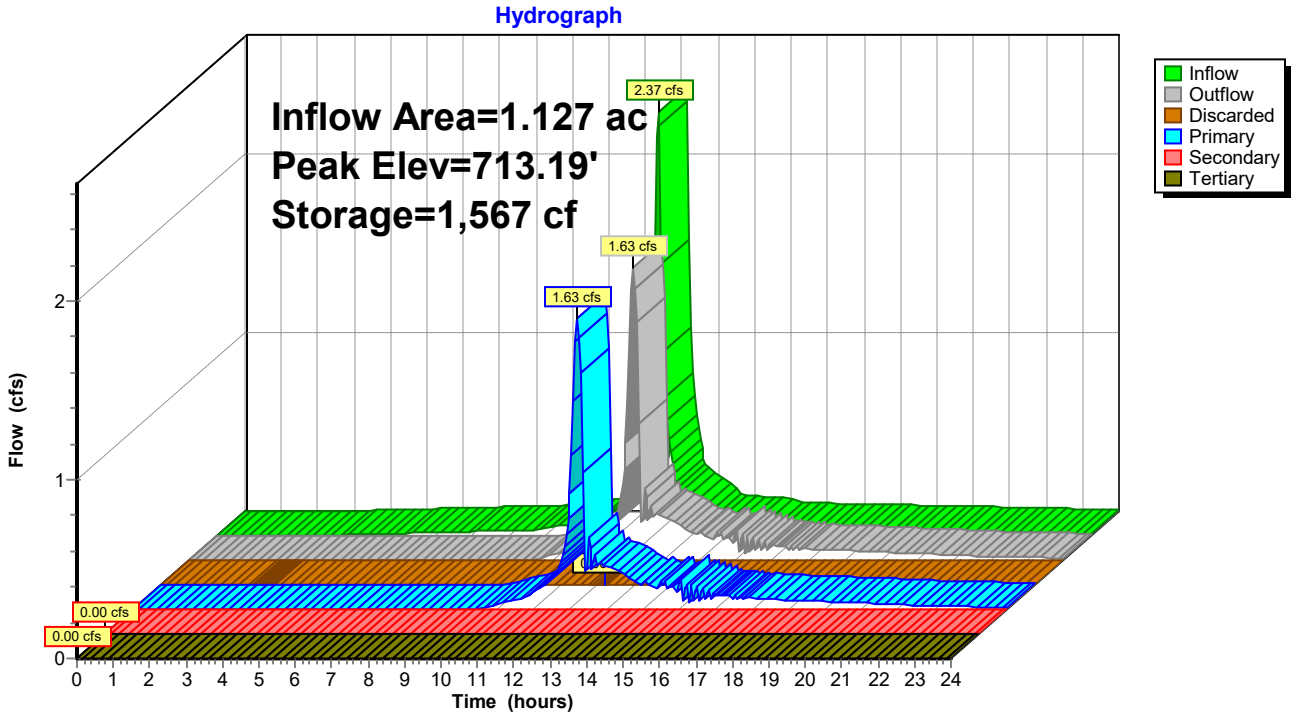
Discarded OutFlow Max=0.00 cfs @ 12.20 hrs HW=713.19' (Free Discharge)
1=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=1.62 cfs @ 12.20 hrs HW=713.19' TW=712.54' (Dynamic Tailwater)
2=Orifice/Grate (Orifice Controls 1.62 cfs @ 2.82 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=712.25' TW=712.00' (Dynamic Tailwater)
3=Orifice/Grate (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=712.25' TW=0.00' (Dynamic Tailwater)
4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond C: Basin C



Summary for Pond MH: Manhole

[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[80] Warning: Exceeded Pond B by 0.36' @ 23.95 hrs (0.04 cfs 0.090 af)

Inflow Area = 1.699 ac, 61.41% Impervious, Inflow Depth = 0.42" for 1-Year event
Inflow = 0.39 cfs @ 12.50 hrs, Volume= 0.060 af
Outflow = 0.42 cfs @ 12.50 hrs, Volume= 0.060 af, Atten= 0%, Lag= 0.0 min
Primary = 0.42 cfs @ 12.50 hrs, Volume= 0.060 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 713.07' @ 12.50 hrs Surf.Area= 7 sf Storage= 8 cf
Flood Elev= 715.00' Surf.Area= 7 sf Storage= 21 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.6 min (843.9 - 843.3)

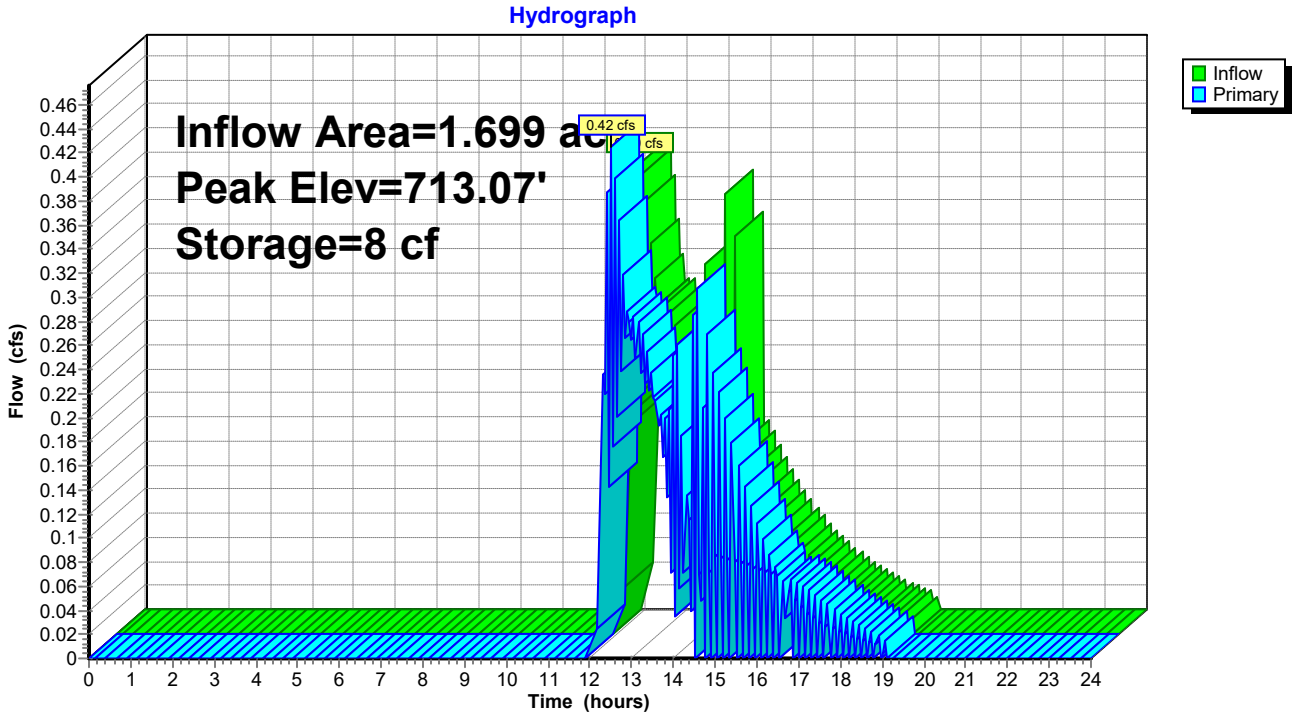
Volume	Invert	Avail.Storage	Storage Description
#1	712.00'	616 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
712.00	7	0	0
800.00	7	616	616

Device	Routing	Invert	Outlet Devices
#1	Primary	712.75'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.42 cfs @ 12.50 hrs HW=713.07' TW=0.00' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.42 cfs @ 1.92 fps)

Pond MH: Manhole

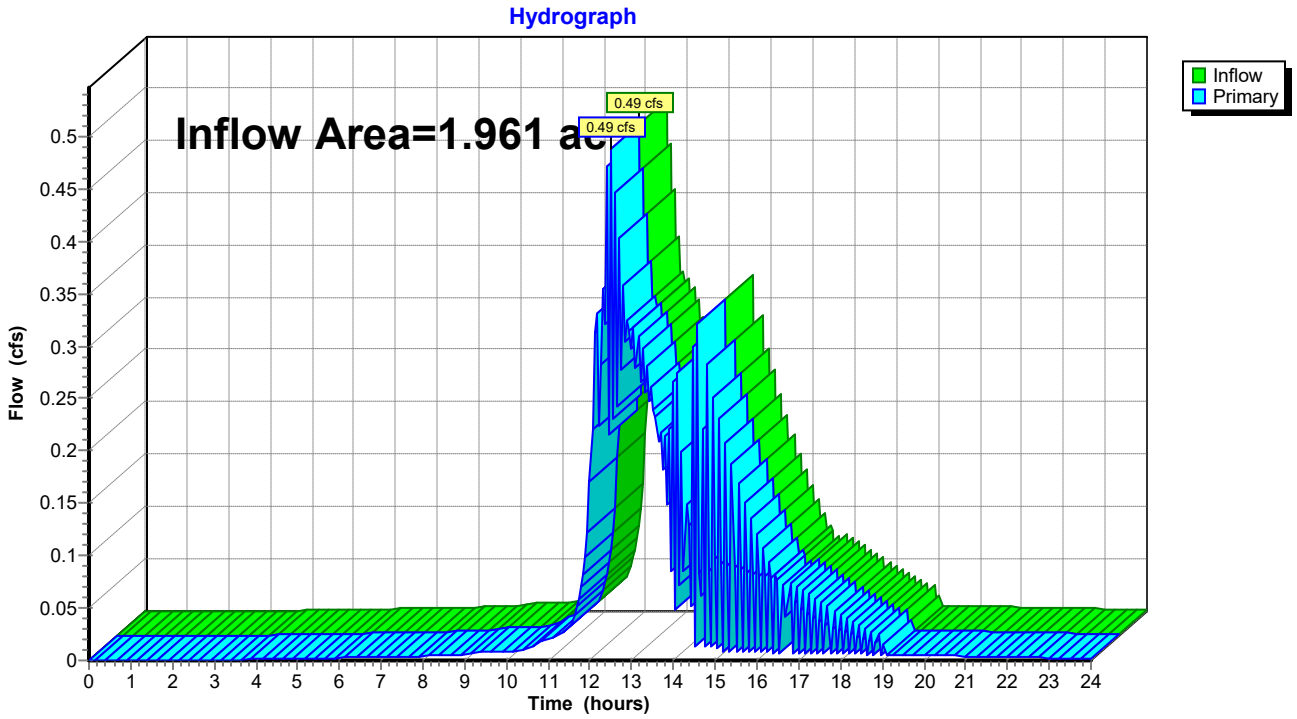


Summary for Link PRO: Proposed Outlet

Inflow Area = 1.961 ac, 58.34% Impervious, Inflow Depth > 0.50" for 1-Year event
Inflow = 0.49 cfs @ 12.50 hrs, Volume= 0.082 af
Primary = 0.49 cfs @ 12.50 hrs, Volume= 0.082 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link PRO: Proposed Outlet



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment P0: West Catch Runoff Area=15,339 sf 75.60% Impervious Runoff Depth>2.13"
Tc=6.0 min CN=WQ Runoff=1.00 cfs 0.063 af

Subcatchment P1: Center Catch Runoff Area=9,557 sf 22.14% Impervious Runoff Depth>0.87"
Tc=6.0 min CN=WQ Runoff=0.23 cfs 0.016 af

Subcatchment P2: East Catch Runoff Area=49,096 sf 64.63% Impervious Runoff Depth>1.87"
Tc=6.0 min CN=WQ Runoff=2.79 cfs 0.176 af

Subcatchment P3: South Catch Runoff Area=11,423 sf 38.42% Impervious Runoff Depth>1.25"
Tc=6.0 min CN=WQ Runoff=0.42 cfs 0.027 af

Pond A: Basin A Peak Elev=713.29' Storage=671 cf Inflow=1.00 cfs 0.063 af
Discarded=0.06 cfs 0.044 af Primary=0.75 cfs 0.019 af Tertiary=0.00 cfs 0.000 af Outflow=0.81 cfs 0.063 af

Pond B: Basin B Peak Elev=713.29' Storage=3,273 cf Inflow=2.85 cfs 0.195 af
Discarded=0.07 cfs 0.066 af Primary=0.46 cfs 0.089 af Secondary=0.00 cfs 0.000 af Outflow=0.52 cfs 0.155 af

Pond C: Basin C Peak Elev=713.30' Storage=1,778 cf Inflow=2.79 cfs 0.176 af
s 0.005 af Primary=1.93 cfs 0.160 af Secondary=0.00 cfs 0.000 af Tertiary=0.00 cfs 0.000 af Outflow=1.93 cfs 0.165 af

Pond MH: Manhole Peak Elev=713.10' Storage=8 cf Inflow=0.46 cfs 0.089 af
Outflow=0.48 cfs 0.089 af

Link PRO: Proposed Outlet Inflow=0.59 cfs 0.116 af
Primary=0.59 cfs 0.116 af

Total Runoff Area = 1.961 ac Runoff Volume = 0.281 af Average Runoff Depth = 1.72"
41.66% Pervious = 0.817 ac 58.34% Impervious = 1.144 ac

Summary for Subcatchment P0: West Catch

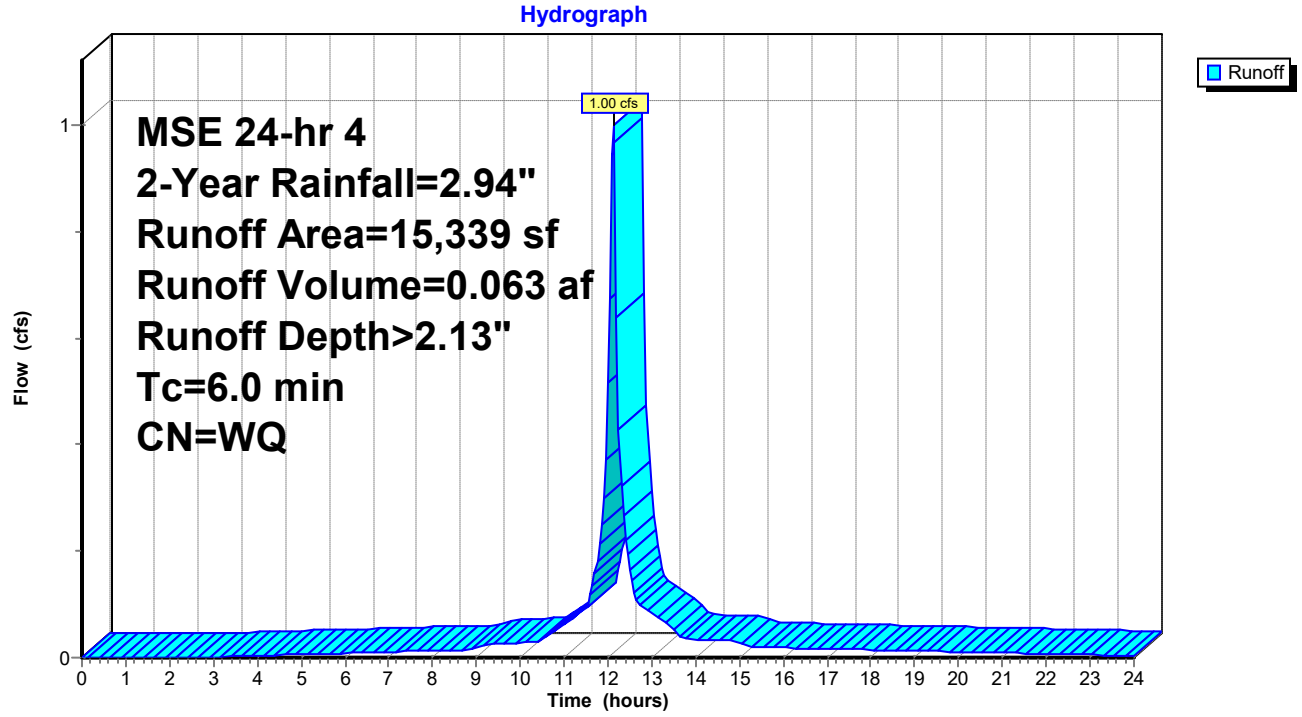
Runoff = 1.00 cfs @ 12.13 hrs, Volume= 0.063 af, Depth> 2.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.94"

Area (sf)	CN	Description
0	98	Roofs, HSG B
11,080	98	Paved parking, HSG B
140	98	Unconnected pavement, HSG B
3,743	61	>75% Grass cover, Good, HSG B
376	98	Water Surface, HSG B
15,339		Weighted Average
3,743		24.40% Pervious Area
11,596		75.60% Impervious Area
140		1.21% Unconnected

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

Subcatchment P0: West Catch



Summary for Subcatchment P1: Center Catch

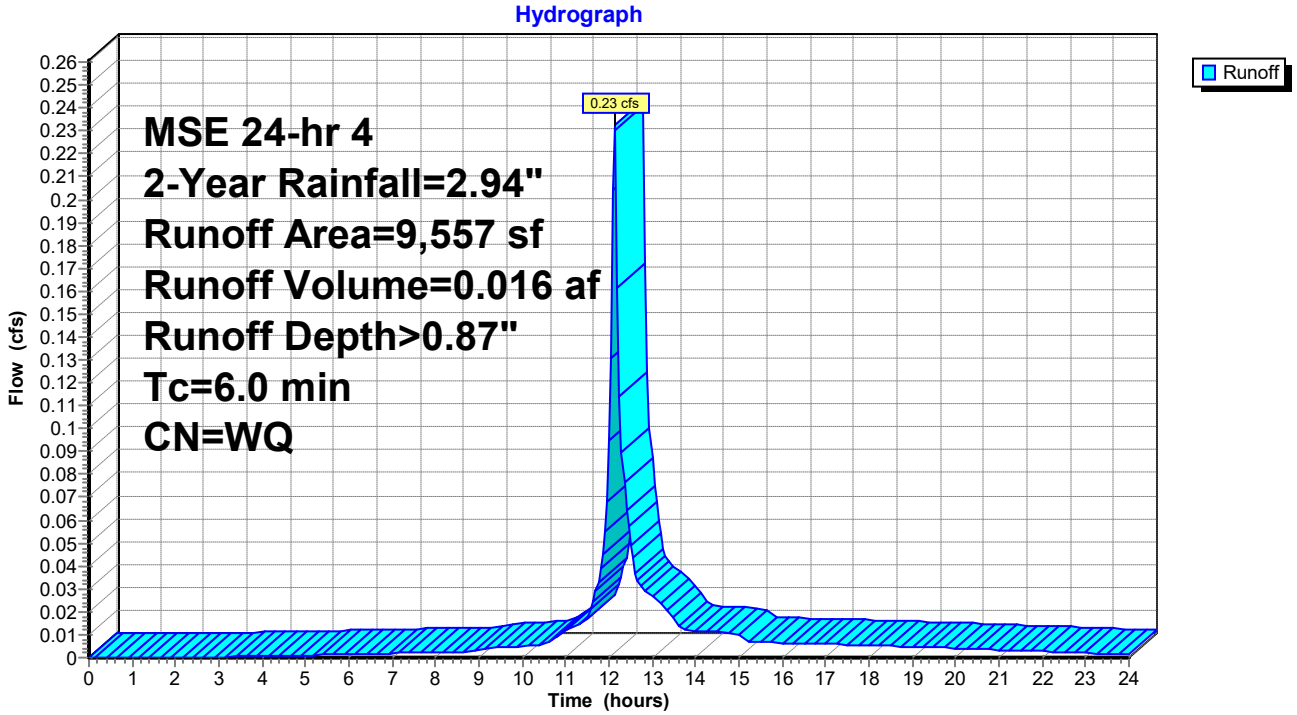
Runoff = 0.23 cfs @ 12.14 hrs, Volume= 0.016 af, Depth> 0.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.94"

Area (sf)	CN	Description
0	98	Roofs, HSG B
1,034	98	Paved parking, HSG B
290	98	Unconnected pavement, HSG B
7,441	61	>75% Grass cover, Good, HSG B
792	98	Water Surface, HSG B
9,557		Weighted Average
7,441		77.86% Pervious Area
2,116		22.14% Impervious Area
290		13.71% Unconnected

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

Subcatchment P1: Center Catch



Summary for Subcatchment P2: East Catch

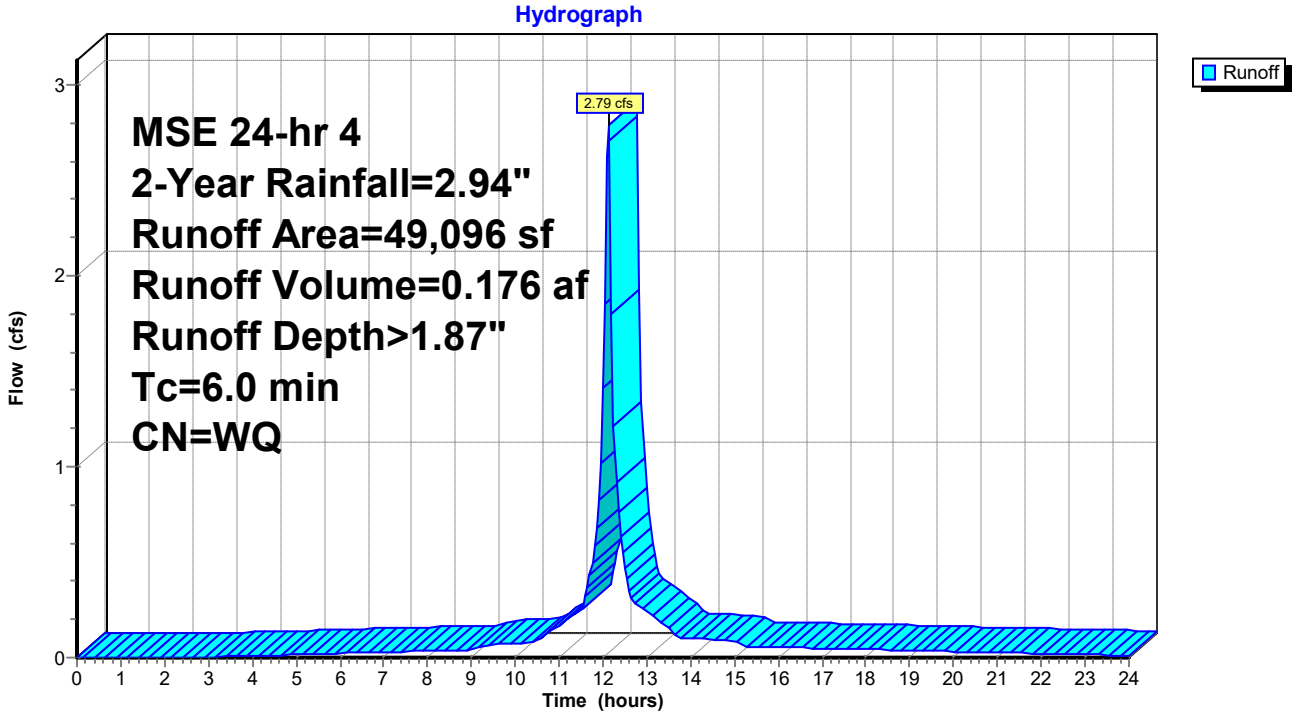
Runoff = 2.79 cfs @ 12.13 hrs, Volume= 0.176 af, Depth> 1.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.94"

Area (sf)	CN	Description
15,992	98	Roofs, HSG B
14,149	98	Paved parking, HSG B
104	98	Unconnected pavement, HSG B
17,366	61	>75% Grass cover, Good, HSG B
1,485	98	Water Surface, HSG B
49,096		Weighted Average
17,366		35.37% Pervious Area
31,730		64.63% Impervious Area
104		0.33% Unconnected

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

Subcatchment P2: East Catch



Summary for Subcatchment P3: South Catch

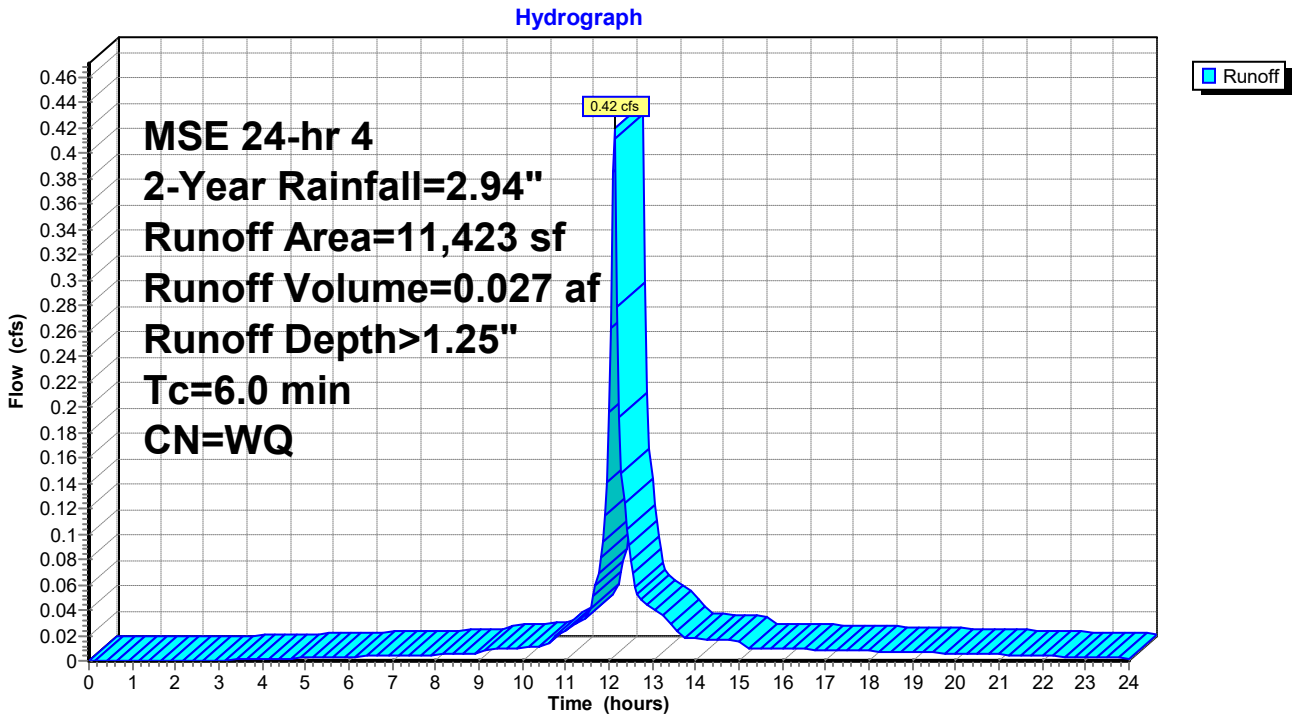
Runoff = 0.42 cfs @ 12.13 hrs, Volume= 0.027 af, Depth> 1.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.94"

Area (sf)	CN	Description
2,900	98	Paved parking, HSG B
7,034	61	>75% Grass cover, Good, HSG B
1,489	98	Unconnected pavement, HSG B
11,423		Weighted Average
7,034		61.58% Pervious Area
4,389		38.42% Impervious Area
1,489		33.93% Unconnected

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

Subcatchment P3: South Catch



Summary for Pond A: Basin A

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=41)

Inflow Area = 0.352 ac, 75.60% Impervious, Inflow Depth > 2.13" for 2-Year event
Inflow = 1.00 cfs @ 12.13 hrs, Volume= 0.063 af
Outflow = 0.81 cfs @ 12.18 hrs, Volume= 0.063 af, Atten= 19%, Lag= 3.1 min
Discarded = 0.06 cfs @ 12.57 hrs, Volume= 0.044 af
Primary = 0.75 cfs @ 12.18 hrs, Volume= 0.019 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 713.29' @ 12.57 hrs Surf.Area= 676 sf Storage= 671 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 63.9 min (824.8 - 760.9)

Volume	Invert	Avail.Storage	Storage Description
#1	712.00'	4,058 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
712.00	376	111.0	0	0	376
714.00	877	139.0	1,218	1,218	987
715.00	2,457	287.0	1,601	2,819	6,008
715.50	2,500	300.0	1,239	4,058	6,633

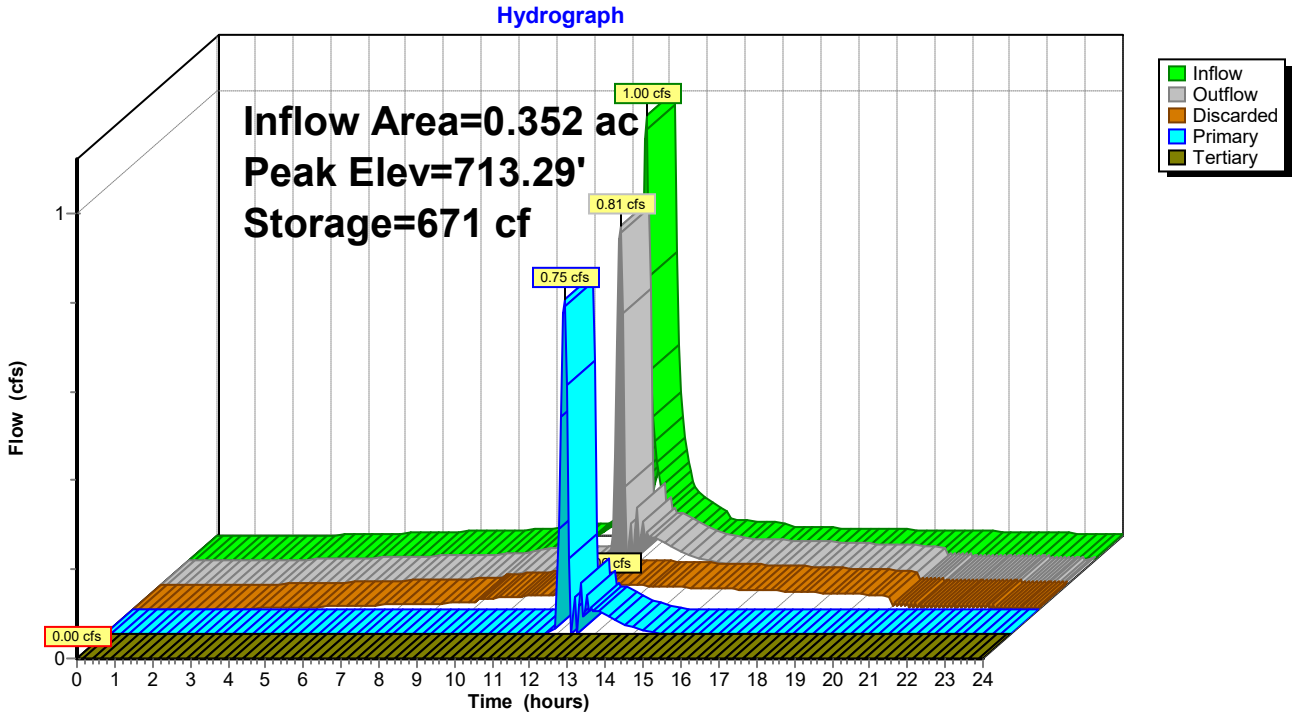
Device	Routing	Invert	Outlet Devices
#1	Discarded	712.00'	**3.600 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#2	Tertiary	715.00'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Primary	712.75'	**15.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 712.75' / 712.50' S= 0.0056 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf

Discarded OutFlow Max=0.06 cfs @ 12.57 hrs HW=713.29' (Free Discharge)
1=Exfiltration (Controls 0.06 cfs)

Primary OutFlow Max=0.73 cfs @ 12.18 hrs HW=713.20' TW=712.76' (Dynamic Tailwater)
3=Culvert (Inlet Controls 0.73 cfs @ 1.81 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=712.00' TW=0.00' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond A: Basin A



Summary for Pond B: Basin B

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=25)
[80] Warning: Exceeded Pond A by 0.15' @ 16.85 hrs (0.00 cfs 0.007 af)
[80] Warning: Exceeded Pond C by 0.05' @ 12.30 hrs (0.67 cfs 0.004 af)

Inflow Area =	1.699 ac,	61.41% Impervious,	Inflow Depth >	1.38"	for 2-Year event
Inflow =	2.85 cfs @	12.18 hrs,	Volume=	0.195 af	
Outflow =	0.52 cfs @	12.46 hrs,	Volume=	0.155 af,	Atten= 82%, Lag= 16.4 min
Discarded =	0.07 cfs @	12.51 hrs,	Volume=	0.066 af	
Primary =	0.46 cfs @	12.46 hrs,	Volume=	0.089 af	
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 713.29' @ 12.51 hrs Surf.Area= 1,818 sf Storage= 3,273 cf
Flood Elev= 715.25' Surf.Area= 2,874 sf Storage= 7,831 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 96.5 min (917.1 - 820.6)

Volume	Invert	Avail.Storage	Storage Description
#1	710.50'	10,160 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
710.50	617	172.0	0	0	617
711.00	792	180.0	351	351	858
712.00	1,167	194.0	973	1,325	1,314
712.50	1,460	246.0	655	1,980	3,139
716.00	3,342	291.0	8,179	10,160	5,279

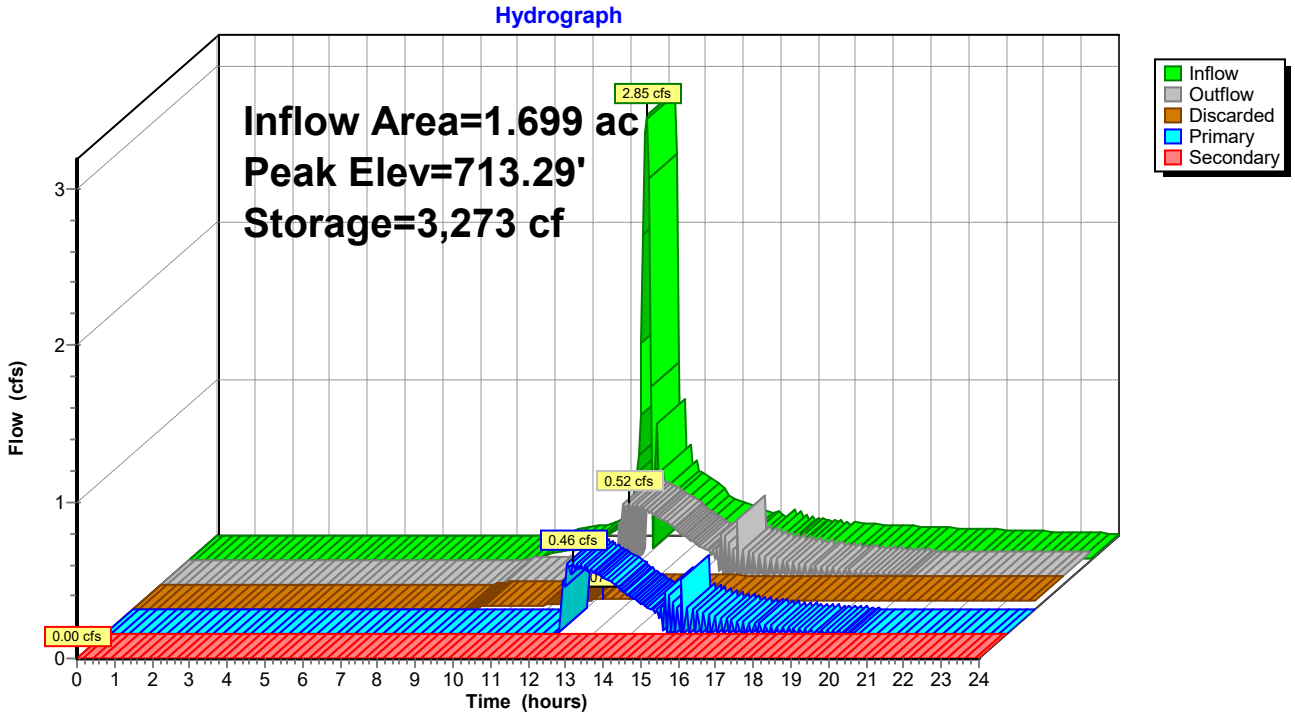
Device	Routing	Invert	Outlet Devices
#1	Discarded	710.50'	**1.630 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#2	Primary	712.50'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Secondary	715.00'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.07 cfs @ 12.51 hrs HW=713.29' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.07 cfs)

Primary OutFlow Max=0.41 cfs @ 12.46 hrs HW=713.28' TW=713.09' (Dynamic Tailwater)
↑—**2=Orifice/Grate** (Orifice Controls 0.41 cfs @ 2.08 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=710.50' TW=712.00' (Dynamic Tailwater)
↑—**3=Orifice/Grate** (Controls 0.00 cfs)

Pond B: Basin B



Summary for Pond C: Basin C

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=21)

Inflow Area = 1.127 ac, 64.63% Impervious, Inflow Depth > 1.87" for 2-Year event
Inflow = 2.79 cfs @ 12.13 hrs, Volume= 0.176 af
Outflow = 1.93 cfs @ 12.20 hrs, Volume= 0.165 af, Atten= 31%, Lag= 4.2 min
Discarded = 0.00 cfs @ 12.59 hrs, Volume= 0.005 af
Primary = 1.93 cfs @ 12.20 hrs, Volume= 0.160 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 713.30' @ 12.59 hrs Surf.Area= 1,902 sf Storage= 1,778 cf

Plug-Flow detention time= 97.7 min calculated for 0.165 af (94% of inflow)
Center-of-Mass det. time= 65.8 min (830.4 - 764.6)

Volume	Invert	Avail.Storage	Storage Description
#1	712.25'	8,517 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
712.25	1,485	200.0	0	0	1,485
712.50	1,586	203.0	384	384	1,594
715.50	2,917	241.0	6,654	7,038	3,092
716.00	3,000	250.0	1,479	8,517	3,465

Device	Routing	Invert	Outlet Devices
#1	Discarded	712.25'	**0.070 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#2	Primary	712.50'	**12.0" Vert. Orifice/Grate** C= 0.600
#3	Secondary	715.00'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Tertiary	715.50'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

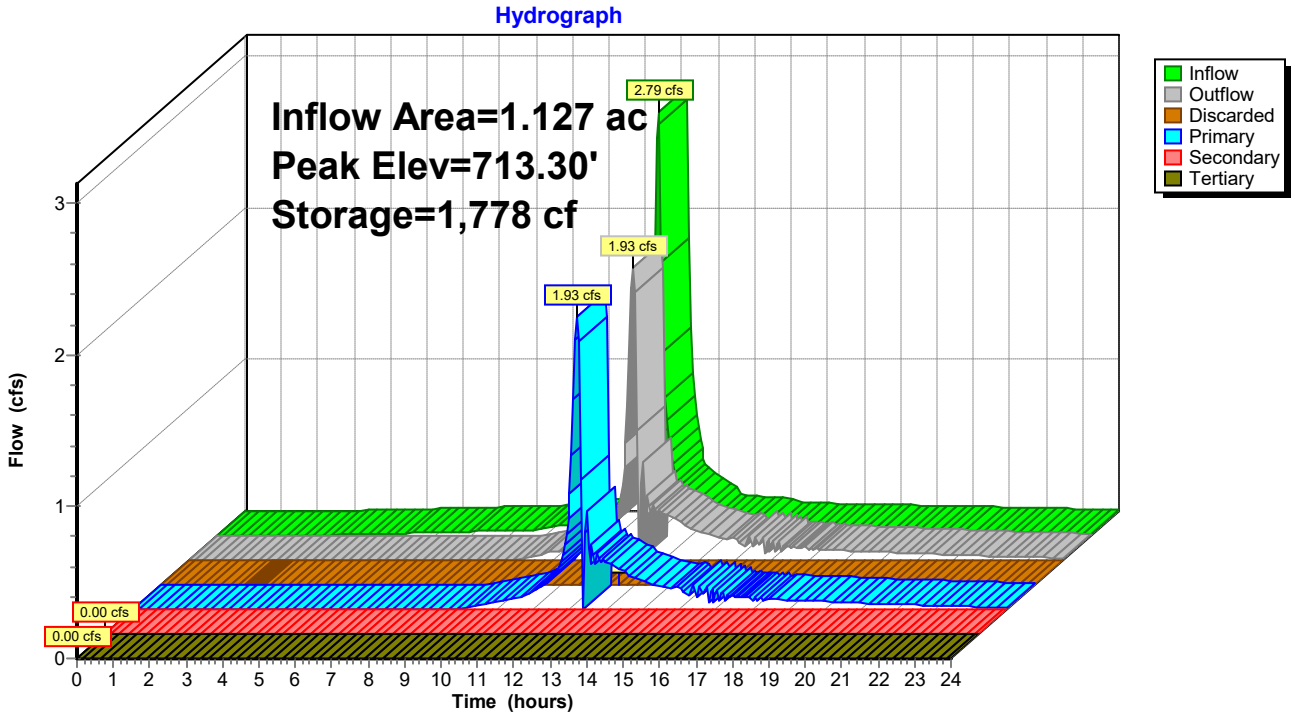
Discarded OutFlow Max=0.00 cfs @ 12.59 hrs HW=713.30' (Free Discharge)
1=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=1.92 cfs @ 12.20 hrs HW=713.27' TW=712.87' (Dynamic Tailwater)
2=Orifice/Grate (Orifice Controls 1.92 cfs @ 2.98 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=712.25' TW=712.00' (Dynamic Tailwater)
3=Orifice/Grate (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=712.25' TW=0.00' (Dynamic Tailwater)
4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond C: Basin C



Summary for Pond MH: Manhole

[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[80] Warning: Exceeded Pond B by 0.26' @ 23.95 hrs (0.03 cfs 0.085 af)

Inflow Area = 1.699 ac, 61.41% Impervious, Inflow Depth = 0.63" for 2-Year event
Inflow = 0.46 cfs @ 12.46 hrs, Volume= 0.089 af
Outflow = 0.48 cfs @ 12.45 hrs, Volume= 0.089 af, Atten= 0%, Lag= 0.0 min
Primary = 0.48 cfs @ 12.45 hrs, Volume= 0.089 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 713.10' @ 12.45 hrs Surf.Area= 7 sf Storage= 8 cf
Flood Elev= 715.00' Surf.Area= 7 sf Storage= 21 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.6 min (843.5 - 842.9)

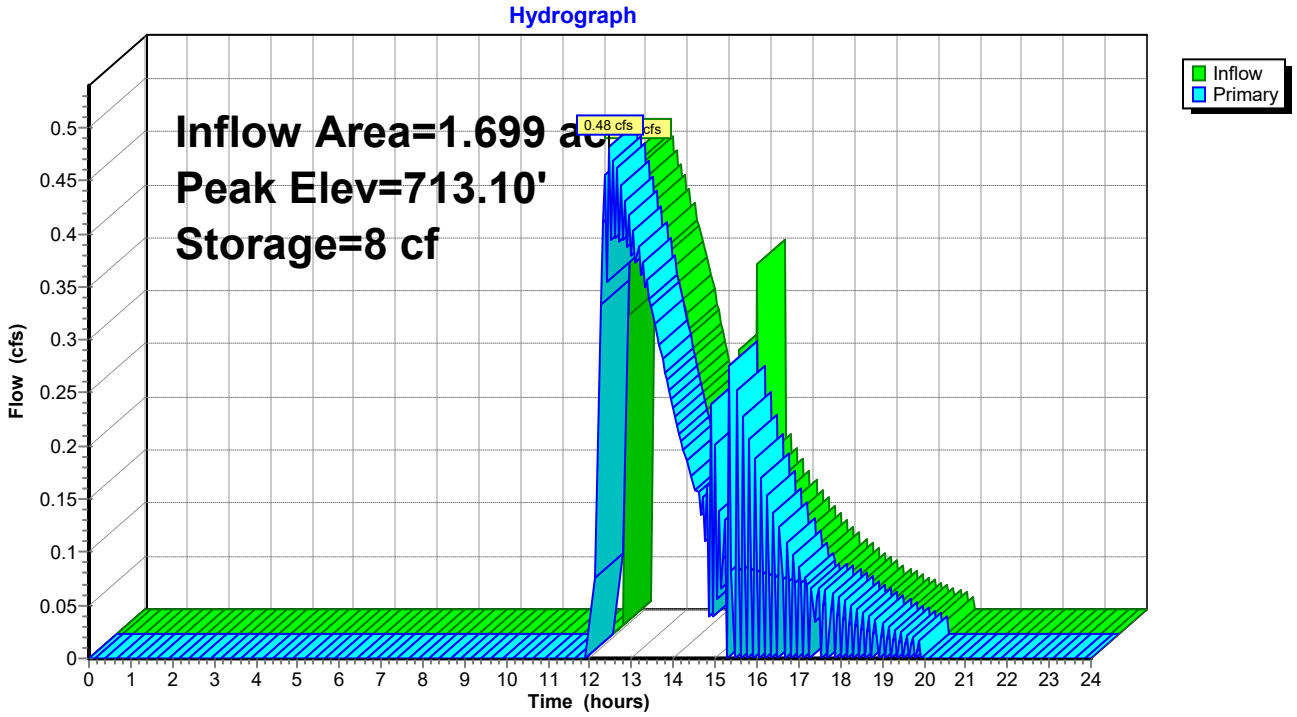
Volume	Invert	Avail.Storage	Storage Description
#1	712.00'	616 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
712.00	7	0	0
800.00	7	616	616

Device	Routing	Invert	Outlet Devices
#1	Primary	712.75'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.47 cfs @ 12.45 hrs HW=713.09' TW=0.00' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.47 cfs @ 1.99 fps)

Pond MH: Manhole

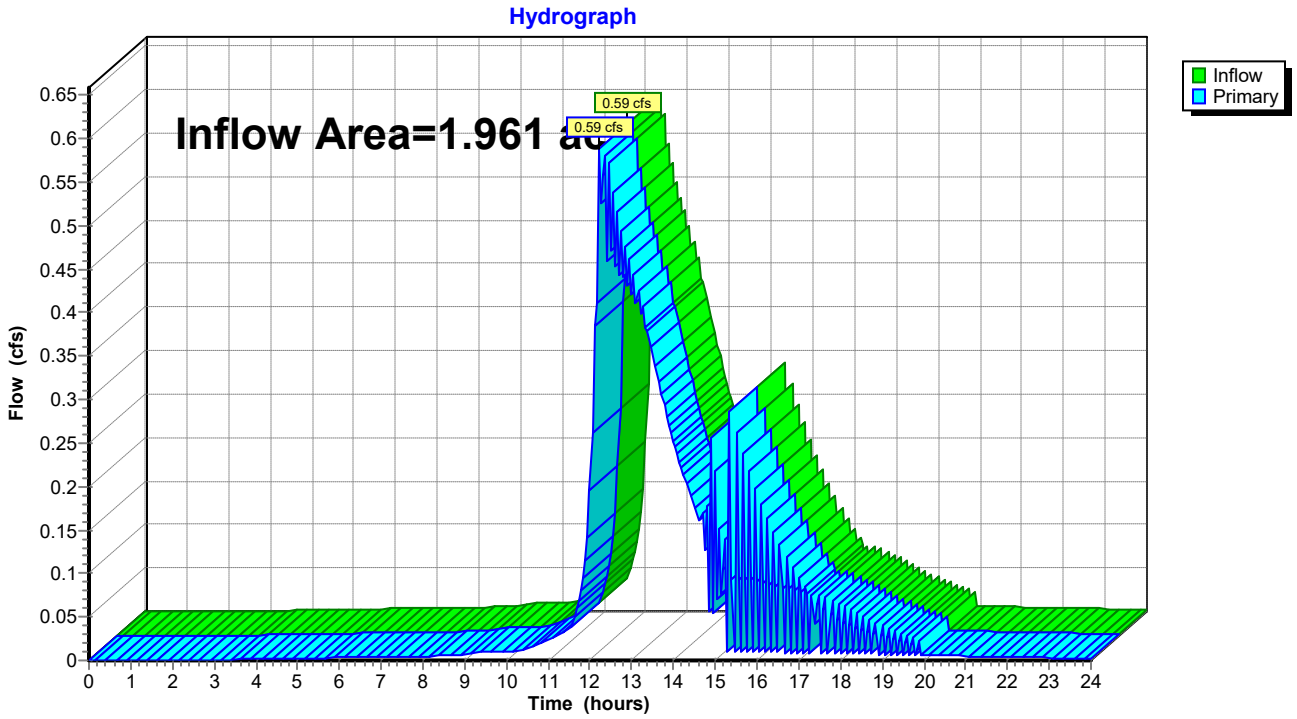


Summary for Link PRO: Proposed Outlet

Inflow Area = 1.961 ac, 58.34% Impervious, Inflow Depth > 0.71" for 2-Year event
Inflow = 0.59 cfs @ 12.21 hrs, Volume= 0.116 af
Primary = 0.59 cfs @ 12.21 hrs, Volume= 0.116 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link PRO: Proposed Outlet



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment P0: West Catch Runoff Area=15,339 sf 75.60% Impervious Runoff Depth>3.33"
Tc=6.0 min CN=WQ Runoff=1.56 cfs 0.098 af

Subcatchment P1: Center Catch Runoff Area=9,557 sf 22.14% Impervious Runoff Depth>1.67"
Tc=6.0 min CN=WQ Runoff=0.50 cfs 0.030 af

Subcatchment P2: East Catch Runoff Area=49,096 sf 64.63% Impervious Runoff Depth>2.99"
Tc=6.0 min CN=WQ Runoff=4.51 cfs 0.280 af

Subcatchment P3: South Catch Runoff Area=11,423 sf 38.42% Impervious Runoff Depth>2.17"
Tc=6.0 min CN=WQ Runoff=0.77 cfs 0.047 af

Pond A: Basin A Peak Elev=713.94' Storage=1,170 cf Inflow=1.56 cfs 0.098 af
Discarded=0.07 cfs 0.059 af Primary=0.97 cfs 0.039 af Tertiary=0.00 cfs 0.000 af Outflow=1.03 cfs 0.098 af

Pond B: Basin B Peak Elev=713.94' Storage=4,566 cf Inflow=3.55 cfs 0.333 af
Discarded=0.08 cfs 0.076 af Primary=0.81 cfs 0.211 af Secondary=0.00 cfs 0.000 af Outflow=0.89 cfs 0.287 af

Pond C: Basin C Peak Elev=713.97' Storage=3,151 cf Inflow=4.51 cfs 0.280 af
s 0.005 af Primary=2.08 cfs 0.264 af Secondary=0.00 cfs 0.000 af Tertiary=0.00 cfs 0.000 af Outflow=2.08 cfs 0.269 af

Pond MH: Manhole Peak Elev=713.21' Storage=8 cf Inflow=0.81 cfs 0.211 af
Outflow=0.81 cfs 0.211 af

Link PRO: Proposed Outlet Inflow=1.38 cfs 0.258 af
Primary=1.38 cfs 0.258 af

Total Runoff Area = 1.961 ac Runoff Volume = 0.456 af Average Runoff Depth = 2.79"
41.66% Pervious = 0.817 ac 58.34% Impervious = 1.144 ac

Summary for Subcatchment P0: West Catch

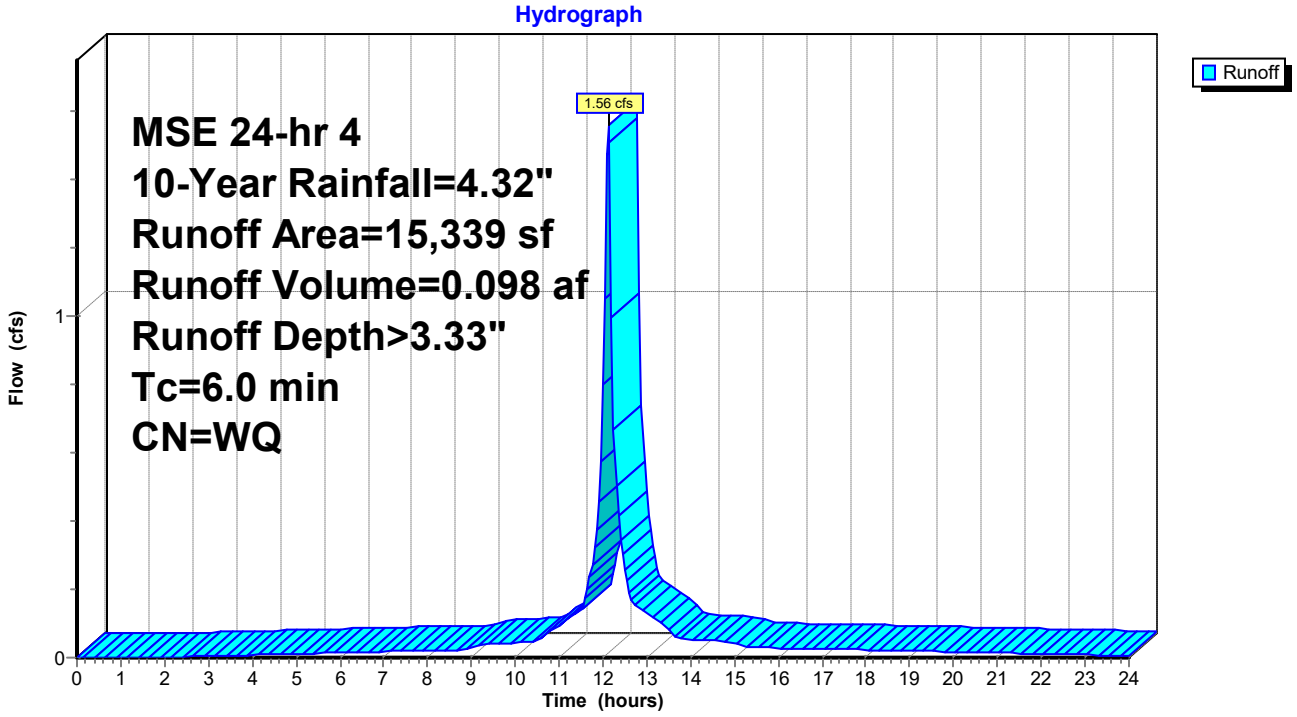
Runoff = 1.56 cfs @ 12.13 hrs, Volume= 0.098 af, Depth> 3.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=4.32"

Area (sf)	CN	Description
0	98	Roofs, HSG B
11,080	98	Paved parking, HSG B
140	98	Unconnected pavement, HSG B
3,743	61	>75% Grass cover, Good, HSG B
376	98	Water Surface, HSG B
15,339		Weighted Average
3,743		24.40% Pervious Area
11,596		75.60% Impervious Area
140		1.21% Unconnected

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

Subcatchment P0: West Catch



Summary for Subcatchment P1: Center Catch

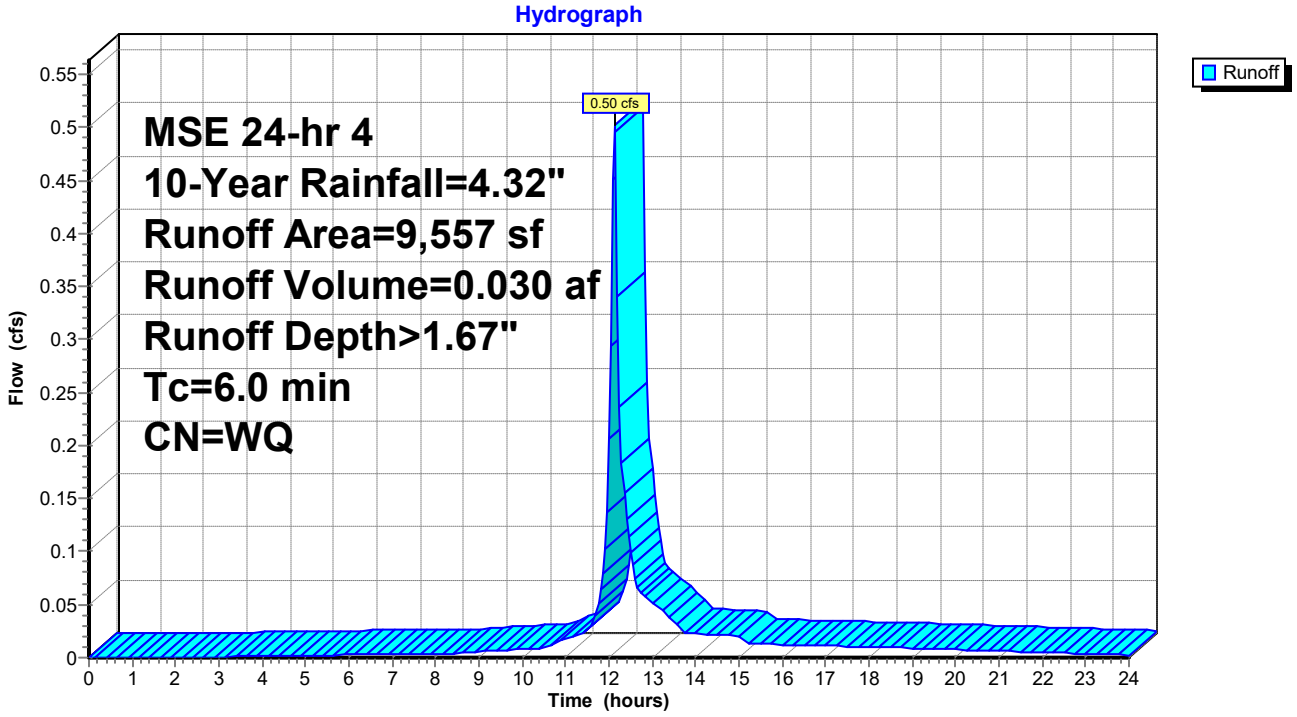
Runoff = 0.50 cfs @ 12.14 hrs, Volume= 0.030 af, Depth> 1.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=4.32"

Area (sf)	CN	Description
0	98	Roofs, HSG B
1,034	98	Paved parking, HSG B
290	98	Unconnected pavement, HSG B
7,441	61	>75% Grass cover, Good, HSG B
792	98	Water Surface, HSG B
9,557		Weighted Average
7,441		77.86% Pervious Area
2,116		22.14% Impervious Area
290		13.71% Unconnected

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

Subcatchment P1: Center Catch



Summary for Subcatchment P2: East Catch

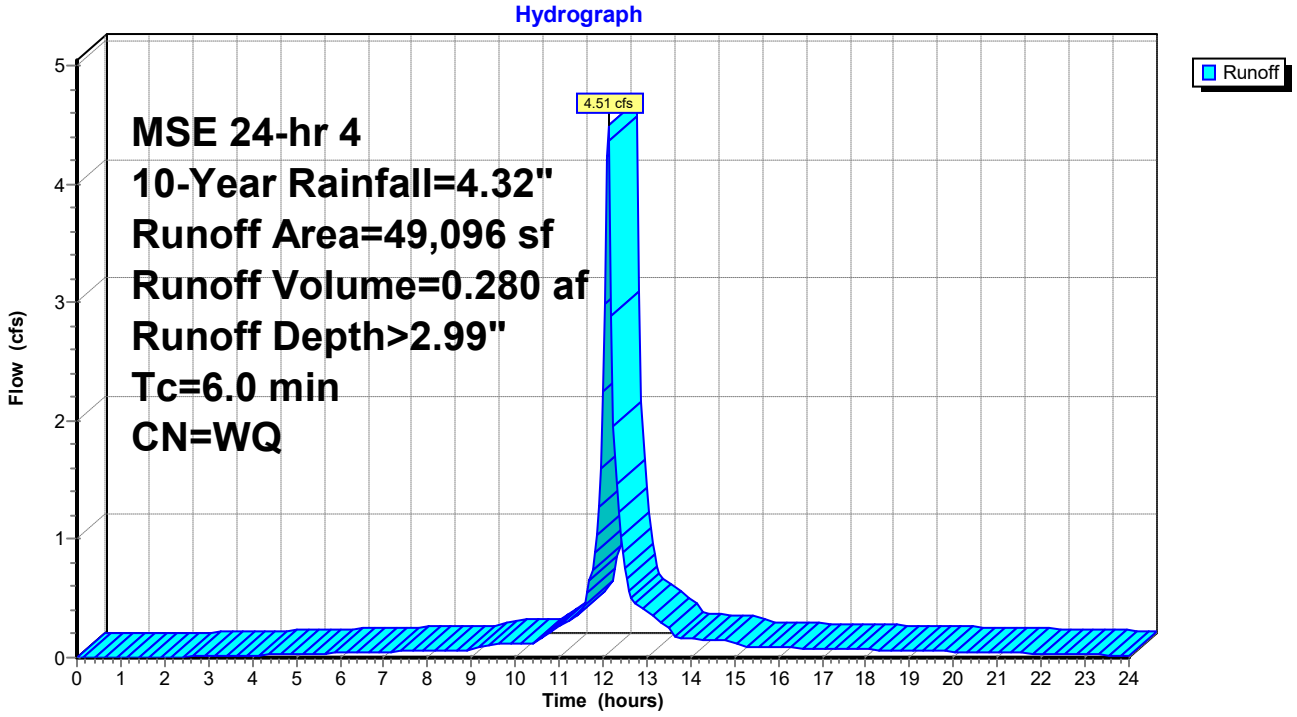
Runoff = 4.51 cfs @ 12.13 hrs, Volume= 0.280 af, Depth> 2.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=4.32"

Area (sf)	CN	Description
15,992	98	Roofs, HSG B
14,149	98	Paved parking, HSG B
104	98	Unconnected pavement, HSG B
17,366	61	>75% Grass cover, Good, HSG B
1,485	98	Water Surface, HSG B
49,096		Weighted Average
17,366		35.37% Pervious Area
31,730		64.63% Impervious Area
104		0.33% Unconnected

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

Subcatchment P2: East Catch



Summary for Subcatchment P3: South Catch

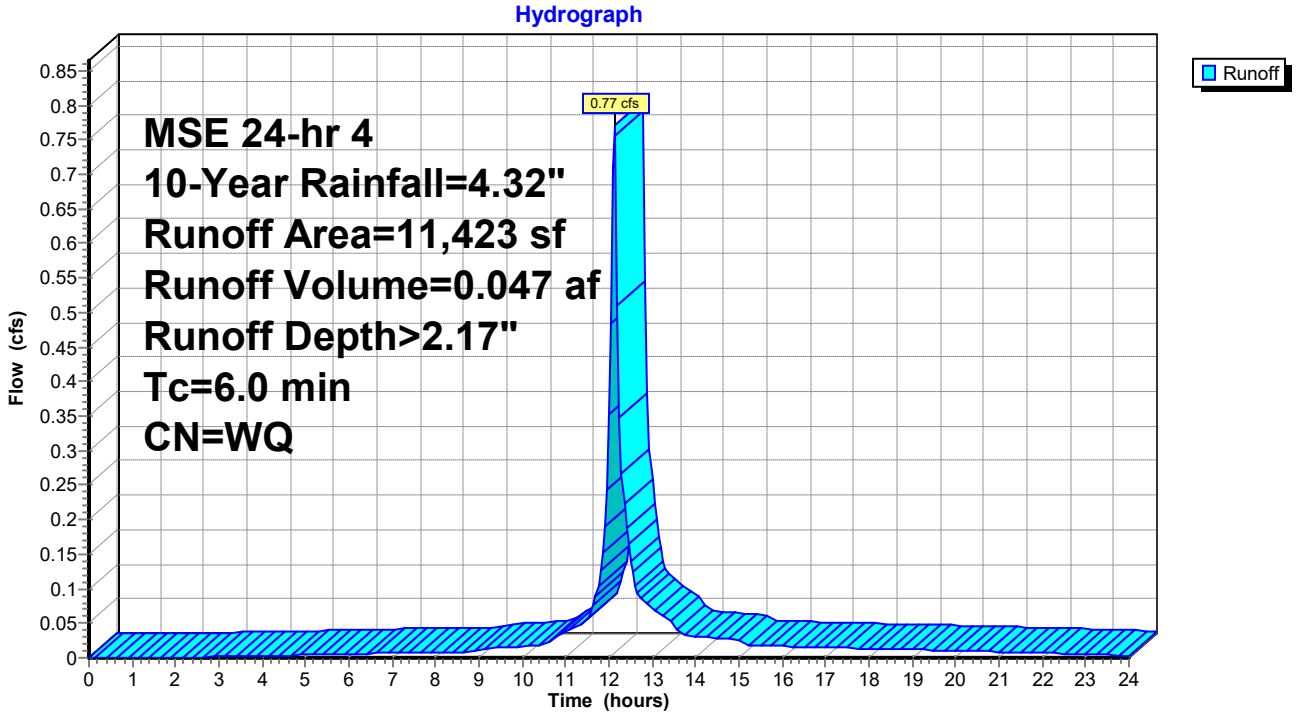
Runoff = 0.77 cfs @ 12.13 hrs, Volume= 0.047 af, Depth> 2.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=4.32"

Area (sf)	CN	Description
2,900	98	Paved parking, HSG B
7,034	61	>75% Grass cover, Good, HSG B
1,489	98	Unconnected pavement, HSG B
11,423		Weighted Average
7,034		61.58% Pervious Area
4,389		38.42% Impervious Area
1,489		33.93% Unconnected

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

Subcatchment P3: South Catch



Summary for Pond A: Basin A

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=18)

Inflow Area = 0.352 ac, 75.60% Impervious, Inflow Depth > 3.33" for 10-Year event
Inflow = 1.56 cfs @ 12.13 hrs, Volume= 0.098 af
Outflow = 1.03 cfs @ 12.13 hrs, Volume= 0.098 af, Atten= 34%, Lag= 0.0 min
Discarded = 0.07 cfs @ 12.59 hrs, Volume= 0.059 af
Primary = 0.97 cfs @ 12.13 hrs, Volume= 0.039 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 713.94' @ 12.59 hrs Surf.Area= 860 sf Storage= 1,170 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 72.7 min (829.4 - 756.6)

Volume	Invert	Avail.Storage	Storage Description
#1	712.00'	4,058 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
712.00	376	111.0	0	0	376
714.00	877	139.0	1,218	1,218	987
715.00	2,457	287.0	1,601	2,819	6,008
715.50	2,500	300.0	1,239	4,058	6,633

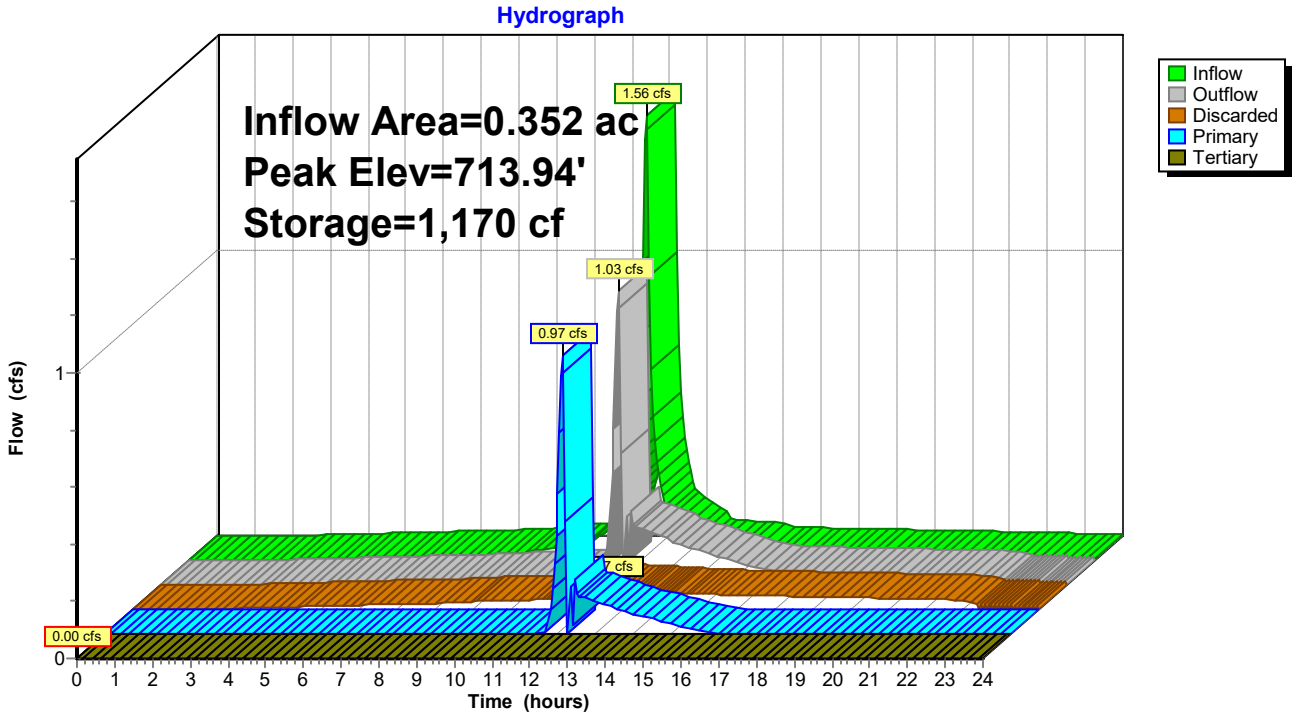
Device	Routing	Invert	Outlet Devices
#1	Discarded	712.00'	**3.600 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#2	Tertiary	715.00'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Primary	712.75'	**15.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 712.75' / 712.50' S= 0.0056 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf

Discarded OutFlow Max=0.07 cfs @ 12.59 hrs HW=713.94' (Free Discharge)
1=Exfiltration (Controls 0.07 cfs)

Primary OutFlow Max=0.00 cfs @ 12.13 hrs HW=713.38' TW=713.43' (Dynamic Tailwater)
3=Culvert (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=712.00' TW=0.00' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond A: Basin A



Summary for Pond B: Basin B

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=26)
[80] Warning: Exceeded Pond A by 0.18' @ 19.05 hrs (0.00 cfs 0.034 af)
[80] Warning: Exceeded Pond C by 0.01' @ 12.20 hrs (0.42 cfs 0.003 af)

Inflow Area = 1.699 ac, 61.41% Impervious, Inflow Depth > 2.35" for 10-Year event
Inflow = 3.55 cfs @ 12.13 hrs, Volume= 0.333 af
Outflow = 0.89 cfs @ 12.54 hrs, Volume= 0.287 af, Atten= 75%, Lag= 24.7 min
Discarded = 0.08 cfs @ 12.54 hrs, Volume= 0.076 af
Primary = 0.81 cfs @ 12.54 hrs, Volume= 0.211 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 713.94' @ 12.54 hrs Surf.Area= 2,143 sf Storage= 4,566 cf
Flood Elev= 715.25' Surf.Area= 2,874 sf Storage= 7,831 cf

Plug-Flow detention time= 124.9 min calculated for 0.286 af (86% of inflow)
Center-of-Mass det. time= 69.1 min (889.5 - 820.4)

Volume	Invert	Avail.Storage	Storage Description
#1	710.50'	10,160 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
710.50	617	172.0	0	0	617
711.00	792	180.0	351	351	858
712.00	1,167	194.0	973	1,325	1,314
712.50	1,460	246.0	655	1,980	3,139
716.00	3,342	291.0	8,179	10,160	5,279

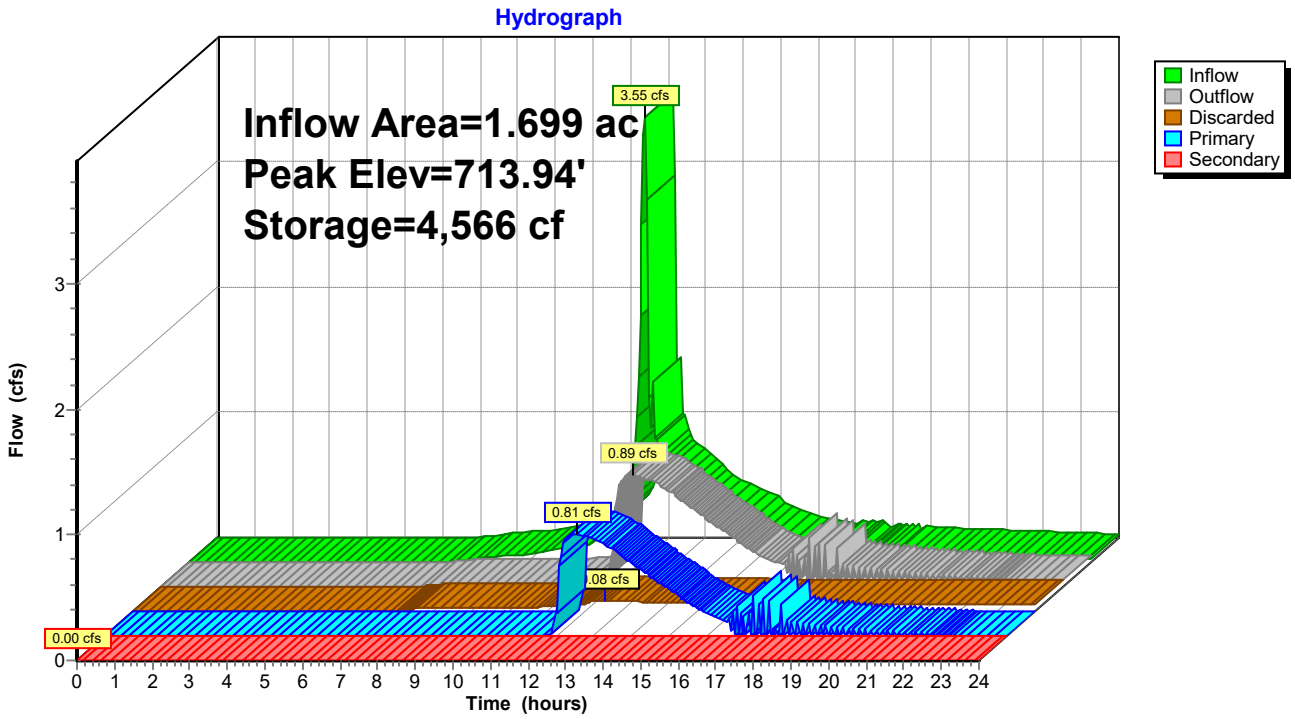
Device	Routing	Invert	Outlet Devices
#1	Discarded	710.50'	**1.630 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#2	Primary	712.50'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Secondary	715.00'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.08 cfs @ 12.54 hrs HW=713.94' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.08 cfs)

Primary OutFlow Max=0.81 cfs @ 12.54 hrs HW=713.94' TW=713.21' (Dynamic Tailwater)
↑—**2=Orifice/Grate** (Orifice Controls 0.81 cfs @ 4.13 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=710.50' TW=712.00' (Dynamic Tailwater)
↑—**3=Orifice/Grate** (Controls 0.00 cfs)

Pond B: Basin B



Summary for Pond C: Basin C

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=19)

Inflow Area = 1.127 ac, 64.63% Impervious, Inflow Depth > 2.99" for 10-Year event
Inflow = 4.51 cfs @ 12.13 hrs, Volume= 0.280 af
Outflow = 2.08 cfs @ 12.12 hrs, Volume= 0.269 af, Atten= 54%, Lag= 0.0 min
Discarded = 0.00 cfs @ 12.55 hrs, Volume= 0.005 af
Primary = 2.08 cfs @ 12.12 hrs, Volume= 0.264 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 713.97' @ 12.55 hrs Surf.Area= 2,189 sf Storage= 3,151 cf

Plug-Flow detention time= 90.9 min calculated for 0.269 af (96% of inflow)
Center-of-Mass det. time= 67.7 min (829.3 - 761.6)

Volume	Invert	Avail.Storage	Storage Description
#1	712.25'	8,517 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
712.25	1,485	200.0	0	0	1,485
712.50	1,586	203.0	384	384	1,594
715.50	2,917	241.0	6,654	7,038	3,092
716.00	3,000	250.0	1,479	8,517	3,465

Device	Routing	Invert	Outlet Devices
#1	Discarded	712.25'	**0.070 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#2	Primary	712.50'	**12.0" Vert. Orifice/Grate** C= 0.600
#3	Secondary	715.00'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Tertiary	715.50'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

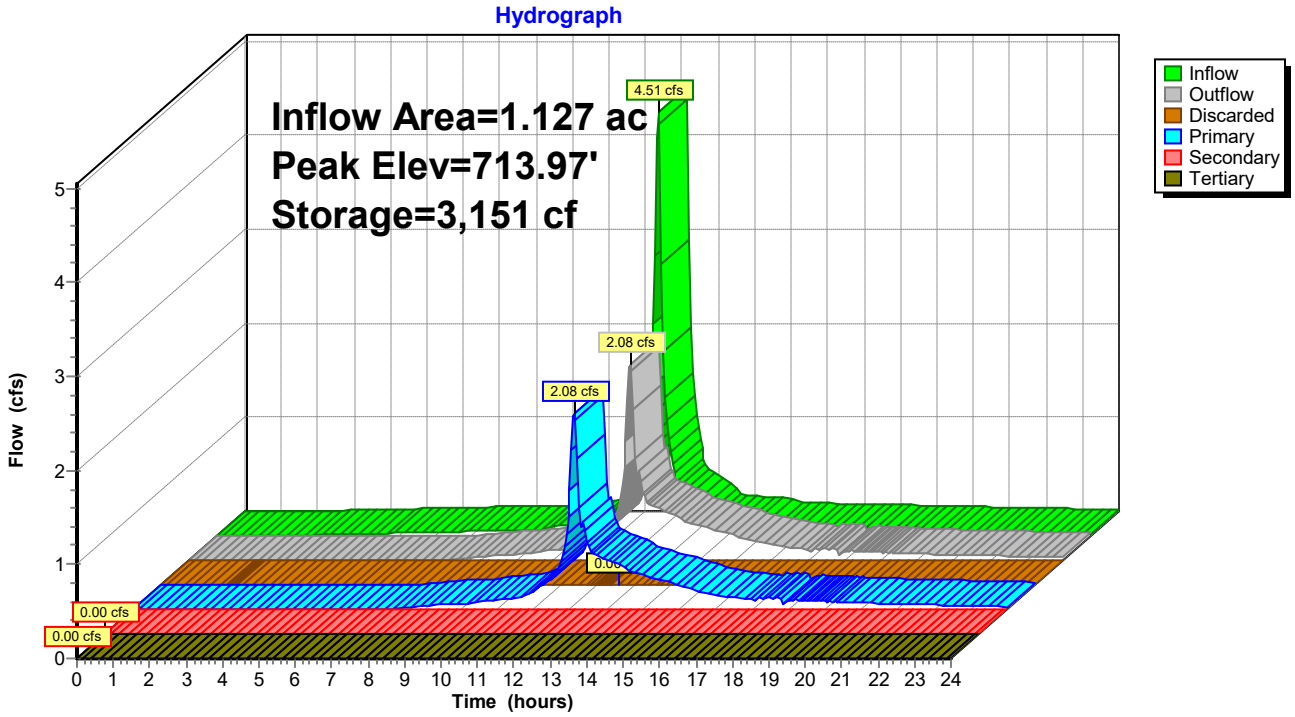
Discarded OutFlow Max=0.00 cfs @ 12.55 hrs HW=713.97' (Free Discharge)
1=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.85 cfs @ 12.12 hrs HW=713.45' TW=713.40' (Dynamic Tailwater)
2=Orifice/Grate (Orifice Controls 0.85 cfs @ 1.10 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=712.25' TW=712.00' (Dynamic Tailwater)
3=Orifice/Grate (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=712.25' TW=0.00' (Dynamic Tailwater)
4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond C: Basin C



Summary for Pond MH: Manhole

[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[80] Warning: Exceeded Pond B by 0.21' @ 22.40 hrs (0.25 cfs 0.094 af)

Inflow Area = 1.699 ac, 61.41% Impervious, Inflow Depth = 1.49" for 10-Year event
Inflow = 0.81 cfs @ 12.54 hrs, Volume= 0.211 af
Outflow = 0.81 cfs @ 12.55 hrs, Volume= 0.211 af, Atten= 0%, Lag= 0.5 min
Primary = 0.81 cfs @ 12.55 hrs, Volume= 0.211 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 713.21' @ 12.55 hrs Surf.Area= 7 sf Storage= 8 cf
Flood Elev= 715.00' Surf.Area= 7 sf Storage= 21 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.3 min (857.8 - 857.6)

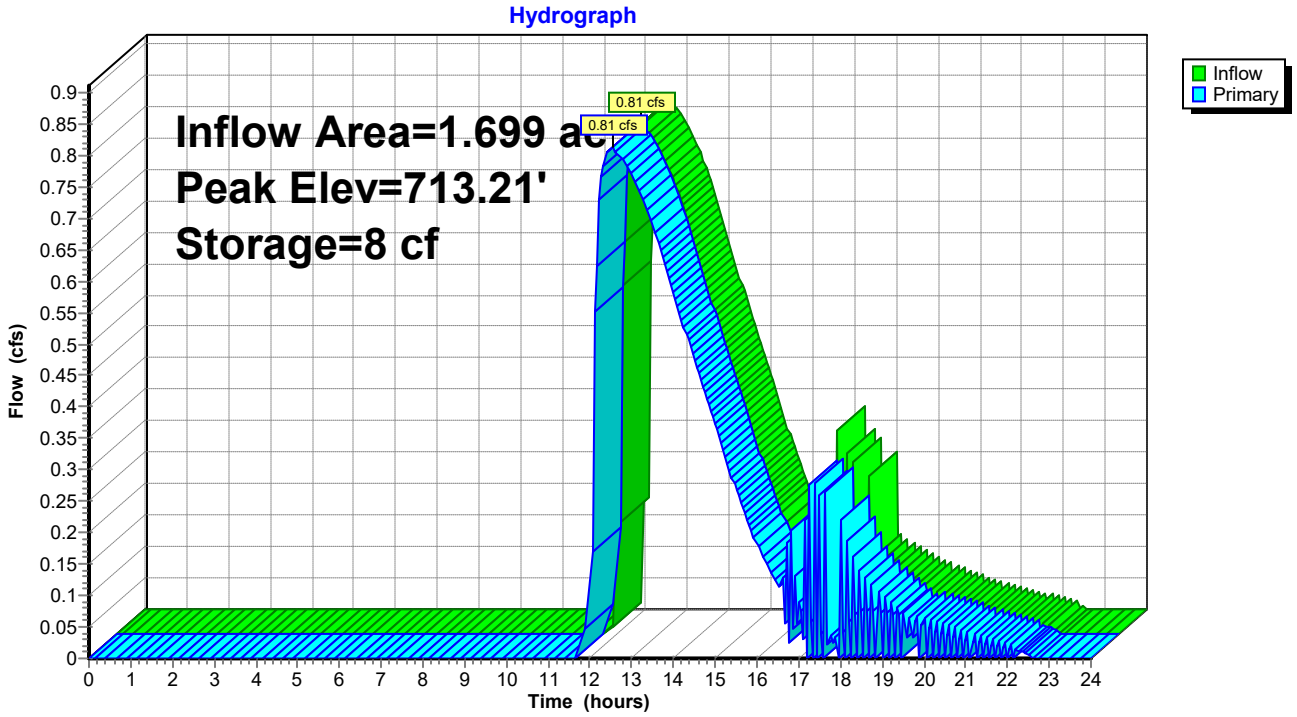
Volume	Invert	Avail.Storage	Storage Description
#1	712.00'	616 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
712.00	7	0	0
800.00	7	616	616

Device	Routing	Invert	Outlet Devices
#1	Primary	712.75'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.81 cfs @ 12.55 hrs HW=713.21' TW=0.00' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.81 cfs @ 2.31 fps)

Pond MH: Manhole

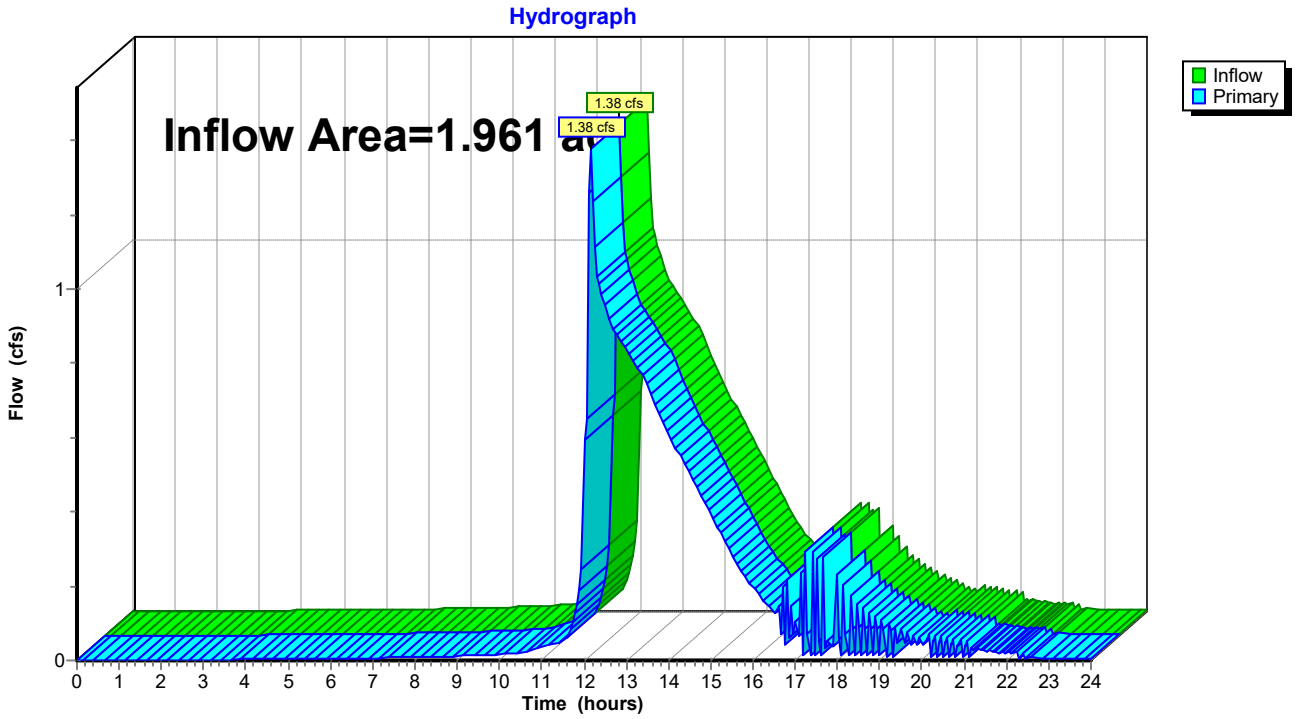


Summary for Link PRO: Proposed Outlet

Inflow Area = 1.961 ac, 58.34% Impervious, Inflow Depth > 1.58" for 10-Year event
Inflow = 1.38 cfs @ 12.15 hrs, Volume= 0.258 af
Primary = 1.38 cfs @ 12.15 hrs, Volume= 0.258 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link PRO: Proposed Outlet



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment P0: West Catch Runoff Area=15,339 sf 75.60% Impervious Runoff Depth>4.27"
Tc=6.0 min CN=WQ Runoff=2.01 cfs 0.125 af

Subcatchment P1: Center Catch Runoff Area=9,557 sf 22.14% Impervious Runoff Depth>2.38"
Tc=6.0 min CN=WQ Runoff=0.74 cfs 0.043 af

Subcatchment P2: East Catch Runoff Area=49,096 sf 64.63% Impervious Runoff Depth>3.88"
Tc=6.0 min CN=WQ Runoff=5.89 cfs 0.364 af

Subcatchment P3: South Catch Runoff Area=11,423 sf 38.42% Impervious Runoff Depth>2.95"
Tc=6.0 min CN=WQ Runoff=1.07 cfs 0.065 af

Pond A: Basin A Peak Elev=714.41' Storage=1,687 cf Inflow=2.01 cfs 0.125 af
Discarded=0.12 cfs 0.073 af Primary=1.12 cfs 0.053 af Tertiary=0.00 cfs 0.000 af Outflow=1.19 cfs 0.125 af

Pond B: Basin B Peak Elev=714.41' Storage=5,623 cf Inflow=4.02 cfs 0.443 af
Discarded=0.09 cfs 0.083 af Primary=1.01 cfs 0.312 af Secondary=0.00 cfs 0.000 af Outflow=1.10 cfs 0.394 af

Pond C: Basin C Peak Elev=714.46' Storage=4,274 cf Inflow=5.89 cfs 0.364 af
s 0.005 af Primary=2.19 cfs 0.346 af Secondary=0.00 cfs 0.000 af Tertiary=0.00 cfs 0.000 af Outflow=2.19 cfs 0.352 af

Pond MH: Manhole Peak Elev=713.28' Storage=9 cf Inflow=1.01 cfs 0.312 af
Outflow=1.03 cfs 0.312 af

Link PRO: Proposed Outlet Inflow=1.85 cfs 0.376 af
Primary=1.85 cfs 0.376 af

Total Runoff Area = 1.961 ac Runoff Volume = 0.598 af Average Runoff Depth = 3.66"
41.66% Pervious = 0.817 ac 58.34% Impervious = 1.144 ac

Summary for Subcatchment P0: West Catch

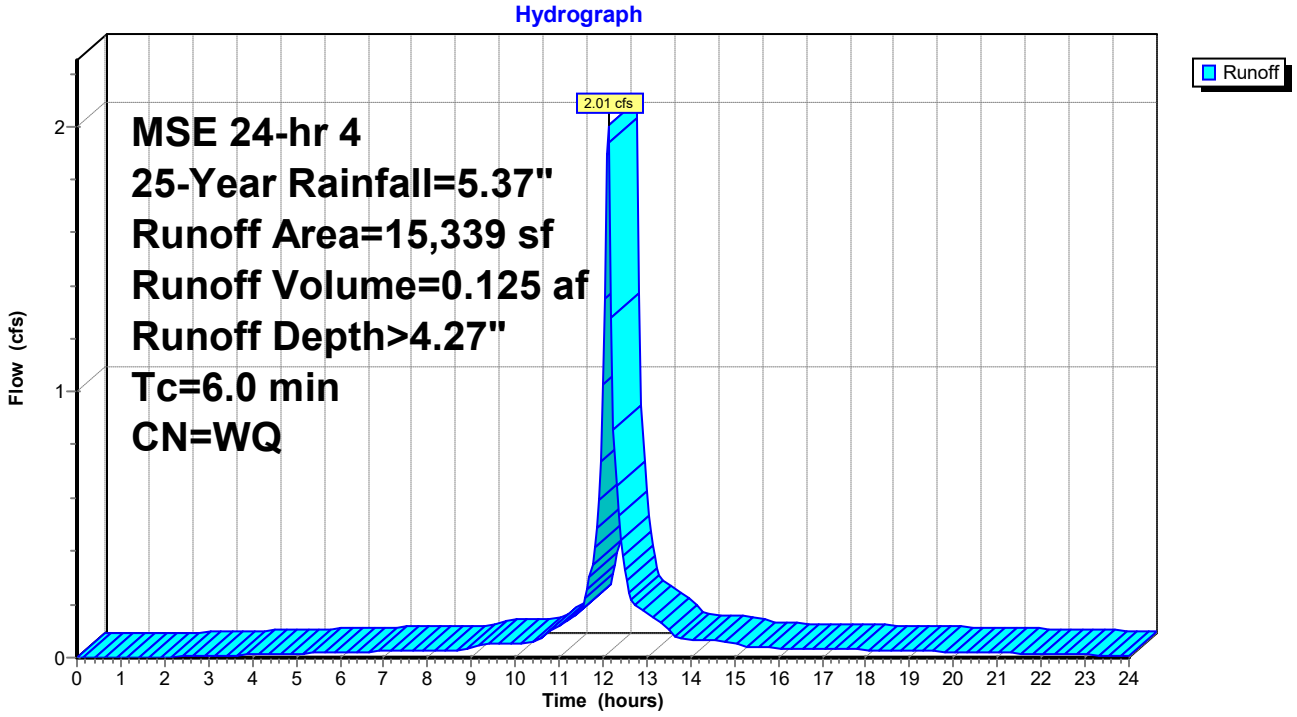
Runoff = 2.01 cfs @ 12.13 hrs, Volume= 0.125 af, Depth> 4.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 25-Year Rainfall=5.37"

Area (sf)	CN	Description
0	98	Roofs, HSG B
11,080	98	Paved parking, HSG B
140	98	Unconnected pavement, HSG B
3,743	61	>75% Grass cover, Good, HSG B
376	98	Water Surface, HSG B
15,339		Weighted Average
3,743		24.40% Pervious Area
11,596		75.60% Impervious Area
140		1.21% Unconnected

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

Subcatchment P0: West Catch



Summary for Subcatchment P1: Center Catch

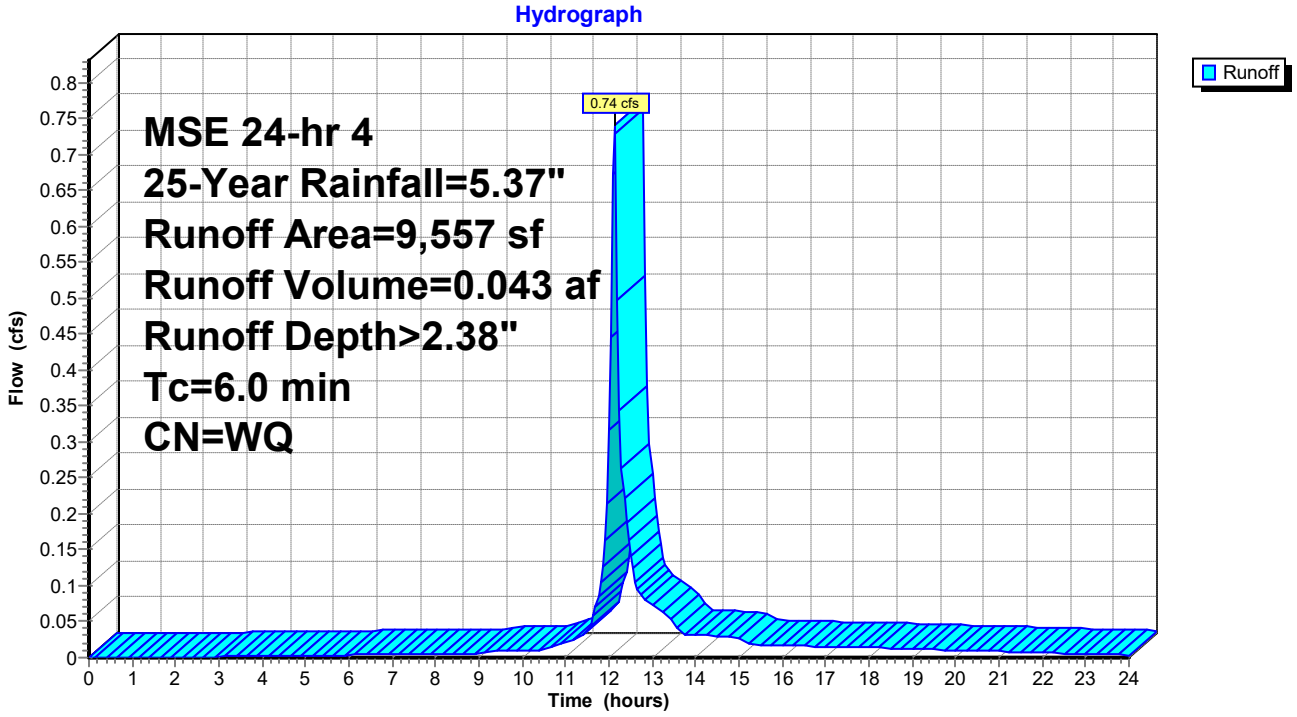
Runoff = 0.74 cfs @ 12.13 hrs, Volume= 0.043 af, Depth> 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 25-Year Rainfall=5.37"

Area (sf)	CN	Description
0	98	Roofs, HSG B
1,034	98	Paved parking, HSG B
290	98	Unconnected pavement, HSG B
7,441	61	>75% Grass cover, Good, HSG B
792	98	Water Surface, HSG B
9,557		Weighted Average
7,441		77.86% Pervious Area
2,116		22.14% Impervious Area
290		13.71% Unconnected

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

Subcatchment P1: Center Catch



Summary for Subcatchment P2: East Catch

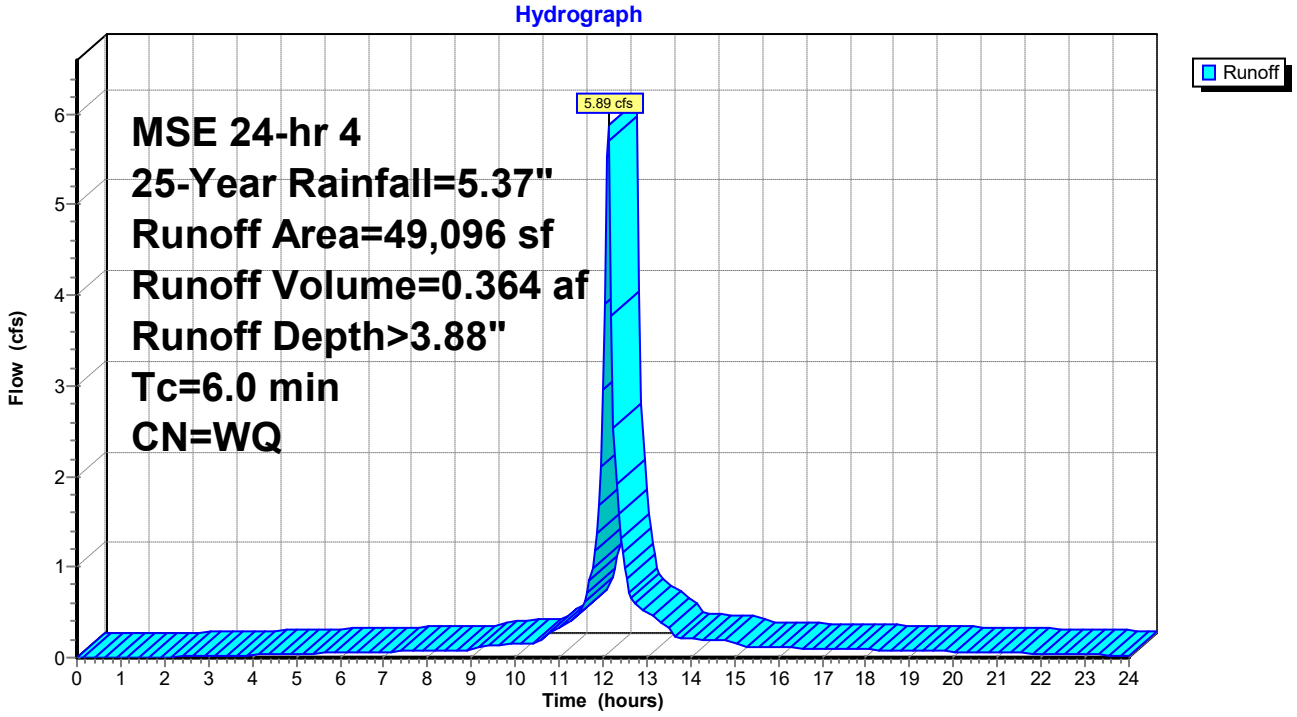
Runoff = 5.89 cfs @ 12.13 hrs, Volume= 0.364 af, Depth> 3.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 25-Year Rainfall=5.37"

Area (sf)	CN	Description
15,992	98	Roofs, HSG B
14,149	98	Paved parking, HSG B
104	98	Unconnected pavement, HSG B
17,366	61	>75% Grass cover, Good, HSG B
1,485	98	Water Surface, HSG B
49,096		Weighted Average
17,366		35.37% Pervious Area
31,730		64.63% Impervious Area
104		0.33% Unconnected

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

Subcatchment P2: East Catch



Summary for Subcatchment P3: South Catch

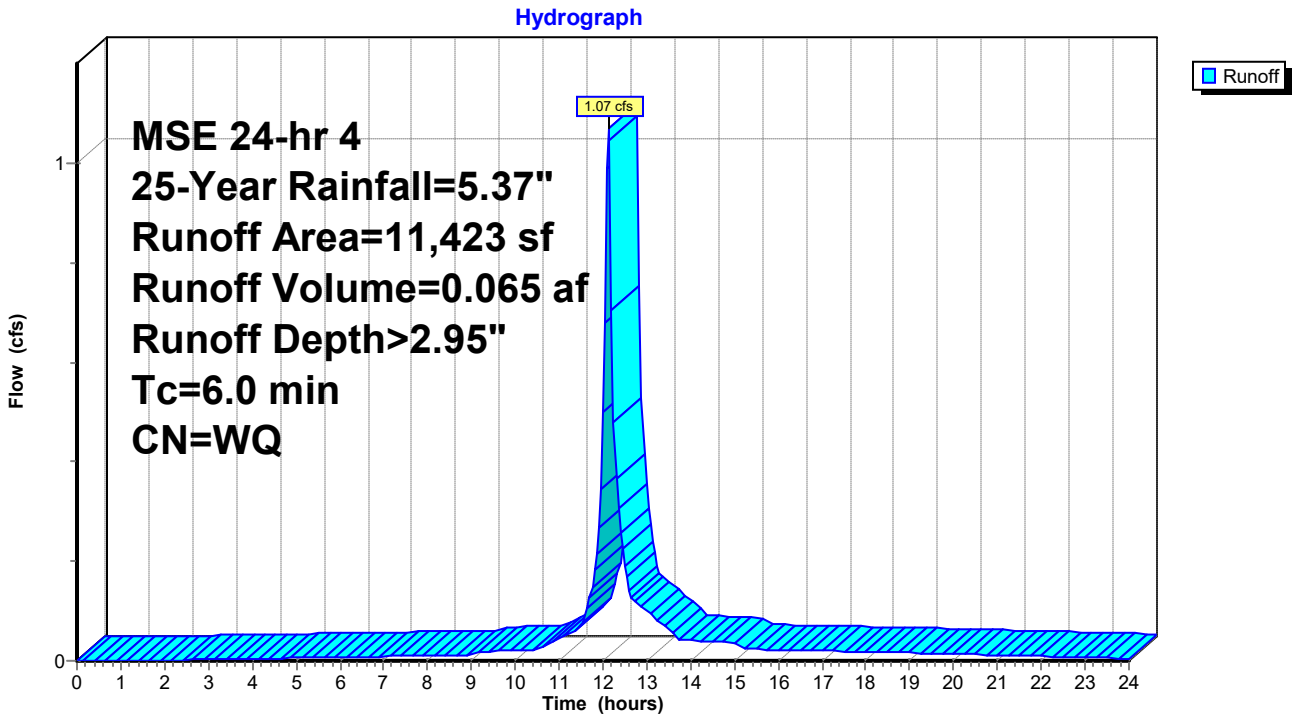
Runoff = 1.07 cfs @ 12.13 hrs, Volume= 0.065 af, Depth> 2.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 25-Year Rainfall=5.37"

Area (sf)	CN	Description
2,900	98	Paved parking, HSG B
7,034	61	>75% Grass cover, Good, HSG B
1,489	98	Unconnected pavement, HSG B
11,423		Weighted Average
7,034		61.58% Pervious Area
4,389		38.42% Impervious Area
1,489		33.93% Unconnected

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

Subcatchment P3: South Catch



Summary for Pond A: Basin A

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=7)

Inflow Area = 0.352 ac, 75.60% Impervious, Inflow Depth > 4.27" for 25-Year event
Inflow = 2.01 cfs @ 12.13 hrs, Volume= 0.125 af
Outflow = 1.19 cfs @ 12.13 hrs, Volume= 0.125 af, Atten= 41%, Lag= 0.0 min
Discarded = 0.12 cfs @ 12.61 hrs, Volume= 0.073 af
Primary = 1.12 cfs @ 12.13 hrs, Volume= 0.053 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 714.41' @ 12.61 hrs Surf.Area= 1,430 sf Storage= 1,687 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 80.4 min (834.9 - 754.5)

Volume	Invert	Avail.Storage	Storage Description
#1	712.00'	4,058 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
712.00	376	111.0	0	0	376
714.00	877	139.0	1,218	1,218	987
715.00	2,457	287.0	1,601	2,819	6,008
715.50	2,500	300.0	1,239	4,058	6,633

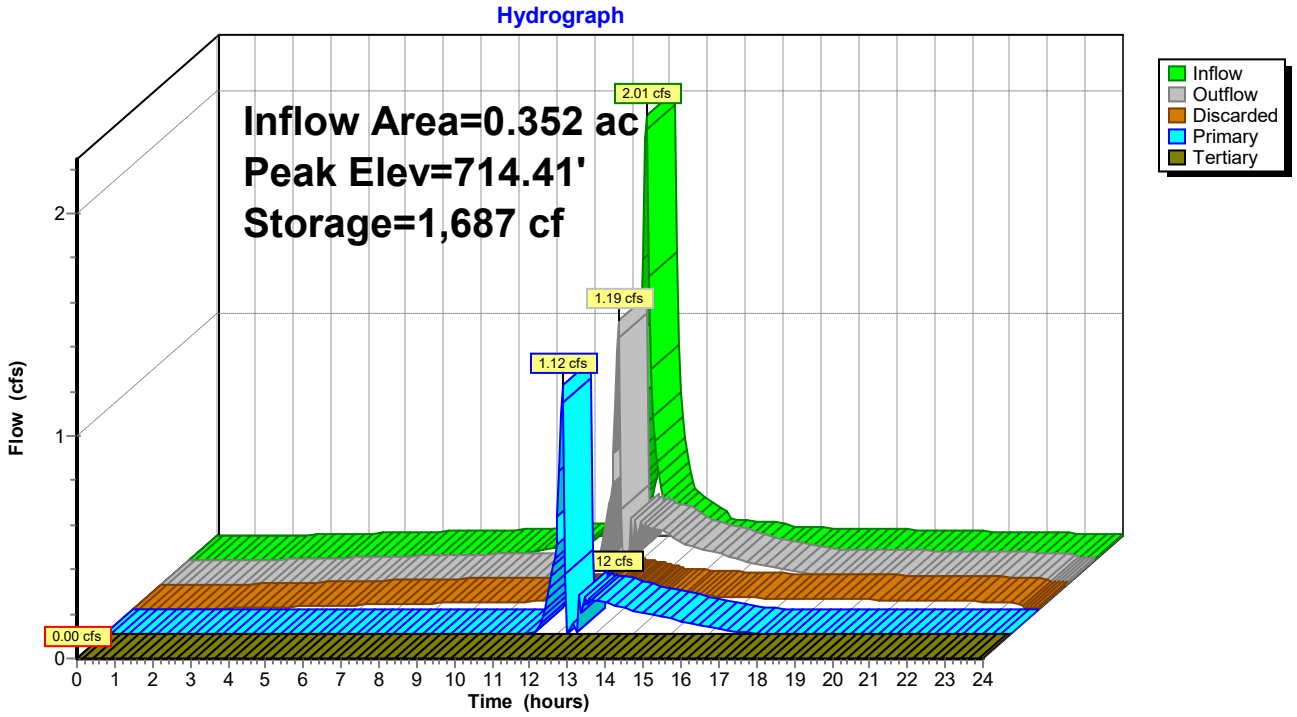
Device	Routing	Invert	Outlet Devices
#1	Discarded	712.00'	**3.600 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#2	Tertiary	715.00'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Primary	712.75'	**15.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 712.75' / 712.50' S= 0.0056 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf

Discarded OutFlow Max=0.12 cfs @ 12.61 hrs HW=714.41' (Free Discharge)
1=Exfiltration (Controls 0.12 cfs)

Primary OutFlow Max=0.00 cfs @ 12.13 hrs HW=713.68' TW=713.84' (Dynamic Tailwater)
3=Culvert (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=712.00' TW=0.00' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond A: Basin A



Summary for Pond B: Basin B

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=24)
[80] Warning: Exceeded Pond A by 0.20' @ 20.50 hrs (0.00 cfs 0.054 af)

Inflow Area = 1.699 ac, 61.41% Impervious, Inflow Depth > 3.13" for 25-Year event
Inflow = 4.02 cfs @ 12.14 hrs, Volume= 0.443 af
Outflow = 1.10 cfs @ 12.50 hrs, Volume= 0.394 af, Atten= 73%, Lag= 21.8 min
Discarded = 0.09 cfs @ 12.56 hrs, Volume= 0.083 af
Primary = 1.01 cfs @ 12.50 hrs, Volume= 0.312 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 714.41' @ 12.56 hrs Surf.Area= 2,392 sf Storage= 5,623 cf
Flood Elev= 715.25' Surf.Area= 2,874 sf Storage= 7,831 cf

Plug-Flow detention time= 113.5 min calculated for 0.393 af (89% of inflow)
Center-of-Mass det. time= 67.0 min (888.7 - 821.7)

Volume	Invert	Avail.Storage	Storage Description
#1	710.50'	10,160 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
710.50	617	172.0	0	0	617
711.00	792	180.0	351	351	858
712.00	1,167	194.0	973	1,325	1,314
712.50	1,460	246.0	655	1,980	3,139
716.00	3,342	291.0	8,179	10,160	5,279

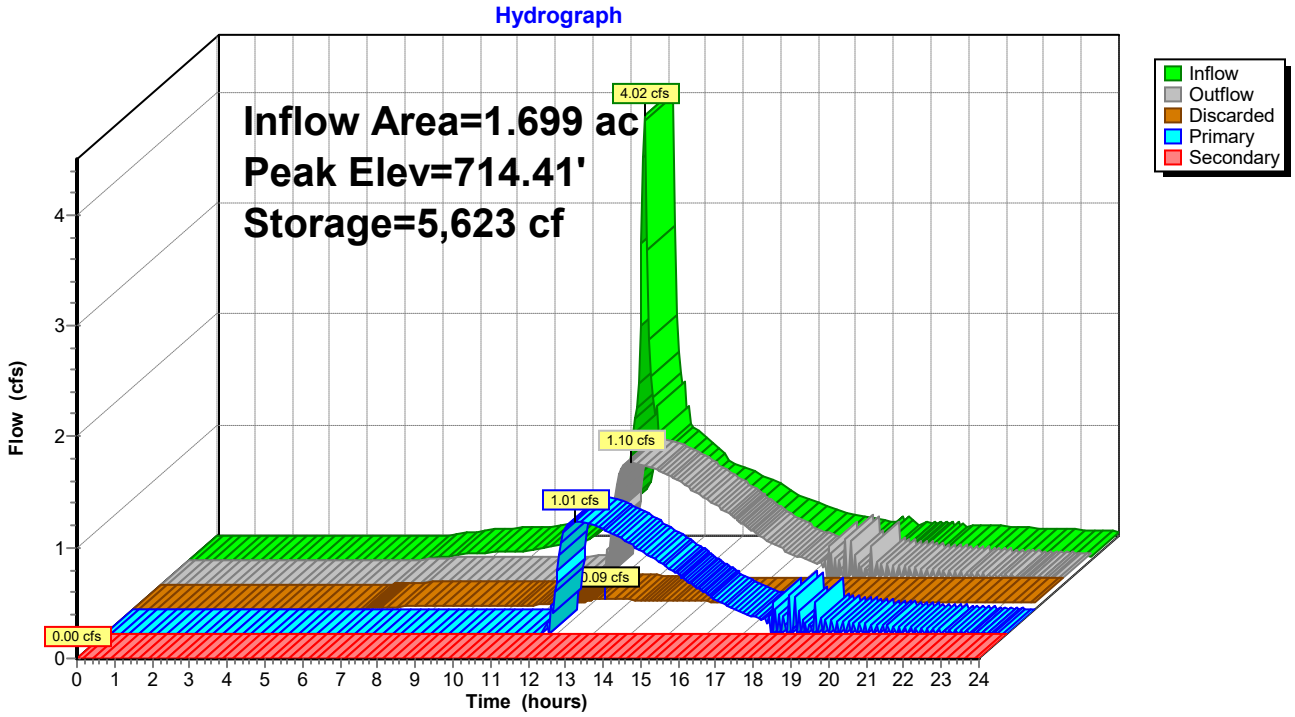
Device	Routing	Invert	Outlet Devices
#1	Discarded	710.50'	**1.630 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#2	Primary	712.50'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Secondary	715.00'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.09 cfs @ 12.56 hrs HW=714.41' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.09 cfs)

Primary OutFlow Max=1.01 cfs @ 12.50 hrs HW=714.41' TW=713.28' (Dynamic Tailwater)
↑—**2=Orifice/Grate** (Orifice Controls 1.01 cfs @ 5.13 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=710.50' TW=712.00' (Dynamic Tailwater)
↑—**3=Orifice/Grate** (Controls 0.00 cfs)

Pond B: Basin B



Summary for Pond C: Basin C

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=21)

Inflow Area = 1.127 ac, 64.63% Impervious, Inflow Depth > 3.88" for 25-Year event
Inflow = 5.89 cfs @ 12.13 hrs, Volume= 0.364 af
Outflow = 2.19 cfs @ 12.15 hrs, Volume= 0.352 af, Atten= 63%, Lag= 1.5 min
Discarded = 0.00 cfs @ 12.54 hrs, Volume= 0.005 af
Primary = 2.19 cfs @ 12.15 hrs, Volume= 0.346 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 714.46' @ 12.54 hrs Surf.Area= 2,410 sf Storage= 4,274 cf

Plug-Flow detention time= 89.0 min calculated for 0.351 af (96% of inflow)
Center-of-Mass det. time= 69.1 min (829.2 - 760.1)

Volume	Invert	Avail.Storage	Storage Description
#1	712.25'	8,517 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
712.25	1,485	200.0	0	0	1,485
712.50	1,586	203.0	384	384	1,594
715.50	2,917	241.0	6,654	7,038	3,092
716.00	3,000	250.0	1,479	8,517	3,465

Device	Routing	Invert	Outlet Devices
#1	Discarded	712.25'	**0.070 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#2	Primary	712.50'	**12.0" Vert. Orifice/Grate** C= 0.600
#3	Secondary	715.00'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Tertiary	715.50'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

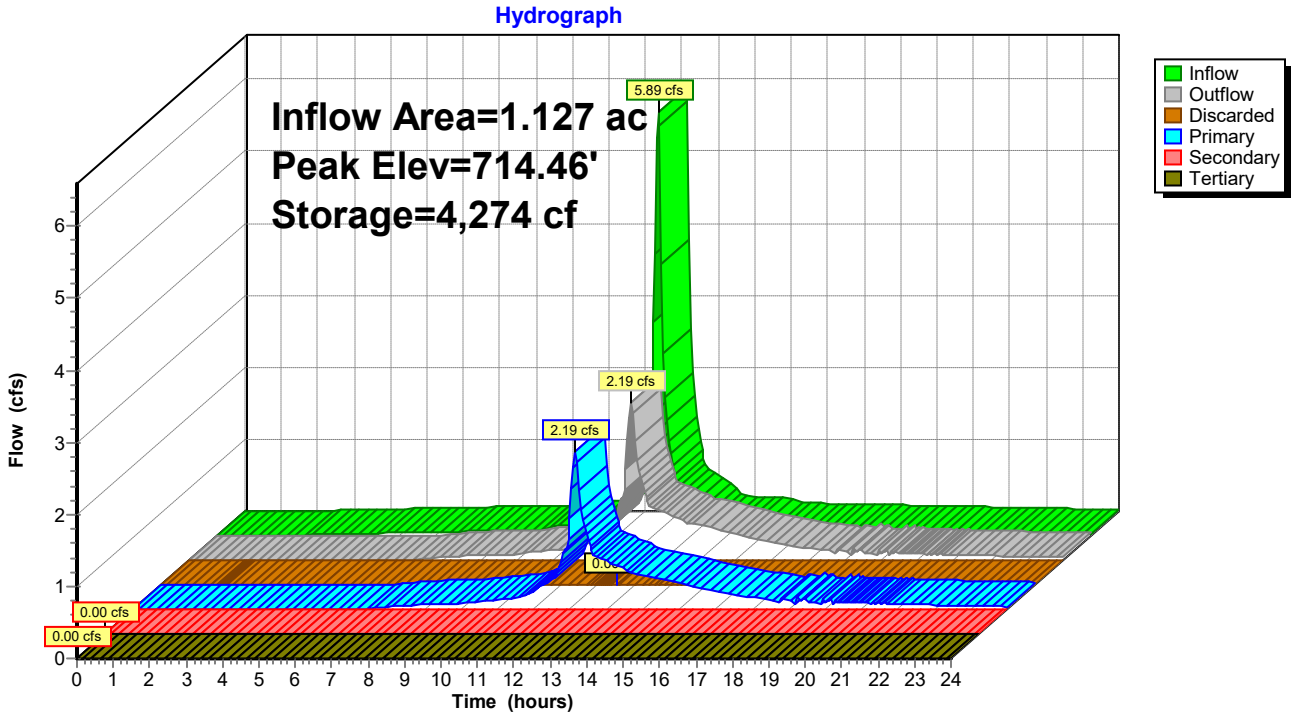
Discarded OutFlow Max=0.00 cfs @ 12.54 hrs HW=714.46' (Free Discharge)
1=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=1.08 cfs @ 12.15 hrs HW=714.05' TW=713.96' (Dynamic Tailwater)
2=Orifice/Grate (Orifice Controls 1.08 cfs @ 1.37 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=712.25' TW=712.00' (Dynamic Tailwater)
3=Orifice/Grate (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=712.25' TW=0.00' (Dynamic Tailwater)
4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond C: Basin C



Summary for Pond MH: Manhole

[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=8)
[80] Warning: Exceeded Pond B by 0.22' @ 23.60 hrs (0.25 cfs 0.088 af)

Inflow Area = 1.699 ac, 61.41% Impervious, Inflow Depth = 2.20" for 25-Year event
Inflow = 1.01 cfs @ 12.50 hrs, Volume= 0.312 af
Outflow = 1.03 cfs @ 12.50 hrs, Volume= 0.312 af, Atten= 0%, Lag= 0.1 min
Primary = 1.03 cfs @ 12.50 hrs, Volume= 0.312 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 713.28' @ 12.50 hrs Surf.Area= 7 sf Storage= 9 cf
Flood Elev= 715.00' Surf.Area= 7 sf Storage= 21 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.3 min (871.3 - 871.0)

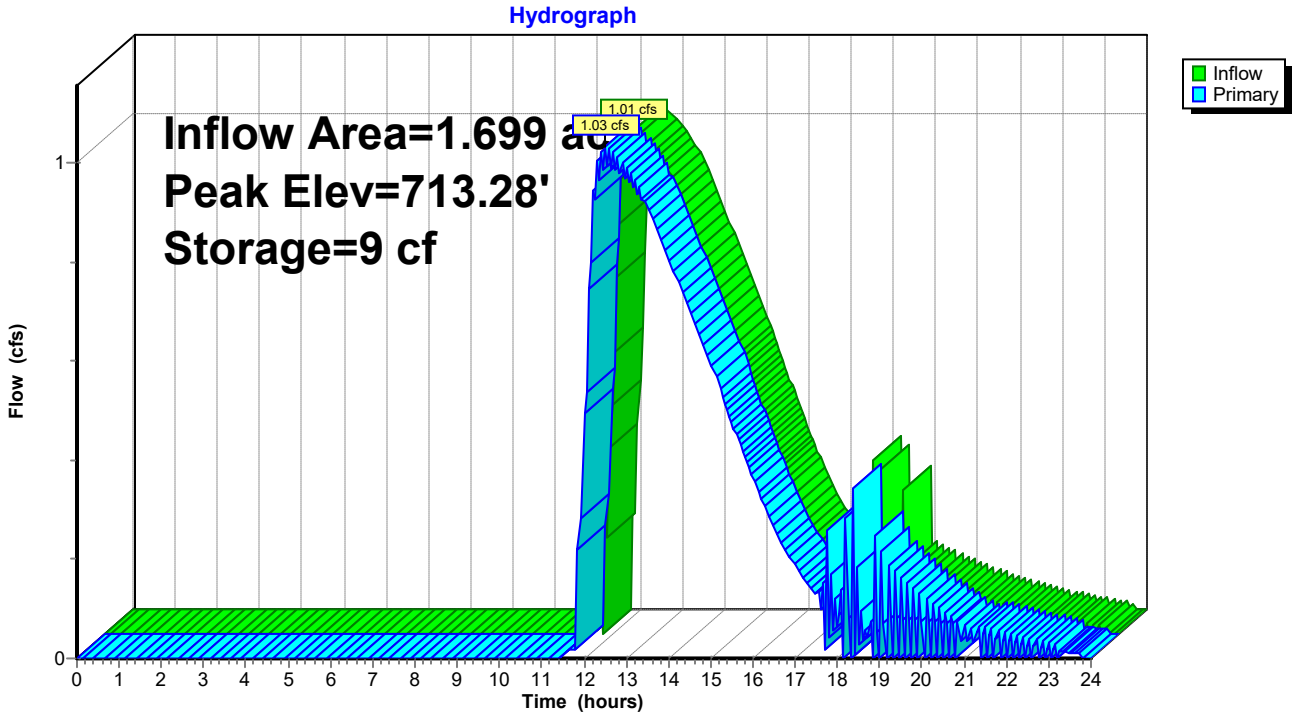
Volume	Invert	Avail.Storage	Storage Description
#1	712.00'	616 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
712.00	7	0	0
800.00	7	616	616

Device	Routing	Invert	Outlet Devices
#1	Primary	712.75'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.03 cfs @ 12.50 hrs HW=713.27' TW=0.00' (Dynamic Tailwater)
1=Orifice/Grate (Orifice Controls 1.03 cfs @ 2.47 fps)

Pond MH: Manhole

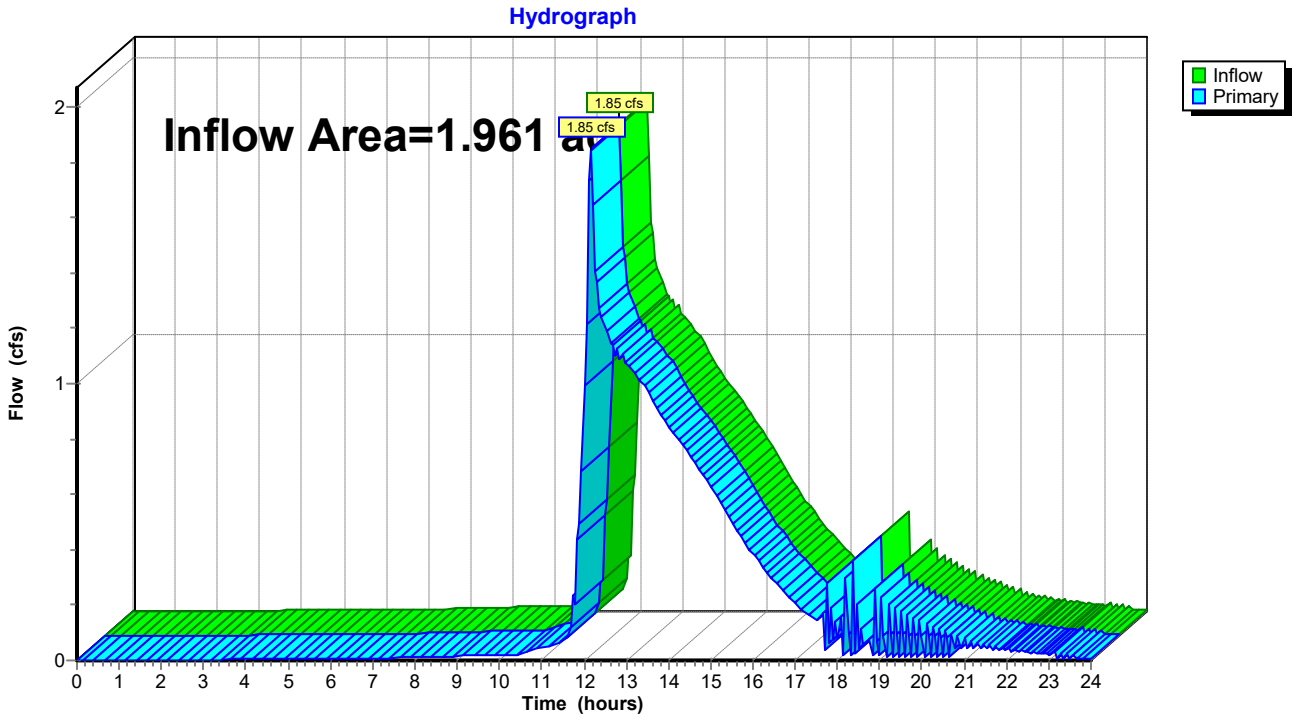


Summary for Link PRO: Proposed Outlet

Inflow Area = 1.961 ac, 58.34% Impervious, Inflow Depth > 2.30" for 25-Year event
Inflow = 1.85 cfs @ 12.14 hrs, Volume= 0.376 af
Primary = 1.85 cfs @ 12.14 hrs, Volume= 0.376 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link PRO: Proposed Outlet



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment P0: West Catch Runoff Area=15,339 sf 75.60% Impervious Runoff Depth>6.06"
Tc=6.0 min CN=WQ Runoff=2.85 cfs 0.178 af

Subcatchment P1: Center Catch Runoff Area=9,557 sf 22.14% Impervious Runoff Depth>3.84"
Tc=6.0 min CN=WQ Runoff=1.23 cfs 0.070 af

Subcatchment P2: East Catch Runoff Area=49,096 sf 64.63% Impervious Runoff Depth>5.60"
Tc=6.0 min CN=WQ Runoff=8.54 cfs 0.526 af

Subcatchment P3: South Catch Runoff Area=11,423 sf 38.42% Impervious Runoff Depth>4.52"
Tc=6.0 min CN=WQ Runoff=1.67 cfs 0.099 af

Pond A: Basin A Peak Elev=714.96' Storage=2,717 cf Inflow=2.85 cfs 0.178 af
Discarded=0.20 cfs 0.099 af Primary=1.24 cfs 0.077 af Tertiary=0.00 cfs 0.000 af Outflow=1.32 cfs 0.176 af

Pond B: Basin B Peak Elev=715.04' Storage=7,235 cf Inflow=5.17 cfs 0.616 af
Discarded=0.10 cfs 0.094 af Primary=1.20 cfs 0.469 af Secondary=0.23 cfs 0.003 af Outflow=1.47 cfs 0.566 af

Pond C: Basin C Peak Elev=715.14' Storage=6,026 cf Inflow=8.54 cfs 0.526 af
s 0.006 af Primary=2.86 cfs 0.469 af Secondary=1.64 cfs 0.036 af Tertiary=0.00 cfs 0.000 af Outflow=3.91 cfs 0.511 af

Pond MH: Manhole Peak Elev=713.79' Storage=13 cf Inflow=2.76 cfs 0.508 af
Outflow=2.78 cfs 0.508 af

Link PRO: Proposed Outlet Inflow=3.49 cfs 0.607 af
Primary=3.49 cfs 0.607 af

Total Runoff Area = 1.961 ac Runoff Volume = 0.873 af Average Runoff Depth = 5.34"
41.66% Pervious = 0.817 ac 58.34% Impervious = 1.144 ac

Summary for Subcatchment P0: West Catch

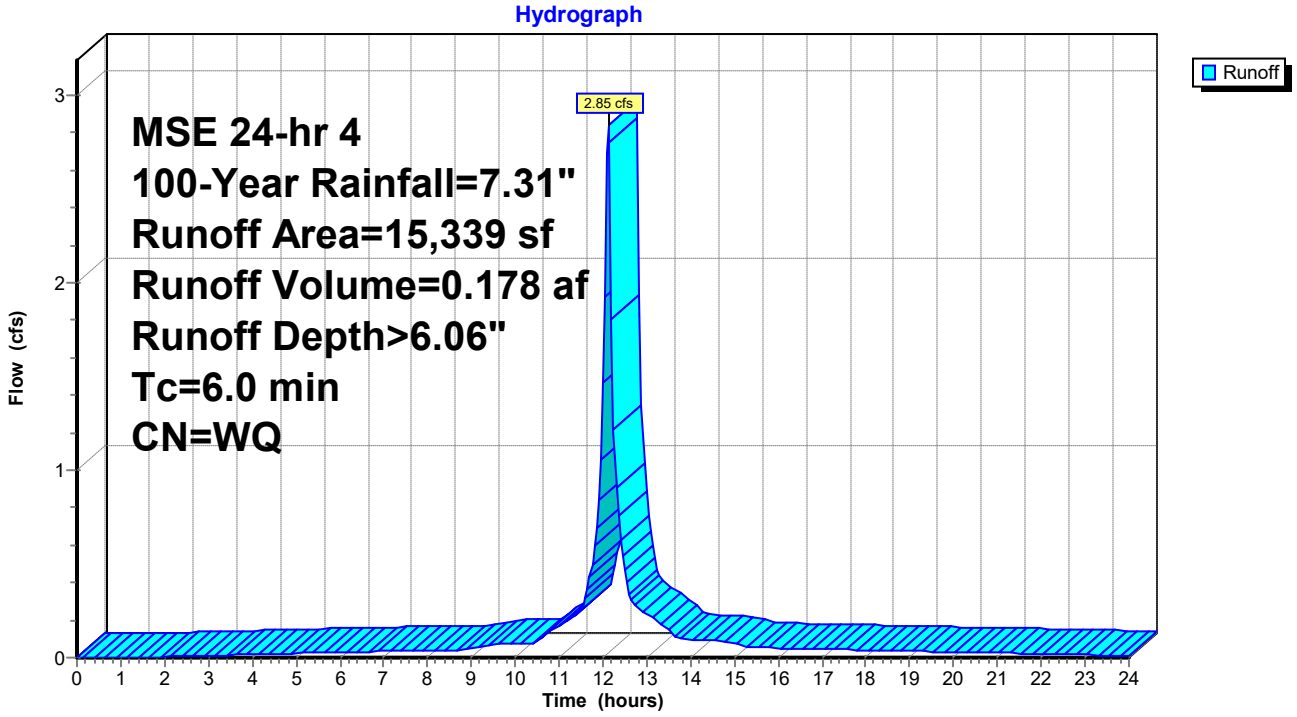
Runoff = 2.85 cfs @ 12.13 hrs, Volume= 0.178 af, Depth> 6.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=7.31"

Area (sf)	CN	Description
0	98	Roofs, HSG B
11,080	98	Paved parking, HSG B
140	98	Unconnected pavement, HSG B
3,743	61	>75% Grass cover, Good, HSG B
376	98	Water Surface, HSG B
15,339		Weighted Average
3,743		24.40% Pervious Area
11,596		75.60% Impervious Area
140		1.21% Unconnected

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

Subcatchment P0: West Catch



Summary for Subcatchment P1: Center Catch

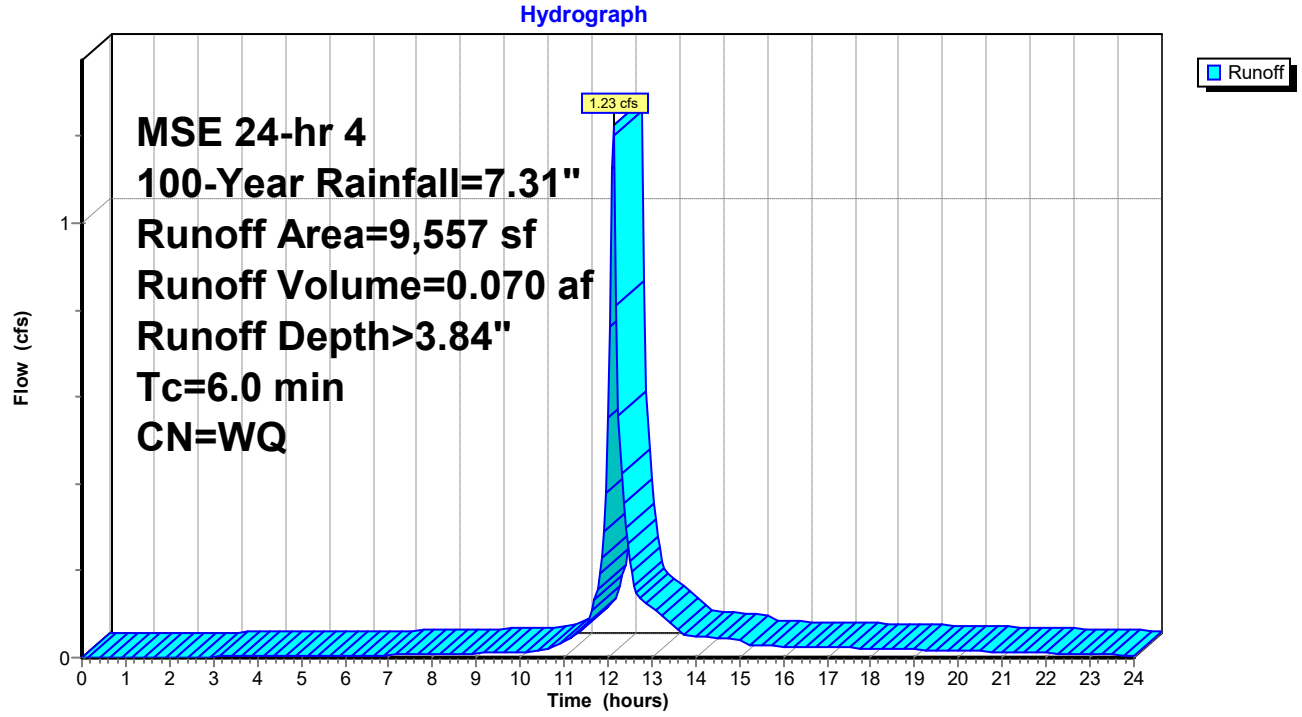
Runoff = 1.23 cfs @ 12.13 hrs, Volume= 0.070 af, Depth> 3.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=7.31"

Area (sf)	CN	Description
0	98	Roofs, HSG B
1,034	98	Paved parking, HSG B
290	98	Unconnected pavement, HSG B
7,441	61	>75% Grass cover, Good, HSG B
792	98	Water Surface, HSG B
9,557		Weighted Average
7,441		77.86% Pervious Area
2,116		22.14% Impervious Area
290		13.71% Unconnected

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

Subcatchment P1: Center Catch



Summary for Subcatchment P2: East Catch

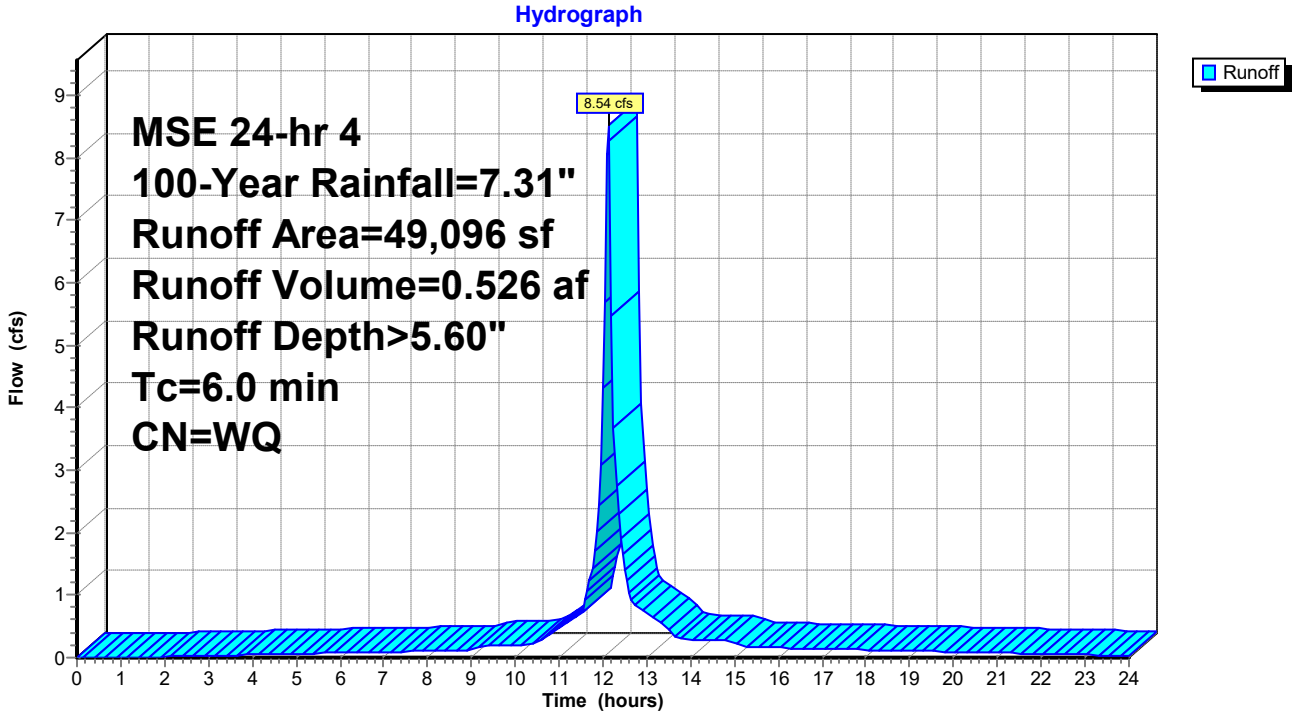
Runoff = 8.54 cfs @ 12.13 hrs, Volume= 0.526 af, Depth> 5.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=7.31"

Area (sf)	CN	Description
15,992	98	Roofs, HSG B
14,149	98	Paved parking, HSG B
104	98	Unconnected pavement, HSG B
17,366	61	>75% Grass cover, Good, HSG B
1,485	98	Water Surface, HSG B
49,096		Weighted Average
17,366		35.37% Pervious Area
31,730		64.63% Impervious Area
104		0.33% Unconnected

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

Subcatchment P2: East Catch



Summary for Subcatchment P3: South Catch

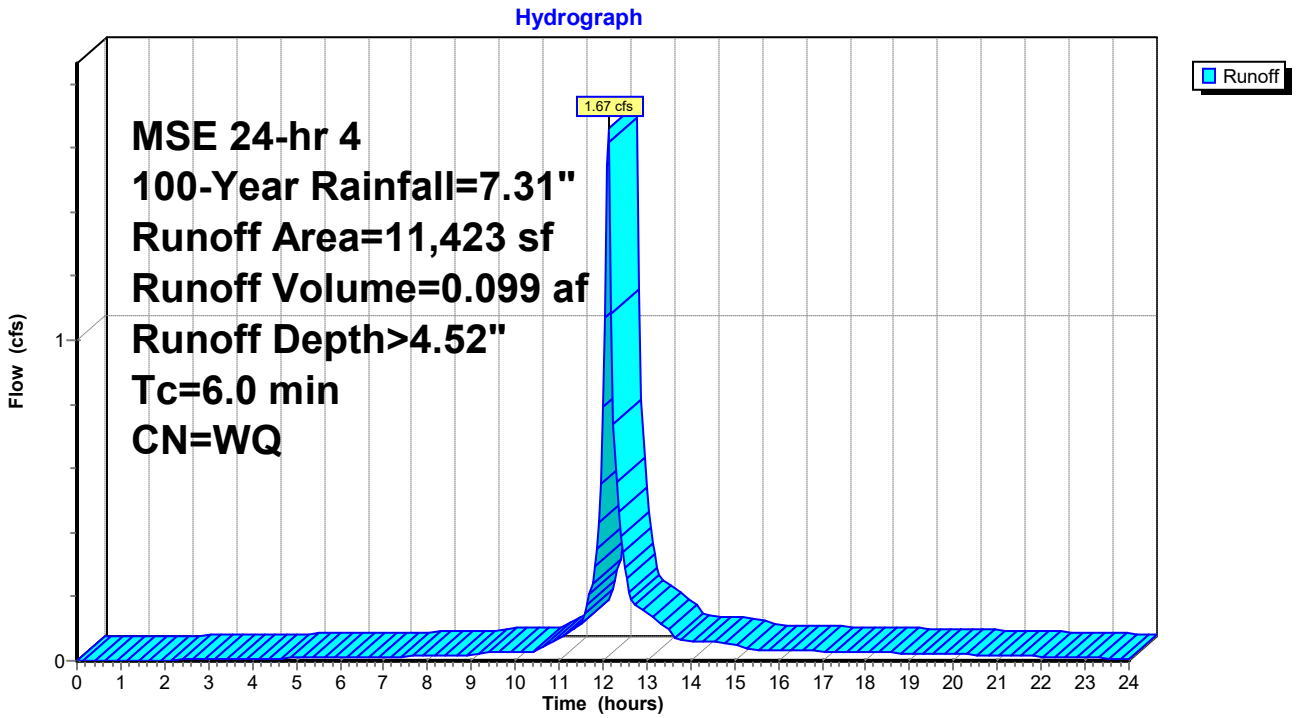
Runoff = 1.67 cfs @ 12.13 hrs, Volume= 0.099 af, Depth> 4.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=7.31"

Area (sf)	CN	Description
2,900	98	Paved parking, HSG B
7,034	61	>75% Grass cover, Good, HSG B
1,489	98	Unconnected pavement, HSG B
11,423		Weighted Average
7,034		61.58% Pervious Area
4,389		38.42% Impervious Area
1,489		33.93% Unconnected

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

Subcatchment P3: South Catch



Summary for Pond A: Basin A

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=5)

Inflow Area = 0.352 ac, 75.60% Impervious, Inflow Depth > 6.06" for 100-Year event
Inflow = 2.85 cfs @ 12.13 hrs, Volume= 0.178 af
Outflow = 1.32 cfs @ 12.10 hrs, Volume= 0.176 af, Atten= 54%, Lag= 0.0 min
Discarded = 0.20 cfs @ 12.72 hrs, Volume= 0.099 af
Primary = 1.24 cfs @ 12.10 hrs, Volume= 0.077 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 714.96' @ 12.72 hrs Surf.Area= 2,375 sf Storage= 2,717 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 83.1 min (834.9 - 751.9)

Volume	Invert	Avail.Storage	Storage Description
#1	712.00'	4,058 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
712.00	376	111.0	0	0	376
714.00	877	139.0	1,218	1,218	987
715.00	2,457	287.0	1,601	2,819	6,008
715.50	2,500	300.0	1,239	4,058	6,633

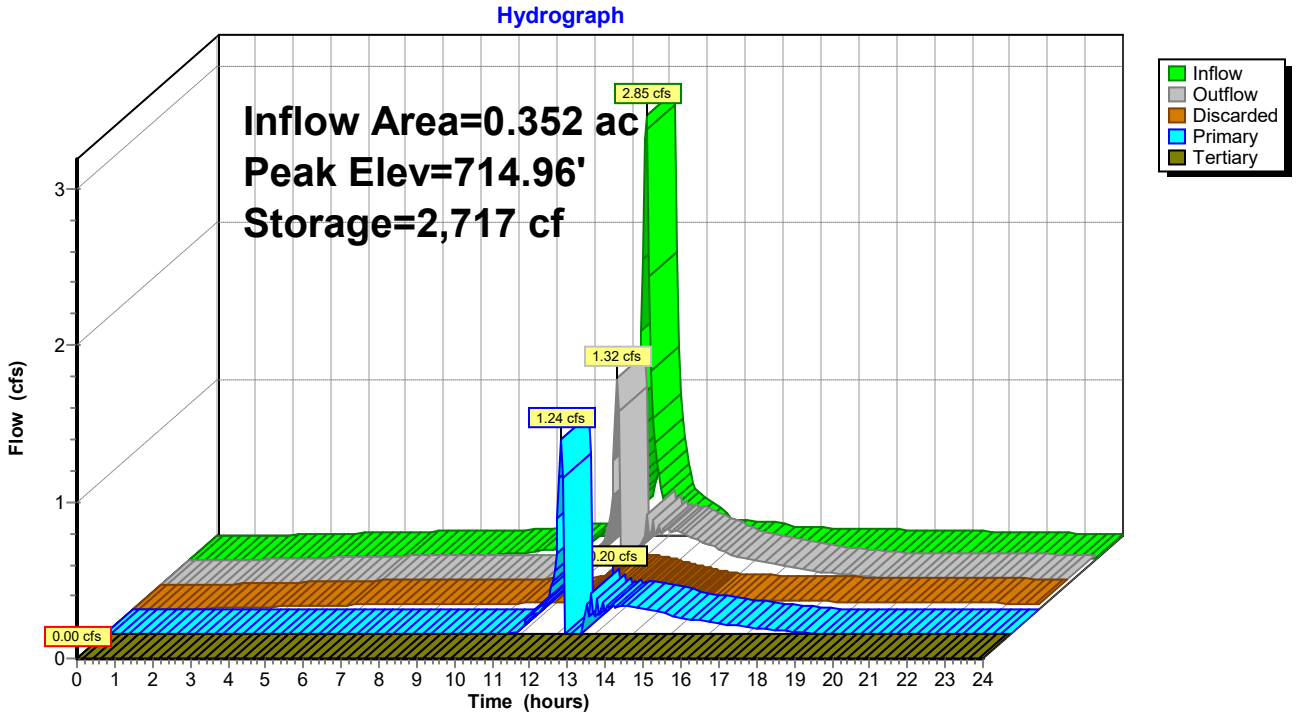
Device	Routing	Invert	Outlet Devices
#1	Discarded	712.00'	**3.600 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#2	Tertiary	715.00'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Primary	712.75'	**15.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 712.75' / 712.50' S= 0.0056 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf

Discarded OutFlow Max=0.20 cfs @ 12.72 hrs HW=714.96' (Free Discharge)
1=Exfiltration (Controls 0.20 cfs)

Primary OutFlow Max=0.00 cfs @ 12.10 hrs HW=714.07' TW=714.26' (Dynamic Tailwater)
3=Culvert (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=712.00' TW=0.00' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond A: Basin A



Summary for Pond B: Basin B

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=23)
[80] Warning: Exceeded Pond A by 0.25' @ 12.20 hrs (2.35 cfs 0.119 af)
[80] Warning: Exceeded Pond C by 0.01' @ 11.90 hrs (0.34 cfs 0.003 af)

Inflow Area =	1.699 ac,	61.41% Impervious,	Inflow Depth >	4.35"	for 100-Year event
Inflow =	5.17 cfs @	12.13 hrs,	Volume=	0.616 af	
Outflow =	1.47 cfs @	12.37 hrs,	Volume=	0.566 af,	Atten= 72%, Lag= 14.7 min
Discarded =	0.10 cfs @	12.38 hrs,	Volume=	0.094 af	
Primary =	1.20 cfs @	12.85 hrs,	Volume=	0.469 af	
Secondary =	0.23 cfs @	12.38 hrs,	Volume=	0.003 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 715.04' @ 12.38 hrs Surf.Area= 2,748 sf Storage= 7,235 cf
Flood Elev= 715.25' Surf.Area= 2,874 sf Storage= 7,831 cf

Plug-Flow detention time= 106.6 min calculated for 0.565 af (92% of inflow)
Center-of-Mass det. time= 69.1 min (895.0 - 825.9)

Volume	Invert	Avail.Storage	Storage Description
#1	710.50'	10,160 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
710.50	617	172.0	0	0	617
711.00	792	180.0	351	351	858
712.00	1,167	194.0	973	1,325	1,314
712.50	1,460	246.0	655	1,980	3,139
716.00	3,342	291.0	8,179	10,160	5,279

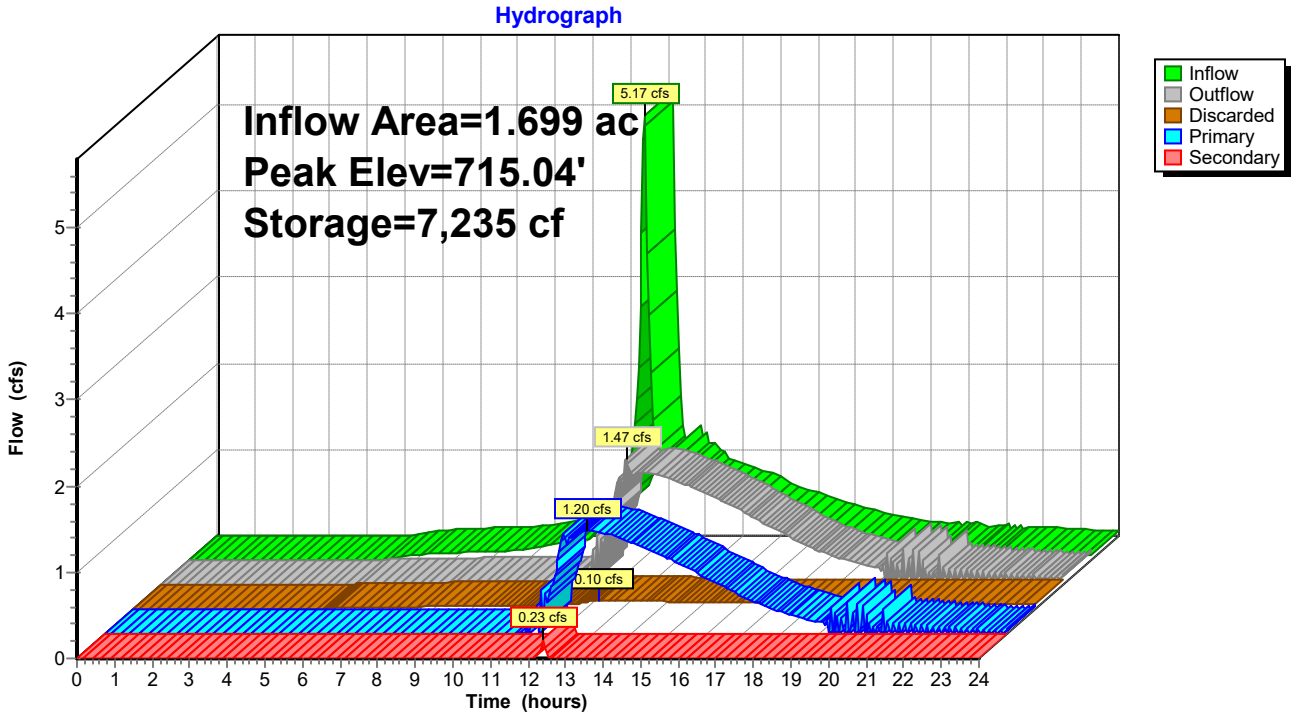
Device	Routing	Invert	Outlet Devices
#1	Discarded	710.50'	**1.630 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#2	Primary	712.50'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Secondary	715.00'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.10 cfs @ 12.38 hrs HW=715.04' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.10 cfs)

Primary OutFlow Max=1.20 cfs @ 12.85 hrs HW=714.93' TW=713.32' (Dynamic Tailwater)
↑—**2=Orifice/Grate** (Orifice Controls 1.20 cfs @ 6.11 fps)

Secondary OutFlow Max=0.22 cfs @ 12.38 hrs HW=715.04' TW=713.64' (Dynamic Tailwater)
↑—**3=Orifice/Grate** (Weir Controls 0.22 cfs @ 0.63 fps)

Pond B: Basin B



Summary for Pond C: Basin C

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=17)

Inflow Area = 1.127 ac, 64.63% Impervious, Inflow Depth > 5.60" for 100-Year event
Inflow = 8.54 cfs @ 12.13 hrs, Volume= 0.526 af
Outflow = 3.91 cfs @ 12.24 hrs, Volume= 0.511 af, Atten= 54%, Lag= 6.8 min
Discarded = 0.00 cfs @ 12.26 hrs, Volume= 0.006 af
Primary = 2.86 cfs @ 12.16 hrs, Volume= 0.469 af
Secondary = 1.64 cfs @ 12.26 hrs, Volume= 0.036 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 715.14' @ 12.26 hrs Surf.Area= 2,737 sf Storage= 6,026 cf

Plug-Flow detention time= 84.7 min calculated for 0.510 af (97% of inflow)
Center-of-Mass det. time= 68.1 min (826.0 - 757.9)

Volume	Invert	Avail.Storage	Storage Description
#1	712.25'	8,517 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
712.25	1,485	200.0	0	0	1,485
712.50	1,586	203.0	384	384	1,594
715.50	2,917	241.0	6,654	7,038	3,092
716.00	3,000	250.0	1,479	8,517	3,465

Device	Routing	Invert	Outlet Devices
#1	Discarded	712.25'	**0.070 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#2	Primary	712.50'	**12.0" Vert. Orifice/Grate** C= 0.600
#3	Secondary	715.00'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Tertiary	715.50'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

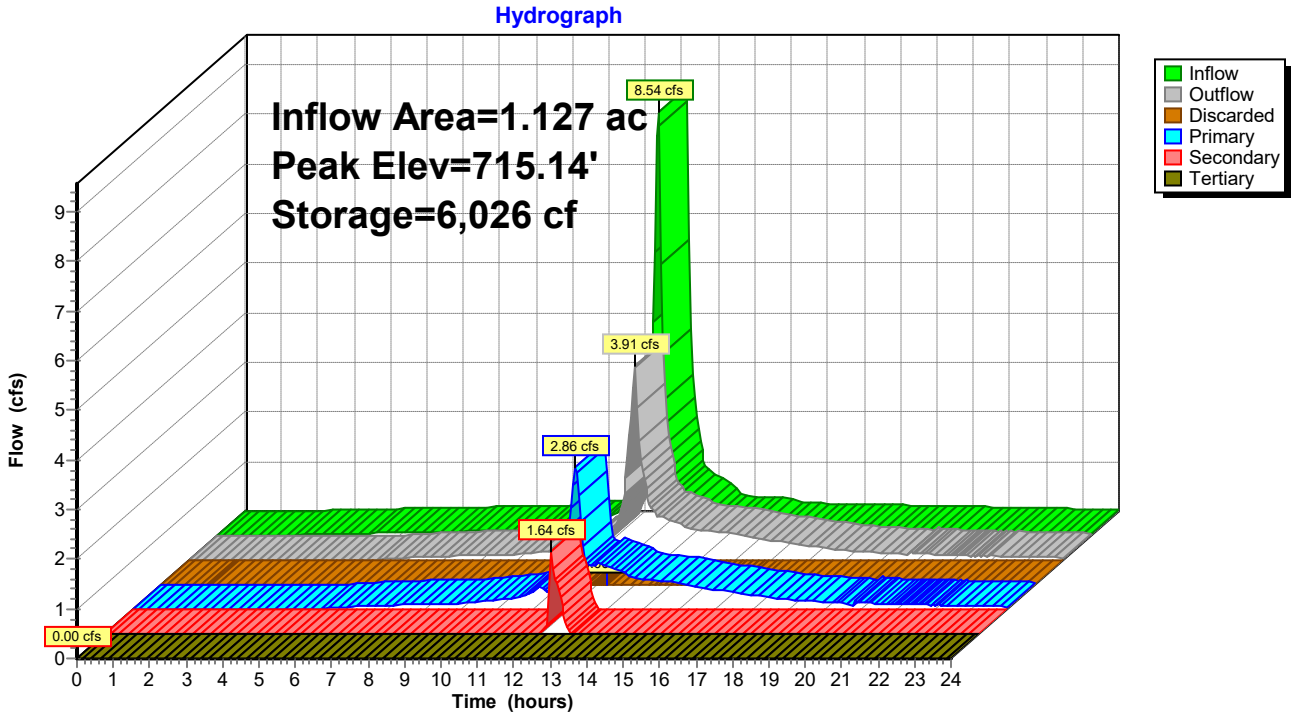
Discarded OutFlow Max=0.00 cfs @ 12.26 hrs HW=715.13' (Free Discharge)
1=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=2.02 cfs @ 12.16 hrs HW=714.90' TW=714.62' (Dynamic Tailwater)
2=Orifice/Grate (Orifice Controls 2.02 cfs @ 2.57 fps)

Secondary OutFlow Max=1.53 cfs @ 12.26 hrs HW=715.14' TW=713.74' (Dynamic Tailwater)
3=Orifice/Grate (Weir Controls 1.53 cfs @ 1.20 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=712.25' TW=0.00' (Dynamic Tailwater)
4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond C: Basin C



Summary for Pond MH: Manhole

[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[80] Warning: Exceeded Pond B by 0.19' @ 23.90 hrs (0.30 cfs 0.070 af)

Inflow Area = 1.699 ac, 61.41% Impervious, Inflow Depth > 3.59" for 100-Year event
Inflow = 2.76 cfs @ 12.26 hrs, Volume= 0.508 af
Outflow = 2.78 cfs @ 12.26 hrs, Volume= 0.508 af, Atten= 0%, Lag= 0.0 min
Primary = 2.78 cfs @ 12.26 hrs, Volume= 0.508 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 713.79' @ 12.26 hrs Surf.Area= 7 sf Storage= 13 cf
Flood Elev= 715.00' Surf.Area= 7 sf Storage= 21 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.1 min (878.7 - 878.6)

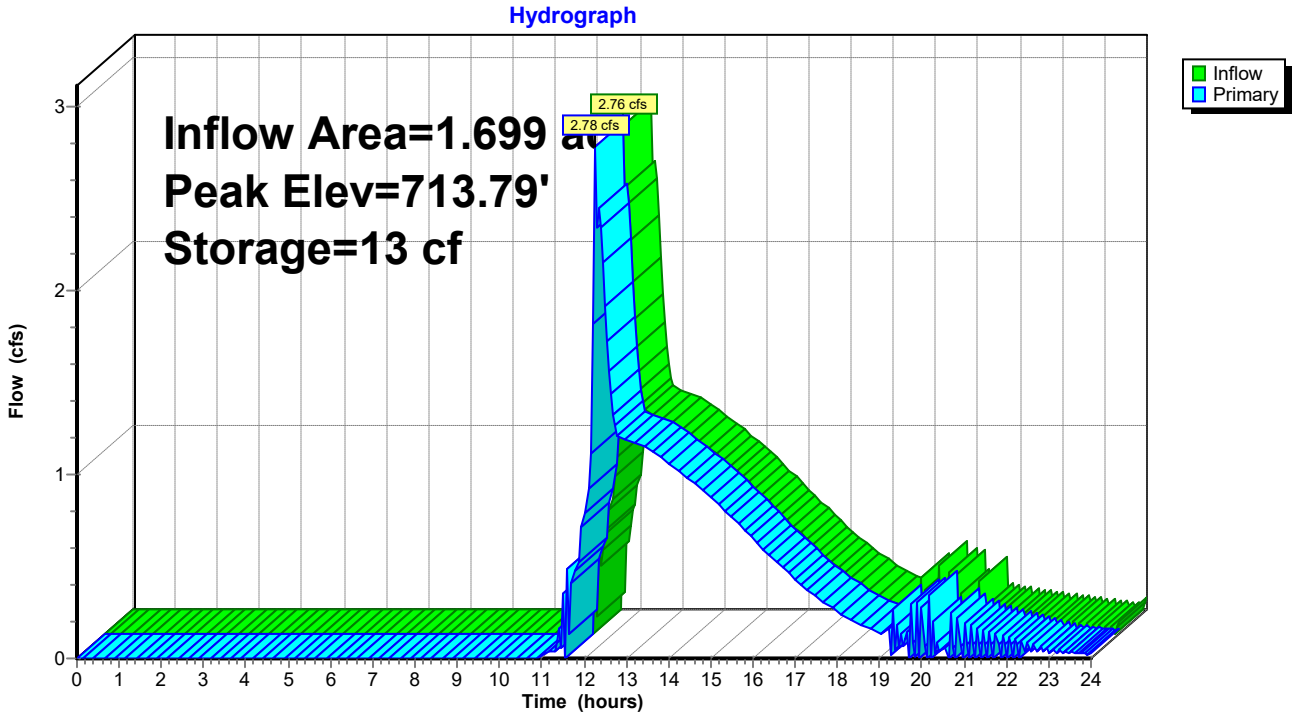
Volume	Invert	Avail.Storage	Storage Description
#1	712.00'	616 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
712.00	7	0	0
800.00	7	616	616

Device	Routing	Invert	Outlet Devices
#1	Primary	712.75'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=2.68 cfs @ 12.26 hrs HW=713.75' TW=0.00' (Dynamic Tailwater)
1=Orifice/Grate (Orifice Controls 2.68 cfs @ 3.41 fps)

Pond MH: Manhole

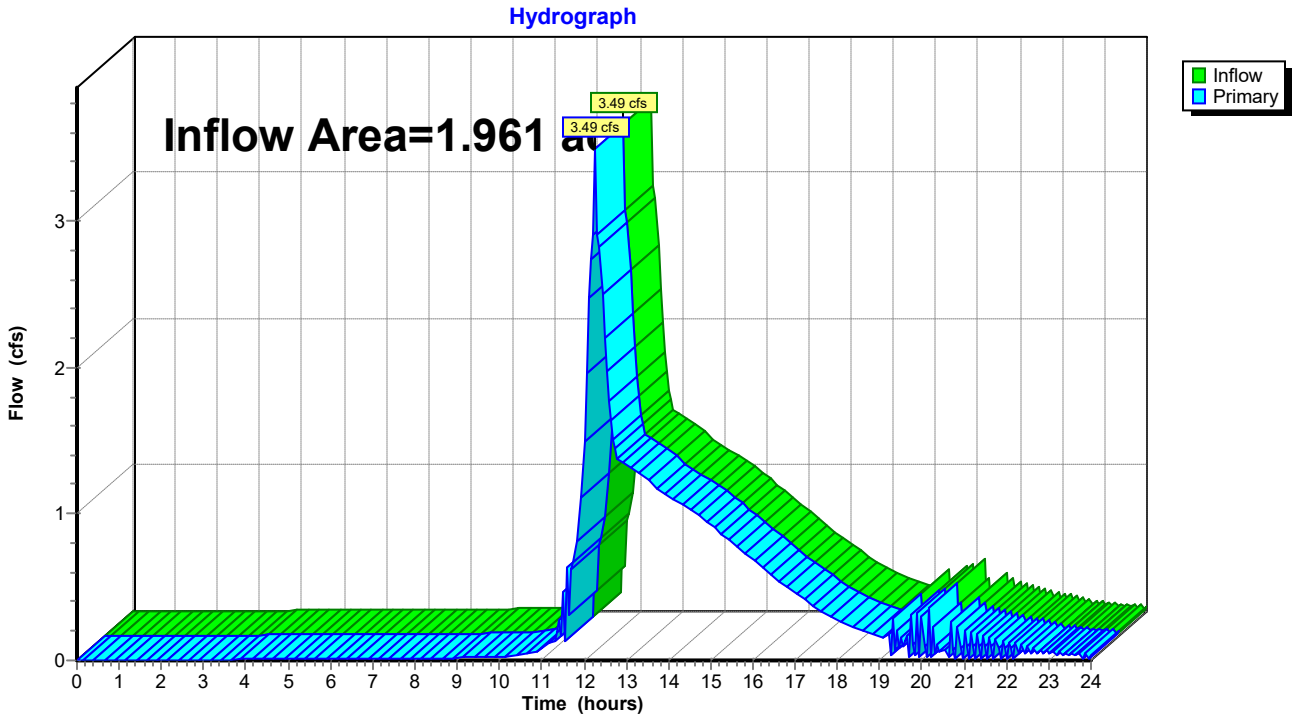


Summary for Link PRO: Proposed Outlet

Inflow Area = 1.961 ac, 58.34% Impervious, Inflow Depth > 3.71" for 100-Year event
Inflow = 3.49 cfs @ 12.25 hrs, Volume= 0.607 af
Primary = 3.49 cfs @ 12.25 hrs, Volume= 0.607 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link PRO: Proposed Outlet

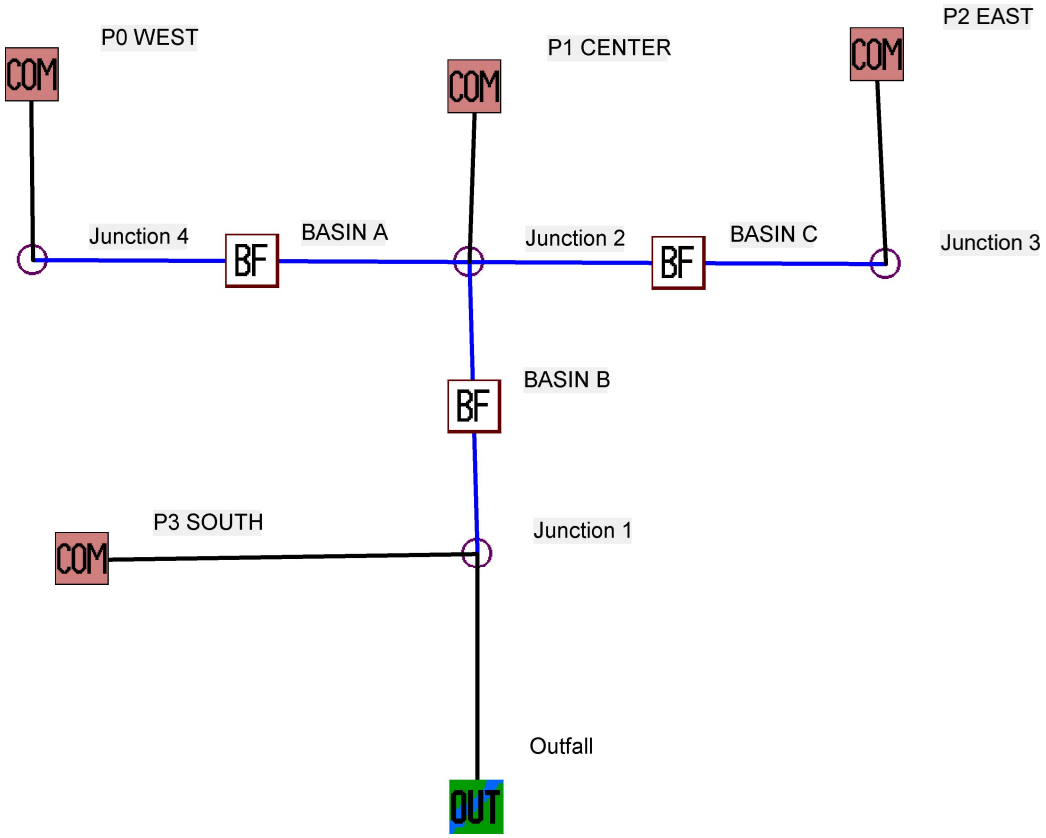


Del's Service Center
North Kinney Coulee Road
La Crosse, WI

Appendix D

WINSLAMM MODELING RESULTS

INFILTRATION CALCULATIONS


P0 WEST
COM
P1 CENTER
COM
P2 EAST
COM
Junction 4
BF
BASIN A
Junction 2
BF
BASIN C
Junction 3
BF
BASIN B
P3 SOUTH
COM
Junction 1
Outfall
OUT

Data file name: S:\Projects\BD5010 Borton Const - Dels Service Center Site Design\Stormwater-NOI\WinSLAMM\Borton WinSLAMM 5.0.mdb
WinSLAMM Version 10.5.0
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Madison WI 1981.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
Seed for random number generator: -42
Study period starting date: 01/01/81 Study period ending date: 12/31/81
Start of Winter Season: 12/02 End of Winter Season: 03/12
Date: 12-18-2025 Time: 13:37:24
Site information:

LU# 1 - Commercial: P1 CENTER Total area (ac): 0.220
13 - Paved Parking 1: 0.024 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.007 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.171 ac. Normal Sandy PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
70 - Water Body Areas: 0.018 ac. PSD File: Source Area PSD File:

LU# 2 - Commercial: P2 EAST Total area (ac): 1.127
1 - Roofs 1: 0.367 ac. Pitched Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
13 - Paved Parking 1: 0.325 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.002 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.399 ac. Normal Sandy PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
70 - Water Body Areas: 0.034 ac. PSD File: Source Area PSD File:

LU# 3 - Commercial: P0 WEST Total area (ac): 0.352
13 - Paved Parking 1: 0.254 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.003 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.086 ac. Normal Sandy PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
70 - Water Body Areas: 0.009 ac. PSD File: Source Area PSD File:

LU# 4 - Commercial: P3 SOUTH Total area (ac): 0.262
25 - Driveways 1: 0.067 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.034 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.161 ac. Normal Sandy PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

Control Practice 1: Biofilter CP# 1 (DS) - BASIN B

1. Top area (square feet) = 3342
2. Bottom aea (square feet) = 617
3. Depth (ft): 9.5
4. Biofilter width (ft) - for Cost Purposes Only: 10
5. Infiltration rate (in/hr) = 1.63
6. Random infiltration rate generation? No
7. Infiltration rate fraction (side): 0.001
8. Infiltration rate fraction (bottom): 1
9. Depth of biofilter that is rock filled (ft) 0
10. Porosity of rock filled volume = 0
11. Engineered soil infiltration rate: 3.6
12. Engineered soil depth (ft) = 3
13. Engineered soil porosity = 0.27
14. Percent solids reduction due to flow through engineered soil = 80
15. Biofilter peak to average flow ratio = 3.8
16. Number of biofiltration control devices = 1
17. Particle size distribution file: Not needed - calculated by program
18. Initial water surface elevation (ft): 0

Soil Data — Soil Type Fraction in Eng. Soil

User-Defined Media Type — 1.000

Biofilter Outlet/Discharge Characteristics:

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 10
2. Weir crest width (ft): 3
3. Height of datum to bottom of weir opening: 9.49

Outlet type: Vertical Stand Pipe

1. Stand pipe diameter (ft): 36
2. Stand pipe height above datum (ft): 7.5

Outlet type: Surface Discharge Pipe

1. Surface discharge pipe outlet diameter (ft): 0.5
2. Pipe invert elevation above datum (ft): 5
3. Number of surface pipe outlets: 1

Outlet type: Evapotranspiration

Month Number	Month	Evapotranspiration (in/day)	Evaporation (in/day)
1	January	.	.
2	February	.	.
3	March	.	.
4	April	.1	.
5	May	.14	.
6	June	.15	.
7	July	.15	.
8	August	.09	.
9	September	.07	.
10	October	.03	.
11	November	.	.
12	December	.	.

1. Saturated Soil Moisture Content: 0.27
2. Soil Field Moisture Capacity (% of Soil Dry Weight): 0.368
3. Permanent Wilting Point (% of Soil Dry Weight): 0.07
4. Supplemental Irrigation Used= False

4a. Fraction of available capacity when irrigation starts = 0
4b. Fraction of available capacity when irrigation stops = 0
5a. First area of biofilter that is vegetated (fraction): 0.9
5b. Second area of biofilter that is vegetated (fraction): 0.1
5c. Third area of biofilter that is vegetated (fraction): 0
5d. Fourth area of biofilter that is vegetated (fraction): 0
6a. First plant type: 7
6b. Second plant type: 4
6c. Third plant type: 0
6d. Fourth plant type: 0
7a. First root depth (ft): 6
7b. Second root depth (ft): 1
7c. Third root depth (ft): 0
7d. Fourth root depth (ft): 0
8a. First ET adjustment factor for actual crop (decimal): 0.5
8b. Second ET adjustment factor for actual crop (decimal): 0.65
8c. Third ET adjustment factor for actual crop (decimal): 0
8e. Fourth ET adjustment factor for actual crop (decimal): 0

Control Practice 2: Biofilter CP# 2 (DS) - BASIN C

1. Top area (square feet) = 3000
2. Bottom aea (square feet) = 1485
3. Depth (ft): 6.75
4. Biofilter width (ft) - for Cost Purposes Only: 10
5. Infiltration rate (in/hr) = 0.07
6. Random infiltration rate generation? No
7. Infiltration rate fraction (side): 0.001
8. Infiltration rate fraction (bottom): 1
9. Depth of biofilter that is rock filled (ft) 0
10. Porosity of rock filled volume = 0
11. Engineered soil infiltration rate: 3.6
12. Engineered soil depth (ft) = 3
13. Engineered soil porosity = 0.27
14. Percent solids reduction due to flow through engineered soil = 80
15. Biofilter peak to average flow ratio = 3.8
16. Number of biofiltration control devices = 1
17. Particle size distribution file: Not needed - calculated by program
18. Initial water surface elevation (ft): 0

Soil Data — Soil Type Fraction in Eng. Soil

User-Defined Media Type — 1.000

Biofilter Outlet/Discharge Characteristics:

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 10
2. Weir crest width (ft): 3
3. Height of datum to bottom of weir opening: 6.25

Outlet type: Vertical Stand Pipe

1. Stand pipe diameter (ft): 36
2. Stand pipe height above datum (ft): 5.75

Outlet type: Surface Discharge Pipe

1. Surface discharge pipe outlet diameter (ft): 1
2. Pipe invert elevation above datum (ft): 3.25
3. Number of surface pipe outlets: 1

Outlet type: Evapotranspiration

Month Number	Month	Evapotranspiration (in/day)	Evaporation (in/day)
1	January	.	.
2	February	.	.
3	March	.	.
4	April	.1	.
5	May	.14	.
6	June	.15	.
7	July	.15	.
8	August	.09	.
9	September	.07	.
10	October	.03	.
11	November	.	.
12	December	.	.

1. Saturated Soil Moisture Content: 0.27
2. Soil Field Moisture Capacity (% of Soil Dry Weight): 0.368
3. Permanent Wilting Point (% of Soil Dry Weight): 0.07
4. Supplemental Irrigation Used= False

4a. Fraction of available capacity when irrigation starts = 0
4b. Fraction of available capacity when irrigation stops = 0
5a. First area of biofilter that is vegetated (fraction): 0.9
5b. Second area of biofilter that is vegetated (fraction): 0.1
5c. Third area of biofilter that is vegetated (fraction): 0
5d. Fourth area of biofilter that is vegetated (fraction): 0
6a. First plant type: 7
6b. Second plant type: 4
6c. Third plant type: 0
6d. Fourth plant type: 0
7a. First root depth (ft): 6
7b. Second root depth (ft): 1
7c. Third root depth (ft): 0
7d. Fourth root depth (ft): 0
8a. First ET adjustment factor for actual crop (decimal): 0.5
8b. Second ET adjustment factor for actual crop (decimal): 0.65
8c. Third ET adjustment factor for actual crop (decimal): 0
8e. Fourth ET adjustment factor for actual crop (decimal): 0

Control Practice 3: Biofilter CP# 3 (DS) - BASIN A

1. Top area (square feet) = 2500
2. Bottom aea (square feet) = 376
3. Depth (ft): 6.5
4. Biofilter width (ft) - for Cost Purposes Only: 10
5. Infiltration rate (in/hr) = 3.6
6. Random infiltration rate generation? No
7. Infiltration rate fraction (side): 0.001
8. Infiltration rate fraction (bottom): 1
9. Depth of biofilter that is rock filled (ft) 0
10. Porosity of rock filled volume = 0
11. Engineered soil infiltration rate: 3.6
12. Engineered soil depth (ft) = 3
13. Engineered soil porosity = 0.27
14. Percent solids reduction due to flow through engineered soil = 80
15. Biofilter peak to average flow ratio = 3.8
16. Number of biofiltration control devices = 1
17. Particle size distribution file: Not needed - calculated by program
18. Initial water surface elevation (ft): 0

Soil Data — Soil Type Fraction in Eng. Soil

User-Defined Media Type — 1.000

Biofilter Outlet/Discharge Characteristics:

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 10
2. Weir crest width (ft): 3
3. Height of datum to bottom of weir opening: 6

Outlet type: Surface Discharge Pipe

1. Surface discharge pipe outlet diameter (ft): 1.25
2. Pipe invert elevation above datum (ft): 3.75
3. Number of surface pipe outlets: 1

Outlet type: Evapotranspiration

Month Number	Month	Evapotranspiration (in/day)	Evaporation (in/day)
1	January	.	.
2	February	.	.
3	March	.	.
4	April	.1	.
5	May	.14	.
6	June	.15	.
7	July	.15	.
8	August	.09	.
9	September	.07	.
10	October	.03	.
11	November	.	.
12	December	.	.

1. Saturated Soil Moisture Content: 0.27
2. Soil Field Moisture Capacity (% of Soil Dry Weight): 0.368
3. Permanent Wilting Point (% of Soil Dry Weight): 0.07
4. Supplemental Irrigation Used= False

4a. Fraction of available capacity when irrigation starts = 0
4b. Fraction of available capacity when irrigation stops = 0
5a. First area of biofilter that is vegetated (fraction): 0.9
5b. Second area of biofilter that is vegetated (fraction): 0.1
5c. Third area of biofilter that is vegetated (fraction): 0
5d. Fourth area of biofilter that is vegetated (fraction): 0
6a. First plant type: 7
6b. Second plant type: 4
6c. Third plant type: 0
6d. Fourth plant type: 0
7a. First root depth (ft): 6
7b. Second root depth (ft): 1
7c. Third root depth (ft): 0
7d. Fourth root depth (ft): 0
8a. First ET adjustment factor for actual crop (decimal): 0.5
8b. Second ET adjustment factor for actual crop (decimal): 0.65
8c. Third ET adjustment factor for actual crop (decimal): 0
8e. Fourth ET adjustment factor for actual crop (decimal): 0

SLAMM for Windows Version 10.5.0

Data file name: S:\Projects\BD5010 Borton Const - Dels Service Center Site Design\Stormwater-NOI\WinSLAMM\Borton WinSLAMM 5.0.mdb
WinSLAMM Version 10.5.0
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Madison WI 1981.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
Seed for random number generator: -42
Study period starting date: 01/01/81 Study period ending date: 12/31/81
Start of Winter Season: 12/02 End of Winter Season: 03/12
Model Run Start Date: 01/01/81 Model Run End Date: 12/31/81
Date of run: 12-18-2025 Time of run: 13:32:02
Total Area Modeled (acres): 1.961
Years in Model Run: 1.00

	Runoff Volume (cu ft)	Percent Runoff Volume Reduction	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction
Total of all Land Uses without Controls:	96766	-	86.30	521.4	-
Outfall Total with Controls:	14366	85.15%	107.1	96.09	81.57%
Annualized Total After Outfall Controls:	14406			96.36	

Biofilter # 1 is expected to clog in 9.68 years.. Percent Solids Reduction due to Engineered Media = 80
Biofilter # 2: Never. Percent Solids Reduction due to Engineered Media = 80
Biofilter # 3 is expected to clog in 5.3 years.. Percent Solids Reduction due to Engineered Media = 80

INFILTRATION CALCULATIONS

DNR Requires post development infiltration volume to equal at least 60% of the pre-development infiltration volume, based on average annual rainfall for this site.

Area of Site =	1.96	Acres
The average annual rainfall =	28.81	inches
Rainfall Volume=	**205082**	Cubic Feet

From WINSLAMM output summary:

Pre-development runoff volume =	2,812	Cubic Feet
Pre-development stay on volume =	202,270	Cubic Feet
Post Development runoff Volume =	14406	Cubic Feet
Post Development stay on Volume =	190,676	Cubic Feet

Stay on Percentage Achieved= **94.3%**

Dels Service Center
North Kinney Coulee Road
La Crosse, WI

Appendix E

UNIVERSAL SOIL LOSS CALCULATIONS

PLOT BY: TNOEL 12/18/2025

ANTICIPATED CONSTRUCTION SEQUENCE

(All dates provided are estimates. Actual construction timelines and sequencing will be determined by the contractor based on site conditions, scheduling, and coordination with project stakeholders.)

1. Install temporary Erosion Control BMP's including silt fence, tracking pad, and check ditch check at locations indicated on plans. (March 1 ,2026)
2. Break ground, strip and stockpile topsoil, rough grade site including foundation, swales, and pond. (March 2, 2026 - April 1, 2026). Pond locations to be used as temporary sediment basin. Temporarily stabilize stockpiles and disturbed areas once at grade.
3. Building construction. (April 2026 - October 2026)
4. Final grading for driveway, walking path, foundation construction. Final Grade Site. Stabilize all finished grade areas with topsoil, seed (WisDOT 40 2lbs/1000SF), fertilizer and straw mulch (90lbs/1000 SF). Install culvert checks, ditch checks, and emat as shown. (April 1, 2026 - July 20, 2026)
5. Pond Construction and install culverts. (August 2026)
6. Permanently stabilize all areas with topsoil, seed (WisDOT 40 2lbs/1000SF), fertilizer and straw mulch (90lbs/1000 SF). and repair any previously stabilized areas as needed. (September 1, 2026).
7. Remove all temporary erosion control measures once vegetation is established. (November 1, 2026)

17-10687-260
DEBOER FAMILY LIVING TRUST
2946 LUOYANG AVE

17-10575-62
HICKORY POINT HOLDINGS LLC
4003 KINNEY COULEE RD

SOIL / MATERIAL STOCKPILE
SILT FENCE
INLET PROTECTION
INLET PROTECTION
CONCRETE CLEAN OUT
RELOCATE AS NEEDED
AND DISPOSE OFFSITE
PROPOSED BUILDING
FFE:716.50
USLE STEP 1
85' @ 2.0%
3/01/26 - 4/01/26
USLE STEP 2
10' @ 5.0%
4/01/26 - 11/01/26
DITCH CHECK
DITCH CHECK
SILT FENCE
EMAT ALL SLOPES
4:1 OR GREATER
BASINS MAY BE EXCAVATED FIRST
DURING CONSTRUCTION FUNCTION
AS TEMPORARY SEDIMENT BASIN
EMAT ALL SLOPES
4:1 OR GREATER
EMAT ALL SLOPES
4:1 OR GREATER
BIORETENTION
BASIN A
BIORETENTION
BASIN B
BIORETENTION
BASIN C
INLET PROTECTION
INLET PROTECTION
TRACKING PAD
SILT FENCE
N KINNEY COULEE ROAD

0' 15' 30'

JEWELL
560 Sunrise Drive
Spring Green, WI 53588
phone: 608-588-7484

Del's Service Center
Repair-Towing-Recovery

Borton CONSTRUCTION

Del's Service Center
La Crosse, WI

Design

12-18-2025

No.	Description	Date

Drawing Name
EROSION CONTROL

Project number	Sheet number
BD5010	C4.0

S:\Projects\BD5010 Borton Const - Dels Service Center Site Design\Drawings\DWG\BD5010_C4.0 EC.dwg.

Soil Loss & Sediment Discharge Calculation Tool

for use on Construction Sites in the State of Wisconsin

WDNR Version 2.1 (12-05-2024)

WISCONSIN DEPT. OF NATURAL RESOURCES

YEAR 1

Developer: Borton Construction

Project: Del's Service Center - La Crosse

Date: 12/18/25

County: La Crosse

Version 2.1

Activity (1)	Begin Date (2)	End Date (3)	Period % R (4)	Annual R Factor (5)	Sub Soil Texture (6)	Soil Erodibility K Factor (7)	Slope (%) (8)	Slope Length (ft) (9)	LS Factor (10)	Land Cover C Factor (11)	Soil loss A (tons/acre) (12)	SDF (13)	Sediment Control Practice (14)	Sediment Discharge (t/ac) (15)
Bare Ground	03/01/26	04/01/26	2.1%	160	Silt Loam	0.43	3.0%	85	0.28	1.00	0.4	0.998	Ditch Check Sedi	0.3
Bare Ground	04/01/26	09/01/26	76.4%	160	Silt Loam	0.43	10.0%	10	0.44	1.00	22.9	0.716	Sediment Basin	3.3
Seed with Mulch or Er	09/01/26	11/01/26	16.6%	160	Silt Loam	0.43	10.0%	10	0.44	0.10	0.5	0.716	Sediment Basin	0.1
End	11/01/26	-----	-----	-----	-------	-----	10.0%	10	0.44	------	-----	0.000	Sediment Basin	0.0
		-----	-----	-----	-------	-----	10.0%	0	-----	-----	-----	0.000		0.0
		-----	-----	-----	-------	-----	0.0%	0	-----	-----	-----	0.000		0.0
										TOTAL	**23.8**		**TOTAL**	**3.6**
													% Reduction Required	**NONE**

Notes:

See Help Page for further descriptions of variables and items in drop-down boxes.
The last land disturbing activity on each sheet must be 'End'. This is either 12 months from the start of construction or final stabilization.
For periods of construction that exceed 12 months, please demonstrate that 5 tons/acre/year is not exceeded in any given 12 month period.

NOTE: THIS TOOL ONLY ADDRESSED SOIL EROSION DUE TO SHEET FLOW. MEASURES TO CONTROL CHANNEL EROSION MAY ALSO BE REQUIRED TO MEET SEDIMENT DISCHARGE REQUIREMENTS.

Recommended Permanent Seeding Dates:

4/15-6/1	and	8/1-8/21	Turf, introduced grasses and legumes
Thaw-6/30			Native Grasses, forbs, and legumes

Designed By:	TTN
Date	12/18/2025

Del's Service Center
Repair-Towing-Recovery

Dels Service Center
North Kinney Coulee Road
La Crosse, WI

Appendix F

MAINTENANCE AGREEMENT

Borton CONSTRUCTION

JEWELL associates engineers, inc.

DECLARATION OF CONDITIONS, COVENANTS AND RESTRICTIONS FOR MAINTENANCE OF STORMWATER MANAGEMENT MEASURES

This space is reserved for recording data

Return to:

City of La Crosse
Engineering Department
400 La Crosse Street
La Crosse, Wisconsin 54601

Tax Parcel No. 17-10575-063

RECITALS:

A. COULEE REGION OCCUPANCY LLC, ATTN: Sarah Delagrave is the owner of DEL'S SERVICE CENTER, more particularly described on Exhibit A attached hereto ("Property").

B. Owner desires to construct buildings and/or parking facilities on the Property in accordance with certain plans and specifications approved by the City.

C. The City requires Owner to record this Declaration regarding maintenance of stormwater management measures to be located on the Property. Owner agrees to maintain the stormwater management measures and to grant to the City the rights set forth below.

NOW, THEREFORE, in consideration of the declarations herein and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the owner agrees as follows:

1. Maintenance. Owner and its successors and assigns shall be responsible to repair and maintain the stormwater management measures located on the Property in good condition and in working order and such that the measures comply with the approved plans on file with the City Engineer. Said maintenance shall be at the Owner's sole cost and expense. Owner will conduct such maintenance or repair work in accordance with all applicable laws, codes, regulations, and similar requirements, and pursuant to the Maintenance Provisions attached hereto as Exhibit B.

2. Easement to City. If Owner fails to maintain the stormwater management measures as required in Section 1, then City shall have the right, after providing Owner with written notice of the maintenance issue ("Maintenance Notice") and thirty (30) days to comply with the City's maintenance request, to enter the Property in order to conduct the maintenance specified in the Maintenance Notice. City will conduct such maintenance work in accordance with all applicable laws, codes, regulations, and similar requirements and will not unreasonably interfere with Owner's use of the Property. All costs and expenses incurred by the City in conducting such maintenance may be charged to the owner of the Property by placing the amount on the tax roll for the Property as a special charge in accordance with Section 66.0627, Wis. Stats.

3. Term/Termination. The term of this Agreement shall commence on the date that this Agreement is filed of record with the Register of Deeds Office for La Crosse County, Wisconsin, and except as otherwise herein specifically provided, shall continue in perpetuity. Notwithstanding the foregoing, this Agreement may be terminated by recording with the Register of Deeds Office for La Crosse County, Wisconsin, a written instrument of termination signed by the City and all of the then-owners of the Property.

4. Miscellaneous.

(a) Notices. Any notice, request or demand required or permitted under this Agreement shall be in writing and shall be deemed given when personally served or three (3) days after the same has been deposited with the United States Post Office, registered or certified mail, return receipt requested, postage prepaid and addressed as follows:

If to Owner: Sarah Delagrave
221 Main Street
Onalaska WI 54650

If to City: City of La Crosse
Engineering Department
400 La Crosse Street
La Crosse, WI 54601
Attention: City Engineer

Any party may change its address for the receipt of notice by written notice to the other.

(b) Governing Law. This Agreement shall be governed and construed in accordance with the laws of the State of Wisconsin.

(c) Amendments or Further Agreements to be in Writing. This Agreement may not be modified in whole or in part unless such agreement is in writing and signed by all parties bound hereby.

(d) Covenants Running with the Land. All of the easements, restrictions, covenants and agreements set forth in this Agreement are intended to be and shall be construed as covenants running with the land, binding upon, inuring to the benefit of, and enforceable by the parties hereto and their respective successors and assigns.

(e) Partial Invalidity. If any provisions, or portions thereof, of this Agreement or the application thereof to any person or circumstance shall, to any extent, be invalid or unenforceable, the remainder of this Agreement, or the application of such provision, or portion thereof, to any other persons or circumstances shall not be affected thereby and each provision of this Agreement shall be valid and enforceable to the fullest extent permitted by law.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this _____ day of _____, 20_____.

_____ _____

STATE OF WISCONSIN)
COUNTY OF LA CROSSE) SS

Personally came before me this _____ day of _____, 20_____, the above named _____, to me known to be the person(s) who executed the foregoing instrument and acknowledged the same.

_____
NOTARY PUBLIC

My Commission Expires:_____

Drafted by: City of La Crosse
Engineering Department
400 La Crosse Street
La Crosse, Wisconsin 54601

EXHIBIT A
Legal Description

Legal Description of Property:

CERTIFIED SURVEY MAP NO. 28 VOL 9 LOT 1 DOC NO. 1244006 & PRT NE-SW BEG NE COR LOT 26 LACROSSE INTERNATIONAL BUSINESS PARK S69D51M22SE 53.43FT TO N COR LOT 1 CSM NO. 158 VOL 8 S0D29M4SE 10.27FT S59D54M33SW 459.30FT ALG W LN LOT 1 CSM NO. 28 VOL 9 TO W R/W I-90 N69D51M 22SW ALG R/W 65.05FT TO SELY COR LOT 26 LACROSSE INTERNATIONAL BUSINESS PARK N59D54M33SE 471.81FT TO POB

Tax Parcel Numbers:
17-10575-063

EXHIBIT B
Stormwater Management Maintenance Measures

Stormwater Management Measures Included in this Agreement (as shown on the attached Construction Plan Set hereby made a part of Exhibit C):

- Culvert Pipes & Storm Sewer
- Bioretention Basin
- Swales

Specific Maintenance Requirements:

Short Term Maintenance (during construction and/or restoration):

- The building construction contractor at the owner's expense or as agreed by the owner and contractor shall perform inspection of all facilities during construction and until site stabilization.
- Inspections during construction shall be weekly and/or after a rainfall event of 0.5" or more.
- Repairs necessary to restore the facility to design performance will be made within 48 hours of the inspection.
- Deficiencies include, but are not limited to, rill erosion, sediment deposition in the infiltration pond or behind perimeter control, and deposition of sediment on the tracking pad.
- Tracking on the public right-of-way shall be inspected regularly during days that construction traffic is leaving the construction site. Any excessive sediment tracked onto the public right-of-way shall be scraped immediately. Thorough sweeping, with appropriate equipment that physically picks up and removes the sediment (vs. pushing it to other locations within the public right-of-way) shall be conducted at the end of each working day during construction activities.

Long Term Maintenance:

- Inspector qualifications for Long Term Maintenance: Inspectors under this item shall maintain a current Registered Professional Engineer License in the State of Wisconsin or possess an alternate certification approved by the **City of La Crosse.**
- All stormwater provisions constructed as part of this project are permanent in location and function over time. The constructed stormwater provisions shall not be removed or significantly altered without written permission from the **City of La Crosse.**

CULVERT PIPES & STORM SEWER

- Visual inspection of components shall be performed and debris removed from pipes, structures, and culverts
- Repair inlet/outlet areas that are damaged or show signs or erosion.
- Rip-rap shall be replaced as necessary.
- Repairs must restore the component to the specifications of the original plan.

BIORETENTION BASINS

- At a minimum, all components of the basin, including inlets, outlets, riprap, and sediment depth, shall be inspected annually.
- Embankments shall be kept clear of woody vegetation.
- To maximize filtration, mowing in buffer areas around stormwater detention basins should be minimized. If occasional mowing is necessary, the mowing height is recommended to be no shorter than 6 inches. Applications of fertilizer, herbicide, pesticide or other chemicals are discouraged unless an approved chemical application plan is on file with the **City of La Crosse.**
- Excavation is prohibited below the original design depth unless geotechnical analysis is completed in accordance with DNR's guidance.
- Repairs must restore the component to the specifications of the original plan.

SWALES

- Inspect swales annually to detect signs of bare ground / soil erosion. swales that show signs of erosion shall be restored. If erosion is persistent, erosion control matting may be helpful in establishing vegetation.
- Inspect swales for signs of standing water or sediment buildup. Re-grade the ditch as necessary to maintain proper stormwater conveyance.
- Repairs must restore the component to the specifications of the original plan.

EXHIBIT C
Construction Plan Set

Insert Construction Plan Set

Del's Service Center
Repair-Towing-Recovery

Dels Service Center
North Kinney Coulee Road
La Crosse, WI

Appendix G

GEOTECHNICAL EXPLORATION REPORT

Borton CONSTRUCTION

JEWELL associates engineers, inc.

CVT

Chosen Valley Testing

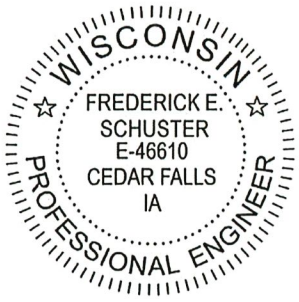
Design Phase Geotechnical Report:

Proposed Del's Auto New Facility
N. Kinney Coulee Rd.
Onalaska, Wisconsin

Prepared for:

Ms. Sarah Delagrave
Coulee Region Occupancy LCC:
221 Main Street,
Onalaska, WI 54650
C/O: Mr. Chris Walters, President
DBS Group

February 14, 2024
22954.23.WIL



I hereby certify that this report was prepared by me or under my direct supervision, and that I am a duly registered engineer under the laws of the State of Wisconsin.

Frederick E. Schuster, PE
Geotechnical Engineer
Registration Number 46610
Date: February 14, 2024

Chosen Valley Testing, Inc.

Geotechnical Engineering & Testing, 1019 2nd Ave. SW, Onalaska, WI 54650, (608) 782-5505 fax (608) 785-2818

Ms. Sarah Delagrave
Coulee Region Occupancy LCC:
221 Main Street,
Onalaska, WI 54650
sarah@delsinc.com
C/O: Mr. Chris Walters, President
DBS Group
cwalters@dbsg.com

February 14, 2024

Re: Design Phase Geotechnical Evaluation Services
Proposed Del's Auto New Facility
N. Kinney Coulee Rd.
Onalaska, Wisconsin
CVT Number: 22954.23.WIL

Dear Ms. Delagrave:

As authorized, we have completed the geotechnical evaluation for the proposed Del's Auto New Facility on N. Kinney Coulee Rd. in Onalaska, Wisconsin. This letter briefly summarizes the findings in the attached report.

Summary of Boring Results

At the surface, the borings and test pit encountered about ½ to 6 ½ feet of sandy and clayey topsoil. Beneath the overlying topsoil, the northern, eastern, and western borings and test pits encountered fill materials generally consisting of silty sand to sandy silts and clays to depths of 2 ½ to 9 ½ feet beneath the surface. Beneath these fills, the easternmost boring and test pit encountered an additional layer of slightly organic lean clay to a depth of about 9 to 11 ½ feet.

Beneath the topsoil layer, easternmost test pit and the northwest pavement boring both encountered a layer of lean to fat clay to depths of 6 ½ and to 12 ½ feet beneath the surface, Below the topsoil, fat clays, or fill materials, the borings and test pits initially encountered interbedded silt, clays and silty clay to depths of about 10 to 14 feet. The bottom of this zone appeared to be at a rather similar elevation across the site. These deposits tended to be softer and more compressible than the deeper soils (see Section B.2. Penetration Test Data).

The underlying soils consisted primarily of silty to rather clean sand to depths of 15 to 17 ½ feet and then terminated in layers of lean clays.

Water was observed in primarily the deeper building borings at 6 ½ to 15 feet below the surface, corresponding to elevations 82 ½ to 91 feet on the datum used. Some of alluvial clays and silts tended to be very wet or saturated, while the immediately underlying sandy soils were waterbearing. This suggests the moisture in the silty soils is perched or trapped. We would expect groundwater levels to fluctuate similarly to nearby creeks and rivers, along with local weather patterns.

Summary of Analysis and Recommendations

Based on the borings, the near-surface soils at the site consist primarily of surface topsoil with existing fill in some area over alluvial clays with silts over sands. Within the building and oversized areas, the topsoil and existing fill are unsuitable for support and are recommended to be fully removed from beneath the building area and oversized areas. Based on the assumed final grades, most footings will bear on the alluvial soils (or on fill placed above the alluvial soils), due to the compressibility of these near-surface alluvial clay and silt soils, partial replacement of the alluvial soils with less compressible granular fill will be needed below footings. For the building, soil correction depths of 2 feet below footing grade are recommended for all footings. Beneath the slabs, a minimum depth of 2 feet of granular fill should be maintained.

With the understood foundation loads and implementation of the earthwork recommendations, we are of the opinion that foundations may be designed to exert bearing pressures up to 2,500 psf. Based on this design bearing pressure, total post-construction settlements are expected to be on the order of 1 inch or less, and differential settlement is expected to be on the order of ½ inch or less between footings that are similarly loaded.

Remarks

We appreciate the opportunity to serve you. The attached report provides more details of our analysis. If you have any questions about our report, please feel free to contact us at (608) 782-5505.

Sincerely,
Chosen Valley Testing, Inc.

Frederick Schuster, PE
Geotechnical Engineer

Colby T. Verdegan, PE
Sr. Geotechnical/Materials Engineer

TABLE OF CONTENTS

Design Phase Geotechnical Report
Proposed Del's Auto New Facility
N. Kinney Coulee Rd.
Onalaska, Wisconsin
CVT Project Number: 22954.23.WIL
Date: February 14, 2024

A. Introduction

The intent of this report is to present our findings to the client in the same logical sequence that led us to arrive at the opinions and recommendations expressed. Since our services often must be completed before the design is finished, assumptions are often needed to prepare a proper scope and to analyze the data. A complete and thorough review of the entire document, including its assumptions and its appendices, should be undertaken immediately upon receipt.

A.1. Purpose

This geotechnical report was prepared to aid in the design and construction of the Del's Auto New Facility on N. Kinney Coulee Rd. in Onalaska, Wisconsin. Our services were authorized by Ms. Sarah Delagrave of Coulee Region Occupancy LCC:.

A.2. Scope

To obtain data for analysis, a total of nine (9) borings were drilled and three test pit was performed on site. The borings were drilled to depths of about 10 to 20 feet while the test pit was excavated to about 15 feet. Our engineering scope consisted of providing geotechnical recommendations for the proposed building, pavements, and water infiltration information in the form of SBD 10793.

A.3. Boring Locations and Elevations

The boring locations were designated to Chosen Valley Testing (CVT) on a site plan provided by the client. The sketch in the Appendix of this report shows the approximate boring locations as drilled.

Ground surface elevations at the borings were estimated with a laser level. The top of a fire hydrant southeast of the site, along N. Kinney Coulee Rd. was used as a referenced. This benchmark was assigned an elevation 100.0 feet.

A.4. Geologic Background

A geotechnical report is based on subsurface data collected for the specific structure or problem. Available geologic data from the region can help interpretation of the data and is briefly summarized in this section.

Geologic maps indicate that the dominant soils in the area are alluvial (water deposited) silts, clays and sand, which may be covered in some areas by colluvial soil (hillside deposits). Bedrock is commonly found with 100 to 150 feet below the surface and likely consists of Cambrian system sandstone.

B. Subsurface Data

Procedures: The borings were performed using penetration test procedures (Method of Test D1586 of the American Society for Testing and Materials). With the penetration test procedures method, a hollow-stem auger is drilled to the desired sampling depth. A 2-inch OD sampling tube is then screwed onto the end of a sampling rod, inserted through the hole in the auger's tip, and then driven into the soil with a 140-pound hammer dropped repeatedly from a height of 30 inches above the sampling rod. The sampler is driven 18 inches into the soil, unless the material is too hard. The samples are generally taken at 2½ to 5-foot intervals. The core of soil obtained was classified and logged by the driller on site and a representative portion was then sealed and delivered to the geotechnical engineer for further review.

The test pits were performed with a large backhoe. The excavated materials were observed, classified, and logged in the field by a professional engineer and a representative sample of each soil type was then sealed and brought back to the laboratory for further testing and classification.

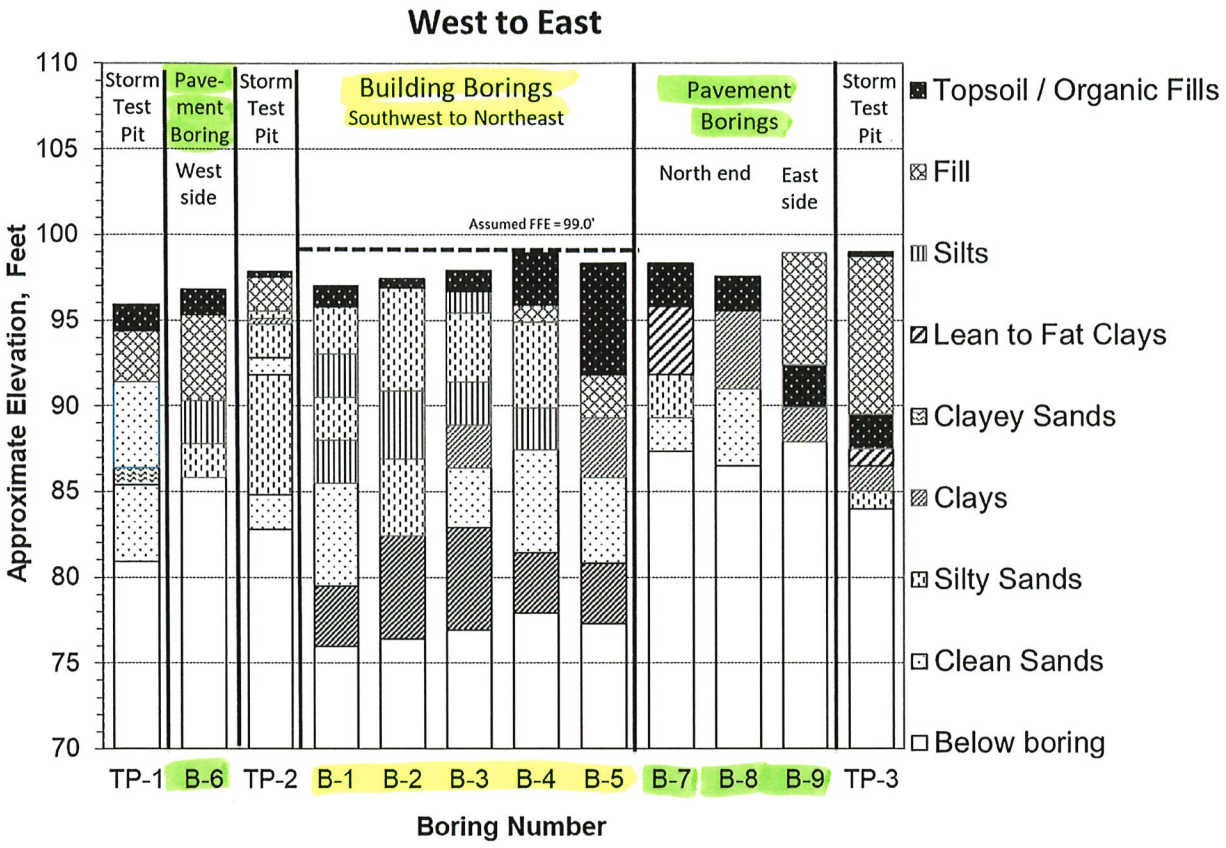
B.1. Stratification

At the surface, the borings and test pit encountered about ½ to 6 ½ feet of sandy and clayey topsoil. Beneath the overlying topsoil, the northern, eastern, and western borings and test pits encountered fill materials generally consisting of silty sand to sandy silts and clays to depths of 2 ½ to 9 ½ feet beneath the surface. Beneath these fills, the easternmost boring and test pit encountered an additional layer of slightly organic lean clay to a depth of about 9 to 11 ½ feet.

Beneath the topsoil layer, easternmost test pit and the northwest pavement boring both encountered a layer of lean to fat clay to depths of 6 ½ and to 12 ½ feet beneath the surface, Below the topsoil, fat clays, or fill materials, the borings and test pits initially encountered interbedded silt, clays and silty clay to depths of about 10 to 14 feet. The bottom of this zone appeared to be at a rather similar elevation across the site. These deposits tended to be softer and more compressible than the deeper soils (see Section B.2. Penetration Test Data).

The underlying soils consisted primarily of silty to rather clean sand to depths of 15 to 17 ½ feet and then terminated in layers of lean clays.

For the reader's convenience, we have summarized the soil boring data on the cross-section which follows. The reader is referred to the log sheets in the Appendix for more detailed information.



B.2. Penetration Test and Laboratory Test Results

The number of blows needed for the hammer to advance the penetration test sampler is an indicator of soil characteristics. The results tend to be more meaningful for natural mineral soils, than for fill soils. In fill soils, compaction tests are more meaningful.

Penetration resistance values ("N" Value) of 4 to 22 blows per foot (BPF) was recorded in the alluvial sands and silty sands indicating they were loose to medium dense, but generally being medium dense. The near-surface alluvial silts and clays encountered on site returned penetration resistance values ranging from weight of hammer to 13 blows per foot, indicating the near-surface materials were very soft to stiff, but generally very soft to medium. The underlying clay at depth returned penetration resistance values ranging from 3 to 9 blows per foot, indicating they were soft to rather stiff.

A key to descriptors used to qualify the relative density of soil (such as *soft, stiff, loose*, and *dense*) can be found on the Legend to Soil Description in the Appendix.

B.3. Groundwater Data

During drilling, the drillers may note the presence of moisture on the sampler, in the cuttings, or in the borehole itself. These findings are reported on the boring logs. Because water levels vary with weather, time of year, and other factors, the presence or lack of water during exploration is subject to interpretation and is not always conclusive.

Water was observed in primarily the deeper building borings at 6 ½ to 15 feet below the surface, corresponding to elevations 82 ½ to 91 feet on the datum used. Some of alluvial clays and silts tended to be very wet or saturated, while the immediately underlying sandy soils were waterbearing. This suggests the moisture in the silty soils is perched or trapped. We would expect groundwater levels to fluctuate similarly to nearby creeks and rivers, along with local weather patterns.

B.4. Laboratory Testing

Fine sieve analyses were performed on samples in the test pits to aid in classification. The following table outlines the results of the analyses and the corresponding USDA soil classification. All tests were performed according to ASTM standards.

Test Pit	Depth Below Surface (ft)	Percent Passing #60 Sieve (%)(.5	Percent Passing #140 Sieve (%).106	Percent Passing #270 Sieve (%).053	USDA Soil Classification
TP-1	3	98.2	64.5	38.6	Sandy Loam, SL
TP-2	4	99.6	74.1	11.0	Loamy Sandy, LS
TP-3	7	99.5	82.0	58.8	Clay, C

C. Design Data

Because each structure has a different loading configuration and intensity, different grades, and different structural or performance tolerances, the results of a geotechnical exploration will mean different things for different facilities. If the facility changes, Chosen Valley Testing should be contacted to discuss possible implications of the changes. Without a chance to review such changes, the recommendations of the soils engineer may no longer be valid or appropriate.

The project consists of the construction of a new Del's Auto Facility, parking lots, and stormwater ponds in La Crosse, Wisconsin. The building is understood to be a 1 story, slab-on-grade structure with cast-in-place concrete foundations with primarily a wood-framed superstructure. Structural loads were not provided. Maximum wall loads are assumed to be on the order of less than 3,000 pounds per lineal foot or less.

Grading plans were not provided. Based on existing grades at the building area borings, the finished floor elevation of the building is assumed to be near elevation 99.0 feet.

Design traffic volumes were not provided. It is assumed that the parking areas will experience primarily standard vehicle traffic with occasional heavy truck traffic.

D. Analysis

Based on the borings, the near-surface soils at the site consist primarily of surface topsoil with existing fill in some area over alluvial clays with silts over sands. Within the building and oversized areas, the topsoil and existing fill are unsuitable for support and are recommended to be fully removed from beneath the building area and oversized areas. Based on the assumed final grades, most footings will bear on the alluvial

soils (or on fill placed above the alluvial soils), due to the compressibility of these near-surface alluvial clay and silt soils, partial replacement of the alluvial soils with less compressible granular fill will be needed below footings. For the building, soil correction depths of 2 feet below footing grade are recommended for all footings. Beneath the slabs, a minimum depth of 2 feet of granular fill should be maintained.

With the understood foundation loads and implementation of the earthwork recommendations, we are of the opinion that foundations may be designed to exert bearing pressures up to 2,500 psf. Based on this design bearing pressure, total post-construction settlements are expected to be on the order of 1 inch or less, and differential settlement is expected to be on the order of ½ inch or less between footings that are similarly loaded.

The remainder of this report provides more details of our recommendations for the proposed improvements.

E. Recommendations-Excavation/Backfill

E.1. Grading Recommendations

E.1.a. Stripping and Excavation: As mentioned before, we recommend completely removing all existing topsoil, buried topsoil, and existing fill materials from the building and oversize areas.

E.1.b. Silt and Clay Soil Corrections: We recommend additionally if encountered removing the near-surface alluvial clays and silts from at least 2 feet below all footings and slabs and 3 feet below all interior footings. The following table shows the estimated depth of the silt and clay removal at each boring location in the building. The clays and silts should be replaced with engineered granular fill.

Boring	Approx. Surface Elevation (feet)	Approx. Depth of Unsuitable Soils (feet)	Approx. Bottom Elevation of Unsuitable Soils feet)	Assumed Approx. Bottom of Footing 2' Correction Elevation (feet)	Approx. Bottom Footing Elevation (feet)
B-1	97	1 1/5	96	93	95
B-2	97 2/5	1/2	97	93	95
B-3	98	1 1/5	96 1/2	93	95
B-4	99	4	95	93	95
B-5	98 1/2	9	89 1/2	89 1/2	95

E.1.c. Subgrade Evaluation: The bearing soils in the excavations should be evaluated by CVT personnel before placing fill or foundations. Any unsuitable materials observed should be removed and replaced with engineered granular fill.

E.1.c. Oversizing: Any stripping or corrective excavations should be oversized at least 1 foot beyond the foundations for each foot of fill needed below footing grade. This oversizing can be reduced by up to 50% if rather precise staking is present during grading.

E.1.d. Filling, Compaction, and Surface Compaction: For ease in compaction, we recommend using

imported sand or gravel having less than 5% particles passing a number 200 sieve, as engineered structural fill below all foundations.

The upper 4 to 6 inches of fill placed directly below the ground floor slabs is recommended to have less than 5% particles passing the number 200 sieve.

All fill below building and oversizing areas should be compacted to a minimum of 95% of its maximum standard Proctor density (ASTM D 698).

E.2. Building Design

E.2.a. Foundation Depth: We recommend placing foundations at least 48 inches below the exposed ground surface for frost protection. Interior foundations in heated areas may be placed directly below slabs. Footings for unheated structures should be placed at least 60 inches below the exposed ground surface.

E.2.b. Bearing Capacity: Based on the assumed loads and implementation of the earthwork recommendations, we are of the opinion that foundations may be designed to exert pressures of up to 2,500 psf. This allowable bearing pressure includes a safety factor of at least 3 against shear failure.

E.2.c. Settlement: Based on a bearing pressure of 1,500 psf, total post-construction settlements are expected to be on the order of 1 inch or less. Differential settlement between similarly loaded footings is expected to be on the order of ½ inch or less.

E.2.d. Vapor Barrier: If the slab will receive coverings that are less permeable than concrete, a vapor barrier should be placed below the slab. Some contractors prefer to place this barrier below the sand, to limit the potential for curling.

E.2.e. Slab Design: The completed slab subgrade is expected to consist 2 feet of engineered fill over silts or clays. We recommend using a modulus of subgrade reaction of up to 150 pounds per cubic inch for these conditions.

F. Paved Areas

F.1. Stripping and Grading

The topsoil and organic materials should be removed within 2 feet of finished subgrade in the paving areas.

After stripping, the parking lot areas are expected to encounter primarily alluvial silty sands to sandy silt with some clays. To provide more uniform support for the pavements, we recommend deeply scarifying the surface and then compacting the existing soils with a large, vibratory compactor. The materials should be compacted to at least 95% of the soil's standard Proctor density and able to pass a test roll.

The alluvial clays were wet and soft at the time of our exploration, and are not expected to be capable of passing a test roll if conditions are similar during construction. Typical remediation efforts consist of soil corrections, thicker pavement sections, and/or extra breaker run or geotextile fabric to strengthen the subgrade. Based on the expected soil conditions, we recommend including a budget for at least 2 feet of breaker run and a geotextile fabric below all paved areas.

F.2. Pavement Design

As mentioned, of silts and clay are expected to be the dominant materials present after topsoil stripping. We recommend designing pavements using support values with the following estimated characteristics:

Soil Type	AASHTO Classification	Frost Index	Design Group Index	K-Value	Soil Support Factor	Est. California Bearing Ratio
Silty Sand	A-2-4/A-4	F-3	10	200	4.5	5 – 15
Silts/Clays	A-4/A-6	F-3	15	125	3.8	5 or less

Again, the proposed pavements are assumed to experience primarily auto traffic and occasional service vehicles. If the soils are sufficiently stable to pass a test roll without using breaker run, we recommend a minimum pavement section consisting of at least 3 inches of bituminous and 8 inches of aggregate base in light parking areas, and at least 4 inches of bituminous and 10 inches of aggregate base in areas that would receive more frequent heavy truck traffic. These sections should be considered preliminary, subject to review by the project civil engineering consultant, and subject to their experience with pavement design and performance in the area of the project.

These pavement sections are based on a firm subgrade capable of passing a test roll. As mentioned, the alluvial silts and clays will likely be wet and soft, and will require scarifying and drying or soil corrections. We again recommend including a budget for placement of up to 2 feet of breaker run and a geotextile fabric below all paved areas.

G. Stormwater Recommendations

Infiltration rates were estimated for the various materials encountered in the pond test pits (Test Pit TP-1, TP-2, and TP-3). The test pits encountered materials ranging from sands to silt and clays. Infiltration rates for these materials were estimated to range from 3.60 to 0.07 inches per hour, based on USDA soil classification. The infiltration/permeability values are the recommended design values from the Wisconsin DNR. Please see the ***Soil Evaluation – Storm*** sheets in the Appendix for more details. Double-ring infiltrometer testing could be performed to provide site specific infiltration values, but was not part of our initial work scope.

H. General Grading Recommendations

H.1. Excavation

The onsite soils are expected to be rather wet, and stripping efforts will likely require tracked equipment. The alluvial clays and silts will be very susceptible to heavy rutting under vehicle traffic. Any disturbed soils will have to be removed and replaced with engineering fill. We recommend limiting traffic to areas that have been strengthened with breaker run and geotextile fabric.

A backhoe is recommended to complete the deep excavations. The backhoe should have a shovel with a smooth lip, to limit disturbance to those materials left in place.

H.2. Sideslopes

The contractor will be required to slope or shore the excavations as needed to meet OSHA requirements for safety and to limit disturbance to surrounding structures. The clayey soils at the site would likely be classified as Type B soils as defined by OSHA. The imported sand fill, natural clean sands and silts on site are expected to be primarily Type C soils as defined by OSHA.

H.3. Cold Weather

If the excavation occurs during freezing temperatures, good winter construction practices should be used. Frozen fill should be thawed before placing and filling should not be placed on frozen ground. Slab areas should be completely thawed prior to placing concrete.

H.4. Construction Testing and Documentation

The bottom of the excavations should be evaluated and documented by qualified geotechnical personnel to assess the soils at bearing depth. Any fill placed below building areas should be evaluated for conformance to the project gradation recommendations and should be tested for compaction. If filling proceeds during periods of freezing weather, full-time testing should be considered to help confirm that imported fill is thawed prior to and during compaction, and that all snow has been removed before placement of the fill.

Although our firm offers testing services relating to civil and structural components of the structure (such as concrete testing, reinforcement observations, etc.), specification of such services are beyond our work scope and the designer should be consulted as to such requirements.

I. Level of Care

The services provided for this project have been conducted in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in this area, under similar budget and time constraints. This is our professional responsibility. No other warranty, expressed or implied, is made.

Appendix

Boring Location Sketch

Log of Boring # 1-9

Log of Test Pit # 1-3

Gradation Curves

Soil Evaluation - Storm

Legend to Soil Description

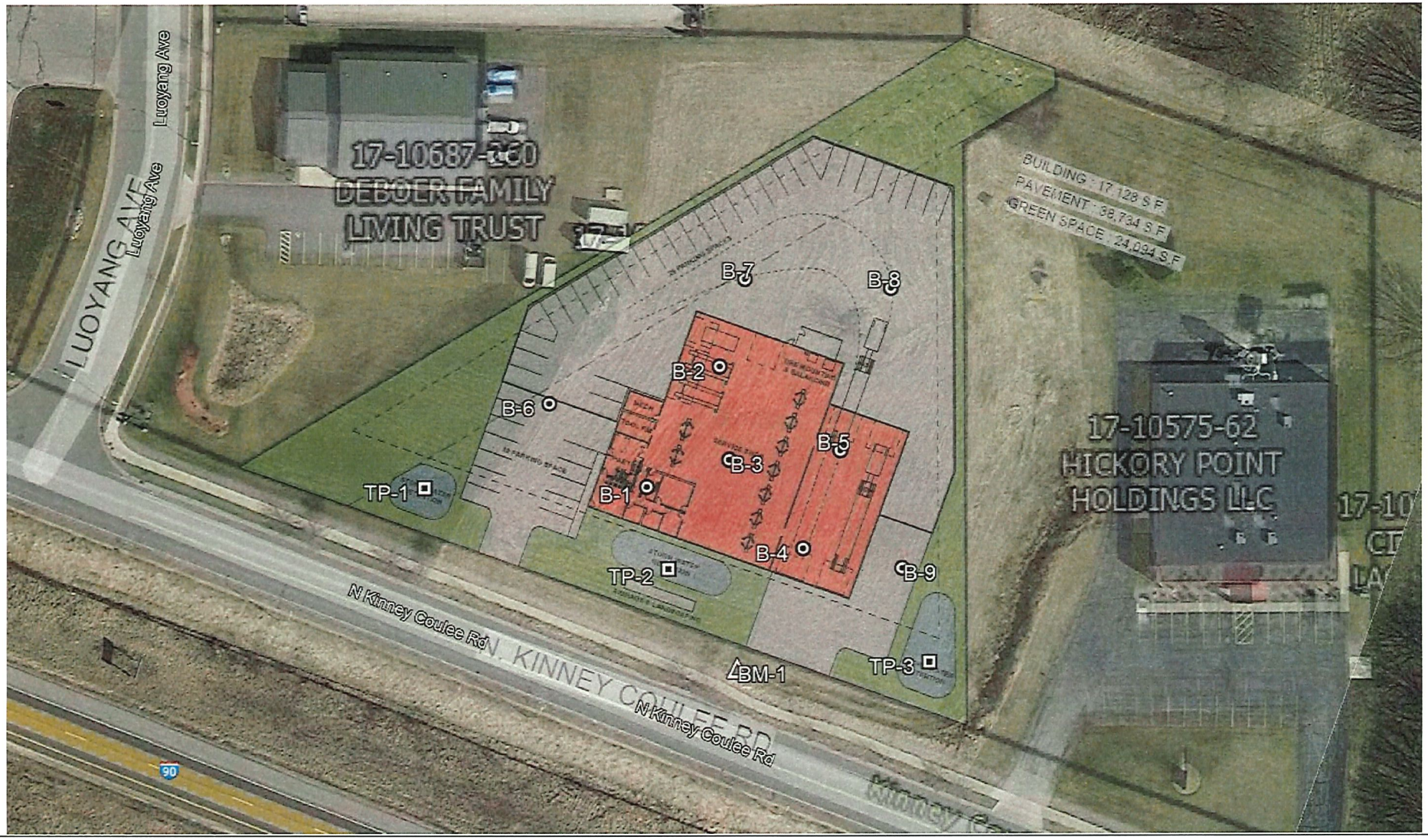
Chosen Valley Testing, Inc.

Legend

- Boring Location
- Test Pit Location
- Bench Mark

N

Boring Location Sketch
Proposed Del's Auto New Facility
N. Kinney Coulee Rd.
Onalaska, Wisconsin
22954.23.WIL



LOG OF BORING

CHOSEN VALLEY TESTING **CVT**

PROJECT: 22954.23.WIL Design Phase Geotechnical Evaluation Proposed Del's Auto New Facility N. Kinney Coulee Rd Onalaska, Wisconsin	BORING: **B-1** LOCATION: See attached sketch DATE: 1/24/2024 SCALE: 1" = 3'

Elev.	Depth	USCS Symbol	Description of Materials (ASTM D 2487/2488)	BPF	WL	Tests and Notes
97.0	0.0	ML OL	**Slightly Organic SANDY SILT** dark brown. (Topsoil)			Benchmark: Top nut of the fire hydrant south of the site, assigned elevation 100 feet.
95.8	1.2	SM	**SILTY SAND** seams of silt, fine grained, brown, moist, medium dense. (Alluvium)	12		
93.0	4.0	ML	**SANDY SILT** seams of sand, brown, wet, stiff. (Alluvium)	13		PP = 1.5 tsf, MC = 16.1%
90.5	6.5	SM	**SILTY SAND** seams of lean clay, fine grained, brown, moist, loose. (Alluvium)	5		
88.0	9.0	ML	**SANDY SILT** brown, very wet, rather soft. (Alluvium)	4		PP = 0.5 tsf, MC = 21.6%
85.5	11.5	SP SM	**POORLY GRADED SAND with SILT** fine grained, brown, wet to water bearing, medium dense. (Alluvium) Water bearing below 13'.	13	▽	
			Seams of silt around 15'.	11		
79.5	17.5	CL	**LEAN CLAY** gray, wet, rather stiff. (Alluvium)	9		PP = 1.25 tsf, MC = 25.7%
76.0	21.0		End of boring. Water observed during drilling below around 13'. Boring sealed upon completion.			

CVT STANDARD 22954.23.WIL (DELS AUTO NEW FACILITY).GPJ LOG A GNNN06.GDT 2/7/24

LOG OF BORING

CHOSEN VALLEY TESTING **CVT**

PROJECT: 22954.23.WIL Design Phase Geotechnical Evaluation Proposed Del's Auto New Facility N. Kinney Coulee Rd Onalaska, Wisconsin	BORING: **B-2** LOCATION: See attached sketch DATE: 1/24/2024 SCALE: 1" = 3'

Elev.	Depth	USCS Symbol	Description of Materials (ASTM D 2487/2488)	BPF	WL	Tests and Notes
97.4	0.0					
96.9	0.5	CL OL	**Slightly Organic LEAN CLAY** black. (Topsoil)			Benchmark: Top nut of the fire hydrant south of the site, assigned elevation 100 feet.
		SM	**SILTY SAND** fine grained, brown, moist, medium dense. (Alluvium)	19		
				14		
90.9	6.5	ML	**SILT** brown, very wet to saturated, very soft. (Alluvium)	*	▽	* WH / WH / WH PP < 0.25 tsf, MC = 27.8%
86.9	10.5	SM	**SILTY SAND** seams of silt, fine grained, brown, water bearing, loose. (Alluvium)	4		
				8		
82.4	15.0	CL	**LEAN CLAY** brown, very wet, medium to rather stiff. (Alluvium) Wet below 17.5'. Gray below 17.5'.	9		PP < 0.25 tsf, MC = 21.9%
76.4	21.0			6		PP = 0.25 tsf, MC = 25.7%
			End of boring. Water observed during drilling below around 7'. Boring sealed upon completion.			

CVT STANDARD 22954.23.WIL (DELS AUTO NEW FACILITY).GPJ LOG A GNNN06.GDT 2/7/24

LOG OF BORING

CHOSEN VALLEY TESTING **CVT**

PROJECT: 22954.23.WIL Design Phase Geotechnical Evaluation Proposed Del's Auto New Facility N. Kinney Coulee Rd Onalaska, Wisconsin	BORING: **B-3** LOCATION: See attached sketch DATE: 1/24/2024 SCALE: 1" = 3'

Elev.	Depth	USCS Symbol	Description of Materials (ASTM D 2487/2488)	BPF	WL	Tests and Notes
97.9	0.0	ML OL	**Slightly Organic SANDY SILT** dark brown. (Topsoil)			Benchmark: Top nut of the fire hydrant south of the site, assigned elevation 100 feet.
96.7	1.2	ML	**SANDY SILT** gray, wet, very stiff. (Alluvium)			PP = 2.5 tsf
95.4	2.5	SM	**SILTY SAND** fine grained, brown, moist, medium dense. (Alluvium)	20		
				22		
91.4	6.5	ML	**SANDY SILT** brown, wet, medium. (Alluvium)	8		PP = 1.0 tsf, MC = 19.0%
88.9	9.0	CL ML	**SILTY CLAY** seams of sand, brown, wet, rather soft. (Alluvium)	4	▽	PP = 1.25 tsf
86.4	11.5	SP SM	**POORLY GRADED SAND with SILT** fine grained, brown, water bearing, loose. (Alluvium)	9		
82.9	15.0	CL	**LEAN CLAY** brown, very wet, rather soft to medium. (Alluvium) Wet below 17.5'. Gray below 17.5'.	5		PP = 0.5 tsf
76.9	21.0			7		PP = 1.5 tsf, MC = 25.4%
			End of boring. Water observed during drilling below around 11'. Boring sealed upon completion.			

CVT STANDARD 22954.23.WIL (DELS AUTO NEW FACILITY).GPJ LOG A GNNN06.GDT 2/7/24

LOG OF BORING

CHOSEN VALLEY TESTING **CVT**

PROJECT: 22954.23.WIL Design Phase Geotechnical Evaluation Proposed Del's Auto New Facility N. Kinney Coulee Rd Onalaska, Wisconsin	BORING: **B-4** LOCATION: See attached sketch DATE: 1/24/2024 SCALE: 1" = 3'

Elev.	Depth	USCS Symbol	Description of Materials (ASTM D 2487/2488)	BPF	WL	Tests and Notes
98.9	0.0	SM	**Slightly Organic SILTY SAND** dark brown. (Topsoil / Fill)			Benchmark: Top nut of the fire hydrant south of the site, assigned elevation 100 feet.
96.9	2.0	ML OL	**FILL**, Slightly organic silt, black, wet, medium.	10		
95.9	3.0	ML	**FILL**, sandy silt, brown and gray mixed, wet, rather stiff.			PP = 2.5 tsf
94.9	4.0	SM	**SILTY SAND** fine grained, brown, moist, medium dense. (Alluvium)	22		
				11		
89.9	9.0	ML	**SANDY SILT** brown, wet, medium. (Alluvium)	6		PP = 1.5 tsf, MC = 18.4%
87.4	11.5	SP SM	**POORLY GRADED SAND with SILT** seams of lean clay, fine grained, brown, wet to water bearing, medium dense. (Alluvium) Water bearing below 13.5'.	12	▽	
				12		
81.4	17.5	CL	**LEAN CLAY** brown, saturated, soft. (Alluvium)	3		PP < 0.25 tsf, MC = 32.0%
77.9	21.0		End of boring. Water observed during drilling below around 13.5'. Boring sealed upon completion.			

CVT STANDARD 22954.23.WIL (DELS AUTO NEW FACILITY).GPJ LOG A GNNN06.GDT 2/7/24

LOG OF BORING

CHOSEN VALLEY TESTING **CVT**

PROJECT: 22954.23.WIL Design Phase Geotechnical Evaluation Proposed Del's Auto New Facility N. Kinney Coulee Rd Onalaska, Wisconsin	BORING: **B-5** LOCATION: See attached sketch DATE: 1/24/2024 SCALE: 1" = 3'

Elev.	Depth	USCS Symbol	Description of Materials (ASTM D 2487/2488)	BPF	WL	Tests and Notes
98.3	0.0	CL OL	**FILL**, Slightly organic lean clay, black, wet, rather stiff.			Benchmark: Top nut of the fire hydrant south of the site, assigned elevation 100 feet.
				10		PP = 2.25 tsf
			Pockets of silty sand around 5'.	11		PP = 1.5 tsf
91.8	6.5	ML	**FILL**, sandy silt, brown and gray mixed, wet, rather stiff.			
				11		PP = 1.0 tsf
89.3	9.0	CL	**LEAN CLAY** gray with rust mottling, wet, medium. (Alluvium)			
				6		PP = 0.75 tsf, MC = 27.6%
85.8	12.5	SP SM	**POORLY GRADED SAND with SILT** fine grained, brown, wet to water bearing, medium dense. (Alluvium)	13		
			Water bearing below 15'. Seams of silty sand around 15'.	21	▽	
80.8	17.5	CL	**LEAN CLAY** brown, saturated, soft. (Alluvium)			
				3		PP < 0.25 tsf, MC = 38.0%
77.3	21.0		End of boring Water observed during drilling below around 15'. Boring sealed upon completion.			

CVT STANDARD 22954.23.WIL (DELS AUTO NEW FACILITY).GPJ LOG A GNNN06.GDT 2/7/24

LOG OF BORING

CHOSEN VALLEY TESTING **CVT**

PROJECT: 22954.23.WIL Design Phase Geotechnical Evaluation Proposed Del's Auto New Facility N. Kinney Coulee Rd Onalaska, Wisconsin	BORING: **B-6** LOCATION: See attached sketch DATE: 1/24/2024 SCALE: 1" = 3'

Elev.	Depth	USCS Symbol	Description of Materials (ASTM D 2487/2488)	BPF	WL	Tests and Notes
96.8	0.0	CL OL	**Slightly Organic LEAN CLAY** black. (Topsoil)			Benchmark: Top nut of the fire hydrant south of the site, assigned elevation 100 feet.
95.3	1.5	SM	**SILTY SAND** pockets of silt, fine grained, brown, moist, medium dense.	20		
			Trace gravel around 5'.	24		
90.3	6.5	ML	**SANDY SILT** brown, wet, rather soft. (Alluvium)	5		PP = 1.25 tsf, MC = 19.5%
87.8	9.0	SM	**SILTY SAND** fine grained, brown, moist, loose. (Alluvium)	6		
85.8	11.0		End of boring. Water not observed during drilling. Boring sealed upon completion.			

CVT STANDARD 22954.23.WIL (DELS AUTO NEW FACILITY).GPJ LOG A GNNN06.GDT 2/7/24

LOG OF BORING

CHOSEN VALLEY TESTING **CVT**

PROJECT: 22954.23.WIL
Design Phase Geotechnical Evaluation
Proposed Del's Auto New Facility
N. Kinney Coulee Rd
Onalaska, Wisconsin

BORING: **B-7**

LOCATION:
See attached sketch

DATE: 1/24/2024 SCALE: 1" = 3'

Elev.	Depth	USCS Symbol	Description of Materials (ASTM D 2487/2488)	BPF	WL	Tests and Notes
98.3	0.0	CL OL	**Slightly Organic LEAN CLAY** black, wet, rather stiff. (Topsoil)			Benchmark: Top nut of the fire hydrant south of the site, assigned elevation 100 feet.
95.8	2.5	CH CL	**FAT to LEAN CLAY** reddish brown, wet, rather stiff. (Alluvium)	10		PP = 2.25 tsf, MC = 36.8%
			Trace sand around 5'.	9		
91.8	6.5	SM	**SILTY SAND** fine grained, brown, wet, medium dense. (Alluvium)	20		
89.3	9.0	SP SM	**POORLY GRADED SAND with SILT** fine grained, brown, water bearing, medium dense. (Alluvium)	12	▽	
87.3	11.0		End of boring. Water observed during drilling below around 9'. Boring sealed upon completion.			

CVT STANDARD 22954.23.WIL (DELS AUTO NEW FACILITY).GPJ LOG A GNNN06.GDT 2/7/24

LOG OF BORING

CHOSEN VALLEY TESTING **CVT**

PROJECT: 22954.23.WIL Design Phase Geotechnical Evaluation Proposed Del's Auto New Facility N. Kinney Coulee Rd Onalaska, Wisconsin	BORING: **B-8** LOCATION: See attached sketch DATE: 1/24/2024 SCALE: 1" = 3'

Elev.	Depth	USCS Symbol	Description of Materials (ASTM D 2487/2488)	BPF	WL	Tests and Notes
97.5	0.0	CL OL	**Slightly Organic LEAN CLAY** black. (Topsoil)			Benchmark: Top nut of the fire hydrant south of the site, assigned elevation 100 feet.
95.5	2.0	CL	**LEAN CLAY** brown, wet, medium to rather stiff. (Alluvium)	8		PP = 2.0 tsf, MC = 25.1%
				9		PP = 2.0 tsf
91.0	6.5	SP SM	**POORLY GRADED SAND with SILT** fine grained, brown, water bearing, loose. (Alluvium)	4	▽	
				5		
86.5	11.0		End of boring. Water observed during drilling below around 6.5'. Boring sealed upon completion.			

LOG OF BORING

CHOSEN VALLEY TESTING **CVT**

PROJECT: 22954.23.WIL Design Phase Geotechnical Evaluation Proposed Del's Auto New Facility N. Kinney Coulee Rd Onalaska, Wisconsin	BORING: **B-9** LOCATION: See attached sketch DATE: 1/24/2024 SCALE: 1" = 3'

Elev.	Depth	USCS Symbol	Description of Materials (ASTM D 2487/2488)	BPF	WL	Tests and Notes
98.9	0.0	CL	**FILL**, sandy lean clay, trace roots, gray, wet, very stiff.			Benchmark: Top nut of the fire hydrant south of the site, assigned elevation 100 feet.
				18		PP = 1.5 tsf, MC = 18.1%
94.9	4.0	SM	**FILL**, silty sand, fine grained, brown, moist, medium dense.			
93.9	5.0	ML	**FILL**, sandy silt, gray, wet, stiff.	15		PP = 1.5 tsf
92.4	6.5	CL OL	**Slightly Organic LEAN CLAY** trace roots, black, wet, medium. (Alluvium)	7		PP = 2.0 tsf, MC = 31.8%
89.9	9.0	CL	**LEAN CLAY** black, wet, medium. (Alluvium / B-Horizon)	8		PP = 1.25 tsf
87.9	11.0		End of boring. Water not observed during drilling. Boring sealed upon completion.			

LOG OF TEST PIT

CHOSEN VALLEY TESTING **CVT**

PROJECT: 22954.23.WIL
Design Phase Geotechnical Evaluation
Proposed Del's Auto New Facility
N. Kinney Coulee Rd
Onalaska, Wisconsin

BORING: **TP-1**

LOCATION:
See attached sketch

DATE: 2/1/2024

SCALE: 1" = 3'

Elev.	Depth	USCS Symbol	Description of Materials (ASTM D 2487/2488)	WL	Tests and Notes
95.9	0.0	CL OL	**Slightly Organic LEAN CLAY** black. (Topsoil)		Benchmark: Top nut of the fire hydrant south of the site, assigned elevation 100 feet.
94.4	1.5		**FILL** Sandy Silt, pockets of sand, fine grained, light brown, moist.		
91.4	4.5				
90.9	5.0	SP	**POORLY GRADED SAND** light brown, wet. (Alluvium)		
		SP SM	**POORLY GRADED SAND with SILT** light brown, wet. (Alluvium)		
86.4	9.5				
85.4	10.5	SC	**CLAYEY SAND** brown, wet. (Alluvium)	▽	
		SP	**POORLY GRADED SAND with SILT** fine grained, brown, water bearing. (Alluvium)		
80.9	15.0				
			End of Test Pit. Water observed during drilling below around 10 1/2'. Test pit backfilled upon completion.		

CVT TEST PIT 22954.23.WIL (DELS AUTO NEW FACILITY).GPJ LOG A GNNN06.GDT 2/14/24

LOG OF TEST PIT

CHOSEN VALLEY TESTING **CVT**

PROJECT: 22954.23.WIL Design Phase Geotechnical Evaluation Proposed Del's Auto New Facility N. Kinney Coulee Rd Onalaska, Wisconsin	BORING: **TP-2** LOCATION: See attached sketch DATE: 2/1/2024 SCALE: 1" = 3'

Elev.	Depth	USCS Symbol	Description of Materials (ASTM D 2487/2488)	WL	Tests and Notes
97.8	0.0				
97.5	0.3	ML OL	**FILL**, Slightly organic sandy silt, trace roots, dark gray, wet.		Benchmark: Top nut of the fire hydrant south of the site, assigned elevation 100 feet.
95.5	2.3	SM	**FILL**, Silty sand, trace gravel, light brown, moist.		
95.1	2.7	SM	**SILTY SAND** seams of silt, fine grained, brown, moist. (Alluvium)		
94.8	3.0	CL	**SANDY LEAN CLAY** dark grey, wet. (Alluvium)		
92.8	5.0	SM	**SILTY SAND** light brown, wet. (Alluvium)		
91.8	6.0	SP	**POORLY GRADED SAND with SILT** fine to medium grained, light brown, moist. (Alluvium)		
84.8	13.0	SM	**SILTY SAND** fine grained, light brown, wet. (Alluvium)	▽	
82.8	15.0	SP SM	**POORLY GRADED SAND with SILT** fine grained, brown, wet to water bearing. (Alluvium)		
			End of Test Pit. Water observed during drilling below around 13'. Test pit backfilled upon completion.		

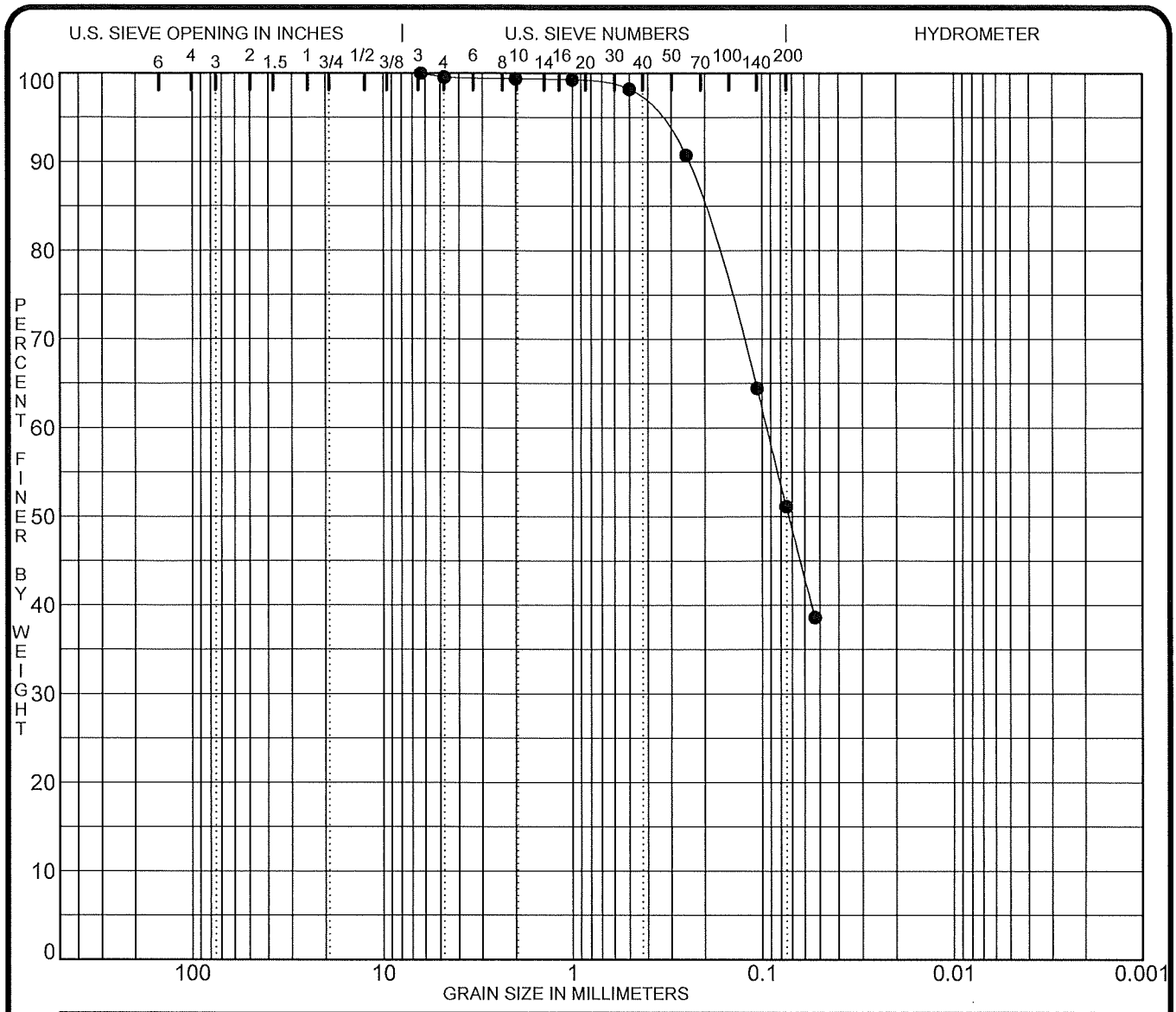
CVT TEST PIT 22954.23.WIL (DELS AUTO NEW FACILITY).GPJ LOG A GNNN06.GDT 2/14/24

LOG OF TEST PIT

CHOSEN VALLEY TESTING **CVT**

PROJECT: 22954.23.WIL Design Phase Geotechnical Evaluation Proposed Del's Auto New Facility N. Kinney Coulee Rd Onalaska, Wisconsin	BORING: **TP-3** LOCATION: See attached sketch DATE: 2/1/2024 SCALE: 1" = 3'

Elev.	Depth	USCS Symbol	Description of Materials (ASTM D 2487/2488)	WL	Tests and Notes
99.0	0.0				
98.7	0.3	CL SM	**FILL**, Slightly organic sandy lean clay, trace roots, dark gray, wet. **FILL**, Silty sand, trace gravel, light brown, moist.		Benchmark: Top nut of the fire hydrant south of the site, assigned elevation 100 feet.
97.1	1.9				
96.0	3.0		**FILL**, Sandy lean Clay, trace gravel, lightbrown, moist. Perched water was encountered at about 2 feet.		
89.5	9.5		**FILL**, Sandy lean clay, gray to light brown to blue-green, wet.		
87.5	11.5	CL OL	**Slightly Organic LEAN CLAY** trace roots, black, wet. (Alluvium)		
86.5	12.5	CH CL	**FAT to LEAN CLAY** grayish brown, wet. (Alluvium)		
85.0	14.0	CL	**SANDY LEAN CLAY** light brown, wet. (Alluvium)	▽	
84.0	15.0	SM	**SILTY SAND** fine grained, brown, waterbearing. (Alluvium)		
			End of Test Pit. Water observed during drilling below around 14'. Test pit backfilled upon completion.		



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	MC%	LL	PL	PI	Cc	Cu
●	TP-1	3.0							

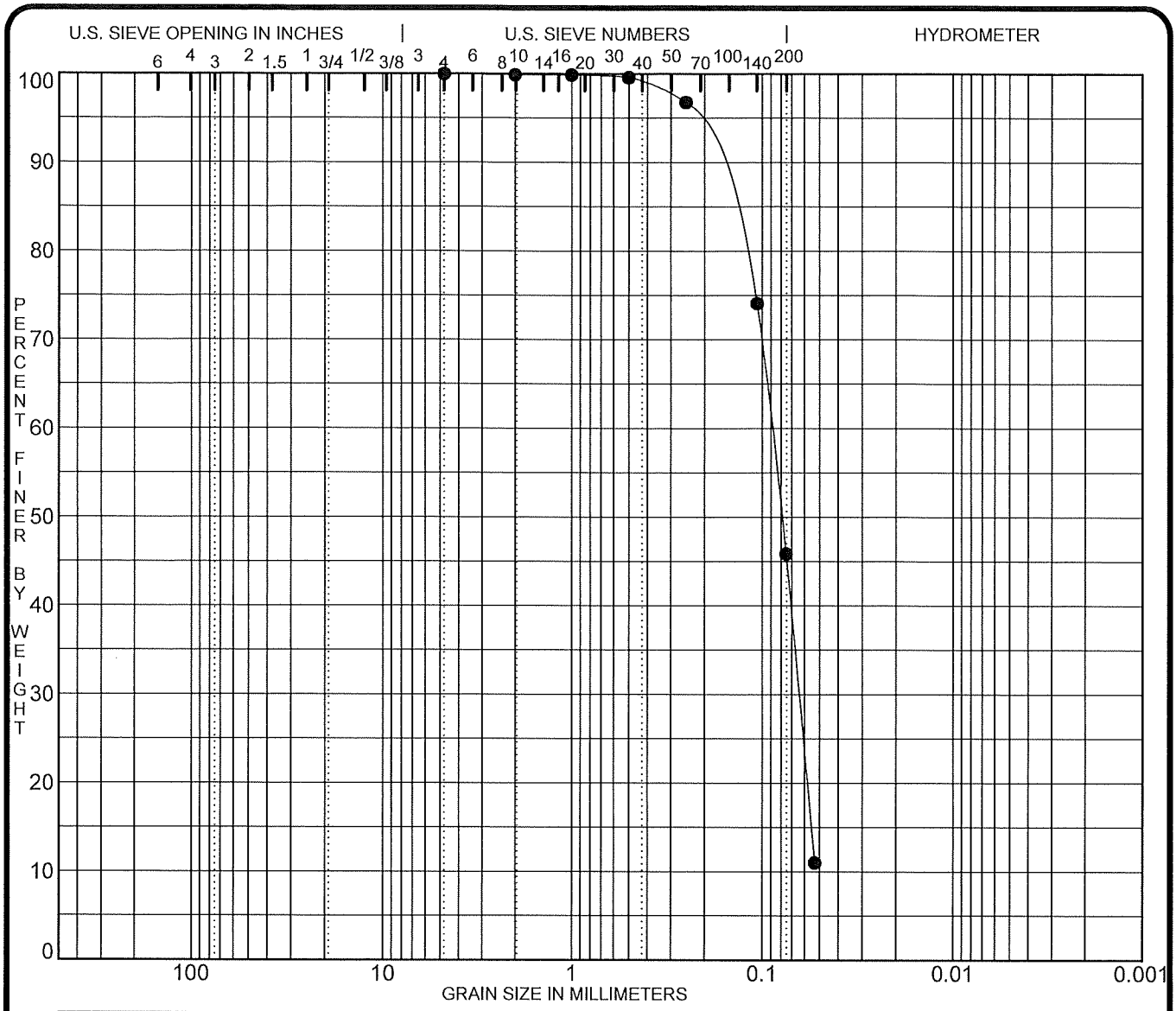
	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	TP-1	3.0	6.30	0.09			0.4	48.4	51.1	

PROJECT Proposed Del's Auto New Facility - N. Kinney
Coulee Rd

JOB NO. 22954.23.WIL
DATE 2/9/24

GRADATION CURVES

Chosen Valley Testing



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	MC%	LL	PL	PI	Cc	Cu
●	TP-2	4.0							

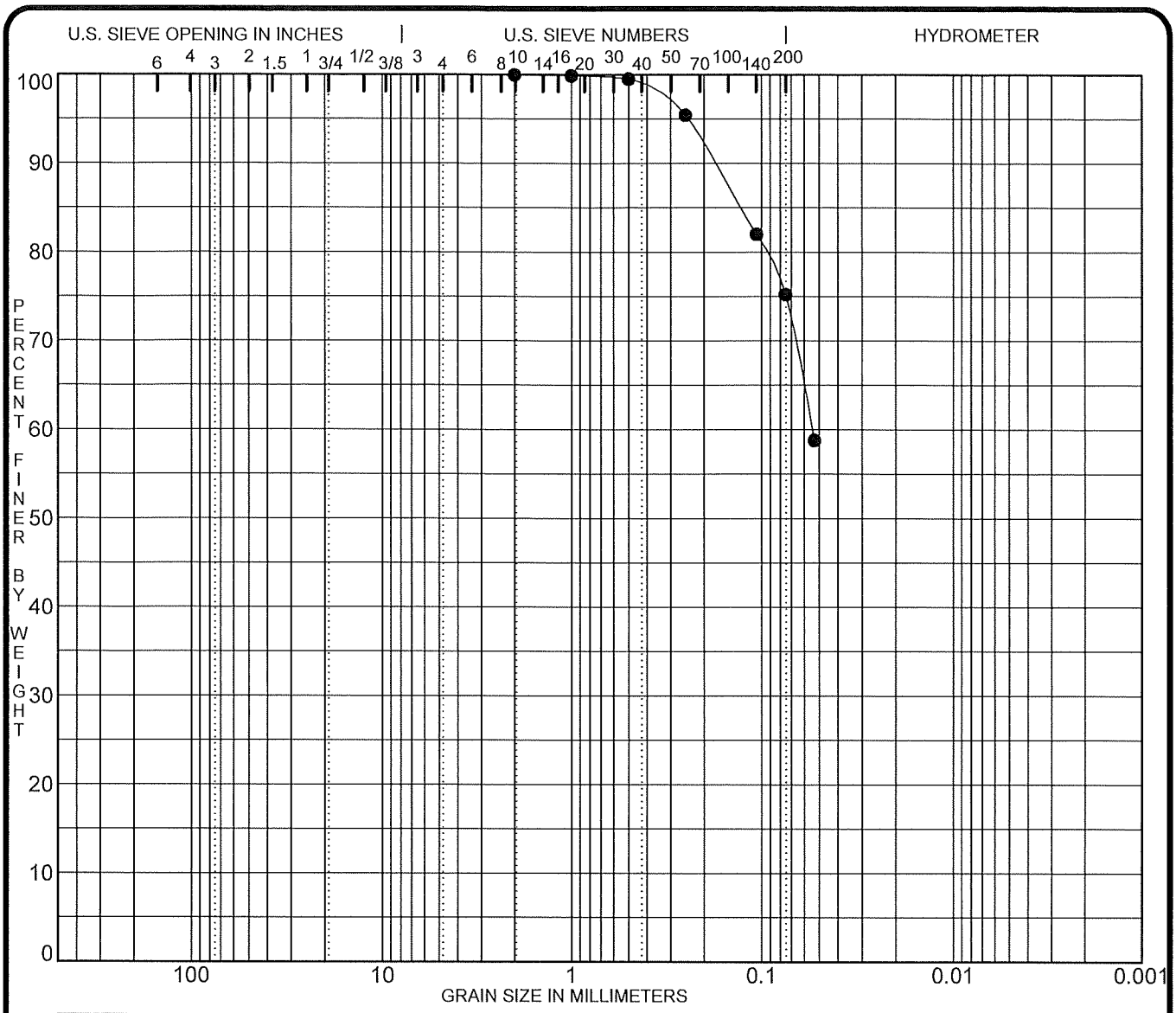
	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	TP-2	4.0	4.75	0.09	0.064		0.0	54.1	45.9	

PROJECT Proposed Del's Auto New Facility - N. Kinney
Coulee Rd

JOB NO. 22954.23.WIL
DATE 2/9/24

GRADATION CURVES

Chosen Valley Testing



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	MC%	LL	PL	PI	Cc	Cu
●	TP-3	7.0							

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	TP-3	7.0	2.00	0.05			0.0	24.8	75.2	

PROJECT Proposed Del's Auto New Facility - N. Kinney
Coulee Rd

JOB NO. 22954.23.WIL
DATE 2/9/24

GRADATION CURVES

Chosen Valley Testing

1002-CPS-23
Division of Industry Services
P. O. Box 2658
Madison, Wisconsin 53701
Scott Walker, Governor
Laura Gutierrez, Secretary

Attachment 2:

SOIL AND SITE EVALUATION – STORM

In accordance with SPS 382.365, 385, Wis. Adm. Code, and WDNR Standard 1002

Attach a complete site plan on paper not less than 8 ½ x 11 inches in size. Plan must include, but not limited to: vertical and horizontal reference point (BM), direction and percent of slope, scale or dimensions, north arrow, and BM referenced to nearest road

Please print all information

Personal information you provide may be used for secondary purposes [Privacy Law, s. 15.04(1)(m)]

County: La Crosse
Parcel I.D.:
Reviewed by:
Date:

Property Owner	Property Location
City of La Crosse	Govt. Lot NE ¼ SW ¼ S12 T 16 N R 07 ☒(or) W
Property Owner' Mail Address: 400 La Crosse St.	Lot # / Block # / Subd. Name or CSM #
City State Zip Code Phone Number: La Crosse WI 54601	☑ City ☐ Village ☐ Town Nearest Road: Onalaska N. Kinney Coulee Rd.

Drainage area _____ ☐ sq .ft ☐ acres

Test site suitable for (check all that apply): ☐ Site not suitable;

☐ Bioretention; ☐ Subsurface Dispersal System;

☐ Reuse; ☐ Irrigation; ☐ Other _____

Hydraulic Application Test Method

☒ Morphological Evaluation
☐ Double Ring Infiltrometer
☐ Other: (specify) _____

Soil Moisture
Date of soil borings: 2/1/2024

USDA-NRCS WETS Value:
☐ Dry =1;
☐ Normal = 2;
☐ Wet = 3.

TP-1 #OBS. ☑ Pit ☐ Boring Ground surface elevation. *95.9 ft. Elevation of limiting factor *85.4 ft.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App Rate Inches/Hr
1	0-18	10YR 2/1		C	2 f abk	mfr	as	<10	>70	0.07
2	18-54	10YR 5/6		SL	2 f pl	mvfr	as	<10	38.6	0.50
3	54-60	10YR 6/4		S	0sg	ml	gw	<10	<15	3.60
4	60-114	10YR 5/4		S	0sg	ml	gw	<10	<15	3.60
5	114-126	10YR 4/6		LS	1 f sbk	mfr	gw	<10	15-25	1.63
6	126-180	10YR 4/3	Water bearing below about 10.5 feet.	S	0sg	ml		<10	<15	3.60

Comments:
*Benchmark: Top nut of the fire hydrant south of the site, assigned elevation of 100 feet.

TP-2 #OBS. ☑ Pit ☐ Boring Ground surface elevation. *97.8 ft. Elevation of limiting factor *84.8 ft.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App Rate Inches/Hr
1	0-4	10YR 3/2		SiL	2 f pl	mvfr	as	<10	>70	0.13
2	4-28	10YR 4/2		LS	1 f sbk	ml	as	<10	15-25	1.63
3	28-32	10YR 5/4		LS	1 f sbk	mvfr	gw	<10	15-25	1.63
4	32-36	10YR 3/1		C	2 f abk	mfr	gw	<10	>80	0.07
5	36-60	10YR 5/3		S	1 f sbk	mvfr	gw	<10	11.0	1.63
6	60-72	10YR 5/8		S	0sg	ml	gw	<10	<15	3.60
7	72-156	10YR 5/4	Water bearing below about 13 feet.	LS	1 f sbk	mvfr	gw	<10	15-25	1.63

Comments:
*Benchmark: Top nut of the fire hydrant south of the site, assigned elevation of 100 feet.

Name (Please Print)	Signature	Credential Number
Frederick Schuster, PE	Frederick Schuster	CST 1356930 / PE 46610
Address	**Date Evaluation Conducted**	**Telephone Number**
Chosen Valley Testing Inc, 1019 2nd Ave. SW., Onalaska, WI 54650	2/12/2024	608-782-5505

SBD-10793 (R01/17)

WDNR
September 2017

TP-2 #OBS. ☐ Pit ☐ Boring Ground surface elevation. _____ ft. Elevation of limiting factor _____ ft. Page 2 of 2

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App Rate Inches/Hr
8	156-180	10YR 4/6	Water bearing below about 13 feet.	S	0sg	ml		<10	<15	3.60

Comments:

TP-3 #OBS. ☑ Pit ☐ Boring Ground surface elevation. *99.0 ft. Elevation of limiting factor *85.0 ft.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App Rate Inches/Hr
1	0-4	10YR 3/2		C	1 f pl	mvfr	as	<10	>70	0.07
2	4-23	10YR 4/3		LS	0sg	mfr	as	<10	15-25	1.63
3	23-36	10YR 4/3		C	1 f pl	mfr	as	<10	>70	0.07
4	36-54	10YR 4/1		C	2 f sbk	mfr	as	<10	>80	0.07
5	54-72	10YR 5/2		C	1 f abk	mfr	as	<10	>70	0.07
6	72-114	5YR 5/2		C	2 f sbk	mfi	as	<10	75.2	0.07
7	114-138	10YR 3/1		C	2 f abk	mfi	gw	<10	>80	0.07

Comments:
*Benchmark: Top nut of the fire hydrant south of the site, assigned elevation of 100 feet.

TP-3 #OBS. ☐ Pit ☐ Boring Ground surface elevation. _____ ft. Elevation of limiting factor _____ ft.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App Rate Inches/Hr
8	138-150	10YR 5/3		C	3 m sbk	mvfi	gw	<10	>80	0.07
9	150-168	10YR 3/6		C	2 f abk	mfi	gw	<10	>70	0.07
10	168-180	10YR 4/6	Water bearing below about 14 feet.	LS	0sg	ml		<10	15-25	1.63

Comments:

[ ] #OBS. ☐ Pit ☐ Boring Ground surface elevation. _____ ft. Elevation of limiting factor _____ ft.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App Rate Inches/Hr

Comments:

Overall Site Comments:

UNIFIED SOIL CLASSIFICATION (ASTM D-2487/2488)

MATERIAL TYPES	CRITERIA FOR ASSIGNING SOIL GROUP NAMES			GROUP SYMBOL	SOIL GROUP NAMES & LEGEND
COARSE-GRAINED SOILS >50% RETAINED ON NO. 200 SIEVE	GRAVELS >50% OF COARSE FRACTION RETAINED ON NO 4. SIEVE	CLEAN GRAVELS <5% FINES	Cu>4 AND 1<Cc<3	GW	WELL-GRADED GRAVEL
			Cu>4 AND 1>Cc>3	GP	POORLY-GRADED GRAVEL
		GRAVELS WITH FINES >12% FINES	FINES CLASSIFY AS ML OR CL	GM	SILTY GRAVEL
			FINES CLASSIFY AS CL OR CH	GC	CLAYEY GRAVEL
	SANDS >50% OF COARSE FRACTION PASSES ON NO 4. SIEVE	CLEAN SANDS <5% FINES	Cu>6 AND 1<Cc<3	SW	WELL-GRADED SAND
			Cu>6 AND 1>Cc>3	SP	POORLY-GRADED SAND
		SANDS AND FINES >12% FINES	FINES CLASSIFY AS ML OR CL	SM	SILTY SAND
			FINES CLASSIFY AS CL OR CH	SC	CLAYEY SAND
FINE-GRAINED SOILS >50% PASSES NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT<50	INORGANIC	PI>7 AND PLOTS>"A" LINE	CL	LEAN CLAY
			PI>4 AND PLOTS<"A" LINE	ML	SILT
		ORGANIC	LL (oven dried)/LL (not dried)<0.75	OL	ORGANIC CLAY OR SILT
	SILTS AND CLAYS LIQUID LIMIT>50	INORGANIC	PI PLOTS >"A" LINE	CH	FAT CLAY
			PI PLOTS <"A" LINE	MH	ELASTIC SILT
		ORGANIC	LL (oven dried)/LL (not dried)<0.75	OH	ORGANIC CLAY OR SILT
HIGHLY ORGANIC SOILS		PRIMARILY ORGANIC MATTER, DARK IN COLOR, AND ORGANIC ODOR		PT	PEAT

Relative Proportions of Sand and Gravel

TERM	PERCENT
Trace	< 15
With	15 - 29
Modifier	> 30

Relative Proportions of Fines

TERM	PERCENT
Trace	< 5
With	5 - 12
Modifier	> 12

Grain Size Terminology

TERM	SIZE
Boulder	< 12 in.
Cobble	3 in. - 12 in.
Gravel	#4 sieve to 3 in.
Sand	#200 sieve to #4 sieve
Silt or Clay	Passing #200 sieve

SAMPLE TYPES

Hollow Stem

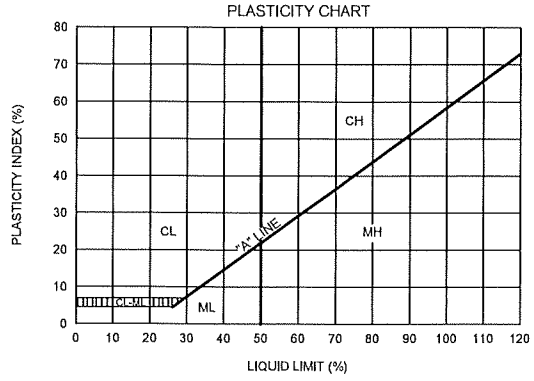
Standard Penetration Test

TEST SYMBOLS

MC	-	MOISTURE CONTENT	LL	-	LIQUID LIMIT
OC	-	ORGANIC CONTENT	PI	-	PLASTISITY INDEX
CN	-	CONSOLIDATION	SW	-	SWELL TEST
DD	-	DRY DENSITY	UU		Unconsolidated Undrained triaxial
PP	-	POCKET PENETROMETER			
RV	-	R-VALUE			
SA	-	SIEVE ANALYSIS			
P200	-	% PASSING #200 SIEVE			

▽ - WATER LEVEL (WITH TIME OF) MEASUREMENT

PLASTICITY CHART



PENETRATION RESISTANCE (RECORDED AS BLOWS / 0.5 FT)

SAND & GRAVEL		SILT & CLAY		
RELATIVE DENSITY	BLOWS/FOOT*	CONSISTENCY	BLOWS/FOOT*	COMPRESSIVE STRENGTH (TSF)
VERY LOOSE	0 - 4	VERY SOFT	0 - 1	0 - 0.25
LOOSE	4 - 10	SOFT	2 - 3	0.25 - 0.50
MEDIUM DENSE	10 - 30	RATHER SOFT MEDIUM	4 - 5 6 - 8	0.50 - 1.0
DENSE	30 - 50	RATHER STIFF STIFF	9 - 12 13 - 16	1.0 - 2.0
VERY DENSE	OVER 50	VERY STIFF	17 - 30	2.0 - 4.0
		HARD	OVER 30	OVER 4.0

* NUMBER OF BLOWS OF 140 LB HAMMER FALLING 30 INCHES TO DRIVE A 2 INCH O.D. (1-3/8 INCH I.D.) SPLIT-BARREL SAMPLER THE LAST 12 INCHES OF AN 18-INCH DRIVE (ASTM-1586 STANDARD PENETRATION TEST).

Chosen Valley Testing

Job No. CVT

LEGEND TO SOIL DESCRIPTIONS

CVT

CVT LEGEND.GPJ 3/8/19