INLAND WETLANDS COMMISSION
Telephone (203) 563-0180
Fax (203) 563-0284

TOWN OF WILTON
CHARTER 1802
SEAL
CONNECTICUT

TOWN HALL
238 Danbury Road
Wilton, Connecticut 06897

APPLICATION FOR A SIGNIFICANT REGULATED ACTIVITY

For Office Use Only:

	WET#________
Filing Fee $________	Wilton Land Record Map# ________
Date of Submission ________	Volume # ________ Page # ________
Date of Acceptance________	Assessor's Map # ________ Lot# ________

APPLICANT INFORMATION:

Applicant FDSPIN 141 DR LLC	Agent (if applicable) Lisa Feinberg, Carmody Law
Address c/o Agent: Carmody Law, 707 Summer St, Stamford, CT 06901	Address c/o Agent: Carmody Law, 707 Summer St, Stamford, CT 06901
Telephone c/o Agent: 203-252-2677	Telephone c/o Agent: 203-252-2677
Email c/o LFeinberg@carmodylaw.com	Email c/o LFeinberg@carmodylaw.com

PROJECT INFORMATION:

Property Address 141 Danbury Rd	Site Acreage 4.28 +/- Acres
Acres of altered Wetlands On-Site 0.0 Acres	Cu. Yds. of Material Excavated 1100 CY
Linear Feet of Watercourse 317.4 LF (total); 196.2 LF (within site).	Cu. Yds. of Material to be Deposited 8140 CY
Linear Feet of Open Water 0.0 LF	Acres of altered upland buffer .67 Acres
Sq. Ft. of proposed and/or altered impervious coverage 126,760 SF (total); 123,710 (onsite)	Sq. Ft. of disturbed land in regulated area 29,320 SF

APPLICATION REQUIREMENTS:

Is The Site Within a Public Water Supply Watershed Boundary? NO ✓ YES* ☐

Is The Site Within 500 Feet of a Town Boundary? NO ✓ YES* ☐

* If the answer is yes, then the applicant is responsible for notifying the appropriate water authority and/or adjoining community's Wetlands Department. Instructions for notification are available at the office of the commission.

Project Description and Purpose: See enclosed Project Narrative.

In addition, the applicant shall provide eleven (11) collated copies of the following information as well as an electronic submission via email to mike.conklin@wiltonct.org & elizabeth.larkin@wiltonct.org **

- [x] A. Written consent from the owner authorizing the agent to act on his/her behalf
- [x] B. A Location Map at a scale of 1" = 800'
- [x] C. ***A Site Plan showing existing and proposed features at a scale not to exceed 1" = 40'*** accurate to the level of a A-2 property and T-2 topographic surveys
- [x] D. Sketch Plans depicting the alternatives considered
- [x] E. Engineering Reports and Analysis and additional drawing to fully describe the proposed project
- [x] F. Sedimentation and Erosion Control Plan, including the Construction Sequence
- [x] G. Names and addresses of adjoining property owners
- [x] H. A narrative describing, in detail

  a. the proposed activity
  b. the alternatives considered
  c. impacts
  d. proposed mitigation measures
- [x] I. Soils Report prepared by a Certified Soil Scientist and Wetlands Map prepared by a Registered Land Surveyor
- [x] J. A Biological Evaluation prepared by a biologist or other qualified professional
- [x] K Description of the chemical and physical characteristics of fill material to be used in the Regulated Area
- [x] L. Description and maps detailing the watershed of the Regulated Area
- (N/A) M. Envelopes addressed to adjacent neighbors, the applicant, and/or agent, with ***certified*** postage and no return address

****Application materials shall be collated and copies of documents more than two pages in length shall be double sided.**

See Section 7 of the Wetlands and Watercourses Regulations of the Town of Wilton for a more detailed description of applications requirements.

The Applicant or his/her agent certifies that he is familiar with the information provided in this application and is aware of the penalties for obtaining a permit through deception, inaccurate or misleading information.

By signing this application, permission is hereby given to necessary and proper inspections of the subject property by the Commissioners and designated agents of the Commission or consultants to the Commission, at reasonable times, both before and after a final decision has been rendered.

Applicant's Signature (By Hand): [signature] Date: 6/8/21

Agent's Signature (if applicable, By Hand) Lisa L. [signature] Date: 6/8/21

CARMODY
TORRANCE | SANDAK | HENNESSEY LLP

Lisa L. Feinberg
Partner
Direct:203-252-2677
Fax:203-325-8608
LFeinberg@carmodylaw.com

707 Summer Street
Stamford, CT 06901

June 8, 2021

VIA E-MAIL & HAND DELIVERY

Mike Conklin
Inland Wetlands Commission
Town of Wilton
Town Annex
238 Danbury Road
Wilton, CT 06897
mike.conklin@wiltonct.org

Re: Inland Wetlands Commission Application
***Address*: 141 Danbury Road, Wilton, Connecticut**
***Applicant*: FDSPIN 141 DR LLC**

Dear Mr. Conklin:

Our client, FDSPIN 141 DR LLC (the "Applicant"), seeks Inland Wetlands Commission ("IWC") approval of an Application for a Significant Regulated Activity that, if approved, will facilitate the redevelopment of property located at 141 Danbury Road, Wilton Connecticut (the "Property"). The Property is approximately 4.28+/- acres and is located on the westerly side of Danbury Road. The Property is designated as Tax Lot 2 on Map 70 in a DE-5 Design Enterprise District. The Property is currently improved with a warehouse style office building and a large surface parking lot used by Melissa & Doug, Inc. Melissa & Doug, Inc. will be vacating the Property shortly, and relocating to a larger facility. The proposed redevelopment would remove the existing structure and replace it with a new multi-family residential building, dense landscaping and associated site improvements.

Work within the Regulated Area is intended to restore and enhance the natural characteristics of the Property and significantly improve water quality on the site, and provide outdoor, passive recreation space for the residents. While no adverse impacts are anticipated, Best Management Practices (BMPs) as described in the enclosed application materials are incorporated to avoid and minimize potential adverse environmental impacts.

In furtherance of the proposed applications, please find the following materials:

- 1 check in the amount of $1,260.00, representing the Application Fee & State Land Use Application Fee;

- 1 Letter of Authority from the Applicant;

- 11 copies of the IWC Application Form for a Significant Regulated Activity, including a Project Narrative & List of Neighboring Property Owners;

- 11 copies of a letter prepared by Environmental Land Solutions, dated June 7, 2021, entitled "Inland Wetlands Application -141 Danbury Road, Wilton, CT;"

- 11 copies of a letter prepared by William Kenny Associates LLC, dated March 15, 2021, entitled "Wetland and Watercourse Delineation, 141 Danbury Road, Wilton, Connecticut;"

- 11 full-size copies of a Landscape Plan prepared by Environmental Land Solutions, dated June 7, 2021, entitled "LP-1 – Landscape and Lighting Plan;"

- 11 full-size copies of plans prepared by Tighe & Bond, dated June 7, 2021, entitled:
    - "C-001 – Site Index, Abbreviations, Notes and Legend;"
    - "C-101 - Site Layout Plan;"
    - "C-102 – Fire Truck Turning Plan;"
    - "C-201 – Grading Plan;"
    - "C-301 – Stormwater Management Plan;"
    - "C-401 – Utility Plan;"
    - "C-501 – Soil Erosion and Sediment Control Plan Initial Phase;"
    - "C-502 – Soil Erosion and Sediment Control Plan Fina, Phase;"
    - "C-503 – Soil Erosion and Sediment Control Details;"
    - "C-504 – Soil Erosion and Sediment Control Details;"
    - "C-601 – Details – 1;"
    - "C-602 – Details – 2;"
    - "C- 603 – Details – 3;"
    - "C-604 – Details – 4;"
    - "C-605 – Details – 5;"
    - "C-606 – Details – 6;"
    - "C-607 – Details – 7;"
    - "C-608 – Details – 8;" and
    - "C-609 – Details – 9;"

- 11 full size copies of alternative site designs, prepared by Lessard Design, entitled:
    - "A.01a – Full Podium, 4 over 1 Option, Site Analysis" dated March 15, 2020; and
    - "A.01 – Illustrative Site Plan – 141 Danbury Road, Site Analysis," dated January 21, 2021;

- 11 copies of an Engineering Report prepared by Tighe & Bond, dated June 7, 2021, entitled "Engineering Report, Prepared For: FDSPIN 141 DR, LLC;"

- 11 full-size copies of a Topographic Survey depicting existing site conditions, prepared by D'Andrea Surveying & Engineering, P.C., dated April 22, 2021, entitled "Topographic Survey Depicting 141 Danbury Road in Wilton, Connecticut, Prepared for FDSPIN 141 DR LLC."

Please let me know if you have any questions or require additional materials. We look forward to advice as to when the IWC will conduct a public hearing regarding the enclosed application. Thank you for your time and attention regarding this matter.

Sincerely,

Lisa L. Feinberg

Lisa L. Feinberg

Enclosures

cc: E. Larkin elizabeth.larkin@wiltonct.org
M. Wrinn Michael.wrinn@wiltonct.org

Environmental Land Solutions, LLC

Landscape Architecture & Environmental Planning
8 Knight Street, Suite 203, Norwalk, CT 06851
Tel: (203) 855-7879 Fax: (203) 855-7836

June 7, 2021

Inland Wetlands Commission
Town Hall Annex
238 Danbury Road
Wilton, CT 06897

Re: Inland Wetlands Application
141 Danbury Road, Wilton, CT

Dear Members of the Commission:

The applicant, FDSPIN 141 DR, LLC, is proposing to redevelop the above referenced property from an existing commercial building to a multi-family residential building. The site fronts on the eastern side of Danbury Road, with the Norwalk River to its west and existing light industry uses to the north and south. Lambert Commons, a multi-family residential development is located across the street.

The Norwalk River and its riparian wetlands occur along the western boundary of the site. Environmental Land Solutions, LLC (ELS) has been authorized by FDSPIN 141 DR, LLC to prepare this biological assessment report as required for this application and to prepare a new riparian buffer planting plan with recreational area to the rear of the site. To complete this evaluation , site visits were made by ELS staff on April 8 and May 8, 2021. Site plans prepared by Tighe & Bond were reviewed as part of this evaluation.

EXISTING CONDITIONS

The subject 4.2± acre property is located at 141 Danbury Road. The existing building is centrally located with paved parking extending along the south and west portion of the site. The east and north areas of the site are maintained as lawn. The site is presently developed with impervious surfaces covering 67%± of the property that gently slope toward the river. The paved parking lot extends down to the river's edge. Clearing along the rivers edge occurred over the last year and was replanted as part of Corrective Action Permit.

Wetlands and Watercourses

The Norwalk River is the predominate wetland resource feature of the site and defines the development to the west. A narrow riparian wetland corridor occurs between the river bank and the parking lot. The wetland line was recently delineated by William Kenny Associates.

The wetland adjacent to the river is a seasonally flooded palustrine wetland. Flagged wetland soils were identified as Rippowam fine sandy loam and Fluvaquent-Udifluvents complex, poorly to well drained alluvial soils. Please refer to the soil report for additional information. The Norwalk River is a perennial watercourse that has been channelized but includes riffle-pool morphology.

The northwest shoreline of the site is defined by riprap, poured and broken pieces of concrete with two sycamore trees on the shoreline. The southwestern shoreline is partially naturalized, but recently cleared of large trees and replanted under a Corrective Action Permit in 2020. This portion of the shoreline is define by a large woodchip berm and 9 planted tree and several shrubs. Existing naturalized vegetation growing along the shoreline includes, Asiatic Bittersweet, Mugwort, Japanese Honeysuckle, Ash saplings, shrub Honeysuckle, Poison Ivy, Garlic Mustard, Euonymus, and Multiflora Rose.

There appears to be no treatment of stormwater runoff from impervious surfaces at the site.

Wetland and Watercourse Functions

The functional evaluation of the wetlands is based on professional experience and the suggested criteria cited in the publication entitled "The Highway Methodology Workbook *Supplement*, Wetland Functions and Values, *A Descriptive Approach*," prepared by the US Army Corps of Engineers, NEDEP-360-1-30a, September 1999.

Using this publication, the primary functions provided by the wetlands include sediment retention, nutrient removal and transformation, stormwater storage, wildlife habitat, visual quality, and limited recreational usage such as nature photography and wildlife observations. The Norwalk River corridor functions as a habitat for finfish and aquatic waterfowl and other aquatic-dependent species, serves as a wildlife corridor (together with its fringe wetlands), a groundwater discharge point, and offers recreational potential such as fishing and small craft boating.

Wildlife

The existing site provides little to no wildlife habitat due to existing improvement adjoining the river. However, naturalized areas to the south, north and west are expected to support a range of species adapted to suburban residential habitats, small woodland tracts, and woodland edges. Theses may provide habitat for wetland dependent wildlife species within the river and riparian edge and provide a small refuge for suburban tolerant wildlife, and are capable of providing habitats for suburban tolerant wildlife species in the form of cover, nesting areas, and food.

The site is not located within a highlighted DEEP Natural Diversity Data Base (NDDB) map for Wilton (May Dec. 2020).

PROPOSED CONDITIONS

The development will place a new multi-family single building central locally on the site. The existing paved parking lot adjacent to the river will be removed and a recreational area and planted riparian buffer installed in its place. The bulk of the building is outside of the wetland 100' upland review area, with the closer corner (western) at 88' from the river. Most of the parking is located beneath the building, however some small areas of parking extends outside of the building at the northwestern corner of the building, where the closest corner is 66'± from the river. However, all surface parking within 200'+ of the river will be constructed with porous pavements. No work is occurring in the wetlands, and 85% of the 100' buffer, totaling 25,020 sf±, will be refurbished from a paved parking lot to a recreational area for the new residences, with extensive replanting of native trees, shrubs, and perennials.

The new development will slightly increase the impervious surfaces on the site. However, significantly improvements to the river buffer and the new stormwater drainage system will dramatically improve water quality leaving the site. The proposed storm drainage management for the site has been developed by Tighe & Bond to provide collection, removal of suspended solids, treatment and infiltration of the first 1" of rainfall.

The following list reflects the proposed activities within the 100' upland review area of the site that encompasses 32,640± sf of the property. This area is now encumbered by 25,020 sf± (75% of the upland review area) of asphalt surface parking.

1. Temporary installation of sediment and erosion controls.
2. Removal of surface asphalt, concrete and the underlying base (21,140± sf).
3. Installation of pervious asphalt (4470± sf).
4. Construction of building (above the ground) totaling 315± sf, in the upland review area.
5. Construction of a fire lane with grass pavers (3450± sf).
6. Construction of a level spreader.
7. Import of topsoil to replace asphalt parking for new landscape areas (780± cy).
8. Landscaping areas with native trees, shrubs, and perennials (11,650± sf).
9. Planting of new lawn (11,615± sf). 1
10. Pervious walking paths (9,375± sf).
11. Removal and management of invasive species along the river’s edge (300'±).

Wetland/Watercourse Potential Impacts and Mitigation Measures

The majority of the site work proposed within the 100' upland review area is intended to restore and expand the functions provided by the river's riparian buffer, while also providing outdoor recreation spaces for the residences. This will be accomplished by removing existing pavement and providing treatment of stormwater runoff treatment to diminish direct discharge to the river, and significantly planting the 100' upland review area with native plants.

The project does not anticipated any long term impacts to the wetland resources. There are no direct disturbances proposed with this development. However, short term disturbances will be managed adjacent to the resources to prevent exposed soil surfaces from entering the wetland and the river.

The following Best Management Practices (BMPs) have been incorporated into the site plans for the purposes of avoiding and/or minimizing potential adverse environmental impacts disturbances and site improvements over the site.

a. *erosion and sedimentation controls* - the site plans indicate that erosion and sedimentation will be controlled by the use of silt fencing to trap sediments within stormwater runoff, anti-tracking pads to remove sediments from tires of construction vehicles, and watering of the site's soils as needed to prevent dust.

b. *catch basins fitted with sumps* - designed to improve water quality by trapping sediments from roadway stormwater runoff. Accumulated sediments will be periodically removed as needed to maintain the basins in proper working order.

c. *swirl concentrators* - designed to maintain water quality by trapping road sediments, floatables (litter), and vehicle oils and grease from stormwater runoff. Accumulated sediments, litter and oils will be periodically removed as needed to maintain the system in proper working order.

d. *underground infiltration galleries* - designed to store stormwater runoff for a period of time and infiltrate stormwater runoff into the ground. Underground infiltration galleries reduce flooding, recharge groundwater, and remove dissolved pollutants as it filters through the soil below. Underground galleries also reduce thermal pollution associated with heated runoff from pavement areas.

e. *porous pavement* - porous pavement can help reduce runoff by infiltrating rain water and melting snow. These materials allow rain and snow melt to seep through the surface down to underlying layers of soil and gravel. In addition to reducing the runoff, permeable pavements can help filter out pollutants that contribute to water pollution. Permeable pavements can also reduce the need for road salt during the winter months. The western portion of the surface pavement is proposed to be pervious.

f. *stone trenches* - proposed stone trenches surround the western edge of the porous pavement. Stone trenches will capture any excess runoff from the porous pavement.

Stone trenches will help cleanse stormwater runoff collected from the new driveway, building roof, and landscape areas by trapping sediments and removing nutrients through plant uptake, and by infiltration. As infiltration occurs, thermal pollution will be reduced from development areas, runoff volume from the development will be reduced and recharge groundwater will occur.

g. *overland flow* - stormwater runoff flowing over newly vegetated buffer areas will result in the trapping of sediments, uptaking of nutrient by plants, and infiltrating runoff. This BMP will occur over the site's proposed landscaped areas.

h. *planted buffers* - native shade trees, understory trees, shrubs, and herbaceous plants are proposed within the wetland buffer for wildlife habitat and aesthetic purposes. Planted buffers will also help to maintain water quality aiding to remove pollutants within stormwater runoff by plant uptake. The new riparian buffer along the river will change from a width of 0 to 35' ± to 60 to 100' ± in width. The new river buffer will include planting of 49 shade and understory trees, over 375 shrubs and over 500 perennials known to benefit pollinators.

i. *level spreader* - a linear level area of stone is proposed at the end of the drainage pipe from the storm drainage system to slow the velocity of the discharged stormwater runoff and prevent erosion.

j. *control of invasive nonnative plant species* - the Landscape Plan indicates the control of Japanese Knotweed, Mugwort, Multiflora Rose, and Porcelainberry for a minium of a two year period during the bonding period and is expected to be included in the regular maintenance for the site.

HABITAT IMPROVEMENTS

The existing site is lacking a significant habitat to support local wildlife, primarily due to the existing paved parking lot which consumes most of the river's riparian buffer. The proposed plan will enhance wildlife habitat planting native trees and shrubs that native species, and provide food sources, nesting site, and cover for local and migratory wildlife.

In addition the plan includes:

1. Placement of 3 bird houses, final location to be determined in the field.
2. Place of one bat box, final location to be determined in the field.
3. Provide allowances of some plant debris to remain in riparian buffer, with appropriate signage to alert residence of the areas value.
4. Replacement of solid concrete slabs along the river's edge, with broken stones, providing niches for wildlife and allowing vegetation to expand and stabilized the river's edge.
5. Planting a grove of American Holly trees within the riparian buffer for food source, nesting and winter protection.

6. Planting perennials in the buffer enhancement area known for their pollinator value.

In addition, the applicant is willing to adopted an Organic Land Care Practice for the on going project maintenance. ELS will submit a packet for the staff's review and adoption for the project.

ALTERNATIVES

As part of the application for a Significant Regulated Activity, the applicant has included two earlier versions of the site plan as required by Section 7.5-c of the Inland Wetlands and Watercourses Regulations for the Town of Wilton (the "Regulations"). These preliminary site analysis plans (Sheet A.01A, dated 3/15/20 and Sheet A.01, dated 1/21/21), prepared by Lessard Design, are included as alternative plans that were explored, discussed and ultimately discarded during the design process. It is important to note that, while the disturbance in the regulated area is considered significant based on the thresholds in the Regulations, all work within this area involves landscape enhancements and water quality improvements.

The alternative plans were eliminated after review and further discussion with the design team, town staff and the Planning & Zoning Commission (during a pre-application review). In lieu of utilizing existing developed areas, the applicant was encouraged to relocate units from the rear of the site to the top of the building thereby significantly enhancing the landscape buffer adjacent to the river and adding additional height to the building to compensate for the loss of units at the back of the site.

Both of these alternatives would leave developed areas on the site essentially "undisturbed" with asphalt approaching the river's edge, but do not provide the room to replace and significantly enhance the buffer along the river. Instead, the applicant has chosen to modify the zoning regulations to permit additional height and the consolidation of the development further from the river. This provides an added opportunity for water quality improvements as well as wetland buffer enhancements. These changes make this submitted site plan superior to these earlier plans, as it relates to protection and enhancements to the river and wetland resources.

SUMMARY

This proposal has incorporated techniques to reduce impacts to the wetland resources within the site by decreasing the existing impacts to the Norwalk River and its associated resources. The proposed site redevelopment will significantly reduce existing manmade intrusions into the 100' upland review area, improve water quality and significantly expanded native plants on the site. The expanded river buffer will also serve as a passive recreation area for the residents of the new building. These site improvements are expected to enhance the wetland's sediment retention, nutrient removal and transformation, stormwater storage, wildlife habitat, visual quality, and recreational usage.

The proposed site work, taken in total, will provide a net environmental benefit to the Norwalk

River and the riparian wetland. The character and functions of the onsite regulated areas are expected to be significantly improvement after the completion of this site work.

Sincerely,

Kate Throckmorton, ASLA
Landscape Architect
Professional in Erosion and Sediment Control
Certified NOFA Professional

Matthew J. Popp, ASLA
Professional Wetland Scientist
Landscape Architect

Danbury Road 141-wilton-ea.wpd

WILLIAM KENNY ASSOCIATES LLC

SOIL SCIENCE
ECOLOGICAL SERVICES
LAND USE PLANNING
LANDSCAPE ARCHITECTURE

March 15, 2021

Mr. Leonard D'Andrea
Rocco V. D'Andrea, Inc.
Six Neil Lane
P. O. Box 549
Riverside, CT 06878

Re: Wetland and Watercourse Delineation
141 Danbury Road, Wilton, Connecticut

Dear Mr. D'Andrea:

As requested, we visited the referenced property to determine the presence or absence of wetlands and/or watercourses, to demarcate (flag) the boundaries of wetlands and watercourses identified, and to identify onsite soil types. This letter includes the methods and results of our investigation, which we completed today, March 15, 2021. In summary, one inland wetland and watercourse system was identified and delineated. The system, which extends and flows north to south along the western property boundary, is a segment of the Norwalk River with a bordering wet floodplain wetland.

Regulatory Definitions

The Inland Wetlands and Watercourses Act (Connecticut General Statutes §22a-38) defines inland wetlands as "land, including submerged land...which consists of any soil types designated as poorly drained, very poorly drained, alluvial, and floodplain." Watercourses are defined in the act as "rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs and all other bodies of water, natural or artificial, vernal or intermittent, public or private, which are contained within, flow through or border upon the state or any portion thereof." The Act defines Intermittent Watercourses as having a defined permanent channel and bank and the occurrence of two or more of the following characteristics: A) evidence of scour or deposits of recent alluvium or detritus, B) the presence of standing or flowing water for a duration longer than a particular storm incident, and C) the presence of hydrophytic vegetation.

195 TUNXIS HILL CUTOFF S
FAIRFIELD, CT 06825
PHONE: 203 366 0588
FAX: 203 366 0067
www.wkassociates.net

Methodology

A second order soil survey in accordance with the principles and practices noted in the USDA publication *Soil Survey Manual* (1993) was completed at the subject site. The classification system of the National Cooperative Soil Survey was used in this investigation. Soil map units identified at the project site generally correspond to those included in the *Soil Survey of the State of Connecticut* (USDA 2005).

Wetland determinations were completed based on the presence of poorly drained, very poorly drained, alluvial, or floodplain soils. Soil types were identified by observation of soil morphology (soil texture, color, structure, etc.). To observe the morphology of the property's soils, test pits and/or borings (maximum depth of two feet) were completed at the site.

Intermittent watercourse determinations were made based on the presence of a defined permanent channel and bank and the occurrence of two or more of the following characteristics: A) evidence of scour or deposits of recent alluvium or detritus, B) the presence of standing or flowing water for a duration longer than a particular storm incident, and C) the presence of hydrophytic vegetation.

Wetland boundaries were demarcated (flagged) with pink surveyor's tape (hung from vegetation) or small flags (on wire stakes) labeled "William Kenny Associates" that are generally spaced a maximum of every 50 feet. Complete boundaries are located along the lines that connect these sequentially numbered flags. The wetland boundaries are subject to change until adopted by local, state, or federal regulatory agencies.

Results

The approximate 4.3-acre commerical property is located at 141 Danbury Road in Wilton, Connecticut. Danbury Road borders the eastern property boundary. Property improvements include a commercial building and an asphalt parking area and driveway. The primary vegetative cover at the property is lawn with other ornamentals and some shade trees. A meadow is present in the southwestern portion of the property.

One inland wetland and watercourse system was identified and delineated. The system, which extends and flows north to south along the western property boundary, is a segment of the Norwalk River with a bordering wet floodplain wetland. Wetland soils are primarily poorly drained and formed from alluvial deposits. The approximate location of the system is shown on the attached map. The boundary of the system was marked at the site with flags numbered 1 to 17.

Three soil map units were identified on the property (two wetland and one upland). Each map unit represents a specific area on the landscape and consists of one or more soils for which the unit is named. Other soils (inclusions that are generally too small to be delineated separately) may account for 10 to 15 percent of each map unit. The mapped units are identified in the following table by name and symbol and typical characteristics (parent material, drainage class, high water table, depth to bedrock, and slope). These characteristics are generally the primary characteristics to be considered in land use planning and management. A description of each characteristic and their land use implications follows the table. A complete description of each soil map unit can be found in the *Soil Survey of the State of Connecticut* (USDA 2005), and at *https://soilseries.sc.egov.usda.gov/osdname.aspx.* On the day of the review, there was no soil frost and no snow cover. The upland soil was moist and the wetland soil was wet to inundated. The sky was clear and air temperatures were in the 30's ° F.

Map Unit Sym.	Map Unit Name	Parent Material	Slope (%)	Drainage Class	High Water Table Depth (ft)	High Water Table Kind	High Water Table Mos.	Depth To Bedrock (in)
Upland Soil								
308	Udorthents, Smoothed	Excavated or Filled Soil (>2 feet)	0-45	Well Drained to Somewhat Poorly Drained	1.5->6.0	Apparent	Nov-May	>60
Wetland Soil								
103	Rippowam fine Sandy loam	Alluvium	0-3	Poorly Drained	0.0-1.5	Apparent	Nov-Jun	>60
109	Fluvaquents-Udifluvents complex, frequently flooded	Alluvium Alluvium	0-3 0-3	Poorly Drained Well Drained	0.0-1.0 >6.0	Apparent --	Oct-May --	>60 >60

Parent material is the unconsolidated organic and mineral material in which soil forms. Soil inherits characteristics, such as mineralogy and texture, from its parent material. Glacial till is unsorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice. Glacial outwash consists of gravel, sand, and silt, which are commonly stratified and deposited by glacial melt water. Alluvium is material such as sand, silt, or clay, deposited on land by streams. Organic deposits consist of decomposed plant and animal parts.

A soil's texture affects the ease of digging, filling, and compacting and the permeability of a soil. Generally sand and gravel soils, such as outwash soils, have higher permeability rates than most glacial till soils. Soil permeability affects the cost to design and construct subsurface sanitary disposal facilities and, if too slow or too fast, may preclude their use. Outwash soils are generally excellent sources of natural aggregates (sand and gravel) suitable for commercial use, such as construction sub base material. Organic layers in soils can cause movement of structural footings. Compacted glacial till layers make excavating more difficult and may preclude the use of subsurface sanitary disposal systems or increase their design and construction costs if fill material is required.

Generally, soils with steeper slopes increase construction costs, increase the potential for erosion and sedimentation impacts, and reduce the feasibility of locating subsurface sanitary disposal facilities.

Drainage class refers to the frequency and duration of periods of soil saturation or partial saturation during soil formation. Seven classes of natural drainage classes exist. They range from excessively drained, where water is removed from the soil very rapidly, to very poorly drained, where water is removed so slowly that free water remains at or near the soil surface during most of the growing season. Soil drainage affects the type and growth of plants found in an area. When landscaping or gardening, drainage class information can be used to assure that proposed plants are adapted to existing drainage conditions or that necessary alterations to drainage conditions (irrigation or drainage systems) are provided to assure plant survival.

High water table is the highest level of a saturated zone in the soil in most years. The water table can affect the timing of excavations; the ease of excavating, constructing, and grading; and the supporting capacity of the soil. Shallow water tables may preclude the use of subsurface sanitary disposal systems or increase design and construction costs if fill material is required.

The depth to bedrock refers to the depth to fixed rock. Bedrock depth affects the ease and cost of construction, such as digging, filling, compacting, and planting. Shallow depth bedrock may preclude the use of subsurface sanitary disposal systems or increase design and construction costs if fill material is required.

Conclusions

Today, we investigated the property at 141 Danbury Road in Wilton, Connecticut and identified and delineated one inland wetland and watercourse system. Thank you for the opportunity to assist you. If you should have any questions or comments, please do not hesitate to contact us.

Sincerely,

William L. Kenny, PWS, PLA
Soil Scientist

Alexander Wojtkowiak
Soil Scientist

Enclosure

Ref. No. 4798

William Kenny Associates LLC

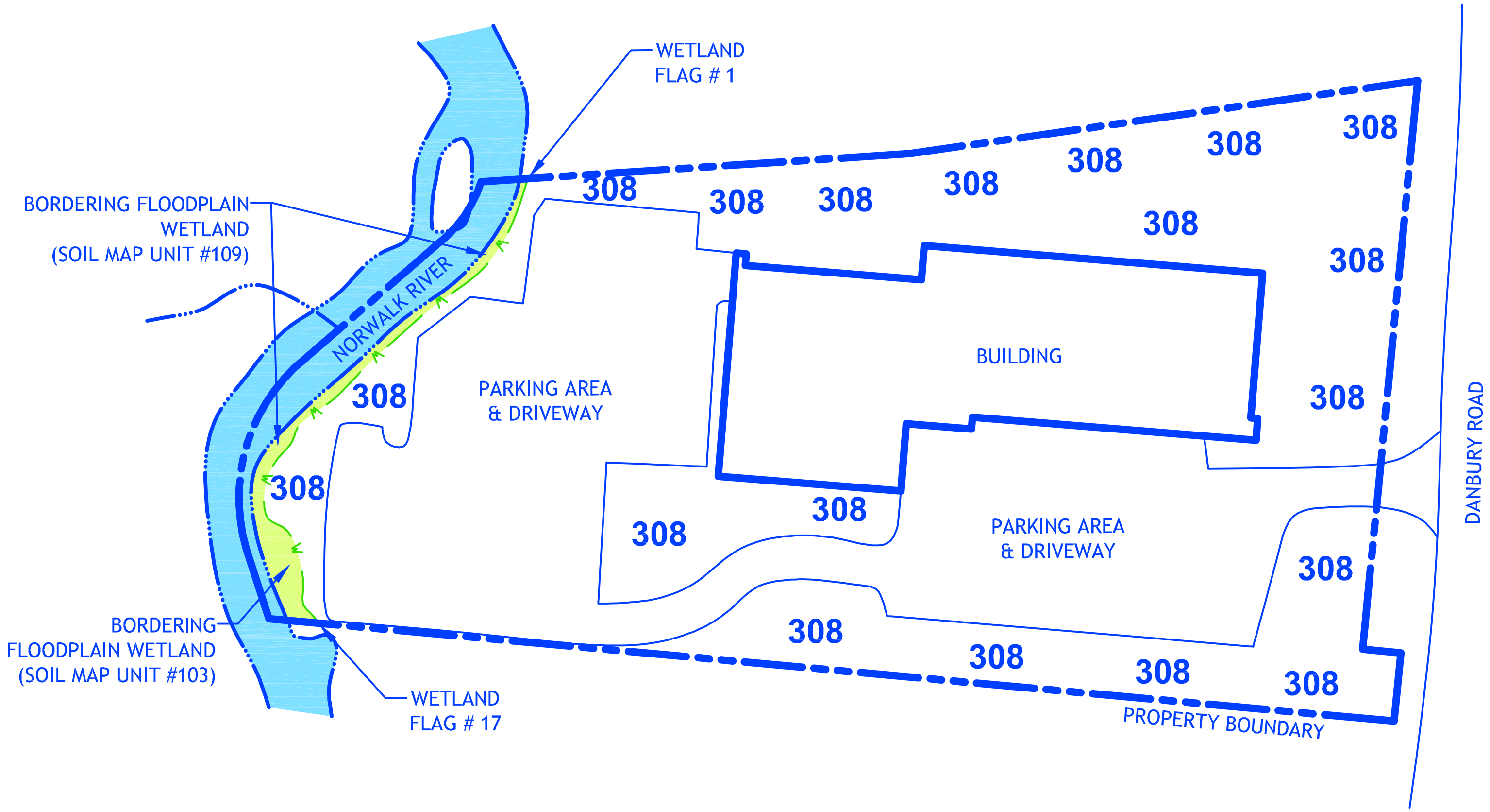
Soil Science
Ecological Services
Land Use Planning
Landscape Architecture

195 Tunxis Hill Cutoff S
Fairfield, CT 06825
Phone: 203 366 0588
Fax: 203 366 0067
www.wkassociates.net

SOIL LEGEND

UPLAND
308 UDORTHENTS, SMOOTHED

WETLAND
103 RIPPOWAM FINE SANDY LOAM
109 FLUVAQUENTS-UDIFLUVENTS COMPLEX



NOTES:

- *INFORMATION SHOWN ON THIS DRAWING, INCLUDING THE WETLAND BOUNDARY, IS APPROXIMATE. THE BOUNDARY IS NOT A SURVEYED REPRESENTATION OF WHAT WAS FIELD MARKED (FLAGGED).*
- *WETLAND AND SOIL INFORMATION PROVIDED BY WILLIAM KENNY ASSOC. OTHER INFORMATION TAKEN FROM A TOWN OF WILTON GIS MAP.*
- ***308**, **103** AND **109** ARE SOIL MAPPING UNIT SYMBOLS. SEE WETLAND DELINEATION REPORT FOR THE SOIL MAP UNIT NAMES AND ADDITIONAL RELATED INFORMATION.*

I CERTIFY THAT THIS WETLAND MAP SUBSTANTIALLY REPRESENTS THE SOILS AND WETLANDS MAPPED IN THE FIELD

WILLIAM L. KENNY, SOIL SCIENTIST

WETLAND & WATERCOURSE MAP

141 DANBURY ROAD
WILTON, CONNECTICUT

SCALE: NOT TO SCALE
DATE: MARCH 15, 2021

Ref. No. 4798

NORTH

List of Neighboring Property Owners

141 Danbury Rd
5/20/2021 (updated 6/8/2021)

	MBLU	Street Address	Owner's Address
1.	55-1-1	1 Lambert Common	Patricia A Garrett & Lorraine Danchise 1 Lambert Common Wilton, CT 06897
2.	55-1-2	2 Lambert Common	Sonya Kelepecsz 2 Lambert Common Wilton, CT 06897
3.	55-1-3	3 Lambert Common	Nanette O Rich 3 Lambert Common Wilton, CT 06897
4.	55-1-4	4 Lambert Common	Olga L Rhodes 4 Lambert Common Wilton, CT 06897
5.	55-1-5	5 Lambert Common	Eileen K Meyers 5 Lambert Common Wilton, CT 06897
6.	55-1-6	6 Lambert Common	Denise Melato 6 Lambert Common Wilton, CT 06897
7.	55-1-7	7 Lambert Common	Irene R Farley 7 Lambert Common Wilton, CT 06897
8.	55-1-8	8 Lambert Common	The Canine Companies Inc 493 Danbury Rd Wilton, CT 06897
9.	55-1-9	9 Lambert Common	Est of Clarice Derubeis C/O Elena Rieders Admin 55 Brambling La Voorhees, NJ 08043
10.	55-1-10	10 Lambert Common	Blanche R Goodwin 10 Lambert Common Wilton, CT 06897
11.	55-1-11	11 Lambert Common	OLK Holdings LLC 20 Colonial Ave Princeton Junction, NY 08550
12.	55-1-12	12 Lambert Common	Leslie K Johnson Po Box PP Mclean, VA 22101

13.	55-1-13	13 Lambert Common	Marie A Ritch 13 Lambert Common Wilton, CT 06897
14.	55-1-14	14 Lambert Common	Sherrill L Werblood 14 Lambert Common Wilton, CT 06897
15.	55-1-15	15 Lambert Common	Carol A Devine 1446 Unquowa Rd Fairfield, CT 06824
16.	55-1-16	16 Lambert Common	Susan A Wall 16 Lambert Common Wilton, CT 06897
17.	55-1-17	17 Lambert Common	Rebecca Tzanos 17 Lambert Common Wilton, CT 06897
18.	55-1-18	18 Lambert Common	Elizabeth Kimball Dempsey Tr 18 Lambert Common Wilton, CT 06897
19.	55-1-19	19 Lambert Common	Meredith Anne Munro MacLaine 19 Lambert Common Wilton, CT 06897
20.	55-1-20	20 Lambert Common	Phyllis F Zappala Trustee 18 Buttonball La Weston, CT 06883
21.	55-1-21	21 Lambert Common	Est Ellen Morrone Steven D Smith P O Box 390 C/O Lovejoy And Rimer Pc Norwalk, CT 06852
22.	55-1-22	22 Lambert Common	Richard & Edith Canzonetti 22 Lambert Common Wilton, CT 06897
23.	55-1-23	23 Lambert Common	Donald A & Eileen P Allers 23 Lambert Common Wilton, CT 06897
24.	55-1-24	24 Lambert Common	Rita H Hausdorff 24 Lambert Common Wilton, CT 06897
25.	55-1-25	25 Lambert Common	Gabriel C Andreescu & Sarah A Andreescu 25 Lambert Common Wilton, CT 06897
26.	55-1-26	26 Lambert Common	Kim Gumsook & Hwi Tae 26 Lambert Common Wilton, CT 06897

27.	55-1-27	27 Lambert Common	Nancy Burroughs 27 Lambert Common Wilton, CT 06897
28.	55-1-28	28 Lambert Common	Margaret M Kelley 28 Lambert Common Wilton, CT 06897
29.	55-1-29	29 Lambert Common	Catherine J Mannix 32 Dorothy Rd Redding, CT 06896
30.	55-1-30	30 Lambert Common	Mady E McSweeney 30 Lambert Common Wilton, CT 06897
31.	55-1-31	31 Lambert Common	Barbara F Sage 31 Lambert Common Wilton, CT 06897
32.	55-1-32	32 Lambert Common	James M Campbell 32 Lambert Common Wilton, CT 06897
33.	55-1-33	33 Lambert Common	Kurt & Christine Olson 33 Lambert Common Wilton, CT 06897
34.	55-1-34	34 Lambert Common	Marjorie Simpson & Samuel Simpson & Sv 34 Lambert Common Wilton, CT 06897
35.	55-1-35	35 Lambert Common	Lori A Bufano 35 Lambert Common Wilton, CT 06897
36.	55-1-36	36 Lambert Common	Ann Brooke Swenson 36 Lambert Common Wilton, CT 06897
37.	55-1-37	37 Lambert Common	Richard A Edgar & Lorraine Jean Edgar & Sv 37 Lambert Common Unit #347 Wilton, CT 06897
38.	55-1-38	38 Lambert Common	Jeannette R Pascarelli 38 Lambert Common Wilton, CT 06897
39.	55-1-39	39 Lambert Common	Joseph C & Gail M Cioffi 39 Lambert Common Wilton, CT 06897
40.	55-1-40	40 Lambert Common	Roslyn Dobey 40 Lambert Common Wilton, CT 06897

41.	55-1-41	41 Lambert Common	Mary B Preston 41 Lambert Common Wilton, CT 06897
42.	55-1-42	42 Lambert Common	Denise Robertson 42 Lambert Common Wilton, CT 06897
43.	55-1-43	43 Lambert Common	John Cocozza 43 Lambert Common Wilton, CT 06897
44.	55-1-44	44 Lambert Common	Elizabeth Picone Trustee 44 Lambert Common Wilton, CT 06897
45.	55-1-45	45 Lambert Common	Aaron & Erin Jacobstein 153 Bob Hill Rd Ridgefield, CT 06877
46.	55-1-46	46 Lambert Common	Lin Xin Yu 46 Lambert Common Wilton, CT 06897
47.	55-1-47	47 Lambert Common	Bruce D Hampson 47 Lambert Common Wilton, CT 06897
48.	55-1-48	48 Lambert Common	Janet M Bondeson 48 Lambert Common Wilton, CT 06897
49.	55-1-49	49 Lambert Common	Leslie A Miles 49 Lambert Common Wilton, CT 06897
50.	55-4-1	1 Wilton Hills	James A & Linda L Kaylor 1 Wilton Hills Wilton, CT 06897
51.	55-4-2	2 Wilton Hills	Frank & Carol Gavel 2 Wilton Hills Wilton, CT 06897
52.	55-4-3	3 Wilton Hills	Joseph & Lois Block 3 Wilton Hills Wilton, CT 06897
53.	55-4-4	4 Wilton Hills	Frank L Picchione 4 Wilton Hills Wilton, CT 06897
54.	55-4-5	5 Wilton Hills	Kaushik Ramamoorthy & Muthukrishnan Aarthie 5 Wilton Hills Wilton, CT 06897
55.	55-4-6	6 Wilton Hills	Kenneth J Wilchfort 6 Wilton Hills Wilton, CT 06897

56.	55-4-7	7 Wilton Hills	Gregg Feldman Lynn Schlesinger 7 Wilton Hills Wilton, CT 06897
57.	55-4-8	8 Wilton Hills	Hollis E Wright-Warren 8 Wilton Hills Wilton, CT 06897
58.	55-4-9	9 Wilton Hills	G William Brautigam & Nancy L Brautigam 9 Wilton Hills Wilton, CT 06897
59.	55-4-10	10 Wilton Hills	Mullapudi Venkata Ramakrishna & Kakarla Kalyani 10 Wilton Hills Wilton, CT 06897
60.	55-4-11	11 Wilton Hills	Fred Rzepka 25250 Rockside Rd Bedford Heights, OH 44146
61.	55-4-12	12 Wilton Hills	Jack M & Laura Boyles 12 Wilton Hills Wilton, CT 06897
62.	55-4-13	13 Wilton Hills	Charles Calvin Thomas, & Betty Wells Thomas 13 Wilton Hills Wilton, CT 06897
63.	55-4-14	14 Wilton Hills	Sriram S Belur & Brunda B Govinda 14 Wilton Hills Wilton, CT 06897
64.	55-4-15	15 Wilton Hills	Andrew M Schopick 15 Wilton Hills Wilton, CT 06897
65.	55-4-16	16 Wilton Hills	Tsui Tak Kwan Kun Sharon 16 Wilton Hills Wilton, CT 06897
66.	55-4-17	17 Wilton Hills	Ajitabh Kaushal & Sharan Chetna 17 Wilton Hills Wilton, CT 06897
67.	55-4-18	18 Wilton Hills	Michele A Rudnicki 18 Wilton Hills Wilton, CT 06897
68.	55-5	116 Danbury Rd	REIF III Danbury Road LLC 230 Park Ave New York, NY 10169

69.	56-1	149 Danbury Rd	Ring's End Inc Po Box 1066 Darien, CT 06820
70.	56-2	153 Danbury Rd	State of Connecticut 2800 Berlin Tpke Newington, CT 06131
71.	56-3	159 Danbury Rd	State of Connecticut 2800 Berlin Tpke Newington, CT 06131
72.	56-5	Danbury Rd	State of Connecticut 2800 Berlin Tpke Newington, CT 06131
73.	56-45	156 Danbury Rd	State of Connecticut 2800 Berlin Tpke Newington, CT 06131
74.	56-46A-BC	Danbury Rd	State of Connecticut 2800 Berlin Tpke Newington, CT 06131
75.	69-38	111 Danbury Rd	Cubesmart LP C/O PTA-CS#831 Po Box 320099 Alexandria, VA 22320
76.	69-41	129 Danbury Rd	Ring's End Incorporated Po Box 1066 Darien, CT 06820
77.	70-1	131 Danbury Rd	FGI Wilton LLC 525 Homestead Ave Mt Vernon, NY 10550
78.	70-2	141 Danbury Rd	FAB 5 LLC Po Box 590 Westport, CT 06881
79.	70-3	17 Wolfpit Rd	State of Connecticut 2800 Berlin Tpke Newington, CT 06131
80.	70-2A	Danbury Rd	State of Connecticut 2800 Berlin Tpke Newington, CT 06131
81.	55-1	1-49 Lambert Common	The Property Group of Ct., Inc. 25 Crescent Street Stamford, CT 06906
82.	55-4	1-18 Wilton Hills	4 Wilton Hills 4 Wilton Hills Wilton, CT 06897
83.		1-18 Wilton Hills	19 Wilton Hills 19 Wilton Hills Wilton, CT 06897

84.	70-16-1	Danbury Rd	The Conn Light & Power Co PO Box 270 Hartford, CT 06141
85.			Metro North Ron Bottacari 347 Madison Avenue New York, NY 10022
86.			David Willard 525 Water Street Bridgeport, CT 06601
87.			Seth Cummins, Esq. 347 Madison Avenue New York, NY 10017
88.			Penn Central Metro-North Railroad – Suburban Station 4 Penn Central Plaza – Floor 1200 Philadelphia, PA 19103
89.			Penn Central Metro-North Railroad 4 Penn Central Plaza – Floor 1200 Philadelphia, PA 19103
90.			State of Connecticut Dept. of Transportation Julie Thomas Office of Rail – Union Station – 4th Floor West 50 Union Ave. New Haven, CT 06519
91.			State of Connecticut Dept. of Transportation Julie Thomas 4 Brewery Street New Haven, CT 06519
92.			State of Connecticut Dept. of Transportation Robert Ike 2800 Berlin Turnpike P.O. Box 317546 Newington, CT 06131
93.			Amy Martinez, Transportation Principal Property Agent Department of Transportation Appraisals/Property Management Division 2800 Berlin Turnpike

			P.O. BOX 317546 Newington, CT 06131-7546
94.			Sheila Mary Sopper Director, Real Estate Development & Operations National Railroad Passenger Corporation (AMTRAK) 30th Street Station, Floor 5S 2955 Market Street Philadelphia, PA 19104
95.			Alan Warner Senior Manager, Real Estate Development National Railroad Passenger Corporation (AMTRAK) 30th Street Station - 5S-014 - Box 25 2955 Market Street Philadelphia, PA 19104
96.			Theodore Smigelski Connecticut Department of Transportation Office of Rail - Property Management Unit Component Change Out Building - 4th Floor 4 Brewery Street New Haven, CT 06519

LEGEND

DESCRIPTION	EXISTING	PROPOSED
PROPERTY LINE		
RIGHT-OF-WAY LINE		
EASEMENT LINE		
LIMITS OF WORK		
INTERMEDIATE CONTOURS		
INDEX CONTOURS	25	25
SPOT GRADE	X 141.2	+ 32.0
MAGNITUDE & DIRECTION OF SLOPE		0.0%
STORM DRAIN	SD	SD
STORM UNDERDRAIN		UD
GRAVITY SANITARY SEWER	SS	SS
SANITARY SEWER FORCE MAIN	SFM	SFM
SANITARY SEWER LOW PRESSURE	SSLP	SSLP
SANITARY SEWER COMBINED	COMB	COMB
WATER SERVICE	W	W
POTABLE WATER	PW	PW
FIRE SERVICE		F
HIGH PRESSURE FIRE SERVICE		HPF
UNDERGROUND ELECTRIC	E	E
PRIMARY ELECTRIC SERVICE	PE	PE
SECONDARY ELECTRIC	SE	SE
OVERHEAD ELECTRIC	OE	OE
TELEPHONE SERVICE	T	T
TEL-DATA SERVICE	T–D	TD
COMMUNICATIONS SERVICE	T–C	TC
CABLE TV SERVICE	CTV	CTV
GAS SERVICE	G	G
CHILLED WATER RETURN	CWR	CWR
CHILLED WATER SUPPLY	CWS	CWS
HOT WATER RETURN	HWR	HWR
HOT WATER SUPPLY	HWS	HWS
STEAM CONDENSATE	C	C
LOW PRESSURE STEAM	LPS	LPS
MEDIUM PRESSURE STEAM	MPS	MPS
HIGH PRESSURE STEAM	HPS	HPS
OXYGEN SERVICE		
OVERHEAD UTILITY (UNSPECIFIED)	OHW	OHW
CURB		
EDGE OF PAVEMENT		
DIRT ROAD		
SIDEWALK		
RETAINING WALL		
STONE WALL		
FENCE - UNSPECIFIED	X	
FENCE - CHAIN LINK		
FENCE - WOOD POST		
GUARDRAIL		
METAL BEAM RAIL		
TRAIN TRACKS		
STORM DRAIN STRUCTURES	MANHOLE; CATCH BASIN CB	MANHOLE; AREA DRAIN; CATCH BASIN
SANITARY SEWER MANHOLE		
WATER SERVICE STRUCTURES	HYDRANT; MANHOLE; VALVE	HYDRANT; MANHOLE; VALVE
GAS SERVICE STRUCTURES	MANHOLE; VALVE	MANHOLE; VALVE
ELECTRIC SERVICE STRUCTURES	UTILITY CO. POLE; MANHOLE; LIGHT	UTILITY CO. POLE; MANHOLE; LIGHT
TELECOMMUNICATIONS MANHOLE		
TREELINE		

LEGEND

RESOURCE AREAS	
VEGETATED WETLAND LIMIT	
WETLANDS WATER COURSE	
WETLAND FLAG	
FLOODWAY	
SETBACK LINE	

□□GENE□□L N□□E□

1. THESE DRAWINGS ARE INTENDED FOR REVIEW AND APPROVAL BY THE TOWN OF WILTON AND ARE NOT RELEASED FOR CONSTRUCTION.
2. TOPOGRAPHICAL, PROPERTY LINES, EXISTING SITE FEATURES, AND UTILITY INFORMATION TAKEN FROM PLAN ENTITLED "TOPOGRAPHIC SURVEY DEPICTING 141 DANBURY ROAD IN WILTON, CONNECTICUT, PREPARED FOR FDSPIN 141 DR LLC" BY D'ANDREA SURVEYING & ENGINEERING, P.C., DATED APRIL 1□, 2021. INFORMATION ON EXISTING UTILITIES HAS BEEN COMPILED FROM AVAILABLE INFORMATION INCLUDING UTILITY COMPANY AND MUNICIPAL RECORD MAPS AND FIELD SURVEY AND IS NOT GUARANTEED CORRECT OR COMPLETE. UTILITIES ARE SHOWN TO ALERT THE CONTRACTOR TO THEIR PRESENCE. THE CONTRACTOR AND/OR RESPONSIBLE PARTY IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL LOCATIONS AND ELEVATIONS OF ALL UTILITIES INCLUDING SERVICES. PRIOR TO CONSTRUCTION, CONTACT "CALL BEFORE YOU DIG" AT 811 OR 1 - 800 - □22 - 4455 AND VERIFY ALL UNDERGROUND AND OVERHEAD UTILITY LOCATIONS.
3. IT IS THE DEVELOPER'S RESPONSIBILITY TO OBTAIN ALL NECESSARY PERMITS AND/OR EASEMENTS FROM STATE AND LOCAL AUTHORITIES AND ANY CONSTRUCTION RIGHTS AND/OR SLOPE RIGHTS AS MAY BE REQUIRED FROM THE PROPERTY OWNERS.
4. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ASSURE THAT ALL PIPING IS PROPERLY BEDDED AND STABILIZED IN AREAS OF HIGH GROUND WATER AND/OR UNSTABLE SOIL CONDITIONS.
5. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH TOWN OF WILTON AND/OR CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARDS.
6. ANY DRAINAGE STRUCTURES, DITCHES, ASPHALT, CURBS, OTHER EXISTING CONSTRUCTION OR GRASSED AREAS DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THE ORIGINAL CONDITION.
7. FIRE LANE MARKINGS SHALL BE STRIPED IN THE FIELD PER FIRE MARSHAL REVIEW AND DIRECTION IF REQUIRED.
8. VERTICAL DATUM IS NAVD88.

□□□□□L□□□□□□□□D□N□□□□N N□□E□

1. UTILITY LOCATIONS SHOWN ARE APPROXIMATE AND ARE SUBJECT TO FINAL SITE SURVEY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL ELEVATIONS, PROPERTY LINES, LOCATION OF UTILITIES AND SITE CONDITIONS IN THE FIELD. IF AN UNFORESEEN INTERFERENCE EXISTS BETWEEN AN EXISTING AND A PROPOSED STRUCTURE, THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER SO THAT THE APPROPRIATE REVISIONS CAN BE MADE.
2. IT IS THE RESPONSIBILITY OF EACH BIDDER IN EVALUATING THESE PLANS TO MAKE EXAMINATIONS IN THE FIELD BY VARIOUS METHODS AND OBTAIN NECESSARY INFORMATION FROM AVAILABLE RECORDS, UTILITY CORPORATIONS, AND INDIVIDUALS AS TO THE LOCATION OF ALL SUBSURFACE STRUCTURES.
3. THE CONTRACTOR IS TO USE CAUTION WHEN WORKING NEAR OR UNDER OVERHEAD AND UNDERGROUND UTILITIES. THE CONTRACTOR IS TO NOTIFY THE UTILITY COMPANIES OF HIS INTENT PRIOR TO THE COMMENCEMENT OF ANY WORK.
4. PLANTINGS SHALL NOT BE PLACED ON TOP OF UTILITIES.
5. ELECTRICAL CONDUIT SHALL BE INSTALLED BY AN ELECTRICIAN LICENSED IN THE STATE OF CONNECTICUT
6. CONTRACTOR SHALL COORDINATE THE EXACT LOCATION OF BUILDING UTILITY SERVICES AND RAIN WATER LEADER LOCATIONS WITH THE MECHANICAL, ELECTRICAL, PLUMBING, AND ARCHITECTURAL DRAWINGS.
7. FOR SITE LIGHTING DESIGN, SEE PROJECT LANDSCAPE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS.

□□□□□□M□□E□ E□N□□E□

1. STORM SEWER LINES ARE TO BE INSTALLED USING INVERT ELEVATIONS, PIPE SLOPES SHOWN ARE APPROXIMATE AND ARE FOR REFERENCE ONLY.
2. APPLICABLE STORM SEWER CONSTRUCTION SHALL CONFORM TO TOWN OF WILTON REQUIREMENTS.
3. ROOF DRAINS ARE TO BE CONNECTED TO THE STORM DRAINAGE SYSTEM WHERE SHOWN.
4. THE ON-SITE DRAINAGE SYSTEM WILL REMAIN PRIVATE. THE PROPERTY OWNER IS TO PROVIDE REGULAR MAINTENANCE OF THE SYSTEM TO ALLOW IT TO CONTINUALLY FUNCTION AS INTENDED.
5. ALL PORTIONS OF THE STORM DRAINAGE SYSTEM ARE TO BE CAPABLE OF HANDLING AASHTO H-20 LOADS.
6. ALL REINFORCED CONCRETE PIPE SHALL BE CLASS IV UNLESS OTHERWISE NOTED.
7. ALL PVC PIPING TO BE CLASS SDR-35 UNLESS OTHERWISE NOTED. (SDR-21 REQUIRED FOR DEPTHS OVER 12 FEET.)
8. ALL CATCH BASINS SHALL HAVE BELL TRAPS EXCEPT IF CONNECTED IN A SERIES, IN WHICH CASE ONLY THE UPPER TWO CATCH BASINS IN THE SERIES SHALL HAVE BELL TRAPS.
9. HDPE PIPING SHALL CONFORM TO ASTM F2306.
10. THE INSTALLATION OF THE DRAINAGE SYSTEM IS TO BE DONE UNDER THE SUPERVISION OF THE DESIGN ENGINEER LICENSED IN THE STATE OF CONNECTICUT. AFTER CONSTRUCTION, THE ENGINEER IS TO SUBMIT TO THE TOWN OF WILTON WRITTEN CERTIFICATION THAT THE SYSTEM WAS INSTALLED AS PER THE APPROVED DESIGN. A DRAINAGE AS-BUILT DRAWING IS SUBMITTED WITH THIS LETTER TO THE TOWN OF WILTON. A REMINDER TO THE PROPERTY OWNER THAT THE SYSTEM WILL REMAIN PRIVATE AND THAT REGULAR MAINTENANCE WILL BE CRUCIAL TO ITS CONTINUED FUNCTIONING AS INTENDED. ADEQUATE ACCESS TO THE SYSTEM FOR MAINTENANCE PURPOSES IS TO BE PROVIDED.

D□□□N□□□□□□E□ E□□□□ □□E□N□□E□

1. SANITARY SEWER AND WATER LINE CROSSINGS SHALL MAINTAIN AN 18 INCH MINIMUM VERTICAL SEPARATION DISTANCE.
2. SEWER AND WATER LINE CROSSING ALL OTHER UTILITIES SHALL MAINTAIN A 12 INCH VERTICAL SEPARATION DISTANCE.
3. SANITARY SEWER LINES ARE TO BE INSTALLED USING INVERT ELEVATIONS. PIPE SLOPES SHOWN ARE APPROXIMATE AND ARE FOR REFERENCE ONLY.
4. PROPOSED SANITARY SEWER SERVICE IS TO MEET THE REQUIREMENTS OF THE TOWN OF WILTON.
5. PROPOSED WATER SERVICE IS TO MEET THE REQUIREMENTS OF THE STATE PLUMBING CODES AND AQUARION WATER COMPANY RULES AND REGULATIONS.

E□G□□D□NG N□□E□

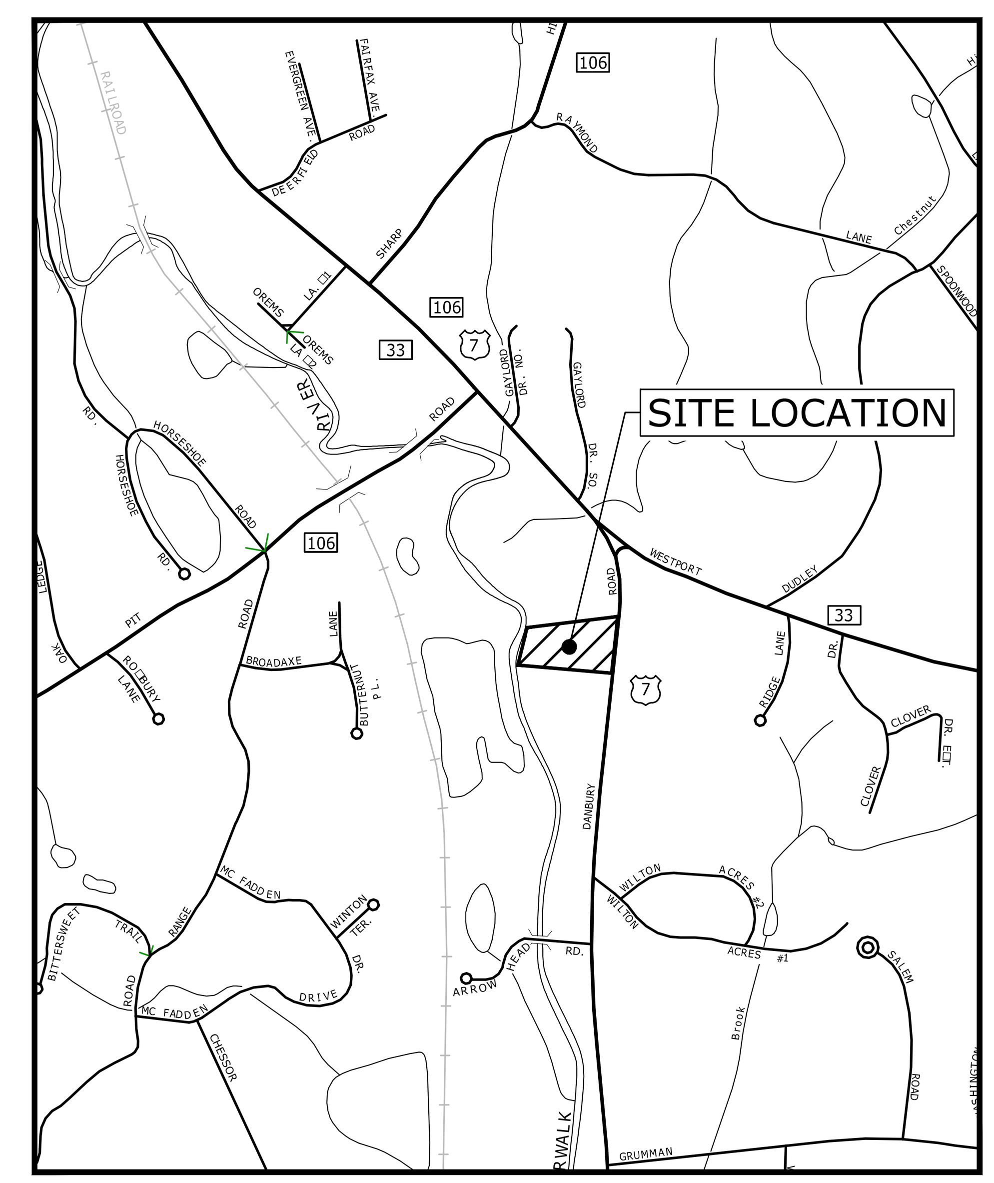
1. AREAS OF DISTURBED EARTH SHALL BE STABILIZED BY MULCHING OR OTHER MEANS. SEEDING OF GRASSED AREAS SHALL BE INITIATED AS SOON AS PRACTICAL AS AN EROSION AND SILTATION CONTROL MEASURE.
2. RETAINING WALLS OVER 3' IN HEIGHT ARE TO BE DESIGNED AND CONSTRUCTED UNDER THE SUPERVISION OF A STATE OF CONNECTICUT LICENSED PROFESSIONAL ENGINEER OR ARCHITECT.
3. RETAINING WALLS REQUIRING AN ENGINEERED DESIGN SHALL BE SUBMITTED TO AND APPROVED BY THE TOWN OF WILTON WITH CALCULATIONS BEFORE CONSTRUCTION OF THESE WALLS BEGINS.
4. RETAINING WALLS ARE TO HAVE PROTECTIVE FENCING WHERE WARRANTED.
5. WHERE LEDGE IS TO BE LEFT IN PLACE, THE STABILITY OF THE LEDGE IS TO BE VERIFIED BY A QUALIFIED STATE OF CONNECTICUT LICENSED PROFESSIONAL ENGINEER OR SOIL SCIENTIST.
6. ALL LAND CLEARING AND CONSTRUCTION DEBRIS SHALL BE PROPERLY DISPOSED OF OFFSITE.
7. THE OWNER IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND/OR EASEMENTS FROM THE STATE OR LOCAL AUTHORITIES AND ANY CONSTRUCTION RIGHTS AS MAY BE REQUIRED FROM ADJOINING PROPERTY OWNER.
8. THE CONTRACTOR SHALL ADJUST THE TOP OF FRAME/GRATE ELEVATIONS OF ALL EXISTING AND PROPOSED SANITARY/STORM/WATER MANHOLES, CATCH BASINS, AREA DRAINS, VALVE COVERS AND APPURTENANCES, WITHIN THE PROJECT LIMITS TO MEET THE PROPOSED GRADES PRIOR TO CONSTRUCTION.

□□□□E□□□□□□□N□

ABDN'D	ABANDONED
AC	ASBESTOS CEMENT PIPE
BC	BITUMINOUS CURB
BFP	BACKFLOW PREVENTOR
BIT	BITUMINOUS
BL	BASELINE
BLDG	BUILDING
BND	BOUND
BOC	BOTTOM OF CURB
BOT	BOTTOM
BS	BOTTOM OF STEP
BW	BOTTOM OF WALL
CATV	CABLE TELEVISION
CB	CATCH BASIN
CEM	CEMENT
CI	CAST IRON PIPE
CL	CENTERLINE
CLF	CHAIN LINK FENCE
CO	CLEAN OUT
CONC	CONCRETE
CPP	CORRUGATED POLYETHYLENE PIPE
CY	CUBIC YARD
DH	DRILL HOLE
DI	DUCTILE IRON PIPE
DIA	DIAMETER
DMH	DRAIN MANHOLE
E	EAST
EF	EACH FACE
EG	EXISTING GRADE
EL/ELEV	ELEVATION
ELEC	ELECTRIC
EMH	ELECTRIC MANHOLE
EOP	EDGE OF PAVEMENT
EW	EACH WAY
EXIST	EXISTING
FES	FLARED END SECTION
FF	FINISH FLOOR
FM	FORCE MAIN
G	GAS
GG	GAS GATE
GRAN	GRANITE
HC	HANDICAP
HDPE	HIGH DENSITY POLYETHYLENE
HMA	HOT MIX ASPHALT
HYD	HYDRANT
IN	INCHES
INV	INVERT
IP	IRON PIN
L	LENGTH OF CURB
LP	LIGHT POLE
LT	LEFT
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MON	MONUMENT
MJ	MECHANICAL JOINT

□□□□E□□□□□□□N□ □□N□□N□□D

N	NORTH
NITC	NOT IN THIS CONTRACT
NTS	NOT TO SCALE
N/A	NOT APPLICABLE
N/F	NOW OR FORMERLY
OC	ON CENTER
OCS	OUTLET CONTROL STRUCTURE
OH	OVERHEAD
PB	PLANT BED
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PCPP	PERFORATED CORRUGATED POLYETHYLENE PIPE
PERF	PERFORATED
PI	POINT OF INTERSECTION
PRC	POINT OF REVERSE CURVATURE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT OF TANGENCY
PVC	POLYVINYLCHLORIDE
PVMT	PAVEMENT
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
REV	REVISION
ROW	RIGHT OF WAY
RT	RIGHT
R&D	REMOVE AND DISPOSE
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
S	SOUTH
SAN	SANITARY
SCH	SCHEDULE
SF	SQUARE FOOT
SMH	SEWER MANHOLE
SS	STAINLESS STEEL
STA	STATION
STL	STEEL
STRM	STORM
T	TANGENT LENGTH
TC	TOP OF CURB
TEL	TEL-DATA
TP	TEST PIT
TS	TOP OF STEP
TW	TOP OF WALL
TYP	TYPICAL
UP	UTILITY POLE
W	WATER
WG	WATER GATE
WV	WATER VALVE
XFMR	TRANSFORMER



L□□□□□□N M□□
SCALE: 1" = 1000'

Tighe&Bond
1000 Bridgeport Avenue
Suite 320
Shelton, CT 06484
(203) 712-1100

ENVIRONMENTAL LAND SOLUTIONS, LLC
Landscape Architecture and Environmental Planning
8 KNIGHT STREET, SUITE 203
NORWALK, CONNECTICUT 06851
Tel: (203) 855-7879 Fax: (203) 855-7836
info@elsllc.net www.elsllc.net

06/07/2021

06/07/2021

□□□ N
□□□M□□□□□N

□□□
D□□□□r□□□□d

FDSPIN
141 DR, LLC

Wilton, Connecticut

MARK	DATE	DESCRIPTION

PROJECT NO:	F0173-002
DATE:	06/07/2021
FILE:	F0173-02-C-001-INDX.dwg
DRAWN BY:	MDS
CHECKED:	EWL
APPROVED:	JWB

SITE INDEX, ABBREVIATIONS, NOTES AND LEGEND

SCALE: AS SHOWN

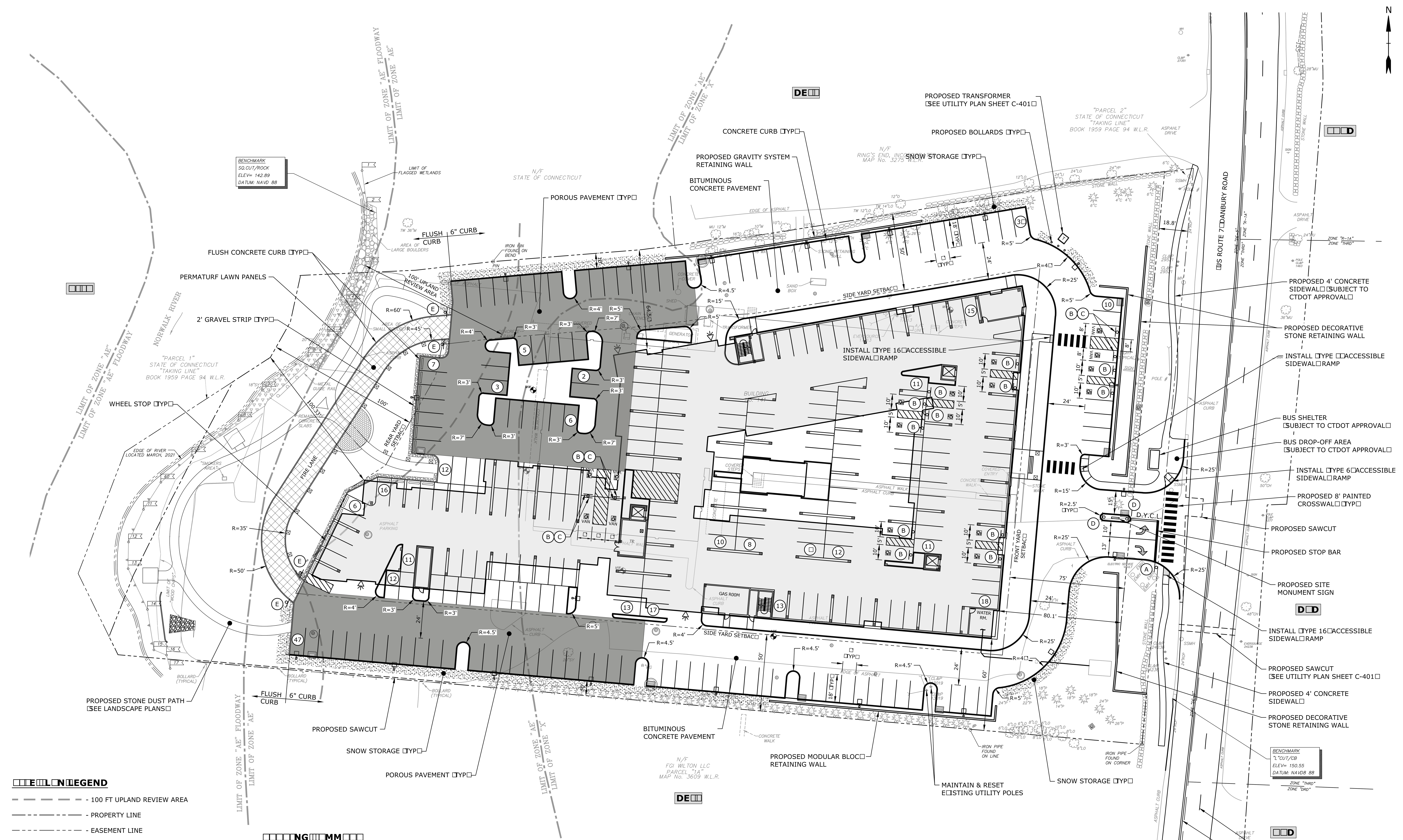
C-001

Tighe&Bond
1000 Bridgeport Avenue
Suite 320
Shelton, CT 06484
(203) 712-1100

ELS
ENVIRONMENTAL LAND SOLUTIONS, LLC
Landscape Architecture and Environmental Planning
8 KNIGHT STREET, SUITE 203
NORWALK, CONNECTICUT 06851
Tel: (203) 855-7879 Fax: (203) 855-7836
info@elsllc.net www.elsllc.net

STATE OF CONNECTICUT
CHARLES J. CROSE
20374
LICENSED PROFESSIONAL ENGINEER
06/07/2021

STATE OF CONNECTICUT
ERIK W. LINDQUIST
22895
LICENSED PROFESSIONAL ENGINEER
06/07/2021



EXISTING LEGEND

- 100 FT UPLAND REVIEW AREA
- PROPERTY LINE
- EASEMENT LINE
- SETBACK LINE
- PROPOSED CURB
- PROPOSED RETAINING WALL
- PROPOSED BUILDING
- PROPOSED SIGN
- PROPOSED LIGHT FIXTURE
- PROPOSED CATCH BASIN
- PROPOSED YARD DRAIN
- PROPOSED MANHOLE
- PROPOSED ACCESSIBLE SYMBOL
- PROPOSED POROUS PAVEMENT
- PROPOSED PERMATURF LAWN PANELS
- SNOW STORAGE AREA

PARKING SUMMARY

REGULAR SPACES	- 2□5
ACCESSIBLE SPACES	- 18
TOTAL SPACES	- 313

SIGN LEGEND

(A) STOP
(B) RESERVED PARKING PERMIT REQUIRED VIOLATORS WILL BE FINED MIN. $150
(C) VAN ACCESSIBLE
(D)
(E) EMERGENCY ACCESS ONLY

AREA AND BULK REQUIREMENTS				
	DE-5	DE-5R	EXISTING	PROPOSED
MIN FRONT YARD	100	75	80.1	80.1
MIN SIDE YARD (EACH)	50	50	4□4	50
MIN. REAR YARD	100	100	167.8	100.33
MIN. PARKING & LOADING SETBACKS (SIDE AND REAR YARDS)	25□	10	0	10
MAX. BUILDING HEIGHT (STORIES/FT)	4/55	4.5/55	2/30	4.5/55
MAX. BUILDING COVERAGE (%)	25%	35%	18.0%□	33.21%
MAX. SITE COVERAGE (%)	50%	75%	63.28%	66.44%
MIN. LOT SIZE (ACRES)	5	4	4.28	4.28
MIN. LOT FRONTAGE	150	150	373.41'	373.41'

NOTE

1. SURVEY CONDITIONS TAKEN FROM PLAN ENTITLED "TOPOGRAPHIC SURVEY DEPICTING 141 DANBURY ROAD IN WILTON, CONNECTICUT, PREPARED FOR FDSPIN 141 DR LLC" BY D'ANDREA SURVEYING & ENGINEERING, P.C., DATED APRIL 1□ 2021, AND IS FOR REFERENCE ONLY.

0 30' 60'
SCALE: 1" = 30'

FDSPIN
141 DR, LLC

Wilton, Connecticut

MARK	DATE	DESCRIPTION

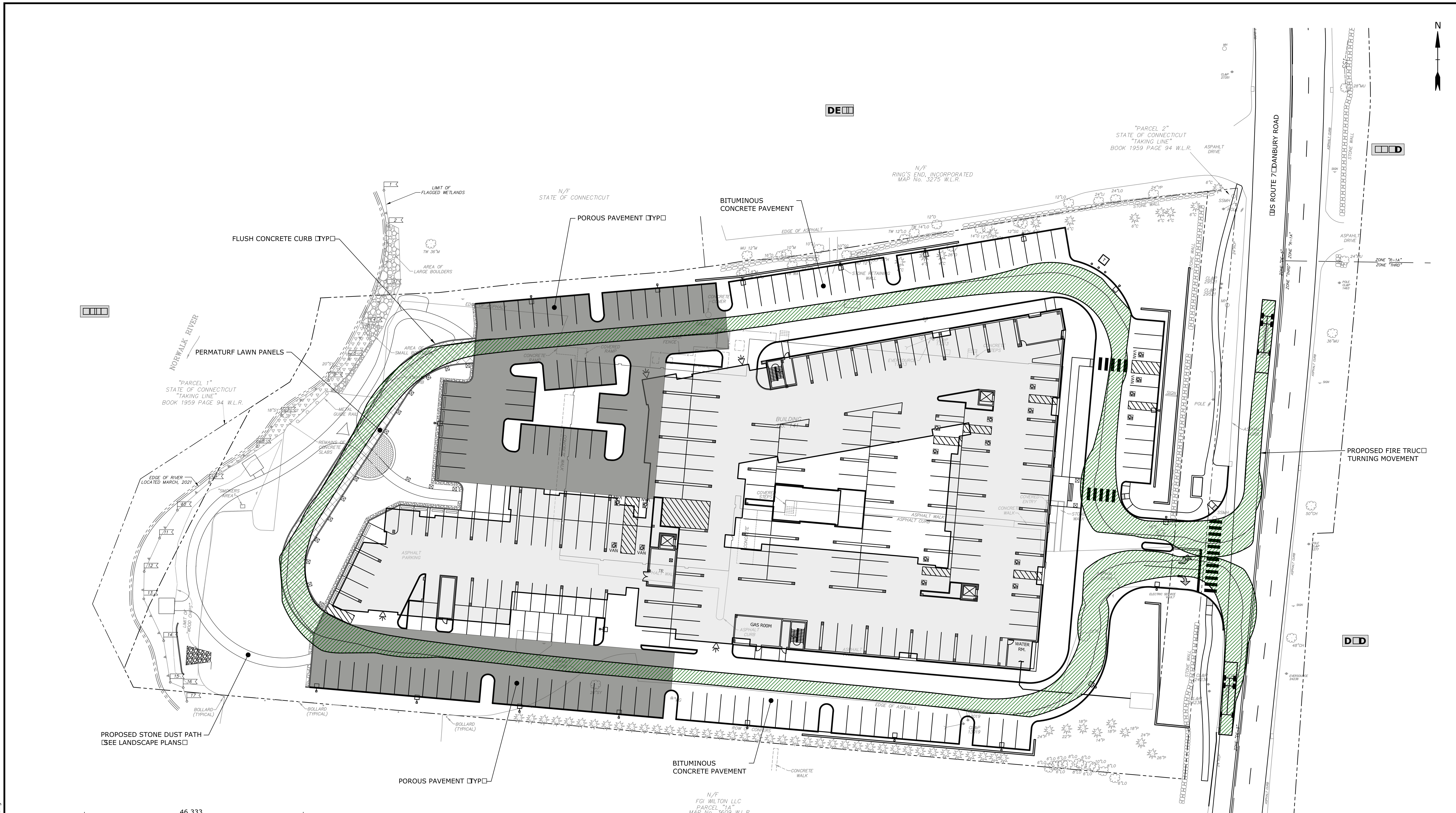
PROJECT NO:	F0173-002
DATE:	06/07/2021
FILE:	F0173-02-C-101-SITE.dwg
DRAWN BY:	MDS
CHECKED:	EWL
APPROVED:	JWB

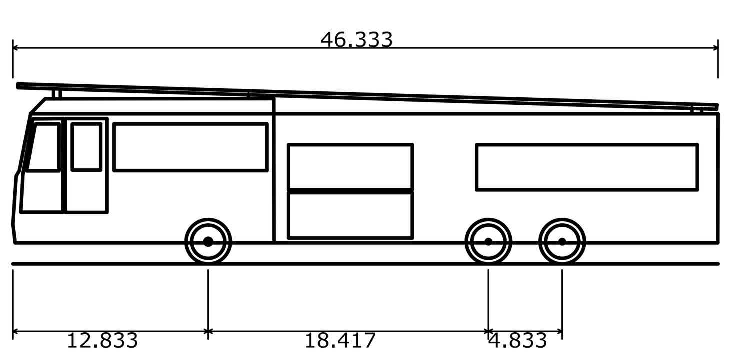
SITE LAYOUT PLAN

SCALE: 1" = 30'

C-101

Last Saved: 6/4/2021
Plotted On:Jun 07, 2021-8:30am By: TAS
Tighe & Bond:J:\F\F0173 Fuller\002 141 Danbury Road\Drawings-Figures\Sheets\F0173-02-C-101-SITE.dwg





E-ONE Emergency One Ocala FL

Overall Length	46.333ft
Overall Width	8.333ft
Overall Body Height	11.833ft
Min Body Ground Clearance	1.33ft
Track Width	8.333ft
Lock-to-lock time	6.00s
Max Wheel Angle	45.00°

FIRE TRUCK DESIGN VEHICLE
NO SCALE

NOTE

1. SURVEY CONDITIONS TAKEN FROM PLAN ENTITLED "TOPOGRAPHIC SURVEY DEPICTING 141 DANBURY ROAD IN WILTON, CONNECTICUT, PREPARED FOR FDSPIN 141 DR LLC" BY D'ANDREA SURVEYING & ENGINEERING, P.C., DATED APRIL 1, 2021, AND IS FOR REFERENCE ONLY.

0 30' 60'
SCALE: 1" = 30'

Tighe&Bond
1000 Bridgeport Avenue
Suite 320
Shelton, CT 06484
(203) 712-1100

ELS
ENVIRONMENTAL LAND SOLUTIONS, LLC
Landscape Architecture and Environmental Planning
8 KNIGHT STREET, SUITE 203
NORWALK, CONNECTICUT 06851
Tel: (203) 855-7879 Fax: (203) 855-7836
info@elsllc.net www.elsllc.net

STATE OF CONNECTICUT CHARLES J. CROCE 20374 LICENSED PROFESSIONAL ENGINEER
06/07/2021

STATE OF CONNECTICUT ERIK W. LINDQUIST 22850 LICENSED PROFESSIONAL ENGINEER
06/07/2021

141 Danbury Road

FDSPIN
141 DR, LLC

Wilton, Connecticut

MARK	DATE	DESCRIPTION

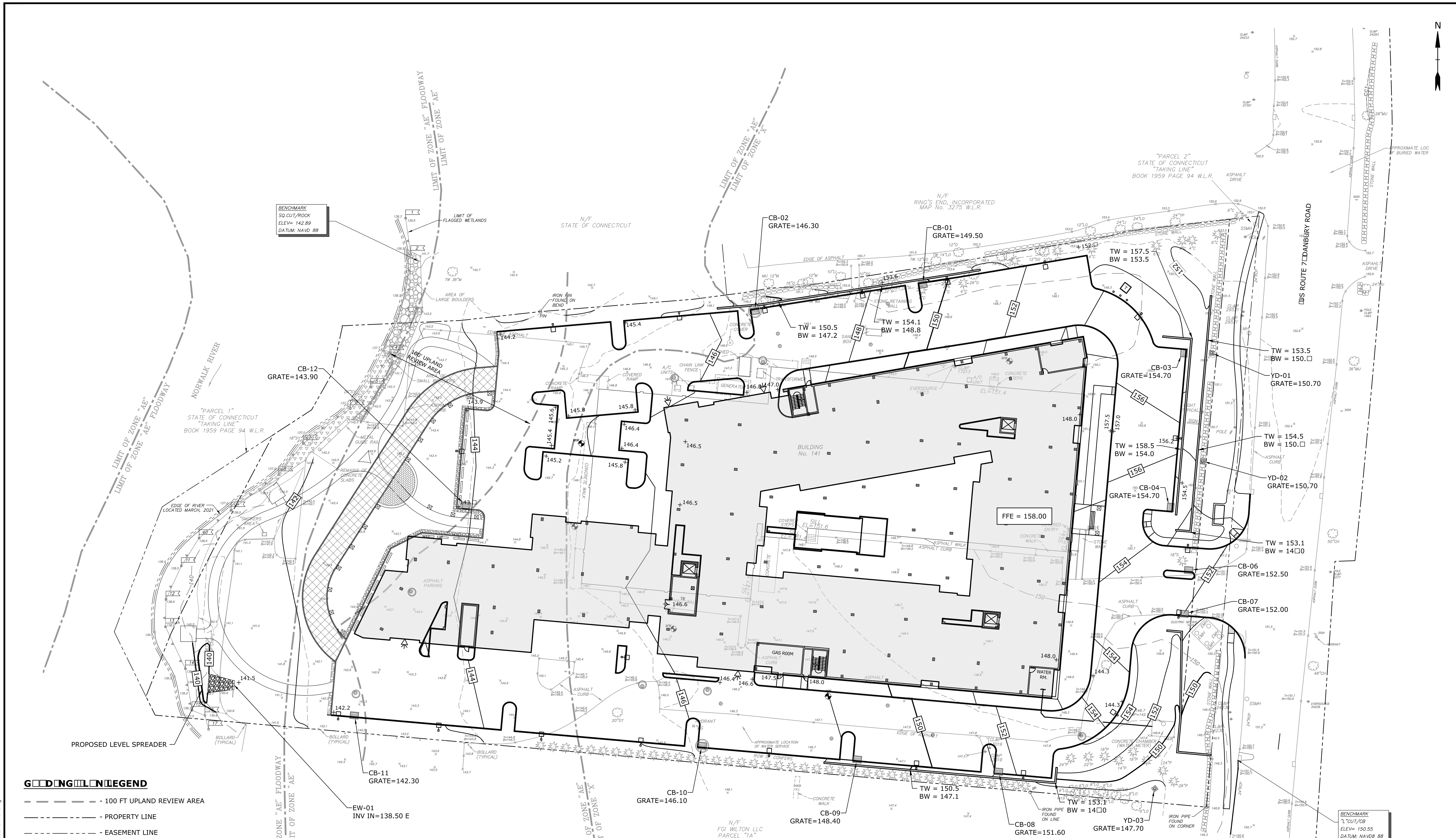
PROJECT NO:	F0173-002
DATE:	06/07/2021
FILE:	F0173-02-C-101-SITE.dwg
DRAWN BY:	MDS
CHECKED:	EWL
APPROVED:	JWB

FIRE TRUCK TURNING PLAN

SCALE: 1" = 30'

C-102

Last Saved: 6/4/2021
Plotted On:Jun 07, 2021-8:30am By: TAS
Tighe & Bond:J:\F\F0173 Fuller\002 141 Danbury Road\Drawings-Figures\Sheets\F0173-02-C-101-SITE.dwg



Tighe&Bond
1000 Bridgeport Avenue
Suite 320
Shelton, CT 06484
(203) 712-1100

ENVIRONMENTAL LAND SOLUTIONS, LLC
Landscape Architecture and Environmental Planning
8 KNIGHT STREET, SUITE 203
NORWALK, CONNECTICUT 06851
Tel: (203) 855-7879 Fax: (203) 855-7836
info@elsllc.net www.elsllc.net

STATE OF CONNECTICUT — CHARLES J. CROSE — 20374 — LICENSED PROFESSIONAL ENGINEER — 06/07/2021

STATE OF CONNECTICUT — ERIK W. LINDQUIST — 22859 — LICENSED PROFESSIONAL ENGINEER — 06/07/2021

FDSPIN
141 DR, LLC

Wilton, Connecticut

GRADING PLAN LEGEND

- 100 FT UPLAND REVIEW AREA
- PROPERTY LINE
- EASEMENT LINE
- SETBACK LINE
- 25 EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
- X 141.2 EXISTING SPOT ELEVATION
- 25 PROPOSED INDEX CONTOUR
- PROPOSED INTERMEDIATE CONTOUR
- + 32.0 PROPOSED SPOT ELEVATION
- PROPOSED RETAINING WALL
- PROPOSED BUILDING
- PROPOSED POROUS PAVEMENT
- PROPOSED PERMATURF LAWN PANELS
- PROPOSED CATCH BASIN
- PROPOSED YARD DRAIN
- TEST PIT LOCATION
- SOIL BORING LOCATION

GRADING PLAN NOTES

1. THE CONTRACTOR SHALL VERIFY ALL GRADES AND EXISTING CONDITIONS, AND REPORT ANY DISCREPANCIES TO THE OWNER'S REPRESENTATIVE.
2. MAKE SMOOTH TRANSITIONS BETWEEN ALL SLOPE CHANGES AND FEATHER EDGES OF ALL CUTS AND FILLS TO BLEND WITH EXISTING CONDITIONS.
3. PRIOR TO PAVING, PLANTING AND SEEDING, ALL FINAL GRADING SHALL BE APPROVED BY THE OWNER'S REPRESENTATIVE.
4. ADJUST ALL EXISTING AND RELOCATED UTILITY COLLARS, FRAMES, INLETS, VALVE BOXES, ETC. TO MEET NEW GRADES.
5. ADJUST ALL EXISTING AND RELOCATED MANHOLES, CATCH BASINS AND UTILITY STRUCTURES TO TNEW ELEVATIONS WHERE REQUIRED.
6. ALL EXCAVATED MATERIAL NOT REQUIRED FOR GRADING OR FILLING SHALL BE REMOVED PROMPTLY FROM THE SITE AND DISPOSED OF LEGALLY.
7. SURVEY CONDITIONS TAKEN FROM PLAN ENTITLED "TOPOGRAPHIC SURVEY DEPICTING 141 DANBURY ROAD IN WILTON, CONNECTICUT, PREPARED FOR FDSPIN 141 DR LLC" BY D'ANDREA SURVEYING & ENGINEERING, P.C., DATED APRIL 1[illegible] 2021, AND IS FOR REFERENCE ONLY.
8. ACCESSIBLE SPACES TO BE GRADED AT 2% OR LESS.
9. ACCESSIBLE ROUTE TO BUILDING NOT TO EXCEED 5%

MARK	DATE	DESCRIPTION

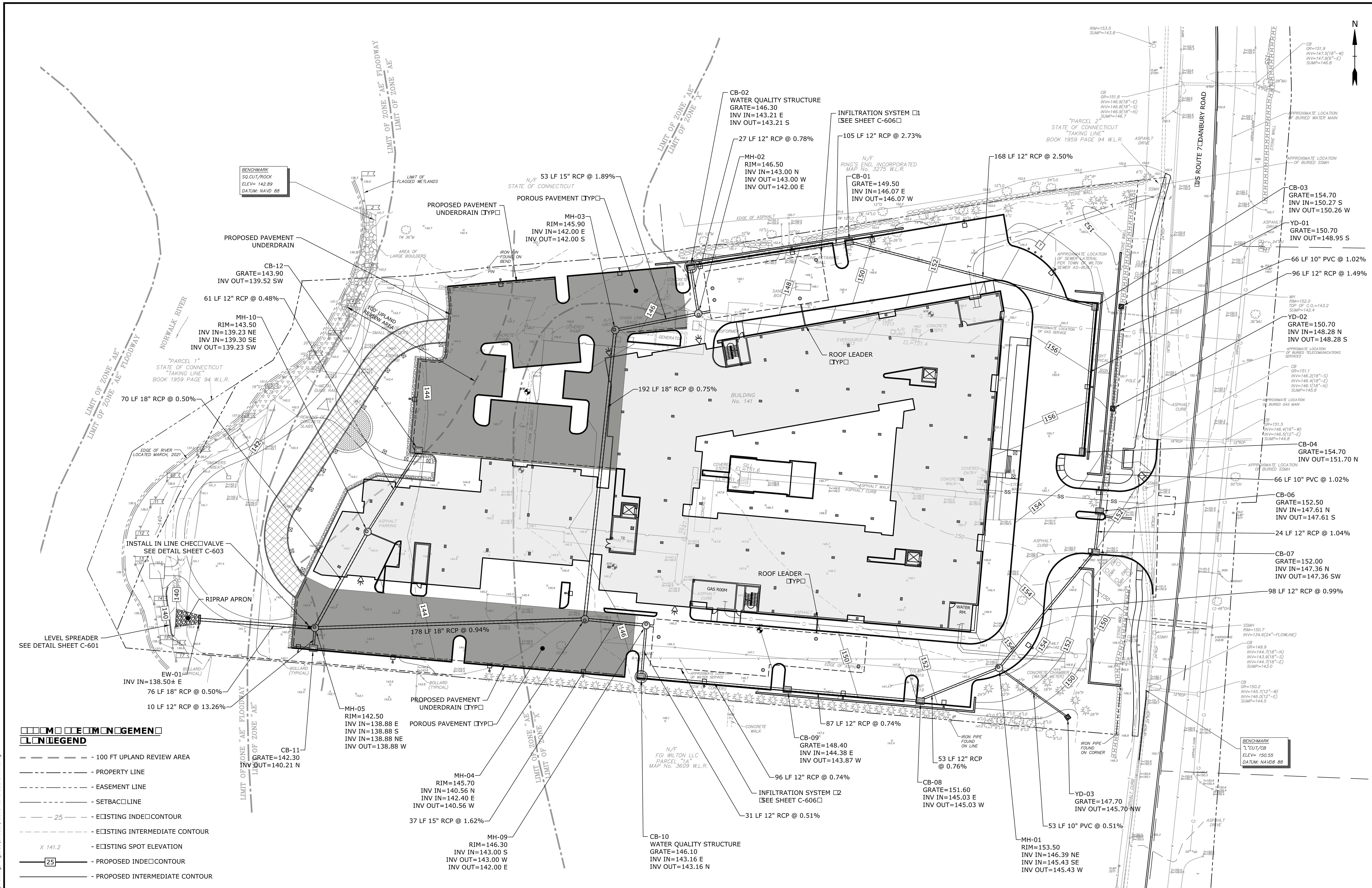
PROJECT NO:	F0173-002
DATE:	06/07/2021
FILE:	F0173-02-C-201-GRAD.dwg
DRAWN BY:	MDS
CHECKED:	EWL
APPROVED:	JWB

GRADING PLAN

SCALE: 1" = 30'

C-201

Last Saved: 6/2/2021
Plotted On: Jun 07, 2021-8:30am By: TAS
Tighe & Bond: J:\F\F0173 Fuller\002 141 Danbury Road\Drawings-Figures\Sheets\F0173-02-C-201-GRAD.dwg



STORMWATER MANAGEMENT PLAN LEGEND

- 100 FT UPLAND REVIEW AREA
- PROPERTY LINE
- EASEMENT LINE
- SETBACK LINE
- 25 — EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
- X 141.2 — EXISTING SPOT ELEVATION
- 25 — PROPOSED INDEX CONTOUR
- PROPOSED INTERMEDIATE CONTOUR
- + 32.0 — PROPOSED SPOT ELEVATION
- PROPOSED CURB
- PROPOSED RETAINING WALL
- PROPOSED BUILDING
- PROPOSED CATCH BASIN
- PROPOSED YARD DRAIN
- PROPOSED MANHOLE
- PROPOSED POROUS PAVEMENT
- PROPOSED PERMATURF LAWN PANELS

NOTE

1. SURVEY CONDITIONS TAKEN FROM PLAN ENTITLED "TOPOGRAPHIC SURVEY DEPICTING 141 DANBURY ROAD IN WILTON, CONNECTICUT, PREPARED FOR FDSPIN 141 DR LLC" BY D'ANDREA SURVEYING & ENGINEERING, P.C., DATED APRIL 1, 2021, AND IS FOR REFERENCE ONLY.

Tighe&Bond
1000 Bridgeport Avenue
Suite 320
Shelton, CT 06484
(203) 712-1100

ELS
ENVIRONMENTAL LAND SOLUTIONS, LLC
Landscape Architecture and Environmental Planning
8 KNIGHT STREET, SUITE 203
NORWALK, CONNECTICUT 06851
Tel: (203) 855-7879 Fax: (203) 855-7836
info@elsllc.net www.elsllc.net

STATE OF CONNECTICUT — CHARLES J. CROCE — 20374 — LICENSED PROFESSIONAL ENGINEER — 06/07/2021
STATE OF CONNECTICUT — ERIK W. LINDQUIST — 22850 — LICENSED PROFESSIONAL ENGINEER — 06/07/2021

FDSPIN
141 DR, LLC

Wilton, Connecticut

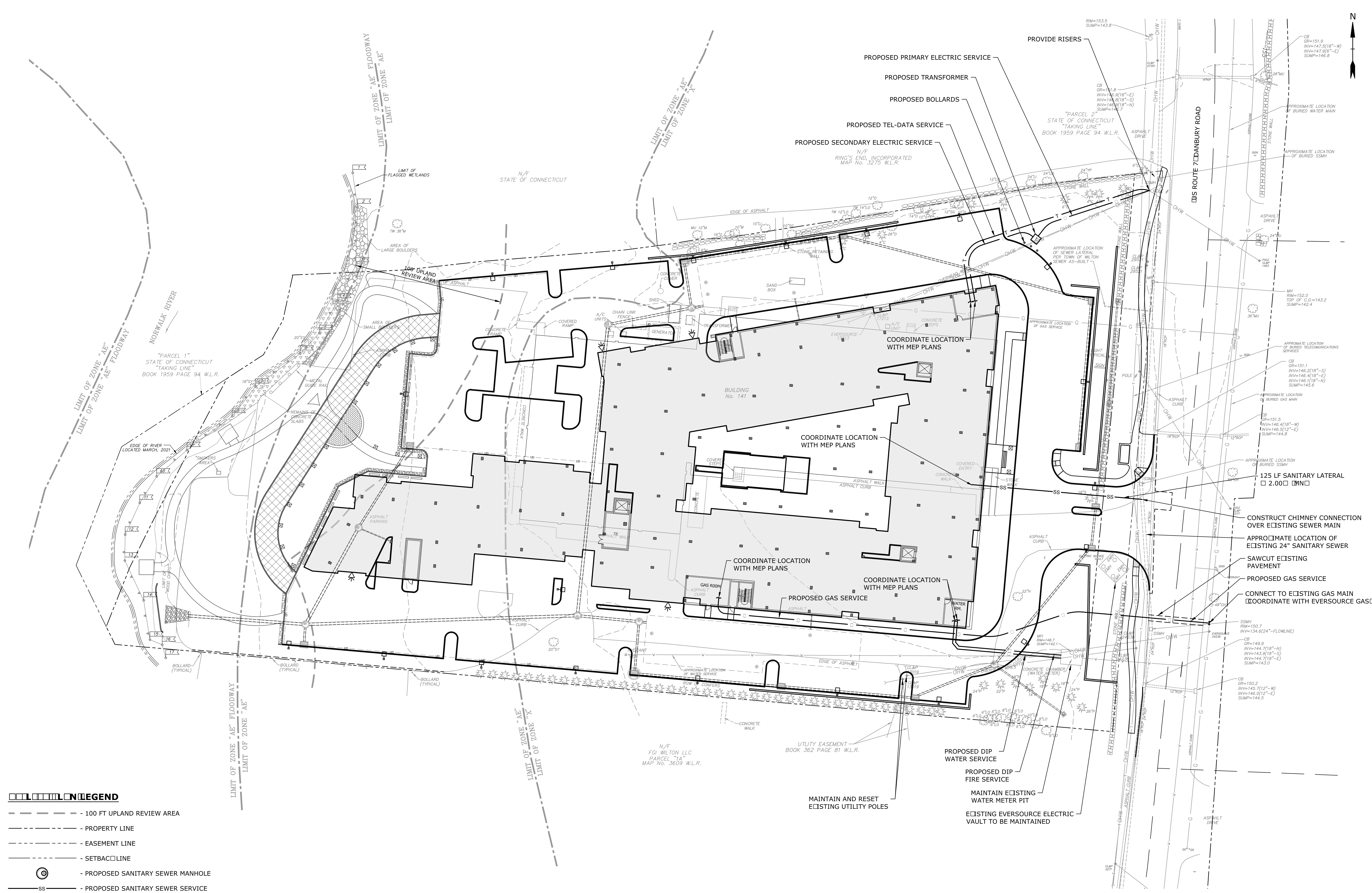
MARK	DATE	DESCRIPTION

PROJECT NO:	F0173-002
DATE:	06/07/2021
FILE:	F0173-02-C-301-STRM.dwg
DRAWN BY:	MDS
CHECKED:	EWL
APPROVED:	JWB

STORMWATER
MANAGEMENT PLAN

SCALE: 1" = 30'

C-301



□□L□□□□L□N□LEGEND

- 100 FT UPLAND REVIEW AREA
- PROPERTY LINE
- EASEMENT LINE
- SETBAC□LINE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER SERVICE
- PROPOSED ELECTRIC SERVICE
- PROPOSED TEL-DATA SERVICE
- PROPOSED WATER SERVICE
- PROPOSED FIRE SERVICE
- PROPOSED GAS SERVICE
- PROPOSED CATCH BASIN
- PROPOSED YARD DRAIN
- PROPOSED MANHOLE

N□□E

1. SURVEY CONDITIONS TA□EN FROM PLAN ENTITLED "TOPOGRAPHIC SURVEY DEPICTING 141 DANBURY ROAD IN WILTON, CONNECTICUT, PREPARED FOR FDSPIN 141 DR LLC" BY D'ANDREA SURVEYING & ENGINEERING, P.C., DATED APRIL 1□ 2021, AND IS FOR REFERENCE ONLY.

Tighe&Bond
1000 Bridgeport A□enue
Suite 320
Shelton, CT 06484
□203□712-1100

ENVIRONMENTAL LAND SOLUTIONS, LLC
Landscape Architecture and Environmental Planning
8 KNIGHT STREET, SUITE 203
NORWALK, CONNECTICUT 06851
Tel: (203) 855-7879 Fax: (203) 855-7836
info@elsllc.net www.elsllc.net

STATE OF CONNECTICUT CHARLES J. CROCE 20374 LICENSED PROFESSIONAL ENGINEER 06/07/2021

STATE OF CONNECTICUT ERIK W. LINDQUIST 22850 LICENSED PROFESSIONAL ENGINEER 06/07/2021

□□□ N
□□□M□□□□□N

□□□
D□□□□r□□□□d

FDSPIN
141 DR, LLC

Wilton, Conne□ti□ut

MAR□	DATE	DESCRIPTION

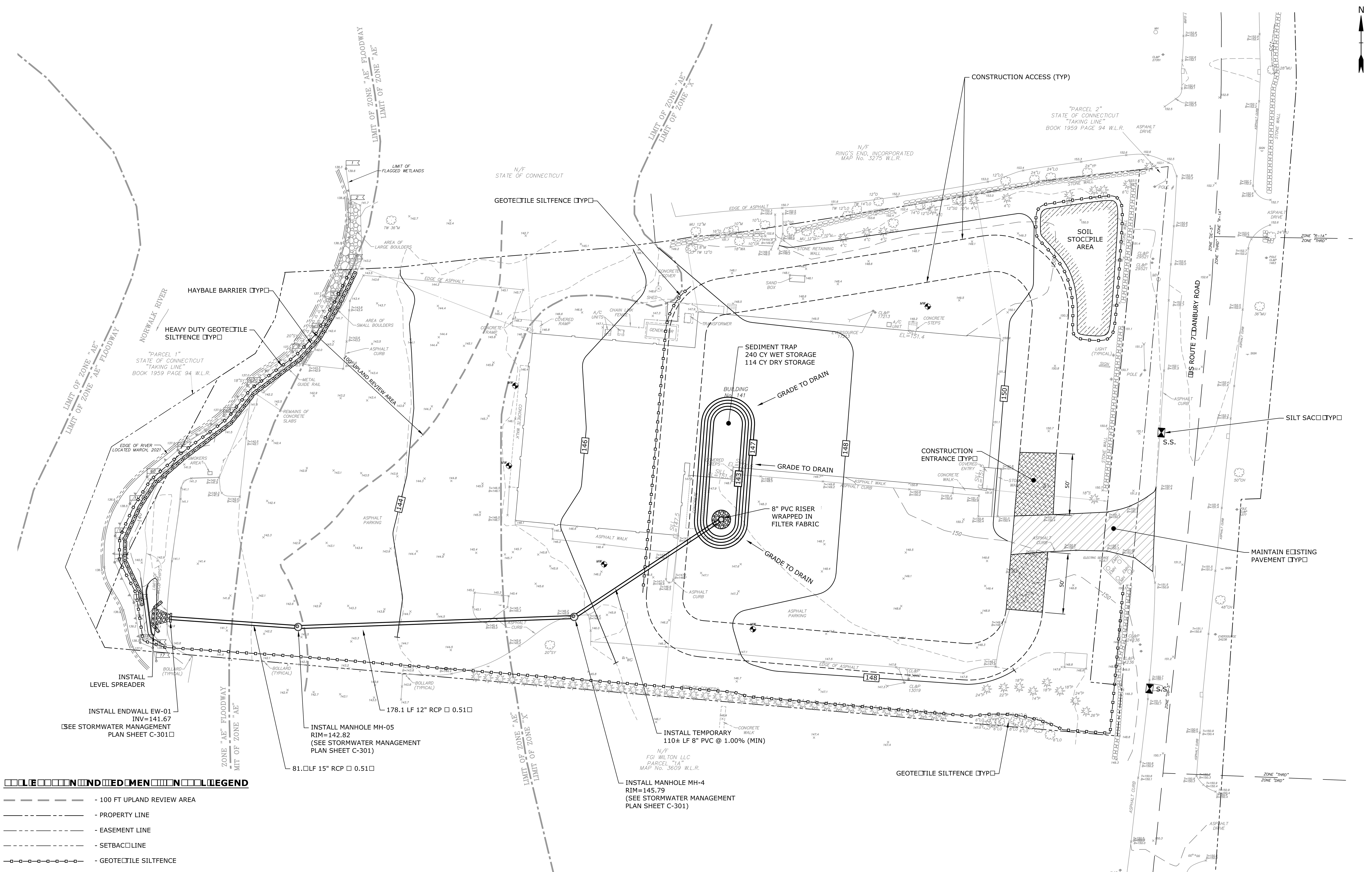
PROJECT NO:	F0173-002
DATE:	06/07/2021
FILE:	F0173-02-C-401-UTIL.dwg
DRAWN BY:	MDS
CHEC□ED:	EWL
APPROVED:	JWB

UTILITY PLAN

SCALE: 1" = 30'

C-401

Last Sa□ed: 6/1/2021
Plotted On:Jun 07, 2021-8:30am By: TAS
Tighe & Bond:J:\F\F0173 Fuller\002 141 Danbury Road\Drawings-Figures\Sheets\F0173-02-C-401-UTIL.dwg



□□IL E□□□□□N □ND □ED□MEN□□□□N □□□□L LEGEND

- 100 FT UPLAND REVIEW AREA
- PROPERTY LINE
- EASEMENT LINE
- SETBAC□LINE
- GEOTE□TILE SILTFENCE
- HAYBALE BARRIER□
- S.S. - SILT SAC□
- CATCH BASIN INLET PROTECTION
- HAYBALE CHEC□DAM
- DE-WATERING SUMP
- CONSTRUCTION ENTRANCE
- SOIL STOC□PILE AREA - SOIL STOC□PILE AREA

N□□E

1. SURVEY CONDITIONS TA□EN FROM PLAN ENTITLED "TOPOGRAPHIC SURVEY DEPICTING 141 DANBURY ROAD IN WILTON, CONNECTICUT, PREPARED FOR FDSPIN 141 DR LLC" BY D'ANDREA SURVEYING & ENGINEERING, P.C., DATED APRIL 1□ 2021, AND IS FOR REFERENCE ONLY.

0 30' 60'
SCALE: 1" = 30'

Tighe&Bond
1000 Bridgeport A□enue
Suite 320
Shelton, CT 06484
□203□712-1100

ENVIRONMENTAL LAND SOLUTIONS, LLC
Landscape Architecture and Environmental Planning
8 KNIGHT STREET, SUITE 203
NORWALK, CONNECTICUT 06851
Tel: (203) 855-7879 Fax: (203) 855-7836
info@elsllc.net www.elsllc.net

STATE OF CONNECTICUT CHARLES J. CROCE 20374 LICENSED PROFESSIONAL ENGINEER 06/07/2021

STATE OF CONNECTICUT ERIK W. LINDQUIST 22856 LICENSED PROFESSIONAL ENGINEER 06/07/2021

□□□ N
□□□M□□□□N

□□□
D□□□□r□□□□d

FDSPIN
141 DR, LLC

Wilton, Conne□ti□ut

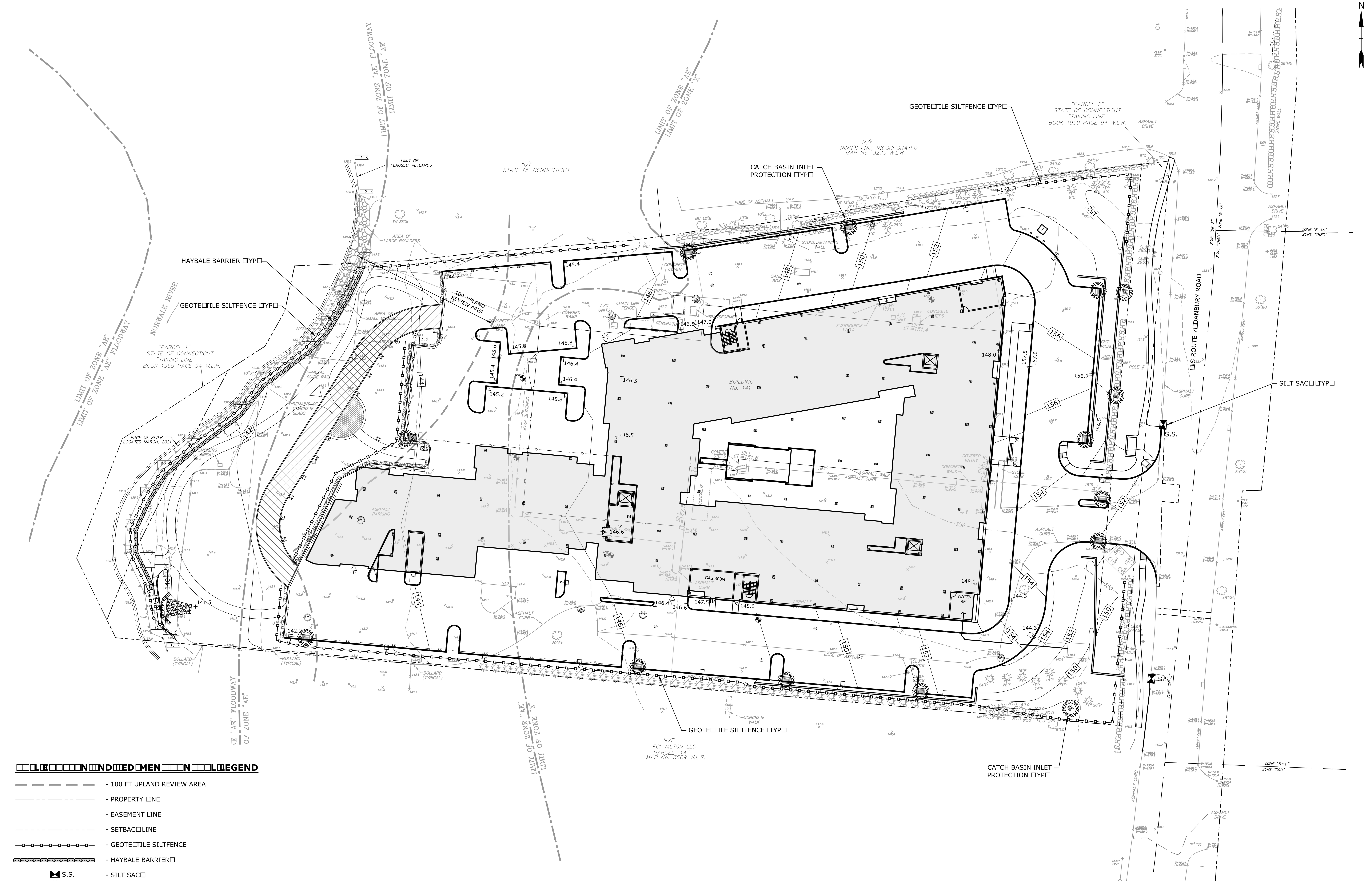
MAR□	DATE	DESCRIPTION

PROJECT NO:	F0173-002
DATE:	06/07/2021
FILE:	F0173-02-C-501-SESC.dwg
DRAWN BY:	MDS
CHEC□ED:	EWL
APPROVED:	JWB

SOIL EROSION AND SEDIMENT CONTROL PLAN INITIAL PHASE

SCALE: 1" = 30'

C-501



SOIL EROSION AND SEDIMENT CONTROL LEGEND

- 100 FT UPLAND REVIEW AREA
- PROPERTY LINE
- EASEMENT LINE
- SETBACK LINE
- GEOTEXTILE SILTFENCE
- HAYBALE BARRIER
- S.S. - SILT SACK
- CATCH BASIN INLET PROTECTION
- HAYBALE CHECK DAM
- DE-WATERING SUMP
- CONSTRUCTION ENTRANCE
- SOIL STOCKPILE AREA - SOIL STOCKPILE AREA

NOTE

1. SURVEY CONDITIONS TAKEN FROM PLAN ENTITLED "TOPOGRAPHIC SURVEY DEPICTING 141 DANBURY ROAD IN WILTON, CONNECTICUT, PREPARED FOR FDSPIN 141 DR LLC" BY D'ANDREA SURVEYING & ENGINEERING, P.C., DATED APRIL 1?, 2021, AND IS FOR REFERENCE ONLY.

0 30' 60'
SCALE: 1" = 30'

Tighe&Bond
1000 Bridgeport Avenue
Suite 320
Shelton, CT 06484
(203) 712-1100

ELS PLANNING – LANDSCAPE ARCHITECTURE – ENVIRONMENTAL
ENVIRONMENTAL LAND SOLUTIONS, LLC
Landscape Architecture and Environmental Planning
8 KNIGHT STREET, SUITE 203
NORWALK, CONNECTICUT 06851
Tel: (203) 855-7879 Fax: (203) 855-7836
info@elsllc.net www.elsllc.net

STATE OF CONNECTICUT – CHARLES J. CROSE – 20374 – LICENSED PROFESSIONAL ENGINEER
06/07/2021

STATE OF CONNECTICUT – ERIK W. LINDQUIST – 22890 – LICENSED PROFESSIONAL ENGINEER
06/07/2021

[illegible]

[illegible]

FDSPIN
141 DR, LLC

Wilton, Connecticut

MARK	DATE	DESCRIPTION

PROJECT NO:	F0173-002
DATE:	06/07/2021
FILE:	F0173-02-C-501-SESC.dwg
DRAWN BY:	MDS
CHECKED:	EWL
APPROVED:	JWB

SOIL EROSION AND SEDIMENT CONTROL PLAN FINAL PHASE

SCALE: 1" = 30'

C-502

Last Saved: 6/1/2021
Plotted On: Jun 07, 2021-8:31am By: TAS
Tighe & Bond: J:\F\F0173 Fuller\002 141 Danbury Road\Drawings-Figures\Sheets\F0173-02-C-501-SESC.dwg

SOIL EROSION AND SEDIMENT CONTROL:

THE STORMWATER MANAGEMENT MEASURES WILL ADDRESS THE STORMWATER QUALITY ONCE THE SITE HAS BEEN CONSTRUCTED AND STABILI□ED. SEDIMENTATION AND EROSION CONTROL MEASURES WILL BE INSTALLED DURING CONSTRUCTION WHICH WILL MINIMI□E ADVERSE IMPACTS FROM CONSTRUCTION ACTIVITIES.

ALL SEDIMENTATION AND EROSION CONTROL MEASURES PROPOSED FOR THIS DEVELOPMENT HAVE BEEN DESIGNED IN ACCORDANCE WITH THE "2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENTATION CONTROL" AS PUBLISHED BY THE CONNECTICUT COUNCIL ON SOIL EROSION AND WATER CONSERVATION. ADDITIONAL GUIDELINES HAVE ALSO BEEN FOLLOWED THAT ARE AVAILABLE FROM THE CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION AS RECOMMENDED FOR SEDIMENTATION CONTROL DURING CONSTRUCTION ACTIVITIES.

LISTED BELOW ARE THE EROSION CONTROL NARRATIVE AND THE EROSION CONTROL NOTES.

SOIL EROSION AND SEDIMENT CONTROL NARRATIVE:

GENERAL

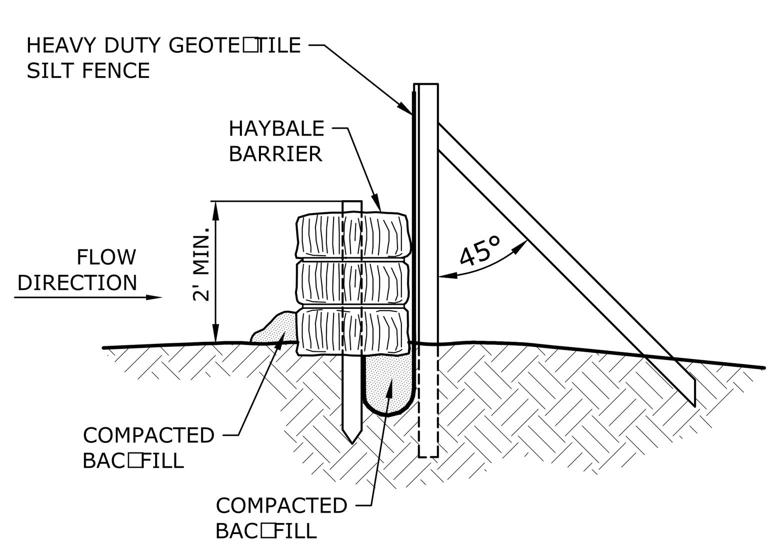
1. THE PROPOSED DEVELOPMENT IS ENTITLED 141 DANBURY ROAD, WILTON, CONNECTICUT.
2. ESTIMATED:
   PROJECT START: FALL 2021
   PROJECT COMPLETION: SPRING 2022
3. EROSION CONTROL NARRATIVE REFERS TO DRAWINGS C-501 THROUGH C-504.
4. THE PROPOSED SITE DEVELOPMENT WILL CONSIST OF BUILDING DEMOLITION, CLEARING AND GRUBBING THE E□ISTING SITE, E□CAVATION,CONSTRUCTION OF SEDIMENTATION/DETENTION BASINS, AND ROUGH GRADING OF BUILDING, PAR□ING AREAS, SIDEWAL□S AND CURBING.
5. THE DEVELOPMENT IS LOCATED IN WILTON, CONNECTICUT AND IS LOCATED ON DANBURY ROAD.

CONSTRUCTION SEQUENCE - INITIAL PHASE

1. CONDUCT A PRE-CONSTRUCTION MEETING WITH THE OWNER OR OWNER'S REPRESENTATIVE, TOWN PLANNER, DESIGN ENGINEER, SITE ENGINEER, CONTRACTOR AND SITE SUPERINTENDENT TO ESTABLISH THE LIMITS OF CONSTRUCTION, CONSTRUCTION PROCEDURES AND MATERIAL STOC□PILE AREAS.
2. FIELD STA□E THE LIMITS OF CONSTRUCTION.
3. INSTALL ALL APPLICABLE SOIL AND EROSION CONTROL MEASURES AROUND THE PERIMETER OF THE SITE TO THE E□TENT POSSIBLE. THIS WILL INCLUDE SILTATION FENCE AROUND THE PROJECT AS SHOWN ON THE PLANS.
4. INSTALL CONSTRUCTION ACCESS ROAD AND ANTI-TRAC□ING PAVEMENT IN THE AREAS AS SHOWN ON THE PLANS. ALL CONSTRUCTION ACCESS SHALL BE INTO THE SITE THROUGH THE ANTI-TRAC□ING PADS.
5. ESTABLISH TEMPORARY STAGING AREA.
6. BEGIN BUILDING DEMOLITION AND PAVEMENT REMOVAL.
7. CONSTRUCT THE INITIAL STORM DRAINAGE AND SEDIMENTATION TRAP AS SHOWN ON THE PLANS.
8. INSTALL WATER QUALITY SYSTEMS AND ASSOCIATED DRAINAGE NETWOR□ TO THE MA□IMUM E□TENT PRACTICABLE. GRADE THE AREA AROUND THE STORM DRAINAGE SYSTEM AS NECESSARY.
□ BEGIN ROUGH ROADWAY GRADING.
10. INSTALL REMAINING DRAINAGE SYSTEM TO THE E□TENT NECESSARY TO PROVIDE POSITIVE DRAINAGE.
11. BEGIN INSTALLATION OF SANITARY SEWER SYSTEM, WATER AND OTHER UTILITIES TO E□TENT NECESSARY.
12. PROVIDE SILT FENCE/HAYBALE BARRIER AROUND SOIL STOC□PILE AREA. PROVIDE TEMPORARY VEGETATIVE COVER □DEFINED IN EROSION CONTROL NOTES□ON ALL E□POSED SURFACES.
13. BEGIN BUILDING CONSTRUCTION.
14. PAVE BINDER COURSE ON PAR□ING AND DRIVEWAYS FOR NON-POROUS PAVEMENT AREAS.
15. ESTABLISH TEMPORARY VEGETATIVE COVER.
16. CONSTRUCT DRAINAGE AND SUBBASE FOR POROUS PAVEMENT AND THEN PLACE PAVEMENT COURSE

CONSTRUCTION SEQUENCE - FINAL PHASE

1. REPAIR PERIMETER SEDIMENT & EROSION CONTROLS AS NEEDED.
2. CLEAN/REPLACE CONTROLS FROM PREVIOUS PHASE AS NEEDED.
3. FINE GRADE SITE.
4. CONTINUE CONSTRUCTION OF BUILDING.
5. COMPLETE CONSTRUCTION OF SIDEWAL□S.
6. ESTABLISH FINAL VEGETATIVE COVER AND LANDSCAPING.
7. PAVE SURFACE COURSE ON ROADWAYS.
8. REMOVE EROSION CONTROLS WHEN SITE IS STABILI□ED.



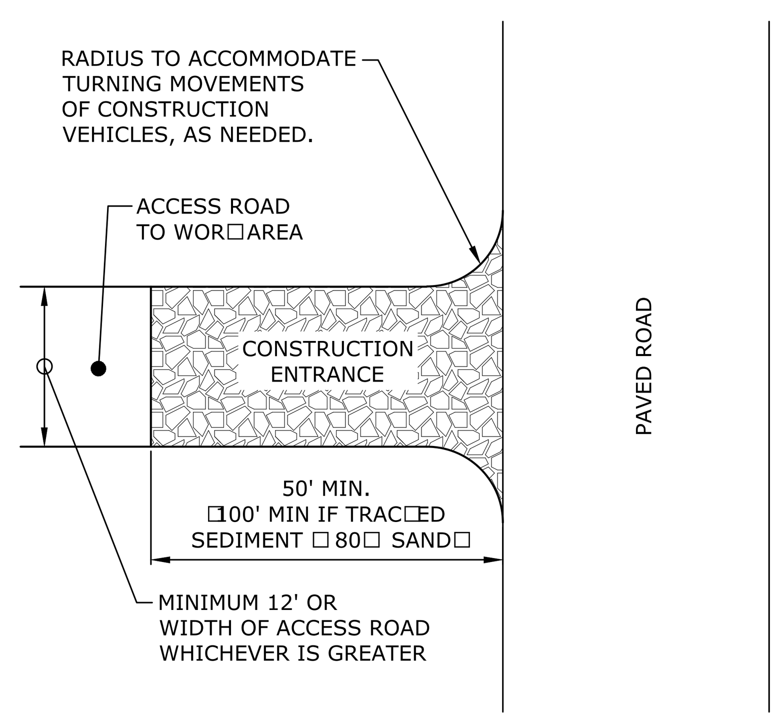
NOTE:

1. BAC□FILL AND COMPACT THE E□CAVATED SOIL AS SHOWN ON THE UPHILL SIDE OF THE BARRIER TO PREVENT PIPING.

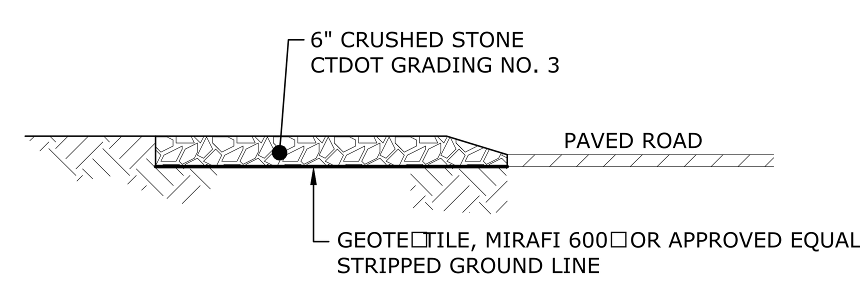
□□L□□EN□E□ND□□□□□□LE □□M□NED□□□□□□E□
NO SCALE

SOIL EROSION AND SEDIMENT CONTROL NOTES:

1. ALL SEDIMENTATION AND EROSION CONTROL MEASURES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE "2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL", DEP BULLETIN NO. 34, AND ALL AMENDMENTS AND ADDENDA THERETO AS PUBLISHED BY THE CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION.
2. LAND DISTURBANCE SHALL BE □EPT TO THE MINIMUM NECESSARY FOR CONSTRUCTION OPERATIONS.
3. ALL EROSION CONTROL MEASURES SHALL BE INSTALLED AS SHOWN ON THE PLAN AND ELSEWHERE AS ORDERED BY THE ENGINEER.
4. ALL CATCH BASINS SHALL BE PROTECTED WITH A SILT SAC□S, HAYBALE RING, SILT FENCE OR BLOC□AND STONE INLET PROTECTION THROUGHOUT THE CONSTRUCTION PERIOD AND UNTIL ALL DISTURBED AREAS ARE THOROUGHLY STABILI□ED.
5. WHENEVER POSSIBLE, EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO CONSTRUCTION. SEE "EROSION CONTROL NARRATIVE".
6. ADDITIONAL CONTROL MEASURES SHALL BE INSTALLED DURING THE CONSTRUCTION PERIOD AS ORDERED BY THE ENGINEER.
7. ALL SEDIMENTATION AND EROSION CONTROL MEASURES SHALL BE MAINTAINED IN EFFECTIVE CONDITION THROUGHOUT THE CONSTRUCTION PERIOD.
8. SEDIMENT REMOVED SHALL BE DISPOSED OF OFF SITE OR IN A MANNER AS REQUIRED BY THE ENGINEER.
□ THE CONSTRUCTION CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION AND MAINTENANCE OF ALL CONTROL MEASURES THROUGHOUT THE CONSTRUCTION PERIOD.
10. ALL DISTURBED AREAS TO BE LEFT E□POSED FOR MORE THAN 30 DAYS SHALL BE PROTECTED WITH A TEMPORARY VEGETATIVE COVER. SEED THESE AREAS WITH PERENNIAL RYEGRASS AT THE RATE OF 40 LBS. PER ACRE □1 LB. PER 1,000 SQ. FT□ APPLY SOIL AMENDMENTS AND MULCH AS REQUIRED TO ESTABLISH A UNIFORM STAND OF VEGETATION OVER ALL DISTURBED AREAS.
11. THE CONSTRUCTION CONTRACTOR SHALL UTILI□E APPROVED METHODS/MATERIALS FOR PREVENTING THE BLOWING AND MOVEMENT OF DUST FROM E□POSED SOIL SURFACES ONTO ADJACENT PROPERTIES AND SITE AREAS.
12. THE CONSTRUCTION CONTRACTOR SHALL MAINTAIN A SUPPLY OF SILT FENCE/HAYBALES AND ANTI-TRAC□ING CRUSHED STONE ON SITE FOR EMERGENCY REPAIRS.
13. ALL DRAINAGE STRUCTURES SHALL BE PERIODICALLY INSPECTED WEE□LY BY THE CONSTRUCTION CONTRACTOR AND CLEANED TO PREVENT THE BUILD-UP OF SILT.
14. THE CONSTRUCTION CONTRACTOR SHALL CAREFULLY COORDINATE THE PLACEMENT OF EROSION CONTROL MEASURES WITH THE PHASING OF CONSTRUCTION.
15. □EEP ALL PAVED SURFACES CLEAN. SWEEP AND SCRAPE BEFORE FORECASTED STORMS.
16. TREAT ALL UNPAVED SURFACE WITH 4" MINIMUM OF TOPSOIL PRIOR TO FINAL STABILI□ATION.
17. HAYBALE BARRIERS AND SILT FENCING SHALL BE INSTALLED ALONG THE TOE OF CRITICAL CUT AND FILL SLOPES.
18. THE CONTRACTOR SHALL NOTIFY THE TOWN OFFICIALS PRIOR TO THE INSTALLATION OF EROSION CONTROLS, CUTTING OF TREES, OR ANY E□CAVATION.
1□ ALL TRUC□S LEAVING THE SITE MUST BE COVERED.
20. SOME CONTROL MEASURES ARE PERMANENT. THESE STRUCTURES SHALL BE CLEANED AND REPLENISHED AT THE END OF CONSTRUCTION. LOCATIONS OF THE PERMANENT CONTROL STRUCTURES ARE SHOWN ON THE DRAINAGE PLANS.
21. ALL SEDIMENTATION AND EROSION CONTROLS SHALL BE CHEC□ED WEE□LY AND/OR AFTER EACH RAIN FALL EVENT. NECESSARY REPAIRS SHALL BE MADE WITHOUT DELAY.
22. PRIOR TO ANY FORECASTED RAINFALL, EROSION AND SEDIMENT CONTROLS SHALL BE INSPECTED AND REPAIRED AS NECESSARY.
23. AFTER ALL DISTURBED AREAS HAVE BEEN STABILI□ED, EROSION CONTROLS MAY BE REMOVED ONCE AUTHORI□ATION TO DO SO HAS BEEN SECURED FROM THE OWNER. DISTURBED AREAS SHALL BE SEEDED AND MULCHED.
24. ALL EMBAN□MENT SLOPES 3:1 OR GREATER TO BE STABILI□ED WITH EROSION CONTROL BLAN□ET, NORTH AMERICAN GREEN SC150BN OR APPROVED EQUIVALENT, UNLESS OTHERWISE NOTED ON PLANS.

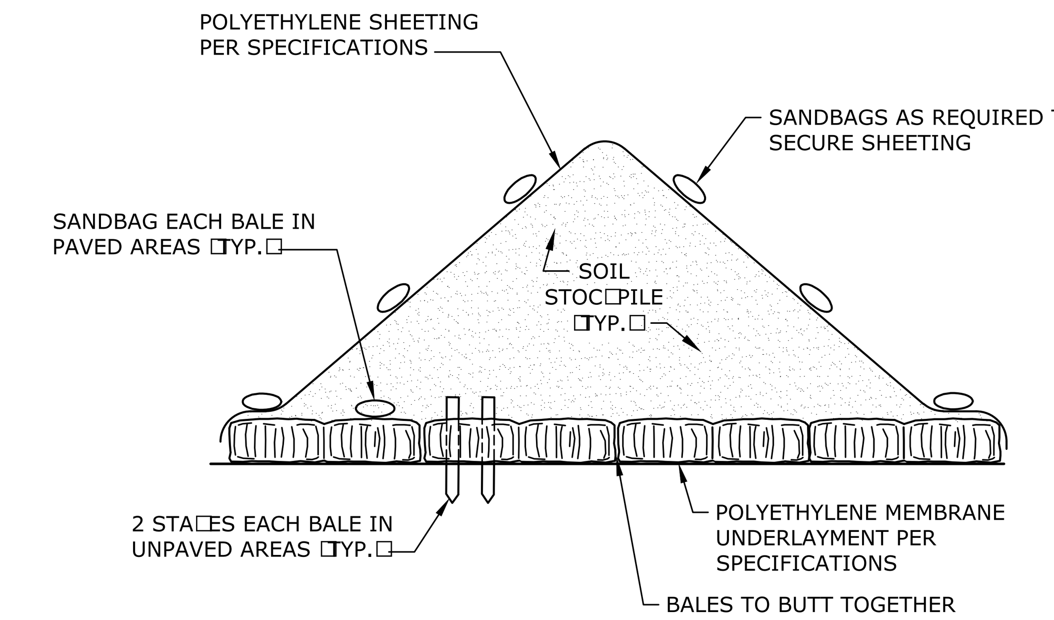


PLAN



ELEVATION

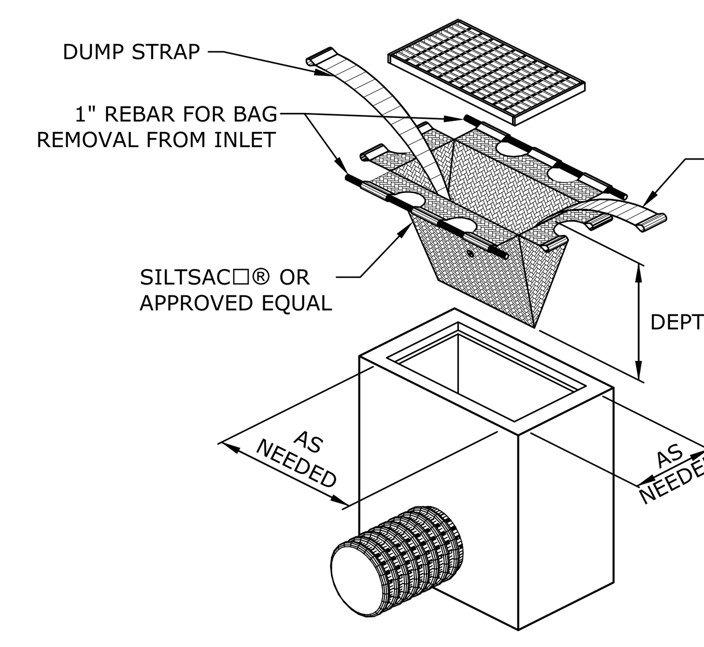
□□N□□□□□□□□N□EN□□N□E
NO SCALE



NOTE:

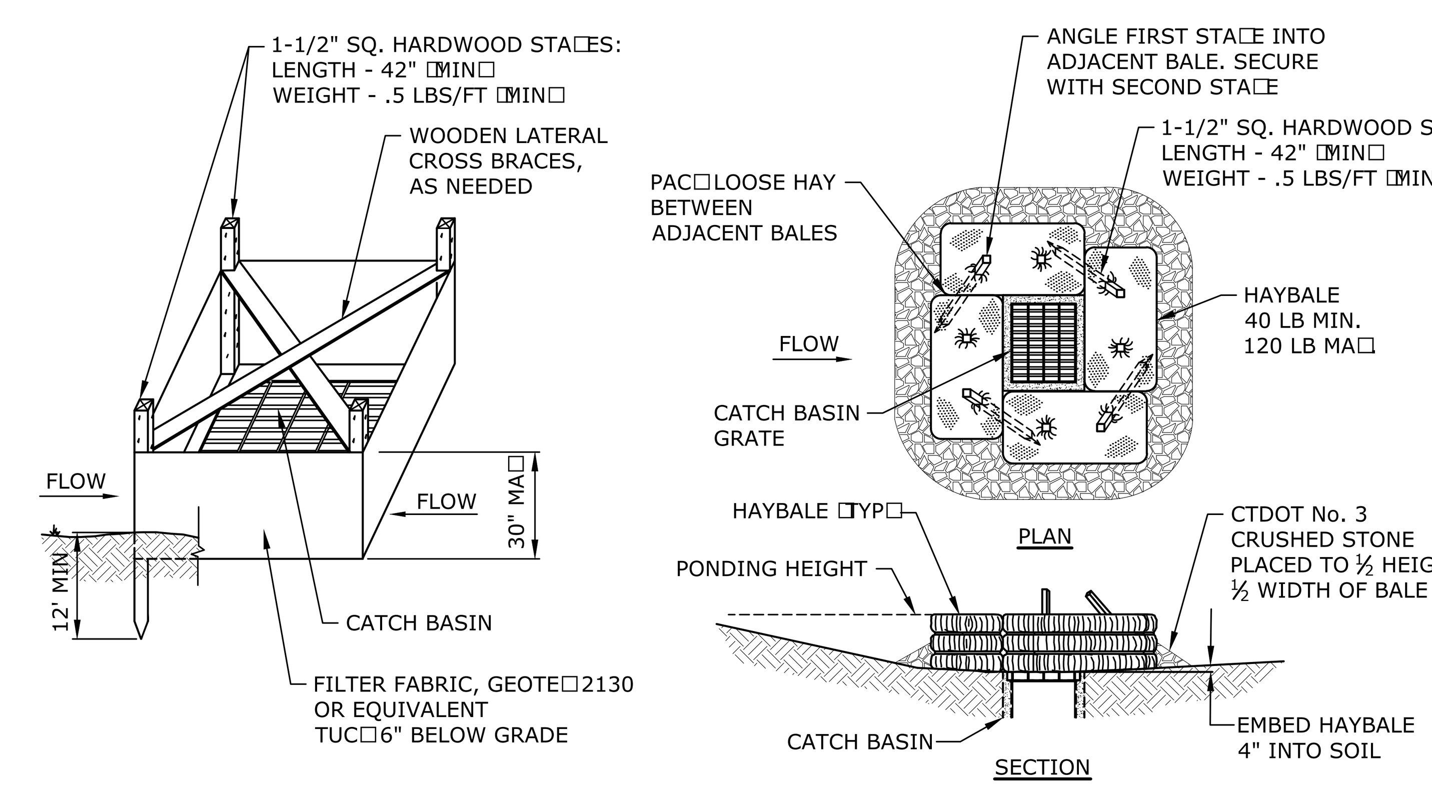
1. DIMENSIONS AS SHOWN ON PLANS

□EM□□□□□□□N□□□LLED□□□□□□□LE□□□E□
NO SCALE



SILTSAC□ MANUFACTURED BY:
ACF ENFIRONMENTAL
2831 CARDWELL ROAD
RICHMOND, VIRGINIA 23237

□□L□□□□□®
NO SCALE



SILT FENCE INSTALLATION AT CATCH BASIN AT LOW POINTS

HAYBALE FILTER INSTALLATION AT CATCH BASIN AT LOW POINTS

□□□□□□□□□□N□E□□□□□N□□N□□□L
NO SCALE

Tighe&Bond
1000 Bridgeport A□enue
Suite 320
Shelton, CT 06484
□203□712-1100

ENVIRONMENTAL LAND SOLUTIONS, LLC
Landscape Architecture and Environmental Planning
8 KNIGHT STREET, SUITE 203
NORWALK, CONNECTICUT 06851
Tel: (203) 855-7879 Fax: (203) 855-7836
info@elsllc.net www.elsllc.net

STATE OF CONNECTICUT CHARLES J. CROCE 20374 LICENSED PROFESSIONAL ENGINEER
06/07/2021

STATE OF CONNECTICUT ERIK W. LINDQUIST 22890 LICENSED PROFESSIONAL ENGINEER
06/07/2021

□□□ N □□□M□□□□□N

□□□ D□□□□r□□□□d

FDSPIN
141 DR, LLC

Wilton, Conne□ti□ut

1		
MAR□	DATE	DESCRIPTION

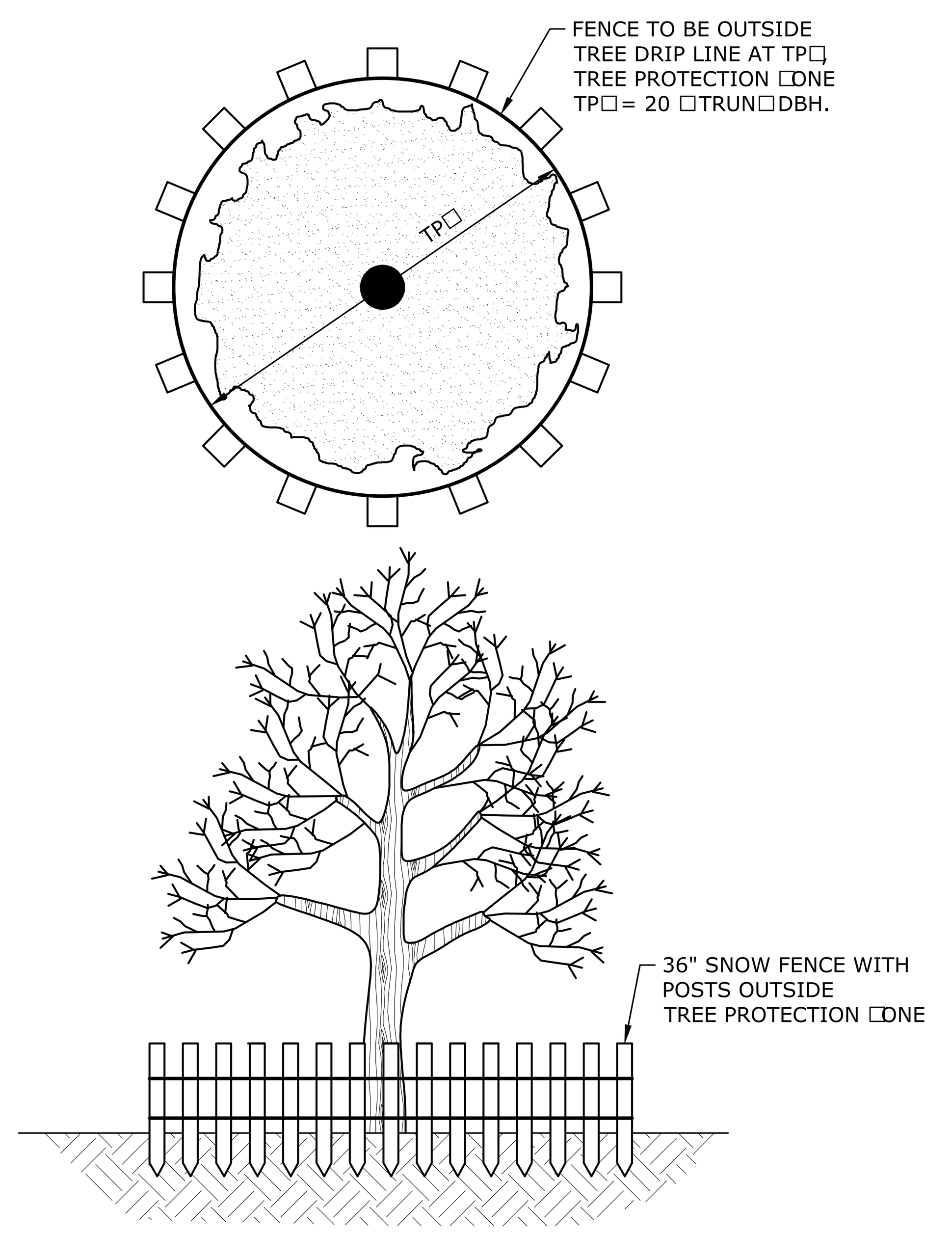
PROJECT NO:	F0173-002
DATE:	06/07/2021
FILE:	F0173-02-C-501-SESC.dwg
DRAWN BY:	MDS
CHEC□ED:	EWL
APPROVED:	JWB

SOIL EROSION AND SEDIMENT CONTROL DETAILS

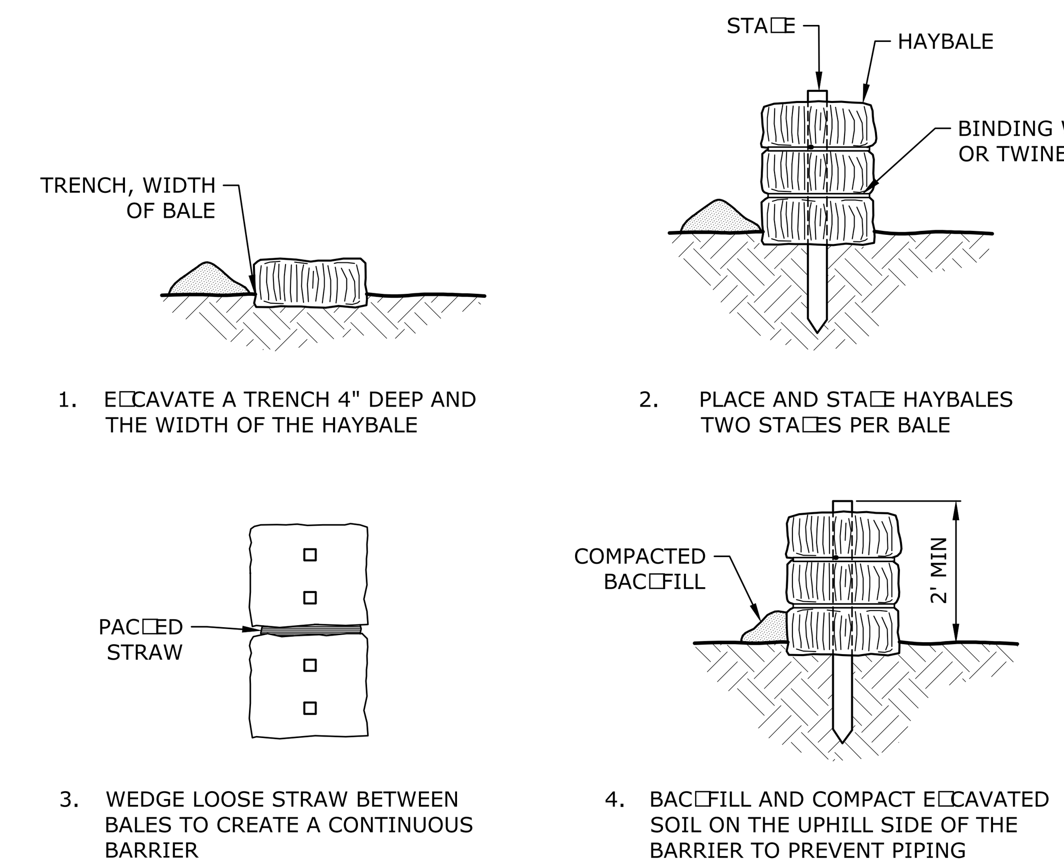
SCALE: AS SHOWN

C-503

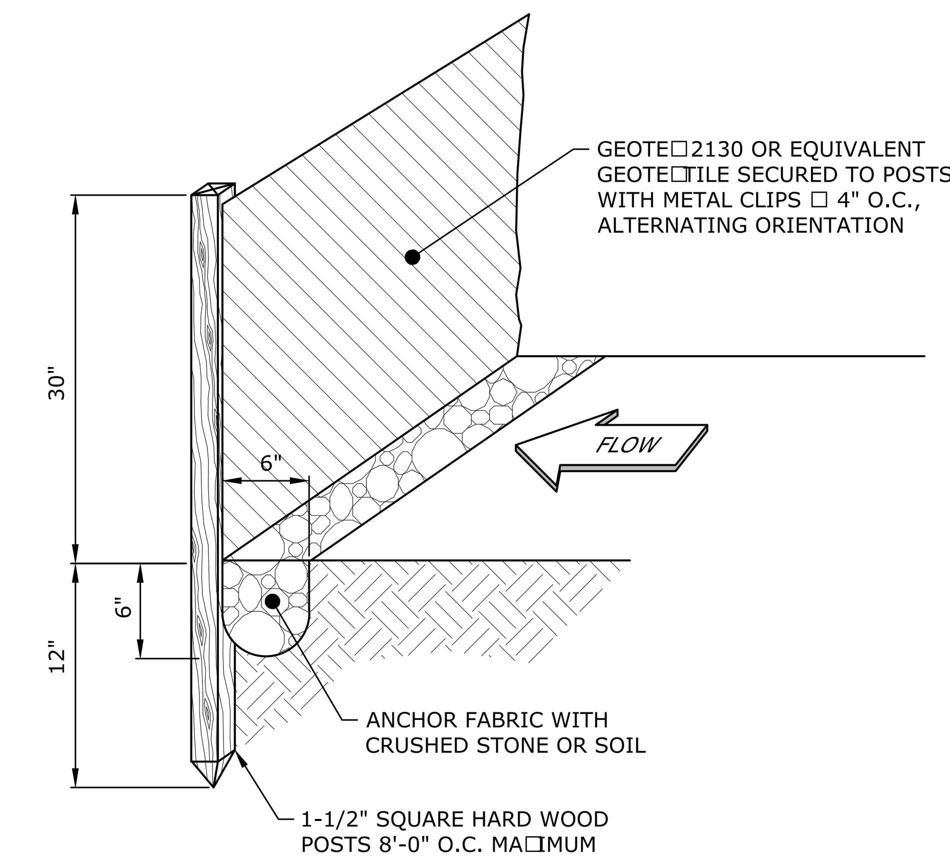
Last Sa□ed: 6/1/2021
Plotted On:Jun 07, 2021-8:31am By: TAS
Tighe & Bond:J:\F\F0173 Fuller\002 141 Danbury Road\Drawings-Figures\Sheets\F0173-02-C-501-SESC.dwg



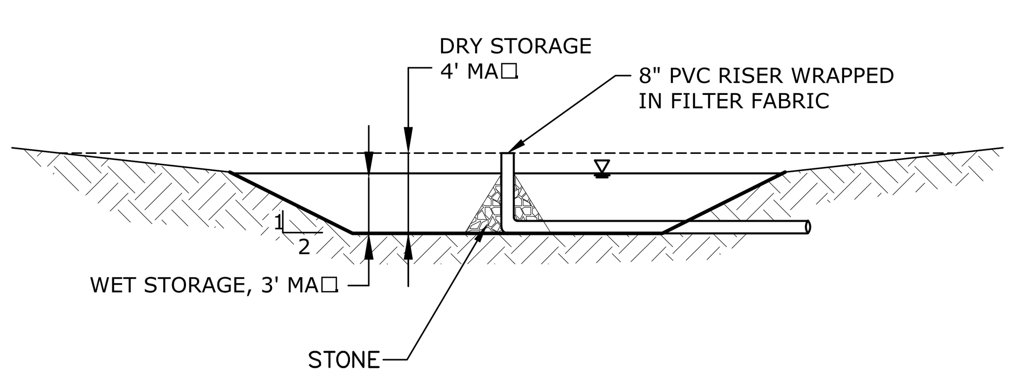
□□EE□□□□E□□□□N
NO SCALE



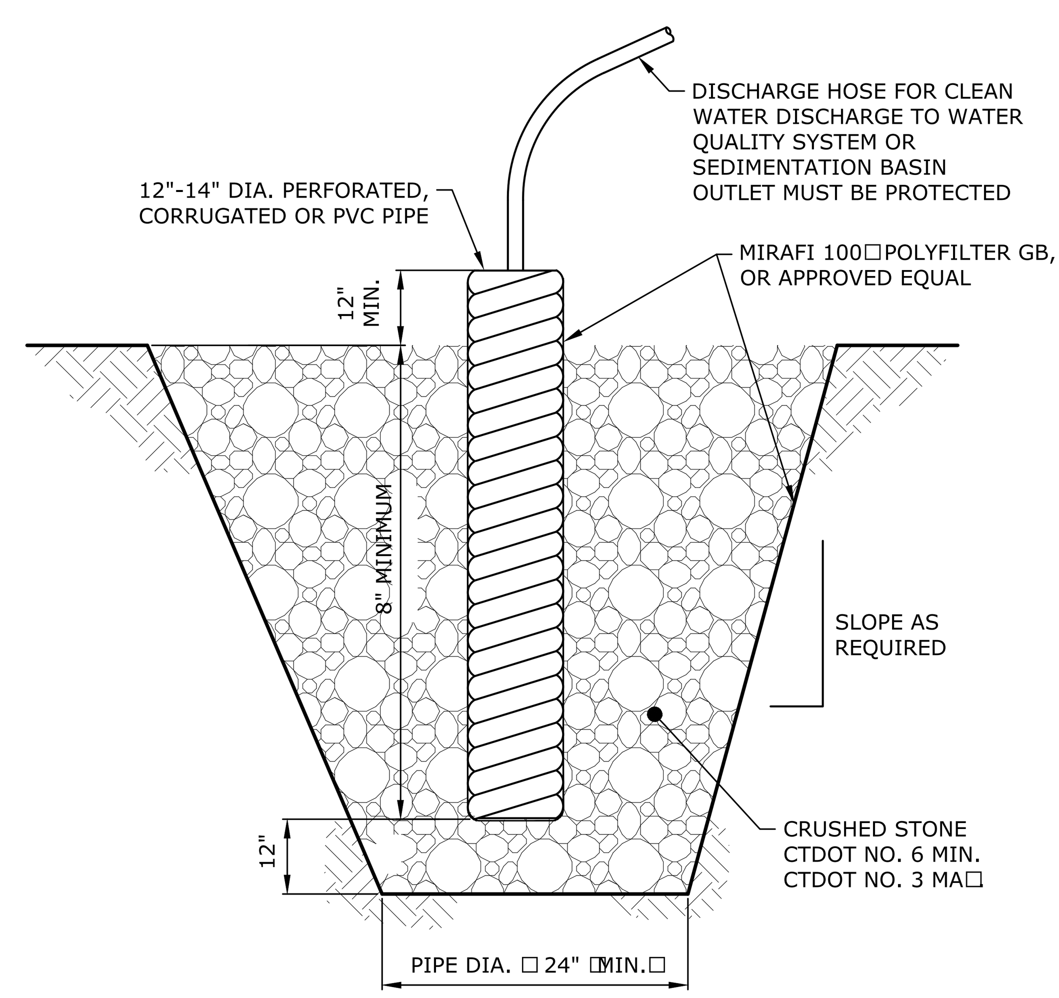
□L□□EMEN□□□ND□□□N□□□□□□□□N
□□□□□□□□LE□□□□□□E□
NO SCALE



□□L□□EN□E
NO SCALE



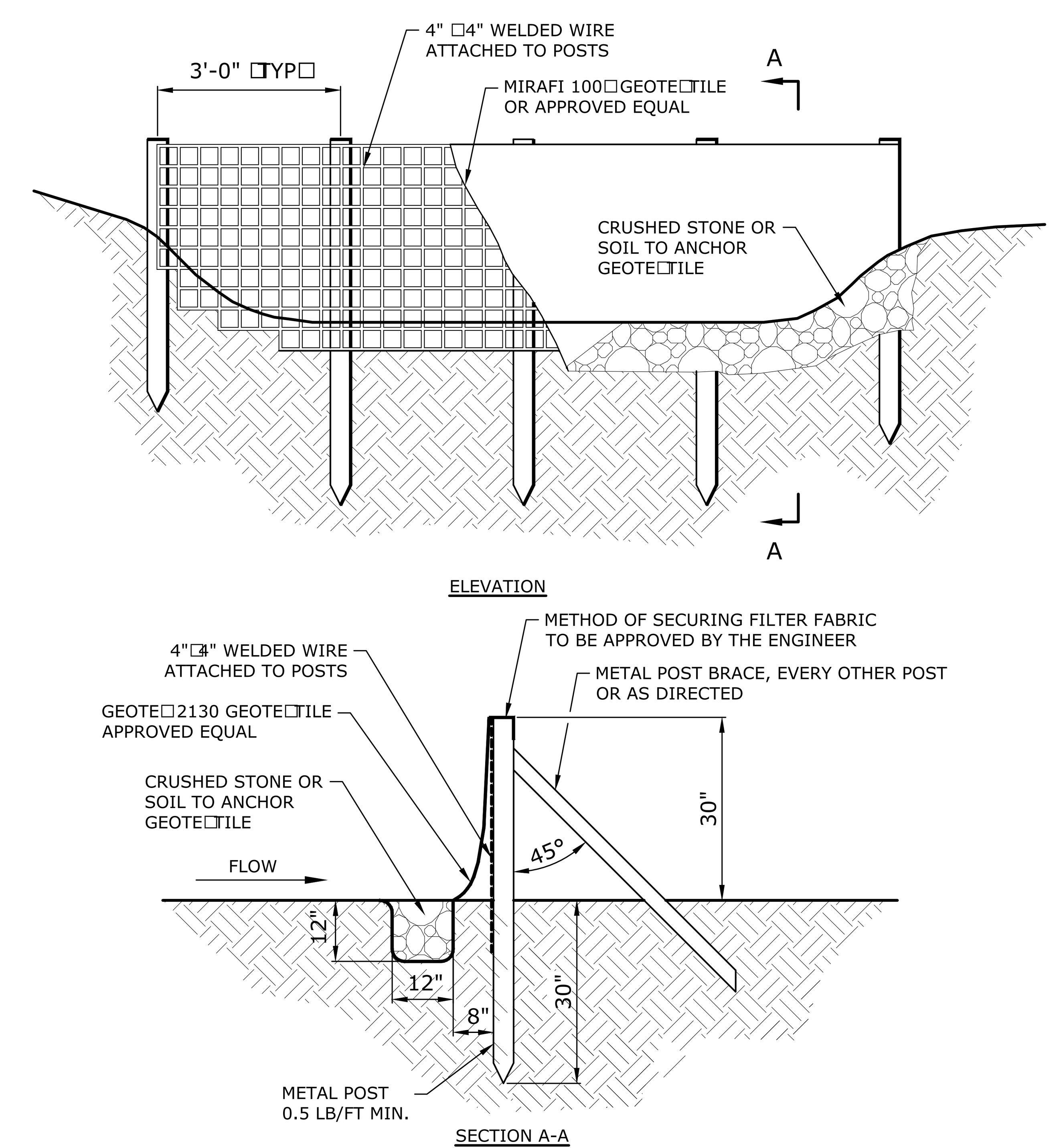
TEMPORARY SEDIMENT TRAP
NO SCALE



NOTES:

1. PERFORATIONS SHALL BE CIRCULAR OR SLOTS, NOT TO E□CEED 1/2" DIAMETER.
2. SIDE SLOPES TO MEET OSHA TRENCHING REQUIREMENTS.

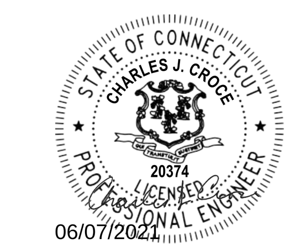
□□M□□□□DE□□□L□□□□E□□□□ED□
NO SCALE



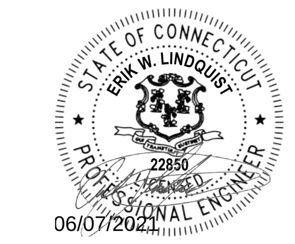
□E□□□D□□□□□L□□EN□E
NO SCALE

Tighe&Bond
1000 Bridgeport A□enue
Suite 320
Shelton, CT 06484
□203□712-1100

ELS
ENVIRONMENTAL LAND SOLUTIONS, LLC
Landscape Architecture and Environmental Planning
8 KNIGHT STREET, SUITE 203
NORWALK, CONNECTICUT 06851
Tel: (203) 855-7879 Fax: (203) 855-7836
info@elsllc.net www.elsllc.net



06/07/2021



06/07/2021

□□□ N
□□□M□□□□□N

□□□
D□□□□r□□□□d

FDSPIN
141 DR, LLC

Wilton, Conne□ti□ut

MAR□	DATE	DESCRIPTION

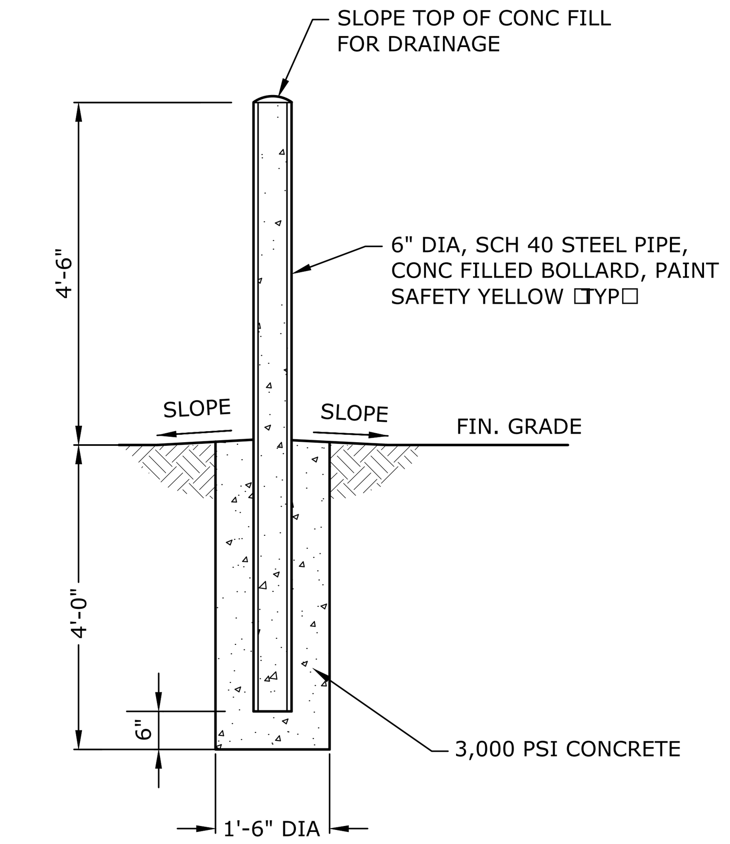
PROJECT NO:	F0173-002
DATE:	06/07/2021
FILE:	F0173-02-C-501-SESC.dwg
DRAWN BY:	MDS
CHEC□ED:	EWL
APPROVED:	JWB

SOIL EROSION AND SEDIMENT CONTROL DETAILS

SCALE: AS SHOWN

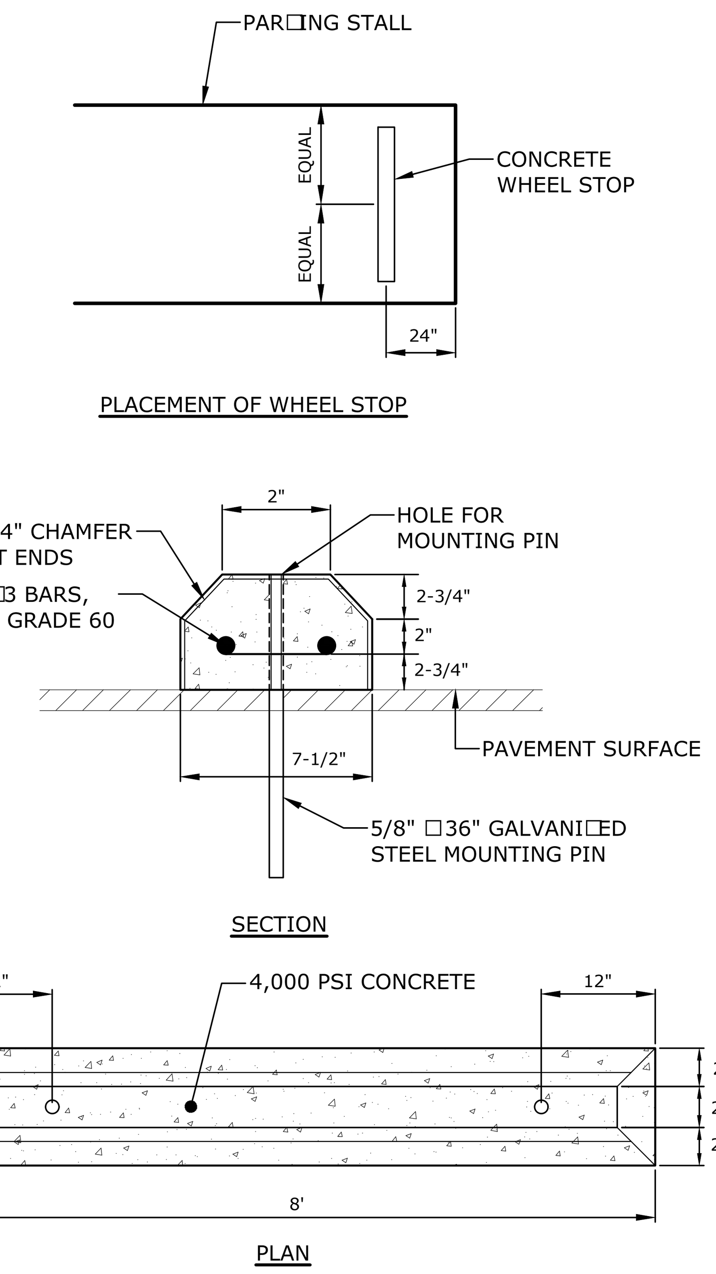
C-504

Last Sa□ed: 6/1/2021
Plotted On:Jun 07, 2021-8:31am By: TAS
Tighe & Bond: J:\F\F0173 Fuller\002 141 Danbury Road\Drawings-Figures\Sheets\F0173-02-C-501-SESC.dwg



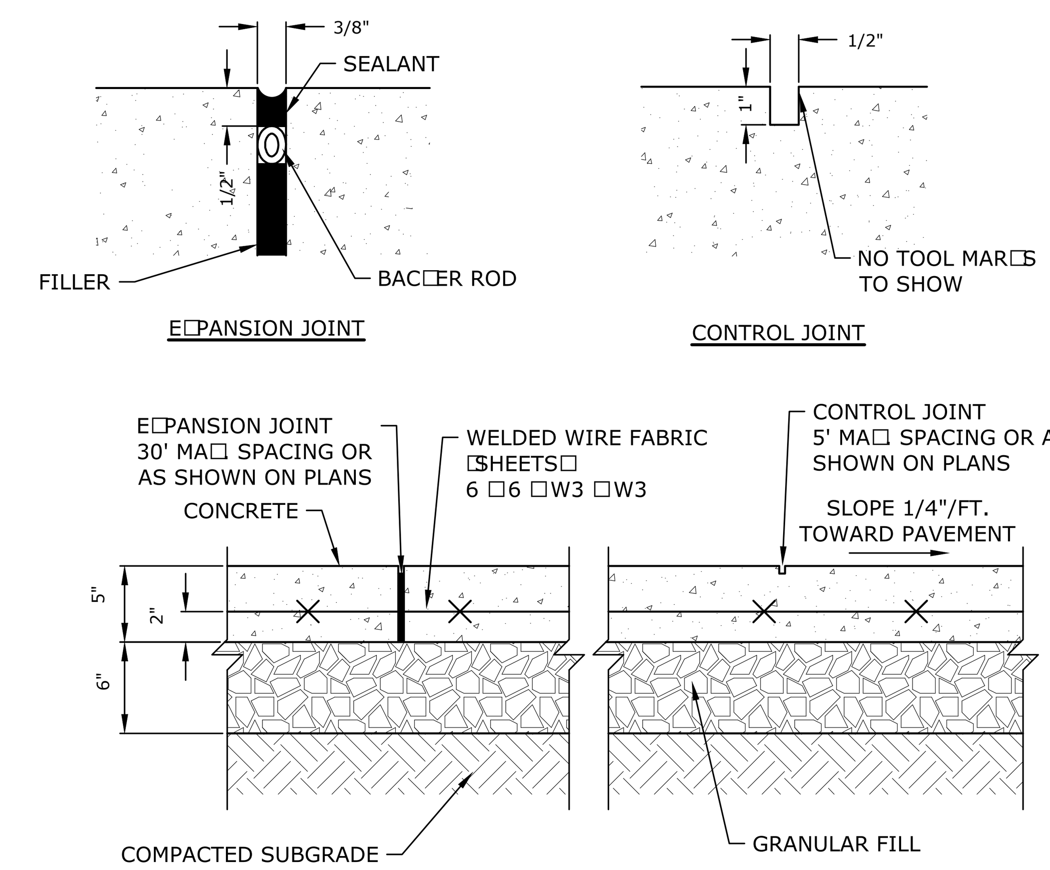
□'D□□ME□E□ □EEL□□□L□□□□LL□□D

NO SCALE



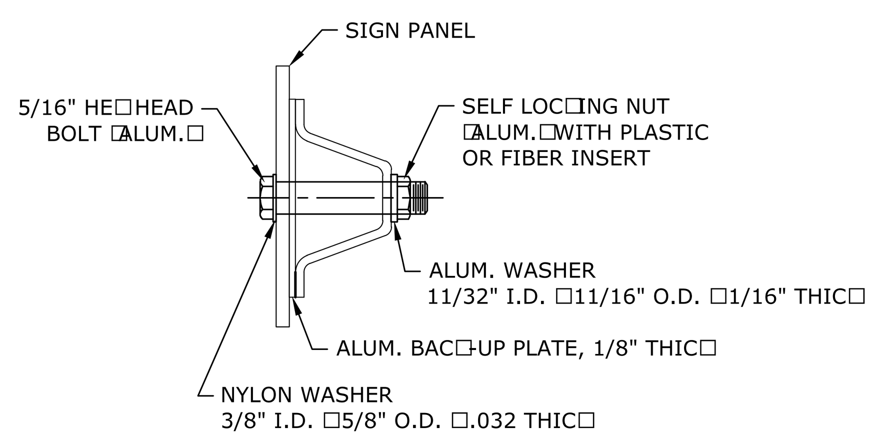
□□N□□E□E□□ □EEL□□□□□DE□□□L

NO SCALE



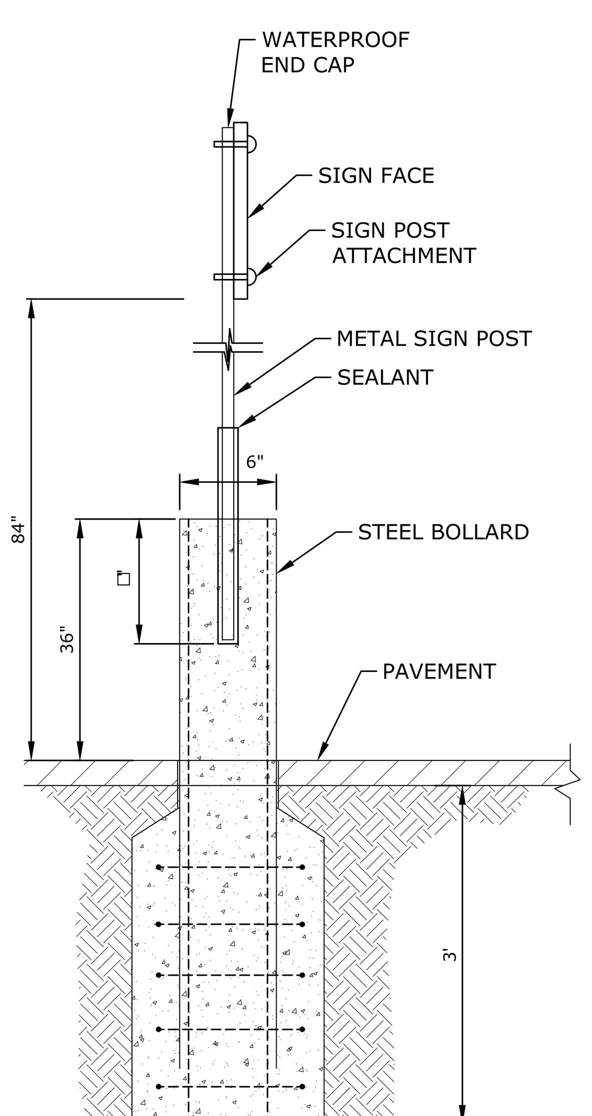
□□N□□E□E□□□DE□ □L□DE□□□L

NO SCALE



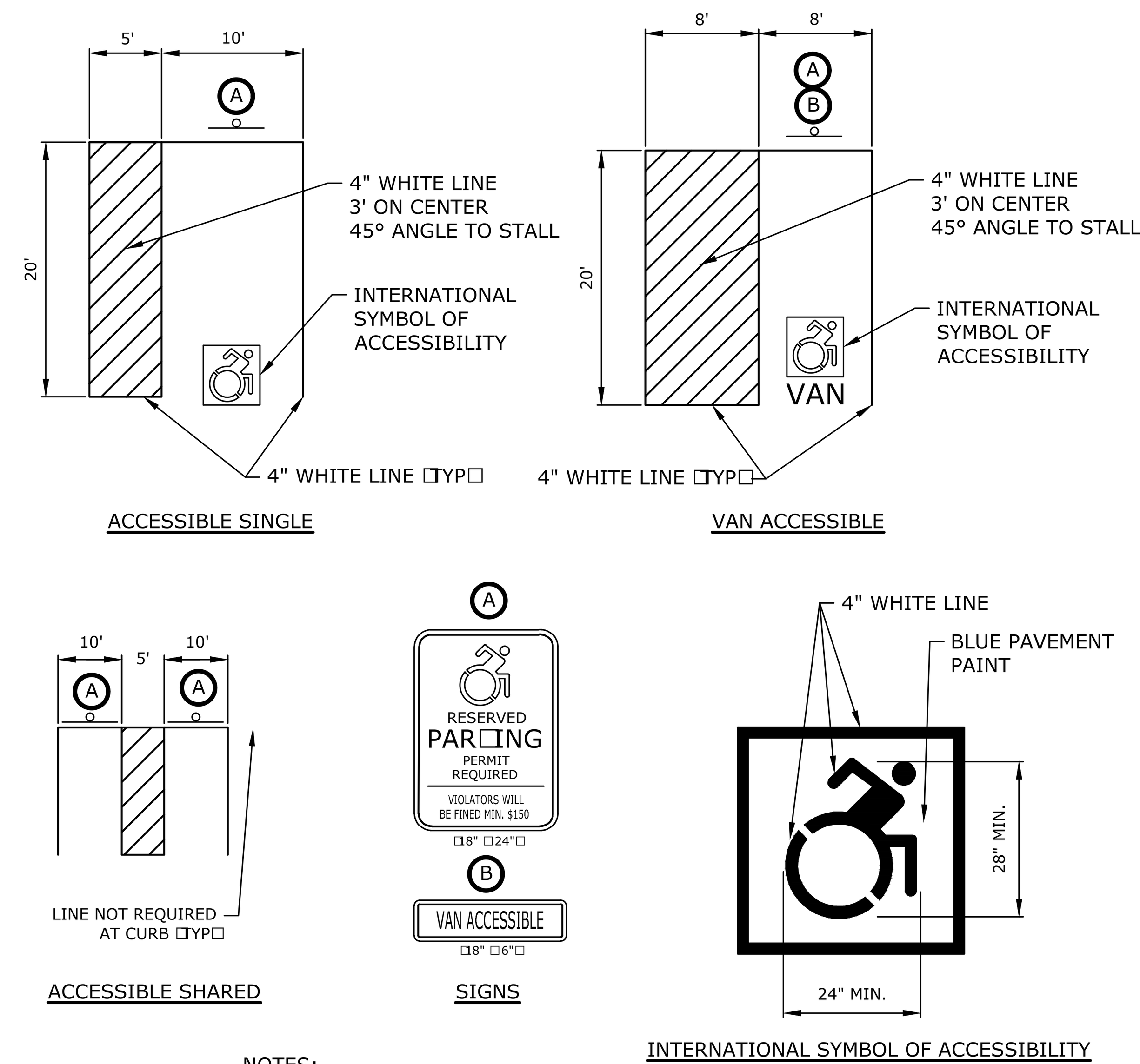
□□□□□□L□□GN □□NEL□□□□□□□MEN□

NO SCALE



□□LL□□D□□GN□M□□N□□NG□DE□□□L

NO SCALE

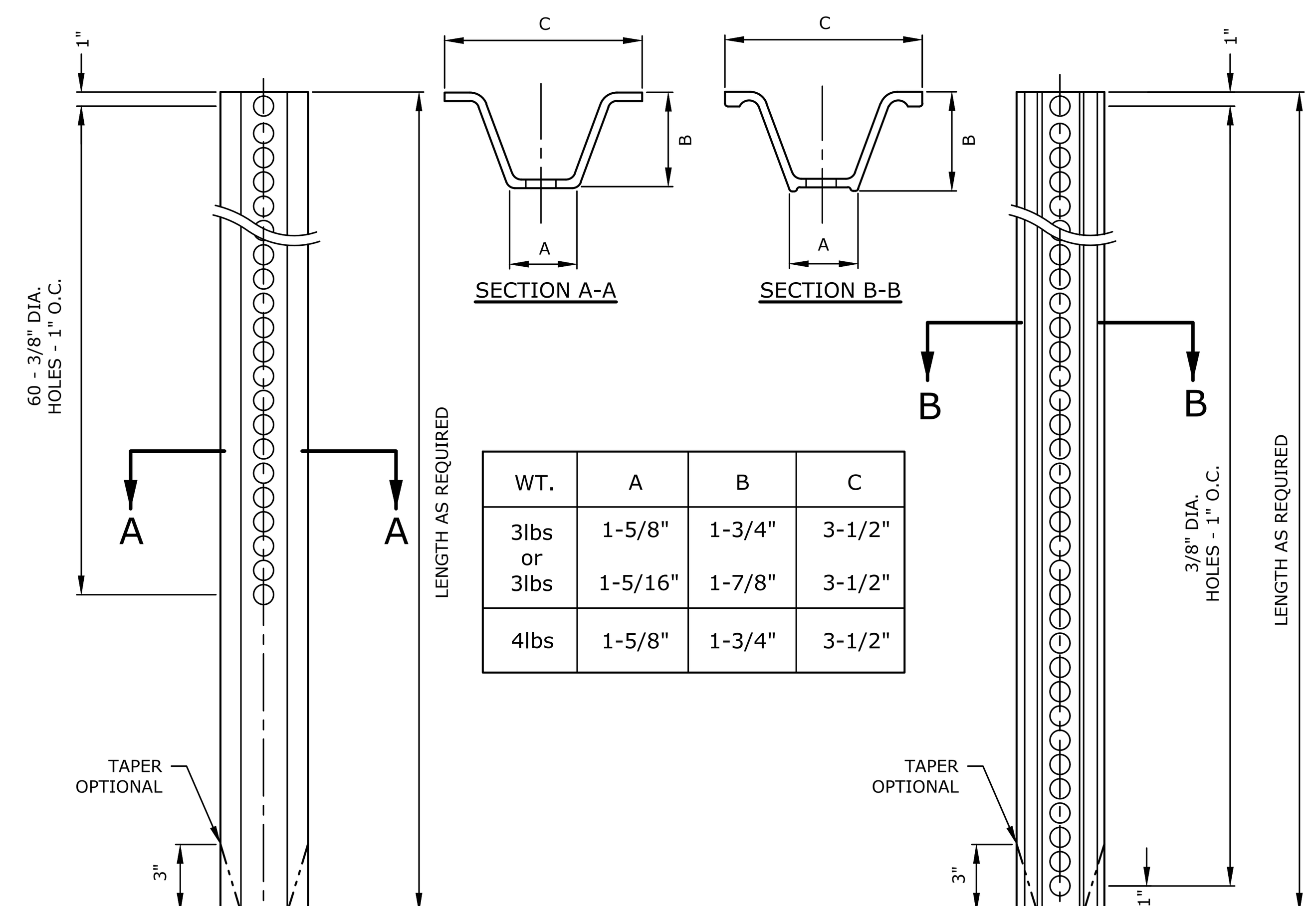


NOTES:

1. SIGN LOCATED AT ALL HANDICAPPED PAR□ING SPACES.
2. 18' □15' D.O.T STANDARD ACCESSIBLE PAR□ING STALL
3. SIGN BAC□GROUND - BLUE REFLECTIVE
4. LETTERS, GRAPHICS & BORDER - WHITE REFLECTIVE

□□□E□□□□LE□□□□□□NG□□□□□□□NG□DE□□□L□

NO SCALE



WT.	A	B	C
3lbs or 3lbs	1-5/8" 1-5/16"	1-3/4" 1-7/8"	3-1/2" 3-1/2"
4lbs	1-5/8"	1-3/4"	3-1/2"

NOTES:

1. STEEL FOR POSTS SHALL CONFORM TO THE MECHANICAL REQUIREMENTS OF ASTM A 4□□81 GRADE 60 AND TO THE CHEMICAL REQUIREMENTS OF ASTM A1-76 CARBON STEEL TEE RAIL HAVING NOMINAL WEIGHT OF □1 LBS. OR GREATER PER LINEAR YARD.
2. AFTER FABRICATION, ALL STEEL POSTS SHALL BE GALVANI□ED TO MEET THE REQUIREMENTS OF ASTM A 123.
3. ALL SIGN POSTS SHALL HAVE "BREA□AWAY" FEATURES THAT MEET AASHTO REQUIREMENTS CONTAINED IN "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS-1□□S." THE "BREA□AWAY" FEATURES SHALL BE STRUCTURALLY ADEQUATE TO CARRY THE SIGNS SHOWN IN THE PLANS AT 60 MPH WIND LOADINGS. INSTALLATIONS SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
4. TYPE A POSTS - 3 LB/FT TYPE B POSTS - 4 LB/FT.

□□□□□□L□ME□□L□□GN□□□□□□

NO SCALE

Tighe&Bond
1000 Bridgeport A□enue
Suite 320
Shelton, CT 06484
□203□712-1100

ELS
ENVIRONMENTAL LAND SOLUTIONS, LLC
Landscape Architecture and Environmental Planning
8 KNIGHT STREET, SUITE 203
NORWALK, CONNECTICUT 06851
Tel: (203) 855-7879 Fax: (203) 855-7836
info@elsllc.net www.elsllc.net

STATE OF CONNECTICUT CHARLES J. CROCE 20374 LICENSED PROFESSIONAL ENGINEER 06/07/2021

STATE OF CONNECTICUT ERIK W. LINDQUIST 22850 LICENSED PROFESSIONAL ENGINEER 06/07/2021

□□□□ N
□□□□M□□□□□□N

□□□
D□□□□□r□□□□□d

FDSPIN
141 DR, LLC

Wilton, Conne□ti□ut

MAR□	DATE	DESCRIPTION

PROJECT NO:	F0173-002
DATE:	06/07/2021
FILE:	F0173-02-C-601-DETL.dwg
DRAWN BY:	MDS
CHEC□ED:	EWL
APPROVED:	JWB

DETAILS - 1

SCALE: AS SHOWN

C-601

Tighe&Bond
1000 Bridgeport A□enue
Suite 320
Shelton, CT 06484
□203□712-1100

ELS
ENVIRONMENTAL LAND SOLUTIONS, LLC
Landscape Architecture and Environmental Planning
8 KNIGHT STREET, SUITE 203
NORWALK, CONNECTICUT 06851
Tel: (203) 855-7879 Fax: (203) 855-7836
info@elsllc.net www.elsllc.net

STATE OF CONNECTICUT – CHARLES J. CROSE – 20374 – LICENSED PROFESSIONAL ENGINEER – 06/07/2021

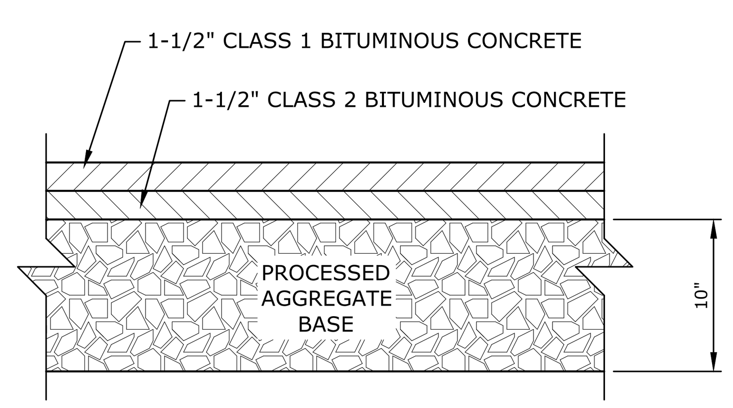
STATE OF CONNECTICUT – ERIK W. LINDQUIST – 22850 – LICENSED PROFESSIONAL ENGINEER – 06/07/2021

□□□ N
□□□M□□□□□N

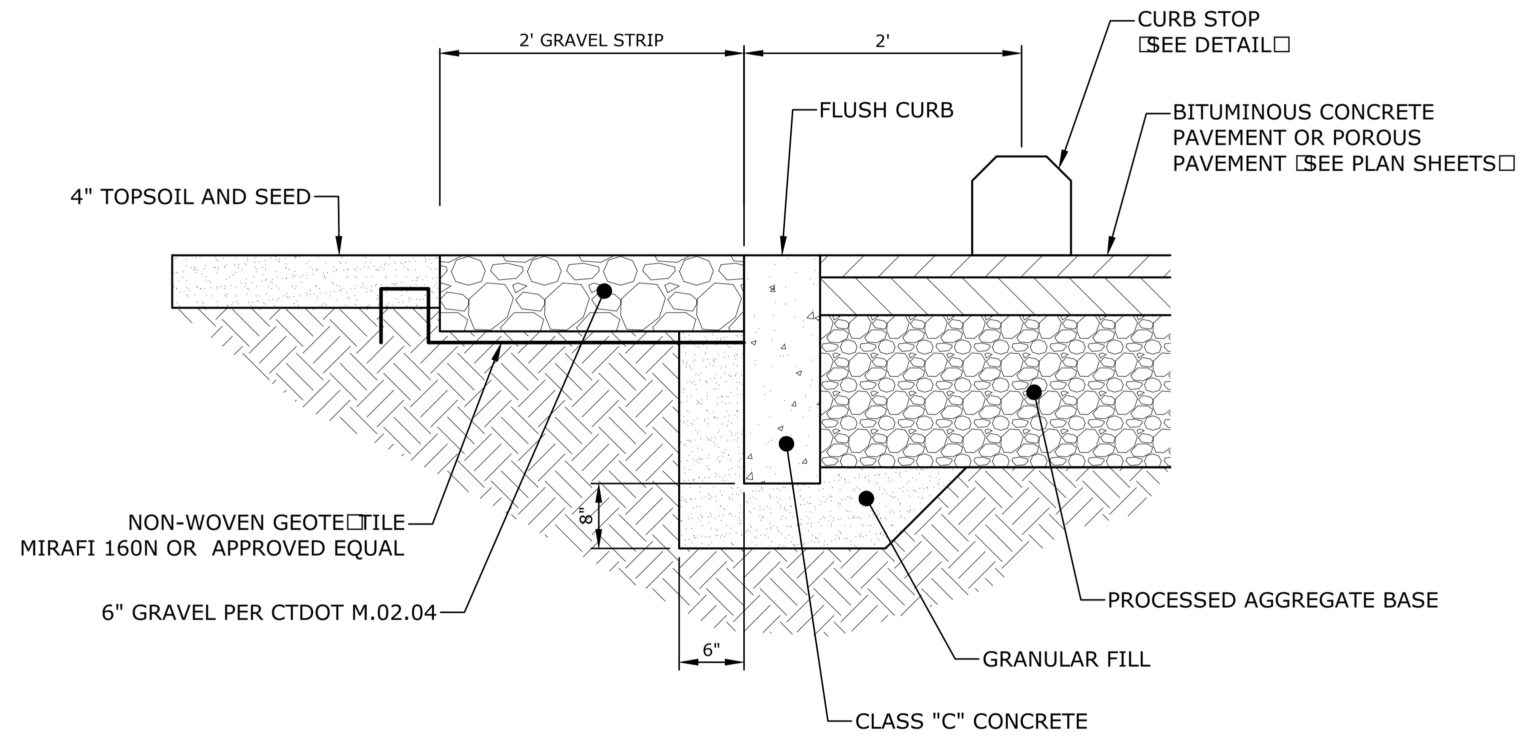
□□□
D□□□□r□□□□d

FDSPIN
141 DR, LLC

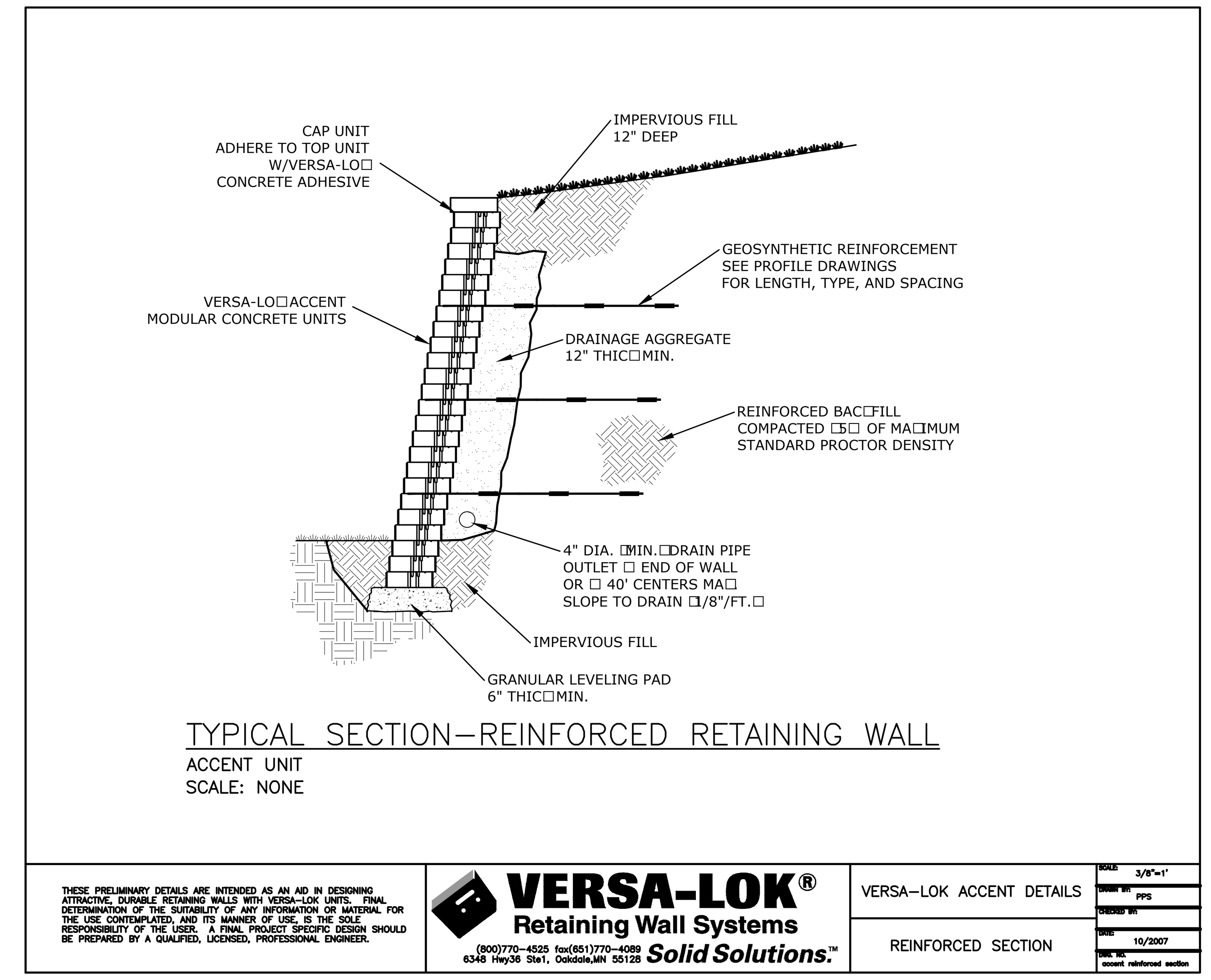
Wilton, Conne□ti□ut



□□□M□N□□□□□N□□E□E□□□EMEN□
NO SCALE

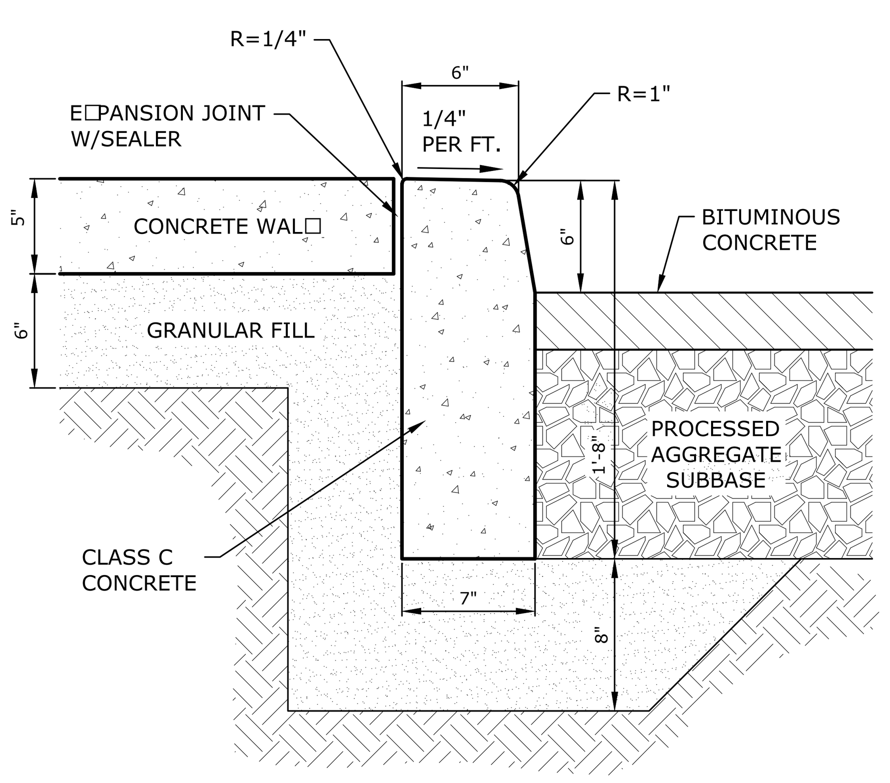


□□G□□□EL□□□□□□□ □□□□L□□□□□□□□DE□□□L
NO SCALE



OR APPROVED EQUAL

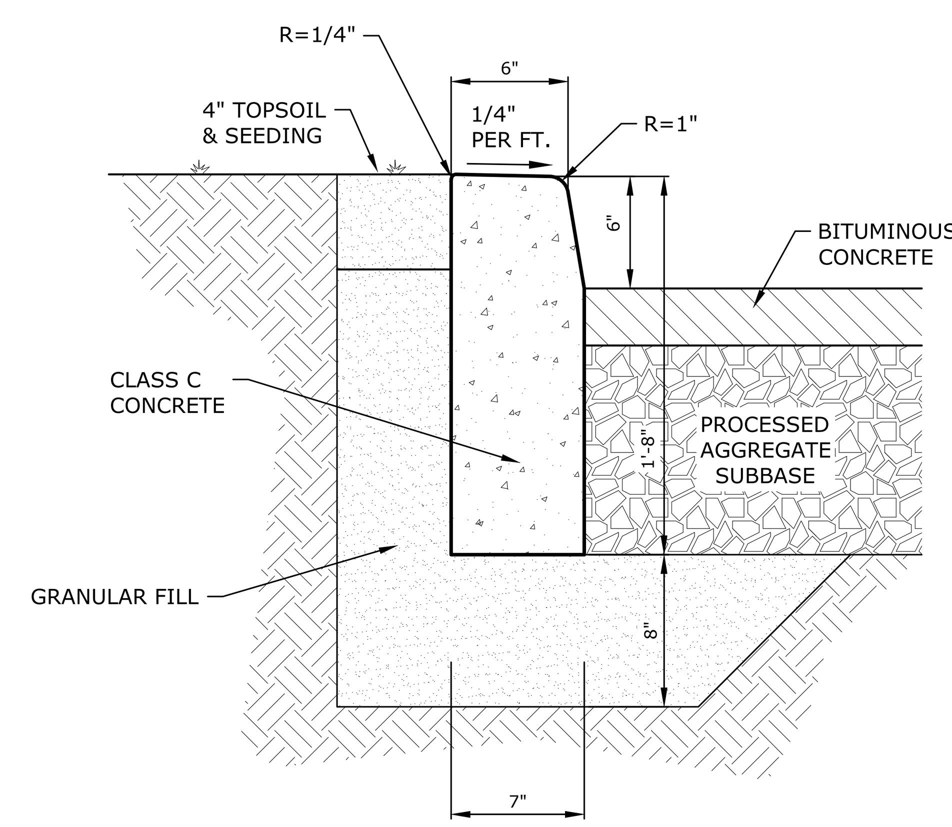
MODULAR BLOC□RETAINING WALL
NO SCALE



NOTE:

1. CONSTRUCT CURBING IN SECTIONS NOT TO E□CEED 10 FEET IN LENGTH, SUCH THAT THE CURBING JOINTS ALIGN WITH JOINTS IN THE CONCRETE PAVEMENT SLAB. NO SECTION SHALL BE LESS THAN 6 FEET IN LENGTH.

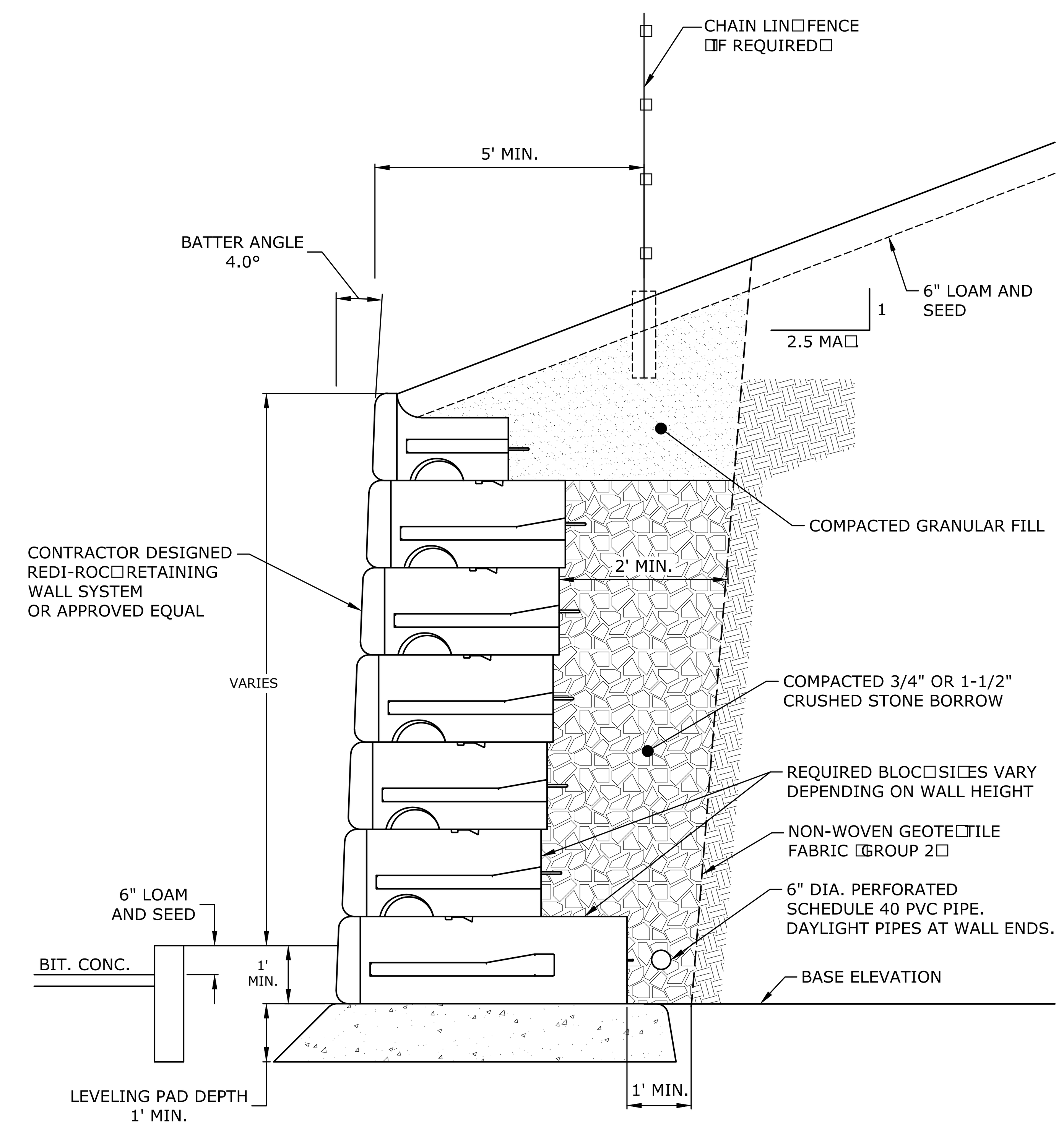
□□N□□E□E□□□□□□ND□□□N□□E□E□□DE□ □L□
NO SCALE



NOTES:

1. CONSTRUCT CURBING IN SECTIONS NOT TO E□CEED 10 FEET IN LENGTH, SUCH THAT THE CURBING JOINTS ALIGN WITH JOINTS IN THE CONCRETE PAVEMENT SLAB. NO SECTION SHALL BE LESS THAN 6 FEET IN LENGTH.

□□N□□E□E□□□□□□D□□□EN□□□□G□□□□
NO SCALE



NOTE:

1. TEMPORARY E□CAVATIONS FOR WALL AND CRUSHED STONE PLACEMENT SHALL BE IN ACCORDANCE WITH OSHA STANDARDS. ADDITIONAL BAC□FILL REQUIRED TO FILL E□CAVATIONS SHALL CONSIST OF COMPACTED GRANULAR FILL OR CRUSHED STONE E□CEPT AS NOTED.

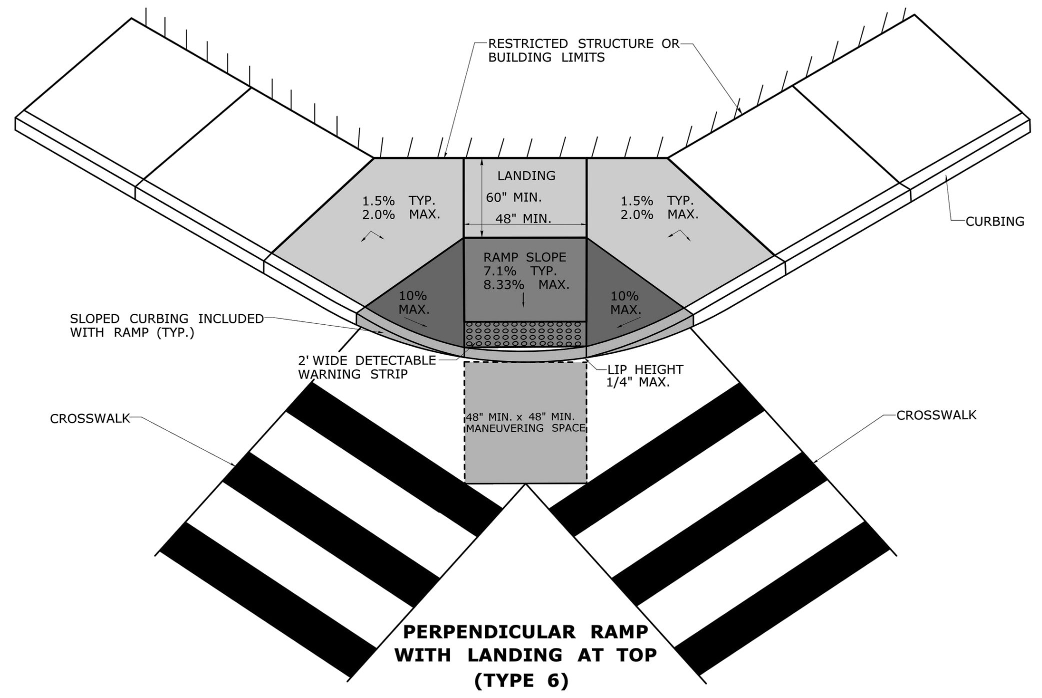
G□□□□□□□E□□□N□NG□□ □LL□DE□□□L
NO SCALE

MAR□	DATE	DESCRIPTION
PROJECT NO:		F0173-002
DATE:		06/07/2021
FILE:		F0173-02-C-601-DETL.dwg
DRAWN BY:		MDS
CHEC□ED:		EWL
APPROVED:		JWB

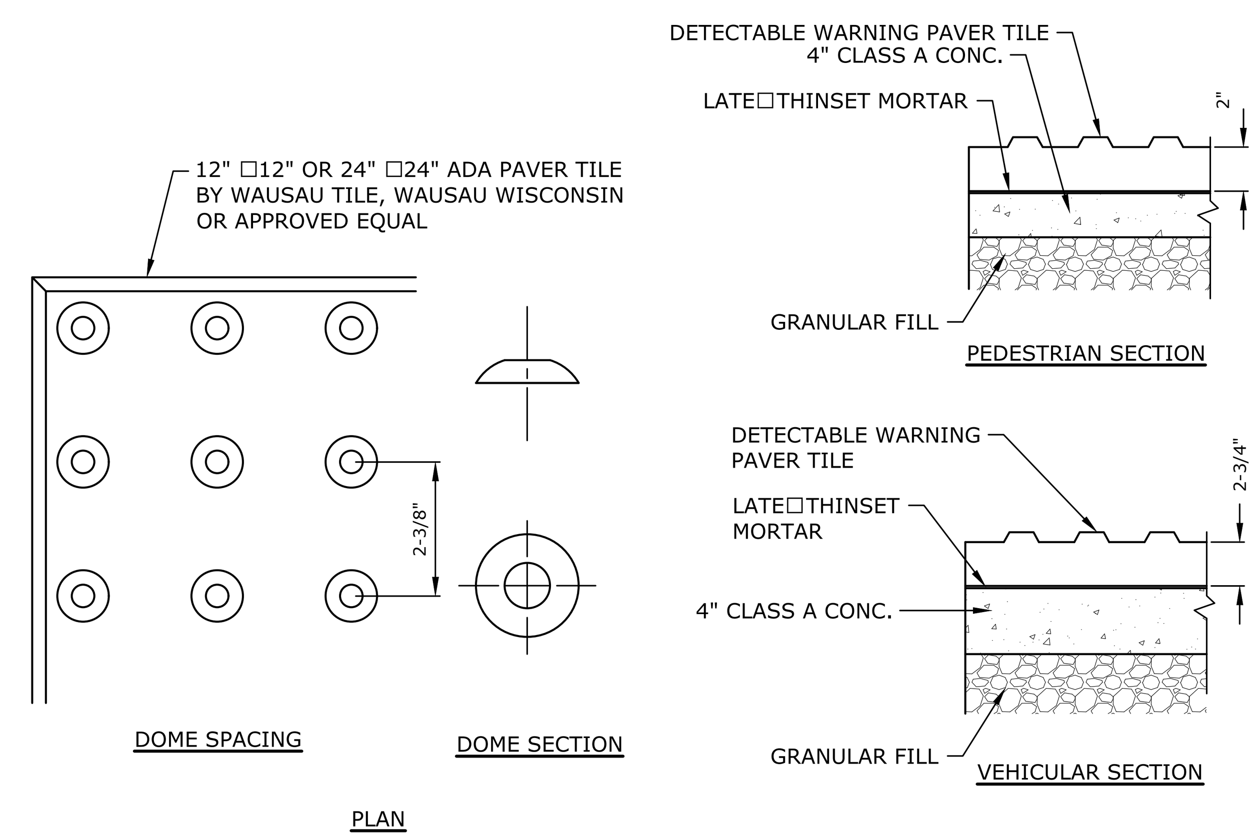
DETAILS - 2

SCALE: AS SHOWN

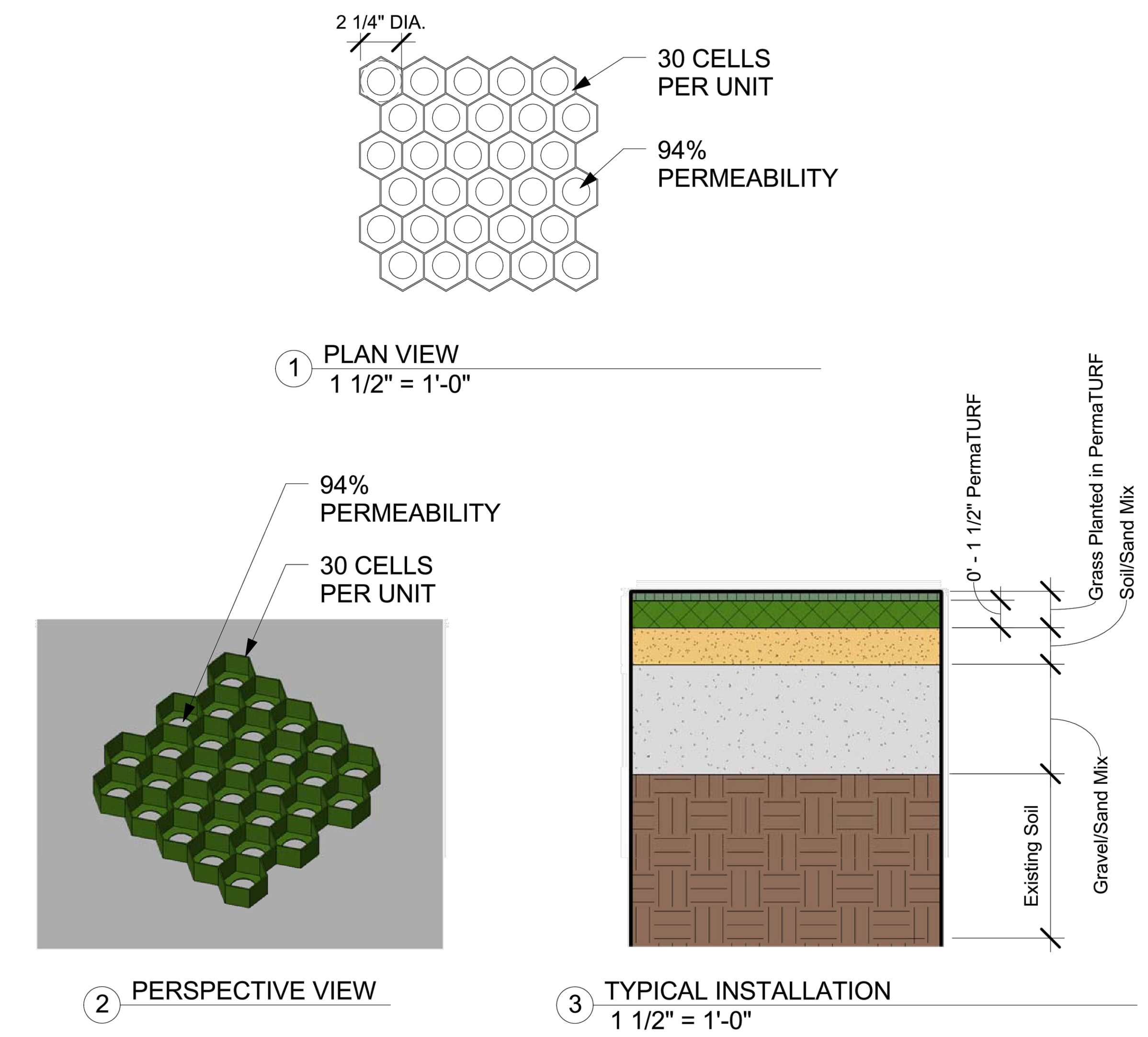
C-602



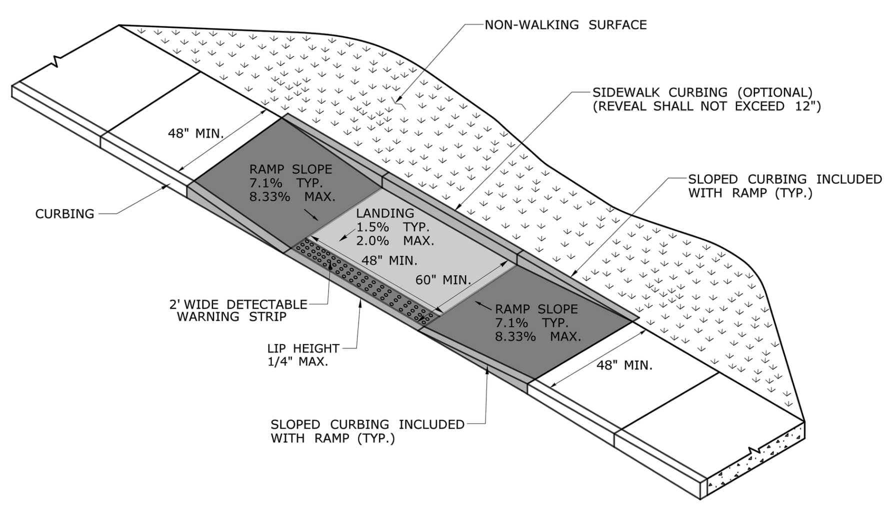
□D□□□□□□□E□□□□□E□□□□LE□□M□
NO SCALE



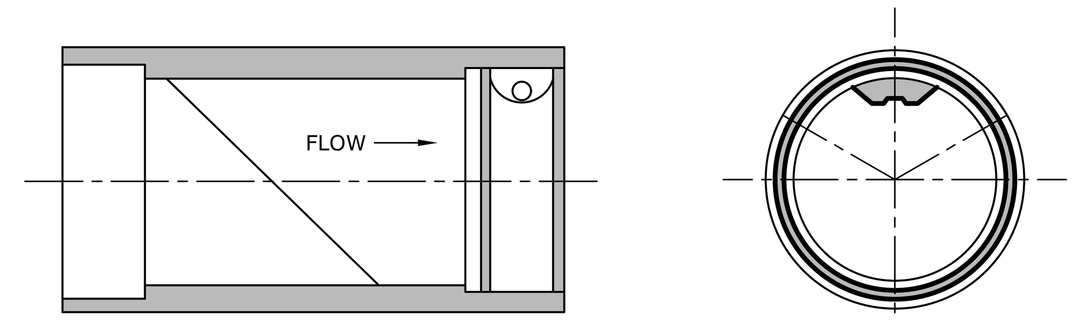
DE□E□□□□□LE□□ □□N□NG□□□LE
NO SCALE



□E□M□□□□□□L□□ N□□NEL□
SCALE AS SHOWN

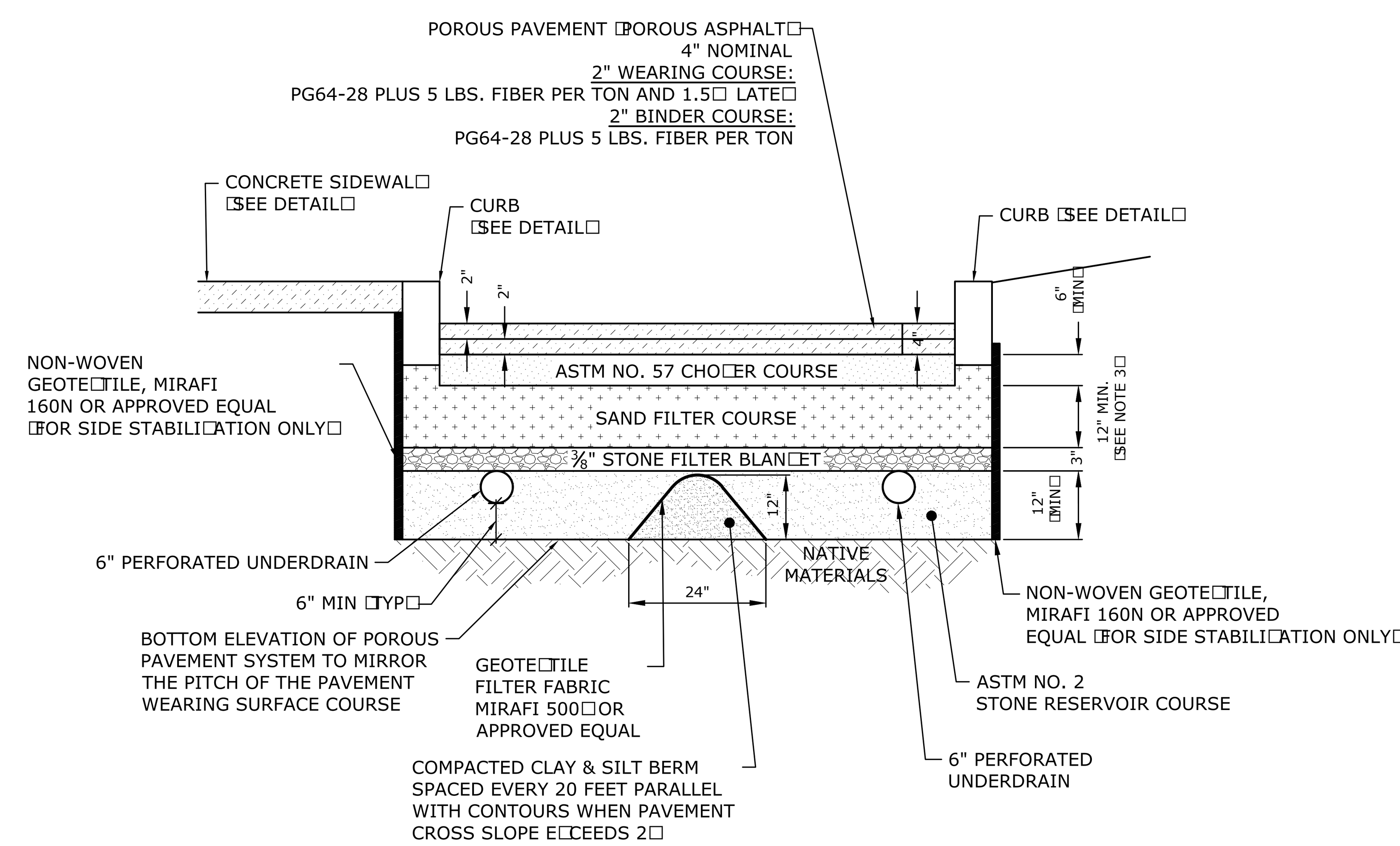


□D□□□□□□□E□□□□□E□□□□LE□□M□
NO SCALE



CHEC□MATE VALVE									
NOMINAL PIPE SI□E I.D.		OVERALL LENGTH		NUMBER OF CLAMPS	CUFF DEPTH		BAC□PRESSURE RATING	
In□hes	Millimeters	In□hes	Millimeters		In□hes	Millimeters	Feet	Meters
12	300	23	584	1	2	51	40	12
14	350	25.75	654	1	4	102	20	6
16	400	28.61	727	1	4	102	20	6
18	450	31	787	1	4	102	20	6
20	500	42.14	1070	2	8	203	20	6
24	600	47.5	1207	2	8	203	20	6

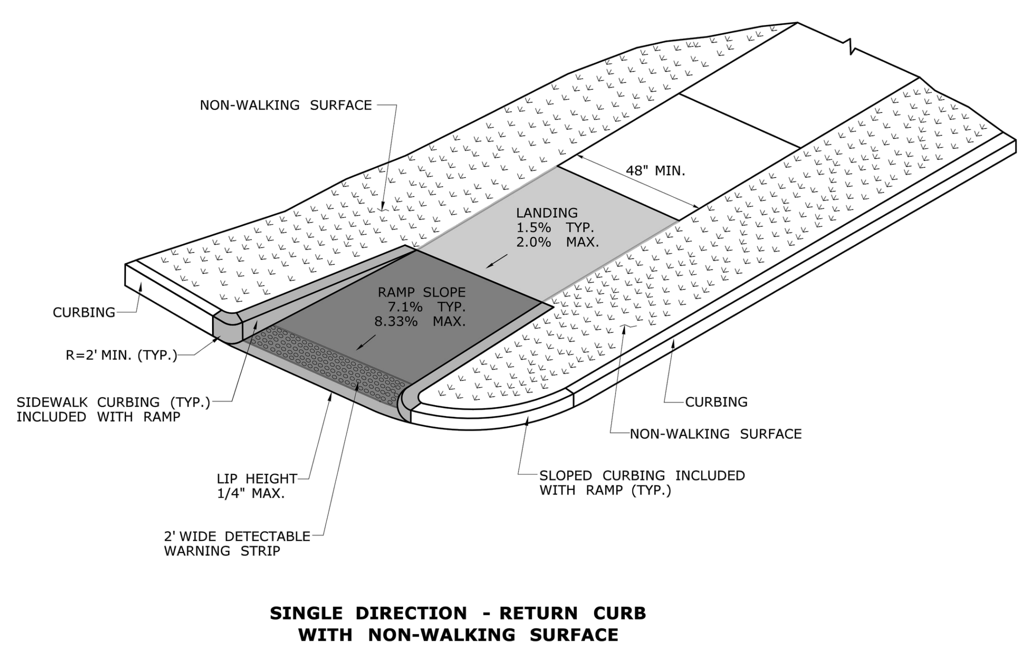
□□E□□M□□E®□N□L□NE□□□E□□□□L□E□DE□□□L
NO SCALE



NOTES:

1. SEE SITE PLAN FOR PAVEMENT WIDTH AND LOCATION.
2. SEE GRADING, DRAINAGE, UTILITIES AND EROSION CONTROL PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.
3. FILTER COURSE TO BE INCREASED AS NECESSARY TO MEET PROPOSED GRADES.

□□□□□□□□□□EMEN□□E□□□□N
NO SCALE



□□D□□□□□□□E□□□□□□□E□□□□LE□□M□
NO SCALE

Last Sa□ed: 6/2/2021
Plotted On:Jun 07, 2021-8:31am By: TAS
Tighe & Bond: J:\F\F0173 Fuller\002 141 Danbury Road\Drawings-Figures\Sheets\F0173-02-C-601-DETL.dwg

Tighe&Bond
1000 Bridgeport A□enue
Suite 320
Shelton, CT 06484
□203□712-1100

ELS
ENVIRONMENTAL LAND SOLUTIONS, LLC
Landscape Architecture and Environmental Planning
8 KNIGHT STREET, SUITE 203
NORWALK, CONNECTICUT 06851
Tel: (203) 855-7879 Fax: (203) 855-7836
info@elsllc.net www.elsllc.net

STATE OF CONNECTICUT CHARLES J. CROSE 20374 LICENSED PROFESSIONAL ENGINEER
06/07/2021

STATE OF CONNECTICUT ERIK W. LINDQUIST 22850 LICENSED PROFESSIONAL ENGINEER
06/07/2021

□□□ N
□□□M□□□□□N

□□□
D□□□□r□□□□d

FDSPIN
141 DR, LLC

Wilton, Conne□ti□ut

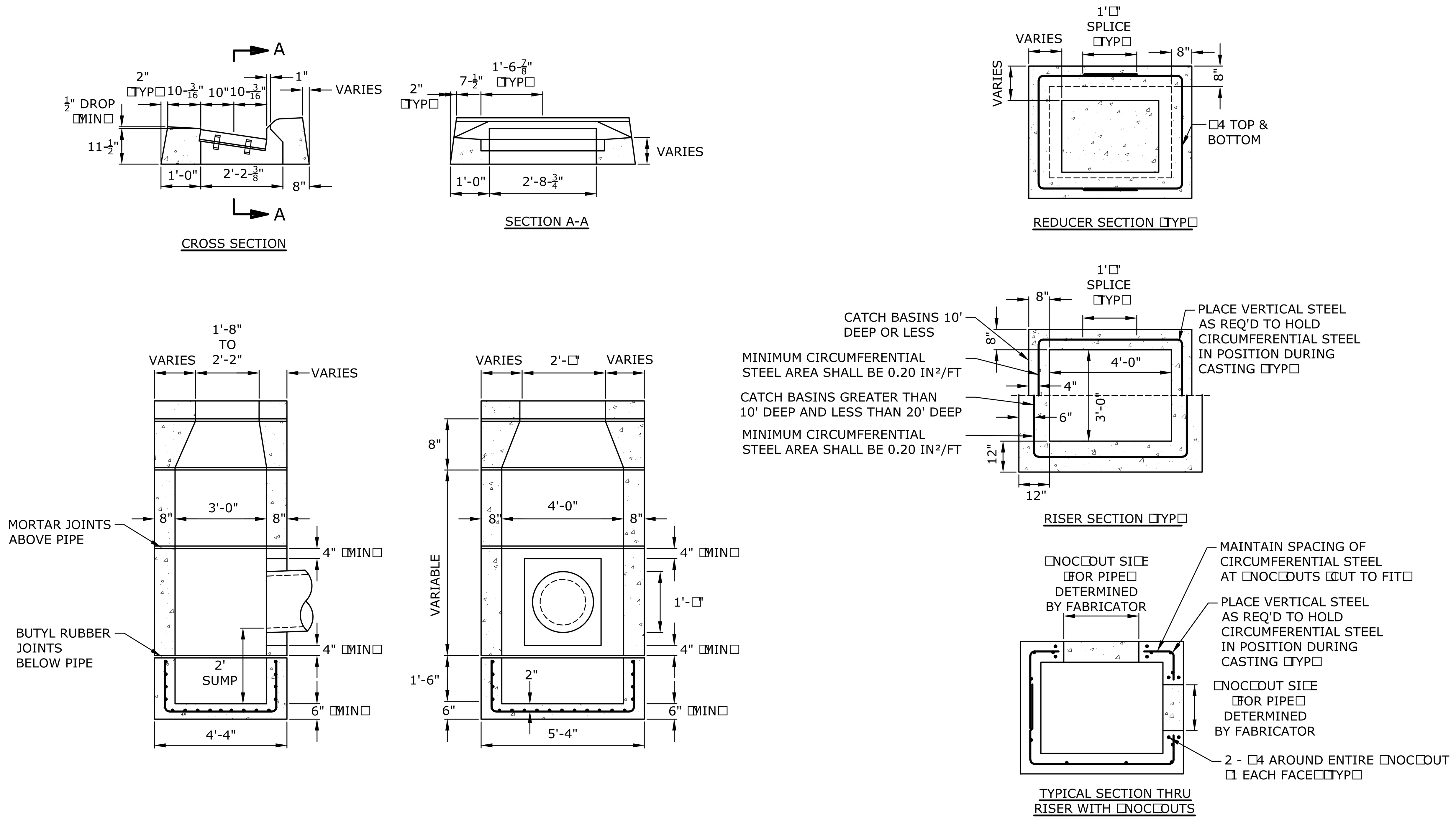
MAR□	DATE	DESCRIPTION

PROJECT NO:	F0173-002
DATE:	06/07/2021
FILE:	F0173-02-C-601-DETL.dwg
DRAWN BY:	MDS
CHEC□ED:	EWL
APPROVED:	JWB

DETAILS - 3

SCALE: AS SHOWN

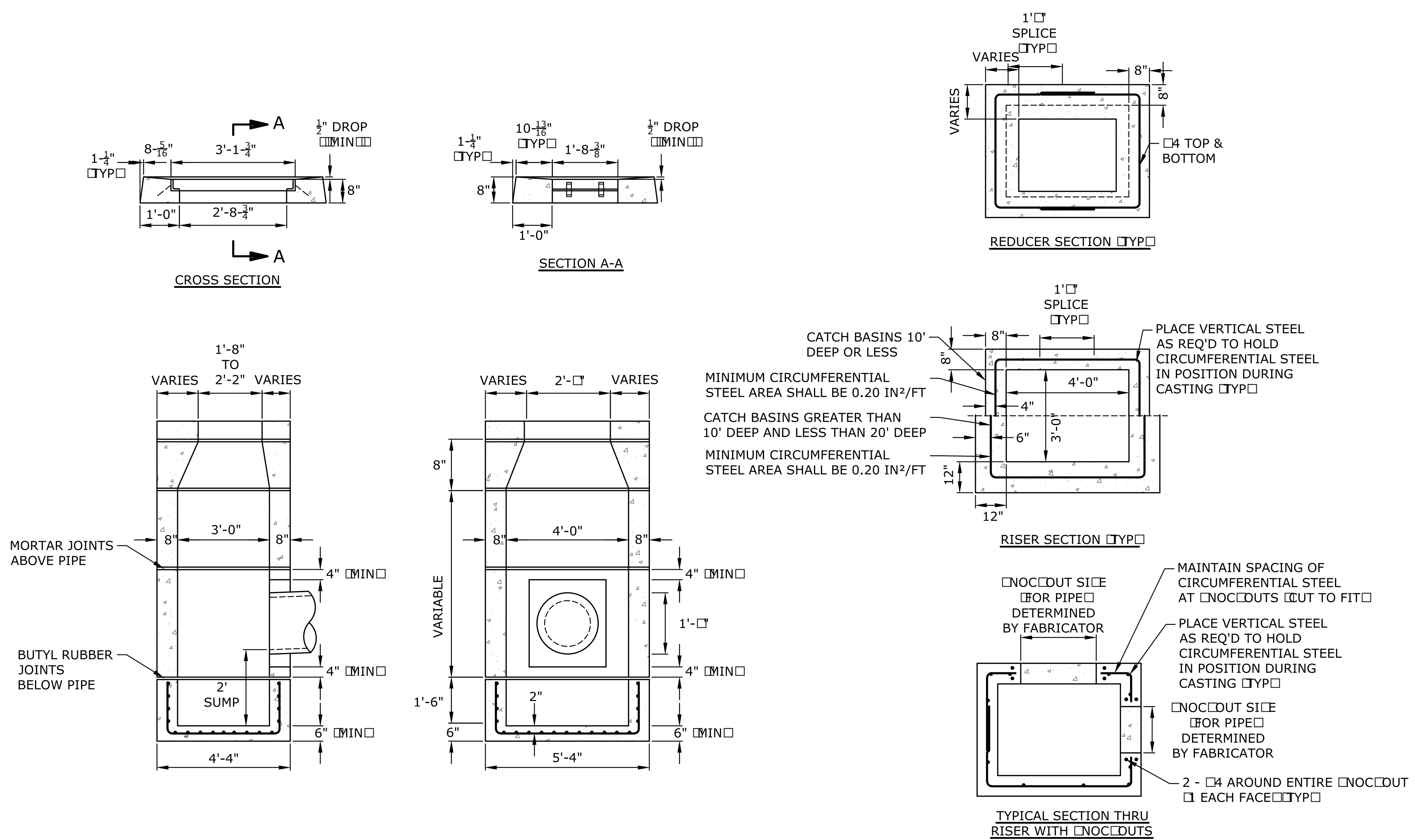
C-603



CONNECTICUT DEPARTMENT OF TRANSPORTATION

□□□E"□"□□□□□□□□□□N

NO SCALE



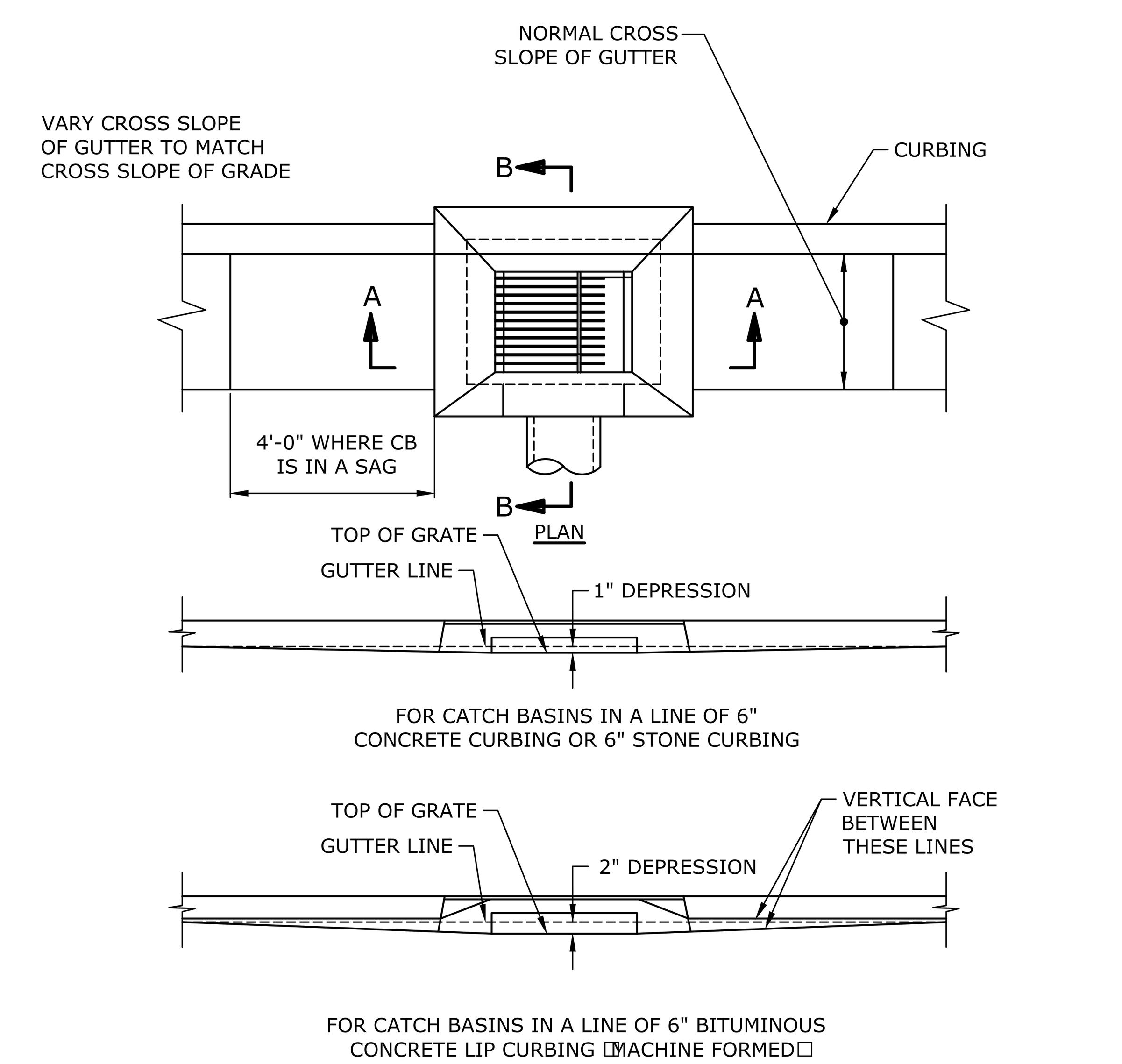
CONNECTICUT DEPARTMENT OF TRANSPORTATION

□□□E"□"□L"□□□□□□□□□□N

NO SCALE

NOTES:

1. REINFORCEMENT SHALL CONFORM TO ASTM A615, GRADE 60.
2. DETAILS ON THIS SHEET SHOW STANDARD REINFORCEMENT. WELDED WIRE FABRIC WITH AN AREA EQUAL TO OR GREATER THAN THE REINFORCING SHOWN MAY BE SUBSTITUTED.
3. ALL LAP SPLICES, DEVELOPMENT LENGTHS, BENDS FOR REINFORCEMENT, AND WELDED WIRE FABRIC SHALL CONFORM TO AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.
4. ALL REINFORCEMENT SHALL HAVE A MINIMUM CLEAR COVER OF 2", E□CEPT FOR BENEATH BOTTOM REINFORCEMENT IN TOP SLABS, WHERE THE MINIMUM MAY BE $1\frac{1}{2}$"
5. MINIMUM CONCRETE COMPRESSIVE STRENGTH FC'=4,000PSI SHALL BE OBTAINED BEFORE SHIPPING.
6. BASES AND RISERS AT A DEPTH OF 20' AND GREATER SHALL BE DESIGNED BY THE CONTRACTOR AND WOR□ING DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.
7. SEE STANDARD DRAWING 507-□FOR CATCH BASIN FRAMES AND GRATES.
8. FOR DOT MAINTENANCE PERSONNEL, RISERS MAY BE PREFABRICATED WITH PIPE OPENINGS IN ALL FOUR WALLS. ADEQUATE REINFORCING AROUND PIPE OPENINGS TO CONFORMING TO THESE PLANS SHALL BE PROVIDED. ANY RISERS USED WHERE A PIPE OPENING IS TO REMAIN IN PLACE MUST BE FORMED UP WITH BRIC□AS DIRECTED BY THE ENGINEER.
□. RISERS SHALL NEVER HAVE CORNER PIPE ENTRIES. WHERE THE ALIGNMENT OF THE PIPE WITH RESPECT TO THE CORNER OF THE CATCH BASIN CANNOT BE CHANGED, A ROUND STRUCTURE CONFORMING TO ASTM C478 SHALL BE USED. REINFORCING FOR THE ROUND TOP SLAB WITH A RECTANGULAR OPENING SHALL CONFORM TO DETAILS SHOWN HERE.
10. ALL PIPE OPENINGS SHALL BE CLOSED USING MATERIALS WHICH CONFORM TO STATE OF CONNECTICUT STANDARD SPECIFICATIONS SECTION M.08.02. IF THE ENGINEER DETERMINES THAT THE CLOSURE OF ANY PIPE OPENING IS UNSATISFACTORY, THE CONTRACTOR SHALL RECLOSE SAID OPENING AT NO ADDITIONAL COST TO THE STATE. □NOC□OUTS FOR PIPE OPENINGS SHALL NOT RESULT IN A REDUCED WALL THIC□NESS.
11. THE LATEST STATE OF CONNECTICUT STANDARD SPECIFICATIONS AND SUPPLEMENTALS SHALL GOVERN.
12. FOR ADDITIONAL DETAILS, SEE OTHER CATCH BASIN SHEETS.
13. WALL THIC□NESS OF ALL CB'S OVER 10' DEEP SHALL BE INCREASED TO 12" THIC□ INSIDE DIMENSION SHALL REMAIN THE SAME. □THE 12" THIC□NESS SHALL START AFTER THE FIRST 10"□
14. BUTYL RUBBER JOINT SEAL SHALL CONFORM TO AASHTO M-1□B AND MORTAR SHALL CONFORM TO THE LATEST STATE OF CONNECTICUT STANDARD SPECIFICATIONS MATERIAL SECTION M11.04.
15. SHRIN□AGE AND TEMPERATURE REINFORCEMENT SHALL BE PROVIDED IN THE TOPS OF SLABS. THE TOTAL AREA OF REINFORCEMENT PROVIDED SHALL BE AT LEAST 0.125 IN²/FT IN EACH DIRECTION. THE MA□IMUM SPACING OF THIS REINFORCEMENT SHALL NOT E□CEED 18 INCHES.
16. THE DETAILS SHOWN IN THE PLAN VIEW FOR THE PRECAST CONCRETE ROUND STRUCTURES SHALL ALSO BE USED FOR CONVERTING MANHOLES TO CATCH BASINS.



Tighe&Bond
1000 Bridgeport A□enue
Suite 320
Shelton, CT 06484
□203□712-1100

ENVIRONMENTAL LAND SOLUTIONS, LLC
Landscape Architecture and Environmental Planning
8 KNIGHT STREET, SUITE 203
NORWALK, CONNECTICUT 06851
Tel: (203) 855-7879 Fax: (203) 855-7836
info@elsllc.net www.elsllc.net

06/07/2021

06/07/2021

□□□ N
□□□M□□□□□N

□□□
D□□□□r□□□□d

FDSPIN
141 DR, LLC

Wilton, Conne□ti□ut

MAR□	DATE	DESCRIPTION

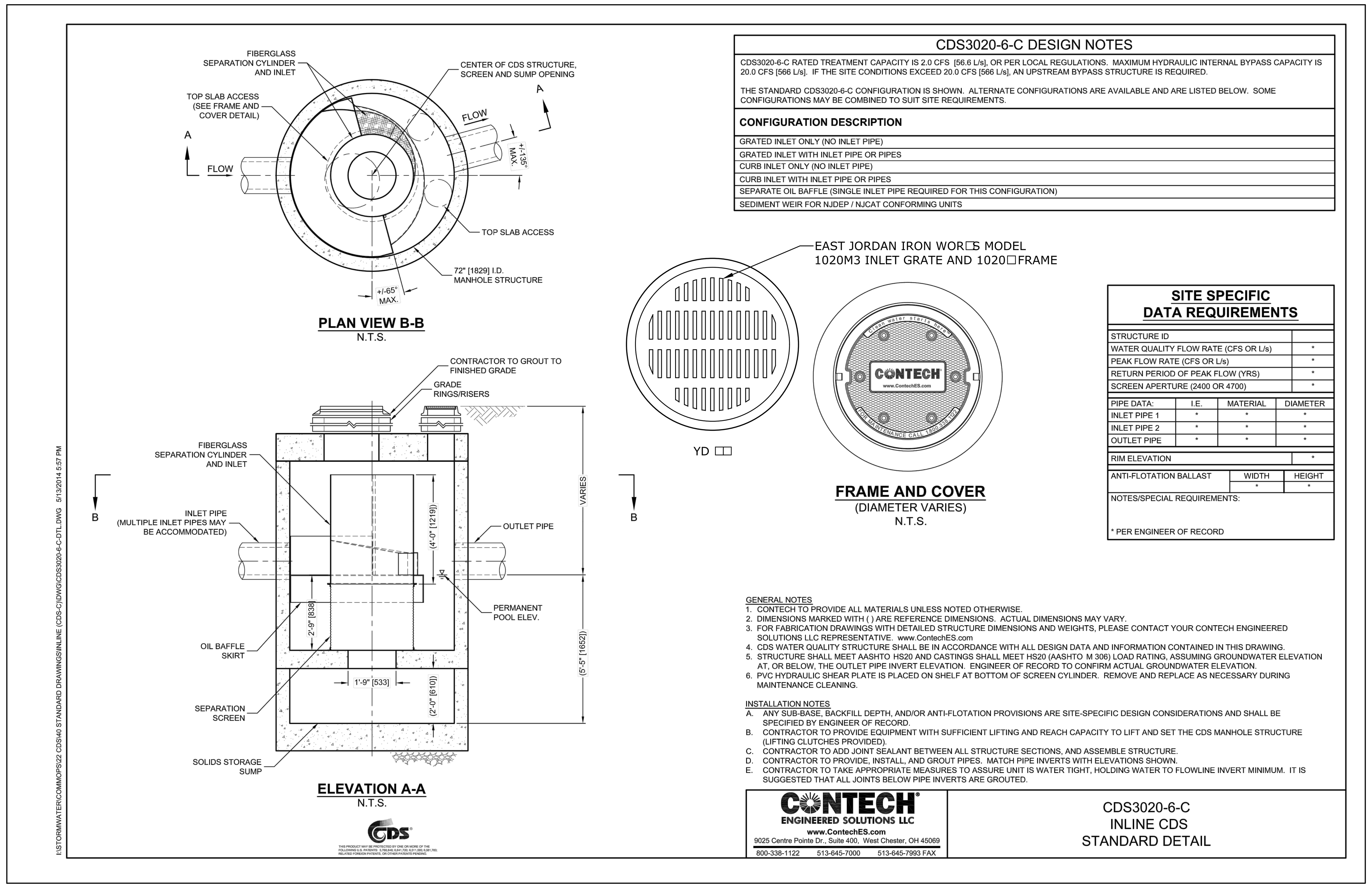
PROJECT NO:	F0173-002
DATE:	06/07/2021
FILE:	F0173-02-C-601-DETL.dwg
DRAWN BY:	MDS
CHEC□ED:	EWL
APPROVED:	JWB

DETAILS - 4

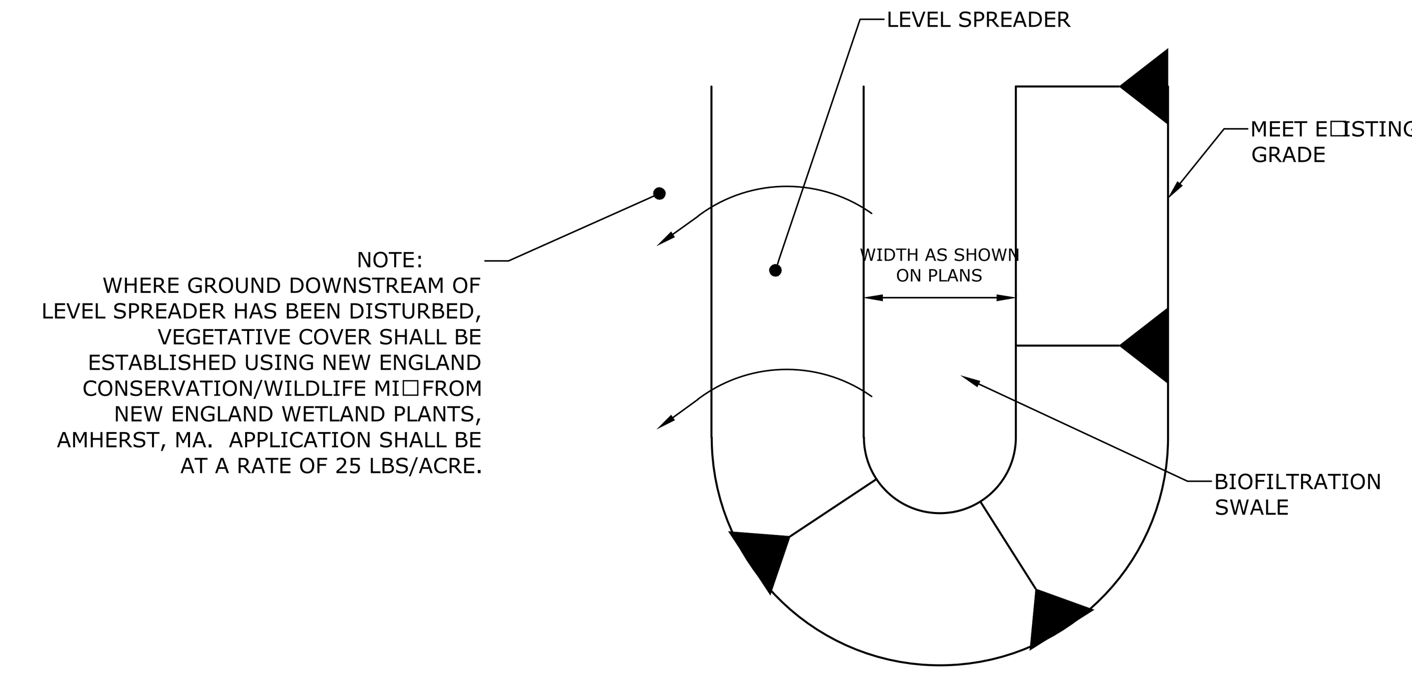
SCALE: AS SHOWN

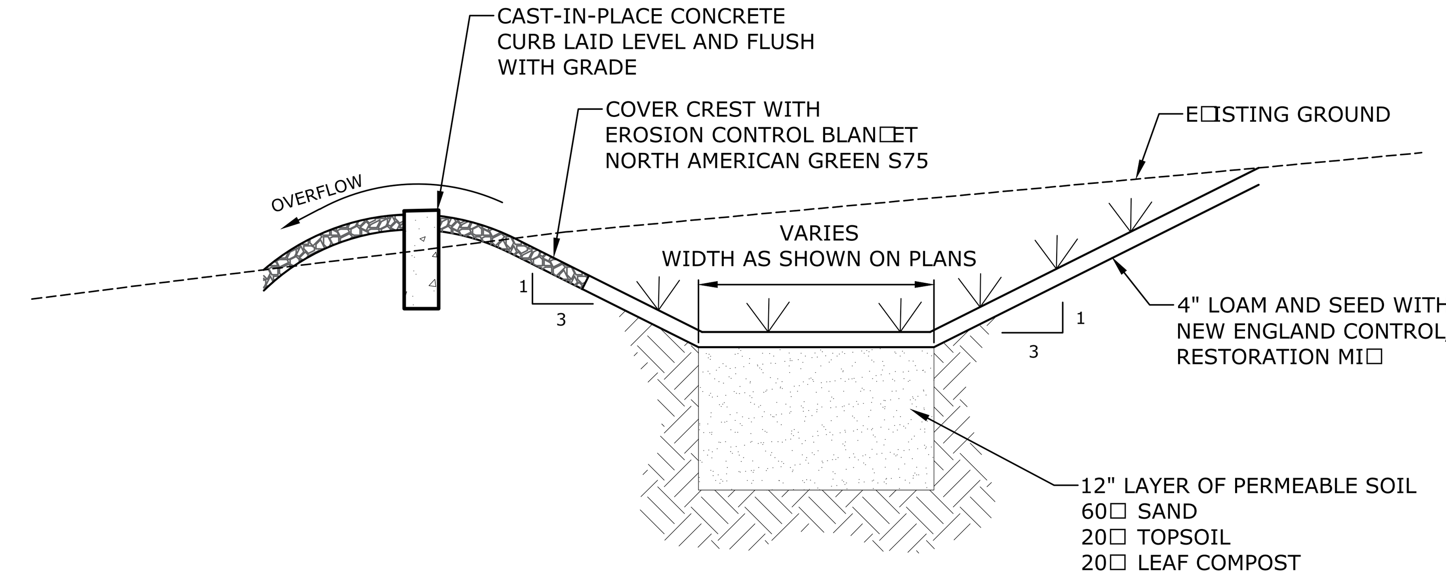
C-604

Last Sa□ed: 6/2/2021
Plotted On:Jun 07, 2021-8:31am By: TAS
Tighe & Bond:J:\F\F0173 Fuller\002 141 Danbury Road\Drawings-Figures\Sheets\F0173-02-C-601-DETL.dwg

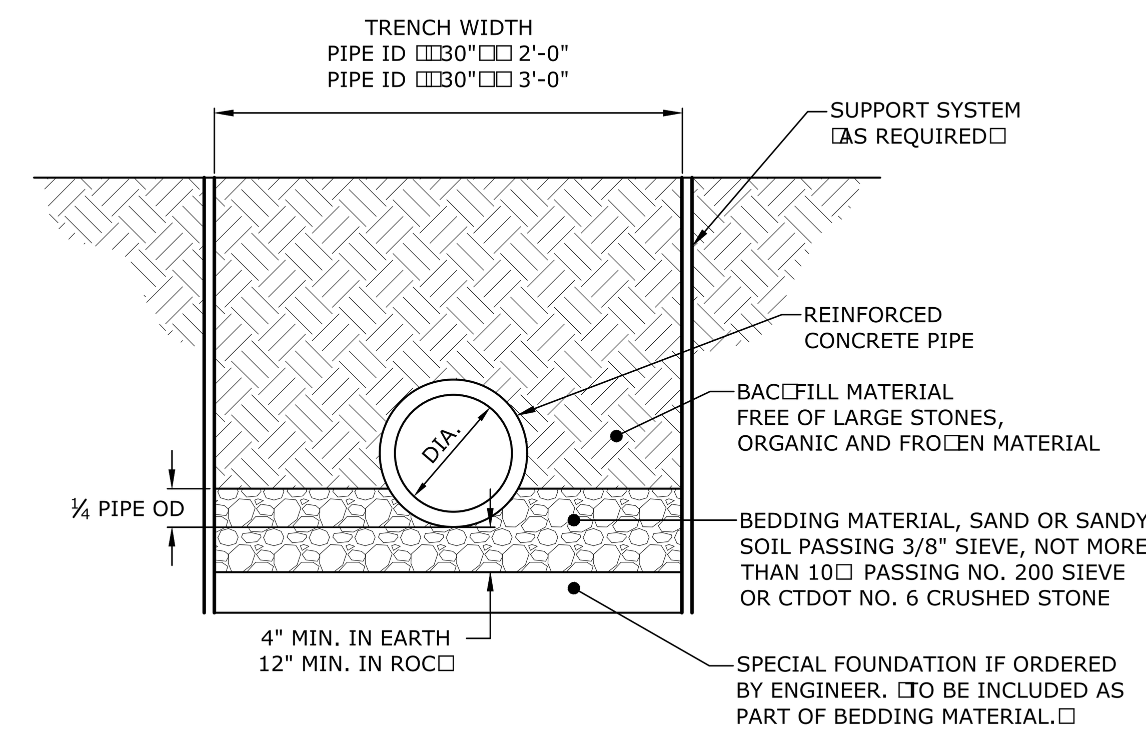


NO SCALE

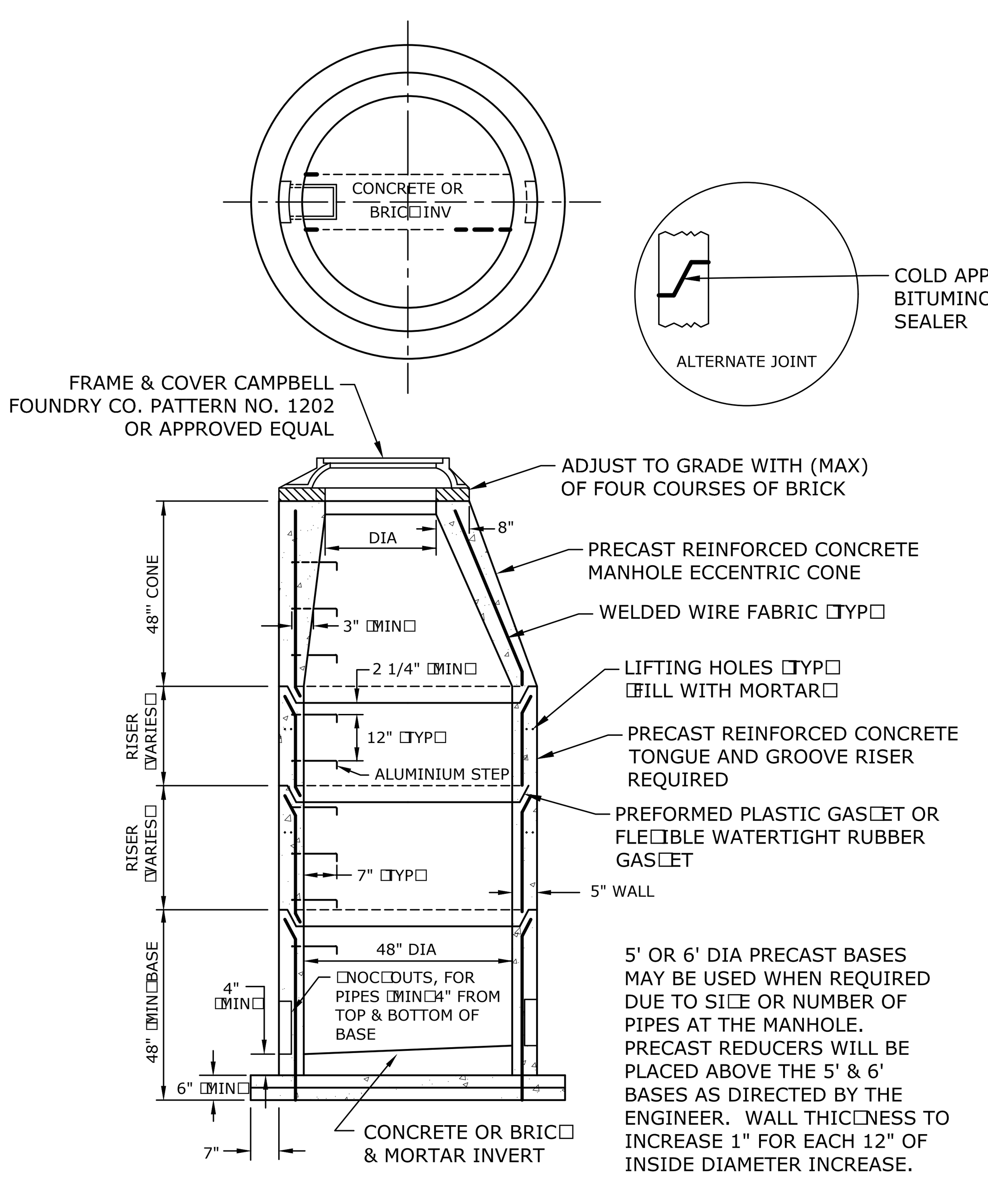




NO SCALE

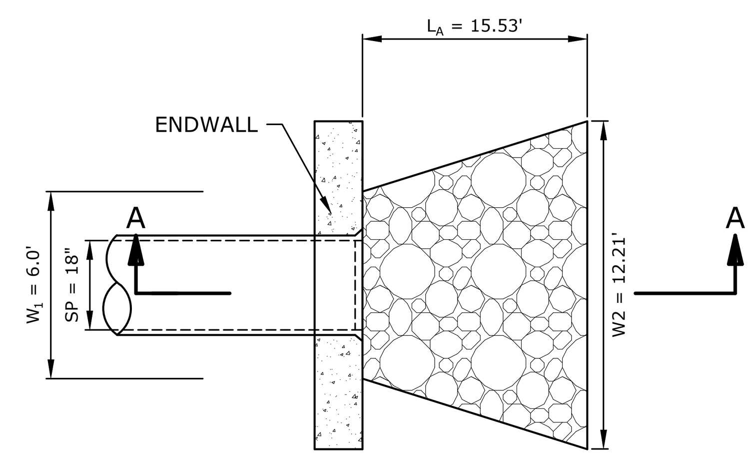


NO SCALE



48" PRECAST MANHOLE

NO SCALE



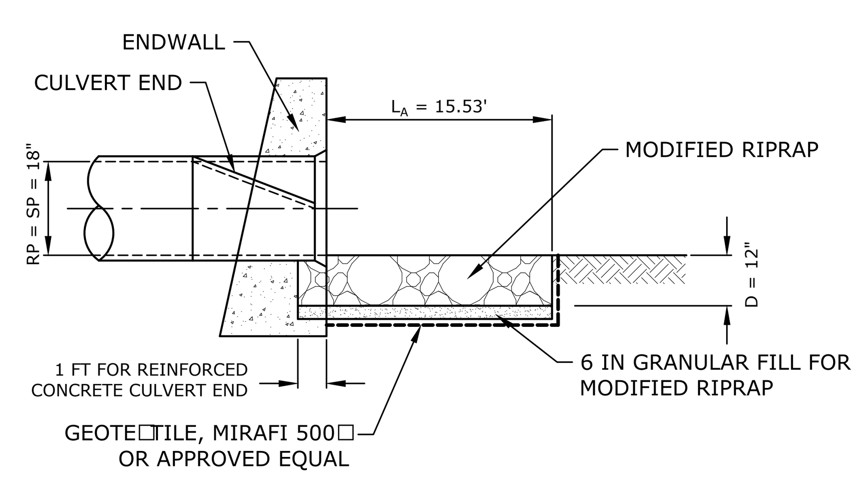
ENDWALL PLAN VIEW

SP= MAX INSIDE PIPE SPAN (NON-CIRCULAR SECTIONS) INSIDE PIPE DIAMETER (CIRCULAR SECTIONS)

RP= MAX INSIDE PIPE RISE (NON-CIRCULAR SECTIONS) INSIDE PIPE DIAMETER (CIRCULAR SECTIONS)

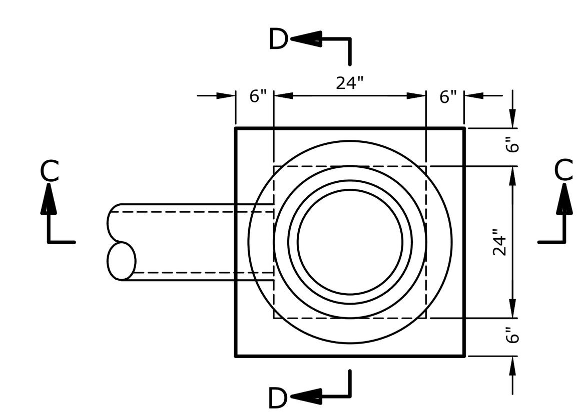
L_A= LENGTH OF RIPRAP APRON MEASURED FROM THE END OF CULVERT END SECTION OR FACE OF ENDWALL

D= 12 IN MODIFIED RIPRAP
18 IN INTERMEDIATE RIPRAP
36 IN STANDARD RIPRAP



SECTION A-A
CULVERT END AND ENDWALL

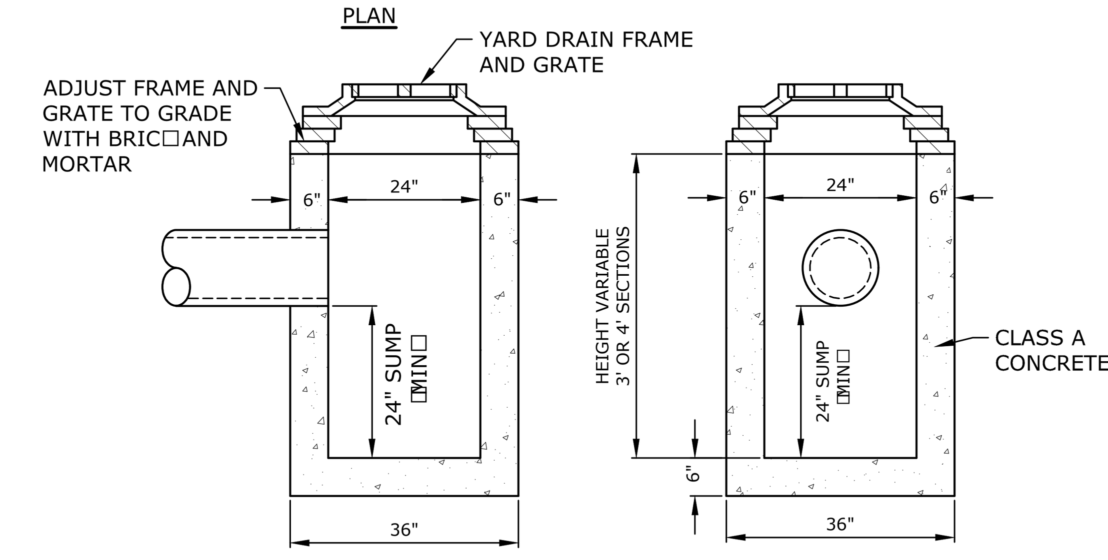
NO SCALE



PLAN

NOTE:

1. REINFORCING TO BE 6x6x10 GAUGE MESH



SECTION C-C

SECTION D-D

YARD DRAIN

NO SCALE

Tighe&Bond
1000 Bridgeport Avenue
Suite 320
Shelton, CT 06484
(203) 712-1100

ELS
ENVIRONMENTAL LAND SOLUTIONS, LLC
Landscape Architecture and Environmental Planning
8 KNIGHT STREET, SUITE 203
NORWALK, CONNECTICUT 06851
Tel: (203) 855-7879 Fax: (203) 855-7836
info@elsllc.net www.elsllc.net

STATE OF CONNECTICUT CHARLES J. CROSE 20374 LICENSED PROFESSIONAL ENGINEER 06/07/2021

STATE OF CONNECTICUT ERIK W. LINDQUIST 22850 LICENSED PROFESSIONAL ENGINEER 06/07/2021

FDSPIN
141 DR, LLC

Wilton, Connecticut

MARK	DATE	DESCRIPTION

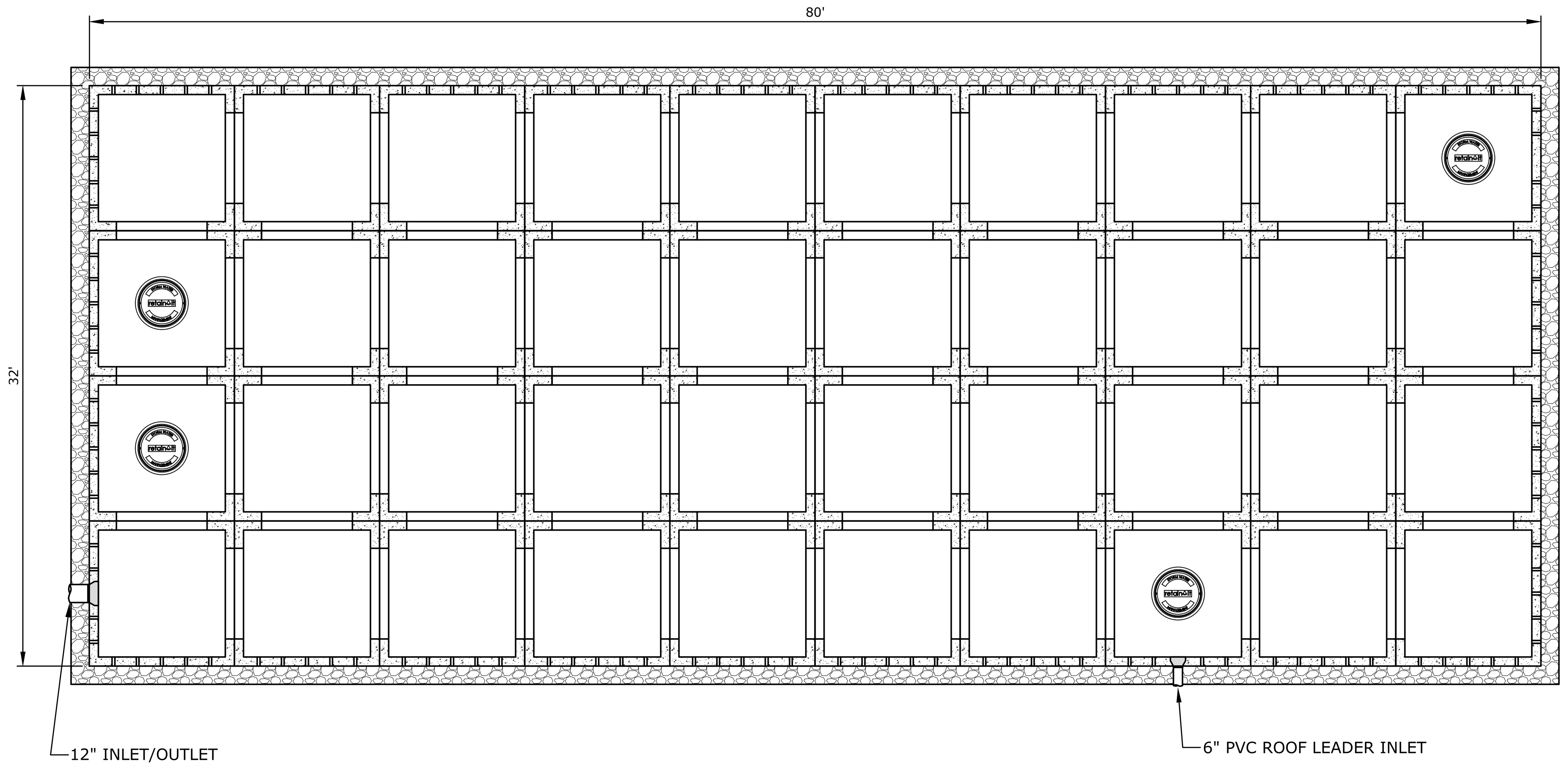
PROJECT NO:	F0173-002
DATE:	06/07/2021
FILE:	F0173-02-C-601-DETL.dwg
DRAWN BY:	MDS
CHECKED:	EWL
APPROVED:	JWB

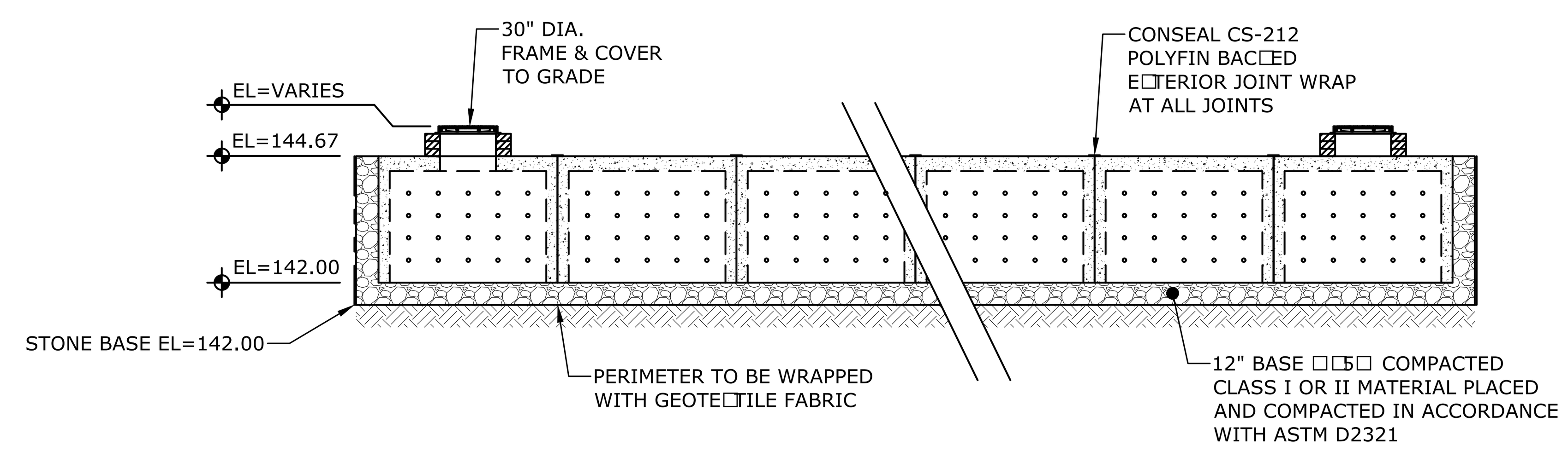
DETAILS - 5

SCALE: AS SHOWN

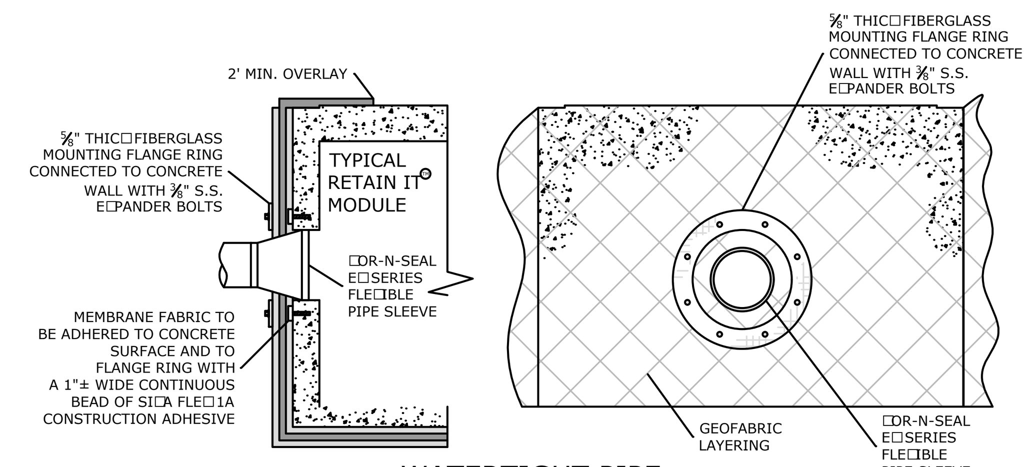
C-605

Last Saved: 6/2/2021
Plotted On: Jun 07, 2021-8:31am By: TAS
Tighe & Bond: J:\F\F0173 Fuller\002 141 Danbury Road\Drawings-Figures\Sheets\F0173-02-C-601-DETL.dwg

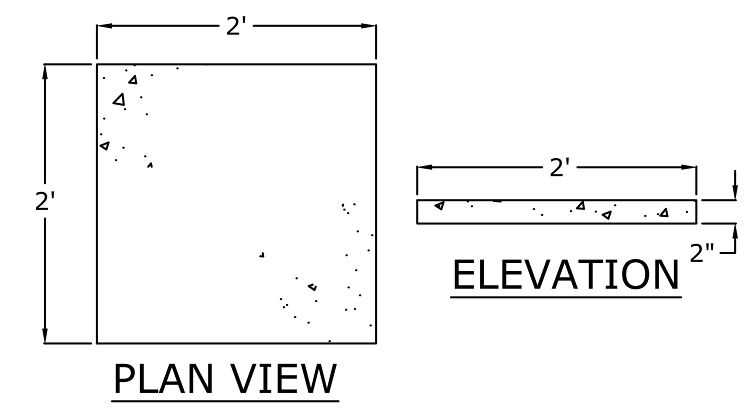




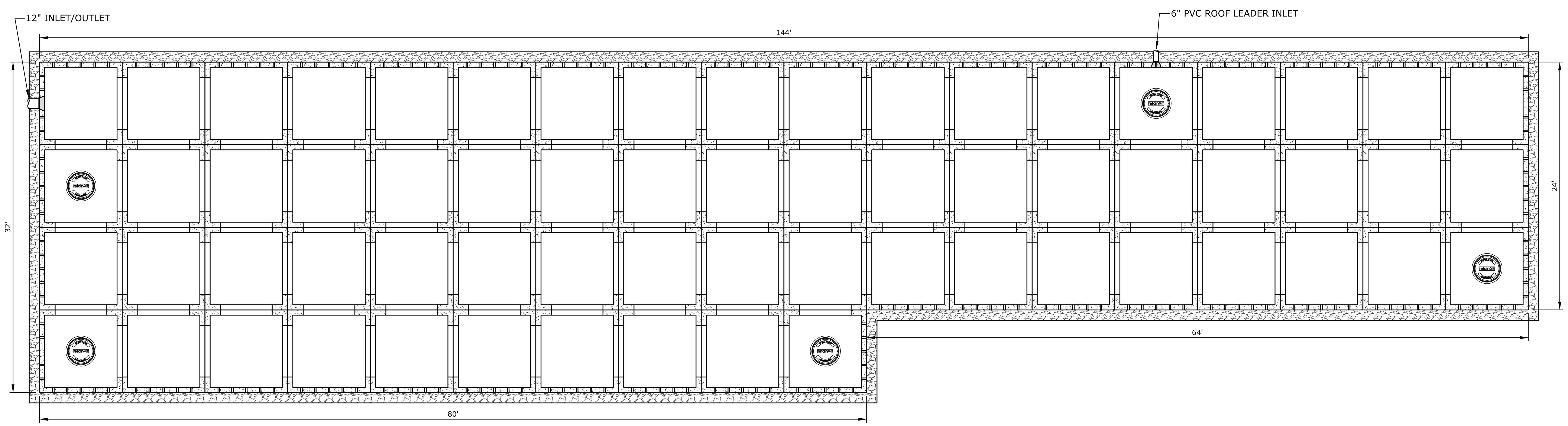
NO SCALE

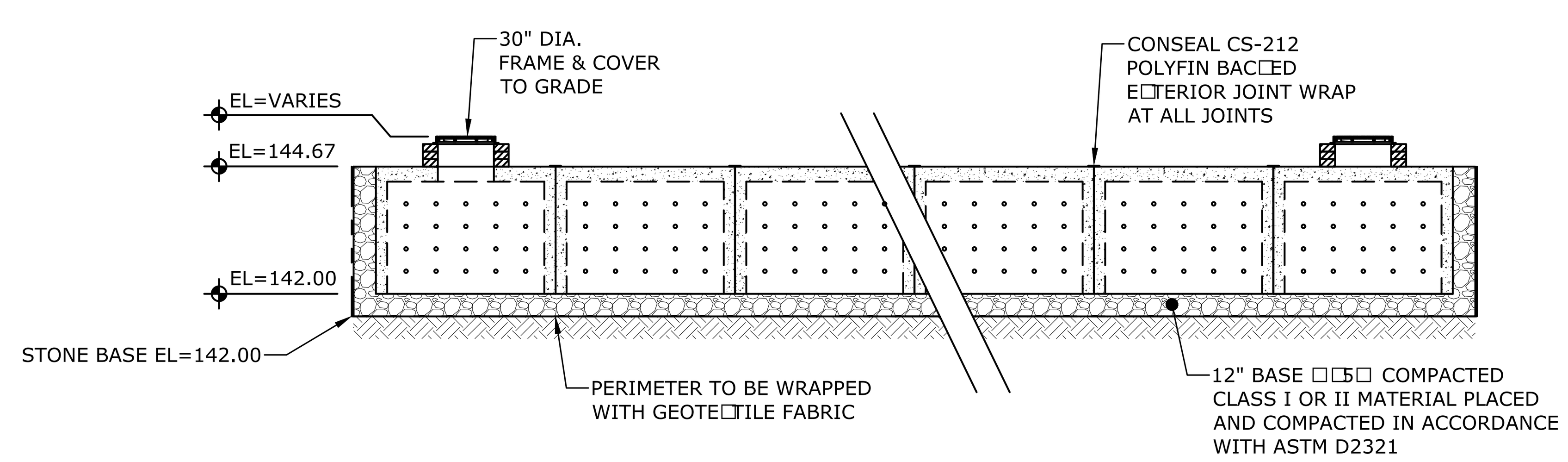


WATERTIGHT PIPE CONNECTION DETAIL



INLET SPLASH PAD





NO SCALE

Tighe&Bond
1000 Bridgeport A□enue
Suite 320
Shelton, CT 06484
□203□712-1100

ENVIRONMENTAL LAND SOLUTIONS, LLC
Landscape Architecture and Environmental Planning
8 KNIGHT STREET, SUITE 203
NORWALK, CONNECTICUT 06851
Tel: (203) 855-7879 Fax: (203) 855-7836
info@elsllc.net www.elsllc.net

06/07/2021

06/07/2021

FDSPIN
141 DR, LLC

Wilton, Conne□ti□ut

MAR□	DATE	DESCRIPTION

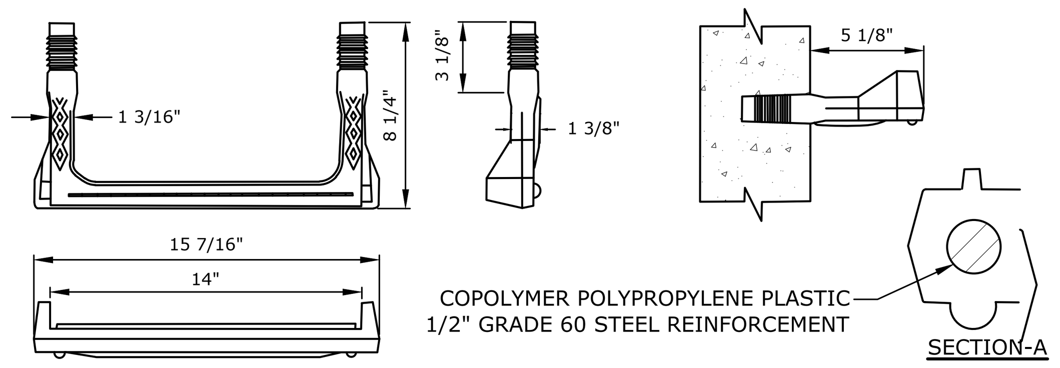
PROJECT NO:	F0173-002
DATE:	06/07/2021
FILE:	F0173-02-C-601-DETL.dwg
DRAWN BY:	MDS
CHEC□ED:	EWL
APPROVED:	JWB

DETAILS - 6

SCALE: AS SHOWN

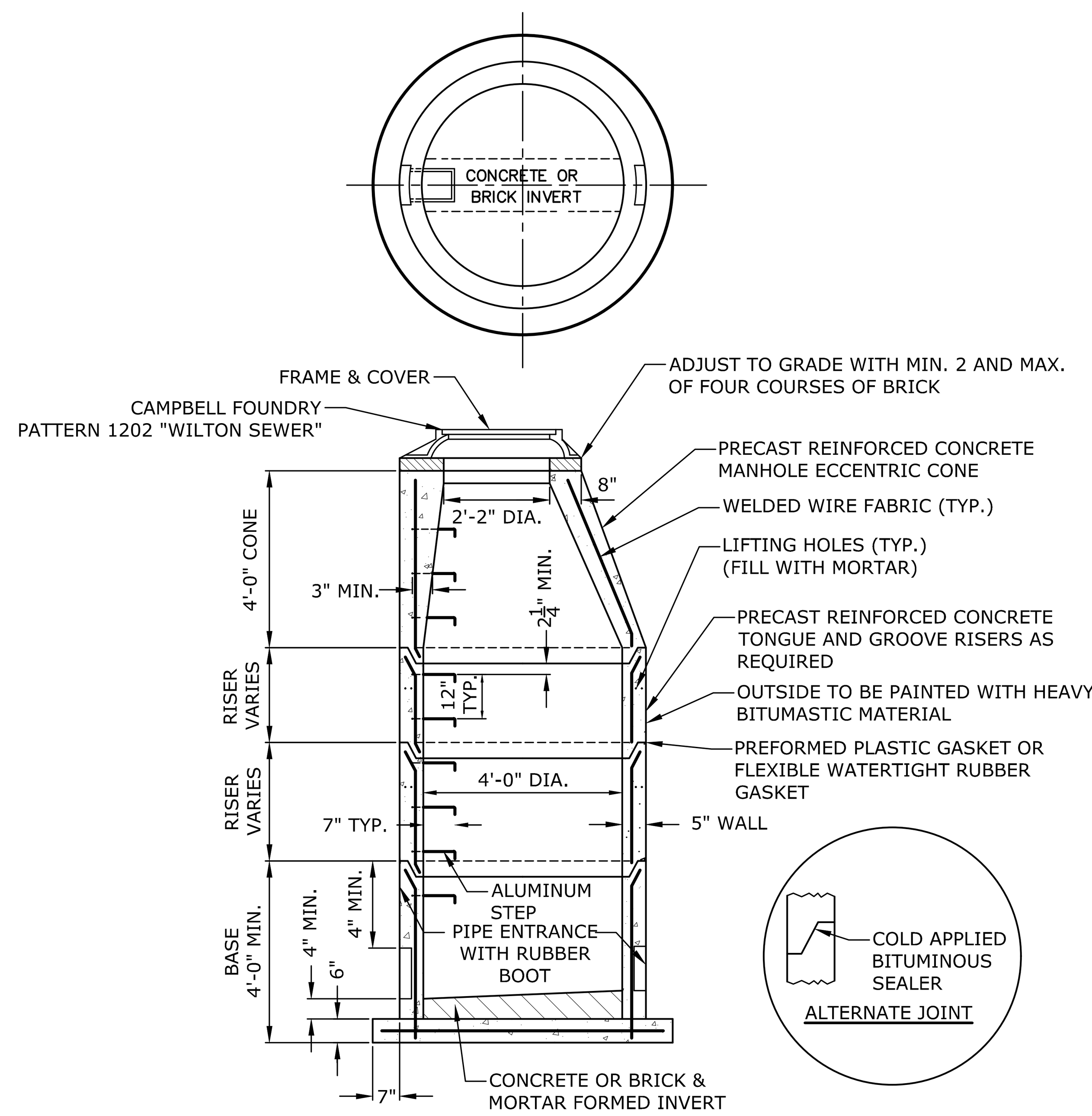
C-606

Last Sa□ed: 6/2/2021
Plotted On:Jun 07, 2021-8:31am By: TAS
Tighe & Bond:J:\F\F0173 Fuller\002 141 Danbury Road\Drawings-Figures\Sheets\F0173-02-C-601-DETL.dwg



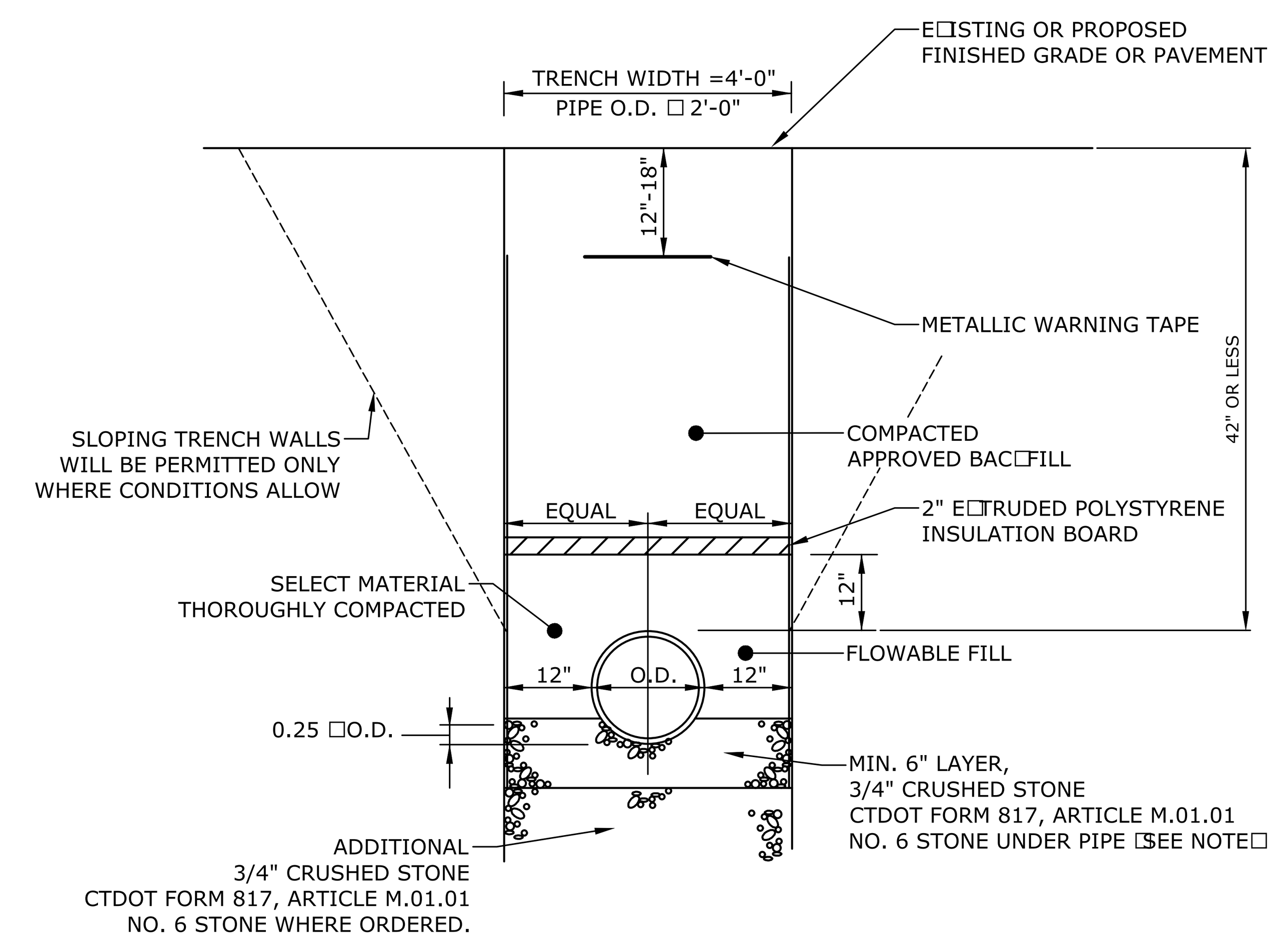
NOTE:
MANHOLE RUNGS ARE TO BE "SAFETY GREEN" PHOSPHORESCENT COPOLYMER POLYPROPYLENE PLASTIC COATED 1/2" GRADE STEEL REINFORCEMENT STEP MODEL No. PS2-PFSL AS MANUFACTURED BY M.A. INDUSTRIES, INC. OR PRESS-SEAL GAS□ET,STEEL REINFORCED □GRADE 60 STEEL□ COPOLYMER POLYPROPYLENE 14" MANHOLE SAFETY STEP PART □ P-14850 WITH BUILT-IN REFLECTORS. STEPS ARE TO BE FACTORY INSTALLED BY THE MANUFACTURER OF THE MANHOLES

M□N□□LE□□□NG
NO SCALE



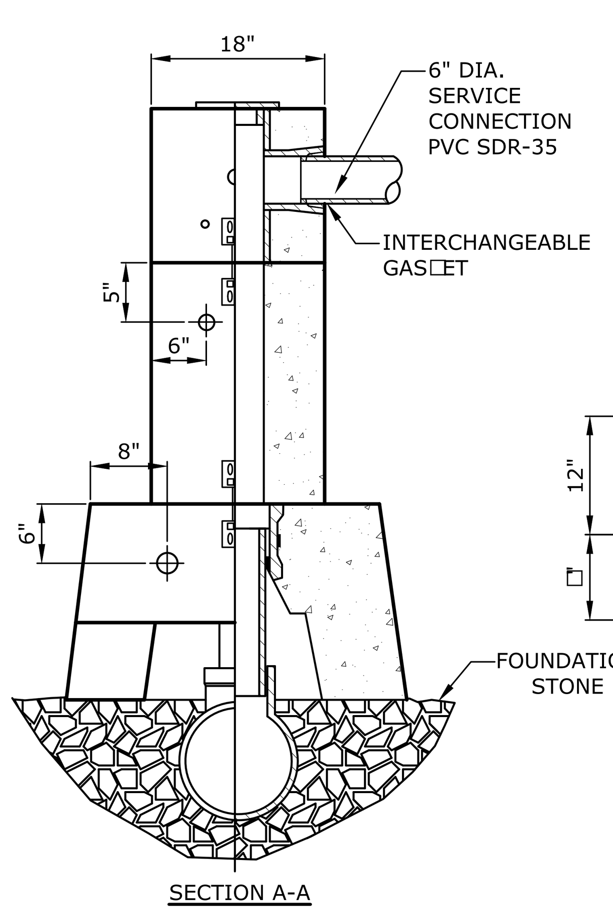
5' OR 6' DIA. PRECAST BASES MAY BE USED WHEN REQUIRED DUE TO SIZE OR NUMBER OF PIPES AT THE MANHOLE.
PRECAST REDUCERS WILL BE PLACED ABOVE THE 5' & 6' BASES AS DIRECTED BY THE ENGINEER.
WALL THICKNESS TO INCREASE 1" FOR EACH 1' OF INSIDE DIAMETER INCREASE.

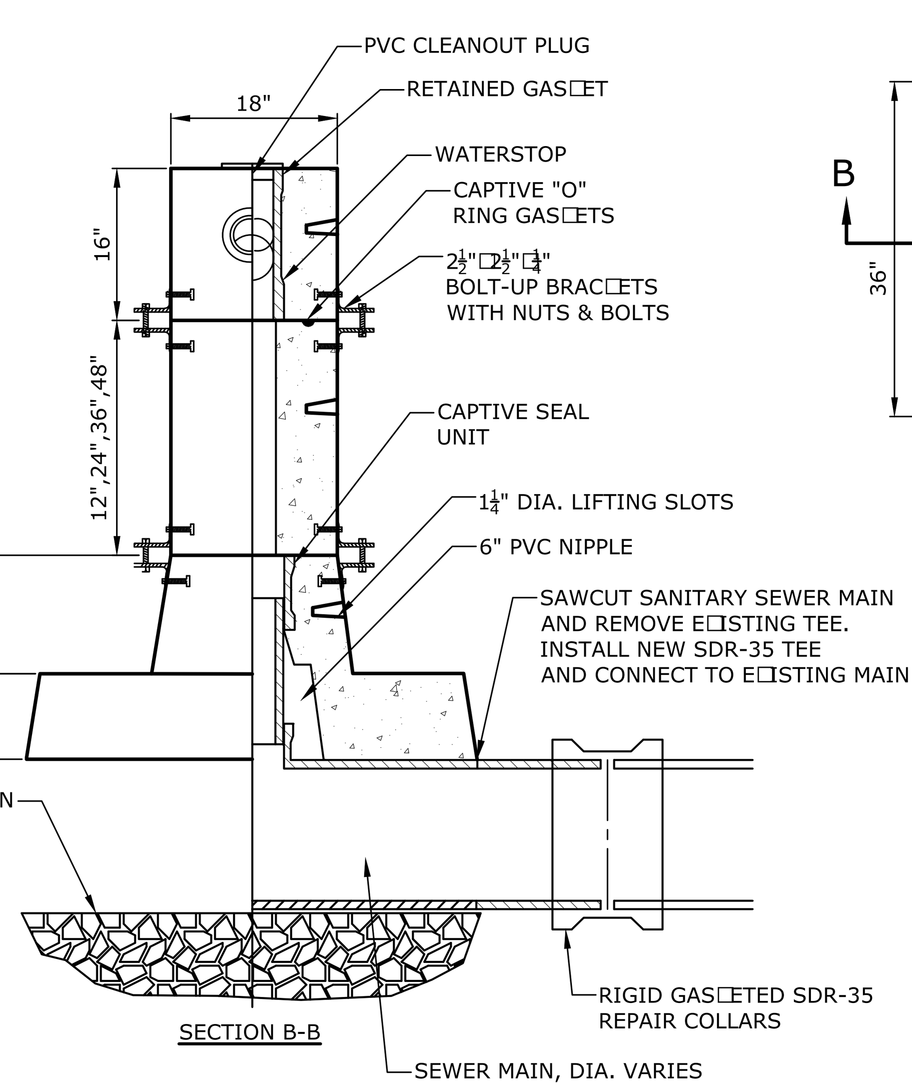
PRECAST SANITARY MANHOLE
NO SCALE

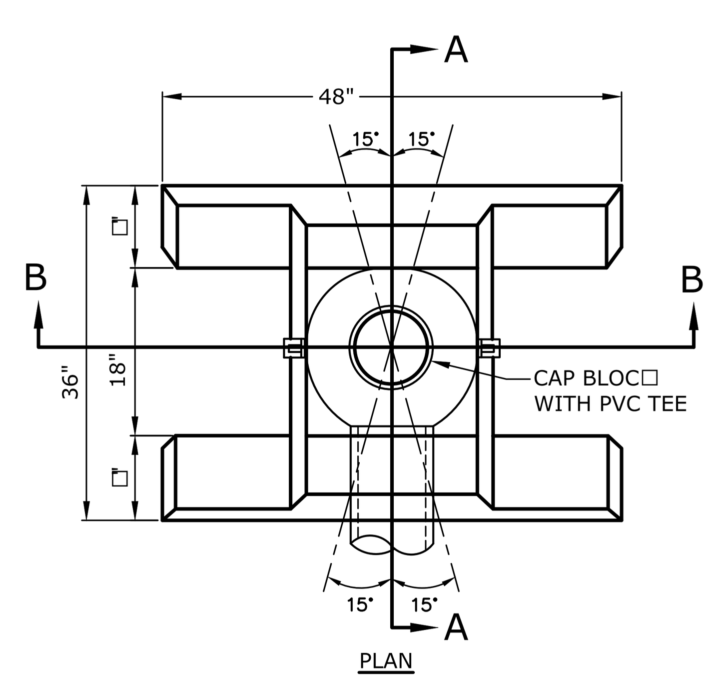


NOTE:
ADJACENT UTILITIES ARE TO BE PROPERLY SUPPORTED AT ALL TIMES
DEAD SAND WATERSTOPS ARE TO BE PLACED AT ALL JOINTS INCLUDING JOINTS AT MANHOLES. THEY ARE TO E□TEND 12" BEYOND EACH PIPE JOINT □IN BOTH DIRECTIONS□ THE DEAD SAND IS TO BE PLACED TO THE SAME HEIGHT AS THE BEDDING MATERIAL.

□□N□□□□□□E□ E□□□EN□□
□□□□□E□ E□□ □□□□□"□□E□□□□LE□□
NO SCALE

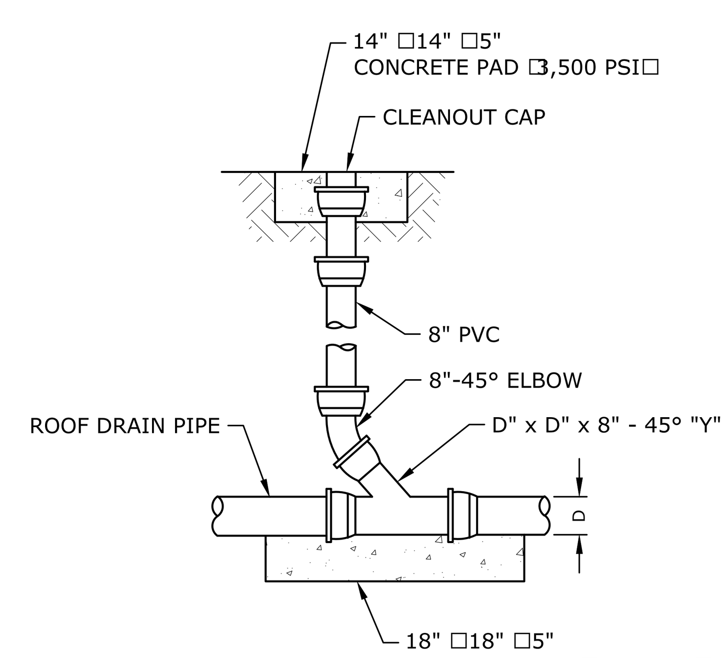




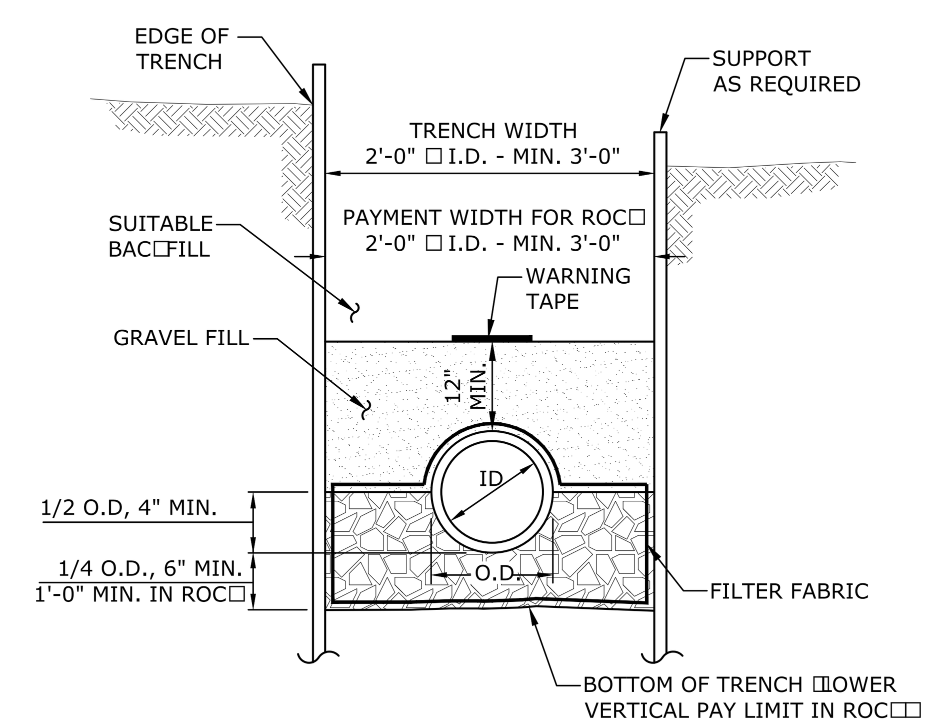


NOTES:
1□ CONCRETE STRENGTH 5,000 PSI □ 28 DAYS. DENSITY 150 PCF.
2□ CEMENT PER ASTM C 150-81.
3□ AIR ENTRAINING PER ASTM C 233-82.
4□ REINFORCING PER ASTM A 615.
5□ FILL VOID UNDER BRIDGING SECTION WITH SUITABLE BEDDING MATERIAL.
6□ PVC FITTINGS PER ASTM D 3034.

□□E□□□□□□□□MNE□
NO SCALE



CLEANOUT DETAIL
NO SCALE



□□□□□□L□□N□□□□□□□E□ E□□□EN□□E□□□□N
NO SCALE

Tighe&Bond
1000 Bridgeport A□enue
Suite 320
Shelton, CT 06484
□203□712-1100

ELS
ENVIRONMENTAL LAND SOLUTIONS, LLC
Landscape Architecture and Environmental Planning
8 KNIGHT STREET, SUITE 203
NORWALK, CONNECTICUT 06851
Tel: (203) 855-7879 Fax: (203) 855-7836
info@elsllc.net www.elsllc.net

STATE OF CONNECTICUT CHARLES J. CROCE 20374 LICENSED PROFESSIONAL ENGINEER 06/07/2021

STATE OF CONNECTICUT ERIK W. LINDQUIST 22850 LICENSED PROFESSIONAL ENGINEER 06/07/2021

□□□ N
□□□M□□□□□N

□□□
D□□□□r□□□□d

FDSPIN
141 DR, LLC

Wilton, Conne□ti□ut

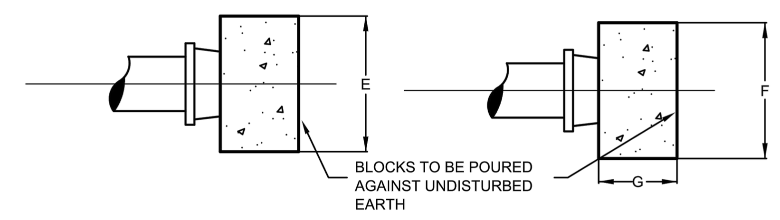
MAR□	DATE	DESCRIPTION
PROJECT NO:	F0173-002	
DATE:	06/07/2021	
FILE:	F0173-02-C-601-DETL.dwg	
DRAWN BY:	MDS	
CHEC□ED:	EWL	
APPROVED:	JWB	

DETAILS - 7

SCALE: AS SHOWN

C-607

Last Sa□ed: 6/2/2021
Plotted On:Jun 07, 2021-8:31am By: TAS
Tighe & Bond:J:\F\F0173 Fuller\002 141 Danbury Road\Drawings-Figures\Sheets\F0173-02-C-601-DETL.dwg



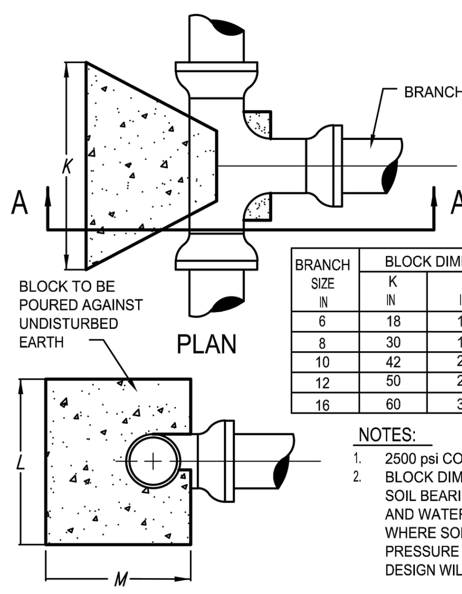
PLAN

ELEVATION

NOTES:
1. 2500 psi CONCRETE TO BE USED
2. BLOCK DIMENSIONS ARE BASED UPON SOIL BEARING PRESSURE OF 2000 psi AND WATER PRESSURE OF 150 psi. WHERE SOIL BEARING IS LESS OR WATER PRESSURE IS GREATER, A SPECIAL DESIGN WILL BE REQUIRED.
3. FOR USE ON ABANDONED LINES AND DEAD ENDS WHERE NO EXTENSION IS CONTEMPLATED.

PIPE DIAM. IN	BLOCK DIMENSIONS E IN	F IN	G IN	CONCRETE VOLUME CU. YD.
6	20	16	12	0.09
8	28	20	12	0.15
10	30	24	12	0.19
12	42	30	14	0.40
16	52	42	18	0.85

CAPS, PLUGS AND VALVES



PLAN

SECTION AA

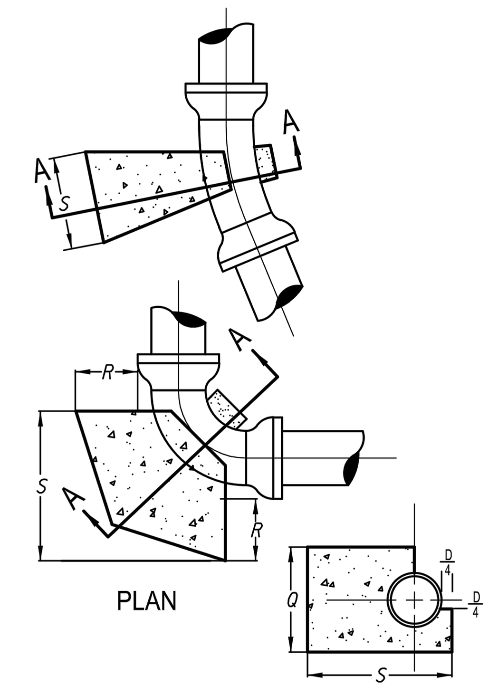
BRANCH SIZE IN	BLOCK DIMENSIONS K IN	L IN	M IN	CONCRETE VOLUME CU. YD.
6	18	16	12	0.09
8	30	18	12	1.15
10	42	20	12	0.24
12	50	24	16	0.42
16	60	36	24	1.12

NOTES:
1. 2500 psi CONCRETE TO BE USED
2. BLOCK DIMENSIONS ARE BASED UPON SOIL BEARING PRESSURE OF 2000 psi AND WATER PRESSURE OF 150 psi. WHERE SOIL BEARING IS LESS OR WATER PRESSURE IS GREATER, A SPECIAL DESIGN WILL BE REQUIRED.

TEES

AQUARION Water Company
Stewards of the Environment

THRUST BLOCKS
AT TEES, CAPS, PLUGS & VALVES
NOT TO SCALE
SD-14



PLAN

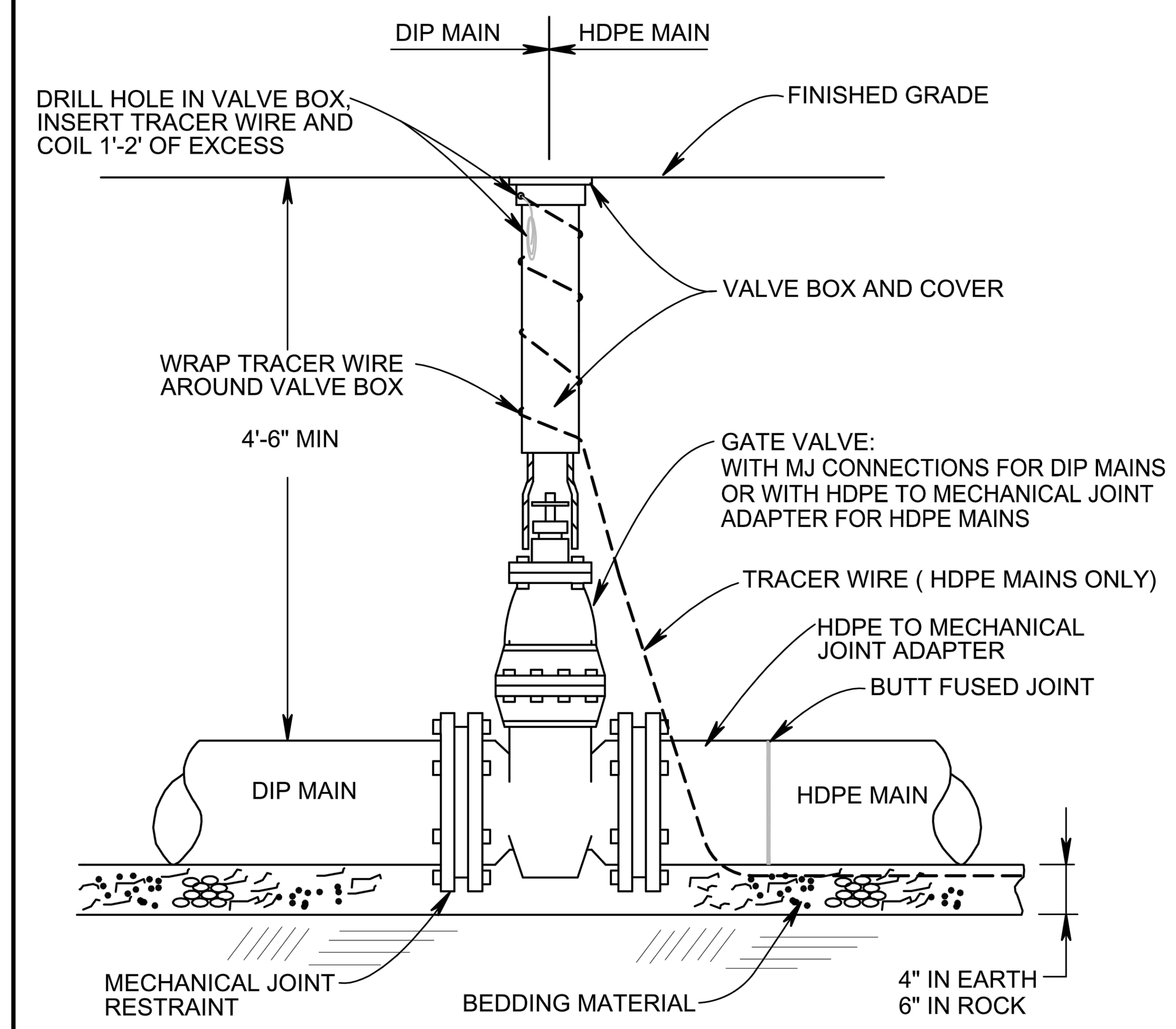
SECTION AA

PIPE DIAM. IN	BLOCK DIMENSIONS BEND	S IN.	Q IN.	R IN.	CONCRETE VOLUME CU. YD.
16	90	48	48	48	2.37
	45	48	34	20	0.70
	22 1/2	42	20	18	0.32
	11 1/4				SEE NOTE 3
12	90	36	36	36	1.00
	45	36	24	18	0.33
	22 1/2	28	18	12	0.13
	11 1/4				SEE NOTE 3
10	90	30	30	30	0.60
	45	30	20	18	0.23
	22 1/2	22	16	12	0.09
	11 1/4				SEE NOTE 3
8	90	24	24	24	0.30
	45	24	16	12	0.20
	22 1/2	18	12	12	0.11
	11 1/4				SEE NOTE 3
6	90	18	18	18	0.25
	45	18	12	12	0.11
	22 1/2	12	12	12	0.07
	11 1/4				SEE NOTE 3

NOTES:
1. 2500 psi CONCRETE TO BE USED
2. BLOCK DIMENSIONS ARE BASED UPON SOIL BEARING PRESSURE OF 2000 psi AND WATER PRESSURE OF 150 psi. WHERE SOIL BEARING IS LESS OR WATER PRESSURE IS GREATER, A SPECIAL DESIGN WILL BE REQUIRED.
3. SEE SAG VERTICAL (ABOVE)

AQUARION Water Company
Stewards of the Environment

THRUST BLOCKS
AT HORIZONTAL BENDS
NOT TO SCALE
SD-15

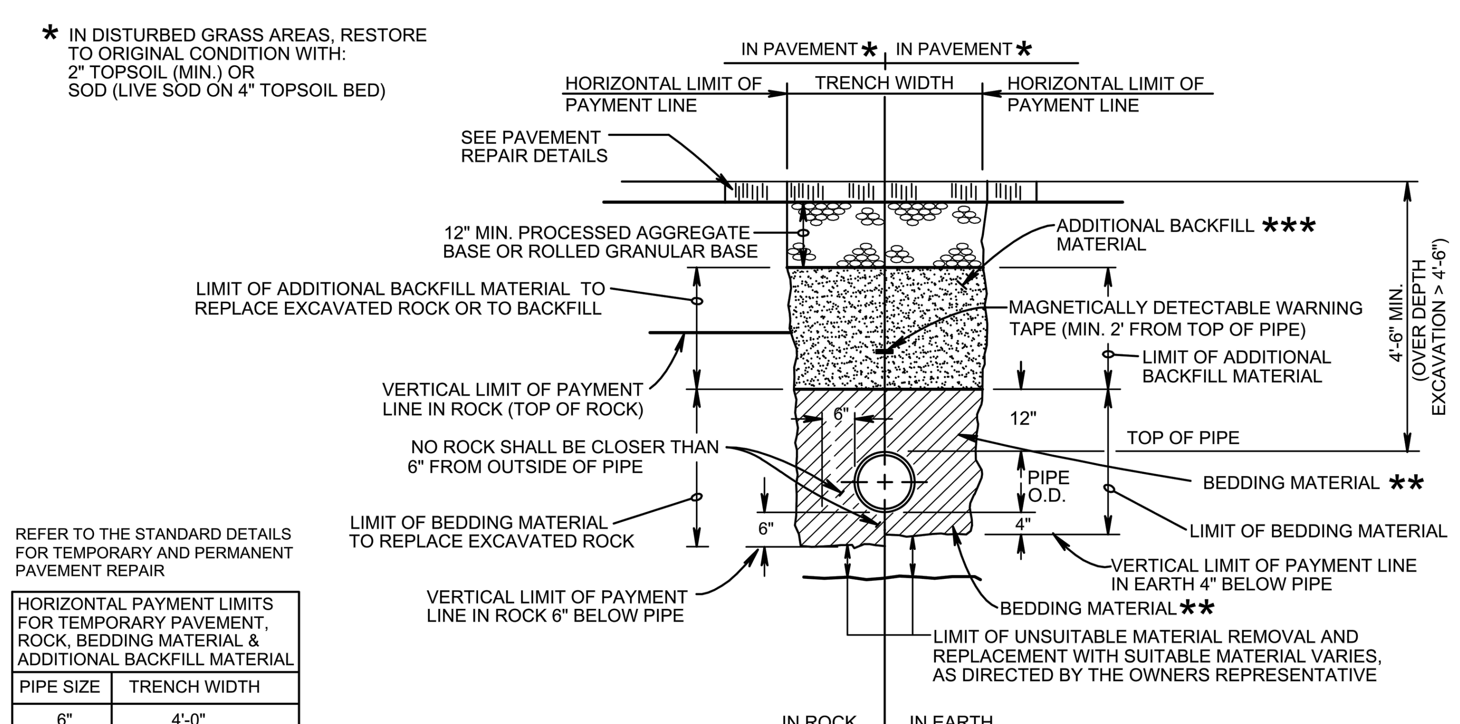


NOTE: ONLY INSTALLED ON MAINS 8" AND SMALLER

NOTE: FOR CONTINUOUS HDPE MAINS, INSTALL TRACER WIRE UNDER ALL VALVES AND FITTINGS. FOR TERMINATION POINTS, INSTALL TRACER WIRE AROUND VALVE BOXES AS SHOWN ABOVE.

AQUARION Water Company
Stewards of the Environment

GATE VALVE
NOT TO SCALE
SD-2



★ IN DISTURBED GRASS AREAS, RESTORE TO ORIGINAL CONDITION WITH: 2" TOPSOIL (MIN.) OR SOD (LIVE SOD ON 4" TOPSOIL BED)

REFER TO THE STANDARD DETAILS FOR TEMPORARY AND PERMANENT PAVEMENT REPAIR

HORIZONTAL PAYMENT LIMITS FOR TEMPORARY PAVEMENT, ROCK, BEDDING MATERIAL & ADDITIONAL BACKFILL MATERIAL	
PIPE SIZE	TRENCH WIDTH
6"	4'-0"
8"	4'-0"
12"	4'-0"
16"	4'-0"
20"	5'-0"
24"	5'-0"
30"	6'-0"
36"	6'-0"

NOTE: IF TRENCH BOXES ARE USED ADD 2' TO ALL TRENCH WIDTHS

★★ FOR DIP: NO STONES LARGER THAN 4", NO STONES WITHIN 4" OF PIPE, THOROUGHLY COMPACTED
FOR HDPE: NO STONES LARGER THAN 3/4", NO STONES WITHIN 4" OF PIPE, THOROUGHLY COMPACTED

★★★ (NO STONES LARGER THAN 12") (COMPACTED IN 12" LIFTS)

AQUARION Water Company
Stewards of the Environment

TYPICAL TRENCH DETAIL
NOT TO SCALE
SD-1

Tighe&Bond
1000 Bridgeport Avenue
Suite 320
Shelton, CT 06484
(203) 712-1100

ELS
ENVIRONMENTAL LAND SOLUTIONS, LLC
Landscape Architecture and Environmental Planning
8 KNIGHT STREET, SUITE 203
NORWALK, CONNECTICUT 06851
Tel: (203) 855-7879 Fax: (203) 855-7836
info@elsllc.net www.elsllc.net

STATE OF CONNECTICUT CHARLES J. CROSE 20374 LICENSED PROFESSIONAL ENGINEER
06/07/2021

STATE OF CONNECTICUT ERIK W. LINDQUIST 22850 LICENSED PROFESSIONAL ENGINEER
06/07/2021

FDSPIN
141 DR, LLC

Wilton, Connecticut

MARK	DATE	DESCRIPTION

PROJECT NO:	F0173-002
DATE:	06/07/2021
FILE:	F0173-02-C-601-DETL.dwg
DRAWN BY:	MDS
CHECKED:	EWL
APPROVED:	JWB

DETAILS - 8

SCALE: AS SHOWN

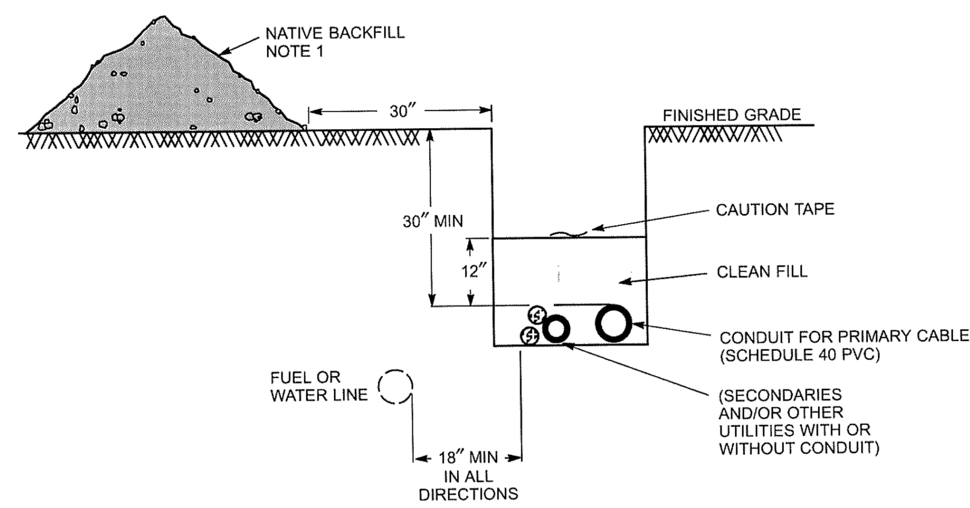
C-608

Last Saved: 6/2/2021
Plotted On: Jun 07, 2021-8:31am By: TAS
Tighe & Bond: J:\F\F0173 Fuller\002 141 Danbury Road\Drawings-Figures\Sheets\F0173-02-C-601-DETL.dwg

SCOPE – All direct–buried primary cables shall be of the jacketed type. The cables may be random–laid with the secondaries and other utilities under certain conditions, detailed in **DTR 44.101**.

INSTALLATION IN TRENCH – All direct–buried cables shall be installed at a depth of at least 30 inches in the following order:

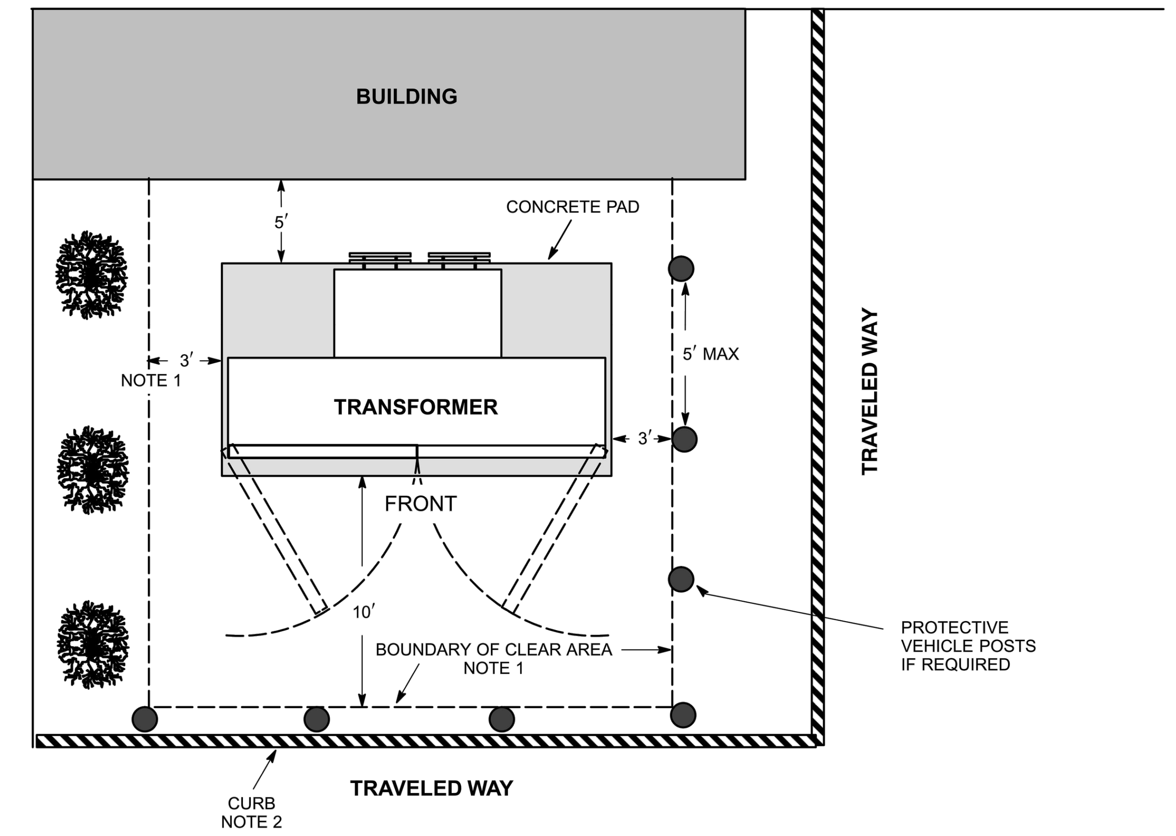
1. Ensure that the bottom of the trench is well–tamped and free of rocks.
2. Install the conduit, gluing all couplings.
3. Install secondaries and other utility cables or conduits in the trench.
4. Backfill with 12 inches clean fill not to contain stones larger than 2 inches in maximum diameter.
5. Install cable warning tape 12 inches over the conduit.
6. Fill in the remainder of the trench with native backfill.
7. Install pull line, including 10 feet of slack, and secure to conduit plug at each end of conduit run.



CROSS SECTION OF JOINT TRENCH

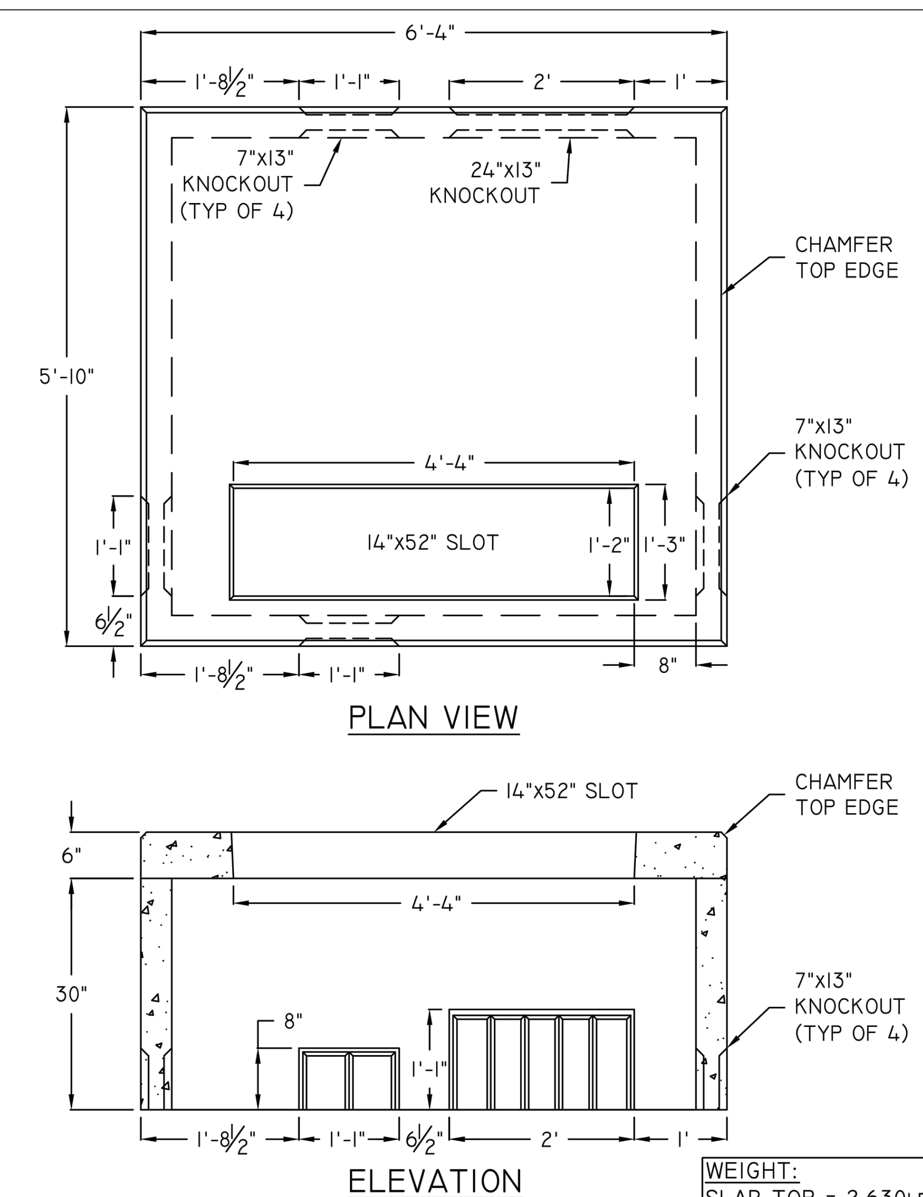
Notes
1. The trench shall be backfilled immediately following placement of the conduit.
2. 1/4–inch–diameter nylon pull line and plastic conduit plugs to be supplied and installed by contractor.

ORIGINAL 6/24/96 APPROVED 12/18/00	SINGLE–PHASE PRIMARY CABLE INSTALLATION DIRECT–BURIED – IN CONDUIT		CT/MA	
	NORTHEAST UTILITIES	CONSTRUCTION STANDARD	DTR 50.103	3



Notes
1. To inspect, provide access, operate elbow connectors and ventilate the transformer, the above specified clear area distances to buildings or shrubs shall be maintained. The distance from the building is to the concrete transformer pad. Property line shall be considered an obstruction, since fences, shrubs, etc. may be installed at a future date by adjacent property owners. Because of the possibility of cooling fins overhanging the pad, side clearances to be increased to 5 feet for transformers 1000 kVA and larger.
2. If no curb exists, or transformer is located closer than 10 feet to the traveled way, protective vehicle posts (●) shall be installed as specified in **DTR 42.061**.
3. Top of transformer pad shall be installed 3 inches above final grade.
4. Transformer shall not be located on steep grades where access to or elbow operation is made difficult.
5. Transformer shall meet the minimum distances to doors, windows, fire escapes, air intakes and walls as specified in **DTR 42.061**.
6. Transformer ***is not*** to be located with its doors facing the building.
7. Refer to **DTR 58.301** for specific instructions on the installation of the transformer pad.
8. Refer to **DSEM Section 06.32** for information on environmental considerations.

ORIGINAL 4/10/91 APPROVED 1/25/02	PAD–MOUNTED TRANSFORMERS LOCATION TO BUILDINGS AND ROADWAYS			
	NORTHEAST UTILITIES	CONSTRUCTION STANDARD	DTR 42.047	6



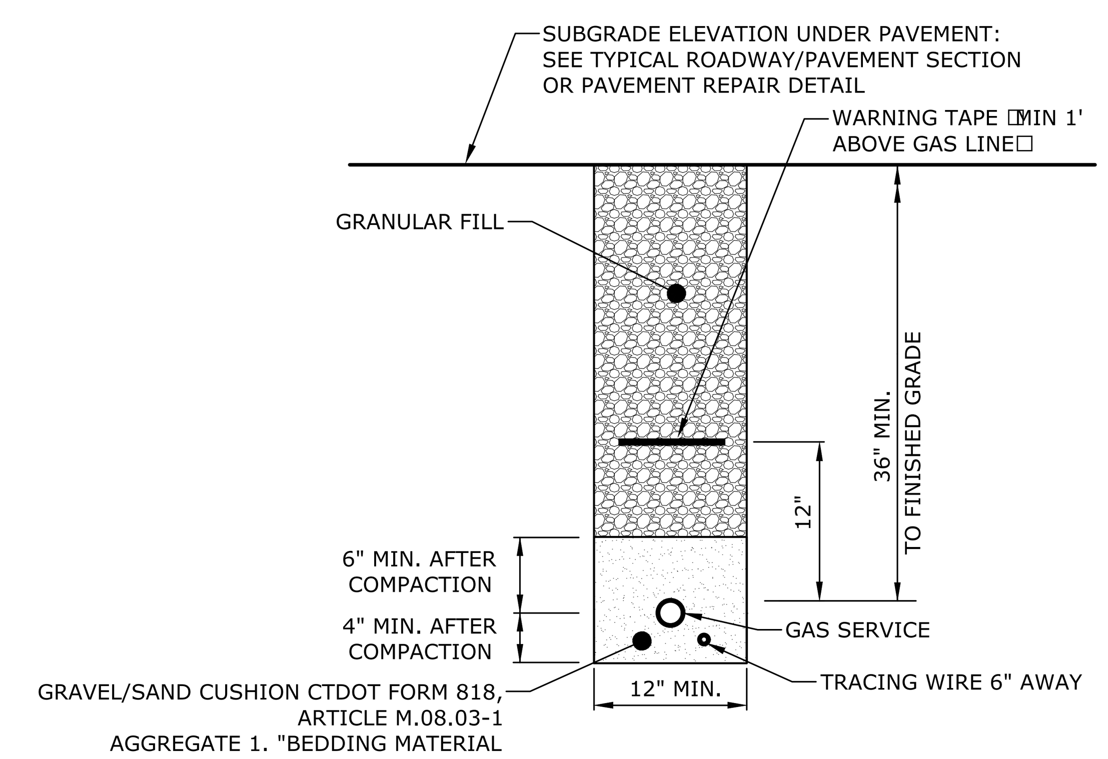
WEIGHT:
SLAB TOP = 2,630LBS
BASE = 3,165LBS

DESIGN NOTES:
1. CONCRETE - 5,000 PSI, 28 DAYS
2. REINFORCING STEEL CONFORMS TO LATEST ASTM A615 GRADE 60
3. H-20 DESIGN LOADING PER AASHTO HS-20-44
4. MEETS ALL PROVISIONS OF NORTHEAST UTILITIES SERVICE DWG NO. P-015

ANY MODIFICATIONS TO THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ARROW CONCRETE PRODUCTS SHALL RENDER IT INVALID AND UNUSABLE.

APPROVAL:	P-015 TRANSFORMER PAD	SCALE: N.T.S.
SIGNATURE / DATE		WEIGHT: 5,795 LBS
		DATE: 3/31/16
		DRAWN: JPW
		DWG #: -

ARROW CONCRETE PRODUCTS
PROGRESS IN PRECAST
560 SALMON BROOK STREET GRANBY, CT 06035 = (860) 653-5063 = www.arrow-concrete.com



NOTES:
1. ALL E□CAVATION WOR□ WILL BE IN ACCORDANCE WITH THE DIRECTION OF THE COMPANY AND IN COMPLIANCE WITH THE REGULATIONS OF THE AUTHORITIES HAVING JURISDICTION OVER THE STREETS, ALLEYS, RIGHT-OF-WAYS, OR PROPERTIES WHERE THE WOR□ IS TO BE E□ECUTED.
2. PRIOR TO THE INSTALLATION OF THE PIPE, SAND PADDING SHALL BE INSTALLED, A MINIMUM OF 4" (MEASURED AFTER COMPACTION.)
3. SAND PADDING ABOVE THE GAS PIPE SHALL BE A MINIMUM OF 6" (MEASURED AFTER COMPACTION□
4. BACKFILL SHALL BE FREE OF LARGE STONES (6" DIAMETER) WITHIN 1' OF THE PIPE. IF THE MATERIAL REMOVED FROM THE TRENCH IS NOT SUITABLE FOR BAC□FILL, REPLACEMENT FILL SHALL BE USED.
5. ALL GAS SERVICE INSTALLATIONS SHALL BE COORDINATED WITH EVERSOURCE.
6. ALL GAS SERVICES SHALL BE INSTALLED ACCORDING TO EVERSOURCE STANDARDS AND REQUIREMENTS.

G□□□E□□□E□□EN□□
NO SCALE

Tighe&Bond
1000 Bridgeport A□enue
Suite 320
Shelton, CT 06484
□203□712-1100

ELS
ENVIRONMENTAL LAND SOLUTIONS, LLC
Landscape Architecture and Environmental Planning
8 KNIGHT STREET, SUITE 203
NORWALK, CONNECTICUT 06851
Tel: (203) 855-7879 Fax: (203) 855-7836
info@elsllc.net www.elsllc.net

STATE OF CONNECTICUT CHARLES J. CROGE LICENSED PROFESSIONAL ENGINEER 20374
06/07/2021

STATE OF CONNECTICUT ERIK W. LINDQUIST LICENSED PROFESSIONAL ENGINEER 22850
06/07/2021

□□□ N
□□□M□□□□□N

□□□
D□□□□r□□□□d

FDSPIN
141 DR, LLC

Wilton, Conne□ti□ut

MAR□	DATE	DESCRIPTION

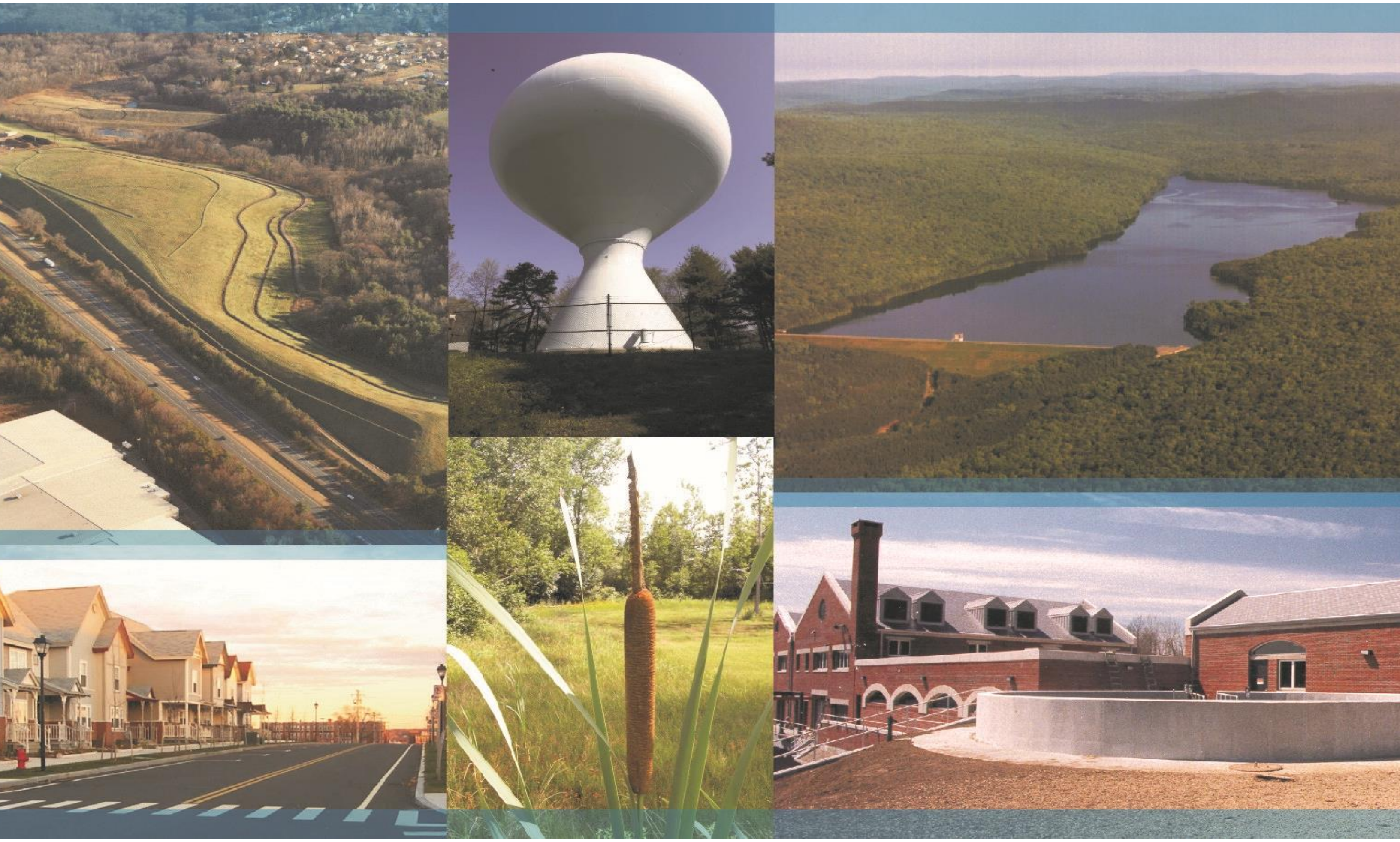
PROJECT NO:	F0173-002
DATE:	06/07/2021
FILE:	F0173-02-C-601-DETL.dwg
DRAWN BY:	MDS
CHEC□ED:	EWL
APPROVED:	JWB

DETAILS - □

SCALE: AS SHOWN

C-60□

Last Sa□ed: 6/2/2021
Plotted On:Jun 07, 2021-8:31am By: TAS
Tighe & Bond: J:\F\F0173 Fuller\002 141 Danbury Road\Drawings-Figures\Sheets\F0173-02-C-601-DETL.dwg

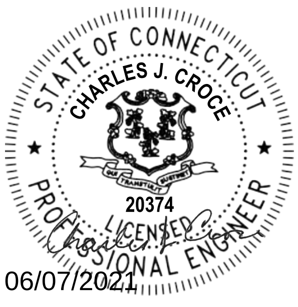


141 Danbury Road
Wilton, Connecticut

ENGINEERING REPORT

Prepared For:

FDSPIN 141 DR, LLC
1 North Water Street, Suite 100
South Norwalk, CT 06854



06/07/2021

06/07/2021

June 7, 2021

Section 1
Introduction and Site Conditions

Tighe & Bond has prepared this report at the request of FDSPIN 141 DR LLC ("Applicant"), to support their applications to the Town of Wilton Planning & Zoning Commission and Inlands Wetlands Commission for a proposed 4½ story multi-family residential building with 173 apartments.

The project site is located on a 4.28-acre parcel bounded by Danbury Road to the east, the Norwalk River to the west, and commercial properties to the north and south. The proposed development consists of the construction of a 173-unit residential building, at-grade parking, stormwater management systems, utility services, lighting, and associated landscaping. Refer to **Figure 1**, Site Location Map, in **Appendix A**.

Tighe & Bond has inspected the property and analyzed available soils, drainage, utility, wetland, and topographic information. Drainage calculations and stormwater management design have been prepared in accordance with the 2000 Connecticut Department of Transportation (CTDOT) Drainage Manual, and the Connecticut Department of Energy and Environmental (DEEP) Protection 2004 Stormwater Quality Manual. The drainage calculations include a hydrologic and hydraulic analysis of the existing conditions and the proposed development. Specifically, the calculations include an analysis of the on-site stormwater management measures and their performance in handling peak flow attenuation and pollutant removals. The report also includes a summary of the site floodplain management, the available existing and proposed utilities to serve the property, and the proposed soil erosion and sedimentation control measures incorporated during construction.

1.1 Existing Conditions

The existing site consists of a 47,000 square foot commercial building with at-grade parking. The 4.28-acre parcel is located within Wilton's DE-5 Design Enterprise District Zone. A significant portion of the site is impervious with paved parking areas, sidewalks, and building, with landscaping and lawns generally around the perimeter of the site. Utility services to the site include underground water, natural gas, overhead electric, and tele-data, connecting to service mains in Danbury Road.

The site is located on Danbury Road (Route 7) which is a north-south three lane State maintained major arterial roadway. The roadway is generally 40 feet wide along the frontage of the site with two lanes northbound and one lane southbound.

The topography of the site generally slopes from east to west towards the Norwalk River. Due to the lack of drainage structures within the property, stormwater runoff flows overland across the paved and landscaped surfaces. The Norwalk River runs adjacent to the western edge of the property, flowing from north to south. Approximately one third of the property lies within the Special Flood Hazard Zone AE of the Norwalk River.

1.2 Project Proposal

The proposed 4½ story multi-family residential building will be home to 173 apartments consisting of one-bedroom (40), one bedroom & den (4), two-bedroom (107), two bedroom & den (7), and three-bedroom (15) units. The proposed building is situated in the central portion of the site, with driveway and parking areas along the northern and southern sides. The ground floor will include surface parking spaces (covered and uncovered) as well as utility/trash rooms and building access points. All uncovered parking will be screened from view by landscaping. The existing driveway into the property will be widened to accommodate the traffic to and from the site, with dedicated turning lanes onto Danbury Road. The western end of the property will be converted into green space with associated landscaping and walking paths along the Norwalk River. New utility services to the property are proposed including underground water, natural gas, electric, and tele-data.

Stormwater management will be accommodated on-site. Surface runoff will be collected in catch basins and inlet structures located throughout the site. Underground infiltration and porous pavement systems have been designed to reduce peak flows and provide stormwater treatment, prior to discharge into the Norwalk River. The stormwater management system has been designed to treat the water quality volume and remove a high level of pollutants.

1.3 Site Soils

The U.S. Department of Agriculture's National Resource Conservation Service (NRCS) Web Soil Survey indicates the following soil types are present on the site:

Urban Land (307): Urban land is mostly covered by streets, parking lots, buildings, and other structures of urban areas. Slopes range from 0 to 45 percent. No drainage class is assigned, and the complex does not meet hydric criteria.

Rippowam Fine Sandy Loam (103): This series consist of very deep, poorly drained loamy soils formed in alluvial sediments. They are nearly level soils on flood plains subject to frequent flooding. Slope ranges from 0 to 3 percent.

A copy of the NRCS Soil Resource Report is included in **Appendix B** of this report.

Soil permeability for the site was estimated to be 2 inches per hour for the design of the proposed stormwater management systems. Estimates were conservative based on the soil classifications observed in the soil exploration program previously performed on site by GZA Environmental, LLC. Permeability estimates will be confirmed in the field prior to the completion of construction documents. See **Appendix B** of this report for boring logs and observed groundwater elevations.

1.4 Wetlands

Wetlands soils were delineated and flagged by William Kenny Associates LLC, William L. Kenny, soil scientist on March 15, 2021 and located in the field by D'Andrea Surveying & Engineering, P.C. Wetland flags and limits are depicted on the project drawing sheets.

Section 2
Stormwater Management

2.1 Existing Site Hydrologic Analysis

To review the impact of the proposed development on the existing site, an existing conditions hydrologic analysis was performed. Under existing conditions, stormwater runoff from the site generally flows from east to west towards the Norwalk River. Since there are no catch basins or inlet structures on the existing site, runoff flows overland and discharges to the river at the western end of the site. The edge of the river along the property has been designated as the design point for the analysis. The drainage area of the existing site has been delineated into sub-watershed areas. The Existing Conditions Watershed Map (Figure WM-01) is included in **Appendix C** of this report.

Impervious and pervious areas, weighted curve number, and time of concentration were calculated for each watershed area and developed into hydrologic model to determine the project's peak flow and volume, as part of the comparative hydrology analysis. Precipitation data for the hydrologic modeling were developed from NOAA's Atlas 14 Point Precipitation Frequency Estimates online utility. The site specific precipitation depths for a 24-hour durations storm are shown in **Table 2-1**.

Table 2-1
24-hour Duration Precipitation Depth

	2-Year	10-Year	25-Year	50-Year	100-Year
Depth (in)	3.54	5.40	6.57	7.44	8.37

A breakdown of existing watershed areas, existing volumetric hydrographs, and existing watershed map are included in **Appendix C** of this report.

2.1.1 Floodplain Management

The Federal Emergency Management Agency's Flood Insurance Rate Map (FIRM) for Fairfield County, effective June 18, 2010 and revised October 16, 2013 shows a portion of the site within the floodway and Zone AE of the Norwalk River, as shown in **Figure 2** in **Appendix A**. Refer to **Section 3 Floodplain Management & Hydraulics** of this report for additional information.

2.2 Proposed Site Hydrologic and Hydraulic Analysis

A stormwater management system has been designed for the proposed development to reduce peak flows and improve water quality for the site. The proposed drainage system consists of catch basins and inlets throughout the development site as well as water quality structures, underground infiltration systems, porous pavement systems, and outlet protection. The stormwater management system will maintain existing drainage patterns and utilize Best Management Practices for stormwater treatment.

Under proposed conditions, drainage patterns will generally remain the same, flowing in a westerly direction and ultimately discharging to the Norwalk River. Drainage structures have been located throughout the site to collect stormwater runoff from paved and landscaped surfaces. Due to the location of the proposed building in the central portion of the site, the drainage system has been split into northern and southern systems around the building. Infiltration systems and porous pavement systems have been designed and located on either side of the proposed building, promoting infiltration and treatment of the stormwater runoff. These systems converge into a single outlet pipe located at the western end of the building, with a single outlet located at the southwestern corner of the site. A riprap apron and level spreader have been designed to reduce outlet velocities and provide erosion control prior to discharge to the Norwalk River.

2.2.1 Proposed Site Hydrology

The proposed conditions hydrologic analysis consists of sub-watershed areas at each inlet structure of the development property. For each proposed watershed area, weighted curve numbers and times of concentration were calculated and utilized in the proposed conditions hydrologic model. The infiltration and porous pavement systems were also modeled to determine the effectiveness in reducing peak discharges from the site.

Table 2-2 provides a summary of the peak discharges under existing and proposed conditions for the 2, 10, 25, 50, and 100 year storm events.

Table 2-2
Summary of Stormwater Peak Discharge (cfs)

		Storm Frequency (Years)				
Discharge Location	**Condition**	**2**	**10**	**25**	**50**	**100**
Norwalk River	Existing	7.662	13.50	17.25	20.05	23.05
	Proposed	1.185	5.658	9.362	12.19	16.34

The proposed conditions watershed map, curve number and time of concentration worksheets, and volumetric hydrographs are included in **Appendix D**.

2.2.2 Water Quality Volume

The water quality volume (WQV) is equivalent to the first inch of runoff from the site that should be captured and treated in order to remove a majority of stormwater pollutants on an average annual basis. For the proposed development, the infiltration and porous pavement systems have been designed to provide the required WQV. **Table 2-3** summarizes the required and provided WQV for the site.

Table 2-3
Summary of Water Quality Volume (cu ft)

Required WQV		10,342
Provided WQV	North Infiltration System	2,912
	South Infiltration System	4,641
	North Porous Pavement System	2,313
	South Porous Pavement System	1,414
Total Provided WQV		11,280

The water quality volume calculation sheets are included in **Appendix E**.

2.2.3 Hydraulic Capacity and Outlet Velocity

The stormwater collection system has been designed to convey the 25-year storm event as required by the CTDOT 2000 Drainage Manual. The system was designed by analyzing sub-areas corresponding to each inlet structure and calculating weighted runoff coefficients and times of concentration. These values were entered into a storm sewers model using Hydraflow Storm Sewers Extension for AutoCAD Civil 3D 2018, Version 2018.3. Based upon this analysis, the proposed storm system has the capacity to convey the 25-year storm event. At the outlet of the system, a riprap apron and level spreader have been designed to reduce outlet velocities and prevent scour along slopes. Hydraulic calculation worksheets and storm sewers output results are included in **Appendix F**.

2.3 Method of Hydrology and Hydraulic Analysis

The following storm drainage design criteria were used for all drainage pipe systems:

1. Design storm rainfall data from NOAA Atlas 14 Point Precipitation Frequency Estimates

2. Piped storm drainage system and the outlets are designed for a 25-year storm event.

3. Minimum time of concentration = 5 minutes

4. For SCS peak flow calculations, Curve Number were as follows:

    a. Impervious (Pavement/Roof Areas) = 98

    b. Landscaped and Lawn Areas = 69

5. For rational peak flow calculations, runoff coefficients were as follows:

a. Impervious (Pavement/Roof) areas = 0.95

b. Landscaped and Lawn Areas = 0.30

6. Minimum diameter of pipes = 12 inches, excluding roof leaders, underdrains, yard drains and foundation drains

7. Minimum pipe slope = 0.5 percent

8. Watershed areas delineated using polylines in AutoCAD Civil 3D 2018.

9. Comparative hydrology analyzed using Hydraflow Hydrographs Extension for AutoCAD Civil 3D 2018, Version 2018.3

10. Storm drainage system analyzed using Hydraflow Storm Sewers Extension for AutoCAD Civil 3D 2018, Version 2018.3

2.4 Best Management Practices

The stormwater management plan for the proposed site uses "Best Management Practices" (BMPs) to remove a high percentage of sediments in accordance with the Connecticut Department of Energy and Environmental Protection "Stormwater General Permit Criteria".

The BMPs include:

<u>Catch Basins and Yard Drains with Sumps:</u> Catch basins and yard drains with sumps collect sediment and prevent discharge of oil and other pollutants into the storm drainage system. All new catch basins and yard drains on-site will have 24-inch sumps.

<u>Hydrodynamic Separators:</u> Hydrodynamic separators serve as pretreatment and prevent transport of oils and sediment further downstream. The proposed stormwater management system utilizes Contech CDS units prior to discharge into the underground infiltration systems. The Contech CDS units have been sized in accordance with the 2004 CTDEEP Stormwater Quality Manual. Sizing calculations are provided in **Appendix E.**

<u>Underground Infiltration</u>: Underground Infiltration serves as a primary treatment practice, reduces peak flow rates, and promotes groundwater recharge. The proposed stormwater management system utilizes concrete chambers surrounded by stone and filter fabric and an outlet control structure designed to attenuate peak flows.

<u>Level Spreader</u>: Level Spreaders serve as a secondary treatment practice that are utilized to reduce stormwater discharge velocities to non-erosive levels.

2.5 Pollutant Loading Analysis

Pollutant loadings for the existing and proposed conditions were calculated using the method prescribed by Debo and Reese in "Municipal Stormwater Management", 1995. This method determines the mass of pollutant loading by inputting the fraction of impervious area, the contributing area, the mean annual rainfall, and the event mean concentration of pollutant (EMC). The EMC is based upon the pollutant analyzed and the general characteristic of the contributing area – residential, commercial, or open space.

For the proposed conditions, the contributing area was further broken down into contributing areas to certain best management practices (BMPs). Pollutant loading reductions were taken at certain BMPs, depending upon the removal efficiency of the BMP as stated in the 2003 edition of Debo and Reese. Pollutant removal efficiencies for proprietary products were taken from a report entitled "Final Report: Stormwater Treatment Devices Section 319 Project" submitted to the Connecticut Department of Environmental Protection, Bureau of Water Management by the University of Connecticut Department of Natural Resources Management and Engineering, April 15, 2002. This report provides results of field testing for pollutant removal on different types of proprietary stormwater treatment devices installed throughout the State of Connecticut. Based upon these pollutant reductions, we have determined that pollutant loadings will be less for the proposed conditions, as shown in **Table 2-4** below. The pollutant loading calculation sheets are included in **Appendix E**.

Table 2-4
Pollutant Loading Summary

		Pollutant					
Item	**Units**	**TKN**	**P**	**TSS**	**Pb**	**Cu**	**Zn**
Proposed, Pre-Treatment	lb/yr/1-in	0.479	0.097	25.480	0.036	0.008	0.034
Proposed, Post-Treatment	lb/yr/1-in	0.296	0.040	5.152	0.015	0.003	0.010
Reduction, Pre to Post Treat	---	38%	59%	80%	58%	61%	72%

2.6 Stormwater Maintenance and Inspection Schedule

Stormwater management systems require periodic maintenance to ensure they function as designed. The initial inspection will be made during an intense rainfall to check the adequacy of the catch basins, roof leaders, piping, hydrodynamic separators, underground infiltration systems, and system outlet.

The following is a checklist of items that will be checked and maintained during scheduled maintenance operations.

Drainage Structures: The Owner will be responsible for cleaning the catch basins, yard drains, manholes, piping, and outlet protection on their property. A Connecticut licensed hauler shall clean the sumps, and legally dispose of removed sand at an off-site location. The road sand may not be reused or stored on-site. As part of the hauling contract, the hauler shall notify the Owner in writing where the material is being disposed.

Each catch basin and yard drain shall be inspected every four months, with one inspection occurring during the month of April. Any debris occurring within one foot from the bottom of each sump shall be removed by Vacuum "Vactor" type of maintenance equipment.

Maintain a log of inspections. Remove organic matter, sand, and debris from catch basins as necessary and dispose of legally.

Hydrodynamic Separator: The Contech CDS Units (hydrodynamic separator) will be skimmed and oil and scum removed. In a separate operation, silt, sand, and sediment will be removed. Once the structure is cleaned of debris, the chamber will be refilled with clean water to prevent wash through of debris and oil during next storm event.

Underground Infiltration: The underground infiltration system will be cleaned of all silt, debris and sediment from the inlet structure, outlet structure and the chamber lengths. The outlet control structure will be inspected and cleaned to make sure nothing is clogging the discharge pipe.

Level Spreader: The level spreader shall be inspected two times annually. Regular maintenance includes removing accumulated debris and sediment, checking for erosion, vegetative bare spots, and removing invasive plant species or tree saplings.

Pavement: Paved areas shall be swept periodically by the Owner to clean trash and other debris. The Owner will sweep paved areas on its property in the spring to remove winter accumulations of road sand.

Perform a visual inspection of paved areas four times per year with one inspection after the last snowfall, but no later than April 1. Sweep accumulated sediment and debris from the paved areas. Clean paved areas as necessary during the remainder of the year.

Maintenance & Inspection Forms are included in **Appendix G.**

Section 3
Floodplain Management & Hydraulics

3.0 Background

The Norwalk River was studied by FEMA as a part of the Flood Insurance Study (FIS) for Fairfield County, dated June 18, 2010. The 2010 FIS updated the modeling of the Norwalk River that was originally done for the 1982 Town of Wilton Flood Insurance Study by incorporating Letters of Map Revision issued between 1982 and 2010. The river system itself was not restudied. It is important to note that the vertical datum of the two studies was changed from the National Geodetic Vertical Datum of 1929 (NGVD29, prior to 1973 also known as the Sea Level Datum of 1929) to the North American Vertical Datum of 1988 (NAVD88). The modeling data provided by FEMA is in the NGVD29 datum and the reported water surface elevations in the 2010 FIS are in the NAVD88 datum.

The National Oceanic and Atmospheric Administration (NOAA) offers an online utility, VERTCON, to calculate the difference between the two datums at a given latitude and longitude coordinate. In the area of the project, the NGVD29 datum is 1.07 feet higher than the NAVD88 datum. Refer to the VERTCON conversion in **Appendix H**.

3.1 Basis of Modeling

Tighe & Bond obtained a copy of the hydraulic model from FEMA for the Norwalk River. This model was used for the hydraulic analysis of the project since it is the effective FEMA model for the project area. The model was developed using the U.S. Army Corps of Engineers HEC-RAS hydraulic analysis modeling environment.

3.1.1 Calibrated Model

To verify the accuracy of the modeling provided by FEMA, a model was created to replicate the data in the FIS. This is the calibrated model, also known as the duplicate effective model. The calibrated model encompasses the Norwalk River, generally spanning from Wolfpit Road to Kent Road in Wilton, corresponding with cross sections O and K of the FIS, respectively. The project site at 141 Danbury Road falls between cross sections O and N of the model. The comparison of the 100-year (1% chance) calibrated model water surface elevations with the elevations reported in the FIS Floodway Table are summarized in **Table 3-1**. The output table of the calibrated model is included in **Appendix H**.

Table 3-1
Calibrated Model Output

FIS Cross Section Identifier	Calibrated Model Cross Section Number	Water Surface Elevation (NAVD88)	
		Floodway Data Table	Calibrated Model
K	21745	123.4	123.41
L	22765	130.6	130.57
M	24525	138.8	138.69
N	24597	141.2	140.19
O	29920	153.1	152.89

As shown in the table, the water surface elevations of the Calibrated Model closely mirror the values reported in the FIS Floodway Table. Slight variations in water surface elevations can be attributed to the differences between the HEC-2 and HEC-RAS modeling environments. The effective modeling and data provided by FEMA of the Norwalk River is in or has been developed from HEC-2 modeling. The HEC-RAS modeling environment is the successor to HEC-2 and is FEMA's current standard for flood studies. Based on the results shown, the Calibrated Model is suitable for modeling the proposed conditions of the project.

3.2 Flow Rates

The established flow rates for the Norwalk River are documented in Volume 1 of the FIS. Tighe & Bond is not challenging the flow rates established by the FIS and will be using the rates for modeling existing and proposed conditions. The flow rates for the river at the location of the site based on the FIS are summarized in **Table 3-2.** See **Appendix H** for a copy of the Norwalk River discharges included in the FIS.

Table 3-2
FIS Norwalk River Flow Rates at the Site

Return Frequency (years)	Annual Chance Probability	Flow Rate (cfs)
10	10%	2,980
50	2%	5,840
100	1%	7,455
500	0.2%	12,505

3.3 Existing Conditions Model

In order to best evaluate the impact of the proposed project, we inserted cross sections into the effective model to create an existing conditions model, also known as the corrected effective model. Due to the spacing of the sections in the effective model, the variations in floodplain topography are not accurately reflected in the vicinity of the project area. A total of four cross sections were added to the model and developed from the topographic survey of the site. Since the topographic survey is in the NAVD88 datum, the elevations of the geometry points were converted to NGVD29 before entering into the model. **Figure 3** in **Appendix A** shows the locations of the cross sections through the project site. **Table 3-3** summarizes the resulting water surface elevations of the added sections in the existing conditions model.

Table 3-3
Existing Conditions 100-Year Water Surface Elevations (NAVD88)

Existing Conditions Model Added Sections	100-year Water Surface Elevation (NAVD88)
28020	146.48
27930	146.47
27830	146.46
27790	146.46

Refer to **Appendix H** for the model output table of the existing conditions model.

3.4 Proposed Conditions Model

The next step in the modeling process is to determine the resultant water surface elevations of the project, including the proposed building and grading changes. We modified the appropriate sections in the Existing Conditions model accordingly. **Table 3-4a** and **3-4b** compare the proposed conditions results to the existing conditions for the 100-year and 10-year events, respectively.

Table 3-4a
100-Year Water Surface Elevation Comparison (NAVD88)

	100-year Water Surface Elevation (NAVD88)		
Section	**Existing**	**Proposed**	**Difference**
28020	146.48	146.48	0.00
27930	146.47	146.47	0.00
27830	146.46	146.46	0.00
27790	146.46	146.46	0.00

Table 3-4b
10-Year Water Surface Elevation Comparison (NAVD88)

	10-year Water Surface Elevation (NAVD88)		
Section	**Existing**	**Proposed**	**Difference**
28020	144.93	144.93	0.00
27930	144.93	144.93	0.00
27830	144.92	144.92	0.00
27790	144.92	144.92	0.00

Based upon the hydraulic analysis, the proposed construction will not adversely impact 100-year and 10-year flood elevations along the Norwalk River.

3.5 Compliance with Local Floodplain Regulations

Section 29-9.F.7 of the Wilton Zoning Regulations requires the following:

k. Equal Conveyance: Within the floodplain, except those areas which are tidally influenced, as designated on the Flood Insurance Rate Map (FIRM) for the community, encroachments resulting from filling, new construction or substantial improvements involving an increase in footprint of the structure, are prohibited unless the applicant provides certification by a registered professional engineer demonstrating, with supporting hydrologic and hydraulic analyses performed in accordance with standard engineering practice, that such encroachments shall not result in any (0.00 feet) increase in flood levels (base flood elevation). Work within the floodplain and the land adjacent to the floodplain, including work to provide compensatory storage shall not be constructed in such a way so as to cause an increase in flood stage or flood velocity.

l. Compensatory Storage: The water holding capacity of the floodplain, except those areas which are tidally influenced, shall not be reduced. Any reduction caused by filling, new construction or substantial improvements involving an increase in footprint to the structure, shall be compensated for by deepening and/or widening of the floodplain, storage shall be provided on-site, unless easements have been gained from adjacent property owners; it shall be provided within the same hydraulic reach and a volume not previously used for flood storage; it shall be hydraulically comparable and incrementally equal to the theoretical volume of flood water at each elevation, up to and including the 100-year flood elevation, which would be displaced by the proposed project. Such compensatory volume shall have an unrestricted hydraulic connection to the same waterway or water body. Compensatory storage can be provided off-site if approved by the municipality.

3.5.1 Equal Conveyance

As shown in Table 3-4a, there are no increases in the base flood elevation as a result of the project, so the equal conveyance requirement has been met.

3.5.2 Compensatory Storage

The placement of the building columns and stairways within the floodplain would result in a loss of floodplain storage. Therefore, we propose revised grading to mitigate against the loss of flood storage volume. The grading as proposed results in a net cut of approximately 800 CY within the floodplain boundary, compensating for the approximate 30 CY occupied by the columns and stairways of the proposed building. The project as proposed would not decrease floodplain storage on-site.

Section 4 Site Utility Services

4.1 Water and Fire Protection Services

Water and fire protection services to the site will be provided by The Aquarion Water Company (Aquarion). Services to the proposed buildings will be fed from the reported 12-inch main located in Danbury Road. Existing hydrants are located in the vicinity of the project site on the west and east sides of Danbury Road.

The estimated daily water demand for the proposed residential development is approximately 48,000 gallons per day (GPD). The estimated peak hour demand is 100 gallons per minute (GPM), determined using a maximum-to-average-day ratio of 3.0.

4.2 Electric Service

Electric service to the site is provided by Eversource Electric Company. Overhead primary service lines are located on the west side of Danbury Road and enter the site from the north.

4.3 Gas Service

Eversource Gas Company provides natural gas service to the project area. Eversource Gas Company maintains a 12-inch gas main located in Danbury Road.

Once the estimated peak demand for the total project is determined, Eversource Gas Company will provide a letter of service availability.

4.4 Tele-Data and Cable TV Services

Frontier Communications provides local and long-distance telephone service to the project area and also offers high speed internet and business data services. The existing network in this area is composed of a combination of overhead lines and underground ductbanks. The existing service is provided overhead on the north side of the building. There is also an existing utility pole on the project site along the southerly property line that provides overhead services for 131 Danbury Road. These overhead wires and the routing for this building will need to be relocated in order to accommodate the proposed site improvements. Easements are not identified on the record documents for this utility pole or the service lines.

Telephone service to the proposed development would be provided underground from a utility pole in the adjacent street. The exact location of the service connections will be coordinated with the utility owner during the final design process.

Altice USA provides cable service as well as high speed internet access to the project area. The majority of the existing network runs overhead and follows the same alignment as the telephone service.

4.5 Sanitary Sewer Service

The project site is located within the Wilton WPCA Sewershed.

Based on available Town maps, there is a 24-inch gravity sanitary sewer located in Danbury Road. The proposed building will connect to the existing sewage system by constructing a manhole over the existing sewer pipe in the adjacent street frontage. WPCA approval will be required for all sewer connections.

The projected wastewater flows associated with the proposed development were calculated based on the 173 residential units with 317 total bedrooms and a flow rate of 150 gallons per day (GPD) per bedroom. A peaking factor of 4 was applied to the average daily flows to estimate peak flows. **Table 4-1** below summarizes the projected average and peak daily sanitary sewer flows for the site. Refer to **Appendix J** for a full breakdown of the sanitary sewer flow calculations.

Table 4-1 - Projected Average and Peak Daily Sanitary Sewer Flows

Wastewater Requirements					
Development		Design Criteria		Average Daily Flow (GPD)	Peak Flow (GPM)*
Use	Units / Bedrooms	GPD	Unit		
Residential	173 / 317	150	Per Bedroom	47,550	132

* Peak factor of 4 was applied to average daily flows to estimate peak flows; New England Interstate Water Pollution Control Commission, 2011.

Section 5
Soil Erosion and Sedimentation Control

5.1 SESC Narrative

General

The proposed development is entitled “141 Danbury Road” in Wilton, Connecticut.

Estimated:
Project Start: Fall 2021
Project Completion: Spring 2022

Erosion Control Narrative refers to drawings C-501 through C-503.

The proposed site development will consist of building demolition, clearing and grubbing the existing site, excavation, construction of sedimentation/detention basins, and rough grading of building, parking areas, sidewalks and curbing.

The development is located in Wilton, Connecticut and is located on Danbury Road.

The stormwater management measures will address the stormwater quality once the site has been constructed and stabilized. Sedimentation and erosion control measures will be installed during construction which will minimize adverse impacts from construction activities.

All sedimentation and erosion control measures proposed for this development have been designed in accordance with the "2002 Connecticut Guidelines for Soil Erosion and Sedimentation Control" as published by the Connecticut Council on Soil Erosion and Water Conservation. Additional guidelines have also been followed that are available from the Connecticut Department of Environmental Protection as recommended for sedimentation control during construction activities.

Construction Sequence – Initial Phase

1. Conduct a pre-construction meeting with the Owner or Owner's Representative, Town Engineer, Design Engineer, Site Engineer, Contractor and Site Superintendent to establish the limits of construction, construction procedures and material stockpile areas.

2. Field stake the limits of construction.

3. Install all applicable soil and erosion control measures around the perimeter of the site to the extent possible. this will include siltation fence around the project as shown on the plans.

4. Install construction access road and anti-tracking pavement in the areas as shown on the plans. All construction access shall be into the site through the anti-tracking pads.

5. Establish temporary staging area.

6. Begin building demolition and pavement removal.

7. Construct the initial storm drainage and sedimentation trap as shown on the plans.

8. Install water quality systems and associated drainage network to the maximum extent practicable. Grade the area around the storm drainage system as necessary.

9. Begin rough roadway grading.

10. Install remaining drainage system to the extent necessary to provide positive drainage.

11. Begin installation of sanitary sewer system, water, and other utilities to extent necessary.

12. Provide silt fence/haybale barrier around soil stockpile area. Provide temporary vegetative cover (defined in erosion control notes) on all exposed surfaces.

13. Begin building construction.

14. Pave binder course on parking and driveways for non-porous pavement areas.

15. Establish temporary vegetative cover.

16. Construct drainage and subbase for porous pavement and place porous pavement course

Construction Sequence – Final Phase

1. Repair perimeter sediment & erosion controls as needed.

2. Clean/replace controls from previous phase as needed.

3. Fine grade site.

4. Continue construction of building.

5. Complete construction of sidewalks.

6. Establish final vegetative cover and landscaping.

7. Pave surface course on roadways.

8. Remove erosion controls when site is stabilized.

5.2 Soil Erosion and Sedimentation Control Notes

1. All sedimentation and erosion control measures shall be constructed in accordance with the standards and specifications of the "2002 Connecticut Guidelines for Soil Erosion and Sediment Control", DEP Bulletin No. 34, and all amendments and addenda thereto as published by the Connecticut Department of Environmental Protection.

2. Land disturbance shall be kept to the minimum necessary for construction operations.

3. All erosion control measures shall be installed as shown on the plan and elsewhere as ordered by the engineer.

4. All catch basins shall be protected with a silt sacks, haybale ring, silt fence or block and stone inlet protection throughout the construction period and until all disturbed areas are thoroughly stabilized.

5. Whenever possible, erosion and sediment control measures shall be installed prior to construction. See "Erosion Control Narrative".

6. Additional control measures shall be installed during the construction period as ordered by the engineer.

7. All sedimentation and erosion control measures shall be maintained in effective condition throughout the construction period.

8. Sediment removed shall be disposed of offsite or in a manner as required by the Engineer.

9. The construction contractor shall be responsible for construction and maintenance of all control measures throughout the construction period.

10. All disturbed areas to be left exposed for more than 30 days shall be protected with a temporary vegetative cover. Seed these areas with perennial ryegrass at the rate of 40 lbs. per acre (1 lb. per 1,000 sq. ft). Apply soil amendments and mulch as required to establish a uniform stand of vegetation over all disturbed areas.

11. The construction contractor shall utilize approved methods/materials for preventing the blowing and movement of dust from exposed soil surfaces onto adjacent properties and site areas.

12. The construction contractor shall maintain a supply of silt fence/haybales and anti-tracking crushed stone on site for emergency repairs.

13. All drainage structures shall be periodically inspected weekly by the construction contractor and cleaned to prevent the build-up of silt.

14. The construction contractor shall carefully coordinate the placement of erosion control measures with the phasing of construction.

15. Keep all paved surfaces clean. Sweep and scrape before forecasted storms.

16. Treat all unpaved surface with 4" minimum of topsoil prior to final stabilization.

17. Haybale barriers and silt fencing shall be installed along the toe of critical cut and fill slopes.

18. The contractor shall notify the Town officials prior to the installation of erosion controls, cutting of trees, or any excavation.

19. All trucks leaving the site must be covered.

20. Some control measures are permanent. These structures shall be cleaned and replenished at the end of construction. locations of the permanent control structures are shown on the drainage plans.

21. All sedimentation and erosion controls shall be checked weekly and/or after each rain fall event. Necessary repairs shall be made without delay.

22. Prior to any forecasted rainfall, erosion and sediment controls shall be inspected and repaired as necessary.

23. After all disturbed areas have been stabilized, erosion controls may be removed once authorization to do so has been secured from the Owner. Disturbed areas shall be seeded and mulched.

24. All embankment slopes 3:1 or greater to be stabilized with erosion control blanket, North American Green SC150BN or approved equivalent, unless otherwise noted on plans.

APPENDIX A

NORTH

141 DANBURY ROAD
WILTON, CONNECTICUT

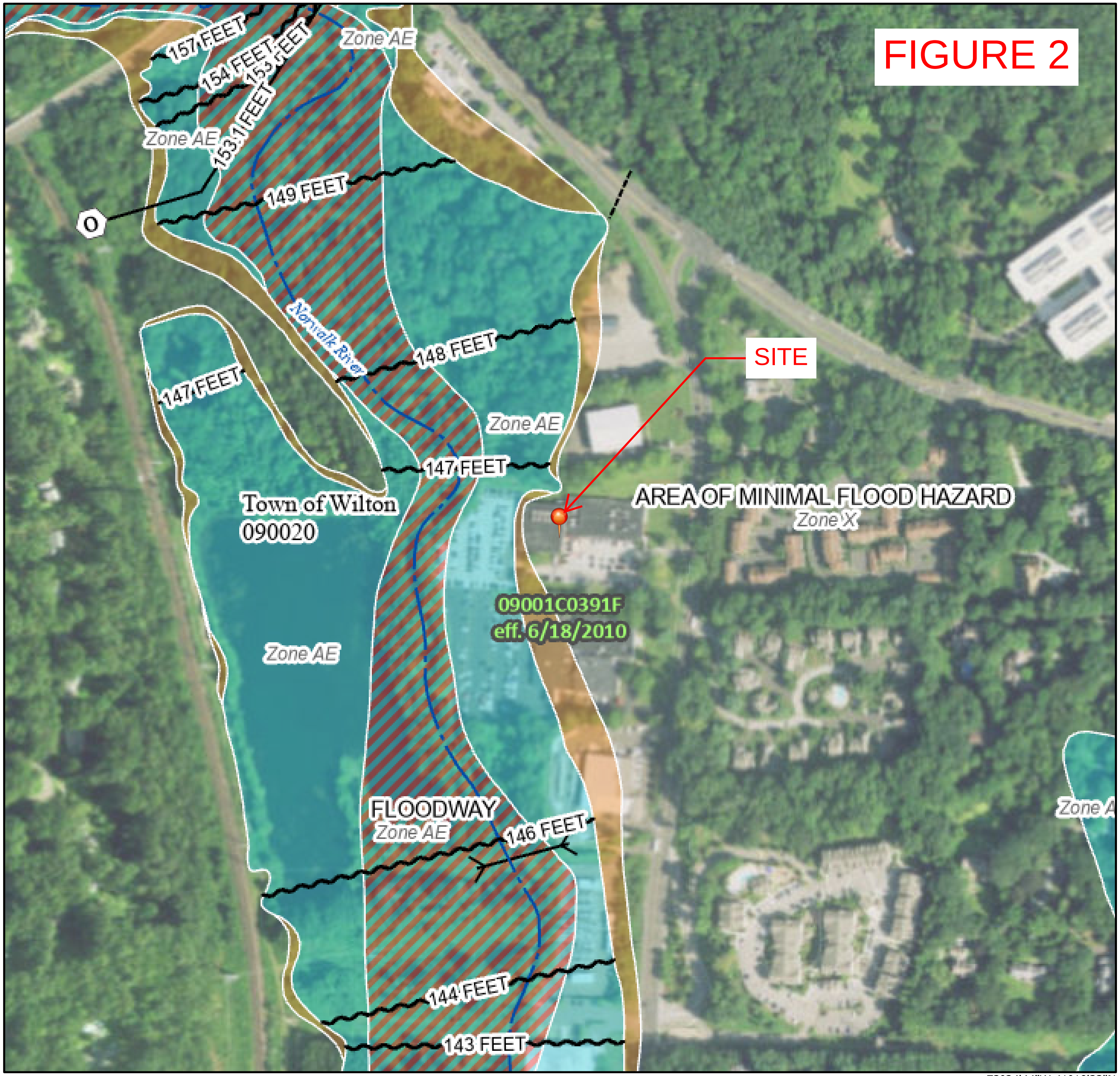
SITE LOCATION MAP

FIGURE 1

Tighe&Bond
www.tighebond.com

National Flood Hazard Layer FIRMette

73°25'21"W 41°11'N



73°24'44"W 41°10'33"N

Feet

0 250 500 1,000 1,500 2,000

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- B 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- 8 Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

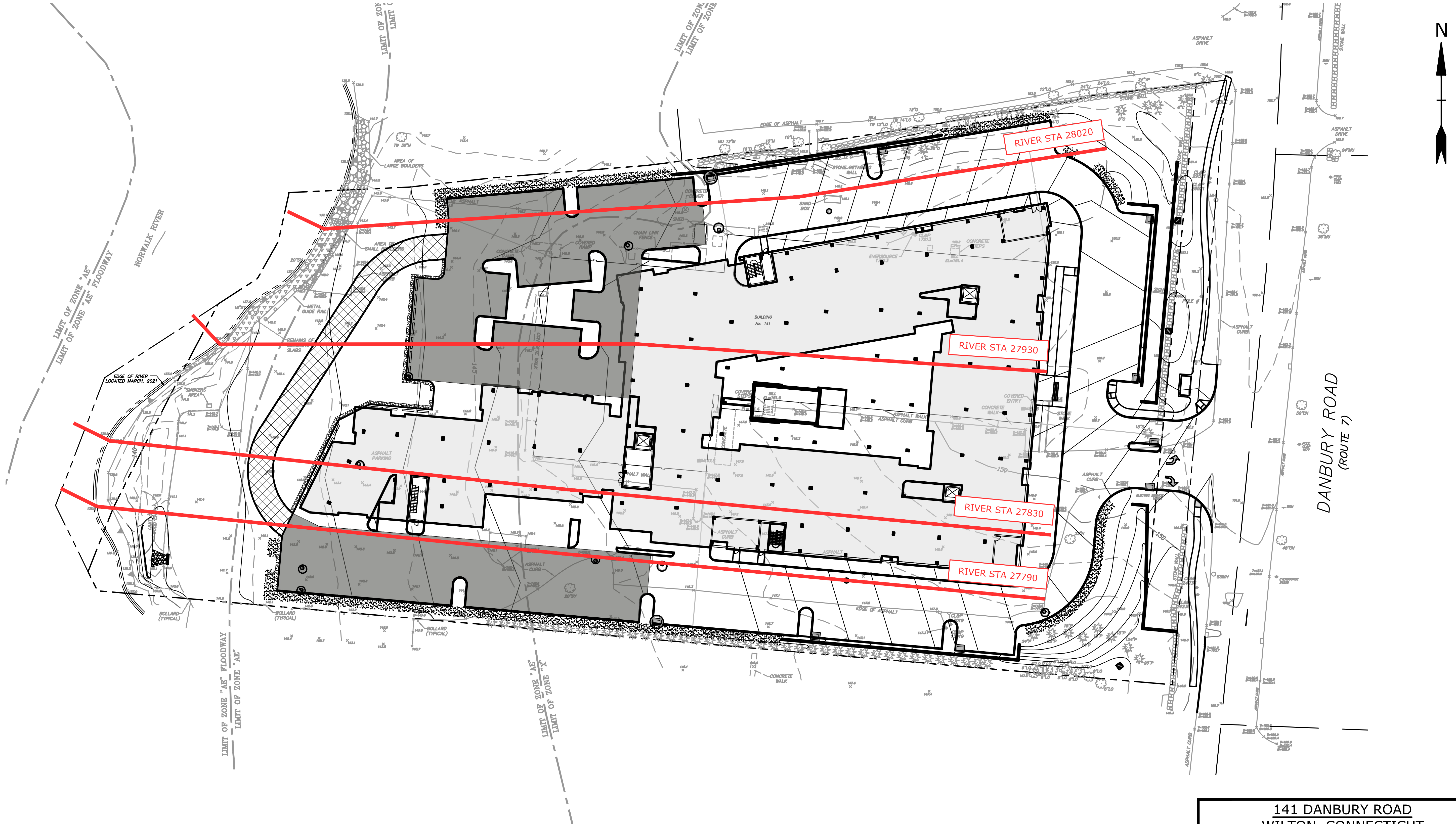
N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/16/2021 at 3:50 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



0 60' 120'

SCALE: 1" = 60'

141 DANBURY ROAD
WILTON, CONNECTICUT

CROSS SECTION LOCATION MAP

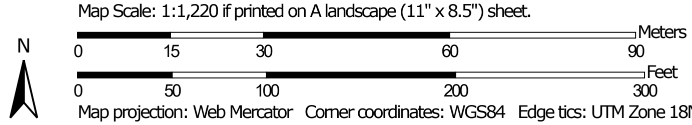
DATE:	05/24/2021
SCALE:	1" = 60'
FIGURE:	3

Tighe&Bond

APPENDIX B

Hydrologic Soil Group—State of Connecticut
(141 Danbury Road)

Map Scale: 1:1,220 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: State of Connecticut
Survey Area Data: Version 20, Jun 9, 2020

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

Date(s) aerial images were photographed: Dec 31, 2009—Oct 5, 2016

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
103	Rippowam fine sandy loam	B/D	0.7	13.8%
307	Urban land	D	4.4	83.3%
W	Water		0.2	2.8%
Totals for Area of Interest			**5.3**	**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

GZA GEOENVIRONMENTAL, INC.
Engineers and Scientists

204 Spring Hill Road
Trumbull, Connecticut 06611
(203) 268-0808

141 Danbury Road

Wilton, Connecticut

BORING NO. MW-4

PAGE 1 OF 1
FILE NO. 50642
CHKD. BY: JMB

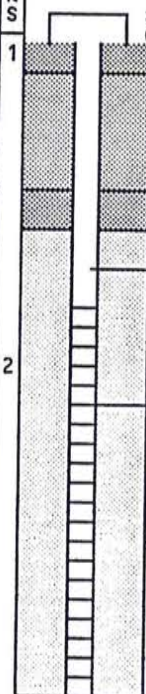
			CASING	SAMPLER
Boring Co.	GZA Drilling	Type	4 1/4" HSA	Split Spoon
Foreman	Al Augustine	I.D./O.D.		1 3/8"/ 2"
GZA Rep.	ClareAnn Walsh	Hammer Wt.		140 lbs.
Date Start	5/30/92 End 5/30/92	Hammer Fall		30 in.
GS.Elev.	Datum	Other		
Location				

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab. Time
5/30/92	1610	9.3'	10.0'	0 hrs.

DEPTH	CASING BLOWS	No.	Pen./Rec.	Depth (Ft.)	Blows/6"	Field Testing (ppm)	SAMPLE DESCRIPTION & CLASSIFICATION	Stratum Description	REMKS
		S-1	24/12	0-2.0	5-10-10-5	ND	Top 2": TOPSOIL and grey-brown, fine to coarse SAND.	TOPSOIL 0.2' FINE TO COARSE SAND	1
5		S-2	24/16	4.0-6.0	2-3-2-2	ND*	Loose, brown, fine SAND grading to black SILT.	4.0' SILT AND SAND	
		S-3	24/20	6.0-8.0	3-3-3-3	ND*	Loose black SILT grading to brown fine Sand grading back to black Silt.		
		S-4	24/22	8.0-10.0	6-5-8-9	ND	Medium dense, grey-brown, fine to coarse SAND, some fine rounded Gravel, trace Rock Fragments.	8.0' FINE TO COARSE SAND	2
10		S-5	24/16	10.0-12.0	8-10-12-12	ND	Medium dense, grey, fine to coarse SAND, trace fine Gravel.		
15		S-6	24/22	15.0-17.0	5-1-2-3	ND	Very loose, grey, fine SAND, finer towards tip of spoon.	15.0' FINE SAND	
		S-7	24/22	17.0-19.0	11-14-18-20	ND	Medium dense, grey, fine SAND.		3 4
20								19.0' E.O.B.	
25									

Equipment Installed



1. Soil samples field screened with a 10.2 eV portable HNu photoionization detector for volatile organic compounds (VOCs). "*" Indicates sample sent to laboratory for additional analysis.
2. Sample wet.
3. 10 feet of 2-inch, schedule 40, threaded, flush-jointed, 10-slot PVC screen set at approximately 17 feet below grade. Well completed to ground surface with 2-inch, schedule 40, threaded, flush-jointed, solid PVC riser. Filter sand placed in annulus around well from 17 to 5 feet below grade. Bentonite seal placed from 5 to 4 feet below grade. Annulus around well backfilled with auger spoils from 4 to 0 feet below grade. Well capped with steel stick-up casing cemented in place.
4. E.O.B. = End of Boring.

tratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings ave been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

BORING NO. MW-4

GZA GEOENVIRONMENTAL, INC.
Engineers and Scientists

204 Spring Hill Road
Trumbull, Connecticut 06611
(203) 268-0808

141 Danbury Road

Wilton, Connecticut

BORING NO. MW-5

PAGE 1 OF 1
FILE NO. 50642
CHKD. BY: JMB

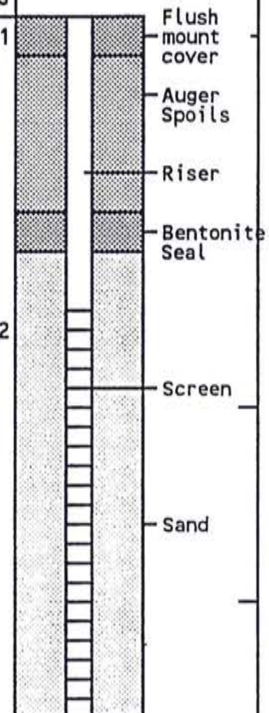
		CASING	SAMPLER
Boring Co.	GZA Drilling	Type: 4 1/4" HSA	Split Spoon
Foreman	Al Augustine	I.D./O.D.:	1 3/8"/ 2"
GZA Rep.	ClareAnn Walsh	Hammer Wt.:	140 lbs.
Date Start	5/30/92 End 5/30/92	Hammer Fall:	30 in.
G.S.Elev.	Datum	Other:	
Location			

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab. Time
5/30/92	1745	9.0′	10.0′	0 hrs.

Depth	Casing Blows	No.	Pen./Rec.	Depth (Ft.)	Blows/6"	Field Testing (ppm)	Sample Description & Classification	Stratum Description	Remarks
		S-1	24/8	0.5-2.5	1-2-4-6	ND	Loose, dark brown SILT, some fine Sand, trace coarse Sand.	TOPSOIL 0.5′	1
5		S-2	24/6	4.0-6.0	16-22-24-25	0.2*	Medium dense, brown, fine to medium SAND and grey ROCK FRAGMENTS, little fine rounded Gravel.		
		S-3	24/12	6.0-8.0	27-24-28-31	ND	Dense ROCK FRAGMENTS and fine to coarse SAND, trace fine rounded Gravel.		
		S-4	24/20	8.0-10.0	8-20-30-13	ND	Dense, brown, fine to coarse SAND, some fine rounded Gravel, trace Rock Fragments.	FINE TO COARSE SAND AND GRAVEL	2
10		S-5	24/14	10.0-12.0	7-9-18-20	ND	Medium dense, brown, fine to coarse SAND and ROCK FRAGMENTS, trace fine rounded Gravel.		
15		S-6	24/18	15.0-17.0	WOR-12-18	ND	Brown, fine SAND, 2" lens of dark brown, coarse Sand, returns to brown, fine Sand below lens.	16.0′ FINE SAND	
		S-7	24/12	18.0-20.0	6-12-13-10	ND	Medium dense, brown, fine SAND and ROCK FRAGMENTS, trace fine rounded Gravel.		
20								20.0′ E.O.B.	3
25									

Equipment Installed



REMARKS

1. Soil samples field screened with a 10.2 eV portable HNu photoionization detector for volatile organic compounds (VOCs). "*" Indicates sample sent to laboratory for additional analysis.
2. Sample wet.
3. 10 feet of 2-inch, schedule 40, threaded, flush-jointed, 10-slot PVC screen set at approximately 18 feet below grade. Well completed to ground surface with 2-inch, schedule 40, threaded, flush-jointed, solid PVC riser. Filter sand placed in annulus around well from 18 to 6 feet below grade. Bentonite seal placed from 6 to 5 feet below grade. Annulus around well backfilled with drill cuttings from 5 to 1 feet below grade. Well capped with flush-mount well cover cemented in place.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

BORING NO. MW-5

GZA GEOENVIRONMENTAL, INC.
Engineers and Scientists

204 Spring Hill Road
Trumbull, Connecticut 06611
(203) 268-0808

141 Danbury Road

Wilton, Connecticut

BORING NO. MW-6

PAGE 1 OF 1
FILE NO. 50642
CHKD. BY: JMB

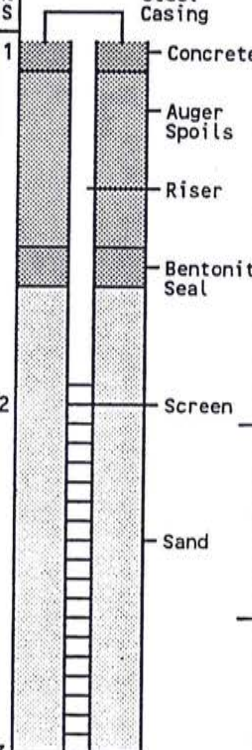
			CASING	SAMPLER
Boring Co.	GZA Drilling	Type	4" HSA	Split Spoon
Foreman	Al Augustine	I.D./O.D.		1 3/8"/ 2"
GZA Rep.	ClareAnn Walsh	Hammer Wt.		140 lbs.
Date Start	5/30/92 End 5/30/92	Hammer Fall		30 in.
GS.Elev.	Datum	Other		
Location				

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab. Time
5/30/92	1715	11.1'	out	4 hrs.

DEPTH	CASING BLOWS	No.	Pen./Rec.	Depth (Ft.)	Blows/6"	Field Testing (ppm)	SAMPLE DESCRIPTION & CLASSIFICATION	Stratum Description	REMKS
		S-1	24/8	0-2.0	4-12-27-50	ND	Top 4": TOPSOIL. Bottom 4": Fine to coarse SAND, trace Rock Fragments.	TOPSOIL	1
								0.25' FILL	
5		S-2	24/16	4.0-6.0	4-5-6-4	ND*	Medium dense, dark brown TOPSOIL, some Silt, trace Brick Fragments (FILL).		
		S-3	24/19	6.0-8.0	4-4-8-16	ND	Medium dense, dark brown TOPSOIL, some Silt, trace Brick Fragments (FILL) grading to grey-brown, fine Sand.		
		S-4	24/10	8.0-10.0	10-15-18-21	ND	Medium dense, grey, fine to coarse SAND, and ROCK fragments.	8.0' FINE TO COARSE SAND	
10									2
		S-5	24/8	10.0-12.0	20-24-16-12	ND	Dense, grey, fine to coarse SAND and ROCK FRAGMENTS.		
15		S-6	24/0	15.0-17.0	4-4-5-4	ND	Loose, grey, fine SAND.	15.0' FINE SAND	
									3
		S-7	24/8	19.0-21.0	5-6-10-8	ND	Medium dense, grey, fine SAND, trace fine, rounded Gravel.		
20									4
								21.0' E.O.B.	
25									

Equipment Installed



REMARKS

1. Soil samples field screened with a 11.7 eV portable HNu photoionization detector for volatile organic compounds (VOCs). "*" Indicates sample sent to laboratory for additional analysis.
2. Sample wet.
3. Soil sample screened with a 10.2 eV portable HNu.
4. 10 feet of 2-inch, schedule 40, threaded, flush-jointed, 10-slot PVC screen set at approximately 19 feet below grade. Well completed to ground surface with 2-inch, schedule 40, threaded, flush-jointed, solid PVC riser. Filter sand placed in annulus around well from 19 to 7 feet below grade. Bentonite seal placed from 7 to 6 feet below grade. Annulus around well backfilled with auger spoils from 6 to 0 feet below grade. Well capped with stick-up casing cemented in place.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

BORING NO. MW-6

GZA GEOENVIRONMENTAL, INC.
Engineers and Scientists

204 Spring Hill Road
Trumbull, Connecticut 06611
(203) 268-0808

141 Danbury Road

Wilton, Connecticut

BORING NO. MW-7

PAGE 1 OF 1
FILE NO. 50642
CHKD. BY: JMB

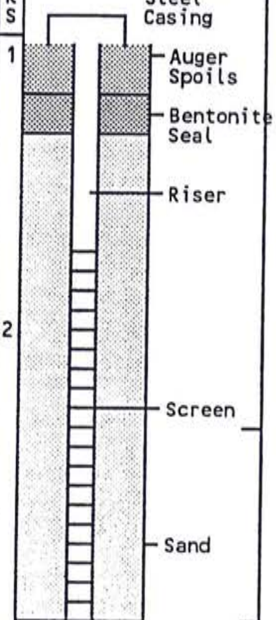
			CASING	SAMPLER
Boring Co.	GZA Drilling	Type	4 1/4" HSA	Split Spoon
Foreman	Al Augustine	I.D./O.D.		1 3/8"/ 2"
GZA Rep.	ClareAnn Walsh	Hammer Wt.		140 lbs.
Date Start	5/30/92 End 5/30/92	Hammer Fall		30 in.
G.S.Elev.	Datum	Other		
Location				

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab. Time
5/30/92	1715	9.4'	out	6 hrs.

DEPTH	CASING	BLOWS	No.	Pen./Rec.	Depth (Ft.)	Blows/6"	Field Testing (ppm)	SAMPLE DESCRIPTION & CLASSIFICATION	Stratum Description	REMARKS
			S-1	24/8	0-2.0	4-8-9-10	0.9	Top 4": TOPSOIL. Bottom 4": Red-brown, fine to coarse SAND, trace fine Gravel.	TOPSOIL 0.25'	1
5			S-2	24/12	4.0-6.0	7-5-5-6	0.9*	Loose, red-brown, medium SAND, trace Silt.		
			S-3	24/18	6.0-8.0	12-15-15-19	0.3	Medium dense, red-brown, fine to coarse SAND, trace fine Gravel.	FINE TO COARSE SAND	
			S-4	24/8	8.0-10.0	14-24-17-24	0.1	Dense, brown-black, coarse SAND, some medium Sand, little fine Gravel.		2
10			S-5	24/18	10.0-12.0	9-7-6-8	ND	Medium dense, grey, fine SAND.	10.0' FINE SAND	
15			S-6	24/12	15.0-17.0	4-3-3-3	ND	Loose, grey, fine SAND.		
									17.0' E.O.B.	3
20										
25										

Equipment Installed



REMARKS

1. Soil samples field screened with a 11.7 eV portable HNu photoionization detector for volatile organic compounds (VOCs). "*" Indicates sample sent to laboratory for additional analysis.
2. Sample wet.
3. 10 feet of 2-inch, schedule 40, threaded, flush-jointed, 10-slot PVC screen set at approximately 15 feet below grade. Well completed to ground surface with 2-inch, schedule 40, threaded, flush-jointed, solid PVC riser. Filter sand placed in annulus around well from 15 to 3 feet below grade. Bentonite seal placed from 3 to 2 feet below grade. Annulus around well backfilled with auger spoils from 2 to 1 feet below grade. Well capped with a steel stick-up casing cemented in place.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

BORING NO. MW-7

GZA GEOENVIRONMENTAL, INC.
Engineers and Scientists

204 Spring Hill Road
Trumbull, Connecticut 06611
(203) 268-0808

141 Danbury Road

Wilton, Connecticut

BORING NO. MW-8

PAGE 1 OF 1
FILE NO. 50642
CHKD. BY: JMB

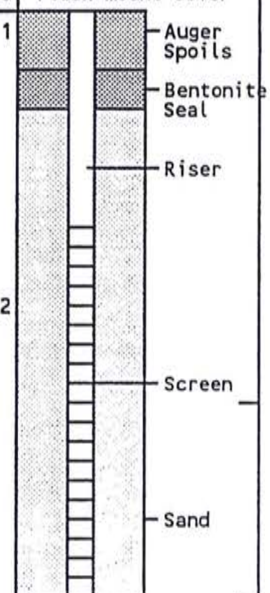
			CASING	SAMPLER
Boring Co.	GZA Drilling	Type	4 1/4" HSA	Split Spoon
Foreman	Al Augustine	I.D./O.D.		1 3/8"/ 2"
GZA Rep.	ClareAnn Walsh	Hammer Wt.		140 lbs.
Date Start	5/30/92 End 5/30/92	Hammer Fall		30 in.
GS.Elev.	Datum	Other		
Location				

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab. Time
5/30/92	---	7.8'	15.0'	0 hrs.

DEPTH	CASINGS	BLOWS	Sample No.	Pen./Rec.	Depth (Ft.)	Blows/6"	Field Testing (ppm)	SAMPLE DESCRIPTION & CLASSIFICATION	Stratum Description	REMKS
			S-1	24/0	0-2.0	6-10-14-11	0.7	Medium dense, brown, fine to coarse SAND (auger spoils).	FINE TO COARSE SAND	1
									2,0'	
5			S-2	24/8	4.0-6.0	2-2-3-4	0.8	Loose, black-brown, fine SAND and SILT, trace Clay.	FINE SAND	
			S-3	24/8	6.0-8.0	2-2-2-3	0.9*	Loose, black, fine SAND and SILT, little Clay, trace coarse Sand.		2
			S-4	24/8	8.0-10.0	5-5-1-10	0.8	Loose, black, fine SAND and SILT, little Clay, trace coarse Sand.		
10			S-5	24/10	10.0-12.0	8-11-15-3	0.8	Medium dense, black-brown, fine to coarse SAND, trace fine rounded Gravel.	10.0' FINE TO COARSE SAND	
15			S-6	24/10	15.0-17.0	8-15-12-10	0.7	Medium dense, brown, fine to coarse SAND, trace fine rounded Gravel, trace Organic matter.		3
									17.0' E.O.B.	
20										
25										

Equipment Installed



REMARKS

1. Soil samples field screened with a 11.7eV portable HNu photoionization detector for volatile organic compounds (VOCs). "*" Indicates sample sent to laboratory for additional analysis.
2. Sample wet.
3. 10 feet of 2-inch, schedule 40, threaded, flush-jointed, 10-slot PVC screen set at approximately 15 feet below grade. Well completed to ground surface with 2-inch, schedule 40, threaded, flush-jointed, solid PVC riser. Filter sand placed in annulus around well from 15 to 3 feet below grade. Bentonite seal placed from 3 to 2 feet below grade. Annulus around well backfilled with auger spoils from 2 to 1 feet below grade. Well capped with a flush-mounted well cover cemented in place.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

BORING NO. MW-8

GZA GEOENVIRONMENTAL, INC.
Engineers and Scientists

204 Spring Hill Road
Trumbull, Connecticut 06611
(203) 268-0808

141 Danbury Road

Wilton, Connecticut

BORING NO. A-1

FILE NO. 50642
CHKD. BY: JMB

Boring Co.	GZA Drilling		**CASING**	**SAMPLER**
		Type	2 3/4" HSA	Split Spoon
Foreman	Al Augustine	I.D./O.D.		1 3/8"/ 2"
GZA Rep.	ClareAnn Walsh	Hammer Wt.		140 lbs.
Date Start	5/31/92 End 5/31/92	Hammer Fall		30 in.
G.S.Elev.	Datum	Other		
Location				

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab. Time

Depth	Casing Blows	No.	Pen./Rec.	Depth (Ft.)	Blows/6"	Field Testing (ppm)	SAMPLE DESCRIPTION & CLASSIFICATION	Stratum Description	Remarks	Equipment Installed
		S-1	24/8	0-2.0	6-18-20-17	ND*	Top 3": TOPSOIL. Bottom 5": Brown, medium to fine SAND, some Rock Fragments.	TOPSOIL; 0.25' FINE TO MEDIUM SAND	1	
5		S-2	24/6	4.0-6.0	2-5-6-6	ND*	Loose brown, fine SAND, trace fine Gravel.	4.0' FINE SAND		
		S-3	24/4	6.0-8.0	4-5-7-15	ND	Medium dense, brown, fine to coarse SAND, trace Silt, trace fine Gravel.	6.0' FINE TO COARSE SAND	2	
		S-4	24/4	8.0-10.0	11-13-26-26	ND	Dense, brown, fine to coarse SAND, little fine Gravel, trace Rock Fragments.			
10								10.0' E.O.B.	3	
15										
20										
25										

REMARKS

1. Soil samples field screened with a 10.2 eV portable HNu photoionization detector for volatile organic compounds (VOCs). "*" Indicates sample sent to laboratory for additional analysis.
2. Sample wet.
3. E.O.B. = End of Boring.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

GZA GEOENVIRONMENTAL, INC.
Engineers and Scientists

204 Spring Hill Road
Trumbull, Connecticut 06611
(203) 268-0808

141 Danbury Road

Wilton, Connecticut

BORING NO. A-2

PAGE 1 OF 1
FILE NO. 50642
CHKD. BY: JMB

Boring Co.	GZA Drilling		CASING	SAMPLER
		Type	4 1/4" HSA	Split Spoon
Foreman	Al Augustine	I.D./O.D.		1 3/8"/ 2"
GZA Rep.	ClareAnn Walsh	Hammer Wt.		140 lbs.
Date Start	5/31/92 End 5/31/92	Hammer Fall		30 in.
G.S.Elev.	Datum	Other	4" HSA	
Location				

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab. Time

Depth	Casing	Blows	No.	Pen./Rec.	Depth (Ft.)	Blows/6"	Field Testing (ppm)	Sample Description & Classification	Stratum Description	Remarks	Equipment Installed
			S-1	24/8	0-2.0	6-13-13-12	ND	Top 4": TOPSOIL. Bottom 4": Brown, medium SAND and ROCK FRAGMENTS.	TOPSOIL 0.3′	1	
5			S-2	24/6	4.0-6.0	2-6-4-8	ND*	Loose, brown, medium to fine SAND, little Silt, trace coarse Sand.	FINE TO MEDIUM SAND		
			S-3	24/10	6.0-8.0	2-4-5-4	ND	No recovery.			
			S-4	24/10	8.0-10.0	20-4-19-15	1.4*	Top 4": Black CLAY and SILT. Middle 1": WOOD FIBER. Bottom 5": ROCK FRAGMENTS.	8.0′ ORGANIC SILT	2	
10			S-5	24/8	10.0-12.0	22-16-15-14	1.9	Dense, grey, medium to fine SAND and ROCK FRAGMENTS.	10.0′ FINE TO MEDIUM SAND	3	
									12.0′ E.O.B.		
20											
25											

REMARKS

1. Soil samples field screened with a 10.2 eV portable HNu photoionization detector for volatile organic compounds (VOCs). "*" Indicates sample sent to laboratory for additional analysis.
2. Sample wet.
3. E.O.B. = End of Boring.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

BORING NO. A-2

GZA GEOENVIRONMENTAL, INC.
Engineers and Scientists

204 Spring Hill Road
Trumbull, Connecticut 06611
(203) 268-0808

141 Danbury Road

Wilton, Connecticut

BORING NO. B-3

PAGE 1 OF 1
FILE NO. 50642
CHKD. BY: JMB

			CASING	SAMPLER
Boring Co.	GZA Drilling	Type	2¼" HSA	Split Spoon
Foreman	Ron Holman	I.D./O.D.		1 3/8"/ 2"
GZA Rep.	L. McKee, P. Crowell	Hammer Wt.		140 lbs.
Date Start	6/13/92 End 6/13/92	Hammer Fall		30 in.
Grd. Elev.	Datum	Other		
Location	See Plan			

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab. Time
6/13/92	---	8.0'	8.0'	0 hrs.

DEPTH	CASINGS	BLOWS	Sample No.	Pen./Rec.	Depth (Ft.)	Blows/6"	Field Testing (ppm)	SAMPLE DESCRIPTION & CLASSIFICATION	Stratum Description	REMKS	Equipment Installed
			S-1	24/14	0-2.0	3-2-7-15	1/0.8	Loose, brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.	TOPSOIL 0.3'	1	None
1											
			S-2	24/10	2.0-4.0	12-19-24-29	0.4/0.6	Dense, brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.	FINE TO COARSE SAND AND GRAVEL		
3											
4			S-3	24/16	4.0-6.0	16-20-44-66	0.2/0.6	Very dense, brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.			
5											
6			S-4	24/21	6.0-8.0	29-26-26-40	0.4/0.6	Top 3": Brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt. Bottom 18": Brown, fine to medium SAND, little Silt.	6.3' FINE TO MEDIUM SAND		
7											
8			S-5	24/15	8.0-10.0	20-19-16-13	0.2/0.6	Dense, brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.	8.0' FINE TO COARSE SAND AND GRAVEL	2	
9											
10									10.0' E.O.B.	3	
11											
12											
13											
14											

REMARKS

1. Soil samples field screened for volatile organic compounds with an 11.7 eV portable HNu Model PI-101 photoionization detector. 1/0.8 = meter response of sample/meter reponse of background conditions. ppm = parts per million.
2. Sample wet at approximately 8 feet below grade.
3. Boring ended at approximately 10 feet below grade. E.O.B. = End of Boring.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

BORING NO. B-3

[G]ZA GEOENVIRONMENTAL, INC.
[En]gineers and Scientists

204 Spring Hill Road
[Tr]umbull, Connecticut 06611
[(2]03) 268-0808

141 Danbury Road

Wilton, Connecticut

BORING NO. B-4

PAGE 1 OF 1
FILE NO. 50642
CHKD. BY: JMB

			CASING	SAMPLER
Boring Co.	GZA Drilling	Type	2¼" HSA	Split Spoon
[Fo]reman	Ron Holman	I.D./O.D.		1 3/8"/ 2"
GZA Rep.	L. McKee, P. Crowell	Hammer Wt.		140 lbs.
[Da]te Start	6/13/92 End 6/13/92	Hammer Fall		30 in.
[G].Elev.	Datum	Other		
Location	See Plan			

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab. Time

DEPTH	CASING	BLOWS	No.	Pen./Rec.	Depth (Ft.)	Blows/6"	Field Testing (ppm)	SAMPLE DESCRIPTION & CLASSIFICATION	Stratum Description	REMKS	Equipment Installed
			S-1	24/16	0-2.0	3-16-18-21	0.6/0.6	Top 6": Brown to black TOPSOIL. Bottom 10": Brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.	TOPSOIL	1	None
1									0.5'		
									FINE TO COARSE SAND AND GRAVEL		
4			S-2	6/6	4.0-4.5	64-10/0"	NS	Very dense, fine to coarse SAND and fine to coarse GRAVEL, little Silt.			
5			S-3	0/0	5.0	10/0"	NS	No recovery.	5.0' E.O.B.	2	
8											
9											
[1]0											
[1]1											
12											
[1]3											
[1]4											

REMARKS

1. Soil samples field screened for volatile organic compounds with an 11.7 eV portable HNu Model PI-101 photoionization detector. 1/0.8 = meter response of sample/meter reponse of background conditions. ppm = parts per million.
2. Boring ended at approximately 5 feet below grade due to auger and spoon refusal. E.O.B. = End of Boring. NS = No sample

[S]tratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

BORING NO. B-4

GZA GEOENVIRONMENTAL, INC.
Engineers and Scientists

204 Spring Hill Road
Trumbull, Connecticut 06611
(203) 268-0808

141 Danbury Road

Wilton, Connecticut

BORING NO. B-4A

PAGE 1 OF 1
FILE NO. 50642
CHKD. BY: JMB

			CASING	SAMPLER
Boring Co.	GZA Drilling	Type	2¼" HSA	Split Spoon
Foreman	Ron Holman	I.D./O.D.		1 3/8"/ 2"
GZA Rep.	L. McKee, P. Crowell	Hammer Wt.		140 lbs.
Date Start	6/13/92 End 6/13/92	Hammer Fall		30 in.
GS.Elev.	Datum	Other		
Location	See plan (4 feet east of B-4)			

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab. Time
6/13/92	---	8.0'	8.0'	0 hrs.

DEPTH	CASING	BLOWS	No.	Pen./Rec.	Depth (Ft.)	Blows/6"	Field Testing (ppm)	SAMPLE DESCRIPTION & CLASSIFICATION	Stratum Description	REMKS	Equipment Installed
0–4									SEE B-4	1	None
4			S-1	24/14	4.0-6.0	22-27-42-22	0.4/0.4	Very dense, brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.			
6			S-2	24/18	6.0-8.0	18-16-15-16	0.6/0.4	Dense, brown, fine to coarse SAND and fine GRAVEL, little Silt.	FINE TO COARSE SAND AND GRAVEL		
8			S-3	24/14	8.0-10.0	14-15-21-30	0.6/0.6	Dense, brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt, trace Organics.		2	
10									10.0' E.O.B.	3	

REMARKS

1. Soil samples field screened for volatile organic compounds with an 11.7 eV portable HNu Model PI-101 photoionization detector. 1/0.8 = meter response of sample/meter reponse of background conditions. ppm = parts per million.
2. Sample wet at approximately 8 feet below grade.
3. Boring ended at approximately 10 feet below grade. E.O.B. = End of Boring.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

GZA GEOENVIRONMENTAL, INC.
Engineers and Scientists

204 Spring Hill Road
Trumbull, Connecticut 06611
(203) 268-0808

141 Danbury Road

Wilton, Connecticut

BORING NO. B-5

FILE NO. 50642
CHKD. BY: JMB

			CASING	SAMPLER
Boring Co.	GZA Drilling	Type	2¼" HSA	Split Spoon
Foreman	Ron Holman	I.D./O.D.		1 3/8"/ 2"
GZA Rep.	L. McKee, P. Crowell	Hammer Wt.		140 lbs.
Date Start	6/13/92 End 6/13/92	Hammer Fall		30 in.
GS.Elev.	Datum	Other		
Location	See plan			

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab. Time
6/13/92	---	8.0'	8.0'	0 hrs.

DEPTH	CASINGS	BLOWS	No.	Pen./Rec.	Depth (Ft.)	Blows/6"	Field Testing (ppm)	SAMPLE DESCRIPTION & CLASSIFICATION	Stratum Description	REMKS	Equipment Installed
			S-1	24/4	0-2.0	1-2-14-24	0.4/0.4	Top 2": Brown to black TOPSOIL. Bottom 2": Brown, medium to coarse SAND and fine to coarse GRAVEL, trace Silt.	TOPSOIL	1	None
1									0.2'		
2			S-2	12/12	2.0-3.0	13-56	0.4/0.4	Very dense, brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.			
3									FINE TO COARSE SAND AND GRAVEL		
4			S-3	24/14	4.0-6.0	16-30-34-34	0.4/0.4	Very dense, brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.			
5											
6			S-4	24/19	6.0-8.0	32-28-60-53	0.4/0.4	Very dense, brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.			
7											
8			S-5	24/14	8.0-10.0	12-17-19-18	0.2/0.2	Dense, brown, fine to medium SAND, little fine to coarse Gravel, little Silt.	8.0' FINE TO COARSE SAND	2	
9											
10									10.0' E.O.B.	3	
11											
12											
13											
14											

REMARKS

1. Soil samples field screened for volatile organic compounds with an 11.7 eV portable HNu Model PI-101 photoionization detector. 1/0.8 = meter response of sample/meter reponse of background conditions. ppm = parts per million.
2. Sample wet at approximately 8 feet below grade.
3. Boring ended at approximately 10 feet below grade. E.O.B. = End of Boring.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

BORING NO. B-5

GZA GEOENVIRONMENTAL, INC.
Engineers and Scientists

204 Spring Hill Road
Trumbull, Connecticut 06611
(203) 268-0808

141 Danbury Road

Wilton, Connecticut

BORING NO. B-6

PAGE 1 OF 1
FILE NO. 50642
CHKD. BY: JMB

			CASING	SAMPLER
Boring Co.	GZA Drilling	Type	2¼" HSA	Split Spoon
Foreman	Ron Holman	I.D./O.D.		1 3/8"/ 2"
GZA Rep.	L. McKee, P. Crowell	Hammer Wt.		140 lbs.
Date Start	6/13/92 End 6/13/92	Hammer Fall		30 in.
GS.Elev.	Datum	Other		
Location	See plan			

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab. Time
6/13/92	---	8.5'	8.0'	0 hrs.

DEPTH	CASING	BLOWS	No.	Pen./Rec.	Depth (Ft.)	Blows/6"	Field Testing (ppm)	SAMPLE DESCRIPTION & CLASSIFICATION	Stratum Description	REMKS	Equipment Installed
			S-1	24/15	0-2.0	6-13-15-27	0.6/0.6	Top 4": Brown to black TOPSOIL. Bottom 11": Brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.	TOPSOIL 0.3'	1	None
1											
2											
3											
4			S-2	24/15	4.0-6.0	22-27-61-61	0.4/0.8	Very dense, brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.	FINE TO COARSE SAND AND GRAVEL		
5											
6			S-3	24/20	6.0-8.0	50-34-44-46	0.6/0.8	Very dense, brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.			
7											
8			S-4	24/16	8.0-10.0	26-50-41-19	0.6/0.8	Very dense, brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.		2	
9											
10									10.0' E.O.B.	3	
11											
12											
13											
14											

REMARKS

1. Soil samples field screened for volatile organic compounds with an 11.7 eV portable HNu Model PI-101 photoionization detector. 1/0.8 = meter response of sample/meter reponse of background conditions. ppm = parts per million.
2. Sample wet at approximately 8.5 feet below grade.
3. Boring ended at approximately 10 feet below grade. E.O.B. = End of Boring.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

BORING NO. B-6

GZA GEOENVIRONMENTAL, INC.
Engineers and Scientists

204 Spring Hill Road
Trumbull, Connecticut 06611
(203) 268-0808

141 Danbury Road

Wilton, Connecticut

BORING NO. B-7

PAGE 1 OF 1
FILE NO. 50642
CHKD. BY: JMB

			CASING	SAMPLER
Boring Co.	GZA Drilling	Type	2¼" HSA	Split Spoon
Foreman	Ron Holman	I.D./O.D.		1 3/8"/ 2"
GZA Rep.	L. McKee, P. Crowell	Hammer Wt.		140 lbs.
Date Start	6/13/92 End 6/13/92	Hammer Fall		30 in.
GS.Elev.	Datum	Other		
Location	See plan			

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab. Time
6/13/92	---	8.5′	8.0′	0 hrs.

DEPTH	CASING	BLOWS	No.	Pen./Rec.	Depth (Ft.)	Blows/6"	Field Testing (ppm)	SAMPLE DESCRIPTION & CLASSIFICATION	Stratum Description	REMKS	Equipment Installed
			S-1	24/16	0-2.0	6-10-18-27	0.8/0.8	Top 10": Brown to black TOPSOIL, little fine to coarse Gravel. Bottom 6": Brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.	TOPSOIL 0.8′	1	None
1											
2											
3											
4			S-2	24/18	4.0-6.0	20-26-23-25	0.8/0.8	Dense, brown, fine to coarse SAND and fine to coarse GRAVEL, trace Silt.	FINE TO COARSE SAND AND GRAVEL		
5											
6			S-3	24/15	6.0-8.0	25-31-38-39	0.8/1.0	Very dense, brown, fine to coarse SAND and fine to coarse GRAVEL, trace Silt.			
7											
8			S-4	24/15	8.0-10.0	21-15-13-24	0.8/1.0	Medium dense, brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.		2	
9											
10									10.0′ E.O.B.	3	
11											
12											
13											
14											

REMARKS

1. Soil samples field screened for volatile organic compounds with an 11.7 eV portable HNu Model PI-101 photoionization detector. 1/0.8 = meter response of sample/meter reponse of background conditions. ppm = parts per million.
2. Sample wet at approximately 8.5 feet below grade.
3. Boring ended at approximately 10 feet below grade. E.O.B. = End of Boring.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

BORING NO. B-7

GZA GEOENVIRONMENTAL, INC.
Engineers and Scientists

204 Spring Hill Road
Trumbull, Connecticut 06611
(203) 268-0808

141 Danbury Road

Wilton, Connecticut

BORING NO. B-8

PAGE 1 OF 1
FILE NO. 50642
CHKD. BY: JMB

			CASING	SAMPLER
Boring Co.	GZA Drilling	Type	2¼" HSA	Split Spoon
Foreman	Ron Holman	I.D./O.D.		1 3/8"/ 2"
GZA Rep.	L. McKee, P. Crowell	Hammer Wt.		140 lbs.
Date Start	6/13/92 End 6/13/92	Hammer Fall		30 in.
GS.Elev.	Datum	Other		
Location	See plan			

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab. Time
6/13/92	---	10.0'	8.0'	0 hrs.

DEPTH	CASING	BLOWS	No.	Pen./Rec.	Depth (Ft.)	Blows/6"	Field Testing (ppm)	SAMPLE DESCRIPTION & CLASSIFICATION	Stratum Description	REMKS	Equipment Installed
			S-1	24/12	0-2.0	4-8-26-24	0.8/0.8	Top 4": Brown TOPSOIL and ORGANICS. Bottom 8": Light grey, tan, brown, fine to coarse SAND, some fine to coarse Gravel, little Silt.	TOPSOIL / 0.8'	1	None
4			S-2	24/10	4.0-6.0	26-48-49-37	0.8/0.8	Very dense, brown, grey, orange, fine to coarse SAND and fine to coarse GRAVEL, trace Silt.	FINE TO COARSE SAND AND GRAVEL		
6			S-3	24/17	6.0-8.0	37-22-50-34	0.8/0.8	Top 9": Brown, fine to coarse SAND and fine to coarse GRAVEL, trace Silt. Bottom 8": Orange to brown, fine SAND, little fine to coarse Gravel, little Silt.	6.8' FINE SAND		
8			S-4	24/18	8.0-10.0	14-9-9-15	0.8/0.8	Medium dense, brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.	8.0' FINE TO COARSE SAND AND GRAVEL	2	
10									10.0' E.O.B.	3	

REMARKS

1. Soil samples field screened for volatile organic compounds with an 11.7 eV portable HNu Model PI-101 photoionization detector. 1/0.8 = meter response of sample/meter reponse of background conditions. ppm = parts per million.
2. Sample wet at approximately 10 feet below grade.
3. Boring ended at approximately 10 feet below grade. E.O.B. = End of Boring.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

BORING NO. B-8

GZA GEOENVIRONMENTAL, INC.
Engineers and Scientists

204 Spring Hill Road
Trumbull, Connecticut 06611
(203) 268-0808

141 Danbury Road

Wilton, Connecticut

BORING NO. B-9
PAGE 1 OF 1
FILE NO. 50642
CHKD. BY: JMB

Boring Co.	GZA Drilling		CASING	SAMPLER
Foreman	Ron Holman	Type	2¼" HSA	Split Spoon
GZA Rep.	L. McKee, P. Crowell	I.D./O.D.		1 3/8"/ 2"
Date Start	6/13/92 End 6/13/92	Hammer Wt.		140 lbs.
GS.Elev.	Datum	Hammer Fall		30 in.
Location	See plan	Other		

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab. Time
6/13/92	---	9.0'	8.0'	0 hrs.

DEPTH	CASING BLOWS	No.	Pen./Rec.	Depth (Ft.)	Blows/6"	Field Testing (ppm)	SAMPLE DESCRIPTION & CLASSIFICATION	Stratum Description	REMKS	Equipment Installed
		S-1	24/16	0-2.0	3-6-8-12	0.6/0.6	Top 4": Brown to black TOPSOIL. Bottom 12": Brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.	TOPSOIL	1	None
1								0.3'		
2		S-2	24/16	2.0-4.0	16-20-17-17	0.6/0.6	Dense, brown, fine to coarse SAND and fine to coarse GRAVEL, trace Silt.			
3										
4		S-3	24/18	4.0-6.0	23-22-29-30	0.6/0.6	Dense, brown, fine to coarse SAND and fine to coarse GRAVEL, trace Silt.	FINE TO COARSE SAND AND GRAVEL		
5										
6		S-4	24/16	6.0-8.0	44-37-54-50	0.6/0.6	Very dense, brown, fine to coarse SAND and fine to coarse GRAVEL, trace Silt.			
7										
8		S-5	24/18	8.0-10.0	21-13-12-12	0.2/0.6	Top 6": Grey, fine SAND, some fine to coarse Gravel, little Silt.	8.0' FINE SAND		
9						0.4/0.6	Bottom 12": Brown, fine to coarse SAND, trace Silt.	8.5' FINE TO COARSE SAND	2	
10								10.0' E.O.B.	3	
11										
12										
13										
14										

REMARKS

1. Soil samples field screened for volatile organic compounds with an 11.7 eV portable HNu Model PI-101 photoionization detector. 1/0.8 = meter response of sample/meter reponse of background conditions. ppm = parts per million.
2. Sample wet at approximately 9 feet below grade.
3. Boring ended at approximately 10 feet below grade. E.O.B. = End of Boring.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

BORING NO. B-9

GZA GEOENVIRONMENTAL, INC.
Engineers and Scientists

204 Spring Hill Road
Trumbull, Connecticut 06611
(203) 268-0808

141 Danbury Road

Wilton, Connecticut

BORING NO. B-10

FILE NO. 50642
CHKD. BY: JMB

			CASING	SAMPLER
Boring Co.	GZA Drilling	Type	2¼" HSA	Split Spoon
Foreman	Ron Holman	I.D./O.D.		1 3/8"/ 2"
GZA Rep.	L. McKee, P. Crowell	Hammer Wt.		140 lbs.
Date Start	6/13/92 End 6/13/92	Hammer Fall		30 in.
GS.Elev.	Datum	Other		
Location	See plan			

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab. Time
6/13/92	---	6.5'	4.0'	0 hrs.

DEPTH	CASING	BLOWS	No.	Pen./Rec.	Depth (Ft.)	Blows/6"	Field Testing (ppm)	SAMPLE DESCRIPTION & CLASSIFICATION	Stratum Description	REMKS	Equipment Installed
			S-1	24/7	0-2.0	4-7-3-3	0.6/0.6	Top 4": Brown to black TOPSOIL. Bottom 3": Brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.	TOPSOIL	1	None
1									0.3'		
2			S-1A	24/3	2.0-4.0	7-8-7-7	0.6/0.6	Medium dense, brown, fine SAND, some fine to coarse Gravel, little Silt.			
3									FINE SAND (ORGANICS FROM 4-6')		
4			S-2	24/2	4.0-6.0	1-3-4-7	0.8/0.6	Loose, brown to black, fine SAND, little fine Gravel, little organic Silt.			
5											
6			S-3	24/10	6.0-8.0	14-17-14-27	0.6/0.6	Dense, brown, fine to coarse SAND and fine to coarse GRAVEL, some Silt.	6.0'	2	
7									FINE TO COARSE SAND		
8									8.0' E.O.B.	3	
9											
10											
11											
12											
13											
14											

REMARKS

1. Soil samples field screened for volatile organic compounds with an 11.7 eV portable HNu Model PI-101 photoionization detector. 1/0.8 = meter response of sample/meter reponse of background conditions. ppm = parts per million.
2. Sample wet at approximately 6.5 feet below grade.
3. Boring ended at approximately 8 feet below grade. E.O.B. = End of Boring.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

BORING NO. B-10

GZA GEOENVIRONMENTAL, INC.
Engineers and Scientists

204 Spring Hill Road
Trumbull, Connecticut 06611
(203) 268-0808

141 Danbury Road

Wilton, Connecticut

BORING NO. B-11

PAGE 1 OF 1
FILE NO. 50642
CHKD. BY: JMB

			CASING	SAMPLER
Boring Co.	GZA Drilling	Type	2¼" HSA	Split Spoon
Foreman	Ron Holman	I.D./O.D.		1 3/8"/ 2"
GZA Rep.	L. McKee, P. Crowell	Hammer Wt.		140 lbs.
Date Start	6/13/92 End 6/13/92	Hammer Fall		30 in.
GS.Elev.	Datum	Other		
Location	See plan			

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab. Time
6/13/92	---	10.0′	8.0′	0 hrs.

DEPTH	CASING	BLOWS	No.	Pen./Rec.	Depth (Ft.)	Blows/6"	Field Testing (ppm)	SAMPLE DESCRIPTION & CLASSIFICATION	Stratum Description	REMKS	Equipment Installed
			S-1	24/12	0.3-2.3	16-13-7-5	0.6/0.6	Medium dense, brown, fine SAND, some fine Gravel, trace Silt. (Black Organic Silt in tip of spoon).	ASPHALT 0.3′	1	None
1											
2											
3											
4			S-2	24/2	4.0-6.0	17-14-21-19	0.4/0.6	Dense, brown, coarse GRAVEL.	FINE TO COARSE SAND AND GRAVEL (ORGANIC SILT AT 2′)		
5											
6			S-3	24/14	6.0-8.0	22-31-30-27	0.6/0.6	Very dense, brown, fine to coarse SAND and fine to coarse GRAVEL, trace Silt.			
7											
8			S-4	24/16	8.0-10.0	42-45-30-20	0.4/0.6	Top 8": Grey, fine to coarse GRAVEL, some fine Sand, trace Silt. Bottom 8": Orange to brown, fine to coarse SAND, some fine Gravel, little Silt.		2	
9											
10									10.0′ E.O.B.	3	
11											
12											
13											
14											

REMARKS

1. Soil samples field screened for volatile organic compounds with an 11.7 eV portable HNu Model PI-101 photoionization detector. 1/0.8 = meter response of sample/meter reponse of background conditions. ppm = parts per million.
2. Sample wet at approximately 10 feet below grade.
3. Boring ended at approximately 10 feet below grade. E.O.B. = End of Boring.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

BORING NO. B-11

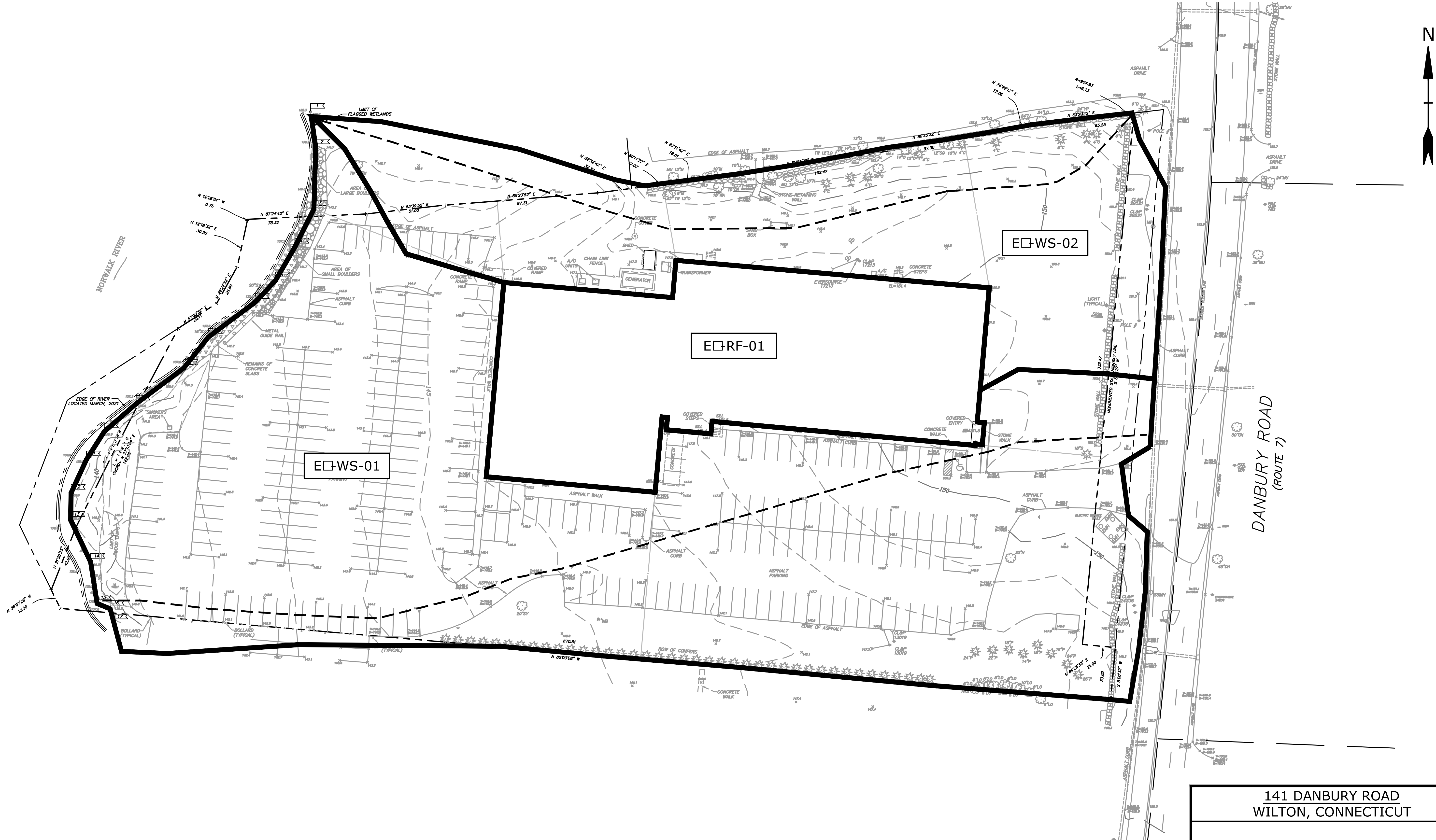
TABLE 1
GROUNDWATER ELEVATION DATA: 11/2/93
141 DANBURY ROAD
WILTON, CONNECTICUT

LOCATION	REFERENCE ELEVATION	DEPTH TO WATER (FT)	WATER TABLE ELEVATION
MW-1	99.14	12.60	86.54
MW-2	100.57	14.33	86.24
MW-3	98.56	12.18	86.38
MW-4	96.24	10.51	85.73
MW-5	94.53	9.24	85.29
MW-6	96.43	11.35	85.08
MW-7	94.73	9.75	84.98
MW-8	88.89	4.00	84.89

NOTES:

1. Reference elevation: are top of PVC monitor wells based on relative difference to an arbitrary benchmark established on center of a manhole cover along the eastern property line which was assumed to be 100 feet above mean sea level.

APPENDIX C



LEGEND

WATERSHED BOUNDARY

T□FLOW PATH

0 60' 120'

SCALE: 1" = 60'

141 DANBURY ROAD
WILTON, CONNECTICUT

E□ISTING WATERSHED MAP
AND T□FLOW PATH

DATE:	05/07/2021
SCALE:	1" = 60'
FIGURE:	WM-01

Tighe&Bond

Plotted On:May 24, 2021-3:5□pm By: TAS
Tighe & Bond:J:\F\F0173 Fuller\002 141 Danbury Road\Design\Stormwater\F0173-02-C-WM-01.dwg

Project No. **F0173-002**
Date: **05/07/21**
Prepared By: **TAS**

141 Danbury Road
Wilton, CT
Existing CN & Tc Worksheet

Tighe&Bond

Name: **EX-WS-01**
Location: Southern Site

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	1.932	98	189.314
Landscaped and Lawns	0.872	69	60.183
			249.497

Total Area: **2.804** **CN:** **89**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.24	3.54	100	0.015	15.2

Shallow Concentrated Flow Travel Time					
Segment ID	**Cover**	**Flow Length (ft)**	**Slope (ft/ft)**	**V (ft/s)**	**Time (min)**
B-C	Paved	580	0.020	2.87	3.4

Total Tc (min) = **18.6**

Name: **EX-WS-02**
Location: Northern Site

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.059	98	5.739
Landscaped and Lawns	1.040	69	71.728
			77.467

Total Area: **1.098** **CN:** **71**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.24	3.54	130	0.035	13.4

Shallow Concentrated Flow Travel Time					
Segment ID	**Cover**	**Flow Length (ft)**	**Slope (ft/ft)**	**V (ft/s)**	**Time (min)**
B-C	Unpaved	410	0.020	2.28	3.0

Total Tc (min) = **16.4**

References:
NRCS Technical Release 55
ConnDOT Drainage Manual, Chapter 6

141 Danbury Road
Wilton, CT
Existing CN & Tc Worksheet

Tighe&Bond

Name: **EX-RF-01**
Location: Existing Building

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.775	98	75.932
Landscaped and Lawns	0.000	69	0.000
			75.932

Total Area: **0.775** **CN:** **98**

Time of Concentration:

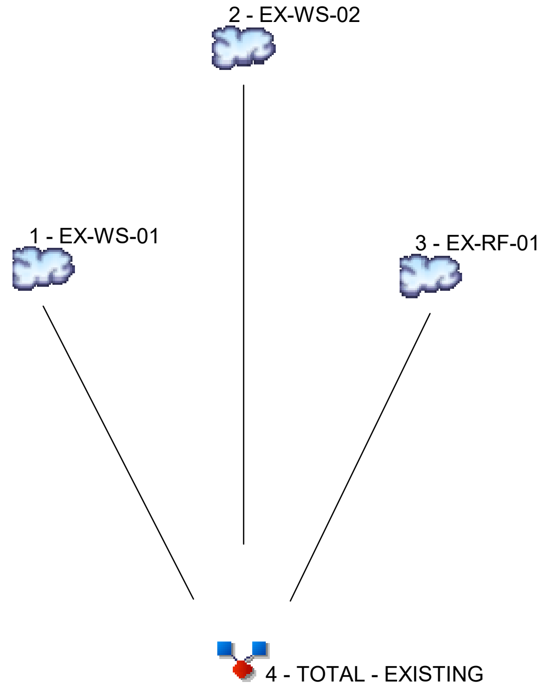
Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.015	3.54	60	0.015	1.1

Total Tc (min) = **1.1**
Minimum Tc = **5.0**

References:
NRCS Technical Release 55
ConnDOT Drainage Manual, Chapter 6

Watershed Model Schematic

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3



Legend

Hyd.	Origin	Description
1	SCS Runoff	EX-WS-01
2	SCS Runoff	EX-WS-02
3	SCS Runoff	EX-RF-01
4	Combine	TOTAL - EXISTING

Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	------	-------	5.474	-------	-------	9.316	11.72	13.50	15.39	EX-WS-01
2	SCS Runoff	------	-------	0.975	-------	-------	2.287	3.202	3.910	4.680	EX-WS-02
3	SCS Runoff	------	-------	2.573	-------	-------	3.949	4.812	5.454	6.139	EX-RF-01
4	Combine	1, 2, 3	-------	7.662	-------	-------	13.50	17.25	20.05	23.05	TOTAL - EXISTING

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	5.474	2	732	24,369	------	------	------	EX-WS-01
2	SCS Runoff	0.975	2	732	4,233	------	------	------	EX-WS-02
3	SCS Runoff	2.573	2	724	8,720	------	------	------	EX-RF-01
4	Combine	7.662	2	730	37,453	1, 2, 3	------	------	TOTAL - EXISTING

F0173-02 Hydrographs - Existing.gpw	Return Period: 2 Year	Monday, 05 / 24 / 2021

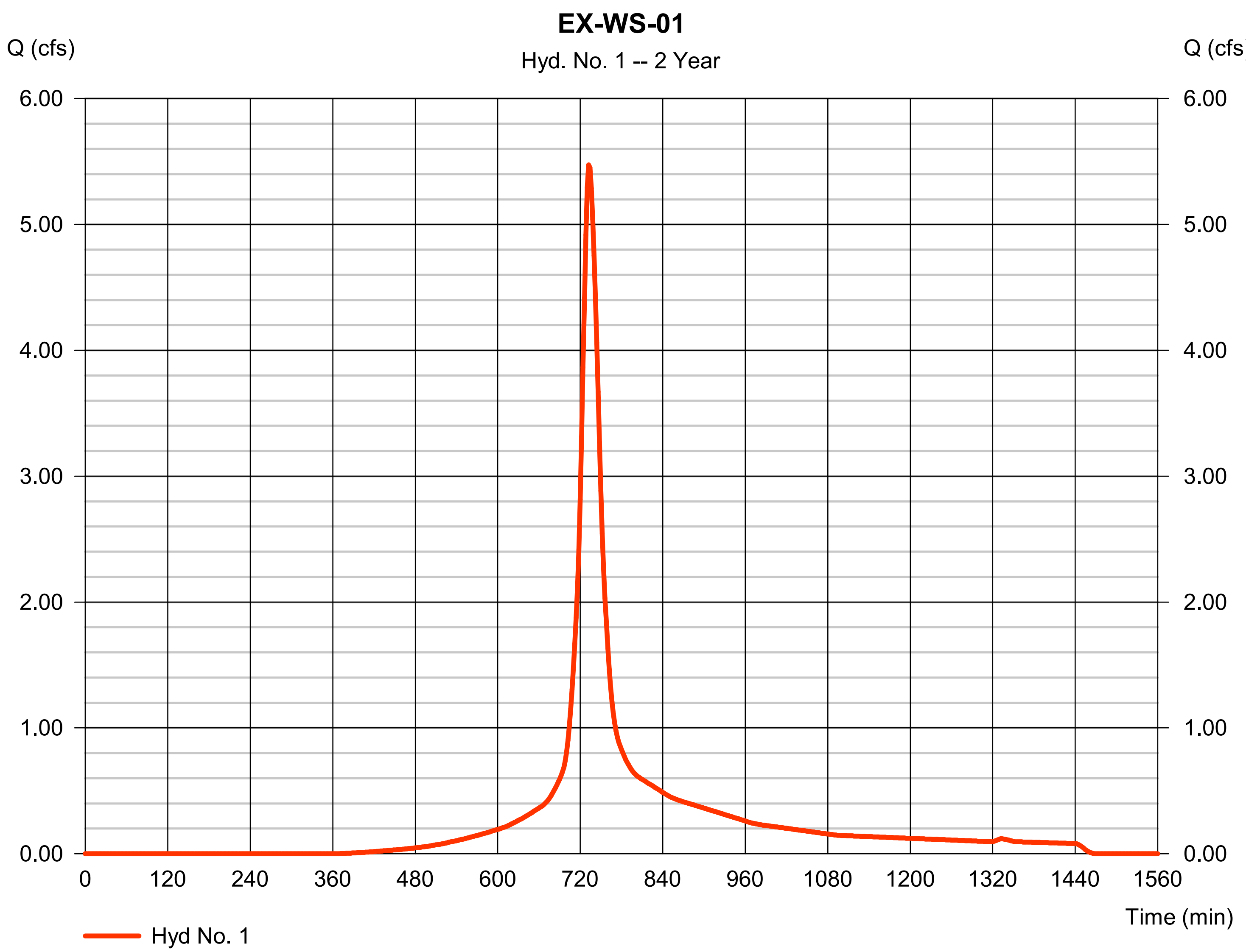
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Monday, 05 / 24 / 2021

Hyd. No. 1

EX-WS-01

Hydrograph type	= SCS Runoff	Peak discharge	= 5.474 cfs
Storm frequency	= 2 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 24,369 cuft
Drainage area	= 2.804 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.60 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



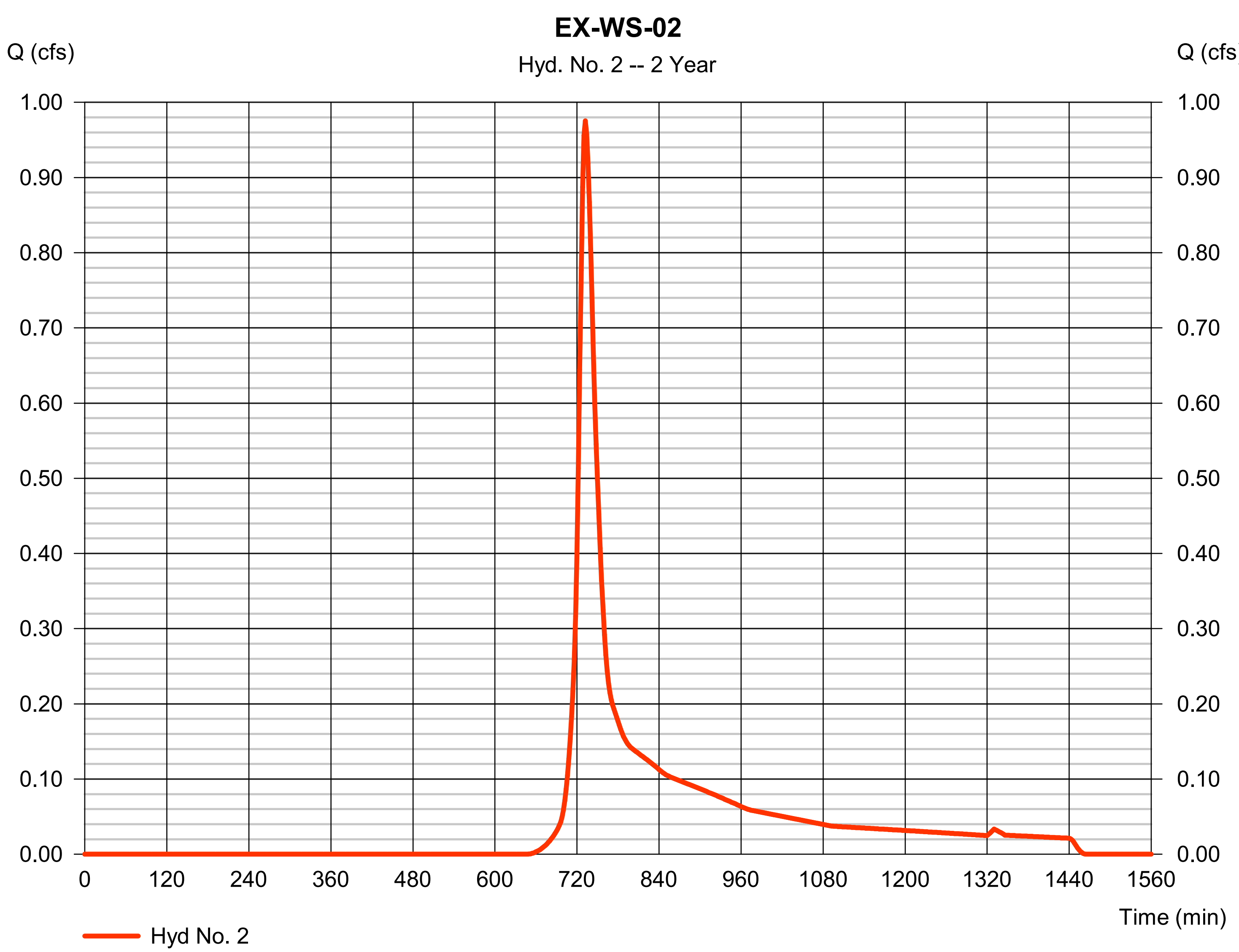
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Monday, 05 / 24 / 2021

Hyd. No. 2

EX-WS-02

Hydrograph type	= SCS Runoff	Peak discharge	= 0.975 cfs
Storm frequency	= 2 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 4,233 cuft
Drainage area	= 1.098 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 16.40 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



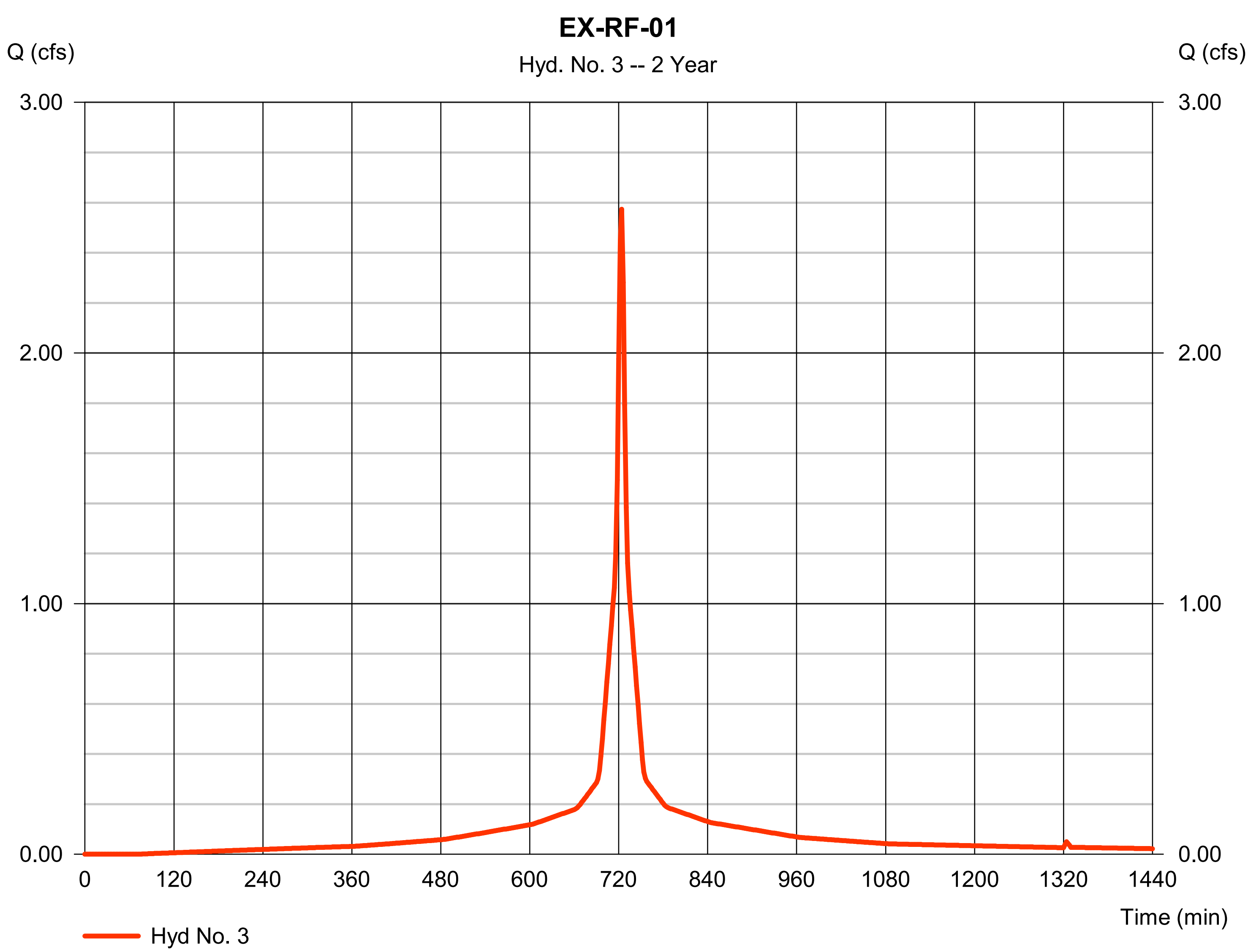
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 — Monday, 05 / 24 / 2021

Hyd. No. 3

EX-RF-01

Hydrograph type	= SCS Runoff	Peak discharge	= 2.573 cfs
Storm frequency	= 2 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 8,720 cuft
Drainage area	= 0.775 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



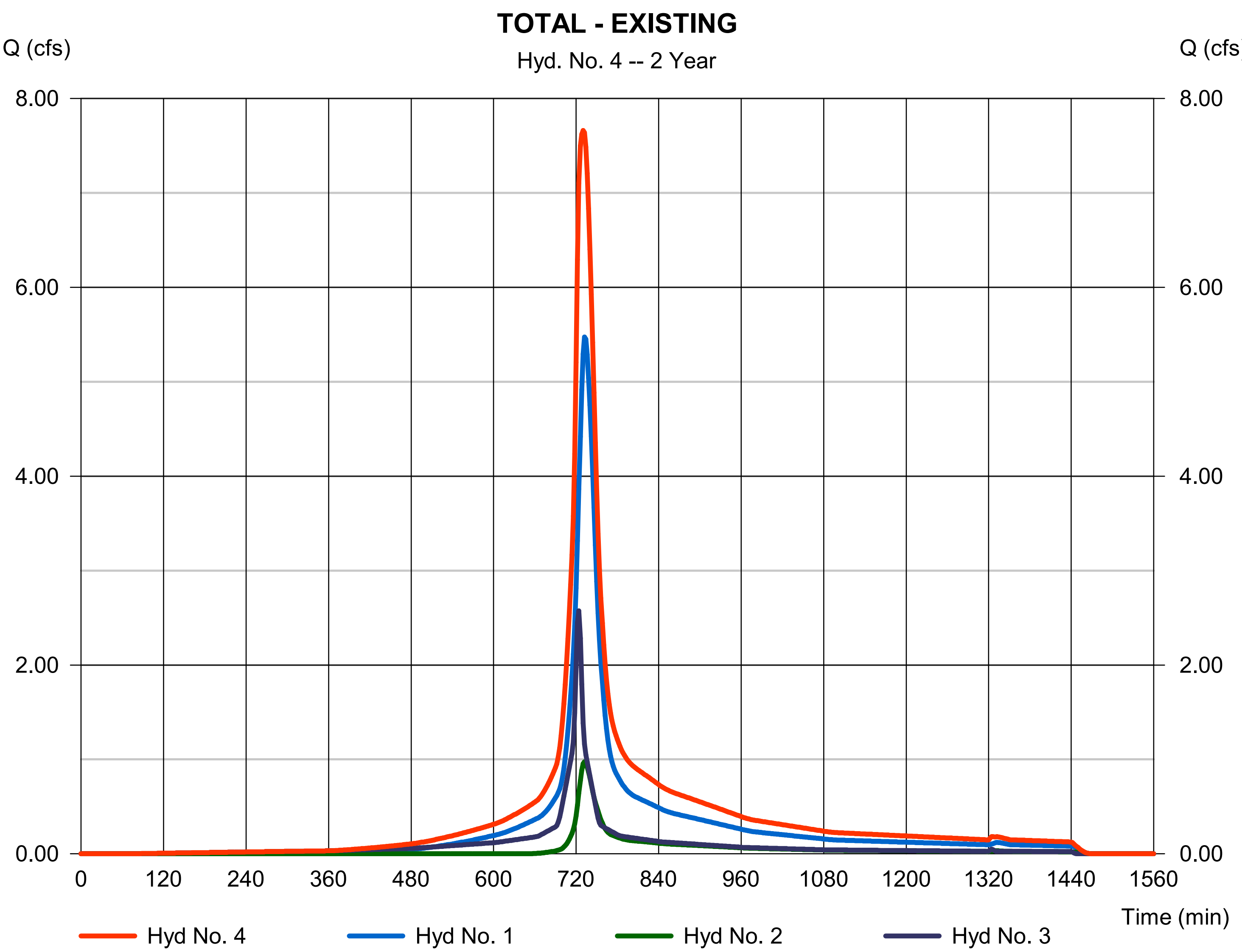
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Monday, 05 / 24 / 2021

Hyd. No. 4

TOTAL - EXISTING

Hydrograph type	= Combine	Peak discharge	= 7.662 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 37,453 cuft
Inflow hyds.	= 1, 2, 3	Contrib. drain. area	= 4.677 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	9.316	2	732	42,301	------	------	------	EX-WS-01
2	SCS Runoff	2.287	2	732	9,417	------	------	------	EX-WS-02
3	SCS Runoff	3.949	2	724	13,616	------	------	------	EX-RF-01
4	Combine	13.50	2	730	65,561	1, 2, 3	------	------	TOTAL - EXISTING

F0173-02 Hydrographs - Existing.gpw	Return Period: 10 Year	Monday, 05 / 24 / 2021

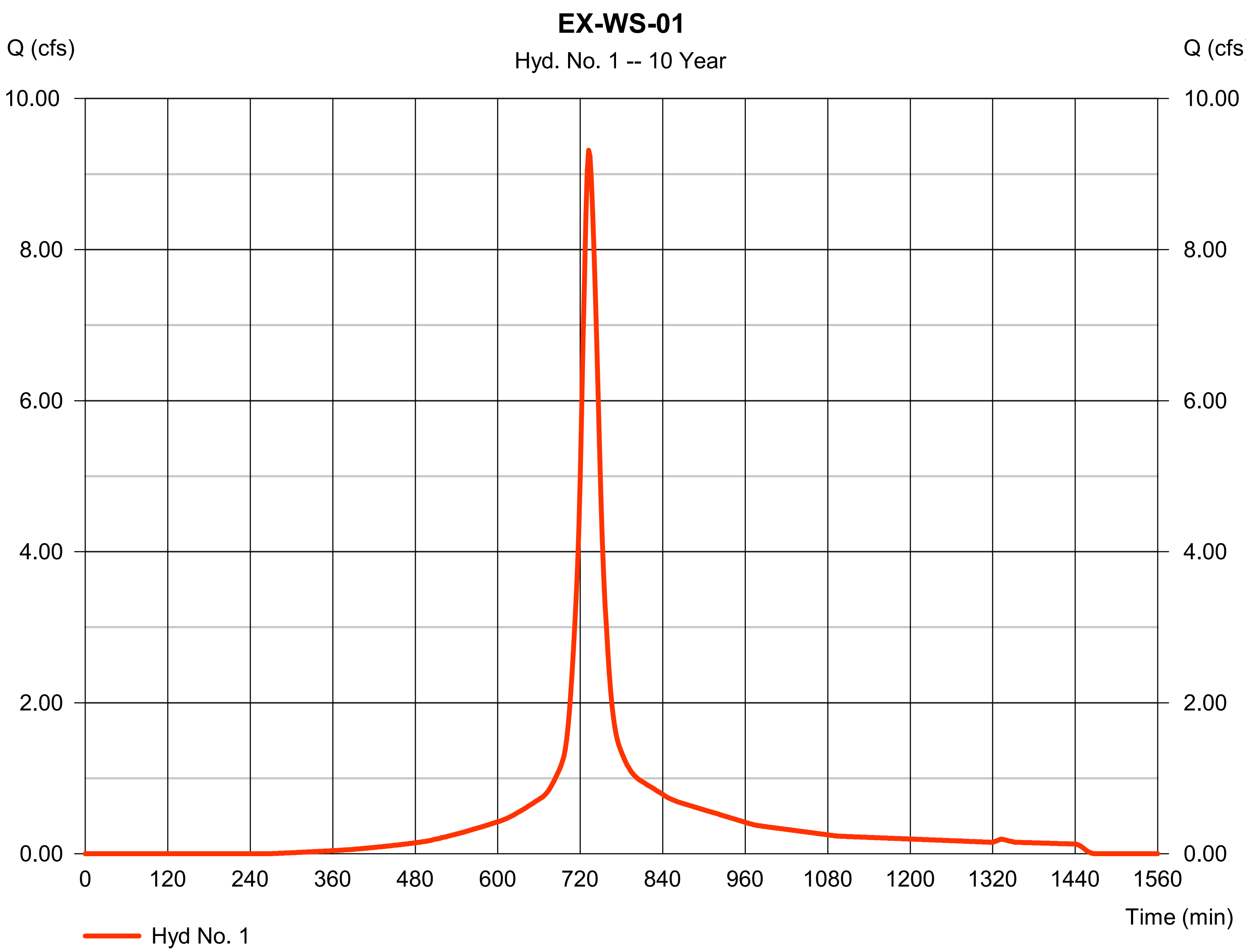
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Monday, 05 / 24 / 2021

Hyd. No. 1

EX-WS-01

Hydrograph type	= SCS Runoff	Peak discharge	= 9.316 cfs
Storm frequency	= 10 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 42,301 cuft
Drainage area	= 2.804 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.60 min
Total precip.	= 5.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



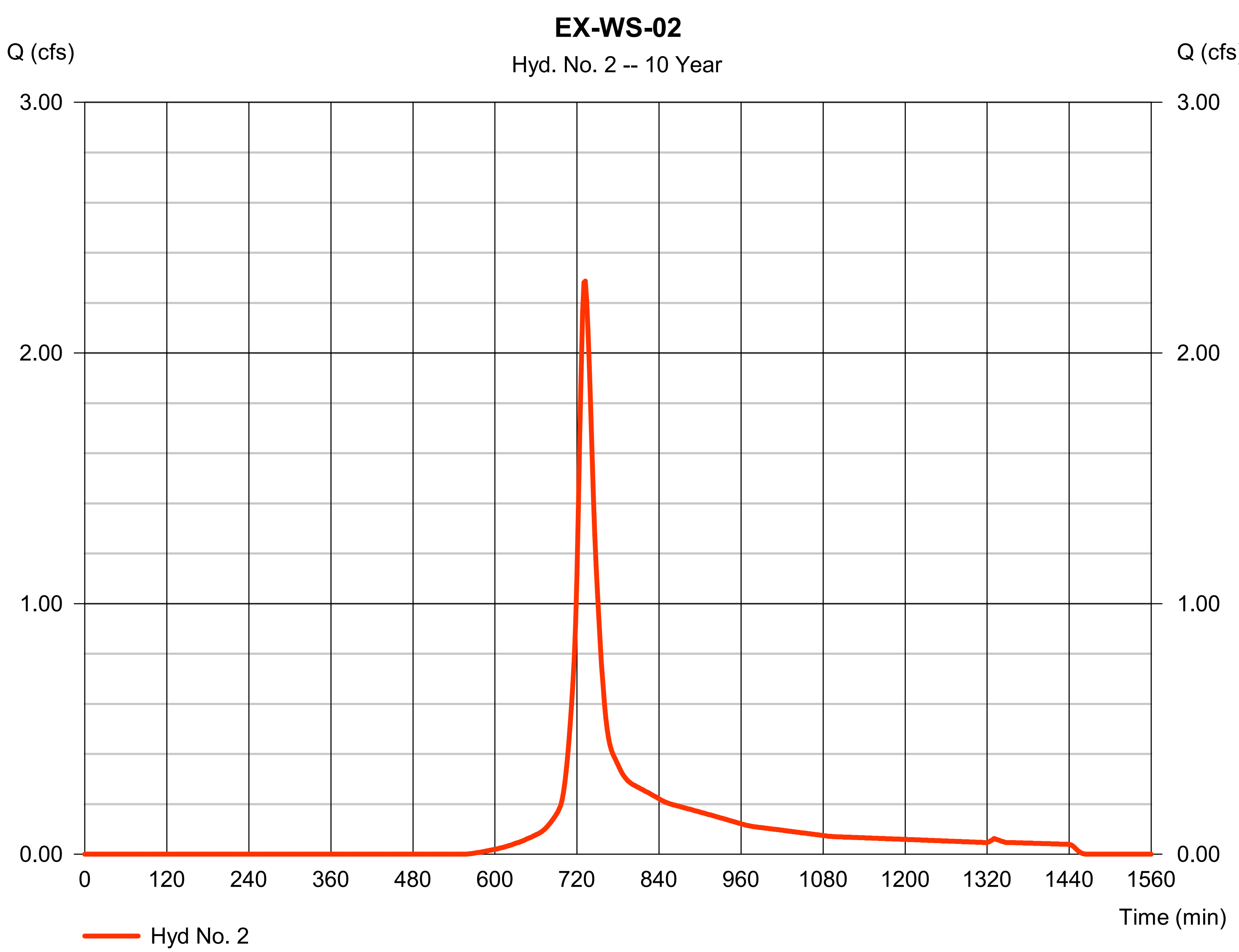
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Monday, 05 / 24 / 2021

Hyd. No. 2

EX-WS-02

Hydrograph type	= SCS Runoff	Peak discharge	= 2.287 cfs
Storm frequency	= 10 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 9,417 cuft
Drainage area	= 1.098 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 16.40 min
Total precip.	= 5.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

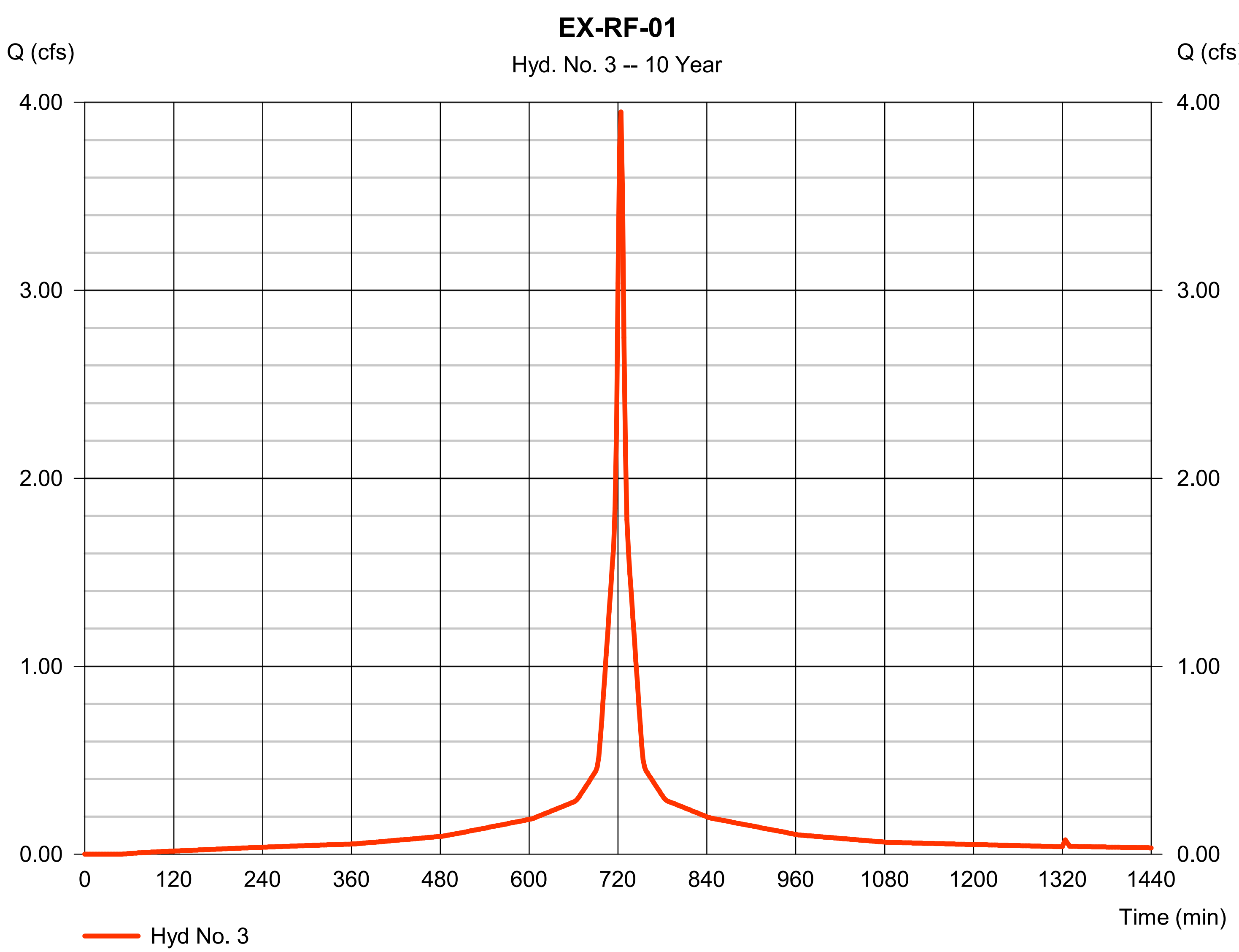


Hydrograph Report

Hyd. No. 3

EX-RF-01

Hydrograph type	= SCS Runoff	Peak discharge	= 3.949 cfs
Storm frequency	= 10 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 13,616 cuft
Drainage area	= 0.775 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



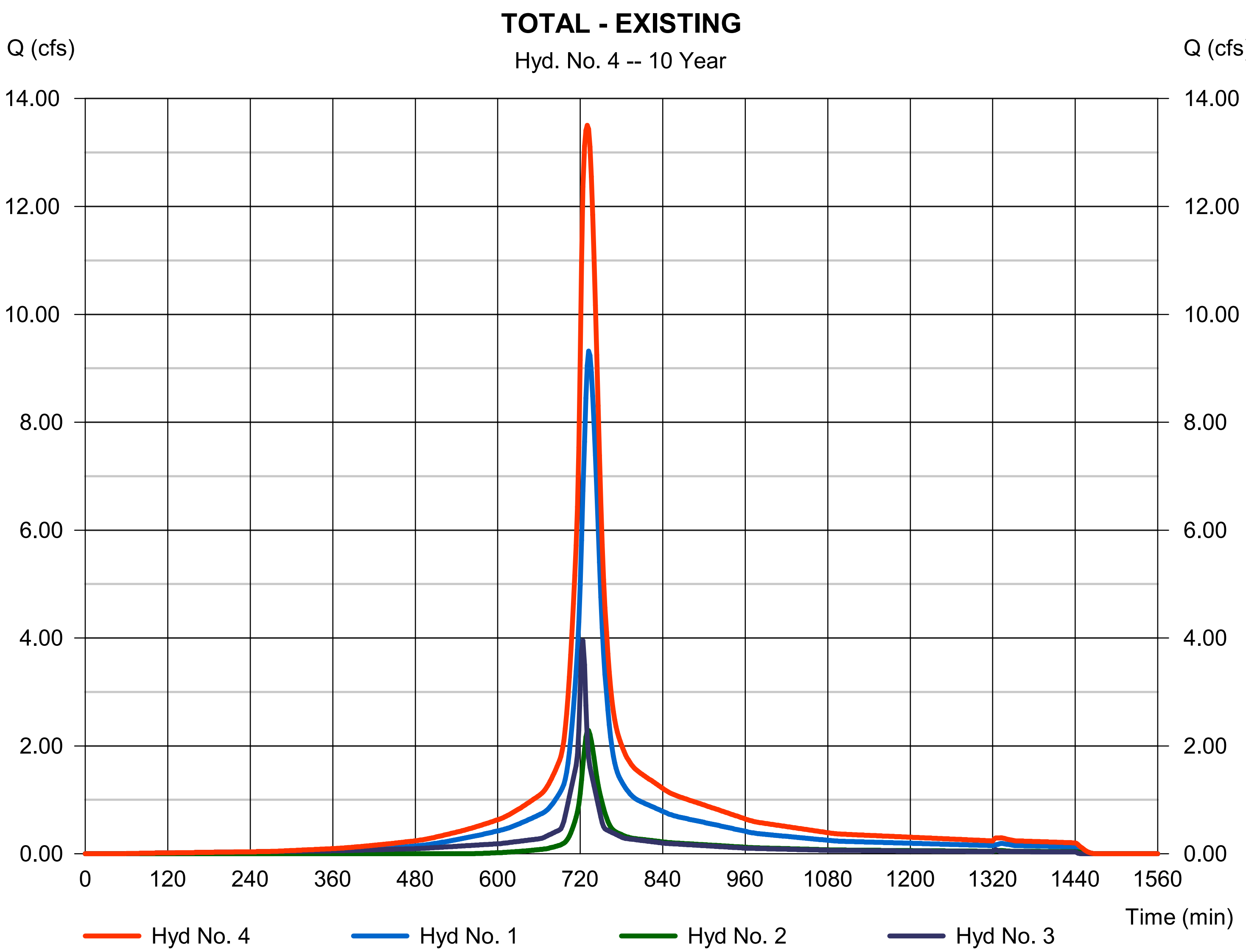
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Monday, 05 / 24 / 2021

Hyd. No. 4

TOTAL - EXISTING

Hydrograph type	= Combine	Peak discharge	= 13.50 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 65,561 cuft
Inflow hyds.	= 1, 2, 3	Contrib. drain. area	= 4.677 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	11.72	2	732	53,834	------	------	------	EX-WS-01
2	SCS Runoff	3.202	2	730	13,075	------	------	------	EX-WS-02
3	SCS Runoff	4.812	2	724	16,698	------	------	------	EX-RF-01
4	Combine	17.25	2	730	83,894	1, 2, 3	------	------	TOTAL - EXISTING

F0173-02 Hydrographs - Existing.gpw	Return Period: 25 Year	Monday, 05 / 24 / 2021

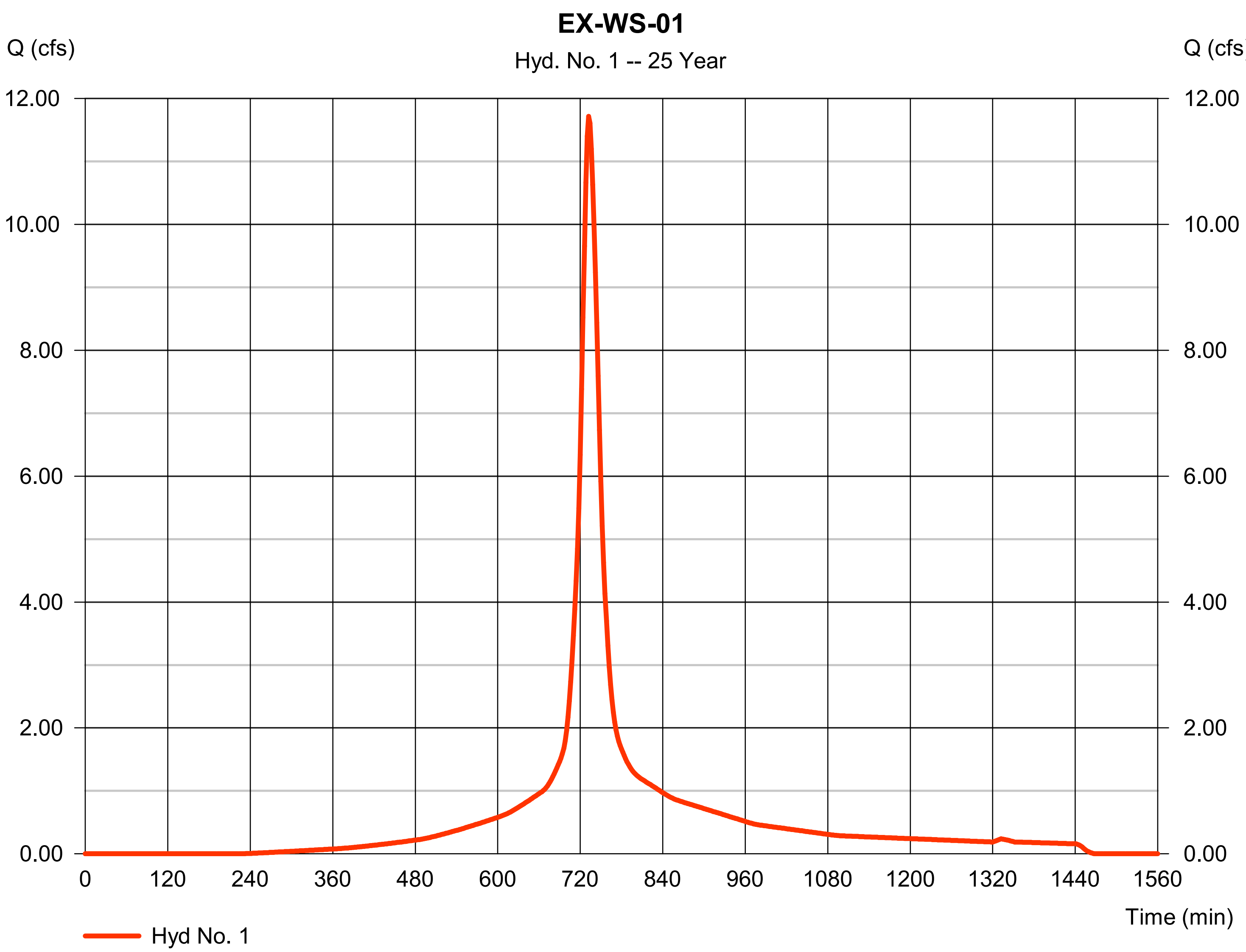
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Monday, 05 / 24 / 2021

Hyd. No. 1

EX-WS-01

Hydrograph type	= SCS Runoff	Peak discharge	= 11.72 cfs
Storm frequency	= 25 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 53,834 cuft
Drainage area	= 2.804 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.60 min
Total precip.	= 6.57 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

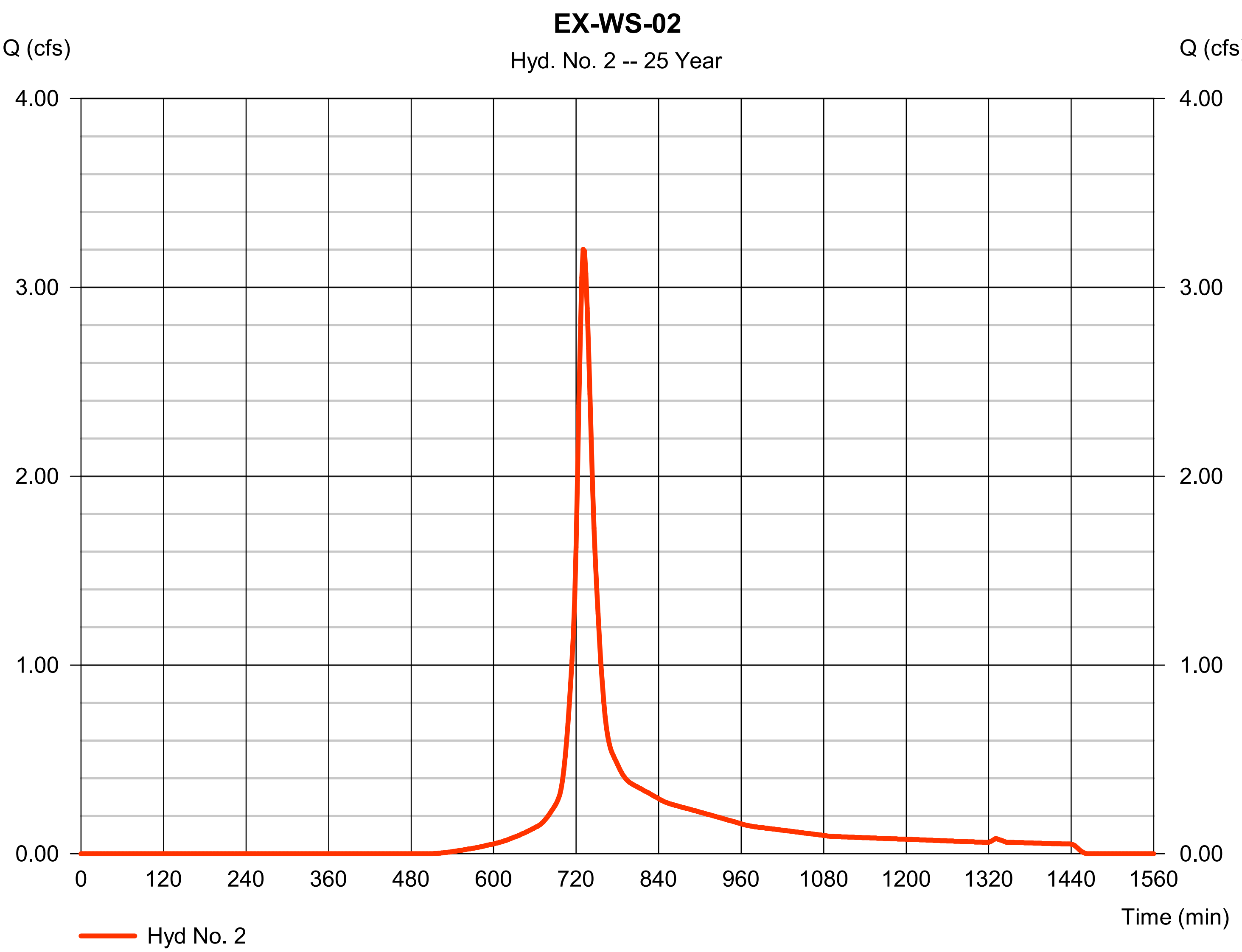


Hydrograph Report

Hyd. No. 2

EX-WS-02

Hydrograph type	= SCS Runoff	Peak discharge	= 3.202 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 13,075 cuft
Drainage area	= 1.098 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 16.40 min
Total precip.	= 6.57 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



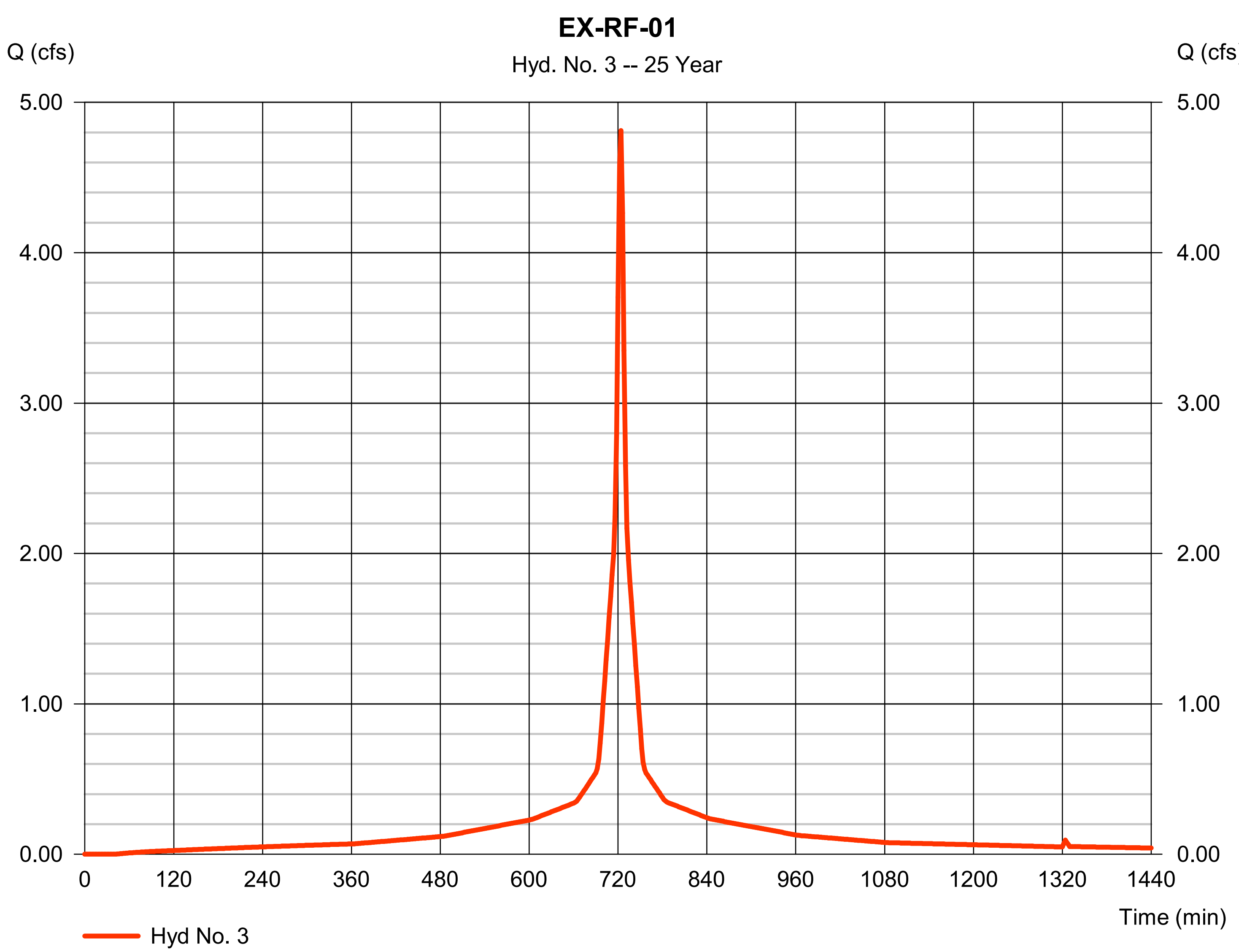
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Monday, 05 / 24 / 2021

Hyd. No. 3

EX-RF-01

Hydrograph type	= SCS Runoff	Peak discharge	= 4.812 cfs
Storm frequency	= 25 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 16,698 cuft
Drainage area	= 0.775 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.57 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

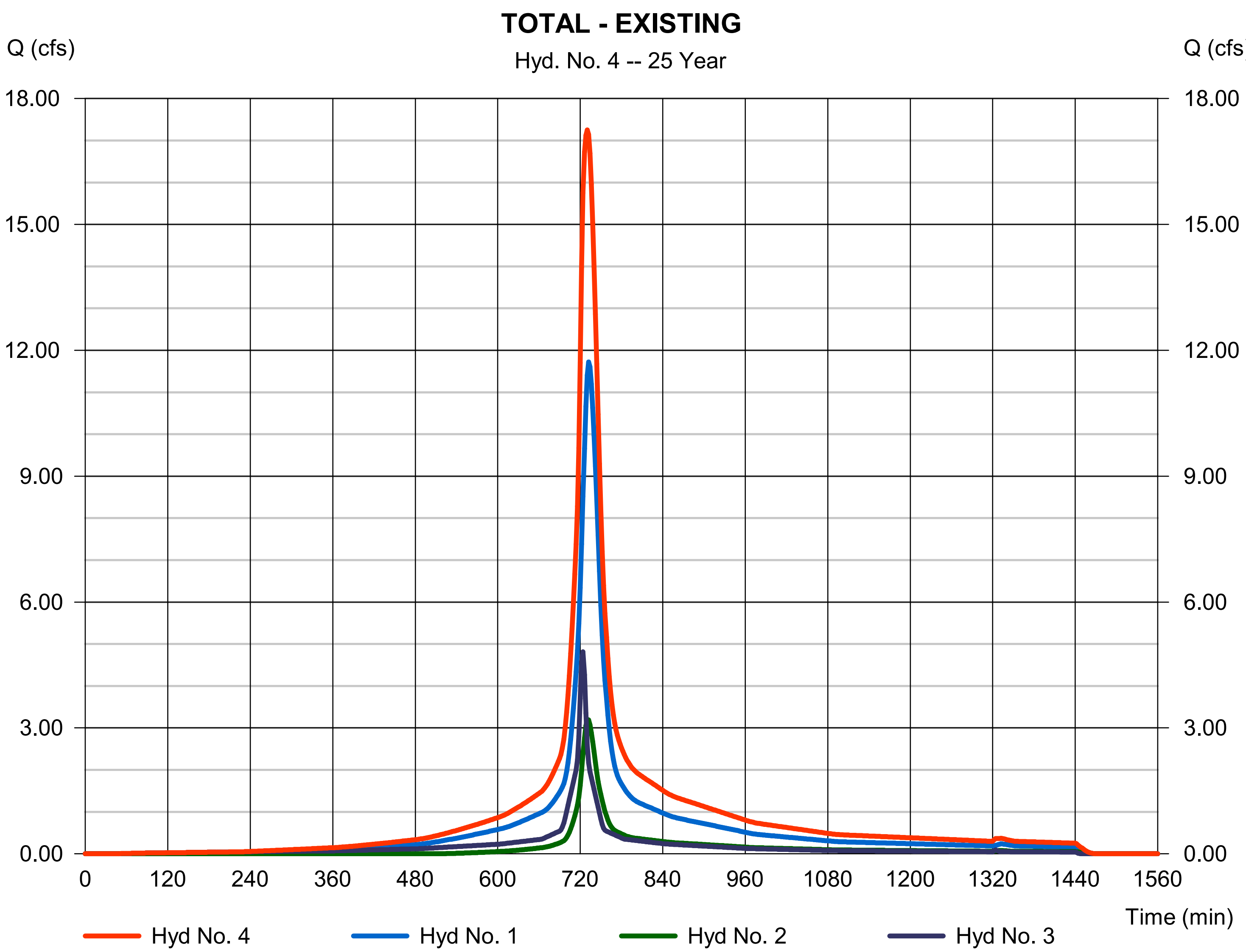


Hydrograph Report

Hyd. No. 4

TOTAL - EXISTING

Hydrograph type	= Combine	Peak discharge	= 17.25 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 83,894 cuft
Inflow hyds.	= 1, 2, 3	Contrib. drain. area	= 4.677 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	13.50	2	732	62,477	------	------	------	EX-WS-01
2	SCS Runoff	3.910	2	730	15,920	------	------	------	EX-WS-02
3	SCS Runoff	5.454	2	724	18,991	------	------	------	EX-RF-01
4	Combine	20.05	2	730	97,722	1, 2, 3	------	------	TOTAL - EXISTING

F0173-02 Hydrographs - Existing.gpw	Return Period: 50 Year	Monday, 05 / 24 / 2021

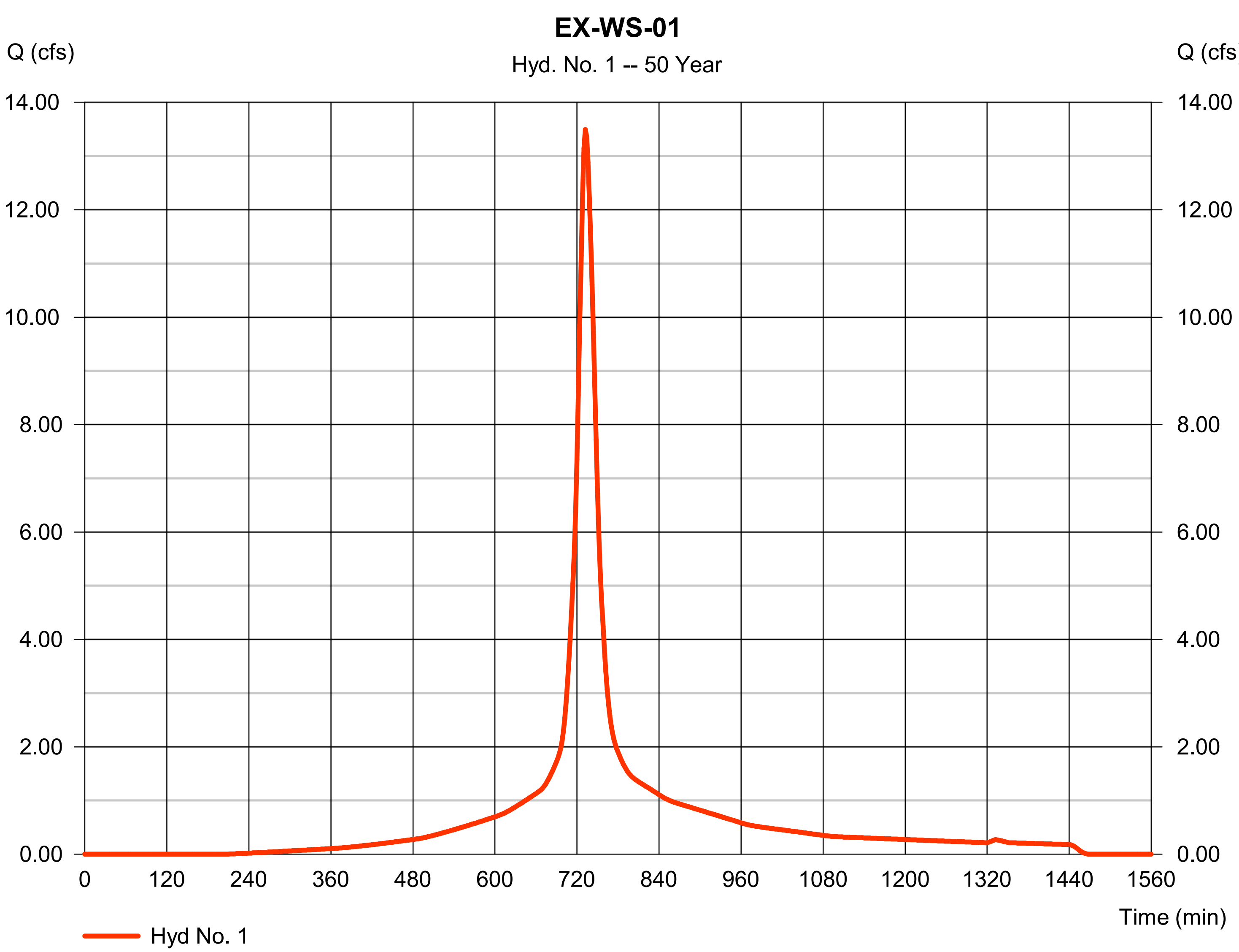
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Monday, 05 / 24 / 2021

Hyd. No. 1

EX-WS-01

Hydrograph type	= SCS Runoff	Peak discharge	= 13.50 cfs
Storm frequency	= 50 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 62,477 cuft
Drainage area	= 2.804 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.60 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



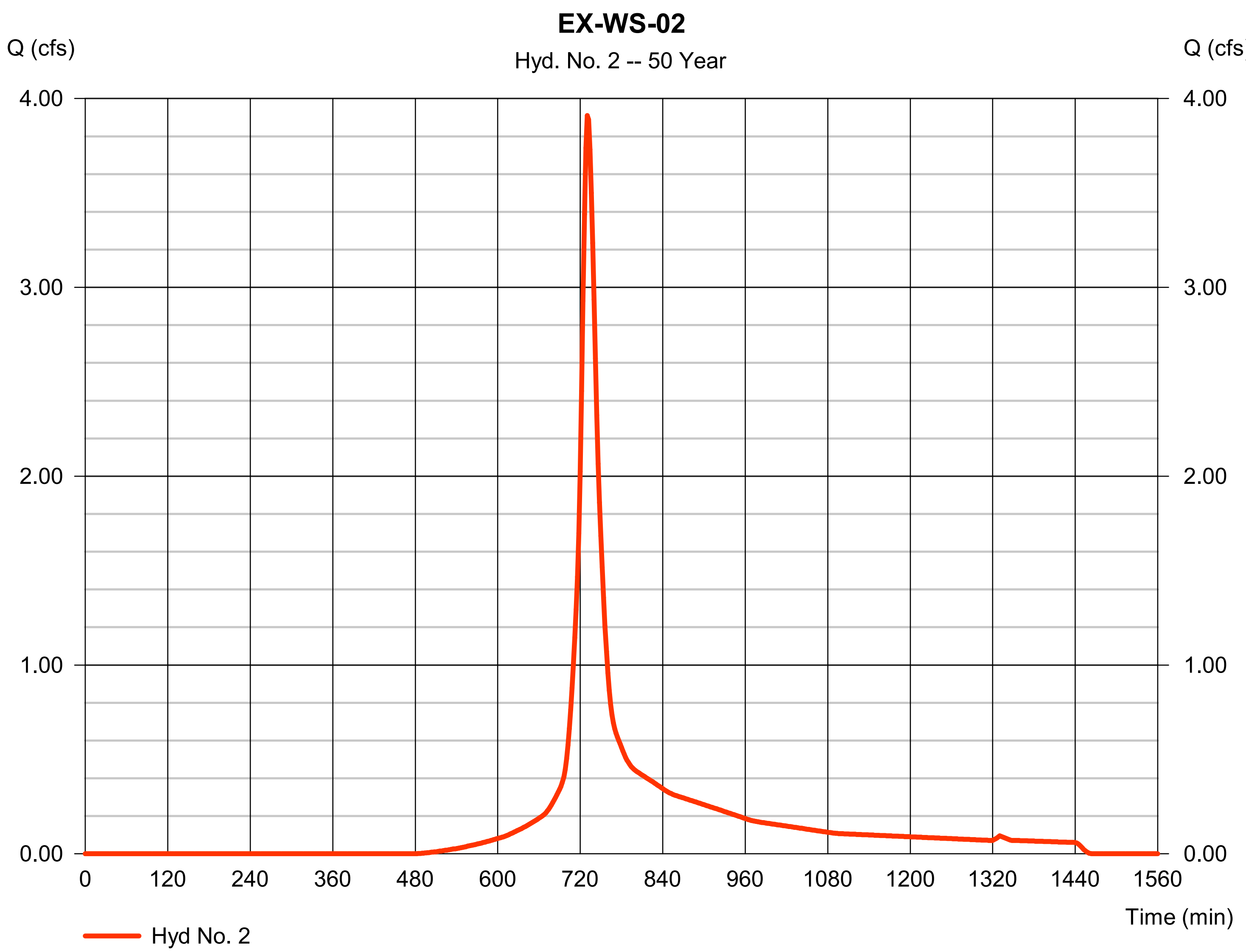
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Monday, 05 / 24 / 2021

Hyd. No. 2

EX-WS-02

Hydrograph type	= SCS Runoff	Peak discharge	= 3.910 cfs
Storm frequency	= 50 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 15,920 cuft
Drainage area	= 1.098 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 16.40 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

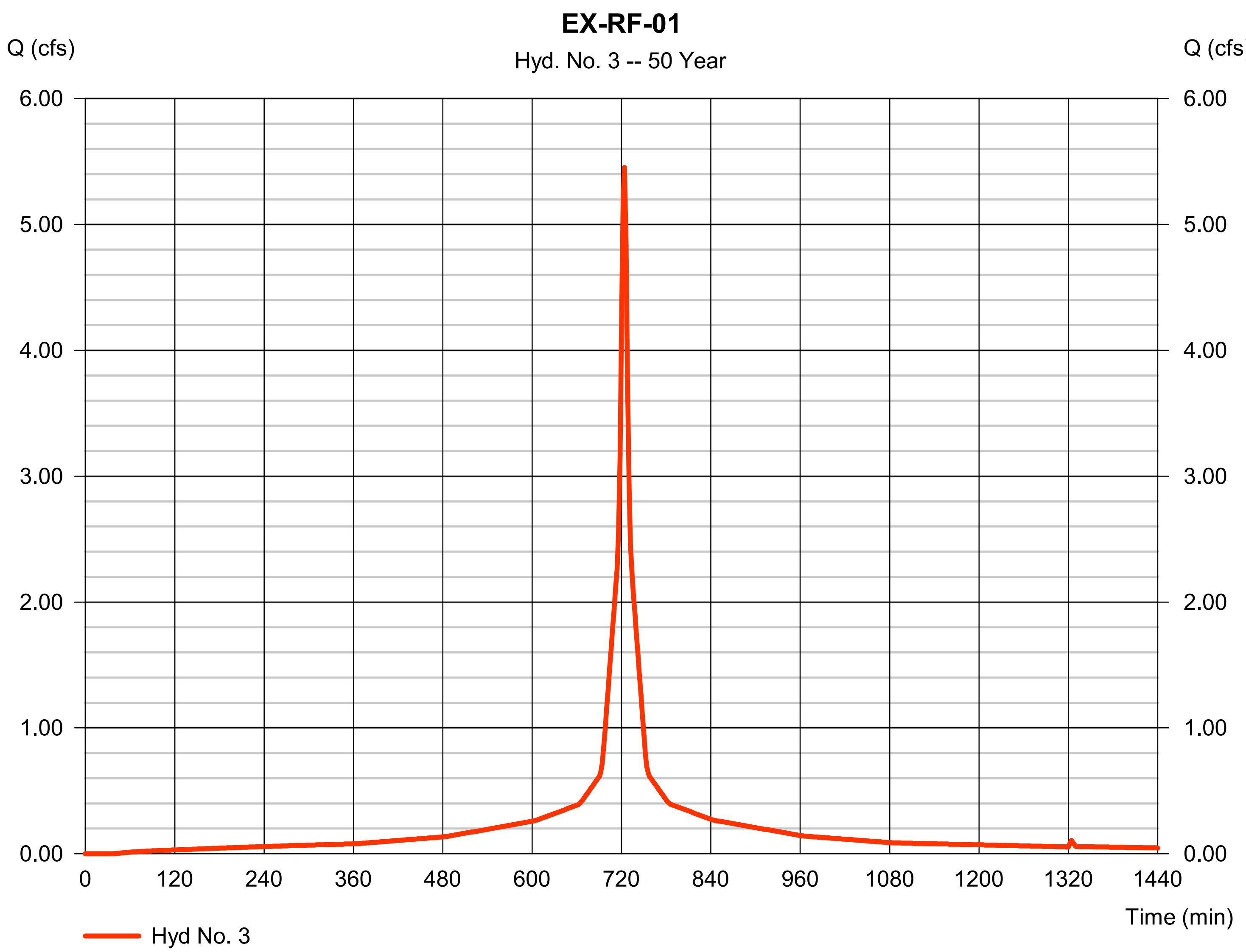


Hydrograph Report

Hyd. No. 3

EX-RF-01

Hydrograph type	= SCS Runoff	Peak discharge	= 5.454 cfs
Storm frequency	= 50 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 18,991 cuft
Drainage area	= 0.775 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



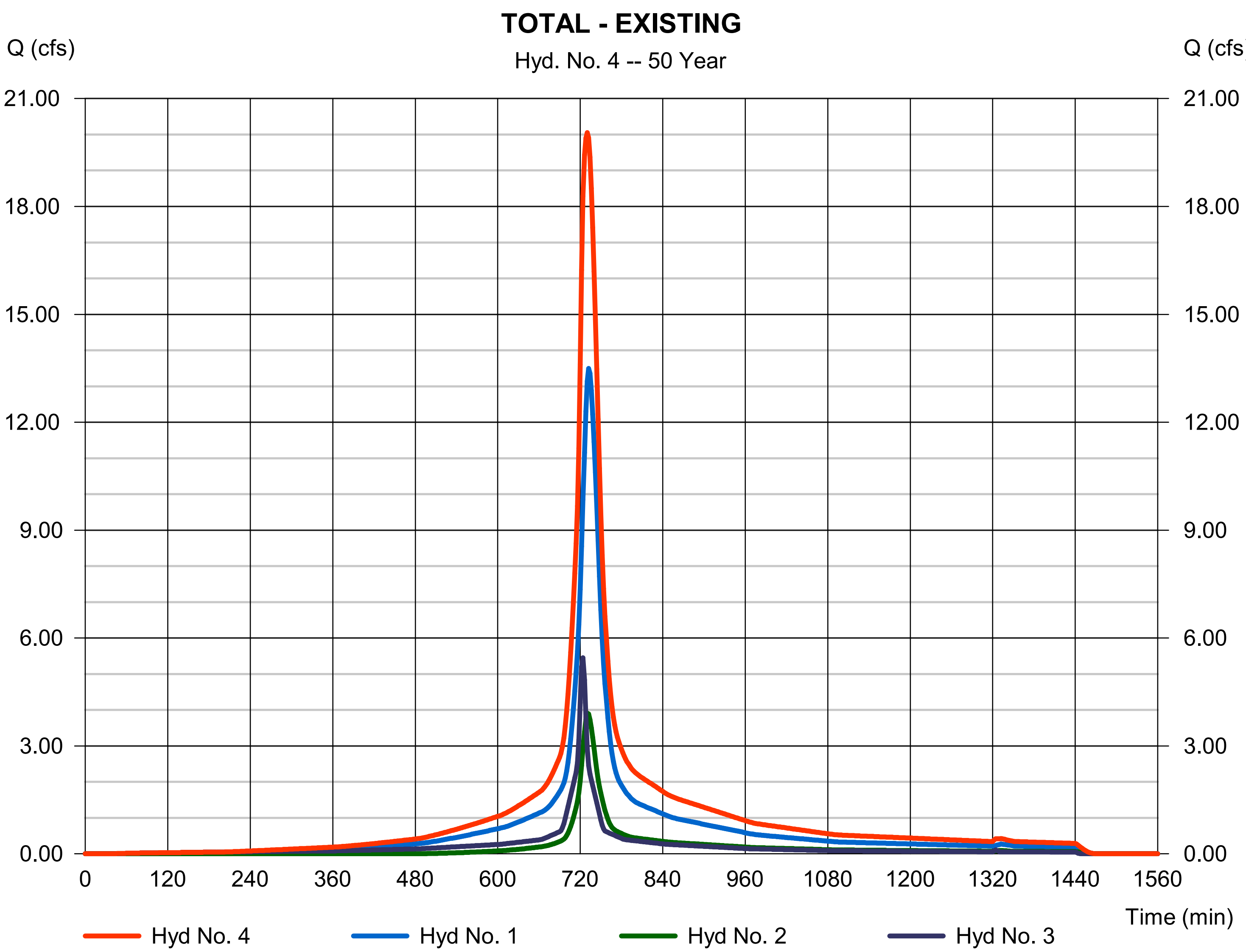
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Monday, 05 / 24 / 2021

Hyd. No. 4

TOTAL - EXISTING

Hydrograph type	= Combine	Peak discharge	= 20.05 cfs
Storm frequency	= 50 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 97,722 cuft
Inflow hyds.	= 1, 2, 3	Contrib. drain. area	= 4.677 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

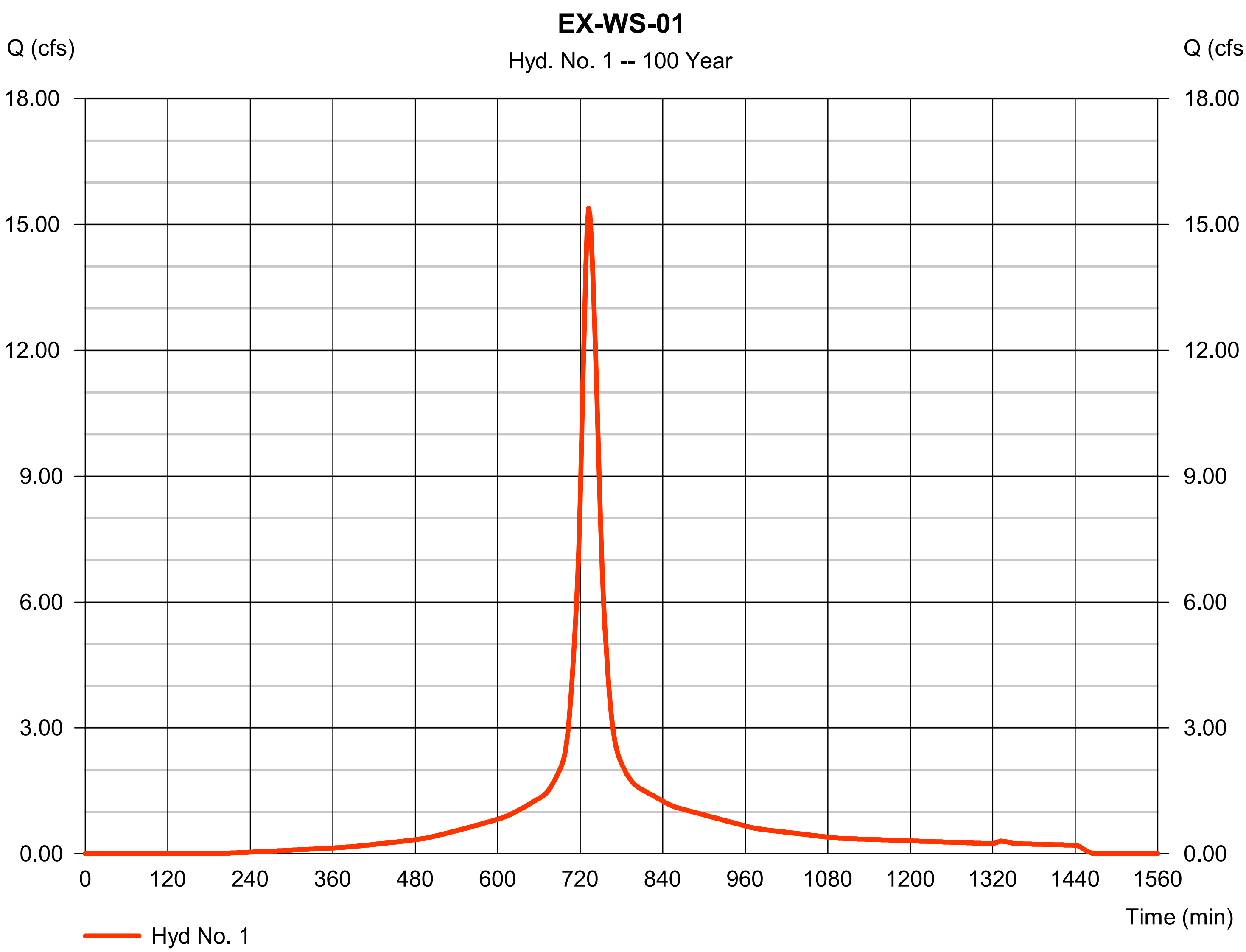
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	15.39	2	732	71,759	------	------	------	EX-WS-01
2	SCS Runoff	4.680	2	730	19,050	------	------	------	EX-WS-02
3	SCS Runoff	6.139	2	724	21,442	------	------	------	EX-RF-01
4	Combine	23.05	2	730	112,636	1, 2, 3	------	------	TOTAL - EXISTING

Hydrograph Report

Hyd. No. 1

EX-WS-01

Hydrograph type	= SCS Runoff	Peak discharge	= 15.39 cfs
Storm frequency	= 100 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 71,759 cuft
Drainage area	= 2.804 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.60 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



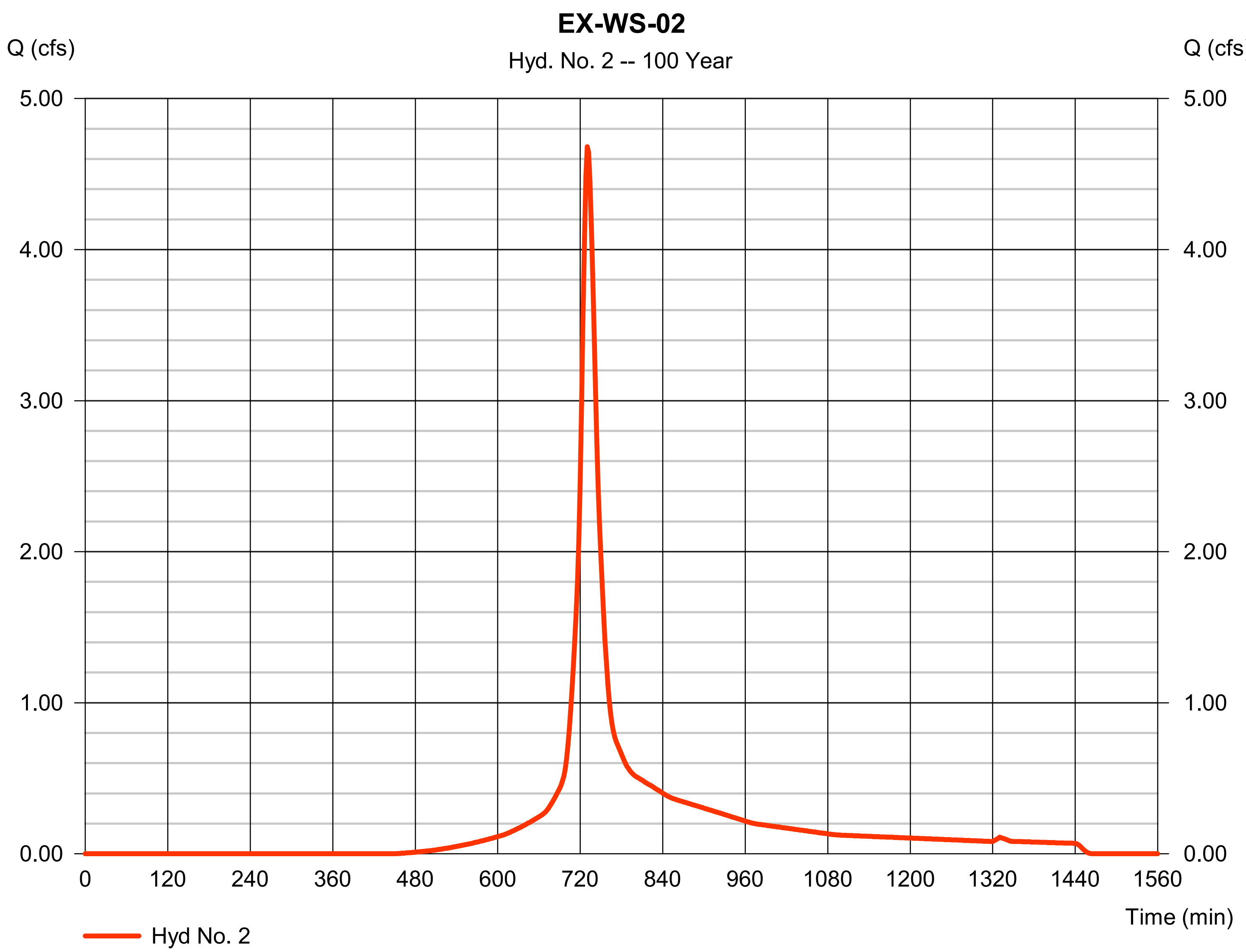
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Monday, 05 / 24 / 2021

Hyd. No. 2

EX-WS-02

Hydrograph type	= SCS Runoff	Peak discharge	= 4.680 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 19,050 cuft
Drainage area	= 1.098 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 16.40 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



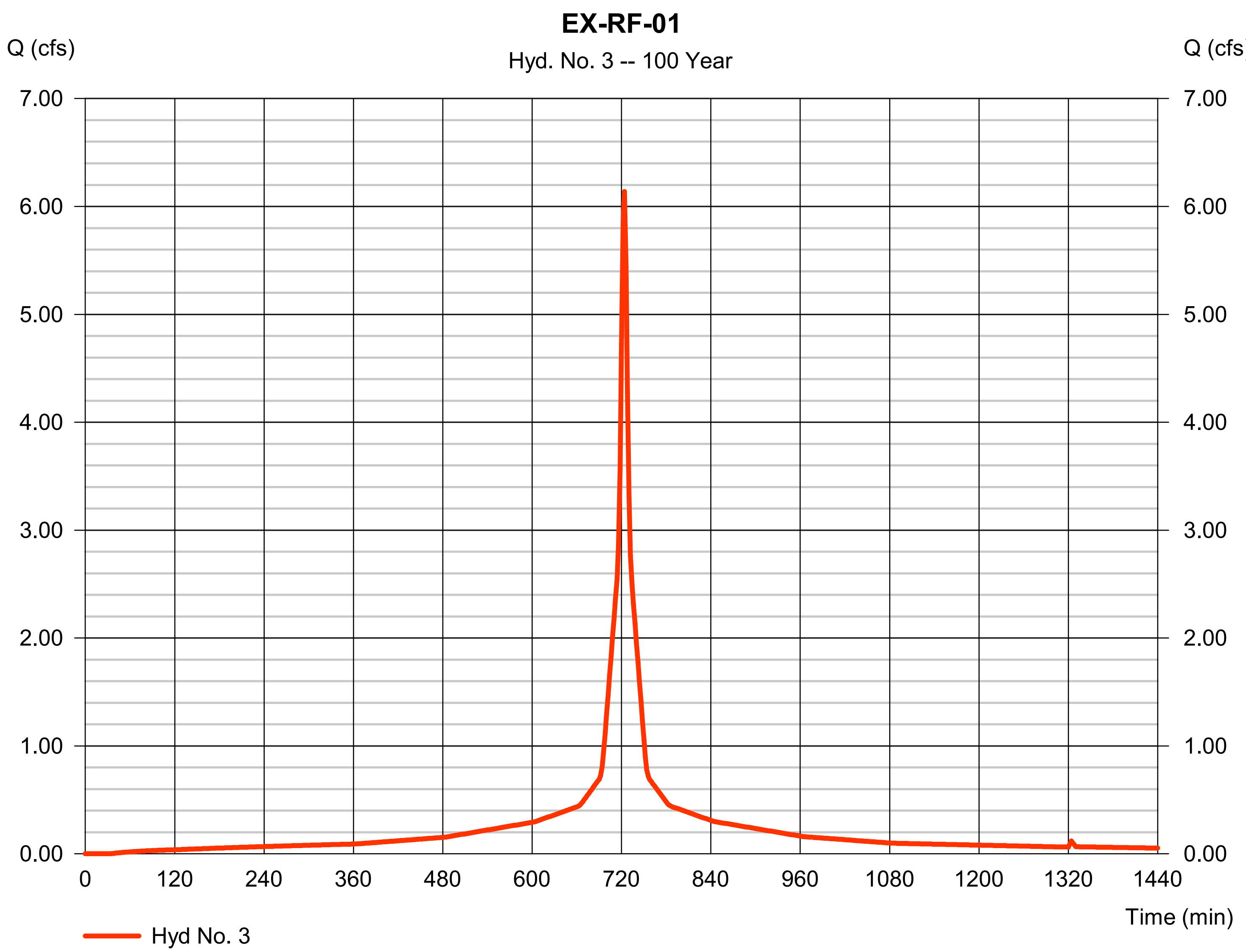
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Monday, 05 / 24 / 2021

Hyd. No. 3

EX-RF-01

Hydrograph type	= SCS Runoff	Peak discharge	= 6.139 cfs
Storm frequency	= 100 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 21,442 cuft
Drainage area	= 0.775 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



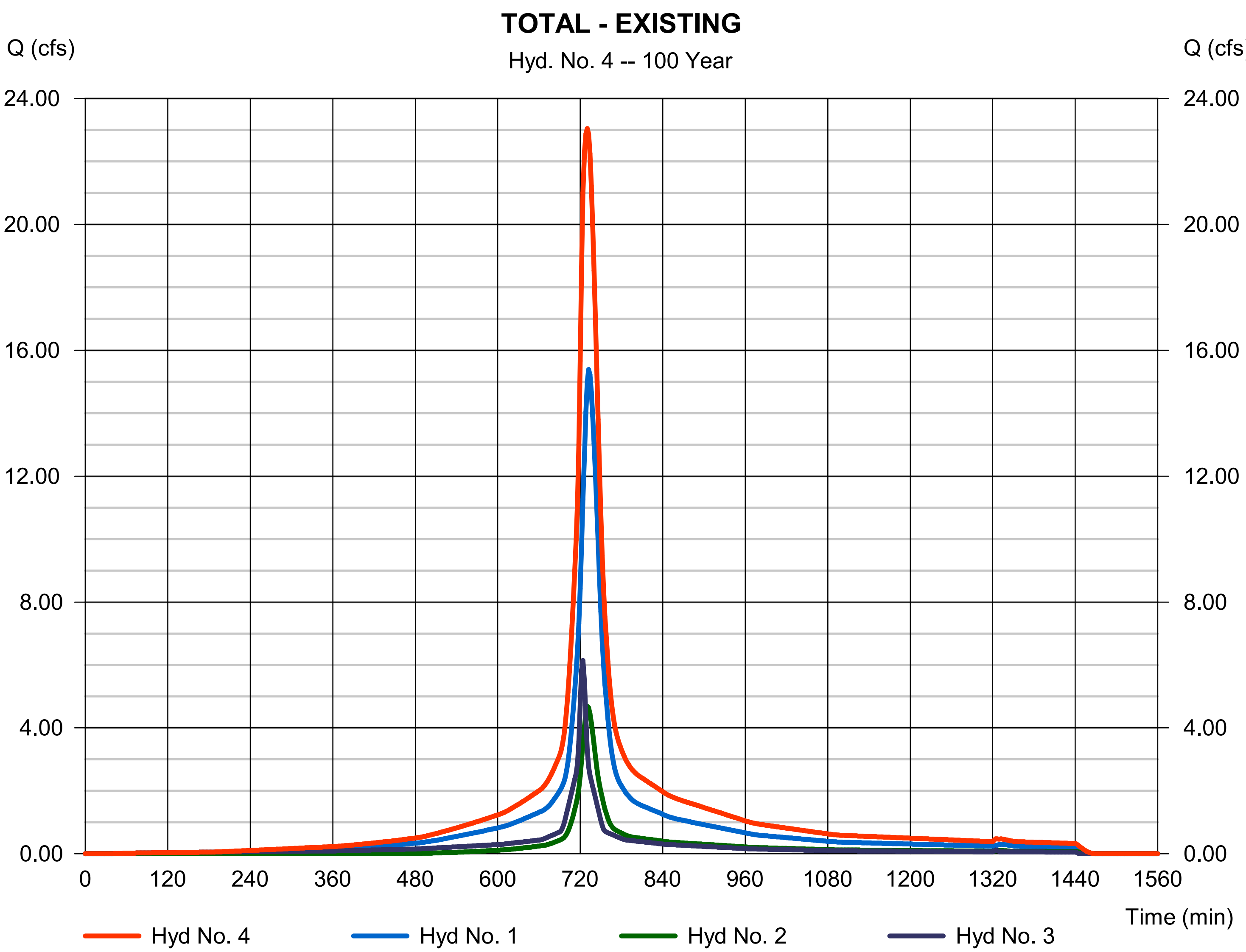
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Monday, 05 / 24 / 2021

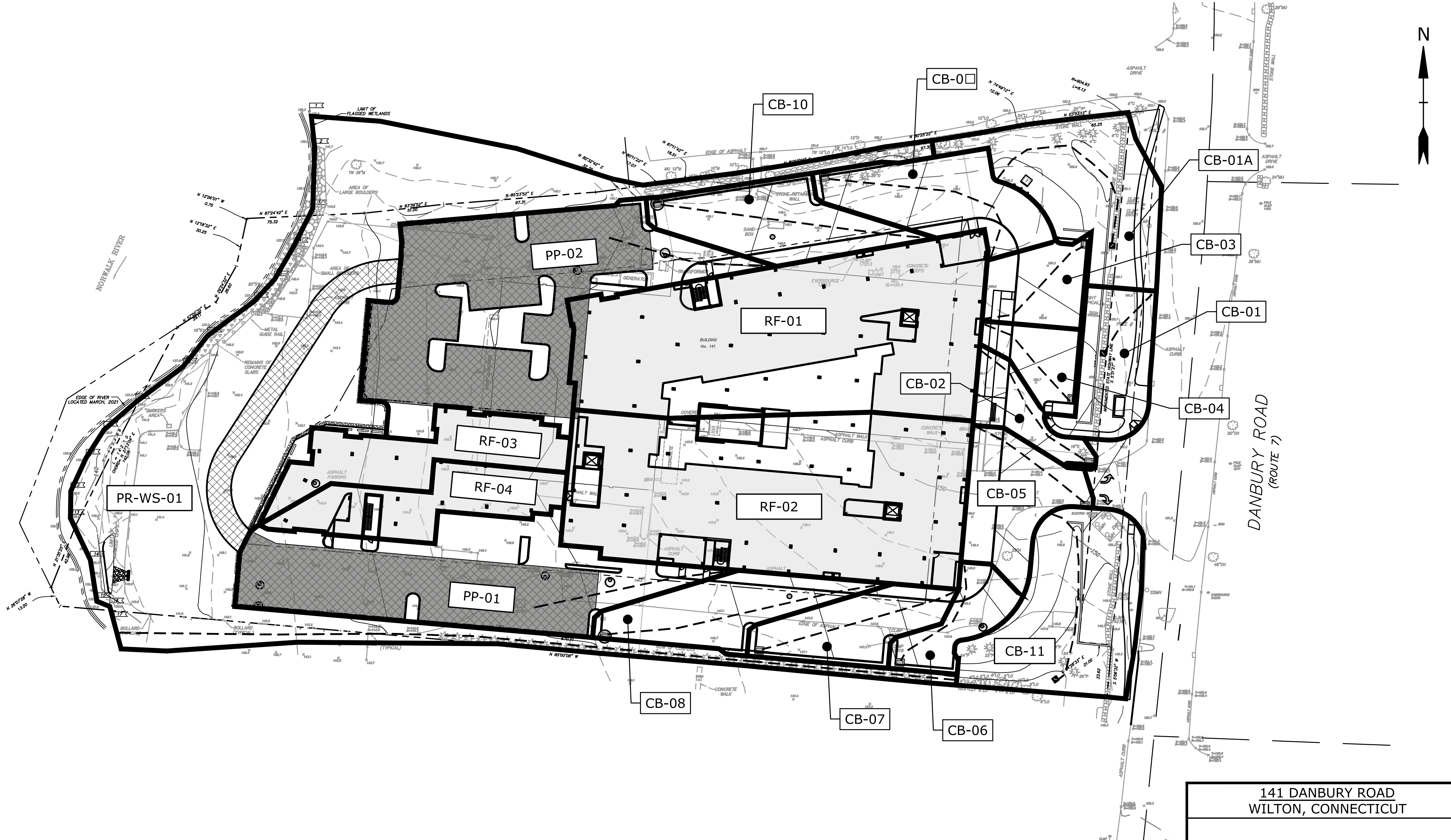
Hyd. No. 4

TOTAL - EXISTING

Hydrograph type	= Combine	Peak discharge	= 23.05 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 112,636 cuft
Inflow hyds.	= 1, 2, 3	Contrib. drain. area	= 4.677 ac



APPENDIX D



LEGEND

WATERSHED BOUNDARY

T□FLOW PATH

141 DANBURY ROAD
WILTON, CONNECTICUT

PROPOSED WATERSHED MAP
AND T□FLOW PATH

DATE: 05/21/2021
SCALE: 1" = 60'
FIGURE: WM-01

Tighe&Bond

Name: **CB-01**
Location: Proposed Yard Drain - Front Lawn

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.007	98	0.720
Landscaped and Lawns	0.187	69	12.880
			13.600

Total Area: **0.194** **CN:** **70**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.24	3.54	130	0.030	14.2

Total Tc (min) = **14.2**

Name: **CB-01A**
Location: Proposed Yard Drain - Front Lawn

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.024	98	2.362
Landscaped and Lawns	0.080	69	5.512
			7.875

Total Area: **0.104** **CN:** **76**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.24	3.54	50	0.020	7.8

Total Tc (min) = **7.8**

References:
NRCS Technical Release 55
ConnDOT Drainage Manual, Chapter 6

Name: **CB-02**
Location: Proposed Catch Basin - Driveway

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.043	98	4.207
Landscaped and Lawns	0.011	69	0.775
			4.982

Total Area: **0.054** **CN:** **92**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.015	3.54	98	0.050	1.0

Total Tc (min) = **1.0**
Minimum Tc = **5.0**

Name: **CB-03**
Location: Proposed Catch Basin - Parking Area East

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.051	98	5.035
Landscaped and Lawns	0.023	69	1.560
			6.595

Total Area: **0.074** **CN:** **89**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.24	3.54	20	0.020	3.7
B-C	0.015	3.54	60	0.033	0.8

Total Tc (min) = **4.5**
Minimum Tc = **5.0**

References:
NRCS Technical Release 55
ConnDOT Drainage Manual, Chapter 6

Name: **CB-04**
Location: Proposed Catch Basin - Parking Area East

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.045	98	4.439
Landscaped and Lawns	0.011	69	0.767
			5.205

Total Area: **0.056** **CN:** **92**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.24	3.54	20	0.020	3.7
B-C	0.015	3.54	55	0.045	0.7

Total Tc (min) = **4.4**
Minimum Tc = **5.0**

Name: **CB-05**
Location: Proposed Catch Basin - Driveway

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.075	98	7.323
Landscaped and Lawns	0.041	69	2.827
			10.150

Total Area: **0.116** **CN:** **88**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.24	3.54	20	0.020	3.7
B-C	0.015	3.54	65	0.040	0.8

Total Tc (min) = **4.5**
Minimum Tc = **5.0**

References:
NRCS Technical Release 55
ConnDOT Drainage Manual, Chapter 6

Name: **CB-06**
Location: Proposed Catch Basin - Parking Area South

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.048	98	4.707
Landscaped and Lawns	0.014	69	0.965
			5.671

Total Area: **0.062** **CN:** **91**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.24	3.54	22	0.020	4.0
B-C	0.015	3.54	58	0.025	0.9

Total Tc (min) = **4.9**
Minimum Tc = **5.0**

Name: **CB-07**
Location: Proposed Catch Basin - Parking Area South

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.080	98	7.879
Landscaped and Lawns	0.019	69	1.296
			9.174

Total Area: **0.099** **CN:** **93**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.24	3.54	15	0.020	3.0
B-C	0.015	3.54	115	0.035	1.3

Total Tc (min) = **4.3**
Minimum Tc = **5.0**

References:
NRCS Technical Release 55
ConnDOT Drainage Manual, Chapter 6

Name: **CB-08**
Location: Proposed Catch Basin - Parking Area South

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.095	98	9.280
Landscaped and Lawns	0.022	69	1.551
			10.831

Total Area: **0.117** **CN:** **92**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.24	3.54	30	0.040	3.9
B-C	0.015	3.54	140	0.035	1.5

Total Tc (min) = **5.5**

Name: **CB-09**
Location: Proposed Catch Basin - Parking Area North

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.117	98	11.440
Landscaped and Lawns	0.020	69	1.405
			12.845

Total Area: **0.137** **CN:** **94**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.24	3.54	20	0.020	3.7
B-C	0.015	3.54	120	1.000	0.4

Total Tc (min) = **4.1**
Minimum Tc = **5.0**

References:
NRCS Technical Release 55
ConnDOT Drainage Manual, Chapter 6

Name: **CB-10**
Location: Proposed Catch Basin - Parking Area North

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.103	98	10.095
Landscaped and Lawns	0.031	69	2.156
			12.251

Total Area: **0.134** **CN:** **91**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.24	3.54	30	0.040	3.9
B-C	0.015	3.54	135	1.000	0.4

Total Tc (min) = **4.3**
Minimum Tc = **5.0**

Name: **CB-11**
Location: Proposed Yard Drain - Southeast Corner Site

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.000	98	0.000
Landscaped and Lawns	0.227	69	15.642
			15.642

Total Area: **0.227** **CN:** **69**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.24	3.54	130	0.050	11.6

Total Tc (min) = **11.6**

References:
NRCS Technical Release 55
ConnDOT Drainage Manual, Chapter 6

Name: **PP-01**
Location: Proposed Porous Pavement - Southwest Parking Area

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.331	98	32.415
Landscaped and Lawns	0.018	69	1.248
			33.663

Total Area: **0.349** **CN:** **96**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.24	3.54	30	0.035	4.1
B-C	0.015	3.54	100	0.020	1.5

Total Tc (min) = **5.6**

Name: **PP-02**
Location: Proposed Porous Pavement - Northwest Parking Area

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.400	98	39.247
Landscaped and Lawns	0.068	69	4.717
			43.964

Total Area: **0.469** **CN:** **94**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.24	3.54	40	0.040	4.9
B-C	0.015	3.54	60	0.016	1.1

Total Tc (min) = **6.0**

References:
NRCS Technical Release 55
ConnDOT Drainage Manual, Chapter 6

Name: **RF-01**
Location: Proposed Building - North

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.571	98	55.997
Landscaped and Lawns	0.000	69	0.000
			55.997

Total Area: **0.571** **CN:** **98**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.015	3.54	50	0.015	1.0

Total Tc (min) = **1.0**
Minimum Tc = **5.0**

Name: **RF-02**
Location: Proposed Building - South

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.585	98	57.365
Landscaped and Lawns	0.000	69	0.000
			57.365

Total Area: **0.585** **CN:** **98**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.015	3.54	50	0.015	1.0

Total Tc (min) = **1.0**
Minimum Tc = **5.0**

References:
NRCS Technical Release 55
ConnDOT Drainage Manual, Chapter 6

Name: **RF-03**
Location: Proposed Building - Northwest

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.138	98	13.485
Landscaped and Lawns	0.000	69	0.000
			13.485

Total Area: **0.138** **CN:** **98**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.015	3.54	50	0.015	1.0

Total Tc (min) = **1.0**
Minimum Tc = **5.0**

Name: **RF-04**
Location: Proposed Building - Southwest

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.127	98	12.432
Landscaped and Lawns	0.000	69	0.000
			12.432

Total Area: **0.127** **CN:** **98**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.015	3.54	50	0.015	1.0

Total Tc (min) = **1.0**
Minimum Tc = **5.0**

References:
NRCS Technical Release 55
ConnDOT Drainage Manual, Chapter 6

Project No. **F0173-002**
Date: **05/21/21**
Prepared By: **TAS**

141 Danbury Road
Wilton, CT
Proposed CN & Tc Worksheet

Tighe&Bond

Name: **PR-WS-01**
Location: Site - West

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.065	98	6.385
Landscaped and Lawns	0.973	69	67.106
			73.490

Total Area: **1.038** **CN:** **71**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.24	3.54	130	0.008	24.1

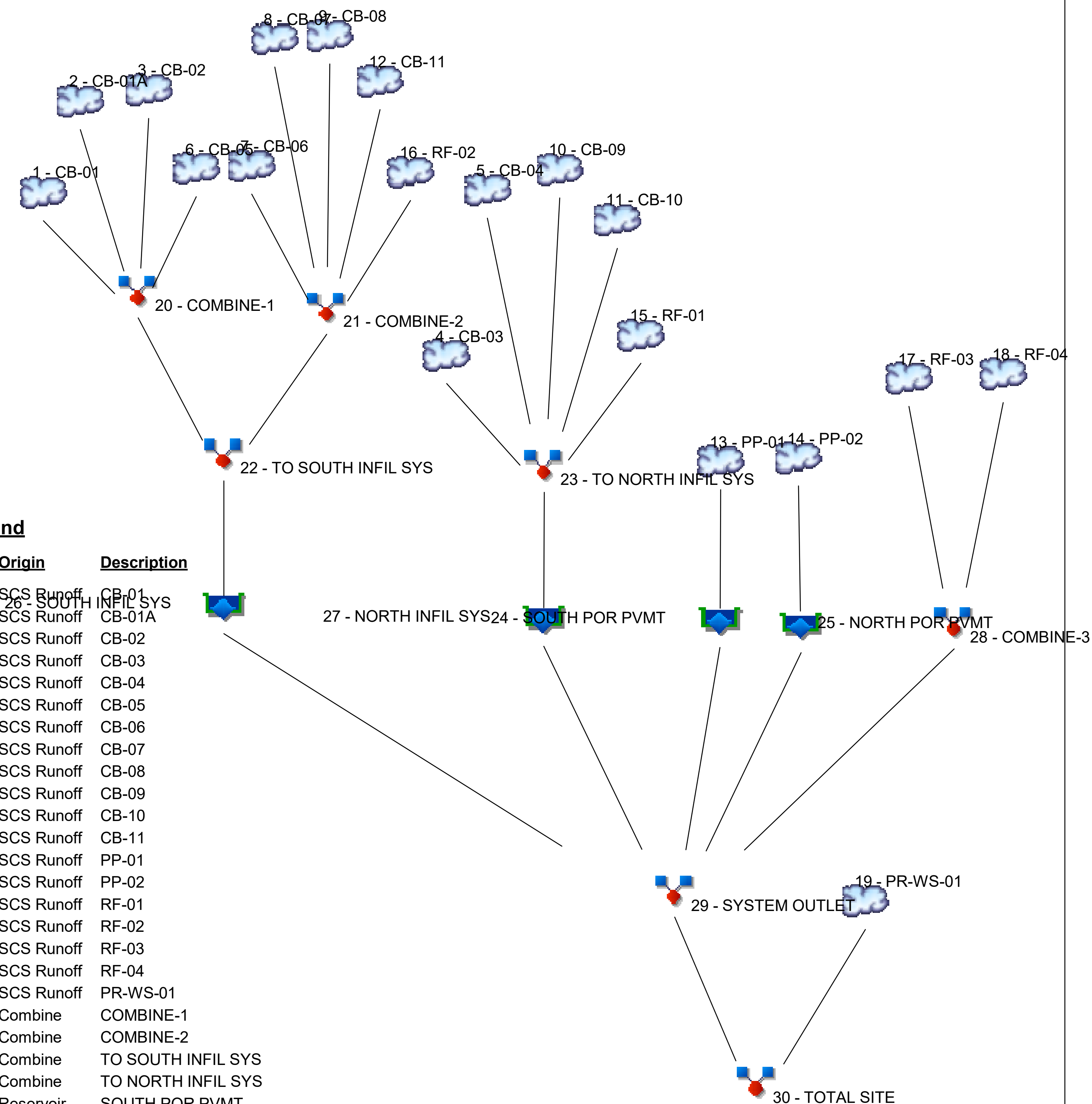
Shallow Concentrated Flow Travel Time					
Segment ID	**Cover**	**Flow Length (ft)**	**Slope (ft/ft)**	**V (ft/s)**	**Time (min)**
B-C	Unpaved	240	0.013	1.80	2.2
C-D	Paved	165	0.013	2.27	1.2

Total Tc (min) = **27.6**

References:
NRCS Technical Release 55
ConnDOT Drainage Manual, Chapter 6

Watershed Model Schematic

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3



Legend

Hyd.	Origin	Description
1	SCS Runoff	CB-01
2	SCS Runoff	CB-01A
3	SCS Runoff	CB-02
4	SCS Runoff	CB-03
5	SCS Runoff	CB-04
6	SCS Runoff	CB-05
7	SCS Runoff	CB-06
8	SCS Runoff	CB-07
9	SCS Runoff	CB-08
10	SCS Runoff	CB-09
11	SCS Runoff	CB-10
12	SCS Runoff	CB-11
13	SCS Runoff	PP-01
14	SCS Runoff	PP-02
15	SCS Runoff	RF-01
16	SCS Runoff	RF-02
17	SCS Runoff	RF-03
18	SCS Runoff	RF-04
19	SCS Runoff	PR-WS-01
20	Combine	COMBINE-1
21	Combine	COMBINE-2
22	Combine	TO SOUTH INFIL SYS
23	Combine	TO NORTH INFIL SYS
24	Reservoir	SOUTH POR PVMT
25	Reservoir	NORTH POR PVMT
26	Reservoir	SOUTH INFIL SYS
27	Reservoir	NORTH INFIL SYS
28	Combine	COMBINE-3
29	Combine	SYSTEM OUTLET
30	Combine	TOTAL SITE

Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	------	-------	0.161	-------	-------	0.389	0.548	0.672	0.807	CB-01
2	SCS Runoff	------	-------	0.150	-------	-------	0.317	0.428	0.513	0.604	CB-01A
3	SCS Runoff	------	-------	0.159	-------	-------	0.259	0.321	0.366	0.415	CB-02
4	SCS Runoff	------	-------	0.199	-------	-------	0.337	0.423	0.487	0.554	CB-03
5	SCS Runoff	------	-------	0.165	-------	-------	0.268	0.332	0.380	0.431	CB-04
6	SCS Runoff	------	-------	0.302	-------	-------	0.518	0.653	0.753	0.860	CB-05
7	SCS Runoff	------	-------	0.177	-------	-------	0.292	0.364	0.417	0.473	CB-06
8	SCS Runoff	------	-------	0.299	-------	-------	0.481	0.594	0.678	0.767	CB-07
9	SCS Runoff	------	-------	0.344	-------	-------	0.560	0.695	0.794	0.900	CB-08
10	SCS Runoff	------	-------	0.424	-------	-------	0.674	0.830	0.945	1.068	CB-09
11	SCS Runoff	------	-------	0.383	-------	-------	0.632	0.786	0.901	1.022	CB-10
12	SCS Runoff	------	-------	0.198	-------	-------	0.490	0.697	0.858	1.034	CB-11
13	SCS Runoff	------	-------	1.126	-------	-------	1.754	2.146	2.437	2.747	PP-01
14	SCS Runoff	------	-------	1.452	-------	-------	2.308	2.841	3.235	3.655	PP-02
15	SCS Runoff	------	-------	1.896	-------	-------	2.910	3.546	4.018	4.523	RF-01
16	SCS Runoff	------	-------	1.942	-------	-------	2.981	3.633	4.117	4.634	RF-02
17	SCS Runoff	------	-------	0.458	-------	-------	0.703	0.857	0.971	1.093	RF-03
18	SCS Runoff	------	-------	0.422	-------	-------	0.647	0.789	0.894	1.006	RF-04
19	SCS Runoff	------	-------	0.734	-------	-------	1.726	2.421	2.955	3.537	PR-WS-01
20	Combine	1, 2, 3, 6,	-------	0.703	-------	-------	1.351	1.778	2.102	2.450	COMBINE-1
21	Combine	7, 8, 9, 12, 16,	-------	2.910	-------	-------	4.708	5.855	6.713	7.633	COMBINE-2
22	Combine	20, 21	-------	3.612	-------	-------	6.059	7.634	8.815	10.08	TO SOUTH INFIL SYS
23	Combine	4, 5, 10, 11, 15,	-------	3.067	-------	-------	4.821	5.917	6.730	7.597	TO NORTH INFIL SYS
24	Reservoir	13	-------	0.000	-------	-------	0.053	0.188	0.278	0.330	SOUTH POR PVMT
25	Reservoir	14	-------	0.000	-------	-------	0.000	0.050	0.140	0.237	NORTH POR PVMT
26	Reservoir	22	-------	0.013	-------	-------	1.750	3.418	4.661	6.520	SOUTH INFIL SYS
27	Reservoir	23	-------	0.292	-------	-------	1.863	3.033	4.540	5.682	NORTH INFIL SYS
28	Combine	17, 18,	-------	0.880	-------	-------	1.350	1.646	1.865	2.099	COMBINE-3
29	Combine	24, 25, 26, 27, 28	-------	0.880	-------	-------	3.943	7.202	10.05	13.89	SYSTEM OUTLET
30	Combine	19, 29	-------	1.185	-------	-------	5.658	9.362	12.19	16.34	TOTAL SITE

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.161	2	732	709	------	------	------	CB-01
2	SCS Runoff	0.150	2	726	526	------	------	------	CB-01A
3	SCS Runoff	0.159	2	724	492	------	------	------	CB-02
4	SCS Runoff	0.199	2	724	603	------	------	------	CB-03
5	SCS Runoff	0.165	2	724	510	------	------	------	CB-04
6	SCS Runoff	0.302	2	724	910	------	------	------	CB-05
7	SCS Runoff	0.177	2	724	544	------	------	------	CB-06
8	SCS Runoff	0.299	2	724	934	------	------	------	CB-07
9	SCS Runoff	0.344	2	724	1,065	------	------	------	CB-08
10	SCS Runoff	0.424	2	724	1,340	------	------	------	CB-09
11	SCS Runoff	0.383	2	724	1,176	------	------	------	CB-10
12	SCS Runoff	0.198	2	730	831	------	------	------	CB-11
13	SCS Runoff	1.126	2	724	3,664	------	------	------	PP-01
14	SCS Runoff	1.452	2	724	4,588	------	------	------	PP-02
15	SCS Runoff	1.896	2	724	6,425	------	------	------	RF-01
16	SCS Runoff	1.942	2	724	6,582	------	------	------	RF-02
17	SCS Runoff	0.458	2	724	1,553	------	------	------	RF-03
18	SCS Runoff	0.422	2	724	1,429	------	------	------	RF-04
19	SCS Runoff	0.734	2	742	4,104	------	------	------	PR-WS-01
20	Combine	0.703	2	724	2,637	1, 2, 3, 6,	------	------	COMBINE-1
21	Combine	2.910	2	724	9,957	7, 8, 9, 12, 16,	------	------	COMBINE-2
22	Combine	3.612	2	724	12,594	20, 21	------	------	TO SOUTH INFIL SYS
23	Combine	3.067	2	724	10,054	4, 5, 10, 11, 15,	------	------	TO NORTH INFIL SYS
24	Reservoir	0.000	2	690	0	13	141.89	1,113	SOUTH POR PVMT
25	Reservoir	0.000	2	736	0	14	141.31	1,422	NORTH POR PVMT
26	Reservoir	0.013	2	802	50	22	143.05	5,211	SOUTH INFIL SYS
27	Reservoir	0.292	2	752	960	23	143.25	4,072	NORTH INFIL SYS
28	Combine	0.880	2	724	2,982	17, 18,	------	------	COMBINE-3
29	Combine	0.880	2	724	3,992	24, 25, 26, 27, 28	------	------	SYSTEM OUTLET
30	Combine	1.185	2	744	8,096	19, 29	------	------	TOTAL SITE

F0173-02 Hydrographs - Proposed.gpw | Return Period: 2 Year | Tuesday, 05 / 25 / 2021

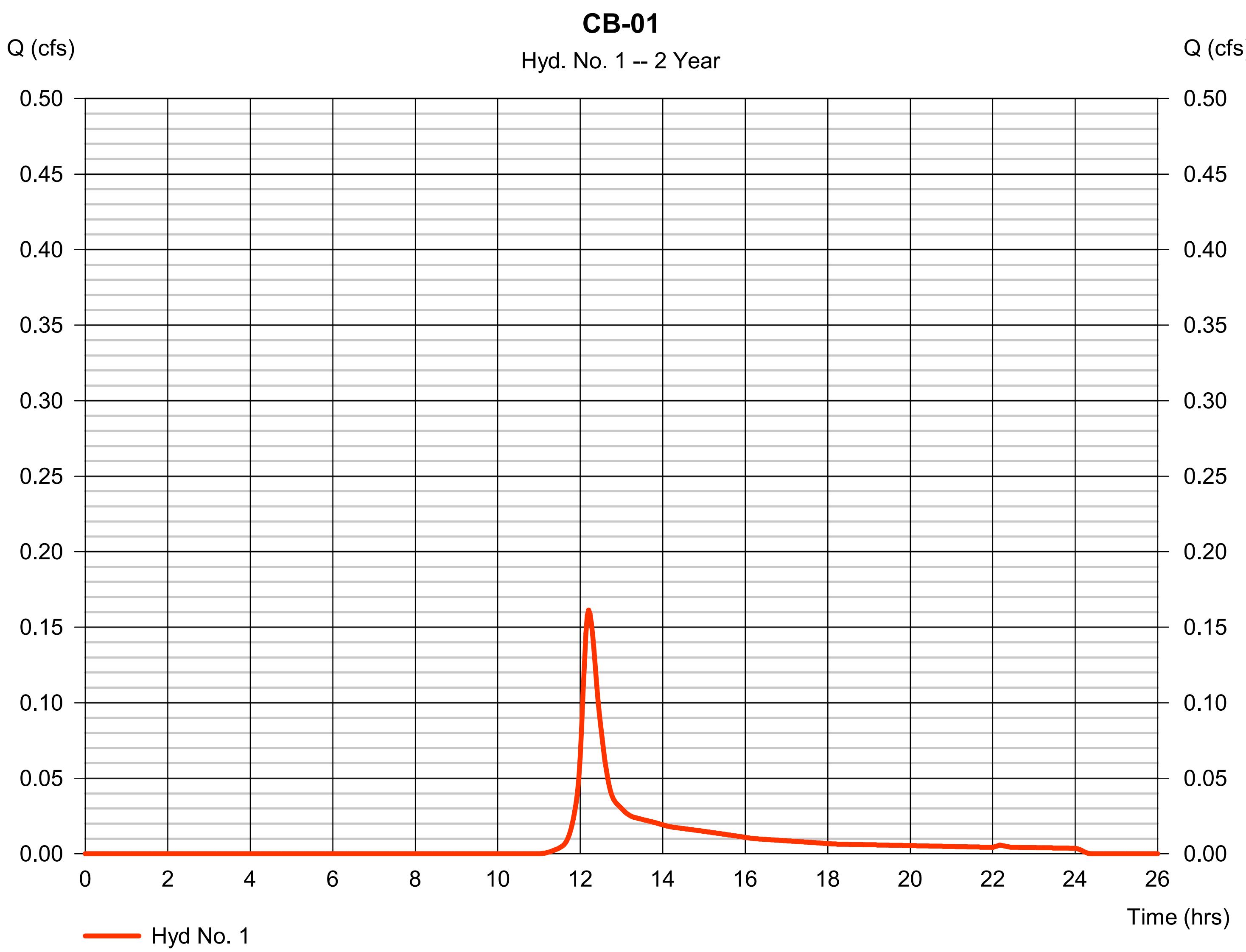
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 1

CB-01

Hydrograph type	= SCS Runoff	Peak discharge	= 0.161 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 709 cuft
Drainage area	= 0.194 ac	Curve number	= 70
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 14.20 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



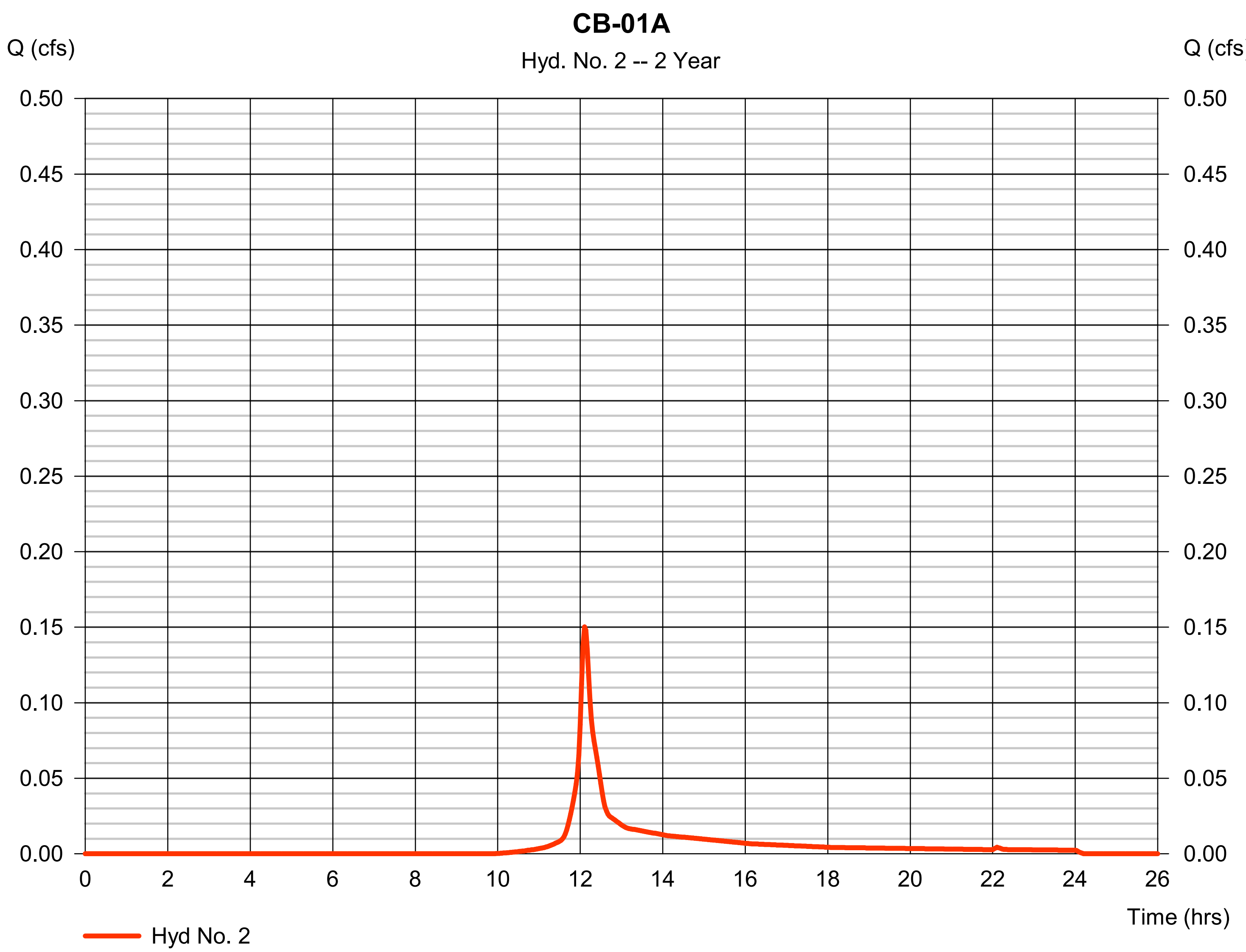
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 | Tuesday, 05 / 25 / 2021

Hyd. No. 2

CB-01A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.150 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 526 cuft
Drainage area	= 0.104 ac	Curve number	= 76
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 7.80 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



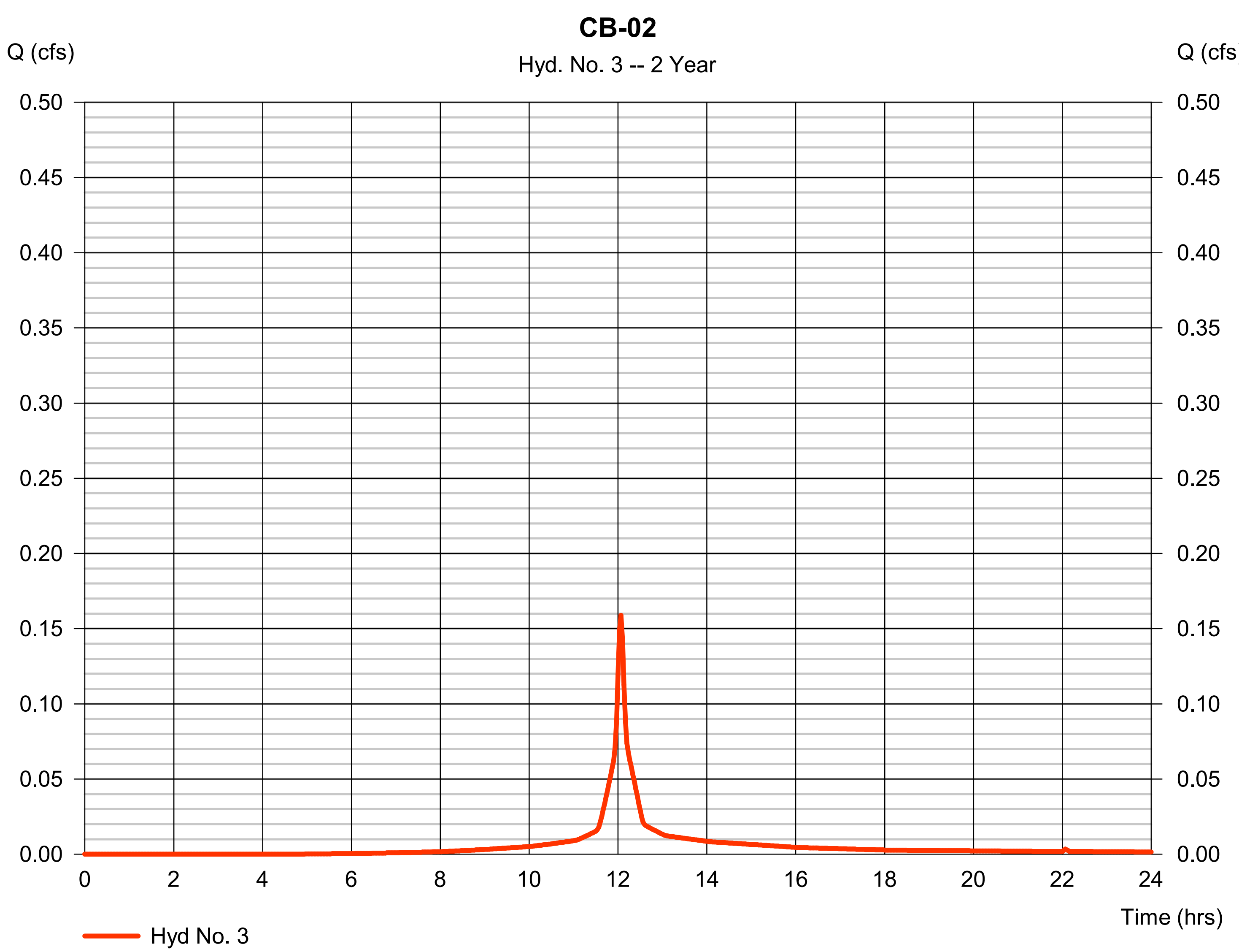
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 3

CB-02

Hydrograph type	= SCS Runoff	Peak discharge	= 0.159 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 492 cuft
Drainage area	= 0.054 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

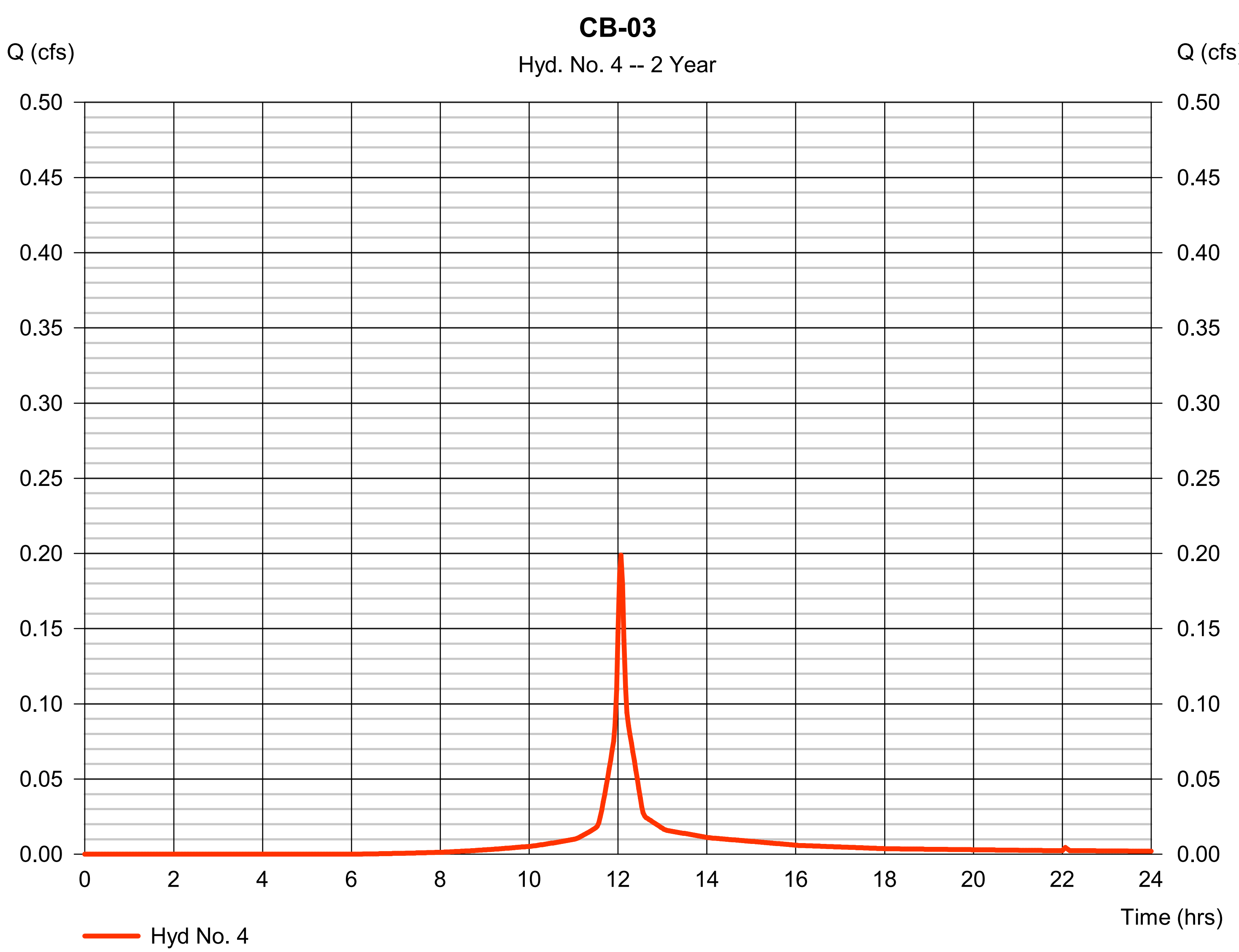


Hydrograph Report

Hyd. No. 4

CB-03

Hydrograph type	= SCS Runoff	Peak discharge	= 0.199 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 603 cuft
Drainage area	= 0.074 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



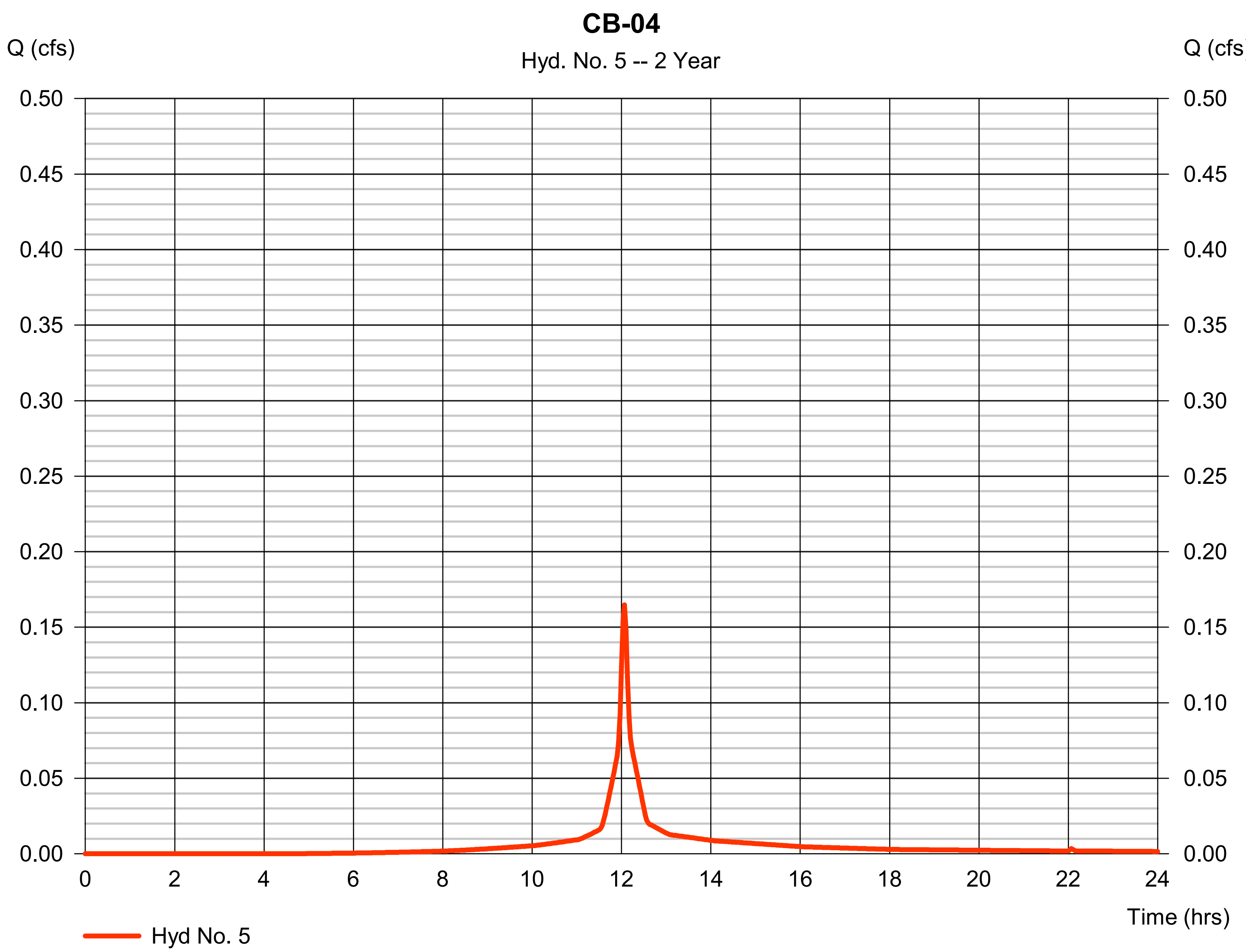
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 5

CB-04

Hydrograph type	= SCS Runoff	Peak discharge	= 0.165 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 510 cuft
Drainage area	= 0.056 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

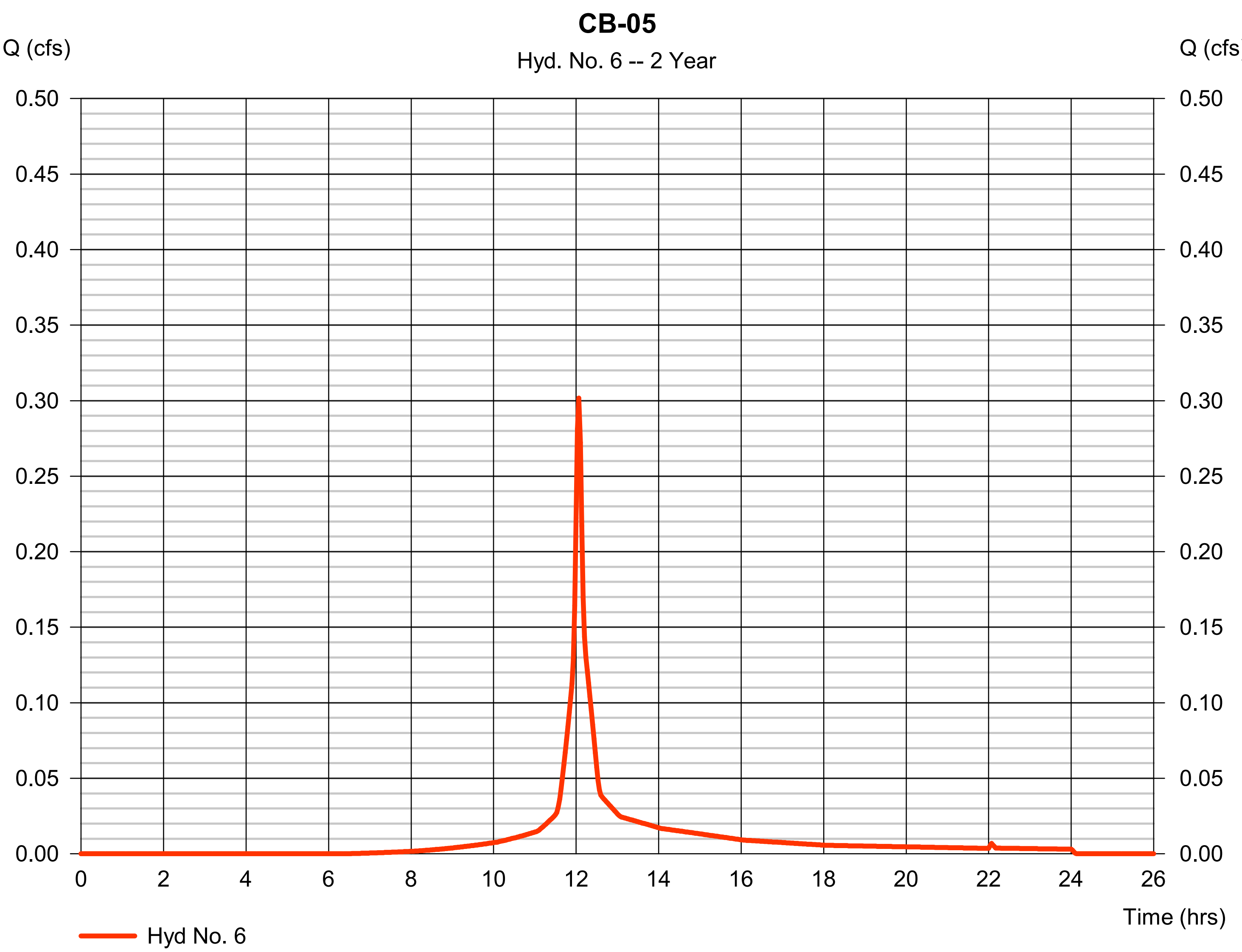


Hydrograph Report

Hyd. No. 6

CB-05

Hydrograph type	= SCS Runoff	Peak discharge	= 0.302 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 910 cuft
Drainage area	= 0.116 ac	Curve number	= 88
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



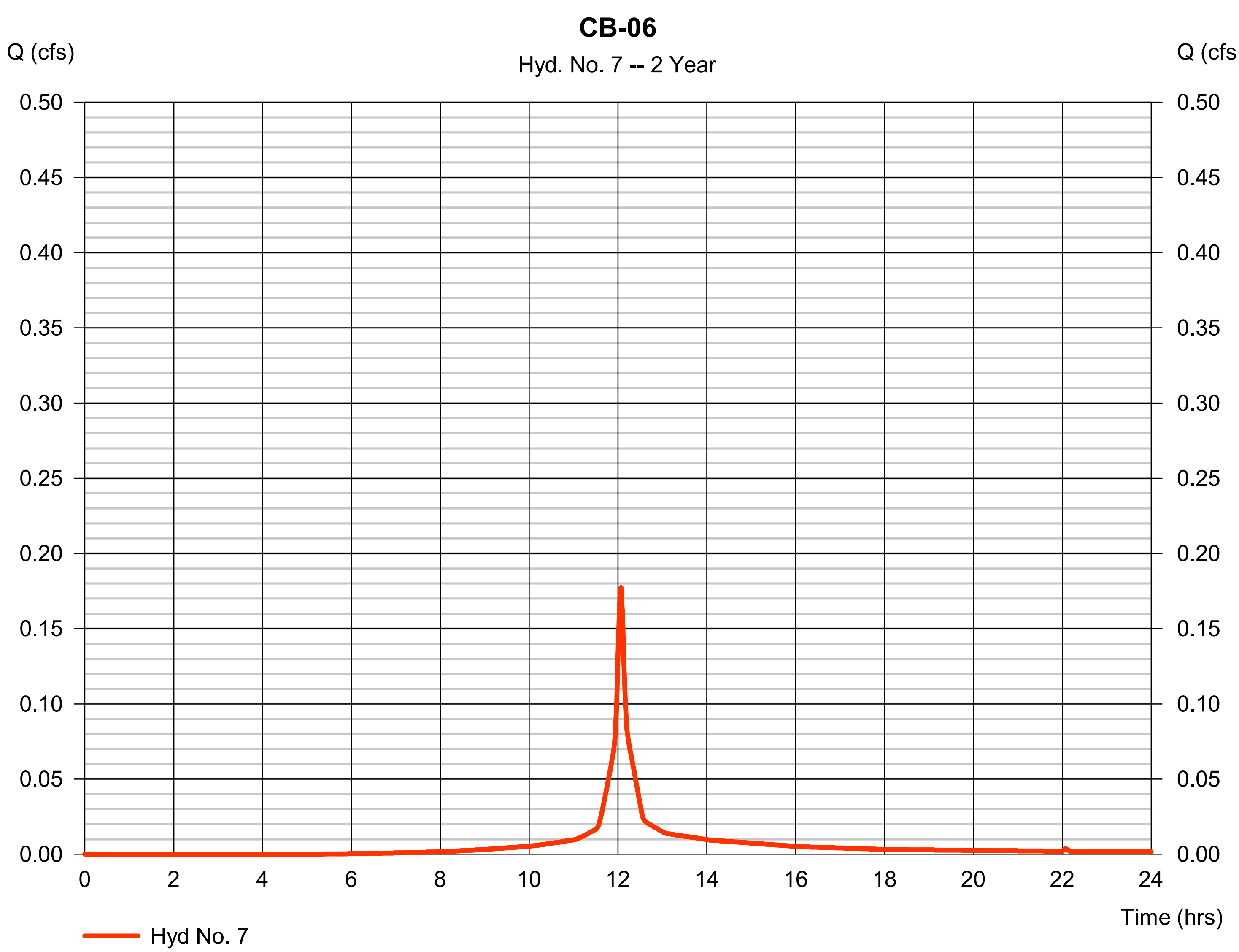
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 7

CB-06

Hydrograph type	= SCS Runoff	Peak discharge	= 0.177 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 544 cuft
Drainage area	= 0.062 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

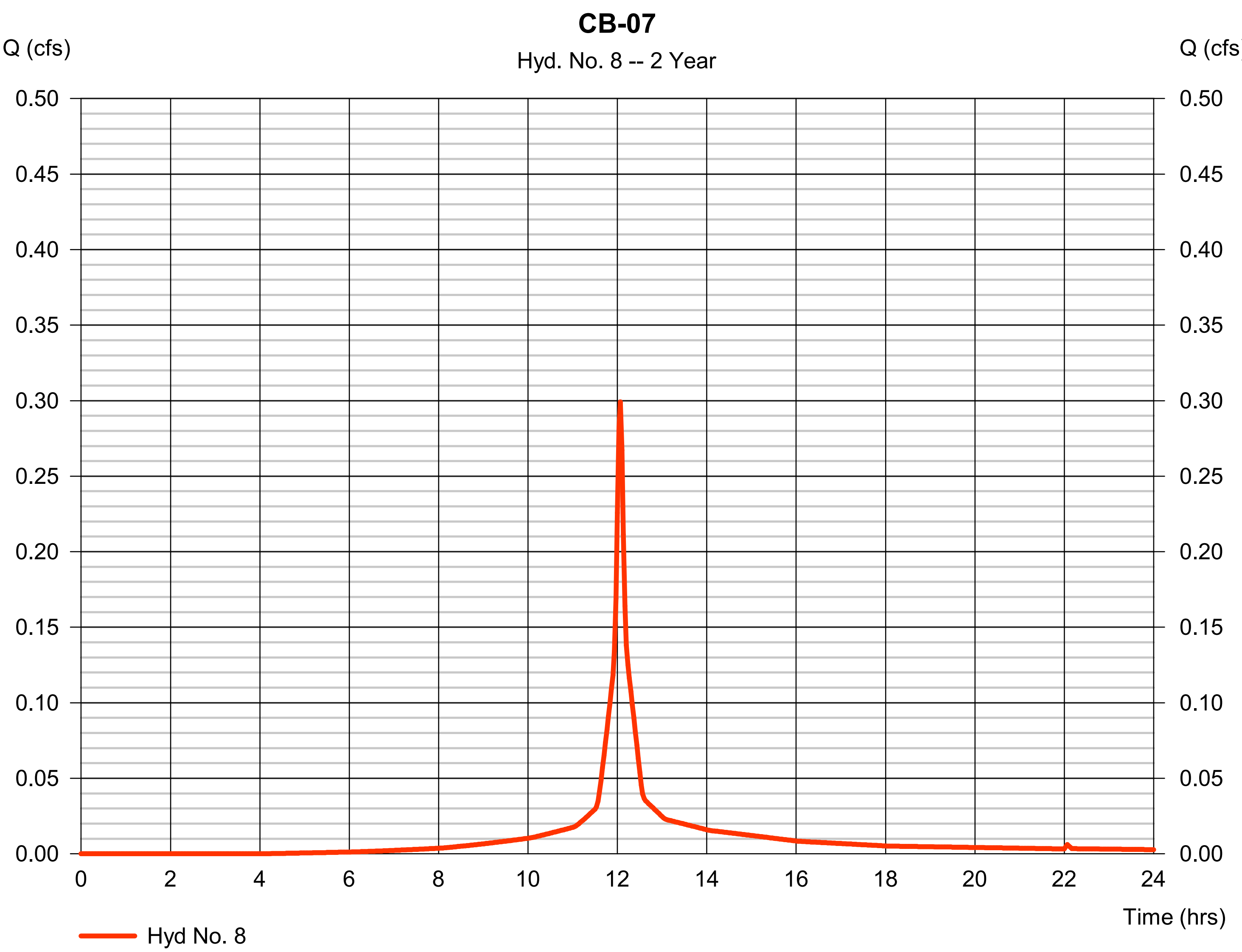


Hydrograph Report

Hyd. No. 8

CB-07

Hydrograph type	= SCS Runoff	Peak discharge	= 0.299 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 934 cuft
Drainage area	= 0.099 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



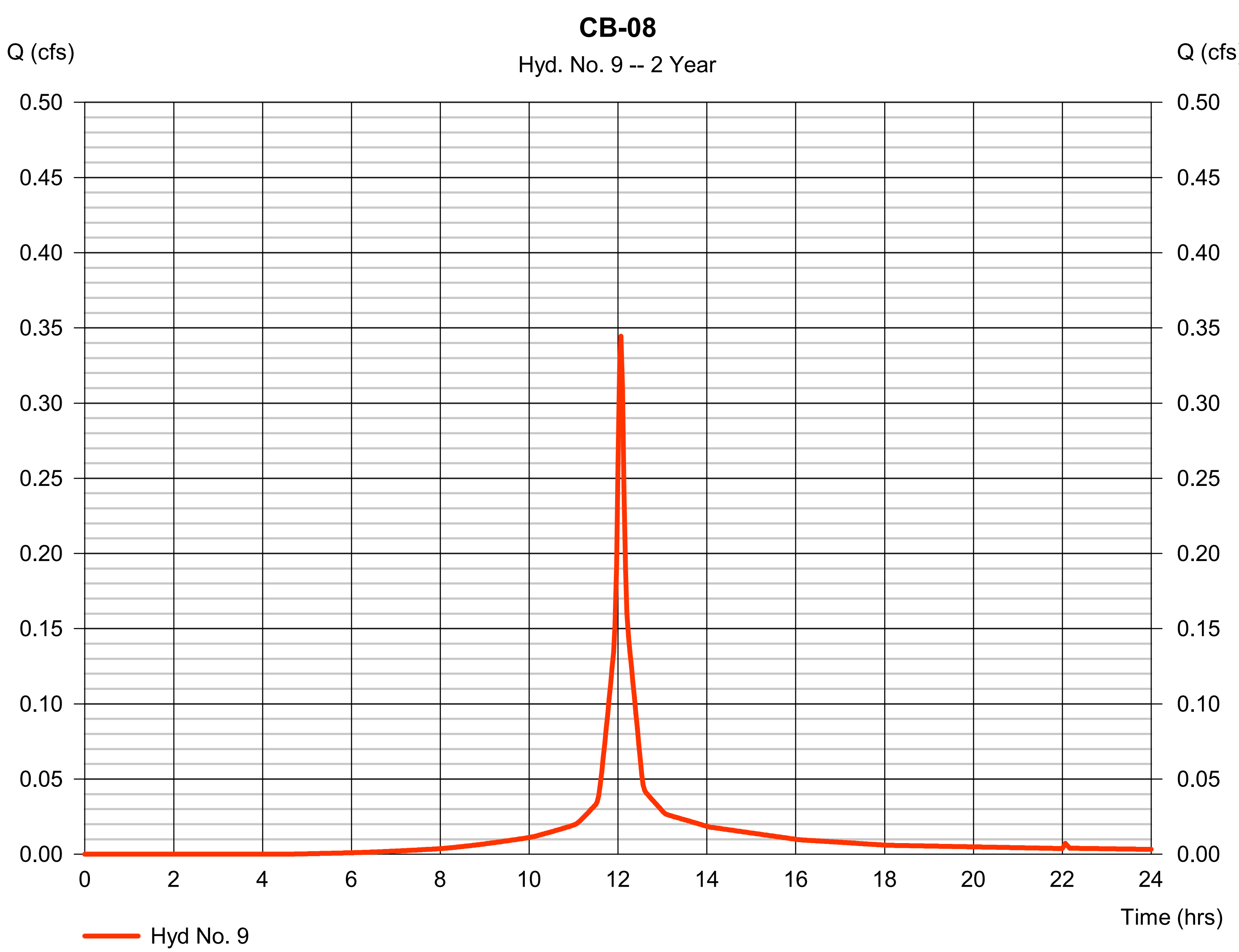
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 9

CB-08

Hydrograph type	= SCS Runoff	Peak discharge	= 0.344 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,065 cuft
Drainage area	= 0.117 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.50 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



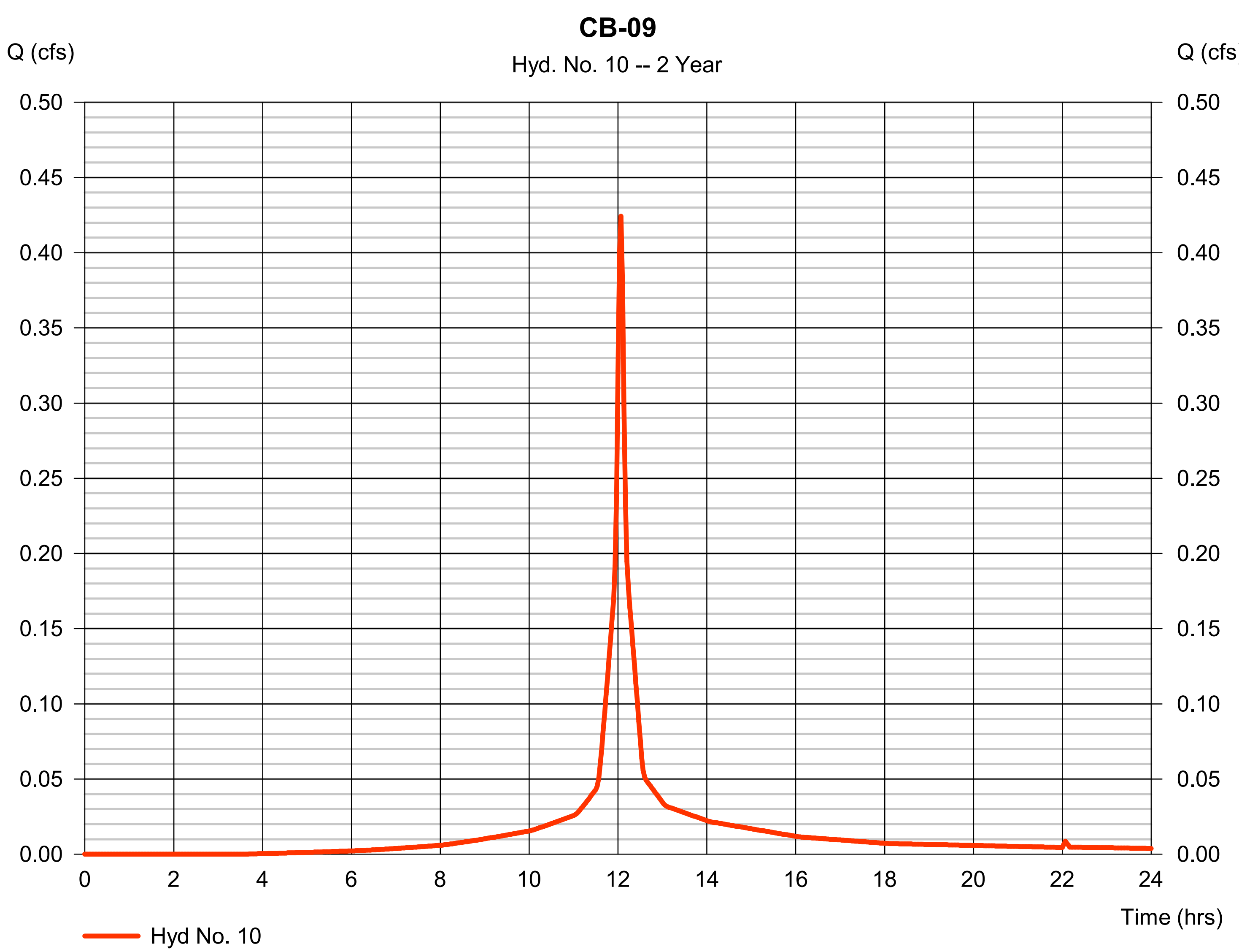
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 10

CB-09

Hydrograph type	= SCS Runoff	Peak discharge	= 0.424 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,340 cuft
Drainage area	= 0.137 ac	Curve number	= 94
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



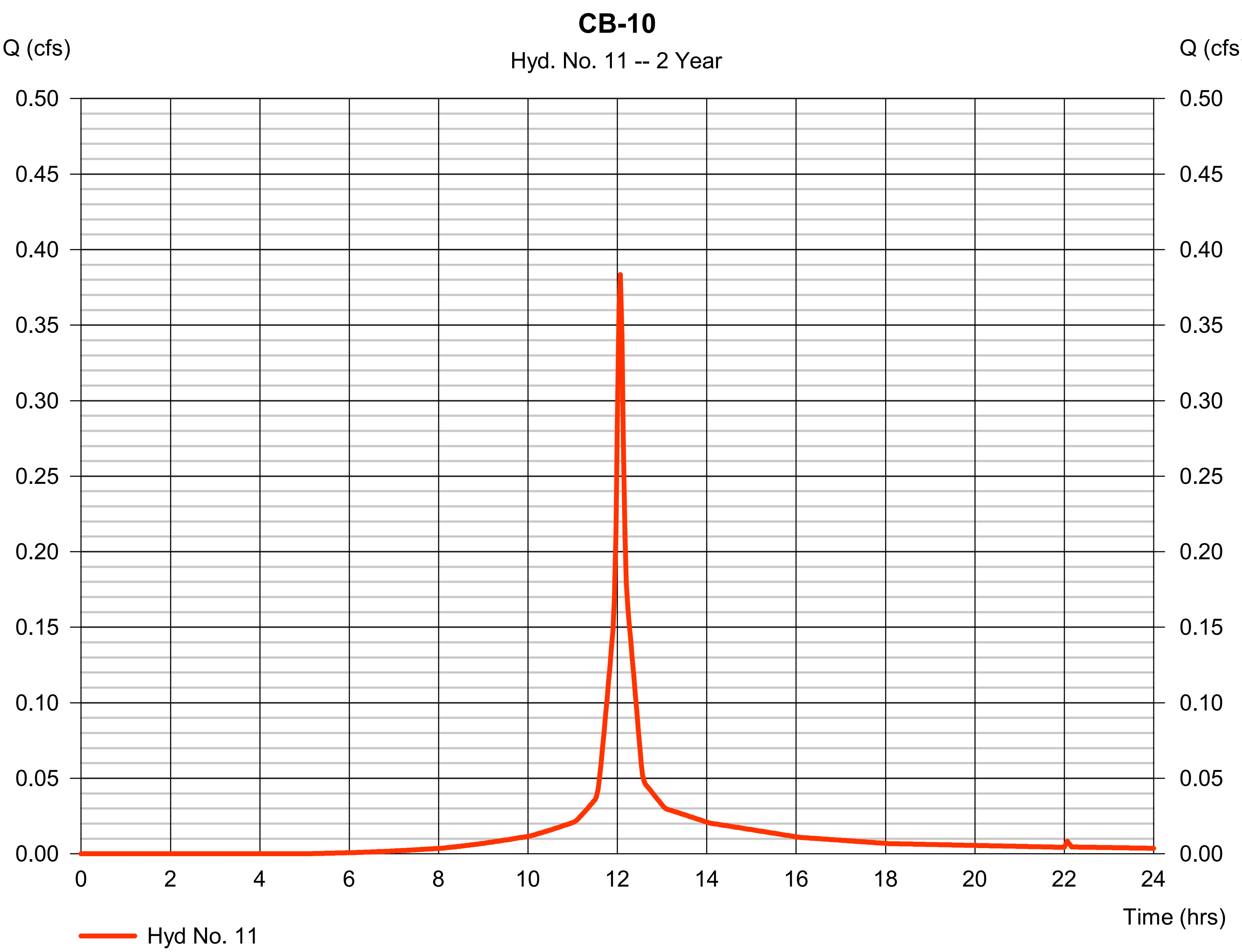
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 11

CB-10

Hydrograph type	= SCS Runoff	Peak discharge	= 0.383 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,176 cuft
Drainage area	= 0.134 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



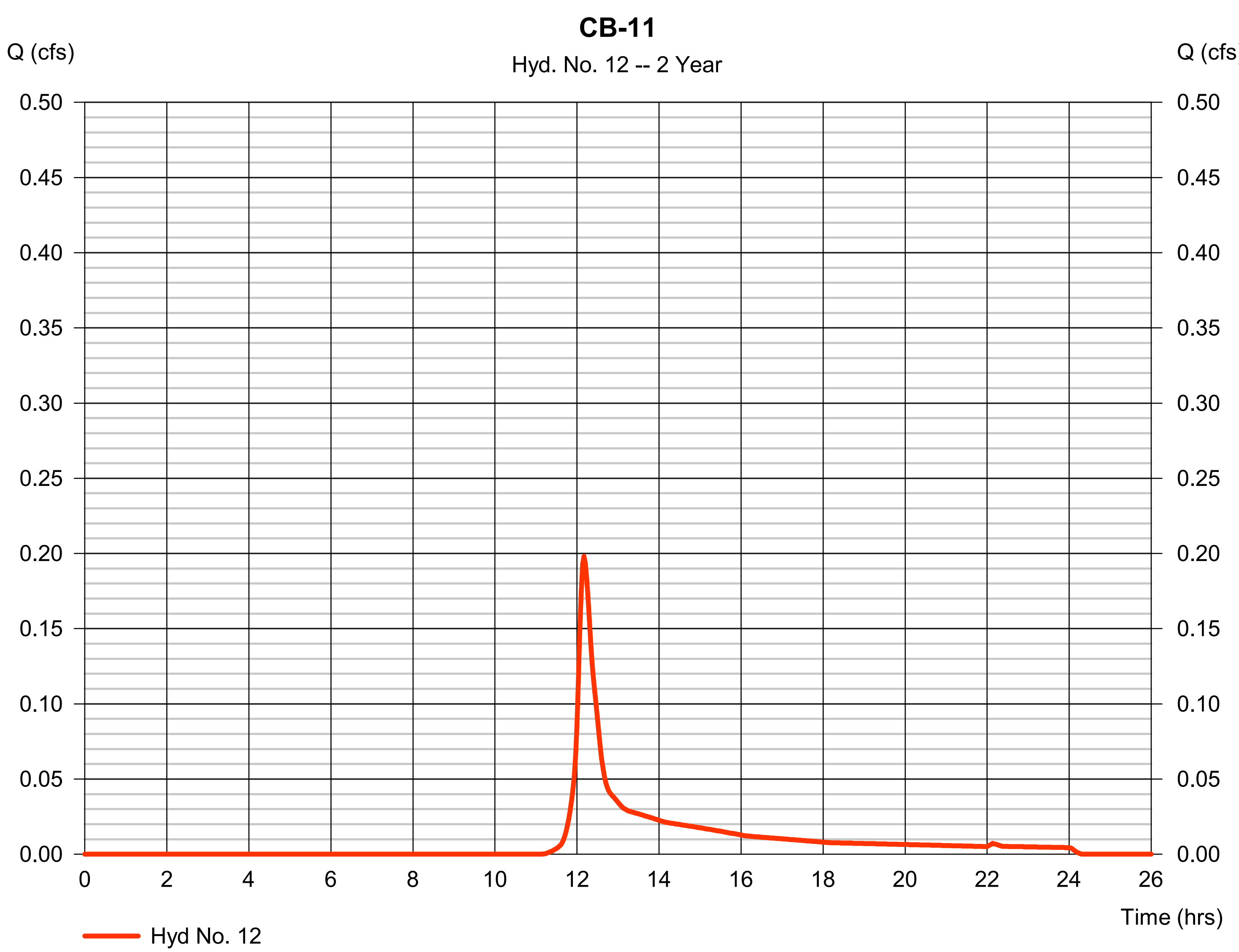
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 — Tuesday, 05 / 25 / 2021

Hyd. No. 12

CB-11

Hydrograph type	= SCS Runoff	Peak discharge	= 0.198 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 831 cuft
Drainage area	= 0.227 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.60 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



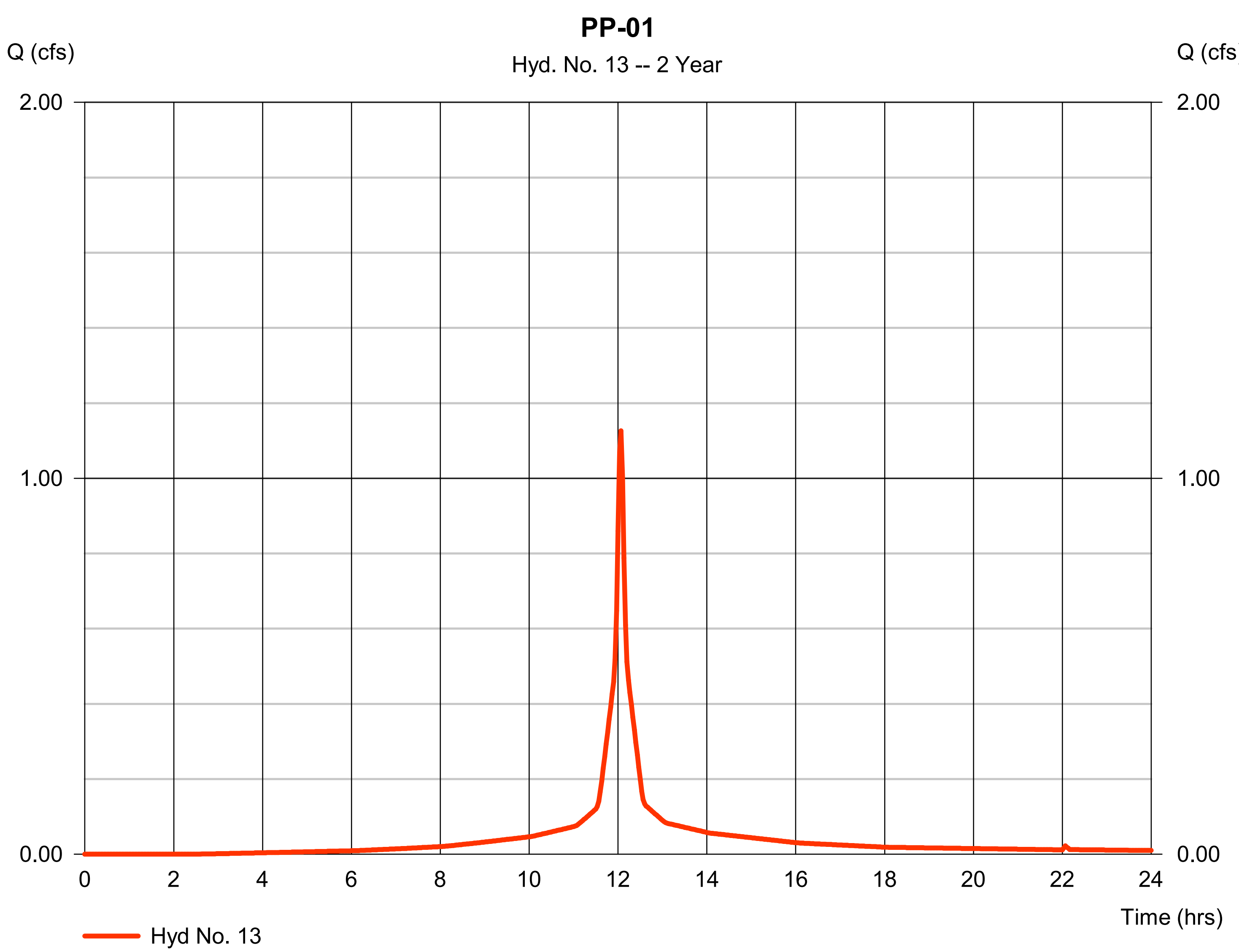
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 13

PP-01

Hydrograph type	= SCS Runoff	Peak discharge	= 1.126 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 3,664 cuft
Drainage area	= 0.349 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.60 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



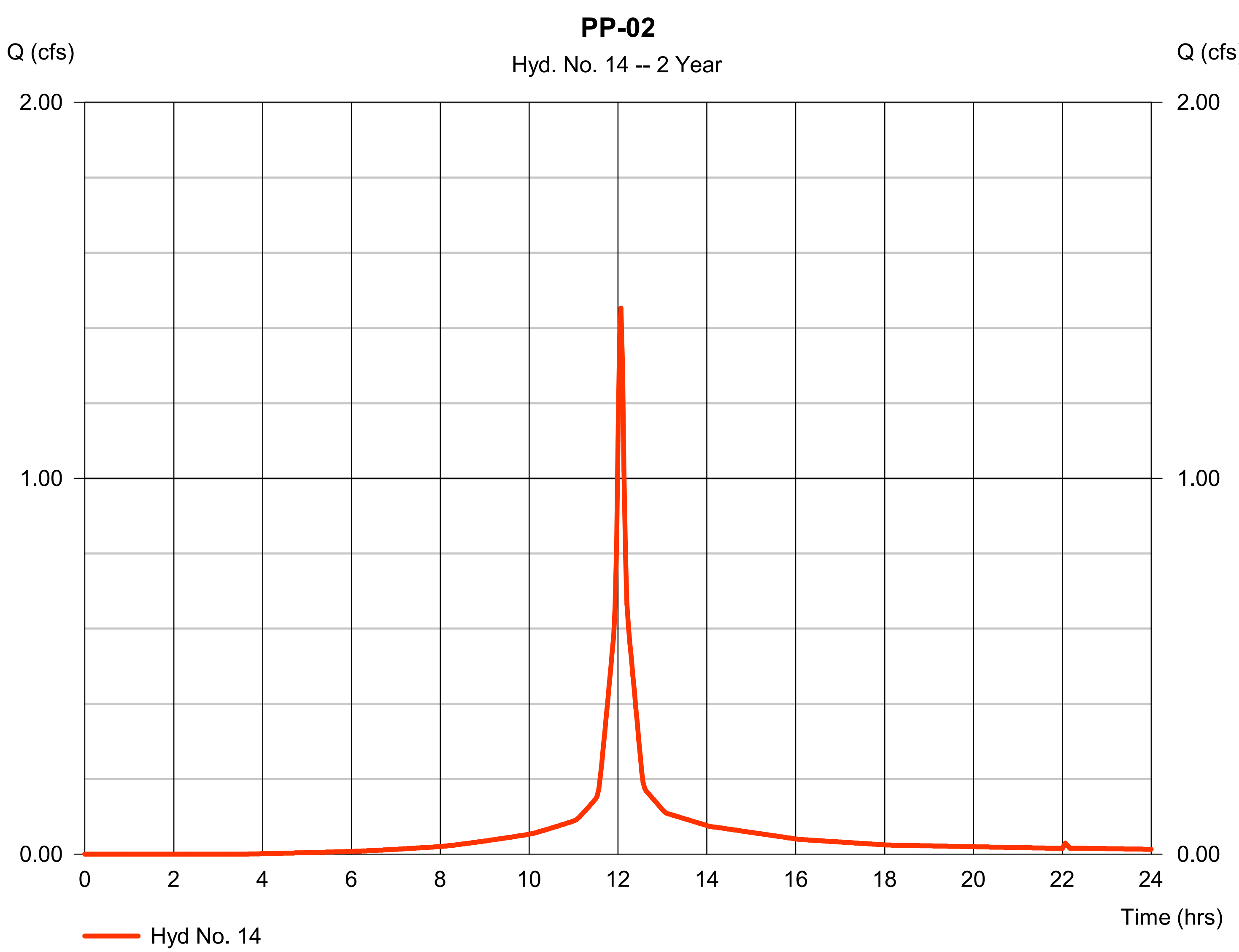
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 — Tuesday, 05 / 25 / 2021

Hyd. No. 14

PP-02

Hydrograph type	= SCS Runoff	Peak discharge	= 1.452 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 4,588 cuft
Drainage area	= 0.469 ac	Curve number	= 94
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



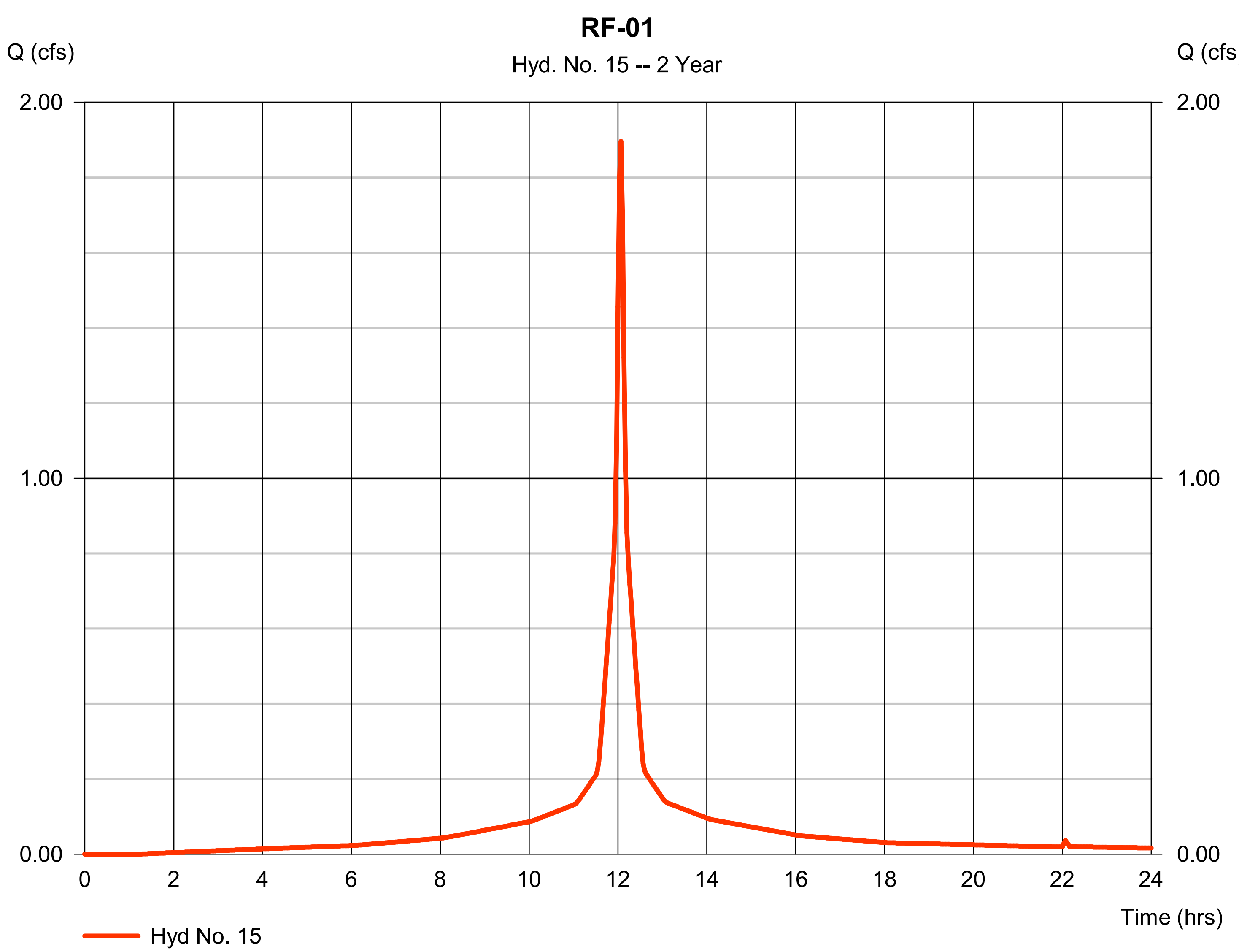
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 — Tuesday, 05 / 25 / 2021

Hyd. No. 15

RF-01

Hydrograph type	= SCS Runoff	Peak discharge	= 1.896 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 6,425 cuft
Drainage area	= 0.571 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



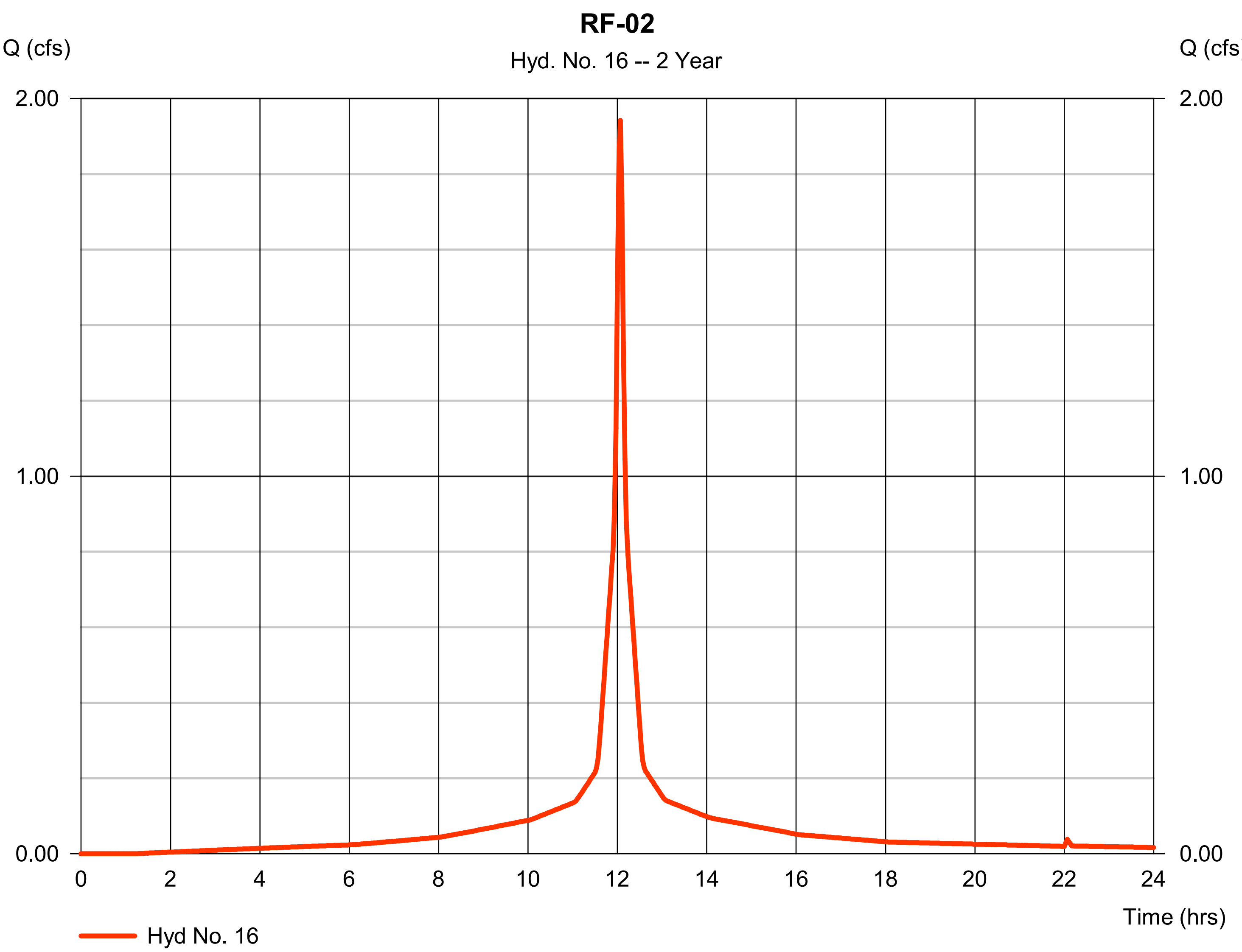
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 16

RF-02

Hydrograph type	= SCS Runoff	Peak discharge	= 1.942 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 6,582 cuft
Drainage area	= 0.585 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



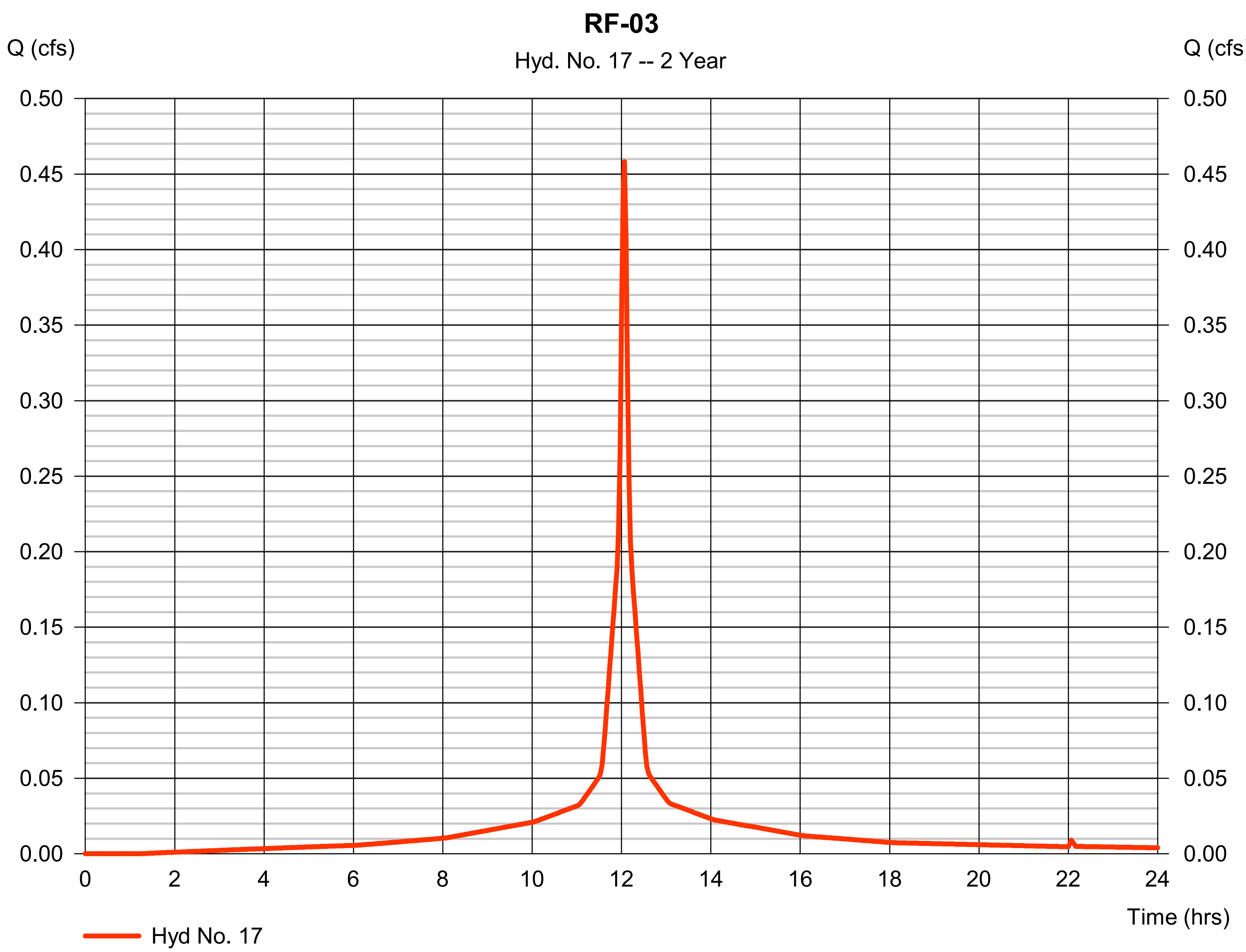
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 17

RF-03

Hydrograph type	= SCS Runoff	Peak discharge	= 0.458 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,553 cuft
Drainage area	= 0.138 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



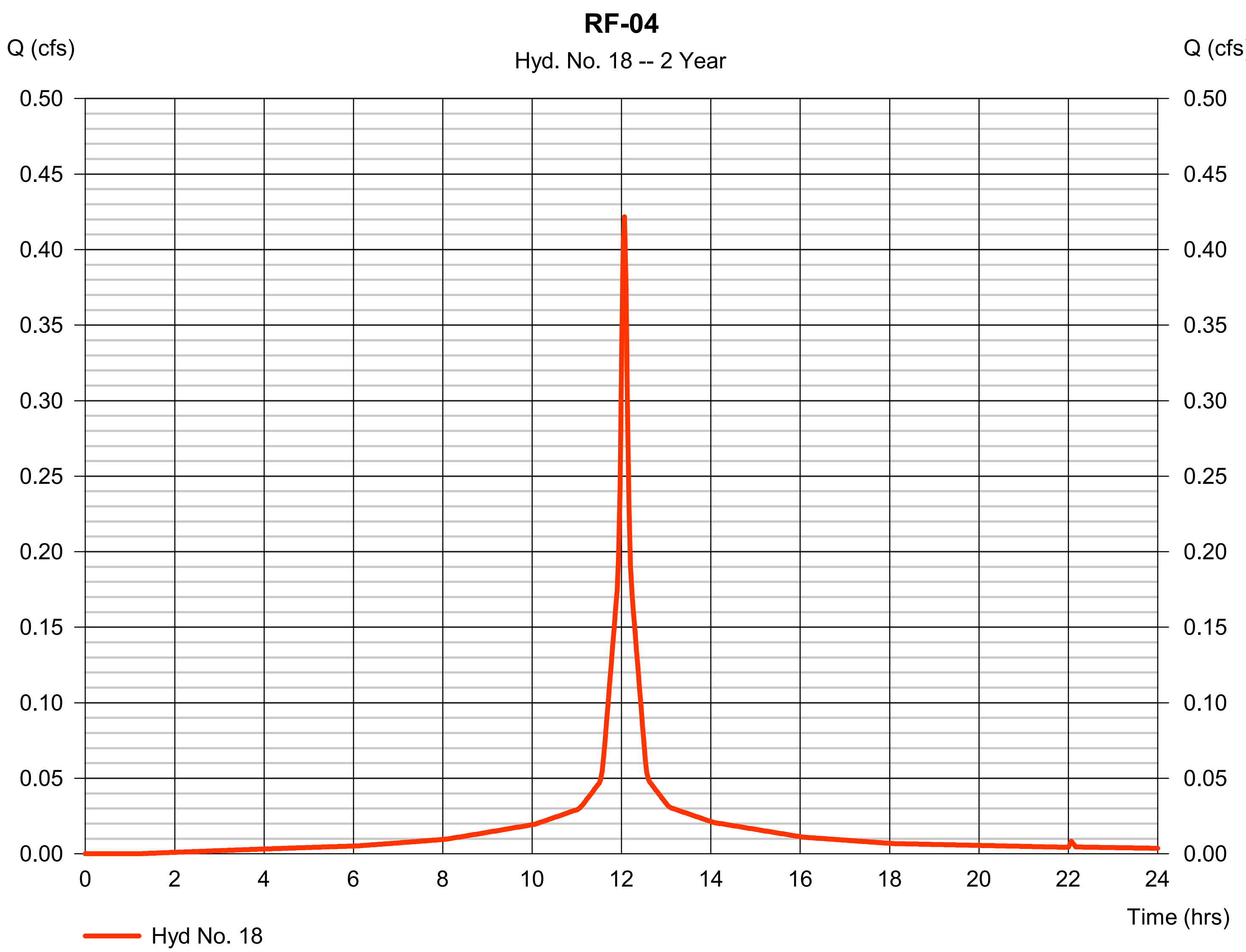
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 18

RF-04

Hydrograph type	= SCS Runoff	Peak discharge	= 0.422 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,429 cuft
Drainage area	= 0.127 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



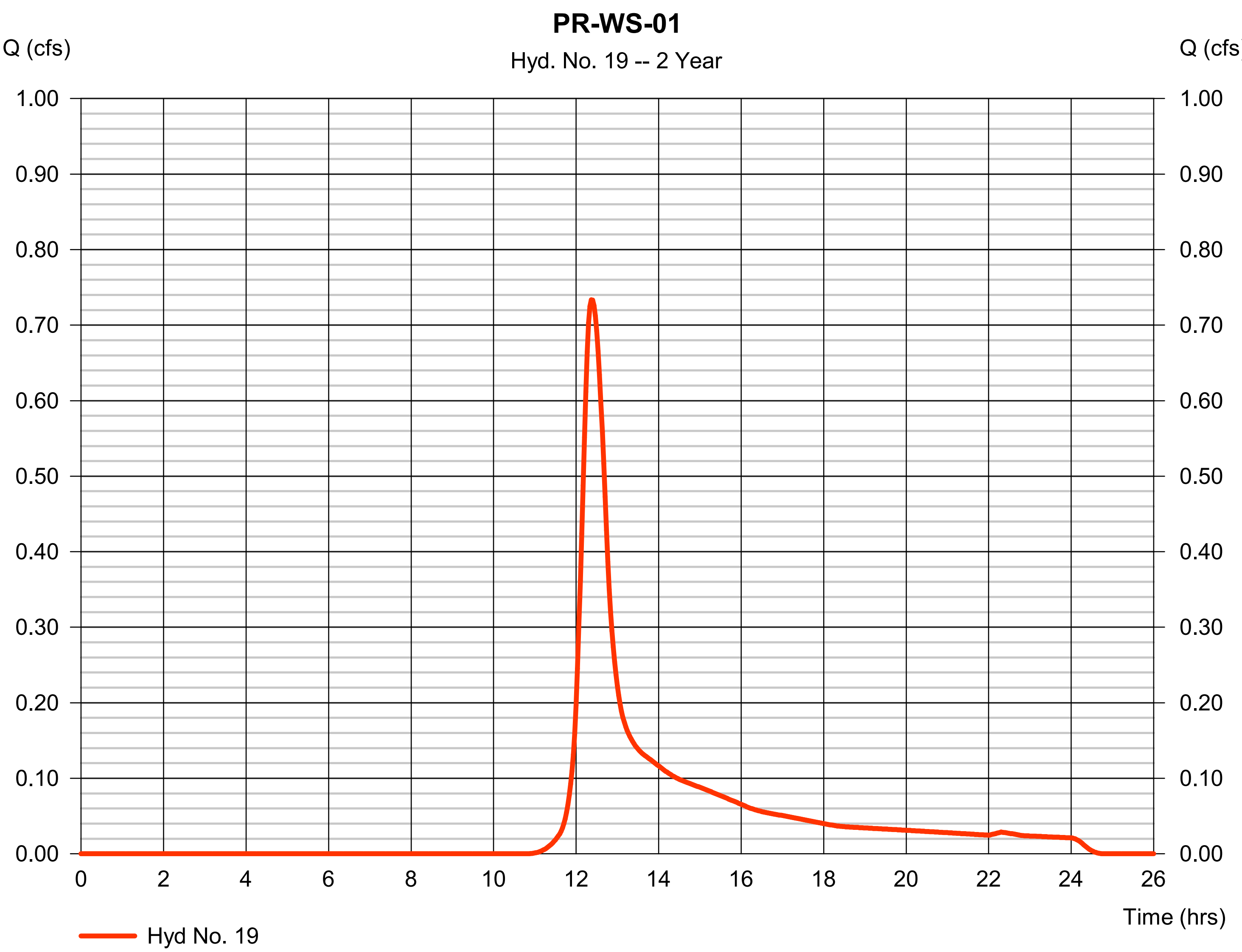
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 19

PR-WS-01

Hydrograph type	= SCS Runoff	Peak discharge	= 0.734 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.37 hrs
Time interval	= 2 min	Hyd. volume	= 4,104 cuft
Drainage area	= 1.038 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 27.60 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



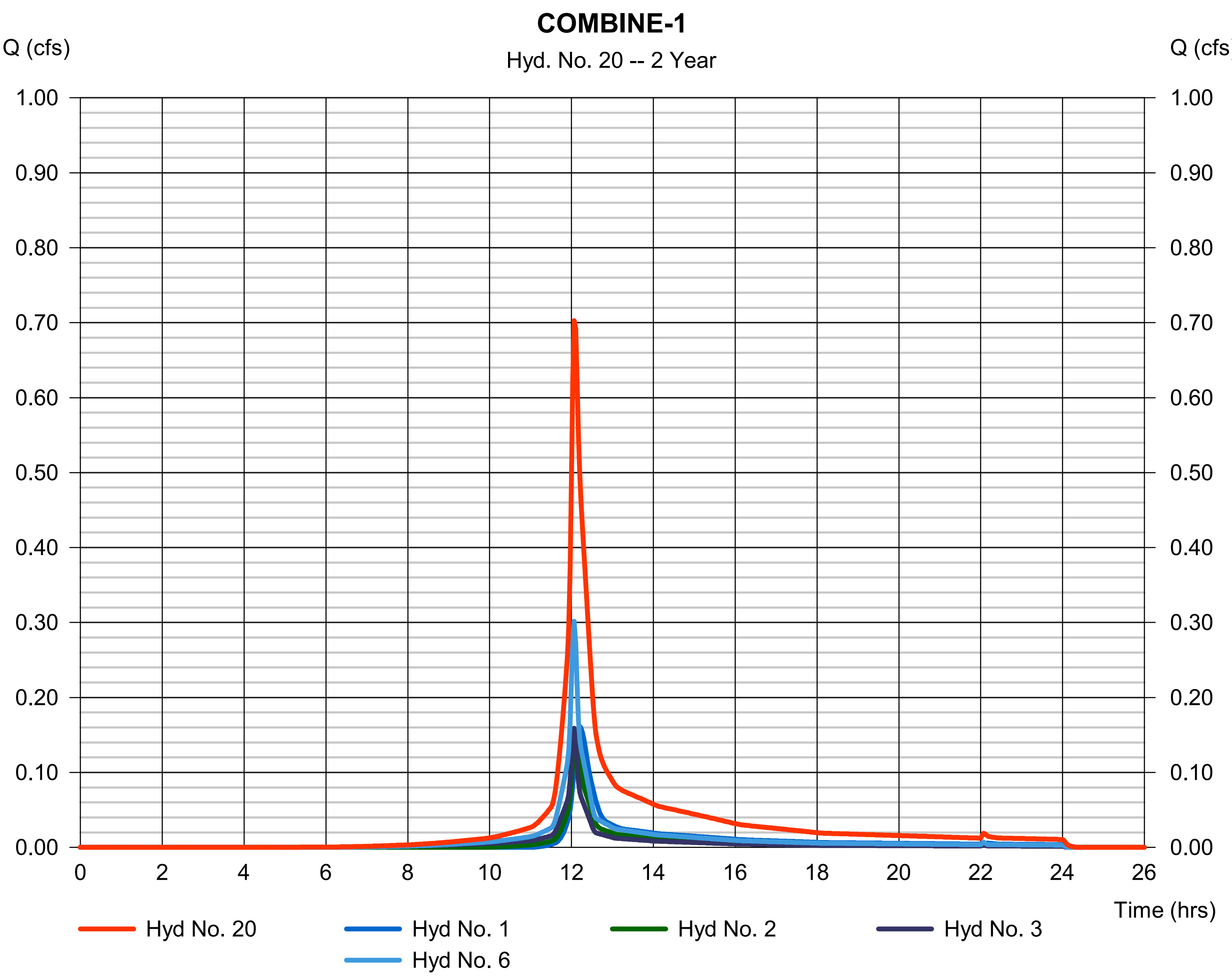
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 20

COMBINE-1

Hydrograph type	= Combine	Peak discharge	= 0.703 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 2,637 cuft
Inflow hyds.	= 1, 2, 3, 6	Contrib. drain. area	= 0.468 ac



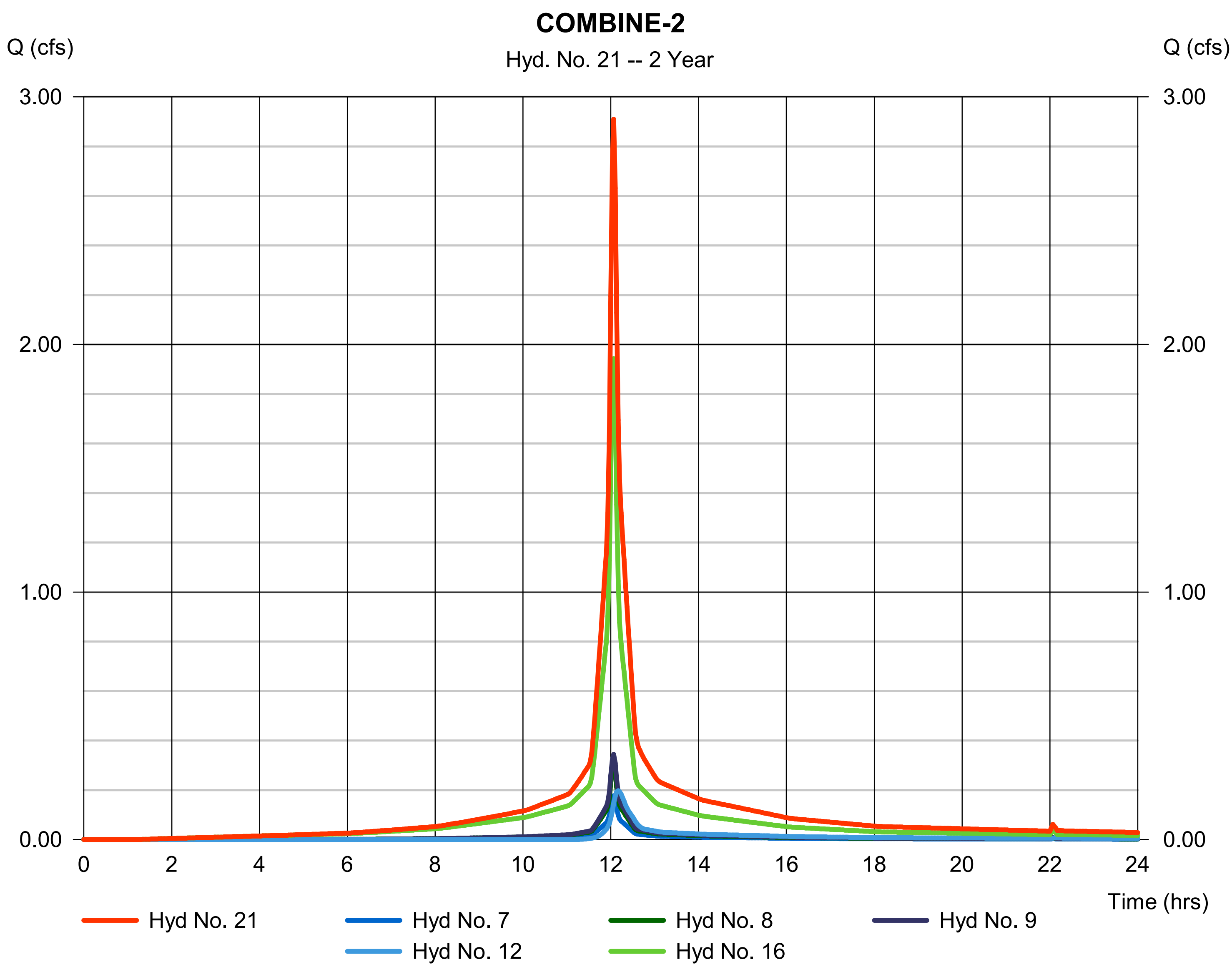
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 21

COMBINE-2

Hydrograph type	= Combine	Peak discharge	= 2.910 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 9,957 cuft
Inflow hyds.	= 7, 8, 9, 12, 16	Contrib. drain. area	= 1.090 ac



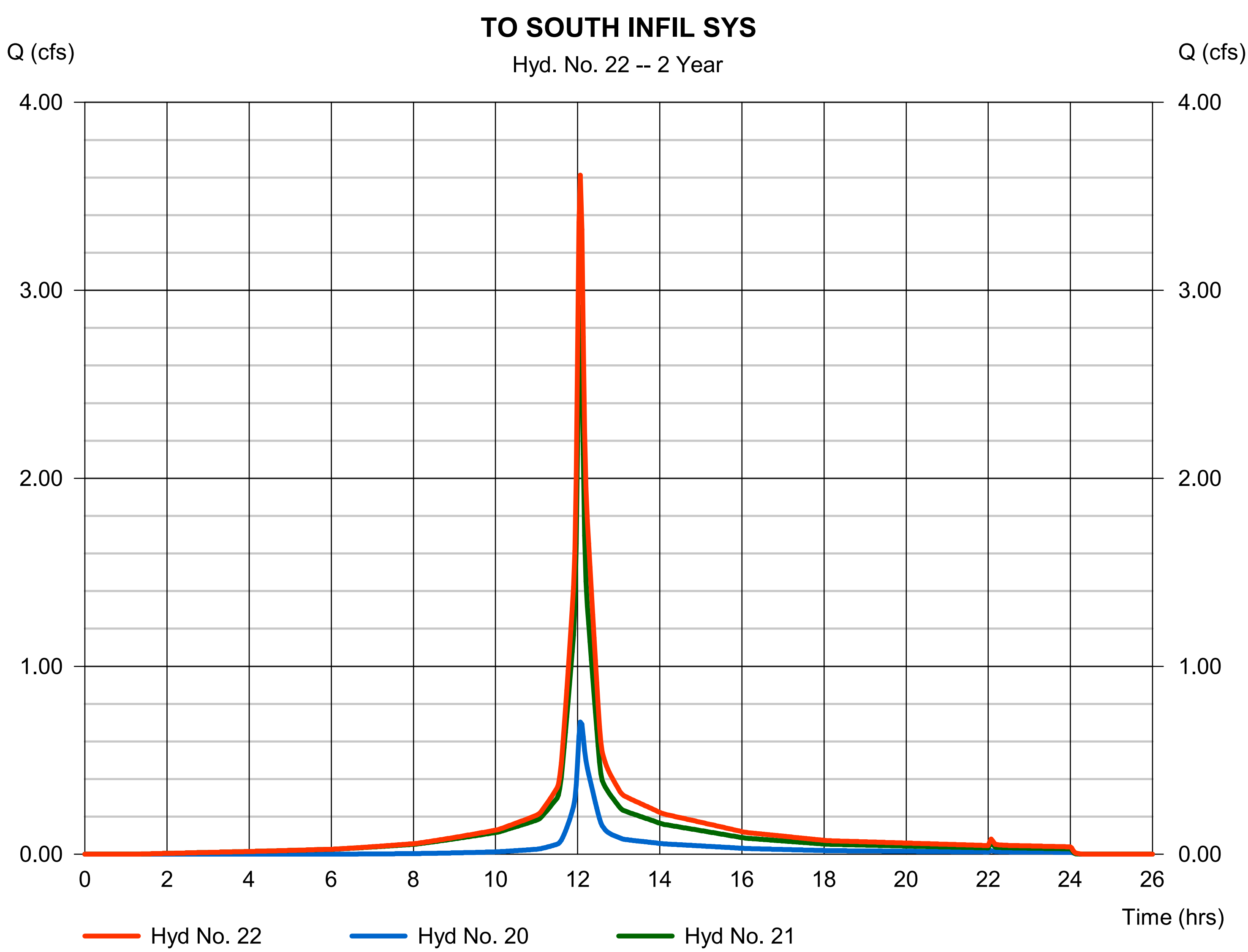
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 22

TO SOUTH INFIL SYS

Hydrograph type	= Combine	Peak discharge	= 3.612 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 12,594 cuft
Inflow hyds.	= 20, 21	Contrib. drain. area	= 0.000 ac

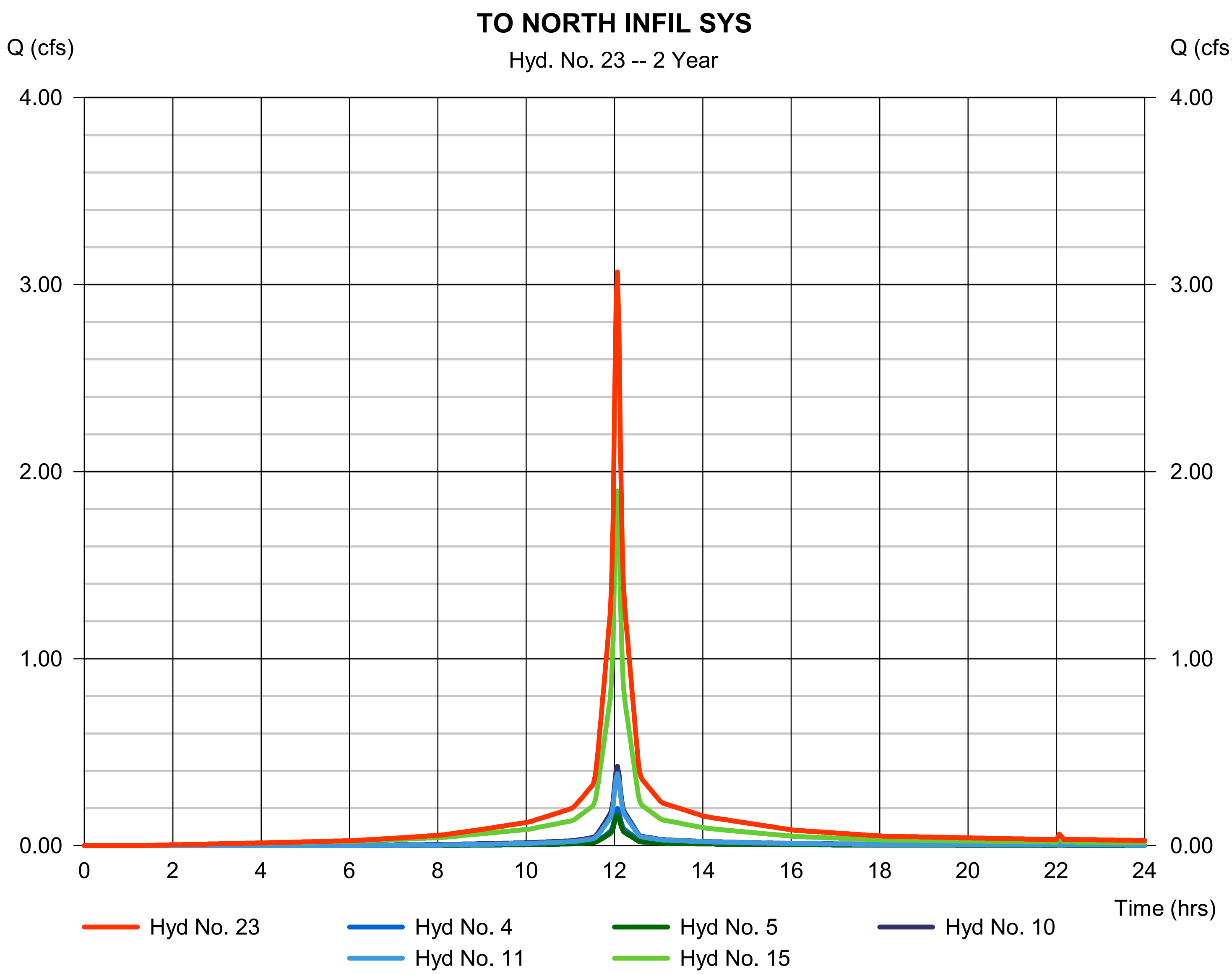


Hydrograph Report

Hyd. No. 23

TO NORTH INFIL SYS

Hydrograph type	= Combine	Peak discharge	= 3.067 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 10,054 cuft
Inflow hyds.	= 4, 5, 10, 11, 15	Contrib. drain. area	= 0.972 ac



Hydrograph Report

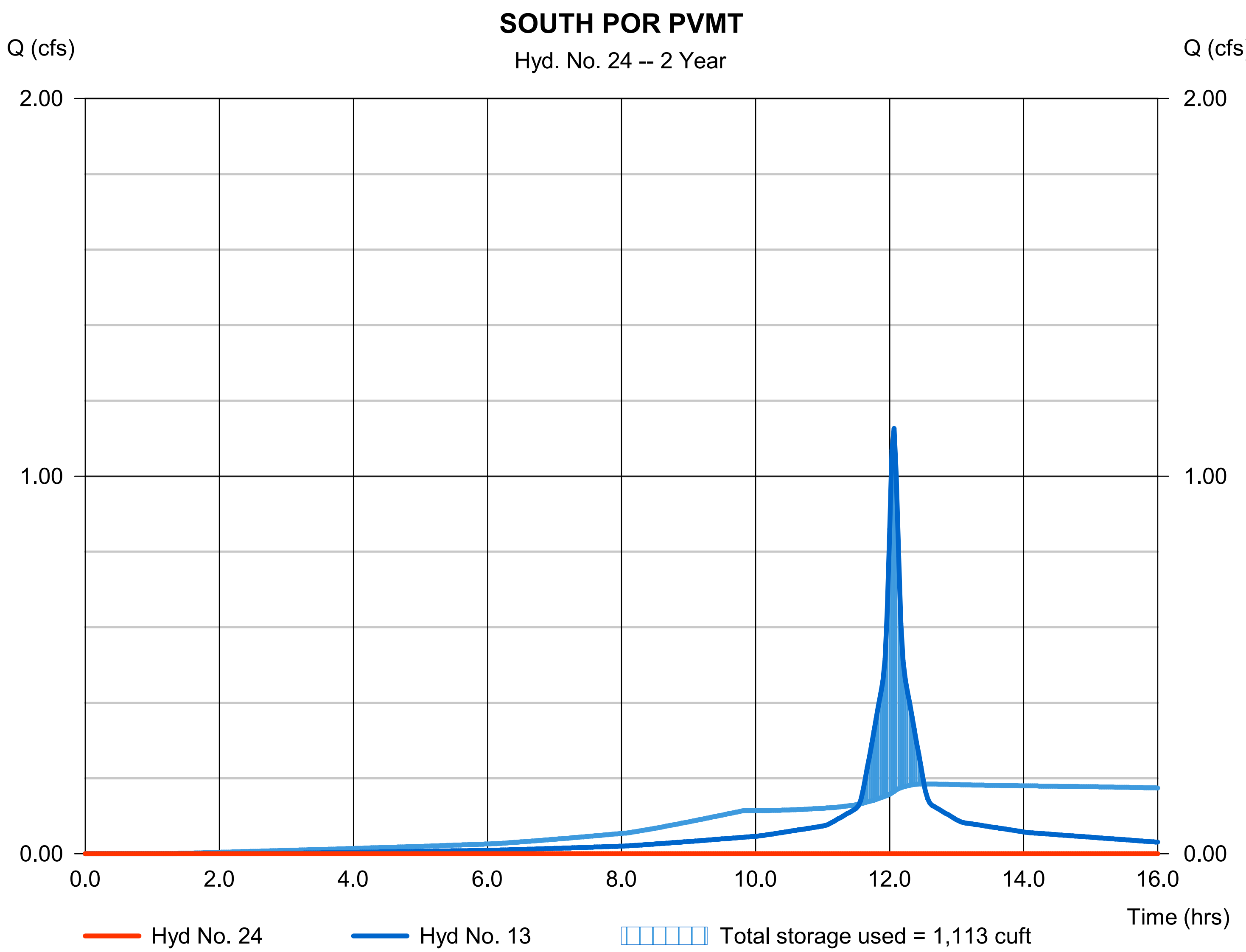
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 24

SOUTH POR PVMT

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.50 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 13 - PP-01	Max. Elevation	= 141.89 ft
Reservoir name	= SOUTH POROUS PVMT	Max. Storage	= 1,113 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Pond No. 3 - SOUTH POROUS PVMT

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 141.50 ft. Voids = 30.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	141.50	9,428	0	0
0.50	142.00	9,428	1,414	1,414
1.00	142.50	9,428	1,414	2,828

Culvert / Orifice Structures

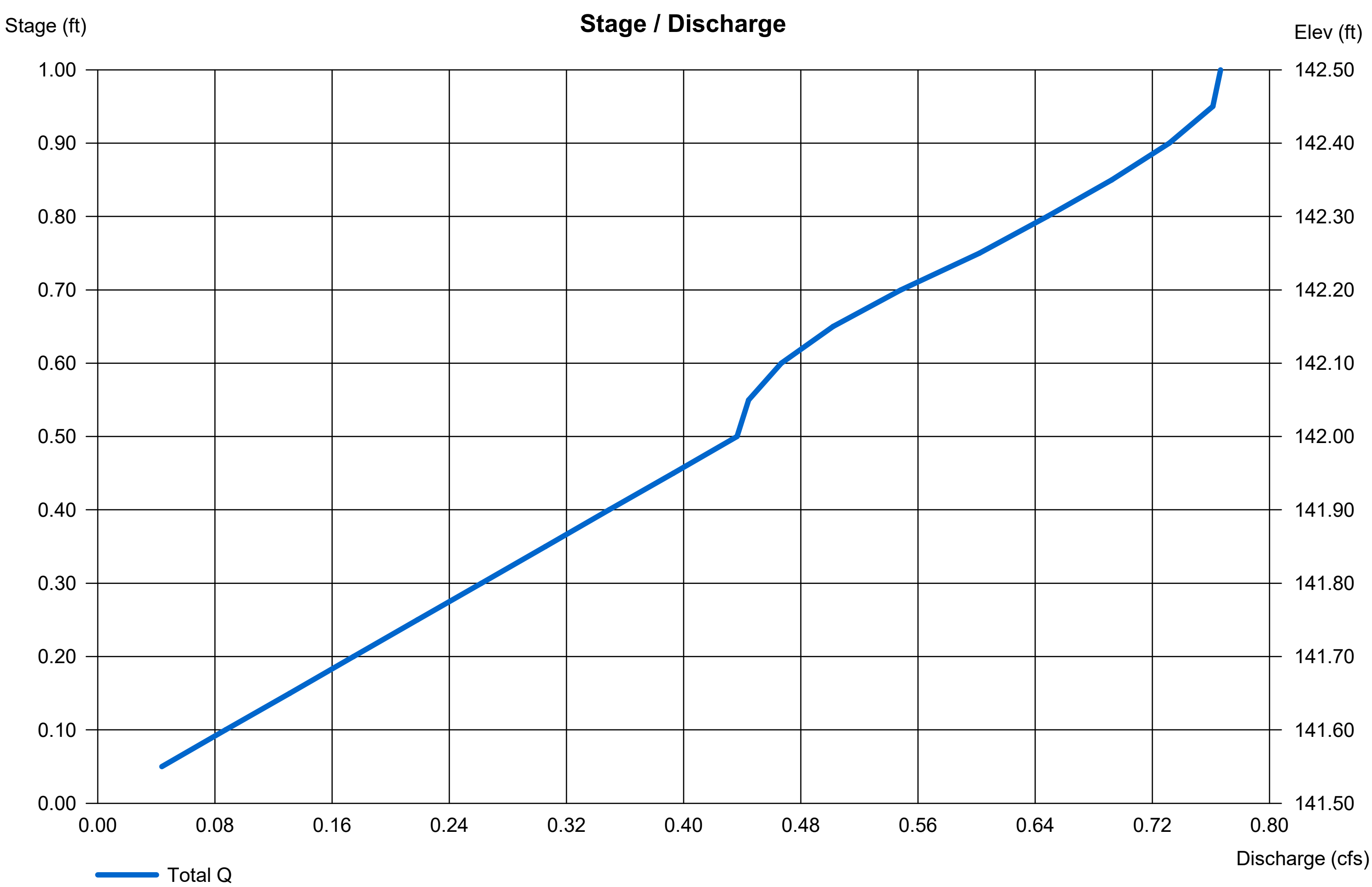
	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 6.00	0.00	0.00	0.00
Span (in)	= 6.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 142.00	0.00	0.00	0.00
Length (ft)	= 10.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 2.000 (by Contour)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



Hydrograph Report

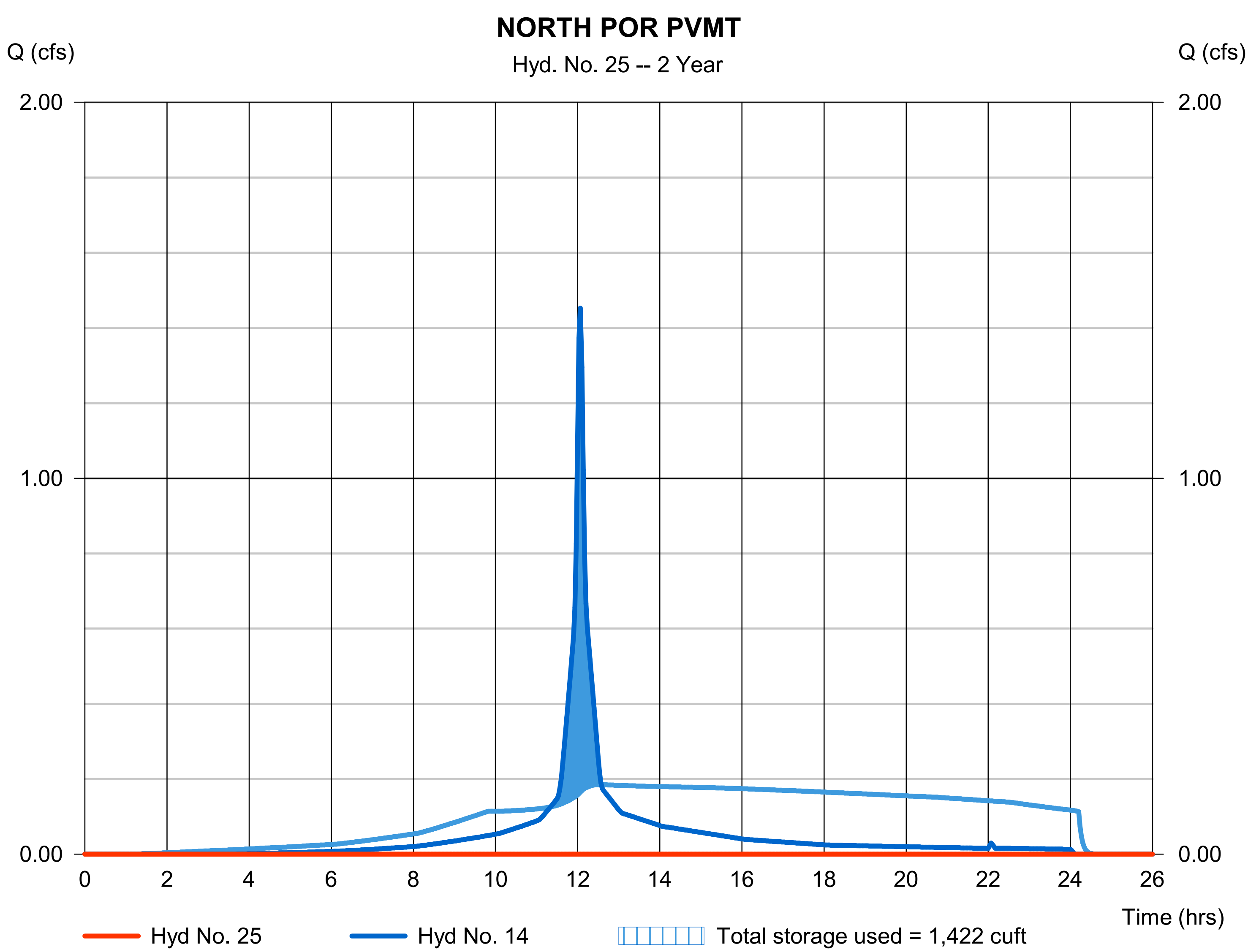
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 25

NORTH POR PVMT

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.27 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 14 - PP-02	Max. Elevation	= 141.31 ft
Reservoir name	= NORTH POROUS PVMT	Max. Storage	= 1,422 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Pond No. 4 - NORTH POROUS PVMT

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 141.00 ft. Voids = 30.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	141.00	15,420	0	0
0.50	141.50	15,420	2,313	2,313
1.00	142.00	15,420	2,313	4,626

Culvert / Orifice Structures

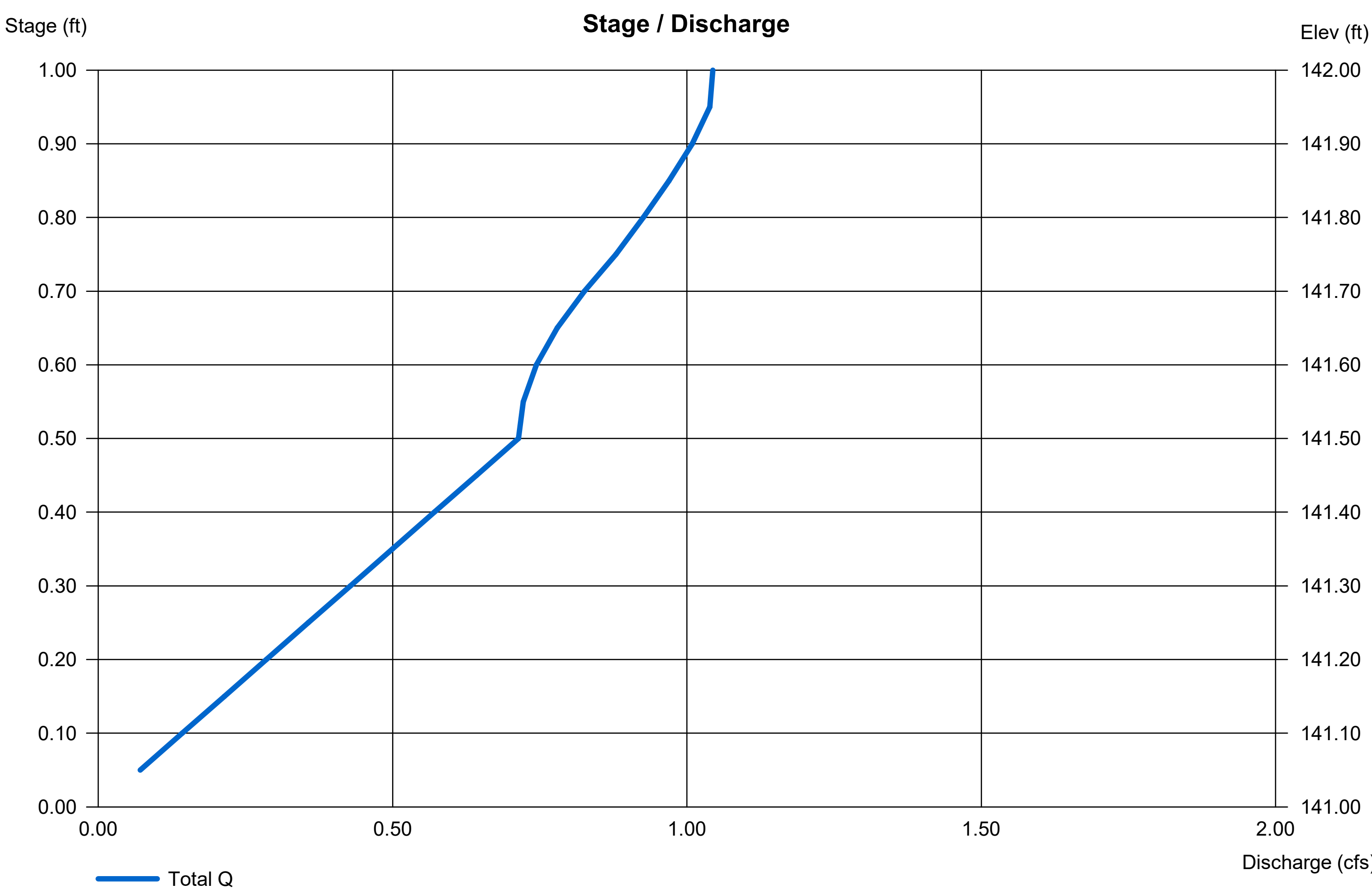
	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 6.00	0.00	0.00	0.00
Span (in)	= 6.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 141.50	0.00	0.00	0.00
Length (ft)	= 10.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 2.000 (by Contour)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



Hydrograph Report

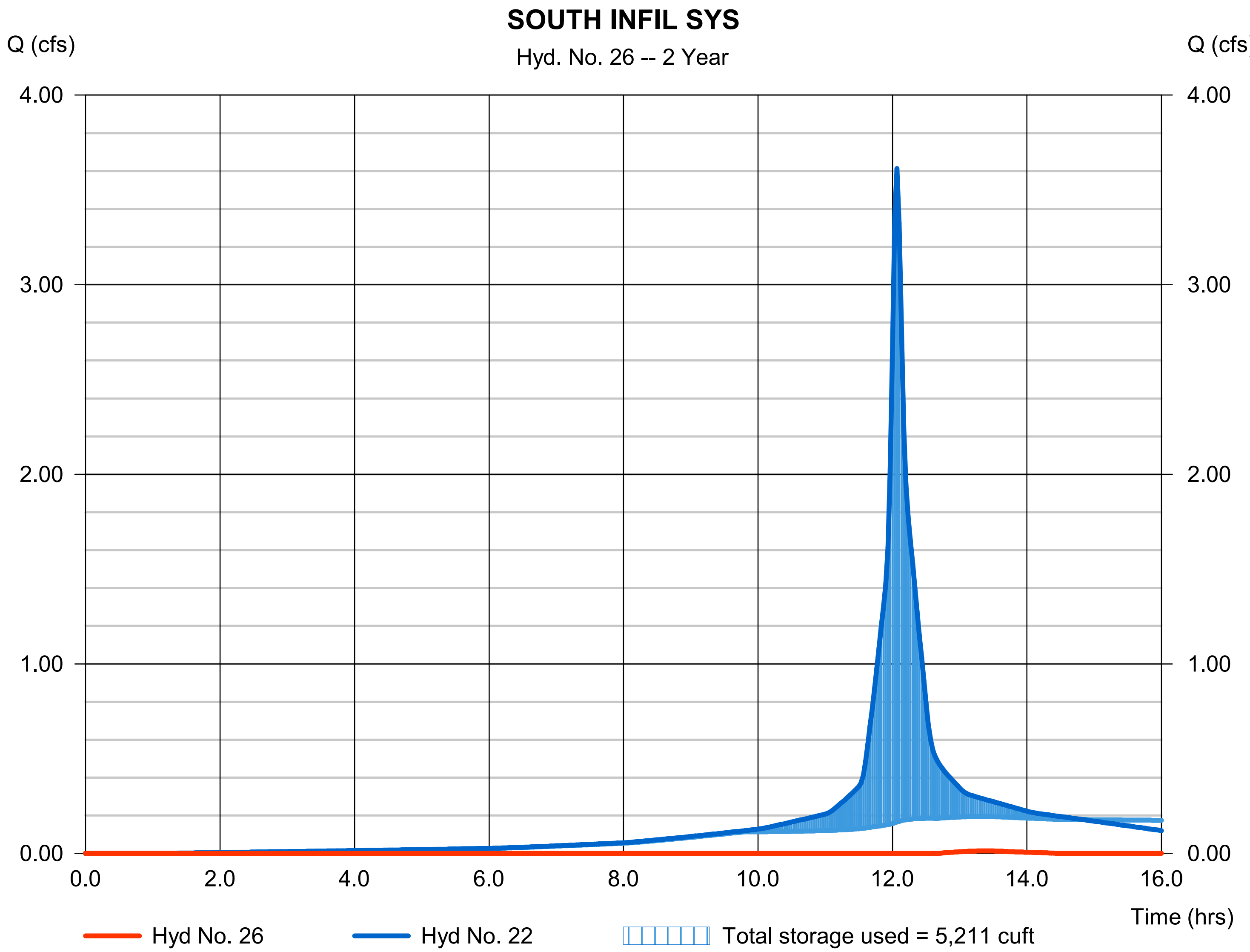
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 26

SOUTH INFIL SYS

Hydrograph type	= Reservoir	Peak discharge	= 0.013 cfs
Storm frequency	= 2 yrs	Time to peak	= 13.37 hrs
Time interval	= 2 min	Hyd. volume	= 50 cuft
Inflow hyd. No.	= 22 - TO SOUTH INFIL SYS	Max. Elevation	= 143.05 ft
Reservoir name	= SOUTH INFIL SYS	Max. Storage	= 5,211 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Pond No. 1 - SOUTH INFIL SYS

Pond Data

UG Chambers -Invert elev. = 142.00 ft, Rise x Span = 2.00 x 7.00 ft, Barrel Len = 170.00 ft, No. Barrels = 3, Slope = 0.00%, Headers = Yes
Encasement -Invert elev. = 141.00 ft, Width = 7.00 ft, Height = 4.00 ft, Voids = 30.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	141.00	n/a	0	0
0.40	141.40	n/a	464	464
0.80	141.80	n/a	464	928
1.20	142.20	n/a	1,005	1,932
1.60	142.60	n/a	1,546	3,478
2.00	143.00	n/a	1,546	5,024
2.40	143.40	n/a	1,546	6,570
2.80	143.80	n/a	1,546	8,116
3.20	144.20	n/a	1,005	9,121
3.60	144.60	n/a	464	9,584
4.00	145.00	n/a	464	10,048

Culvert / Orifice Structures

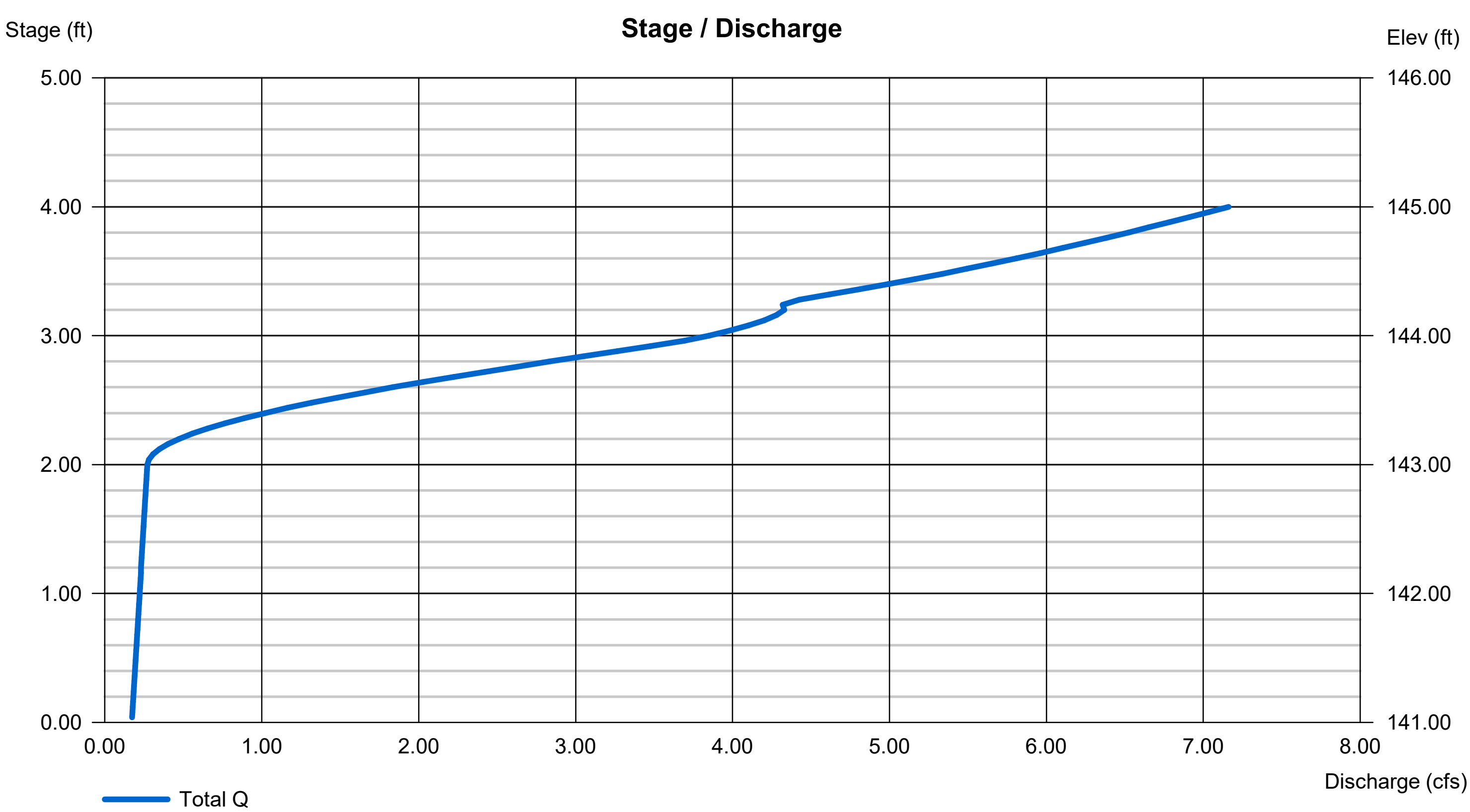
	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15.00	Inactive	0.00	0.00
Span (in)	= 15.00	0.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 143.00	0.00	0.00	0.00
Length (ft)	= 38.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	Inactive	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 2.000 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



Hydrograph Report

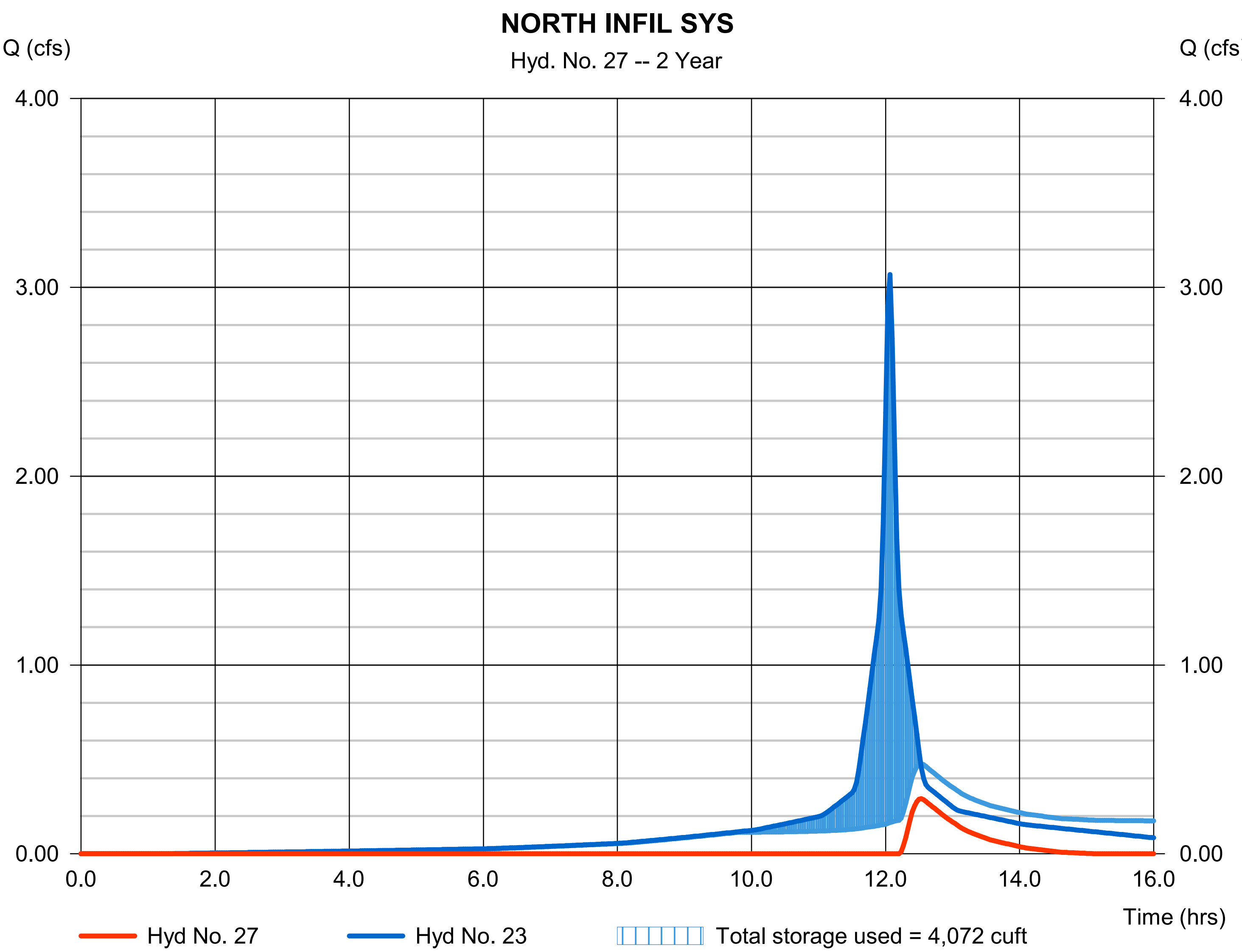
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 27

NORTH INFIL SYS

Hydrograph type	= Reservoir	Peak discharge	= 0.292 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.53 hrs
Time interval	= 2 min	Hyd. volume	= 960 cuft
Inflow hyd. No.	= 23 - TO NORTH INFIL SYS	Max. Elevation	= 143.25 ft
Reservoir name	= NORTH INFIL SYS	Max. Storage	= 4,072 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Pond No. 2 - NORTH INFIL SYS

Pond Data

UG Chambers -Invert elev. = 142.00 ft, Rise x Span = 2.00 x 7.00 ft, Barrel Len = 80.00 ft, No. Barrels = 4, Slope = 0.00%, Headers = Yes
Encasement -Invert elev. = 141.00 ft, Width = 7.00 ft, Height = 4.00 ft, Voids = 30.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	141.00	n/a	0	0
0.40	141.40	n/a	316	316
0.80	141.80	n/a	316	632
1.20	142.20	n/a	684	1,316
1.60	142.60	n/a	1,053	2,369
2.00	143.00	n/a	1,053	3,422
2.40	143.40	n/a	1,053	4,475
2.80	143.80	n/a	1,053	5,528
3.20	144.20	n/a	684	6,213
3.60	144.60	n/a	316	6,528
4.00	145.00	n/a	316	6,844

Culvert / Orifice Structures

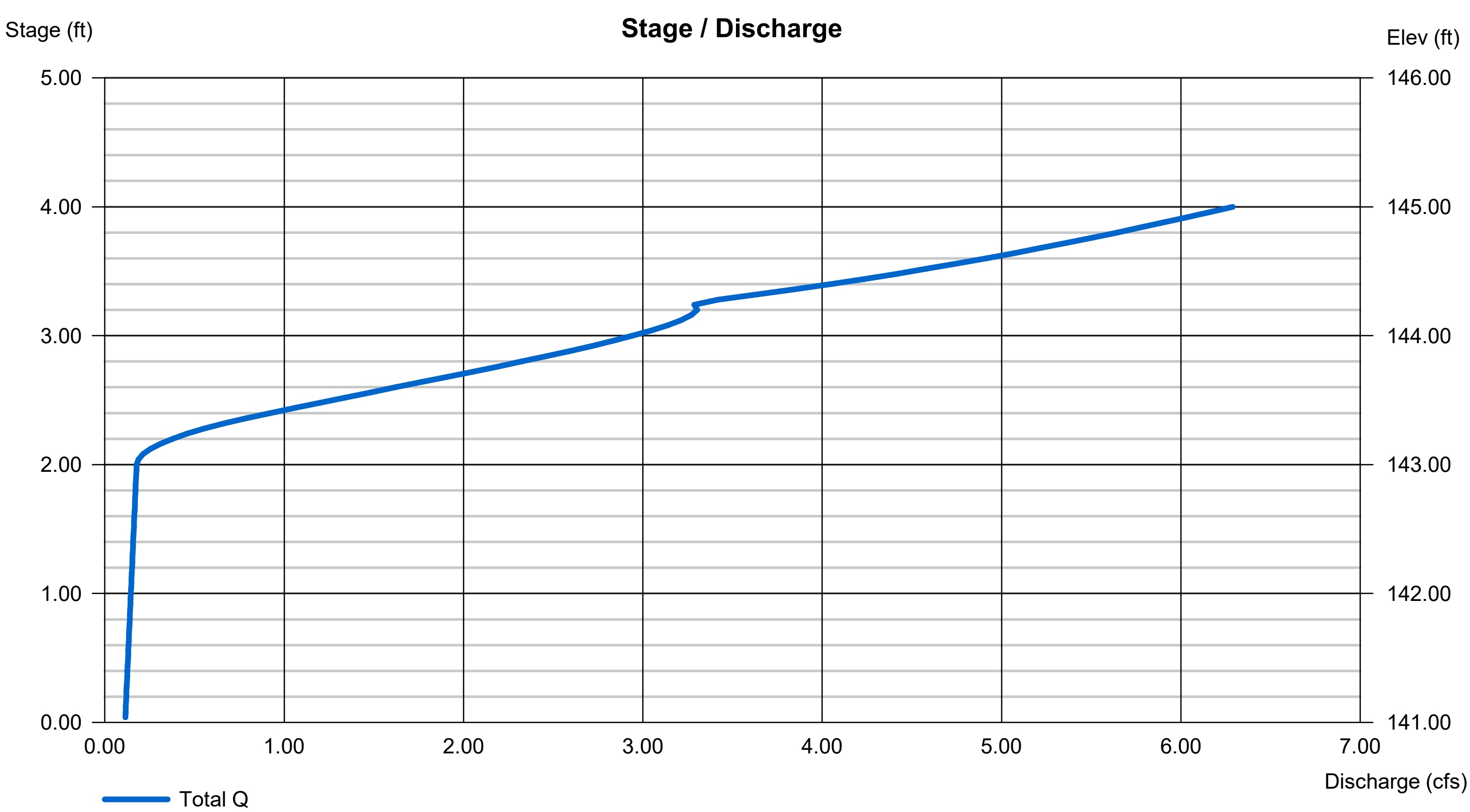
	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15.00	Inactive	0.00	0.00
Span (in)	= 15.00	0.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 143.00	0.00	0.00	0.00
Length (ft)	= 50.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	Inactive	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 2.000 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



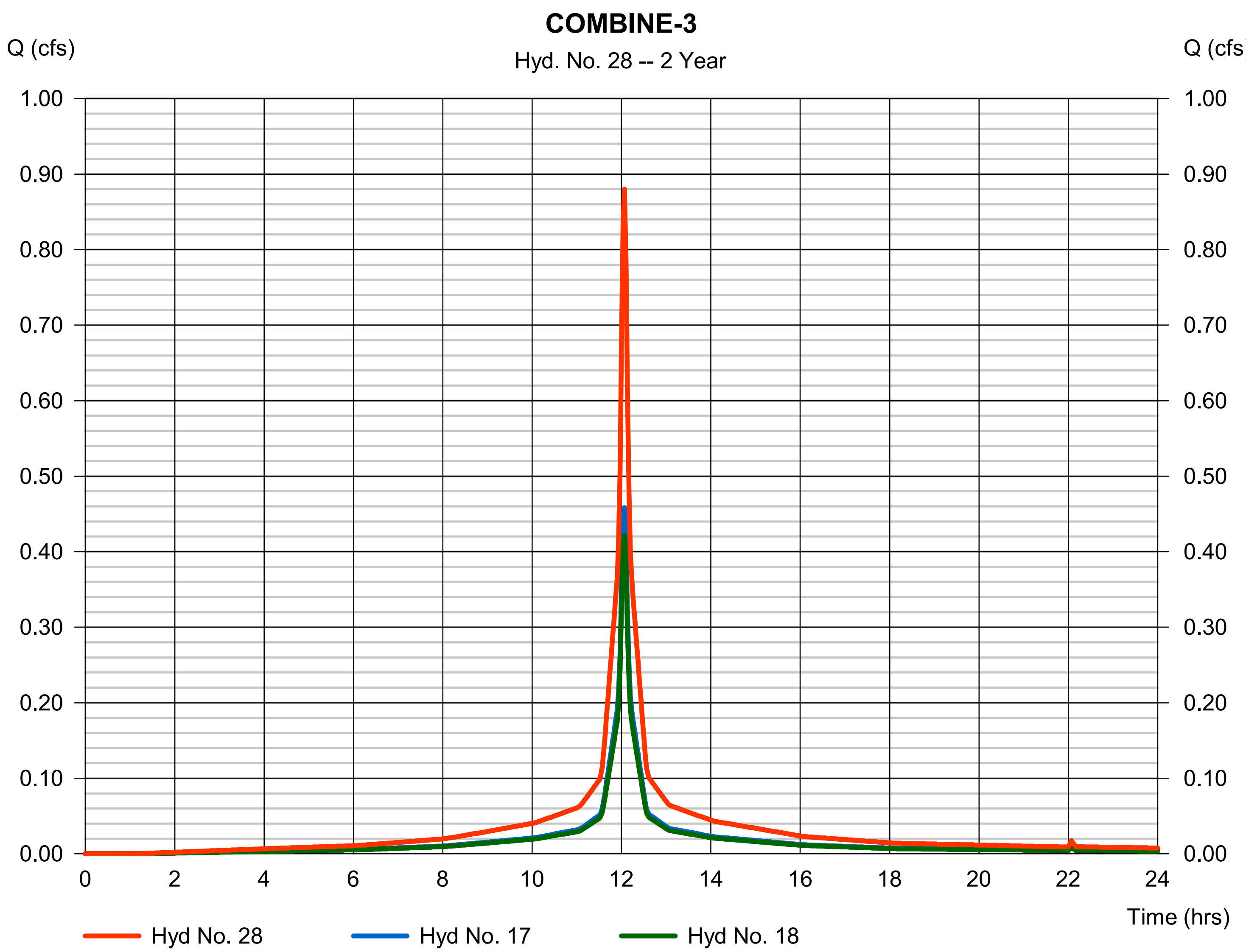
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 28

COMBINE-3

Hydrograph type	= Combine	Peak discharge	= 0.880 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 2,982 cuft
Inflow hyds.	= 17, 18	Contrib. drain. area	= 0.265 ac



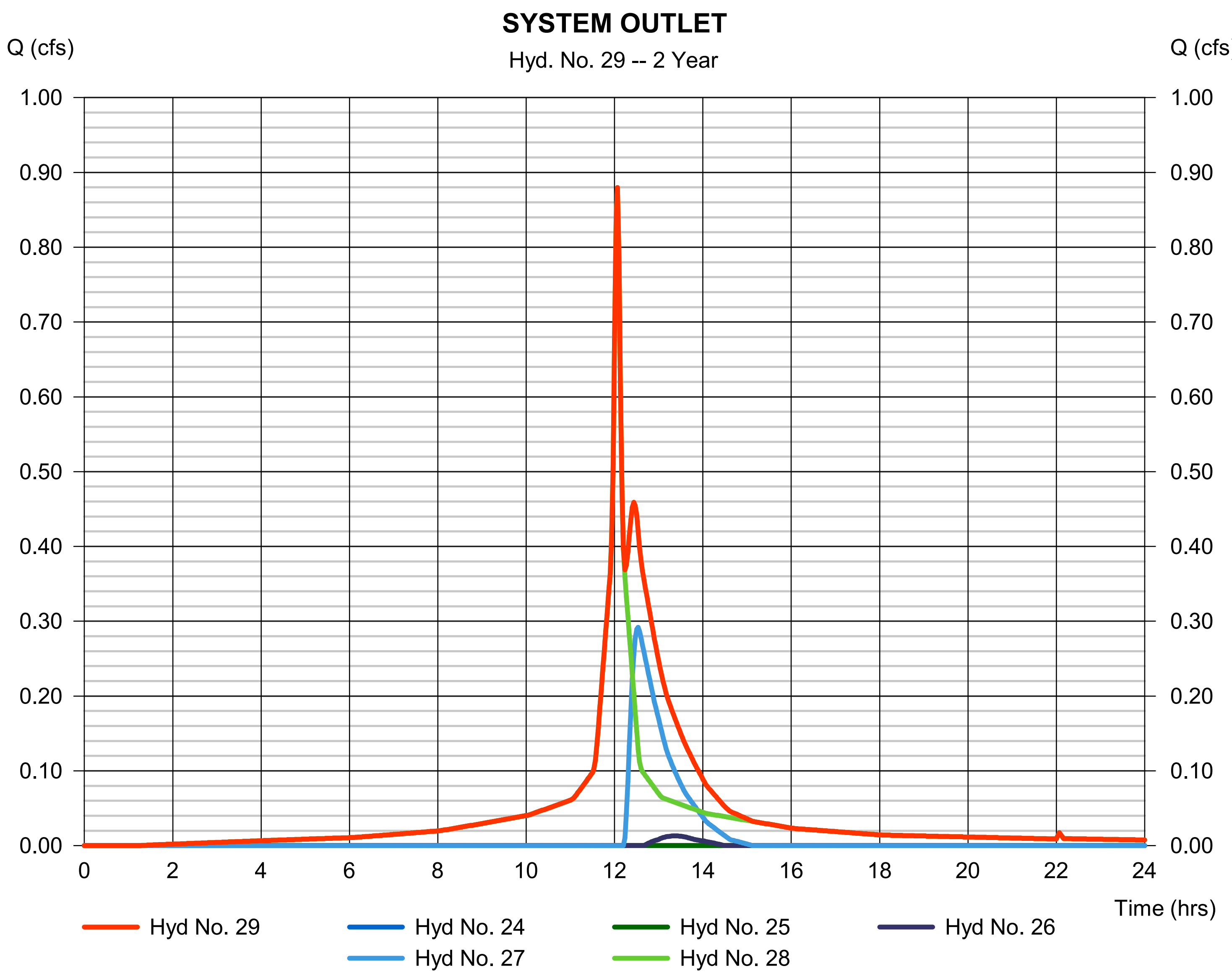
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 | Tuesday, 05 / 25 / 2021

Hyd. No. 29

SYSTEM OUTLET

Hydrograph type	= Combine	Peak discharge	= 0.880 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 3,992 cuft
Inflow hyds.	= 24, 25, 26, 27, 28	Contrib. drain. area	= 0.000 ac



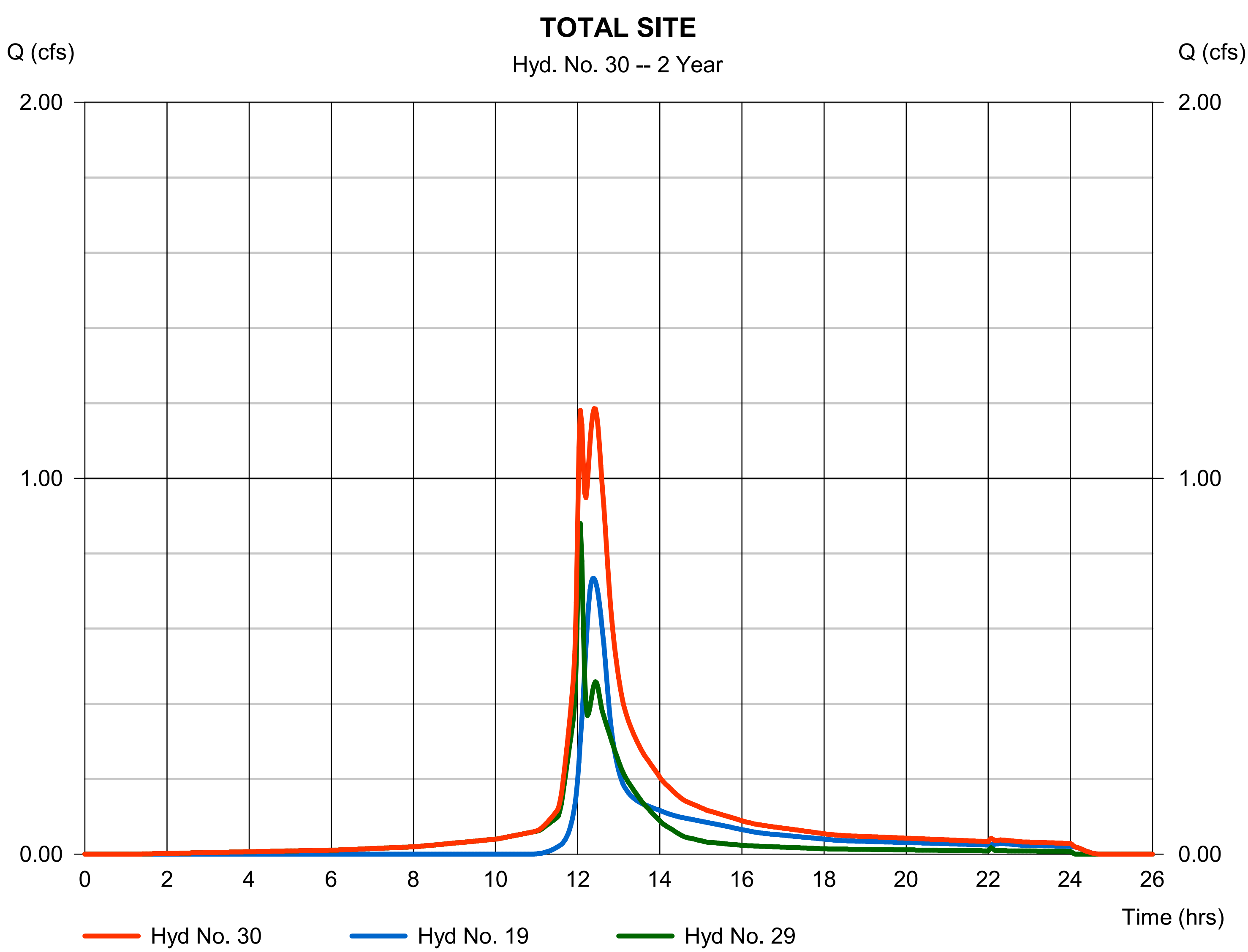
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 30

TOTAL SITE

Hydrograph type	= Combine	Peak discharge	= 1.185 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.40 hrs
Time interval	= 2 min	Hyd. volume	= 8,096 cuft
Inflow hyds.	= 19, 29	Contrib. drain. area	= 1.038 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.389	2	732	1,605	------	------	------	CB-01
2	SCS Runoff	0.317	2	726	1,083	------	------	------	CB-01A
3	SCS Runoff	0.259	2	724	823	------	------	------	CB-02
4	SCS Runoff	0.337	2	724	1,047	------	------	------	CB-03
5	SCS Runoff	0.268	2	724	854	------	------	------	CB-04
6	SCS Runoff	0.518	2	724	1,599	------	------	------	CB-05
7	SCS Runoff	0.292	2	724	922	------	------	------	CB-06
8	SCS Runoff	0.481	2	724	1,547	------	------	------	CB-07
9	SCS Runoff	0.560	2	724	1,784	------	------	------	CB-08
10	SCS Runoff	0.674	2	724	2,193	------	------	------	CB-09
11	SCS Runoff	0.632	2	724	1,993	------	------	------	CB-10
12	SCS Runoff	0.490	2	730	1,914	------	------	------	CB-11
13	SCS Runoff	1.754	2	724	5,856	------	------	------	PP-01
14	SCS Runoff	2.308	2	724	7,506	------	------	------	PP-02
15	SCS Runoff	2.910	2	724	10,032	------	------	------	RF-01
16	SCS Runoff	2.981	2	724	10,278	------	------	------	RF-02
17	SCS Runoff	0.703	2	724	2,425	------	------	------	RF-03
18	SCS Runoff	0.647	2	724	2,231	------	------	------	RF-04
19	SCS Runoff	1.726	2	740	9,131	------	------	------	PR-WS-01
20	Combine	1.351	2	724	5,110	1, 2, 3, 6,	------	------	COMBINE-1
21	Combine	4.708	2	724	16,445	7, 8, 9, 12, 16,	------	------	COMBINE-2
22	Combine	6.059	2	724	21,556	20, 21	------	------	TO SOUTH INFIL SYS
23	Combine	4.821	2	724	16,118	4, 5, 10, 11, 15,	------	------	TO NORTH INFIL SYS
24	Reservoir	0.053	2	742	79	13	142.13	1,789	SOUTH POR PVMT
25	Reservoir	0.000	2	780	0	14	141.49	2,281	NORTH POR PVMT
26	Reservoir	1.750	2	744	5,699	22	143.65	7,518	SOUTH INFIL SYS
27	Reservoir	1.863	2	734	5,078	23	143.73	5,328	NORTH INFIL SYS
28	Combine	1.350	2	724	4,656	17, 18,	------	------	COMBINE-3
29	Combine	3.943	2	738	15,512	24, 25, 26, 27, 28	------	------	SYSTEM OUTLET
30	Combine	5.658	2	740	24,643	19, 29	------	------	TOTAL SITE

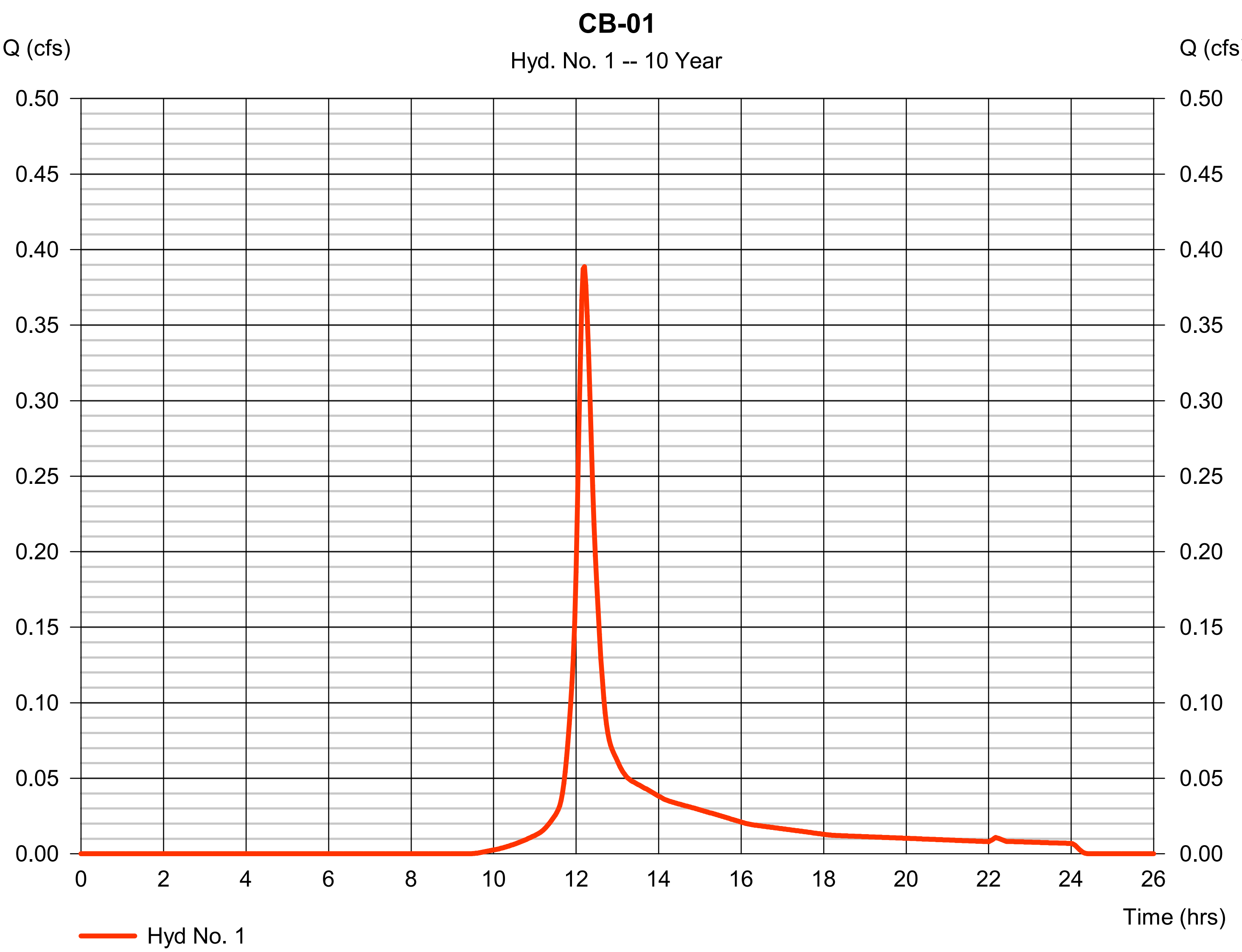
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 1

CB-01

Hydrograph type	= SCS Runoff	Peak discharge	= 0.389 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 1,605 cuft
Drainage area	= 0.194 ac	Curve number	= 70
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 14.20 min
Total precip.	= 5.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



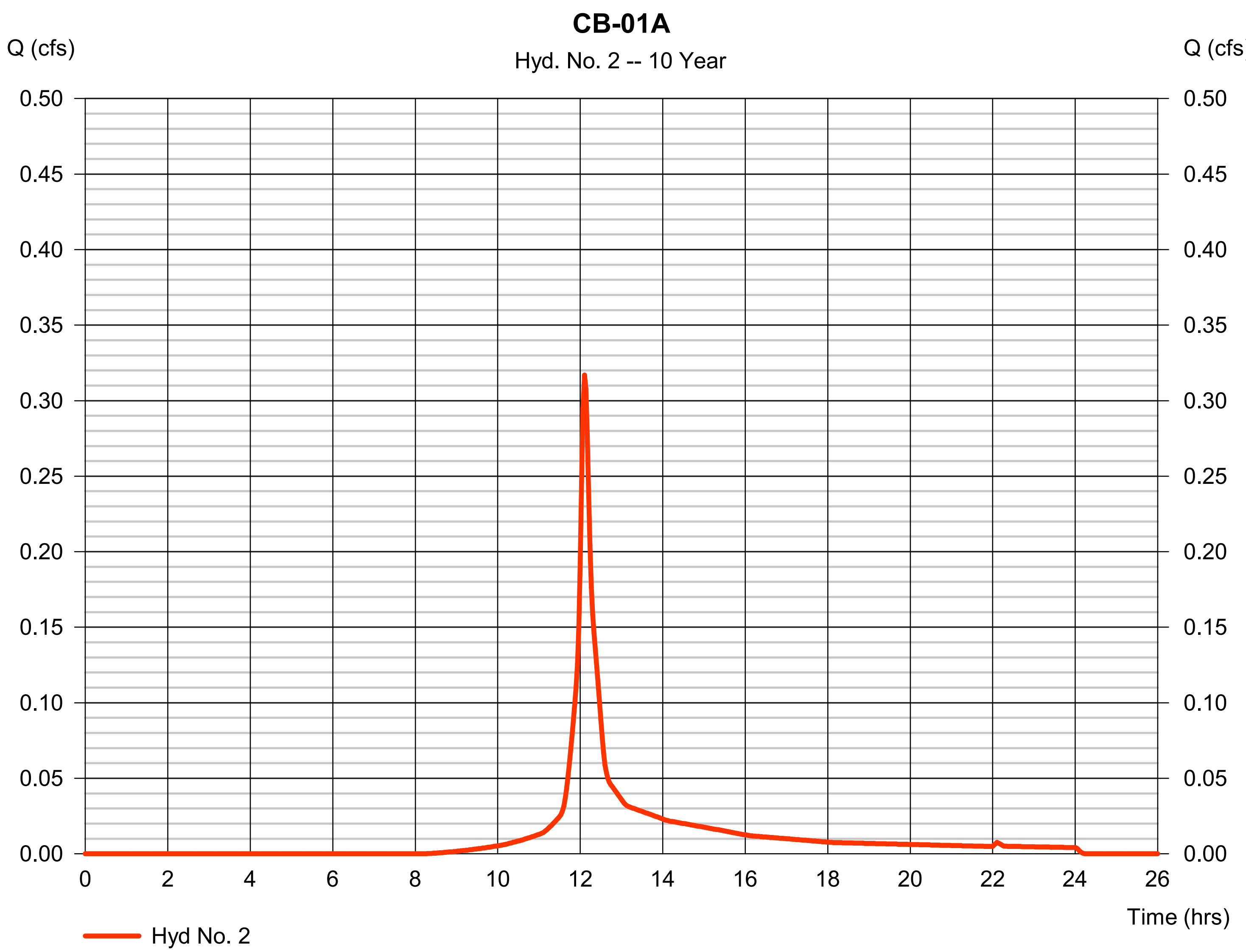
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 2

CB-01A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.317 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 1,083 cuft
Drainage area	= 0.104 ac	Curve number	= 76
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 7.80 min
Total precip.	= 5.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



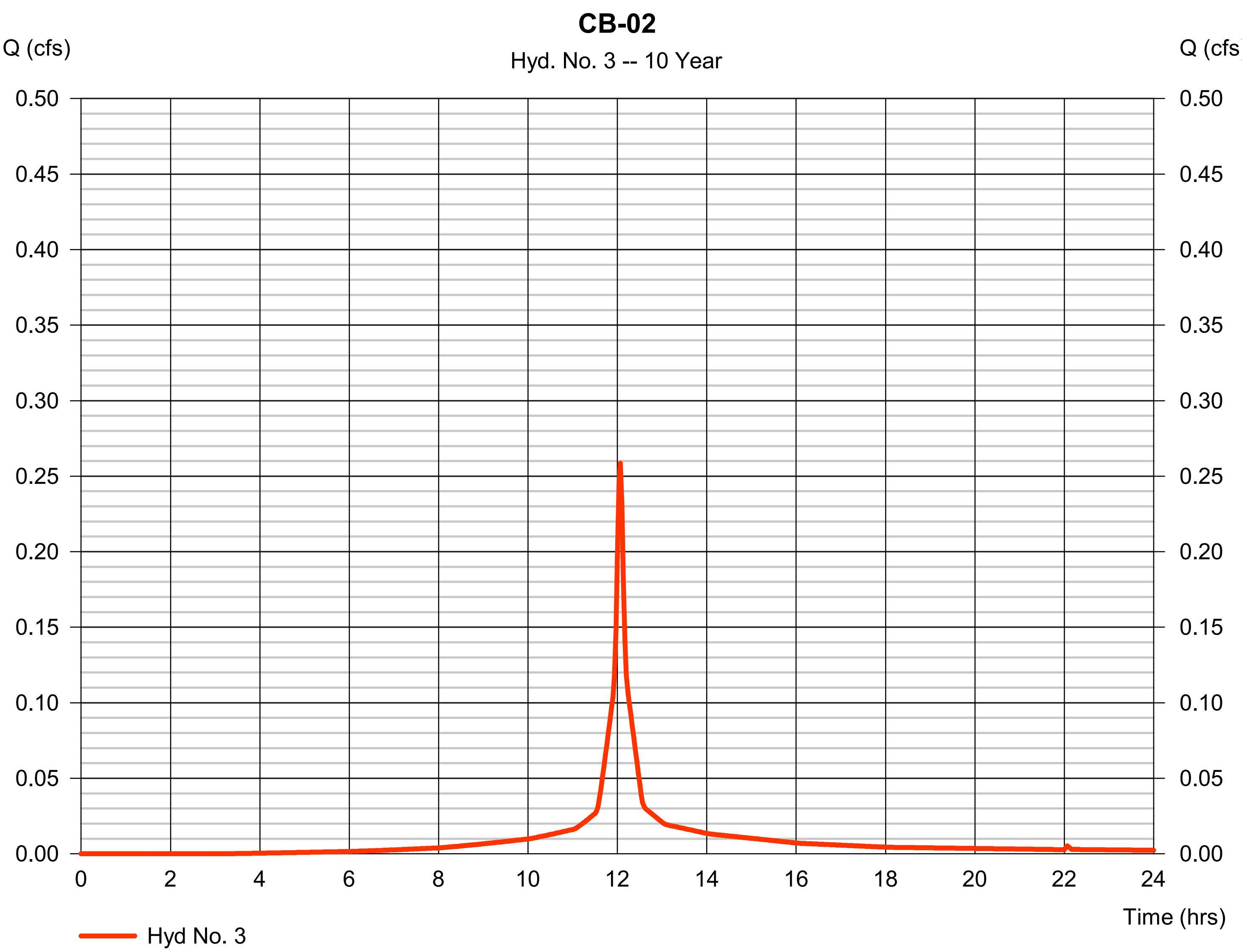
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 — Tuesday, 05 / 25 / 2021

Hyd. No. 3

CB-02

Hydrograph type	= SCS Runoff	Peak discharge	= 0.259 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 823 cuft
Drainage area	= 0.054 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

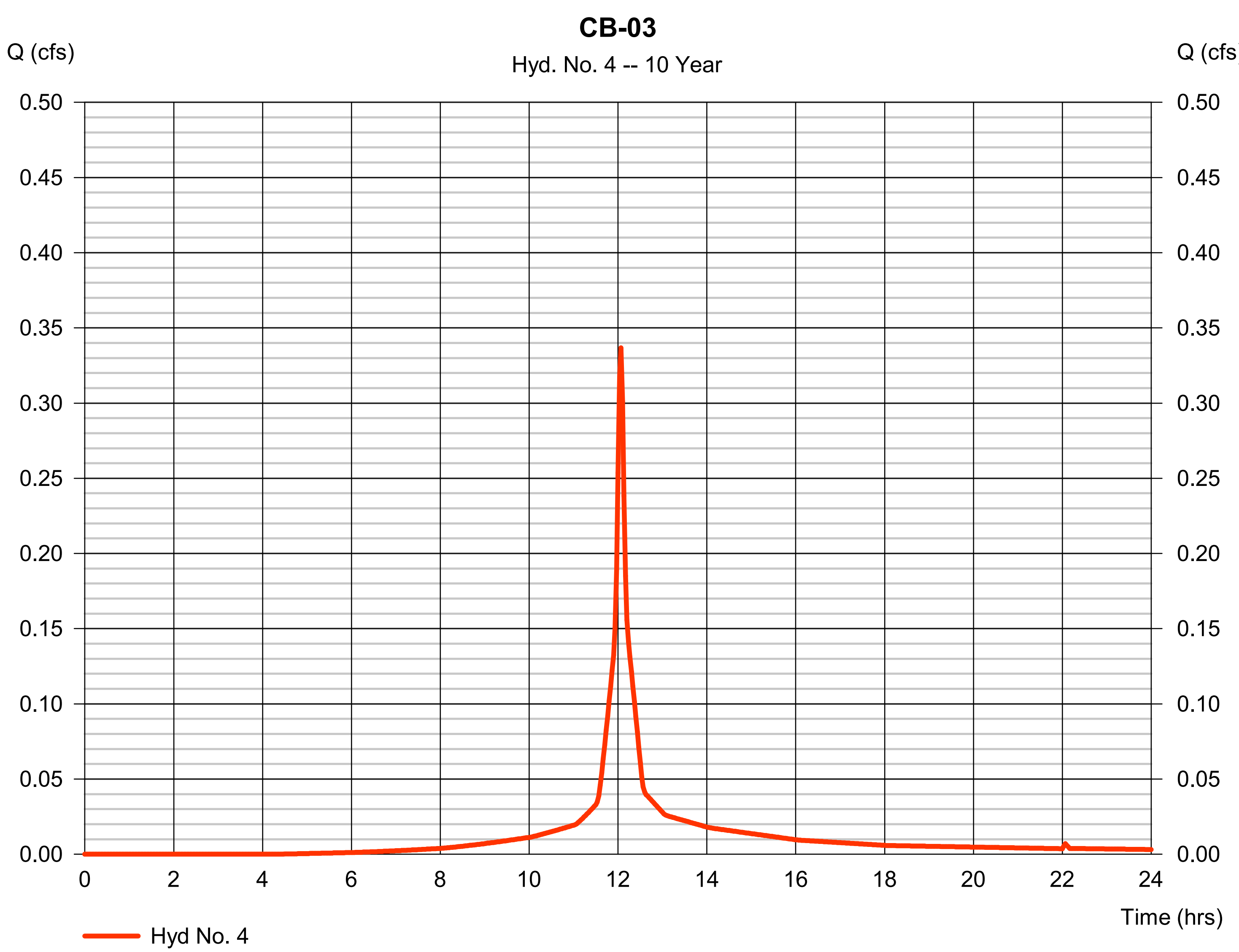


Hydrograph Report

Hyd. No. 4

CB-03

Hydrograph type	= SCS Runoff	Peak discharge	= 0.337 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,047 cuft
Drainage area	= 0.074 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



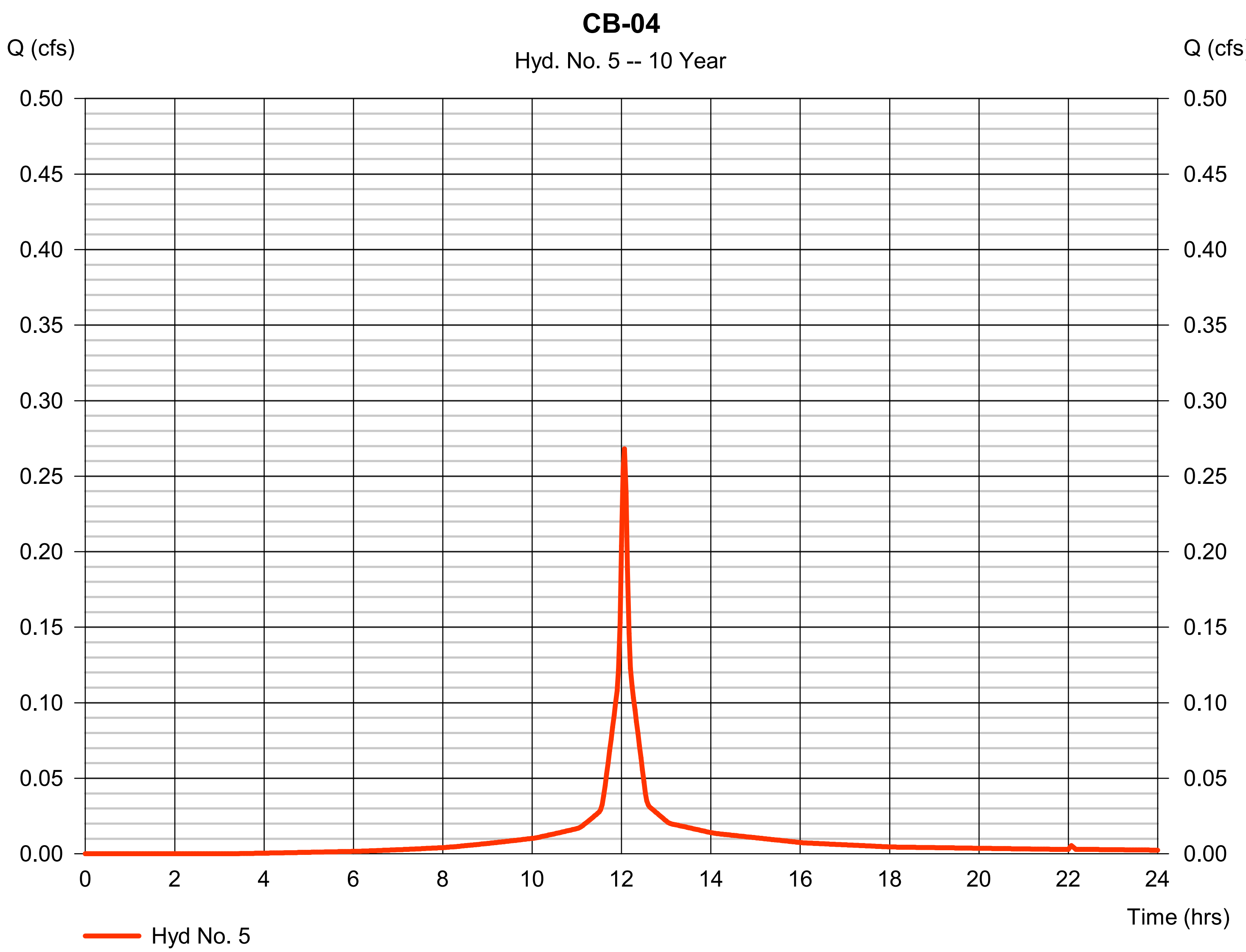
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 5

CB-04

Hydrograph type	= SCS Runoff	Peak discharge	= 0.268 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 854 cuft
Drainage area	= 0.056 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



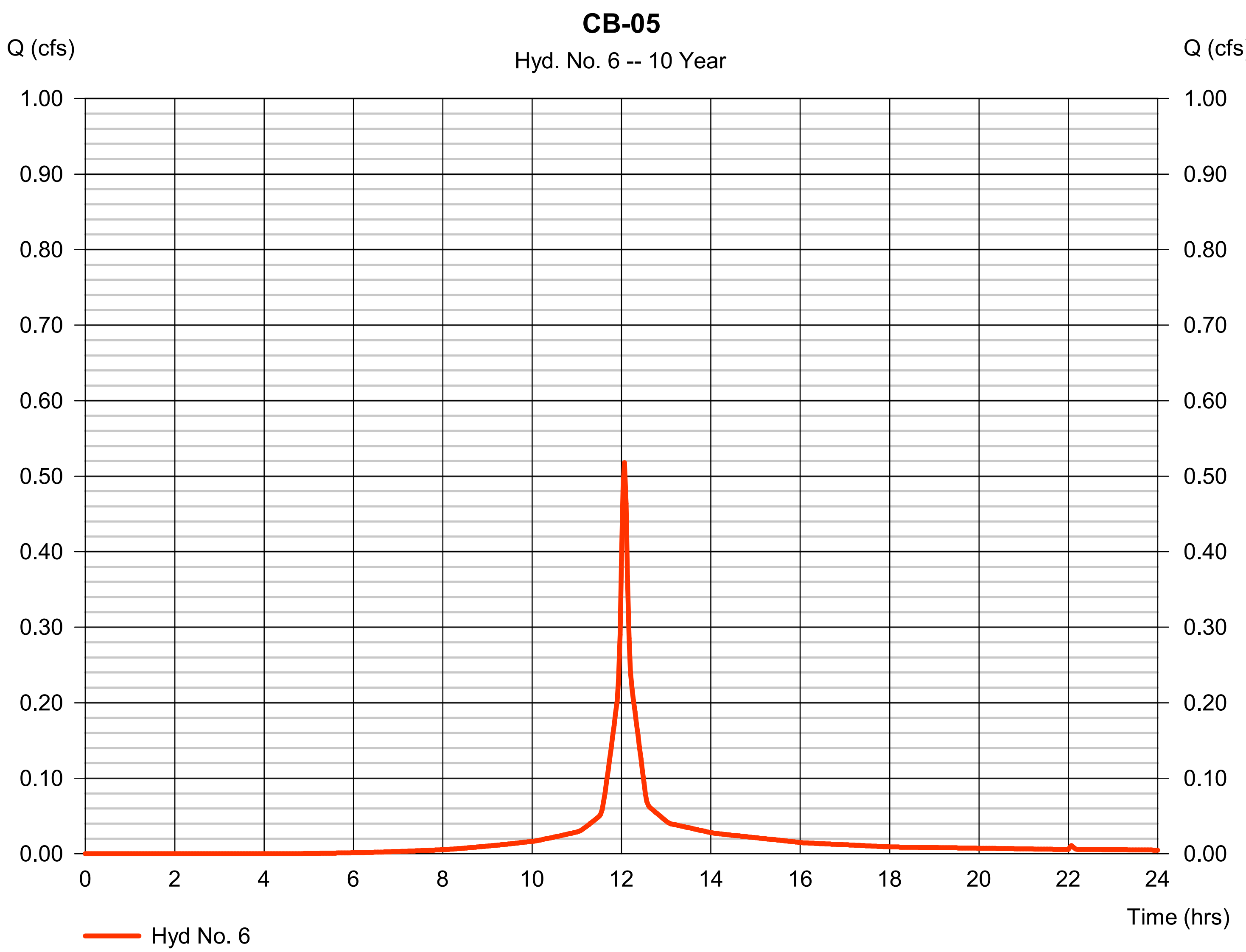
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 6

CB-05

Hydrograph type	= SCS Runoff	Peak discharge	= 0.518 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,599 cuft
Drainage area	= 0.116 ac	Curve number	= 88
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



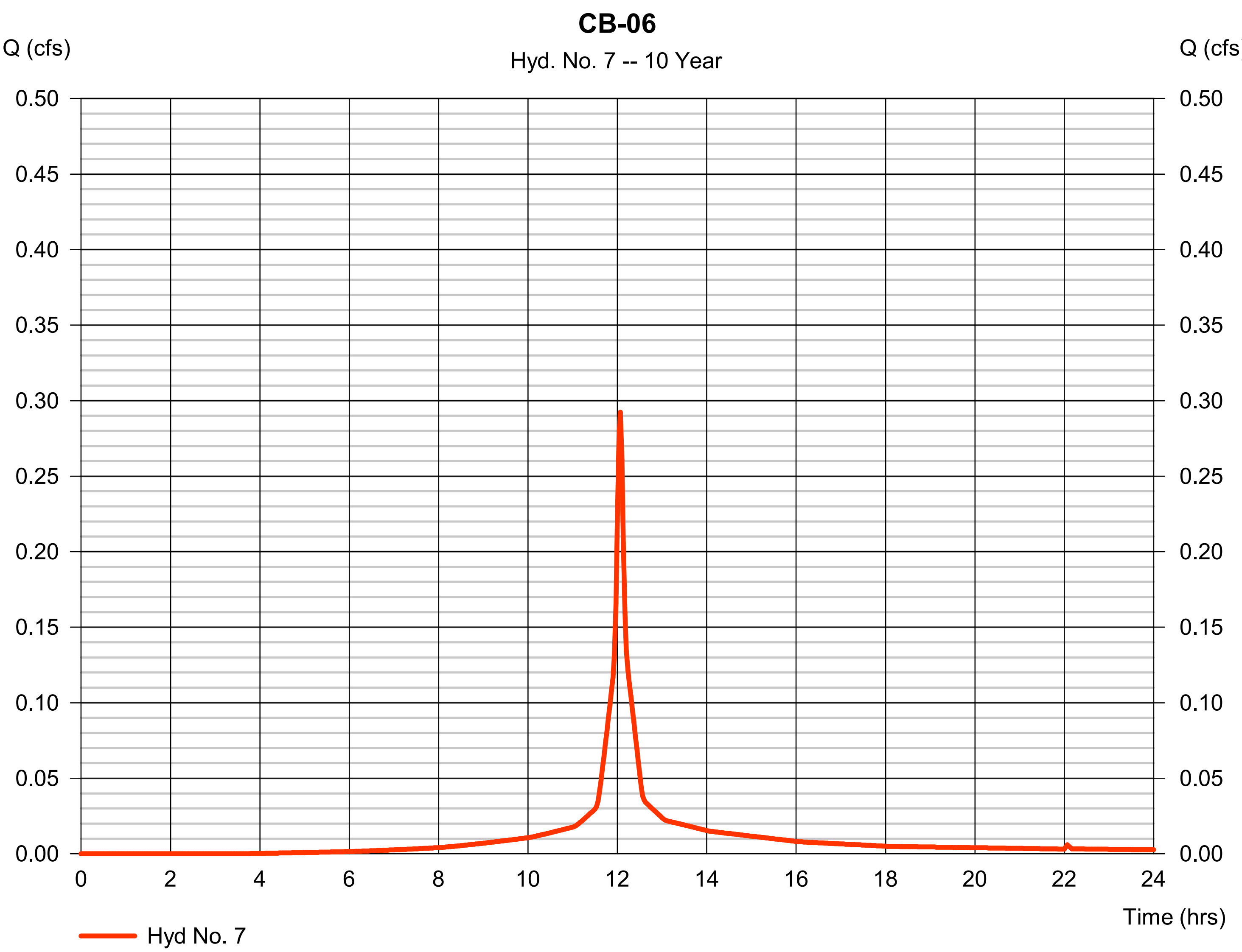
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 7

CB-06

Hydrograph type	= SCS Runoff	Peak discharge	= 0.292 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 922 cuft
Drainage area	= 0.062 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



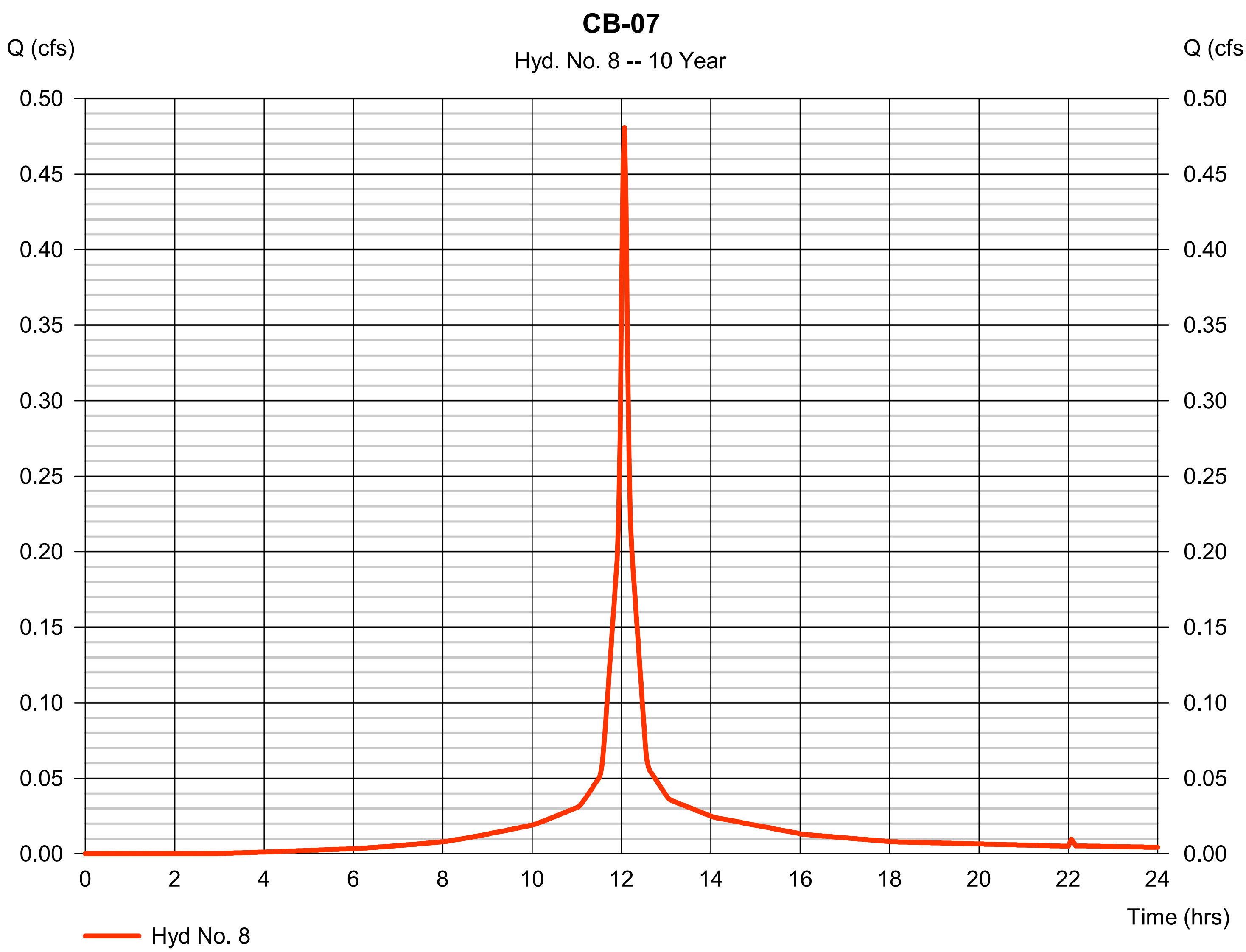
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 8

CB-07

Hydrograph type	= SCS Runoff	Peak discharge	= 0.481 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,547 cuft
Drainage area	= 0.099 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



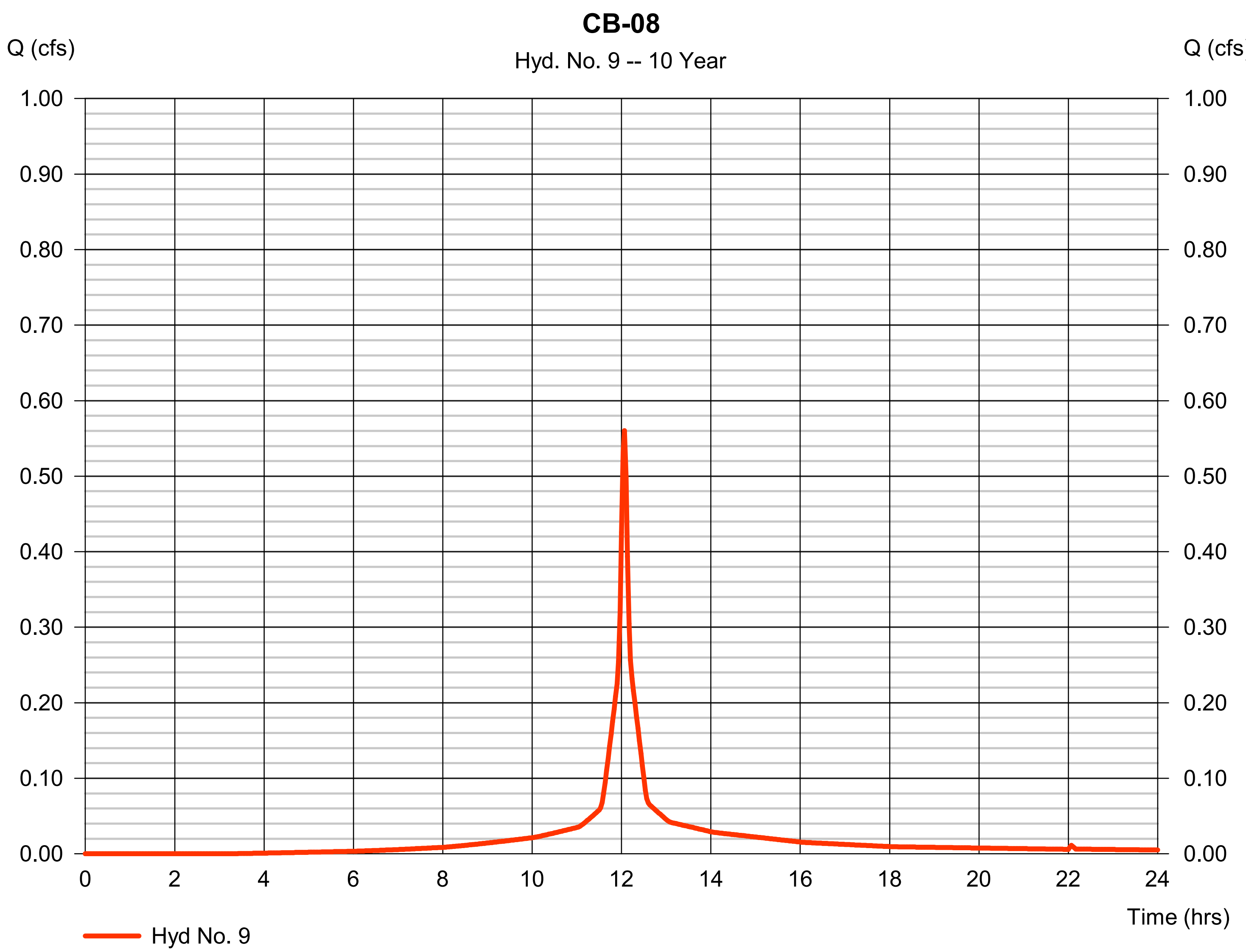
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 9

CB-08

Hydrograph type	= SCS Runoff	Peak discharge	= 0.560 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,784 cuft
Drainage area	= 0.117 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.50 min
Total precip.	= 5.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



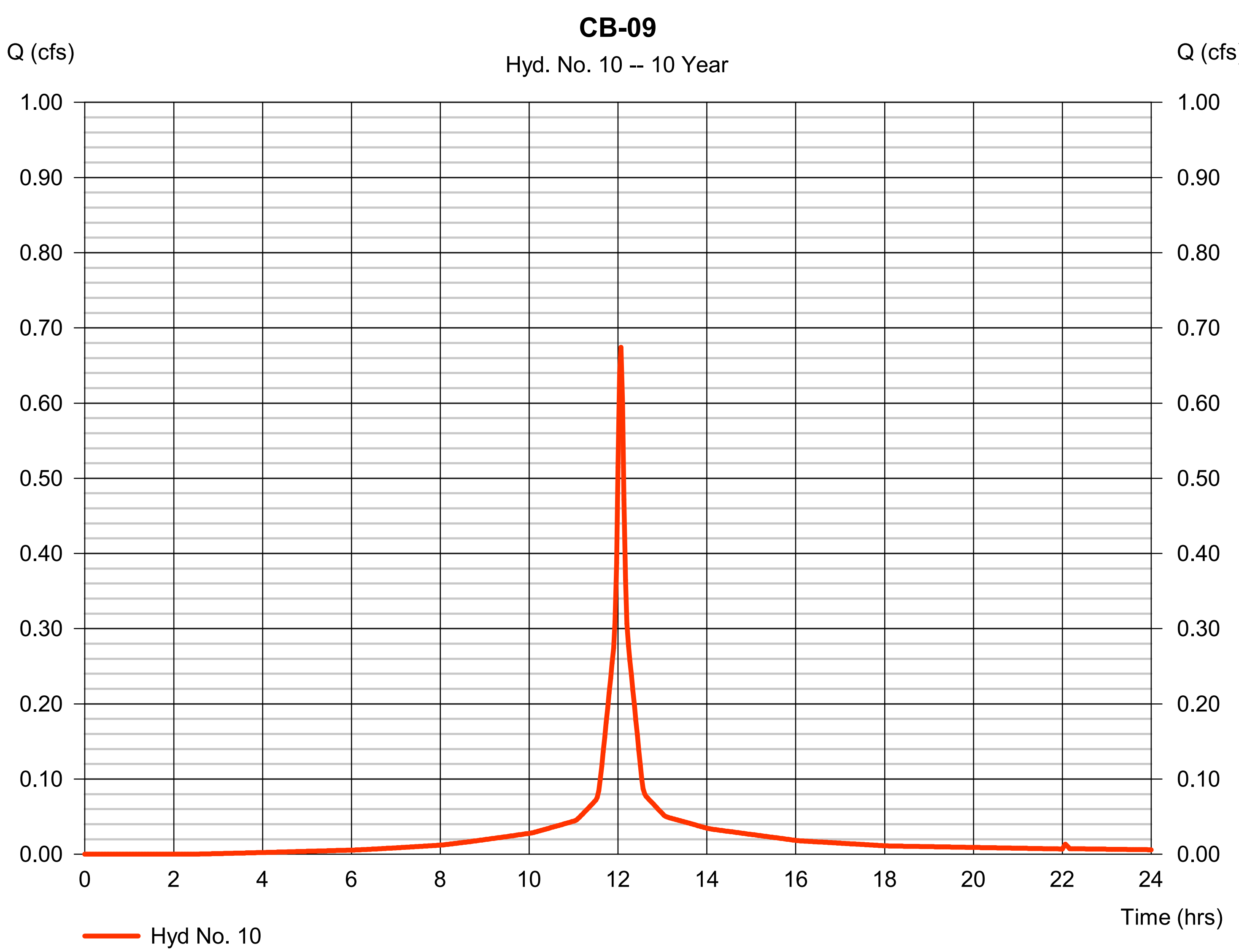
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 10

CB-09

Hydrograph type	= SCS Runoff	Peak discharge	= 0.674 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 2,193 cuft
Drainage area	= 0.137 ac	Curve number	= 94
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



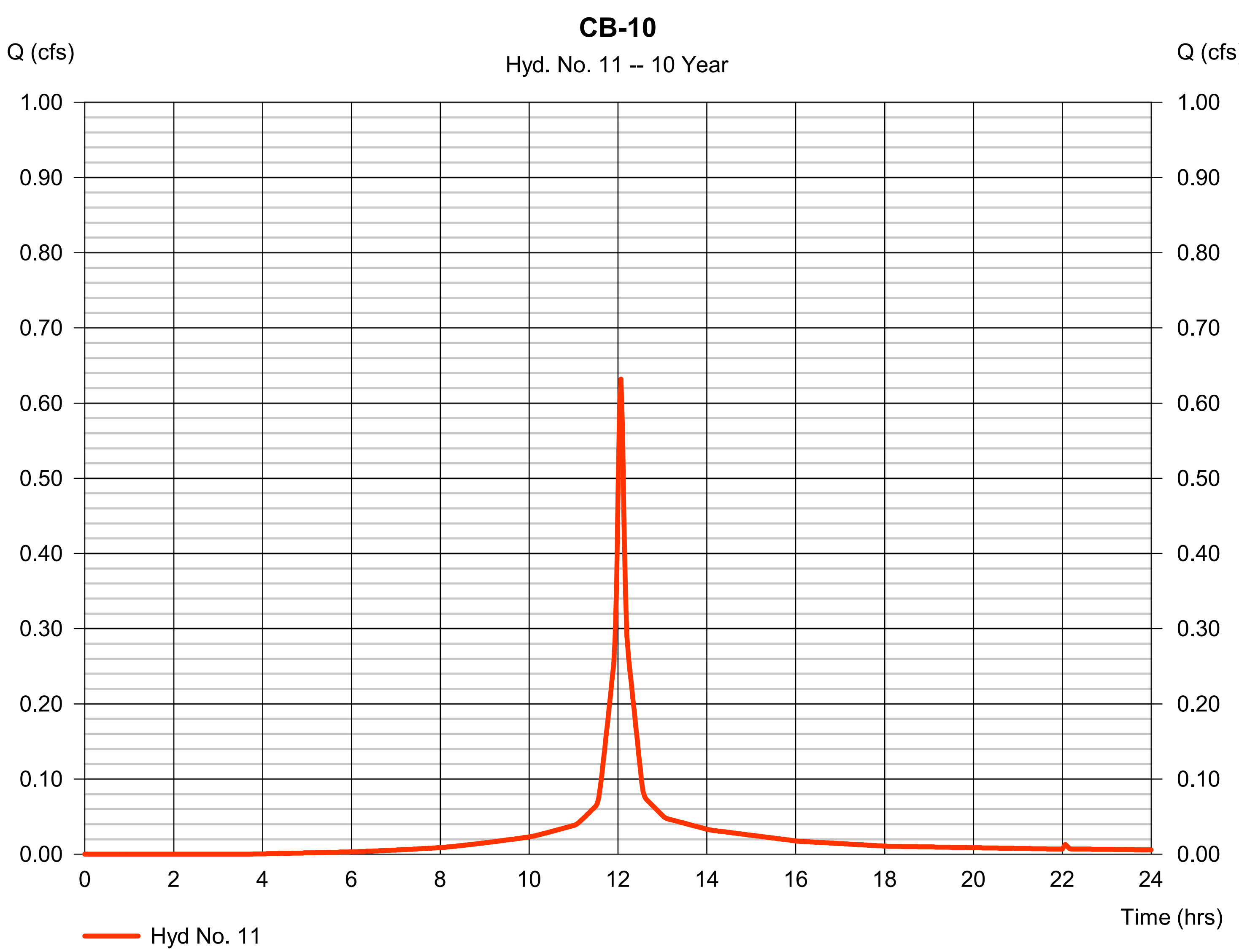
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 | Tuesday, 05 / 25 / 2021

Hyd. No. 11

CB-10

Hydrograph type	= SCS Runoff	Peak discharge	= 0.632 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,993 cuft
Drainage area	= 0.134 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



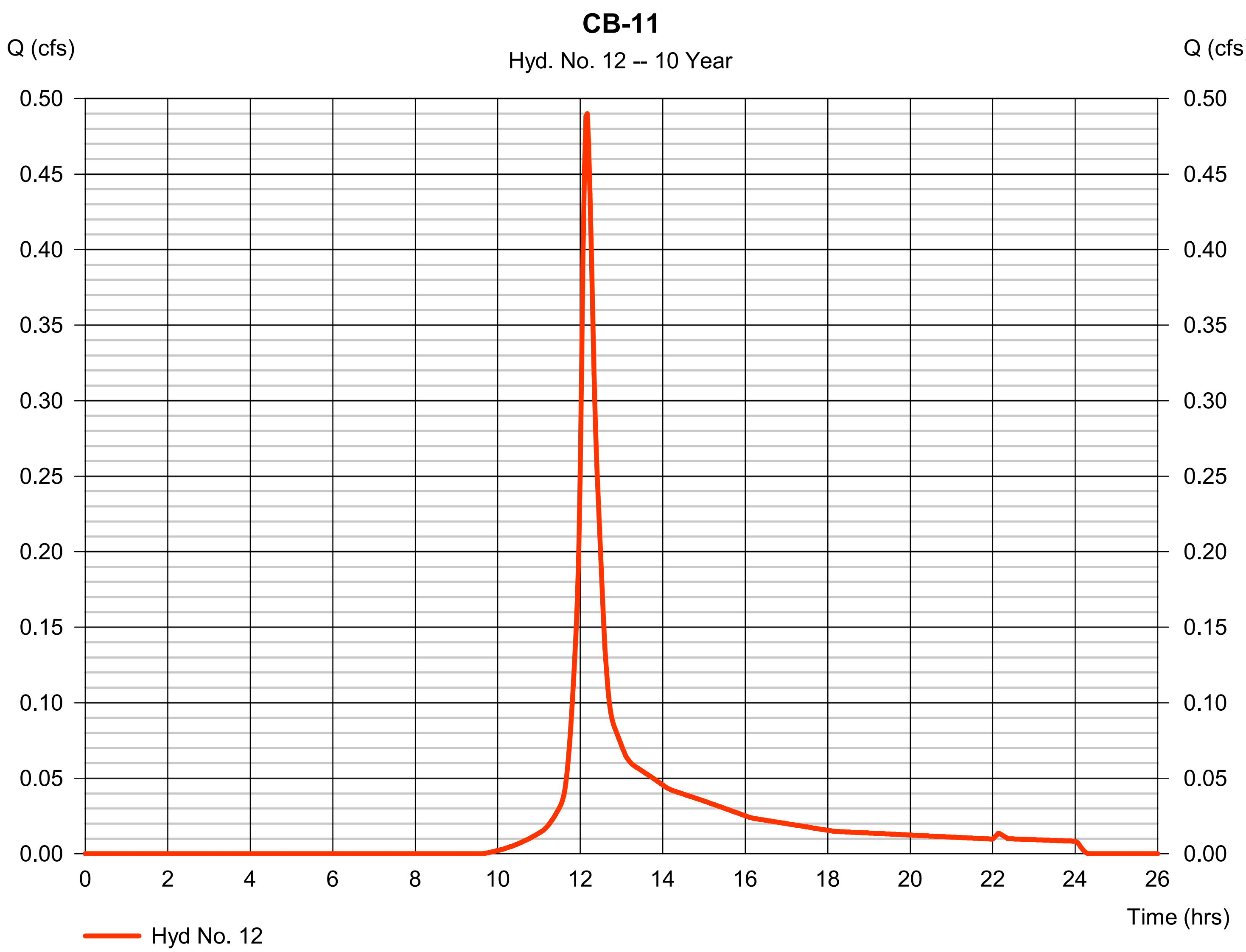
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 12

CB-11

Hydrograph type	= SCS Runoff	Peak discharge	= 0.490 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 1,914 cuft
Drainage area	= 0.227 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.60 min
Total precip.	= 5.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



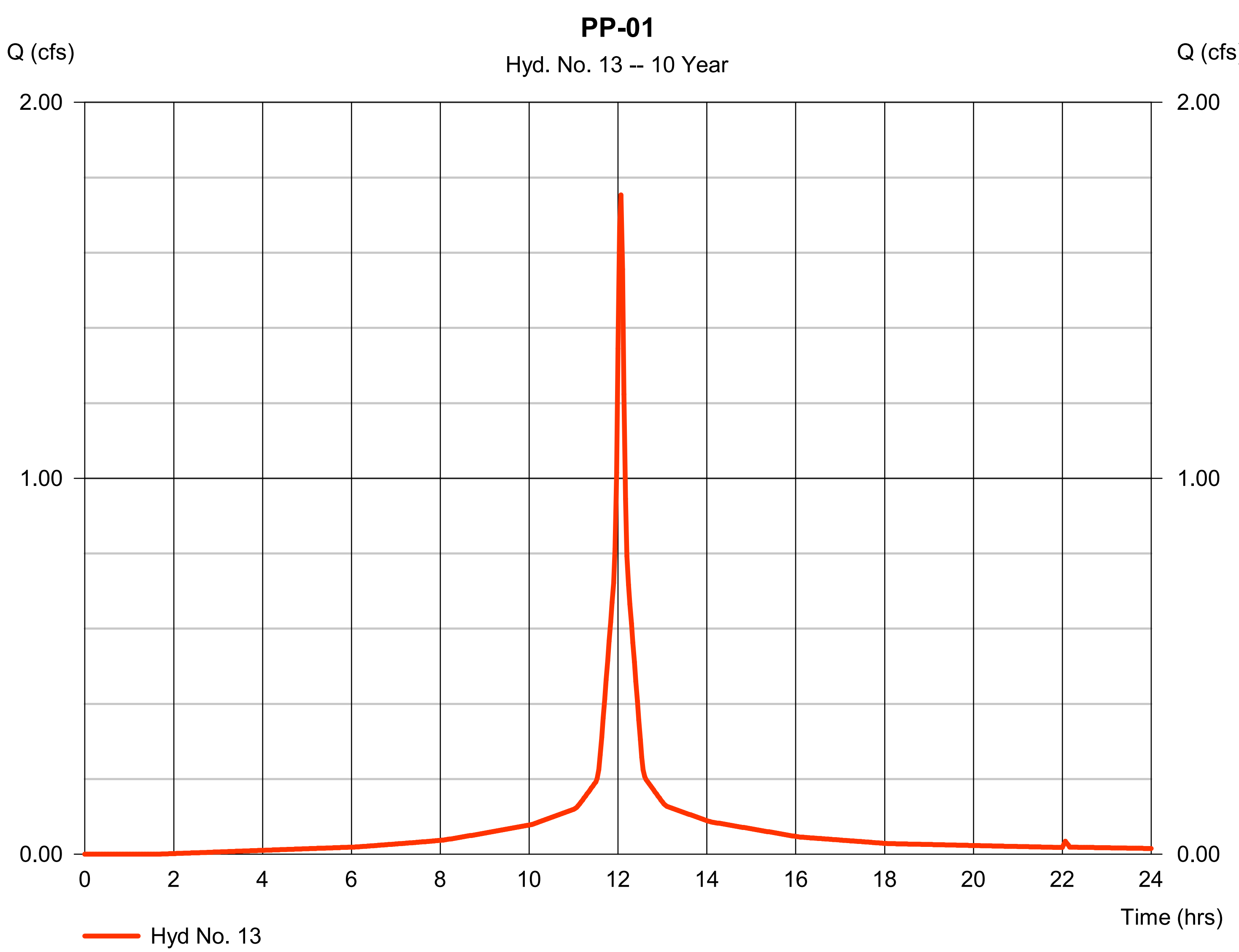
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 13

PP-01

Hydrograph type	= SCS Runoff	Peak discharge	= 1.754 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 5,856 cuft
Drainage area	= 0.349 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.60 min
Total precip.	= 5.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



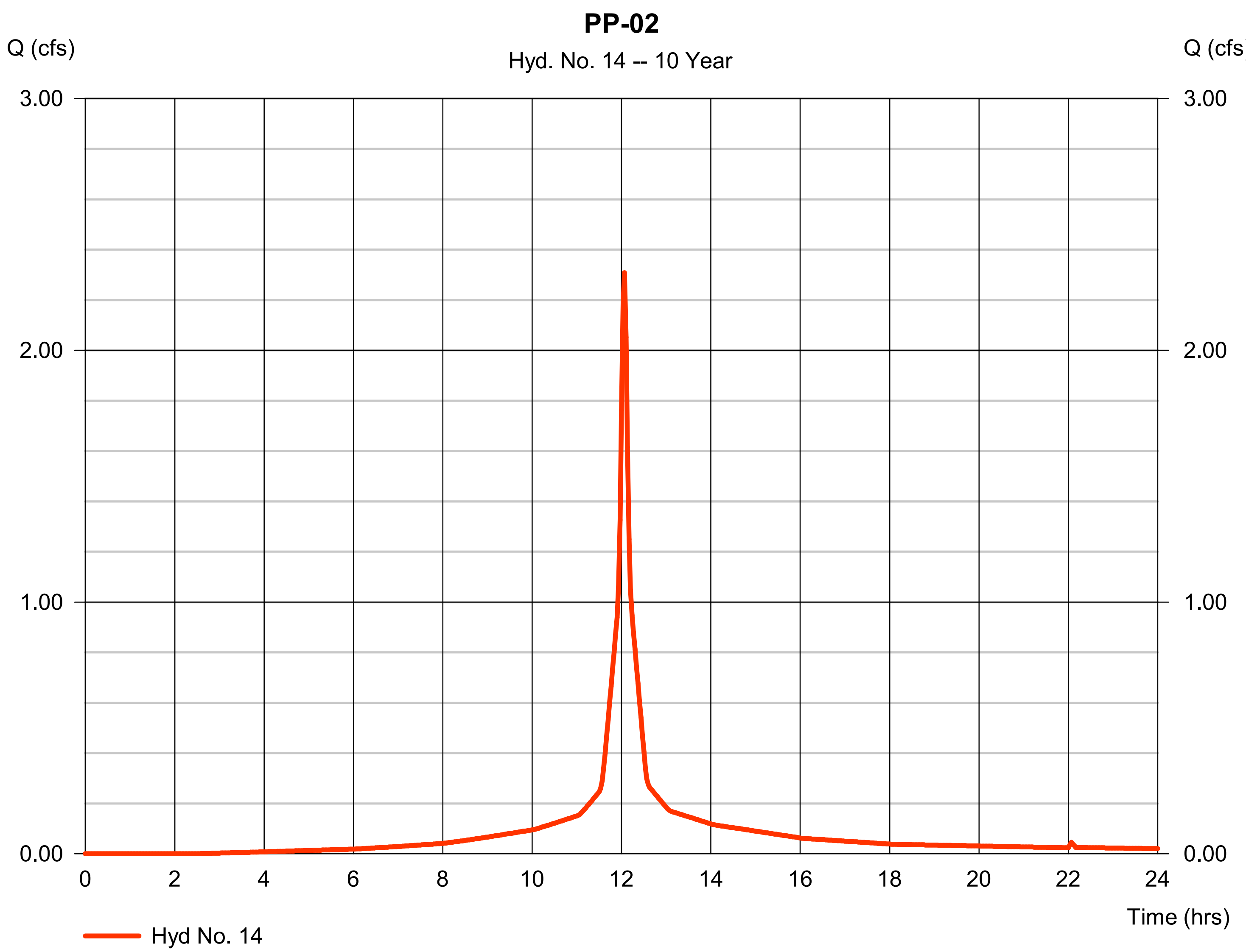
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 14

PP-02

Hydrograph type	= SCS Runoff	Peak discharge	= 2.308 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 7,506 cuft
Drainage area	= 0.469 ac	Curve number	= 94
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



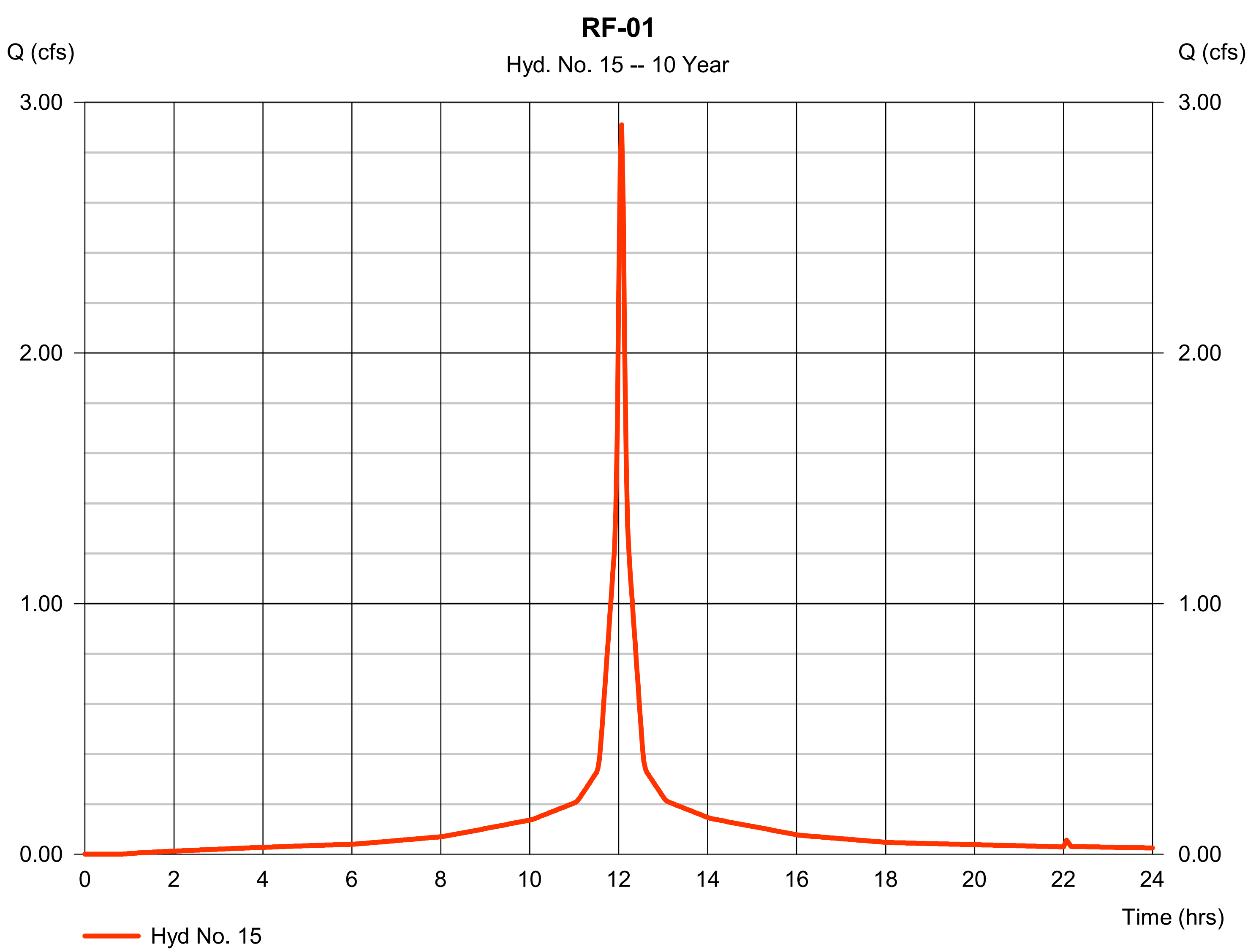
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 15

RF-01

Hydrograph type	= SCS Runoff	Peak discharge	= 2.910 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 10,032 cuft
Drainage area	= 0.571 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



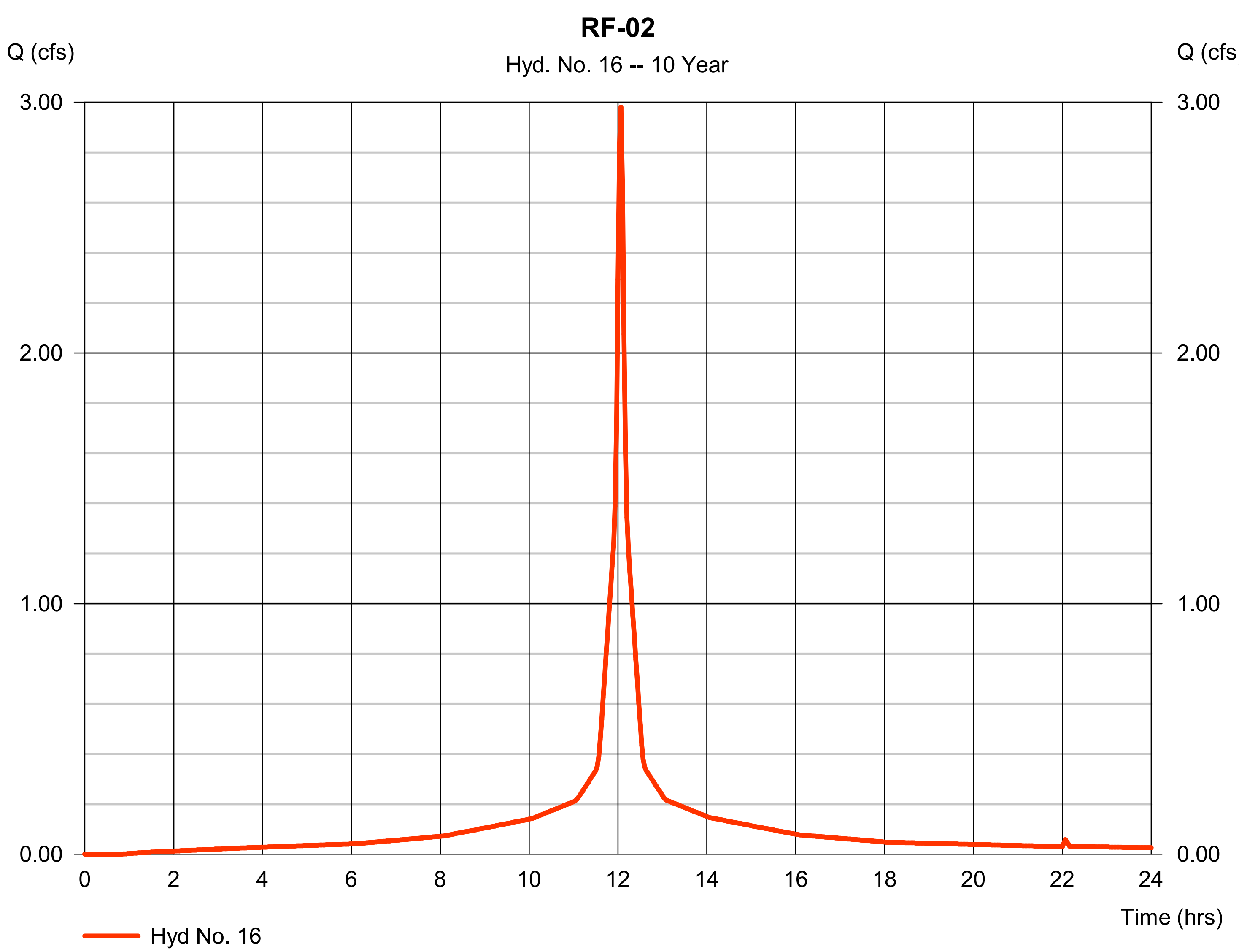
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 — Tuesday, 05 / 25 / 2021

Hyd. No. 16

RF-02

Hydrograph type	= SCS Runoff	Peak discharge	= 2.981 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 10,278 cuft
Drainage area	= 0.585 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



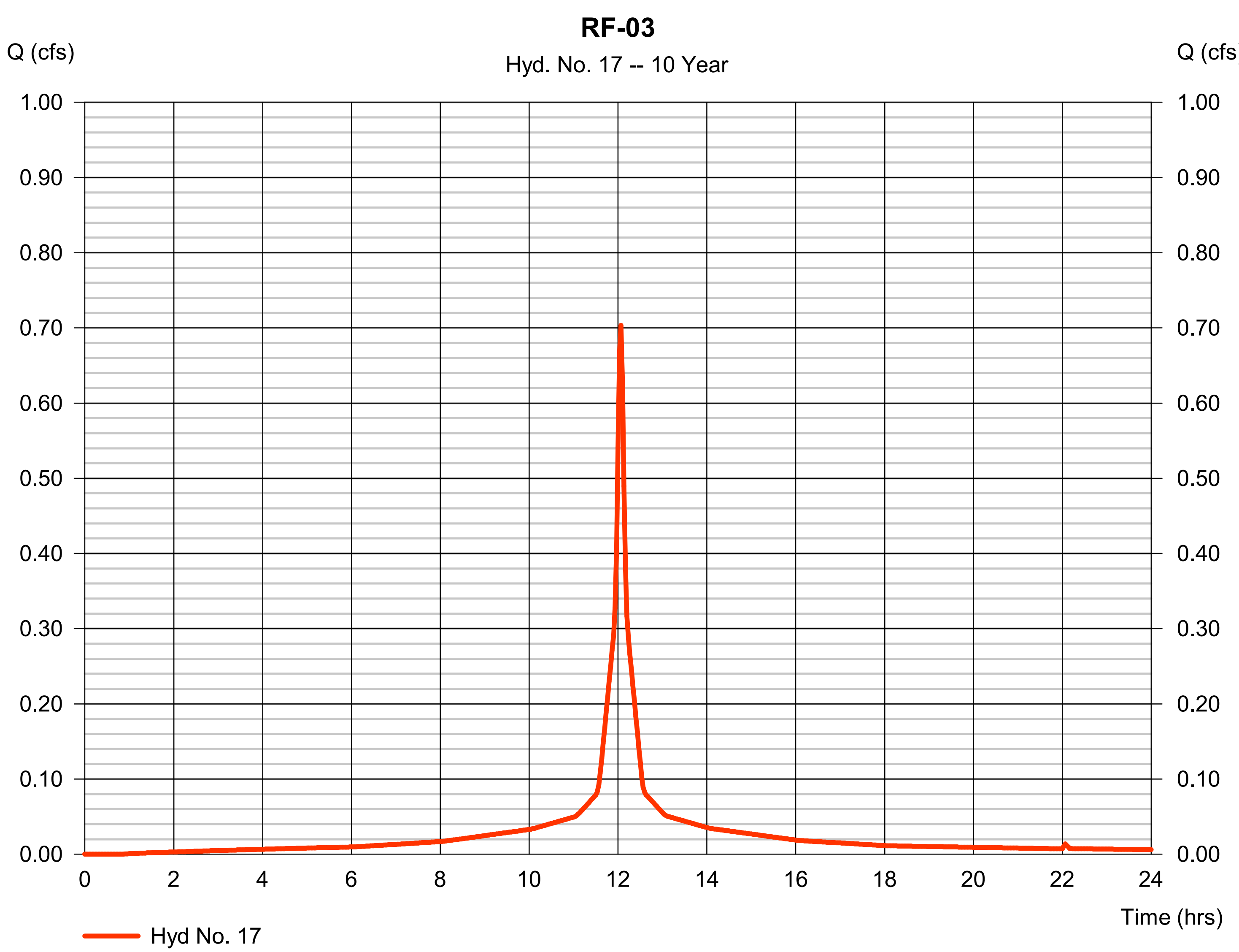
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 17

RF-03

Hydrograph type	= SCS Runoff	Peak discharge	= 0.703 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 2,425 cuft
Drainage area	= 0.138 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



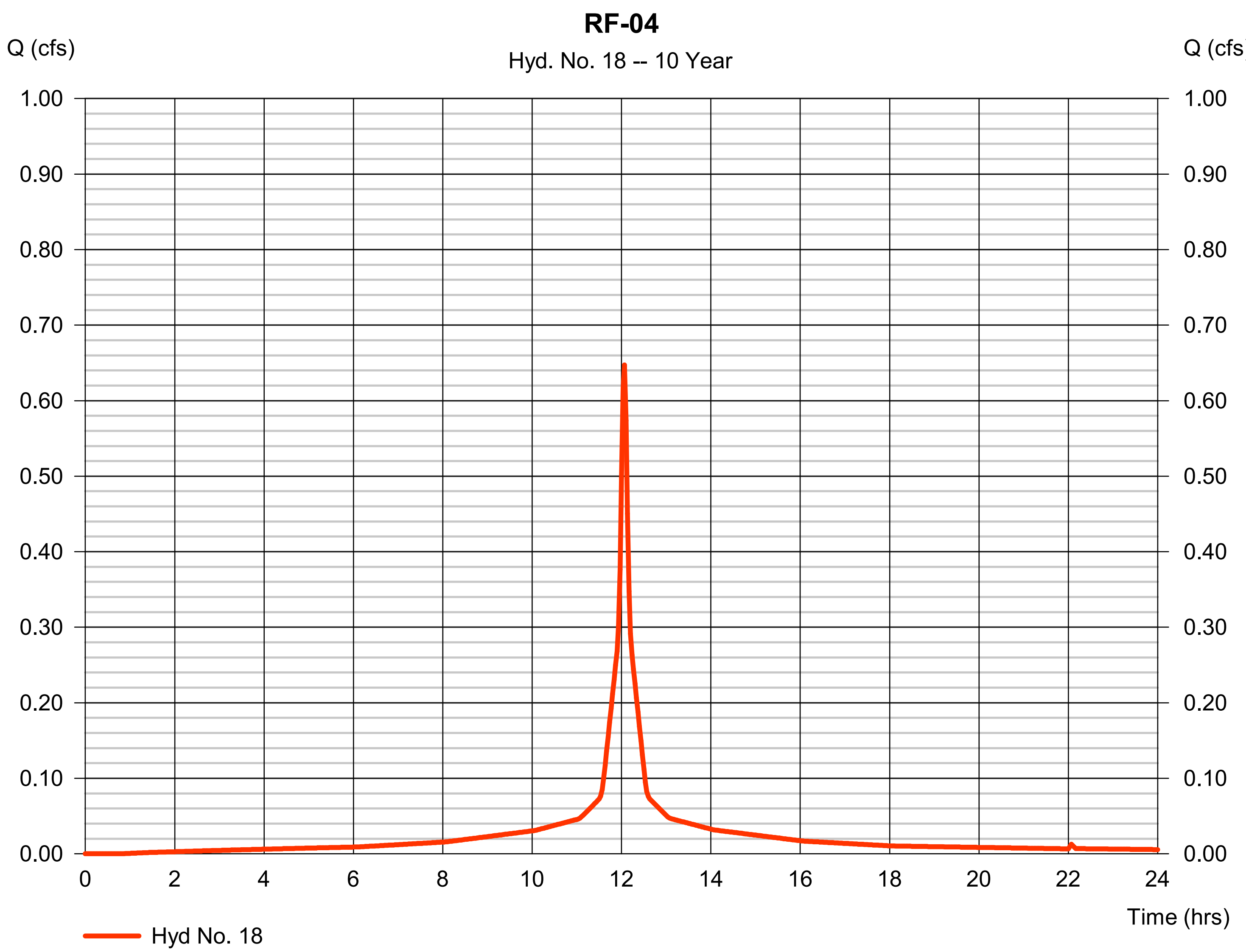
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 18

RF-04

Hydrograph type	= SCS Runoff	Peak discharge	= 0.647 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 2,231 cuft
Drainage area	= 0.127 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



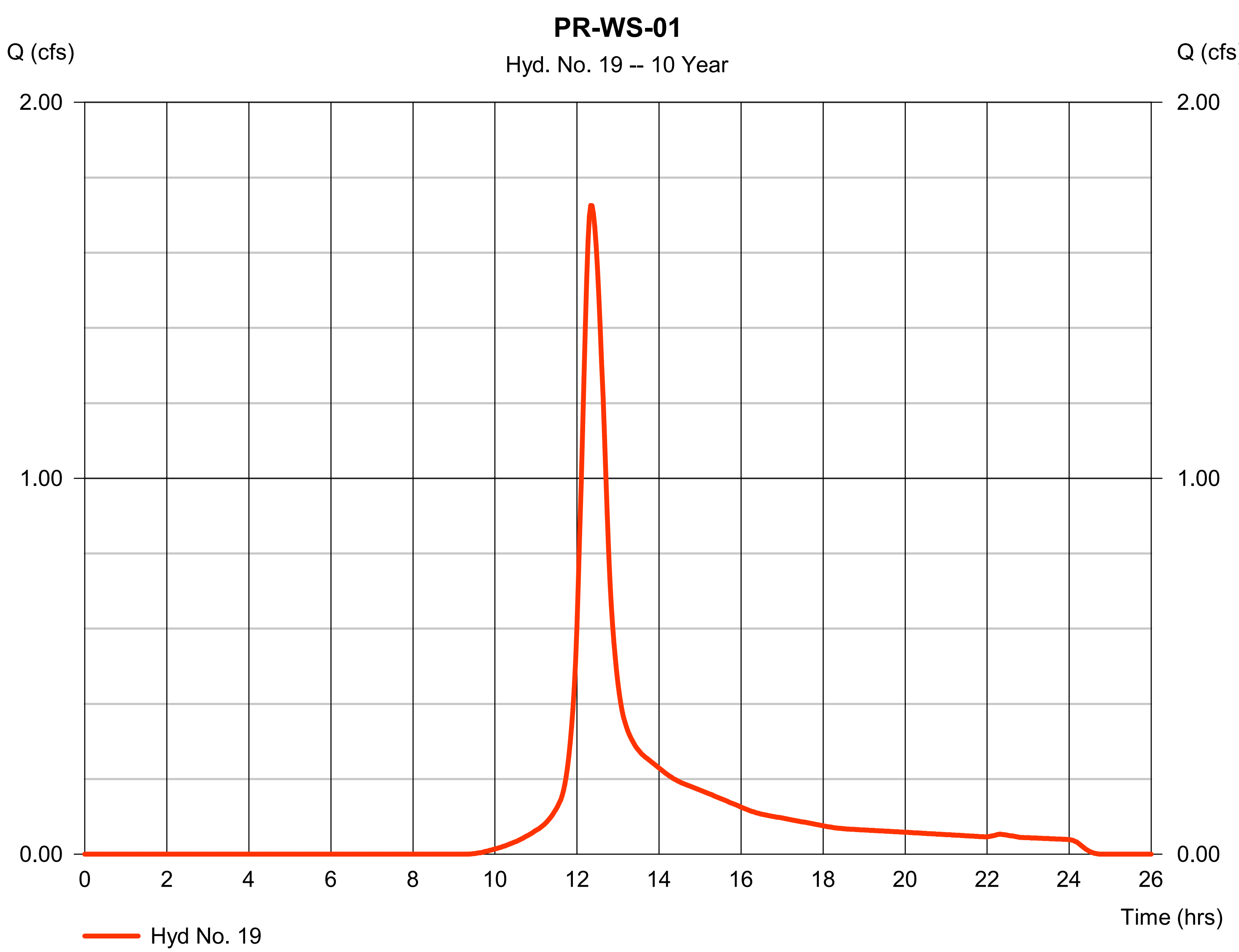
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 | Tuesday, 05 / 25 / 2021

Hyd. No. 19

PR-WS-01

Hydrograph type	= SCS Runoff	Peak discharge	= 1.726 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.33 hrs
Time interval	= 2 min	Hyd. volume	= 9,131 cuft
Drainage area	= 1.038 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 27.60 min
Total precip.	= 5.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



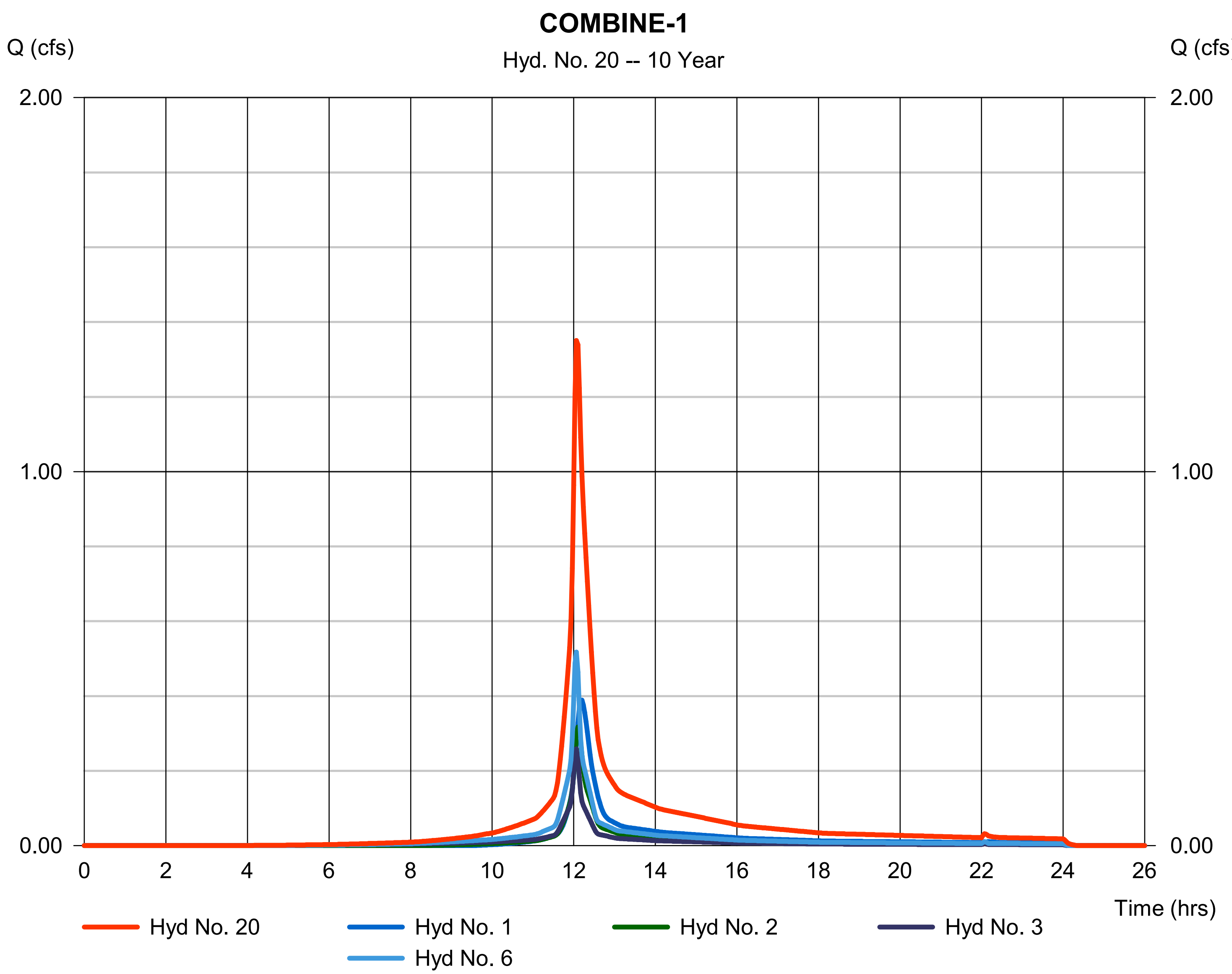
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 20

COMBINE-1

Hydrograph type	= Combine	Peak discharge	= 1.351 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 5,110 cuft
Inflow hyds.	= 1, 2, 3, 6	Contrib. drain. area	= 0.468 ac



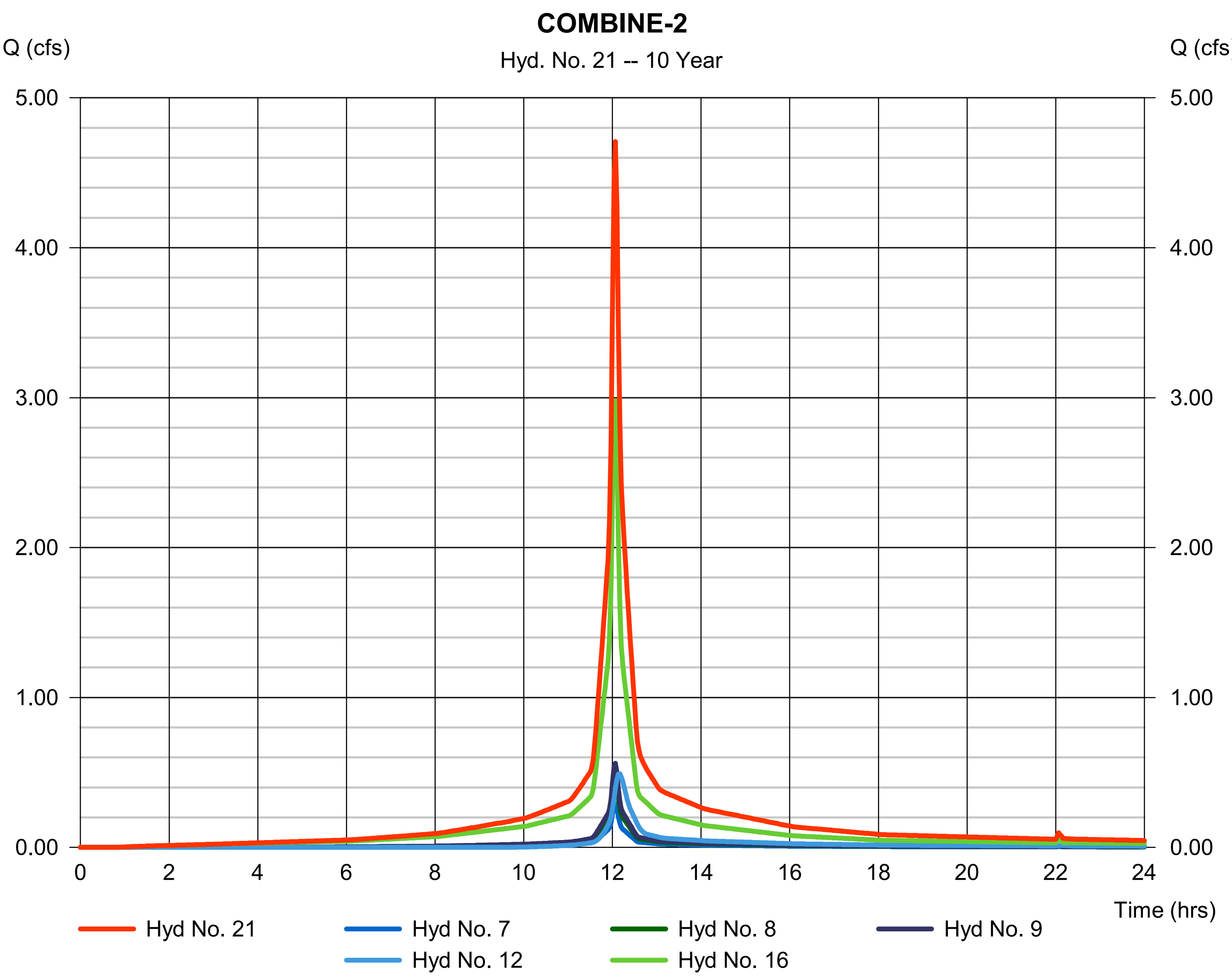
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 21

COMBINE-2

Hydrograph type	= Combine	Peak discharge	= 4.708 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 16,445 cuft
Inflow hyds.	= 7, 8, 9, 12, 16	Contrib. drain. area	= 1.090 ac



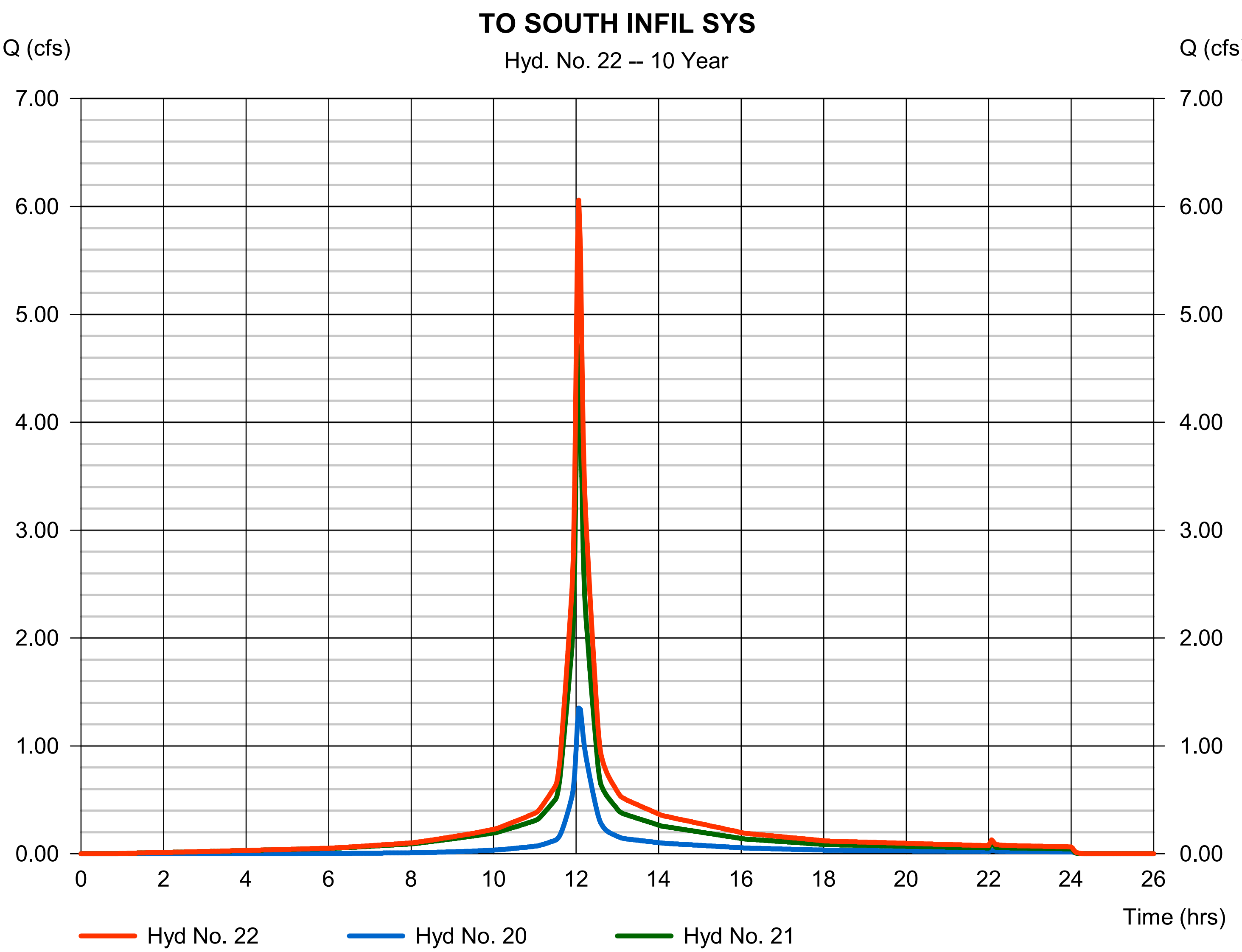
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 — Tuesday, 05 / 25 / 2021

Hyd. No. 22

TO SOUTH INFIL SYS

Hydrograph type	= Combine	Peak discharge	= 6.059 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 21,556 cuft
Inflow hyds.	= 20, 21	Contrib. drain. area	= 0.000 ac



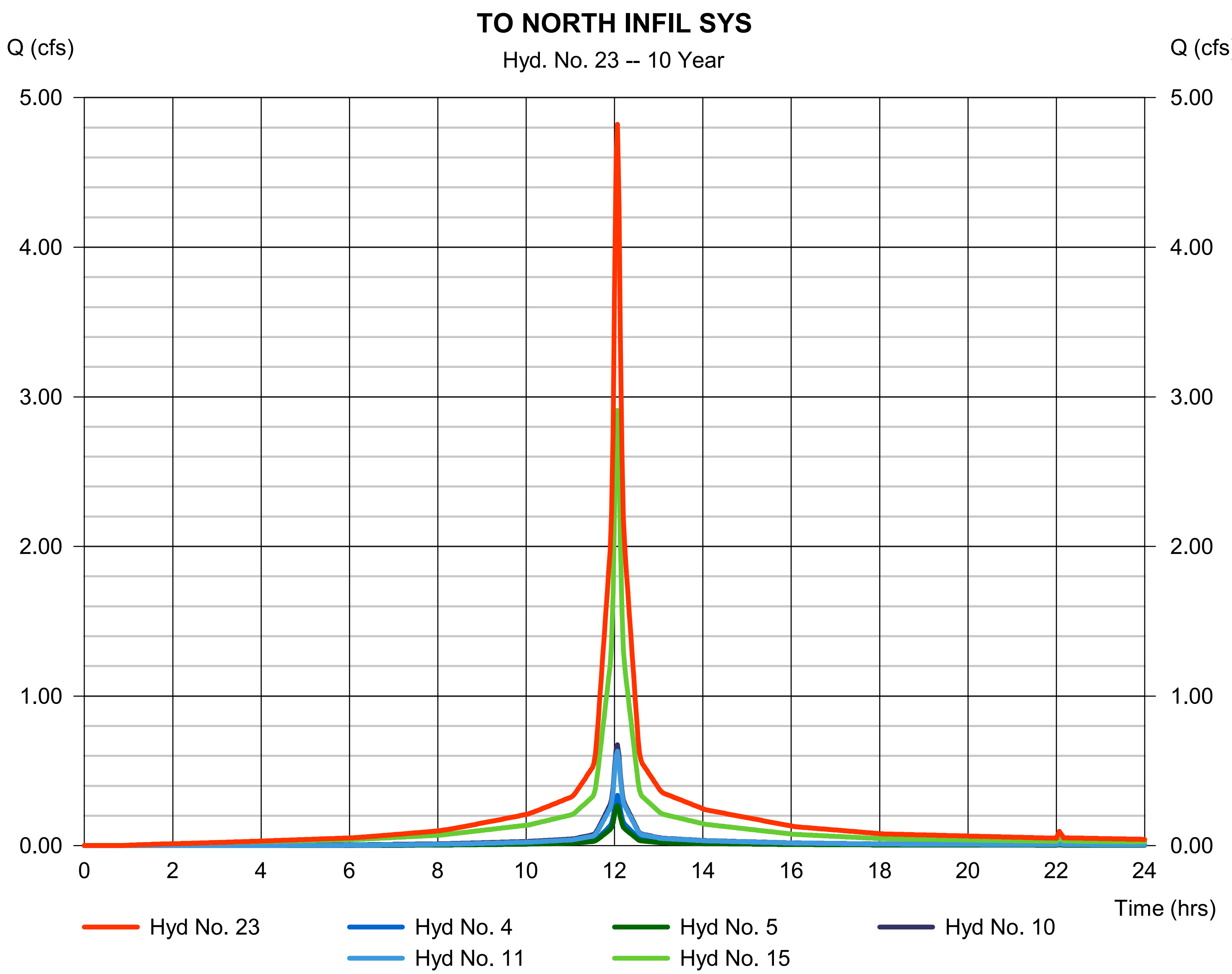
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 23

TO NORTH INFIL SYS

Hydrograph type	= Combine	Peak discharge	= 4.821 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 16,118 cuft
Inflow hyds.	= 4, 5, 10, 11, 15	Contrib. drain. area	= 0.972 ac



Hydrograph Report

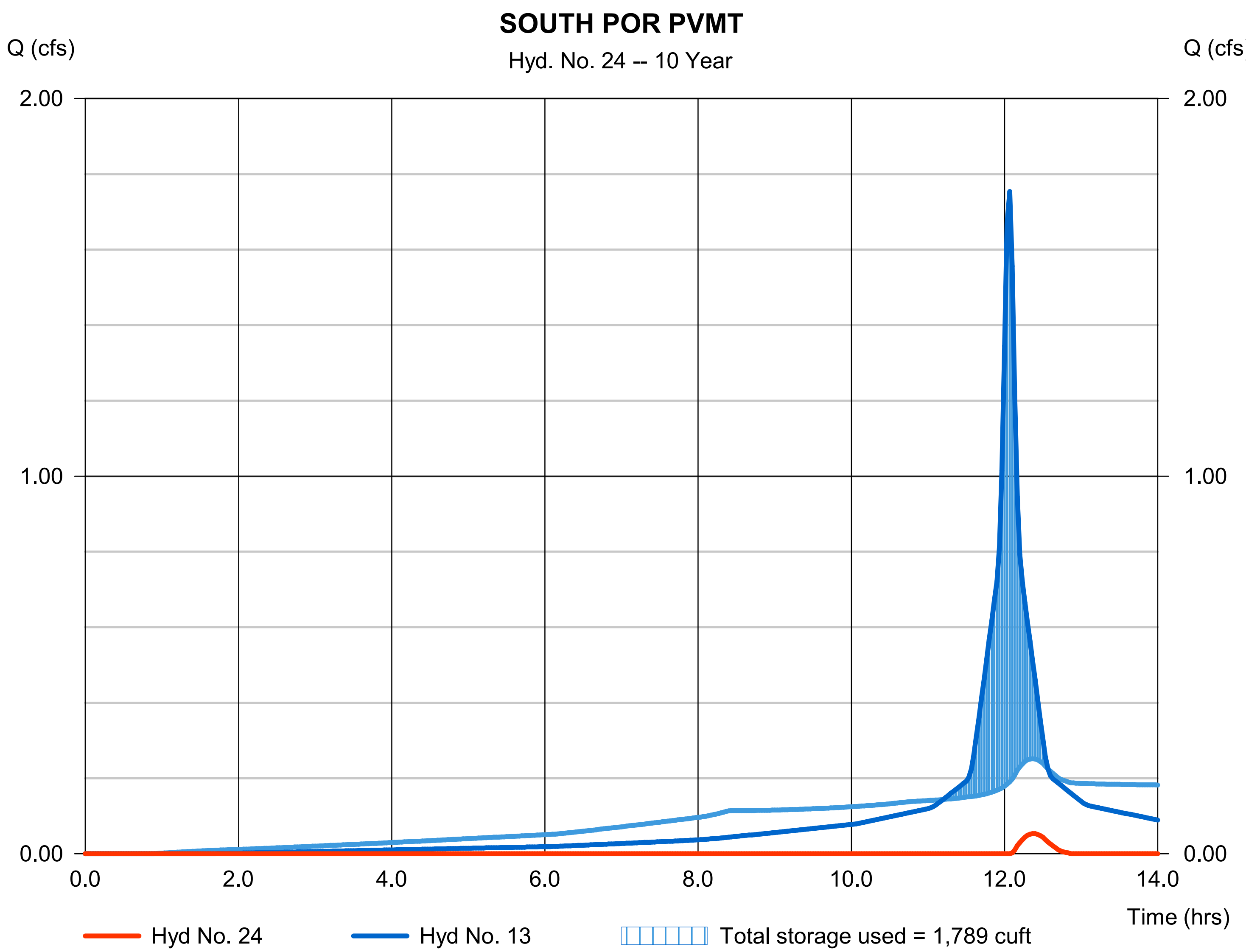
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 24

SOUTH POR PVMT

Hydrograph type	= Reservoir	Peak discharge	= 0.053 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.37 hrs
Time interval	= 2 min	Hyd. volume	= 79 cuft
Inflow hyd. No.	= 13 - PP-01	Max. Elevation	= 142.13 ft
Reservoir name	= SOUTH POROUS PVMT	Max. Storage	= 1,789 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

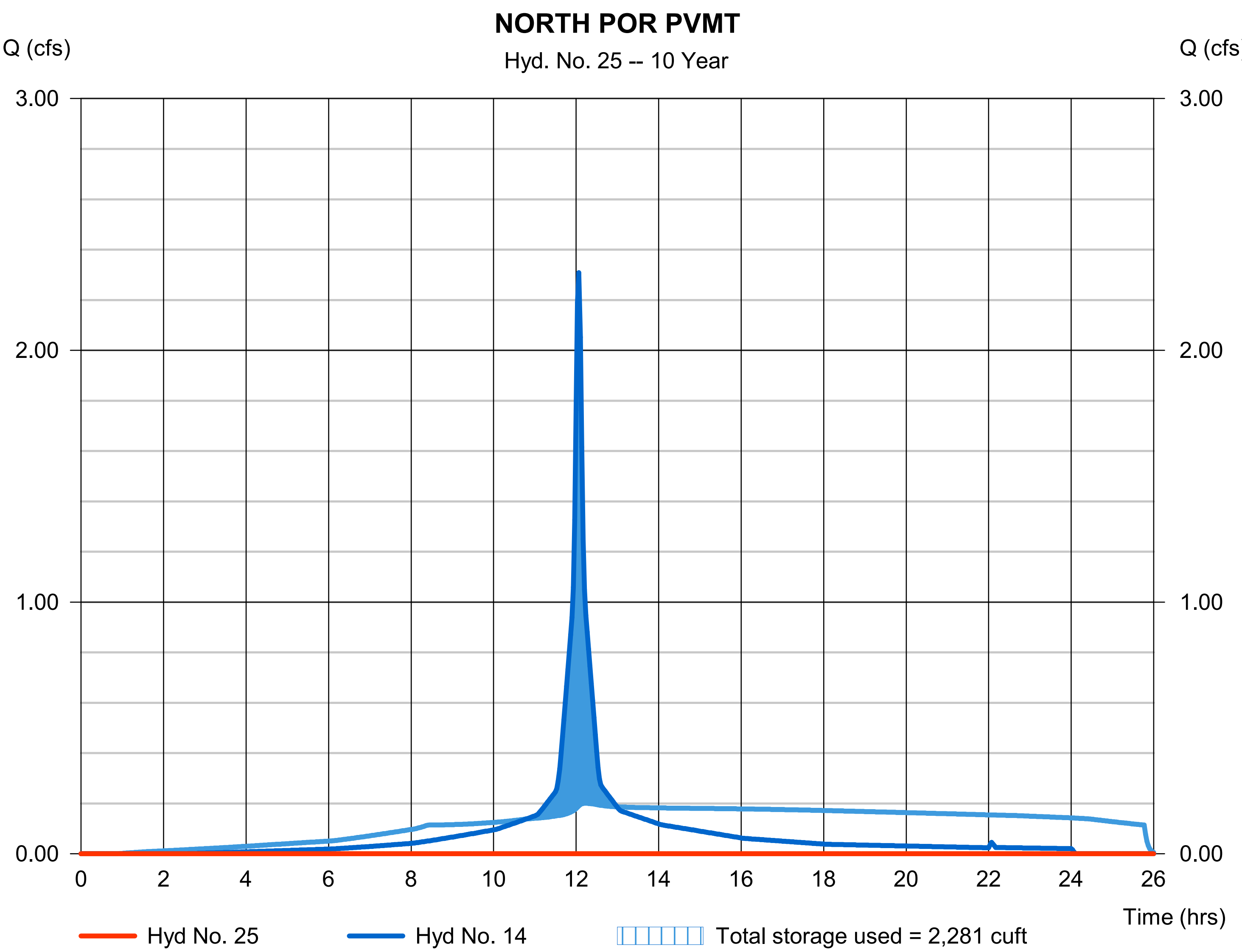
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 25

NORTH POR PVMT

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= 13.00 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 14 - PP-02	Max. Elevation	= 141.49 ft
Reservoir name	= NORTH POROUS PVMT	Max. Storage	= 2,281 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

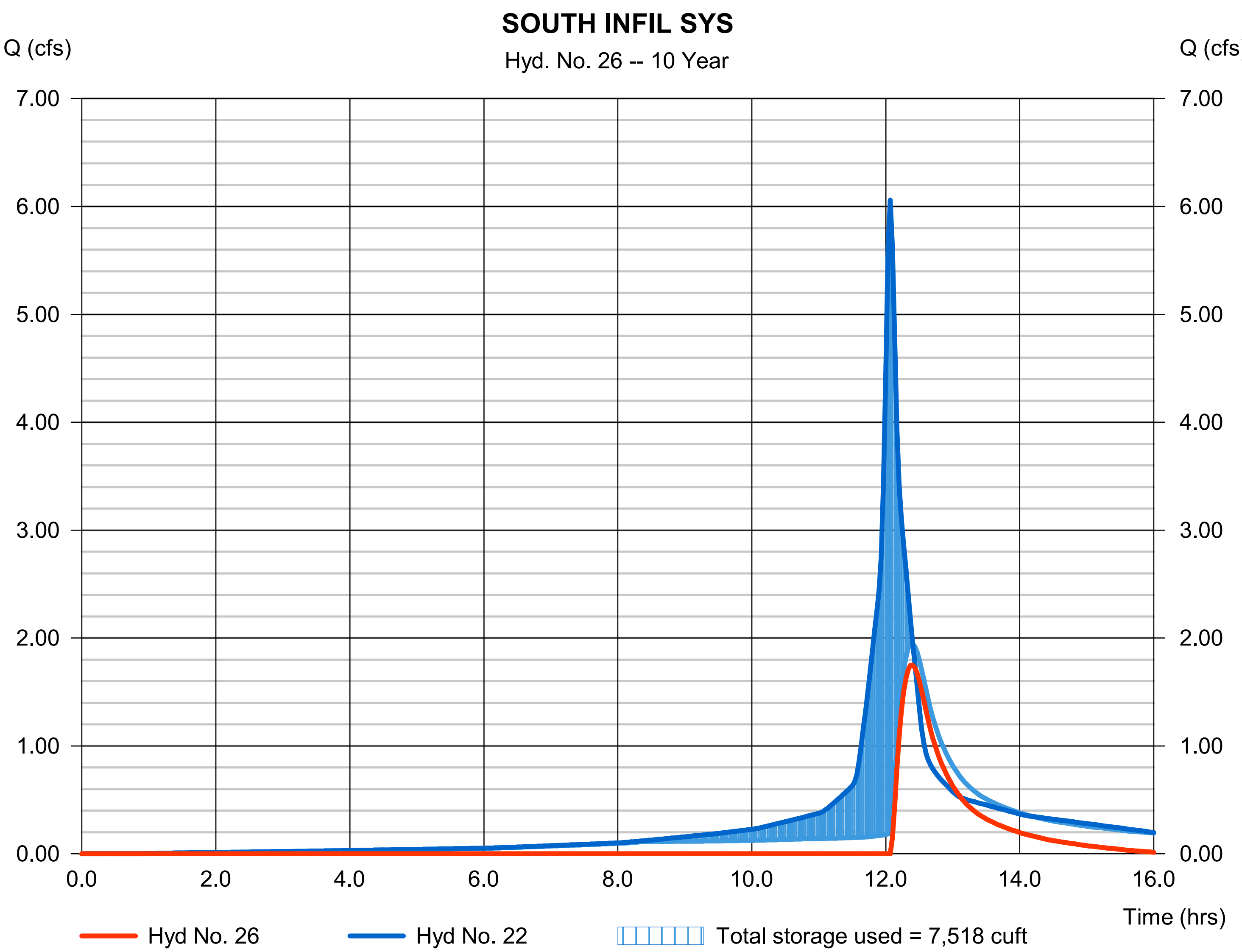
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 26

SOUTH INFIL SYS

Hydrograph type	= Reservoir	Peak discharge	= 1.750 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.40 hrs
Time interval	= 2 min	Hyd. volume	= 5,699 cuft
Inflow hyd. No.	= 22 - TO SOUTH INFIL SYS	Max. Elevation	= 143.65 ft
Reservoir name	= SOUTH INFIL SYS	Max. Storage	= 7,518 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

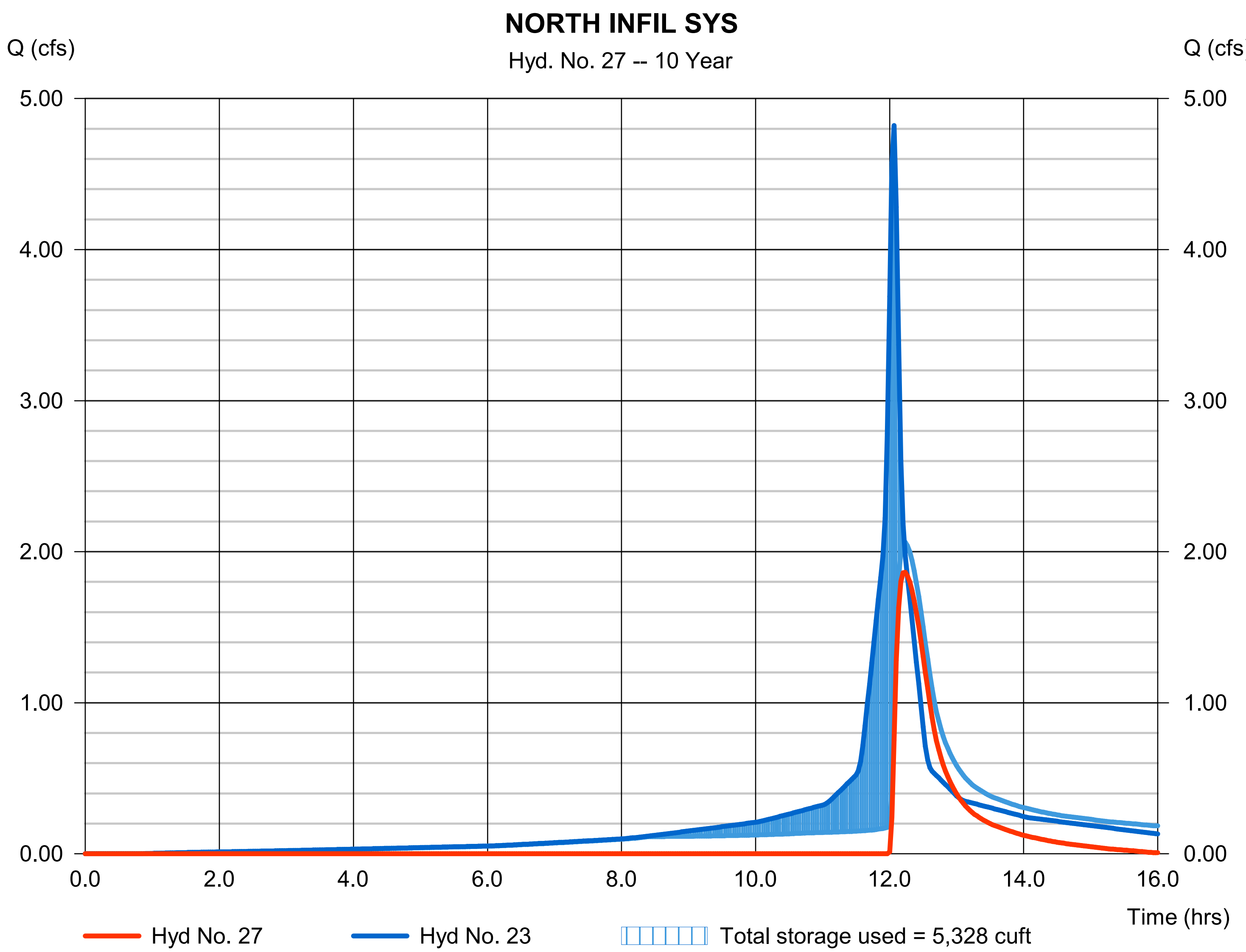
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 27

NORTH INFIL SYS

Hydrograph type	= Reservoir	Peak discharge	= 1.863 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.23 hrs
Time interval	= 2 min	Hyd. volume	= 5,078 cuft
Inflow hyd. No.	= 23 - TO NORTH INFIL SYS	Max. Elevation	= 143.73 ft
Reservoir name	= NORTH INFIL SYS	Max. Storage	= 5,328 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



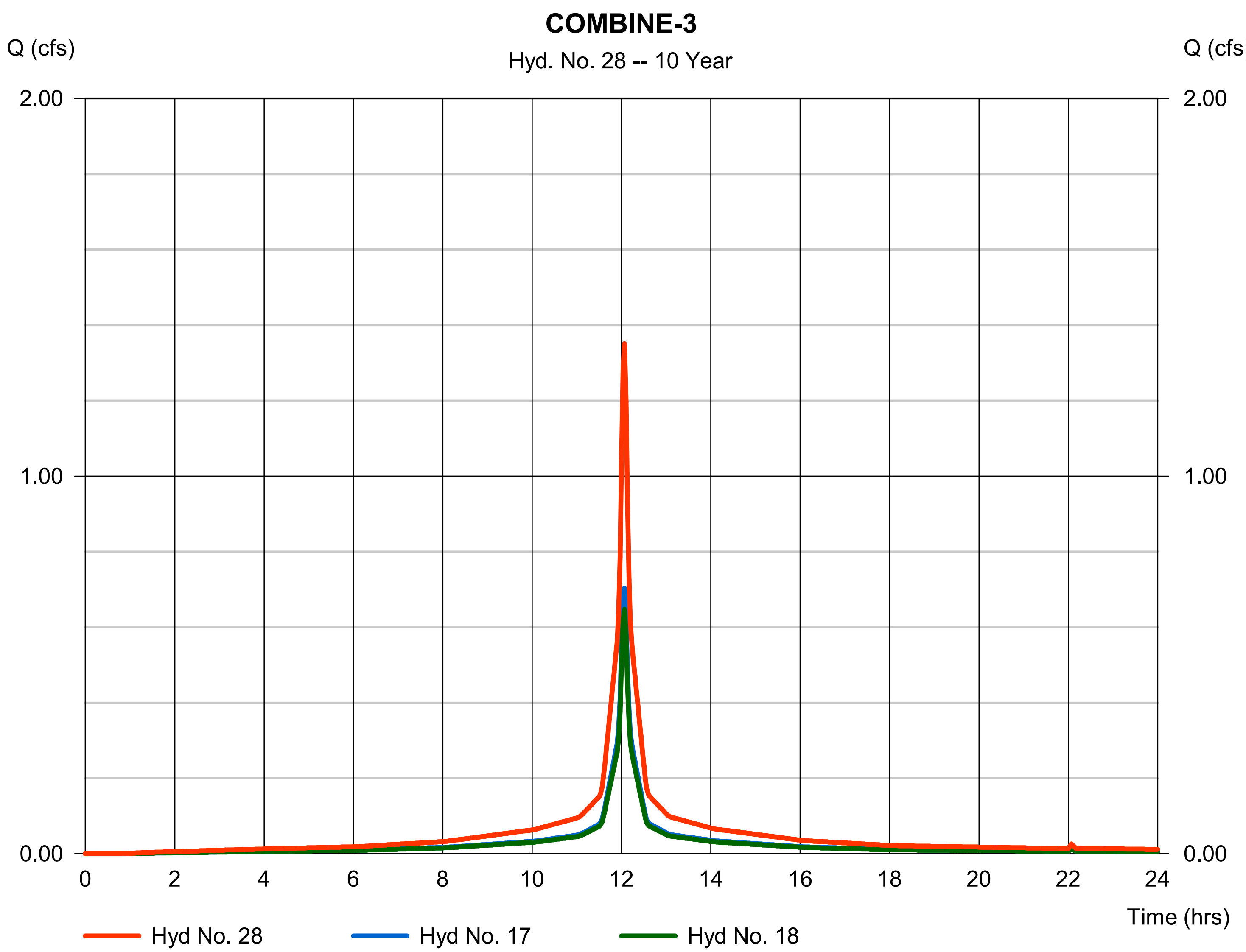
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 28

COMBINE-3

Hydrograph type	= Combine	Peak discharge	= 1.350 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 4,656 cuft
Inflow hyds.	= 17, 18	Contrib. drain. area	= 0.265 ac



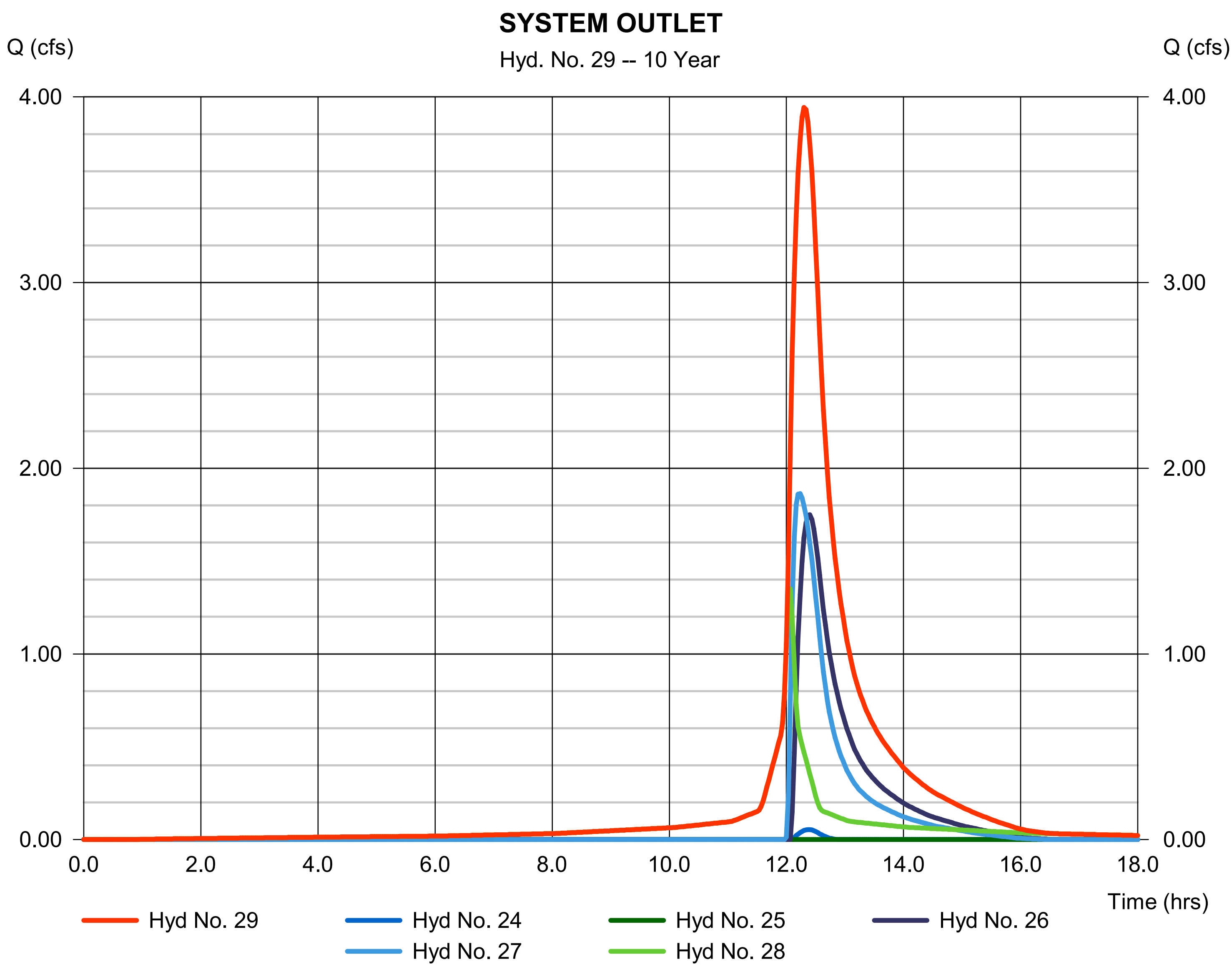
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 29

SYSTEM OUTLET

Hydrograph type	= Combine	Peak discharge	= 3.943 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.30 hrs
Time interval	= 2 min	Hyd. volume	= 15,512 cuft
Inflow hyds.	= 24, 25, 26, 27, 28	Contrib. drain. area	= 0.000 ac



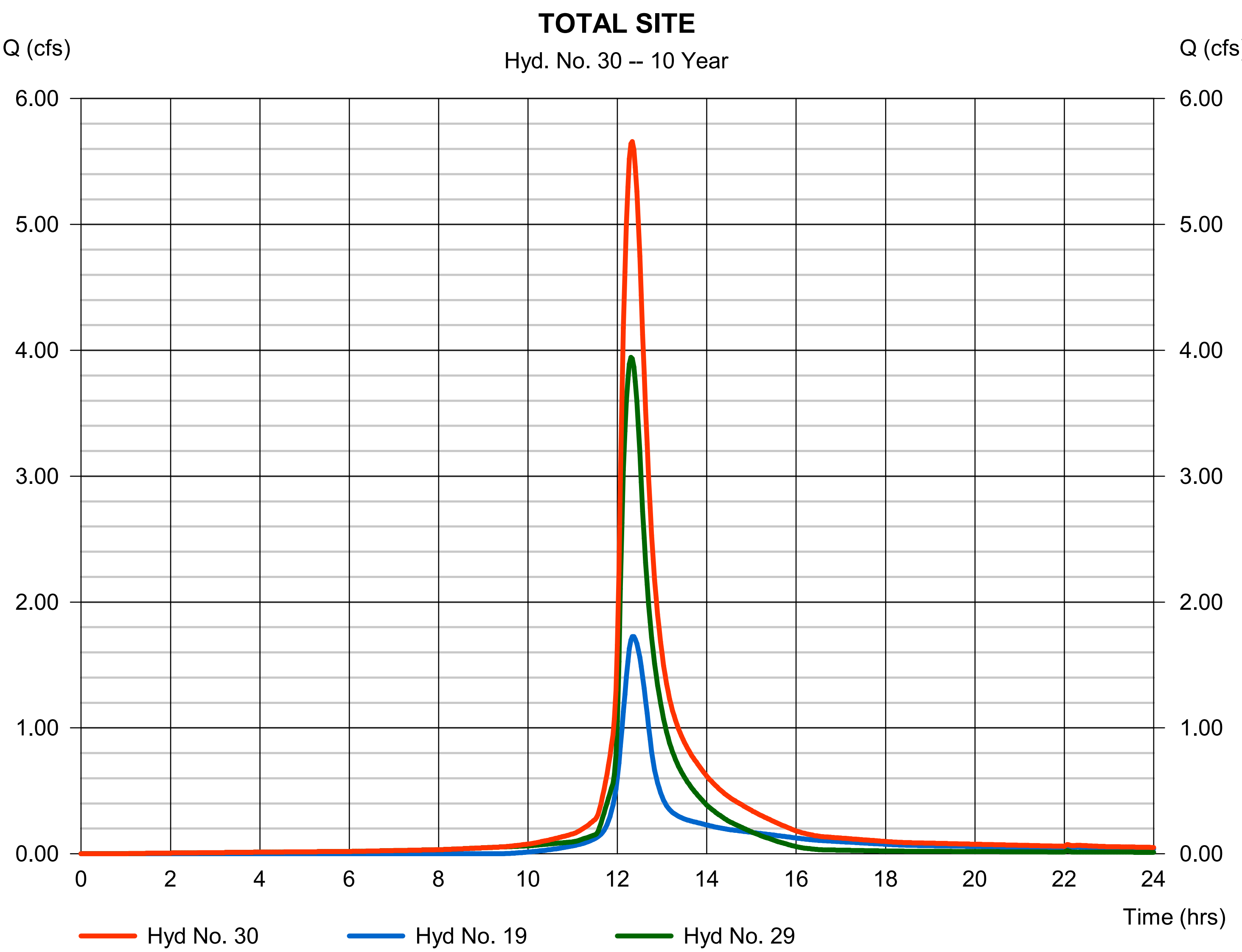
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 30

TOTAL SITE

Hydrograph type	= Combine	Peak discharge	= 5.658 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.33 hrs
Time interval	= 2 min	Hyd. volume	= 24,643 cuft
Inflow hyds.	= 19, 29	Contrib. drain. area	= 1.038 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.548	2	730	2,241	------	------	------	CB-01
2	SCS Runoff	0.428	2	726	1,464	------	------	------	CB-01A
3	SCS Runoff	0.321	2	724	1,035	------	------	------	CB-02
4	SCS Runoff	0.423	2	724	1,332	------	------	------	CB-03
5	SCS Runoff	0.332	2	724	1,073	------	------	------	CB-04
6	SCS Runoff	0.653	2	724	2,043	------	------	------	CB-05
7	SCS Runoff	0.364	2	724	1,164	------	------	------	CB-06
8	SCS Runoff	0.594	2	724	1,936	------	------	------	CB-07
9	SCS Runoff	0.695	2	724	2,242	------	------	------	CB-08
10	SCS Runoff	0.830	2	724	2,733	------	------	------	CB-09
11	SCS Runoff	0.786	2	724	2,515	------	------	------	CB-10
12	SCS Runoff	0.697	2	728	2,689	------	------	------	CB-11
13	SCS Runoff	2.146	2	724	7,239	------	------	------	PP-01
14	SCS Runoff	2.841	2	724	9,355	------	------	------	PP-02
15	SCS Runoff	3.546	2	724	12,303	------	------	------	RF-01
16	SCS Runoff	3.633	2	724	12,605	------	------	------	RF-02
17	SCS Runoff	0.857	2	724	2,973	------	------	------	RF-03
18	SCS Runoff	0.789	2	724	2,736	------	------	------	RF-04
19	SCS Runoff	2.421	2	740	12,677	------	------	------	PR-WS-01
20	Combine	1.778	2	724	6,783	1, 2, 3, 6,	------	------	COMBINE-1
21	Combine	5.855	2	724	20,635	7, 8, 9, 12, 16,	------	------	COMBINE-2
22	Combine	7.634	2	724	27,418	20, 21	------	------	TO SOUTH INFIL SYS
23	Combine	5.917	2	724	19,956	4, 5, 10, 11, 15,	------	------	TO NORTH INFIL SYS
24	Reservoir	0.188	2	742	389	13	142.27	2,190	SOUTH POR PVMT
25	Reservoir	0.050	2	744	73	14	141.63	2,905	NORTH POR PVMT
26	Reservoir	3.418	2	736	10,013	22	143.97	8,545	SOUTH INFIL SYS
27	Reservoir	3.033	2	730	7,914	23	144.15	6,117	NORTH INFIL SYS
28	Combine	1.646	2	724	5,710	17, 18,	------	------	COMBINE-3
29	Combine	7.202	2	732	24,099	24, 25, 26, 27, 28	------	------	SYSTEM OUTLET
30	Combine	9.362	2	736	36,776	19, 29	------	------	TOTAL SITE

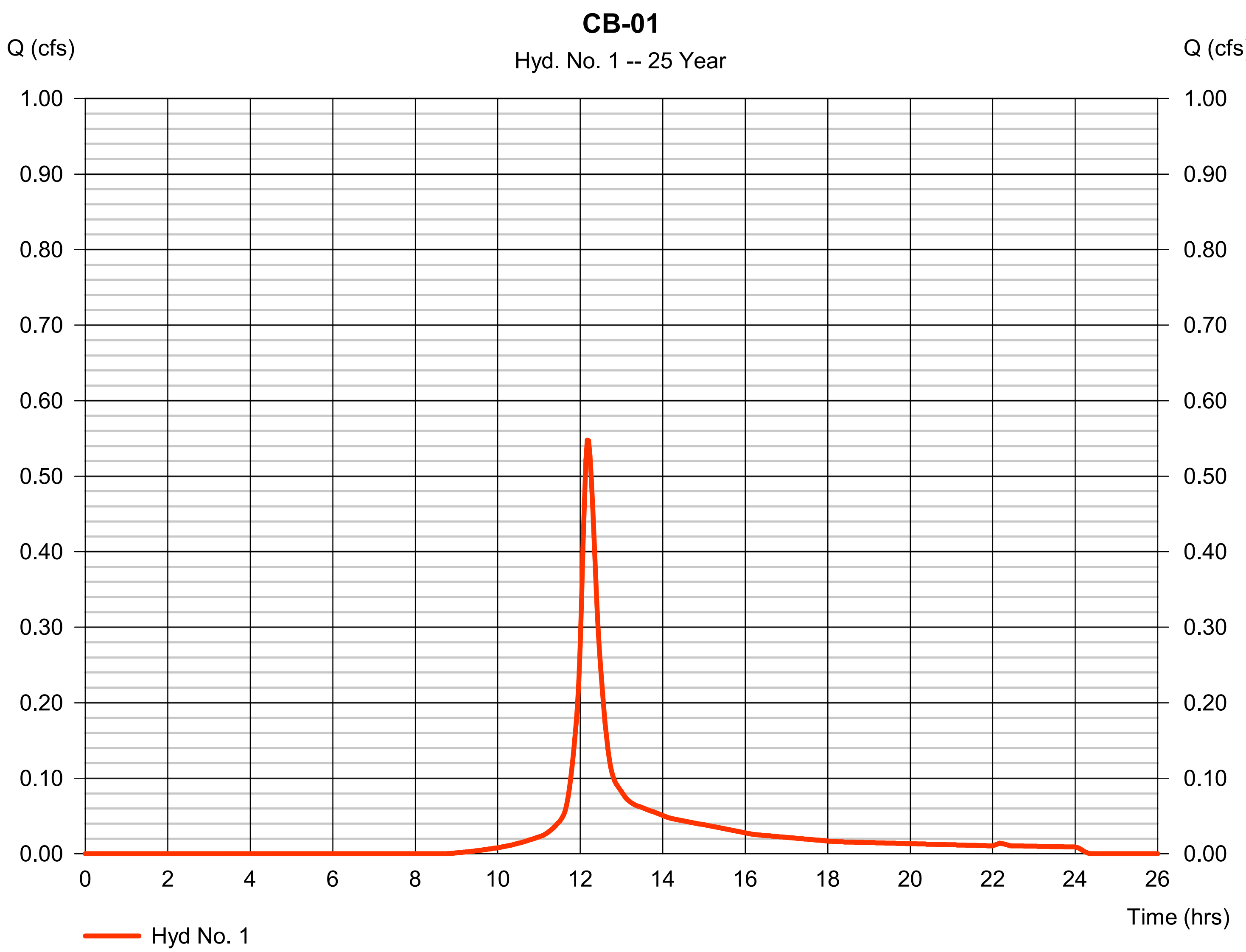
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 | Tuesday, 05 / 25 / 2021

Hyd. No. 1

CB-01

Hydrograph type	= SCS Runoff	Peak discharge	= 0.548 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 2,241 cuft
Drainage area	= 0.194 ac	Curve number	= 70
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 14.20 min
Total precip.	= 6.57 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



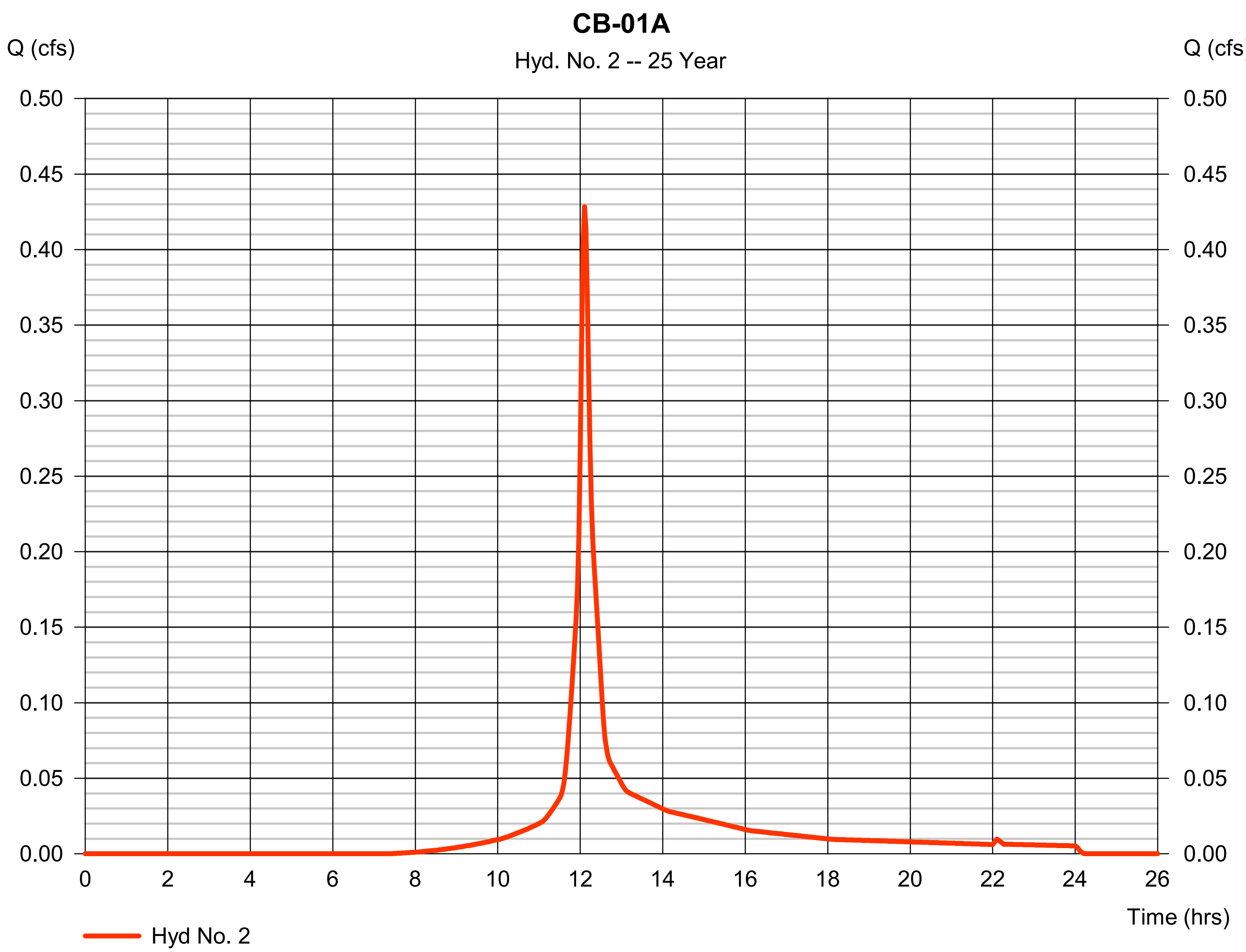
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 2

CB-01A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.428 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 1,464 cuft
Drainage area	= 0.104 ac	Curve number	= 76
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 7.80 min
Total precip.	= 6.57 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



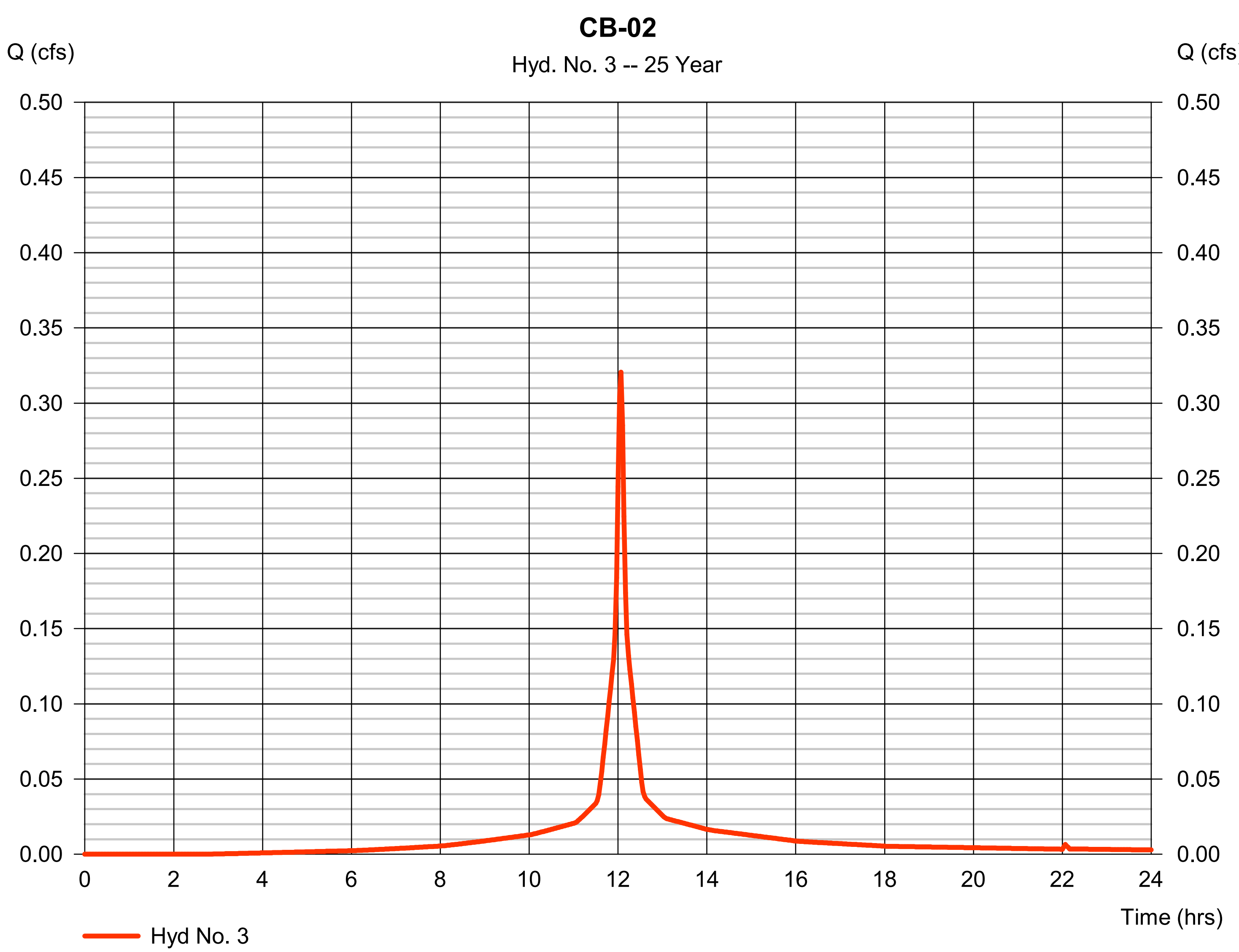
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 3

CB-02

Hydrograph type	= SCS Runoff	Peak discharge	= 0.321 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,035 cuft
Drainage area	= 0.054 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.57 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



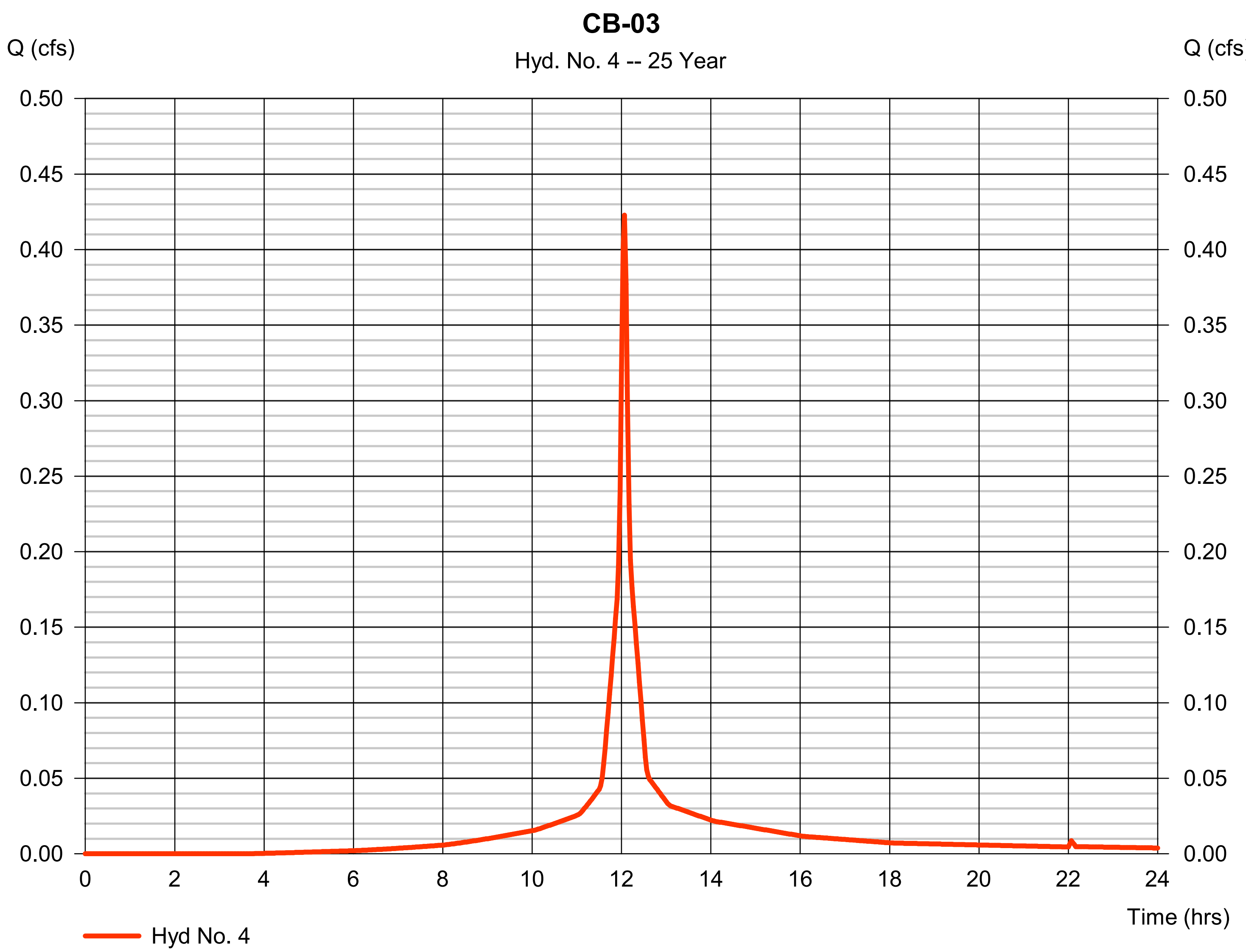
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 4

CB-03

Hydrograph type	= SCS Runoff	Peak discharge	= 0.423 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,332 cuft
Drainage area	= 0.074 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.57 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



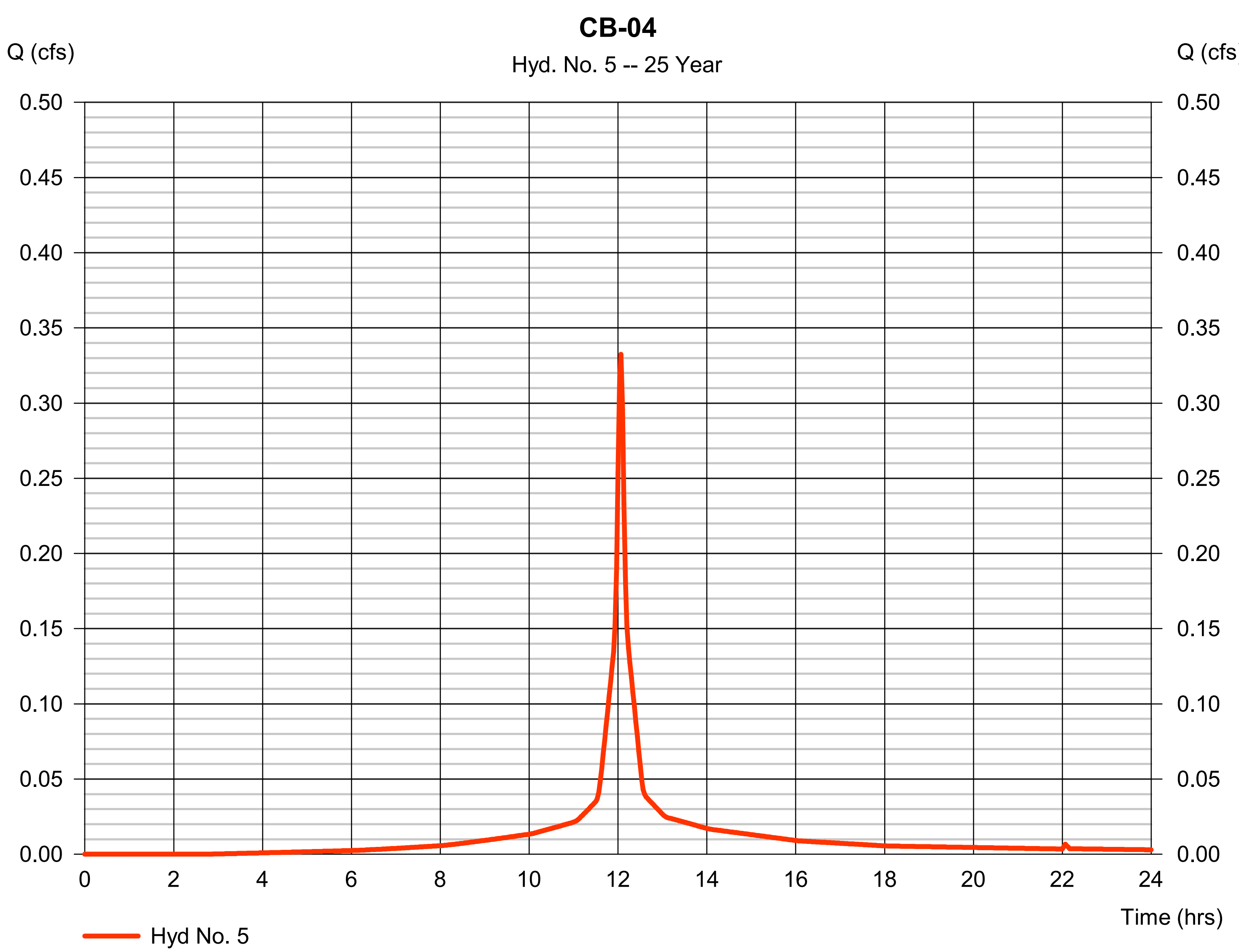
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 | Tuesday, 05 / 25 / 2021

Hyd. No. 5

CB-04

Hydrograph type	= SCS Runoff	Peak discharge	= 0.332 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,073 cuft
Drainage area	= 0.056 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.57 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



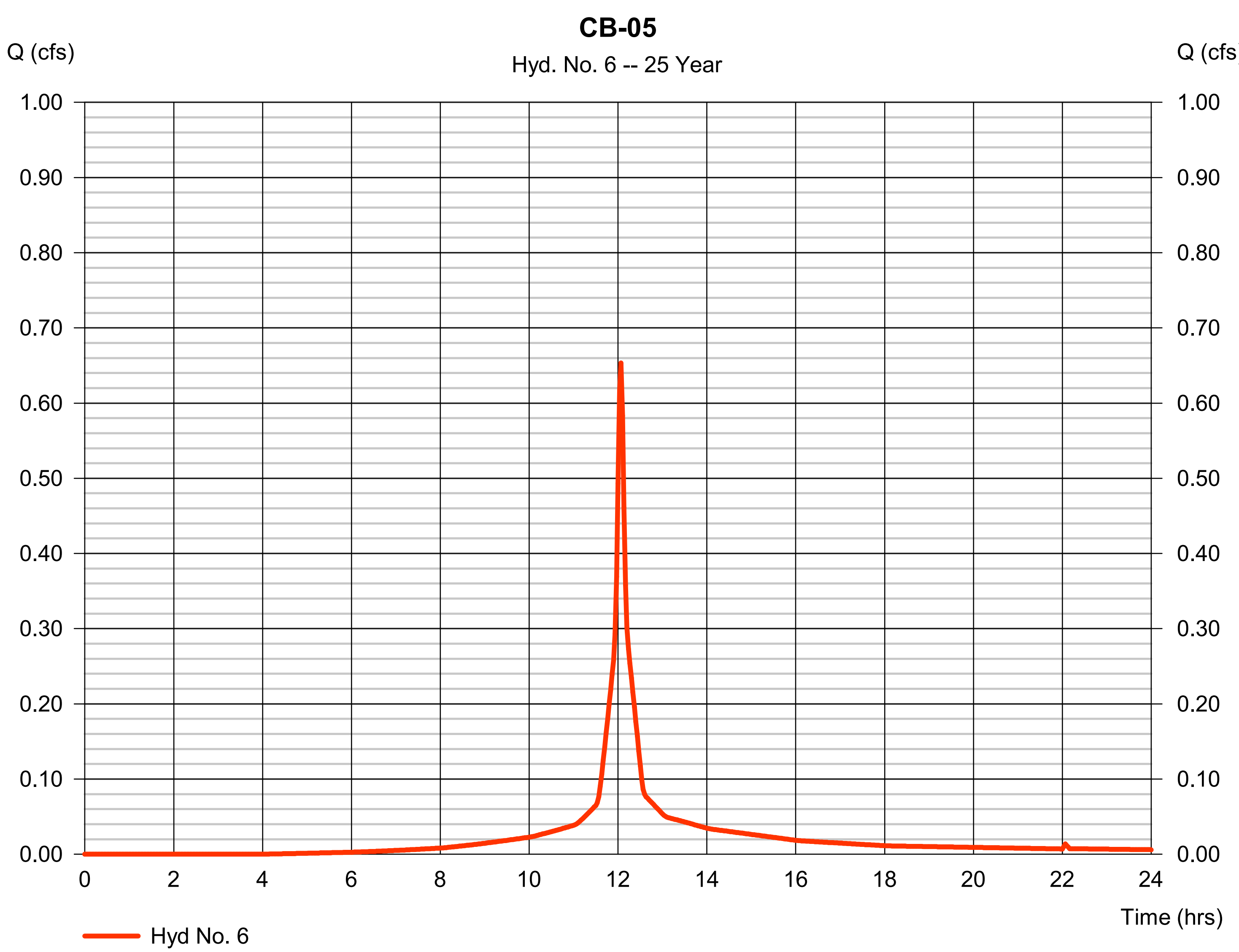
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 | Tuesday, 05 / 25 / 2021

Hyd. No. 6

CB-05

Hydrograph type	= SCS Runoff	Peak discharge	= 0.653 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 2,043 cuft
Drainage area	= 0.116 ac	Curve number	= 88
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.57 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



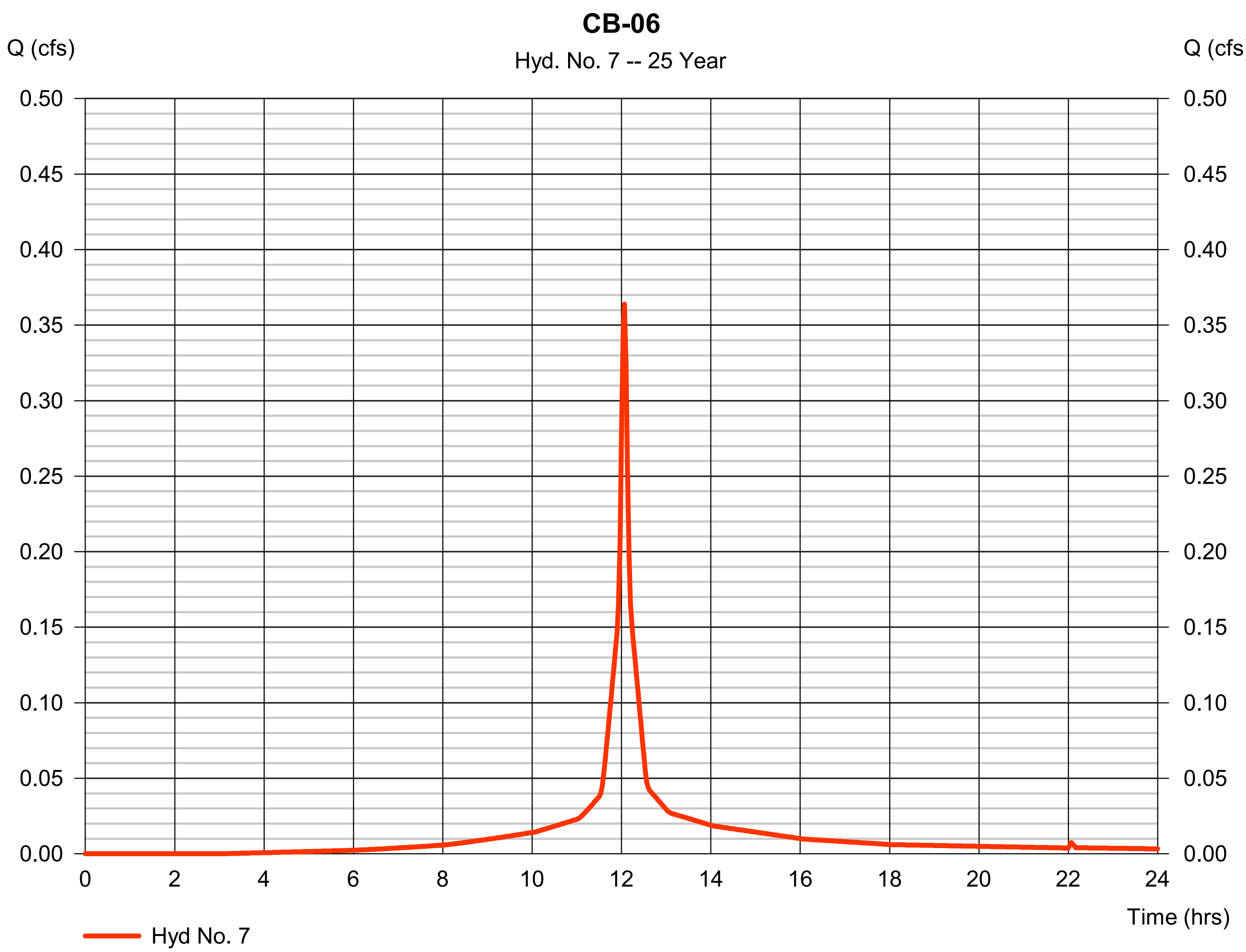
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 7

CB-06

Hydrograph type	= SCS Runoff	Peak discharge	= 0.364 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,164 cuft
Drainage area	= 0.062 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.57 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



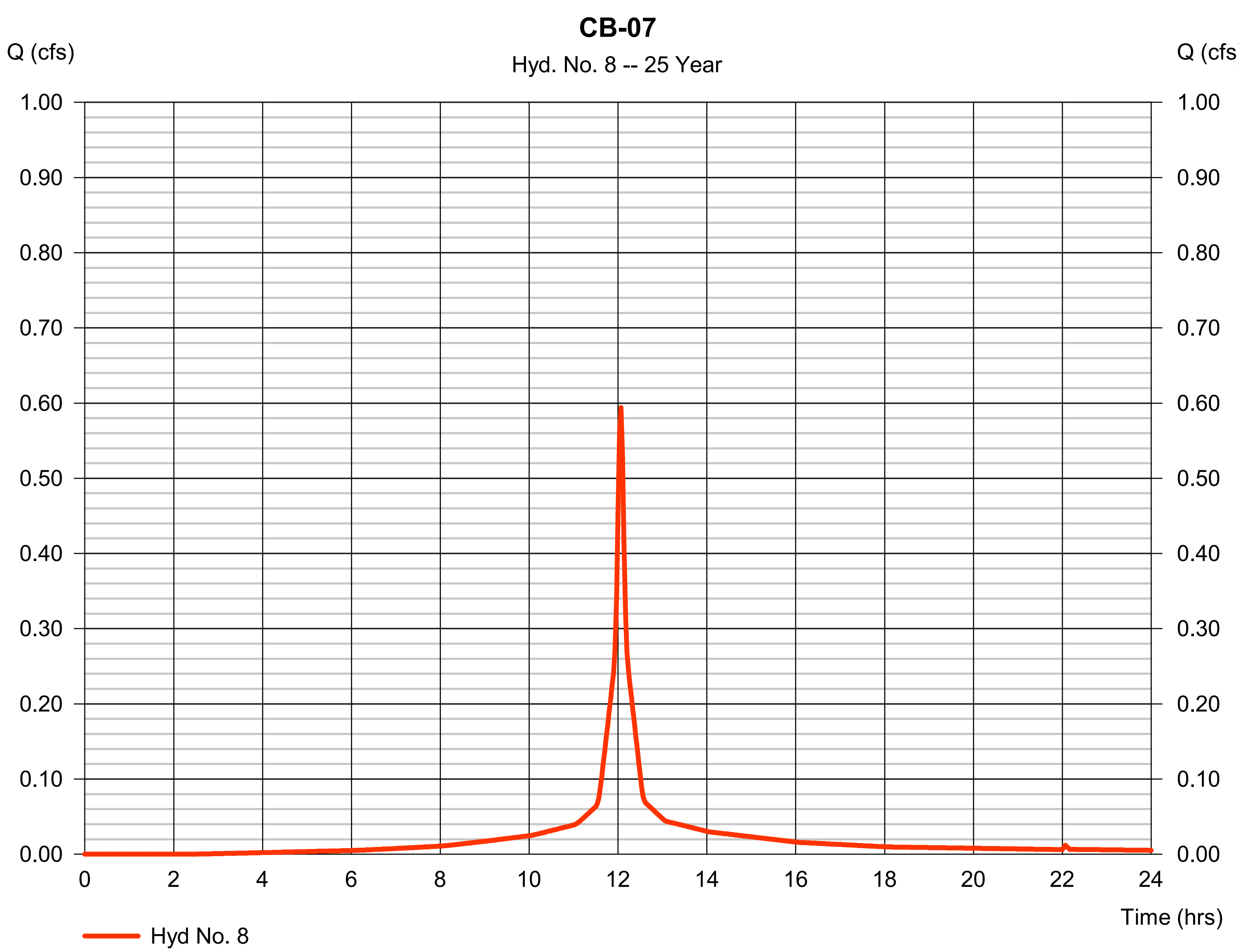
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 8

CB-07

Hydrograph type	= SCS Runoff	Peak discharge	= 0.594 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,936 cuft
Drainage area	= 0.099 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.57 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



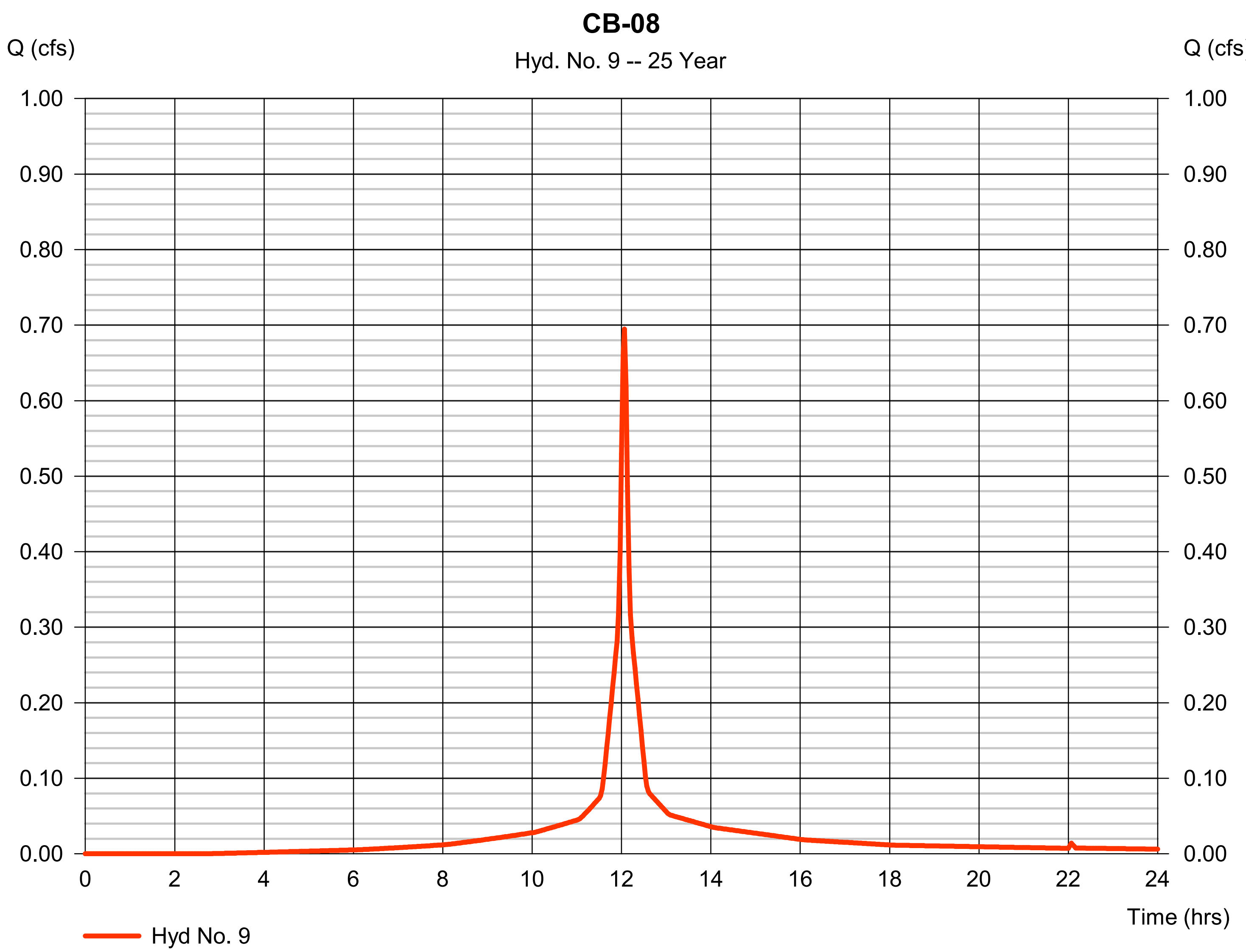
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 9

CB-08

Hydrograph type	= SCS Runoff	Peak discharge	= 0.695 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 2,242 cuft
Drainage area	= 0.117 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.50 min
Total precip.	= 6.57 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



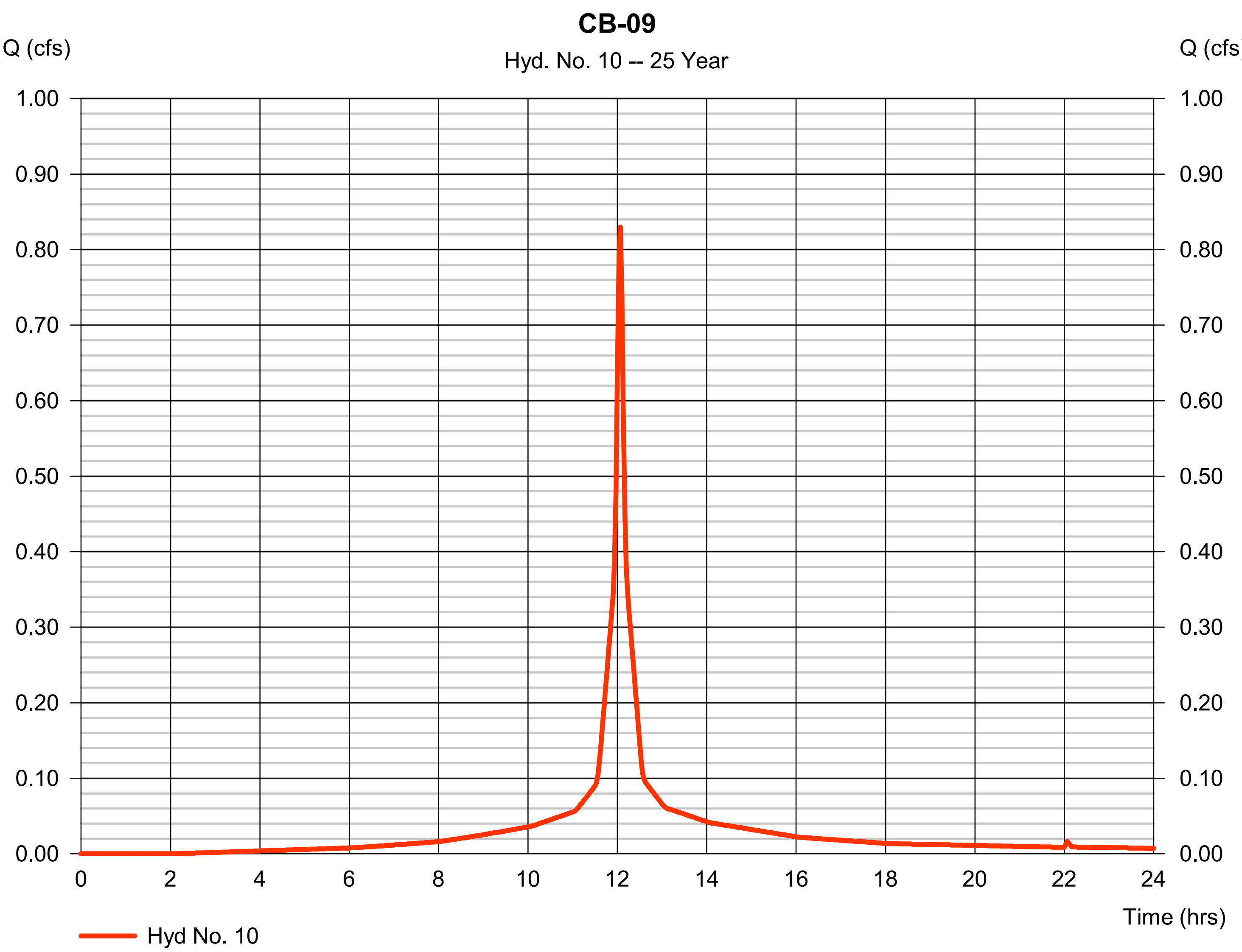
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 10

CB-09

Hydrograph type	= SCS Runoff	Peak discharge	= 0.830 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 2,733 cuft
Drainage area	= 0.137 ac	Curve number	= 94
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.57 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



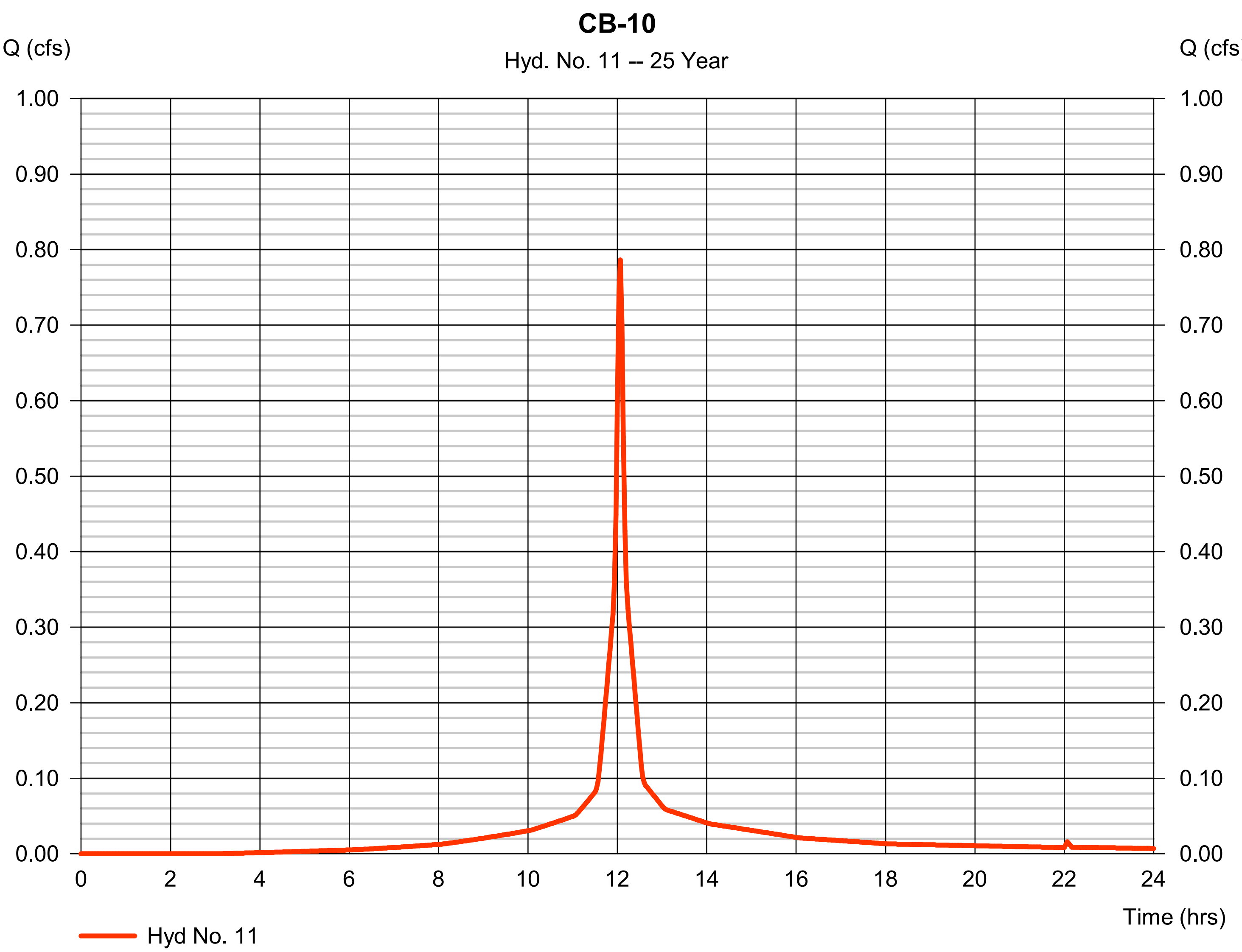
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 11

CB-10

Hydrograph type	= SCS Runoff	Peak discharge	= 0.786 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 2,515 cuft
Drainage area	= 0.134 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.57 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



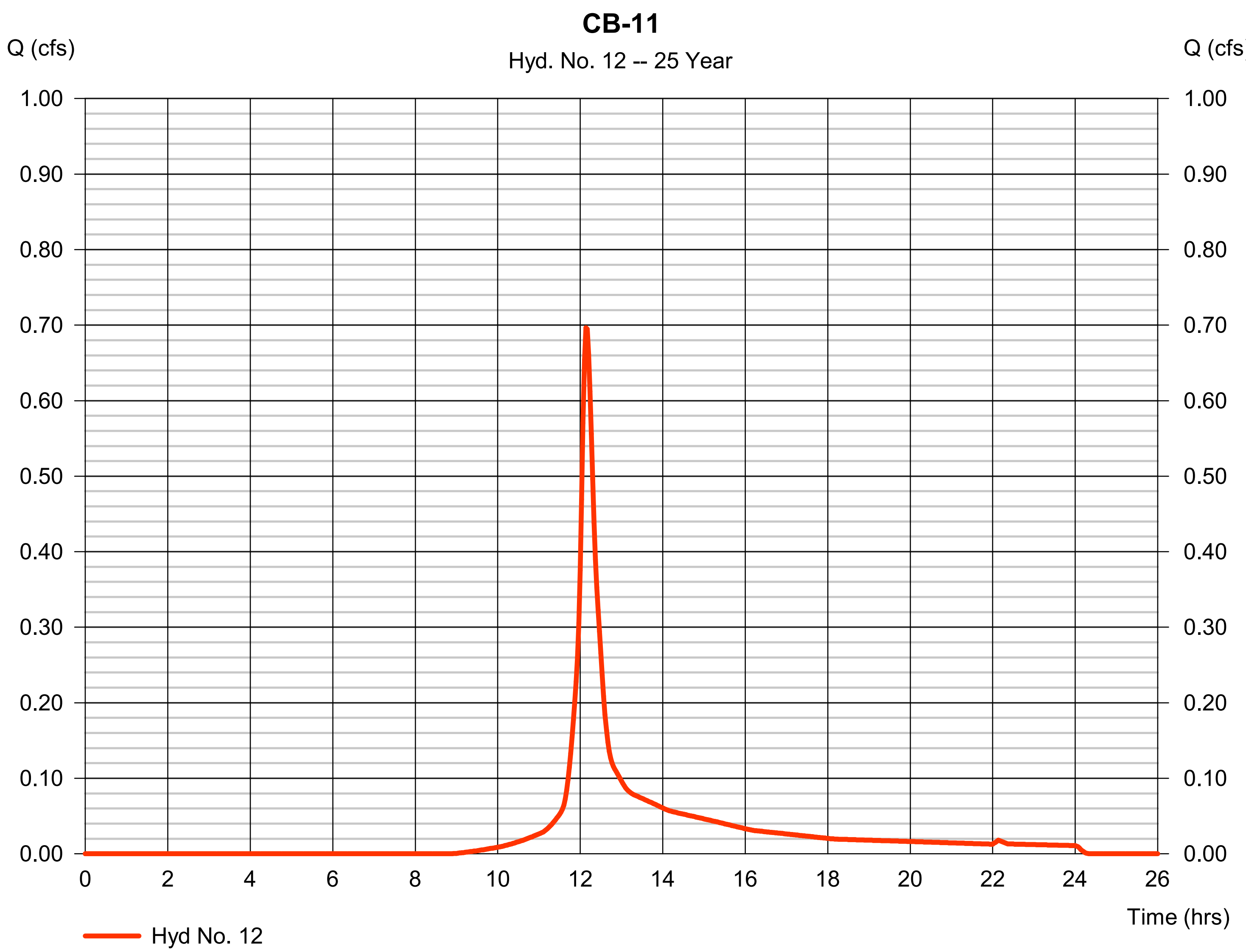
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 12

CB-11

Hydrograph type	= SCS Runoff	Peak discharge	= 0.697 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 2,689 cuft
Drainage area	= 0.227 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.60 min
Total precip.	= 6.57 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



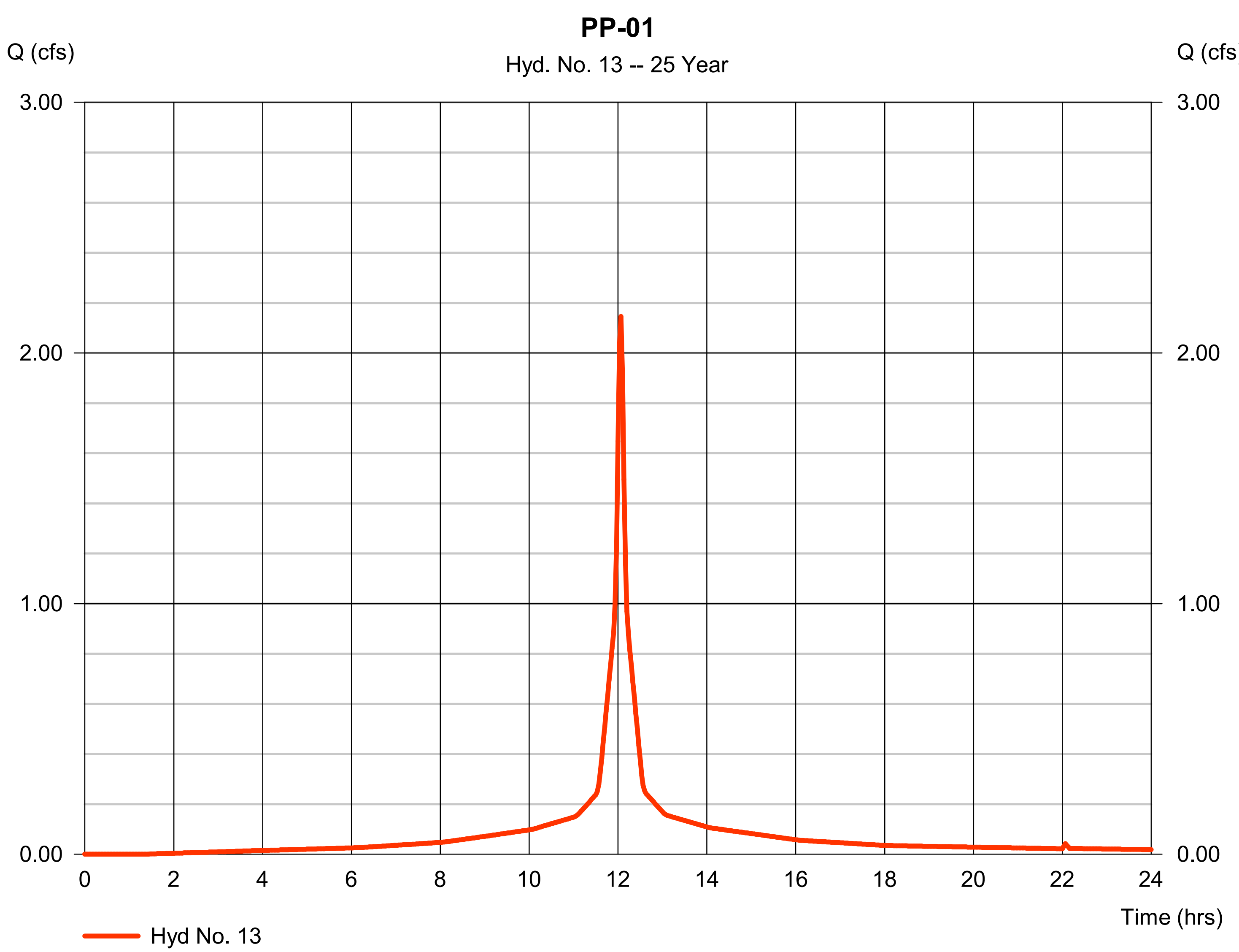
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 13

PP-01

Hydrograph type	= SCS Runoff	Peak discharge	= 2.146 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 7,239 cuft
Drainage area	= 0.349 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.60 min
Total precip.	= 6.57 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



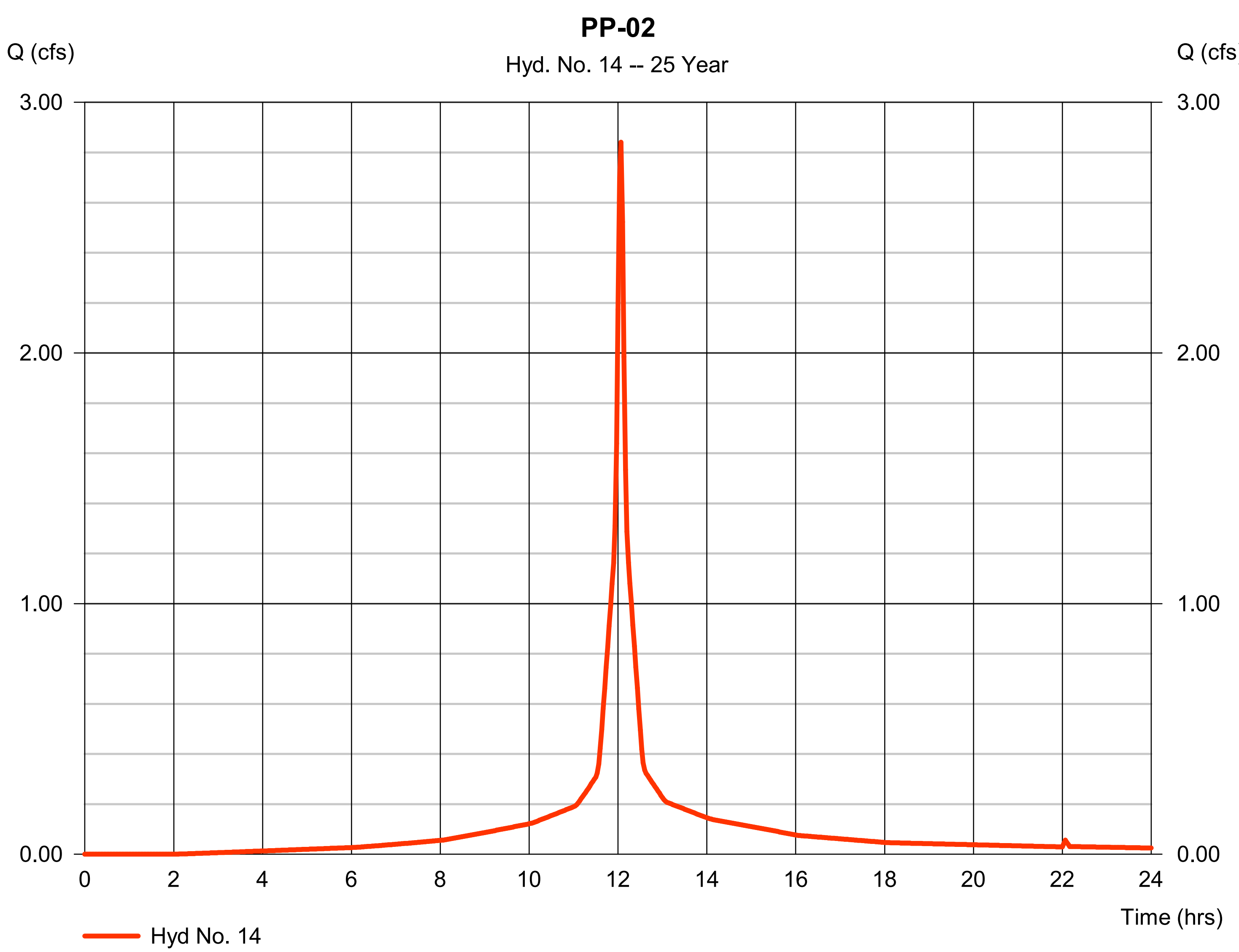
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 14

PP-02

Hydrograph type	= SCS Runoff	Peak discharge	= 2.841 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 9,355 cuft
Drainage area	= 0.469 ac	Curve number	= 94
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 6.57 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

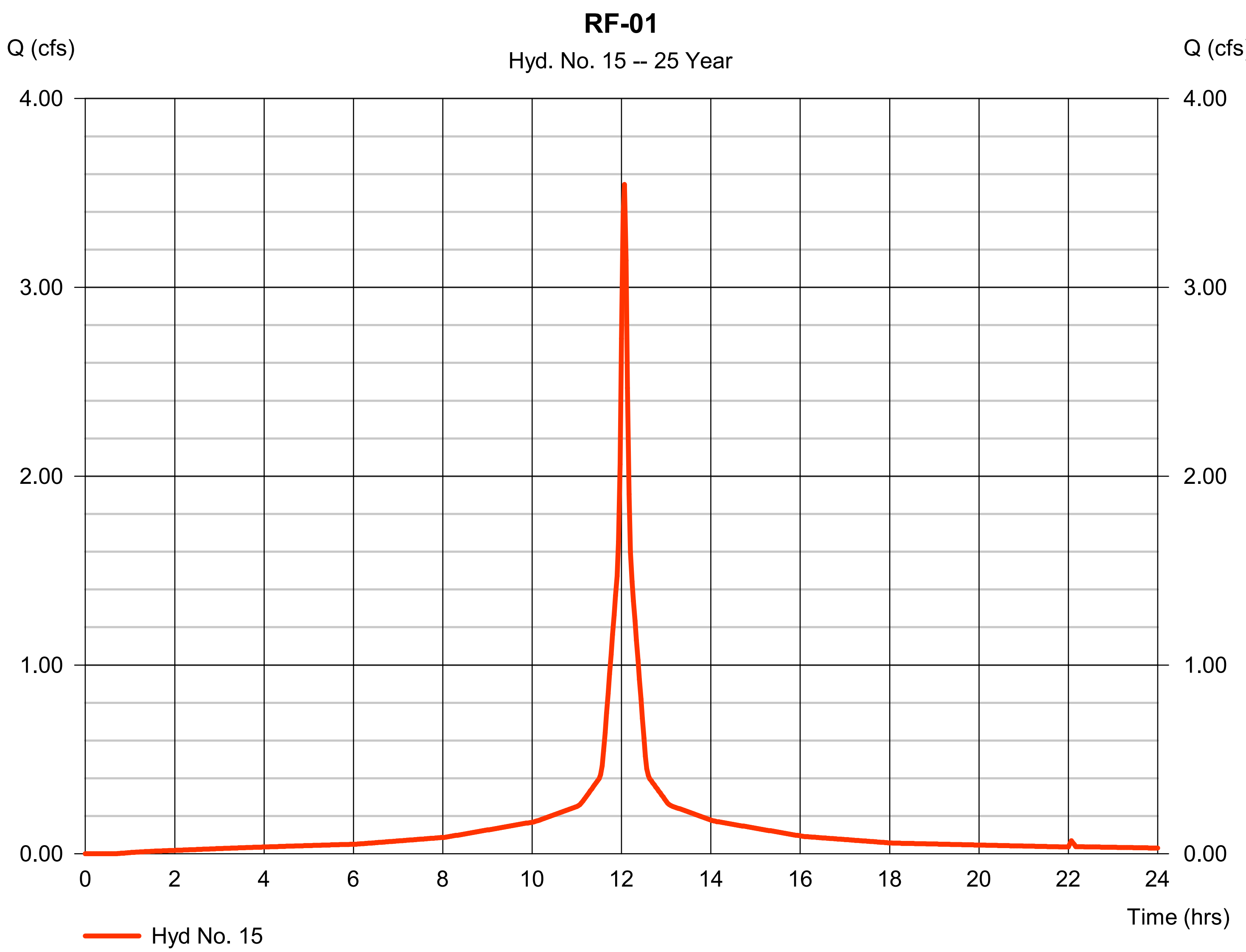


Hydrograph Report

Hyd. No. 15

RF-01

Hydrograph type	= SCS Runoff	Peak discharge	= 3.546 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 12,303 cuft
Drainage area	= 0.571 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.57 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



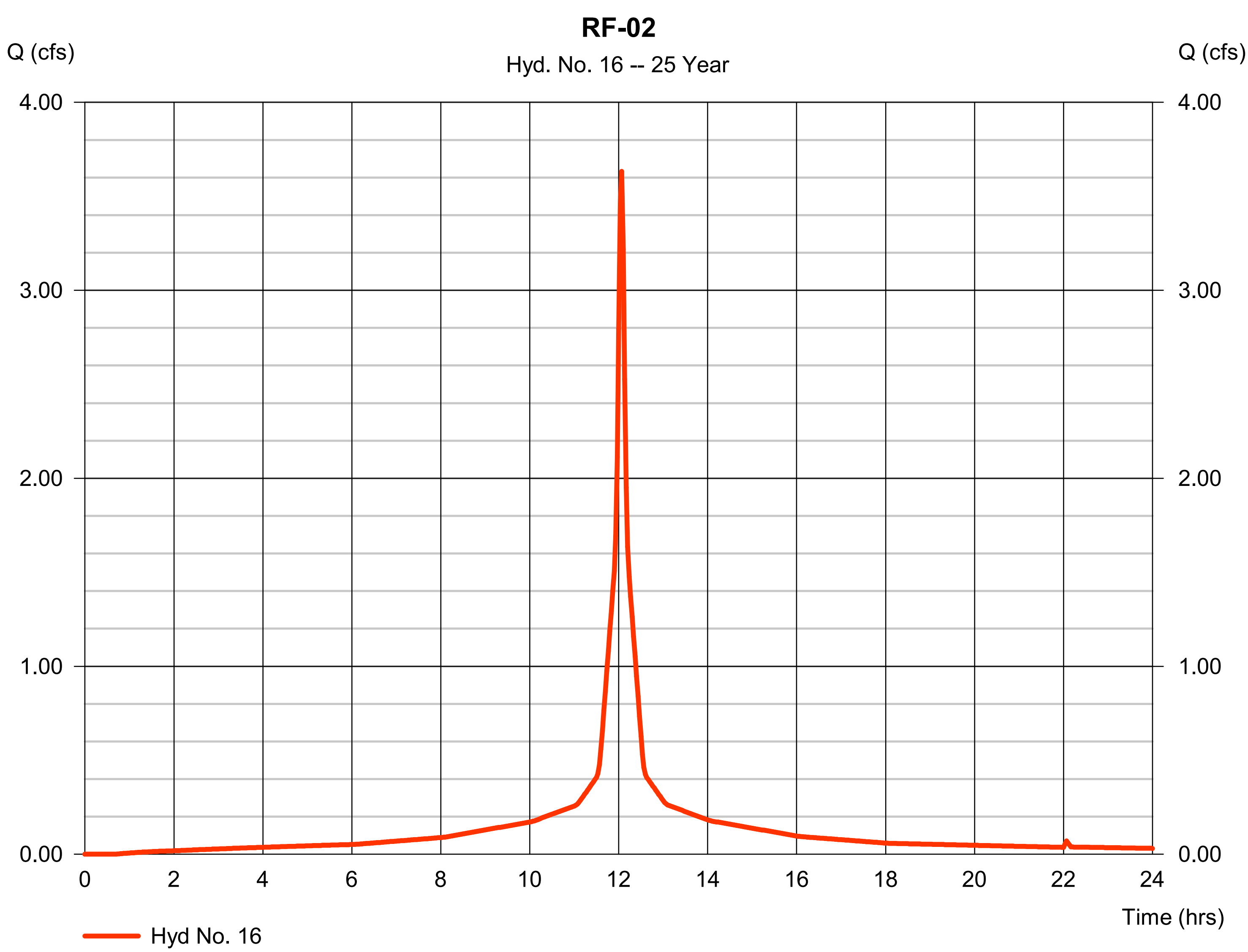
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 16

RF-02

Hydrograph type	= SCS Runoff	Peak discharge	= 3.633 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 12,605 cuft
Drainage area	= 0.585 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.57 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



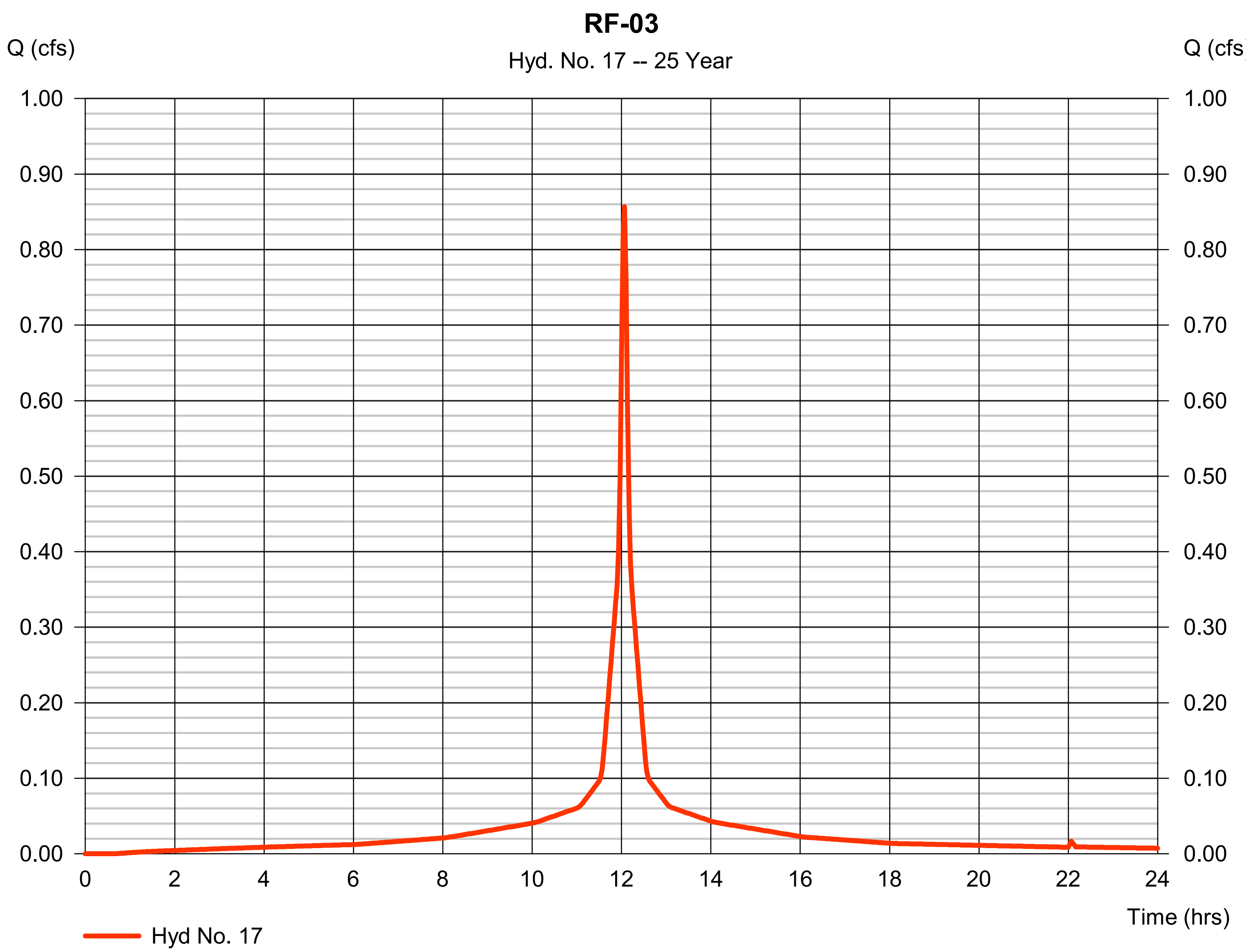
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 17

RF-03

Hydrograph type	= SCS Runoff	Peak discharge	= 0.857 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 2,973 cuft
Drainage area	= 0.138 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.57 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



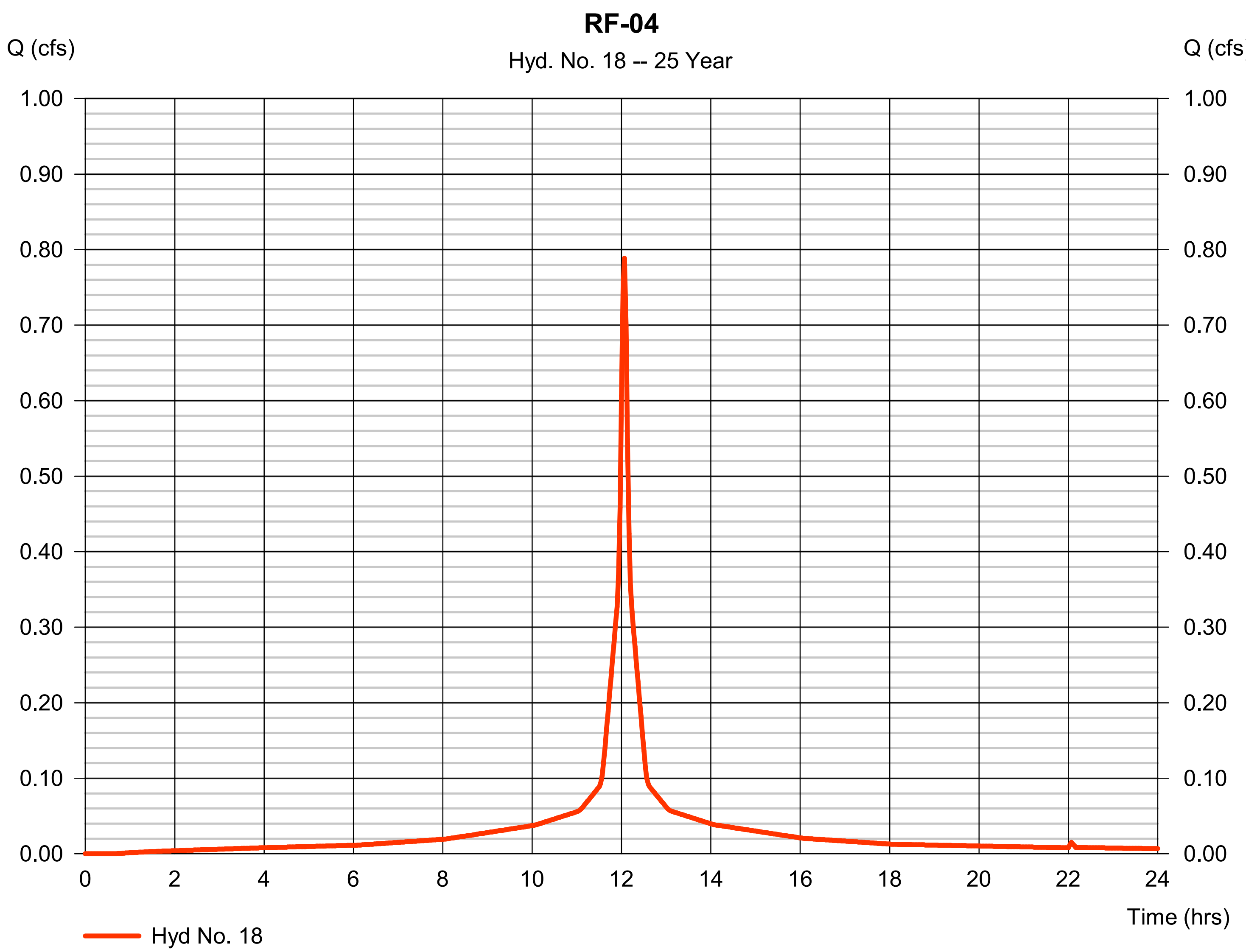
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 18

RF-04

Hydrograph type	= SCS Runoff	Peak discharge	= 0.789 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 2,736 cuft
Drainage area	= 0.127 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.57 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



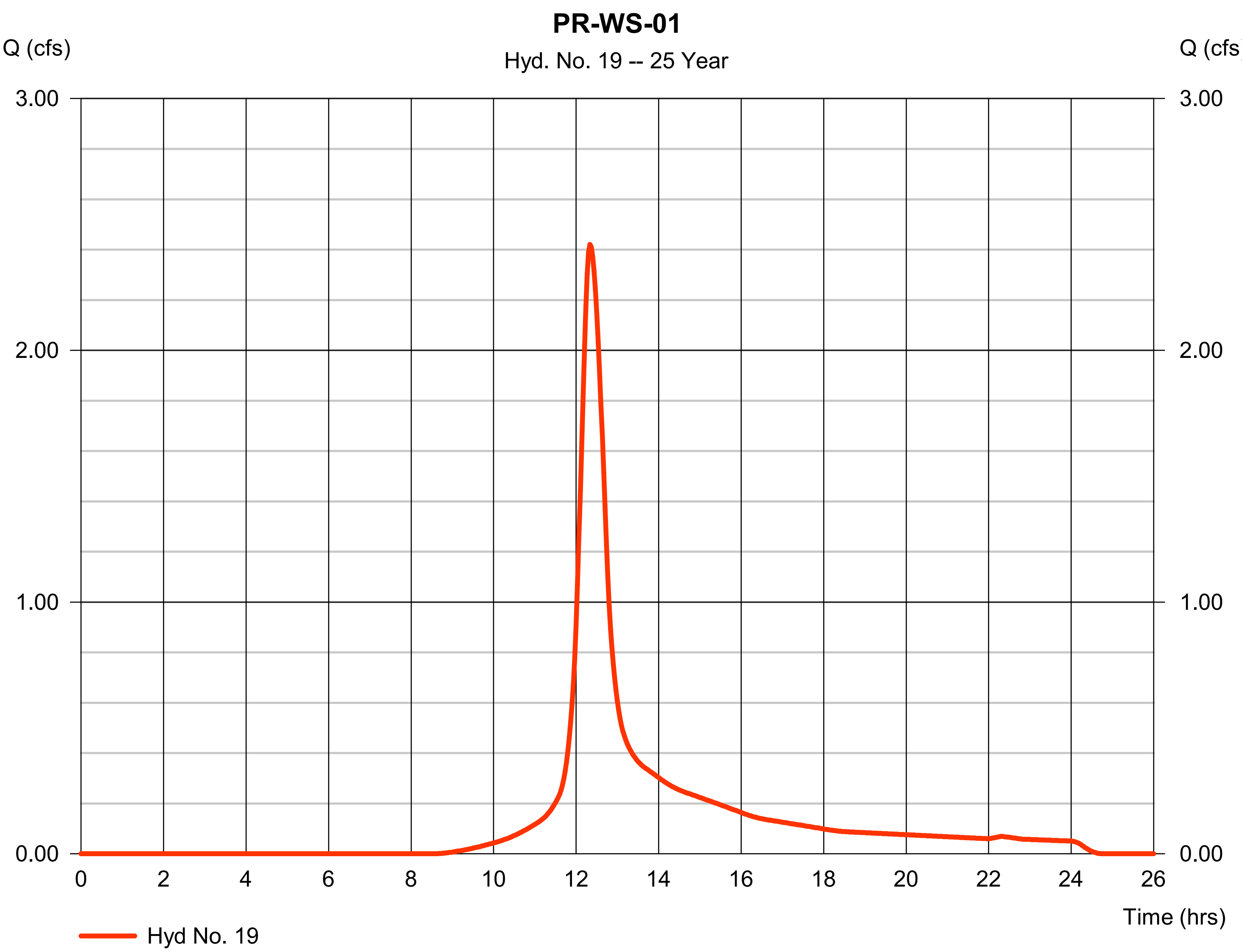
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 19

PR-WS-01

Hydrograph type	= SCS Runoff	Peak discharge	= 2.421 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.33 hrs
Time interval	= 2 min	Hyd. volume	= 12,677 cuft
Drainage area	= 1.038 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 27.60 min
Total precip.	= 6.57 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



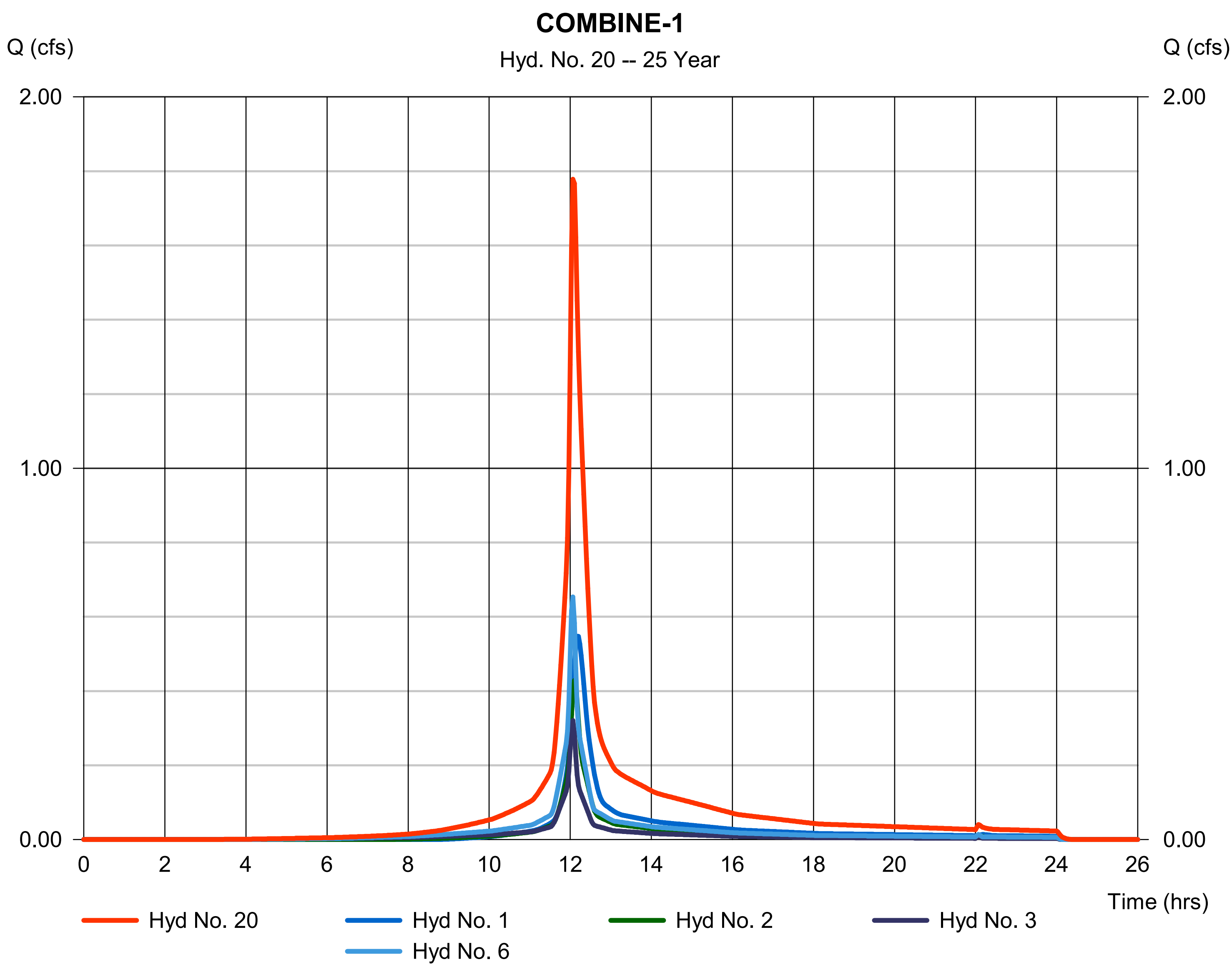
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 20

COMBINE-1

Hydrograph type	= Combine	Peak discharge	= 1.778 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 6,783 cuft
Inflow hyds.	= 1, 2, 3, 6	Contrib. drain. area	= 0.468 ac



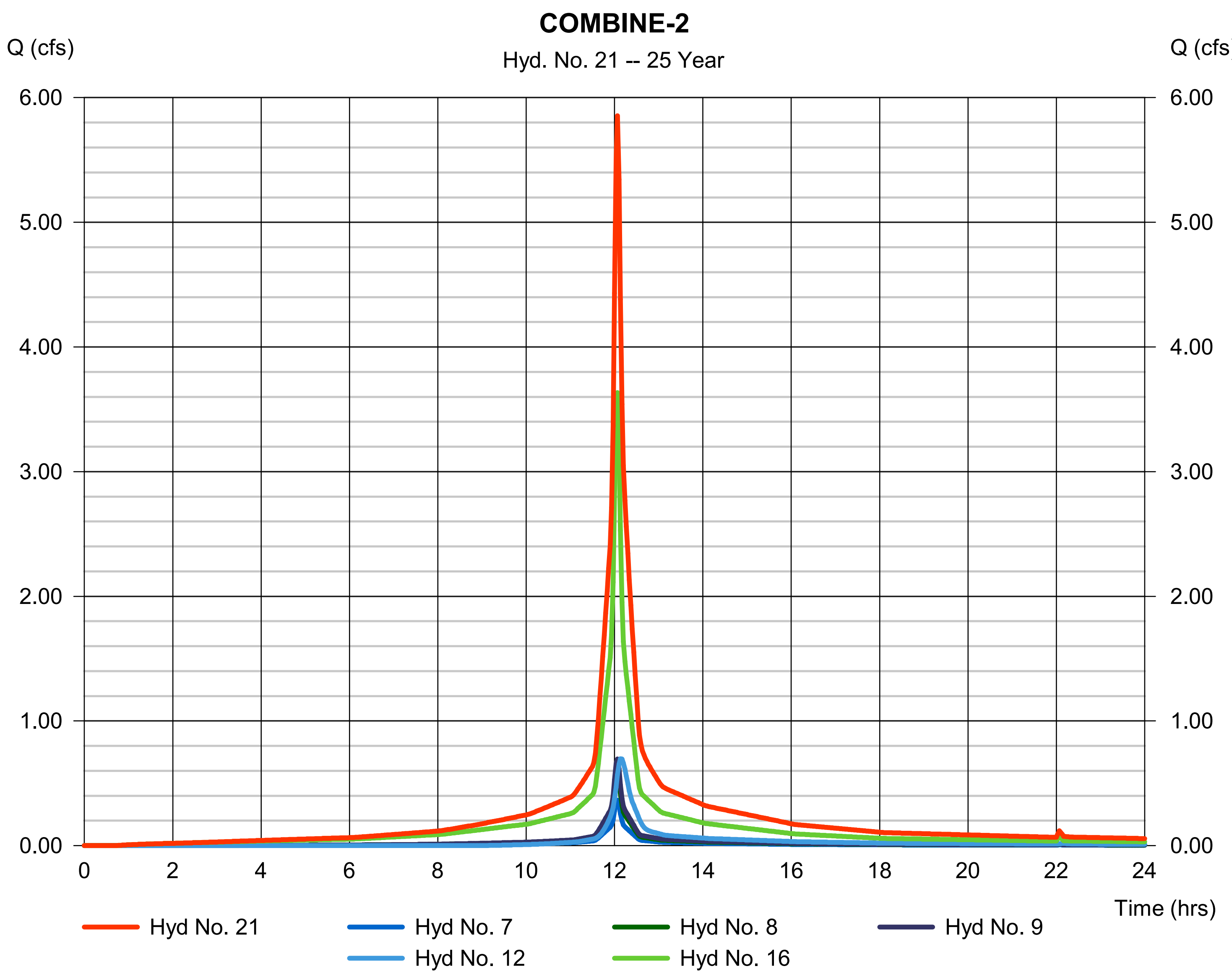
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 21

COMBINE-2

Hydrograph type	= Combine	Peak discharge	= 5.855 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 20,635 cuft
Inflow hyds.	= 7, 8, 9, 12, 16	Contrib. drain. area	= 1.090 ac



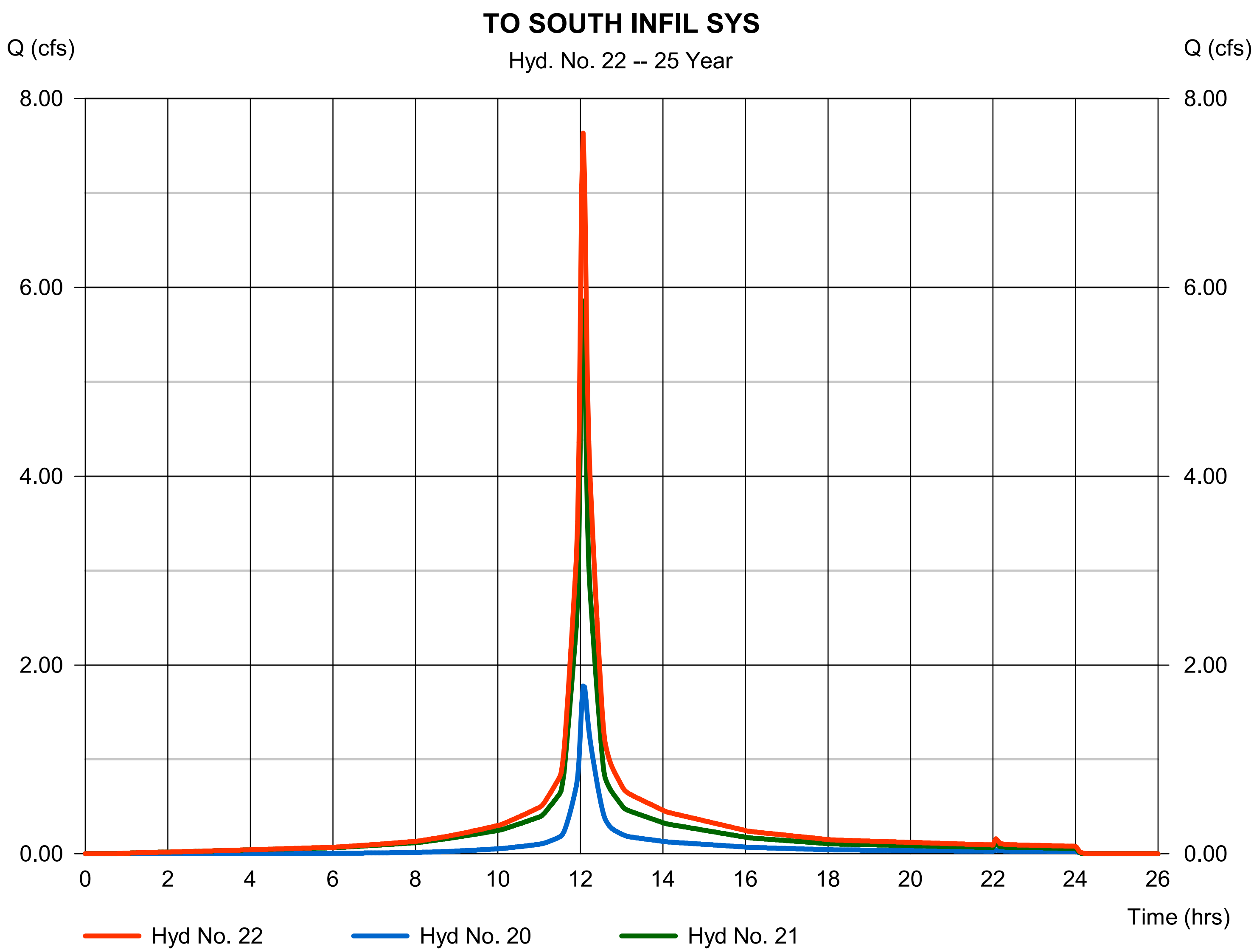
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 22

TO SOUTH INFIL SYS

Hydrograph type	= Combine	Peak discharge	= 7.634 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 27,418 cuft
Inflow hyds.	= 20, 21	Contrib. drain. area	= 0.000 ac



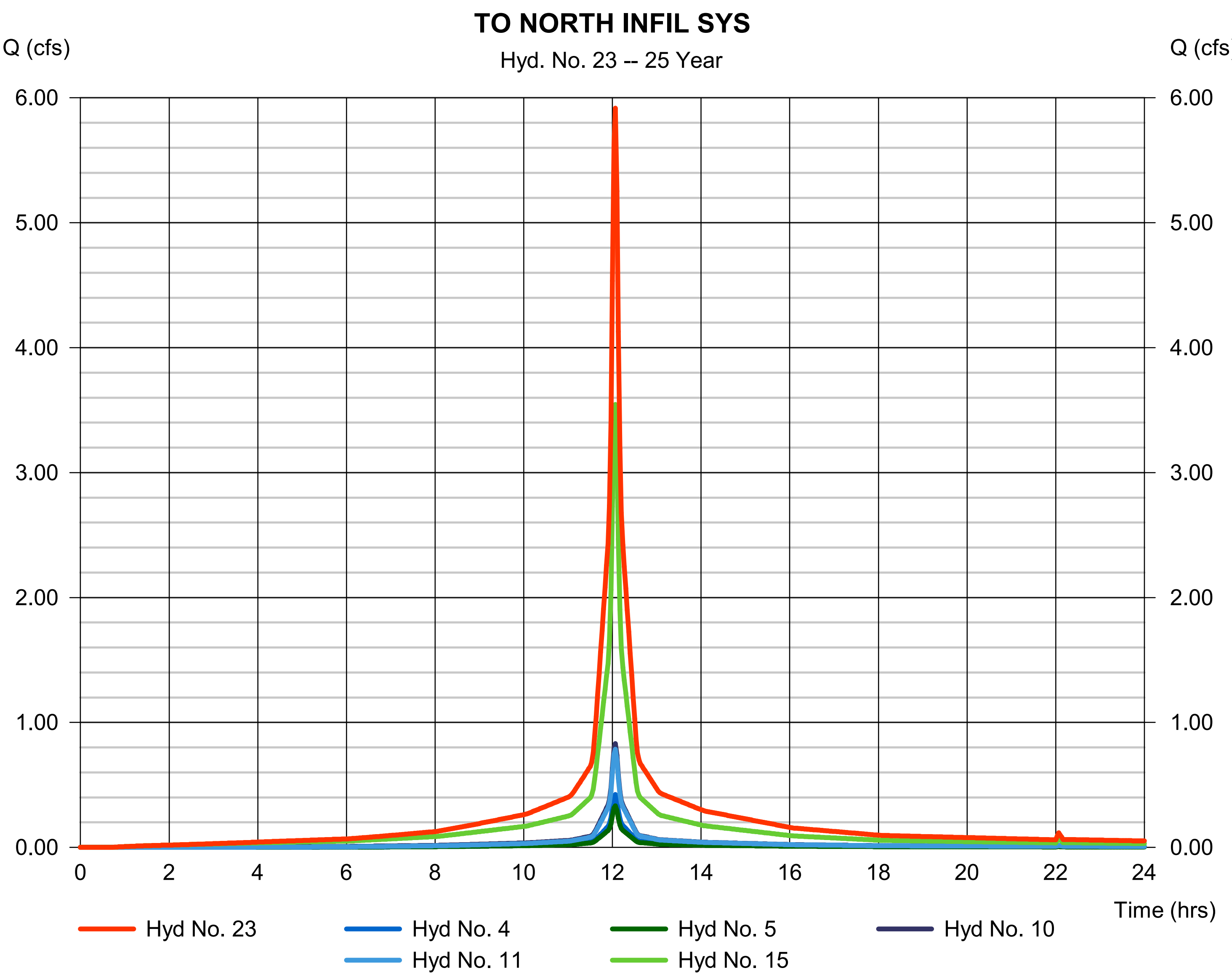
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 23

TO NORTH INFIL SYS

Hydrograph type	= Combine	Peak discharge	= 5.917 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 19,956 cuft
Inflow hyds.	= 4, 5, 10, 11, 15	Contrib. drain. area	= 0.972 ac



Hydrograph Report

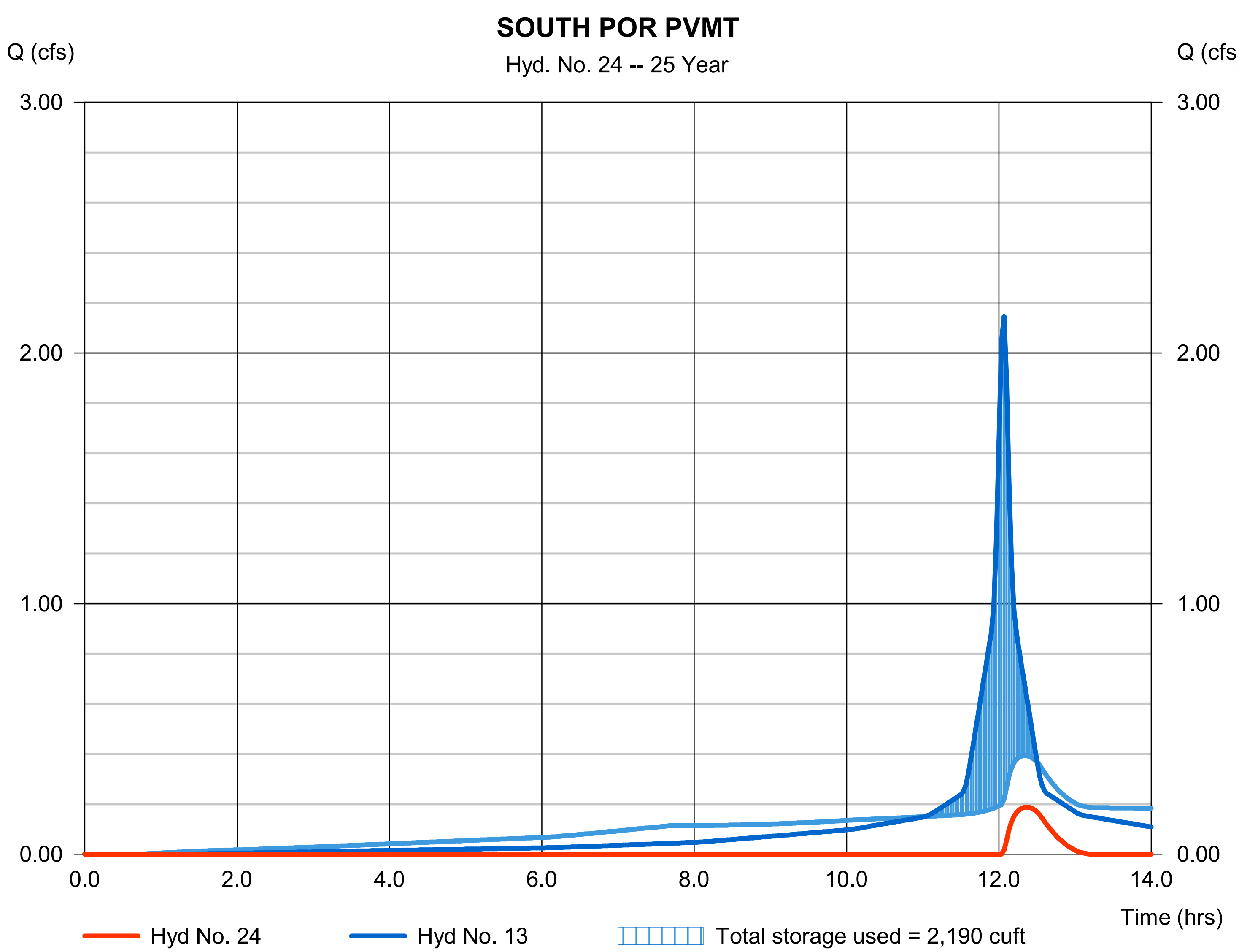
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 24

SOUTH POR PVMT

Hydrograph type	= Reservoir	Peak discharge	= 0.188 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.37 hrs
Time interval	= 2 min	Hyd. volume	= 389 cuft
Inflow hyd. No.	= 13 - PP-01	Max. Elevation	= 142.27 ft
Reservoir name	= SOUTH POROUS PVMT	Max. Storage	= 2,190 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

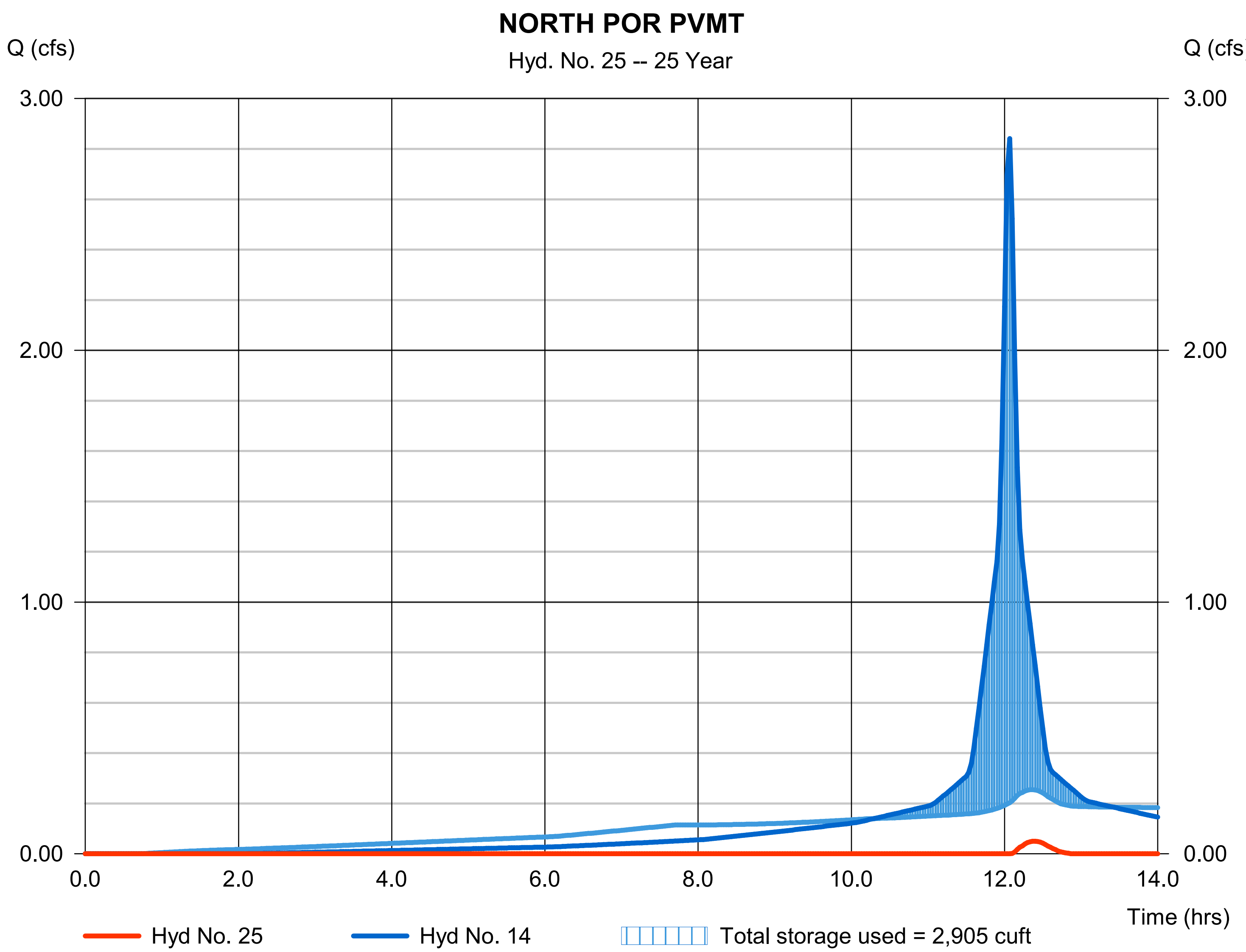
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 25

NORTH POR PVMT

Hydrograph type	= Reservoir	Peak discharge	= 0.050 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.40 hrs
Time interval	= 2 min	Hyd. volume	= 73 cuft
Inflow hyd. No.	= 14 - PP-02	Max. Elevation	= 141.63 ft
Reservoir name	= NORTH POROUS PVMT	Max. Storage	= 2,905 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

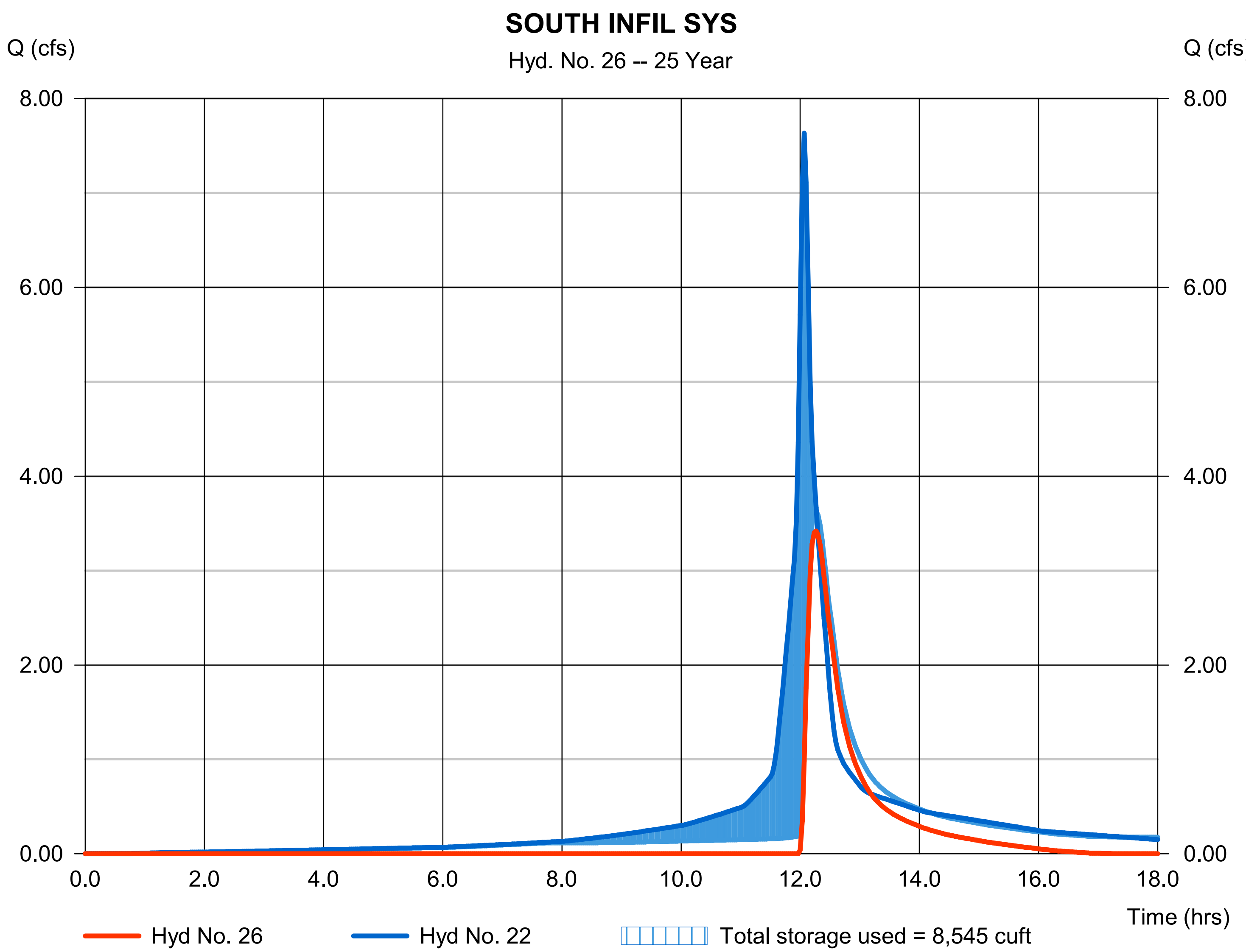
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 26

SOUTH INFIL SYS

Hydrograph type	= Reservoir	Peak discharge	= 3.418 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.27 hrs
Time interval	= 2 min	Hyd. volume	= 10,013 cuft
Inflow hyd. No.	= 22 - TO SOUTH INFIL SYS	Max. Elevation	= 143.97 ft
Reservoir name	= SOUTH INFIL SYS	Max. Storage	= 8,545 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

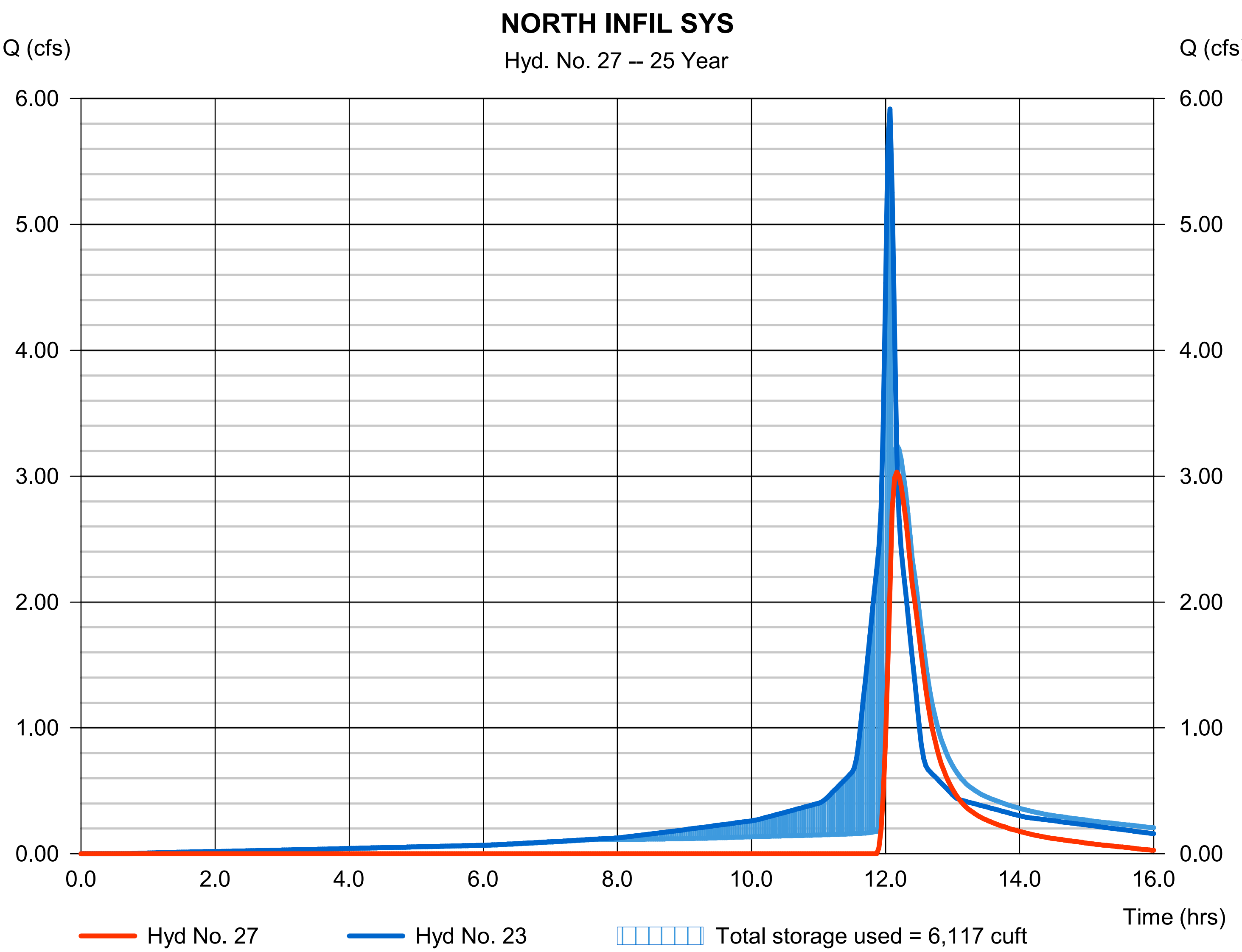
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 27

NORTH INFIL SYS

Hydrograph type	= Reservoir	Peak discharge	= 3.033 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 7,914 cuft
Inflow hyd. No.	= 23 - TO NORTH INFIL SYS	Max. Elevation	= 144.15 ft
Reservoir name	= NORTH INFIL SYS	Max. Storage	= 6,117 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



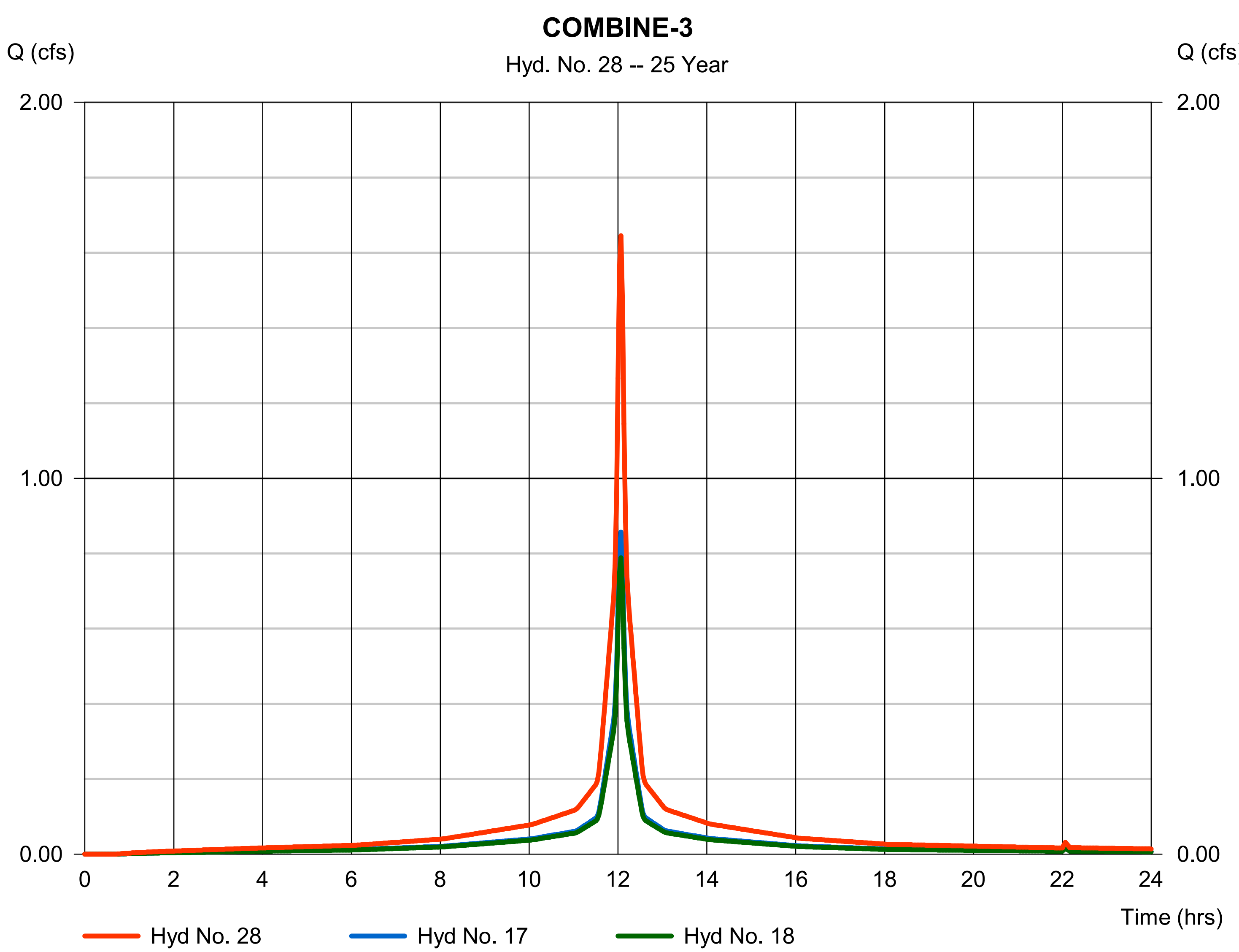
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 28

COMBINE-3

Hydrograph type	= Combine	Peak discharge	= 1.646 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 5,710 cuft
Inflow hyds.	= 17, 18	Contrib. drain. area	= 0.265 ac



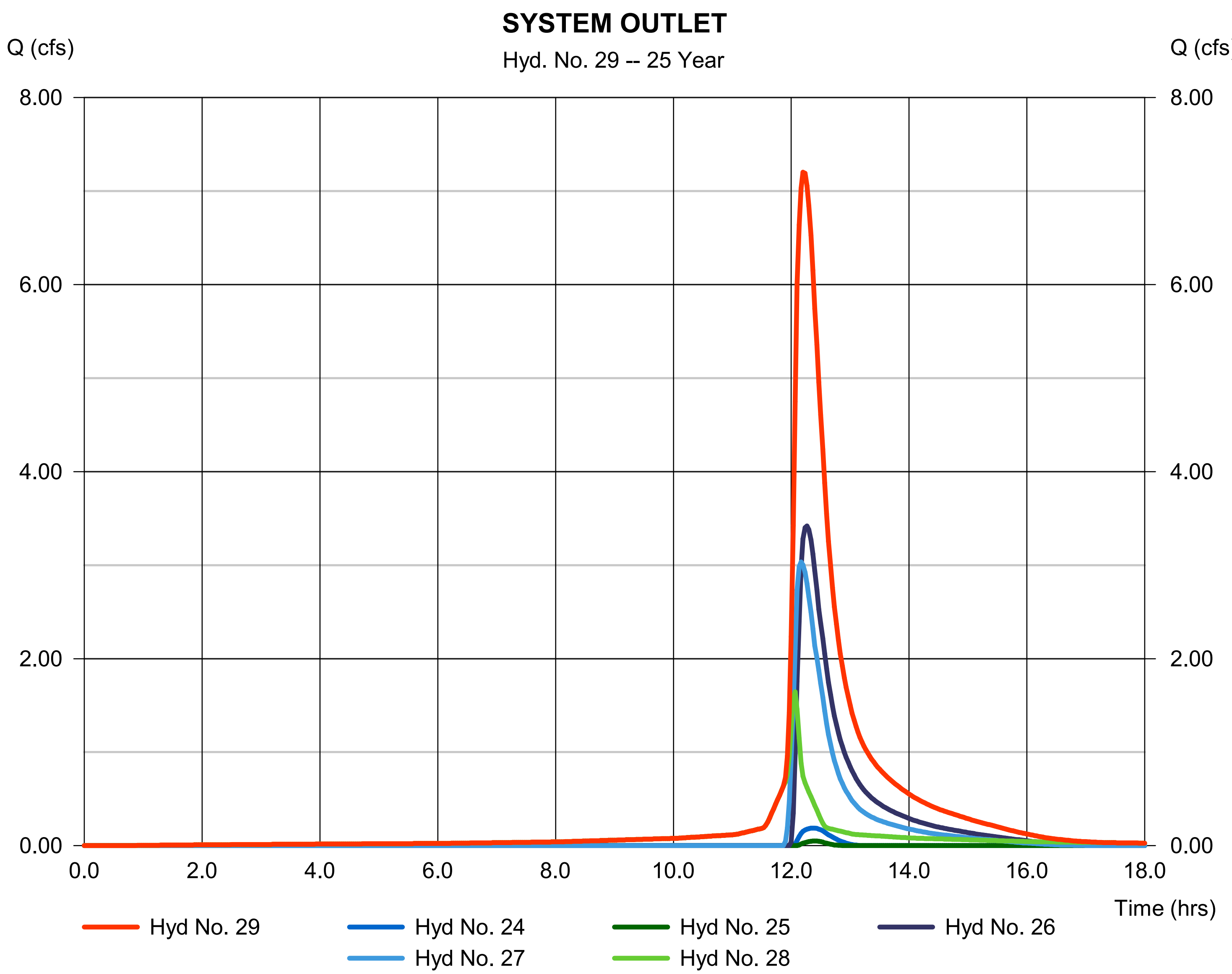
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 | Tuesday, 05 / 25 / 2021

Hyd. No. 29

SYSTEM OUTLET

Hydrograph type	= Combine	Peak discharge	= 7.202 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 24,099 cuft
Inflow hyds.	= 24, 25, 26, 27, 28	Contrib. drain. area	= 0.000 ac



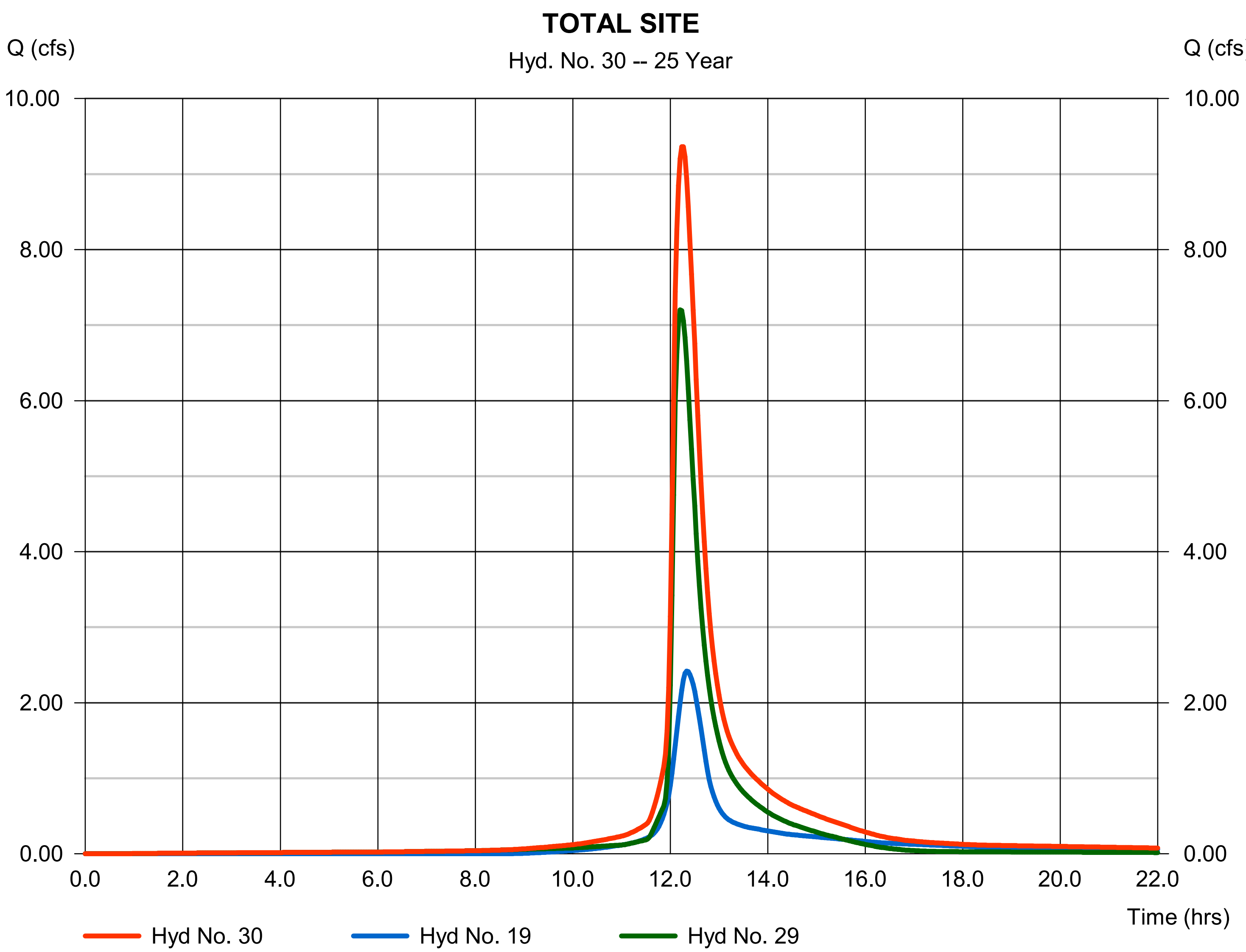
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 30

TOTAL SITE

Hydrograph type	= Combine	Peak discharge	= 9.362 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.27 hrs
Time interval	= 2 min	Hyd. volume	= 36,776 cuft
Inflow hyds.	= 19, 29	Contrib. drain. area	= 1.038 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

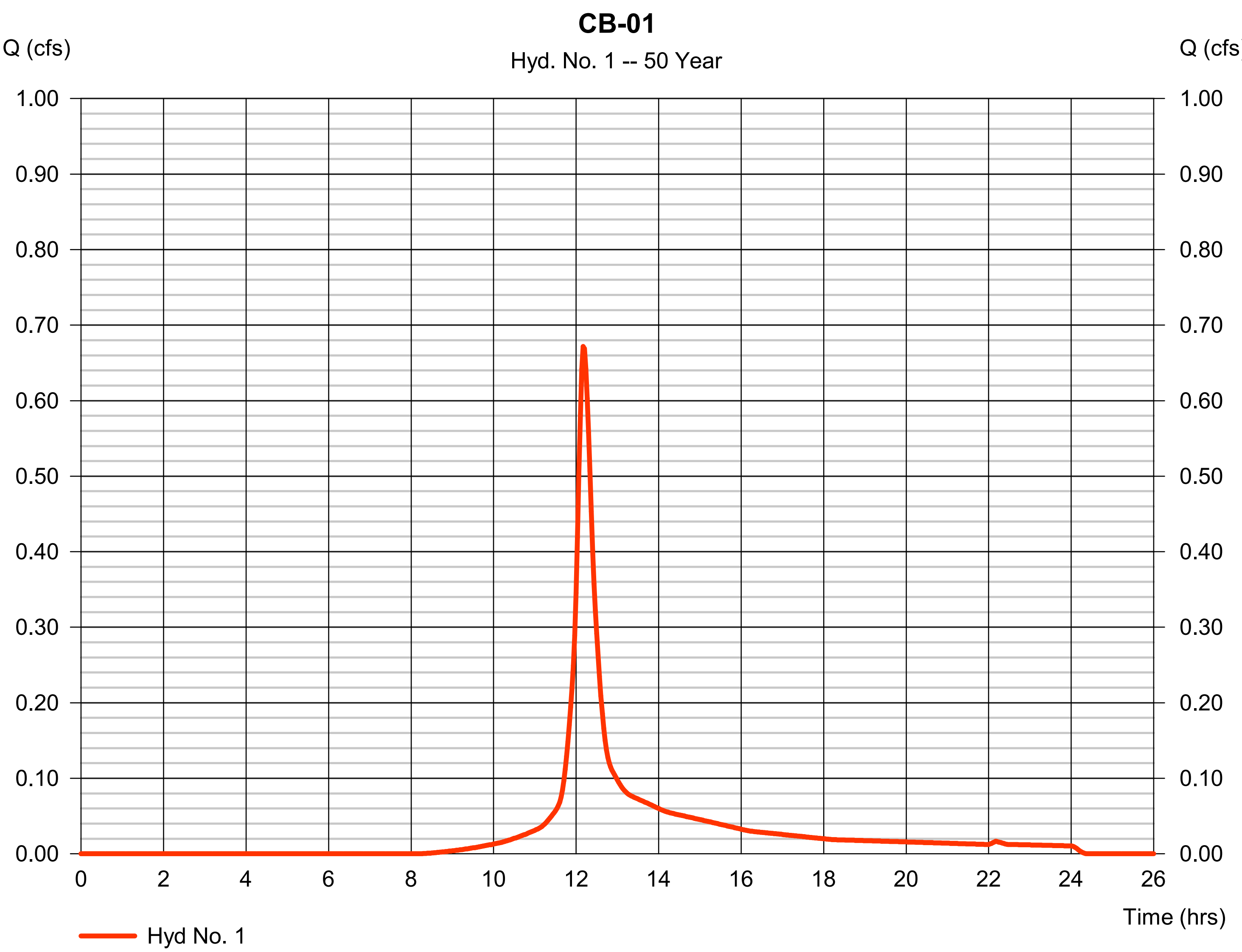
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.672	2	730	2,738	------	------	------	CB-01
2	SCS Runoff	0.513	2	726	1,756	------	------	------	CB-01A
3	SCS Runoff	0.366	2	724	1,193	------	------	------	CB-02
4	SCS Runoff	0.487	2	724	1,546	------	------	------	CB-03
5	SCS Runoff	0.380	2	724	1,237	------	------	------	CB-04
6	SCS Runoff	0.753	2	724	2,377	------	------	------	CB-05
7	SCS Runoff	0.417	2	724	1,344	------	------	------	CB-06
8	SCS Runoff	0.678	2	724	2,226	------	------	------	CB-07
9	SCS Runoff	0.794	2	724	2,584	------	------	------	CB-08
10	SCS Runoff	0.945	2	724	3,136	------	------	------	CB-09
11	SCS Runoff	0.901	2	724	2,906	------	------	------	CB-10
12	SCS Runoff	0.858	2	728	3,295	------	------	------	CB-11
13	SCS Runoff	2.437	2	724	8,269	------	------	------	PP-01
14	SCS Runoff	3.235	2	724	10,734	------	------	------	PP-02
15	SCS Runoff	4.018	2	724	13,992	------	------	------	RF-01
16	SCS Runoff	4.117	2	724	14,335	------	------	------	RF-02
17	SCS Runoff	0.971	2	724	3,382	------	------	------	RF-03
18	SCS Runoff	0.894	2	724	3,112	------	------	------	RF-04
19	SCS Runoff	2.955	2	740	15,436	------	------	------	PR-WS-01
20	Combine	2.102	2	724	8,063	1, 2, 3, 6,	------	------	COMBINE-1
21	Combine	6.713	2	724	23,785	7, 8, 9, 12, 16,	------	------	COMBINE-2
22	Combine	8.815	2	724	31,848	20, 21	------	------	TO SOUTH INFIL SYS
23	Combine	6.730	2	724	22,816	4, 5, 10, 11, 15,	------	------	TO NORTH INFIL SYS
24	Reservoir	0.278	2	742	694	13	142.38	2,484	SOUTH POR PVMT
25	Reservoir	0.140	2	744	271	14	141.73	3,359	NORTH POR PVMT
26	Reservoir	4.661	2	732	13,406	22	144.41	9,355	SOUTH INFIL SYS
27	Reservoir	4.540	2	728	10,110	23	144.57	6,500	NORTH INFIL SYS
28	Combine	1.865	2	724	6,494	17, 18,	------	------	COMBINE-3
29	Combine	10.05	2	728	30,974	24, 25, 26, 27, 28	------	------	SYSTEM OUTLET
30	Combine	12.19	2	730	46,410	19, 29	------	------	TOTAL SITE

Hydrograph Report

Hyd. No. 1

CB-01

Hydrograph type	= SCS Runoff	Peak discharge	= 0.672 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 2,738 cuft
Drainage area	= 0.194 ac	Curve number	= 70
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 14.20 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



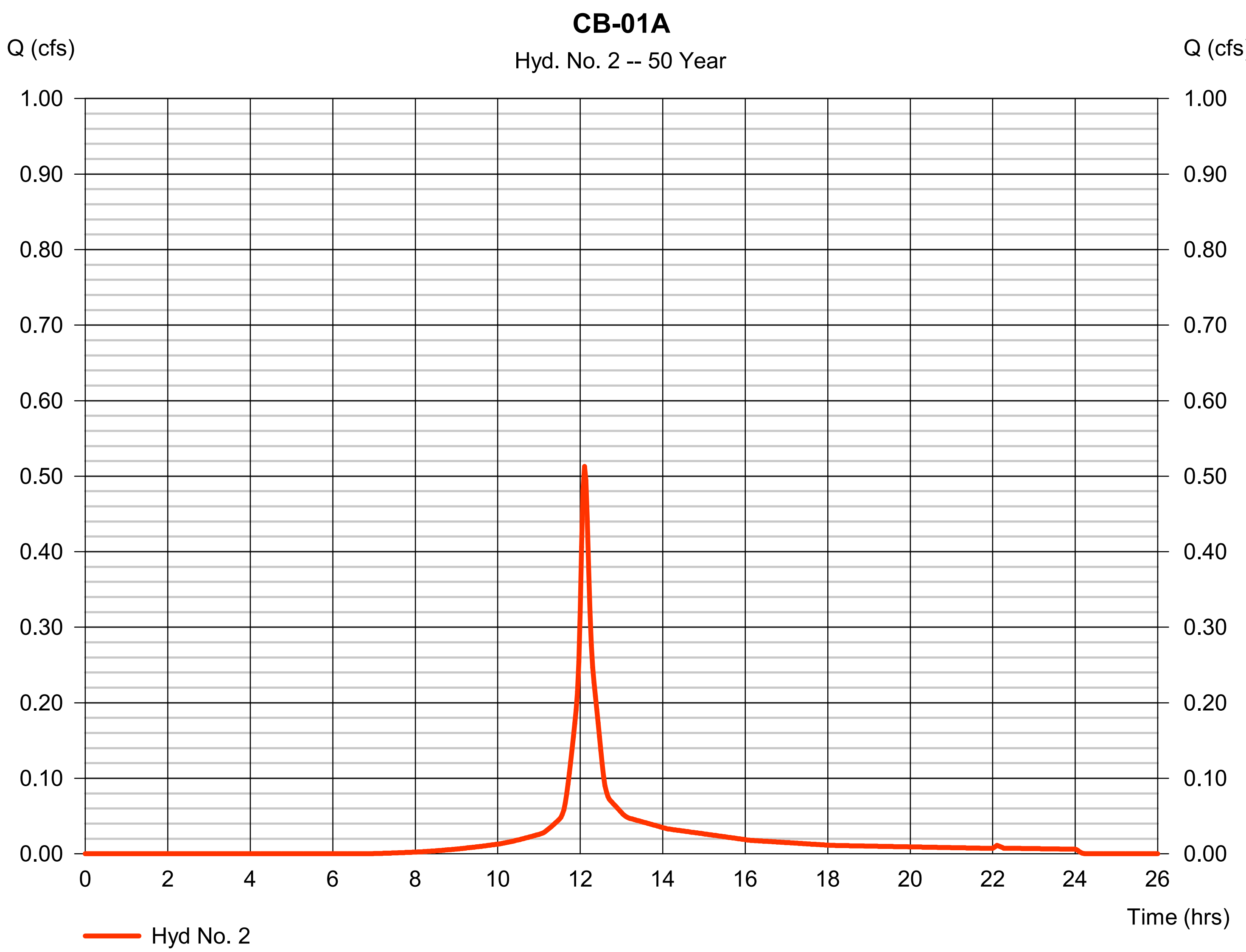
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 2

CB-01A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.513 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 1,756 cuft
Drainage area	= 0.104 ac	Curve number	= 76
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 7.80 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



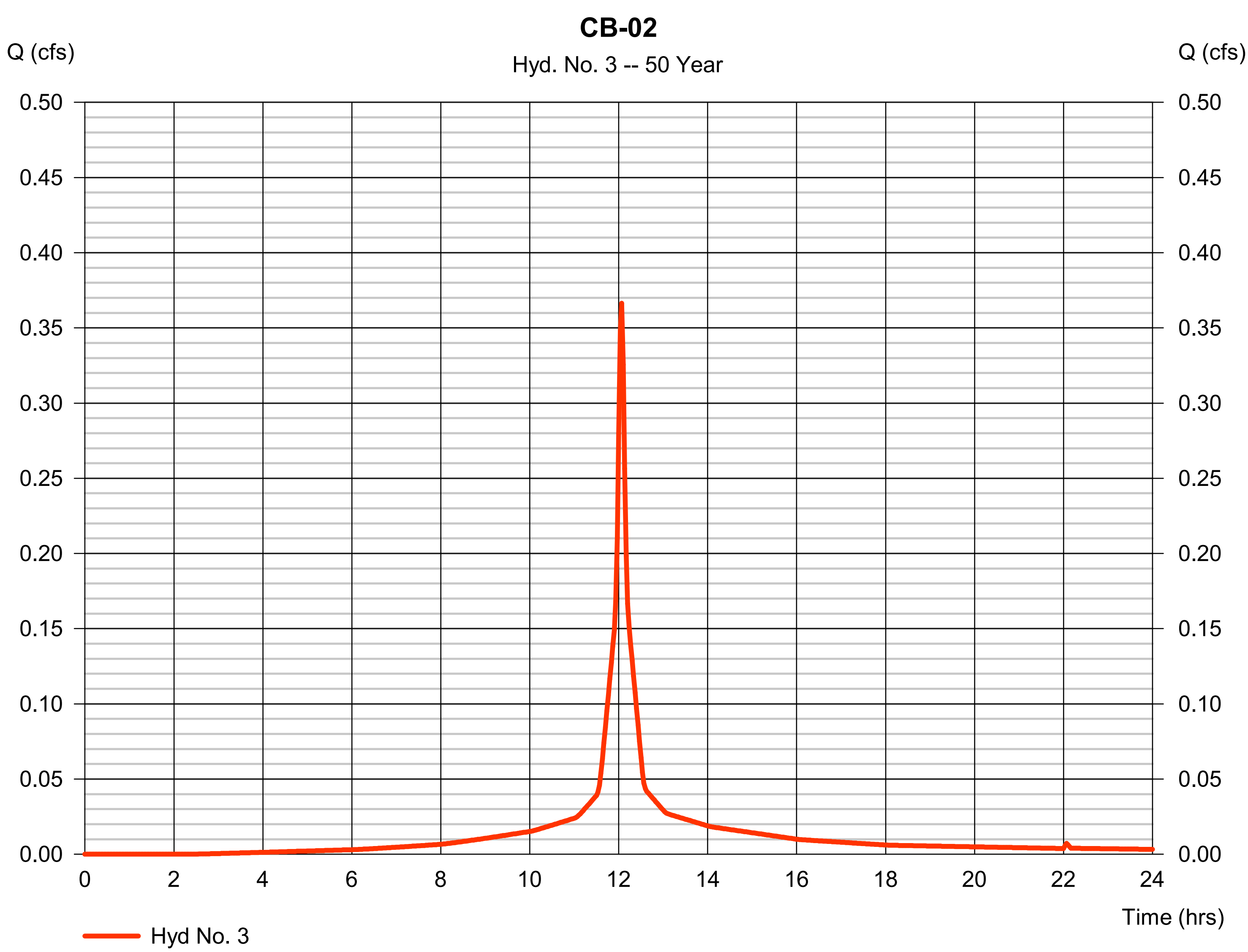
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 3

CB-02

Hydrograph type	= SCS Runoff	Peak discharge	= 0.366 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,193 cuft
Drainage area	= 0.054 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

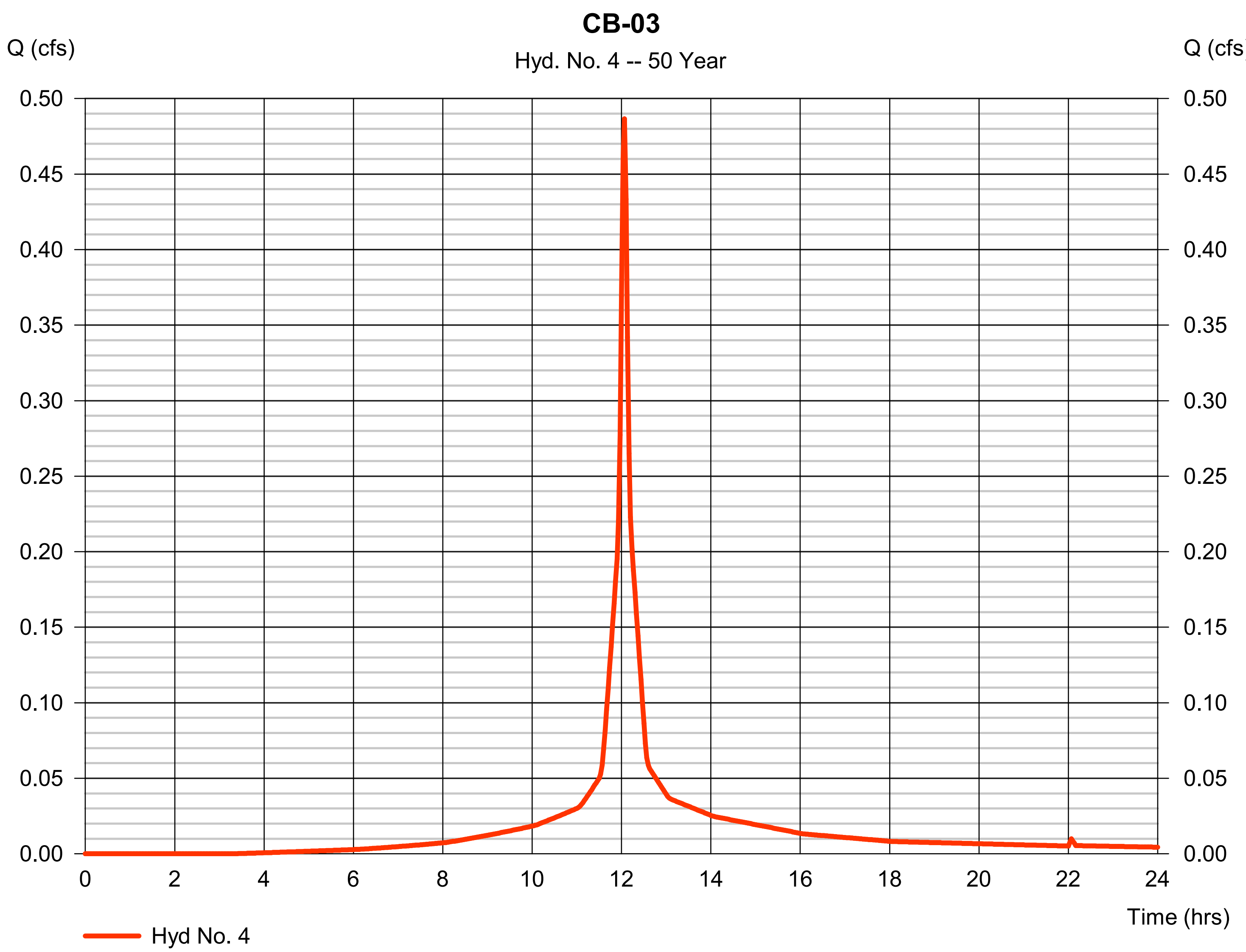


Hydrograph Report

Hyd. No. 4

CB-03

Hydrograph type	= SCS Runoff	Peak discharge	= 0.487 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,546 cuft
Drainage area	= 0.074 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



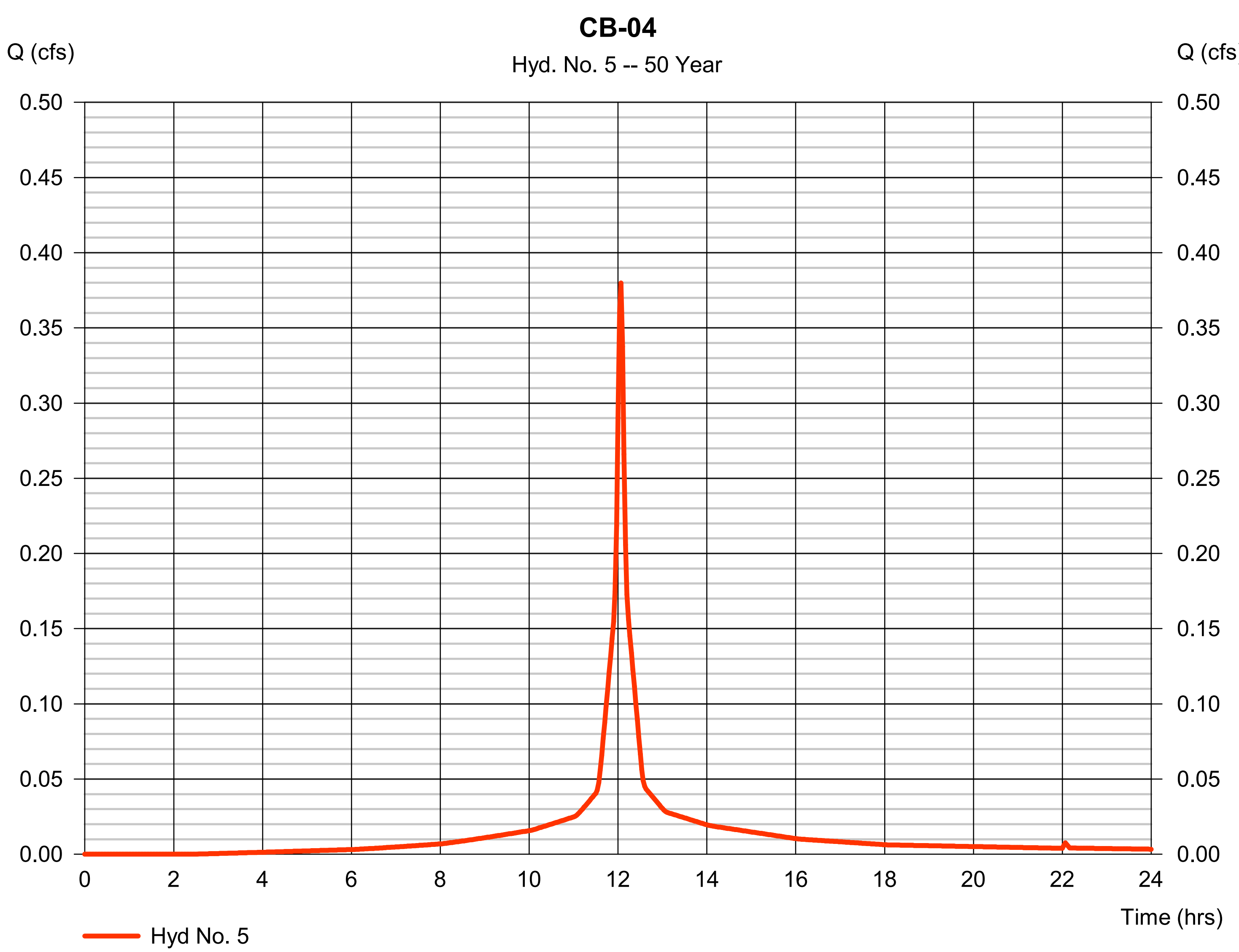
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 — Tuesday, 05 / 25 / 2021

Hyd. No. 5

CB-04

Hydrograph type	= SCS Runoff	Peak discharge	= 0.380 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,237 cuft
Drainage area	= 0.056 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



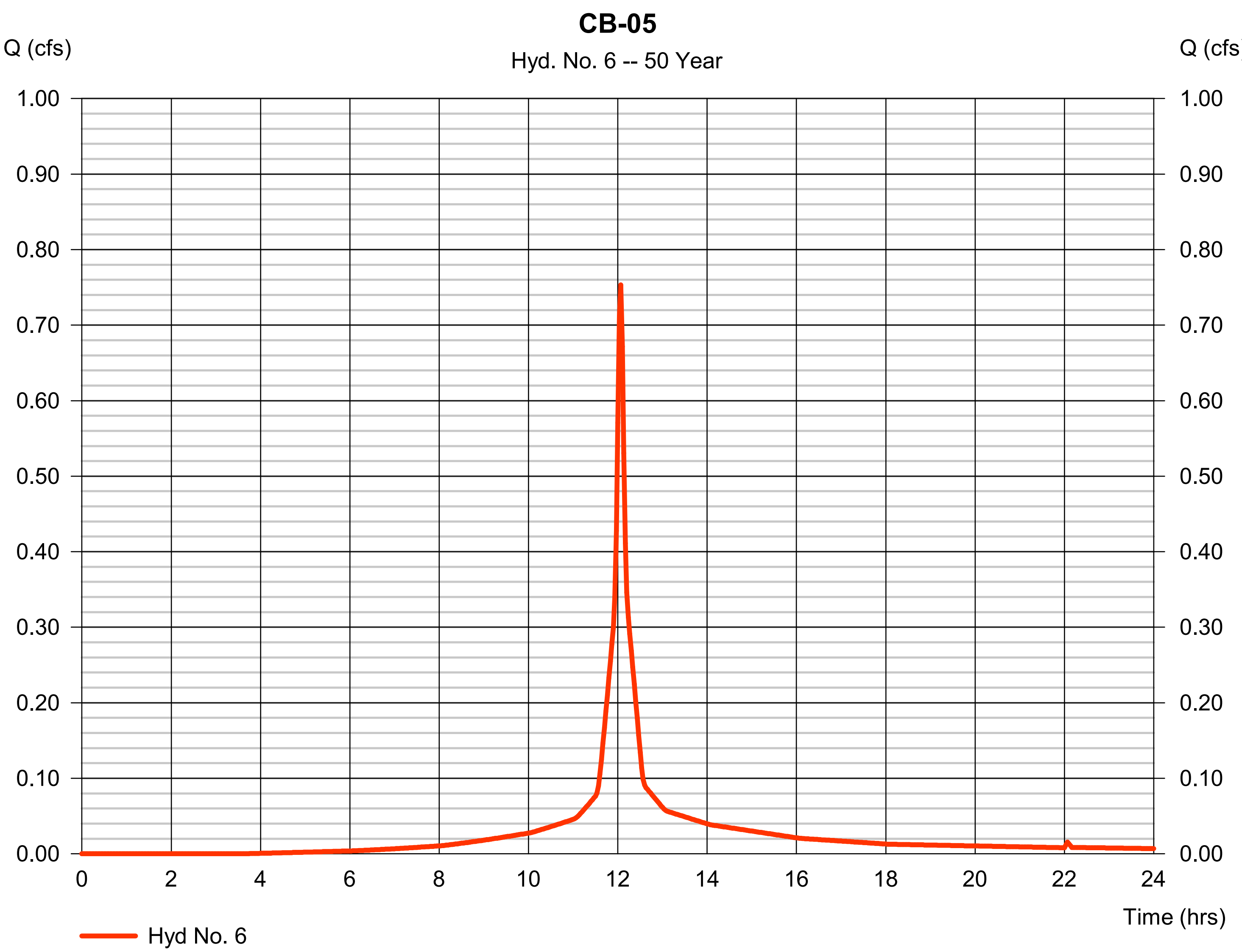
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 6

CB-05

Hydrograph type	= SCS Runoff	Peak discharge	= 0.753 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 2,377 cuft
Drainage area	= 0.116 ac	Curve number	= 88
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



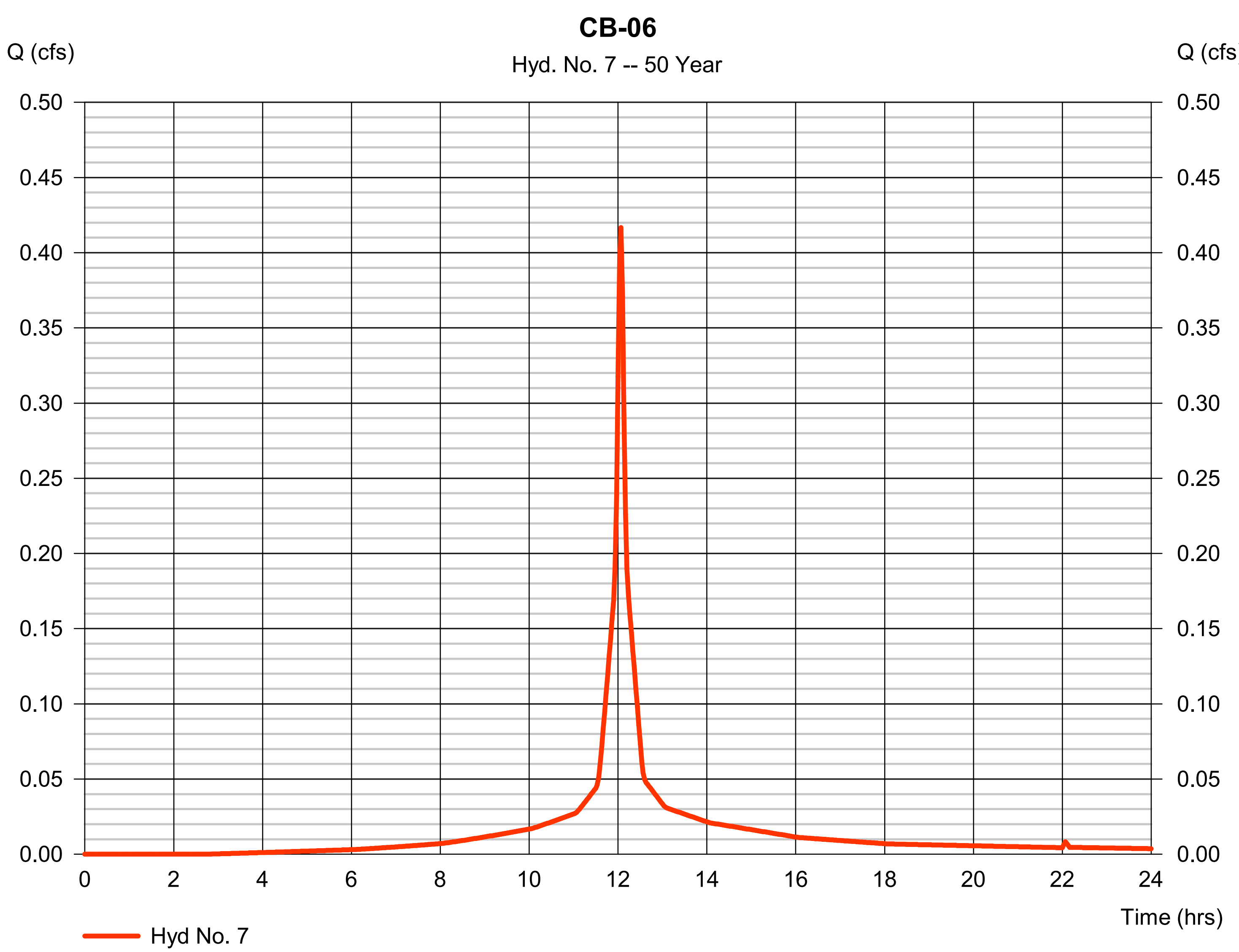
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 7

CB-06

Hydrograph type	= SCS Runoff	Peak discharge	= 0.417 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,344 cuft
Drainage area	= 0.062 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



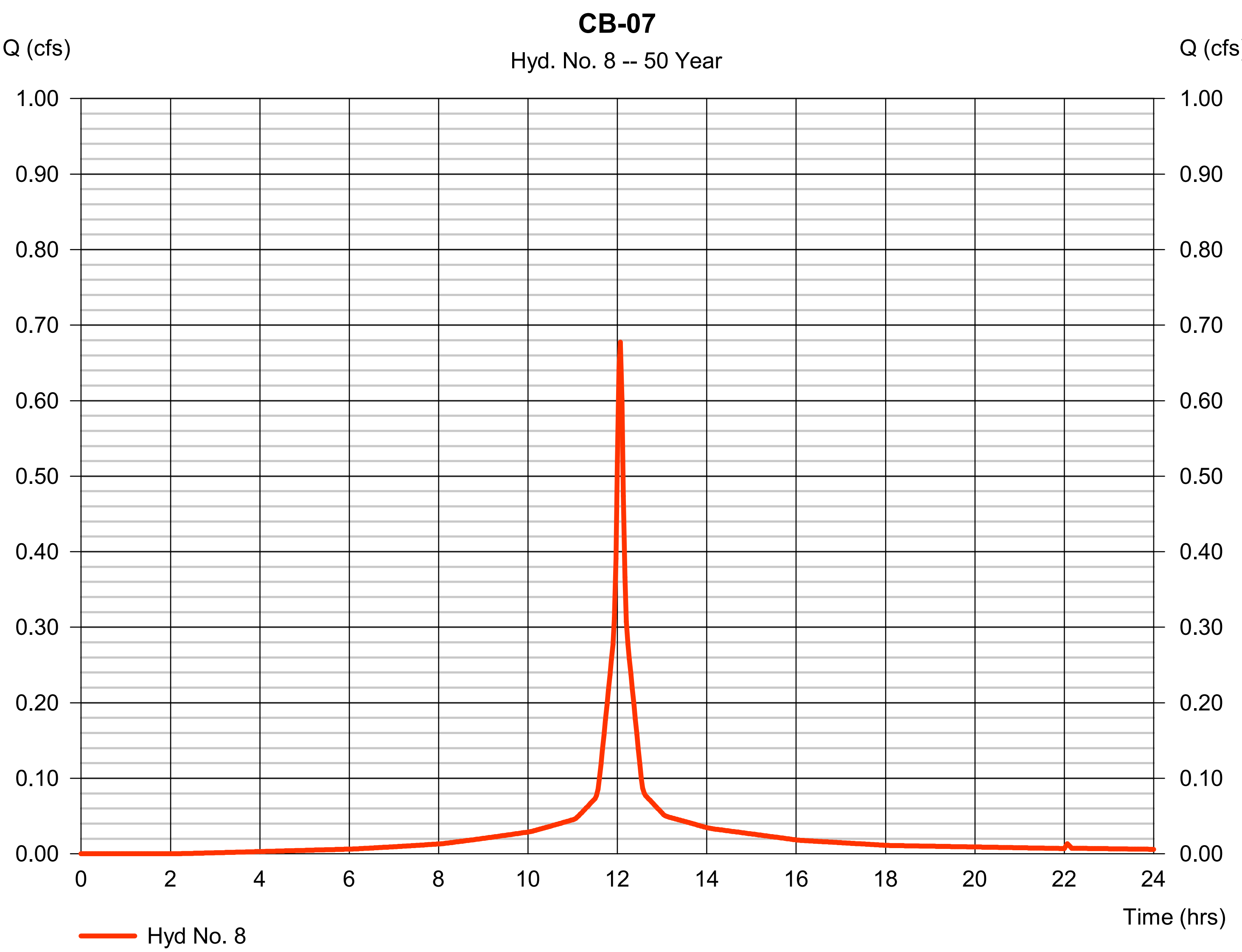
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 8

CB-07

Hydrograph type	= SCS Runoff	Peak discharge	= 0.678 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 2,226 cuft
Drainage area	= 0.099 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



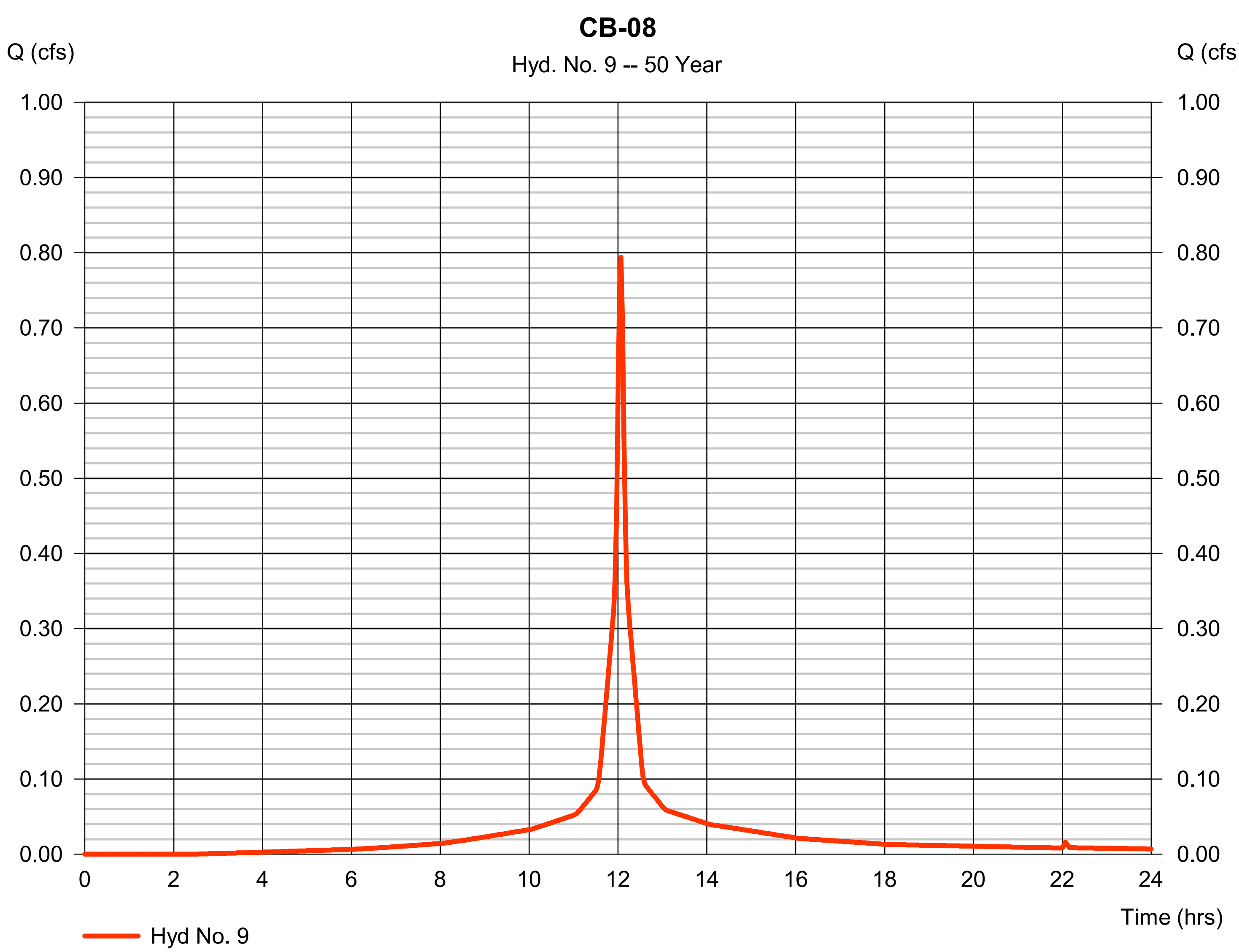
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 — Tuesday, 05 / 25 / 2021

Hyd. No. 9

CB-08

Hydrograph type	= SCS Runoff	Peak discharge	= 0.794 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 2,584 cuft
Drainage area	= 0.117 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.50 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



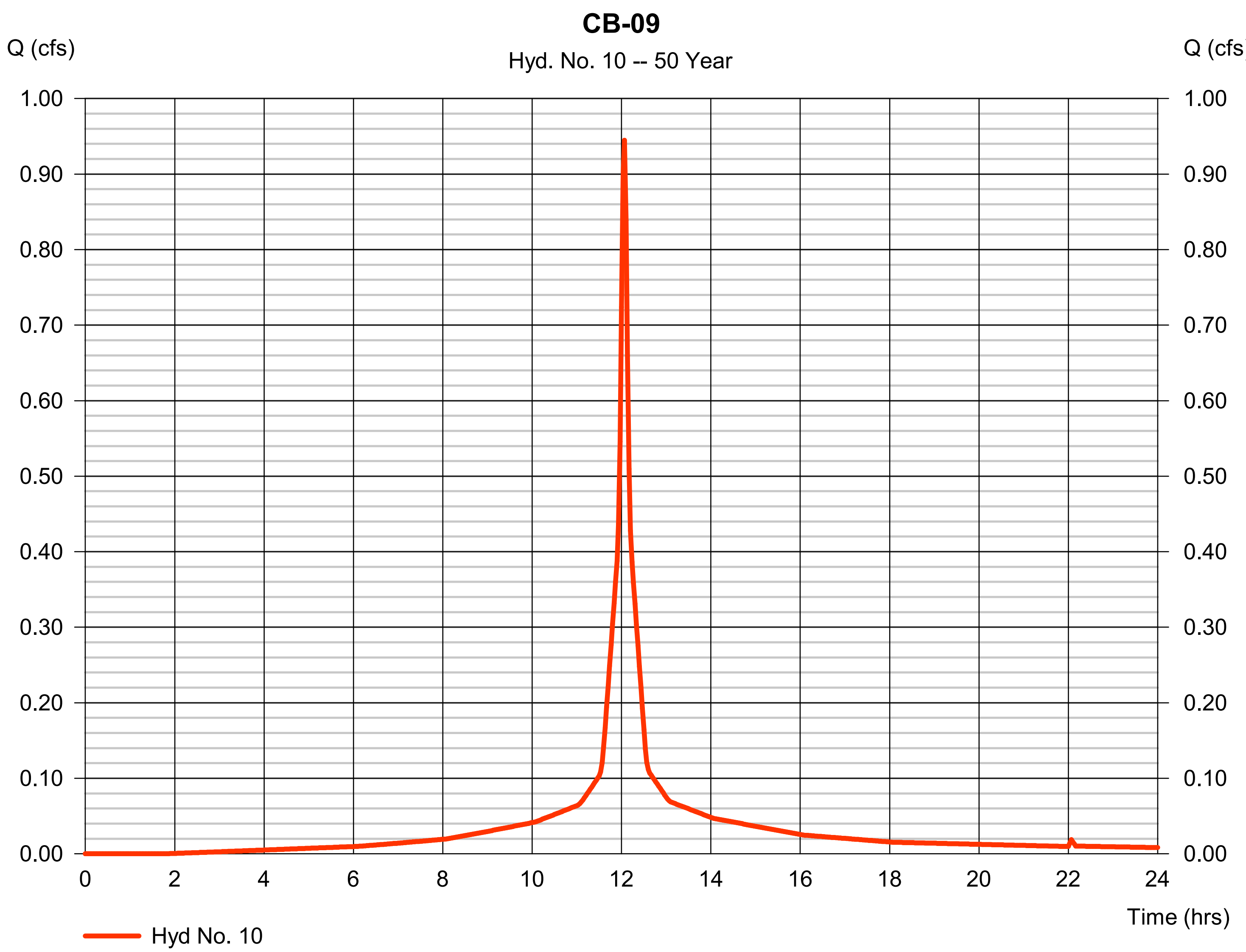
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 10

CB-09

Hydrograph type	= SCS Runoff	Peak discharge	= 0.945 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 3,136 cuft
Drainage area	= 0.137 ac	Curve number	= 94
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



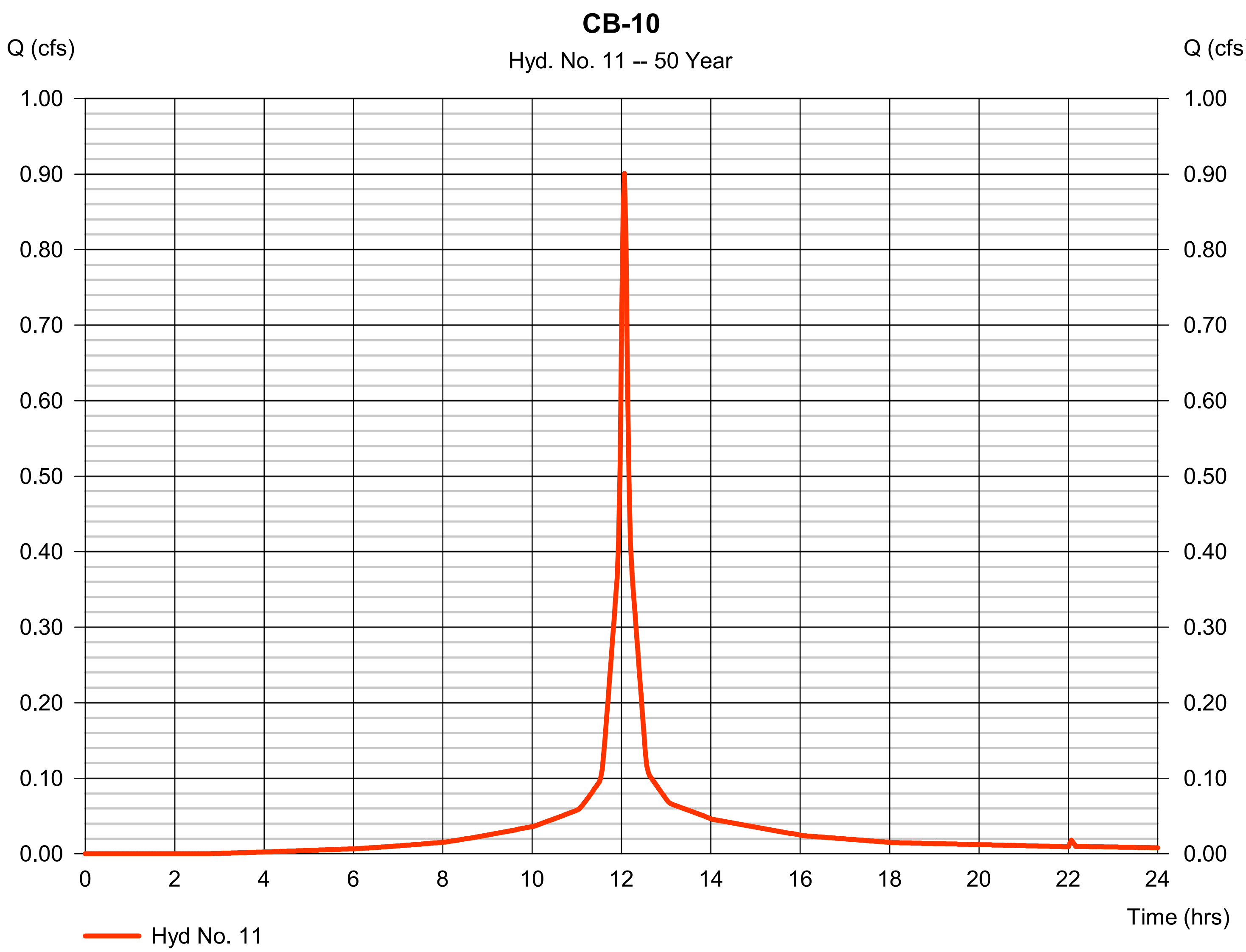
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 11

CB-10

Hydrograph type	= SCS Runoff	Peak discharge	= 0.901 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 2,906 cuft
Drainage area	= 0.134 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



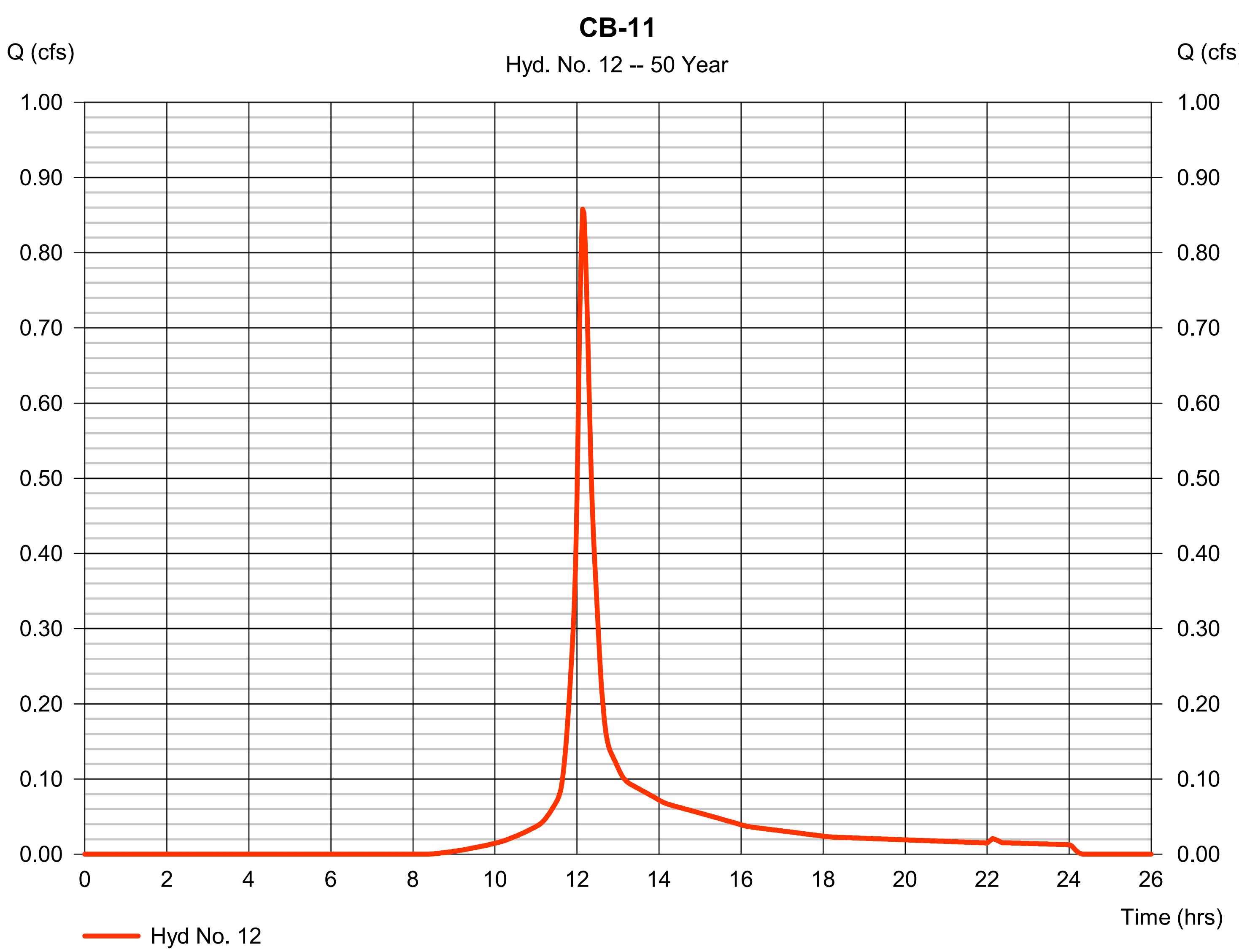
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 12

CB-11

Hydrograph type	= SCS Runoff	Peak discharge	= 0.858 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 3,295 cuft
Drainage area	= 0.227 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.60 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



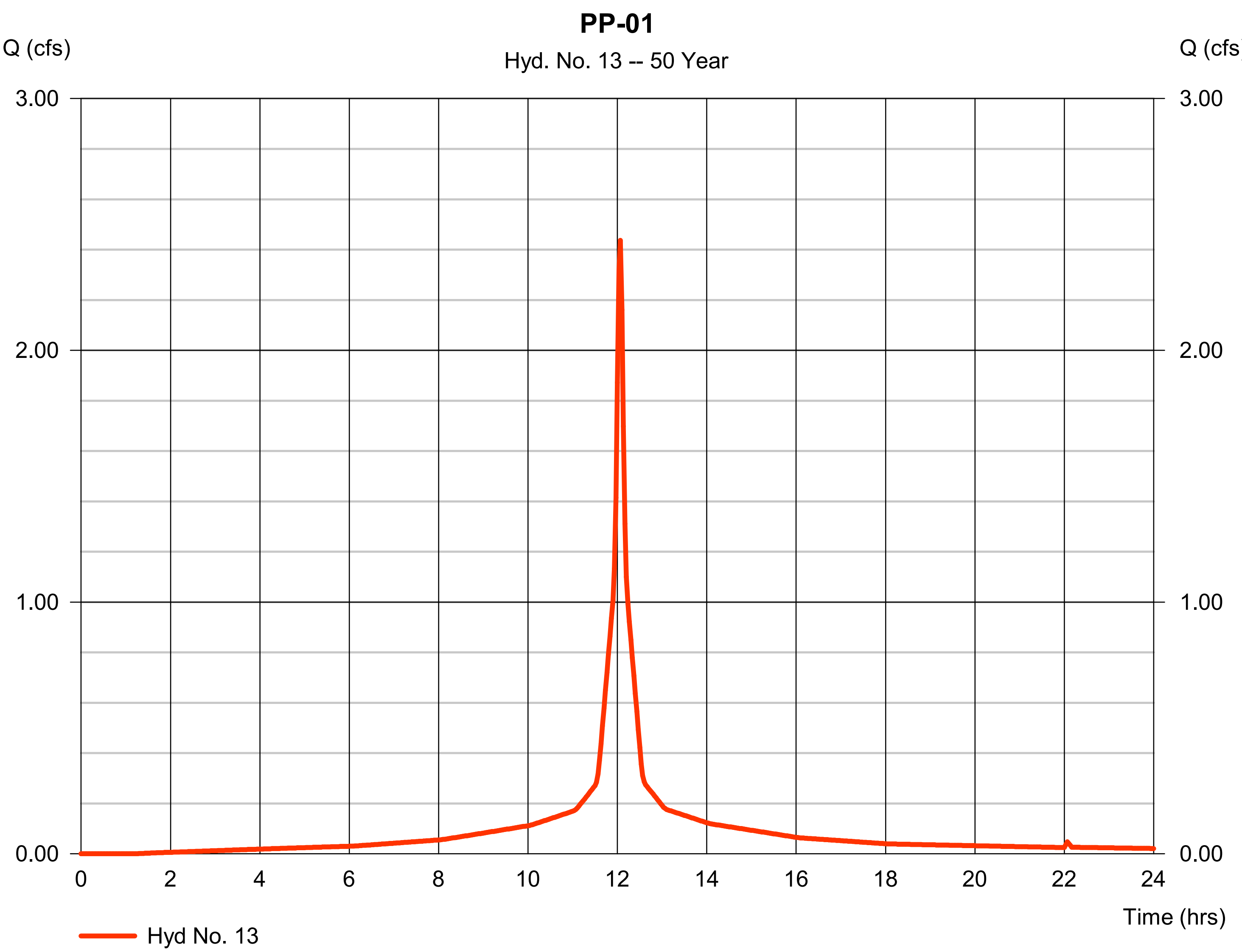
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 | Tuesday, 05 / 25 / 2021

Hyd. No. 13

PP-01

Hydrograph type	= SCS Runoff	Peak discharge	= 2.437 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 8,269 cuft
Drainage area	= 0.349 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.60 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



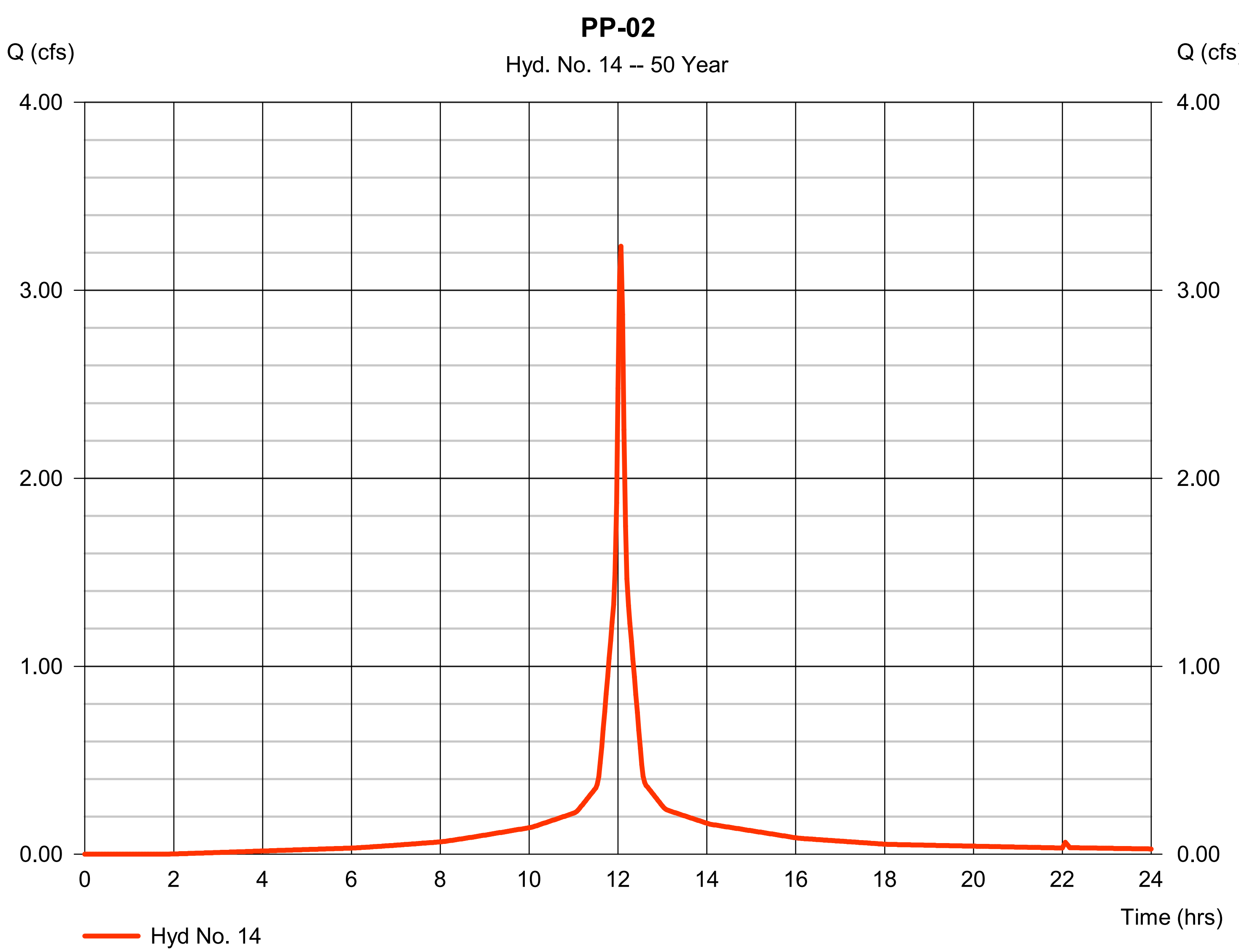
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 14

PP-02

Hydrograph type	= SCS Runoff	Peak discharge	= 3.235 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 10,734 cuft
Drainage area	= 0.469 ac	Curve number	= 94
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



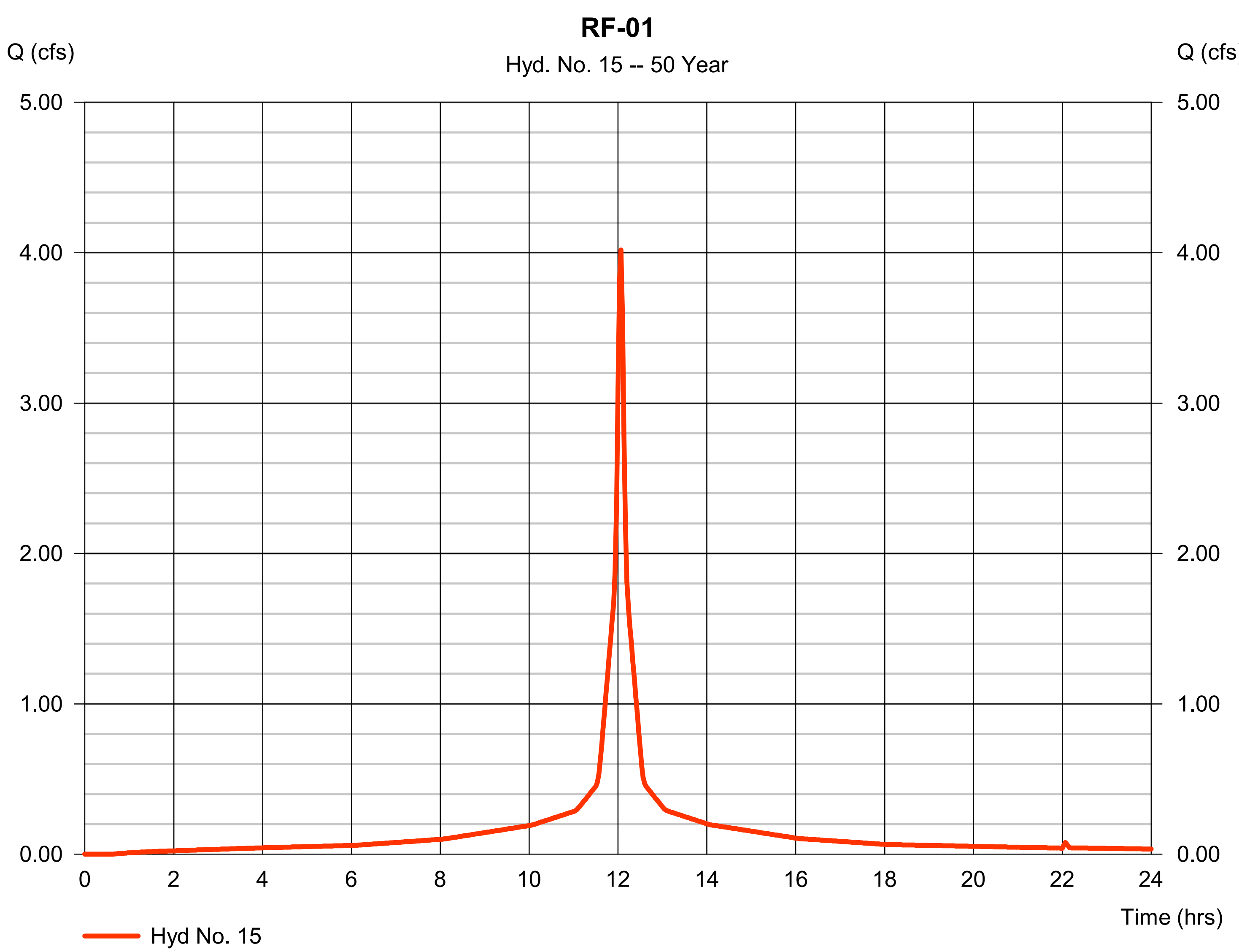
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 15

RF-01

Hydrograph type	= SCS Runoff	Peak discharge	= 4.018 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 13,992 cuft
Drainage area	= 0.571 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



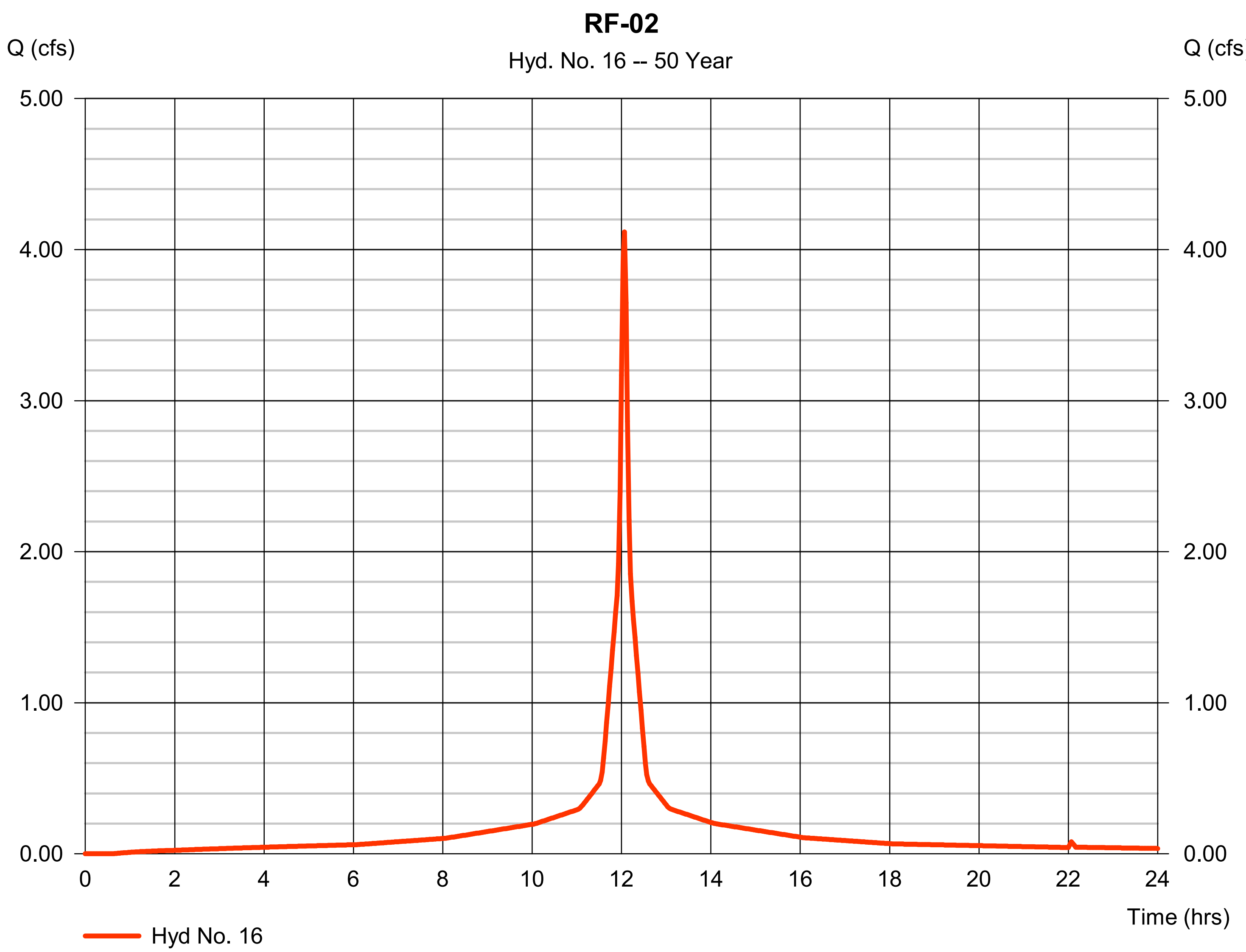
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 — Tuesday, 05 / 25 / 2021

Hyd. No. 16

RF-02

Hydrograph type	= SCS Runoff	Peak discharge	= 4.117 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 14,335 cuft
Drainage area	= 0.585 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



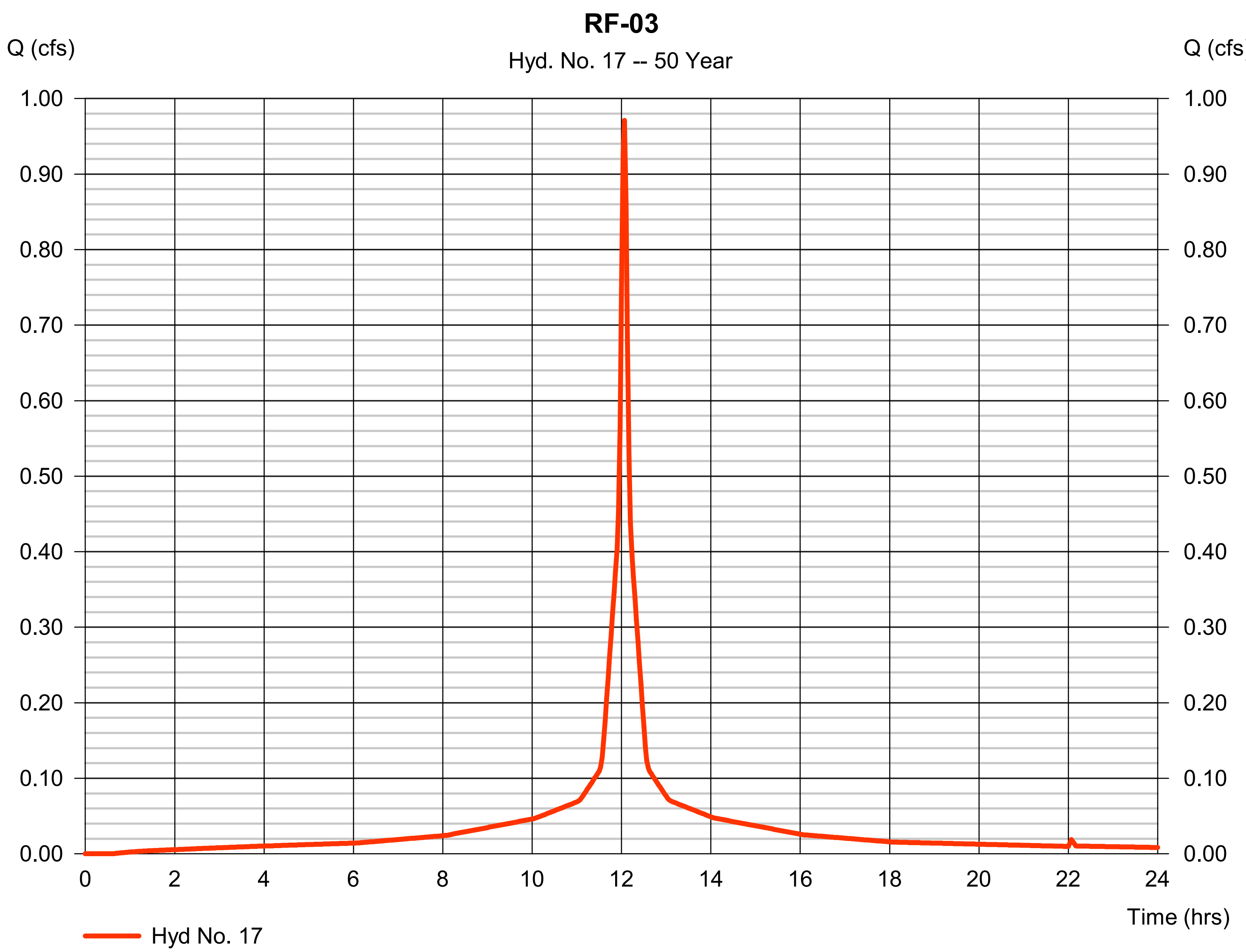
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 — Tuesday, 05 / 25 / 2021

Hyd. No. 17

RF-03

Hydrograph type	= SCS Runoff	Peak discharge	= 0.971 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 3,382 cuft
Drainage area	= 0.138 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



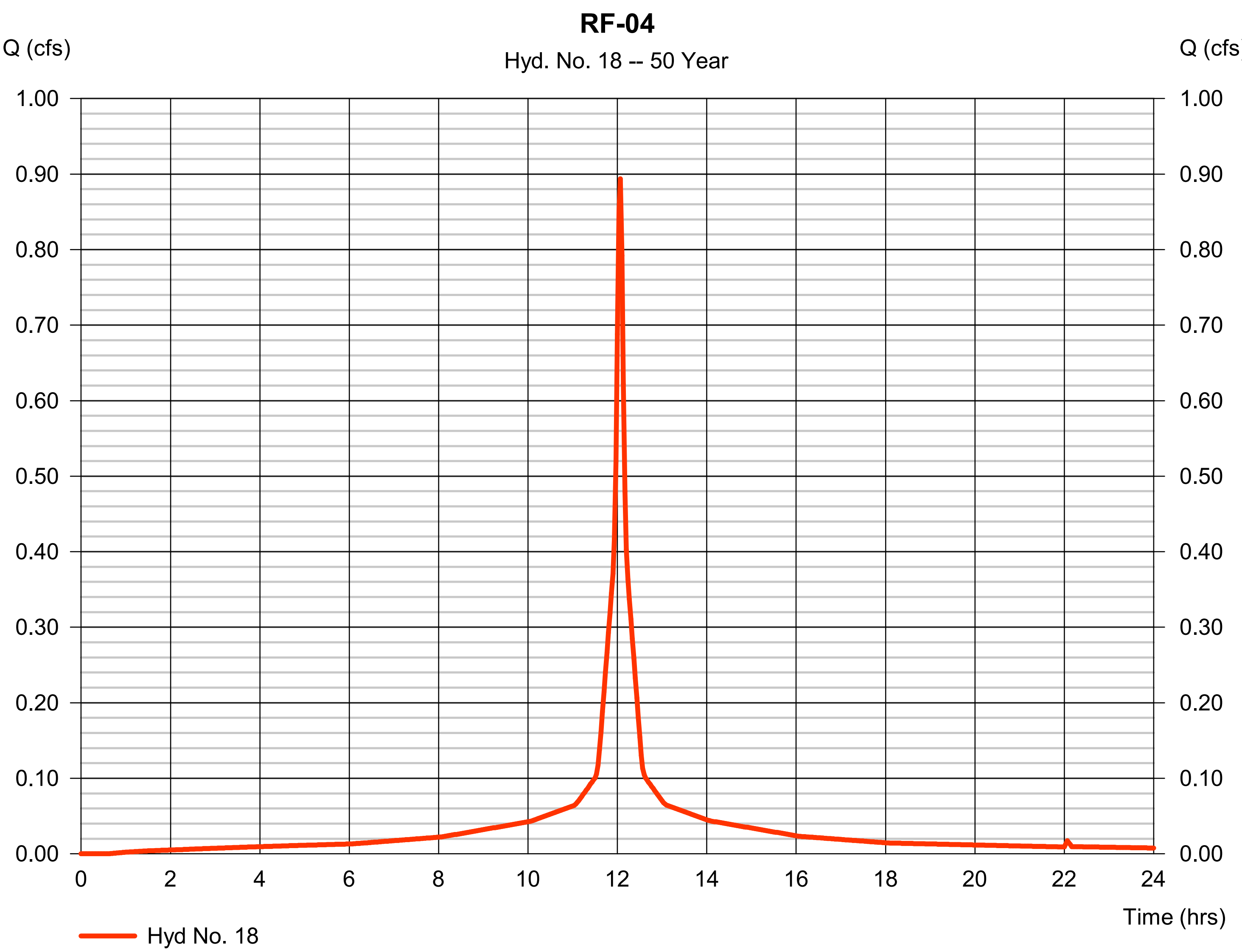
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 — Tuesday, 05 / 25 / 2021

Hyd. No. 18

RF-04

Hydrograph type	= SCS Runoff	Peak discharge	= 0.894 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 3,112 cuft
Drainage area	= 0.127 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



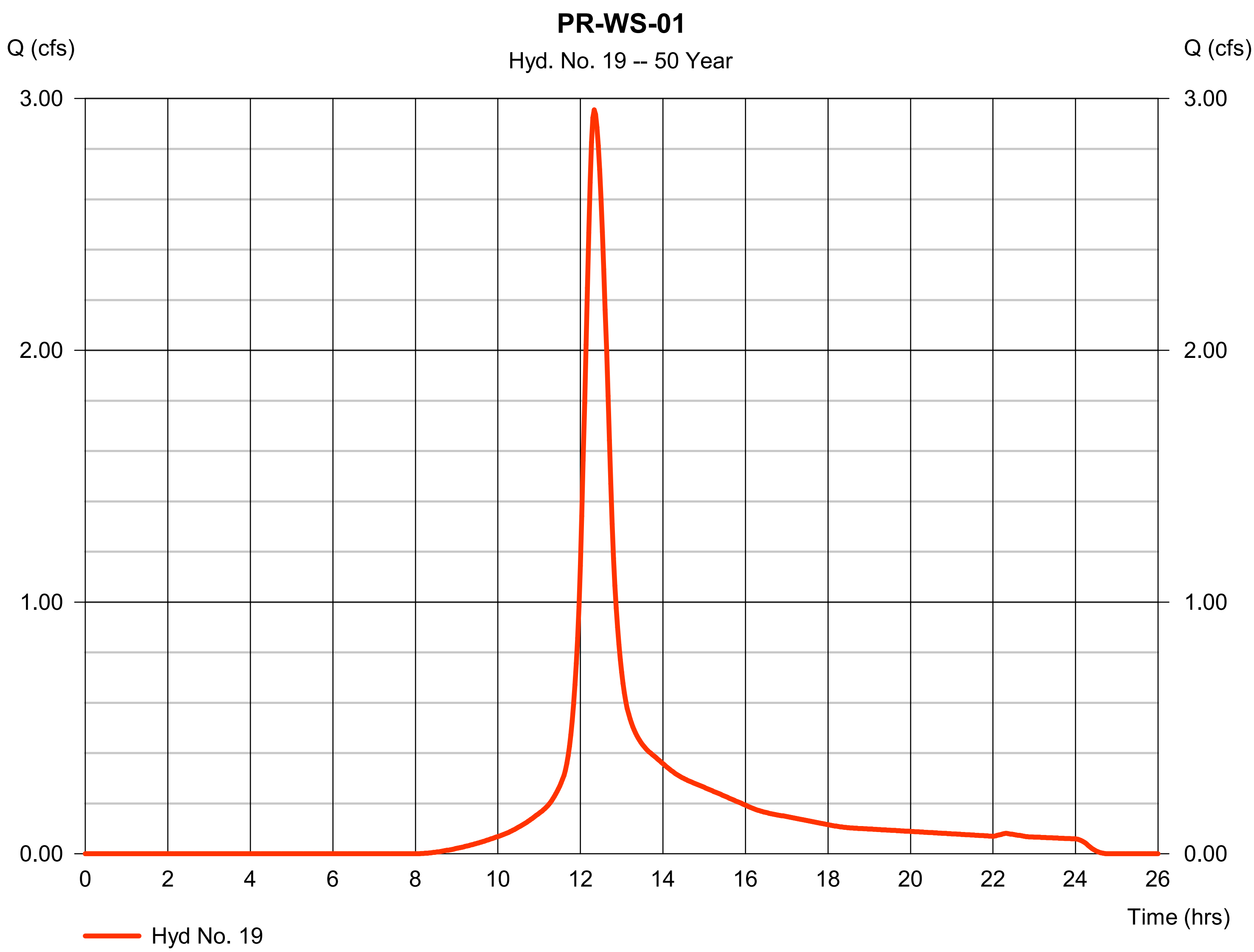
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 19

PR-WS-01

Hydrograph type	= SCS Runoff	Peak discharge	= 2.955 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.33 hrs
Time interval	= 2 min	Hyd. volume	= 15,436 cuft
Drainage area	= 1.038 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 27.60 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



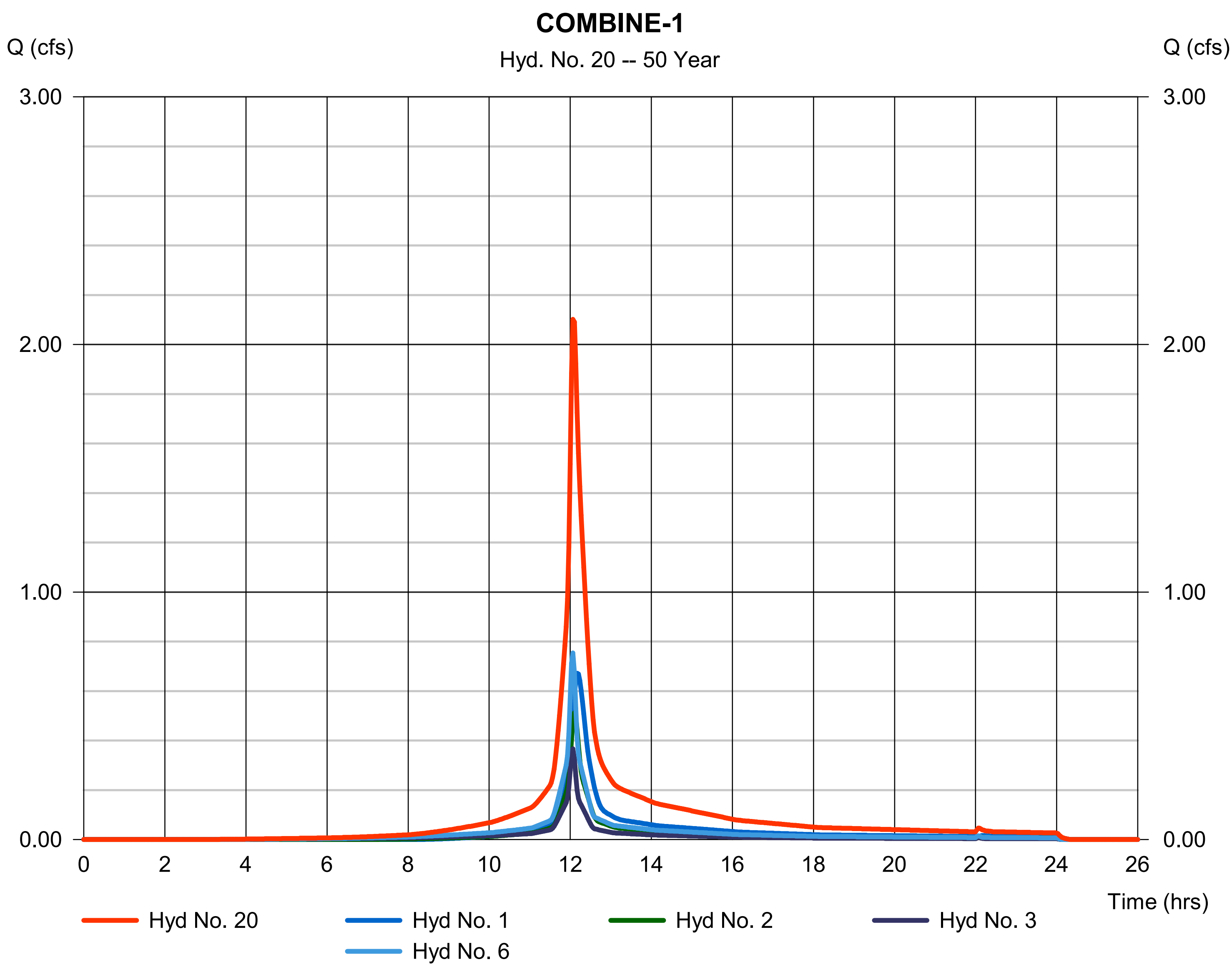
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 20

COMBINE-1

Hydrograph type	= Combine	Peak discharge	= 2.102 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 8,063 cuft
Inflow hyds.	= 1, 2, 3, 6	Contrib. drain. area	= 0.468 ac



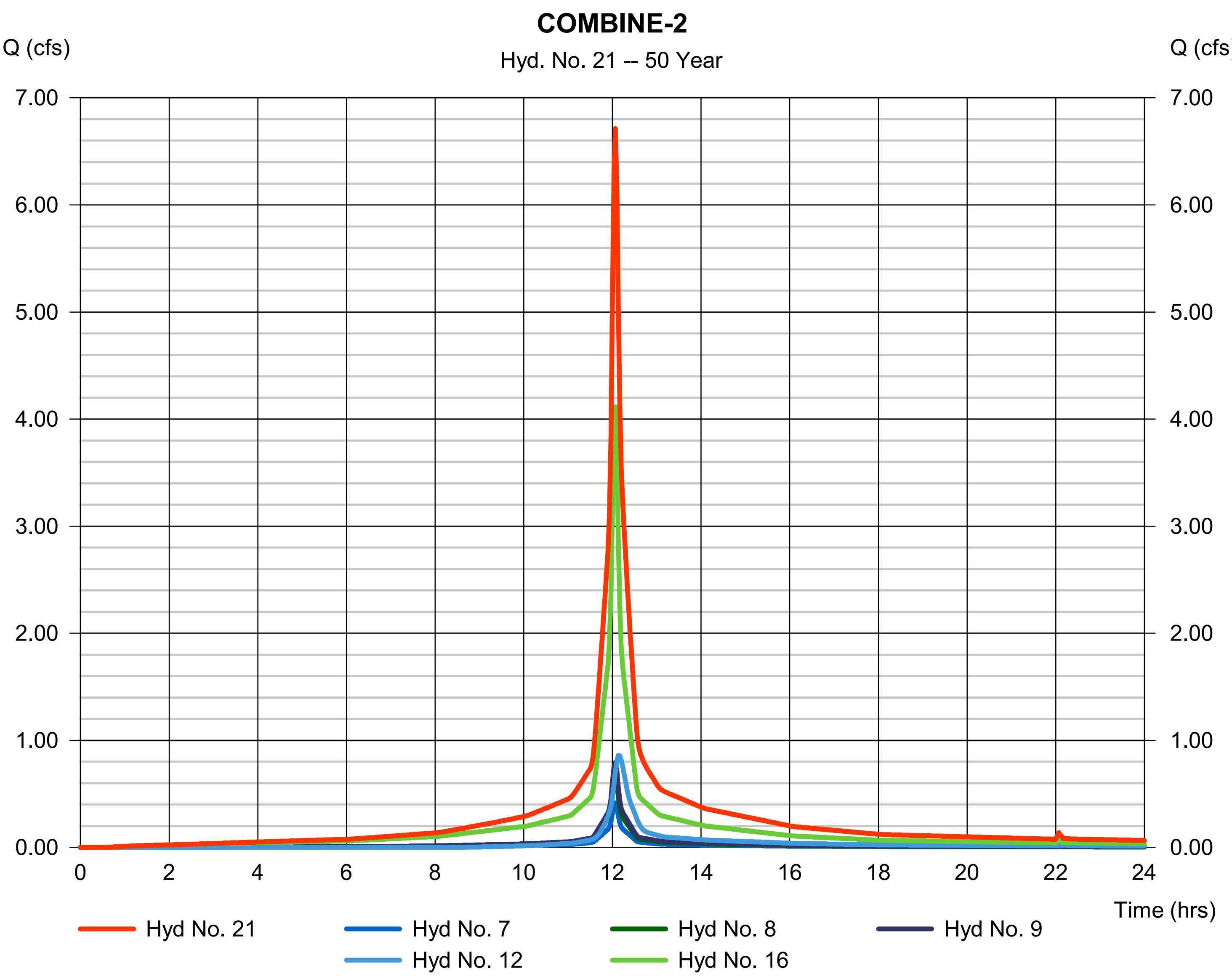
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 21

COMBINE-2

Hydrograph type	= Combine	Peak discharge	= 6.713 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 23,785 cuft
Inflow hyds.	= 7, 8, 9, 12, 16	Contrib. drain. area	= 1.090 ac



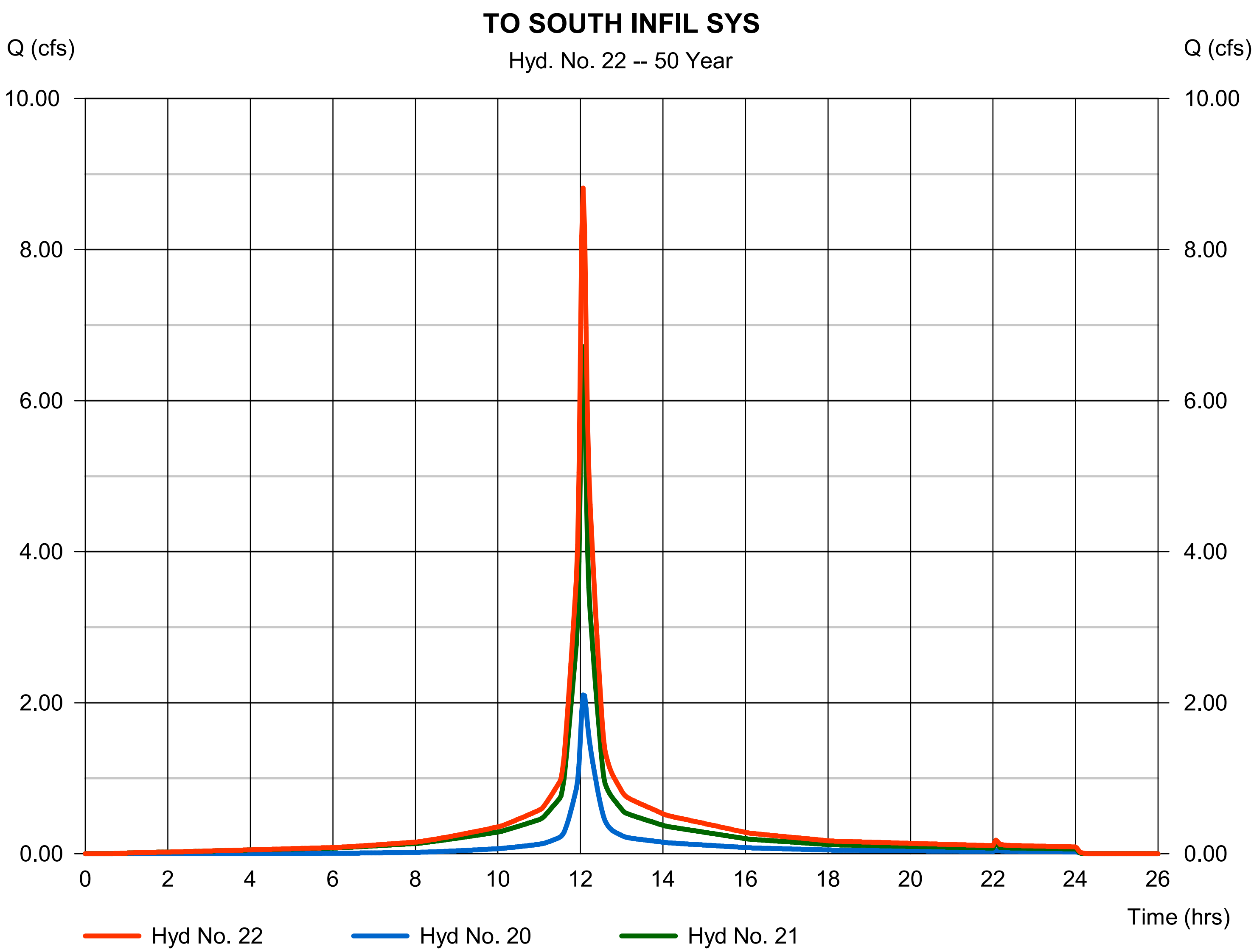
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 22

TO SOUTH INFIL SYS

Hydrograph type	= Combine	Peak discharge	= 8.815 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 31,848 cuft
Inflow hyds.	= 20, 21	Contrib. drain. area	= 0.000 ac



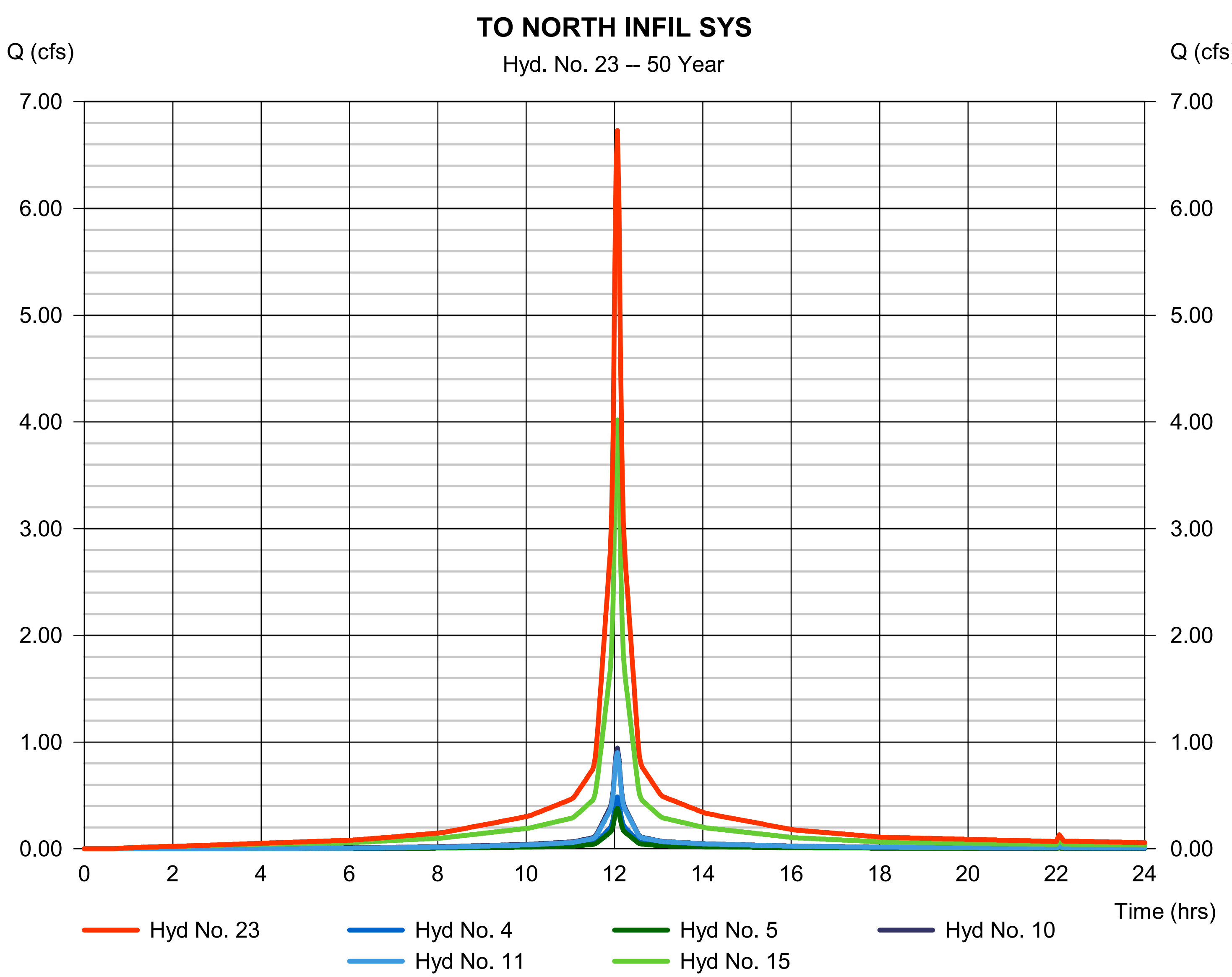
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 23

TO NORTH INFIL SYS

Hydrograph type	= Combine	Peak discharge	= 6.730 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 22,816 cuft
Inflow hyds.	= 4, 5, 10, 11, 15	Contrib. drain. area	= 0.972 ac



Hydrograph Report

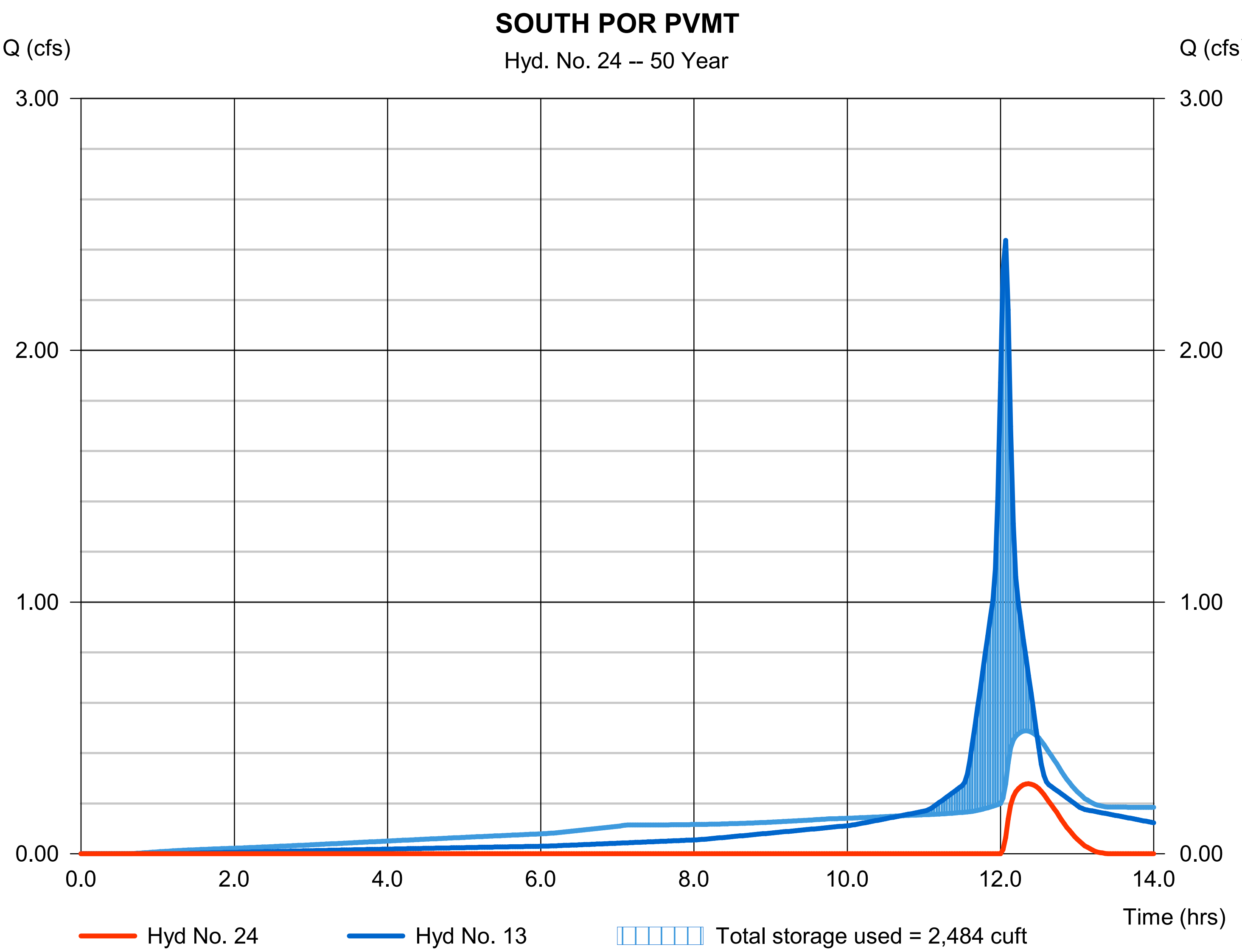
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 24

SOUTH POR PVMT

Hydrograph type	= Reservoir	Peak discharge	= 0.278 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.37 hrs
Time interval	= 2 min	Hyd. volume	= 694 cuft
Inflow hyd. No.	= 13 - PP-01	Max. Elevation	= 142.38 ft
Reservoir name	= SOUTH POROUS PVMT	Max. Storage	= 2,484 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

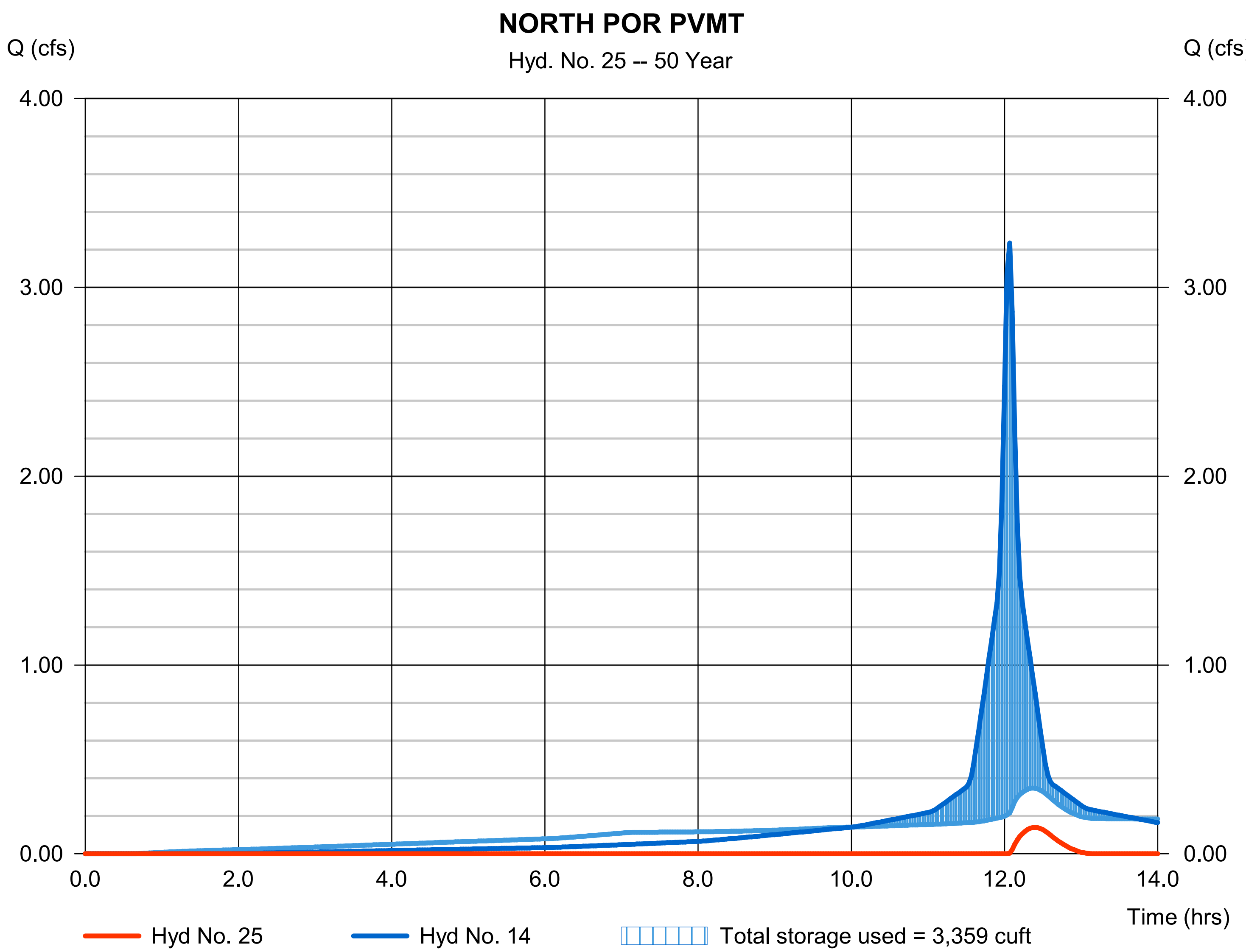
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 | Tuesday, 05 / 25 / 2021

Hyd. No. 25

NORTH POR PVMT

Hydrograph type	= Reservoir	Peak discharge	= 0.140 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.40 hrs
Time interval	= 2 min	Hyd. volume	= 271 cuft
Inflow hyd. No.	= 14 - PP-02	Max. Elevation	= 141.73 ft
Reservoir name	= NORTH POROUS PVMT	Max. Storage	= 3,359 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

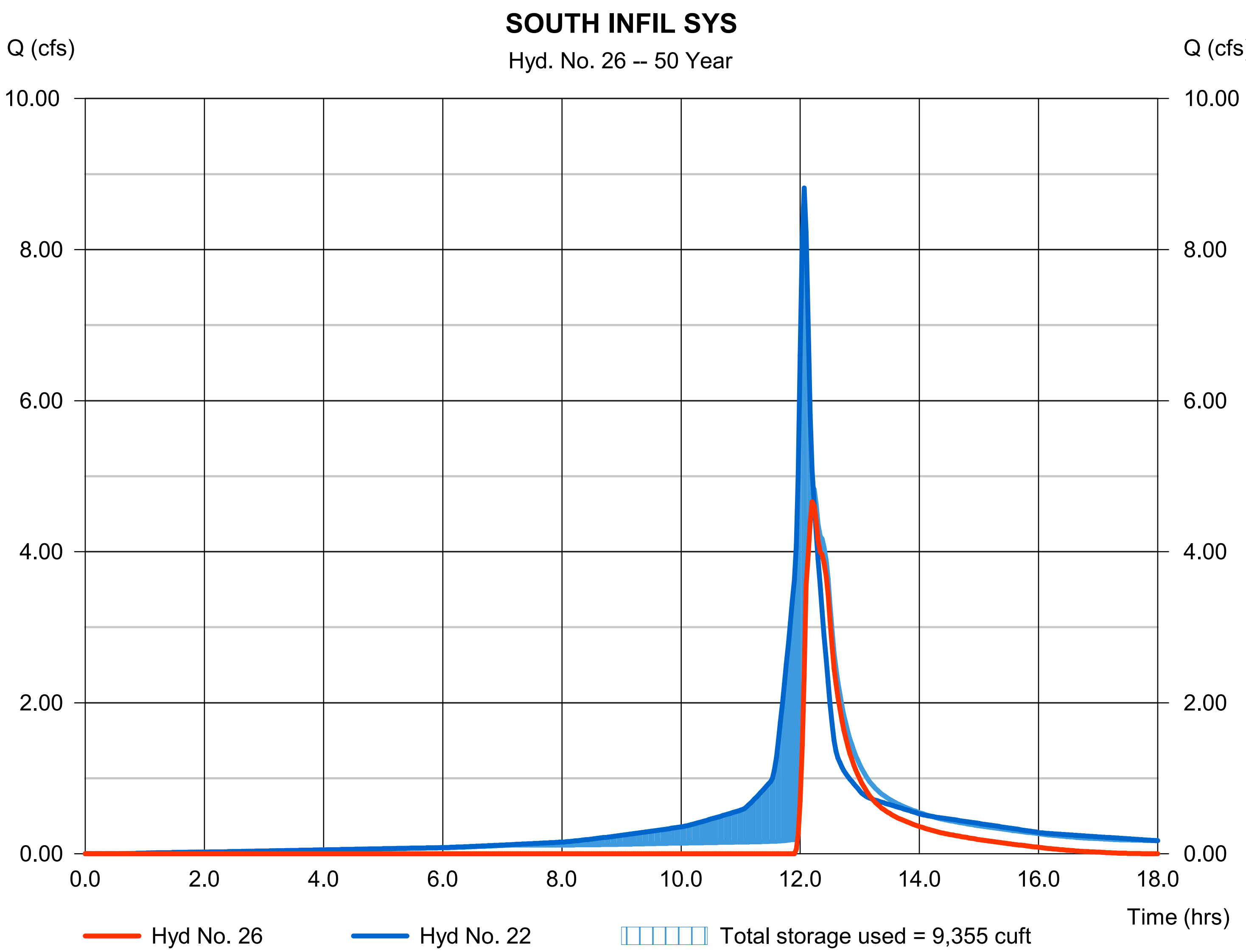
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 | Tuesday, 05 / 25 / 2021

Hyd. No. 26

SOUTH INFIL SYS

Hydrograph type	= Reservoir	Peak discharge	= 4.661 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 13,406 cuft
Inflow hyd. No.	= 22 - TO SOUTH INFIL SYS	Max. Elevation	= 144.41 ft
Reservoir name	= SOUTH INFIL SYS	Max. Storage	= 9,355 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

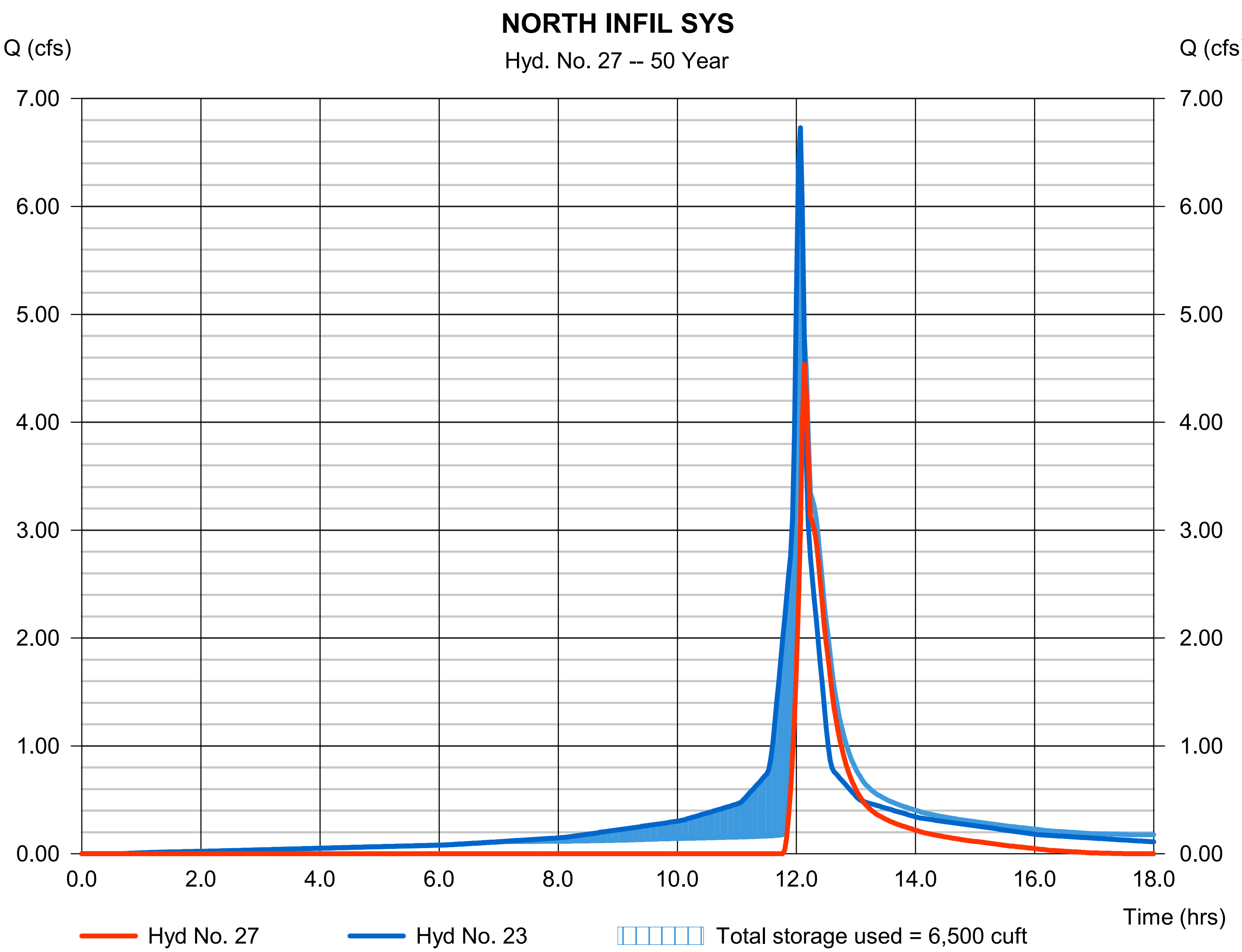
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 27

NORTH INFIL SYS

Hydrograph type	= Reservoir	Peak discharge	= 4.540 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 10,110 cuft
Inflow hyd. No.	= 23 - TO NORTH INFIL SYS	Max. Elevation	= 144.57 ft
Reservoir name	= NORTH INFIL SYS	Max. Storage	= 6,500 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



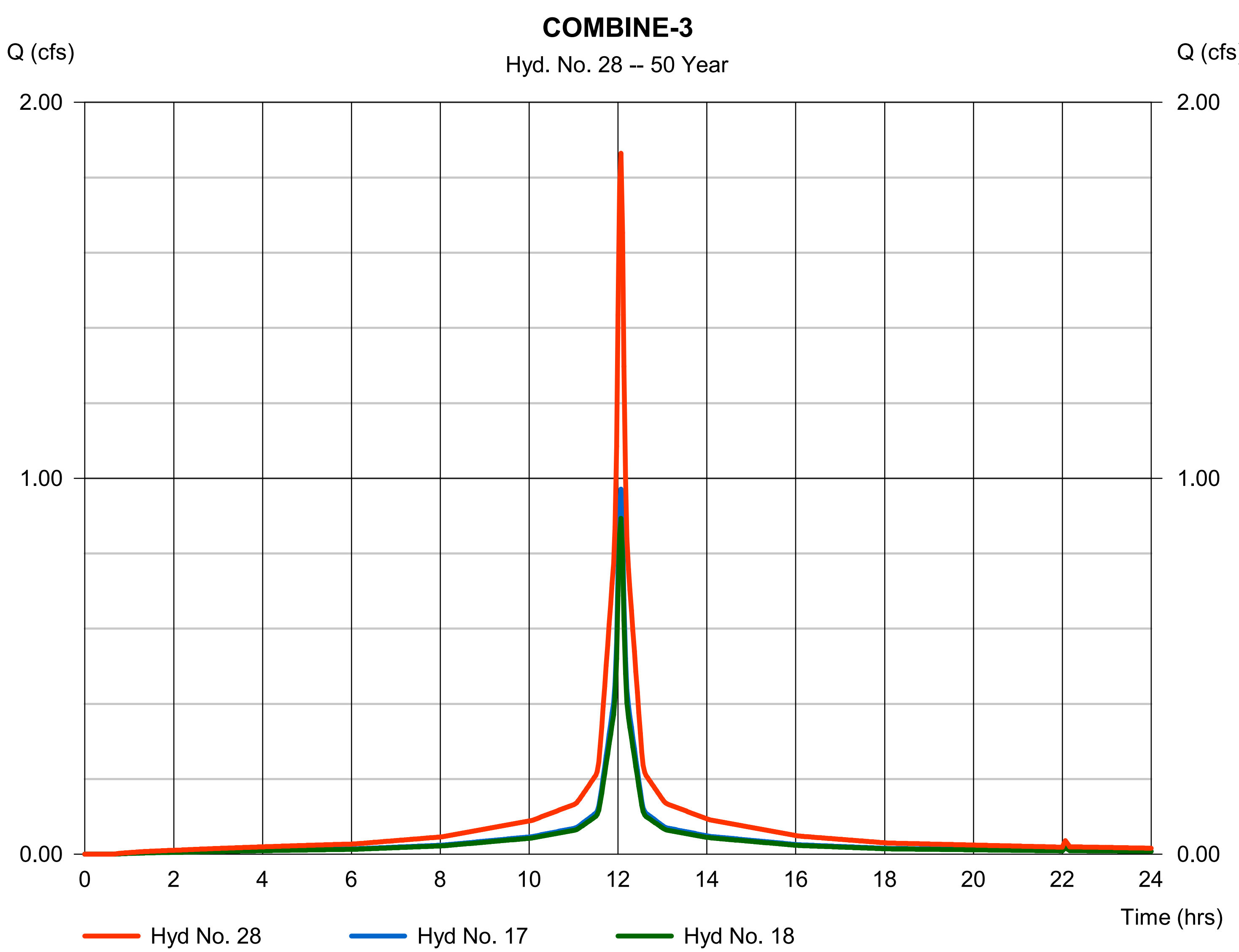
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 | Tuesday, 05 / 25 / 2021

Hyd. No. 28

COMBINE-3

Hydrograph type	= Combine	Peak discharge	= 1.865 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 6,494 cuft
Inflow hyds.	= 17, 18	Contrib. drain. area	= 0.265 ac



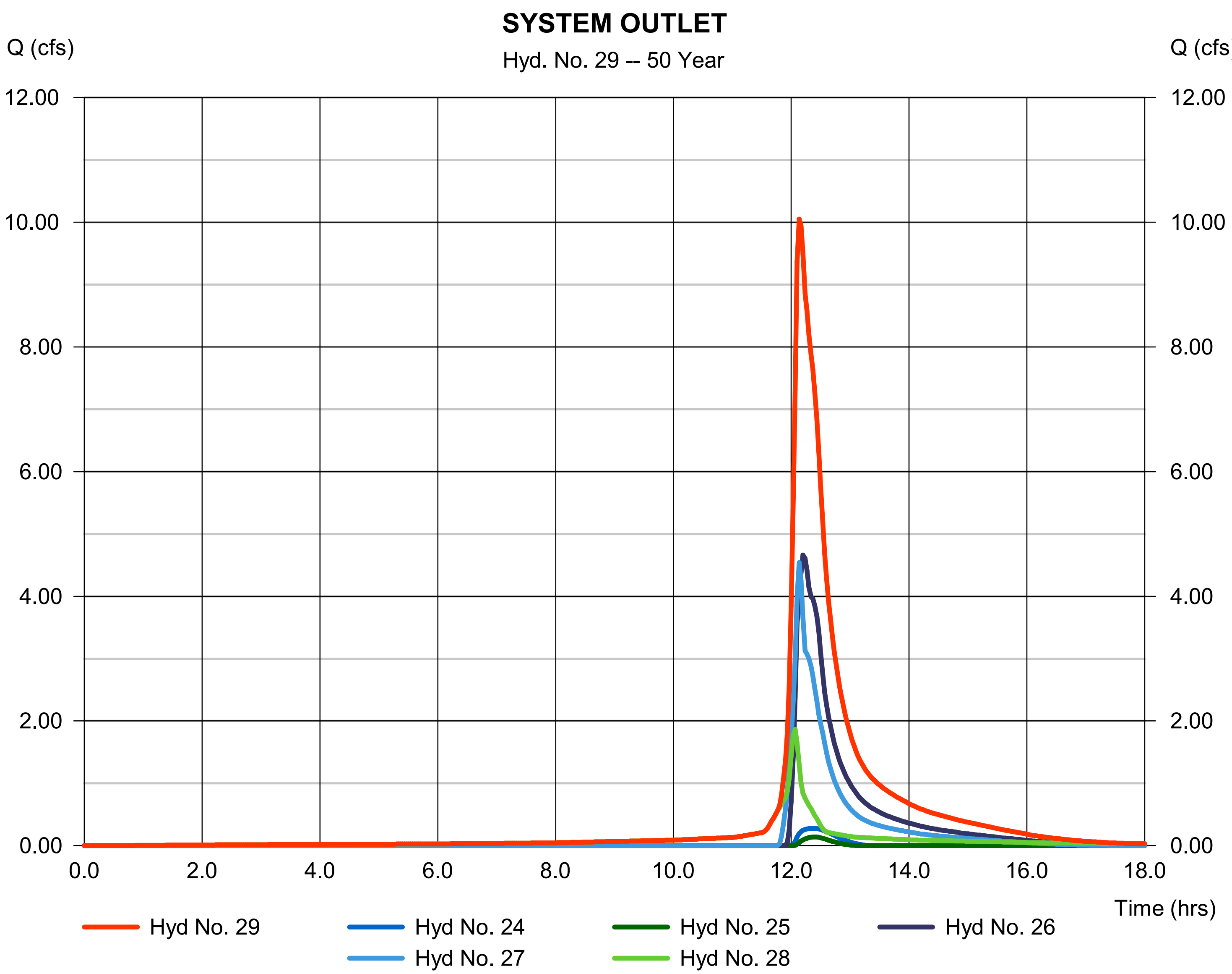
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 29

SYSTEM OUTLET

Hydrograph type	= Combine	Peak discharge	= 10.05 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 30,974 cuft
Inflow hyds.	= 24, 25, 26, 27, 28	Contrib. drain. area	= 0.000 ac



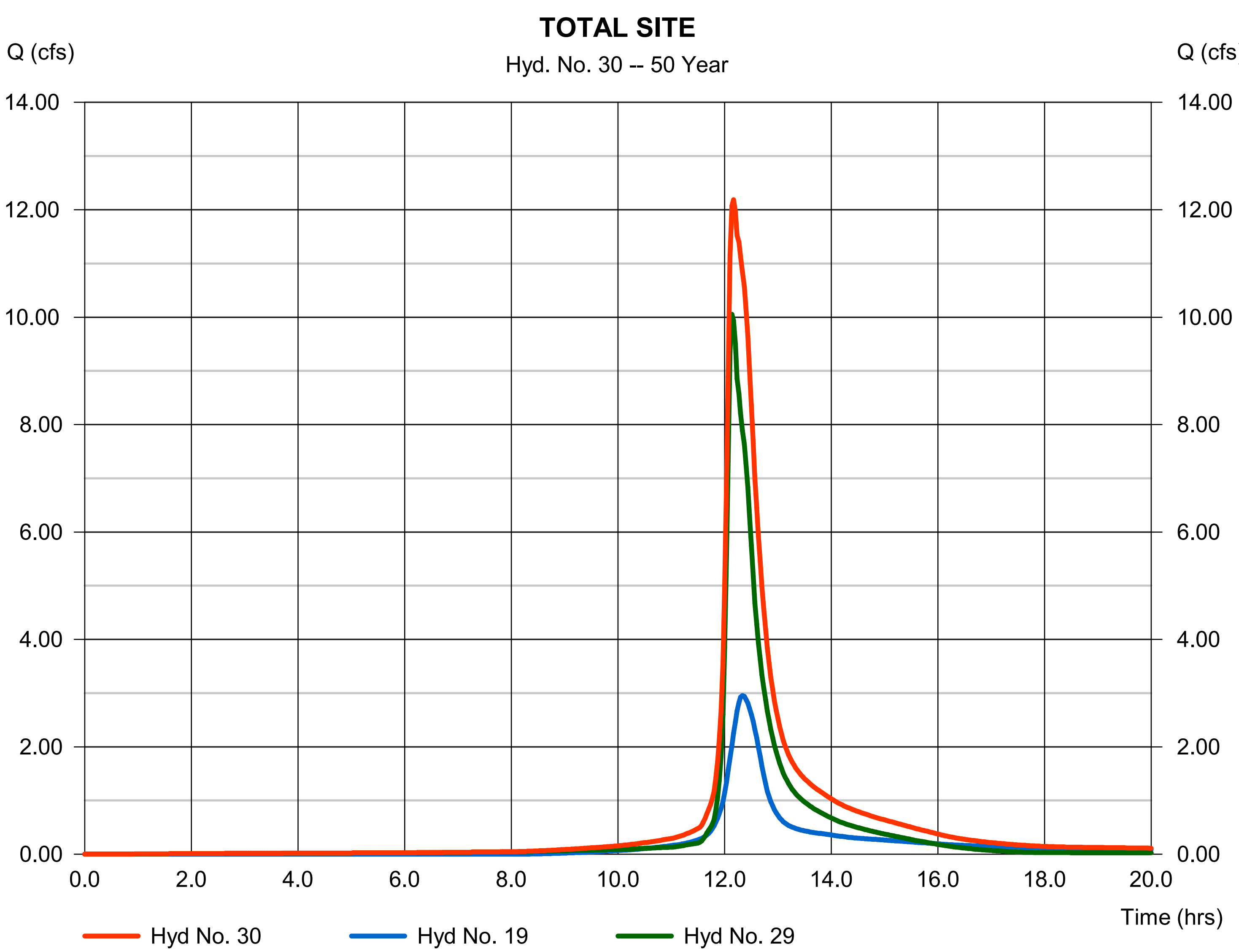
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 30

TOTAL SITE

Hydrograph type	= Combine	Peak discharge	= 12.19 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 46,410 cuft
Inflow hyds.	= 19, 29	Contrib. drain. area	= 1.038 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.807	2	730	3,285	------	------	------	CB-01
2	SCS Runoff	0.604	2	726	2,075	------	------	------	CB-01A
3	SCS Runoff	0.415	2	724	1,362	------	------	------	CB-02
4	SCS Runoff	0.554	2	724	1,775	------	------	------	CB-03
5	SCS Runoff	0.431	2	724	1,412	------	------	------	CB-04
6	SCS Runoff	0.860	2	724	2,736	------	------	------	CB-05
7	SCS Runoff	0.473	2	724	1,538	------	------	------	CB-06
8	SCS Runoff	0.767	2	724	2,537	------	------	------	CB-07
9	SCS Runoff	0.900	2	724	2,950	------	------	------	CB-08
10	SCS Runoff	1.068	2	724	3,567	------	------	------	CB-09
11	SCS Runoff	1.022	2	724	3,324	------	------	------	CB-10
12	SCS Runoff	1.034	2	728	3,965	------	------	------	CB-11
13	SCS Runoff	2.747	2	724	9,371	------	------	------	PP-01
14	SCS Runoff	3.655	2	724	12,210	------	------	------	PP-02
15	SCS Runoff	4.523	2	724	15,798	------	------	------	RF-01
16	SCS Runoff	4.634	2	724	16,185	------	------	------	RF-02
17	SCS Runoff	1.093	2	724	3,818	------	------	------	RF-03
18	SCS Runoff	1.006	2	724	3,514	------	------	------	RF-04
19	SCS Runoff	3.537	2	740	18,471	------	------	------	PR-WS-01
20	Combine	2.450	2	724	9,457	1, 2, 3, 6,	------	------	COMBINE-1
21	Combine	7.633	2	724	27,176	7, 8, 9, 12, 16,	------	------	COMBINE-2
22	Combine	10.08	2	724	36,633	20, 21	------	------	TO SOUTH INFIL SYS
23	Combine	7.597	2	724	25,877	4, 5, 10, 11, 15,	------	------	TO NORTH INFIL SYS
24	Reservoir	0.330	2	742	1,045	13	142.50	2,824	SOUTH POR PVMT
25	Reservoir	0.237	2	744	582	14	141.83	3,832	NORTH POR PVMT
26	Reservoir	6.520	2	730	17,173	22	144.92	9,945	SOUTH INFIL SYS
27	Reservoir	5.682	2	728	12,524	23	144.93	6,752	NORTH INFIL SYS
28	Combine	2.099	2	724	7,332	17, 18,	------	------	COMBINE-3
29	Combine	13.89	2	728	38,655	24, 25, 26, 27, 28	------	------	SYSTEM OUTLET
30	Combine	16.34	2	728	57,126	19, 29	------	------	TOTAL SITE

F0173-02 Hydrographs - Proposed.gpw	Return Period: 100 Year	Tuesday, 05 / 25 / 2021

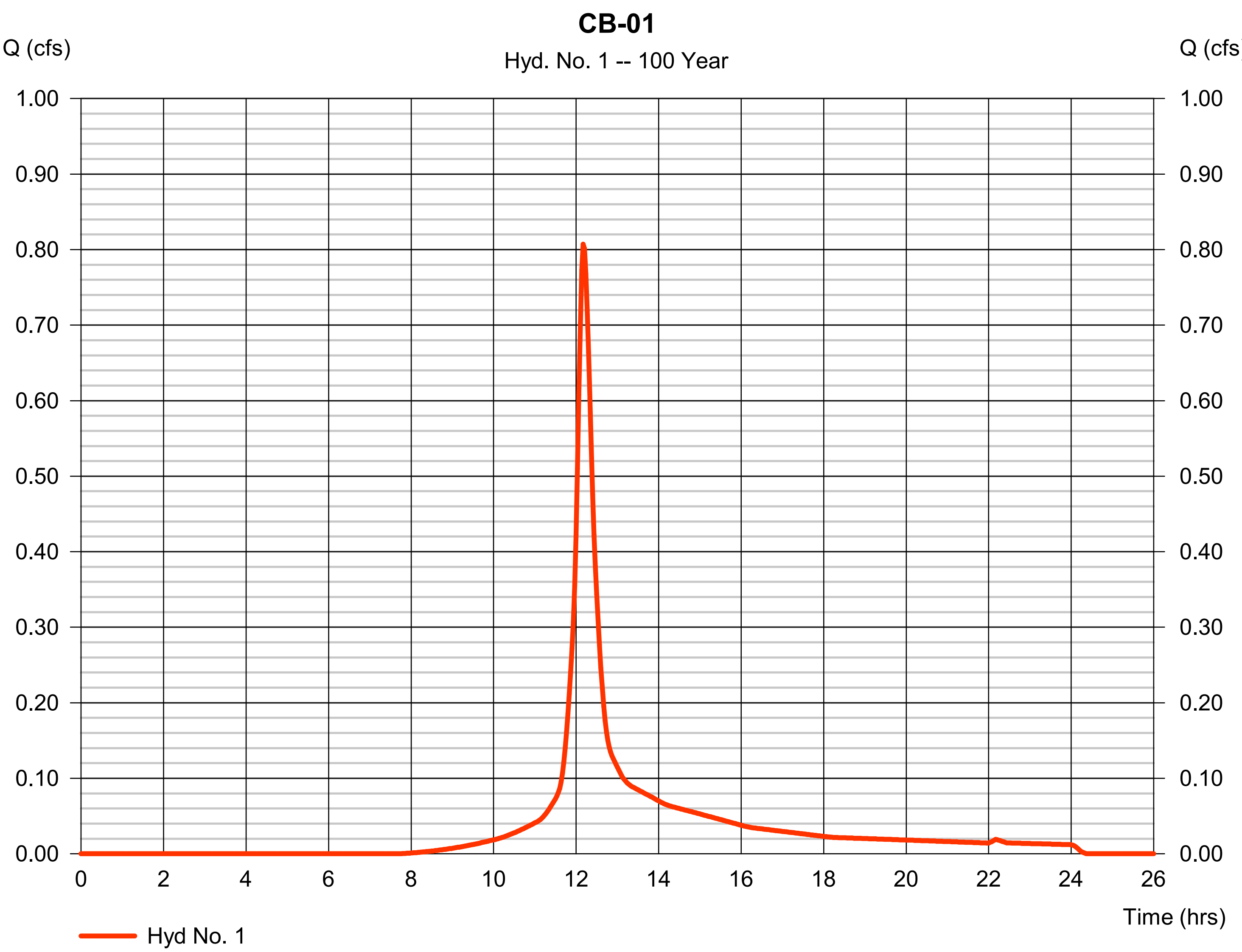
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 1

CB-01

Hydrograph type	= SCS Runoff	Peak discharge	= 0.807 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 3,285 cuft
Drainage area	= 0.194 ac	Curve number	= 70
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 14.20 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



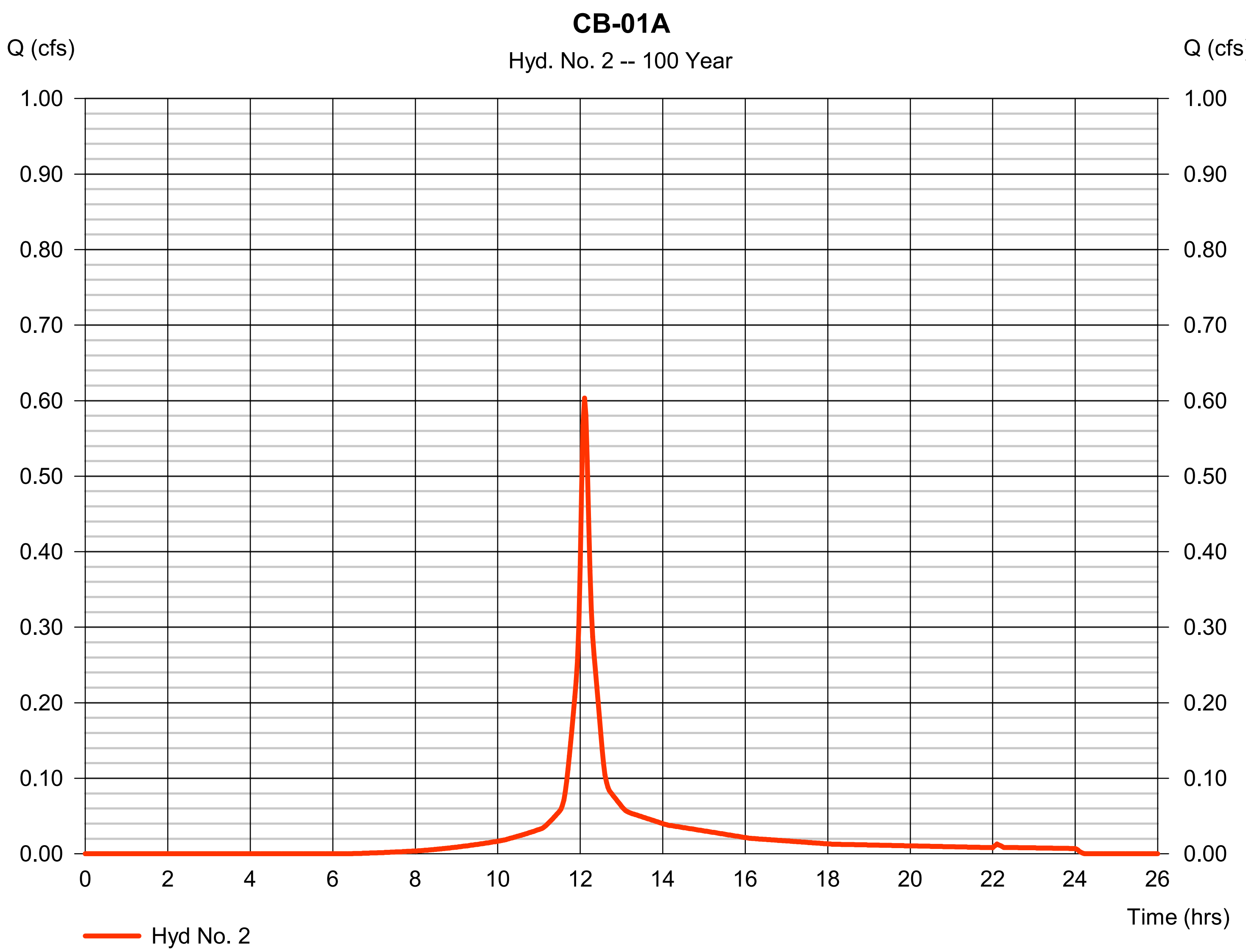
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 2

CB-01A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.604 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 2,075 cuft
Drainage area	= 0.104 ac	Curve number	= 76
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 7.80 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



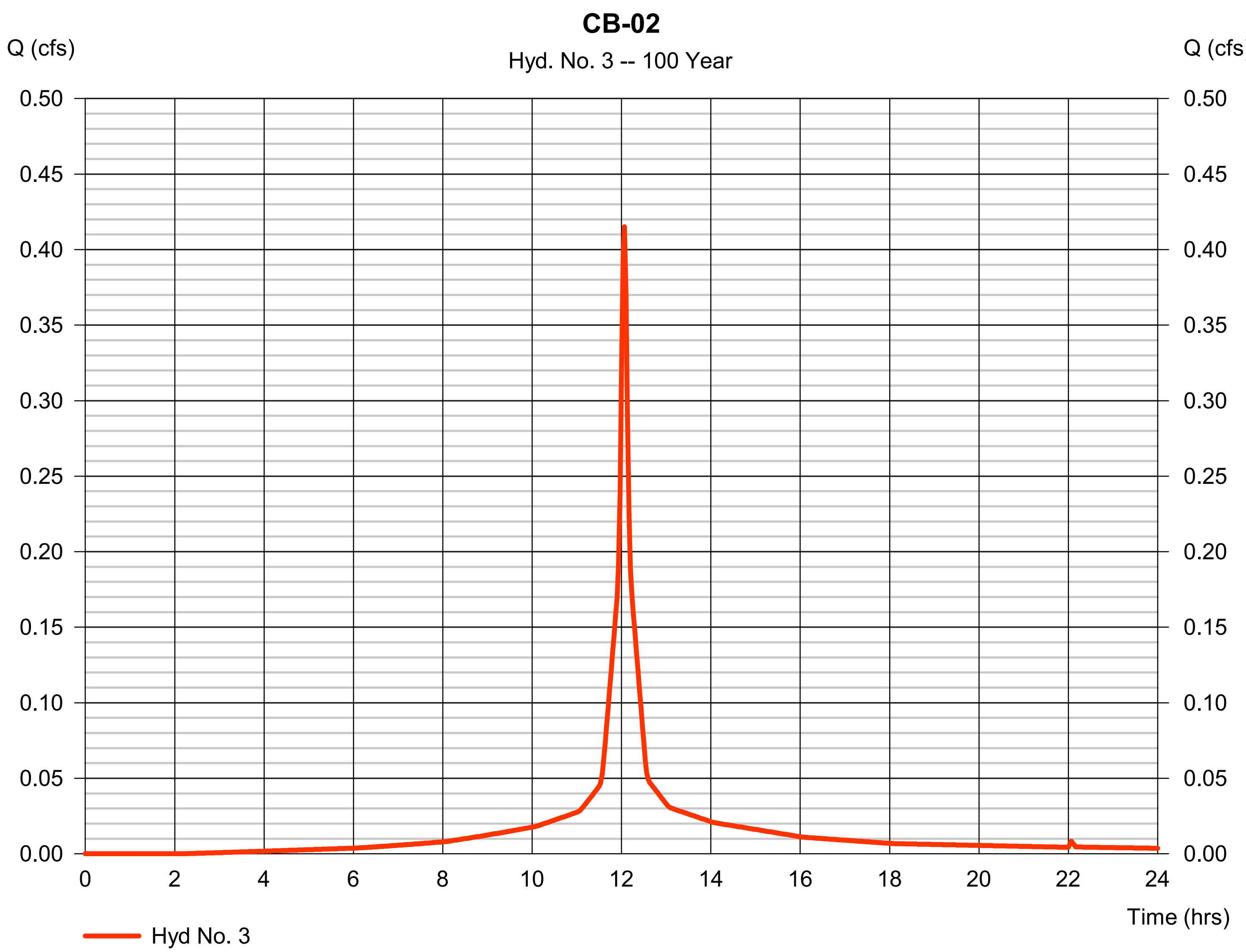
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 3

CB-02

Hydrograph type	= SCS Runoff	Peak discharge	= 0.415 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,362 cuft
Drainage area	= 0.054 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



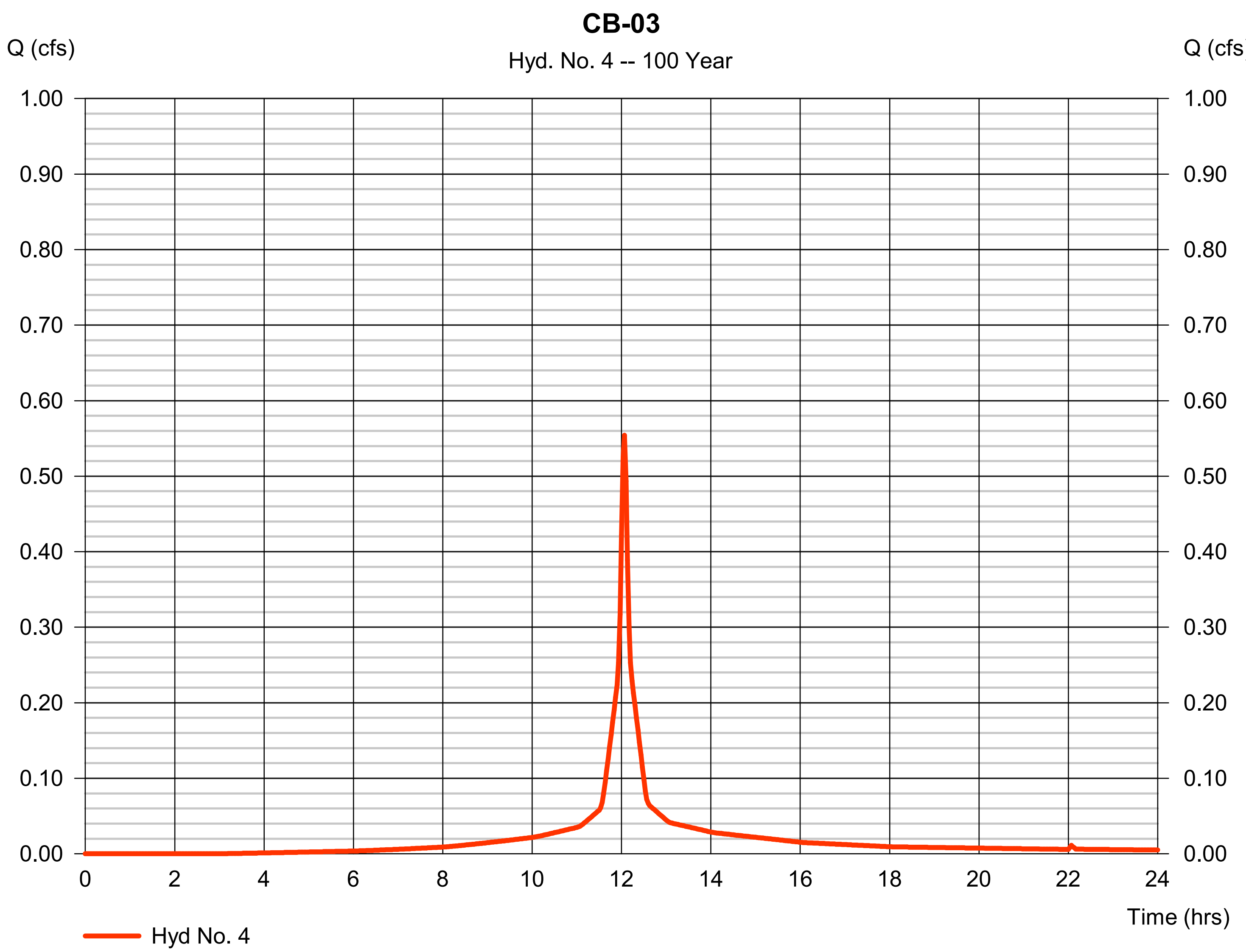
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 4

CB-03

Hydrograph type	= SCS Runoff	Peak discharge	= 0.554 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,775 cuft
Drainage area	= 0.074 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



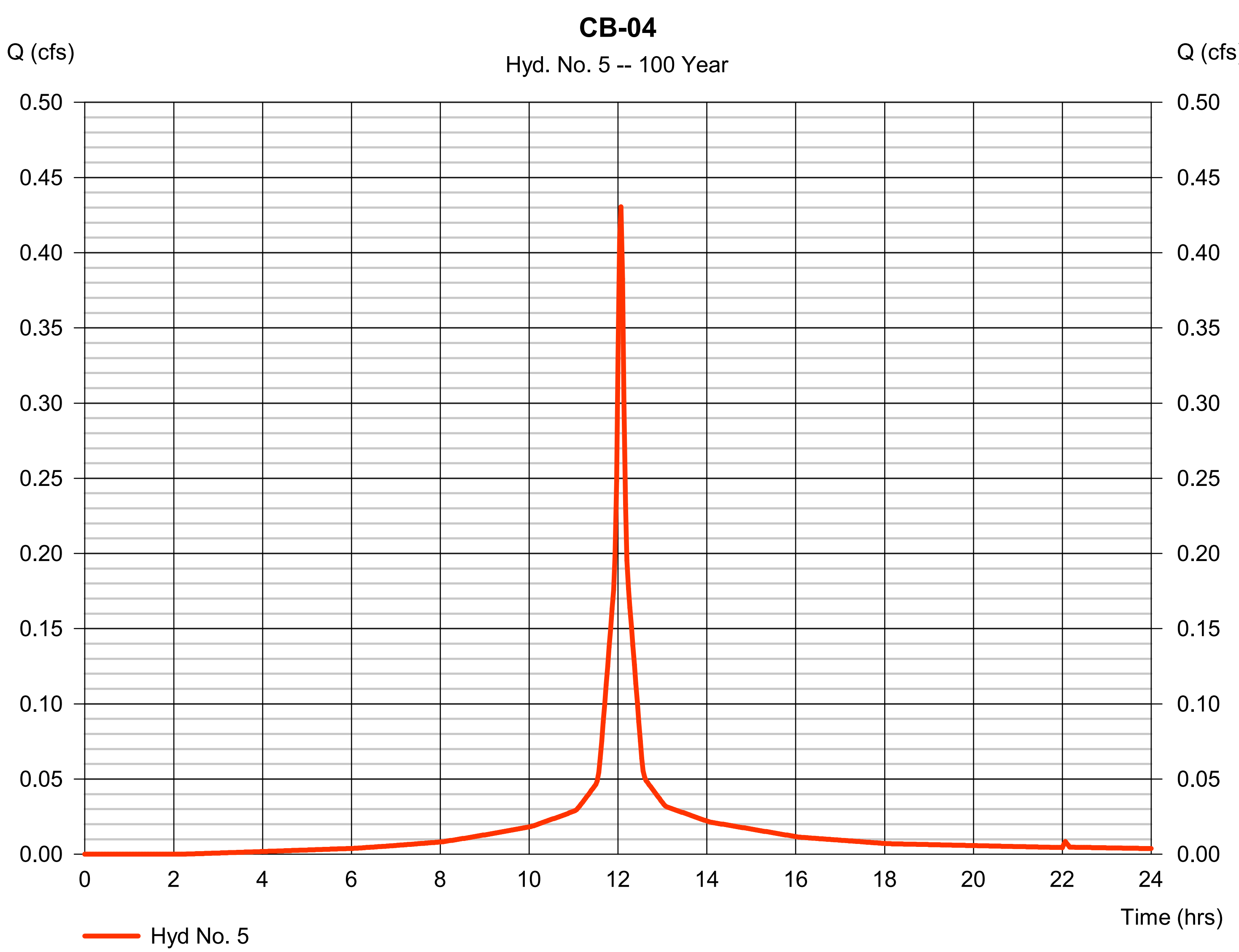
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 — Tuesday, 05 / 25 / 2021

Hyd. No. 5

CB-04

Hydrograph type	= SCS Runoff	Peak discharge	= 0.431 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,412 cuft
Drainage area	= 0.056 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



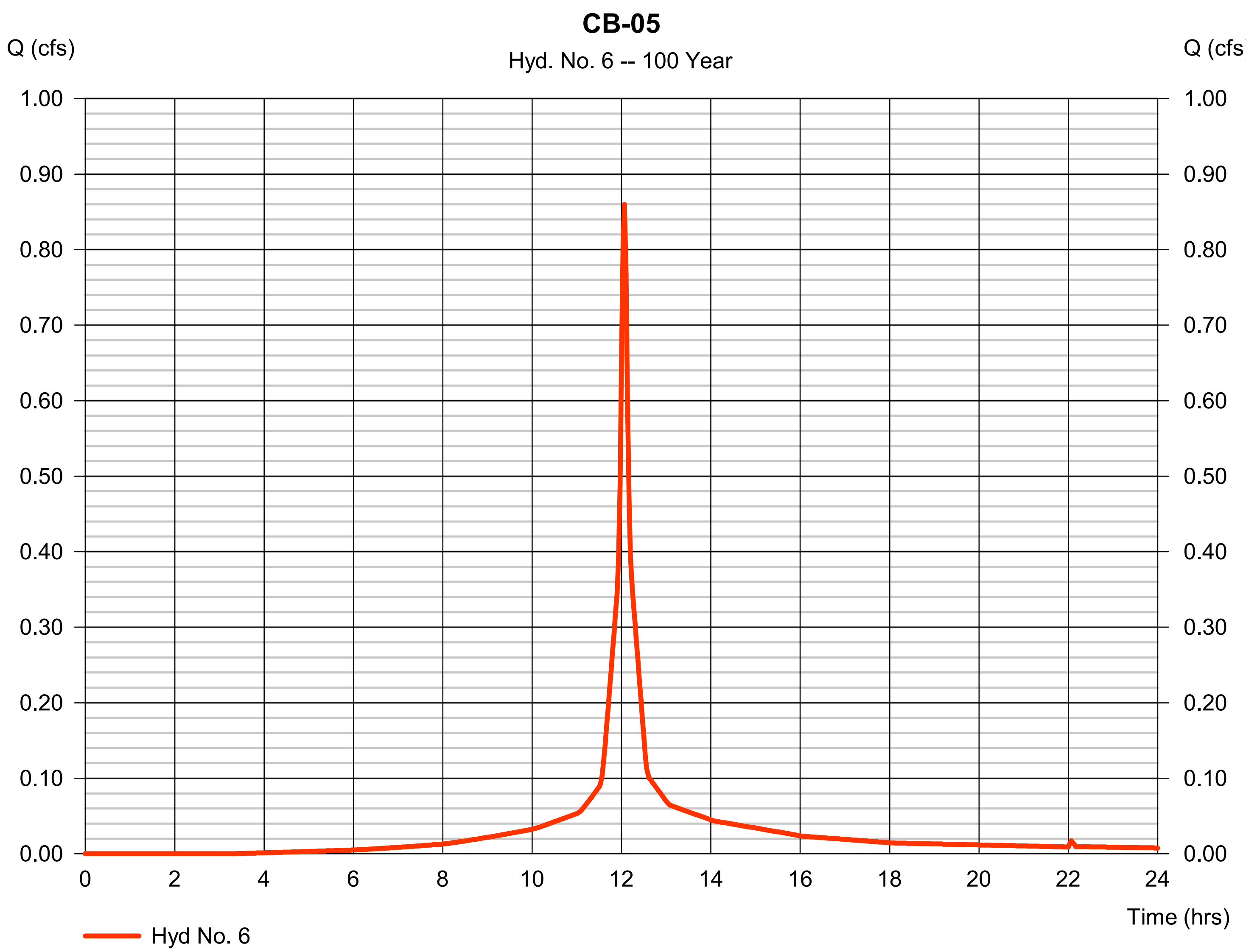
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 6

CB-05

Hydrograph type	= SCS Runoff	Peak discharge	= 0.860 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 2,736 cuft
Drainage area	= 0.116 ac	Curve number	= 88
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



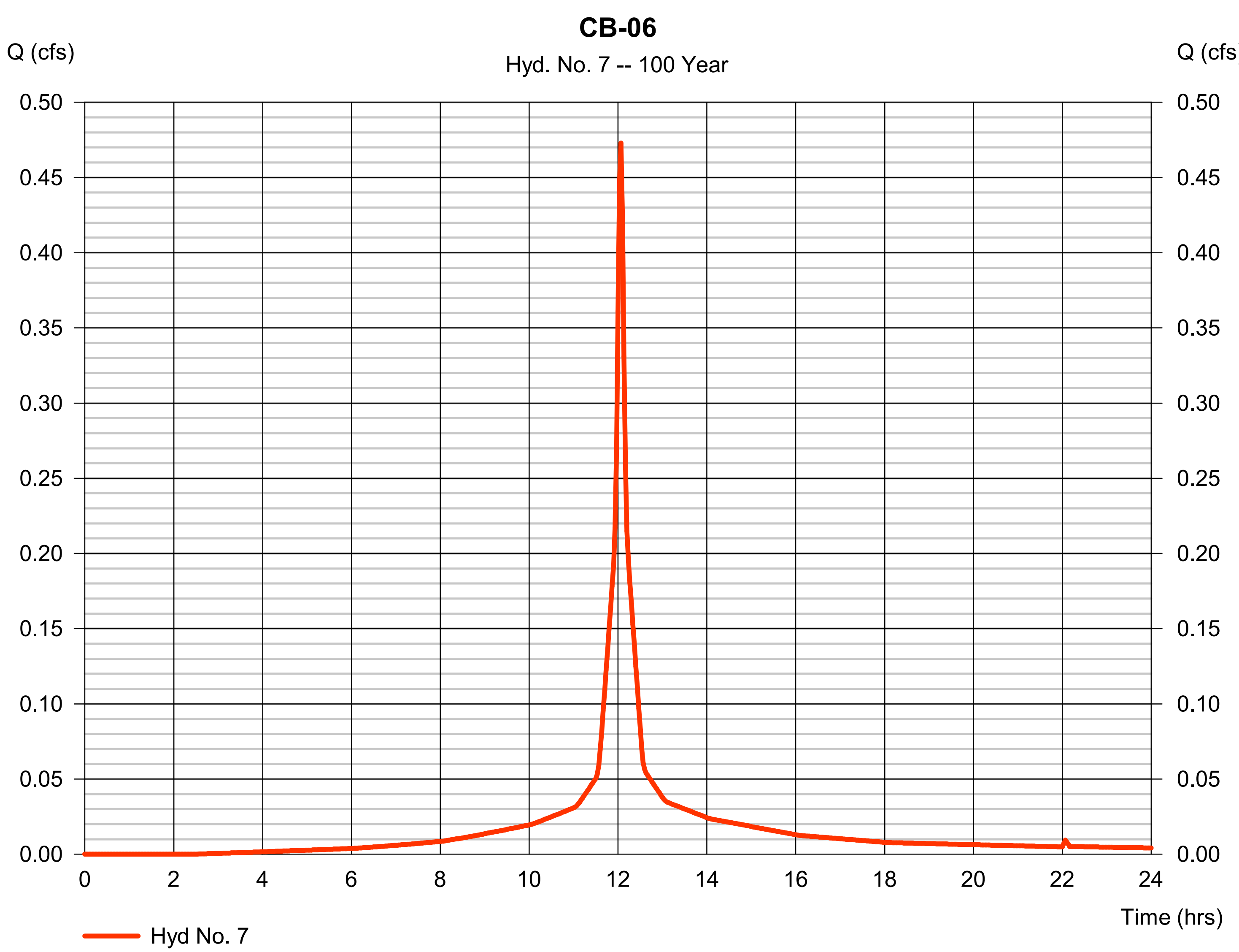
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 7

CB-06

Hydrograph type	= SCS Runoff	Peak discharge	= 0.473 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,538 cuft
Drainage area	= 0.062 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



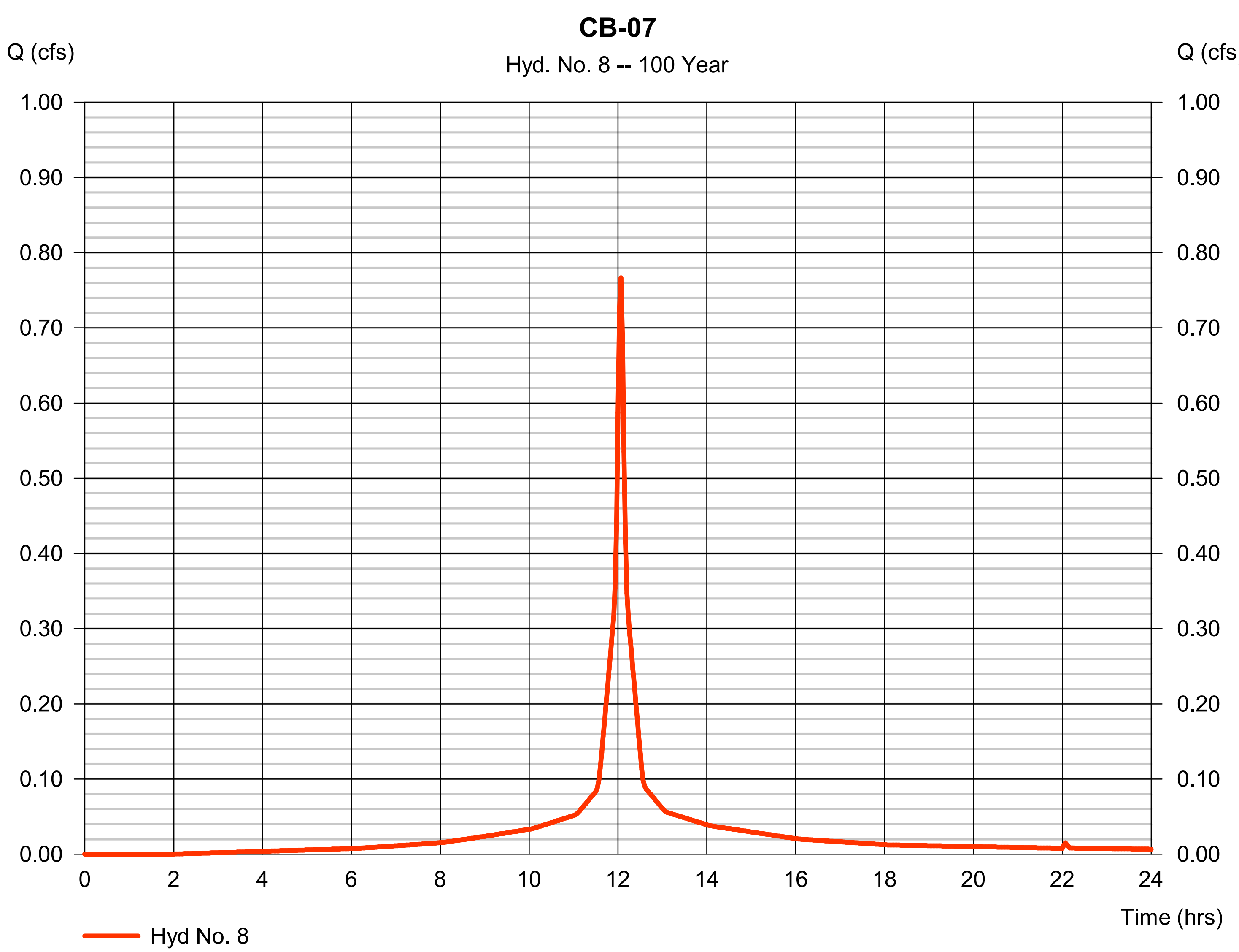
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 8

CB-07

Hydrograph type	= SCS Runoff	Peak discharge	= 0.767 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 2,537 cuft
Drainage area	= 0.099 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



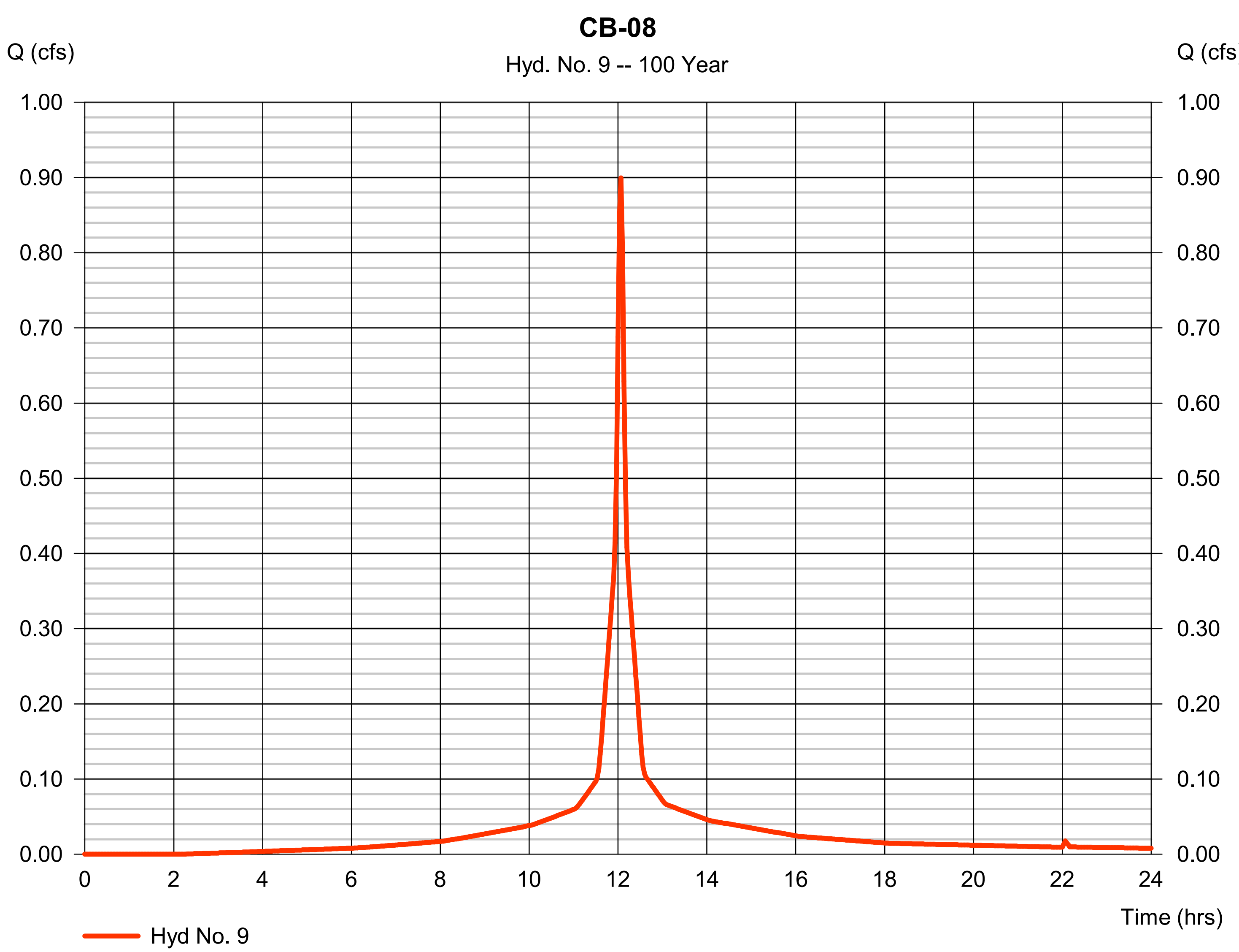
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 — Tuesday, 05 / 25 / 2021

Hyd. No. 9

CB-08

Hydrograph type	= SCS Runoff	Peak discharge	= 0.900 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 2,950 cuft
Drainage area	= 0.117 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.50 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



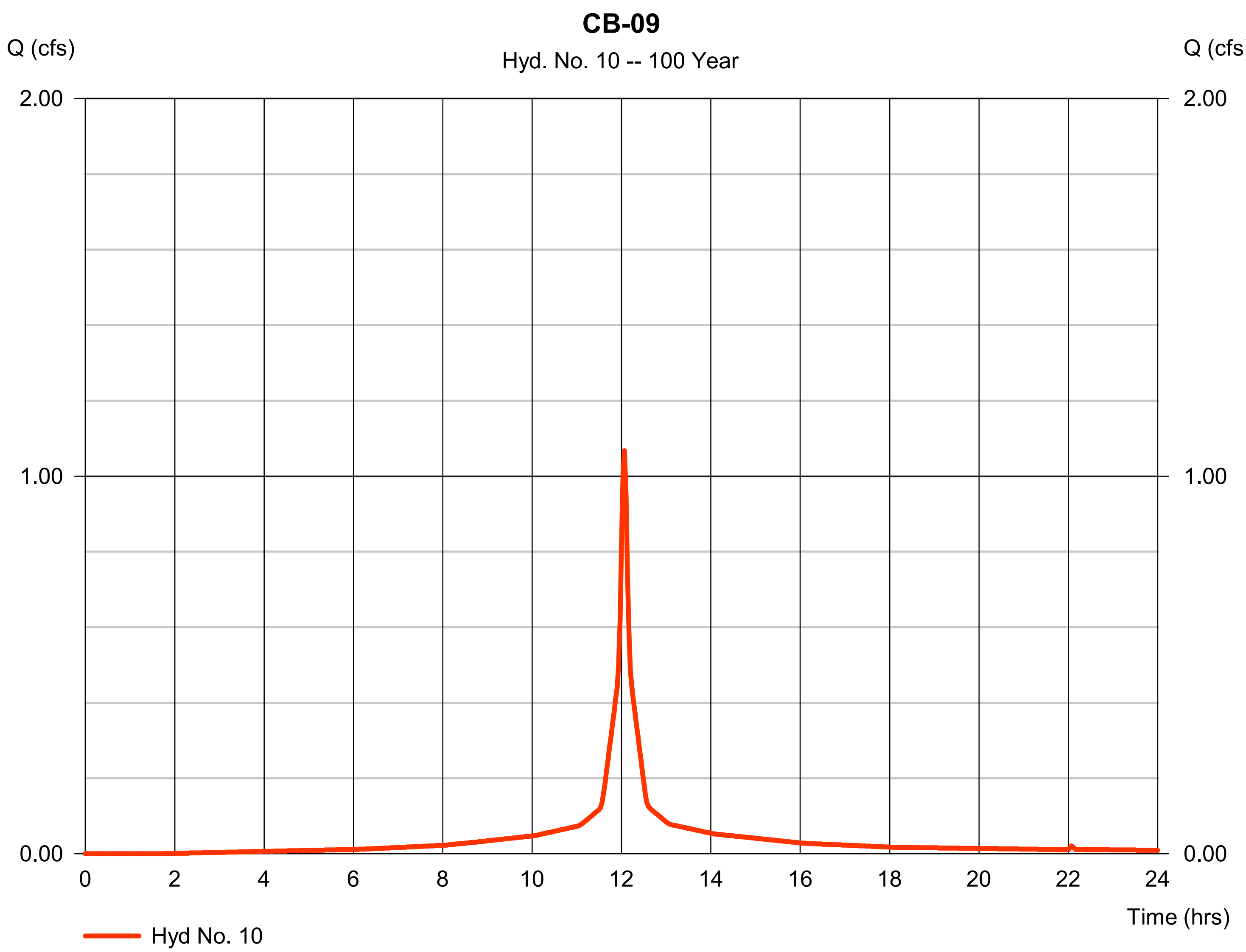
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 | Tuesday, 05 / 25 / 2021

Hyd. No. 10

CB-09

Hydrograph type	= SCS Runoff	Peak discharge	= 1.068 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 3,567 cuft
Drainage area	= 0.137 ac	Curve number	= 94
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



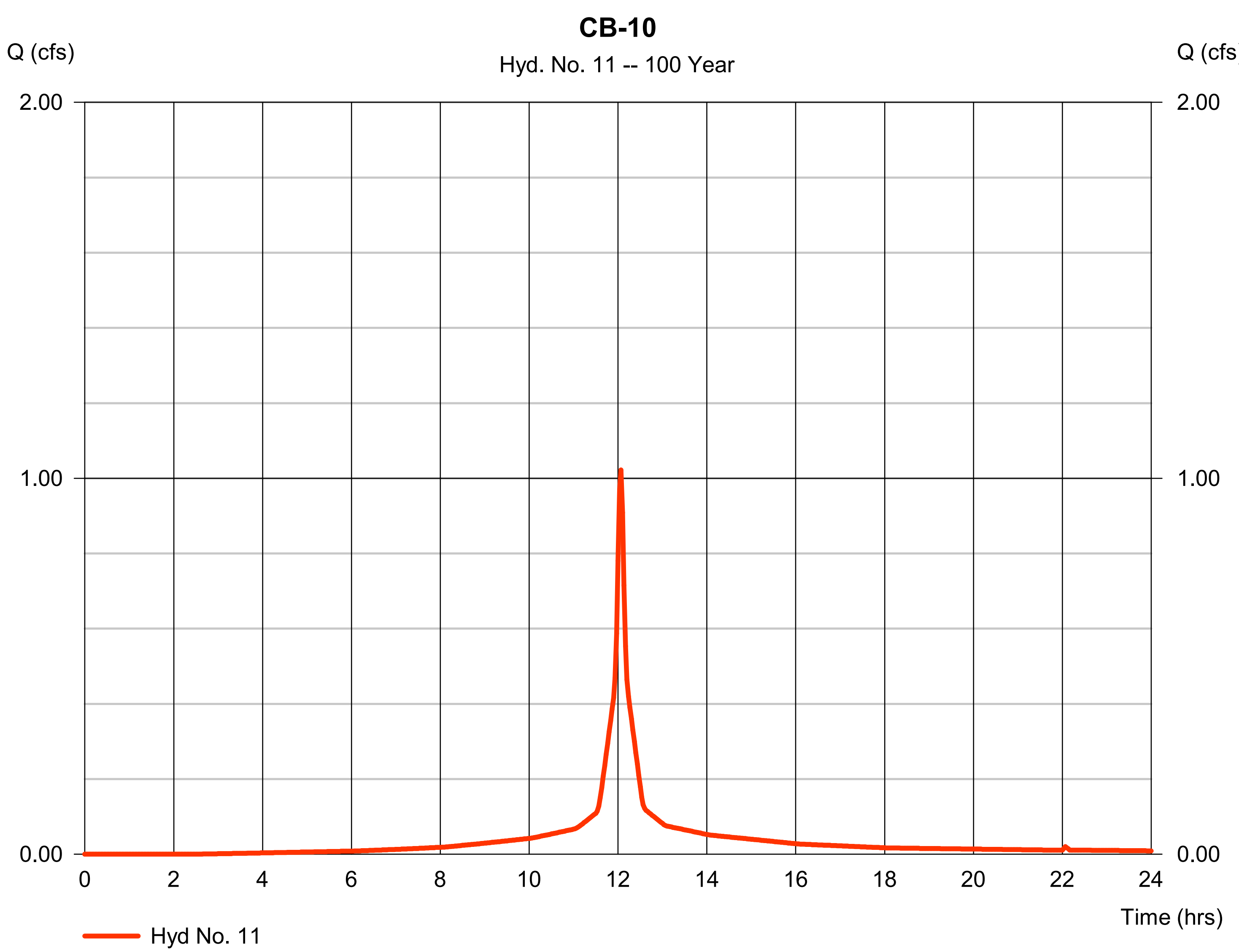
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 11

CB-10

Hydrograph type	= SCS Runoff	Peak discharge	= 1.022 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 3,324 cuft
Drainage area	= 0.134 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



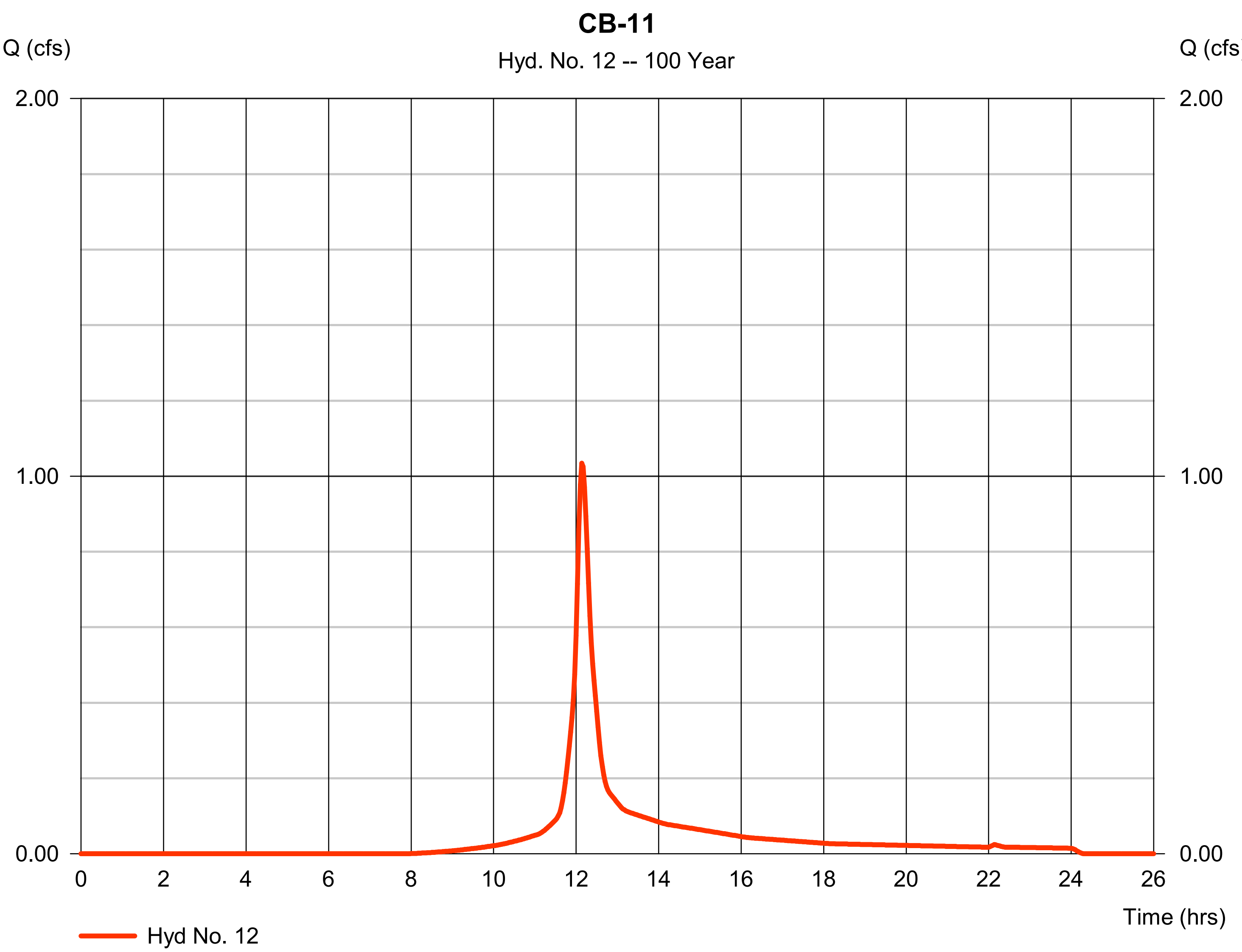
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 12

CB-11

Hydrograph type	= SCS Runoff	Peak discharge	= 1.034 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 3,965 cuft
Drainage area	= 0.227 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.60 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



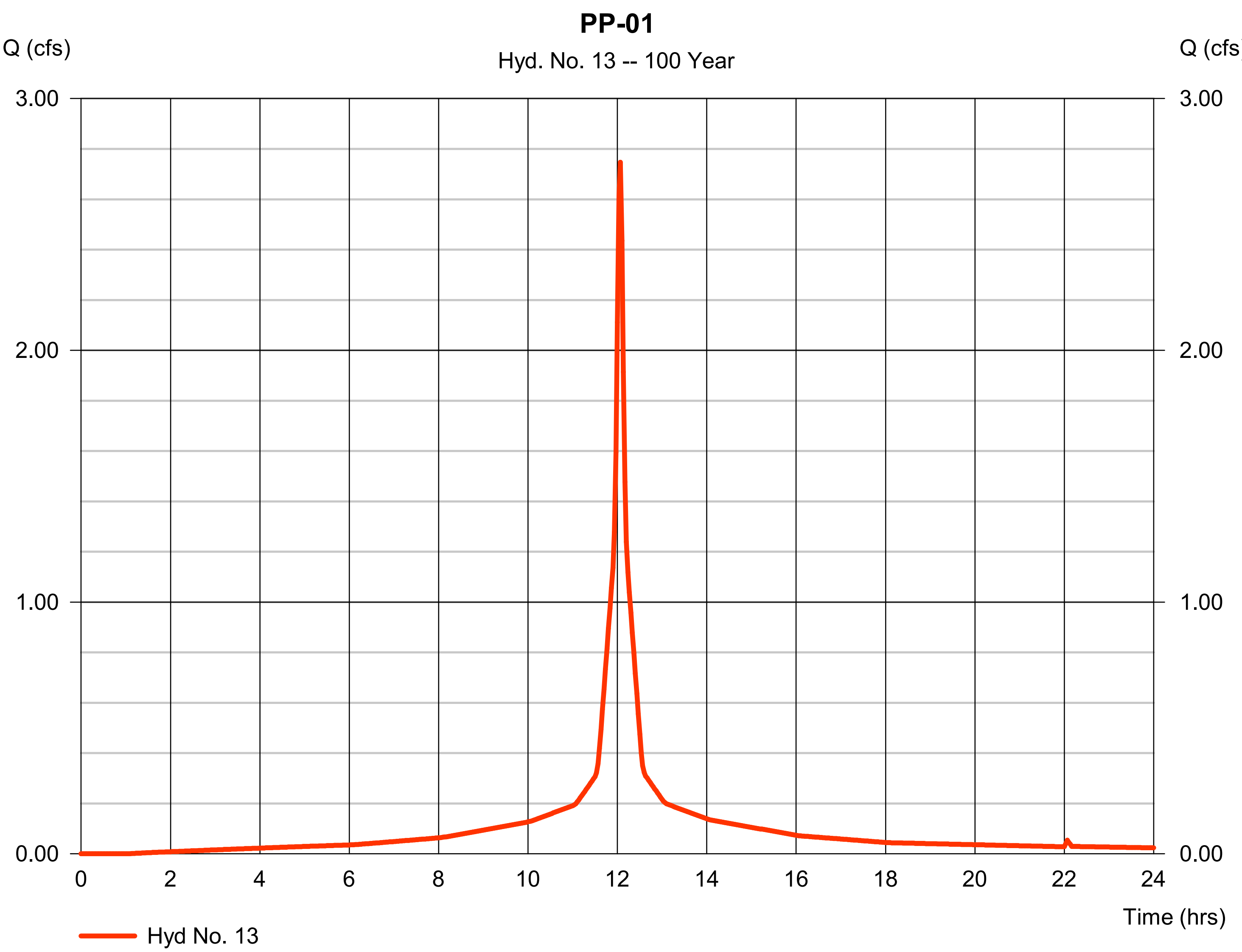
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 | Tuesday, 05 / 25 / 2021

Hyd. No. 13

PP-01

Hydrograph type	= SCS Runoff	Peak discharge	= 2.747 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 9,371 cuft
Drainage area	= 0.349 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.60 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



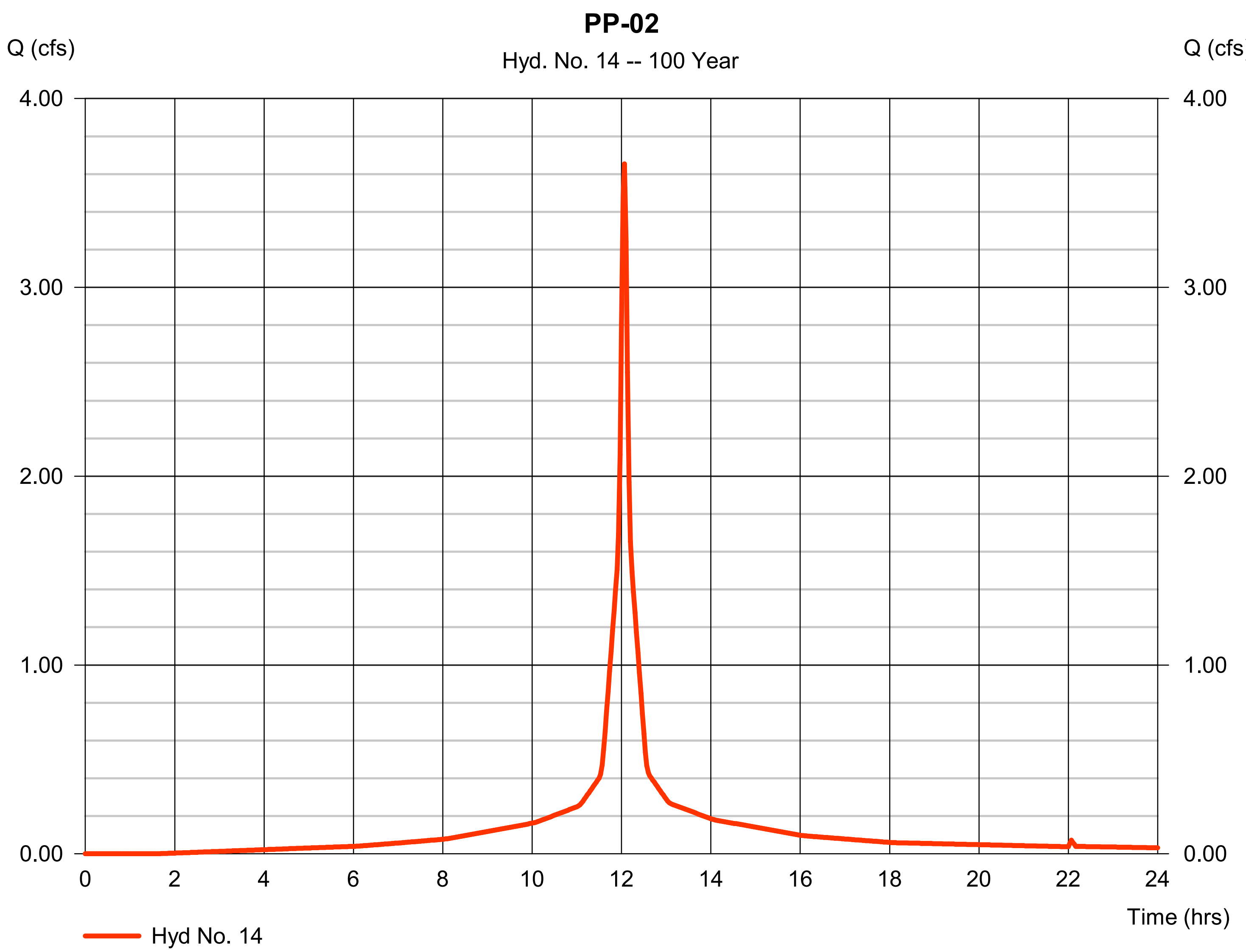
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 14

PP-02

Hydrograph type	= SCS Runoff	Peak discharge	= 3.655 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 12,210 cuft
Drainage area	= 0.469 ac	Curve number	= 94
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



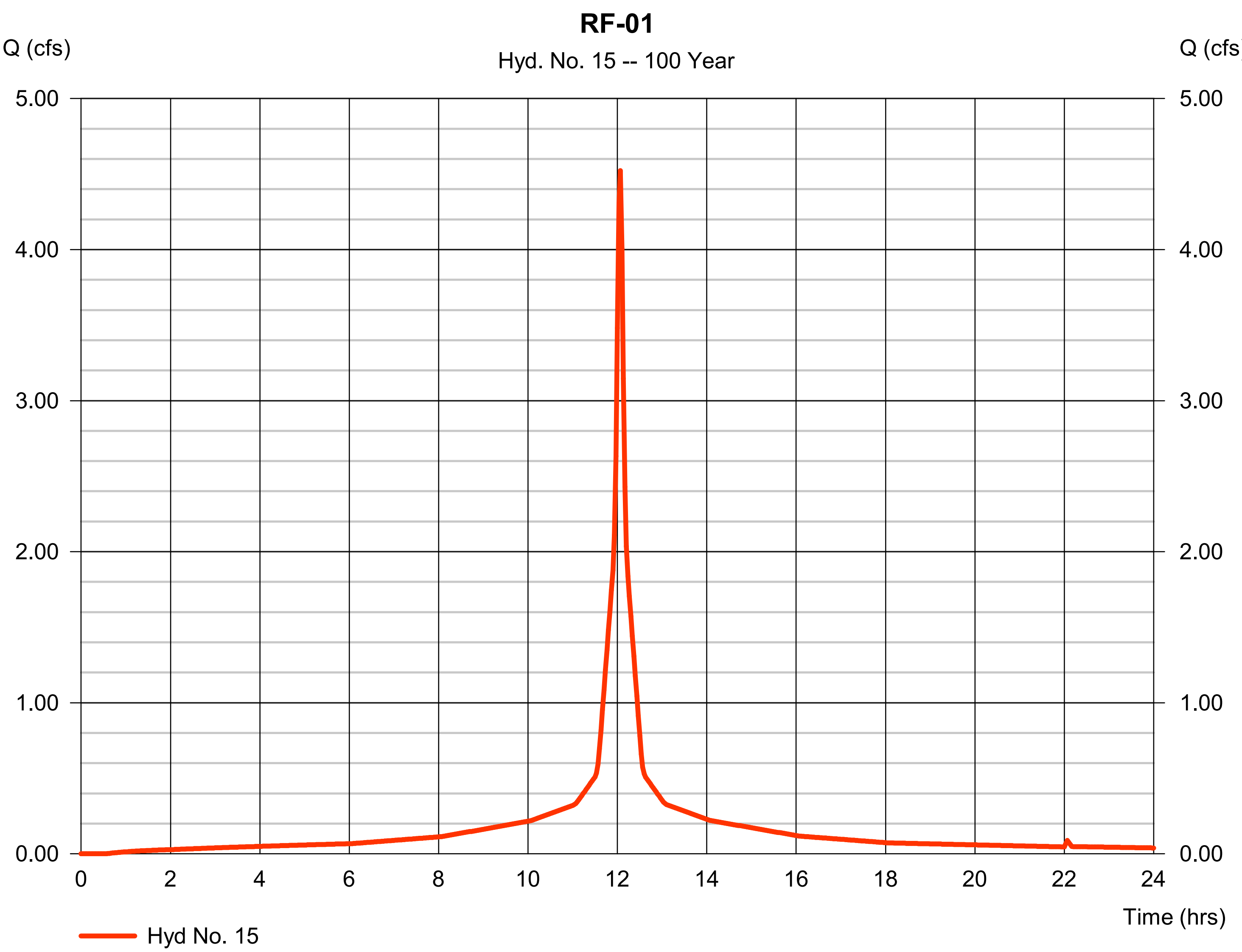
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 15

RF-01

Hydrograph type	= SCS Runoff	Peak discharge	= 4.523 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 15,798 cuft
Drainage area	= 0.571 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

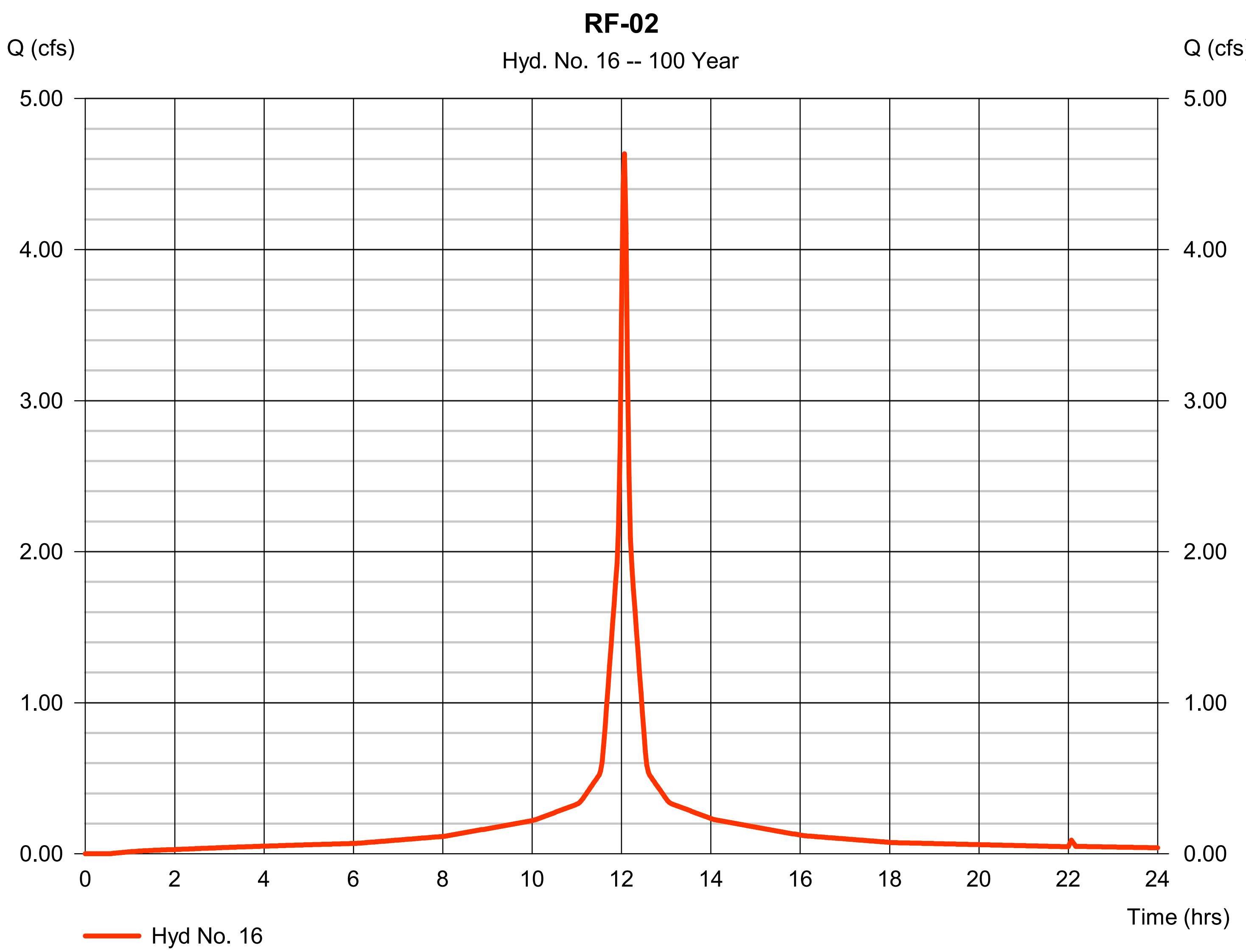


Hydrograph Report

Hyd. No. 16

RF-02

Hydrograph type	= SCS Runoff	Peak discharge	= 4.634 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 16,185 cuft
Drainage area	= 0.585 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



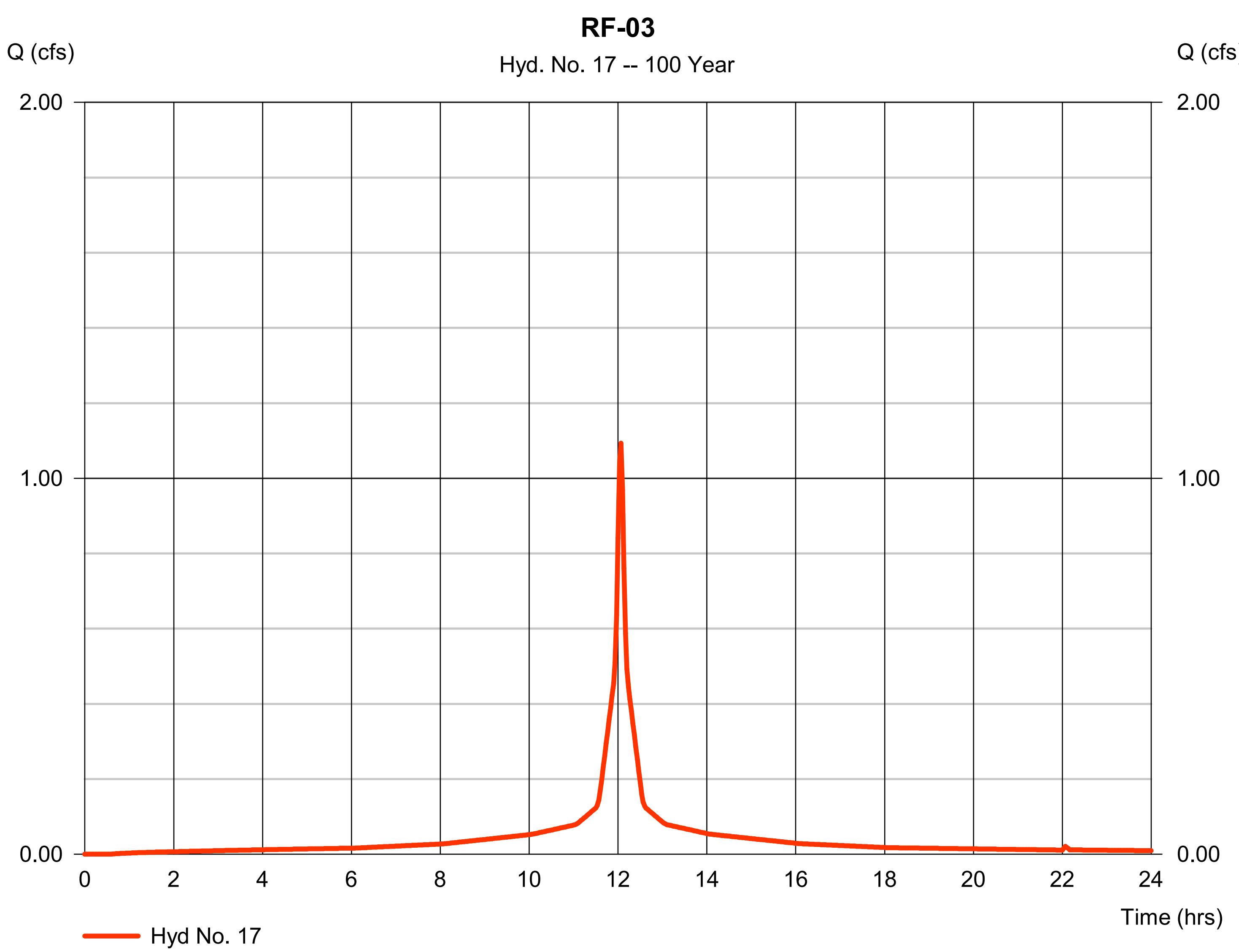
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 17

RF-03

Hydrograph type	= SCS Runoff	Peak discharge	= 1.093 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 3,818 cuft
Drainage area	= 0.138 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



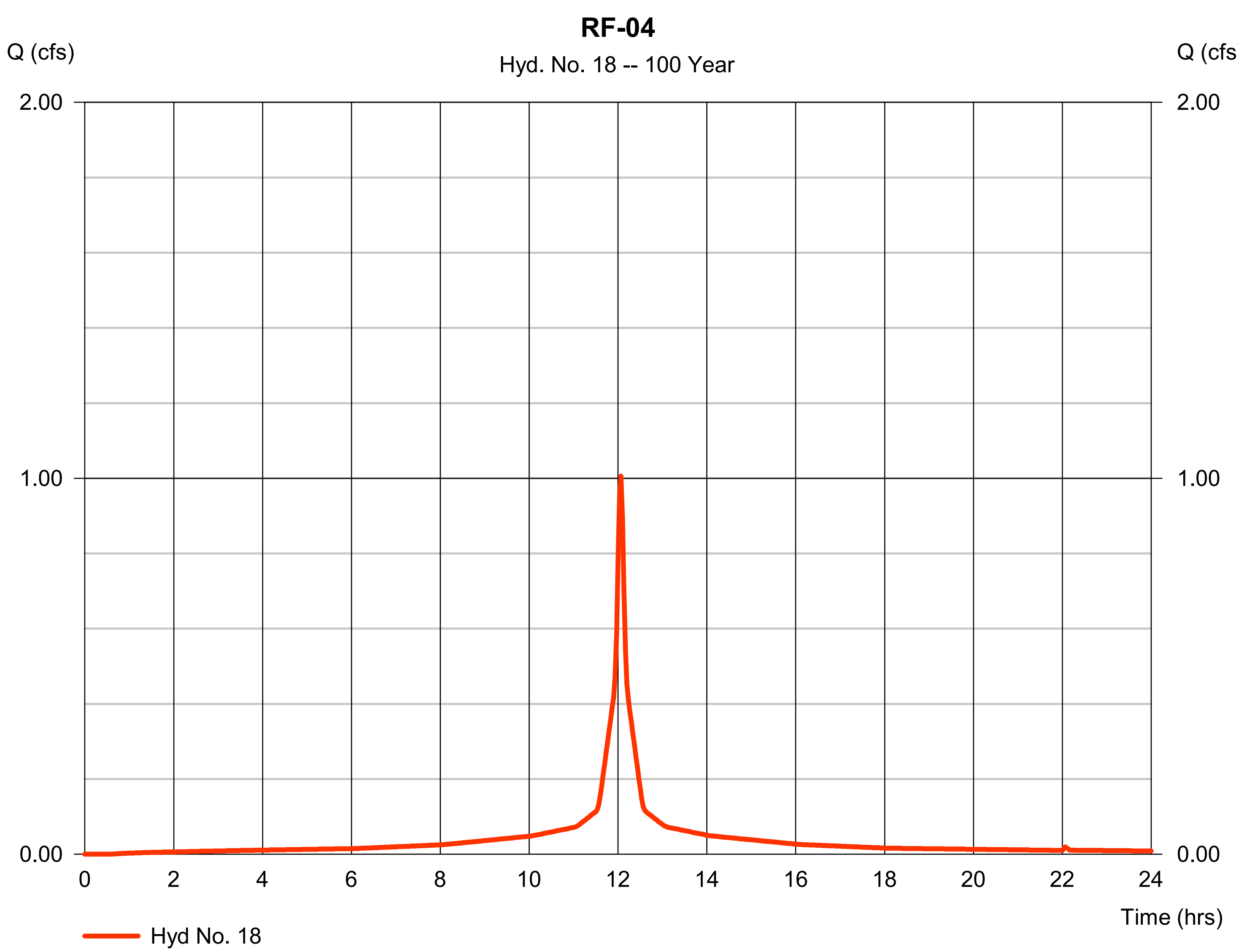
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 — Tuesday, 05 / 25 / 2021

Hyd. No. 18

RF-04

Hydrograph type	= SCS Runoff	Peak discharge	= 1.006 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 3,514 cuft
Drainage area	= 0.127 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



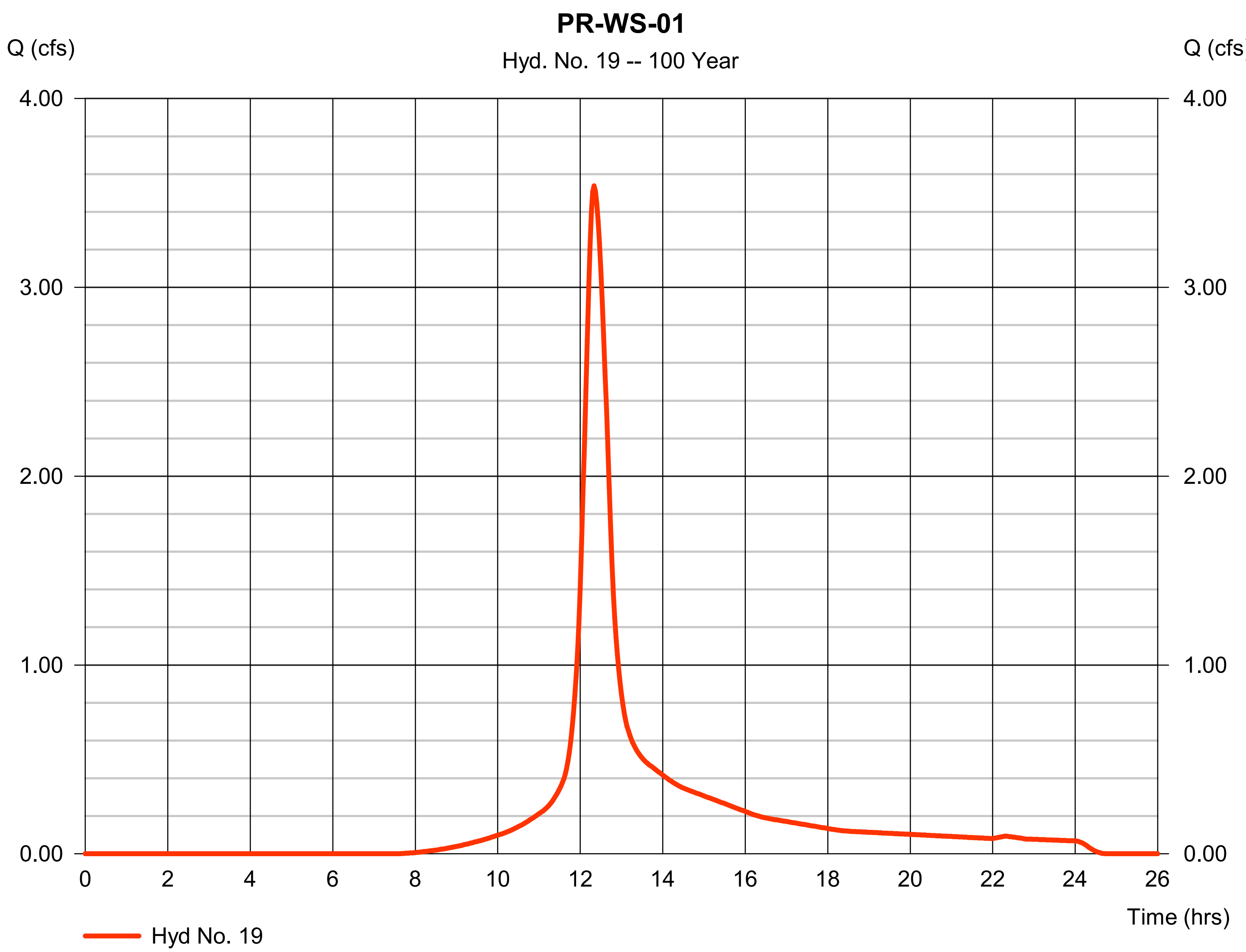
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 19

PR-WS-01

Hydrograph type	= SCS Runoff	Peak discharge	= 3.537 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.33 hrs
Time interval	= 2 min	Hyd. volume	= 18,471 cuft
Drainage area	= 1.038 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 27.60 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



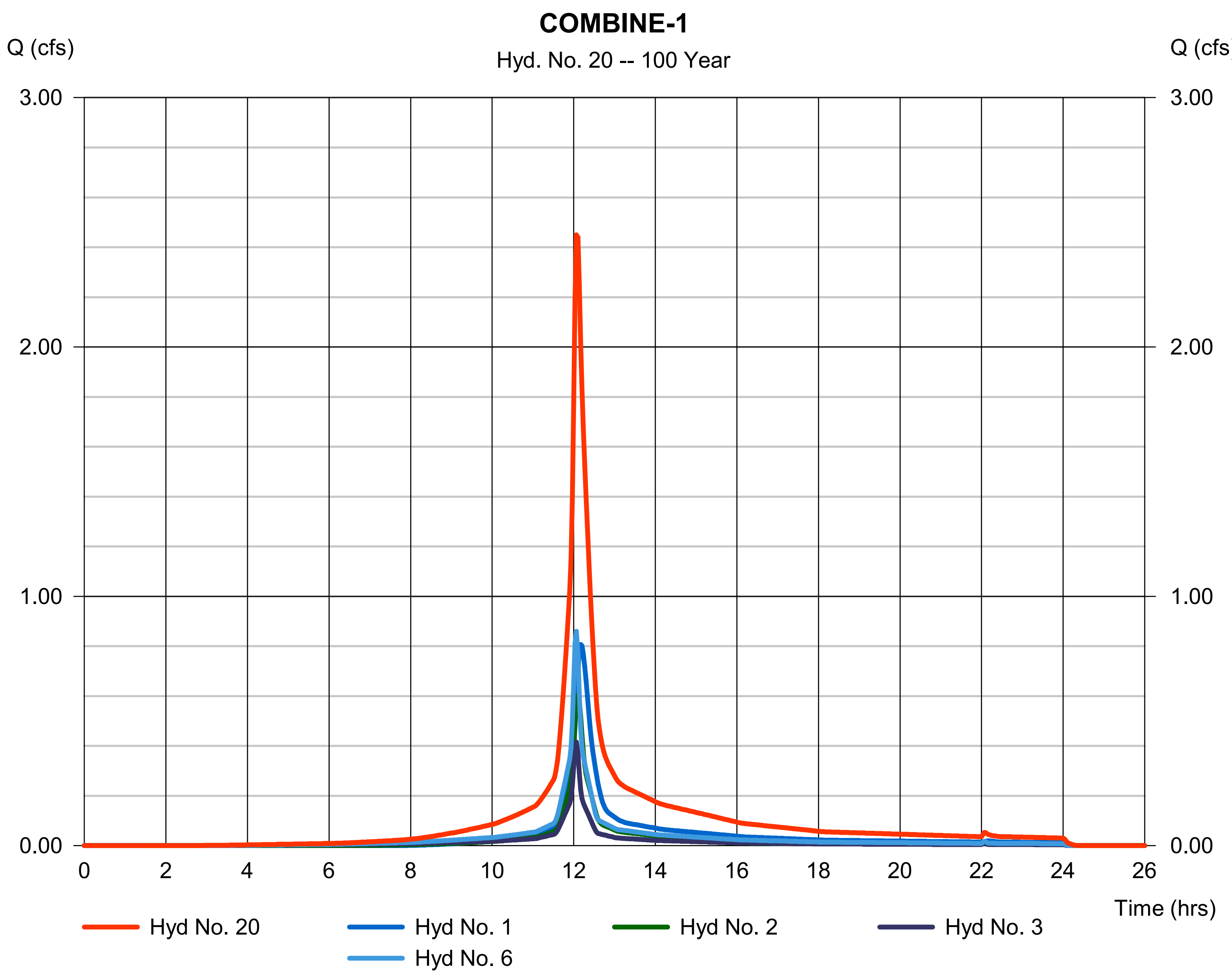
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 20

COMBINE-1

Hydrograph type	= Combine	Peak discharge	= 2.450 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 9,457 cuft
Inflow hyds.	= 1, 2, 3, 6	Contrib. drain. area	= 0.468 ac



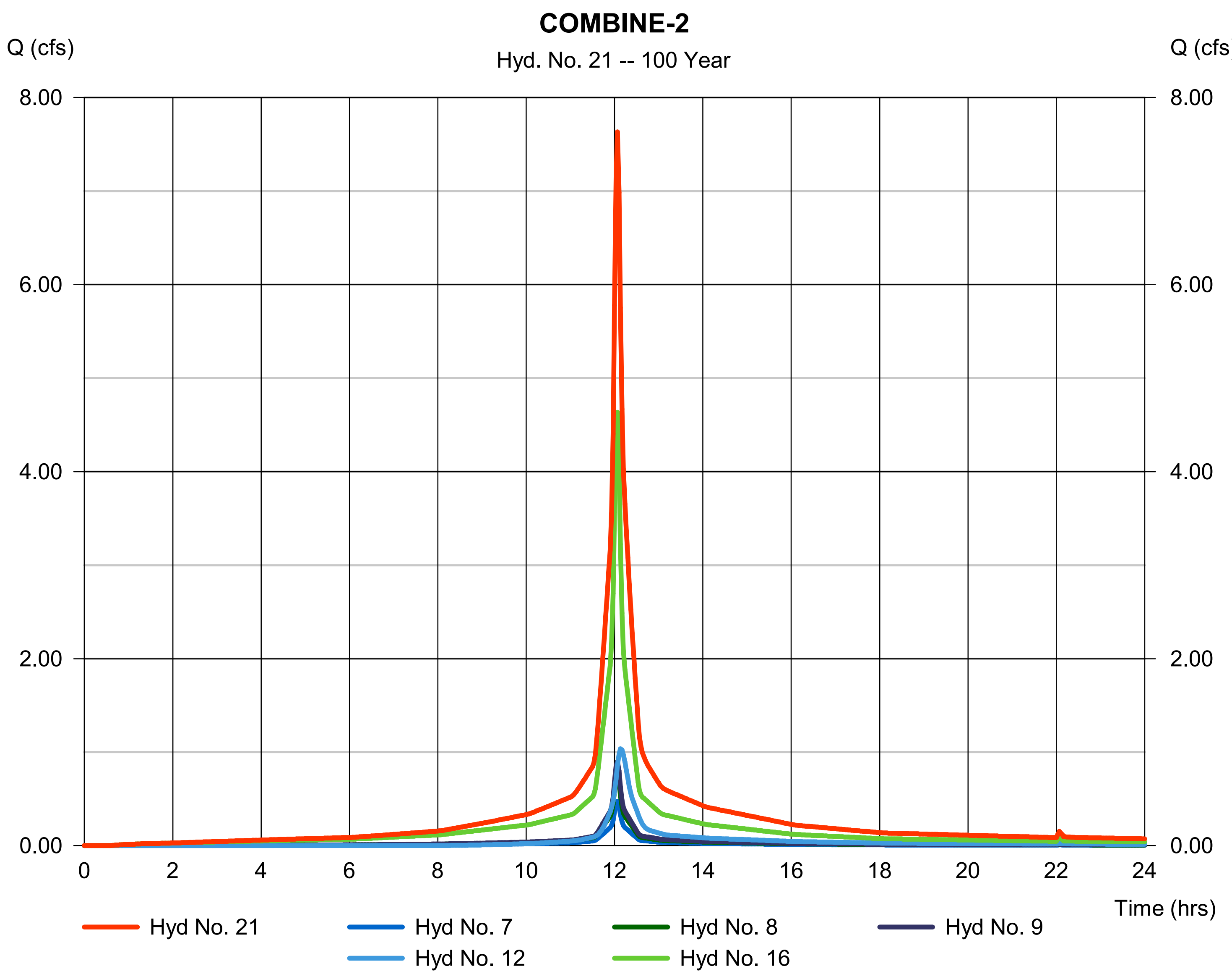
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 21

COMBINE-2

Hydrograph type	= Combine	Peak discharge	= 7.633 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 27,176 cuft
Inflow hyds.	= 7, 8, 9, 12, 16	Contrib. drain. area	= 1.090 ac



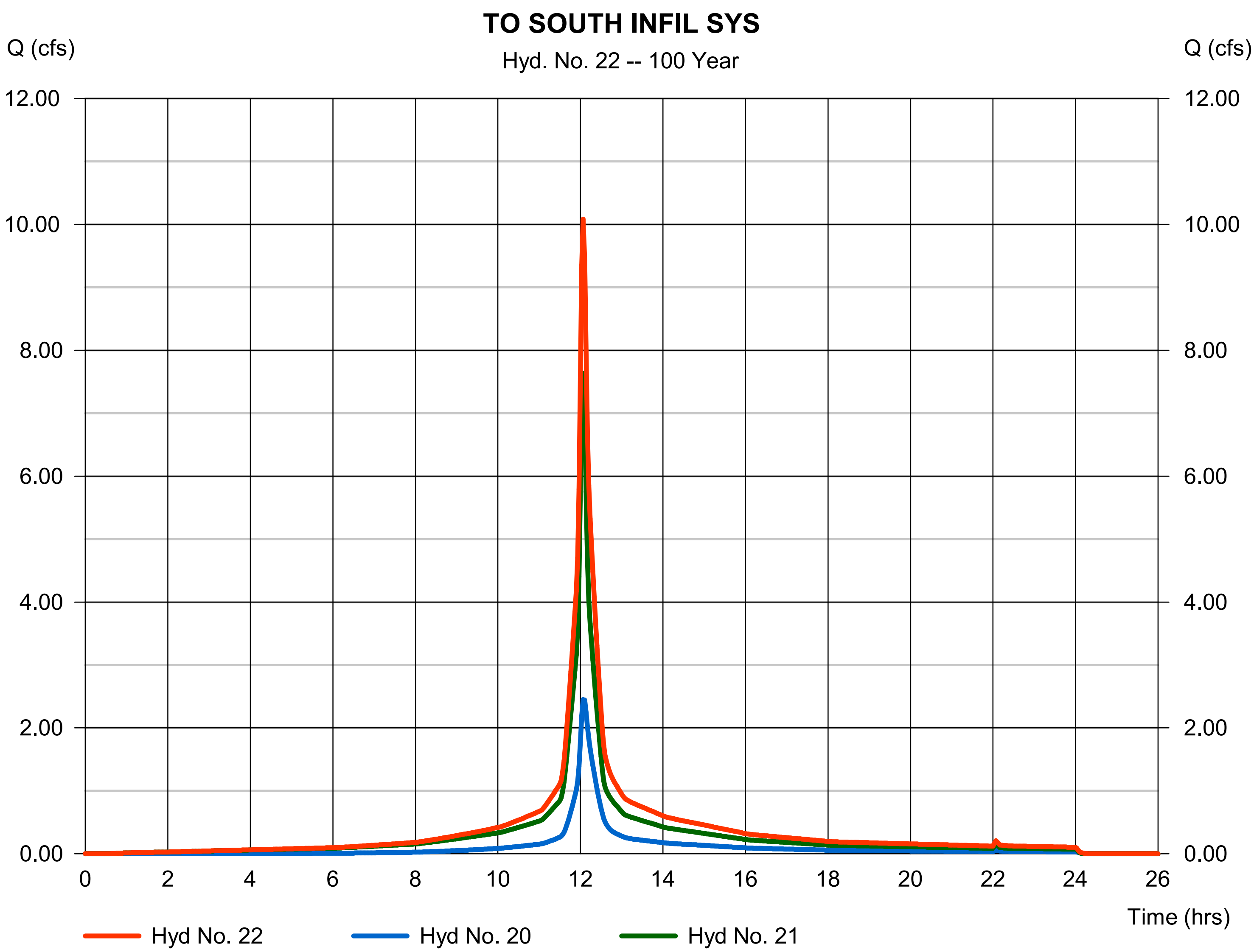
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 22

TO SOUTH INFIL SYS

Hydrograph type	= Combine	Peak discharge	= 10.08 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 36,633 cuft
Inflow hyds.	= 20, 21	Contrib. drain. area	= 0.000 ac



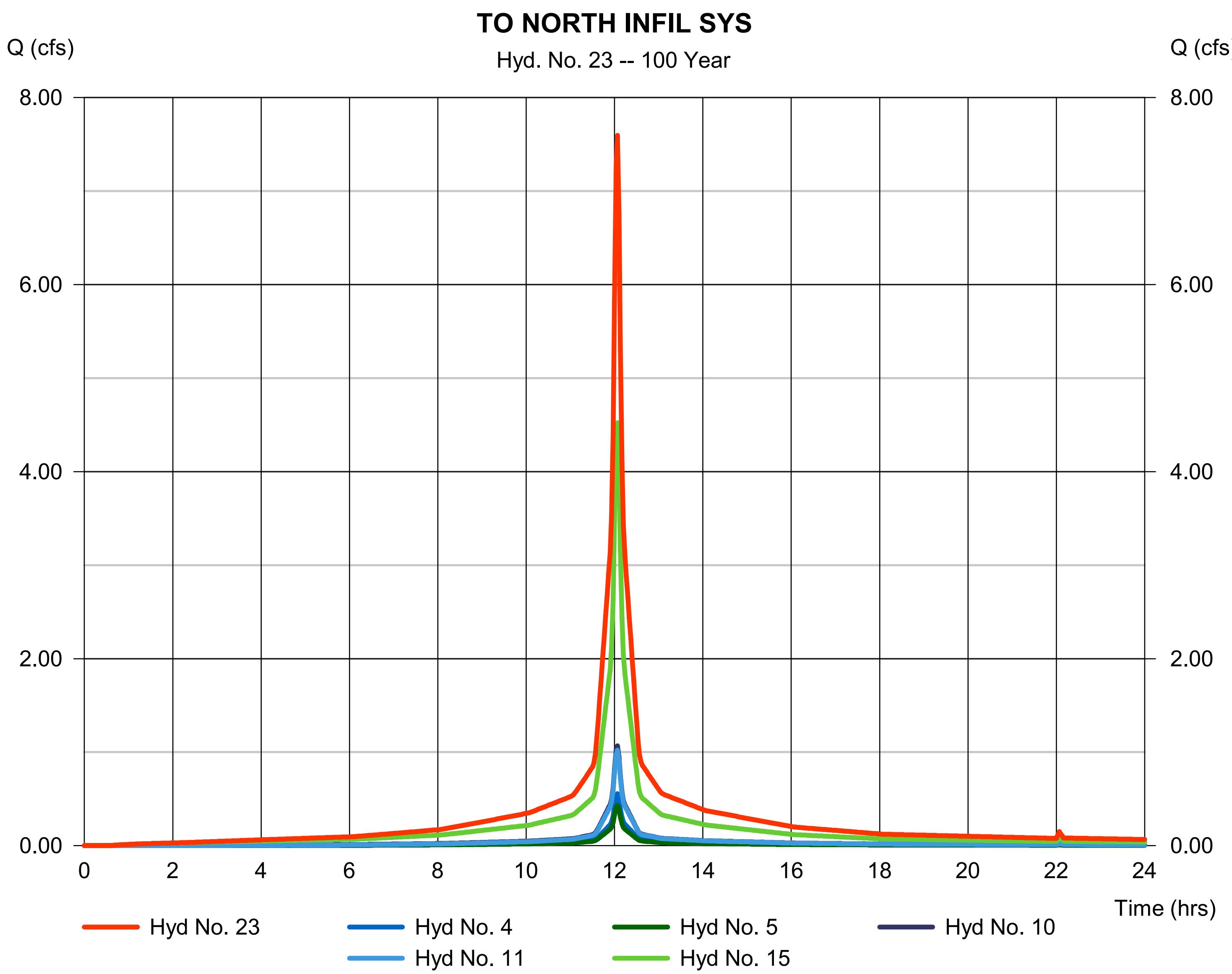
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 23

TO NORTH INFIL SYS

Hydrograph type	= Combine	Peak discharge	= 7.597 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 25,877 cuft
Inflow hyds.	= 4, 5, 10, 11, 15	Contrib. drain. area	= 0.972 ac



Hydrograph Report

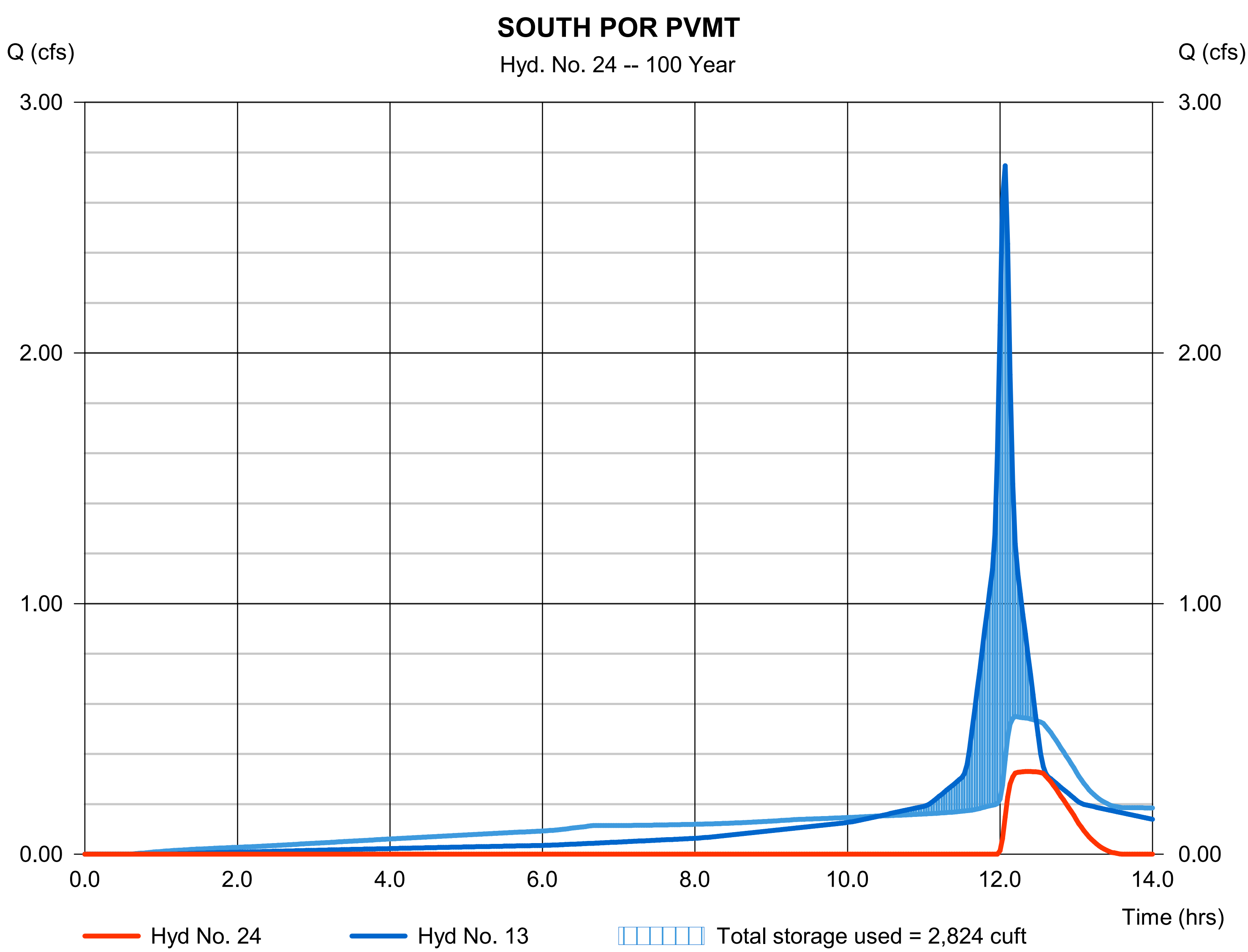
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 24

SOUTH POR PVMT

Hydrograph type	= Reservoir	Peak discharge	= 0.330 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.37 hrs
Time interval	= 2 min	Hyd. volume	= 1,045 cuft
Inflow hyd. No.	= 13 - PP-01	Max. Elevation	= 142.50 ft
Reservoir name	= SOUTH POROUS PVMT	Max. Storage	= 2,824 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

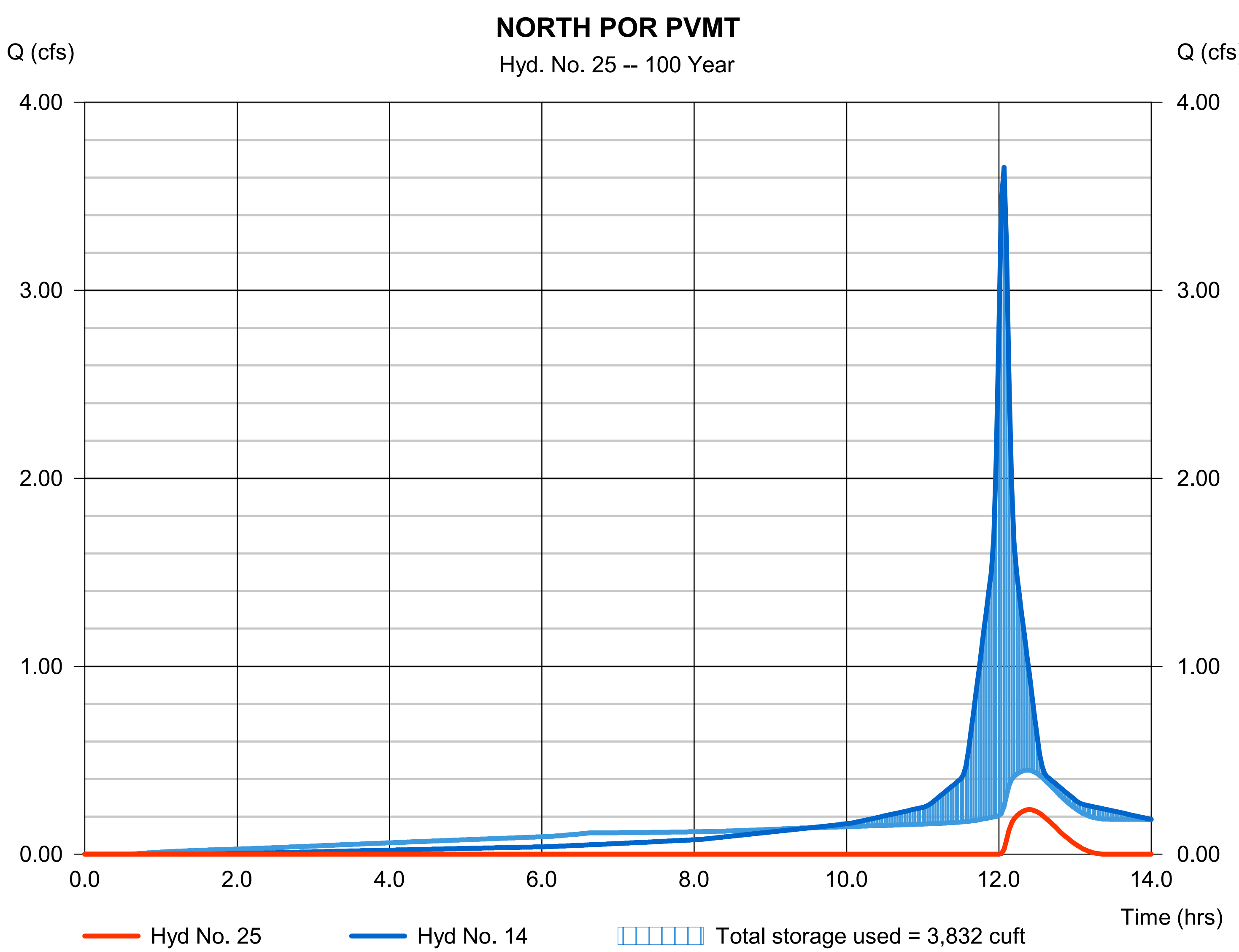
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 25

NORTH POR PVMT

Hydrograph type	= Reservoir	Peak discharge	= 0.237 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.40 hrs
Time interval	= 2 min	Hyd. volume	= 582 cuft
Inflow hyd. No.	= 14 - PP-02	Max. Elevation	= 141.83 ft
Reservoir name	= NORTH POROUS PVMT	Max. Storage	= 3,832 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

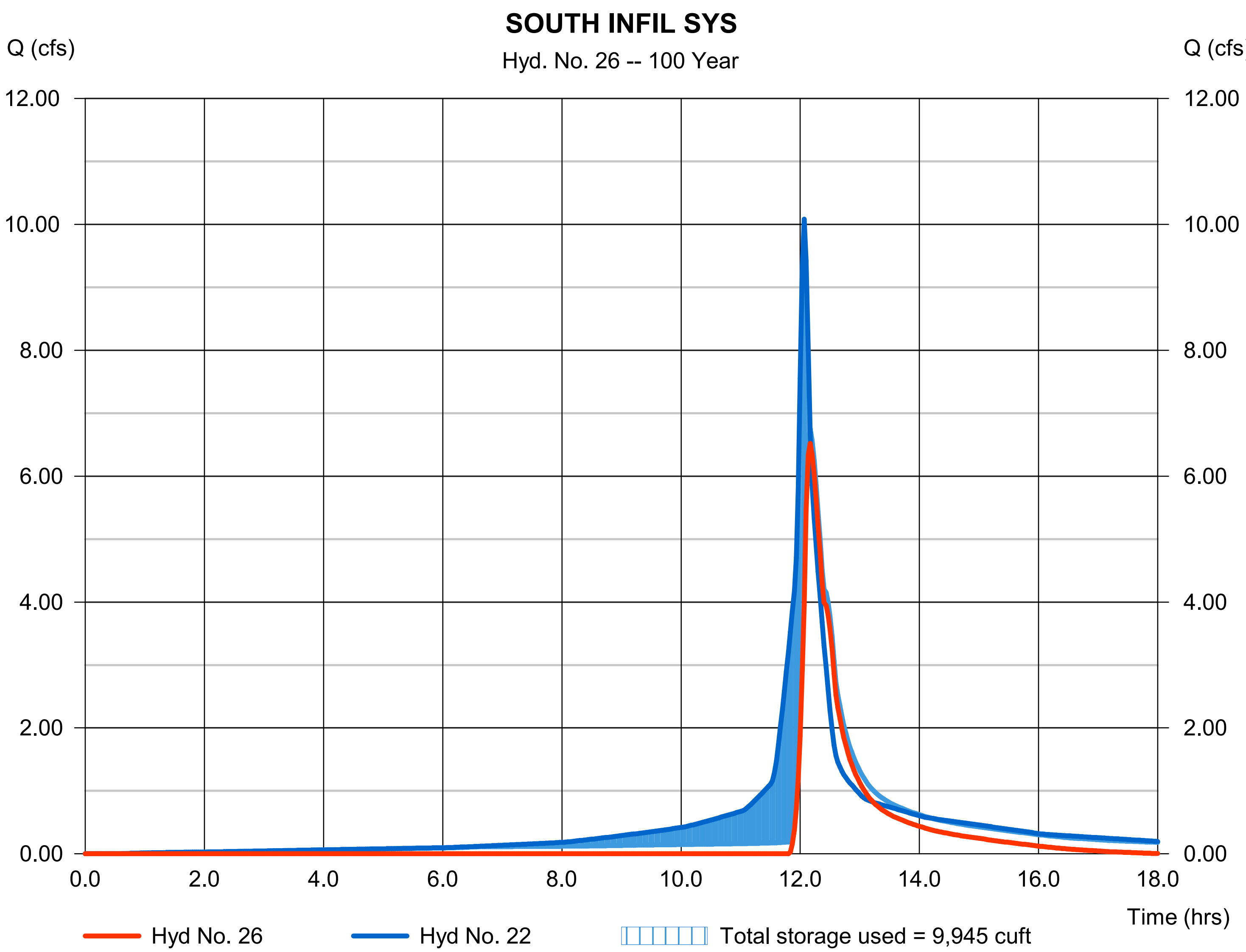
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 26

SOUTH INFIL SYS

Hydrograph type	= Reservoir	Peak discharge	= 6.520 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 17,173 cuft
Inflow hyd. No.	= 22 - TO SOUTH INFIL SYS	Max. Elevation	= 144.92 ft
Reservoir name	= SOUTH INFIL SYS	Max. Storage	= 9,945 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

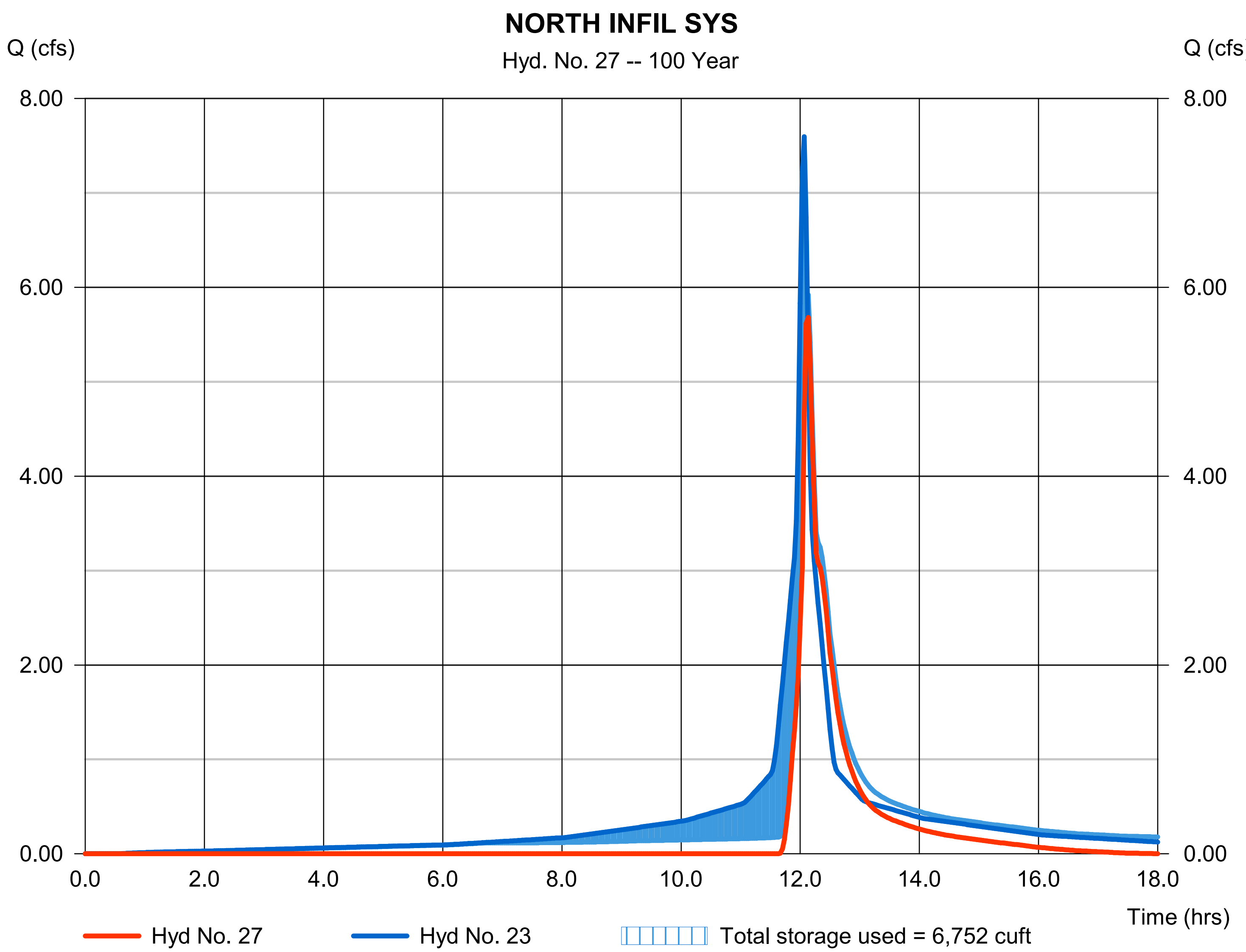
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 | Tuesday, 05 / 25 / 2021

Hyd. No. 27

NORTH INFIL SYS

Hydrograph type	= Reservoir	Peak discharge	= 5.682 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 12,524 cuft
Inflow hyd. No.	= 23 - TO NORTH INFIL SYS	Max. Elevation	= 144.93 ft
Reservoir name	= NORTH INFIL SYS	Max. Storage	= 6,752 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



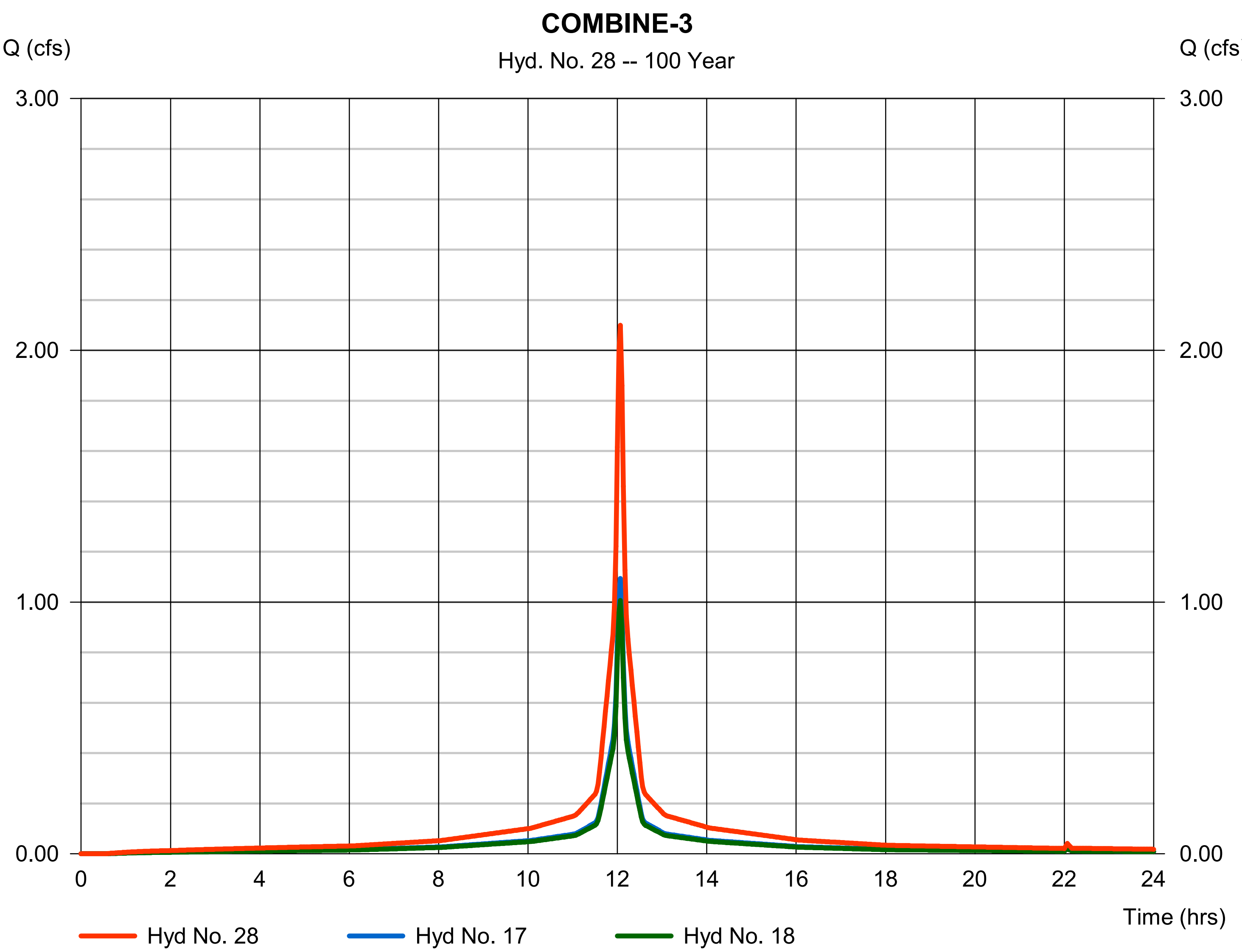
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 28

COMBINE-3

Hydrograph type	= Combine	Peak discharge	= 2.099 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 7,332 cuft
Inflow hyds.	= 17, 18	Contrib. drain. area	= 0.265 ac



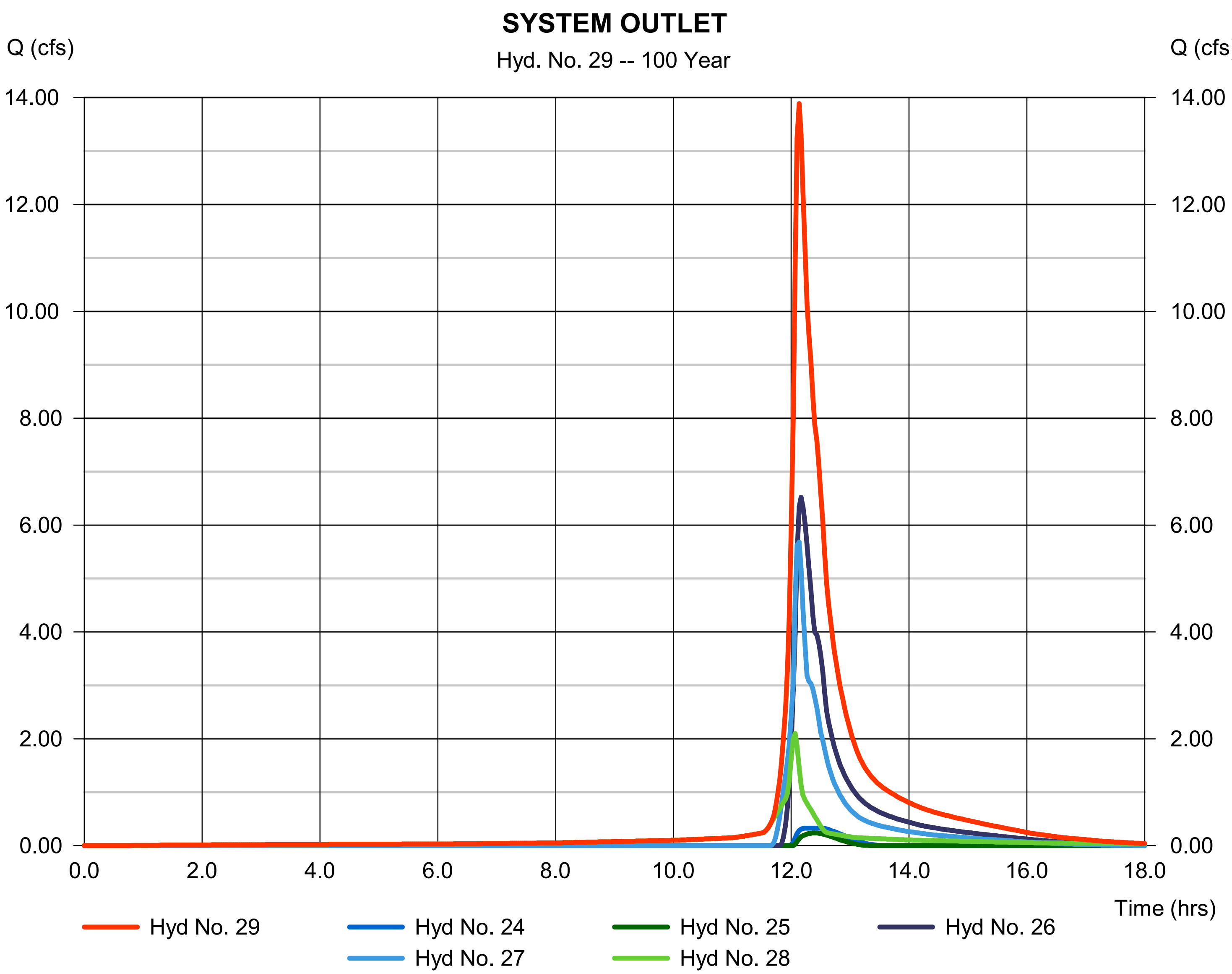
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 Tuesday, 05 / 25 / 2021

Hyd. No. 29

SYSTEM OUTLET

Hydrograph type	= Combine	Peak discharge	= 13.89 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 38,655 cuft
Inflow hyds.	= 24, 25, 26, 27, 28	Contrib. drain. area	= 0.000 ac



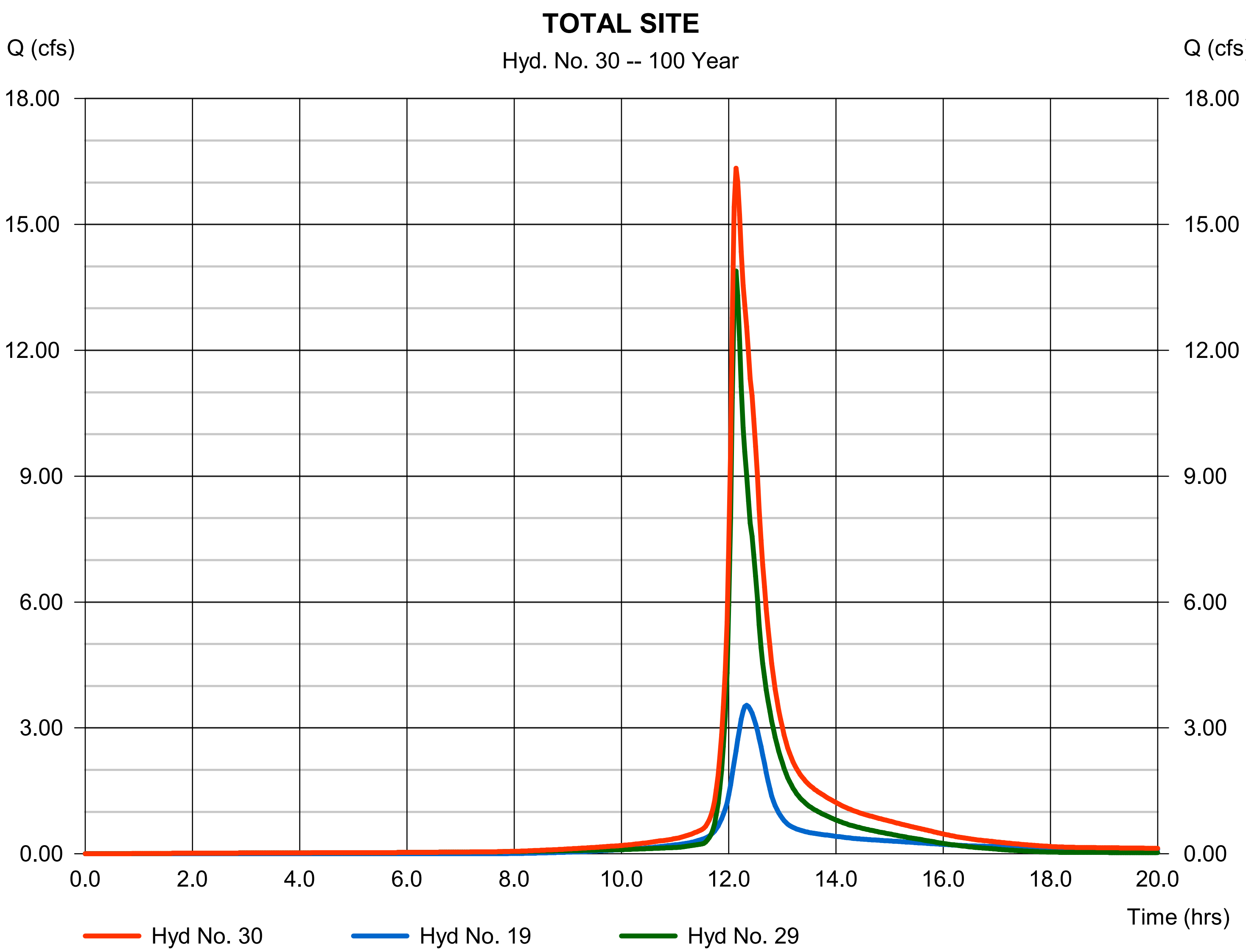
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3 — Tuesday, 05 / 25 / 2021

Hyd. No. 30

TOTAL SITE

Hydrograph type	= Combine	Peak discharge	= 16.34 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 57,126 cuft
Inflow hyds.	= 19, 29	Contrib. drain. area	= 1.038 ac



APPENDIX E

Required Water Quality Volume (WQV)

141 Danbury Road

Site Area in Acres, A	=	4.692	ac
Impervious Area in Acres	=	2.905	ac
Percent Impervious Cover, I	=	62	%
Volumetric Runoff Coefficient, R			
$R = 0.05 + 0.009(I)$	=	0.607	

Water Quality Volume (WQV)

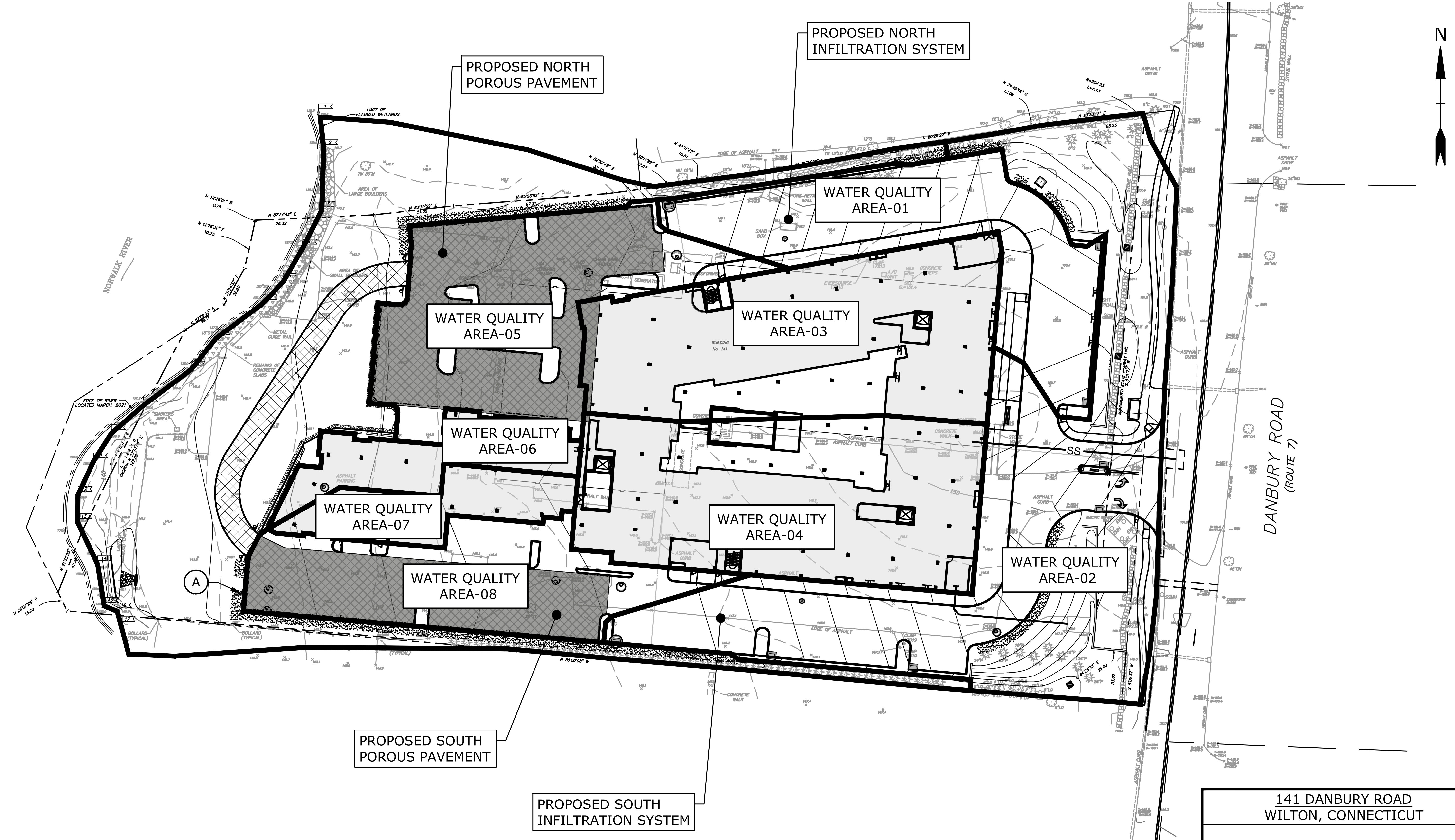
$$WQV = \frac{(1'')(R)(A)}{12}$$

	=	**0.237**	**ac·ft**
	=	**10,342**	**cf**

Provided Water Quality Volume

North Infiltration System	=	2,912	cf
South Infiltration System	=	4,641	cf
North Porous Pavement System	=	2,313	cf
South Porous Pavement System	=	1,414	cf
	=	**11,280**	**cf**

References:
2004 Connecticut Stormwater Quality Manual Chapter 7.4.1



LEGEND

WATER QUALITY BOUNDARY

A DESIGN POINT

0 60' 120'

SCALE: 1" = 60'

141 DANBURY ROAD
WILTON, CONNECTICUT

WATER QUALITY WATERSHED MAP

DATE:	05/12/2021
SCALE:	1" = 60'
FIGURE:	WQM-01

Tighe&Bond

Plotted On:May 24, 2021-1:35pm By: TAS
Tighe & Bond:J:\F\F0173 Fuller\002 141 Danbury Road\Design\Stormwater\F0173-02-C-Proposed Water Quality Map.dwg

Tighe&Bond
Engineers | Environmental Specialists

Project Name: **141 Danbury Road**
Project Number: **F0173-002**
Project Location: **Wilton, CT**
Description: **Stormwater BMP Pollutant Removal Estimate**
Prepared By: **ACF** Date: **May 12 2021**

Water Quality Area 1

Item	Units	Pollutant					
		TKN	P	TSS	Pb	Cu	Zn
Proposed, Pre Treatment	lb/yr/1-in	0.067	0.014	3.561	0.005	0.001	0.005
Proposed, Post Treatment	lb/yr/1-in	0.040	0.003	0.360	0.002	0.000	0.000

Reduction, Pre to Post Treat	---	40%	78%	90%	64%	70%	90%

Water Quality Area 2

Item	Units	Pollutant					
		TKN	P	TSS	Pb	Cu	Zn
Proposed, Pre Treatment	lb/yr/1-in	0.187	0.038	9.937	0.014	0.003	0.013
Proposed, Post Treatment	lb/yr/1-in	0.111	0.008	1.006	0.005	0.001	0.001

Reduction, Pre to Post Treat	---	40%	78%	90%	64%	70%	90%

Water Quality Area 3

Item	Units	Pollutant					
		TKN	P	TSS	Pb	Cu	Zn
Proposed, Pre Treatment	lb/yr/1-in	0.037	0.007	1.962	0.003	0.001	0.003
Proposed, Post Treatment	lb/yr/1-in	0.027	0.005	1.079	0.002	0.000	0.002

Reduction, Pre to Post Treat	---	27%	33%	45%	32%	32%	32%

Water Quality Area 4

Item	Units	Pollutant					
		TKN	P	TSS	Pb	Cu	Zn
Proposed, Pre Treatment	lb/yr/1-in	0.038	0.008	2.010	0.003	0.001	0.003
Proposed, Post Treatment	lb/yr/1-in	0.028	0.005	1.105	0.002	0.000	0.002

Reduction, Pre to Post Treat	---	27%	33%	45%	32%	32%	32%

Water Quality Area 5

Item	Units	Pollutant					
		TKN	P	TSS	Pb	Cu	Zn
Proposed, Pre Treatment	lb/yr/1-in	0.091	0.018	4.833	0.007	0.002	0.006
Proposed, Post Treatment	lb/yr/1-in	0.055	0.011	0.967	0.003	0.001	0.003

Reduction, Pre to Post Treat	---	40%	40%	80%	60%	60%	60%

Water Quality Area 6

Item	Units	Pollutant					
		TKN	P	TSS	Pb	Cu	Zn
Proposed, Pre Treatment	lb/yr/1-in	0.000	0.000	0.000	0.000	0.000	0.000
Proposed, Post Treatment	lb/yr/1-in	0.000	0.000	0.000	0.000	0.000	0.000
Reduction, Pre to Post Treat	---	---	---	---	---	---	---

Water Quality Area 7

Item	Units	Pollutant					
		TKN	P	TSS	Pb	Cu	Zn
Proposed, Pre Treatment	lb/yr/1-in	0.000	0.000	0.000	0.000	0.000	0.000
Proposed, Post Treatment	lb/yr/1-in	0.000	0.000	0.000	0.000	0.000	0.000
Reduction, Pre to Post Treat	---	---	---	---	---	---	---

Water Quality Area 8

Item	Units	Pollutant					
		TKN	P	TSS	Pb	Cu	Zn
Proposed, Pre Treatment	lb/yr/1-in	0.060	0.012	3.178	0.005	0.001	0.004
Proposed, Post Treatment	lb/yr/1-in	0.036	0.007	0.636	0.002	0.000	0.002
Reduction, Pre to Post Treat	---	40%	40%	80%	60%	60%	60%

Total Site

Item	Units	Pollutant					
		TKN	P	TSS	Pb	Cu	Zn
Proposed, Pre Treatment	lb/yr/1-in	0.479	0.097	25.480	0.036	0.008	0.034
Proposed, Post Treatment	lb/yr/1-in	0.296	0.040	5.152	0.015	0.003	0.010
Reduction, Pre to Post Treat	---	38%	59%	80%	58%	61%	72%

Loading Calculation

Location: **Area 1** Condition: **Proposed**
Rainfall: 1 inches
Impervious Fraction: 0.32 Total Area = 0.4017 acres

Pollutant	Residential		Weighted	
	A (acres)	EMC (mg/L)	EMC (mg/L)	L (lbs/yr)
Total Nitrogen (N)	0.402	1.900	1.900	0.067
Total Phosphorus (P)	0.402	0.383	0.383	0.014
Total Suspended Solids	0.402	101.0	101.0	3.6
Lead	0.402	0.144	0.144	0.005
Copper	0.402	0.033	0.033	0.001
Zinc	0.402	0.135	0.135	0.005

L = 0.2266 * EMC * [0.15 + 0.75*I] * P *A

L	Pollution Loading (lbs/year)
EMC	Mean Event Mean Concentration (mg/L)
I	Fraction of Impervious Acres (acres)
P	Annual Rainfall (in)
A	Watershed Area (acres)

Notes:
1. Pollution loading calculated using *Municipal Stormwater Management, Second Edition* by Debo & Reese, pgs. 193-195

Location: **Area 1** Condition: **Proposed**
Rainfall: 1 inches
Impervious Fraction: 0.32 Total Area = 0.4017 acres
BMP: **Deep Sump Catch Basins**

Pollutant	L_{in} 1 (lbs)	Sum L (lbs)	RR (%)	$L_{removed}$ (lbs)	L_{out} (lbs)
Total Nitrogen (N)	0.067	0.067	0	0.00	0.067
Total Phosphorus (P)	0.014	0.014	0	0.00	0.014
Total Suspended Solids	3.561	3.6	20	0.71	2.8
Lead	0.005	0.005	0	0.00	0.005
Copper	0.001	0.001	0	0.00	0.001
Zinc	0.005	0.005	0	0.00	0.005
Lin 1	Pollutant Load Area 1				
Sum L	Sum of Pollutant Load to this BMP				
RR	Removal rate in percentage				
L_{out}	Pollutant Load out of BMP				

Notes:
1. Pollution loading calculated using *Municipal Stormwater Management, Second Edition* , by Debo & Reese, pgs. 193-195.

2. Pollutant removal rates for Rain Garden/Infiltration Trench and Wet Pond taken from *Municipal Stormwater Management, Second Edition* , by Debo & Reese, Tbl. 13-13, p. 748.

3. Pollutant removal rates for Vortechnics Stormwater Quality Unit and Deep Sump Catch Basins taken from *Final Report, Stormwater Treatment Devices Section 319 Project, Project #99-07* , Submitted to CT DEP April 15, 2002.

4. Pollutant removal rates for Ultra Urban Filter Catch Basin inserts taken from *Final Report: Sediment Removal from Simulated Stormwater Runoff by Abtech Industries, Inc. UltraUrban Filter-CO in Laboratory Flume Tests* , Submitted by Stan Galicki, Ph.D., Millsaps College December 9th, 2009.

Location: **Area 1** Condition: **Proposed**
Rainfall: 1 inches
Impervious Fraction: 0.32 Total Area = 0.4017 acres
BMP: **Water Quality Structure**

Pollutant	L_{in} 1 (lbs)	Sum L (lbs)	RR (%)	$L_{removed}$ (lbs)	L_{out} (lbs)
Total Nitrogen (N)	0.067	0.067	18.3	0.01	0.055
Total Phosphorus (P)	0.014	0.014	66.9	0.01	0.004
Total Suspended Solids	2.849	2.8	77	2.19	0.7
Lead	0.005	0.005	46.5	0.00	0.003
Copper	0.001	0.001	56.2	0.00	0.001
Zinc	0.005	0.005	85.3	0.00	0.001
Lin 1	Pollutant Load Out of Deep Sump Catch Basins BMP				
Sum L	Sum of Pollutant Load to this BMP				
RR	Removal rate in percentage				
L_{out}	Pollutant Load out of BMP				

Notes:
1. Pollution loading calculated using *Municipal Stormwater Management, Second Edition* , by Debo & Reese, pgs. 193-195.

2. Pollutant removal rates for Rain Garden/Infiltration Trench and Wet Pond taken from *Municipal Stormwater Management, Second Edition* , by Debo & Reese, Tbl. 13-13, p. 748.

3. Pollutant removal rates for Vortechnics Stormwater Quality Unit and Deep Sump Catch Basins taken from *Final Report, Stormwater Treatment Devices Section 319 Project, Project #99-07* , Submitted to CT DEP April 15, 2002.

4. Pollutant removal rates for Ultra Urban Filter Catch Basin inserts taken from *Final Report: Sediment Removal from Simulated Stormwater Runoff by Abtech Industries, Inc. UltraUrban Filter-CO in Laboratory Flume Tests* , Submitted by Stan Galicki, Ph.D., Millsaps College December 9th, 2009.

Location:	**Area 1**		Condition: **Proposed**
Rainfall:	1 inches		
Impervious Fraction:	0.32		Total Area = 0.4017 acres
BMP:	**Infiltration System**		

Pollutant	Lin 1 (lbs)	Sum L (lbs)	RR (-)	Lremoved (lbs)	Lout (lbs)
Total Nitrogen (N)	0.055	0.055	27	0.01	0.040
Total Phosphorus (P)	0.004	0.004	33	0.00	0.003
Total Suspended Solids	0.655	0.7	45	0.29	0.4
Lead	0.003	0.003	32	0.00	0.002
Copper	0.001	0.001	32	0.00	0.000
Zinc	0.001	0.001	32	0.00	0.000
Lin 1	Pollutant Load out from WQS				
Sum L	Sum of Pollutant Load to this BMP				
RR	Removal rate in percentage				
Lout	Pollutant Load out of BMP				

Notes:

1. Pollution loading calculated using *Municipal Stormwater Management, Second Edition* , by Debo & Reese, pgs. 193-195.

2. Pollutant removal rates for Rain Garden/Infiltration Trench and Wet Pond taken from *Municipal Stormwater Management, Second Edition* , by Debo & Reese, Tbl. 13-13, p. 748.

3. Pollutant removal rates for Vortechnics Stormwater Quality Unit and Deep Sump Catch Basins taken from *Final Report, Stormwater Treatment Devices Section 319 Project, Project #99-07* , Submitted to CT DEP April 15, 2002.

4. Pollutant removal rates for Ultra Urban Filter Catch Basin inserts taken from *Final Report: Sediment Removal from Simulated Stormwater Runoff by Abtech Industries, Inc. UltraUrban Filter-CO in Laboratory Flume Tests* , Submitted by Stan Galicki, Ph.D., Millsaps College December 9th, 2009.

Loading Calculation

Location: **Area 2** Condition: **Proposed**
Rainfall: 1 inches
Impervious Fraction: 0.37 Total Area = 1.01338 acres

Pollutant	Residential		Weighted	
	A (acres)	EMC (mg/L)	EMC (mg/L)	L (lbs/yr)
Total Nitrogen (N)	1.013	1.900	1.900	0.187
Total Phosphorus (P)	1.013	0.383	0.383	0.038
Total Suspended Solids	1.013	101.0	101.0	9.9
Lead	1.013	0.144	0.144	0.014
Copper	1.013	0.033	0.033	0.003
Zinc	1.013	0.135	0.135	0.013

L = 0.2266 * EMC * [0.15 + 0.75*I] * P *A

L	Pollution Loading (lbs/year)
EMC	Mean Event Mean Concentration (mg/L)
I	Fraction of Impervious Acres (acres)
P	Annual Rainfall (in)
A	Watershed Area (acres)

Notes:
1. Pollution loading calculated using *Municipal Stormwater Management, Second Edition* by Debo & Reese, pgs. 193-195

Location:	**Area 2**		Condition: **Proposed**
Rainfall:	1	inches	
Impervious Fraction:	0.37		Total Area = 1.0134 acres
BMP:	**Deep Sump Catch Basins**		

Pollutant	L_{in} 1 (lbs)	Sum L (lbs)	RR (%)	$L_{removed}$ (lbs)	L_{out} (lbs)
Total Nitrogen (N)	0.187	0.187	0	0.00	0.187
Total Phosphorus (P)	0.038	0.038	0	0.00	0.038
Total Suspended Solids	9.937	9.9	20	1.99	7.9
Lead	0.014	0.014	0	0.00	0.014
Copper	0.003	0.003	0	0.00	0.003
Zinc	0.013	0.013	0	0.00	0.013
Lin 1	Pollutant Load Area 1				
Sum L	Sum of Pollutant Load to this BMP				
RR	Removal rate in percentage				
L_{out}	Pollutant Load out of BMP				

Notes:

1. Pollution loading calculated using *Municipal Stormwater Management, Second Edition* , by Debo & Reese, pgs. 193-195.

2. Pollutant removal rates for Rain Garden/Infiltration Trench and Wet Pond taken from *Municipal Stormwater Management, Second Edition* , by Debo & Reese, Tbl. 13-13, p. 748.

3. Pollutant removal rates for Vortechnics Stormwater Quality Unit and Deep Sump Catch Basins taken from *Final Report, Stormwater Treatment Devices Section 319 Project, Project #99-07* , Submitted to CT DEP April 15, 2002.

4. Pollutant removal rates for Ultra Urban Filter Catch Basin inserts taken from *Final Report: Sediment Removal from Simulated Stormwater Runoff by Abtech Industries, Inc. UltraUrban Filter-CO in Laboratory Flume Tests* , Submitted by Stan Galicki, Ph.D., Millsaps College December 9th, 2009.

Location: **Area 2** Condition: **Proposed**
Rainfall: 1 inches
Impervious Fraction: 0.37 Total Area = 1.0134 acres
BMP: **Water Quality Structure**

Pollutant	Lin 1 (lbs)	Sum L (lbs)	RR (%)	Lremoved (lbs)	Lout (lbs)
Total Nitrogen (N)	0.187	0.187	18.3	0.03	0.153
Total Phosphorus (P)	0.038	0.038	66.9	0.03	0.012
Total Suspended Solids	7.949	7.9	77	6.12	1.8
Lead	0.014	0.014	46.5	0.01	0.008
Copper	0.003	0.003	56.2	0.00	0.001
Zinc	0.013	0.013	85.3	0.01	0.002
Lin 1	Pollutant Load Out of Deep Sump Catch Basins BMP				
Sum L	Sum of Pollutant Load to this BMP				
RR	Removal rate in percentage				
Lout	Pollutant Load out of BMP				

Notes:
1. Pollution loading calculated using *Municipal Stormwater Management, Second Edition* , by Debo & Reese, pgs. 193-195.

2. Pollutant removal rates for Rain Garden/Infiltration Trench and Wet Pond taken from *Municipal Stormwater Management, Second Edition* , by Debo & Reese, Tbl. 13-13, p. 748.

3. Pollutant removal rates for Vortechnics Stormwater Quality Unit and Deep Sump Catch Basins taken from *Final Report, Stormwater Treatment Devices Section 319 Project, Project #99-07* , Submitted to CT DEP April 15, 2002.

4. Pollutant removal rates for Ultra Urban Filter Catch Basin inserts taken from *Final Report: Sediment Removal from Simulated Stormwater Runoff by Abtech Industries, Inc. UltraUrban Filter-CO in Laboratory Flume Tests* , Submitted by Stan Galicki, Ph.D., Millsaps College December 9th, 2009.

Location:	**Area 2**		Condition: **Proposed**
Rainfall:	1 inches		
Impervious Fraction:	0.37		Total Area = 1.0134 acres
BMP:	**Infiltration System**		

Pollutant	L_{in} 1 (lbs)	Sum L (lbs)	RR (-)	$L_{removed}$ (lbs)	L_{out} (lbs)
Total Nitrogen (N)	0.153	0.153	27	0.04	0.111
Total Phosphorus (P)	0.012	0.012	33	0.00	0.008
Total Suspended Solids	1.828	1.8	45	0.82	1.0
Lead	0.008	0.008	32	0.00	0.005
Copper	0.001	0.001	32	0.00	0.001
Zinc	0.002	0.002	32	0.00	0.001
Lin 1	Pollutant Load out from WQS				
Sum L	Sum of Pollutant Load to this BMP				
RR	Removal rate in percentage				
L_{out}	Pollutant Load out of BMP				

Notes:

1. Pollution loading calculated using *Municipal Stormwater Management, Second Edition* , by Debo & Reese, pgs. 193-195.

2. Pollutant removal rates for Rain Garden/Infiltration Trench and Wet Pond taken from *Municipal Stormwater Management, Second Edition* , by Debo & Reese, Tbl. 13-13, p. 748.

3. Pollutant removal rates for Vortechnics Stormwater Quality Unit and Deep Sump Catch Basins taken from *Final Report, Stormwater Treatment Devices Section 319 Project, Project #99-07* , Submitted to CT DEP April 15, 2002.

4. Pollutant removal rates for Ultra Urban Filter Catch Basin inserts taken from *Final Report: Sediment Removal from Simulated Stormwater Runoff by Abtech Industries, Inc. UltraUrban Filter-CO in Laboratory Flume Tests* , Submitted by Stan Galicki, Ph.D., Millsaps College December 9th, 2009.

Loading Calculation

Location: **Area 3** Condition: **Proposed**
Rainfall: 1 inches
Impervious Fraction: 0.00 Total Area = 0.57139 acres

Pollutant	Residential		Weighted	
	A (acres)	EMC (mg/L)	EMC (mg/L)	L (lbs/yr)
Total Nitrogen (N)	0.571	1.900	1.900	0.037
Total Phosphorus (P)	0.571	0.383	0.383	0.007
Total Suspended Solids	0.571	101.0	101.0	2.0
Lead	0.571	0.144	0.144	0.003
Copper	0.571	0.033	0.033	0.001
Zinc	0.571	0.135	0.135	0.003

$$L = 0.2266 * EMC * [0.15 + 0.75*I] * P *A$$

L	Pollution Loading (lbs/year)
EMC	Mean Event Mean Concentration (mg/L)
I	Fraction of Impervious Acres (acres)
P	Annual Rainfall (in)
A	Watershed Area (acres)

Notes:
1. Pollution loading calculated using *Municipal Stormwater Management, Second Edition* by Debo & Reese, pgs. 193-195

Location: **Area 3** Condition: **Proposed**

Rainfall: 1 inches

Impervious Fraction: 0.00 Total Area = 0.5714 acres

BMP: **Infiltration System**

Pollutant	Lin 1 (lbs)	Sum L (lbs)	RR (-)	Lremoved (lbs)	Lout (lbs)
Total Nitrogen (N)	0.037	0.037	27	0.01	0.027
Total Phosphorus (P)	0.007	0.007	33	0.00	0.005
Total Suspended Solids	1.962	2.0	45	0.88	1.1
Lead	0.003	0.003	32	0.00	0.002
Copper	0.001	0.001	32	0.00	0.000
Zinc	0.003	0.003	32	0.00	0.002
Lin 1	Pollutant Load out from WQS				
Sum L	Sum of Pollutant Load to this BMP				
RR	Removal rate in percentage				
Lout	Pollutant Load out of BMP				

Notes:

1. Pollution loading calculated using *Municipal Stormwater Management, Second Edition* , by Debo & Reese, pgs. 193-195.

2. Pollutant removal rates for Rain Garden/Infiltration Trench and Wet Pond taken from *Municipal Stormwater Management, Second Edition* , by Debo & Reese, Tbl. 13-13, p. 748.

3. Pollutant removal rates for Vortechnics Stormwater Quality Unit and Deep Sump Catch Basins taken from *Final Report, Stormwater Treatment Devices Section 319 Project, Project #99-07* , Submitted to CT DEP April 15, 2002.

4. Pollutant removal rates for Ultra Urban Filter Catch Basin inserts taken from *Final Report: Sediment Removal from Simulated Stormwater Runoff by Abtech Industries, Inc. UltraUrban Filter-CO in Laboratory Flume Tests* , Submitted by Stan Galicki, Ph.D., Millsaps College December 9th, 2009.

Loading Calculation

Location: **Area 4** Condition: **Proposed**
Rainfall: 1 inches
Impervious Fraction: 0.00 Total Area = 0.58535 acres

Pollutant	Residential		Weighted	
	A (acres)	EMC (mg/L)	EMC (mg/L)	L (lbs/yr)
Total Nitrogen (N)	0.585	1.900	1.900	0.038
Total Phosphorus (P)	0.585	0.383	0.383	0.008
Total Suspended Solids	0.585	101.0	101.0	2.0
Lead	0.585	0.144	0.144	0.003
Copper	0.585	0.033	0.033	0.001
Zinc	0.585	0.135	0.135	0.003

$$L = 0.2266 * EMC * [0.15 + 0.75*I] * P * A$$

L	Pollution Loading (lbs/year)
EMC	Mean Event Mean Concentration (mg/L)
I	Fraction of Impervious Acres (acres)
P	Annual Rainfall (in)
A	Watershed Area (acres)

Notes:
1. Pollution loading calculated using *Municipal Stormwater Management, Second Edition* by Debo & Reese, pgs. 193-195

Location:	**Area 4**		Condition: **Proposed**
Rainfall:	1 inches		
Impervious Fraction:	0.00		Total Area = 0.5854 acres
BMP:	**Infiltration System**		

Pollutant	Lin 1 (lbs)	Sum L (lbs)	RR (-)	Lremoved (lbs)	Lout (lbs)
Total Nitrogen (N)	0.038	0.038	27	0.01	0.028
Total Phosphorus (P)	0.008	0.008	33	0.00	0.005
Total Suspended Solids	2.010	2.0	45	0.90	1.1
Lead	0.003	0.003	32	0.00	0.002
Copper	0.001	0.001	32	0.00	0.000
Zinc	0.003	0.003	32	0.00	0.002
Lin 1	Pollutant Load out from WQS				
Sum L	Sum of Pollutant Load to this BMP				
RR	Removal rate in percentage				
Lout	Pollutant Load out of BMP				

Notes:

1. Pollution loading calculated using *Municipal Stormwater Management, Second Edition* , by Debo & Reese, pgs. 193-195.

2. Pollutant removal rates for Rain Garden/Infiltration Trench and Wet Pond taken from *Municipal Stormwater Management, Second Edition* , by Debo & Reese, Tbl. 13-13, p. 748.

3. Pollutant removal rates for Vortechnics Stormwater Quality Unit and Deep Sump Catch Basins taken from *Final Report, Stormwater Treatment Devices Section 319 Project, Project #99-07* , Submitted to CT DEP April 15, 2002.

4. Pollutant removal rates for Ultra Urban Filter Catch Basin inserts taken from *Final Report: Sediment Removal from Simulated Stormwater Runoff by Abtech Industries, Inc. UltraUrban Filter-CO in Laboratory Flume Tests* , Submitted by Stan Galicki, Ph.D., Millsaps College December 9th, 2009.

Loading Calculation

Location: **Area 5** Condition: **Proposed**
Rainfall: 1 inches
Impervious Fraction: 0.40 Total Area = 0.46886 acres

Pollutant	Residential		Weighted	
	A (acres)	EMC (mg/L)	EMC (mg/L)	L (lbs/yr)
Total Nitrogen (N)	0.469	1.900	1.900	0.091
Total Phosphorus (P)	0.469	0.383	0.383	0.018
Total Suspended Solids	0.469	101.0	101.0	4.8
Lead	0.469	0.144	0.144	0.007
Copper	0.469	0.033	0.033	0.002
Zinc	0.469	0.135	0.135	0.006

$$L = 0.2266 * EMC * [0.15 + 0.75*I] * P *A$$

L	Pollution Loading (lbs/year)
EMC	Mean Event Mean Concentration (mg/L)
I	Fraction of Impervious Acres (acres)
P	Annual Rainfall (in)
A	Watershed Area (acres)

Notes:
1. Pollution loading calculated using *Municipal Stormwater Management, Second Edition* by Debo & Reese, pgs. 193-195

Location:	**Area 5**		Condition: **Proposed**
Rainfall:	1	inches	
Impervious Fraction:	0.40		Total Area = 0.4689 acres
BMP:	**Porous Pavement**		

Pollutant	L_{in} 1 (lbs)	Sum L (lbs)	RR (-)	$L_{removed}$ (lbs)	L_{out} (lbs)
Total Nitrogen (N)	0.091	0.091	40	0.04	0.055
Total Phosphorus (P)	0.018	0.018	40	0.01	0.011
Total Suspended Solids	4.833	4.8	80	3.87	1.0
Lead	0.007	0.007	60	0.00	0.003
Copper	0.002	0.002	60	0.00	0.001
Zinc	0.006	0.006	60	0.00	0.003
Lin 1	Pollutant Load out from WQS				
Sum L	Sum of Pollutant Load to this BMP				
RR	Removal rate in percentage				
L_{out}	Pollutant Load out of BMP				

Notes:

1. Pollution loading calculated using *Municipal Stormwater Management, Second Edition* , by Debo & Reese, pgs. 193-195.

2. Pollutant removal rates for Rain Garden/Infiltration Trench and Wet Pond taken from *Municipal Stormwater Management, Second Edition* , by Debo & Reese, Tbl. 13-13, p. 748.

3. Pollutant removal rates for Vortechnics Stormwater Quality Unit and Deep Sump Catch Basins taken from *Final Report, Stormwater Treatment Devices Section 319 Project, Project #99-07* , Submitted to CT DEP April 15, 2002.

4. Pollutant removal rates for Ultra Urban Filter Catch Basin inserts taken from *Final Report: Sediment Removal from Simulated Stormwater Runoff by Abtech Industries, Inc. UltraUrban Filter-CO in Laboratory Flume Tests* , Submitted by Stan Galicki, Ph.D., Millsaps College December 9th, 2009.

Loading Calculation

Location: **Area 8** Condition: **Proposed**
Rainfall: 1 inches
Impervious Fraction: 0.33 Total Area = 0.34885 acres

Pollutant	Residential		Weighted	
	A (acres)	EMC (mg/L)	EMC (mg/L)	L (lbs/yr)
Total Nitrogen (N)	0.349	1.900	1.900	0.060
Total Phosphorus (P)	0.349	0.383	0.383	0.012
Total Suspended Solids	0.349	101.0	101.0	3.2
Lead	0.349	0.144	0.144	0.005
Copper	0.349	0.033	0.033	0.001
Zinc	0.349	0.135	0.135	0.004

$$L = 0.2266 * EMC * [0.15 + 0.75*I] * P *A$$

L	Pollution Loading (lbs/year)
EMC	Mean Event Mean Concentration (mg/L)
I	Fraction of Impervious Acres (acres)
P	Annual Rainfall (in)
A	Watershed Area (acres)

Notes:
1. Pollution loading calculated using *Municipal Stormwater Management, Second Edition* by Debo & Reese, pgs. 193-195

Location:	**Area 8**		Condition: **Proposed**
Rainfall:	1 inches		
Impervious Fraction:	0.33	Total Area =	0.3489 acres
BMP:	**Porous Pavement**		

Pollutant	L_{in} 1 (lbs)	Sum L (lbs)	RR (-)	$L_{removed}$ (lbs)	L_{out} (lbs)
Total Nitrogen (N)	0.060	0.060	40	0.02	0.036
Total Phosphorus (P)	0.012	0.012	40	0.00	0.007
Total Suspended Solids	3.178	3.2	80	2.54	0.6
Lead	0.005	0.005	60	0.00	0.002
Copper	0.001	0.001	60	0.00	0.000
Zinc	0.004	0.004	60	0.00	0.002
Lin 1	Pollutant Load out from WQS				
Sum L	Sum of Pollutant Load to this BMP				
RR	Removal rate in percentage				
L_{out}	Pollutant Load out of BMP				

Notes:

1. Pollution loading calculated using *Municipal Stormwater Management, Second Edition* , by Debo & Reese, pgs. 193-195.

2. Pollutant removal rates for Rain Garden/Infiltration Trench and Wet Pond taken from *Municipal Stormwater Management, Second Edition* , by Debo & Reese, Tbl. 13-13, p. 748.

3. Pollutant removal rates for Vortechnics Stormwater Quality Unit and Deep Sump Catch Basins taken from *Final Report, Stormwater Treatment Devices Section 319 Project, Project #99-07* , Submitted to CT DEP April 15, 2002.

4. Pollutant removal rates for Ultra Urban Filter Catch Basin inserts taken from *Final Report: Sediment Removal from Simulated Stormwater Runoff by Abtech Industries, Inc. UltraUrban Filter-CO in Laboratory Flume Tests* , Submitted by Stan Galicki, Ph.D., Millsaps College December 9th, 2009.

APPENDIX F

Project No. **F0173-002**
Date: **05/21/21**
Prepared By: **TAS**

141 Danbury Road
Wilton, CT
Proposed C & Tc Worksheet

Tighe&Bond

Name: **CB-01**
Location: Proposed Yard Drain - Front Lawn

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.007	0.95	0.007
Landscaped and Lawns	0.187	0.30	0.056
			0.063

Total Area: **0.194** **C:** **0.32**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.24	3.54	130	0.030	14.2

Total Tc (min) = **14.2**

Name: **CB-01A**
Location: Proposed Yard Drain - Front Lawn

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.024	0.95	0.023
Landscaped and Lawns	0.080	0.30	0.024
			0.047

Total Area: **0.104** **C:** **0.45**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.24	3.54	50	0.020	7.8

Total Tc (min) = **7.8**

References:
ConnDOT Drainage Manual, Chapter 6

Name: **CB-02**
Location: Proposed Catch Basin - Driveway

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.047	0.95	0.045
Landscaped and Lawns	0.001	0.30	0.000
			0.045

Total Area: **0.048** **C:** **0.94**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.015	3.54	23	0.050	0.3

Total Tc (min) = **0.3**
Minimum Tc = **5.0**

Name: **CB-03**
Location: Proposed Catch Basin - Parking Area East

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.051	0.95	0.049
Landscaped and Lawns	0.023	0.30	0.007
			0.056

Total Area: **0.074** **C:** **0.75**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.24	3.54	20	0.020	3.7
B-C	0.015	3.54	60	0.033	0.8

Total Tc (min) = **4.5**
Minimum Tc = **5.0**

References:
ConnDOT Drainage Manual, Chapter 6

Name: **CB-04**
Location: Proposed Catch Basin - Parking Area East

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.045	0.95	0.043
Landscaped and Lawns	0.011	0.30	0.003
			0.046

Total Area: **0.056** **C:** **0.82**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.24	3.54	20	0.020	3.7
B-C	0.015	3.54	55	0.045	0.7

Total Tc (min) = **4.4**
Minimum Tc = **5.0**

Name: **CB-05**
Location: Proposed Catch Basin - Driveway

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.101	0.95	0.096
Landscaped and Lawns	0.061	0.30	0.018
			0.114

Total Area: **0.162** **C:** **0.70**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.24	3.54	30	0.020	5.2
B-C	0.015	3.54	90	0.040	1.0

Total Tc (min) = **6.2**

References:
ConnDOT Drainage Manual, Chapter 6

Name: **CB-06**
Location: Proposed Catch Basin - Parking Area South

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.048	0.95	0.046
Landscaped and Lawns	0.014	0.30	0.004
			0.050

Total Area: **0.062** **C:** **0.80**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.24	3.54	22	0.020	4.0
B-C	0.015	3.54	58	0.025	0.9

Total Tc (min) = **4.9**
Minimum Tc = **5.0**

Name: **CB-07**
Location: Proposed Catch Basin - Parking Area South

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.080	0.95	0.076
Landscaped and Lawns	0.019	0.30	0.006
			0.082

Total Area: **0.099** **C:** **0.83**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.24	3.54	15	0.020	3.0
B-C	0.015	3.54	115	0.035	1.3

Total Tc (min) = **4.3**
Minimum Tc = **5.0**

References:
ConnDOT Drainage Manual, Chapter 6

Name: **CB-08**
Location: Proposed Catch Basin - Parking Area South

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.095	0.95	0.090
Landscaped and Lawns	0.022	0.30	0.007
			0.097

Total Area: **0.117** **C:** **0.83**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.24	3.54	30	0.040	3.9
B-C	0.015	3.54	140	0.035	1.5

Total Tc (min) = **5.5**

Name: **CB-09**
Location: Proposed Catch Basin - Parking Area North

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.117	0.95	0.111
Landscaped and Lawns	0.020	0.30	0.006
			0.117

Total Area: **0.137** **C:** **0.85**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.24	3.54	20	0.020	3.7
B-C	0.015	3.54	120	1.000	0.4

Total Tc (min) = **4.1**
Minimum Tc = **5.0**

References:
ConnDOT Drainage Manual, Chapter 6

Name: **CB-10**
Location: Proposed Catch Basin - Parking Area North

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.103	0.95	0.098
Landscaped and Lawns	0.031	0.30	0.009
			0.107

Total Area: **0.134** **C:** **0.80**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.24	3.54	30	0.040	3.9
B-C	0.015	3.54	135	1.000	0.4

Total Tc (min) = **4.3**
Minimum Tc = **5.0**

Name: **CB-11**
Location: Proposed Yard Drain - Southeast Corner Site

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.000	0.95	0.000
Landscaped and Lawns	0.227	0.30	0.068
			0.068

Total Area: **0.227** **C:** **0.30**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.24	3.54	130	0.050	11.6

Total Tc (min) = **11.6**

References:
ConnDOT Drainage Manual, Chapter 6

Name: **RF-01**
Location: Proposed Building - North

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.571	0.95	0.543
Landscaped and Lawns	0.000	0.30	0.000
			0.543

Total Area: **0.571** **C:** **0.95**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.015	3.54	50	0.015	1.0

Total Tc (min) = **1.0**
Minimum Tc = **5.0**

Name: **RF-02**
Location: Proposed Building - South

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.585	0.95	0.556
Landscaped and Lawns	0.000	0.30	0.000
			0.556

Total Area: **0.585** **C:** **0.95**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.015	3.54	50	0.015	1.0

Total Tc (min) = **1.0**
Minimum Tc = **5.0**

References:
ConnDOT Drainage Manual, Chapter 6

Name: **RF-03**
Location: Proposed Building - Northwest

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.138	0.95	0.131
Landscaped and Lawns	0.000	0.30	0.000
			0.131

Total Area: **0.138** **C:** **0.95**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.015	3.54	50	0.015	1.0

Total Tc (min) = **1.0**
Minimum Tc = **5.0**

Name: **RF-04**
Location: Proposed Building - Southwest

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.127	0.95	0.121
Landscaped and Lawns	0.000	0.30	0.000
			0.121

Total Area: **0.127** **C:** **0.95**

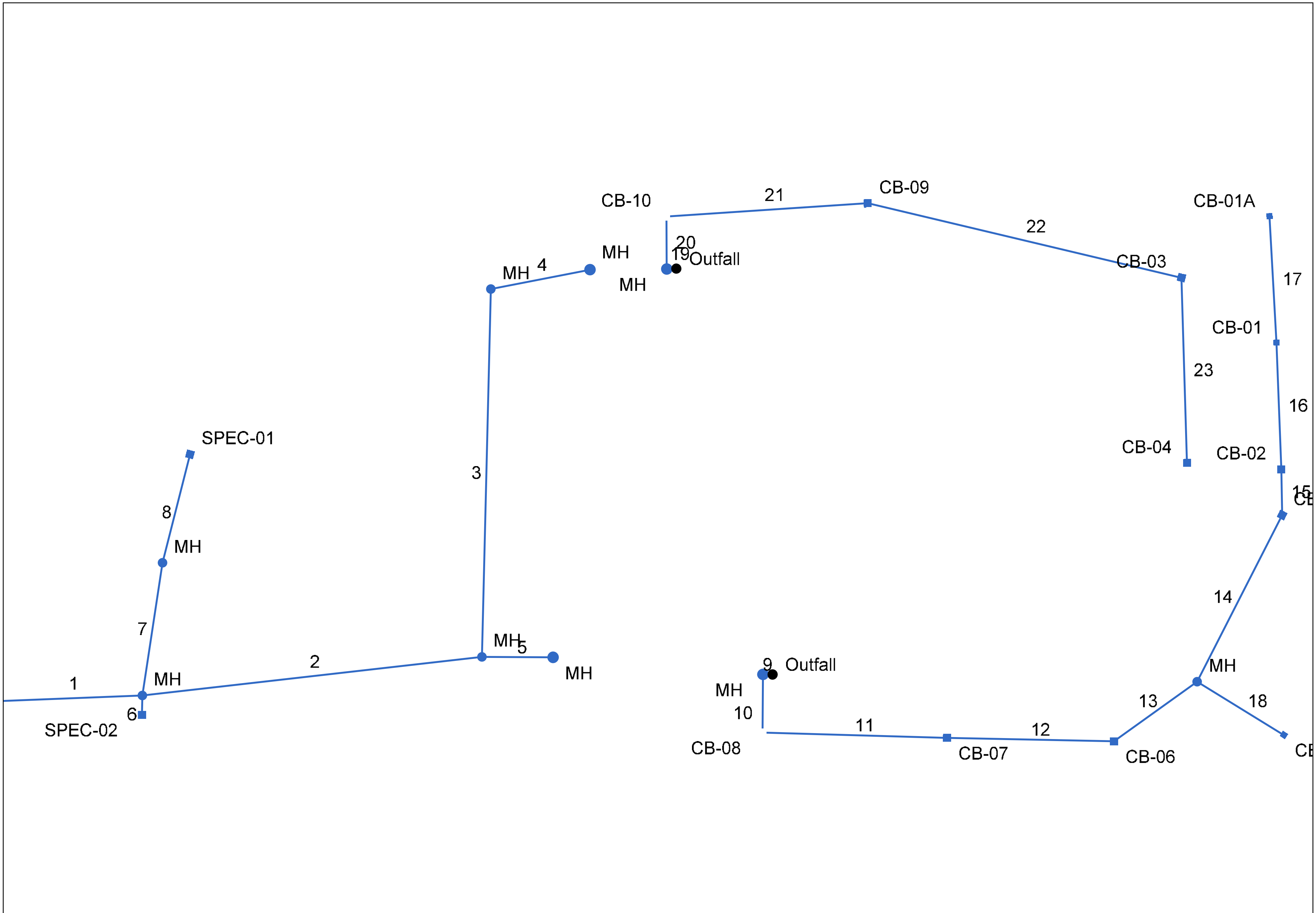
Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	**"n"**	**P_2 (in)**	**Flow Length (ft)**	**Slope (ft/ft)**	**Time (min)**
A-B	0.015	3.54	50	0.015	1.0

Total Tc (min) = **1.0**
Minimum Tc = **5.0**

References:
ConnDOT Drainage Manual, Chapter 6

Hydraflow Storm Sewers Extension for Autodesk® AutoCAD® Civil 3D® Plan



Project File: F0173-02 Storm Sewers Model.stm	Number of lines: 23	Date: 5/27/2021

Storm Sewers v2018.30

Storm Sewer Tabulation

Station Line	To Line	Len (ft)	Drng Area Incr (ac)	Drng Area Total (ac)	Rnoff coeff (C)	Area x C Incr	Area x C Total	Tc Inlet (min)	Tc Syst (min)	Rain (I) (in/hr)	Total flow (cfs)	Cap full (cfs)	Vel (ft/s)	Pipe Size (in)	Pipe Slope (%)	Invert Elev Dn (ft)	Invert Elev Up (ft)	HGL Elev Dn (ft)	HGL Elev Up (ft)	Grnd / Rim Elev Dn (ft)	Grnd / Rim Elev Up (ft)	Line ID
1	End	76.000	0.00	0.26	0.00	0.00	0.25	0.0	16.9	4.7	7.79	8.04	4.41	18	0.50	138.50	138.88	140.44	140.80	141.50	142.82	
2	1	178.000	0.00	0.00	0.00	0.00	0.00	0.0	1.3	0.0	6.40	11.05	4.20	18	0.94	138.88	140.56	141.10	141.62	142.82	145.79	
3	2	192.000	0.00	0.00	0.00	0.00	0.00	0.0	0.2	0.0	3.00	9.85	2.88	18	0.75	140.56	142.00	141.97	142.66	145.79	145.97	
4	3	52.600	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	3.00	9.65	4.43	15	1.90	142.00	143.00	142.66	143.70	145.97	146.50	
5	2	37.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	3.40	7.00	5.07	15	1.00	142.63	143.00	143.24	143.74	145.79	146.33	
6	1	10.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.19	14.07	0.25	12	13.30	138.88	140.21	141.10	141.10	142.82	144.30	
7	1	70.000	0.26	0.26	0.95	0.25	0.25	5.0	15.3	4.9	1.27	8.04	0.72	18	0.50	138.88	139.23	141.10	141.11	142.82	143.80	
8	7	58.500	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.05	2.72	0.06	12	0.50	139.23	139.52	141.11	141.11	143.80	143.90	
9	End	5.000	0.00	1.01	0.00	0.00	0.57	0.0	16.6	4.7	2.68	0.00	3.41	12	0.00	142.00	142.00	143.84	143.86	146.33	146.33	
10	9	30.400	0.12	1.01	0.83	0.10	0.57	5.5	16.4	4.7	2.69	2.80	3.43	12	0.53	143.00	143.16	144.04	144.16	146.33	146.10	
11	10	96.000	0.10	0.89	0.83	0.08	0.47	5.0	15.9	4.8	2.26	3.32	3.02	12	0.74	143.16	143.87	144.43	144.72	146.10	148.30	
12	11	87.000	0.06	0.79	0.80	0.05	0.38	5.0	15.6	4.9	1.88	3.33	4.16	12	0.75	144.38	145.03	144.92	145.61	148.30	151.60	
13	12	53.300	0.00	0.73	0.00	0.00	0.33	0.0	15.3	4.9	1.65	3.34	3.62	12	0.75	145.03	145.43	145.61	145.98	151.60	153.50	
14	13	97.600	0.16	0.50	0.70	0.11	0.27	6.2	14.9	5.0	1.34	3.85	3.98	12	0.99	146.39	147.36	146.80	147.85	153.50	0.00	
15	14	23.900	0.05	0.34	0.94	0.05	0.15	5.0	14.7	5.1	0.77	3.87	2.49	12	1.00	147.36	147.60	147.85	147.97	0.00	152.50	
16	15	66.300	0.19	0.29	0.32	0.06	0.11	14.2	14.2	5.2	0.56	2.38	2.05	10	1.01	147.36	148.03	147.97	148.36	152.50	150.70	
17	16	66.000	0.10	0.10	0.45	0.05	0.05	7.8	7.8	7.0	0.33	2.39	2.04	10	1.02	148.03	148.70	148.36	148.95	150.70	150.70	
18	13	53.000	0.23	0.23	0.30	0.07	0.07	11.6	11.6	5.8	0.39	1.69	1.55	10	0.51	145.43	145.70	145.98	146.02	153.50	147.70	
19	End	5.000	0.00	0.40	0.00	0.00	0.32	0.0	7.6	7.1	2.29	0.00	2.91	12	0.00	142.00	142.00	143.79	143.81	146.50	146.50	
20	19	27.400	0.13	0.40	0.80	0.10	0.32	5.0	7.5	7.2	2.30	3.38	3.64	12	0.77	143.00	143.21	143.94	143.86	146.50	146.30	
21	20	105.100	0.14	0.27	0.85	0.12	0.22	5.0	7.0	7.4	1.61	6.36	3.36	12	2.72	143.21	146.07	143.86	146.61	146.30	149.70	
22	21	167.900	0.07	0.13	0.75	0.05	0.10	5.0	5.8	8.0	0.79	6.09	2.41	12	2.50	146.07	150.26	146.61	150.63	149.70	154.70	
23	22	96.700	0.06	0.06	0.82	0.05	0.05	5.0	5.0	8.6	0.39	4.71	1.96	12	1.49	150.26	151.70	150.63	151.96	154.70	154.70	

Project File: F0173-02 Storm Sewers Model.stm | Number of lines: 23 | Run Date: 5/27/2021

NOTES:Intensity = 38.51 / (Inlet time + 3.60) ^ 0.70; Return period =Yrs. 25 ; c = cir e = ellip b = box

APPENDIX G

141 Danbury Road

Residential Development

Wilton, Connecticut

Maintenance and Inspection Plan

May 2021

The initial inspection will be made during an intense rainfall to check the adequacy of the catch basins, roof leaders, piping, hydrodynamic separators, underground infiltration systems, and system outlet.

The following is a checklist of items that will be checked and maintained during scheduled maintenance operations.

Drainage Structures: The Owner will be responsible for cleaning the catch basins, yard drains, manholes, piping, and outlet protection on their property. A Connecticut licensed hauler shall clean the sumps, and legally dispose of removed sand at an off-site location. The road sand may not be reused or stored on-site. As part of the hauling contract, the hauler shall notify the Owner in writing where the material is being disposed.

Each catch basin and yard drain shall be inspected every four months, with one inspection occurring during the month of April. Any debris occurring within one foot from the bottom of each sump shall be removed by Vacuum "Vactor" type of maintenance equipment. Maintain a log of inspections. Remove organic matter, sand, and debris from catch basins as necessary and dispose of legally.

Hydrodynamic Separator: The Contech CDS units (hydrodynamic separator) will be skimmed and oil and scum removed. In a separate operation, silt, sand, and sediment will be removed. Once the structure is cleaned of debris, the chamber will be refilled with clean water to prevent wash through of debris and oil during next storm event.

Underground Infiltration: The underground infiltration system will be cleaned of all silt, debris and sediment from the inlet structure, outlet structure and the chamber lengths. The outlet control structure will be inspected and cleaned to make sure nothing is clogging the discharge pipe.

Level Spreader: The level spreader shall be inspected two times annually. Regular maintenance includes removing accumulated debris and sediment, checking for erosion, vegetative bare spots, and removing invasive plan species or tree saplings.

Pavement: Paved areas shall be swept periodically by the Owner to clean trash and other debris. The Owner will sweep paved areas on its property in the spring to remove winter accumulations of road sand.

Perform a visual inspection of paved areas four times per year with one inspection after the last snowfall, but no later than April 1. Sweep accumulated sediment and debris from the paved areas. Clean paved areas as necessary during the remainder of the year.

Drainage Structures Inspection

Each catch basin and yard drain shall be inspected every four months, with one inspection occurring during the month of April. Any debris occurring within one foot from the bottom of each sump shall be removed by Vacuum "Vactor" type of maintenance equipment. Maintain a log of inspections. Remove organic matter, sand, and debris from catch basins as necessary and dispose of legally.

Date (MM/DD/YY)	Company/Person	Supervising Team Member	Comments

Underground Infiltration

The underground infiltration system shall be inspected annually and will be cleaned of all silt, debris and sediment from the inlet structure, outlet structure and the chamber lengths. The outlet control structure will be inspected and cleaned to make sure nothing is clogging the discharge pipe.

Date (MM/DD/YY)	Company/Person	Supervising Team Member	Comments

Pavement Inspection

Perform a visual inspection of paved areas four times per year with one inspection after the last snowfall, but no later than April 1. Sweep accumulated sediment and debris from the paved areas. Clean paved areas as necessary during the remainder of the year.

Date (MM/DD/YY)	Company/Person	Supervising Team Member	Comments

APPENDIX H

Questions concerning the VERTCON process may be mailed to [_NGS]

Latitude: 41.179

Longitude: 073.417

NGVD 29 height:

Datum shift(NAVD 88 minus NGVD 29): -0.329 meter = -1.07 feet

---

TABLE 5 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT-ANNUAL-CHANCE	2-PERCENT-ANNUAL-CHANCE	1-PERCENT-ANNUAL-CHANCE	0.2-PERCENT-ANNUAL-CHANCE
NOROTON RIVER - continued					
At Jelliff Mill Road	4.38	520	890	1,080	1,900
Upstream of Mead Park	1.90	220	390	460	820
Upstream of Wahackne Road	0.79	90	160	200	340
Upstream of Greenley Road	0.43	50	90	110	190
NORTH FARRAR BROOK					
At the confluence with the Pequonnock River (Upper Reach)	0.46	100	245	350	780
At the Trumbull-Monroe corporate limits	0.03	10	25	35	80
NORWALK RIVER					
Upstream of confluence of Betts Pond Brook	57.6	4,100	9,500	14,000	16,250
Upstream of confluence of Silvermine River	32.8	2,600	6,300	9,100	20,000
At Kent Road	30.0	2,980	5,840	7,455	12,505
Downstream of confluence of Comstock Brook	25.7	2,680	5,280	6,735	11,295
Upstream of confluence of Comstock Brook	18.4	1,845	3,660	4,675	7,840
Downstream of confluence of Gilbert and Bennett Brooks	13.8	1,425	2,865	3,655	6,135
Upstream of confluence of Gilbert and Bennett Brooks	12.3	1,205	2,445	3,125	5,240
Downstream of the confluence of Cooper Pond Brook	11.13	1,010	2,085	2,665	4,475
Upstream of the confluence of Cooper Pond Brook	8.73	665	1,250	1,595	2,680

Norwalk River
Calibrated (Duplicate Effective) Model Output Table

HEC-RAS Plan: DE River: RIVER-1 Reach: Reach-1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach-1	29920	10%	2980.00	147.00	152.32	152.32	153.29	0.004454	9.23	671.47	438.66	0.75
Reach-1	29920	2%	5840.00	147.00	153.56	153.56	154.60	0.004481	10.83	1400.71	673.09	0.79
Reach-1	29920	1%	7455.00	147.00	153.96	153.96	155.12	0.004919	11.86	1676.50	693.44	0.83
Reach-1	29920	0.2%	12505.00	147.00	154.99	154.99	156.40	0.005722	14.14	2414.85	738.35	0.92
Reach-1	29760	10%	2980.00	142.20	148.53		149.01	0.001498	5.62	583.13	179.68	0.44
Reach-1	29760	2%	5840.00	142.20	151.31		151.93	0.001165	6.63	1125.96	211.79	0.42
Reach-1	29760	1%	7455.00	142.20	152.19		152.97	0.001276	7.45	1317.25	222.00	0.44
Reach-1	29760	0.2%	12505.00	142.20	154.28		155.51	0.001589	9.59	1814.00	255.42	0.51
Reach-1	28240	10%	2980.00	138.00	145.34		146.30	0.002090	7.99	445.85	151.41	0.55
Reach-1	28240	2%	5840.00	138.00	146.52	146.52	148.75	0.004139	12.55	696.60	258.98	0.79
Reach-1	28240	1%	7455.00	138.00	147.71	147.71	149.80	0.003506	12.69	1059.97	366.77	0.75
Reach-1	28240	0.2%	12505.00	138.00	149.76	149.76	151.98	0.003397	14.32	1979.91	552.23	0.76
Reach-1	27468	10%	2980.00	132.10	145.99		145.99	0.000005	0.60	9140.64	793.45	0.03
Reach-1	27468	2%	5840.00	132.10	146.99		146.99	0.000017	1.11	9943.03	813.12	0.05
Reach-1	27468	1%	7455.00	132.10	147.53		147.54	0.000024	1.37	10389.13	832.33	0.06
Reach-1	27468	0.2%	12505.00	132.10	148.85		148.88	0.000052	2.13	11529.28	890.79	0.10
Reach-1	27110	10%	2980.00	136.60	145.97		145.99	0.000064	1.74	4765.52	962.48	0.10
Reach-1	27110	2%	5840.00	136.60	146.94		146.97	0.000148	2.83	5707.19	991.44	0.16
Reach-1	27110	1%	7455.00	136.60	147.46		147.51	0.000187	3.29	6234.70	1005.58	0.18
Reach-1	27110	0.2%	12505.00	136.60	148.74		148.82	0.000304	4.52	7518.38	1009.50	0.23
Reach-1	27025	10%	2980.00	135.50	145.63	141.84	145.90	0.000562	5.28	1759.35	880.05	0.30
Reach-1	27025	2%	5840.00	135.50	145.74	145.59	146.68	0.001965	9.96	1855.68	883.55	0.56
Reach-1	27025	1%	7455.00	135.50	146.24	146.03	147.20	0.002112	10.68	2304.78	899.67	0.59
Reach-1	27025	0.2%	12505.00	135.50	147.33	147.10	148.46	0.002654	12.81	3304.65	934.56	0.67
Reach-1	27020		Bridge									
Reach-1	27015	10%	2980.00	135.50	141.85	141.85	144.38	0.006857	13.22	278.63	62.97	0.97
Reach-1	27015	2%	5840.00	135.50	145.62	145.62	146.66	0.002172	10.38	1752.24	879.80	0.59
Reach-1	27015	1%	7455.00	135.50	146.08	146.08	147.18	0.002399	11.26	2163.67	894.64	0.63
Reach-1	27015	0.2%	12505.00	135.50	147.11	147.11	148.43	0.003090	13.64	3099.86	927.52	0.72
Reach-1	26680	10%	2980.00	134.00	140.31	140.08	141.21	0.004091	9.97	762.74	365.85	0.74
Reach-1	26680	2%	5840.00	134.00	142.16		142.88	0.003007	10.34	1642.26	560.63	0.67
Reach-1	26680	1%	7455.00	134.00	142.90		143.58	0.002777	10.58	2066.21	590.20	0.65
Reach-1	26680	0.2%	12505.00	134.00	145.35		145.79	0.001646	9.70	3857.15	759.13	0.52
Reach-1	26209	10%	2980.00	133.40	140.62		140.66	0.000240	1.93	2591.95	867.42	0.17
Reach-1	26209	2%	5840.00	133.40	142.35		142.41	0.000238	2.43	4170.98	944.15	0.18
Reach-1	26209	1%	7455.00	133.40	143.05		143.12	0.000251	2.70	4830.47	949.47	0.19
Reach-1	26209	0.2%	12505.00	133.40	145.37		145.47	0.000223	3.12	7059.39	967.22	0.19
Reach-1	26136	10%	2980.00	130.20	139.77	136.89	140.44	0.001214	7.36	865.42	504.59	0.44
Reach-1	26136	2%	5840.00	130.20	141.38	140.68	142.16	0.001499	9.14	1847.21	666.49	0.50
Reach-1	26136	1%	7455.00	130.20	142.12	141.28	142.88	0.001499	9.56	2353.38	704.50	0.50
Reach-1	26136	0.2%	12505.00	130.20	144.86	142.59	145.33	0.000938	8.76	4394.50	760.00	0.41
Reach-1	26127.5		Bridge									
Reach-1	26119	10%	2980.00	131.30	138.62	136.96	138.86	0.001012	5.17	1356.28	541.45	0.36
Reach-1	26119	2%	5840.00	131.30	141.25	138.61	141.42	0.000572	4.88	3054.77	719.80	0.28
Reach-1	26119	1%	7455.00	131.30	142.26	138.86	142.42	0.000529	5.03	3791.17	742.95	0.28
Reach-1	26119	0.2%	12505.00	131.30	144.97	140.05	145.13	0.000437	5.35	5865.51	778.00	0.26
Reach-1	26058	10%	2980.00	131.30	138.53		138.79	0.001092	5.33	1309.05	531.38	0.37
Reach-1	26058	2%	5840.00	131.30	141.22		141.38	0.000586	4.92	3026.55	717.66	0.29
Reach-1	26058	1%	7455.00	131.30	142.22		142.38	0.000539	5.06	3764.56	742.33	0.28
Reach-1	26058	0.2%	12505.00	131.30	144.94		145.10	0.000442	5.37	5843.13	778.00	0.26
Reach-1	25358	10%	2980.00	131.00	137.99		138.13	0.000739	4.81	1594.08	436.94	0.33
Reach-1	25358	2%	5840.00	131.00	140.85		140.99	0.000527	5.13	2885.35	468.88	0.29
Reach-1	25358	1%	7455.00	131.00	141.84		142.00	0.000548	5.59	3368.25	501.77	0.30
Reach-1	25358	0.2%	12505.00	131.00	144.56		144.76	0.000543	6.48	5013.74	635.86	0.31
Reach-1	24597	10%	2980.00	127.90	137.54		137.72	0.000415	3.74	908.33	167.21	0.22
Reach-1	24597	2%	5840.00	127.90	140.33		140.60	0.000462	4.72	1477.03	282.08	0.24
Reach-1	24597	1%	7455.00	127.90	141.26		141.58	0.000532	5.33	1784.39	487.39	0.26
Reach-1	24597	0.2%	12505.00	127.90	143.91		144.30	0.000614	6.50	3259.65	576.34	0.29
Reach-1	24560	10%	2980.00	127.90	137.15	132.79	137.67	0.001052	5.78	515.90	160.44	0.35
Reach-1	24560	2%	5840.00	127.90	140.28	135.20	140.58	0.000520	4.99	1376.45	274.15	0.26

HEC-RAS Plan: DE River: RIVER-1 Reach: Reach-1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach-1	24560	1%	7455.00	127.90	141.24	136.38	141.56	0.000537	5.35	1773.46	485.12	0.26
Reach-1	24560	0.2%	12505.00	127.90	143.88	139.30	144.28	0.000619	6.52	3245.22	576.17	0.29
Reach-1	24542.5		Bridge									
Reach-1	24525	10%	2980.00	127.20	135.27	133.49	136.46	0.003361	9.08	507.48	212.95	0.60
Reach-1	24525	2%	5840.00	127.20	138.57	136.74	139.62	0.002188	9.45	1358.71	342.03	0.52
Reach-1	24525	1%	7455.00	127.20	139.76	137.71	140.91	0.002189	10.16	1844.44	449.44	0.53
Reach-1	24525	0.2%	12505.00	127.20	142.35	139.79	143.79	0.002461	12.32	3395.84	811.45	0.58
Reach-1	24457	10%	2980.00	127.20	133.42	133.42	136.00	0.007504	12.96	249.76	64.13	1.00
Reach-1	24457	2%	5840.00	127.20	136.74	136.74	139.26	0.004358	13.68	858.70	241.86	0.82
Reach-1	24457	1%	7455.00	127.20	137.78	137.78	140.54	0.004328	14.71	1121.20	262.63	0.84
Reach-1	24457	0.2%	12505.00	127.20	140.59	140.59	143.45	0.003743	16.22	2228.03	492.18	0.81
Reach-1	24105	10%	2980.00	124.80	132.65	130.63	133.44	0.002381	7.13	417.66	78.83	0.55
Reach-1	24105	2%	5840.00	124.80	134.63	132.93	136.19	0.003492	10.03	582.32	262.38	0.69
Reach-1	24105	1%	7455.00	124.80	135.37	134.00	137.42	0.004065	11.49	665.70	391.75	0.75
Reach-1	24105	0.2%	12505.00	124.80	138.50	137.57	139.49	0.001714	9.47	3845.46	1520.09	0.52
Reach-1	23805	10%	2980.00	124.00	132.38		132.87	0.001170	6.13	997.32	331.23	0.41
Reach-1	23805	2%	5840.00	124.00	134.65		135.32	0.001300	7.78	1933.43	474.68	0.45
Reach-1	23805	1%	7455.00	124.00	135.65		136.39	0.001316	8.38	2427.76	508.37	0.46
Reach-1	23805	0.2%	12505.00	124.00	138.18		138.99	0.001278	9.55	4409.49	1582.59	0.47
Reach-1	23415	10%	2980.00	123.00	129.81	129.81	131.82	0.006096	11.90	404.45	161.55	0.89
Reach-1	23415	2%	5840.00	123.00	132.27	132.27	134.30	0.004596	13.19	1159.47	343.43	0.82
Reach-1	23415	1%	7455.00	123.00	133.11	133.11	135.33	0.004719	14.27	1451.84	358.59	0.84
Reach-1	23415	0.2%	12505.00	123.00	135.13	135.13	137.89	0.005069	16.96	2245.13	422.31	0.91
Reach-1	23171	10%	2980.00	120.30	128.75		129.48	0.002604	6.87	455.76	121.38	0.57
Reach-1	23171	2%	5840.00	120.30	129.79	129.12	131.57	0.005575	10.79	599.24	177.93	0.81
Reach-1	23171	1%	7455.00	120.30	131.12	130.85	132.49	0.003967	9.91	913.48	264.15	0.67
Reach-1	23171	0.2%	12505.00	120.30	134.35		135.16	0.001732	7.84	1880.08	333.29	0.44
Reach-1	23036	10%	2980.00	121.70	128.65		129.15	0.001483	5.59	564.12	284.35	0.43
Reach-1	23036	2%	5840.00	121.70	130.47		130.96	0.000752	4.61	1111.41	319.70	0.31
Reach-1	23036	1%	7455.00	121.70	131.62		132.07	0.000479	3.98	1491.73	341.41	0.25
Reach-1	23036	0.2%	12505.00	121.70	134.55		134.98	0.000237	3.32	2572.37	391.51	0.18
Reach-1	22916	10%	2980.00	121.00	128.01	126.93	128.88	0.002603	8.01	570.82	302.03	0.57
Reach-1	22916	2%	5840.00	121.00	130.41		130.84	0.000999	6.20	1483.60	430.42	0.38
Reach-1	22916	1%	7455.00	121.00	131.63		131.97	0.000628	5.38	2037.14	480.80	0.31
Reach-1	22916	0.2%	12505.00	121.00	134.63		134.90	0.000281	4.31	3712.15	632.31	0.21
Reach-1	22765	10%	2980.00	114.20	128.49		128.58	0.000149	2.53	1428.22	234.62	0.13
Reach-1	22765	2%	5840.00	114.20	130.48		130.70	0.000299	3.96	2020.14	395.39	0.19
Reach-1	22765	1%	7455.00	114.20	131.64		131.87	0.000301	4.19	2548.37	511.91	0.19
Reach-1	22765	0.2%	12505.00	114.20	134.64		134.84	0.000240	4.22	4324.67	669.64	0.17
Reach-1	22450	10%	2980.00	116.90	127.63	124.78	128.38	0.006142	7.39	605.20	384.22	0.48
Reach-1	22450	2%	5840.00	116.90	130.27		130.51	0.001575	4.56	1791.09	483.52	0.26
Reach-1	22450	1%	7455.00	116.90	131.48		131.70	0.001059	4.04	2388.82	500.92	0.21
Reach-1	22450	0.2%	12505.00	116.90	134.54		134.71	0.000615	3.62	4362.75	1054.32	0.17
Reach-1	22140	10%	2980.00	117.00	124.05	124.05	126.26	0.006734	12.84	391.36	132.65	0.95
Reach-1	22140	2%	5840.00	117.00	126.77	126.77	129.42	0.005440	14.96	889.23	205.48	0.91
Reach-1	22140	1%	7455.00	117.00	127.84	127.84	130.78	0.005382	16.12	1119.61	224.02	0.92
Reach-1	22140	0.2%	12505.00	117.00	131.26	131.26	134.04	0.003953	16.95	2349.42	658.06	0.83
Reach-1	21825	10%	2980.00	115.90	121.80	121.75	123.65	0.007981	11.17	314.54	84.21	0.97
Reach-1	21825	2%	5840.00	115.90	124.12	124.12	126.73	0.006551	13.42	604.08	179.14	0.94
Reach-1	21825	1%	7455.00	115.90	125.26	125.26	128.03	0.005781	14.07	847.23	239.90	0.91
Reach-1	21825	0.2%	12505.00	115.90	131.24	127.79	132.45	0.001436	10.39	3430.35	1045.30	0.50
Reach-1	21770	10%	2980.00	115.40	122.06	120.08	122.97	0.002174	7.62	390.83	103.38	0.55
Reach-1	21770	2%	5840.00	115.40	124.17	122.36	126.07	0.003067	11.07	527.79	119.93	0.68
Reach-1	21770	1%	7455.00	115.40	125.08	123.47	127.59	0.003503	12.70	587.15	127.10	0.74
Reach-1	21770	0.2%	12505.00	115.40	130.39	126.53	132.19	0.001574	11.58	2432.53	932.61	0.54
Reach-1	21757.5		Bridge									
Reach-1	21745	10%	2980.00	115.40	121.95	120.08	122.89	0.002314	7.77	383.57	102.50	0.56
Reach-1	21745	2%	5840.00	115.40	123.88	122.36	125.93	0.003470	11.48	508.60	117.61	0.72
Reach-1	21745	1%	7455.00	115.40	124.48	123.47	127.36	0.004410	13.60	547.97	122.37	0.83
Reach-1	21745	0.2%	12505.00	115.40	126.94	126.53	131.79	0.005288	17.67	707.72	141.67	0.94

HEC-RAS Plan: DE River: RIVER-1 Reach: Reach-1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach-1	21695	10%	2980.00	114.20	121.74	120.15	122.74	0.003025	8.01	371.94	69.60	0.61
Reach-1	21695	2%	5840.00	114.20	123.69	122.46	125.72	0.004430	11.42	511.32	74.77	0.76
Reach-1	21695	1%	7455.00	114.20	124.27	123.52	127.08	0.005624	13.46	557.56	87.09	0.87
Reach-1	21695	0.2%	12505.00	114.20	127.45	127.45	130.78	0.004531	14.98	1124.07	292.57	0.82
Reach-1	21285	10%	2980.00	114.30	119.50	119.17	120.92	0.006772	9.55	312.25	87.08	0.88
Reach-1	21285	2%	5840.00	114.30	121.70	121.16	123.70	0.005436	11.42	567.01	229.63	0.85
Reach-1	21285	1%	7455.00	114.30	122.75	122.75	124.74	0.004638	11.68	907.52	396.78	0.80
Reach-1	21285	0.2%	12505.00	114.30	124.70	124.69	126.86	0.004103	13.05	1782.33	518.61	0.79

Norwalk River
Existing Conditions (Corrected Effective) Model Output Table

HEC-RAS Plan: EXIST River: RIVER-1 Reach: Reach-1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach-1	29920	10%	2980.00	147.00	152.32	152.32	153.29	0.004454	9.23	671.47	438.66	0.75
Reach-1	29920	2%	5840.00	147.00	153.56	153.56	154.60	0.004481	10.83	1400.71	673.09	0.79
Reach-1	29920	1%	7455.00	147.00	153.96	153.96	155.12	0.004919	11.86	1676.50	693.44	0.83
Reach-1	29920	0.2%	12505.00	147.00	154.99	154.99	156.40	0.005722	14.14	2414.85	738.35	0.92
Reach-1	29760	10%	2980.00	142.20	148.53		149.01	0.001498	5.62	583.07	179.68	0.44
Reach-1	29760	2%	5840.00	142.20	151.31		151.93	0.001165	6.63	1125.96	211.79	0.42
Reach-1	29760	1%	7455.00	142.20	152.19		152.97	0.001276	7.45	1317.25	222.00	0.44
Reach-1	29760	0.2%	12505.00	142.20	154.28		155.51	0.001589	9.59	1814.00	255.42	0.51
Reach-1	28240	10%	2980.00	138.00	145.39		146.32	0.002036	7.92	452.97	156.57	0.54
Reach-1	28240	2%	5840.00	138.00	146.52	146.52	148.75	0.004139	12.55	696.60	258.98	0.79
Reach-1	28240	1%	7455.00	138.00	147.71	147.71	149.80	0.003506	12.69	1059.97	366.77	0.75
Reach-1	28240	0.2%	12505.00	138.00	149.76	149.76	151.98	0.003397	14.32	1979.91	552.23	0.76
Reach-1	28020	10%	2980.00	136.33	146.00		146.01	0.000055	1.53	4394.50	676.05	0.09
Reach-1	28020	2%	5840.00	136.33	147.00		147.03	0.000131	2.54	5105.56	745.73	0.14
Reach-1	28020	1%	7455.00	136.33	147.55		147.59	0.000166	2.97	5519.40	766.71	0.16
Reach-1	28020	0.2%	12505.00	136.33	148.88		148.97	0.000263	4.06	6569.85	803.73	0.21
Reach-1	27930	10%	2980.00	135.65	146.00		146.01	0.000046	1.46	4590.19	721.01	0.08
Reach-1	27930	2%	5840.00	135.65	146.99		147.02	0.000106	2.38	5340.23	774.68	0.13
Reach-1	27930	1%	7455.00	135.65	147.54		147.58	0.000132	2.76	5765.37	785.36	0.15
Reach-1	27930	0.2%	12505.00	135.65	148.86		148.95	0.000207	3.72	6803.94	788.32	0.19
Reach-1	27830	10%	2980.00	134.60	145.99		146.00	0.000037	1.37	4836.61	785.83	0.08
Reach-1	27830	2%	5840.00	134.60	146.98		147.01	0.000084	2.20	5662.42	869.13	0.12
Reach-1	27830	1%	7455.00	134.60	147.53		147.57	0.000104	2.52	6148.13	920.10	0.13
Reach-1	27830	0.2%	12505.00	134.60	148.85		148.92	0.000153	3.29	7437.92	1023.96	0.16
Reach-1	27790	10%	2980.00	134.60	145.99		146.00	0.000035	1.33	4920.80	803.92	0.08
Reach-1	27790	2%	5840.00	134.60	146.98		147.01	0.000079	2.13	5783.83	928.44	0.11
Reach-1	27790	1%	7455.00	134.60	147.53		147.56	0.000097	2.43	6299.40	970.45	0.13
Reach-1	27790	0.2%	12505.00	134.60	148.85		148.92	0.000139	3.14	7665.44	1110.26	0.16
Reach-1	27468	10%	2980.00	132.10	145.99		145.99	0.000005	0.60	9140.64	793.45	0.03
Reach-1	27468	2%	5840.00	132.10	146.99		146.99	0.000017	1.11	9943.03	813.12	0.05
Reach-1	27468	1%	7455.00	132.10	147.53		147.54	0.000024	1.37	10389.13	832.33	0.06
Reach-1	27468	0.2%	12505.00	132.10	148.85		148.88	0.000052	2.13	11529.28	890.79	0.10
Reach-1	27110	10%	2980.00	136.60	145.97		145.99	0.000064	1.74	4765.52	962.48	0.10
Reach-1	27110	2%	5840.00	136.60	146.94		146.97	0.000148	2.83	5707.19	991.44	0.16
Reach-1	27110	1%	7455.00	136.60	147.46		147.51	0.000187	3.29	6234.70	1005.58	0.18
Reach-1	27110	0.2%	12505.00	136.60	148.74		148.82	0.000304	4.52	7518.38	1009.50	0.23
Reach-1	27025	10%	2980.00	135.50	145.63	141.84	145.90	0.000562	5.28	1759.35	880.05	0.30
Reach-1	27025	2%	5840.00	135.50	145.74	145.59	146.68	0.001965	9.96	1855.68	883.55	0.56
Reach-1	27025	1%	7455.00	135.50	146.24	146.03	147.20	0.002112	10.68	2304.78	899.67	0.59
Reach-1	27025	0.2%	12505.00	135.50	147.33	147.10	148.46	0.002654	12.81	3304.65	934.56	0.67
Reach-1	27020		Bridge									
Reach-1	27015	10%	2980.00	135.50	141.85	141.85	144.38	0.006857	13.22	278.63	62.97	0.97
Reach-1	27015	2%	5840.00	135.50	145.62	145.62	146.66	0.002172	10.38	1752.24	879.80	0.59
Reach-1	27015	1%	7455.00	135.50	146.08	146.08	147.18	0.002399	11.26	2163.67	894.64	0.63
Reach-1	27015	0.2%	12505.00	135.50	147.11	147.11	148.43	0.003090	13.64	3099.86	927.52	0.72
Reach-1	26680	10%	2980.00	134.00	140.25	140.08	141.20	0.004316	10.17	742.52	359.88	0.76
Reach-1	26680	2%	5840.00	134.00	142.16		142.88	0.003007	10.34	1642.30	560.63	0.67
Reach-1	26680	1%	7455.00	134.00	142.89		143.57	0.002787	10.60	2063.23	590.00	0.65
Reach-1	26680	0.2%	12505.00	134.00	145.43		145.86	0.001574	9.53	3920.70	759.51	0.51
Reach-1	26209	10%	2980.00	133.40	140.59		140.63	0.000247	1.94	2566.09	865.64	0.17
Reach-1	26209	2%	5840.00	133.40	142.35		142.41	0.000238	2.43	4171.02	944.15	0.18
Reach-1	26209	1%	7455.00	133.40	143.04		143.12	0.000252	2.70	4826.43	949.44	0.19
Reach-1	26209	0.2%	12505.00	133.40	145.45		145.54	0.000216	3.09	7137.65	967.83	0.18
Reach-1	26136	10%	2980.00	130.20	139.70	136.89	140.40	0.001266	7.48	832.78	483.49	0.44
Reach-1	26136	2%	5840.00	130.20	141.38	140.68	142.16	0.001499	9.14	1847.30	666.49	0.50
Reach-1	26136	1%	7455.00	130.20	142.10	141.28	142.87	0.001511	9.59	2344.50	703.85	0.51
Reach-1	26136	0.2%	12505.00	130.20	144.97	142.59	145.41	0.000893	8.59	4476.35	760.00	0.40
Reach-1	26127.5		Bridge									
Reach-1	26119	10%	2980.00	131.30	137.79	136.96	139.43	0.004828	10.33	305.18	444.27	0.76
Reach-1	26119	2%	5840.00	131.30	141.23	138.61	141.40	0.000580	4.90	3038.66	718.58	0.29

HEC-RAS Plan: EXIST River: RIVER-1 Reach: Reach-1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach-1	26119	1%	7455.00	131.30	142.25	138.86	142.41	0.000532	5.04	3781.94	742.73	0.28
Reach-1	26119	0.2%	12505.00	131.30	145.07	140.05	145.23	0.000420	5.27	5944.93	778.00	0.26
Reach-1	26058	10%	2980.00	131.30	138.31		138.63	0.001328	5.74	1195.20	506.31	0.41
Reach-1	26058	2%	5840.00	131.30	141.19		141.36	0.000594	4.95	3010.05	716.41	0.29
Reach-1	26058	1%	7455.00	131.30	142.21		142.37	0.000543	5.08	3755.15	742.11	0.28
Reach-1	26058	0.2%	12505.00	131.30	145.04		145.20	0.000425	5.29	5923.49	778.00	0.26
Reach-1	25358	10%	2980.00	131.00	137.60		137.79	0.000999	5.37	1424.10	432.76	0.38
Reach-1	25358	2%	5840.00	131.00	140.82		140.96	0.000534	5.16	2872.39	468.02	0.29
Reach-1	25358	1%	7455.00	131.00	141.83		141.99	0.000552	5.61	3360.84	499.89	0.30
Reach-1	25358	0.2%	12505.00	131.00	144.68		144.87	0.000522	6.39	5088.72	636.70	0.31
Reach-1	25340	10%	2980.00	128.10	137.58		137.77	0.000473	4.58	1994.04	375.83	0.27
Reach-1	25340	2%	5840.00	128.10	140.68		140.94	0.000504	5.76	3250.24	506.40	0.29
Reach-1	25340	1%	7455.00	128.10	141.64		141.96	0.000587	6.55	3740.65	512.66	0.32
Reach-1	25340	0.2%	12505.00	128.10	144.36		144.83	0.000718	8.22	5237.84	696.11	0.37
Reach-1	25334	10%	2980.00	130.31	137.63		137.75	0.000522	3.87	1572.58	347.27	0.27
Reach-1	25334	2%	5840.00	130.31	140.75		140.90	0.000405	4.43	2715.70	411.08	0.25
Reach-1	25334	1%	7455.00	130.31	141.74		141.92	0.000444	4.96	3149.10	457.22	0.27
Reach-1	25334	0.2%	12505.00	130.31	144.51		144.76	0.000483	6.04	4441.00	475.13	0.29
Reach-1	24975	10%	2980.00	129.20	135.57	135.57	137.16	0.005532	10.62	402.65	172.24	0.83
Reach-1	24975	2%	5840.00	129.20	139.83		140.59	0.001521	8.36	1283.40	362.15	0.48
Reach-1	24975	1%	7455.00	129.20	140.90		141.61	0.001359	8.49	1683.39	414.42	0.46
Reach-1	24975	0.2%	12505.00	129.20	144.14		144.54	0.000656	7.07	3094.75	445.51	0.34
Reach-1	24922	10%	2980.00	127.89	135.50		136.32	0.002194	7.76	556.72	155.93	0.55
Reach-1	24922	2%	5840.00	127.89	139.90		140.47	0.000917	7.14	1431.97	374.77	0.38
Reach-1	24922	1%	7455.00	127.89	140.97		141.50	0.000829	7.23	1850.23	441.04	0.37
Reach-1	24922	0.2%	12505.00	127.89	144.18		144.49	0.000415	6.01	3438.02	506.44	0.27
Reach-1	24677	10%	2980.00	127.87	135.59		135.88	0.000688	4.52	855.68	167.98	0.31
Reach-1	24677	2%	5840.00	127.87	139.95		140.24	0.000405	4.83	1817.72	331.75	0.25
Reach-1	24677	1%	7455.00	127.87	140.94		141.30	0.000460	5.44	2180.83	396.78	0.28
Reach-1	24677	0.2%	12505.00	127.87	143.91		144.36	0.000485	6.46	3377.85	405.00	0.29
Reach-1	24620	10%	2980.00	128.90	134.41	133.97	135.69	0.005035	9.23	402.42	166.53	0.77
Reach-1	24620	2%	5840.00	128.90	139.56		140.17	0.001035	6.96	1443.21	273.89	0.40
Reach-1	24620	1%	7455.00	128.90	140.48		141.22	0.001143	7.78	1737.87	369.05	0.42
Reach-1	24620	0.2%	12505.00	128.90	143.60		144.30	0.000901	8.22	3001.58	410.00	0.39
Reach-1	24597	10%	2980.00	127.30	134.90		135.41	0.001279	5.88	709.79	201.22	0.40
Reach-1	24597	2%	5840.00	127.30	139.69		140.09	0.000572	5.66	1863.48	322.73	0.30
Reach-1	24597	1%	7455.00	127.30	140.63		141.12	0.000653	6.38	2207.50	395.10	0.32
Reach-1	24597	0.2%	12505.00	127.30	143.74		144.22	0.000567	6.91	3499.24	421.00	0.31
Reach-1	24570	10%	2980.00	127.60	134.33	132.31	135.31	0.002228	7.94	375.39	104.89	0.56
Reach-1	24570	2%	5840.00	127.60	138.87	134.73	140.00	0.001290	8.69	958.27	316.33	0.47
Reach-1	24570	1%	7455.00	127.60	139.43	135.90	140.99	0.001698	10.31	1145.22	348.43	0.54
Reach-1	24570	0.2%	12505.00	127.60	142.91	140.91	144.13	0.001176	10.26	3114.93	807.05	0.47
Reach-1	24542.5		Bridge									
Reach-1	24540	10%	2980.00	127.60	134.18		135.21	0.002423	8.14	366.09	101.22	0.58
Reach-1	24540	2%	5840.00	127.60	137.37	134.72	139.01	0.002223	10.32	679.47	187.99	0.60
Reach-1	24540	1%	7455.00	127.60	138.19	135.88	140.32	0.002630	11.88	844.91	232.45	0.66
Reach-1	24540	0.2%	12505.00	127.60	142.97	140.68	144.09	0.001107	9.98	3240.15	809.73	0.46
Reach-1	24485	10%	2980.00	126.30	133.05		134.80	0.004960	10.97	339.74	65.99	0.79
Reach-1	24485	2%	5840.00	126.30	135.42	135.42	138.41	0.006522	14.55	576.27	136.90	0.94
Reach-1	24485	1%	7455.00	126.30	136.91	136.91	139.86	0.005771	14.75	837.67	207.98	0.90
Reach-1	24485	0.2%	12505.00	126.30	139.57	139.57	143.21	0.005456	17.09	1473.62	250.14	0.92
Reach-1	24430	10%	2980.00	126.60	133.65		134.19	0.004131	5.91	504.51	89.39	0.44
Reach-1	24430	2%	5840.00	126.60	136.49		137.13	0.003507	6.76	1121.38	251.35	0.41
Reach-1	24430	1%	7455.00	126.60	137.85		138.46	0.002969	6.88	1464.10	254.64	0.39
Reach-1	24430	0.2%	12505.00	126.60	140.49		141.28	0.002984	8.11	2145.07	261.05	0.41
Reach-1	24401	10%	2980.00	124.66	133.66		134.04	0.003118	4.88	610.18	102.03	0.35
Reach-1	24401	2%	5840.00	124.66	136.40		137.02	0.003389	6.39	985.38	198.56	0.39
Reach-1	24401	1%	7455.00	124.66	137.67		138.37	0.003234	6.86	1278.84	257.49	0.39
Reach-1	24401	0.2%	12505.00	124.66	140.31		141.18	0.003245	8.07	2049.16	332.83	0.41
Reach-1	24381	10%	2980.00	124.66	133.34		133.96	0.001781	7.05	527.73	91.46	0.49

HEC-RAS Plan: EXIST River: RIVER-1 Reach: Reach-1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach-1	24381	2%	5840.00	124.66	135.78		136.91	0.002413	9.59	770.10	118.58	0.59
Reach-1	24381	1%	7455.00	124.66	136.85		138.24	0.002563	10.71	931.57	185.57	0.62
Reach-1	24381	0.2%	12505.00	124.66	139.22	137.46	141.03	0.002745	12.89	1531.13	330.29	0.66
Reach-1	24180	10%	2980.00	124.70	133.06		133.61	0.001495	5.98	502.38	92.91	0.44
Reach-1	24180	2%	5840.00	124.70	135.48		136.44	0.001803	7.95	844.89	259.49	0.51
Reach-1	24180	1%	7455.00	124.70	136.78	133.49	137.70	0.001560	8.02	1209.32	290.98	0.48
Reach-1	24180	0.2%	12505.00	124.70	139.53	136.93	140.38	0.001281	8.35	2316.16	451.50	0.45
Reach-1	24105	10%	2980.00	124.80	132.53		133.42	0.003018	7.59	392.78	80.10	0.60
Reach-1	24105	2%	5840.00	124.80	134.54		136.18	0.004147	10.27	570.55	100.04	0.73
Reach-1	24105	1%	7455.00	124.80	135.32	134.24	137.40	0.004605	11.57	660.02	164.97	0.79
Reach-1	24105	0.2%	12505.00	124.80	137.64	137.25	140.07	0.003869	12.93	1098.93	201.62	0.76
Reach-1	23805	10%	2980.00	124.00	132.40		132.79	0.001004	5.69	1165.28	312.50	0.38
Reach-1	23805	2%	5840.00	124.00	134.69		135.27	0.001156	7.36	2038.14	469.70	0.42
Reach-1	23805	1%	7455.00	124.00	135.70		136.34	0.001191	7.99	2548.56	544.98	0.44
Reach-1	23805	0.2%	12505.00	124.00	138.21		138.97	0.001211	9.31	4063.59	641.58	0.46
Reach-1	23415	10%	2980.00	123.00	129.81	129.81	131.82	0.006096	11.90	404.45	161.55	0.89
Reach-1	23415	2%	5840.00	123.00	132.27	132.27	134.30	0.004596	13.19	1159.47	343.43	0.82
Reach-1	23415	1%	7455.00	123.00	133.11	133.11	135.33	0.004719	14.27	1451.84	358.59	0.84
Reach-1	23415	0.2%	12505.00	123.00	135.13	135.13	137.89	0.005069	16.96	2245.13	422.31	0.91
Reach-1	23171	10%	2980.00	120.30	128.75		129.48	0.002604	6.87	455.76	121.38	0.57
Reach-1	23171	2%	5840.00	120.30	129.79	129.12	131.57	0.005575	10.79	599.24	177.93	0.81
Reach-1	23171	1%	7455.00	120.30	131.12	130.85	132.49	0.003967	9.91	913.48	264.15	0.67
Reach-1	23171	0.2%	12505.00	120.30	134.35		135.16	0.001732	7.84	1880.08	333.29	0.44
Reach-1	23036	10%	2980.00	121.70	128.65		129.15	0.001483	5.59	564.12	284.35	0.43
Reach-1	23036	2%	5840.00	121.70	130.47		130.96	0.000752	4.61	1111.41	319.70	0.31
Reach-1	23036	1%	7455.00	121.70	131.62		132.07	0.000479	3.98	1491.73	341.41	0.25
Reach-1	23036	0.2%	12505.00	121.70	134.55		134.98	0.000237	3.32	2572.37	391.51	0.18
Reach-1	22916	10%	2980.00	121.00	128.01	126.93	128.88	0.002603	8.01	570.82	302.03	0.57
Reach-1	22916	2%	5840.00	121.00	130.41		130.84	0.000999	6.20	1483.60	430.42	0.38
Reach-1	22916	1%	7455.00	121.00	131.63		131.97	0.000628	5.38	2037.14	480.80	0.31
Reach-1	22916	0.2%	12505.00	121.00	134.63		134.90	0.000281	4.31	3712.15	632.31	0.21
Reach-1	22765	10%	2980.00	114.20	128.49		128.58	0.000149	2.53	1428.22	234.62	0.13
Reach-1	22765	2%	5840.00	114.20	130.48		130.70	0.000299	3.96	2020.14	395.39	0.19
Reach-1	22765	1%	7455.00	114.20	131.64		131.87	0.000301	4.19	2548.37	511.91	0.19
Reach-1	22765	0.2%	12505.00	114.20	134.64		134.84	0.000240	4.22	4324.67	669.64	0.17
Reach-1	22450	10%	2980.00	116.90	127.63	124.78	128.38	0.006142	7.39	605.20	384.22	0.48
Reach-1	22450	2%	5840.00	116.90	130.27		130.51	0.001575	4.56	1791.09	483.52	0.26
Reach-1	22450	1%	7455.00	116.90	131.48		131.70	0.001059	4.04	2388.82	500.92	0.21
Reach-1	22450	0.2%	12505.00	116.90	134.54		134.71	0.000615	3.62	4362.75	1054.32	0.17
Reach-1	22140	10%	2980.00	117.00	124.05	124.05	126.26	0.006734	12.84	391.36	132.65	0.95
Reach-1	22140	2%	5840.00	117.00	126.77	126.77	129.42	0.005440	14.96	889.23	205.48	0.91
Reach-1	22140	1%	7455.00	117.00	127.84	127.84	130.78	0.005382	16.12	1119.61	224.02	0.92
Reach-1	22140	0.2%	12505.00	117.00	131.26	131.26	134.04	0.003953	16.95	2349.42	658.06	0.83
Reach-1	21825	10%	2980.00	115.90	121.80	121.75	123.65	0.007981	11.17	314.54	84.21	0.97
Reach-1	21825	2%	5840.00	115.90	124.12	124.12	126.73	0.006551	13.42	604.08	179.14	0.94
Reach-1	21825	1%	7455.00	115.90	125.26	125.26	128.03	0.005781	14.07	847.23	239.90	0.91
Reach-1	21825	0.2%	12505.00	115.90	131.24	127.79	132.45	0.001436	10.39	3430.35	1045.30	0.50
Reach-1	21770	10%	2980.00	115.40	122.06	120.08	122.97	0.002174	7.62	390.83	103.38	0.55
Reach-1	21770	2%	5840.00	115.40	124.17	122.36	126.07	0.003067	11.07	527.79	119.93	0.68
Reach-1	21770	1%	7455.00	115.40	125.08	123.47	127.59	0.003503	12.70	587.15	127.10	0.74
Reach-1	21770	0.2%	12505.00	115.40	130.39	126.53	132.19	0.001574	11.58	2432.53	932.61	0.54
Reach-1	21757.5		Bridge									
Reach-1	21745	10%	2980.00	115.40	121.95	120.08	122.89	0.002314	7.77	383.57	102.50	0.56
Reach-1	21745	2%	5840.00	115.40	123.88	122.36	125.93	0.003470	11.48	508.60	117.61	0.72
Reach-1	21745	1%	7455.00	115.40	124.48	123.47	127.36	0.004410	13.60	547.97	122.37	0.83
Reach-1	21745	0.2%	12505.00	115.40	126.94	126.53	131.79	0.005288	17.67	707.72	141.67	0.94
Reach-1	21695	10%	2980.00	114.20	121.74	120.15	122.74	0.003025	8.01	371.94	69.60	0.61
Reach-1	21695	2%	5840.00	114.20	123.69	122.46	125.72	0.004430	11.42	511.32	74.77	0.76
Reach-1	21695	1%	7455.00	114.20	124.27	123.52	127.08	0.005624	13.46	557.56	87.09	0.87
Reach-1	21695	0.2%	12505.00	114.20	127.45	127.45	130.78	0.004531	14.98	1124.07	292.57	0.82

HEC-RAS Plan: EXIST River: RIVER-1 Reach: Reach-1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach-1	21285	10%	2980.00	114.30	119.50	119.17	120.92	0.006772	9.55	312.25	87.08	0.88
Reach-1	21285	2%	5840.00	114.30	121.70	121.16	123.70	0.005436	11.42	567.01	229.63	0.85
Reach-1	21285	1%	7455.00	114.30	122.75	122.75	124.74	0.004638	11.68	907.52	396.78	0.80
Reach-1	21285	0.2%	12505.00	114.30	124.70	124.69	126.86	0.004103	13.05	1782.33	518.61	0.79

Norwalk River
Proposed Conditions Model Output Table

HEC-RAS Plan: PROPOSED River: RIVER-1 Reach: Reach-1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach-1	29920	10%	2980.00	147.00	152.32	152.32	153.29	0.004454	9.23	671.47	438.66	0.75
Reach-1	29920	2%	5840.00	147.00	153.56	153.56	154.60	0.004481	10.83	1400.71	673.09	0.79
Reach-1	29920	1%	7455.00	147.00	153.96	153.96	155.12	0.004919	11.86	1676.50	693.44	0.83
Reach-1	29920	0.2%	12505.00	147.00	154.99	154.99	156.40	0.005722	14.14	2414.85	738.35	0.92
Reach-1	29760	10%	2980.00	142.20	148.53		149.01	0.001498	5.62	583.07	179.68	0.44
Reach-1	29760	2%	5840.00	142.20	151.31		151.93	0.001165	6.63	1125.96	211.79	0.42
Reach-1	29760	1%	7455.00	142.20	152.19		152.97	0.001276	7.45	1317.25	222.00	0.44
Reach-1	29760	0.2%	12505.00	142.20	154.28		155.51	0.001589	9.59	1814.00	255.42	0.51
Reach-1	28240	10%	2980.00	138.00	145.39		146.33	0.002035	7.92	453.14	156.69	0.54
Reach-1	28240	2%	5840.00	138.00	146.52	146.52	148.75	0.004139	12.55	696.60	258.98	0.79
Reach-1	28240	1%	7455.00	138.00	147.71	147.71	149.80	0.003506	12.69	1059.97	366.77	0.75
Reach-1	28240	0.2%	12505.00	138.00	149.76	149.76	151.98	0.003397	14.32	1979.91	552.23	0.76
Reach-1	28020	10%	2980.00	136.33	146.00		146.01	0.000055	1.53	4419.69	705.50	0.09
Reach-1	28020	2%	5840.00	136.33	147.00		147.04	0.000130	2.53	5181.72	802.47	0.14
Reach-1	28020	1%	7455.00	136.33	147.55		147.59	0.000163	2.94	5632.11	838.83	0.16
Reach-1	28020	0.2%	12505.00	136.33	148.89		148.97	0.000246	3.92	6797.17	892.67	0.20
Reach-1	27930	10%	2980.00	135.65	146.00		146.01	0.000049	1.51	4606.87	734.08	0.09
Reach-1	27930	2%	5840.00	135.65	146.99		147.02	0.000116	2.50	5386.72	818.88	0.14
Reach-1	27930	1%	7455.00	135.65	147.54		147.58	0.000146	2.90	5847.71	863.80	0.16
Reach-1	27930	0.2%	12505.00	135.65	148.87		148.94	0.000221	3.85	7100.18	1055.04	0.20
Reach-1	27830	10%	2980.00	134.60	145.99		146.00	0.000041	1.44	4845.93	788.10	0.08
Reach-1	27830	2%	5840.00	134.60	146.99		147.01	0.000096	2.34	5676.92	876.39	0.13
Reach-1	27830	1%	7455.00	134.60	147.53		147.57	0.000120	2.70	6166.04	914.94	0.14
Reach-1	27830	0.2%	12505.00	134.60	148.86		148.92	0.000180	3.57	7478.45	1102.15	0.18
Reach-1	27790	10%	2980.00	134.60	145.99		146.00	0.000039	1.40	4934.34	818.72	0.08
Reach-1	27790	2%	5840.00	134.60	146.98		147.01	0.000089	2.25	5799.61	916.21	0.12
Reach-1	27790	1%	7455.00	134.60	147.53		147.56	0.000109	2.58	6306.18	946.93	0.14
Reach-1	27790	0.2%	12505.00	134.60	148.85		148.92	0.000161	3.38	7600.04	999.96	0.17
Reach-1	27468	10%	2980.00	132.10	145.99		145.99	0.000005	0.60	9140.64	793.45	0.03
Reach-1	27468	2%	5840.00	132.10	146.99		146.99	0.000017	1.11	9943.03	813.12	0.05
Reach-1	27468	1%	7455.00	132.10	147.53		147.54	0.000024	1.37	10389.13	832.33	0.06
Reach-1	27468	0.2%	12505.00	132.10	148.85		148.88	0.000052	2.13	11529.28	890.79	0.10
Reach-1	27110	10%	2980.00	136.60	145.97		145.99	0.000064	1.74	4765.52	962.48	0.10
Reach-1	27110	2%	5840.00	136.60	146.94		146.97	0.000148	2.83	5707.19	991.44	0.16
Reach-1	27110	1%	7455.00	136.60	147.46		147.51	0.000187	3.29	6234.70	1005.58	0.18
Reach-1	27110	0.2%	12505.00	136.60	148.74		148.82	0.000304	4.52	7518.38	1009.50	0.23
Reach-1	27025	10%	2980.00	135.50	145.63	141.84	145.90	0.000562	5.28	1759.35	880.05	0.30
Reach-1	27025	2%	5840.00	135.50	145.74	145.59	146.68	0.001965	9.96	1855.68	883.55	0.56
Reach-1	27025	1%	7455.00	135.50	146.24	146.03	147.20	0.002112	10.68	2304.78	899.67	0.59
Reach-1	27025	0.2%	12505.00	135.50	147.33	147.10	148.46	0.002654	12.81	3304.65	934.56	0.67
Reach-1	27020		Bridge									
Reach-1	27015	10%	2980.00	135.50	141.85	141.85	144.38	0.006857	13.22	278.63	62.97	0.97
Reach-1	27015	2%	5840.00	135.50	145.62	145.62	146.66	0.002172	10.38	1752.24	879.80	0.59
Reach-1	27015	1%	7455.00	135.50	146.08	146.08	147.18	0.002399	11.26	2163.67	894.64	0.63
Reach-1	27015	0.2%	12505.00	135.50	147.11	147.11	148.43	0.003090	13.64	3099.86	927.52	0.72
Reach-1	26680	10%	2980.00	134.00	140.25	140.08	141.20	0.004316	10.17	742.52	359.88	0.76
Reach-1	26680	2%	5840.00	134.00	142.16		142.88	0.003007	10.34	1642.30	560.63	0.67
Reach-1	26680	1%	7455.00	134.00	142.89		143.57	0.002787	10.60	2063.23	590.00	0.65
Reach-1	26680	0.2%	12505.00	134.00	145.43		145.86	0.001574	9.53	3920.70	759.51	0.51
Reach-1	26209	10%	2980.00	133.40	140.59		140.63	0.000247	1.94	2566.09	865.64	0.17
Reach-1	26209	2%	5840.00	133.40	142.35		142.41	0.000238	2.43	4171.02	944.15	0.18
Reach-1	26209	1%	7455.00	133.40	143.04		143.12	0.000252	2.70	4826.43	949.44	0.19
Reach-1	26209	0.2%	12505.00	133.40	145.45		145.54	0.000216	3.09	7137.65	967.83	0.18
Reach-1	26136	10%	2980.00	130.20	139.70	136.89	140.40	0.001266	7.48	832.78	483.49	0.44
Reach-1	26136	2%	5840.00	130.20	141.38	140.68	142.16	0.001499	9.14	1847.30	666.49	0.50
Reach-1	26136	1%	7455.00	130.20	142.10	141.28	142.87	0.001511	9.59	2344.50	703.85	0.51
Reach-1	26136	0.2%	12505.00	130.20	144.97	142.59	145.41	0.000893	8.59	4476.35	760.00	0.40
Reach-1	26127.5		Bridge									
Reach-1	26119	10%	2980.00	131.30	137.79	136.96	139.43	0.004828	10.33	305.18	444.27	0.76
Reach-1	26119	2%	5840.00	131.30	141.23	138.61	141.40	0.000580	4.90	3038.66	718.58	0.29

HEC-RAS Plan: PROPOSED River: RIVER-1 Reach: Reach-1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach-1	26119	1%	7455.00	131.30	142.25	138.86	142.41	0.000532	5.04	3781.94	742.73	0.28
Reach-1	26119	0.2%	12505.00	131.30	145.07	140.05	145.23	0.000420	5.27	5944.93	778.00	0.26
Reach-1	26058	10%	2980.00	131.30	138.31		138.63	0.001328	5.74	1195.20	506.31	0.41
Reach-1	26058	2%	5840.00	131.30	141.19		141.36	0.000594	4.95	3010.05	716.41	0.29
Reach-1	26058	1%	7455.00	131.30	142.21		142.37	0.000543	5.08	3755.15	742.11	0.28
Reach-1	26058	0.2%	12505.00	131.30	145.04		145.20	0.000425	5.29	5923.49	778.00	0.26
Reach-1	25358	10%	2980.00	131.00	137.60		137.79	0.000999	5.37	1424.10	432.76	0.38
Reach-1	25358	2%	5840.00	131.00	140.82		140.96	0.000534	5.16	2872.39	468.02	0.29
Reach-1	25358	1%	7455.00	131.00	141.83		141.99	0.000552	5.61	3360.84	499.89	0.30
Reach-1	25358	0.2%	12505.00	131.00	144.68		144.87	0.000522	6.39	5088.72	636.70	0.31
Reach-1	25340	10%	2980.00	128.10	137.58		137.77	0.000473	4.58	1994.04	375.83	0.27
Reach-1	25340	2%	5840.00	128.10	140.68		140.94	0.000504	5.76	3250.24	506.40	0.29
Reach-1	25340	1%	7455.00	128.10	141.64		141.96	0.000587	6.55	3740.65	512.66	0.32
Reach-1	25340	0.2%	12505.00	128.10	144.36		144.83	0.000718	8.22	5237.84	696.11	0.37
Reach-1	25334	10%	2980.00	130.31	137.63		137.75	0.000522	3.87	1572.58	347.27	0.27
Reach-1	25334	2%	5840.00	130.31	140.75		140.90	0.000405	4.43	2715.70	411.08	0.25
Reach-1	25334	1%	7455.00	130.31	141.74		141.92	0.000444	4.96	3149.10	457.22	0.27
Reach-1	25334	0.2%	12505.00	130.31	144.51		144.76	0.000483	6.04	4441.00	475.13	0.29
Reach-1	24975	10%	2980.00	129.20	135.57	135.57	137.16	0.005532	10.62	402.65	172.24	0.83
Reach-1	24975	2%	5840.00	129.20	139.83		140.59	0.001521	8.36	1283.40	362.15	0.48
Reach-1	24975	1%	7455.00	129.20	140.90		141.61	0.001359	8.49	1683.39	414.42	0.46
Reach-1	24975	0.2%	12505.00	129.20	144.14		144.54	0.000656	7.07	3094.75	445.51	0.34
Reach-1	24922	10%	2980.00	127.89	135.50		136.32	0.002194	7.76	556.72	155.93	0.55
Reach-1	24922	2%	5840.00	127.89	139.90		140.47	0.000917	7.14	1431.97	374.77	0.38
Reach-1	24922	1%	7455.00	127.89	140.97		141.50	0.000829	7.23	1850.23	441.04	0.37
Reach-1	24922	0.2%	12505.00	127.89	144.18		144.49	0.000415	6.01	3438.02	506.44	0.27
Reach-1	24677	10%	2980.00	127.87	135.59		135.88	0.000688	4.52	855.68	167.98	0.31
Reach-1	24677	2%	5840.00	127.87	139.95		140.24	0.000405	4.83	1817.72	331.75	0.25
Reach-1	24677	1%	7455.00	127.87	140.94		141.30	0.000460	5.44	2180.83	396.78	0.28
Reach-1	24677	0.2%	12505.00	127.87	143.91		144.36	0.000485	6.46	3377.85	405.00	0.29
Reach-1	24620	10%	2980.00	128.90	134.41	133.97	135.69	0.005035	9.23	402.42	166.53	0.77
Reach-1	24620	2%	5840.00	128.90	139.56		140.17	0.001035	6.96	1443.21	273.89	0.40
Reach-1	24620	1%	7455.00	128.90	140.48		141.22	0.001143	7.78	1737.87	369.05	0.42
Reach-1	24620	0.2%	12505.00	128.90	143.60		144.30	0.000901	8.22	3001.58	410.00	0.39
Reach-1	24597	10%	2980.00	127.30	134.90		135.41	0.001279	5.88	709.79	201.22	0.40
Reach-1	24597	2%	5840.00	127.30	139.69		140.09	0.000572	5.66	1863.48	322.73	0.30
Reach-1	24597	1%	7455.00	127.30	140.63		141.12	0.000653	6.38	2207.50	395.10	0.32
Reach-1	24597	0.2%	12505.00	127.30	143.74		144.22	0.000567	6.91	3499.24	421.00	0.31
Reach-1	24570	10%	2980.00	127.60	134.33	132.31	135.31	0.002228	7.94	375.39	104.89	0.56
Reach-1	24570	2%	5840.00	127.60	138.87	134.73	140.00	0.001290	8.69	958.27	316.33	0.47
Reach-1	24570	1%	7455.00	127.60	139.43	135.90	140.99	0.001698	10.31	1145.22	348.43	0.54
Reach-1	24570	0.2%	12505.00	127.60	142.91	140.91	144.13	0.001176	10.26	3114.93	807.05	0.47
Reach-1	24542.5		Bridge									
Reach-1	24540	10%	2980.00	127.60	134.18		135.21	0.002423	8.14	366.09	101.22	0.58
Reach-1	24540	2%	5840.00	127.60	137.37	134.72	139.01	0.002223	10.32	679.47	187.99	0.60
Reach-1	24540	1%	7455.00	127.60	138.19	135.88	140.32	0.002630	11.88	844.91	232.45	0.66
Reach-1	24540	0.2%	12505.00	127.60	142.97	140.68	144.09	0.001107	9.98	3240.15	809.73	0.46
Reach-1	24485	10%	2980.00	126.30	133.05		134.80	0.004960	10.97	339.74	65.99	0.79
Reach-1	24485	2%	5840.00	126.30	135.42	135.42	138.41	0.006522	14.55	576.27	136.90	0.94
Reach-1	24485	1%	7455.00	126.30	136.91	136.91	139.86	0.005771	14.75	837.67	207.98	0.90
Reach-1	24485	0.2%	12505.00	126.30	139.57	139.57	143.21	0.005456	17.09	1473.62	250.14	0.92
Reach-1	24430	10%	2980.00	126.60	133.65		134.19	0.004131	5.91	504.51	89.39	0.44
Reach-1	24430	2%	5840.00	126.60	136.49		137.13	0.003507	6.76	1121.38	251.35	0.41
Reach-1	24430	1%	7455.00	126.60	137.85		138.46	0.002969	6.88	1464.10	254.64	0.39
Reach-1	24430	0.2%	12505.00	126.60	140.49		141.28	0.002984	8.11	2145.07	261.05	0.41
Reach-1	24401	10%	2980.00	124.66	133.66		134.04	0.003118	4.88	610.18	102.03	0.35
Reach-1	24401	2%	5840.00	124.66	136.40		137.02	0.003389	6.39	985.38	198.56	0.39
Reach-1	24401	1%	7455.00	124.66	137.67		138.37	0.003234	6.86	1278.84	257.49	0.39
Reach-1	24401	0.2%	12505.00	124.66	140.31		141.18	0.003245	8.07	2049.16	332.83	0.41
Reach-1	24381	10%	2980.00	124.66	133.34		133.96	0.001781	7.05	527.73	91.46	0.49

HEC-RAS Plan: PROPOSED River: RIVER-1 Reach: Reach-1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach-1	24381	2%	5840.00	124.66	135.78		136.91	0.002413	9.59	770.10	118.58	0.59
Reach-1	24381	1%	7455.00	124.66	136.85		138.24	0.002563	10.71	931.57	185.57	0.62
Reach-1	24381	0.2%	12505.00	124.66	139.22	137.46	141.03	0.002745	12.89	1531.13	330.29	0.66
Reach-1	24180	10%	2980.00	124.70	133.06		133.61	0.001495	5.98	502.38	92.91	0.44
Reach-1	24180	2%	5840.00	124.70	135.48		136.44	0.001803	7.95	844.89	259.49	0.51
Reach-1	24180	1%	7455.00	124.70	136.78	133.49	137.70	0.001560	8.02	1209.32	290.98	0.48
Reach-1	24180	0.2%	12505.00	124.70	139.53	136.93	140.38	0.001281	8.35	2316.16	451.50	0.45
Reach-1	24105	10%	2980.00	124.80	132.53		133.42	0.003018	7.59	392.78	80.10	0.60
Reach-1	24105	2%	5840.00	124.80	134.54		136.18	0.004147	10.27	570.55	100.04	0.73
Reach-1	24105	1%	7455.00	124.80	135.32	134.24	137.40	0.004605	11.57	660.02	164.97	0.79
Reach-1	24105	0.2%	12505.00	124.80	137.64	137.25	140.07	0.003869	12.93	1098.93	201.62	0.76
Reach-1	23805	10%	2980.00	124.00	132.40		132.79	0.001004	5.69	1165.28	312.50	0.38
Reach-1	23805	2%	5840.00	124.00	134.69		135.27	0.001156	7.36	2038.14	469.70	0.42
Reach-1	23805	1%	7455.00	124.00	135.70		136.34	0.001191	7.99	2548.56	544.98	0.44
Reach-1	23805	0.2%	12505.00	124.00	138.21		138.97	0.001211	9.31	4063.59	641.58	0.46
Reach-1	23415	10%	2980.00	123.00	129.81	129.81	131.82	0.006096	11.90	404.45	161.55	0.89
Reach-1	23415	2%	5840.00	123.00	132.27	132.27	134.30	0.004596	13.19	1159.47	343.43	0.82
Reach-1	23415	1%	7455.00	123.00	133.11	133.11	135.33	0.004719	14.27	1451.84	358.59	0.84
Reach-1	23415	0.2%	12505.00	123.00	135.13	135.13	137.89	0.005069	16.96	2245.13	422.31	0.91
Reach-1	23171	10%	2980.00	120.30	128.75		129.48	0.002604	6.87	455.76	121.38	0.57
Reach-1	23171	2%	5840.00	120.30	129.79	129.12	131.57	0.005575	10.79	599.24	177.93	0.81
Reach-1	23171	1%	7455.00	120.30	131.12	130.85	132.49	0.003967	9.91	913.48	264.15	0.67
Reach-1	23171	0.2%	12505.00	120.30	134.35		135.16	0.001732	7.84	1880.08	333.29	0.44
Reach-1	23036	10%	2980.00	121.70	128.65		129.15	0.001483	5.59	564.12	284.35	0.43
Reach-1	23036	2%	5840.00	121.70	130.47		130.96	0.000752	4.61	1111.41	319.70	0.31
Reach-1	23036	1%	7455.00	121.70	131.62		132.07	0.000479	3.98	1491.73	341.41	0.25
Reach-1	23036	0.2%	12505.00	121.70	134.55		134.98	0.000237	3.32	2572.37	391.51	0.18
Reach-1	22916	10%	2980.00	121.00	128.01	126.93	128.88	0.002603	8.01	570.82	302.03	0.57
Reach-1	22916	2%	5840.00	121.00	130.41		130.84	0.000999	6.20	1483.60	430.42	0.38
Reach-1	22916	1%	7455.00	121.00	131.63		131.97	0.000628	5.38	2037.14	480.80	0.31
Reach-1	22916	0.2%	12505.00	121.00	134.63		134.90	0.000281	4.31	3712.15	632.31	0.21
Reach-1	22765	10%	2980.00	114.20	128.49		128.58	0.000149	2.53	1428.22	234.62	0.13
Reach-1	22765	2%	5840.00	114.20	130.48		130.70	0.000299	3.96	2020.14	395.39	0.19
Reach-1	22765	1%	7455.00	114.20	131.64		131.87	0.000301	4.19	2548.37	511.91	0.19
Reach-1	22765	0.2%	12505.00	114.20	134.64		134.84	0.000240	4.22	4324.67	669.64	0.17
Reach-1	22450	10%	2980.00	116.90	127.63	124.78	128.38	0.006142	7.39	605.20	384.22	0.48
Reach-1	22450	2%	5840.00	116.90	130.27		130.51	0.001575	4.56	1791.09	483.52	0.26
Reach-1	22450	1%	7455.00	116.90	131.48		131.70	0.001059	4.04	2388.82	500.92	0.21
Reach-1	22450	0.2%	12505.00	116.90	134.54		134.71	0.000615	3.62	4362.75	1054.32	0.17
Reach-1	22140	10%	2980.00	117.00	124.05	124.05	126.26	0.006734	12.84	391.36	132.65	0.95
Reach-1	22140	2%	5840.00	117.00	126.77	126.77	129.42	0.005440	14.96	889.23	205.48	0.91
Reach-1	22140	1%	7455.00	117.00	127.84	127.84	130.78	0.005382	16.12	1119.61	224.02	0.92
Reach-1	22140	0.2%	12505.00	117.00	131.26	131.26	134.04	0.003953	16.95	2349.42	658.06	0.83
Reach-1	21825	10%	2980.00	115.90	121.80	121.75	123.65	0.007981	11.17	314.54	84.21	0.97
Reach-1	21825	2%	5840.00	115.90	124.12	124.12	126.73	0.006551	13.42	604.08	179.14	0.94
Reach-1	21825	1%	7455.00	115.90	125.26	125.26	128.03	0.005781	14.07	847.23	239.90	0.91
Reach-1	21825	0.2%	12505.00	115.90	131.24	127.79	132.45	0.001436	10.39	3430.35	1045.30	0.50
Reach-1	21770	10%	2980.00	115.40	122.06	120.08	122.97	0.002174	7.62	390.83	103.38	0.55
Reach-1	21770	2%	5840.00	115.40	124.17	122.36	126.07	0.003067	11.07	527.79	119.93	0.68
Reach-1	21770	1%	7455.00	115.40	125.08	123.47	127.59	0.003503	12.70	587.15	127.10	0.74
Reach-1	21770	0.2%	12505.00	115.40	130.39	126.53	132.19	0.001574	11.58	2432.53	932.61	0.54
Reach-1	21757.5		Bridge									
Reach-1	21745	10%	2980.00	115.40	121.95	120.08	122.89	0.002314	7.77	383.57	102.50	0.56
Reach-1	21745	2%	5840.00	115.40	123.88	122.36	125.93	0.003470	11.48	508.60	117.61	0.72
Reach-1	21745	1%	7455.00	115.40	124.48	123.47	127.36	0.004410	13.60	547.97	122.37	0.83
Reach-1	21745	0.2%	12505.00	115.40	126.94	126.53	131.79	0.005288	17.67	707.72	141.67	0.94
Reach-1	21695	10%	2980.00	114.20	121.74	120.15	122.74	0.003025	8.01	371.94	69.60	0.61
Reach-1	21695	2%	5840.00	114.20	123.69	122.46	125.72	0.004430	11.42	511.32	74.77	0.76
Reach-1	21695	1%	7455.00	114.20	124.27	123.52	127.08	0.005624	13.46	557.56	87.09	0.87
Reach-1	21695	0.2%	12505.00	114.20	127.45	127.45	130.78	0.004531	14.98	1124.07	292.57	0.82

HEC-RAS Plan: PROPOSED River: RIVER-1 Reach: Reach-1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach-1	21285	10%	2980.00	114.30	119.50	119.17	120.92	0.006772	9.55	312.25	87.08	0.88
Reach-1	21285	2%	5840.00	114.30	121.70	121.16	123.70	0.005436	11.42	567.01	229.63	0.85
Reach-1	21285	1%	7455.00	114.30	122.75	122.75	124.74	0.004638	11.68	907.52	396.78	0.80
Reach-1	21285	0.2%	12505.00	114.30	124.70	124.69	126.86	0.004103	13.05	1782.33	518.61	0.79

APPENDIX I

Project Name: **141 Danbury Road**
Project Number: **F0173-02**
Project Location: **Wilton, CT**
Description: **Riprap Apron Calculation**
Prepared By: **TAS** Date: **May 24, 2021**

Riprap Apron

Invert Elevation =	138.50	ft
Tailwater Elevation =	140.44	ft
Tailwater Depth (TW) =	1.94	ft
Inside Pipe Diameter (S_p) =	2.00	ft
Pipe Discharge (Q) =	10.21	cfs
Outlet Velocity (V) =	4.41	ft/s

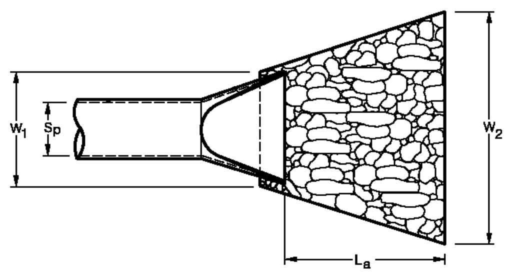
Apron Type

Type A Riprap Apron (Minimum Tailwater Condition) TW < $0.5R_p$

Type B Riprap Apron (Maximum Tailwater Condition) TW ≥ $0.5R_p$

TW = 1.94 > $0.5R_p$

Use Type B Apron



Apron Length

Type B Riprap Apron (Maximum Tailwater Condition) TW ≥ $0.5R_p$

$L_a = (3.0(Q-5)/Sp^{1.5})+10.0$

$L_a =$ 15.53 ft

Apron Width

Type B Riprap Apron (Maximum Tailwater Condition) TW ≥ $0.5R_p$

$W_1 = 3*S_p$

$W_2 = 3*S_p+0.4L_a$

W_1 =	6.00	ft
W_2 =	12.21	ft

Riprap Specification

Outlet Velocity (V)=	0-8 ft/s	Modified
Outlet Velocity (V)=	8-10 ft/s	Intermediate
Outlet Velocity (V)=	10-14 ft/s	Standard

Outlet Velocity (V)= 4.410 ft/s Use Modified Riprap

Outlet protection has been designed in accordance with the Section 11.13 of the ConnDOT Drainage Manual

Tighe&Bond
Engineers | Environmental Specialists

Project Name: **141 Danbury Road**
Project Number: **F0173-02**
Project Location: **Wilton, CT**
Description: **Temporary Sediment Trap Sizing Calculation**
Prepared By: **TAS** Date: **May 20, 2021**

Temporary Sediment Trap 01

Sediment Storage Volume

Drainage Area	=	2.4	acres
Initial Storage Volume	=	134	cy/ac
Required Storage	=	**322**	**cy**
	=	**8,683**	**cf**
Min Wet Storage (1/2 Required Storage)	=	**4,342**	**cf**

Wet Storage Volume

$$V_w = 0.85 * A_w * D_w$$

V_w, Wet Storage Volume	=	**7064**	**cf**
D_w, Maximum Depth (Low Point in Trap to Base of Outlet)	=	3	ft
A_w, Surface Area of the Flooded Area at the Base of the Outlet	=	2770	sf

Dry Storage Volume

$$V_d = [\ (A_w + A_d) / 2\ ] * D_d$$

A_w, Surface Area of the Flooded Area at the Base of the Outlet	=	2770	sf
A_d, Surface Area of the Flooded Area at the Top of the Outlet	=	3237	sf
D_d, Depth (Base to the top of the Outlet)	=	1	ft
V_d, Dry Storage Volume	=	**3004**	**cf**

Provided Storage Volume

Wet Storage	=	7064	cf
	=	262	cy
Dry Storage	=	3004	cf
	=	111	cy
Total Provided Storage	=	**10067**	**cf**
	=	**373**	**cy**

Calculated in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control Section 5-11

APPENDIX J

Tighe&Bond
Engineers | Environmental Specialists

Project Name: **141 Danbury Road**
Project Number: **F0173-02**
Project Location: **Wilton, CT**
Description: **Sanitary Sewer Flow Calculation**
Prepared By: **TAS** Date: **May 24, 2021**

141 Danbury Road

Total Bedrooms

			Bedrooms
1 Bedroom Units =	44	x 1	44
2 Bedroom Units =	114	x 2	228
3 Bedroom Units =	15	x 3	45
Total Residential Units =	173		
	317	**Total Bedrooms**	

Average Daily & Peak Flow

317 Units
150 GPD per Bedroom

Average Flow =	317	x 150
Average Flow =	**47,550**	**GPD**
Peak Flow Factor =	4	
Peak Flow =	**190,200**	**GPD**
=	**132**	**GPM**

Sanitary Sewer Lateral Capactity

6" PVC Gravity Lateral

$$\text{Capacity} = \frac{1.49 \times R^{2/3} \times S^{1/2} \times A}{n}$$

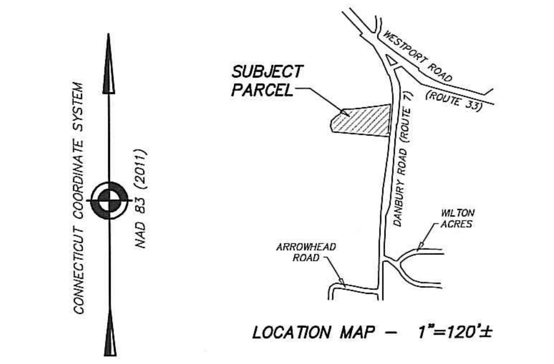
R =	0.125
S = 2% =	0.020
A =	0.196
n =	0.010

Capacity = **668,400** **GPD**

PARCEL 2, TAX MAP NO. 70

NOTES:

1) REFERENCE IS MADE TO A CERTAIN UNFILED MAP ENTITLED "MAP OF PROPERTY PREPARED FOR U.S. SURGICAL CORPORATION" WILTON, CONNECTICUT, PREPARED BY GREGORY SURVEYORS CIVIL ENGINEERS, LAND SURVEYORS AND SITE PLANNERS AND DATED OCTOBER 5, 1990.



TREE LEGEND

C – CEDAR
CR – CHERRY
H – HICKORY
LI – LINDEN
LO – LOCUST
M – MAPLE
O – OAK
P – PINE
S – SPRUCE
SG – SWEETGUM
SY – SYCAMORE
YP – YELLOW POPLAR
WA – WALNUT

MU – MULTI
TW – TWIN

THE LIMIT OF FLAGGED WETLANDS DEPICTED HEREON WAS DELINEATED IN THE FIELD BY WILLIAM KENNY ASSOCIATES LLC, WILLIAM L. KENNY, SOIL SCIENTIST ON MARCH 15, 2021 AND LOCATED IN THE FIELD BY D'ANDREA SURVEYING & ENGINEERING, P.C.

PROPERTY LIES WITHIN FLOOD HAZARD ZONES "AE" (EL=146.7± NAVD 88 AT SOUTHERN PROPERTY LINE AND EL=146.9± NAVD 88 AT NORTHERN PROPERTY LINE), ZONE "AE" (FLOODWAY) AND "X" AS DETERMINED FROM FIS PROFILE 271P AND AS DEPICTED ON FLOOD INSURANCE RATE MAP (FIRM) No. 09001C0391F, DATED JUNE 18, 2010, PUBLISHED BY FEMA AND TRANSCRIBED HEREON.

CONTOURS AND ELEVATIONS DEPICTED HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

THIS MAP IS A TOPOGRAPHIC SURVEY. TOPOGRAPHIC DATA IS IN ACCORDANCE WITH CLASS "T-2" TOPOGRAPHIC ACCURACY. BOUNDARY INFORMATION IS BASED ON A DEPENDENT RESURVEY CONDUCTED IN ACCORDANCE WITH HORIZONTAL ACCURACY CLASS "A-2" AS DEFINED IN THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTIONS 20-300b-1 THROUGH SECTION 20-300b-20.

NEW MONUMENTATION HAS NOT BEEN SET IN THE COURSE OF MAKING THIS SURVEY.

ONLY COPIES OF THIS MAP, BEARING AN ORIGINAL IMPRINT OF THE SURVEYOR'S EMBOSSED SEAL SHALL BE CONSIDERED TO BE TRUE, VALID COPIES.

AREA = 4.2833 ACRES

REFER TO MAP No. 3609 AND BOOK 1959 PAGE 92 W.L.R.

LAND LIES IN ZONE "DE-5"

TO MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

D'ANDREA SURVEYING & ENGINEERING, P.C.

Edwin W. Rhodes, SURVEYOR
EDWIN W. RHODES, III CT LS No. 70436
RIVERSIDE, CONNECTICUT APRIL 22, 2021

STATE OF CONNECTICUT ★ EDWIN W. RHODES ★ No. 70436 LICENSED LAND SURVEYOR

141DANBURY_21EE_TS_1.DWG

THIS SHALL NOT BE CONSIDERED A SEALED DOCUMENT

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE INFORMATION, INCLUDING PHYSICAL EVIDENCE, AND UTILITY COMPANY SKETCHES. DEPICTED UTILITIES ARE APPROXIMATE, AND MAY BE INCOMPLETE. SURVEY DECLARATION OF ACCURACY DOES NOT EXTEND TO THE PLOTTING OF UNDERGROUND UTILITIES. UNDERGROUND UTILITY LOCATION SHALL BE FIELD VERIFIED AND MARKED PRIOR TO COMMENCING ANY EXCAVATION ACTIVITIES. "CALL BEFORE YOU DIG," 1-800-922-4455.

TOPOGRAPHIC SURVEY
DEPICTING
141 DANBURY ROAD
IN
WILTON, CONNECTICUT
PREPARED FOR
FDSPIN 141 DR LLC

May 19, 2021

Mr. Michael Wrinn
Town Planner
Planning and Zoning Department
Town of Wilton
Town Annex
238 Danbury Road
Wilton, CT 06897

RE: 141 Danbury Road, Wilton, CT (the "Property")
Letter of Authority

Dear Mr. Wrinn:

FDSPIN 141 DR LLC is the contract purchaser of the property located at 141 Danbury Road, Wilton, CT (the "Property"), I hereby authorize the attorneys of Carmody Torrance Sandak & Hennessey, LLP, with offices located at 707 Summer Street, Stamford, Connecticut 06901, to act as agent for FDSPIN 141 DR LLC in connection with the enclosed land use applications. Thank you for your acknowledgement of said authority.

Sincerely,

FDSPIN 141 DR LLC

By: Samuel B. Fuller
Samuel B. Fuller
Duly Authorized

<u>Project Narrative</u>

I. Background

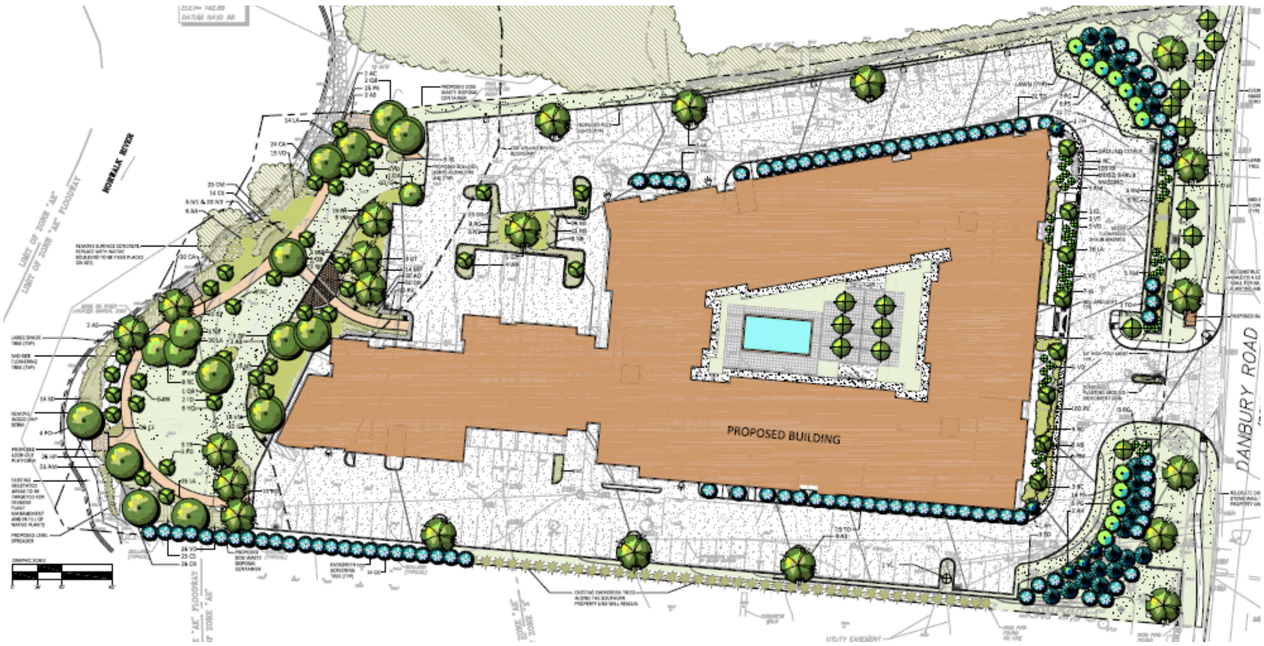
FDSPIN 141 DR LLC (the **"Applicant"**) is the contract purchaser of the property located at 141 Danbury Road, Wilton, Connecticut (the **"Property"**). The Property consists of approximately 4.28+/- acres on the westerly side of Danbury Road and is designated as Tax Lot 2 on Map 70 in a DE-5 Design Enterprise District. The Property is adjacent to the Norwalk River. The Applicant seeks to redevelop the Property with a multifamily residential building and associated landscape and site improvements. Because these site enhancements will partially take place in the regulated area, the Applicant is seeking approval of an Application for a Significant Regulated Activity from the Inland Wetlands Commission (the **"Commission"**).

The Property is currently improved with a warehouse style office building and a large surface parking lot extending up to the river's edge. These impervious improvements currently cover 63% of the Property, and stormwater currently sheet flows over the site directly into the river without any water quality treatment. The width of the riparian buffer adjacent to the river varies from 0' to 35'+/- across the westerly portion of the Property. The Property, and existing improvements located thereon, are depicted in the aerial photograph below.[1]

II. Proposal

[1] Aerial photograph of the Property obtained from the Wilton GIS website.

The enclosed application is in furtherance of the redevelopment of the Property that, if approved, will allow the Applicant to replace the existing structure and parking with a new multi-family residential building accompanied by dense landscaping throughout the Property, including the westerly portion of the site along the Norwalk River.



As seen in the above rendered Landscape Plan, the Applicant proposes transforming 85% of the area within the Regulated Area (approximately 25,020+/- sf) from a paved parking area to a private landscaped, recreational area. This passive, recreational space will consist of native trees, shrubs and perennials. Because much of the site is in the Flood Zone, the building will be raised with parking beneath it. Aside from building columns (approximately 315+/- sf), the building itself is located entirely outside of the Regulated Area and site improvements are no closer than 66’ to the Norwalk River. Although not visible in the image above, porous pavers will be utilized on all parking surfaces within 200’ of the Norwalk River, further facilitating the reduction of runoff by infiltrating rainwater and melting snow. Material excavated onsite will be utilized as fill, and additional pavement subbase will be incorporated on an as-needed basis.

Work within the Regulated Area is intended to restore and enhance the natural characteristics of the Property and significantly improve water quality on the site, and to provide outdoor, passive recreation space for the residents. While no adverse impacts are anticipated, Best Management Practices (BMPs) as described in the enclosed Engineering Report and plans are incorporated to avoid and minimize potential adverse environmental impacts.

III. Compliance with Standards & Criteria For Decision

The proposal is compliant with the standards of Section 10.3 of the Inland Wetlands and Watercourses Regulations for the Town of Wilton (the “Regulations”) as follows:

In carrying out the purposes and policies of sections 22a-36 to 22a-45, inclusive, of the Connecticut General Statutes, including matters relating to regulating, licensing and enforcing of the provisions thereof, the Commission shall consider all relevant facts and circumstances in making its decision on any application for a permit, including but not limited to the following:

a) *Impacts of the proposed regulated activity on wetlands or watercourses outside the area for which the activity is proposed and future activities associated with, or reasonably related to, the proposed regulated activity which are made inevitable by the proposed regulated activity and which may have an impact on wetlands or watercourses.*

All of the work proposed within the Regulated Area is intended to restore and expand the function of the Norwalk River's riparian buffer, improve water quality and provide wildlife habitat, while simultaneously providing recreation space for residents. As such, no impacts on wetlands or watercourses outside the area for which the activity is proposed are anticipated. Similarly, future activities associated with, or reasonably related to the proposed regulated activity will be primarily comprised of Wilton residents enjoying the landscaped areas proposed by the Applicant. No direct disturbance is proposed. Therefore, no adverse impact on wetlands or watercourses are anticipated. In fact, improvements to the river buffer, and proposed stormwater treatment measures described in the enclosed Engineering Report, will dramatically improve water quality on the Property.

b) *The applicant's purpose for, and any feasible and prudent alternatives to, the proposed regulated activity which alternatives would cause less or no environmental impact to wetlands and watercourses. This consideration should include, but is not limited to, the alternative of requiring actions of a different nature which would provide similar benefits with different environmental impacts, such as using a different location for the activity.*

Pursuant to the Connecticut General Statutes, a *"feasible"* and *"prudent"* alternative includes one able to be *"constructed or implemented consistent with sound engineering principles"* which is *"economically and otherwise reasonable in light of the social benefits to be derived from the proposed regulated activity provided cost may be considered in deciding what is prudent and further provided a mere showing of expense will not necessarily mean an alternative is imprudent."*[2]

After considering several different development proposals, the Applicant is confident that the current proposal is the most feasible and prudent alternative for the Property. As shown on the submitted alternatives, other development scenarios would have produced a shorter

[2] Conn. Gen. Stat. Sec. 22a-38(17) – Conn. Gen. Stat. Sec. 22a-38(18).

building; however, in order to ensure the project remained economically viable, those proposals also would have located the building and associated parking areas closer to the Norwalk River. These scenarios would encroach further into the Regulated Area than the proposed activity and would prohibit the significant investment in site landscaping currently proposed. Specifically, the March 2020 proposal would result in a building approximately 38' away from the edge of the Norwalk River, and a parking area located approximately 24' away from the edge of the Norwalk River. Similarly, the January 2021 proposal would result in a building approximately 40' away from the river's edge, and a surface parking area approximately 7'6" away from the river's edge. The current proposal, which locates the building no closer than 88' to the Norwalk River is far superior in terms of environmental impact.

In addition to setting the building back, the current proposal also incorporates:

- Catch Basins and yard drains fitted with 24" sumps to collect sediment and prevent discharge of oil and other pollutants into the storm drainage system;
- Hydrodynamic Separators to prevent the transport of oils and sediment further downstream, including Contech CDS units sized in accordance with the 2004 CTDEEP Stormwater Quality Manual; and
- Concrete chambers surrounded by stone and filter fabric designed to attenuate peak flows, serve as a primary treatment practice and promote groundwater discharge.

At the same time, the proposal will result in several important social benefits for the Town of Wilton (the **"Town"**). As noted in the 2019 Plan of Conservation and Development (the **"POCD"**), the "relatively high price of housing coupled with an available housing stock of detached single-family homes has more recently contributed to lower in-migration of younger working-age people and has increased the out-migration of empty-nesters and retirees."[3] Trends of increasing housing costs and decreasing housing supply have only been exacerbated by the COVID-19 Pandemic. At the same time, "the community has increasingly expressed interest in increasing housing type variety and price points in design and location appropriate ways" to increase the Town's overall housing stock and to attract and meet "the needs of occupants at different life and employment stages."[4] Moreover, the proposal would include an affordability component with 10% of the units available at prices affordable to families earning less than 80% of Area Median Income. With limited sites that are appropriate for multifamily residential development, the redevelopment of the Property for this purpose is necessary to achieve the Town's housing and economic development goals. For these reasons, the proposal is responsive to these trends and the vision identified in the POCD.

[3] POCD, pg. 8.
[4] Id.

In addition to increasing housing type, the proposal will result in the conversion of a paved parking area to a private park available for outdoor, recreational use. The replacement of impervious surface with a landscaped area planted with native species will enhance the environmental characteristics of the Property.

c) *The relationship between the short-term and long-term impacts of the proposed regulated activity on wetlands or watercourses and the maintenance and enhancement of long-term productivity of such wetlands or watercourses.*

No impacts on the wetlands or watercourses are anticipated. However, to mitigate any potential short-term impacts associated with site disturbance and construction, sediment and erosion controls will be implemented such as: silt fencing to trap sediments within stormwater runoff; anti-tracking pads to remove sediments from vehicles entering the Property; and watering of the Property as needed to prevent dust.

BMPs proposed to avoid long-term impacts include: catch basins fitted with sumps to trap sediments from roadway stormwater runoff; swirl concentrators designed to maintain water quality by trapping sediments, litter, oils and grease; and underground infiltration galleries to store and treat runoff.

d) *Irreversible and irretrievable loss of wetland or watercourse resources which would be caused by the proposed regulated activity, including consideration of the extent to which the proposed regulated activity would foreclose a future ability to protect, enhance or restore such resources. This requires recognition that the inland wetlands and watercourses of the State of Connecticut are an indispensable, irreplaceable and fragile natural resource, and that these areas may be irreversibly destroyed by deposition, filling, and removal of material, by the diversion, obstruction or change of water flow including low flows, and by the erection of structures and other uses.*

No deposition, filling, removal of material, diversion, obstruction or change of water flow is proposed in connection with the proposed redevelopment. The proposal will not result in the irreversible or irretrievable loss of wetland or watercourse resources. Rather, the proposal will better protect, enhance and restore these resources as compared to the existing impervious parking lot located within the Regulated Area. For example, the proposal will increase the width of the riparian buffer along the Norwalk River from 0’ - 35’+/- to 60’ - 100’+/-. This buffer will include 49 shade and understory trees, over 375 shrubs and over 500 perennials known to benefit pollinators.

e) *The character and degree of injury to, or interference with, safety, health, or the reasonable use of property, including abutting or downstream* *property, which would be caused or threatened by the proposed regulated activity, or the creation of conditions which may do so. This includes recognition of potential damage from erosion, turbidity, or siltation, loss of fish and wildlife and their habitat, loss of unique habitat having demonstrable natural, scientific or educational value, loss or diminution of beneficial aquatic organisms and wetland plants, the dangers of flooding and pollution, and the destruction of the economic, aesthetic, recreational and other public and private uses and values of wetlands and watercourses to the community.*

The proposal will not injure or interfere with the safety, health or reasonable use of the Property or abutting/downstream properties. In fact, building multifamily housing on the Property will facilitate the preservation of open space in other areas of Town that are better suited for passive, green space than multifamily residential use. BMPs employed during and after construction will protect the wetlands and watercourses on and adjacent to the Property. Currently, the Property provides little to no wildlife habitat due to existing improvements adjoining the Norwalk River and lacks water quality improvements. Modern stormwater systems and the planting of native species will protect against erosion, turbidity, and adverse impacts to wildlife and their habitat. Furthermore, replacing a parking lot with significant landscaping will increase the aesthetic and recreational value of the Property.

f) The environmental impact of the proposed regulated activity on the inland wetland or watercourse including the effects on the inland wetland's and watercourse's capacity to support desirable biological life, to prevent flooding, to supply and protect surface and ground waters, to control sediment, to facilitate drainage, to control pollution, to support recreational activities, and to promote public health and safety. Measures which would mitigate the impact of any aspect of the proposed regulated activity. Mitigation measures which may be considered as a condition of issuing a permit for such activity include but are not limited to, measures to (a) prevent or minimize pollution or other environmental damage, (b) maintain or enhance existing environmental quality, or (c) in the following order of priority: 1. restore, 2. enhance, and 3. create productive wetland or watercourse resources. Appropriate mitigation measures are those which could be feasibly carried out by the applicant and would protect the wetland's or watercourse's natural capacity to support fish and wildlife, to prevent flooding, to supply and protect surface and ground waters, including public water supplies to control sedimentation, to prevent erosion, to assimilate wastes, to facilitate drainage, to control pollution, to support recreational activities and open space, and to promote public health and safety.

Replacement of a surface parking lot with enhanced landscaping and updated water quality improvements will enhance the wetland and watercourse's ability to support desirable biological life, prevent flooding, supply and protect surface water and ground waters, control sediment, facilitate drainage, support recreational activities and promote public health and safety. These features will restore and enhance the productive wetland and watercourse resources on and near the Property.

IV. Feasible & Prudent Alternative Analysis

As stated in the Applicant's response to Section 10.3(b) above, the current proposal is the feasible and prudent alternative for the site. Other proposals would have located a building and/or parking areas closer to the Norwalk River with greater impact on the Regulated Area. This proposal appropriately sets the building and impervious improvements back from the Regulated Area, provides a robust landscaped recreational area and restores and enhances the natural environment. At the same time, the proposal will facilitate the Town's ability to respond to trends impacting housing cost and supply.

*NOTE: REFER TO CIVIL FOR SITE PLAN AND CIVIL INFORMATION.
LANDSCAPE SHOWN FOR ILLUSTRATIVE PURPOSES ONLY.
REFER TO LANDSCAPE FOR TREES AND LANDSCAPE INFORMATION.

lessard DESIGN
8521 LEESBURG PIKE, SEVENTH FLOOR, VIENNA, VA 22182
P:571.830.1800 | F:571.830.1801 | WWW.LESSARDDESIGN.COM

ILLUSTRATIVE SITE PLAN - 141 DANBURY ROAD

SITE ANALYSIS

141 DANBURY ROAD
WILTON, CT
FULLER DEVELOPMENT

JAN 21, 2021
FUL.003

0' 25' 50' 100'
SCALE: 1"=50' (@ 22"x34")

A.01

lessard DESIGN
8521 LEESBURG PIKE, SUITE 700, VIENNA, VA 22182
P:571.830.1800 | F: 571.830.1801 | LESSARDDESIGN.COM

FULL PODIUM, 4 OVER 1 OPTION

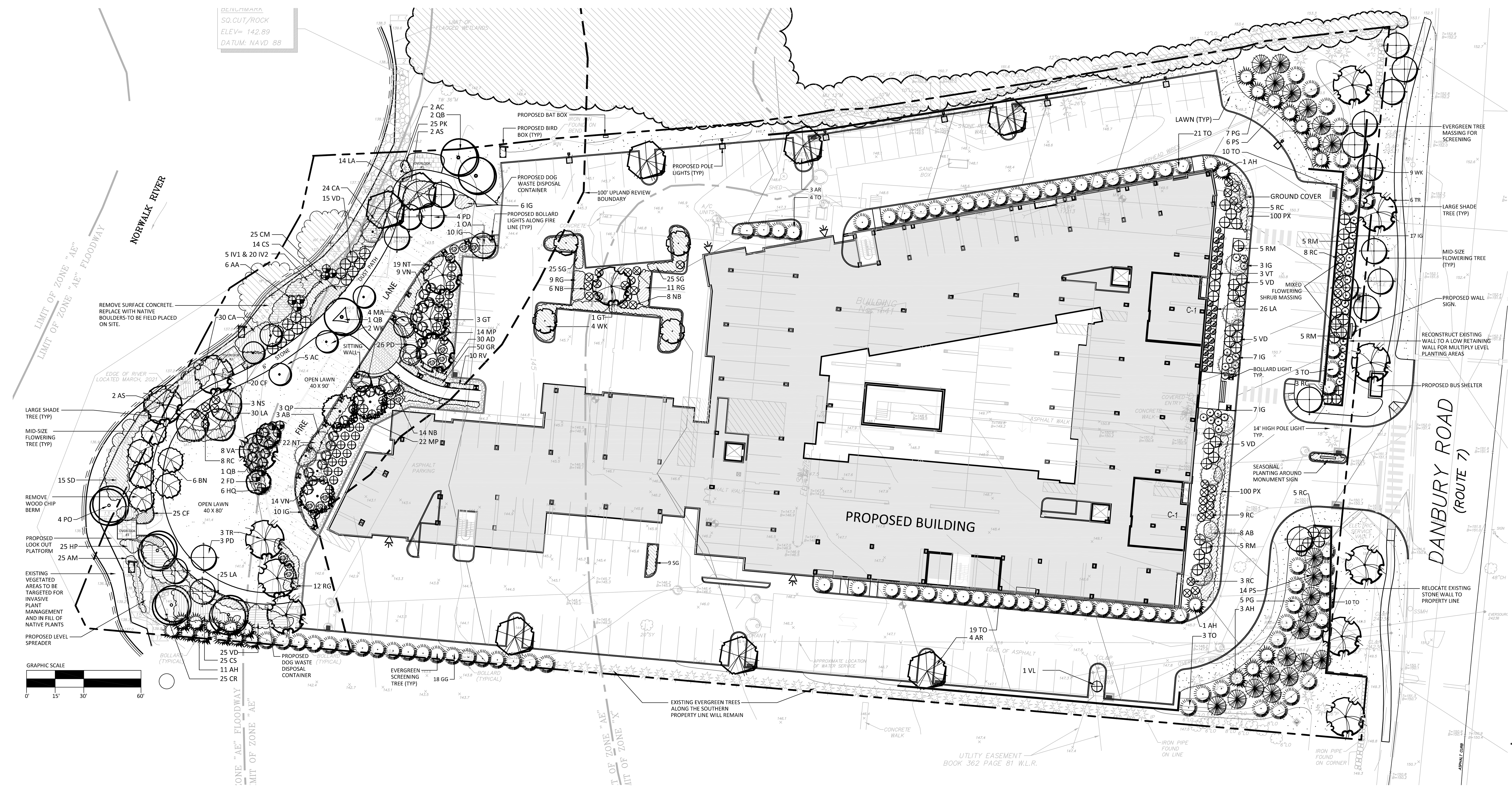
SITE ANALYSIS

141 DANBURY ROAD
WILTON, CT
FULLER DEVELOPMENT

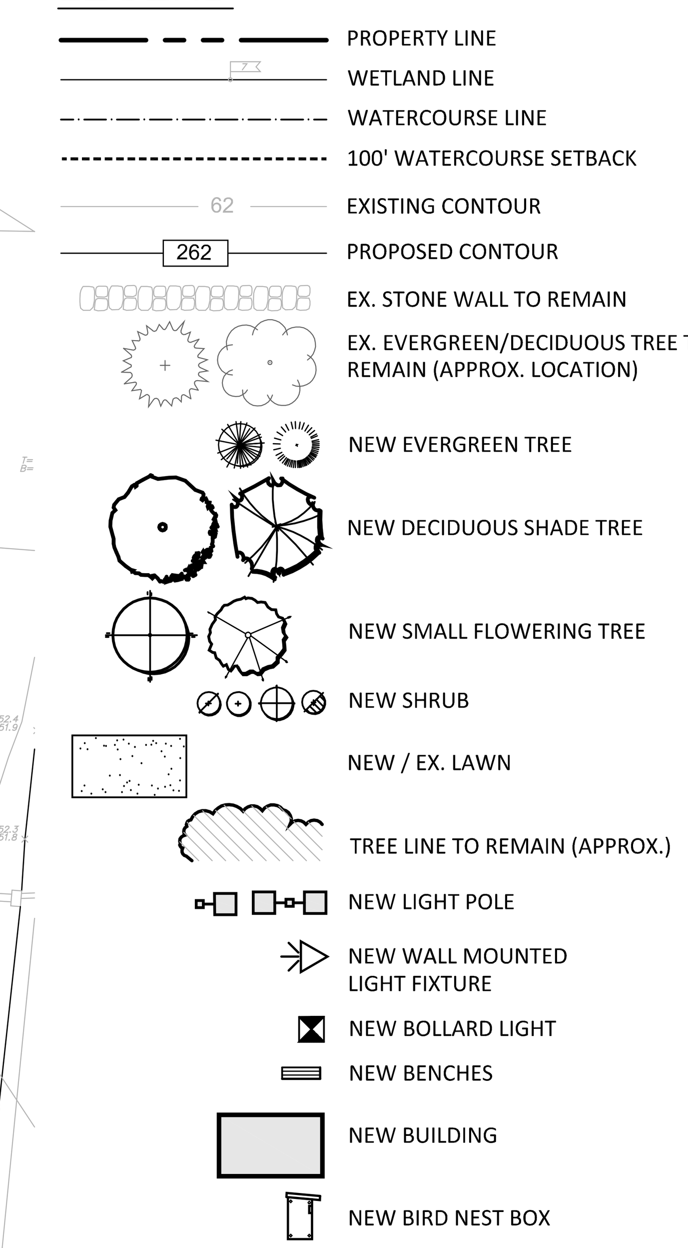
MAR. 15 2020
XXX.000

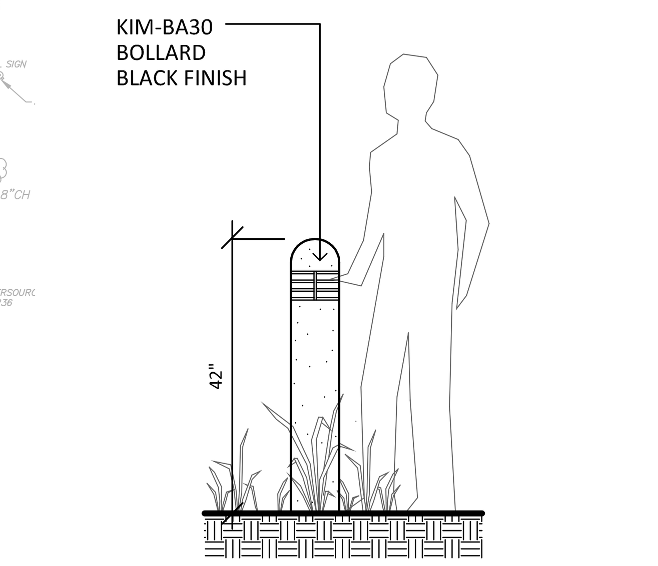
A.01a

0 25' 50' 100'
SCALE: 1" = 50'
AT 22"x34"



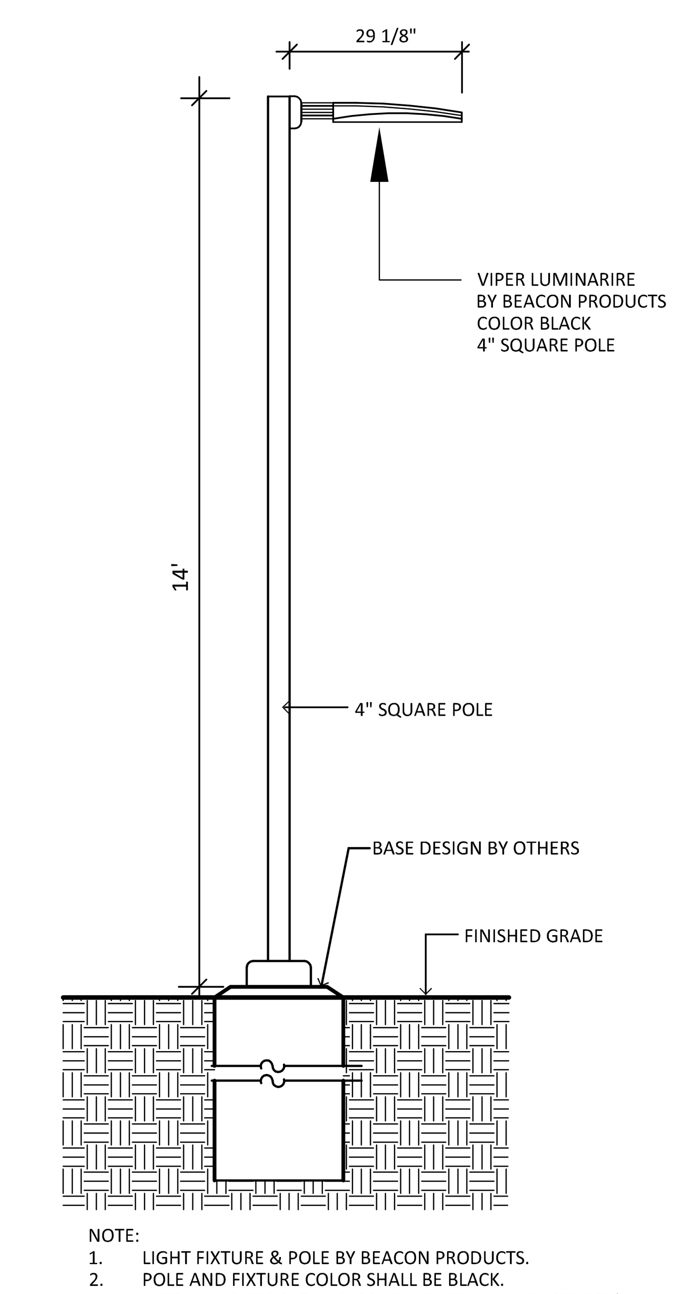
LEGEND





BOLLARD LIGHT TYP)

SCALE: NOT TO SCALE



NOTE:
1. LIGHT FIXTURE & POLE BY BEACON PRODUCTS.
2. POLE AND FIXTURE COLOR SHALL BE BLACK.
3. INSTALL LIGHT POLE AND FOOTING PER MANUFACTURER'S RECOMMENDATIONS.

LIGHT POLE (TYP.)

SCALE: NOT TO SCALE

NONNATIVE INVASIVE SPECIES CONTROL NOTES:

1. REMOVAL OF NONNATIVE INVASIVE PLANTS TO BE ONGOING OVER A TWO (2) YEAR PERIOD (OR LONGER). SCOPE OF WORK MAY VARY YEAR TO YEAR BASED ON FINANCIAL LIMITATIONS.

2. THE LANDSCAPE CONTRACTOR SHALL CONTACT THE PROJECT ENVIRONMENTAL CONSULTANT WITH ANY QUESTIONS REGARDING THE CONTROL OR IDENTIFICATION OF INVASIVE NONNATIVE SPECIES.

3. THE LANDSCAPE CONTRACTOR SHALL FOLLOW THE METHODS AND RECOMMENDATIONS RECOMMENDED BY THE HERBICIDE MANUFACTURER AND COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS. A PERMIT FROM DEEP IS REQUIRED FOR ANY PESTICIDE APPLICATION TO A BODY OF WATER.

4. ALL CUT OR PULLED INVASIVE NONNATIVE PLANT MATERIALS SHALL BE DISPOSED OF APPROPRIATELY AND COMPLY WITH THE 2004 DEEP / UCONN "GUIDELINES FOR DISPOSAL OF TERRESTRIAL INVASIVE PLANTS." ALL CUTTINGS SHALL BE COLLECTED AND PLACED ONSITE ON A PLASTIC TARP (OR ON AN ASPHALT PAVEMENT AREA) AND SUN DRIED UNTIL DEAD. AVOID CUTTINGS FROM BEING IN CONTACT WITH ANY SOIL. DEAD PLANTS SHALL BE BAGGED AND DEPOSITED AT AN INCINERATOR WASTE FACILITY (NOT A COMPOSTING FACILITY).

5. START CONTROL OF INVASIVE PLANT SPECIES PRIOR TO THE START OF EARTH MOVING ACTIVITIES. CONTROL NONNATIVE INVASIVE SPECIES AS FOLLOWS:

   A. FOR JAPANESE KNOTWEED, ASIATIC BITTERSWEET, AND EUONYMUS.

      STEP #1 (PRIOR TO HERBICIDE TREATMENT): CUT PLANT DOWN TO GRADE LEVEL DURING THE GROWING SEASON (LATE SUMMER OR EARLY FALL IS PREFERABLE). REMOVE ASIATIC BITTERSWEET ROOTS IF FEASIBLE. DISPOSE OF CUT PLANT MATERIAL AS OUTLINED ABOVE.

      STEP #2: IMMEDIATELY AFTER CUTTING, TREAT CUT STEMS WITH AN APPROPRIATE HERBICIDE (SUCH AS ROUND-UP) AT THE RATE AND METHODS RECOMMENDED BY THE MANUFACTURER. CARE SHALL BE TAKEN TO AVOID HERBICIDE CONTACT WITH NATIVE OR OTHER DESIRABLE VEGETATION.

      STEP #3: CHECK CONTROL AREA MONTHLY DURING THE GROWING SEASON FOR NEW GROWTH. SPOT TREAT NEW GROWTH WITH AN APPROPRIATE HERBICIDE AS NEEDED FOR CONTROL.

   B. FOR PORCELAINBERRY CONTROL.

      STEP #1: PULL PORCELAINBERRY PLANTS (INCLUDING ROOTS IF FEASIBLE) FROM THE GROUND DURING THE SPRING AND EARLY SUMMER MONTHS. HOWEVER, MANUAL CONTROL MAY BE DIFFICULT BECAUSE OF THEIR HE EXTENSIVE ROOT SYSTEM. IF PORCELAINBERRY IS CUT AT GRADE, TREAT CUT STEMS SYSTEMIC HERBICIDE.

      STEP #2: FOLLOW UP WITH BOTH MANUAL REMOVAL AND HERBICIDE TREATMENT MONTHLY UNTIL CONTROLLED.

6. CARE SHALL BE TAKEN TO AVOID HERBICIDE CONTACT WITH NATIVE OR OTHER DESIRABLE VEGETATION. IN AREAS WHERE NATIVE PLANTS ARE GROWING NEAR PLANTS TO BE CONTROLLED, THE HERBICIDE SHALL NOT BE SPRAYED ONTO THE TARGET PLANTS. IN THESE AREAS THE HERBICIDE SHALL BE APPLIED WITH A BRUSH OR CLOTH.

TREE PLANT LIST

QTY	KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	REMARKS
SHADE TREES						
6	AR	ACER RUBRA	RED MAPLE	3-3.5" CAL	B&B	
4	AS	ACER SACCHARINUM	SILVER MAPLE	2-2.5" CAL	B&B	
6	BN	BETULA NIGRA	RIVER BIRCH	8-9' HT.	B&B	3 STEMS
4	GT	GLEDITSIA TRIACANTHOS 'SHADEMASTER'	SHADEMASTER LOCUST	3-3.5" CAL.	B&B	FULL
3	NS	NYSSA SYLVATICA	BLACK GUM	2-2.5" CAL.	B&B	
4	PO	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	3-.35" CAL.	B&B	FULL
3	QB	QUERCUS BICOLOR	SWAMP WHITE OAK	2-2.5" CAL.	B&B	FULL
3	QP	QUERCUS PALUSTRIS	PIN OAK	2-2.5" CAL.	B&B	FULL
9	TR	TILIA AMERICANA 'REDMOND'	REDMOND LINDEN	3-3.5" CAL.	B&B	FULL
FLOWERING TREES						
7	AC	AMELANCHIER CANADENSIS	SHADBLOW	7-8' HT.	B&B	
11	AB	AMELANCHIER 'AUTUMN BRULLANCE'	AUTUMN BRILLANCE SHAD	8-10' HT.	B&B	TRI--STEM
7	PD	CORNUS ALNIFOLIA	PAGODA DOGWOOD	6-8' HT	B7b	
2	CF	CORNUS FLORIDA	FLOWERING DOGWOOD	2-2.5" HT.	B&B	WHITE
13	WK	CRATAEGUS 'WINTER KING'	WINTER KING HAWTHORN	2-2.5" CAL.	B&B	FULL
4	MA	MALUS 'ADIRONDACK'	ADIRONDACK CRAB APPLE	2-2.5" CAL.	B&B	
1	OA	OXYDENDRUM ARBOREUM	SOURWOOD	2-2.5" CAL.	B&B	
EVERGREENS						
16	AH	ILEX OPACA	AMERICAN HOLLY	7-8' HT.	B&B	25% MALES
12	PG	PICEA GLAGA	WHTIE SPRUCE	8-10' HT.	B&B	
20	PS	PINUS STROBUS	WHITE PINE	10-12' HT.	B&B	FULL
66	TO	THUJA OCCIDENTALIS 'NIGRA'	DARK ARBORVITEA	7-8' HT.	B&B	
19	GG	THUGA 'GREEN GIANT'	GREEN GIANT	8-10'	B&B	

LIGHTING NOTES:

1. EXISTING AND PROPOSED SITE INFORMATION TAKEN FROM A DIGITAL AUTOCADD SITE PLAN SUPPLIED BY TIGHE&BOND. SEE THEIR SITE PLANS FOR ALL OTHER SITE INFORMATION.
2. SITE LIGHTING LEVELS ON THE PLAN WAS PREPARED BY OTHERS AND IS SHOWN ONLY FOR GENERAL REFERENCE PURPOSES.
3. SITE LIGHTING INFORMATION AND LIGHTING PLANS PREPARED BY ENVIRONMENTAL LAND SOLUTIONS, LLC ARE DESIGNED FOR GENERAL LANDSCAPE AESTHETIC PURPOSES ONLY. LIGHTING INFORMATION SHOWN ON THIS PLAN SHALL NOT BE USED FOR SECURITY OR SAFETY PURPOSES.
4. LOCATION AND TYPE OF LIGHT FIXTURES ARE TYPICAL AND MAY VARY BASED ON ACTUAL FIELD CONDITIONS, SITE AND ARCHITECTURAL PLAN REVISIONS.
5. THIS PLAN ASSUMES THAT THE BUILDINGS WILL HAVE BUILDING MOUNTED WALL FIXTURES (BY OTHERS) TO LIGHT THE INGRESS/EGREES AREAS (DOORS).
6. INSTALL LIGHT FIXTURES AS RECOMMENDED BY THE MANUFACTURER.
7. LIGHTING DATA INFORMATION PROVIDED BY CLIFF GILBERT FROM VAN VANGUARD LIGHTING COMPANY (203-788-0814).

SHRUB AND PERENNIAL PLANT LIST

QTY	KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT
SHRUBS					
6	AA	ARONIA ARBUTIFOLIA 'BRILLIANTISSIMA'	RED CHOKEBERRY	3-4' HT.	CONT.
41	NT	CEANOTHUS AMERICANUS	NEW JERSEY TEA	1 GAL.	CONT.
54	CA	CLETHRA ALNIFOLIA	CELTHRA	3-4' HT.	CONT.
25	CR	CORNUS RACEMOSA	GREY DOGWOOD	3-4' HT.	CONT.
39	CS	CORNUS SERVICEA	RED-TWIG DOGWOOD	3-4' HT	CONT.
6	HQ	HYDRANGEA QUERCILFOLIA	OAKLEAF HYDRANGEA	3-4' HT.	B&B
34	IG	ILEX GLABRA 'SHAMROCK'	COMPACT INKBERRY	2-3' HT.	CONT.
5	IV1	ILEX VERTICILLATA 'SOUTHERN GENTLEMAN'	S. GENTLEMAN HOLLY	3-4' HT.	CONT.
20	IV2	ILEX VERTICILLATA 'WINTER RED'	WINTER RED WINTERBERRY	3-4' HT.	CONT.
120	LA	LEUCOTHOE AXILLARIS	LEUCOTHOE	15-18" HT.	CONT.
36	MP	MYRICA PENSYLVANICA	NORTHERN BAYBERRY	2-3' HT.	CONT.
28	NB	PHYSOCARPUS 'AMBER JUBILEE'	AMBER JULBILEE NINEBARK	2-3' HT.	B&B
26	PD	POTENTILLA 'DAKOTA SUNSPOT'	D. SUNSPOT CINQUEFOIL	18-24" HT.	CONT.
35	RC	RHODODENDRON 'ALBUM'	CATAWBIENSE RHOD.	36-42" HT.	B&B
20	RM	RHODODENDRON MAXIMUM	ROSEBAY RHOD.	5-6' HT.	B&B
32	RG	RHUS AROMATIC 'GRO-LOW'	GRO-LOW SUMAC	24-30"	CONT.
15	SD	SALIX DISCOLOR	PUSSY WILLOW	5-6' HT	CONT.
8	VA	VIBURNUM ACERFOLIA	MAPLELEAF VIBURNUM	30-36" HT.	B&B
55	VD	VIBURNUM DENTATUM 'BLUE MUFFIN'	BLUE MUFFIN ARROWWOOD	30-36" HT.	CONT.
1	VL	VIBURNUM LENTAGO	NANNYBERRY	3-4' HT.	B&B
23	VN	VIBURNUM NUDUM 'WINTERTHUR'	SMOOTH WITHEROD	30-36" HT.	B&B
3	VTR	VIBURNUM TRILOBUM 'COMPACTUM'	COMPACT AMER. CRANBERRY	30-36" HT.	B&B
GROUNDCOVERS & PERENNIALS					
30	AD	ARUNCUS DIOCUS	GOATSBREAD	1 GAL.	CONT.
25	AM	ASCLEPAIS INCARNATA	SWAMP MILKWEED	1 GAL.	CONT.
25	CM	CIMIFUGA RACEMOSA	FAIRY CANDLES	1 GAL.	CONT.
X	CR	COREOPSIS GRANDFLORA	TICKSEED	1 GAL.	CONT.
50	GR	GERANIUM 'ROXANNE'	ROXANNE GERANIUM	1 GAL.	CONT.
25	HP	HYPERICUM PERFORATUM	ST. JOHNS WORT	1 GAL.	CONT.
20	PK	PACKERA OBOVATA	GOLDEN GROUNDSEL	1 GAL.	CONT.
59	SG	PANICUM VIRGATUM 'HANSE HERMS'	HANSE HERMS SWITCHGRASS	1 GAL.	CONT.
200	PX	PAXISTIMA CANBYI	CLIFF GREEN	1 GAL.	CONT.
45	CF	POLYSTICHUM ACROSTICHOIDES	CHRISTMAS FEN	1 GAL.	CONT.
10	RV	ROSA VIRGINIANA	VIRGINIA ROSE	1 GAL.	CONT.

Tighe&Bond
1000 Bridgeport Avenue
Suite 320
Shelton, CT 06484
(203) 712-1100

ENVIRONMENTAL LAND SOLUTIONS, LLC
Landscape Architecture and Environmental Planning
8 KNIGHT STREET, SUITE 203
NORWALK, CONNECTICUT 06851
Tel: (203) 855-7879 Fax: (203) 855-7836
info@elsllc.net www.elsllc.net

PROJECT NORTH

TOWN SUBMISSION

141 Danbury Road

FDSPIN
141 DR, LLC

Wilton, Connecticut

6-7-21- SUBMISSION TO INLAND WETLANDS

PROJECT NO:	F0173-002
DATE:	JUNE 7, 2021
FILE:	F0173-02-G-TITL.dwg
DRAWN BY:	KET
CHECKED:	MJP
APPROVED:	KET

LANDSCAPE AND LIGHTING PLAN

SCALE: 1"=30'

LP-1