

CONSTRUCTION SEQUENCE

ANY NECESSARY ROCK REMOVAL SHALL BE BY MEANS OF CHIPPING. REMOVED MATERIAL SHALL BE REMOVED FROM SITE IMMEDIATELY AND NOT STOCKPILED. HOURS OF OPERATION SHALL BE LIMITED TO 8 AM TO 6 PM, MONDAYS THROUGH FRIDAY, SUBJECT TO ANY FURTHER REGULATION FROM THE TOWN OF WILTON.

PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY, A CERTIFIED AS-BUILT DRAWING AND CERTIFIED LETTER SIGNED BY A PROFESSIONAL ENGINEER INDICATING THAT ALL WORK WAS COMPLETED IN ACCORDANCE WITH THE DESIGN PLANS SHALL BE SUBMITTED TO THE TOWN OF WILTON.

CROSSING TO BE CONSTRUCTED DURING DRY SEASON (AUGUST-SEPTEMBER) AND OUTSIDE OF THE AMPHIBIAN BREEDING SEASON

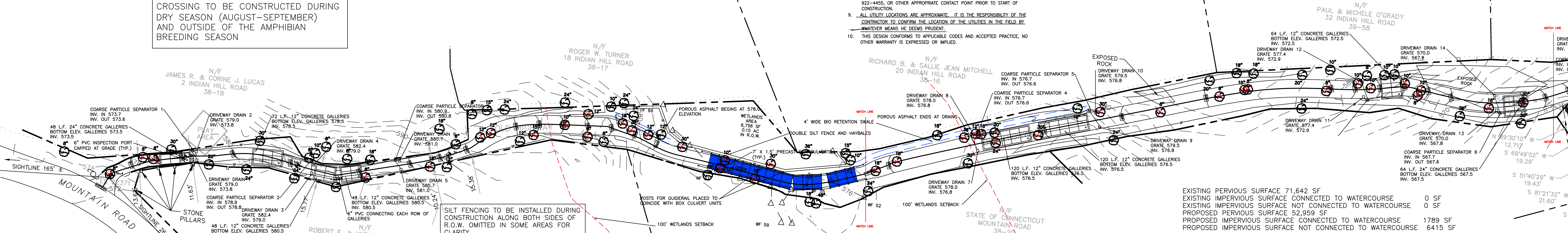
INSTALL SILT FENCING AND HAYBALES AS SHOWN ON PLAN. SECURE CROSSING WITH PLYWOOD. FILL AND STONE WILL BE BROUGHT TO THE NORTH END OF THE CROSSING. TWO EXCAVATORS WILL BE BROUGHT TO THE NORTH END. ONE WILL POSITION THE CULVERTS AS SHOWN ON THE PLAN AS IT RETURNS TO THE SOUTH END. THE EXCAVATOR ON THE NORTH WILL FILL BETWEEN CULVERTS, WORKING TO THE SOUTH, AS THE SOUTH MACHINE DOES THE SAME WORKING TO THE NORTH. THE POSTS FOR THE GUIDE RAILS WILL BE INSTALLED TO COINCIDE WITH THE SOLID PORTION OF EACH CULVERT. THE PROCESS BASE FOR THE POROUS DRIVEWAY WILL BE PLACED ACROSS THE AREA. THE POROUS PAVEMENT WILL BE PLACED.

GENERAL CONSTRUCTION NOTES:

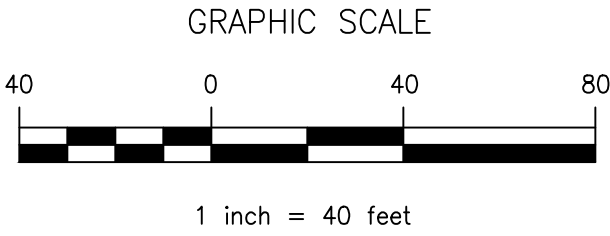
- CONSTRUCTION AND STRUCTURES SHALL COMPLY WITH ALL MUNICIPAL OR STATE REQUIREMENTS. ALL WORK SHALL BE CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER, TO THE SATISFACTION OF THE ENGINEERING BUREAU, THAT CONSTRUCTION IS IN ACCORDANCE WITH THESE PLANS.
- THE ENGINEERING BUREAU OF THE DEPARTMENT OF PUBLIC WORKS AND THE ENGINEER OF RECORD SHALL BE NOTIFIED THREE DAYS PRIOR TO THE COMMENCEMENT OF EACH PHASE OF CONSTRUCTION.
- NO CERTIFICATE OF CONFORMANCE TO STANDARDS SHALL BE ISSUED BY THE DESIGN ENGINEER IF PROPER NOTICE IS NOT PROVIDED FOR INSPECTIONS OR IF INSPECTIONS ARE NOT MADE PRIOR TO THE COMMENCEMENT OF EACH PHASE OF CONSTRUCTION.
- SUBSURFACE STRUCTURES AND UTILITIES HAVE BEEN DETERMINED FROM EXISTING RECORDS AND ARE NOT GUARANTEED TO BE COMPLETE OR ACCURATE. IN ORDER TO AVOID CONFLICT OF THE PROPOSED WORK AND EXISTING UTILITIES, THE CONTRACTOR SHALL LOCATE EXISTING UTILITIES BY EXCAVATING TEST HOLES. IF THE CONTRACTOR DETERMINES THAT A CONFLICT EXISTS, HE SHALL IMMEDIATELY NOTIFY THE ENGINEER, WHO WILL MAKE THE NECESSARY ADJUSTMENTS.
- EXISTING PROPERTY AND UTILITY INFORMATION WAS TAKEN FROM A SURVEY BY ALL SEASONS LAND SURVEYING TITLED "TOPOGRAPHIC SURVEY PREPARED FOR OLD DRIFTWAY LLC", DATED MARCH 30, 2023.
- THESE PLANS ARE FOR MUNICIPAL OR STATE AGENCY APPROVAL ONLY. NOT FOR CONSTRUCTION.
- NO PIPE SHALL HAVE A BEND OF GREATER THAN 45 DEGREES.
- THE CONTRACTOR SHALL NOTIFY "CALL BEFORE YOU DIG" AT 1-800-922-4455, OR OTHER APPROPRIATE CONTACT POINT PRIOR TO START-OF CONSTRUCTION.
- ALL UTILITY LOCATIONS ARE APPROXIMATE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONFIRM THE LOCATION OF THE UTILITIES IN THE FIELD BY WATEREVEER MEANS HE DEEMS PRUDENT.
- THIS DESIGN CONFORMS TO APPLICABLE CODES AND ACCEPTED PRACTICE, NO OTHER WARRANTY IS EXPRESSED OR IMPLIED.

SEDIMENTATION AND EROSION CONTROL NOTES

- LAND DISTURBANCE SHALL BE KEPT TO A MINIMUM. PERMANENT STABILIZATION SHALL BE SCHEDULED AS SOON AS PINK GRASSES ARE ESTABLISHED.
- ALL DISTURBED AREAS SHALL BE FINE GRADED AND SEEDING WITH AN APPROVED SEED MIXTURE. COVER NEWLY SEEDING AREAS WITH MULCH HAY OR SALT HAY.
- ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL HANDBOOK.
- ALL CONTROL MEASURES SHALL BE MAINTAINED IN EFFECTIVE CONDITION THROUGHOUT THE CONSTRUCTION PERIOD. CHECK AFTER EACH STORM EVENT.
- ADDITIONAL CONTROL MEASURES SHALL BE INSTALLED DURING THE CONSTRUCTION PERIOD, IF REQUIRED BY TOWN AUTHORITIES.
- SEDIMENT DEPOSITS REMOVED FROM FILTER BARRIERS SHALL BE PLACED IN FILL AREAS OR SPREAD WHERE THERE IS PROPOSED VEGETATIVE COVER. ANY SEDIMENT DEPOSITS REMAINING AFTER THE FILTER BARRIER IS REMOVED SHALL BE FINE GRADED AND PLANTED ACCORDING TO PLAN.
- THE SITE CONSTRUCTION CONTRACTOR IS ASSIGNED THE RESPONSIBILITY FOR IMPLEMENTING THIS EROSION AND SEDIMENT CONTROL PLAN. THIS RESPONSIBILITY INCLUDES THE INSTALLATION AND MAINTENANCE OF CONTROL MEASURES, INCLUDING ALL PARTS CHANGED ON THE CONSTRUCTION SITE OF THE REQUIREMENTS AND OBJECTIVES OF THE PLAN NOTING THE PLANNING AND ZONING OFFICE (AND/OR THE CONSERVATION COMMISSION) OF ANY TOWN OF THE RESPONSIBILITY AND CONVEYING A COPY OF THE EROSION AND SEDIMENT CONTROL PLAN IF THE TITLE TO THE LANDS TRANSFERRED TO A NEW OWNER.



EXISTING PERVIOUS SURFACE 71,642 SF	0 SF
EXISTING IMPERVIOUS SURFACE CONNECTED TO WATERCOURSE	0 SF
EXISTING IMPERVIOUS SURFACE NOT CONNECTED TO WATERCOURSE	0 SF
PROPOSED PERVIOUS SURFACE 52,959 SF	
PROPOSED IMPERVIOUS SURFACE CONNECTED TO WATERCOURSE	1789 SF
PROPOSED IMPERVIOUS SURFACE NOT CONNECTED TO WATERCOURSE	6415 SF



SILT FENCING TO BE INSTALLED DURING CONSTRUCTION ALONG BOTH SIDES OF R.O.W. OMITTED IN SOME AREAS FOR CLARITY.

MUD ANTI TRACKING PAD TO BE INSTALLED AT ENTRY OF R.O.W. DURING CONSTRUCTION. OMITTED FOR CLARITY.

STORAGE COURSE OF POROUS ASPHALT BED TO BE MINIMUM 1.25 FEET THICK.

ALL PIPES ARE TO BE 6" PVC (S=0.01 MIN.) UNLESS OTHERWISE INDICATED.

NO ACTIVITY PROPOSED ON ADJOINING PROPERTIES; NO EASEMENTS REQUIRED.

NO CURBING ALONG POROUS ASPHALT IN WETLANDS SECTION OF DRIVEWAY.

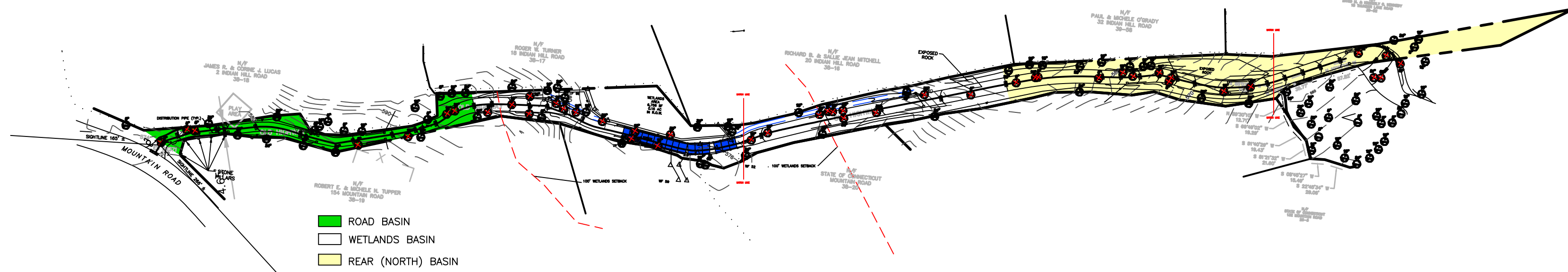
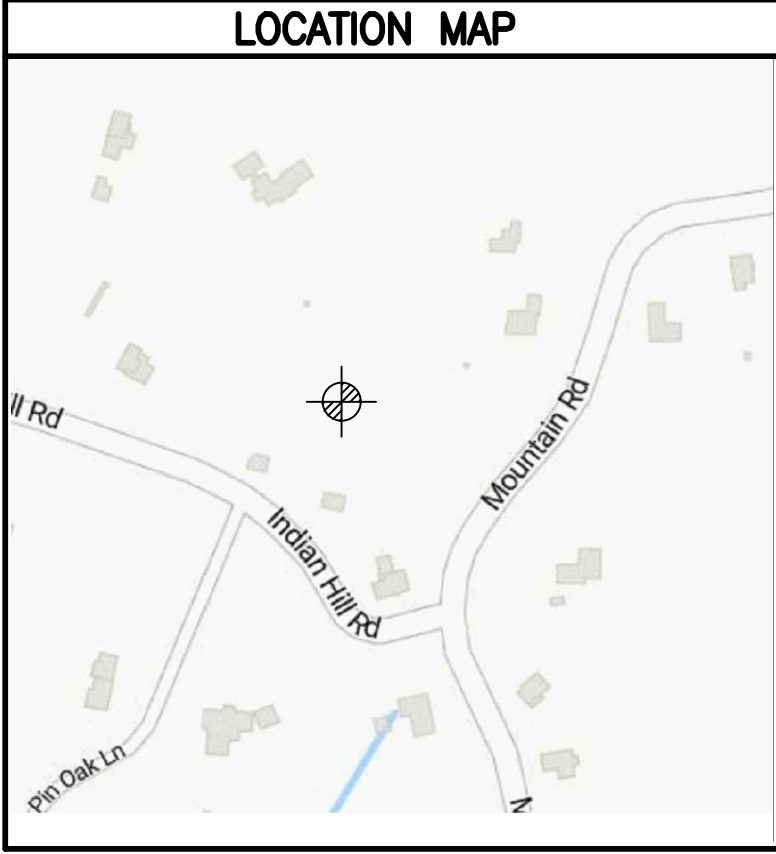
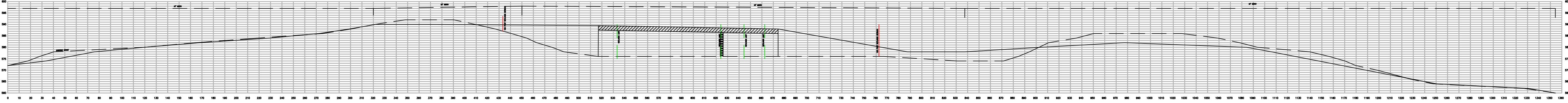
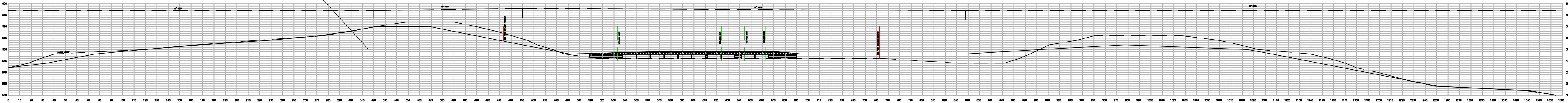
DRIVEWAY MINIMUM 10' WIDE, WIDENING TO 15' IN AREAS AS SHOWN ON PLAN. DRIVEWAY SECTION IN WETLANDS BASIN TO CONSIST OF POROUS ASPHALT.

ALL GALLERIES TO BE H-20 RATED.

4" PERFORATED DRAIN PVC TO BE PLACED AT BOTTOM OF AGGREGATE STORAGE BASE AT 10' INTERVALS OVER CULVERT AREA. EITHER END TO BE OPEN OVER SIDE OF CULVERTS.

ALL LEDGE AND ROCK WITHIN 2' OF THE BOTTOM ELEVATION OF ANY CONCRETE GALLERY OR AGGREGATE BASE UNDER POROUS ASPHALT TO BE REMOVED AS NECESSARY.

BOX CULVERTS DESIGNED FOR HL 93 LOADING.

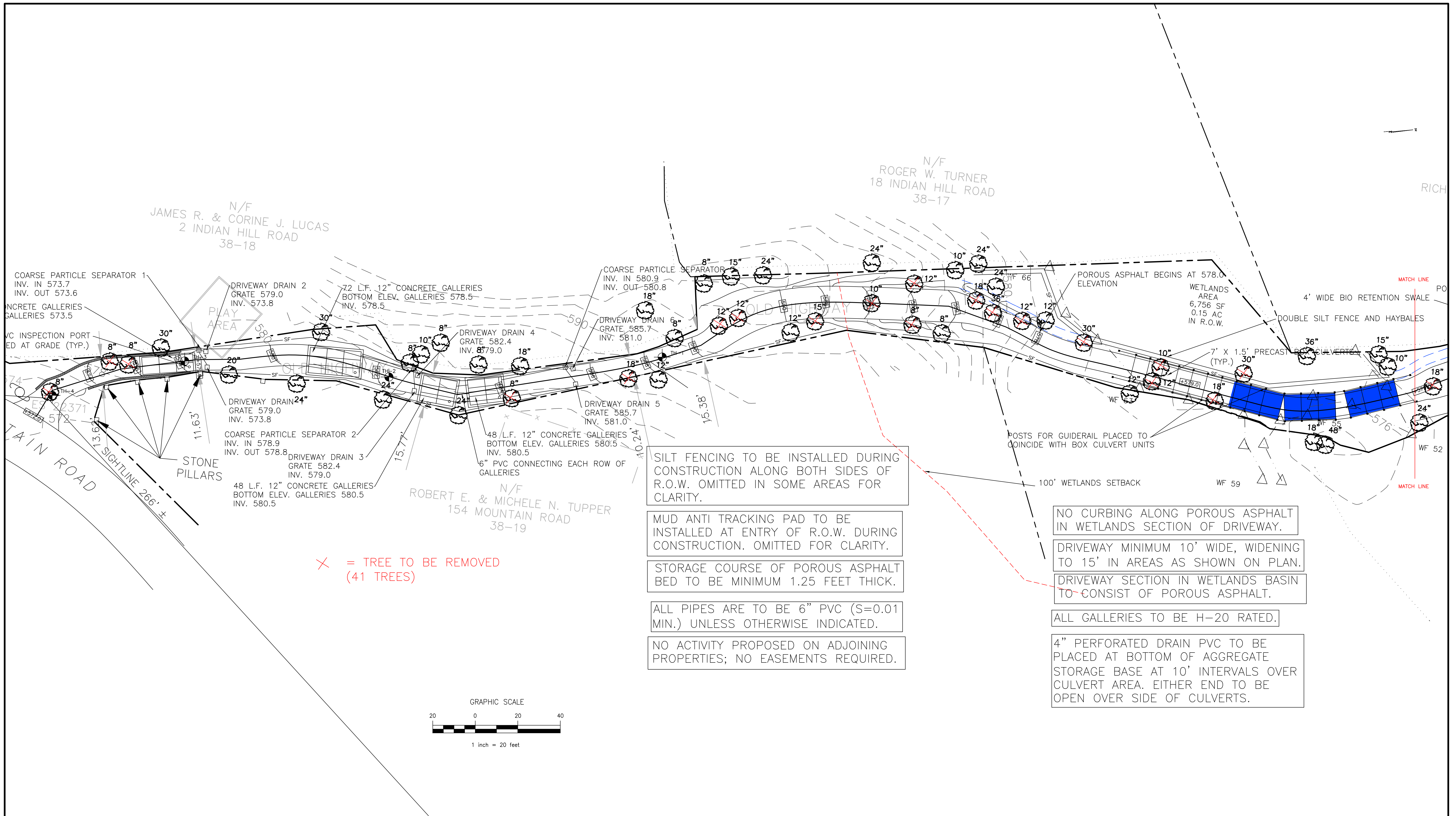


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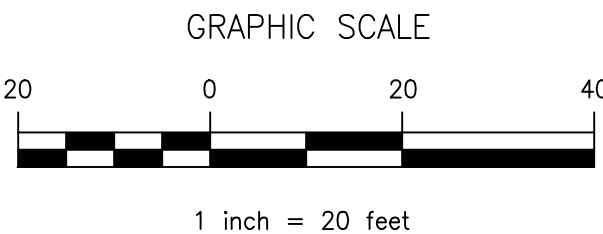


FAIRFIELD COUNTY ENGINEERING L.L.C.
60 WINFIELD STREET, NORWALK, CONNECTICUT 06855 PH: (203) 831-8005 FAX: (203) 831-8006

REV. 11/10/23: PER ENGINEERING COMMENTS.	
OLD DRIFTWAY LLC	
0 MOUNTAIN ROAD WILTON, CONNECTICUT	
RIGHT OF WAY PLAN	
CIVIL ENGINEERS	2168 project
1 OF 6 sheet	



✕ = TREE TO BE REMOVED
(41 TREES)



SILT FENCING TO BE INSTALLED DURING CONSTRUCTION ALONG BOTH SIDES OF R.O.W. OMITTED IN SOME AREAS FOR CLARITY.

MUD ANTI TRACKING PAD TO BE INSTALLED AT ENTRY OF R.O.W. DURING CONSTRUCTION. OMITTED FOR CLARITY.

STORAGE COURSE OF POROUS ASPHALT BED TO BE MINIMUM 1.25 FEET THICK.

ALL PIPES ARE TO BE 6" PVC (S=0.01 MIN.) UNLESS OTHERWISE INDICATED.

NO ACTIVITY PROPOSED ON ADJOINING PROPERTIES; NO EASEMENTS REQUIRED.

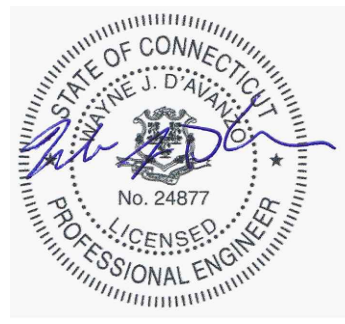
NO CURBING ALONG POROUS ASPHALT IN WETLANDS SECTION OF DRIVEWAY.

DRIVEWAY MINIMUM 10' WIDE, WIDENING TO 15' IN AREAS AS SHOWN ON PLAN.

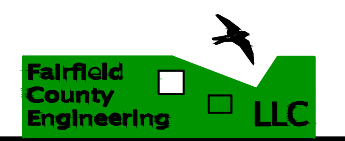
DRIVEWAY SECTION IN WETLANDS BASIN TO CONSIST OF POROUS ASPHALT.

ALL GALLERIES TO BE H-20 RATED.

4" PERFORATED DRAIN PVC TO BE PLACED AT BOTTOM OF AGGREGATE STORAGE BASE AT 10' INTERVALS OVER CULVERT AREA. EITHER END TO BE OPEN OVER SIDE OF CULVERTS.

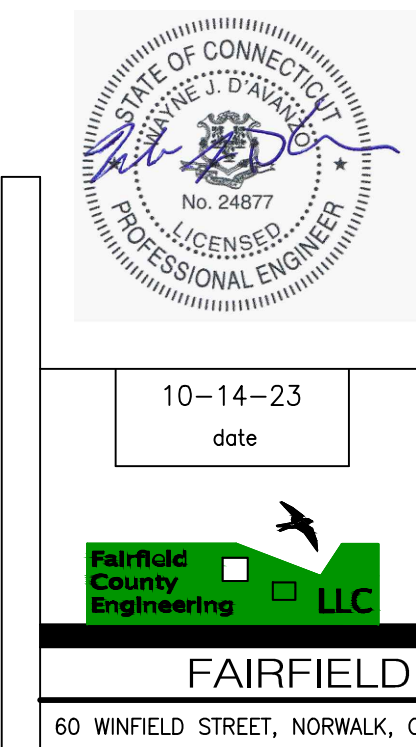
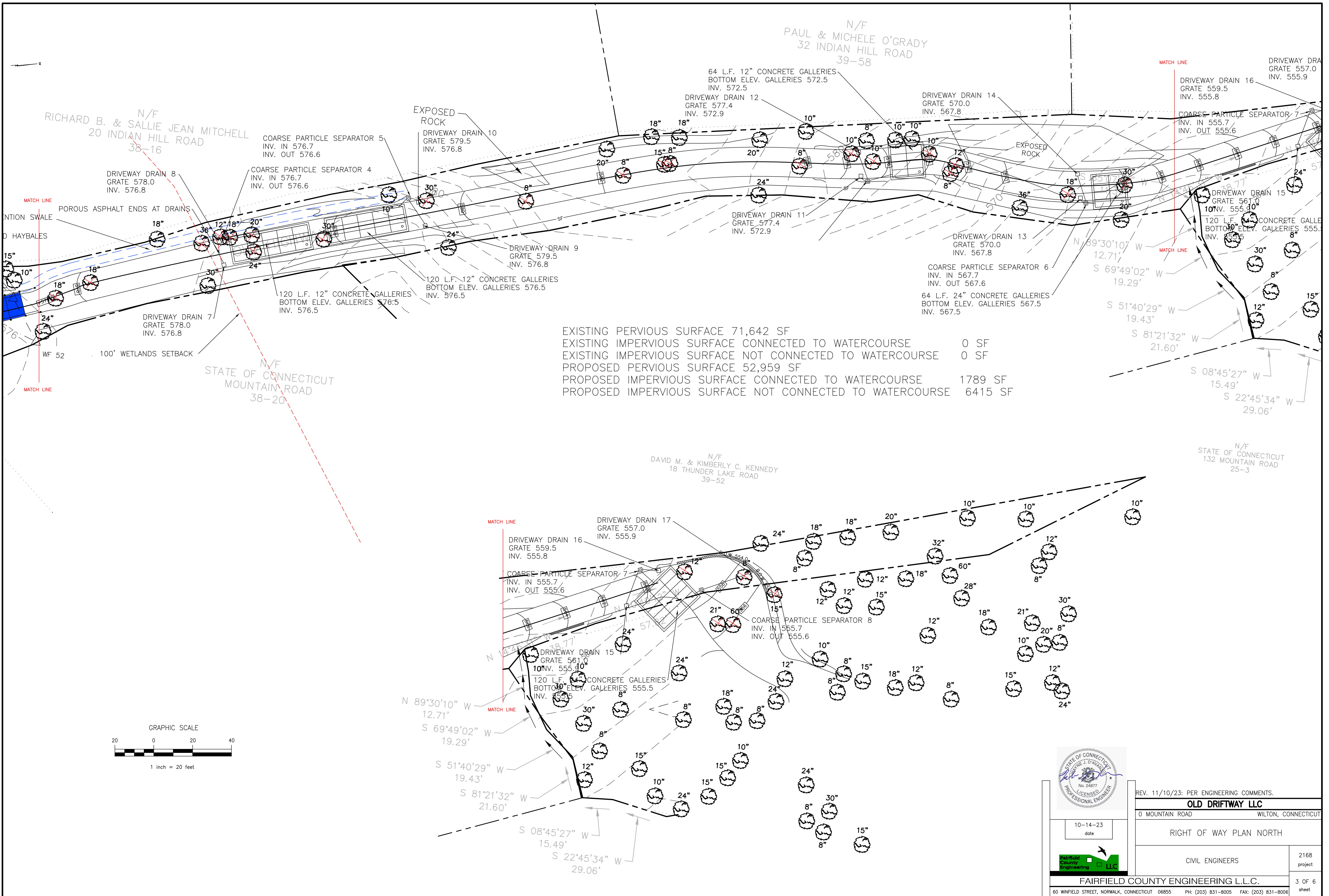


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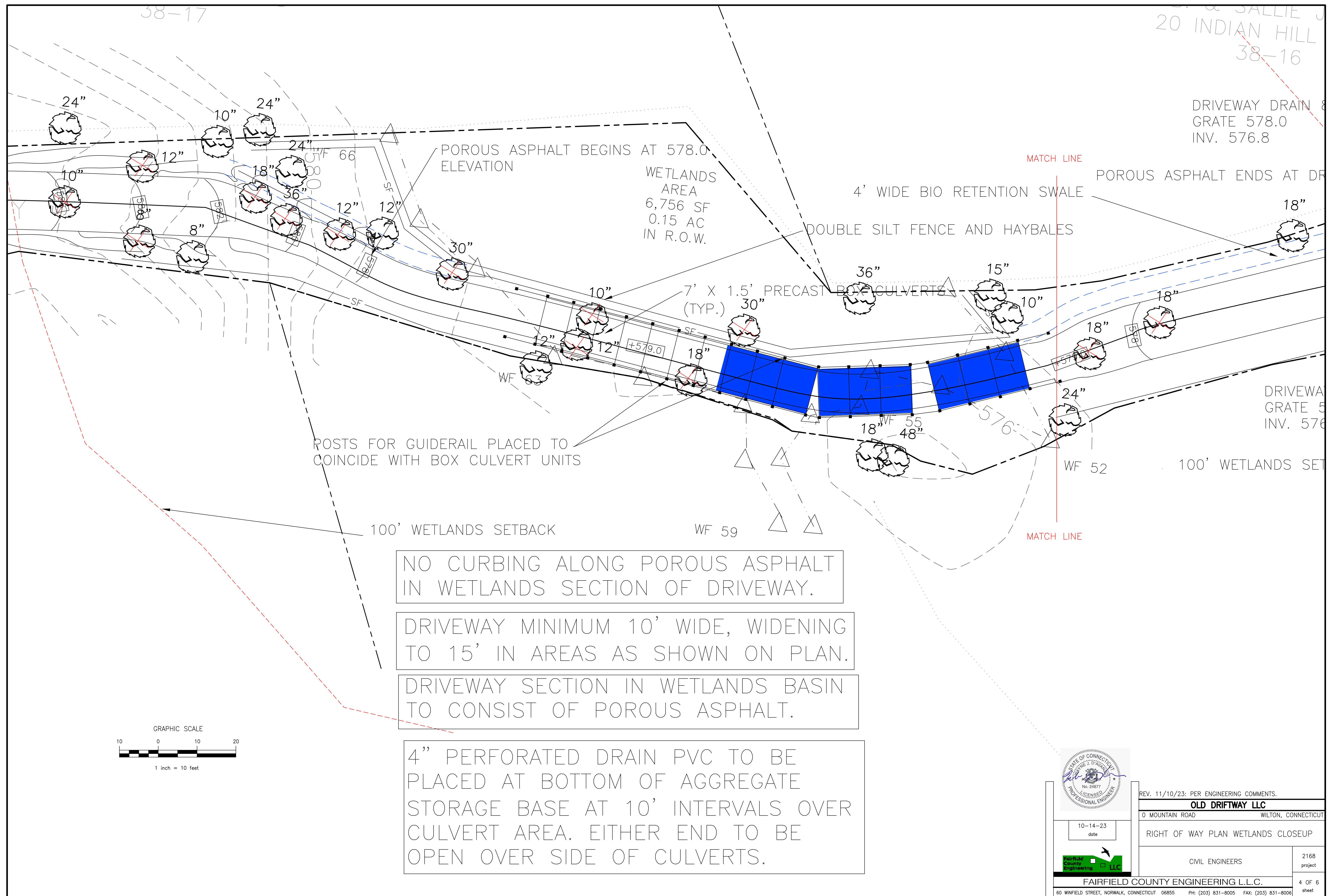


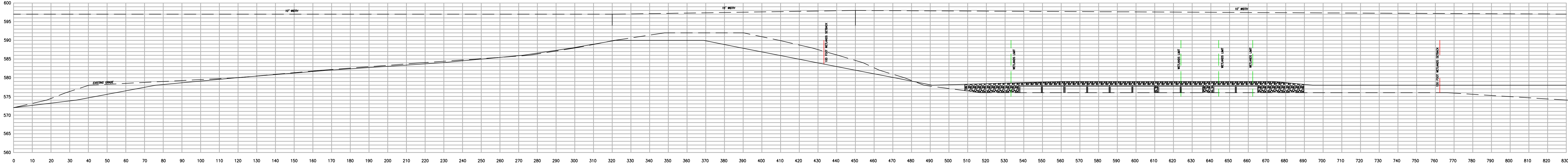
FAIRFIELD COUNTY ENGINEERING L.L.C.
60 WINFIELD STREET, NORWALK, CONNECTICUT 06855 PH: (203) 831-8005 FAX: (203) 831-8006

REV. 11/10/23: PER ENGINEERING COMMENTS.	
OLD DRIFTWAY LLC	
0 MOUNTAIN ROAD WILTON, CONNECTICUT	
RIGHT OF WAY PLAN SOUTH	
CIVIL ENGINEERS	2168 project
2 OF 6 sheet	

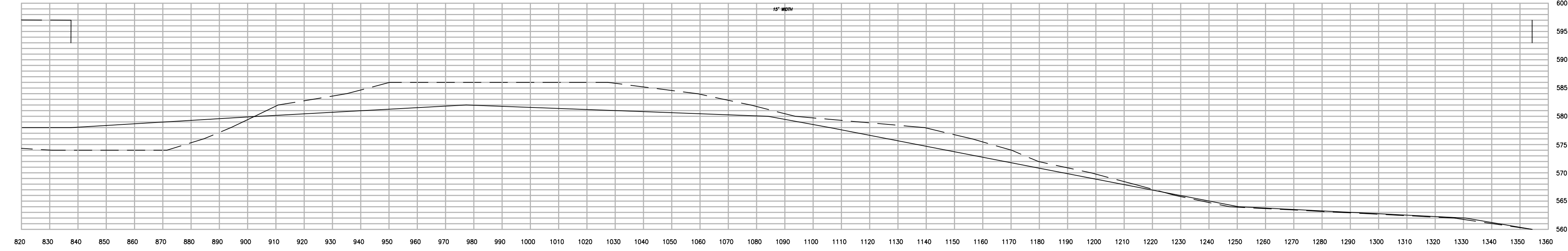


REV. 11/10/23: PER ENGINEERING COMMENTS.	
OLD DRIFTWAY LLC	
O. MOUNTAIN ROAD WILTON, CONNECTICUT	
RIGHT OF WAY PLAN NORTH	
CIVIL ENGINEERS	2168 project
FAIRFIELD COUNTY ENGINEERING L.L.C.	
60 WINFIELD STREET, NORWALK, CONNECTICUT 06855 PH: (203) 831-8005 FAX: (203) 831-8006	
10-14-23 date	3 OF 6 sheet

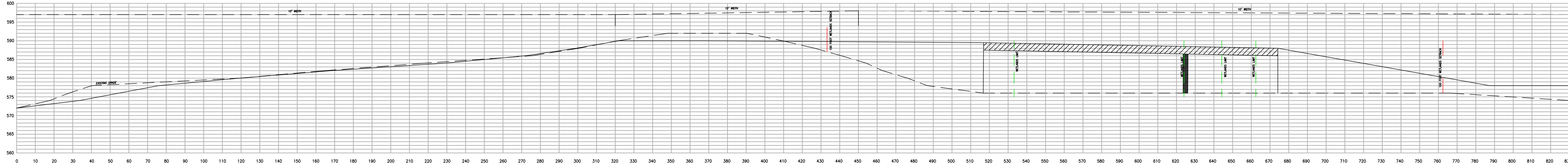




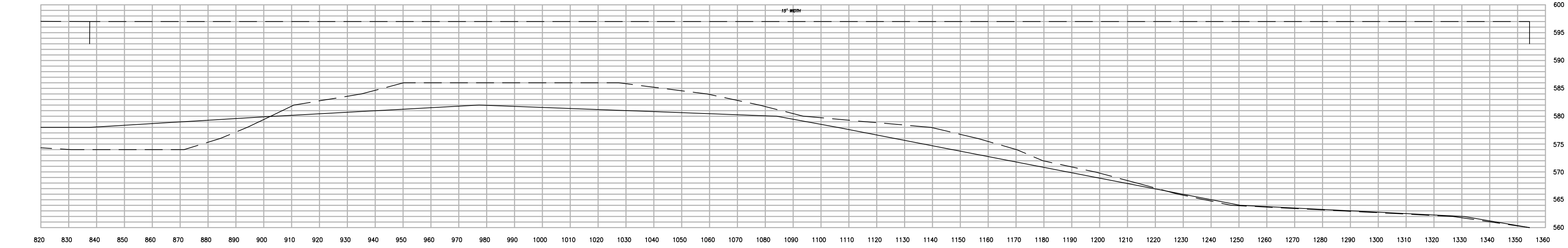
DRIVEWAY PROFILE
SCALE- H: 1"=25'
V: 1"=12.5'



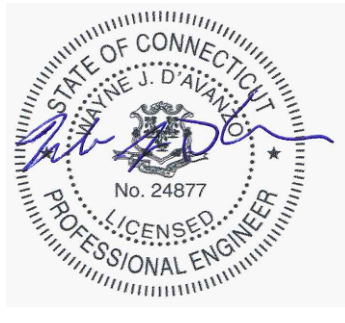
DRIVEWAY PROFILE
SCALE- H: 1"=25'
V: 1"=12.5'



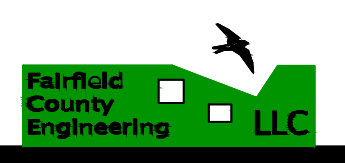
DRIVEWAY PROFILE (ALTERNATE - BRIDGE)
SCALE- H: 1"=25'
V: 1"=12.5'



DRIVEWAY PROFILE (ALTERNATE - BRIDGE)
SCALE- H: 1"=25'
V: 1"=12.5'

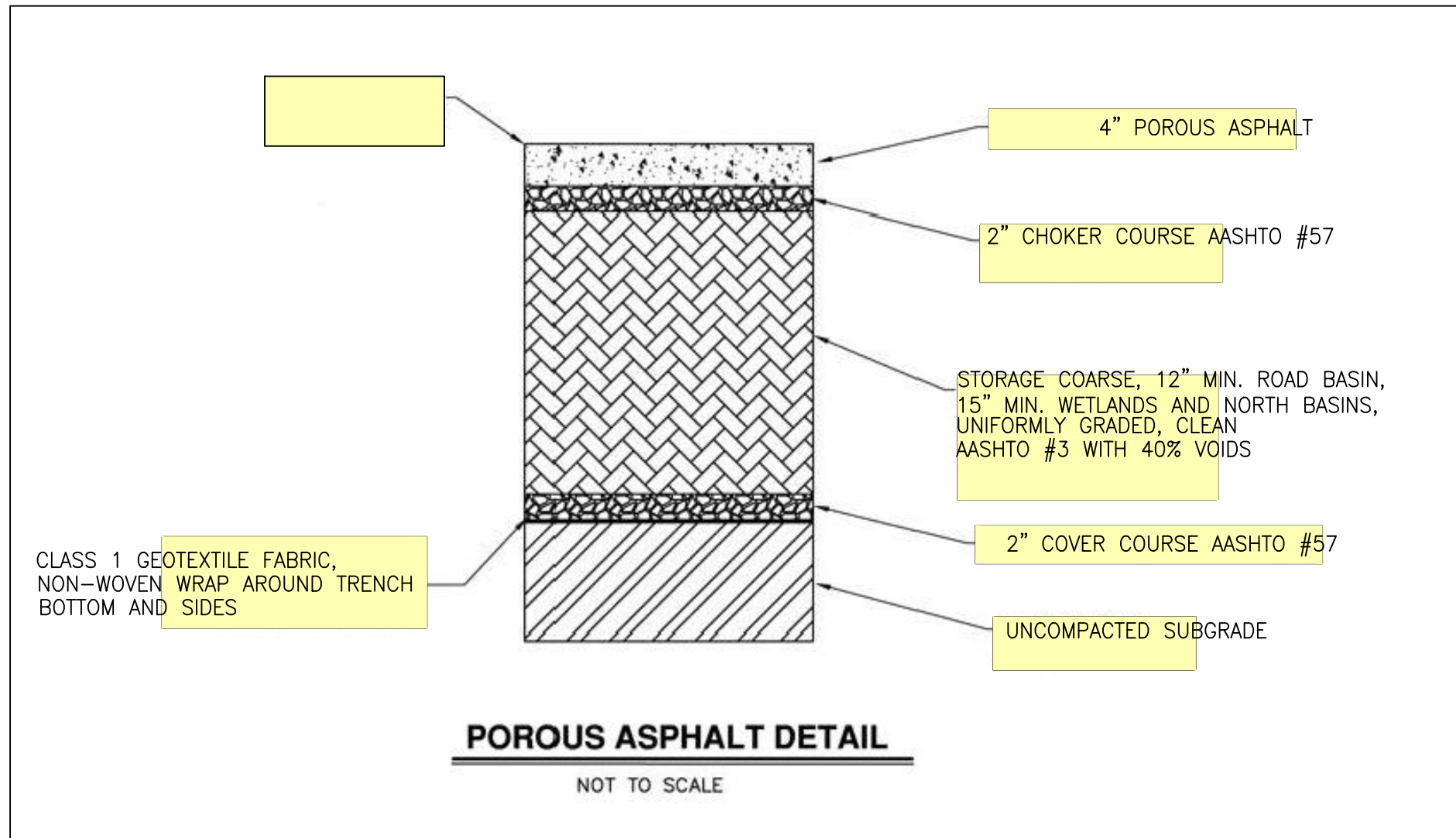


10-14-23
date

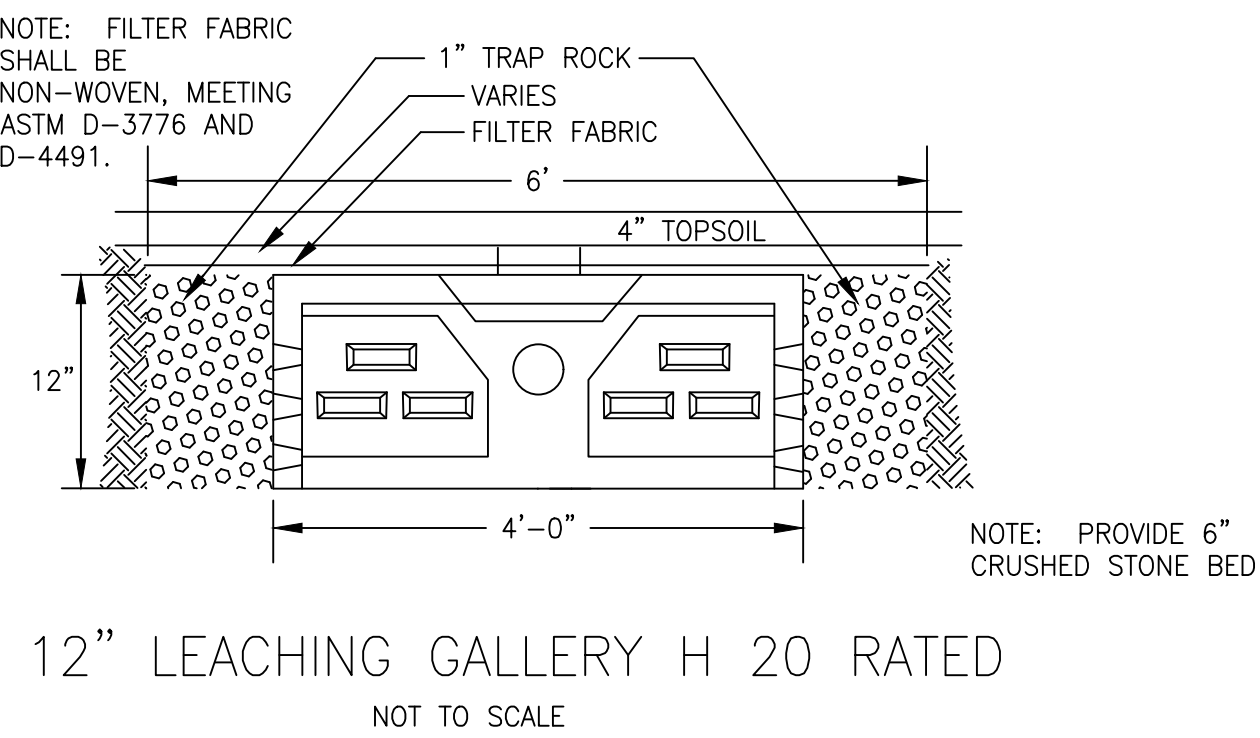
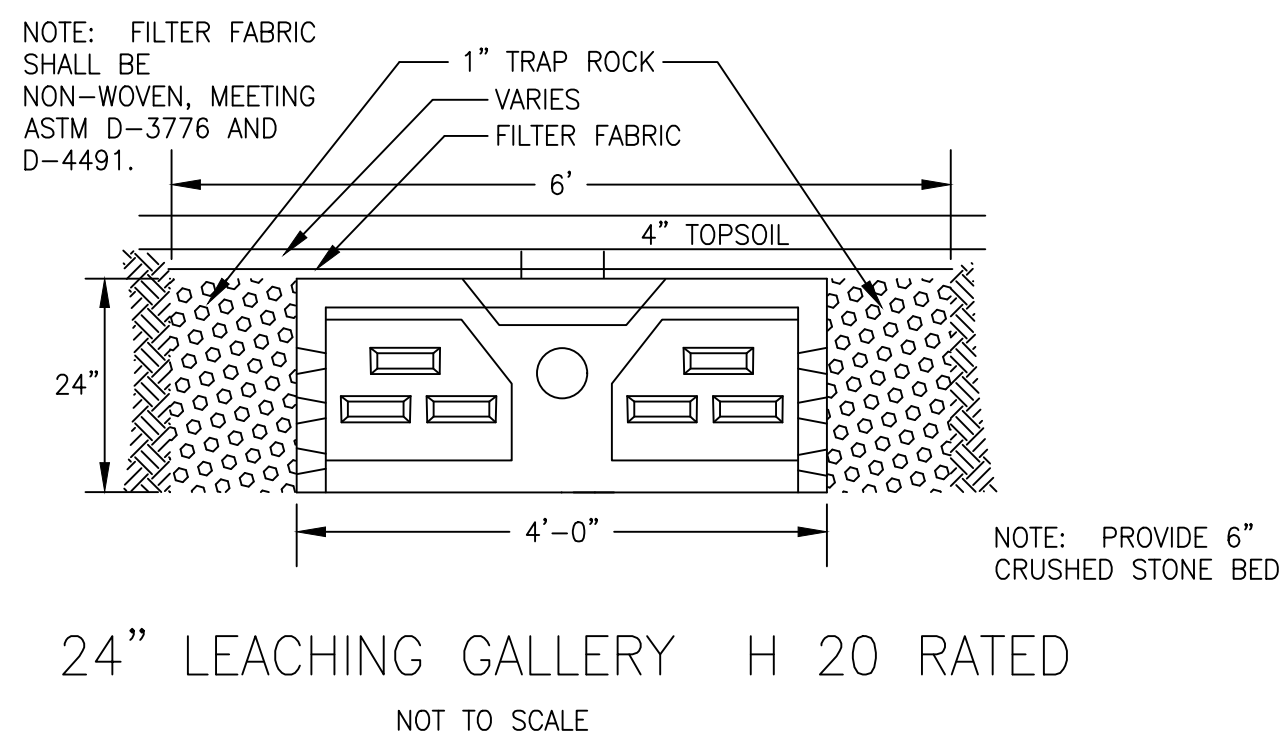
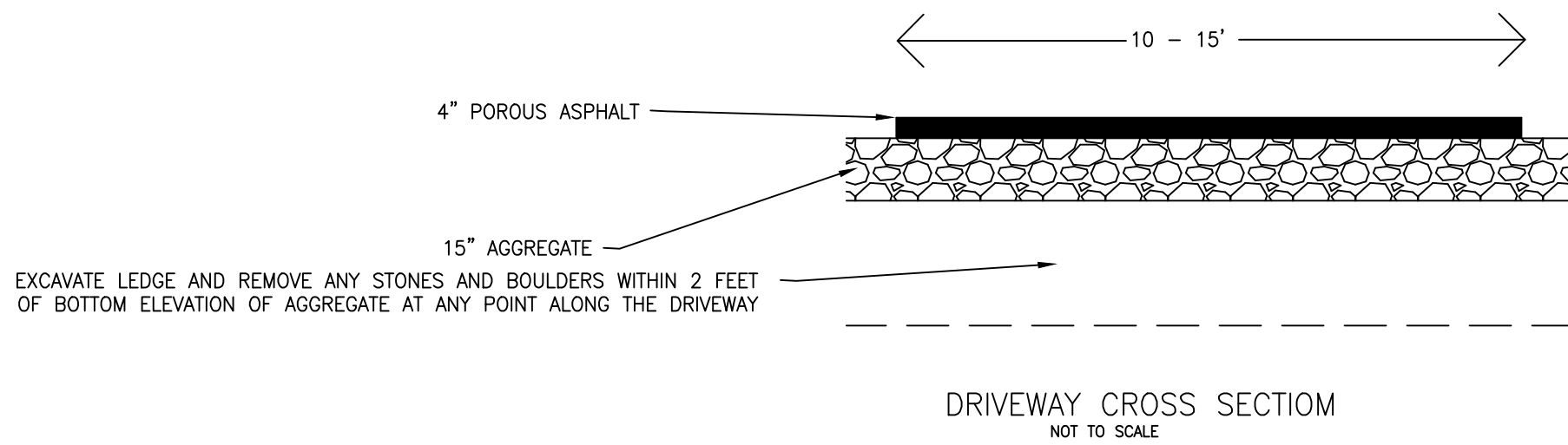
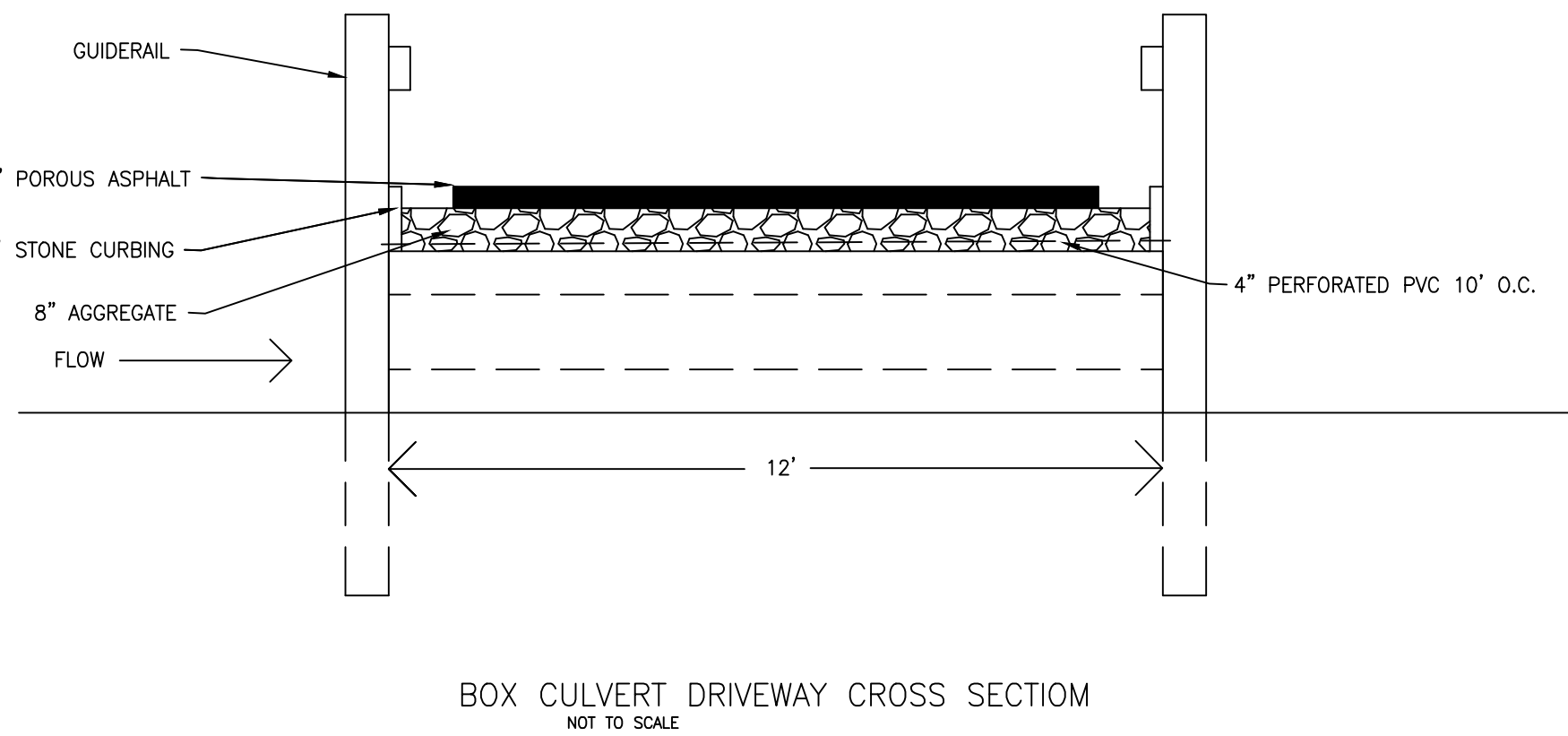
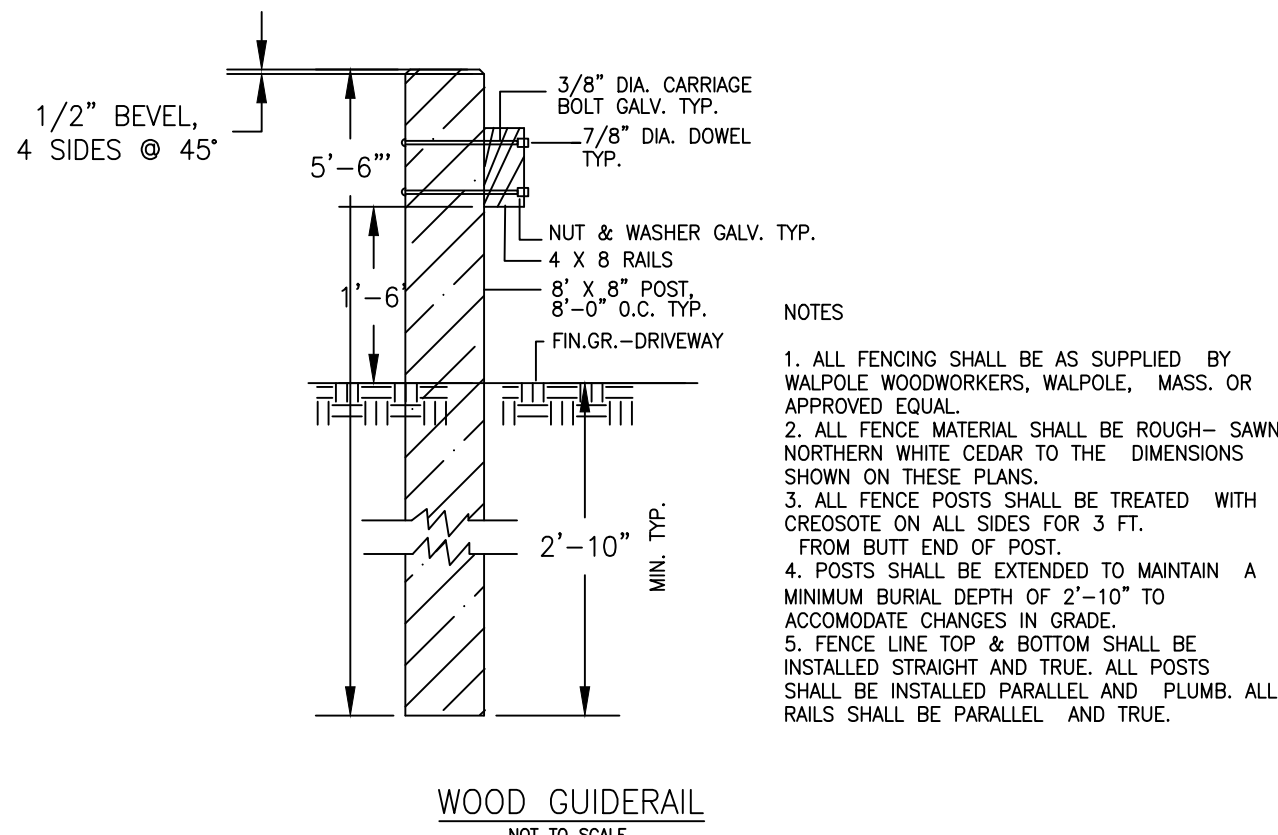
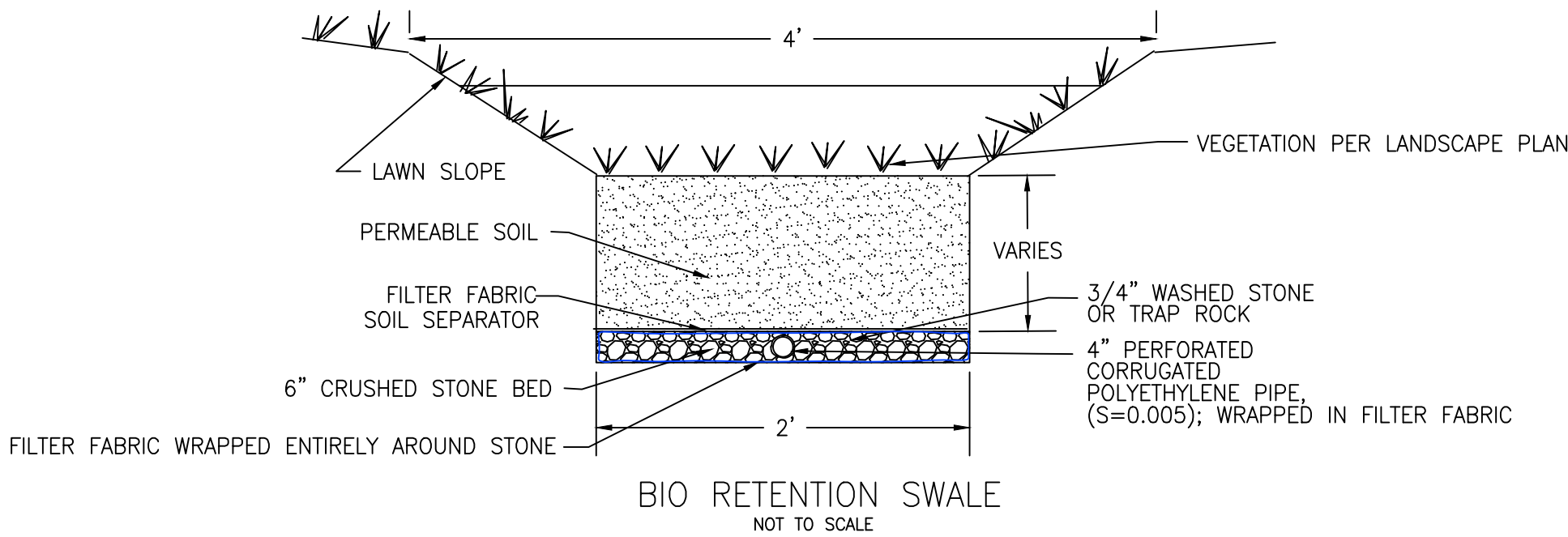
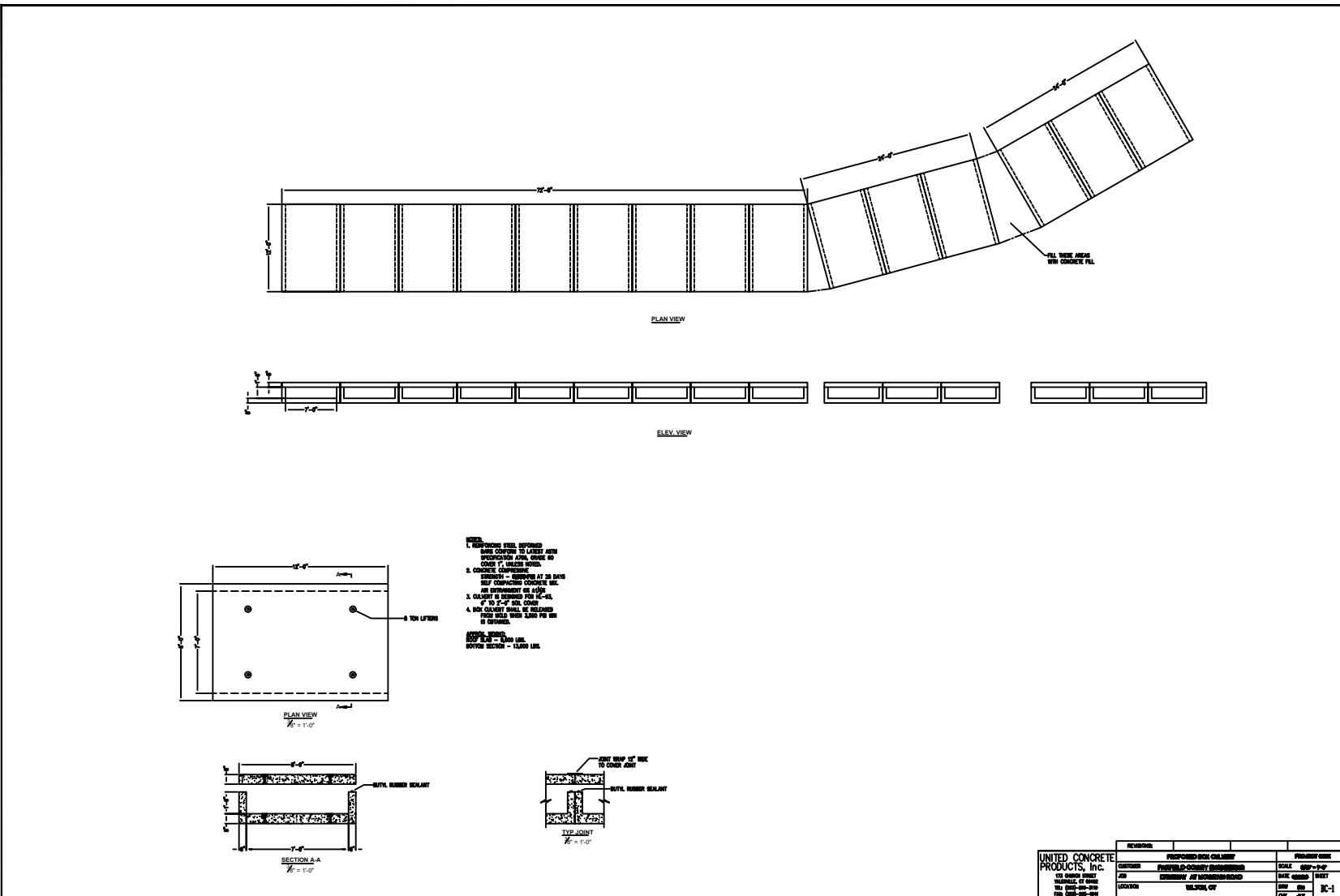
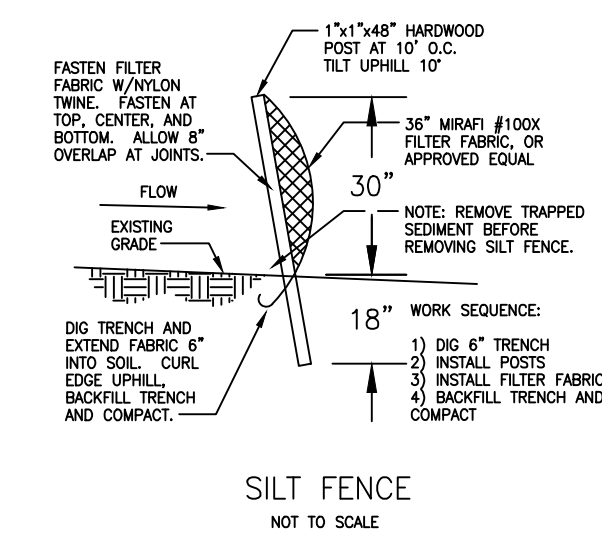
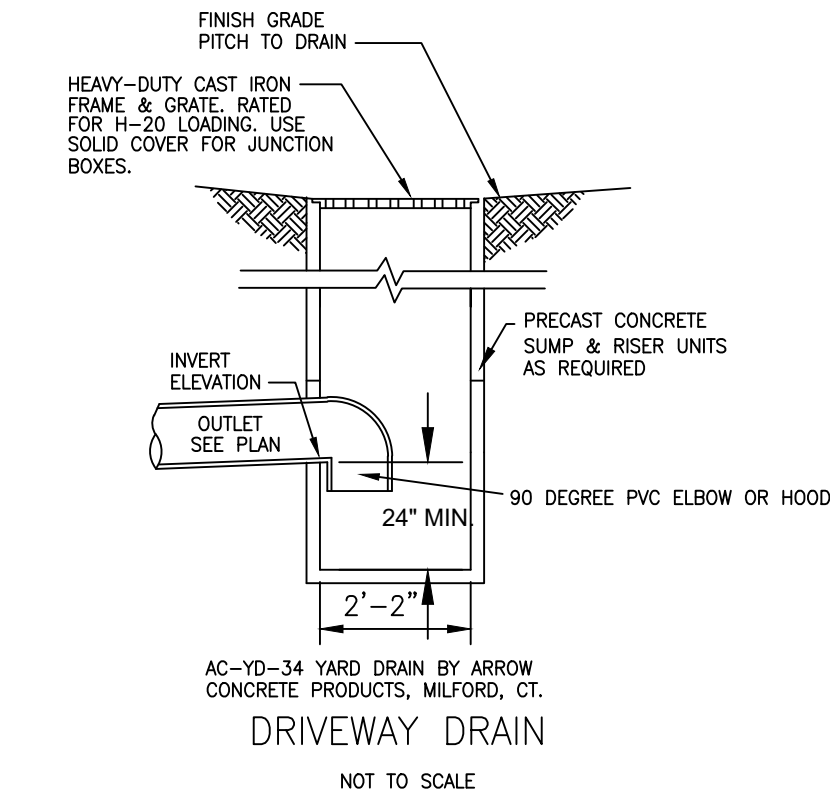


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REV. 11/10/23: PER ENGINEERING COMMENTS.	
OLD DRIFTWAY LLC	
0 MOUNTAIN ROAD WILTON, CONNECTICUT	
DETAIL SHEET	
CIVIL ENGINEERS	2168 project
5 OF 6 sheet	

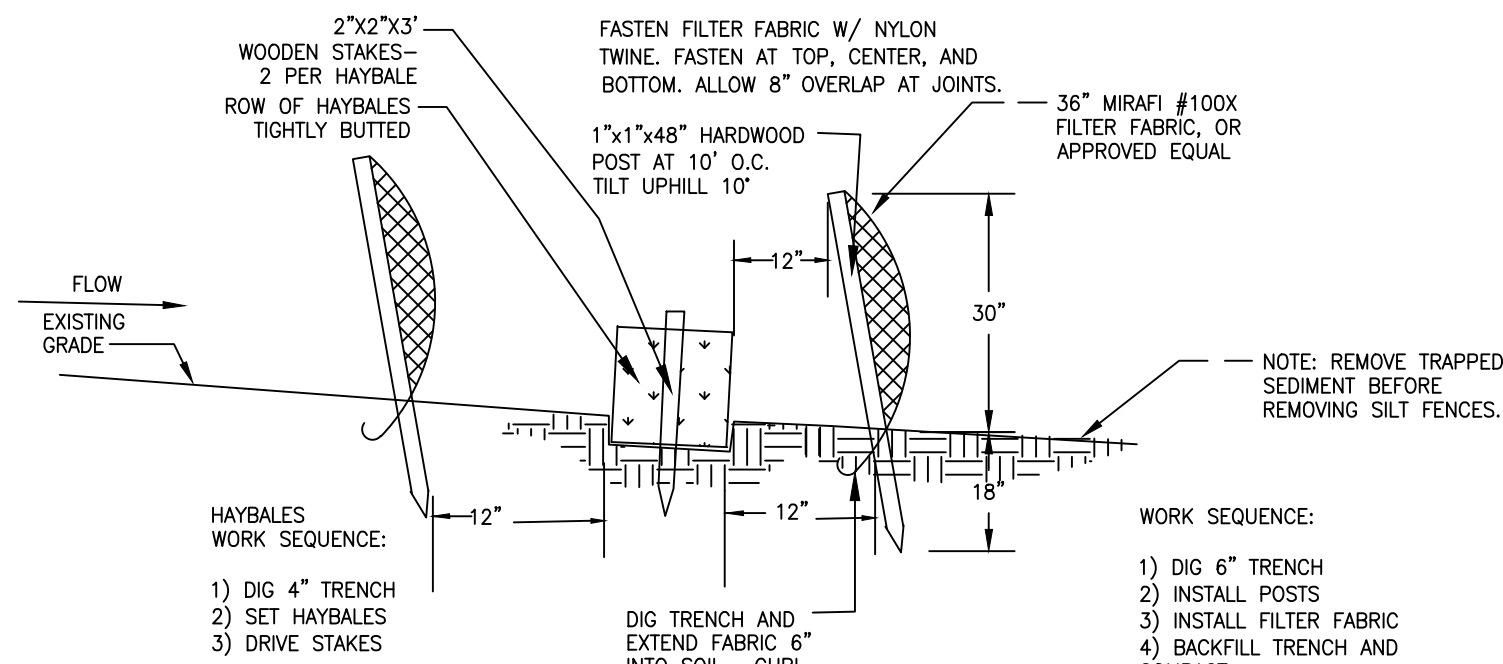


NOTE: SOILS BENEATH AGGREGATE SHALL BE SCARIFIED OR TILLED PRIOR TO INSTALLATION OF AGGRAGATE.



CONSTRUCTION SEQUENCE

1. Install silt fencing along both sides of R.O.W.
2. Install double silt fencing and haybales along wetlands.
3. Install mud anti tracking pad at entry.
4. Engage herpetologist as necessary.
5. Grade driveway, place box culverts.
6. Install driveway drains, coarse particle separators.
7. Install swales, plantings as indicated on Landscape Plan.
8. Pave porous and regular asphalt areas of driveway.
9. Fine grade, topsoil and seed all areas as necessary.
10. Remove erosion controls once site is stabilized.



DOUBLE SILT FENCE W/HAYBALES
NOT TO SCALE

FCE Project #	2168	Date Performed:	10/6/2023
Client:	Old Driftway LLC		
Location:	0 Mountain Road, Wilton		
Observed by:	Wayne D'Avanzo		
Test Hole 1:	0-4"	Topsoil	
	4-38"	Tan Fine Gravel, rocky	
		No Ground Water	
		No Motting	
		No Ledge	
		Compacted at 38"	
		Roots to 30"	
Test Hole 2:	0-4"	Topsoil	
	4-24"	Tan Fine Gravel	
		No Ground Water	
		No Motting	
		Ledge @ 24"	
		Roots to 19"	
Test Hole 3:	0-5"	Topsoil	
	5-43"	Tan Fine Gravel, rocky	
		No Ground Water	
		No Motting	
		No Ledge	
		Roots to 28"	
Test Hole 4:	0-4"	Topsoil	
	4-20"	Brown Fine Gravel	
		No Ground Water	
		No Motting	
		Ledge @ 20"	
		Roots to 12"	



10-14-23 date	REV. 11/10/23: PER ENGINEERING COMMENTS.
	OLD DRIFTWAY LLC
	0 MOUNTAIN ROAD WILTON, CONNECTICUT
	DETAIL SHEET
	CIVIL ENGINEERS
	2168 project
	FAIRFIELD COUNTY ENGINEERING L.L.C.
	60 WINFIELD STREET, NORWALK, CONNECTICUT 06855 PH: (203) 831-8005 FAX: (203) 831-8006
	6 OF 6 sheet

DRAINAGE REPORT

PREPARED FOR

EXISTING AND PROPOSED SITE CONDITIONS

LOCATED AT:

0 MOUNTAIN ROAD RIGHT OF WAY

FCE #2168



WILTON, CONNECTICUT

November 10, 2023

FAIRFIELD COUNTY ENGINEERING, LLC

CIVIL ENGINEERS

**60 WINFIELD ST.
NORWALK, CONNECTICUT 06855
(203) 831-8005
FAX: (203) 831-8006
E-mail to: wayne@fairfieldce.com**



NARRATIVE:

The subject of this report is the 1.644 acre accessway to the parcel located at 0 Mountain Road in Wilton. The purpose of this report is to determine the existing and proposed runoffs resulting from the proposed site improvements in order to design a stormwater management system.

EXISTING CONDITIONS:

The subject parcel is an accessway to the rear lot located at the northwest side of Mountain Road, approximately 200 feet from its intersection with Indian Hill Road. The accessway is currently vacant.

Existing soils at this location, as identified in the NRCS Soil Survey of Fairfield County, Connecticut, consist of Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky, which has a Hydrologic classification of 'B'.

The proposed driveway contains three local watershed basins; one that drains to the road, one that drains to the vernal pool/wetlands in the central section, and one that drains to the rear (north)

The existing runoff from a 25-Year rainfall event in the road basin is 0.43 c.f.s.
The existing runoff from a 25-Year rainfall event in the wetlands basin is 2.80 c.f.s.
The existing runoff from a 25-Year rainfall event in the north basin is 1.26 c.f.s.

PROPOSED CONDITIONS:

The proposal for this site is to construct a driveway to serve the proposed single family residence.

The proposed runoff (un-mitigated) from a 25-Year rainfall in the road basin event is 0.85 c.f.s.

The proposed runoff (un-mitigated) from a 25-Year rainfall in the wetlands basin event is 3.69 c.f.s.

The proposed runoff (un-mitigated) from a 25-Year rainfall in the north basin event is 1.94 c.f.s.

COMPUTATIONS:

The following computations of the existing and proposed conditions runoff flows were derived from the HydroCAD computer software. HydroCAD follows the NRCS TR-20 procedure for computing stormwater runoff. Computations were performed for a 25-year storm event, which has a 4% chance of occurring in any given 12 month period.

Existing Conditions (Road Basin):

Woods	6,862 s.f.	CN 61
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Total -	6,862 s.f.
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Weighted CN - **61**

Proposed Conditions (Road Basin):

Driveway	4,017 s.f.	CN 98
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Woods	2,845 s.f.	CN 61
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Total -	6,862 s.f.
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Weighted CN - **83**

Water Quality Volume

$$I = (58.5 \times 0.009) + 0.05 = 0.5765$$

$$WQV = (0.5765 (0.158 \text{ acres})/12) = 0.007590 \text{ ac-ft} = 330.6 \text{ ft}^3.$$

Groundwater Recharge Volume

$$GWV = 330.6 \times 0.25 = 82.7 \text{ ft}^3.$$

Existing Conditions (Wetlands Basin):

Woods	44,736 s.f.	CN 61
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Total -	44,736 s.f.
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Weighted CN - **61**

Proposed Conditions (Wetlands Basin):

Driveway	8,204 s.f.	CN 98
Woods	36,532 s.f.	CN 61
Total -	44,736 s.f.	

Weighted CN - **68**

Water Quality Volume

$$I = (18.3 \times 0.009) + 0.05 = 0.2147$$

$$WQV = (0.2147 (1.027 \text{ acres})/12) = 0.0183747 \text{ ac-ft} = 800.4 \text{ ft}^3.$$

Groundwater Recharge Volume

$$GWV = 800.4 \times 0.25 = 200.1 \text{ ft}^3.$$

Existing Conditions (North Basin):

Woods	20,044 s.f.	CN 61
Total -	20,044 s.f.	

Weighted CN - **61**

Proposed Conditions (North Basin):

Driveway	6,462 s.f.	CN 98
Woods	13,582 s.f.	CN 61
Total -	20,044 s.f.	

Weighted CN - **73**

Water Quality Volume

$$I = (32.2 \times 0.009) + 0.05 = 0.3398$$

$$WQV = (0.3398 (0.460 \text{ acres})/12) = 0.01302566 \text{ ac-ft} = 567.4 \text{ ft}^3.$$

Groundwater Recharge Volume

$$GWV = 567.4 \times 0.25 = 141.8 \text{ ft}^3.$$

SUMMARY (ROAD BASIN)

Existing Runoff (25 Year): 0.43 c.f.s.

Proposed Runoff (25 Year): 0.85 c.f.s.

Proposed Impervious Run-off
Retained (25 Year): 0.44 c.f.s

Proposed Run-off from Areas
Bypassing Retention plus overflow (25 Year): 0.36 c.f.s.

SUMMARY (WETLANDS BASIN)

Existing Runoff (25 Year): 2.80 c.f.s.

Proposed Runoff (25 Year): 3.69 c.f.s.

Proposed Impervious Run-off
Retained (25 Year): 1.23 c.f.s

Proposed Run-off from Areas
Bypassing Retention plus overflow (25 Year): 2.63 c.f.s.

SUMMARY (NORTH BASIN)

Existing Runoff (25 Year): 1.26 c.f.s.

Proposed Runoff (25 Year): 1.94 c.f.s.

Proposed Impervious Run-off
Retained (25 Year): 0.96 c.f.s

Proposed Run-off from Areas 1.14 c.f.s.

CONCLUSIONS:

The increased runoff resulting from the proposed site improvements will be retained in an on-site retention system. The runoff from the driveway will be routed to concrete galleries, and in one section near the wetlands to the aggregate under the porous asphalt that comprises the driveway in that area.

The system in the road basin will decrease the net peak runoff during a 25 Year storm in the road basin from its current peak of 0.43 c.f.s. to 0.36 c.f.s.

The proposed retention system in the road basin consists of 48 linear feet of 24" concrete galleries and 168 linear feet of 12" concrete galleries, which provide 986 ft³ of storage, which will accommodate the runoff from a 25 Year rainfall event routed to the system, meets the Water Quality Volume and provides groundwater recharge.

The system in the watershed basin will decrease the net peak runoff during a 25 Year storm in the road basin from its current peak of 2.80 c.f.s. to 2.63 c.f.s.

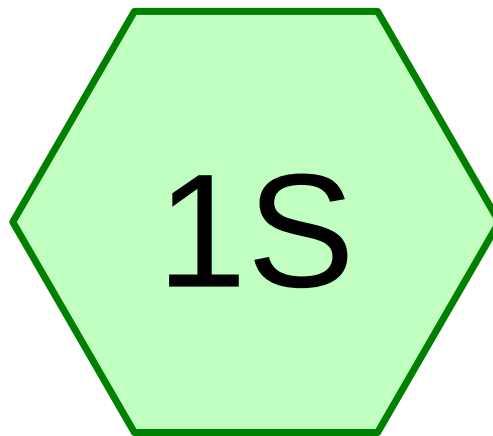
The proposed retention system in the wetlands basin consists of 240 linear feet of 12" concrete galleries and an approximately 278 foot portion of porous asphalt with aggregate under. The aggregate under the porous asphalt is to be 15" thick in the wetlands basin. The combined system provides 3,543 ft³ of storage, which will accommodate the runoff from a 25 Year rainfall event routed to the system, meets the Water Quality Volume and provides groundwater recharge.

The model conservatively calculates a 9 foot width of the driveway for retention capacity of the aggregate, although its entire width will have aggregate under it. The driveway is a minimum of 10 feet wide, widening to 15 feet in areas.

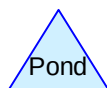
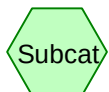
The system in the north basin will decrease the net peak runoff during a 25 Year storm in the road basin from its current peak of 1.26 c.f.s. to 1.14 c.f.s.

The proposed retention system in the north basin consists of 64 linear feet of 12" concrete galleries and 184 linear feet of 24" concrete galleries, which provides 1,688 ft³ of storage, which will accommodate the runoff from a 25 Year rainfall event routed to the system, meets the Water Quality Volume and provides groundwater recharge.

The proposed improvements will have no adverse impact on the road or surrounding properties.



Existing Conditions



Routing Diagram for 2168ROWExisting

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Summary for Subcatchment 1S: Existing Conditions

Runoff = 0.43 cfs @ 12.08 hrs, Volume= 0.031 af, Depth> 2.34"

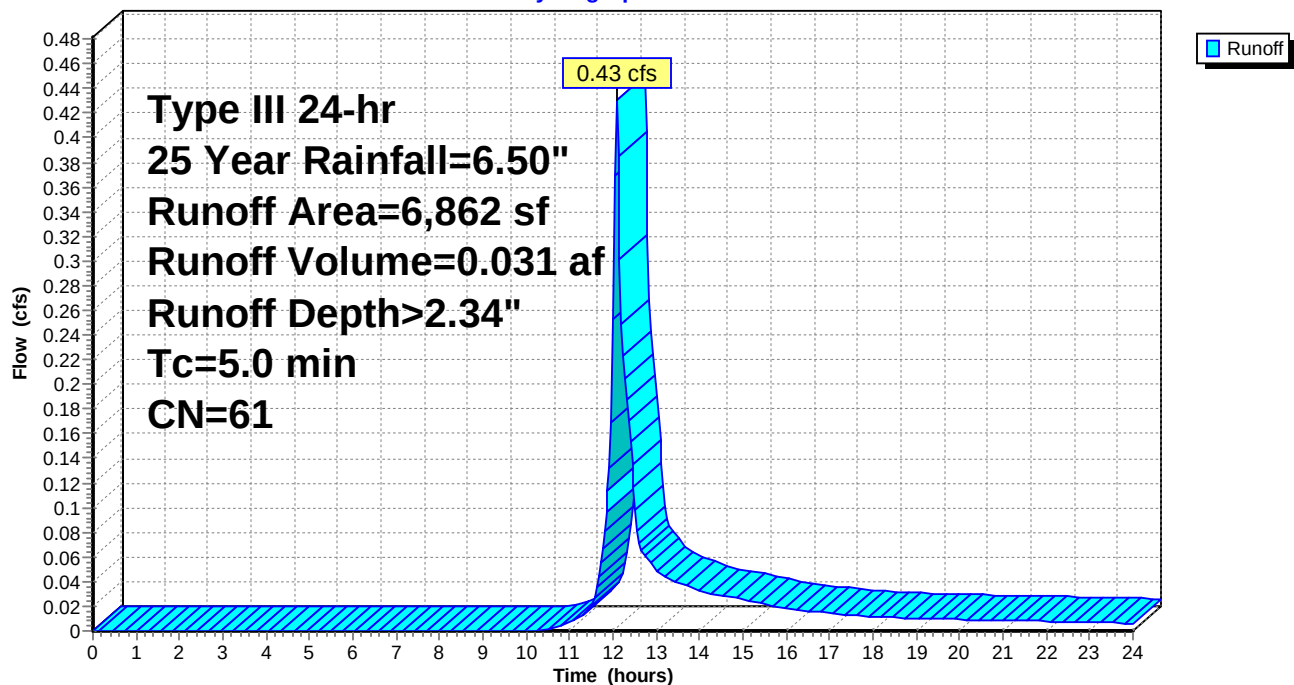
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 Year Rainfall=6.50"

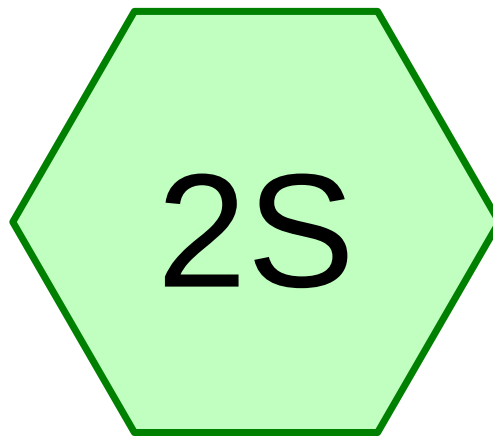
	Area (sf)	CN	Description
*	6,862	61	Woods, Fair, HSG B
	6,862		100.00% Pervious Area

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

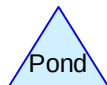
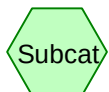
Subcatchment 1S: Existing Conditions

Hydrograph





Proposed Conditions



Routing Diagram for 2168ROWProposed

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Summary for Subcatchment 2S: Proposed Conditions

Runoff = 0.85 cfs @ 12.08 hrs, Volume= 0.060 af, Depth> 4.55"

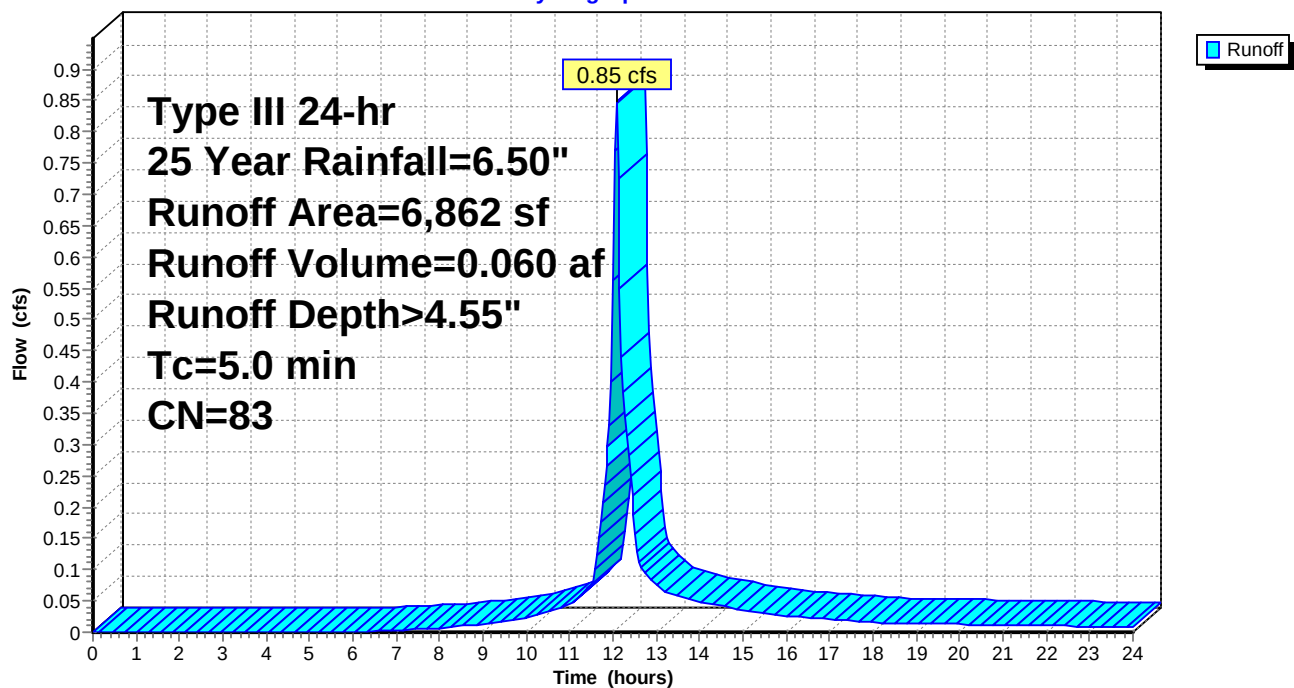
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 Year Rainfall=6.50"

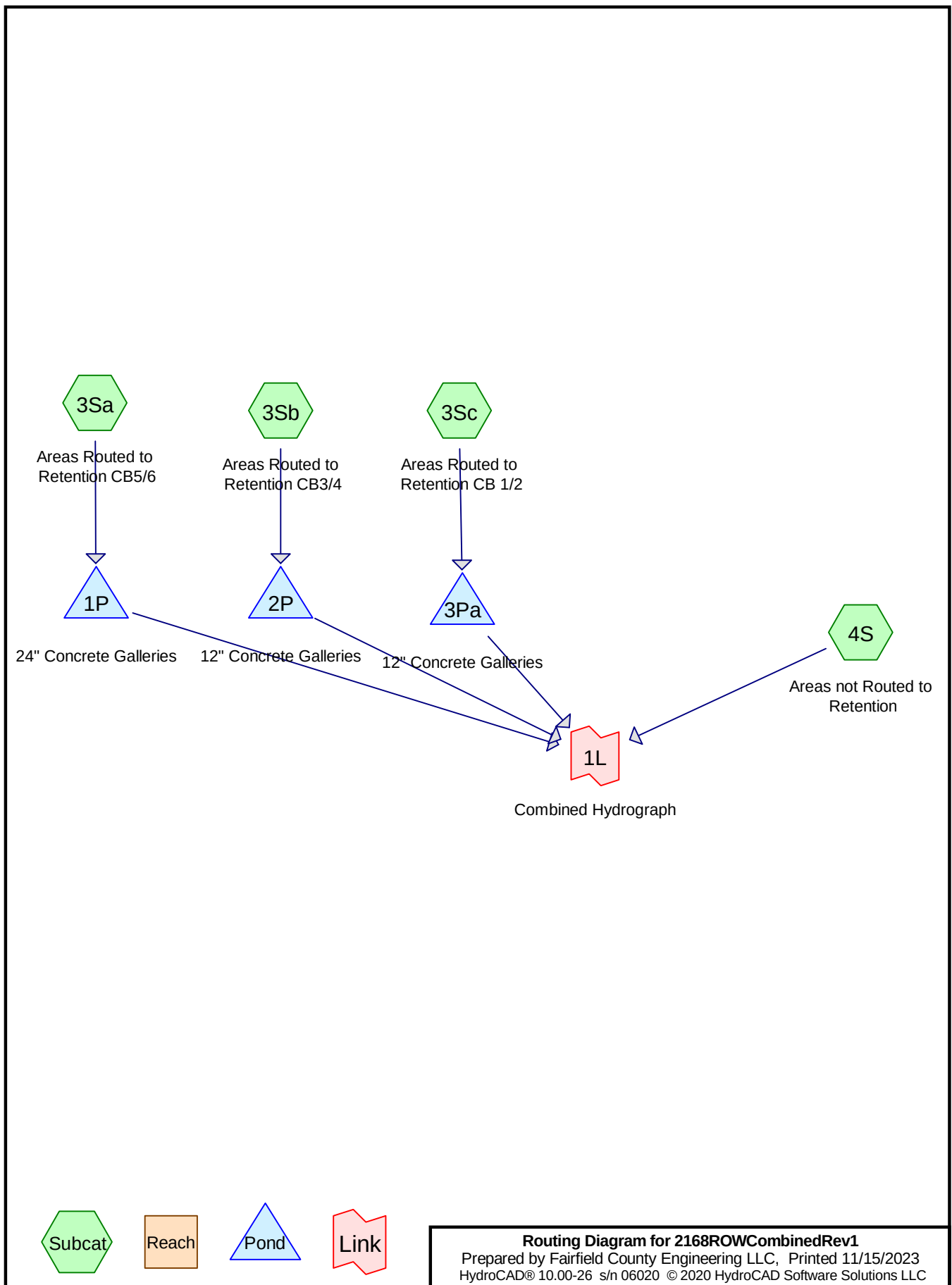
	Area (sf)	CN	Description
*	4,017	98	Driveway
*	2,845	61	Woods, Fair, HSG B
	6,862	83	Weighted Average
	2,845		41.46% Pervious Area
	4,017		58.54% Impervious Area

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

Subcatchment 2S: Proposed Conditions

Hydrograph





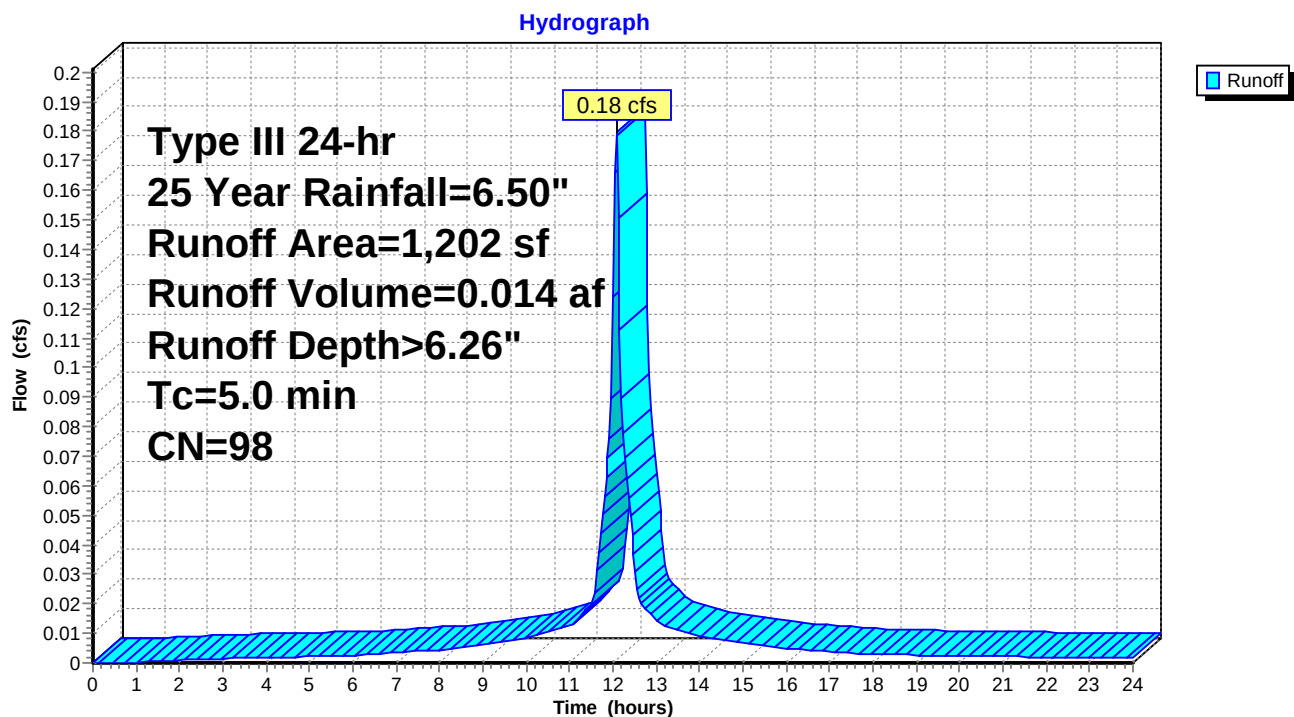
Summary for Subcatchment 3Sa: Areas Routed to Retention CB5/6

Runoff = 0.18 cfs @ 12.07 hrs, Volume= 0.014 af, Depth> 6.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
* 1,202	98	Driveway
1,202		100.00% Impervious Area

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

Subcatchment 3Sa: Areas Routed to Retention CB5/6

Summary for Subcatchment 3Sb: Areas Routed to Retention CB3/4

Runoff = 0.11 cfs @ 12.07 hrs, Volume= 0.009 af, Depth> 6.26"

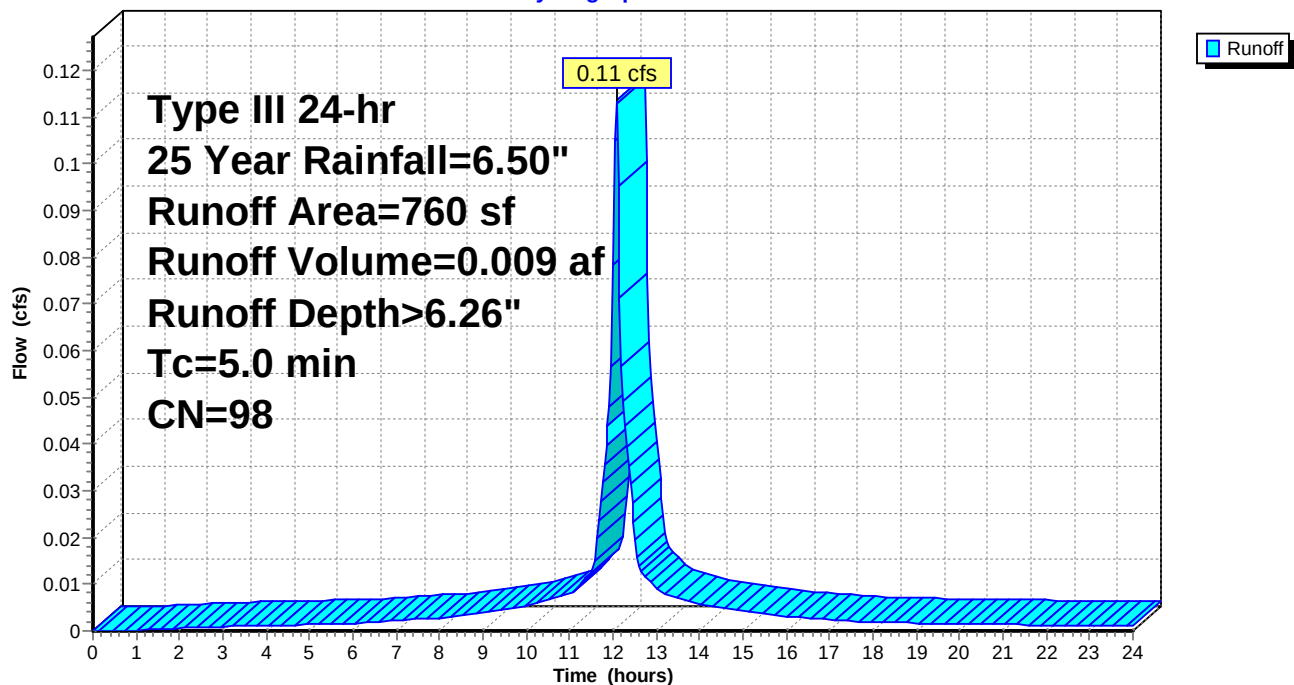
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
* 760	98	Driveway
760		100.00% Impervious Area

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

Subcatchment 3Sb: Areas Routed to Retention CB3/4

Hydrograph



Summary for Subcatchment 3Sc: Areas Routed to Retention CB 1/2

Runoff = 0.15 cfs @ 12.07 hrs, Volume= 0.012 af, Depth> 6.26"

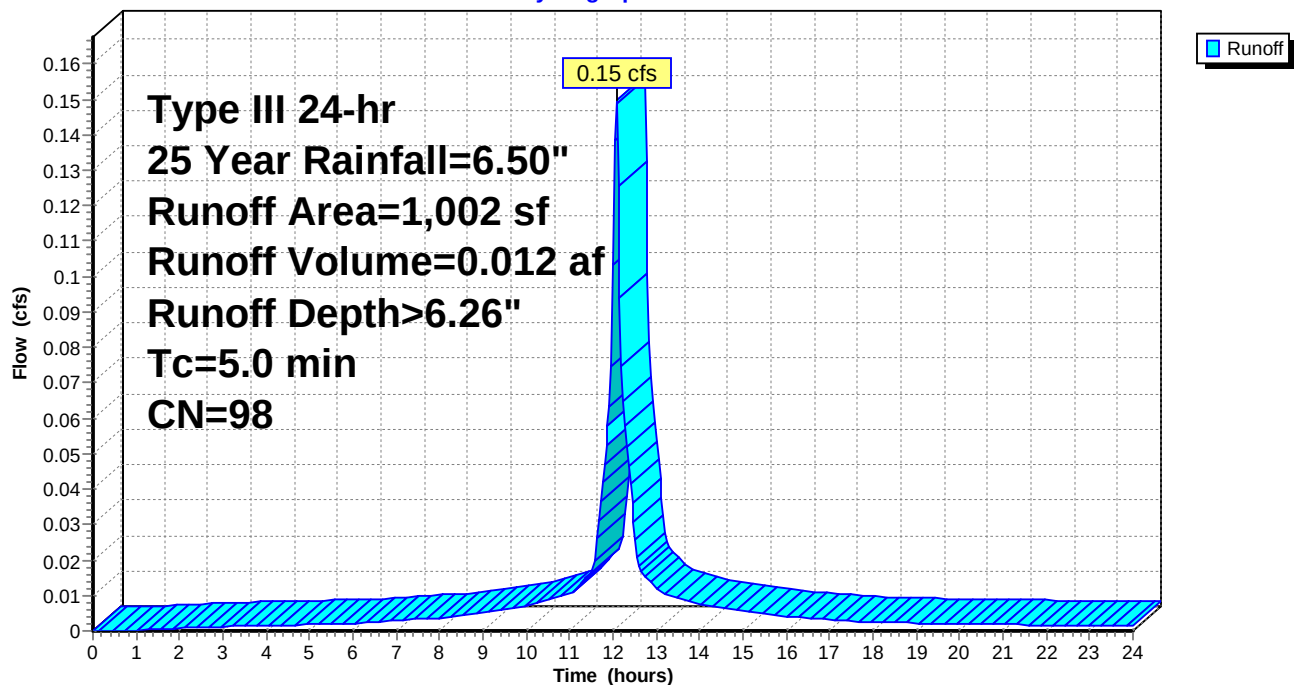
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
* 1,002	98	Driveway
1,002		100.00% Impervious Area

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

Subcatchment 3Sc: Areas Routed to Retention CB 1/2

Hydrograph



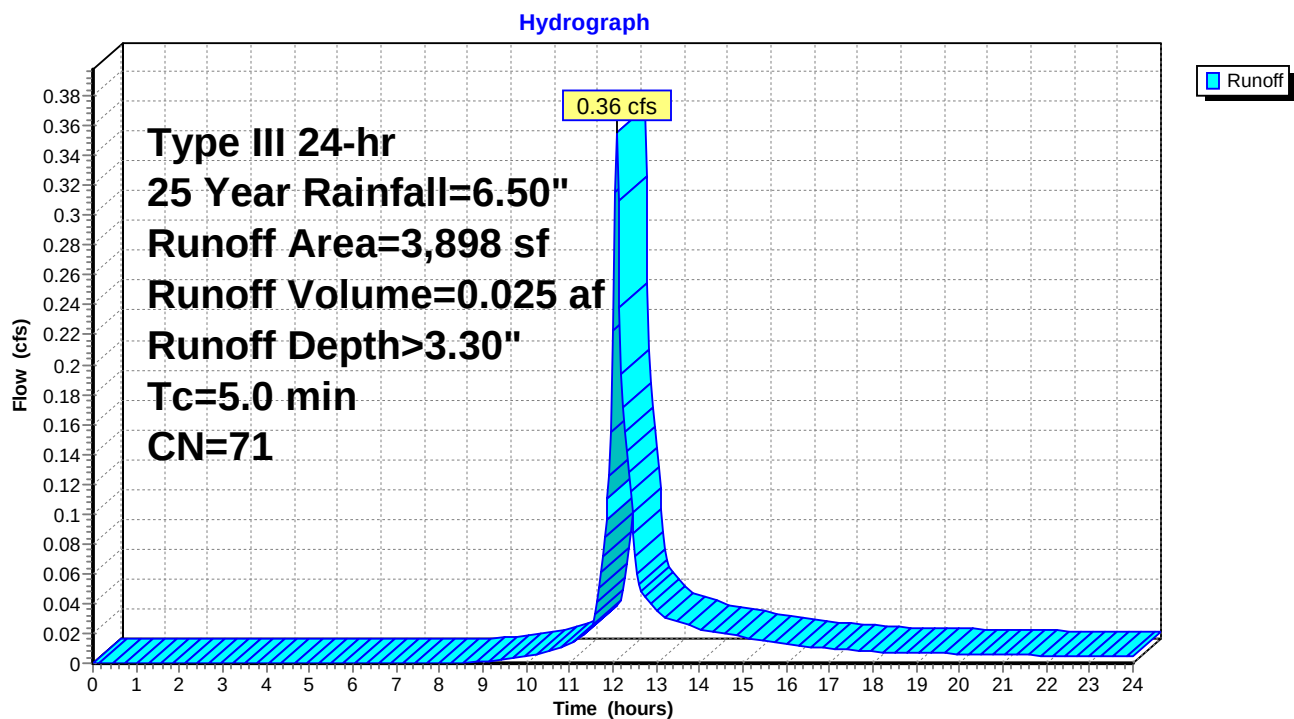
Summary for Subcatchment 4S: Areas not Routed to Retention

Runoff = 0.36 cfs @ 12.08 hrs, Volume= 0.025 af, Depth> 3.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	1,053	98	Driveway
*	2,845	61	Woods, Fair, HSG B
	3,898	71	Weighted Average
	2,845		72.99% Pervious Area
	1,053		27.01% Impervious Area

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

Subcatchment 4S: Areas not Routed to Retention

Summary for Pond 1P: 24" Concrete Galleries

Inflow Area = 0.028 ac, 100.00% Impervious, Inflow Depth > 6.26" for 25 Year event
 Inflow = 0.18 cfs @ 12.07 hrs, Volume= 0.014 af
 Outflow = 0.08 cfs @ 12.30 hrs, Volume= 0.006 af, Atten= 58%, Lag= 13.4 min
 Primary = 0.08 cfs @ 12.30 hrs, Volume= 0.006 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
 Peak Elev= 575.56' @ 12.28 hrs Surf.Area= 234 sf Storage= 380 cf

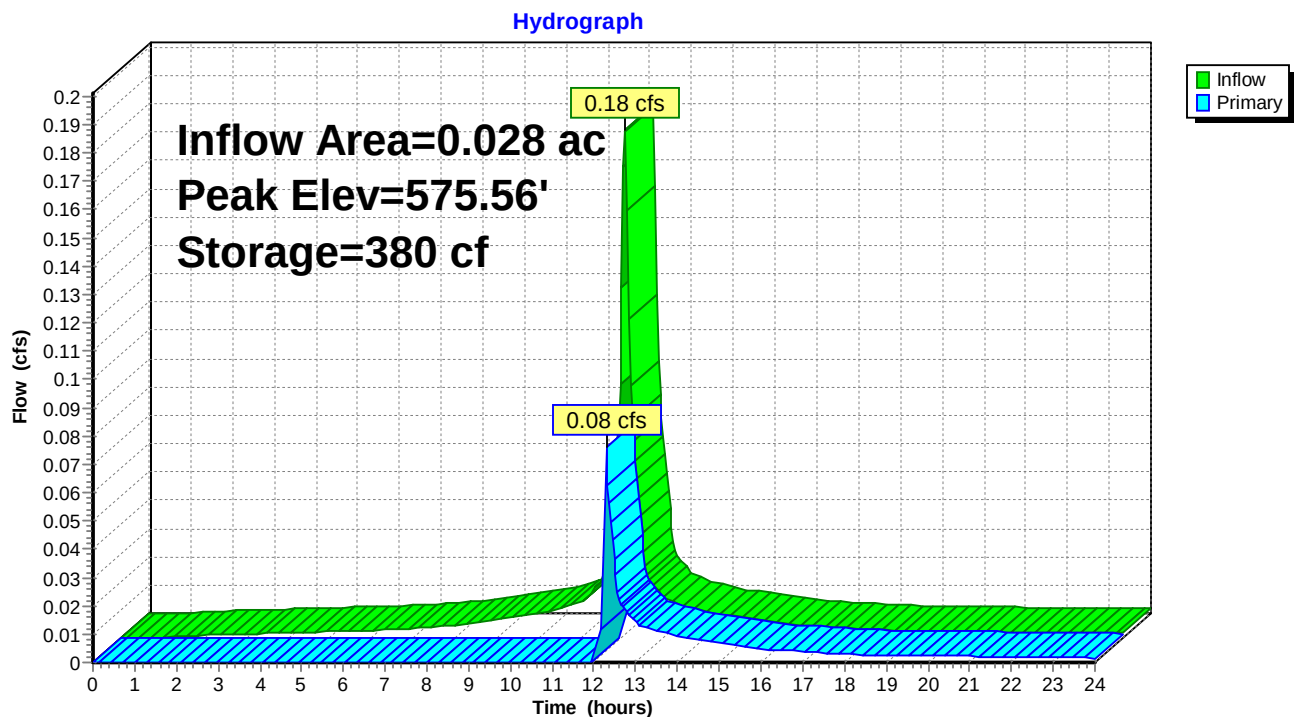
Plug-Flow detention time= 331.5 min calculated for 0.006 af (39% of inflow)
 Center-of-Mass det. time= 170.5 min (913.2 - 742.7)

Volume	Invert	Avail.Storage	Storage Description
#1	573.50'	59 cf	9.00'W x 26.00'L x 2.00'H Stone 468 cf Overall - 321 cf Embedded = 147 cf x 40.0% Voids
#2	573.50'	321 cf	8.00'W x 24.00'L x 1.67'H 24" Concrete Galleries Inside #1
		380 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	575.50'	6.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.07 cfs @ 12.30 hrs HW=575.55' (Free Discharge)

↑ **1=Orifice/Grate** (Weir Controls 0.07 cfs @ 0.77 fps)

Pond 1P: 24" Concrete Galleries

Summary for Pond 2P: 12" Concrete Galleries

Inflow Area = 0.017 ac, 100.00% Impervious, Inflow Depth > 6.26" for 25 Year event
 Inflow = 0.11 cfs @ 12.07 hrs, Volume= 0.009 af
 Outflow = 0.03 cfs @ 12.45 hrs, Volume= 0.003 af, Atten= 72%, Lag= 22.6 min
 Primary = 0.03 cfs @ 12.45 hrs, Volume= 0.003 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
 Peak Elev= 579.54' @ 12.45 hrs Surf.Area= 364 sf Storage= 261 cf

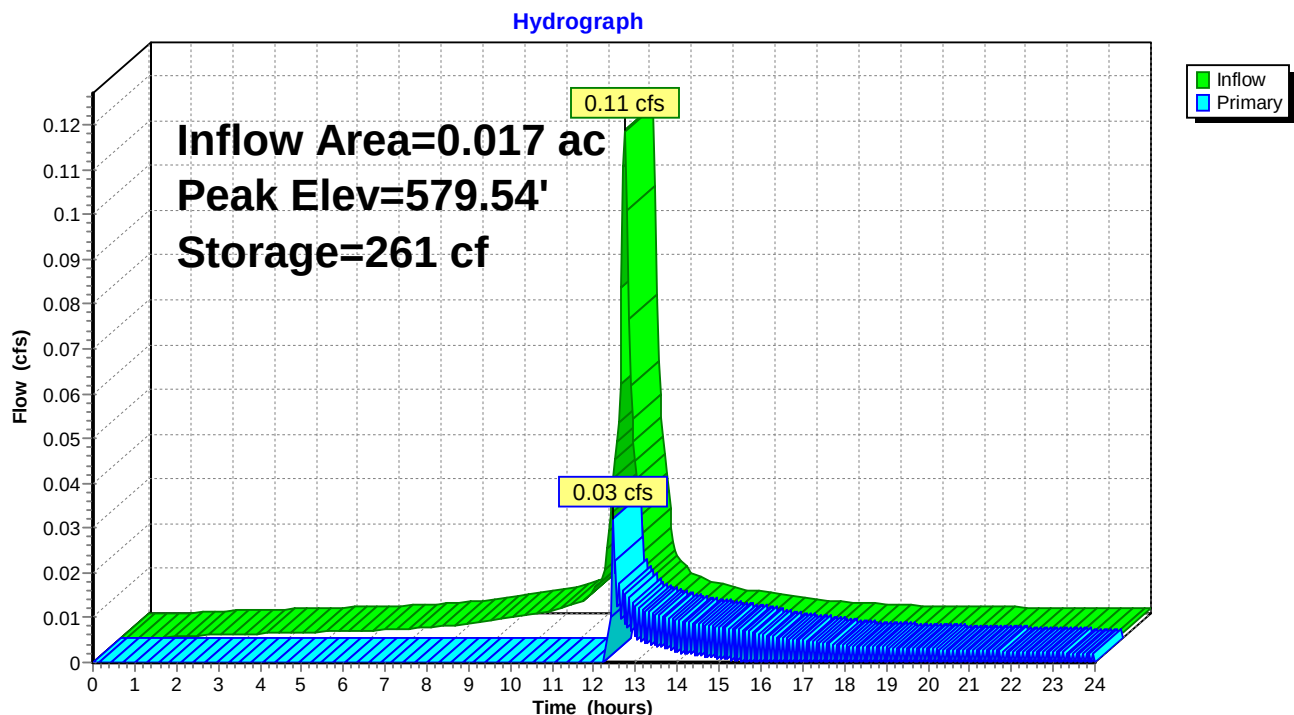
Plug-Flow detention time= 379.3 min calculated for 0.003 af (34% of inflow)
 Center-of-Mass det. time= 197.8 min (940.5 - 742.7)

Volume	Invert	Avail.Storage	Storage Description
#1	578.50'	68 cf	14.00'W x 26.00'L x 1.00'H Stone 364 cf Overall - 193 cf Embedded = 171 cf x 40.0% Voids
#2	578.50'	193 cf	12.00'W x 24.00'L x 0.67'H 12" Concrete Galleries Inside #1
		261 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	579.50'	6.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.03 cfs @ 12.45 hrs HW=579.53' (Free Discharge)
 ↑ **1=Orifice/Grate** (Weir Controls 0.03 cfs @ 0.57 fps)

Pond 2P: 12" Concrete Galleries



Summary for Pond 3Pa: 12" Concrete Galleries

Inflow Area = 0.023 ac, 100.00% Impervious, Inflow Depth > 6.26" for 25 Year event
 Inflow = 0.15 cfs @ 12.07 hrs, Volume= 0.012 af
 Outflow = 0.04 cfs @ 12.45 hrs, Volume= 0.004 af, Atten= 73%, Lag= 22.8 min
 Primary = 0.04 cfs @ 12.45 hrs, Volume= 0.004 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
 Peak Elev= 581.54' @ 12.46 hrs Surf.Area= 476 sf Storage= 345 cf

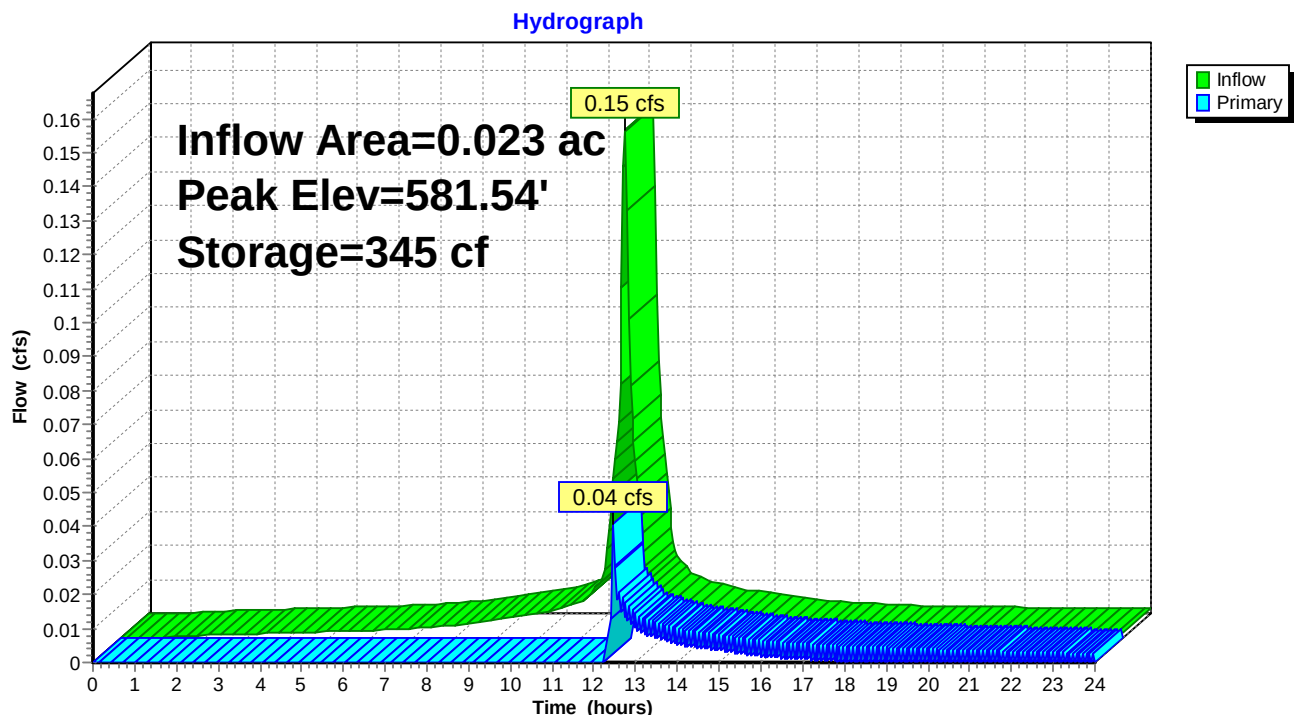
Plug-Flow detention time= 379.7 min calculated for 0.004 af (34% of inflow)
 Center-of-Mass det. time= 198.0 min (940.7 - 742.7)

Volume	Invert	Avail.Storage	Storage Description
#1	580.50'	87 cf	14.00'W x 34.00'L x 1.00'H Stone 476 cf Overall - 257 cf Embedded = 219 cf x 40.0% Voids
#2	580.50'	257 cf	12.00'W x 32.00'L x 0.67'H 12" Concrete Galleries Inside #1
		345 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	581.50'	6.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.04 cfs @ 12.45 hrs HW=581.54' (Free Discharge)

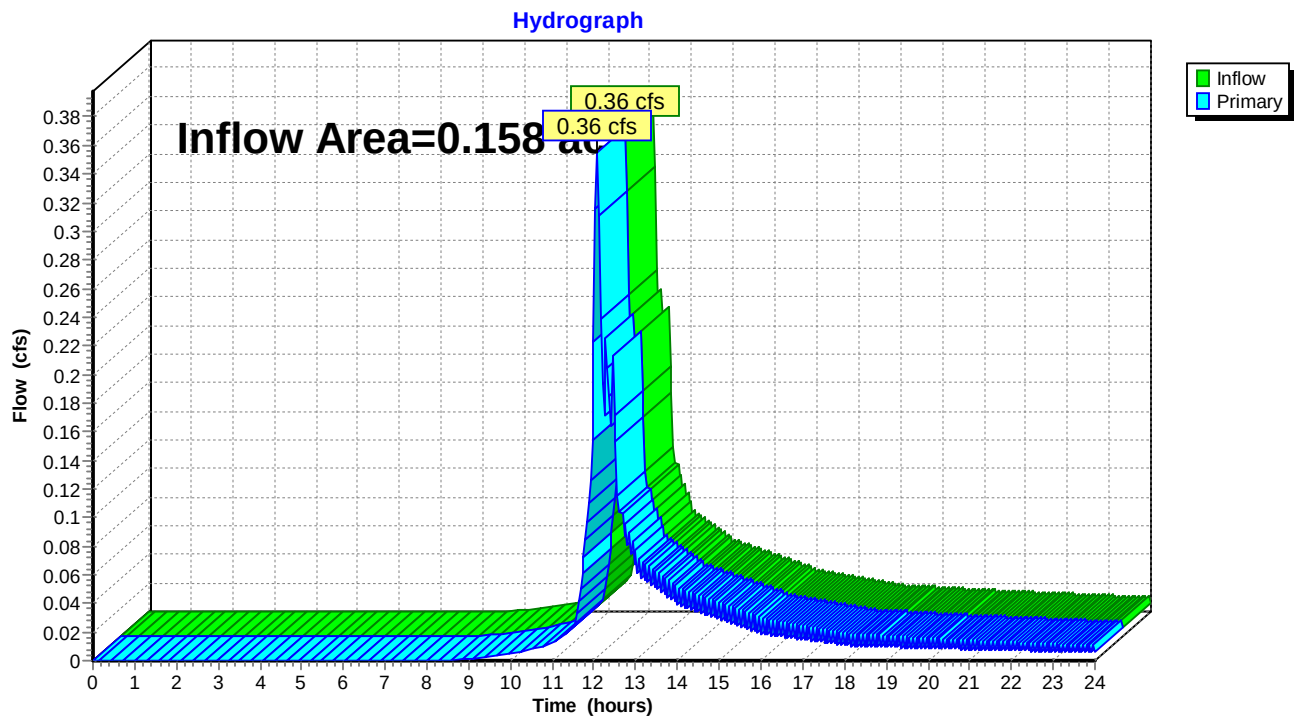
↑ **1=Orifice/Grate** (Weir Controls 0.04 cfs @ 0.62 fps)

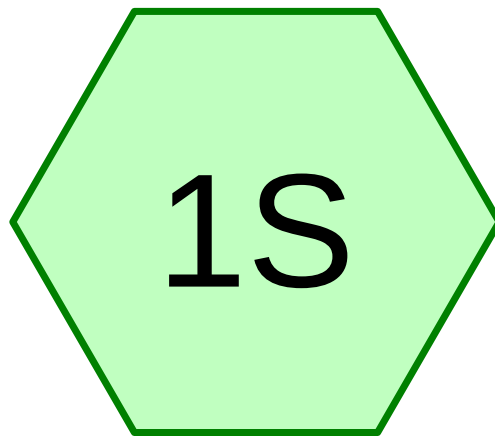
Pond 3Pa: 12" Concrete Galleries

Summary for Link 1L: Combined Hydrograph

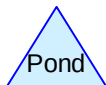
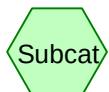
Inflow Area = 0.158 ac, 58.54% Impervious, Inflow Depth > 2.86" for 25 Year event
Inflow = 0.36 cfs @ 12.08 hrs, Volume= 0.037 af
Primary = 0.36 cfs @ 12.08 hrs, Volume= 0.037 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs

Link 1L: Combined Hydrograph



Existing Conditions Wetlands Basin



Routing Diagram for 2168ROWWetlandsExisting

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Summary for Subcatchment 1S: Existing Conditions Wetlands Basin

Runoff = 2.80 cfs @ 12.08 hrs, Volume= 0.201 af, Depth> 2.34"

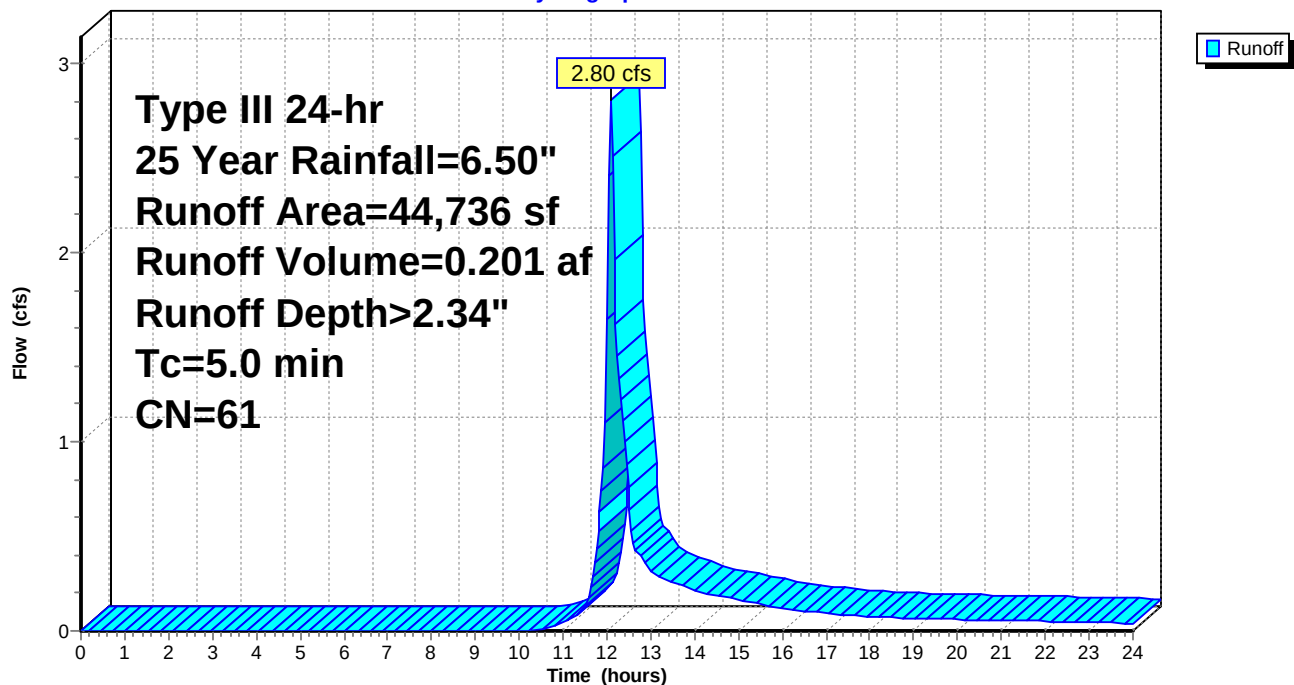
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 Year Rainfall=6.50"

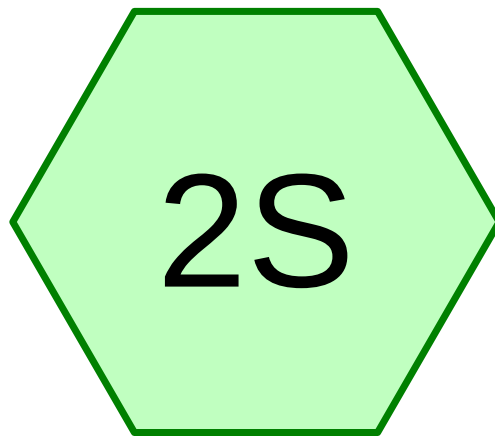
	Area (sf)	CN	Description
*	44,736	61	Woods, Fair, HSG B
	44,736		100.00% Pervious Area

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

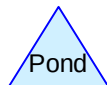
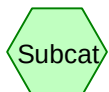
Subcatchment 1S: Existing Conditions Wetlands Basin

Hydrograph





Proposed Conditions Wetlands Basin



Routing Diagram for 2168ROWWetlandsProposed
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2168ROWWetlandsProposed

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Type III 24-hr 25 Year Rainfall=6.50"

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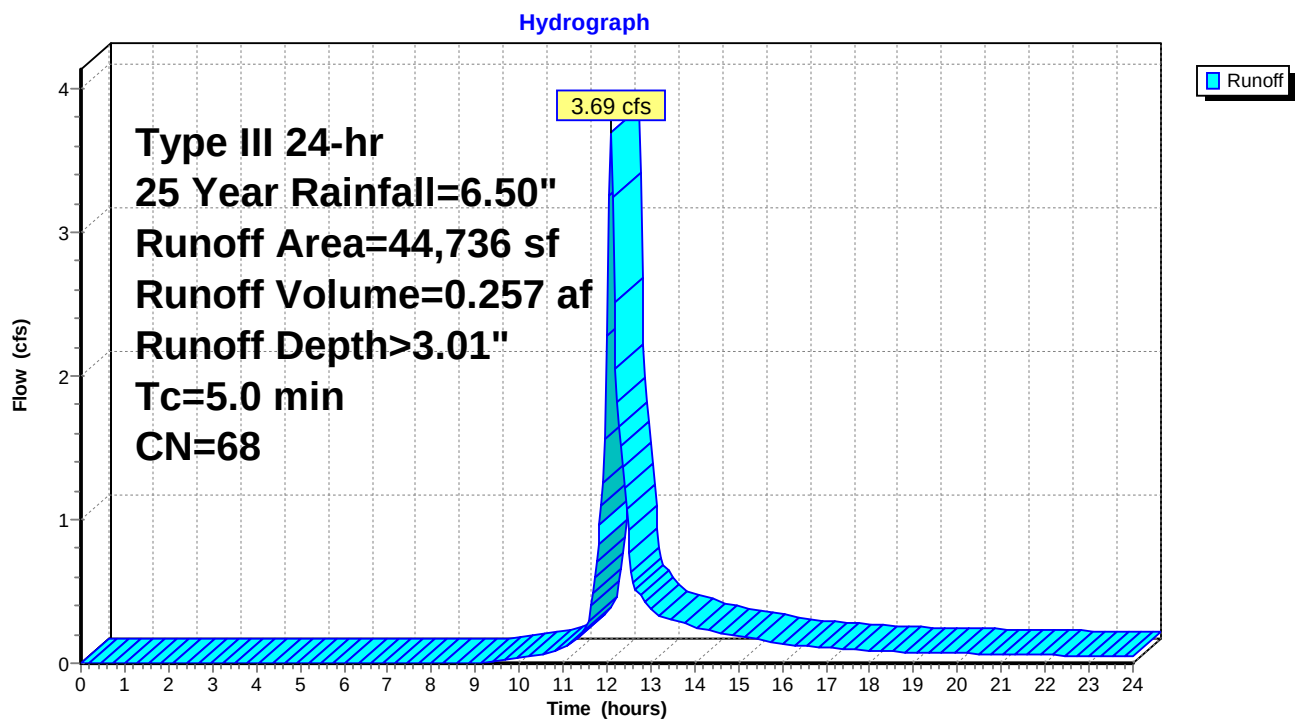
Summary for Subcatchment 2S: Proposed Conditions Wetlands Basin

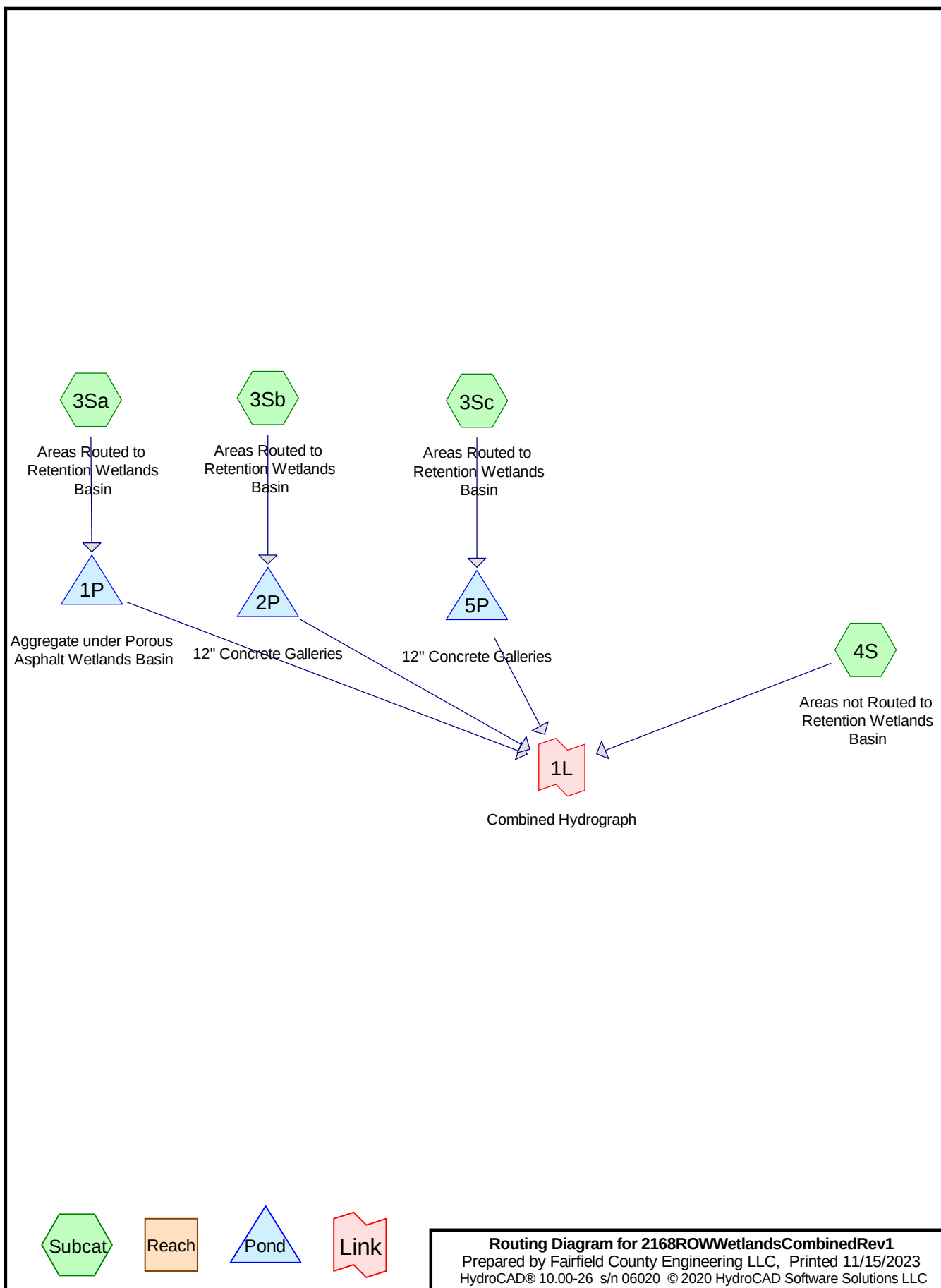
Runoff = 3.69 cfs @ 12.08 hrs, Volume= 0.257 af, Depth> 3.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	8,204	98	Driveway
*	36,532	61	Woods, Fair, HSG B
	44,736	68	Weighted Average
	36,532		81.66% Pervious Area
	8,204		18.34% Impervious Area

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

Subcatchment 2S: Proposed Conditions Wetlands Basin



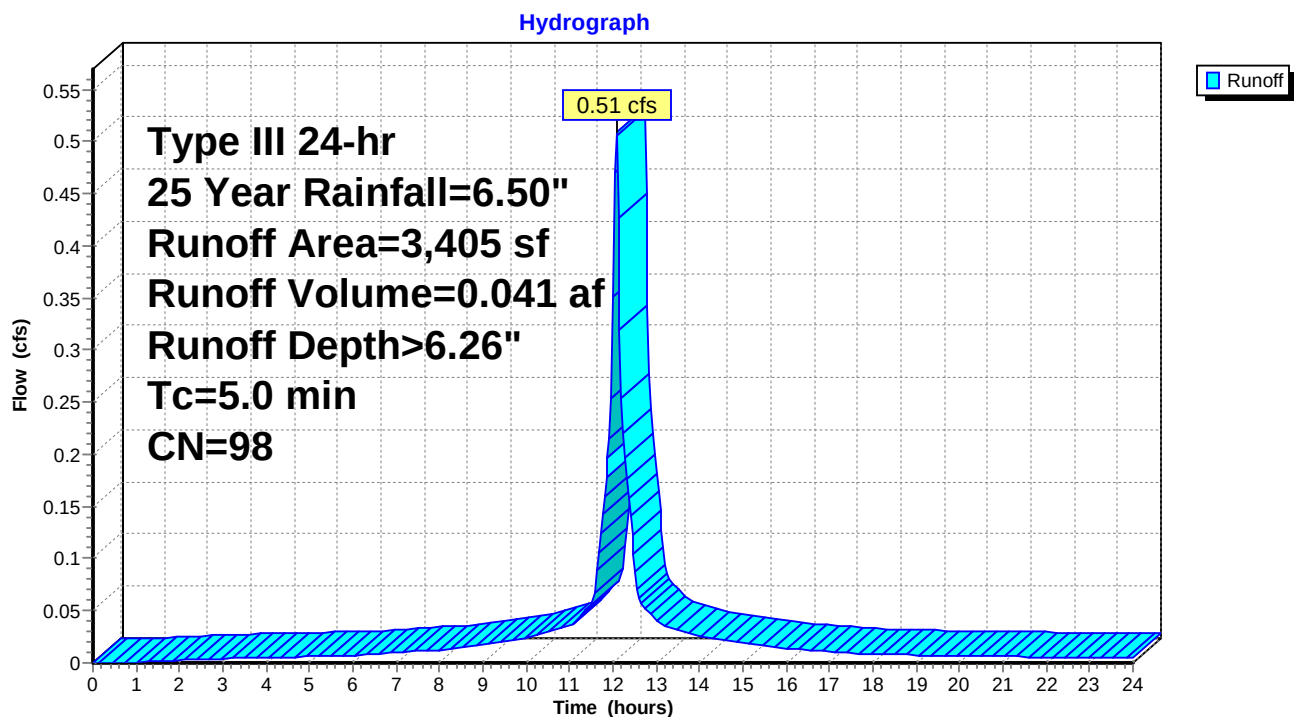
Summary for Subcatchment 3Sa: Areas Routed to Retention Wetlands Basin

Runoff = 0.51 cfs @ 12.07 hrs, Volume= 0.041 af, Depth> 6.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	3,405	98	Driveway
	3,405		100.00% Impervious Area

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

Subcatchment 3Sa: Areas Routed to Retention Wetlands Basin

Summary for Subcatchment 3Sb: Areas Routed to Retention Wetlands Basin

Runoff = 0.24 cfs @ 12.07 hrs, Volume= 0.019 af, Depth> 6.26"

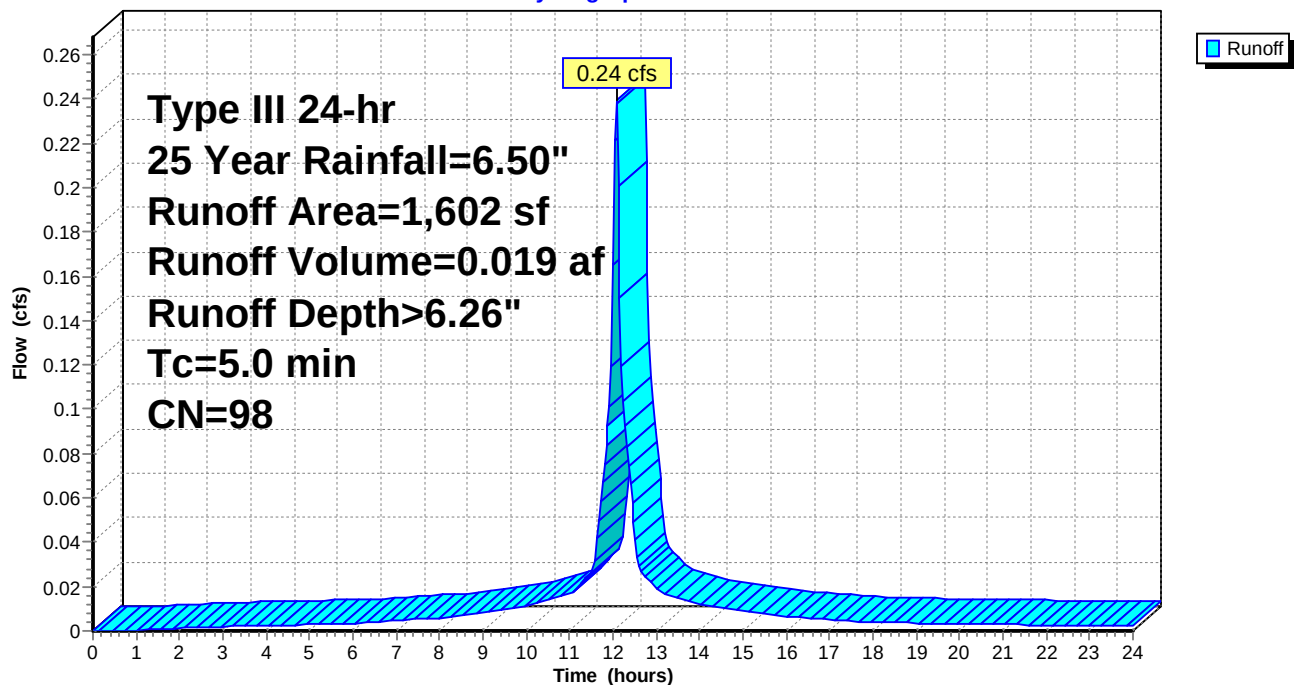
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
* 1,602	98	Driveway
1,602		100.00% Impervious Area

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

Subcatchment 3Sb: Areas Routed to Retention Wetlands Basin

Hydrograph



Summary for Subcatchment 3Sc: Areas Routed to Retention Wetlands Basin

Runoff = 0.21 cfs @ 12.07 hrs, Volume= 0.017 af, Depth> 6.26"

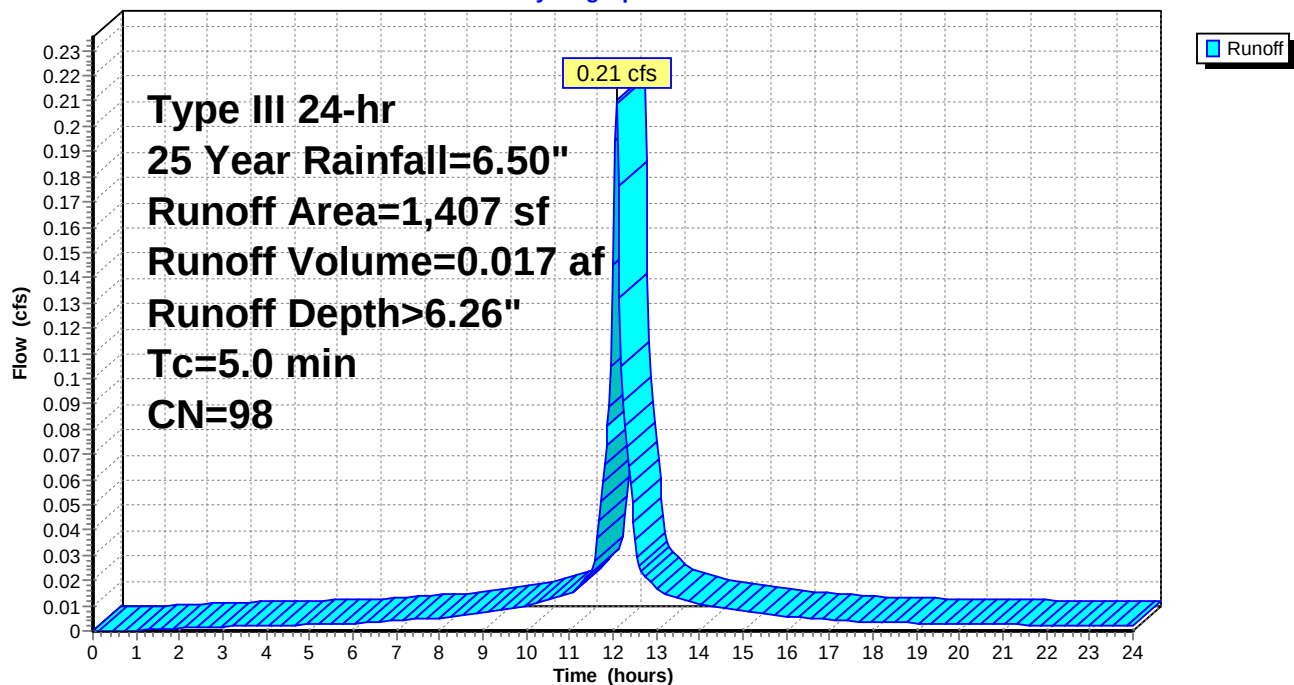
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	1,407	98	Driveway
	1,407		100.00% Impervious Area

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

Subcatchment 3Sc: Areas Routed to Retention Wetlands Basin

Hydrograph



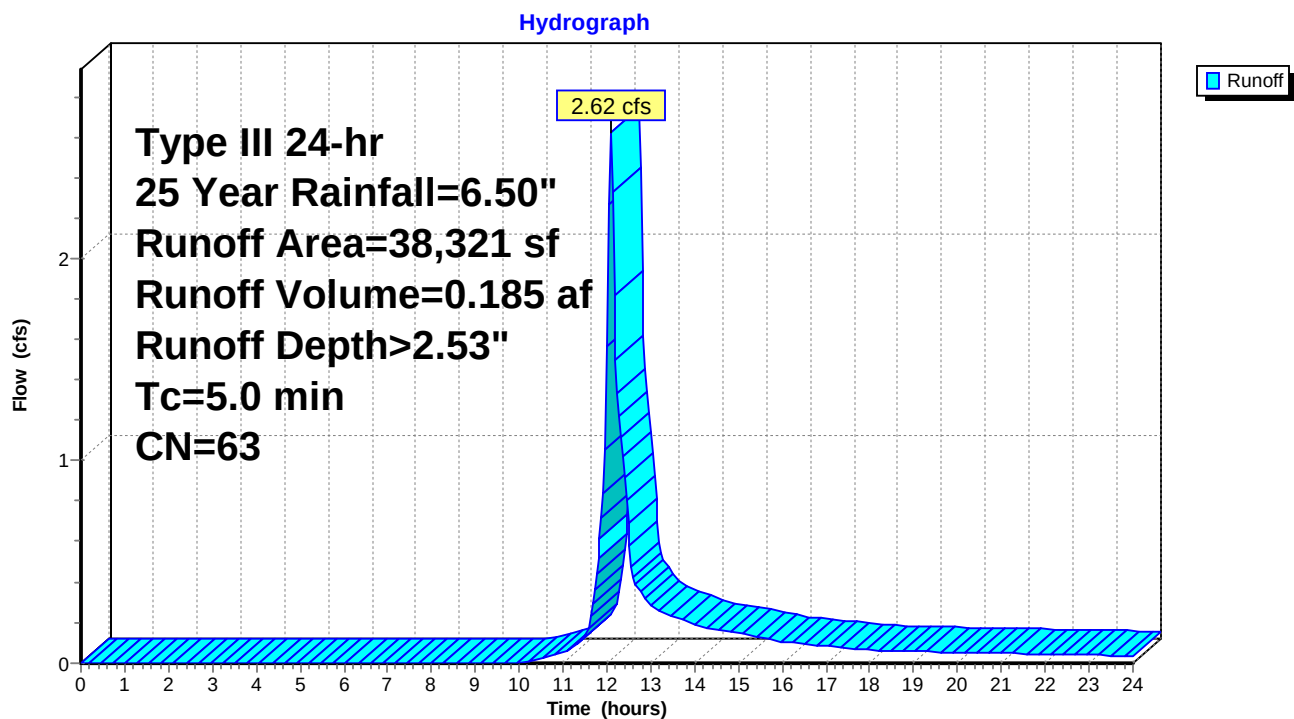
Summary for Subcatchment 4S: Areas not Routed to Retention Wetlands Basin

Runoff = 2.62 cfs @ 12.08 hrs, Volume= 0.185 af, Depth> 2.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	1,789	98	Driveway
*	36,532	61	Woods, Fair, HSG B
	38,321	63	Weighted Average
	36,532		95.33% Pervious Area
	1,789		4.67% Impervious Area

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

Subcatchment 4S: Areas not Routed to Retention Wetlands Basin

Summary for Pond 1P: Aggregate under Porous Asphalt Wetlands Basin

Inflow Area = 0.078 ac, 100.00% Impervious, Inflow Depth > 6.26" for 25 Year event
 Inflow = 0.51 cfs @ 12.07 hrs, Volume= 0.041 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
 Peak Elev= 0.83' @ 24.00 hrs Surf.Area= 5,373 sf Storage= 1,775 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

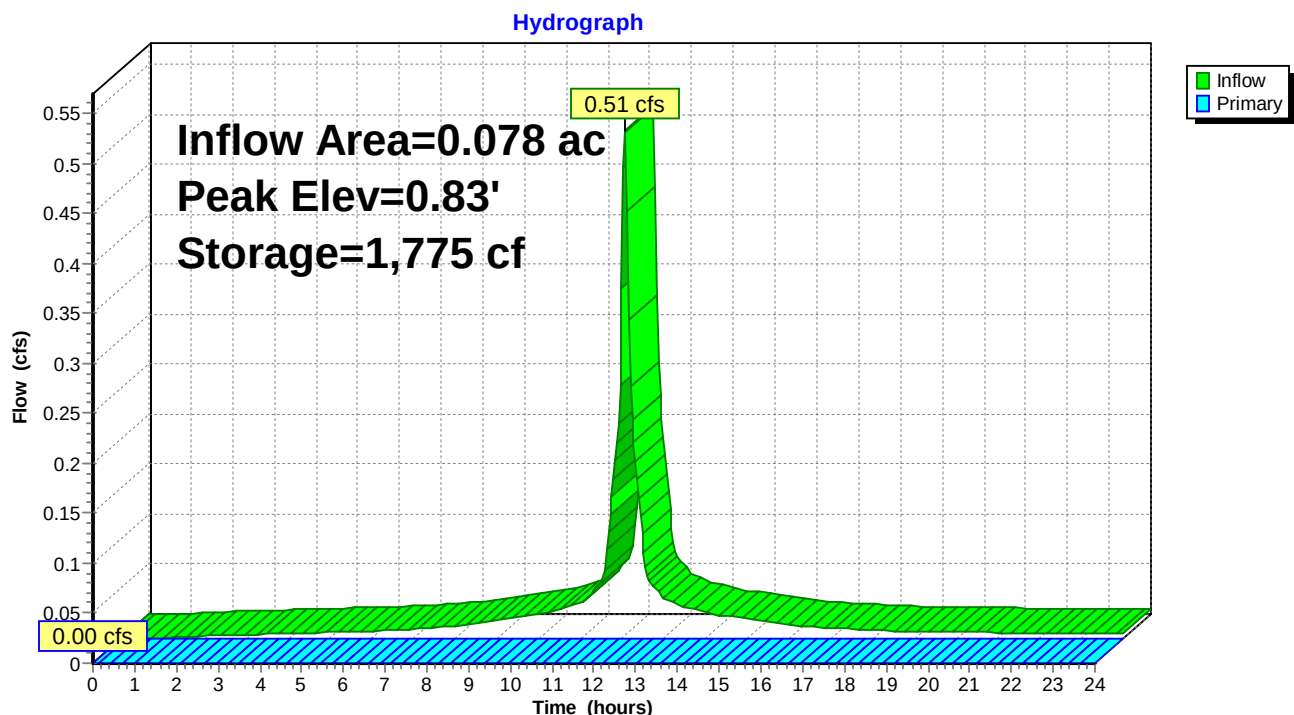
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	2,687 cf	9.00'W x 597.00'L x 1.25'H Aggregate 6,716 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	1.25'	1.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)

← **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Aggregate under Porous Asphalt Wetlands Basin

Summary for Pond 2P: 12" Concrete Galleries

Inflow Area = 0.037 ac, 100.00% Impervious, Inflow Depth > 6.26" for 25 Year event
 Inflow = 0.24 cfs @ 12.07 hrs, Volume= 0.019 af
 Outflow = 0.22 cfs @ 12.15 hrs, Volume= 0.009 af, Atten= 8%, Lag= 4.9 min
 Primary = 0.22 cfs @ 12.15 hrs, Volume= 0.009 af

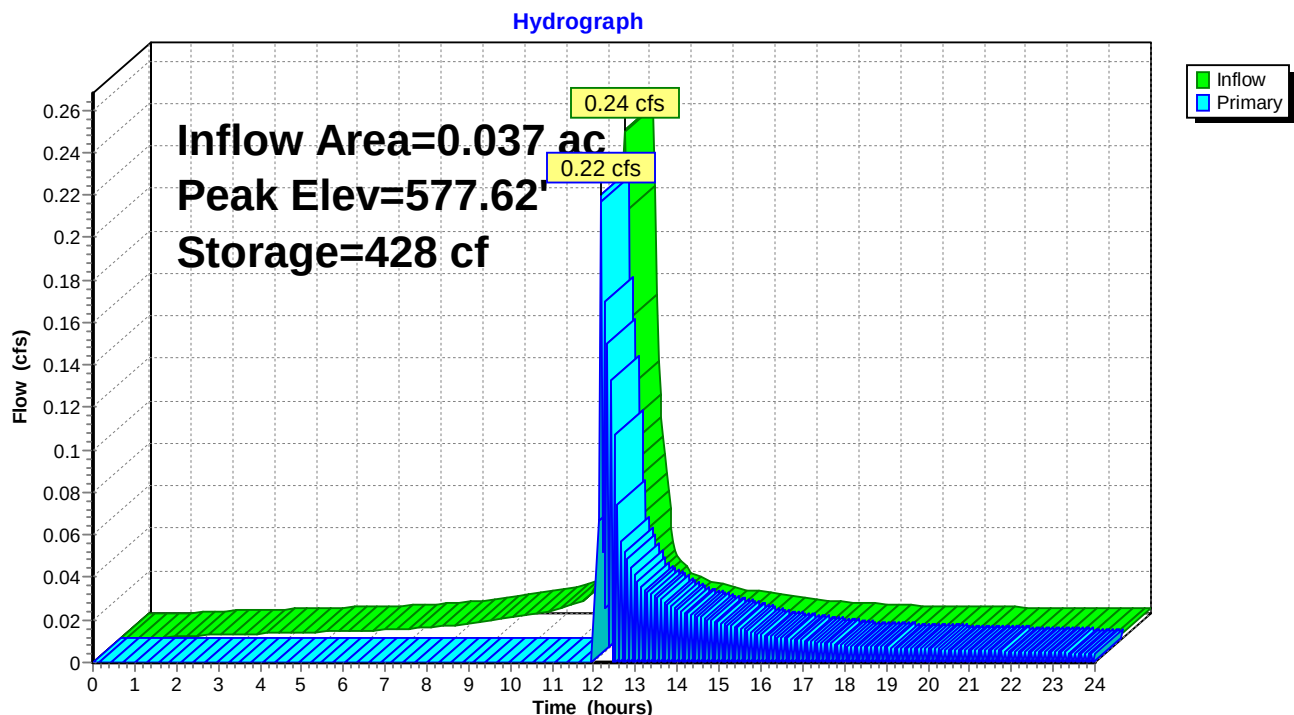
Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
 Peak Elev= 577.62' @ 12.15 hrs Surf.Area= 588 sf Storage= 428 cf

Plug-Flow detention time= 267.7 min calculated for 0.009 af (49% of inflow)
 Center-of-Mass det. time= 134.9 min (877.6 - 742.7)

Volume	Invert	Avail.Storage	Storage Description
#1	576.50'	107 cf	14.00'W x 42.00'L x 1.00'H Stone 588 cf Overall - 322 cf Embedded = 266 cf x 40.0% Voids
#2	576.50'	322 cf	12.00'W x 40.00'L x 0.67'H 12" Concrete Galleries Inside #1
		428 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	577.50'	6.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.20 cfs @ 12.15 hrs HW=577.62' (Free Discharge)
 ↑ **1=Orifice/Grate** (Weir Controls 0.20 cfs @ 1.11 fps)

Pond 2P: 12" Concrete Galleries

Summary for Pond 5P: 12" Concrete Galleries

Inflow Area = 0.032 ac, 100.00% Impervious, Inflow Depth > 6.26" for 25 Year event
 Inflow = 0.21 cfs @ 12.07 hrs, Volume= 0.017 af
 Outflow = 0.13 cfs @ 12.24 hrs, Volume= 0.007 af, Atten= 36%, Lag= 10.3 min
 Primary = 0.13 cfs @ 12.24 hrs, Volume= 0.007 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs

Peak Elev= 577.59' @ 12.24 hrs Surf.Area= 588 sf Storage= 428 cf

Plug-Flow detention time= 312.8 min calculated for 0.007 af (42% of inflow)

Center-of-Mass det. time= 160.4 min (903.1 - 742.7)

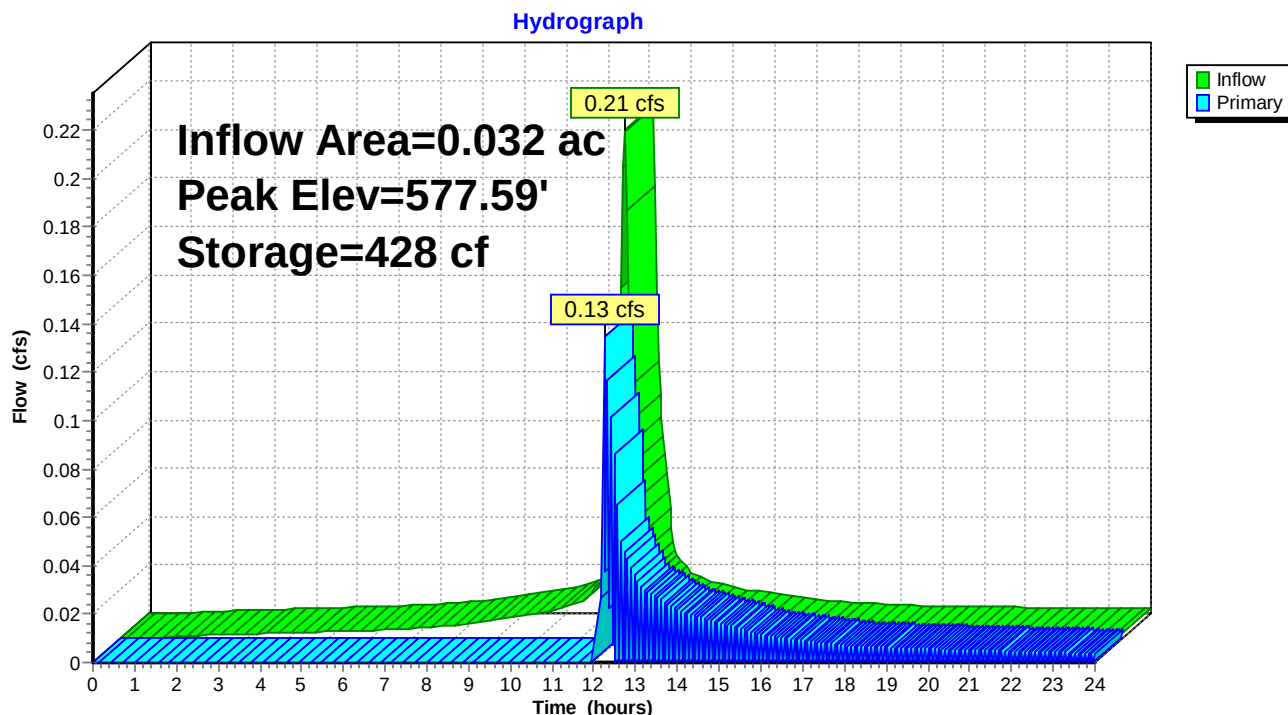
Volume	Invert	Avail.Storage	Storage Description
#1	576.50'	107 cf	14.00'W x 42.00'L x 1.00'H Stone
			588 cf Overall - 322 cf Embedded = 266 cf x 40.0% Voids
#2	576.50'	322 cf	12.00'W x 40.00'L x 0.67'H 12" Concrete Galleries Inside #1
		428 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	577.50'	6.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.12 cfs @ 12.24 hrs HW=577.58' (Free Discharge)

↑ **1=Orifice/Grate** (Weir Controls 0.12 cfs @ 0.95 fps)

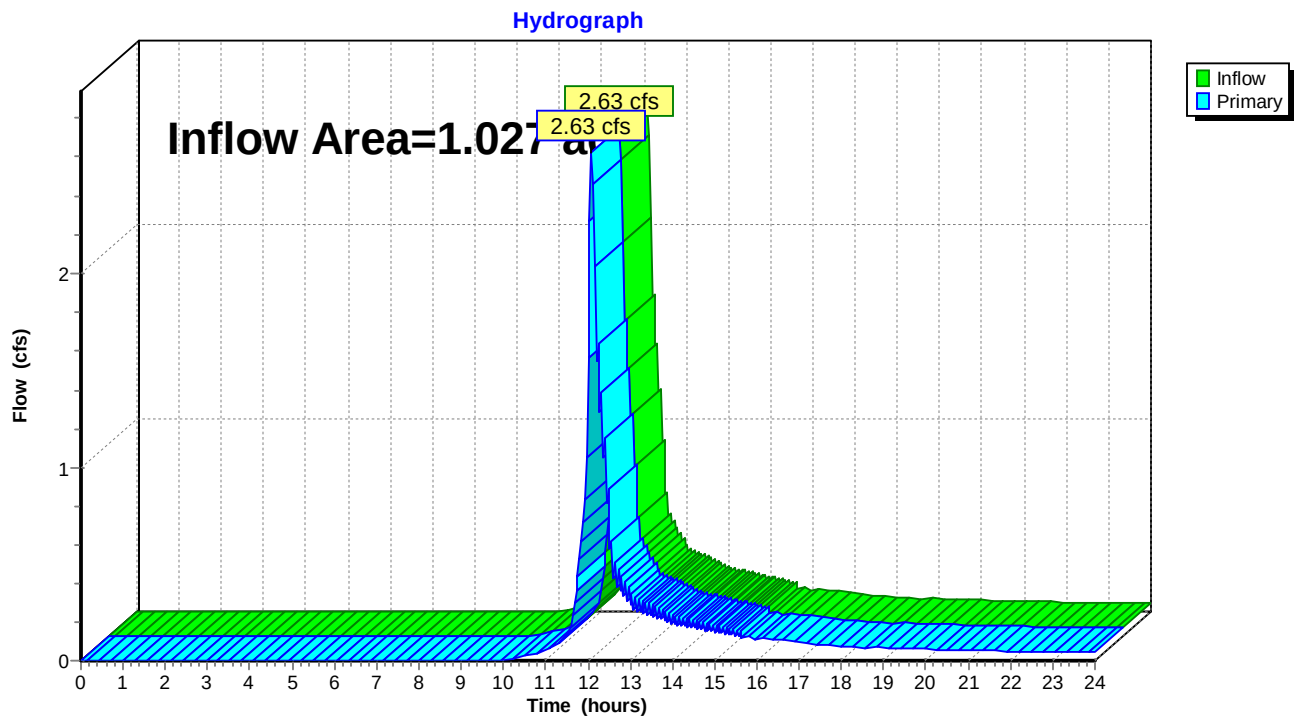
Pond 5P: 12" Concrete Galleries

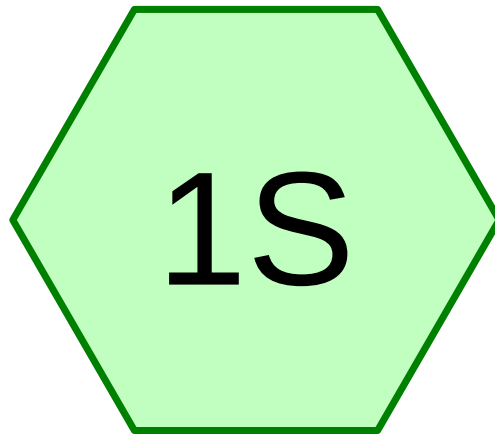


Summary for Link 1L: Combined Hydrograph

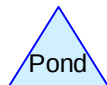
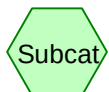
Inflow Area = 1.027 ac, 18.34% Impervious, Inflow Depth > 2.36" for 25 Year event
Inflow = 2.63 cfs @ 12.09 hrs, Volume= 0.202 af
Primary = 2.63 cfs @ 12.09 hrs, Volume= 0.202 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs

Link 1L: Combined Hydrograph



Existing Conditions North Basin



Routing Diagram for 2168ROWNorthExisting

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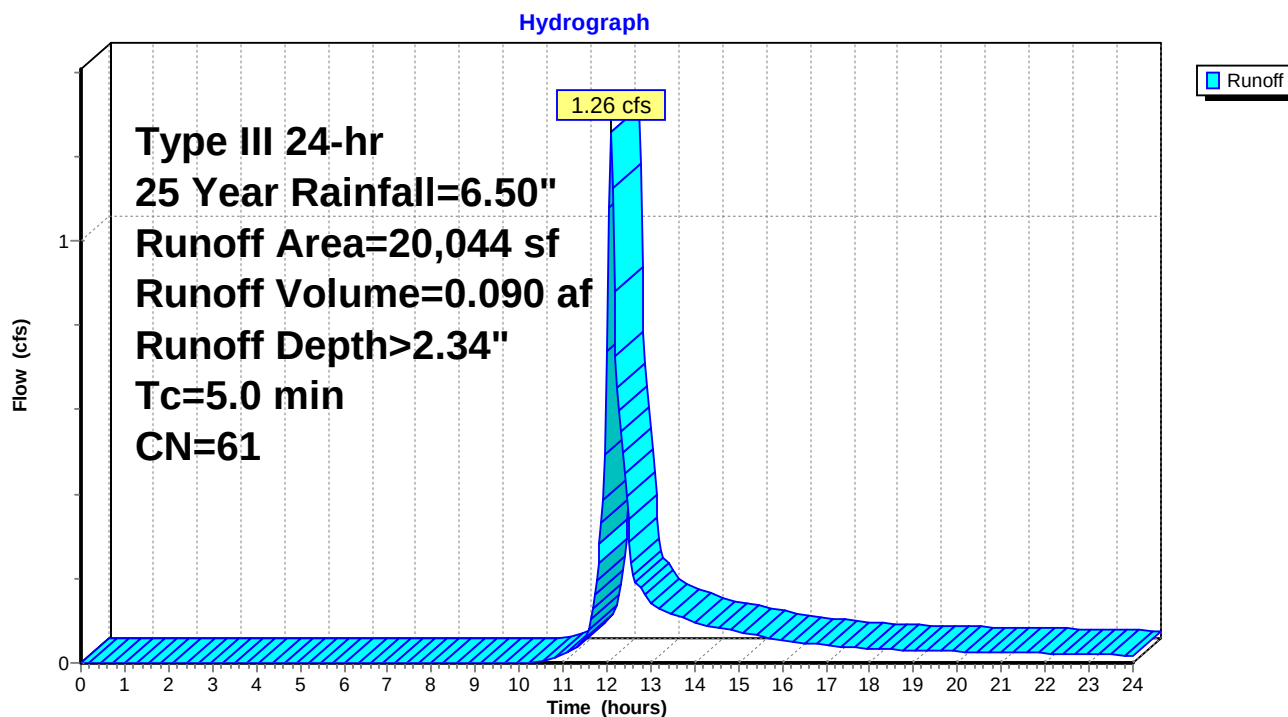
Summary for Subcatchment 1S: Existing Conditions North Basin

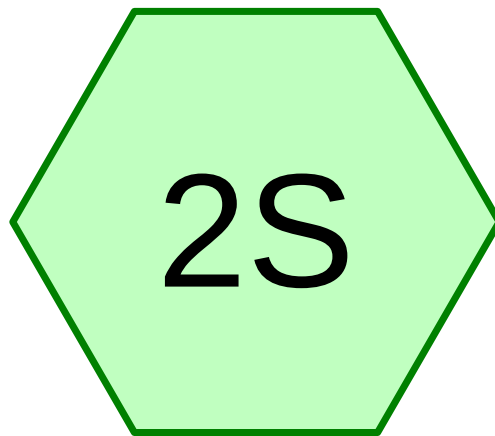
Runoff = 1.26 cfs @ 12.08 hrs, Volume= 0.090 af, Depth> 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 Year Rainfall=6.50"

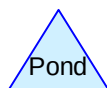
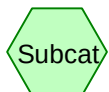
Area (sf)	CN	Description
* 20,044	61	Woods, Fair, HSG B
20,044		100.00% Pervious Area

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

Subcatchment 1S: Existing Conditions North Basin



Proposed Conditions North Basin



Routing Diagram for 2168ROWNorthProposed

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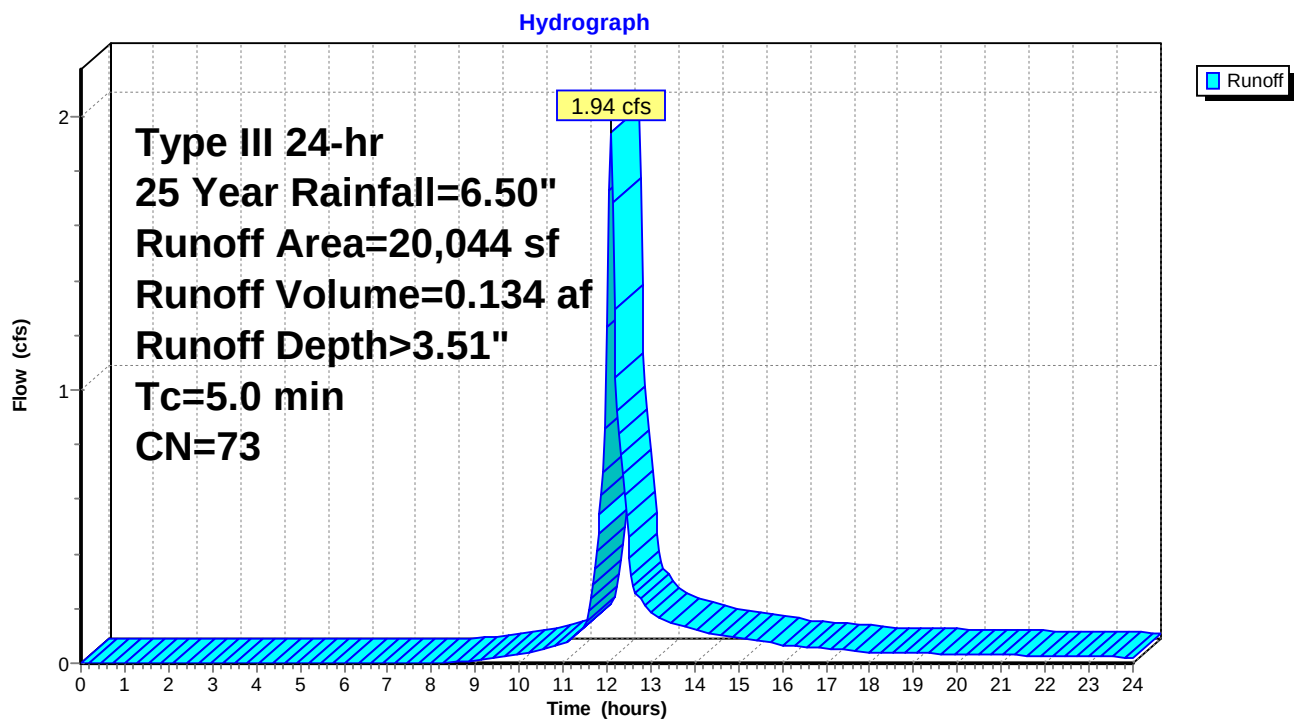
Summary for Subcatchment 2S: Proposed Conditions North Basin

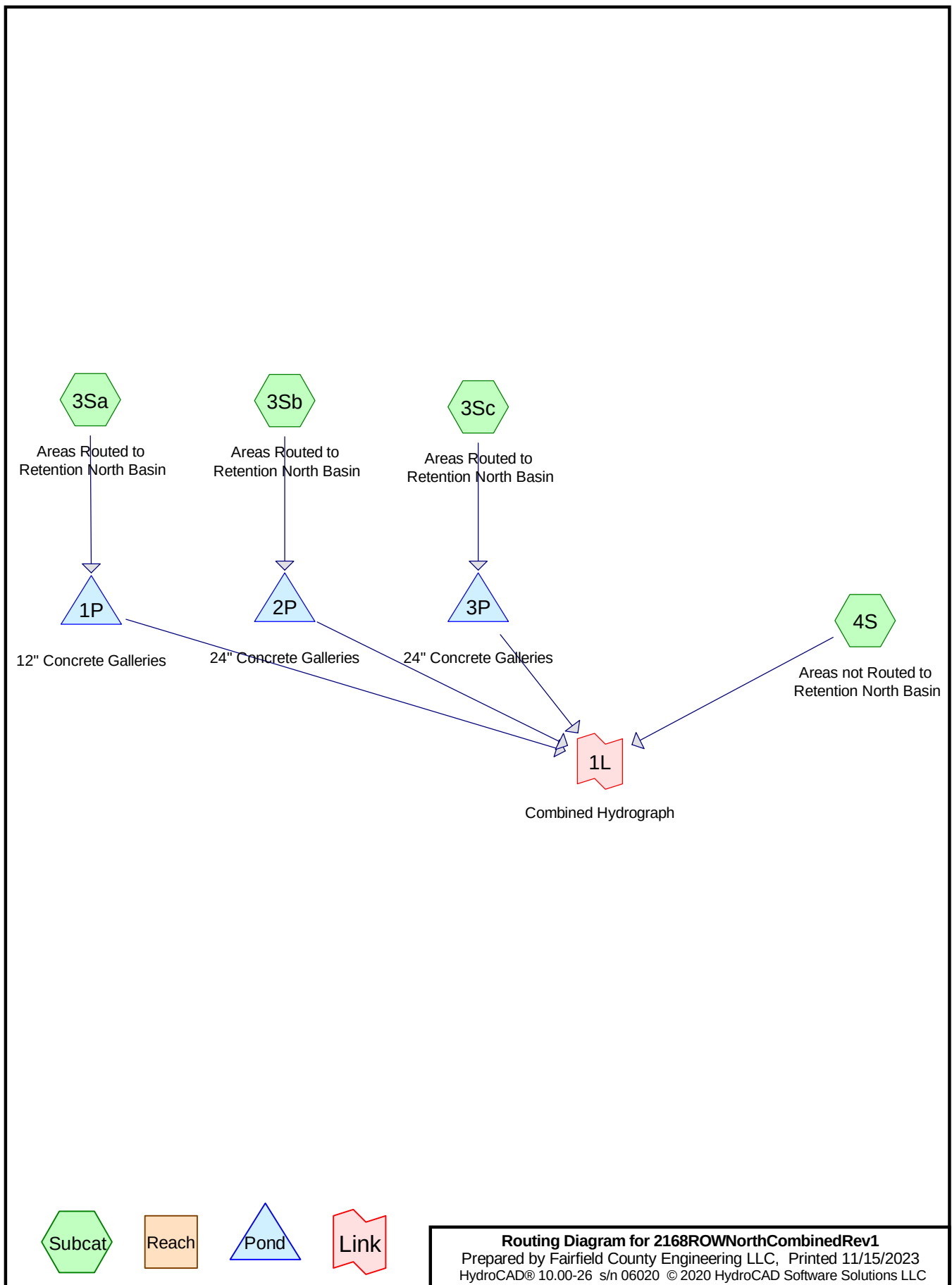
Runoff = 1.94 cfs @ 12.08 hrs, Volume= 0.134 af, Depth> 3.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	6,462	98	Driveway
*	13,582	61	Woods, Fair, HSG B
	20,044	73	Weighted Average
	13,582		67.76% Pervious Area
	6,462		32.24% Impervious Area

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

Subcatchment 2S: Proposed Conditions North Basin



Summary for Subcatchment 3Sa: Areas Routed to Retention North Basin

Runoff = 0.29 cfs @ 12.07 hrs, Volume= 0.024 af, Depth> 6.26"

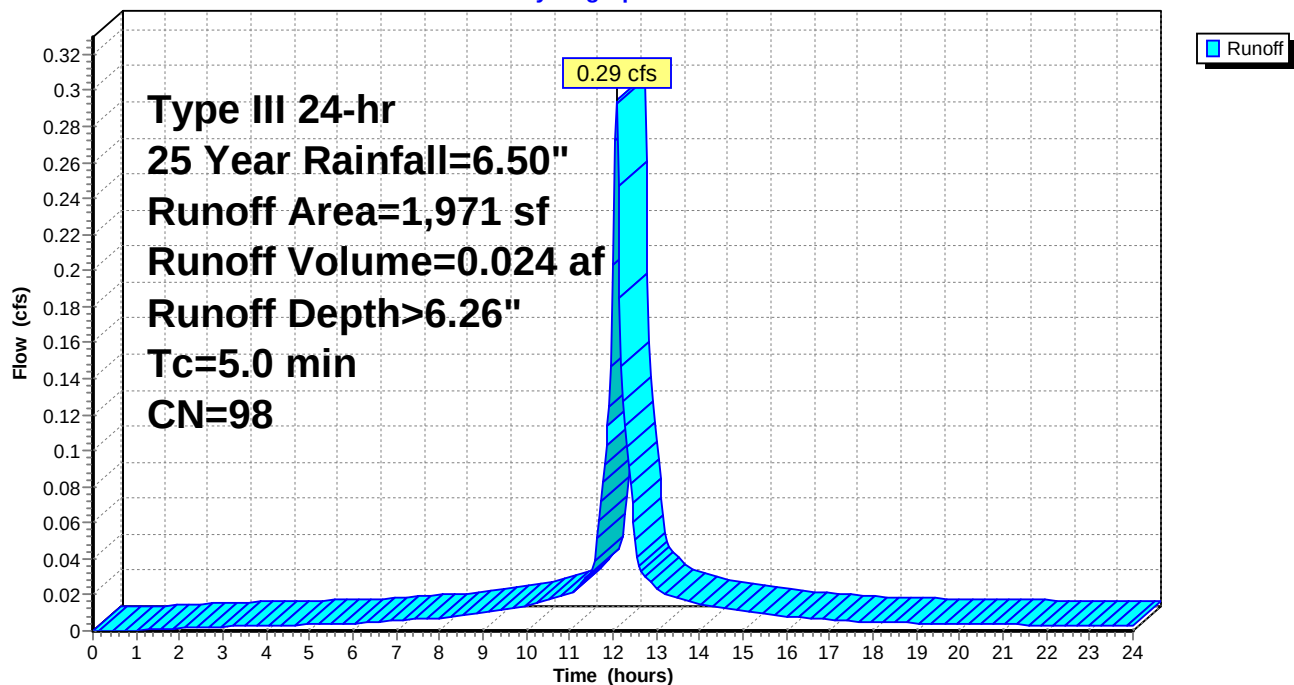
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	1,971	98	Driveway
	1,971		100.00% Impervious Area

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

Subcatchment 3Sa: Areas Routed to Retention North Basin

Hydrograph



Summary for Subcatchment 3Sb: Areas Routed to Retention North Basin

Runoff = 0.25 cfs @ 12.07 hrs, Volume= 0.020 af, Depth> 6.26"

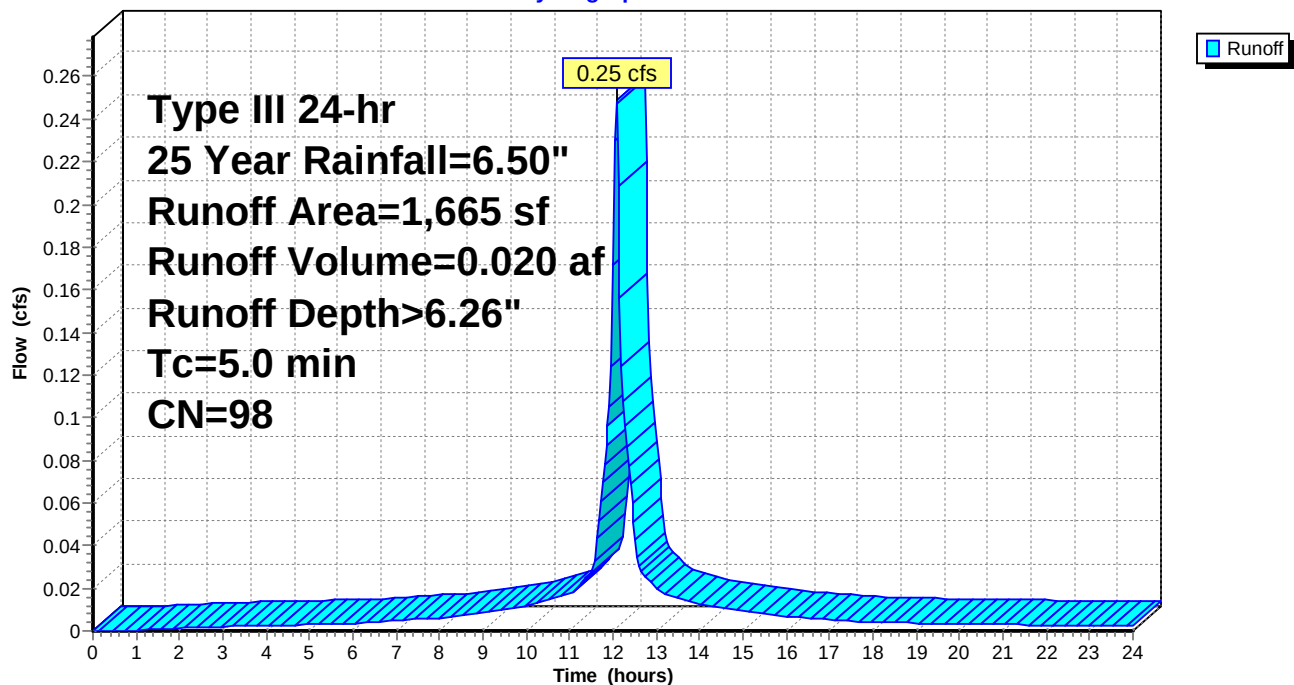
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	1,665	98	Driveway
	1,665		100.00% Impervious Area

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

Subcatchment 3Sb: Areas Routed to Retention North Basin

Hydrograph



Summary for Subcatchment 3Sc: Areas Routed to Retention North Basin

Runoff = 0.42 cfs @ 12.07 hrs, Volume= 0.034 af, Depth> 6.26"

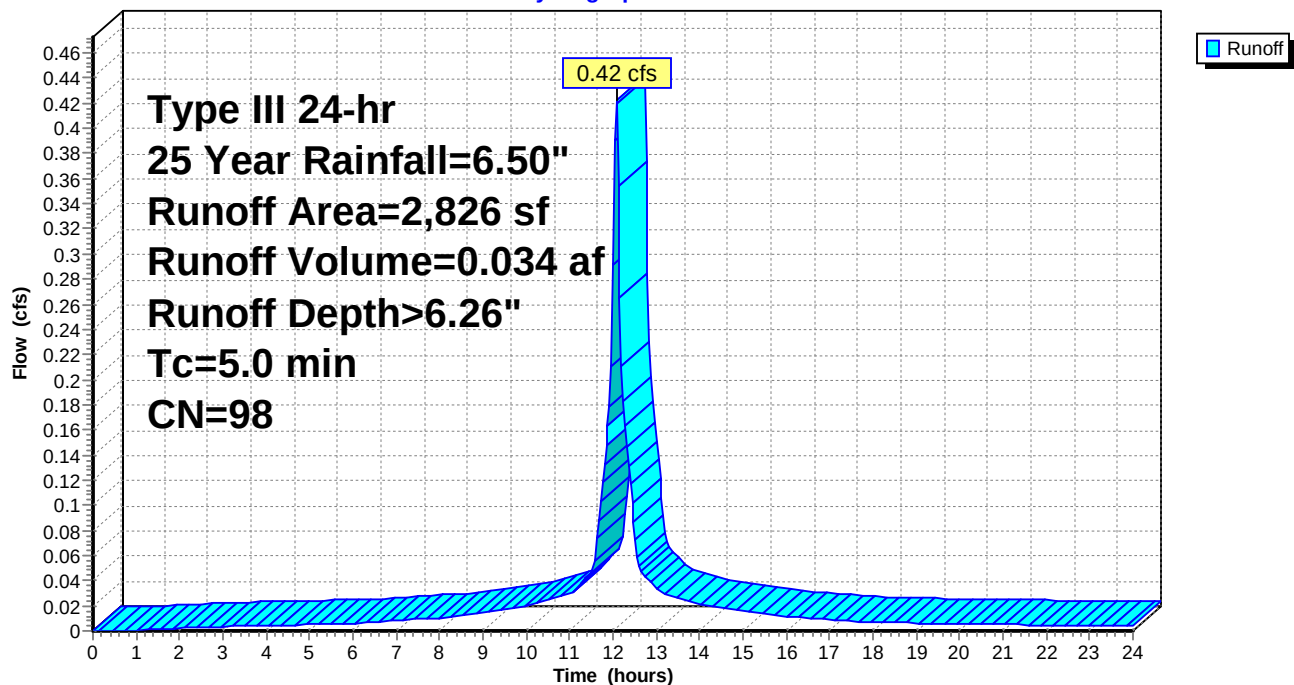
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	2,826	98	Driveway
	2,826		100.00% Impervious Area

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

Subcatchment 3Sc: Areas Routed to Retention North Basin

Hydrograph



Summary for Subcatchment 4S: Areas not Routed to Retention North Basin

Runoff = 0.85 cfs @ 12.08 hrs, Volume= 0.061 af, Depth> 2.34"

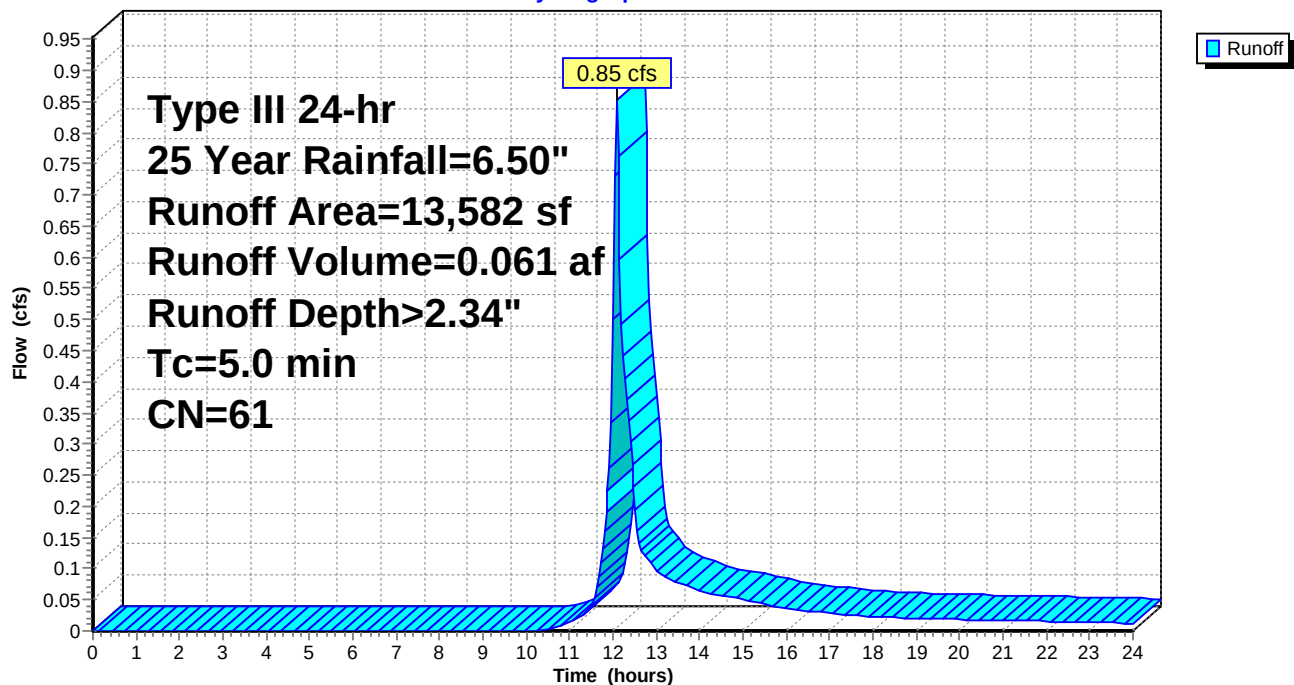
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
* 13,582	61	Woods, Fair, HSG B
13,582		100.00% Pervious Area

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

Subcatchment 4S: Areas not Routed to Retention North Basin

Hydrograph



Summary for Pond 1P: 12" Concrete Galleries

Inflow Area = 0.045 ac, 100.00% Impervious, Inflow Depth > 6.26" for 25 Year event
 Inflow = 0.29 cfs @ 12.07 hrs, Volume= 0.024 af
 Outflow = 0.29 cfs @ 12.07 hrs, Volume= 0.018 af, Atten= 1%, Lag= 0.0 min
 Primary = 0.29 cfs @ 12.07 hrs, Volume= 0.018 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
 Peak Elev= 573.65' @ 12.07 hrs Surf.Area= 324 sf Storage= 233 cf

Plug-Flow detention time= 154.8 min calculated for 0.018 af (77% of inflow)
 Center-of-Mass det. time= 73.2 min (815.9 - 742.7)

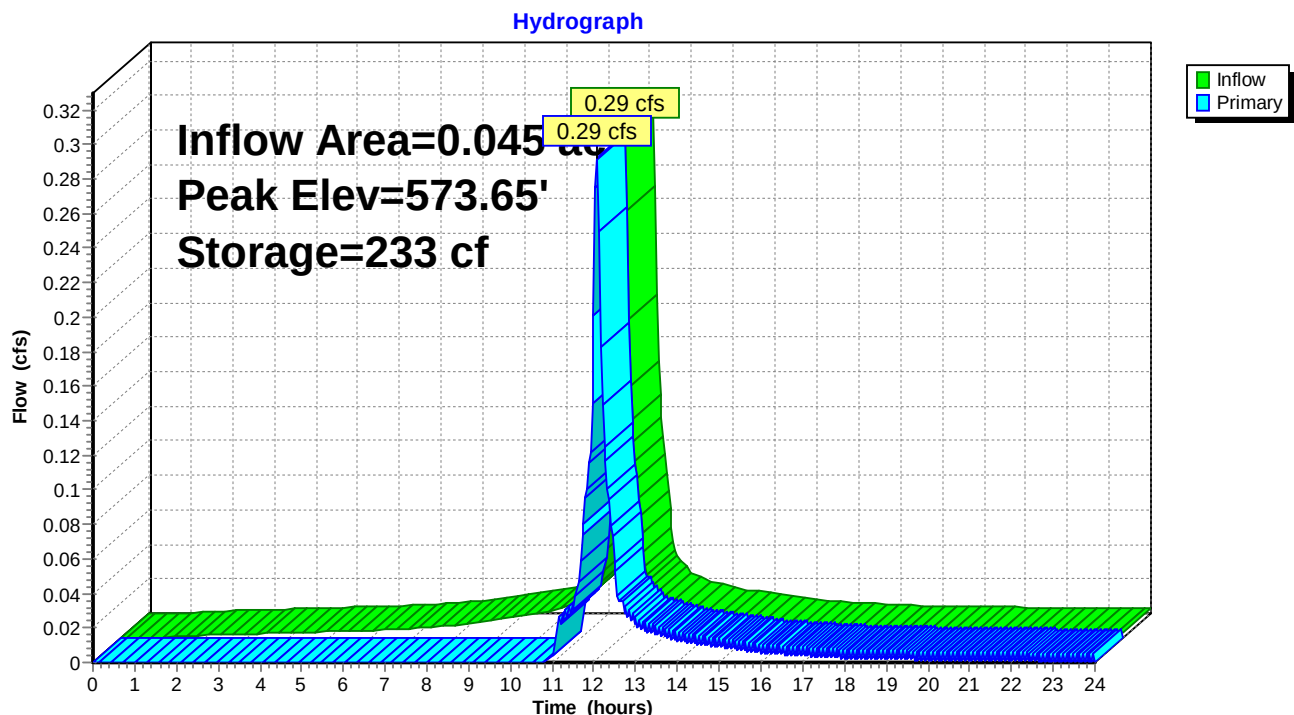
Volume	Invert	Avail.Storage	Storage Description
#1	572.50'	61 cf	18.00'W x 18.00'L x 1.00'H Stone
			324 cf Overall - 172 cf Embedded = 152 cf x 40.0% Voids
#2	572.50'	172 cf	16.00'W x 16.00'L x 0.67'H 12" Concrete Galleries Inside #1
		233 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	573.50'	6.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.29 cfs @ 12.07 hrs HW=573.65' (Free Discharge)

↑ **1=Orifice/Grate** (Weir Controls 0.29 cfs @ 1.25 fps)

Pond 1P: 12" Concrete Galleries



Summary for Pond 2P: 24" Concrete Galleries

Inflow Area = 0.038 ac, 100.00% Impervious, Inflow Depth > 6.26" for 25 Year event
 Inflow = 0.25 cfs @ 12.07 hrs, Volume= 0.020 af
 Outflow = 0.17 cfs @ 12.28 hrs, Volume= 0.008 af, Atten= 31%, Lag= 12.4 min
 Primary = 0.17 cfs @ 12.28 hrs, Volume= 0.008 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
 Peak Elev= 569.60' @ 12.28 hrs Surf.Area= 324 sf Storage= 516 cf

Plug-Flow detention time= 318.7 min calculated for 0.008 af (41% of inflow)
 Center-of-Mass det. time= 163.5 min (906.2 - 742.7)

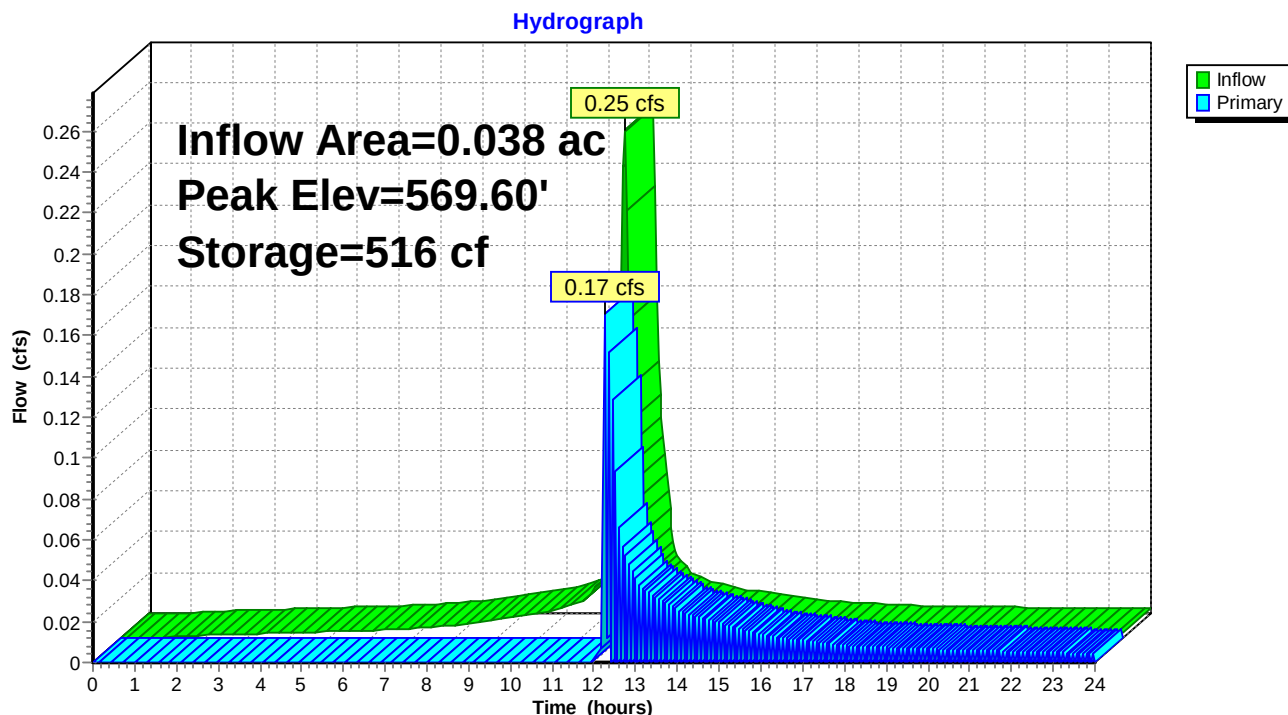
Volume	Invert	Avail.Storage	Storage Description
#1	567.50'	88 cf	18.00'W x 18.00'L x 2.00'H Stone 648 cf Overall - 428 cf Embedded = 220 cf x 40.0% Voids
#2	567.50'	428 cf	16.00'W x 16.00'L x 1.67'H 24" Concrete Galleries Inside #1
		516 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	569.50'	6.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.16 cfs @ 12.28 hrs HW=569.60' (Free Discharge)

↑ **1=Orifice/Grate** (Weir Controls 0.16 cfs @ 1.04 fps)

Pond 2P: 24" Concrete Galleries



Summary for Pond 3P: 24" Concrete Galleries

Inflow Area = 0.065 ac, 100.00% Impervious, Inflow Depth > 6.26" for 25 Year event
 Inflow = 0.42 cfs @ 12.07 hrs, Volume= 0.034 af
 Outflow = 0.14 cfs @ 12.39 hrs, Volume= 0.012 af, Atten= 67%, Lag= 19.2 min
 Primary = 0.14 cfs @ 12.39 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
 Peak Elev= 557.59' @ 12.39 hrs Surf.Area= 572 sf Storage= 939 cf

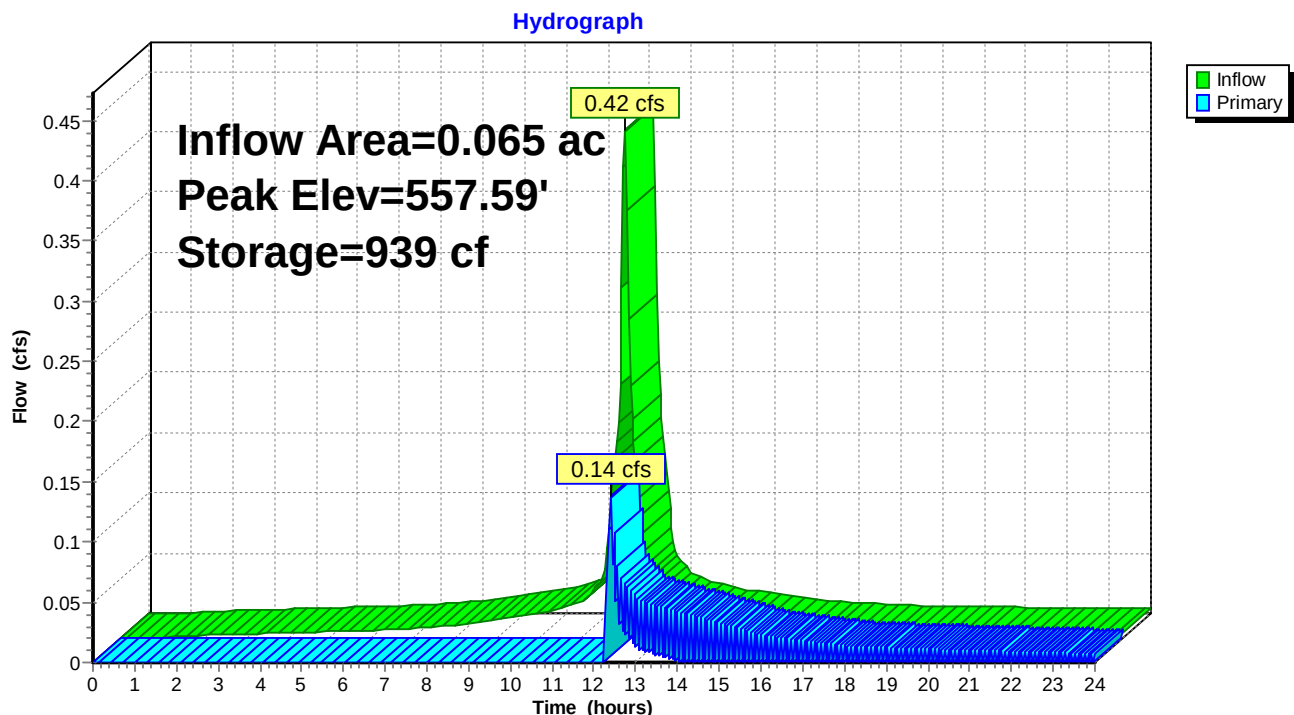
Plug-Flow detention time= 358.3 min calculated for 0.012 af (36% of inflow)
 Center-of-Mass det. time= 186.0 min (928.7 - 742.7)

Volume	Invert	Avail.Storage	Storage Description
#1	555.50'	137 cf	22.00'W x 26.00'L x 2.00'H Stone 1,144 cf Overall - 802 cf Embedded = 342 cf x 40.0% Voids
#2	555.50'	802 cf	20.00'W x 24.00'L x 1.67'H 24" Concrete Galleries Inside #1
		939 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	557.50'	6.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.13 cfs @ 12.39 hrs HW=557.59' (Free Discharge)

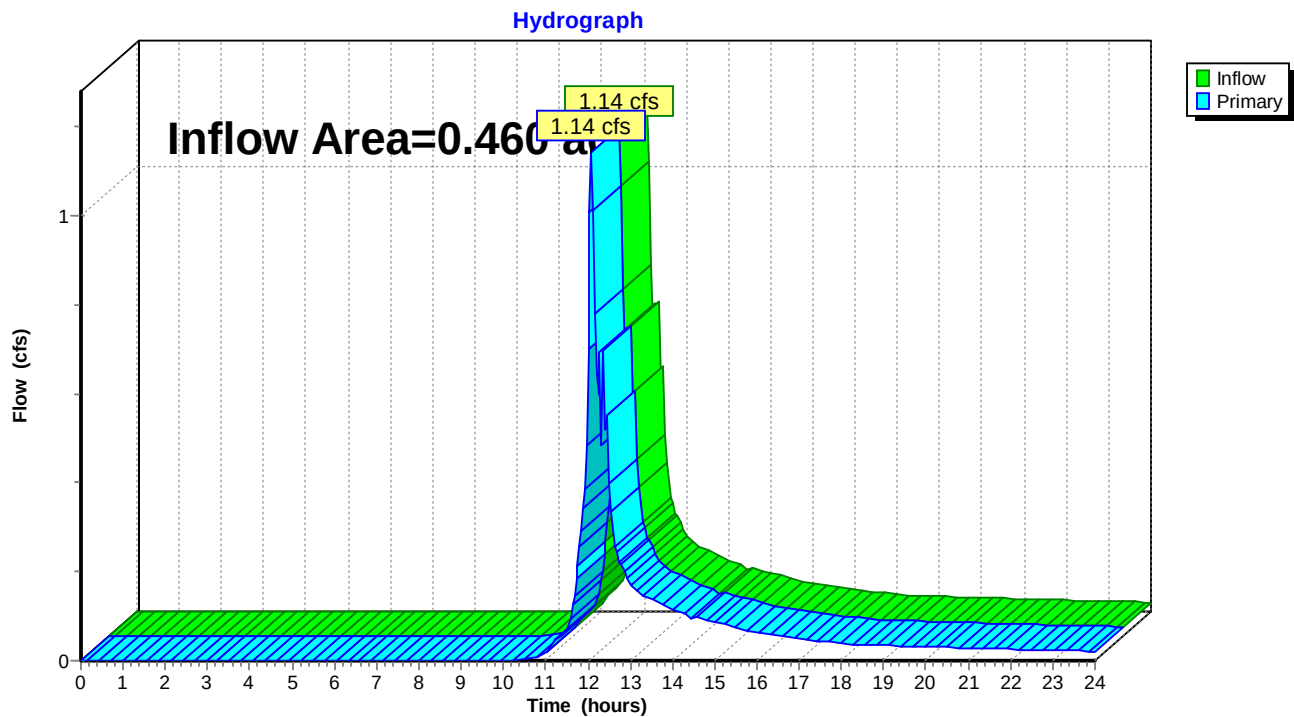
↑ **1=Orifice/Grate** (Weir Controls 0.13 cfs @ 0.96 fps)

Pond 3P: 24" Concrete Galleries

Summary for Link 1L: Combined Hydrograph

Inflow Area = 0.460 ac, 32.24% Impervious, Inflow Depth > 2.60" for 25 Year event
Inflow = 1.14 cfs @ 12.08 hrs, Volume= 0.100 af
Primary = 1.14 cfs @ 12.08 hrs, Volume= 0.100 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs

Link 1L: Combined Hydrograph

Date: November 16, 2023

Project: Marc Nogid, CT

Scope: Bridge Design, Bridge Manufacturing

Contact: Kenny Adams

Our Estimate below defines our full scope of work for the bridges on the above-referenced project. The price on this proposal is only valid for thirty (30) days.

Bridge Brother's scope will include all structural engineering, manufacturing, installation, and site construction for your project. Any associated designs will be in adherence to the engineering standards set forth in the proposal. Any additional work outside of the proposed scope below will be priced in the form of a Change Order.

Structural & Civil Engineering: Included

- PE Stamped Design & Calculation Package
- PE Stamped Abutment & Anchor Design - Add \$7,000
 - Permits/Geotechnical Reports/Site Surveys Supplied by Others

Bridge Manufacturing (Excluding Sales Tax): \$323,007

- Qty (1) 12' x 100' Type Bridge
- Bridge Design and Member Size is Based on Bridge Brothers Stamped Design
- Finish (Weathering)
- Truss Configuration (Beam Bridge)
- Decking (SIP Galvanized Pan for concrete to be poured by others or SYP)
 - Shipped Attached
- HL/93 Vehicular Loading
- Railing (42" Horizontal railing)
- Splices (1 Length Splice)
- Additional Options Included (Anchor Bolt Supply, Bearing Plate Supply)
- Sales Tax is EXCLUDED
- Freight to Project Site (FOB)
 - The bridge will be shipped in pieces (Length and or floor splice) with a current estimated value of freight of (\$22,000)
 - Estimated total bridge weight is 95,000#)

Bridge Sitework & Erection (Excluding Sales Tax):**\$420,000**

- QTY (2) Precast or poured-in-place foundations - Assumed to be no more than 6' tall
- Site excavation and grading estimate could be subject to change based on geotechnical report, site survey, and site constraints/conditions
- Site must have clear accessible graded access for crane to travel to abutment locations
- Site must be cut to grade and pre-excavated, ready for either precast or poured in place abutments. The site must have sufficient site access for construction/installation equipment to both sides of the bridge.
- Site is to have clear crane access within a 10' radius of abutments backwall - if radius is more than 10' a Change Order may be issued for the difference in crane value.
- Rip rap, piles, dewatering, and suitable fill are excluded and will be charged at T&M rates if required for project site conditions.
 - If piles are required \$1,500 per pile will be charged and \$175 per ln/ft
- Excess soils to be removed by others.
- Unload and splice/fit-up bridge sections.
- Utilities and overhead powerlines are to be covered, protected or relocated at the owner expense prior to Bridge Brothers mobilization.
- Lane closures by others
- Erect bridge and install bridge anchors per project plans
- Install the rebar/concrete for the bridge deck

Annual bridge inspection and preventative maintenance package: Optional \$15,711**Estimated Project Schedule**

- **Structural Design Package**
 - 8 weeks
- **Bridge Manufacturing and Freight**
 - 16-20 Weeks from the Date of Approved Drawings Depending on Project Scope
 - Delivery may vary due to mill lead times
- **Bridge Site Work and Erection**
 - 1-3 Weeks depending on project specific details

Qualifications:

- Bridge Brothers Terms and Conditions are required to be signed, in the circumstance where they are not, please allow a minimum of ten (10) working days for contract review.
- Any language listed within this proposal shall be fully incorporated into the final contract.
- Bridge Brothers will require a payment to serve as a deposit to begin engineering services.
- Bridge Brothers will require a payment following the approval of engineering submittals.
- Bridge Brothers will require a payment following the completion of fabrication.
- Bridge Brothers will require the payment of Change Orders prior to shipment.
- Bridge Brothers will require a payment that serves as an erection deposit before any Bridge Brothers mobilization.
- Bridge Brothers will not accept any retention holdbacks thirty (30) days after the completion of our scope of work.
- The Customer must provide sufficient space for delivery trucks to safely park and be unloaded, any time delays at delivery

TURNKEY PREFABRICATED BRIDGES

which result in additional freight charges will be billed to the customer.

- Means and methods of installation are Bridge Brothers and any measure requested and/or required outside of this will be charged at Time and Material from our standard rate sheet.
- Pricing may be subject to change based on the Geotechnical Report, Site Survey, and Site Constraint.
- Utilities, overhead power lines, or anything in relation are to be covered, protected, or relocated at the Customers' expense prior to Bridge Brother's mobilization.
- Customer needs to provide graded access to both abutment locations for erection equipment, the following will apply:
 - o Bridge Brothers is not responsible for the following:
 - Tree removal.
 - Brush removal.
 - Excess dirt removal.
 - Excess grubbing.
 - o Bridge Brothers will bill a fee for where site conditions are not in compliance and any delays/down time as a result of non compliance will be billed double our T&M rates.
- Any equipment or tools used on site that are owned/rented by the Customer is at the expense of the Customer; Bridge Brothers will not be responsible for any cost associated with such unless discussed prior to mobilization.
- The following requirements must be satisfied in relation to Unloading and Splice Fit Up Bridges:
 - o 80% Safety Factor to be used on all cranes, if a lower safety percentage is required/requested and a larger crane is required, any cost associated with such will be billed in the form of a Change Order.
- Lane Closures and traffic control will be completed by Others at no cost to Bridge Brothers.
- If Bridge Brothers is to be pouring concrete the following applies:
 - o Concrete cure time and setting of the Bridge is dependent on project specifics and project P.E.
 - o The cost associated with the concrete tes/heating is on the Customer.
 - o The cost associated with the sealing of concrete is on the Customer.
 - o The cost associated with any epoxy-coated rebar is on the Customer.
 - o Concrete is poured in conformance to structural requirements, not architectural requirements.
 - o Where Bridge Brothers performs any of the above-mentioned work or work in relation to the above-mentioned this will be billed in the form of a Change Order at our T&M standard rates.
- Bridge Brothers is responsible for the precast or poured-in-place abutments, this is up to 6' tall; anything above 6' tall will require a Change Order at our T&M rates.
 - o Abutment backfilling will be done by Others.
- Where Piles are required, they will be billed at the following:
 - o Piles are priced at \$1,500 per pile and \$175 per In/ft
- Rip Rap, Wingwalls, and Dirt are not included in this price; where this is required the cost of such will bill in the form of a Change Order at our standard T&M rates.
- Where the project includes cable railing, Bridge Brothers will tension cables to the design specifications:

- o Bridge Brothers will leave a tension tool upon written request from the Customer.
- o Bridge Brothers will remobilize to tension cables following the final walkthrough, where the Customer requests any re-tensioning of cable railing; this will be billed in the form of a Change Order and will be completed at the discretion of the Bridge Brothers installation schedule.

- Where the project is painted or galvanized the following will apply:
 - o Any additional touch-up galv or paint will be completed by Bridge Brothers while on site, anything requested following the final walkthrough will be billed in the form of a Change Order.
 - o Bridge Brothers will leave additional paint with the customer following the final walkthrough.
- Bridge Brothers will require a final walk-through with a customer representative following such a project completion and the acceptance form will be signed while Bridge Brothers personnel is onsite.
- Bridge Brothers is a nondiscriminatory employer.

Exclusions:

- Any item not listed in this proposal is not included in Bridge Brothers' Scope of Work.
- Any proposed scope of work additions will be billed in the form of a Change Order.
- Sales Tax is not included here and shall be paid by the Customer to Bridge Brothers.
- Where Bridge Brothers is required to obtain higher insurance limits to match Customer requirements, the cost of such will be billed in the form of a Change Order.
- Bridge Brothers reserves the right to adjust pricing for material, freight, onsite equipment and labor escalation.
- Any additional inspection beyond visual is the responsibility of the customer.
- Any additional compliance requirements are excluded from this proposal.
- Any design revision after Rev1 submittals will be billed in the form of a Change Order at our standard hourly rates.
- Any cost associated with union labor is not included in this proposal.
- Any cost associated with prevailing wage is not included in this proposal.
- Any cost associated with dewatering is not included in this proposal.
- Any cost associated with soil compaction, dirt removal, bull rock, erosion control, silt fencing, or anything in relation is not included in this proposal.
- Bridge Brothers does not perform site elevation references, centerline work, site layout, surveys, or control points.
 - o Bridge foundations and/or supports must be surveyed and verify locations/elevations and be provided to Bridge Brothers prior to mobilization.
- Due to the nature of this business, engineering, and market delays shall not result in any consequential or liquidated damages for which Bridge Brothers may be held liable.
- Bridge Brothers reserves the right to make schedule adjustments for installation due to site conditions.



TURNKEY PREFABRICATED BRIDGES

If you have any follow-up questions in relation to this proposal or require additional information, please feel free to contact us at the following:

Kenny Adams / Sales Engineer / 770.696.8946 / Kenny@bridgebrothers.com