CITY OF EAGLE RIVER Wisconsin

Snowmobile Capital of the World ★ ATV/UTV Capital of Wisconsin ★ Hockey Capital of Wisconsin

AGENDA NOTICE *(5/29/2026)*

THE PLANNING COMMISSION OF THE CITY OF EAGLE RIVER WILL HOLD A MEETING ON THURSDAY, JUNE 4, 2026, AT 5:00 P.M. AT CITY HALL, 525 E. MAPLE STREET IN EAGLE RIVER.

Notice is hereby given that a majority of the City Council of the City of Eagle River may be attending scheduled Planning Commission meetings either in person or via zoom. This constitutes a meeting of the City Council pursuant to State ex rel. Badke v. Greendale Village Bd., 173 Wis. 2d 553, 494 N.W.2d 409 (1993), and must be noticed as such, although the Council will not take any formal action at these meetings.

This meeting will be available by Zoom at the following link:
https://us06web.zoom.us/j/85111695208?pwd=x5pMv8crrbsPuYwefObTYbJG0m83b3.1
Meeting ID: 851 1169 5208
Passcode: 963936

1) Call to Order.
2) Roll Call.
3) Approval of minutes.
4) Public Hearings, discussion and possible action on the following agenda item(s):
   a) Conditional Use Permit Public Hearing Continuation: Request by Amerco Real Estate Company/U-Haul for a conditional use permit to construct two (2) self-storage units totaling 51,977 square feet at 1100 N. Railroad Street, Eagle River, computer number 221-1019-06, in accordance with Chapter 106, Article VI, Division 7, Sec 106-473 Uses permitted by conditional grant, (8) Storage buildings not used for habitation – human or animal.
   b) Final Plan Review – Bike/Pedestrian crossing at Bridge & Spruce Streets (GHT & ERRP)
   c) Meadows - Request to purchase City-Owned Parcel Adjacent to 655 N Bond
   d) Comprehensive Plan - Scheduling of future comprehensive plan sessions as stand-alone meetings
   e) Discussion Only - Sponsor/off-site signage displayed year-round at local facilities (ie: Snowmobile Derby Track, Vilas County Fairgrounds)
5) Adjournment.

Robin Ginner, City Administrator

Please note that, upon reasonable notice, at least 24 hours in advance, efforts will be made to accommodate the needs of disabled individuals through appropriate aids and services or provide a video link for meetings. For additional information to request this service, please contact the City Clerk's Office at 715-479-8682 ext. 224,
525 E. Maple Street, P.O. Box 1269, Eagle River WI 54521.

May 7, 2026

A meeting of the Plan Commission of the City of Eagle River was called to order at 5:00pm by Mayor Deb Brown.

Roll Call**:** Alex Forer, Mary Horant, Brad Adamovich, Adam Grassl, John Hletko, Kim Schaffer and Deb Brown. Also in attendance Becky Bolte. Robin Ginner was present via Zoom.

Motion by Schaffer, 2nd by Horant to approve the minutes of the 3-5-2026 meeting. Carried. Ayes: Forer, Hletko, Grassl, Schaffer Abstained: Adamovich

a) Conditional Use Permit Public Hearing: Request by the Eagle River Historical Society to place interpretive signs in Rotary Square, Silver Lake Beach Park and Riverview Park: Mayor Brown opened the public hearing at 5:05pm. Executive Director for the Eagle River Historical Society, Vito Bortolotti presented the plan for the signs to commemorate the 250 year celebration of American with local history. Former Executive Director Karen Sailer, 111 S 2nd, spoke in favor of the signs. Kathryn Craffey, 202 N 3rd, spoke on her concerns with the signs being cemented into the ground at the Square, soil testing before installation, Historical Society hearing application having blanks, concerns that the history of indigenous people was not presented on the proposed signs, concerns about sponsor recognition being disguised as advertising. Bortolotti responded that he wanted to maintain historical integrity and a second round of signs is in the planning stage that would include Native American history in the area, anticipating within two years. The ER Historical Society continues to search out the history of indigenous people in the area that dates back an estimated 10,000 years. Horant suggested affixing signs on the neighboring building at the Square in lieu of having signs on or through the astro turf. Bortolotti is working with Eagle River Revitalization on adjustments to signs and placement to avoid any damage to the turf. Alice Kramer, 828 Meta Loon Trail, Town of Lincoln, clarified inception of why those parks were chosen as the sites have geographical significance. Jessica Bortolotti, 112 Illinois, signs are a great addition but encouraged those opposed to feel free to fundraise and put up their own signs. Jay Johnstone, 112 Illinois, all for the signs, history of towns is great, but accuracy is important. Andy Lichtfuss, 8414 Squash Lake Ln, Town of Three Lakes, City of Eagle River business owner, stated not every sign is going to be able to capture all of our history but this is a good beginning. Chelsea Sims, 213 E Wall St, spoke from Zoom with concerns of the lack of representation of the indigenous people. Discussion. Horant asked that people be part of the solution, volunteer. Brown called for any other audience comments. Annette Numrich, 1533 E Dollar Lk Rd, Town of Lincoln, the City of Madison has information on their historical signs that reads; *We recognize that this land is seeded property of the indigenous peoples*. Ginner reminded the audience that the Planning Commission is not tasked with what someone can put on their signs citing First Amendment violation but instead on the physical sign structure not what is on the sign. Emails received were then read aloud by Clerk Bolte - Kira Oas, 1508 Sandstone Circle, Town of Lincoln requesting the signs include the highlights of the indigenous people here before us. Jim Holperin, the Square Representative, requested that signs placed at the Square be portable, avoiding any digging into the turf. Mayor Brown closed the Public Hearing at 5:28pm and brought conversation back to the Commissioners. Grassl asked about the city receiving copy of sign before being put up. Hletko stated signs should be portable and concerns with sponsorship portion being advertising. Schaffer spoke to the city allowing a small signature on murals. Adamovich asked that park signs be portable for plowing/mowing/events. Grassl asked about mounting signs onto buildings at parks. Bortolotti is open for discussion on mounting and placement options. *Motion by Horant, 2nd by Forer to recommend City Council approval of a conditional use permit to the Eagle River Historical Society to place interpretive signs at the Square, Silver Lake Beach Park, and Riverview park with the condition that placement be done in coordination with Public Works at City representatives' discretion. Carried on a roll call vote, all*.

b) Conditional Use Permit Public Hearing: Request by Amerco Real Estate Company/U-Haul for a conditional use permit to construct two (2) self-storage units totaling 51,977 square feet at 1100 N.

Railroad Street, EagleRiver, computer number 221-1019-06, in accordance with Chapter 106, Article VI, Division 7, Sec 106-473Uses permitted by conditional grant, (8) Storage buildings not used for habitation – human or animal. Shawn Odden, representative for U-Haul Company of WI, was present. Mayor Brown confirmed a two-minute time limit for public comments. Odden stated they would like to partner with the city to develop the property at 1100 N Railroad with approximately 520 climate controlled self-storage units, 419 of which would be inside access. The approximate value of the facility would be $5 million at completion. Schaffer asked petitioner; "Why this property" with Odden responding accessibility, price, visibility and location. There will be one restroom in each building and estimating two people will be employed. Schaffer stated city sewer and water was designed for higher usage and that our sewer and water system would be underutilized by design. Ginner reminded all the standards to be applied from City Ordinance; (c)Standards. No conditional use will be granted by the council or recommended by the plan commission unless the use:(1) Addresses expected harmful project impacts.(2)Is so designed, located and proposed to be operated that the public health, safety and welfare will be protected.(3)Will not cause substantial injury to the value of other property in the neighborhood in which it is located Mayor Brown opened the floor for public comments at 5:40PM. Vic Washelesky, 173 River St, spoke on engineering background and presented information on expected project harmful impacts. Washelesky presented calculations that with a 57,000 Sq Ft building on the property, allowing for 20% without structure as required impervious surface, the comparison of rainfall runoff without project and with would result in 6x the amount of rainfall runoff with nowhere to go. Washelesky spoke on the height of Bluebird Road, lack of a ditch, and citing water pooling already a problem. Vito Bortolotti, 319 N Main, spoke on the detrimental impacts on his family owned business of Bortolotti's Cin Cin, including aesthetics, light pollution and visibility. Karen Sailer, 111 S 2nd, objected to the project, stating Eagle River is a tourist destination and Eagle River Revitalization spends a lot of time and money to make the area beautiful to attract tourism and business. Kathryn Craffey, 202 N 3rd, questioned the total number of units to be built, reported unreadable information in the public packets, concerns for lack of policies, storage units do not support the largest industry of tourism, reported lack of land use and growth management policies, wanted a minimum of a plan that is more aesthetically pleasing, suggested land be used for affordable housing or retail. Jess Bortolotti, 112 Illinois and business at 1114 Bluebird, stated flooding is a major issue in that area and they have had to put in drainage pond at their business. Advertising is geared towards small town feel and nature and feels storage units are the wrong image for the city. The project would not bring in jobs or service into the area. Andy Lichtfuss, 8414 Squash Lake Rd, Three Lakes, VP Chamber of Commerce, ERRP Board, owner of Andy's Pontoon Saloon on Wall St, spoke with WI Economic Develop for stats, the city is small with less than 1700 residents with 765,000 tourists visiting annually. Lichtfuss stated there are better uses for that property that would benefit tourism and locals. Jay Stock, Tribute Brewing, 1106 N Bluebird, the project would be detrimental to his business agreeing with opposition already provided, citing location by airport restrictions in height of and signage problems. Annette Numrich, 1533 E Dollar Lake Rd, Town of Lincoln, concerns with aesthetics as people approach the city, stated the city is losing what draws people to our area with billboards and metal buildings. Taylor Garrison, 319 N Main, stated that area is near the Northland Pines Schools and snowmobiling events, stating the project would impact the residents and tourists. Shawn Odden, petitioner, replied: U-Haul civil engineers can look at water detention/run-off control, the building will have a low profile blocking visibility less than what could go in there, proposal has a few options for building design, there will be no unit access doors to the street side, his data shows there is a huge demand for storage. Odden reported U-Haul uses the highest level of security, code access to get into the main building, getting notices when people access the units and notices if any unit has been accessed for more than four hours. U-Haul is open to landscaping. Letters received where then read into record. In Opposition to the proposed storage unit project: Alice Kramer - President of the ER Historical Society, Jessica Bortolotti - 112 Illinois Rd and 112 Illinois and business at 1114 Bluebird, Karen Sailer - 111 S 2nd, Vito Bortolotti - 314 N Main, Chelsea Sims - 213 E Wall St, Wendy Harris - Town of Lincoln, Melissa Deal – 121 N Main, Deborah Magee – 537 N Bond, Kari Kirschbaum – property owners at 311 Spruce and 214 N 3rd, Carol Marshall – Town of Lincoln, Dottie Reeder – Town of Lincoln, Katherine Kolb – Town of Washington. At 6:45PM Mayor Brown closed to public comments and brought conversation up to the

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Commissioners. Discussion. Schaffer asked Vic Washelesky, who was an Engineer, what would have to be done to accommodate the runoff from a business that size. Washelesky stating it depends on different factors but recommended a condition that detention needs to be a certain way to address it and requiring a landscaping plan. Adamovich stated that currently the storm sewer is only on the highway, so Bluebird side would run down to Cin Cin and Tribute. Schaffer confirmed two expected employees and that the sewer water system would be underused with only two bathrooms. Hletko confirmed proposed height of building at 11'. Horant presented need for landscaping plan including buffers, lighting plan, confirmed the cut in would not be from highway, options for material used for siding, concerns of signage/visibility to the existing businesses on Bluebird and sign height near the airport, and stated the project doesn't address housing or job creation issues in the community. Horant reminded all that the property has remained for sale for decades with no one purchasing. U-Haul representative Odden responded they would be open to monument signage to address signs to neighboring businesses. Horant expressed concerns on impact of small businesses on Bluebird and stated with all buildings in proposed project, it's 57,000 Square Feet. Forer stated on site stormwater management is a must and expressed concerns on security and how taxing security would be on the ER Police Department. Adamovich asked how many people the project would bring into the building daily with Odden replying that an average would be 25 visits per day. Grassl, we want business, and we want a Northwoods aesthetic, we want job creation, and people can't find a place to live. The property has sat empty for 50 years. Grassl stated he was willing to compromise but that there was a lot to consider. Hletko, concern with water mitigation and reiterated that residents don't like storage units. Hletko also voiced that the property has sat empty for 50 years and any development would block the view to Cin Cin and Tribute. Odden stated underground water detention could be under driveway, but they would start with above ground options. Holly Tomlanovich confirmed the placement would not interfere with existing trail system. *Motion by Horant, 2nd by Hletko to postpone any action until June 4th, 2026, Planning Commission regular meeting when developer can come back with detailed plans to be reviewed by the Commissioners, including; water retention, landscaping, signage, lighting plan, and siding samples. Carried on a roll call vote, all.*

c) Ordinance Amendment Public Hearing: Ordinance to Amend Chapter 106 (Zoning) of the Municipal Code of the City of Eagle River, Wisconsin, by adding a Definition of "Excavation" to Section 106-1: *Motion by Hletko, 2nd by Grassl to recommend City Council adoption of presented ordinance, changing 500 cubic yards to 500 cubic feet, to read: Excavation. Any man-made cut, cavity, trench, depression, hole, or open pit in the earth's surface formed by the removal of soil, rock, earth, sand, gravel, or other materials, whether by mechanical equipment, hand tools, blasting, or other means. Excavation includes, but is not limited to, activities for foundations, basements, footings, trenches for utilities, grading for site preparation, or removal of unsuitable materials. This term does not include minor landscaping grading that does not exceed 12 inches in depth or 500 cubic **feet** in volume, or routine maintenance activities exempted under other provisions of this Code. Carried on a roll call vote, all.*

d) Dennis Meadows, Formal Request: Purchase of City-Owned Parcel Adjacent to 655 N Bond: Discussion with petitioner Dennis Meadows, Commission, and the public. Discussion. Concerns heard on selling public land and setting precedence. *Motion by Horant, 2nd by Forer to postpone to June 4, 2026, Planning Commission meeting to allow PC to obtain legal counsel. Carried on a roll call vote, all.*

e) Comprehensive Plan update: Eric Sonnleitner was present for North Central Wisconsin Regional Planning Commission. Mayor Brown stated letters requesting Riverside Park have been received and distributed to Commission members, but the discussion would remain on task with the agenda, by Commission members. Review of NCWRPC updates of Chapters 1-3 discussed at the March 5, 2026, Planning Commission meeting. Chapter 4 - Utilities & Community Facilities was read through by Sonnleitner with little input. Grassl called for adjournment citing lack of participation as meeting has been going for over three hours. Remaining agenda items to be addressed at the next meeting of the Plan Commission.

Motion by Grassl, 2nd by Horant to adjourn at 8:15PM. Carried, all.

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CITY OF
EAGLE RIVER
Wisconsin

Application for a Hearing before Planning Commission

Fee: $300, payable at application

Applicant MUST provide the following information:

Name Sahithya Cheruku Phone 602-263-6555

Mailing Address 2727 N Central Ave, Phoenix AZ Email sahithya_cheruku@uhaul.com

Interest in the Property Applicant from Amerco Real Estate Company

Name of Property Owner Aspirus building, Inc.

Project Site Address 1100 N Railroad St, Eagle River WI 54521

The above signed applicant does petition the City Council as follows:

Amend the Zoning Classification or Boundaries of a District

Change may only be initiated by the City Council, Plan Commission or a petition by one or more of the owners or lessees of the property proposed to be changed.

Present Zoning Classification C-2 Highway Commercial

Requested Zoning Classification Conditional Use Permit

Applicant must provide the following information

- Legal description and address of the property in question.
- A sketch drawn to a scale of not less than 100 feet to the inch, showing area to be changed, its location, the location of the existing boundaries and the uses within 300 feet of the property proposed to be changed.
- Property owners names, mailing address of all property within 300 feet of the property in question.
- Present use of the property in question.
- Proposed use of the property in question.

Zoning Ordinance Amendment

Change initiated, must be initiated by Zoning Administrator.

Requested Amendment to section: _____

_____

_____

_____

Conditional Use Permit

Zoning Classification of Property C-2 Highway Commercial

List the requested conditional use, Amerco Real Estate Company is proposing to develop a U-Haul self-storage center at this location.

_____

_____

Applicant must provide the following information:

- A legal description and address of the property where the use will take place.
- The names and mailing addresses of the abutting property owners.
- Present uses of the abutting properties.
- A site plan of the property showing distances of structures to property lines, parking areas, landscaping, lighting, traffic line of sight visibilities and any other information which will assist the Planning Commission to make a decision.

Additional information may be requested by the Eagle River Plan Commission or the Eagle River City Council to evaluate your application. The lack of information may in itself be sufficient cause to deny a petition. Failure to provide the above required information may result in additional public hearings, which additional costs will be borne by the applicant.

The completed application must be submitted to the Zoning Administrator's office no less than 30 days before the date of the Planning Commission meeting, 525 E. Maple Street, PO Box 1269, Eagle River, WI 54521.

Applicant or Owner of the property or Agent shall appear before the Planning Commission.

Dated this 07 day of April, 2026

Respectfully submitted by Sahithya Cheruku

For Office Use Only:

Permit distribution: ☑ *Treasurer (w/check)* ☑ *File* ☐ *Planning Commission*

Payment: $ 300.- ☐ *Cash* ☑ *Check #* 0868-11552 *Date:* 4/7/26 *Admin:* _____ *Date:* 4/13/26

2CHB3858 UHLUSOC3

PAYABLE THROUGH

D868-11552

U-HAUL INTERNATIONAL, INC.

JPMORGAN CHASE, N.A.
MAIN OFFICE
PHOENIX, ARIZONA

91-2/1221

2727 N. CENTRAL AVE., PHOENIX, AZ 85004-1502

DATE 4/7/26

PAY TO THE ORDER OF CITY OF EAGLE RIVER $ 300.00

THREE HUNDRED DOLLARS & NO/100 DOLLARS

NOT GOOD FOR MORE THAN $2,500

VOID AFTER 180 DAYS

MEMO C.U.P.

AUTHORIZED SIGNATURE

⑈D868115521⑈ ⑆122100024⑆ 28 28⑈460 7⑈

RECEIPT DATE 4-7-26 No. 175862

RECEIVED FROM U Haul International $ 300.00

(Land by Holiday/Circle K N)

DOLLARS

○ FOR RENT
● FOR Conditional Use Permit - 1110 N Railroad

ACCOUNT		
PAYMENT	300 00	
BAL. DUE		

○ CASH
● CHECK
○ MONEY ORDER
○ CREDIT CARD

FROM _____ TO _____

BY Becky J Bolte

3-11

4/7/26

Dave believes U-haul has already submitted CUP Hearing form to you.

BJB

City of Eagle River Permit Application

Site Address 1100 N Railroad St, Eagle River, WI 54521 Permit # _____

Building ☐ **Signs** ☐ **Conditional Use** ☑ **Re-Zoning** ☐

Demolition ☐ **Excavation** ☐ **Moving** ***(Deposit Required)*** ☐ **Other** _____ ☐

The undersigned hereby applies for a permit to do the work herein described and located on the application. The undersigned agrees that all work will be done in accordance with the Municipal Code of the City of Eagle River and with the statues of the State of Wisconsin Administrative Code applicable to the said premise.

Applicant Name Sahithya Cheruku Phone # 602-263-6555

Mailing Address 2727 N Central Ave, Phoenix, AZ 85004 Email: sahithya_cheruku@uhaul.com

Intended Purpose of Application The use of Self-storage requires a Conditional Use permit. U-Haul is proposing to apply for the permit to allow this use.

Project Cost: _____ Size of Structure Total 51,977 G.S.F (Site Plan Attached)

Contractor Name _N/A_____Phone # __N/A_____

It is understood no structure or improvement may be constructed on City owned property, utility easements or highway right of ways without specific written permission from the City Council or designated representative. When establishing the site for construction, grade will be as established by City Council's designated representative. __SC_____ ***(Initial)***

Expiration of Permit: If no Zoning Compliance certificate is issued within two years of the date of the issuance of the building permit, such building permit shall lapse. The holder of the permit must apply for an extension to the Administrator who may grant an extension. If no compliance certificate is issued within twenty-four months of the date of the issuing of the building permit, such building permit shall lapse. The holder of the building permit may apply for a re-issue of the building permit to the Administrator. It is understood the total building permit fee will be assessed at this time. By the granting of this permit the undersigned agrees to allow Administrator unfettered and unlimited access to the subject property for inspections to determine compliance to the City of Eagle River Code of Ordinances and applicable laws.

Diggers Hotline MUST be contacted prior to the start of the excavation 1-800-242-8511. SC ***(Initial)***

Signature of Applicant or Agent Sahithya Cheruku Date 04/07/26

This permit is a zoning permit only. The improvement may require a building permit. For single family and two family residential properties you need to contact Baas Inspection Agency LLC at 715 891 0323 to determine if you need a building permit and inspection. For Commercial Property and Multi Family (4 or more units) you need to contact the State Building Inspector for District 7.

Permit Fee _____ Zoning District _____

Minimum Setbacks:

Front _____ Corner Side _____ Each Side _____ Rear _____ Max Height _____

Site Plan Required _____ Approved _____

Remarks _____

_____

_____

Signed _____ Date _____

Zoning Administrator

For Office Use Only:

Permit distribution: ☐ *Clerk (w/check)* ☐ *Light & Water* ☐ *Fire Dept.(commercial only)* ☐ *File*

*Payment: $*_____ ☐ *Cash* ☐ *Check #*_____ *Date:*_____ *Admin:*_____ *Date* _____

CITY OF EAGLE RIVER Wisconsin

NOTICE OF PUBLIC HEARING

Posted 05/12/2026

Amerco Real Estate Company/U-Haul is requesting a conditional use permit to construct two (2) self-storage units totaling 51,977 square feet at 1100 N. Railroad Street, Eagle River, computer number 221-1019-06, in accordance with Chapter 106, Article VI, Division 7, Sec 106-473 Uses permitted by conditional grant, (8) Storage buildings not used for habitation – human or animal. The property, zoned as Highway Commercial, is described as: Sec. 28, T40N, R10E PRT NW NW. Complete legal in tax roll.

The City of Eagle River Planning Commission will hold a public hearing to review the request on Thursday, June 4, 2026 at 5:00 p.m. located at the Eagle River City Hall, 525 E. Maple Street, Eagle River WI 54521. Comments can be made at the public hearing or by mail to City Administrator, PO. Box 1269, Eagle River, WI 54521; by phone (715) 479-8682 x227 or email rcginner@eagleriverwi.gov. Documents will be available for review at City Hall. PETITIONERS, OR THEIR REPRESENTATIVES, SHALL BE PRESENT.

Legal Notice

Publish twice, beginning April 20, 2026 – Affidavit requested

NOTICE OF PUBLIC HEARING
CITY OF EAGLE RIVER PLANNING COMMISSION

Amerco Real Estate Company/U-Haul is requesting a conditional use permit to construct two (2) self-storage units totaling 51,977 square feet at 1100 N. Railroad Street, Eagle River, computer number 221-1019-06, in accordance with Chapter 106, Article VI, Division 7, Sec 106-473 Uses permitted by conditional grant, (8) Storage buildings not used for habitation – human or animal. The property, zoned as Highway Commercial, is described as: Sec. 28, T40N, R10E PRT NW NW. Complete legal in tax roll.

The City of Eagle River Planning Commission has scheduled a public hearing for Thursday, May 7, 2026 at 5 pm, located in the Eagle River Common Council Chambers, 525 E. Maple Street, Eagle River, WI 54521.

Comments can be made in person at the public hearing or by mail to City Administrator, PO. Box 1269, Eagle River, WI 54521; by phone (715) 479-8682 x227 or email rcginner@eagleriverwi.gov. Documents will be available for review at City Hall. PETITIONERS, OR THEIR REPRESENTATIVES, SHALL BE PRESENT.

STATE OF WISCONSIN DOT
, WI 00000

TRIBUTE HOLDINGS LLC
39 OAKWOOD DR
NAPERVILLE, IL 60540

CITY OF EAGLE RIVER
PO BOX 1269
EAGLE RIVER, WI 54521

BRIAN P ROTH
5408 RAZORBACK RD
CONOVER, WI 54519

SENIOR EAGLE RIVER INC
VOLUNTEER ENTERPRISE
EAGLE RIVER, WI 54521

WCD HOLDINGS LLC
PO BOX 1808
EAGLE RIVER, WI 54521

LIZCO SUPER 8 INC
3910 INDIAN LAKE RD
RHINELANDER, WI 54501

ERINS PUB AND GRUB LLC
2141 ADAM RD
EAGLE RIVER, WI 54521

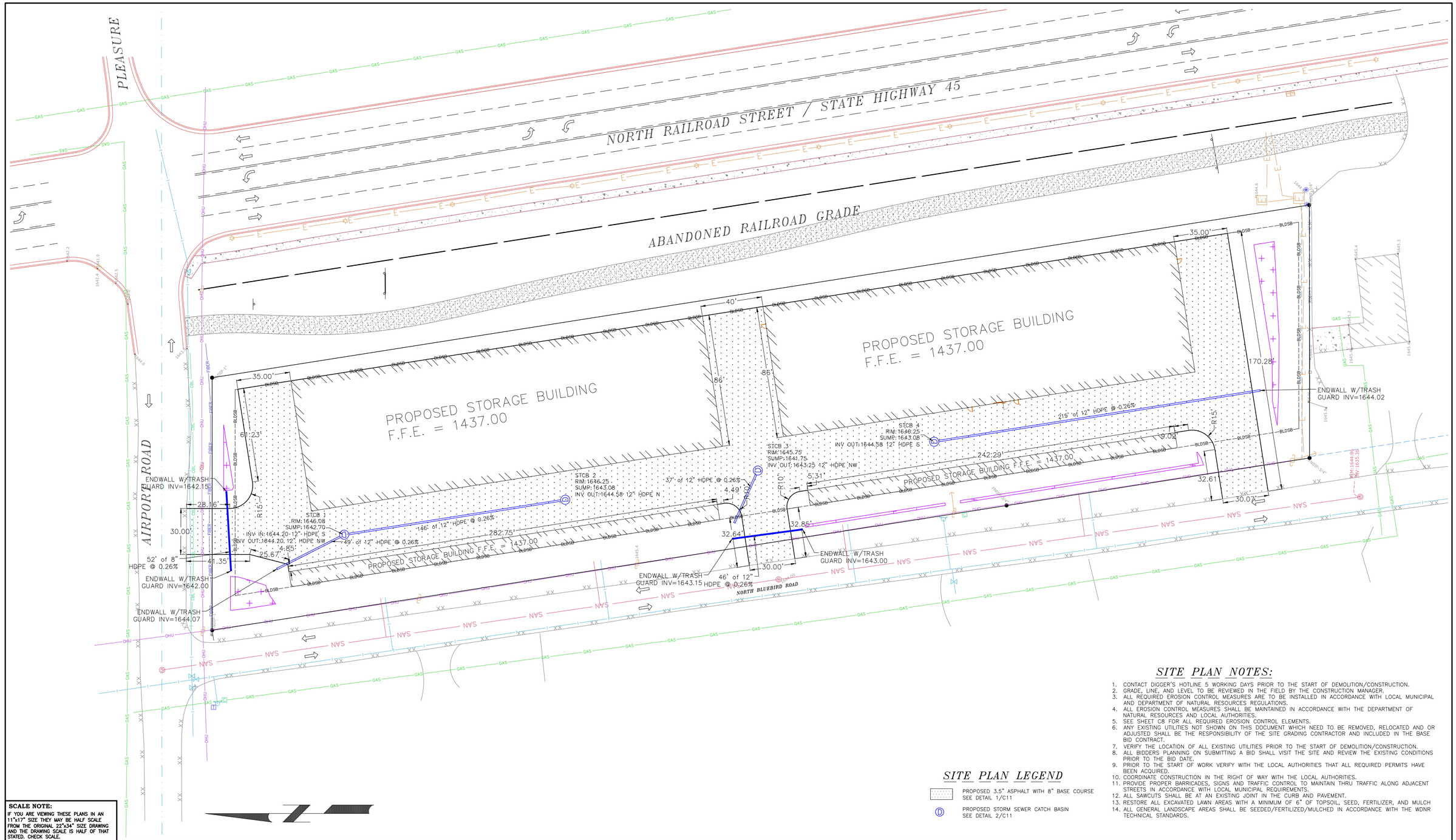
GREGORY A HERFINDAHL TRUST
118 AIRPORT RD
EAGLE RIVER, WI 54521

INDIANHEAD OIL CO LLC
PO BOX 52085 DC-17
PHOENIX, AZ 85249

ASPIRUS BUILDINGS INC
2200 WESTWOOD DR
WAUSAU, WI 54401

EAGLE CAR WASH LAND LLC
PO BOX 1835
EAGLE RIVER, WI 54521

KEY 23 INVESTMENTS LLC
PO BOX 914
EAGLE RIVER, WI 54521



SITE PLAN NOTES:

1. CONTACT DIGGER'S HOTLINE 5 WORKING DAYS PRIOR TO THE START OF DEMOLITION/CONSTRUCTION.
2. GRADE, LINE, AND LEVEL TO BE REVIEWED IN THE FIELD BY THE CONSTRUCTION MANAGER.
3. ALL REQUIRED EROSION CONTROL MEASURES ARE TO BE INSTALLED IN ACCORDANCE WITH LOCAL MUNICIPAL AND DEPARTMENT OF NATURAL RESOURCES REGULATIONS.
4. ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES AND LOCAL AUTHORITIES.
5. SEE SHEET C8 FOR ALL REQUIRED EROSION CONTROL ELEMENTS.
6. ANY EXISTING UTILITIES NOT SHOWN ON THIS DOCUMENT WHICH NEED TO BE REMOVED, RELOCATED AND OR ADJUSTED SHALL BE THE RESPONSIBILITY OF THE SITE GRADING CONTRACTOR AND INCLUDED IN THE BASE BID CONTRACT.
7. VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO THE START OF DEMOLITION/CONSTRUCTION.
8. ALL BIDDERS PLANNING ON SUBMITTING A BID SHALL VISIT THE SITE AND REVIEW THE EXISTING CONDITIONS PRIOR TO THE BID DATE.
9. PRIOR TO THE START OF WORK VERIFY WITH THE LOCAL AUTHORITIES THAT ALL REQUIRED PERMITS HAVE BEEN ACQUIRED.
10. COORDINATE CONSTRUCTION IN THE RIGHT OF WAY WITH THE LOCAL AUTHORITIES.
11. PROVIDE PROPER BARRICADES, SIGNS AND TRAFFIC CONTROL TO MAINTAIN THRU TRAFFIC ALONG ADJACENT STREETS IN ACCORDANCE WITH LOCAL MUNICIPAL REQUIREMENTS.
12. ALL SAWCUTS SHALL BE AT AN EXISTING JOINT IN THE CURB AND PAVEMENT.
13. RESTORE ALL EXCAVATED LAWN AREAS WITH A MINIMUM OF 6" OF TOPSOIL, SEED, FERTILIZER, AND MULCH
14. ALL GENERAL LANDSCAPE AREAS SHALL BE SEEDED/FERTILIZED/MULCHED IN ACCORDANCE WITH THE WDNR TECHNICAL STANDARDS.

SITE PLAN LEGEND

PROPOSED 3.5" ASPHALT WITH 8" BASE COURSE
SEE DETAIL 1/C11

(D) PROPOSED STORM SEWER CATCH BASIN
SEE DETAIL 2/C11

SCALE NOTE:
IF YOU ARE VIEWING THESE PLANS IN AN 11"x17" SIZE THEY MAY BE HALF SCALE FROM THE ORIGINAL 22"x34" SIZE DRAWING AND THE DRAWING SCALE IS HALF OF THAT STATED. CHECK SCALE.

STAMP/SIGNATURE:

REVISIONS

BY	DATE	DESCRIPTION

TITLE PAGE: PROPOSED SITE PLAN

PROJECT: U-HAUL EAGLE RIVER

LOCATION: CITY OF EAGLE RIVER
VILAS COUNTY, WISCONSIN

VREELAND ASSOCIATES LAND SURVEYORS & ENGINEERS
6103 DAWN STREET WESTON, WI. 54476
PHONE NO.: (715) 241-0947
EMAIL: dustin@vreelandassociates.us
WEBSITE: www.vreelandlandsurveying.com
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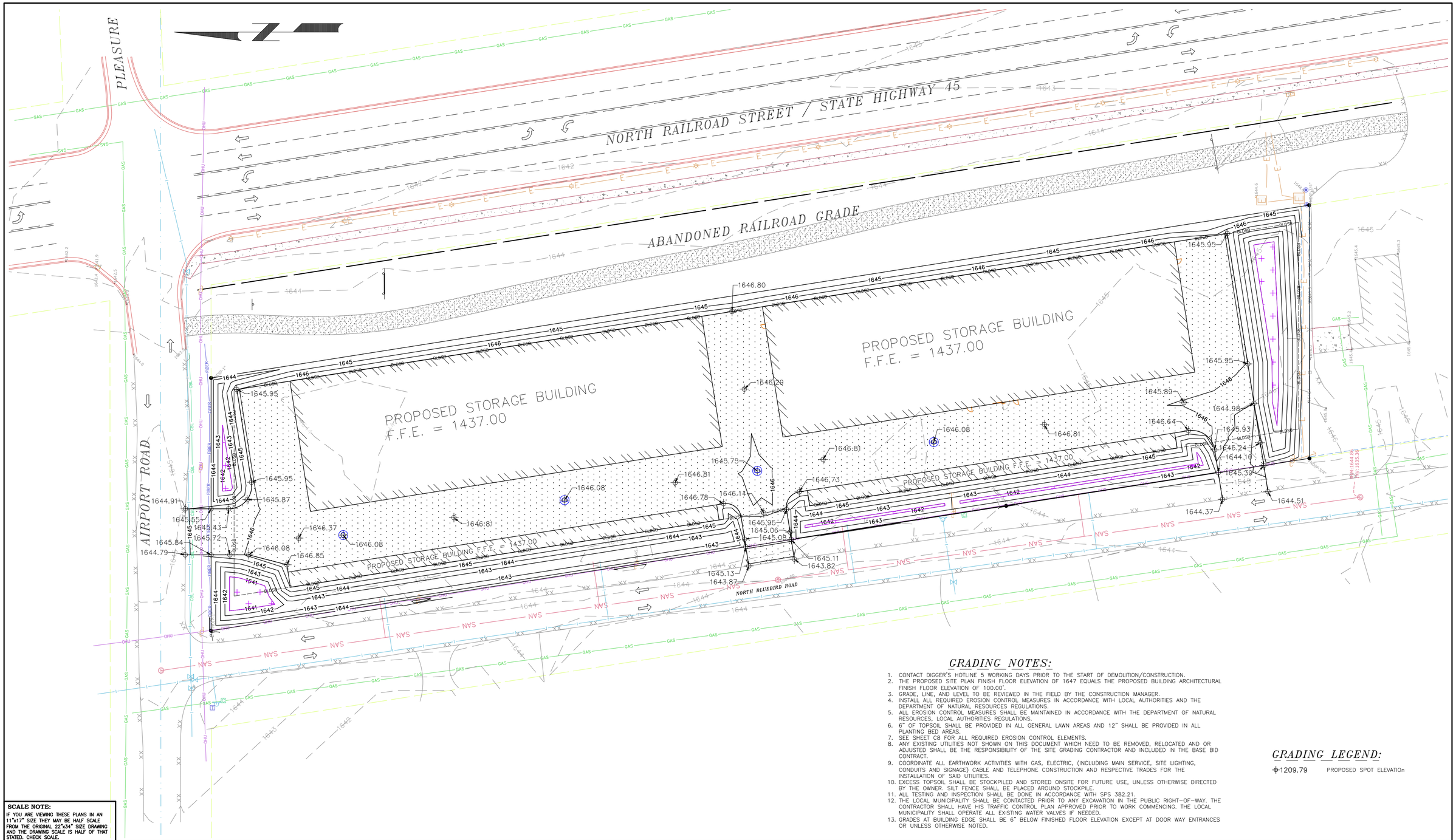
PREPARED FOR: DAVID BARNES

PLAN DATE: MAY 28TH, 2026

DESIGNER: DUSTIN VREELAND
SURVEYED BY: OTHERS
FILE NO.: 26-0159
ORIGINAL PLAN DATE: 5/28/2026
SCALE: 1" = 30'
SHEET C3



GRADING NOTES:

1. CONTACT DIGGER'S HOTLINE 5 WORKING DAYS PRIOR TO THE START OF DEMOLITION/CONSTRUCTION.
2. THE PROPOSED SITE PLAN FINISH FLOOR ELEVATION OF 1647 EQUALS THE PROPOSED BUILDING ARCHITECTURAL FINISH FLOOR ELEVATION OF 100.00'.
3. GRADE, LINE, AND LEVEL TO BE REVIEWED IN THE FIELD BY THE CONSTRUCTION MANAGER.
4. INSTALL ALL REQUIRED EROSION CONTROL MEASURES IN ACCORDANCE WITH LOCAL AUTHORITIES AND THE DEPARTMENT OF NATURAL RESOURCES REGULATIONS.
5. ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES, LOCAL AUTHORITIES REGULATIONS.
6. 6" OF TOPSOIL SHALL BE PROVIDED IN ALL GENERAL LAWN AREAS AND 12" SHALL BE PROVIDED IN ALL PLANTING BED AREAS.
7. SEE SHEET C8 FOR ALL REQUIRED EROSION CONTROL ELEMENTS.
8. ANY EXISTING UTILITIES NOT SHOWN ON THIS DOCUMENT WHICH NEED TO BE REMOVED, RELOCATED AND OR ADJUSTED SHALL BE THE RESPONSIBILITY OF THE SITE GRADING CONTRACTOR AND INCLUDED IN THE BASE BID CONTRACT.
9. COORDINATE ALL EARTHWORK ACTIVITIES WITH GAS, ELECTRIC, (INCLUDING MAIN SERVICE, SITE LIGHTING, CONDUITS AND SIGNAGE) CABLE AND TELEPHONE CONSTRUCTION AND RESPECTIVE TRADES FOR THE INSTALLATION OF SAID UTILITIES.
10. EXCESS TOPSOIL SHALL BE STOCKPILED AND STORED ONSITE FOR FUTURE USE, UNLESS OTHERWISE DIRECTED BY THE OWNER. SILT FENCE SHALL BE PLACED AROUND STOCKPILE.
11. ALL TESTING AND INSPECTION SHALL BE DONE IN ACCORDANCE WITH SPS 382.21.
12. THE LOCAL MUNICIPALITY SHALL BE CONTACTED PRIOR TO ANY EXCAVATION IN THE PUBLIC RIGHT-OF-WAY. THE CONTRACTOR SHALL HAVE HIS TRAFFIC CONTROL PLAN APPROVED PRIOR TO WORK COMMENCING. THE LOCAL MUNICIPALITY SHALL OPERATE ALL EXISTING WATER VALVES IF NEEDED.
13. GRADES AT BUILDING EDGE SHALL BE 6" BELOW FINISHED FLOOR ELEVATION EXCEPT AT DOOR WAY ENTRANCES OR UNLESS OTHERWISE NOTED.

GRADING LEGEND:

1209.79 PROPOSED SPOT ELEVATIOn

SCALE NOTE:
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STAMP/SIGNATURE:

REVISIONS

BY	DATE	DESCRIPTION

TITLE PAGE:
PROPOSED GRADING PLAN

PROJECT: U-HAUL EAGLE RIVER

LOCATION: CITY OF EAGLE RIVER
VILAS COUNTY, WISCONSIN

VREELAND ASSOCIATES LAND SURVEYORS & ENGINEERS
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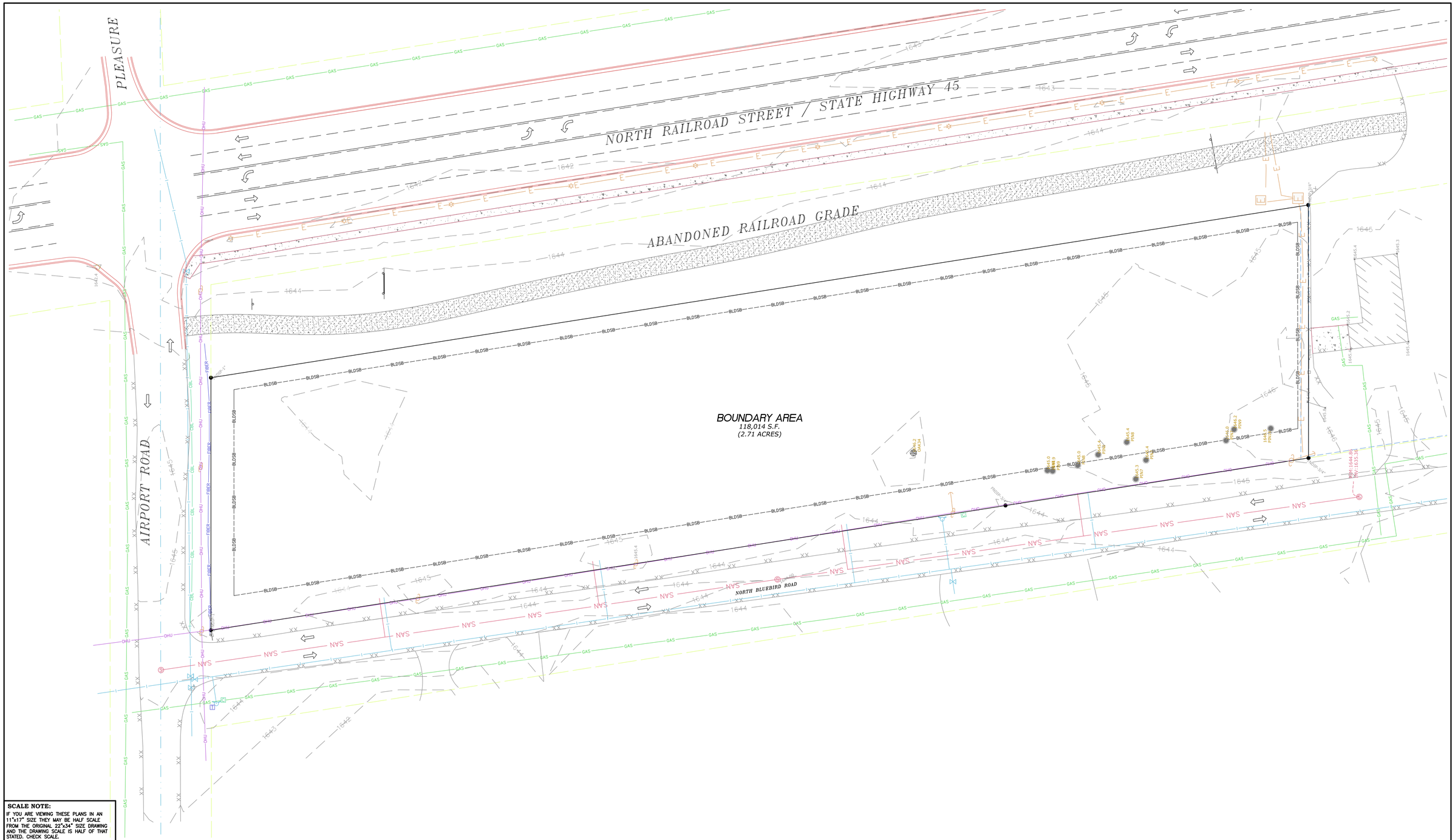
PREPARED FOR: DAVID BARNES

PLAN DATE: MAY 28TH, 2026

DESIGNER: DUSTIN VREELAND
SURVEYED BY: OTHERS
FILE NO.: 26-0159
ORIGINAL PLAN DATE: 5/28/2026
SCALE: 1" = 30'
SHEET C4



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BY	DATE	DESCRIPTION

TITLE PAGE: *EXISTING SITE*

PROJECT: *U-HAUL EAGLE RIVER*

LOCATION: *CITY OF EAGLE RIVER*
VILAS COUNTY, WISCONSIN

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PREPARED FOR: *DAVID BARNES*

PLAN DATE: *MAY 28TH, 2026*

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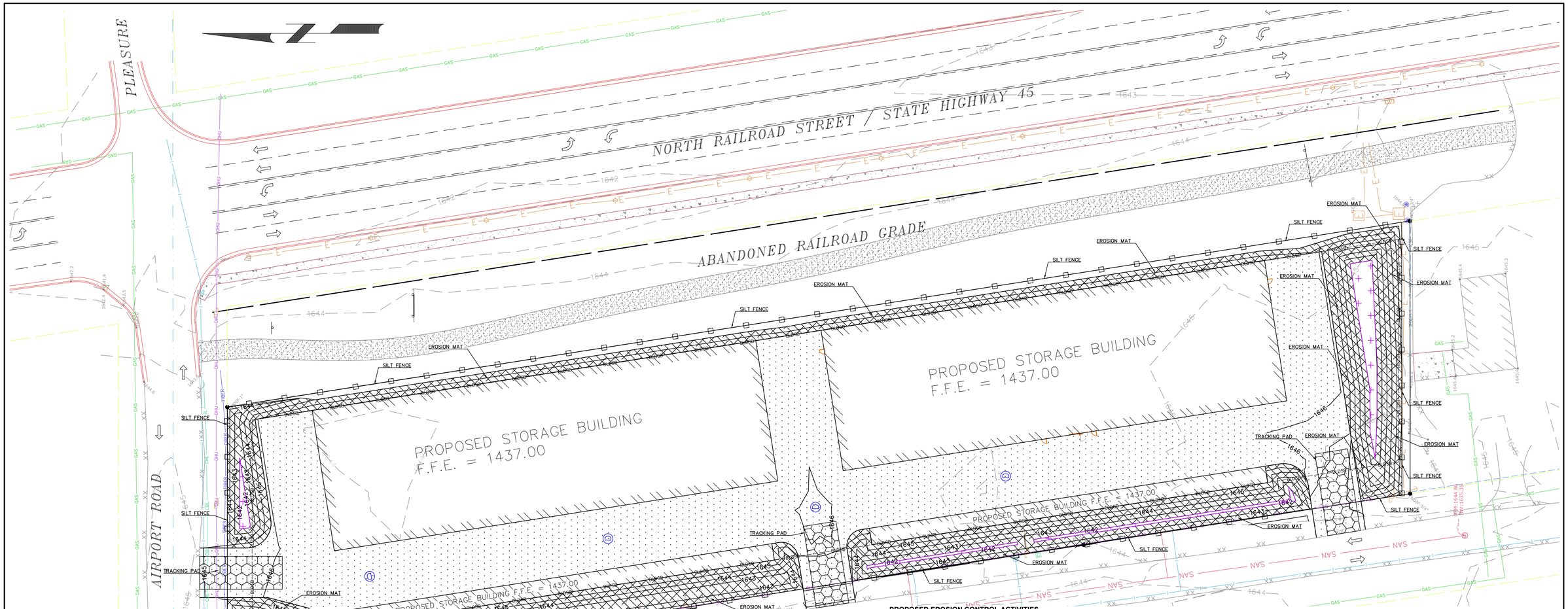
FILE NO.: 26-0159
ORIGINAL PLAN DATE: 5/28/2026
SCALE: *1" = 30'*
SHEET *C2*



EROSION CONTROL SCHEDULING

1. INSTALL PERIMETER EROSION CONTROL. INSTALL INLET PROTECTION ON ALL CATCH BASIN DOWNSTREAM OF SITE EVEN IF NOT CALLED OUT ON THIS SHEET.
2. BEGIN DEMOLITION FOR NEW BUILDING.
3. BEGIN ROUGH GRADING AND UTILITY INSTALLATION.
4. DURING GRADING ACTIVITIES EXISTING GRASS AND VEGETATION, TO BE REMOVED, SHALL REMAIN IN PLACE FOR AS LONG AS POSSIBLE, TO AVOID SEDIMENT TRANSPORT.
5. ALL DISTURBED AREAS SHALL BE STABILIZED, TEMPORARILY AND/OR PERMANENT, WITHIN 30 DAYS OF DISTURBANCE, OR PERMANENTLY STABILIZED WITHIN 7 DAYS OF ACHIEVING FINISHED GRADE.
6. IF DISTURBED AREAS MUST BE LEFT OVER WINTER, AN ANIONIC POLYACRYLAMIDE SHALL BE APPLIED TO ALL DISTURBED AREAS PRIOR TO GROUND FREEZE. SEE SPECIFICATIONS FOR DETAILS.

PROPOSED EROSION CONTROL ACTIVITIES

1. CONTACT DIGGER'S HOTLINE 5 WORKING DAYS PRIOR TO THE START OF DEMOLTION/CONSTRUCTION.
2. NOTIFY THE LOCAL MUNICIPALITY AT LEAST 2 WORKING DAYS PRIOR TO THE START OF SOIL DISTURBING ACTIVITIES.
3. KEEP A COPY OF THE EROSION CONTROL PLANS AND STORMWATER & EROSION CONTROL MANANGEMENT PLAN ON SITE THROUGHOUT THE PROJECT.
4. INSTALL ALL TEMPORARY EROSION CONTROL ELEMENTS PRIOR TO THE START OF DEMOLITION/CONSTRUCTION.
5. ALL ACTIVITIES SHALL BE CONDUCTED IN A LOGICAL SEQUENCE AS TO MINIMIZE THE AMOUNT OF BARE SOIL EXPOSED AT ANY ONE TIME. MAINTAIN EXISTING VEGETATION AS LONG AS POSSIBLE.
6. CRUSHED ROCK DRIVES FOR SEDIMENT TRACKING UTILIZING 3" CRUSHED ROCK SHALL BE MAINTAINED AT ALL CONSTRUCTION ENTRANCES TO THE SITE. THE ROCK DRIVE SHALL BE A MINIMUM OF 12" THICK AND BE A MINIMUM OF 50 FEET IN LENGTH BY THE WIDTH OF THE DRIVEWAY.
7. OFF SITE SEDIMENT DEPOSITS OCCURRING AS A RESULT OF A STORM EVENT SHALL BE CLEANED UP BY THE END OF THE NEXT WORK DAY. ALL OFF SITE SEDIMENT DEPOSITS OCCURRING AS A RESULT OF CONSTRUCTION ACTIVITIES, INCLUDING SOIL TRACKED BY CONSTRUCTION TRAFFIC, SHALL AT A MINIMUM BE CLEANED BY THE END OF EACH WORK DAY. EXCESSIVE AMOUNTS OF SEDIMENT OR OTHER DEBRIS TRACKED ONTO ADJACENT STREETS SHALL BE CLEANED BY THE END OF EACH WORK DAY. EXCESSIVE AMOUNTS OF SEDIMENT OR OTHER DEBRIS TRACKED ONTO ADJACENT STREETS SHALL BE CLEANED IMMEDIATELY. FINE SEDIMENT ACCUMULATIONS SHALL BE CLEANED FROM ADJACENT STREETS BY THE USE OF MECHANICAL OR MANUAL SWEEPING OPERATIONS ONCE A WEEK AT A MINIMUM AND BEFORE IMMINENT RAIN EVENTS.
8. DISTURBED GROUND OUTSIDE OF THE EVERYDAY CONSTRUCTION AREAS, INCLUDING SOIL STOCKPILES, THAT ARE LEFT INACTIVE FOR MORE THAN 7 DAYS SHALL BE TEMPORARILY STABILIZED BY SEEDING/MULCHING OR OTHER APPROVED METHODS.
9. WASTE MATERIAL THAT IS GENERATED ON THE CONSTRUCTION SITE SHALL BE PROPERLY DISPOSED OF AND NOT ALLOWED TO RUN INTO RECEIVING WATERS. ANY SEDIMENT OR TRASH THAT HAS MOVED OFF-SITE SHALL BE SWEPT OR CLEANED UP BEFORE THE END OF THE WORK DAY.
10. EROSION CONTROL DEVICES DESTROYED AS A RESULT OF CONSTRUCTION ACTIVITIES SHALL BE REPAIRED BY THE END OF EACH WORK DAY.
11. INSPECT ALL EROSION CONTROL MEASURES AT LEAST ONCE A WEEK AND AFTER ANY RAINFALL OF 0.5" OR MORE. MAKE NEEDED REPAIRS AND DOCUMENT ALL ACTIVITIES AS PER THE REQUIREMENTS OF THE NOTICE OF INTENT SUBMITTED BY THE PROJECT CIVIL ENGINEER.
12. INLET PROTECTION SHALL BE PLACE IN ANY DOWNSTREAM CATCH BASINS EVEN IF THEY ARE NOT SHOWN ON SHEET C7.
13. ALL TEMPORARY EROSION CONTROL ELEMENTS SHALL REMAIN IN PLACE UNTIL A SUFFICIENT GROWTH OF VEGETATION IS ESTABLISHED AND THEN BE REMOVED AS PART OF THE BASE BID.
14. IF SEDIMENT LADEN WATER NEEDS TO BE REMOVED FROM THE SITE, FILTER BAGS OR SCREENING SHALL BE USED IN ACCORDANCE WITH THE WI DNR TECHNICAL STANDARDS 1061 TO PREVENT THE DISCHARGE OF SEDIMENT TO THE MAXIMUM EXTENT PRACTICABLE.
15. IF BARE SOIL IS EXPOSED DURING THE WINTER MONTHS, STABILIZATION BY MULCHING OR ANIONIC POLYACRYLAMIDE SHALL OCCUR PRIOR TO SNOW OR FROZEN GROUND.
16. SILT FENCE SHALL BE INSTALLED AROUND THE TOPSOIL STOCKPILE.
17. THE CONTRACTOR SHALL ONLY USE PHOSPHORUS FREE FERTILIZER FOR ALL LANDSCAPE APPLICATIONS.
18. THE CONTRACTOR SHALL BE RESPONSIBLE FOR WATERING PLANTED DISTURBED AREAS WHENEVER MORE THAN 7 DAYS OF DRY WEATHER OCCUR.
19. THE CONTRACTOR SHALL PERFORM INSPECTIONS AND MONITORING OF EROSION CONTROL PRACTICES IN ACCORDANCE WITH THE WI DNR "CONSTRUCTION SITE INSPECTION REPORT" FORM 3400-187. THIS FORM CAN BE FOUND ON WISCONSIN DNR WEBSITE OR PROVIDE IF NECESSARY.

SCALE NOTE:
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STAMP/SIGNATURE:

REVISIONS

BY	DATE	DESCRIPTION

TITLE PAGE: PROPOSED EROSION CONTROL PLAN

PROJECT: U-HAUL EAGLE RIVER

LOCATION: CITY OF EAGLE RIVER
VILAS COUNTY, WISCONSIN

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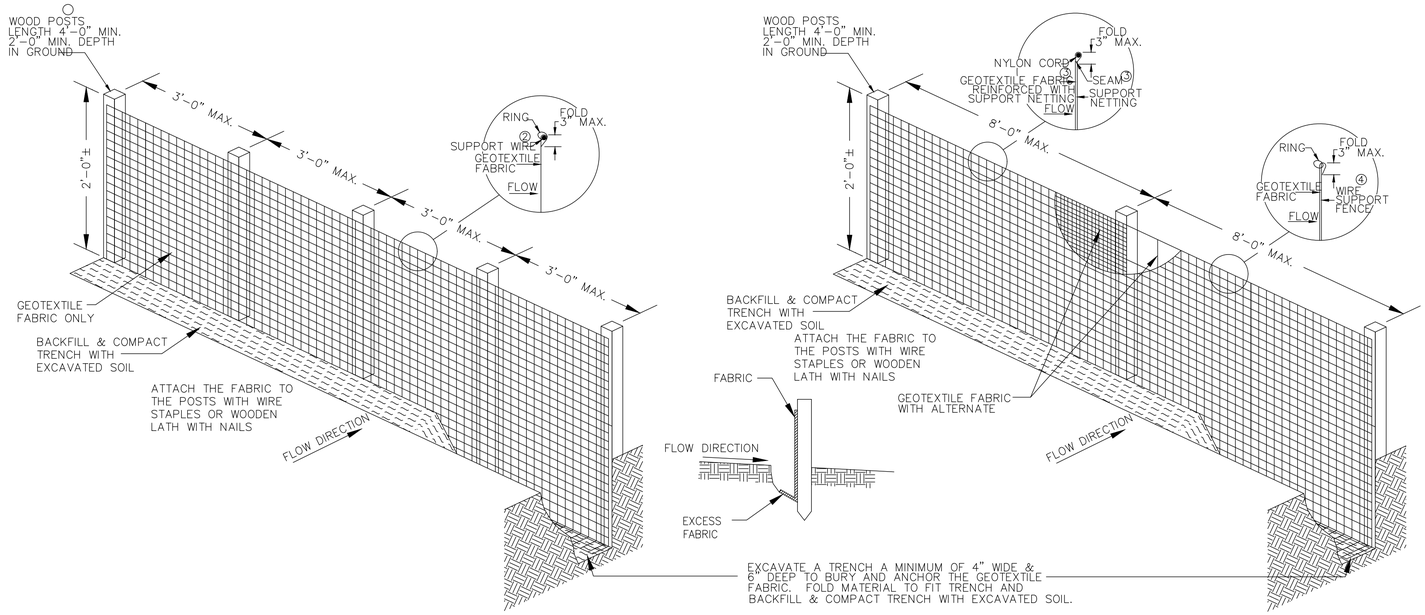
PREPARED FOR: DAVID BARNES

PLAN DATE: MAY 28TH, 2026

DESIGNER: DUSTIN VREELAND
SURVEYED BY: OTHERS
FILE NO.: 26-0159
ORIGINAL PLAN DATE: 5/28/2026
SCALE: 1" = 30'
SHEET C4



ALTERNATE "A" TRENCH DETAIL ALTERNATE "B"

SILT FENCE (1 / C6)

GENERAL NOTES:

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

WHEN POSSIBLE THE SILT FENCE SHOULD BE CONSTRUCTED IN AN ARC OR HORSESHOE SHAPE, WITH THE ENDS POINTING UPSLOPE TO MAXIMIZE BOTH STRENGTH AND EFFECTIVENESS.

ADDITIONAL POST DEPTH OR TIE BACKS MAY BE REQUIRED IN UNSTABLE SOIL CONDITIONS.

ALTERNATES "A" & "B" ARE EQUAL AND EITHER MAY BE USED.

ATTACH THE FABRIC TO THE POSTS WITH WIRE STAPLES OR WOODEN LATH AND NAILS.

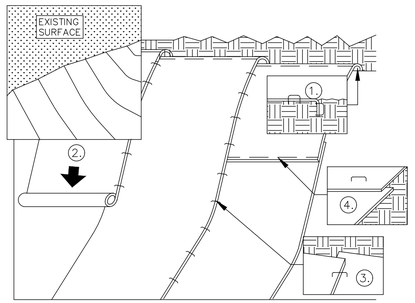
① STEEL POSTS SHALL BE A STUDDED "TEE" OR "U" TYPE WITH A MINIMUM WEIGHT OF 1.28 LBS/LINEAL FOOT (WITHOUT ANCHOR). FIN ANCHORS SUFFICIENT TO RESIST POST MOVEMENT ARE REQUIRED. WOOD POSTS SHALL BE A MINIMUM SIZE OF 4" DIA. OR 1 1/2" X 3 1/2" EXCEPT WOOD POSTS FOR GEOTEXTILE FABRIC REINFORCED WITH NETTING SHALL BE MINIMUM SIZE OF 1 1/8" X 1 1/8" OAK OR HICKORY.

② MINIMUM 14 GAGE WIRE REQUIRED, FOLD FABRIC 3" OVER THE WIRE AND STAPLE OR PLACE WIRE RINGS ON 12" C-C.

③ GEOTEXTILE FABRIC SHALL BE REINFORCED WITH AN INDUSTRIAL POLYPROPYLENE NETTING WITH A MAXIMUM MESH SPACING OF 3/4" OR EQUAL. A HEAVY DUTY NYLON TOP SUPPORT CORD OR EQUIVALENT IS REQUIRED.

④ WIRE SUPPORT FENCE SHALL BE 14 GAGE MINIMUM WOVEN WIRE WITH A MAXIMUM MESH SPACING OF 6". SECURE TOP OF GEOTEXTILE FABRIC TO TOP OF FENCE WITH STAPLES OR WIRE RINGS AT 12" C-C.

⑤ LENGTH NOT LESS THAN THE CIRCUMFERENCE OF THE LARGEST TIRE ON THE CONSTRUCTION EQUIPMENT, PLUS 5 FEET.

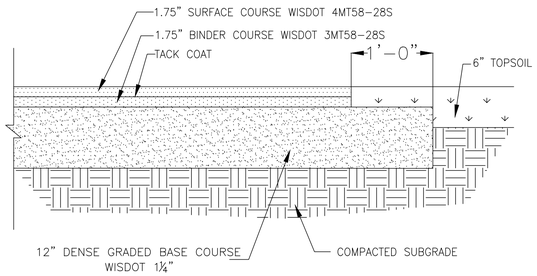


NOTES:
EROSION MAT WILL BE INSTALLED AT ANY SLOPE AT OR GREATER THAN 5' HORIZONTAL TO 1' VERTICAL.

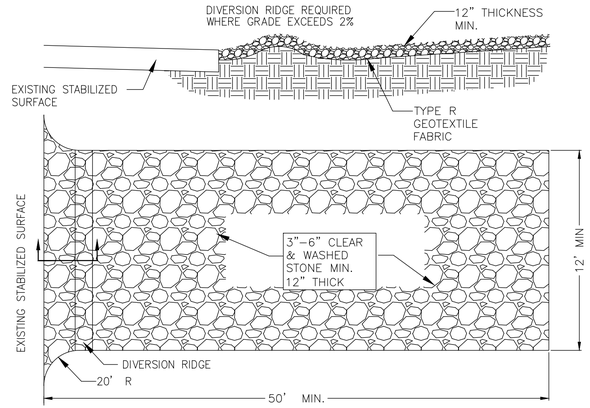
INSTALLATION NOTES:

1. BEGIN AT THE TOP OF THE SLOPE. ANCHOR THE MAT IN A 6" WIDE x 6" DEEP TRENCH. BACKFILL AND COMPACT THE TRENCH.
2. ROLL THE MAT DOWN THE SLOPE IN DIRECTION OF FLOW.
3. OVERLAP PARALLEL EROSION MAT APPROX. 2". PLACE MAT END OVER END (SHINGLE STYLE).
4. OVERLAP END TO END APPROX. 6" AND STAPLE OVERLAP AREA WITH STAPLES APPROX. 12" APART.

EROSION MAT (2 / C6)



3.5" ASPHALT PAVEMENT (3 / C6)



NOTES:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING. REPAIR AND/OR CLEANOUT ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
4. IF TRACKING PAD IS FILLED WITH SEDIMENT REMOVE AND REPLACE AGGREGATE.
5. IF A 50' PAD LENGTH IS NOT POSSIBLE DUE TO SITE GEOMETRY, INSTALL MAXIMUM LENGTH PRACTICABLE.

TRACKING PAD (4 / C6)

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STAMP/SIGNATURE:

REVISIONS

BY	DATE	DESCRIPTION

TITLE PAGE: *SITE DETAILS*

PROJECT: *U-HAUL EAGLE RIVER*

LOCATION: *CITY OF EAGLE RIVER*
VILAS COUNTY, WISCONSIN

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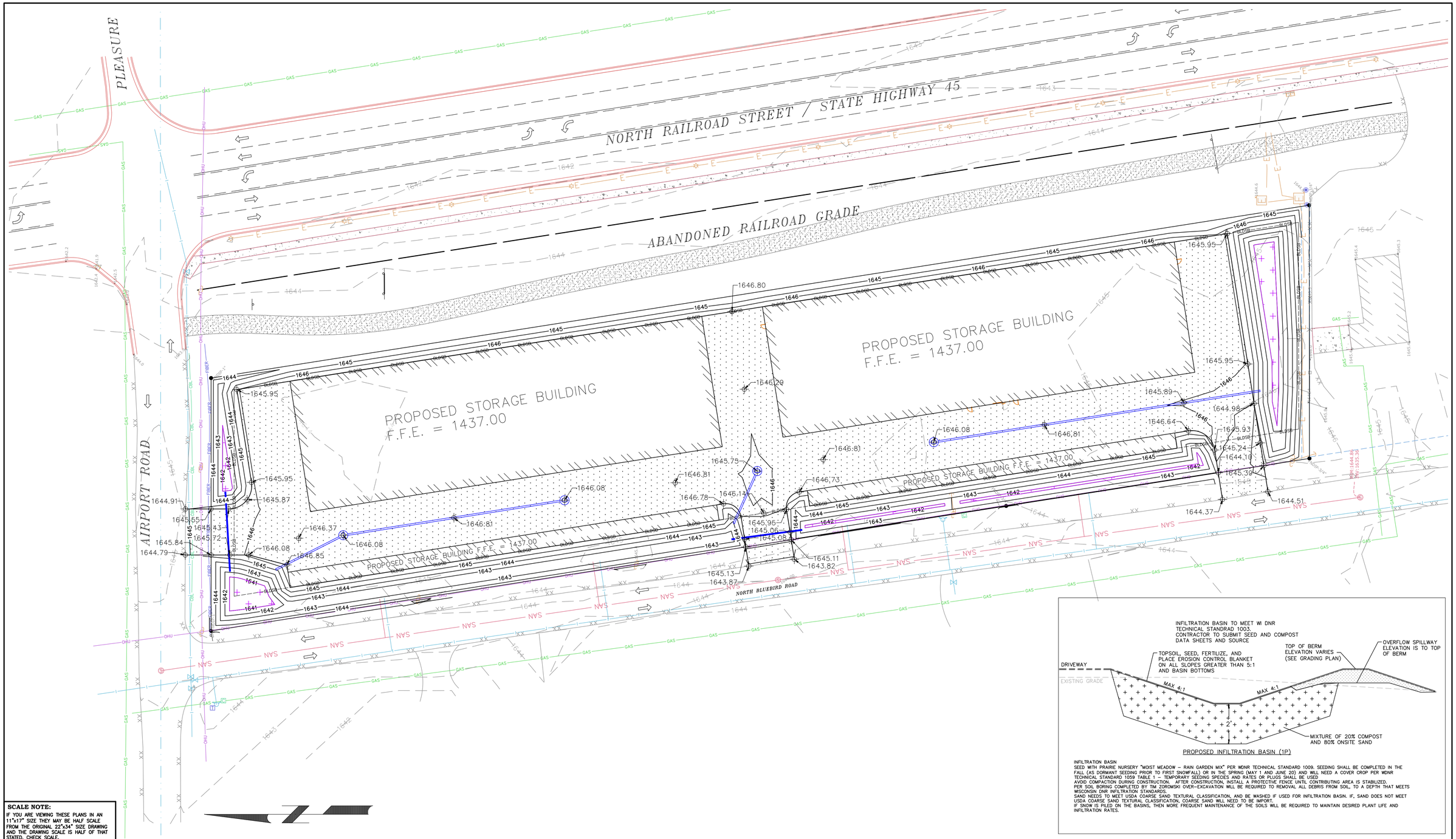
PREPARED FOR: *DAVID BARNES*

PLAN DATE: *MAY 28TH, 2026*

DESIGNER: DUSTIN VREELAND
SURVEYED BY: OTHERS
FILE NO.: 26-0159
ORIGINAL PLAN DATE: 5/28/2026
SCALE: *1" = 30'*
SHEET *C6*



PROPOSED INFILTRATION BASIN (1P)

INFILTRATION BASIN
SEED WITH PRAIRIE NURSERY "MOIST MEADOW – RAIN GARDEN MIX" PER WDNR TECHNICAL STANDARD 1009. SEEDING SHALL BE COMPLETED IN THE FALL (AS DORMANT SEEDING PRIOR TO FIRST SNOWFALL) OR IN THE SPRING (MAY 1 AND JUNE 20) AND WILL NEED A COVER CROP PER WDNR TECHNICAL STANDARD 1059 TABLE 1 – TEMPORARY SEEDING SPECIES AND RATES OR PLUGS SHALL BE USED.
AVOID COMPACTION DURING CONSTRUCTION. AFTER CONSTRUCTION, INSTALL A PROTECTIVE FENCE UNTIL CONTRIBUTING AREA IS STABILIZED.
PER SOIL BORING COMPLETED BY TIM ZOROWSKI OVER-EXCAVATION WILL BE REQUIRED TO REMOVAL ALL DEBRIS FROM SOIL, TO A DEPTH THAT MEETS WISCONSIN DNR INFILTRATION STANDARDS.
SAND NEEDS TO MEET USDA COARSE SAND TEXTURAL CLASSIFICATION, AND BE WASHED IF USED FOR INFILTRATION BASIN. IF, SAND DOES NOT MEET USDA COARSE SAND TEXTURAL CLASSIFICATION, COARSE SAND WILL NEED TO BE IMPORT.
IF SNOW IS PILED ON THE BASINS, THEN MORE FREQUENT MAINTENANCE OF THE SOILS WILL BE REQUIRED TO MAINTAIN DESIRED PLANT LIFE AND INFILTRATION RATES.

SCALE NOTE:
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BY	DATE	DESCRIPTION

TITLE PAGE: *PROPOSED STORMWATER PLAN & DETAIL*

PROJECT: *U–HAUL EAGLE RIVER*

LOCATION: *CITY OF EAGLE RIVER*
VILAS COUNTY, WISCONSIN

VREELAND ASSOCIATES LAND SURVEYORS & ENGINEERS
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PREPARED FOR: *DAVID BARNES*

PLAN DATE: *MAY 28TH, 2026*

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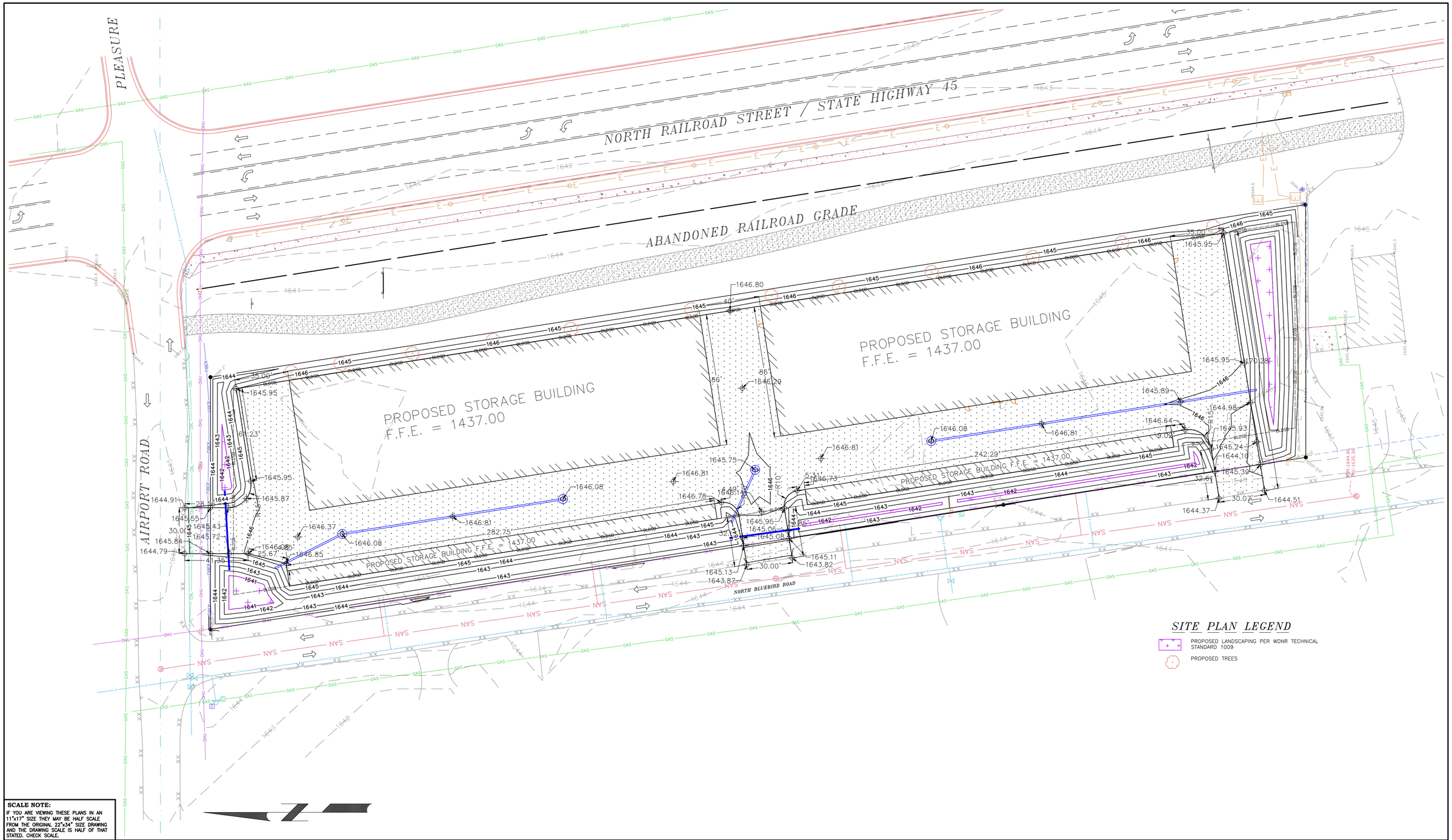
SURVEYED BY: OTHERS
FILE NO.: 26-0159
ORIGINAL PLAN DATE: 5/28/2026
SCALE: 1" = 30'
SHEET C7



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STAMP/SIGNATURE:

REVISIONS

BY	DATE	DESCRIPTION

TITLE PAGE:
PROPOSED LANDSCAPING PLAN

PROJECT: U–HAUL EAGLE RIVER

LOCATION: CITY OF EAGLE RIVER
VILAS COUNTY, WISCONSIN

VREELAND ASSOCIATES LAND SURVEYORS & ENGINEERS
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PREPARED FOR:
DAVID BARNES

PLAN DATE:
MAY 28TH, 2026

DESIGNER: DUSTIN VREELAND
SURVEYED BY: OTHERS
FILE NO.: 26-0159
ORIGINAL PLAN DATE: 5/28/2026
SCALE: 1" = 30'
SHEET C8

Page 2-3

Page 4

LED EXTERIOR LIGHTING

CUTOFF WALL PACKS

LED Cutoff Wall Packs are high quality, designed for outdoor use. Perfect for illuminating entrances, walls, and providing added security lighting. Our energy-saving wall packs deliver bright, uniform light with a long life (50,000 hrs) significantly reducing maintenance costs and energy use over the life of the fixture, quickly paying for itself.

Application: Ideal for commercial and industrial applications; building entrances, walkways, security and perimeter lighting.

Fixtures are available in a variety of finishes and color temperatures.
Contact your sales representative to discuss your specific needs.

LED EXTERIOR LIGHTING

SPEC-SELECT™ STEALTH FULL CUTOFF WALL PACK

PQL PREMIUM QUALITY LIGHTING®

FEATURES

- Selectable Wattage & Color Temperature (3000K, 4000K, 5000K)
- High Efficiency, Energy Saving
- Durable Construction
- Mercury Free - Environmentally friendly.
- Vibration and shock resistant
- Wet Location Rated
- Bronze or White finish
- Ideal for security, walkways and perimeter lighting.

WATTS	ITEM#	DESCRIPTION	DLC®	CCT	LUMENS	LPW	BEAM	CRI	VOLTS	FINISH	LIFE HOURS	TRAD. EQUIV.	CASE
20/30 45/50	83910	F. CUTOFF WALL PACK/20-30-45-50W/30-50K/120-277V/BRZ *Qualification Model # SPSTLWP-50-[L;H]V- [C;MC;PC;PSC;SC]-TK*	★	30-50K	1500-6343	127	Type III	73	120-277	BRONZE	50,000	100-175W	1
	83913	F. CUTOFF WALL PACK/20-30-45-50W/30-50K/120-277V/WHT *Qualification Model # SPSTLWP-50-[L;H]V- [C;MC;PC;PSC;SC]-TK*	★	30-50K	1500-6343	127	Type III	73	120-277	WHITE	50,000	100-175W	1
80/90 100/120	83911	F. CUTOFF WALL PACK/80-90-100-120W/30-50K/120-277V/BRZ *Qualification Model # SPSTLWP-120-[L;H]V- [C;MC;PC;PSC;SC]-TK*	★	30-50K	9600-14500	121	Type III	73	120-277	BRONZE	50,000	250-400W	1
	83915	F. CUTOFF WALL PACK/80-90-100-120W/30-50K/120-277V/WHT *Qualification Model # SPSTLWP-120-[L;H]V- [C;MC;PC;PSC;SC]-TK*	★	30-50K	9600-14500	121	Type III	73	120-277	WHITE	50,000	250-400W	1

ACCESSORIES

Check fixture TDS to confirm compatibility of accessories.

WATTS	ITEM#	DESCRIPTION	CASE
	83336	BUTTON STYLE PHOTO CELL FOR LED WALL PACK/120-277V	70
4	55704	EMERGENCY PACK FOR LED FIXTURE 4W/90 MIN/IP65 2 & 1 TEST LIGHT AND BUTTON *(Not for use on fixtures over 50W)*	50

** 83336 and 83895 or 55704 (4W EM Battery) cannot be used together; one accessory prevents the other from fitting in the fixture.*

83336

55704

Key: *P = Pending / LPW = Lumens Per Watt / TRAD. EQUIV. = Traditional Equivalent*

Note: *Warranty and Qualifications can vary per item, see technical data sheets (TDS) for specific information. • Not all product variations listed are DLC® qualified. Visit www.designlights.org/search to confirm qualification. • Published lumens on LED products are approximate and may vary slightly. • Specifications are subject to change without notice. • Photos and drawings may not be to scale and are for general reference only.*

STEALTH FULL CUTOFF WALL PACK

PQL
PREMIUM QUALITY LIGHTING®

FEATURES

- High Efficiency, Energy Saving
- Durable Construction
- Mercury Free - Environmentally friendly.
- Vibration and shock resistant
- Wet Location Rated
- Bronze finish
- Ideal for security, walkways and perimeter lighting.

WATTS	ITEM#	DESCRIPTION	DLC®	CCT	LUMENS	LPW	BEAM	CRI	VOLTS	FINISH	LIFE HOURS	TRAD. EQUIV.	CASE
30	83900	FULL CUTOFF WALL PACK/30W/50K/120-347V/BRZ *Qualification Model # STLWP-30-347-[D,P,M]-50K*	★	5000K	4110	137	Type III	70	120-347	BRONZE	50,000	100W	1

ACCESSORIES

Check fixture TDS to confirm compatibility of accessories.

WATTS	ITEM#	DESCRIPTION	CASE
	83896	MICROWAVE MOTION SENSOR FOR LED STEALTH™ FULL CUTOFF WALL PACK/12-24vDC	100
	83336	BUTTON STYLE PHOTO CELL FOR LED WALL PACK/120-277V	70
4	55704	EMERGENCY PACK FOR LED FIXTURE 4W/90 MIN/IP65 2 & 1 TEST LIGHT AND BUTTON *(Not for use on fixtures over 50W)*	50
8	83893	EM BATTERY FOR LED STEALTH™ FULL CUTOFF WALL PACK/8W 90 MIN/120-277V *(Not for use on fixtures over 150W)*	20

83896

83336

55704

83893

Key: *P = Pending / LPW = Lumens Per Watt / TRAD. EQUIV. = Traditional Equivalent*

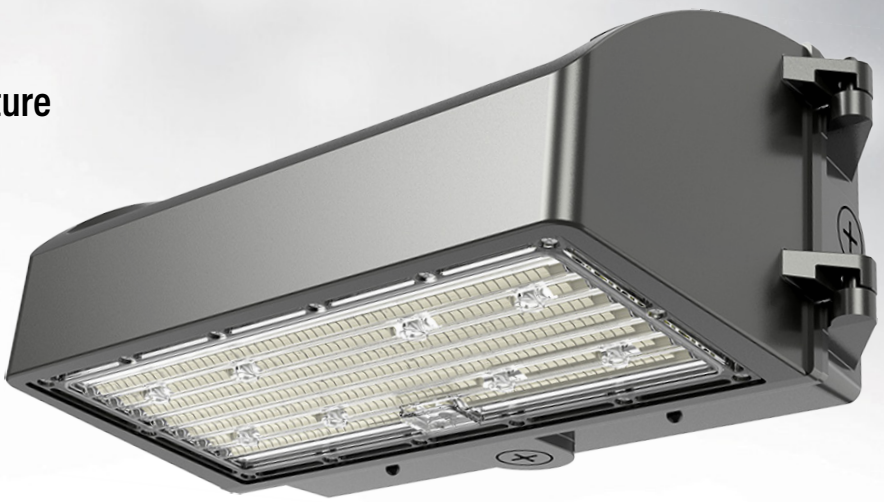
Note: *Warranty and Qualifications can vary per item, see technical data sheets (TDS) for specific information. • Not all product variations listed are DLC® qualified. Visit www.designlights.org/search to confirm qualification. • Published lumens on LED products are approximate and may vary slightly. • Specifications are subject to change without notice. • Photos and drawings may not be to scale and are for general reference only.*

SPEC-SELECT™ DESIGNER FULL CUTOFF WALL PACK

PQL PREMIUM QUALITY LIGHTING®

FEATURES

- Selectable Wattage & Color Temperature (3000K, 4000K, 5000K)
- High Efficiency, Energy Saving
- Durable Construction
- Mercury Free - Environmentally friendly.
- Vibration and shock resistant
- Wet Location Rated
- Ideal for security, walkways and perimeter lighting.



WATTS	ITEM#	DESCRIPTION	DLC®	CCT	LUMENS	LPW	BEAM	CRI	VOLTS	FINISH	LIFE HOURS	TRAD. EQUIV.	CASE
0-10V DIMMING													
40/50 60/80	83917	DESIGNER F.C.W.P/40-50-60-80W/30-50K/DIMM/120-277V/BRZ *Qualification Model # SSTWP-80[L;H]-[CS]-CC*	★	30-50K	5212-10399	130	93°	74	120-277	BRONZE	50,000	200-400W	1

ACCESSORIES

Check fixture TDS to confirm compatibility of accessories.

WATTS	ITEM#	DESCRIPTION	CASE
	83336	BUTTON STYLE PHOTO CELL FOR LED WALL PACK/120-277V	70

83336

Key: *P = Pending / LPW = Lumens Per Watt / TRAD. EQUIV. = Traditional Equivalent*

Note: *Warranty and Qualifications can vary per item, see technical data sheets (TDS) for specific information. • Not all product variations listed are DLC® qualified. Visit www.designlights.org/search to confirm qualification. • Published lumens on LED products are approximate and may vary slightly. • Specifications are subject to change without notice. • Photos and drawings may not be to scale and are for general reference only.*

Erosion Control/Storm Water Management Maintenance/Operation Plan

For:
U-Haul Eagle River

Prepared By:

VREELAND ASSOCIATE
LAND SURVEYORS & ENGINEERS

6103 Dawn Street
Weston, WI 54476

Located in:
City of Eagle River
Vilas County, WI

Dated:
May 28, 2026

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Storm Water Management Plan
U-Haul Eagle River
City of Eagle River, Wisconsin

Appendices

Erosion Control/Storm Water Management
Maintenance and Operation Plan
for
U-Haul Eagle River

1.0 BACKGROUND & GENERAL INFORMATION

1.1 Introduction and Project Location

Vreeland Associates has been retained by David Barnes to perform storm water management calculations and prepare a storm water management plan per NR216.47 and NR151, for the proposed shed buildings project. The project site is located at 1100 N Railroad Street Eagle River, WI. The project is located in part of the Northwest ¼ of the Northwest ¼ of Section 28, Township 40 North, Range 10 East, City of Eagle River, Vilas County, Wisconsin.

1.2 Project Description

The proposed project consists of developing proposed 2.7 acres for indoor storage and parking lot. The site will be graded for storm water management best management practices. (See Location Plan in **Appendix A**).

1.3 Project Requirements

The project area includes approximately 2.7 acres that will be disturbed. Since the disturbed area exceeds one acre, a Wisconsin Department of Natural Resources Notice of Intent application/permit (NOI-WPDES per WDNR) is required.

The storm water management plan for this project is developed in accordance with the NOI-WPDES requirements and NR216.47/NR151.121 for new development site.

1.4 General Project Data

Soils
Based on existing soil mapping data from the Natural Resources Conservation Service (NRCS), the existing subgrade soils are expected to be Rubicon sand, which are classified as hydrologic class "A". Stormwater test pits were performed by Partners. The borings found to topsoil overlaying fill sand and sand. These borings are consistent with NRCS. The determined limiting factor for stormwater infiltration was sand layer with an infiltration rate of 3.6 in/hr. The geotechnical data containing soil hydrologic classes are attached in **Appendix B**.

Groundwater
At the site of the proposed infiltration groundwater was encountered. Groundwater will be well below the proposed project and will not be disturbed.

Wetlands
According to the Wisconsin DNR Wetlands and Wetlands Indicator map, there are not identified wetlands within the project limits.

2.0 EXISTING DRAINAGE CONDITIONS

2.1 Existing Drainage Area

The existing site consists of one sub-basin (E1). Sub-basin E1 contains grass. E1 generally flows to the northeast of the property. An existing drainage map can be found in **Appendix C.**

2.2 Existing Drainage Calculation Summary

Existing drainage calculations utilize TR-55 methodology and results for a 1, 2, 10 and 100-year design storm are included. Existing drainage calculations are provided in **Appendix C.**

2.3 Existing Off-Site Drainage

Existing off-site storm water runoff draining onto the project site has been taken into consideration for the existing or proposed drainage evaluation.

3.0 PROPOSED DRAINAGE CONDITIONS

3.1 Proposed Drainage Areas

The proposed site is divided into six sub-basins (D1-D5, 1S). 1S consists of runoff from the grass area. Runoff from D1 consists of parking lot, building, and grass. Runoff from D1 is conveyed to the north and will runoff into P1 for treatment and rate control. D2 consists of the parking lot, building and grass area. Runoff from D2 is conveyed to the west into P2 for treatment and rate control. D3 consists of runoff from the proposed buildings, parking lot and lawn area. Runoff from D3 is conveyed into the proposed stormwater detention basin 3P for treatment and rate control. D4 consists of runoff from the proposed buildings, parking lot and lawn area. Runoff from D4 is conveyed into the proposed stormwater detention basin 3P for treatment and rate control. D5 consists of runoff from the proposed buildings, parking lot and lawn area. Runoff from D5 is conveyed into the proposed stormwater detention basin 3P for treatment and rate control. A proposed drainage area map is provided in **Appendix C.**

3.2 Post-Development Runoff Summary

Proposed drainage calculations utilize TR-55 methodology and results for a 1, 2, 10 and 100-year design storm have been attached. A proposed drainage area map and calculations are provided in **Appendix D.**

3.3 Proposed Detention Areas

There are five proposed treatment and rate control devices for storm water management. Pond P1 is a stormwater infiltration basin that will be used for infiltration purposes, total suspended solids removal and peak discharge control. Infiltration basin (1P) is located on the northeast corner of the proposed project. The basin will have a culvert to flow into P2 to control the depth of water. An emergency overflow has been included for extreme storm events. Pond P2 is a stormwater infiltration basin that will be used for infiltration purposes, total suspended solids removal and peak discharge control. Infiltration basin (P2) is located on the northwest side of the proposed project. The basin will have a culvert to flow into P3 to control the depth of water. An emergency overflow has been included for extreme storm events. Pond P3 is a stormwater infiltration basin that will be used for infiltration purposes, total suspended solids removal and peak discharge control. Infiltration basin (P3) is located on the west side of the proposed project. The basin will have a culvert to flow into P4 to control the depth of water. An emergency overflow has been included for extreme storm events. Pond P4 is a stormwater infiltration basin that will be used for infiltration purposes, total suspended solids removal and peak discharge control. Infiltration basin (1P) is located on the west side of the proposed project. An emergency overflow has been included for extreme storm events. Pond P5 is a stormwater infiltration basin that will be used for

infiltration purposes, total suspended solids removal and peak discharge control. Infiltration basin (P5) is located on the south side of the proposed project. An emergency overflow has been included for extreme storm events. See **Appendix C** detention basin volume calculations.

4.0 POST-DEVELOPMENT PERFORMANCE STANDARDS

4.1 Total Suspended Solids

1. According to NR151.122, BMPs shall be designed in accordance with Table 1, or to the maximum extent practicable. For new development projects Table 1 indicates that the total suspended solids load from parking areas and roads shall be reduced by 80 percent, based on an average annual rainfall, as compared to no runoff management controls.

The total suspended solids removal has been modeled in WinSLAMM version 10.5. According to the WinSLAMM modeling the expected TSS removal from the entire site is **99.69% (**excluding the proposed grass swales) the proposed design meets the requirements of NR151.122. See **Appendix D** for the WinSLAMM modeling inputs and outputs.

4.2 Infiltration

NR 151 requires that the post-development site infiltrate 90% of the pre-development runoff based on an average annual rainfall. Using WinSLAMM and HydroCAD the results show that the post-development site infiltrates **99.94%** of the average annual rainfall utilizing the infiltration basin for infiltration. See **Appendix D** for input and output results using HydroCAD and WinSLAMM and soil report for measured infiltration.

4.3 Peak Discharge

According to NR151.123(1), BMPs shall be employed to maintain or reduce the peak runoff discharge rates, to the maximum extent practicable, as compared to pre-development conditions.

The pre-development and post-development peak rates of discharge leaving the site are summarized in the table below. Curve numbers used for the modeling of this site were Class C soils per the soil borings completed by Star Environmental. See **Appendix C** for HydroCAD modeling routing diagrams, summaries, and node listings.

	Pre-Development	Post-Development
	Total (E1)	Total (2L)
1-year 24-hour Peak Flow	0.00 cfs	0.00 cfs
2-year 24-hour Peak Flow	0.00 cfs	0.00 cfs
10-year 24-hour Peak Flow	0.01 cfs	0.00 cfs
100-year 24-hour Peak Flow	1.04 cfs	4.26 cfs

4.4 Protective Area

According to NR151.125(4)(e) areas of post-construction sites from which the runoff does not enter the surface water, including wetlands, without first being treated by a BMP to meet the requirements of 151.122 to 151.123, are exempt from meeting the requirements of the Protective Areas performance standards. Not applicable.

4.5 Summary

The modeling of this site shows that the requirements set by the Department of Natural Resources for total suspended solids, peak discharge, and infiltration can all be met with the proposed design.

The Storm Water Management Plan shows basic compliance with accepted engineering practice in hydrology planning and design. The resulting development will function as a positive addition to the community while sustaining environmental benefits in storm water management and quality.

5.0 CONSTRUCTION SITE PERFORMANCE STANDARDS

5.1 Erosion Control

The purpose of this control plan is to provide guidelines that comply with the state and local requirements, as well as to make recommendations regarding erosion control and storm water management. The construction of this development is a critical phase in terms of storm water management and runoff control. Construction site erosion control will help minimize the impact of development, enhance and protect local environment, and protect the surrounding project area by applying best management practices for erosion control at construction sites. This work shall be planned and executed in accordance with the Wisconsin Department of Natural Resources Storm Water Management Technical Standards and/or accepted local engineering practice. The owner/developer will be responsible for erosion control during the process of construction. Silt fence, site vegetation, inlet protection, tracking pad, and erosion mat will be utilized to keep sediment from leaving the construction site.

5.2 Construction Site Erosion Control Measures

The following erosion control devices may be used on the project site at any time during the construction phases to ensure the compliance with NR 216 and local erosion control requirements, as applicable.

a) Silt Fence (WDNR 1056)

Continuous silt fencing will be required along all areas downstream of disturbed area, and around the base of all stockpiled material subject to sediment transportation during rain fall events (stockpiled topsoil, gravel base, etc.). The silt fencing will provide a siltation barrier between the disturbed area and any inlets and ultimately downstream water bodies. All silt fence shall be removed upon completion of the project or when disturbed areas have generated sufficient vegetation to prevent erosion and the threat of sediment reaching inlets and bodies of water.

b) Site Vegetation

Existing site vegetation outside of project limits shall be protected and maintained to the maximum extent practicable. Existing site vegetation within the project limits shall remain undisturbed until construction schedule warrants disturbance. For disturbed areas vegetation that resists erosion, maintains slow storm water velocities, and retains sediment from runoff shall be provided by the contractor. Temporary seeding may be required for disturbed areas that are subject to long periods of construction inactivity. Temporary vegetation is used when areas are disturbed and may remain unfinished long enough to allow vegetation to grow and assist with erosion control. Permanent vegetation is encouraged as soon as possible in the construction process.

c) Tracking Pad (WDNR 1057)

Stone tracking pads will be constructed at all entrances to the construction site to minimize sediment tracking onto existing streets. A minimum of one construction entrance is required for the project site. Tracking pads are temporary and will be removed or much of the aggregate will be removed before the site is completed.

d) Non-channel Erosion Mat (WDNR 1052)

The purpose of this practice is to protect the soil surface from the erosive effect of rainfall and prevent sheet erosion during the establishment of grass or other vegetation, and to reduce soil moisture loss due to evaporation. This practice applies to both Erosion Control Re-vegetative Mats (ECRM) and Turf-Reinforcement Mats (TRM).

1. CLASS I: A short-term duration (minimum of 6 months), light duty, organic mat with photodegradable plastic or biodegradable netting.

a. Type A – Use on erodible slopes 2.5:1 or flatter.

b. Type B – Double netted product for use on erodible slopes 2:1 or flatter.

e) Waste and Material Disposal

All waste and unused building materials (including garbage, debris, cleaning wastes, or other construction materials) shall be properly disposed of and not allowed to be carried by runoff into a receiving channel or inlet.

5.3 Operation and Maintenance, Short-term

The owner of this project is directly responsible for implementation and maintenance of the construction site erosion control measures.

The Contractor shall conduct the following inspections:
- Weekly inspections of implemented erosion and sediment controls.
- Inspections of erosion and sediment controls within 24 hours after precipitation event 0.5 inches or greater which results in runoff during active construction periods.

The Contractor shall maintain weekly written reports of all inspections that include:
- The date, time, and exact place of the inspection.
- The name of the individual who performed the inspection.
- An assessment of the condition of erosion and sediment controls.
- A description of any erosion and sediment control implementation and maintenance performed.
- A description of the present phase of construction at the site.

Repairs shall be made immediately, as required, to maintain effectiveness, until permanent vegetation is established. All repairs to erosion control devices shall be documented on the Wisconsin Department of Natural Resources Construction Site Inspection Report (Form 3400-187). A copy of Form 3400-187 can be found in **Appendix F**.

5.4 Operation and Maintenance, Long-term

The OWNER of this project is directly responsible for the operation, inspection, and maintenance of all storm water facilities located within the project site, as described below.

- Infiltration Basin:
  Inspection: Look for accumulation of sediment and/or debris in basin and riprap. Length of time water is retained in basin. Look for erosion or damage. Review plant health; look for weeds and grasses encroaching on plants.
  Maintenance: Remove accumulated sediment deposits and/or debris in basin and riprap and repair any eroded or damaged grass areas. Remove any identified weeds or grasses. Do not plow/store snow in bio-retention basin. Annually mow the side slopes to reduce brush and other large root vegetation that may weaken the berms. Once every five years, deep-till infiltration basin promotes infiltration.
- Grass Swale:

Inspection: Look for accumulation of sediment and/or debris in pond and riprap. Look for erosion or damage. Review plant/grass health.
Maintenance: Remove accumulated sediment deposits and/or debris in swale and riprap and repair any eroded or damaged grass areas. If water is retained for more than 24-48 hours after a storm event, replace topsoil by removing the top 6" of topsoil, tilling bottom of basin, installing new topsoil and restoring grass in basin.

6.0 SOIL AND SEDIMENT LOSS DISCHARGE

The Wisconsin DNR requires that all construction sites must lose less than 5 tons per acre of sediment during the construction of the project. The DNR Soil Loss & Sediment Discharge Calculation Tool version 2.0 was used to determine the construction site sediment discharge. Using the worst-case scenario of a fully disturbed site and the maximum possible flow length, the calculations show that the soil loss is 1.7 tons/acre and the sediment discharge is 1.0 tons/acre. This assumes silt fence sediment control practices. This meets the DNR requirements. Calculations are shown in **Appendix E**. Soil Loss map shows the worst case scenario.

APPENDIX A

Location Map

ALTA/NSPS LAND TITLE SURVEY

~for~ AMERCO REAL ESTATE COMPANY
~of~ 1100 NORTH RAILROAD STREET
EAGLE RIVER, WI 54521
ENTITY NUMBER: 868086

BENCHMARK:

NGS BENCHMARK
DESIGNATION: 7H68
PID: DP1777
ELEVATION: 1637.48 (NAVD 88)

NORTH

GRAPHIC SCALE

40 0 20 40 80 160

1 INCH = 40 FEET

CERTIFICATION

I hereby certify to AMERCO Real Estate Company, a Nevada corporation; to U-Haul Co. of Wisconsin; to Landmark Title Assurance Agency; and to First American Title Insurance Company National Commercial Services, that this is a survey of:

The Land referred to herein below is situated in the County of Vilas, State of Wisconsin, and is described as follows:

Part of the Northwest Quarter of the Northwest Quarter (NW 1/4 NW 1/4), Section Twenty-eight (28), Township Forty (40) North, Range Ten (10) East of the Fourth Principal Meridian, City of Eagle River, Vilas County, Wisconsin, described as follows:

Beginning at a point on the South side of Airport Road where the West side of the C & NW Ry. Co. right-of-way intersects the South side of said Airport Road as the place of beginning of the land to be described; thence Southerly 50 rods along the West side of said right-of-way; thence Westerly parallel to said Airport Road, 10 rods; thence Northerly, parallel with the aforesaid right-of-way of the C & NW Ry. Co. 50 rods to the South side of said Airport Road, thence Easterly along the South side of said Airport Road, 10 rods to the place of beginning.

EXCEPTING THEREFROM that parcel of land described in Volume 616 Micro Records, Page 288.

and is based upon information found in the commitment for title insurance prepared by First American Title Insurance Company, File No. 8119-6606780, dated effective January 08, 2026 at 8:00 a.m., and that all easements, if any, listed in Schedule B-II on the herein referenced commitment for title insurance, are shown hereon; and that this map or plat and the survey on which it is based were made (i) in accordance with "Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys," jointly established and adopted by ALTA and NSPS in 2021, and (ii) pursuant to the Accuracy Standards as adopted by ALTA and NSPS and in effect on the date of this certification, the undersigned further certifies that in my professional opinion, as a land surveyor licensed in the State of Minnesota, the Relative Positional Accuracy of this survey does not exceed that which is specified therein and includes Items 1, 2, 3, 4, 5, 7(a), 7(b1), 7(c), 8, 9, 11(b), 13, 14, 16, 17, 19, and 20 (topo details per AMERCO Exhibit B 2025) of Table A thereof. The field work was completed on January 22, 2026.

I further certify that this survey was prepared by me or under my direct supervision and that I am a duly Licensed Land Surveyor under the laws of the State of Wisconsin.

Date: March 20, 2026

E.G. Rud & Sons, Inc.

Kevin C. McCain, Land Surveyor
Wisconsin License No. S-3270

WISCONSIN
KEVIN C. MCCAIN
S-3270
COON RAPIDS
MINNESOTA
LAND SURVEYOR

GENERAL NOTES

1. Fee ownership is vested in Aspirus Buildings, Inc. Parcel ID Number: 221-1019-06.
2. Address of the surveyed premises: 1100 North Railroad Street, Eagle River, WI 54521
3. Bearings shown hereon are based on the Vilas County Coordinate System.
4. Surveyed premises shown on this survey map is in Flood Zone X (Areas determined to be outside the 0.2% annual chance floodplain.), according to Flood Insurance Rate Map Community No. 550461 Panel No. 0670 Suffix B by the Federal Emergency Management Agency, effective date June 5, 2012.
5. Boundary area of the surveyed premises: 118,014± sq. ft. (2.71 acres).
6. There are no marked or striped parking areas onsite.
7. The surveyed premises has direct access to North Bluebird Road, a public street. The city administrator has confirmed that any future access must be to Bluebird Road. Access will not be allowed to Airport Road.
8. Location of utilities existing on or serving the surveyed property determined by:
   - Observed evidence collected pursuant to Section 5.E.iv.
   - Markings and drawings requested by E.G. Rud and Sons, Inc per Diggers Hotline Ticket Nos. 20260306584 and 20260306593.
   - Utility mapping provided by the City of Eagle River.

   Excavations were not made during the process of this survey to locate underground utilities and/or structures. The location of underground utilities and/or structures may vary from locations shown hereon and additional underground utilities and/or structures may be encountered. Diggers Hotlinel locate and other similar utility locate requests from surveyors may be ignored or result in an incomplete response. Where additional or more detailed information is required, the client is advised that excavation may be necessary. Contact Diggers Hotline at (800) 242-8511 for verification of utility type and field location, prior to excavation.
9. Subsurface and environmental conditions were not examined or considered during the process of this survey. No statement is made concerning the existence of underground or overhead containers or facilities that may affect the use or development of the surveyed premises.
10. There was no observed evidence of recent earth moving work, building construction or building additions observed in the process of conducting the fieldwork.
11. The surveyor is unaware of any proposed changes in street right of way lines. There was no recent street or sidewalk construction or repairs observed in the process of conducting the fieldwork.
12. Due to field work being completed during the winter season there may be improvements in addition to those shown that were not visible due to snow and ice conditions characteristic of Wisconsin winters.
13. There were no wetland markers on site. National Wetland Inventory (NWI) mapping does not show any wetlands on site.
14. First American Title Insurance Company, File No. 8119-6606780, Schedule B-II Survey Related Exceptions:

    14. Limitations imposed upon ingress to and egress from the above described premises to United States Highway 45, more specifically known as South County Line - STH 17 including ramps and connection roads on the right of way thereof, as set forth in a finding, determination and declaration by the State Highway Commission of Wisconsin, Recorded: September 24, 1998 Volume 837 of records, Page 76, Document No. 342707 wherein said highway is designated a controlled-access highway under the provisions of Section 84.25 of the Wisconsin Statues.
    Authorization for Access to or Across a Controlled-Access Highway recorded July 28, 1999 in Volume 881, Page 381 as Document No. 353566. [Surveyor's note: Access per Doc. No. 353566 is south of the subject property and is shown on the survey.]

    15. Utility Easement to Eagle River Light & Water, its successors and assigns, dated May 03, 2005, recorded/filed May 04, 2005 in Volume 1342, Page 663 as Document No. 431319. [Surveyor's note: Shown on survey.]

LEGEND

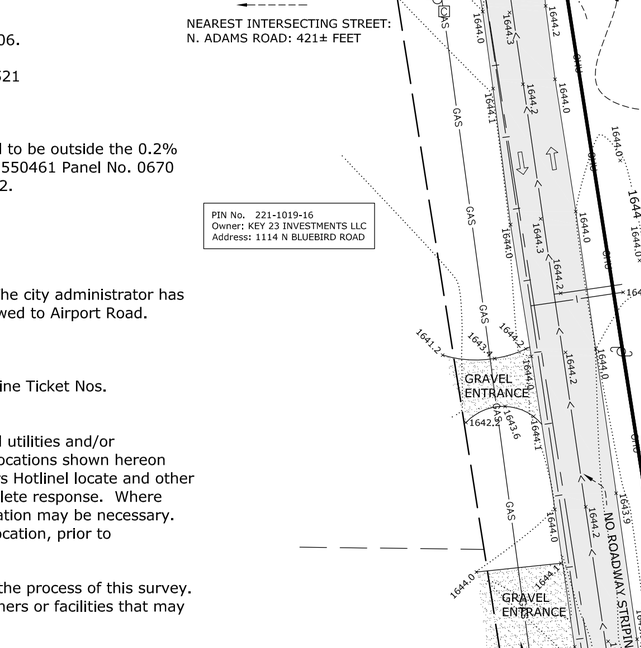
- DENOTES IRON MONUMENT FOUND AS LABELED
- DENOTES BOLLARD
- DENOTES CATCH BASIN
- DENOTES CABLE PEDESTAL
- DENOTES ELECTRIC TRANSFORMER/METER
- X 952.36 DENOTES EXISTING SPOT ELEVATION
- DENOTES FIBER OPTIC BOX
- DENOTES GUY WIRE
- DENOTES HYDRANT
- DENOTES POWER POLE
- DENOTES SANITARY SEWER MANHOLE
- DENOTES LIGHT POLE
- DENOTES SIGN
- DENOTES WATER VALVE
- 99 DENOTES SCHEDULE B-II EXCEPTION NO.
- DENOTES TELEPHONE PEDESTAL
- DENOTES WOOD FENCE
- DENOTES EXISTING CONTOURS
- DENOTES EXISTING SANITARY SEWER
- DENOTES EXISTING STORM SEWER
- DENOTES EXISTING WATER MAIN
- OHU DENOTES OVERHEAD UTILITY
- E DENOTES UNDERGROUND ELECTRIC LINE
- GAS DENOTES UNDERGROUND GAS LINE
- CBL DENOTES UNDERGROUND CABLE LINE
- TEL DENOTES UNDERGROUND TELEPHONE LINE
- FIBER DENOTES UNDERGROUND FIBER OPTIC LINE
- BLDSB DENOTES BUILDING SETBACK LINE
- DENOTES CONTROLLED ACCESS PER DOC. NO. 342707
- 2 DENOTES SIGNIFICANT OBSERVATION
- DENOTES DIRECTION OF TRAFFIC FLOW
- DENOTES BITUMINOUS SURFACE
- DENOTES CONCRETE SURFACE
- DENOTES GRAVEL SURFACE

PIN No. XX-XX-XX-XX-XXXX
Owner: X
Address: Unassigned
DENOTES ADJACENT PARCEL OWNER INFORMATION (PER VILAS COUNTY TAX INFORMATION)

TREE DETAIL

960.26 OAK20 2

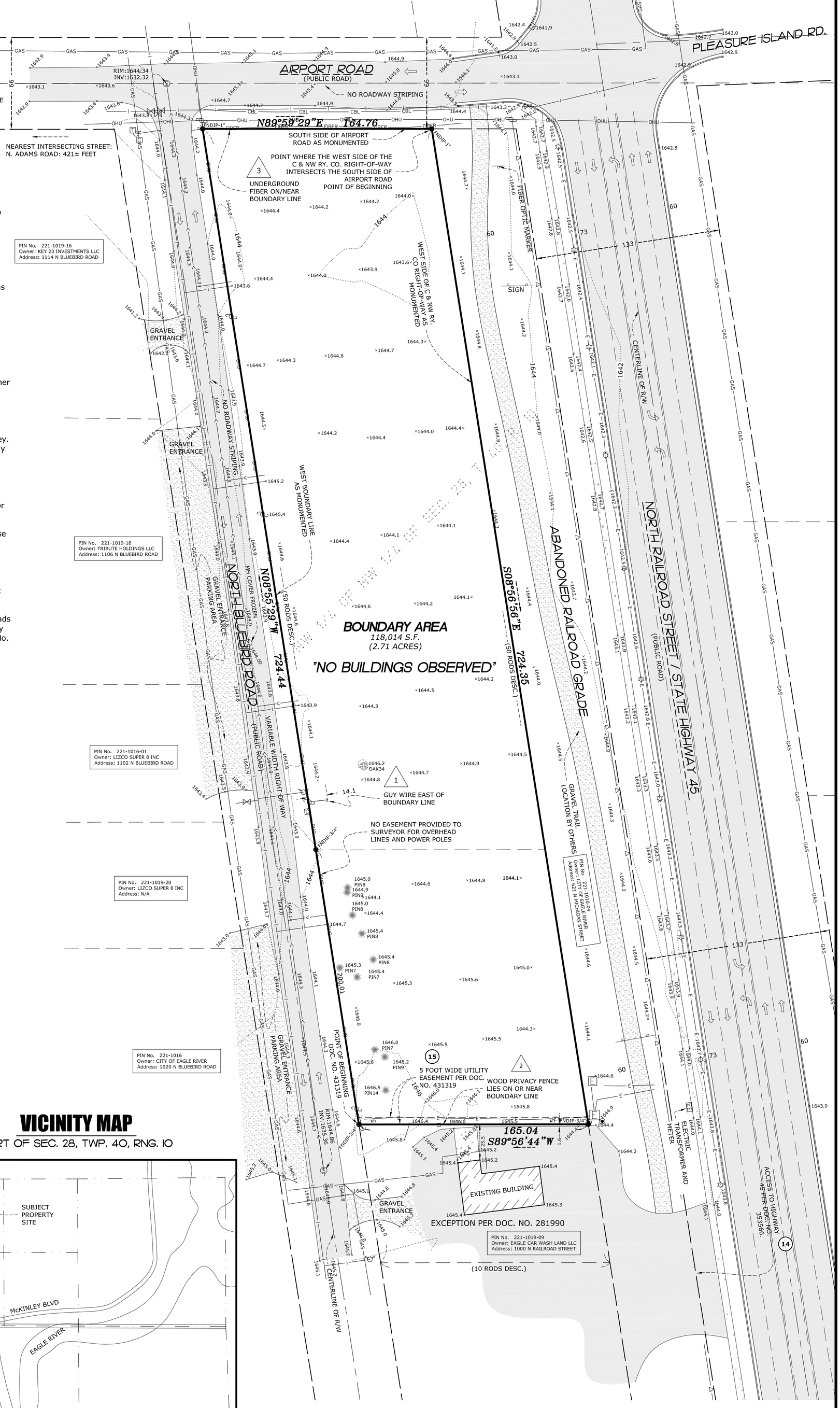
- DENOTES ELEVATION
- DENOTES TREE QUANTITY
- DENOTES TREE SIZE IN INCHES
- DENOTES TREE TYPE



VICINITY MAP

PART OF SEC. 28, TWP. 40, RNG. 10

VILAS COUNTY, WISCONSIN
(NO SCALE)



SIGNIFICANT OBSERVATIONS

1. There are existing overhead wires and power poles running along the west boundary line. The guy wire crosses the boundary by 14.1 feet.
2. There is a wood privacy fence that lies on/near the southerly boundary line.
3. There is an underground fiber optic line on/near the north boundary line.

E. G. RUD & SONS, INC.
EST. 1977
Professional Land Surveyors
6776 Lake Drive NE, Suite 110
Lino Lakes, MN 55014
Tel. (651) 361-8200 Fax (651) 361-8701
www.egrud.com

DRAWN BY: BPN	JOB NO: 26.0036AB	DATE: 2/10/2026
CHECK BY: JER	FIELD CREW: DT/CT	

NO.	DATE	DESCRIPTION	BY
1	3/20/2026	CLIENT COMMENTS	BPN
2			
3			

ALTA/NSPS LAND TITLE SURVEY

~for~ AMERCO REAL ESTATE COMPANY
~of~ 1100 NORTH RAILROAD STREET
EAGLE RIVER, WI 54521
ENTITY NUMBER: 868086

BENCHMARK:

NGS BENCHMARK
DESIGNATION: 7H68
PID: DP1777
ELEVATION: 1637.48 (NAVD 88)

NORTH

GRAPHIC SCALE

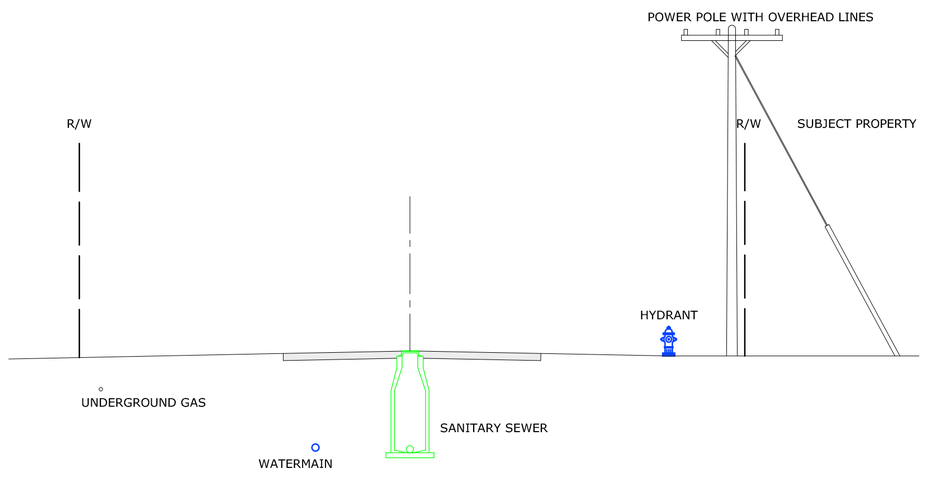
40 0 20 40 80 160

1 INCH = 40 FEET

WISCONSIN
KEVIN C. MCCAIN
S-3270
COON RAPIDS
MINNESOTA
LAND SURVEYOR

TYPICAL UTILITY LAYOUT

NORTH BLUEBIRD ROAD



PLEASURE ISLAND RD.

AIRPORT ROAD
(PUBLIC ROAD)

99

N89°59'29"E 164.76

SOUTH SIDE OF AIRPORT ROAD AS MONUMENTED

POINT WHERE THE WEST SIDE OF THE C & NW RY. CO. RIGHT-OF-WAY INTERSECTS THE SOUTH SIDE OF AIRPORT ROAD
POINT OF BEGINNING

NEAREST INTERSECTING STREET:
N. ADAMS ROAD: 421± FEET

60
73
133
60

WEST SIDE OF C & NW RY. CO RIGHT-OF-WAY AS MONUMENTED

WEST BOUNDARY LINE AS MONUMENTED

NORTH BLUEBIRD ROAD
VARIABLE WIDTH RIGHT OF WAY
(PUBLIC ROAD)

N08°55'29"W 724.44

(50 RODS DESC.)

NE 1/4 OF NW 1/4 OF SEC. 28

BOUNDARY AREA
118,014 S.F.
(2.71 ACRES)

"NO BUILDINGS OBSERVED"

S08°56'56"E 724.35

(50 RODS DESC.)

ABANDONED RAILROAD GRADE

NORTH RAILROAD STREET / STATE HIGHWAY 45
(PUBLIC ROAD)

200.01

15
5 FOOT WIDE UTILITY EASEMENT PER DOC. NO. 431319

165.04
N89°56'44"E

EXCEPTION PER DOC. NO. 281990

(10 RODS DESC.)

133

60
73
60

ACCESS TO HIGHWAY 45 PER DOC. NO. 353586.

14

LEGEND

- DENOTES IRON MONUMENT FOUND AS LABELED
- DENOTES BOLLARD
- DENOTES CATCH BASIN
- DENOTES CABLE PEDESTAL
- DENOTES ELECTRIC TRANSFORMER/METER
- X 952.36 DENOTES EXISTING SPOT ELEVATION
- DENOTES FIBER OPTIC BOX
- DENOTES GUY WIRE
- DENOTES HYDRANT
- DENOTES POWER POLE
- DENOTES SANITARY SEWER MANHOLE
- DENOTES LIGHT POLE
- DENOTES SIGN
- DENOTES WATER VALVE
- (99) DENOTES SCHEDULE B-II EXCEPTION NO.
- DENOTES TELEPHONE PEDESTAL
- DENOTES WOOD FENCE
- DENOTES EXISTING CONTOURS
- DENOTES EXISTING SANITARY SEWER
- DENOTES EXISTING STORM SEWER
- DENOTES EXISTING WATER MAIN
- OHU DENOTES OVERHEAD UTILITY
- E DENOTES UNDERGROUND ELECTRIC LINE
- GAS DENOTES UNDERGROUND GAS LINE
- CBL DENOTES UNDERGROUND CABLE LINE
- TEL DENOTES UNDERGROUND TELEPHONE LINE
- FIBER DENOTES UNDERGROUND FIBER OPTIC LINE
- BLDSB DENOTES BUILDING SETBACK LINE
- DENOTES CONTROLLED ACCESS PER DOC. NO. 347
- (2) DENOTES SIGNIFICANT OBSERVATION
- DENOTES DIRECTION OF TRAFFIC FLOW
- DENOTES BITUMINOUS SURFACE
- DENOTES CONCRETE SURFACE
- DENOTES GRAVEL SURFACE
- PIN No. XX-XX-XX-XX-XXXX / Owner: X / Address: Unassigned — DENOTES ADJACENT PARCEL OWNER INFORMATION (PER VILAS COUNTY TAX INFORMATION)

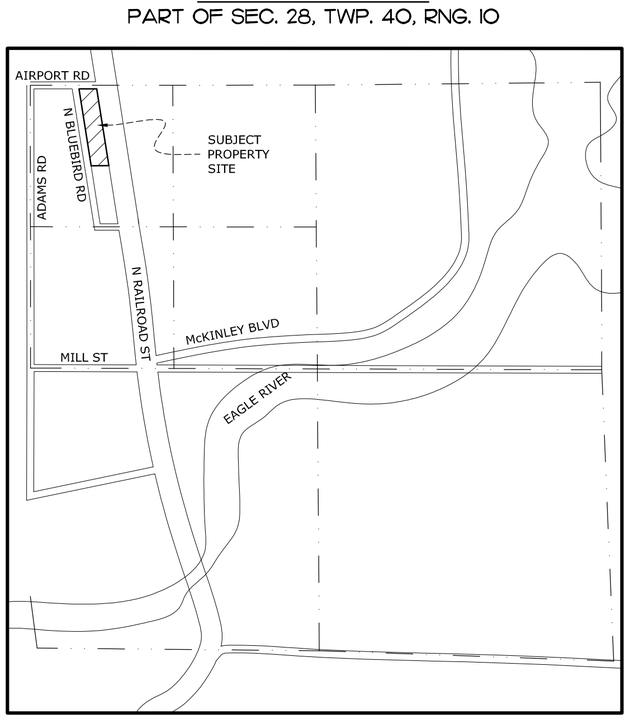
TREE DETAIL

960 26 OAK20 2

- DENOTES ELEVATION
- DENOTES TREE QUANTITY
- DENOTES TREE SIZE IN INCHES
- DENOTES TREE TYPE

VICINITY MAP

PART OF SEC. 28, TWP. 40, RNG. 10



VILAS COUNTY, WISCONSIN
(NO SCALE)

SIGNIFICANT OBSERVATIONS

1. There are existing overhead wires and power poles running along the west boundary line. The guy wire crosses the boundary by 14.1 feet.
2. There is a wood privacy fence that lies on/near the southerly boundary line.
3. There is an underground fiber optic line on/near the north boundary line.

E. G. RUD & SONS, INC.
EST. 1977
Professional Land Surveyors
6776 Lake Drive NE, Suite 110
Lino Lakes, MN 55014
Tel. (651) 361-8200 Fax (651) 361-8701
www.egrud.com

DRAWN BY: BPN	JOB NO: 26.0036AB	DATE: 2/10/2026	
CHECK BY: JER	FIELD CREW: DT/CT		
1	3/20/2026	CLIENT COMMENTS	BPN
2			
3			
NO.	DATE	DESCRIPTION	BY

APPENDIX B

Geotechnical Data

Map Scale: 1:1,340 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N 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 1:20,000.

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: Vilas County, Wisconsin
Survey Area Data: Version 23, 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: Aug 16, 2021—Sep 1, 2021

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
3174B	Rubicon sand, 0 to 6 percent slopes	A	3.1	100.0%
Totals for Area of Interest			**3.1**	**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

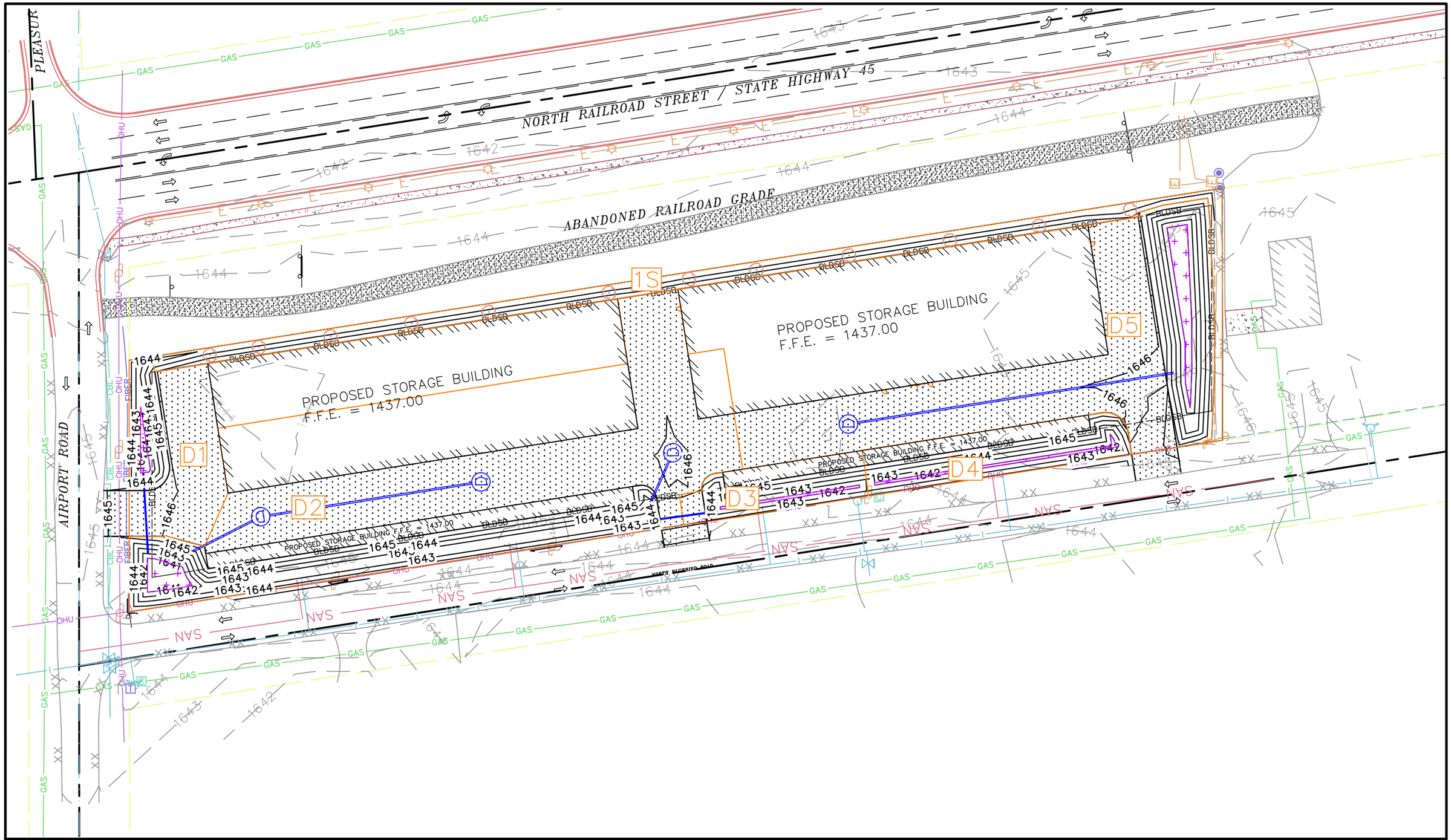
Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

APPENDIX C

Existing & Proposed Drainage Map and Calculations



STAMP/SIGNATURE:	REVISIONS: BY / DATE / DESCRIPTION	TITLE PAGE: *PROPOSED CATCHMENT AREA*
		PROJECT: *U-HAUL EAGLE RIVER*
		LOCATION: *CITY OF EAGLE RIVER, VILAS COUNTY, WISCONSIN*

VREELAND ASSOCIATES LAND SURVEYORS & ENGINEERS
6103 DAWN STREET WESTON, WI. 54476
PHONE NO.: (715) 241-0947
EMAIL: dustin@vreelandassociates.us
WEBSITE: www.vreelandlandsurveying.com
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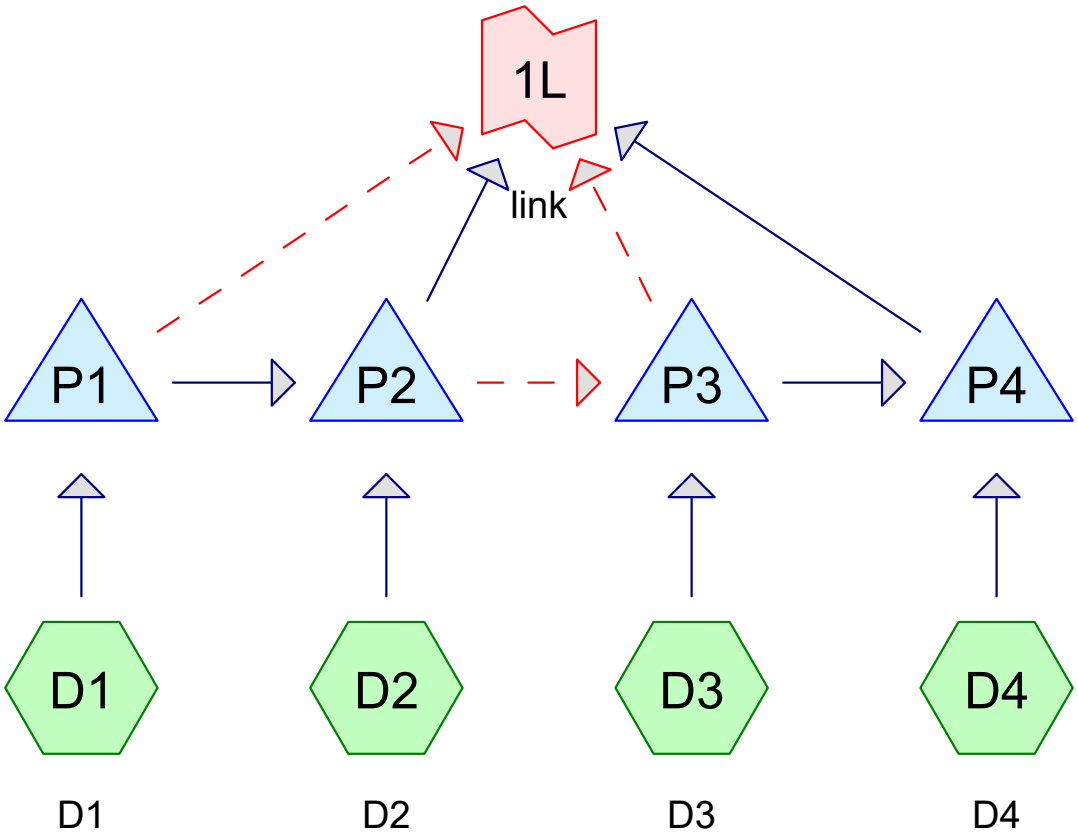
PREPARED FOR:	*DAVID BARNES*
PLAN DATE:	*MAY 28TH, 2026*
DESIGNER: DUSTIN VREELAND	
SURVEYED BY: OTHERS	
FILE NO.: 26-0159	
ORIGINAL PLAN DATE: 5/28/26	
SCALE:	*1" = 60'*
SHEET	**PROP**



Subcat Reach Pond Link

Routing Diagram for 26-0159 north
Prepared by Vreeland Associates, Printed 5/28/2026
HydroCAD® 10.20-8a s/n 09881 © 2025 HydroCAD Software Solutions LLC

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	MSE 24-hr	4	Default	24.00	1	2.22	2
2	2-Year	MSE 24-hr	4	Default	24.00	1	2.56	2
3	10-Year	MSE 24-hr	4	Default	24.00	1	3.79	2
4	100-Year	MSE 24-hr	4	Default	24.00	1	6.43	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.368	39	>75% Grass cover, Good, HSG A (D1, D2, D3, D4)
0.026	98	basin (D1, D2, D3, D4)
0.657	98	building (D1, D2, D3, D4)
0.504	98	parking lot (D1, D2, D3)
1.555	**84**	**TOTAL AREA**

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	P1	1,642.15	1,642.00	55.0	0.0027	0.012	0.0	8.0	0.0	
2	P2	1,643.15	1,643.00	55.0	0.0027	0.012	0.0	12.0	0.0	

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 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 D1: D1 Runoff Area=18,312 sf 90.12% Impervious Runoff Depth=1.80"
Tc=10.0 min CN=WQ Runoff=0.91 cfs 0.063 af

Subcatchment D2: D2 Runoff Area=40,724 sf 78.59% Impervious Runoff Depth=1.57"
Tc=10.0 min CN=WQ Runoff=1.76 cfs 0.122 af

Subcatchment D3: D3 Runoff Area=3,535 sf 39.52% Impervious Runoff Depth=0.79"
Tc=10.0 min CN=WQ Runoff=0.08 cfs 0.005 af

Subcatchment D4: D4 Runoff Area=5,176 sf 34.78% Impervious Runoff Depth=0.69"
Tc=10.0 min CN=WQ Runoff=0.10 cfs 0.007 af

Pond P1: Peak Elev=1,642.91' Storage=168 cf Inflow=0.91 cfs 0.063 af
Discarded=0.02 cfs 0.016 af Primary=0.80 cfs 0.047 af Secondary=0.00 cfs 0.000 af Outflow=0.82 cfs 0.063 af

Pond P2: Peak Elev=1,642.79' Storage=3,521 cf Inflow=2.51 cfs 0.169 af
Discarded=0.31 cfs 0.169 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.31 cfs 0.169 af

Pond P3: Peak Elev=1,642.04' Storage=21 cf Inflow=0.08 cfs 0.005 af
Discarded=0.04 cfs 0.005 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.005 af

Pond P4: Peak Elev=1,642.02' Storage=13 cf Inflow=0.10 cfs 0.007 af
Discarded=0.07 cfs 0.007 af Primary=0.00 cfs 0.000 af Outflow=0.07 cfs 0.007 af

Link 1L: link Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 1.555 ac Runoff Volume = 0.197 af Average Runoff Depth = 1.52"
23.68% Pervious = 0.368 ac 76.32% Impervious = 1.187 ac

Summary for Subcatchment D1: D1

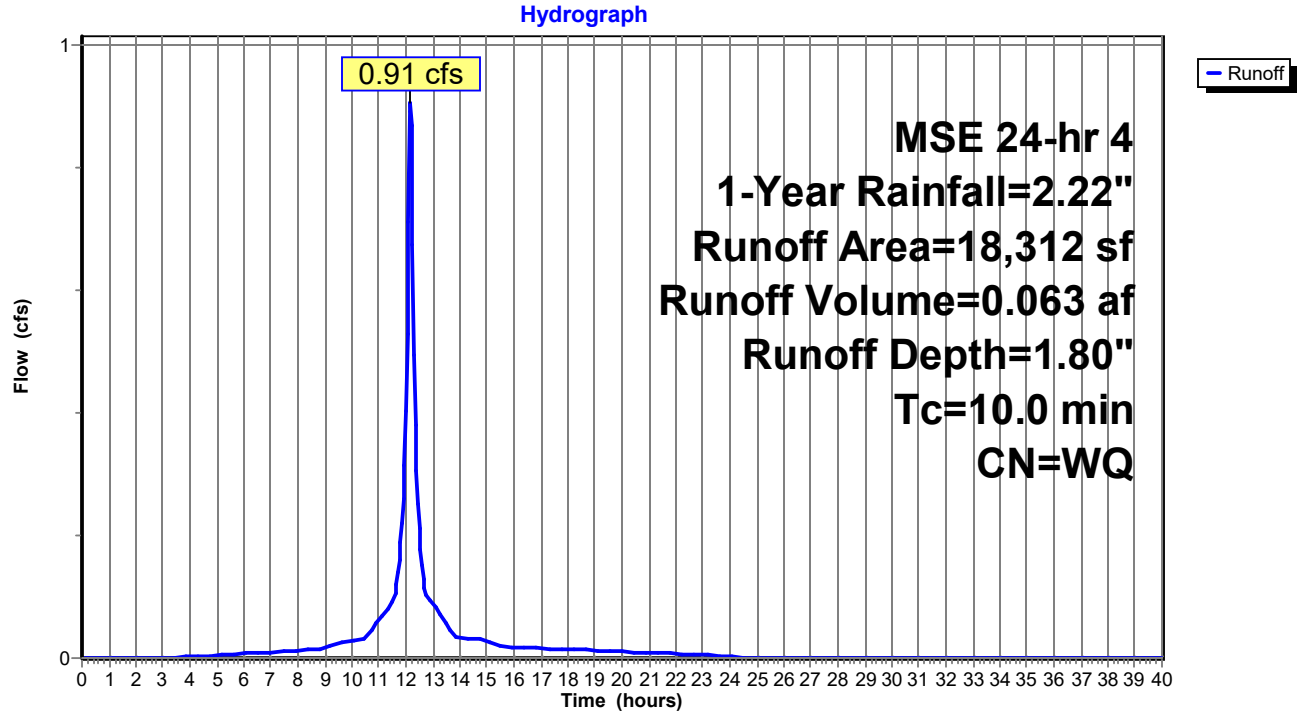
Runoff = 0.91 cfs @ 12.17 hrs, Volume= 0.063 af, Depth= 1.80"
Routed to Pond P1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.22"

	Area (sf)	CN	Description
*	4,776	98	parking lot
*	11,687	98	building
*	40	98	basin
	1,809	39	>75% Grass cover, Good, HSG A
	18,312		Weighted Average
	1,809		9.88% Pervious Area
	16,503		90.12% Impervious Area

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

Subcatchment D1: D1



Summary for Subcatchment D2: D2

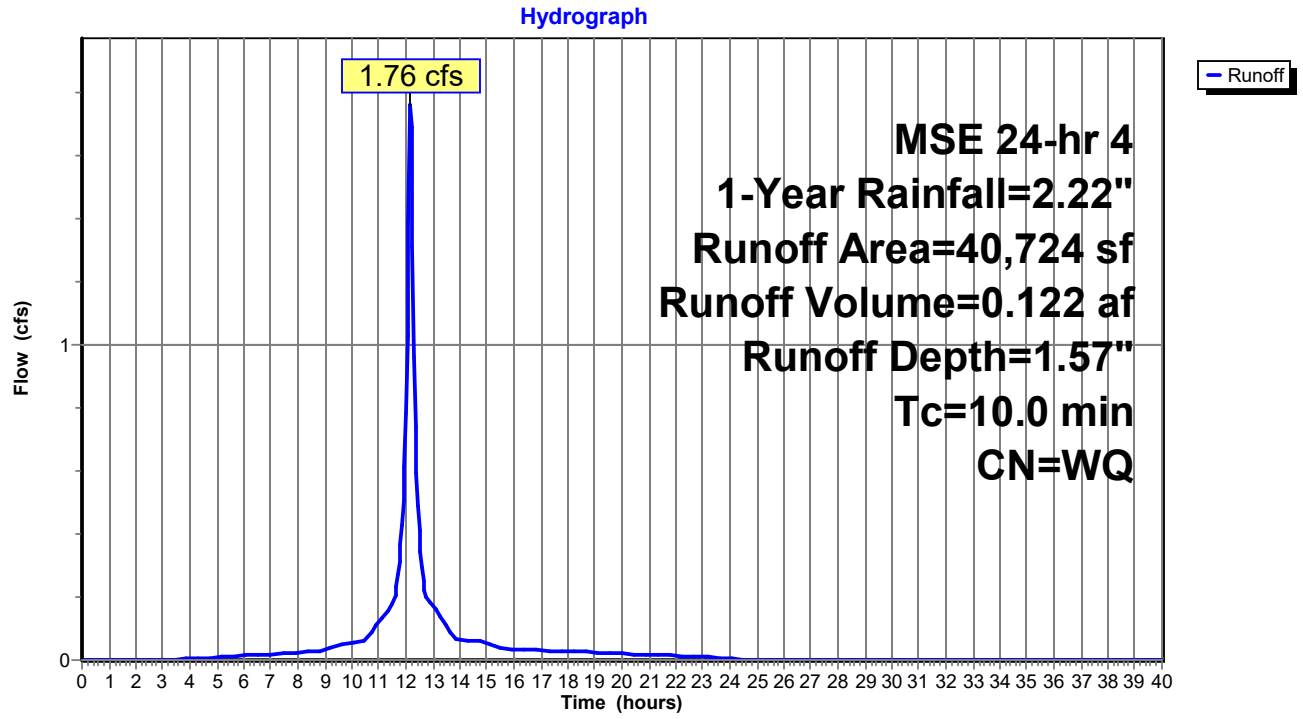
Runoff = 1.76 cfs @ 12.17 hrs, Volume= 0.122 af, Depth= 1.57"
Routed to Pond P2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.22"

	Area (sf)	CN	Description
*	630	98	basin
*	16,865	98	parking lot
	8,720	39	>75% Grass cover, Good, HSG A
*	14,509	98	building
	40,724		Weighted Average
	8,720		21.41% Pervious Area
	32,004		78.59% Impervious Area

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

Subcatchment D2: D2



Summary for Subcatchment D3: D3

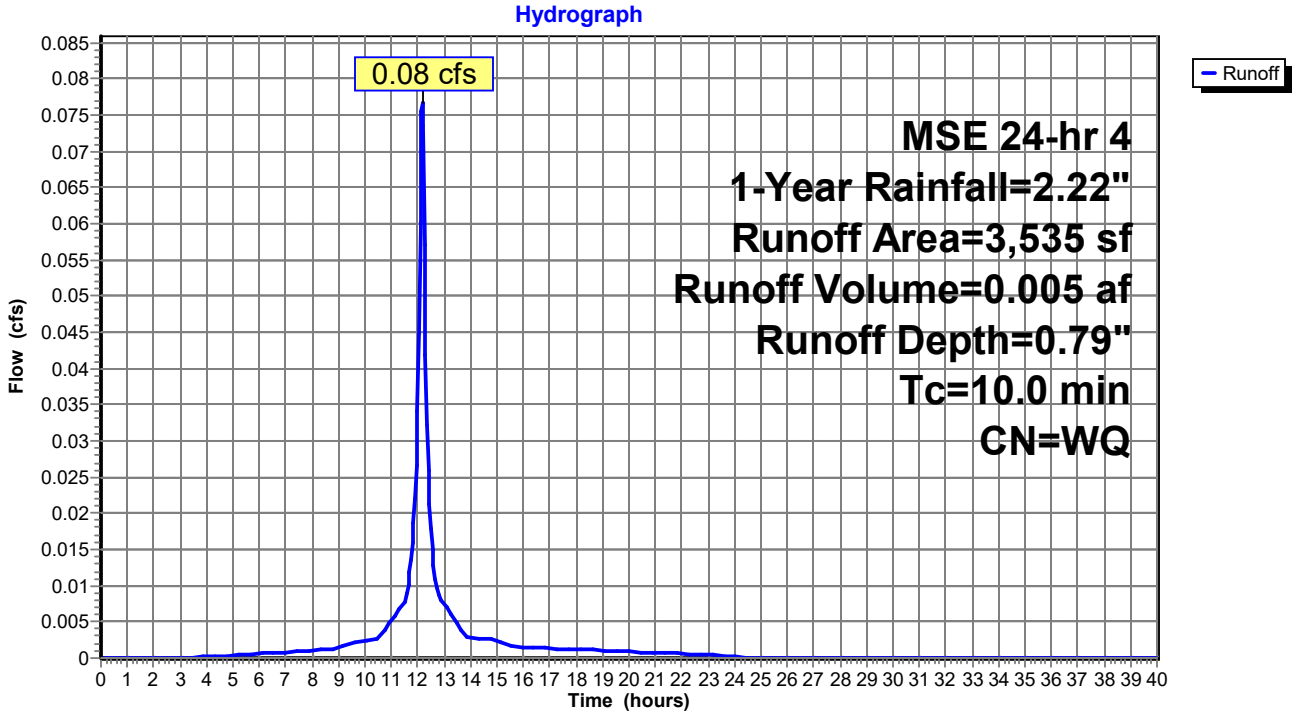
Runoff = 0.08 cfs @ 12.17 hrs, Volume= 0.005 af, Depth= 0.79"
Routed to Pond P3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.22"

	Area (sf)	CN	Description
*	303	98	parking lot
*	924	98	building
*	170	98	basin
	2,138	39	>75% Grass cover, Good, HSG A
	3,535		Weighted Average
	2,138		60.48% Pervious Area
	1,397		39.52% Impervious Area

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

Subcatchment D3: D3



Summary for Subcatchment D4: D4

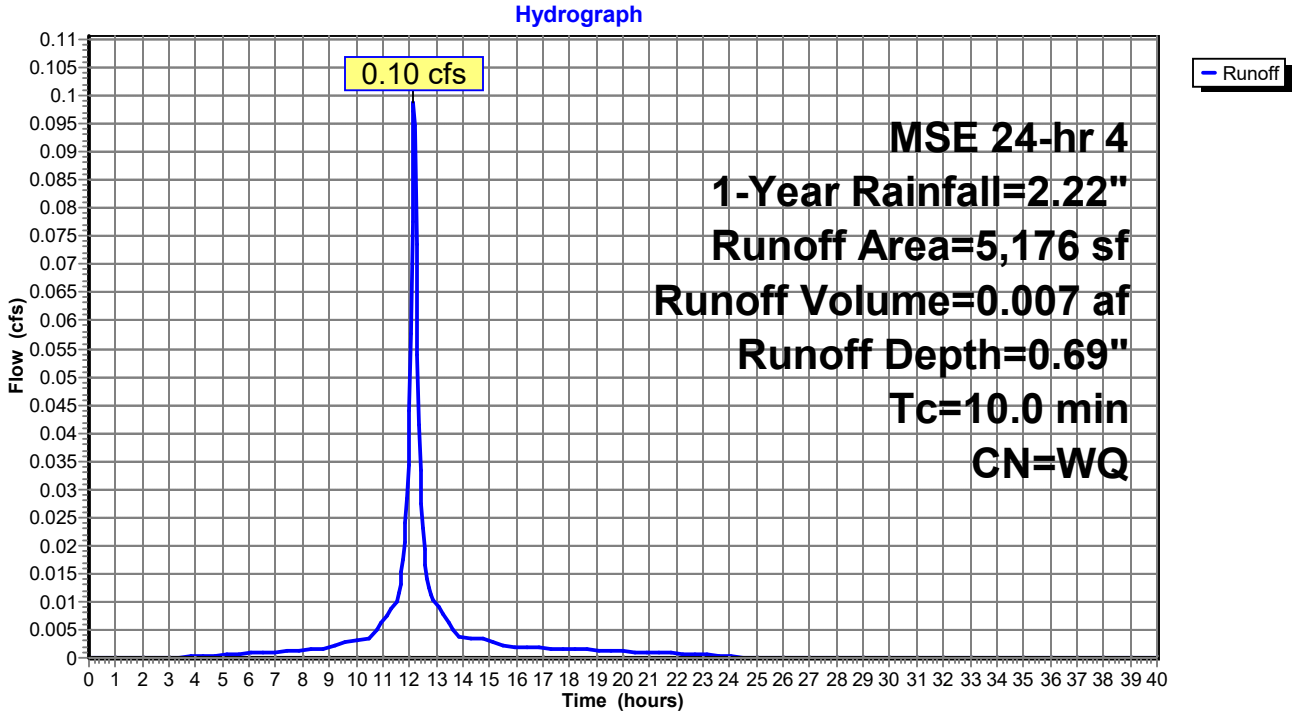
Runoff = 0.10 cfs @ 12.17 hrs, Volume= 0.007 af, Depth= 0.69"
Routed to Pond P4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.22"

	Area (sf)	CN	Description
*	1,500	98	building
*	300	98	basin
	3,376	39	>75% Grass cover, Good, HSG A
	5,176		Weighted Average
	3,376		65.22% Pervious Area
	1,800		34.78% Impervious Area

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

Subcatchment D4: D4



Summary for Pond P1:

Inflow Area = 0.420 ac, 90.12% Impervious, Inflow Depth = 1.80" for 1-Year event
Inflow = 0.91 cfs @ 12.17 hrs, Volume= 0.063 af
Outflow = 0.82 cfs @ 12.21 hrs, Volume= 0.063 af, Atten= 9%, Lag= 2.7 min
Discarded = 0.02 cfs @ 12.21 hrs, Volume= 0.016 af
Primary = 0.80 cfs @ 12.21 hrs, Volume= 0.047 af
Routed to Pond P2 :
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,642.91' @ 12.21 hrs Surf.Area= 285 sf Storage= 168 cf

Plug-Flow detention time= 20.2 min calculated for 0.063 af (100% of inflow)
Center-of-Mass det. time= 20.4 min (785.4 - 765.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,641.00'	11,161 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,641.00	1	0	0
1,642.00	40	21	21
1,643.00	310	175	196
1,644.00	810	560	756
1,645.00	20,000	10,405	11,161

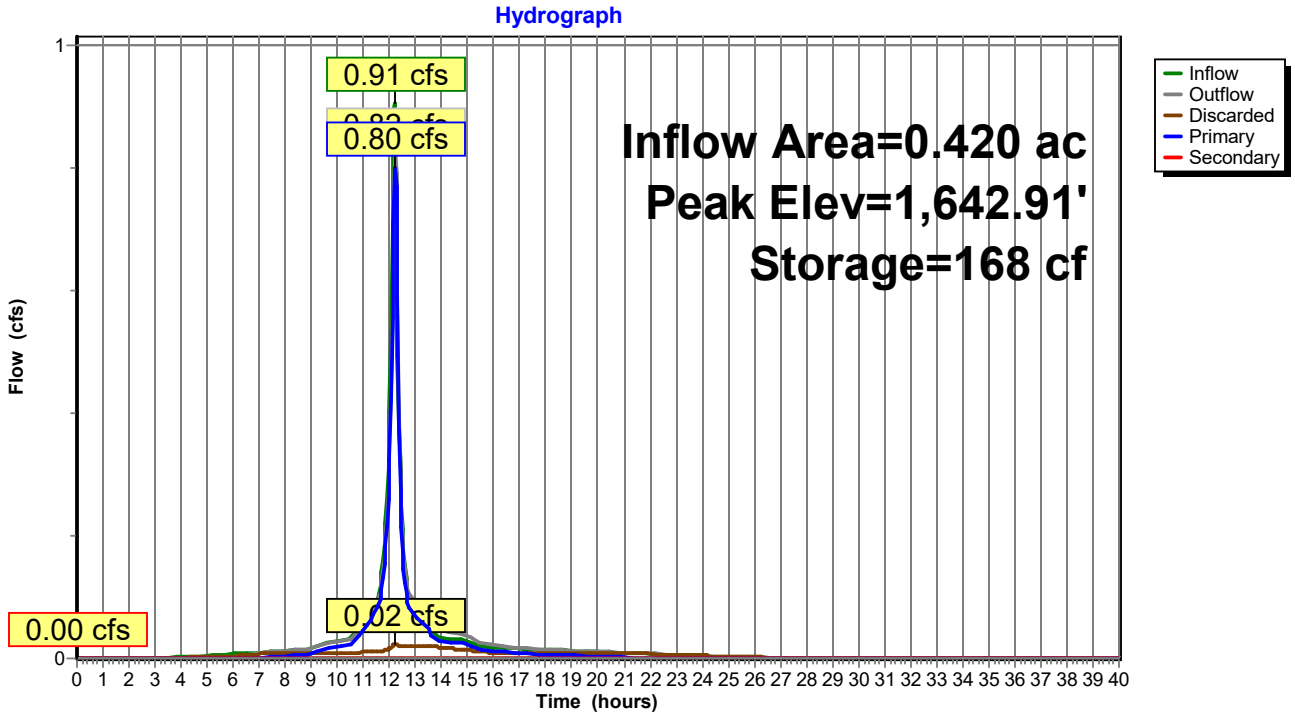
Device	Routing	Invert	Outlet Devices
#1	Secondary	1,644.00'	**5.0' long + 4.0 '/' SideZ x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,641.00'	**3.600 in/hr Exfiltration over Surface area**
#3	Primary	1,642.15'	**8.0" Round Culvert** L= 55.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,642.15' / 1,642.00' S= 0.0027 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Discarded OutFlow Max=0.02 cfs @ 12.21 hrs HW=1,642.90' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.79 cfs @ 12.21 hrs HW=1,642.90' TW=1,642.47' (Dynamic Tailwater)
3=Culvert (Barrel Controls 0.79 cfs @ 2.51 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,641.00' TW=0.00' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond P1:


Hydrograph
Inflow Area=0.420 ac
Peak Elev=1,642.91'
Storage=168 cf
0.91 cfs
0.80 cfs
0.02 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

Summary for Pond P2:

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

Inflow Area = 1.355 ac, 82.17% Impervious, Inflow Depth = 1.50" for 1-Year event
Inflow = 2.51 cfs @ 12.18 hrs, Volume= 0.169 af
Outflow = 0.31 cfs @ 12.71 hrs, Volume= 0.169 af, Atten= 88%, Lag= 32.0 min
Discarded = 0.31 cfs @ 12.71 hrs, Volume= 0.169 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : link
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond P3 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,642.79' @ 12.71 hrs Surf.Area= 3,738 sf Storage= 3,521 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 122.9 min (884.7 - 761.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,641.00'	22,530 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,641.00	500	0	0
1,642.00	1,990	1,245	1,245
1,643.00	4,190	3,090	4,335
1,644.00	6,100	5,145	9,480
1,645.00	20,000	13,050	22,530

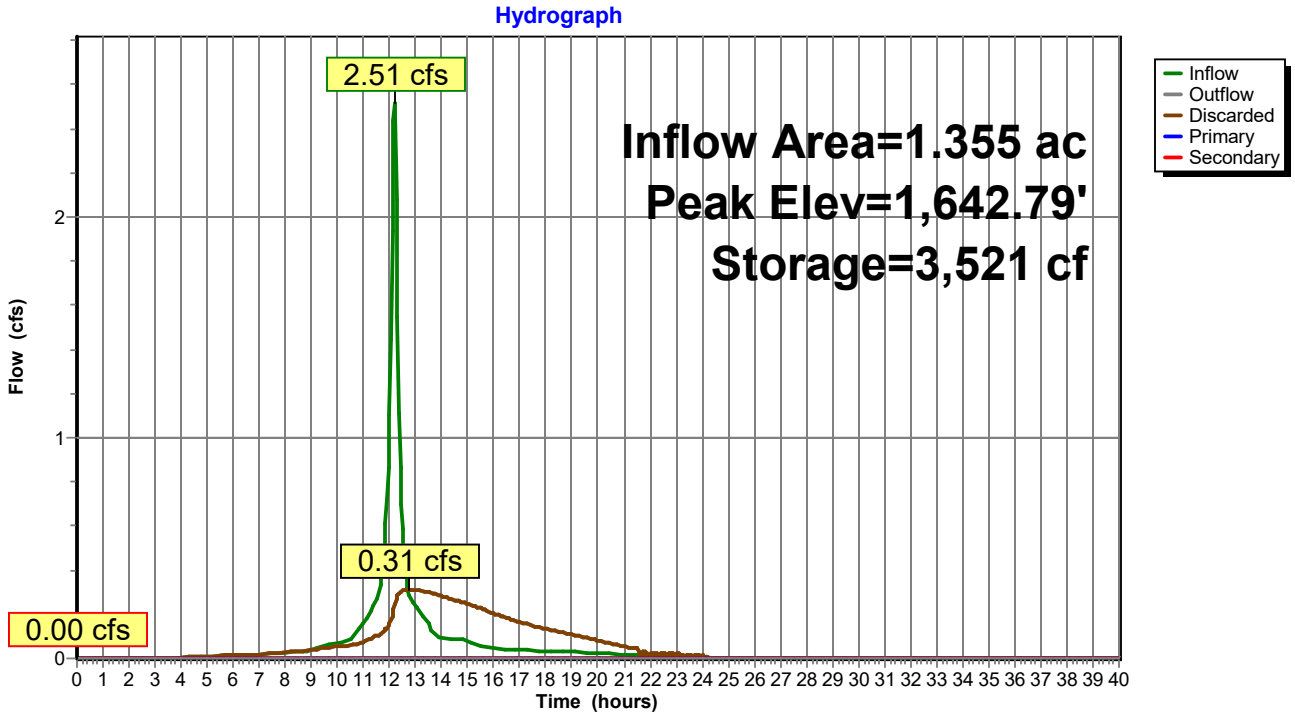
Device	Routing	Invert	Outlet Devices
#1	Primary	1,643.50'	**10.0' long + 4.0 '/' SideZ x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,641.00'	**3.600 in/hr Exfiltration over Surface area**
#3	Secondary	1,643.15'	**12.0" Round Culvert** L= 55.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,643.15' / 1,643.00' S= 0.0027 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.31 cfs @ 12.71 hrs HW=1,642.79' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.31 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,641.00' TW=0.00' (Dynamic Tailwater)
↑**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,641.00' TW=1,642.00' (Dynamic Tailwater)
↑**3=Culvert** (Controls 0.00 cfs)

Pond P2:


Hydrograph
2.51 cfs
0.31 cfs
0.00 cfs
Inflow Area=1.355 ac
Peak Elev=1,642.79'
Storage=3,521 cf
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
0
1
2

Summary for Pond P3:

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=113)

Inflow Area = 0.081 ac, 39.52% Impervious, Inflow Depth = 0.79" for 1-Year event
Inflow = 0.08 cfs @ 12.17 hrs, Volume= 0.005 af
Outflow = 0.04 cfs @ 12.31 hrs, Volume= 0.005 af, Atten= 47%, Lag= 8.5 min
Discarded = 0.04 cfs @ 12.31 hrs, Volume= 0.005 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond P4 :
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,642.04' @ 12.31 hrs Surf.Area= 488 sf Storage= 21 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 2.2 min (767.2 - 765.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	3,820 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	460	0	0
1,643.00	1,090	775	775
1,644.00	5,000	3,045	3,820

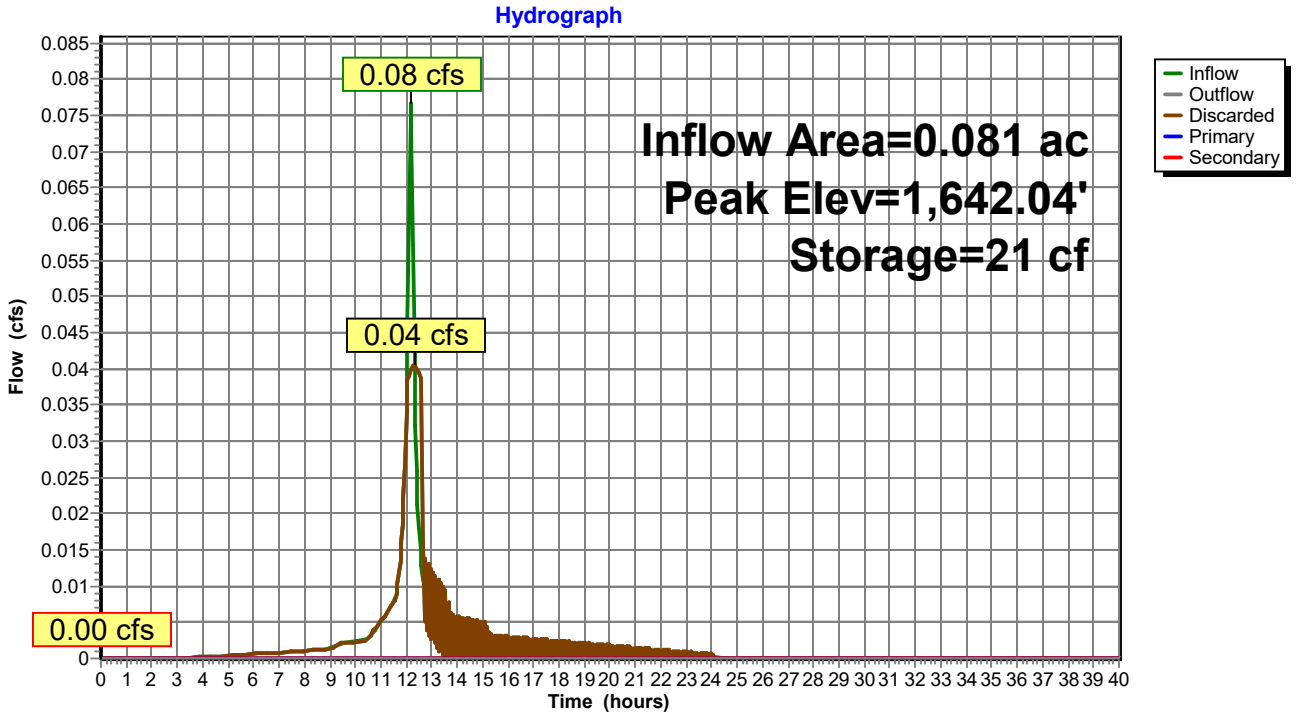
Device	Routing	Invert	Outlet Devices
#1	Secondary	1,643.50'	**10.0' long + 4.0 '/' SideZ x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,642.00'	**3.600 in/hr Exfiltration over Surface area**
#3	Primary	1,643.00'	**5.0' long + 4.0 '/' SideZ 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

Discarded OutFlow Max=0.04 cfs @ 12.31 hrs HW=1,642.04' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,642.00' TW=1,642.00' (Dynamic Tailwater)
3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,642.00' TW=0.00' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond P3:


Hydrograph
Inflow Area=0.081 ac
Peak Elev=1,642.04'
Storage=21 cf
0.08 cfs
0.04 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Pond P4:

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=113)

Inflow Area = 0.200 ac, 36.70% Impervious, Inflow Depth = 0.41" for 1-Year event
Inflow = 0.10 cfs @ 12.17 hrs, Volume= 0.007 af
Outflow = 0.07 cfs @ 12.26 hrs, Volume= 0.007 af, Atten= 31%, Lag= 5.7 min
Discarded = 0.07 cfs @ 12.26 hrs, Volume= 0.007 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,642.02' @ 12.26 hrs Surf.Area= 818 sf Storage= 13 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.7 min (765.7 - 765.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	4,800 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

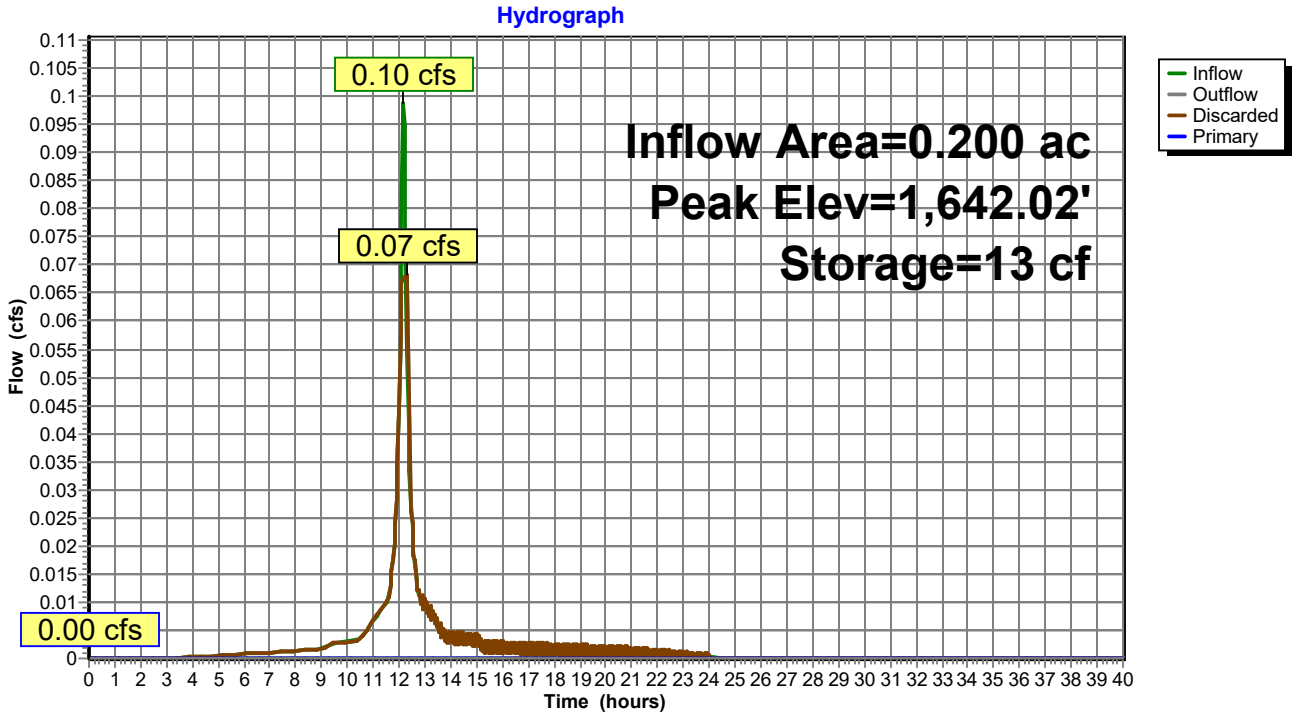
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	800	0	0
1,643.00	1,900	1,350	1,350
1,644.00	5,000	3,450	4,800

Device	Routing	Invert	Outlet Devices
#1	Primary	1,643.50'	**10.0' long + 4.0 '/' SideZ x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,642.00'	**3.600 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.07 cfs @ 12.26 hrs HW=1,642.02' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,642.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P4:

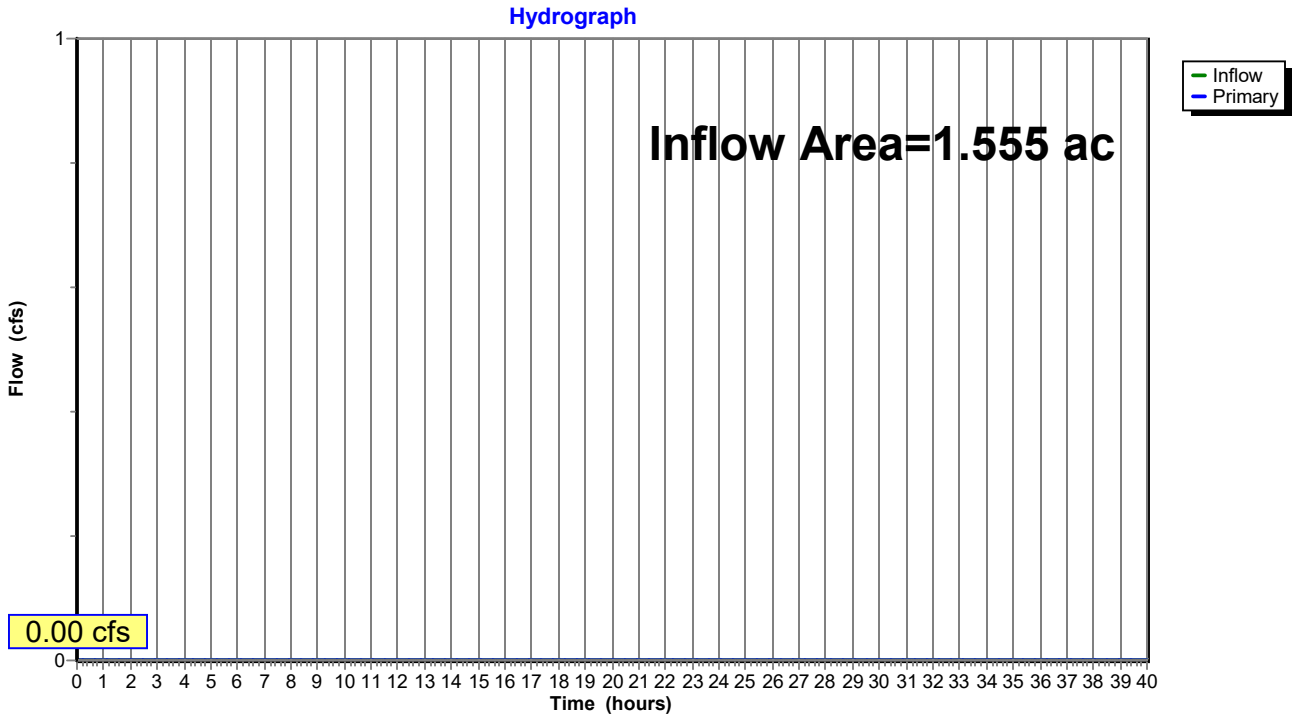

Hydrograph
Inflow Area=0.200 ac
Peak Elev=1,642.02'
Storage=13 cf
0.10 cfs
0.07 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Summary for Link 1L: link

Inflow Area = 1.555 ac, 76.32% Impervious, Inflow Depth = 0.00" for 1-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Link 1L: link



Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 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 D1: D1 Runoff Area=18,312 sf 90.12% Impervious Runoff Depth=2.10"
Tc=10.0 min CN=WQ Runoff=1.05 cfs 0.074 af

Subcatchment D2: D2 Runoff Area=40,724 sf 78.59% Impervious Runoff Depth=1.83"
Tc=10.0 min CN=WQ Runoff=2.04 cfs 0.143 af

Subcatchment D3: D3 Runoff Area=3,535 sf 39.52% Impervious Runoff Depth=0.92"
Tc=10.0 min CN=WQ Runoff=0.09 cfs 0.006 af

Subcatchment D4: D4 Runoff Area=5,176 sf 34.78% Impervious Runoff Depth=0.81"
Tc=10.0 min CN=WQ Runoff=0.11 cfs 0.008 af

Pond P1: Peak Elev=1,643.02' Storage=201 cf Inflow=1.05 cfs 0.074 af
Discarded=0.03 cfs 0.018 af Primary=0.88 cfs 0.056 af Secondary=0.00 cfs 0.000 af Outflow=0.91 cfs 0.074 af

Pond P2: Peak Elev=1,642.96' Storage=4,176 cf Inflow=2.87 cfs 0.198 af
Discarded=0.34 cfs 0.199 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.34 cfs 0.199 af

Pond P3: Peak Elev=1,642.06' Storage=30 cf Inflow=0.09 cfs 0.006 af
Discarded=0.04 cfs 0.006 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.006 af

Pond P4: Peak Elev=1,642.03' Storage=23 cf Inflow=0.11 cfs 0.008 af
Discarded=0.07 cfs 0.008 af Primary=0.00 cfs 0.000 af Outflow=0.07 cfs 0.008 af

Link 1L: link Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 1.555 ac Runoff Volume = 0.231 af Average Runoff Depth = 1.78"
23.68% Pervious = 0.368 ac 76.32% Impervious = 1.187 ac

Summary for Subcatchment D1: D1

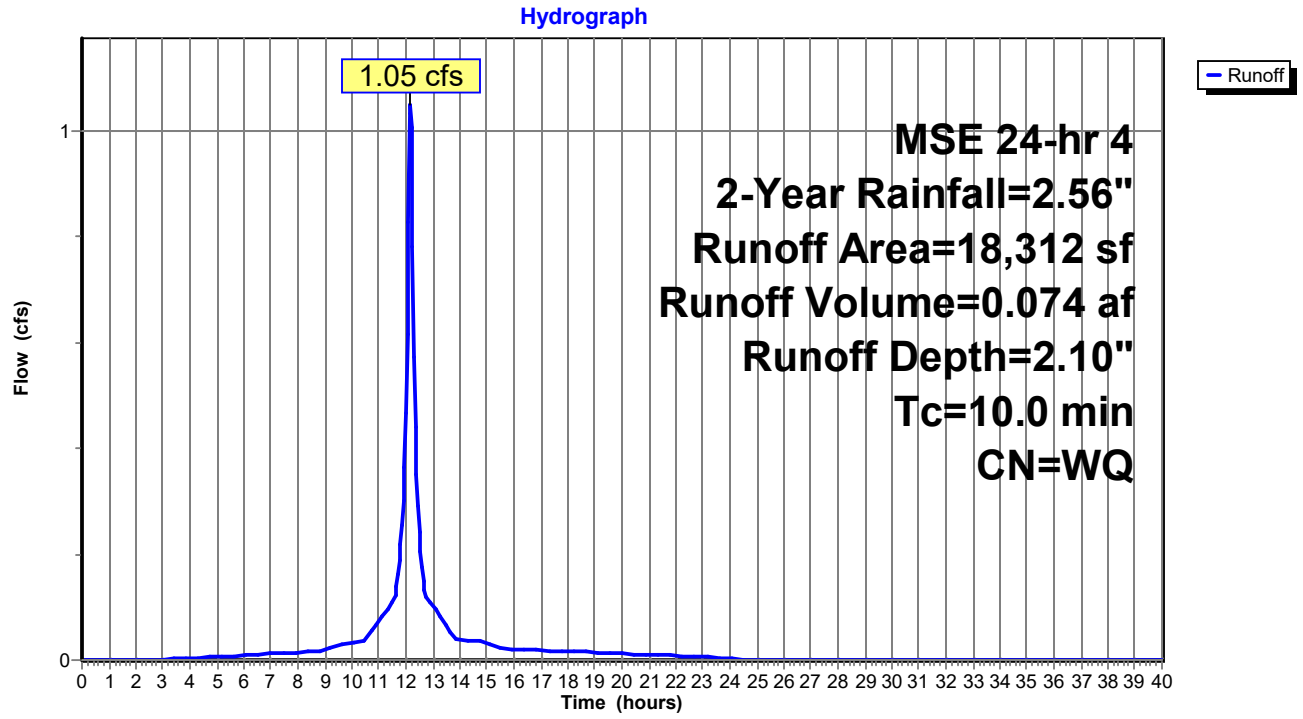
Runoff = 1.05 cfs @ 12.17 hrs, Volume= 0.074 af, Depth= 2.10"
Routed to Pond P1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.56"

	Area (sf)	CN	Description
*	4,776	98	parking lot
*	11,687	98	building
*	40	98	basin
	1,809	39	>75% Grass cover, Good, HSG A
	18,312		Weighted Average
	1,809		9.88% Pervious Area
	16,503		90.12% Impervious Area

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

Subcatchment D1: D1



Summary for Subcatchment D2: D2

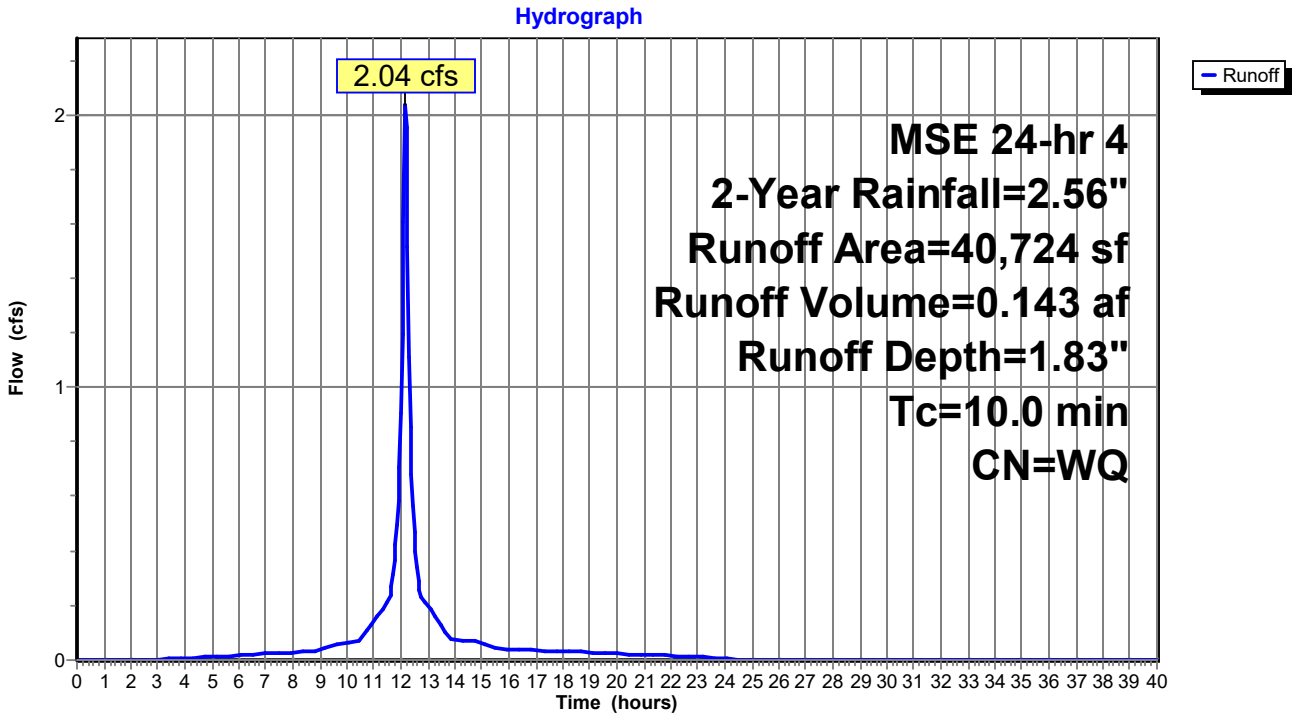
Runoff = 2.04 cfs @ 12.17 hrs, Volume= 0.143 af, Depth= 1.83"
Routed to Pond P2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.56"

	Area (sf)	CN	Description
*	630	98	basin
*	16,865	98	parking lot
	8,720	39	>75% Grass cover, Good, HSG A
*	14,509	98	building
	40,724		Weighted Average
	8,720		21.41% Pervious Area
	32,004		78.59% Impervious Area

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

Subcatchment D2: D2



Summary for Subcatchment D3: D3

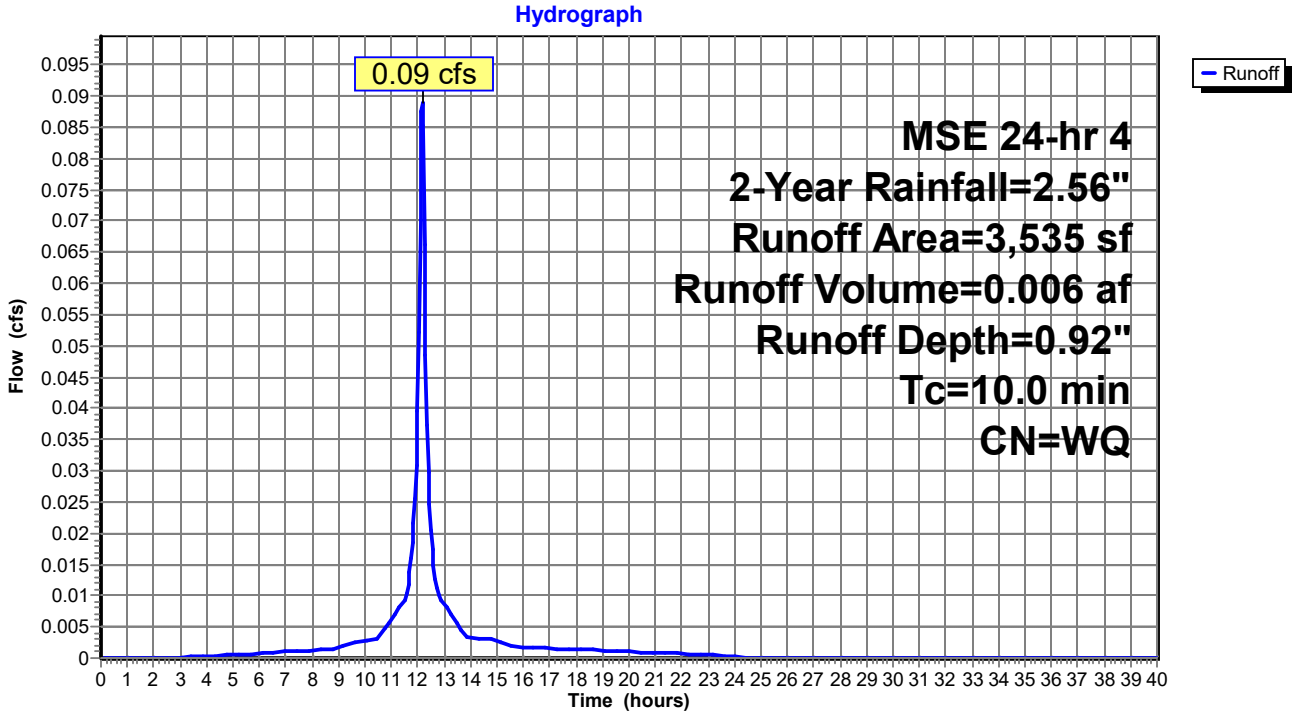
Runoff = 0.09 cfs @ 12.17 hrs, Volume= 0.006 af, Depth= 0.92"
Routed to Pond P3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.56"

	Area (sf)	CN	Description
*	303	98	parking lot
*	924	98	building
*	170	98	basin
	2,138	39	>75% Grass cover, Good, HSG A
	3,535		Weighted Average
	2,138		60.48% Pervious Area
	1,397		39.52% Impervious Area

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

Subcatchment D3: D3



Summary for Subcatchment D4: D4

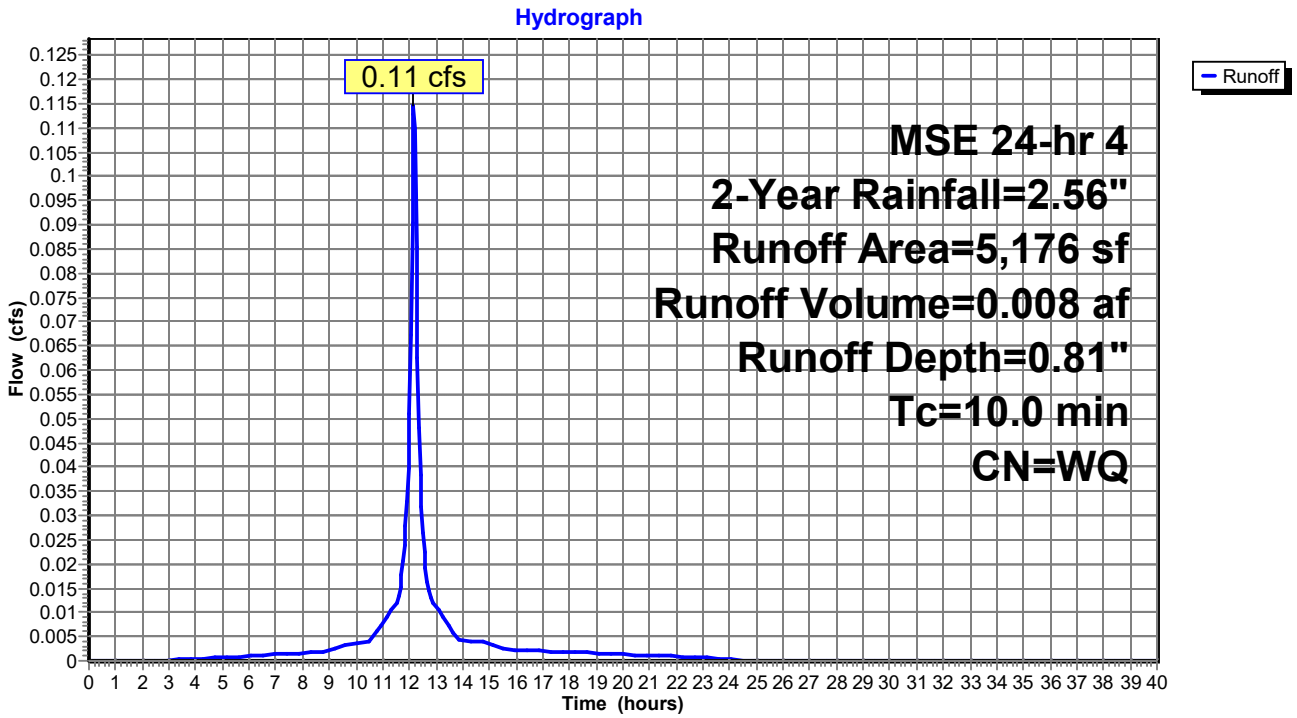
Runoff = 0.11 cfs @ 12.17 hrs, Volume= 0.008 af, Depth= 0.81"
Routed to Pond P4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.56"

	Area (sf)	CN	Description
*	1,500	98	building
*	300	98	basin
	3,376	39	>75% Grass cover, Good, HSG A
	5,176		Weighted Average
	3,376		65.22% Pervious Area
	1,800		34.78% Impervious Area

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

Subcatchment D4: D4



Summary for Pond P1:

Inflow Area = 0.420 ac, 90.12% Impervious, Inflow Depth = 2.10" for 2-Year event
Inflow = 1.05 cfs @ 12.17 hrs, Volume= 0.074 af
Outflow = 0.91 cfs @ 12.22 hrs, Volume= 0.074 af, Atten= 14%, Lag= 3.3 min
Discarded = 0.03 cfs @ 12.22 hrs, Volume= 0.018 af
Primary = 0.88 cfs @ 12.22 hrs, Volume= 0.056 af
Routed to Pond P2 :
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,643.02' @ 12.22 hrs Surf.Area= 319 sf Storage= 201 cf

Plug-Flow detention time= 20.9 min calculated for 0.073 af (100% of inflow)
Center-of-Mass det. time= 21.0 min (783.0 - 762.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,641.00'	11,161 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,641.00	1	0	0
1,642.00	40	21	21
1,643.00	310	175	196
1,644.00	810	560	756
1,645.00	20,000	10,405	11,161

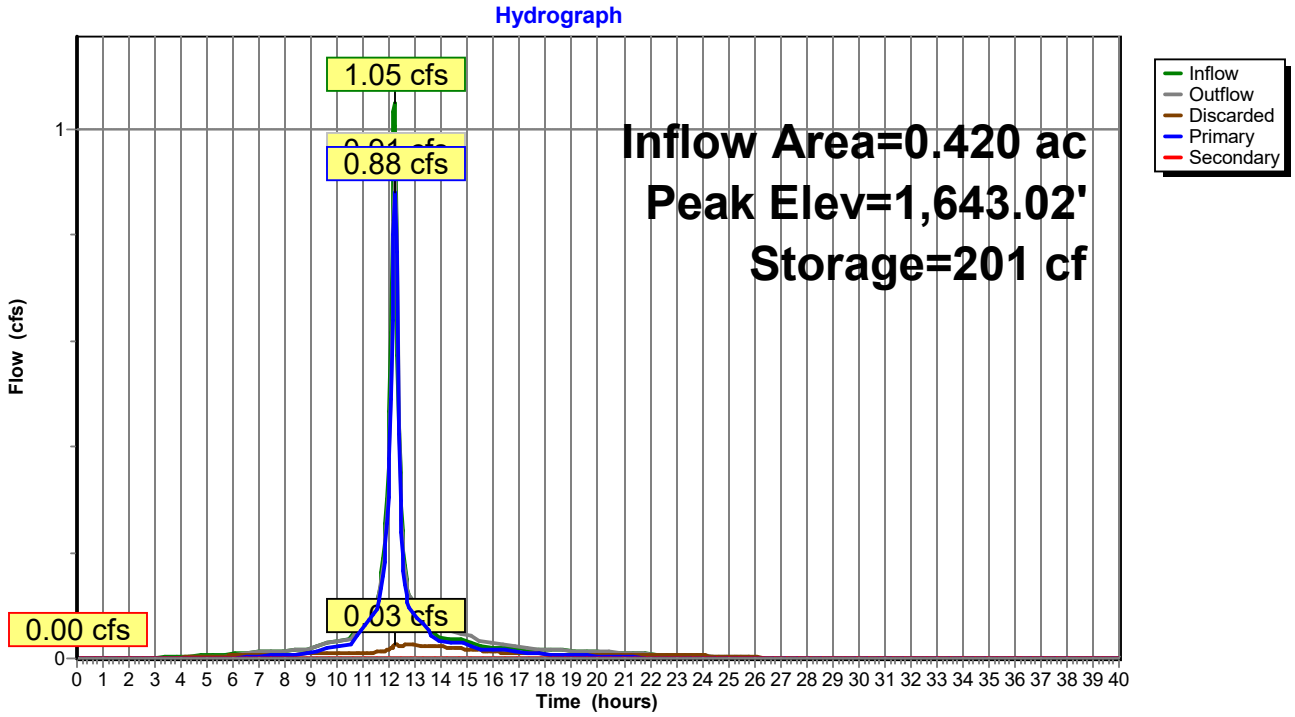
Device	Routing	Invert	Outlet Devices
#1	Secondary	1,644.00'	**5.0' long + 4.0 '/' SideZ x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,641.00'	**3.600 in/hr Exfiltration over Surface area**
#3	Primary	1,642.15'	**8.0" Round Culvert** L= 55.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,642.15' / 1,642.00' S= 0.0027 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Discarded OutFlow Max=0.03 cfs @ 12.22 hrs HW=1,643.01' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.87 cfs @ 12.22 hrs HW=1,643.01' TW=1,642.65' (Dynamic Tailwater)
3=Culvert (Outlet Controls 0.87 cfs @ 2.52 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,641.00' TW=0.00' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond P1:


Hydrograph
1.05 cfs
0.88 cfs
0.03 cfs
0.00 cfs
Inflow Area=0.420 ac
Peak Elev=1,643.02'
Storage=201 cf
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

Summary for Pond P2:

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=16)

Inflow Area = 1.355 ac, 82.17% Impervious, Inflow Depth = 1.76" for 2-Year event
Inflow = 2.87 cfs @ 12.18 hrs, Volume= 0.198 af
Outflow = 0.34 cfs @ 12.74 hrs, Volume= 0.199 af, Atten= 88%, Lag= 33.9 min
Discarded = 0.34 cfs @ 12.74 hrs, Volume= 0.199 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : link
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond P3 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,642.96' @ 12.74 hrs Surf.Area= 4,105 sf Storage= 4,176 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 133.7 min (893.6 - 759.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,641.00'	22,530 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,641.00	500	0	0
1,642.00	1,990	1,245	1,245
1,643.00	4,190	3,090	4,335
1,644.00	6,100	5,145	9,480
1,645.00	20,000	13,050	22,530

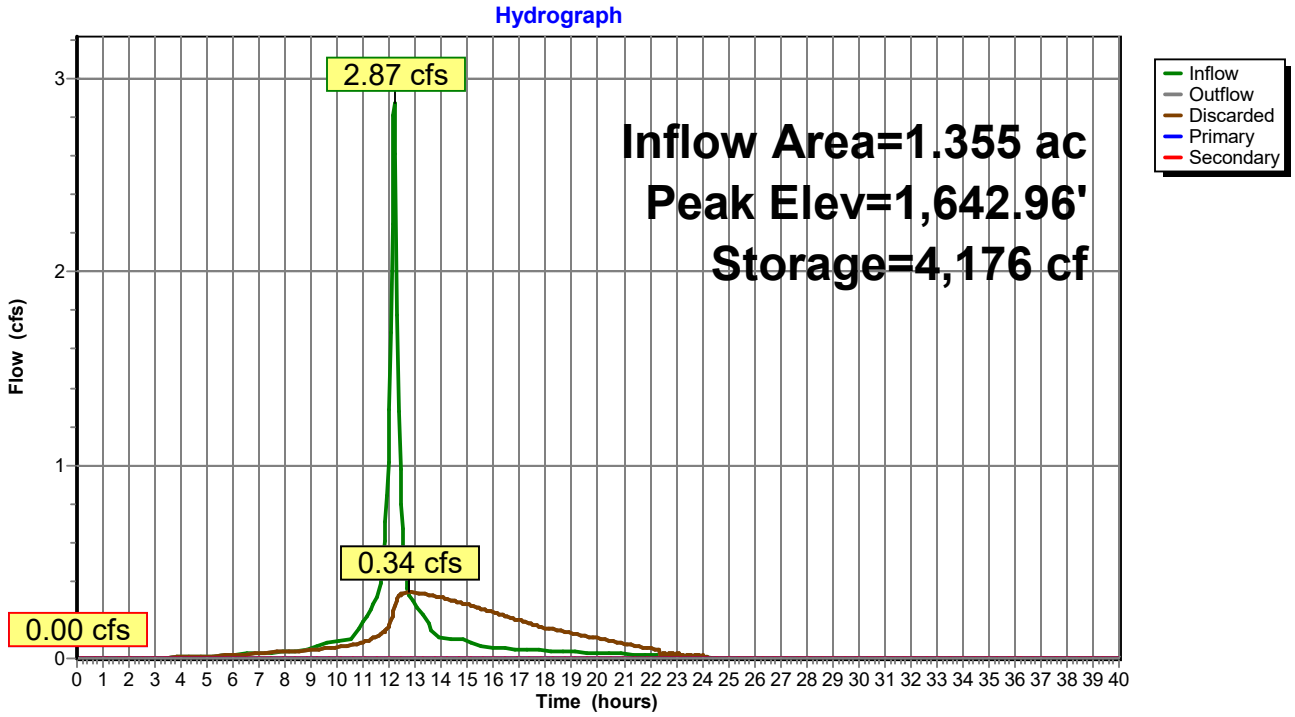
Device	Routing	Invert	Outlet Devices
#1	Primary	1,643.50'	**10.0' long + 4.0 '/' SideZ x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,641.00'	**3.600 in/hr Exfiltration over Surface area**
#3	Secondary	1,643.15'	**12.0" Round Culvert** L= 55.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,643.15' / 1,643.00' S= 0.0027 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.34 cfs @ 12.74 hrs HW=1,642.96' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.34 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,641.00' TW=0.00' (Dynamic Tailwater)
↑**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,641.00' TW=1,642.00' (Dynamic Tailwater)
↑**3=Culvert** (Controls 0.00 cfs)

Pond P2:


Hydrograph
2.87 cfs
0.34 cfs
0.00 cfs
Inflow Area=1.355 ac
Peak Elev=1,642.96'
Storage=4,176 cf
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
0 1 2 3

Summary for Pond P3:

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=112)

Inflow Area = 0.081 ac, 39.52% Impervious, Inflow Depth = 0.92" for 2-Year event
Inflow = 0.09 cfs @ 12.17 hrs, Volume= 0.006 af
Outflow = 0.04 cfs @ 12.33 hrs, Volume= 0.006 af, Atten= 53%, Lag= 9.8 min
Discarded = 0.04 cfs @ 12.33 hrs, Volume= 0.006 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond P4 :
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,642.06' @ 12.33 hrs Surf.Area= 500 sf Storage= 30 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 3.3 min (765.2 - 762.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	3,820 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	460	0	0
1,643.00	1,090	775	775
1,644.00	5,000	3,045	3,820

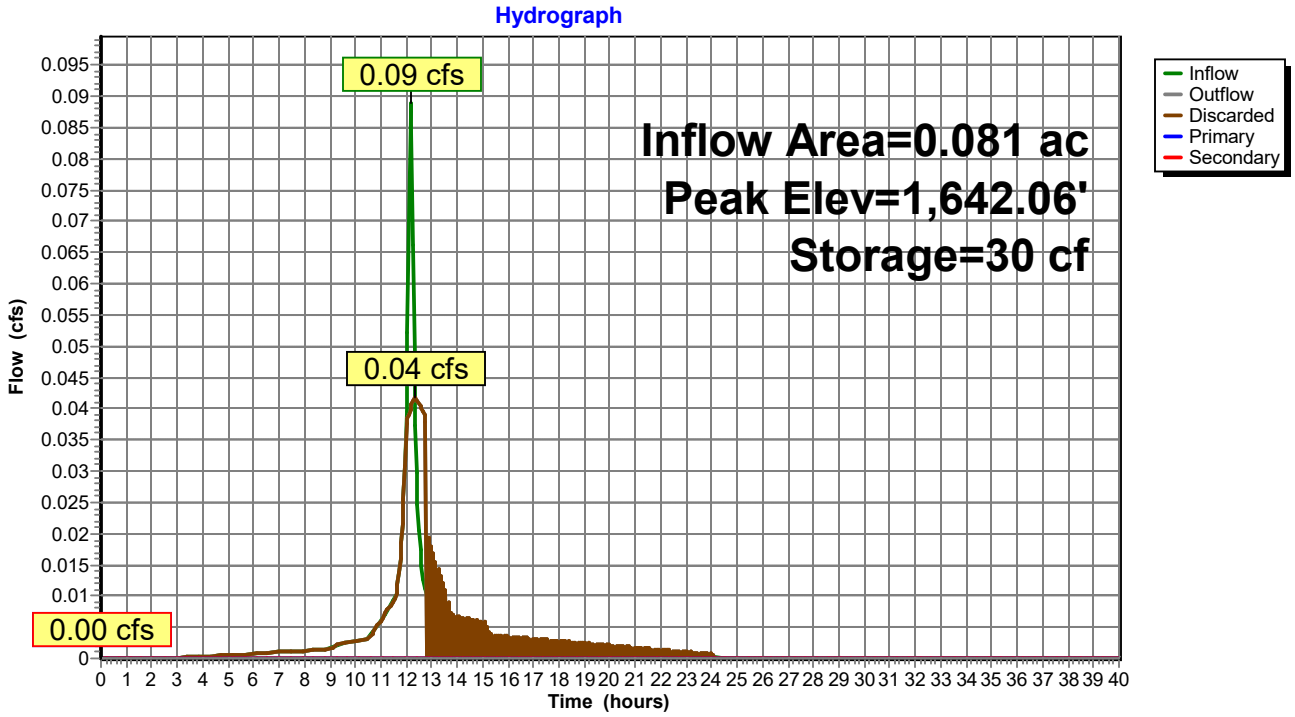
Device	Routing	Invert	Outlet Devices
#1	Secondary	1,643.50'	**10.0' long + 4.0 '/' SideZ x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,642.00'	**3.600 in/hr Exfiltration over Surface area**
#3	Primary	1,643.00'	**5.0' long + 4.0 '/' SideZ 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

Discarded OutFlow Max=0.04 cfs @ 12.33 hrs HW=1,642.06' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,642.00' TW=1,642.00' (Dynamic Tailwater)
3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,642.00' TW=0.00' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond P3:


Hydrograph
0.09 cfs
0.04 cfs
0.00 cfs
Inflow Area=0.081 ac
Peak Elev=1,642.06'
Storage=30 cf
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Pond P4:

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=114)

Inflow Area = 0.200 ac, 36.70% Impervious, Inflow Depth = 0.48" for 2-Year event
Inflow = 0.11 cfs @ 12.17 hrs, Volume= 0.008 af
Outflow = 0.07 cfs @ 12.29 hrs, Volume= 0.008 af, Atten= 40%, Lag= 7.1 min
Discarded = 0.07 cfs @ 12.29 hrs, Volume= 0.008 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,642.03' @ 12.29 hrs Surf.Area= 830 sf Storage= 23 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1.5 min (763.4 - 762.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	4,800 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

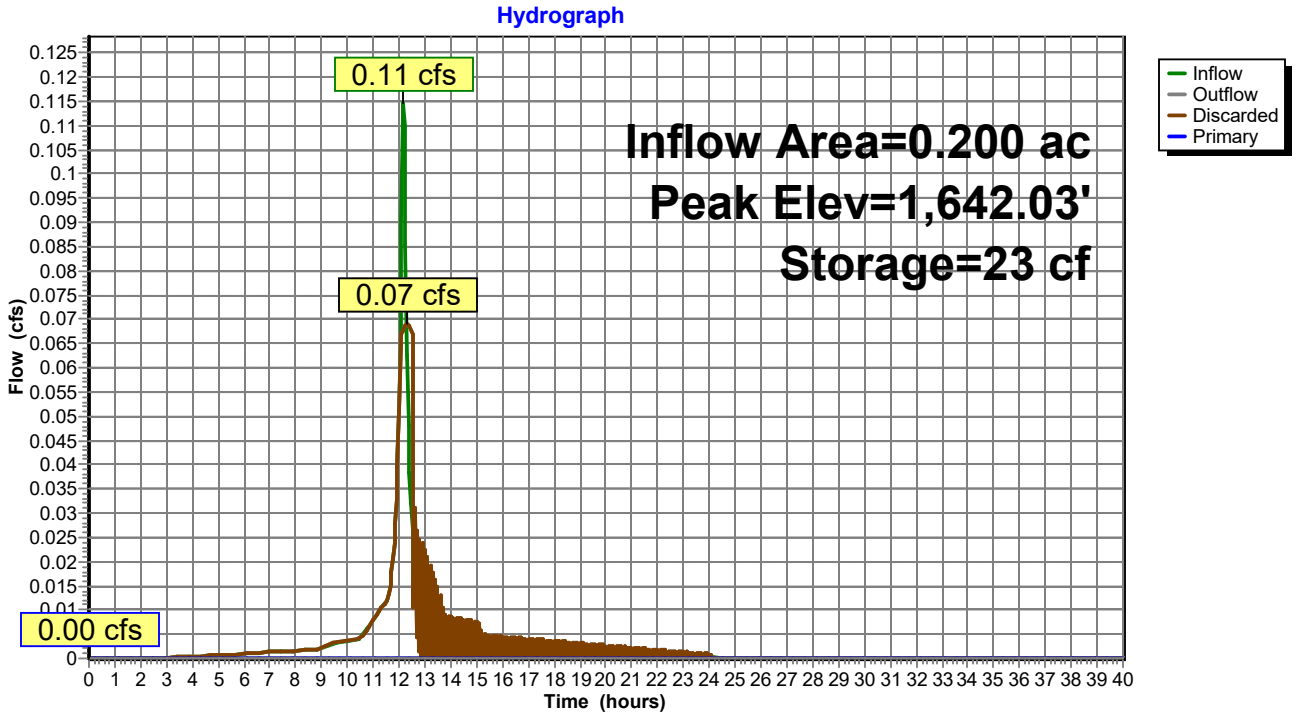
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	800	0	0
1,643.00	1,900	1,350	1,350
1,644.00	5,000	3,450	4,800

Device	Routing	Invert	Outlet Devices
#1	Primary	1,643.50'	**10.0' long + 4.0 '/' SideZ x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,642.00'	**3.600 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.07 cfs @ 12.29 hrs HW=1,642.03' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,642.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P4:

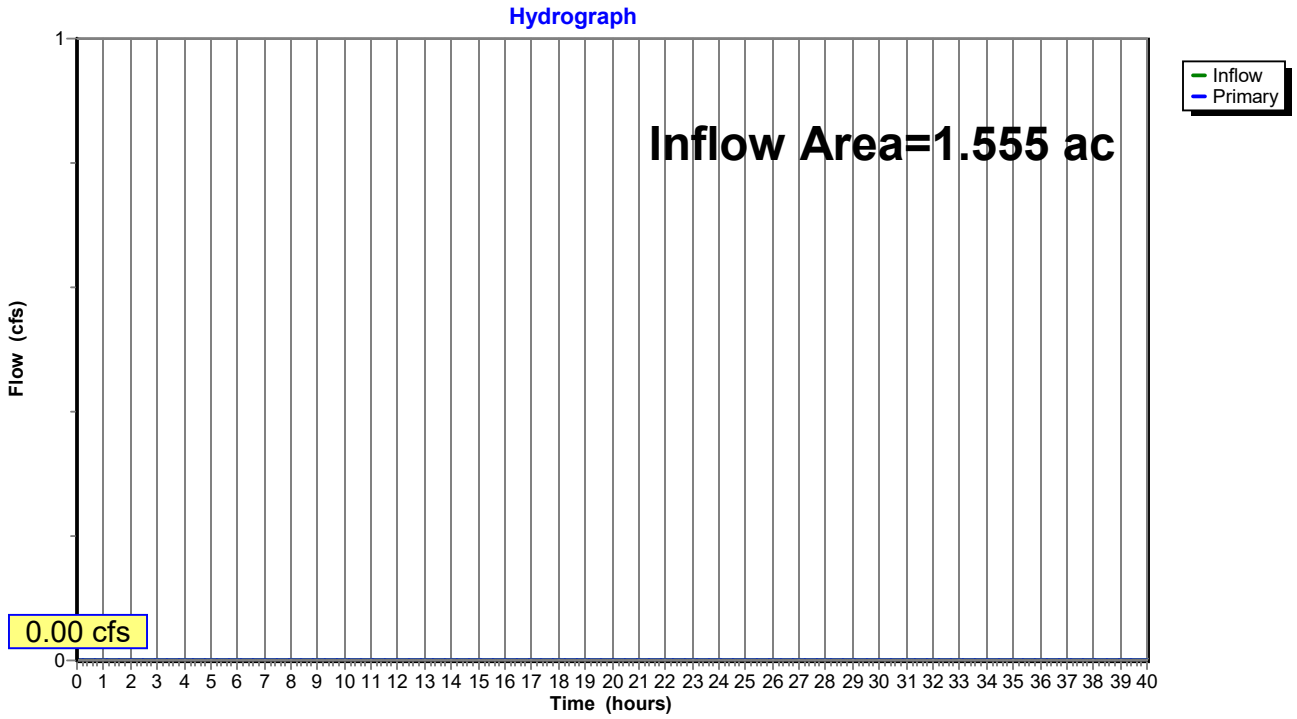

Hydrograph
Inflow Area=0.200 ac
Peak Elev=1,642.03'
Storage=23 cf
0.11 cfs
0.07 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Summary for Link 1L: link

Inflow Area = 1.555 ac, 76.32% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Link 1L: link



Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 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 D1: D1 Runoff Area=18,312 sf 90.12% Impervious Runoff Depth=3.21"
Tc=10.0 min CN=WQ Runoff=1.57 cfs 0.112 af

Subcatchment D2: D2 Runoff Area=40,724 sf 78.59% Impervious Runoff Depth=2.80"
Tc=10.0 min CN=WQ Runoff=3.05 cfs 0.218 af

Subcatchment D3: D3 Runoff Area=3,535 sf 39.52% Impervious Runoff Depth=1.42"
Tc=10.0 min CN=WQ Runoff=0.13 cfs 0.010 af

Subcatchment D4: D4 Runoff Area=5,176 sf 34.78% Impervious Runoff Depth=1.25"
Tc=10.0 min CN=WQ Runoff=0.17 cfs 0.012 af

Pond P1: Peak Elev=1,643.52' Storage=425 cf Inflow=1.57 cfs 0.112 af
Discarded=0.05 cfs 0.026 af Primary=1.02 cfs 0.087 af Secondary=0.00 cfs 0.000 af Outflow=1.07 cfs 0.112 af

Pond P2: Peak Elev=1,643.44' Storage=6,364 cf Inflow=4.07 cfs 0.305 af
Discarded=0.42 cfs 0.287 af Primary=0.00 cfs 0.000 af Secondary=0.21 cfs 0.018 af Outflow=0.63 cfs 0.305 af

Pond P3: Peak Elev=1,642.77' Storage=538 cf Inflow=0.23 cfs 0.027 af
Discarded=0.08 cfs 0.027 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.08 cfs 0.027 af

Pond P4: Peak Elev=1,642.08' Storage=67 cf Inflow=0.17 cfs 0.012 af
Discarded=0.07 cfs 0.013 af Primary=0.00 cfs 0.000 af Outflow=0.07 cfs 0.013 af

Link 1L: link Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 1.555 ac Runoff Volume = 0.353 af Average Runoff Depth = 2.72"
23.68% Pervious = 0.368 ac 76.32% Impervious = 1.187 ac

Summary for Subcatchment D1: D1

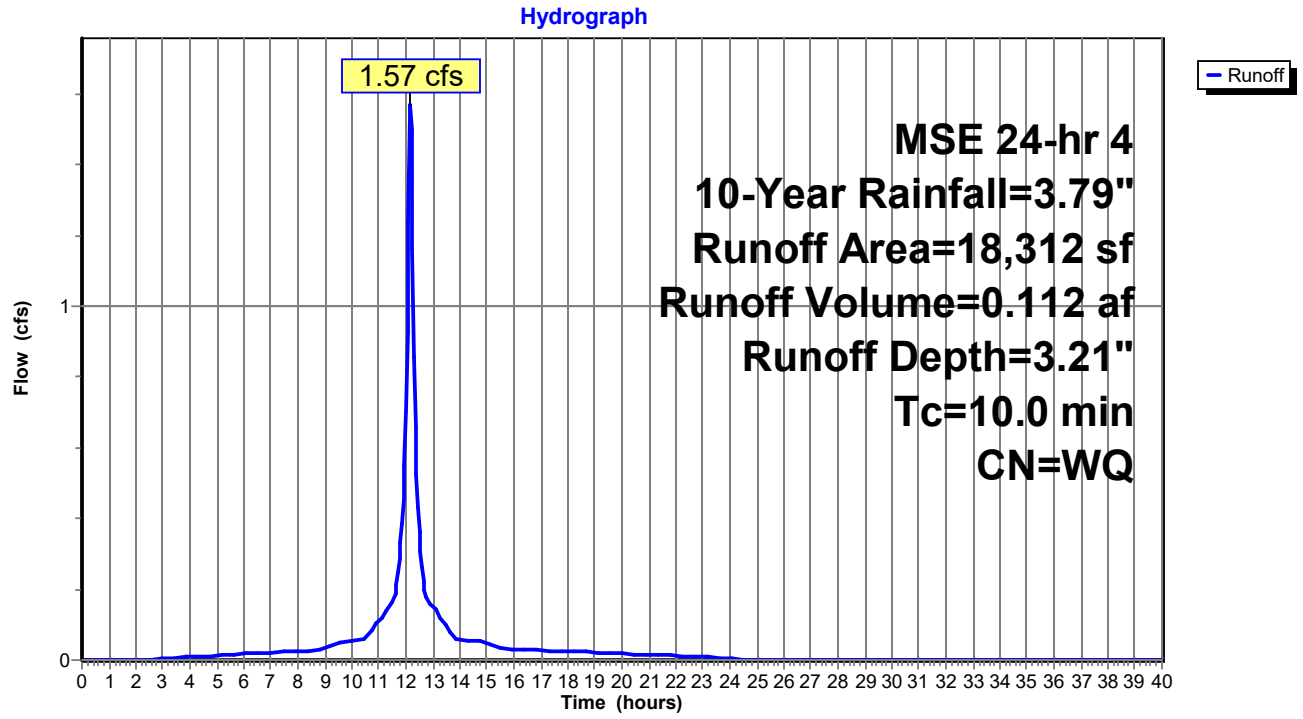
Runoff = 1.57 cfs @ 12.17 hrs, Volume= 0.112 af, Depth= 3.21"
Routed to Pond P1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.79"

	Area (sf)	CN	Description
*	4,776	98	parking lot
*	11,687	98	building
*	40	98	basin
	1,809	39	>75% Grass cover, Good, HSG A
	18,312		Weighted Average
	1,809		9.88% Pervious Area
	16,503		90.12% Impervious Area

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

Subcatchment D1: D1



Summary for Subcatchment D2: D2

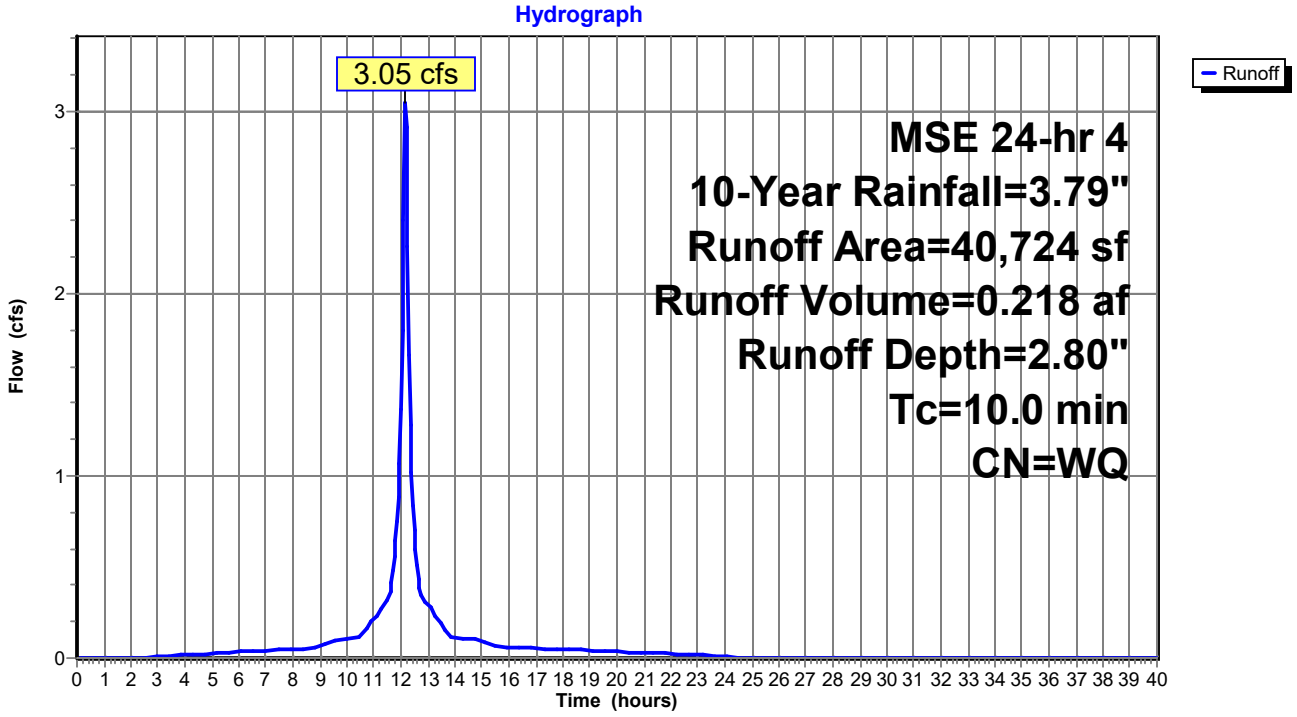
Runoff = 3.05 cfs @ 12.17 hrs, Volume= 0.218 af, Depth= 2.80"
Routed to Pond P2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.79"

	Area (sf)	CN	Description
*	630	98	basin
*	16,865	98	parking lot
	8,720	39	>75% Grass cover, Good, HSG A
*	14,509	98	building
	40,724		Weighted Average
	8,720		21.41% Pervious Area
	32,004		78.59% Impervious Area

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

Subcatchment D2: D2



Summary for Subcatchment D3: D3

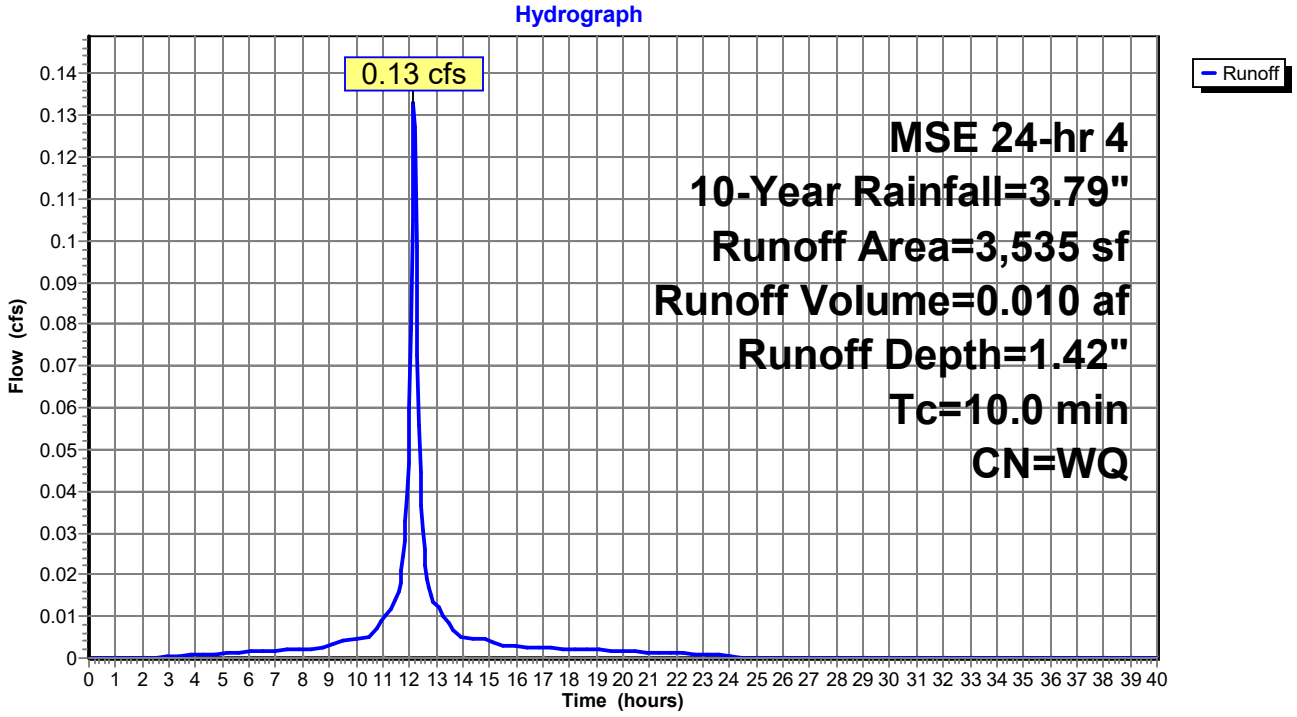
Runoff = 0.13 cfs @ 12.17 hrs, Volume= 0.010 af, Depth= 1.42"
Routed to Pond P3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.79"

	Area (sf)	CN	Description
*	303	98	parking lot
*	924	98	building
*	170	98	basin
	2,138	39	>75% Grass cover, Good, HSG A
	3,535		Weighted Average
	2,138		60.48% Pervious Area
	1,397		39.52% Impervious Area

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

Subcatchment D3: D3



Summary for Subcatchment D4: D4

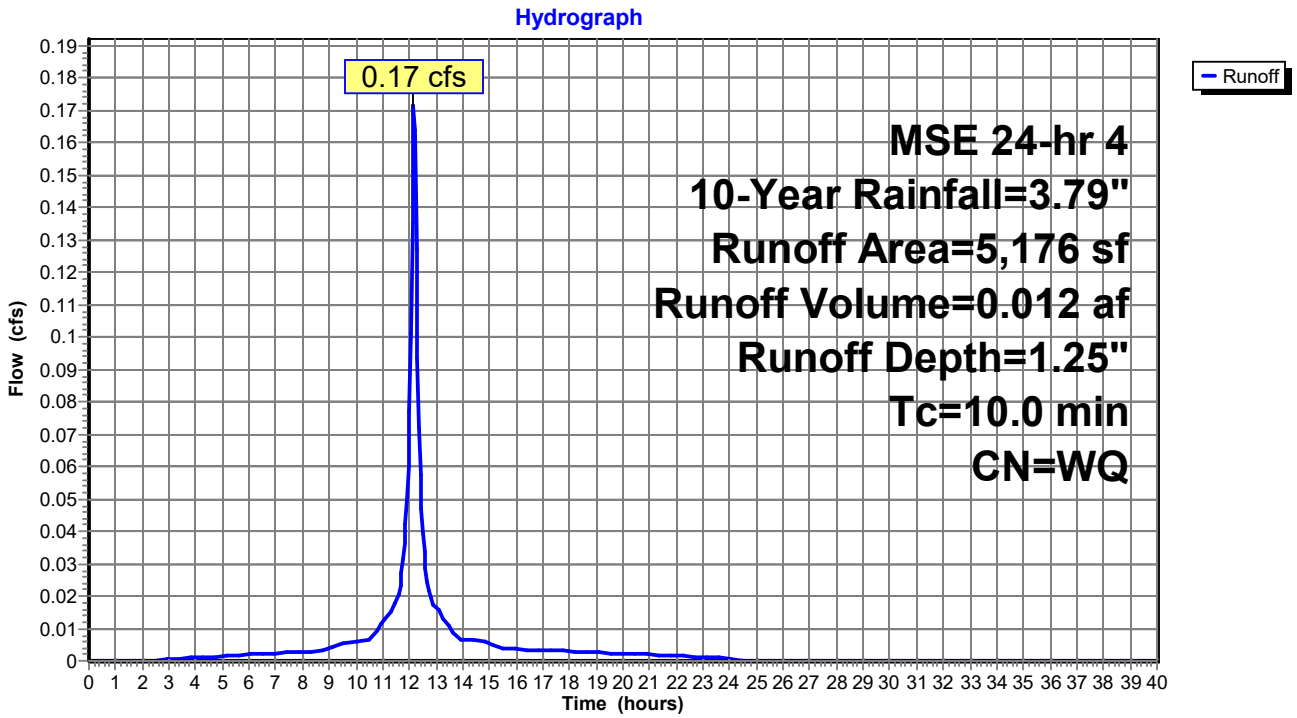
Runoff = 0.17 cfs @ 12.17 hrs, Volume= 0.012 af, Depth= 1.25"
Routed to Pond P4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.79"

	Area (sf)	CN	Description
*	1,500	98	building
*	300	98	basin
	3,376	39	>75% Grass cover, Good, HSG A
	5,176		Weighted Average
	3,376		65.22% Pervious Area
	1,800		34.78% Impervious Area

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

Subcatchment D4: D4



Summary for Pond P1:

Inflow Area = 0.420 ac, 90.12% Impervious, Inflow Depth = 3.21" for 10-Year event
Inflow = 1.57 cfs @ 12.17 hrs, Volume= 0.112 af
Outflow = 1.07 cfs @ 12.19 hrs, Volume= 0.112 af, Atten= 32%, Lag= 1.4 min
Discarded = 0.05 cfs @ 12.30 hrs, Volume= 0.026 af
Primary = 1.02 cfs @ 12.19 hrs, Volume= 0.087 af
Routed to Pond P2 :
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,643.52' @ 12.30 hrs Surf.Area= 570 sf Storage= 425 cf

Plug-Flow detention time= 23.6 min calculated for 0.112 af (100% of inflow)
Center-of-Mass det. time= 23.8 min (778.7 - 754.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,641.00'	11,161 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,641.00	1	0	0
1,642.00	40	21	21
1,643.00	310	175	196
1,644.00	810	560	756
1,645.00	20,000	10,405	11,161

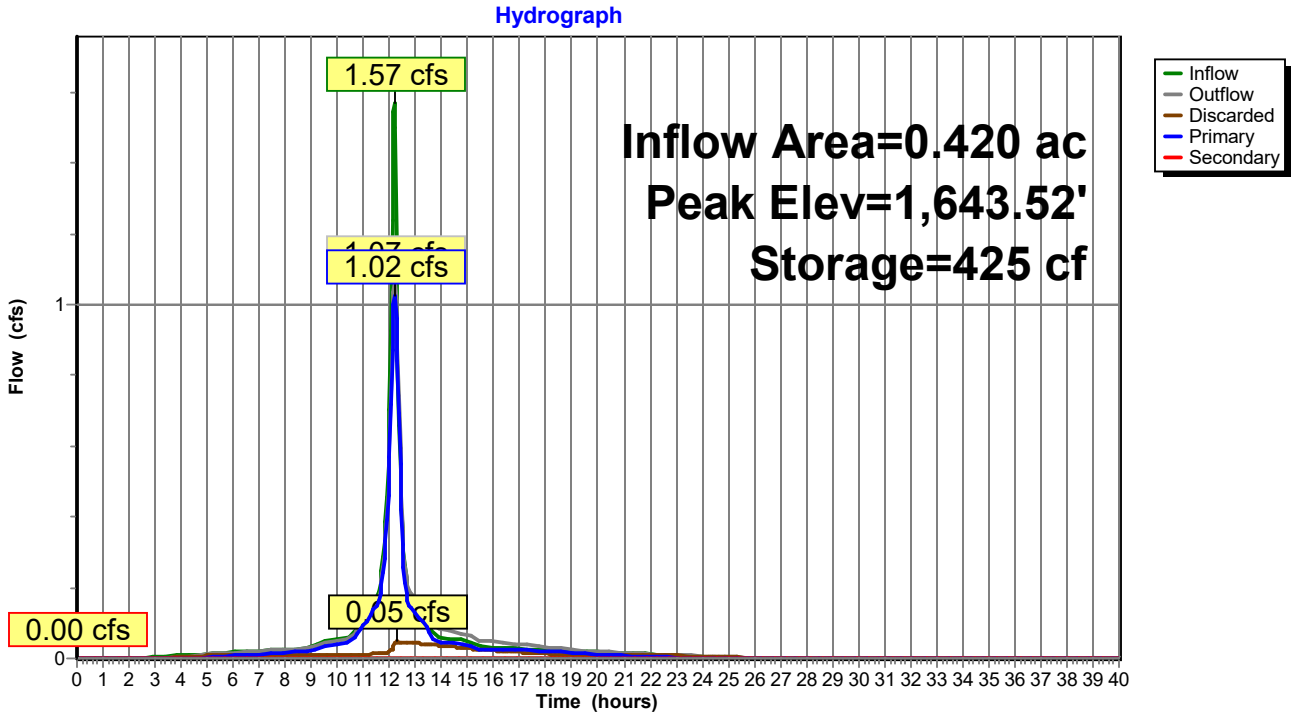
Device	Routing	Invert	Outlet Devices
#1	Secondary	1,644.00'	**5.0' long + 4.0 '/' SideZ x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,641.00'	**3.600 in/hr Exfiltration over Surface area**
#3	Primary	1,642.15'	**8.0" Round Culvert** L= 55.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,642.15' / 1,642.00' S= 0.0027 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Discarded OutFlow Max=0.05 cfs @ 12.30 hrs HW=1,643.52' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=0.85 cfs @ 12.19 hrs HW=1,643.36' TW=1,642.99' (Dynamic Tailwater)
3=Culvert (Outlet Controls 0.85 cfs @ 2.43 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,641.00' TW=0.00' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond P1:


Hydrograph
Inflow Area=0.420 ac
Peak Elev=1,643.52'
Storage=425 cf
1.57 cfs
1.02 cfs
0.05 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Pond P2:

Inflow Area = 1.355 ac, 82.17% Impervious, Inflow Depth = 2.70" for 10-Year event
Inflow = 4.07 cfs @ 12.17 hrs, Volume= 0.305 af
Outflow = 0.63 cfs @ 12.65 hrs, Volume= 0.305 af, Atten= 84%, Lag= 28.5 min
Discarded = 0.42 cfs @ 12.65 hrs, Volume= 0.287 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : link
Secondary = 0.21 cfs @ 12.65 hrs, Volume= 0.018 af
Routed to Pond P3 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,643.44' @ 12.65 hrs Surf.Area= 5,031 sf Storage= 6,364 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 152.6 min (908.0 - 755.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,641.00'	22,530 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,641.00	500	0	0
1,642.00	1,990	1,245	1,245
1,643.00	4,190	3,090	4,335
1,644.00	6,100	5,145	9,480
1,645.00	20,000	13,050	22,530

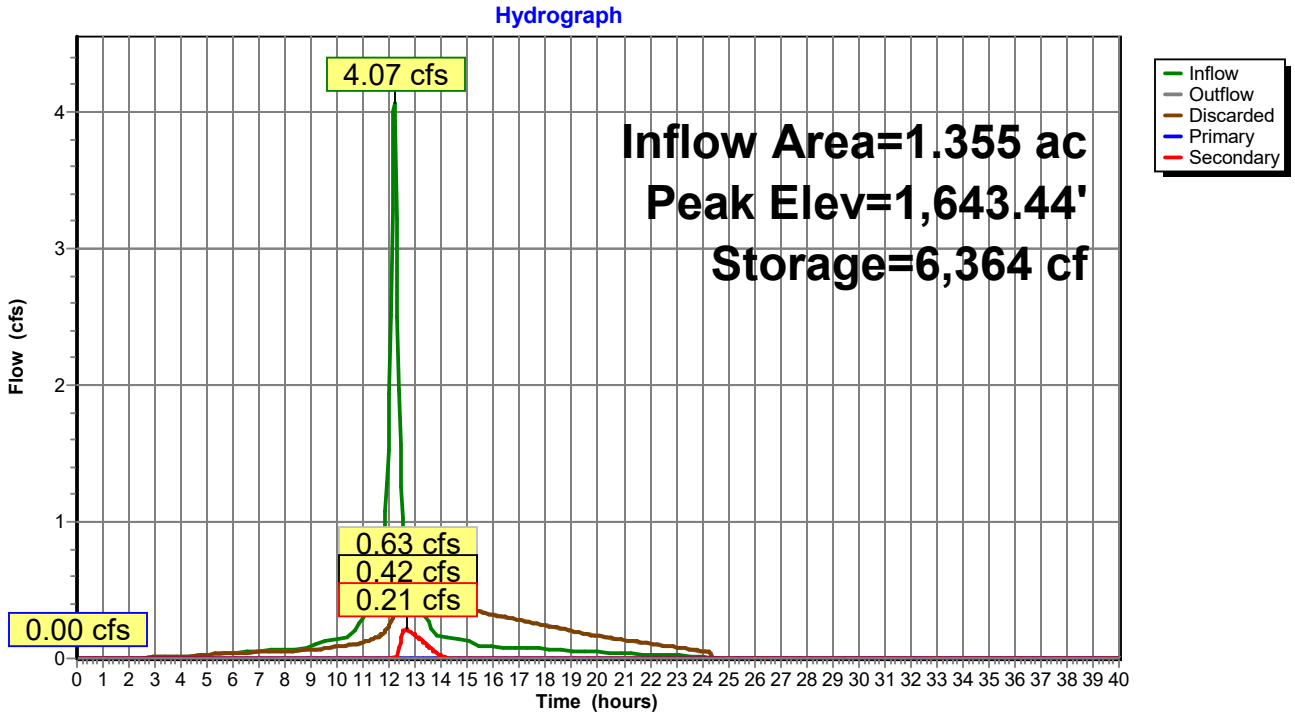
Device	Routing	Invert	Outlet Devices
#1	Primary	1,643.50'	**10.0' long + 4.0 '/' SideZ x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,641.00'	**3.600 in/hr Exfiltration over Surface area**
#3	Secondary	1,643.15'	**12.0" Round Culvert** L= 55.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,643.15' / 1,643.00' S= 0.0027 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.42 cfs @ 12.65 hrs HW=1,643.44' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.42 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,641.00' TW=0.00' (Dynamic Tailwater)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.21 cfs @ 12.65 hrs HW=1,643.44' TW=1,642.41' (Dynamic Tailwater)
└**3=Culvert** (Barrel Controls 0.21 cfs @ 1.69 fps)

Pond P2:


Hydrograph
4.07 cfs
Inflow Area=1.355 ac
Peak Elev=1,643.44'
Storage=6,364 cf
0.63 cfs
0.42 cfs
0.21 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
0 1 2 3 4

Summary for Pond P3:

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=72)

Inflow Area = 0.081 ac, 39.52% Impervious, Inflow Depth = 4.04" for 10-Year event
Inflow = 0.23 cfs @ 12.61 hrs, Volume= 0.027 af
Outflow = 0.08 cfs @ 13.60 hrs, Volume= 0.027 af, Atten= 66%, Lag= 59.1 min
Discarded = 0.08 cfs @ 13.60 hrs, Volume= 0.027 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond P4 :
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,642.77' @ 13.60 hrs Surf.Area= 943 sf Storage= 538 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 64.8 min (836.6 - 771.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	3,820 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	460	0	0
1,643.00	1,090	775	775
1,644.00	5,000	3,045	3,820

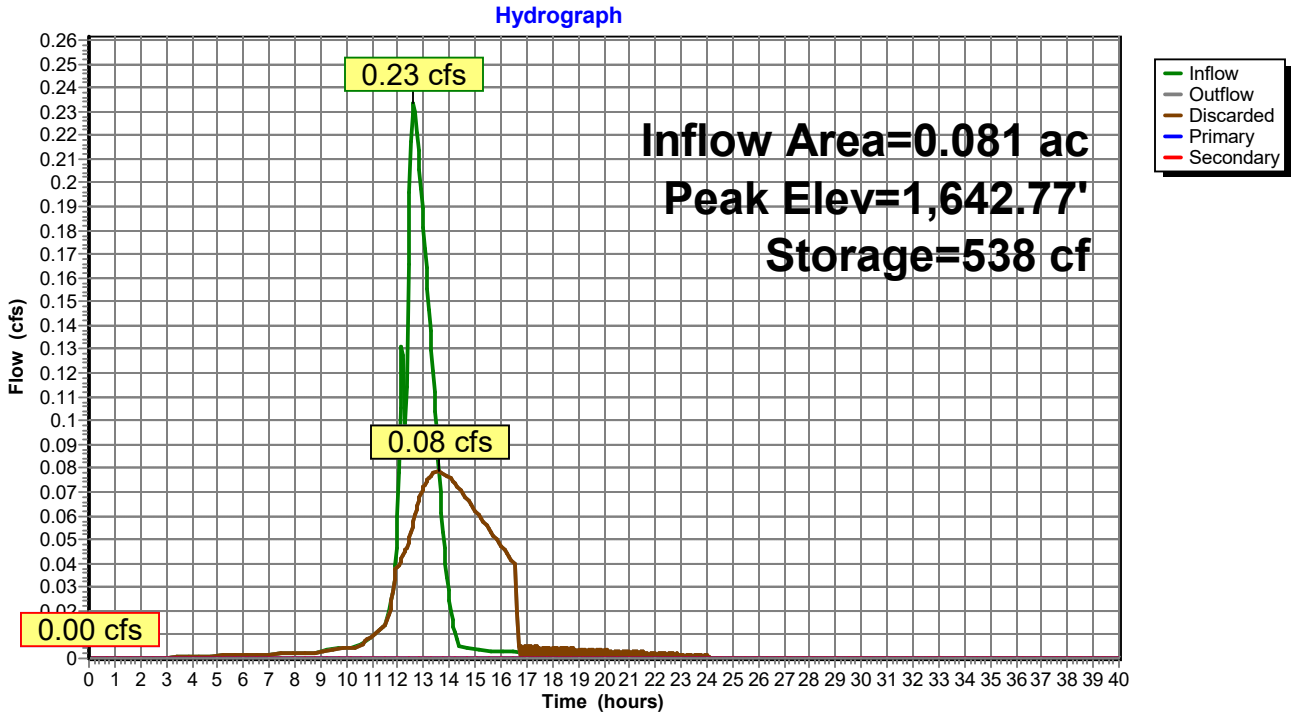
Device	Routing	Invert	Outlet Devices
#1	Secondary	1,643.50'	**10.0' long + 4.0 '/' SideZ x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,642.00'	**3.600 in/hr Exfiltration over Surface area**
#3	Primary	1,643.00'	**5.0' long + 4.0 '/' SideZ 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

Discarded OutFlow Max=0.08 cfs @ 13.60 hrs HW=1,642.77' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,642.00' TW=1,642.00' (Dynamic Tailwater)
3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,642.00' TW=0.00' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond P3:


Hydrograph
Inflow Area=0.081 ac
Peak Elev=1,642.77'
Storage=538 cf
0.23 cfs
0.08 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Pond P4:

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=111)

Inflow Area = 0.200 ac, 36.70% Impervious, Inflow Depth = 0.75" for 10-Year event
Inflow = 0.17 cfs @ 12.17 hrs, Volume= 0.012 af
Outflow = 0.07 cfs @ 12.35 hrs, Volume= 0.013 af, Atten= 57%, Lag= 10.8 min
Discarded = 0.07 cfs @ 12.35 hrs, Volume= 0.013 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,642.08' @ 12.35 hrs Surf.Area= 888 sf Storage= 67 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 4.1 min (763.9 - 759.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	4,800 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

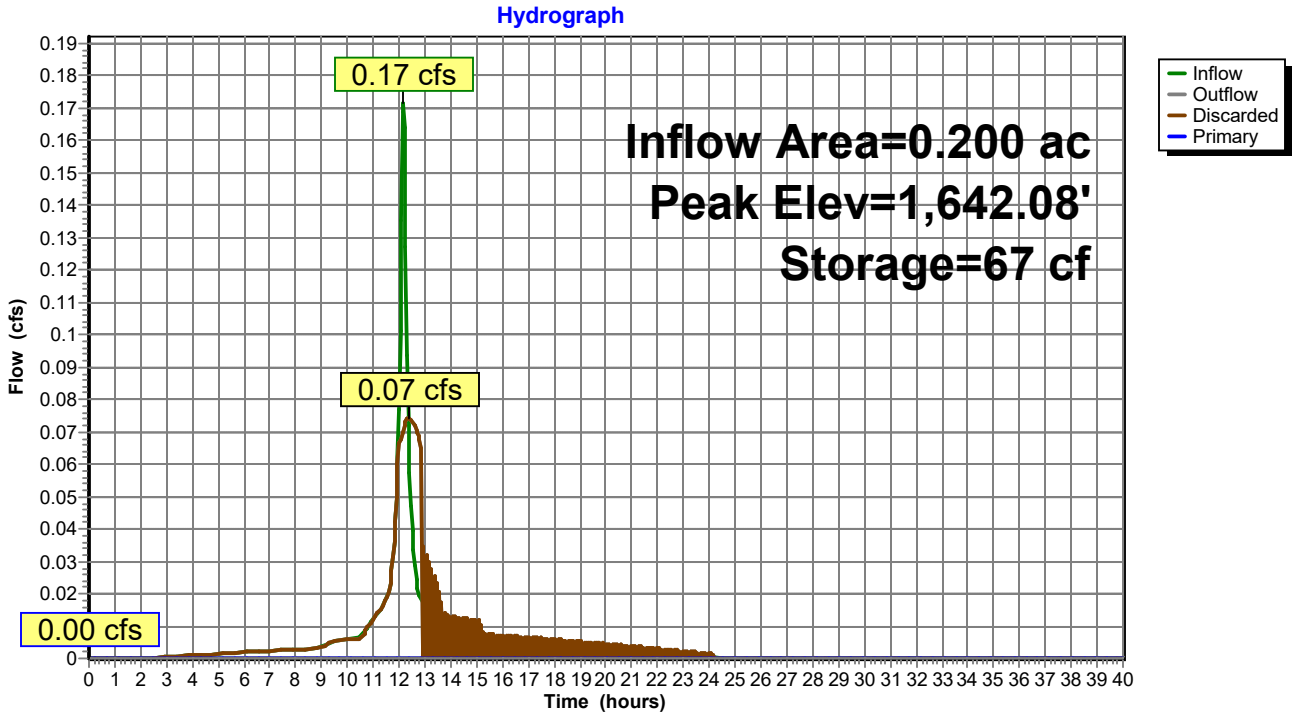
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	800	0	0
1,643.00	1,900	1,350	1,350
1,644.00	5,000	3,450	4,800

Device	Routing	Invert	Outlet Devices
#1	Primary	1,643.50'	**10.0' long + 4.0 '/' SideZ x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,642.00'	**3.600 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.07 cfs @ 12.35 hrs HW=1,642.08' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,642.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P4:

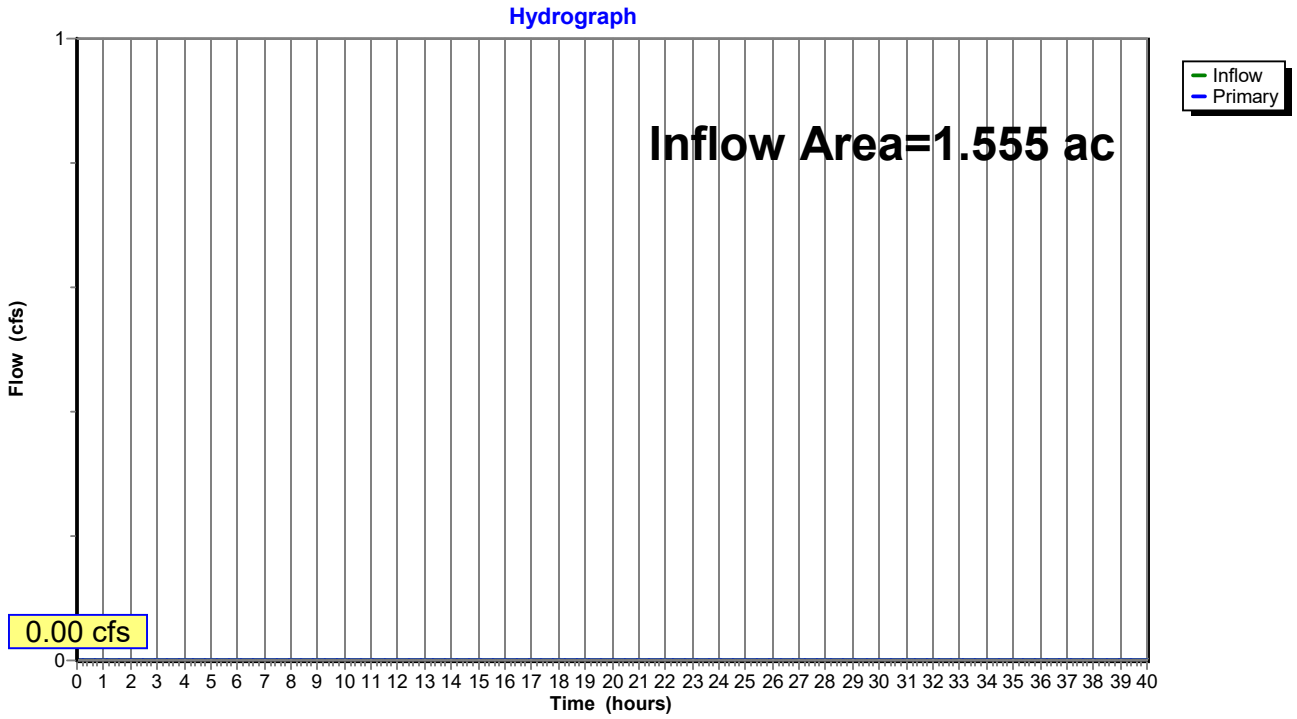

Hydrograph
Inflow Area=0.200 ac
Peak Elev=1,642.08'
Storage=67 cf
0.17 cfs
0.07 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Summary for Link 1L: link

Inflow Area = 1.555 ac, 76.32% Impervious, Inflow Depth = 0.00" for 10-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Link 1L: link



Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 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 D1: D1 Runoff Area=18,312 sf 90.12% Impervious Runoff Depth=5.64"
Tc=10.0 min CN=WQ Runoff=2.69 cfs 0.197 af

Subcatchment D2: D2 Runoff Area=40,724 sf 78.59% Impervious Runoff Depth=4.99"
Tc=10.0 min CN=WQ Runoff=5.25 cfs 0.389 af

Subcatchment D3: D3 Runoff Area=3,535 sf 39.52% Impervious Runoff Depth=2.79"
Tc=10.0 min CN=WQ Runoff=0.24 cfs 0.019 af

Subcatchment D4: D4 Runoff Area=5,176 sf 34.78% Impervious Runoff Depth=2.53"
Tc=10.0 min CN=WQ Runoff=0.31 cfs 0.025 af

Pond P1: Peak Elev=1,644.13' Storage=1,035 cf Inflow=2.69 cfs 0.197 af
Discarded=0.28 cfs 0.037 af Primary=1.14 cfs 0.149 af Secondary=0.71 cfs 0.011 af Outflow=1.94 cfs 0.197 af

Pond P2: Peak Elev=1,643.73' Storage=7,916 cf Inflow=6.38 cfs 0.538 af
Discarded=0.47 cfs 0.380 af Primary=3.23 cfs 0.091 af Secondary=0.81 cfs 0.066 af Outflow=4.50 cfs 0.538 af

Pond P3: Peak Elev=1,643.11' Storage=921 cf Inflow=0.98 cfs 0.085 af
Discarded=0.13 cfs 0.049 af Primary=0.50 cfs 0.036 af Secondary=0.00 cfs 0.000 af Outflow=0.63 cfs 0.085 af

Pond P4: Peak Elev=1,642.92' Storage=1,196 cf Inflow=0.58 cfs 0.061 af
Discarded=0.15 cfs 0.061 af Primary=0.00 cfs 0.000 af Outflow=0.15 cfs 0.061 af

Link 1L: link Inflow=3.94 cfs 0.103 af
Primary=3.94 cfs 0.103 af

Total Runoff Area = 1.555 ac Runoff Volume = 0.630 af Average Runoff Depth = 4.86"
23.68% Pervious = 0.368 ac 76.32% Impervious = 1.187 ac

Summary for Subcatchment D1: D1

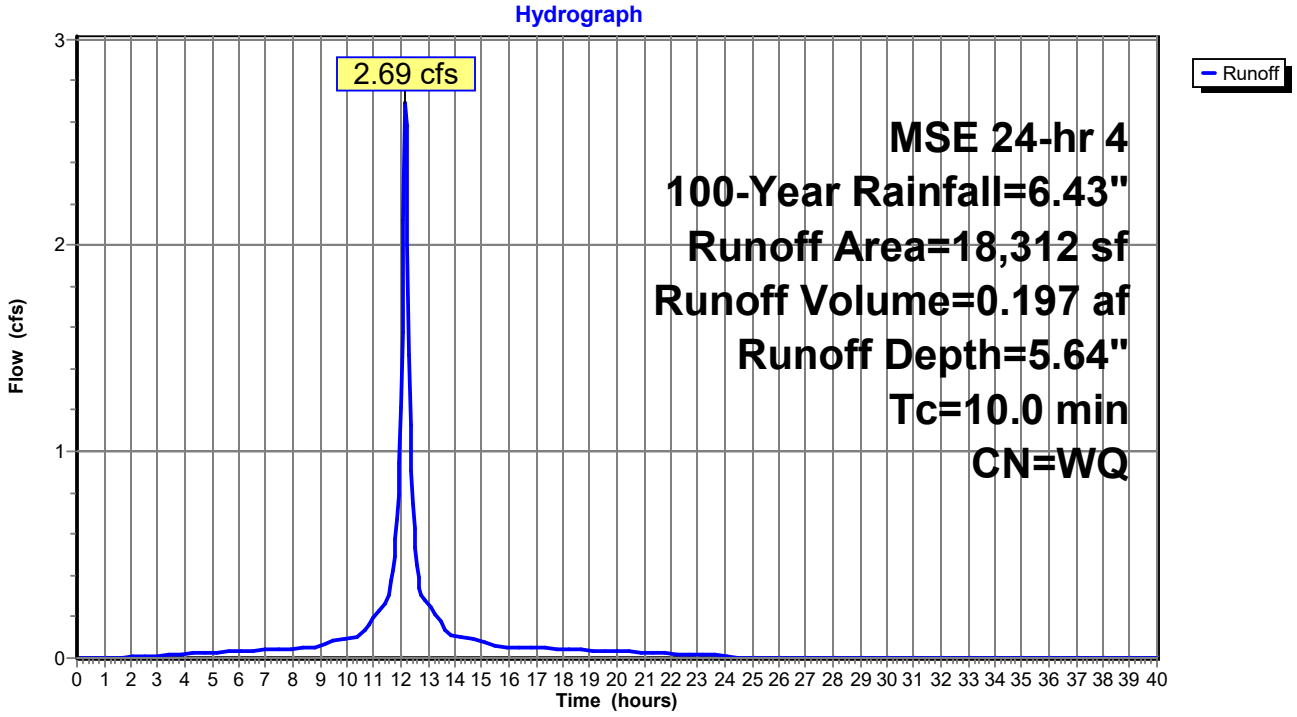
Runoff = 2.69 cfs @ 12.17 hrs, Volume= 0.197 af, Depth= 5.64"
Routed to Pond P1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.43"

	Area (sf)	CN	Description
*	4,776	98	parking lot
*	11,687	98	building
*	40	98	basin
	1,809	39	>75% Grass cover, Good, HSG A
	18,312		Weighted Average
	1,809		9.88% Pervious Area
	16,503		90.12% Impervious Area

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

Subcatchment D1: D1



Summary for Subcatchment D2: D2

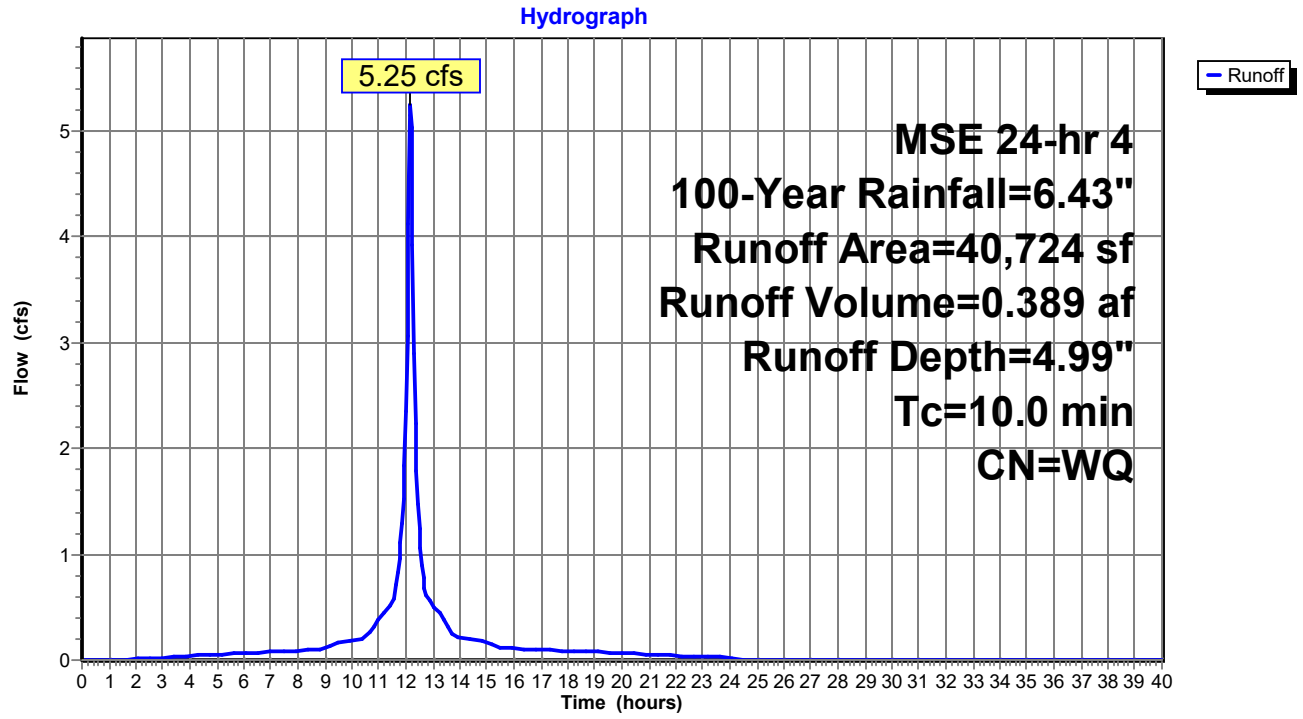
Runoff = 5.25 cfs @ 12.17 hrs, Volume= 0.389 af, Depth= 4.99"
Routed to Pond P2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.43"

	Area (sf)	CN	Description
*	630	98	basin
*	16,865	98	parking lot
	8,720	39	>75% Grass cover, Good, HSG A
*	14,509	98	building
	40,724		Weighted Average
	8,720		21.41% Pervious Area
	32,004		78.59% Impervious Area

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

Subcatchment D2: D2



Summary for Subcatchment D3: D3

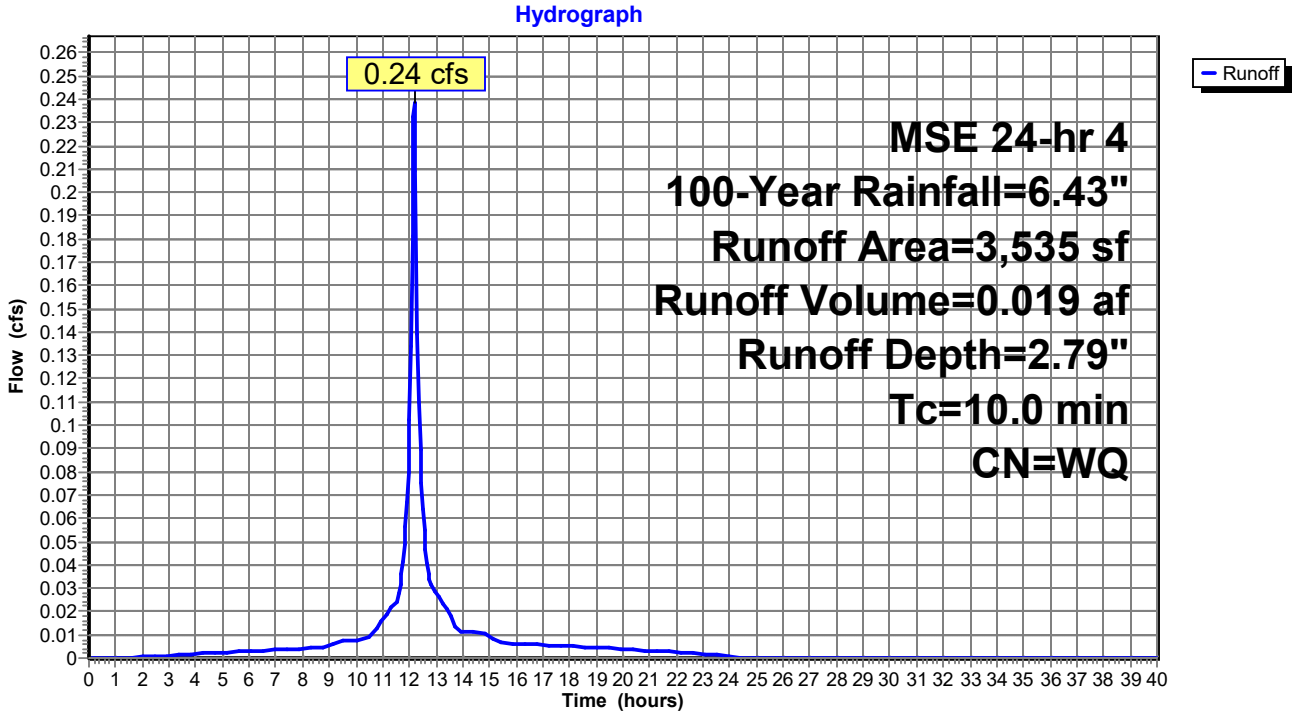
Runoff = 0.24 cfs @ 12.18 hrs, Volume= 0.019 af, Depth= 2.79"
Routed to Pond P3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.43"

	Area (sf)	CN	Description
*	303	98	parking lot
*	924	98	building
*	170	98	basin
	2,138	39	>75% Grass cover, Good, HSG A
	3,535		Weighted Average
	2,138		60.48% Pervious Area
	1,397		39.52% Impervious Area

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

Subcatchment D3: D3



Summary for Subcatchment D4: D4

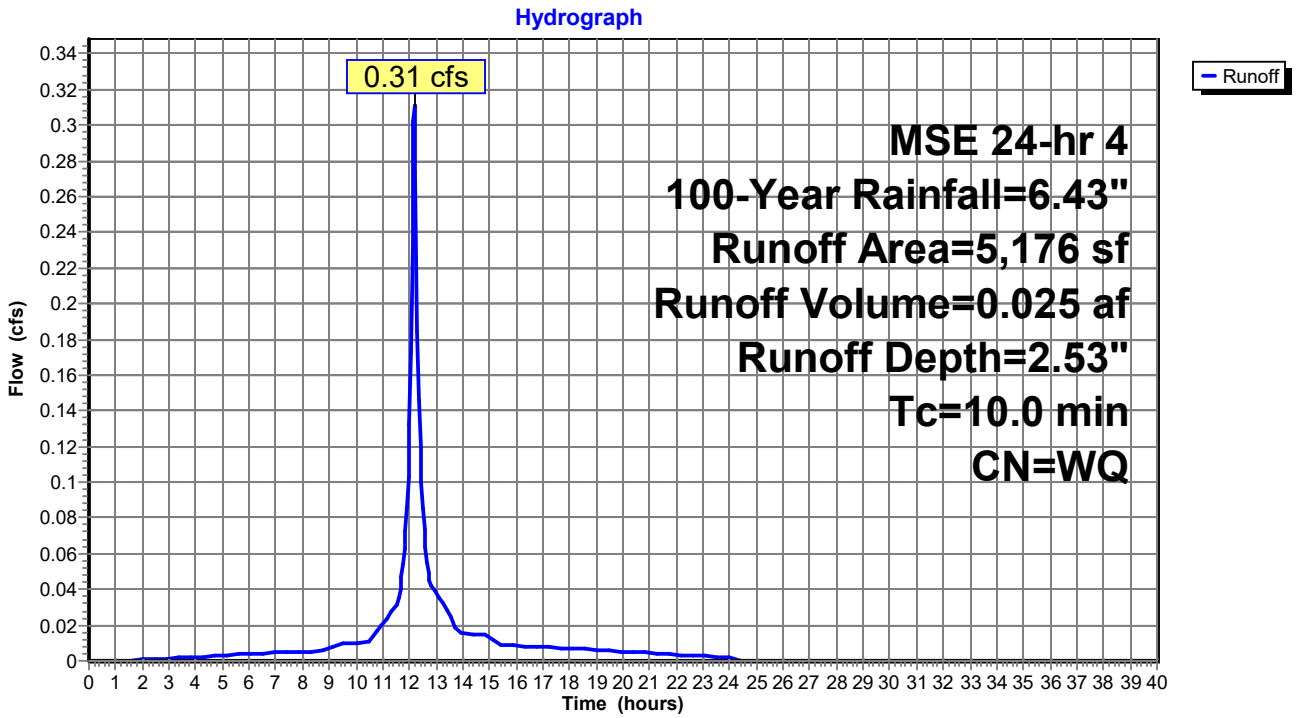
Runoff = 0.31 cfs @ 12.18 hrs, Volume= 0.025 af, Depth= 2.53"
Routed to Pond P4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.43"

	Area (sf)	CN	Description
*	1,500	98	building
*	300	98	basin
	3,376	39	>75% Grass cover, Good, HSG A
	5,176		Weighted Average
	3,376		65.22% Pervious Area
	1,800		34.78% Impervious Area

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

Subcatchment D4: D4



Summary for Pond P1:

Inflow Area = 0.420 ac, 90.12% Impervious, Inflow Depth = 5.64" for 100-Year event
Inflow = 2.69 cfs @ 12.17 hrs, Volume= 0.197 af
Outflow = 1.94 cfs @ 12.25 hrs, Volume= 0.197 af, Atten= 28%, Lag= 4.7 min
Discarded = 0.28 cfs @ 12.26 hrs, Volume= 0.037 af
Primary = 1.14 cfs @ 12.16 hrs, Volume= 0.149 af
Routed to Pond P2 :
Secondary = 0.71 cfs @ 12.26 hrs, Volume= 0.011 af
Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,644.13' @ 12.26 hrs Surf.Area= 3,373 sf Storage= 1,035 cf

Plug-Flow detention time= 19.5 min calculated for 0.197 af (100% of inflow)
Center-of-Mass det. time= 19.7 min (768.1 - 748.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,641.00'	11,161 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,641.00	1	0	0
1,642.00	40	21	21
1,643.00	310	175	196
1,644.00	810	560	756
1,645.00	20,000	10,405	11,161

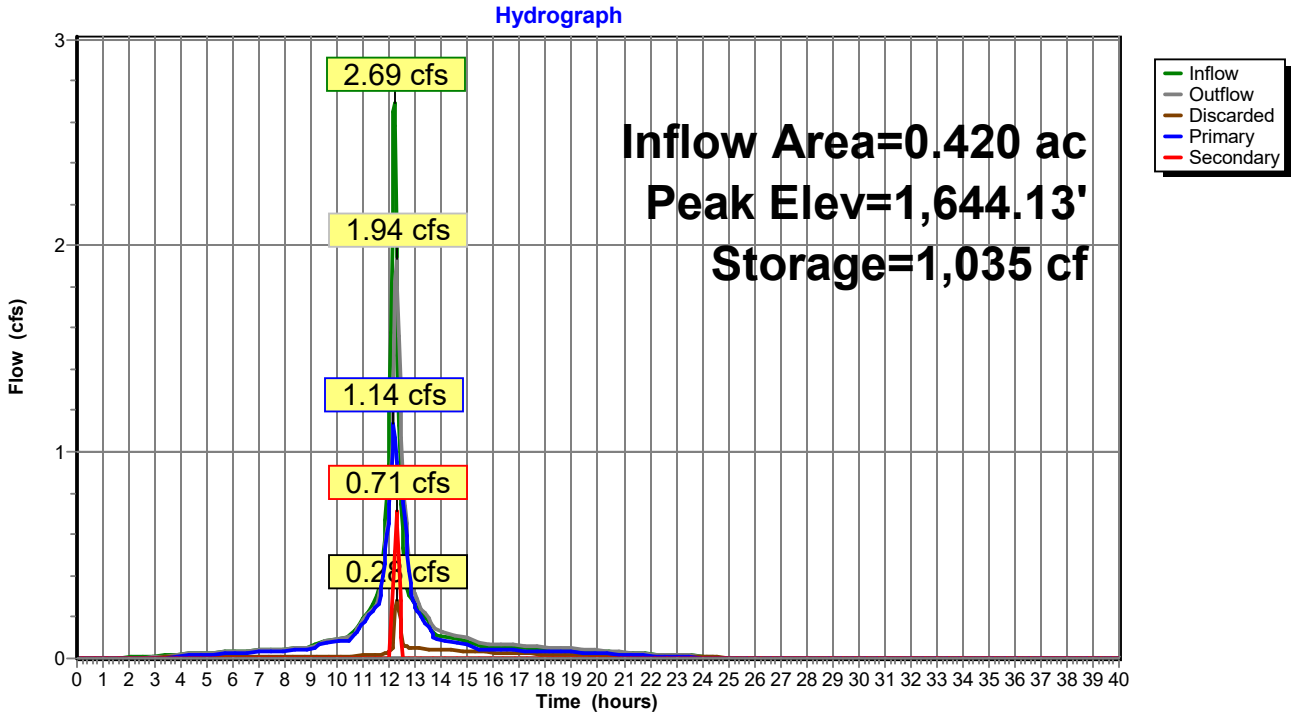
Device	Routing	Invert	Outlet Devices
#1	Secondary	1,644.00'	**5.0' long + 4.0 '/' SideZ x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,641.00'	**3.600 in/hr Exfiltration over Surface area**
#3	Primary	1,642.15'	**8.0" Round Culvert** L= 55.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,642.15' / 1,642.00' S= 0.0027 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Discarded OutFlow Max=0.28 cfs @ 12.26 hrs HW=1,644.13' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.28 cfs)

Primary OutFlow Max=0.97 cfs @ 12.16 hrs HW=1,644.02' TW=1,643.54' (Dynamic Tailwater)
3=Culvert (Outlet Controls 0.97 cfs @ 2.77 fps)

Secondary OutFlow Max=0.69 cfs @ 12.26 hrs HW=1,644.13' TW=0.00' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Weir Controls 0.69 cfs @ 0.95 fps)

Pond P1:


Hydrograph
Inflow Area=0.420 ac
Peak Elev=1,644.13'
Storage=1,035 cf
2.69 cfs
1.94 cfs
1.14 cfs
0.71 cfs
0.28 cfs
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
0 1 2 3

Summary for Pond P2:

Inflow Area = 1.355 ac, 82.17% Impervious, Inflow Depth = 4.76" for 100-Year event
Inflow = 6.38 cfs @ 12.17 hrs, Volume= 0.538 af
Outflow = 4.50 cfs @ 12.27 hrs, Volume= 0.538 af, Atten= 29%, Lag= 6.4 min
Discarded = 0.47 cfs @ 12.27 hrs, Volume= 0.380 af
Primary = 3.23 cfs @ 12.27 hrs, Volume= 0.091 af
Routed to Link 1L : link
Secondary = 0.81 cfs @ 12.27 hrs, Volume= 0.066 af
Routed to Pond P3 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,643.73' @ 12.27 hrs Surf.Area= 5,589 sf Storage= 7,916 cf

Plug-Flow detention time= 123.1 min calculated for 0.537 af (100% of inflow)
Center-of-Mass det. time= 123.2 min (874.9 - 751.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,641.00'	22,530 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,641.00	500	0	0
1,642.00	1,990	1,245	1,245
1,643.00	4,190	3,090	4,335
1,644.00	6,100	5,145	9,480
1,645.00	20,000	13,050	22,530

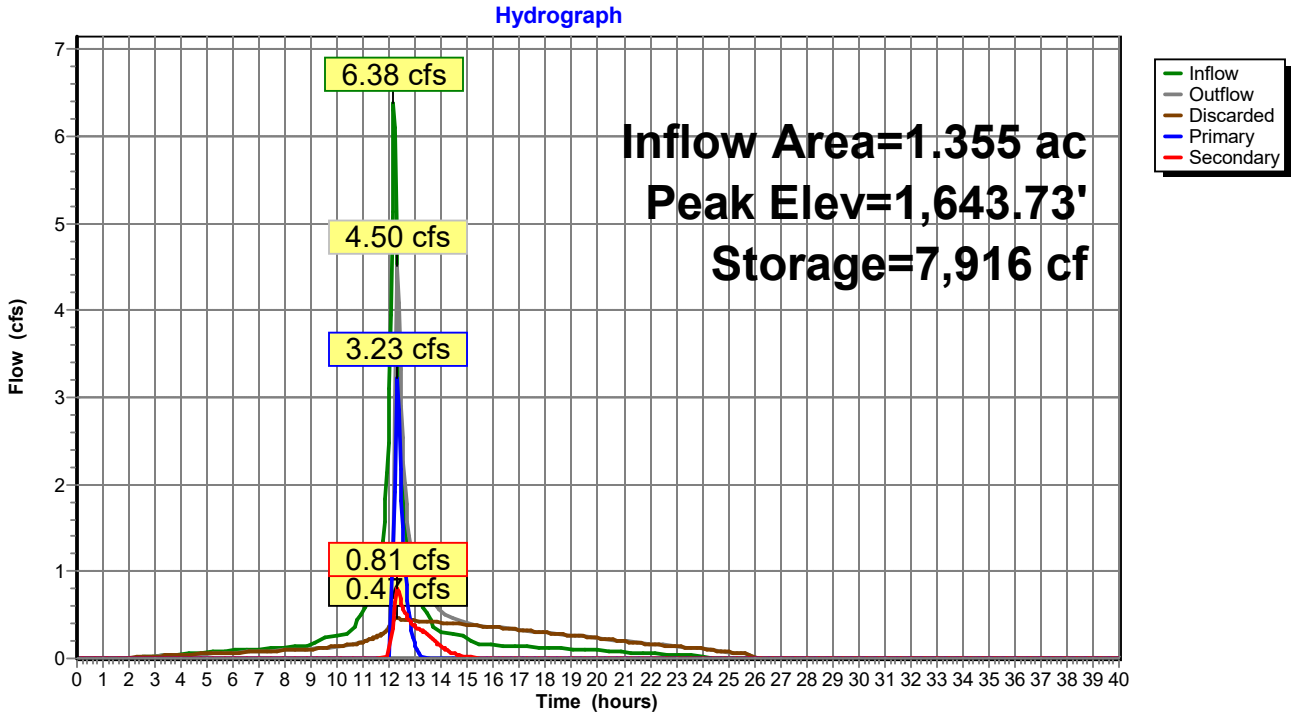
Device	Routing	Invert	Outlet Devices
#1	Primary	1,643.50'	**10.0' long + 4.0 '/' SideZ x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,641.00'	**3.600 in/hr Exfiltration over Surface area**
#3	Secondary	1,643.15'	**12.0" Round Culvert** L= 55.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,643.15' / 1,643.00' S= 0.0027 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.46 cfs @ 12.27 hrs HW=1,643.73' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.46 cfs)

Primary OutFlow Max=3.08 cfs @ 12.27 hrs HW=1,643.73' TW=0.00' (Dynamic Tailwater)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 3.08 cfs @ 1.26 fps)

Secondary OutFlow Max=0.79 cfs @ 12.27 hrs HW=1,643.73' TW=1,642.71' (Dynamic Tailwater)
└**3=Culvert** (Barrel Controls 0.79 cfs @ 2.44 fps)

Pond P2:


Hydrograph
Inflow Area=1.355 ac
Peak Elev=1,643.73'
Storage=7,916 cf
6.38 cfs
4.50 cfs
3.23 cfs
0.81 cfs
0.47 cfs
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

Summary for Pond P3:

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=49)

Inflow Area = 0.081 ac, 39.52% Impervious, Inflow Depth = 12.59" for 100-Year event
Inflow = 0.98 cfs @ 12.26 hrs, Volume= 0.085 af
Outflow = 0.63 cfs @ 12.55 hrs, Volume= 0.085 af, Atten= 36%, Lag= 17.2 min
Discarded = 0.13 cfs @ 12.55 hrs, Volume= 0.049 af
Primary = 0.50 cfs @ 12.55 hrs, Volume= 0.036 af
Routed to Pond P4 :
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,643.11' @ 12.55 hrs Surf.Area= 1,527 sf Storage= 921 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 54.1 min (829.6 - 775.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	3,820 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	460	0	0
1,643.00	1,090	775	775
1,644.00	5,000	3,045	3,820

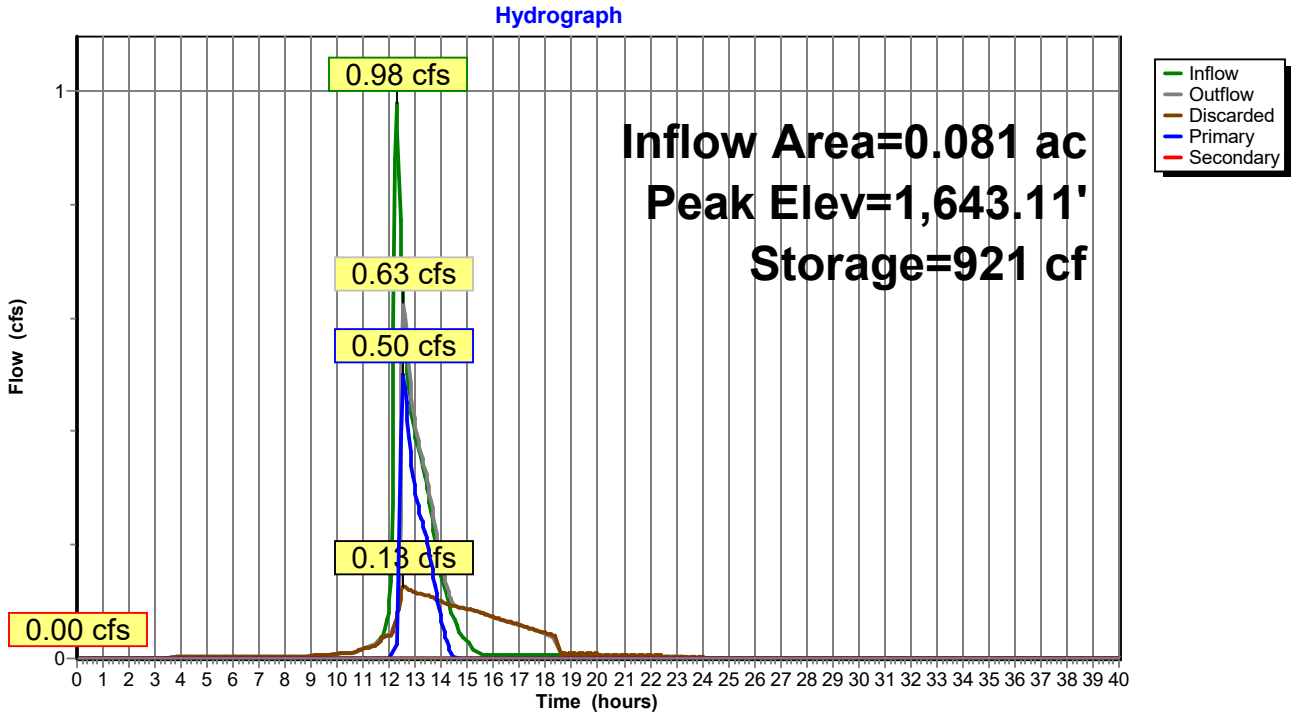
Device	Routing	Invert	Outlet Devices
#1	Secondary	1,643.50'	**10.0' long + 4.0 '/' SideZ x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,642.00'	**3.600 in/hr Exfiltration over Surface area**
#3	Primary	1,643.00'	**5.0' long + 4.0 '/' SideZ 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

Discarded OutFlow Max=0.13 cfs @ 12.55 hrs HW=1,643.11' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.13 cfs)

Primary OutFlow Max=0.50 cfs @ 12.55 hrs HW=1,643.11' TW=1,642.42' (Dynamic Tailwater)
3=Broad-Crested Rectangular Weir (Weir Controls 0.50 cfs @ 0.82 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,642.00' TW=0.00' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond P3:


Hydrograph
Inflow Area=0.081 ac
Peak Elev=1,643.11'
Storage=921 cf
0.98 cfs
0.63 cfs
0.50 cfs
0.13 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

Summary for Pond P4:

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=65)

Inflow Area = 0.200 ac, 36.70% Impervious, Inflow Depth = 3.65" for 100-Year event
Inflow = 0.58 cfs @ 12.53 hrs, Volume= 0.061 af
Outflow = 0.15 cfs @ 13.73 hrs, Volume= 0.061 af, Atten= 74%, Lag= 72.3 min
Discarded = 0.15 cfs @ 13.73 hrs, Volume= 0.061 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,642.92' @ 13.73 hrs Surf.Area= 1,809 sf Storage= 1,196 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 76.0 min (853.9 - 777.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	4,800 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

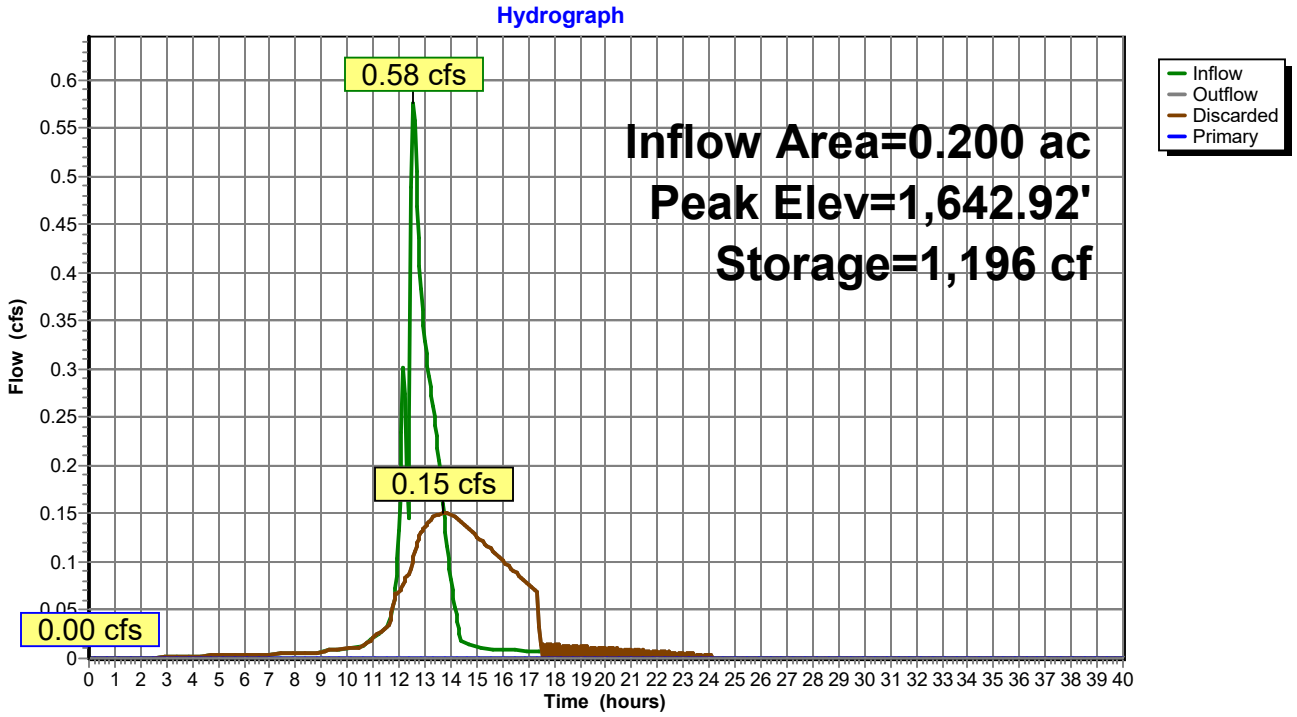
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	800	0	0
1,643.00	1,900	1,350	1,350
1,644.00	5,000	3,450	4,800

Device	Routing	Invert	Outlet Devices
#1	Primary	1,643.50'	**10.0' long + 4.0 '/' SideZ x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,642.00'	**3.600 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.15 cfs @ 13.73 hrs HW=1,642.92' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.15 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,642.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P4:

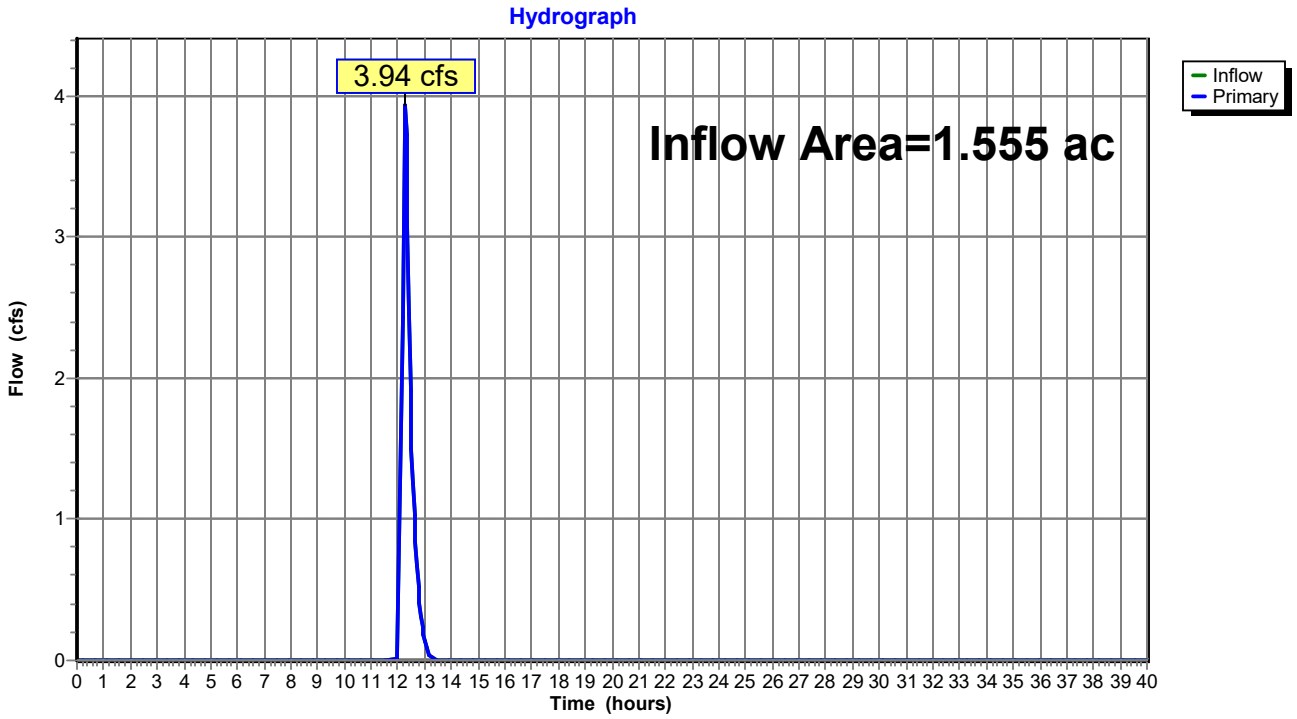

Hydrograph
0.58 cfs
0.15 cfs
0.00 cfs
Inflow Area=0.200 ac
Peak Elev=1,642.92'
Storage=1,196 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Summary for Link 1L: link

Inflow Area = 1.555 ac, 76.32% Impervious, Inflow Depth = 0.79" for 100-Year event
Inflow = 3.94 cfs @ 12.27 hrs, Volume= 0.103 af
Primary = 3.94 cfs @ 12.27 hrs, Volume= 0.103 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Link 1L: link



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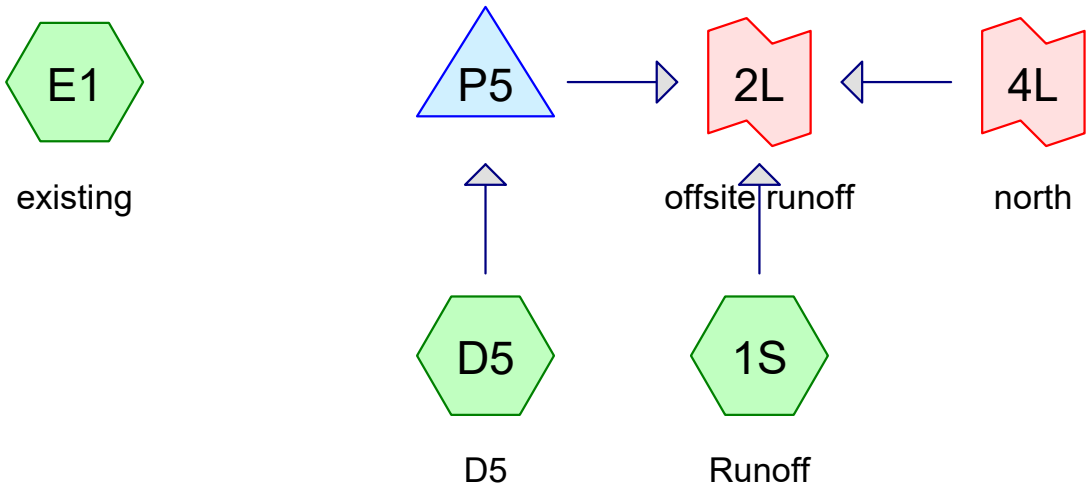


Subcat Reach Pond Link

Routing Diagram for 26-0159 south
Prepared by Vreeland Associates, Printed 5/28/2026
HydroCAD® 10.20-8a s/n 09881 © 2025 HydroCAD Software Solutions LLC

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	MSE 24-hr	4	Default	24.00	1	2.22	2
2	2-Year	MSE 24-hr	4	Default	24.00	1	2.56	2
3	10-Year	MSE 24-hr	4	Default	24.00	1	3.79	2
4	100-Year	MSE 24-hr	4	Default	24.00	1	6.43	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.277	39	>75% Grass cover, Good, HSG A (1S, D5, E1)
0.026	98	basin (D5)
0.513	98	building (D5)
0.331	98	pavement (D5)
4.147	**51**	**TOTAL AREA**

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 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 1S: Runoff Runoff Area=7,842 sf 0.00% Impervious Runoff Depth=0.00"
Tc=10.0 min CN=39 Runoff=0.00 cfs 0.000 af

Subcatchment D5: D5 Runoff Area=42,461 sf 89.28% Impervious Runoff Depth=1.78"
Tc=6.0 min CN=WQ Runoff=2.39 cfs 0.145 af

Subcatchment E1: existing Runoff Area=2.992 ac 0.00% Impervious Runoff Depth=0.00"
Tc=10.0 min CN=39 Runoff=0.00 cfs 0.000 af

Pond P5: Peak Elev=1,643.52' Storage=2,764 cf Inflow=2.39 cfs 0.145 af
Discarded=0.21 cfs 0.145 af Primary=0.00 cfs 0.000 af Outflow=0.21 cfs 0.145 af

Link 2L: offsite runoff Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Link 4L: north 1-Year Inflow Imported from 26-0159 north~Link 1L.hce Inflow=0.00 cfs 0.000 af
Area= 1.555 ac 76.32% Imperv. Primary=0.00 cfs 0.000 af

Total Runoff Area = 4.147 ac Runoff Volume = 0.145 af Average Runoff Depth = 0.42"
79.01% Pervious = 3.277 ac 20.99% Impervious = 0.870 ac

Summary for Subcatchment 1S: Runoff

[45] Hint: Runoff=Zero

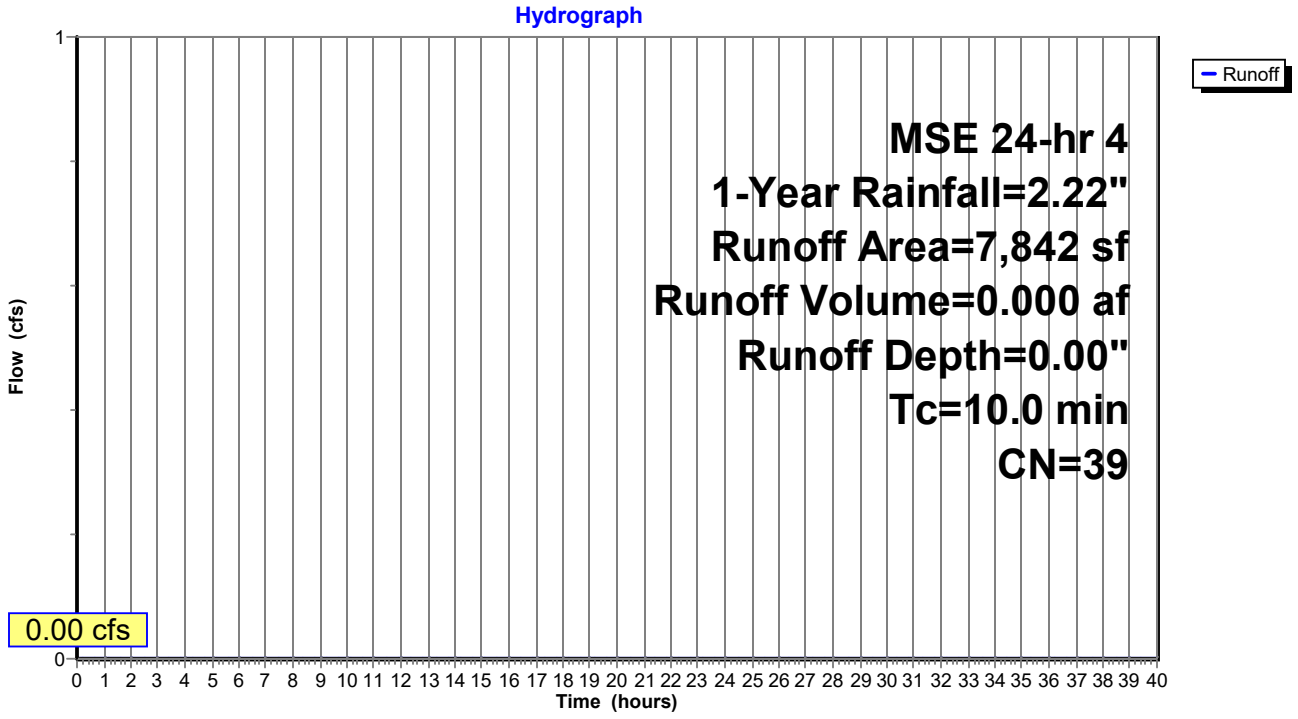
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Link 2L : offsite runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.22"

Area (sf)	CN	Description
7,842	39	>75% Grass cover, Good, HSG A
7,842		100.00% Pervious Area

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

Subcatchment 1S: Runoff



Summary for Subcatchment D5: D5

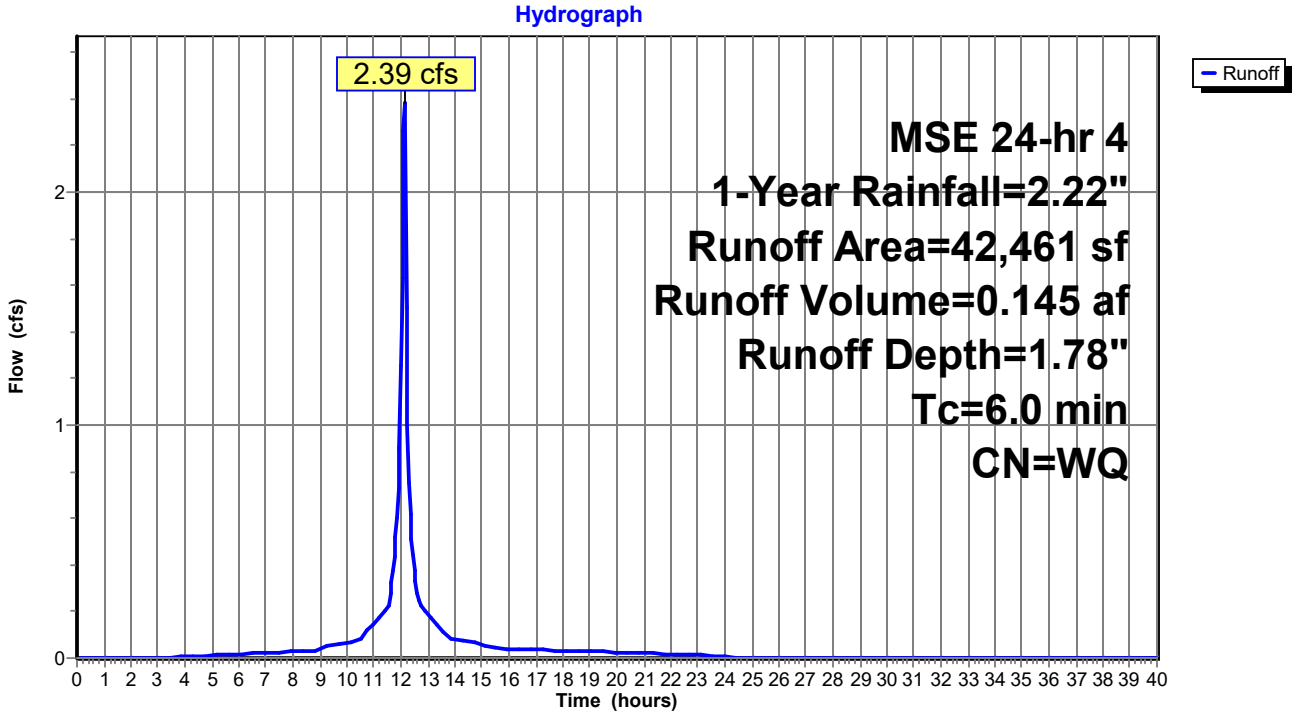
Runoff = 2.39 cfs @ 12.13 hrs, Volume= 0.145 af, Depth= 1.78"
Routed to Pond P5 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.22"

	Area (sf)	CN	Description
*	14,424	98	pavement
*	22,344	98	building
*	1,140	98	basin
	4,553	39	>75% Grass cover, Good, HSG A
	42,461		Weighted Average
	4,553		10.72% Pervious Area
	37,908		89.28% Impervious Area

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

Subcatchment D5: D5



Summary for Subcatchment E1: existing

[45] Hint: Runoff=Zero

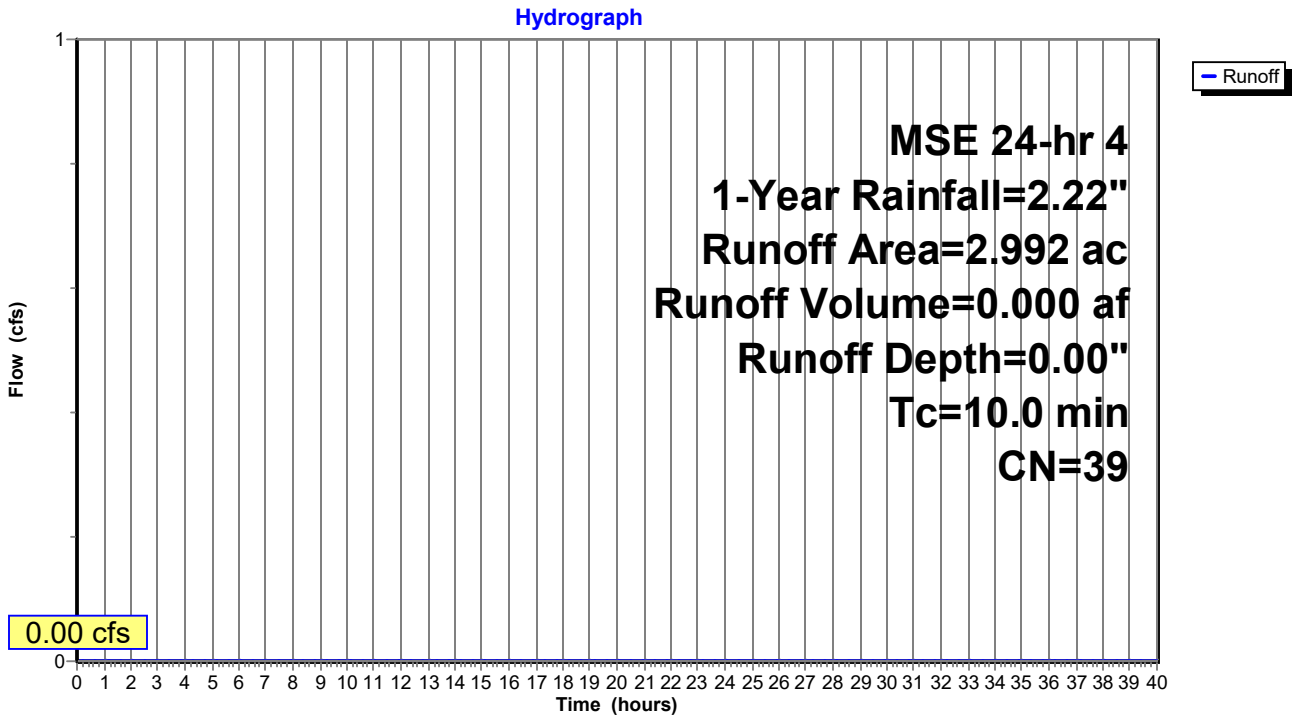
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.22"

Area (ac)	CN	Description
2.992	39	>75% Grass cover, Good, HSG A
2.992		100.00% Pervious Area

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

Subcatchment E1: existing



Summary for Pond P5:

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=36)

Inflow Area = 0.975 ac, 89.28% Impervious, Inflow Depth = 1.78" for 1-Year event
Inflow = 2.39 cfs @ 12.13 hrs, Volume= 0.145 af
Outflow = 0.21 cfs @ 12.85 hrs, Volume= 0.145 af, Atten= 91%, Lag= 43.7 min
Discarded = 0.21 cfs @ 12.85 hrs, Volume= 0.145 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2L : offsite runoff

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,643.52' @ 12.85 hrs Surf.Area= 2,530 sf Storage= 2,764 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 118.4 min (879.6 - 761.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	24,860 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

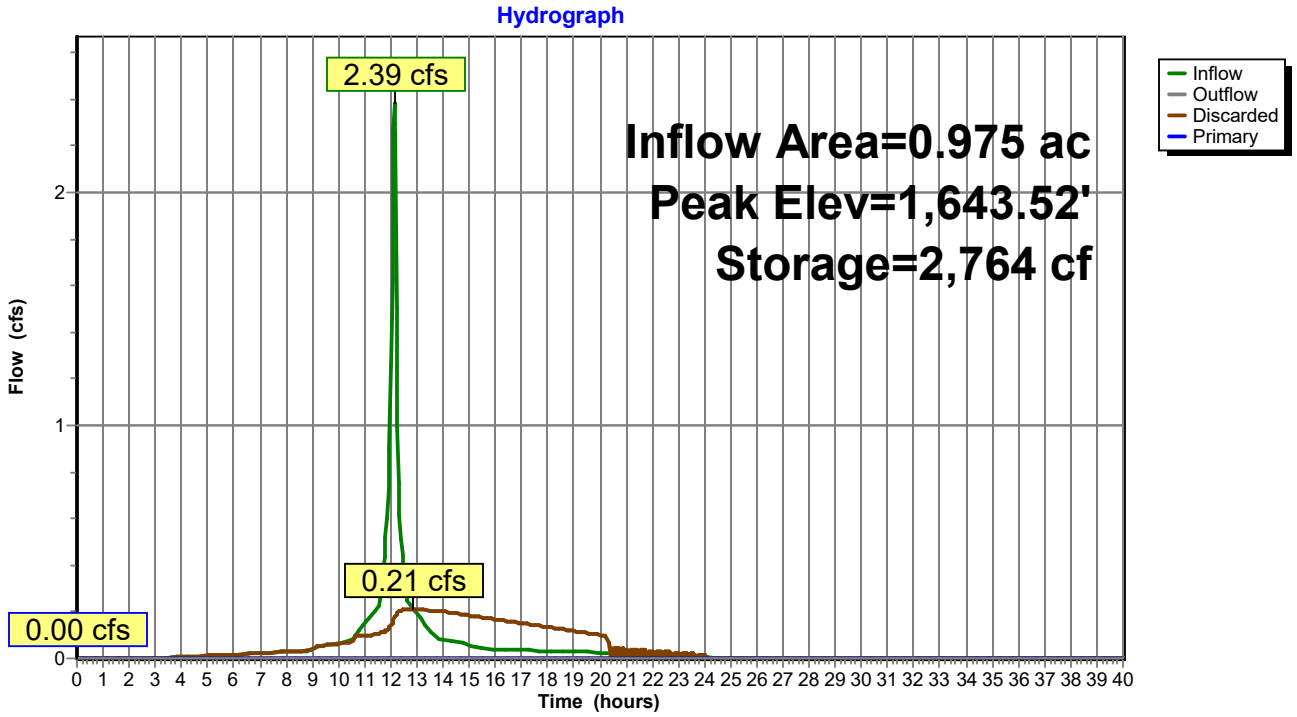
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	1,140	0	0
1,643.00	2,020	1,580	1,580
1,644.00	3,000	2,510	4,090
1,645.00	4,000	3,500	7,590
1,646.00	5,270	4,635	12,225
1,647.00	20,000	12,635	24,860

Device	Routing	Invert	Outlet Devices
#1	Primary	1,644.75'	**10.0' long + 4.0 '/' SideZ x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,642.00'	**3.600 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.21 cfs @ 12.85 hrs HW=1,643.52' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.21 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,642.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P5:

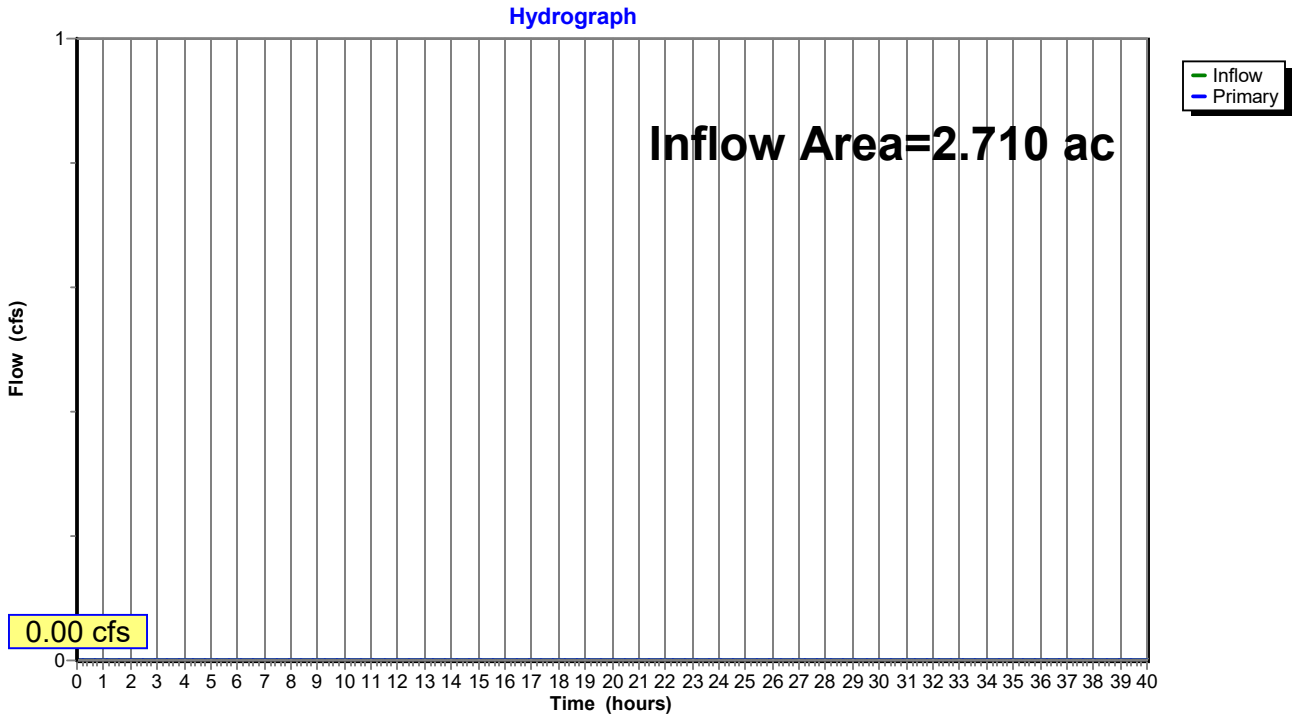

Hydrograph
Inflow Area=0.975 ac
Peak Elev=1,643.52'
Storage=2,764 cf
2.39 cfs
0.21 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
0 1 2

Summary for Link 2L: offsite runoff

Inflow Area = 2.710 ac, 75.91% Impervious, Inflow Depth = 0.00" for 1-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Link 2L: offsite runoff



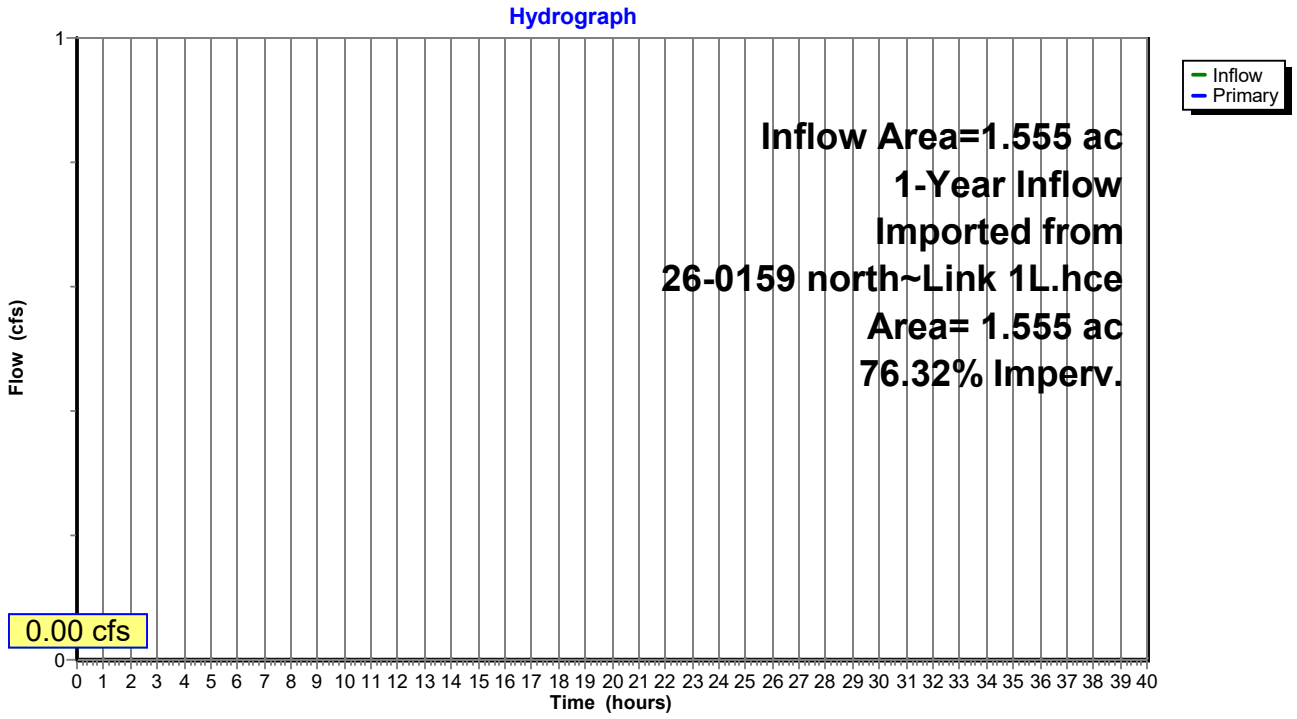
Summary for Link 4L: north

Inflow Area = 1.555 ac, 76.32% Impervious, Inflow Depth = 0.00" for 1-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Routed to Link 2L : offsite runoff

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

1-Year Inflow Imported from 26-0159 north~Link 1L.hce

Link 4L: north



Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 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 1S: Runoff Runoff Area=7,842 sf 0.00% Impervious Runoff Depth=0.00"
Tc=10.0 min CN=39 Runoff=0.00 cfs 0.000 af

Subcatchment D5: D5 Runoff Area=42,461 sf 89.28% Impervious Runoff Depth=2.08"
Tc=6.0 min CN=WQ Runoff=2.77 cfs 0.169 af

Subcatchment E1: existing Runoff Area=2.992 ac 0.00% Impervious Runoff Depth=0.00"
Tc=10.0 min CN=39 Runoff=0.00 cfs 0.000 af

Pond P5: Peak Elev=1,643.74' Storage=3,337 cf Inflow=2.77 cfs 0.169 af
Discarded=0.23 cfs 0.169 af Primary=0.00 cfs 0.000 af Outflow=0.23 cfs 0.169 af

Link 2L: offsite runoff Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Link 4L: north 2-Year Inflow Imported from 26-0159 north~Link 1L.hce Inflow=0.00 cfs 0.000 af
Area= 1.555 ac 76.32% Imperv. Primary=0.00 cfs 0.000 af

Total Runoff Area = 4.147 ac Runoff Volume = 0.169 af Average Runoff Depth = 0.49"
79.01% Pervious = 3.277 ac 20.99% Impervious = 0.870 ac

Summary for Subcatchment 1S: Runoff

[45] Hint: Runoff=Zero

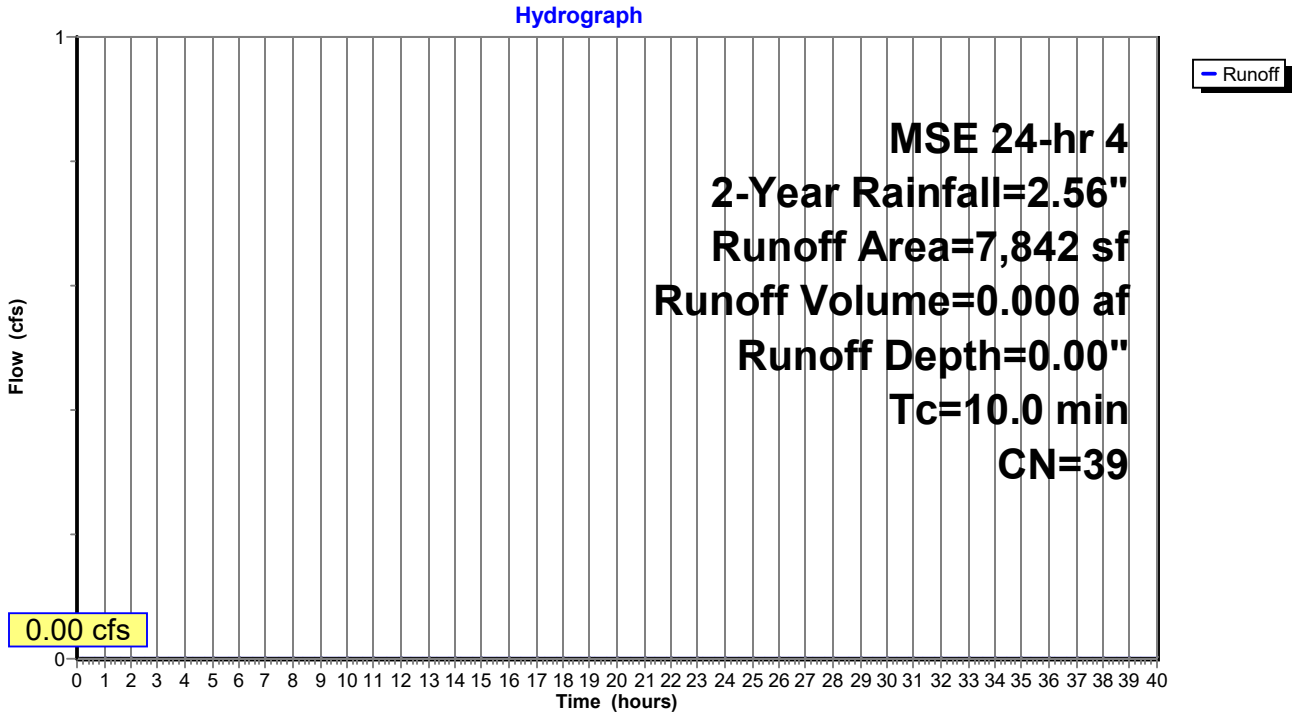
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Link 2L : offsite runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.56"

Area (sf)	CN	Description
7,842	39	>75% Grass cover, Good, HSG A
7,842		100.00% Pervious Area

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

Subcatchment 1S: Runoff



Summary for Subcatchment D5: D5

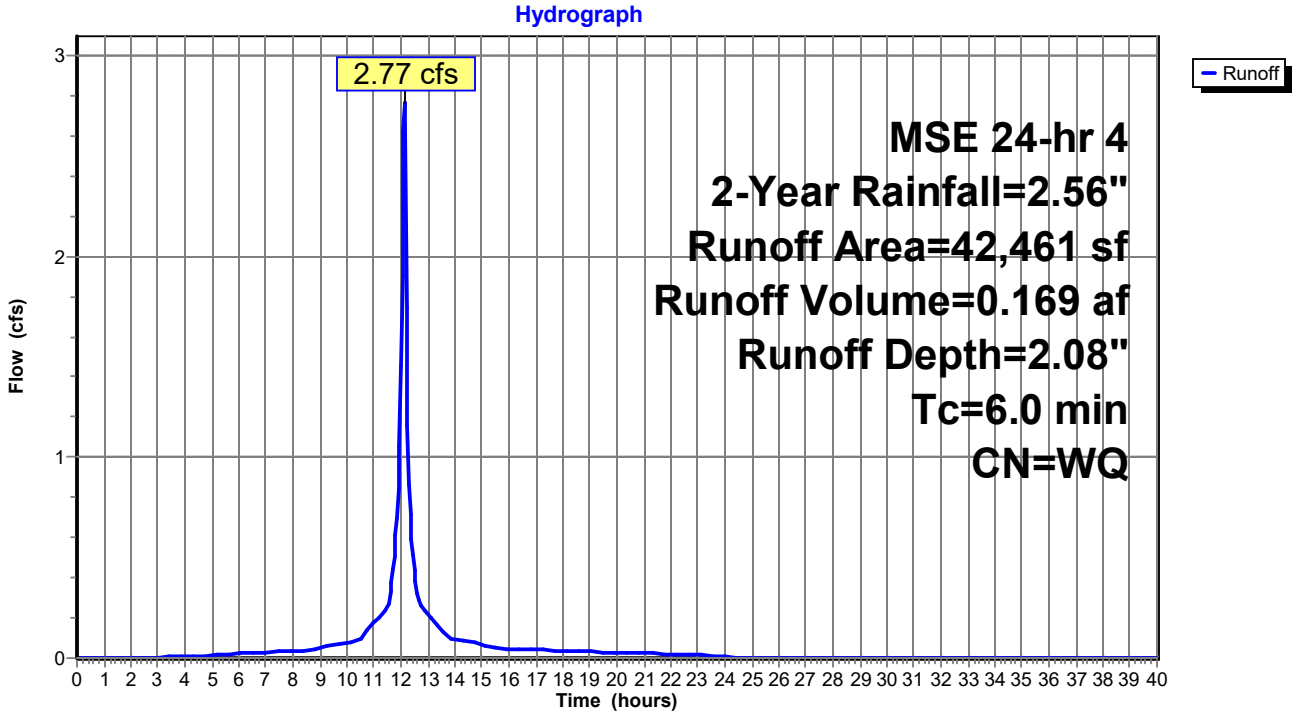
Runoff = 2.77 cfs @ 12.13 hrs, Volume= 0.169 af, Depth= 2.08"
Routed to Pond P5 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.56"

	Area (sf)	CN	Description
*	14,424	98	pavement
*	22,344	98	building
*	1,140	98	basin
	4,553	39	>75% Grass cover, Good, HSG A
	42,461		Weighted Average
	4,553		10.72% Pervious Area
	37,908		89.28% Impervious Area

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

Subcatchment D5: D5



Summary for Subcatchment E1: existing

[45] Hint: Runoff=Zero

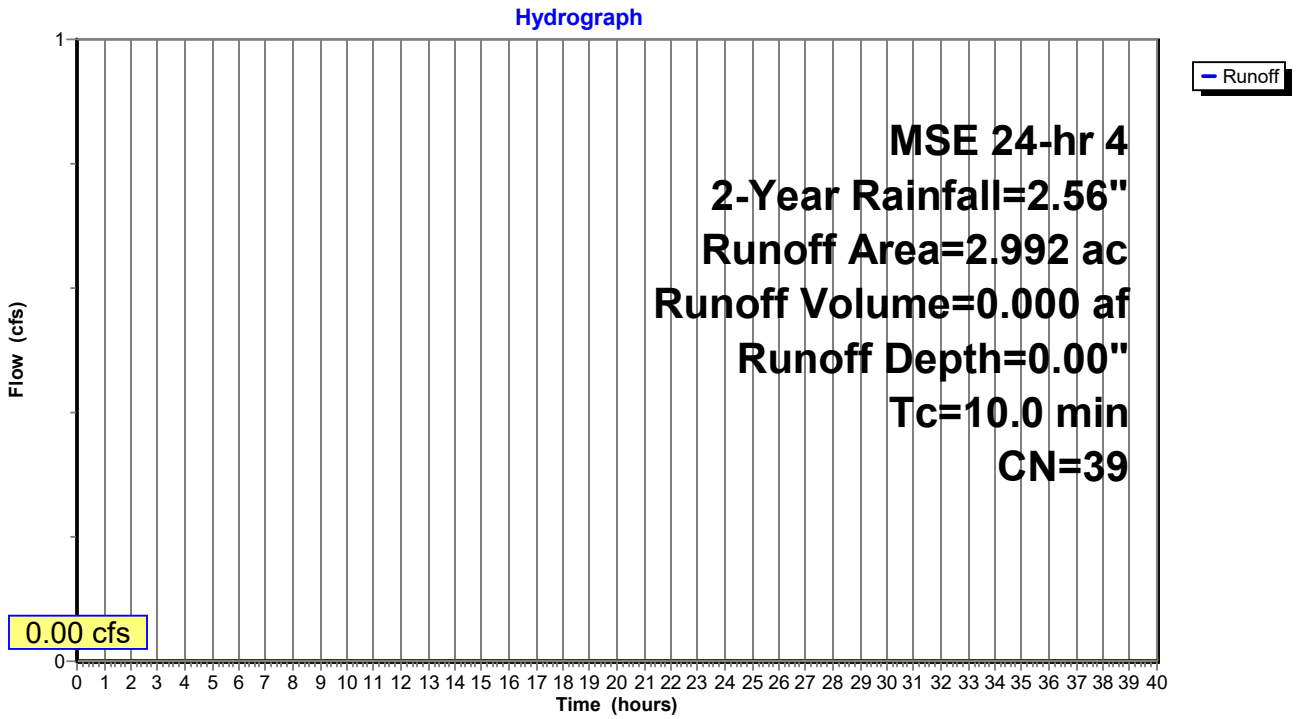
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.56"

Area (ac)	CN	Description
2.992	39	>75% Grass cover, Good, HSG A
2.992		100.00% Pervious Area

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

Subcatchment E1: existing



Summary for Pond P5:

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=26)

Inflow Area = 0.975 ac, 89.28% Impervious, Inflow Depth = 2.08" for 2-Year event
Inflow = 2.77 cfs @ 12.13 hrs, Volume= 0.169 af
Outflow = 0.23 cfs @ 12.95 hrs, Volume= 0.169 af, Atten= 92%, Lag= 49.5 min
Discarded = 0.23 cfs @ 12.95 hrs, Volume= 0.169 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2L : offsite runoff

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,643.74' @ 12.95 hrs Surf.Area= 2,743 sf Storage= 3,337 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 135.5 min (893.8 - 758.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	24,860 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

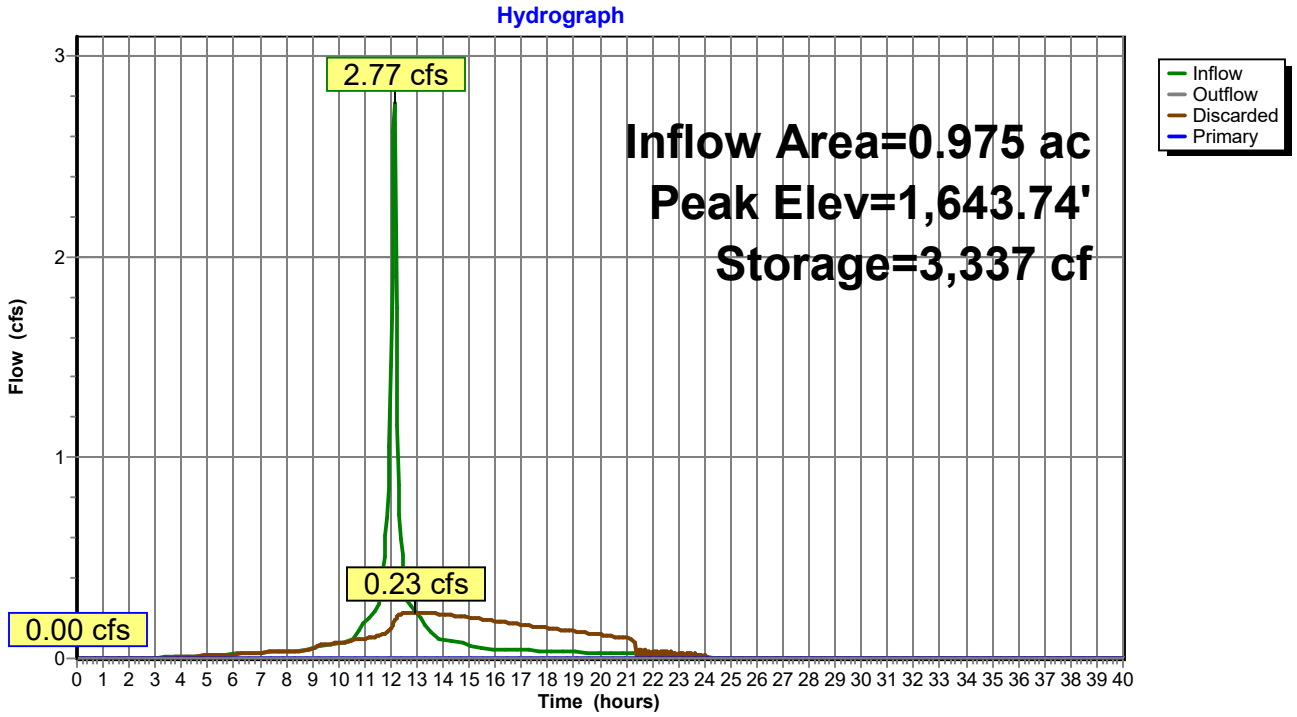
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	1,140	0	0
1,643.00	2,020	1,580	1,580
1,644.00	3,000	2,510	4,090
1,645.00	4,000	3,500	7,590
1,646.00	5,270	4,635	12,225
1,647.00	20,000	12,635	24,860

Device	Routing	Invert	Outlet Devices
#1	Primary	1,644.75'	**10.0' long + 4.0 '/' SideZ x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,642.00'	**3.600 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.23 cfs @ 12.95 hrs HW=1,643.74' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,642.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P5:

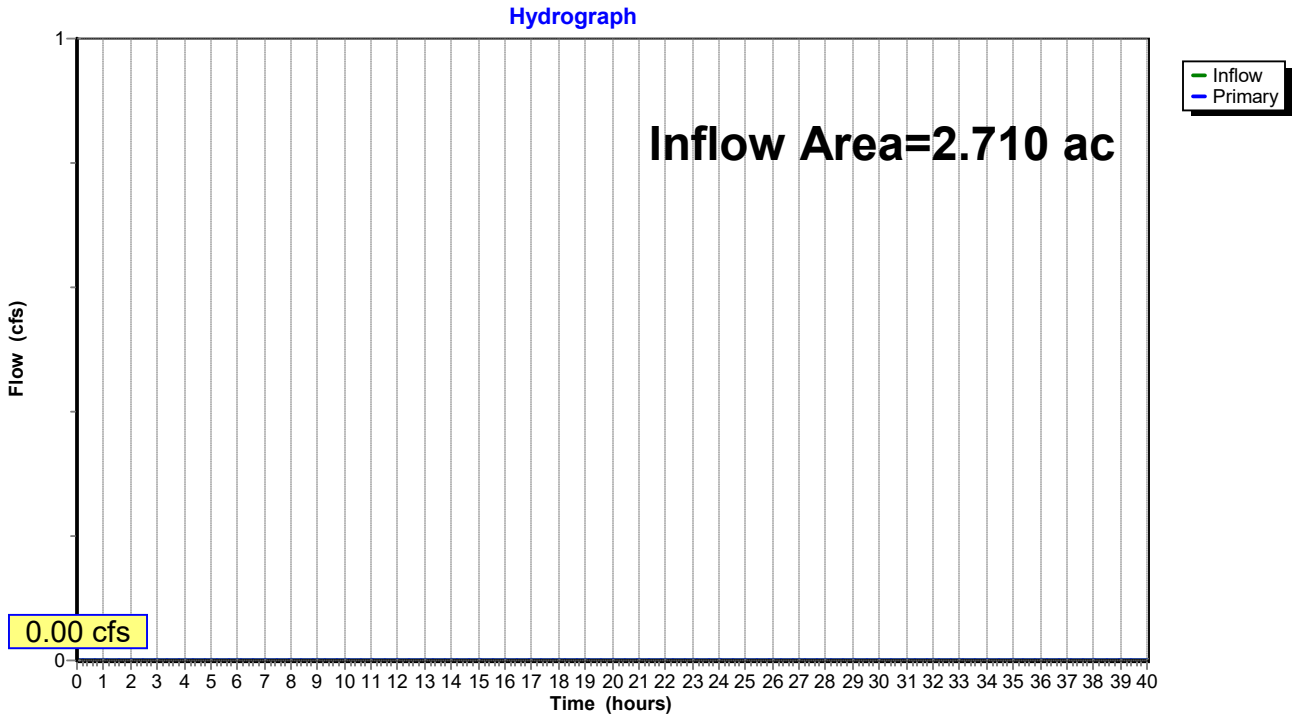

Hydrograph
Inflow Area=0.975 ac
Peak Elev=1,643.74'
Storage=3,337 cf
2.77 cfs
0.23 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
0 1 2 3

Summary for Link 2L: offsite runoff

Inflow Area = 2.710 ac, 75.91% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Link 2L: offsite runoff



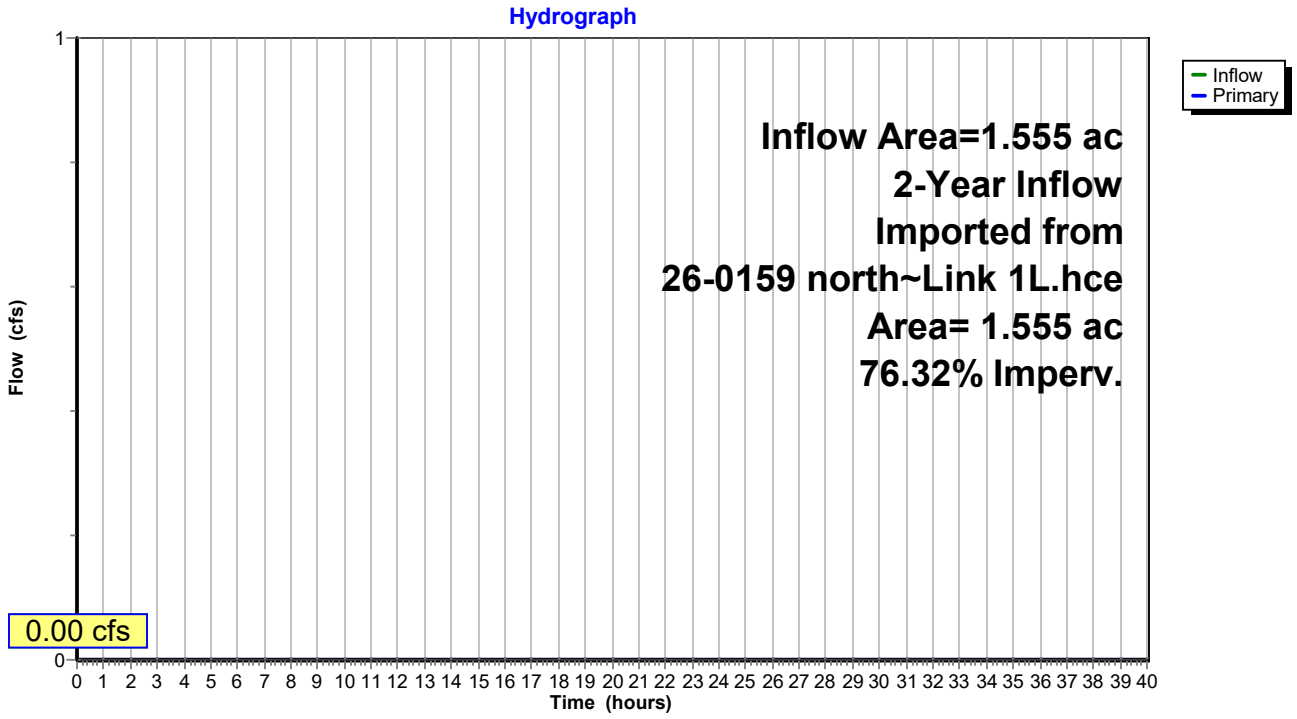
Summary for Link 4L: north

Inflow Area = 1.555 ac, 76.32% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Routed to Link 2L : offsite runoff

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

2-Year Inflow Imported from 26-0159 north~Link 1L.hce

Link 4L: north



Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 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 1S: Runoff Runoff Area=7,842 sf 0.00% Impervious Runoff Depth=0.03"
Tc=10.0 min CN=39 Runoff=0.00 cfs 0.000 af

Subcatchment D5: D5 Runoff Area=42,461 sf 89.28% Impervious Runoff Depth=3.18"
Tc=6.0 min CN=WQ Runoff=4.14 cfs 0.258 af

Subcatchment E1: existing Runoff Area=2.992 ac 0.00% Impervious Runoff Depth=0.03"
Tc=10.0 min CN=39 Runoff=0.01 cfs 0.007 af

Pond P5: Peak Elev=1,644.45' Storage=5,531 cf Inflow=4.14 cfs 0.258 af
Discarded=0.29 cfs 0.258 af Primary=0.00 cfs 0.000 af Outflow=0.29 cfs 0.258 af

Link 2L: offsite runoff Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Link 4L: north 10-Year Inflow Imported from 26-0159 north~Link 1L.hce Inflow=0.00 cfs 0.000 af
Area= 1.555 ac 76.32% Imperv. Primary=0.00 cfs 0.000 af

Total Runoff Area = 4.147 ac Runoff Volume = 0.265 af Average Runoff Depth = 0.77"
79.01% Pervious = 3.277 ac 20.99% Impervious = 0.870 ac

Summary for Subcatchment 1S: Runoff

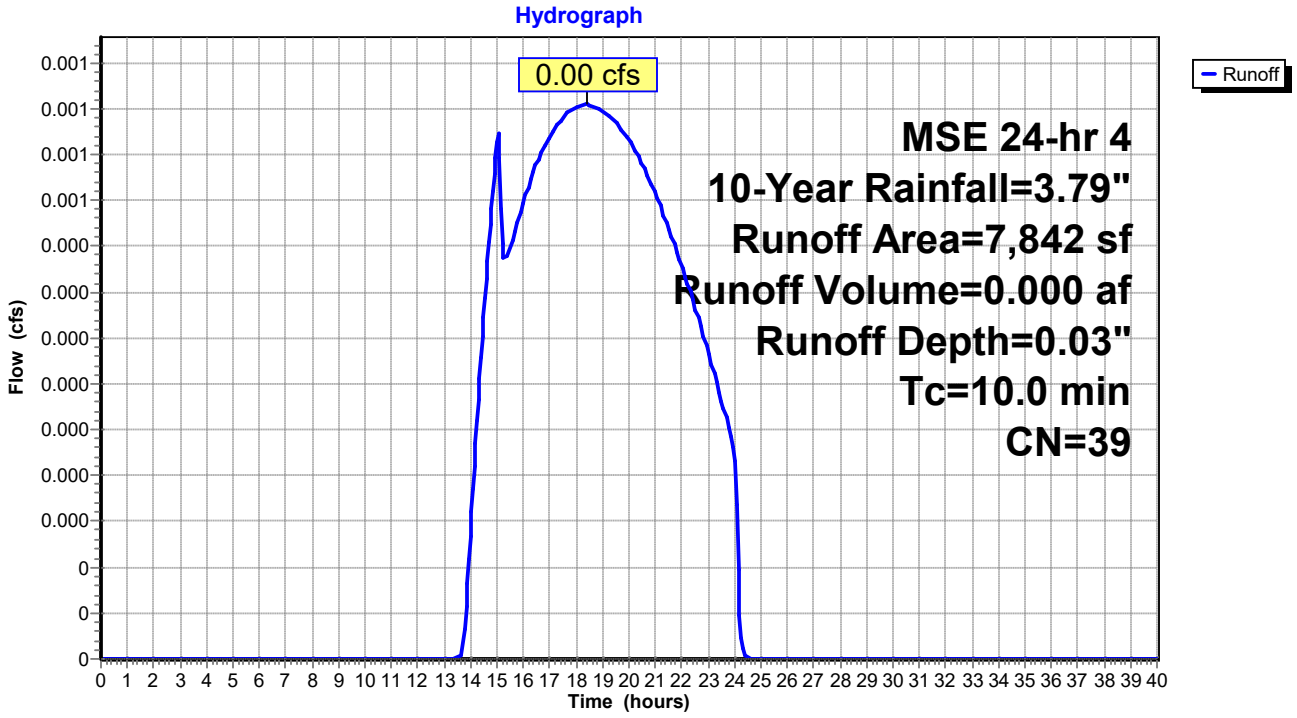
Runoff = 0.00 cfs @ 18.40 hrs, Volume= 0.000 af, Depth= 0.03"
Routed to Link 2L : offsite runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.79"

Area (sf)	CN	Description
7,842	39	>75% Grass cover, Good, HSG A
7,842		100.00% Pervious Area

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

Subcatchment 1S: Runoff



Summary for Subcatchment D5: D5

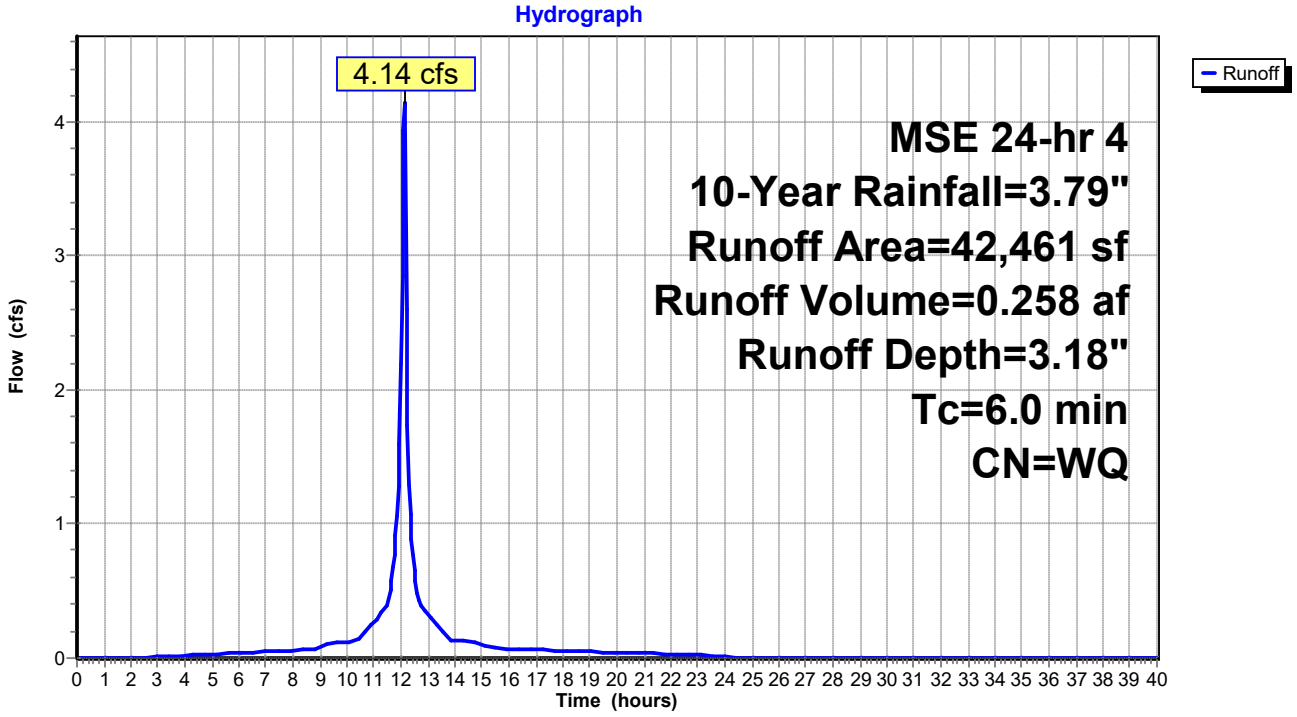
Runoff = 4.14 cfs @ 12.13 hrs, Volume= 0.258 af, Depth= 3.18"
Routed to Pond P5 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.79"

	Area (sf)	CN	Description
*	14,424	98	pavement
*	22,344	98	building
*	1,140	98	basin
	4,553	39	>75% Grass cover, Good, HSG A
	42,461		Weighted Average
	4,553		10.72% Pervious Area
	37,908		89.28% Impervious Area

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

Subcatchment D5: D5



Summary for Subcatchment E1: existing

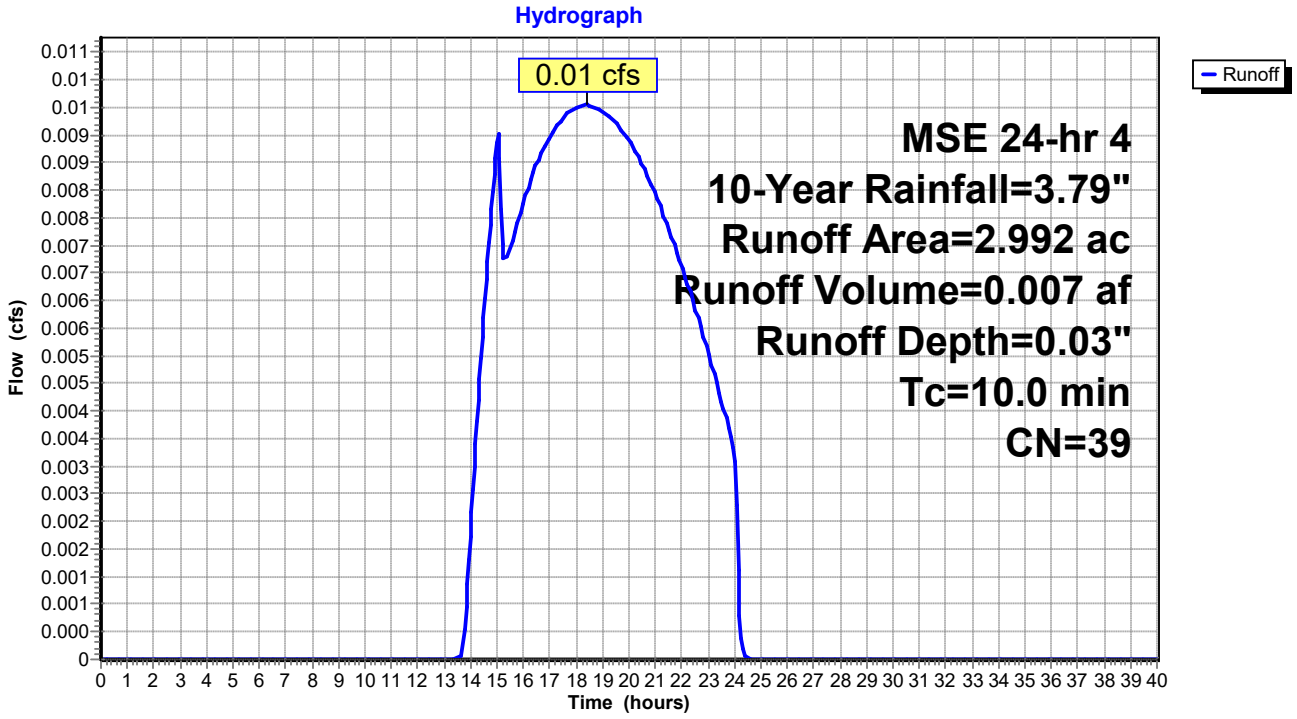
Runoff = 0.01 cfs @ 18.40 hrs, Volume= 0.007 af, Depth= 0.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.79"

Area (ac)	CN	Description
2.992	39	>75% Grass cover, Good, HSG A
2.992		100.00% Pervious Area

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

Subcatchment E1: existing



Summary for Pond P5:

Inflow Area = 0.975 ac, 89.28% Impervious, Inflow Depth = 3.18" for 10-Year event
Inflow = 4.14 cfs @ 12.13 hrs, Volume= 0.258 af
Outflow = 0.29 cfs @ 13.18 hrs, Volume= 0.258 af, Atten= 93%, Lag= 63.0 min
Discarded = 0.29 cfs @ 13.18 hrs, Volume= 0.258 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2L : offsite runoff

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,644.45' @ 13.18 hrs Surf.Area= 3,447 sf Storage= 5,531 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 191.3 min (942.6 - 751.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	24,860 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

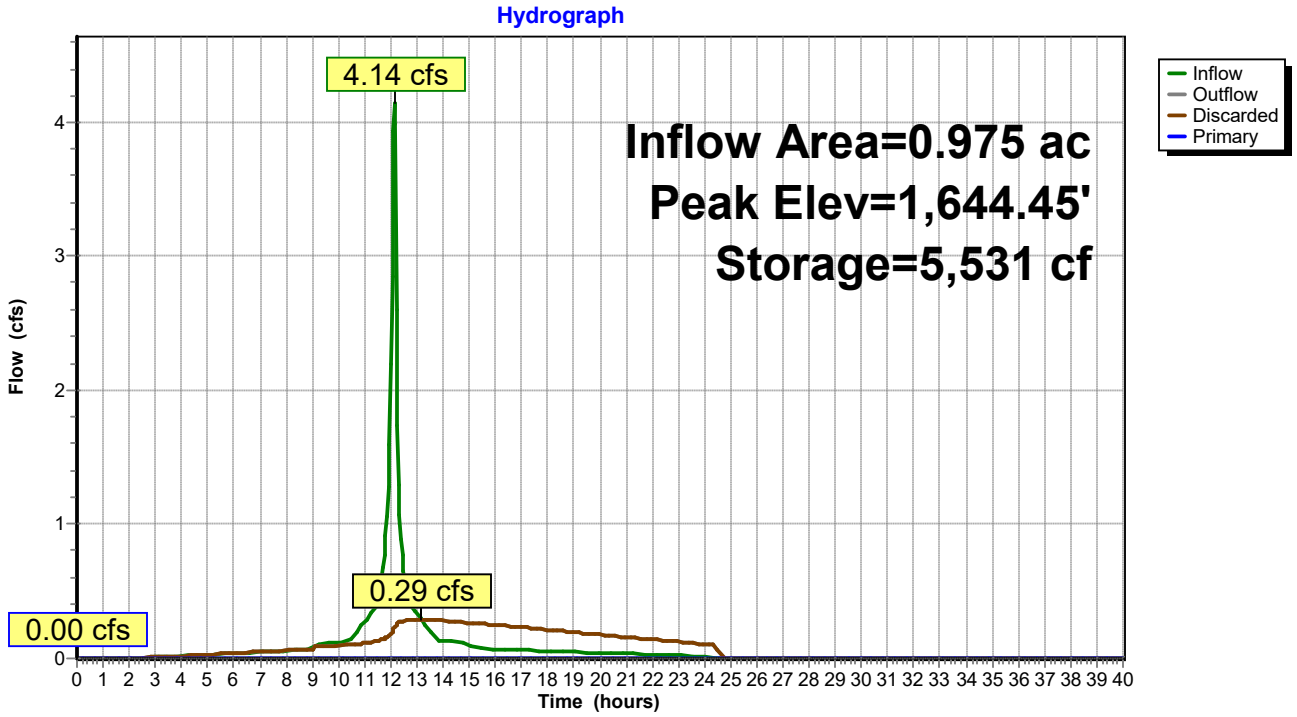
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	1,140	0	0
1,643.00	2,020	1,580	1,580
1,644.00	3,000	2,510	4,090
1,645.00	4,000	3,500	7,590
1,646.00	5,270	4,635	12,225
1,647.00	20,000	12,635	24,860

Device	Routing	Invert	Outlet Devices
#1	Primary	1,644.75'	**10.0' long + 4.0 '/' SideZ x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,642.00'	**3.600 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.29 cfs @ 13.18 hrs HW=1,644.45' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.29 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,642.00' TW=0.00' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond P5:

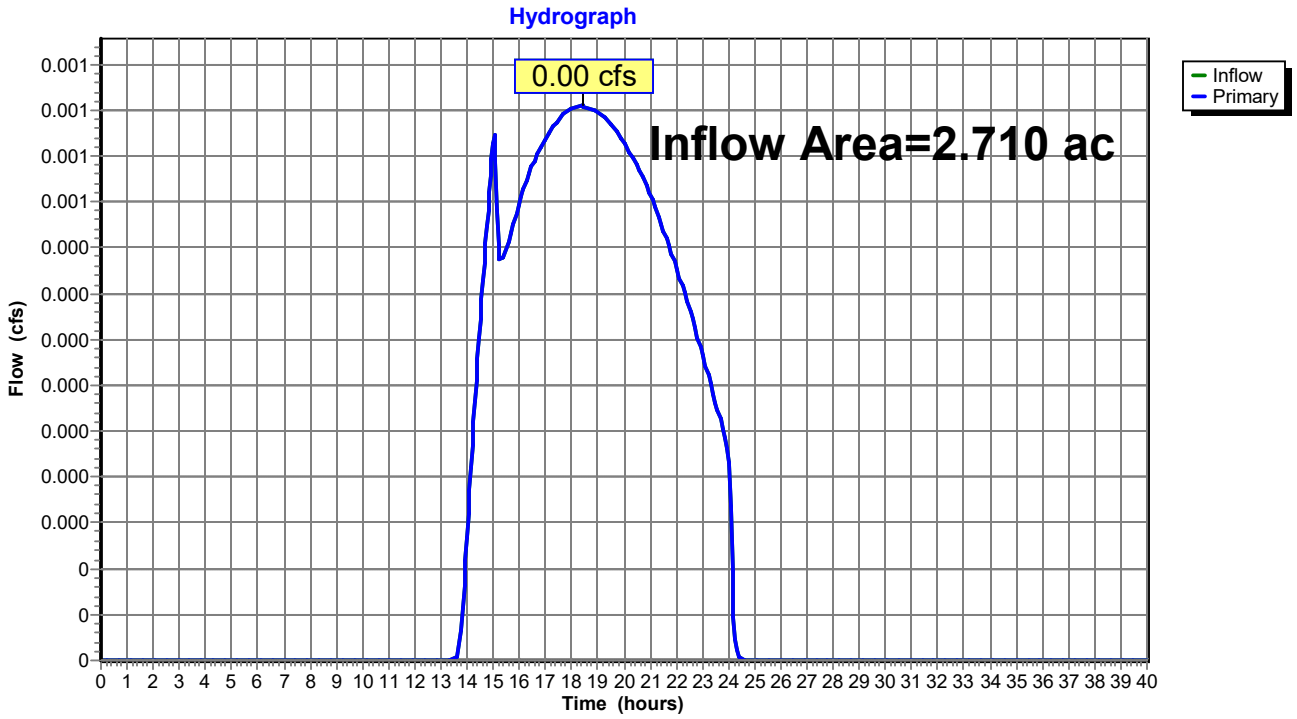

Hydrograph
4.14 cfs
0.29 cfs
0.00 cfs
Inflow Area=0.975 ac
Peak Elev=1,644.45'
Storage=5,531 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

Summary for Link 2L: offsite runoff

Inflow Area = 2.710 ac, 75.91% Impervious, Inflow Depth = 0.00" for 10-Year event
Inflow = 0.00 cfs @ 18.40 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 18.40 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Link 2L: offsite runoff



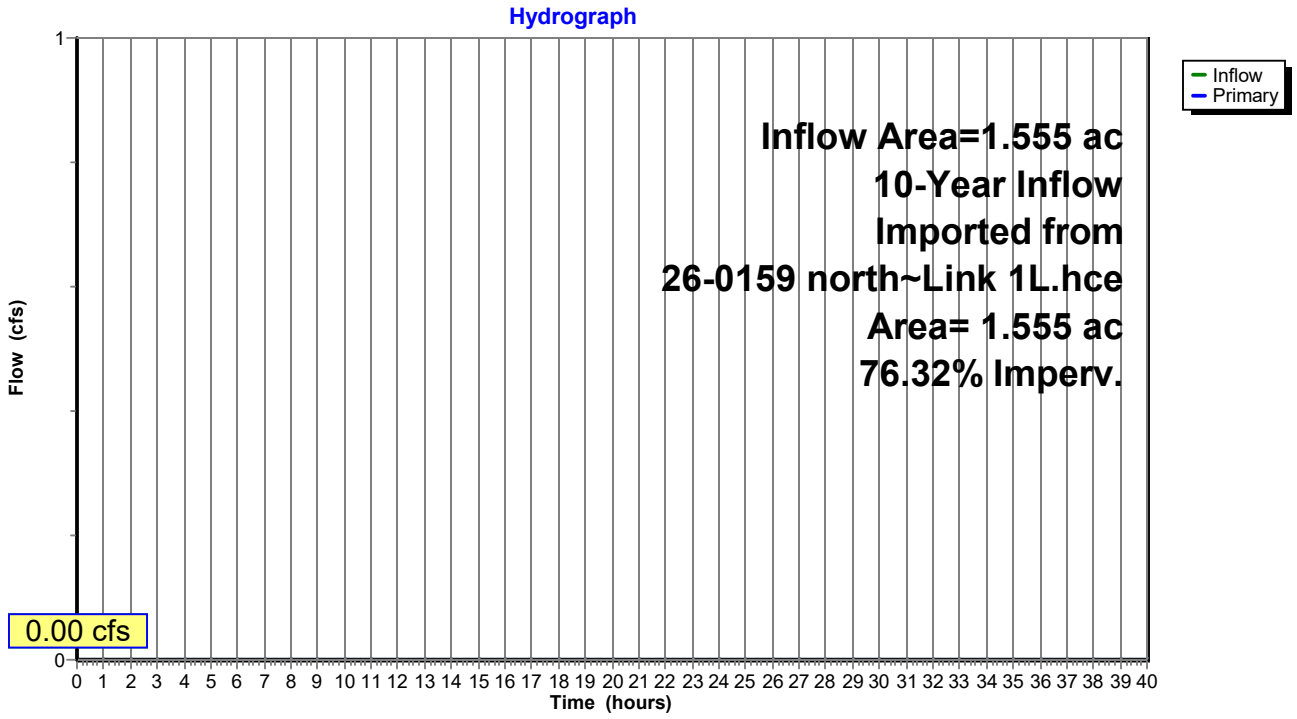
Summary for Link 4L: north

Inflow Area = 1.555 ac, 76.32% Impervious, Inflow Depth = 0.00" for 10-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Routed to Link 2L : offsite runoff

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

10-Year Inflow Imported from 26-0159 north~Link 1L.hce

Link 4L: north



Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 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 1S: Runoff Runoff Area=7,842 sf 0.00% Impervious Runoff Depth=0.58"
Tc=10.0 min CN=39 Runoff=0.06 cfs 0.009 af

Subcatchment D5: D5 Runoff Area=42,461 sf 89.28% Impervious Runoff Depth=5.59"
Tc=6.0 min CN=WQ Runoff=7.09 cfs 0.454 af

Subcatchment E1: existing Runoff Area=2.992 ac 0.00% Impervious Runoff Depth=0.58"
Tc=10.0 min CN=39 Runoff=1.04 cfs 0.143 af

Pond P5: Peak Elev=1,645.01' Storage=7,633 cf Inflow=7.09 cfs 0.454 af
Discarded=0.33 cfs 0.355 af Primary=3.81 cfs 0.099 af Outflow=4.14 cfs 0.454 af

Link 2L: offsite runoff Inflow=7.30 cfs 0.211 af
Primary=7.30 cfs 0.211 af

Link 4L: north 100-Year Inflow Imported from 26-0159 north~Link 1L.hce Inflow=3.94 cfs 0.103 af
Area= 1.555 ac 76.32% Imperv. Primary=3.94 cfs 0.103 af

Total Runoff Area = 4.147 ac Runoff Volume = 0.606 af Average Runoff Depth = 1.75"
79.01% Pervious = 3.277 ac 20.99% Impervious = 0.870 ac

Summary for Subcatchment 1S: Runoff

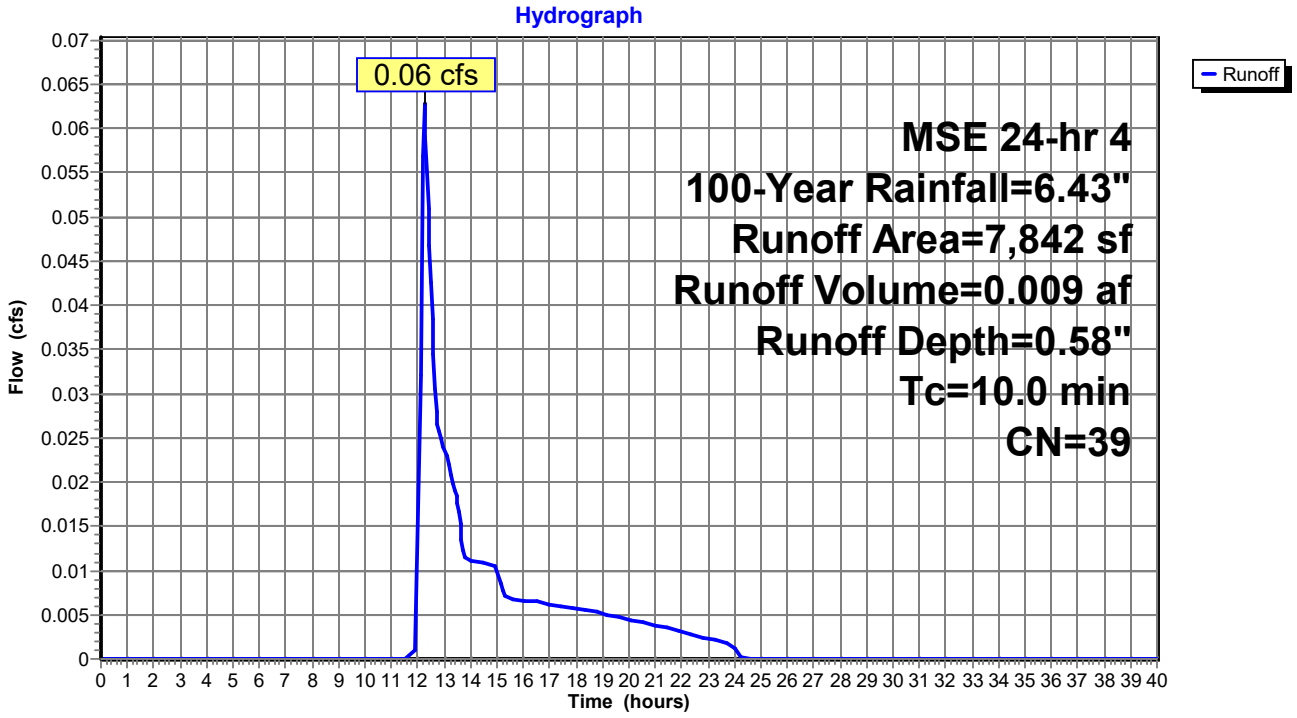
Runoff = 0.06 cfs @ 12.26 hrs, Volume= 0.009 af, Depth= 0.58"
Routed to Link 2L : offsite runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.43"

Area (sf)	CN	Description
7,842	39	>75% Grass cover, Good, HSG A
7,842		100.00% Pervious Area

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

Subcatchment 1S: Runoff



Summary for Subcatchment D5: D5

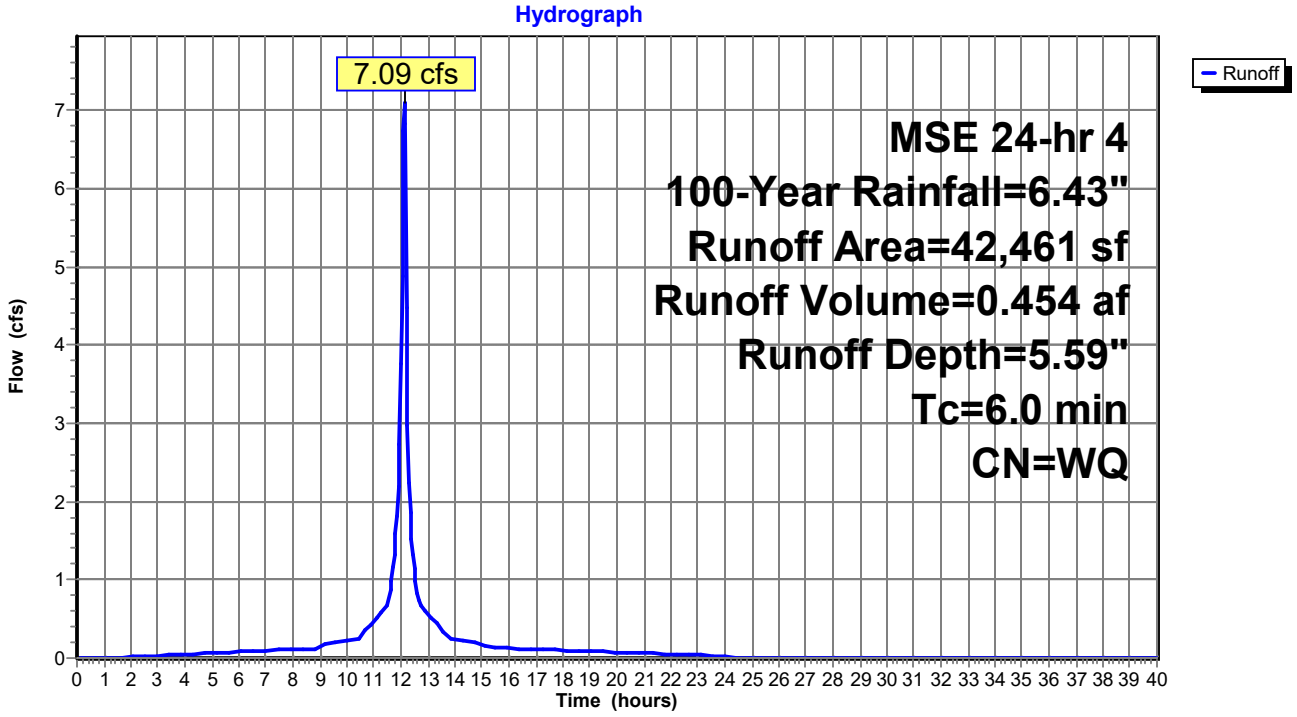
Runoff = 7.09 cfs @ 12.13 hrs, Volume= 0.454 af, Depth= 5.59"
Routed to Pond P5 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.43"

	Area (sf)	CN	Description
*	14,424	98	pavement
*	22,344	98	building
*	1,140	98	basin
	4,553	39	>75% Grass cover, Good, HSG A
	42,461		Weighted Average
	4,553		10.72% Pervious Area
	37,908		89.28% Impervious Area

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

Subcatchment D5: D5



Summary for Subcatchment E1: existing

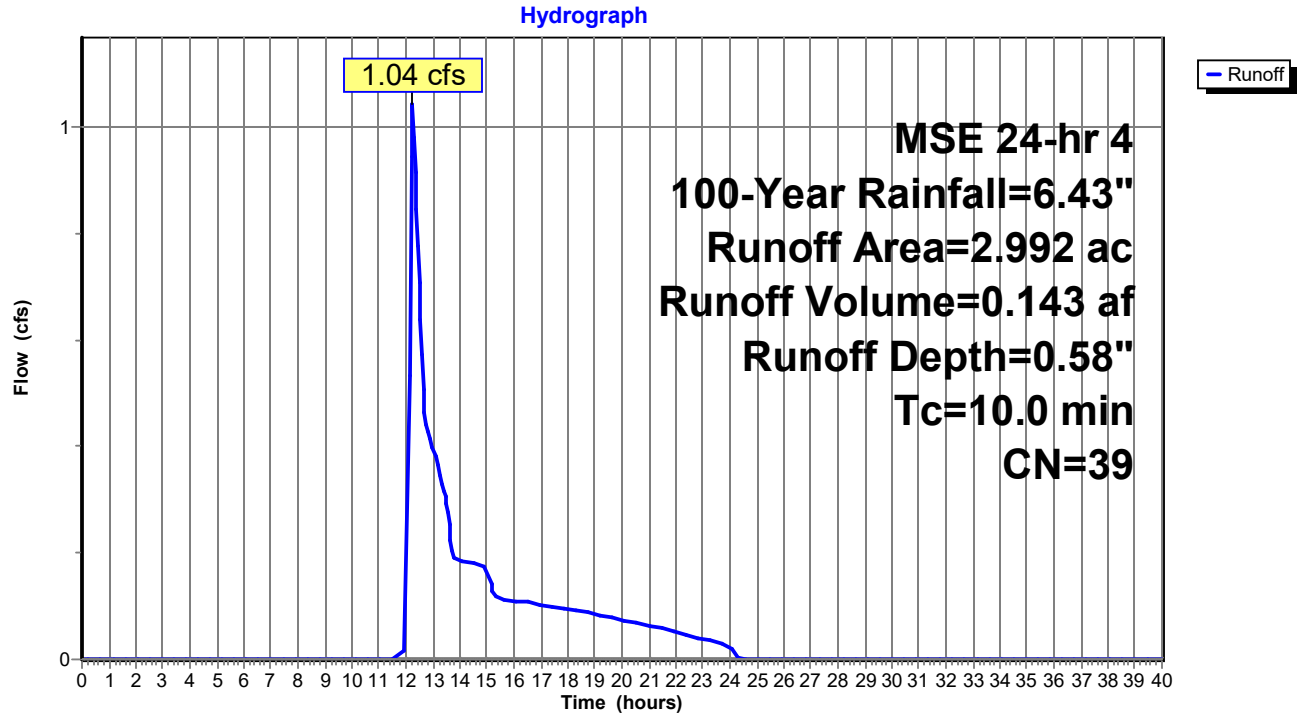
Runoff = 1.04 cfs @ 12.26 hrs, Volume= 0.143 af, Depth= 0.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.43"

Area (ac)	CN	Description
2.992	39	>75% Grass cover, Good, HSG A
2.992		100.00% Pervious Area

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

Subcatchment E1: existing



Summary for Pond P5:

Inflow Area = 0.975 ac, 89.28% Impervious, Inflow Depth = 5.59" for 100-Year event
Inflow = 7.09 cfs @ 12.13 hrs, Volume= 0.454 af
Outflow = 4.14 cfs @ 12.22 hrs, Volume= 0.454 af, Atten= 42%, Lag= 5.8 min
Discarded = 0.33 cfs @ 12.22 hrs, Volume= 0.355 af
Primary = 3.81 cfs @ 12.22 hrs, Volume= 0.099 af
Routed to Link 2L : offsite runoff

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,645.01' @ 12.22 hrs Surf.Area= 4,014 sf Storage= 7,633 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 174.4 min (919.3 - 744.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	24,860 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

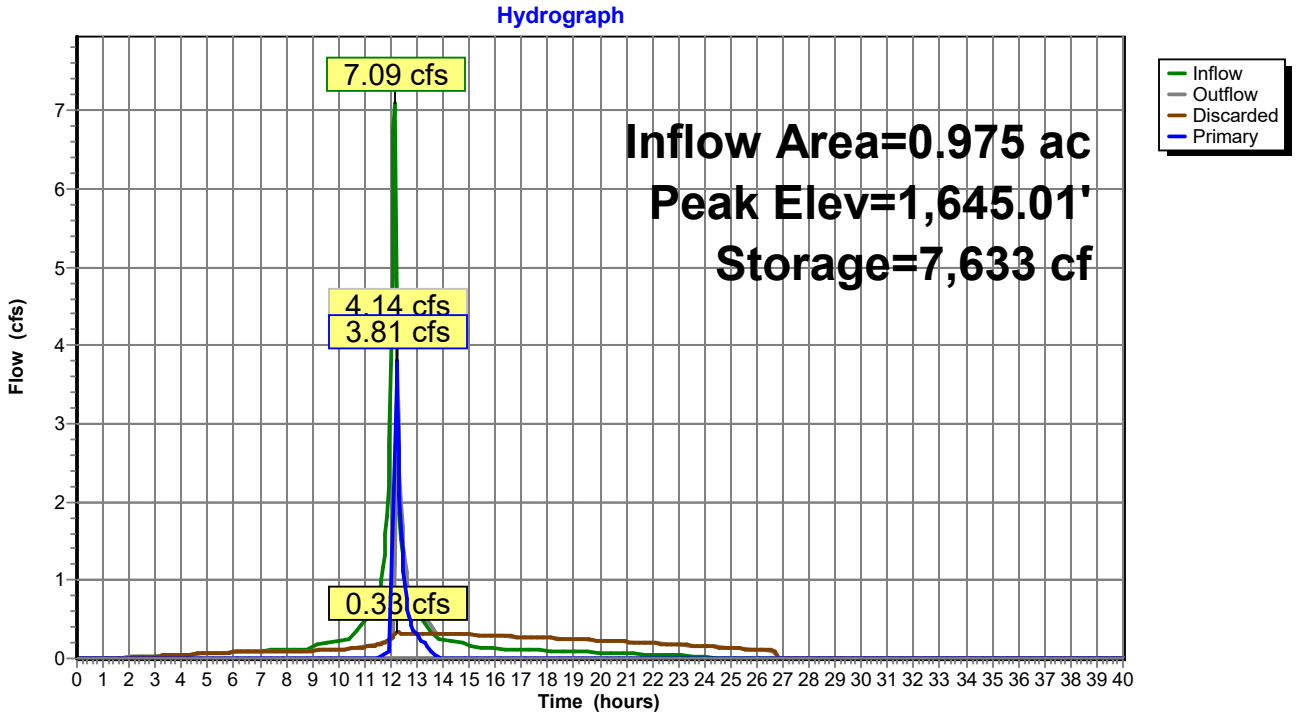
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	1,140	0	0
1,643.00	2,020	1,580	1,580
1,644.00	3,000	2,510	4,090
1,645.00	4,000	3,500	7,590
1,646.00	5,270	4,635	12,225
1,647.00	20,000	12,635	24,860

Device	Routing	Invert	Outlet Devices
#1	Primary	1,644.75'	**10.0' long + 4.0 '/' SideZ x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,642.00'	**3.600 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.33 cfs @ 12.22 hrs HW=1,644.99' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.33 cfs)

Primary OutFlow Max=3.47 cfs @ 12.22 hrs HW=1,644.99' TW=0.00' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Weir Controls 3.47 cfs @ 1.30 fps)

Pond P5:

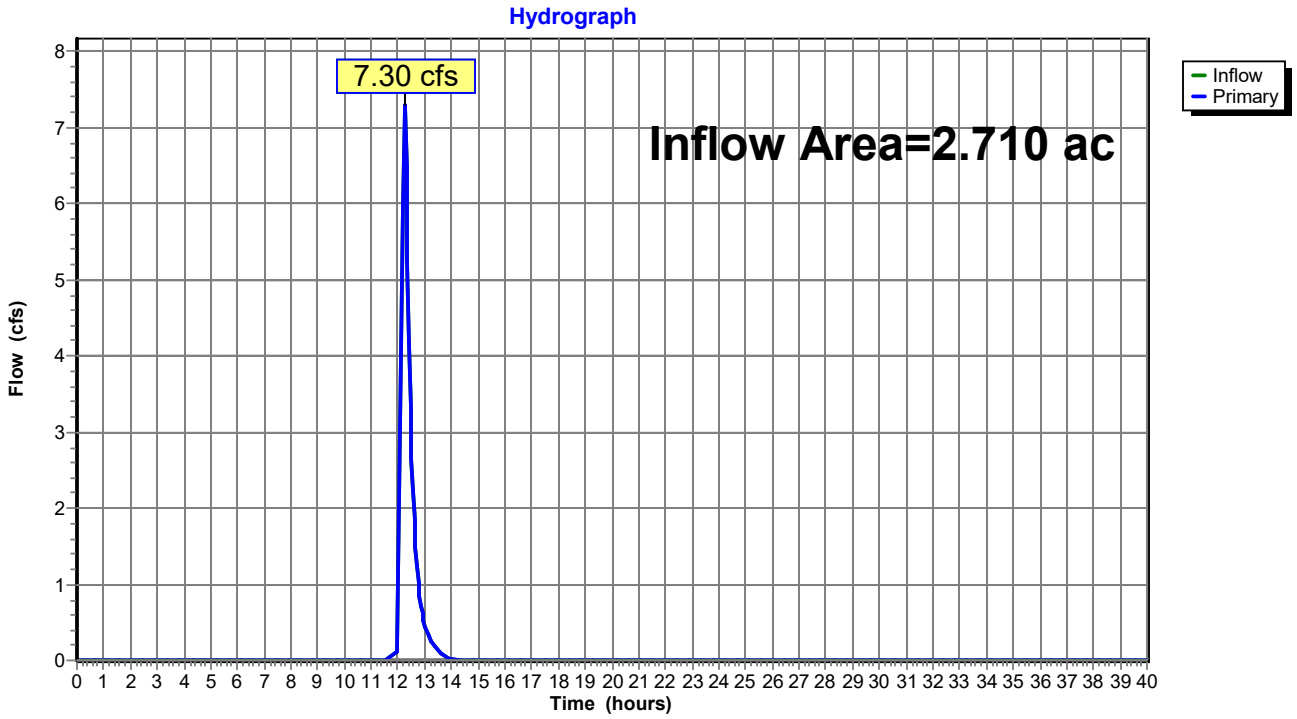

Hydrograph
7.09 cfs
4.14 cfs
3.81 cfs
0.38 cfs
Inflow Area=0.975 ac
Peak Elev=1,645.01'
Storage=7,633 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Summary for Link 2L: offsite runoff

Inflow Area = 2.710 ac, 75.91% Impervious, Inflow Depth = 0.93" for 100-Year event
Inflow = 7.30 cfs @ 12.26 hrs, Volume= 0.211 af
Primary = 7.30 cfs @ 12.26 hrs, Volume= 0.211 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Link 2L: offsite runoff



Summary for Link 4L: north

Inflow Area = 1.555 ac, 76.32% Impervious, Inflow Depth = 0.79" for 100-Year event
Inflow = 3.94 cfs @ 12.27 hrs, Volume= 0.103 af
Primary = 3.94 cfs @ 12.27 hrs, Volume= 0.103 af, Atten= 0%, Lag= 0.0 min
Routed to Link 2L : offsite runoff

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

100-Year Inflow Imported from 26-0159 north~Link 1L.hce

Link 4L: north

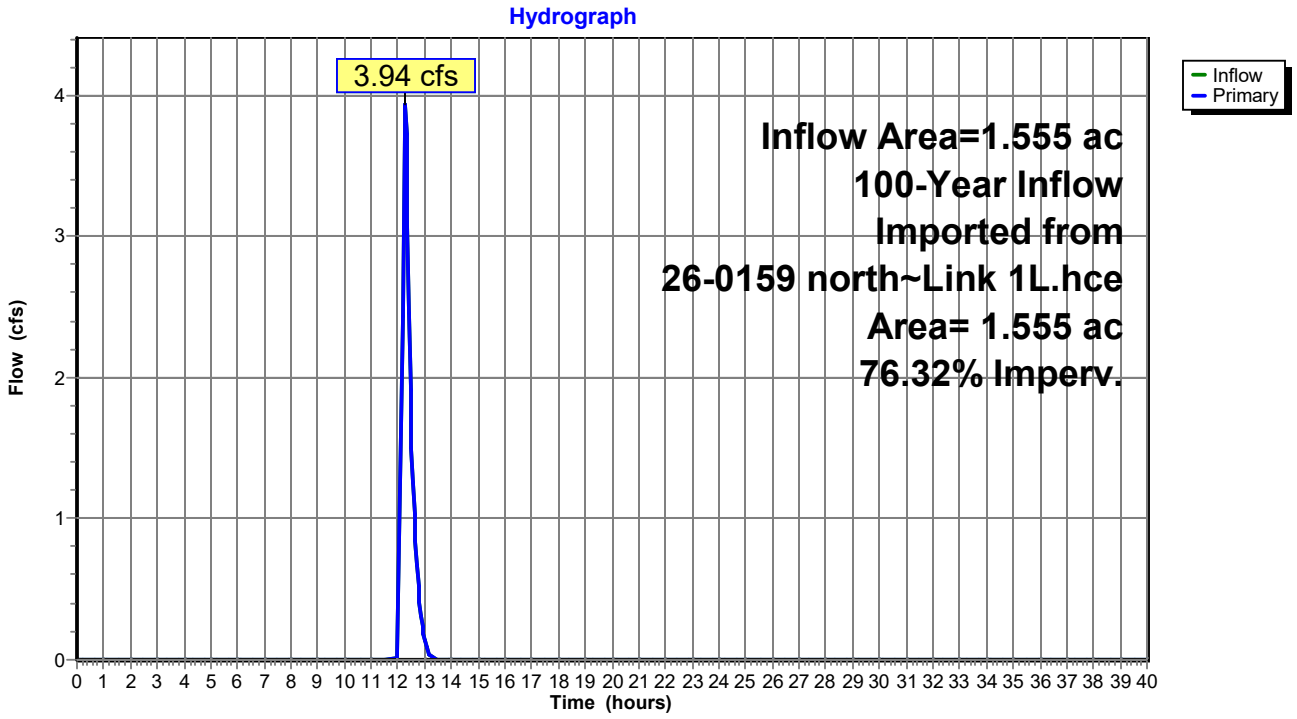


TABLE OF CONTENTS

APPENDIX D

Proposed Infiltration and WinSLAMM Calculations

Infiltration Volumes

U-Haul Eagle River

Location: City of Eagle River

Existing Infiltration Volume:

Inflow Area: 118,048 sf
Rainfall Total: 22.63 in

Total Volume= Inflow Area x Rainfall Total
Total Volume: 222,618 cf

Volume Leaving Site: 0

Existing Infiltration Volume = Total Volume-Volume Leaving Site
Existing Infiltration Volume: 222,618 cf

Proposed Infiltration Volume:

Inflow Area: 118,048 sf
Total Rainfall Infiltrated: 22.63 in

Total Volume= Inflow Area x Rainfall Total
Total Potential Volume Runoff: 222,618 cf
Outfall Total (from WinSLAMM): 127 cf
Proposed Infiltration Volume 222,491 cf

Percent of Pre-development Infiltration Volume Infiltrated:

Infiltration Percent = Proposed Infiltration Volume/Existing Infiltration Volume
Infiltration Percent: 99.94%

Calculated by: Dustin Vreeland
Date: 5/28/2026

Data file name: \\VREELAND-SERVER\Data\Vital\Cad Files\2026\26-0159 Barnes - UHaul Eagle River\26-0159 winslamm.mdb
WinSLAMM Version 10.5.0
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Green Bay WI 1969.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_Res and Other Urban Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban 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\WI_Res and Other Urban 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: 01/02/69 Study period ending date: 12/28/69
Start of Winter Season: 11/25 End of Winter Season: 03/29
Date: 05-28-2026 Time: 22:17:46
Site information:

LU# 1 - Commercial: Commercial 1 Total area (ac): 0.421
  1 - Roofs 1: 0.268 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  13 - Paved Parking 1: 0.110 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  51 - Small Landscaped Areas 1: 0.042 ac. Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  70 - Water Body Areas: 0.001 ac. Source Area PSD File:

LU# 2 - Commercial: Commercial 2 Total area (ac): 0.934
  1 - Roofs 1: 0.333 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  13 - Paved Parking 1: 0.387 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  51 - Small Landscaped Areas 1: 0.200 ac. Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  70 - Water Body Areas: 0.014 ac. Source Area PSD File:

LU# 3 - Commercial: Commercial 3 Total area (ac): 0.081
  1 - Roofs 1: 0.021 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  13 - Paved Parking 1: 0.007 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  51 - Small Landscaped Areas 1: 0.049 ac. Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  70 - Water Body Areas: 0.004 ac. Source Area PSD File:

LU# 4 - Commercial: Commercial 4 Total area (ac): 0.119
  1 - Roofs 1: 0.034 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  51 - Small Landscaped Areas 1: 0.078 ac. Normal Sandy Source Area PSD File:

C:\WinSLAMM Files\NURP.cpz
     70 - Water Body Areas: 0.007 ac.   Source Area PSD File:

LU# 5 - Commercial: Commercial 5   Total area (ac): 0.975
     1 - Roofs 1: 0.513 ac.   Pitched   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     13 - Paved Parking 1: 0.331 ac.   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     51 - Small Landscaped Areas 1: 0.105 ac.   Normal Sandy   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     70 - Water Body Areas: 0.026 ac.   Source Area PSD File:

LU# 6 - Commercial: Commercial 6   Total area (ac): 0.180
     51 - Small Landscaped Areas 1: 0.180 ac.   Normal Sandy   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

Control Practice 1: Biofilter CP# 1 (DS) - P1
1. Top area (square feet) = 810
2. Bottom aea (square feet) = 1
3. Depth (ft): 4
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: 0
12. Engineered soil depth (ft) = 0
13. Engineered soil porosity = 0
14. Percent solids reduction due to flow through engineered soil = 0
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
Biofilter Outlet/Discharge Characteristics:
Outlet type: Broad Crested Weir
1. Weir crest length (ft): 5
2. Weir crest width (ft): 5
3. Height of datum to bottom of weir opening: 3
Outlet type: Surface Discharge Pipe
1. Surface discharge pipe outlet diameter (ft): 0.67
2. Pipe invert elevation above datum (ft): 1.15
3. Number of surface pipe outlets: 1

Control Practice 2: Biofilter CP# 2 (DS) - P2
1. Top area (square feet) = 6100
2. Bottom aea (square feet) = 500
3. Depth (ft): 4
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:   0
   12.  Engineered soil depth (ft) =  0
   13.  Engineered soil porosity =  0
   14. Percent solids reduction due to flow through engineered soil =  0
   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
        Biofilter Outlet/Discharge Characteristics:
       Outlet type:  Broad Crested Weir
              1.  Weir crest length (ft):   10
              2.  Weir crest width (ft):   5
              3.  Height of datum to bottom of weir opening:   3
       Outlet type:  Surface Discharge Pipe
              1.  Surface discharge pipe outlet diameter (ft):   1
              2.  Pipe invert elevation above datum (ft):   2.15
              3.  Number of surface pipe outlets:   1

Control Practice 3:  Biofilter CP# 3 (DS) - P3
   1.  Top area (square feet) =  10000
   2.  Bottom aea (square feet) =  460
   3.  Depth (ft):   3
   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:   0
   12.  Engineered soil depth (ft) =  0
   13.  Engineered soil porosity =  0
   14. Percent solids reduction due to flow through engineered soil =  0
   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
        Biofilter Outlet/Discharge Characteristics:
       Outlet type:  Broad Crested Weir
              1.  Weir crest length (ft):   10
              2.  Weir crest width (ft):   4
              3.  Height of datum to bottom of weir opening:   1

Control Practice 4:  Biofilter CP# 4 (DS) - P4
   1.  Top area (square feet) =  10000
   2.  Bottom aea (square feet) =  800
   3.  Depth (ft):   3
   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: 0
12. Engineered soil depth (ft) = 0
13. Engineered soil porosity = 0
14. Percent solids reduction due to flow through engineered soil = 0
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

Biofilter Outlet/Discharge Characteristics:

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 10
2. Weir crest width (ft): 4
3. Height of datum to bottom of weir opening: 2

Control Practice 5: Biofilter CP# 5 (DS) - P5

1. Top area (square feet) = 20000
2. Bottom aea (square feet) = 1140
3. Depth (ft): 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: 0
12. Engineered soil depth (ft) = 0
13. Engineered soil porosity = 0
14. Percent solids reduction due to flow through engineered soil = 0
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

Biofilter Outlet/Discharge Characteristics:

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 10
2. Weir crest width (ft): 4
3. Height of datum to bottom of weir opening: 2.75

SLAMM for Windows Version 10.5.0
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Data file name: \\VREELAND-SERVER\Data\Vital\Cad Files\2026\26-0159 Barnes - UHaul Eagle River\26-0159 winslamm.mdb
Data file description:
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Green Bay WI 1969.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_Res and Other Urban Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban 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\WI_Res and Other Urban 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
Start of Winter Season: 11/25 End of Winter Season: 03/29
Model Run Start Date: 01/02/69 Model Run End Date: 12/28/69
Date of run: 05-28-2026 Time of run: 22:17:27
Total Area Modeled (acres): 2.710
Years in Model Run: 0.99

	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:	139829	-	65.90	575.2	-
Outfall Total with Controls:	127.4	99.91%	227.0	1.806	99.69%
Annualized Total After Outfall Controls:	129.2			1.831	

. Percent Solids Reduction due to Engineered Media Not Used
. Percent Solids Reduction due to Engineered Media Not Used
. Percent Solids Reduction due to Engineered Media Not Used
. Percent Solids Reduction due to Engineered Media Not Used
. Percent Solids Reduction due to Engineered Media Not Used

APPENDIX E

Soil Loss and Sediment Discharge Map and Calculations

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: U-Haul

Project: U-Haul Eagle River

Date: 05/28/26

County: Vilas

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	07/01/26	04/01/27	64.2%	100	Sand	0.15	1.2%	195	0.17	1.00	1.7	0.924	Silt Fence	0.9
Seed with Mulch or Ero	04/01/27	06/01/27	16.4%	100	Sand	0.15	1.2%	195	0.17	0.10	0.0	0.924	Silt Fence	0.0
End	06/01/27	-----	-----	-----	-------	-----	1.2%	195	0.17	------	-----	0.000		0.0
		-----	-----	-----	-------	-----	1.2%	195	0.17	-----	-----	0.000		0.0
		-----	-----	-----	-------	-----	1.2%	0	-----	-----	-----	0.000		0.0
		-----	-----	-----	-------	-----	0.0%	0	-----	-----	-----	0.000		0.0
										TOTAL	**1.7**		**TOTAL**	**1.0**
													% 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 Thaw-6/30		8/1-8/21	Turf, introduced grasses and legumes Native Grasses, forbs, and legumes

Designed By:	Dustin Vreeland
Date	5/28/2026

APPENDIX F

State of Wisconsin Construction Site Inspection Report

State of Wisconsin
Department of Natural Resources (DNR)
PO Box 7921, Madison WI 53707-7921
dnr.wi.gov

CONSTRUCTION SITE INSPECTION REPORT

Form 3400-187 (R 11/16)

Notice: This form was developed in accordance with s. NR 216.48 Wis. Adm. Code for WPDES permittees' convenience; however, use of this specific form is voluntary. Multiple copies of this form may be made to compile the inspection report. Inspections of the construction site and implemented erosion and sediment control best management practices (BMPs) must be performed weekly and within 24 hours after a rainfall event 0.5 inches or greater.

Construction Site Name and Location (Project, Municipality, and County):	**Site/Facility ID No. (FIN):**
Onsite Contact/Contractor:	**Onsite Phone/Cell:**

Note: Inspection reports, along with erosion control and storm water management plans, are required to be maintained on site in accordance with s. NR 216.48 (4) and made available upon request. PLEASE PRINT LEGIBLY.

Date of inspection:

Time of inspection:
Start: _____ ◯ **am** ◯ **pm**
End: _____ ◯ **am** ◯ **pm**

Type of inspection: ◯ **Weekly** ◯ **Precipitation Event** ◯ **Other (specify)**

Weather/Site Conditions:

Temp. _____ **°F** **Antecedent Soil Moisture**

◯ **Dry** ◯ **Frozen or snow covered**
◯ **Variable** ◯ **Frozen (Thaw predicted in next week)**
◯ **Wet** ◯ **Melting Snow/slush**

Last Rainfall Depth: _____ **inches**

Last Rainfall Date: _____

Describe current phase of construction:

Scheduled Final Stabilization Date for Universal Soil Loss Equation (USLE) [1] :

Project on Schedule[2]? ◯ **Yes** ◯ **No**

Name(s) of individual(s) performing inspection:

Inspector Phone/Cell:

I certify that the information contained on this form is an accurate assessment of site conditions at the time of inspection:

Inspector Signature _____ **Date:** _____

Inspection Questions:	**Yes**	**No (Identify Actions Required):**	**Location/Comments:**	**Actions Completed by Date & Initials**
1. Is the erosion control plan accessible to operators?	☐	☐ Provide onsite copy		
2. Is the permit certificate posted where visible?	☐	☐ Post certificate		
3. Is the current phase of construction on sequence with the site-specific erosion and sediment control plan, including installation/stabilization of ponds and ditches?	☐	☐ Add sediment control ☐ Install missing ditch/pipe/pond ☐ Stabilize bare soil		
4. Are all erosion and sediment control BMPs shown on plan properly installed and in functional condition?	☐	☐ Repair ☐ Modify ☐ Install/Replace		
5. Is inlet protection properly installed and functioning in all inlets likely to receive runoff from the site?	☐	☐ Clean ☐ Replace ☐ Install		
6. Is the air free of fugitive dust resulting from construction activity and bare soil exposure?	☐	☐ Apply water ☐ Apply dust control product		

[1] The Universal Soil Loss Equation (USLE) model and the Construction Site Soil Loss and Sediment Discharge Guidance are available at: http://dnr.wi.gov/topic/stormwater/standards/const_standards.html

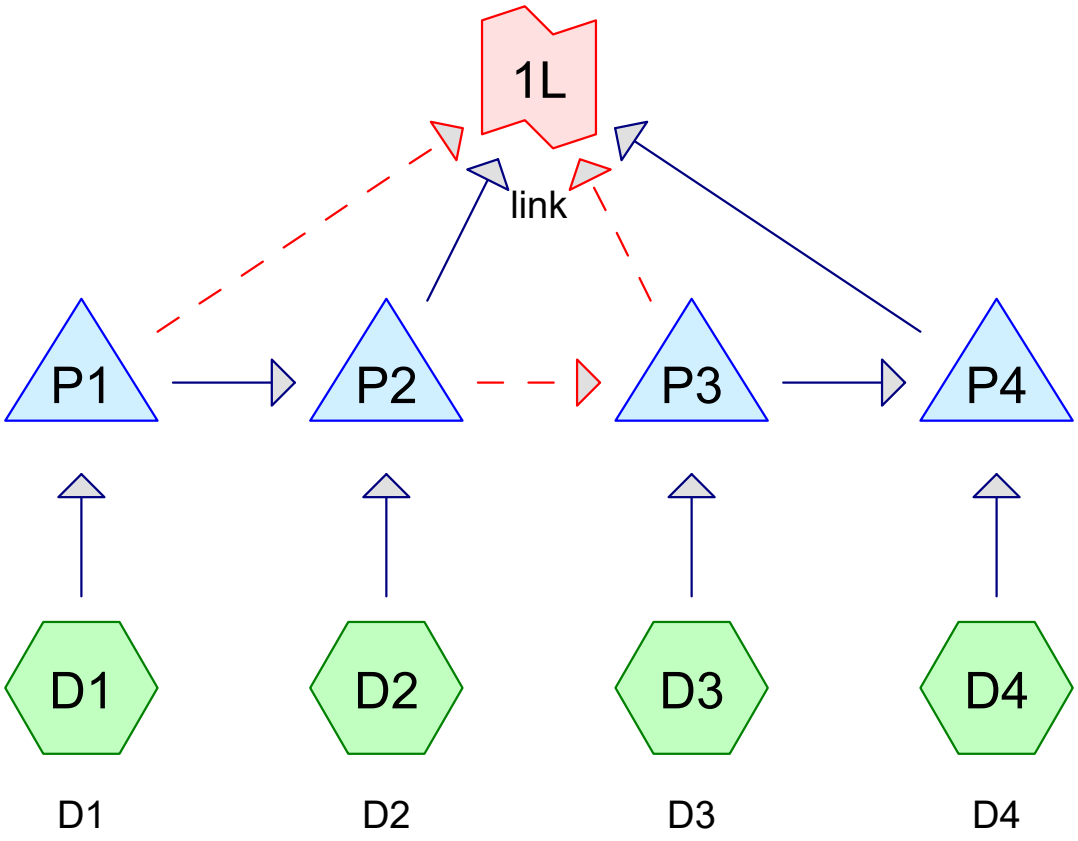
[2] If the project is not on schedule then the soil loss summary for the project should be reviewed and schedule, plan or practices modified accordingly.

CONSTRUCTION SITE INSPECTION REPORT

Inspection Questions:	Yes	No (Identify Actions Required):	Location/Comments:	Actions Completed by Date & Initials
7. Is the public right of way curb line free of tracked soil and accumulation?	☐	☐ Install tracking pad ☐ Widen/lengthen pad ☐ Amend stone/Add geotextile ☐ Install wheel washing station ☐ Close entrance/exit ☐ Limit traffic across disturbed areas ☐ Sweep road and curb line		
8. Are wetlands, lakes, streams, ditches, or storm sewers downstream of the site free of sedimentation and turbid water leaving the site?[3]	☐	☐ Repair/Replace erosion control ☐ Add sediment controls ☐ Modify operations ☐ Contact DNR to verify extent of cleanup required		
9. Is dewatering and/or vehicle and equipment washing being done in a manner that prevents erosion and sediment discharge?	☐	☐ Install treatment train ☐ Install energy dissipation ☐ Modify discharge location ☐ Modify intake to reduce sediment		
10. Are soil stockpiles existing for more than 7 days covered and stabilized?	☐	☐ Seed ☐ Install mat/mulch/polymer ☐ Cover with tarp/plastic sheeting		
11. Are downstream channels and other downhill areas protected from scour and erosion?	☐	☐ Install energy dissipation at outfall ☐ Install ditch checks ☐ Install slope interruption ☐ Install onsite detention		
12. Are good housekeeping practices or treatment controls in place to prevent the discharge of chemicals, cement, trash, and other materials into wetlands, waterways, storm sewers, ditches, or drainage-ways?[4]	☐	☐ Properly dispose of trash ☐ Provide concrete washout station ☐ Contact DNR to verify extent of cleanup required		
13. Is the plan reflective of current site operations and does it address all erosion and sediment control issues identified during the inspection?	☐	☐ Revise sequence ☐ Revise sediment control BMP ☐ Revise erosion control BMP ☐ Revise post-construction storm water BMP		
14. Are all areas where construction has temporarily ceased (and will not resume for more than 2 weeks) temporarily stabilized?	☐	☐ Topsoil & seed ☐ Install mat/mulch/polymer ☐ Cover with tarp/plastic sheeting		
15. Are all areas at final grade permanently vegetated or stabilized with other treatments?	☐	☐ Topsoil & seed ☐ Install mat/mulch/polymer ☐ Sod ☐ Install stone base		
16. Have temporary sediment controls been removed in areas of the site that meet the permit definition of 'final stabilization'?	☐	☐ Water to establish vegetation ☐ Repair or reseed areas ☐ Remove temporary practices		

3 If sediment discharge enters a wetland or waterbody, the permittee should consult with DNR staff to determine if sediment cleanup and/or additional control measures are required.

4 The permittee shall notify the DNR immediately via the spills hotline at (800)943-0003 of any release or spill of a hazardous substance to the environment in accordance with s. 292.11, Wis. Stats., and ch. NR 706, Wis. Adm. Code.



Subcat Reach Pond Link

Routing Diagram for 26-0159 north
Prepared by Vreeland Associates, Printed 5/28/2026
HydroCAD® 10.20-8a s/n 09881 © 2025 HydroCAD Software Solutions LLC

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	MSE 24-hr	4	Default	24.00	1	2.22	2
2	2-Year	MSE 24-hr	4	Default	24.00	1	2.56	2
3	10-Year	MSE 24-hr	4	Default	24.00	1	3.79	2
4	100-Year	MSE 24-hr	4	Default	24.00	1	6.43	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.368	39	>75% Grass cover, Good, HSG A (D1, D2, D3, D4)
0.026	98	basin (D1, D2, D3, D4)
0.657	98	building (D1, D2, D3, D4)
0.504	98	parking lot (D1, D2, D3)
1.555	**84**	**TOTAL AREA**

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	P1	1,642.15	1,642.00	55.0	0.0027	0.012	0.0	8.0	0.0	
2	P2	1,643.15	1,643.00	55.0	0.0027	0.012	0.0	12.0	0.0	

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 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 D1: D1 Runoff Area=18,312 sf 90.12% Impervious Runoff Depth=1.80"
Tc=10.0 min CN=WQ Runoff=0.91 cfs 0.063 af

Subcatchment D2: D2 Runoff Area=40,724 sf 78.59% Impervious Runoff Depth=1.57"
Tc=10.0 min CN=WQ Runoff=1.76 cfs 0.122 af

Subcatchment D3: D3 Runoff Area=3,535 sf 39.52% Impervious Runoff Depth=0.79"
Tc=10.0 min CN=WQ Runoff=0.08 cfs 0.005 af

Subcatchment D4: D4 Runoff Area=5,176 sf 34.78% Impervious Runoff Depth=0.69"
Tc=10.0 min CN=WQ Runoff=0.10 cfs 0.007 af

Pond P1: Peak Elev=1,642.91' Storage=168 cf Inflow=0.91 cfs 0.063 af
Discarded=0.02 cfs 0.016 af Primary=0.80 cfs 0.047 af Secondary=0.00 cfs 0.000 af Outflow=0.82 cfs 0.063 af

Pond P2: Peak Elev=1,642.79' Storage=3,521 cf Inflow=2.51 cfs 0.169 af
Discarded=0.31 cfs 0.169 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.31 cfs 0.169 af

Pond P3: Peak Elev=1,642.04' Storage=21 cf Inflow=0.08 cfs 0.005 af
Discarded=0.04 cfs 0.005 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.005 af

Pond P4: Peak Elev=1,642.02' Storage=13 cf Inflow=0.10 cfs 0.007 af
Discarded=0.07 cfs 0.007 af Primary=0.00 cfs 0.000 af Outflow=0.07 cfs 0.007 af

Link 1L: link Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 1.555 ac Runoff Volume = 0.197 af Average Runoff Depth = 1.52"
23.68% Pervious = 0.368 ac 76.32% Impervious = 1.187 ac

Summary for Subcatchment D1: D1

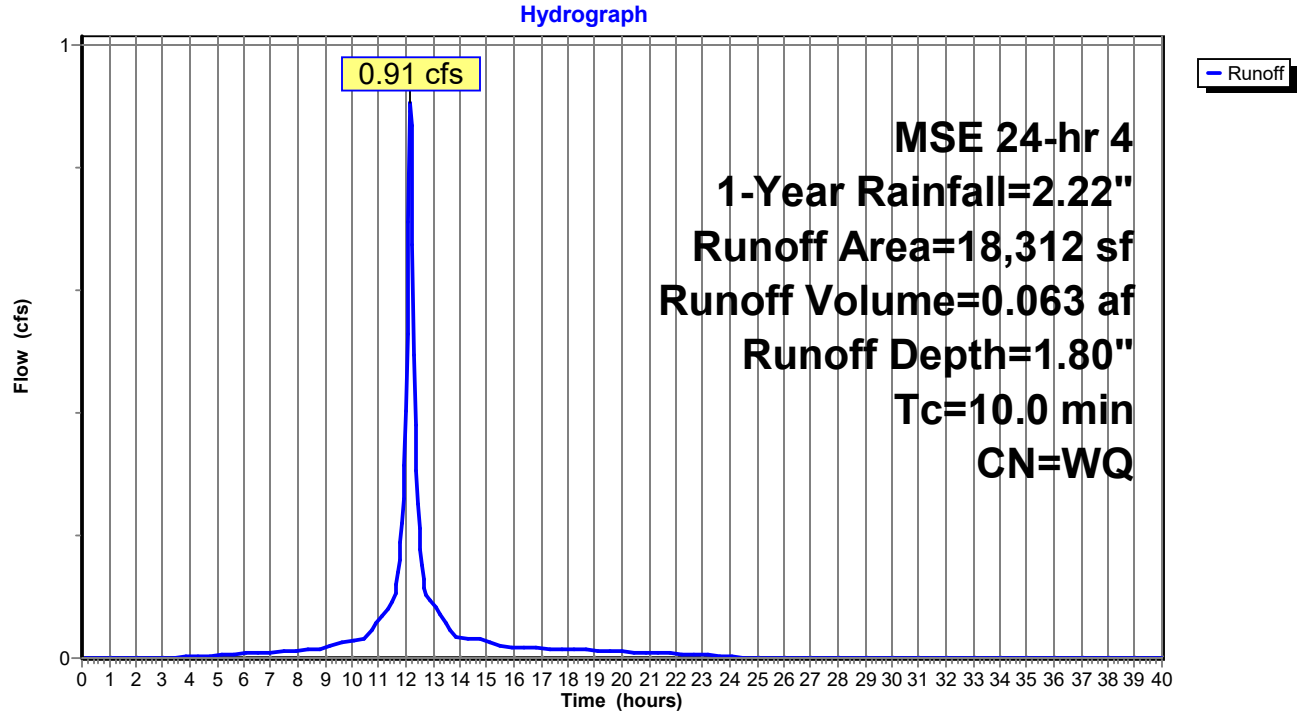
Runoff = 0.91 cfs @ 12.17 hrs, Volume= 0.063 af, Depth= 1.80"
Routed to Pond P1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.22"

	Area (sf)	CN	Description
*	4,776	98	parking lot
*	11,687	98	building
*	40	98	basin
	1,809	39	>75% Grass cover, Good, HSG A
	18,312		Weighted Average
	1,809		9.88% Pervious Area
	16,503		90.12% Impervious Area

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

Subcatchment D1: D1



Summary for Subcatchment D2: D2

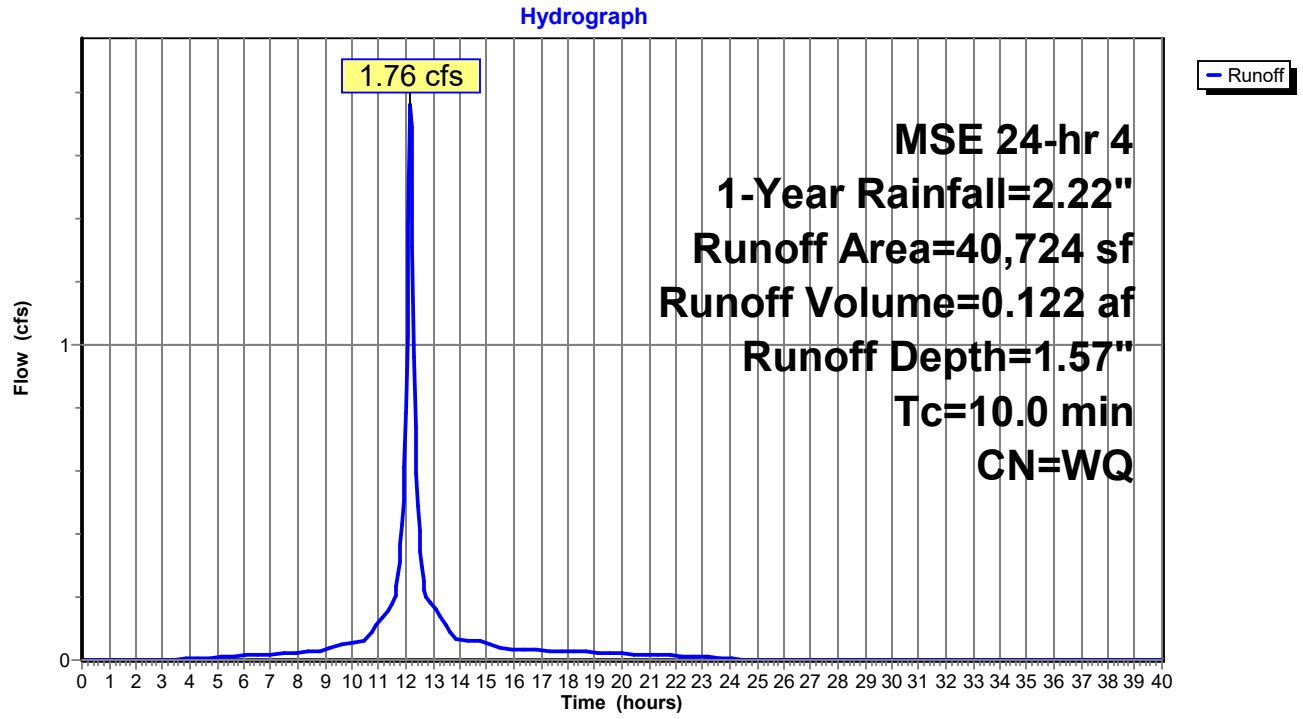
Runoff = 1.76 cfs @ 12.17 hrs, Volume= 0.122 af, Depth= 1.57"
Routed to Pond P2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.22"

	Area (sf)	CN	Description
*	630	98	basin
*	16,865	98	parking lot
	8,720	39	>75% Grass cover, Good, HSG A
*	14,509	98	building
	40,724		Weighted Average
	8,720		21.41% Pervious Area
	32,004		78.59% Impervious Area

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

Subcatchment D2: D2



Summary for Subcatchment D3: D3

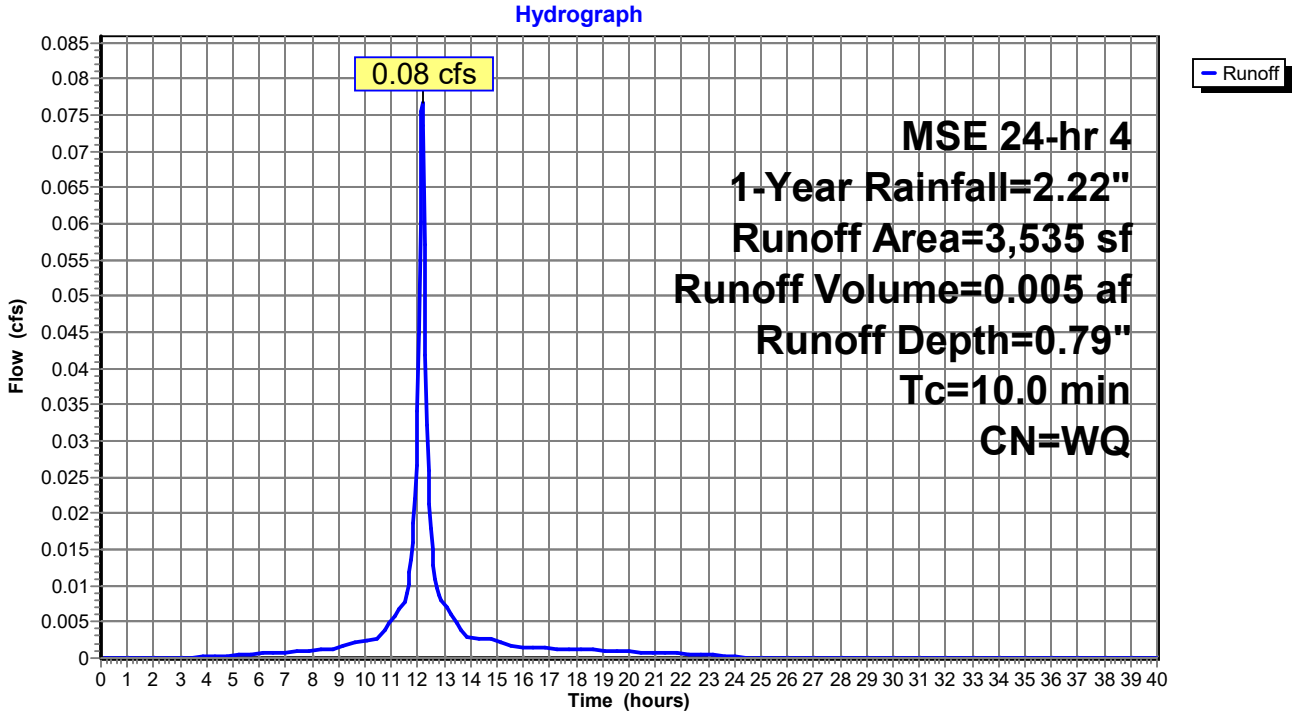
Runoff = 0.08 cfs @ 12.17 hrs, Volume= 0.005 af, Depth= 0.79"
Routed to Pond P3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.22"

	Area (sf)	CN	Description
*	303	98	parking lot
*	924	98	building
*	170	98	basin
	2,138	39	>75% Grass cover, Good, HSG A
	3,535		Weighted Average
	2,138		60.48% Pervious Area
	1,397		39.52% Impervious Area

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

Subcatchment D3: D3



Summary for Subcatchment D4: D4

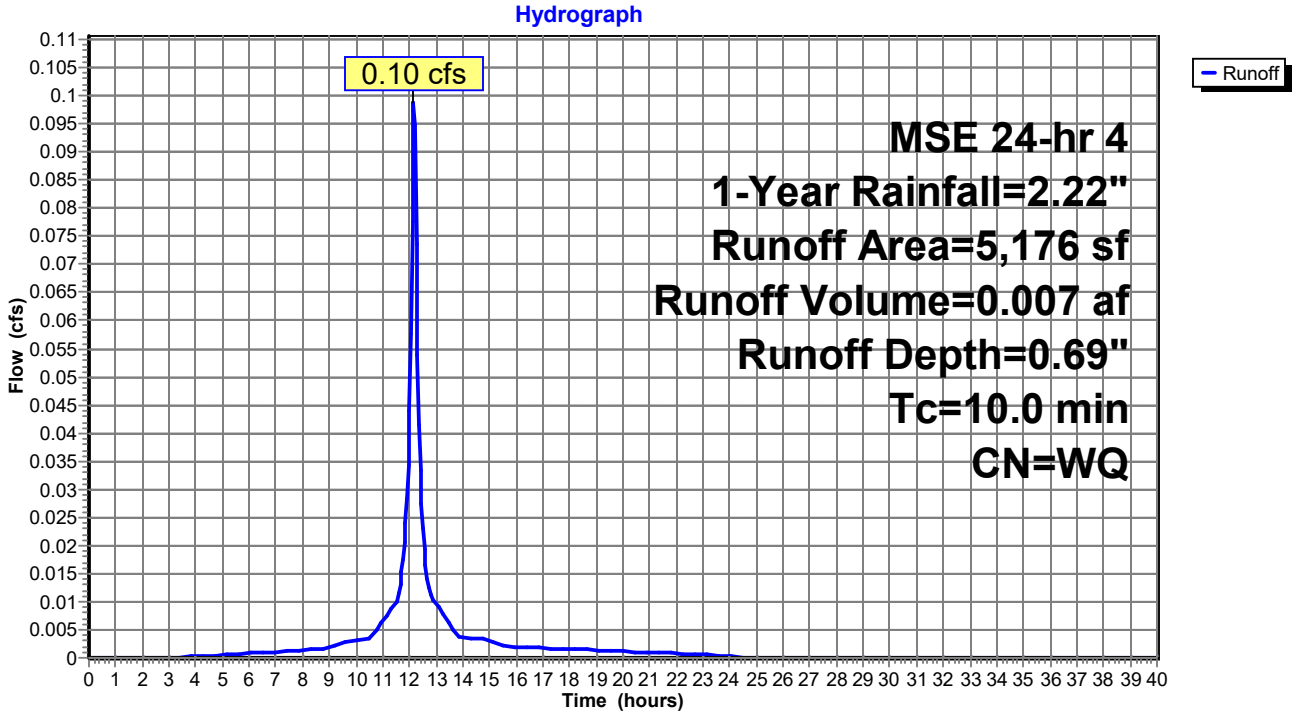
Runoff = 0.10 cfs @ 12.17 hrs, Volume= 0.007 af, Depth= 0.69"
Routed to Pond P4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.22"

	Area (sf)	CN	Description
*	1,500	98	building
*	300	98	basin
	3,376	39	>75% Grass cover, Good, HSG A
	5,176		Weighted Average
	3,376		65.22% Pervious Area
	1,800		34.78% Impervious Area

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

Subcatchment D4: D4



Summary for Pond P1:

Inflow Area = 0.420 ac, 90.12% Impervious, Inflow Depth = 1.80" for 1-Year event
Inflow = 0.91 cfs @ 12.17 hrs, Volume= 0.063 af
Outflow = 0.82 cfs @ 12.21 hrs, Volume= 0.063 af, Atten= 9%, Lag= 2.7 min
Discarded = 0.02 cfs @ 12.21 hrs, Volume= 0.016 af
Primary = 0.80 cfs @ 12.21 hrs, Volume= 0.047 af
Routed to Pond P2 :
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,642.91' @ 12.21 hrs Surf.Area= 285 sf Storage= 168 cf

Plug-Flow detention time= 20.2 min calculated for 0.063 af (100% of inflow)
Center-of-Mass det. time= 20.4 min (785.4 - 765.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,641.00'	11,161 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,641.00	1	0	0
1,642.00	40	21	21
1,643.00	310	175	196
1,644.00	810	560	756
1,645.00	20,000	10,405	11,161

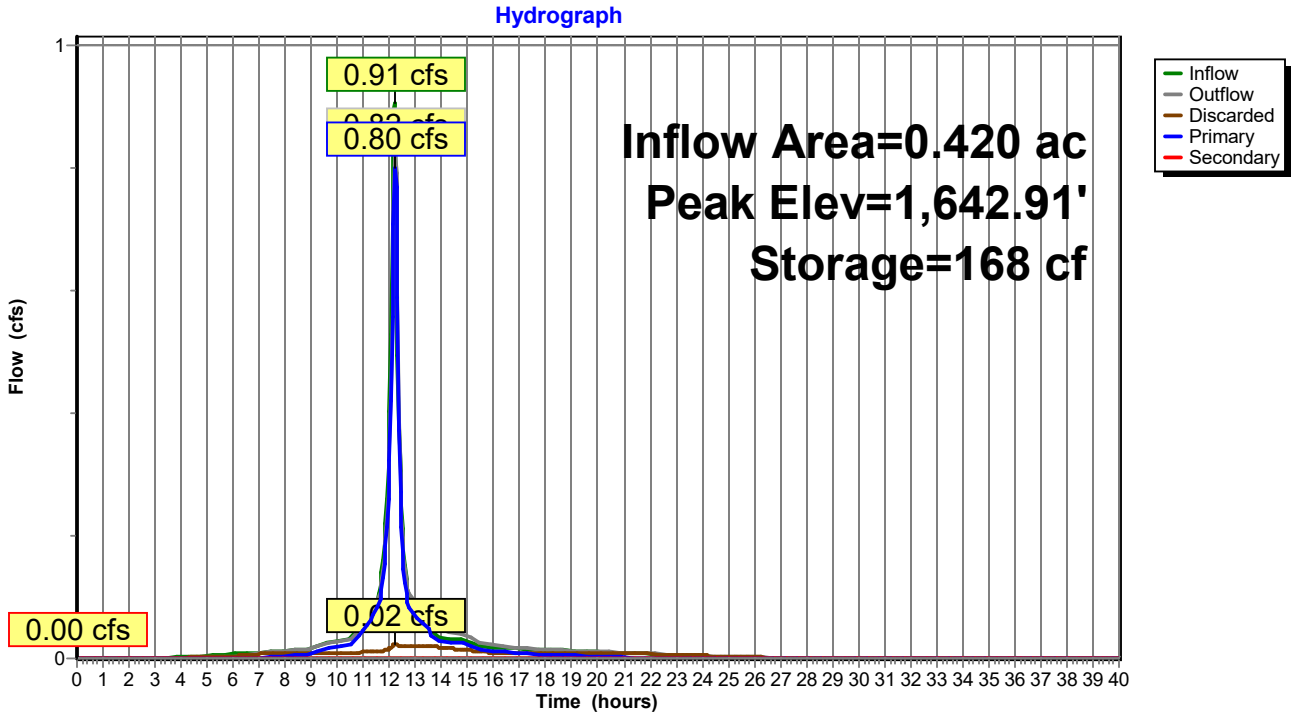
Device	Routing	Invert	Outlet Devices
#1	Secondary	1,644.00'	**5.0' long + 4.0 '/' SideZ x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,641.00'	**3.600 in/hr Exfiltration over Surface area**
#3	Primary	1,642.15'	**8.0" Round Culvert** L= 55.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,642.15' / 1,642.00' S= 0.0027 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Discarded OutFlow Max=0.02 cfs @ 12.21 hrs HW=1,642.90' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.79 cfs @ 12.21 hrs HW=1,642.90' TW=1,642.47' (Dynamic Tailwater)
3=Culvert (Barrel Controls 0.79 cfs @ 2.51 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,641.00' TW=0.00' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond P1:


Hydrograph
Inflow Area=0.420 ac
Peak Elev=1,642.91'
Storage=168 cf
0.91 cfs
0.80 cfs
0.02 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

Summary for Pond P2:

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

Inflow Area = 1.355 ac, 82.17% Impervious, Inflow Depth = 1.50" for 1-Year event
Inflow = 2.51 cfs @ 12.18 hrs, Volume= 0.169 af
Outflow = 0.31 cfs @ 12.71 hrs, Volume= 0.169 af, Atten= 88%, Lag= 32.0 min
Discarded = 0.31 cfs @ 12.71 hrs, Volume= 0.169 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : link
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond P3 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,642.79' @ 12.71 hrs Surf.Area= 3,738 sf Storage= 3,521 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 122.9 min (884.7 - 761.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,641.00'	22,530 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,641.00	500	0	0
1,642.00	1,990	1,245	1,245
1,643.00	4,190	3,090	4,335
1,644.00	6,100	5,145	9,480
1,645.00	20,000	13,050	22,530

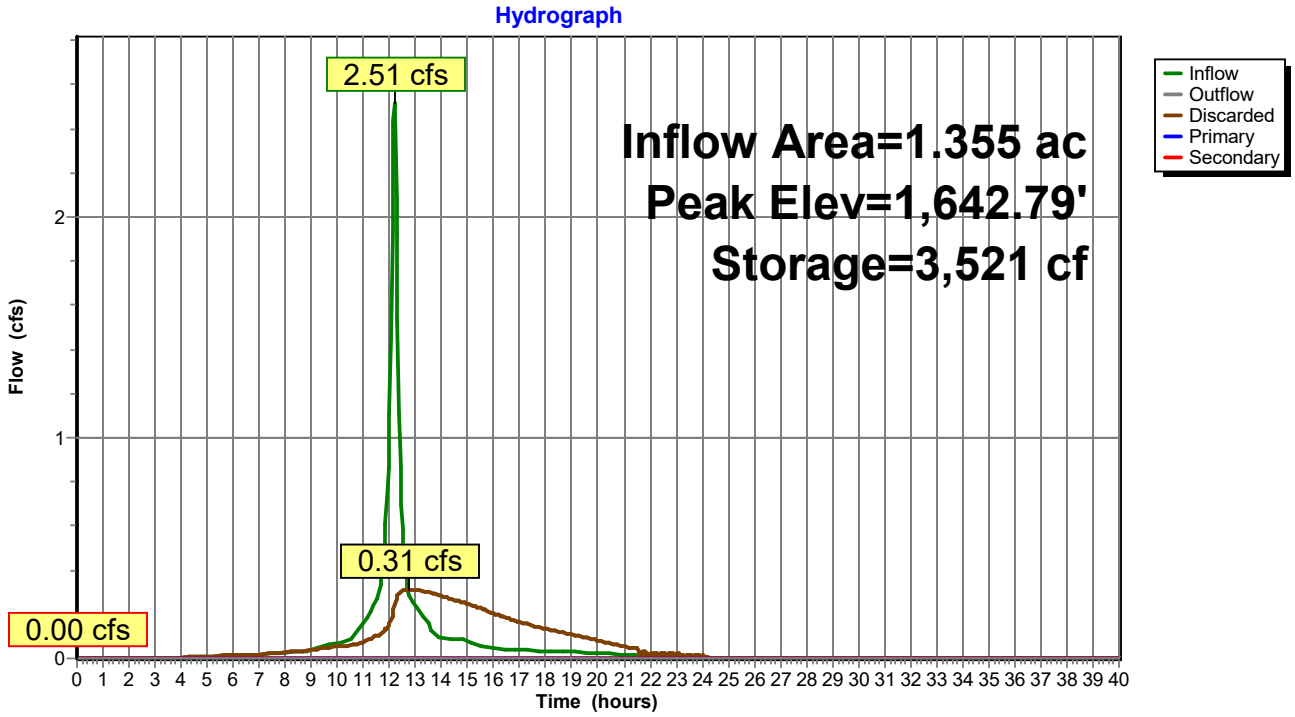
Device	Routing	Invert	Outlet Devices
#1	Primary	1,643.50'	**10.0' long + 4.0 '/' SideZ x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,641.00'	**3.600 in/hr Exfiltration over Surface area**
#3	Secondary	1,643.15'	**12.0" Round Culvert** L= 55.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,643.15' / 1,643.00' S= 0.0027 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.31 cfs @ 12.71 hrs HW=1,642.79' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.31 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,641.00' TW=0.00' (Dynamic Tailwater)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,641.00' TW=1,642.00' (Dynamic Tailwater)
└**3=Culvert** (Controls 0.00 cfs)

Pond P2:


Hydrograph
2.51 cfs
0.31 cfs
0.00 cfs
Inflow Area=1.355 ac
Peak Elev=1,642.79'
Storage=3,521 cf
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
0
1
2

Summary for Pond P3:

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=113)

Inflow Area = 0.081 ac, 39.52% Impervious, Inflow Depth = 0.79" for 1-Year event
Inflow = 0.08 cfs @ 12.17 hrs, Volume= 0.005 af
Outflow = 0.04 cfs @ 12.31 hrs, Volume= 0.005 af, Atten= 47%, Lag= 8.5 min
Discarded = 0.04 cfs @ 12.31 hrs, Volume= 0.005 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond P4 :
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,642.04' @ 12.31 hrs Surf.Area= 488 sf Storage= 21 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 2.2 min (767.2 - 765.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	3,820 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	460	0	0
1,643.00	1,090	775	775
1,644.00	5,000	3,045	3,820

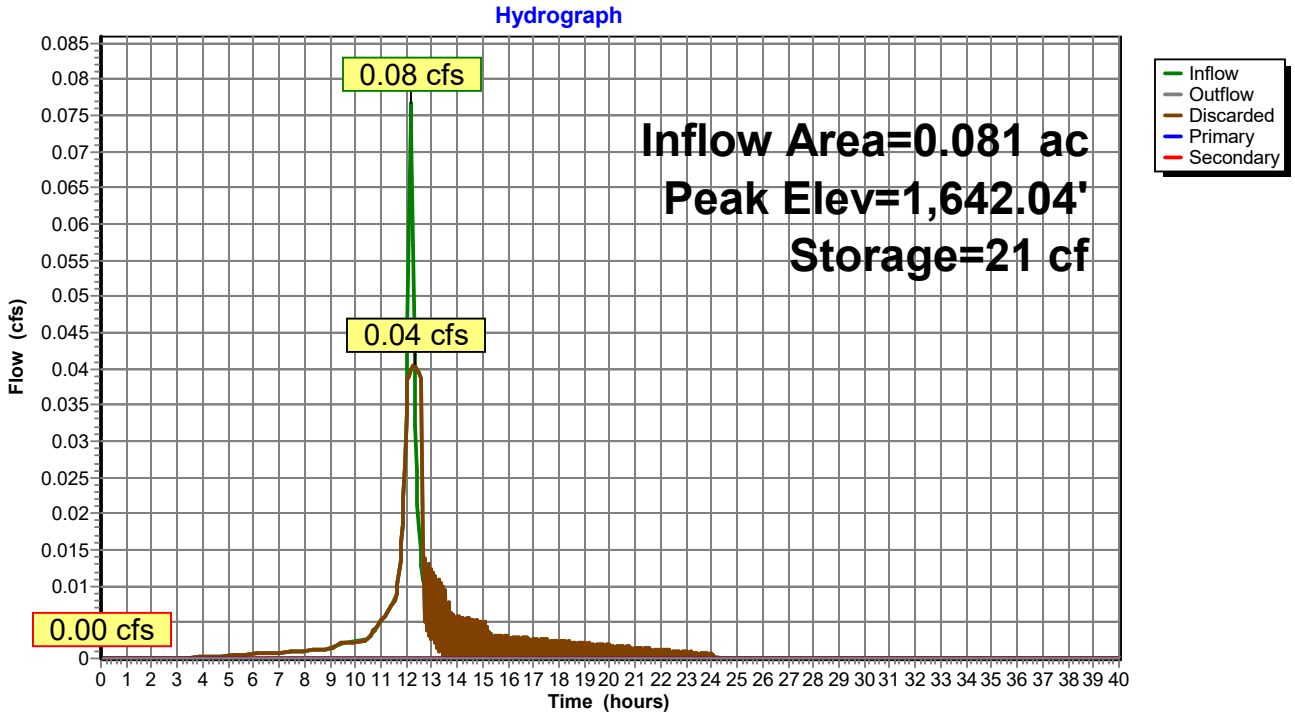
Device	Routing	Invert	Outlet Devices
#1	Secondary	1,643.50'	**10.0' long + 4.0 '/' SideZ x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,642.00'	**3.600 in/hr Exfiltration over Surface area**
#3	Primary	1,643.00'	**5.0' long + 4.0 '/' SideZ 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

Discarded OutFlow Max=0.04 cfs @ 12.31 hrs HW=1,642.04' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,642.00' TW=1,642.00' (Dynamic Tailwater)
3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,642.00' TW=0.00' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond P3:


Hydrograph
Inflow Area=0.081 ac
Peak Elev=1,642.04'
Storage=21 cf
0.08 cfs
0.04 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
Time (hours)
0.085
0.08
0.075
0.07
0.065
0.06
0.055
0.05
0.045
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

Summary for Pond P4:

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=113)

Inflow Area = 0.200 ac, 36.70% Impervious, Inflow Depth = 0.41" for 1-Year event
Inflow = 0.10 cfs @ 12.17 hrs, Volume= 0.007 af
Outflow = 0.07 cfs @ 12.26 hrs, Volume= 0.007 af, Atten= 31%, Lag= 5.7 min
Discarded = 0.07 cfs @ 12.26 hrs, Volume= 0.007 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,642.02' @ 12.26 hrs Surf.Area= 818 sf Storage= 13 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.7 min (765.7 - 765.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	4,800 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

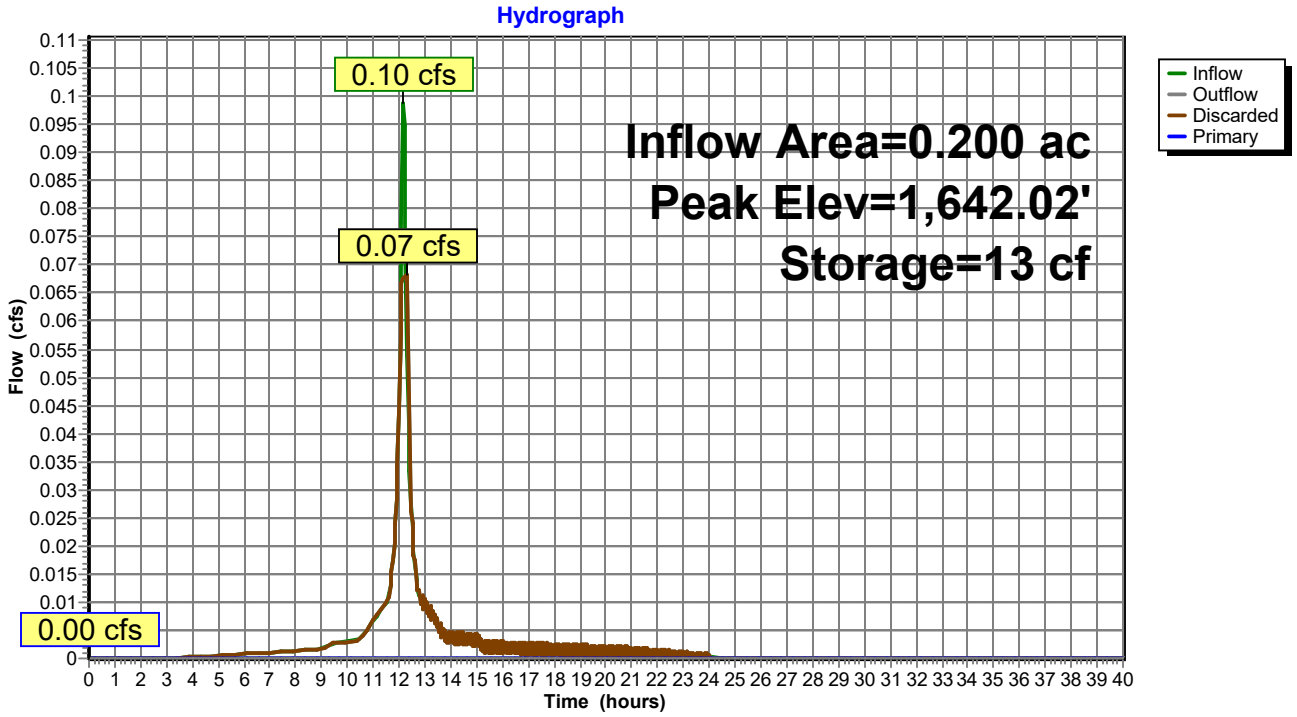
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	800	0	0
1,643.00	1,900	1,350	1,350
1,644.00	5,000	3,450	4,800

Device	Routing	Invert	Outlet Devices
#1	Primary	1,643.50'	**10.0' long + 4.0 '/' SideZ x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,642.00'	**3.600 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.07 cfs @ 12.26 hrs HW=1,642.02' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,642.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P4:

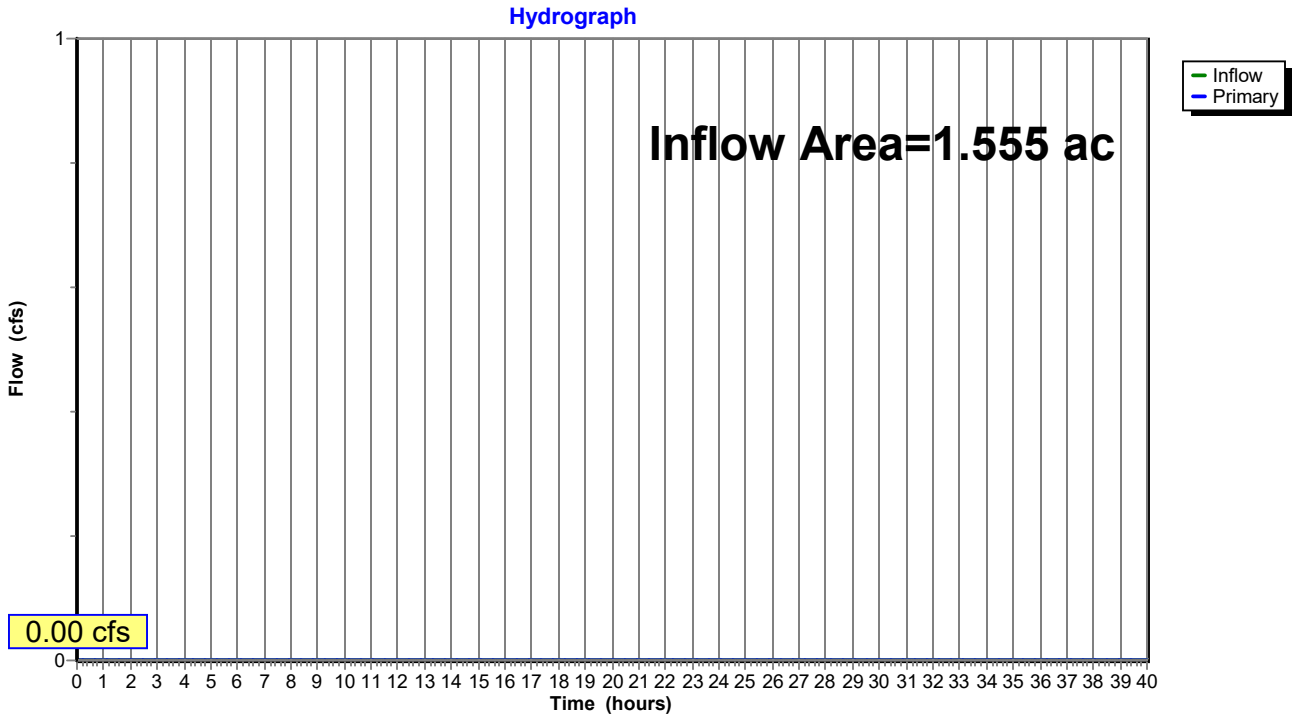

Hydrograph
Inflow Area=0.200 ac
Peak Elev=1,642.02'
Storage=13 cf
0.10 cfs
0.07 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Summary for Link 1L: link

Inflow Area = 1.555 ac, 76.32% Impervious, Inflow Depth = 0.00" for 1-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Link 1L: link



Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 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 D1: D1 Runoff Area=18,312 sf 90.12% Impervious Runoff Depth=2.10"
Tc=10.0 min CN=WQ Runoff=1.05 cfs 0.074 af

Subcatchment D2: D2 Runoff Area=40,724 sf 78.59% Impervious Runoff Depth=1.83"
Tc=10.0 min CN=WQ Runoff=2.04 cfs 0.143 af

Subcatchment D3: D3 Runoff Area=3,535 sf 39.52% Impervious Runoff Depth=0.92"
Tc=10.0 min CN=WQ Runoff=0.09 cfs 0.006 af

Subcatchment D4: D4 Runoff Area=5,176 sf 34.78% Impervious Runoff Depth=0.81"
Tc=10.0 min CN=WQ Runoff=0.11 cfs 0.008 af

Pond P1: Peak Elev=1,643.02' Storage=201 cf Inflow=1.05 cfs 0.074 af
Discarded=0.03 cfs 0.018 af Primary=0.88 cfs 0.056 af Secondary=0.00 cfs 0.000 af Outflow=0.91 cfs 0.074 af

Pond P2: Peak Elev=1,642.96' Storage=4,176 cf Inflow=2.87 cfs 0.198 af
Discarded=0.34 cfs 0.199 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.34 cfs 0.199 af

Pond P3: Peak Elev=1,642.06' Storage=30 cf Inflow=0.09 cfs 0.006 af
Discarded=0.04 cfs 0.006 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.006 af

Pond P4: Peak Elev=1,642.03' Storage=23 cf Inflow=0.11 cfs 0.008 af
Discarded=0.07 cfs 0.008 af Primary=0.00 cfs 0.000 af Outflow=0.07 cfs 0.008 af

Link 1L: link Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 1.555 ac Runoff Volume = 0.231 af Average Runoff Depth = 1.78"
23.68% Pervious = 0.368 ac 76.32% Impervious = 1.187 ac

Summary for Subcatchment D1: D1

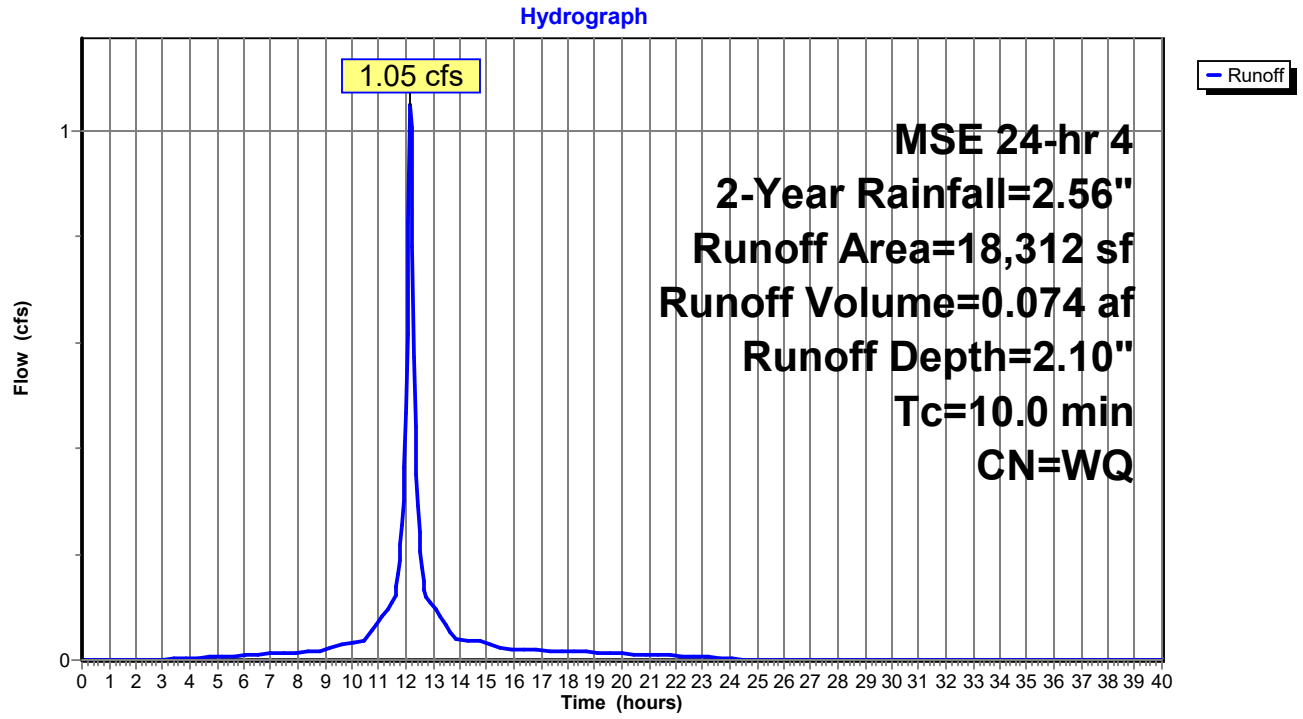
Runoff = 1.05 cfs @ 12.17 hrs, Volume= 0.074 af, Depth= 2.10"
Routed to Pond P1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.56"

	Area (sf)	CN	Description
*	4,776	98	parking lot
*	11,687	98	building
*	40	98	basin
	1,809	39	>75% Grass cover, Good, HSG A
	18,312		Weighted Average
	1,809		9.88% Pervious Area
	16,503		90.12% Impervious Area

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

Subcatchment D1: D1



Summary for Subcatchment D2: D2

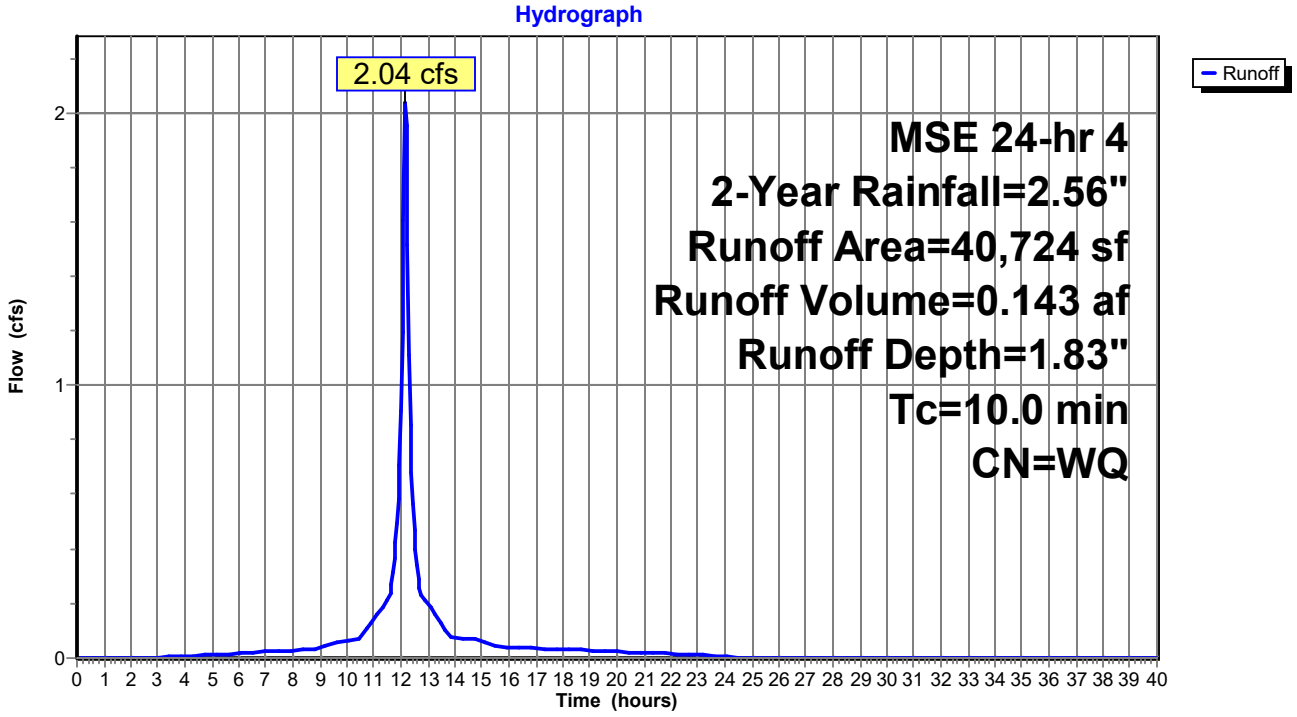
Runoff = 2.04 cfs @ 12.17 hrs, Volume= 0.143 af, Depth= 1.83"
Routed to Pond P2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.56"

	Area (sf)	CN	Description
*	630	98	basin
*	16,865	98	parking lot
	8,720	39	>75% Grass cover, Good, HSG A
*	14,509	98	building
	40,724		Weighted Average
	8,720		21.41% Pervious Area
	32,004		78.59% Impervious Area

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

Subcatchment D2: D2



Summary for Subcatchment D3: D3

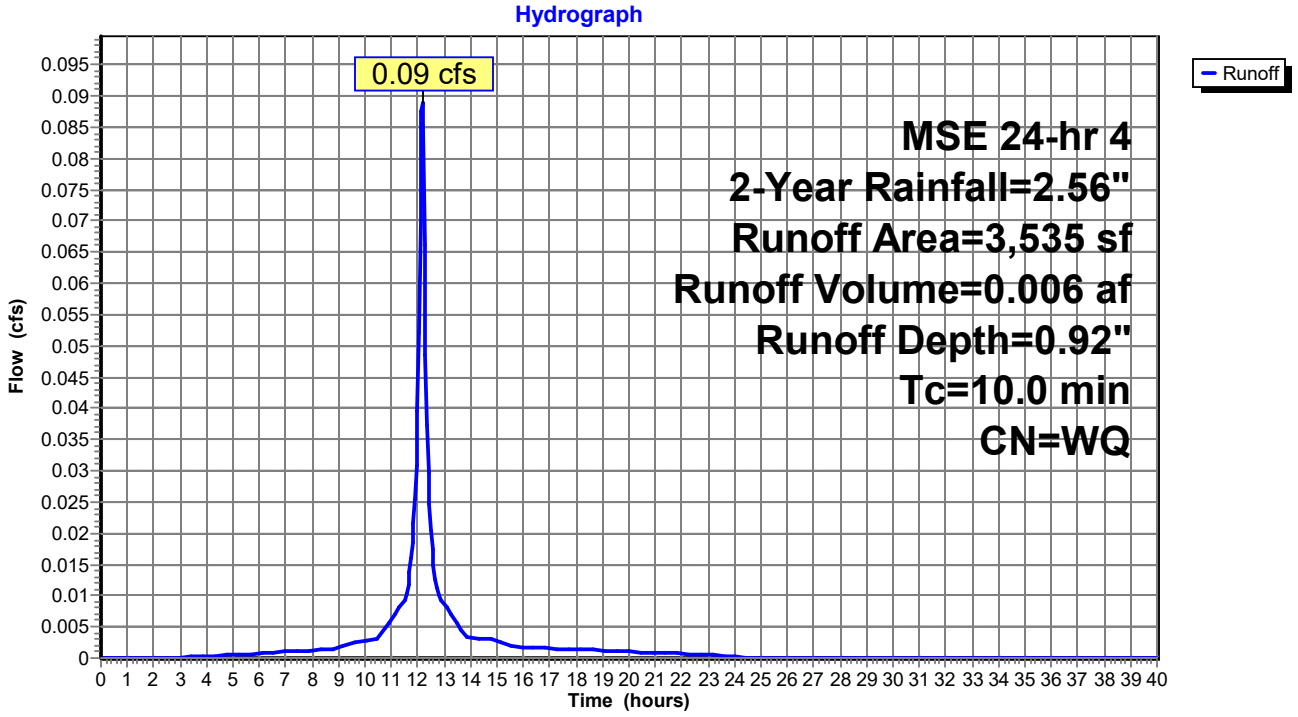
Runoff = 0.09 cfs @ 12.17 hrs, Volume= 0.006 af, Depth= 0.92"
Routed to Pond P3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.56"

	Area (sf)	CN	Description
*	303	98	parking lot
*	924	98	building
*	170	98	basin
	2,138	39	>75% Grass cover, Good, HSG A
	3,535		Weighted Average
	2,138		60.48% Pervious Area
	1,397		39.52% Impervious Area

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

Subcatchment D3: D3



Summary for Subcatchment D4: D4

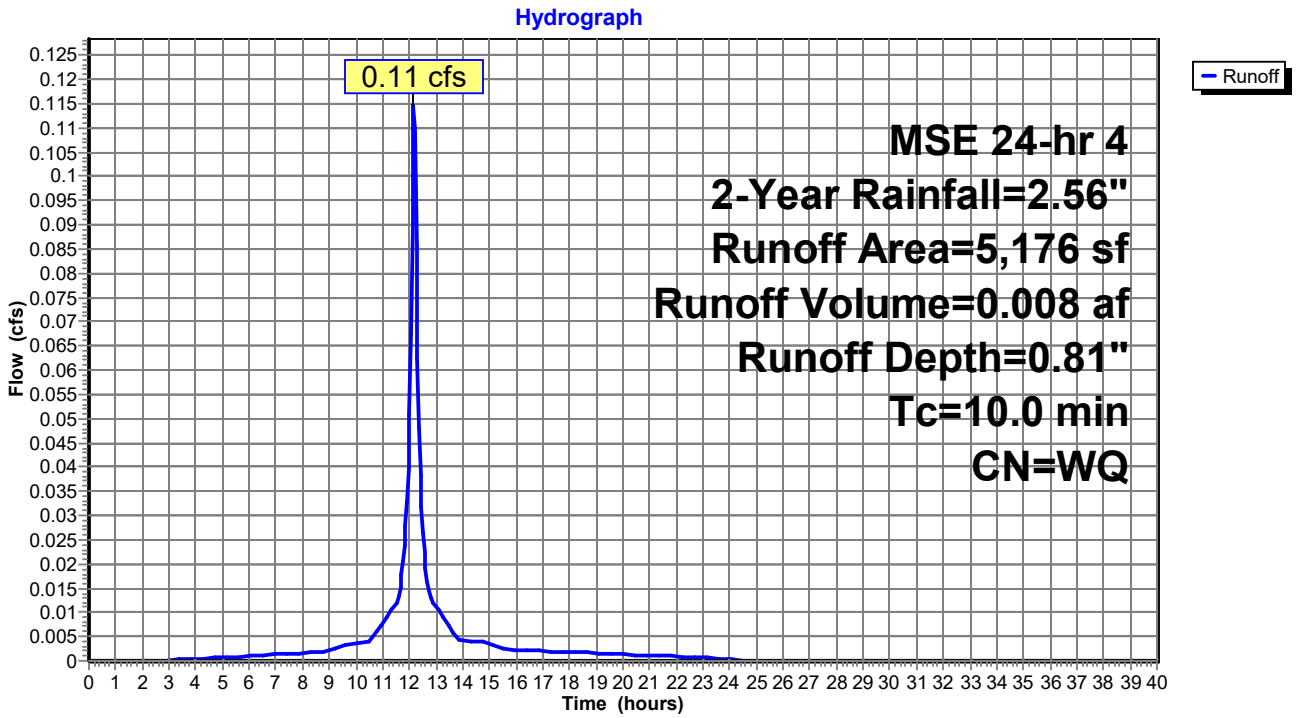
Runoff = 0.11 cfs @ 12.17 hrs, Volume= 0.008 af, Depth= 0.81"
Routed to Pond P4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.56"

	Area (sf)	CN	Description
*	1,500	98	building
*	300	98	basin
	3,376	39	>75% Grass cover, Good, HSG A
	5,176		Weighted Average
	3,376		65.22% Pervious Area
	1,800		34.78% Impervious Area

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

Subcatchment D4: D4



Summary for Pond P1:

Inflow Area = 0.420 ac, 90.12% Impervious, Inflow Depth = 2.10" for 2-Year event
Inflow = 1.05 cfs @ 12.17 hrs, Volume= 0.074 af
Outflow = 0.91 cfs @ 12.22 hrs, Volume= 0.074 af, Atten= 14%, Lag= 3.3 min
Discarded = 0.03 cfs @ 12.22 hrs, Volume= 0.018 af
Primary = 0.88 cfs @ 12.22 hrs, Volume= 0.056 af
Routed to Pond P2 :
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,643.02' @ 12.22 hrs Surf.Area= 319 sf Storage= 201 cf

Plug-Flow detention time= 20.9 min calculated for 0.073 af (100% of inflow)
Center-of-Mass det. time= 21.0 min (783.0 - 762.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,641.00'	11,161 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,641.00	1	0	0
1,642.00	40	21	21
1,643.00	310	175	196
1,644.00	810	560	756
1,645.00	20,000	10,405	11,161

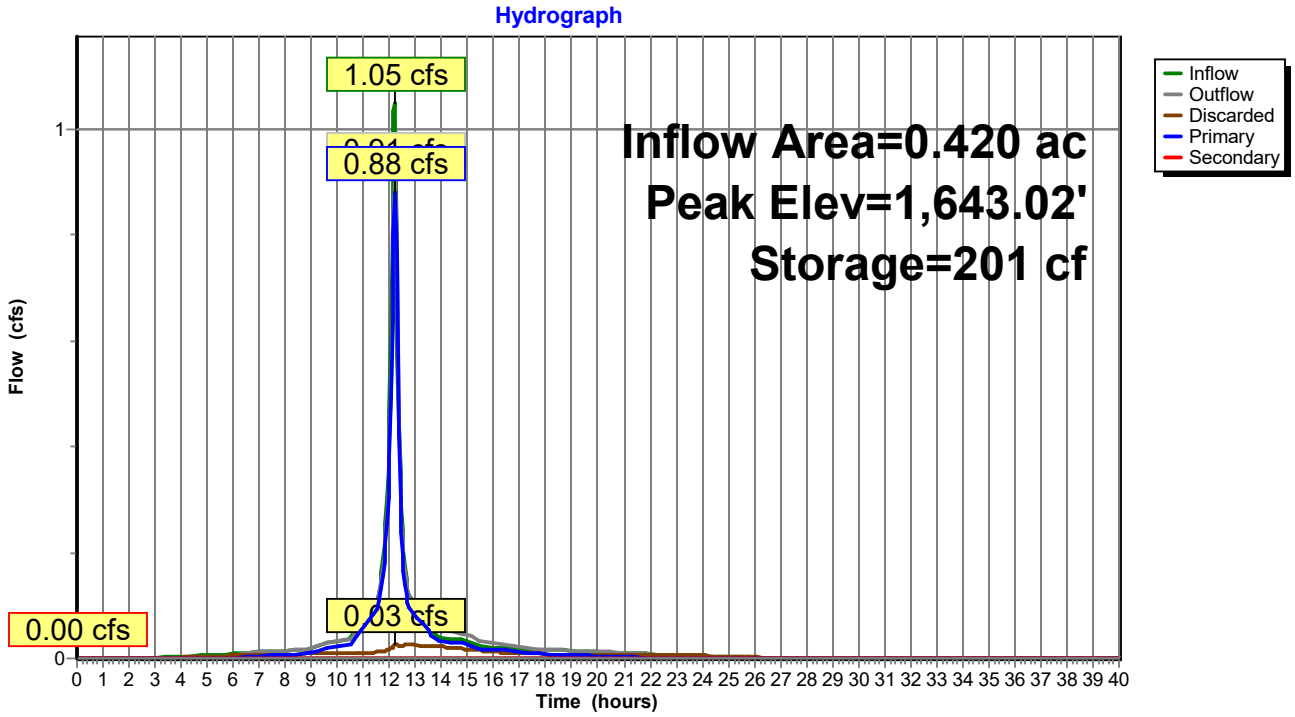
Device	Routing	Invert	Outlet Devices
#1	Secondary	1,644.00'	**5.0' long + 4.0 '/' SideZ x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,641.00'	**3.600 in/hr Exfiltration over Surface area**
#3	Primary	1,642.15'	**8.0" Round Culvert** L= 55.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,642.15' / 1,642.00' S= 0.0027 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Discarded OutFlow Max=0.03 cfs @ 12.22 hrs HW=1,643.01' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.87 cfs @ 12.22 hrs HW=1,643.01' TW=1,642.65' (Dynamic Tailwater)
3=Culvert (Outlet Controls 0.87 cfs @ 2.52 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,641.00' TW=0.00' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond P1:


Hydrograph
1.05 cfs
0.88 cfs
0.03 cfs
0.00 cfs
Inflow Area=0.420 ac
Peak Elev=1,643.02'
Storage=201 cf
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

Summary for Pond P2:

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=16)

Inflow Area = 1.355 ac, 82.17% Impervious, Inflow Depth = 1.76" for 2-Year event
Inflow = 2.87 cfs @ 12.18 hrs, Volume= 0.198 af
Outflow = 0.34 cfs @ 12.74 hrs, Volume= 0.199 af, Atten= 88%, Lag= 33.9 min
Discarded = 0.34 cfs @ 12.74 hrs, Volume= 0.199 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : link
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond P3 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,642.96' @ 12.74 hrs Surf.Area= 4,105 sf Storage= 4,176 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 133.7 min (893.6 - 759.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,641.00'	22,530 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,641.00	500	0	0
1,642.00	1,990	1,245	1,245
1,643.00	4,190	3,090	4,335
1,644.00	6,100	5,145	9,480
1,645.00	20,000	13,050	22,530

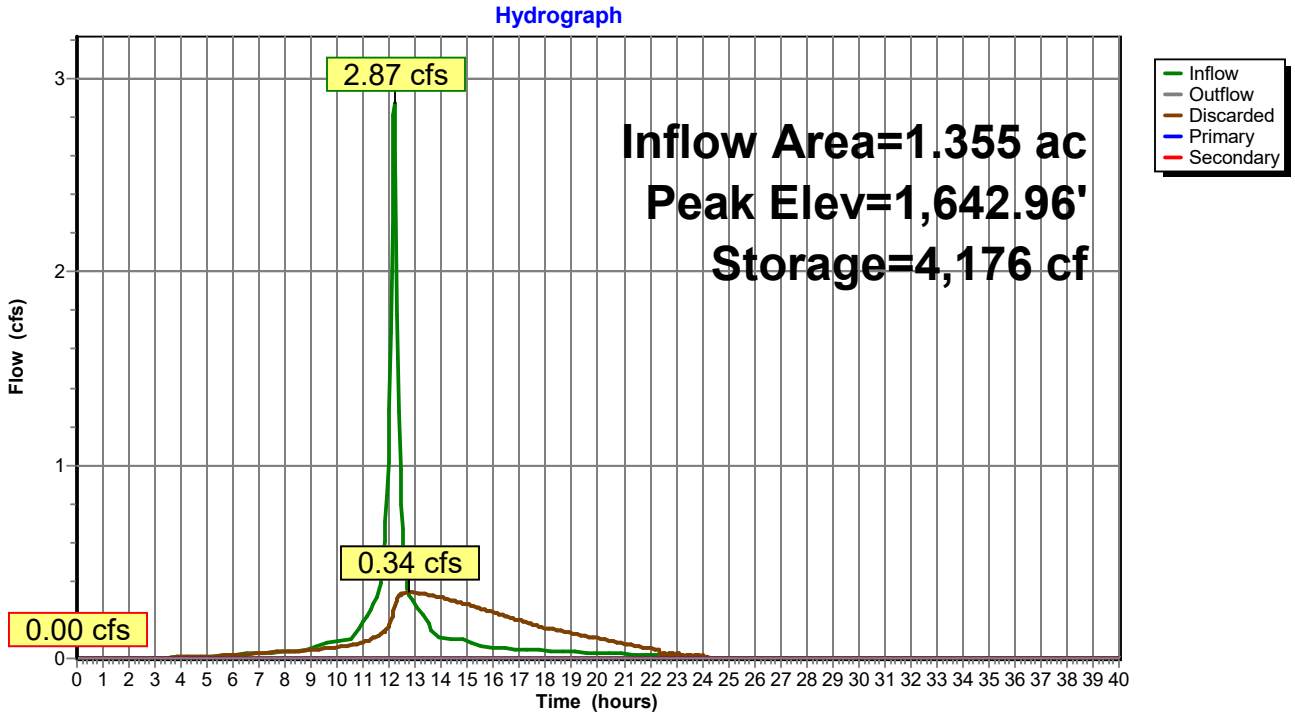
Device	Routing	Invert	Outlet Devices
#1	Primary	1,643.50'	**10.0' long + 4.0 '/' SideZ x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,641.00'	**3.600 in/hr Exfiltration over Surface area**
#3	Secondary	1,643.15'	**12.0" Round Culvert** L= 55.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,643.15' / 1,643.00' S= 0.0027 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.34 cfs @ 12.74 hrs HW=1,642.96' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.34 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,641.00' TW=0.00' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,641.00' TW=1,642.00' (Dynamic Tailwater)
3=Culvert (Controls 0.00 cfs)

Pond P2:


Hydrograph
2.87 cfs
0.34 cfs
0.00 cfs
Inflow Area=1.355 ac
Peak Elev=1,642.96'
Storage=4,176 cf
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
0 1 2 3

Summary for Pond P3:

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=112)

Inflow Area = 0.081 ac, 39.52% Impervious, Inflow Depth = 0.92" for 2-Year event
Inflow = 0.09 cfs @ 12.17 hrs, Volume= 0.006 af
Outflow = 0.04 cfs @ 12.33 hrs, Volume= 0.006 af, Atten= 53%, Lag= 9.8 min
Discarded = 0.04 cfs @ 12.33 hrs, Volume= 0.006 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond P4 :
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,642.06' @ 12.33 hrs Surf.Area= 500 sf Storage= 30 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 3.3 min (765.2 - 762.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	3,820 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	460	0	0
1,643.00	1,090	775	775
1,644.00	5,000	3,045	3,820

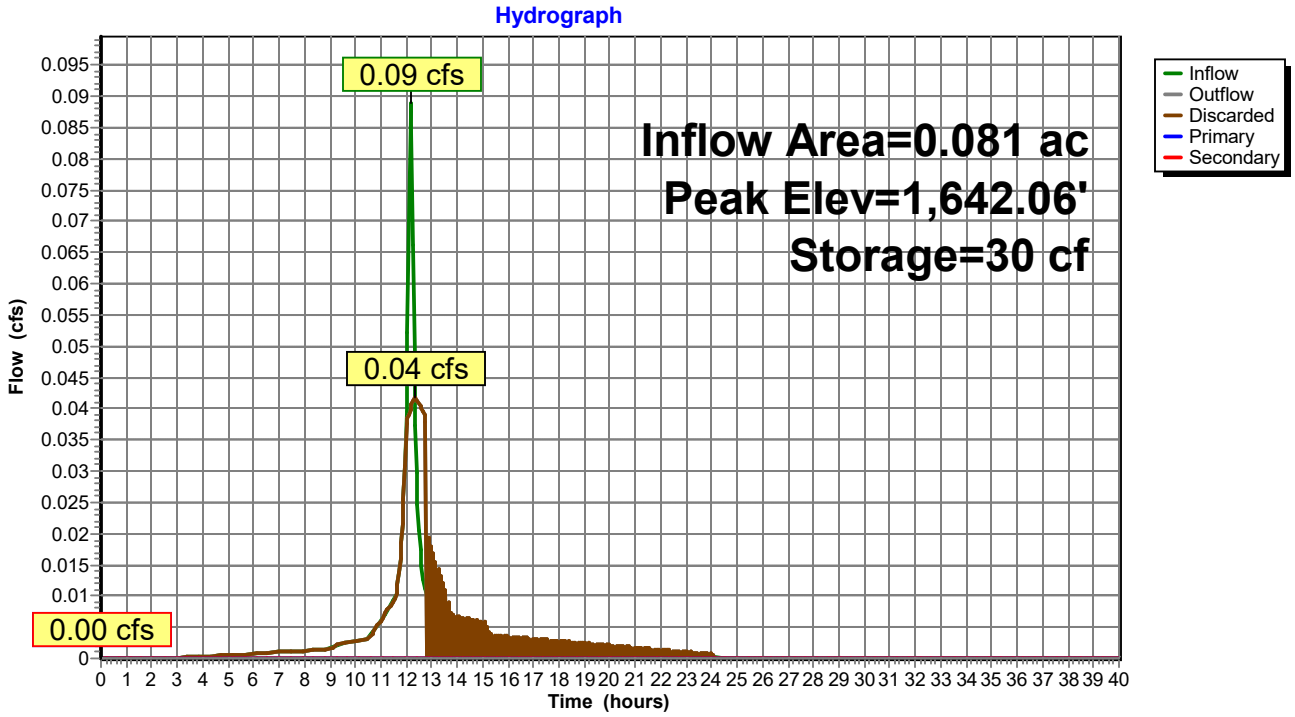
Device	Routing	Invert	Outlet Devices
#1	Secondary	1,643.50'	**10.0' long + 4.0 '/' SideZ x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,642.00'	**3.600 in/hr Exfiltration over Surface area**
#3	Primary	1,643.00'	**5.0' long + 4.0 '/' SideZ 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

Discarded OutFlow Max=0.04 cfs @ 12.33 hrs HW=1,642.06' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,642.00' TW=1,642.00' (Dynamic Tailwater)
3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,642.00' TW=0.00' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond P3:


Hydrograph
0.09 cfs
0.04 cfs
0.00 cfs
Inflow Area=0.081 ac
Peak Elev=1,642.06'
Storage=30 cf
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Pond P4:

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=114)

Inflow Area = 0.200 ac, 36.70% Impervious, Inflow Depth = 0.48" for 2-Year event
Inflow = 0.11 cfs @ 12.17 hrs, Volume= 0.008 af
Outflow = 0.07 cfs @ 12.29 hrs, Volume= 0.008 af, Atten= 40%, Lag= 7.1 min
Discarded = 0.07 cfs @ 12.29 hrs, Volume= 0.008 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,642.03' @ 12.29 hrs Surf.Area= 830 sf Storage= 23 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1.5 min (763.4 - 762.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	4,800 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

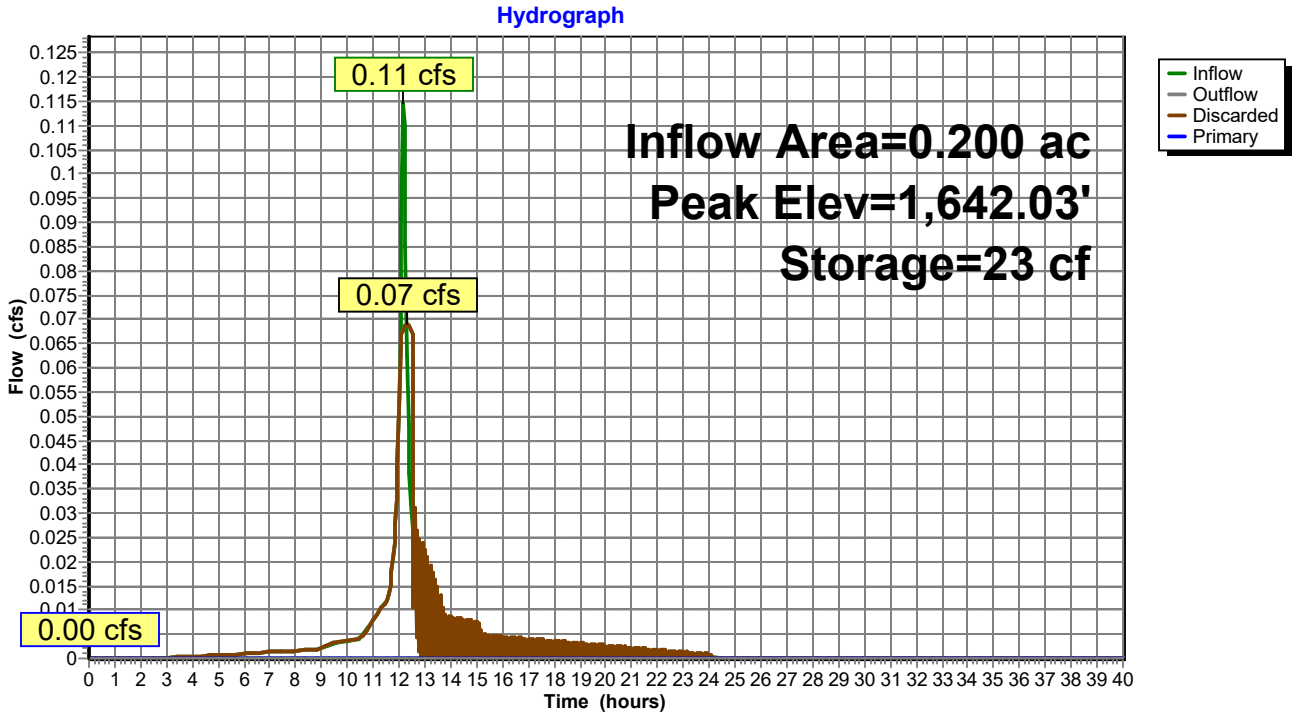
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	800	0	0
1,643.00	1,900	1,350	1,350
1,644.00	5,000	3,450	4,800

Device	Routing	Invert	Outlet Devices
#1	Primary	1,643.50'	**10.0' long + 4.0 '/' SideZ x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,642.00'	**3.600 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.07 cfs @ 12.29 hrs HW=1,642.03' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,642.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P4:

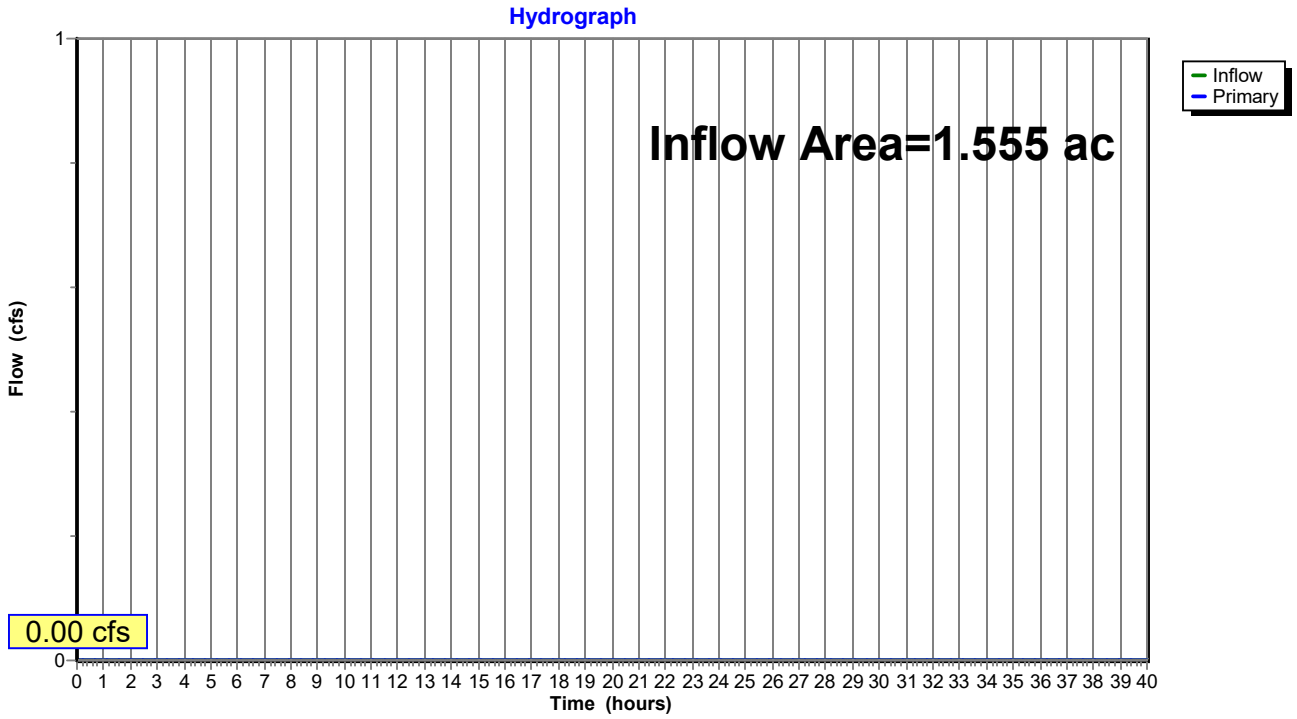

Hydrograph
Inflow Area=0.200 ac
Peak Elev=1,642.03'
Storage=23 cf
0.11 cfs
0.07 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Summary for Link 1L: link

Inflow Area = 1.555 ac, 76.32% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Link 1L: link



Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 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 D1: D1 Runoff Area=18,312 sf 90.12% Impervious Runoff Depth=3.21"
Tc=10.0 min CN=WQ Runoff=1.57 cfs 0.112 af

Subcatchment D2: D2 Runoff Area=40,724 sf 78.59% Impervious Runoff Depth=2.80"
Tc=10.0 min CN=WQ Runoff=3.05 cfs 0.218 af

Subcatchment D3: D3 Runoff Area=3,535 sf 39.52% Impervious Runoff Depth=1.42"
Tc=10.0 min CN=WQ Runoff=0.13 cfs 0.010 af

Subcatchment D4: D4 Runoff Area=5,176 sf 34.78% Impervious Runoff Depth=1.25"
Tc=10.0 min CN=WQ Runoff=0.17 cfs 0.012 af

Pond P1: Peak Elev=1,643.52' Storage=425 cf Inflow=1.57 cfs 0.112 af
Discarded=0.05 cfs 0.026 af Primary=1.02 cfs 0.087 af Secondary=0.00 cfs 0.000 af Outflow=1.07 cfs 0.112 af

Pond P2: Peak Elev=1,643.44' Storage=6,364 cf Inflow=4.07 cfs 0.305 af
Discarded=0.42 cfs 0.287 af Primary=0.00 cfs 0.000 af Secondary=0.21 cfs 0.018 af Outflow=0.63 cfs 0.305 af

Pond P3: Peak Elev=1,642.77' Storage=538 cf Inflow=0.23 cfs 0.027 af
Discarded=0.08 cfs 0.027 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.08 cfs 0.027 af

Pond P4: Peak Elev=1,642.08' Storage=67 cf Inflow=0.17 cfs 0.012 af
Discarded=0.07 cfs 0.013 af Primary=0.00 cfs 0.000 af Outflow=0.07 cfs 0.013 af

Link 1L: link Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 1.555 ac Runoff Volume = 0.353 af Average Runoff Depth = 2.72"
23.68% Pervious = 0.368 ac 76.32% Impervious = 1.187 ac

Summary for Subcatchment D1: D1

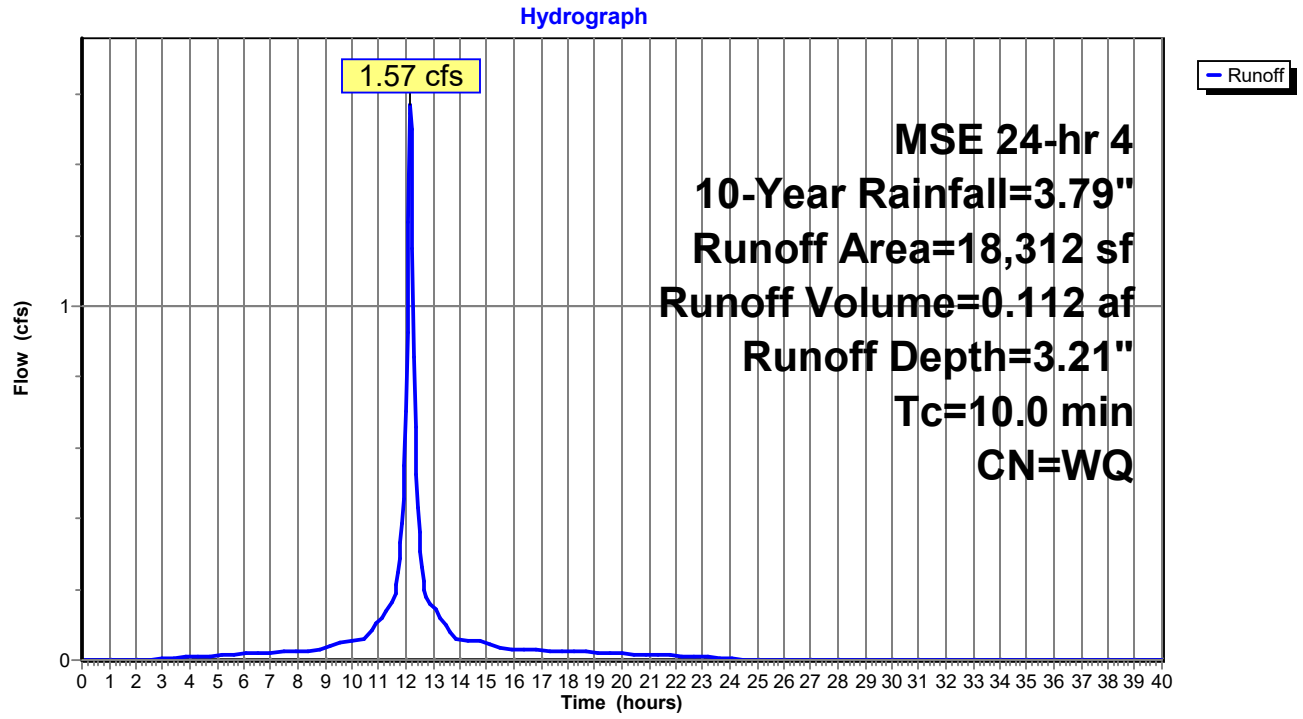
Runoff = 1.57 cfs @ 12.17 hrs, Volume= 0.112 af, Depth= 3.21"
Routed to Pond P1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.79"

	Area (sf)	CN	Description
*	4,776	98	parking lot
*	11,687	98	building
*	40	98	basin
	1,809	39	>75% Grass cover, Good, HSG A
	18,312		Weighted Average
	1,809		9.88% Pervious Area
	16,503		90.12% Impervious Area

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

Subcatchment D1: D1



Summary for Subcatchment D2: D2

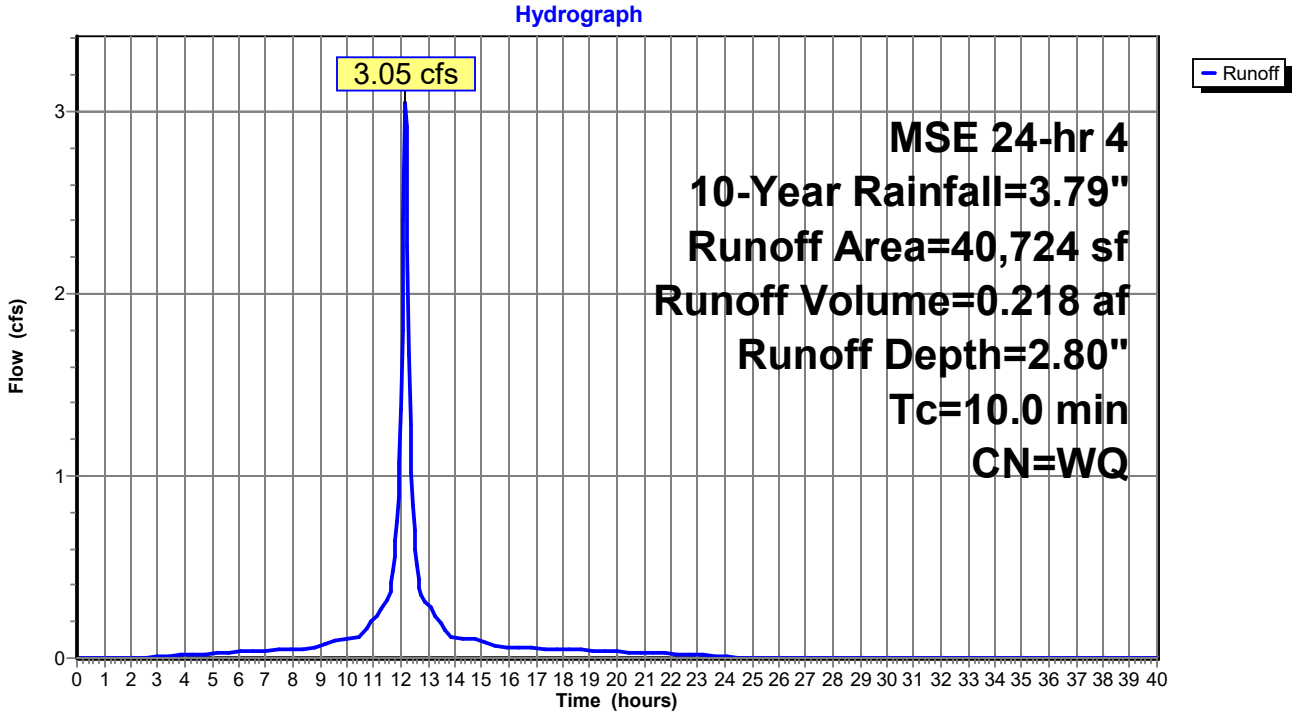
Runoff = 3.05 cfs @ 12.17 hrs, Volume= 0.218 af, Depth= 2.80"
Routed to Pond P2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.79"

	Area (sf)	CN	Description
*	630	98	basin
*	16,865	98	parking lot
	8,720	39	>75% Grass cover, Good, HSG A
*	14,509	98	building
	40,724		Weighted Average
	8,720		21.41% Pervious Area
	32,004		78.59% Impervious Area

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

Subcatchment D2: D2



Summary for Subcatchment D3: D3

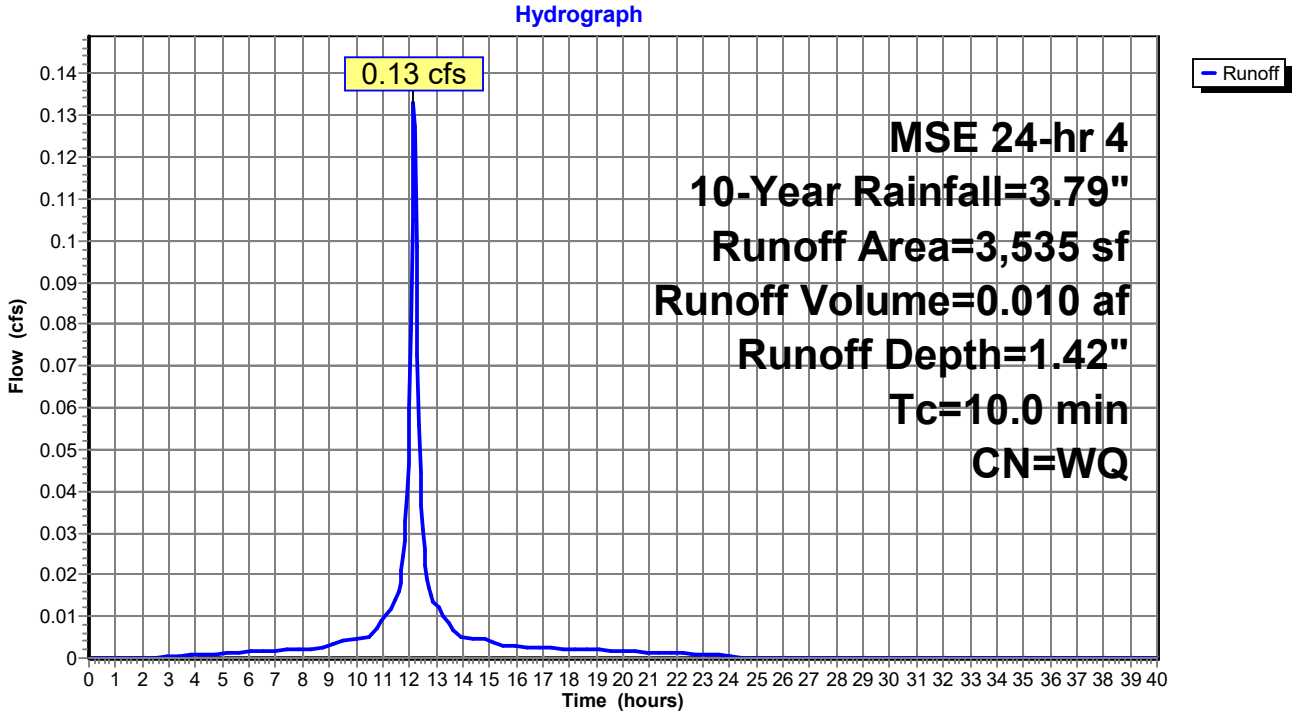
Runoff = 0.13 cfs @ 12.17 hrs, Volume= 0.010 af, Depth= 1.42"
Routed to Pond P3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.79"

	Area (sf)	CN	Description
*	303	98	parking lot
*	924	98	building
*	170	98	basin
	2,138	39	>75% Grass cover, Good, HSG A
	3,535		Weighted Average
	2,138		60.48% Pervious Area
	1,397		39.52% Impervious Area

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

Subcatchment D3: D3



Summary for Subcatchment D4: D4

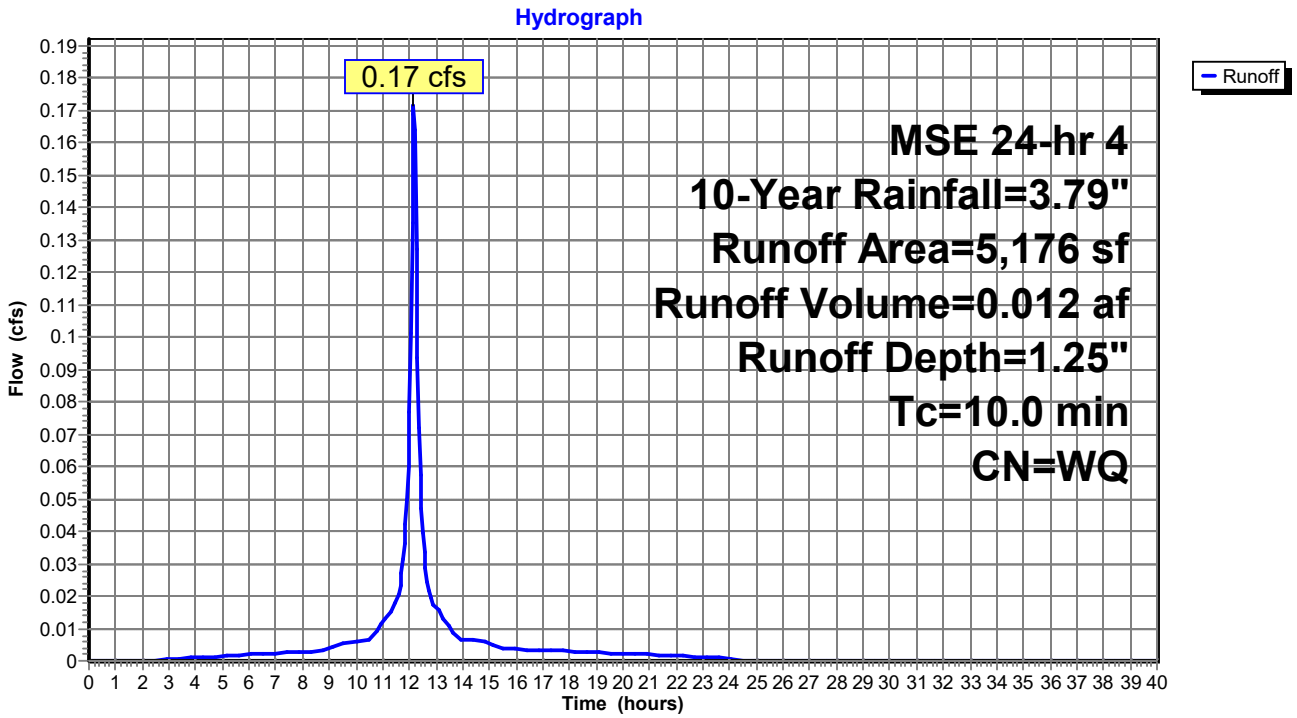
Runoff = 0.17 cfs @ 12.17 hrs, Volume= 0.012 af, Depth= 1.25"
Routed to Pond P4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.79"

	Area (sf)	CN	Description
*	1,500	98	building
*	300	98	basin
	3,376	39	>75% Grass cover, Good, HSG A
	5,176		Weighted Average
	3,376		65.22% Pervious Area
	1,800		34.78% Impervious Area

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

Subcatchment D4: D4



Summary for Pond P1:

Inflow Area = 0.420 ac, 90.12% Impervious, Inflow Depth = 3.21" for 10-Year event
Inflow = 1.57 cfs @ 12.17 hrs, Volume= 0.112 af
Outflow = 1.07 cfs @ 12.19 hrs, Volume= 0.112 af, Atten= 32%, Lag= 1.4 min
Discarded = 0.05 cfs @ 12.30 hrs, Volume= 0.026 af
Primary = 1.02 cfs @ 12.19 hrs, Volume= 0.087 af
Routed to Pond P2 :
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,643.52' @ 12.30 hrs Surf.Area= 570 sf Storage= 425 cf

Plug-Flow detention time= 23.6 min calculated for 0.112 af (100% of inflow)
Center-of-Mass det. time= 23.8 min (778.7 - 754.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,641.00'	11,161 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,641.00	1	0	0
1,642.00	40	21	21
1,643.00	310	175	196
1,644.00	810	560	756
1,645.00	20,000	10,405	11,161

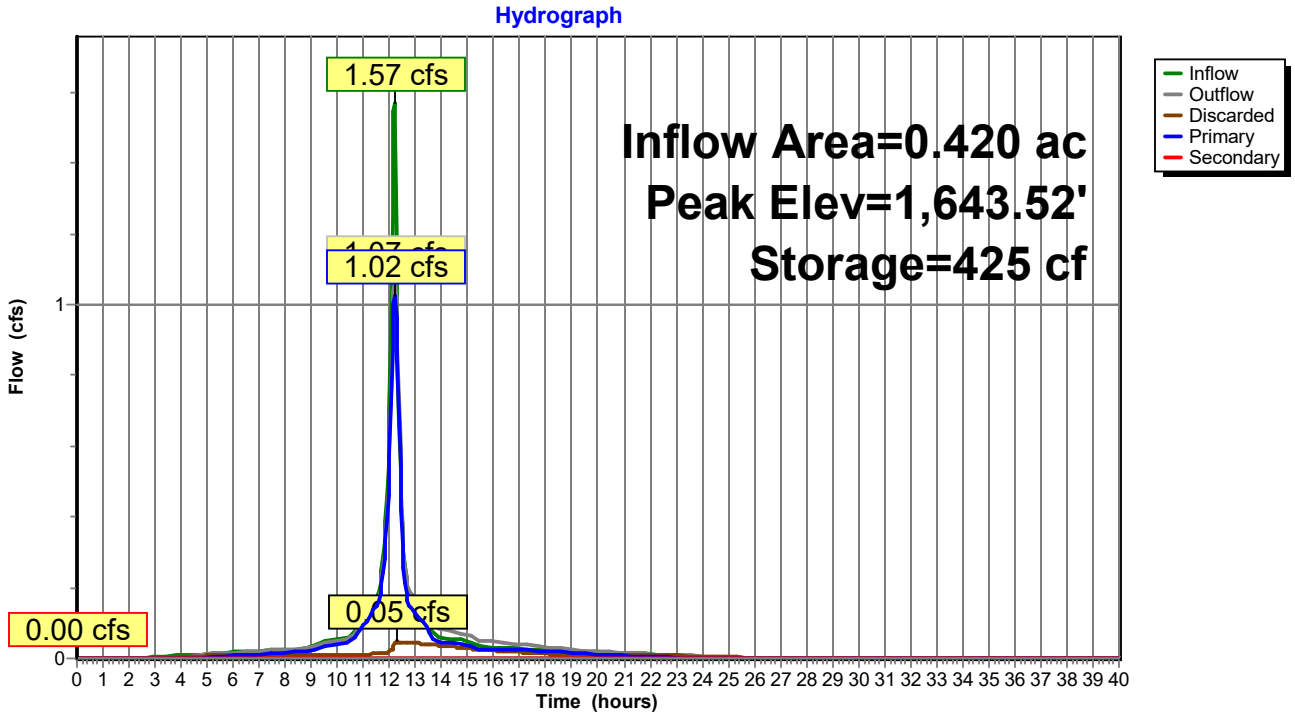
Device	Routing	Invert	Outlet Devices
#1	Secondary	1,644.00'	**5.0' long + 4.0 '/' SideZ x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,641.00'	**3.600 in/hr Exfiltration over Surface area**
#3	Primary	1,642.15'	**8.0" Round Culvert** L= 55.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,642.15' / 1,642.00' S= 0.0027 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Discarded OutFlow Max=0.05 cfs @ 12.30 hrs HW=1,643.52' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=0.85 cfs @ 12.19 hrs HW=1,643.36' TW=1,642.99' (Dynamic Tailwater)
3=Culvert (Outlet Controls 0.85 cfs @ 2.43 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,641.00' TW=0.00' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond P1:


Hydrograph
Inflow Area=0.420 ac
Peak Elev=1,643.52'
Storage=425 cf
1.57 cfs
1.02 cfs
0.05 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Pond P2:

Inflow Area = 1.355 ac, 82.17% Impervious, Inflow Depth = 2.70" for 10-Year event
Inflow = 4.07 cfs @ 12.17 hrs, Volume= 0.305 af
Outflow = 0.63 cfs @ 12.65 hrs, Volume= 0.305 af, Atten= 84%, Lag= 28.5 min
Discarded = 0.42 cfs @ 12.65 hrs, Volume= 0.287 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : link
Secondary = 0.21 cfs @ 12.65 hrs, Volume= 0.018 af
Routed to Pond P3 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,643.44' @ 12.65 hrs Surf.Area= 5,031 sf Storage= 6,364 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 152.6 min (908.0 - 755.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,641.00'	22,530 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,641.00	500	0	0
1,642.00	1,990	1,245	1,245
1,643.00	4,190	3,090	4,335
1,644.00	6,100	5,145	9,480
1,645.00	20,000	13,050	22,530

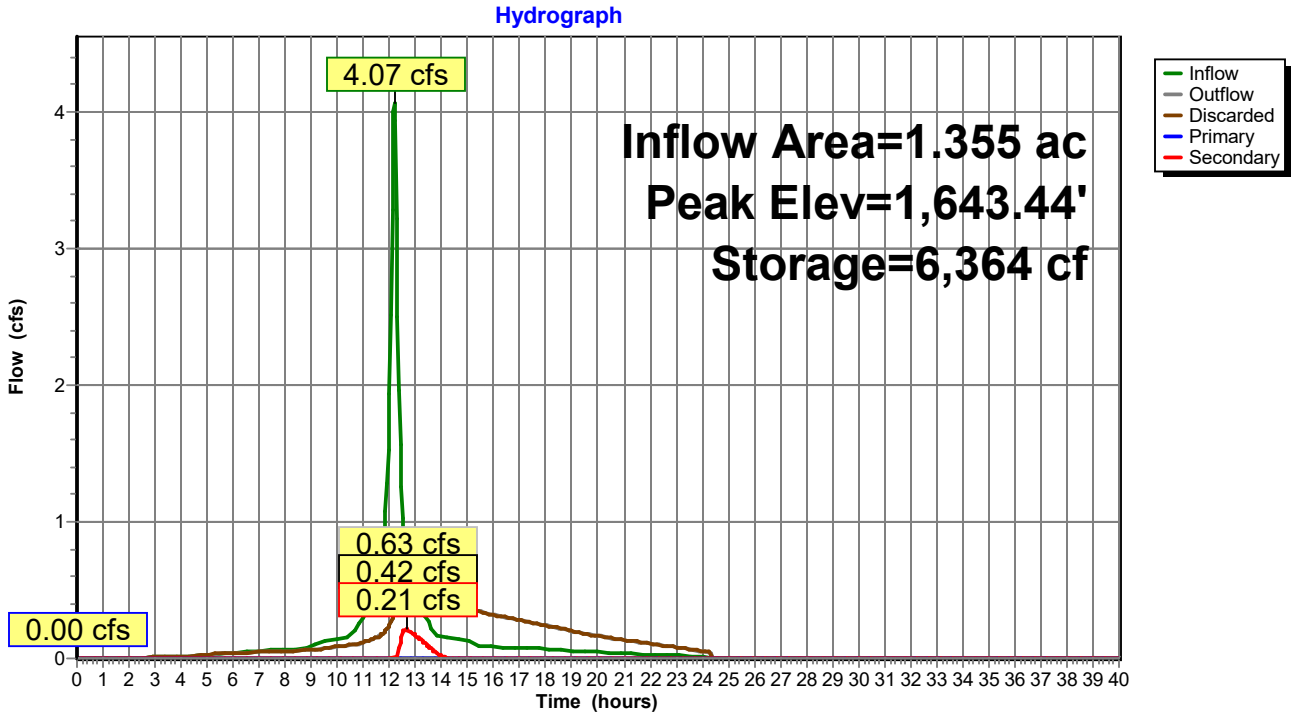
Device	Routing	Invert	Outlet Devices
#1	Primary	1,643.50'	**10.0' long + 4.0 '/' SideZ x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,641.00'	**3.600 in/hr Exfiltration over Surface area**
#3	Secondary	1,643.15'	**12.0" Round Culvert** L= 55.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,643.15' / 1,643.00' S= 0.0027 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.42 cfs @ 12.65 hrs HW=1,643.44' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.42 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,641.00' TW=0.00' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Secondary OutFlow Max=0.21 cfs @ 12.65 hrs HW=1,643.44' TW=1,642.41' (Dynamic Tailwater)
3=Culvert (Barrel Controls 0.21 cfs @ 1.69 fps)

Pond P2:


Hydrograph
Inflow Area=1.355 ac
Peak Elev=1,643.44'
Storage=6,364 cf
4.07 cfs
0.63 cfs
0.42 cfs
0.21 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
0 1 2 3 4

Summary for Pond P3:

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=72)

Inflow Area = 0.081 ac, 39.52% Impervious, Inflow Depth = 4.04" for 10-Year event
Inflow = 0.23 cfs @ 12.61 hrs, Volume= 0.027 af
Outflow = 0.08 cfs @ 13.60 hrs, Volume= 0.027 af, Atten= 66%, Lag= 59.1 min
Discarded = 0.08 cfs @ 13.60 hrs, Volume= 0.027 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond P4 :
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,642.77' @ 13.60 hrs Surf.Area= 943 sf Storage= 538 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 64.8 min (836.6 - 771.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	3,820 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	460	0	0
1,643.00	1,090	775	775
1,644.00	5,000	3,045	3,820

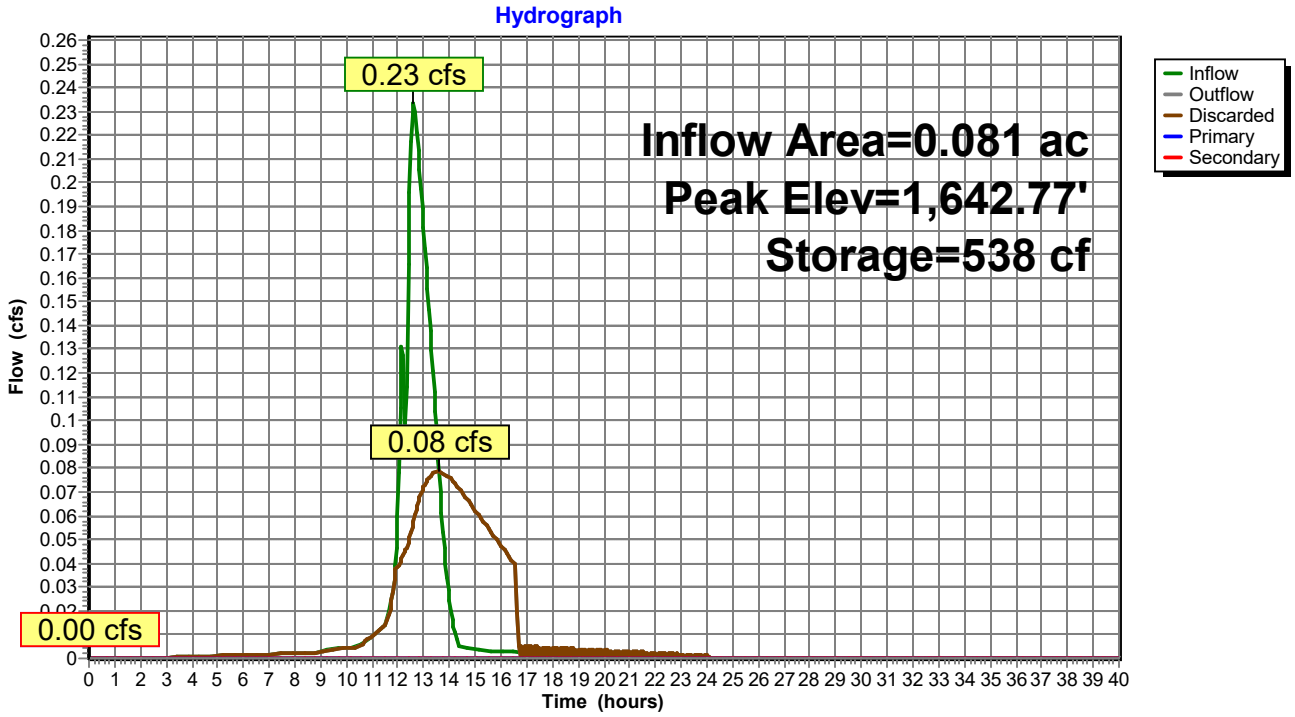
Device	Routing	Invert	Outlet Devices
#1	Secondary	1,643.50'	**10.0' long + 4.0 '/' SideZ x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,642.00'	**3.600 in/hr Exfiltration over Surface area**
#3	Primary	1,643.00'	**5.0' long + 4.0 '/' SideZ 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

Discarded OutFlow Max=0.08 cfs @ 13.60 hrs HW=1,642.77' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,642.00' TW=1,642.00' (Dynamic Tailwater)
3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,642.00' TW=0.00' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond P3:


Hydrograph
0.23 cfs
0.08 cfs
0.00 cfs
Inflow Area=0.081 ac
Peak Elev=1,642.77'
Storage=538 cf
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Pond P4:

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=111)

Inflow Area = 0.200 ac, 36.70% Impervious, Inflow Depth = 0.75" for 10-Year event
Inflow = 0.17 cfs @ 12.17 hrs, Volume= 0.012 af
Outflow = 0.07 cfs @ 12.35 hrs, Volume= 0.013 af, Atten= 57%, Lag= 10.8 min
Discarded = 0.07 cfs @ 12.35 hrs, Volume= 0.013 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,642.08' @ 12.35 hrs Surf.Area= 888 sf Storage= 67 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 4.1 min (763.9 - 759.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	4,800 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

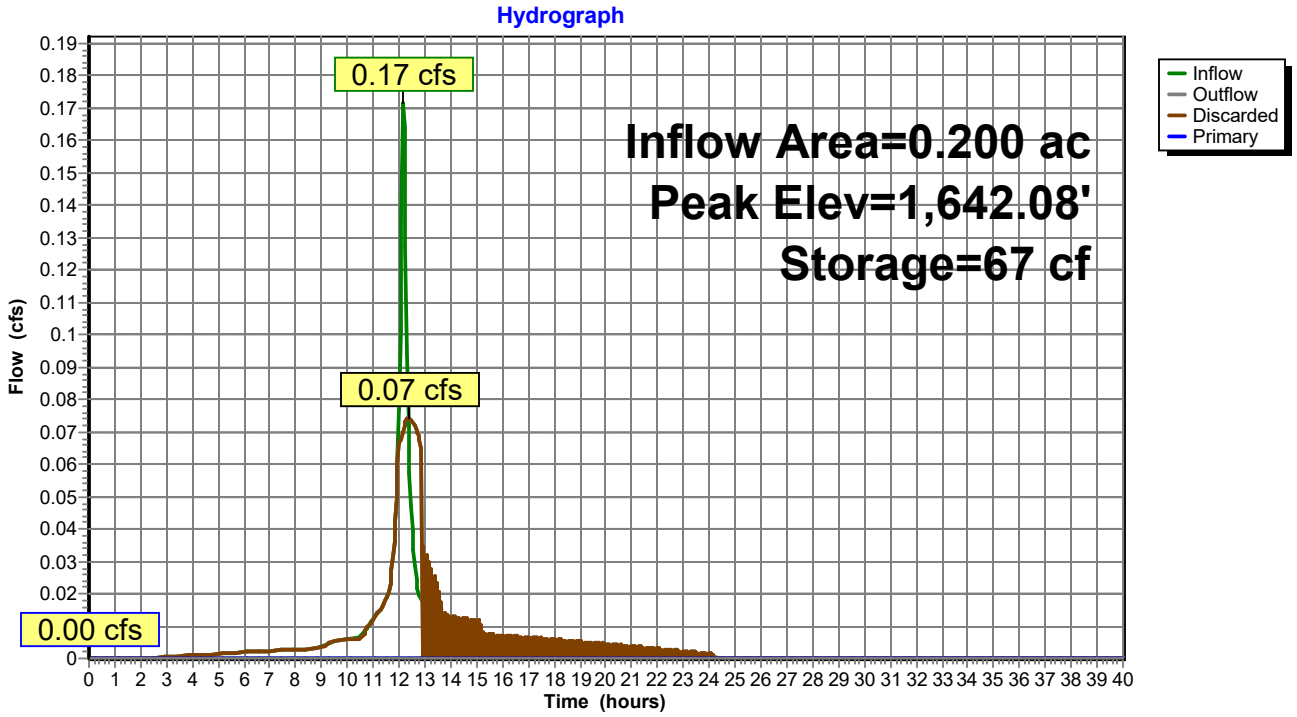
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	800	0	0
1,643.00	1,900	1,350	1,350
1,644.00	5,000	3,450	4,800

Device	Routing	Invert	Outlet Devices
#1	Primary	1,643.50'	**10.0' long + 4.0 '/' SideZ x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,642.00'	**3.600 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.07 cfs @ 12.35 hrs HW=1,642.08' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,642.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P4:

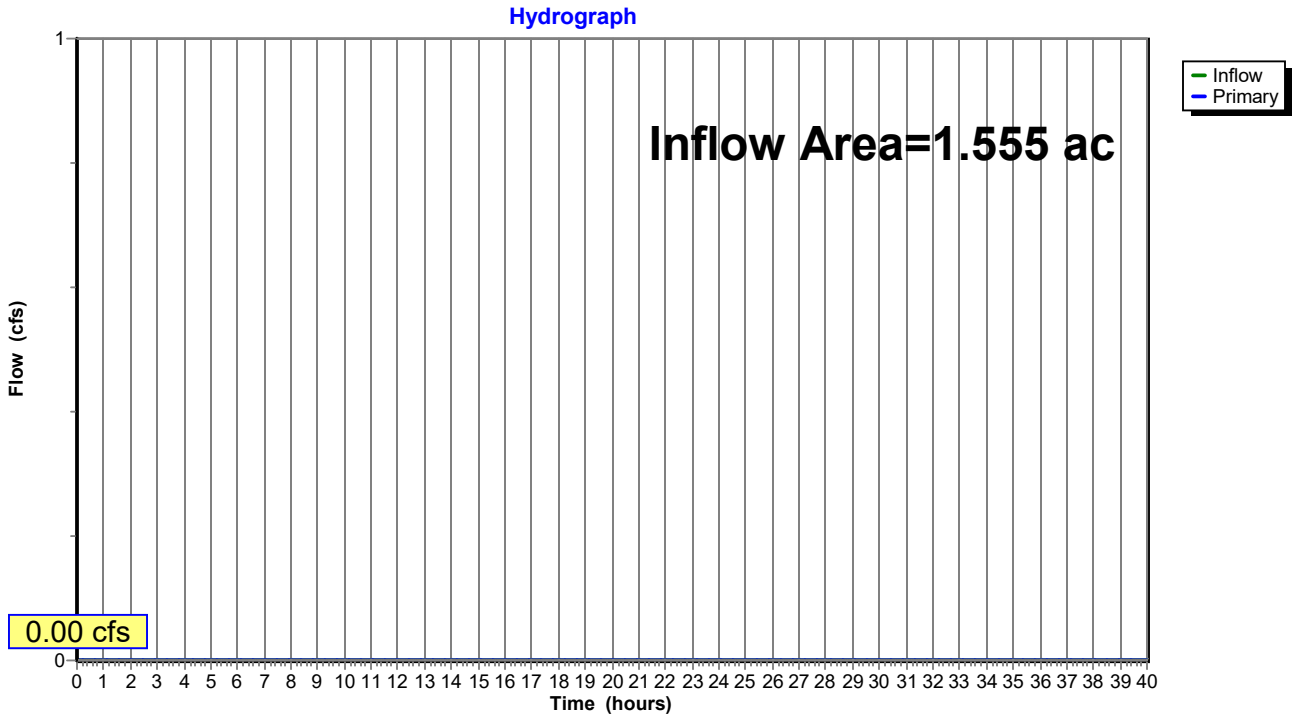

Hydrograph
Inflow Area=0.200 ac
Peak Elev=1,642.08'
Storage=67 cf
0.17 cfs
0.07 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Summary for Link 1L: link

Inflow Area = 1.555 ac, 76.32% Impervious, Inflow Depth = 0.00" for 10-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Link 1L: link



Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 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 D1: D1 Runoff Area=18,312 sf 90.12% Impervious Runoff Depth=5.64"
Tc=10.0 min CN=WQ Runoff=2.69 cfs 0.197 af

Subcatchment D2: D2 Runoff Area=40,724 sf 78.59% Impervious Runoff Depth=4.99"
Tc=10.0 min CN=WQ Runoff=5.25 cfs 0.389 af

Subcatchment D3: D3 Runoff Area=3,535 sf 39.52% Impervious Runoff Depth=2.79"
Tc=10.0 min CN=WQ Runoff=0.24 cfs 0.019 af

Subcatchment D4: D4 Runoff Area=5,176 sf 34.78% Impervious Runoff Depth=2.53"
Tc=10.0 min CN=WQ Runoff=0.31 cfs 0.025 af

Pond P1: Peak Elev=1,644.13' Storage=1,035 cf Inflow=2.69 cfs 0.197 af
Discarded=0.28 cfs 0.037 af Primary=1.14 cfs 0.149 af Secondary=0.71 cfs 0.011 af Outflow=1.94 cfs 0.197 af

Pond P2: Peak Elev=1,643.73' Storage=7,916 cf Inflow=6.38 cfs 0.538 af
Discarded=0.47 cfs 0.380 af Primary=3.23 cfs 0.091 af Secondary=0.81 cfs 0.066 af Outflow=4.50 cfs 0.538 af

Pond P3: Peak Elev=1,643.11' Storage=921 cf Inflow=0.98 cfs 0.085 af
Discarded=0.13 cfs 0.049 af Primary=0.50 cfs 0.036 af Secondary=0.00 cfs 0.000 af Outflow=0.63 cfs 0.085 af

Pond P4: Peak Elev=1,642.92' Storage=1,196 cf Inflow=0.58 cfs 0.061 af
Discarded=0.15 cfs 0.061 af Primary=0.00 cfs 0.000 af Outflow=0.15 cfs 0.061 af

Link 1L: link Inflow=3.94 cfs 0.103 af
Primary=3.94 cfs 0.103 af

Total Runoff Area = 1.555 ac Runoff Volume = 0.630 af Average Runoff Depth = 4.86"
23.68% Pervious = 0.368 ac 76.32% Impervious = 1.187 ac

Summary for Subcatchment D1: D1

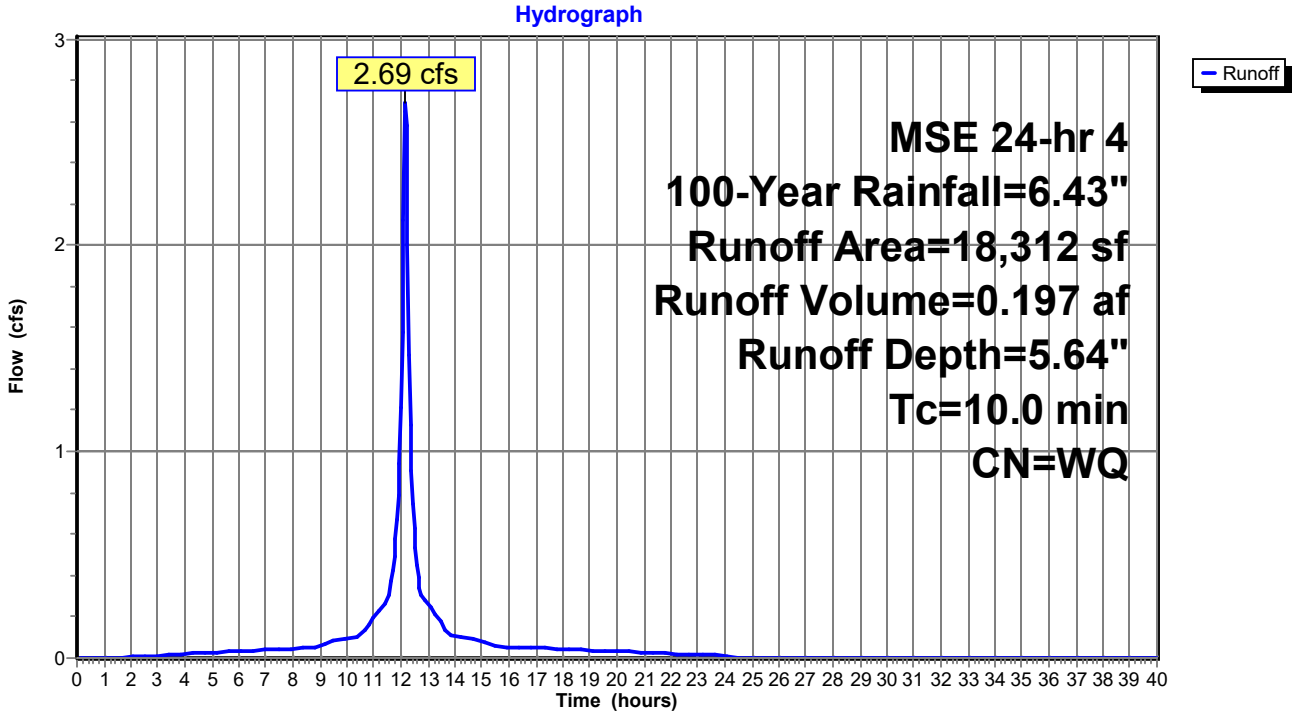
Runoff = 2.69 cfs @ 12.17 hrs, Volume= 0.197 af, Depth= 5.64"
Routed to Pond P1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.43"

	Area (sf)	CN	Description
*	4,776	98	parking lot
*	11,687	98	building
*	40	98	basin
	1,809	39	>75% Grass cover, Good, HSG A
	18,312		Weighted Average
	1,809		9.88% Pervious Area
	16,503		90.12% Impervious Area

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

Subcatchment D1: D1



Summary for Subcatchment D2: D2

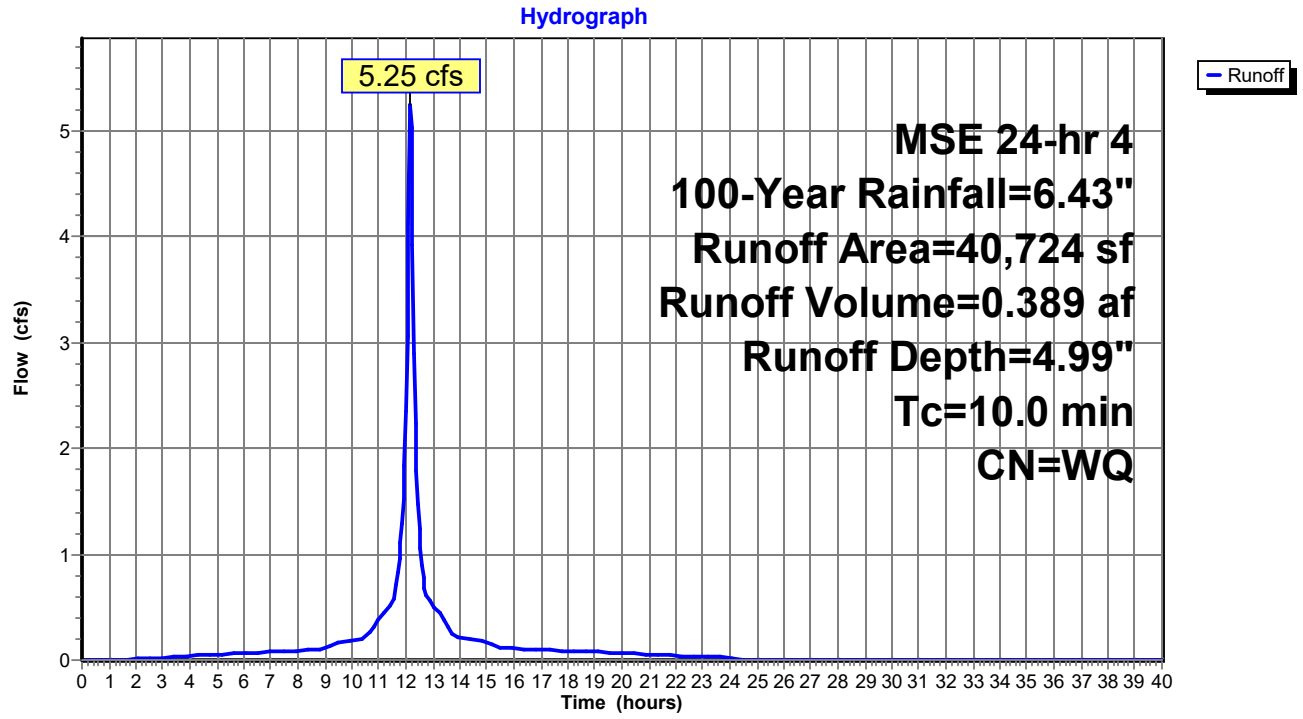
Runoff = 5.25 cfs @ 12.17 hrs, Volume= 0.389 af, Depth= 4.99"
Routed to Pond P2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.43"

	Area (sf)	CN	Description
*	630	98	basin
*	16,865	98	parking lot
	8,720	39	>75% Grass cover, Good, HSG A
*	14,509	98	building
	40,724		Weighted Average
	8,720		21.41% Pervious Area
	32,004		78.59% Impervious Area

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

Subcatchment D2: D2



Summary for Subcatchment D3: D3

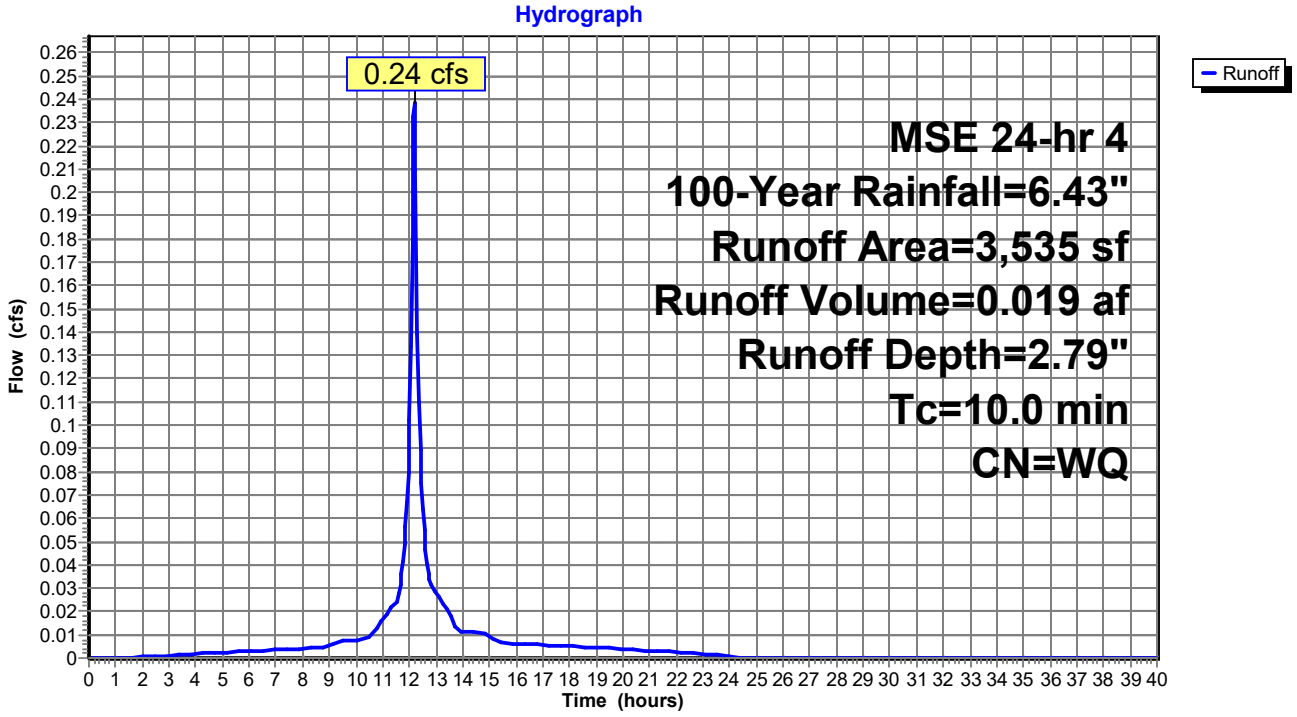
Runoff = 0.24 cfs @ 12.18 hrs, Volume= 0.019 af, Depth= 2.79"
Routed to Pond P3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.43"

	Area (sf)	CN	Description
*	303	98	parking lot
*	924	98	building
*	170	98	basin
	2,138	39	>75% Grass cover, Good, HSG A
	3,535		Weighted Average
	2,138		60.48% Pervious Area
	1,397		39.52% Impervious Area

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

Subcatchment D3: D3



Summary for Subcatchment D4: D4

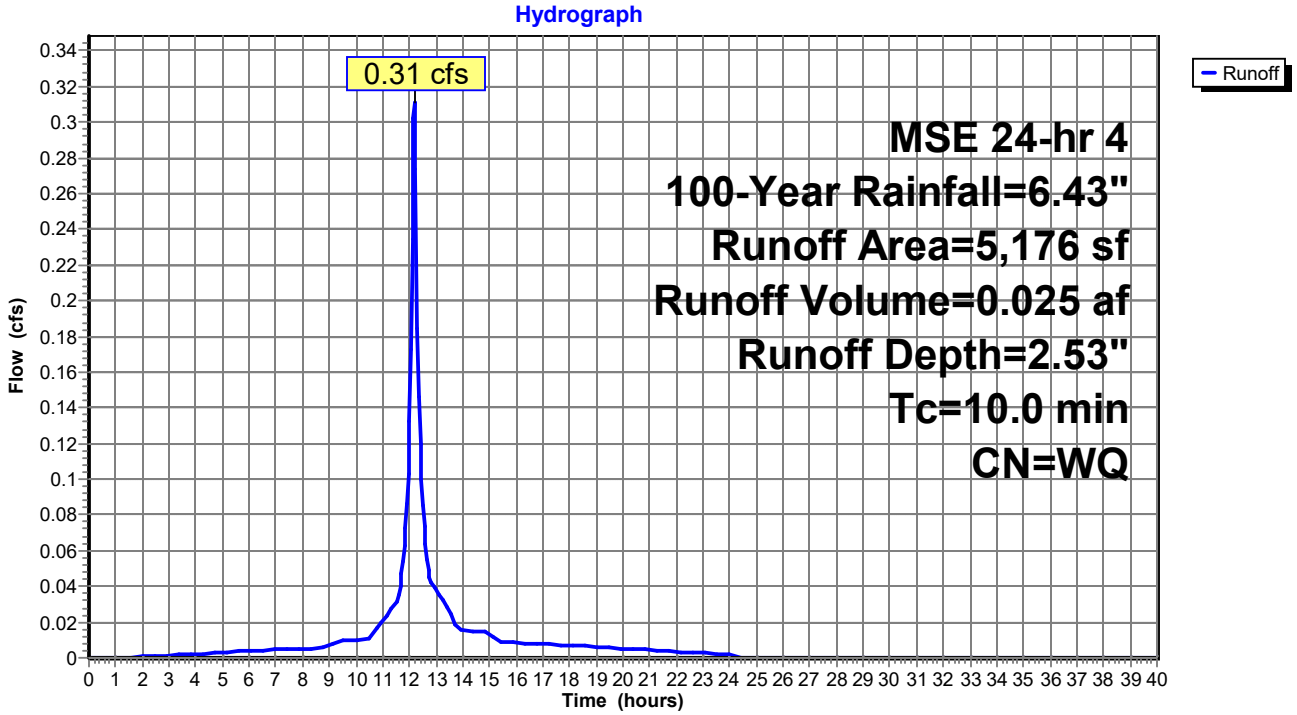
Runoff = 0.31 cfs @ 12.18 hrs, Volume= 0.025 af, Depth= 2.53"
Routed to Pond P4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.43"

	Area (sf)	CN	Description
*	1,500	98	building
*	300	98	basin
	3,376	39	>75% Grass cover, Good, HSG A
	5,176		Weighted Average
	3,376		65.22% Pervious Area
	1,800		34.78% Impervious Area

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

Subcatchment D4: D4



Summary for Pond P1:

Inflow Area = 0.420 ac, 90.12% Impervious, Inflow Depth = 5.64" for 100-Year event
Inflow = 2.69 cfs @ 12.17 hrs, Volume= 0.197 af
Outflow = 1.94 cfs @ 12.25 hrs, Volume= 0.197 af, Atten= 28%, Lag= 4.7 min
Discarded = 0.28 cfs @ 12.26 hrs, Volume= 0.037 af
Primary = 1.14 cfs @ 12.16 hrs, Volume= 0.149 af
Routed to Pond P2 :
Secondary = 0.71 cfs @ 12.26 hrs, Volume= 0.011 af
Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,644.13' @ 12.26 hrs Surf.Area= 3,373 sf Storage= 1,035 cf

Plug-Flow detention time= 19.5 min calculated for 0.197 af (100% of inflow)
Center-of-Mass det. time= 19.7 min (768.1 - 748.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,641.00'	11,161 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,641.00	1	0	0
1,642.00	40	21	21
1,643.00	310	175	196
1,644.00	810	560	756
1,645.00	20,000	10,405	11,161

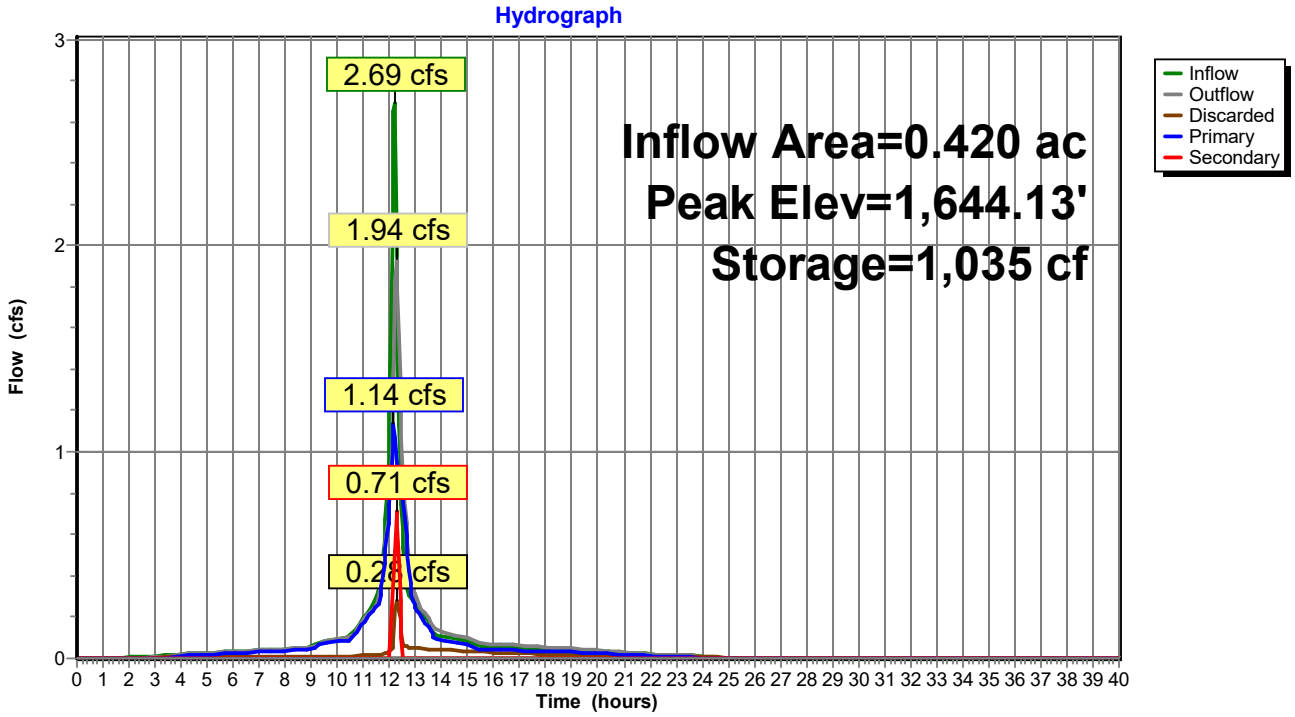
Device	Routing	Invert	Outlet Devices
#1	Secondary	1,644.00'	**5.0' long + 4.0 '/' SideZ x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,641.00'	**3.600 in/hr Exfiltration over Surface area**
#3	Primary	1,642.15'	**8.0" Round Culvert** L= 55.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,642.15' / 1,642.00' S= 0.0027 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Discarded OutFlow Max=0.28 cfs @ 12.26 hrs HW=1,644.13' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.28 cfs)

Primary OutFlow Max=0.97 cfs @ 12.16 hrs HW=1,644.02' TW=1,643.54' (Dynamic Tailwater)
3=Culvert (Outlet Controls 0.97 cfs @ 2.77 fps)

Secondary OutFlow Max=0.69 cfs @ 12.26 hrs HW=1,644.13' TW=0.00' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Weir Controls 0.69 cfs @ 0.95 fps)

Pond P1:


Hydrograph
Inflow Area=0.420 ac
Peak Elev=1,644.13'
Storage=1,035 cf
2.69 cfs
1.94 cfs
1.14 cfs
0.71 cfs
0.28 cfs
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
0 1 2 3

Summary for Pond P2:

Inflow Area = 1.355 ac, 82.17% Impervious, Inflow Depth = 4.76" for 100-Year event
Inflow = 6.38 cfs @ 12.17 hrs, Volume= 0.538 af
Outflow = 4.50 cfs @ 12.27 hrs, Volume= 0.538 af, Atten= 29%, Lag= 6.4 min
Discarded = 0.47 cfs @ 12.27 hrs, Volume= 0.380 af
Primary = 3.23 cfs @ 12.27 hrs, Volume= 0.091 af
Routed to Link 1L : link
Secondary = 0.81 cfs @ 12.27 hrs, Volume= 0.066 af
Routed to Pond P3 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,643.73' @ 12.27 hrs Surf.Area= 5,589 sf Storage= 7,916 cf

Plug-Flow detention time= 123.1 min calculated for 0.537 af (100% of inflow)
Center-of-Mass det. time= 123.2 min (874.9 - 751.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,641.00'	22,530 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,641.00	500	0	0
1,642.00	1,990	1,245	1,245
1,643.00	4,190	3,090	4,335
1,644.00	6,100	5,145	9,480
1,645.00	20,000	13,050	22,530

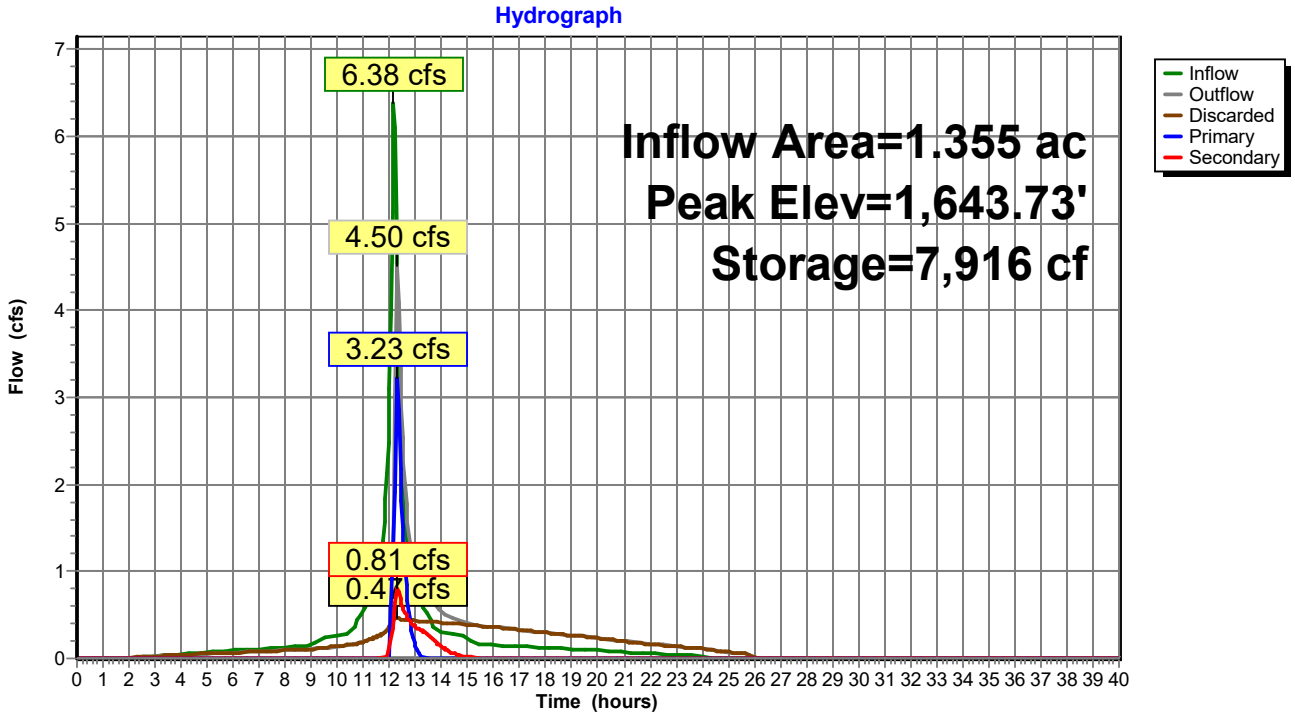
Device	Routing	Invert	Outlet Devices
#1	Primary	1,643.50'	**10.0' long + 4.0 '/' SideZ x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,641.00'	**3.600 in/hr Exfiltration over Surface area**
#3	Secondary	1,643.15'	**12.0" Round Culvert** L= 55.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,643.15' / 1,643.00' S= 0.0027 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.46 cfs @ 12.27 hrs HW=1,643.73' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.46 cfs)

Primary OutFlow Max=3.08 cfs @ 12.27 hrs HW=1,643.73' TW=0.00' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Weir Controls 3.08 cfs @ 1.26 fps)

Secondary OutFlow Max=0.79 cfs @ 12.27 hrs HW=1,643.73' TW=1,642.71' (Dynamic Tailwater)
3=Culvert (Barrel Controls 0.79 cfs @ 2.44 fps)

Pond P2:


Hydrograph
Inflow Area=1.355 ac
Peak Elev=1,643.73'
Storage=7,916 cf
6.38 cfs
4.50 cfs
3.23 cfs
0.81 cfs
0.47 cfs
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

Summary for Pond P3:

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=49)

Inflow Area = 0.081 ac, 39.52% Impervious, Inflow Depth = 12.59" for 100-Year event
Inflow = 0.98 cfs @ 12.26 hrs, Volume= 0.085 af
Outflow = 0.63 cfs @ 12.55 hrs, Volume= 0.085 af, Atten= 36%, Lag= 17.2 min
Discarded = 0.13 cfs @ 12.55 hrs, Volume= 0.049 af
Primary = 0.50 cfs @ 12.55 hrs, Volume= 0.036 af
Routed to Pond P4 :
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,643.11' @ 12.55 hrs Surf.Area= 1,527 sf Storage= 921 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 54.1 min (829.6 - 775.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	3,820 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	460	0	0
1,643.00	1,090	775	775
1,644.00	5,000	3,045	3,820

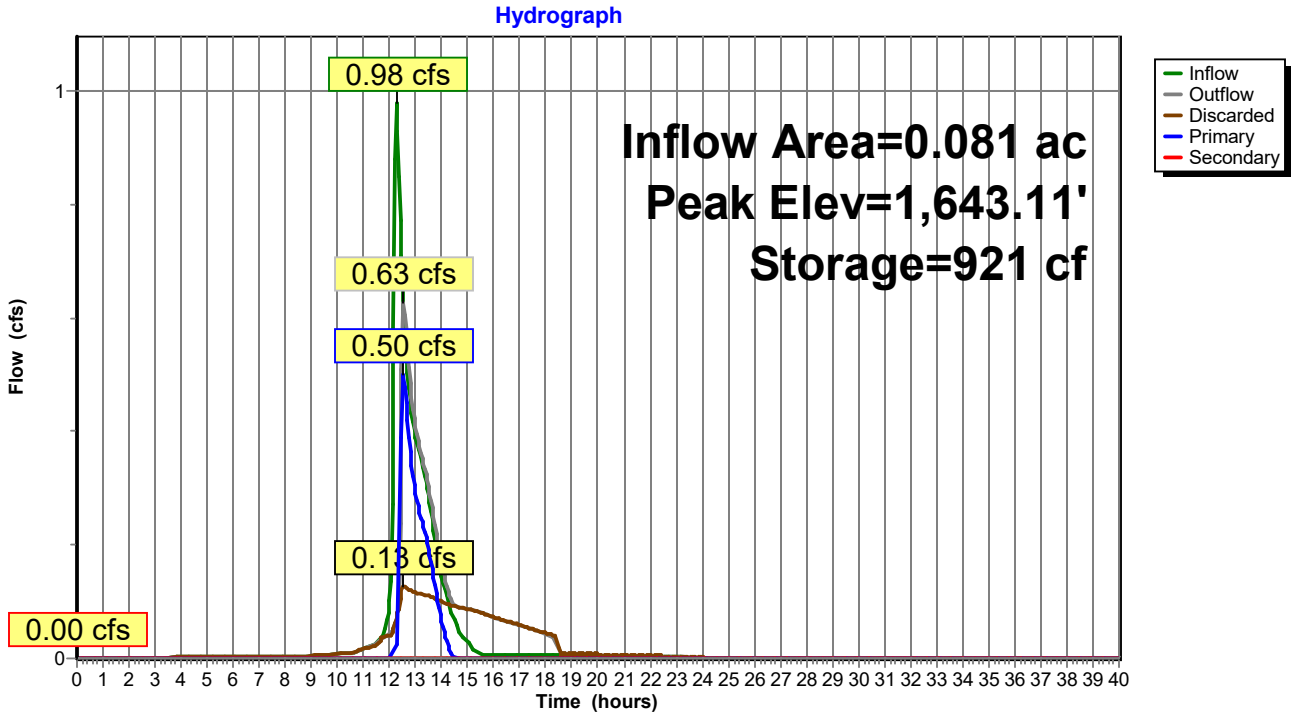
Device	Routing	Invert	Outlet Devices
#1	Secondary	1,643.50'	**10.0' long + 4.0 '/' SideZ x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,642.00'	**3.600 in/hr Exfiltration over Surface area**
#3	Primary	1,643.00'	**5.0' long + 4.0 '/' SideZ 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

Discarded OutFlow Max=0.13 cfs @ 12.55 hrs HW=1,643.11' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.13 cfs)

Primary OutFlow Max=0.50 cfs @ 12.55 hrs HW=1,643.11' TW=1,642.42' (Dynamic Tailwater)
3=Broad-Crested Rectangular Weir (Weir Controls 0.50 cfs @ 0.82 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,642.00' TW=0.00' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond P3:


Hydrograph
Inflow Area=0.081 ac
Peak Elev=1,643.11'
Storage=921 cf
0.98 cfs
0.63 cfs
0.50 cfs
0.13 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

Summary for Pond P4:

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=65)

Inflow Area = 0.200 ac, 36.70% Impervious, Inflow Depth = 3.65" for 100-Year event
Inflow = 0.58 cfs @ 12.53 hrs, Volume= 0.061 af
Outflow = 0.15 cfs @ 13.73 hrs, Volume= 0.061 af, Atten= 74%, Lag= 72.3 min
Discarded = 0.15 cfs @ 13.73 hrs, Volume= 0.061 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,642.92' @ 13.73 hrs Surf.Area= 1,809 sf Storage= 1,196 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 76.0 min (853.9 - 777.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	4,800 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

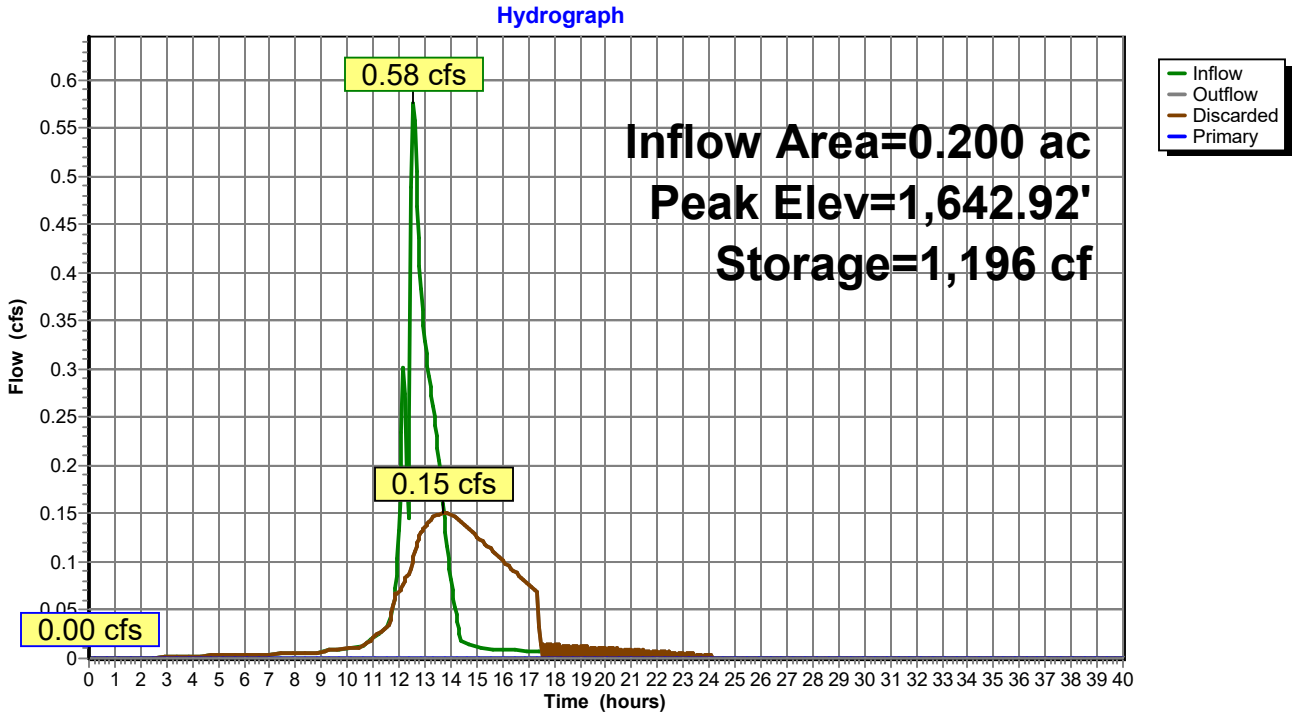
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	800	0	0
1,643.00	1,900	1,350	1,350
1,644.00	5,000	3,450	4,800

Device	Routing	Invert	Outlet Devices
#1	Primary	1,643.50'	**10.0' long + 4.0 '/' SideZ x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,642.00'	**3.600 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.15 cfs @ 13.73 hrs HW=1,642.92' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.15 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,642.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P4:

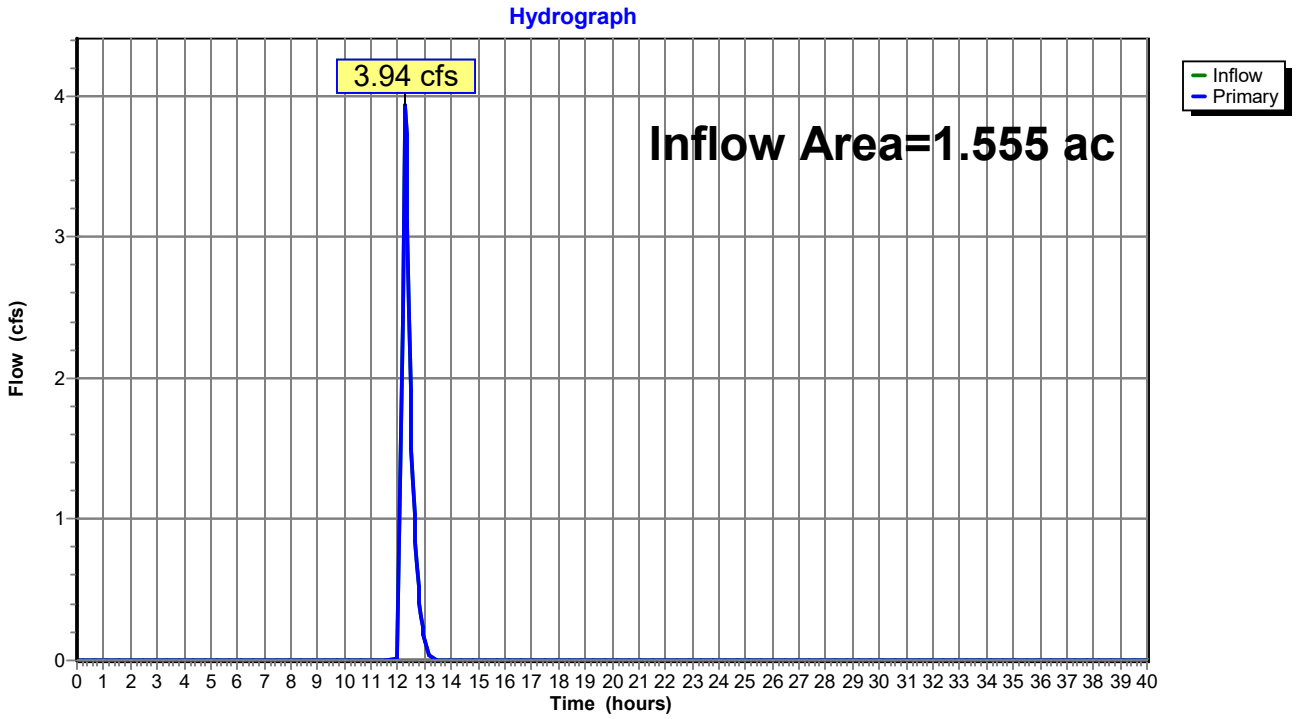

Hydrograph
0.58 cfs
0.15 cfs
0.00 cfs
Inflow Area=0.200 ac
Peak Elev=1,642.92'
Storage=1,196 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Summary for Link 1L: link

Inflow Area = 1.555 ac, 76.32% Impervious, Inflow Depth = 0.79" for 100-Year event
Inflow = 3.94 cfs @ 12.27 hrs, Volume= 0.103 af
Primary = 3.94 cfs @ 12.27 hrs, Volume= 0.103 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Link 1L: link



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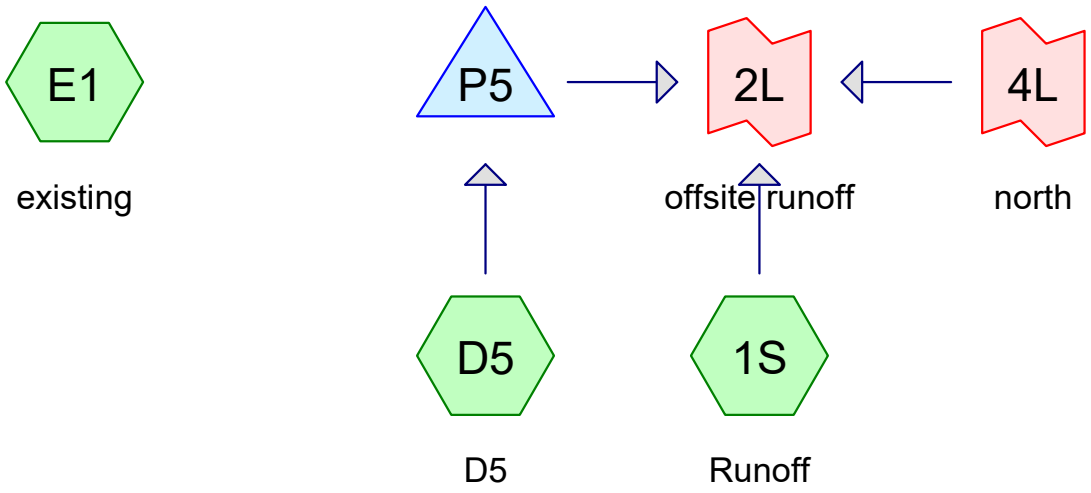


Subcat Reach Pond Link

Routing Diagram for 26-0159 south
Prepared by Vreeland Associates, Printed 5/28/2026
HydroCAD® 10.20-8a s/n 09881 © 2025 HydroCAD Software Solutions LLC

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	MSE 24-hr	4	Default	24.00	1	2.22	2
2	2-Year	MSE 24-hr	4	Default	24.00	1	2.56	2
3	10-Year	MSE 24-hr	4	Default	24.00	1	3.79	2
4	100-Year	MSE 24-hr	4	Default	24.00	1	6.43	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.277	39	>75% Grass cover, Good, HSG A (1S, D5, E1)
0.026	98	basin (D5)
0.513	98	building (D5)
0.331	98	pavement (D5)
4.147	**51**	**TOTAL AREA**

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 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 1S: Runoff Runoff Area=7,842 sf 0.00% Impervious Runoff Depth=0.00"
Tc=10.0 min CN=39 Runoff=0.00 cfs 0.000 af

Subcatchment D5: D5 Runoff Area=42,461 sf 89.28% Impervious Runoff Depth=1.78"
Tc=6.0 min CN=WQ Runoff=2.39 cfs 0.145 af

Subcatchment E1: existing Runoff Area=2.992 ac 0.00% Impervious Runoff Depth=0.00"
Tc=10.0 min CN=39 Runoff=0.00 cfs 0.000 af

Pond P5: Peak Elev=1,643.52' Storage=2,764 cf Inflow=2.39 cfs 0.145 af
Discarded=0.21 cfs 0.145 af Primary=0.00 cfs 0.000 af Outflow=0.21 cfs 0.145 af

Link 2L: offsite runoff Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Link 4L: north 1-Year Inflow Imported from 26-0159 north~Link 1L.hce Inflow=0.00 cfs 0.000 af
Area= 1.555 ac 76.32% Imperv. Primary=0.00 cfs 0.000 af

Total Runoff Area = 4.147 ac Runoff Volume = 0.145 af Average Runoff Depth = 0.42"
79.01% Pervious = 3.277 ac 20.99% Impervious = 0.870 ac

Summary for Subcatchment 1S: Runoff

[45] Hint: Runoff=Zero

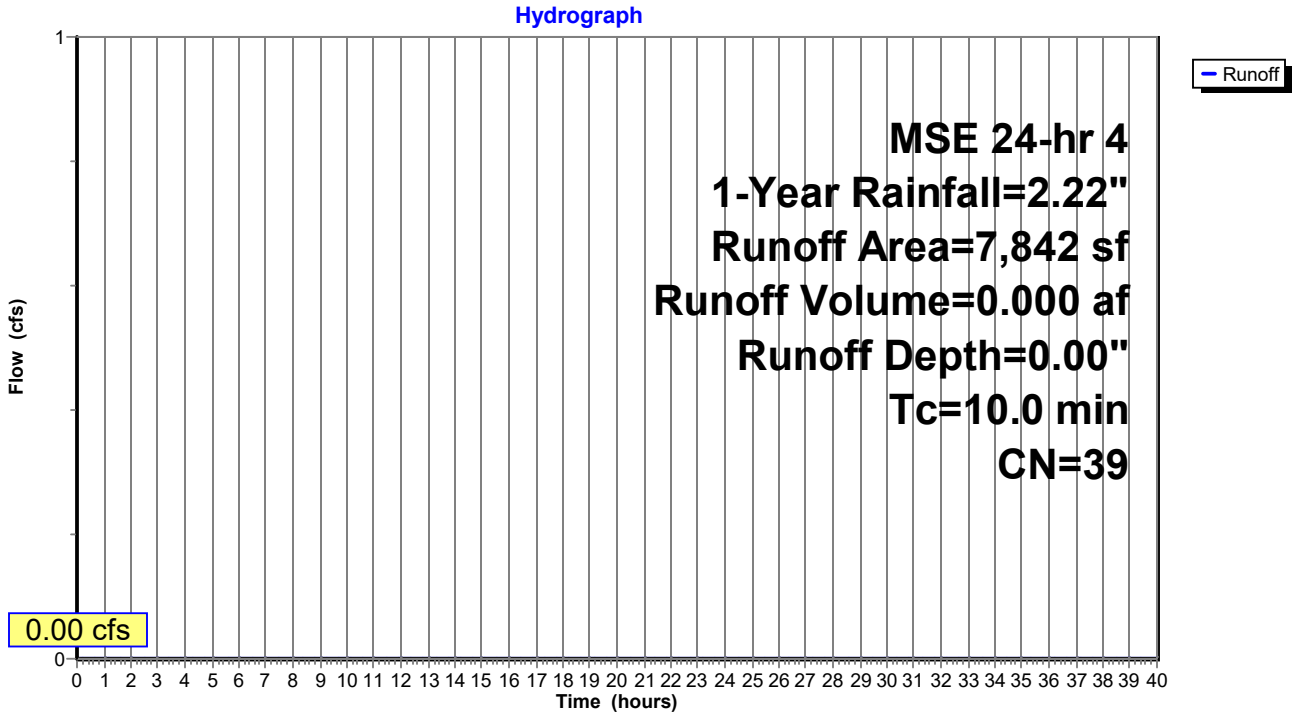
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Link 2L : offsite runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.22"

Area (sf)	CN	Description
7,842	39	>75% Grass cover, Good, HSG A
7,842		100.00% Pervious Area

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

Subcatchment 1S: Runoff



Summary for Subcatchment D5: D5

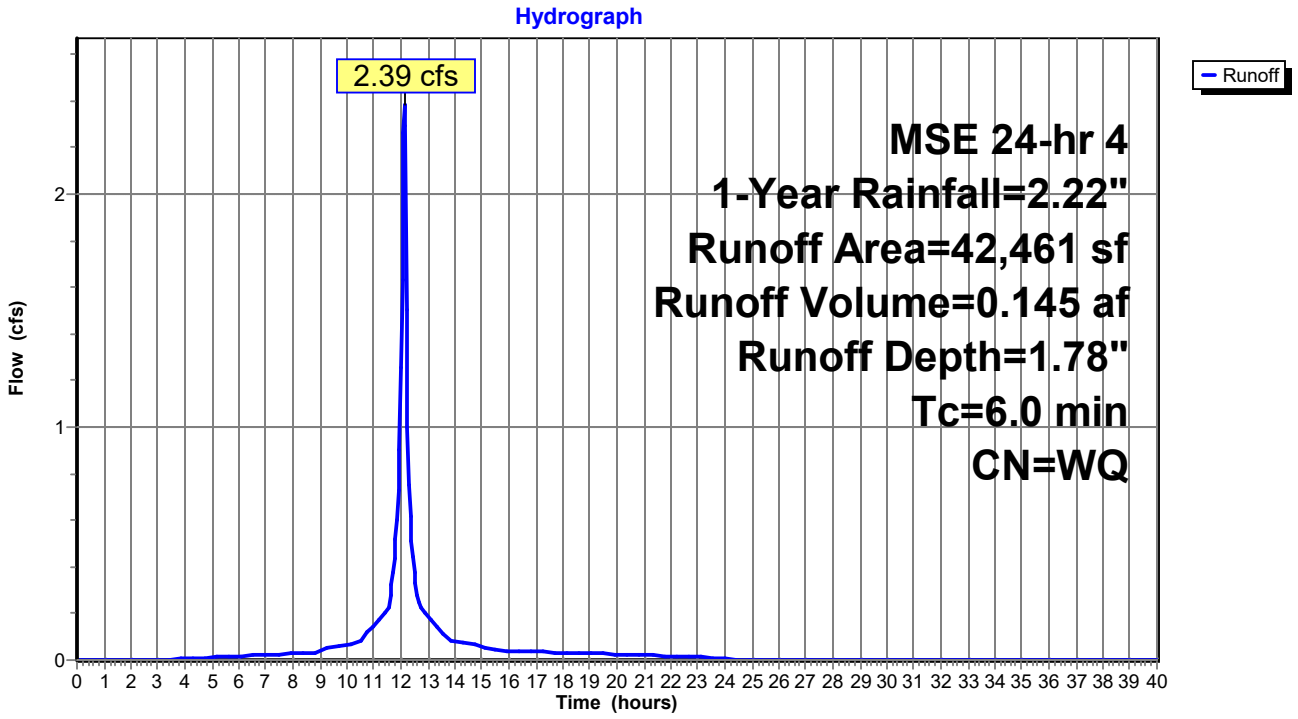
Runoff = 2.39 cfs @ 12.13 hrs, Volume= 0.145 af, Depth= 1.78"
Routed to Pond P5 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.22"

	Area (sf)	CN	Description
*	14,424	98	pavement
*	22,344	98	building
*	1,140	98	basin
	4,553	39	>75% Grass cover, Good, HSG A
	42,461		Weighted Average
	4,553		10.72% Pervious Area
	37,908		89.28% Impervious Area

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

Subcatchment D5: D5



Summary for Subcatchment E1: existing

[45] Hint: Runoff=Zero

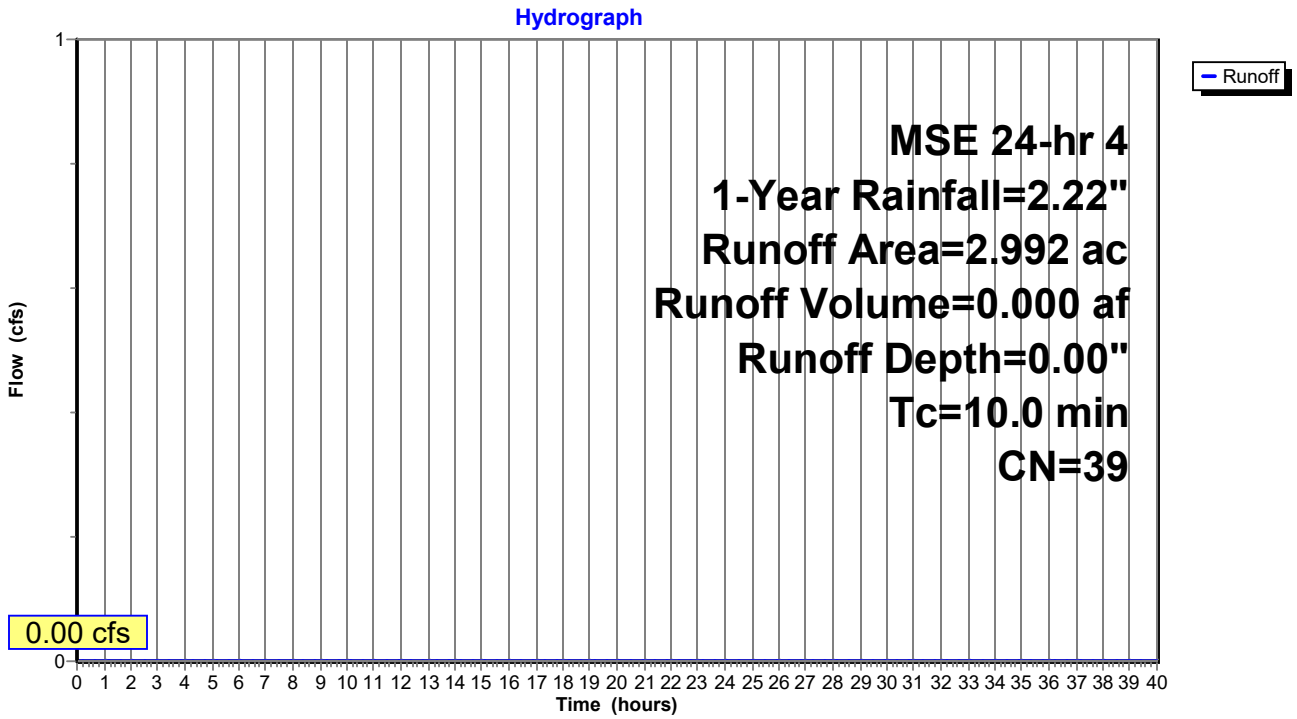
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1-Year Rainfall=2.22"

Area (ac)	CN	Description
2.992	39	>75% Grass cover, Good, HSG A
2.992		100.00% Pervious Area

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

Subcatchment E1: existing



Summary for Pond P5:

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=36)

Inflow Area = 0.975 ac, 89.28% Impervious, Inflow Depth = 1.78" for 1-Year event
Inflow = 2.39 cfs @ 12.13 hrs, Volume= 0.145 af
Outflow = 0.21 cfs @ 12.85 hrs, Volume= 0.145 af, Atten= 91%, Lag= 43.7 min
Discarded = 0.21 cfs @ 12.85 hrs, Volume= 0.145 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2L : offsite runoff

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,643.52' @ 12.85 hrs Surf.Area= 2,530 sf Storage= 2,764 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 118.4 min (879.6 - 761.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	24,860 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

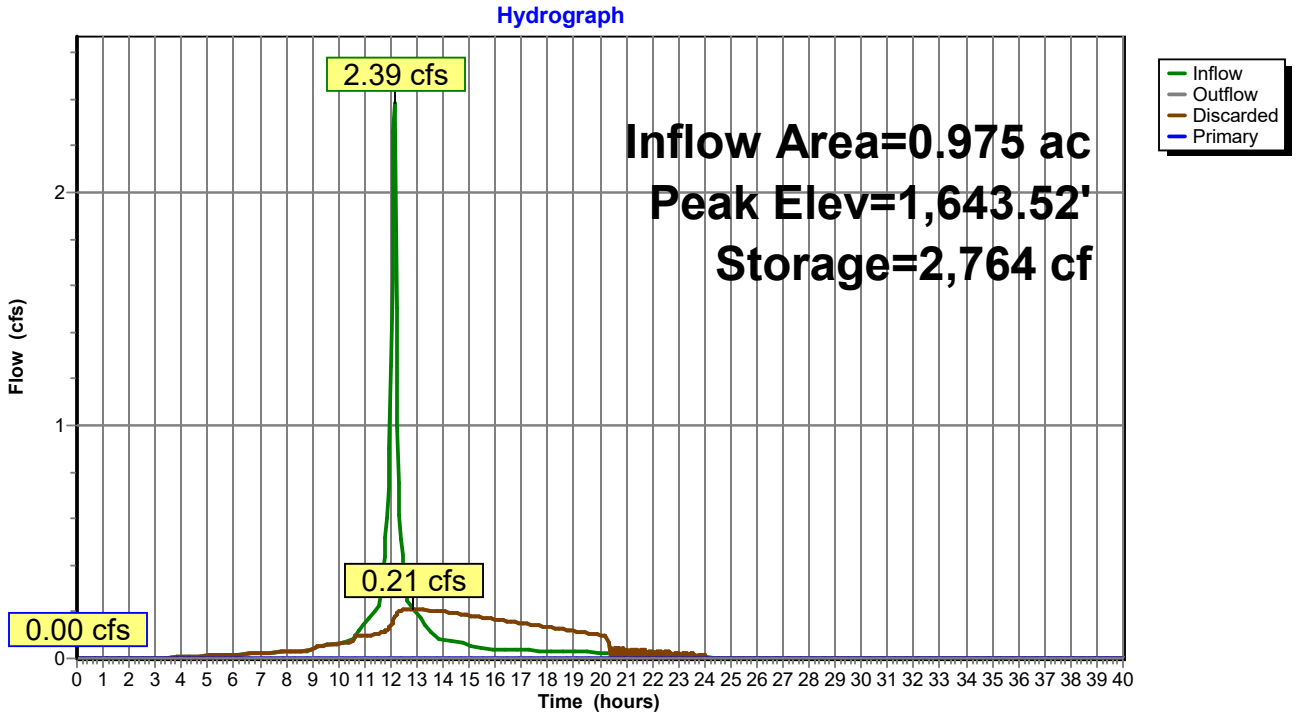
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	1,140	0	0
1,643.00	2,020	1,580	1,580
1,644.00	3,000	2,510	4,090
1,645.00	4,000	3,500	7,590
1,646.00	5,270	4,635	12,225
1,647.00	20,000	12,635	24,860

Device	Routing	Invert	Outlet Devices
#1	Primary	1,644.75'	**10.0' long + 4.0 '/' SideZ x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,642.00'	**3.600 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.21 cfs @ 12.85 hrs HW=1,643.52' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.21 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,642.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P5:

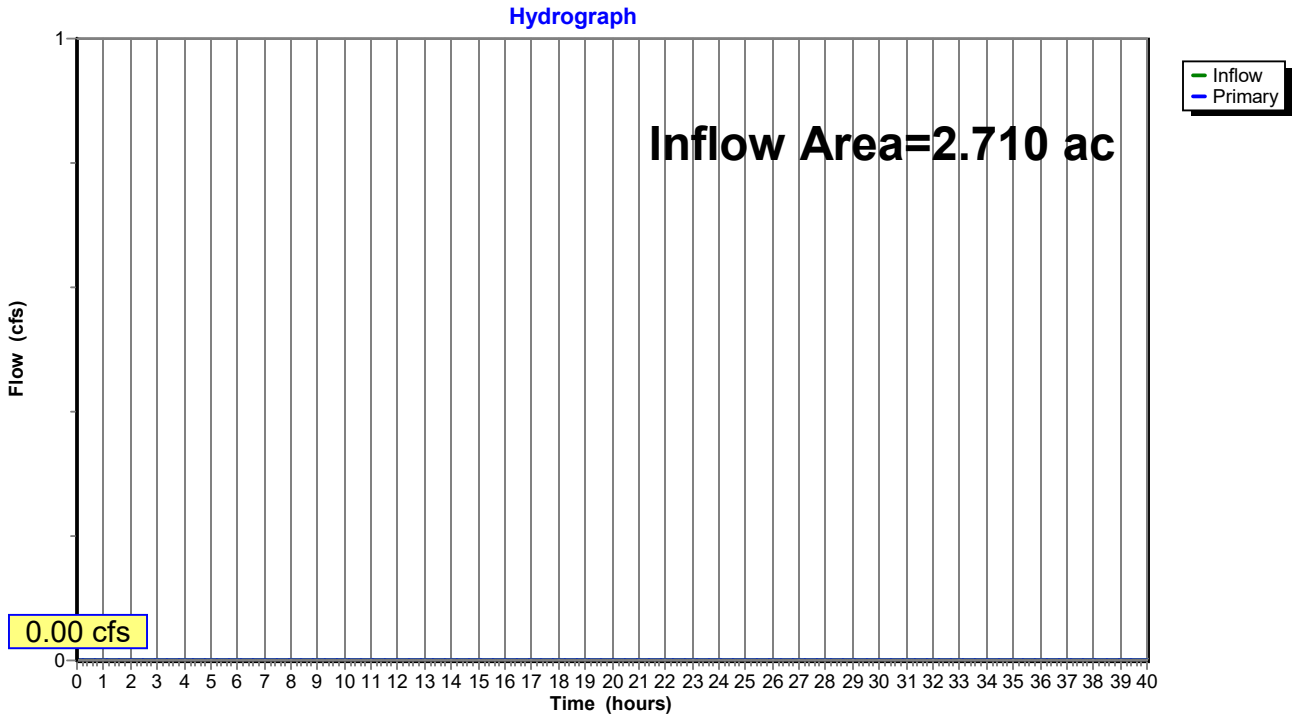

Hydrograph
2.39 cfs
0.21 cfs
0.00 cfs
Inflow Area=0.975 ac
Peak Elev=1,643.52'
Storage=2,764 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
0
1
2

Summary for Link 2L: offsite runoff

Inflow Area = 2.710 ac, 75.91% Impervious, Inflow Depth = 0.00" for 1-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Link 2L: offsite runoff



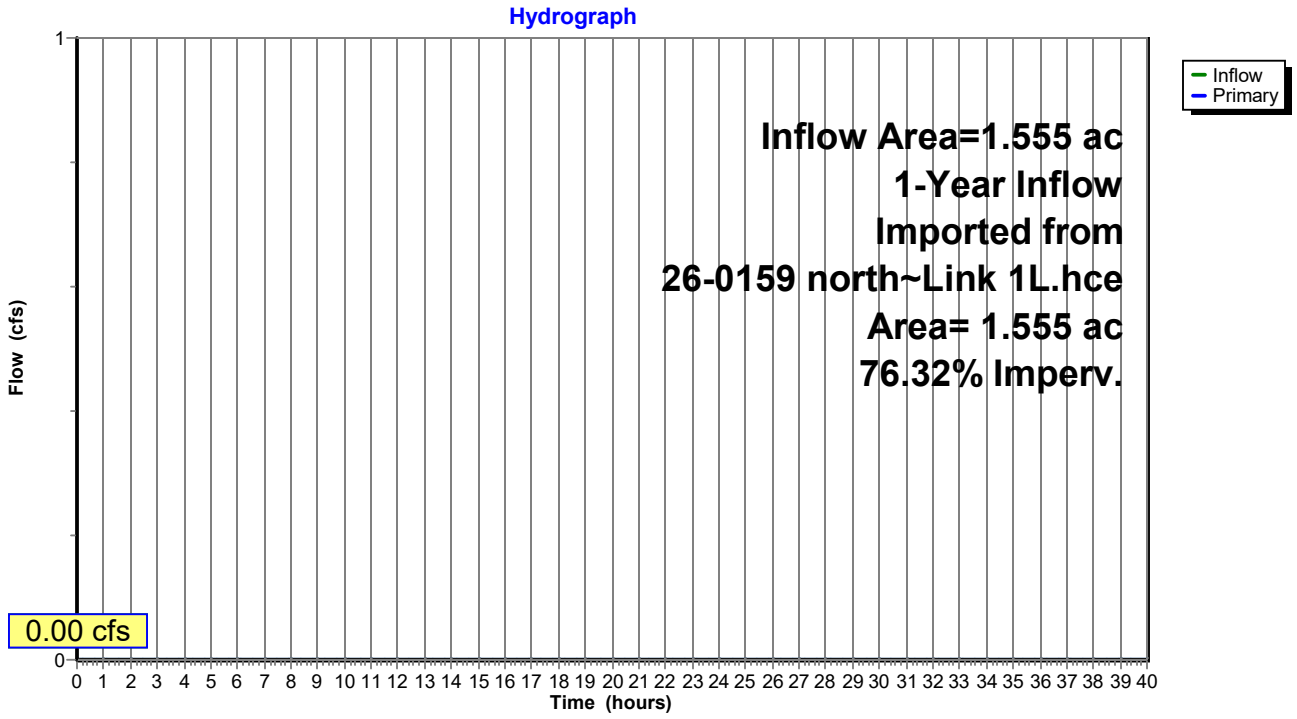
Summary for Link 4L: north

Inflow Area = 1.555 ac, 76.32% Impervious, Inflow Depth = 0.00" for 1-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Routed to Link 2L : offsite runoff

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

1-Year Inflow Imported from 26-0159 north~Link 1L.hce

Link 4L: north



Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 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 1S: Runoff Runoff Area=7,842 sf 0.00% Impervious Runoff Depth=0.00"
Tc=10.0 min CN=39 Runoff=0.00 cfs 0.000 af

Subcatchment D5: D5 Runoff Area=42,461 sf 89.28% Impervious Runoff Depth=2.08"
Tc=6.0 min CN=WQ Runoff=2.77 cfs 0.169 af

Subcatchment E1: existing Runoff Area=2.992 ac 0.00% Impervious Runoff Depth=0.00"
Tc=10.0 min CN=39 Runoff=0.00 cfs 0.000 af

Pond P5: Peak Elev=1,643.74' Storage=3,337 cf Inflow=2.77 cfs 0.169 af
Discarded=0.23 cfs 0.169 af Primary=0.00 cfs 0.000 af Outflow=0.23 cfs 0.169 af

Link 2L: offsite runoff Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Link 4L: north 2-Year Inflow Imported from 26-0159 north~Link 1L.hce Inflow=0.00 cfs 0.000 af
Area= 1.555 ac 76.32% Imperv. Primary=0.00 cfs 0.000 af

Total Runoff Area = 4.147 ac Runoff Volume = 0.169 af Average Runoff Depth = 0.49"
79.01% Pervious = 3.277 ac 20.99% Impervious = 0.870 ac

Summary for Subcatchment 1S: Runoff

[45] Hint: Runoff=Zero

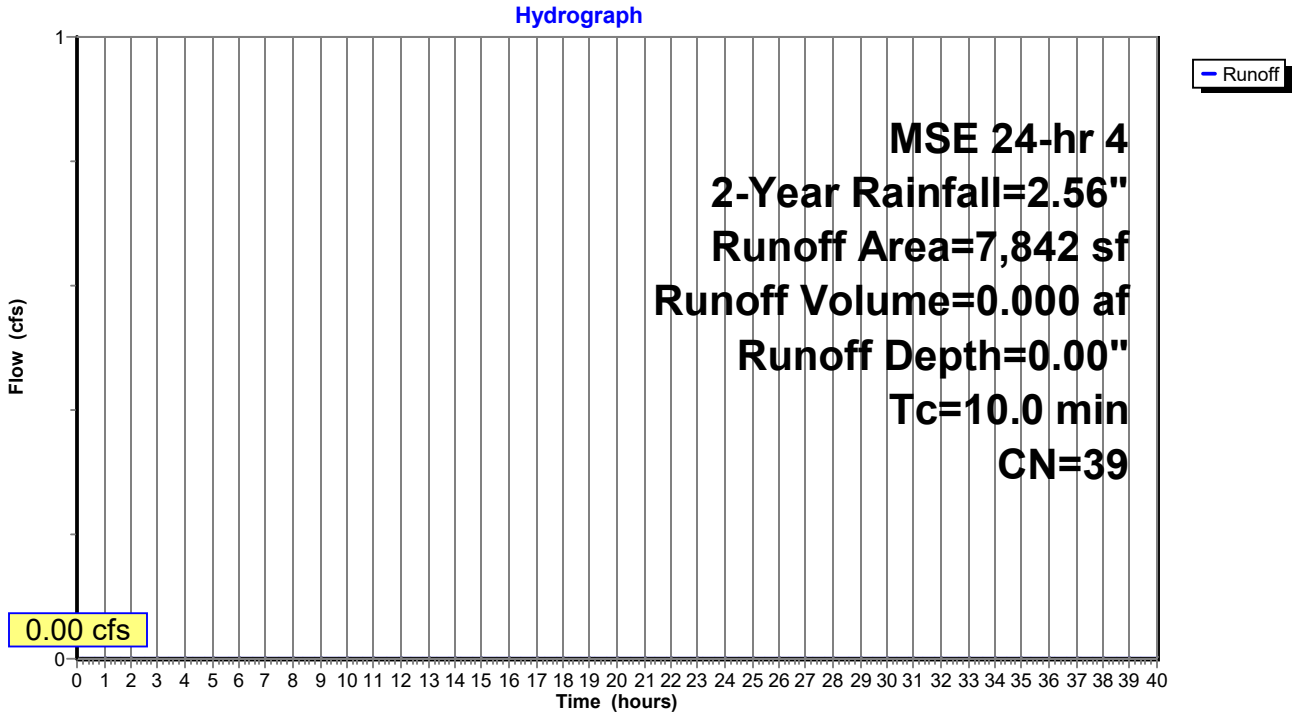
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Link 2L : offsite runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.56"

Area (sf)	CN	Description
7,842	39	>75% Grass cover, Good, HSG A
7,842		100.00% Pervious Area

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

Subcatchment 1S: Runoff



Summary for Subcatchment D5: D5

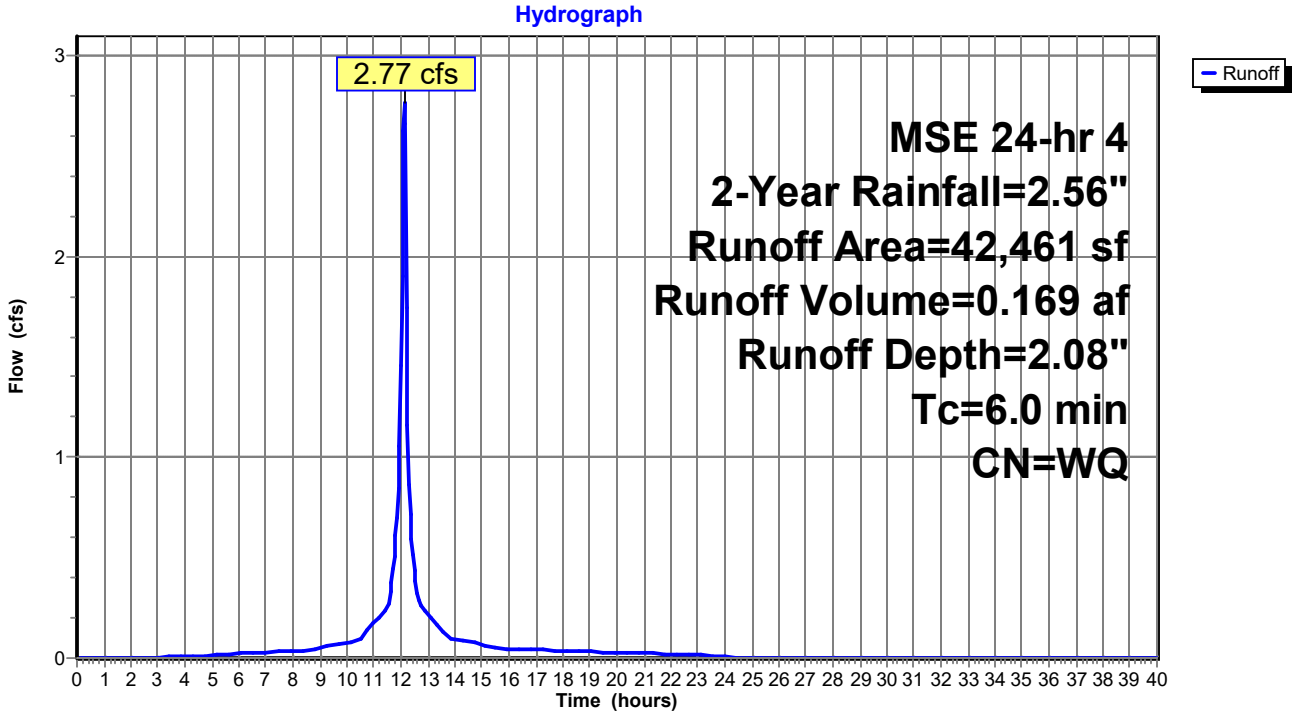
Runoff = 2.77 cfs @ 12.13 hrs, Volume= 0.169 af, Depth= 2.08"
Routed to Pond P5 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.56"

	Area (sf)	CN	Description
*	14,424	98	pavement
*	22,344	98	building
*	1,140	98	basin
	4,553	39	>75% Grass cover, Good, HSG A
	42,461		Weighted Average
	4,553		10.72% Pervious Area
	37,908		89.28% Impervious Area

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

Subcatchment D5: D5



Summary for Subcatchment E1: existing

[45] Hint: Runoff=Zero

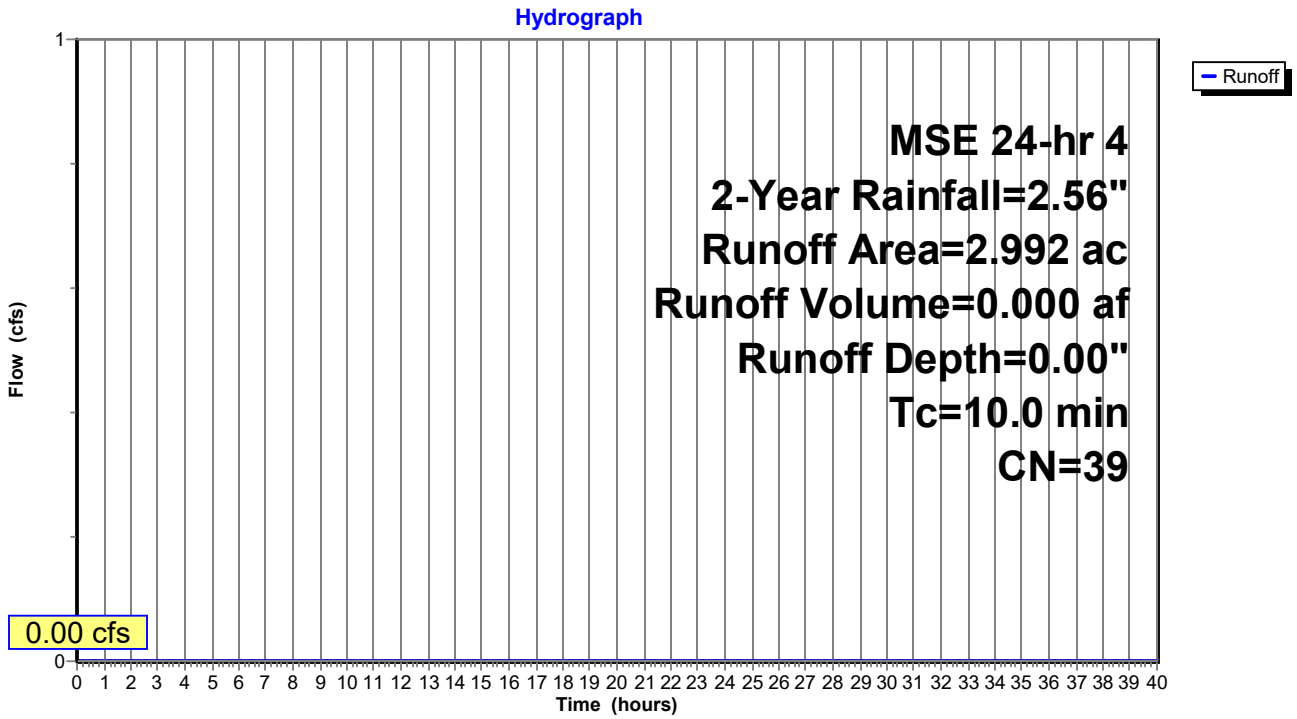
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2-Year Rainfall=2.56"

Area (ac)	CN	Description
2.992	39	>75% Grass cover, Good, HSG A
2.992		100.00% Pervious Area

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

Subcatchment E1: existing



Summary for Pond P5:

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=26)

Inflow Area = 0.975 ac, 89.28% Impervious, Inflow Depth = 2.08" for 2-Year event
Inflow = 2.77 cfs @ 12.13 hrs, Volume= 0.169 af
Outflow = 0.23 cfs @ 12.95 hrs, Volume= 0.169 af, Atten= 92%, Lag= 49.5 min
Discarded = 0.23 cfs @ 12.95 hrs, Volume= 0.169 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2L : offsite runoff

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,643.74' @ 12.95 hrs Surf.Area= 2,743 sf Storage= 3,337 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 135.5 min (893.8 - 758.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	24,860 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

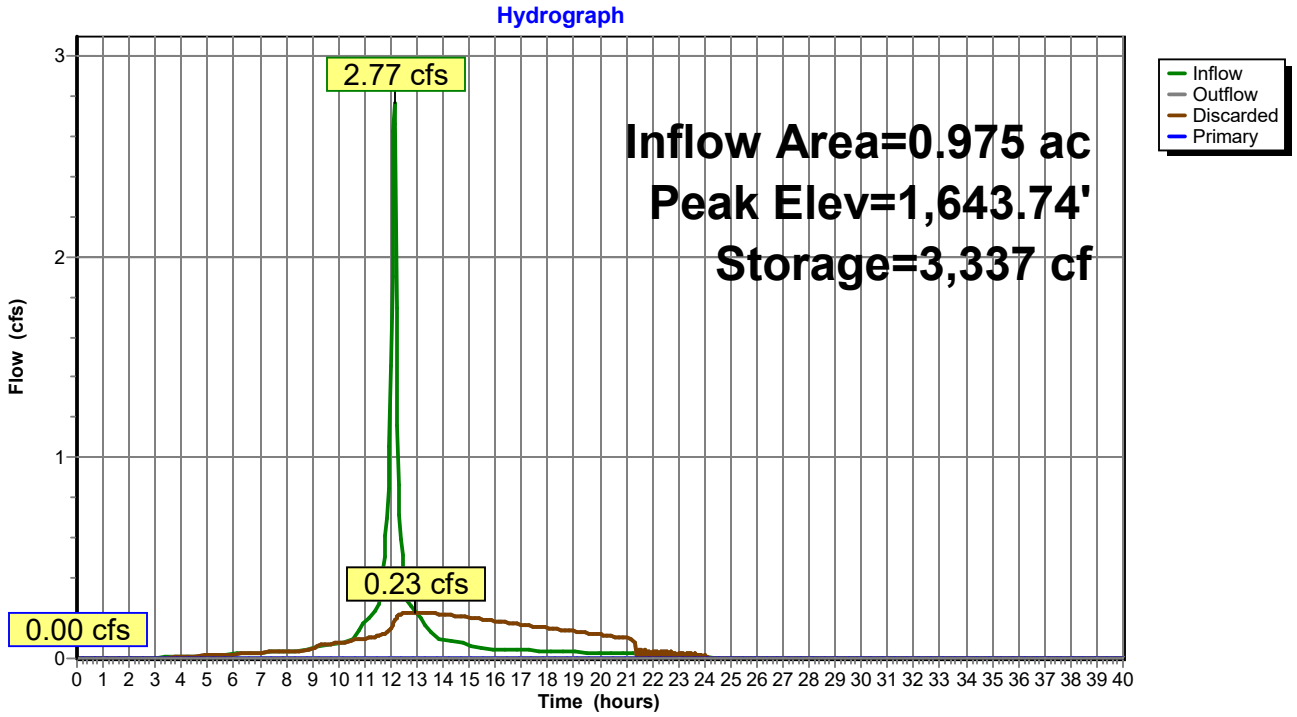
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	1,140	0	0
1,643.00	2,020	1,580	1,580
1,644.00	3,000	2,510	4,090
1,645.00	4,000	3,500	7,590
1,646.00	5,270	4,635	12,225
1,647.00	20,000	12,635	24,860

Device	Routing	Invert	Outlet Devices
#1	Primary	1,644.75'	**10.0' long + 4.0 '/' SideZ x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,642.00'	**3.600 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.23 cfs @ 12.95 hrs HW=1,643.74' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,642.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P5:

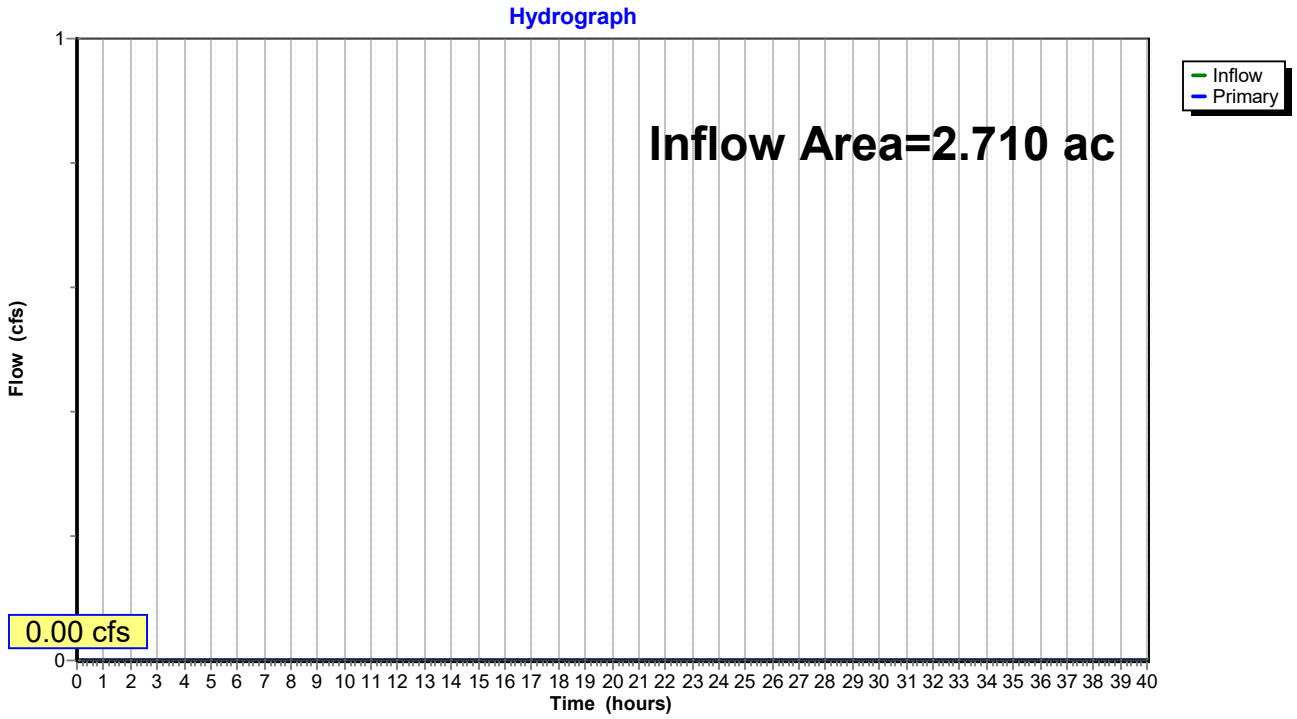

Hydrograph
Inflow Area=0.975 ac
Peak Elev=1,643.74'
Storage=3,337 cf
2.77 cfs
0.23 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
0 1 2 3

Summary for Link 2L: offsite runoff

Inflow Area = 2.710 ac, 75.91% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Link 2L: offsite runoff



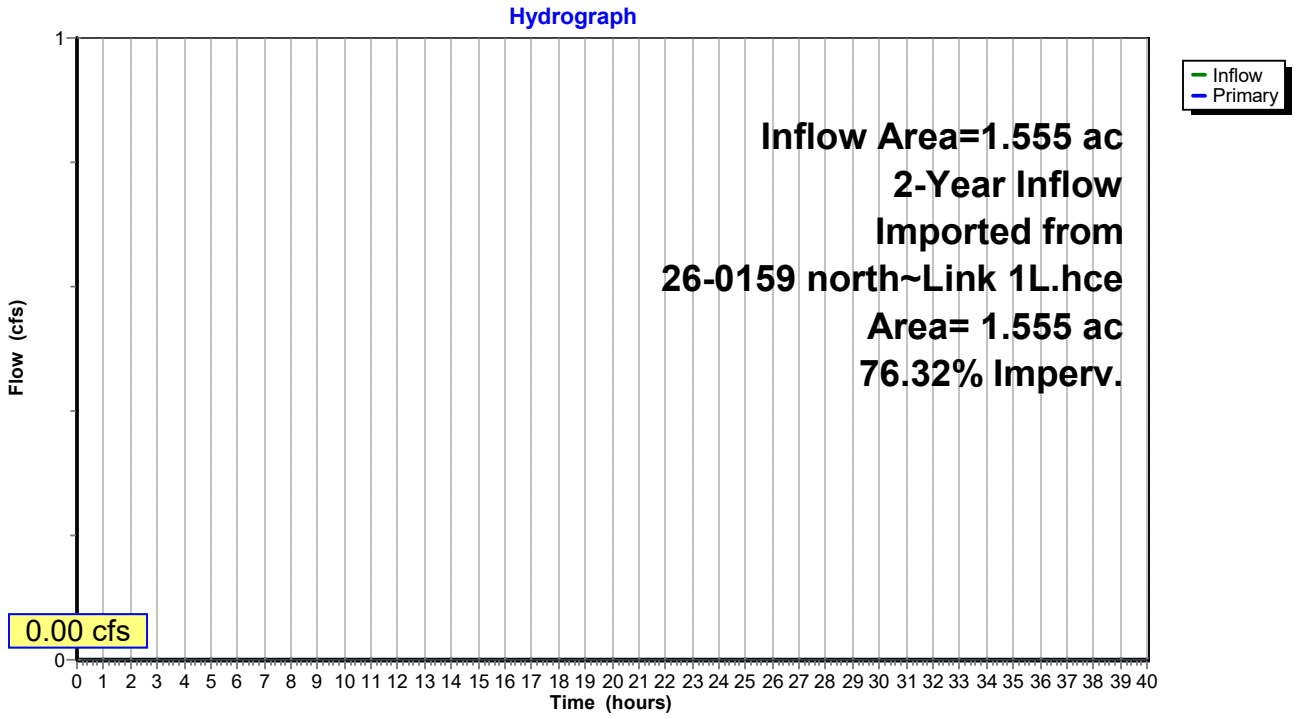
Summary for Link 4L: north

Inflow Area = 1.555 ac, 76.32% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Routed to Link 2L : offsite runoff

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

2-Year Inflow Imported from 26-0159 north~Link 1L.hce

Link 4L: north



Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 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 1S: Runoff Runoff Area=7,842 sf 0.00% Impervious Runoff Depth=0.03"
Tc=10.0 min CN=39 Runoff=0.00 cfs 0.000 af

Subcatchment D5: D5 Runoff Area=42,461 sf 89.28% Impervious Runoff Depth=3.18"
Tc=6.0 min CN=WQ Runoff=4.14 cfs 0.258 af

Subcatchment E1: existing Runoff Area=2.992 ac 0.00% Impervious Runoff Depth=0.03"
Tc=10.0 min CN=39 Runoff=0.01 cfs 0.007 af

Pond P5: Peak Elev=1,644.45' Storage=5,531 cf Inflow=4.14 cfs 0.258 af
Discarded=0.29 cfs 0.258 af Primary=0.00 cfs 0.000 af Outflow=0.29 cfs 0.258 af

Link 2L: offsite runoff Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Link 4L: north 10-Year Inflow Imported from 26-0159 north~Link 1L.hce Inflow=0.00 cfs 0.000 af
Area= 1.555 ac 76.32% Imperv. Primary=0.00 cfs 0.000 af

Total Runoff Area = 4.147 ac Runoff Volume = 0.265 af Average Runoff Depth = 0.77"
79.01% Pervious = 3.277 ac 20.99% Impervious = 0.870 ac

Summary for Subcatchment 1S: Runoff

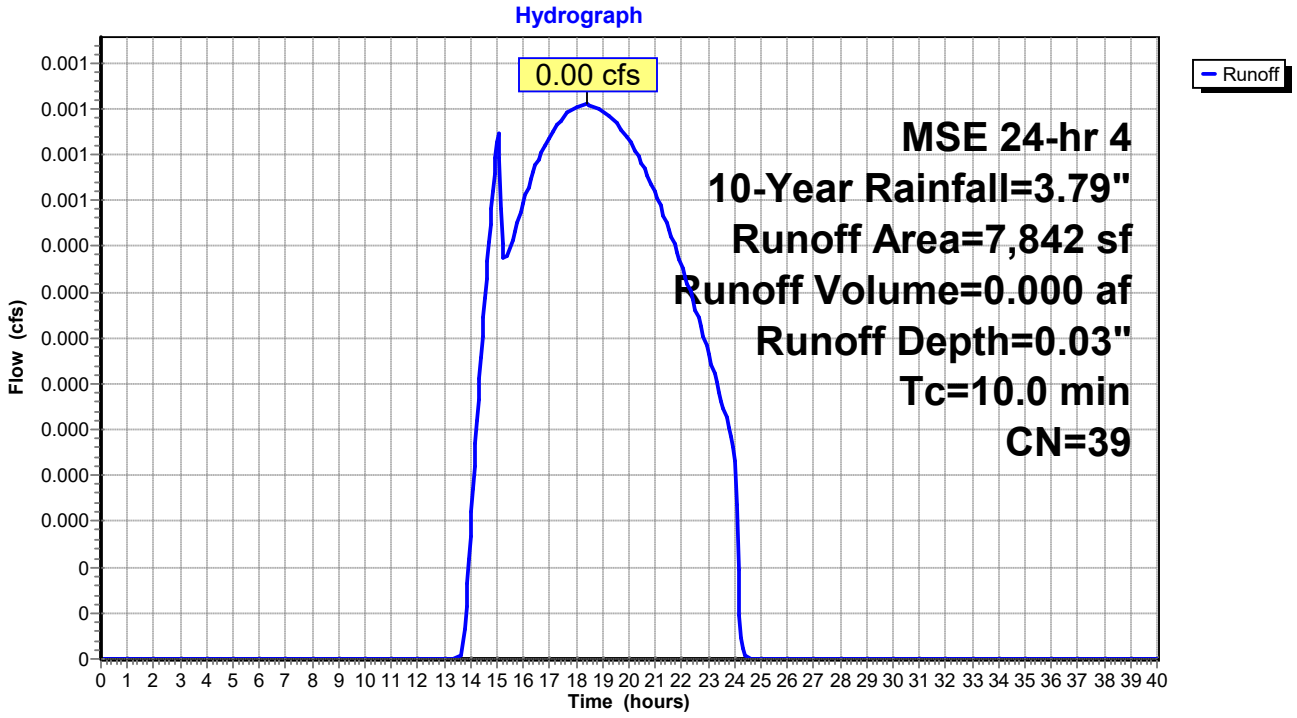
Runoff = 0.00 cfs @ 18.40 hrs, Volume= 0.000 af, Depth= 0.03"
Routed to Link 2L : offsite runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.79"

Area (sf)	CN	Description
7,842	39	>75% Grass cover, Good, HSG A
7,842		100.00% Pervious Area

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

Subcatchment 1S: Runoff



Summary for Subcatchment D5: D5

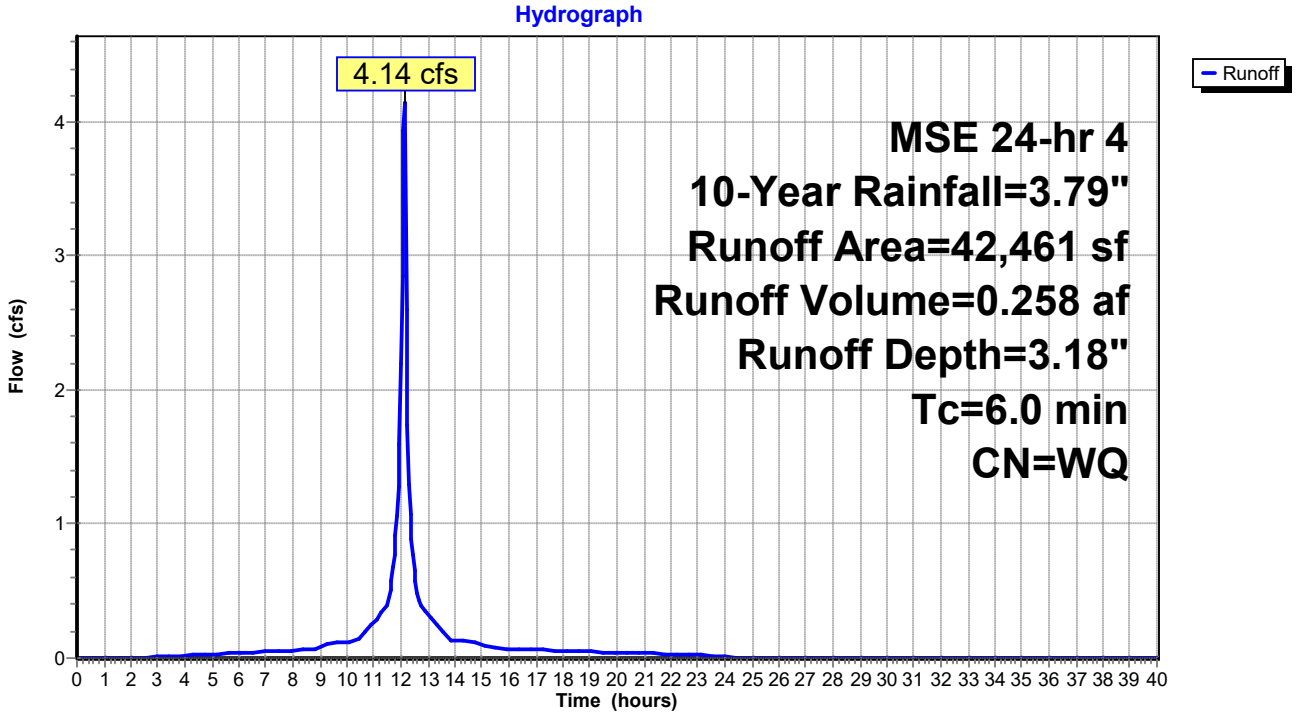
Runoff = 4.14 cfs @ 12.13 hrs, Volume= 0.258 af, Depth= 3.18"
Routed to Pond P5 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.79"

	Area (sf)	CN	Description
*	14,424	98	pavement
*	22,344	98	building
*	1,140	98	basin
	4,553	39	>75% Grass cover, Good, HSG A
	42,461		Weighted Average
	4,553		10.72% Pervious Area
	37,908		89.28% Impervious Area

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

Subcatchment D5: D5



Summary for Subcatchment E1: existing

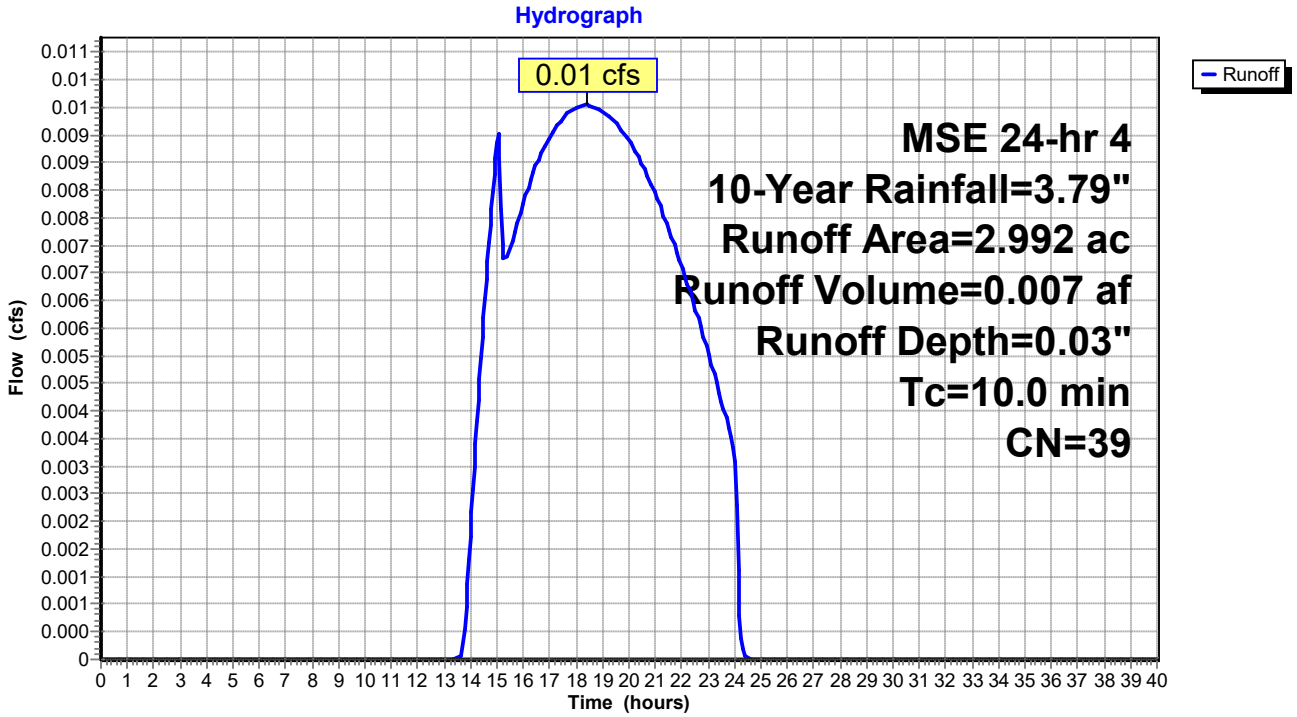
Runoff = 0.01 cfs @ 18.40 hrs, Volume= 0.007 af, Depth= 0.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10-Year Rainfall=3.79"

Area (ac)	CN	Description
2.992	39	>75% Grass cover, Good, HSG A
2.992		100.00% Pervious Area

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

Subcatchment E1: existing



Summary for Pond P5:

Inflow Area = 0.975 ac, 89.28% Impervious, Inflow Depth = 3.18" for 10-Year event
Inflow = 4.14 cfs @ 12.13 hrs, Volume= 0.258 af
Outflow = 0.29 cfs @ 13.18 hrs, Volume= 0.258 af, Atten= 93%, Lag= 63.0 min
Discarded = 0.29 cfs @ 13.18 hrs, Volume= 0.258 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2L : offsite runoff

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,644.45' @ 13.18 hrs Surf.Area= 3,447 sf Storage= 5,531 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 191.3 min (942.6 - 751.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	24,860 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

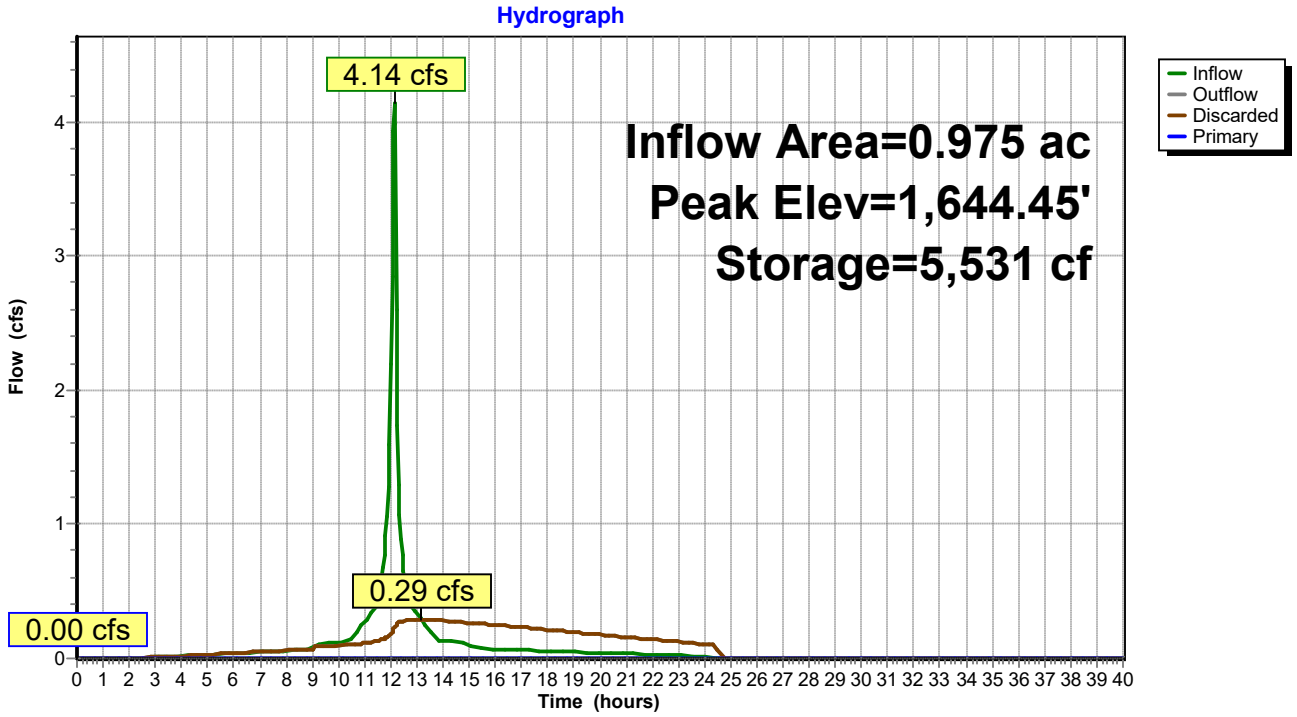
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	1,140	0	0
1,643.00	2,020	1,580	1,580
1,644.00	3,000	2,510	4,090
1,645.00	4,000	3,500	7,590
1,646.00	5,270	4,635	12,225
1,647.00	20,000	12,635	24,860

Device	Routing	Invert	Outlet Devices
#1	Primary	1,644.75'	**10.0' long + 4.0 '/' SideZ x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,642.00'	**3.600 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.29 cfs @ 13.18 hrs HW=1,644.45' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.29 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,642.00' TW=0.00' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond P5:

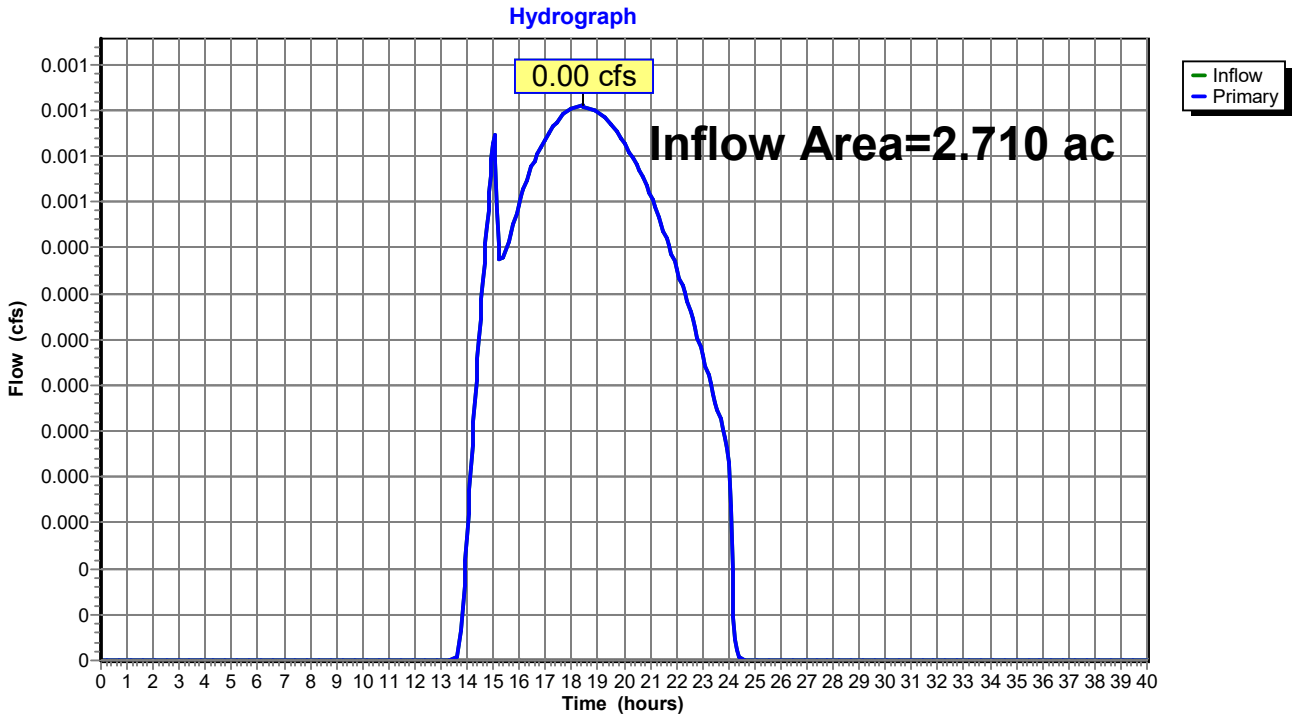

Hydrograph
4.14 cfs
0.29 cfs
0.00 cfs
Inflow Area=0.975 ac
Peak Elev=1,644.45'
Storage=5,531 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
0 1 2 3 4

Summary for Link 2L: offsite runoff

Inflow Area = 2.710 ac, 75.91% Impervious, Inflow Depth = 0.00" for 10-Year event
Inflow = 0.00 cfs @ 18.40 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 18.40 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Link 2L: offsite runoff



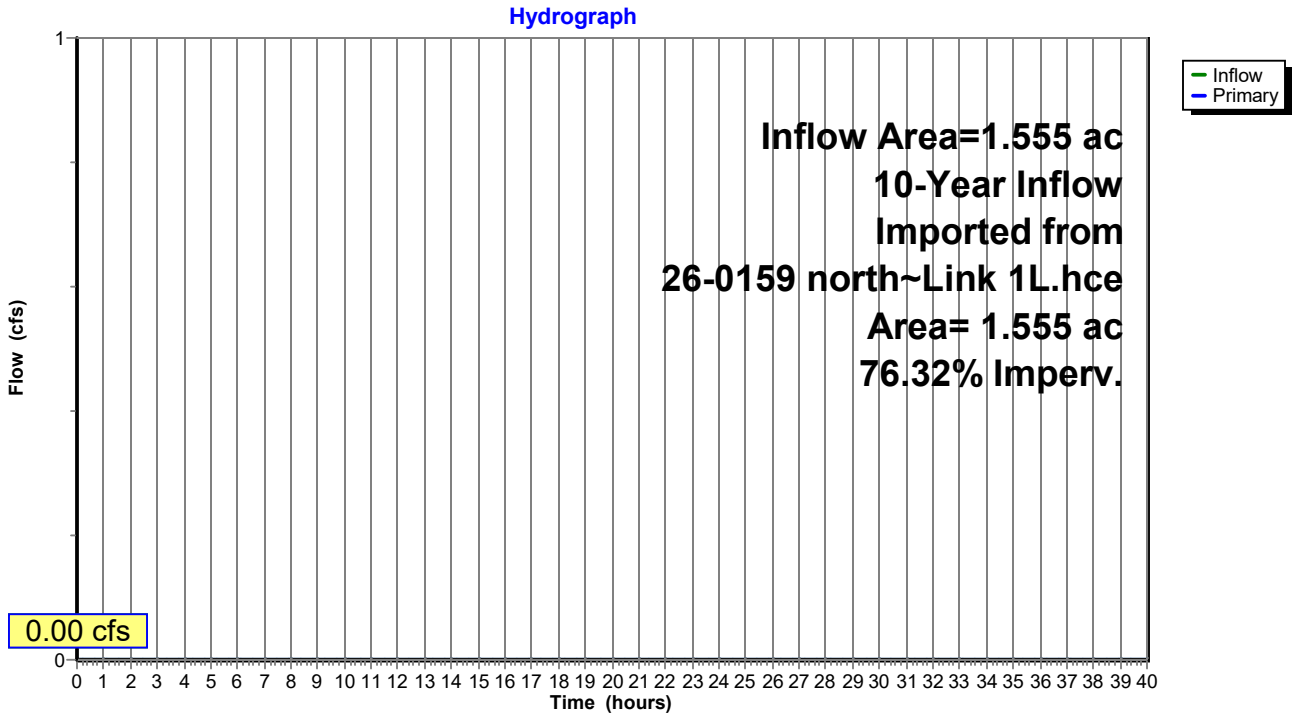
Summary for Link 4L: north

Inflow Area = 1.555 ac, 76.32% Impervious, Inflow Depth = 0.00" for 10-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Routed to Link 2L : offsite runoff

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

10-Year Inflow Imported from 26-0159 north~Link 1L.hce

Link 4L: north



Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 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 1S: Runoff Runoff Area=7,842 sf 0.00% Impervious Runoff Depth=0.58"
Tc=10.0 min CN=39 Runoff=0.06 cfs 0.009 af

Subcatchment D5: D5 Runoff Area=42,461 sf 89.28% Impervious Runoff Depth=5.59"
Tc=6.0 min CN=WQ Runoff=7.09 cfs 0.454 af

Subcatchment E1: existing Runoff Area=2.992 ac 0.00% Impervious Runoff Depth=0.58"
Tc=10.0 min CN=39 Runoff=1.04 cfs 0.143 af

Pond P5: Peak Elev=1,645.01' Storage=7,633 cf Inflow=7.09 cfs 0.454 af
Discarded=0.33 cfs 0.355 af Primary=3.81 cfs 0.099 af Outflow=4.14 cfs 0.454 af

Link 2L: offsite runoff Inflow=7.30 cfs 0.211 af
Primary=7.30 cfs 0.211 af

Link 4L: north 100-Year Inflow Imported from 26-0159 north~Link 1L.hce Inflow=3.94 cfs 0.103 af
Area= 1.555 ac 76.32% Imperv. Primary=3.94 cfs 0.103 af

Total Runoff Area = 4.147 ac Runoff Volume = 0.606 af Average Runoff Depth = 1.75"
79.01% Pervious = 3.277 ac 20.99% Impervious = 0.870 ac

Summary for Subcatchment 1S: Runoff

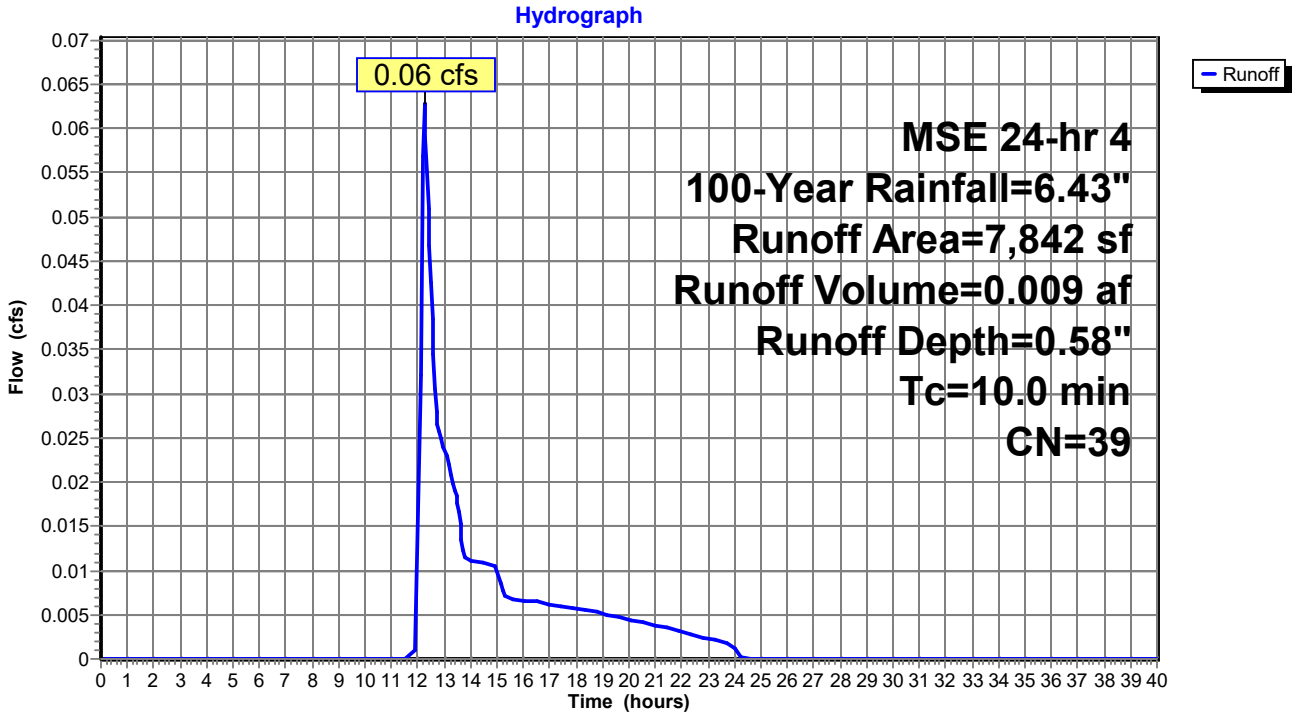
Runoff = 0.06 cfs @ 12.26 hrs, Volume= 0.009 af, Depth= 0.58"
Routed to Link 2L : offsite runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.43"

Area (sf)	CN	Description
7,842	39	>75% Grass cover, Good, HSG A
7,842		100.00% Pervious Area

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

Subcatchment 1S: Runoff



Summary for Subcatchment D5: D5

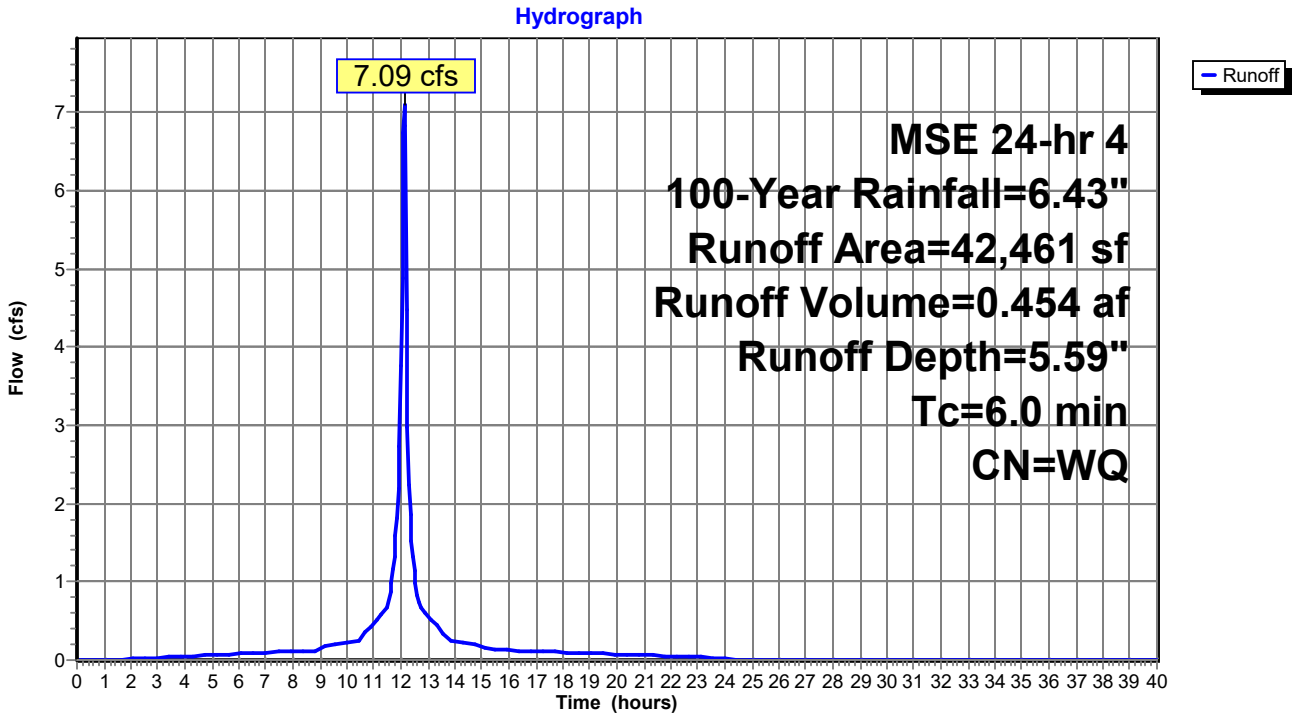
Runoff = 7.09 cfs @ 12.13 hrs, Volume= 0.454 af, Depth= 5.59"
Routed to Pond P5 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.43"

	Area (sf)	CN	Description
*	14,424	98	pavement
*	22,344	98	building
*	1,140	98	basin
	4,553	39	>75% Grass cover, Good, HSG A
	42,461		Weighted Average
	4,553		10.72% Pervious Area
	37,908		89.28% Impervious Area

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

Subcatchment D5: D5



Summary for Subcatchment E1: existing

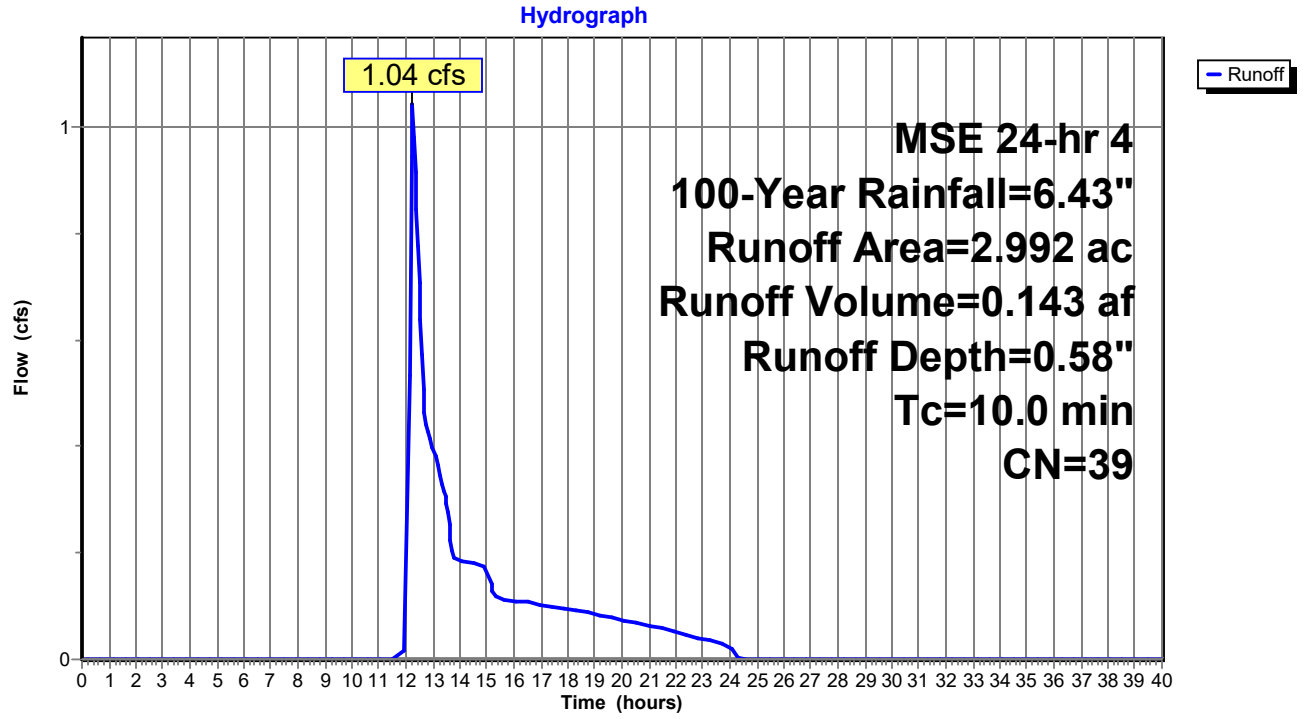
Runoff = 1.04 cfs @ 12.26 hrs, Volume= 0.143 af, Depth= 0.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100-Year Rainfall=6.43"

Area (ac)	CN	Description
2.992	39	>75% Grass cover, Good, HSG A
2.992		100.00% Pervious Area

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

Subcatchment E1: existing



Summary for Pond P5:

Inflow Area = 0.975 ac, 89.28% Impervious, Inflow Depth = 5.59" for 100-Year event
Inflow = 7.09 cfs @ 12.13 hrs, Volume= 0.454 af
Outflow = 4.14 cfs @ 12.22 hrs, Volume= 0.454 af, Atten= 42%, Lag= 5.8 min
Discarded = 0.33 cfs @ 12.22 hrs, Volume= 0.355 af
Primary = 3.81 cfs @ 12.22 hrs, Volume= 0.099 af
Routed to Link 2L : offsite runoff

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 1,645.01' @ 12.22 hrs Surf.Area= 4,014 sf Storage= 7,633 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 174.4 min (919.3 - 744.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	24,860 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

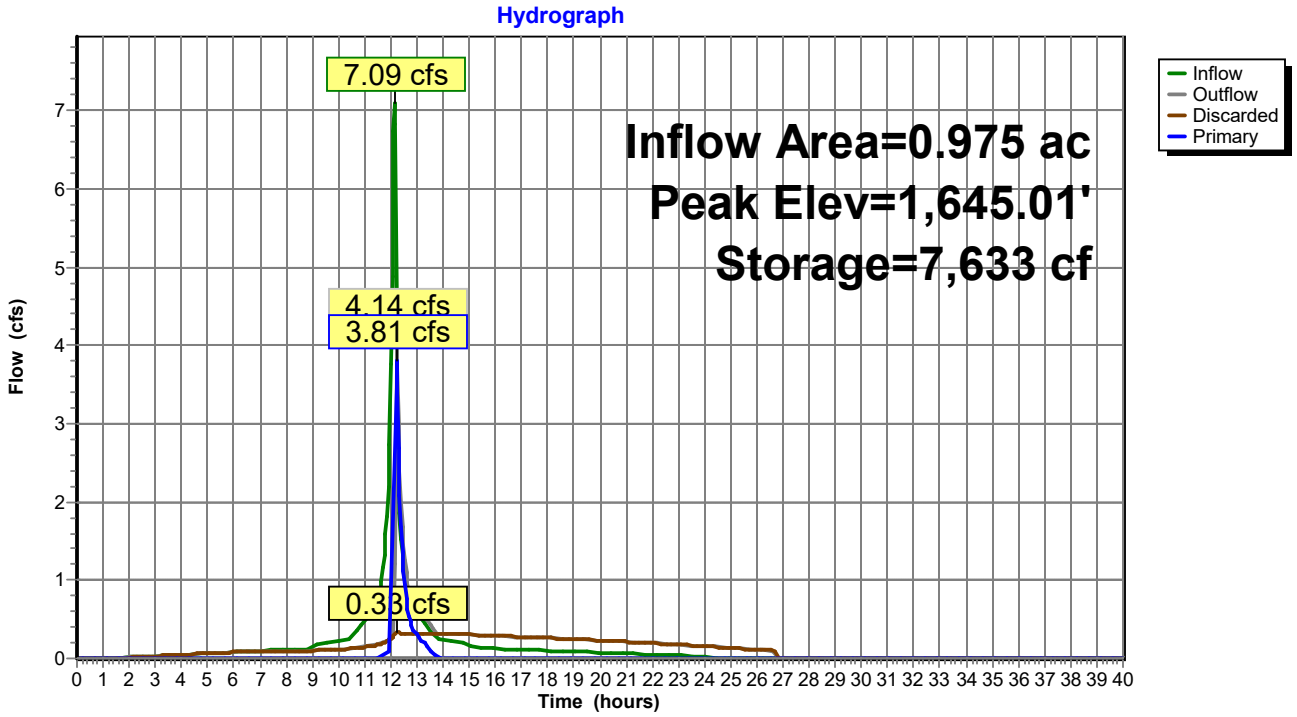
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	1,140	0	0
1,643.00	2,020	1,580	1,580
1,644.00	3,000	2,510	4,090
1,645.00	4,000	3,500	7,590
1,646.00	5,270	4,635	12,225
1,647.00	20,000	12,635	24,860

Device	Routing	Invert	Outlet Devices
#1	Primary	1,644.75'	**10.0' long + 4.0 '/' SideZ x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,642.00'	**3.600 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.33 cfs @ 12.22 hrs HW=1,644.99' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.33 cfs)

Primary OutFlow Max=3.47 cfs @ 12.22 hrs HW=1,644.99' TW=0.00' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Weir Controls 3.47 cfs @ 1.30 fps)

Pond P5:

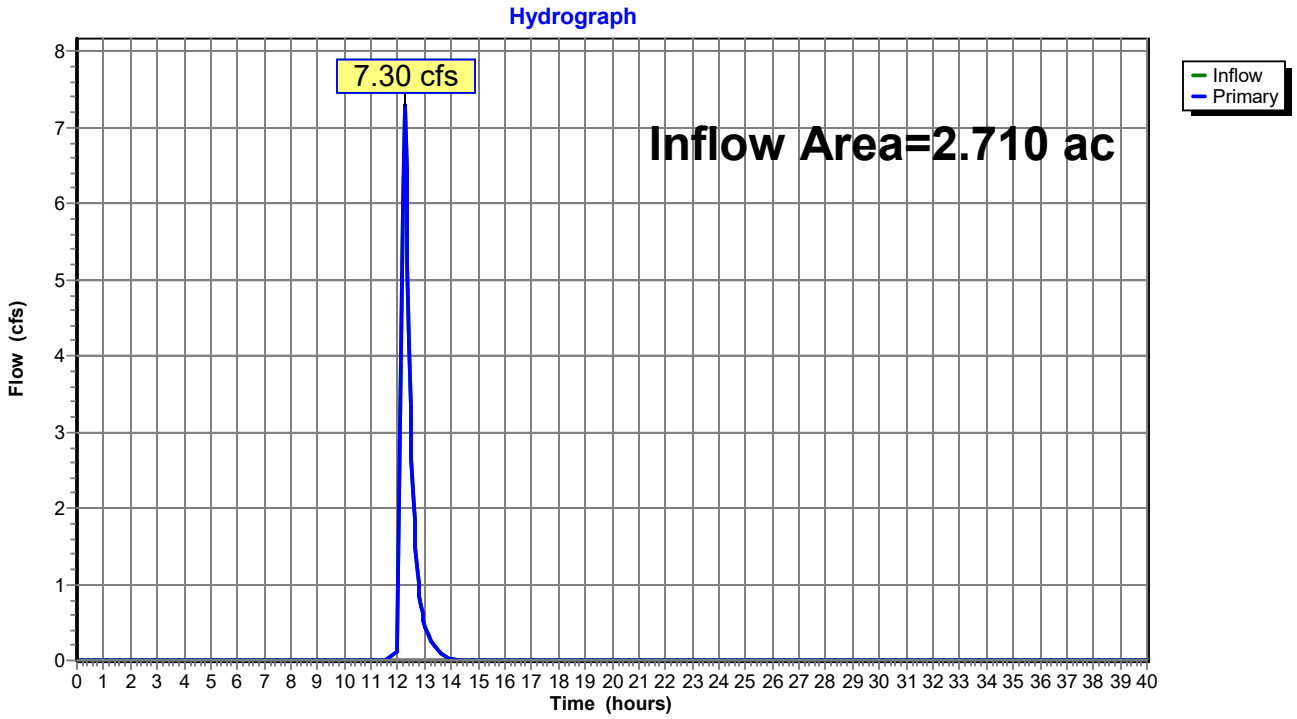

Hydrograph
7.09 cfs
4.14 cfs
3.81 cfs
0.38 cfs
Inflow Area=0.975 ac
Peak Elev=1,645.01'
Storage=7,633 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Summary for Link 2L: offsite runoff

Inflow Area = 2.710 ac, 75.91% Impervious, Inflow Depth = 0.93" for 100-Year event
Inflow = 7.30 cfs @ 12.26 hrs, Volume= 0.211 af
Primary = 7.30 cfs @ 12.26 hrs, Volume= 0.211 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Link 2L: offsite runoff



Summary for Link 4L: north

Inflow Area = 1.555 ac, 76.32% Impervious, Inflow Depth = 0.79" for 100-Year event
Inflow = 3.94 cfs @ 12.27 hrs, Volume= 0.103 af
Primary = 3.94 cfs @ 12.27 hrs, Volume= 0.103 af, Atten= 0%, Lag= 0.0 min
Routed to Link 2L : offsite runoff

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

100-Year Inflow Imported from 26-0159 north~Link 1L.hce

Link 4L: north

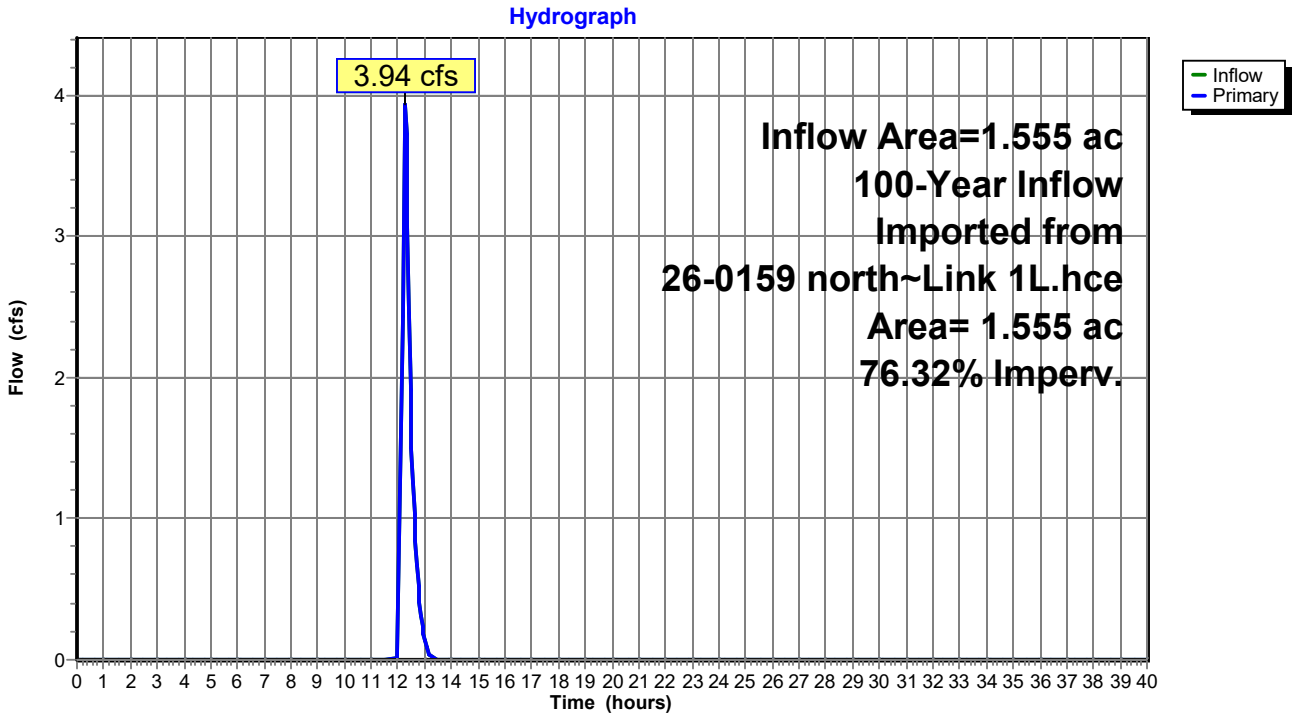


TABLE OF CONTENTS

Public Comments Received
U-haul Storage Facility - 1100 N Bluebird Road

Date	Name	Address	Comments			
			Pro	Against	Form	
04/27/26	*Alice Kramer*	*ERHS*		*x*	*Email*	*Read into the record at the 5/7/26 meeting*
04/30/26	*Vito Bortolotti*	*112 W Illinois and 1114 N Bluebird*		*x*	*Email*	
04/30/26	*Jessica Bortolotti*	*112 W Illinois and 1114 N Bluebird*		*x*	*Email*	
05/04/26	*Karen Sailor*	*COER (address unknown)*		*x*	*Email*	
05/04/26	*Deborah Magee*	*537 N Bond Street*		*x*	*Email*	
05/07/26	*Dottie Reeder*	*Town of Lincoln*		*x*	*Email*	
05/07/26	*Chelsea Sims*	*213 E Wall Street, Apt 4*		*x*	*Email*	
05/07/26	*Wendy Harris*	*Town of Lincoln*		*x*	*Email*	
05/07/26	*Carol Marshall*	*Town of Lincoln*		*x*	*Email*	
05/07/26	*Kari Kirschbaum*	*COER (address unknown)*		*x*	*Email*	
05/27/26	Patricia Michel	Address unknown		x	Email (attached)	
05/27/26	Megan Levande	103 N Second Street		x	Email (attached)	
05/28/26	Linda Goller	Address unknown		x	Email (attached)	

Robin Ginner

From: linda goller <lgoller@hotmail.com>
Sent: Thursday, May 28, 2026 10:49 AM
To: Robin Ginner
Subject: Storage Units

Please please please, no more storage units. That is all I see driving from my house to Eagle River and my house to Woodruff! So many trees taken down, it is not a good representation of the Northwoods to see garage doors wherever you go. Don't we have enough of those already? We are beginning to look like a trash town! That land can be used for something attractive or inviting. We have become Storage County!
Thank you for listening,
Linda Goller

Robin Ginner

From: Megan Levande <levandem@gmail.com>
Sent: Wednesday, May 27, 2026 5:17 PM
To: Robin Ginner
Subject: Proposed Storage Units on Railroad St.

Hello,
It has come to my attention that there are some storage units being proposed on Railroad street. I will unfortunately be out of town during the public meeting, but I wanted to be able to voice my concern. As a year round resident and someone who grew up here, I must ask that we not allow this. Our area is being over run with unsightly storage units. I understand the need, but we don't need to have them visible on one of the main drags om town. There must be other businesses that will contribute more tax revenue than this that would add to the character and charm of town. Please do not approve this request. We have more to offer!
Thank you for hearing my concern,
Megan Levande
103 N 2nd St.

Robin Ginner

From: Patricia Michel <pmichel@wi.rr.com>
Sent: Wednesday, May 27, 2026 12:38 PM
To: Robin Ginner
Subject: Storage units on Railroad Street

I no longer own property in Eagle River, but I'm a regular visitor and have been for more than 60 years. I understand that people need to have storage units to stow their toys. However, Eagle River is a charming, beautiful town. It's a draw for people to come and see the lovely town as well as the beautiful water and northwoods. Placing more storage units in high traffic areas is the wrong thing to do. It would be better to have a wooded lot rather than an ugly storage unit. Over the years I've seen some ugly developments along the roads surrounding Eagle River. This storage unit would add to that. And sadly, Eagle River is ruining its beautiful, magical draw. I urge you to deny the permit to build these units on Railroad street.

PROJECT ID: **2025.024**

WITH:

COUNTY: **VILAS**

ORDER OF SHEETS

Section No.	1	Title
Section No.	2	General Notes
Section No.	2	Project Overview
Section No.	2	Typical Sections
Section No.	2	Construction Details
Section No.	2	Curb Ramp Details
Section No.	2	Permanent Signage
Section No.	2	Traffic Control
Section No.	5	Grading and Erosion Control
Section No.	6	Standard Detail Drawings

TOTAL SHEETS = 26

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT

EAGLE RIVER REVITALIZATION PROGRAM BICYCLE AND PEDESTRIAN CROSSING

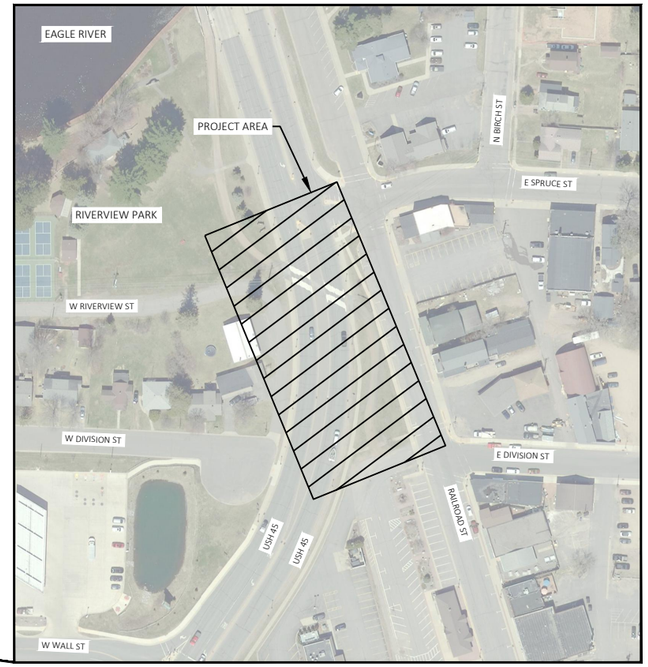
N

USH 45
VILAS COUNTY

BECHER HOPPE PROJECT NUMBER
2025.024

LAYOUT

SCALE 0 1 MI



CONVENTIONAL SYMBOLS

PLAN

- CORPORATE LIMITS
- PROPERTY LINE
- LOT LINE
- LIMITED HIGHWAY EASEMENT
- EXISTING RIGHT OF WAY
- PROPOSED OR NEW R/W LINE
- SLOPE INTERCEPT
- REFERENCE LINE (300'EB')
- EXISTING CULVERT
- PROPOSED CULVERT (Box or Pipe)
- COMBUSTIBLE FLUIDS (CAUTION)
- MARSH AREA
- WOODED OR SHRUB AREA

PROFILE

- GRADE LINE
- ORIGINAL GROUND
- MARSH OR ROCK PROFILE (To be noted as such) (ROCK)
- SPECIAL DITCH (LABEL)
- GRADE ELEVATION (95.36)
- CULVERT (Profile View)

UTILITIES

- ELECTRIC (E)
- FIBER OPTIC (FO)
- GAS (G)
- SANITARY SEWER (SAN)
- STORM SEWER (SS)
- TELEPHONE (T)
- WATER (W)
- UTILITY PEDESTAL
- POWER POLE
- TELEPHONE POLE

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COORDINATE REFERENCE SYSTEM (WISCRS), VILAS COUNTY, NAD83 (2011), IN U.S. SURVEY FEET. POSITIONS SHOWN ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES ARE THE SAME AS GROUND DISTANCES.

ELEVATIONS ARE REFERENCED TO NAVD 88 (2012). GPS DERIVED ELEVATIONS ARE BASED ON GEOID 18

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	BECHER HOPPE
Designer	BECHER HOPPE
Project Manager	BECHER HOPPE
Regional Examiner	NA
Regional Supervisor	NA

APPROVED FOR THE DEPARTMENT

DATE: _____ _____ (Signature)

E

FILE NAME : P:\2025\2025.024 - EAGLE RIVER REVIT PROGRAM-GHT-USH 45 CROSSING\CAD\PLANS\010101-TI.DWG PLOT DATE : 4/22/2026 7:57 AM PLOT BY : AARON J. WALLNER PLOT NAME :

CONTACTS

FRONTIER COMMUNICATIONS

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RHINELANDER, WI 54501
PHONE: (262) 446-9821

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330 N 4TH STREET
WAUSAU WI, 54403
PHONE: (715) 845-8000
EMAIL: AWALLNER@BECHERHOPPE.COM

EAGLE RIVER REVITALIZATION PROGRAM CONTACT

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EXECUTIVE DIRECTOR
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DESIGN PROJECT LEADER

LAURA VAN VALKENBERG
GREAT HEADWATERS TRAILS FOUNDATION
PO BOX 1164
EAGLE RIVER, WI 54521
PHONE: (715) 303-4483
EMAIL: GHTRAILS@GMAIL.COM

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

GENERAL NOTES

THE LOCATIONS OF EXISTING UTILITY FACILITIES SHOWN ON THE PLANS ARE APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN.

CONTRACTOR WILL BE RESPONSIBLE FOR RESHAPING AND SEEDING ANY PREVIOUSLY GRASSED AREAS WHICH ARE DISTURBED BY OPERATIONS, OUTSIDE OF THE NORMAL CONSTRUCTION LIMITS.

HMA PAVEMENT WEIGHT CALCULATIONS ARE BASED ON 115 LBS/SY/IN.

RIGHT OF WAY INFORMATION AND PROPERTY LINE DATA SHOWN ON THE PLANS ARE APPROXIMATE.

THE CONTRACTOR IS TO WORK WITH UTMOST CARE AND PROTECT ALL SURVEY MARKERS. REMOVAL OF ANY SURVEY MARKER IS TO BE WITH THE APPROVAL OF THE ENGINEER. IF SURVEY MARKERS ARE DESTROYED, THEY ARE TO BE REPLACED AT THE COST OF THE CONTRACTOR.

TOPSOIL SHALL BE PLACED 1-INCH BELOW THE TOP OF ADJACENT CURBS OR SIDEWALKS.

RADIUS DIMENSIONS FOR THE CURB AND GUTTER ARE TO THE FLANGE LINE UNLESS OTHERWISE NOTED.

PAVEMENT REMOVAL WILL BE TO THE NEAREST JOINT OR A SAWED EDGE WILL BE REQUIRED AS DIRECTED BY THE ENGINEER.

CURB AND GUTTER PLAN GRADES ARE AT THE FLANGE LINE UNLESS OTHERWISE NOTED.

SAWCUTS, AS SHOWN ON THE PLANS, ARE SUGGESTED LOCATIONS AND MAY BE ADJUSTED AT THE DISCRETION OF THE ENGINEER TO BETTER SUIT FIELD CONDITIONS.

TRAFFIC CONTROL DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.

DO NOT DRIVE OR STORE EQUIPMENT, OR STORE CONSTRUCTION MATERIALS IN ENVIRONMENTALLY SENSITIVE AREAS, WETLANDS OR WATERWAYS.

MANDATORY ALTERNATE #1 SHALL CONSIST OF THE REMOVAL OF SIDEWALK ALONG THE SOUTH AND EAST EXTENTS OF THE PROJECT AND REPLACING WITH HOT MIX ASPHALT.

RUNOFF COEFFICIENT TABLE

	HYDROLOGIC SOIL GROUP											
	A			B			C			D		
	SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)		
LAND USE:	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER
ROW CROPS:	.08 .22	.16 .30	.22 .38	.12 .26	.20 .34	.27 .44	.15 .30	.24 .37	.33 .50	.19 .34	.28 .41	.38 .56
MEDIAN STRIPTURF:	.19 .24	.20 .26	.24 .30	.19 .25	.22 .28	.26 .33	.20 .26	.23 .30	.30 .37	.20 .27	.25 .32	.30 .40
SIDE SLOPETURF:			.25 .32			.27 .34			.28 .36			.30 .38
PAVEMENT:												
ASPHALT:	.70 - .95											
CONCRETE:	.80 - .95											
BRICK:	.70 - .80											
DRIVES, WALKS:	.75 - .85											
ROOFS:	.75 - .95											
GRAVEL ROADS, SHOULDERS:	.40 - .60											

TOTAL PROJECT AREA = 1.625 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 0.267 ACRES

STANDARD ABBREVIATIONS

ABUT	ABUTMENT	LT	LEFT
AC	ACRE	LHF	LEFT HAND FORWARD
AGG	AGGREGATE	L	LENGTH OF CURVE
AH	AHEAD	LF	LINEAR FOOT
∠	ANGLE	LC	LONG CHORD OF CURVE
AADT	ANNUAL AVERAGE DAILY TRAFFIC	LS	LUMP SUM
AEW	APRON ENDWALL	MGAL	ONE THOUSAND GALLONS
ASPH	ASPHALTIC	MH	MANHOLE
BK	BACK	ML OR M/L	MATCH LINE
BC	BACK OF CURB	NOM	NOMINAL
BAD	BASE AGGREGATE DENSE	NC	NORMAL CROWN
BL OR B/L	BASE LINE	NB	NORTHBOUND
BM	BENCH MARK	NO	NUMBER
CB	CATCH BASIN	OD	OUTSIDE DIAMETER
CL OR C/L	CENTER LINE	PAVT	PAVEMENT
Δ	CENTRAL ANGLE OR DELTA	PLE	PERMANENT LIMITED EASEMENT
CE	COMMERCIAL ENTRANCE	PC	POINT OF CURVATURE
CONC	CONCRETE	PI	POINT OF INTERSECTION
CSW	CONCRETE SIDEWALK	PT	POINT OF TANGENCY
CONST	CONSTRUCTION	PCC	PORTLAND CEMENT CONCRETE
CP	CONTROL POINT	LB	POUND
CO	COUNTY	PSI	POUNDS PER SQUARE INCH
CTH	COUNTY TRUCK HIGHWAY	PE	PRIVATE ENTRANCE
CY	CUBIC YARD	PROJ	PROJECT
CP	CULVERT PIPE	PL	PROPERTY LINE
CPCA	CULVERT PIPE CORRUGATED ALUMINUM	PRW	PROPOSED RIGHT OF WAY
CPCPE	CULVERT PIPE CORRUGATED POLYETHYLENE	R	RADIUS
CPCPP	CULVERT PIPE CORRUGATED POLYPROPYLENE	RL OR R/L	REFERENCE LINE
CPCS	CULVERT PIPE CORRUGATED STEEL	REQD	REQUIRED
CPCSAC	CULVERT PIPE CORRUGATED STEEL ALUMINUM COATED	RT	RIGHT
CPCSPC	CULVERT PIPE CORRUGATED STEEL POLYMER COATED	RHF	RIGHT HAND FORWARD
CPRC	CULVERT PIPE REINFORCED CONCRETE	R/W	RIGHT OF WAY
CPRCHE	CULVERT PIPE REINFORCED CONCRETE HORIZONTAL ELLIPTICAL	RD	ROAD
CPS	CULVERT PIPE SALVAGED	RDWY	ROADWAY
CPT	CULVERT PIPE TEMPORARY	SHLDR	SHOULDER
C & G	CURB AND GUTTER	SW	SIDEWALK
D	DEGREE OF CURVE	SB	SOUTHBOUND
DHV	DESIGN HOUR VOLUME	SPECS	SPECIFICATIONS
DIA	DIAMETER	SF	SQUARE FEET
DD	DIRECTIONAL DISTRIBUTION	SY	SQUARE YARD
DE	DRAINAGE EASEMENT	SDD	STANDARD DETAIL DRAWINGS
DWY	DRIVEWAY	STH	STATE TRUNK HIGHWAY
EA	EACH	STA	STATION
EB	EASTBOUND	SSPC	STORM SEWER PIPE COMPOSITE
EL OR ELEV	ELEVATION	SSCPE	STORM SEWER PIPE CORRUGATED POLYETHYLENE
EMB	EMBANKMENT	SSCPP	STORM SEWER PIPE CORRUGATED POLYPROPYLENE
EW	ENDWALL	SSPNRC	STORM SEWER PIPE NON-REINFORCED CONCRETE
EAT	ENERGY ABSORBING TERMINAL	SSPRC	STORM SEWER PIPE REINFORCED CONCRETE
ESALS	EQUIVALENT SINGLE AXLE LOADS	SSPRC	STORM SEWER PIPE REINFORCED CONCRETE
EXC	EXCAVATION	SSPRCHE	STORM SEWER PIPE REINFORCED CONCRETE HORIZONTAL ELLIPTICAL
EBS	EXCAVATION BELOW SUBGRADE	SE	SUPERELEVATION
EXIST	EXISTING	SL OR S/L	SURVEY LINE
FERT	FERTILIZER	TEMP	TEMPORARY
FE	FIELD ENTRANCE	TI	TEMPORARY INTEREST
FL OR F/L	FLOW LINE	TLE	TEMPORARY LIMITED EASEMENT
FT	FOOT	TC	TOP OF CURB
FTMS	FREE TRAFFIC MANAGEMENT SYSTEM	TL OR T/L	TRANSIT LINE
HES	HIGH EARLY STRENGTH	T	TRUCKS (PERCENT OF)
HE	HIGHWAY EASEMENT	TYP	TYPICAL
CWT	HUNDRED WEIGHT	USH	UNITED STATES HIGHWAY
IN DIA	INCH DIAMETER	VAR	VARIABLE
INL	INLET	VC	VERTICAL CURVE
ID	INSIDE DIAMETER	VPC	VERTICAL POINT OF CURVATURE
INTERS	INTERSECTION	VPI	VERTICAL POINT OF INTERSECTION
IH	INTERSTATE HIGHWAY	VPT	VERTICAL POINT OF TANGENCY
INV	INVERT	W	WEST
JT	JOINT	WB	WESTBOUND

2

PROJECT NO: 2025.024	HWY: USH 45	COUNTY: VILAS	GENERAL NOTES	SHEET	E

2

PRIVATE PROPERTY

E SPRUCE ST

PRIVATE PROPERTY

PRIVATE PROPERTY

PRIVATE PROPERTY

PRIVATE PROPERTY

PRIVATE PROPERTY

USH 45/STH 32/ STH 17

USH 45/STH 32/ STH 17

RAILROAD ST

EXISTING CURB RAMPS TO REMAIN

PROPOSED SIGN

EXISTING "NO RIGHT TURN" SIGN TO BE REMOVED & RE-INSTALLED

EXISTING FENCE TO BE REMOVED & BOTH SNOWMOBILE TRAIL DIRECTIONAL SIGNS TO BE REMOVED AND RE-INSTALLED ALONG RE-ALIGNED TRAIL

MANDATORY ALTERNATE #1:

REMOVE EXISTING CONCRETE SIDEWALK, REPLACE WITH HOT MIX ASPHALT

PROPOSED SIGN

CURB RAMP

STEEL PIPE GATE (TYP.) SEE CONSTRUCTION DETAILS.

RECTANGULAR RAPID FLASHING BEACON (RRFB) WIRELESS AND SOLAR POWER SYSTEM (TYP.)

103+00

CURB RAMP

SNOWMOBILE TRAIL TO BE RE-ALIGNED. SEE PLAN SHEETS FOR GRADES AND RESTORATION LIMITS.

104+00

MEDIAN PUSH BUTTON ASSEMBLY

PROPOSED SIGN

CITY OF EAGLE RIVER

102+00

EXISTING SIDEWALK TO REMAIN AS A PART OF THE BASE PROJECT. SEE TYPICAL SECTION "PEDESTRIAN MULTI-USE TRAIL ALONG SIDEWALK"

CURB RAMPS

INFORMATION BOARD/KIOSK TO BE INSTALLED BY OTHERS

101+00

EXISTING SNOWMOBILE TRAIL CROSSING AND RAMPS TO RECEIVE NEW THERMOPLASTIC COATING

MOTORIZED VEHICLE TRAIL TO REMAIN

PROPOSED SIGN

STEEL PIPE GATE (TYP.) SEE CONSTRUCTION DETAIL B/06.

105+00

EXISTING SIDEWALK TO BE REMOVED. SEE PLAN SHEETS FOR RESTORATION LIMITS.

PROPOSED SIGNS

105+30

EXISTING SNOWMOBILE TRAIL TO BE REMOVED

RIVERVIEW PARK

CURB RAMP

EXISTING TRAIL STOP SIGN TO BE REMOVED AND RE-INSTALLED OUTSIDE OF RE-ALIGNED TRAIL.

100+00

CURB RAMP

CITY OF EAGLE RIVER

GIS PROPERTY LINE (TYP.)

PRIVATE PROPERTY

W RIVERVIEW ST

W DIVISION ST

PRIVATE PROPERTY

GENERAL NOTES

- SEE PERMANENT SIGNAGE SHEET FOR EXACT SIGN PLACEMENTS.
- SEE CURB RAMP DETAIL SHEETS FOR ALL CURB RAMP DESIGNS.
- PROPERTY LINES ARE BASED ON 2025 GIS DATA FROM VILAS COUNTY.
- AERIAL IMAGE IS FROM 2025 MICROSOFT MAP DATA.

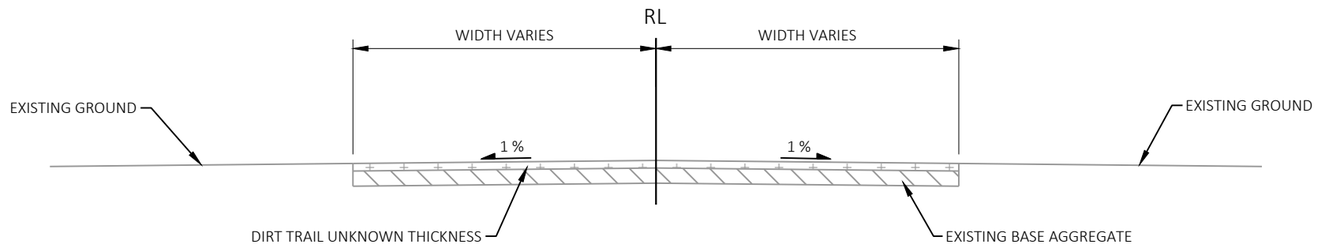
PROJECT NO: 2025.024	HWY: USH 45	COUNTY: VILAS	PROJECT OVERVIEW	SHEET	E

FILE NAME : P:\2025\2025.024 - EAGLE RIVER REVIT PROGRAM-GHT-USH 45 CROSSING\CAD\PLANS\020201-PO.DWG
LAYOUT NAME - 01

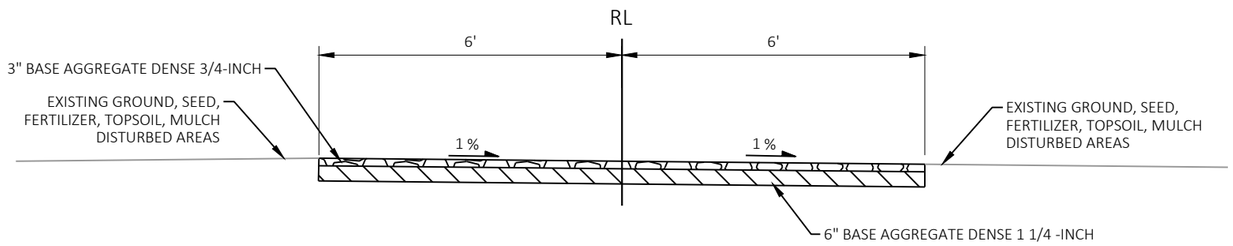
PLOT DATE : 4/2/2026 8:08 AM PLOT BY : AARON J. WALLNER PLOT NAME : PLOT SCALE : 1 IN:40 FT

WISDOT/CADDS SHEET 42

2



EXISTING SNOWMOBILE TRAIL

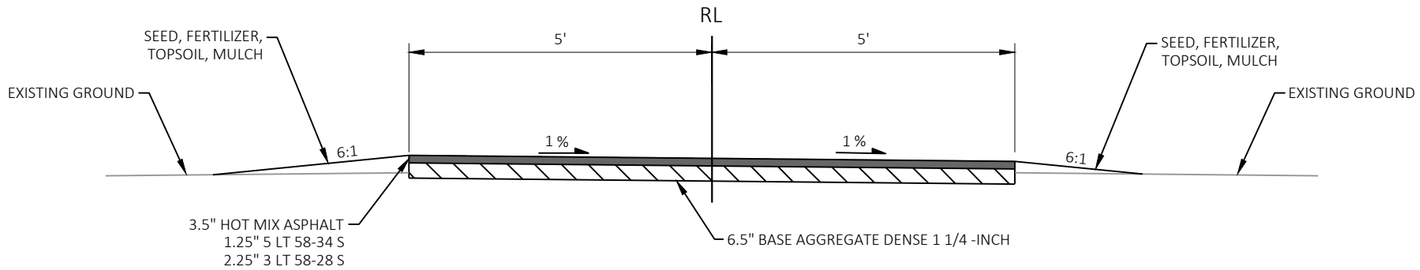


SNOWMOBILE TRAIL PROPOSED TYPICAL SECTION

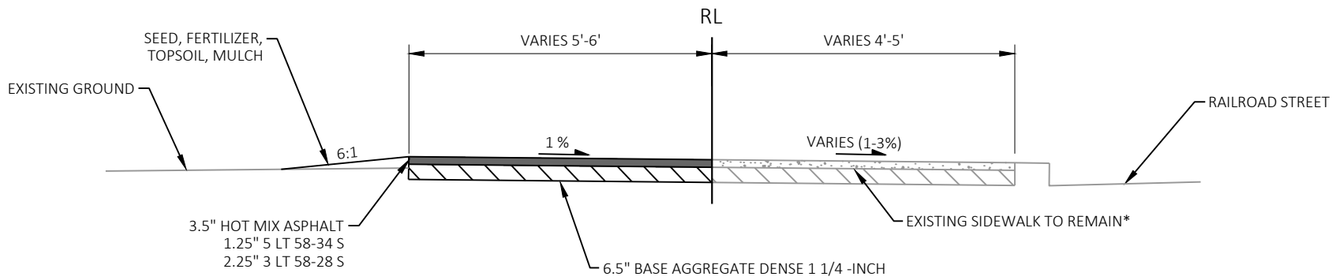
PROJECT NO: 2025.024	HWY: USH 45	COUNTY: VILAS	TYPICAL SECTIONS	SHEET	E

FILE NAME : P:\2025\2025.024 - EAGLE RIVER REVIT PROGRAM-GHT-USH 45 CROSSING\CAD\PLANS\020301-TS.DWG
LAYOUT NAME - 01

PLOT DATE : 8/4/2026 8:30 AM PLOT BY : AARON J. WALLNER PLOT NAME : PLOT SCALE : 1 IN:5 FT

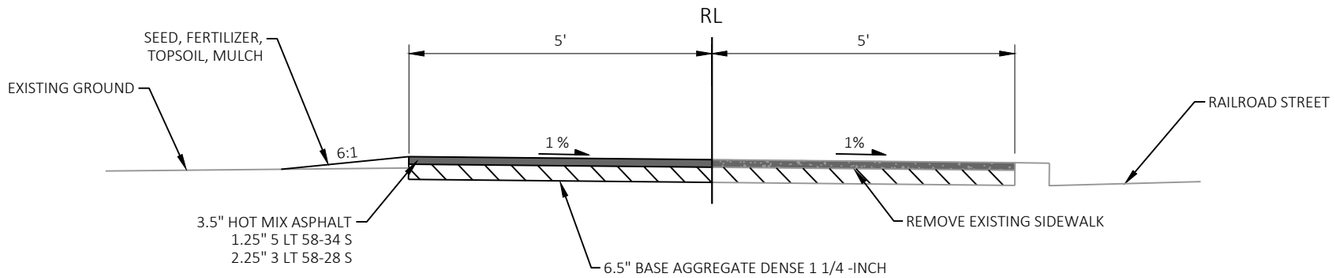


PEDESTRIAN MULTI-USE TRAIL
STA 100+05-100+60
STA 104+20 -105+20



PEDESTRIAN MULTI-USE TRAIL ALONG SIDEWALK
STA 100+60 - 103+30

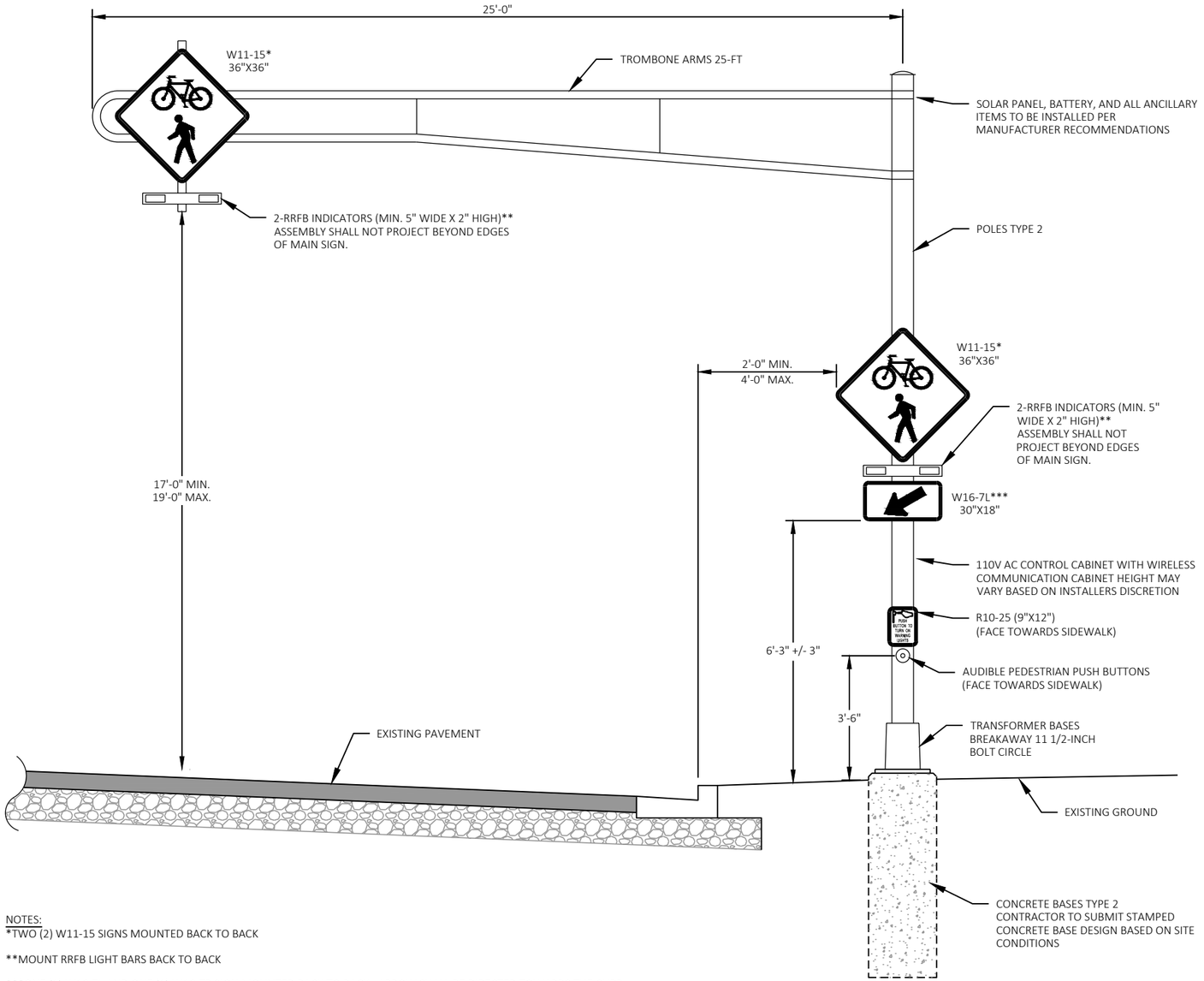
NOTE*
SEE CURB RAMP DETAIL SHEETS FOR
CONCRETE ONLY AREAS



PEDESTRIAN MULTI-USE TRAIL ALONG SIDEWALK: MANDATORY ALTERNATE #1
STA 100+60 - 103+30

PROJECT NO: 2025.024	HWY: USH 45	COUNTY: VILAS	TYPICAL SECTIONS	SHEET	E

FILE NAME : P:\2025\2025.024 - EAGLE RIVER REVIT PROGRAM-GHT-USH 45 CROSSING\CAD\PLANS\020301-TS.DWG
LAYOUT NAME - 02
PLOT DATE : 8/4/2026 8:30 AM
PLOT BY : AARON J. WALLNER
PLOT NAME :
PLOT SCALE : 1 IN:5 FT
WISDOT/CADDS SHEET 42



NOTES:
*TWO (2) W11-15 SIGNS MOUNTED BACK TO BACK

**MOUNT RRFB LIGHT BARS BACK TO BACK

***ONE (1) W16-7L AND ONE (1) W16-7R SIGN MOUNTED BACK TO BACK. ARROW SHALL BE DIRECTED TOWARDS THE CURB.

RRFB SYSTEM SHALL BE WIRELESSLY LINKED TO RRFB SYSTEM LOCATED ON THE SOUTHBOUND SIDE OF USH 45 AND MEDIAN SO ALL SYSTEMS ARE ACTIVATED SIMULTANEOUSLY WHEN BUTTON IS PRESSED.

RRFB SYSTEM SHALL BE SOLAR POWERED. PROVIDE AND MOUNT SOLAR PANELS PER MANUFACTURER RECOMMENDATIONS.

MOUNT SYSTEM CONTROLLER CABINETS ON POLES PER MANUFACTURER RECOMMENDATIONS.

SEE S.D.D. "CONCRETE BASES, TYPES 1, 2, 5 &6" FOR MORE INFORMATION ON CONCRETE BASES TYPE 2.

SEE S.D.D. "TRANSFORMER/PEDESTAL BASES" FOR MORE INFORMATION.

SEE S.D.D. "POLE MOUNTINGS FOR TRAFFIC SIGNALS, TYPE 2" FOR MORE INFORMATION ON POLES TYPE 2.

A 05 RECTANGULAR RAPID FLASHING BEACON (RRFB) WIRELESS & SOLAR POWERED SYSTEM
NOT TO SCALE

NOTES:

* TWO (2) W11-5 SIGNS MOUNTED BACK TO BACK.

** MOUNT RRFB LIGHT BARS BACK TO BACK.

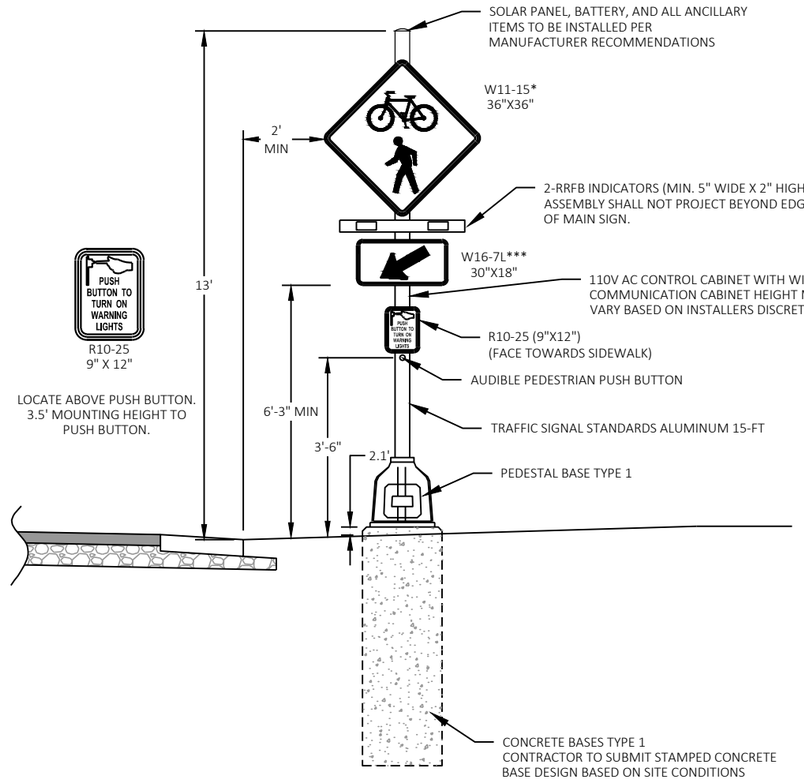
*** ONE (1) W16-7L AND ONE (1) W16-7R SIGN MOUNTED BACK TO BACK. ARROW SHALL BE DIRECTED TOWARDS THE SHOULDER.

ALL RRFB LOCATIONS SHALL BE WIRELESSLY LINKED TO EACHOTHER SO ALL SYSTEMS ARE ACTIVATED SIMULTANEOUSLY WHEN ANY PUSH BUTTON IS PRESSED.

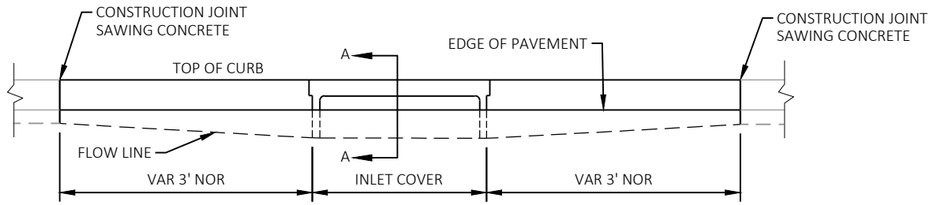
RRFB SYSTEM SHALL BE SOLAR POWERED. PROVIDE AND MOUNT SOLAR PANELS PER MANUFACTURER RECOMMENDATIONS. SOLAR PANEL TO BE MOUNTED 13 FEET ABOVE FINISHED GRADE.

MOUNT SYSTEM CONTROLLER CABINETS ON POLES TYPE 1 PER MANUFACTURER RECOMMENDATIONS.

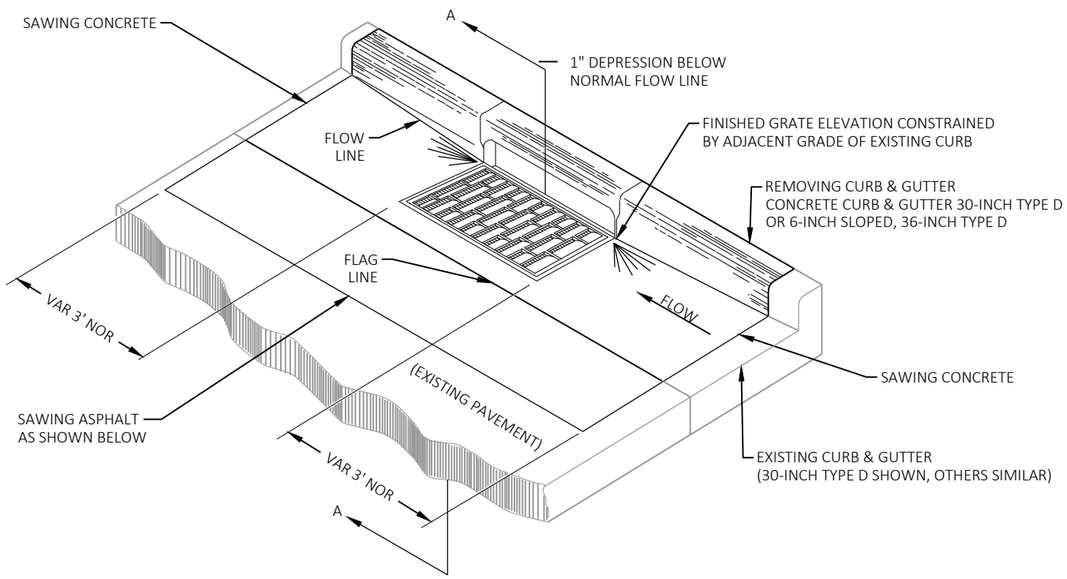
SEE S.D.D. "TRANSFORMER/PEDESTAL BASES" FOR MORE INFORMATION.

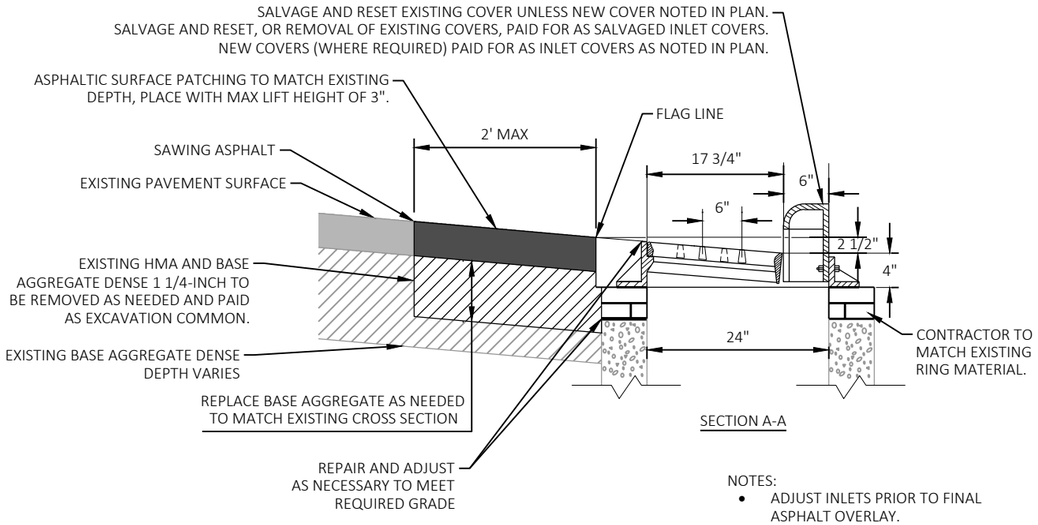


B 05 RECTANGULAR RAPID FLASHING BEACON (RRFB) SYSTEM - MEDIAN
NOT TO SCALE



ELEVATION

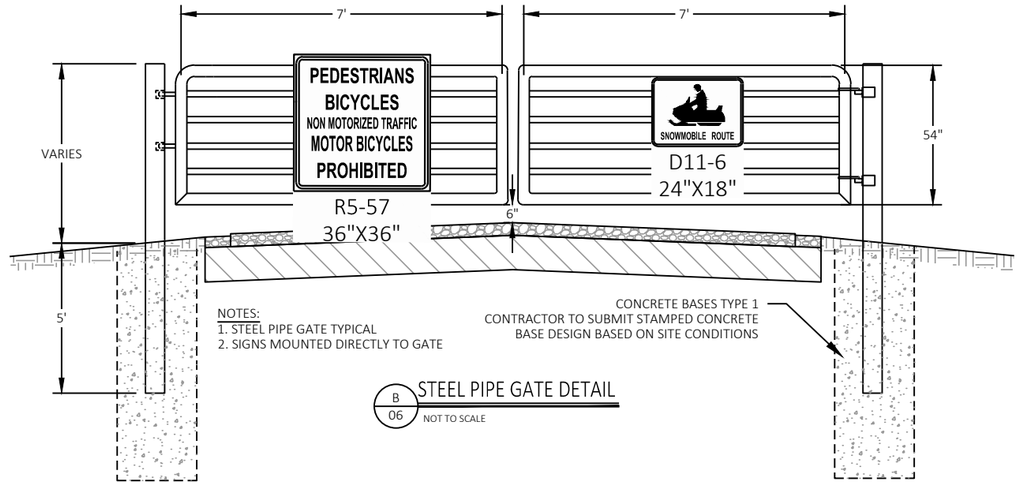




SECTION A-A

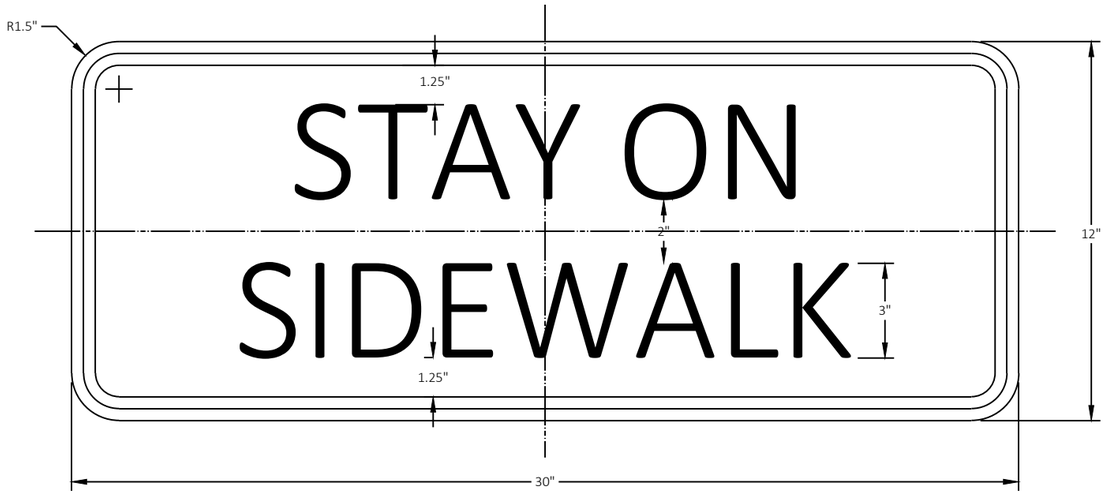
NOTES:
- ADJUST INLETS PRIOR TO FINAL ASPHALT OVERLAY.
- COMMON EXCAVATION TO BE INCIDENTAL TO ADJUSTING INLET COVERS BID

A 06 ADJUSTING INLET COVERS DETAIL
NOT TO SCALE



NOTES:
1. STEEL PIPE GATE TYPICAL
2. SIGNS MOUNTED DIRECTLY TO GATE

B 06 STEEL PIPE GATE DETAIL
NOT TO SCALE



NOTE:
1) SIGN IS TYPE II, TYPE F REFLECTIVE
2) COLORS:
BACKGROUND - WHITE
MESSAGE - BLACK
3) SIGN PLATE: W4-4B

C 06 STAY ON SIDEWALK SIGN DETAIL
NOT TO SCALE

PROJECT NO: 2025.024	HWY: USH 45	COUNTY: VILAS	CONSTRUCTION DETAILS	SHEET	E

South HMA Curb Ramp					
POINT NUMBER	STATION	OFFSET	ELEVATION	NORTHING	EASTING
1	100+03.67	25.13' RT	1637.30	106410.61	501032.29
2	100+04.28	24.65' RT	1637.29	106411.26	501032.74
3	100+18.29	17.50' RT	1637.29	106422.23	501044.01
4	100+18.89	17.23' RT	1637.29	106422.67	501044.49
5	100+21.59	4.81' RT	1637.56	106435.33	501043.40
6	100+21.07	4.81' RT	1637.56	106435.18	501042.91
7	100+19.86	10.17' RT	1637.47	106429.70	501043.33
8	100+18.76	15.04' RT	1637.39	106424.72	501043.72
9	100+07.12	12.07' RT	1637.57	106424.12	501031.73
10	100+08.23	7.19' RT	1637.65	106429.10	501031.34
11	100+06.64	11.95' RT	1637.49	106424.09	501031.23
12	100+07.81	7.40' RT	1637.68	106428.78	501031.01
13	100+05.60	8.48' RT	1637.73	106427.09	501029.22
14	100+13.33	5.22' LT	1637.73	106442.47	501032.54
15	100+19.77	5.20' LT	1637.70	106444.35	501038.71
16	100+33.08	5.15' LT	1637.65	106448.24	501051.44
17	100+50.37	5.08' LT	1637.53	106453.29	501067.97
18	100+56.32	0.03' LT	1637.43	106450.22	501075.15
19	100+23.11	0.02' LT	1637.62	106440.39	501043.43
20	100+56.26	4.98' RT	1637.42	106445.42	501076.57
21	100+63.68	15.65' RT	1637.24	106437.42	501086.82
22	100+29.37	16.21' RT	1637.23	106426.74	501054.20
23	100+21.04	16.71' RT	1637.30	106423.80	501046.40

SIDEWALK TO BE REMOVED. SEE PLAN SHEETS FOR LIMITS.

EXITING MOTORIZED TRAIL TO REMAIN

EXITING MOTORIZED TRAIL TO BE RESTORED

SURVEY MONUMENT. DO NOT DISTURB

MP

21 LF SAWING CONCRETE

100+00

1.3%

1.3%

HMA

100+50

0.7%

5 LF SAWING CONCRETE

101+00

MANDATORY ALTERNATE 1:

CURB RAMP TO BE INSTALLED WITH TRUNCATED DOMES AND HMA SURFACE

PI: 100+89.53

1.5%

1.5%

5.0'

12.0'

LP

1.5%

1.5%

2.7%

4" HMA CURB

R42'

CURB RAMP DETECTABLE WARNING FIELD RADIAL, YELLOW

4B1

146.5 LF MARKING LINE EPOXY 6-INCH

COMMERCIAL DRIVEWAY

RAILROAD ST

USH 45/STH 32/ STH 17

N

LEGEND

- X — CURB RAMP TYPE
- LP — ADA COMPLIANT LANDING PAD
- HMA — 3.5" HOT MIX ASPHALT

GENERAL NOTES

- PROPERTY LINES ARE BASED ON 2025 GIS DATA FROM VILAS COUNTY.
- AERIAL IMAGE IS FROM 2025 MICROSOFT MAP DATA.
- SEE PLAN SHEETS FOR HMA GRADING

PROJECT NO: 2025.024	HWY: USH 45	COUNTY: VILAS	CURB RAMP DETAILS	SHEET	E

FILE NAME : P:\2025\2025.024 - EAGLE RIVER REVIT PROGRAM-GHT-USH 45 CROSSING\CAD\PLANS\021301-CR.DWG
LAYOUT NAME - 01

PLOT DATE : 4/2026 10:39 AM PLOT BY : AARON J. WALLNER PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 42

Median Curb Ramp					
POINT NUMBER	STATION	OFFSET	ELEVATION	NORTHING	EASTING
100	103+97.68	8.00' LT	1636.43	106700.82	500983.43
101	103+97.72	6.00' LT	1636.45	106702.74	500982.86
102	103+97.66	5.00' LT	1635.94	106703.72	500982.66
103	103+97.96	5.00' RT	1635.92	106713.29	500979.73
104	103+98.00	6.00' RT	1636.33	106714.24	500979.43
105	103+98.26	12.63' RT	1636.23	106720.57	500977.43
106	104+01.69	4.98' LT	1636.11	106702.68	500978.77
107	104+01.83	5.02' RT	1635.96	106712.29	500975.99
108	104+06.69	4.96' LT	1636.19	106701.38	500973.94
109	104+06.83	5.04' RT	1636.04	106710.99	500971.16
110	104+10.62	4.94' LT	1635.98	106700.37	500970.14
111	104+10.63	5.94' LT	1636.35	106699.40	500970.40
112	104+10.77	9.01' RT	1636.24	106713.78	500966.32
113	104+10.71	6.06' RT	1636.29	106710.95	500967.15
114	104+10.69	5.06' RT	1635.89	106709.99	500967.44
115	104+14.32	9.02' RT	1635.94	106712.86	500962.90
116	104+14.19	5.96' LT	1636.04	106698.43	500966.96

47.5 LF MARKING LINE EPOXY 6-INCH

19 LF SAWING ASPHALT

CONCRETE CURB AND GUTTER 18-INCH TYPE D

RESET INLET COVER

CONCRETE CURB AND GUTTER 18-INCH TYPE D TRANSITION EXISTING INLET

26 LF SAWING ASPHALT

49 LF MARKING LINE EPOXY 6-INCH

CURB RAMP DETECTABLE WARNING FIELD YELLOW (TYP.)

20 LF SAWING ASPHALT

CONCRETE CURB AND GUTTER 30-INCH TYPE L

EXISTING LIGHT POLE TO REMAIN

EXISTING MANHOLE TO REMAIN

5 LF SAWING CONCRETE

5 LF SAWING CONCRETE

5 LF SAWING CONCRETE

SIDEWALK TO BE REMOVED. SEE PLAN SHEETS FOR LIMITS.

PT: 103+67.99

PC: 103+56.67

BM HYD NW BOLT 1638.660

BASE PROJECT: REPLACE FROM POINTS 51-52 WITH 6" CONCRETE SIDEWALK

MANDATORY ALTERNATE #1: REPLACE FROM POINTS 51-52 WITH HOT MIX ASPHALT

USH 45/STH 32/ STH 17

E SPRUCE ST

RAILROAD ST

LEGEND

- X — CURB RAMP TYPE
- LP — ADA COMPLIANT LANDING PAD
- HMA — 3" HOT MIX ASPHALT
- SW6 — CONCRETE SIDEWALK 6-INCH

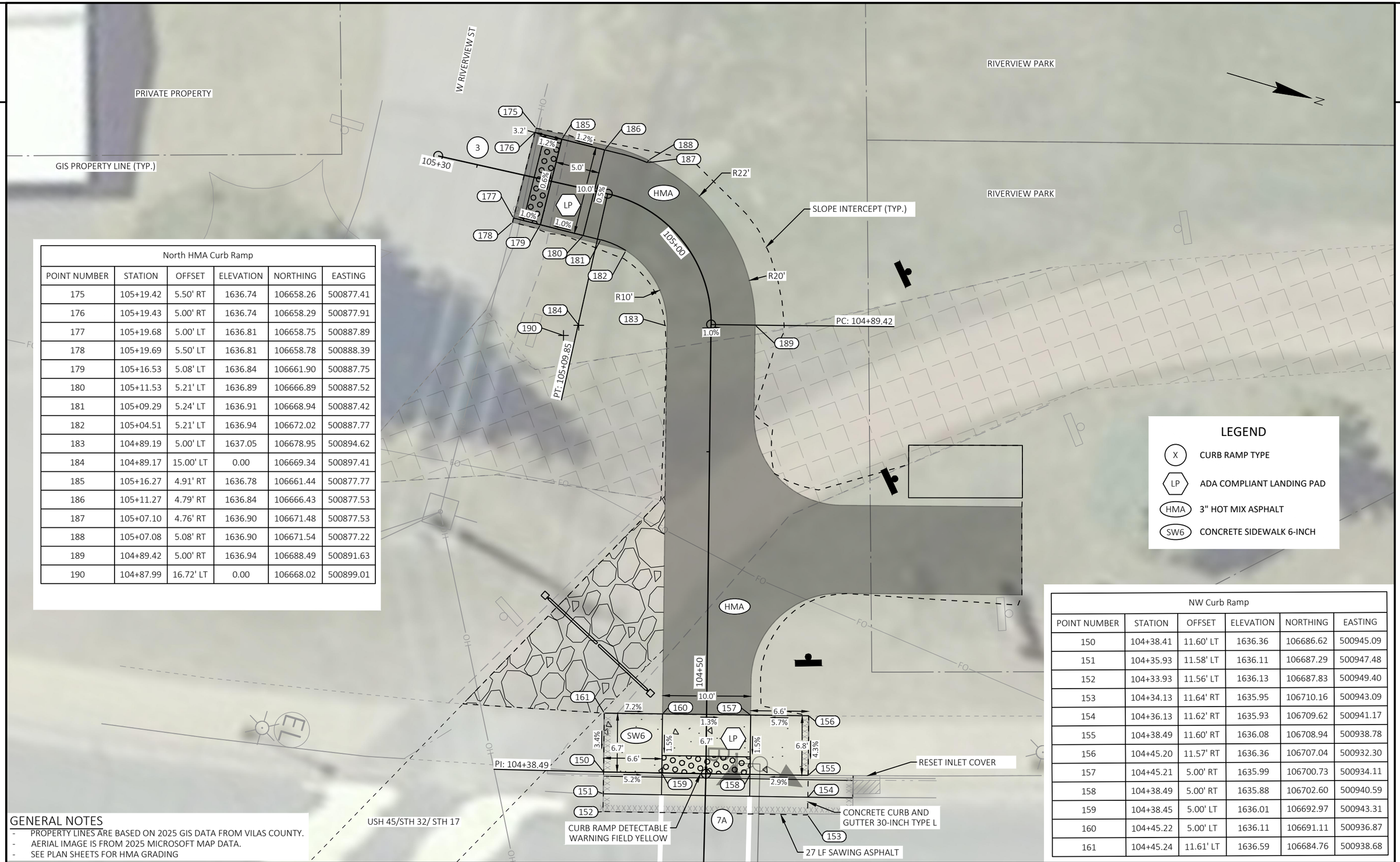
NE Curb Ramp					
POINT NUMBER	STATION	OFFSET	ELEVATION	NORTHING	EASTING
50	103+36.62	0.03' LT	1636.59	106693.64	501027.57
51	103+36.63	4.13' RT	1636.50	106695.36	501031.37
52	103+56.88	8.05' RT	1636.29	106715.62	501026.53
53	103+59.11	9.80' RT	1636.37	106720.49	501025.37
54	103+58.62	14.85' RT	1636.40	106722.78	501030.03
55	103+60.17	16.49' RT	1636.47	106727.22	501028.04
56	103+60.83	12.64' RT	1636.44	106725.35	501024.20
57	103+62.31	9.05' RT	1636.37	106724.06	501019.37
58	103+63.73	10.78' RT	1636.44	106726.77	501017.00
59	103+65.93	8.70' RT	1636.26	106725.34	501011.91
60	103+64.47	6.33' RT	1636.29	106722.76	501014.54
61	103+69.07	8.00' RT	1636.41	106723.80	501006.81
62	103+69.02	5.00' RT	1636.11	106720.92	501007.65
63	103+68.91	5.00' LT	1636.07	106711.30	501010.39
64	103+68.99	8.00' LT	1636.39	106708.38	501011.11
65	103+59.21	1.50' LT	1636.14	106713.03	501016.87
66	103+37.56	5.87' LT	1636.64	106692.10	501021.86
67	103+41.64	0.00'	1636.49	106698.23	501025.54
68	103+57.55	3.18' RT	1636.22	106714.33	501021.70
69	103+60.44	5.52' RT	1636.29	106719.19	501020.54

GENERAL NOTES

- PROPERTY LINES ARE BASED ON 2025 GIS DATA FROM VILAS COUNTY.
- AERIAL IMAGE IS FROM 2025 MICROSOFT MAP DATA.
- SEE PLAN SHEETS FOR HMA GRADING

PROJECT NO: 2025.024	HWY: USH 45	COUNTY: VILAS	CURB RAMP DETAILS	SHEET E

2



North HMA Curb Ramp					
POINT NUMBER	STATION	OFFSET	ELEVATION	NORTHING	EASTING
175	105+19.42	5.50' RT	1636.74	106658.26	500877.41
176	105+19.43	5.00' RT	1636.74	106658.29	500877.91
177	105+19.68	5.00' LT	1636.81	106658.75	500887.89
178	105+19.69	5.50' LT	1636.81	106658.78	500888.39
179	105+16.53	5.08' LT	1636.84	106661.90	500887.75
180	105+11.53	5.21' LT	1636.89	106666.89	500887.52
181	105+09.29	5.24' LT	1636.91	106668.94	500887.42
182	105+04.51	5.21' LT	1636.94	106672.02	500887.77
183	104+89.19	5.00' LT	1637.05	106678.95	500894.62
184	104+89.17	15.00' LT	0.00	106669.34	500897.41
185	105+16.27	4.91' RT	1636.78	106661.44	500877.77
186	105+11.27	4.79' RT	1636.84	106666.43	500877.53
187	105+07.10	4.76' RT	1636.90	106671.48	500877.53
188	105+07.08	5.08' RT	1636.90	106671.54	500877.22
189	104+89.42	5.00' RT	1636.94	106688.49	500891.63
190	104+87.99	16.72' LT	0.00	106668.02	500899.01

LEGEND

- (X) CURB RAMP TYPE
- (LP) ADA COMPLIANT LANDING PAD
- (HMA) 3" HOT MIX ASPHALT
- (SW6) CONCRETE SIDEWALK 6-INCH

NW Curb Ramp					
POINT NUMBER	STATION	OFFSET	ELEVATION	NORTHING	EASTING
150	104+38.41	11.60' LT	1636.36	106686.62	500945.09
151	104+35.93	11.58' LT	1636.11	106687.29	500947.48
152	104+33.93	11.56' LT	1636.13	106687.83	500949.40
153	104+34.13	11.64' RT	1635.95	106710.16	500943.09
154	104+36.13	11.62' RT	1635.93	106709.62	500941.17
155	104+38.49	11.60' RT	1636.08	106708.94	500938.78
156	104+45.20	11.57' RT	1636.36	106707.04	500932.30
157	104+45.21	5.00' RT	1635.99	106700.73	500934.11
158	104+38.49	5.00' RT	1635.88	106702.60	500940.59
159	104+38.45	5.00' LT	1636.01	106692.97	500943.31
160	104+45.22	5.00' LT	1636.11	106691.11	500936.87
161	104+45.24	11.61' LT	1636.59	106684.76	500938.68

GENERAL NOTES

- PROPERTY LINES ARE BASED ON 2025 GIS DATA FROM VILAS COUNTY.
- AERIAL IMAGE IS FROM 2025 MICROSOFT MAP DATA.
- SEE PLAN SHEETS FOR HMA GRADING

PROJECT NO: 2025.024	HWY: USH 45	COUNTY: VILAS	CURB RAMP DETAILS	SHEET E

2

PRIVATE PROPERTY

E SPRUCE ST

PRIVATE PROPERTY

PRIVATE PROPERTY

PRIVATE PROPERTY

PRIVATE PROPERTY

PRIVATE PROPERTY

N

USH 45/STH 32/ STH 17

USH 45/STH 32/ STH 17

W11-15
30"X30"
AHEAD
W16-9P
24"X12"

09

160'

CITY OF EAGLE RIVER

BIKE ROUTE
D11-1
24"X18"
STAY ON SIDEWALK
30"x12"
M6-1
21"X21"

RIVERVIEW PARK

11

10

PEDESTRIANS
BICYCLES
NON MOTORIZED TRAFFIC
MOTOR BICYCLES
PROHIBITED
R5-57
36"X36"

12

CITY OF EAGLE RIVER

BIKE ROUTE
D11-1
24"X18"
STAY ON SIDEWALK
30"x12"
M6-1
21"X21"
07

PC: 103+56.67

PT: 103+67.99

SALVAGED "NO RIGHT TURN" SIGN

06

103+00

05

04

SIGNS 1-5 REPRESENT VARIOUS SNOWMOBILE SIGNS TO BE RELOCATED. CONTRACTOR TO INSTALL PER GUIDANCE FROM THE CITY OF EAGLE RIVER

PI: 102+75.92

SEE CONSTRUCTION DETAILS FOR SIGNAGE MOUNTED TO GATE

RAILROAD ST

104+00

160'

102+00

03

08

PI: 104+38.49

SEE CONSTRUCTION DETAILS FOR SIGNAGE MOUNTED TO GATE

W11-15
30"X30"
AHEAD
W16-9P
24"X12"

101+00

PI: 100+89.53

W11-15
30"X30"
STAY ON SIDEWALK
30"x12"
M6-1
21"X21"

02

01

100+00

105+00

PC: 104+89.42

105+30

PT: 105+09.85

GIS PROPERTY LINE (TYP.)

W RIVERVIEW ST

PRIVATE PROPERTY

PRIVATE PROPERTY

W DIVISION ST

Sign Post Locations				
POINT NUMBER	STATION	OFFSET	NORTHING	EASTING
01	100+20.32	8.62' LT	106447.78	501038.22
02	100+36.23	7.51' LT	106451.43	501053.75
03	102+34.82	25.86' LT	106591.45	501039.78
04	102+61.60	7.76' LT	106622.35	501049.29
05	102+72.72	10.14' LT	106632.29	501043.76
06	103+49.09	6.83' LT	106702.21	501016.25
07	103+62.27	17.69' RT	106731.80	501023.19
08	101+99.73	40.99' LT	106553.47	501035.54
09	104+48.70	164.64' RT	106853.16	500886.58
10	104+52.40	10.83' RT	106704.34	500925.59
11	104+71.87	20.49' RT	106708.23	500904.21
12	104+91.91	22.81' RT	106703.37	500880.83

NOTES
- PROPERTY LINES ARE BASED ON 2025 GIS DATA FROM VILAS COUNTY.
- AERIAL IMAGE IS FROM 2025 MICROSOFT MAP DATA
- SEE CONSTRUCTION DETAILS FOR "STAY ON SIDEWALK" SIGN SPECIFICS

PROJECT NO: 2025.024	HWY: USH 45	COUNTY: VILAS	PERMANENT SIGNAGE	SHEET	E

2

2

SIGN TO BE INSTALLED 200' NORTH OF "RIGHT LANE CLOSED AHEAD" SIGN

ROAD WORK AHEAD
W20-1A

LEFT LANE CLOSED AHEAD
W20-5SA

W04-2L

END ROAD WORK
G20-2A
48"X24"

LANE CLOSED
R11-2L
48"X30"
TYPE III BARRICADE

200'

200'

210'

15'

125'

50'

PC: 103+56.67

PT: 103+67.99

103+00

104+00

PI: 104+38.49

PC: 104+89.42

105+00

105+30

PT: 105+09.85

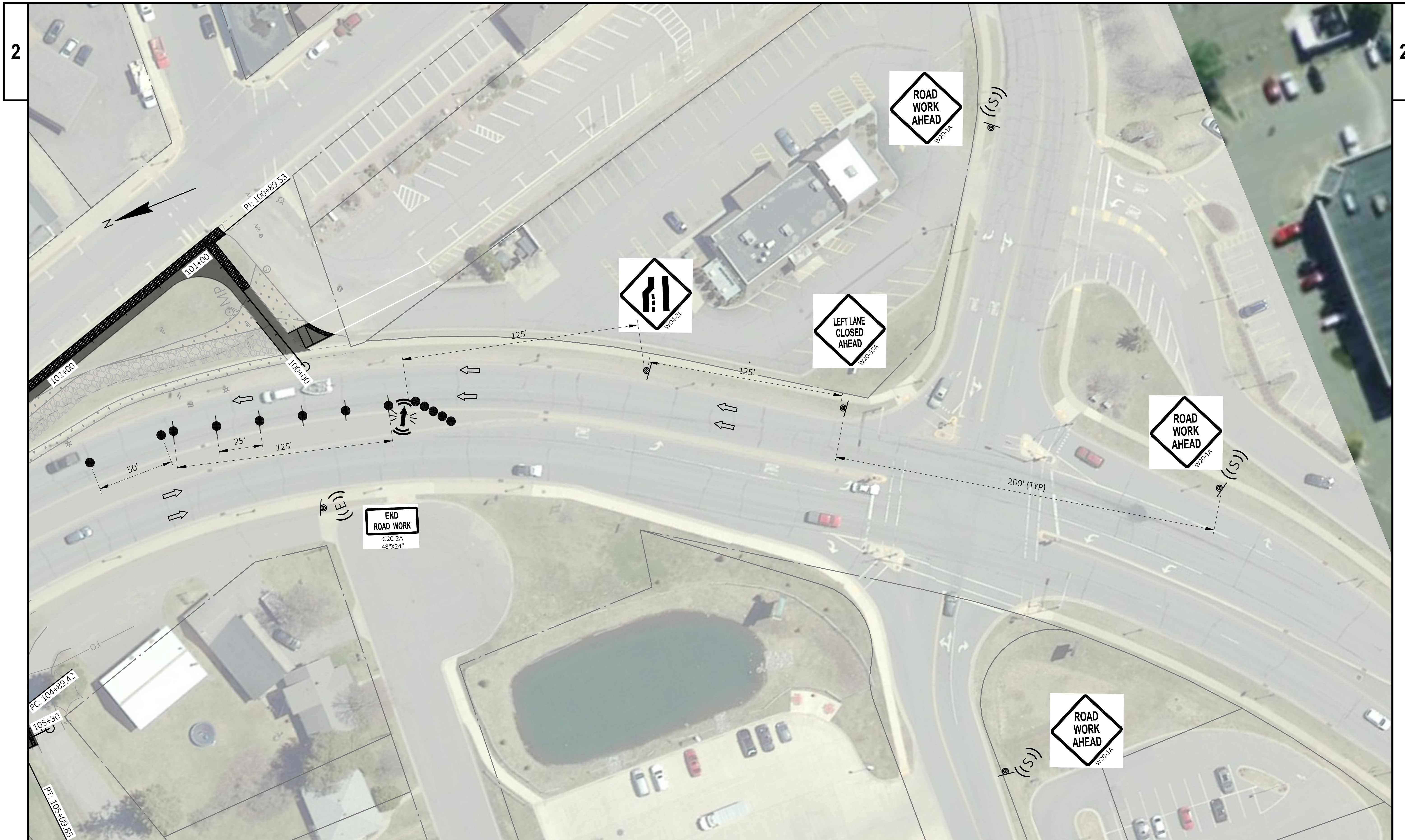
PROJECT NO: 2025.024	HWY: USH 45	COUNTY: VILAS	TRAFFIC CONTROL: INSIDE LANE CLOSURE	SHEET	E

FILE NAME : P:\2025\2025.024 - EAGLE RIVER REVIT PROGRAM-GHT-USH 45 CROSSING\CAD\PLANS\025100-TC_STAGE2.DWG
LAYOUT NAME - Stage 2 (N)

PLOT DATE : 4/2026 1:23 PM

PLOT BY : AARON J. WALLNER PLOT NAME : PLOT SCALE : 1 IN:50 FT

WISDOT/CADDS SHEET 42



PROJECT NO: 2025.024	HWY: USH 45	COUNTY: VILAS	TRAFFIC CONTROL: INSIDE LANE CLOSURE	SHEET	E

FILE NAME : P:\2025\2025.024 - EAGLE RIVER REVIT PROGRAM-GHT-USH 45 CROSSING\CAD\PLANS\025100-TC_STAGE2.DWG
LAYOUT NAME - Stage 2 (S)
PLOT DATE : 2016 1:23 PM PLOT BY : AARON J. WALLNER PLOT NAME : PLOT SCALE : 1 IN:50 FT WISDOT/CADDS SHEET 42

2

2

N

SIGN TO BE INSTALLED 200' NORTH OF "RIGHT LANE CLOSED AHEAD" SIGN

ROAD WORK AHEAD W20-1A

RIGHT LANE CLOSED AHEAD W20-5A

W04-2R

200'

200'

60'

50'

225'

TEMPORARY PEDESTRIAN DETOUR

END ROAD WORK G20-2A 48"X24"

LANE CLOSED R11-2L 48"X30"

TYPE III BARRICADE

TEMPORARY PEDESTRIAN DETOUR

PC: 103+56.67

PT: 103+67.99

103+00

104+00

PI: 104+38.49

PC: 104+89.42

105+00

105+30

PT: 105+09.85

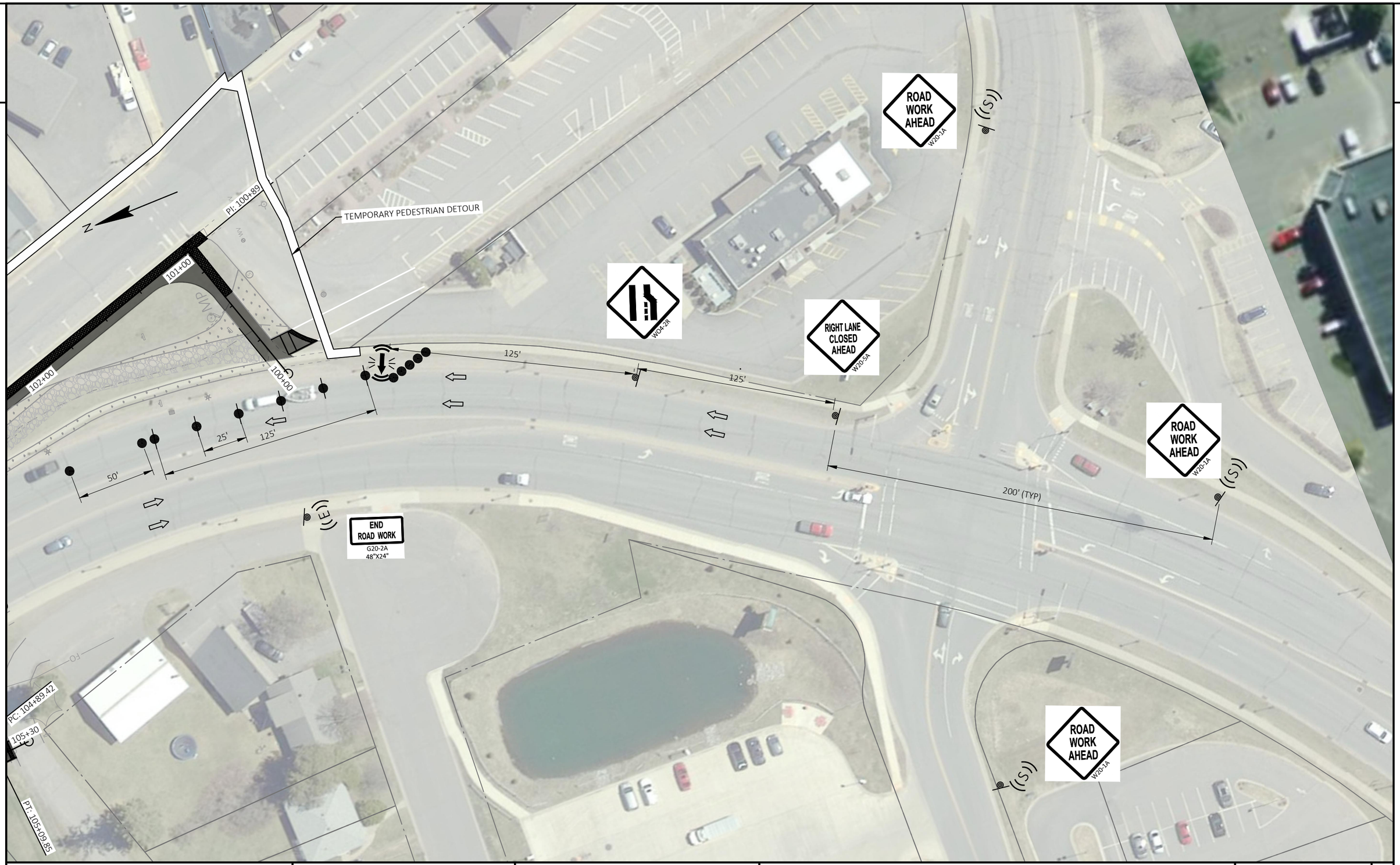
PROJECT NO: 2025.024	HWY: USH 45	COUNTY: VILAS	TRAFFIC CONTROL: OUTSIDE LANE CLOSURE	SHEET	E

FILE NAME : P:\2025\2025.024 - EAGLE RIVER REVIT PROGRAM-GHT-USH 45 CROSSING\CAD\PLANS\025100-TC.DWG
LAYOUT NAME - Stage 1 (N)

PLOT DATE : 4/2025 1:23 PM PLOT BY : AARON J. WALLNER PLOT NAME : PLOT SCALE : 1 IN:50 FT

WISDOT/CADDS SHEET 42

2



PROJECT NO: 2025.024	HWY: USH 45	COUNTY: VILAS	TRAFFIC CONTROL: OUTSIDE LANE CLOSURE	SHEET	E

EXISTING SIDEWALK TO REMAIN. CONTRACTOR TO PAVE AGAINST EDGE OF SIDEWALK.

100+00

N

USH 45/STH 32/ STH 17

STA 100+27.70, -24.71' LT
EL 1637.70

STA 100+38.66, -44.19' LT
EL 1637.71

STA 100+39.64, -18.69' LT
EL 1637.62

STA 101+56.26, -40.15' LT
EL 1637.56

RE-ALIGNED SNOWMOBILE TRAIL

STA 100+49.22, -38.45' LT
EL 1637.59

STA 101+84.33, -26.71' LT
EL 1637.32

STA 100+50.78, -5.54' LT
EL 1637.53

STA 102+00.73, -22.98' LT
EL 1637.17

SEE CURB RAMP SHEETS FOR GRADES FROM B.O.P - STA 100+60

GRADING/ RESTORATION LIMITS (TYP.)

STA 100+59.47, -5.05' LT
EL 1637.46

STA 100+59.49, -30.05' LT

STA 101+50.80, -29.42' LT
EL 1637.44

STA 100+59.30, -0.06' LT
EL 1637.42

STA 101+79.14, -15.88' LT
EL 1637.20

R38.0

R50.0

STA 101+88.97, -12.38' LT
EL 1637.11

STA 102+00.71, -5.54' LT
EL 1636.88

STA 102+00.73, -10.98' LT
EL 1637.05

STA 100+75, -10.44' LT
EL 1637.37

STA 101+75, -5.19' LT
EL 1636.99

R25.0

STA 101+10, -7.02' LT
EL 1637.25

STA 101+50, -5.24' LT
EL 1637.06

STA 101+19.44, -5.17' LT
EL 1637.16

COMMERCIAL DRIVEWAY

89.53'
N72°47'55"E

N16°57'07"W
186.39'

PI: 100+89.53

101+00

102+00

EXISTING SIDEWALK TO REMAIN

-2.56% -2.14% -1.00% -0.72% -0.31% 0.11% -0.47% -0.83% -2.79% -2.42%

PROJECT NO: 2025.024	HWY: USH 45	COUNTY: VILAS	GRADING & EROSION CONTROL	SHEET	E

FILE NAME : P:\2025\2025.024 - EAGLE RIVER REVIT PROGRAM-GHT-USH 45 CROSSING\CAD\PLANS\050201-PN.DWG
LAYOUT NAME - 01

PLOT DATE : 4/2/2026 2:47 PM

PLOT BY : AARON J. WALLNER

PLOT NAME :

PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 44

RECTANGULAR RAPID FLASHING BECAN
MEDIAN PUSH BUTTON ASSEMBLY
STA 104+04.22, -6.83' LT

104+00

SEE CURB RAMP
SHEETS FOR GRADES

N

S74°43'10"W
70.50'

USH 45/STH 32/ STH 17

SEE CURB RAMP
SHEETS FOR GRADES

PT: 103+67.99

RECTANGULAR RAPID FLASHING BECAN
STA 103+60.82, -5.52' LT

STA 102+49, -33.46' LT
EL 1636.79

STA 102+48.73, -32.07' LT
EL 1636.84

CENTER OF GATE POST
STA 102+54.96, -25.13' LT

STA 102+58.24, -24.62' LT
EL 1636.97

EXISTING SNOWMOBILE TRAIL
CROSSING GRADES TO REMAIN

GRADING/ RESTORATION
LIMITS (TYP.)

R38.0

-1.06%

-2.68%

STA 102+50.37, -23.80' LT
EL 1637.05

-0.58%

1636.6

1636.7

1636.8

1636.9

STA 102+81.33, -20.09' LT
EL 1636.86

STA 103+25, -5.86' LT
EL 1636.63

-1.04%

1637.1

-1.00%

-0.54%

R50.0

STA 103+00, -5.85' LT
EL 1636.58

-2.10%

PI: 102+75.92

-1.00%

N24°15'08"W
80.75

STA 102+50.36, -11.80' LT
EL 1636.93

1637.0

1636.9

1636.8

1636.7

STA 102+69.50, -5.07' LT
EL 1636.52

STA 102+50, -5.26' LT
EL 1636.62

STA 102+25, -5.31' LT
EL 1636.75

-0.34%

103+00

2.5%

-1.77%

-0.65%

-3.02%

CENTER OF GATE POST
STA 102+56.27, -8.89' LT

BM HYD NW BOLT
1638.66

PC: 103+56.97

RAILROAD ST

CURVE 1
PI STA = 103+63.51
Y = 106718.166
X = 501016.558
DELTA = 81°01'41" LT
D = 716°11'50"
T = 6.84'
L = 11.31'
R = 8.00'
PC STA = 103+56.67
Y = 106711.933
X = 501019.366
PT STA = 103+67.99
Y = 106716.365
X = 501009.963
DB = N24°15'08"W
DA = S74°43'10"W

PROJECT NO: 2025.024	HWY: USH 45	COUNTY: VILAS	GRADING & EROSION CONTROL	SHEET	E

FILE NAME : P:\2025\2025.024 - EAGLE RIVER REVIT PROGRAM-GHT-USH 45 CROSSING\CAD\PLANS\050201-PN.DWG
LAYOUT NAME - 02

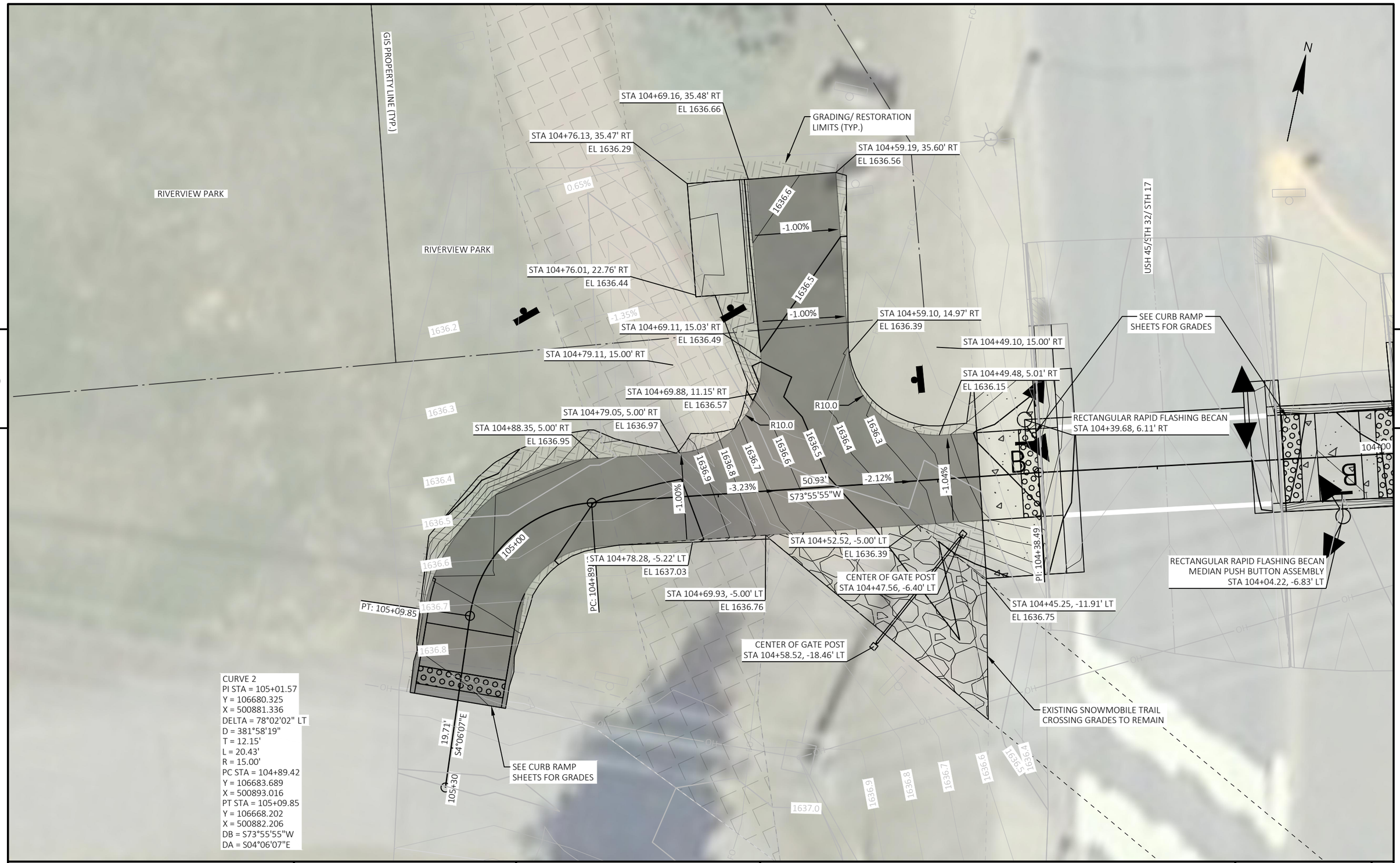
PLOT DATE : 4/2/2026 2:54 PM

PLOT BY : AARON J. WALLNER

PLOT NAME :

PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 44



PROJECT NO: 2025.024	HWY: USH 45	COUNTY: VILAS	GRADING & EROSION CONTROL	SHEET	E

FILE NAME : P:\2025\2025.024 - EAGLE RIVER REVIT PROGRAM-GHT-USH 45 CROSSING\CAD\PLANS\050201-PN.DWG
LAYOUT NAME - 03

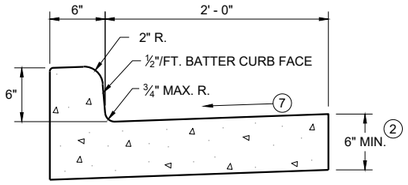
PLOT DATE : 4/2026 2:56 PM

PLOT BY : AARON J. WALLNER

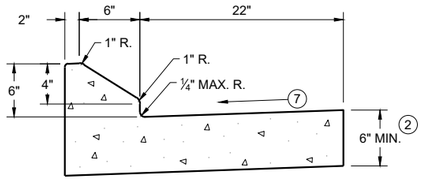
PLOT NAME :

PLOT SCALE : 1 IN:10 FT

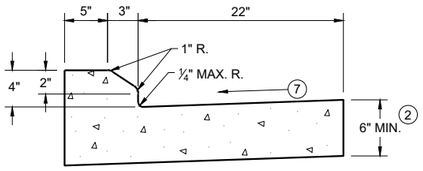
WISDOT/CADDS SHEET 44



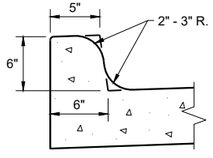
TYPES A (1) & D



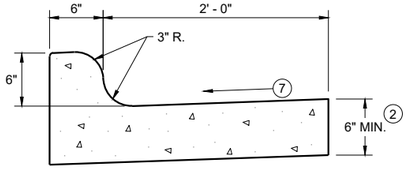
6" SLOPED CURB TYPES G (1) & J



4" SLOPED CURB TYPES G (1) & J

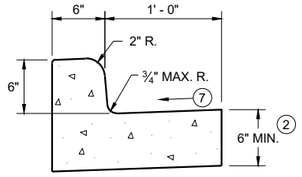


TYPES K (1) & L
(OPTIONAL CURB SHAPE)



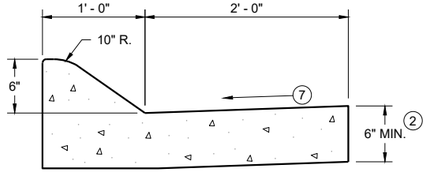
TYPES K (1) & L

CONCRETE CURB AND GUTTER 30"

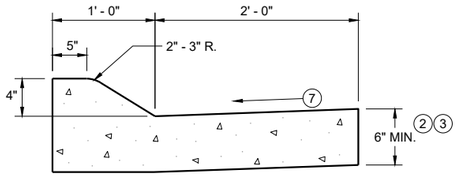


TYPES A (1) & D

CONCRETE CURB AND GUTTER 18"

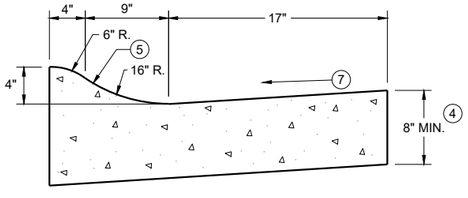


6" SLOPED CURB TYPES A (1) & D



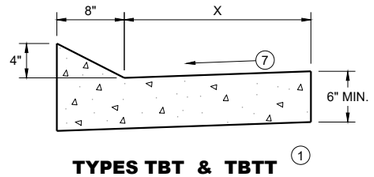
4" SLOPED CURB TYPES A (1) & D

CONCRETE CURB AND GUTTER 36"



4" SLOPED CURB TYPES R (1) & T
CONCRETE CURB AND GUTTER 30"

TBT & TBTT	X
30"	22"
36"	28"

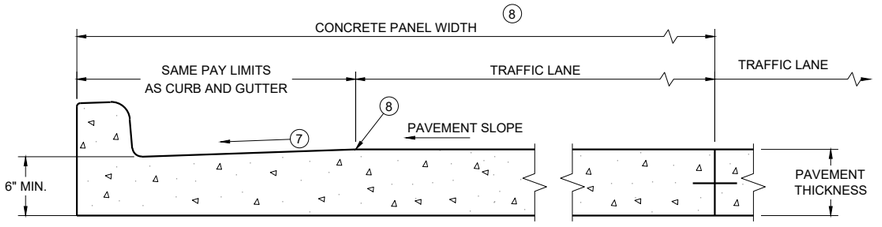


TYPES TBT & TBTT (1)

CONCRETE CURB AND GUTTER

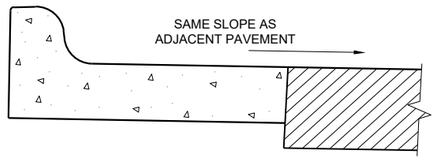
PAVEMENT THICKNESS AND MAXIMUM CONCRETE PANEL WIDTH TABLE

PAVEMENT THICKNESS	MAXIMUM PANEL WIDTH
LESS THAN 10"	12'
10" & ABOVE	15'



PARTIAL SECTION OF PAVEMENT WITH INTEGRAL CURB AND GUTTER *

* BIKE LANE IS NOT SHOWN



REVERSE SLOPE GUTTER (6)
(TYPICAL FOR ALL CURB & GUTTER TYPES)

GENERAL NOTES

DETAILS OF CONSTRUCTION AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.6.2 OF THE STANDARD SPECIFICATIONS.

INTEGRAL CURB AND GUTTER SHALL CONFORM TO THE DETAILS SHOWN FOR CONCRETE CURB AND GUTTER INCLUDING THE TRANSVERSE GUTTER SLOPE.

UNLESS OTHERWISE SHOWN ON THE TYPICAL CROSS SECTIONS, THE BASE AGGREGATE AND COMMON EXCAVATION LIMITS ARE 2' - 0" BEHIND THE BACK OF CURBS.

(1) TIE BARS ARE REQUIRED FOR CURB AND GUTTERS TYPES A, G, K, R, AND TBTT.

(2) THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.

(3) USE 8" MINIMUM GUTTER THICKNESS WHEN USED WITH AN ADJACENT CONCRETE TRUCK APRON PLACED BEHIND BACK OF CURB.

(4) THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 8" MINIMUM GUTTER THICKNESS IS MAINTAINED.

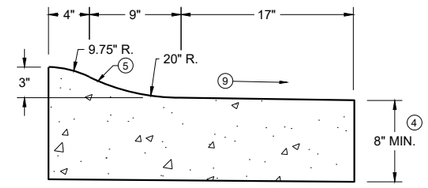
(5) UNLESS OTHERWISE NOTED, FOR STAKING PURPOSES THE FACE OF CURB IS 6" FROM THE BACK OF CURB.

(6) WHEN REVERSE SLOPE GUTTER IS REQUIRED, THE LOCATION(S) WILL BE SHOWN ELSEWHERE IN THE PLAN.

(7) USE 4% GUTTER CROSS SLOPE UNLESS OTHERWISE NOTED IN THE PLANS.

(8) INCLUDE LONGITUDINAL JOINT AND TIE BARS ALONG LANE EDGE WHEN CONCRETE PANEL WIDTH EXCEEDS THE MAXIMUM WIDTH PER TABLE BELOW. LONGITUDINAL JOINT(S) ARE NOT ALLOWED WITHIN TRAFFIC LANES AND BIKE LANES. LONGITUDINAL JOINT MAY BE SAWED.

(9) SLOPE TO BE REVERSE SLOPE MATCHING THE SLOPE OF THE PAVEMENT AND THE CIRCULATORY ROADWAY



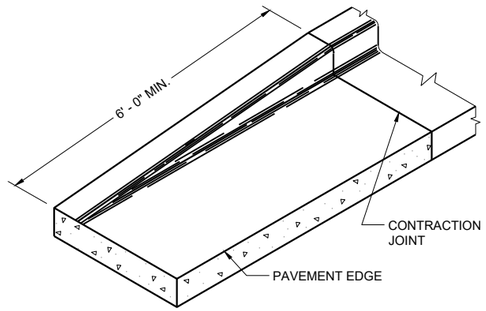
3" SLOPED CURB TYPES R (1) & T

CONCRETE CURB AND GUTTER

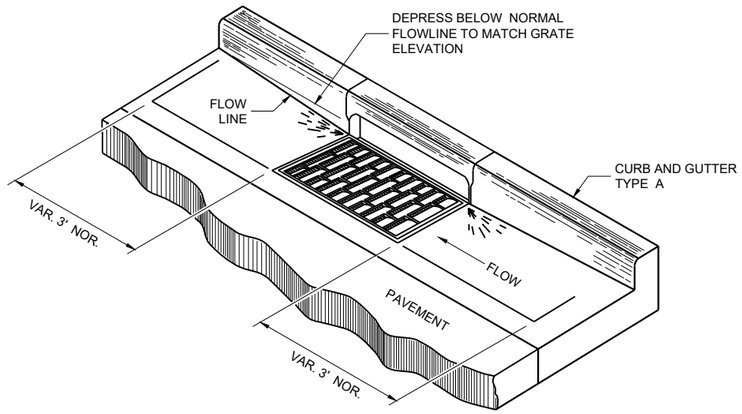
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

SDD 08D01-24a



END SECTION CURB AND GUTTER



DETAIL OF CURB AND GUTTER AT INLETS

(TYPICAL H INLET COVER SHOWN)

GENERAL NOTES

DETAILS OF CONSTRUCTION AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.6.2 OF THE STANDARD SPECIFICATIONS.

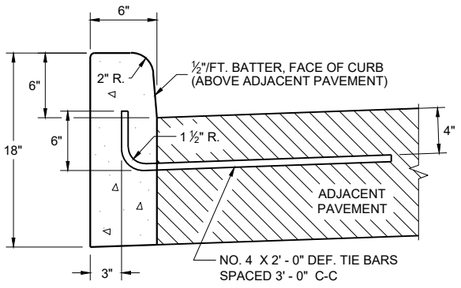
UNLESS OTHERWISE SHOWN ON THE TYPICAL CROSS SECTIONS, THE BASE AGGREGATE AND COMMON EXCAVATION LIMITS ARE 2' - 0" BEHIND THE BACK OF CURBS.

(1) TIE BARS ARE REQUIRED FOR CURB AND GUTTERS TYPES A, G, K, R, AND TBTT.

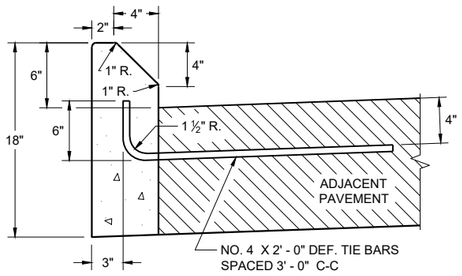
(2) THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.

(10) REFER TO SDD 08D18 AND 08D19 FOR ADDITIONAL DRIVEWAY ENTRANCE CURB DETAILS.

(11) PLACE 1" THICK EXPANSION JOINT MATERIAL BETWEEN VERTICAL FACE CURB TYPES EXTENDING FROM THE TOP OF CURB TO 1 INCH BELOW THE ADJOINING CONCRETE SURFACE. RIGID CONCRETE STRUCTURES INCLUDE RAISED CONCRETE MEDIANS, CONCRETE SAFETY ISLANDS, SPLITTER ISLANDS, OR LOCATIONS IDENTIFIED ON THE PLANS.

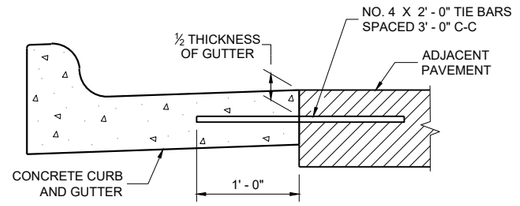


TYPES A (1) & D

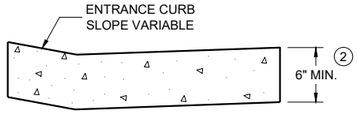


TYPES G (1) & J

CONCRETE CURB

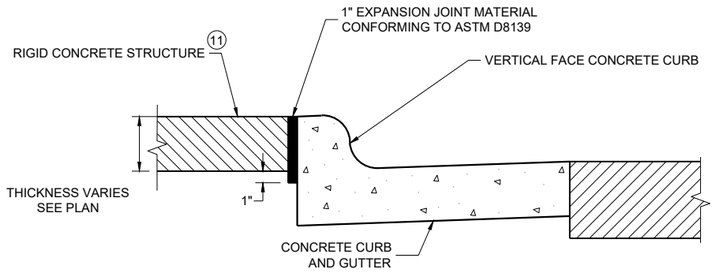


TYPICAL TIE BAR LOCATION (1)

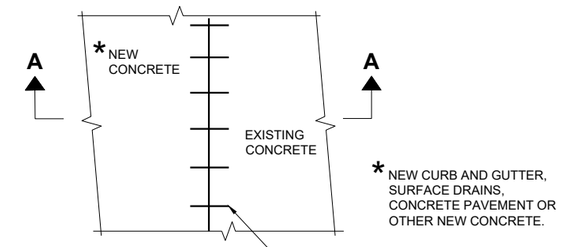


DRIVEWAY ENTRANCE CURB (10)

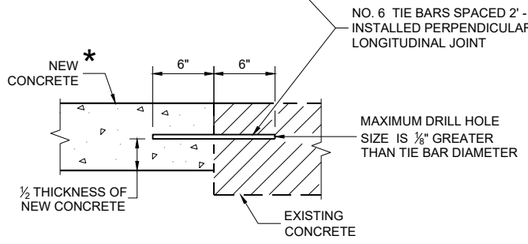
(WHEN DIRECTED BY THE ENGINEER)



EXPANSION JOINT DETAIL FOR VERTICAL CURB ABUTTING A RIGID STRUCTURE (11)



PLAN VIEW



SECTION A - A

TIE BARS DRILLED INTO EXISTING PAVEMENT

CONCRETE CURB, TIES AND CURB AND GUTTER APPLICATIONS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2025 — DATE
/S/ Rodnery Taylor — ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR

FHWA

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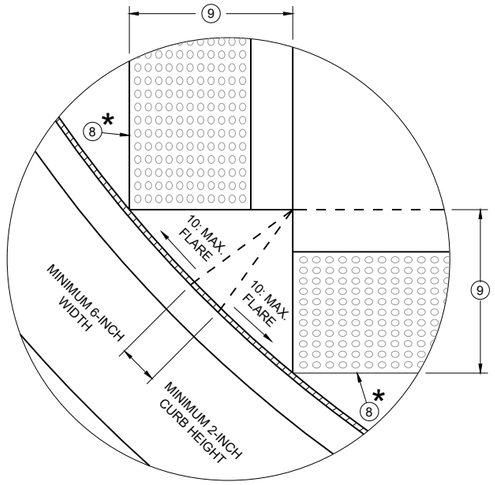
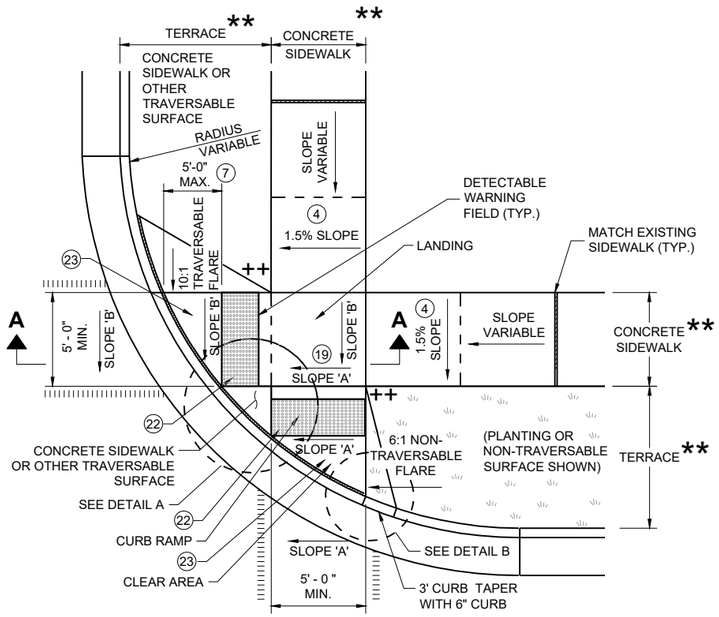
SDD 08D01-24b

6

SDD 08D01-24b



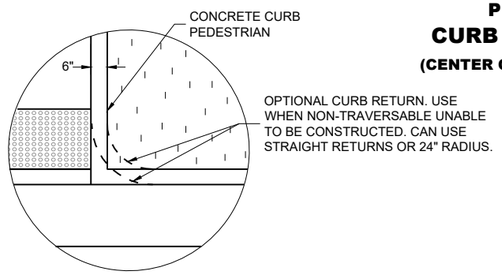
DETAIL A



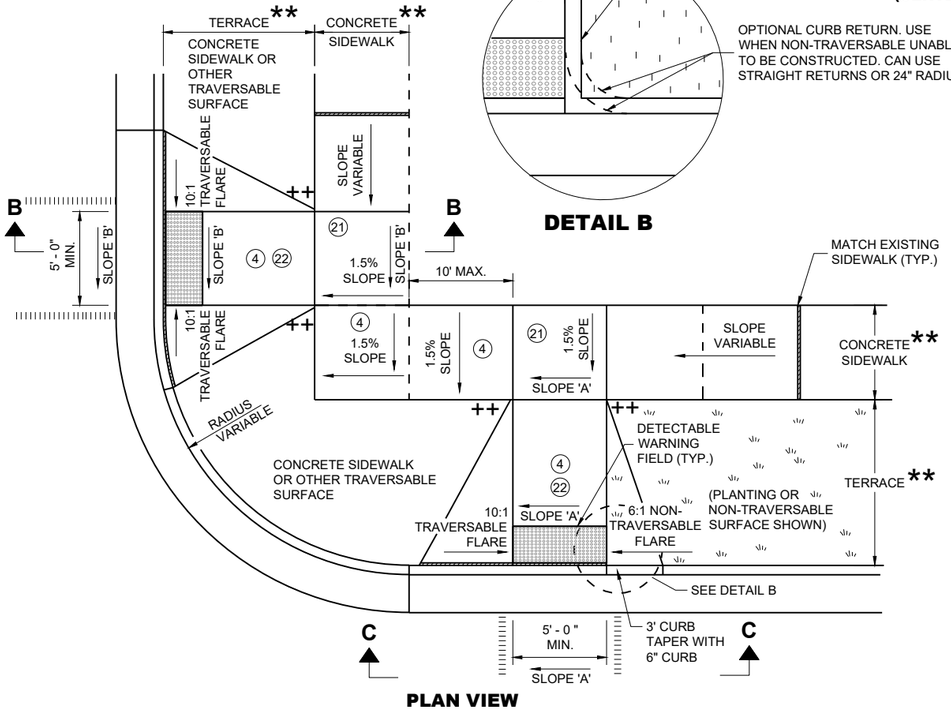
PLAN VIEW

CURB RAMP TYPE 2

(CENTER OF CORNER RADIUS)



DETAIL B



PLAN VIEW

CURB RAMP TYPE 3

(OUTSIDE OF CROSSWALK AREA)

GENERAL NOTES

AVOID PLACING DRAINAGE STRUCTURES, JUNCTION BOXES OR OTHER OBSTRUCTIONS IN FRONT OF CURB RAMP ACCESS AREAS.

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.

DETECTABLE WARNING FIELDS THAT ARE INSTALLED AS A GROUP OR SIDE BY SIDE SHALL BE FROM THE SAME MANUFACTURER.

(2) GRADE CHANGE BETWEEN GUTTER COUNTER SLOPE AND THE CURB RAMP SLOPE IS DESIRABLY 11% OR LESS AND SHALL NOT EXCEED 13.3%. TYPICAL GUTTER COUNTER SLOPE IS 4% BUT MAY BE MODIFIED TO FIT FIELD CONDITIONS. PROVIDE LONGITUDINAL DRAINAGE AROUND CURB AND AWAY FROM CURB RAMP. NO VERTICAL LIPS OR DISCONTINUITIES ARE ALLOWED. SLOPE OF CURB HEAD OPENING SHALL MATCH THE RAMP SLOPE, MINIMALLY 1.5%, DESIRABLY 7% OR LESS, AND SHALL NOT EXCEED A MAXIMUM OF 8.3%. WHEN ADJACENT TO 1.5% LANDING, CONSTRUCT CURB HEAD OPENING AT 1.5% IN THE DIRECTION OF PEDESTRIAN TRAVEL.

(3) MAXIMUM 8.3% CURB RAMP SLOPE IS ALLOWABLE WITH GUTTER COUNTER SLOPE OF 5% MAXIMUM AND A 13.3% MAXIMUM GRADE CHANGE.

(4) ±0.5% CONSTRUCTION TOLERANCE IN SIDEWALK CROSS SLOPE. THE SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2.1% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

(7) WHEN GRADE BREAK DISTANCE EXCEEDS 5 FEET, USE RADIAL DETECTABLE WARNING FIELD PER SDD 8D5-f.

(8) PROVIDE GRADE BREAK PERPENDICULAR TO DIRECTION OF WHEELCHAIR TRAVEL.

(9) WHEN DISTANCE IS LESS THAN 6' - 0", IT MAY BE DIFFICULT TO ACHIEVE A 7% DESIGN MAXIMUM SLOPE OR FLATTER ALONG THE RAMP. REDUCE CURB HEIGHT IN TRIANGLE AREA TO ACHIEVE 7% DESIGN MAXIMUM SLOPE OR FLATTER ON RAMP. CONSTRUCT 2-INCH MINIMUM CURB HEIGHT BETWEEN 10:1 FLARES.

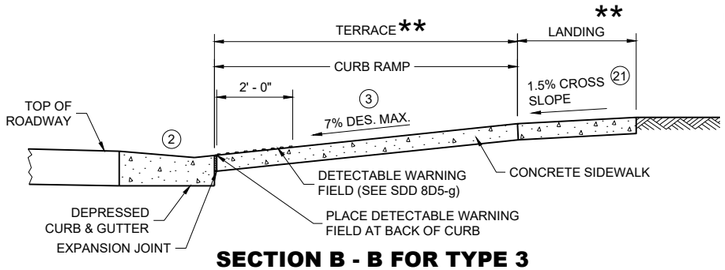
(17) A MAXIMUM 2-INCH CONCRETE BORDER IS PERMITTED ALONG ALL SIDES OF THE DETECTABLE WARNING FIELD SURFACE.

(19) WHERE A LANDING SERVES TWO CURB RAMPS, THE LANDING SLOPE SHALL NOT EXCEED THE CROSS SLOPE AT THE BOTTOM OF THE RAMP OR WITHIN THE CROSSWALK PARALLEL TO THE DIRECTION OF TRAVEL.

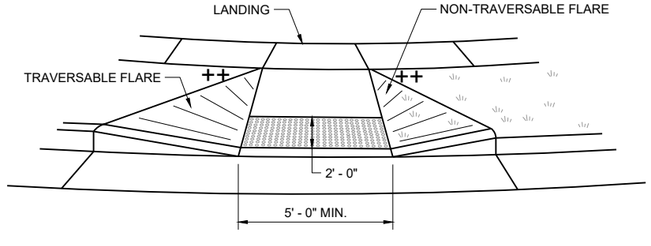
(21) PROVIDE A LANDING WITH A SLOPE PARALLEL TO ROADWAY THAT MATCHES SLOPE AT THE BOTTOM OF THE ADJACENT RAMP. SLOPE PERPENDICULAR TO ROADWAY SHALL BE 2.1% MAXIMUM. STANDARD LANDING SIZE IS 5 FEET BY 5 FEET.

(22) THE ENTIRE RAMP SHALL BE A PLANAR SURFACE. DO NOT WARP THE RUNNING SLOPE OR CROSS SLOPE OF THE RAMP. WARPING OF THE SIDEWALK CROSS SLOPE SHALL TAKE PLACE BETWEEN THE LANDING AND MATCH POINT.

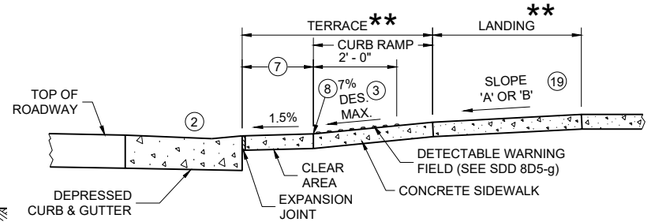
(23) THE CLEAR AREA BETWEEN THE BOTTOM OF RAMP AND BACK OF CURB SHALL BE SLOPED SO THAT WATER DRAINS OUT OF ONE SIDE OR BOTH SIDES OF THE CURB OPENING.



SECTION B - B FOR TYPE 3



VIEW C - C FOR TYPE 3



SECTION A - A FOR TYPE 2

LEGEND

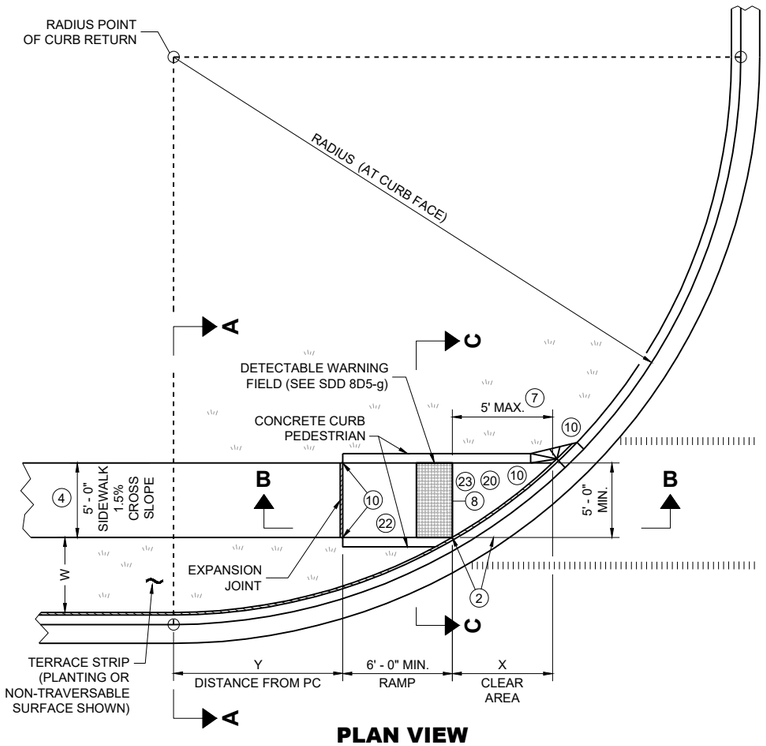
▨	½" EXPANSION JOINT SIDEWALK
– – – –	CONTRACTION JOINT SIDEWALK
ıllıllıllıllıl	PAVEMENT MARKING CROSSWALK (WHITE)
*	MAXIMUM 2.1% SLOPE IN ALL DIRECTIONS IN FRONT OF GRADE BREAK
**	WIDTH SHOWN ELSEWHERE IN THE PLANS
++	CONSTRUCT 6" WEDGE TO AVOID CONCRETE BREAKAGE

CURB RAMPS TYPE 2 AND 3

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

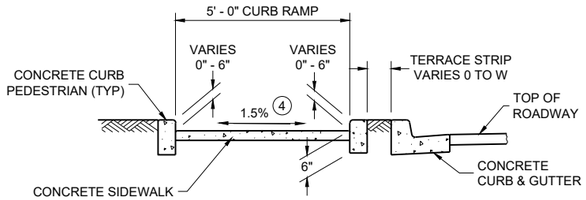
SDD 08D05-22b



PLAN VIEW
CURB RAMP TYPE 4B

RADIUS (AT CURB FACE)	W = 3' - 0"		W = 4' - 0"		W = 5' - 0"		W = 6' - 0"		W = 7' - 0"		W = 8' - 0"		W = 9' - 0"		W = 10' - 0"	
	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
10 FEET	2' - 10 ¼"	0' - 5"	2' - 1"	1' - 4 ½"	1' - 5"	2' - 1"	0' - 10"	2' - 7 ½"	0' - 3 ¼"	3' - 0 ¼"						
15 FEET	4' - 6 ¾"	2' - 1 ¾"	3' - 9"	3' - 5 ¾"	3' - 1 ¼"	4' - 6"	2' - 6 ¾"	5' - 4 ½"	2' - 1"	6' - 1"	1' - 8"	6' - 8 ½"	1' - 3 ¼"	7' - 2 ½"	0' - 10 ¾"	7' - 7 ¼"
20 FEET			4' - 11 ½"	5' - 1 ¾"	4' - 3 ¼"	6' - 5 ½"	3' - 8 ¾"	7' - 7"	3' - 3"	8' - 6 ½"	2' - 10"	9' - 4 ½"	2' - 5 ½"	10' - 1 ¼"	2' - 1 ¼"	10' - 9"
30 FEET									4' - 10 ¾"	12' - 5 ¾"	4' - 5 ½"	13' - 7 ¾"	4' - 0 ¾"	14' - 8 ½"	3' - 8 ½"	15' - 8 ¼"
40 FEET															4' - 10 ¾"	19' - 8 ¼"

INTERMEDIATE RADII CAN BE INTERPOLATED
DIMENSION "Y" IS CALCULATED BASED ON 6'-0" RAMP LENGTH
DIMENSION "X" IS CALCULATED BASED ON 5'-0" SIDEWALK WIDTH



SECTION C - C FOR TYPE 4B

LEGEND

- ½" EXPANSION JOINT SIDEWALK
- CONTRACTION JOINT SIDEWALK
- PAVEMENT MARKING CROSSWALK (WHITE)
- * MAXIMUM 2.1% SLOPE IN ALL DIRECTIONS IF FRONT OF GRADE BREAK
- ++ CONSTRUCT 6" WEDGE TO AVOID CONCRETE BREAKAGE

GENERAL NOTES

AVOID PLACING DRAINAGE STRUCTURES, JUNCTION BOXES OR OTHER OBSTRUCTIONS IN FRONT OF CURB RAMP ACCESS AREAS.

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.

DETECTABLE WARNING FIELDS THAT ARE INSTALLED AS A GROUP OR SIDE BY SIDE, SHALL BE FROM THE SAME MANUFACTURER.

(2) GRADE CHANGE BETWEEN GUTTER COUNTER SLOPE AND THE CURB RAMP SLOPE IS DESIRABLY 11% OR LESS AND SHALL NOT EXCEED 13.3%. TYPICAL GUTTER COUNTER SLOPE IS 4% BUT MAY BE MODIFIED TO FIT FIELD CONDITIONS. PROVIDE LONGITUDINAL DRAINAGE AROUND CURB AND AWAY FROM CURB RAMP. NO VERTICAL LIPS OR DISCONTINUITIES ARE ALLOWED. SLOPE OF CURB HEAD OPENING SHALL MATCH THE RAMP SLOPE, MINIMALLY 1.5%, DESIRABLY 7% OR LESS, AND SHALL NOT EXCEED A MAXIMUM OF 8.3%. WHEN ADJACENT TO 1.5% LANDING, CONSTRUCT CURB HEAD OPENING AT 1.5% IN THE DIRECTION OF PEDESTRIAN TRAVEL.

(3) MAXIMUM 8.3% CURB RAMP SLOPE IS ALLOWABLE WITH GUTTER COUNTER SLOPE OF 5% MAXIMUM AND A 13.3% MAXIMUM GRADE CHANGE.

(4) ±0.5% CONSTRUCTION TOLERANCE IN SIDEWALK CROSS SLOPE. THE SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2.1% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

(7) WHEN THIS GRADE BREAK DISTANCE EXCEEDS 5 FEET, USE RADIAL DETECTABLE WARNING FIELD PER SDD 8D5-f.

(8) PROVIDE GRADE BREAK PERPENDICULAR TO DIRECTION OF WHEELCHAIR TRAVEL.

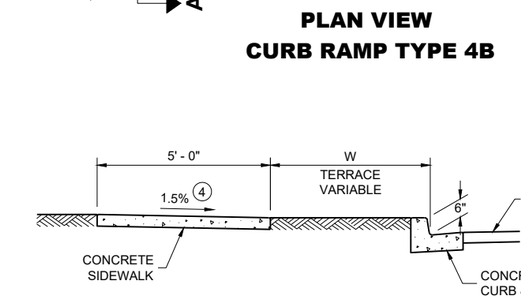
(10) INSTALL TRANSITION NOSE (INCIDENTAL TO OTHER PAY ITEMS). DO NOT MARK TRANSITION NOSE.

(17) A MAXIMUM 2-INCH CONCRETE BORDER IS PERMITTED ALONG ALL SIDES OF THE DETECTABLE WARNING FIELD SURFACE.

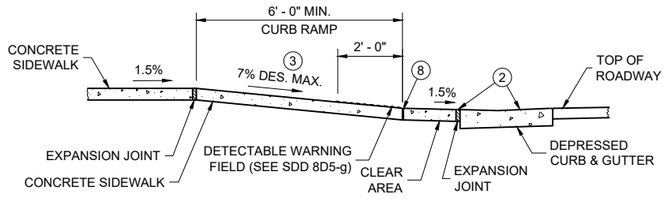
(20) MAXIMUM 1.5% DESIGN MAXIMUM AND 2.1% PROWAG MAXIMUM RUNNING SLOPE ON CLEAR AREA. CROSS SLOPE OF CLEAR AREA SHALL MATCH THE CROSS SLOPE OF THE ADJACENT CROSSWALK.

(22) THE ENTIRE RAMP SHALL BE A PLANAR SURFACE. DO NOT WARP THE RUNNING SLOPE OR CROSS SLOPE OF THE RAMP. WARPING OF THE SIDEWALK CROSS SLOPE SHALL TAKE PLACE BETWEEN THE LANDING AND MATCH POINT.

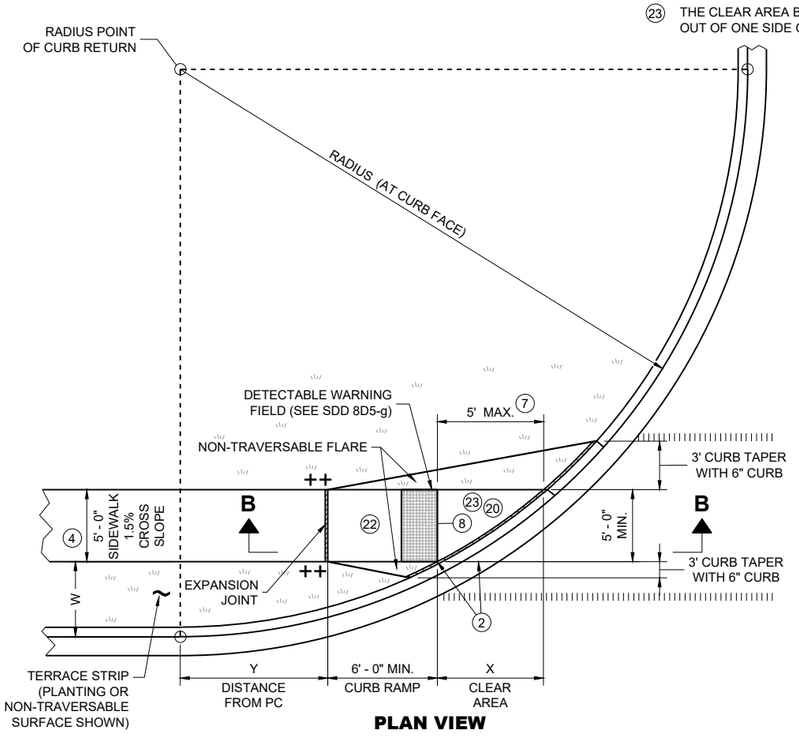
(23) THE CLEAR AREA BETWEEN THE BOTTOM OF RAMP AND BACK OF CURB SHALL BE SLOPED SO THAT WATER DRAINS OUT OF ONE SIDE OR BOTH SIDES OF THE CURB OPENING.



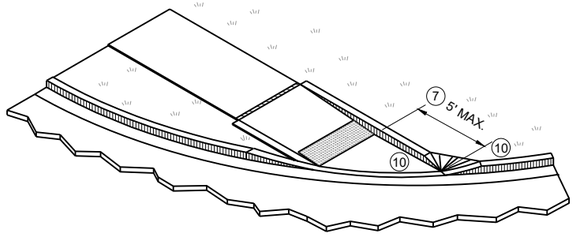
SECTION A - A FOR TYPE 4B



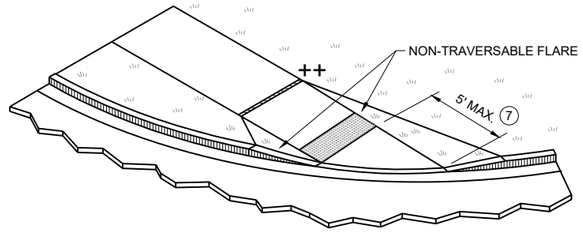
SECTION B - B FOR TYPE 4B AND TYPE 4B1



PLAN VIEW
CURB RAMP TYPE 4B1



ISOMETRIC VIEW FOR TYPE 4B



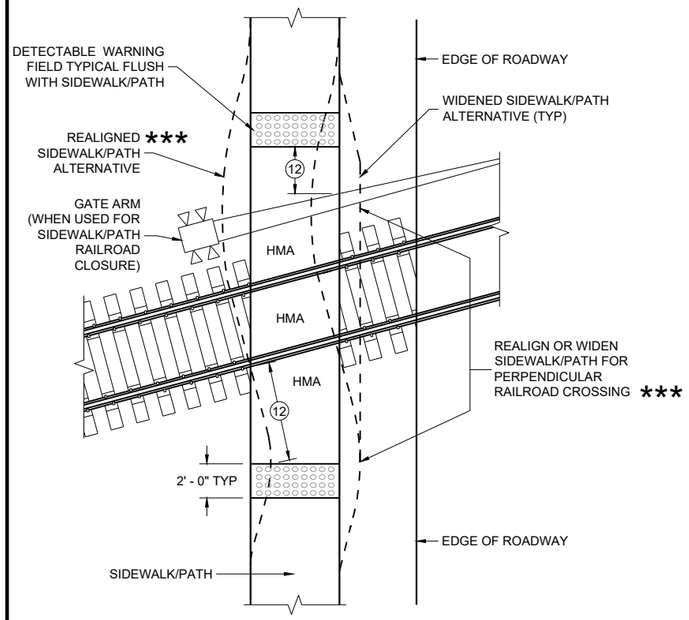
ISOMETRIC VIEW FOR TYPE 4B1

CURB RAMPS
TYPE 4B AND 4B1

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

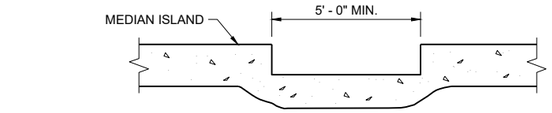
6

SDD 08D05-22d

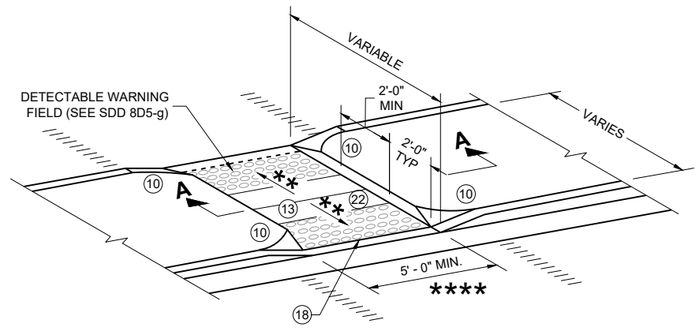


CURB RAMP TYPE 8

DETECTABLE WARNINGS FOR SIDEWALKS OR SHARED USE PATHS AT RAILROAD CROSSINGS



SECTION A - A FOR TYPE 5



CURB RAMP TYPE 5

MEDIAN ISLAND NON-ELEVATED PEDESTRIAN CROSSING

GENERAL NOTES

AVOID PLACING DRAINAGE STRUCTURES, JUNCTION BOXES OR OTHER OBSTRUCTIONS IN FRONT OF CURB RAMP ACCESS AREAS.

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.

SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2.1%.

DETECTABLE WARNING FIELDS THAT ARE INSTALLED AS A GROUP OR SIDE BY SIDE, SHALL BE FROM THE SAME MANUFACTURER.

(2) GRADE CHANGE BETWEEN GUTTER COUNTER SLOPE AND THE CURB RAMP SLOPE IS DESIRABLY 11% OR LESS AND SHALL NOT EXCEED 13.3%. TYPICAL GUTTER COUNTER SLOPE IS 4% BUT MAY BE MODIFIED TO FIT FIELD CONDITIONS. PROVIDE LONGITUDINAL DRAINAGE AROUND CURB AND AWAY FROM CURB RAMP. NO VERTICAL LIPS OR DISCONTINUITIES ARE ALLOWED. SLOPE OF CURB HEAD OPENING SHALL MATCH THE RAMP SLOPE, MINIMALLY 1.5%, DESIRABLY 7% OR LESS, AND SHALL NOT EXCEED A MAXIMUM OF 8.3%. WHEN ADJACENT TO 1.5% LANDING, CONSTRUCT CURB HEAD OPENING AT 1.5% IN THE DIRECTION OF PEDESTRIAN TRAVEL.

(3) MAXIMUM 8.3% CURB RAMP SLOPE IS ALLOWABLE WITH GUTTER COUNTER SLOPE OF 5% MAXIMUM AND A 13.3% MAXIMUM GRADE CHANGE.

(4) ±0.5% CONSTRUCTION TOLERANCE IN SIDEWALK CROSS SLOPE. THE SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2.1% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

(6) PROVIDE A 5 FOOT BY 5 FOOT LANDING. SLOPE PERPENDICULAR TO CURB SHALL BE 2.1% MAXIMUM. SLOPE PARALLEL TO CURB SHALL MATCH THE CURB AND GUTTER LONGITUDINAL SLOPE.

(10) INSTALL TRANSITION NOSE (INCIDENTAL TO OTHER PAY ITEMS). DO NOT MARK TRANSITION NOSE.

(11) SLOPE SIDEWALK TOWARD LANDING AS SHOWN WHERE THERE IS NO TERRACE OR WHERE THE TERRACE WIDTH IS LESS THAN 6 FEET WIDE.

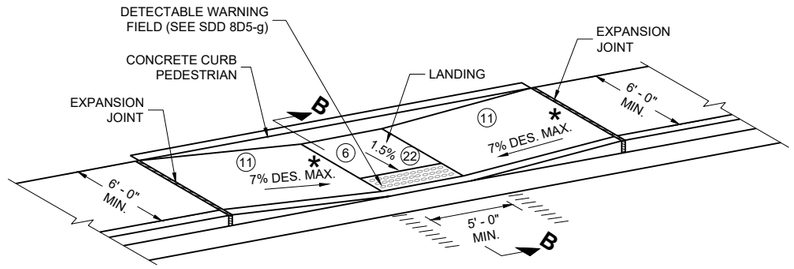
(12) THE EDGE OF THE DETECTABLE WARNING FIELD NEAREST TO A RAILROAD CROSSING SHALL BE 1.5 FEET ±0.1' FROM THE FACE OF THE GATE ARM IF THE GATE ARM EXTENDS ACROSS THE SIDEWALK/PATH, WHERE THERE IS NO PEDESTRIAN GATE, THE EDGE OF THE DETECTABLE WARNING FIELD NEAREST TO THE RAILROAD TRACK IS 15 FEET MAXIMUM AND 12 FEET MINIMUM, 15 FEET TYPICAL FROM THE NEAREST RAIL.

(13) DO NOT INSTALL DETECTABLE WARNING FIELDS AT THE EDGES OF STEET-LEVEL PEDESTRIAN REFUGE ISLANDS IF A MINIMUM 2 FOOT CONCRETE SURFACE WITHOUT DETECTABLE WARNINGS (MEASURED IN THE DIRECTION OF PEDESTRIAN TRAVEL) CANNOT BE ACHIEVED.

(17) A MAXIMUM 2-INCH CONCRETE BORDER IS PERMITTED ALONG ALL SIDES OF THE DETECTABLE WARNING FIELD SURFACE.

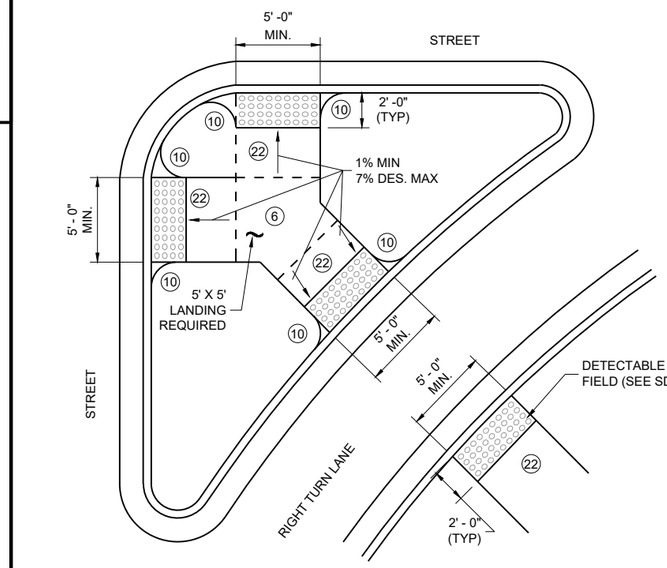
(18) WHEN THE DISTANCE BETWEEN THE BACK OF CURBS IS LESS THAN 6 FEET BUT THE FACE OF CURB TO FACE OF CURB DISTANCE IS 6 FEET OR GREATER THEN THE DETECTABLE WARNING FIELDS MAY BE MOVED SO THAT THE EDGE OF THE WARNING FIELD IS PLACED AT THE GUTTER FLOWLINE. MAINTAIN A MINIMUM OF TWO FEET BETWEEN DETECTABLE WARNING FIELD PANELS.

(22) THE ENTIRE RAMP SHALL BE A PLANAR SURFACE. DO NOT WARP THE RUNNING SLOPE OR CROSS SLOPE OF THE RAMP. WARPING OF THE SIDEWALK CROSS SLOPE SHALL TAKE PLACE BETWEEN THE LANDING AND MATCH POINT.



CURB RAMP TYPE 7A

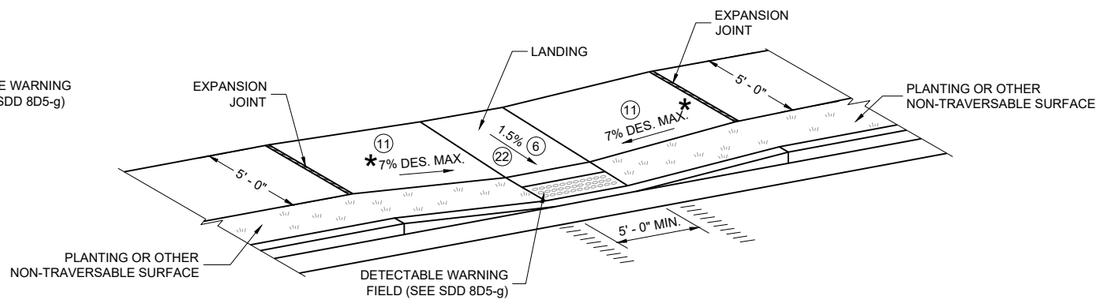
FOR INTERSECTIONS AND MID BLOCK CROSSINGS



CURB RAMP TYPE 6

DETECTABLE WARNING AT ISLANDS

REFER TO GENERAL NOTES (2) AND (3) FOR ALL ISLAND CURB RAMPS

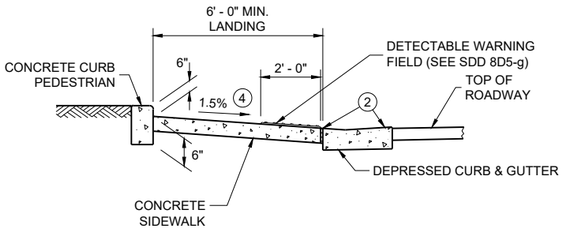


CURB RAMP TYPE 7B

FOR INTERSECTIONS AND MID BLOCK CROSSINGS

LEGEND

- ½" EXPANSION JOINT SIDEWALK
- CONTRACTION JOINT FIELD LOCATED
- PAVEMENT MARKING CROSSWALK (WHITE)
- * MAXIMUM 8.3%
- ** 1% MINIMUM (PROVIDE DRAINAGE)
- *** DETAILS TO BE DETERMINED BY ENGINEER
- **** FOR SHARED USE PATHS, WIDTH MUST BE AS WIDE AS THE CROSSWALK



SECTION B - B FOR TYPE 7A

CURB RAMPS
TYPE 5, 6, 7A, 7B & 8

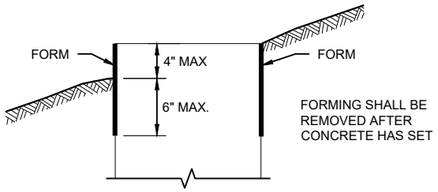
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

SDD 08D05-22e

SDD 9C2 Concrete Bases, Types 1, 2, 5 & 6

FORM DEPTH SHALL BE NO MORE THAN 6" BELOW GRADE ON THE LOWER SIDE OF BASE



FORMING DETAIL

QUANTITY REQUIREMENTS	CONCRETE BASE TYPE		
	1	2	5 & 6
APPROX. CUBIC YARDS OF CONCRETE	0.40	0.57	0.40
LBS. OF HOOP BAR STEEL	NONE	23	16
LBS. OF VERTICAL BAR STEEL	NONE	60	18

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWINGSHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

BASES SHALL BE EXCAVATED BY USE OF A CIRCULAR AUGER.

TOP SURFACES OF CONCRETE BASES SHALL BE TROWEL FINISHED SMOOTH AND LEVEL.

CONDUIT SIZES AND LOCATIONS SHALL BE SHOWN ON THE PLANS

THE FINAL OR TERMINATING CONCRETE BASE IN A CONDUIT RUN SHALL HAVE A 6" EXIT STUB INSTALLED FOR FUTURE CABLING USE. THE EXIT STUB SHALL BE SIZED AS USED THROUGHOUT THE CONDUIT RUN AS SHOWN A THE ENTRANCE OF THE BASE.

ENDS OF CONDUIT INSTALLED BELOW GRADE FRO FUTURE USE SHALL BE CAPPED IF METALLIC OR PLUGGED IF NON-METALLIC.

MINIMUM BENDING RADIUS OF CONDUIT IS EQUAL TO 6X THE DIAMETER.

CONDUIT HEIGHT ABOVE CONCRETE BASES SHALL BE 1 INCH. ALL METALLIC CONDUIT ENDS SHALL BE REAMED AND THREADED.

ALL CONDUIT ENDS AT THE TOP OF CONCRETE BASES SHALL BE CAPPED IF METALLIC OR PLUGGED IF NON-METALLIC IMMEDIATELY AFTER PLACEMENT AND BEFORE CONCRETE IS POURED. CONDUITS IN WHICH WIRE OR CABLE IS NOT INSTALLED SHALL REMAIN CAPPED OR PLUGGED.

BELL ENDS SHALL BE INSTALLED ON ALL PVC CONDUIT EXPOSED AT THE TOP OF CONCRETE BASES BEFORE INSTALLATION.

WHEN REQUIRED TO CONNECT NON-METALLIC CONDUIT TO METALLIC CONDUIT, ONLY ADAPTER FITTINGS, U.L. LISTED FOR ELECTRICAL USE, SHALL BE USED.

IF A BASE REQUIRES A DEEP FORM BECAUSE OF LOOSE DIRT OR FILL, THE FORM SHALL BE REMOVED BEFORE BACKFILLING AROUND THE BASE. BACKFILL SHALL BE TAMPED TIGHT AGAINST THE BARE CONCRETE BASE IN LAYERS OF 1 FOOT OR LESS.

A NO. 4 AWG STRANDED COPPER EQUIPMENT GROUNDING CONDUCTOR SHALL BE EXOTHERMICALLY WELDED TO THE EQUIPMENT GROUNDING ELECTRODE (GROUND ROD) FOR TYPE 2, TYPE 5 AND TYPE 6 BASES.

THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE FURNISHED AND INSTALLED TO ENTER ALL BASE TYPES THROUGH A 1 INCH CONDUIT INSTALLED FOR GROUNDING PURPOSES, LEAVING A 4 FOOT COIL OF WIRE ABOVE THE CONCRETE BASE. THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE NEATLY COILED AND THE COILS TIED TOGETHER.

ANCHOR RODS SHALL BE THREADED 12" IN LENGTH ON EACH END OF THE ROD. ANCHOR RODS SHALL BE MANUFACTURED IN ACCORDANCE WITH SECTION 654.2.1 OF THE STANDARD SPECIFICATIONS.

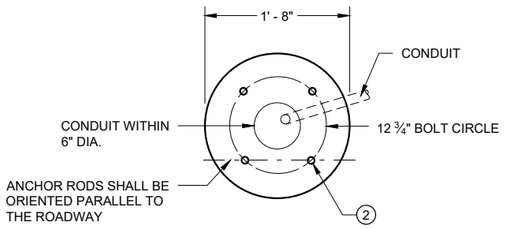
WASHERS AND LOCK WASHERS ARE REQUIRED ON ALL ANCHOR RODS.

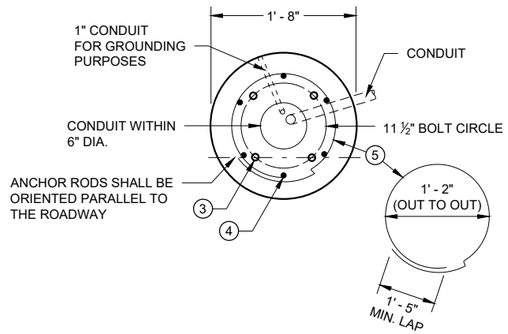
WHEN ANCHOR RODS USING THE ALTERNATE "L" BEND ARE FURNISHED, THE 4 INCH"L" BEND SHALL BE IN ADDITION TO THE SPECIFIED ANCHOR ROD BAR LENGTH. THE "L" BEND SHALL NOT BE THREADED.

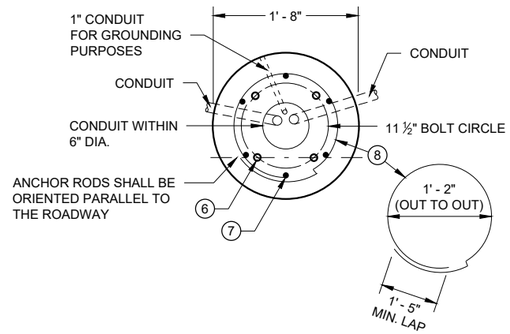
ANCHOR RODS SHALL BE INSTALLED WITH MISALIGNMENTS OF LESS THAN 1:40 FROM VERTICAL.

WELDING OF THE ANCHOR RODS TO THE CAGE IS UNACCEPTABLE. TIE WIRES SHALL BE USED.

BAR STEEL REINFORCEMENT SHALL BE COATED WITH POWDERED EPOXY RESIN IN ACCORDANCE WITH SECTION 505 OF THE STANDARD SPECIFICATIONS (LATEST EDITION).







1 THE MINIMUM DEPTH OF CONDUIT EXITING THE CONCRETE BASE AND INSTALLED BELOW THE TRAVELED WAY SHALL BE 24 INCHES. THE MINIMUM DEPTH OF CONDUIT EXITING THE CONCRETE BASE THAT IS NOT INSTALLED BELOW THE TRAVELED WAY SHALL BE 18 INCHES. THE MAXIMUM DEPTH OF ALL CONDUIT SHALL BE 36 INCHES EXCEPT WITH WRITTEN APPROVAL OF THE ENGINEER.

2 (4) 1" DIA. X 3' - 6" ANCHOR RODS.

3 (4) 1" DIA. X 5' - 0" ANCHOR RODS.

4 (6) NO. 6 X 6' - 8" BAR STEEL REINFORCEMENT.

5 (7) NO. 4 X 5' - 1" BAR STEEL REINFORCEMENT @ 1' - 0" C - C.

6 (4) 1" DIA. X 3' - 6" ANCHOR RODS.

7 (6) NO. 4 X 4' - 8" BAR STEEL REINFORCEMENT.

8 (5) NO. 4 X 5' - 1" BAR STELL REINFORCEMENT @ 1' - 0" C -C.

9 EXOTHERMIC CONNECTION TO EUIPMENT GROUNDING CONDUCTOR

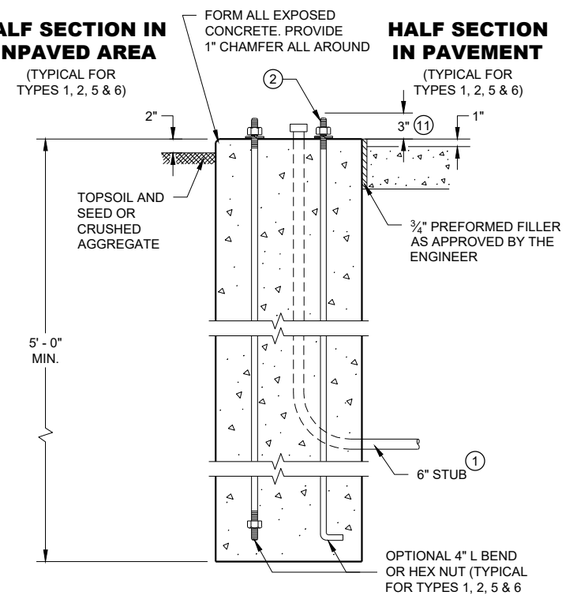
10 ⅝" DIA. X 8' -0" COPPERCLAD EQUIPMENT GROUNDING ELECTRODE REQUIRED

11 ANY ANCHOR ROD PROJECTION SHORTER THAN 2 ¾" OR LONGER THAN 3 ¼" SHALL REQUIRE THE BASE TO BE REMOVED AND REPLACED AT THE CONTRACTORS EXPENSE.

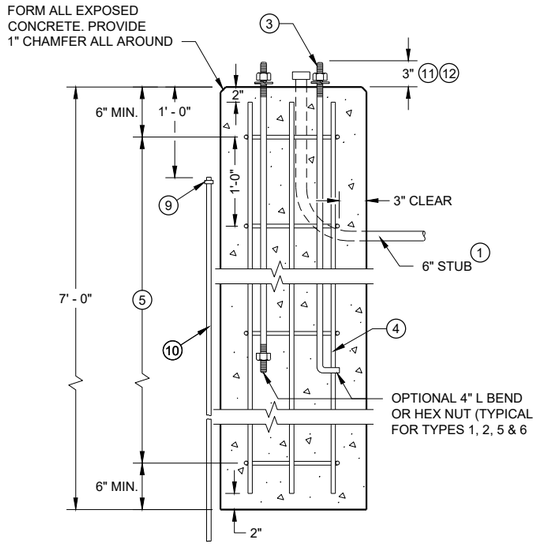
12 FOR NON - BREAKAWAY INSTALLATIONS, 4 ½" ± ANCHOR ROD PROJECTION WITH THE USE OF LEVELING NUTS. RODENT SCREEN REQUIRED.

HALF SECTION IN UNPAVED AREA
(TYPICAL FOR TYPES 1, 2, 5 & 6)

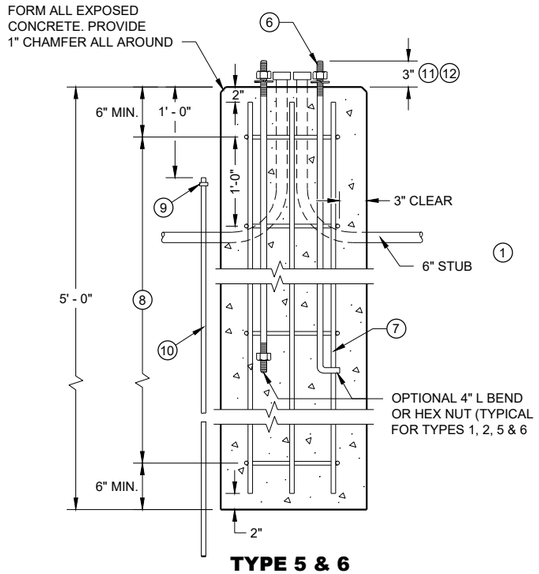
HALF SECTION IN PAVEMENT
(TYPICAL FOR TYPES 1, 2, 5 & 6)



TYPE 1



TYPE 2



TYPE 5 & 6

CONCRETE BASES

CONCRETE BASES TYPES 1, 2, 5, & 6

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2019
DATE

/S/ Ahmet Demirbilek
STATE ELECTRICAL ENGINEER

FHWA

SDD 09C02 - 09

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

FOUR (4) BOLTS SHALL BE FURNISHED WITH EACH TRANSFORMER BASE. BOLTS SHALL BE 1" DIAMETER, 4" IN LENGTH, WITH WASHERS, LOCK WASHERS AND NUTS. BOLTS, NUTS AND WASHERS SHALL BE MANUFACTURED IN ACCORDANCE WITH SECTION 531.2.2 OF THE STANDARD SPECIFICATIONS.

LEVELING SHIMS, IF NEEDED, SHALL BE DESIGNED FOR THE PURPOSE AND USED UNDER CAST BASES WHEN PLUMBING POLES OR STANDARDS DURING INSTALLATION. THE USE OF WASHERS IN LIEU OF PROPER LEVELING SHIMS IS NOT ACCEPTABLE.

SHIM LENGTH SHALL BE LONG ENOUGH TO COMPLETELY COVER THE AREA UNDER THE LENGTH AND WIDTH OF THE BASE MOUNTING FLANGE.

DOUBLE NUTTING IS NOT ACCEPTABLE FOR LEVELING OR MOUNTING PURPOSES.

A NEMA APPROVED, U.L. LISTED, COPPER WITH BRASS OR STAINLESS STEEL SET SCREW, DIRECT BURY RATED, MECHANICAL CONNECTOR (LUG), SIZED TO ACCEPT AWG. #10 TO #4 COPPER STRANDED WIRE SHALL BE FURNISHED AND INSTALLED IN THE PEDESTAL AND TRANSFORMER BASES.

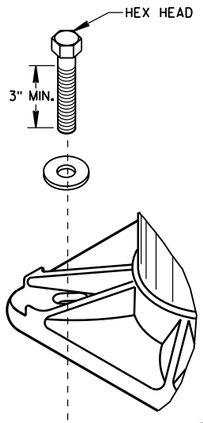
THE MECHANICAL CONNECTOR SHALL BE INSTALLED USING A 1/4" - 20 (TPI) STAINLESS STEEL HEX HEAD BOLT OF SUFFICIENT LENGTH TO FIRMLY ATTACH THE LUG TO THE BASE.

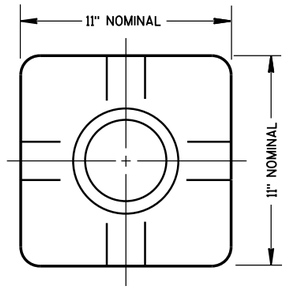
SHOULD THE MANNER OF ATTACHMENT OF THE LUG REQUIRE WASHERS, HEX NUTS, LOCK WASHER - THEY SHALL BE STAINLESS STEEL AS IS THE BOLT. THE MANNER OF ATTACHMENT SHALL NOT BLOCK ACCESSIBILITY TO WIRE PLACEMENT IN THE CONNECTOR.

PEDESTAL BASE COLLAR THREADING SHALL BE TAPERED AND IN ACCORDANCE WITH NATIONAL PIPE THREADING DIMENSIONS.

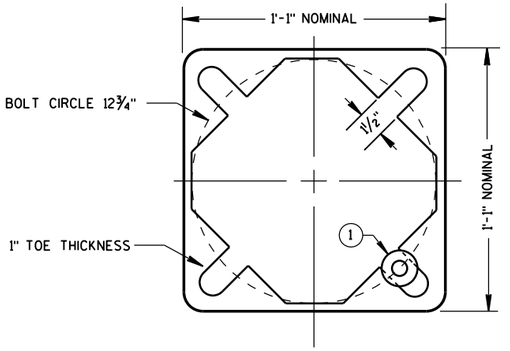
BASE COLLAR THREADING SHALL EXTEND INTO THE BASE COLLAR WITH SUFFICIENT DEPTH TO ACCEPT THE INSTALLATION OF TRAFFIC SIGNAL STANDARDS TO A DEPTH OF 1 1/2", THEN TIGHTENING TO A POINT OF BEING IMMOVABLE.

THE ACCESS DOOR SHALL BE OF THE SAME MATERIAL AS THE BASE.

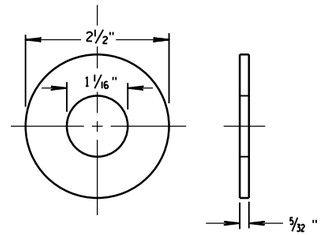




TOP VIEW
(PEDESTAL BASE)

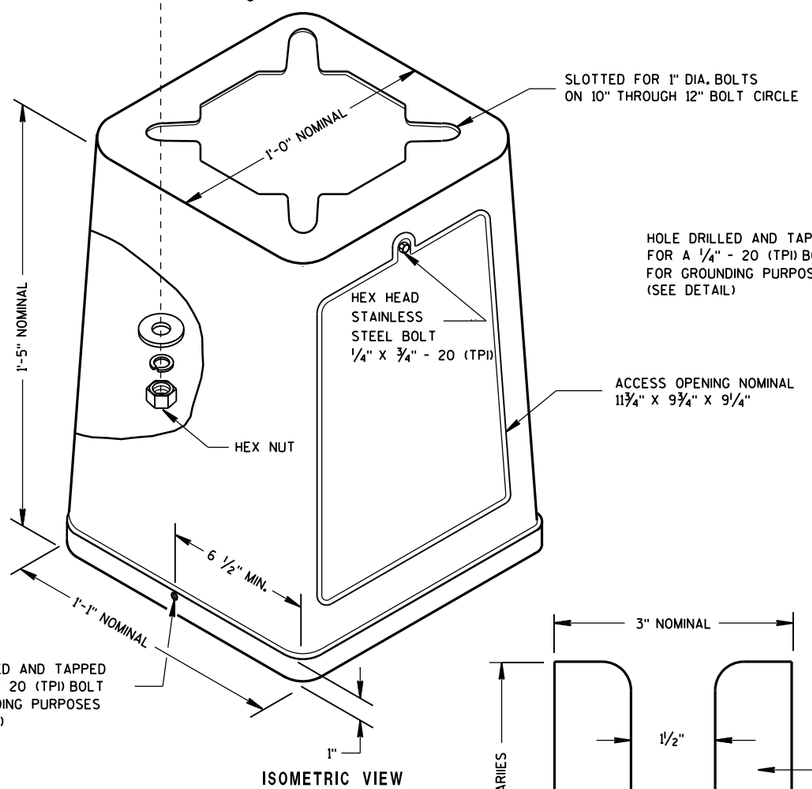


BOTTOM VIEW
(PEDESTAL BASE)

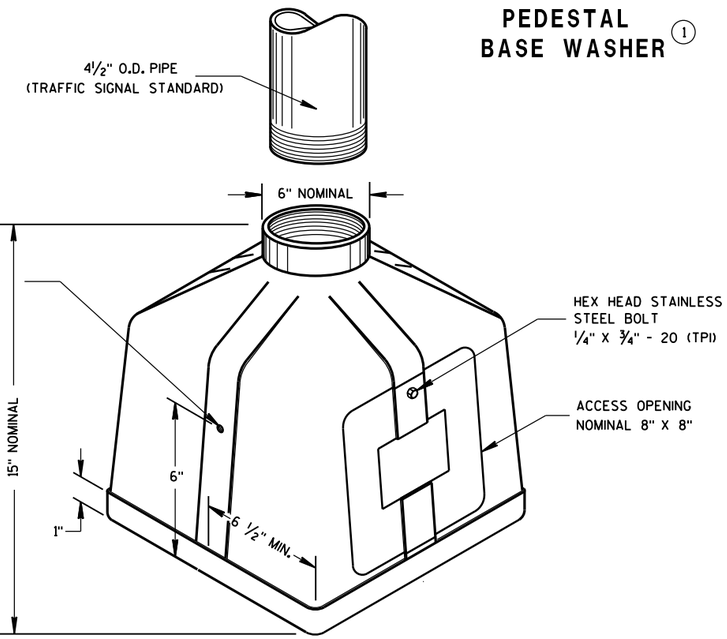


ZINC COATED STEEL WASHER
TO BE PROVIDED BY THE CONTRACTOR

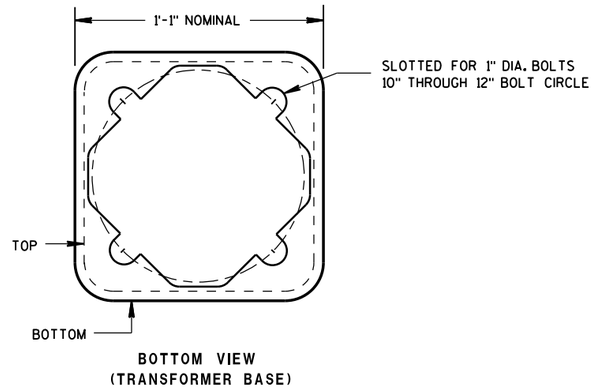
PEDESTAL BASE WASHER (1)



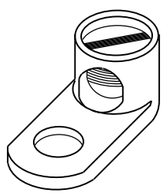
ISOMETRIC VIEW



ISOMETRIC VIEW
PEDESTAL BASE

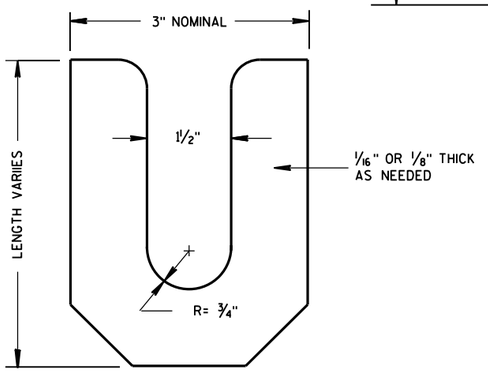


BOTTOM VIEW
(TRANSFORMER BASE)



TYPICAL MECHANICAL CONNECTOR LUG
TO BE FURNISHED WITH EACH BASE

TRANSFORMER BASE
INTENDED FOR USE WITH TYPE 2, 3, 4, 5 & 6 POLES



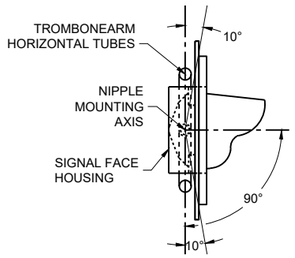
LEVELING SHIM

TRANSFORMER/PEDESTAL BASES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
Sept. 2014 — DATE
/S/ Ahmet Demirbilek — STATE ELECTRICAL ENGINEER
FHWA

6
SDD 9C 3-4

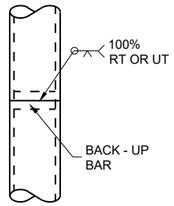


SECTION A-A

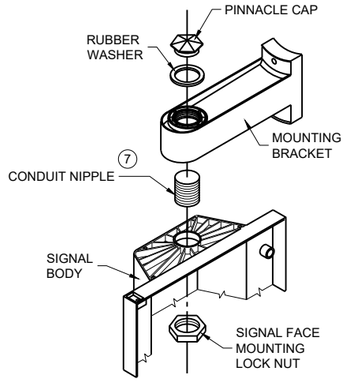
(10 DEGREES TILT REQUIREMENT OF FACE(S) IN THE TROMBONE MOUNTING)

FOR MANUFACTURERS USE ONLY

WELD TO BE 100% R.T. OR U.T. TESTED AS PER THE REQUIREMENTS OF AWS D 1.5-88. RECORDS OF COMPLIANCE OF SUCH TESTING SHALL BE FURNISHED TO THE OFFICE OF DESIGN / BRIDGE FOR VERIFICATION AND APPROVAL.



POLE SPLICE DETAIL



SIGNAL FACE MOUNTING DETAIL

(BANDED)

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THEPERTINENT REQUIREMENTS OF THE CONTRACT.

POLES SHALL BE EITHER ALUMINUM OR GALVANIZED STEEL AS CALLED FOR IN THE CONTRACT.

SECTION 657, POLES, OF THE STANDARD SPECIFICATIONS SHALL APPLY TO THIS DRAWING.

A PULL WIRE / ROPE SHALL BE INSTALLED IN EACH TROMBONE ARM RACEWAY DURING THE MANUFACTURING PROCESS.

TYPE 2 ALUMINUM POLES SHALL BE CONSTRUCTED OF 6063 - T6 ALUMINUM ALLOY. SLEEVING INSIDE THE POLE IS NOT ACCEPTABLE.

WHEN TRANSFORMER BASES ARE USED, WIRE CONNECTIONS SHALL BE MADE IN THE TRANSFORMER BASE.

(1) 4" X 6" REINFORCED HANDHOLE AND COVER ASSEMBLY WITH TWO (2) ¼"X¾" - 20 TPI , STAINLESS STEEL, HEX HEAD BOLTS.

(2) SIGNAL FACE MOUNTING BRACKETS. MOUNT WITH CAP SCREWS AND BANDING.

(3) GROMMETS. 1" CHASE NIPPLES OR 1" CLOSE CONDUIT NIPPLES WITH BUSHINGS SHALL BE PROVIDED FOR 1 ⅜" HOLE IN POLE SHAFT FOR WIRING.

(4) SECURELY MOUNT DULL BLACK POLYCARBONATE BACK PLATES, PROJECTING 5" BEYOND ALL SIDES OF THE SIGNAL FACE HOUSING,PER MANUFACTURER'S RECOMMENDATIONS.

(5) POLE MOUNTED SIGNAL FACES SHALL REQUIRE ONE OR MORE MOUNTING SPACERS UNDER THE TOP MOUNTING BRACKET(S) AS REQUIRED, TO PLUMB THE SIGNAL FACES.

(6) CAST ALUMINUM TRANSFORMER BASE.

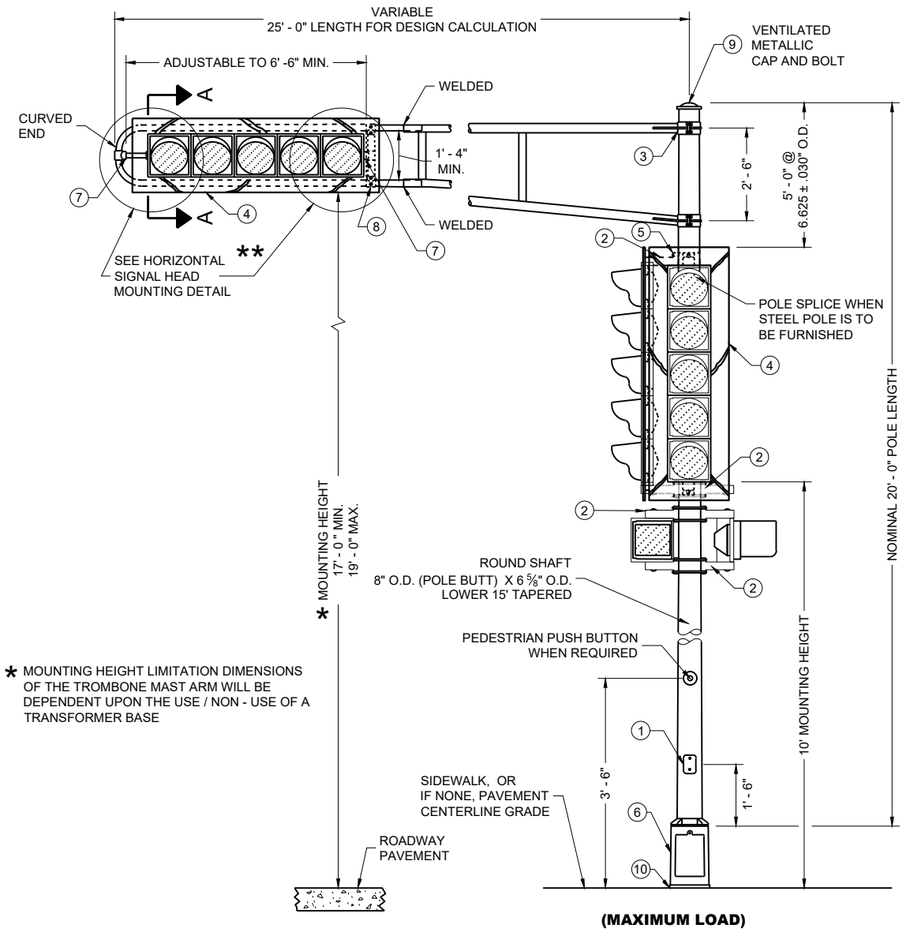
(7) USE 1 ½" ID NIPPLES ZINC-COATED RIGID METAL CONDUIT, LONG ENOUGH TO ACCOMMODATE FULL DEPTH THREADING INTO THE HEAD MOUNTING LOCK NUT IN ORDER TO TIGHTEN THE FACE, BUT THAT DO NOT INTERFERE WITH REFLECTOR CLOSURE. THREAD THE NIPPLE INTO THE MOUNTING BRACKET/ELBOW UNTIL TIGHT. USE APPROVED PINNACLE TYPE HARDWARE FROM A DEPARTMENT APPROVED MANUFACTURER TO CLOSE THE UNUSED 1 ½" OPENING IN SIGNAL FACES AND BRACKET ENDS.

(8) VERTICAL STRUT (ADJUSTABLE). ONE (1) SET SCREW (¼"X¾" - 20 TPI STAINLESS STEEL, HEX HEAD) INTO EACH ARM MEMBER IF STRUTS THE SLIDING TYPE.

(9) FURNISH AND INSTALL VENTILATED, CAST METALLIC (ALUMINUM ALLOY) CAPS. FASTEN CAPS WITH ONE (1) - 20 TPI STAINLESS STEEL, HEX HEAD BOLT.

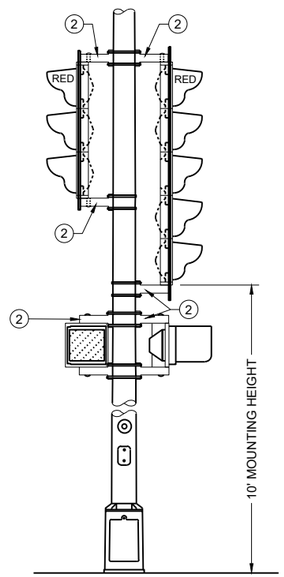
(10) SHIMMING, IF NEEDED, SHALL BE LOCATED BETWEEN THE CONCRETE FOUNDATION AND THE TRANSFORMER BASE.

(11) USE SERRATED LOCK WASHERS WITH NOTCHES BETWEEN END TEE AND SIGNAL HEAD.

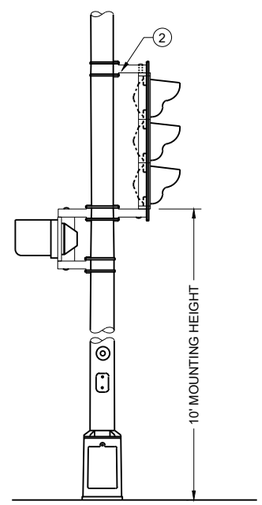


* MOUNTING HEIGHT LIMITATION DIMENSIONS OF THE TROMBONE MAST ARM WILL BE DEPENDENT UPON THE USE / NON - USE OF A TRANSFORMER BASE

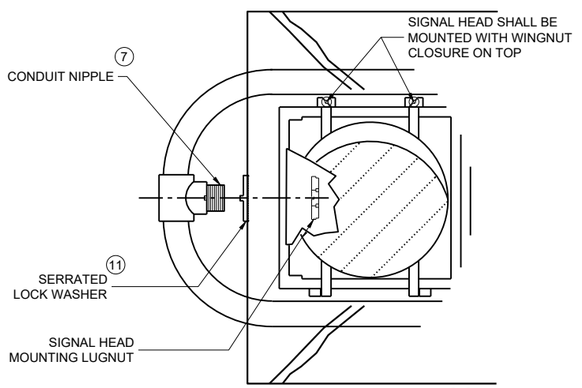
(MAXIMUM LOAD)



TYPICAL MOUNTING OF BACK TO BACK 3 AND 5 SECTION SIGNAL FACES



TYPICAL MOUNTING OF 3 SECTION SIGNAL FACE



HORIZONTAL SIGNAL HEAD ** MOUNTING DETAIL

** SIGNAL HEAD ATTACHMENT ALSO APPLIES TO MOUNTING AT CROSS BAR

TYPE 2 POLE MOUNTING CONFIGURATION

POLE MOUNTINGS FOR TRAFFIC SIGNALS TYPE 2

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

SDD 09E01-17a

Becher-Hoppe Associates, Inc.			Opinion of Probable Costs			Date:	12-Sep-25
			Eagle River Revitalization Committee			BHA Project No.:	
			USH 45 Crossing			Prepared By:	AJW
(715) 845-8000			2025.024			Checked By:	
Item No.	WisDOT REF	Project Manual Section	Item Description	Estimated Quantity	Unit	Unit Cost	Total Cost
1	204.0150	-	Removing Curb and Gutter	80	LF	$20.00	$1,600.00
2	204.0155	-	Removing Sidewalk	253	SY	$15.00	$3,788.33
3	205.0100	-	Excavation Common	259	CY	$25.00	$6,481.48
4	305.0110	-	Base Aggregate Dense 3/4 Inch	59	TON	$35.00	$2,079.75
5	305.0120	-	Base Aggregate Dense 1 1/4 Inch	289	TON	$25.00	$7,231.65
6	455.0605	-	Tack Coat	28	GAS	$4.00	$112.00
7	460.5223	-	HMA Pavement 3 LT 58-28-S	52	TON	$150.00	$7,762.50
8	460.5245	-	HMA Pavement 5 LT 58-34 S	29	TON	$200.00	$5,750.00
9	601.0407		Concrete Curb & Gutter 18-Inch Type D	36	LF	$50.00	$1,800.00
10	601.0419	-	Concrete Curb & Gutter 30-Inch Type L	44	LF	$40.00	$1,760.00
11	602.0415	-	Concrete Sidewalk 6-inch	645	SF	$20.00	$12,900.00
12	602.0505	-	Curb Ramp Detectable Warning Field, Yellow	100	SF	$60.00	$6,000.00
13	602.0605	-	Curb Ramp Detectable Warning Field Radial Yellow	30	SF	$70.00	$2,100.00
14	611.9710	-	Salvaged Inlet Covers	2	EA	$750.00	$1,500.00
15	616.03XX		Gate	2	EA	$3,000.00	$6,000.00
16	619.1000	-	Mobilization	1	EA	$7,500.00	$7,500.00
17	625.0500	-	Salvaged Topsoil	294	SY	$4.00	$1,177.78
18	628.2102	-	Moving Signs Type II	1	EA	$500.00	$500.00
19	628.1905	-	Mobilizations Erosion Control	1	EA	$400.00	$400.00
20	628.1910	-	Mobilizations Emergency Erosion Control	1	EA	$200.00	$200.00
21	627.0200	-	Mulching	294	SY	$1.50	$441.67
22	628.7015	-	Inlet Protection, Type C	10	EA	$60.00	$600.00
23	629.0210	-	Fertilizer Type B	0.2	CWT	$150.00	$27.83
24	630.0140	-	Seeding Mixture No. 40	8.0	LB	$25.00	$198.75
25	634.0616	-	Posts Wood 4x6-inch x 16-ft	7	EA	$110.00	$770.00
26	637.xxxx	-	Signs	143	SF	$40.00	$5,724.17
27	643.5000	-	Traffic Control (Both Stages)	1	EA	$12,500.00	$12,500.00
28	646.7420	-	Marking Crosswalk Epoxy Trnasverse Line 6-Inch	100	LF	$15.00	$1,500.00
29	654.0101		Concrete Bases Type 1	7	EACH	$1,500.00	$10,500.00
30	657.0305		Poles Type 2	2	EACH	$3,000.00	$6,000.00
31	657.0420		Traffic Signal Standards Aluminum 13-FT	1	EACH	$600.00	$600.00
32	657.0595		Trombone Arms 25-FT	2	EACH	$2,500.00	$5,000.00
33	SPV	-	Protective Thermoplastic Coating at Snowmobile Trail	22	SY	$150.00	$3,366.67
34			Rectangular Rapid Flashing Beacon (RRFB) Wireless & Solar Powered System Station (2x flashing beacons, 1 wireless solar panel cabinet, 1 solar panel, 1 battery, 1 push button, 1 passive radar detector, 1 radio control cabinet)	2	LS	$7,000.00	$14,000.00

Item No.	WisDOT REF	Project Manual Section	Item Description	Estimated Quantity	Unit	Unit Cost	Total Cost
35		-	Rectangular Rapid Flashing Beacon (RRFB) Wireless & Solar Powered Median System Station (1 flashing beacons, 1 wireless solar panel cabinet, 1 solar panel, 1 batter, 1 push button, 1 radio control cabinet)	1	LS	$5,000.00	$5,000.00
							$142,872.56
				Construction Costs			$142,872.56
				15% Contingency			$ 21,430.88
				Project Total			$ 164,303.45

MANDATORY ALTERNATE #1

Item No.	WisDOT REF	Project Manual Section	Item Description	Estimated Quantity	Unit	Unit Cost	Total Cost
2	204.0155	-	Removing Sidewalk	164	SY	$15.00	$2,461.67
3	205.0100	-	Excavation Common	27	CY	$25.00	$683.80
5	305.0120	-	Base Aggregate Dense 1 1/4 Inch	65	TON	$25.00	$1,629.71
6	455.0605	-	Tack Coat	28	GAS	$4.00	$112.00
7	460.5223	-	HMA Pavement 3 LT 58-28-S	21	TON	$150.00	$3,184.78
8	460.5245	-	HMA Pavement 5 LT 58-34 S	12	TON	$200.00	$2,359.10
12	602.0505	-	Curb Ramp Detectable Warning Field, Yellow	10	SF	$60.00	$600.00
							$11,031.06
				Construction Costs			$11,031.06
				15% Contingency			$ 1,654.66
				Project Total			$ 12,685.71
				Project Total Plus M.A. 1			**$ 176,989.16**

Dennis Meadows
5857 Rita Lane
Cicero, NY 13039

dmeadows@americangranby.com
Cell: 315-960-1756
April 20, 2026

City Administrator
Eagle River City Council
525 E. Maple Street
P.O. Box 1269
Eagle River, WI 54521

Dear City Administrator and Members of the City Council,

I am writing in my capacity as Power of Attorney for my mother, Carol Meadows, to respectfully request consideration for the purchase of a portion of city-owned property located across from her residence at 655 N Bond.

My parents owned and resided at this property for over 30 years. During that time, they maintained access to the pier located across the road on city-owned land. This access originated through an agreement with City leadership at the time and remained in place throughout their ownership. As a result, access to the water has long been an integral part of the property's use.

We would like to request the opportunity to purchase approximately 60 feet of frontage, with a depth consistent with a prior transaction, on the city-owned strip of land located directly across from the residence to the west of the current pier. We understand that the City has previously approve a similar request, for recent sale of a comparable parcel to Cascades Investments for the purpose of installing a pier. We also understand that these access parcels are typically made available to adjacent property owners. Based on this precedent and our property's long-standing relationship with the pier access, we believe this request is both reasonable and consistent with prior Council decisions.

Our intent is to establish a clear and permanent access solution that aligns with the City's existing practices and ensures consistency in how these matters are handled.

We appreciate your time and consideration of this request. I would be happy to provide any additional information or documentation upon request.

Thank you for your consideration.

Sincerely,

Dennis Meadows – Power of Attorney for Carol Meadows

LAKE PARK ADDITION

Village of Eagle River.

24

CERTTFICATE OF SURVEY.

STATE OF WISCONSIN, MARATHON COUNTY)SS:
I,D.S.BURNETT, a duly qualified surveyor of Marathon County, State of Wisconsin,being first duly sworn on oath certify that by order and authority of Mart Hirzel and G.F.Bond, owners, of the city of Eagle River, Vilas County, State of Wisconsin, I have made a survey and map of the following described land ,to-wit;
From the Meander corner (a 6" x 6" cement stone) on the North bank of Silver Lake and on the section line between sections twenty seven (27) and twenty eight (28) in township forty (40) North, Range ten (10)East of the Fourth(4th) Principal Meridian of Wisconsin, thence north along the section line(Magnetic Variation Three (3) degreesEast) a distance of Four Hundred and forty two and 7/10 (442.7) feet and to the quarter post(a 6" x 6"cement stone) between sections twenty seven (27) and twenty eight (28), said town and range. Thence north along the section line (Magnetic Variation three (3) degrees and thirty eight (38') minutes East), a distance of seven hundred sixteen (716) feet and to the meander corner (a 6"X6" cement stone) on the South side of Yellow Birch Lake.Thence fixing a point marked "O" which is thirty five and 3/10 (35.3) South of the last named Meander corner and on a line offsetted four (4) feet to the West, I back sighted South along offsetted line, then turned an angle to the right of seventy eight (78) degrees and forty nine (49') minutes, a distance of one hundred thirty and 3/10 (130.3) feet to traverse point #1, thence by an angle to the Right of Fifty five (55) degrees and twenty seven (27') minutes, a distance of One hundred forty eight and 8/10 (148.8) feet to traverse Point #2.
Thence by an angle of thirteen degrees and forty eight (48') minutes to the Left a distance of One hundrew sixty six and 5/10 (166.5) feet to traverse point #3. Thence by an angle Left of Thirty one (31) degrees and thirty three (33') minutes, a distance of Two hundred thirty (230) feet to traverse point #4. Thence by an angle Left to the Left of Forty three (43) degrees and Fifty five (55) minutes a distance of One hundred forty seven (147) feet to traverse point #5. Thence by an angle Left of Thirteen (13) degrees and four (4) minutes a distance of Four hundred eighty two and 5 /10 (482.5) to traverse point #6 and to a point on the Westerly boundary of the platted parcel.
Thence by an angle Left of Thirty three (33) degrees and ten (10) minutes a distance of Ten hundred twenty eight (1028) feet to the Northerly boundary of Lake Shore Drive #7, thence on a Magnetic Course of South Forty three (43) East, a distance of eighty (80) feet to the water's edge of the North Shore of Silver Lake #8. Thence by an included angle to the right of Fifty five (55) degrees and four (4') Minutes, a distance of One hundred fifty two (152) feet to traverse point #9. Thence by an angle Left of One (1) degress and ten (10) minutes, a distance of Four hundred thirty five and five (435.5) feet to traverse point #10. Thence by an angle Left of Two (2) degrees and eight (8) minutes a distance of Two Hundred fifty two (252) feet to traverse point #11. Thence by an Angle Right of Ten (10) degrees and eleven (11) minutes a distance of Two hundred twenty eight (228) feet to traverse point #12. Thence by an included angle Left of Sixty eight (68) degrees and twenty five (25) minutes a distance of Two Hundred twenty (220) feet and to the point of beginning, enclosing in above described boundaries a portion of Government Lot Eight (8) all in section twenty eight (28), said town and range. The distances from all traverse points to water's edge is shown on map in all cases.The Outlots A,B,C,D,E & F are not to be considered as included within the Platted area.) I further certify that the above is a clear and concise description of the exterior boundaries of the land surveyed by me and of the subdivisions made thereof and that the attached map is a true and correct representation of said boundaries and sub divisions and that in surveying, subdividing and mapping the same I have fully complied with the provisions of Chapter One Hundred one (101) of the Revised Statutes of Wisconsin for 1913.
Signed- D.S.BURNETT, Surveyor.
Subscribed and sworn to before me this 19th day of June,1922.
H.A.Beilke, Clerk of the Circuit Court, Marathon Co,Wis.

STATE OF WISCONSIN, VILAS COUNTY)SSSS
We hereby certify that we own and have caused the land described in the foregoing certificate of D.S.Burnett, Surveyor to be surveyed and mapped as represented in the attached plat.

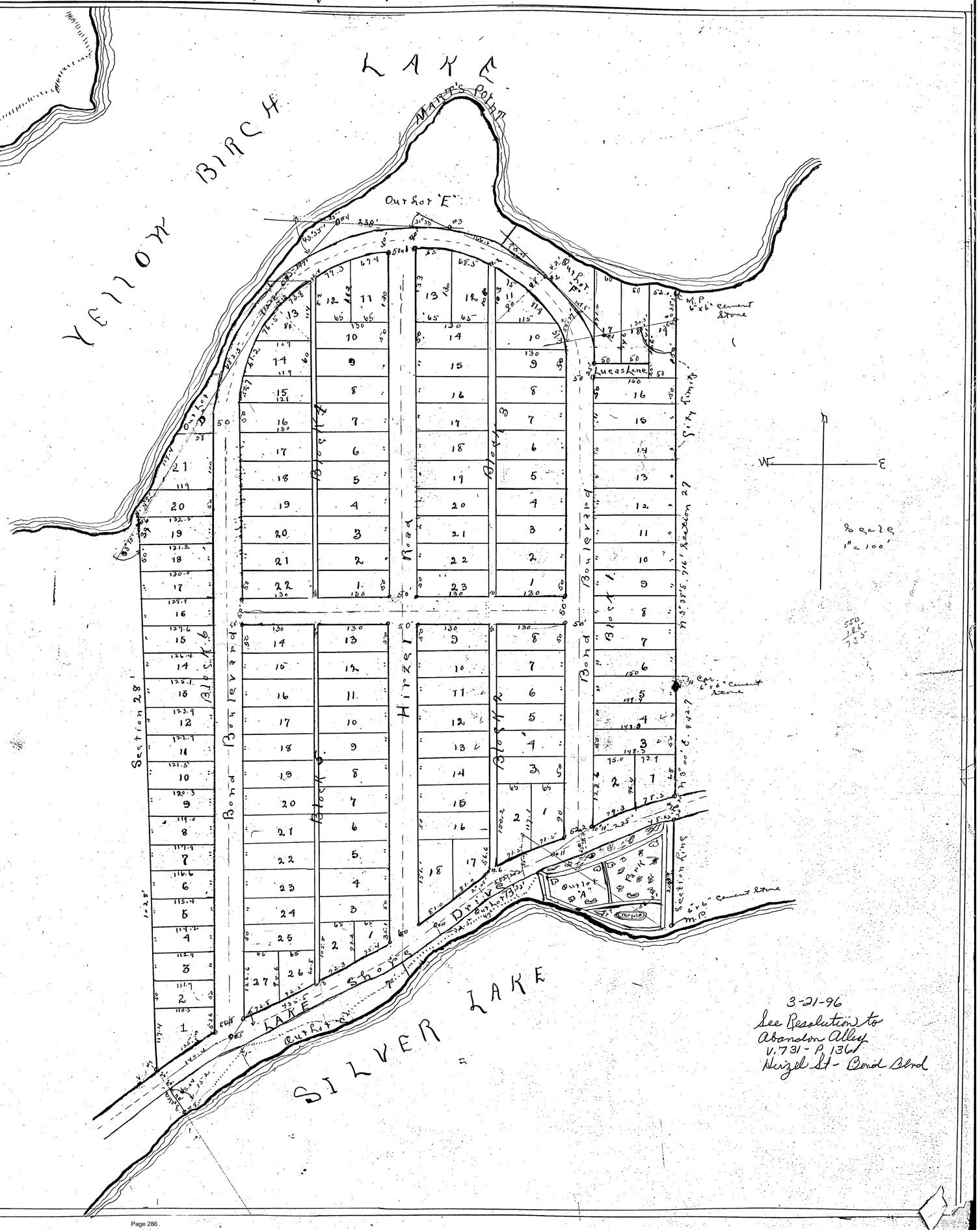
Jonas Radcliffe) WITNESSES.
Nels O.Benson)

MART HIRZEL (SEAL)
ROSE B.HIRZEL (SEAL)
G.F.BOND (SEAL)
ERNA J.BOND (SEAL)

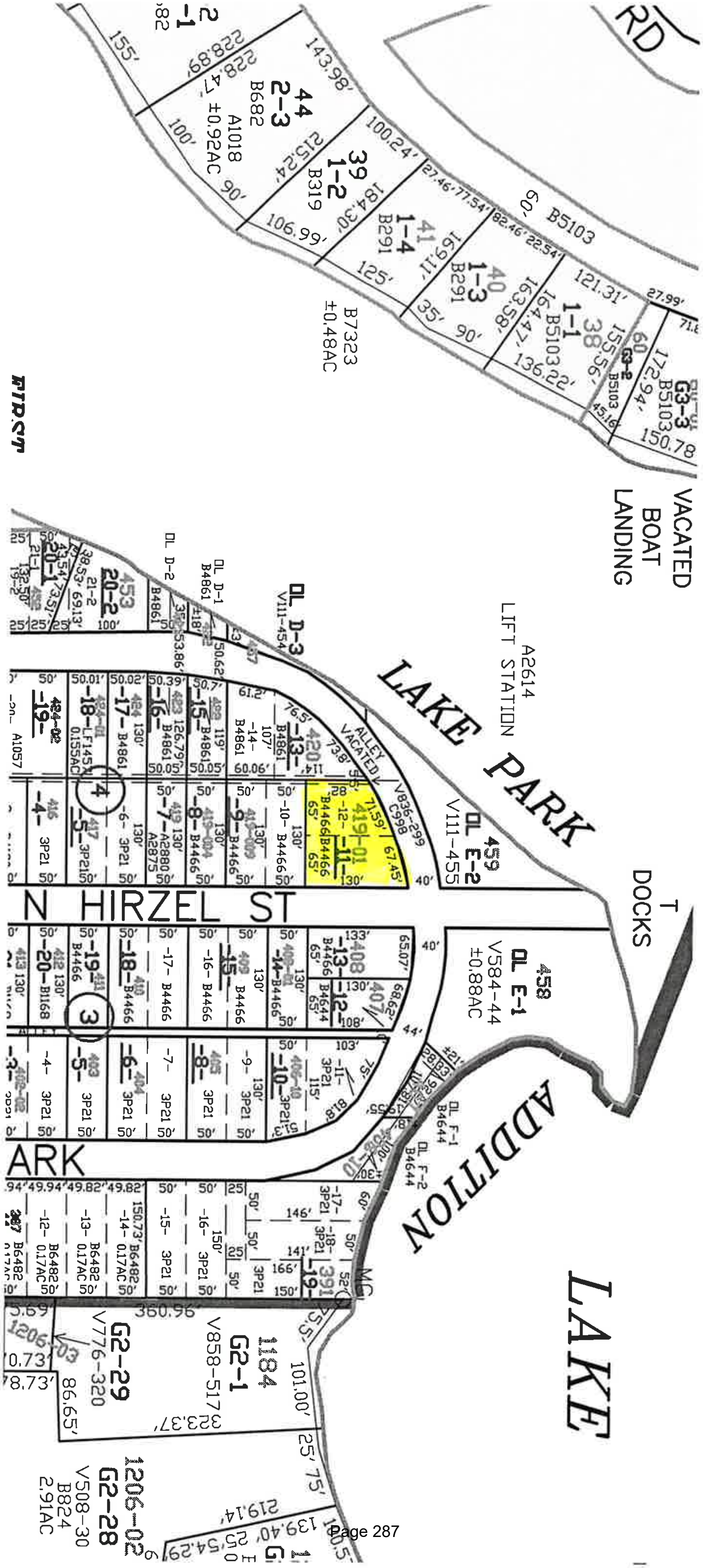
STATE OF WISCONSIN, VILAS COUNTY)
BE IT REMEMBERED, That on the 7th day of July,A.D.1922 personally appeared before me Mart Hirzel and his wife, Rose B. and G.F.Bond and his wife Erna J. all to me personally known, of the City of Eagle River, Vilas County, Wisconsin, Stateof Wisconsin, who executed the foregoing certificate and acknowledged the same.
Jonas Radcliffe
Notary Public, Vilas County, Wisconsin
(Notarial seal of J.R.) My commission expires October 11th,1925,

No. 27602

REGISTER'S OFFICE
Vilas County, Wis.
Received for record, this 8 day of July A.D. 1922 at 10 o'clock A. M. and duly recorded in Vol. 3 of Plats on Page 21
Fern Scott
REGISTER OF DEEDS



3-21-96
See Resolution to Abandon Alley
V.731 - P.136
Hirzel St - Bond Blvd



LAKE PARK ADDITION
LAKE
N HIRZEL ST
VACATED BOAT LANDING
T DOCKS
A2614 LIFT STATION
ALLEY VACATED

QUIT CLAIM DEED.—Vol. 111 STATE OF WISCONSIN—FORM No. 11

H. C. MILLER CO.—MILWAUKEE—Y53808

NUMBER

73482

This Indenture, Made this 14th day of August, A. D., 19 47

between Marcellus N. Renk and Dorothy Renk, his wife,

part ies of the first part,

and City of Eagle River, a municipal corporation

part y of the second part.

WITNESSETH, That the said part y of the first part, for and in consideration of the sum of One Dollar and other valuable consideration Dollars, to them in hand paid by the said parties of the second part, the receipt whereof is hereby confessed and acknowledged, ha ve given, granted, bargained, sold, remised, released and quit-claimed, and by these presents do give, grant, bargain, sell, remise, release and quit-claim unto the said part y of the second part, and to its successors ~~heirs~~ and assigns forever, the following described real estate, situated in the County of Vilas, State of Wisconsin, to-wit:

That portion of Out Lot "E" of Lake Park Addition to the City of Eagle River, lying west of an extension of the east line of Hirzel Road, and a point projected due west from the northeast tip of Lot 13 Blk 4. Being a portion of land lying between Bond Boulevard and Yellow Birch Lake."

Said parcel being free and rid of any restrictions regarding access to the same that may have existed heretofore.

TO HAVE AND TO HOLD the same, together with all and singular the appurtenances and privileges thereunto belonging or in anywise thereunto appertaining, and all the estate, right, title, interest and claim whatsoever of the said part ies of the first part, either in law or equity, either in possession or expectancy of, to the only proper use, benefit and behoof of the said part y of the second part, its successors and assigns forever.

IN WITNESS WHEREOF, the said part ies of the first part ha ve hereunto set their hand s and seal s this 14th day of August, A. D., 19 47.

Signed and Sealed in Presence of

/s/ Gordon J. Aulik
Gordon J. Aulik

/s/ Edith M. Jankovich
Edith M. Jankovich

/s/ Marcellus N. Renk
Marcellus N. Renk (SEAL)

/s/ Dorothy Renk
Dorothy Renk (SEAL)

(SEAL)

(SEAL)

STATE OF WISCONSIN,
Vilas County. } ss.

Personally came before me, this 14th day of August, A. D., 1947,
the above named Marcellus N. Renk and Dorothy Renk, his wife,

to me known to be the person s who executed the foregoing instrument and acknowledged the same.

Received for Record this 16th day of September A. D., 19 47, at 1:45 o'clock P. M.

Sylvester Stein
Register of Deeds.

Sylvester S tein
Deputy.

Circuit Court Commissioner SEAL Affixed

/s/ Gordon J. Aulik
Gordon J. Aulik

~~Notary Public~~ Vilas County, Wis.

~~My Commission expires~~ Circuit Court Commissioner