BENSALEM TOWNSHIP

Building and Planning Department
Office 215-633-3644 ▪ Fax 215-633-3753
2400 Byberry Road ▪ Bensalem, PA 19020

SUBMISSION OF REVISED PLANS APPLICATION

- ☐ **MINOR SUBDIVISION**
- ☐ **MINOR LAND DEVELOPMENT**
- ☐ **PRELIMINARY SUBDIVISION**
- ☑ **PRELIMINARY LAND DEVELOPMENT**
- ☑ **FINAL LAND DEVELOPMENT**
- ☐ **FINAL SUBDIVISION**

Application is hereby made for revising the plan(s) for: Preliminary/Final Land Development Plans for JPMorgan Chase Bank

Applicant's Name: JPMorgan Chase Bank, N.A.

Owner: Bensalem MZL LLC - C/O Katz Property Management LLC

Location: 1729 Street Road, Bensalem, PA 19020

Tax Parcel No: 02-043-305

Date of Original Submission: May 14, 2021

THE CHANGES MADE TO THE PLAN(S) ARE AS FOLLOWS:

All changes listed in the Attached Bensalem Township Engineer Response Letter

All changes listed in the Attached Bensalem Township Traffic Engineer Response Letter

All changes listed in the Attached Bensalem Township Fire Rescue Response Letter

Whereas the Pennsylvania Municipalities Planning Code (Act 247 of 1968) requires the Bensalem Township to render a decision and to communicate it to the applicant no later than 90 days after an application for Subdivision or Land Development has been filed.

I, Todd Samms, VP of JPMorgan Chase Bank, N.A., (owner, agent) regarding the above application hereby request an extension of time beyond the aforesaid 90 day limitation. I waive any and all rights under any Act of Assembly or Ordinance of Bensalem Township, having to do with the aforesaid time limitations.

Todd Samms — *Signature of Applicant, Owner or Agent*

08/26/2021 — *Date*

A SIGNED COPY OF THIS APPLICATION IS REQUIRED AT TIME OF PERMIT ISSUANCE

Comments or Notes:

JP Morgan Chase Bank, Bensalem
1729 Street Road Opinion of Probable Cost

Submitted To: T&M Associates
74 West Broad Street
Suite 530
Bethlehem, PA 18018
Attn: Russell G. Benner, P.E.

CoreStates, Inc.
201 S. Maple Avenue
Suite 300
Ambler, PA 19002
267.529.3660

Item	Quantity	Unit	Cost per Unit	Amount
Site Preparation				
Clearing & Grubbing	0.76	Acre	$ 800.00	$ 608.00
Curb & Pavement Removal	25,152	S.F.	$ 2.00	$ 50,304.00
Building Demolition	2,421	S.F.	$ 5.00	$ 12,105.00
			Site Prep Subtotal	$ 63,017.00
Erosion & Sediment Control				
12" Compost Filter Sock	815	LF	$ 7.00	$ 5,705.00
Construction Entrance	1	ea	$ 1,100.00	$ 1,100.00
Inlet Protection	7	ea	$ 250.00	$ 1,750.00
Concrete Washout	1	ea	$ 600.00	$ 600.00
Final Stabilization & Grading	1	ea	$ 8,000.00	$ 8,000.00
			Erosion & Sediment Subtotal	$ 17,155.00
Site Construction				
Asphalt Pavement	16,352	S.F.	$ 6.00	$ 98,112.00
Concrete Curb	1,321	LF	$ 10.00	$ 13,210.00
Concrete Walkways	1,502	S.F.	$ 10.00	$ 15,020.00
Concrete Parking Pavement	479	S.F.	$ 20.00	$ 9,580.00
			Site Construction Subtotal	$ 135,922.00
Stormwater Management				
6" PVC Roof Drain Pipe	54	LF	$ 40.00	$ 2,160.00
12" HDPE Storm Pipe	264	LF	$ 40.00	$ 10,560.00
15" HDPE Storm Pipe	76	LF	$ 45.00	$ 3,420.00
18" Perforated HDPE Storm Pipe	888	LF	$ 55.00	$ 48,840.00
Precast PennDOT Type C Inlet Box	4	ea	$ 2,120.00	$ 8,480.00
Precast Storm Manhole	6	ea	$ 2,100.00	$ 12,600.00
Yard Drain	1	ea	$ 225.00	$ 225.00
Stone Surrounding Basin	317.9	CY	$ 40.00	$ 12,716.00
			Stormwater Subtotal	$ 99,001.00
Sanitary Sewer & Other Utilities				
4" PVC Sanitary Pipe	195	LF	$ 35.00	$ 6,825.00
Connection to existing PROW Lateral	1	ea	$ 1,000.00	$ 1,000.00
1.25" Gas Pipe	185	LF	$ 1.00	$ 185.00
1.5" Type K Water Line	154	LF	$ 16.50	$ 2,541.00
			Sanitary Subtotal	$ 10,551.00
Miscellaneous Site Features				
Pavement Markings	1	Lump Sum	$ 9,000.00	$ 9,000.00
Site Lighting	1	Lump Sum	$ 20,000.00	$ 20,000.00
Bike Rack	1	ea	$ 450.00	$ 450.00
Traffic Control Signs	13	ea	$ 175.00	$ 2,275.00
			Miscellaneous Subtotal	$ 31,725.00
Landscaping				
Refer to Landscape Cost Estimate Attached	1	ea	$ 17,314.50	$ 17,314.50
			Landscaping Subtotal	$ 17,314.50
			Subtotal (All Sections)	$ 374,685.50
			Engineering &Contingency (10%)	$ 37,468.55
			Total	$ 412,154.05

Francis Greene, P.E.
PA License No. PE075817

EVERGREEN
DESIGN GROUP

Project: Chase Bank – 1729 Street Road, Bensalem PA.
Prepared by: Eric Shepley

Date: 08-06-2021

Chase Bank - Bensalem			Unit		Extended
	Qty		Cost		Cost
TREES					
2.5"cal Red Sunset Maple	5		$ 350.00		$ 1,750.00
2.5" cal Honey Locust	5		$ 350.00		$ 1,750.00
2.5" cal Spring Snow Crabapple - Fruitless	3		$ 350.00		$ 1,050.00
2.5" cal American Hophornbeam	4		$ 350.00		$ 1,400.00
2.4 cal Little Leaf Linden	4		$ 350.00		$ 1,400.00
SHRUBS					
5 gal Summersweet	51		$ 42.50		$ 2,167.50
1 gal All Gold Japanese Forest Grass	20		$ 17.50		$ 350.00
5 gal Dwf Ninebark	11		$ 42.50		$ 467.50
5 gal Broad-leaved Meadow	9		$ 42.50		$ 382.50
5 gal Arrowwood Viburnum	24		$ 42.50		$ 1,020.00
TURF					
Kentucky Bluegrass Sod - sf	8,580		$ 0.65		$ 5,577.00
				TOTAL	**$ 17,314.50**
Estimate includes the guarantee as well as the labor, material, installation and maintenance cost.					

August 26, 2021

Russell G. Benner, P.E., Township Engineer
T&M Associates
74 West Broad Street
Suite 530
Bethlehem, PA 18018

CC: Honorable Mayor Joseph DiGirolamo
Loretta Alston, Bensalem Planning Commission
Debbie McBreen, Bensalem Council Clerk
Danielle Kimmel, Bensalem Township Finance Department
Michael Roedig, Bucks County Planning Commission
Joseph Pizzo, Esquire, Rudolph Clarke, LLC
Ed Rudolph, Esquire, Rudolph Clarke, LLC
Phil Wursta, Township Traffic Engineer (email)
Todd Samms, Vice President, JP Morgan Chase Bank, Applicant
Bensalem MZL, c/o Katz Properties Management LLC, Owner
254 West 31st Street, New York NY 10001
Francis Greene, PE, CoreStates, Inc., Applicant's Engineer
201 S. Maple Avenue, Suite 300, Ambler, PA 19002

RE: Preliminary/Final Land Development Plan Review
JPMorgan Chase Bank, N.A.
1729 Street Road
TMP # 02-043-305
Bensalem Township, Bucks County, PA
Project No. BENS R 1280

Dear Mr. Benner,

We are in receipt of the JPMorgan Chase Bank, N.A. Preliminary/Final Land Development Plan Review Letter dated July 14, 2021. Please find enclosed responses to the previously mentioned documents.

A - Application

Comment 1 As requested by the Township, we have completed our review of the following information.
1. Subdivision and Land Development Application dated May 17, 2021
2. 21-sheet Preliminary/Final Land Development Plan set prepared by Core States Group dated May 13, 2021 with no revisions
3. 1-sheet Drainage Area Maps prepared by Core States Group dated May 13, 2021 with no revisions
4. Stormwater Management Report prepared by Core States Group dated May 14, 2021 with no revisions
5. Erosion and Sediment Control Report prepared by Core States Group dated May 14, 2021 with no revisions

6. Traffic Engineering Assessment prepared by Shropshire Associates LLC dated May 7, 2021 with no revisions
7. Agreement Regarding Reciprocal Rights As To Parking And Other Common Areas dated July 15, 1969
8. Bucks County Planning Commission review letter dated June 10, 2021
9. Township Traffic Safety Unit review letter dated May 18, 2021 stating they do not foresee any traffic issues
10. Township Fire Rescue Department review (rejected) letter dated May 21, 2021

Response 1 **Acknowledged.**

B - Discussion

Comment 1 The 4.37-acre site is located in the G-C General Commercial Zoning District and is tax map parcel # 02-043-305. The site is owned by Bensalem MZL LLC and contains the following features:

1. A 1-story masonry building (2,510 sf) with drive-thru – formerly a Krispy Kreme Doughnuts
2. A 1-story masonry building (1,597 sf) – currently A Philly Pretzel Factory
3. A portion of a grocery store and the loading dock (formerly Kmart)
4. 434 parking spaces for the shopping center.
5. 43 standard parking spaces and 2 ADA accessible parking spaces in the lease area for the Krispy Kreme.

The Philly Pretzel Factory and the grocery store will remain, and the applicant is proposing the following:
1. Remove the Krispy Kreme and build a 3,320 SF Chase Bank with a two-lane drive-thru
2. Reconfigure the existing parking lot around the Krispy Kreme to accommodate the drive-thru and to include 28 standard parking spaces and 2 ADA accessible parking spaces

A bank or similar financial institution is a permitted use in the G-C District per Zoning Ordinance Section 232-380(9).

Street Road is State Route 132 and it is classified as a major arterial street (100-foot right-of-way).

There are no floodplains on site per FEMA FIRM Panel 407K dated March 21, 2017.

The site drains to the Poquessing Creek Watershed. Since the proposed development creates a reduction of impervious cover, this development is exempt from the Stormwater Management Site Plan requirements, the Volume Control requirements and Peak Rate Control requirements per Stormwater Management Ordinance Section 196-6(a) and Table 106.1.

We have reviewed the plan for compliance the Zoning Ordinance, the Subdivision and Land Development Ordinance and the Stormwater Management Ordinance. We offer the following comments for your consideration. Ordinance sections are quoted in Italic text and our comments are provided in upright text.

Response 1 **Acknowledged.**

C - Chapter 232 - Zoning Ordinance (ZO)

Comment 1 In accordance with ZO Section 232-381(3), in the G-C District, front, side and rear yards shall be provided on each lot.

Show the required setback lines on the Site Plan. This is also referenced in SLDO Section 201-41(d)(11)b.

Response 1 **Completed. Please see the revised Site Plan – Sheet C5.1 (Sheet 5 of 23).**

Comment 2 In accordance with ZO Section 232-386, fire lanes shall be provided and marked in accordance with Bensalem Township Fire Prevention Ordinance No. 93-15.

Revise the plan to include fire lanes for the Chase Bank. We defer the review of fire lanes to the Bensalem Township Fire Marshal. All comments in the Township Fire Rescue Department Review letter dated May 21, 2021.

The Emergency Access Plan shows that a firetruck would top the curb and hit light poles in several locations. This must be revised.

Response 2 **Completed. Per the Township Fire Rescue Department Review letter dated May 21, 2021 and conversations with Robert Sponheimer, the fire lanes have been added to the plans. The Emergency Access Plan has also been updated per the review letter and conversations. Please see the revised Site Plan – Sheet C5.1 (Sheet 5 of 23) and Emergency Access Plan – A – Sheet C19.1 (Sheet 20 of 23).**

Comment 3 In accordance with the ZO Section 232-586(c)(3), the following types of uses shall provide off street parking areas as indicated.

The Zoning Table states that 570 spaces are required, 434 spaces are existing and 529 are proposed. No zoning relief is required since they are improving an existing non-conformity. However, we have the following comments regarding the parking information provided on plan sheet C5.1.

a. The Parking Calculations reference 527 spaces for the grocery, we calculated 234. This comment also applies to the General Retail use.
b. Based on the current parking quantities listed in the chart, it is unclear how the total require parking of 570 was calculated.

Response 3 **Completed. The required parking for grocery and general retail uses have been updated to 235 and 311 spaces, respectfully. The grocery parking requirement of 234.28 is rounded up to 235. The required parking of 570 was determined via the sum of the Grocery, General Retail, Pretzel Factory and Chase Bank totals in the "Standard Parking Stall Requirement Calculations". The Krispy Kreme total is not included int he calculation due to it being demolished. Please see the revised Site Plan – Sheet C5.1 (Sheet 5 of 23).**

Comment 4 In accordance with ZO Section 232-586(d)(3)b., in the G-C District, no parking of vehicles shall be permitted in the area within 25 feet from the abutting outside boundary of a public street, road or highway, nor within 25 feet from any other property line bounding the premises.

Revise the existing features plan to dimension the existing parking setback from the r/w of Street Road and revise the site plan to dimension the proposed parking setback from the r/w of Street Road. Add this information to the Zoning Data Chart on plan sheet C5 to document the existing condition.

Response 4 **Completed. The existing parking setback from the Street Roads Right-Of-Way is 12.9 feet and the proposed parking setback is 13.8 feet. Per our meeting on 07/20/2021, it was decided that this is an existing non-conformity, and the zoning chart will be updated accordingly. Please see the revised Existing Conditions & Demolition Plan – Sheet C4 (Sheet 4 of 23) and Site Plan – Sheet C5.1 (Sheet 5 of 23).**

Comment 5 In accordance with ZO Section 232-587(2), all areas for loading and unloading of delivery trucks and other vehicles and for the servicing of establishments of shops by refuse collection, field and other service vehicles shall have adequate and unobstructed access from a street, alley or driveway and shall be so arranged that they may be used without blocking or otherwise interfering with the use of automobile access or parking facilities or pedestrian ways.

Provide trash truck turning templates.

Response 5 **Completed. Please see the Emergency Access Plan – B – Sheet C19.2 (Sheet 21 of 23).**

Comment 6 In accordance with ZO Section 232-713(a), a permit shall be obtained from the Township before erecting, placing, rebuilding, significantly altering, reconstructing or moving any sign…

Provide a note on the record plan stating a permit will be required for any alterations to the existing sign and for any proposed signs.

Response 6 **Completed. Please see Site Note #8 the revised Site Plan – Sheet C5.1 (Sheet 5 of 23).**

D - Chapter 201 - Subdivision and Land Development Ordinance (SLDO)

Comment 1 In accordance with SLDO Section 201-41(d)(2), the preliminary plan shall provide the …names and owners of all adjacent tax parcels, with the tax map parcel numbers, land use and zoning classifications and present use.

Expand the adjacent property owners' labels to include zoning district and existing use.

Response 1 **Completed. Please see the revised Existing Conditions & Demolition Plan – Sheet C4 (Sheet 4 of 23) and Overall Site Plan – Sheet C5.2 (Sheet 6 of 23).**

Comment 2 In accordance with SLDO Section 201-41(d)(3), the preliminary plan shall provide the total tract boundary lines of the area being subdivided and/or developed, with accurate distances to hundredths of a foot and bearings to 15 seconds…
Revise the plan set to include a plan sheet showing the total tract. Boundary information for the tract should be shown on a plan sheet to be recorded.

Response 2 **Completed. Please see the Overall Site Plan – Sheet C5.2 (Sheet 6 of 23).**

Comment 3 In accordance with SLDO Section 201-41(d)(7), the preliminary plan shall provide all existing building or other structure within the proposed land development; all existing streets of record in or adjoining the tract including names, right-of-way widths and cartway widths.

As mentioned above, provide a plan showing the entire parcel and all existing buildings, structures and streets and provide the following information on the record plan:
a. Show and dimension the half and full cartway of Street Road.
b. Show and dimension the existing right-of-way width of Street Road (full and half width).

Response 3 **Completed. An aerial has been provided to show existing buildings and other structures within the proposed development Please see the Overall Site Plan – Sheet C5.2 (Sheet 6 of 23).**

Comment 4 In accordance with SLDO Section 201-41(d)(9), the preliminary plan shall provide all existing sewer lines, water lines, fire hydrants, utility transmission lines, culverts, bridges, railroads, or other manmade features within the proposed subdivision and/or land development and within 400 feet of the boundaries of the proposed subdivision and/or land development or a less distance within which the Township Engineer determines that all necessary information can be provided; location, width and purpose of existing easements and utility rights-of-way within 50 feet of the proposed subdivision and/or land development

Revise the plan set to include a full (plan sheet) size high-quality color aerial which shows existing features for 400 feet beyond the property boundary and delineates the site boundary.

The Alta/NSPS plan references various deed restrictions, rights-of-way and agreements. This information should be on added to a plan sheet that is going to be recorded.

Response 4 **Completed. An aerial has been provided to show existing buildings and other structures within 400 feet of the proposed development Please see the Overall Site Plan – Sheet C5.2 (Sheet 6 of 23). The various deed restrictions, rights-of-way and agreements have also been added to the plan.**

Comment 5 In accordance with SLDO Section 201-41(d)(10), the preliminary plan shall provide contour lines… location and level data to which contour elevations refer shall be based on the Bensalem Township Municipal Authority Sanitary Sewer System.

Revise the plan to provide a site benchmark with elevation.

Response 5 **Completed. Two (2) site benchmarks with elevation have been added to the plans. Please see the ALTA / NSPS Land Title Survey (Sheet 3 of 23) and Existing Conditions & Demolition Plan (Sheet 4 of 23).**

Comment 6 In accordance with SLDO Section 201-41(d.)(13), a certification of ownership, acknowledgment of plan, and offer of dedication shall be lettered on the plan, duly acknowledged and signed by the owner of the property, and notarized; a certificate for approval of the plan by the Bensalem Township Council and review by the Township Engineer shall be provided; a space shall be left, preferably adjacent to the municipal certification, in which the review stamp of the County Planning Commission may be applied; space shall be left along the lower edge of the sheet, in order that the County Recorder of Deeds may acknowledge receipt and recording of the plan when it is presented.

Add signature blocks to the Record Plan as follows:
a. An owner certification block which includes space for a notary.
b. A block for approval by Township Council with lines for three signatures.
c. A signature block that states “reviewed by the Township Engineer”.
d. Provide a block for the Bucks County Planning Commission stamp.
e. Provide a designated space for the Bucks County Recorder of Deeds.
f. Provide an engineer’s certification. Clarify which plan sheets are being recorded. Sheet C1 should be recorded since it includes the property owner and the Sheet Index. Add the deed book and page and/or instrument no. on the record plan.

Response 6 **Completed. Signature blocks have been added and the sheet index has been updated for which plans are to be recorded. Please see the revised Cover Sheet – Sheet C1 (Sheet 1 of 23).**

Comment 7 In accordance with SLDO Section 201-41(d)(15), a wetland certification must be placed on the plan. This certification will either state that there are no wetlands or that there are wetlands on the site. The person who conducted the study shall sign the certification.

Revise the plan to include a signed certification.

Response 7 **Completed. The signature block has been added. Please see the revised Cover Sheet – Sheet C1 (Sheet 1 of 23).**

Comment 8 In accordance with SLDO Section 201-41(e)(3), the preliminary plan shall be accompanied by… a plan for providing utility services as approved by appropriate public utility or by utilities chartered under the law of PA who will provide the utility services, including but not limited to all electric, telephone, gas and cable television.

Provide will-serve letters from applicable utilities.

Response 8 **Completed. Please see attached will-serve letters.**

Comment 9 In accordance with SLDO Section 201-101(c), whenever federal, state or other applicable regulations impose more restrictive standards and requirements than those outlined herein, such other regulations shall control.

Revise General Site Note #1 on plan sheet 2 to also reference PennDOT standards and to state that where discrepancies occur, the more restrictive shall control.

Response 9 **Completed. Please see the revised General Notes Plan – Sheet C2 (Sheet 2 of 23).**

Comment 10 In accordance with SLDO Section 201-106(a)(1)a., no changes shall be made in the contour of the land; no grading, excavating, removal or destruction of topsoil, trees or other vegetative cover of the land shall be commenced within a proposed subdivision or land development until such time as a plan for minimizing erosion and sedimentation has been reviewed by the County conservation district, reviewed and approved by the Township Planning Commission and Bensalem Township Council and until a land alteration permit has been issued in accordance with Ordinance No. 212, as amended.

Provide a note on the Record Plan stating that a land alteration permit will be required prior to the start of any grading, excavation, removal of topsoil, removal of trees or removal of any other vegetative cover.

The applicant is required to obtain approval form the Bucks County Conservation District, we defer the review of erosion and sediment controls to the Bucks County Conservation District.

Response 10 **Completed. Please see Site Note #9 on the revised Site Plan – Sheet C5.1 (Sheet 6 of 23). We are currently in the review process for approval from Bucks County Conservation District. Please see attached review letter from Bucks County Conservation District dated May 26, 2021.**

Comment 11 In accordance with SLDO Section 201-106(a)(2)a.6., no proposed gradings shall be permitted within three feet of any site property line.

Grading is proposed less than 1 foot from the Family Dining property. Regrade this area to provide the required 3 feet of clearance or obtain a temporary grading easement from the abutting property owner or request a waiver. If a waiver is granted the plan must be revised as follows:
a. Revise the plan to a provide a label (in the plan view) stating that no disturbance, grading or encroachment can occur on the abutting property without first obtaining written permission from the abutting property owner.
b. Revise the grading plan and erosion control plan to show construction fence along this property line.
c. Revise the construction sequence to include installation of this fence prior to construction.
d. Add a construction fence detail to the plan.

Response 11 **A waiver is being requested for Section 201-106(a)(2)a.6., no proposed gradings shall be permitted within three feet of any site property line. Please see the revised Cover Sheet – Sheet C1 (Sheet 1 of 23), Grading Plan – Sheet C6 (Sheet 7 of 23), Construction Details – Sheet C17 (Sheet 18 of 23), Erosion and Sediment Control Plan – Sheet C11 (Sheet 12 of 23) and Erosion and Sediment Control Notes – Sheet C12 (Sheet 13 of 23).**

Comment 12 In accordance with SLDO Section 201-106(c)(11)a., topsoil shall not be removed from the development site or used as fill.

Add this note to the Grading Plan and the Erosion & Sedimentation Control Plan.

Response 12 **Completed. Please see Grading Note #19 the revised Grading Plan – Sheet C6 (Sheet 7 of 23) and Erosion and Sediment Control Note #1 on the revised Erosion & Sediment Control Plan – Sheet C11 (Sheet 12 of 23).**

Comment 13 In accordance with SLDO Section 201-111(a), sidewalks shall be provided along streets by the developer. All sidewalks shall meet all applicable standards for access by handicapped persons.

We acknowledge that a waiver was recently granted as part of the application for the improvements of the old Kmart building. Since this is a separate application, technically the waiver has to be granted for as part of this application also. This waiver comment also applies to street trees per SLDO Section 201-106(c)(1) and (2).

Response 13 **Per our meeting on 07/20/21, the two sections of the code mentioned above for the sidewalks and street trees are not to be considered waivers but to be consider a fee-in-lieu of. The plan set will be updated accordingly.**

Comment 14 In accordance with SLDO Section 201-112(d), a planting strip with an average width of 10 feet and minimum width of 7 feet shall be provided between the edge of the parking area and the outside wall of the nearest building. Parking area includes parking spaces, aisles and driveways. Sidewalks may be included within the planting strip area.

Revise the plan to dimension the proposed clearance between the parking and the building on the southwest side of the building to ensure compliance with this requirement.

Response 14 **Completed. The dimensions from the southwest side of the proposed building and the existing parking area have been added to the plan. The dimension between the existing parking area and the proposed curb line has been added as well. Please see the revised Site Plan – Sheet C5.1 (Sheet 5 of 23).**

Comment 15 In accordance with SLDO Section 201-115(1), no owner or other person shall construct…the whole or any part of any water facility and/or sewage facility for the use… of any buildings or structures constructed or planned to be constructed within the Township until ... plans and specification thereof have been filed and approved by the Bensalem Township Council and the Department of Environmental Protection...

The applicant shall submit a Planning Module Application Mailer to PA DEP to determine if a Planning Module must be submitted for this land development.

Response 15 **The response to the Planning Module Application Mailer from PA DEP is "This project does not meet the definition of a subdivision under the Pennsylvania Sewage Facilities Act. Therefore, no planning modules are required to be submitted to the Department of Environmental Protection (DEP)."**

The waiver letter is included in this resubmission.

Comment 16 In accordance with SLDO Section 201-115(3), when water is proposed to be furnished to any subdivision or land development, the developer shall…install fire hydrants according to the technical regulation and specification of the Township….

We defer the review of fire hydrants to the Township Fire Rescue Department.

Response 16 **Completed. Per the Township Fire Rescue Department Review letter dated May 21, 2021 and conversations with Robert Sponheimer, the fire hydrant located on the neighboring property is within the location requirements for the Fire Rescue Department. Please see the revised Utility Plan – Sheet C7 (Sheet 8 of 23)**

E - Chapter 196 - Stormwater Management Ordinance (SWMO)

Comment 1 Since the land development does not create an increase of impervious cover, the application is exempt from volume control, peak rate control, and SWM site plan requirements per Stormwater Management Ordinance Section 196-6(a) and Table 106.1

They are proposing an underground stormwater management facility.

In accordance with SWMO Section 196-61(b)(1), storm sewers (pipes or other structures) shall be reinforced concrete pipe have a minimum grade of ½ % and a minimum inside diameter of 18 inches

The applicant is requesting a waiver to use HDPE pipe less than 18-inch diameter. The proposed pipes are 12" and 15". They are located within the parking lot and are maintained by the owner/applicant.

Response 1 **Per our meeting on 07/20/21, even though we are exempt from volume control, peak rate control, and SWM site plan requirements it was decided that the proposed basin is to remain due to flooding concerns in Bensalem Township. The pre-developed conditions were also modeled with 20% of the existing impervious being considered meadow. This modeling is proposed to remain.**

Comment 2 In accordance with SWMO Section 196-61(b)(5), the storm drain system shall be designed to carry a 100-year peak flow rate.

Revise the storm sewer computation sheet (Appendix E) to include HGL and TG information at each inlet.

Response 2 **Completed. Please see the revised Storm Sewer Computation Sheet (Appendix E)**

F – General Comments

Comment 1 Submit a construction cost estimate per Section 201-64(a)(1).

Response 1 **Completed. Please see attached Opinion of Probable Cost.**

Comment 2 Revise the plan sheet numbering to reference the total number of plan sheets (i.e. 1 of 21, 2 of 21 etc.)

Response 2 **Completed. Sheet numbering has been added to all plans.**

Comment 3 The County property records for this site reference a lot area of 4.37 acres. The Zoning Data Chart on plan sheet C5 references 9.1 acres. Please clarify.

Response 3 **The 4.37 acres that the county property records mentions is for Premises "B" which our proposed development is located. According to the aforementioned application for the improvements of the old Kmart building and our survey, Premises "B" is approximately 3.70 acres. There is also a Premises "A" directly north of our property which is approximately 5.42 acres. Per our meeting on 07/20/21, the 9.1 acres for the zoning data chart is to remain. Please See Site Area Notes that have been added to the Site Plan clarifying the 9.1 acres calculation (which includes Premises A and B) and highlighting the leased area in acres.**

Comment 4 Replace the tulip poplar (Liriodendron tulipifera) species which is proposed at three corners of the building since this is a fast-growing, wide-spreading species. This is also referenced in the BCPC review.

Response 4 **Completed. Please see the revised Landscape Planting Plan – Sheet LP-1 (Sheet 22 of 23) and Landscape Details & Specifications Plan – Sheet LP-2 (Sheet 23 of 23).**

Comment 5 We defer review of the traffic engineering assessment to the Township Traffic Engineer.

Response 5 **Acknowledged.**

Comment 6 All existing and proposed cross access/parking agreements should be submitted to the Solicitor for review.

Response 6 **Acknowledged. Please see attached parking agreement.**

If you should have any questions or require additional information, please do not hesitate to contact me at (267) 529-3660 or fgreene@core-states.com.

Sincerely,

Francis Greene, P.E.
Senior Project Manager

August 26, 2021

Robert T. Sponheimer, CFEI, CVFI, Battalion Chief
Bensalem Township Fire Rescue Department
2400 Byberry Road
Bensalem, PA 19020

CC: Francis Greene, PE, CoreStates LLC
Loretta Alston, Bensalem Township Building and Planning Department
Norm Muller, Bensalem Township Police Traffic Safety
Bensalem Township Council
Bensalem Township Planning Committee

RE: JPMorgan Chase Bank Bensalem PA
TMP #: 2-43-405
Total Acres: 4.37 Acres T.B.D.: .76
Date of Plan: 05/13/2021 Sheets: C11, C12 & C13
Location: 1729 Street Road
Bensalem Township, Bucks County, PA

Dear Mr. Krasselt,

We are in receipt of the JPMorgan Chase Bank Bensalem PA Review Letter dated May 26, 2021. Please find enclosed responses to the previously mentioned documents.

Comment 1-a Provide a fire apparatus turning design plan, demonstrating that township fire apparatus can properly navigate throughout the property. Plan C19 "Emergency Access Plan" use a fire apparatus template that is not in accordance with our requirements.

Response 1-a **Completed. The fire apparatus template has been updated to be in accordance with Bensalem Township Fire Rescue Department. Please see the Emergency Access Plan (Sheet C19).**

Comment 1-b Provide a fire apparatus turning design plan, demonstrating that township fire apparatus can properly navigate throughout the property. See the enclosed copy of the Bensalem Township Fire Apparatus turning radius specification requirements.

Response 1-b **Acknowledged. The fire apparatus template has been updated to be in accordance with Bensalem Township Fire Rescue Department. Please see the Emergency Access Plan (Sheet C19).**

Comment 2-a Provide a detailed plan indicating the locations of the fire lanes, including the required signage and markings on the pavement. See the enclosed copy of the Bensalem Township Fire Lane specification requirements.

Response 2-a **Completed. The fire lane locations & signs have been added to the plans. Please see Keynote "AE" & "AF" on the Site Plan (Sheet C5).**

Comment 3-a Provide a utility plan, specifying the locations of all new and existing fire hydrants and fire service water mains. A fire hydrant shall be located at an approved location with-in 300' of all sides of a structure.

Response 3-a **Completed. The existing fire hydrant location (163.82 feet from the furthest proposed building corner) is shown by Keynote "Q" on the Utility Plan. The entirety of the limit of disturbance is within 300 feet of the existing fire hydrant on the neighboring parcel. Please see the Emergency Access Plan (Sheet C19) for the 300-foot radius with the center of the circle being the existing fire hydrant. The existing 8" C.I.P. Water Main is shown on by Keynote "R" on the Utility Plan. The proposed 1.5" Type K Water Lateral is shown on by Keynote "K" on the Utility Plan. Please see the Utility Plan (Sheet C7).**

If you should have any questions or require additional information, please do not hesitate to contact me at (267) 529-3660 or fgreene@core-states.com.

Sincerely,

Francis Greene, P.E.
Senior Project Manager

August 26, 2021

William Zadrovicz, E.I.T.
Traffic Planning and Design, Inc.
2003 Lower State Rd, Suite 122
Doylestown, PA 18901

CC: The Honorable Joseph DiGirolamo
William Cmorey, Director of Administration
Ken Farrall, Director Code Enforcement
John Chaykowski, Finance Department
Stacey Polakowski, Chairman, Impact Fee Advisory Committee
Russell Benner, P.E., T & M Associates, Township Engineer
Phil Wursta, TPD, Township Traffic Engineer

RE: 1729 Street Rd-Chase Bank
Land Development
TPD # BSTO.00182

Dear Mr. Zadrovicz,

We are in receipt of the JPMorgan Chase Bank, N.A. Preliminary/Final Land Development Plan Review Letter dated July 14, 2021. Please find enclosed responses to the previously mentioned documents.

Study Comments

Comment 1 An impact fee will not be necessary for this site due to the proposed site generating less traffic than the site that it is replacing.

Response 1 **Refer to the Revised Traffic Engineering Assessment prepared by Shropshire Associates, LLC.**

Comment 2 Trips should not be shown making a left into the driveway due to the driveway being a right in/right out driveway. Redistribute traffic appropriately.

Response 2 **Refer to the Revised Traffic Engineering Assessment prepared by Shropshire Associates, LLC.**

Comment 3 The synchro analysis should be provided for review and approval.

Response 3 **Refer to the Revised Traffic Engineering Assessment prepared by Shropshire Associates, LLC.**

Plan Comments

Comment 4 Provide a site connection and crossing to allow future connection to sidewalk along the site frontage.

Response 4 **Completed. Please see the Site Plan – Sheet C5.1 (Sheet 5 of 23).**

Comment 5 Update the ADA concrete ramp detail to show a minimum of 5' ramp width/opening and a minimum 4x4 foot turning area at the top of the ramp.

Response 5 **Completed. Please see Construction Details – Sheet C17 (Sheet 18 of 23).**

Comment 6 Provide a truck turn showing a garbage truck accessing the dumpster area.

Response 6 **Completed. Please see the Emergency Access Plan – B – Sheet C19.2 (Sheet 21 of 23).**

Comment 7 Coordinate work between the shopping center redevelopment and this site (drainage, traffic control, drive aisle changes). Provide notes on the plans and correspondence regarding these items. Provide site traffic control for trenching operations if necessary.

Response 7 **Completed. Please see Site Note #10 on the revised Site Plan – Sheet C5.1 (Sheet 15of 23).**

Comment 8 Do not install stop signs and do not enter signs on the same post.

Response 8 **Completed. Please see the Site Plan – Sheet C5.1 (Sheet 5 of 23).**

Comment 9 Revise the truck turns to avoid tracking over site features. This includes curbing and site lighting poles.

Response 9 **Completed. Please see the Emergency Access Plan – A & B – Sheets C19.1 & C19.2 (Sheet 20-21 of 23).**

If you should have any questions or require additional information, please do not hesitate to contact me at (267) 529-3660 or fgreene@core-states.com.

Sincerely,

Francis Greene, P.E.
Senior Project Manager

Shropshire Associates LLC

ESBE / SBE Certified

Traffic Engineering, Transportation Planning & Design

277 White Horse Pike, Suite 203, Atco, NJ 08004
P: 609-714-0400 F: 609-714-9944 www.sallc.org

David R. Shropshire, PE, PP
A Andrew Feranda, PE, PTOE, CME
Randal C. Barranger, PE
Nathan B. Mosley, PE, CME

May 7, 2021
Updated: August 12, 2021

Mr. Fran Greene, P.E. *(via email: FGreene@Core-States.com)*
CoreStates Group
201 South Maple Avenue - Suite 300
Ambler, PA 19002

Re: **Traffic Engineering Assessment**
Chase Bank – Bensalem
1729 Street Road (SR 132)
Bensalem Township, Bucks County, PA
SA Project No. 20186

Dear Martin:

At your request, Shropshire Associates LLC prepared the following Traffic Engineering Assessment (TEA) for application to Bensalem Township Bucks, County for the proposed Chase Bank. The site located at 1729 Street Road, State Route 132 (SR 132), is currently a pad site within an existing shopping center. The site currently contains a 2,421 square foot (sf) Krispy Kreme donut and coffee shop. The proposal is to remove the existing building and replace it with a 3,320 sf Chase Bank with one (1) remote drive-up ATM lane and a bypass lane. The proposed bank will be accessed via existing driveways for the shopping center along Street Road, Brookwood Drive and via circulation aisles internal to the shopping center. The purpose of this assessment is to determine the amount of traffic to be generated by the proposed Chase Bank and to analyze the impact of the site's traffic on the adjacent roadway network.

Existing Conditions

A field reconnaissance was conducted to determine the features of the adjacent roadways in the study area. A brief description of the roads and intersections within the study area are provided below.

In the vicinity of the site, **Street Road, State Route 132 (SR 132)** is a four-lane roadway with dual left center turn lane, classified as a principal arterial and is under the jurisdiction of the Pennsylvania Department of Transportation (PennDOT). Street Road has an approximate cartway width of 68 feet (ft), consisting of two (2) 11 ft lanes in each direction, as well as a 12 ft center two-way left-turn lane with 6 ft shoulders. The posted speed limit along Street Road is 45 MPH. For the purpose of this study, Street Road is assumed to extend in a general east-west direction.

In the vicinity of the site, **Doris Avenue** is a two-lane local roadway under the jurisdiction of Bensalem Township. Doris Avenue consists of one (1) lane in each direction and has an approximate cartway width of 24 ft. The posted speed limit along Doris Avenue is 25 MPH. For the purpose of this study, Doris Avenue is assumed to extend in a general north-south direction.

The intersection of **Street Road (SR 132) and Doris Avenue/Shopping Center Driveway** is a four-legged intersection that is stop-controlled along northbound Doris Avenue and southbound shopping center driveway approaches. Both the eastbound and westbound Street Road approaches consist of two-way left-turn lane, a dedicated through lane, and shared through/right-turn lane. The northbound stop-controlled Doris Avenue approach consists of a single lane for all movements. The southbound stop-controlled shopping center driveway approach consists of a single right-turn only exit lane. It is worth noting that although the intersection is configured for right-turn only egress, several left-turn movements were observed exiting from the shopping center driveway.

The internal intersection of the **Shopping Center Driveway and the Philly Pretzel Factory Driveway/Krispy Kreme Driveway** intersection is a four-legged intersection that is assumed to have stop-control along the eastbound Philly Pretzel Factory driveway and the westbound Krispy Kreme driveway approaches. All approaches consist of a single lane for all permitted movements.

Traffic Count Data

To determine the amount of traffic on the adjacent roadway network, manual turning movement counts (MTMC) were conducted at the study intersections on Thursday, March 18, 2021 and Saturday March 20, 2019. The counts were conducted during the weekday morning peak period (7:00 to 9:00 AM), afternoon peak period (4:00 to 6:00 PM) and the Saturday peak period (11:00 AM to 2:00 PM). A summary of the traffic counts can be found in the appendix to this assessment and the existing volumes are illustrated on Figure 1A.

In addition, due to the current reduced roadway volumes as a result of COVID-19, the collected March 2021 MTMC data was adjusted. The traffic volumes collected for the Street Road through movements were increased by 10% to normalize the volumes. The adjusted existing volumes are illustrated on Figure 1B.

Future Conditions

As indicated above, the proposal is to construct a 3,320 SF Chase Bank with one (1) remote drive-up ATM lane and a bypass lane on a pad site within the shopping center. The traffic resulting from the proposed development will not affect the adjacent roadway network until the development is fully built out, which is anticipated to be by the year 2023. Typically, it can be expected that the traffic volumes along the adjacent roadways will increase as a result of general area traffic growth however, based on the *Growth Factors for August 2019 to July 2020* provided by PennDOT, a 0.00% annual traffic growth will occur along Street Road in the vicinity of the site. Additionally, the adjacent shopping center is also currently undergoing redevelopment consisting of a 56,526 sf retail space and a 42,596 sf grocery store. The traffic associated with this other proposed redevelopment is illustrated in Figure 2. The 2023 No-Build volumes were estimated by applying the 0.00% annual growth rate to the existing roadway volumes added with the proposed background development (Figure 2) and are indicated on Figure 3.

ITE Trip Generation

The amount of traffic to be generated by the proposed Chase Bank with drive-up ATM lane can best be estimated by a comparison with similar sites. The amount of traffic to be generated by the proposed site was estimated based on the data contained in the Institute of Transportation Engineers (ITE) *Trip Generation Handbook, 10th Edition*. The proposed use is

most similar to ITE Land Use 912: Drive-in Bank. Table 1 indicates the total, pass-by, and new traffic to be generated by the proposed Chase Bank with drive-thru based upon the latest ITE trip generation rates, with the worksheets attached for your review.

Table 1
ITE Trip Generation – Chase Bank (3,320 SF)

Trip Type	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total
Total	18	14	32	34	34	68	44	43	87
Pass-By	5	5	10	12	12	24	17	17	34
New	13	9	22	22	22	44	27	26	53

The traffic to be generated by the proposed Chase Bank must then be distributed to the adjacent roadway network in a manner in which the employees and patrons are reasonably expected to travel. The new site traffic was assigned to the roadway network based on the existing distribution of traffic along the adjacent roadway network during peak hour conditions (Figure 4). The pass-by site traffic distribution was calculated based upon the existing roadway volumes currently passing the site during the peak hours (Figure 5).

The new trip assignment based the existing conditions is shown in Figure 6, with the pass-by trip assignment shown in Figure 7. The total site traffic, combining the new trips (Figure 6) and pass-by trips (Figure 7), is shown in Figure 8.

The total site traffic (Figure 8) was then added to the No-Build Volumes to determine the Build volumes, which are illustrated on Figure 9.

Trip Generation Comparison

As noted above, the proposed 3,320 SF Chase Bank facility will replace the existing 2,421 SF Krispy Kreme development. Therefore, a trip generation comparison has been prepared between the proposed Chase Bank facility and the existing 2,421 SF Krispy Kreme donut & coffee shop. The existing use is most similar to ITE Land Use 937: Coffee/Donut Shop with Drive-Through Window. Table 2 indicates the total traffic to be generated by the existing Krispy Kreme building based upon the latest ITE trip generation rates, with the worksheets attached for your review.

Table 2
ITE Trip Generation – Krispy Kreme (2,421 SF)

Trip Type	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total
Total	109	106	215	52	53	105	106	106	212
Pass-By	81	81	162	26	26	52	53	53	106
New	28	25	53	26	27	53	53	53	106

As shown in Table 2, when using the latest ITE trip generation rates and comparing the number of total trips to be generated by the existing Krispy Kreme donut & coffee shop as compared to the number of total trips to be generated by the proposed Chase Bank facility,

there will be a decrease in new trips of approximately 31 during the weekday AM peak hour, approximately 9 during the weekday PM peak hour, and approximately 53 during the Saturday midday peak hour.

Operational Analysis

In order to measure the quality of the traffic flow for the adjacent roadways and intersections, capacity analyses for the study intersections have been completed based upon the methods outlined in the *2010 Highway Capacity Manual*. Capacity analysis is a procedure used to estimate the ability of the roadway network to carry traffic. Capacity analyses are performed based on a Level of Service methodology. Level of Service (LOS) is a qualitative measure that characterizes the operational conditions of a roadway or intersection based on the perceptions by motorists and passengers. LOS are defined for each type of facility (i.e. freeways, highways, signalized intersections, unsignalized intersections). These Levels of Service range from LOS A to LOS F, with a LOS A representing the best operating conditions and a LOS F representing the worst operating conditions.

The determination for the LOS for an unsignalized intersection is based upon the average control delay associated with each minor movement (i.e. yielding left-turn movements from the major roads and stop-controlled movements from the minor approaches). The Level of Service criteria for signalized and unsignalized intersections is summarized below in Table 2.

Table 2
Level of Service Criteria

Level of Service	Unsignalized Delay (sec)
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

In order to assess the traffic impact of the proposed development, the roadway network was evaluated under the Existing, No-Build, and Build conditions using the above-described methodology. A detailed description of the study intersections' operations under the three scenarios is provided below, with the resulting Existing, No-Build and Build Levels of Service illustrated on Figures 10, 11, and 12; respectively. The capacity analysis worksheets are attached for reference.

Street Road (SR 132) and Shopping Center Driveway/Doris Avenue

Under the existing conditions, the eastbound Street Road conflicting left-turn movements operate at a LOS B during the AM and PM peak hours, and LOS C during the Saturday midday peak hour. The westbound Street Road conflicting left-turn movements operate at a LOS B during all peak hours. The northbound Doris Avenue stop-controlled approach operates at a LOS B during the AM peak hour and LOS F during the PM and Saturday midday peak hours. The southbound shopping center driveway stop-controlled right-turn movements operate at a LOS B during the AM peak hour and LOS C during the PM and Saturday midday peak hours.

Under the future No-Build conditions, all individual movements at the Street Road and shopping center driveway/Doris Avenue stop-controlled intersection will continue to operate at existing levels of service with the exception of the eastbound conflicting left-turn movements, which will operate at a LOS C during the PM peak hour, as well as the shopping center stop-controlled right-turn movements, which will operate at a LOS F during the PM peak hour and LOS E during the Saturday midday peak hour.

Under the future Build conditions, all individual movements at the Street Road and shopping center driveway/Doris Avenue stop-controlled intersection will continue to operate at No-Build levels of service with the exception of the southbound shopping center stop-controlled right-turn movements, which will operate at a LOS F during the Saturday midday peak hour.

The proposed bank site will contribute towards a total of 0.2%, 1.0%, 1.2% of the future volumes during the AM, PM, and Saturday midday peak hour volumes at the intersection, respectively.

Shopping Center Driveway and Pretzel Factory Driveway/Site Driveway

Under the existing conditions, the northbound and southbound shopping center conflicting left-turn movements operate at a LOS A during all peak hours. The eastbound Philly Pretzel Factory driveway stop-controlled approach operates at a LOS A during all peak hours. The westbound site driveway stop-controlled Krispy Kreme approach operates at LOS A during the AM and PM peak hour and LOS B during the Saturday midday peak hour.

Under the future No-Build conditions, the northbound and southbound shopping center conflicting left-turn movements will continue to operate at a LOS A during all peak hours. The eastbound Philly Pretzel Factory driveway stop-controlled approach will operate at a LOS B during all peak hours. The westbound site driveway stop-controlled approach will operate at a LOS B during the AM peak hour, LOS C during the PM peak hour, and LOS B during the Saturday midday peak hour.

Under the future Build conditions, all individual movements will continue to operate at No-Build levels of service, with the exception of the westbound site driveway approach, which will operate at a LOS D during the PM peak hour and LOS C during the Saturday midday peak hour, as well as the eastbound Pretzel Factory driveway approach, which will operate at a LOS C during the PM peak hour.

Site Layout

The proposal is to replace the existing 2,421 sf Krispy Kreme donut and coffee shop with a 3,320 sf Chase Bank with one (1) remote drive-up ATM lane and a bypass lane. The proposed bank will be oriented toward Street Road on a pad site within an existing shopping center. That same shopping center is also under redevelopment. The proposed bank will share access and internal circulation aisles with the shopping center and other pad sites that comprise the shopping center. The bank will have two (2) access points that connect the bank pad with the shopping center, one (1) access will form the west approach of the intersection with the pretzel factory driveway. The other access point will be to the rear of the bank or the north that connects with the large commercial building currently being developed for retail and grocery store use. Parking for the bank will be contained on the pad and includes 30 parking spaces of which there are 2 handicap parking spaces. The proposed bank will also have a remote drive-up ATM lane for the convenience of customers. The drive-up ATM lane helps decrease the

need for parking spaces. Additionally, the trend is toward more online banking which also results in reduced demand for parking and generally lower trip generation rates. Circulation aisles in the bank pad site are 24 ft wide for two-way access to parking spaces. The drive-thru lane is 15 ft wide and located on the east and north sides of the building for one-way (counter-clockwise) flow to the drive-up ATM. The 30 parking spaces are 9 ft wide by 18 ft long, typical. Sidewalk is provided for pedestrian access between parking and the building entrances. Sidewalk is typically a minimum of 5 ft wide with wider 8 ft sidewalk near the entrance to the bank.

Conclusion

Based on the data and analysis presented in this traffic engineering assessment report, the proposed Chase Bank will have minimal impact on the adjacent roadways based upon the following conclusions:

- The proposed 3,320 SF Chase Bank with remote drive-up ATM will generate at total of 22 new site trips during the AM peak hour, 44 new trips during the PM peak hour, and 53 new site trips during the Saturday peak hour.

- The proposed Chase Bank with remote drive-up ATM will generate significantly fewer trips than the previous Krispy Kreme use on the site. There will be 31 fewer total trips during the AM peak hour, 9 fewer total trips during the PM peak hour, and 53 fewer total trips during the Saturday peak hour.

- The proposed bank site will contribute towards a total of 0.2%, 1.0%, 1.2% of the future volumes during the AM, PM, and Saturday midday peak hour volumes at the shopping center access across from Doris Avenue.

- Access to the proposed Chase Bank facility will be safe and efficient making use of internal connection with the shopping center's circulation aisles for use of the Street Road and Brookwood Drive driveways.

- Under the Build conditions, all individual movements at the intersection of Street Road and the Shopping Center Driveway/Doris Avenue stop-controlled intersection will continue to operate at No-Build levels of service, with the exception of the southbound shopping center stop-controlled right-turn movements, which will operate at a LOS F during the Saturday midday peak hour. Should delay associated with this level of service occur, patrons of the shopping center have the ability to distribute to other shopping center driveways via internal circulation aisles.

- Under the Build conditions, all individual movements at the intersection of the shopping center driveway and the Pretzel Factory driveway/Chase Bank driveway stop-controlled intersection will continue to operate at No-Build levels of service, with the exception of the westbound site driveway stop-controlled approach, which will operate at a LOS D during the PM peak hour and LOS C during the Saturday midday peak hour, as well as the eastbound Pretzel Factory driveway approach, which will operate at a LOS C during the PM peak hour. It can be expected that any delay at this intersection will last for very short periods due to options available for patrons of the shopping center for ingress and egress.

Please call if you have any questions or require additional information.

Sincerely,
Shropshire Associates LLC

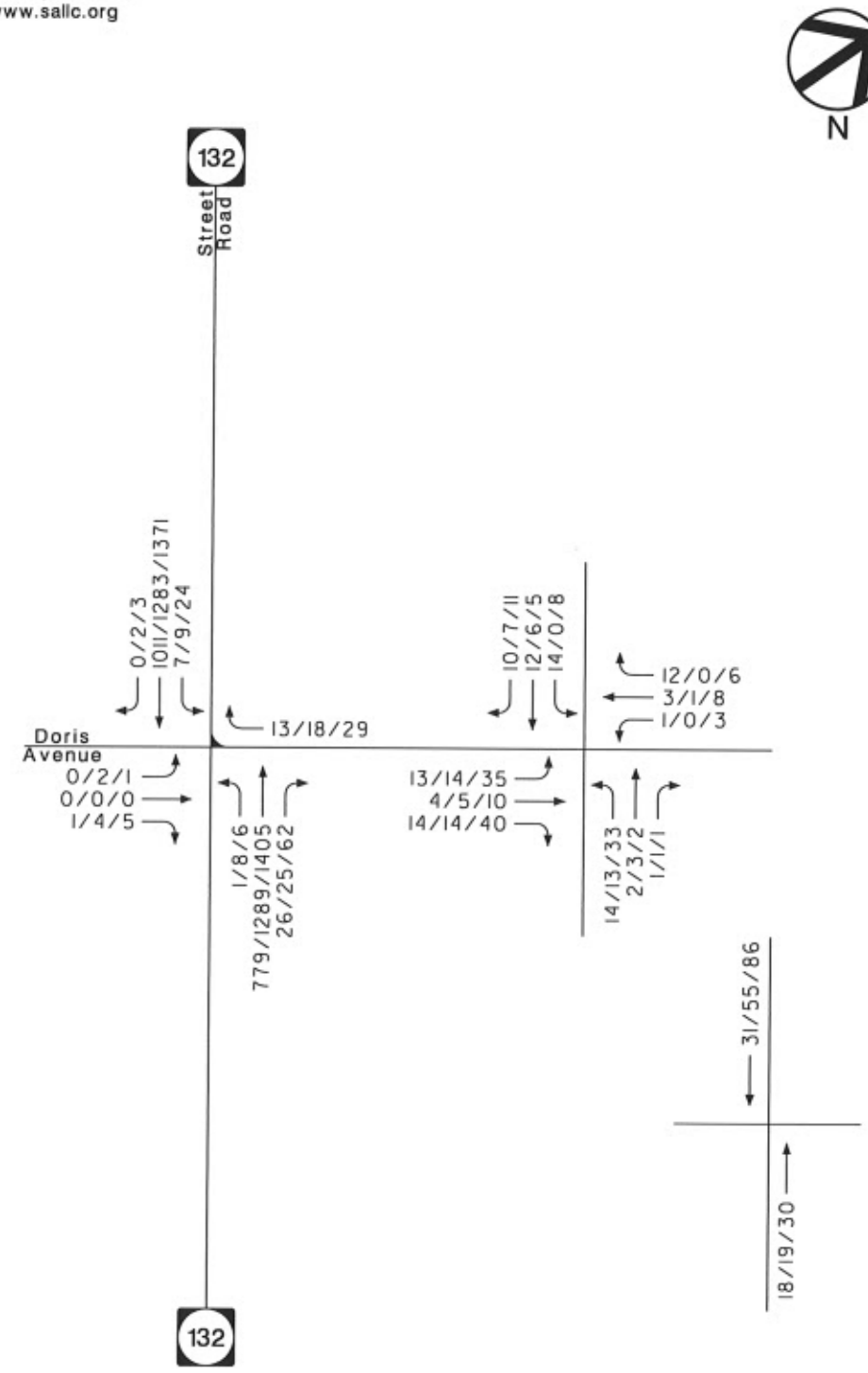
A Andrew Feranda, PE, PTOE, CME
Professional Engineer
P.A. License No. 61629
AAF/jab

Attachments

cc: Thomas Newman, PE (via email: TNewman@Core-States.com)

Shropshire Associates LLC
277 White Horse Pike - Suite 203, Atco, NJ 08004
P: 609.714.0400 F: 609.714.9944 www.sallc.org

FIGURE 1A
EXISTING VOLUMES



Chase – Bensalem

Bensalem Township, Bucks County, PA
August 2021

AM/PM/SAT PEAK HOUR

SA Project No. 20186

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FIGURE 1B
ADJUSTED EXISTING VOLUMES

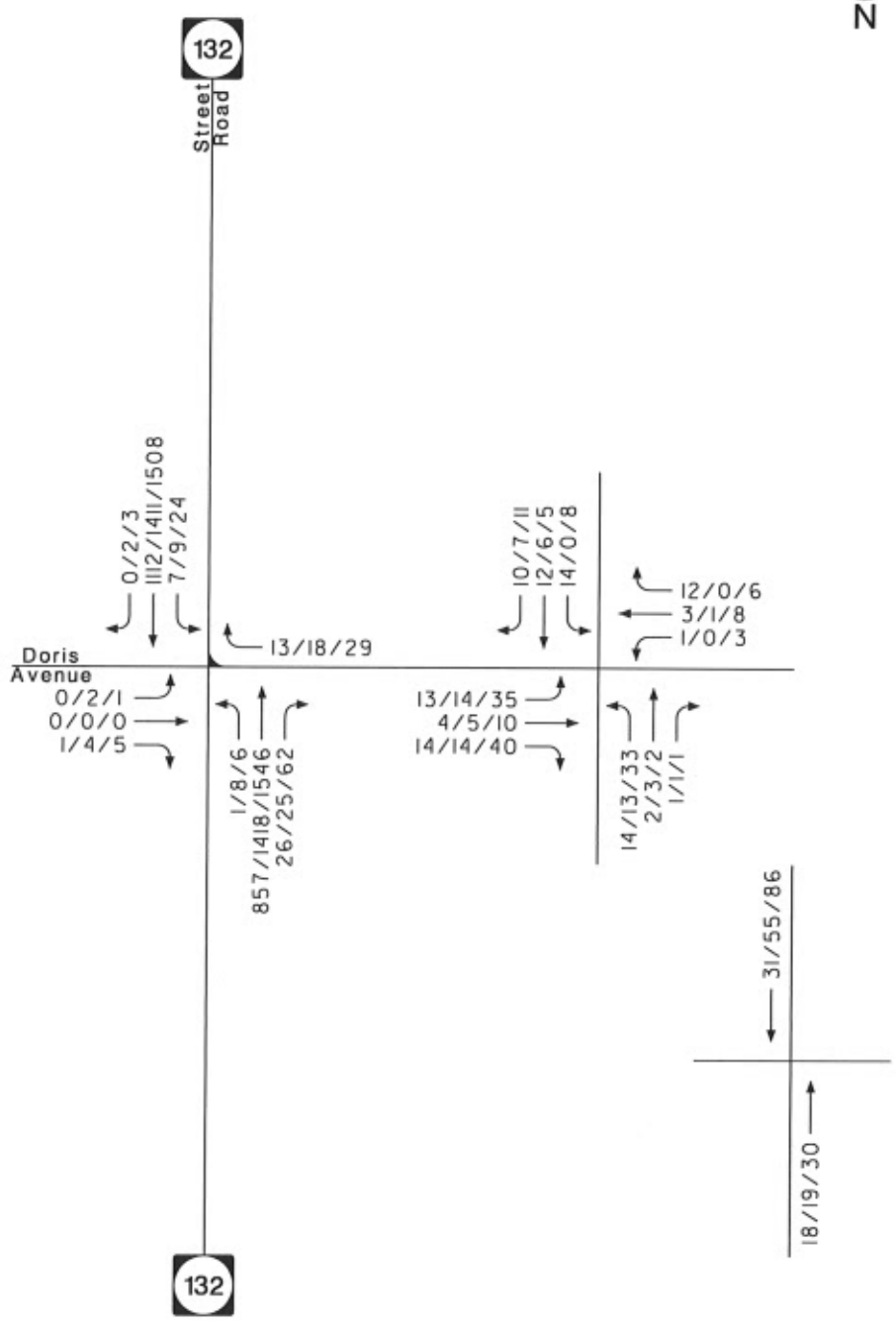

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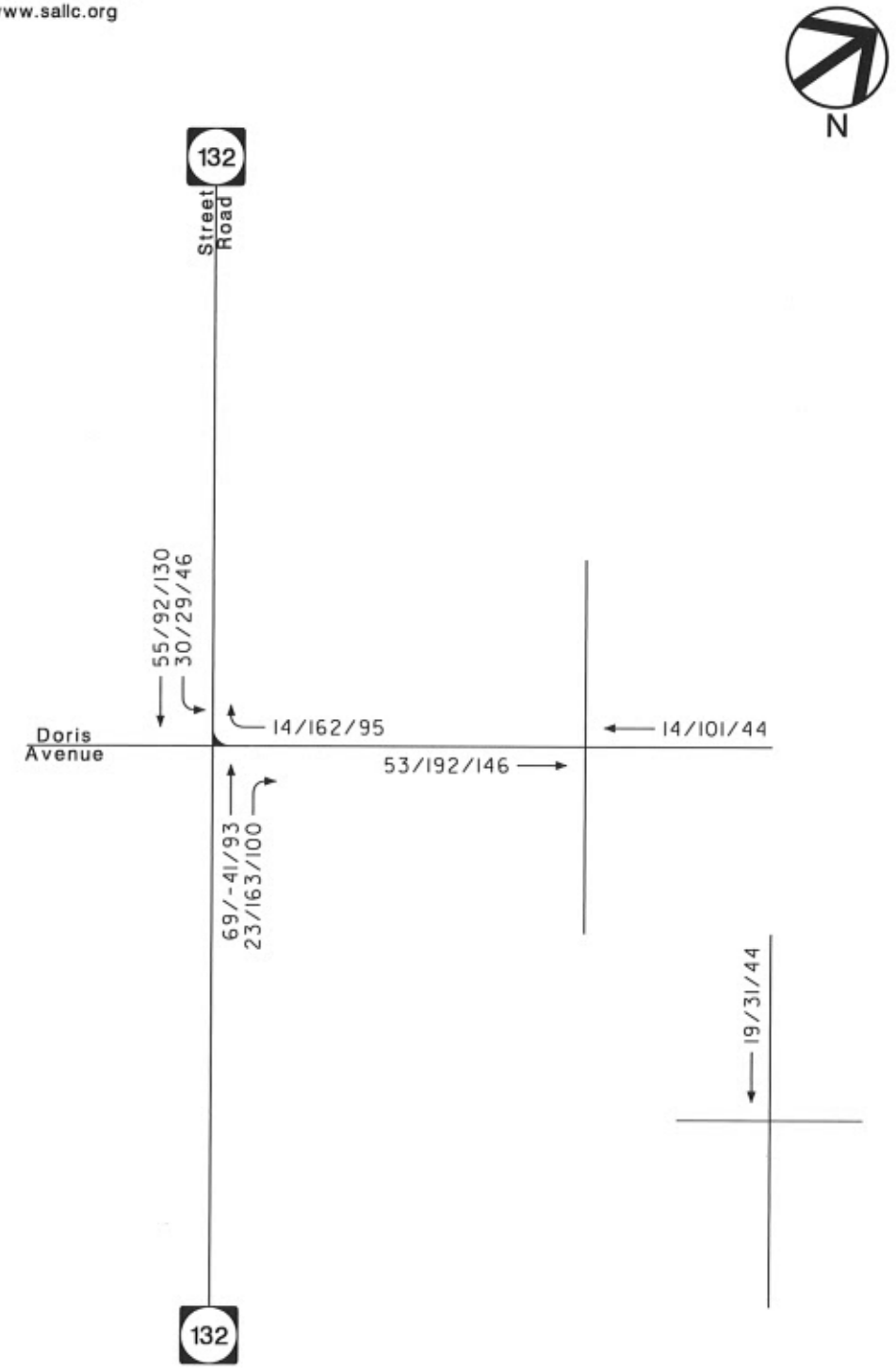
FIGURE 2
BACKGROUND DEVELOPMENT



Chase – Bensalem

Bensalem Township, Bucks County, PA
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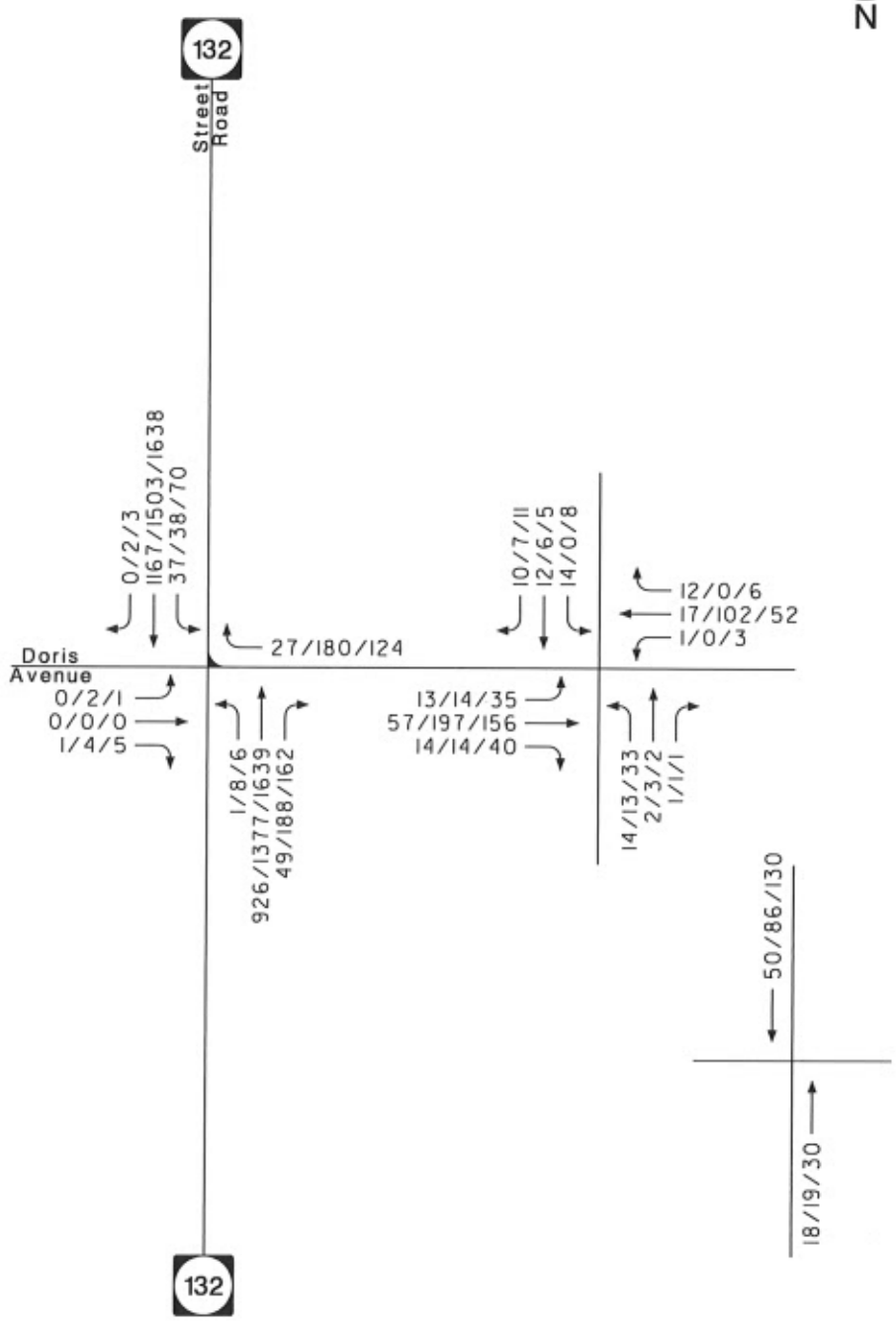
FIGURE 3
NO-BUILD VOLUMES



Chase – Bensalem

Bensalem Township, Bucks County, PA

April 2021

AM/PM/SAT PEAK HOUR

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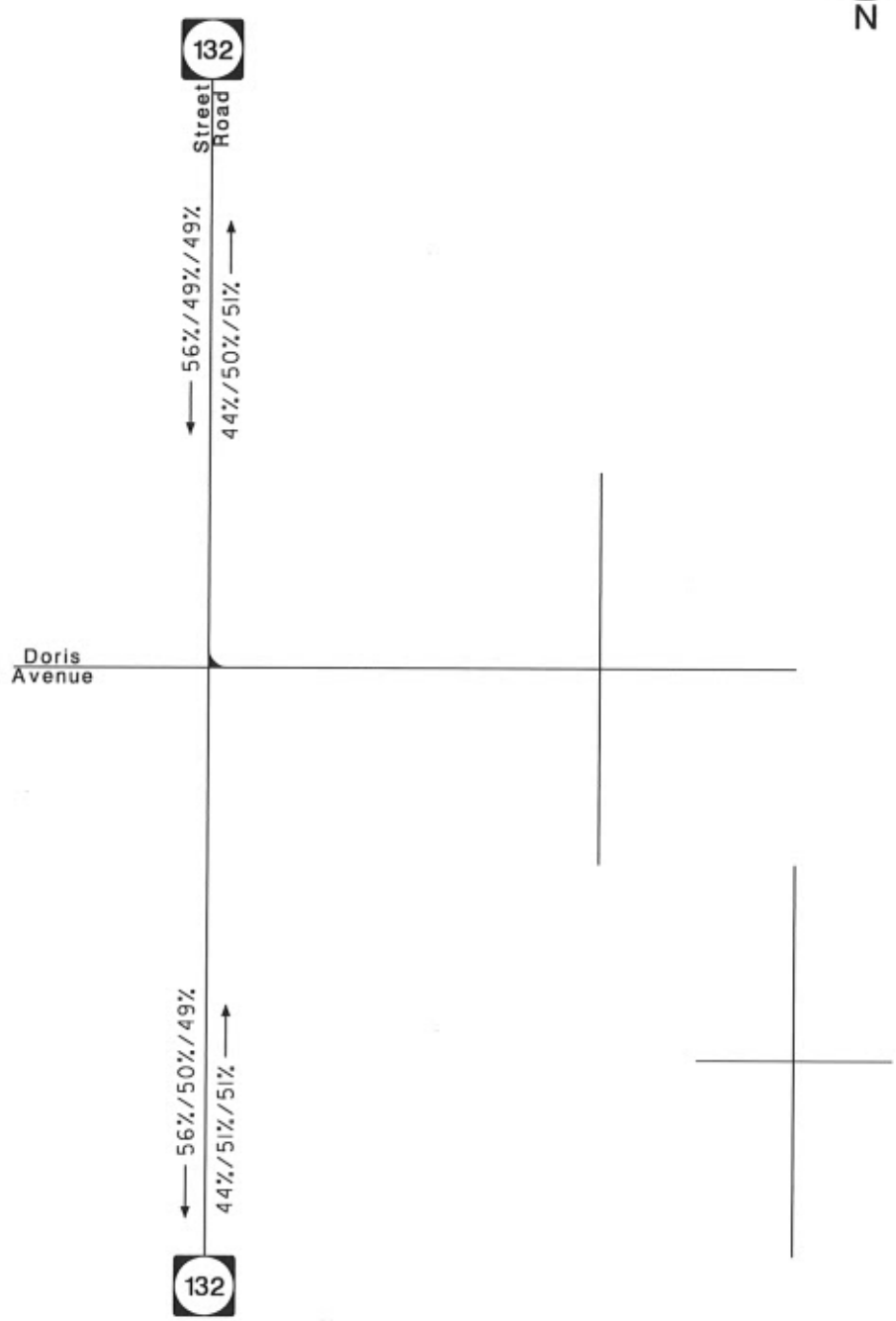
FIGURE 4
TRIP DISTRIBUTION
(New)

N



Chase – Bensalem

Bensalem Township, Bucks County, PA
August 2021

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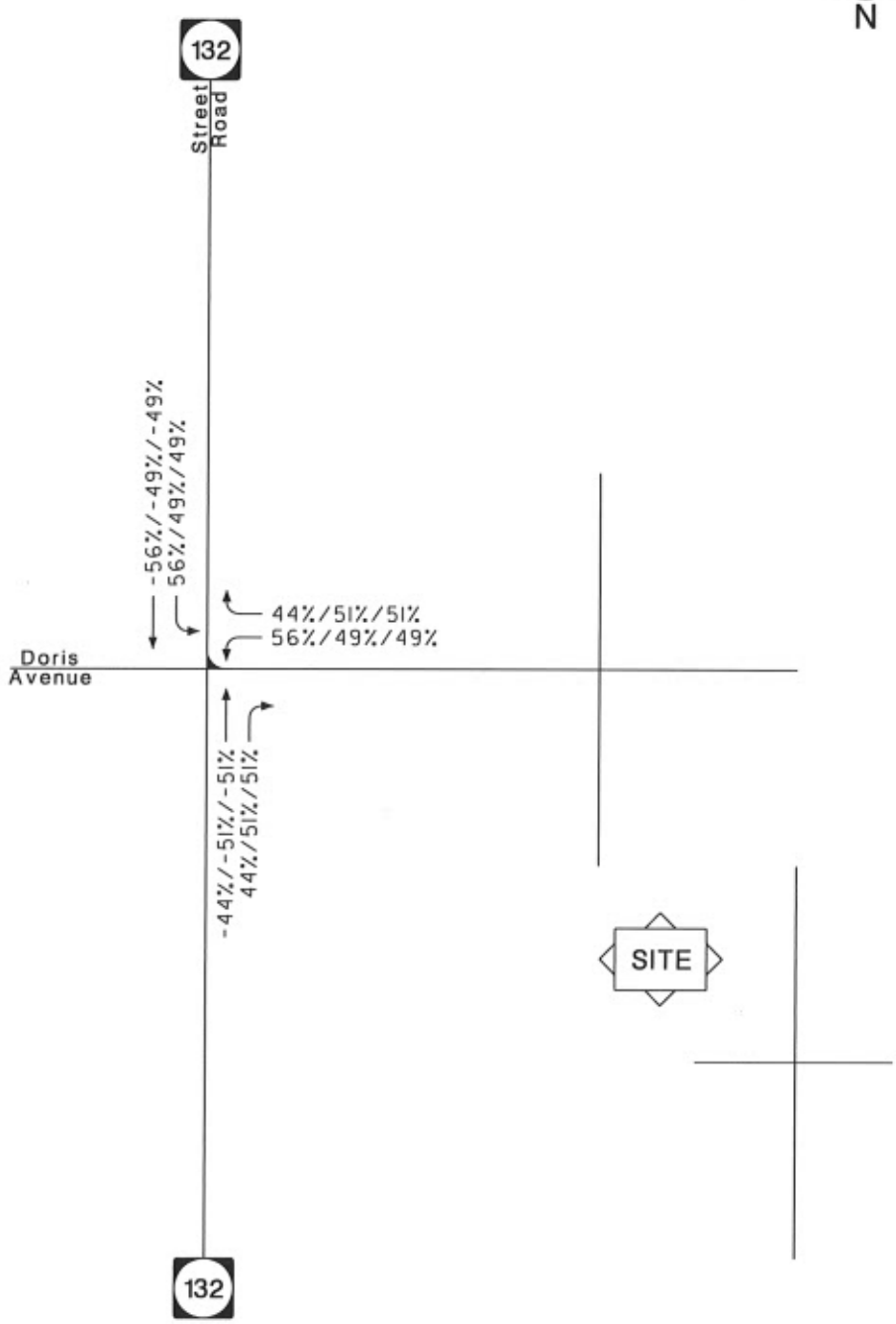
FIGURE 5
TRIP DISTRIBUTION
(Pass-By)

N



Chase – Bensalem

Bensalem Township, Bucks County, PA

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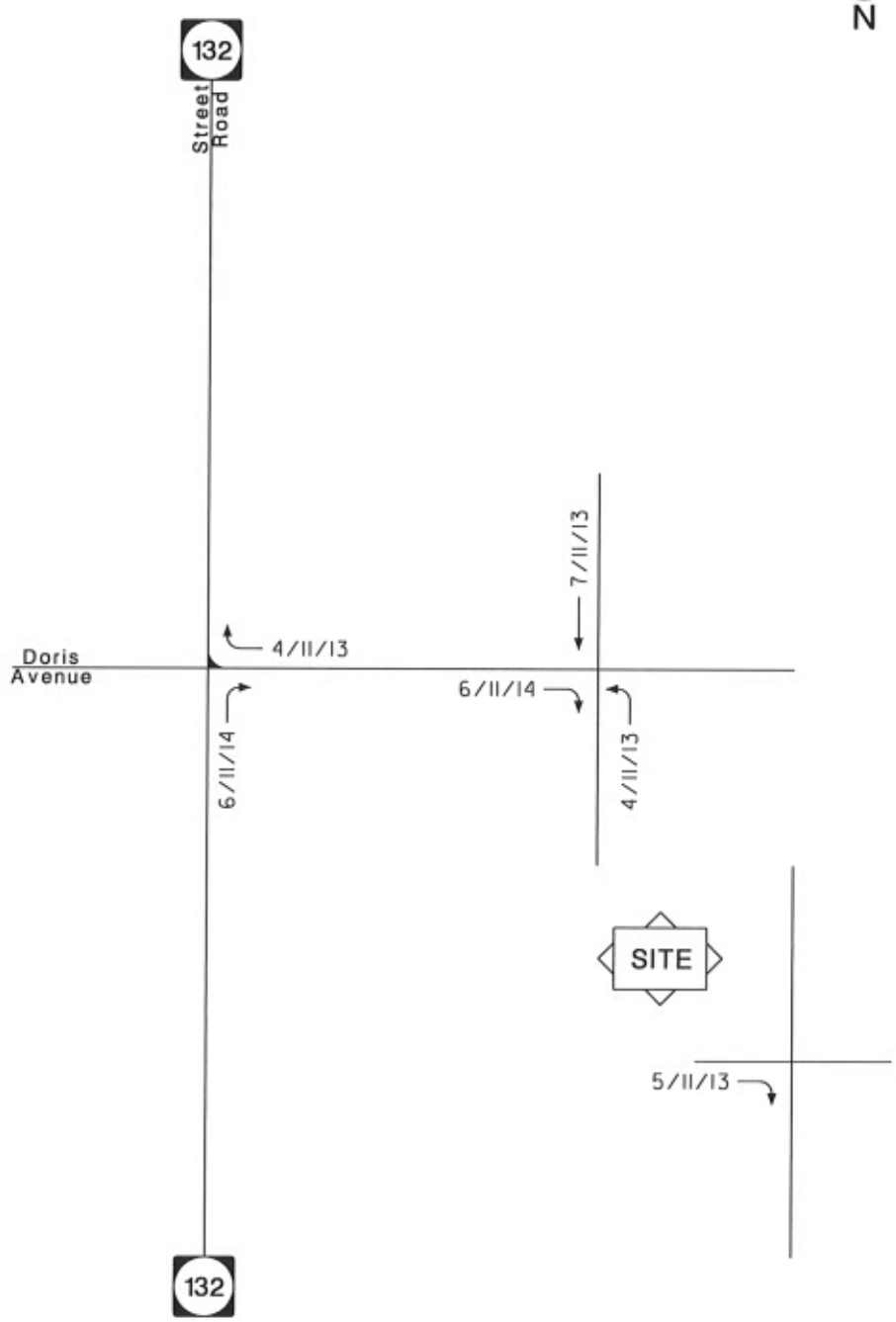
FIGURE 6
SITE TRAFFIC
(New)

N



Chase – Bensalem

Bensalem Township, Bucks County, PA
August 2021

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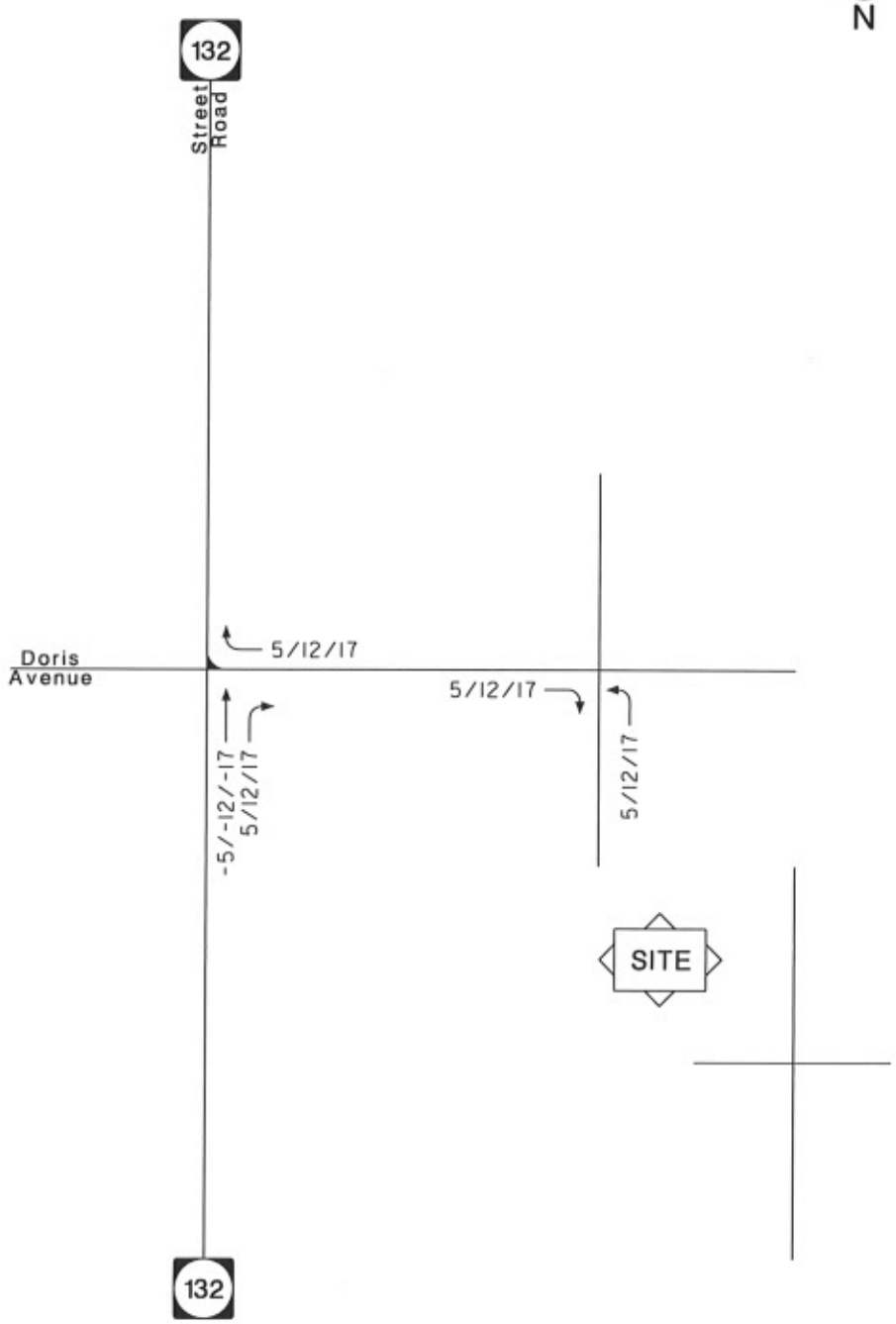
FIGURE 7
SITE TRAFFIC
(Pass-By)

N



Chase – Bensalem

Bensalem Township, Bucks County, PA

August 2021

AM/PM/SAT PEAK HOUR

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FIGURE 8
SITE TRAFFIC
(Total)

N

Chase – Bensalem

Bensalem Township, Bucks County, PA
August 2021

AM/PM/SAT PEAK HOUR

SA Project No. 20186

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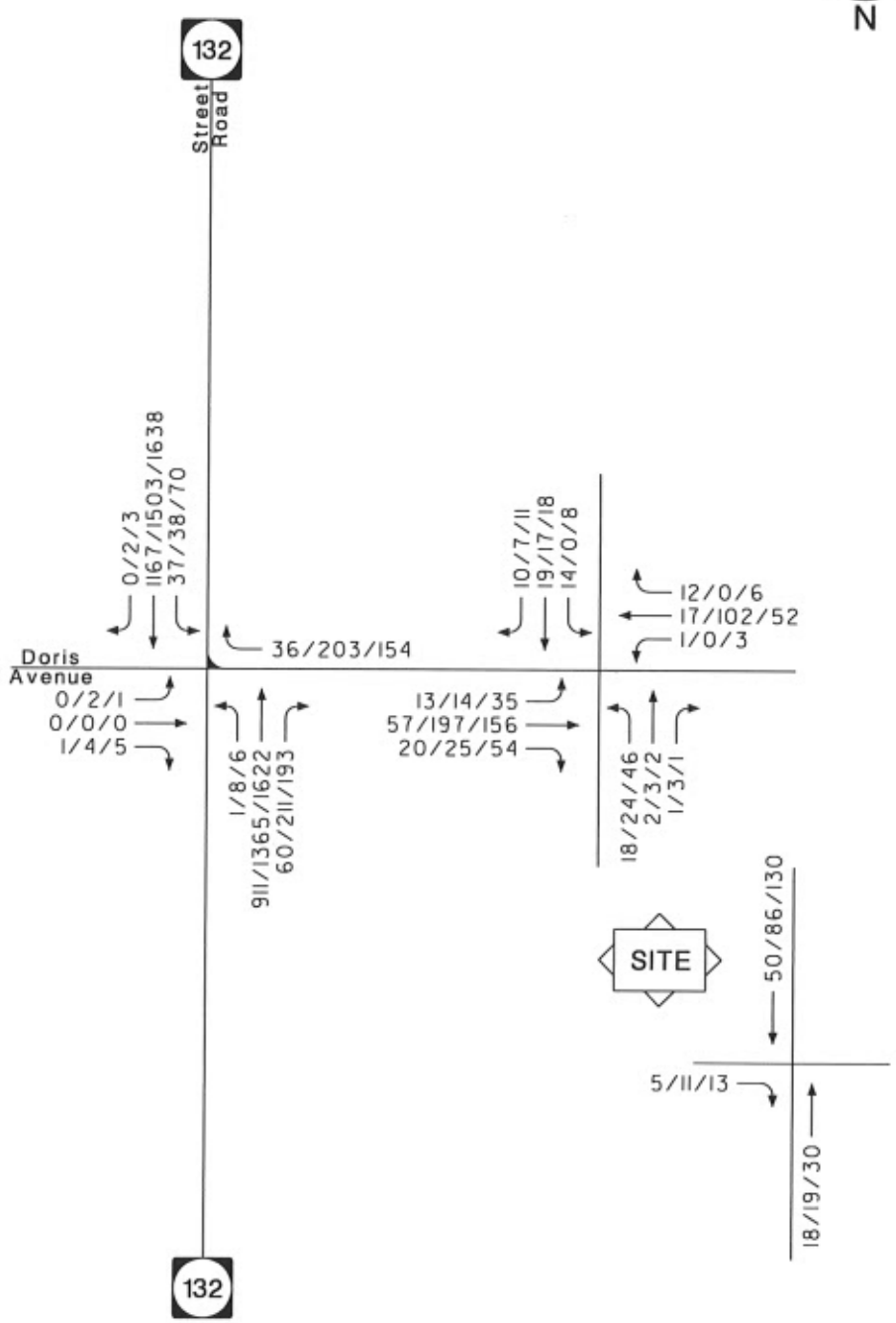
FIGURE 9
BUILD VOLUMES



Chase – Bensalem

Bensalem Township, Bucks County, PA

August 2021

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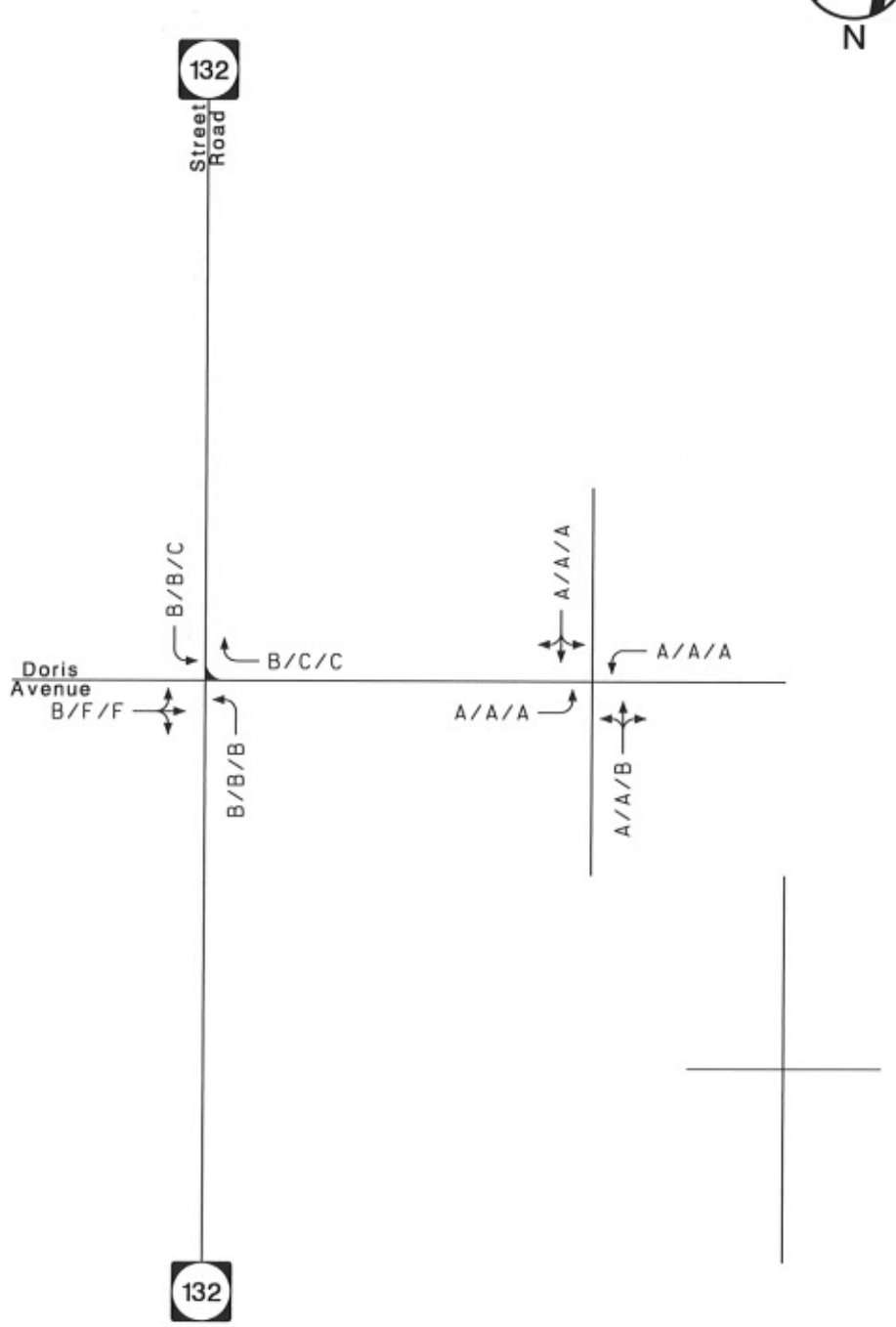
FIGURE 10
EXISTING LEVELS OF SERVICE



Chase – Bensalem

Bensalem Township, Bucks County, PA

August 2021

AM/PM/SAT PEAK HOUR

SA Project No. 20186

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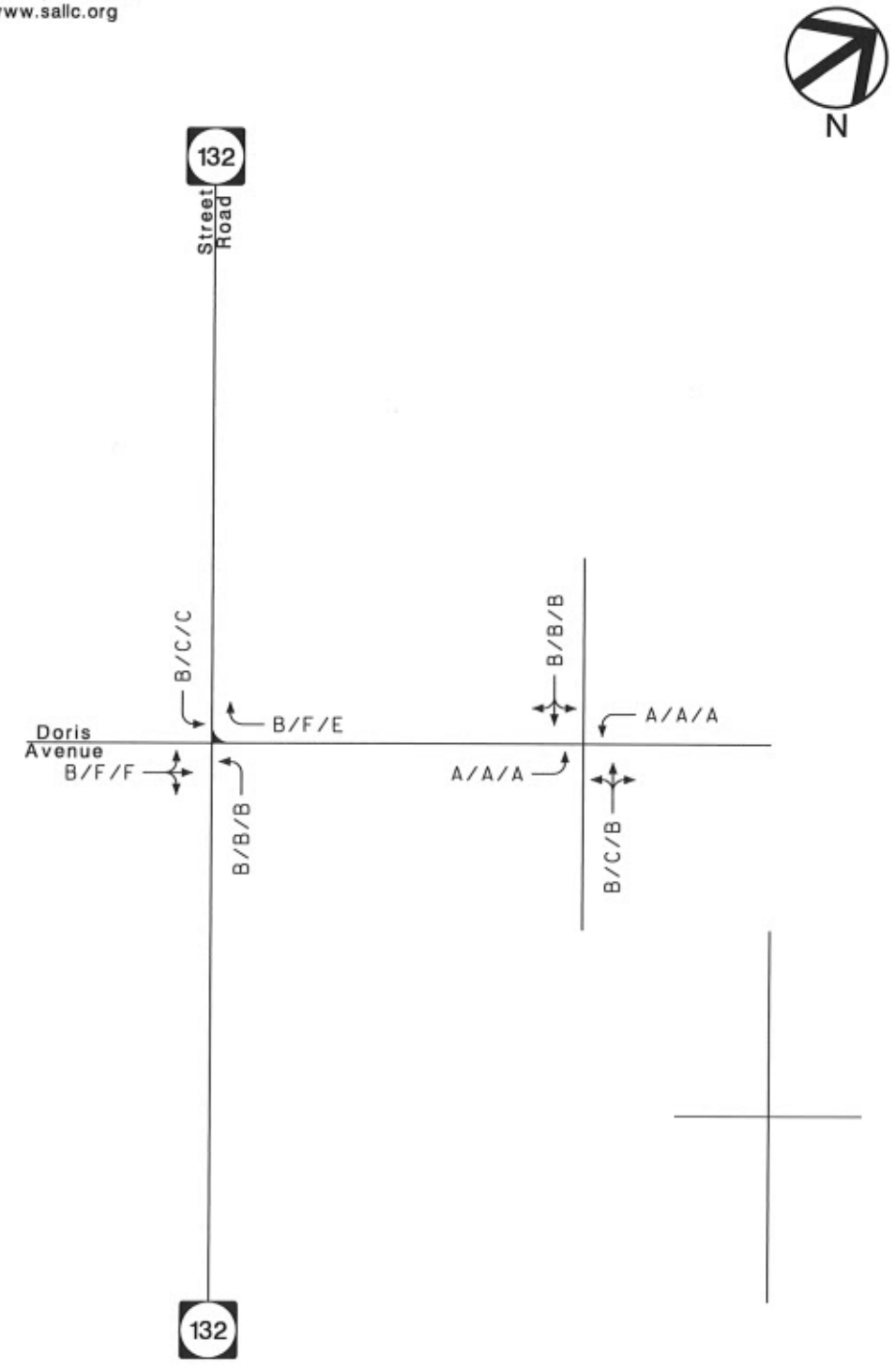
FIGURE 11
NO-BUILD LEVELS OF SERVICE



Chase – Bensalem

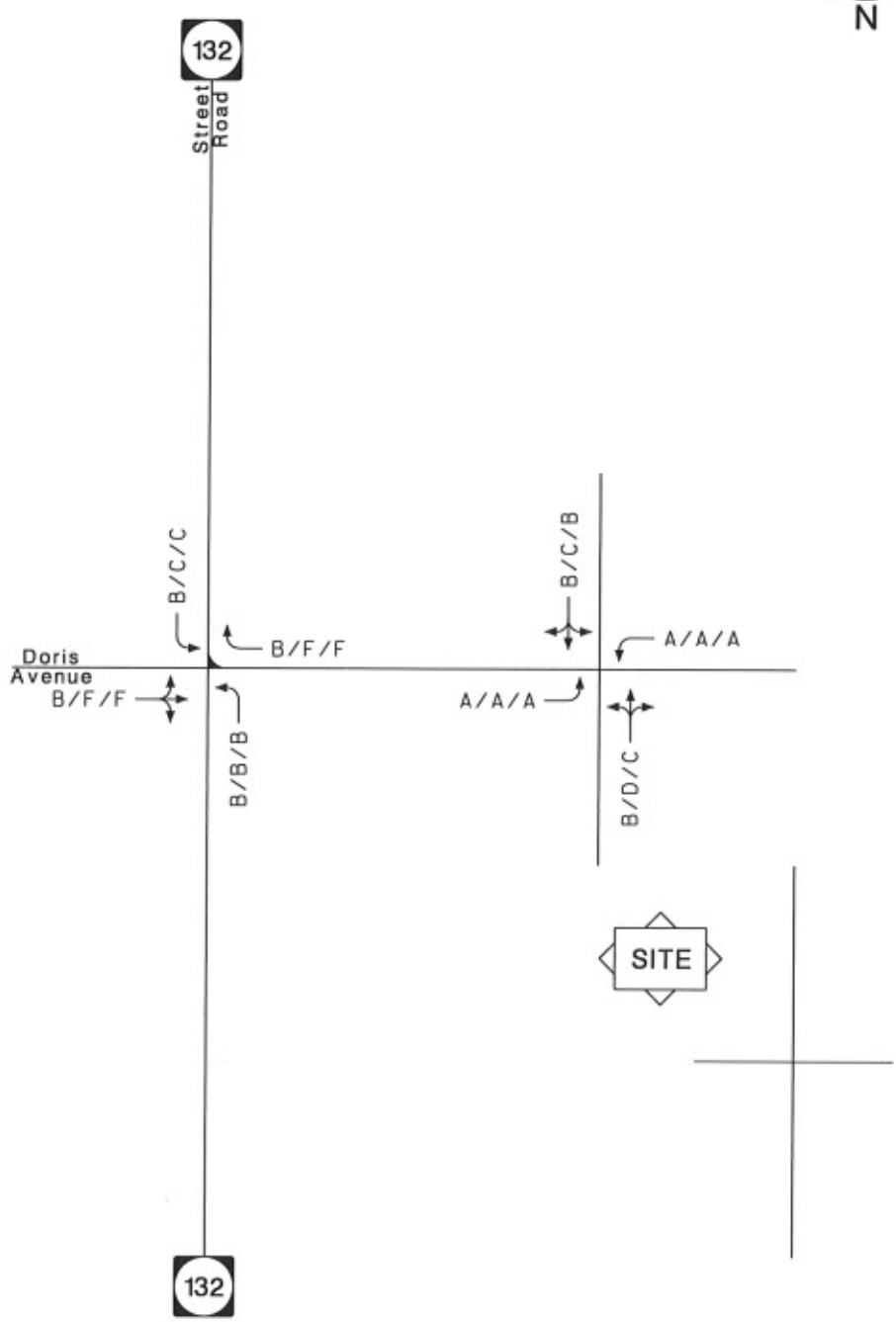
Bensalem Township, Bucks County, PA
August 2021

AM/PM/SAT PEAK HOUR

SA Project No. 20186

Shropshire Associates LLC
277 White Horse Pike - Suite 203, Atco, NJ 08004
P: 609.714.0400 F: 609.714.9944 www.sallc.org

FIGURE 12
BUILD LEVELS OF SERVICE



Chase – Bensalem

Bensalem Township, Bucks County, PA
August 2021

AM/PM/SAT PEAK HOUR

SA Project No. 20186

Shropshire Associates LLC

277 Whitehorse Pike, Suite 203
Atco, NJ 08004

N/S Route: Site Driveway / Doris Ave.
E/W Route: Street Rd.
Bensalem/Bucks County/PA
Thurs/Rain/JH/D4-3142

File Name : 20186001
Site Code : 20186001
Start Date : 3/18/2021
Page No : 1

Groups Printed- Unshifted - Trailers

	Site Driveway Southbound				Street Rd. Westbound				Doris Ave. Northbound				Street Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
07:00 AM	3	0	1	4	6	136	0	142	2	1	0	3	0	215	1	216	365
07:15 AM	0	0	0	0	4	174	0	178	1	0	0	1	0	236	0	236	415
07:30 AM	3	0	2	5	6	197	0	203	0	0	0	0	0	266	4	270	478
07:45 AM	5	0	4	9	6	212	0	218	0	0	0	0	0	269	2	271	498
Total	11	0	7	18	22	719	0	741	3	1	0	4	0	986	7	993	1756
08:00 AM	5	0	1	6	10	196	1	207	0	0	0	0	0	240	1	241	454
08:15 AM	3	0	5	8	1	174	0	175	0	0	0	0	0	210	3	213	396
08:30 AM	6	0	3	9	4	233	0	237	2	0	0	2	0	204	3	207	455
08:45 AM	1	0	0	1	4	213	2	219	1	0	1	2	0	236	2	238	460
Total	15	0	9	24	19	816	3	838	3	0	1	4	0	890	9	899	1765
*** BREAK ***																	
04:00 PM	6	0	1	7	5	291	0	296	3	0	0	3	0	296	2	298	604
04:15 PM	5	0	1	6	8	324	0	332	0	0	1	1	0	352	3	355	694
04:30 PM	3	0	1	4	7	308	3	318	1	0	0	1	0	308	3	311	634
04:45 PM	6	0	1	7	6	351	3	360	0	0	0	0	1	323	1	325	692
Total	20	0	4	24	26	1274	6	1306	4	0	1	5	1	1279	9	1289	2624
05:00 PM	4	0	0	4	4	306	2	312	3	0	1	4	1	300	2	303	623
05:15 PM	2	0	0	2	5	340	0	345	2	0	0	2	1	312	1	314	663
05:30 PM	1	0	3	4	3	294	0	297	1	0	0	1	1	259	2	262	564
05:45 PM	0	0	0	0	7	308	1	316	2	0	0	2	0	258	0	258	576
Total	7	0	3	10	19	1248	3	1270	8	0	1	9	3	1129	5	1137	2426
Grand Total	53	0	23	76	86	4057	12	4155	18	1	3	22	4	4284	30	4318	8571
Apprch %	69.7	0	30.3		2.1	97.6	0.3		81.8	4.5	13.6		0.1	99.2	0.7		
Total %	0.6	0	0.3	0.9	1	47.3	0.1	48.5	0.2	0	0	0.3	0	50	0.4	50.4	
Unshifted	53	0	23	76	80	3990	12	4082	18	1	3	22	4	4206	30	4240	8420
% Unshifted	100	0	100	100	93	98.3	100	98.2	100	100	100	100	100	98.2	100	98.2	98.2
Tractor-Trailers	0	0	0	0	6	67	0	73	0	0	0	0	0	78	0	78	151
% Tractor-Trailers	0	0	0	0	7	1.7	0	1.8	0	0	0	0	0	1.8	0	1.8	1.8

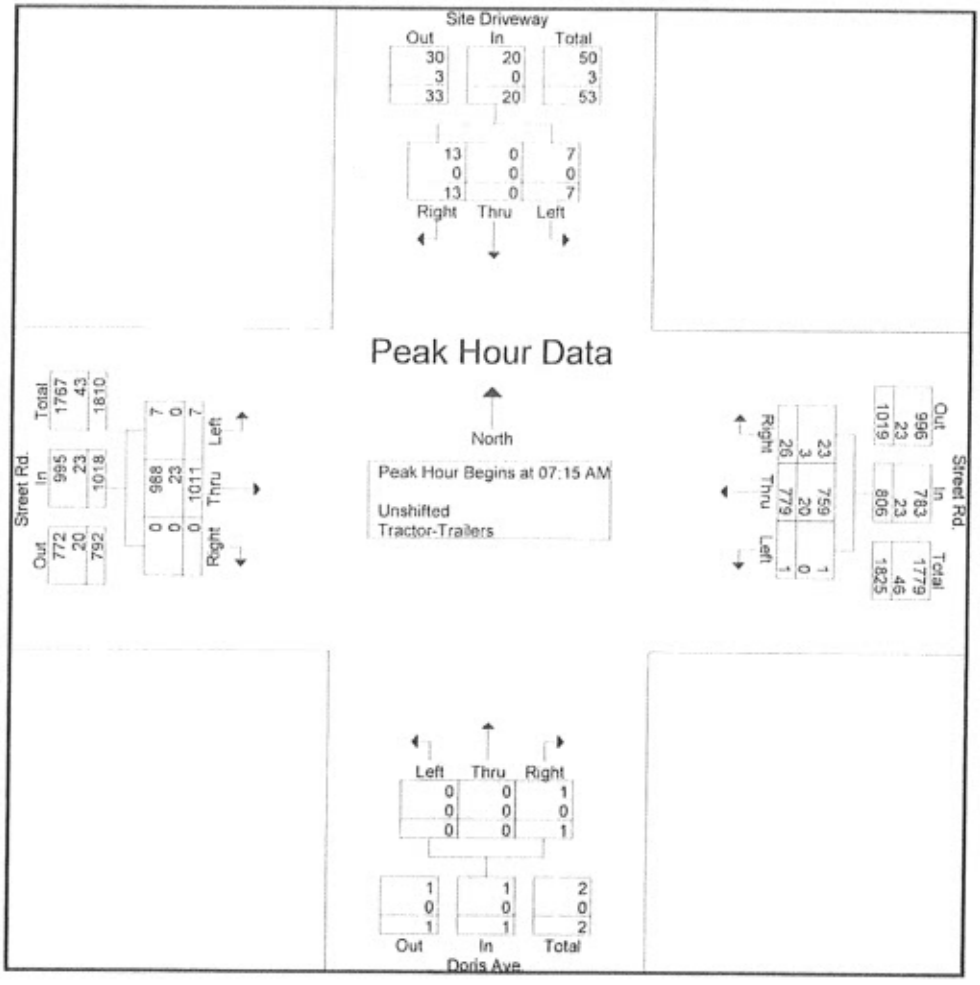
Shropshire Associates LLC

277 Whitehorse Pike, Suite 203
Atco, NJ 08004

N/S Route: Site Driveway / Doris Ave.
E/W Route: Street Rd.
Bensalem/Bucks County/PA
Thurs/Rain/JH/D4-3142

File Name : 20186001
Site Code : 20186001
Start Date : 3/18/2021
Page No : 2

	Site Driveway Southbound				Street Rd. Westbound				Doris Ave. Northbound				Street Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	4	174	0	178	**1**	0	0	**1**	0	236	0	236	415
07:30 AM	3	0	2	5	6	197	0	203	0	0	0	0	0	266	**4**	270	478
07:45 AM	**5**	0	**4**	**9**	6	**212**	0	**218**	0	0	0	0	0	**269**	2	**271**	**498**
08:00 AM	5	0	1	6	**10**	196	**1**	207	0	0	0	0	0	240	1	241	454
Total Volume	13	0	7	20	26	779	1	806	1	0	0	1	0	1011	7	1018	1845
% App. Total	65	0	35		3.2	96.7	0.1		100	0	0		0	99.3	0.7		
PHF	.650	.000	.438	.556	.650	.919	.250	.924	.250	.000	.000	.250	.000	.940	.438	.939	.926
Unshifted	13	0	7	20	23	759	1	783	1	0	0	1	0	988	7	995	1799
% Unshifted	100	0	100	100	88.5	97.4	100	97.1	100	0	0	100	0	97.7	100	97.7	97.5
Tractor-Trailers	0	0	0	0	3	20	0	23	0	0	0	0	0	23	0	23	46
% Tractor-Trailers	0	0	0	0	11.5	2.6	0	2.9	0	0	0	0	0	2.3	0	2.3	2.5



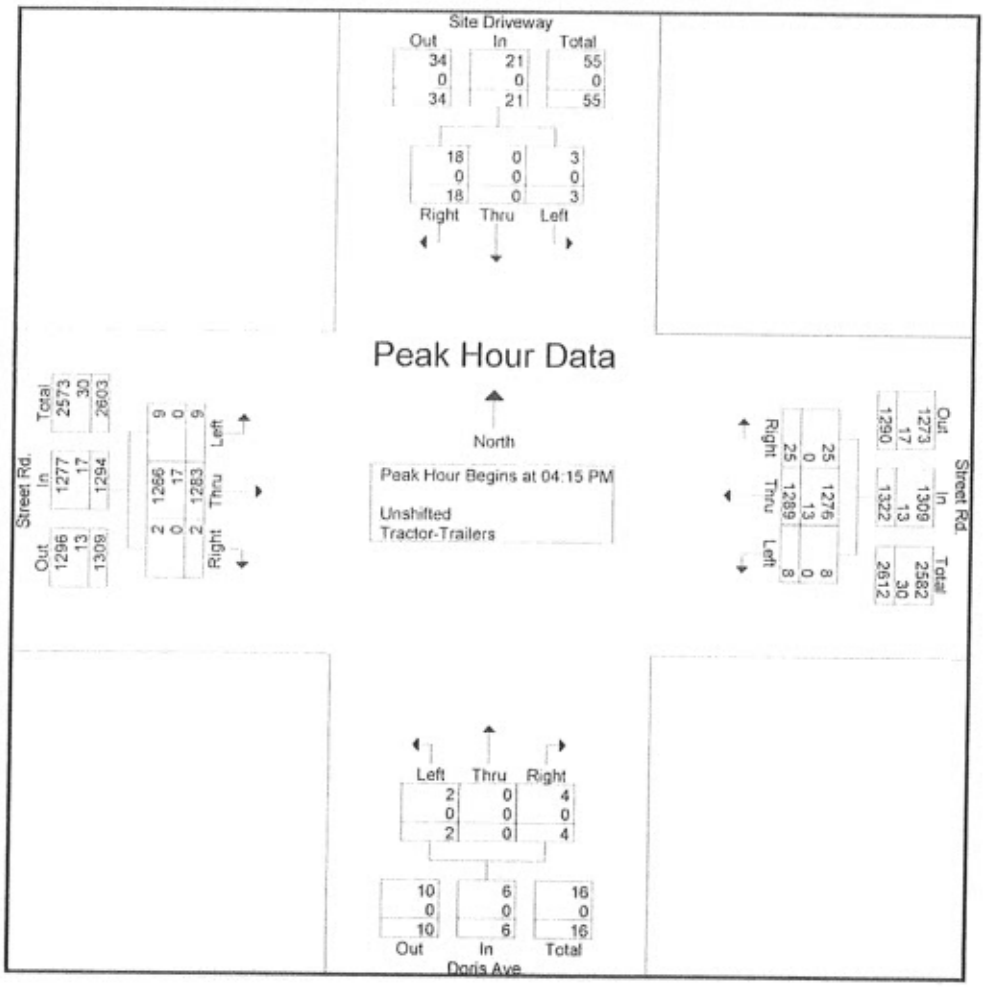
Shropshire Associates LLC

277 Whitehorse Pike, Suite 203
Atco, NJ 08004

N/S Route: Site Driveway / Doris Ave.
E/W Route: Street Rd.
Bensalem/Bucks County/PA
Thurs/Rain/JH/D4-3142

File Name : 20186001
Site Code : 20186001
Start Date : 3/18/2021
Page No : 3

	Site Driveway Southbound				Street Rd. Westbound				Doris Ave. Northbound				Street Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	5	0	**1**	6	**8**	324	0	332	0	0	**1**	1	0	**352**	3	**355**	**694**
04:30 PM	3	0	1	4	7	308	**3**	318	1	0	0	1	0	308	3	311	634
04:45 PM	**6**	0	1	**7**	6	**351**	3	**360**	0	0	0	0	**1**	323	1	325	692
05:00 PM	4	0	0	4	4	306	2	312	**3**	0	1	**4**	1	300	2	303	623
Total Volume	18	0	3	21	25	1289	8	1322	4	0	2	6	2	1283	9	1294	2643
% App. Total	85.7	0	14.3		1.9	97.5	0.6		66.7	0	33.3		0.2	99.1	0.7		
PHF	.750	.000	.750	.750	.781	.918	.667	.918	.333	.000	.500	.375	.500	.911	.750	.911	.952
Unshifted	18	0	3	21	25	1276	8	1309	4	0	2	6	2	1266	9	1277	2613
% Unshifted	100	0	100	100	100	99.0	100	99.0	100	0	100	100	100	98.7	100	98.7	98.9
Tractor-Trailers	0	0	0	0	0	13	0	13	0	0	0	0	0	17	0	17	30
% Tractor-Trailers	0	0	0	0	0	1.0	0	1.0	0	0	0	0	0	1.3	0	1.3	1.1



Shropshire Associates LLC

277 Whitehorse Pike, Suite 203
Atco, NJ 08004

N/S Route: Site Driveway / Doris Ave.
E/W Route: Street Rd.
Bensalem/Bucks County/PA
Sat/Clear/JH/D4-3142

File Name : 20186003
Site Code : 20186003
Start Date : 3/20/2021
Page No : 1

Groups Printed- Unshifted - Trailers

	Site Driveway Southbound				Street Rd. Westbound				Doris Ave. Northbound				Street Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
11:00 AM	9	0	4	13	11	299	0	310	2	0	0	2	0	298	7	305	630
11:15 AM	4	0	4	8	14	299	0	313	1	0	0	1	0	299	8	307	629
11:30 AM	6	0	6	12	14	291	1	306	1	0	1	2	0	261	13	274	594
11:45 AM	4	0	4	8	14	341	1	356	1	0	0	1	0	312	4	316	681
Total	23	0	18	41	53	1230	2	1285	5	0	1	6	0	1170	32	1202	2534
12:00 PM	6	0	4	10	9	303	2	314	3	0	0	3	1	292	8	301	628
12:15 PM	10	0	5	15	16	288	2	306	0	0	0	0	1	341	6	348	669
12:30 PM	7	0	2	9	10	315	2	327	1	0	0	1	1	298	7	306	643
12:45 PM	9	0	1	10	12	346	1	359	2	0	0	2	0	335	3	338	709
Total	32	0	12	44	47	1252	7	1306	6	0	0	6	3	1266	24	1293	2649
01:00 PM	4	0	4	8	20	335	1	356	0	0	0	0	1	351	5	357	721
01:15 PM	8	0	4	12	16	366	0	382	2	0	1	3	1	355	7	363	760
01:30 PM	8	0	2	10	14	358	4	376	1	0	0	1	1	330	9	340	727
01:45 PM	11	0	3	14	15	319	2	336	3	0	0	3	0	341	4	345	698
Total	31	0	13	44	65	1378	7	1450	6	0	1	7	3	1377	25	1405	2906
Grand Total	86	0	43	129	165	3860	16	4041	17	0	2	19	6	3813	81	3900	8089
Apprch %	66.7	0	33.3		4.1	95.5	0.4		89.5	0	10.5		0.2	97.8	2.1		
Total %	1.1	0	0.5	1.6	2	47.7	0.2	50	0.2	0	0	0.2	0.1	47.1	1	48.2	
Unshifted	86	0	43	129	165	3846	16	4027	17	0	2	19	6	3781	81	3868	8043
% Unshifted	100	0	100	100	100	99.6	100	99.7	100	0	100	100	100	99.2	100	99.2	99.4
Tractor-Trailers	0	0	0	0	0	14	0	14	0	0	0	0	0	32	0	32	46
% Tractor-Trailers	0	0	0	0	0	0.4	0	0.3	0	0	0	0	0	0.8	0	0.8	0.6

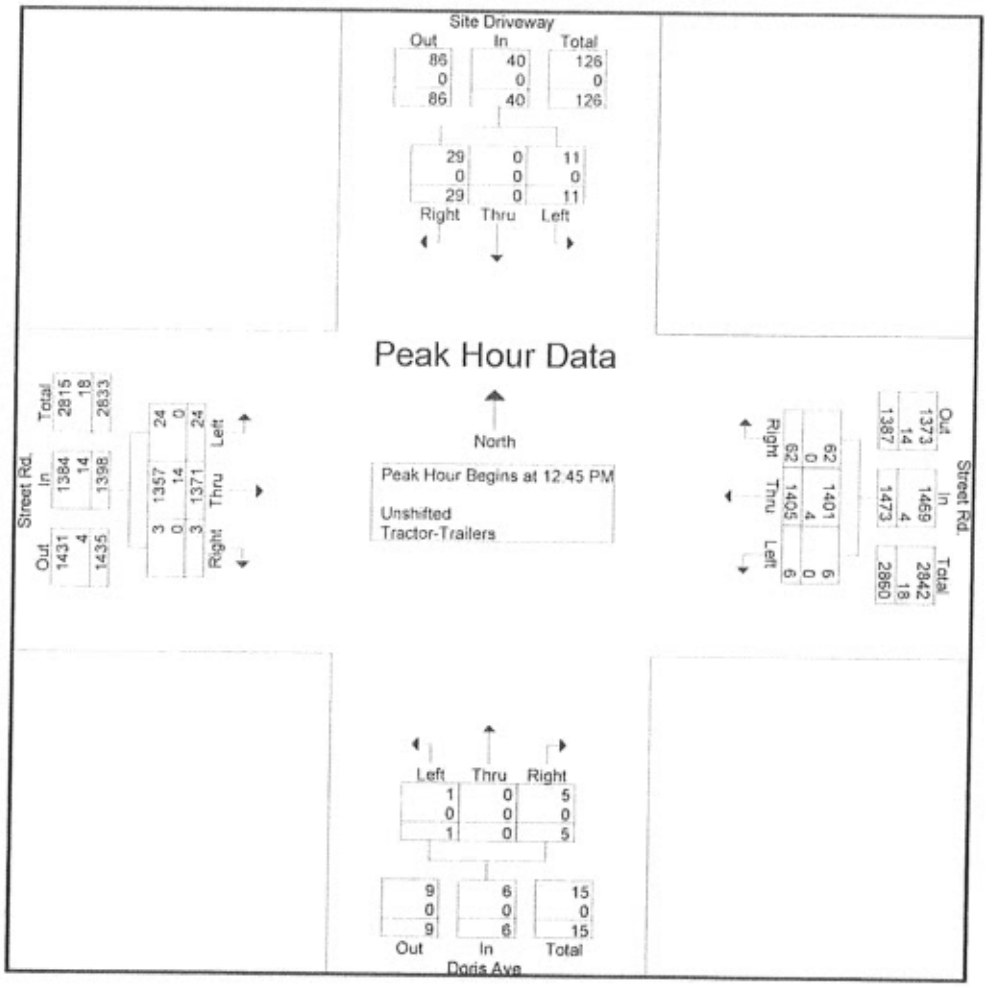
Shropshire Associates LLC

277 Whitehorse Pike, Suite 203
Atco, NJ 08004

N/S Route: Site Driveway / Doris Ave.
E/W Route: Street Rd.
Bensalem/Bucks County/PA
Sat/Clear/JH/D4-3142

File Name : 20186003
Site Code : 20186003
Start Date : 3/20/2021
Page No : 2

	Site Driveway Southbound				Street Rd. Westbound				Doris Ave. Northbound				Street Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:45 PM																	
12:45 PM	**9**	0	1	10	12	346	1	359	**2**	0	0	2	0	335	3	338	709
01:00 PM	4	0	**4**	8	**20**	335	1	356	0	0	0	0	**1**	351	5	357	721
01:15 PM	8	0	4	**12**	16	**366**	0	**382**	2	0	**1**	**3**	1	**355**	7	**363**	**760**
01:30 PM	8	0	2	10	14	358	**4**	376	1	0	0	1	1	330	**9**	340	727
Total Volume	29	0	11	40	62	1405	6	1473	5	0	1	6	3	1371	24	1398	2917
% App. Total	72.5	0	27.5		4.2	95.4	0.4		83.3	0	16.7		0.2	98.1	1.7		
PHF	.806	.000	.688	.833	.775	.960	.375	.964	.625	.000	.250	.500	.750	.965	.667	.963	.960
Unshifted	29	0	11	40	62	1401	6	1469	5	0	1	6	3	1357	24	1384	2899
% Unshifted	100	0	100	100	100	99.7	100	99.7	100	0	100	100	100	99.0	100	99.0	99.4
Tractor-Trailers	0	0	0	0	0	4	0	4	0	0	0	0	0	14	0	14	18
% Tractor-Trailers	0	0	0	0	0	0.3	0	0.3	0	0	0	0	0	1.0	0	1.0	0.6



Shropshire Associates LLC

277 Whitehorse Pike, Suite 203
Atco, NJ 08004

N/S Route: Site Driveway
E/W Route: Krispy Kreme Drive / Pretzel Factory Drive
Bensalem/Bucks County/PA
Thurs/Rain/EM/D4-2584

File Name : 20186002
Site Code : 20186002
Start Date : 3/18/2021
Page No : 1

Groups Printed- Unshifted - Trailers

	Site Driveway Southbound				Krispy Kreme Entrance Westbound				Site Driveway Northbound				Pretzel Factory Entrance Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	2	2	1	1	5	7	2	0	0	2	11
07:15 AM	2	1	0	3	0	0	0	0	1	0	3	4	0	1	2	3	10
07:30 AM	2	1	0	3	0	0	1	1	4	2	4	10	3	0	6	9	23
07:45 AM	3	1	1	5	0	0	6	6	2	1	4	7	2	9	0	11	29
Total	7	3	1	11	0	0	9	9	8	4	16	28	7	10	8	25	73
08:00 AM	4	0	0	4	0	1	3	4	6	1	2	9	2	1	7	10	27
08:15 AM	3	1	0	4	1	1	4	6	2	0	3	5	3	2	1	6	21
08:30 AM	0	1	0	1	0	0	3	3	5	1	1	7	3	1	0	4	15
08:45 AM	0	0	0	0	0	0	2	2	2	0	5	7	2	0	0	2	11
Total	7	2	0	9	1	2	12	15	15	2	11	28	10	4	8	22	74
*** BREAK ***																	
04:00 PM	0	1	0	1	0	0	4	4	2	1	2	5	1	1	0	2	12
04:15 PM	0	1	0	1	0	1	0	1	3	3	4	10	3	2	0	5	17
04:30 PM	0	0	0	0	0	0	8	8	3	1	3	7	1	0	0	1	16
04:45 PM	0	0	0	0	0	0	2	2	3	1	5	9	2	2	0	4	15
Total	0	2	0	2	0	1	14	15	11	6	14	31	7	5	0	12	60
05:00 PM	0	0	0	0	1	2	3	6	5	0	2	7	1	2	0	3	16
05:15 PM	0	0	0	0	1	0	1	2	2	0	3	5	0	1	0	1	8
05:30 PM	0	3	0	3	0	0	1	1	4	0	0	4	0	0	0	0	8
05:45 PM	1	0	1	2	0	1	0	1	3	0	1	4	0	0	0	0	7
Total	1	3	1	5	2	3	5	10	14	0	6	20	1	3	0	4	39
Grand Total	15	10	2	27	3	6	40	49	48	12	47	107	25	22	16	63	246
Apprch %	55.6	37	7.4		6.1	12.2	81.6		44.9	11.2	43.9		39.7	34.9	25.4		
Total %	6.1	4.1	0.8	11	1.2	2.4	16.3	19.9	19.5	4.9	19.1	43.5	10.2	8.9	6.5	25.6	
Unshifted	15	10	2	27	3	3	40	46	48	12	42	102	25	20	16	61	236
% Unshifted	100	100	100	100	100	50	100	93.9	100	100	89.4	95.3	100	90.9	100	96.8	95.9
Tractor-Trailers	0	0	0	0	0	3	0	3	0	0	5	5	0	2	0	2	10
% Tractor-Trailers	0	0	0	0	0	50	0	6.1	0	0	10.6	4.7	0	9.1	0	3.2	4.1

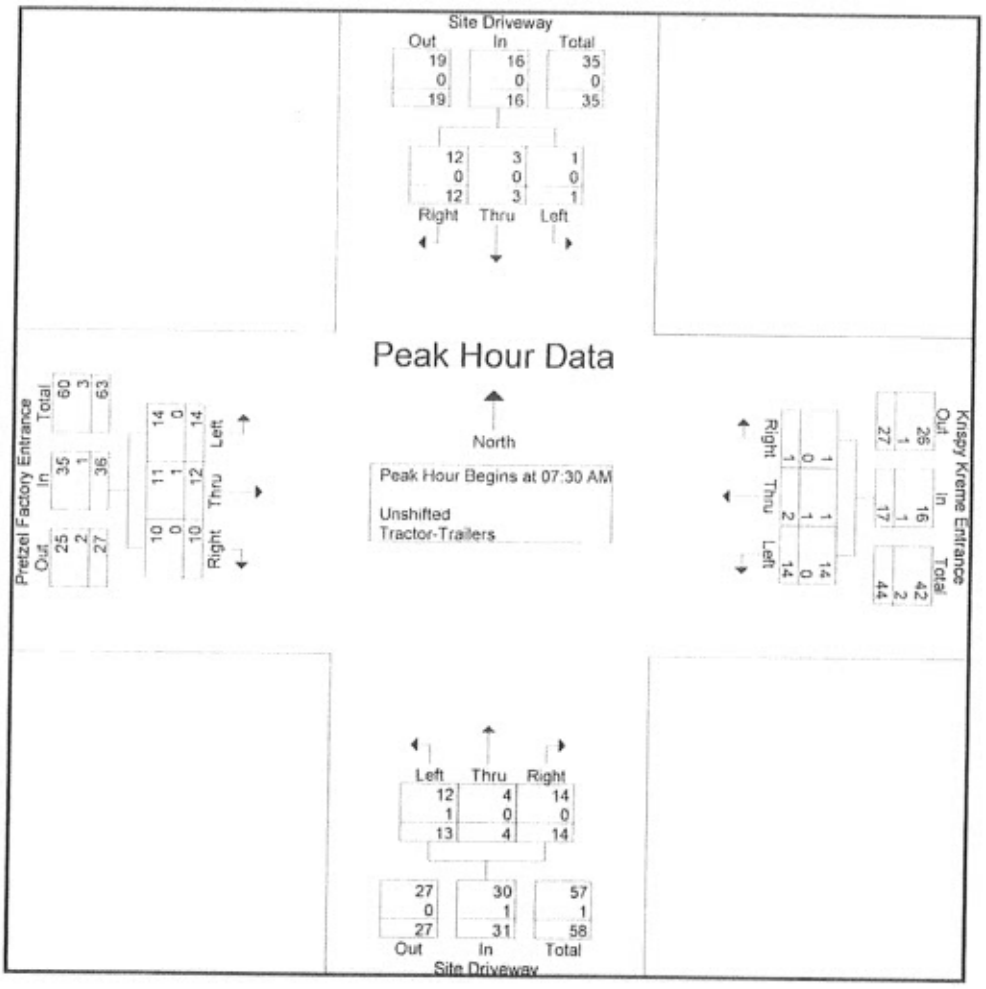
Shropshire Associates LLC

277 Whitehorse Pike, Suite 203
Atco, NJ 08004

N/S Route: Site Driveway
E/W Route: Krispy Kreme Drive / Pretzel Factory Drive
Bensalem/Bucks County/PA
Thurs/Rain/EM/D4-2584

File Name : 20186002
Site Code : 20186002
Start Date : 3/18/2021
Page No : 2

	Site Driveway Southbound				Krispy Kreme Entrance Westbound				Site Driveway Northbound				Pretzel Factory Entrance Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	2	1	0	3	0	0	1	1	4	2	4	10	3	0	6	9	23
07:45 AM	3	1	1	5	0	0	6	6	2	1	4	7	2	9	0	11	29
08:00 AM	4	0	0	4	0	1	3	4	6	1	2	9	2	1	7	10	27
08:15 AM	3	1	0	4	1	1	4	6	2	0	3	5	3	2	1	6	21
Total Volume	12	3	1	16	1	2	14	17	14	4	13	31	10	12	14	36	100
% App. Total	75	18.8	6.2		5.9	11.8	82.4		45.2	12.9	41.9		27.8	33.3	38.9		
PHF	.750	.750	.250	.800	.250	.500	.583	.708	.583	.500	.813	.775	.833	.333	.500	.818	.862
Unshifted	12	3	1	16	1	1	14	16	14	4	12	30	10	11	14	35	97
% Unshifted	100	100	100	100	100	50.0	100	94.1	100	100	92.3	96.8	100	91.7	100	97.2	97.0
Tractor-Trailers	0	0	0	0	0	1	0	1	0	0	1	1	0	1	0	1	3
% Tractor-Trailers	0	0	0	0	0	50.0	0	5.9	0	0	7.7	3.2	0	8.3	0	2.8	3.0



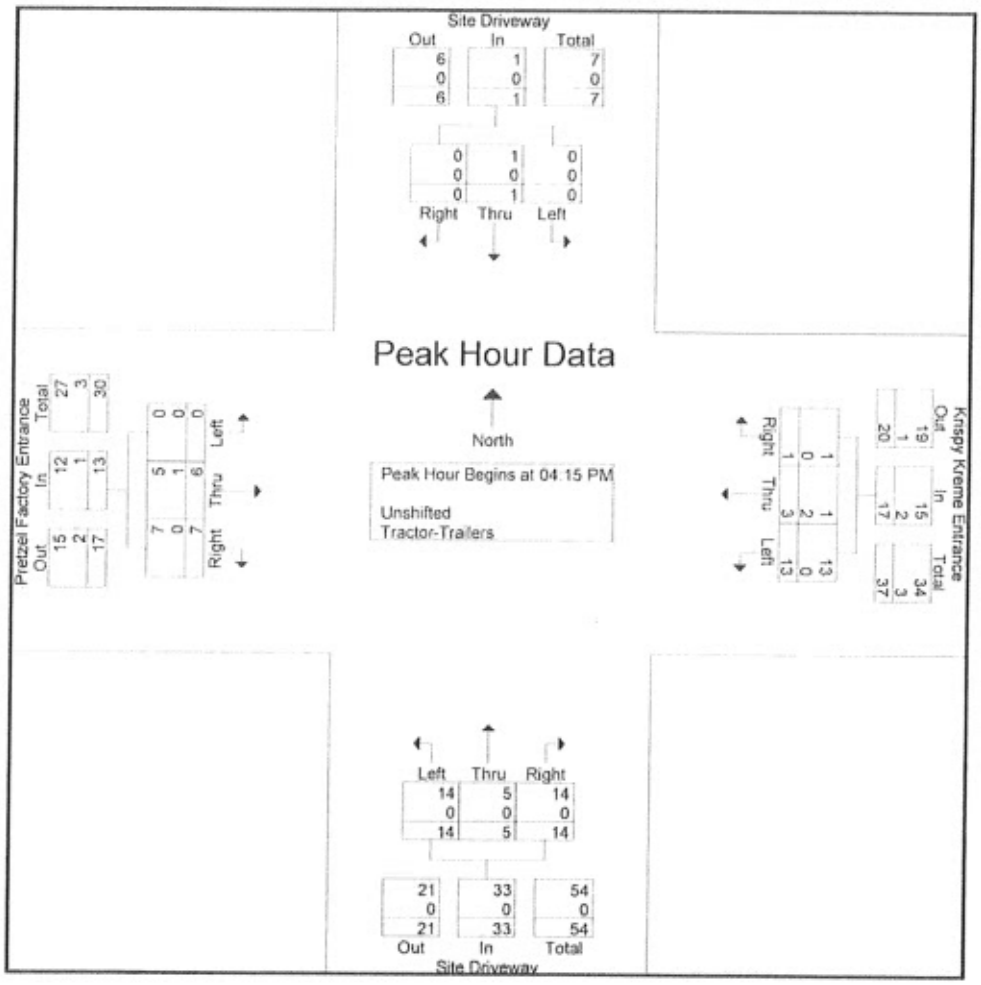
Shropshire Associates LLC

277 Whitehorse Pike, Suite 203
Atco, NJ 08004

N/S Route: Site Driveway
E/W Route: Krispy Kreme Drive / Pretzel Factory Drive
Bensalem/Bucks County/PA
Thurs/Rain/EM/D4-2584

File Name : 20186002
Site Code : 20186002
Start Date : 3/18/2021
Page No : 3

	Site Driveway Southbound				Krispy Kreme Entrance Westbound				Site Driveway Northbound				Pretzel Factory Entrance Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	1	0	1	0	1	0	1	3	3	4	10	3	2	0	5	17
04:30 PM	0	0	0	0	0	0	8	8	3	1	3	7	1	0	0	1	16
04:45 PM	0	0	0	0	0	0	2	2	3	1	5	9	2	2	0	4	15
05:00 PM	0	0	0	0	1	2	3	6	5	0	2	7	1	2	0	3	16
Total Volume	0	1	0	1	1	3	13	17	14	5	14	33	7	6	0	13	64
% App. Total	0	100	0		5.9	17.6	76.5		42.4	15.2	42.4		53.8	46.2	0		
PHF	.000	.250	.000	.250	.250	.375	.406	.531	.700	.417	.700	.825	.583	.750	.000	.650	.941
Unshifted	0	1	0	1	1	1	13	15	14	5	14	33	7	5	0	12	61
% Unshifted	0	100	0	100	100	33.3	100	88.2	100	100	100	100	100	83.3	0	92.3	95.3
Tractor-Trailers	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1	3
% Tractor-Trailers	0	0	0	0	0	66.7	0	11.8	0	0	0	0	0	16.7	0	7.7	4.7



Shropshire Associates LLC

277 Whitehorse Pike, Suite 203
Atco, NJ 08004

N/S Route: Site Driveway
E/W Route: Krispy Kreme Drive / Pretzel Factory Drive
Bensalem/Bucks County/PA
Sat/Clear/EM/D4-2584

File Name : 20186004
Site Code : 20186004
Start Date : 3/20/2021
Page No : 1

Groups Printed- Unshifted - Trailers

	Site Driveway Southbound				Krispy Kreme Driveway Westbound				Site Driveway Northbound				Pretzel Factory Driveway Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
11:00 AM	0	2	0	2	0	3	10	13	11	0	6	17	3	6	3	12	44
11:15 AM	1	3	0	4	0	3	4	7	12	1	12	25	2	1	5	8	44
11:30 AM	0	4	0	4	0	0	5	5	13	0	10	23	4	2	1	7	39
11:45 AM	1	1	1	3	0	0	4	4	9	2	8	19	1	3	1	5	31
Total	2	10	1	13	0	6	23	29	45	3	36	84	10	12	10	32	158
12:00 PM	0	1	0	1	0	1	5	6	9	2	8	19	2	1	0	3	29
12:15 PM	0	6	0	6	1	0	4	5	5	3	7	15	7	2	5	14	40
12:30 PM	1	1	0	2	1	0	4	5	9	4	9	22	3	3	0	6	35
12:45 PM	0	2	0	2	0	0	5	5	5	2	5	12	1	1	3	5	24
Total	1	10	0	11	2	1	18	21	28	11	29	68	13	7	8	28	128
01:00 PM	1	2	1	4	0	0	6	6	10	0	8	18	1	2	0	3	31
01:15 PM	3	2	1	6	0	0	7	7	7	1	11	19	4	1	2	7	39
01:30 PM	2	2	0	4	1	2	9	12	13	3	7	23	2	1	2	5	44
01:45 PM	0	2	1	3	0	0	11	11	10	6	9	25	4	1	4	9	48
Total	6	8	3	17	1	2	33	36	40	10	35	85	11	5	8	24	162
Grand Total	9	28	4	41	3	9	74	86	113	24	100	237	34	24	26	84	448
Apprch %	22	68.3	9.8		3.5	10.5	86		47.7	10.1	42.2		40.5	28.6	31		
Total %	2	6.2	0.9	9.2	0.7	2	16.5	19.2	25.2	5.4	22.3	52.9	7.6	5.4	5.8	18.8	
Unshifted	9	28	4	41	3	8	74	85	113	24	100	237	34	23	26	83	446
% Unshifted	100	100	100	100	100	88.9	100	98.8	100	100	100	100	100	95.8	100	98.8	99.6
Tractor-Trailers	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
% Tractor-Trailers	0	0	0	0	0	11.1	0	1.2	0	0	0	0	0	4.2	0	1.2	0.4

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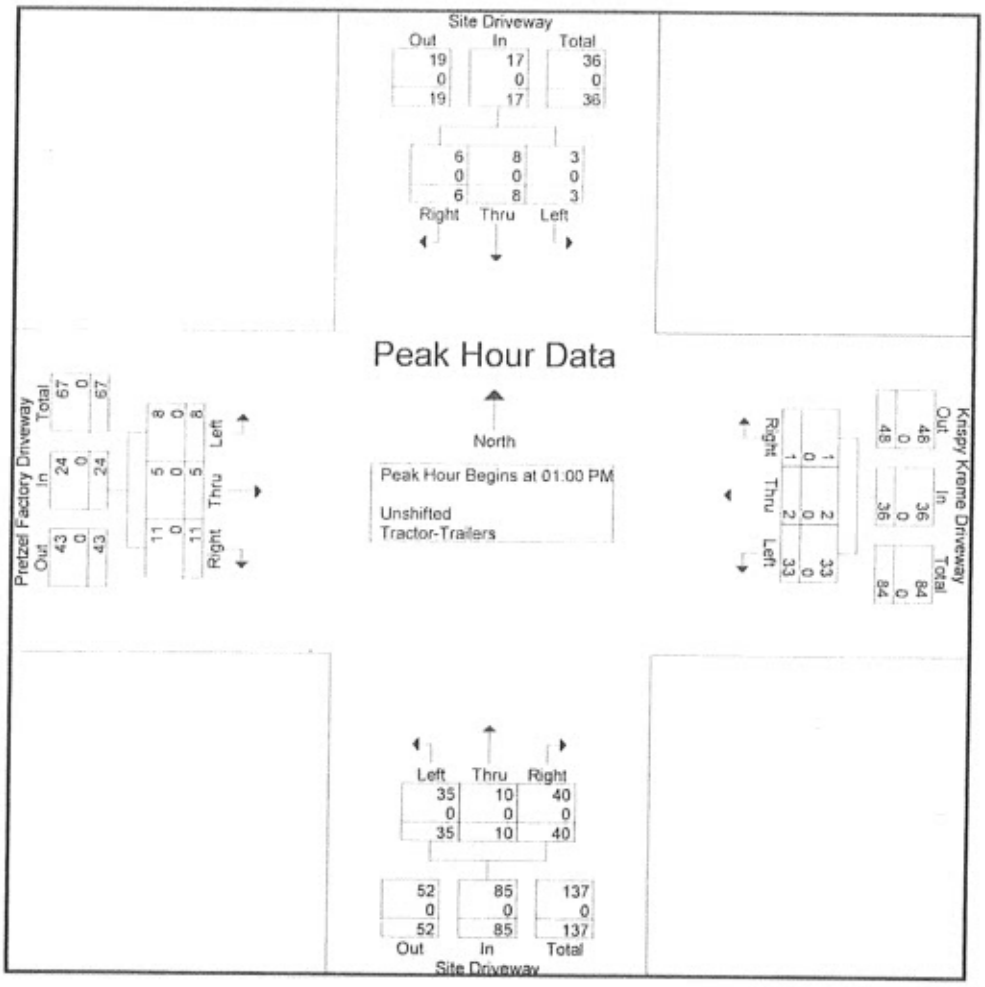
277 Whitehorse Pike, Suite 203
Atco, NJ 08004

N/S Route: Site Driveway
E/W Route: Krispy Kreme Drive / Pretzel Factory Drive
Bensalem/Bucks County/PA
Sat/Clear/EM/D4-2584

File Name : 20186004
Site Code : 20186004
Start Date : 3/20/2021
Page No : 2

	Site Driveway Southbound				Krispy Kreme Driveway Westbound				Site Driveway Northbound				Pretzel Factory Driveway Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 01:00 PM																	
01:00 PM	1	**2**	**1**	4	0	0	6	6	10	0	8	18	1	**2**	0	3	31
01:15 PM	**3**	2	1	**6**	0	0	7	7	7	1	**11**	19	**4**	1	2	7	39
01:30 PM	2	2	0	4	**1**	**2**	9	**12**	**13**	3	7	23	2	1	2	5	44
01:45 PM	0	2	1	3	0	0	**11**	11	10	**6**	9	**25**	4	1	**4**	**9**	**48**
Total Volume	6	8	3	17	1	2	33	36	40	10	35	85	11	5	8	24	162
% App. Total	35.3	47.1	17.6		2.8	5.6	91.7		47.1	11.8	41.2		45.8	20.8	33.3		
PHF	.500	1.00	.750	.708	.250	.250	.750	.750	.769	.417	.795	.850	.688	.625	.500	.667	.844
Unshifted	6	8	3	17	1	2	33	36	40	10	35	85	11	5	8	24	162
% Unshifted	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Tractor-Trailers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Tractor-Trailers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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277 Whitehorse Pike, Suite 203
Atco, NJ 08004

N/S Route:
E/W Route: Burger King Rear Driveway In/Out
Bensalem/Bucks County/PA
Thurs/Rain/EM/D4-2584

File Name : 20186002-a
Site Code : 20186002
Start Date : 3/18/2021
Page No : 1

Groups Printed- Burger King Rear Driveway

	Burget King Rear Drive Out Westbound		Burger King Rear Drive In Eastbound		
Start Time	Thru	App. Total	Thru	App. Total	Int. Total
07:00 AM	4	4	8	8	12
07:15 AM	2	2	5	5	7
07:30 AM	3	3	6	6	9
07:45 AM	3	3	4	4	7
Total	12	12	23	23	35
08:00 AM	2	2	8	8	10
08:15 AM	5	5	7	7	12
08:30 AM	3	3	7	7	10
08:45 AM	8	8	9	9	17
Total	18	18	31	31	49
*** BREAK ***					
04:00 PM	4	4	9	9	13
04:15 PM	2	2	15	15	17
04:30 PM	4	4	10	10	14
04:45 PM	8	8	19	19	27
Total	18	18	53	53	71
05:00 PM	5	5	11	11	16
05:15 PM	4	4	9	9	13
05:30 PM	3	3	8	8	11
05:45 PM	1	1	8	8	9
Total	13	13	36	36	49
Grand Total	61	61	143	143	204
Apprch %	100		100		
Total %	29.9	29.9	70.1	70.1	

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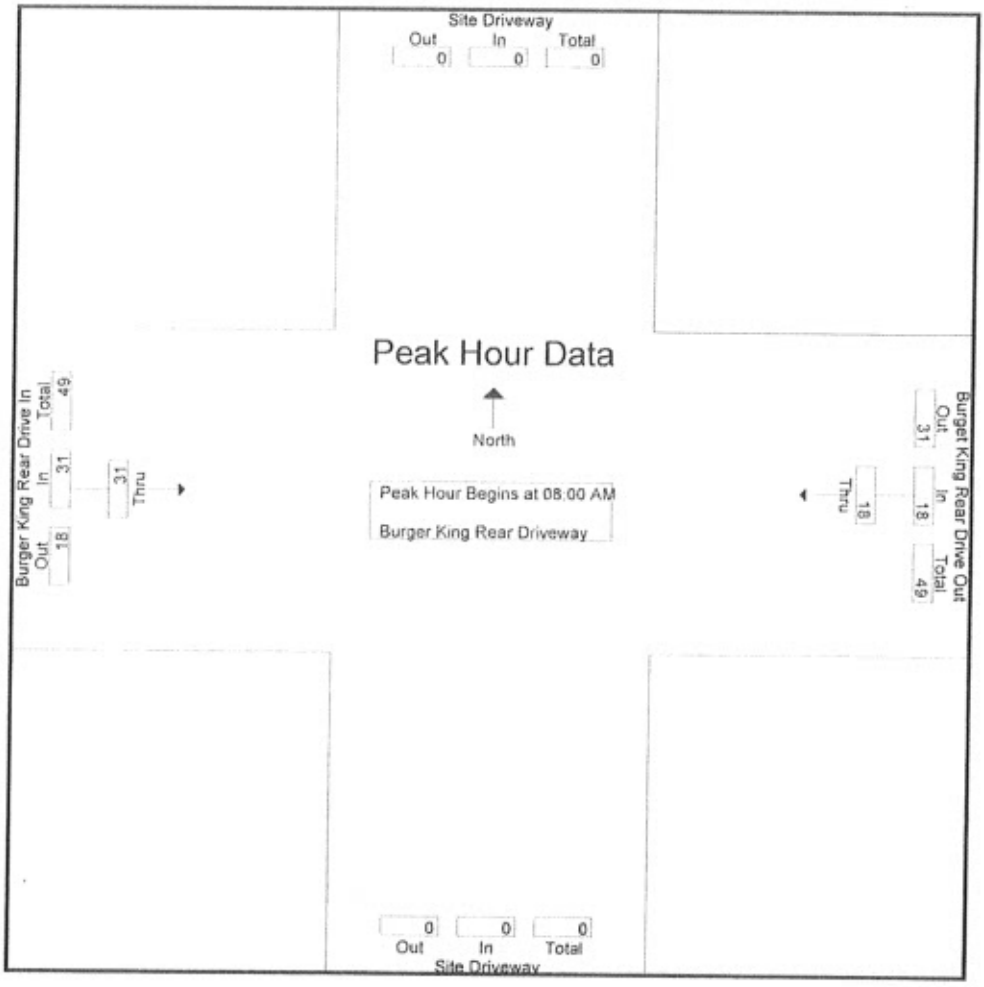
277 Whitehorse Pike, Suite 203
Atco, NJ 08004

N/S Route:
E/W Route: Burger King Rear Driveway In/Out
Bensalem/Bucks County/PA
Thurs/Rain/EM/D4-2584

File Name : 20186002-a
Site Code : 20186002
Start Date : 3/18/2021
Page No : 2

	Burget King Rear Drive Out Westbound		Burger King Rear Drive In Eastbound		
Start Time	Thru	App. Total	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1					
Peak Hour for Entire Intersection Begins at 08:00 AM					
08:00 AM	2	2	8	8	10
08:15 AM	5	5	7	7	12
08:30 AM	3	3	7	7	10
08:45 AM	**8**	**8**	**9**	**9**	**17**
Total Volume	18	18	31	31	49
% App. Total	100		100		
PHF	.563	.563	.861	.861	.721



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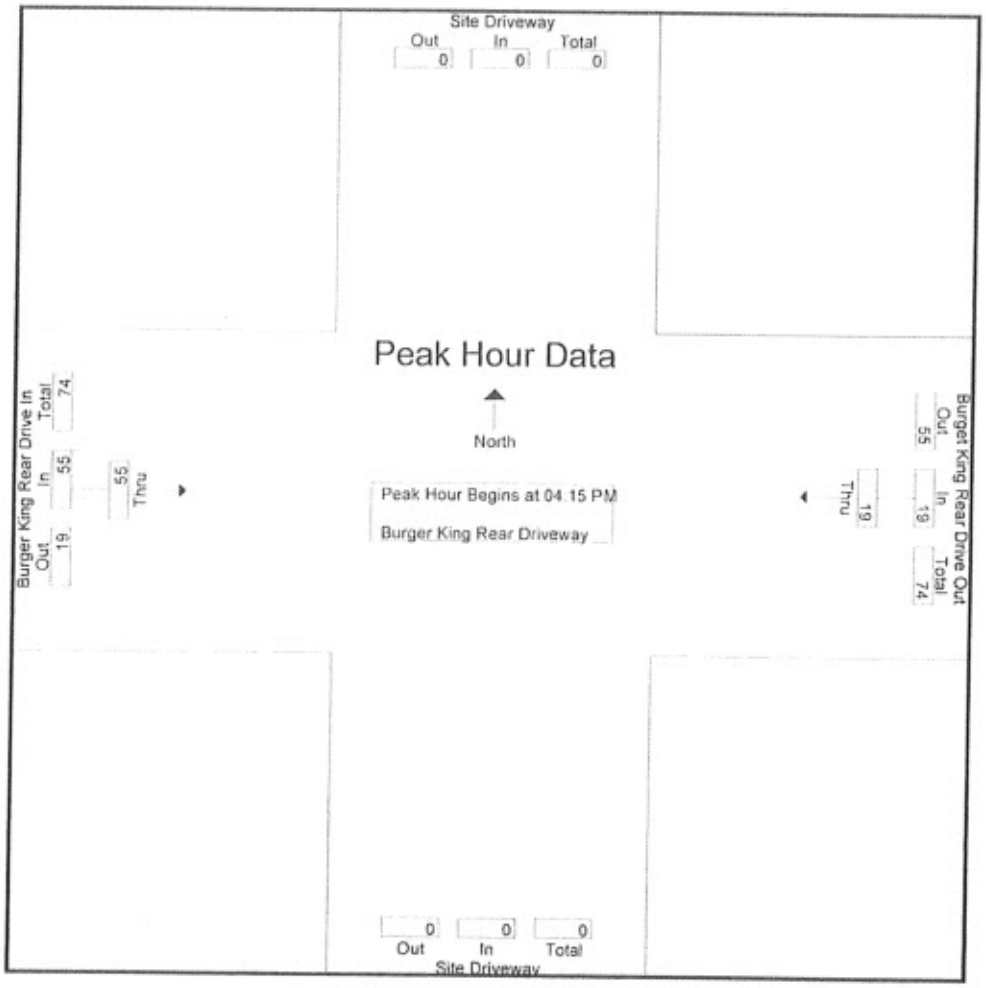
277 Whitehorse Pike, Suite 203
Atco, NJ 08004

N/S Route:
E/W Route: Burger King Rear Driveway In/Out
Bensalem/Bucks County/PA
Thurs/Rain/EM/D4-2584

File Name : 20186002-a
Site Code : 20186002
Start Date : 3/18/2021
Page No : 3

	Burget King Rear Drive Out Westbound		Burger King Rear Drive In Eastbound		
Start Time	Thru	App. Total	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1					
Peak Hour for Entire Intersection Begins at 04:15 PM					
04:15 PM	2	2	15	15	17
04:30 PM	4	4	10	10	14
04:45 PM	8	8	19	19	27
05:00 PM	5	5	11	11	16
Total Volume	19	19	55	55	74
% App. Total	100		100		
PHF	.594	.594	.724	.724	.685



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277 Whitehorse Pike, Suite 203
Atco, NJ 08004

N/S Route:
E/W Route: Burger King Rear Drive In/Out
Bensalem/Bucks County/PA
Sat/Clear/EM/D4-2584

File Name : 20186004-a
Site Code : 20186004
Start Date : 3/20/2021
Page No : 1

Groups Printed- Burger King Rear Driveway

	Burger King Rear Drive Out Westbound		Burger King Rear Drive In Eastbound		
Start Time	Thru	App. Total	Thru	App. Total	Int. Total
11:00 AM	4	4	14	14	18
11:15 AM	7	7	25	25	32
11:30 AM	4	4	21	21	25
11:45 AM	5	5	18	18	23
Total	20	20	78	78	98
12:00 PM	8	8	16	16	24
12:15 PM	4	4	23	23	27
12:30 PM	5	5	14	14	19
12:45 PM	7	7	23	23	30
Total	24	24	76	76	100
01:00 PM	6	6	10	10	16
01:15 PM	8	8	18	18	26
01:30 PM	9	9	35	35	44
01:45 PM	4	4	20	20	24
Total	27	27	83	83	110
Grand Total	71	71	237	237	308
Apprch %	100		100		
Total %	23.1	23.1	76.9	76.9	

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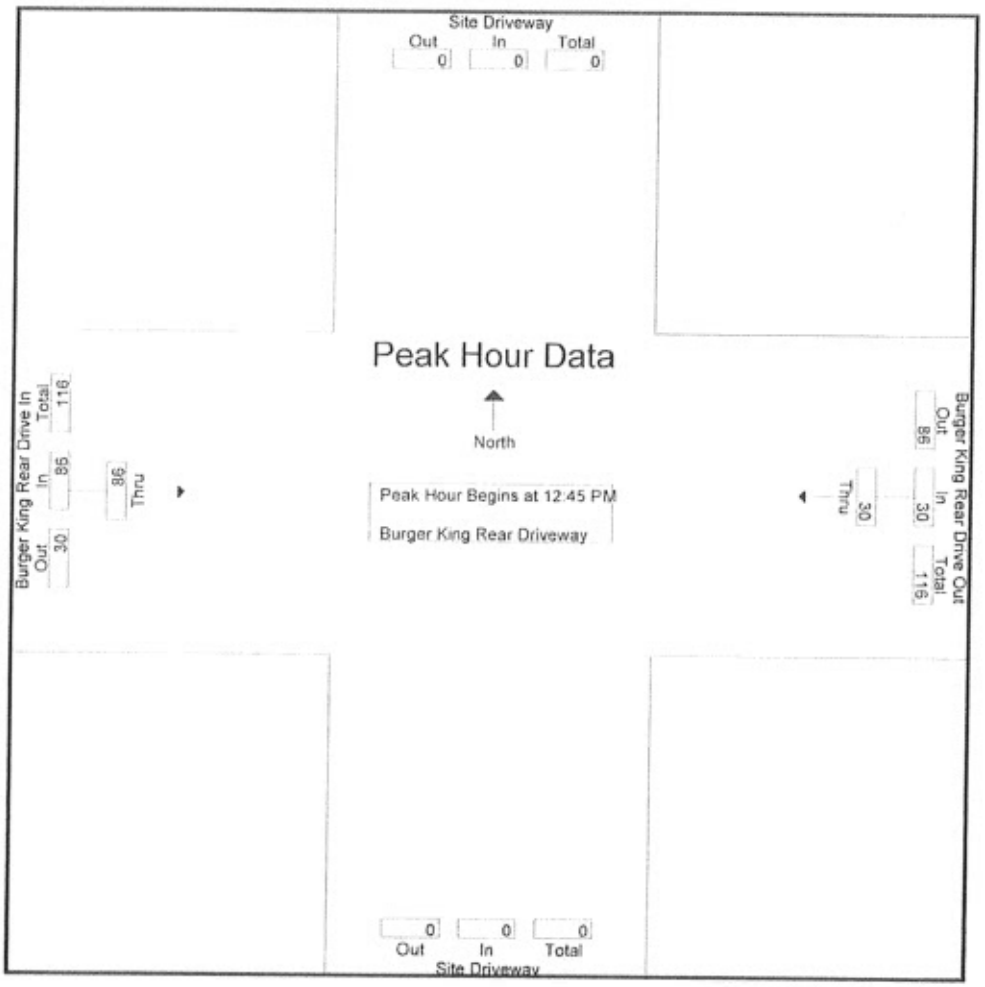
277 Whitehorse Pike, Suite 203
Atco, NJ 08004

N/S Route:
E/W Route: Burger King Rear Drive In/Out
Bensalem/Bucks County/PA
Sat/Clear/EM/D4-2584

File Name : 20186004-a
Site Code : 20186004
Start Date : 3/20/2021
Page No : 2

	Burger King Rear Drive Out Westbound		Burger King Rear Drive In Eastbound		
Start Time	Thru	App. Total	Thru	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1					
Peak Hour for Entire Intersection Begins at 12:45 PM					
12:45 PM	7	7	23	23	30
01:00 PM	6	6	10	10	16
01:15 PM	8	8	18	18	26
01:30 PM	**9**	**9**	**35**	**35**	**44**
Total Volume	30	30	86	86	116
% App. Total	100		100		
PHF	.833	.833	.614	.614	.659



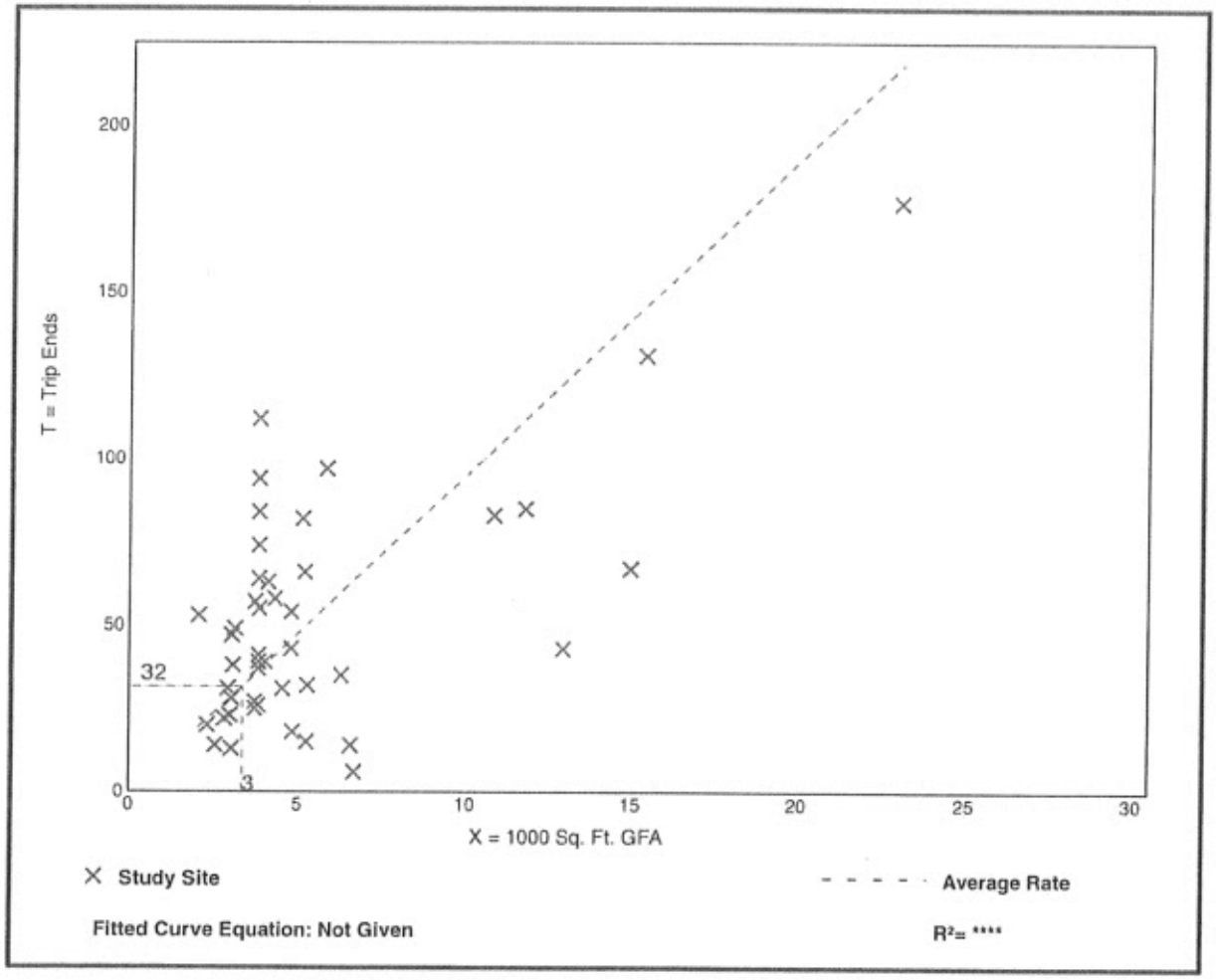
Drive-in Bank
(912)

Vehicle Trip Ends vs:	**1000 Sq. Ft. GFA**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 7 and 9 a.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	46
Avg. 1000 Sq. Ft. GFA:	5
Directional Distribution:	58% entering, 42% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.50	0.89 - 29.47	5.85

Data Plot and Equation



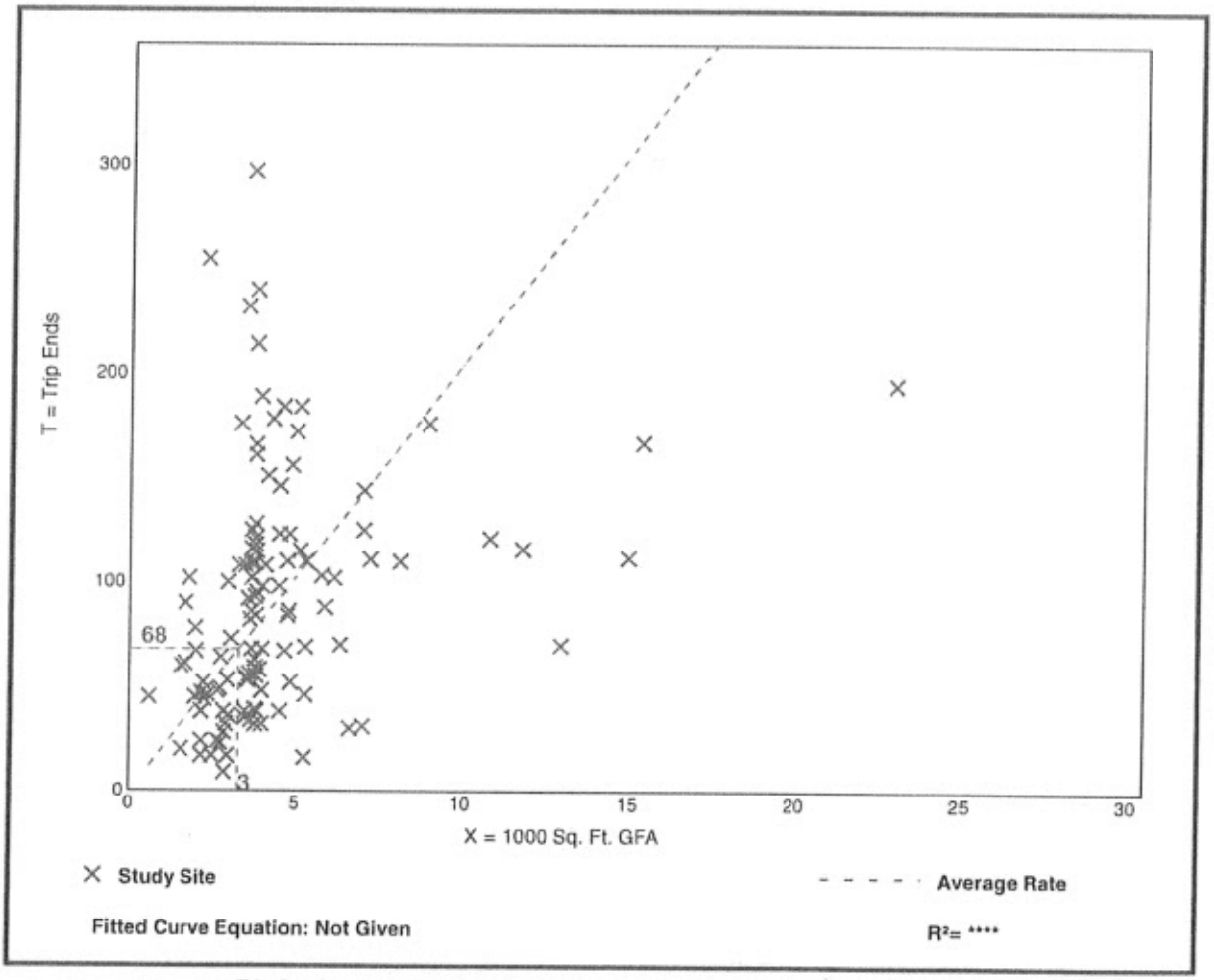
Drive-in Bank
(912)

Vehicle Trip Ends vs:	**1000 Sq. Ft. GFA**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 4 and 6 p.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	115
Avg. 1000 Sq. Ft. GFA:	4
Directional Distribution:	50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
20.45	3.04 - 109.91	15.01

Data Plot and Equation



Drive-in Bank
(912)

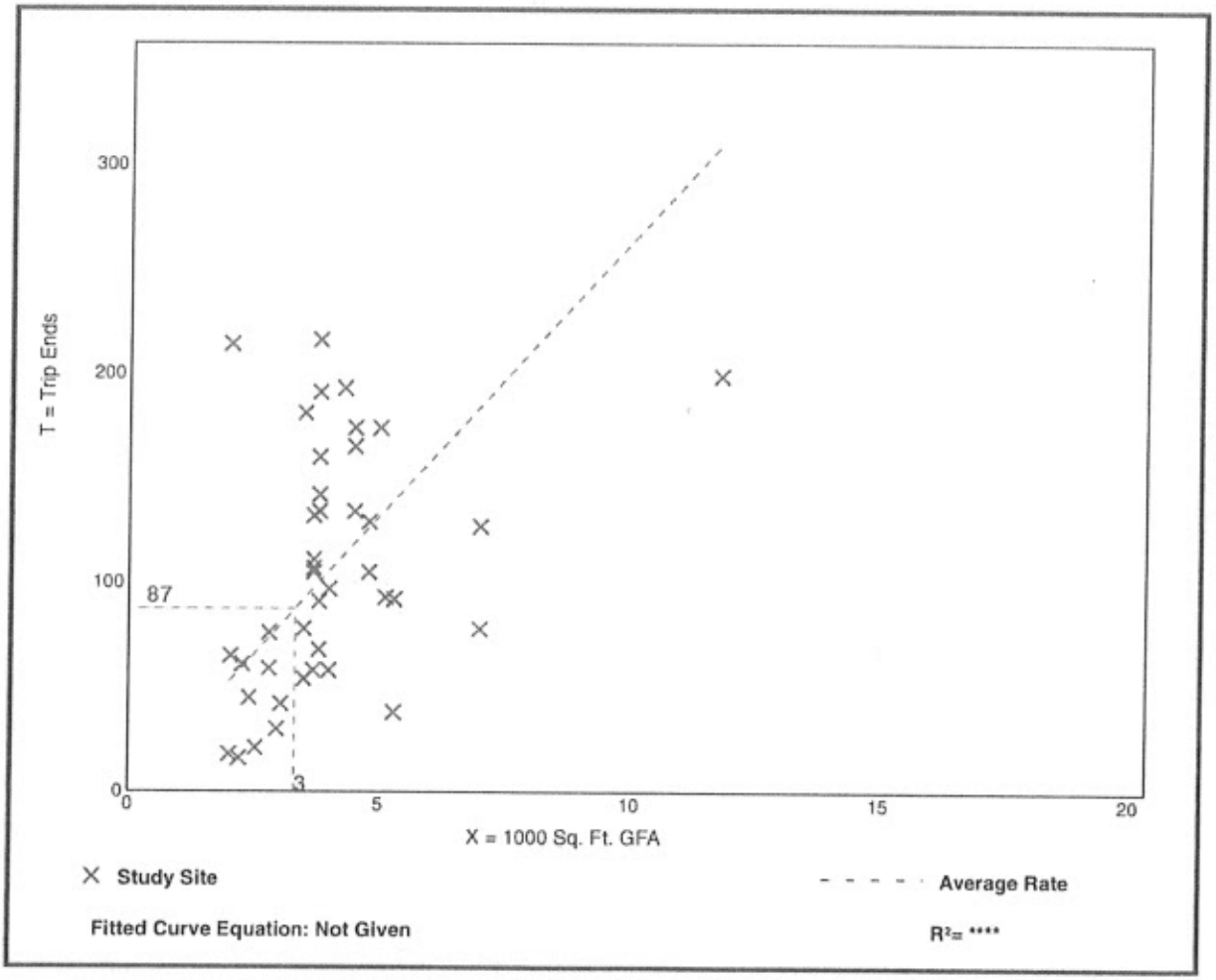
Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Saturday, Peak Hour of Generator**

Setting/Location: **General Urban/Suburban**
Number of Studies: 41
Avg. 1000 Sq. Ft. GFA: 4
Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
26.35	7.18 - 107.00	15.32

Data Plot and Equation



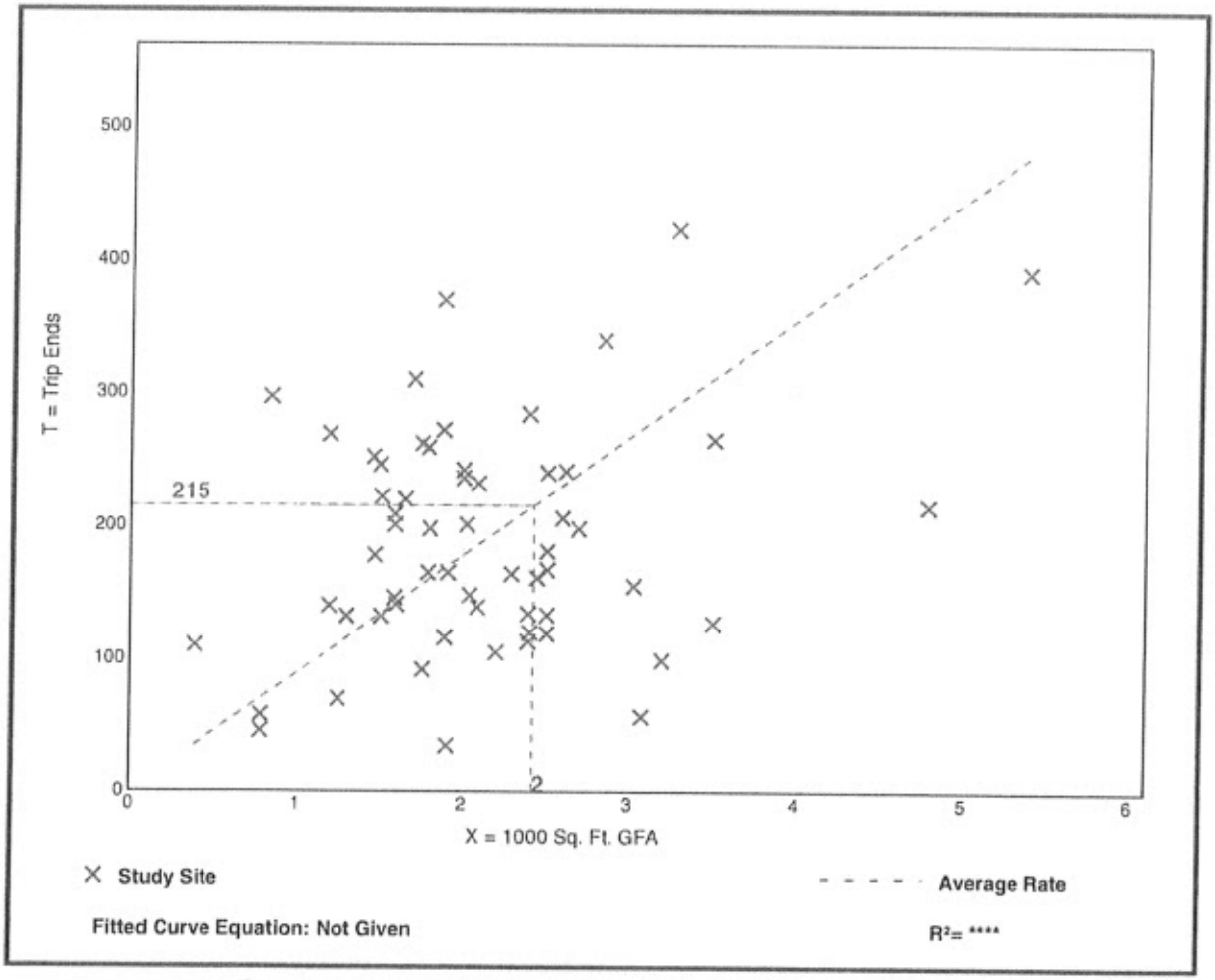
Coffee/Donut Shop with Drive-Through Window
(937)

Vehicle Trip Ends vs:	**1000 Sq. Ft. GFA**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 7 and 9 a.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	61
Avg. 1000 Sq. Ft. GFA:	2
Directional Distribution:	51% entering, 49% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
88.99	18.32 - 353.57	48.19

Data Plot and Equation



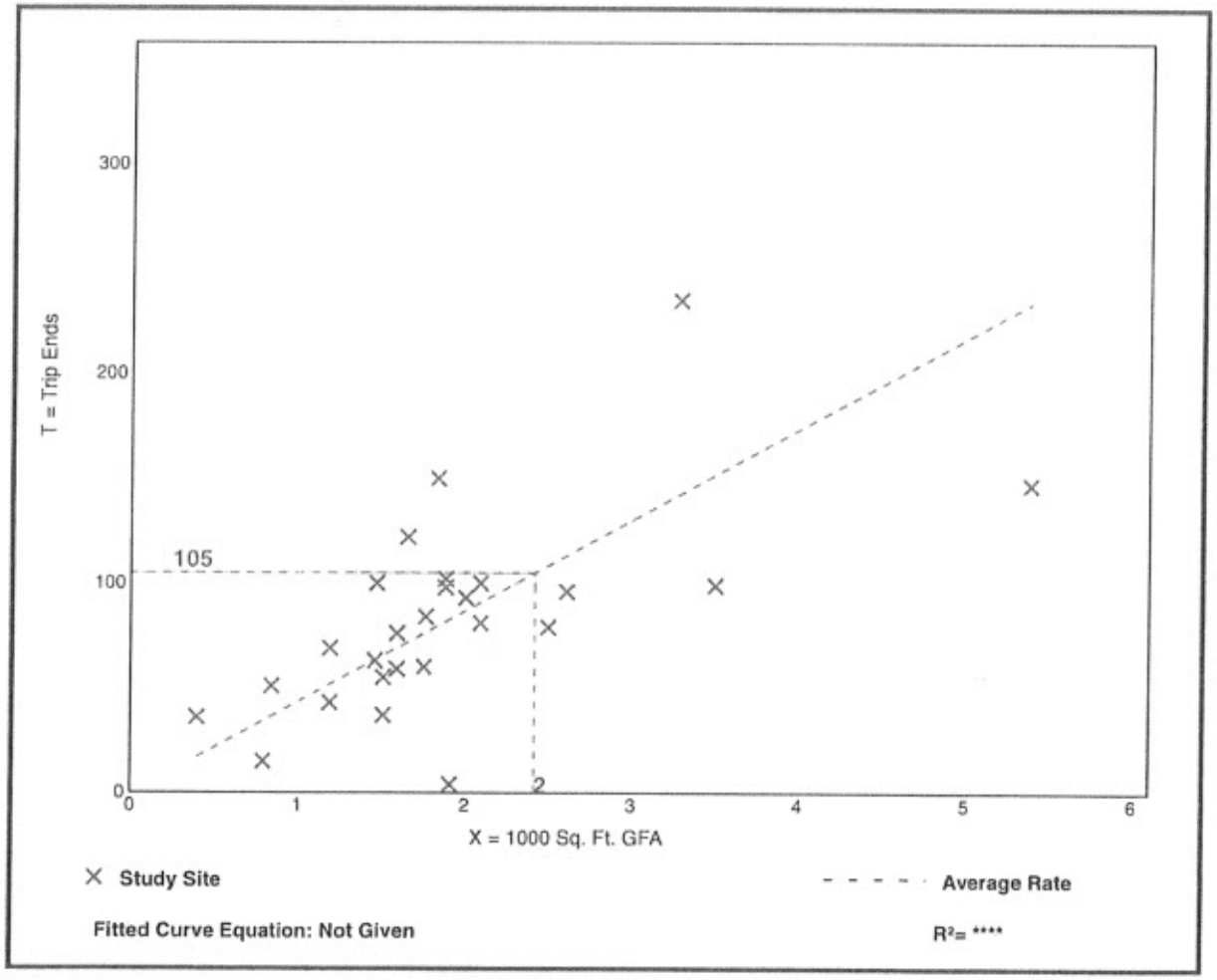
Coffee/Donut Shop with Drive-Through Window
(937)

Vehicle Trip Ends vs:	**1000 Sq. Ft. GFA**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 4 and 6 p.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	26
Avg. 1000 Sq. Ft. GFA:	2
Directional Distribution:	50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
43.38	2.09 - 92.31	18.88

Data Plot and Equation



Coffee/Donut Shop with Drive-Through Window
(937)

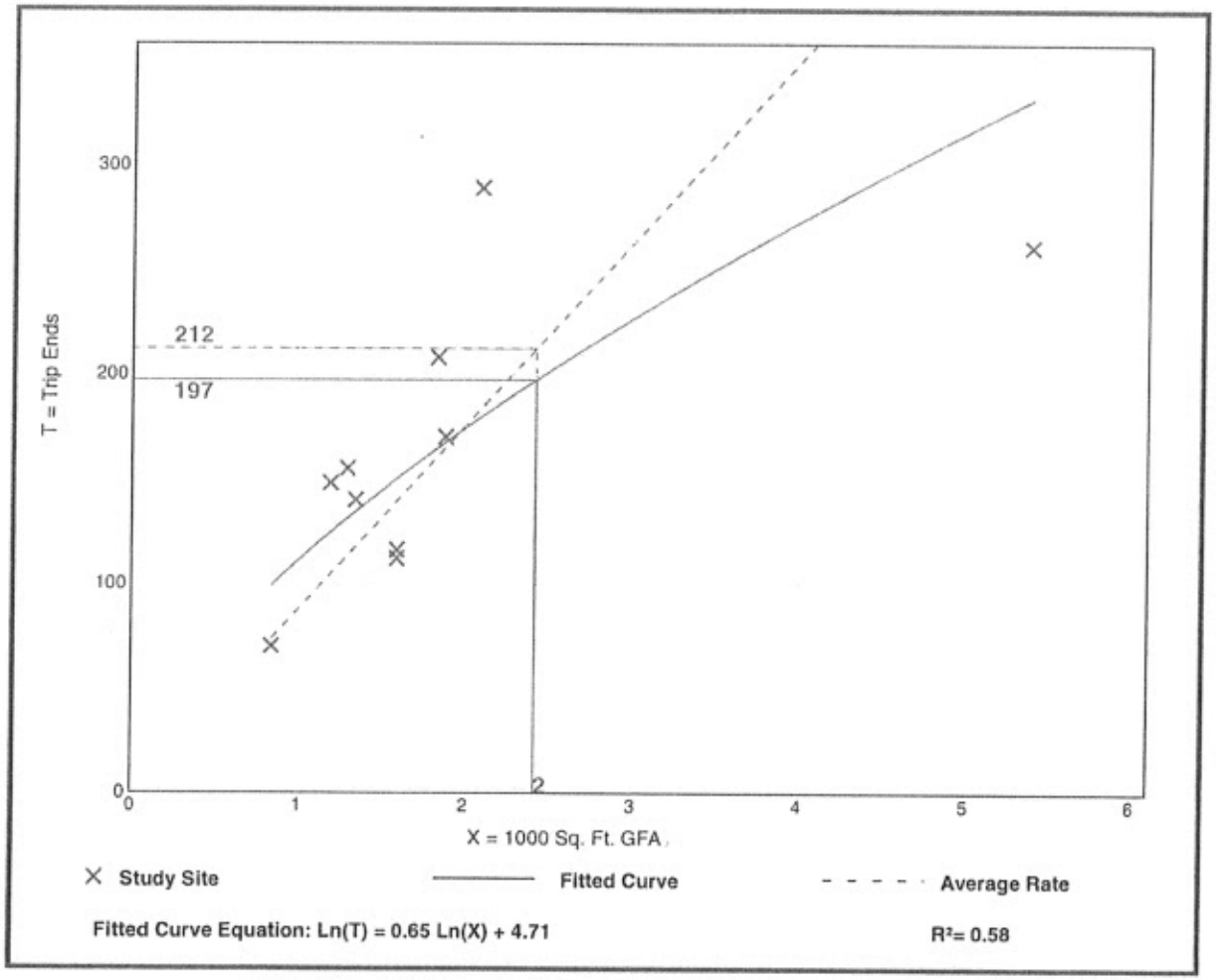
Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Saturday, Peak Hour of Generator**

Setting/Location: **General Urban/Suburban**
Number of Studies: 10
Avg. 1000 Sq. Ft. GFA: 2
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
87.70	48.42 - 138.28	33.38

Data Plot and Equation



Intersection	
Int Delay, s/veh	0.2

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	1	857	26	7	1112	0	0	0	1	0	0	13
Future Vol, veh/h	1	857	26	7	1112	0	0	0	1	0	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	92	65	44	94	25	25	25	25	44	25	65
Heavy Vehicles, %	0	3	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	4	932	40	16	1183	0	0	0	4	0	0	20

Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	1183	0	0	972	0	0	1689	2195	592	-	-	486
Stage 1	-	-	-	-	-	-	1215	1215	-	-	-	-
Stage 2	-	-	-	-	-	-	474	980	-	-	-	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	-	-	3.3
Pot Cap-1 Maneuver	597	-	-	717	-	-	62	46	454	0	0	533
Stage 1	-	-	-	-	-	-	195	256	-	0	0	-
Stage 2	-	-	-	-	-	-	545	331	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	597	-	-	717	-	-	58	45	454	-	-	533
Mov Cap-2 Maneuver	-	-	-	-	-	-	58	45	-	-	-	-
Stage 1	-	-	-	-	-	-	194	250	-	-	-	-
Stage 2	-	-	-	-	-	-	521	329	-	-	-	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	0	0.1	13	12
HCM LOS			B	B

Minor Lane/Major Mvmt	NELn1	NBL	NBT	NBR	SBL	SBT	SBR	SWLn1
Capacity (veh/h)	454	597	-	-	717	-	-	533
HCM Lane V/C Ratio	0.009	0.007	-	-	0.022	-	-	0.038
HCM Control Delay (s)	13	11.1	-	-	10.1	-	-	12
HCM Lane LOS	B	B	-	-	B	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0.1	-	-	0.1

Intersection	
Int Delay, s/veh	6.5

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	14	2	1	14	12	10	13	4	14	1	3	12
Future Vol, veh/h	14	2	1	14	12	10	13	4	14	1	3	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	58	50	25	50	33	83	81	50	58	25	75	75
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	24	4	4	28	36	12	16	8	24	4	4	16

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	96	80	20	76	84	12	20	0	0	32	0	0
Stage 1	52	52	-	20	20	-	-	-	-	-	-	-
Stage 2	44	28	-	56	64	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	891	814	1064	919	810	1074	1609	-	-	1593	-	-
Stage 1	966	856	-	1004	883	-	-	-	-	-	-	-
Stage 2	975	876	-	961	846	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	842	803	1064	903	799	1074	1609	-	-	1593	-	-
Mov Cap-2 Maneuver	842	803	-	903	799	-	-	-	-	-	-	-
Stage 1	956	847	-	994	880	-	-	-	-	-	-	-
Stage 2	921	873	-	943	838	-	-	-	-	-	-	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	9.4	9.5	2.4	1.2
HCM LOS	A	A		

Minor Lane/Major Mvmt	NEL	NET	NER	NBLn1	SBLn1	SWL	SWT	SWR
Capacity (veh/h)	1609	-	-	859	871	1593	-	-
HCM Lane V/C Ratio	0.01	-	-	0.037	0.088	0.003	-	-
HCM Control Delay (s)	7.3	0	-	9.4	9.5	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	8	1418	25	9	1411	2	2	0	4	0	0	18
Future Vol, veh/h	8	1418	25	9	1411	2	2	0	4	0	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	92	78	75	91	50	50	25	33	75	25	75
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	12	1541	32	12	1551	4	4	0	12	0	0	24

Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	1555	0	0	1573	0	0	2372	3174	778	-	-	787
Stage 1	-	-	-	-	-	-	1577	1577	-	-	-	-
Stage 2	-	-	-	-	-	-	795	1597	-	-	-	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	-	-	3.3
Pot Cap-1 Maneuver	431	-	-	425	-	-	19	11	343	0	0	339
Stage 1	-	-	-	-	-	-	117	171	-	0	0	-
Stage 2	-	-	-	-	-	-	351	168	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	431	-	-	425	-	-	17	10	343	-	-	339
Mov Cap-2 Maneuver	-	-	-	-	-	-	17	10	-	-	-	-
Stage 1	-	-	-	-	-	-	114	166	-	-	-	-
Stage 2	-	-	-	-	-	-	317	163	-	-	-	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	0.1	0.1	85.7	16.4
HCM LOS			F	C

Minor Lane/Major Mvmt	NELn1	NBL	NBT	NBR	SBL	SBT	SBR	SWLn1
Capacity (veh/h)	60	431	-	-	425	-	-	339
HCM Lane V/C Ratio	0.269	0.028	-	-	0.028	-	-	0.071
HCM Control Delay (s)	85.7	13.6	-	-	13.7	-	-	16.4
HCM Lane LOS	F	B	-	-	B	-	-	C
HCM 95th %tile Q(veh)	0.9	0.1	-	-	0.1	-	-	0.2

Intersection	
Int Delay, s/veh	6.1

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	13	3	1	0	6	7	14	5	14	0	1	0
Future Vol, veh/h	13	3	1	0	6	7	14	5	14	0	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	41	38	25	25	75	58	70	42	70	25	25	25
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	32	8	4	0	8	12	20	12	20	0	4	0

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	76	66	22	72	76	4	4	0	0	32	0	0
Stage 1	62	62	-	4	4	-	-	-	-	-	-	-
Stage 2	14	4	-	68	72	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	919	829	1061	924	818	1085	1631	-	-	1593	-	-
Stage 1	954	847	-	1024	897	-	-	-	-	-	-	-
Stage 2	1011	897	-	947	839	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	893	818	1061	905	807	1085	1631	-	-	1593	-	-
Mov Cap-2 Maneuver	893	818	-	905	807	-	-	-	-	-	-	-
Stage 1	942	836	-	1011	897	-	-	-	-	-	-	-
Stage 2	991	897	-	922	828	-	-	-	-	-	-	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	9.2	8.9	2.8	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NEL	NET	NER	NBLn1	SBLn1	SWL	SWT	SWR
Capacity (veh/h)	1631	-	-	891	954	1593	-	-
HCM Lane V/C Ratio	0.012	-	-	0.049	0.021	-	-	-
HCM Control Delay (s)	7.2	0	-	9.2	8.9	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

Intersection	
Int Delay, s/veh	1

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	6	1546	62	24	1508	3	1	0	5	0	0	29
Future Vol, veh/h	6	1546	62	24	1508	3	1	0	5	0	0	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	38	96	78	67	96	75	25	25	62	69	25	81
Heavy Vehicles, %	0	0	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	16	1610	79	36	1571	4	4	0	8	0	0	36

Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	1575	0	0	1689	0	0	2482	3366	788	-	-	845
Stage 1	-	-	-	-	-	-	1645	1645	-	-	-	-
Stage 2	-	-	-	-	-	-	837	1721	-	-	-	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	-	-	3.3
Pot Cap-1 Maneuver	424	-	-	383	-	-	15	8	338	0	0	310
Stage 1	-	-	-	-	-	-	106	159	-	0	0	-
Stage 2	-	-	-	-	-	-	332	146	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	424	-	-	383	-	-	12	7	338	-	-	310
Mov Cap-2 Maneuver	-	-	-	-	-	-	12	7	-	-	-	-
Stage 1	-	-	-	-	-	-	102	144	-	-	-	-
Stage 2	-	-	-	-	-	-	283	140	-	-	-	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	0.1	0.3	160.6	18.1
HCM LOS			F	C

Minor Lane/Major Mvmt	NELn1	NBL	NBT	NBR	SBL	SBT	SBR	SWLn1
Capacity (veh/h)	34	424	-	-	383	-	-	310
HCM Lane V/C Ratio	0.355	0.037	-	-	0.094	-	-	0.115
HCM Control Delay (s)	160.6	13.8	-	-	15.4	-	-	18.1
HCM Lane LOS	F	B	-	-	C	-	-	C
HCM 95th %tile Q(veh)	1.2	0.1	-	-	0.3	-	-	0.4

Intersection	
Int Delay, s/veh	5.4

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	33	2	1	8	5	11	35	10	40	3	8	6
Future Vol, veh/h	33	2	1	8	5	11	35	10	40	3	8	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	25	25	50	62	69	80	42	77	75	100	50
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	44	8	4	16	8	16	44	24	52	4	8	12

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	172	166	50	166	186	14	20	0	0	76	0	0
Stage 1	138	138	-	22	22	-	-	-	-	-	-	-
Stage 2	34	28	-	144	164	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	796	730	1024	803	712	1072	1609	-	-	1536	-	-
Stage 1	870	786	-	1002	881	-	-	-	-	-	-	-
Stage 2	987	876	-	864	766	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	759	707	1024	773	689	1072	1609	-	-	1536	-	-
Mov Cap-2 Maneuver	759	707	-	773	689	-	-	-	-	-	-	-
Stage 1	845	763	-	973	878	-	-	-	-	-	-	-
Stage 2	961	873	-	827	744	-	-	-	-	-	-	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	10.1	9.5	2.7	1.2
HCM LOS	B	A		

Minor Lane/Major Mvmt	NEL	NET	NER	NBLn1	SBLn1	SWL	SWT	SWR
Capacity (veh/h)	1609	-	-	765	846	1536	-	-
HCM Lane V/C Ratio	0.027	-	-	0.073	0.047	0.003	-	-
HCM Control Delay (s)	7.3	0	-	10.1	9.5	7.3	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	1	926	49	37	1167	0	0	0	1	0	0	27
Future Vol, veh/h	1	926	49	37	1167	0	0	0	1	0	0	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	92	65	44	94	25	25	25	25	44	25	65
Heavy Vehicles, %	0	3	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	4	1007	75	84	1241	0	0	0	4	0	0	42

Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	1241	0	0	1082	0	0	1921	2499	621	-	-	541
Stage 1	-	-	-	-	-	-	1409	1409	-	-	-	-
Stage 2	-	-	-	-	-	-	512	1090	-	-	-	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	-	-	3.3
Pot Cap-1 Maneuver	568	-	-	652	-	-	42	29	435	0	0	491
Stage 1	-	-	-	-	-	-	148	207	-	0	0	-
Stage 2	-	-	-	-	-	-	518	294	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	568	-	-	652	-	-	34	25	435	-	-	491
Mov Cap-2 Maneuver	-	-	-	-	-	-	34	25	-	-	-	-
Stage 1	-	-	-	-	-	-	147	180	-	-	-	-
Stage 2	-	-	-	-	-	-	471	292	-	-	-	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	0	0.7	13.4	13
HCM LOS			B	B

Minor Lane/Major Mvmt	NELn1	NBL	NBT	NBR	SBL	SBT	SBR	SWLn1
Capacity (veh/h)	435	568	-	-	652	-	-	491
HCM Lane V/C Ratio	0.009	0.007	-	-	0.129	-	-	0.085
HCM Control Delay (s)	13.4	11.4	-	-	11.3	-	-	13
HCM Lane LOS	B	B	-	-	B	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0.4	-	-	0.3

Intersection	
Int Delay, s/veh	4.2

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	14	2	1	14	12	10	13	57	14	1	17	12
Future Vol, veh/h	14	2	1	14	12	10	13	57	14	1	17	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	58	50	25	50	33	83	81	50	58	25	75	75
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	24	4	4	28	36	12	16	114	24	4	23	16

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	221	205	126	201	209	31	39	0	0	138	0	0
Stage 1	158	158	-	39	39	-	-	-	-	-	-	-
Stage 2	63	47	-	162	170	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	739	695	930	762	692	1049	1584	-	-	1458	-	-
Stage 1	849	771	-	981	866	-	-	-	-	-	-	-
Stage 2	953	860	-	845	762	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	693	685	930	748	682	1049	1584	-	-	1458	-	-
Mov Cap-2 Maneuver	693	685	-	748	682	-	-	-	-	-	-	-
Stage 1	840	763	-	970	863	-	-	-	-	-	-	-
Stage 2	900	857	-	828	754	-	-	-	-	-	-	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	10.3	10.4	0.8	0.7
HCM LOS	B	B		

Minor Lane/Major Mvmt	NEL	NET	NER	NBLn1	SBLn1	SWL	SWT	SWR
Capacity (veh/h)	1584	-	-	715	747	1458	-	-
HCM Lane V/C Ratio	0.01	-	-	0.045	0.102	0.003	-	-
HCM Control Delay (s)	7.3	0	-	10.3	10.4	7.5	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0	-	-

Intersection	
Int Delay, s/veh	9.6

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	8	1377	188	38	1503	2	2	0	4	0	0	180
Future Vol, veh/h	8	1377	188	38	1503	2	2	0	4	0	0	180
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	92	78	75	91	50	50	25	33	75	25	75
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	12	1497	241	51	1652	4	4	0	12	0	0	240

Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	1656	0	0	1738	0	0	2529	3518	828	-	-	869
Stage 1	-	-	-	-	-	-	1756	1756	-	-	-	-
Stage 2	-	-	-	-	-	-	773	1762	-	-	-	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	-	-	3.3
Pot Cap-1 Maneuver	395	-	-	367	-	-	14	6	318	0	0	299
Stage 1	-	-	-	-	-	-	90	140	-	0	0	-
Stage 2	-	-	-	-	-	-	362	139	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	395	-	-	367	-	-	~ 2	5	318	-	-	299
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 2	5	-	-	-	-
Stage 1	-	-	-	-	-	-	87	121	-	-	-	-
Stage 2	-	-	-	-	-	-	69	135	-	-	-	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	0.1	0.5	$ 1361.8	52.1
HCM LOS			F	F

Minor Lane/Major Mvmt	NELn1	NBL	NBT	NBR	SBL	SBT	SBR	SWLn1
Capacity (veh/h)	8	395	-	-	367	-	-	299
HCM Lane V/C Ratio	2.015	0.03	-	-	0.138	-	-	0.803
HCM Control Delay (s)	$ 1361.8	14.4	-	-	16.4	-	-	52.1
HCM Lane LOS	F	B	-	-	C	-	-	F
HCM 95th %tile Q(veh)	3	0.1	-	-	0.5	-	-	6.5

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	1.4

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	13	3	1	0	6	7	14	197	14	0	102	0
Future Vol, veh/h	13	3	1	0	6	7	14	197	14	0	102	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	41	38	25	25	75	58	70	42	70	25	25	25
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	32	8	4	0	8	12	20	469	20	0	408	0

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	937	927	479	933	937	408	408	0	0	489	0	0
Stage 1	519	519	-	408	408	-	-	-	-	-	-	-
Stage 2	418	408	-	525	529	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	247	270	591	248	267	648	1162	-	-	1085	-	-
Stage 1	544	536	-	624	600	-	-	-	-	-	-	-
Stage 2	616	600	-	540	530	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	232	264	591	236	261	648	1162	-	-	1085	-	-
Mov Cap-2 Maneuver	232	264	-	236	261	-	-	-	-	-	-	-
Stage 1	531	523	-	609	600	-	-	-	-	-	-	-
Stage 2	596	600	-	516	517	-	-	-	-	-	-	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	22.3	14.3	0.3	0
HCM LOS	C	B		

Minor Lane/Major Mvmt	NEL	NET	NER	NBLn1	SBLn1	SWL	SWT	SWR
Capacity (veh/h)	1162	-	-	252	407	1085	-	-
HCM Lane V/C Ratio	0.017	-	-	0.173	0.049	-	-	-
HCM Control Delay (s)	8.2	0	-	22.3	14.3	0	-	-
HCM Lane LOS	A	A	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.2	0	-	-

Intersection	
Int Delay, s/veh	5.1

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	6	1639	162	70	1638	3	1	0	5	0	0	124
Future Vol, veh/h	6	1639	162	70	1638	3	1	0	5	0	0	124
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	38	96	78	67	96	75	25	25	62	69	25	81
Heavy Vehicles, %	0	0	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	16	1707	208	104	1706	4	4	0	8	0	0	153

Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	1710	0	0	1915	0	0	2802	3863	855	-	-	958
Stage 1	-	-	-	-	-	-	1916	1916	-	-	-	-
Stage 2	-	-	-	-	-	-	886	1947	-	-	-	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	-	-	3.3
Pot Cap-1 Maneuver	376	-	-	314	-	-	9	4	306	0	0	261
Stage 1	-	-	-	-	-	-	71	116	-	0	0	-
Stage 2	-	-	-	-	-	-	310	112	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	376	-	-	314	-	-	~ 3	3	306	-	-	261
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 3	3	-	-	-	-
Stage 1	-	-	-	-	-	-	68	78	-	-	-	-
Stage 2	-	-	-	-	-	-	123	107	-	-	-	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	0.1	1.3	$ 978.8	36.6
HCM LOS			F	E

Minor Lane/Major Mvmt	NELn1	NBL	NBT	NBR	SBL	SBT	SBR	SWLn1
Capacity (veh/h)	9	376	-	-	314	-	-	261
HCM Lane V/C Ratio	1.341	0.042	-	-	0.333	-	-	0.587
HCM Control Delay (s)	$ 978.8	15	-	-	22.1	-	-	36.6
HCM Lane LOS	F	B	-	-	C	-	-	E
HCM 95th %tile Q(veh)	2.3	0.1	-	-	1.4	-	-	3.4

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	2.6

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	33	2	1	8	5	11	35	156	40	3	52	6
Future Vol, veh/h	33	2	1	8	5	11	35	156	40	3	52	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	25	25	50	62	69	80	42	77	75	100	50
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	44	8	4	16	8	16	44	371	52	4	52	12

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	563	557	397	557	577	58	64	0	0	423	0	0
Stage 1	485	485	-	66	66	-	-	-	-	-	-	-
Stage 2	78	72	-	491	511	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	440	442	657	444	430	1014	1551	-	-	1147	-	-
Stage 1	567	555	-	950	844	-	-	-	-	-	-	-
Stage 2	936	839	-	563	540	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	413	424	657	421	412	1014	1551	-	-	1147	-	-
Mov Cap-2 Maneuver	413	424	-	421	412	-	-	-	-	-	-	-
Stage 1	546	534	-	915	841	-	-	-	-	-	-	-
Stage 2	909	836	-	531	520	-	-	-	-	-	-	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	14.7	12.1	0.7	0.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NEL	NET	NER	NBLn1	SBLn1	SWL	SWT	SWR
Capacity (veh/h)	1551	-	-	426	546	1147	-	-
HCM Lane V/C Ratio	0.028	-	-	0.131	0.073	0.003	-	-
HCM Control Delay (s)	7.4	0	-	14.7	12.1	8.2	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.2	0	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	1	911	60	37	1167	0	0	0	1	0	0	36
Future Vol, veh/h	1	911	60	37	1167	0	0	0	1	0	0	36
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	92	65	44	94	25	25	25	25	44	25	65
Heavy Vehicles, %	0	3	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	4	990	92	84	1241	0	0	0	4	0	0	55

Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	1241	0	0	1082	0	0	1912	2499	621	-	-	541
Stage 1	-	-	-	-	-	-	1409	1409	-	-	-	-
Stage 2	-	-	-	-	-	-	503	1090	-	-	-	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	-	-	3.3
Pot Cap-1 Maneuver	568	-	-	652	-	-	42	29	435	0	0	491
Stage 1	-	-	-	-	-	-	148	207	-	0	0	-
Stage 2	-	-	-	-	-	-	524	294	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	568	-	-	652	-	-	33	25	435	-	-	491
Mov Cap-2 Maneuver	-	-	-	-	-	-	33	25	-	-	-	-
Stage 1	-	-	-	-	-	-	147	180	-	-	-	-
Stage 2	-	-	-	-	-	-	462	292	-	-	-	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	0	0.7	13.4	13.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NELn1	NBL	NBT	NBR	SBL	SBT	SBR	SWLn1
Capacity (veh/h)	435	568	-	-	652	-	-	491
HCM Lane V/C Ratio	0.009	0.007	-	-	0.129	-	-	0.113
HCM Control Delay (s)	13.4	11.4	-	-	11.3	-	-	13.3
HCM Lane LOS	B	B	-	-	B	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0.4	-	-	0.4

Intersection	
Int Delay, s/veh	4.7

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	18	2	1	14	19	10	13	57	20	1	17	12
Future Vol, veh/h	18	2	1	14	19	10	13	57	20	1	17	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	58	50	25	50	33	83	81	50	58	25	75	75
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	31	4	4	28	58	12	16	114	34	4	23	16

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	237	210	131	206	219	31	39	0	0	148	0	0
Stage 1	163	163	-	39	39	-	-	-	-	-	-	-
Stage 2	74	47	-	167	180	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	722	691	924	756	683	1049	1584	-	-	1446	-	-
Stage 1	844	767	-	981	866	-	-	-	-	-	-	-
Stage 2	940	860	-	840	754	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	660	681	924	742	673	1049	1584	-	-	1446	-	-
Mov Cap-2 Maneuver	660	681	-	742	673	-	-	-	-	-	-	-
Stage 1	835	759	-	970	863	-	-	-	-	-	-	-
Stage 2	865	857	-	823	746	-	-	-	-	-	-	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	10.6	10.7	0.7	0.7
HCM LOS	B	B		

Minor Lane/Major Mvmt	NEL	NET	NER	NBLn1	SBLn1	SWL	SWT	SWR
Capacity (veh/h)	1584	-	-	682	724	1446	-	-
HCM Lane V/C Ratio	0.01	-	-	0.057	0.135	0.003	-	-
HCM Control Delay (s)	7.3	0	-	10.6	10.7	7.5	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.5	0	-	-

Intersection	
Int Delay, s/veh	18.5

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	8	1365	211	38	1503	2	2	0	4	0	0	203
Future Vol, veh/h	8	1365	211	38	1503	2	2	0	4	0	0	203
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	92	78	75	91	50	50	25	33	75	25	75
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	12	1484	271	51	1652	4	4	0	12	0	0	271

Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	1656	0	0	1755	0	0	2522	3535	828	-	-	878
Stage 1	-	-	-	-	-	-	1756	1756	-	-	-	-
Stage 2	-	-	-	-	-	-	766	1779	-	-	-	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	-	-	3.3
Pot Cap-1 Maneuver	395	-	-	361	-	-	14	6	318	0	0	295
Stage 1	-	-	-	-	-	-	90	140	-	0	0	-
Stage 2	-	-	-	-	-	-	366	136	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	395	-	-	361	-	-	~ 1	5	318	-	-	295
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 1	5	-	-	-	-
Stage 1	-	-	-	-	-	-	87	120	-	-	-	-
Stage 2	-	-	-	-	-	-	29	132	-	-	-	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	0.1	0.5	$ 3035	72
HCM LOS			F	F

Minor Lane/Major Mvmt	NELn1	NBL	NBT	NBR	SBL	SBT	SBR	SWLn1
Capacity (veh/h)	4	395	-	-	361	-	-	295
HCM Lane V/C Ratio	4.03	0.03	-	-	0.14	-	-	0.918
HCM Control Delay (s)	$ 3035	14.4	-	-	16.6	-	-	72
HCM Lane LOS	F	B	-	-	C	-	-	F
HCM 95th %tile Q(veh)	3.3	0.1	-	-	0.5	-	-	8.7

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	2.7

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	24	3	3	0	17	7	14	197	25	0	102	0
Future Vol, veh/h	24	3	3	0	17	7	14	197	25	0	102	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	41	38	25	25	75	58	70	42	70	25	25	25
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	59	8	12	0	23	12	20	469	36	0	408	0

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	953	935	487	945	953	408	408	0	0	505	0	0
Stage 1	527	527	-	408	408	-	-	-	-	-	-	-
Stage 2	426	408	-	537	545	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	241	267	585	244	261	648	1162	-	-	1070	-	-
Stage 1	538	532	-	624	600	-	-	-	-	-	-	-
Stage 2	610	600	-	532	522	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	216	261	585	229	255	648	1162	-	-	1070	-	-
Mov Cap-2 Maneuver	216	261	-	229	255	-	-	-	-	-	-	-
Stage 1	525	519	-	609	600	-	-	-	-	-	-	-
Stage 2	576	600	-	501	509	-	-	-	-	-	-	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	26.6	17.5	0.3	0
HCM LOS	D	C		

Minor Lane/Major Mvmt	NEL	NET	NER	NBLn1	SBLn1	SWL	SWT	SWR
Capacity (veh/h)	1162	-	-	244	323	1070	-	-
HCM Lane V/C Ratio	0.017	-	-	0.321	0.108	-	-	-
HCM Control Delay (s)	8.2	0	-	26.6	17.5	0	-	-
HCM Lane LOS	A	A	-	D	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.3	0.4	0	-	-

Intersection	
Int Delay, s/veh	7.9

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	6	1622	193	70	1638	3	1	0	5	0	0	154
Future Vol, veh/h	6	1622	193	70	1638	3	1	0	5	0	0	154
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	38	96	78	67	96	75	25	25	62	69	25	81
Heavy Vehicles, %	0	0	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	16	1690	247	104	1706	4	4	0	8	0	0	190

Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	1710	0	0	1937	0	0	2793	3885	855	-	-	969
Stage 1	-	-	-	-	-	-	1916	1916	-	-	-	-
Stage 2	-	-	-	-	-	-	877	1969	-	-	-	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	-	-	3.3
Pot Cap-1 Maneuver	376	-	-	307	-	-	9	4	306	0	0	257
Stage 1	-	-	-	-	-	-	71	116	-	0	0	-
Stage 2	-	-	-	-	-	-	314	110	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	376	-	-	307	-	-	~ 2	3	306	-	-	257
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 2	3	-	-	-	-
Stage 1	-	-	-	-	-	-	68	77	-	-	-	-
Stage 2	-	-	-	-	-	-	78	105	-	-	-	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	0.1	1.3	$ 1603.5	50.4
HCM LOS			F	F

Minor Lane/Major Mvmt	NELn1	NBL	NBT	NBR	SBL	SBT	SBR	SWLn1
Capacity (veh/h)	6	376	-	-	307	-	-	257
HCM Lane V/C Ratio	2.011	0.042	-	-	0.34	-	-	0.74
HCM Control Delay (s)	$ 1603.5	15	-	-	22.7	-	-	50.4
HCM Lane LOS	F	B	-	-	C	-	-	F
HCM 95th %tile Q(veh)	2.5	0.1	-	-	1.5	-	-	5.2

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	3.5

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	46	2	1	8	18	11	35	156	54	3	52	6
Future Vol, veh/h	46	2	1	8	18	11	35	156	54	3	52	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	25	25	50	62	69	80	42	77	75	100	50
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	61	8	4	16	29	16	44	371	70	4	52	12

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	583	566	406	566	595	58	64	0	0	441	0	0
Stage 1	494	494	-	66	66	-	-	-	-	-	-	-
Stage 2	89	72	-	500	529	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	427	436	649	438	420	1014	1551	-	-	1130	-	-
Stage 1	561	550	-	950	844	-	-	-	-	-	-	-
Stage 2	923	839	-	557	530	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	385	418	649	415	402	1014	1551	-	-	1130	-	-
Mov Cap-2 Maneuver	385	418	-	415	402	-	-	-	-	-	-	-
Stage 1	540	529	-	914	841	-	-	-	-	-	-	-
Stage 2	874	836	-	524	510	-	-	-	-	-	-	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	16.1	13.5	0.7	0.5
HCM LOS	C	B		

Minor Lane/Major Mvmt	NEL	NET	NER	NBLn1	SBLn1	SWL	SWT	SWR
Capacity (veh/h)	1551	-	-	397	482	1130	-	-
HCM Lane V/C Ratio	0.028	-	-	0.185	0.127	0.004	-	-
HCM Control Delay (s)	7.4	0	-	16.1	13.5	8.2	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.7	0.4	0	-	-

EROSION AND SEDIMENT CONTROL REPORT

FOR

JP MORGAN CHASE BANK

PARCEL ID 02-043-305

1729 STREET ROAD (STATE ROUTE 132)

BENSALEM TOWNSHIP

BUCKS COUNTY

COMMONWEALTH OF PENNSYLVANIA

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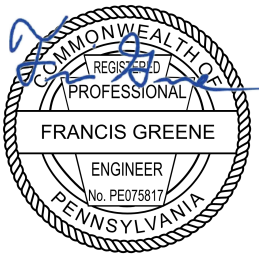

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1. GENERAL PROJECT DESCRIPTION

1.1. PROPOSED PROJECT DESCRIPTION

Core States Group (CSG) has been retained by JP Morgan Chase to provide engineering services for the construction of a new Chase Bank in Bensalem Township, Bucks County, Pennsylvania. The purpose of this report is to demonstrate compliance with PA Code Chapter 102 requirements for Erosion and Sediment Pollution Control. These include calculations of requirements for stormwater rate control, volume control, and water quality.

The existing (past 5 years) and historic (past 50 years) land use types for the project are identical – per Bucks County Property Records, the commercial occupancy of the property dates to 1975.

The topography of the majority of the site slopes from the western and southwestern corner of the building down to the north corner of the site to an existing inlet in an existing parking lot. A small southwest portion of the site flows to Street Road and a portion of the existing parking lot and landscape area slopes to the southern property line. Per PA EMap, the runoff eventually is conveyed into Neshaminy Creek.

The main stem of the Basin, Media Water Intake to Neshaminy Creek has a PA Code Chapter 93 Designated Use of Warm Water Fishery (WWF) and Migratory Fishes (MF). No portion of the project drains to a High Quality (HQ) or Exceptional Value (EV) watershed.

1.2. EROSION AND SEDIMENT POLLUTION CONTROL DESCRIPTION

The purpose of erosion and sedimentation control measures is to control erosion within the working area and to minimize the amount of sedimentation in any nearby streams or drainage ways.

Although the size of the proposed Chase Bank requires a significant amount of disturbance to the existing site, the erosion and sediment control plan has been designed to protect the surrounding features as to the extent possible. As part of the Chase Bank re-development plans, the site will decrease the impervious coverage by 5,045 S.F., or 15.2% of the project area. By decreasing the impervious area by more than 15% , numerous benefits are observed. These include a decrease in the rate and volume of stormwater runoff (when compared to the existing conditions), a decrease in thermal impacts, and an increase in water quality.

The design of the E&S Plan will additionally minimize soil compaction for the project. Construction equipment will be limited to the areas determined in the sequence of construction for each phase of construction. This prevents areas from being traversed until necessary – decreasing the traffic on any individual area of the site.

Temporary erosion will be controlled through the use of erosion and sediment pollution control devices included in the Pennsylvania Department of Environmental Protection's (PADEP) "Erosion and Sediment Pollution Control Best Management Practice (BMP) Manual" (March, 2012 edition). Erosion and sedimentation control measures designated for use during the proposed replacement include compost filter socks, rock construction entrances, sediment basins and traps, and seeding/re-vegetation of disturbed areas. Temporary measures shall be installed and maintained during construction with permanent measures in place at the conclusion of all work.

1.3. CONSTRUCTION SCHEDULE

Construction activities for the proposed Chase Bank construction are planned to commence in Spring, 2022. The estimated total duration of the project is 8 months, including mobilization, demobilization, site cleanup and restoration. The Construction Sequence is included in Section 4 of this narrative.

1.4. PLAN PREPARER

This Erosion and Sedimentation Control Report has been prepared by Christopher Lang, E.I.T. under the direction of Francis Greene, P.E.

2. TOPOGRAPHICAL FEATURES

- Location map
- Contours at one foot intervals
- Limits of disturbance of project
- Existing roads and physical features (i.e., building, paving, utilities, roadways)
- Soil types (described in this Erosion and Sediment Control Plan Narrative)
- Plan scale and north arrow

All of the above information is depicted on the included Erosion and Sedimentation Control Plan drawings (banded separately) prepared by Core States, Inc.

3. SOILS

3.1. PROJECT AREA SOIL TYPES

UfuB—Urban Land, 0 to 8 percent slopes

The Urban Land component makes up 90 percent of the map unit with Udorthents, unstable fill making up the remaining 10 percent. Slopes are 0 to 8 percent. This parent material is Pavement, buildings and other artificially covered areas human transported material. This soil does not meet hydric criteria. Typical depth to water table is about 78 inches, and the available water storage in profile is moderate (about 4.55 inches).

3.2. SOIL LIMITATION RESOLUTIONS

Erosion Hazard (Road, Trail)

Exposed areas within the disturbed project site with specific soil conditions may be prone to soil loss and accelerated erosion. Erosion and sedimentation control BMPs will be implemented and the construction entrance used will be maintained as necessary.

Cutbanks Caving

Some caving in of steep excavation side slopes is anticipated due to the soil conditions within the project area. Trench boxes and sloping-back of the trench walls will be performed at the discretion of the contractor in accordance with OSHA regulations.

Depth to Saturated Zone

Excavation shall be dewatered as necessary using filter bags to minimize erosion and sedimentation outside the project area. The down slope side of the dewatering sites will be protected with compost filter sock and located an ample distance from drainage channels to allow for natural filtering of the water.

Depth to Bedrock

The contractor will excavate rock as required utilizing typical equipment, such as a hydraulic hammer if necessary. Bedrock was not encountered in borings completed as part of a geotechnical investigation at the site.

Steep Slopes

The vast majority of the existing site is developed and paved (approximately 85%), and there are no steep slopes on the site.

3.3. HYDRIC SOILS

Soil is classified as being hydric if it is constantly saturated to the point where anaerobic conditions inhibit growth during the normal growing season. Per the USDA Soil Survey for Delaware County, none of the encountered soils are considered to be hydric.

4. THERMAL IMPACTS ANALYSIS

As part of the Chase Bank re-development plans, the site will decrease the impervious coverage by 5,045 S.F., or 15.2% of the project area. By decreasing the impervious area by more than 15% , numerous benefits are observed. These include a decrease in thermal impacts, when compared to the existing conditions.

The most significant factor in the consideration of thermal impacts for the project was the overall reduction in impervious coverage, and the structural BMPs proposed for the extended detention and treatment of stormwater runoff.

One of the most effective methods for avoiding thermal impacts is to maintain the existing tree cover on the site. The plans propose to protect the existing mature trees along the public right-of-way of the property. In addition to trying to minimize tree clearing, trees and other vegetation will be planted to supplement the remaining tree that will not be disturbed during construction. This provides some tree cover between the basin discharge and the receiving water.

5. CONSTRUCTION SEQUENCE AND STAGING

All earth disturbances, including clearing and grubbing as well as cuts and fills shall be done in accordance with the approved E&S plan. A copy of the approved drawings (stamped, signed and dated by the reviewing agency) must be available at the project site at all times. The reviewing agency shall be notified of any changes to the approved plan prior to implementation of those changes. The reviewing agency and Township Engineer may require a written submittal of those changes for review and approval at its discretion.

The control facilities for the site work include sediment traps, compost filter socks, pumped water filter bags, rock construction entrances, and appropriate seeding/ revegetation of disturbed areas.

Contractors may store equipment, materials and construction trailers within the limit of disturbance. Refer to the Erosion and Sedimentation Control Plan drawings (bound separately), prepared by Core States, Inc., for additional information.

All temporary and permanent control measures will be installed, maintained and removed in accordance with the procedures outlined in the “Erosion and Sediment Pollution Control Program Manual,” published by PADEP, Bureau of Soil and Water Conservation. These

measures are described in Sections 5.0 and 6.0 of this narrative.

The overall construction schedule is estimated to be approximately 8 months. The anticipated sequence of construction is described below:

SEQUENCE OF CONSTRUCTION

- All earth disturbance activities shall proceed in accordance with the following sequence. Each stage shall be completed in compliance with Pennsylvania Code Chapter 102 Erosion and Sediment Control Regulations before any following stage is initiated. Clearing and grubbing shall be limited only to those areas described in each stage. Upon completion or temporary cessation of the earth disturbance activity that will exceed four (4) days, or any stage thereof, the project site shall be immediately stabilized with the appropriate temporary or permanent stabilization.
- At least seven (7) days before starting any earth disturbance activities, the operator shall invite all contractors involved in those activities including, but not limited to: the landowner, all appropriate municipal officials, and the Bensalem township engineer for an on-site pre-construction meeting. Also, at least three (3) days before starting any earth disturbance activities, all contractors involved in those activities shall notify the Pennsylvania one call system inc. At 1-800-242-1776 for buried utilities location.
- Before initiating any revision to the approved erosion and sediment control plan or revisions to other plans which may affect the effectiveness of the approved E&S control plan, the operator must receive approval of the revisions from the Bensalem Township engineer. The operator shall assure that the approved erosion and sediment control plan is properly and completely implemented. Immediately upon discovering unforeseen circumstances posing the potential for accelerated erosion and/or sediment pollution, the operator shall implement appropriate best management practices to eliminate potential for accelerated erosion and/or sediment pollution.

1. Install rock construction entrance with stone diversion berm as designated on the plans. Remove paving as necessary.
2. Install temporary construction fence along the southern side property line as shown on the plans. Installation of the temporary construction fence should take place prior to any construction.
3. Install all perimeter compost filter socks and inlet protection within the designated limit of disturbance as indicated on the plans. Only limited clearing and grubbing necessary to install the perimeter erosion and sediment pollution controls is permitted.
4. Demolish existing site features, as necessary, to install erosion control measures for control during demolition activities. Contractor to install pumped water filter bag for use during pumping of water during construction activities.
5. Place excess material in soil stock pile area as shown on plans.
6. Contractor to provide dust control measures during all demolition activities of site work and building work. Continually spray disturbed areas with water from multiple hoses or water truck, as needed, to minimize dust during demolition of site features. Contractor shall dispose of materials removed according to local and state requirements. If asbestos

or any other regulated hazardous material exists within the property, it shall be removed and certifications to that effect shall be filed with the Pennsylvania Department of Environment Protection.

7. Demolish existing site features, building, and utilities proposed to be removed. During demolition of utilities all utility services must be maintained for neighboring properties whose utilities currently traverse the site and are proposed to be rerouted. Coordinate with local utility providers in advance of construction.
8. Initiate the necessary earthwork to reach the grades indicated on the plans. Building construction may commence upon acceptance of building pad by owner. The concrete washout must be installed before any concrete can be poured on-site. Contractor must perform bulk of earthwork to balance cuts and fills to the greatest extent possible. All areas disturbed during the earthwork phase of construction must be temporarily seeded and stabilized in accordance with the general conservation notes and specifications and seeding specifications if permanent stabilization cannot be achieved within four (4) days.
9. Critical stage: installation of subsurface detention / infiltration basin & initiate storm sewer installations including Nyloplast Envirohood for the features show on the plans starting at the further downstream structure. Inlets discharging to the basin must be blocked immediately after installation and remain blocked until site is fully stabilized to prevent sediment from entering basin. No construction equipment, such as cranes during building construction, shall be parked on top of the subsurface detention / managed release basins to avoid damaging the basin or over-compacting the subsurface soils and reducing site infiltration rates. The permittee shall provide engineering oversight for the installation of critical stage and post construction stormwater BMPs. The permittee shall provide engineering oversight for the installation of critical stage and post construction stormwater BMPs. A licensed professional or designee knowledgeable in the design and construction of the post construction BMPs shall conduct the oversight.
10. Continue with the balance of earthwork including utility installation (storm piping, sanitary laterals, water laterals, gas, electric, telephone, and cable) where applicable.
11. Reposition perimeter compost filter socks, install new inlet protection on all newly installed inlets within the property as shown on erosion & sediment control plan phase ii.
12. Install curbing and install stone base course in the driveway and parking areas.
13. Initiate final grading and placement of topsoil in all landscape areas. As soon as slopes, channels, ditches and other disturbed areas reach final grade, they must be stabilized. All landscape areas must be stabilized and permanent seeding or placement of sod must be applied. When final grade is achieved during non-germinating months, the area should be mulched until the beginning of the next planting season. However, the area will not be considered stabilized until a minimum uniform 70% vegetative cover of erosion resistant perennial species has been achieved. As disturbed areas within a project approach final grade, preparations should be made for seeding and mulching to begin. In no case should an area exceeding 15,000 square feet, which is to be stabilized by vegetation, reach final grade without being seeded and mulched. Waiting until earthmoving is completed before making preparations for seeding and mulching is not acceptable. Seeding and mulching requirements are specified in the general conservation notes and specifications.
14. Install bituminous pavement and concrete including sidewalks.

15. Critical stage: survey as-built subsurface storm sewer system and provide engineer of record with as-built conditions to confirm system has been constructed to meet the Bensalem township ordinances.
16. Critical stage: installation of BMP 6.7.2 landscape restoration. Install final vegetation and landscaping specified on the landscape planting plan.
17. Upon site stabilization (uniform coverage or density of 70% across all disturbed areas) and notification to and inspection from Bensalem township engineer, remove remaining erosion and sediment control facilities. Any area disturbed during the removal of erosion and sediment control facilities shall be stabilized immediately.
18. Clear site of debris and all unwanted materials. Operator shall remove from site, recycle or dispose of all building materials and wastes in accordance with the department's solid waste management regulations at 25 PA. Code 260.1 et seq., 271.1 et seq. The contractor shall not illegally bury, dump or discharge any building material or waste at this site.
19. Demobilize & contact Bensalem Township Engineer for final site inspections.

6. TEMPORARY CONTROL MEASURES

The temporary control measures and facilities for use during construction and earthmoving activities are discussed below. Refer to the Erosion and Sedimentation Control Plan drawings (bound separately), prepared by Core States, Inc., for additional information.

The types of measures selected prevent excessive erosion and sedimentation. These controls provide means of storm water handling, accelerated erosion control, and sediment pollution control. Construction operations shall be carried out in a manner that minimizes erosion and water/air pollution. State, county, and local laws concerning pollution abatement, shall be followed.

Compost Filter Sock: Compost filter socks will be placed on the downgrade side of slopes and disturbed areas. The diameter and total width of the filter sock is different depending on the slope of the land and the maximum upslope length. Wooden posts will be installed through the silt socks twelve inches below grade and must be at least thirty-six inches high. Stakes will be 10 feet on center. In paved areas, concrete blocks shall be provided 10 feet on center to support the compost filter socks. Rock Filter Outlets will be installed at all low points along the filter socks.

(See Appendix G for compost filter socks size calculations)

Pumped Water Filter Bags: Geotextile fabric-filter bags will be placed on a level, stabilized area. Silt socks shall be placed entirely around the filter bag. Hoses will be wired to the entrance of the bag to secure it in place. Filter bags shall not be placed on slopes exceeding 5%. If a filter bag is required on slopes greater than 5%, non-erodible material may be placed under the bag to reduce steepness. Bags will be replaced when they reach 1/2 capacity.

Rock Construction Entrances: Construction entrances will be constructed of eight inches of AASHTO #1 stone over geotextile fabric (AMOCO Woven Fabric type 2002 or equivalent) and will be located as designated on the Construction Plan drawings. Construction entrances will be cleaned every working day. Refer to drawing detail sheets for additional notes and dimensions.

Dust Control: Contractor to provide dust control measures during all demolition activities of site work and building work. Continually spray building with water from multiple hoses or water truck, as needed, to minimize dust during demolition of site hardscape. Contractor shall dispose of materials removed according to local and state requirements. If asbestos or any other regulated hazardous material exists within the building, it shall be removed and certifications to that effect shall be filed with the Pennsylvania Department of Environment Protection.

Temporary Seeding: Disturbed work areas shall be temporarily stabilized in accordance with the Temporary Seeding Specifications shown below:

- Standard for temporary stabilization with Fibermulch
    - Mulching is most applicable to those areas subject to periodic disturbance and reworking in addition, stabilization with fiber mulch shall be used during non-germination periods.
    - Perform all cultural operations at right angles to the slope.
    - Grade as need and feasible. See standard for land grading.
    - Protective materials to be used:
        - Unrotted small-grain un-chopped straw or hay at 3.0 tons per acre (4 tons per acre between November 1 and March 1) spread uniformly and anchored with liquid mulch binder. Binder products shall be installed in accordance with the product manufacturer's specifications.
- Hydromulcher. Use is limited to flatter slopes and during optimum seeding periods in spring and fall. Liquid mulch binders: apply immediately after placement of hay or straw mulch to minimize loss by wind or water. Products to be installed at a rate of 1 ton per acre (minimum) or per manufacturer's specifications. Standard for temporary stabilization with seed:
    - Disturbed areas which are not at finished grade and which will be redisturbed within twelve (12) months must be seeded and mulched immediately with a temporary cover.
    - All areas to be permanently seeded shall also receive temporary seeding concurrently.
    - Seedbed preparation for temporary seeding.
        - Perform all cultural operations at right angles to slope.
        - Apply agricultural lime at a rate of 1 tone per acre.
        - Apply 10-10-10 fertilizer at a rate of 500 pounds per acre.
        - Work lime and fertilizer into the soil as nearly as practical to a depth of four (4) inches.
- Temporary seed mixtures: disturbed areas which are not at finished grade and which will

be disturbed again within twelve (12) months must be seeded with a temporary seed mixture as follows:

- Annual rye (40 pounds / acre pls)
- Or spring oats (96 pounds / acre pls) or winter rye (168 pounds / acre pls)

(Reference: Penn State "Erosion Control & Conservation Plantings on Noncropland", Table 5)

7. PERMANENT CONTROL MEASURES

The purpose of the permanent control measures and facilities is to prevent erosion of the project site after construction is complete. The control measures to be utilized for all areas include erosion control matting and permanent seeding. The locations of the measures and facilities are depicted on the Erosion and Sedimentation Control Plan drawings, prepared by Core States Group, that accompany this narrative.

Permanent Seeding: Disturbed work areas shall be permanently stabilized in accordance with the Permanent Seeding Specifications and comply with the Commonwealth of Pennsylvania Department of Environmental Protection's (PADEP) Erosion and Sediment Pollution Control Program Manual.

8. MAINTENANCE OF CONTROL FACILITIES

All temporary and permanent control measures, as described in Sections 5.0 and 6.0 of this report, and as noted and detailed in the Erosion and Sedimentation Pollution Control Plans, will be installed, maintained and removed in accordance with the procedures outlined in the "Erosion and Sediment Pollution Control Program Manual," published by PADEP, Bureau of Soil and Water Conservation.

Control measures and facilities, both temporary and permanent; will be maintained during the progress of the work. This will be performed by implementing a program of proper disposal of materials and frequent removal of materials accumulated at the control facilities. Temporary control measures will be maintained until permanent stabilization is achieved.

Materials not used in construction will be removed from the site as early as possible. Any soils removed from the site must be transported to a site that has an adequate and implemented erosion and sediment pollution control plan. Dewatered sediment cleaned from compost filter socks and desilting bags will be disposed on site and will be reused in final grading operations or disposed of at a location with an approved Erosion and Sediment Pollution Control Plan.

During construction, removal of the filter socks shall take place when necessary.

Maintenance will include the inspection of erosion and sediment control facilities after any measurable storm event and on a weekly basis. Facilities will be cleaned, repaired or replaced as needed.

EROSION AND SEDIMENTATION CONTROL MEASURES MAINTENANCE SCHEDULE/PROCEDURES			
CONTROL MEASURE	INSPECTION SCHEDULE	POTENTIAL ISSUES	TYPICAL REMEDIES
COMPOST FILTER SOCK	WEEKLY AND AFTER EACH MEASURABLE RAINFALL EVENT	UNDERCUTTING OF BARRIER SEDIMENT AT 1/2 HEIGHT OF BARRIER DAMAGED FABRIC	INCREASE NUMBER OF STAKES IN AFFECTED AREA REMOVE SEDIMENT, PLACE ACROSS SITE AS FILL REPAIR/REPLACE ACCORDING TO MANUFACTURERS SPECIFICATIONS
PUMPED WATER FILTER BAG	BEFORE AND AFTER EACH USE	TORN FABRIC SEDIMENT ESCAPING BAG BAG FILLED 1/2 WITH SEDIMENT	REPLACE FILTER BAG REPLACE FILTER BAG REPLACE FILTER BAG
ROCK CONSTRUCTION ENTRANCE	WEEKLY AND AFTER EACH MEASURABLE RAINFALL EVENT	MISSING STONE, RUTTING SEDIMENT ON ROADWAY	ADD ROCK TO SPECIFIED DIMENSIONS SWEEP DRIED MATERIAL BACK TO PROJECT SITE. DO NOT WASH WITH WATER.
TEMPORARY/ PERMANENT VEGETATION	WEEKLY AND AFTER EACH MEASURABLE RAINFALL EVENT	SEDIMENT AT TOE OF SLOPE RILLS AND GULLIES FORMING BARE PATCHES	APPLY EROSION CONTROL BLANKET AS NECESSARY FILL RILLS AND GULLIES. APPLY EROSION CONTROL BLANKET AS NECESSARY RE-SEED PER SEEDING SPECIFICATIONS

9. DEFINITION OF STABILIZATION

A site will be permanently stabilized when all permanent control measures/facilities have been completed and are operational, temporary control measures/ facilities removed, and uniform erosion-resistant perennial vegetation is established to the point where the surface soil is capable of resisting erosion during runoff events. The standard for this vegetative cover will be a uniform coverage or density of 70 percent (germinated grass cover) across the disturbed area. Any area that is to be stabilized by vegetation and exceeds 15,000 square feet must be seeded and mulched once final grade is established.

Interim erosion and sediment pollution controls such as compost filter sock will be utilized until permanent stabilization is achieved.

10. ALTERNATIVE EROSION AND SEDIMENT POLLUTION CONTROL MEASURES

Any revisions to the Erosion and Sediment Pollution Control Plans will be prepared in accordance with the Pennsylvania Department of Environmental Protection (PADEP) guidelines. All alternative plans and revisions must be submitted to the Delaware County Conservation District and Media Borough Engineer.

11. GENERAL NOTES

- Stockpile heights must not exceed 35 feet; stockpile slopes must not exceed 2:1.
- The operator/responsible person (O/RP) on site shall assure that the approved erosion and sediment control plan is properly and completely implemented.
- Immediately upon discovering unforeseen circumstances posing the potential for accelerated erosion and/or sediment pollution, the O/RP shall implement appropriate Best Management Practices (BMPs) to eliminate the potential for accelerated erosion and/or sediment pollution.
- The O/RP shall assure that an erosion and sediment control plan has been prepared and approved by the Bucks County Conservation District and is being implemented and maintained for all soils and/or rock spoil and borrow areas regardless of their locations.
- All pumping of sediment-laden water shall be through a sediment control BMP such as a pumped water filter bag discharging over an undisturbed area.
- A copy of the approved erosion and sediment control plan must be available on the project site at all times.
- Erosion and sediment BMPs must be constructed, stabilized and functional before site disturbance begins within the tributary areas of those BMPs.
- After final site stabilization has been achieved, temporary erosion and sediment BMP

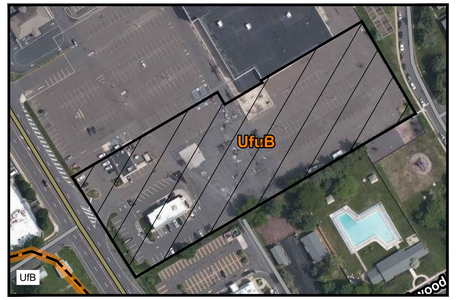
controls must be removed. Areas disturbed during the removal of the BMPs must be stabilized immediately.

- At least seven (7) days before starting any earth disturbance activity, the O/RP shall invite all contractors involved in that activity, the landowner, all appropriate municipal officials, the erosion and sediment control plan designer and the BucksCounty Conservation District to a pre-construction meeting. Also, at least three (3) days before starting any earth disturbance activity, all contractors involved in that activity shall notify the Pennsylvania One-Call System Inc. at 1-800-242-1776 to determine any underground utilities locations.
- Immediately after earth disturbance activity ceases, the O/RP shall stabilize any areas disturbed by the activity. During non-germinating periods, mulch must be applied at specified rates. Disturbed areas that are not finished grade and which will be re-disturbed within one year must be stabilized in accordance with temporary vegetative stabilization specifications.
- Disturbed areas that are at a finished grade or which will not be re-disturbed within one year must be stabilized in accordance with permanent vegetative stabilization specifications.
- An area shall be considered to have achieved final stabilization when it has a minimum uniform 70% vegetative or other permanent non-vegetative cover with a density sufficient to resist accelerated surface erosion and subsurface characteristics sufficient to resist sliding and other movements. Upon the installation of temporary sediment basin riser(s), a qualified site representative shall conduct an immediate inspection of the riser(s), where upon the Bucks County Conservation District shall be notified in writing that the riser is sealed (watertight).
- At stream crossings, a 50-foot buffer shall be maintained. On buffers, clearings, sod disturbances and excavations, equipment traffic should be minimized. Activity such as stacking logs, burning cleared brush, discharged rainwater from trenches, welding pipe sections, refueling and maintaining equipment should be avoided within buffer zones.
- Until a site is stabilized, all erosion and sediment BMPs must be maintained properly. Maintenance must include inspections of all erosion control BMPs after each runoff event and on a weekly basis. All preventative and remedial maintenance work, including cleanout, repair, replacement, re-grading, reseeding, re-mulching and re0netting must be performed immediately. If erosion and sediment control BMPs fail to perform as expected, replacement BMPs, or modifications of those installed, will be required.
- Sediment removed from BMPs shall be disposed of on-site in landscaped areas outside of steep slopes, wetlands, floodplains or drainage swales and immediately stabilized or placed in soil stockpiles and stabilized.
- All building material and wastes must be removed from the site and recycled in accordance with DEP's Solid Waste Regulations (25 PA Code 260.1 et seq., 271.1 et seq., and 287.1 et seq.) and/or any additional local, state or federal regulations. No building materials (used or unused) or waste materials shall be burned, buried, dumped, or discharged at the site.

APPENDIX A

EROSION AND SEDIMENT CONTROL PLANS

GRAPHIC SCALE
20 10 5 0 20
1" = 20'



SOILS MAP
1" = 150'

CHAPTER 93 RECEIVING WATERSHED AND STREAM CLASSIFICATION:
- DELAWARE RIVER BASIN
- NESHAMINY CREEK WATERSHED
- BASIN, MEDIA WATER INTAKE TO NESHAMINY CREEK, **WWF, MF**

SOIL USE LIMITATIONS AND THEIR RESOLUTIONS PROVIDED:

CONTRACTOR SHALL CONSULT WITH GEOTECHNICAL ENGINEER TO DETERMINE SOIL LIMITATIONS AND RESOLUTIONS SPECIFIC TO THIS PROJECT.

1. SOIL TYPES POORLY SUITED AS SOURCES OF TOPSOIL RESTRICT OR PLACE CONDITIONS ON PLANNING VEGETATIVE STABILIZATION. ACIDIC, LOW FERTILITY, EXCESSIVE DRYNESS AND EXCESSIVE WETNESS LIMIT PLANT GROWTH.
   RESOLUTIONS: IDENTIFYING AND RESOLVING CHARACTERISTICS, THAT RENDER THE SOIL TYPES POORLY, SUITED AS TOPSOIL.

2. ACIDIC SOIL TYPES EXHIBITING PH REACTION VALUES LOWER THAN ABOUT 5.5, LIMIT VEGETATIVE STABILIZATION. SOIL TESTS MIGHT BE NECESSARY TO DETERMINE SITE SPECIFIC PH REACTION.
   RESOLUTIONS: APPLYING LIME CONSISTENT WITH RATES DETERMINED BY SOIL TESTING; SELECTING VEGETATIVE SPECIES TOLERANT TO ACIDIC SOIL CONDITIONS; AND IMPLEMENTING COMBINATIONS OF THESE AND/OR OTHER METHODS. SPECIFIC TOLERANCE INFORMATION IS PROVIDED IN TABLE 1 OF THE EROSION CONTROL & CONSERVATION PLANTINGS ON NONCROPLAND PUBLISHED BY PENN STATE.

3. LOW FERTILITY SOIL TYPES LACKING IN SUFFICIENT AMOUNTS OF ESSENTIAL PLANT NUTRIENTS SUCH AS: NITRPGEN, PHOSPHOROUS, POTASSIUM, SULFER, MAGNESIUM, CALCIUM, IRON, MANGANESE, BORON, CHLORINE, ZINC, COPPER AND MOLYBDENUM, LIMIT VEGETATION STABILIZATION. SOIL TESTS MIGHT BE NECESSARY TO DETERMINE SITE SPECIFIC SOIL FERTILITY.
   RESOLUTIONS: INCORPORATING SOIL NUTRIENTS CONSISTENT WITH RATES DETERMINED BY SOIL TESTING; SELECTIVE VEGETATIVE SPECIES TOLERANT TO LOW FERTILITY SOIL CONDITIONS, AND IMPLEMENTING COMBINATIONS OF THESE AND/OR OTHER METHODS. SPECIFIC TOLERANCE INFORMATION IS PROVIDED IN TABLE 1 OF THE EROSION CONTROL & CONSERVATION PLANTINGS ON NONCROPLAND PUBLISHED BY PENN STATE.

4. ERODIBLE SOIL TYPES EXHIBITING K VALUES GREATER THAN 0.36 OR PLASTICITY INDEX VALUES LOWER THAN 10, LIMIT VEGETATIVE STABILIZATION OF CHANNELS.
   RESOLUTIONS: TEMPORARY CHANNEL LINING, PROVIDING PERMANENT CHANNEL LINING, DECREASING CHANNEL GRADE, INCREASING CHANNEL WIDTH, SELECTING VEGETATIVE WITH GREATER RETARDANCE, SELECTING PERMANENT LININGS OTHER THAN GRASSES, AND IMPLEMENTING COMBINATION OF THESE AND/OR METHODS. VEGETATIVE RETARDANCE INFORMATION IS PROVIDED IN TABLES 6 AND 7 OF THE EROSION AND SEDIMENT POLLUTION CONTROL MANUAL PUBLISHED BY PADEP.

5. WET SOIL TYPES HAVE EXCESSIVE ROOT ZONE AND SOIL MOISTURES. SOME SOIL SURVEYS INDICATE WETNESS, HIGH WATER TABLE AND FLOODING. THIS INDICATOR IS AFFECTED BY SOIL DISTURBANCE.
   RESOLUTIONS: SELECTING VEGETATIVE SPECIES TOLERANT TO WET CONDITIONS, TILING VEGETATIVE AREAS, AND IMPLEMENTING COMBINATIONS OF THESE AND/OR OTHER METHODS. SPECIFIC TOLERANCE INFORMATION IS PROVIDED IN TABLE 1 OF THE EROSION CONTROL & CONSERVATION PLANTINGS ON NONCROPLAND PUBLISHED BY THE PENN STATE.

6. DRY SOIL TYPES LACK SUFFICIENT ROOT ZONE SOIL MOISTURES. THIS INDICATOR IS AFFECTED BY SOIL DISTURBANCE.
   RESOLUTIONS: SELECTING VEGETATIVE SPECIES TOLERANT TO DRY CONDITIONS. IRRIGATING VEGETATED AREAS AND IMPLEMENTING COMBINATION OF THESE AND/OR OTHER METHODS. SPECIFIC TOLERANCE INFORMATION IS PROVIDED IN TABLE 1 OF THE EROSION CONTROL & CONSERVATION PLANTINGS ON NONCROPLAND PUBLISHED BY PENN STATE.

7. SOIL TYPES SUSCEPTIBLE TO SINKHOLE AND SOLUTION CHANNEL/CHAMBER FORMATION POSE LIMITATIONS ON LOCATING RESERVOIR AREAS OF SEDIMENT BASINS, SEDIMENT TRAPS, STORMWATER RETENTION BASINS, AND STORMWATER DETENTION BASINS.
   RESOLUTIONS: LOCATING THOSE FACILITIES ON OTHER SOIL TYPES, LINING RESERVOIR AREAS WITH IMPERMEABLE LINNINGS, LIMITING STANDING WATER DEPTHS, LIMITING RETENTION TIMES AND IMPLEMENTING COMBINATIONS OF THESE AND/OR OTHER METHODS.

8. SOIL TYPES THAT EXHIBIT INSTABILITY IN POND EMBANKMENTS OR SUSCEPTIBILITY TO PIPING AND SEEPING POSE LIMITATIONS ON PLANNING EMBANKMENTS OF SEDIMENT BASINS, SEDIMENT TRAPS, STORMWATER RETENTION BASINS AND STORMWATER DETENTION BASINS.
   RESOLUTIONS: IMPORTING OTHER SOIL FOR EMBANKMENT OF THOSE FACILITIES, LOCATING THOSE FACILITIES ON OTHER SOIL TYPES, LIMITING EMBANKMENT SLOPE STEEPNESS AND IMPLEMENTING COMBINATIONS OF THESE AND/OR OTHER METHODS.

9. SOIL THAT ARE DIFFICULT TO COMPACT, UNSUITABLE FOR WINTER GRADING, OR SUSCEPTIBLE TO FROST ACTION POSE LIMITATIONS ON PLANNING EMBANKMENTS OF SEDIMENT BASINS, SEDIMENT TRAPS, STORMWATER RETENTION BASINS AND STORMWATER DETENTION BASINS.
   RESOLUTIONS: IMPORTING OTHER SOIL FOR EMBANKMENT OF THOSE FACILITIES, LOCATING THOSE FACILITIES ON OTHER SOIL TYPES, NOT CONSTRUCTING EMBANKMENTS DURING PERIODS PRONE TO FROST AND IMPLEMENTING COMBINATIONS OF THESE AND/OR OTHER METHODS

10. SUSCEPTIBILITY FOR THE DEVELOPMENT OF SINKHOLE WITHIN IDENTIFIED SOILS.
    RESOLUTIONS: IN THE EVENT THAT PRESENCE OF A SINKHOLE IS DETECTED DURING THE COURSE OF WORK, CORRECTIVE MEASURES SHALL BE PERFORMED UNDER THE OBSERVATION AND GUIDANCE OF THE OWNER'S GEOTECHNICAL CONSULTANT.
    EXCAVATE THE LOOSE, WET SOILS SURROUNDING THE SINKHOLE TO EXPOSE THE SINKHOLE "THROAT" (THE OPENING IN THE ROCK) AND THE ADJACENT STABLE SOILS/ROCK WHERE POSSIBLE, THE EXCAVATION SHALL EXTEND A MINIMUM OF TWO FEET (2') BEYOND THE STABLE SOILS OR TO THE ROCK SURFACE, WHICHEVER IS ENCOUNTERED FIRST.
    FILL THE EXPOSED SINKHOLE "THROAT" WITH LEAN CONCRETE TO BLOCK THE MIGRATION OF THE UPPER LAYERS OF SOIL THROUGH THE ROCK OPENING.
    AFTER CONCRETE HAS CURED OVERNIGHT BACKFILL THE REMAINDER OF THE EXCAVATION WITH CLAYEY SOILS TO PROVIDE A LOW PERMEABILITY BARRIER. THE CLAYEY SOILS SHALL BE PLACED IN 8" LIFTS AND EACH LIFT COMPACTED BY REPEATED PASSES OF THE COMPACTION EQUIPMENT UNTIL STABLE. CARE SHALL BE TAKEN TO ASSURE THAT THE SOIL AT THE EDGES OF THE EXCAVATION ARE WELL COMPACTED.

EROSION AND SEDIMENT CONTROL NOTES

1. IN ACCORDANCE WITH SLDO SECTION 201-106(C)(11)A., TOPSOIL SHALL NOT BE REMOVED FROM THE DEVELOPMENT SITE OR USED AS FILL.

STOCKPILE NOTES

1. STOCKPILING PROPOSED ON ASPHALT. (SEE LOCATION ON PLAN)
2. EXCESS MATERIAL TO BE TAKEN TO SITE WITH AN APPROVED SEDIMENT AND EROSION CONTROL PERMIT.
3. ALL STOCKPILES LEFT AT THE END OF THE DAY NEED TO BE STABILIZED UNTIL THE NEXT REDISTURBANCE OR REMOVAL.

E&S LEGEND

- SOX — CS — COMPOST FILTER SOCK (12 INCH)
- IP — INLET PROTECTION
- TS — TOPSOIL STOCKPILE
- CE — CONSTRUCTION ENTRANCE W/ STONE DIVERSION BERM
- CW — CONCRETE WASHOUT
- LOD — LIMITS OF DISTURBANCE
- X — X — CF — PROPOSED TEMPORARY CONSTRUCTION FENCE

ALERT TO CONTRACTOR:

PRIOR TO THE CONSTRUCTION OF OR CONNECTION TO ANY STORM DRAIN, SANITARY SEWER, WATER MAIN OR ANY OF THE DRY UTILITIES, THE CONTRACTOR SHALL EXCAVATE, VERIFY AND CALCULATE ALL POINTS OF CONNECTION AND ALL UTILITY CROSSINGS AND INFORM ENGINEER AND THE OWNER OF ANY CONFLICT OR REQUIRED DEVIATIONS FROM THE PLAN. NOTIFICATION SHALL BE MADE A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION. ENGINEER AND OWNER SHALL BE HELD HARMLESS IN THE EVENT THAT THE CONTRACTOR FAILS TO MAKE SUCH NOTIFICATION.

SOIL SUITABILITY AND CHARACTERISTICS

DESIGNATION	SOIL	HYDROLOGIC SOIL GROUP	DESCRIPTION	DEPTH FROM SURFACE OF TYPICAL PROFILE	DEPTH TO SEASONAL HIGH WATER TABLE	DEPTH TO BEDROCK	PERMEABILITY	SHRINK SWELL POTENTIAL	HYDRIC SOIL	SUSCEPTIBILITY TO FROST HEAVING	FOR USE AS ROAD FILL	FOR USE AS TOPSOIL	FOR USE AS GRAVEL	FOR USE AS SAND
UfuB	URBAN LAND, 0 TO 8 PERCENT SLOPES	-	URBAN LAND: 90 PERCENT MINOR COMPONENTS: 10 PERCENT	-	GREATER THAN 78 INCHES	-	NOT RATED	NOT RATED	RATING: 0	NONE	NOT RATED	NOT RATED	NOT RATED	NOT RATED

CORE STATES GROUP
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Ambler, PA 19002
Phone (215) 809-2125
MSwaggard@core-states.com

CLIENT
CHASE

Know what's below. Call before you dig.

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON DESIGN DRAWINGS, RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE MEASUREMENTS TAKEN IN THE FIELD. CORE STATES, INC. DOES NOT GUARANTEE THAT LOCATIONS SHOWN ARE EXACT. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF UTILITIES.

REVISIONS

REV	DATE	COMMENT	BY
1	08/24/21	BCCD, BCPC, AND TWP COMMENTS	CML

DOCUMENT
PRELIMINARY/ FINAL LAND DEVELOPMENT PLAN FOR CHASE BANK

SITE LOCATION
1729 STREET ROAD
BENSALEM, PA
19020

ENGINEER SEAL
COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
FRANCIS GREENE
ENGINEER
No. PE075817
PENNSYLVANIA

08/26/2021
FRANCIS GREENE, P.E.
PA LICENSE #075817

SHEET TITLE
EROSION & SEDIMENT CONTROL PLAN

JOB #:	JPM-29391
DATE:	5/13/21
SCALE:	1" = 20'
DRAWN BY:	CML
CHECKED BY:	FG

SHEET NO.
C11
SHEET 12 OF 23

User: CLANG Plot Date/Time: Aug. 24, 21 - 16:43:47 Drawing: C:\Users\clang\appdata\local\temp\AcPublish_15640\JPM 29391-P-EROS.dwg ,11 EROS

GENERAL CONSERVATION NOTES AND SPECIFICATIONS

1. GENERAL INFORMATION

A. THIS EROSION AND SEDIMENT CONTROL PLAN SHALL BE AVAILABLE AT THE SITE.
B. NO SEDIMENT OR SEDIMENT LADEN WATER MUST BE ALLOWED TO LEAVE THE SITE WITHOUT FIRST BEING PROPERLY FILTERED.
C. ANY SEDIMENT THAT IS TRACKED ONTO THE ROAD MUST BE CLEANED OFF BEFORE THE END OF THE DAY.
D. DISTURBED AREAS ON WHICH EARTHMOVING ACTIVITIES HAVE CEASED AND WHICH WILL REMAIN EXPOSED SHALL BE STABILIZED IMMEDIATELY, EITHER TEMPORARILY OR PERMANENTLY, INCLUDING THE RESTORATION OF DRIVEWAYS, STOCKPILES, OFF-SITE UNDERGROUND UTILITY LINES AND GRADED PERIMETER AREAS. DURING NON-GERMINATION PERIODS, MULCH MUST BE APPLIED AT RECOMMENDED RATES. CRUSHED STONE ON PAVEMENT SUBGRADES IS CONSIDERED ADEQUATE PROTECTION.
E. AREAS THAT FAIL TO GERMINATE MUST BE RE-SEEDED OR MULCHED.
F. WHERE DISTURBED AREAS ARE DIFFICULT TO STABILIZE, NETTING SHOULD BE USED TO HOLD SEED AND MULCH IN PLACE; THIS IS ESPECIALLY IMPORTANT AROUND WATERCOURSES, IN SWALES AND AREAS OF CONCENTRATED FLOWS, STEEP SLOPES.
G. UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENTATION MUST BE MAINTAINED PROPERLY. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENT CONTROL AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, RE-GRADING, RE-SEEDING, RE-MULCHING, AND RE-NETTING, MUST BE PERFORMED IMMEDIATELY. IF AT ANY TIME PRIOR TO SITE STABILIZATION ANY E&SP PROBLEMS OCCUR WHICH REQUIRE ADDITIONAL CONTROLS, IMMEDIATE ACTION MUST BE TAKEN TO CORRECT THE PROBLEMS.
H. THE CONTRACTOR MUST DEVELOP AND COORDINATE WITH OWNER AND HAVE APPROVED BY THE COUNTY CONSERVATION DISTRICT, A SEPARATE EROSION AND SEDIMENT POLLUTION CONTROL PLAN FOR EACH SPOIL, BORROW OR OTHER WORK AREA NOT DETAILED ON THE PERMITTED PLANS, WHETHER LOCATED WITHIN OR OUTSIDE OF THE LIMITS OF CONSTRUCTION.
I. CONTRACTOR SHALL NOTIFY THE COUNTY CONSERVATION DISTRICT OF DISPOSAL METHOD AND LOCATION OF MATERIALS (IF ANY) TO BE REMOVED FROM SITE.
J. STANDARD FOR DISPOSAL OF MATERIALS ALL MATERIALS TO BE RECYCLED OR DISPOSED OF MUST DO SO IN ACCORDANCE WITH ALL APPLICABLE STATE AND LOCAL REGULATIONS. STOCKPILES TO BE HAULED OFF SITE MUST HAVE AN APPROVED EROSION AND SEDIMENT CONTROL PLAN AT THE DESTINATION LOCATION.
K. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN SOIL STABILIZATION THROUGHOUT CONSTRUCTION. ADDITIONAL MEASURES REQUIRED TO ENSURE ON-SITE AND OFF-SITE STABILIZATION IN AND ADJACENT TO CONSTRUCTION ACTIVITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND HALL BE AT NO COST TO THE OWNER. IMMEDIATE NOTIFICATION SHALL BE GIVEN TO THE OWNER AND ENGINEER SHOULD ADDITION STABILIZATION MEASURES BE NECESSARY; IN ACCORDANCE WITH THE NPDES AND/OR SWPPP REQUIREMENTS FOR THE PROJECT.

2. STANDARD FOR LAND GRADING

A. DEFINITION: RESHAPING THE GROUND SURFACE BY GRADING TO PLAN GRADES, WHICH ARE DETERMINED BY TOPOGRAPHIC SURVEY AND LAYOUT.
B. PROVISIONS SHALL BE MADE TO SAFELY CONDUCT SURFACE WATER TO STORM DRAINS OR SUITABLE WATER COURSES AND TO PREVENT SURFACE RUNOFF FROM DAMAGING CUT FACES AND FULL SLOPES.
C. ADJOINING PROPERTY SHALL BE PROTECTED FROM EXCAVATION AND FILLING OPERATIONS.
- INSTALLATION REQUIREMENTS
- TIMBER, LOGS, BRUSH, RUBBISH, ROCKS, STUMPS AND VEGETABLE MATTER WHICH WILL INTERFERE WITH THE GRADING OPERATION OR AFFECT THE PLANNED STABILITY OR FILL AREAS SHALL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH STANDARD FOR DISPOSAL OF MATERIALS.
- FILL MATERIAL IS TO BE FREE OF BRUSH, RUBBISH, TIMBER, LOGS, VEGETATIVE MATTER AND STUMPS IN AMOUNTS THAT WILL BE DETRIMENTAL TO CONSTRUCTING STABLE FILLS.
- ALL FILLS SHALL BE COMPACTED SUFFICIENTLY FOR THEIR INTENDED PURPOSE AND AS REQUIRED TO REDUCE SLIPPING, EROSION OR EXCESS SATURATION.
- ALL DISTURBED AREAS SHALL BE LEFT WITH A NEAT AND FINISHED APPEARANCE AND SHALL BE PROTECTED FROM EROSION.
- (SEE 1. D.)

3. STANDARD FOR UTILITY TRENCH EXCAVATION

A. LIMIT ADVANCE CLEARING AND GRUBBING OPERATIONS TO A DISTANCE EQUAL TO TWO TIMES THE LENGTH OF PIPE INSTALLATION THAT CAN BE COMPLETED IN ONE DAY.
B. LIMIT DAILY TRENCH EXCAVATION TO THE LENGTH OF PIPE PLACEMENT, PLUG INSTALLATION AND BACKFILLING THAT CAN BE COMPLETED THE SAME DAY. DAILY BACKFILLING OF THE TRENCH MAY BE DELAYED FOR A MAX. OF SIX DAYS FOR CERTAIN CASES REQUIRING TESTING OF THE INSTALLED PIPE.
C. WATER WHICH ACCUMULATES IN THE OPEN TRENCH WILL BE COMPLETELY REMOVED BY PUMPING TO A FACILITY FOR REMOVAL OF SEDIMENT (SEDIMENT FILTER BAG, SEE DETAIL) BEFORE PIPE PLACEMENT AND/OR BACKFILLING BEGINS.
D. ON THE DAY FOLLOWING PIPE PLACEMENT AND TRENCH BACKFILLING, THE DISTURBED AREA WILL BE GRADED TO FINAL CONTOURS AND APPROPRIATE TEMPORARY EROSION AND SEDIMENT POLLUTION CONTROL MEASURES / FACILITIES WILL BE INSTALLED. SEEDING AND MULCHING OF ALL DISTURBED AREAS WILL BE DONE IMMEDIATELY.
E. WORK CREWS AND EQUIPMENT FOR TRENCHING, PLACEMENT OF PIPE, PLUG CONSTRUCTION AND BACKFILLING WILL BE SELF CONTAINED AND SEPARATE FORM CLEARING AND GRUBBING AND SITE RESTORATION AND STABILIZATION OPERATIONS.
F. ALL SOIL EXCAVATED FROM THE TRENCH WILL BE PLACED ON THE UPHILL SIDE OF THE TRENCH.

4. STANDARD FOR TEMPORARY STABILIZATION

A. STANDARD FOR TEMPORARY STABILIZATION WITH FIBERMULCH
- MULCHING IS MOST APPLICABLE TO THOSE AREAS SUBJECT TO PERIODIC DISTURBANCE AND REWORKING IN ADDITION, STABILIZATION WITH FIBER MULCH SHALL BE USED DURING NON-GERMINATION PERIODS.
- PERFORM ALL CULTURAL OPERATIONS AT RIGHT ANGLES TO THE SLOPE.
- GRADE AS NEED AND FEASIBLE. SEE STANDARD FOR LAND GRADING.
- PROTECTIVE MATERIALS TO BE USED:
  - UNROTTED SMALL-GRAIN UN-CHOPPED STRAW OR HAY AT 3.0 TONS PER ACRE (4 TONS PER ACRE BETWEEN NOVEMBER 1 AND MARCH 1) SPREAD UNIFORMLY AND ANCHORED WITH LIQUID MULCH BINDER. BINDER PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH THE PRODUCT MANUFACTURER'S SPECIFICATIONS.
  - HYDROMULCHER. USE IS LIMITED TO FLATTER SLOPES AND DURING OPTIMUM SEEDING PERIODS IN SPRING AND FALL. LIQUID MULCH BINDERS: APPLY IMMEDIATELY AFTER PLACEMENT OF HAY OR STRAW MULCH TO MINIMIZE LOSS BY WIND OR WATER. PRODUCTS TO BE INSTALLED AT A RATE OF 1 TON PER ACRE (MINIMUM) OR PER MANUFACTURER'S SPECIFICATIONS.

B. STANDARD FOR TEMPORARY STABILIZATION WITH SEED
- DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE REDISTURBED WITHIN TWELVE (12) MONTHS MUST BE SEEDED AND MULCHED IMMEDIATELY WITH A TEMPORARY COVER.
- ALL AREAS TO BE PERMANENTLY SEEDED SHALL ALSO RECEIVE TEMPORARY SEEDING CONCURRENTLY.
- SEEDBED PREPARATION FOR TEMPORARY SEEDING.
  - PERFORM ALL CULTURAL OPERATIONS AT RIGHT ANGLES TO SLOPE.
  - APPLY AGRICULTURAL LIME AT A RATE OF 1 TONE PER ACRE.
  - APPLY 10-10-10 FERTILIZER AT A RATE OF 500 POUNDS PER ACRE.
  - WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF FOUR (4) INCHES.

C. SEEDING: SEE SEEDING SPECIFICATIONS.

5. STANDARD FOR PERMANENT STABILIZATION

A. SPECIFICATION FOR SEEDING SOIL TREATMENT FOR PERMANENT VEGETATIVE COVER
1. **SITE PREPARATION**
A. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION. SEEDING, MULCH APPLICATION AND ANCHORING, AND MAINTENANCE.
A. SUBSOIL SHOULD BE TESTED FOR LIME REQUIREMENT AND LIMESTONE, IF NEEDED, SHOULD BE APPLIED TO BRING SOIL PH TO BETWEEN 5.5 AND 7 AND INCORPORATED INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES.
B. IMMEDIATELY PRIOR TO TOPSOIL DISTRIBUTION, THE SURFACE SHOULD BE SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3-5 INCHES TO PROVIDE A GOOD BOND WITH THE TOPSOIL.
2. **APPLYING TOPSOIL**
A. TOPSOIL SHOULD BE HANDLED ONLY WHEN IT IS DRY ENOUGH TO WORK WITHOUT DAMAGING SOIL STRUCTURE.
B. ALL DISTURBED TOPSOIL ON-SITE IS TO BE REDISTRIBUTED ON-SITE IN AREAS NOT COVERED BY IMPERVIOUS SURFACES. NO REMOVAL OF TOPSOIL IS ALLOWED UNLESS APPROVED BY BENSALEM TOWNSHIP. UNIFORM APPLICATION TO A DEPTH OF 6-8 INCHES (UNSETTLED) IS RECOMMENDED. SOILS WITH A PH OF 4.0 OR LESS OR CONTAINING IRON SULFIDE SHALL BE COVERED WITH A MINIMUM DEPTH OF 12 INCHES OF SOIL HAVING A PH OF 5.0 OR MORE.
3. **SEEDBED PREPARATION**
A. A SOIL TEST SHALL BE CONDUCTED TO ACCURATELY DETERMINE NECESSARY SOIL AMENDMENTS.
B. PERFORM ALL CULTURAL OPERATIONS AT RIGHT ANGLES TO SLOPE.
C. SOIL MODIFICATIONS:
1. APPLY 10-10-20 RATED FERTILIZER AT A RATE OF 1000 POUNDS PER ACRE OR 25 POUNDS PER 1000 SQUARE FEET, OR AS DIRECTED BY SOIL TEST.
2. APPLY AGRICULTURAL LIME AT A RATE OF 6 TONS PER ACRE OR 240 POUNDS PER 1000 SQUARE FEET, OR AS DIRECTED BY SOIL TEST.
D. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES CONTINUE TILLAGE UNTIL A REASONABLY UNIFORM FINE SEEDBED IS PREPARED.
E. REMOVE FROM THE SURFACE ALL STONES ONE INCH (1") OR LARGER IN ANY DIMENSION, REMOVE ALL OTHER DEBRIS, SUCH AS WIRE, CABLE, TREE ROOTS, PIECES OF CONCRETE, CLODS, LUMPS OR OTHER UNSUITABLE MATERIAL.
F. INSPECT SEEDBED JUST BEFORE SEEDING. IF TRAFFIC HAS LEFT THE SOIL COMPACTED, THE AREA MUST BE RE-TILLED AND FIRMED AS ABOVE.
4. SEEDING: SEE SEEDING SPECIFICATIONS
5. SEED BED AREAS SHALL ALSO BE STABILIZED USING AN APPROVED METHOD (EG: HYDROMULCHING) AS OUTLINED IN ITEM 4.A. HEREIN.

ALERT TO CONTRACTOR:

PRIOR TO THE CONSTRUCTION OF OR CONNECTION TO ANY STORM DRAIN, SANITARY SEWER, WATER MAIN OR ANY OF THE DRY UTILITIES, THE CONTRACTOR SHALL EXCAVATE, VERIFY AND CALCULATE ALL POINTS OF CONNECTION AND ALL UTILITY CROSSINGS AND INFORM ENGINEER AND THE OWNER OF ANY CONFLICT OR REQUIRED DEVIATIONS FROM THE PLAN. NOTIFICATION SHALL BE MADE A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION. ENGINEER AND OWNER SHALL BE HELD HARMLESS IN THE EVENT THAT THE CONTRACTOR FAILS TO MAKE SUCH NOTIFICATION.

B. STANDARD FOR PERMANENT STABILIZATION WITH SOD
1. METHODS AND MATERIALS
A. CULTIVATED SOD IS PREFERRED OVER NATIVE OR PASTURE SOD. SPECIFY "CERTIFIED SOD," OR OTHER HIGH QUALITY CULTIVATED SOD.
B. SOD SHOULD BE FREE OF WEEDS AND UNDESIRABLE COARSE WEEDY GRASSES.
C. SOD SHOULD BE OF UNIFORM THICKNESS, APPROXIMATELY 5/8 INCH, PLUS OR MINUS 1/4 INCH, AT TIME OF CUTTING. (EXCLUDES TOP GROWTH).
D. SOD SHOULD BE VIGOROUS AND DENSE AND BE ABLE TO RETAIN ITS OWN SHAPE AND WEIGHT WHEN SUSPENDED VERTICALLY WITH A FIRM GRASP FROM THE UPPER 0% OF THE STRIP. BROKEN PADS OR TORN AND UNEVEN ENDS WILL NOT BE ACCEPTABLE.
E. A SOD OF KENTUCKY 31 TALL FESCUE WITH BLUEGRASS, OR A FESCUE BLEND IS PREFERRED.
F. ONLY MOIST, FRESH UNHEATED SOD SHOULD BE USED. SOD SHOULD BE HARVESTED, DELIVERED AND INSTALLED WITHIN A PERIOD OF 36 HOURS.
2. SITE PREPARATIONS: SEE SPECIFICATION FOR SEEDING & SOIL TREATMENT FOR PERMANENT VEGETATIVE COVER (ITEM 5.A. ABOVE)
3. SOD PLACEMENT
A. SOD STRIPS SHOULD BE LAID ON THE CONTOUR, NEVER UP AND DOWN THE SLOPE, STARTING AT THE BOTTOM OF THE SLOPE AND WORKING UP. ON STEEP SLOPES, THE USE OF LADDERS WILL FACILITATE THE WORK AND PREVENT DAMAGE TO THE SOD. DURING PERIODS OF HIGH TEMPERATURE, LIGHTLY IRRIGATE THE SOIL IMMEDIATELY PRIOR TO LAYING THE SOD.
B. PLACE SOD STRIPS WITH SNUG EVEN JOINTS THAT ARE STAGGERED. OPEN SPACES INVITE EROSION.
C. ROLL OR TAMP SOD IMMEDIATELY FOLLOWING PLACEMENT TO INSURE SOLID CONTACT OF ROOT MAT AND SOIL SURFACE. DO NOT OVERLAP SOD. ALL JOINTS SHOULD BE BUTTED TIGHTLY IN ORDER TO PREVENT VOIDS, WHICH WOULD CAUSE DRYING OF THE ROOTS.
D. ON SLOPES GREATER THAN 3 TO 1, SECURE SOD TO SURFACE SOIL WITH WOOD PEGS, WIRE STAPLES OR A BIODEGRADABLE FASTENER.
E. SURFACE WATER CANNOT ALWAYS BE DIVERTED FROM FLOWING OVER THE FACE OF THE SLOPE, BUT A CAPPING STRIP OF HEAVY JUTE OR PLASTIC NETTING, PROPERLY SECURED, ALONG THE CROWN OF THE SLOPE AND EDGES WILL PROVIDE EXTRA PROTECTION AGAINST LIFTING AND UNDERCUTTING OF SOD. THE SAME TECHNIQUE CAN BE USED TO ANCHOR SOD IN WATER-CARRYING CHANNELS AND OTHER CRITICAL AREAS. WIRE STAPLES MUST BE USED TO ANCHOR NETTING IN CHANNEL WORK.
F. IMMEDIATELY FOLLOWING INSTALLATION, SOD SHOULD BE WATERED UNTIL MOISTURE PENETRATES THE SOIL LAYER BENEATH SOD TO A DEPTH OF 4 INCHES. MAINTAIN OPTIMUM MOISTURE FOR AT LEAST TWO WEEKS.
4. FOLLOW-UP INSPECTION: AFTER THE FIRST GROWING SEASON, THE SOD SHOULD BE INSPECTED TO DETERMINE IF ADDITIONAL FERTILIZATION OR LIMING IS NEEDED.

EROSION AND SEDIMENT CONTROL SUPPLEMENTAL NOTES

E&S PLANNING AND DESIGN §102.4(B)(4)

THE FOLLOWING MEASURES ARE TAKEN TO MINIMIZE THE EXTENT AND DURATION OF EARTH DISTURBANCE:
- ACCESS THE SITE THRU DESIGNATED CONSTRUCTION ENTRANCE
- SEQUENCE CONSTRUCTION ACTIVITIES BY LIMITING DISTURBANCES TO A SPECIFIC TASK SUCH THAT EACH TASK IS COMPLETED BEFORE THE NEXT TASK IS INITIATED
- MAINTAIN EXISTING GRADES ON SITE WHERE PLAUSIBLE.

THE FOLLOWING MEASURES ARE TAKEN TO MAXIMIZE PROTECTION OF MISTING DRAINAGE FEATURES AND VEGETATION:
- ACCESS THE SITE THROUGH DESIGNATED CONSTRUCTION ENTRANCE
- UTILIZE THE EXISTING DRAINAGE PATTERNS AS MUCH AS POSSIBLE.
- MAINTAIN EXISTING DRAINAGE PATTERNS TO POI#1

THE FOLLOWING MEASURES ARE TAKEN TO MINIMIZE SOIL COMPACTION:
- ACCESS THE SITE THROUGH DESIGNATED CONSTRUCTION ENTRANCE
- USE OF TREADED MACHINERY MERE PRACTICAL DURING EARTHMOVING OPERATIONS

THE FOLLOWING MEASURES ARE TAKEN TO PREVENT OR MINIMIZE GENERATION OF INCREASED STORM WATER RUNOFF:
- UTILIZE PERIMETER CONTROLS SUCH AS SILT SOCK, SILT FENCE WHILE NOT OVERLOADING ANY SPECIFIC BMP ENSURING LONGER SUSTAINABILITY OF THE EROSION AND SEDIMENT CONTROLS

RECYCLING OR DISPOSAL OF MATERIALS §102.4(B}(5)(XI)
1.) ANTICIPATED CONSTRUCTION WASTES INCLUDE BUT ARE NOT LIMITED TO: ONE-STORY BUILDING, CURBING, SIDEWALK AND ASPHALT AREAS.
2.) ALL BUILDING MATERIAL AND WASTES MUST BE REMOVED FROM THE SITE AND RECYCLED OR RECYCLED IN ACCORDANCE WITH DEP5 SOLID WASTE REGULATIONS (25 PA CODE 260.1 ET SEQ., 271.1 ET SE., AND 287.1 ET SEQ.,) AND/OR ANY ADDITIONAL LOCAL, STATE, OR FEDERAL REGULATIONS. NO BUILDING MATERIALS (USED OR UNUSED) OR WATER MATERIALS SHALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT THE SITE.

POTENTIAL THERMAL IMPACT TO SURFACE WATERS §102.4(B}(5)(XIII)
THERMAL IMPACTS HAVE BEEN AVOIDED IN THE E&S CONDITION THROUGH THE USE OF SILT SOXX TO ENSURE THAT RUNOFF FILTERS THROUGH A MEDIA, WHICH SHOULD REDUCE THE WATER TEMPERATURE OF STORMWATER FLOWS THAT WOULD OTHERWISE COME DIRECTLY FROM THE PAVEMENT.

E&S PLAN DESIGNED AND IMPLEMENTED TO BE CONSISTENT WITH PCSM PLAN §102.4(B)(5)(XIV)
1.) THERE ARE NO EXISTING/ PROPOSED RIPARIAN BUFFERS OUTSIDE THE LIMIT OF DISTURBANCE

EXISITING/PROPOSED RIPARIAN FOREST BUFFERS §102.4(B)(5)(XV)
1.) THERE ARE NO EXISTING/PROPOSED RIPARIAN FOREST BUFFERS SHOWN ON THE PLAN MAPS.
2.) THERE ARE NO EXISTING/PROPOSED RIPARIAN FOREST BUFFERS OUTSIDE THE LIMIT OF DISTURBANCE.
3.) THERE ARE NO DELINEATED WETLANDS WITHIN THE PROPOSED LIMITS OF DISTURBANCE ON THIS SITE.

ANTIDEGRADATION ANALYSIS
EVALUATIONS OF NON-DISCHARGE ALTERNATIVE ONLY PERTAIN TO HQ OR EV WATERS PER THE PADEP & WATER QUALITY ANTIDEGRADATION DOCUMENT DATED NOV. 29, 2003. THE SUBJECT SITE IS LOCATED WITHIN THE NESHAMINY CREEK WATERSHED IN THE DELAWARE RIVER MAJOR RIVER BASIN. THE CLOSEST RECEIVING WATER IS NESHAMINY CREEK, MEDIA WATER INTAKE TO NESHAMINY CREEK WHICH HAS A WWF AND MF CHAPTER 93 CLASSIFICATION.

SEEDING SPECIFICATIONS

1. SEEDING DATES
A. SEEDING SHALL OCCUR BETWEEN MARCH 1ST AND MAY 15TH OR BETWEEN AUGUST 15TH AND NO LATER THAN OCTOBER 15TH.
B. IF SEEDING CANNOT BE CONDUCTED DURING THE TIMEFRAMES NOTED ABOVE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH THE LOCAL CONSERVATION DISTRICT AND ALL APPROPRIATE AGENCIES TO DETERMINE AN ACCEPTABLE MEANS IN WHICH TO STABILIZE THE SITE THROUGH THE NEXT GROWING SEASON.
2. SEED MIXTURES: SEED MIXTURE TO BE USED ON THIS SITE SHALL CONSIST OF THE FOLLOWING UNLESS OTHERWISE NOTED ON THE PLANS. RATES ARE IN THE FORM OF POUNDS PER ACRE (LB/A) PER PURE LIVE SEED (POUNDS / ACRE PLS). CONTRACTOR WILL NEED TO ADJUST ACCORDINGLY BASED ON THE SEED GERMINATION AND PURITY RATING (SEE ITEM #3 BELOW).
A. TEMPORARY SEED MIXTURES: DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE DISTURBED AGAIN WITHIN TWELVE (12) MONTHS MUST BE SEEDED WITH A TEMPORARY SEED MIXTURE AS FOLLOWS:
ANNUAL RYE (40 POUNDS / ACRE PLS)
OR SPRING OATS (96 POUNDS / ACRE PLS) OR WINTER RYE (168 POUNDS / ACRE PLS)
(REFERENCE: PENN STATE "EROSION CONTROL & CONSERVATION PLANTINGS ON NONCROPLAND", TABLE 5)
B. PERMANENT SEEDING SHALL CONSIST OF A NURSE CROP PLUS A PERMANENT SEED MIXTURE, AS FOLLOWS:
I. NURSE CROP (SELECT ONE):
ANNUAL RYE (10 POUNDS / ACRE PLS)
OR SPRING OATS (64 POUNDS / ACRE PLS) OR WINTER RYE (56 POUNDS / ACRE PLS)
(REFERENCE: PA DEP EROSION AND SEDIMENT CONTROL PROGRAM MANUAL, LATEST EDITION, TABLE 11.4, SEED MIX #1)
II. PERMANENT SEED MIX:
TALL FESCUES (64 POUNDS / ACRE PLS) OR FINE FESCUE (35 POUNDS / ACRE PLS)
OR KENTUCKY BLUEGRASS (25 POUNDS / ACRE PLS) PLUS REDTOP (3 POUNDS / ACRE PLS) OR PERENNIAL RYEGRASS (15 POUNDS / ACRE PLS)
(REFERENCE: PA DEP EROSION AND SEDIMENT CONTROL PROGRAM MANUAL, LATEST EDITION, TABLE 11.4, SEED MIX #2)
3. PURE LIVE SEED:
A. SEED USED FOR THE PURPOSE OF PERMANENT STABILIZATION SHALL BE LABELED WITH GERMINATION AND PURITY PERCENTAGES. UNLABELED SEED WILL BE REJECTED. SEED SHALL NOT BE USED MORE THAN ONE (1) YEAR BEYOND THE LABEL DATE.
B. DETERMINING THE PERCENT PURE LIVE SEED (PERCENT PLS) OF A LABELED SEED: MULTIPLY BY THE PERCENTAGE OF PURE SEED BY THE PERCENTAGE OF GERMINATION AND DIVIDE THE RESULT BY 100 ((% PURE X % GERMINATION) / 100)
C. DETERMINING THE ACTUAL SEED RATE: SIMPLY DIVIDE THE PERCENT PLS RATING OF THE SEED INTO THE PLS REQUIRED, AS NOTED ABOVE. THE RESULT IS THE POUNDS OF SEED REQUIRED. FOR EXAMPLE: IF THE REQUIRED RATE IS 64 POUNDS PLS, AND THE SEED IS RATED AT 35% PLS, DIVIDE 64 BY 0.35 TO GET 182.9 POUNDS, WHICH IS THE AMOUNT OF THAT SEED REQUIRED PER ACRE.
4. APPLICATION OF SEED: SEEDING SHALL BE APPLIED AND ESTABLISHED IN ACCORDANCE WITH THE "EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL" AS PUBLISHED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF WATER QUALITY PROTECTION (MOST RECENT EDITION).
A. SEED SHALL BE APPLIED IN A NON-COMPACTED, ROUGHENED TOPSOIL.
B. SEED MAY BE APPLIED THROUGH ANY OF THE FOLLOWING MEANS AND METHODS, OR OTHER ACCEPTED INDUSTRY PRACTICES, UNLESS SPECIFICALLY NOTED OTHERWISE ON THESE PLANS:
I. DRILL SEEDING
II. BROADCAST SEEDING (TWO DIRECTIONS)
III. HYDROSEEDING (TWO DIRECTIONS)
C. ALL SEED SHALL BE TEMPORARILY OR PERMANENTLY STABILIZED UNTIL A 70% PERENNIAL COVER IS ACHIEVED:
I. TEMPORARY STABILIZATION WITH STRAW:
1. STRAW MULCH SHALL BE APPLIED ON TOP OF THE FRESHLY SEEDED AREAS AT A RATE OF 3 TONS PER ACRE (4 TONS PER ACRE BETWEEN NOVEMBER 1ST AND MARCH 1ST).
2. STRAW SHALL BE STABILIZED WITH A WOOD OR PAPER FIBER MULCH AND TACKIFIER SOLUTION IN ACCORDANCE WITH THE PRODUCT MANUFACTURER'S SPECIFICATIONS.

5. IRRIGATION: NEW SEED APPLICATIONS SHOULD BE SUPPLIED WITH ADEQUATE WATER, A MINIMUM OF ¼" TWICE A DAY, UNTIL VEGETATION IS WELL ESTABLISHED (A MINIMUM OF 75% COVER).

SEQUENCE OF CONSTRUCTION BMP INSTALLATION AND REMOVAL

§102.4(b)(5)(vii)

- ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE FOLLOWING SEQUENCE. EACH STAGE SHALL BE COMPLETED IN COMPLIANCE WITH PENNSYLVANIA CODE CHAPTER 102 EROSION AND SEDIMENT CONTROL REGULATIONS BEFORE ANY FOLLOWING STAGE IS INITIATED. CLEARING AND GRUBBING SHALL BE LIMITED ONLY TO THOSE AREAS DESCRIBED IN EACH STAGE. UPON COMPLETION OR TEMPORARY CESSATION OF THE EARTH DISTURBANCE ACTIVITY THAT WILL EXCEED FOUR (4) DAYS, OR ANY STAGE THEREOF, THE PROJECT SITE SHALL BE IMMEDIATELY STABILIZED WITH THE APPROPRIATE TEMPORARY OR PERMANENT STABILIZATION.
- AT LEAST SEVEN (7) DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, THE OPERATOR SHALL INVITE ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES INCLUDING, BUT NOT LIMITED TO: THE LANDOWNER, ALL APPROPRIATE MUNICIPAL OFFICIALS, AND THE BENSALEM TOWNSHIP ENGINEER FOR AN ON-SITE PRE-CONSTRUCTION MEETING. ALSO, AT LEAST THREE (3) DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES SHALL NOTIFY THE PENNSYLVANIA ONE CALL SYSTEM INC. AT 1-800-242-1776 FOR BURIED UTILITIES LOCATION.
- BEFORE INITIATING ANY REVISION TO THE APPROVED EROSION AND SEDIMENT CONTROL PLAN OR REVISIONS TO OTHER PLANS WHICH MAY AFFECT THE EFFECTIVENESS OF THE APPROVED E&S CONTROL PLAN, THE OPERATOR MUST RECEIVE APPROVAL OF THE REVISIONS FROM THE BENSALEM TOWNSHIP ENGINEER. THE OPERATOR SHALL ASSURE THAT THE APPROVED EROSION AND SEDIMENT CONTROL PLAN IS PROPERLY AND COMPLETELY IMPLEMENTED. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO ELIMINATE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION.

1. INSTALL ROCK CONSTRUCTION ENTRANCE WITH STONE DIVERSION BERM AS DESIGNATED ON THE PLANS. REMOVE PAVING AS NECESSARY.
2. INSTALL TEMPORARY CONSTRUCTION FENCE ALONG THE SOUTHERN SIDE PROPERTY LINE AS SHOWN ON THE PLANS. INSTALLATION OF THE TEMPORARY CONSTRUCTION FENCE SHOULD TAKE PLACE PRIOR TO ANY CONSTRUCTION.
3. INSTALL ALL PERIMETER COMPOST FILTER SOCKS AND INLET PROTECTION WITHIN THE DESIGNATED LIMIT OF DISTURBANCE AS INDICATED ON THE PLANS. ONLY LIMITED CLEARING AND GRUBBING NECESSARY TO INSTALL THE PERIMETER EROSION AND SEDIMENT POLLUTION CONTROLS IS PERMITTED.
4. DEMOLISH EXISTING SITE FEATURES, AS NECESSARY, TO INSTALL EROSION CONTROL MEASURES FOR CONTROL DURING DEMOLITION ACTIVITIES. CONTRACTOR TO INSTALL PUMPED WATER FILTER BAG FOR USE DURING PUMPING OF WATER DURING CONSTRUCTION ACTIVITIES.
5. PLACE EXCESS MATERIAL IN SOIL STOCK PILE AREA AS SHOWN ON PLANS.
6. CONTRACTOR TO PROVIDE DUST CONTROL MEASURES DURING ALL DEMOLITION ACTIVITIES OF SITE WORK AND BUILDING WORK. CONTINUALLY SPRAY DISTURBED AREAS WITH WATER FROM MULTIPLE HOSES OR WATER TRUCK, AS NEEDED, TO MINIMIZE DUST DURING DEMOLITION OF SITE FEATURES. CONTRACTOR SHALL DISPOSE OF MATERIALS REMOVED ACCORDING TO LOCAL AND STATE REQUIREMENTS. IF ASBESTOS OR ANY OTHER REGULATED HAZARDOUS MATERIAL EXISTS WITHIN THE PROPERTY, IT SHALL BE REMOVED AND CERTIFICATIONS TO THAT EFFECT SHALL BE FILED WITH THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENT PROTECTION.
7. DEMOLISH EXISTING SITE FEATURES, BUILDING, AND UTILITIES PROPOSED TO BE REMOVED. DURING DEMOLITION OF UTILITIES ALL UTILITY SERVICES MUST BE MAINTAINED FOR NEIGHBORING PROPERTIES WHOSE UTILITIES CURRENTLY TRAVERSE THE SITE AND ARE PROPOSED TO BE REROUTED. COORDINATE WITH LOCAL UTILITY PROVIDERS IN ADVANCE OF CONSTRUCTION.
8. INITIATE THE NECESSARY EARTHWORK TO REACH THE GRADES INDICATED ON THE PLANS. BUILDING CONSTRUCTION MAY COMMENCE UPON ACCEPTANCE OF BUILDING PAD BY OWNER. THE CONCRETE WASHOUT MUST BE INSTALLED BEFORE ANY CONCRETE CAN BE POURED ON-SITE. CONTRACTOR MUST PERFORM BULK OF EARTHWORK TO BALANCE CUTS AND FILLS TO THE GREATEST EXTENT POSSIBLE. ALL AREAS DISTURBED DURING THE EARTHWORK PHASE OF CONSTRUCTION MUST BE TEMPORARILY SEEDED AND STABILIZED IN ACCORDANCE WITH THE GENERAL CONSERVATION NOTES AND SPECIFICATIONS AND SEEDING SPECIFICATIONS IF PERMANENT STABILIZATION CANNOT BE ACHIEVED WITHIN FOUR (4) DAYS.
9. **CRITICAL STAGE: INSTALLATION OF SUBSURFACE DETENTION / INFILTRATION BASIN & INITIATE STORM SEWER INSTALLATIONS INCLUDING NYLOPLAST ENVIROHOOD FOR THE FEATURES SHOW ON THE PLANS STARTING AT THE FURTHER DOWNSTREAM STRUCTURE. INLETS DISCHARGING TO THE BASIN MUST BE BLOCKED IMMEDIATELY AFTER INSTALLATION AND REMAIN BLOCKED UNTIL SITE IS FULLY STABILIZED TO PREVENT SEDIMENT FROM ENTERING BASIN. NO CONSTRUCTION EQUIPMENT, SUCH AS CRANES DURING BUILDING CONSTRUCTION, SHALL BE PARKED ON TOP OF THE SUBSURFACE DETENTION / MANAGED RELEASE BASINS TO AVOID DAMAGING THE BASIN OR OVER-COMPACTING THE SUBSURFACE SOILS AND REDUCING SITE INFILTRATION RATES. THE PERMITTEE SHALL PROVIDE ENGINEERING OVERSIGHT FOR THE INSTALLATION OF CRITICAL STAGE AND POST CONSTRUCTION STORMWATER BMPS. THE PERMITTEE SHALL PROVIDE ENGINEERING OVERSIGHT FOR THE INSTALLATION OF CRITICAL STAGE AND POST CONSTRUCTION STORMWATER BMPS. A LICENSED PROFESSIONAL OR DESIGNEE KNOWLEDGEABLE IN THE DESIGN AND CONSTRUCTION OF THE POST CONSTRUCTION BMPS SHALL CONDUCT THE OVERSIGHT.**
10. CONTINUE WITH THE BALANCE OF EARTHWORK INCLUDING UTILITY INSTALLATION (STORM PIPING, SANITARY LATERALS, WATER LATERALS, GAS, ELECTRIC, TELEPHONE, AND CABLE) WHERE APPLICABLE.
11. REPOSITION PERIMETER COMPOST FILTER SOCKS, INSTALL NEW INLET PROTECTION ON ALL NEWLY INSTALLED INLETS WITHIN THE PROPERTY AS SHOWN ON EROSION & SEDIMENT CONTROL PLAN PHASE II.
12. INSTALL CURBING AND INSTALL STONE BASE COURSE IN THE DRIVEWAY AND PARKING AREAS.
13. INITIATE FINAL GRADING AND PLACEMENT OF TOPSOIL IN ALL LANDSCAPE AREAS. AS SOON AS SLOPES, CHANNELS, DITCHES AND OTHER DISTURBED AREAS REACH FINAL GRADE, THEY MUST BE STABILIZED. ALL LANDSCAPE AREAS MUST BE STABILIZED AND PERMANENT SEEDING OR PLACEMENT OF SOD MUST BE APPLIED. WHEN FINAL GRADE IS ACHIEVED DURING NON-GERMINATING MONTHS, THE AREA SHOULD BE MULCHED UNTIL THE BEGINNING OF THE NEXT PLANTING SEASON. HOWEVER, THE AREA WILL NOT BE CONSIDERED STABILIZED UNTIL A MINIMUM UNIFORM 70% VEGETATIVE COVER OF EROSION RESISTANT PERENNIAL SPECIES HAS BEEN ACHIEVED. AS DISTURBED AREAS WITHIN A PROJECT APPROACH FINAL GRADE, PREPARATIONS SHOULD BE MADE FOR SEEDING AND MULCHING TO BEGIN. IN NO CASE SHOULD AN AREA EXCEEDING 15,000 SQUARE FEET, WHICH IS TO BE STABILIZED BY VEGETATION, REACH FINAL GRADE WITHOUT BEING SEEDED AND MULCHED. WAITING UNTIL EARTHMOVING IS COMPLETED BEFORE MAKING PREPARATIONS FOR SEEDING AND MULCHING IS NOT ACCEPTABLE. SEEDING AND MULCHING REQUIREMENTS ARE SPECIFIED IN THE GENERAL CONSERVATION NOTES AND SPECIFICATIONS.
14. INSTALL BITUMINOUS PAVEMENT AND CONCRETE INCLUDING SIDEWALKS.
15. **CRITICAL STAGE: SURVEY AS-BUILT SUBSURFACE STORM SEWER SYSTEM AND PROVIDE ENGINEER OF RECORD WITH AS-BUILT CONDITIONS TO CONFIRM SYSTEM HAS BEEN CONSTRUCTED TO MEET THE BENSALEM TOWNSHIP ORDINANCES.**
16. **CRITICAL STAGE: INSTALLATION OF BMP 6.7.2 LANDSCAPE RESTORATION. INSTALL FINAL VEGETATION AND LANDSCAPING SPECIFIED ON THE LANDSCAPE PLANTING PLAN.**
17. UPON SITE STABILIZATION (UNIFORM COVERAGE OR DENSITY OF 70% ACROSS ALL DISTURBED AREAS) AND NOTIFICATION TO AND INSPECTION FROM BENSALEM TOWNSHIP ENGINEER, REMOVE REMAINING EROSION AND SEDIMENT CONTROL FACILITIES. ANY AREA DISTURBED DURING THE REMOVAL OF EROSION AND SEDIMENT CONTROL FACILITIES SHALL BE STABILIZED IMMEDIATELY.
18. CLEAR SITE OF DEBRIS AND ALL UNWANTED MATERIALS. OPERATOR SHALL REMOVE FROM SITE, RECYCLE OR DISPOSE OF ALL BUILDING MATERIALS AND WASTES IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA. CODE 260.1 ET SEQ., 271.1 ET SEQ. THE CONTRACTOR SHALL NOT ILLEGALLY BURY, DUMP OR DISCHARGE ANY BUILDING MATERIAL OR WASTE AT THIS SITE.
19. DEMOBILIZE & CONTACT BENSALEM TOWNSHIP ENGINEER FOR FINAL SITE INSPECTIONS.

BUCKS COUNTY STANDARD E&S PLAN NOTES

1. STOCKPILE HEIGHTS MUST NOT EXCEED 35 FEET; STOCKPILE SLOPES MUST NOT EXCEED 2:1.
2. THE OPERATOR/RESPONSIBLE PERSON (O/RP) ON SITE SHALL ASSURE THAT THE APPROVED EROSION AND SEDIMENT CONTROL PLAN IS PROPERLY AND COMPLETELY IMPLEMENTED.
3. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE O/RP SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES (BMPS) TO ELIMINATE THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION.
4. THE O/RP SHALL ASSURE THAT AN EROSION AND SEDIMENT CONTROL PLAN HAS BEEN PREPARED AND APPROVED BY THE BUCKS COUNTY CONSERVATION DISTRICT AND IS BEING IMPLEMENTED AND MAINTAINED FOR ALL SOILS AND/OR ROCK SPOIL AND BORROW AREAS REGARDLESS OF THEIR LOCATIONS.
5. ALL PUMPING OF SEDIMENT-LADEN WATER SHALL BE THROUGH A SEDIMENT CONTROL BMP SUCH AS A PUMPED WATER FILTER BAG DISCHARGING OVER AN UNDISTURBED AREA.
6. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN MUST BE AVAILABLE ON THE PROJECT SITE AT ALL TIMES.
7. EROSION AND SEDIMENT BMPS MUST BE CONSTRUCTED, STABILIZED AND FUNCTIONAL BEFORE SITE DISTURBANCE BEGINS WITHIN THE TRIBUTARY AREAS OF THOSE BMPS.
8. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENT BMP CONTROLS MUST BE REMOVED. AREAS DISTURBED DURING THE REMOVAL OF THE BMPS MUST BE STABILIZED IMMEDIATELY.
9. AT LEAST SEVEN (7) DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITY, THE O/R SHALL INVITE ALL CONTRACTORS INVOLVED IN THAT ACTIVITY, THE LANDOWNER, ALL APPROPRIATE MUNICIPAL OFFICIALS, THE EROSION AND SEDIMENT CONTROL PLAN DESIGNER AND THE BUCKS COUNTY CONSERVATION DISTRICT TO A PRE-CONSTRUCTION MEETING. ALSO, AT LEAST THREE (3) DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITY, ALL CONTRACTORS INVOLVED IN THAT ACTIVITY SHALL NOTIFY THE PENNSYLVANIA ONE-CALL SYSTEM INC. AT 1-800-242- 1776 TO DETERMINE ANY UNDERGROUND UTILITIES LOCATIONS.
10. IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITY CEASES, THE O/RP SHALL STABILIZE ANY AREAS DISTURBED BY THE ACTIVITY. DURING NON-GERMINATING PERIODS, MULCH MUST BE APPLIED AT SPECIFIED RATES. DISTURBED AREAS THAT ARE NOT FINISHED GRADE AND WHICH WILL BE RE-DISTURBED WITHIN ONE YEAR MUST BE STABILIZED IN ACCORDANCE WITH TEMPORARY VEGETATIVE STABILIZATION SPECIFICATIONS. DISTURBED AREAS THAT ARE AT A FINISHED GRADE OR WHICH WILL NOT BE RE-DISTURBED WITHIN ONE YEAR MUST BE STABILIZED IN ACCORDANCE WITH PERMANENT VEGETATIVE STABILIZATION SPECIFICATIONS.
11. AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM UNIFORM 70% VEGETATIVE OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING AND OTHER MOVEMENTS.
12. UPON THE INSTALLATION OF TEMPORARY SEDIMENT BASIN RISER(S), A QUALIFIED SITE REPRESENTATIVE SHALL CONDUCT AN IMMEDIATE INSPECTION OF THE RISER(S), WHEREUPON THE BUCKS COUNTY CONSERVATION DISTRICT SHALL BE NOTIFIED IN WRITING THAT THE RISER IS SEALED (WATERTIGHT).
13. AT STREAM CROSSINGS, A 50-FOOT BUFFER SHALL BE MAINTAINED. ON BUFFERS, CLEARINGS, SOD DISTURBANCES AND EXCAVATIONS, EQUIPMENT TRAFFIC SHOULD BE MINIMIZED. ACTIVITY SUCH AS STACKING LOGS, BURNING CLEARED BRUSH, DISCHARGED RAINWATER FROM TRENCHES, WELDING PIPE SECTIONS, REFUELING AND MAINTAINING EQUIPMENT SHOULD BE AVOIDED WITHIN BUFFER ZONES.
14. UNTIL A SITE IS STABILIZED, ALL EROSION AND SEDIMENT BMPS MUST BE MAINTAINED PROPERLY. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION CONTROL BMPS AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEANOUT, REPAIR, REPLACEMENT, RE-GRADING, RESEEDING, RE-MULCHING AND RENETTING MUST BE PERFORMED IMMEDIATELY. IF EROSION AND SEDIMENT CONTROL BMPS FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPS, OR MODIFICATIONS OF THOSE INSTALLED, WILL BE REQUIRED.
15. SEDIMENT REMOVED FROM BMPS SHALL BE DISPOSED OF ON-SITE IN LANDSCAPED AREAS OUTSIDE OF STEEP SLOPES, WETLANDS, FLOODPLAINS OR DRAINAGE SWALES AND IMMEDIATELY STABILIZED OR PLACED IN SOIL STOCKPILES AND STABILIZED.
16. ALL BUILDING MATERIAL AND WASTES MUST BE REMOVED FROM THE SITE AND RECYCLED IN ACCORDANCE WITH DEP'S SOLID WASTE REGULATIONS (25 PA CODE 260.1 ET SEQ., 271.1 ET SEQ., AND 287.1 ET SEQ.) AND/OR ANY ADDITIONAL LOCAL, STATE OR FEDERAL REGULATIONS. NO BUILDING MATERIALS (USED OR UNUSED) OR WASTE MATERIALS SHALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT THE SITE.

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Ambler, PA 19002
Phone (215) 809-2125
MSwaggard@core-states.com

CLIENT

CHASE

811 Know what's below. Call before you dig.

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON DESIGN DRAWINGS, RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. CORE STATES, INC. DOES NOT GUARANTEE THAT LOCATIONS SHOWN ARE EXACT. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF UTILITIES.

REVISIONS

REV	DATE	COMMENT	BY
1	08/24/21	BCCD, BCPC, AND TWP COMMENTS	CML

DOCUMENT
PRELIMINARY/ FINAL LAND DEVELOPMENT PLAN FOR CHASE BANK

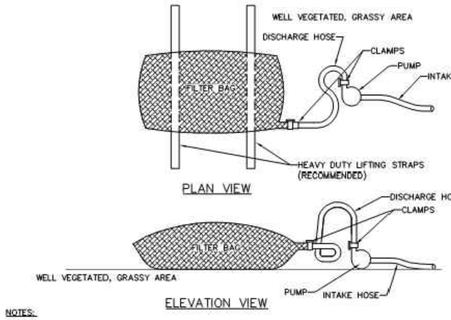
SITE LOCATION
1729 STREET ROAD
BENSALEM, PA
19020

ENGINEER SEAL
COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL FRANCIS GREENE ENGINEER No. PE075817
08/26/2021
FRANCIS GREENE, P.E.
PA LICENSE #075817

SHEET TITLE
EROSION & SEDIMENT CONTROL NOTES

JOB #:	JPM-29391
DATE:	5/13/21
SCALE:	N/A
DRAWN BY:	CML
CHECKED BY:	FG

SHEET NO.
C12
SHEET 13 OF 23



NOTES:

LOW VOLUME FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH, DOUBLE STITCHED "J" TYPE SEAMS. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS. HIGH VOLUME FILTER BAGS SHALL BE MADE FROM WOVEN GEOTEXTILES THAT MEET THE FOLLOWING STANDARDS:

PROPERTY	TEST METHOD	MINIMUM STANDARD
AVG. WIDE WIDTH STRENGTH	ASTM D-4884	60 LB/IN
GRAB TENSILE	ASTM D-4632	205 LB
PUNCTURE	ASTM D-4833	110 LB
MULLEN BURST	ASTM D-3786	350 PSI
UV RESISTANCE	ASTM D-4355	70%
AOS % RETAINED	ASTM D-4751	80 SIEVE

A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES SHALL BE PROVIDED. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME 1/2 FULL OF SEDIMENT. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED. BAGS SHALL BE PLACED ON STRAPS TO FACILITATE REMOVAL UNLESS BAGS COME WITH LIFTING STRAPS ALREADY ATTACHED.

BAGS SHALL BE LOCATED IN WELL-VEGETATED (GRASSY) AREA, AND DISCHARGE ONTO STABLE, EROSION RESISTANT AREAS. WHERE THIS IS NOT POSSIBLE, A GEOTEXTILE UNDERLAYMENT AND FLOW PATH SHALL BE PROVIDED. BAGS MAY BE PLACED ON FILTER STONE TO INCREASE DISCHARGE CAPACITY. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5%, FOR SLOPES EXCEEDING 5%, CLEAN ROCK OR OTHER NON-ERODIBLE AND NON-POLLUTING MATERIAL MAY BE PLACED UNDER THE BAG TO REDUCE SLOPE STEEPNESS.

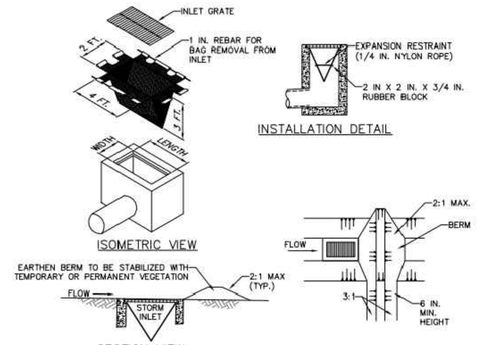
NO DOWNSLOPE SEDIMENT BARRIER IS REQUIRED FOR MOST INSTALLATIONS. COMPOST BERM OR COMPOST FILTER SOCK SHALL BE INSTALLED BELOW BAGS LOCATED IN HQ OR EV WATERSHEDS, WITHIN 50 FEET OF ANY RECEIVING SURFACE WATER OR WHERE GRASSY AREA IS NOT AVAILABLE.

THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED. A PIECE OF PVC PIPE IS RECOMMENDED FOR THIS PURPOSE.

THE PUMPING RATE SHALL BE NO GREATER THAN 750 GPM OR 1/2 THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHALL BE FLOATING AND SCREENED.

FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.

STANDARD CONSTRUCTION DETAIL #3-16
PUMPED WATER FILTER BAG
NOT TO SCALE



NOTES:

MAXIMUM DRAINAGE AREA = 1/2 ACRE.

INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS.

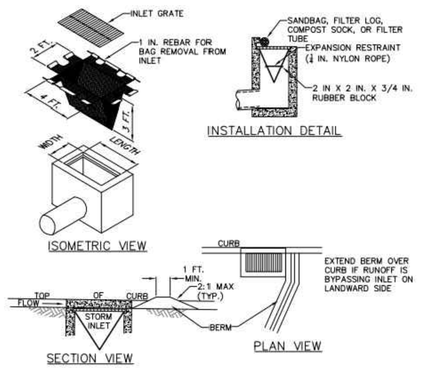
ROLLED EARTHEN BERM IN ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM ON ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. EARTHEN BERM IN CHANNEL SHALL BE MAINTAINED UNTIL PERMANENT STABILIZATION IS COMPLETED OR REMAIN PERMANENTLY.

AT A MINIMUM, THE FABRIC SHALL HAVE A MINIMUM GRAB TENSILE STRENGTH OF 120 LBS., A MINIMUM BURST STRENGTH OF 200 PSI, AND A MINIMUM TRAPEZOIDAL TEAR STRENGTH OF 50 LBS. FILTER BAGS SHALL BE CAPABLE OF TRAPPING ALL PARTICLES NOT PASSING A NO. 40 SIEVE.

INLET FILTER BAGS SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. BAGS SHALL BE EMPTIED AND RINSED OR REPLACED WHEN HALF FULL OR WHEN FLOW CAPACITY HAS BEEN REDUCED SO AS TO CAUSE FLOODING OR BYPASSING OF THE INLET. DAMAGED OR CLOGGED BAGS SHALL BE REPLACED. A SUPPLY SHALL BE MAINTAINED ON SITE FOR REPLACEMENT OF BAGS. ALL NEEDED REPAIRS SHALL BE INITIATED IMMEDIATELY AFTER THE INSPECTION. DISPOSE ACCUMULATED SEDIMENT AS WELL AS ALL USED BAGS ACCORDING TO THE PLAN NOTES.

DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.

STANDARD CONSTRUCTION DETAIL #4-16
FILTER BAG INLET PROTECTION - TYPE M INLET
NOT TO SCALE



NOTES:

MAXIMUM DRAINAGE AREA = 1/2 ACRE.

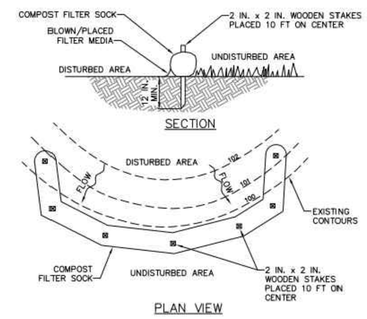
INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS.

ROLLED EARTHEN BERM SHALL BE MAINTAINED UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. SIX INCH MINIMUM HEIGHT ASPHALT BERM SHALL BE MAINTAINED UNTIL ROADWAY SURFACE RECEIVES FINAL COAT.
AT A MINIMUM, THE FABRIC SHALL HAVE A MINIMUM GRAB TENSILE STRENGTH OF 120 LBS, A MINIMUM BURST STRENGTH OF 200 PSI, AND A MINIMUM TRAPEZOIDAL TEAR STRENGTH OF 50 LBS. FILTER BAGS SHALL BE CAPABLE OF TRAPPING ALL PARTICLES NOT PASSING A NO. 40 SIEVE.

INLET FILTER BAGS SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. BAGS SHALL BE EMPTIED AND RINSED OR REPLACED WHEN HALF FULL OR WHEN FLOW CAPACITY HAS BEEN REDUCED SO AS TO CAUSE FLOODING OR BYPASSING OF THE INLET. DAMAGED OR CLOGGED BAGS SHALL BE REPLACED. A SUPPLY SHALL BE MAINTAINED ON SITE FOR REPLACEMENT OF BAGS. ALL NEEDED REPAIRS SHALL BE INITIATED IMMEDIATELY AFTER THE INSPECTION. DISPOSE OF ACCUMULATED SEDIMENT AS WELL AS ALL USED BAGS ACCORDING TO THE PLAN NOTES.

DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.

STANDARD CONSTRUCTION DETAIL #4-15
FILTER BAG INLET PROTECTION - TYPE C INLET
NOT TO SCALE



NOTES:

SOCK FABRIC SHALL MEET STANDARDS OF TABLE 4.1 OF THE PA DEP EROSION CONTROL MANUAL. COMPOST SHALL MEET THE STANDARDS OF TABLE 4.2 OF THE PA DEP EROSION CONTROL MANUAL.

COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE BARRIER SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT. MAXIMUM SLOPE LENGTH ABOVE ANY BARRIER SHALL NOT EXCEED THAT SPECIFIED FOR THE SIZE OF THE SOCK AND THE SLOPE OF ITS TRIBUTARY AREA.

TRAFFIC SHALL NOT BE PERMITTED TO CROSS COMPOST FILTER SOCKS.

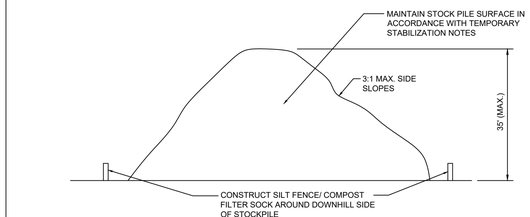
ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 THE ABOVE GROUND HEIGHT OF THE BARRIER AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.

COMPOST FILTER SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.

BIODEGRADABLE COMPOST FILTER SOCKS SHALL BE REPLACED AFTER 6 MONTHS; PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCK, STAKES SHALL BE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED. IN THE LATTER CASE, THE MESH SHALL BE CUT OPEN AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.

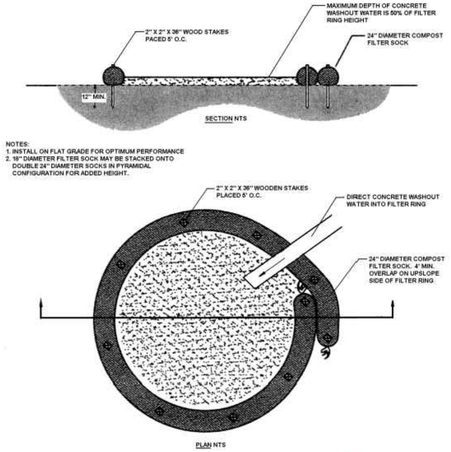
STANDARD CONSTRUCTION DETAIL #4-1
COMPOST FILTER SOCK
NOT TO SCALE



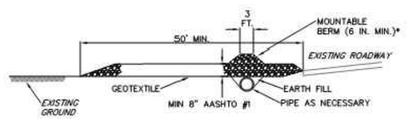
TEMPORARY STOCKPILE DETAIL
N.T.S.

Filtrexx

FIGURE 3.18
Typical Compost Sock Washout Installation



A suitable impervious geomembrane shall be placed at the location of the washout prior to installing the socks.
Adapted from Filtrexx



* MOUNTABLE BERM USED TO PROVIDE PROPER COVER FOR PIPE.

NOTES:

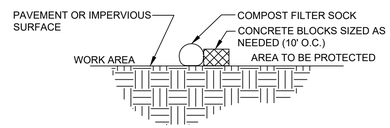
REMOVE TOPSOIL PRIOR TO INSTALLATION OF ROCK CONSTRUCTION ENTRANCE. EXTEND ROCK OVER FULL WIDTH OF ENTRANCE.

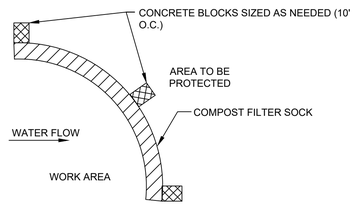
RUNOFF SHALL BE DIVERTED FROM ROADWAY TO A SUITABLE SEDIMENT REMOVAL BMP PRIOR TO ENTERING ROCK CONSTRUCTION ENTRANCE.

MOUNTABLE BERM SHALL BE INSTALLED WHEREVER OPTIONAL CULVERT PIPE IS USED AND PROPER PIPE COVER AS SPECIFIED BY MANUFACTURER IS NOT OTHERWISE PROVIDED. PIPE SHALL BE SIZED APPROPRIATELY FOR SIZE OF DITCH BEING CROSSED.

MAINTENANCE: ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. A STOCKPILE SHALL BE MAINTAINED ON SITE FOR THIS PURPOSE. ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE IMMEDIATELY. IF EXCESSIVE AMOUNTS OF SEDIMENT ARE BEING DEPOSITED ON ROADWAY, EXTEND LENGTH OF ROCK CONSTRUCTION ENTRANCE BY 50 FOOT INCREMENTS UNTIL CONDITION IS ALLEVIATED OR INSTALL WASH RACK. WASHING THE ROADWAY OR SWEEPING THE DEPOSITS INTO ROADWAY DITCHES, SEWERS, CULVERTS, OR OTHER DRAINAGE COURSES IS NOT ACCEPTABLE.

STANDARD CONSTRUCTION DETAIL #3-1
ROCK CONSTRUCTION ENTRANCE
NOT TO SCALE





NOTES

1. ALL SOCK FABRIC TO MEET STANDARDS OF TABLE 4.1 OF THE PA DEP EROSION CONTROL MANUAL.
2. ALL COMPOST MATERIAL SHALL MEET THE STANDARDS OF TABLE 4.2 OF THE PA DEP EROSION CONTROL MANUAL.
3. FILTER MEDIA TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

N.T.S.

COMPOST FILTER SOCK ON PAVEMENT (CS)

ALERT TO CONTRACTOR:

PRIOR TO THE CONSTRUCTION OF OR CONNECTION TO ANY STORM DRAIN, SANITARY SEWER, WATER MAIN OR ANY OF THE DRY UTILITIES, THE CONTRACTOR SHALL EXCAVATE, VERIFY AND CALCULATE ALL POINTS OF CONNECTION AND ALL UTILITY CROSSINGS AND INFORM ENGINEER AND THE OWNER OF ANY CONFLICT OR REQUIRED DEVIATIONS FROM THE PLAN. NOTIFICATION SHALL BE MADE A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION. ENGINEER AND OWNER SHALL BE HELD HARMLESS IN THE EVENT THAT THE CONTRACTOR FAILS TO MAKE SUCH NOTIFICATION.

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201 S. Maple Avenue, Suite 300
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MSwaggard@core-states.com

CLIENT
CHASE

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THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON DESIGN DRAWINGS, RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. CORE STATES, INC. DOES NOT GUARANTEE THAT LOCATIONS SHOWN ARE EXACT. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF UTILITIES.

REVISIONS

REV	DATE	COMMENT	BY
1	08/24/21	BCCD, BCPC, AND TWP COMMENTS	CML

DOCUMENT
PRELIMINARY/ FINAL LAND DEVELOPMENT PLAN FOR CHASE BANK

SITE LOCATION
1729 STREET ROAD
BENSALEM, PA
19020

ENGINEER SEAL
COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
FRANCIS GREENE
ENGINEER
No. PE079817
COMMONWEALTH OF PENNSYLVANIA
08/26/2021
FRANCIS GREENE, P.E.
PA LICENSE #075817

SHEET TITLE
EROSION & SEDIMENT CONTROL DETAILS

JOB #:	JPM-29391
DATE:	5/13/21
SCALE:	N/A
DRAWN BY:	CML
CHECKED BY:	FG

SHEET NO.
C13
SHEET 14 OF 23

APPENDIX B

WEB SOIL SURVEY

Custom Soil Resource Report
Soil Map

Map Scale: 1:1,490 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 20 40 80 120

Feet
0 50 100 200 300

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 Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

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 1:24,000.

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: Bucks County, Pennsylvania
Survey Area Data: Version 17, Jun 4, 2020

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

Date(s) aerial images were photographed: May 14, 2019—May 19, 2019

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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
UfuB	Urban land, 0 to 8 percent slopes	4.3	100.0%
Totals for Area of Interest		**4.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Bucks County, Pennsylvania

UfuB—Urban land, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: l7sq
Elevation: 800 to 1,500 feet
Mean annual precipitation: 36 to 46 inches
Mean annual air temperature: 41 to 62 degrees F
Frost-free period: 130 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Parent material: Pavement, buildings and other artifically covered areas human transported material

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Minor Components

Udorthents, unstable fill

Percent of map unit: 10 percent
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

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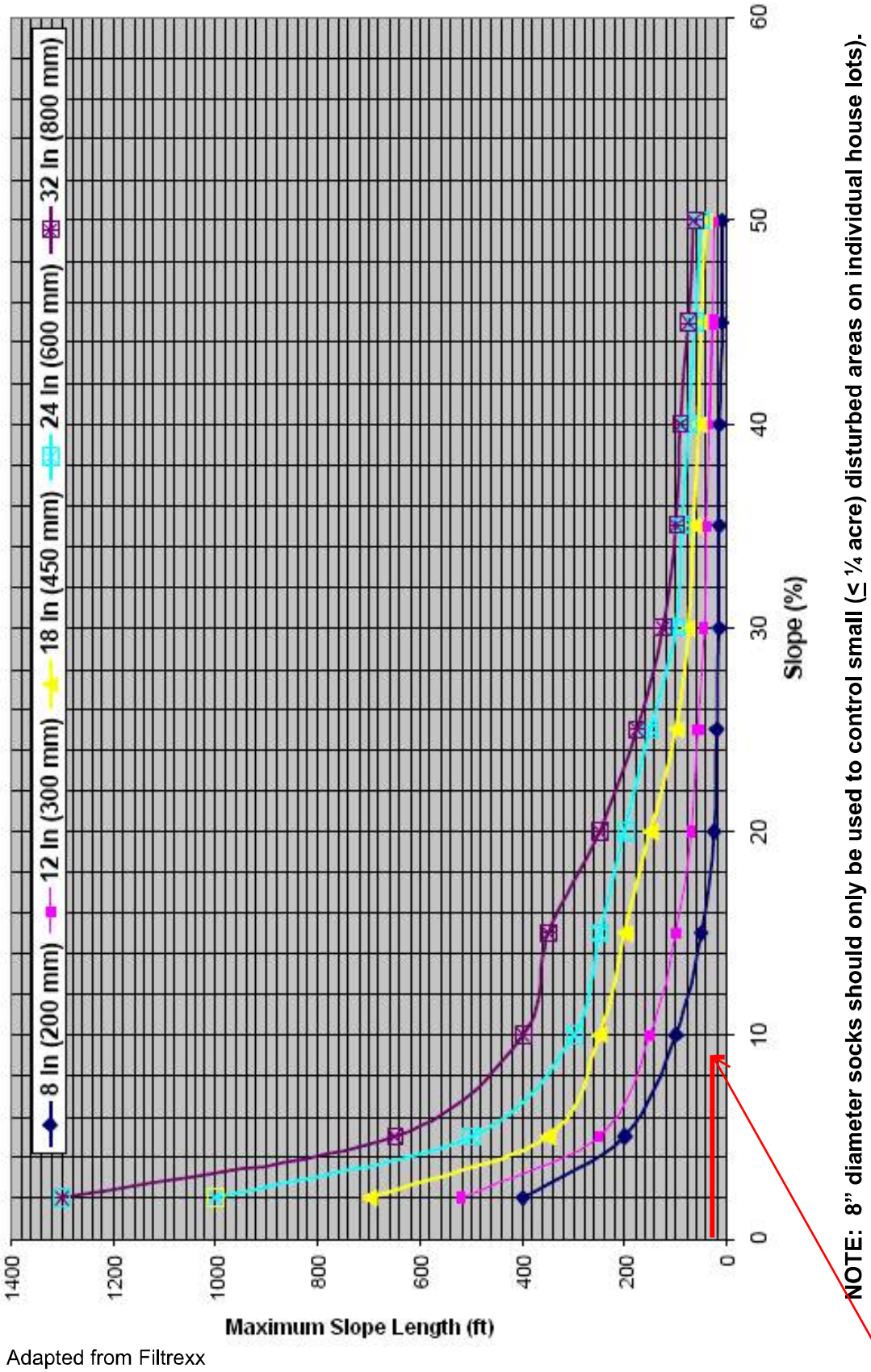
APPENDIX C

EROSION AND SEDIMENT CONTROL DESIGN CALCULATIONS

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS



Adapted from Filtrexx

Max Flow Length 28 Ft.
Max Slope 8.4%
Use 12 Inch Sock

STORMWATER MANAGEMENT REPORT

FOR

JP MORGAN CHASE BANK

PARCEL ID 02-043-305

1729 STREET ROAD (STATE ROUTE 132)

BENSALEM TOWNSHIP

BUCKS COUNTY

COMMONWEALTH OF PENNSYLVANIA

PREPARED BY:

CORE STATES GROUP

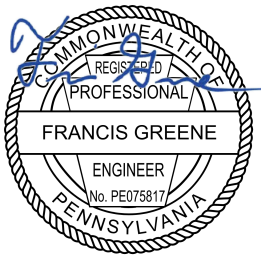
201 South Maple Ave, Suite 300

Ambler, Pennsylvania 19002

(215) 809-2125

May 14, 2021

Revised August 26, 2021



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Pennsylvania Professional Engineer

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1. GENERAL PROJECT DESCRIPTION

1.1. INTRODUCTION

Core States Group (CSG) has been retained by JPMorgan Chase to provide engineering services for the construction of a new Chase Bank in Bensalem Township, Bucks County, Pennsylvania. The purpose of this report is to demonstrate compliance with PA Code Chapter 102 requirements for Post Construction Stormwater Management. These include calculations of requirements for stormwater rate control, volume control, and water quality.

1.2. PROJECT LOCATION AND EXISTING SITE CONDITIONS

The project lies completely within Bensalem Township, Bucks County. The proposed Chase Bank will be located on the Brookwood Plaza parcel nearest the intersection of Street Road, and Brookwood Drive. The portion of the parcel being redeveloped currently operates as a Krispy Kreme Restaurant.

The site, Parcel ID 02-043-305, is located on the East side of Street Road (PA 132). The existing conditions of the site are mostly impervious coverage with a large asphalt parking and drive aisle area for patrons of the Krispy Kreme Restaurant building. The existing (past 5 years) and historic (past 50 years) land use types for the project are identical – per Bucks County Property Records, the commercial occupancy of the property dates to 1975.

The surrounding area consists of residential apartment dwellings to the East, and commercial uses to the North, South, and West.

1.3. PROPOSED CHASE BANK DESCRIPTION

The proposed Chase bank has been designed to meet the bulk zoning and code requirements outlined in the Bensalem Township Code of Ordinances. The bank will be a 3,320 S.F. building with 30 parking spaces for patrons. Two driveways are proposed on the existing parking lot surrounding the proposed work which eventually lead to Street Road and Brookwood Drive. A drive-up ATM is proposed on the east side of the existing building for customer use and egress from the ATM lane is onto the existing parking lot which leads to either Street Road and Brookwood Drive.

The proposed limit of disturbance associated with the project is 0.78 acres; including the new bank building, proposed parking area, demolition of existing site features, landscaping improvements, storm piping, and staging areas.

1.4. EXISTING SITE DRAINAGE

The site slopes to three separate points of interest: Sheet flow to Street Road to the west which discharges into a public storm system, sheet flow to the neighboring property to the south, and sheet flow to an existing storm system to the northeast in the existing parking lot. Per PA EMap, the runoff eventually is conveyed into Neshaminy Creek.

The main stem of the Basin, Media Water Intake to Neshaminy Creek Bridge has a PA Code Chapter 93 Designated Use of Warm Water Fishery (WWF) and Migratory Fishes (MF). No portion of the project drains to a High Quality (HQ) or Exceptional Value (EV) watershed.

1.5. APPLICABLE REGULATIONS

As a proposed Land Development Project within Bensalem Township, Chase Bank must comply with the Codes and Ordinances of Bensalem Township, Bucks County, and all applicable state and federal regulations.

Per Chapter 196 Stormwater Management of the Bensalem Township Code, analysis must demonstrate that the PCSM BMPs will meet the infiltration volume, water quality, and stormwater peak rate control requirements specified in the Article III Stormwater Management. Currently, the subject property falls within Stormwater Management Limits of the Approved Neshaminy Creek Watershed Act 167 Plan.

The project will comply with Chapter 196 Article III Stormwater Management requirements regarding Infiltration Volume, Water Quality, and Stormwater Peak Rate Control.

Site stormwater volume control requirements will be in accordance with § 196-34, Simplified Method. The proposed subsurface infiltration / slow release detention basin is sized to capture 2” of all new impervious surfaces. The first inch of runoff from all new impervious surfaces will be permanently removed from the system by the 1.875 feet of stone storage below the perforated piping. A minimum 0.25 in/hour infiltration rate was assumed for this project. If percolation tests on site prior to construction are less, the contractor is to contact the township engineer immediately.

The water quality requirement, § 196-3, states that the applicant is required to meet state water quality requirements. Each proposed inlet is equipped with a water quality Nyloplast Envirohood.

The peak rate of runoff requirements for Neshaminy Creek Watershed, per § 196-35, require the net change for all storm events up to and including the 100-year/24-hour storm to be managed when compared to the pre-construction runoff rate. The net change in peak rate for the 2-, 5-, 10-, 25-, 50-, and 100-year/24-hour storms must be managed in a manner not to exceed preconstruction rates. In addition to the peak rates being reduced from pre-existing site conditions, the areas of bypass to either Street Road and the southeastern property line had been reduced.

1.6 PCSM PLAN

In accordance with PA Code Chapter 102 regulations, a Post Construction Stormwater Management (PCSM) Plan and Narrative were created. Together, these documents detail the measures to be in place at the completion of the construction, after stabilization has occurred. Per §102.8(b), the following considerations have been made for the project:

(1) *Preserve the integrity of stream channels and maintain and protect the physical, biological and chemical qualities of the receiving stream*

Through the proposed structural and non-structural BMPs, stormwater runoff will be controlled to prevent any impacts to the receiving streams. See Section 8 for a description of BMPs used on the project.

(2) *Prevent an increase in the rate of stormwater runoff.*

As demonstrated in the attached calculations, the project decreases the rate of stormwater runoff post construction. See Appendix E for calculations.

(3) *Minimize any increase in stormwater volume.*

Through the proposed structural and non-structural BMPs, stormwater volume will be minimized. See Section 8 for a description of BMPs used on the project.

(4) *Minimize impervious areas.*

As part of the Chase Bank re-development plans, the site will decrease the impervious coverage by 5,045 S.F., or 15.2% of the project area. By decreasing the impervious area by more than 15% , numerous benefits are observed. These include a decrease in the rate and volume of stormwater runoff (when compared to the existing conditions),

a decrease in thermal impacts, and an increase in water quality.

(5) *Maximize the protection of existing drainage features and existing vegetation.*

To the extent possible, the existing natural drainage features and existing vegetation will be protected for the project. The site will be planted with native plantings and vegetation in the areas proposed on the project's landscape planting plan to promote sustainable vegetation that will not require significant maintenance.

(6) *Minimize land clearing and grading.*

Land grading will be initiated during construction, and the final site will decrease the impervious coverage by 5,045 S.F., or 15.2% of the project area. By decreasing the impervious area by more than 15% , numerous environmental benefits are observed.

(7) *Minimize soil compaction.*

The existing site is mostly impervious and has compacted subgrade under the asphalt and concrete pavement sections. The proposed construction of the project will decrease the impervious coverage by 5,045 S.F., or 15.2% of the project area. Existing soils will be scarified to help decrease existing compaction and restore native vegetation and infiltration rates to the development.

(8) *Utilize other structural or nonstructural BMPs that prevent or minimize changes in stormwater.*

See Section 8 for a full description of BMPs utilized on the project to prevent or minimize changes in stormwater. The proposed development will result in a decrease in the rate and volume of stormwater runoff (when compared to the existing conditions), a decrease in thermal impacts, and an increase in water quality.

1.7. PLAN PREPARER

This Stormwater Management Plan has been prepared by Christopher Lang, E.I.T. under the direction of Francis Greene, P.E.

2. TOPOGRAPHICAL FEATURES

The enclosed drawings prepared by Core States Group include the following:

- Location Map
- Contours at one (1) foot intervals
- Limits of disturbed areas
- Existing and proposed physical features
- Plan scale and north arrow

3. SOILS INFORMATION

3.1. SOILS ENCOUNTERED

The USDA Soil Survey for Bucks County indicates that the project lies within one (1) soil type. The Overall Soil Map for the project can be found in the appendix section of this document. The one (1) soil encountered are as follows:

- UfuB – Urban Land, 0 to 8 percent slopes (100% of Area of Interest)

3.2. SOIL LIMITATIONS AND RESOLUTIONS

Erosion Hazard (Road, Trail)

Exposed areas within the disturbed project site with specific soil conditions may be prone to soil loss and accelerated erosion. Erosion and sedimentation control BMPs will be implemented and the construction entrance used will be maintained as necessary.

Cutbanks Caving

Some caving in of steep excavation side slopes is anticipated due to the soil conditions within the project area. Trench boxes and sloping-back of the trench walls will be performed at the discretion of the contractor in accordance with OSHA regulations.

Depth to Saturated Zone

Excavation shall be dewatered as necessary using filter bags to minimize erosion and sedimentation outside the project area. The down slope side of the dewatering sites will be protected with compost filter sock and located an ample distance from drainage channels to allow for natural filtering of the water.

Depth to Bedrock

The contractor will excavate rock as required utilizing typical equipment, such as a hydraulic hammer if necessary. Bedrock was not encountered in borings completed as part of a geotechnical investigation at the site.

Steep Slopes

The vast majority of the existing site is developed and paved and there are no steep slopes on the site.

3.3 HYDRIC SOILS

Soil is classified as being hydric if it is constantly saturated to the point where anaerobic conditions inhibit growth during the normal growing season. Per the USDA Soil Survey for Bucks County, none of the encountered soils are considered to be hydric.

3.4 SOIL TESTING

Percolation tests are to be performed prior to construction on-site. A minimum 0.25 in/hr infiltration rate was assumed for this project. If percolation tests on site prior to construction are less, the contractor is to contact the township engineer immediately.

3.5. POTENTIAL SOIL CONDITIONS CAUSING POLLUTION

Based on geotechnical survey data from the site, there are no geological or soil conditions which are expected to cause pollution to the site. In the event soil conditions are observed during construction, the contractor shall notify the plan preparer to address the issue. The area is also not known to be prone to sinkholes.

4. THERMAL IMPACT ANALYSIS

As part of the Chase Bank re-development plans, the site will decrease the impervious coverage by 5,045 S.F., or 15.2% of the project area. By decreasing the impervious area by more than 15%, numerous benefits are observed. These include a decrease in thermal impacts, when compared to existing conditions.

The most significant factor in the consideration of thermal impacts for the project was the overall reduction in impervious coverage, and the structural BMPs proposed for the extended detention and treatment of stormwater runoff.

One of the most effective methods for avoiding thermal impacts is to minimize tree clearing, trees and other vegetation will be planted to supplement the remaining trees that will not be

disturbed during construction. This provides some tree cover between the basin discharge and the receiving water.

5. PROPOSED STORMWATER MANAGEMENT PRACTICES AND SITE DRAINAGE

In accordance with the Bensalem Township Code, the site re-development must consider 20 percent of the existing impervious area disturbed as meadow in good condition, and all pervious areas as meadow in good condition for stormwater calculations. To manage the increase in runoff volume and rate generated from the proposed Chase Bank, compared to pre-development meadow in good condition, a subsurface infiltration / slow release detention basin has been proposed. Runoff will be collected from the site's parking areas and building rooftop using surface catch basins (inlets) and conveyed to the subsurface infiltration/ slow release detention basin via underground storm drainage piping. The first inch of runoff from new impervious surfaces is permanently removed from the runoff flow and the remaining volume is release via an outfall control structure to reduce the post development rates to less than those of the pre-development meadow in good condition rates.

6. CALCULATION METHODOLOGY

To accurately determine the peak rate and volume of stormwater runoff for the project, the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Urban Hydrology for Small Watersheds Technical Release 55 (TR-55) was used. Hydraflow Hydrographs Extension for AutoCAD Civil 3D 2020 modeling software was used to perform the runoff calculations

Composite Curve Numbers (CN) were calculated based on the TR-55 Manuel. Time of concentration calculations paths were delineated for each POI and added to the Hydraflow model.

Core States Group divided the project site into three (3) separate drainage areas, draining to three Points of Interest (POIs). The drainage areas discharge via sheet flow to Street Road to the west which discharges into a public storm system, sheet flow to the neighboring property to the south, and sheet flow to an existing storm system to the northeast in the existing parking lot. The Point of Interest (POI) analyzed in this report is the existing storm inlet located to the northeast in the existing parking lot. The other two points of interest are the same as pre-developed conditions. The post-developed areas draining to the other two points of interest are less than pre-developed condition.

Pre-development and post-development runoff calculations were generated for the 1-Year, 2-Year, 5-Year, 10- Year, 25-Year, 50-Year and 100-Year storm events. Refer to Appendix E for the pre and post- construction calculation summary.

The rainfall depths used in the calculations are based on the values derived from NOAA Atlas 14 for the project site location, referenced in the Bensalem Township Code for the Soil Cover Complex Method Type II twenty-four-hour rainfall distribution (refer to Table 1 below). These values are also reflected in the Appendix with the Hydraflow Hydrographs output.

Table 6.1 – 24 hour Rainfall for Bensalem Township, PA
NOAA Atlas 14

Storm Event	Rainfall Depth (Inches)
1-Year	2.76
2-Year	3.34
5-Year	4.24
10-Year	5.01
25-Year	6.15
50-Year	7.13
100-Year	8.21

7. SUMMARY OF STORMWATER MANAGEMENT CALCULATIONS

To demonstrate compliance with volume control requirements of the Chapter 196 Article III Stormwater Management § 196-34. The proposed BMP captures the runoff volume from at least the first two inches of runoff from all new impervious surfaces. The BMP is designed for the first inch of runoff volume from the new impervious surfaces to be permanently removed from the runoff flow.

Volume Control - Simplified Method		
Stone Void Ratio	0.4	
Stone Depth Below Piping	1.875	FT
Area of Stone	2676.85	SF
Total Storage Below Piping	2008	CF
New Impervious Surfaces	22560	SF
2" of Runoff Volume	3760	CF
1" of Runoff Volume	1880	CF

To demonstrate compliance with the peak flow rate requirements of the Chapter 196 Article III Stormwater Management § 196-35, the peak rates from each of the drainage areas on-site flowing towards the inlet to the northeast in the parking lot is considered POI#1. Two other drainage areas draining to the southeastern property line and to Street Road are considered POI #2 & #3. The areas and runoff from POIs #2 & #3 are less than pre-existing site conditions. The areas in POI #1 will be captured via storm inlets and sewers to a proposed subsurface infiltration/ slow release basin.

Once the runoff has been conveyed to the subsurface infiltration / slow release basin, it will be detained and released via the outfall control structure to meet the rate requirements highlighted previously. For smaller storms, two 5-inch orifices has been proposed to control the release rate. For larger storms, a primary weir wall structure has been proposed and will consist of a concrete wall cast within the outfall control structure. As the stormwater level rises in the basins, the orifice and weir wall will act in series to pass the runoff into the outfall manhole, through a storm drainage pipe, to discharge into the existing inlet located northeast of the site in the existing parking lot. The detention pond and pipes have been designed for the capacity to convey the 100-year storm event without overtopping the basin top. Refer to Table 7.1 included in this report for pre to post development peak runoff rate comparison.

Table 7.1 – Pre to Post Development Peak Runoff Rate – POI #1

Storm Event	Pre-Developed Combined Flow (CFS)	Post-Developed Combined Flow (CFS)	Post-Developed Required Flow (CFS)
1-Year	1.828	0.169	1.828
2-Year	2.295	0.236	2.295
5-Year	3.014	1.359	3.014
10-Year	3.625	2.465	3.625
25-Year	4.524	3.923	4.524
50-Year	5.292	4.851	5.292
100-Year	6.134	5.713	6.134

Table 7.1 – Pre to Post Development Peak Runoff Rate – POI #2

POI #2			
Storm Event	Pre-Developed Combined Flow (CFS)	Post-Developed Combined Flow (CFS)	Post-Developed Required Flow (CFS)
1-Year	0.438	0.162	0.438
2-Year	0.564	0.223	0.564
5-Year	0.758	0.323	0.758
10-Year	0.924	0.411	0.924
25-Year	1.169	0.542	1.169
50-Year	1.377	0.655	1.377
100-Year	1.606	0.780	1.606

Table 7.1 – Pre to Post Development Peak Runoff Rate – POI #3

POI #3			
Storm Event	Pre-Developed Combined Flow (CFS)	Post-Developed Combined Flow (CFS)	Post-Developed Required Flow (CFS)
1-Year	0.065	0.056	0.065
2-Year	0.094	0.073	0.094
5-Year	0.140	0.099	0.140
10-Year	0.183	0.121	0.183
25-Year	0.247	0.154	0.247
50-Year	0.304	0.182	0.304
100-Year	0.366	0.212	0.366

All calculations for Pre- and Post-Development Hydrograph reports are located in Appendix E.

8. BEST MANAGEMENT PRACTICES (BMPS)

The following structural and non-structural BMPs are proposed across the site to manage the runoff rate and volume increases, as well as to provide benefits to the water quality of the stormwater runoff:

8.1. RE-VEGETATE/RE-FOREST DISTURBED AREA (NATIVE SPECIES)

Non-Structural BMP 5.6.3 – This BMP emphasizes the selection and use of vegetation that does not require significant chemical maintenance from fertilizers, herbicides and pesticides. Implicit in this BMP is the assumption that native species have the greatest tolerance and resistance to pests and require less fertilization and chemical application that non-native species. The following key design elements have been included:

- **Preserve all high-quality plant materials wherever possible –** The existing vegetation has been preserved where possible, and also supplemented with native plantings to provide a higher quality landscaping area.
- **Develop Landscape Plan using native species –** All landscaping proposed for the project will be native species and has been included on a landscape plan. (See Landscape Planting Plan prepared by Evergreen)
- **Reduce landscape maintenance, especially grass mowing –** The proposed landscape planting plan utilizes native seed mixes that have designed to grow in small areas along the frontage of the property and to try to minimize the required maintenance of vegetation. Grass mowing will need to be performed seasonally to control the rate of growth in smaller areas of the site.
- **Reduce or eliminate chemical applications, and fertilizers** – The proposed native seed mixes have been designed to grow and maintain vegetation without the use of lime, fertilizers, or chemical pesticides.

8.2. SUBSURFACE INFILTRATION / SLOW RELEASE DETENTION BASIN

Structural BMP 6.4.3 – Selected to store the captured stormwater runoff generated from the proposed Chase Bank Development. Storage will be provided to serve as the principal stormwater BMP to promote infiltration, detention and release of runoff to address the Infiltration Volume, Water Quality, Stream Bank Erosion, and Stormwater Peak Rate Control requirement set forth in Chapter 251 Article III Stormwater Management. The key design elements incorporated into the design are as follows:

- **Maintain a minimum 2-foot separation to bedrock and seasonally high-water table** – Soil testing was not performed on site to ensure no limiting zone is located within two feet of the bottom of the basin to promote infiltration. If bedrock or seasonal high-water table is encountered the contractor is to contact the township engineer immediately.
- **Design to hold/infiltrate 1" of new impervious surface runoff –** The subsurface infiltration / slow release detention basin has been designed to store 1" of new impervious surface runoff volume in the stone media beneath the low flow orifice of the outfall control structure. This volume is infiltrated in less than 72 hours.
- **Design to detain the proposed conditions design storm up to 100-Year Storm to the corresponding pre-existing conditions flow using the SCS Type II distribution –** The subsurface infiltration / slow release detention basin has been designed to release the all storm events up to the 100-year/24-hour at a rate less than the corresponding storm event for the pre-development site considered meadow in good condition for modeling purposes. The release rate is controlled by a low flow orifice outfall control structure and is released through the outfall control structure for a time in excess of 24 hours. This satisfies the minimum of 24 hours from a point in time when the maximum volume of water from the one-year storm is stored in a proposed BMP.
- **Protection from Sedimentation During Construction –** Provisions have been outlined to protect basin from sedimentation during construction. Permanent water quality inlet filters are proposed to prevent additional sediment accumulation post-construction.
- **Beds filled with stone, minimum 40% void space, and wrapped in nonwoven geotextile –** Provided construction specifications for construction of subsurface basin address these best practices in design of BMP.
- **Provide positive overflow through outlet structure –** The subsurface infiltration / slow release detention basin has been designed to include an outlet outfall control structure to allow for the small and large events to discharge from the basin at a rate equal or less than the pre-development site considered meadow in good condition.

8.3. WATER QUALITY FILTER: NYLOPLAST ENVIROHOOD

Structural BMP 6.6.4 – Selected to provide pre-treatment of the captured stormwater runoff generated from the proposed Chase Bank Development, the proposed water quality inlet will serve in conjunction with the subsurface infiltration / slow release detention basin and address

the water quality requirements set forth in Chapter 251. The key design elements incorporated into the design are as follows:

- **Most useful in small drainage areas** – Proposed site topography minimizes contributing drainage area to each of the catch basin inlets proposed on the site.
- **Ideal in combination with other BMPs –** The water quality filters are proposed to provide pre-treatment prior to entering the subsurface infiltration / slow release detention basin.
- **Regular Maintenance is Necessary –** Post-construction maintenance operations to maintain the water quality filter are outlined in the PCSM plans and this report.

8.4. LANDSCAPE RESTORATION

Structural BMP 6.7.2 – Landscape restoration is the general term used for actively sustainable landscaping practices that are implemented outside of riparian buffer areas. The following key design elements have been included:

- **Minimize traditional turf lawn areas –**Turf lawn areas have been minimized on the landscape planting plan and are limited to areas along the frontage of the property.
- **Maximize landscape restoration area planted with native vegetation** – All vegetation proposed on site will be native requiring little maintenance.
- **Prevent post-construction erosion through adequate stabilization –** The seeding specifications include provisions to protect the seeds from erosion. No steep slopes are proposed within the site, and therefore no additional erosion control matting has also been proposed.
- **Minimize fertilizer and chemical-based pest control programs –** For the permanent seed mixes, no fertilizer or chemical pesticides are proposed.
- **Minimize Mowing –** The proposed landscape planting plan utilizes native seed mixes that have designed to grow in small areas along the frontage of the property and to try to minimize the required maintenance of vegetation. Grass mowing will need to be performed seasonally to control the rate of growth in smaller areas of the site.

9. POST CONSTRUCTION OPERATION AND MAINTENANCE PROCEDURES

Subsurface Detention and Infiltration Basin

- Inlets should be inspected and cleaned at least two times per year and after major runoff events.
- Inspect the basin after runoff events to make sure that runoff drains down within 72 hours.
- Inspect for accumulation of sediment, damage to outlet structures, signs of water contamination/spills.
- Remove accumulated sediment from basin as required. Restore original cross section and infiltration rate. Properly dispose of sediment.

Water Quality Inlet Filter – Nyloplast Envirohood

- Inlets should be inspected and cleaned at least four (4) times per year and after major runoff events.
- Inspect the inlets after runoff events to make sure that runoff drains down within 72 hours.
- Inspect for accumulation of sediment, damage to filter media, clogging, and signs of water contamination/spills.
- Remove accumulated sediment from the filter as required. Restore original functionality of water quality inlet. Properly dispose of sediment.
- Filter shall be replaced with equivalent filter when cleaning and sediment removal does not restore functional use and water quality treatment.

10. STORM DRAINAGE CALCULATIONS

Stormwater runoff to the proposed stormwater management subsurface detention basin is conveyed via surface catch basins (inlets) for the parking and rooftop areas. Water quality inlet filters are proposed for the parking lot catch basins to provide water quality pre-treatment of the stormwater runoff prior to entering the basin. The bottom elevation of the subsurface detention and infiltration basin is set at a constant flat elevation to provide storage of stormwater runoff. See the Construction Drawings for details and profiles of the proposed drainage system.

All but one proposed inlet have less than 2 CFS of runoff flowing to them in the 100-year storm. Inlet A5 has a flow 3.03 CFs and a cross slope of 3.67%. A cross slope of 3.67% would allow for a capacity of 3.90 CFS. Please See Table 10.3.2 below. Per PennDOT Publicantion 13M Table 10.3.2 – Inlet A5 and all other inlets meet the inlet capacity requirements per Section 196-61 (b) (7) – Inlet Capacity.

TABLE 10.3.2 (ENGLISH)
CAPACITY OF TYPE C INLET OR
TYPE M INLET (MOUNTABLE CURB)
AT SUMP CONDITION

PAVEMENT CROSS SLOPE	INLET CAPACITY (cfs)*	
	TYPE C	TYPE M (MOUNTABLE CURB)
1V:48H	2.0	2.0
1V:24H	4.5	3.5
1V:16H	7.7	5.0
1V:12H	11.2	5.0

11. SUBSURFACE INFILTRATION / SLOW RELEASE DETENTION DESIGN & OUTFALL CONTROL CALCULATIONS

To complete the design of the stormwater management subsurface infiltration / slow release detention basin, it was considered that the volume of water stored beneath the low flow orifice would have to exceed the infiltration / water quality volume defined in Bensalem Township Code § 196-35. The bottom invert elevation of the 18-inch HDPE pipes and subsurface detention basin are set at a constant flat elevation to provide storage in series with each other. The system will fill up with stormwater runoff to provide the detention storage volume, and infiltration / water quality volume is stored within the stone media beneath the low flow orifice of the outfall control structure. For larger storm events, additional storage is provided within the 18-inch HDPE pipes and surrounding stone media. Porosity of the stone bed was considered for storage capacity sizing calculations of the basin. Perforated HDPE piping is proposed to allow for adequate detention and infiltration of the stormwater runoff collected and conveyed. Access manholes are proposed at the corners of the basin to provide access for maintenance of sedimentation accumulation and inspection of the system.

The Outfall Control Structure was designed to release the excess volume stored in the subsurface basin at a rate equal to or less than the pre-development runoff rates for the site. The final design incorporates two (2) 5-inch orifice and one (1) 4-foot weir wall within the concrete structure. These controls work in series to release stormwater runoff collected for each of the 1 through 100-year/24-hour storm events. The runoff is released into the existing storm conveyance system that connects to the existing inlet to the northeast of the proposed site.

APPENDIX A

SITE PLAN

ZONING DATA BENSALEM TOWNSHIP
(GC - GENERAL COMMERCIAL) - ENTIRE SITE AREA

ITEM	REQUIRED	EXISTING	PROPOSED	COMMENT
MIN. LOT AREA	7,200 S.F.	397,154 SF	397,154 SF	COMPLIANT
MAX BUILDING AREA	35%	26.0% (103,260 S.F.)	26.2% (104,159 S.F.)	COMPLIANT
MAX BUILDING HEIGHT	45 FT.	12.8'	21.50'	COMPLIANT
MIN. FRONT YARD	75 FT.	82.1'	78.93'	COMPLIANT
MIN. SIDE YARD	8 FT.	0'	0'	EXISTING NON-CONFORMITY
MIN. REAR YARD	35 FT.	69.8'	69.8'	COMPLIANT
MAX IMPERVIOUS SURFACE RATIO	60%	98.8%	97.5%	EXISTING NON-CONFORMITY
BUFFER YARDS	20 FT. LANDSCAPE BUFFER ADJACENT TO RESIDENCE DISTRICT OR PARK	0 FT	0	EXISTING NON-CONFORMITY

ZONING DATA BENSALEM TOWNSHIP
(GC - GENERAL COMMERCIAL) - LEASED AREA

ITEM	REQUIRED	EXISTING	PROPOSED	COMMENT
MIN. LOT AREA	7,200 S.F.	33,096 SF	33,096 S.F.	COMPLIANT
MAX BUILDING AREA	35%	7.3% (2,421 S.F.)	10.3% (3,320 S.F.)	COMPLIANT
MAX BUILDING HEIGHT	45 FT.	12.8'	21.50'	COMPLIANT
MIN. FRONT YARD	75 FT.	82.1'	78.93'	COMPLIANT
MIN. SIDE YARD	8 FT.	71.7'	26.58'	COMPLIANT
MIN. REAR YARD	35 FT.	522.8'	552.6'	COMPLIANT
MAX IMPERVIOUS SURFACE RATIO	60%	83.4%	68.2% (22,560 S.F.)	EXISTING NON-CONFORMITY
BUFFER YARDS	20 FT. LANDSCAPE BUFFER ADJACENT TO RESIDENCE DISTRICT OR PARK	N/A	N/A	N/A
PARKING SETBACK	25 FEET FROM THE BOUNDARY OF A PUBLIC STREET, ROAD OR HIGHWAY, NOR WITHIN 25 FEET FROM ANY OTHER PROP LINE	12.89 FT FROM THE R/W OF STREET ROAD	13.79 FT FROM THE R/W OF STREET ROAD	EXISTING NON-CONFORMITY

SITE AREA NOTES:

1. THE 397,154 SF. MENTIONED IN THE ENTIRE SITE AREA ZONING DATA TABLE ABOVE IS THE AREA OF PREMISE "A" AND "B" COMBINED. PER OUR SURVEY, PREMISE "B" IS 3.70 ACRES AND PREMISE "A" IS 5.40 ACRES. THOSE NUMBERS COMBINED ARE THE 397,154 SF OR 9.1 ACRES MENTIONED ABOVE.
2. THE LEASED AREA ZONING DATA TABLE ONLY INCLUDES THE CHASE BANK LEASED AREA.

SITE KEY NOTES:

A. PROPOSED 3,320 SF CHASE BANK BUILDING. REFER TO BUILDING PERMIT PLANS FOR DETAILS.
B. PROPOSED DRIVE-UP ATM CANOPY. REFER TO BUILDING PERMIT PLANS FOR DETAILS.
C. PROPOSED ADA COMPLIANT CURB RAMP WITH DETECTABLE WARNING SURFACE. REFER TO CONSTRUCTION DETAILS SHEET.
D. PROPOSED 9' X 18' PARKING SPACE (TYP.)
E. PROPOSED 8' X 18' ACCESSIBLE PARKING SPACE AND AISLE.
F. PROPOSED ASPHALT PAVEMENT. REFER TO CONSTRUCTION DETAILS SHEET.
G. PROPOSED CONCRETE PAD. REFER TO CONSTRUCTION DETAILS SHEET.
H. PROPOSED CONCRETE SIDEWALK. REFER TO CONSTRUCTION DETAILS SHEET.
I. PROPOSED 6" CONCRETE CURB. REFER TO CONSTRUCTION DETAILS SHEET.
J. PROPOSED LANDSCAPE AREA. REFER TO PLANTING PLAN SHEET LP-1 BY EVERGREEN DESIGN GROUP FOR PLANTINGS.
K. PROPOSED ASPHALT PAVEMENT REPAIR ALONG NEW CURBLINE. REFER TO CONSTRUCTION DETAILS SHEET.
L. PROPOSED TRASH ENCLOSURE. REFER TO BUILDING PERMIT PLANS FOR DETAILS
M. PROPOSED VAN ACCESSIBLE PARKING SIGN. REFER TO CONSTRUCTION DETAILS SHEET.
N. PROPOSED TYPE C INLET. REFER TO POST-CONSTRUCTION STORMWATER MANAGEMENT DETAILS.
O. PROPOSED LIGHT FIXTURE (TYP.). REFER TO LIGHTING DETAILS SHEET.
P. PROPOSED YARD DRAIN. REFER TO POST-CONSTRUCTION STORMWATER MANAGEMENT DETAILS
Q. PROPOSED 6" CLEANOUT. REFER TO CONSTRUCTION DETAILS.
R. PROPOSED BIKE RACK. REFER TO CONSTRUCTION DETAILS.
S. PROPOSED TRANSFORMER. CONTRACTOR TO COORDINATE WITH PECO.
T. PROPOSED 'STOP' SIGN. REFER TO CONSTRUCTION DETAILS SHEET.
U. PROPOSED 'DO NOT ENTER' SIGN. REFER TO CONSTRUCTION DETAILS SHEET.
V. PROPOSED SITE MARKINGS. REFER TO CONSTRUCTION DETAILS SHEET.
W. PROPOSED 36.9 SF CHASE WALL SIGN. REFER TO ARCHITECTURAL PLANS AND DETAILS.
X. PROPOSED 12.7 SF CHASE WALL SIGN. REFER TO ARCHITECTURAL PLANS AND DETAILS.
Y. PROPOSED 50 SF CHASE ILLUMINATED PYLON SIGN.
Z. PROPOSED 2.3 SF CHASE DIRECTIONAL SIGN.
AA. PROPOSED STORM MANHOLE. REFER TO POST-CONSTRUCTION STORMWATER MANAGEMENT DETAILS.
AB. PROPOSED WATER METER PIT. METER PIT TO BE COORDINATED WITH AQUA PA.
AC. PROPOSED CONCRETE ISLAND SEPARATING DRIVE-UP ATM AND BYPASS LANE.
AD. PROPOSED WATER VALVE. VALVE TO BE COORDINATED WITH AQUA PA.
AE. PROPOSED "NO PARKING FIRE LANE" SITE MARKINGS. REFER TO SHEET C19 FOR MARKING SPECIFICATIONS & REFER CONSTRUCTION DETAILS SHEET FOR FIRE LANE DETAILS.
AF. PROPOSED "NO PARKING FIRE LANE" SIGN. REFER TO CONSTRUCTION DETAILS SHEET.

ALERT TO CONTRACTOR:

PRIOR TO THE CONSTRUCTION OF OR CONNECTION TO ANY STORM DRAIN, SANITARY SEWER, WATER MAIN OR ANY OF THE DRY UTILITIES, THE CONTRACTOR SHALL EXCAVATE, VERIFY AND CALCULATE ALL POINTS OF CONNECTION AND ALL UTILITY CROSSINGS AND INFORM ENGINEER AND THE OWNER OF ANY CONFLICT OR REQUIRED DEVIATIONS FROM THE PLAN. NOTIFICATION SHALL BE MADE A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION. ENGINEER AND OWNER SHALL BE HELD HARMLESS IN THE EVENT THAT THE CONTRACTOR FAILS TO MAKE SUCH NOTIFICATION.

PRE VS POST IMPERVIOUS COVERAGE - LEASED AREA

	PERVIOUS	IMPERVIOUS	% IMPERVIOUS
PRE-CONSTRUCTION	5,491 SF	27,605 SF	83.4%
POST-CONSTRUCTION	10,536 SF	22,560 SF	68.2%

SITE NOTES:

1. REFER TO SHEET C2 FOR GENERAL NOTES.
2. REFER TO SHEET C4 FOR DEMOLITION PLAN.
3. REFER TO SHEET C6 FOR GRADING PLAN.
4. REFER TO SHEET C7 FOR UTILITY PLAN.
5. ALL DIMENSIONS ARE TO GROUND LEVEL IMPROVEMENTS (FACE OF CURB, CONCRETE SLAB, ETC.) UNLESS NOTED OTHERWISE. REFER TO ARCHITECTURAL PLANS FOR BUILDING AND CANOPY DETAILS.
6. ALL DIMENSIONS FROM PROPERTY LINES ARE PERPENDICULAR UNLESS OTHERWISE NOTED.
7. ANY ADJACENT EXISTING LANDSCAPE MATERIAL DISTURBED DURING CONSTRUCTION SHALL BE REPLACED PER LOCAL REGULATIONS.
8. A PERMIT WILL BE REQUIRED FOR ANY ALTERATIONS TO THE EXISTING SIGN AND FOR ANY PROPOSED SIGNS.
9. A LAND ALTERATION PERMIT WILL BE REQUIRED PRIOR TO THE START OF ANY GRADING, EXCAVATION, REMOVAL OF TOPSOIL, REMOVAL OF TREES OR REMOVAL OF ANY OTHER VEGETATIVE COVER.
10. PRIOR TO CONSTRUCTION, CONTRACTOR TO COORDINATE WITH THE SHOPPING CENTER REDEVELOPMENT TO MINIMIZE CONSTRUCTION IMPACT.

PARKING CALCULATIONS BENSALEM TOWNSHIP - LEASED AREA

ITEM	REQUIRED	EXISTING	PROPOSED
STANDARD PARKING SPACES	1 SPACES PER 200 S.F. GROSS FLOOR AREA. 3,293 S.F. BANK X (1 SPACES / 200 S.F.) = 17 SPACES	43 SPACES	28 SPACES
ADA PARKING STALLS	1 TO 25 TOTAL SPACES: 1 SPACE	2 SPACES	2 SPACES
TOTAL SPACES	18 SPACES	45 SPACES	30 SPACES
DRIVE-UP ATM STACKING SPACES	5 STACKING SPACES	N/A	5 STACKING SPACES
STANDARD PARKING STALL SIZE	9 FT X 18 FT	10 FT X 18 FT	9 FT X 18 FT
ADA PARKING STALL SIZE	12 FT X 18 FT	10 FT X 18 FT	8 X 18 FT
LOADING BAY STALL SIZE	12 FT X 65 FT	N/A	N/A

PARKING CALCULATIONS BENSALEM TOWNSHIP - ENTIRE SITE AREA

ITEM	REQUIRED	EXISTING (1)	PROPOSED (PER MASER CONSULTING) (1)	PROPOSED
STANDARD PARKING SPACES (1)	1 SPACES PER 200 S.F. GROSS FLOOR AREA. TOTAL SITE: 576 SPACES (2) 3,293 S.F. BANK X (1 SPACES / 200 S.F.) = 17 SPACES	434 SPACES	544 SPACES	527 SPACES
ADA PARKING STALLS	1 TO 25 TOTAL SPACES: 1 SPACE 401 TO 500 TOTAL SPACES: 9 SPACES 501 TO 1000 TOTAL SPACES: 2% OF TOTAL	12 SPACES	12 SPACES	12 SPACES
DRIVE-UP ATM STACKING SPACES	5 STACKING SPACES	N/A	N/A	5 STACKING SPACES
STANDARD PARKING STALL SIZE	9 FT X 18 FT	10 FT X 18 FT	9 FT X 18 FT & 10 FT X 18 FT	9 FT X 18 FT & 10 FT X 18 FT
ADA PARKING STALL SIZE	12 FT X 18 FT	10 FT X 18 FT	12 FT X 18 FT	12 FT X 18 FT & 8 X 18 FT
LOADING BAY STALL SIZE	12 FT X 65 FT	N/A	12 FT X 65 FT	12 FT X 65 FT

PARKING CALCULATION NOTES:

1. INFORMATION IS BASED ON PARKING CALCULATIONS ON SHEET 3 OF LAND DEVELOPMENT PLANS FOR BENSALEM MZL LLC BY MASER CONSULTING P.A. DATED 05-01-20 REVISED 02-11-21. PROJECT NUMBER 19003305A

STANDARD PARKING STALL REQUIREMENT CALCULATIONS

BUSINESS	TYPE	SIZE	PARKING REQUIREMENTS	PARKING
GROCERY	STRIP SHOPPING CENTER/RETAIL STORES	42,596 S.F.	5.5/1,000 S.F. OF LEASABLE AREA	235 SPACES
GENERAL RETAIL	STRIP SHOPPING CENTER/RETAIL STORES	56,526 S.F.	5.5/1,000 S.F. OF LEASABLE AREA	311 SPACES
PRETZEL FACTORY	RESTURAUNT	1,600 S.F.	ONE EMPLOYEE PLUS EITHER ONE FOR EVERY TWO SEATS OR ONE PER 50 S.F. OF FLOOR SPACE DEVOTED TO PATRON USE, WHICHEVER IS GREATER	2 EMPLOYEES + 250 S.F. PATRON USE = 7 (0 SEATS DEDICATED FOR PATRONS)
EXISTING KRISPY KREME (TBR)	RESTURAUNT	2,500 S.F.	ONE EMPLOYEE PLUS EITHER ONE FOR EVERY TWO SEATS OR ONE PER 50 S.F. OF FLOOR SPACE DEVOTED TO PATRON USE, WHICHEVER IS GREATER	3 EMPLOYEES + 1,000 S.F. PATRON USE = 23 (18 SEATS DEDICATED FOR PATRONS)
PROPOSED CHASE BANK	BANK	3,320 S.F.	ONE SPACE PER 200 S.F. OF FLOOR AREA	3,320 S.F. BANK X (1 SPACES / 200 S.F.) = 17 SPACES
TOTAL (REQUIRED)				570 SPACES
TOTAL (EXISTING)				434 SPACES
TOTAL PROPOSED (PER MASER CONSULTING)				544 SPACES
TOTAL (PROPOSED)				529 SPACES

SITE LEGEND

- PROPERTY BOUNDARY LINE
- CENTER LINE OF EXISTING ROADWAY
- ADJOINING PROPERTY LINE
- EXISTING BUILDING SETBACK LINE
- EXISTING BUILDING
- EXISTING EDGE OF PAVEMENT
- EXISTING FENCE
- DEMO CURB
- EXISTING TREE
- EXISTING UTILITY POLE
- EXISTING STORM STRUCTURES
- EXISTING SANITARY STRUCTURES
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- EXISTING SIGN
- EXISTING BOLLARD
- PROPOSED SAWCUT LINE
- PROPOSED CURB
- PROPOSED BUILDING
- PROPOSED ASPHALT
- PROPOSED CONCRETE
- PROPOSED STORM STRUCTURES
- PROPOSED WATER STRUCTURES
- PROPOSED PARKING COUNT
- CHASE LEASED AREA

CORE STATES GROUP
201 S. Maple Avenue, Suite 300
Ambler, PA 19002
Phone (215) 809-2125
MSwaggard@core-states.com

CLIENT

CHASE

Know what's below. Call before you dig.

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON DESIGN PLANS AND/OR FIELD SURVEYS AND THEREFORE ONLY APPROXIMATE. FIELD MEASUREMENTS TAKEN IN THE FIELD CORE STATES, INC. DOES NOT GUARANTEE THAT LOCATIONS SHOWN ARE EXACT. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANIES AT LEAST THREE WORKING DAYS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF UTILITIES.

REVISIONS

REV	DATE	COMMENT	BY
1	08/24/21	BCCD, BCPC, AND TWP COMMENTS	CML

DOCUMENT
PRELIMINARY/ FINAL LAND DEVELOPMENT PLAN FOR CHASE BANK

SITE LOCATION
1729 STREET ROAD
BENSALEM, PA
19020

ENGINEER SEAL

COMMONWEALTH OF PENNSYLVANIA
REGISTERED
PROFESSIONAL
FRANCIS GREENE
ENGINEER
No. PE075617
PENNSYLVANIA

08/26/2021

FRANCIS GREENE, P.E.
PA LICENSE #075817

SHEET TITLE
SITE PLAN

JOB #:	JPM-29391
DATE:	5/13/21
SCALE:	1" = 20'
DRAWN BY:	CML
CHECKED BY:	FG

SHEET NO.
C5.1
SHEET 5 OF 23

User: CLANG Plot Date/Time: Aug. 26, 21 - 09:04:44 Drawing: P:\J.P. Morgan Chase\Bensalem, PA (Bensalem)-JPM.29391\CIVIL\Drawings\Presentation\JPM.29391-P-SITE.dwg ,05.1 SITE

APPENDIX B

WEB SOIL SURVEY MAP

Custom Soil Resource Report
Soil Map

Map Scale: 1:1,490 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 20 40 80 120

Feet
0 50 100 200 300

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 Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

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 1:24,000.

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: Bucks County, Pennsylvania
Survey Area Data: Version 17, Jun 4, 2020

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

Date(s) aerial images were photographed: May 14, 2019—May 19, 2019

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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
UfuB	Urban land, 0 to 8 percent slopes	4.3	100.0%
Totals for Area of Interest		**4.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Bucks County, Pennsylvania

UfuB—Urban land, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: l7sq
Elevation: 800 to 1,500 feet
Mean annual precipitation: 36 to 46 inches
Mean annual air temperature: 41 to 62 degrees F
Frost-free period: 130 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Parent material: Pavement, buildings and other artifically covered areas human transported material

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Minor Components

Udorthents, unstable fill

Percent of map unit: 10 percent
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

References

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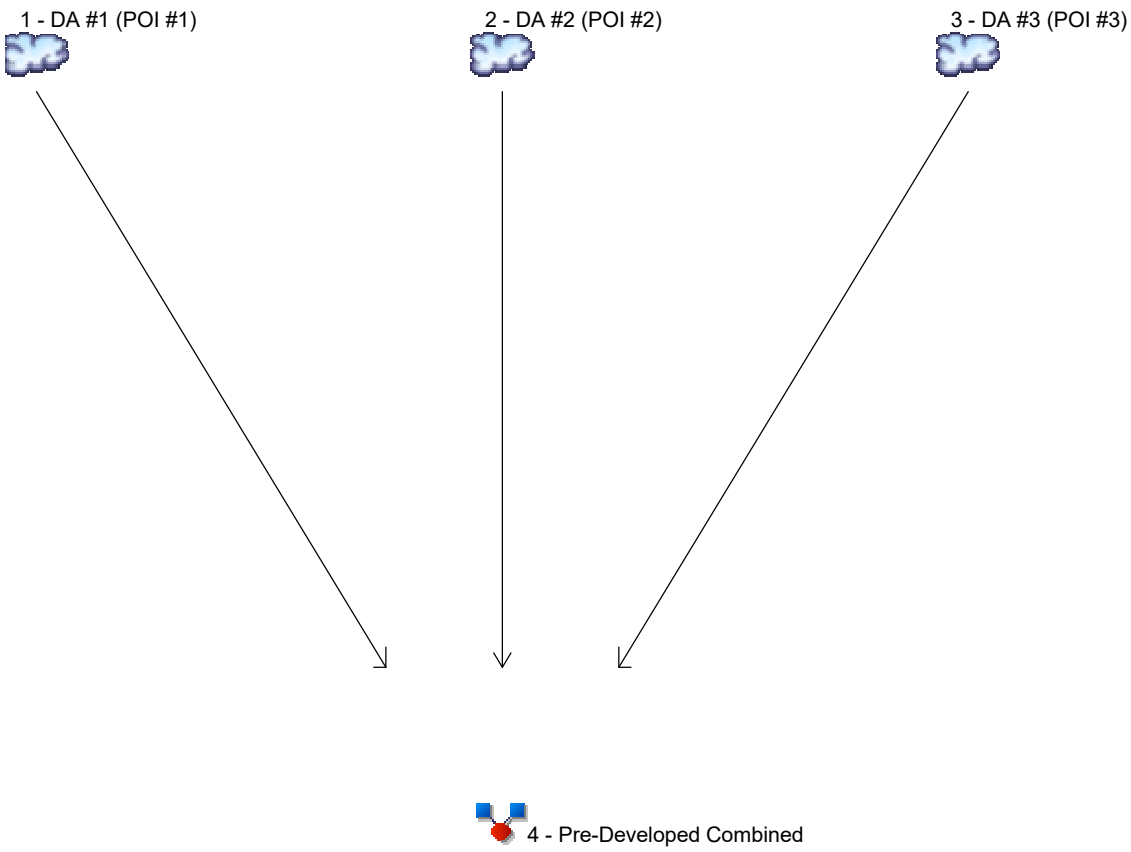
APPENDIX C

PRE- & POST- HYDROGRAPH COMPARISON REPORT

Watershed Model Schematic



Legend

Hyd.	Origin	Description
1	SCS Runoff	DA #1 (POI #1)
2	SCS Runoff	DA #2 (POI #2)
3	SCS Runoff	DA #3 (POI #3)
4	Combine	Pre-Developed Combined

Hydrograph Return Period Recap

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	------	1.828	2.295	-------	3.014	3.625	4.524	5.292	6.134	DA #1 (POI #1)
2	SCS Runoff	------	0.438	0.564	-------	0.758	0.924	1.169	1.377	1.606	DA #2 (POI #2)
3	SCS Runoff	------	0.065	0.094	-------	0.140	0.183	0.247	0.304	0.366	DA #3 (POI #3)
4	Combine	1, 2, 3	2.329	2.951	-------	3.913	4.733	5.940	6.972	8.106	Pre-Developed Combined

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

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	1.828	2	716	3,860	------	------	------	DA #1 (POI #1)
2	SCS Runoff	0.438	2	716	901	------	------	------	DA #2 (POI #2)
3	SCS Runoff	0.065	2	718	131	------	------	------	DA #3 (POI #3)
4	Combine	2.329	2	716	4,892	1, 2, 3	------	------	Pre-Developed Combined

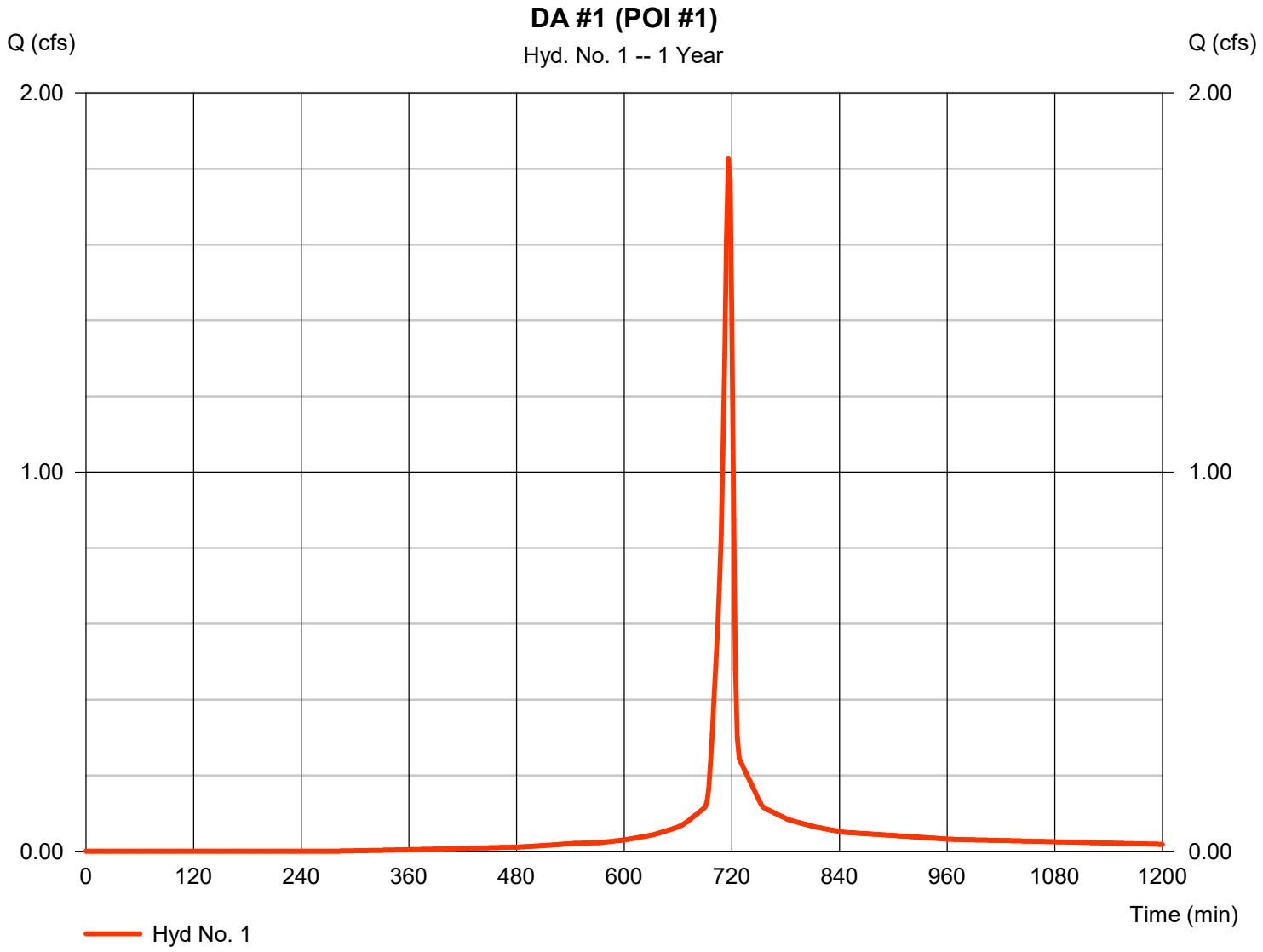
Hydrograph Report

Hyd. No. 1

DA #1 (POI #1)

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.828 cfs
Storm frequency	=	1 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	3,860 cuft
Drainage area	=	0.560 ac	Curve number	=	93*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.050 x 78) + (0.100 x 78) + (0.410 x 98)] / 0.560



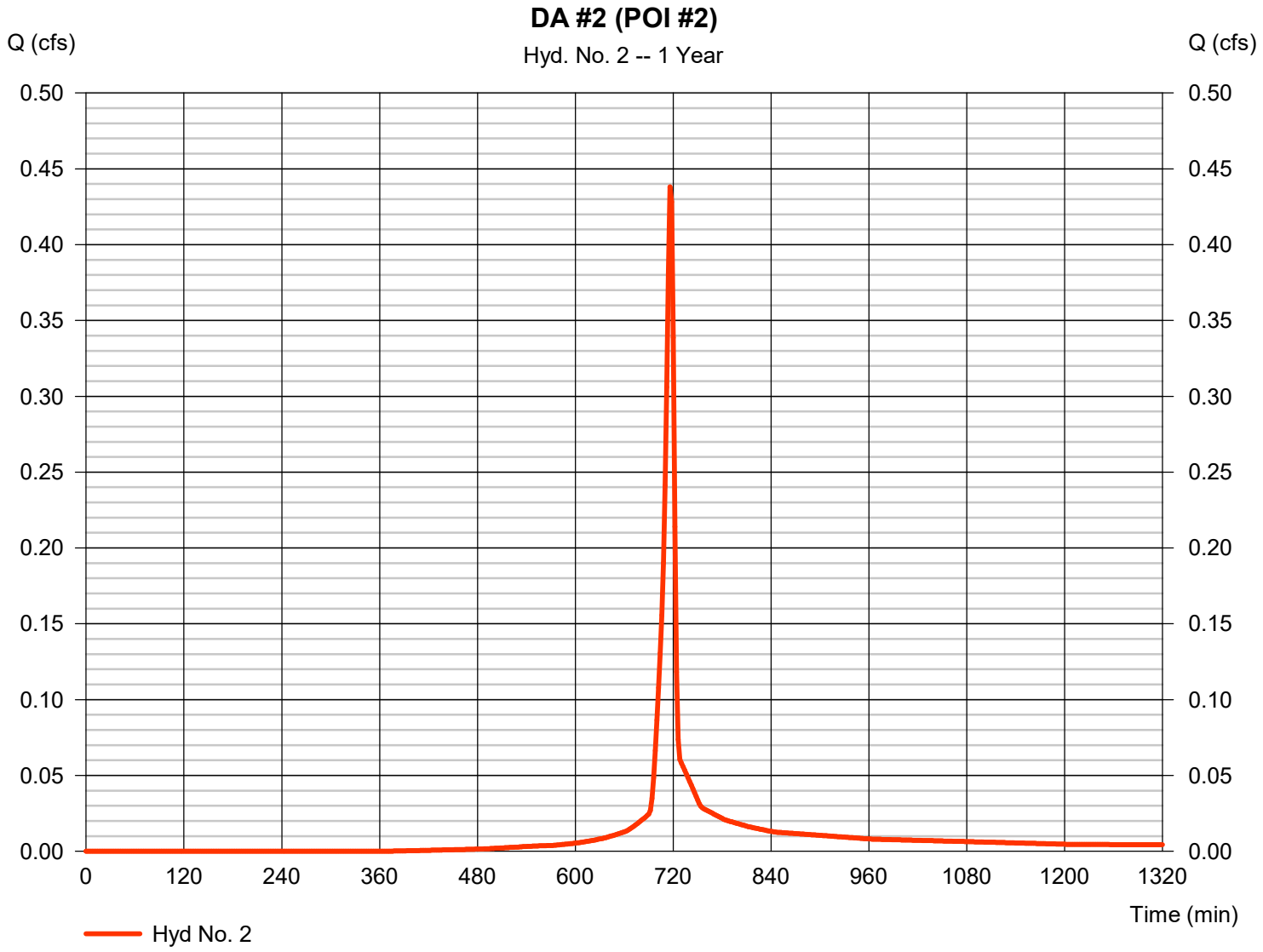
Hydrograph Report

Hyd. No. 2

DA #2 (POI #2)

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.438 cfs
Storm frequency	=	1 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	901 cuft
Drainage area	=	0.150 ac	Curve number	=	90*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.040 x 78) + (0.020 x 78) + (0.090 x 98)] / 0.150



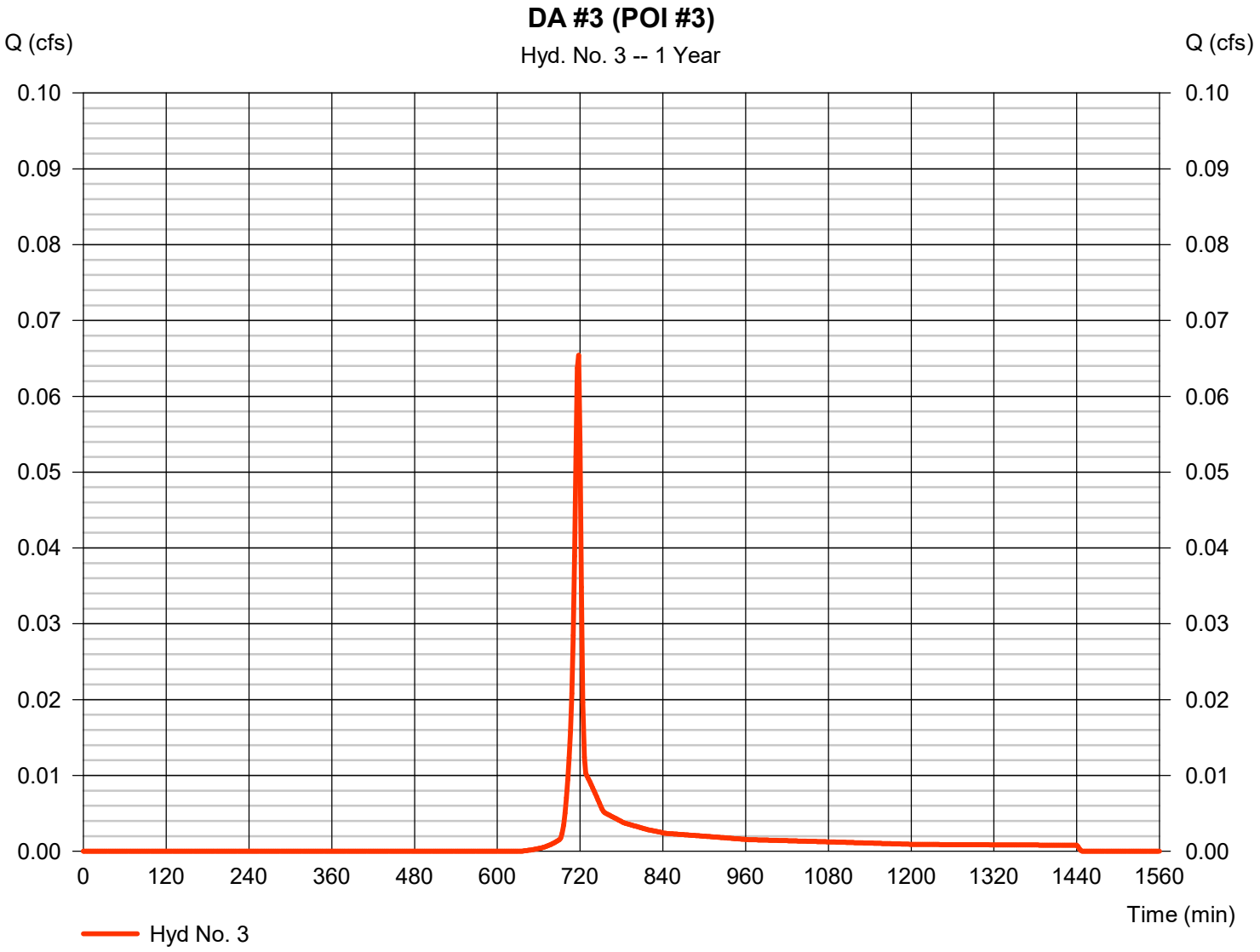
Hydrograph Report

Hyd. No. 3

DA #3 (POI #3)

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.065 cfs
Storm frequency	=	1 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	131 cuft
Drainage area	=	0.040 ac	Curve number	=	78*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.040 x 78)] / 0.040

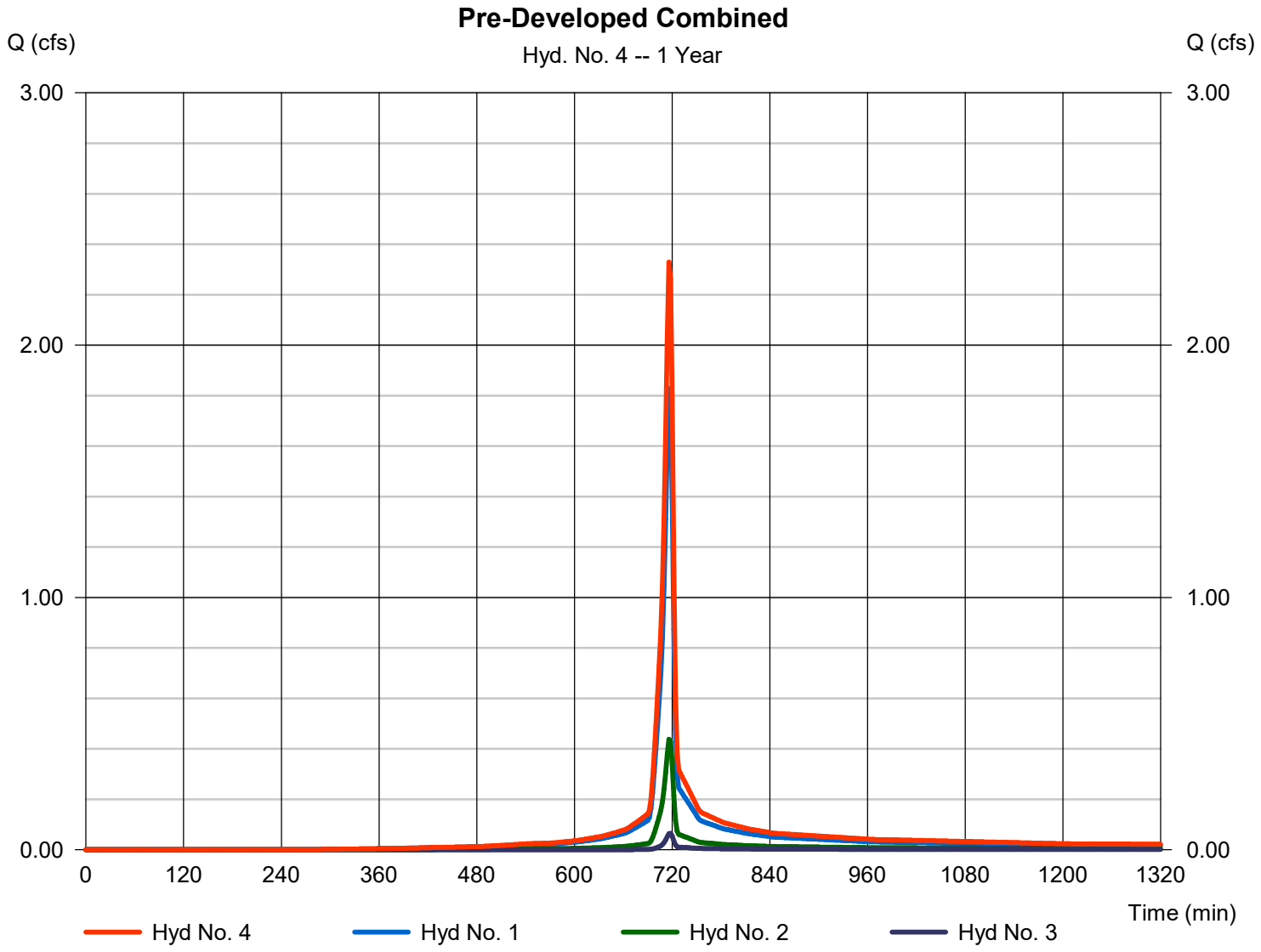


Hydrograph Report

Hyd. No. 4

Pre-Developed Combined

Hydrograph type	=	Combine	Peak discharge	=	2.329 cfs
Storm frequency	=	1 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	4,892 cuft
Inflow hyds.	=	1, 2, 3	Contrib. drain. area	=	0.750 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

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	2.295	2	716	4,918	------	------	------	DA #1 (POI #1)
2	SCS Runoff	0.564	2	716	1,173	------	------	------	DA #2 (POI #2)
3	SCS Runoff	0.094	2	718	187	------	------	------	DA #3 (POI #3)
4	Combine	2.951	2	716	6,279	1, 2, 3	------	------	Pre-Developed Combined

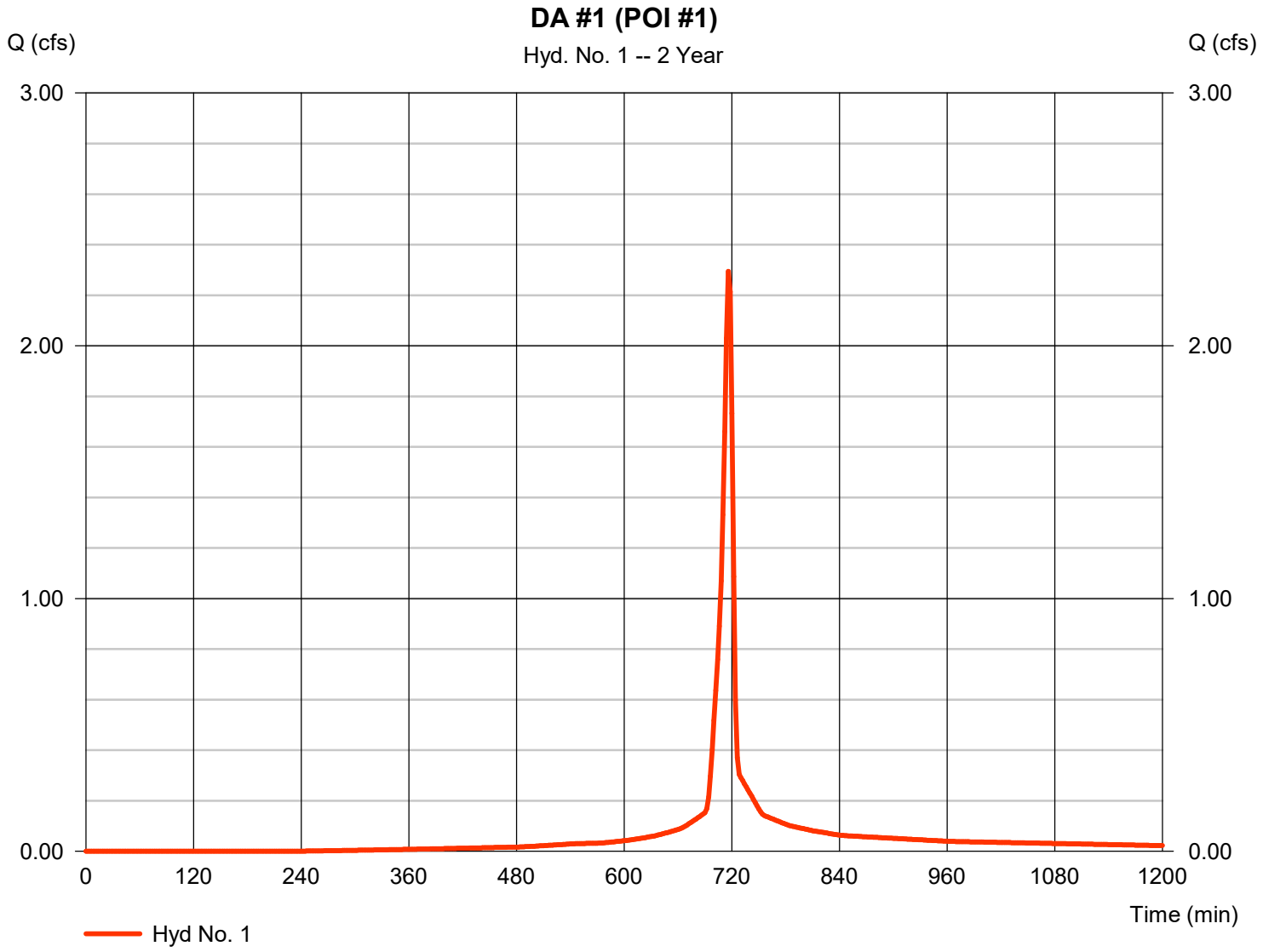
Hydrograph Report

Hyd. No. 1

DA #1 (POI #1)

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.295 cfs
Storm frequency	=	2 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	4,918 cuft
Drainage area	=	0.560 ac	Curve number	=	93*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.34 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.050 x 78) + (0.100 x 78) + (0.410 x 98)] / 0.560



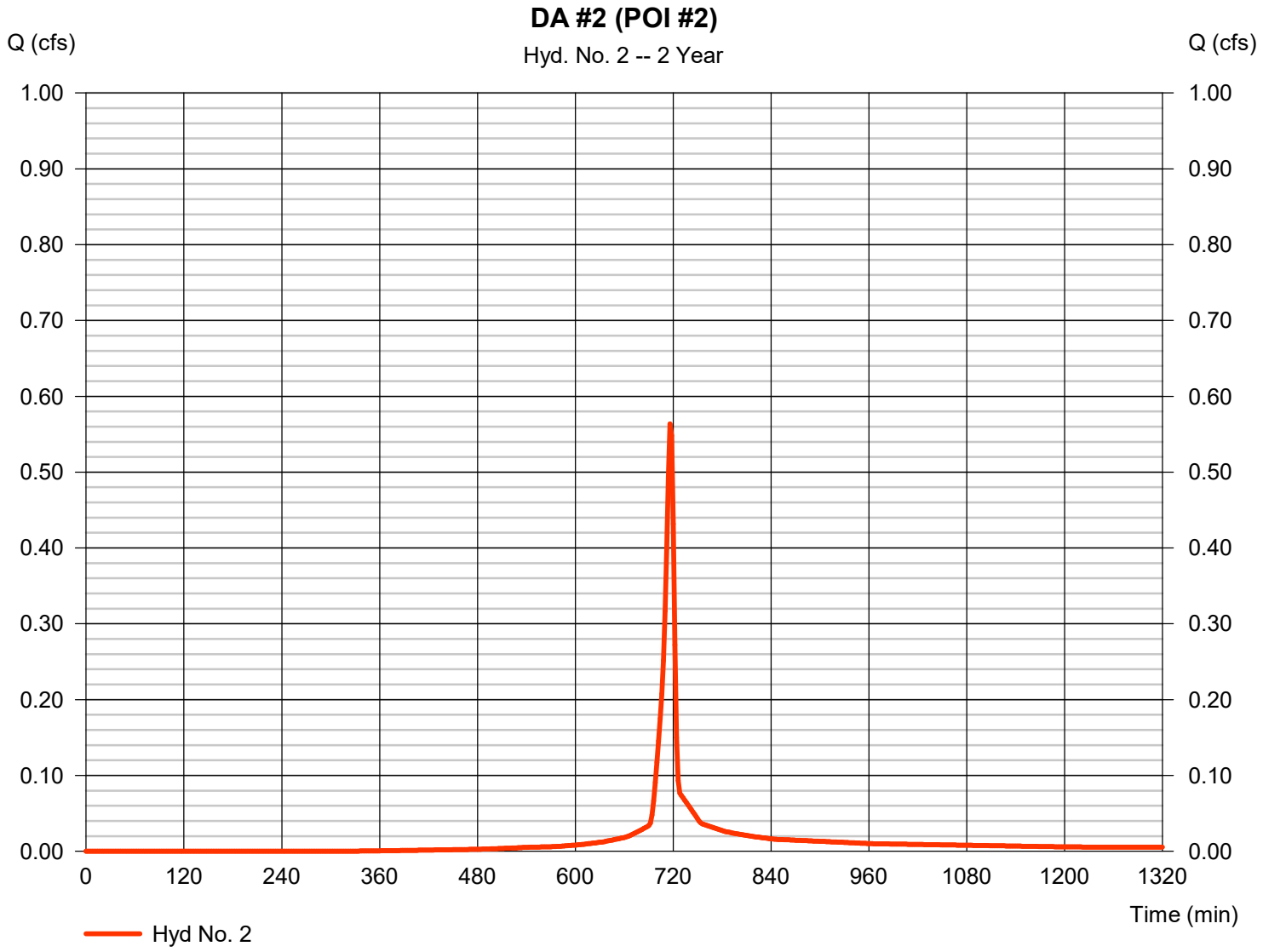
Hydrograph Report

Hyd. No. 2

DA #2 (POI #2)

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.564 cfs
Storm frequency	=	2 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	1,173 cuft
Drainage area	=	0.150 ac	Curve number	=	90*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.34 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.040 x 78) + (0.020 x 78) + (0.090 x 98)] / 0.150



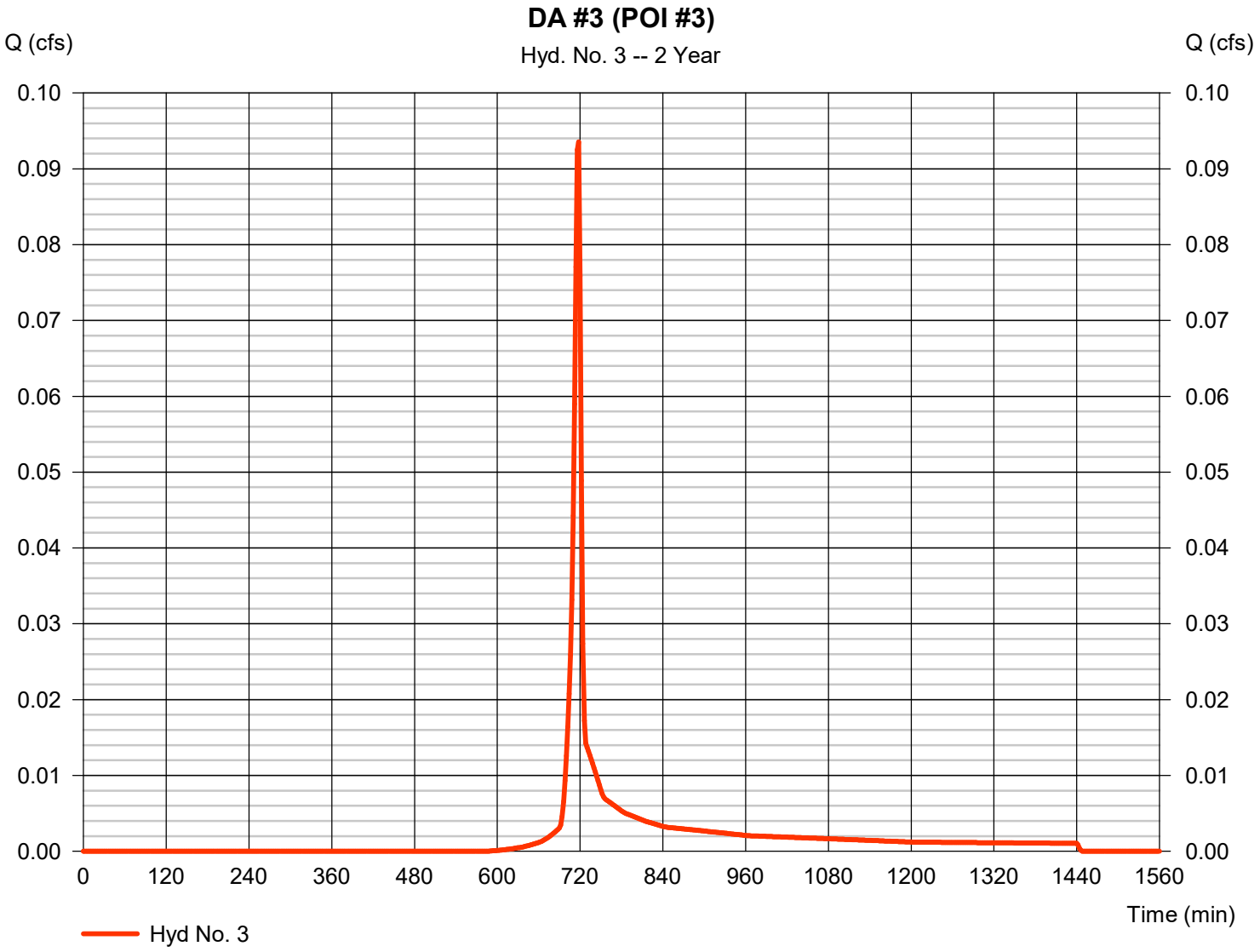
Hydrograph Report

Hyd. No. 3

DA #3 (POI #3)

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.094 cfs
Storm frequency	=	2 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	187 cuft
Drainage area	=	0.040 ac	Curve number	=	78*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.34 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.040 x 78)] / 0.040

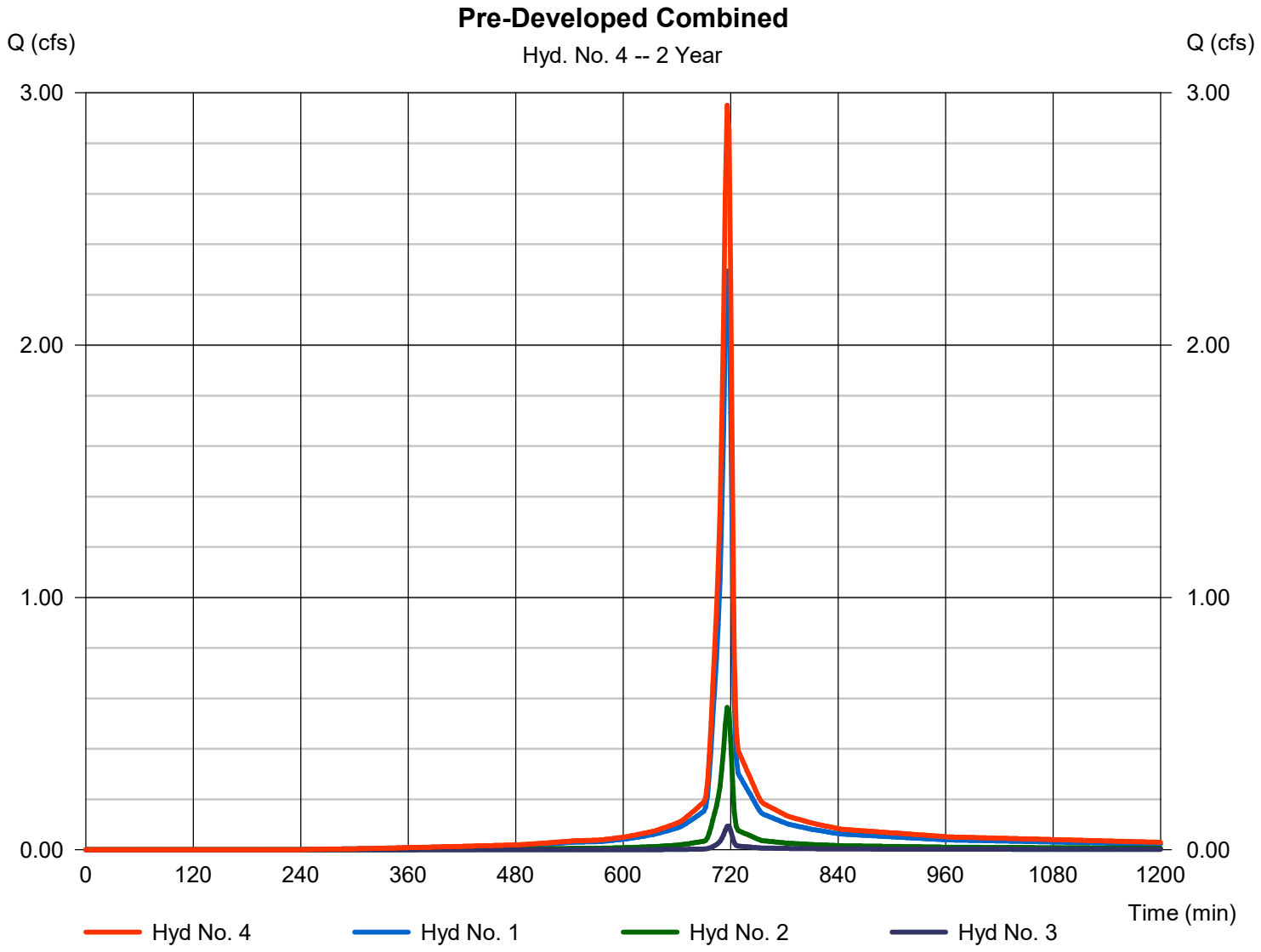


Hydrograph Report

Hyd. No. 4

Pre-Developed Combined

Hydrograph type	=	Combine	Peak discharge	=	2.951 cfs
Storm frequency	=	2 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	6,279 cuft
Inflow hyds.	=	1, 2, 3	Contrib. drain. area	=	0.750 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

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	3.014	2	716	6,582	------	------	------	DA #1 (POI #1)
2	SCS Runoff	0.758	2	716	1,607	------	------	------	DA #2 (POI #2)
3	SCS Runoff	0.140	2	716	283	------	------	------	DA #3 (POI #3)
4	Combine	3.913	2	716	8,472	1, 2, 3	------	------	Pre-Developed Combined

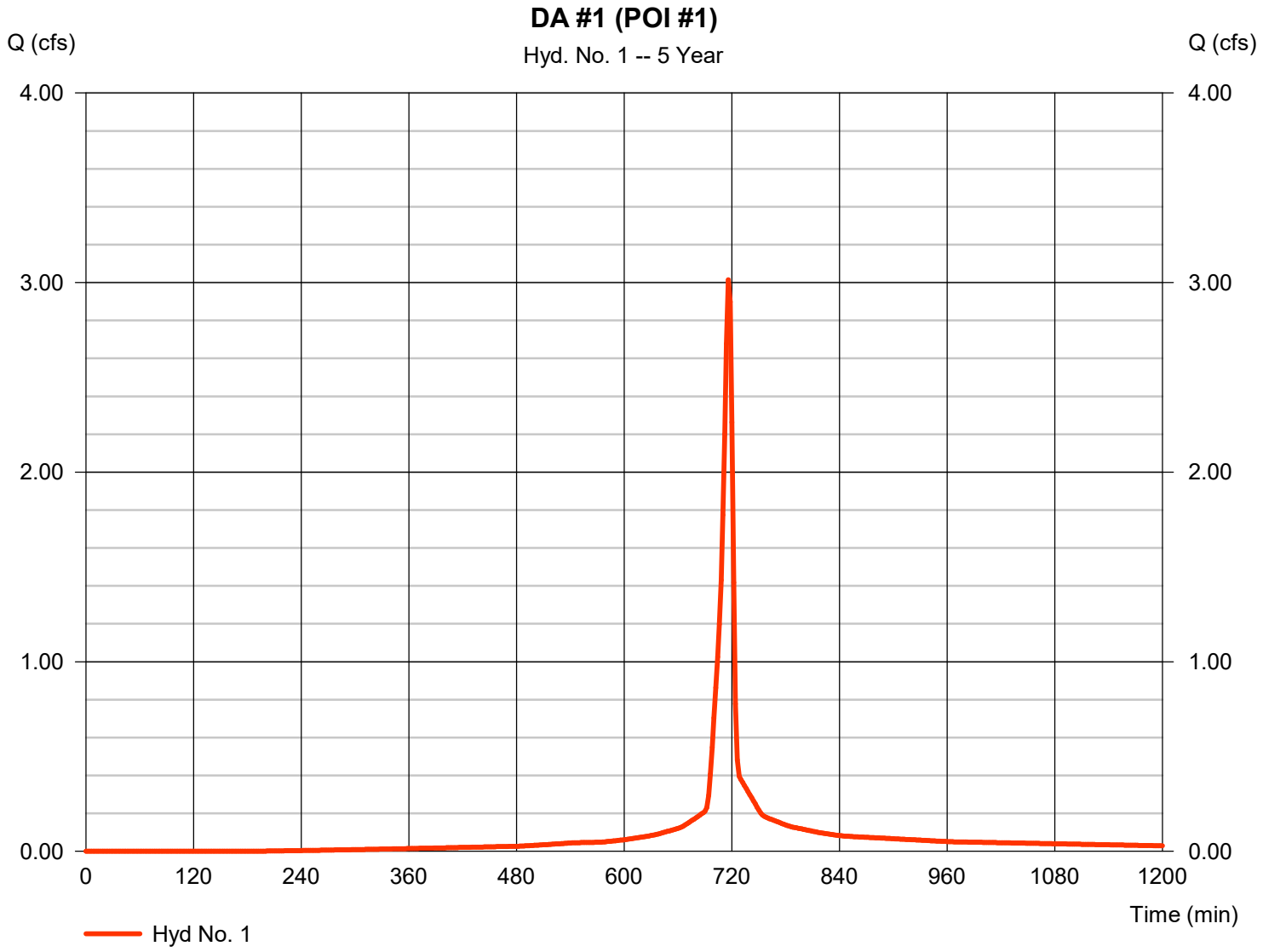
Hydrograph Report

Hyd. No. 1

DA #1 (POI #1)

Hydrograph type	=	SCS Runoff	Peak discharge	=	3.014 cfs
Storm frequency	=	5 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	6,582 cuft
Drainage area	=	0.560 ac	Curve number	=	93*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	4.24 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.050 x 78) + (0.100 x 78) + (0.410 x 98)] / 0.560



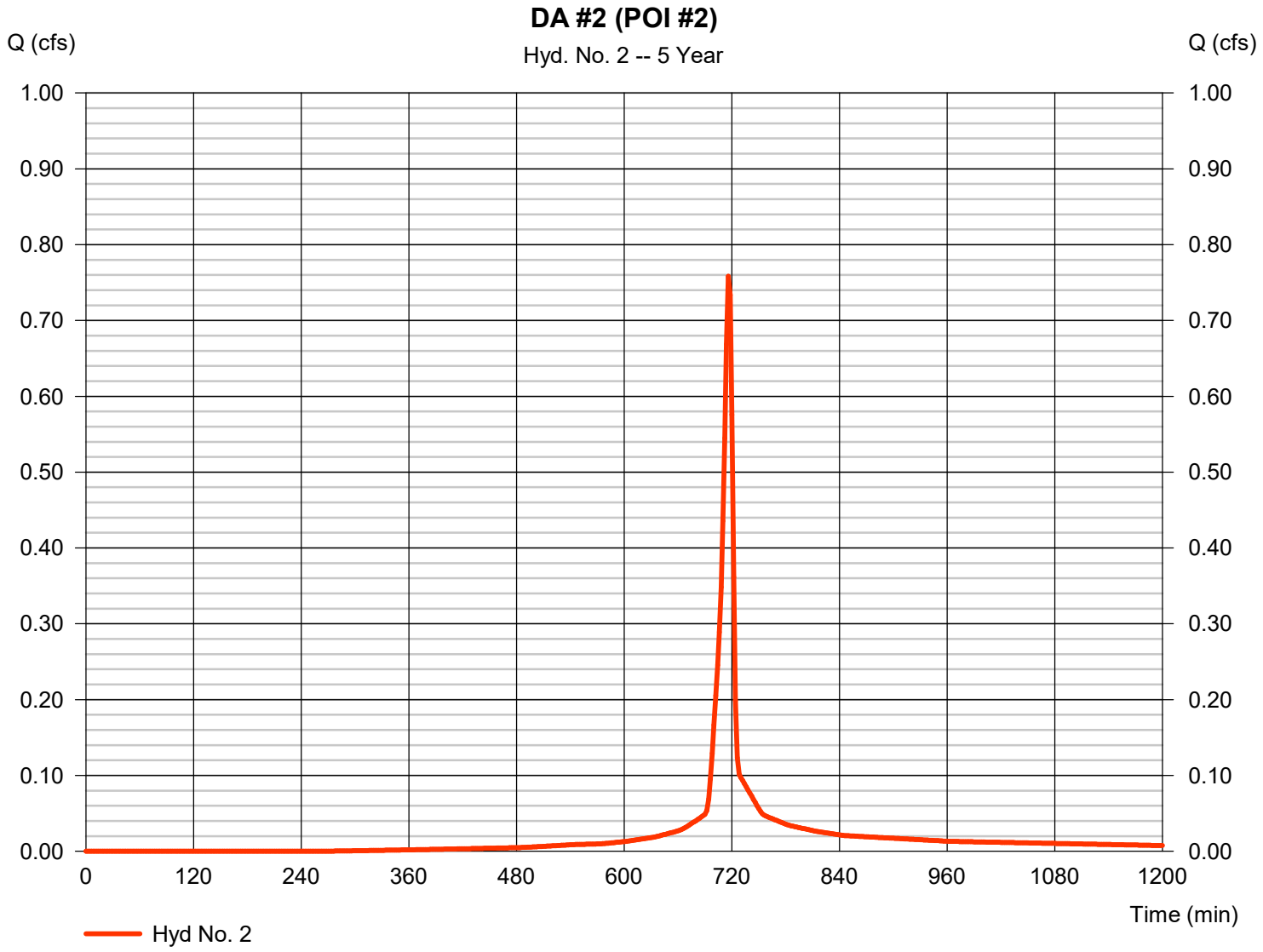
Hydrograph Report

Hyd. No. 2

DA #2 (POI #2)

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.758 cfs
Storm frequency	=	5 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	1,607 cuft
Drainage area	=	0.150 ac	Curve number	=	90*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	4.24 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.040 x 78) + (0.020 x 78) + (0.090 x 98)] / 0.150



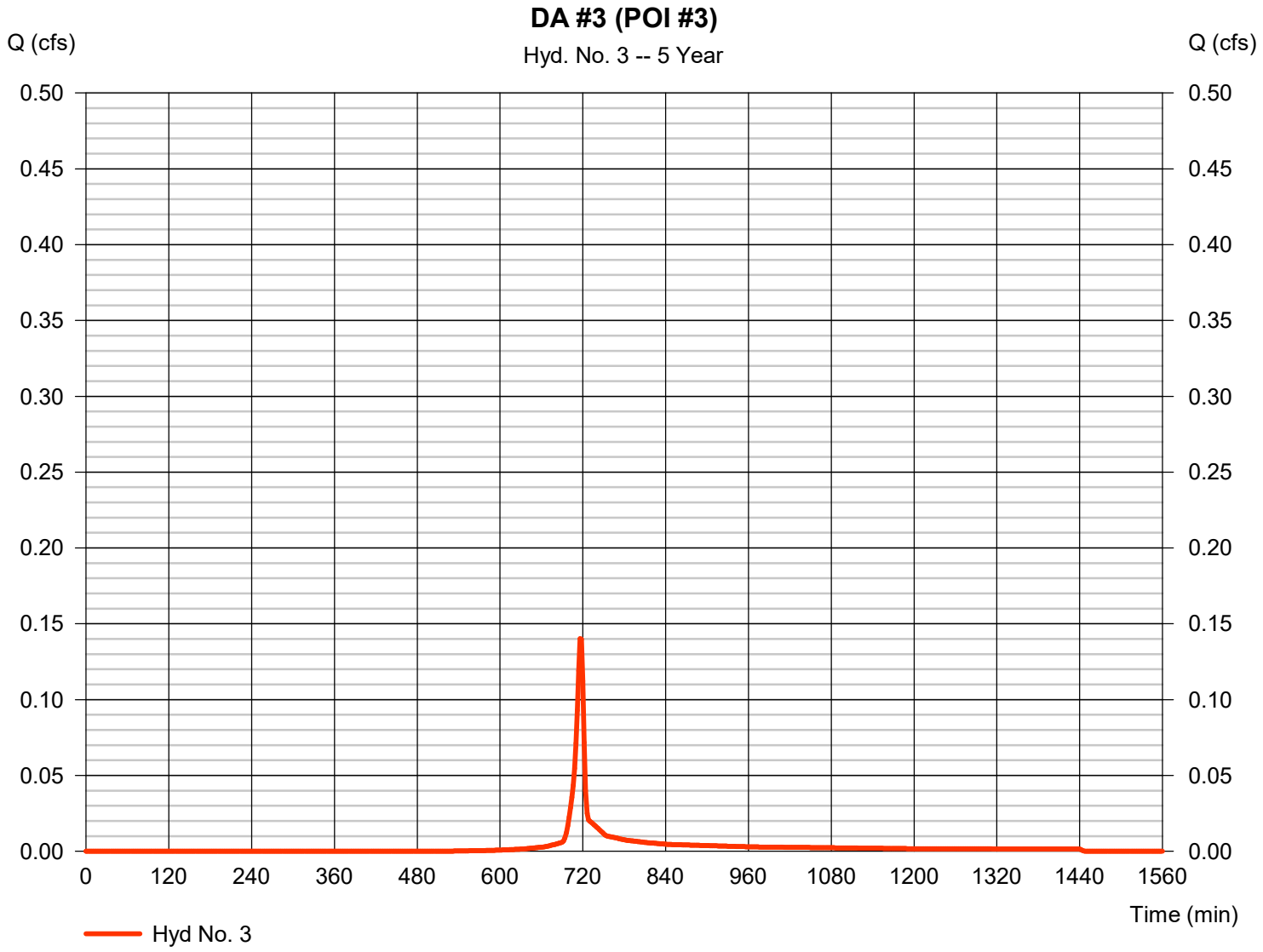
Hydrograph Report

Hyd. No. 3

DA #3 (POI #3)

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.140 cfs
Storm frequency	=	5 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	283 cuft
Drainage area	=	0.040 ac	Curve number	=	78*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	4.24 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.040 x 78)] / 0.040

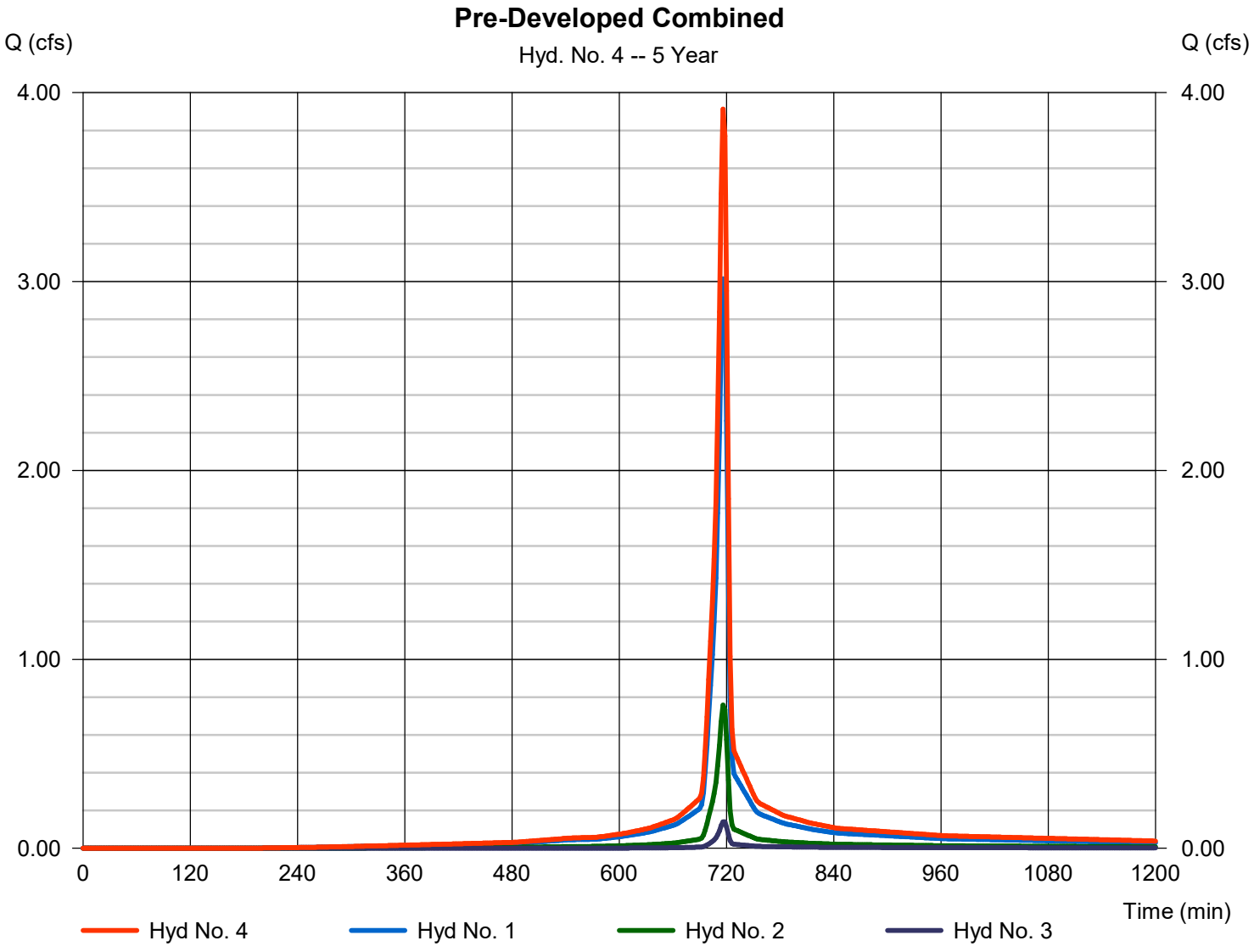


Hydrograph Report

Hyd. No. 4

Pre-Developed Combined

Hydrograph type	=	Combine	Peak discharge	=	3.913 cfs
Storm frequency	=	5 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	8,472 cuft
Inflow hyds.	=	1, 2, 3	Contrib. drain. area	=	0.750 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

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	3.625	2	716	8,019	------	------	------	DA #1 (POI #1)
2	SCS Runoff	0.924	2	716	1,984	------	------	------	DA #2 (POI #2)
3	SCS Runoff	0.183	2	716	370	------	------	------	DA #3 (POI #3)
4	Combine	4.733	2	716	10,373	1, 2, 3	------	------	Pre-Developed Combined

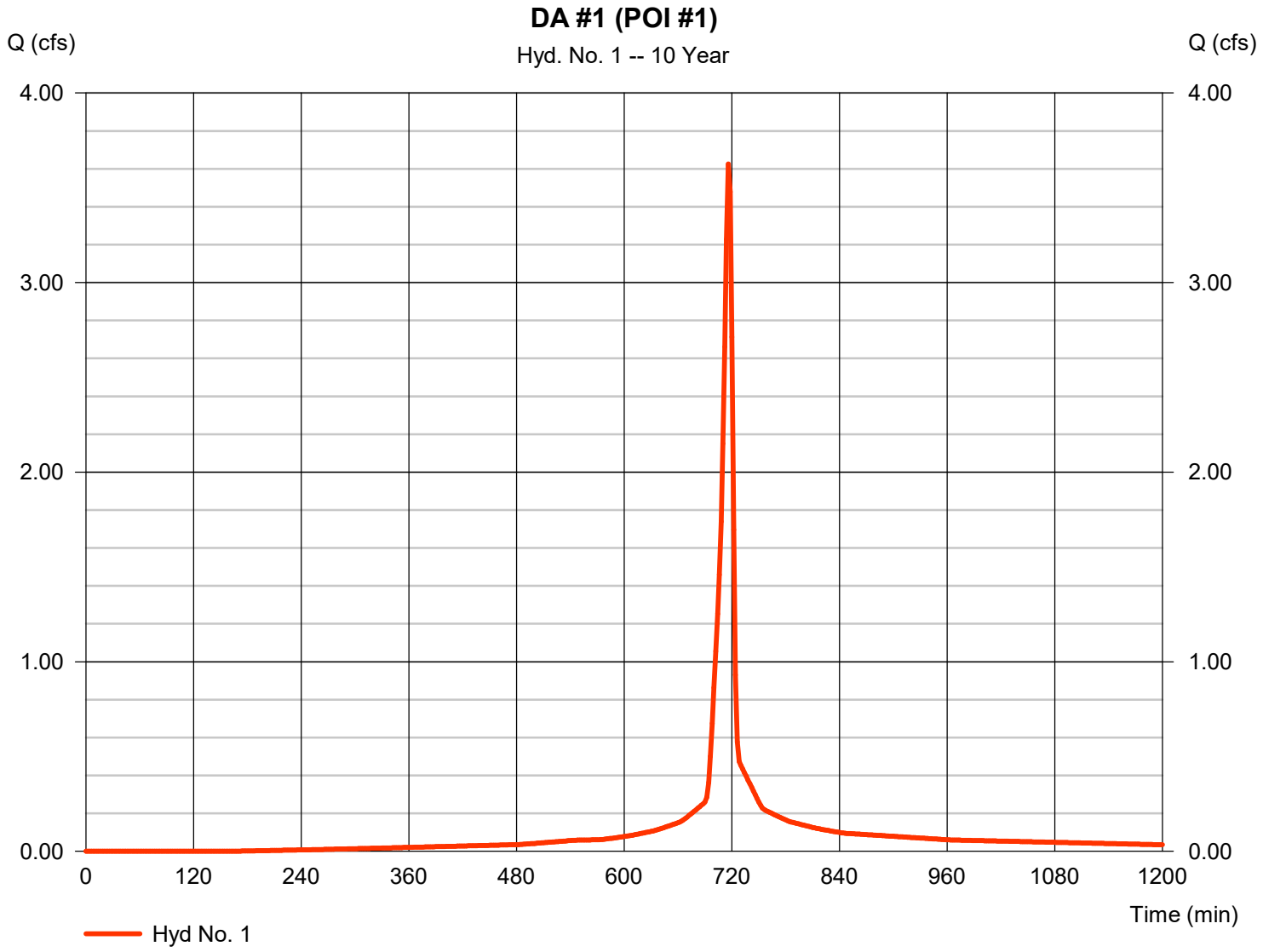
Hydrograph Report

Hyd. No. 1

DA #1 (POI #1)

Hydrograph type	=	SCS Runoff	Peak discharge	=	3.625 cfs
Storm frequency	=	10 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	8,019 cuft
Drainage area	=	0.560 ac	Curve number	=	93*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.01 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.050 x 78) + (0.100 x 78) + (0.410 x 98)] / 0.560



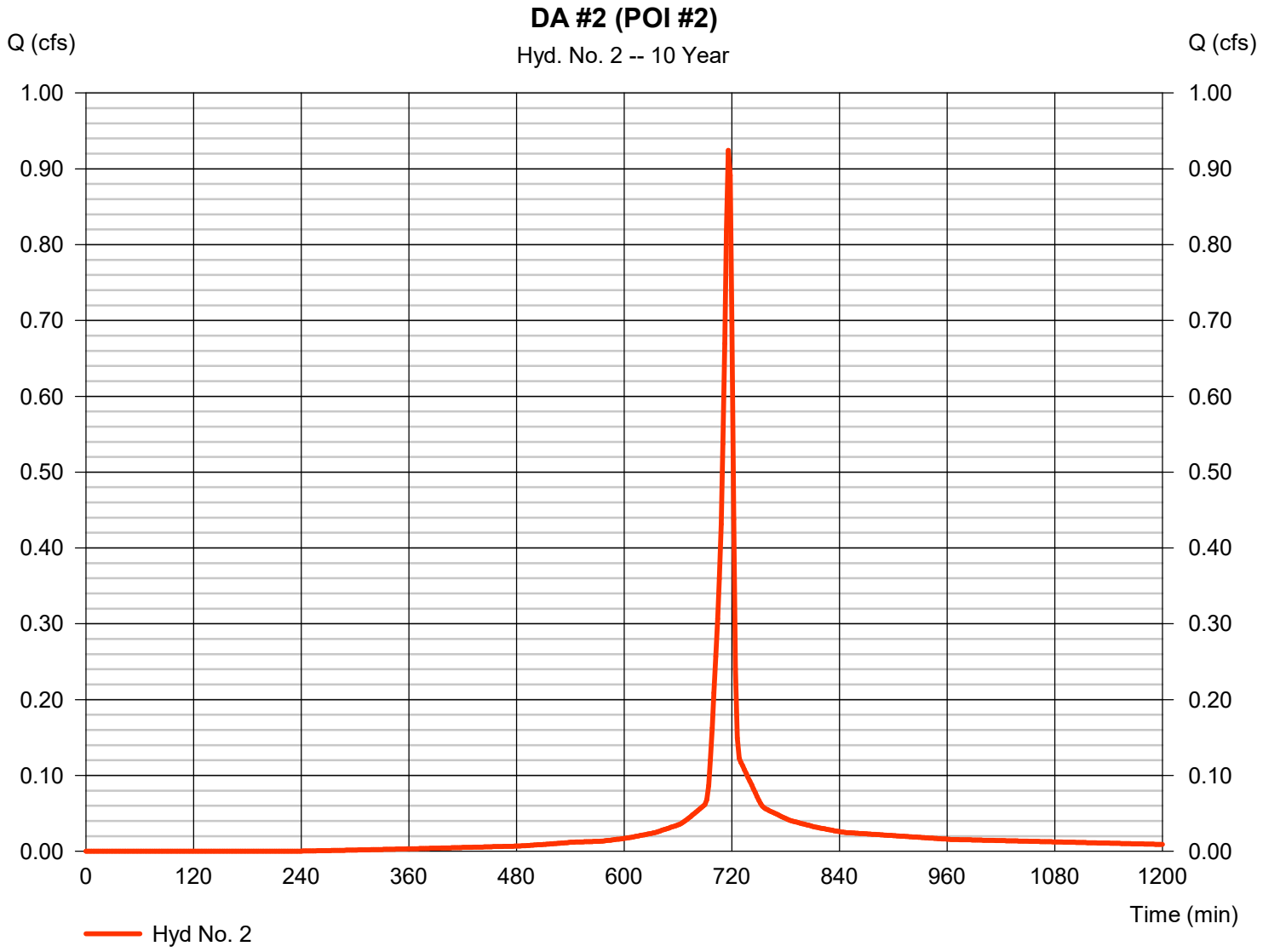
Hydrograph Report

Hyd. No. 2

DA #2 (POI #2)

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.924 cfs
Storm frequency	=	10 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	1,984 cuft
Drainage area	=	0.150 ac	Curve number	=	90*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.01 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.040 x 78) + (0.020 x 78) + (0.090 x 98)] / 0.150



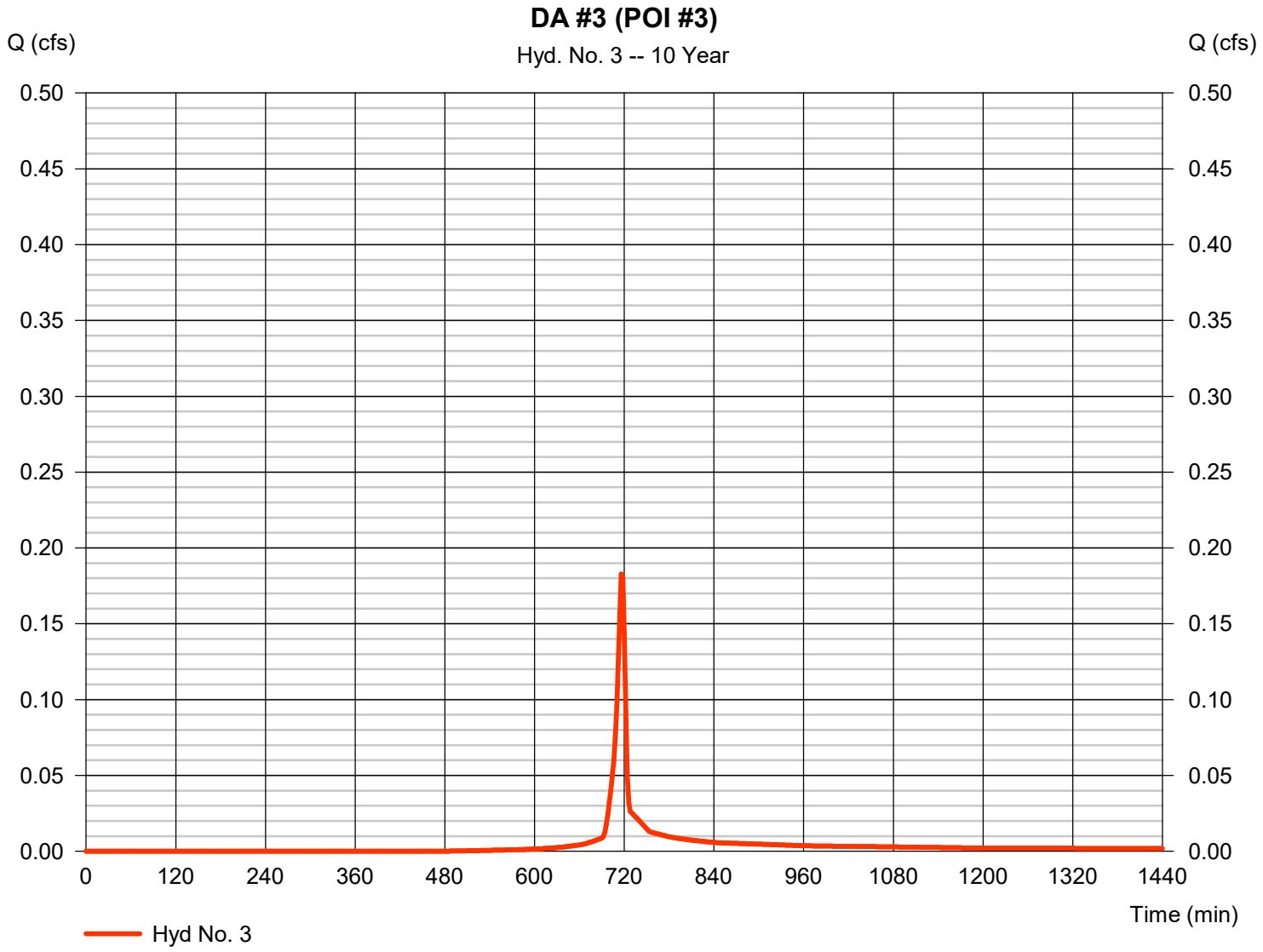
Hydrograph Report

Hyd. No. 3

DA #3 (POI #3)

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.183 cfs
Storm frequency	=	10 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	370 cuft
Drainage area	=	0.040 ac	Curve number	=	78*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.01 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.040 x 78)] / 0.040

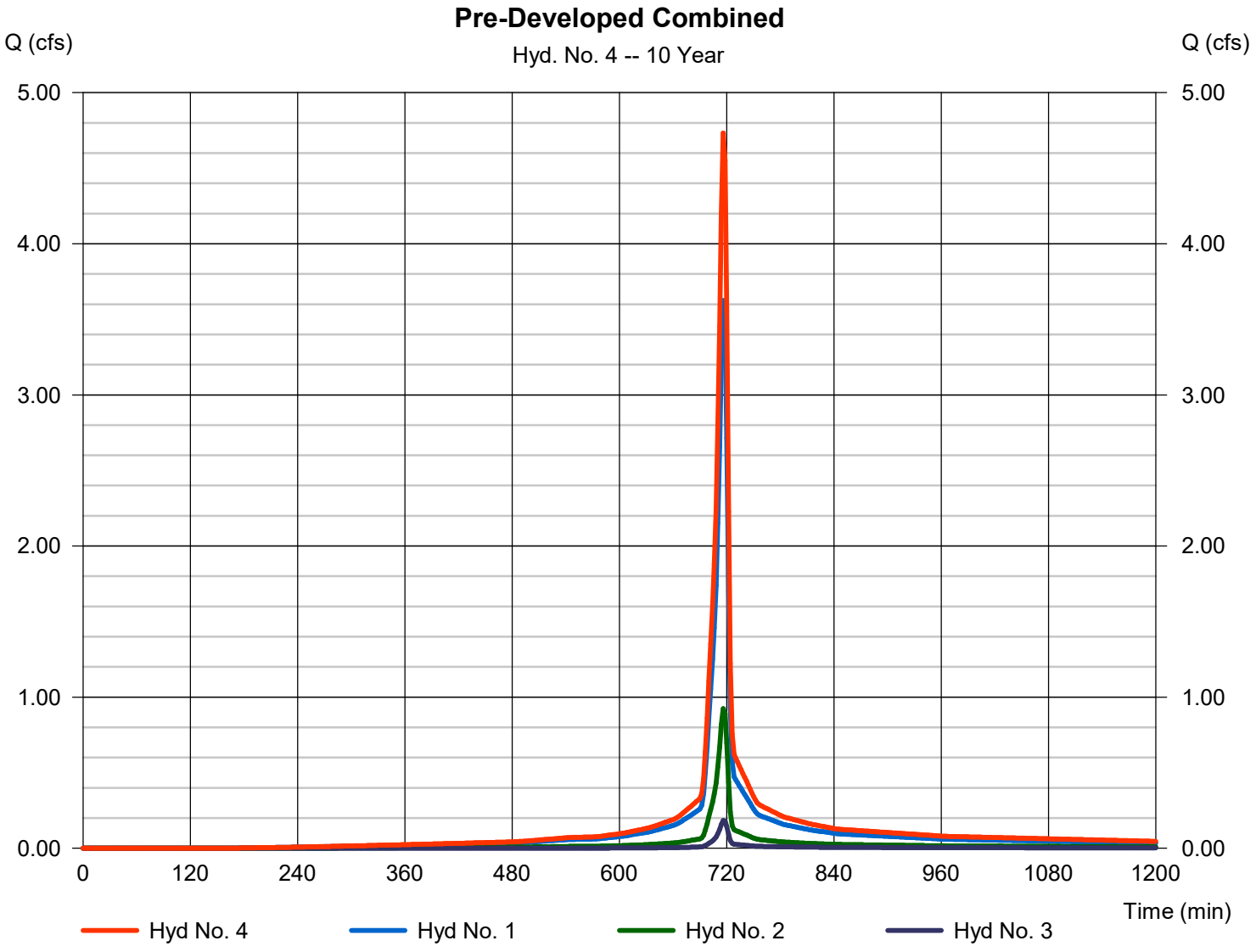


Hydrograph Report

Hyd. No. 4

Pre-Developed Combined

Hydrograph type	=	Combine	Peak discharge	=	4.733 cfs
Storm frequency	=	10 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	10,373 cuft
Inflow hyds.	=	1, 2, 3	Contrib. drain. area	=	0.750 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

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	4.524	2	716	10,159	------	------	------	DA #1 (POI #1)
2	SCS Runoff	1.169	2	716	2,548	------	------	------	DA #2 (POI #2)
3	SCS Runoff	0.247	2	716	505	------	------	------	DA #3 (POI #3)
4	Combine	5.940	2	716	13,212	1, 2, 3	------	------	Pre-Developed Combined

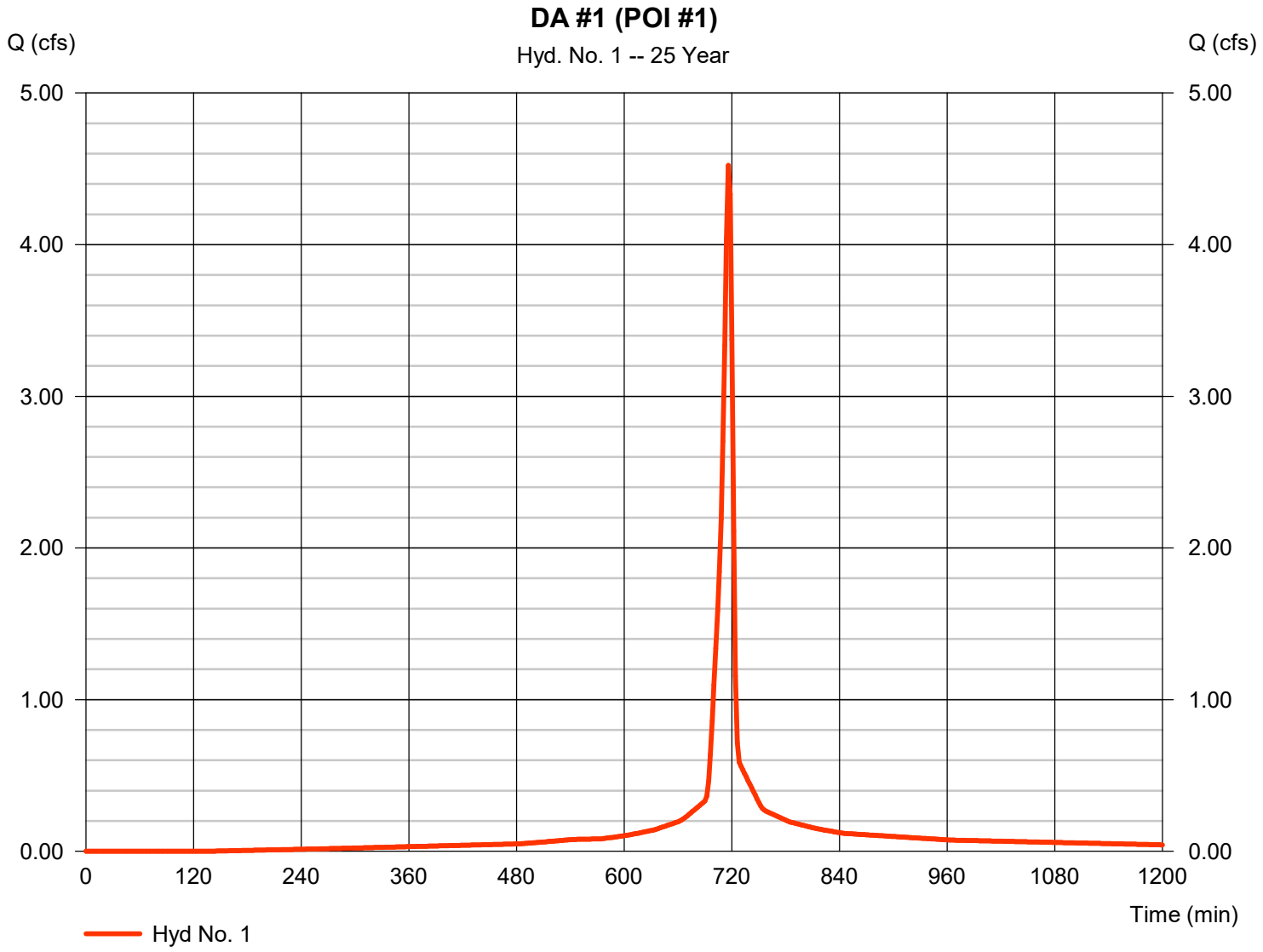
Hydrograph Report

Hyd. No. 1

DA #1 (POI #1)

Hydrograph type	=	SCS Runoff	Peak discharge	=	4.524 cfs
Storm frequency	=	25 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	10,159 cuft
Drainage area	=	0.560 ac	Curve number	=	93*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	6.15 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.050 x 78) + (0.100 x 78) + (0.410 x 98)] / 0.560



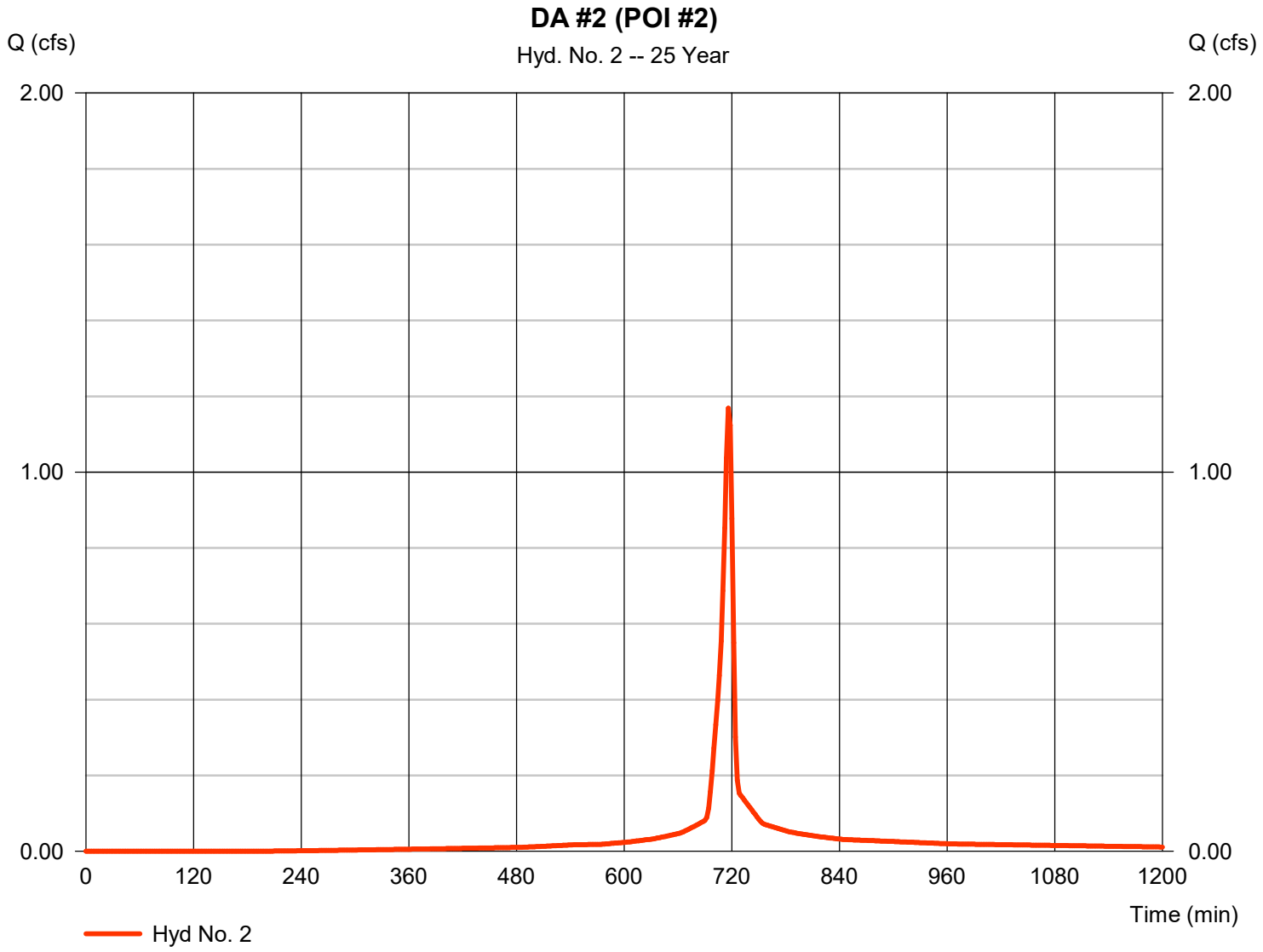
Hydrograph Report

Hyd. No. 2

DA #2 (POI #2)

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.169 cfs
Storm frequency	=	25 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	2,548 cuft
Drainage area	=	0.150 ac	Curve number	=	90*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	6.15 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.040 x 78) + (0.020 x 78) + (0.090 x 98)] / 0.150



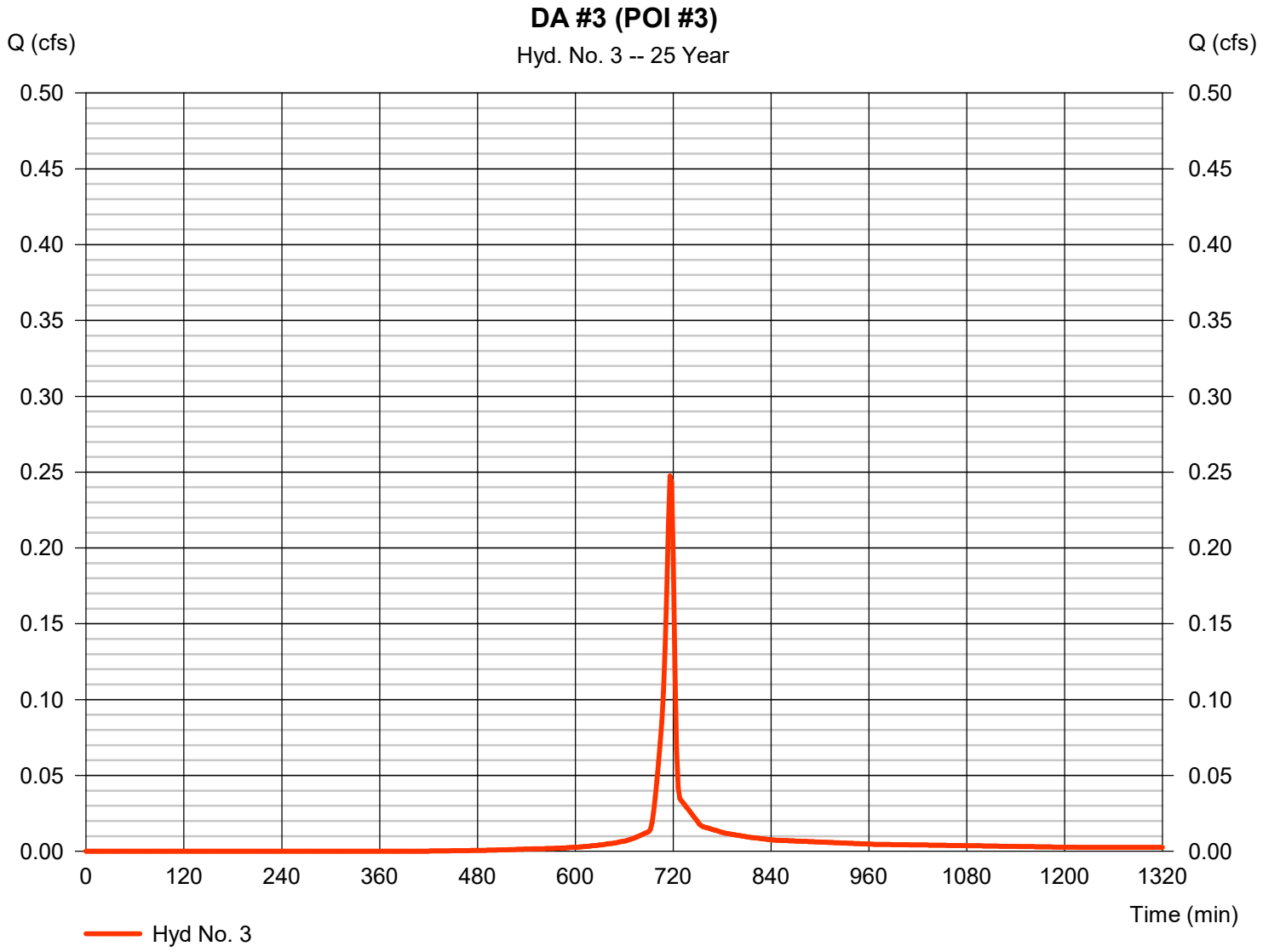
Hydrograph Report

Hyd. No. 3

DA #3 (POI #3)

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.247 cfs
Storm frequency	=	25 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	505 cuft
Drainage area	=	0.040 ac	Curve number	=	78*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	6.15 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.040 x 78)] / 0.040

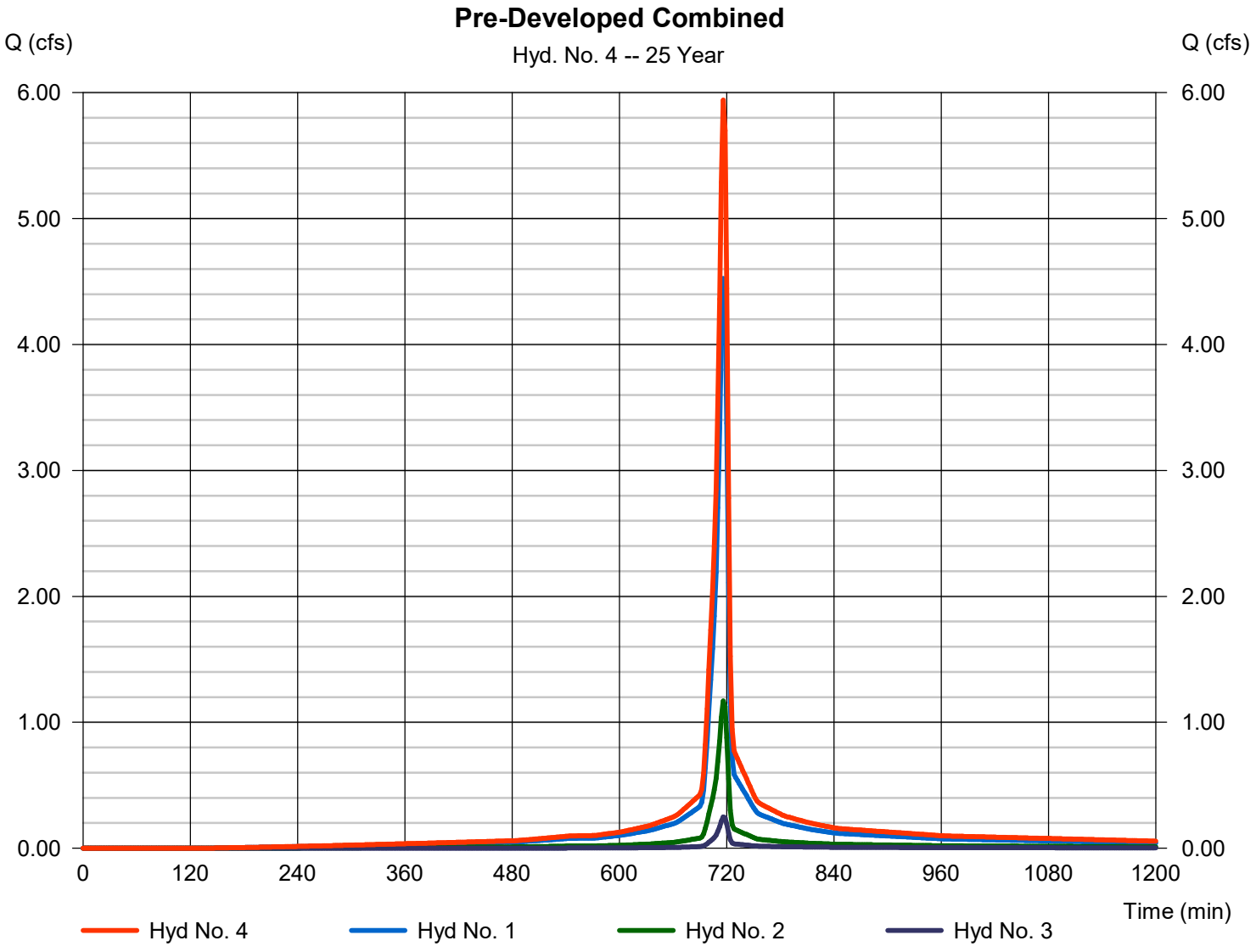


Hydrograph Report

Hyd. No. 4

Pre-Developed Combined

Hydrograph type	=	Combine	Peak discharge	=	5.940 cfs
Storm frequency	=	25 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	13,212 cuft
Inflow hyds.	=	1, 2, 3	Contrib. drain. area	=	0.750 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

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	5.292	2	716	12,006	------	------	------	DA #1 (POI #1)
2	SCS Runoff	1.377	2	716	3,038	------	------	------	DA #2 (POI #2)
3	SCS Runoff	0.304	2	716	625	------	------	------	DA #3 (POI #3)
4	Combine	6.972	2	716	15,669	1, 2, 3	------	------	Pre-Developed Combined

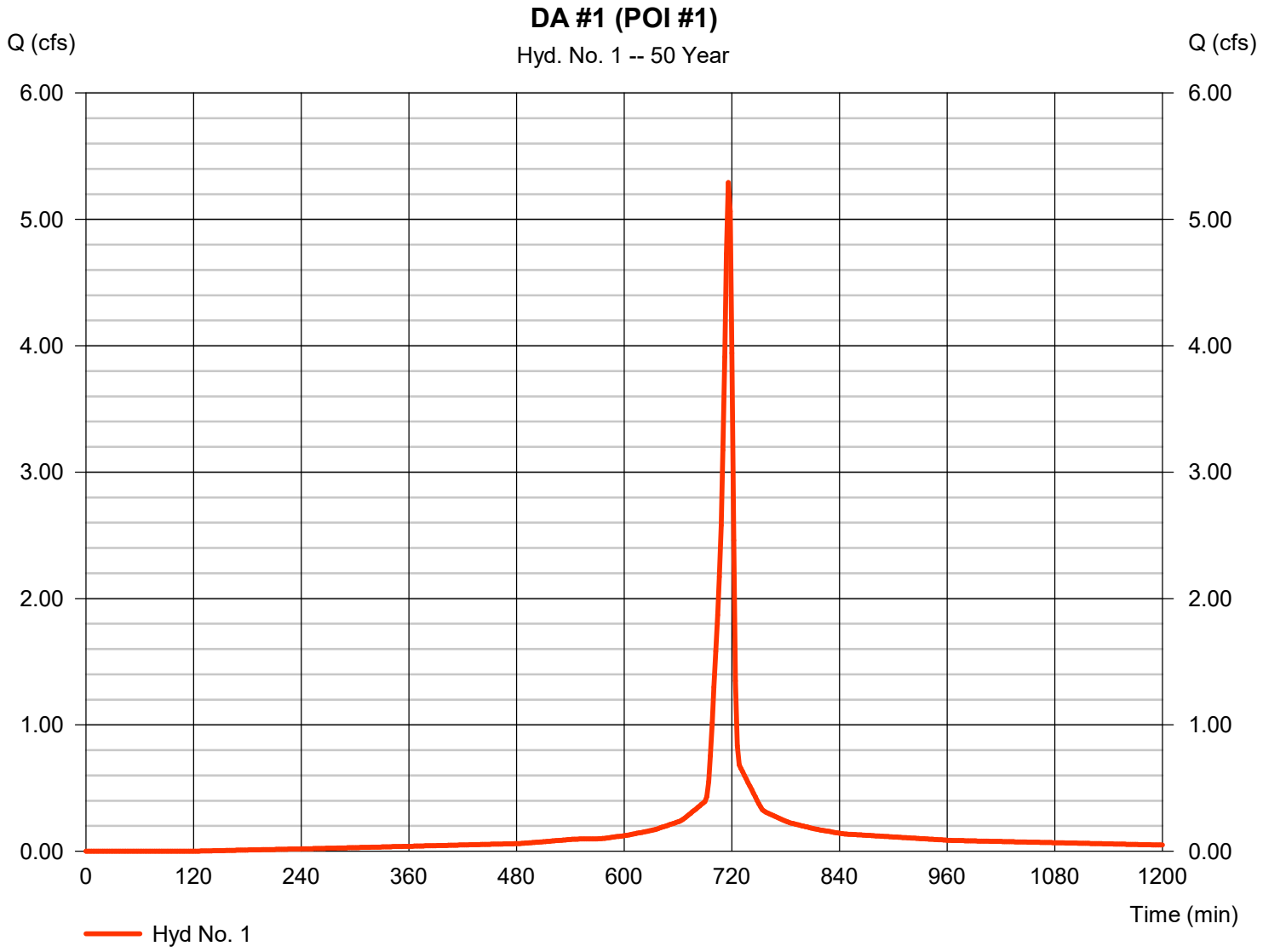
Hydrograph Report

Hyd. No. 1

DA #1 (POI #1)

Hydrograph type	=	SCS Runoff	Peak discharge	=	5.292 cfs
Storm frequency	=	50 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	12,006 cuft
Drainage area	=	0.560 ac	Curve number	=	93*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	7.13 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.050 x 78) + (0.100 x 78) + (0.410 x 98)] / 0.560



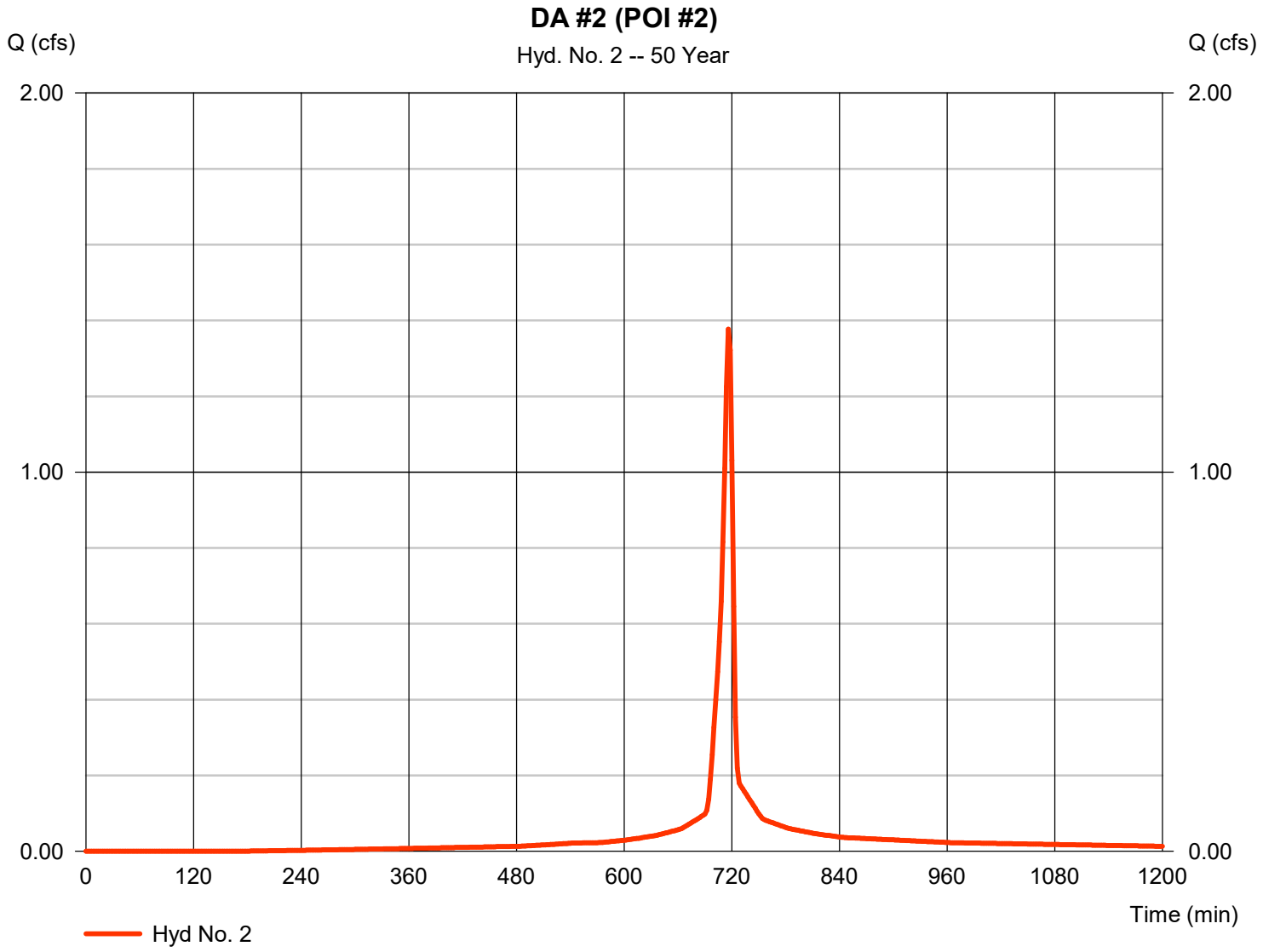
Hydrograph Report

Hyd. No. 2

DA #2 (POI #2)

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.377 cfs
Storm frequency	=	50 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	3,038 cuft
Drainage area	=	0.150 ac	Curve number	=	90*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	7.13 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.040 x 78) + (0.020 x 78) + (0.090 x 98)] / 0.150



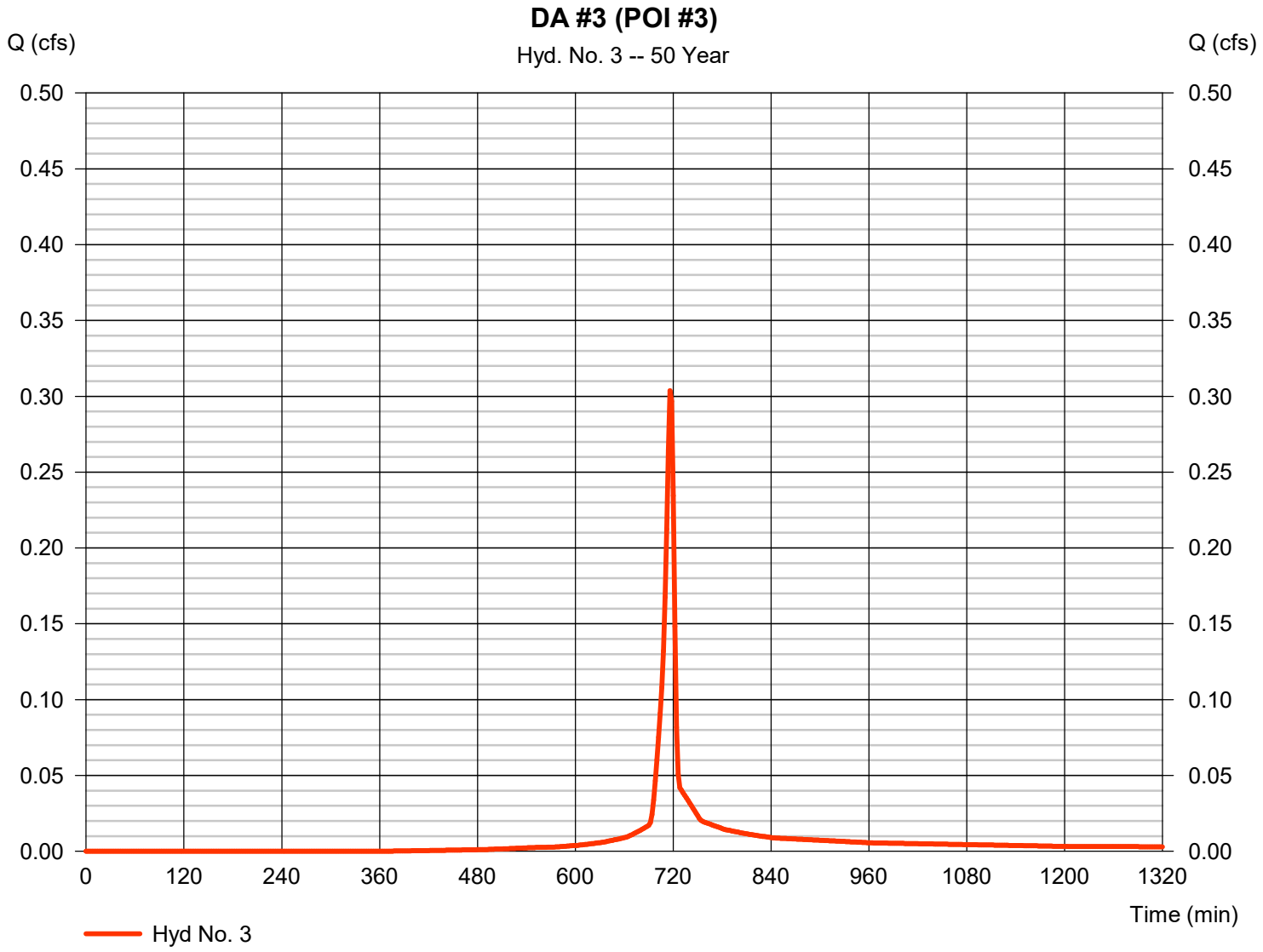
Hydrograph Report

Hyd. No. 3

DA #3 (POI #3)

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.304 cfs
Storm frequency	=	50 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	625 cuft
Drainage area	=	0.040 ac	Curve number	=	78*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	7.13 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.040 x 78)] / 0.040

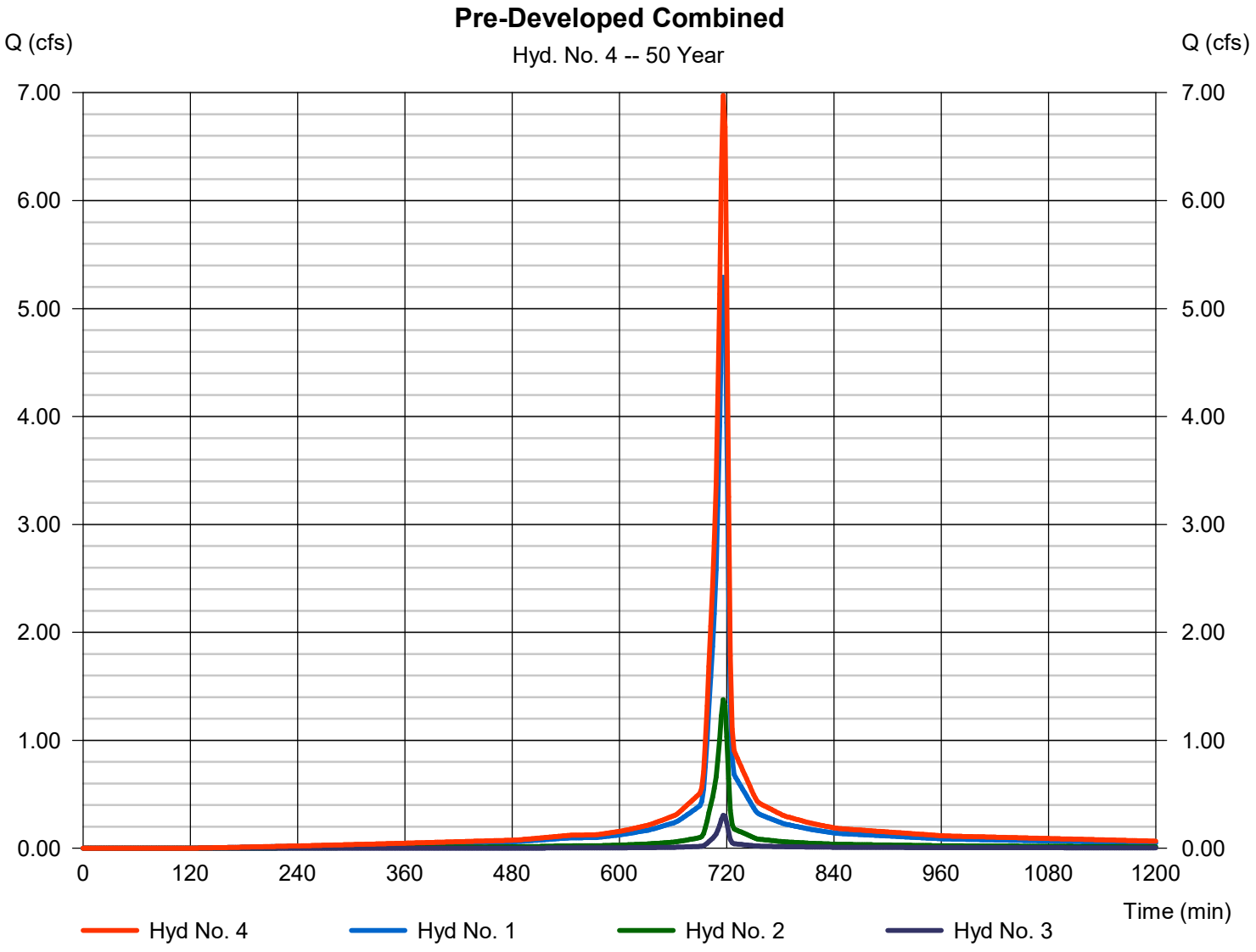


Hydrograph Report

Hyd. No. 4

Pre-Developed Combined

Hydrograph type	=	Combine	Peak discharge	=	6.972 cfs
Storm frequency	=	50 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	15,669 cuft
Inflow hyds.	=	1, 2, 3	Contrib. drain. area	=	0.750 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

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	6.134	2	716	14,047	------	------	------	DA #1 (POI #1)
2	SCS Runoff	1.606	2	716	3,580	------	------	------	DA #2 (POI #2)
3	SCS Runoff	0.366	2	716	760	------	------	------	DA #3 (POI #3)
4	Combine	8.106	2	716	18,387	1, 2, 3	------	------	Pre-Developed Combined

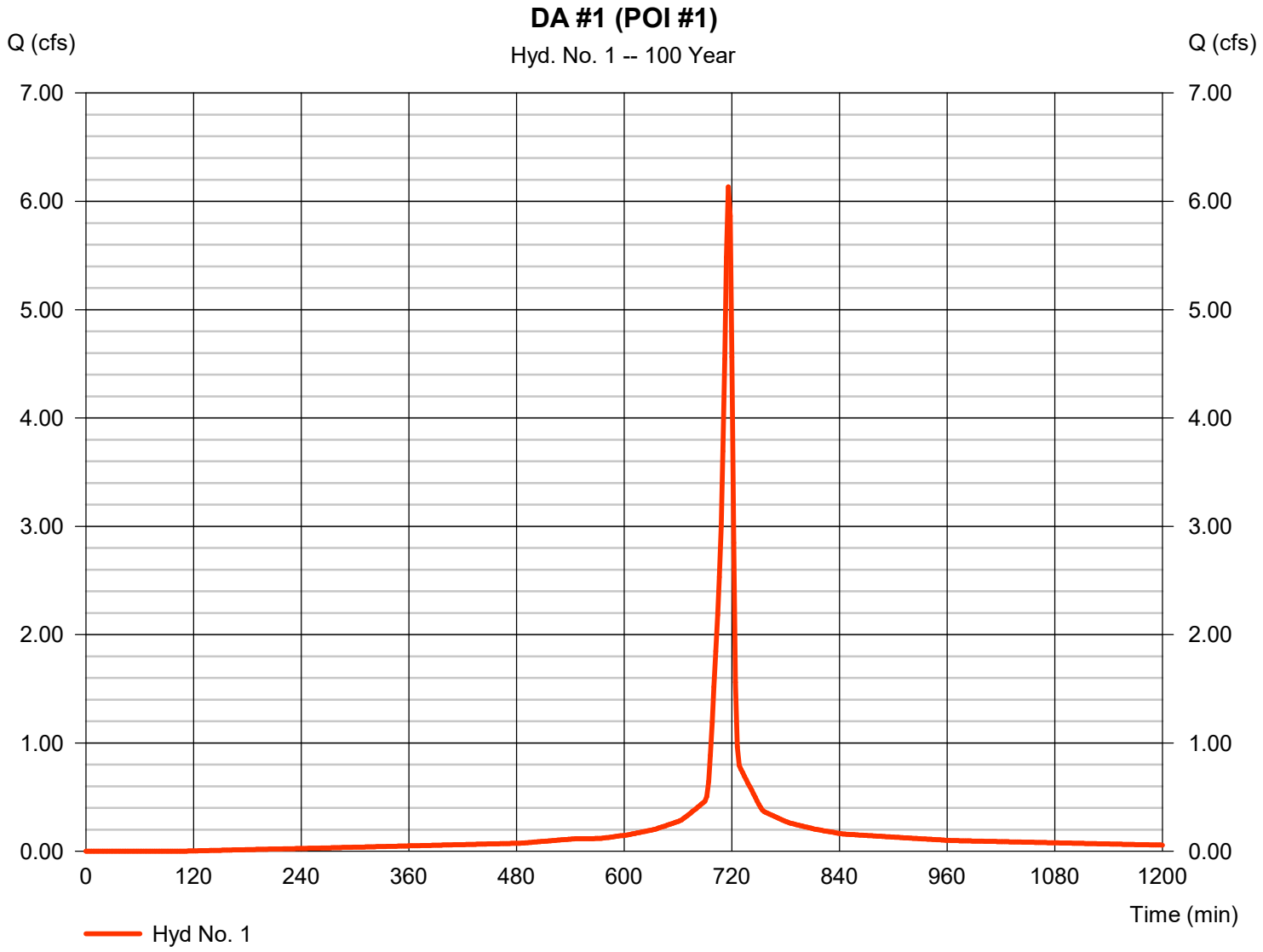
Hydrograph Report

Hyd. No. 1

DA #1 (POI #1)

Hydrograph type	=	SCS Runoff	Peak discharge	=	6.134 cfs
Storm frequency	=	100 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	14,047 cuft
Drainage area	=	0.560 ac	Curve number	=	93*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	8.21 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.050 x 78) + (0.100 x 78) + (0.410 x 98)] / 0.560



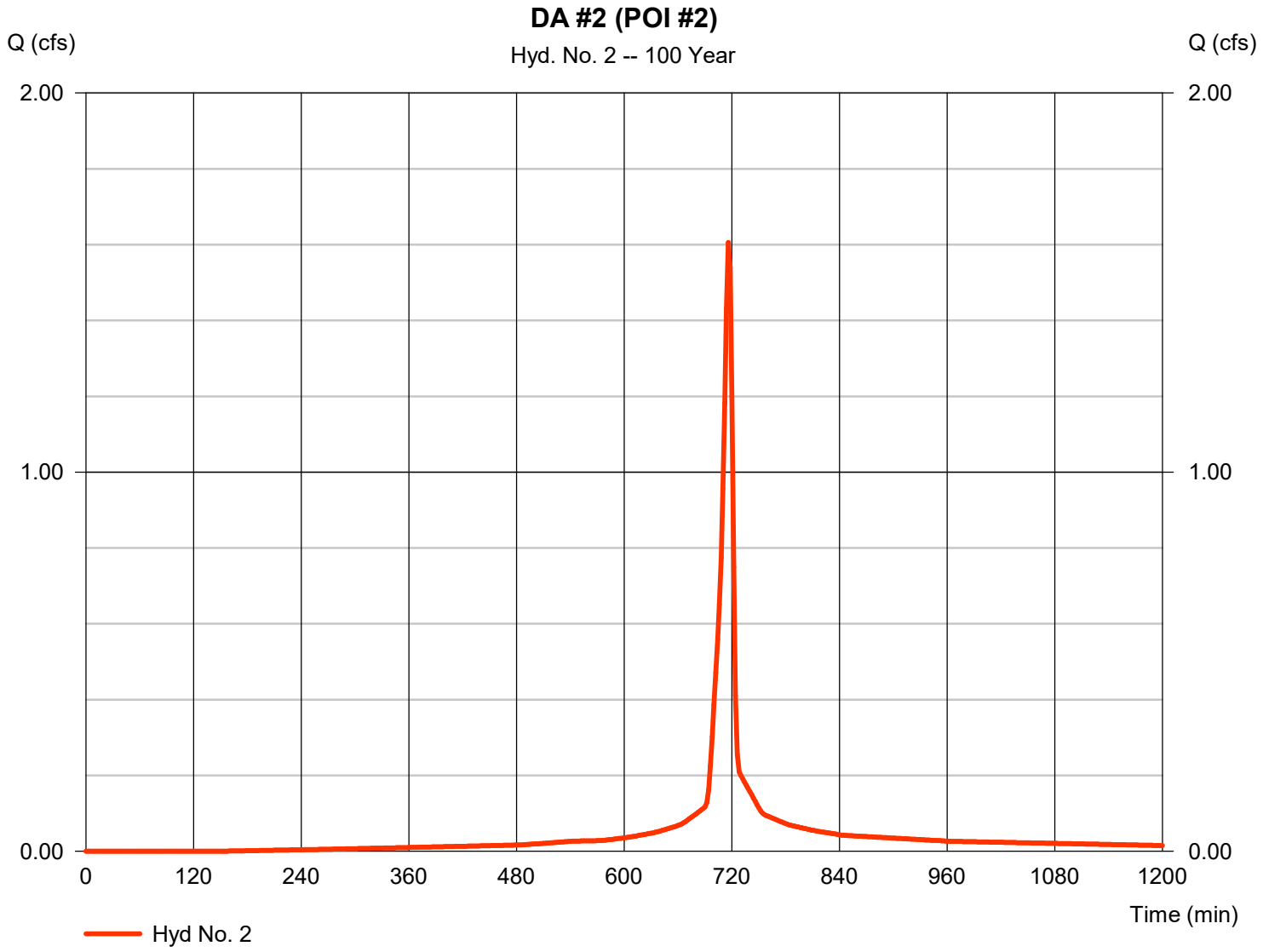
Hydrograph Report

Hyd. No. 2

DA #2 (POI #2)

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.606 cfs
Storm frequency	=	100 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	3,580 cuft
Drainage area	=	0.150 ac	Curve number	=	90*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	8.21 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.040 x 78) + (0.020 x 78) + (0.090 x 98)] / 0.150



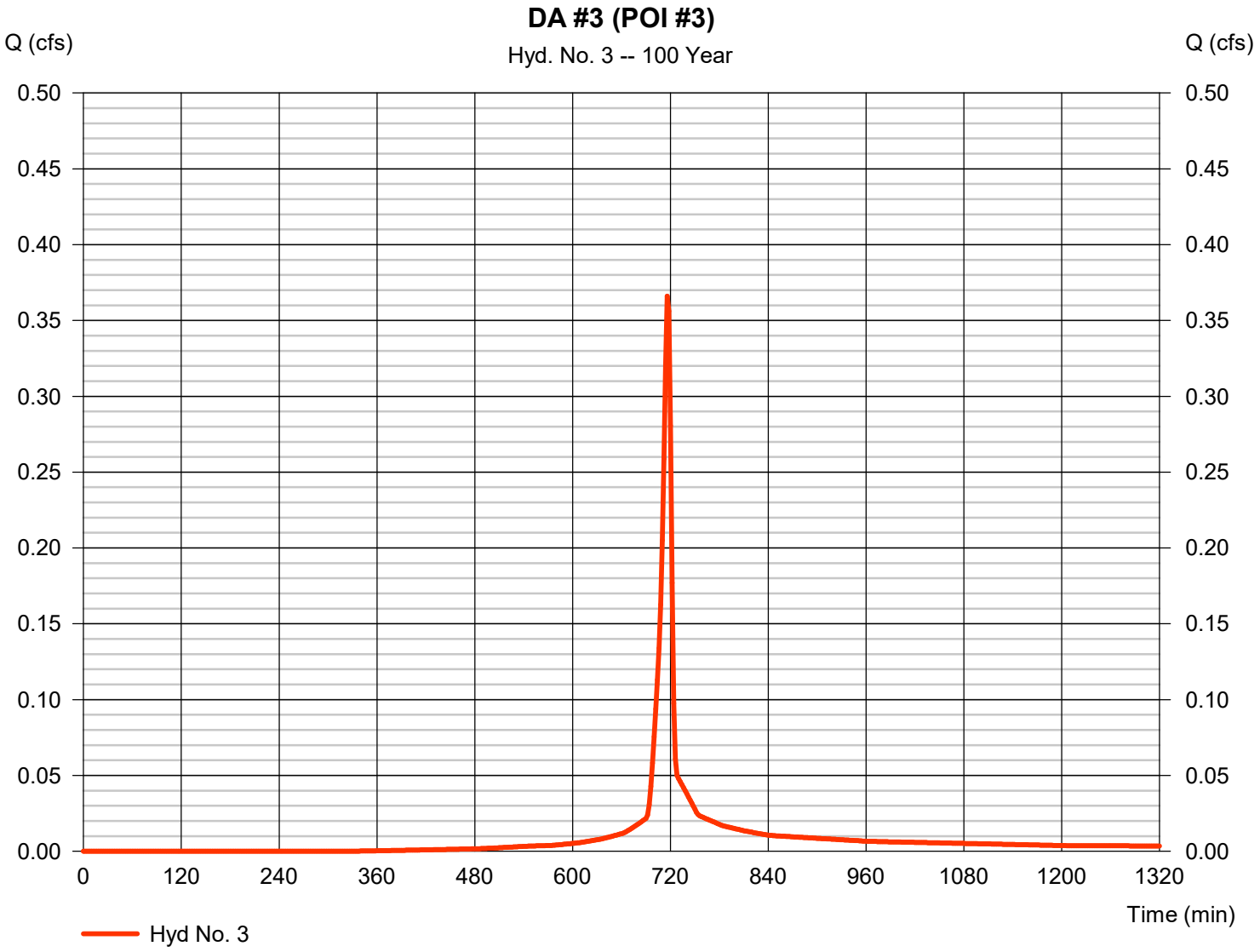
Hydrograph Report

Hyd. No. 3

DA #3 (POI #3)

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.366 cfs
Storm frequency	=	100 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	760 cuft
Drainage area	=	0.040 ac	Curve number	=	78*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	8.21 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.040 x 78)] / 0.040

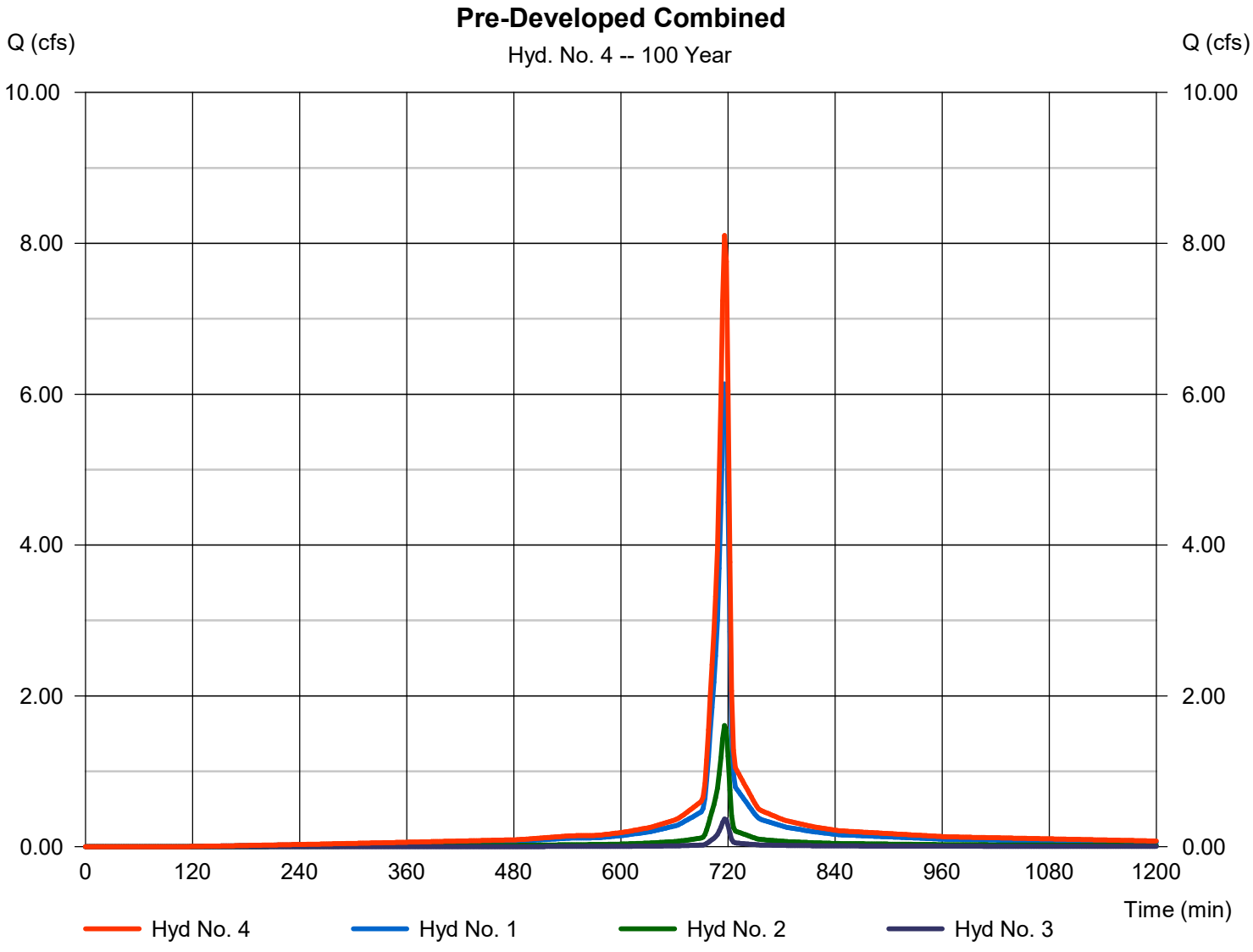


Hydrograph Report

Hyd. No. 4

Pre-Developed Combined

Hydrograph type	=	Combine	Peak discharge	=	8.106 cfs
Storm frequency	=	100 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	18,387 cuft
Inflow hyds.	=	1, 2, 3	Contrib. drain. area	=	0.750 ac



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	115.5004	22.5000	1.0000	--------
3	0.0000	0.0000	0.0000	--------
5	51.9372	9.3000	0.7907	--------
10	278.8819	24.8001	1.1120	--------
25	219.5284	23.1000	1.0246	--------
50	269.6732	24.9001	1.0391	--------
100	2352.9341	42.7999	1.4497	--------

File name: NJ IDF TABLE.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	4.20	3.55	3.08	2.72	2.43	2.20	2.01	1.85	1.71	1.59	1.49	1.40
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.34	5.00	4.17	3.59	3.17	2.85	2.59	2.38	2.21	2.06	1.93	1.82
10	6.40	5.38	4.64	4.07	3.61	3.25	2.95	2.70	2.48	2.30	2.14	2.00
25	7.20	6.09	5.27	4.64	4.15	3.75	3.42	3.14	2.91	2.70	2.53	2.37
50	7.90	6.72	5.85	5.18	4.64	4.20	3.84	3.53	3.27	3.04	2.84	2.67
100	8.65	7.49	6.57	5.82	5.21	4.70	4.27	3.90	3.58	3.31	3.06	2.85

Tc = time in minutes. Values may exceed 60.

lorgan Chase\Bensalem, PA (Bensalem)-JPM.29391\CIVIL\Engineering\Stormwater\Chase Bank Bensalem Precip.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	2.76	3.34	0.00	4.24	5.01	6.15	7.13	8.21
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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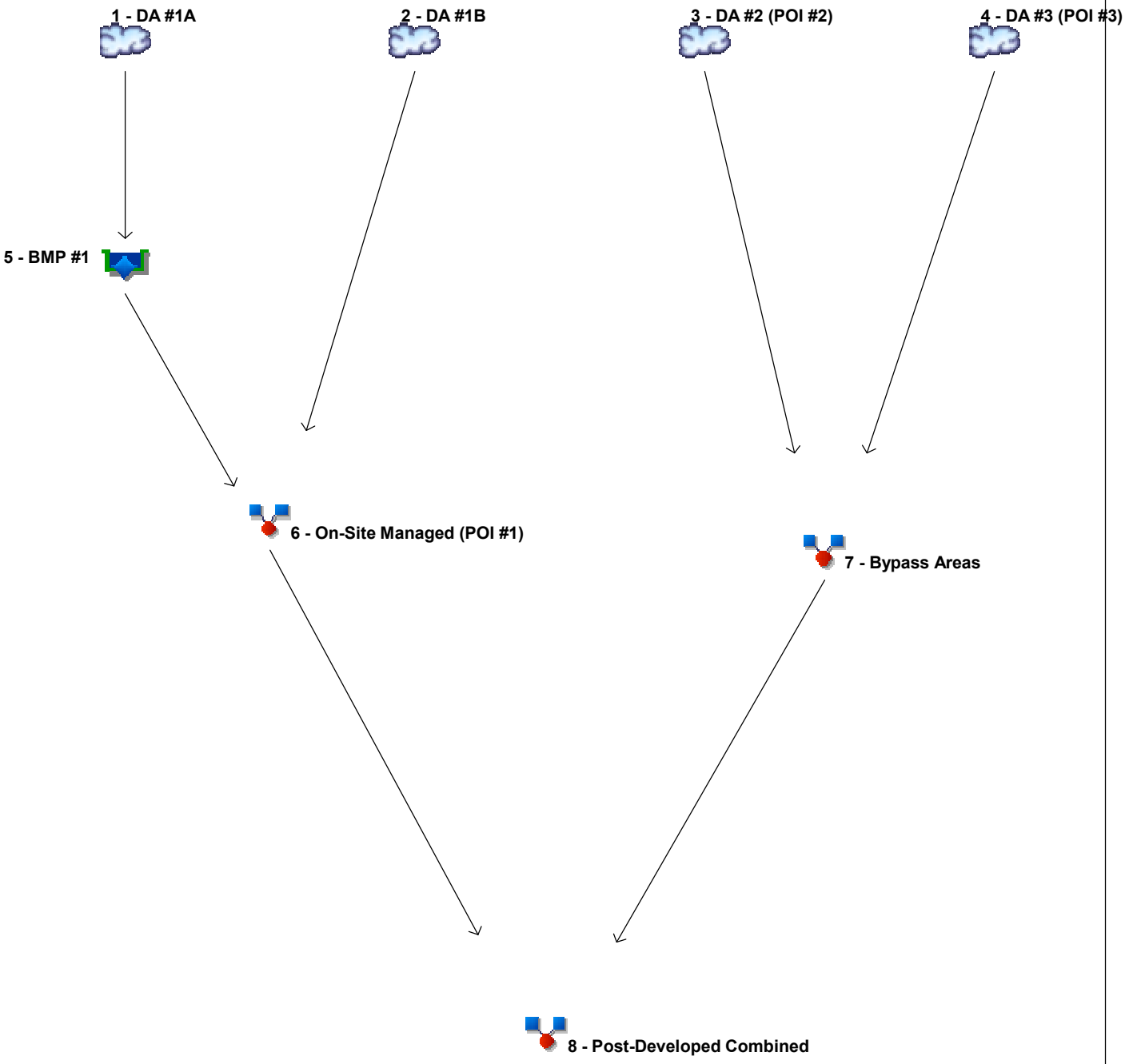
Watershed Model Schematic

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020



Legend

Hyd.	Origin	Description
1	SCS Runoff	DA #1A
2	SCS Runoff	DA #1B
3	SCS Runoff	DA #2 (POI #2)
4	SCS Runoff	DA #3 (POI #3)
5	Reservoir	BMP #1
6	Combine	On-Site Managed (POI #1)
7	Combine	Bypass Areas
8	Combine	Post-Developed Combined

Hydrograph Return Period Recap

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	------	2.056	2.562	-------	3.341	4.003	4.976	5.809	6.723	DA #1A
2	SCS Runoff	------	0.169	0.210	-------	0.274	0.328	0.408	0.476	0.551	DA #1B
3	SCS Runoff	------	0.162	0.223	-------	0.323	0.411	0.542	0.655	0.780	DA #2 (POI #2)
4	SCS Runoff	------	0.056	0.073	-------	0.099	0.121	0.154	0.182	0.212	DA #3 (POI #3)
5	Reservoir	1	0.023	0.215	-------	1.231	2.270	3.619	4.497	5.303	BMP #1
6	Combine	2, 5	0.169	0.236	-------	1.359	2.465	3.923	4.851	5.713	On-Site Managed (POI #1)
7	Combine	3, 4,	0.217	0.295	-------	0.422	0.532	0.696	0.837	0.992	Bypass Areas
8	Combine	6, 7	0.385	0.505	-------	1.567	2.876	4.455	5.551	6.638	Post-Developed Combined

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

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	2.056	2	716	4,398	------	------	------	DA #1A
2	SCS Runoff	0.169	2	716	360	------	------	------	DA #1B
3	SCS Runoff	0.162	2	718	325	------	------	------	DA #2 (POI #2)
4	SCS Runoff	0.056	2	716	115	------	------	------	DA #3 (POI #3)
5	Reservoir	0.023	2	832	187	1	102.31	2,765	BMP #1
6	Combine	0.169	2	716	548	2, 5	------	------	On-Site Managed (POI #1)
7	Combine	0.217	2	718	439	3, 4,	------	------	Bypass Areas
8	Combine	0.385	2	716	987	6, 7	------	------	Post-Developed Combined

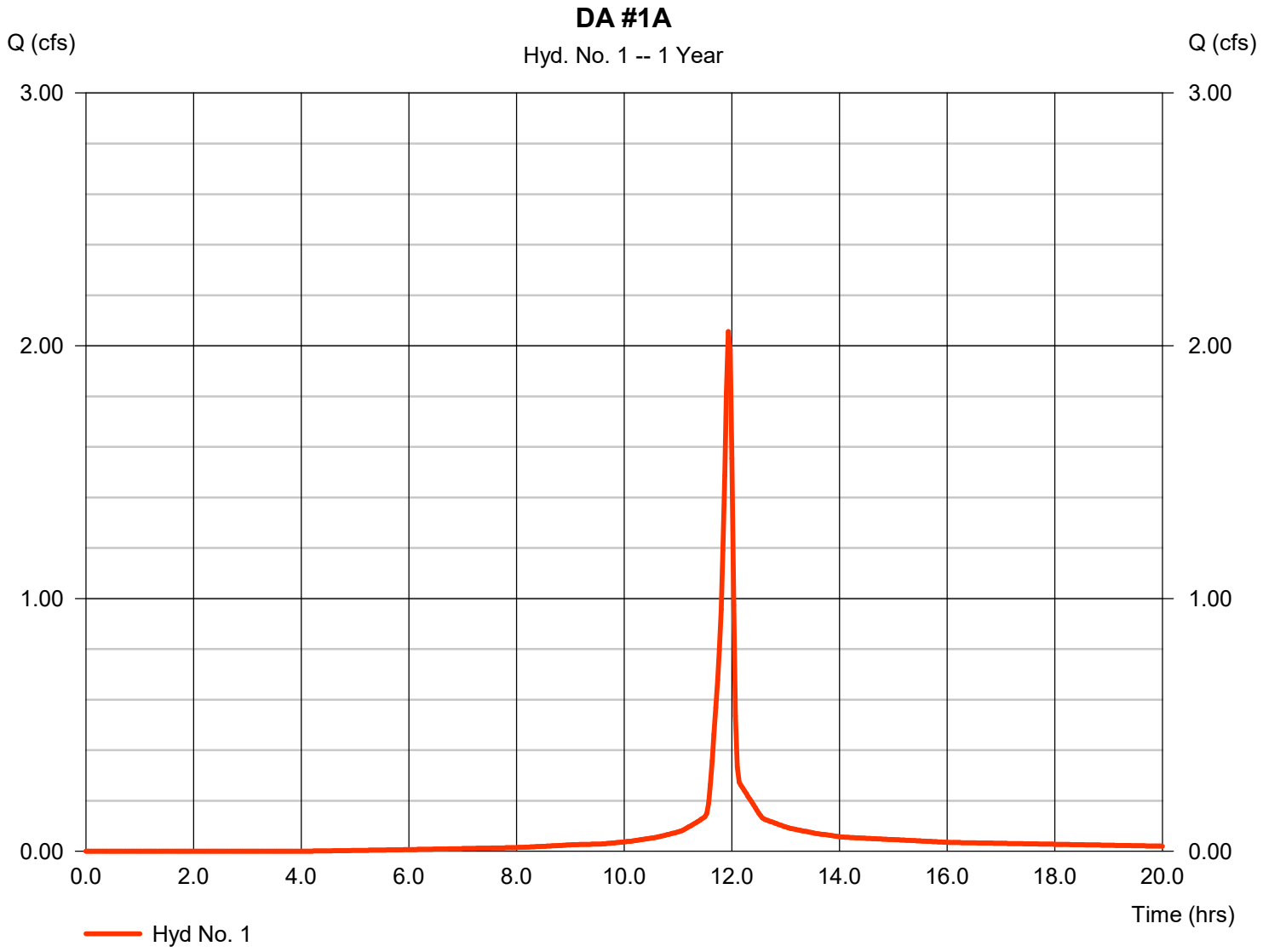
Hydrograph Report

Hyd. No. 1

DA #1A

Hydrograph type	= SCS Runoff	Peak discharge	= 2.056 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 4,398 cuft
Drainage area	= 0.610 ac	Curve number	= 94*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.140 x 80) + (0.470 x 98)] / 0.610



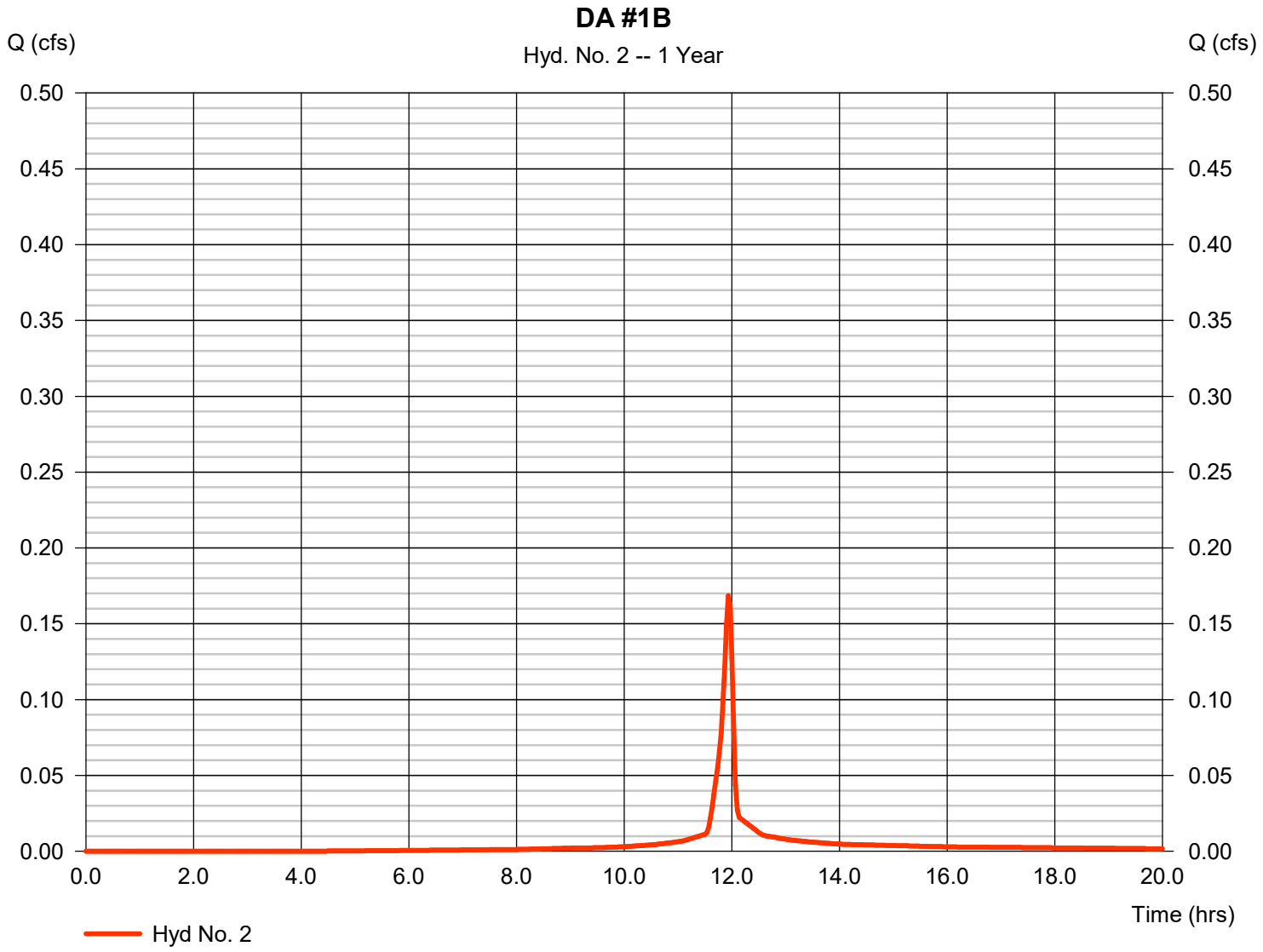
Hydrograph Report

Hyd. No. 2

DA #1B

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.169 cfs
Storm frequency	=	1 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	360 cuft
Drainage area	=	0.050 ac	Curve number	=	94*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.010 x 80) + (0.040 x 98)] / 0.050



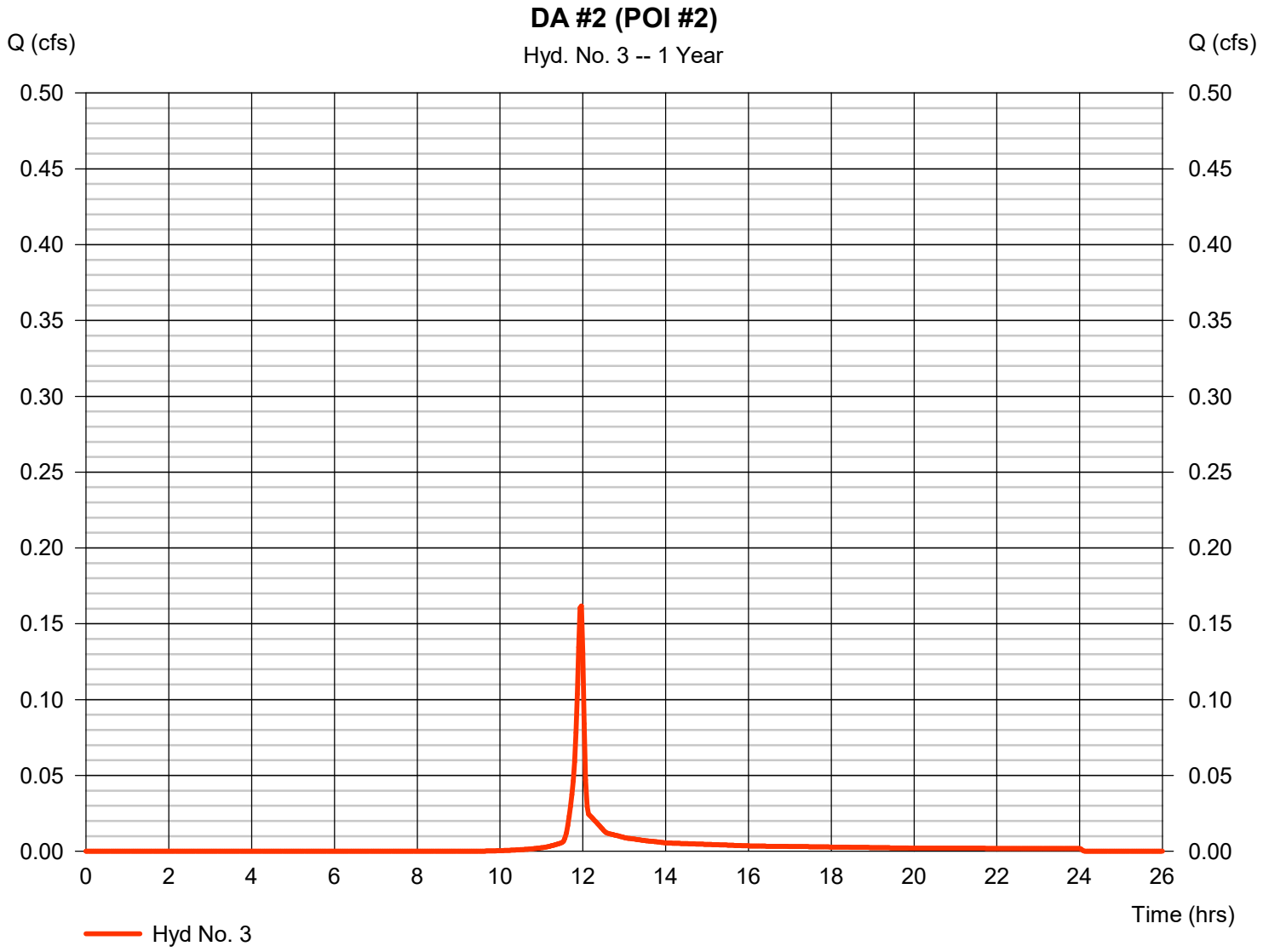
Hydrograph Report

Hyd. No. 3

DA #2 (POI #2)

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.162 cfs
Storm frequency	=	1 yrs	Time to peak	=	11.97 hrs
Time interval	=	2 min	Hyd. volume	=	325 cuft
Drainage area	=	0.080 ac	Curve number	=	82*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.070 x 80) + (0.010 x 98)] / 0.080



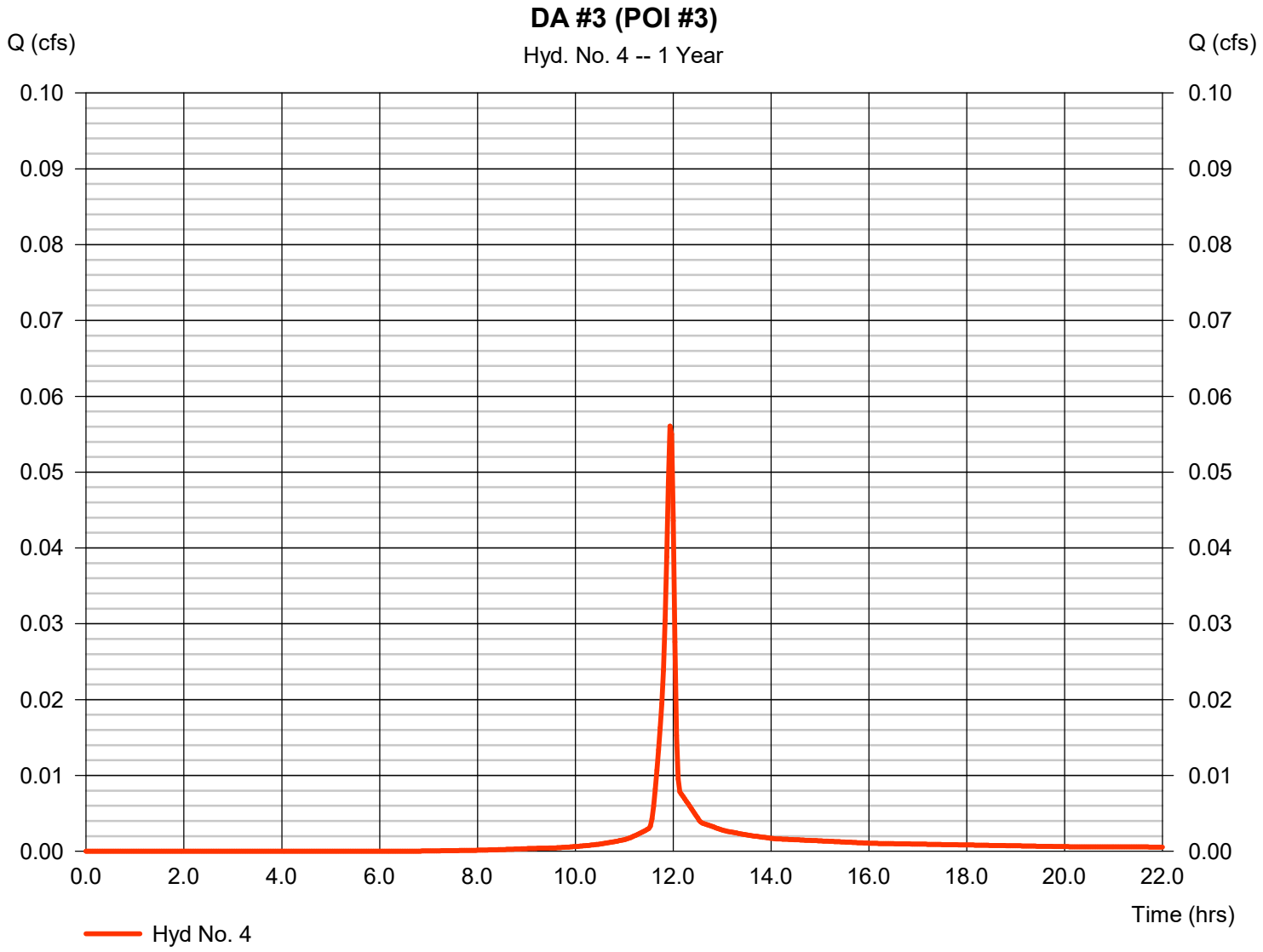
Hydrograph Report

Hyd. No. 4

DA #3 (POI #3)

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.056 cfs
Storm frequency	=	1 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	115 cuft
Drainage area	=	0.020 ac	Curve number	=	89*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.010 x 80) + (0.010 x 98)] / 0.020



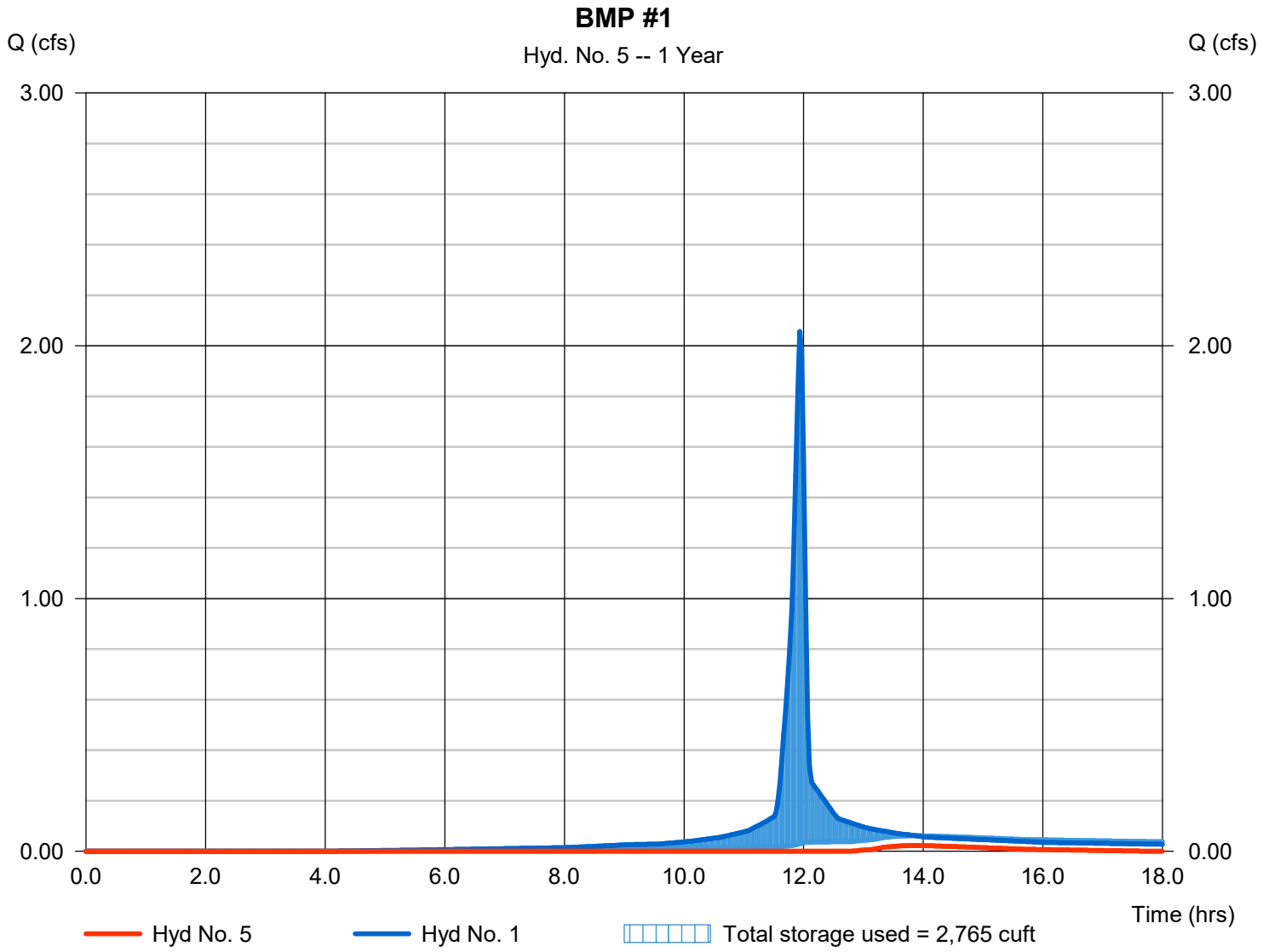
Hydrograph Report

Hyd. No. 5

BMP #1

Hydrograph type	=	Reservoir	Peak discharge	=	0.023 cfs
Storm frequency	=	1 yrs	Time to peak	=	13.87 hrs
Time interval	=	2 min	Hyd. volume	=	187 cuft
Inflow hyd. No.	=	1 - DA #1A	Max. Elevation	=	102.31 ft
Reservoir name	=	BMP #1	Max. Storage	=	2,765 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond No. 1 - BMP #1

Pond Data

UG Chambers -Invert elev. = 102.00 ft, Rise x Span = 1.50 x 1.50 ft, Barrel Len = 62.50 ft, No. Barrels = 13, Slope = 0.00%, Headers = Yes
Encasement -Invert elev. = 99.88 ft, Width = 3.00 ft, Height = 4.38 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	99.88	n/a	0	0
0.44	100.32	n/a	468	468
0.88	100.76	n/a	468	936
1.31	101.19	n/a	468	1,404
1.75	101.63	n/a	468	1,873
2.19	102.07	n/a	484	2,357
2.63	102.51	n/a	734	3,091
3.07	102.95	n/a	814	3,905
3.50	103.38	n/a	751	4,656
3.94	103.82	n/a	502	5,158
4.38	104.26	n/a	468	5,626

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15.00	Inactive	0.00	0.00
Span (in)	= 15.00	10.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 102.25	102.00	0.00	0.00
Length (ft)	= 76.00	0.00	0.00	0.00
Slope (%)	= 1.44	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)	= 103.85	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.250 (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).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	99.88	0.00	0.00	---	---	0.00	---	---	---	0.000	---	0.000
0.04	47	99.92	0.00	0.00	---	---	0.00	---	---	---	0.015	---	0.015
0.09	94	99.97	0.00	0.00	---	---	0.00	---	---	---	0.016	---	0.016
0.13	140	100.01	0.00	0.00	---	---	0.00	---	---	---	0.016	---	0.016
0.18	187	100.06	0.00	0.00	---	---	0.00	---	---	---	0.017	---	0.017
0.22	234	100.10	0.00	0.00	---	---	0.00	---	---	---	0.017	---	0.017
0.26	281	100.14	0.00	0.00	---	---	0.00	---	---	---	0.017	---	0.017
0.31	328	100.19	0.00	0.00	---	---	0.00	---	---	---	0.018	---	0.018
0.35	375	100.23	0.00	0.00	---	---	0.00	---	---	---	0.018	---	0.018
0.39	421	100.27	0.00	0.00	---	---	0.00	---	---	---	0.019	---	0.019
0.44	468	100.32	0.00	0.00	---	---	0.00	---	---	---	0.019	---	0.019
0.48	515	100.36	0.00	0.00	---	---	0.00	---	---	---	0.020	---	0.020
0.53	562	100.41	0.00	0.00	---	---	0.00	---	---	---	0.020	---	0.020
0.57	609	100.45	0.00	0.00	---	---	0.00	---	---	---	0.020	---	0.020
0.61	655	100.49	0.00	0.00	---	---	0.00	---	---	---	0.021	---	0.021
0.66	702	100.54	0.00	0.00	---	---	0.00	---	---	---	0.021	---	0.021
0.70	749	100.58	0.00	0.00	---	---	0.00	---	---	---	0.022	---	0.022
0.74	796	100.62	0.00	0.00	---	---	0.00	---	---	---	0.022	---	0.022
0.79	843	100.67	0.00	0.00	---	---	0.00	---	---	---	0.023	---	0.023
0.83	889	100.71	0.00	0.00	---	---	0.00	---	---	---	0.023	---	0.023
0.88	936	100.76	0.00	0.00	---	---	0.00	---	---	---	0.023	---	0.023
0.92	983	100.80	0.00	0.00	---	---	0.00	---	---	---	0.024	---	0.024
0.96	1,030	100.84	0.00	0.00	---	---	0.00	---	---	---	0.024	---	0.024
1.01	1,077	100.89	0.00	0.00	---	---	0.00	---	---	---	0.025	---	0.025
1.05	1,124	100.93	0.00	0.00	---	---	0.00	---	---	---	0.025	---	0.025
1.09	1,170	100.97	0.00	0.00	---	---	0.00	---	---	---	0.026	---	0.026
1.14	1,217	101.02	0.00	0.00	---	---	0.00	---	---	---	0.026	---	0.026
1.18	1,264	101.06	0.00	0.00	---	---	0.00	---	---	---	0.026	---	0.026
1.23	1,311	101.11	0.00	0.00	---	---	0.00	---	---	---	0.027	---	0.027
1.27	1,358	101.15	0.00	0.00	---	---	0.00	---	---	---	0.027	---	0.027
1.31	1,404	101.19	0.00	0.00	---	---	0.00	---	---	---	0.028	---	0.028
1.36	1,451	101.24	0.00	0.00	---	---	0.00	---	---	---	0.028	---	0.028

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BMP #1

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
1.40	1,498	101.28	0.00	0.00	---	---	0.00	---	---	---	0.029	---	0.029
1.45	1,545	101.33	0.00	0.00	---	---	0.00	---	---	---	0.029	---	0.029
1.49	1,592	101.37	0.00	0.00	---	---	0.00	---	---	---	0.029	---	0.029
1.53	1,638	101.41	0.00	0.00	---	---	0.00	---	---	---	0.030	---	0.030
1.58	1,685	101.46	0.00	0.00	---	---	0.00	---	---	---	0.030	---	0.030
1.62	1,732	101.50	0.00	0.00	---	---	0.00	---	---	---	0.031	---	0.031
1.66	1,779	101.54	0.00	0.00	---	---	0.00	---	---	---	0.031	---	0.031
1.71	1,826	101.59	0.00	0.00	---	---	0.00	---	---	---	0.032	---	0.032
1.75	1,873	101.63	0.00	0.00	---	---	0.00	---	---	---	0.032	---	0.032
1.80	1,921	101.68	0.00	0.00	---	---	0.00	---	---	---	0.032	---	0.032
1.84	1,969	101.72	0.00	0.00	---	---	0.00	---	---	---	0.033	---	0.033
1.88	2,018	101.76	0.00	0.00	---	---	0.00	---	---	---	0.033	---	0.033
1.93	2,066	101.81	0.00	0.00	---	---	0.00	---	---	---	0.034	---	0.034
1.97	2,115	101.85	0.00	0.00	---	---	0.00	---	---	---	0.034	---	0.034
2.01	2,163	101.89	0.00	0.00	---	---	0.00	---	---	---	0.035	---	0.035
2.06	2,211	101.94	0.00	0.00	---	---	0.00	---	---	---	0.035	---	0.035
2.10	2,260	101.98	0.00	0.00	---	---	0.00	---	---	---	0.036	---	0.036
2.15	2,308	102.03	0.00	0.00	---	---	0.00	---	---	---	0.036	---	0.036
2.19	2,357	102.07	0.00	0.00	---	---	0.00	---	---	---	0.036	---	0.036
2.23	2,430	102.11	0.00	0.00	---	---	0.00	---	---	---	0.037	---	0.037
2.28	2,503	102.16	0.00	0.00	---	---	0.00	---	---	---	0.037	---	0.037
2.32	2,577	102.20	0.00	0.00	---	---	0.00	---	---	---	0.038	---	0.038
2.37	2,650	102.25	0.00	0.00	---	---	0.00	---	---	---	0.038	---	0.038
2.41	2,724	102.29	0.01 ic	0.00	---	---	0.00	---	---	---	0.039	---	0.046
2.45	2,797	102.33	0.03 ic	0.00	---	---	0.00	---	---	---	0.039	---	0.073
2.50	2,870	102.38	0.08 ic	0.00	---	---	0.00	---	---	---	0.039	---	0.119
2.54	2,944	102.42	0.14 ic	0.00	---	---	0.00	---	---	---	0.040	---	0.181
2.58	3,017	102.46	0.22 ic	0.00	---	---	0.00	---	---	---	0.040	---	0.261
2.63	3,091	102.51	0.32 ic	0.00	---	---	0.00	---	---	---	0.041	---	0.358
2.67	3,172	102.55	0.43 ic	0.00	---	---	0.00	---	---	---	0.041	---	0.470
2.72	3,253	102.60	0.55 ic	0.00	---	---	0.00	---	---	---	0.042	---	0.595
2.76	3,335	102.64	0.69 ic	0.00	---	---	0.00	---	---	---	0.042	---	0.735
2.80	3,416	102.68	0.85 ic	0.00	---	---	0.00	---	---	---	0.042	---	0.890
2.85	3,498	102.73	1.01 ic	0.00	---	---	0.00	---	---	---	0.043	---	1.055
2.89	3,579	102.77	1.19 ic	0.00	---	---	0.00	---	---	---	0.043	---	1.234
2.93	3,660	102.81	1.38 ic	0.00	---	---	0.00	---	---	---	0.044	---	1.423
2.98	3,742	102.86	1.58 ic	0.00	---	---	0.00	---	---	---	0.044	---	1.621
3.02	3,823	102.90	1.78 ic	0.00	---	---	0.00	---	---	---	0.045	---	1.826
3.07	3,905	102.95	2.00 ic	0.00	---	---	0.00	---	---	---	0.045	---	2.041
3.11	3,980	102.99	2.22 ic	0.00	---	---	0.00	---	---	---	0.045	---	2.262
3.15	4,055	103.03	2.44 ic	0.00	---	---	0.00	---	---	---	0.046	---	2.488
3.20	4,130	103.08	2.67 ic	0.00	---	---	0.00	---	---	---	0.046	---	2.716
3.24	4,205	103.12	2.90 ic	0.00	---	---	0.00	---	---	---	0.047	---	2.950
3.28	4,280	103.17	3.14 ic	0.00	---	---	0.00	---	---	---	0.047	---	3.185
3.33	4,355	103.21	3.37 ic	0.00	---	---	0.00	---	---	---	0.048	---	3.416
3.37	4,430	103.25	3.60 ic	0.00	---	---	0.00	---	---	---	0.048	---	3.645
3.42	4,506	103.30	3.82 ic	0.00	---	---	0.00	---	---	---	0.048	---	3.872
3.46	4,581	103.34	4.04 ic	0.00	---	---	0.00	---	---	---	0.049	---	4.087
3.50	4,656	103.38	4.24 ic	0.00	---	---	0.00	---	---	---	0.049	---	4.291
3.55	4,706	103.43	4.43 ic	0.00	---	---	0.00	---	---	---	0.050	---	4.479
3.59	4,756	103.47	4.59 ic	0.00	---	---	0.00	---	---	---	0.050	---	4.642
3.64	4,806	103.52	4.73 ic	0.00	---	---	0.00	---	---	---	0.051	---	4.779
3.68	4,857	103.56	4.89 ic	0.00	---	---	0.00	---	---	---	0.051	---	4.938
3.72	4,907	103.60	5.04 ic	0.00	---	---	0.00	---	---	---	0.051	---	5.092
3.77	4,957	103.65	5.19 ic	0.00	---	---	0.00	---	---	---	0.052	---	5.242
3.81	5,007	103.69	5.34 ic	0.00	---	---	0.00	---	---	---	0.052	---	5.388
3.85	5,057	103.73	5.48 ic	0.00	---	---	0.00	---	---	---	0.053	---	5.530
3.90	5,107	103.78	5.61 ic	0.00	---	---	0.00	---	---	---	0.053	---	5.668
3.94	5,158	103.82	5.75 ic	0.00	---	---	0.00	---	---	---	0.054	---	5.803
3.99	5,204	103.87	5.88 ic	0.00	---	---	0.00	---	---	---	0.054	---	5.935
4.03	5,251	103.91	6.01 ic	0.00	---	---	0.00	---	---	---	0.054	---	6.064
4.07	5,298	103.95	6.14 ic	0.00	---	---	0.00	---	---	---	0.055	---	6.190
4.12	5,345	104.00	6.26 ic	0.00	---	---	0.00	---	---	---	0.055	---	6.314
4.16	5,392	104.04	6.38 ic	0.00	---	---	0.00	---	---	---	0.056	---	6.435
4.20	5,438	104.08	6.50 ic	0.00	---	---	0.00	---	---	---	0.056	---	6.555
4.25	5,485	104.13	6.61 ic	0.00	---	---	0.00	---	---	---	0.057	---	6.672
4.29	5,532	104.17	6.73 ic	0.00	---	---	0.00	---	---	---	0.057	---	6.787
4.34	5,579	104.22	6.84 ic	0.00	---	---	0.00	---	---	---	0.058	---	6.900
4.38	5,626	104.26	6.95 ic	0.00	---	---	0.00	---	---	---	0.058	---	7.011

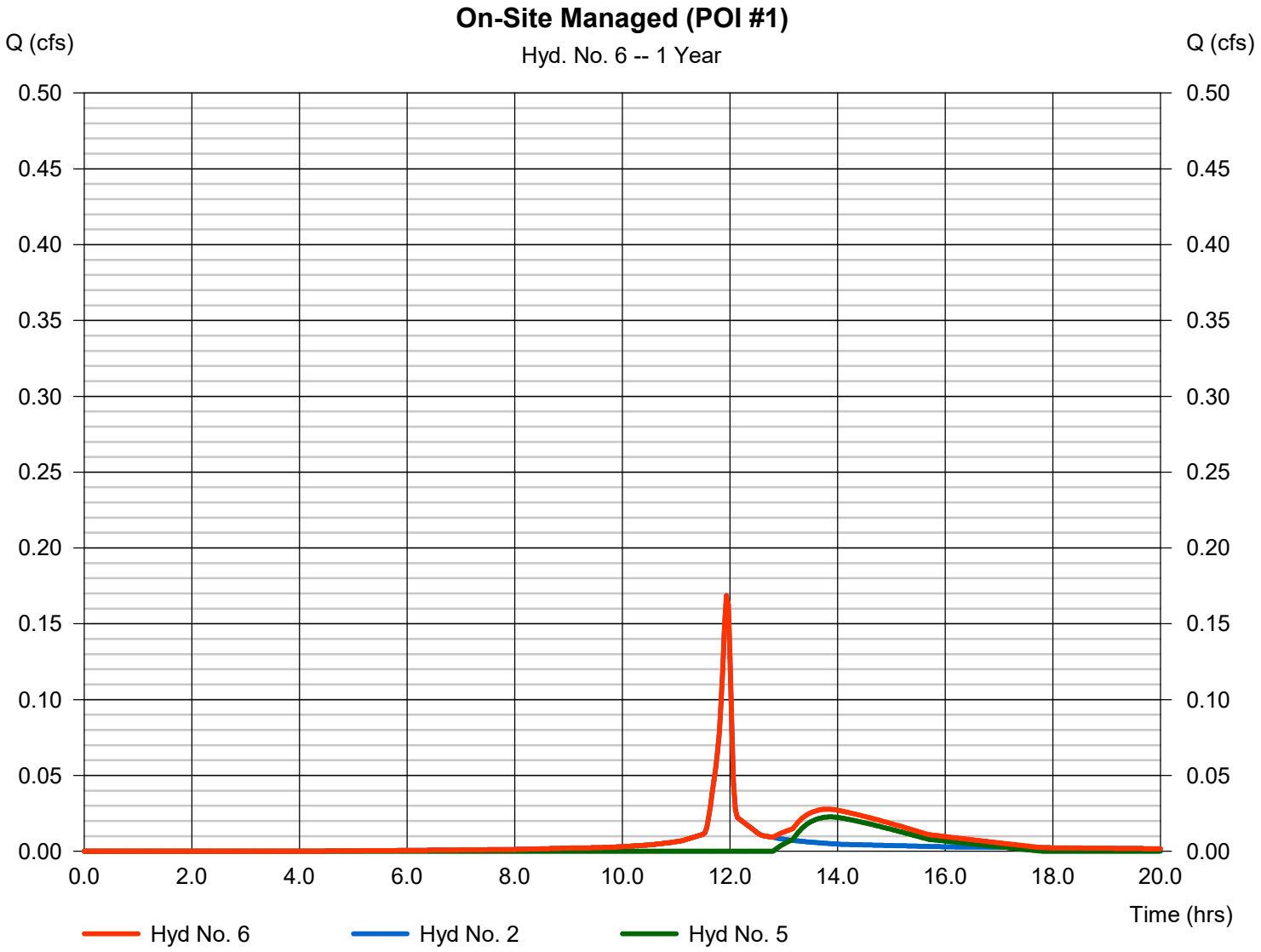
...End

Hydrograph Report

Hyd. No. 6

On-Site Managed (POI #1)

Hydrograph type	= Combine	Peak discharge	= 0.169 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 548 cuft
Inflow hyds.	= 2, 5	Contrib. drain. area	= 0.050 ac

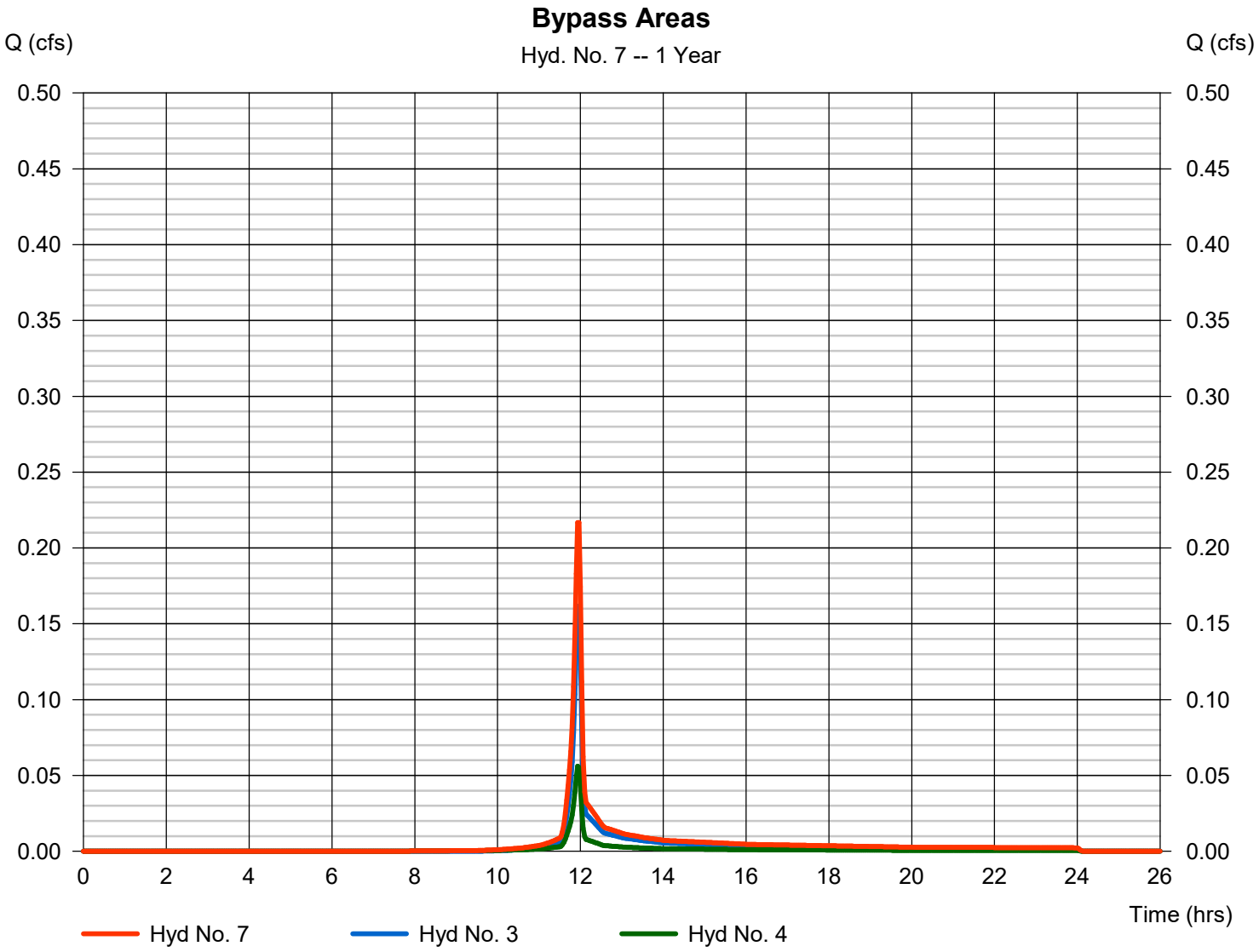


Hydrograph Report

Hyd. No. 7

Bypass Areas

Hydrograph type	= Combine	Peak discharge	= 0.217 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 439 cuft
Inflow hyds.	= 3, 4	Contrib. drain. area	= 0.100 ac

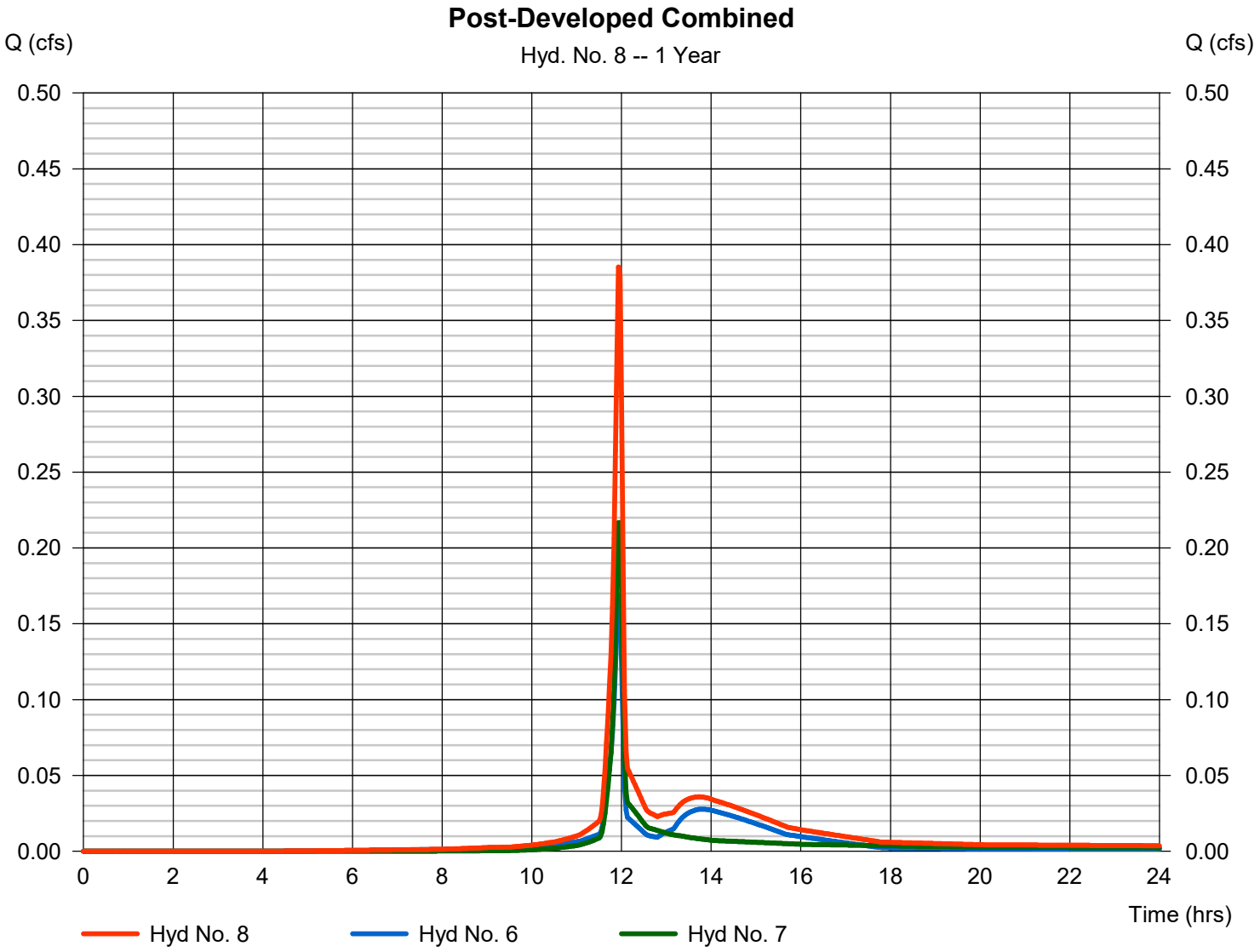


Hydrograph Report

Hyd. No. 8

Post-Developed Combined

Hydrograph type	=	Combine	Peak discharge	=	0.385 cfs
Storm frequency	=	1 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	987 cuft
Inflow hyds.	=	6, 7	Contrib. drain. area	=	0.000 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

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	2.562	2	716	5,563	------	------	------	DA #1A
2	SCS Runoff	0.210	2	716	456	------	------	------	DA #1B
3	SCS Runoff	0.223	2	716	450	------	------	------	DA #2 (POI #2)
4	SCS Runoff	0.073	2	716	150	------	------	------	DA #3 (POI #3)
5	Reservoir	0.215	2	740	1,134	1	102.46	3,011	BMP #1
6	Combine	0.236	2	738	1,590	2, 5	------	------	On-Site Managed (POI #1)
7	Combine	0.295	2	716	600	3, 4,	------	------	Bypass Areas
8	Combine	0.505	2	716	2,190	6, 7	------	------	Post-Developed Combined

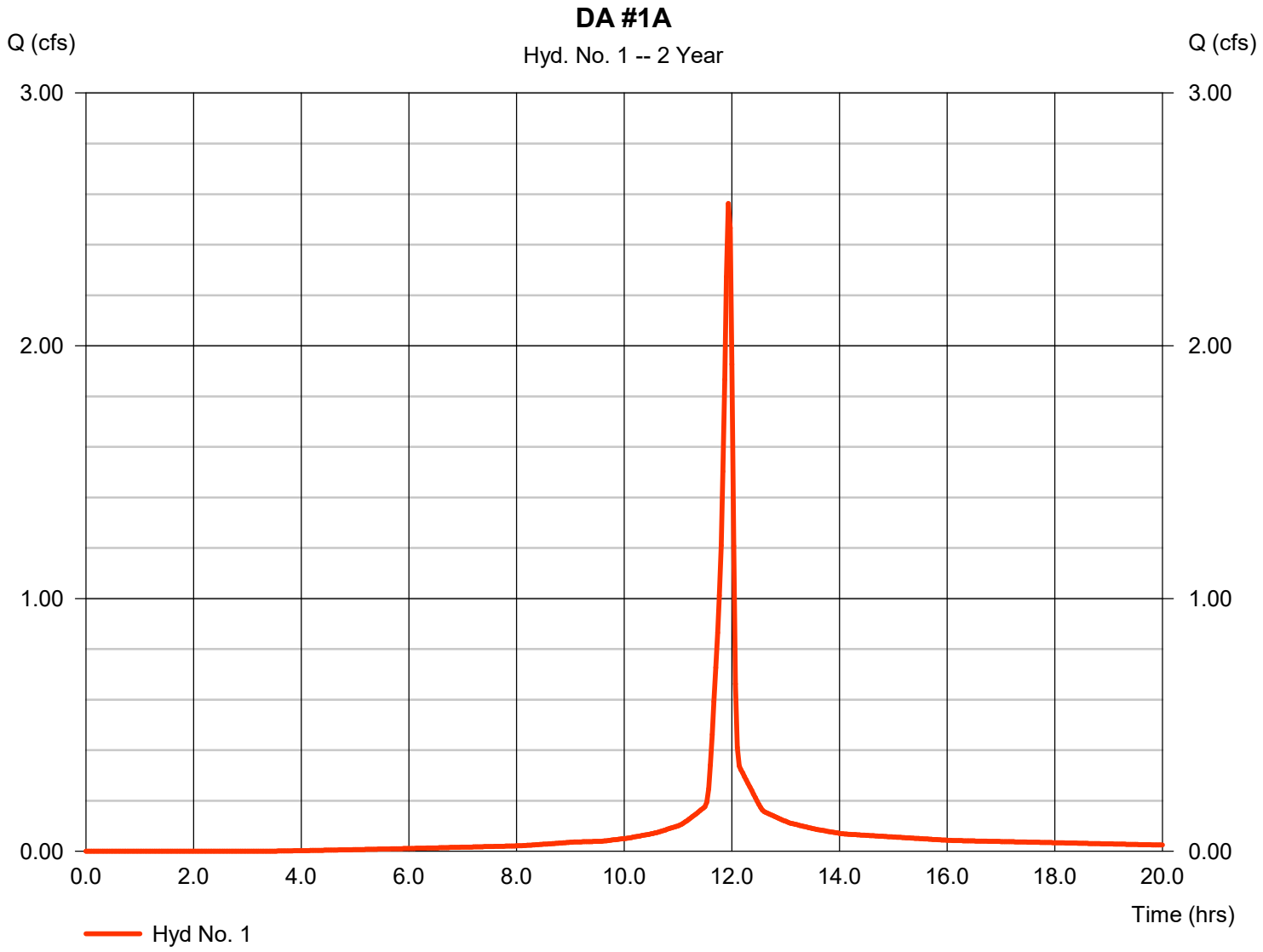
Hydrograph Report

Hyd. No. 1

DA #1A

Hydrograph type	= SCS Runoff	Peak discharge	= 2.562 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 5,563 cuft
Drainage area	= 0.610 ac	Curve number	= 94*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.34 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.140 x 80) + (0.470 x 98)] / 0.610



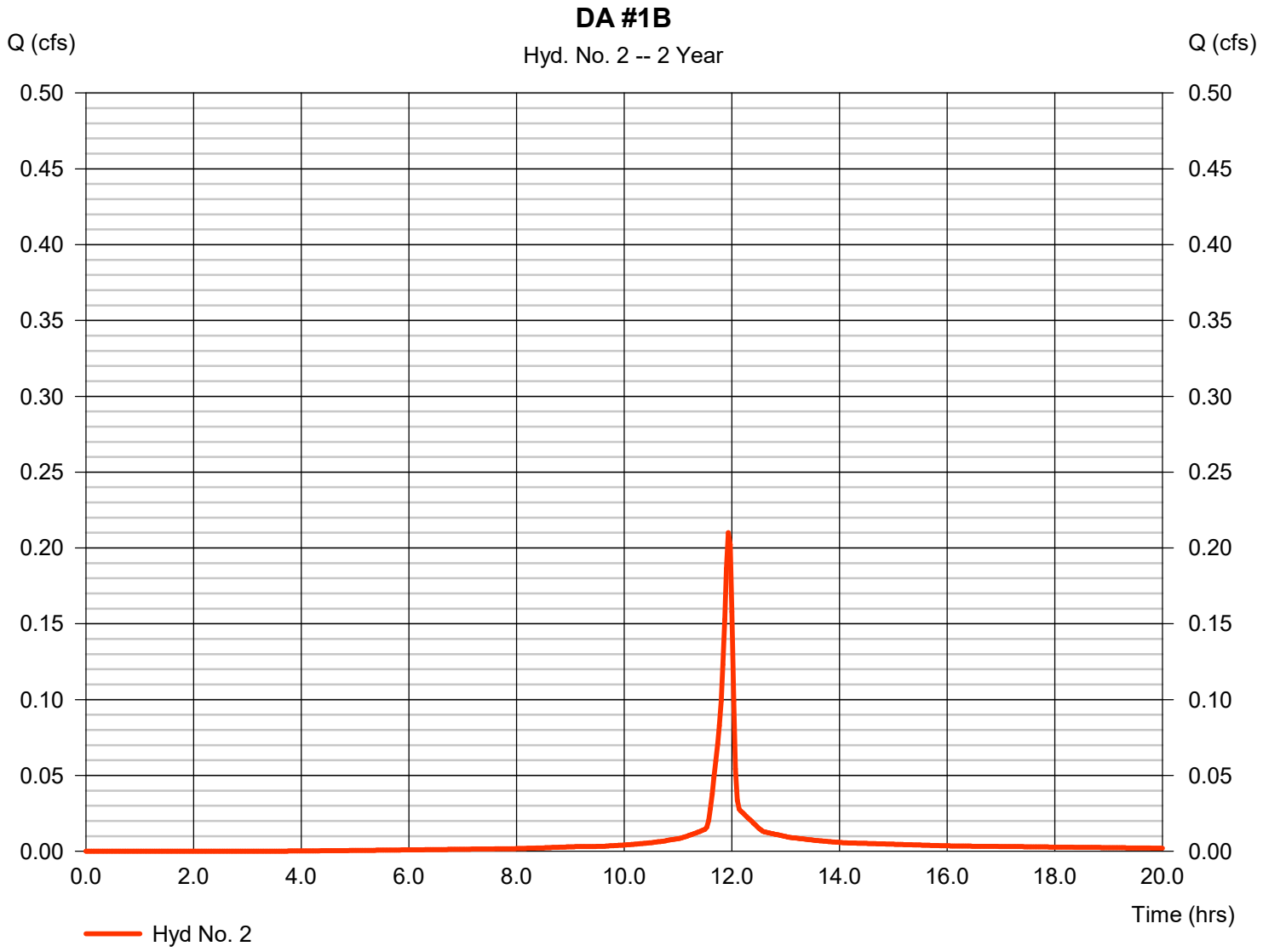
Hydrograph Report

Hyd. No. 2

DA #1B

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.210 cfs
Storm frequency	=	2 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	456 cuft
Drainage area	=	0.050 ac	Curve number	=	94*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.34 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.010 x 80) + (0.040 x 98)] / 0.050



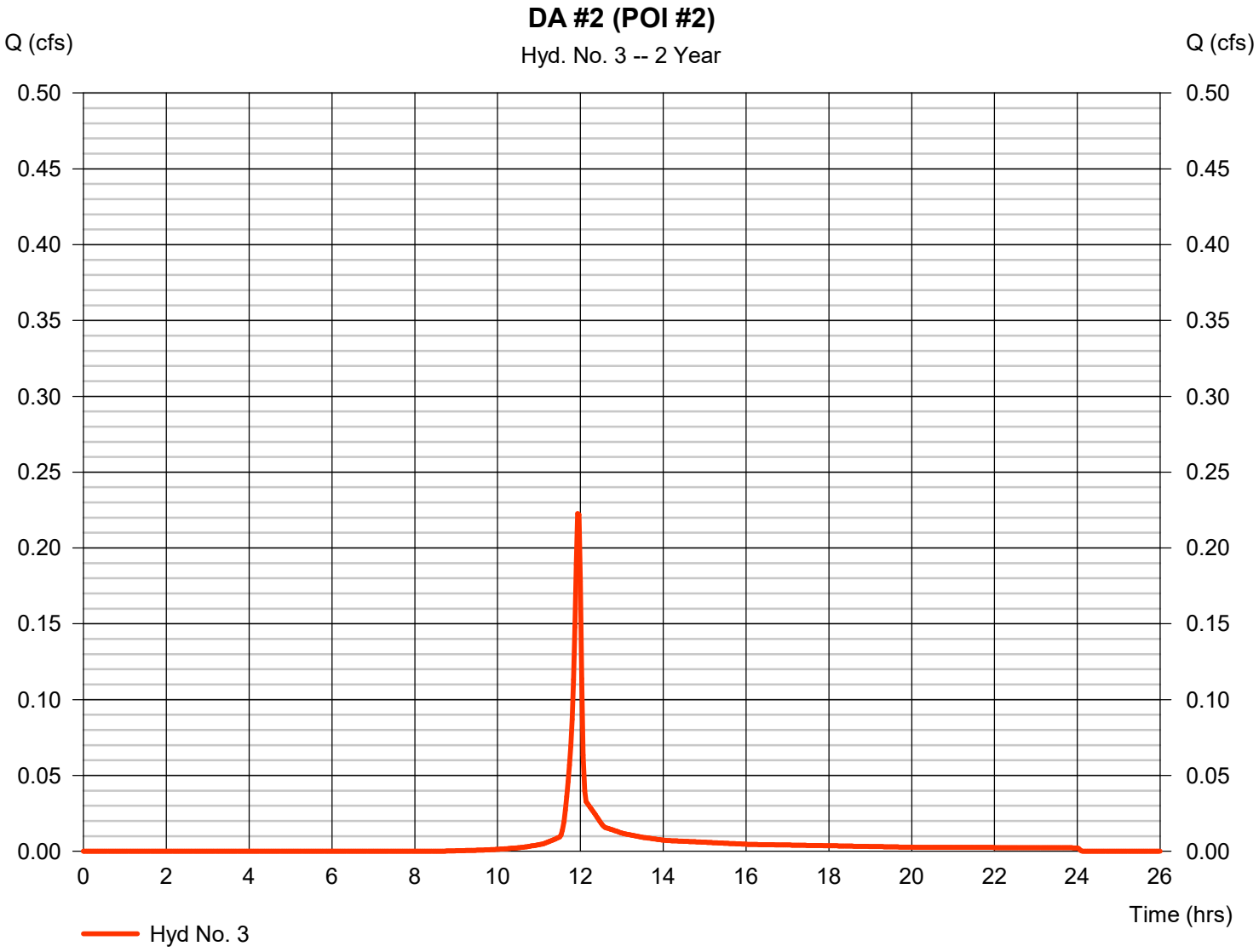
Hydrograph Report

Hyd. No. 3

DA #2 (POI #2)

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.223 cfs
Storm frequency	=	2 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	450 cuft
Drainage area	=	0.080 ac	Curve number	=	82*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.34 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.070 x 80) + (0.010 x 98)] / 0.080



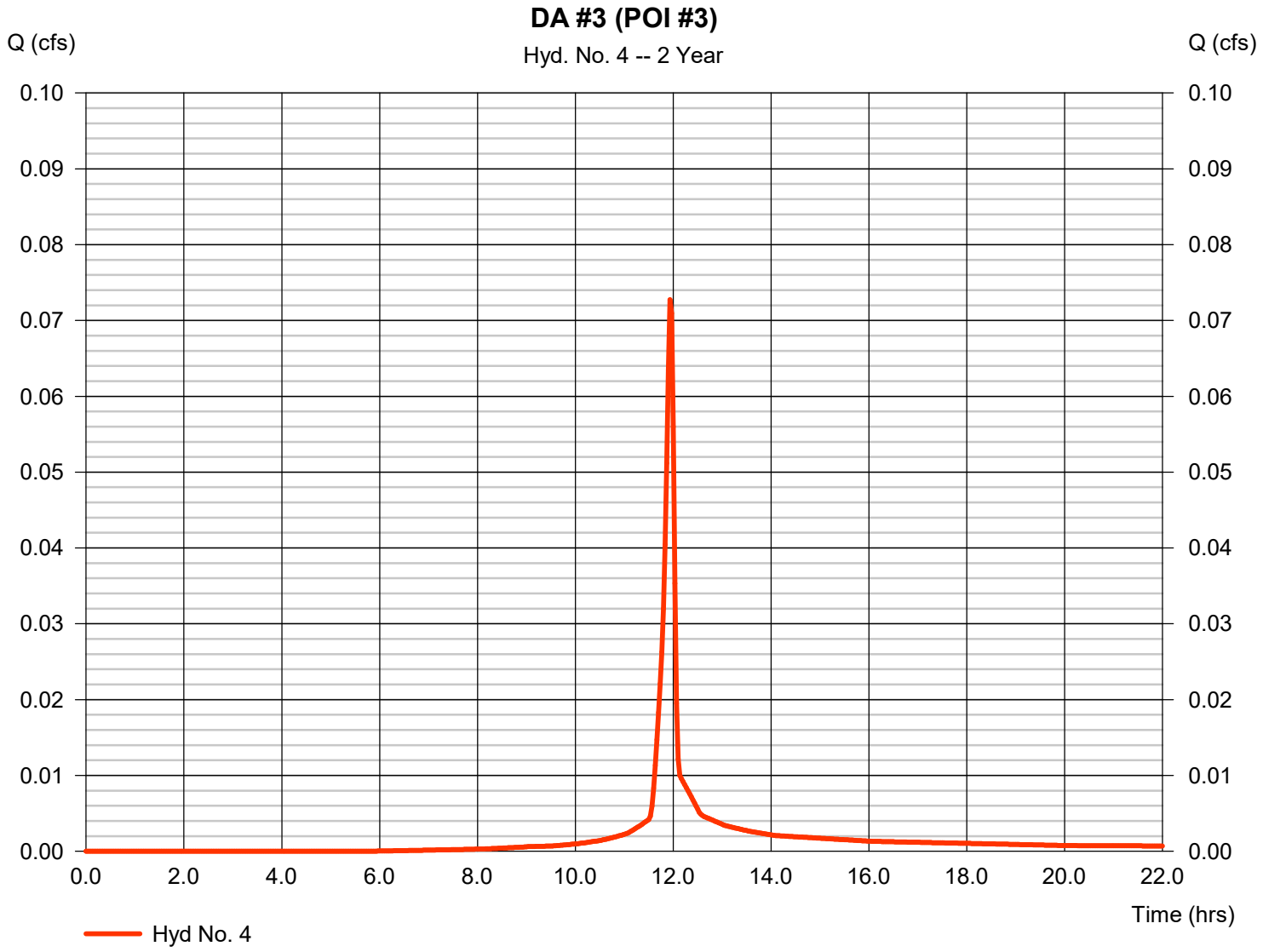
Hydrograph Report

Hyd. No. 4

DA #3 (POI #3)

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.073 cfs
Storm frequency	=	2 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	150 cuft
Drainage area	=	0.020 ac	Curve number	=	89*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.34 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.010 x 80) + (0.010 x 98)] / 0.020



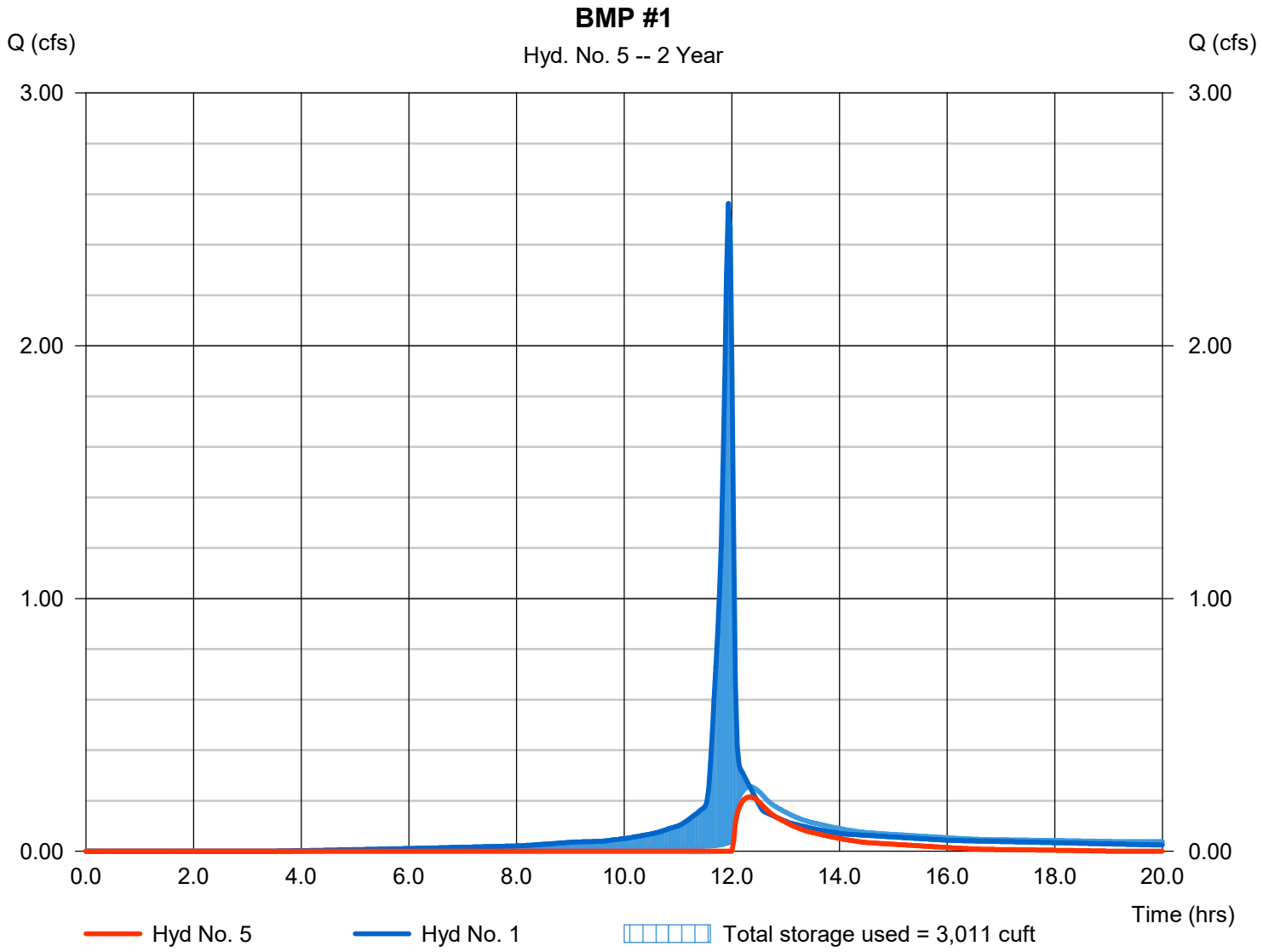
Hydrograph Report

Hyd. No. 5

BMP #1

Hydrograph type	=	Reservoir	Peak discharge	=	0.215 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.33 hrs
Time interval	=	2 min	Hyd. volume	=	1,134 cuft
Inflow hyd. No.	=	1 - DA #1A	Max. Elevation	=	102.46 ft
Reservoir name	=	BMP #1	Max. Storage	=	3,011 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

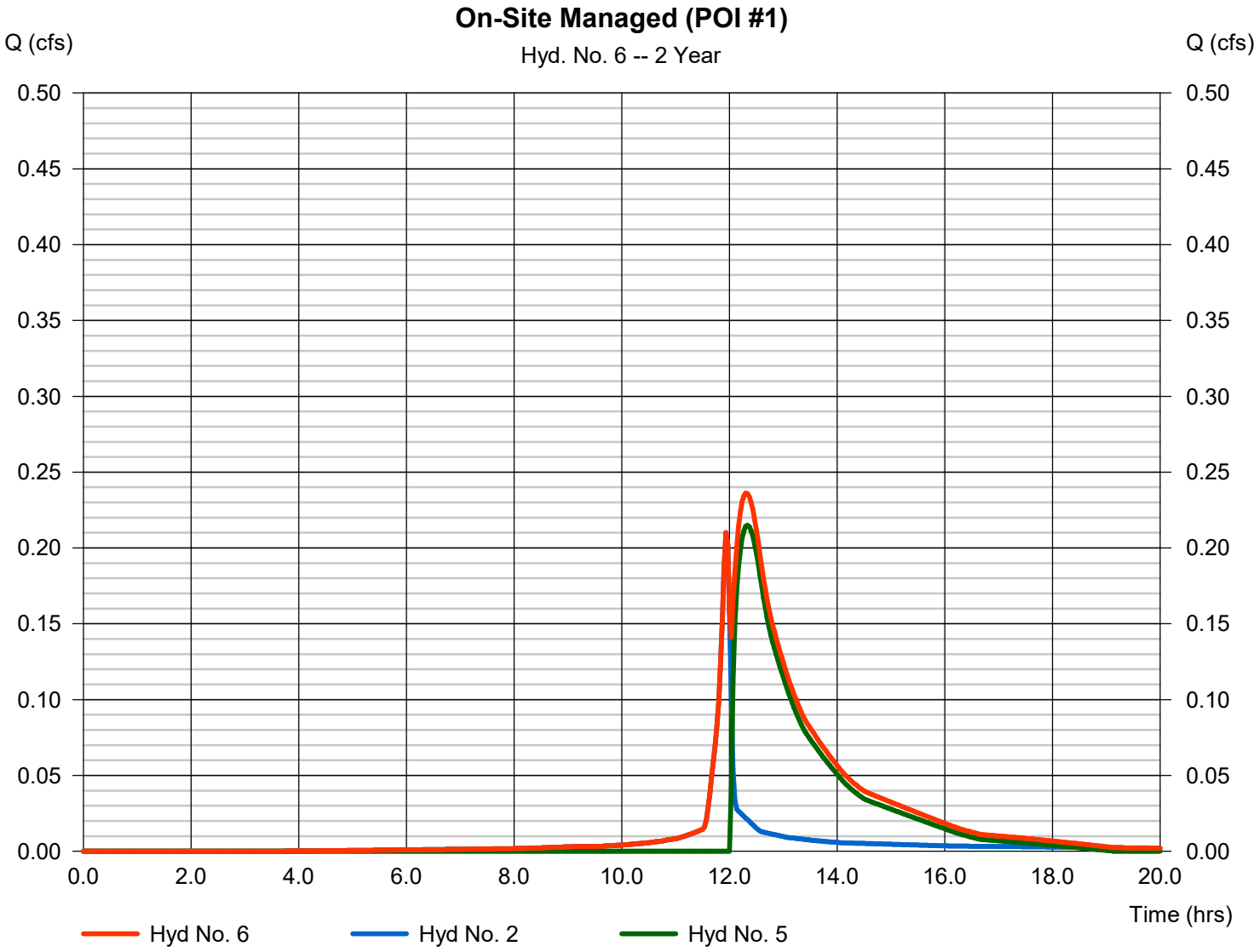


Hydrograph Report

Hyd. No. 6

On-Site Managed (POI #1)

Hydrograph type	= Combine	Peak discharge	= 0.236 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.30 hrs
Time interval	= 2 min	Hyd. volume	= 1,590 cuft
Inflow hyds.	= 2, 5	Contrib. drain. area	= 0.050 ac

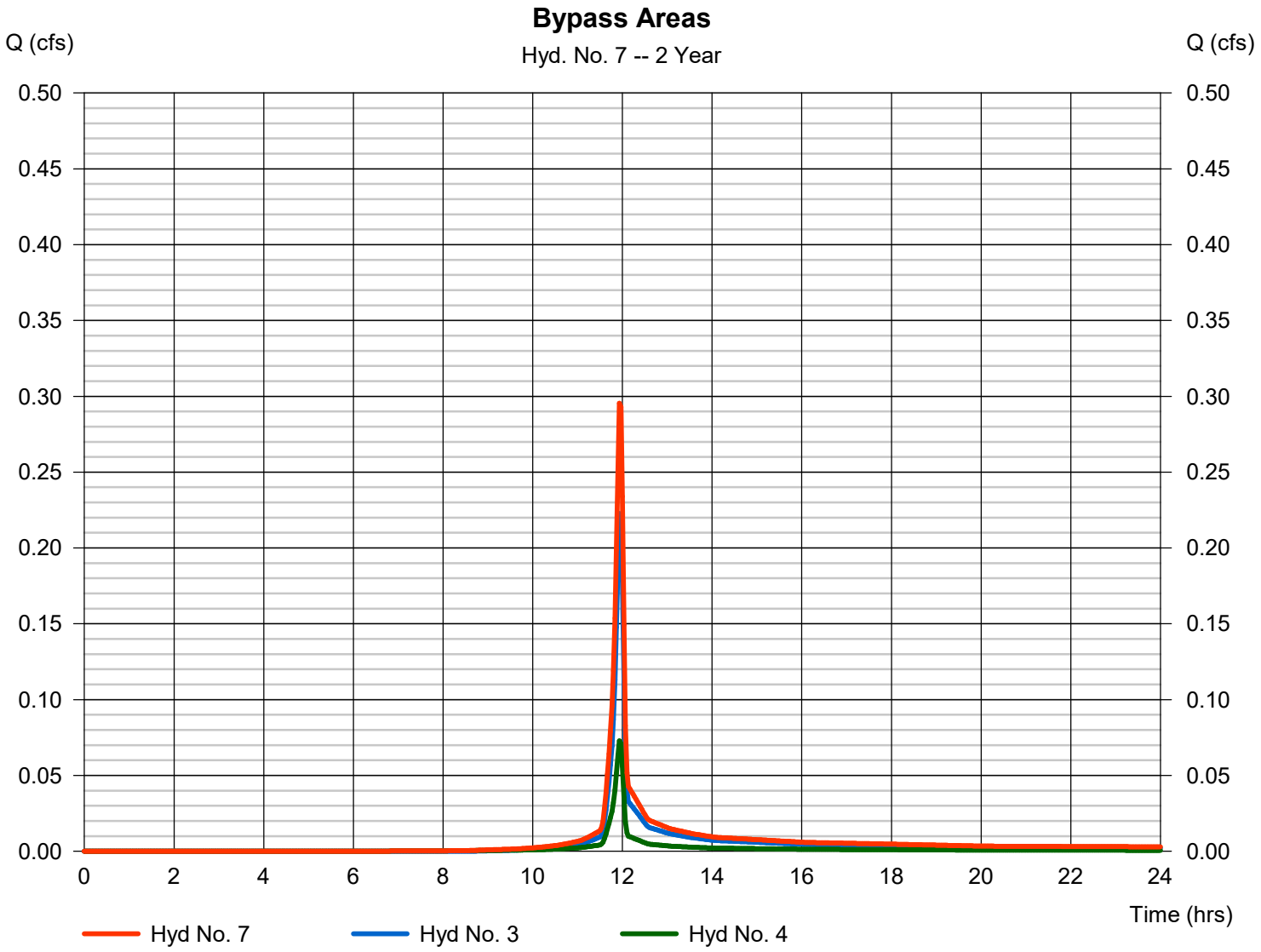


Hydrograph Report

Hyd. No. 7

Bypass Areas

Hydrograph type	= Combine	Peak discharge	= 0.295 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 600 cuft
Inflow hyds.	= 3, 4	Contrib. drain. area	= 0.100 ac

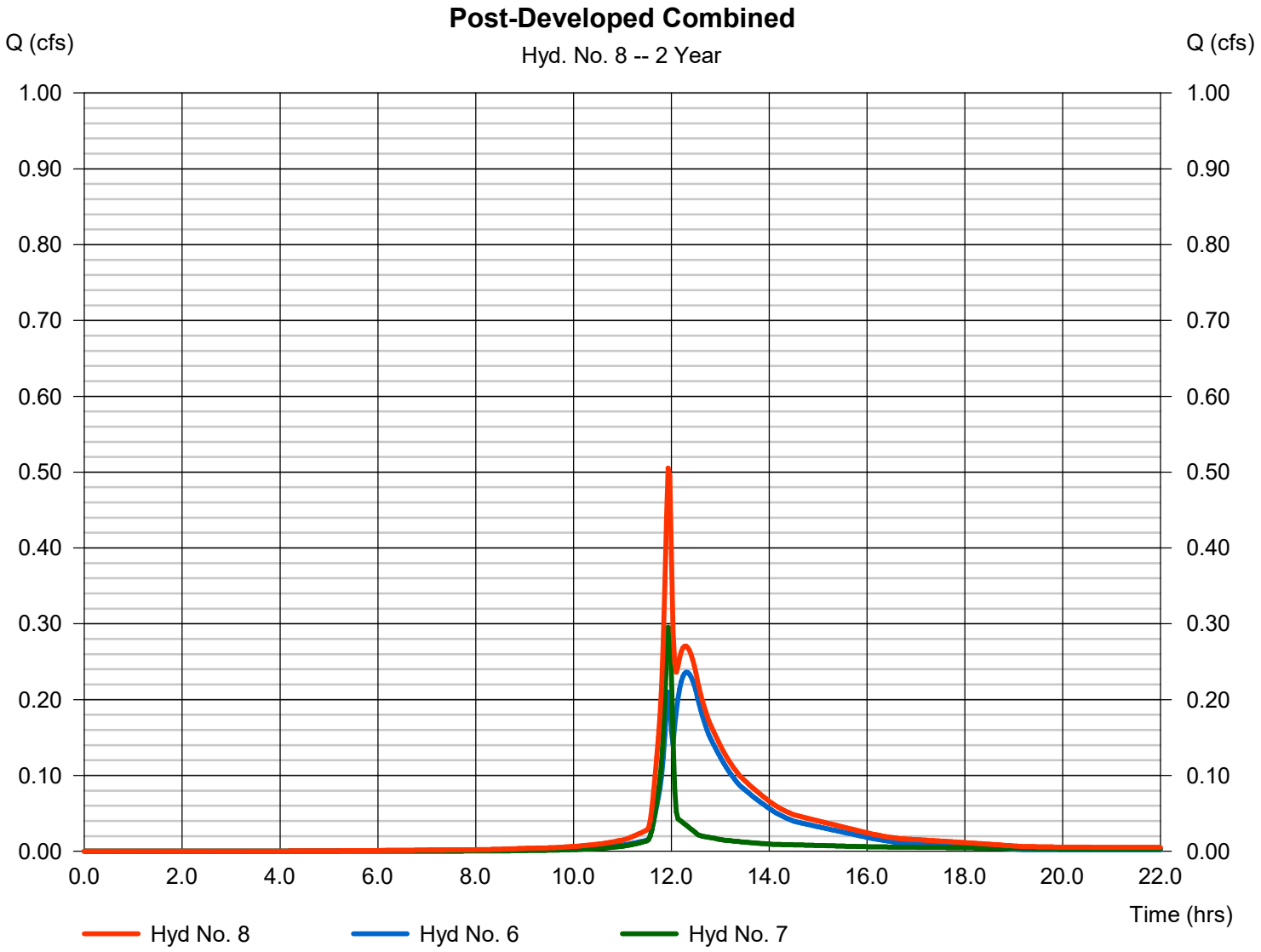


Hydrograph Report

Hyd. No. 8

Post-Developed Combined

Hydrograph type	=	Combine	Peak discharge	=	0.505 cfs
Storm frequency	=	2 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	2,190 cuft
Inflow hyds.	=	6, 7	Contrib. drain. area	=	0.000 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

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	3.341	2	716	7,390	------	------	------	DA #1A
2	SCS Runoff	0.274	2	716	606	------	------	------	DA #1B
3	SCS Runoff	0.323	2	716	656	------	------	------	DA #2 (POI #2)
4	SCS Runoff	0.099	2	716	208	------	------	------	DA #3 (POI #3)
5	Reservoir	1.231	2	722	2,710	1	102.78	3,596	BMP #1
6	Combine	1.359	2	722	3,316	2, 5	------	------	On-Site Managed (POI #1)
7	Combine	0.422	2	716	864	3, 4,	------	------	Bypass Areas
8	Combine	1.567	2	722	4,179	6, 7	------	------	Post-Developed Combined

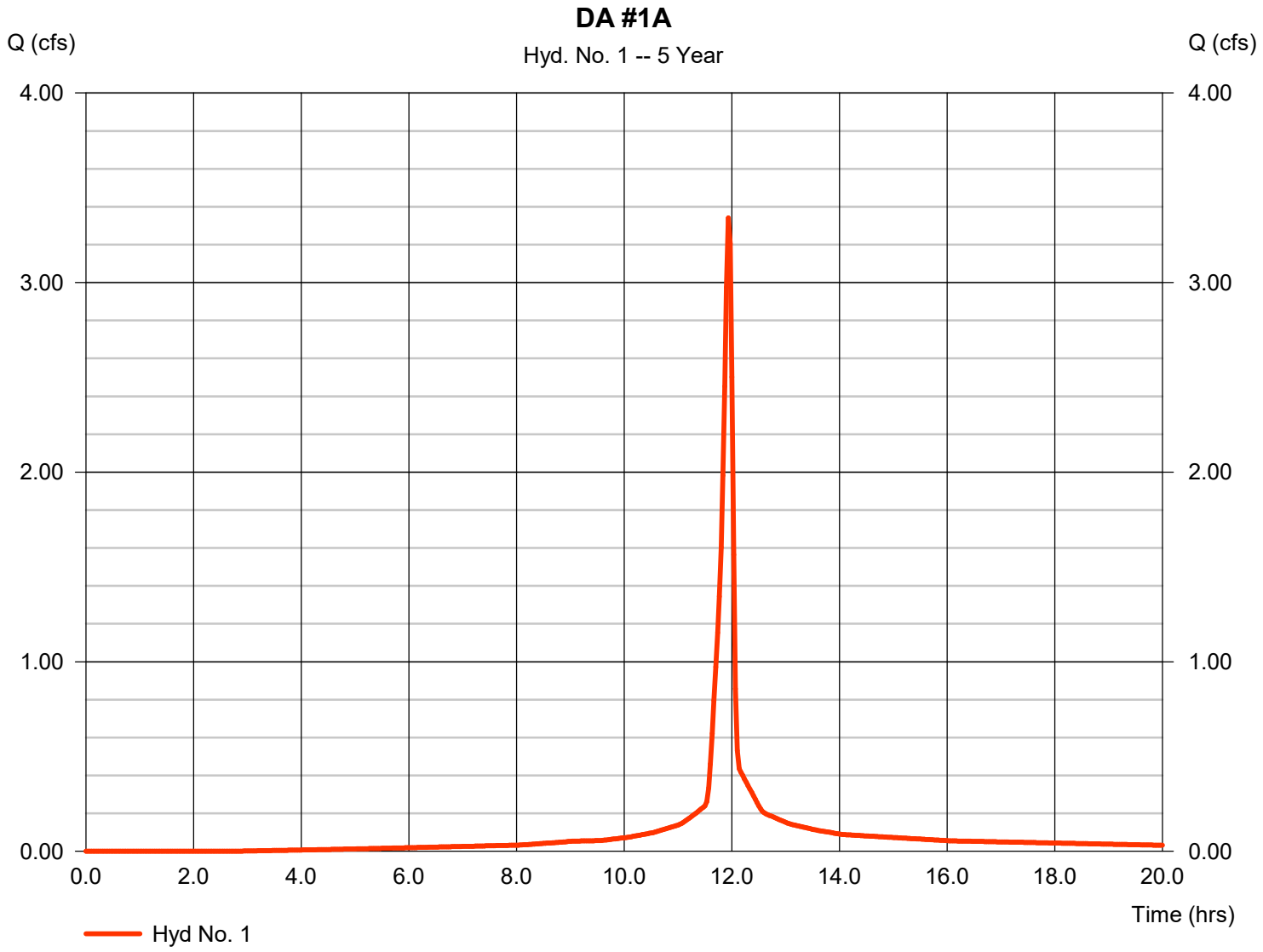
Hydrograph Report

Hyd. No. 1

DA #1A

Hydrograph type	=	SCS Runoff	Peak discharge	=	3.341 cfs
Storm frequency	=	5 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	7,390 cuft
Drainage area	=	0.610 ac	Curve number	=	94*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	4.24 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.140 x 80) + (0.470 x 98)] / 0.610



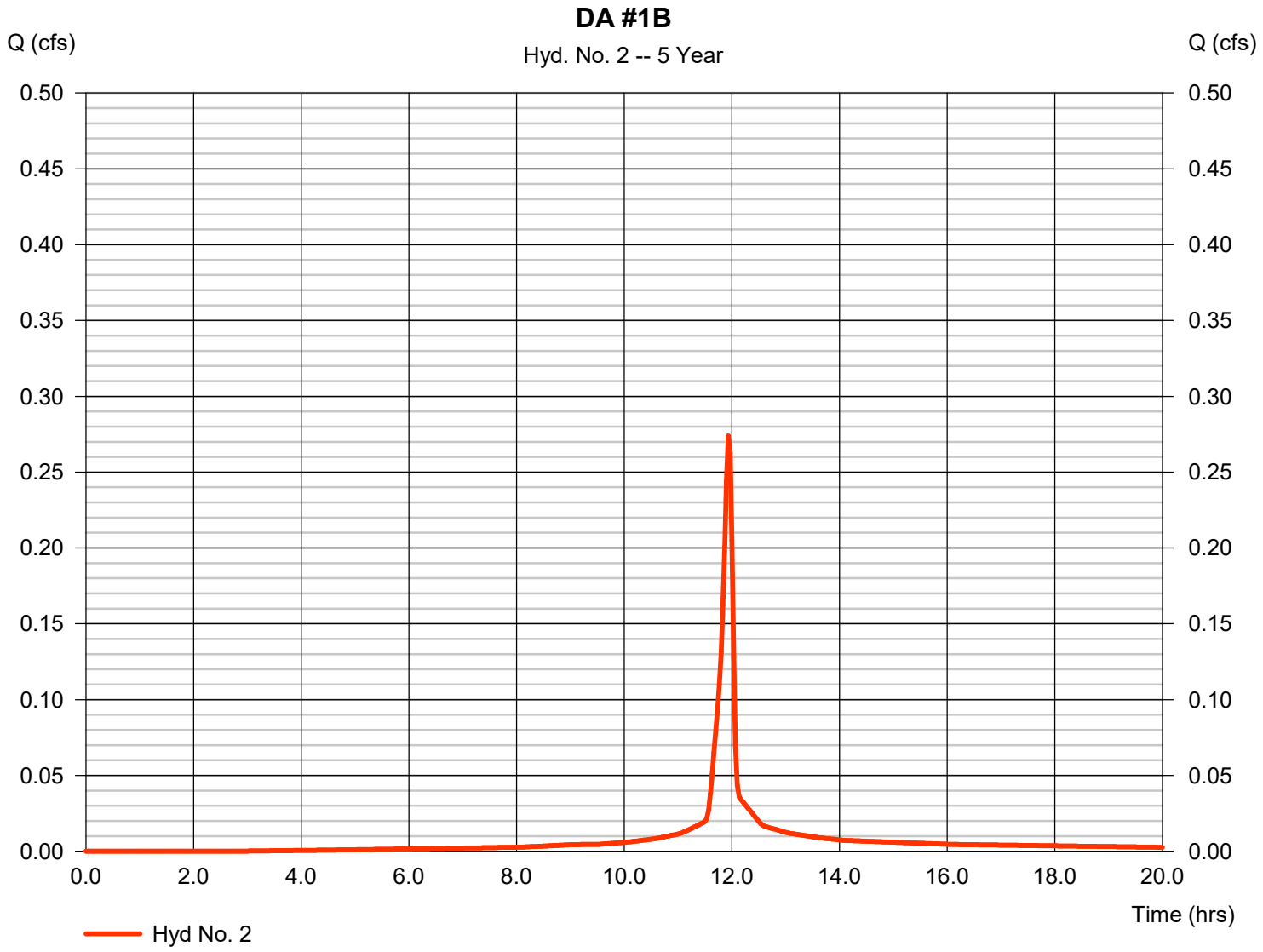
Hydrograph Report

Hyd. No. 2

DA #1B

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.274 cfs
Storm frequency	=	5 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	606 cuft
Drainage area	=	0.050 ac	Curve number	=	94*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	4.24 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.010 x 80) + (0.040 x 98)] / 0.050



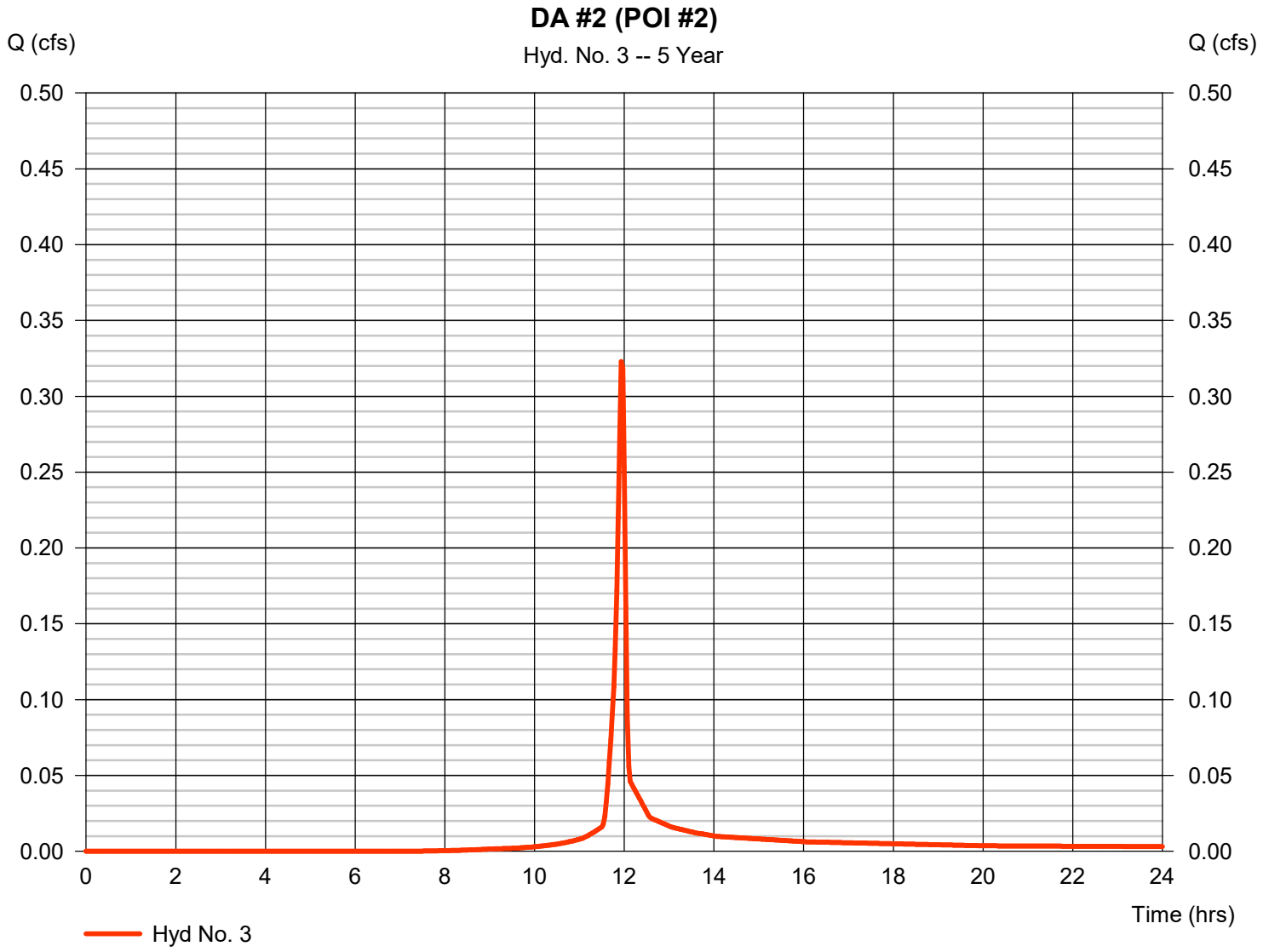
Hydrograph Report

Hyd. No. 3

DA #2 (POI #2)

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.323 cfs
Storm frequency	=	5 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	656 cuft
Drainage area	=	0.080 ac	Curve number	=	82*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	4.24 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.070 x 80) + (0.010 x 98)] / 0.080



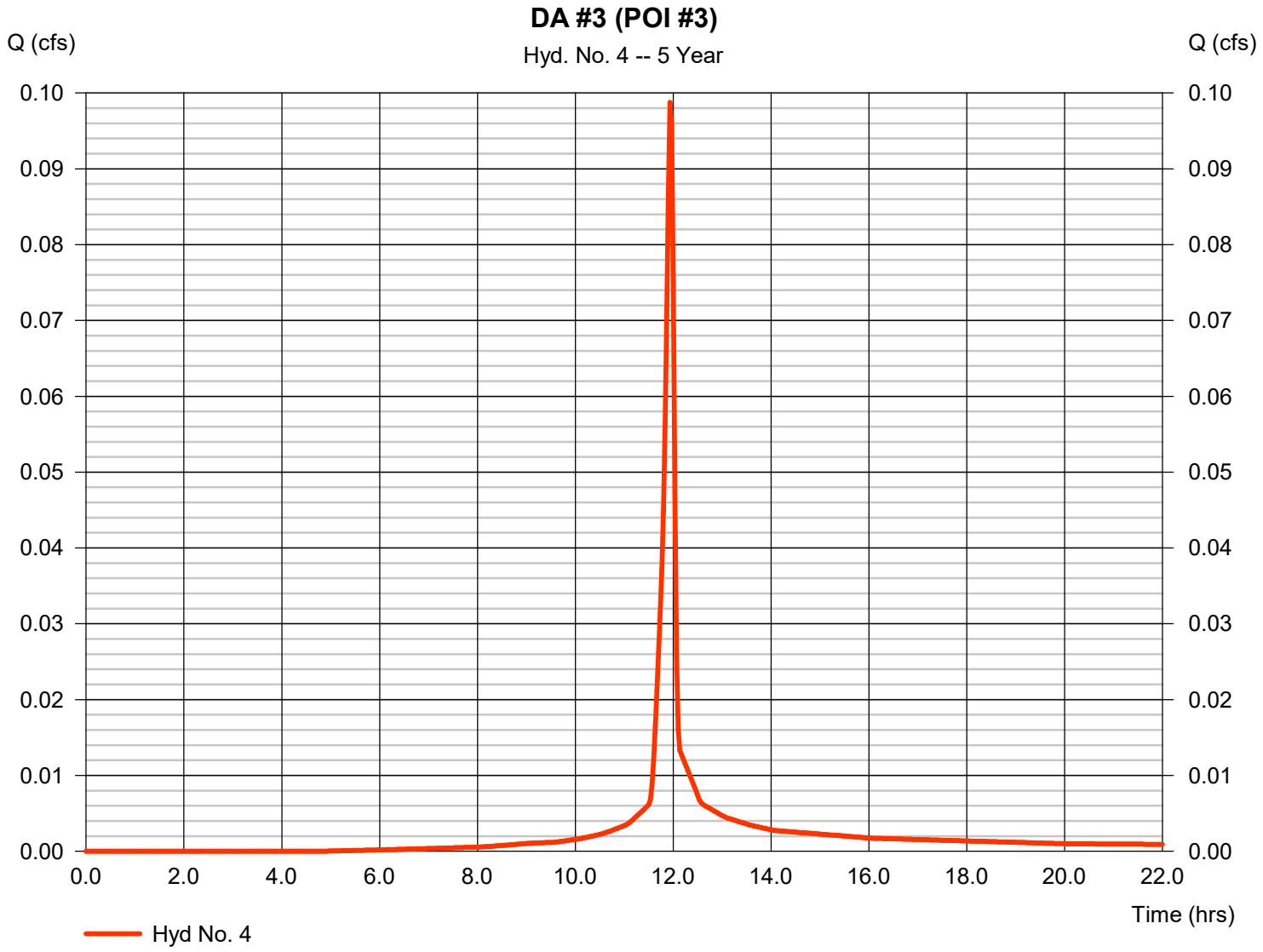
Hydrograph Report

Hyd. No. 4

DA #3 (POI #3)

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.099 cfs
Storm frequency	=	5 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	208 cuft
Drainage area	=	0.020 ac	Curve number	=	89*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	4.24 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.010 x 80) + (0.010 x 98)] / 0.020



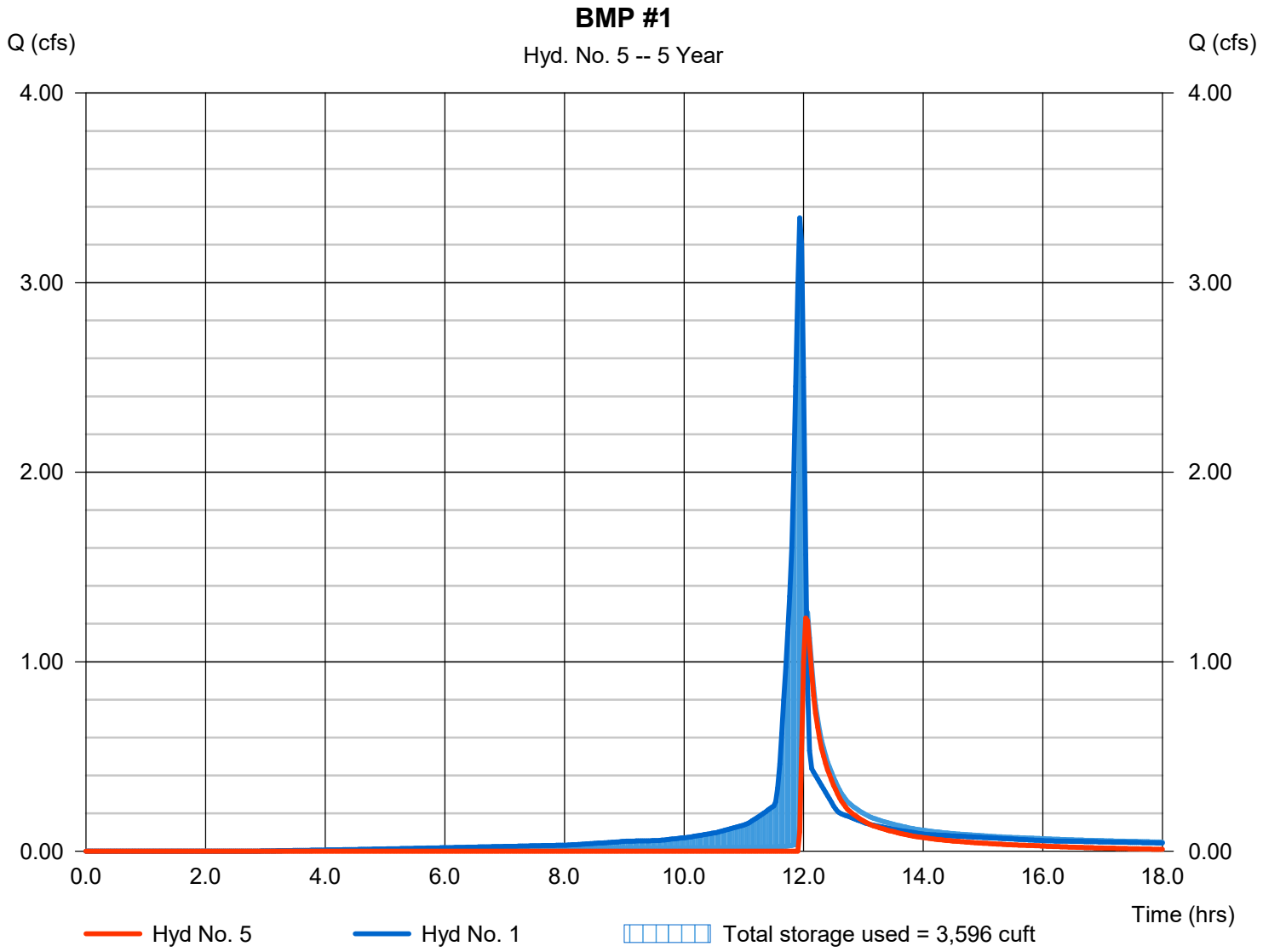
Hydrograph Report

Hyd. No. 5

BMP #1

Hydrograph type	=	Reservoir	Peak discharge	=	1.231 cfs
Storm frequency	=	5 yrs	Time to peak	=	12.03 hrs
Time interval	=	2 min	Hyd. volume	=	2,710 cuft
Inflow hyd. No.	=	1 - DA #1A	Max. Elevation	=	102.78 ft
Reservoir name	=	BMP #1	Max. Storage	=	3,596 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

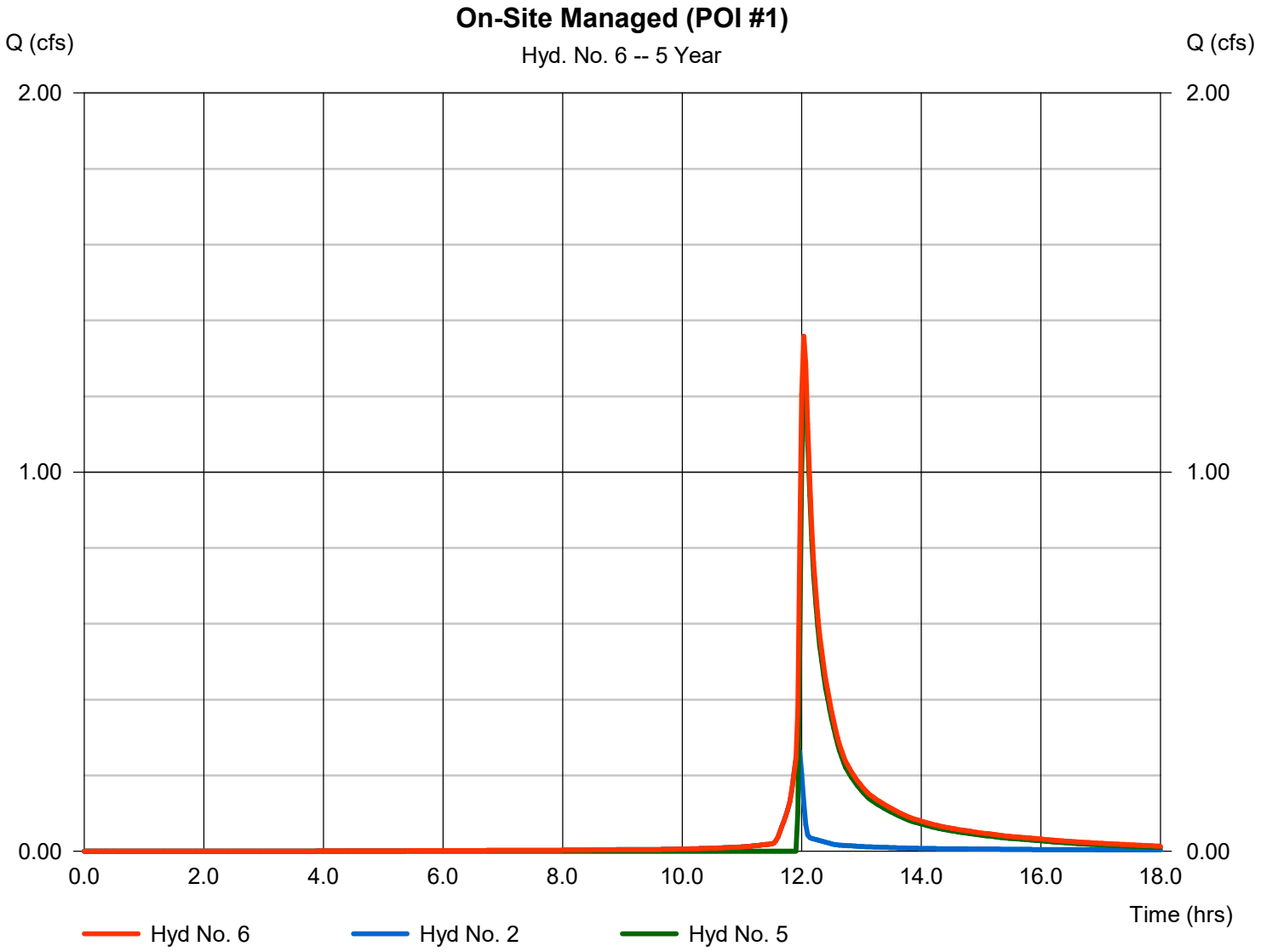


Hydrograph Report

Hyd. No. 6

On-Site Managed (POI #1)

Hydrograph type	=	Combine	Peak discharge	=	1.359 cfs
Storm frequency	=	5 yrs	Time to peak	=	12.03 hrs
Time interval	=	2 min	Hyd. volume	=	3,316 cuft
Inflow hyds.	=	2, 5	Contrib. drain. area	=	0.050 ac

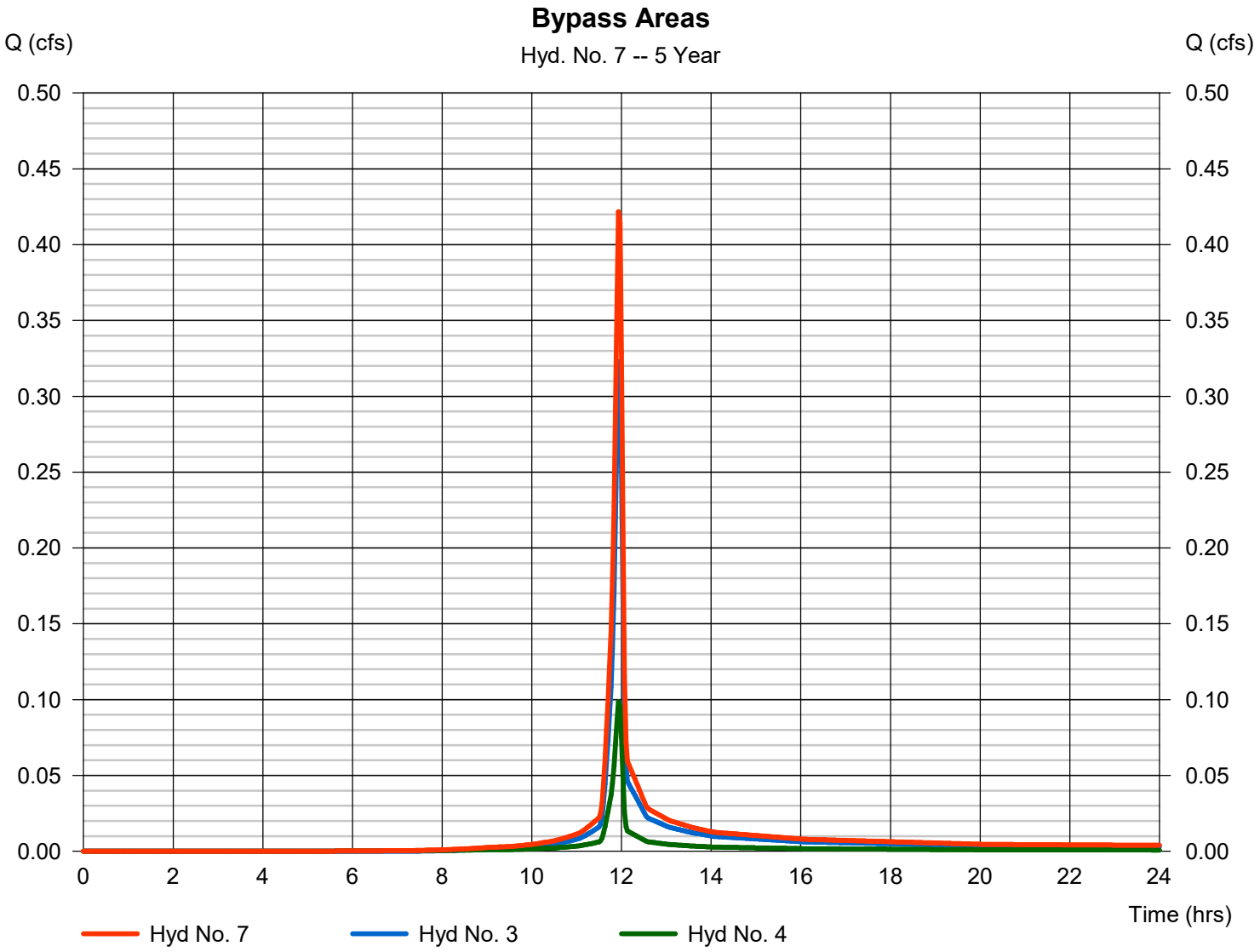


Hydrograph Report

Hyd. No. 7

Bypass Areas

Hydrograph type	= Combine	Peak discharge	= 0.422 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 864 cuft
Inflow hyds.	= 3, 4	Contrib. drain. area	= 0.100 ac

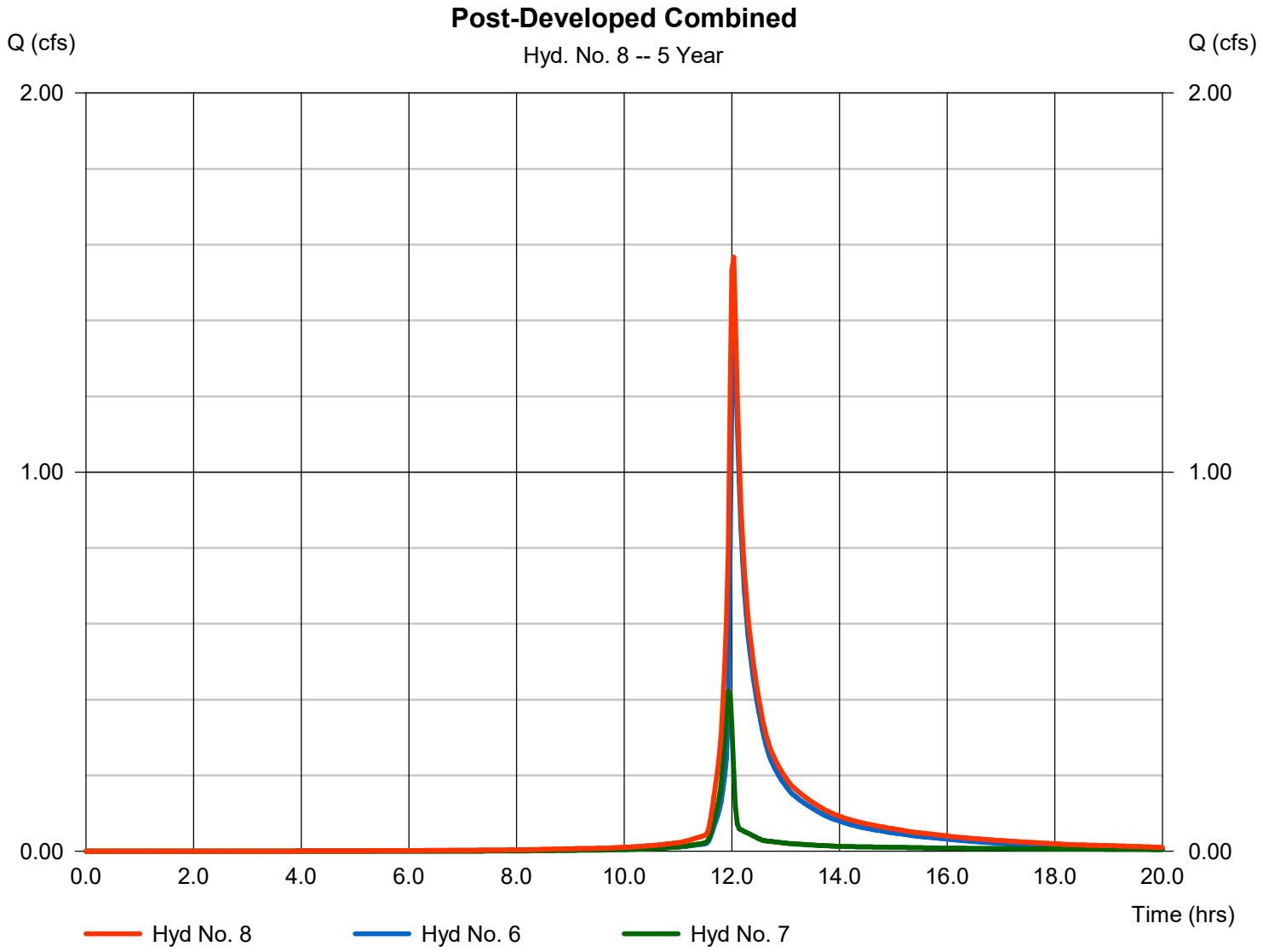


Hydrograph Report

Hyd. No. 8

Post-Developed Combined

Hydrograph type	= Combine	Peak discharge	= 1.567 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 4,179 cuft
Inflow hyds.	= 6, 7	Contrib. drain. area	= 0.000 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

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	4.003	2	716	8,963	------	------	------	DA #1A
2	SCS Runoff	0.328	2	716	735	------	------	------	DA #1B
3	SCS Runoff	0.411	2	716	841	------	------	------	DA #2 (POI #2)
4	SCS Runoff	0.121	2	716	257	------	------	------	DA #3 (POI #3)
5	Reservoir	2.270	2	722	4,124	1	103.00	3,998	BMP #1
6	Combine	2.465	2	720	4,859	2, 5	------	------	On-Site Managed (POI #1)
7	Combine	0.532	2	716	1,098	3, 4,	------	------	Bypass Areas
8	Combine	2.876	2	720	5,957	6, 7	------	------	Post-Developed Combined

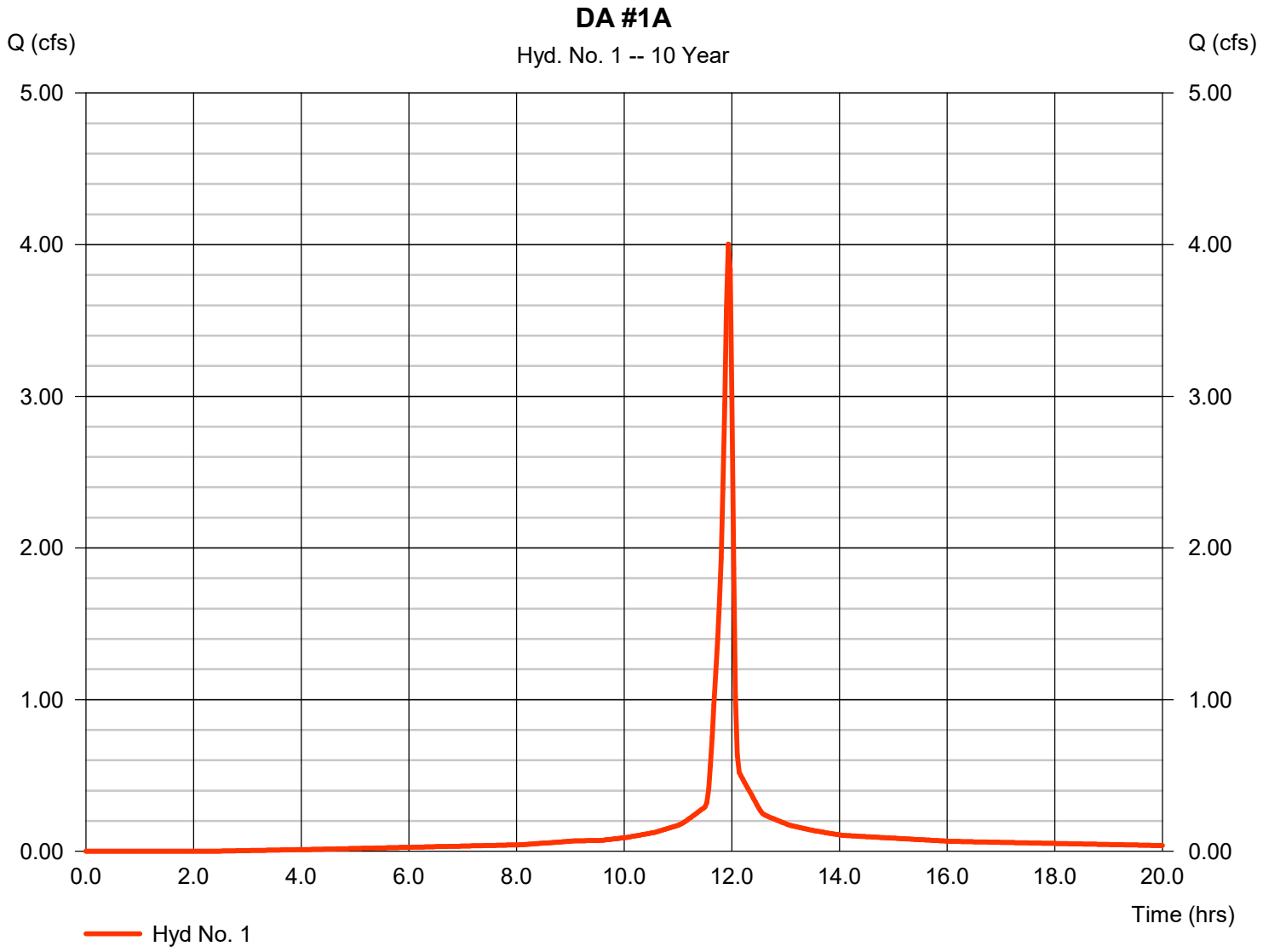
Hydrograph Report

Hyd. No. 1

DA #1A

Hydrograph type	=	SCS Runoff	Peak discharge	=	4.003 cfs
Storm frequency	=	10 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	8,963 cuft
Drainage area	=	0.610 ac	Curve number	=	94*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.01 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.140 x 80) + (0.470 x 98)] / 0.610



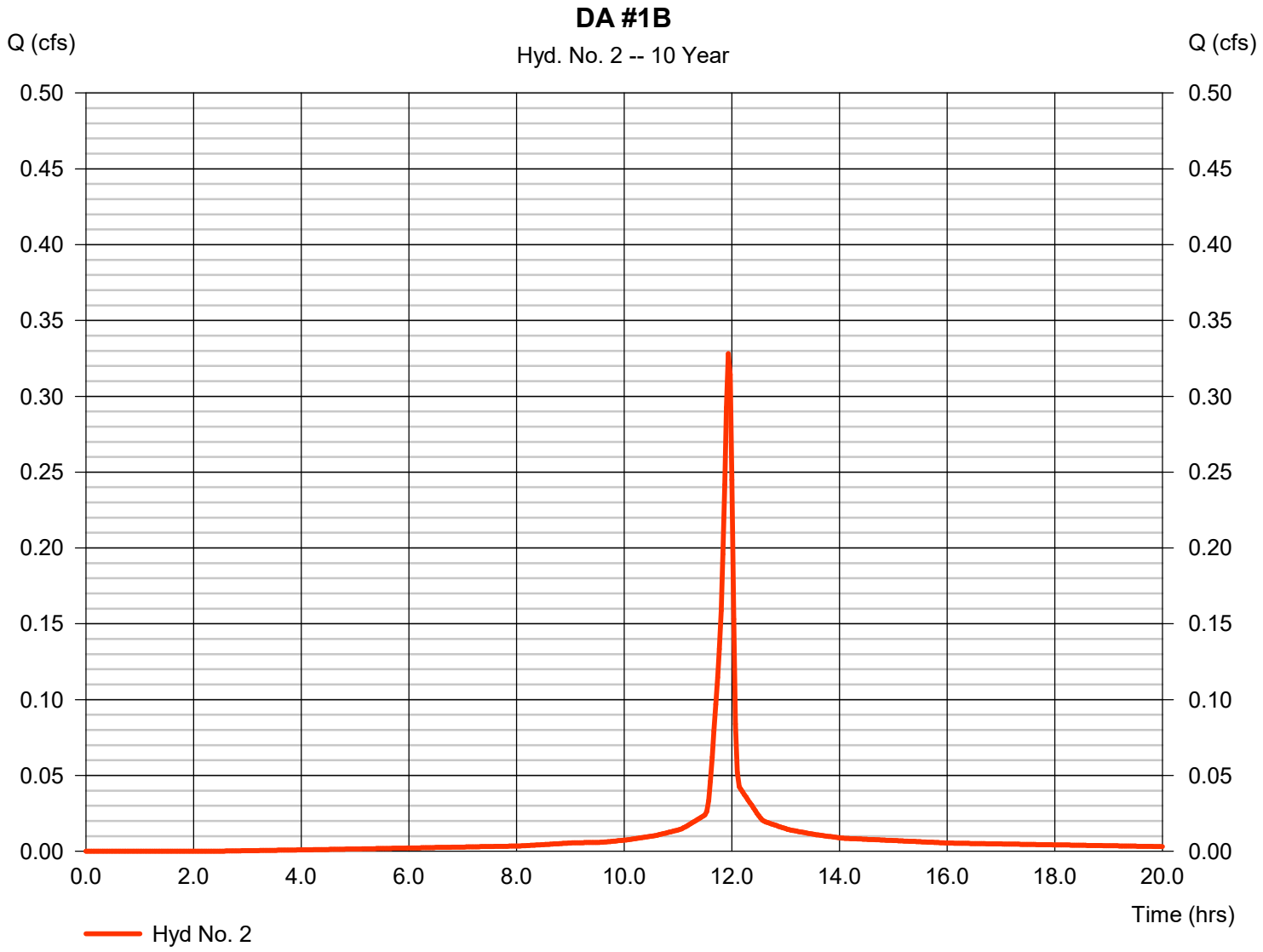
Hydrograph Report

Hyd. No. 2

DA #1B

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.328 cfs
Storm frequency	=	10 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	735 cuft
Drainage area	=	0.050 ac	Curve number	=	94*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.01 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.010 x 80) + (0.040 x 98)] / 0.050



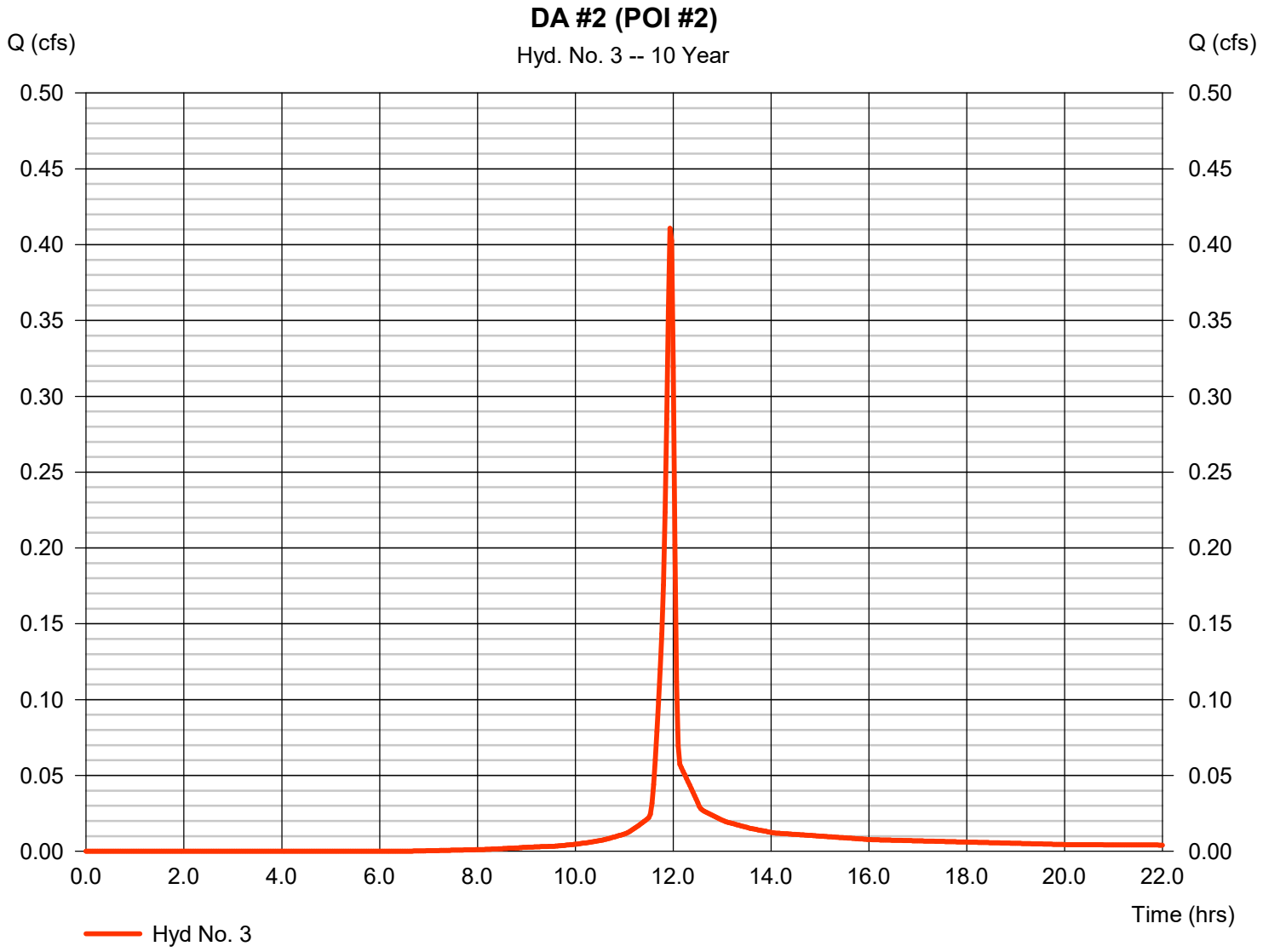
Hydrograph Report

Hyd. No. 3

DA #2 (POI #2)

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.411 cfs
Storm frequency	=	10 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	841 cuft
Drainage area	=	0.080 ac	Curve number	=	82*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.01 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.070 x 80) + (0.010 x 98)] / 0.080



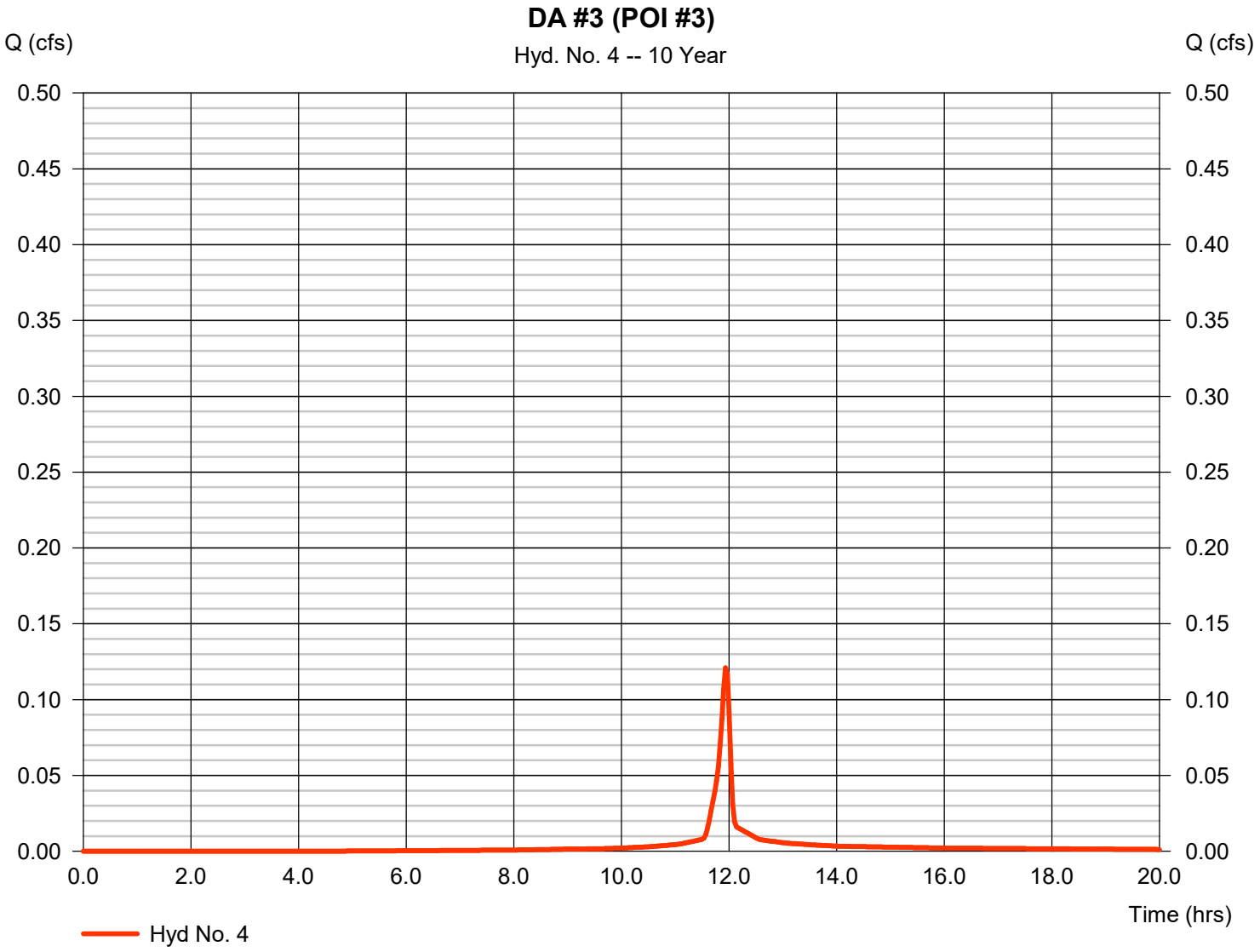
Hydrograph Report

Hyd. No. 4

DA #3 (POI #3)

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.121 cfs
Storm frequency	=	10 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	257 cuft
Drainage area	=	0.020 ac	Curve number	=	89*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.01 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.010 x 80) + (0.010 x 98)] / 0.020



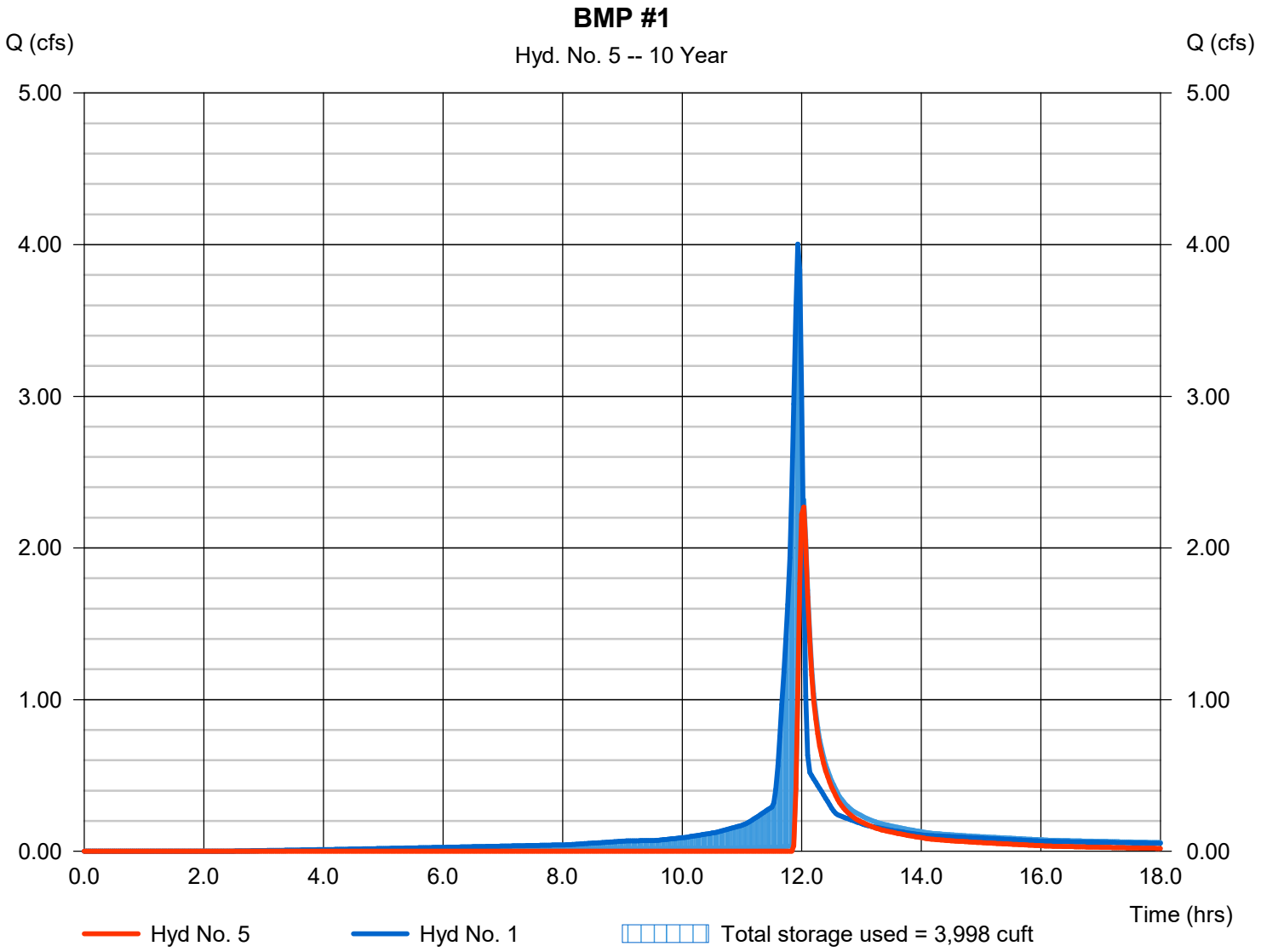
Hydrograph Report

Hyd. No. 5

BMP #1

Hydrograph type	=	Reservoir	Peak discharge	=	2.270 cfs
Storm frequency	=	10 yrs	Time to peak	=	12.03 hrs
Time interval	=	2 min	Hyd. volume	=	4,124 cuft
Inflow hyd. No.	=	1 - DA #1A	Max. Elevation	=	103.00 ft
Reservoir name	=	BMP #1	Max. Storage	=	3,998 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

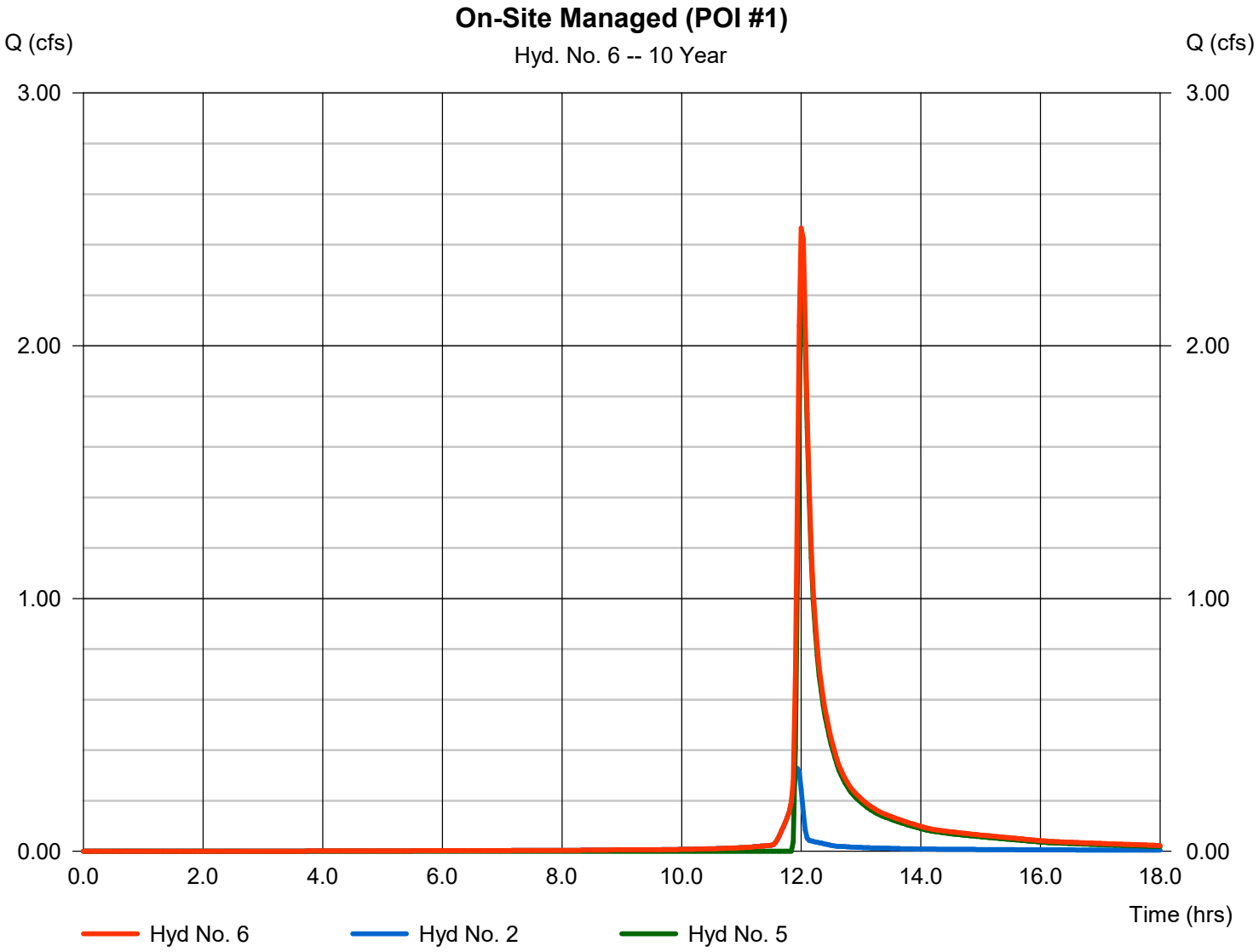


Hydrograph Report

Hyd. No. 6

On-Site Managed (POI #1)

Hydrograph type	= Combine	Peak discharge	= 2.465 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 4,859 cuft
Inflow hyds.	= 2, 5	Contrib. drain. area	= 0.050 ac

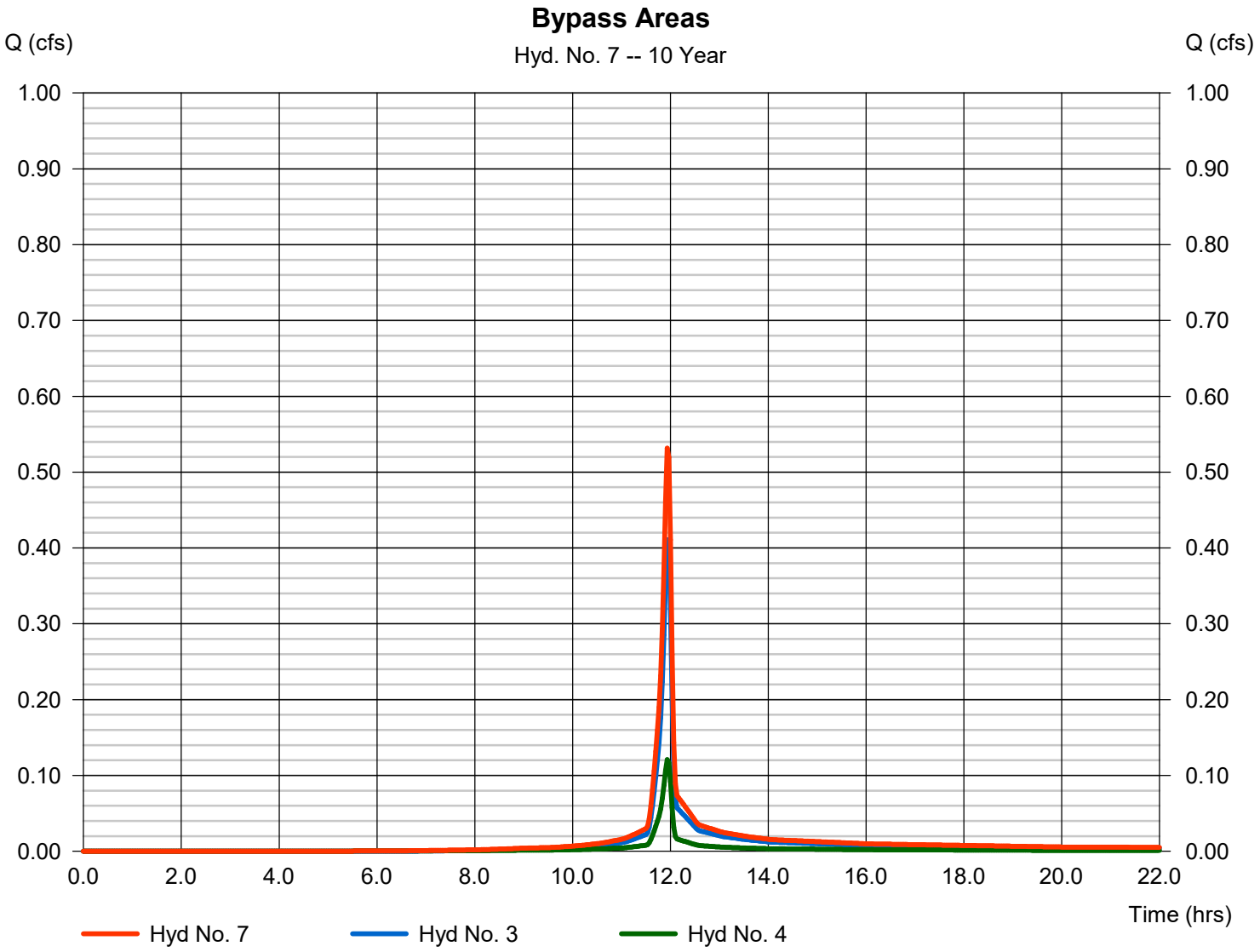


Hydrograph Report

Hyd. No. 7

Bypass Areas

Hydrograph type	= Combine	Peak discharge	= 0.532 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 1,098 cuft
Inflow hyds.	= 3, 4	Contrib. drain. area	= 0.100 ac

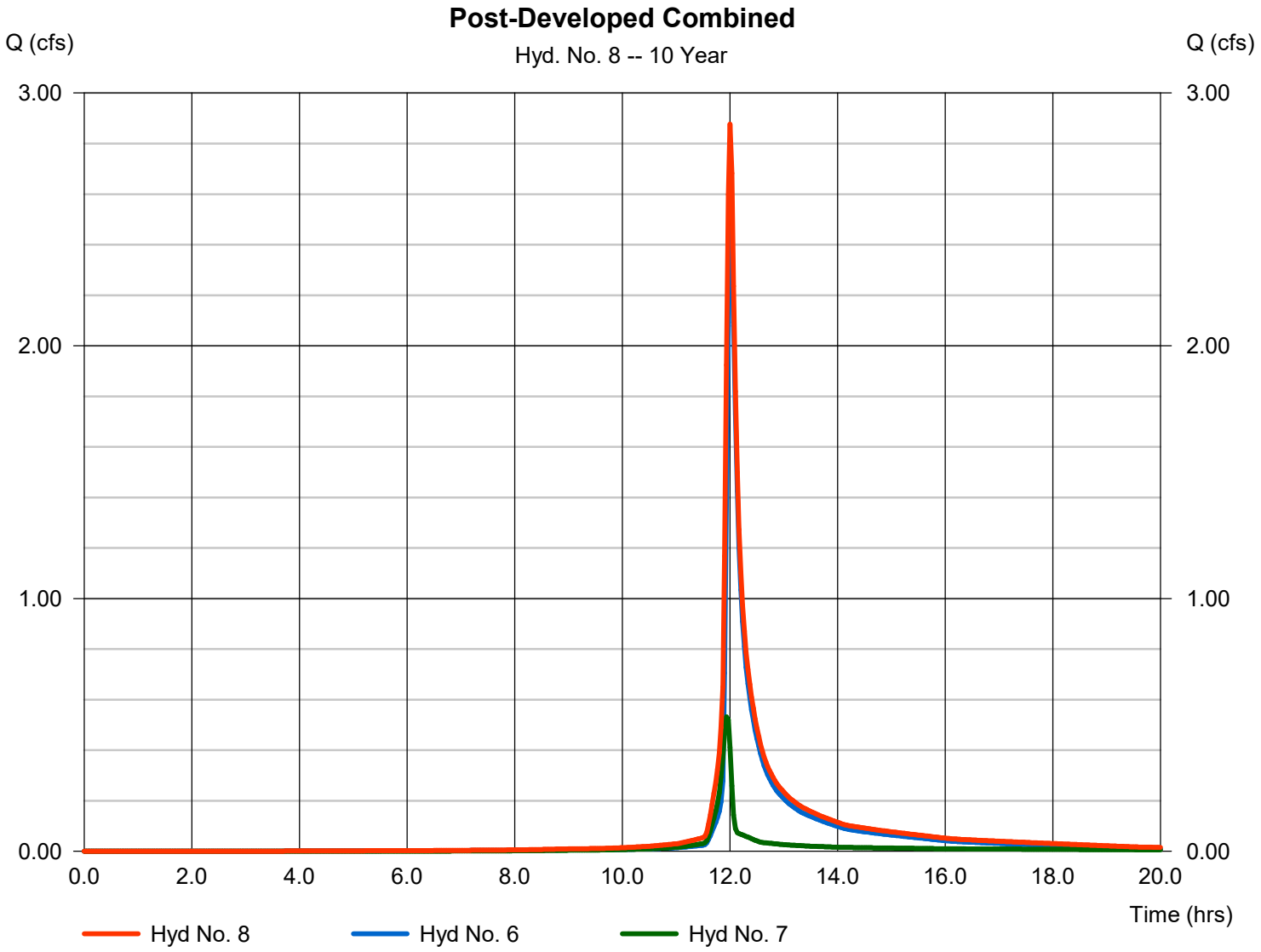


Hydrograph Report

Hyd. No. 8

Post-Developed Combined

Hydrograph type	= Combine	Peak discharge	= 2.876 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 5,957 cuft
Inflow hyds.	= 6, 7	Contrib. drain. area	= 0.000 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

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	4.976	2	716	11,304	------	------	------	DA #1A
2	SCS Runoff	0.408	2	716	927	------	------	------	DA #1B
3	SCS Runoff	0.542	2	716	1,123	------	------	------	DA #2 (POI #2)
4	SCS Runoff	0.154	2	716	332	------	------	------	DA #3 (POI #3)
5	Reservoir	3.619	2	720	6,301	1	103.26	4,438	BMP #1
6	Combine	3.923	2	720	7,228	2, 5	------	------	On-Site Managed (POI #1)
7	Combine	0.696	2	716	1,455	3, 4,	------	------	Bypass Areas
8	Combine	4.455	2	720	8,683	6, 7	------	------	Post-Developed Combined

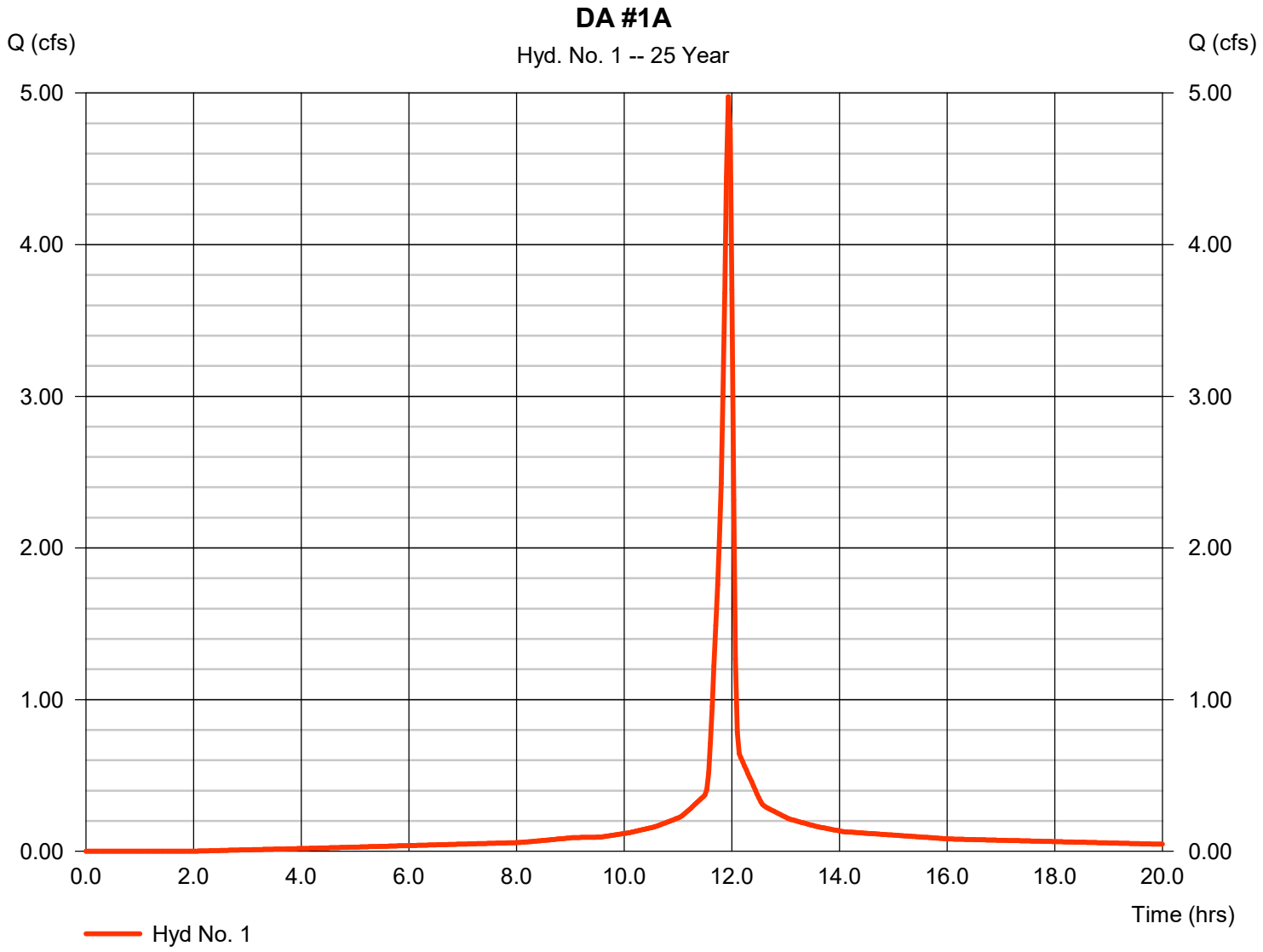
Hydrograph Report

Hyd. No. 1

DA #1A

Hydrograph type	=	SCS Runoff	Peak discharge	=	4.976 cfs
Storm frequency	=	25 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	11,304 cuft
Drainage area	=	0.610 ac	Curve number	=	94*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	6.15 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.140 x 80) + (0.470 x 98)] / 0.610



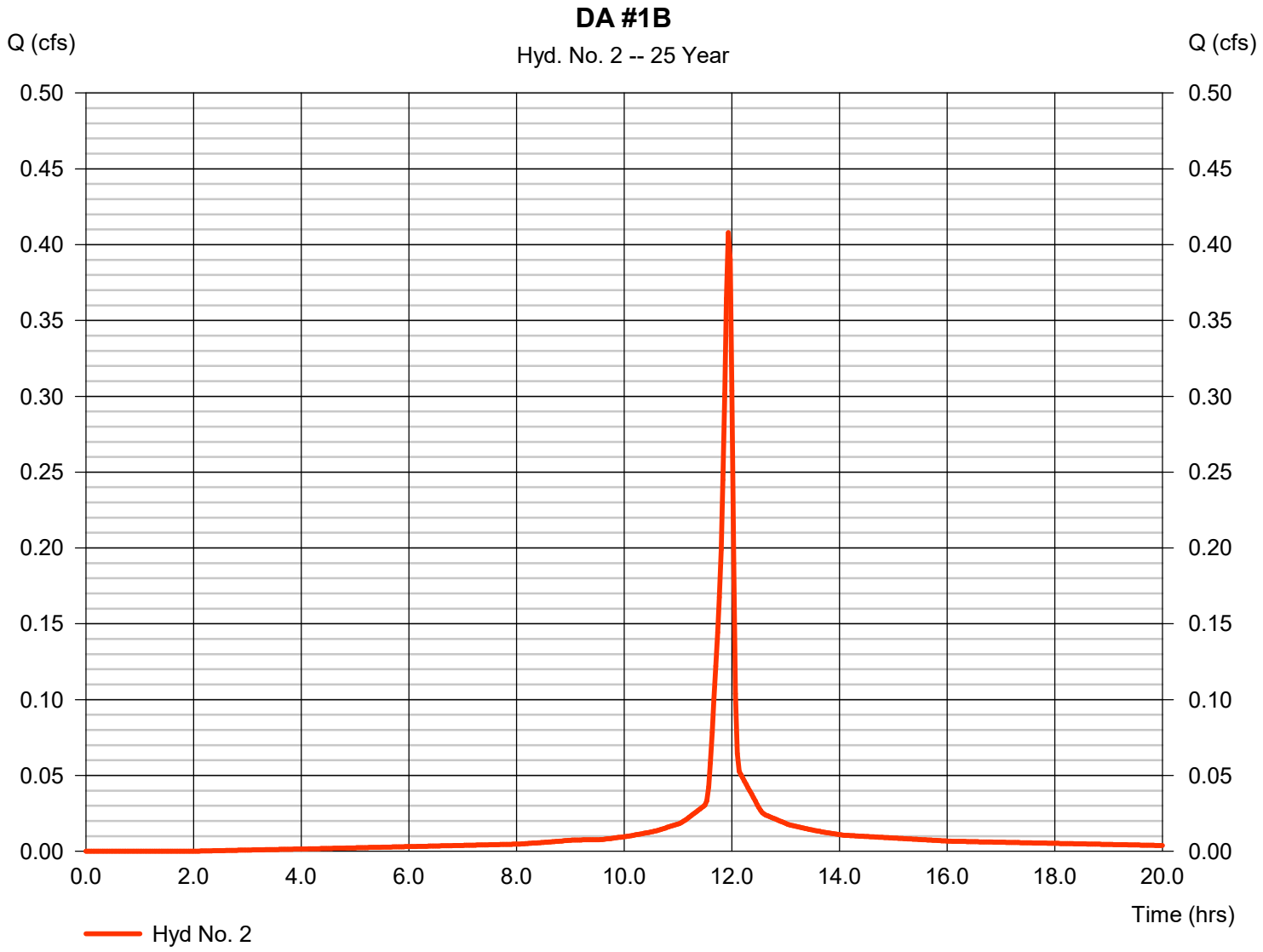
Hydrograph Report

Hyd. No. 2

DA #1B

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.408 cfs
Storm frequency	=	25 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	927 cuft
Drainage area	=	0.050 ac	Curve number	=	94*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	6.15 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.010 x 80) + (0.040 x 98)] / 0.050



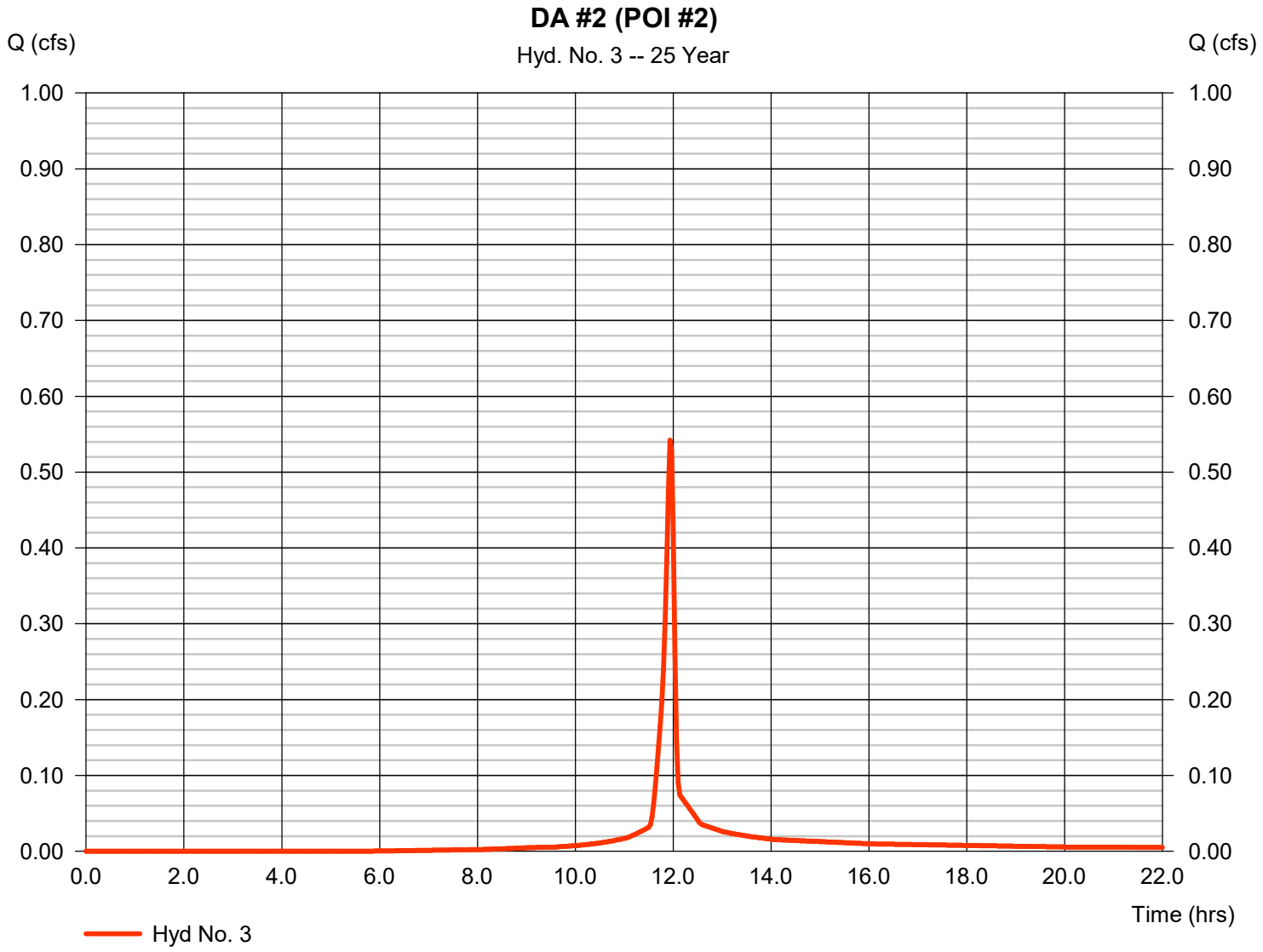
Hydrograph Report

Hyd. No. 3

DA #2 (POI #2)

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.542 cfs
Storm frequency	=	25 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	1,123 cuft
Drainage area	=	0.080 ac	Curve number	=	82*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	6.15 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.070 x 80) + (0.010 x 98)] / 0.080



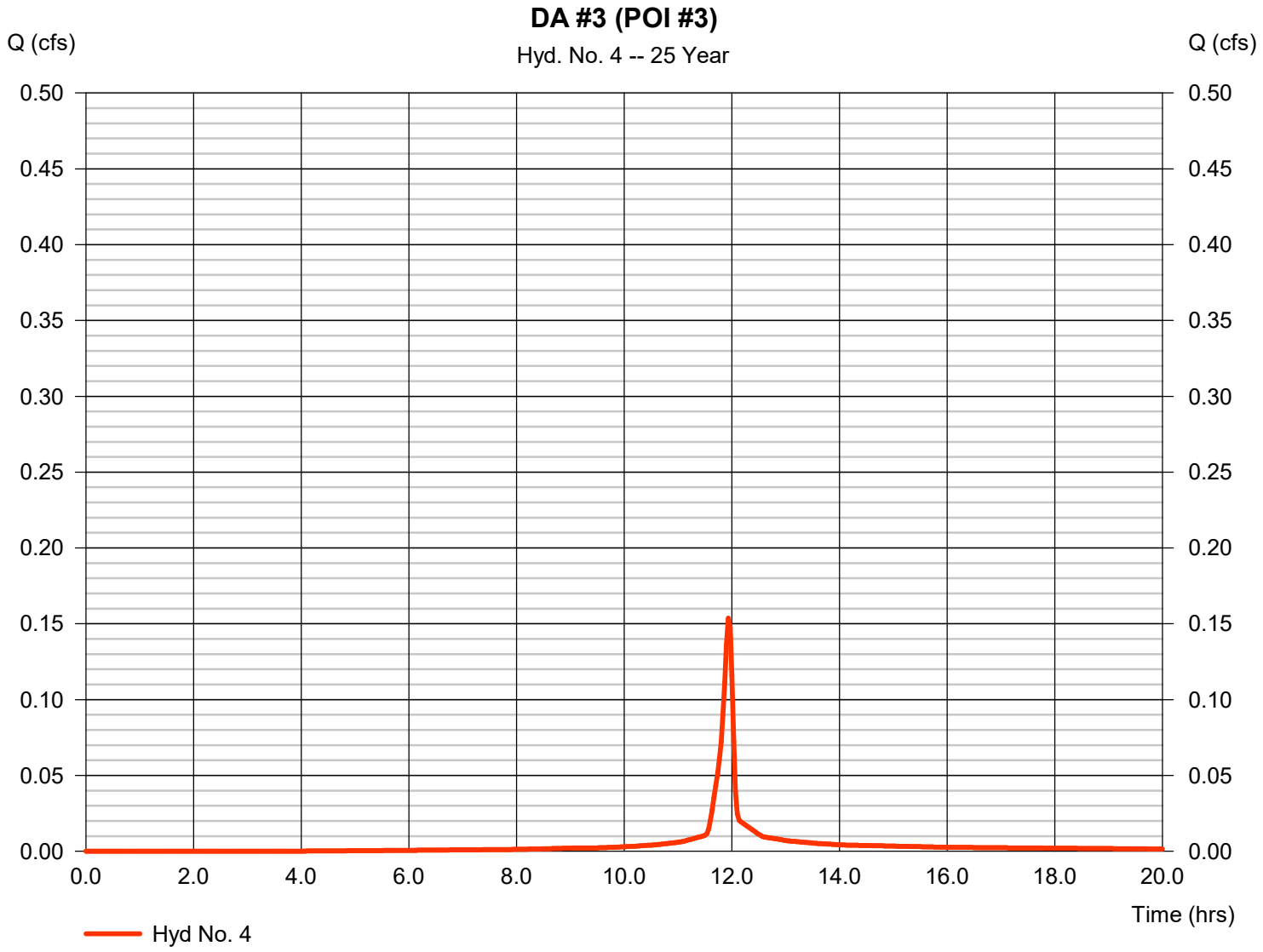
Hydrograph Report

Hyd. No. 4

DA #3 (POI #3)

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.154 cfs
Storm frequency	=	25 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	332 cuft
Drainage area	=	0.020 ac	Curve number	=	89*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	6.15 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.010 x 80) + (0.010 x 98)] / 0.020



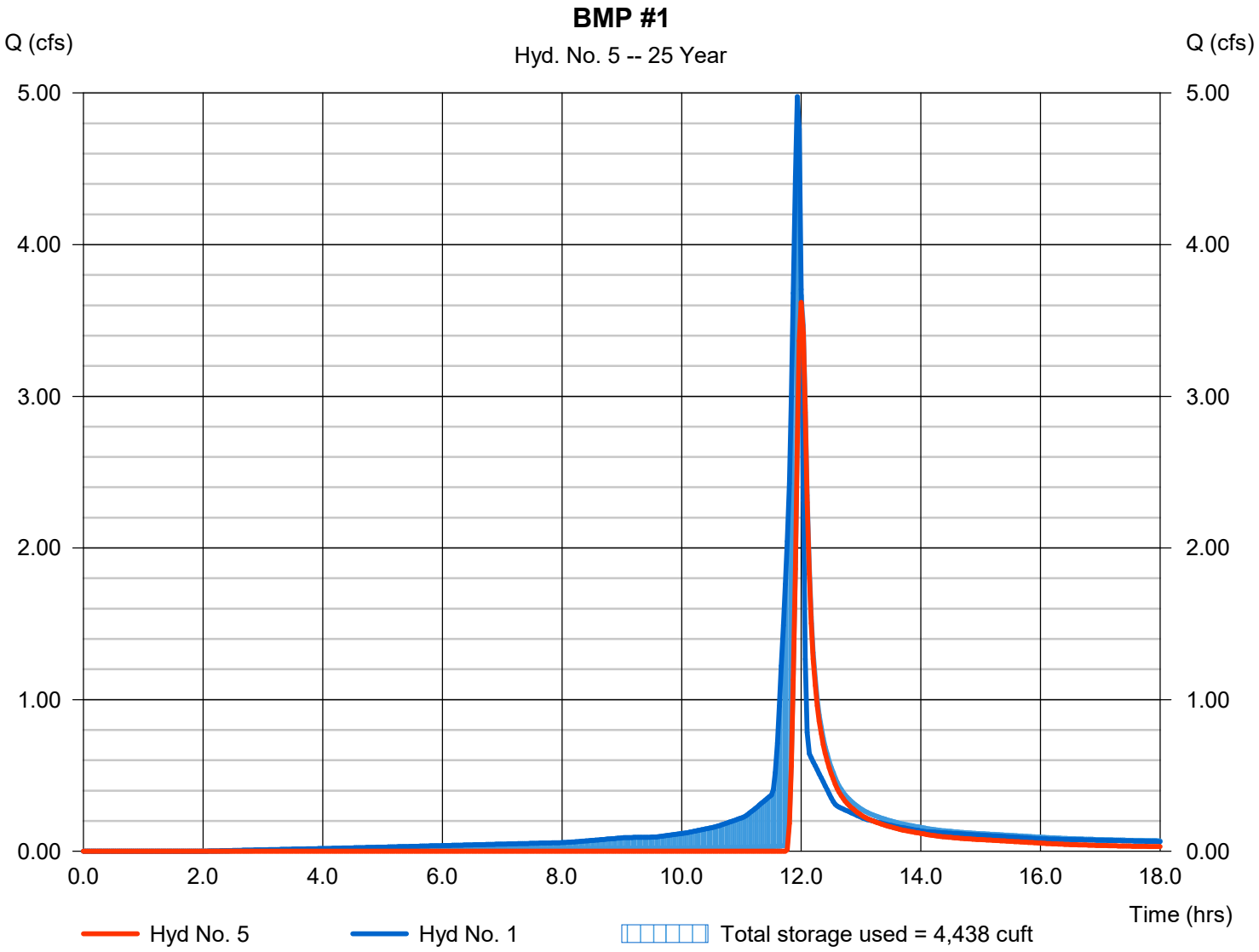
Hydrograph Report

Hyd. No. 5

BMP #1

Hydrograph type	=	Reservoir	Peak discharge	=	3.619 cfs
Storm frequency	=	25 yrs	Time to peak	=	12.00 hrs
Time interval	=	2 min	Hyd. volume	=	6,301 cuft
Inflow hyd. No.	=	1 - DA #1A	Max. Elevation	=	103.26 ft
Reservoir name	=	BMP #1	Max. Storage	=	4,438 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

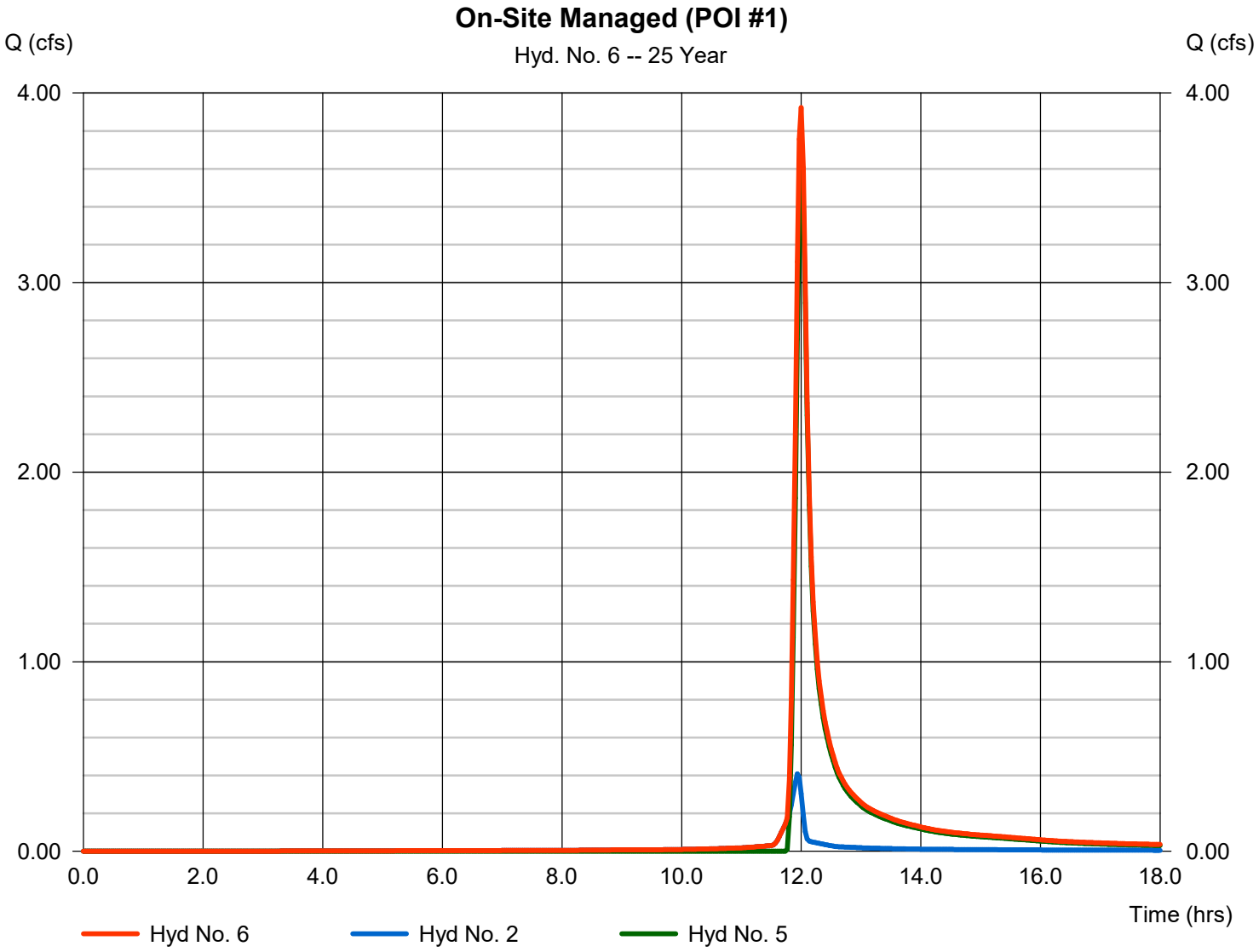


Hydrograph Report

Hyd. No. 6

On-Site Managed (POI #1)

Hydrograph type	= Combine	Peak discharge	= 3.923 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 7,228 cuft
Inflow hyds.	= 2, 5	Contrib. drain. area	= 0.050 ac

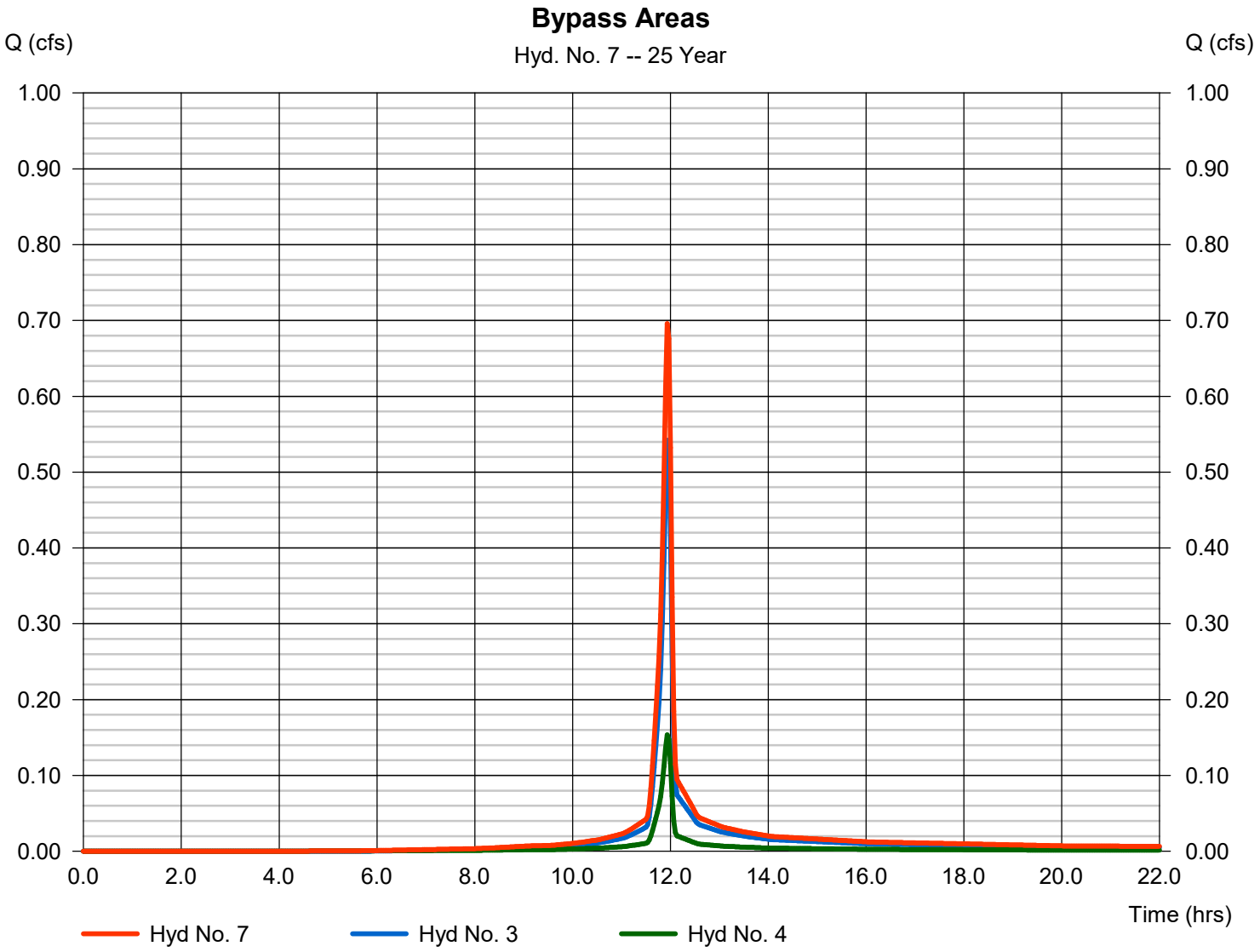


Hydrograph Report

Hyd. No. 7

Bypass Areas

Hydrograph type	= Combine	Peak discharge	= 0.696 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 1,455 cuft
Inflow hyds.	= 3, 4	Contrib. drain. area	= 0.100 ac

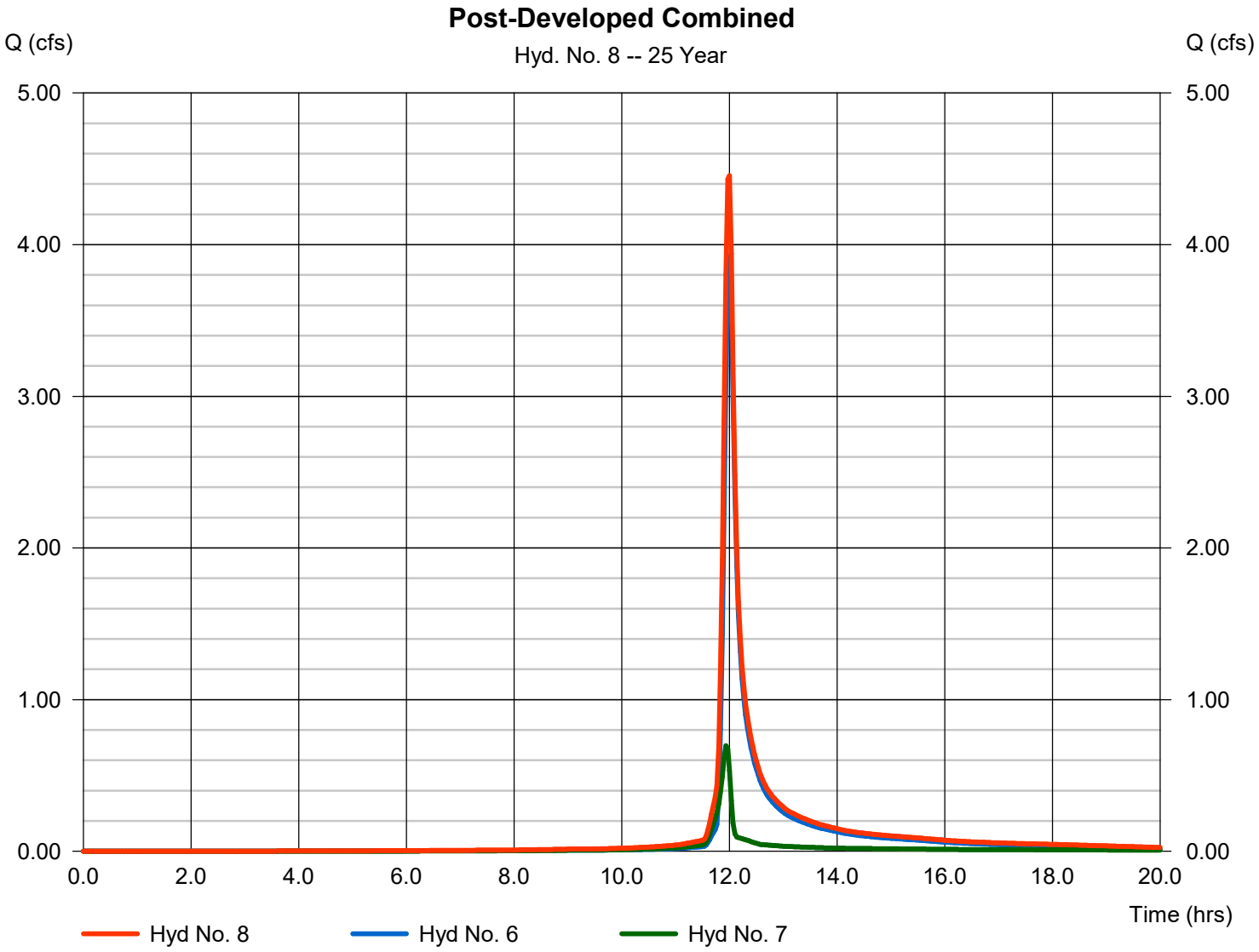


Hydrograph Report

Hyd. No. 8

Post-Developed Combined

Hydrograph type	= Combine	Peak discharge	= 4.455 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 8,683 cuft
Inflow hyds.	= 6, 7	Contrib. drain. area	= 0.000 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

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	5.809	2	716	13,322	------	------	------	DA #1A
2	SCS Runoff	0.476	2	716	1,092	------	------	------	DA #1B
3	SCS Runoff	0.655	2	716	1,372	------	------	------	DA #2 (POI #2)
4	SCS Runoff	0.182	2	716	397	------	------	------	DA #3 (POI #3)
5	Reservoir	4.497	2	720	8,211	1	103.45	4,727	BMP #1
6	Combine	4.851	2	720	9,303	2, 5	------	------	On-Site Managed (POI #1)
7	Combine	0.837	2	716	1,769	3, 4,	------	------	Bypass Areas
8	Combine	5.551	2	718	11,072	6, 7	------	------	Post-Developed Combined

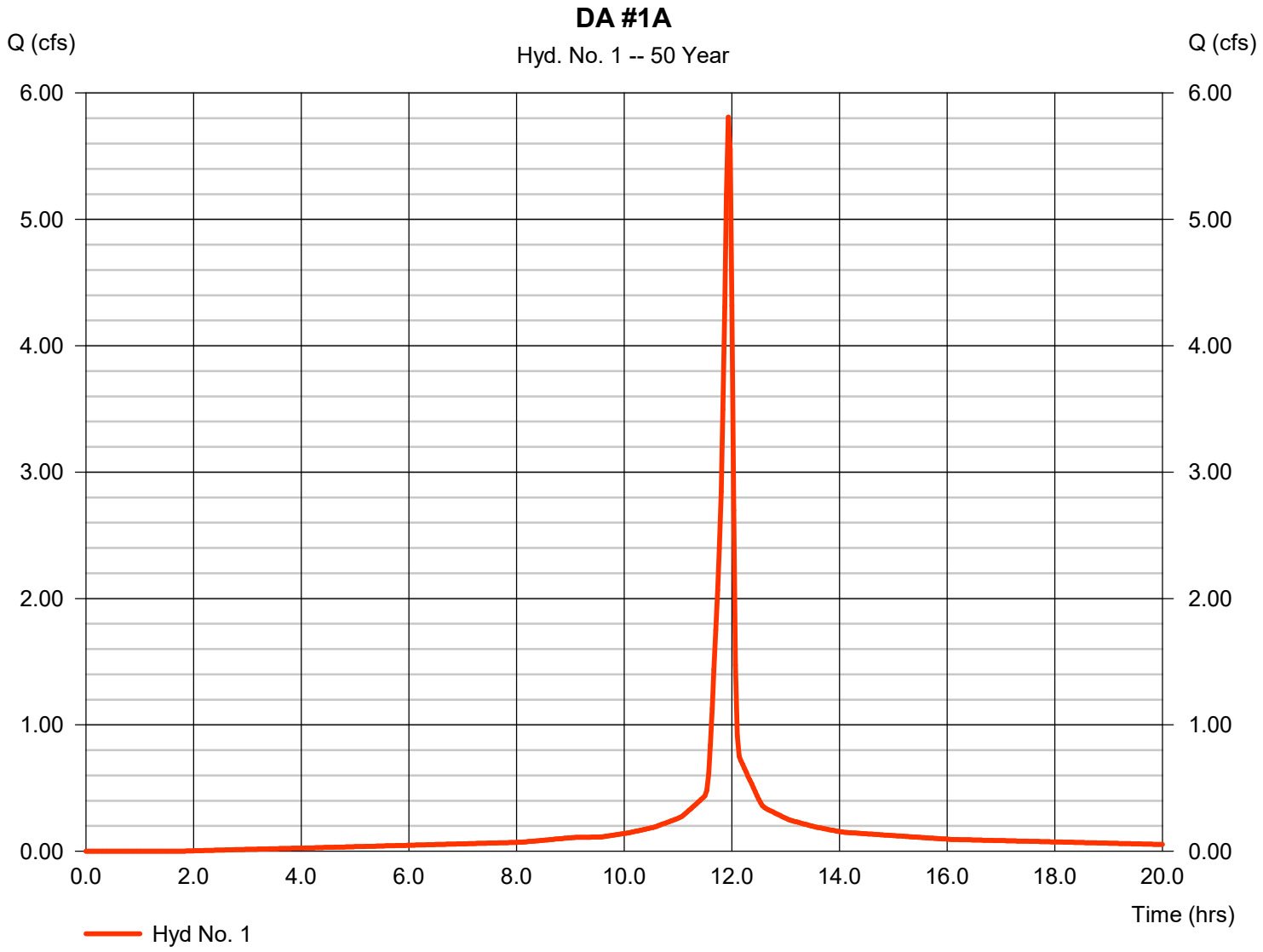
Hydrograph Report

Hyd. No. 1

DA #1A

Hydrograph type	=	SCS Runoff	Peak discharge	=	5.809 cfs
Storm frequency	=	50 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	13,322 cuft
Drainage area	=	0.610 ac	Curve number	=	94*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	7.13 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.140 x 80) + (0.470 x 98)] / 0.610



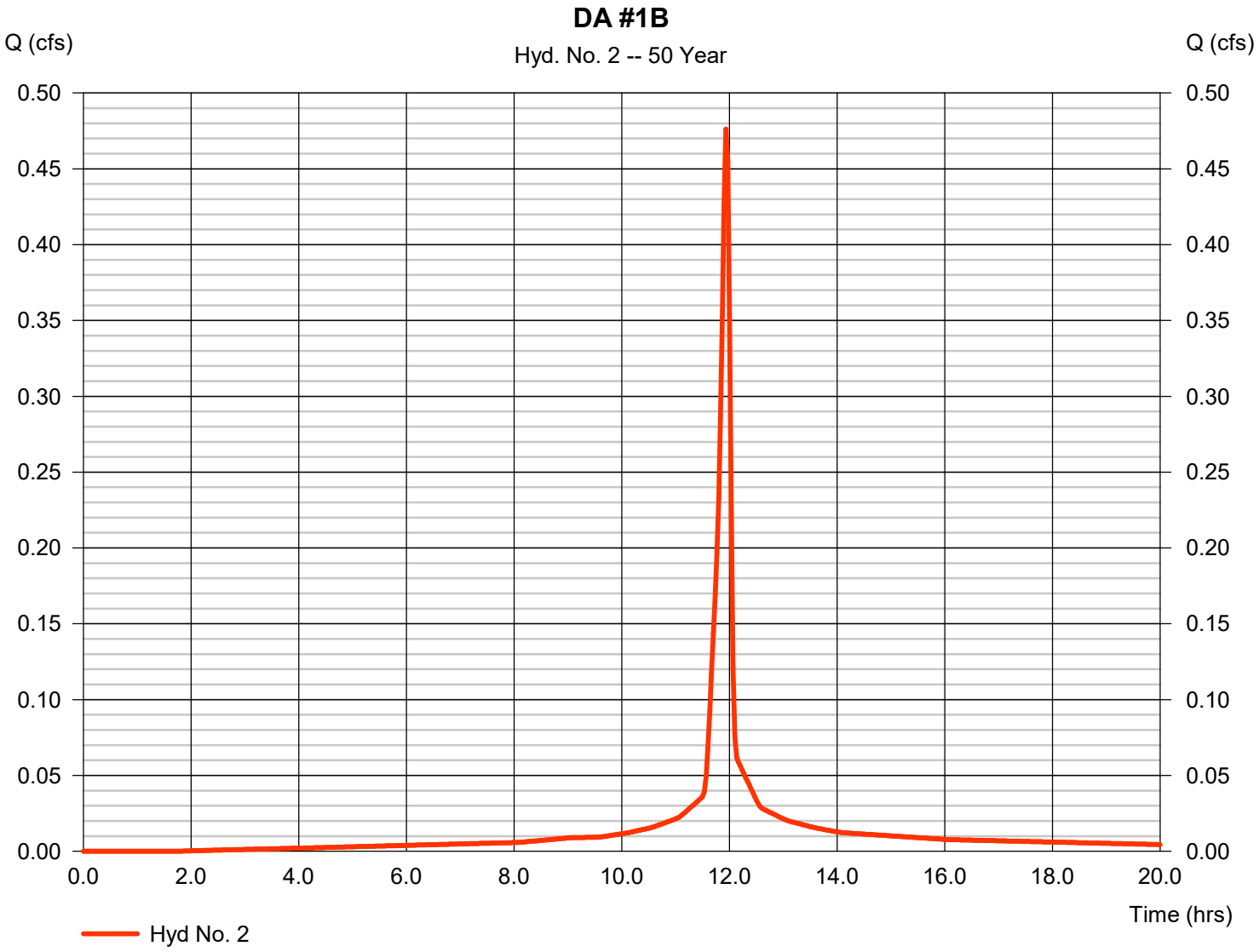
Hydrograph Report

Hyd. No. 2

DA #1B

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.476 cfs
Storm frequency	=	50 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	1,092 cuft
Drainage area	=	0.050 ac	Curve number	=	94*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	7.13 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.010 x 80) + (0.040 x 98)] / 0.050



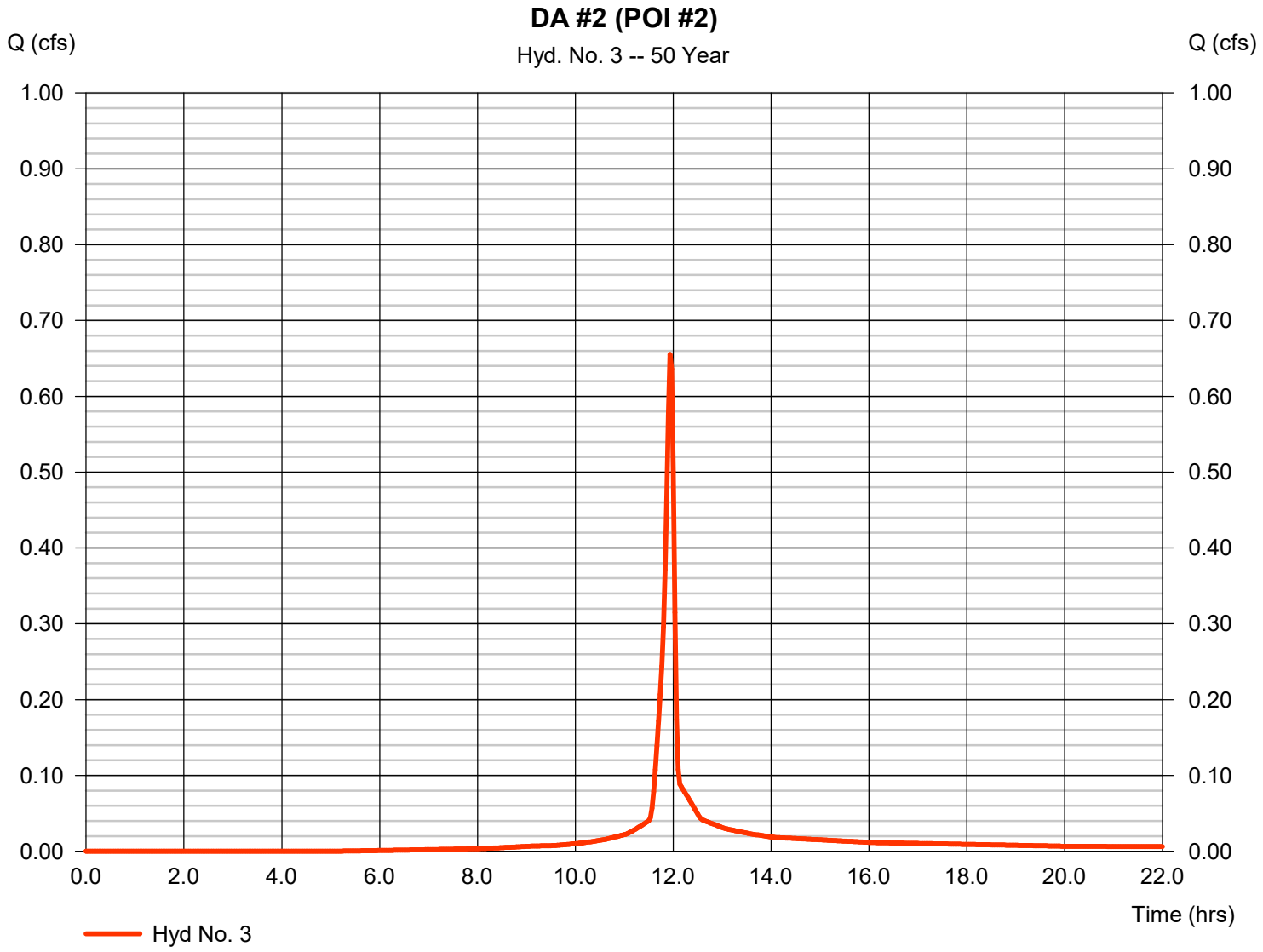
Hydrograph Report

Hyd. No. 3

DA #2 (POI #2)

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.655 cfs
Storm frequency	=	50 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	1,372 cuft
Drainage area	=	0.080 ac	Curve number	=	82*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	7.13 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.070 x 80) + (0.010 x 98)] / 0.080



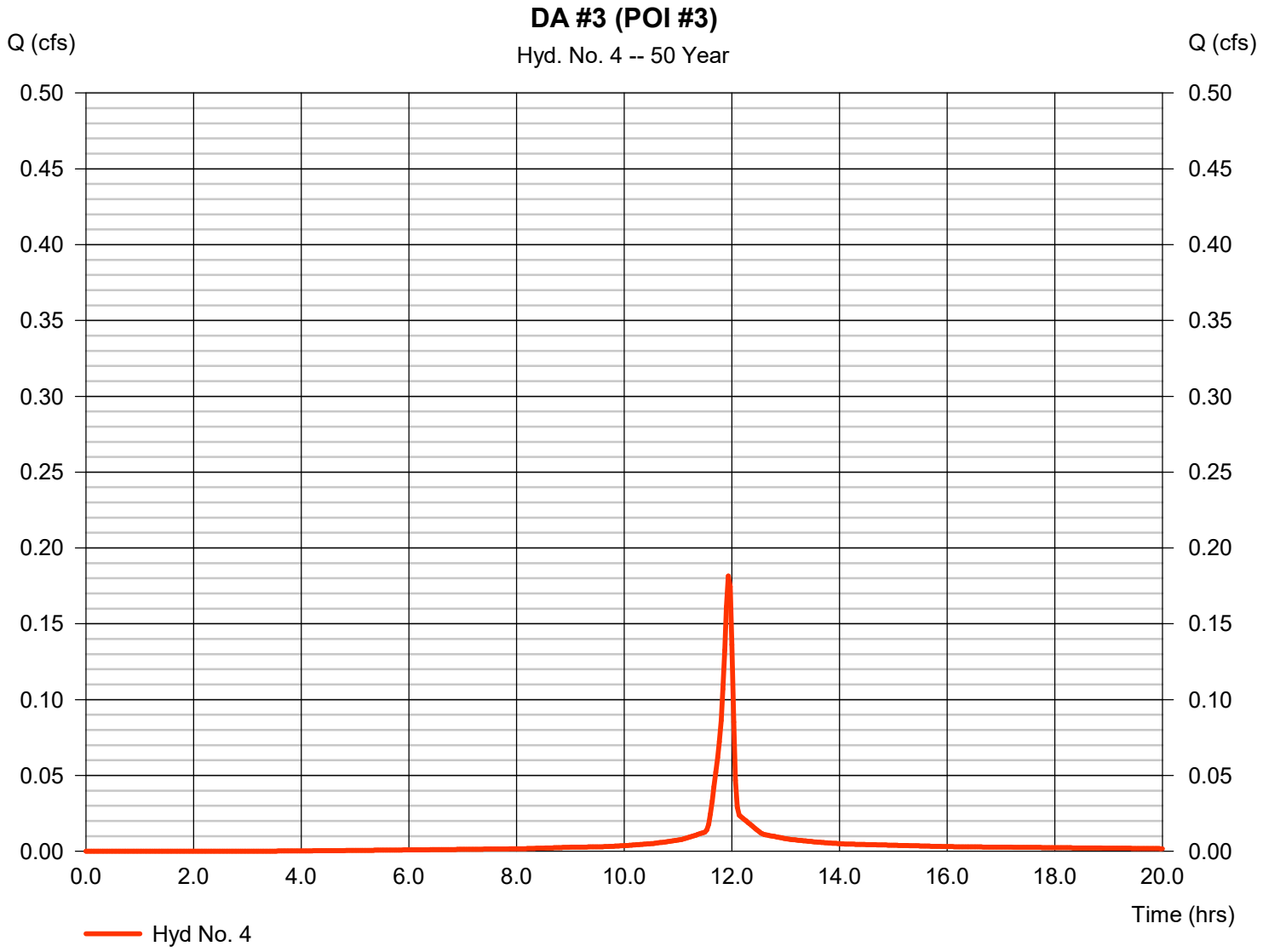
Hydrograph Report

Hyd. No. 4

DA #3 (POI #3)

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.182 cfs
Storm frequency	=	50 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	397 cuft
Drainage area	=	0.020 ac	Curve number	=	89*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	7.13 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.010 x 80) + (0.010 x 98)] / 0.020



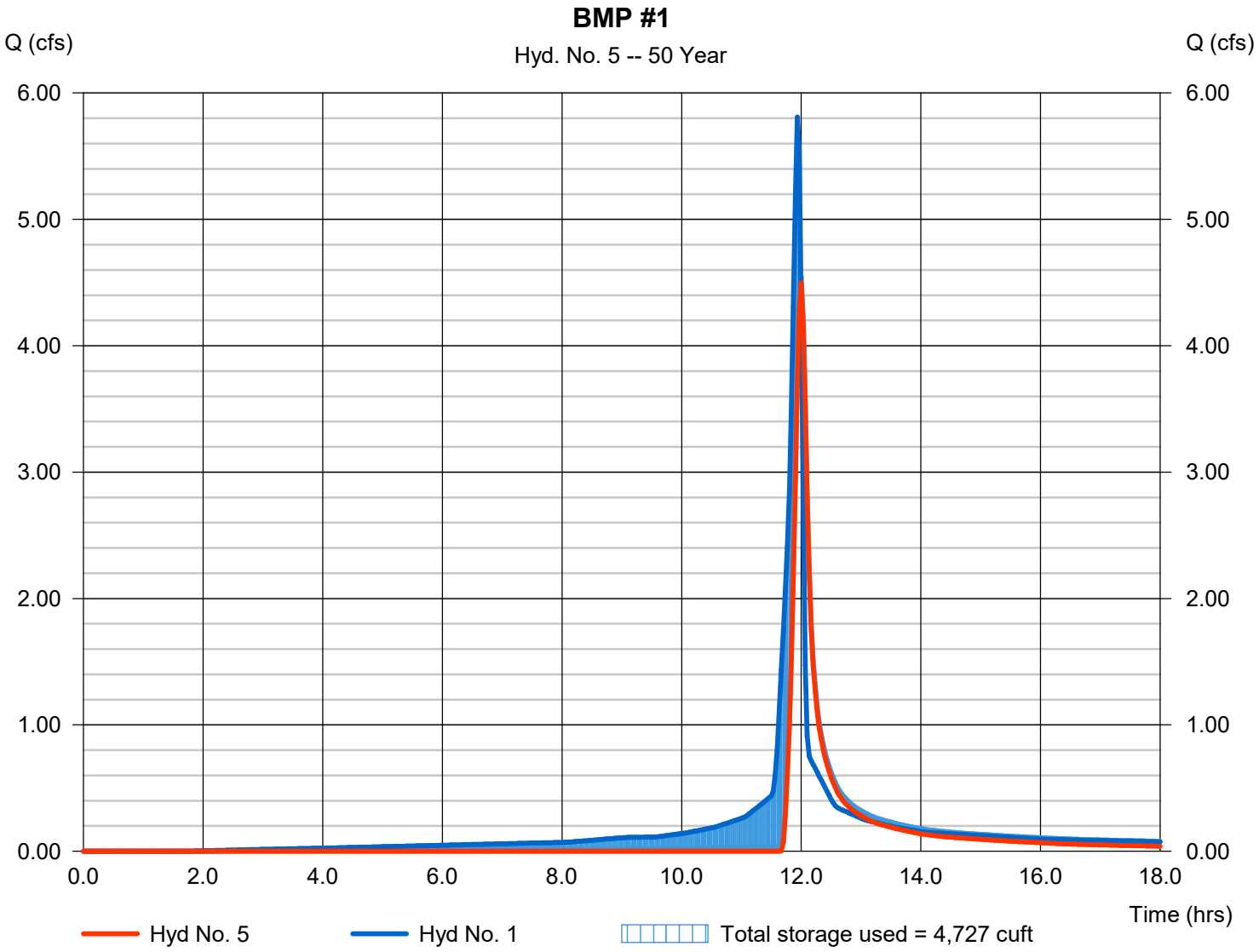
Hydrograph Report

Hyd. No. 5

BMP #1

Hydrograph type	=	Reservoir	Peak discharge	=	4.497 cfs
Storm frequency	=	50 yrs	Time to peak	=	12.00 hrs
Time interval	=	2 min	Hyd. volume	=	8,211 cuft
Inflow hyd. No.	=	1 - DA #1A	Max. Elevation	=	103.45 ft
Reservoir name	=	BMP #1	Max. Storage	=	4,727 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

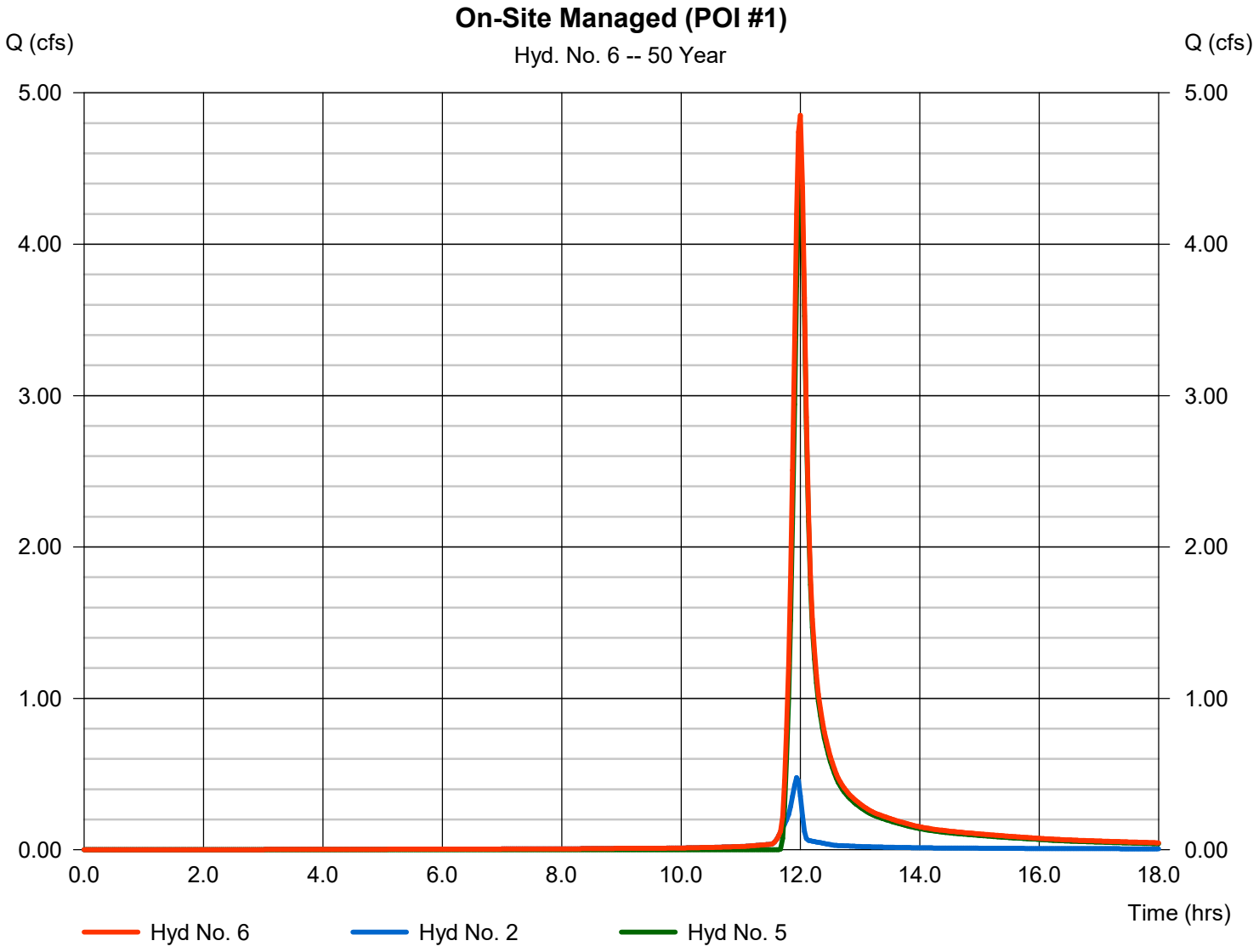


Hydrograph Report

Hyd. No. 6

On-Site Managed (POI #1)

Hydrograph type	= Combine	Peak discharge	= 4.851 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 9,303 cuft
Inflow hyds.	= 2, 5	Contrib. drain. area	= 0.050 ac

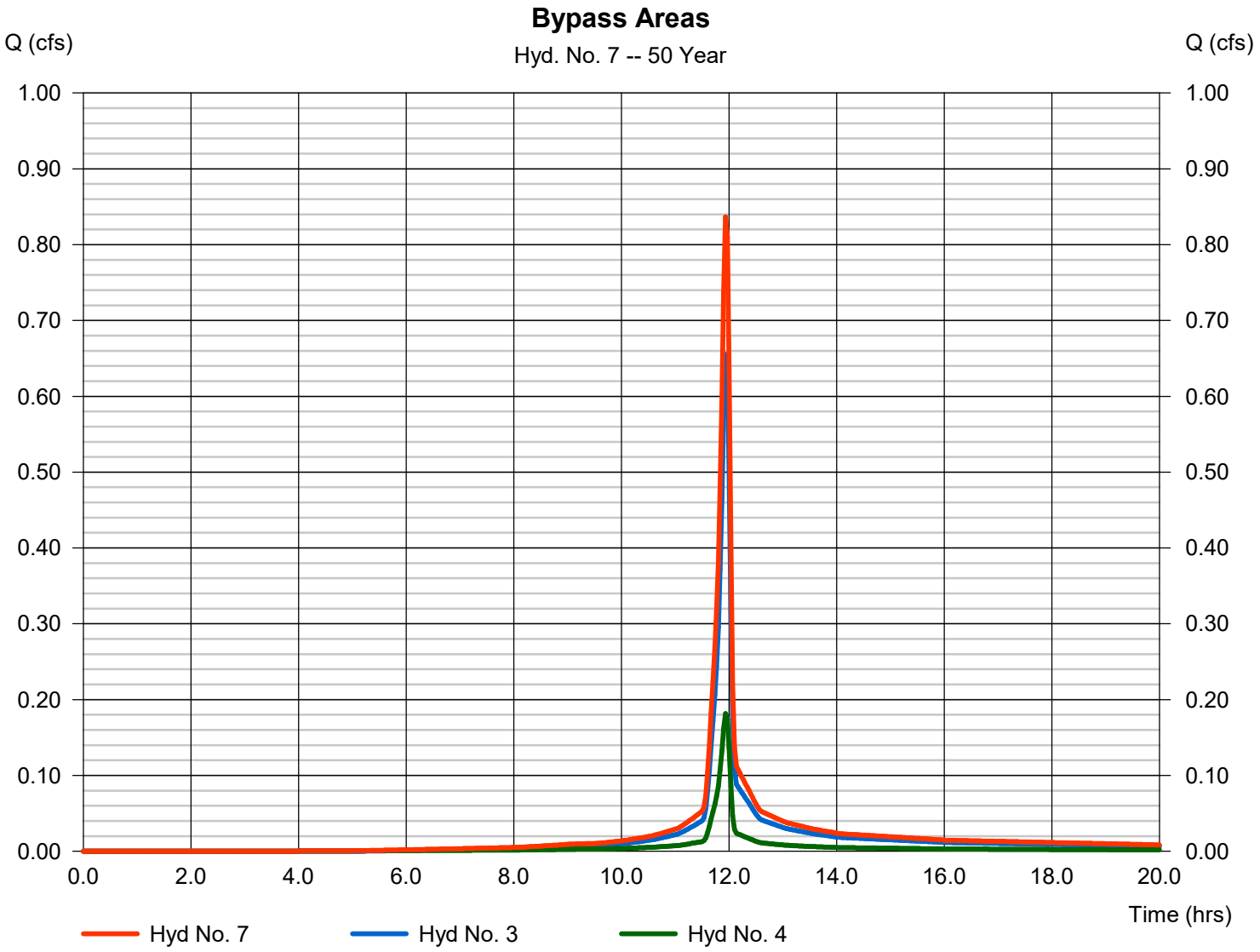


Hydrograph Report

Hyd. No. 7

Bypass Areas

Hydrograph type	= Combine	Peak discharge	= 0.837 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 1,769 cuft
Inflow hyds.	= 3, 4	Contrib. drain. area	= 0.100 ac

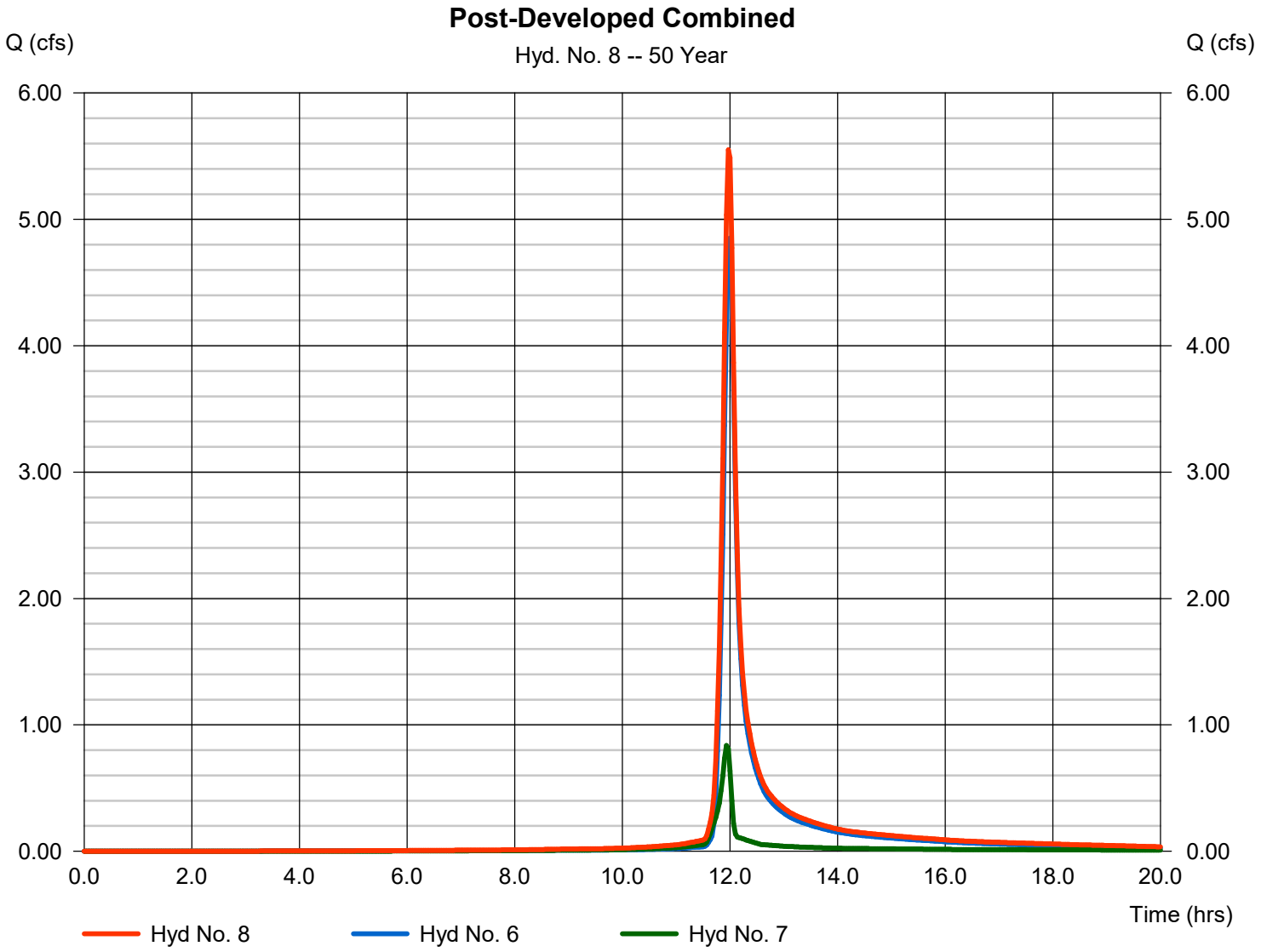


Hydrograph Report

Hyd. No. 8

Post-Developed Combined

Hydrograph type	=	Combine	Peak discharge	=	5.551 cfs
Storm frequency	=	50 yrs	Time to peak	=	11.97 hrs
Time interval	=	2 min	Hyd. volume	=	11,072 cuft
Inflow hyds.	=	6, 7	Contrib. drain. area	=	0.000 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

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	6.723	2	716	15,550	------	------	------	DA #1A
2	SCS Runoff	0.551	2	716	1,275	------	------	------	DA #1B
3	SCS Runoff	0.780	2	716	1,650	------	------	------	DA #2 (POI #2)
4	SCS Runoff	0.212	2	716	469	------	------	------	DA #3 (POI #3)
5	Reservoir	5.303	2	720	10,345	1	103.68	4,996	BMP #1
6	Combine	5.713	2	720	11,620	2, 5	------	------	On-Site Managed (POI #1)
7	Combine	0.992	2	716	2,119	3, 4,	------	------	Bypass Areas
8	Combine	6.638	2	718	13,739	6, 7	------	------	Post-Developed Combined

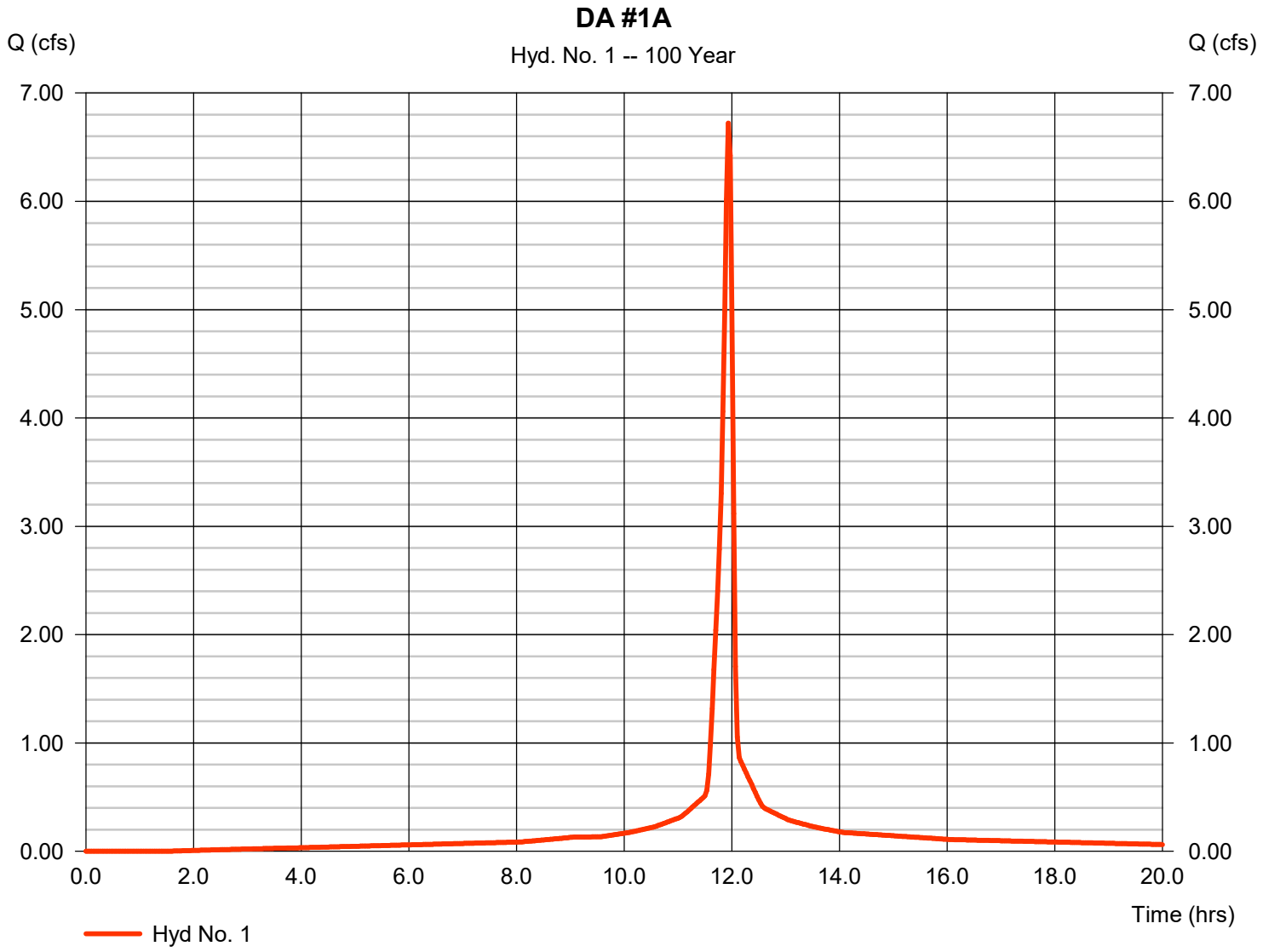
Hydrograph Report

Hyd. No. 1

DA #1A

Hydrograph type	=	SCS Runoff	Peak discharge	=	6.723 cfs
Storm frequency	=	100 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	15,550 cuft
Drainage area	=	0.610 ac	Curve number	=	94*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	8.21 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.140 x 80) + (0.470 x 98)] / 0.610



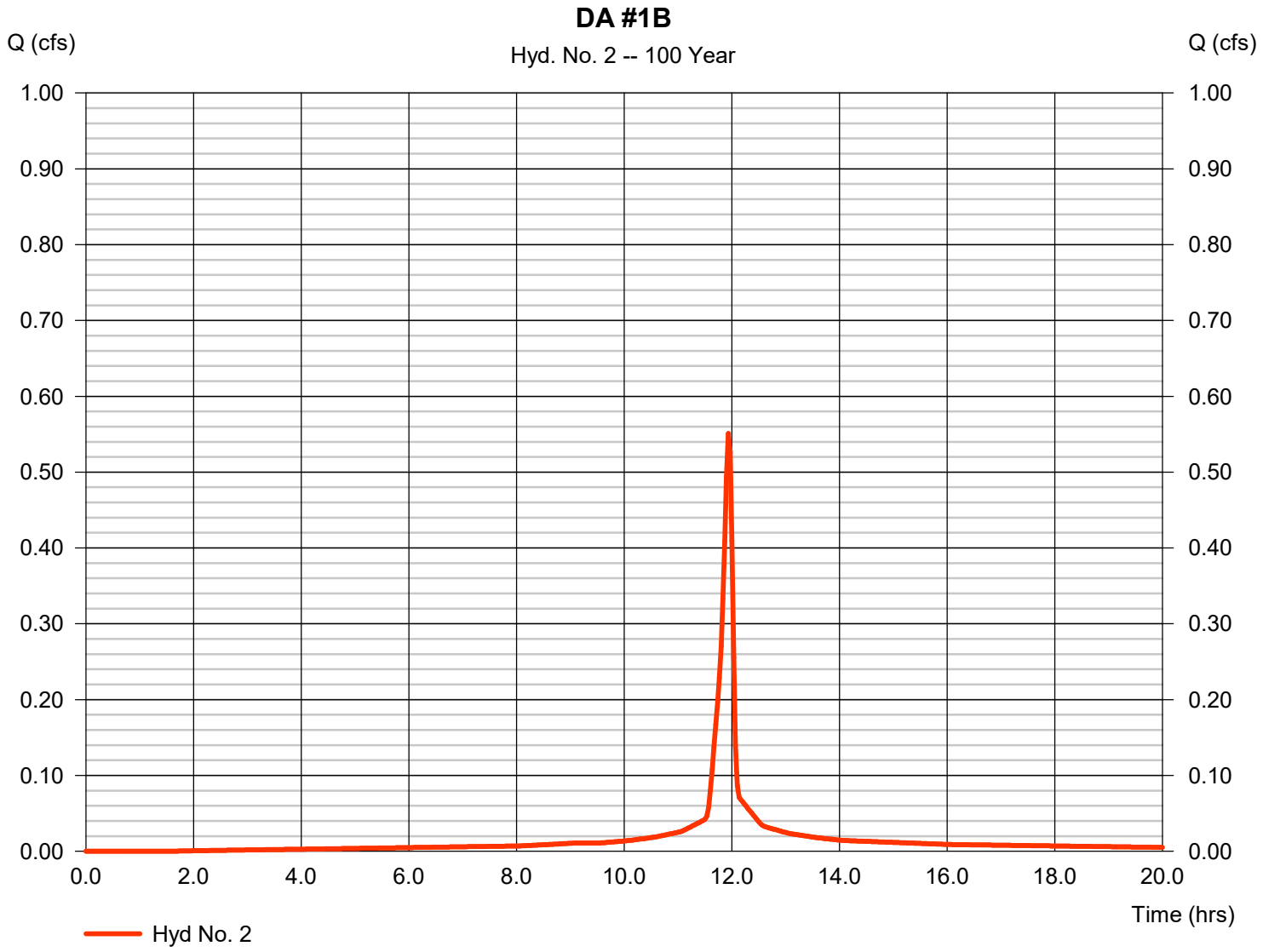
Hydrograph Report

Hyd. No. 2

DA #1B

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.551 cfs
Storm frequency	=	100 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	1,275 cuft
Drainage area	=	0.050 ac	Curve number	=	94*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	8.21 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.010 x 80) + (0.040 x 98)] / 0.050



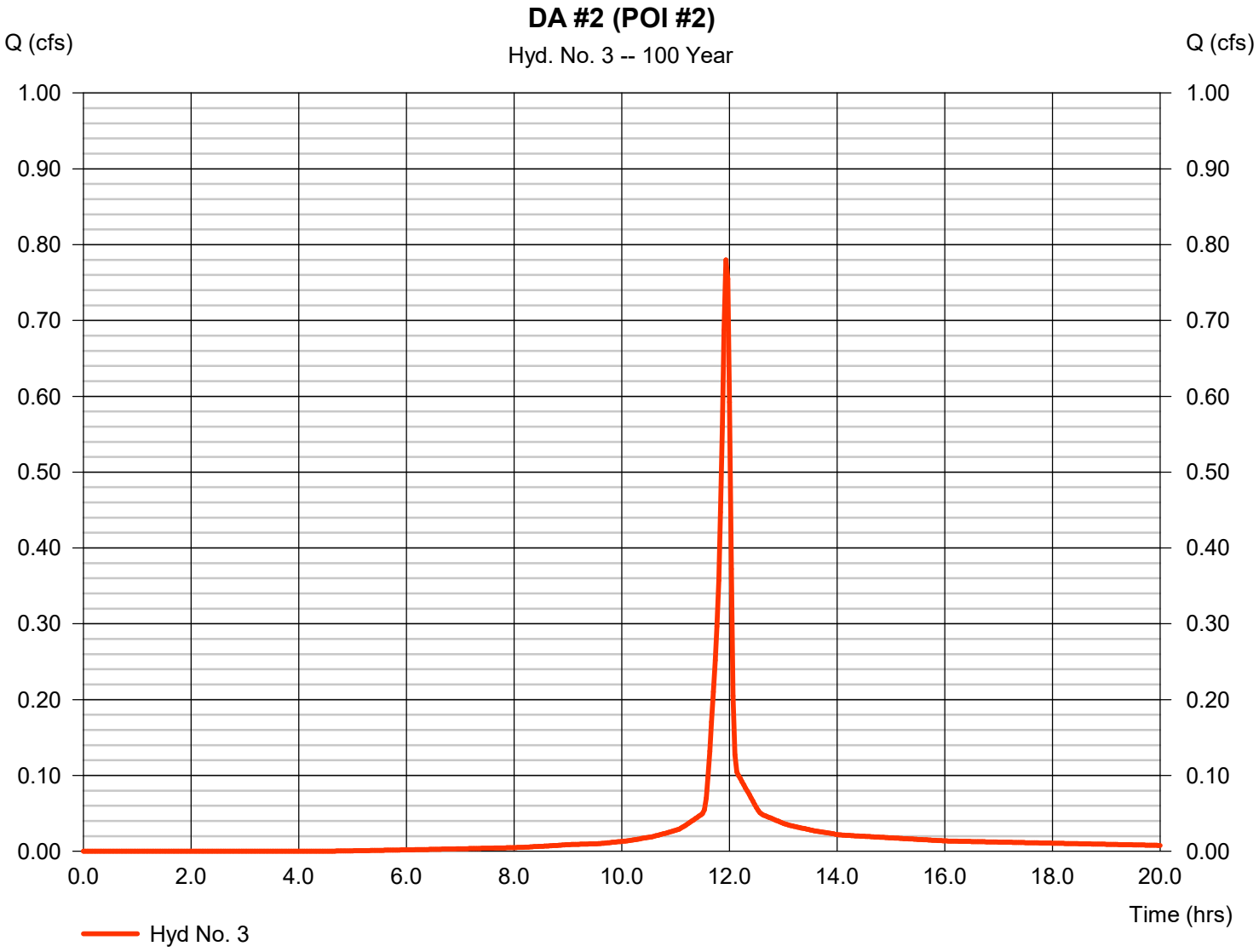
Hydrograph Report

Hyd. No. 3

DA #2 (POI #2)

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.780 cfs
Storm frequency	=	100 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	1,650 cuft
Drainage area	=	0.080 ac	Curve number	=	82*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	8.21 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.070 x 80) + (0.010 x 98)] / 0.080



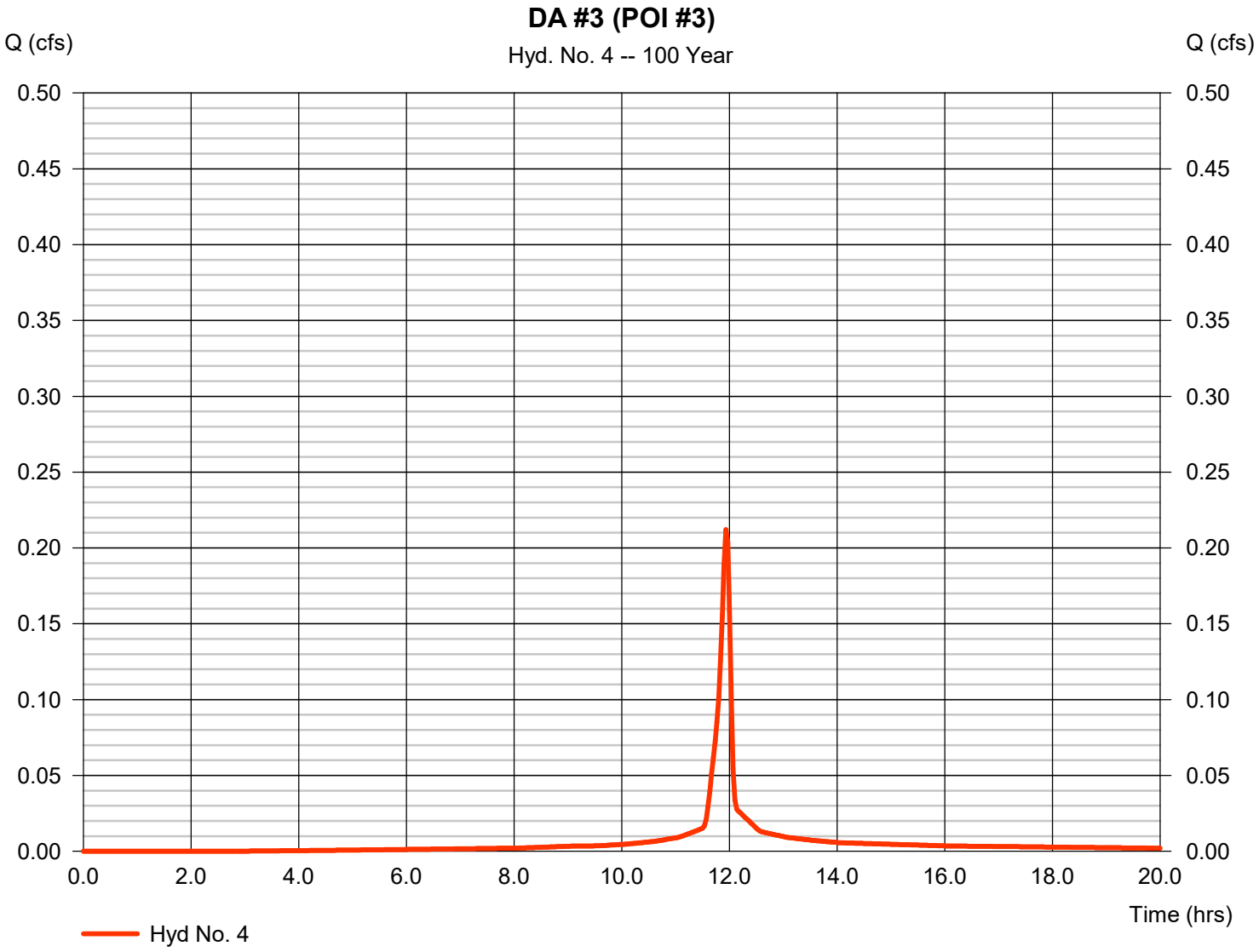
Hydrograph Report

Hyd. No. 4

DA #3 (POI #3)

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.212 cfs
Storm frequency	=	100 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	469 cuft
Drainage area	=	0.020 ac	Curve number	=	89*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	8.21 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.010 x 80) + (0.010 x 98)] / 0.020



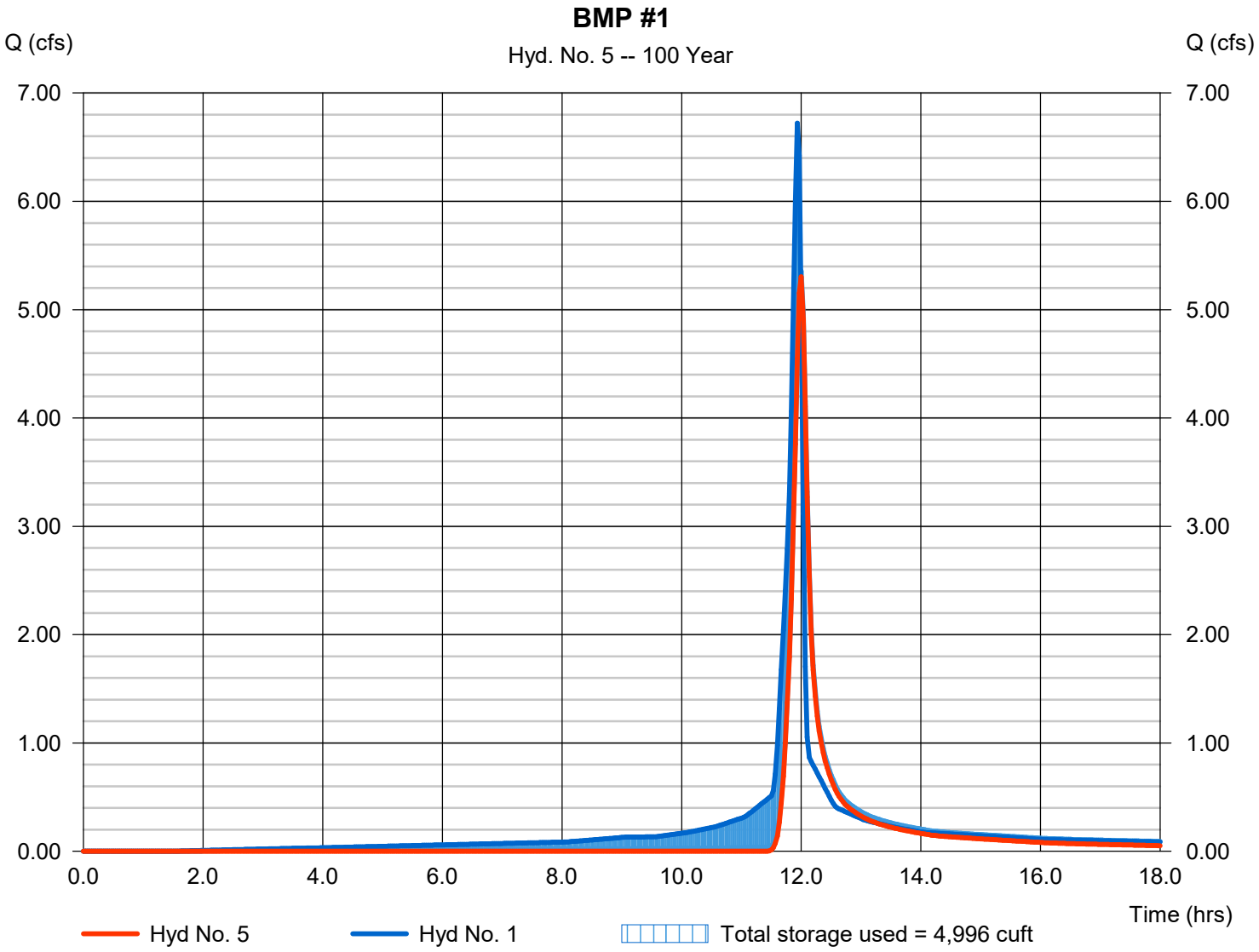
Hydrograph Report

Hyd. No. 5

BMP #1

Hydrograph type	=	Reservoir	Peak discharge	=	5.303 cfs
Storm frequency	=	100 yrs	Time to peak	=	12.00 hrs
Time interval	=	2 min	Hyd. volume	=	10,345 cuft
Inflow hyd. No.	=	1 - DA #1A	Max. Elevation	=	103.68 ft
Reservoir name	=	BMP #1	Max. Storage	=	4,996 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

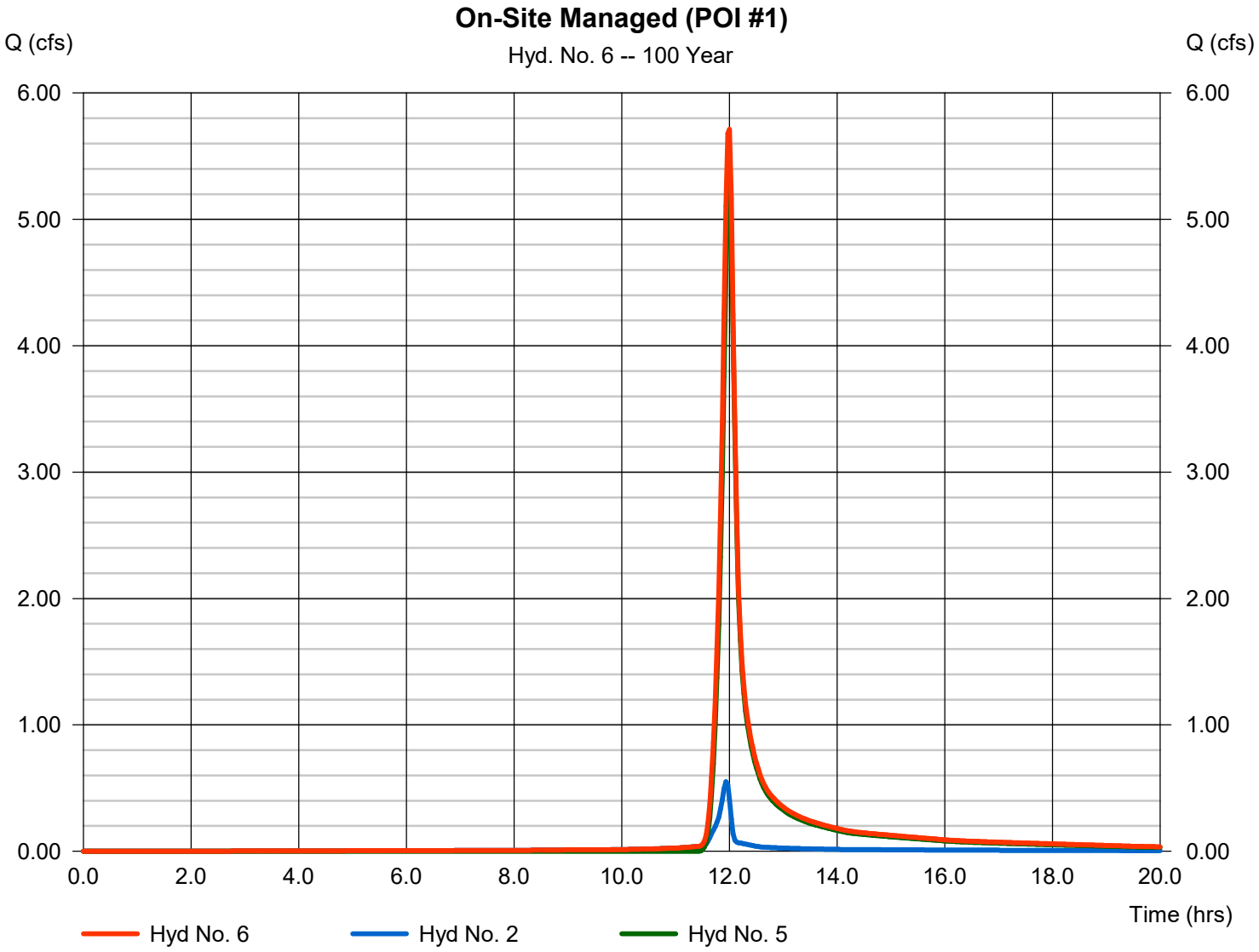


Hydrograph Report

Hyd. No. 6

On-Site Managed (POI #1)

Hydrograph type	=	Combine	Peak discharge	=	5.713 cfs
Storm frequency	=	100 yrs	Time to peak	=	12.00 hrs
Time interval	=	2 min	Hyd. volume	=	11,620 cuft
Inflow hyds.	=	2, 5	Contrib. drain. area	=	0.050 ac

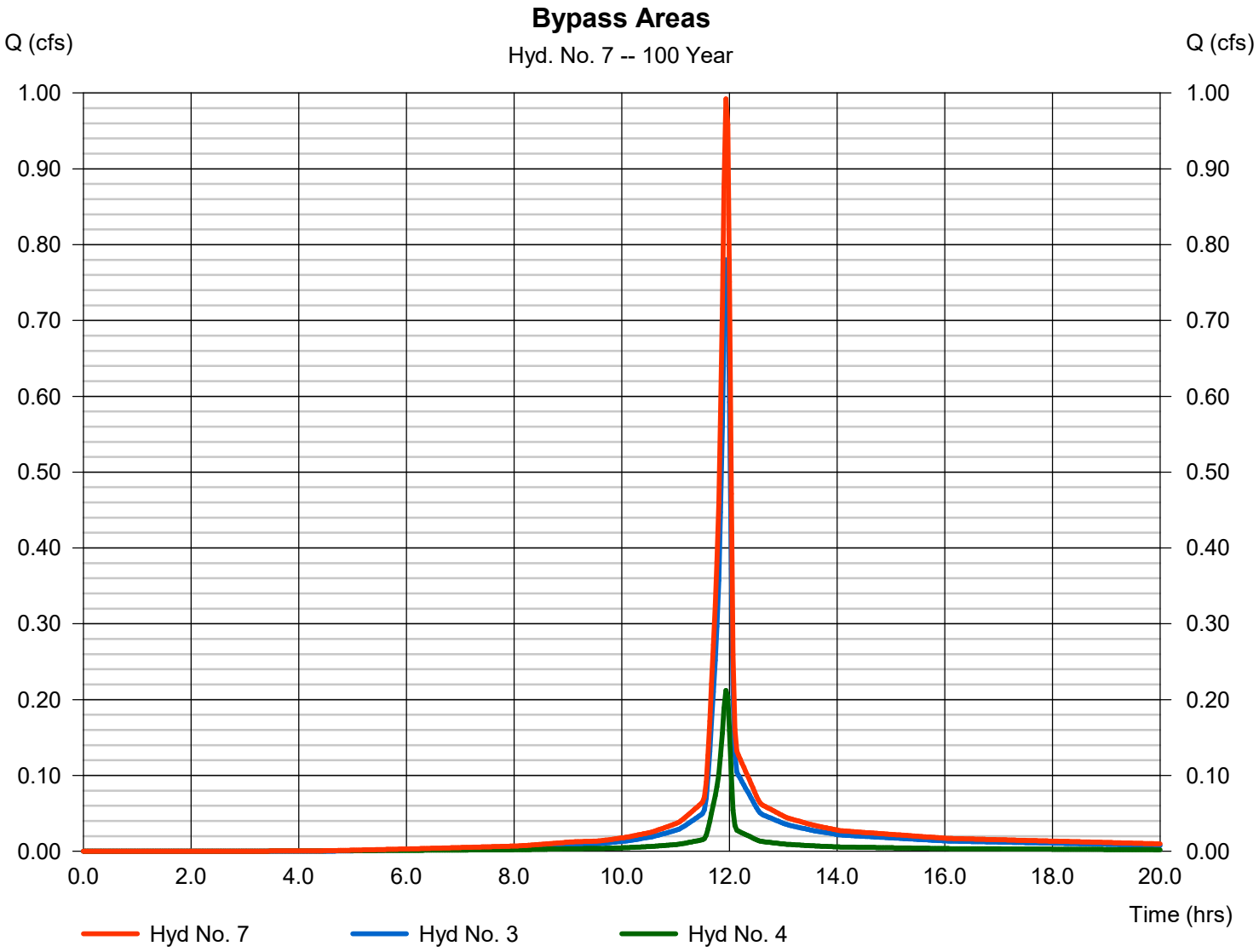


Hydrograph Report

Hyd. No. 7

Bypass Areas

Hydrograph type	= Combine	Peak discharge	= 0.992 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 2,119 cuft
Inflow hyds.	= 3, 4	Contrib. drain. area	= 0.100 ac

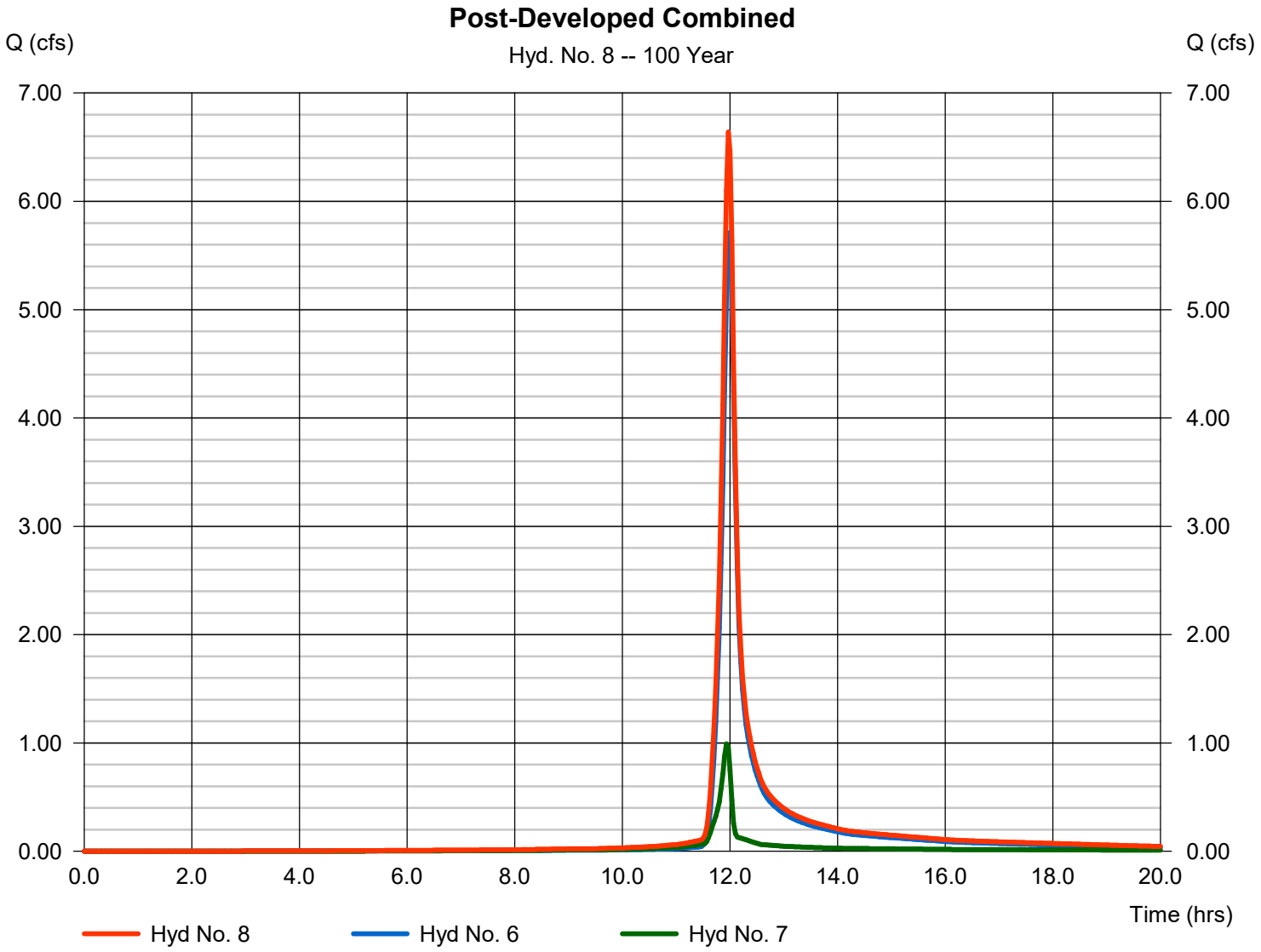


Hydrograph Report

Hyd. No. 8

Post-Developed Combined

Hydrograph type	=	Combine	Peak discharge	=	6.638 cfs
Storm frequency	=	100 yrs	Time to peak	=	11.97 hrs
Time interval	=	2 min	Hyd. volume	=	13,739 cuft
Inflow hyds.	=	6, 7	Contrib. drain. area	=	0.000 ac



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	115.5004	22.5000	1.0000	--------
3	0.0000	0.0000	0.0000	--------
5	51.9372	9.3000	0.7907	--------
10	278.8819	24.8001	1.1120	--------
25	219.5284	23.1000	1.0246	--------
50	269.6732	24.9001	1.0391	--------
100	2352.9341	42.7999	1.4497	--------

File name: NJ IDF TABLE.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	4.20	3.55	3.08	2.72	2.43	2.20	2.01	1.85	1.71	1.59	1.49	1.40
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.34	5.00	4.17	3.59	3.17	2.85	2.59	2.38	2.21	2.06	1.93	1.82
10	6.40	5.38	4.64	4.07	3.61	3.25	2.95	2.70	2.48	2.30	2.14	2.00
25	7.20	6.09	5.27	4.64	4.15	3.75	3.42	3.14	2.91	2.70	2.53	2.37
50	7.90	6.72	5.85	5.18	4.64	4.20	3.84	3.53	3.27	3.04	2.84	2.67
100	8.65	7.49	6.57	5.82	5.21	4.70	4.27	3.90	3.58	3.31	3.06	2.85

Tc = time in minutes. Values may exceed 60.

lorgan Chase\Bensalem, PA (Bensalem)-JPM.29391\CIVIL\Engineering\Stormwater\Chase Bank Bensalem Precip.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	2.76	3.34	0.00	4.24	5.01	6.15	7.13	8.21
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Thursday, 08 / 26 / 2021

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APPENDIX D

DRAINAGE AREA MAPS

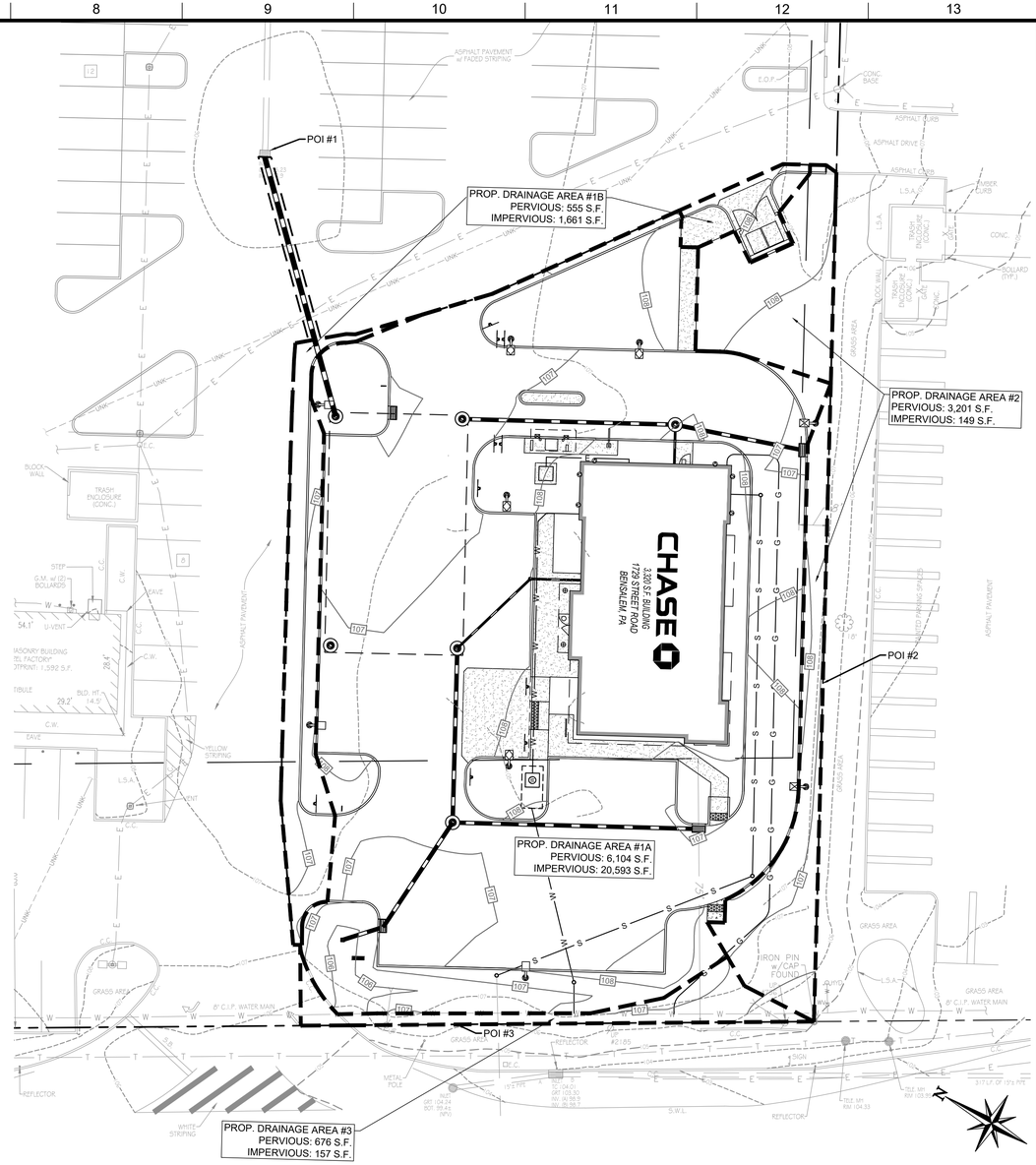
TR-55 CURVE NUMBERS

HYDROLOGIC SOIL GROUP 'D'

- MEADOW GOOD CONDITION - 78
- IMPERVIOUS SURFACE - 98

PRE-DEVELOPMENT DRAINAGE AREA MAP

GRAPHIC SCALE
20 10 5 0 20
1" = 20'



TR-55 CURVE NUMBERS

HYDROLOGIC SOIL GROUP 'D'

- LANDSCAPE AREAS - 80
- IMPERVIOUS SURFACE - 98

POST-DEVELOPMENT DRAINAGE AREA MAP

GRAPHIC SCALE
20 10 5 0 20
1" = 20'

ALERT TO CONTRACTOR:

PRIOR TO THE CONSTRUCTION OF OR CONNECTION TO ANY STORM DRAIN, SANITARY SEWER, WATER MAIN OR ANY OF THE DRY UTILITIES, THE CONTRACTOR SHALL EXCAVATE, VERIFY AND CALCULATE ALL POINTS OF CONNECTION AND ALL UTILITY CROSSINGS AND INFORM ENGINEER AND THE OWNER OF ANY CONFLICT OR REQUIRED DEVIATIONS FROM THE PLAN. NOTIFICATION SHALL BE MADE A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION. ENGINEER AND OWNER SHALL BE HELD HARMLESS IN THE EVENT THAT THE CONTRACTOR FAILS TO MAKE SUCH NOTIFICATION.

CORE STATES GROUP
201 S. Maple Avenue, Suite 300
Ambler, PA 19002
Phone (215) 809-2125
MSwaggard@core-states.com

CLIENT

CHASE

Know what's below. Call before you dig.

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON DESIGN PLANS AND/OR FIELD LOCATIONS PERFORMED BY OTHERS AND/OR VISUAL FIELD MEASUREMENTS TAKEN IN THE FIELD. CORE STATES, INC. DOES NOT GUARANTEE THAT LOCATIONS SHOWN ARE EXACT. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANIES 72 WORKING HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF UTILITIES.

REVISIONS

REV	DATE	COMMENT	BY
1	08/24/21	BCCD, BCPC, AND TWP COMMENTS	CML

DOCUMENT

PRELIMINARY/ FINAL LAND DEVELOPMENT PLAN FOR CHASE BANK

SITE LOCATION

1729 STREET ROAD
BENSALEM, PA
19020

ENGINEER SEAL

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
FRANCIS GREENE
ENGINEER
No. PE075817
PENNSYLVANIA

08/26/2021

FRANCIS GREENE, P.E.
PA LICENSE #075817

SHEET TITLE

DRAINAGE AREA MAPS

JOB #:	JPM-29391
DATE:	5/13/21
SCALE:	1" = 20'
DRAWN BY:	CML
CHECKED BY:	FG

SHEET NO.

DA

User: CLANG Plot Date/Time: Aug. 26, 21 - 09:42:42 Drawing: P:\J.P. Morgan Chase\Bensalem, PA (Bensalem)-JPM.29391\CIVIL\Drawings\Presentation\JPM.29391-P-EROS.dwg :DRAN MAP

APPENDIX E

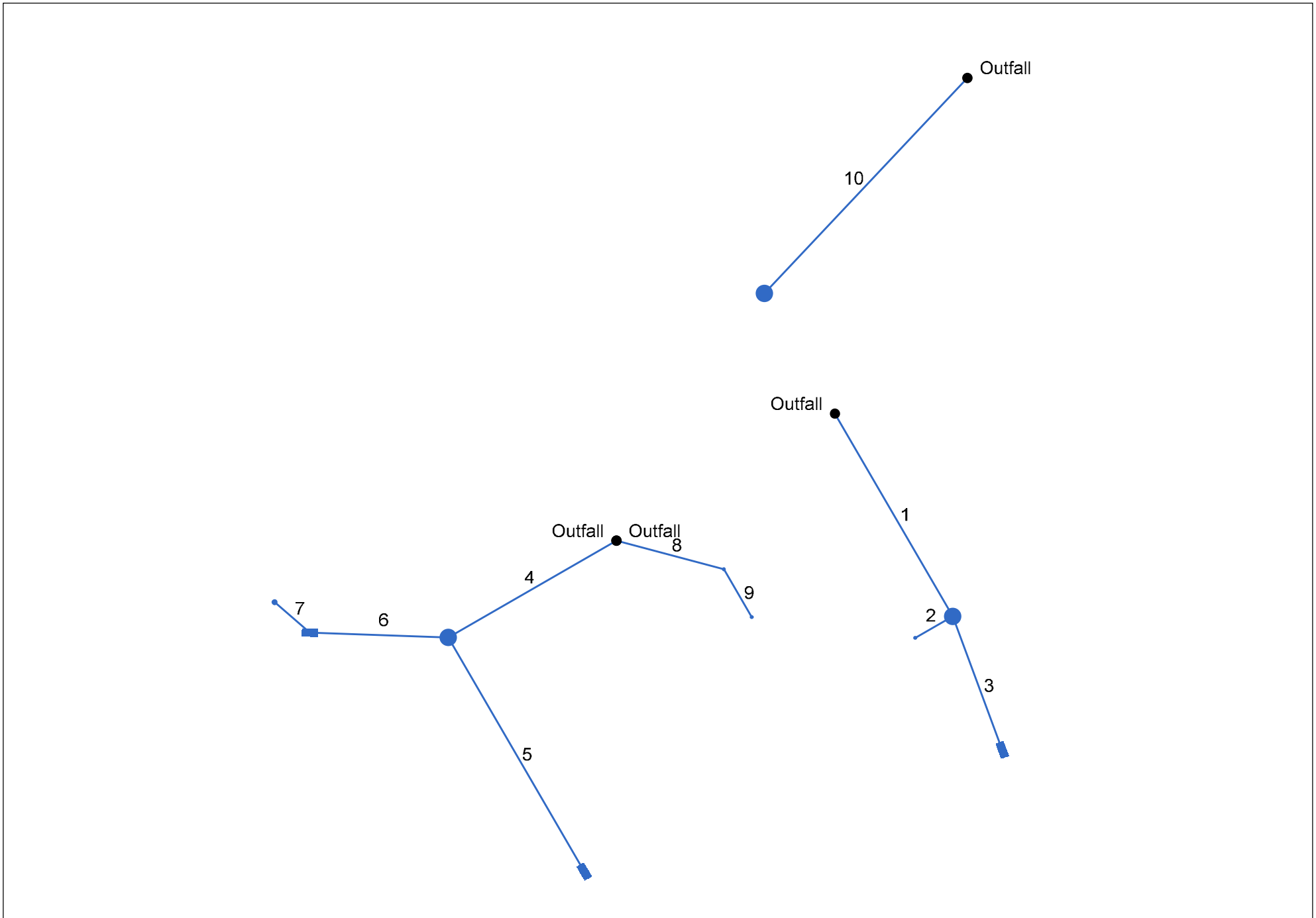
STORM DRAIN DESIGN CALCULATIONS

100-Year Storm Sewer Computation Sheet

Municipality: Bensalem Township
Land Development: Chase Bank - Bensalem
Computed By: CML ***Date:*** 05/12/21 ***Storm Frequency:*** ***100 Yr.***
Revised by: CML ***Date:*** 08/26/21 ***Pipe Material:*** **HDPE**
Manning's "n" value: **0.011** **0.011**

					Local									Total									
From	*To*	*Increment of Area (Acres)*	*Coefficient of Runoff (C)*	*Equivalent Area (Acres)*	*Time of Concentration (Min.)*	*I (In. per Hr.)*	*Area Flow (C.F.S.)*	*Available Ponding (In.)*	*Total Area (Acres)*	*Total Equil. Area (Acres)*	*Time of Concentration (Min.)*	*I (In. per Hr.)*	*Total Flow (C.F.S.)*	*Slope (Ft./Ft.)*	*Diameter of Pipe (In.)*	*Velocity (F.P.S.)*	*Length of Line (Ft.)*	*Time of Flow (min.)*	*Pipe Capacity (C.F.S.)*	*TG / Rim of To Structure (Ft.)*	*TG / Rim of From Structure (Ft.)*	*HGL for To Structure (Ft.)*	*HGL for From Structure (Ft.)*
A3	A2	0.08	0.91	0.07	5	8.21	0.60	-	0.08	0.07	5.00	8.21	0.60	0.0114	12	5.74	70	0.20	4.50	107.38	106.90	103.37	103.96
A11	A10	0.05	0.73	0.04	5	8.21	0.30	-	0.05	0.04	5.00	8.21	0.30	0.0083	12	4.90	12	0.04	3.84	106.38	105.32	103.63	103.52
A10	A2	0.09	0.95	0.09	5	8.21	0.70	-	0.09	0.12	5.00	8.21	1.00	0.0104	12	5.48	36	0.11	4.30	107.38	106.38	103.37	103.63
A2	A1	0	0	0.00	5	8.21	0.00		0.00	0.23	5.00	8.21	1.90	0.0091	12	5.13	50	0.16	4.02	107.49	107.38	102.61	103.51
A6	A5	0.12	0.95	0.11	5	8.21	0.94		0.12	0.11	5.00	8.21	0.94	0.0109	12	5.61	37	0.11	4.40	107.99	106.78	103.51	103.85
A5	A4	0.02	0.95	0.02	5	8.21	0.16		0.02	0.13	5.00	8.21	1.09	0.0149	12	6.56	61	0.15	5.15	106.55	107.99	102.61	103.51

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: JPM.29391-STM-1.stm	Number of lines: 10	Date: 8/26/2021

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	60.537	59.967	MH	0.00	0.00	0.00	0.0	102.10	1.49	103.00	12	Cir	0.011	1.00	107.99	STM3
2	1	11.134	90.000	Grate	0.00	0.04	0.95	5.0	103.50	12.04	104.84	6	Cir	0.011	1.00	108.75	RD3
3	1	36.793	9.785	Grate	0.00	0.12	0.95	5.0	103.00	1.09	103.40	12	Cir	0.011	1.00	106.70	STM4
4	End	50.000	149.980	MH	0.00	0.00	0.00	0.0	102.35	0.90	102.80	12	Cir	0.011	1.00	107.38	STM1
5	4	69.914	-90.014	Grate	0.00	0.08	0.91	5.0	102.80	1.14	103.60	12	Cir	0.011	1.00	106.86	STM2
6	4	35.655	32.040	Grate	0.00	0.09	0.95	5.0	102.80	1.04	103.17	12	Cir	0.011	1.01	106.31	STM5
7	6	12.000	38.821	Grate	0.00	0.05	0.73	5.0	103.17	0.83	103.27	12	Cir	0.011	1.00	105.32	STM6
8	End	28.633	14.967	MH	0.00	0.00	0.00	0.0	102.60	1.75	103.10	6	Cir	0.011	0.75	107.99	RD2
9	8	14.287	44.990	Grate	0.00	0.04	0.95	5.0	103.10	2.80	103.50	6	Cir	0.011	1.00	108.75	RD1
10	End	76.365	133.176	MH	5.39	0.00	0.00	5.0	101.15	1.44	102.25	16	Cir	0.011	1.00	106.71	STM7

Project File: JPM.29391-STM-1.stm | Number of lines: 10 | Date: 8/26/2021

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	A5	Manhole	107.99	Cir	4.00	4.00	12	Cir	103.00	6 12	Cir Cir	103.50 103.00
2	BLD2	Grate	108.75	Cir	0.50	0.50	6	Cir	104.84			
3	A6	Grate	106.70	Rect	4.00	2.00	12	Cir	103.40			
4	A2	Manhole	107.38	Cir	4.00	4.00	12	Cir	102.80	12 12	Cir Cir	102.80 102.80
5	A3	Grate	106.86	Rect	4.00	2.00	12	Cir	103.60			
6	A10	Grate	106.31	Rect	4.00	2.00	12	Cir	103.17	12	Cir	103.17
7	A11	Grate	105.32	Cir	1.00	1.00	12	Cir	103.27			
8	CO1	Manhole	107.99	Cir	0.50	0.00	6	Cir	103.10	6	Cir	103.10
9	BLD1	Grate	108.75	Cir	0.50	0.50	6	Cir	103.50			
10	A9	Manhole	106.71	Cir	4.00	4.00	16	Cir	102.25			

Project File: JPM.29391-STM-1.stm | Number of Structures: 10 | Run Date: 8/26/2021

Storm Sewer Inlet Time Tabulation

Line No.	Line ID	Tc Method	Sheet Flow					Shallow Concentrated Flow					Channel Flow							Total Travel Time (min)
			n-Value	flow Length (ft)	2-yr 24h P (in)	Land Slope (%)	Travel Time (min)	flow Length (ft)	Water Slope (%)	Surf Descr	Ave Vel (ft/s)	Travel Time (min)	X-sec Area (sqft)	Wetted Perim (ft)	Chan Slope (%)	n-Value	Vel	flow Length (ft)	Travel Time (min)	
1	STM3	User																		0.00
2	RD3	User																		5.00
3	STM4	User																		5.00
4	STM1	User																		0.00
5	STM2	User																		5.00
6	STM5	User																		5.00
7	STM6	User																		5.00
8	RD2	User																		0.00
9	RD1	User																		5.00
10	STM7	User																		5.00

Project File: JPM.29391-STM-1.stm | Min. Tc used for intensity calculations = 5 min | Number of lines: 10 | Date: 8/26/2021

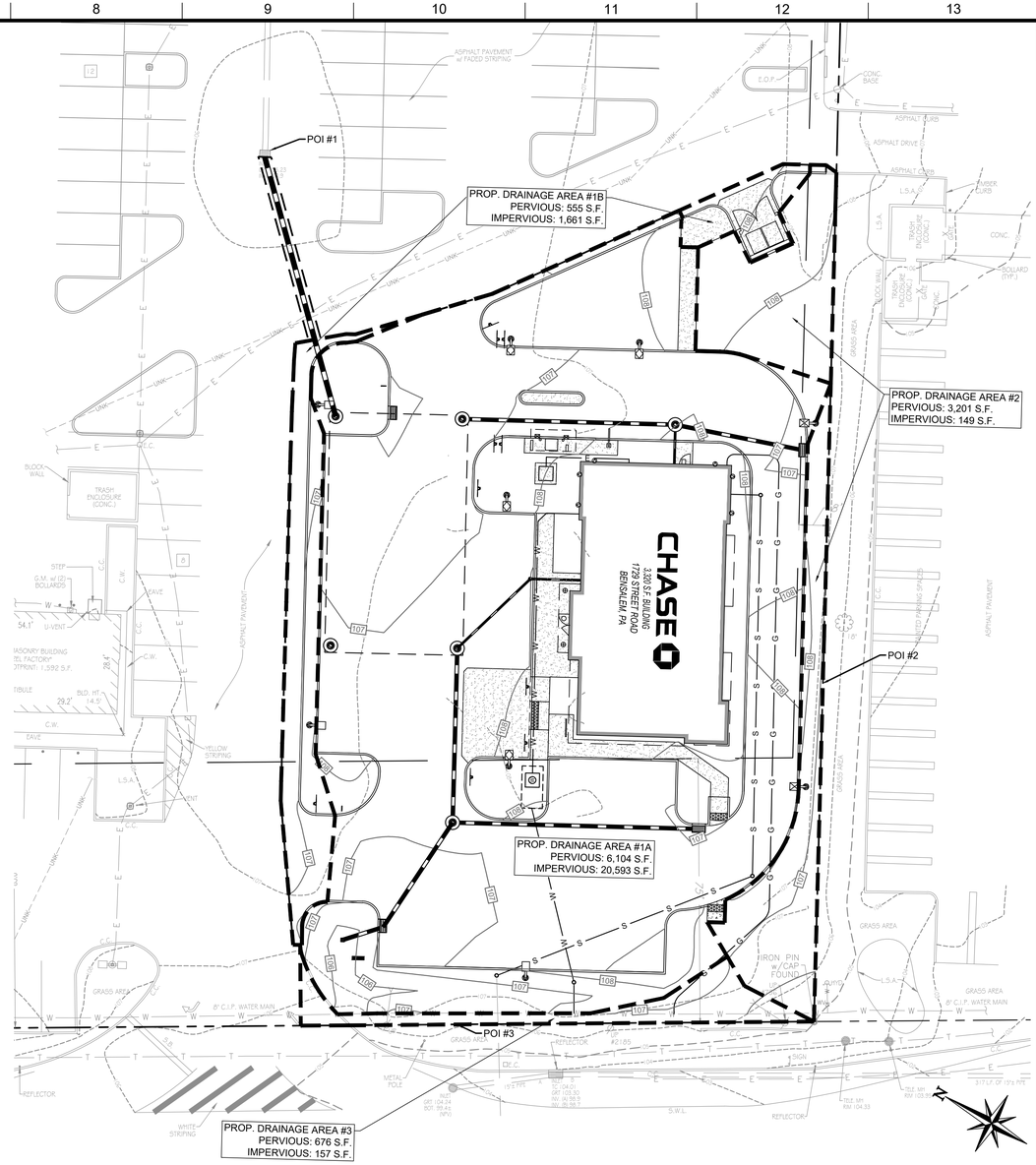
TR-55 CURVE NUMBERS

HYDROLOGIC SOIL GROUP 'D'

- MEADOW GOOD CONDITION - 78
- IMPERVIOUS SURFACE - 98

PRE-DEVELOPMENT DRAINAGE AREA MAP

GRAPHIC SCALE
20 10 5 0 20
1" = 20'



TR-55 CURVE NUMBERS

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POST-DEVELOPMENT DRAINAGE AREA MAP

GRAPHIC SCALE
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MSwaggard@core-states.com

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REVISIONS

REV	DATE	COMMENT	BY
1	08/24/21	BCCD, BCPC, AND TWP COMMENTS	CML

DOCUMENT

PRELIMINARY/ FINAL LAND DEVELOPMENT PLAN FOR CHASE BANK

SITE LOCATION

1729 STREET ROAD
BENSALEM, PA
19020

ENGINEER SEAL

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
FRANCIS GREENE
ENGINEER
No. PE075817
PENNSYLVANIA

08/26/2021

FRANCIS GREENE, P.E.
PA LICENSE #075817

SHEET TITLE

DRAINAGE AREA MAPS

JOB #:	JPM-29391
DATE:	5/13/21
SCALE:	1" = 20'
DRAWN BY:	CML
CHECKED BY:	FG

SHEET NO.

DA

User: CLANG Plot Date/Time: Aug. 26, 21 - 09:42:42 Drawing: P:\J.P. Morgan Chase\Bensalem, PA (Bensalem)-JPM.29391\CIVIL\Drawings\Presentation\JPM.29391-P-EROS.dwg :DRAN MAP

PRELIMINARY / FINAL
LAND DEVELOPMENT PLAN
FOR

CHASE

PROPOSED CHASE BANK
PARCEL ID 02-043-305
1729 STREET ROAD (PA ROUTE 132)
BENSALEM TOWNSHIP
BUCKS COUNTY, PENNSYLVANIA 19020

DESIGN AND DEVELOPMENT CONTACTS:

OWNER:
BENSALEM MZL LLC.
C/O KATZ PROPERTIES MANAGEMENT LLC
254 W 31ST ST FLOOR
4TH FLOOR
NEW YORK, NY 10001
(856) 630-1989

APPLICANT:
JPMORGAN CHASE
10 SOUTH DEARBORN STREET
15TH FLOOR
CHICAGO, IL 60603
CONTACT: TODD SAMMS
(614) 248-3128

CIVIL ENGINEER:
CORESTATES, INC.
201 S. MAPLE AVENUE, SUITE 300
AMBLER, PA 19002
CONTACT: FRANCIS GREENE, P.E.
(267) 529-3660

ARCHITECT:
CORESTATES, INC.
201 S. MAPLE AVENUE, SUITE 300
AMBLER, PA 19002
CONTACT: KEN MACKENZIE
(215) 809-2125

MUNICIPAL CONTACTS:

BUILDING:
BENSALEM TOWNSHIP DEPARTMENT OF BUILDING AND PLANNING
2400 BYBERRY ROAD
BENSALEM, PA 19020
CONTACT: JOE LaCORTE
(215) 633-3768

ZONING:
BENSALEM TOWNSHIP DEPARTMENT OF BUILDING AND PLANNING
2400 BYBERRY ROAD
BENSALEM, PA 19020
CONTACT: KENNETH FARALL
(215) 633-2643

POLICE:
BENSALEM TOWNSHIP POLICE DEPARTMENT
2400 BYBERRY ROAD
BENSALEM, PA 19020
(215) 633-3700

PUBLIC WORKS:
BENSALEM TOWNSHIP PUBLIC WORKS DEPARTMENT
3800 HULMEVILLE ROAD
BENSALEM, PA 19020
(215) 633-3980

UTILITY CONTACTS:

UTILITY COMPANY	PHONE NUMBER
BENSALEM TOWNSHIP	(215) 633-3980
COMCAST	(800) 934-6489
AQUA AMERICA PA	(877) 987-2782
VERIZON EASTERN	(800) 922-0204
PECO	(800) 494-4000
BUCKS COUNTY W&SA	(215) 343-2538

FLOODPLAIN NOTE:

THIS PROPERTY IS LOCATED IN FLOOD ZONE X (AREAS OF MINIMAL FLOOD HAZARD) AS IDENTIFIED ON THE NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAP NO. 42017C0504K, MAP EFFECTIVE/ REVISED DATE MARCH 21, 2017.

WAIVERS REQUESTED:

1. §196-61 (b) (1)- STORM SEWER AND INLETS - SIZE AND MATERIAL
   - STORM SEWERS (PIPES OR OTHER STRUCTURES) SHALL BE REINFORCED CONCRETE PIPE HAVE A MINIMUM GRADE OF ½% AND A MINIMUM INSIDE DIAMETER OF 18 INCHES. A WAIVER FOR SIZE AND MATERIAL OF STORM SEWERS IS BEING REQUESTED. PER OUR DESIGN CALCULATIONS, 12-INCH HDPE PIPE IS ADEQUATE TO CONVEY THE 100-YEAR STORM.

2. §201-106 (a) (2)a.6 - PROPOSED GRADING
   - NO PROPOSED GRADINGS SHALL BE PERMITTED WITHIN THREE FEET OF ANY SITE PROPERTY LINE. A WAIVER FOR PROPOSED GRADING BEING PROPOSED UP TO THE PROPERTY LINE IS BEING REQUESTED.

FEE IN-LIEU OF:

BELOW ARE THE SECTIONS OF THE BENSALEM TOWNSHIP CODE THAT WOULD REQUIRE A FEE IN-LIEU OF.

1. §201-111(a)- SIDEWALKS ALONG STREETS - SIDEWALKS SHALL BE PROVIDED ALONG STREETS BY THE DEVELOPER.

2. §201-106(c)(1)- STREET TREES - WITHIN ANY LAND DEVELOPMENT OR SUBDIVISION, STREET TREES SHALL BE PLANTED BY DEVELOPER ALONG ALL STREETS WHERE SUITABLE STREET TREES DO NOT EXIST.

3. §201-106(C)(2)- STREET TREE SPACING - STREET TREES SHALL BE PLANTED AT INTERVALS OF NO MORE THAN 20 FEET OR AT A GREATER INTERVAL AS DETERMINED BY THE SHADE TREE COMMISSION DEPENDENT UPON SPECIES SELECTED OR AN EQUIVALENT NUMBER SHALL BE PLATED IN AN INFORMAL ARRANGEMENT, BUT IN NO CASE WILL ANY TREES BE PLANTED IN EXISTING OR PROPOSED STREET RIGHTS-OF-WAY.

SHEET INDEX

SHEET	SHEET NUMBER	DESCRIPTION	PREPARED BY	REVISION NUMBER
CIVIL PLANS				
C1	1 OF 23	COVER SHEET (TO BE RECORDED)	CORE STATES	●
C2	2 OF 23	GENERAL NOTES	CORE STATES	●
C3	3 OF 23	ALTA/ NSPS LAND TITLE SURVEY	GALLAS SURVEYING GROUP	●
C4	4 OF 23	EXISTING CONDITIONS & DEMOLITION PLAN	CORE STATES	●
C5.1	5 OF 23	SITE PLAN (TO BE RECORDED)	CORE STATES	●
C5.2	6 OF 23	OVERALL SITE PLAN (TO BE RECORDED)	CORE STATES	●
C6	7 OF 23	GRADING PLAN	CORE STATES	●
C7	8 OF 23	UTILITY PLAN	CORE STATES	●
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C9	10 OF 23	LIGHTING PLAN	CORE STATES	
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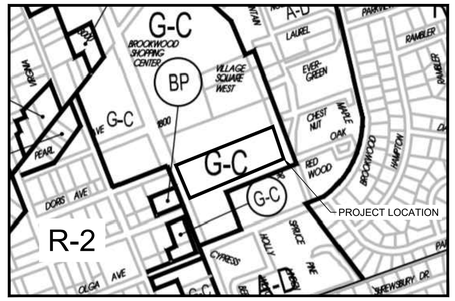
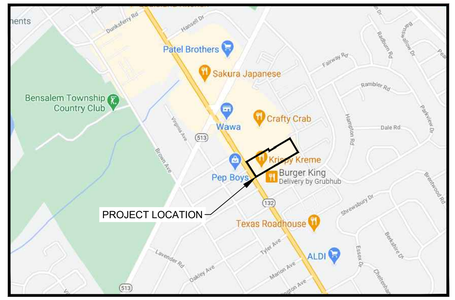
LP-1	22 OF 23	LANDSCAPE PLANTING	EVERGREEN DESIGN	●
LP-2	23 OF 23	LANDSCAPE DETAILS & SPECIFICATIONS	EVERGREEN DESIGN	●



ZONING DISTRICT MAP
1" = 500'



VICINITY MAP
1" = 1,000'

SOILS MAP
1" = 150'

CERTIFICATION OF BUCKS COUNTY

BCPC NO. _____
PROCESSED AND REVIEWED. REPORT PREPARED BY THE BUCKS COUNTY PLANNING COMMISSION IN ACCORDANCE WITH THE PA MUNICIPALITIES PLANNING CODE.
CERTIFIED THIS DATE _____, DAY OF, _____, _____.

BUCKS COUNTY RECORDER OF DEEDS

RECORDED IN THE OFFICE OF THE RECORDER OF DEEDS AT DOYLESTOWN, PENNSYLVANIA IN PLAN BOOK _____, PAGE _____, ON THE _____, DAY OF _____, _____.

BY _____

BENSALEM TOWNSHIP ENGINEER CERTIFICATION

REVIEWED BY THE TOWNSHIP ENGINEER, THIS _____ DAY OF 20____

_____
BENSALEM TOWNSHIP ENGINEER

WETLAND CERTIFICATION

I HEREBY CERTIFY THAT THE PLANS SHOWN AND DESCRIBED HEREON DO NOT CONTAIN ANY WETLANDS EITHER IDENTIFIED VISUALLY OR THROUGH REGISTERED MAPPING DATABASES.

_____
PROFESSIONAL WETLAND SCIENTIST

_____
DATE

CERTIFICATE OF MUNICIPAL APPROVAL

AT A MEETING HELD ON _____, 20__, THE BENSALEM TOWNSHIP COUNCIL BY A FORMAL MOTION, APPROVED THE FINAL PLAN OF THE LAND DEVELOPMENT AT 1837 STREET ROAD, AS SHOWN HEREON

_____ _____
SIGNATURES OF TOWNSHIP COUNCIL DATE

_____ _____
SIGNATURES OF TOWNSHIP COUNCIL DATE

_____ _____
SIGNATURES OF TOWNSHIP COUNCIL DATE

CERTIFICATION OF OWNER

STATE:

COUNTY:

ON THIS, THE _____ DAY OF _____, 20__ BEFORE ME, THE UNDERSIGNED OFFICER, PERSONALLY
APPEARED _____, WHO BEING DULY SWORN ACCORDING TO LAW, DEPOSES
AND SAYS THAT HE IS THE _____ OF THE PROPERTY SHOWN ON
THIS PLAN, THAT THE SUBDIVISION / LAND DEVELOPMENT PLAN THEREOF WAS MADE AT THIS / ITS DIRECTION, THAT HE ACKNOWLEDGES THE SAME TO BE HIS / ITS ACT AND PLAN
_____, AND THAT ALL STREETS _____
SHOWN AND NOT HERETOFORE DEDICATED ARE HEREBY DEDICATED TO THE PUBLIC USE
_____.

_____
SIGNATURE

_____
SIGNATURE AND SEAL OF NOTARY

MY COMMISSION EXPIRES

_____, 20_____

ENGINEER'S CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS ARE IN CONFORMANCE WITH ENGINEERING, ZONING, BUILDING, SANITATION, AND OTHER APPLICABLE ORDINANCES OF THIS TOWNSHIP, AND HAVE BEEN PREPARED IN ACCORDANCE WITH ACT 367 OF THE COMMONWEALTH OF PENNSYLVANIA, KNOWN AS THE "ENGINEER, LAND SURVEYOR, AND GEOLOGIST REGISTRATION LAW" (P.L. 913, No. 367), AS AMENDED.

_____ _____
SIGNATURE OF ENGINEER DATE

075817
PENNSYLVANIA P.E. LICENSE NUMBER

CORE STATES GROUP
201 S. Maple Avenue, Suite 300
Ambler, PA 19002
Phone (215) 809-2125
MSwaggard@core-states.com

CLIENT
CHASE

811 Know what's below. Call before you dig.

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON DESIGN PLANS AND RECORDS OF THE VARIOUS UTILITY COMPANIES AND WHERE POSSIBLE MEASUREMENTS TAKEN IN THE FIELD. CORE STATES, INC. DOES NOT GUARANTEE THAT LOCATIONS SHOWN ARE EXACT. THE CONTRACTOR MUST CONTACT THE VARIOUS UTILITY COMPANIES AT LEAST THREE WORKING HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF UTILITIES.

REV	DATE	COMMENT	BY
1	08/24/21	BCCD, BCPC, AND TWP COMMENTS	CML

DOCUMENT
PRELIMINARY/ FINAL LAND DEVELOPMENT PLAN FOR CHASE BANK

SITE LOCATION
1729 STREET ROAD
BENSALEM, PA
19020

ENGINEER SEAL
COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
FRANCIS GREENE
ENGINEER
No. PE075817
PENNSYLVANIA
08/26/2021
FRANCIS GREENE, P.E.
PA LICENSE #075817

SHEET TITLE
COVER SHEET

JOB #:	JPM-29391
DATE:	5/13/21
SCALE:	N/A
DRAWN BY:	CML
CHECKED BY:	FG

SHEET NO.
C1
SHEET 1 OF 23

STANDARD ABBREVIATIONS	
AC	ACRES
ADA	AMERICANS WITH DISABILITY ACT
ARCH	ARCHITECTURAL
BC	BOTTOM OF CURB
BF	BASEMENT FLOOR
BK	BLOCK
BL	BASELINE
BLD	BUILDING
BOL	BOLLARD
BM	BENCH MARK
BRL	BUILDING RESTRICTION LINE
CF	CUBIC FEET
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CONN	CONNECTION
CONC	CONCRETE
CPP	CORRUGATED PLASTIC PIPE
CY	CUBIC YARDS
DEC	DECORATIVE
DEP	DEPRESSED
DIP	DUCTILE IRON PIPE
DOM	DOMESTIC
ELEC	ELECTRIC
ELEV	ELEVATION
EP	EDGE OF PAVEMENT
ES	EDGE OF SHOULDER
EW	END OF WALL
EX	EXISTING
FES	FLARED END SECTION
FF	FINISH FLOOR ELEVATION
FH	FIRE HYDRANT
FG	FINISHED GRADE
G	GRADE
GF	GARAGE FLOOR
GH	GRADE HIGH SIDE OF WALL
GL	GRADE LOW SIDE OF WALL
GRT	GRATE
GV	GATE VALVE
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HP	HIGH POINT
HOR	HORIZONTAL
HW	HEADWALL
INT	INTERSECTION
INV	INVERT
LF	LINEAR FOOT
LOC	LIMITS OF CLEARING
LOD	LIMITS OF DISTURBANCE
LOS	LINE OF SIGHT
LP	LOW POINT
LS	LANDSCAPE
MAX	MAXIMUM
ME	MATCH EXISTING
MIN	MINIMUM
MH	MANHOLE
MJ	MECHANICAL JOINT
OC	ON CENTER
PC	POINT OF CURVATURE
PCCR	POINT OF COMPOUND CURVATURE, CURB RETURN
PI	POINT OF INTERSECTION
POG	POINT OF GRADE
POI	POINT OF INTEREST
PROP	PROPOSED
PT	POINT OF TANGENCY
PTCR	POINT OF TANGENCY, CURB RETURN
PVC	POLYVINYL CHLORIDE PIPE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
RCPR	REINFORCED CONCRETE WITH RUBBER GASKET
RET-WALL	RETAINING WALL
R/W	RIGHT OF WAY
S	SLOPE
SAN	SANITARY SEWER
SF	SQUARE FEET
STA	STATION
STM	STORM
TBR	TO BE REMOVED
TBRL	TO BE RELOCATED
TC	TOP OF CURB
TEL	TELEPHONE
TP	TREE PROTECTION
TW	TOP OF WALL
TYP	TYPICAL
UG	UNDERGROUND
UP	UTILITY POLE
W/L	WATER LINE
W/M	WATER METER
±	PLUS OR MINUS
°	DEGREE
Ø	DIAMETER
#	NUMBER

GENERAL SITE NOTES:

1. ALL CONSTRUCTION MATERIALS AND TECHNIQUES OF INSTALLATION SHALL MEET PERFORMANCE VALUES OF THE MATERIALS SPECIFIED AND COMPLY WITH ALL BENSALEM TOWNSHIP REGULATIONS AND CODES, PENNDOT AND O.S.H.A. STANDARDS. WHERE DISCREPANCIES OCCUR, THE MORE RESTRICTIVE SHALL CONTROL.
2. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT THIS PROJECT IS CONSTRUCTED IN ACCORDANCE WITH THESE DOCUMENTS AND IN COMPLIANCE WITH CODES INDICATED HEREIN. THE QUALITY OF WORKMANSHIP AND INSTALLATION OF MATERIALS SPECIFIED BY THE ARCHITECT/ENGINEER ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE ARCHITECT/ENGINEER WILL NOT BE HELD RESPONSIBLE FOR ANY SUBSTANDARD OR INSUFFICIENT WORKMANSHIP, MATERIALS, OR SERVICES PROVIDED IN THE EXECUTION OF ANY PHASE OF CONSTRUCTION OF THIS PROJECT.
3. ALL MATERIALS ARE TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS. THE GENERAL CONTRACTOR SHALL ENSURE THAT ALL MANUFACTURER'S WARRANTIES WILL BE HONORED.
4. ALL CONDITIONS SHOWN TO BE "EXISTING" SHALL BE VERIFIED IN THE FIELD BY THE GENERAL CONTRACTOR PRIOR TO START OF CONSTRUCTION. ANY DISCREPANCIES SHALL BE NOTED AND SUBMITTED TO THE OWNER AND THE ARCHITECT/ENGINEER FOR REVIEW. CHANGES TO THE ORIGINAL DESIGN OF THE PROJECT DUE TO EXISTING SITE CONDITIONS MUST BE APPROVED BY BOTH THE OWNER AND THE ARCHITECT/ENGINEER PRIOR TO MAKING ANY CHANGES.
5. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR HAVING A THOROUGH KNOWLEDGE OF EXISTING FIELD CONDITIONS AND OF ALL DRAWINGS AND SPECIFICATIONS RELATED TO THEIR FIELD. THE FAILURE TO ACQUAINT THEMSELVES WITH THIS PROJECT AND ONES FIELD OF SERVICE SHALL NOT RELIEVE THEM OF ANY RESPONSIBILITY FOR PERFORMING THEIR WORK PROPERLY. NO ADDITIONAL COMPENSATION SHALL BE ALLOWED DUE TO THE GENERAL CONTRACTOR'S FAILURE TO CONVEY THE NECESSARY KNOWLEDGE TO FAMILIARIZE WORKERS AND SUBCONTRACTORS WITH THIS PROJECT.
6. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THE SAFETY OF ALL PERSONS ON THE JOB SITE AT ALL TIMES INCLUDING (BUT NOT LIMITED TO) SUBCONTRACTORS, FACILITY EMPLOYEES, VENDORS, DESIGN STAFF PROFESSIONALS AND INSPECTION PERSONNEL.
7. THE GENERAL CONTRACTOR SHALL PROVIDE DUMPSTERS, PORTABLE TOILETS AND TEMPORARY POWER FOR UNRESTRICTED PROJECT RELATED USE BY OTHERS FOR THE DURATION OF THE PROJECT.
8. THE GENERAL CONTRACTOR SHALL COORDINATE PROJECT PHASING AND STORAGE OF MATERIALS WITH THE OWNER AND EROSION AND SEDIMENT CONTROL AUTHORITY.
9. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR THE RECEIVING, UNLOADING, STORING AND PROTECTION OF MATERIALS AND EQUIPMENT SUPPLIED BY THE OWNER UNTIL IT HAS BEEN INSTALLED AND ACCEPTED BY THE OWNER.
10. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING THE AREA CLEAN AND FREE OF DEBRIS AT ALL TIMES DURING CONSTRUCTION. THE GENERAL CONTRACTOR SHALL POWER WASH THE ENTIRE CONSTRUCTION AREA PRIOR TO TURNOVER TO THE OWNER.
11. THE GENERAL CONTRACTOR SHALL FIELD VERIFY THE EXACT LOCATION OF ALL PUBLIC AND PRIVATE UTILITIES, INCLUDING IRRIGATION, SPECIFIC TO THIS PROJECT PRIOR TO THE START OF ANY DEMOLITION OR CONSTRUCTION. SHOULD ANY UTILITY REQUIRE RELOCATION, CONTRACTOR SHALL COORDINATE WITH THE OWNER AND THE ARCHITECT/ENGINEER.
12. SAWCUT AND REMOVE PORTIONS OF EXISTING PAVING ONLY AS REQUIRED TO INSTALL NEW UTILITIES OR TO CONSTRUCT PROPOSED FACILITIES PER THIS PLAN. REPLACE PORTIONS REMOVED TO MATCH EXISTING FLUSH AND SMOOTH.
13. IF REQUESTED BY THE OWNER OR BENSALEM TOWNSHIP, CONTRACTOR TO PROVIDE TEMPORARY CONSTRUCTION FENCING, PER BENSALEM TOWNSHIP OR A MINIMUM 6 FOOT HIGH, AROUND ENTIRE AREA OF CONSTRUCTION OR PER THE CLIENTS STANDARDS. FIELD VERIFY EXACT LOCATION AND SPECIFICATIONS OF FENCE WITH THE OWNER PRIOR TO START OF CONSTRUCTION. REMOVE FENCING AT COMPLETION OF PROJECT AND PATCH PAVING AS REQUIRED AT FENCE POST HOLES.
14. ALL DIMENSIONS ARE TO GROUND LEVEL IMPROVEMENTS (FACE OF CURB, CONCRETE SLAB, ETC UNLESS NOTED OTHERWISE).
15. CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF ALL PROPERTY CORNERS.
16. CONTRACTOR SHALL MATCH PROPOSED CURB AND GUTTER, CONCRETE, AND PAVEMENT TO EXISTING IN GRADE AND ALIGNMENT.
17. CONSTRUCTION SHALL COMPLY WITH ALL BENSALEM TOWNSHIP CODES AND BE CONSTRUCTED TO SAME.
18. CONTRACTOR IS RESPONSIBLE FOR REPAIRING THE DAMAGE DONE TO ANY EXISTING ITEM TO REMAIN DURING CONSTRUCTION, SUCH AS, BUT NOT LIMITED TO, DRAINAGE, UTILITIES, PAVEMENT, STRIPING, CURB, ETC. REPAIRS SHALL BE EQUAL TO, OR BETTER THAN, EXISTING CONDITIONS. CONTRACTOR IS RESPONSIBLE TO DOCUMENT ALL EXISTING DAMAGE AND NOTIFY OWNER PRIOR TO CONSTRUCTION START. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ANY DAMAGE INCURRED TO ADJACENT PROPERTIES DURING THE CONSTRUCTION PHASES OF THIS PROJECT.
19. CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF BUILDING APPURTENANCES, STAIRS, RAMPS, SLOPE PAVING, SIDEWALKS, PRECISE BUILDING DIMENSIONS AND EXACT BUILDING UTILITY ENTRANCE LOCATIONS.
20. ALL DISTURBED AREAS ARE TO RECEIVE A MINIMUM OF FOUR INCHES OF TOPSOIL, UNLESS OTHERWISE NOTED IN THESE PLANS, SEED OR SOD, MULCH AND WATER UNTIL A HEALTHY STAND OF GRASS IS ESTABLISHED.
21. EXISTING STRUCTURES WITHIN CONSTRUCTION LIMITS ARE TO BE MAINTAINED, ABANDONED, REMOVED OR RELOCATED AS NECESSARY. ALL COST SHALL BE INCLUDED IN BASE BID.
22. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RELOCATIONS, (UNLESS OTHERWISE NOTED ON PLANS) INCLUDING BUT NOT LIMITED TO, ALL UTILITIES, STORM DRAINAGE, SIGNS, TRAFFIC SIGNALS & POLES, ETC. AS REQUIRED. ALL WORK SHALL BE IN ACCORDANCE WITH BENSALEM TOWNSHIP REQUIREMENTS AND PROJECT SITE WORK SPECIFICATIONS AND SHALL BE APPROVED BY SUCH. ALL COST SHALL BE INCLUDED IN BASE BID.
23. THE SITE WORK FOR THIS PROJECT SHALL MEET OR EXCEED THE SPECIFICATIONS IN THE CONTRACT DOCUMENTS AND THE OWNER/ DEVELOPER SITE WORK SPECIFICATIONS.
24. ANY DISCREPANCIES ON THE DRAWINGS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE OWNER AND ENGINEER OF RECORD BEFORE COMMENCING WORK. NO FIELD CHANGES OR DEVIATIONS FROM THE DESIGN ARE TO BE MADE WITHOUT PRIOR APPROVAL.
25. IN THE EVENT THE CONSTRUCTION IS ABANDONED PRIOR TO THE COMPLETION OF THE PROJECT, ALL CONSTRUCTION AND STOCKPILED VEGETATIVE DEBRIS AND FILL SHALL BE REMOVED FROM THE SITE AND THE SITE SHALL BE STABILIZED PER THE PERMIT FOR STORM WATER DISCHARGE FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES (NPDES).
26. THESE PLANS ARE INTENDED TO AND SHALL COMPLY WITH AMERICANS WITH DISABILITIES ACT.
27. CONTRACTOR IS RESPONSIBLE FOR PERMITTING, INSTALLATION AND MAINTENANCE OF ALL MAINTENANCE OF TRAFFIC OPERATIONS DURING CONSTRUCTION. MAINTENANCE OF TRAFFIC SHALL CONFORM TO BENSALEM TOWNSHIP STANDARDS.
28. ALL DESIGN AND CONSTRUCTION MUST CONFORM TO THE MINIMUM STANDARDS SET DOWN IN THE BENSALEM TOWNSHIP DEVELOPMENT CODE, ZONING, AND/OR RELATED ORDINANCES, AND MINIMUM TESTING FREQUENCY REQUIREMENTS.
29. PREVIOUS SITE PLAN REMAINS IN EFFECT EXCEPT AS MODIFIED BY THE PROPOSED REVISIONS.
30. SAFETY NOTICE TO CONTRACTOR: IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. ANY CONSTRUCTION OBSERVATION BY THE ENGINEER OF THE CONTRACTOR'S PERFORMANCE IS NOT INTENDED TO INCLUDE REVIEW OF THE ADEQUACY OF THE CONTRACTOR'S SAFETY MEASURES ON OR NEAR THE CONSTRUCTION SITE.

SOIL EROSION AND SEDIMENT CONTROL NOTES:

1. ALL APPLICABLE EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE IN PLACE PRIOR TO ANY GRADING OPERATION AND/OR INSTALLATION OF PROPOSED STRUCTURES OR UTILITIES.
2. SOIL EROSION AND SEDIMENT CONTROL PRACTICES ON THIS PLAN SHALL BE CONSTRUCTED IN ACCORDANCE WITH ALL BENSALEM TOWNSHIP STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL.
3. APPLICABLE EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE LEFT IN PLACE UNTIL CONSTRUCTION IS COMPLETED AND/OR THE AREA IS STABILIZED.
4. THE CONTRACTOR SHALL PERFORM ALL WORK, FURNISH ALL MATERIALS AND INSTALL ALL MEASURES REQUIRED TO REASONABLY CONTROL SOIL EROSION RESULTING FROM CONSTRUCTION OPERATIONS AND PREVENT EXCESSIVE FLOW OF SEDIMENT FROM THE CONSTRUCTION SITE.
5. ANY DISTURBED AREA THAT IS TO BE LEFT EXPOSED FOR MORE THAN 14 DAYS, UNLESS OTHERWISE NOTED IN THE PLANS, AND NOT SUBJECT TO CONSTRUCTION TRAFFIC SHALL IMMEDIATELY RECEIVE A TEMPORARY SEEDING AND FERTILIZATION IN ACCORDANCE WITH ALL BENSALEM TOWNSHIP STANDARDS. IF THE SEASON PROHIBITS TEMPORARY SEEDING, THE DISTURBED AREAS WILL BE MULCHED WITH SALT HAY OR EQUIVALENT AND ANCHORED.
6. ALL SEDIMENTATION STRUCTURES WILL BE INSPECTED AND MAINTAINED ON A REGULAR BASIS AND AFTER EVERY STORM EVENT.
7. A CRUSHED STONE TIRE CLEANING PAD WILL BE INSTALLED WHEREVER A CONSTRUCTION ACCESS EXISTS. THE STABILIZED PAD WILL BE INSTALLED ACCORDING TO THE STANDARD FOR STABILIZED CONSTRUCTION ACCESS.
8. ALL CATCH BASIN INLETS WILL BE PROTECTED ACCORDING TO THE CERTIFIED PLAN.
9. ALL STORM DRAINAGE OUTLETS WILL BE STABILIZED, AS REQUIRED, BEFORE THE DISCHARGE POINTS BECOME OPERATIONAL.
10. OFFSITE SEDIMENT DISTURBANCE MAY REQUIRE ADDITIONAL CONTROL MEASURES TO BE DETERMINED BY THE EROSION CONTROL INSPECTOR.
11. A COPY OF THE CERTIFIED SOIL EROSION AND SEDIMENT CONTROL PLAN MUST BE MAINTAINED ON THE PROJECT SITE DURING CONSTRUCTION.
12. THE BENSALEM TOWNSHIP ENGINEER SHALL BE NOTIFIED PRIOR TO ANY LAND DISTURBANCE.
13. ANY CONVEYANCE OF THIS PROJECT PRIOR TO ITS COMPLETION WILL TRANSFER FULL RESPONSIBILITY FOR COMPLIANCE WITH THE CERTIFIED PLAN TO ANY SUBSEQUENT OWNERS.
14. MAXIMUM SIDE SLOPES OF ALL EXPOSED SURFACES SHALL NOT BE CONSTRUCTED STEEPER THAN 3:1 UNLESS OTHERWISE APPROVED BY THE BENSALEM TOWNSHIP.
15. ADJOINING PROPERTIES SHALL BE PROTECTED FROM EXCAVATION AND FILLING OPERATIONS ON THE PROPOSED SITE.
16. USE STAGED CONSTRUCTION METHODS TO MINIMIZE EXPOSED SURFACES, WHERE APPLICABLE.
17. ALL VEGETATIVE MATERIAL SHALL BE SELECTED IN ACCORDANCE WITH AMERICAN STANDARDS FOR NURSERY STOCK OF THE AMERICAN ASSOCIATION OF THE NURSERYMAN.
18. NATURAL VEGETATION AND SPECIES SHALL BE RETAINED WHERE SPECIFIED ON THE LANDSCAPING PLAN.
19. THE SOIL EROSION INSPECTOR MAY REQUIRE ADDITIONAL SOIL EROSION MEASURES TO BE INSTALLED, AS DIRECTED BY THE INSPECTOR.

DEMOLITION NOTES:

1. THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS AND CODES AND OBTAIN ALL REQUIRED PERMITS FOR ANY CONSTRUCTION ACTIVITY.
2. THE CONTRACTOR SHALL CONTACT 811 DIG SAFELY BEFORE PERFORMING ANY EXCAVATION WORK.
3. THE CONTRACTOR SHALL INSTALL ALL CONSTRUCTION FENCING AND EROSION AND SEDIMENT CONTROL DEVICES PRIOR TO THE START OF ANY DEMOLITION OR CONSTRUCTION ACTIVITY.
4. ALL STRUCTURES, UTILITIES, SITE IMPROVEMENTS AND TREES DESIGNATED ON THE DRAWINGS OR DIRECTED BY THE ENGINEER TO REMAIN SHALL BE PROTECTED FROM DAMAGE BY ALL CONSTRUCTION OPERATIONS. THIS SHALL BE ACCOMPLISHED BY ERECTING BARRIERS, GUARDS AND ENCLOSURES AS SHOWN ON THE DRAWINGS OR OTHER APPROVED MEANS. PROTECTION SHALL BE MAINTAINED UNTIL ALL WORK IN THE VICINITY OF THE WORK BEING PROTECTED HAS BEEN COMPLETED.
5. THE CONTRACTOR SHALL COMPLY WITH ALL DEMOLITION AND NEW CONSTRUCTION INSPECTIONS AS REQUIRED BY FEDERAL, STATE AND AUTHORITY HAVING JURISDICTION LAWS, REGULATIONS AND BUILDING CODES.
6. THE CONTRACTOR IS RESPONSIBLE FOR THE DEMOLITION, REMOVAL, AND DISPOSAL (IN A LOCATION APPROVED BY ALL AUTHORITIES HAVING JURISDICTION) ALL STRUCTURES, PADS, WALLS, FLUMES, FOUNDATIONS, PARKING, DRIVES, DRAINAGE, STRUCTURES, UTILITIES, ETC., SUCH THAT THE IMPROVEMENTS SHOWN ON THE REMAINING PLANS CAN BE CONSTRUCTED. UTILITIES ARE TO BE REMOVED TO THE RIGHT-OF-WAY, UNLESS OTHERWISE NOTED.
7. ALL FACILITIES TO BE REMOVED SHALL BE UNDERCUT TO SUITABLE MATERIAL AND BROUGHT TO GRADE WITH SUITABLE COMPACTED FILL MATERIAL PER THE CONTRACT DOCUMENTS.
8. CONTRACTOR IS TO REMOVE AND DISPOSE OF ALL DEBRIS, RUBBISH, VEGETATION FROM CLEARING AND GRUBBING, AND OTHER MATERIALS RESULTING FROM PREVIOUS AND CURRENT DEMOLITION OPERATIONS. DISPOSAL WILL BE IN ACCORDANCE WITH ALL LOCAL, STATE AND/OR FEDERAL REGULATIONS GOVERNING SUCH OPERATIONS. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED FOR DEMOLITION AND DISPOSAL.
9. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL DEBRIS FROM THE SITE AND DISPOSING THE DEBRIS IN A LAWFUL MANNER. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED FOR DEMOLITION AND DISPOSAL.
10. THE CONTRACTOR SHALL COORDINATE WITH RESPECTIVE UTILITY COMPANIES PRIOR TO THE REMOVAL AND/OR RELOCATION OF UTILITIES. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANY CONCERNING PORTIONS OF WORK WHICH MAY BE PERFORMED BY THE UTILITY COMPANY'S FORCES AND ANY FEES WHICH ARE TO BE PAID TO THE UTILITY COMPANY FOR THEIR SERVICES. THE CONTRACTOR IS RESPONSIBLE FOR PAYING ALL FEES AND CHARGES.
11. THE LOCATIONS OF ALL EXISTING UTILITIES SHOWN ON THIS PLAN HAVE BEEN DETERMINED FROM THE BEST INFORMATION AVAILABLE AND ARE GIVEN FOR THE CONVENIENCE OF THE CONTRACTOR. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THEIR ACCURACY. PRIOR TO THE START OF ANY DEMOLITION ACTIVITY, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES FOR ONSITE LOCATIONS OF EXISTING UTILITIES.
12. ALL EXISTING SEWERS, PIPING AND UTILITIES SHOWN ARE NOT TO BE INTERPRETED AS THE EXACT LOCATION, OR AS THE ONLY OBSTACLES THAT MAY OCCUR ON THE SITE. VERIFY EXISTING CONDITIONS AND PROCEED WITH CAUTION AROUND ANY ANTICIPATED FEATURES. GIVE NOTICE TO ALL UTILITY COMPANIES REGARDING DESTRUCTION AND REMOVAL OF ALL SERVICE LINES AND CAP ALL LINES BEFORE PROCEEDING WITH THE WORK. UTILITIES DETERMINED TO BE ABANDONED AND LEFT IN PLACE SHALL BE GROUTED IF UNDER BUILDING.
13. ELECTRICAL, TELEPHONE, CABLE, WATER, FIBER OPTIC CABLE AND/OR GAS LINES NEEDING TO BE REMOVED OR RELOCATED SHALL BE COORDINATED WITH THE AFFECTED UTILITY COMPANY AND REMOVED TO THE PROPERTY LINE. ADEQUATE TIME SHALL BE PROVIDED FOR RELOCATION AND CLOSE COORDINATION WITH THE UTILITY COMPANY IS NECESSARY TO PROVIDE A SMOOTH TRANSITION IN UTILITY SERVICE. CONTRACTOR SHALL PAY CLOSE ATTENTION TO EXISTING UTILITIES WITHIN ANY ROAD RIGHT OF WAY DURING CONSTRUCTION.
14. CONTRACTOR TO REPLACE ALL DEAD AND/OR DAMAGED SHRUBS IN KIND.

GENERAL UTILITY NOTES:

1. CONTRACTOR SHALL COORDINATE ANY DISRUPTIONS TO EXISTING UTILITY SERVICES WITH ADJACENT PROPERTY OWNERS.
2. ALL ELECTRIC, TELEPHONE AND GAS EXTENSIONS INCLUDING SERVICE LINES SHALL BE CONSTRUCTED TO THE APPROPRIATE UTILITY COMPANY SPECIFICATIONS. ALL UTILITY DISCONNECTIONS SHALL BE COORDINATED WITH THE DESIGNATED UTILITY COMPANIES.
3. CONSTRUCTION SHALL NOT START ON ANY PUBLIC UTILITY SYSTEM UNTIL WRITTEN APPROVAL HAS BEEN RECEIVED BY THE ENGINEER FROM BENSALEM TOWNSHIP AND CONTRACTOR HAS BEEN NOTIFIED BY SAID ENGINEER.
4. PRIOR TO THE CONSTRUCTION OF OR CONNECTION TO ANY STORM DRAIN, SANITARY SEWER, WATER MAIN OR ANY DRY UTILITIES, THE CONTRACTOR SHALL EXCAVATE, VERIFY AND CALCULATE ALL POINTS OF CONNECTION AND ALL UTILITY CROSSINGS AND INFORM THE ENGINEER AND THE OWNER/DEVELOPER OF ANY CONFLICT OR REQUIRED DEVIATIONS FROM THE PLAN. NOTIFICATION SHALL BE MADE A MINIMUM OF 72 HOURS PRIOR TO CONSTRUCTION, UNLESS OTHERWISE SPECIFIED IN PLANS. THE ENGINEER AND ITS OWNER SHALL BE HELD HARMLESS IN THE EVENT THAT THE CONTRACTOR FAILS TO MAKE SUCH NOTIFICATION.
5. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE SCHEDULE FOR INSTALLATION WITH THE UTILITY COMPANIES AND THE OWNER. ANY EXISTING UTILITIES DISRUPTED DURING PLACEMENT OF NEW UTILITIES SHALL BE REPAIRED AND OPERATING NORMALLY THE SAME DAY OF DISRUPTION. THE GENERAL CONTRACTOR SHALL FIELD VERIFY THE EXACT LOCATION OF ALL EXISTING ITEMS THAT WILL BE DISRUPTED DURING THE PLACEMENT OF NEW UTILITIES AND PROVIDE THE OWNER A DETAILED PHASING SCHEDULE OUTLINING THE TIMELINE FOR INSTALLATION OF NEW UTILITIES INCLUDING THE PROPOSED TIMES THAT EXISTING ITEMS WILL BE DISRUPTED. THE NEW UTILITIES TRENCH WIDTH AND DEPTH SHALL MEET ALL LOCAL AND STATE REQUIREMENTS FOR THE DISPLACEMENT OF ALL UTILITIES. IF DIRECTIONAL BORING IS USED FOR INSTALLATION, THE ABOVE LISTED ITEMS ARE STILL REQUIRED TO BE SUBMITTED TO THE OWNER.
6. ALL FILL MATERIAL IS TO BE IN PLACE, AND COMPACTED BEFORE INSTALLATION OF PROPOSED UTILITIES.
7. CONTRACTOR SHALL NOTIFY THE UTILITY AUTHORITIES' INSPECTORS PER BENSALEM TOWNSHIP REQUIREMENTS BEFORE CONNECTING TO ANY EXISTING LINE AND FOLLOW ALL REQUIREMENTS AND SPECIFICATIONS.
8. UNDERGROUND UTILITY LINES SHALL BE INSTALLED, INSPECTED AND APPROVED BEFORE BACKFILLING.
9. ALL CONCRETE FOR ENCASEMENTS SHALL MEET THE BENSALEM TOWNSHIP REQUIREMENTS FOR ENCASEMENT.
10. DRAWINGS DO NOT PURPORT TO SHOW ALL EXISTING UTILITIES. CONTRACTOR TO VERIFY ALL UTILITIES PRIOR TO COMMENCEMENT OF CONSTRUCTION.
11. THE CONTRACTOR SHALL CONSTRUCT GRAVITY SEWER LATERALS, MANHOLES, GRAVITY SEWER LINES AND DOMESTIC WATER AND FIRE PROTECTION SYSTEM AS SHOWN ON THESE PLANS. THE CONTRACTOR SHALL FURNISH ALL NECESSARY MATERIALS, EQUIPMENT, MACHINERY, TOOLS, MEANS OF TRANSPORTATION AND LABOR NECESSARY TO COMPLETE THE WORK IN FULL AND COMPLETE IN ACCORDANCE WITH THE SHOWN, DESCRIBED AND REASONABLY INTENDED REQUIREMENTS OF THE CONTRACT DOCUMENTS AND JURISDICTIONAL AGENCY REQUIREMENTS. IN THE EVENT THAT THE CONTRACT DOCUMENTS AND THE JURISDICTIONAL AGENCY REQUIREMENTS ARE NOT IN AGREEMENT, THE MOST STRINGENT SHALL GOVERN.
12. THE CONTRACTOR SHALL RESTORE ALL DISTURBED VEGETATION IN KIND, UNLESS SHOWN OTHERWISE.
13. DEFLECTION OF PIPE JOINTS AND CURVATURE OF PIPE SHALL NOT EXCEED THE MANUFACTURER'S SPECIFICATIONS. SECURELY CLOSE ALL OPEN ENDS OF PIPE AND FITTINGS WITH A WATERTIGHT PLUG WHEN WORK IS NOT IN PROGRESS. THE INTERIOR OF ALL PIPES SHALL BE CLEAN AND JOINT SURFACES WIPED CLEAN AND DRY AFTER THE PIPE HAS BEEN LOWERED INTO THE TRENCH. VALVES SHALL BE PLUMB AND LOCATED ACCORDING TO THE PLANS.
14. ALL UTILITY AND STORM DRAIN TRENCHES LOCATED UNDER AREAS TO RECEIVE PAVING SHALL BE COMPLETELY BACKFILLED AND COMPACTED IN ACCORDANCE WITH SPECIFICATIONS. IN THE EVENT THAT THE CONTRACT DOCUMENTS AND JURISDICTIONAL AGENCY REQUIREMENTS ARE NOT IN AGREEMENT, THE MOST STRINGENT SHALL GOVERN.
15. SHOP DRAWINGS FOR ALL MATERIALS AND APPURTENANCE SHALL BE SUBMITTED TO AND APPROVED BY THE AUTHORITY HAVING JURISDICTION UTILITY DEPARTMENT. CONTRACTOR TO COPY THE ENGINEER OF RECORD WITH APPROVED DRAWINGS AS REQUIRED. NO WORK IS TO BEGIN UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED, APPROVED AND RETURNED TO THE CONTRACTOR.
16. PER AUTHORITY HAVING JURISDICTION TIMING REQUIREMENTS, PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY BENSALEM TOWNSHIP AND THE UTILITY COMPANY AND SUPPLY THEM WITH ALL REQUIRED SHOP DRAWINGS, THE CONTRACTOR'S NAME, STARTING DATE, PROJECTED SCHEDULE AND OTHER INFORMATION AS REQUIRED. THE BENSALEM TOWNSHIP ENGINEERING INSPECTION OFFICE SHOULD ALSO BE CONTACTED PER TIMING REQUIREMENTS PRIOR TO CONSTRUCTION TO ENSURE AVAILABILITY OF INSPECTION PERSONNEL. ANY WORK PREFORMED PRIOR TO NOTIFYING BENSALEM TOWNSHIP ENGINEERING INSPECTION OFFICE OR WITHOUT A DEPARTMENT INSPECTOR PRESENT MAY BE SUBJECT TO REMOVAL AND REPLACEMENT AT THE SOLE EXPENSE OF THE CONTRACTOR.
17. SANITARY SEWER, FORCE MAINS, SEWER LATERALS, AND STORM SEWERS SHOULD CROSS UNDER WATER MAINS AND/OR WATER SERVICES WHENEVER POSSIBLE. SANITARY SEWERS, FORCE MAINS, SEWER LATERALS, AND STORM SEWERS CROSSING WATER MAINS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 18 INCHES BETWEEN THE BOTTOM OF THE UPPER PIPE AND THE TOP OF THE LOWER PIPE, UNLESS OTHERWISE SPECIFIED IN THE PLANS.
18. A MINIMUM HORIZONTAL DISTANCE OF 10 FEET SHOULD BE MAINTAINED BETWEEN WATER LINES AND ANY TYPE OF SEWER LINES OR OTHER SOURCES OF CONTAMINATION, UNLESS OTHERWISE NOTED IN THE PLANS. WATER LINES AND SEWERS SHALL NOT BE LAID IN THE SAME TRENCH EXCEPT ON THE WRITTEN APPROVAL OF THE BENSALEM TOWNSHIP. WATER MAINS NECESSARILY IN CLOSE PROXIMITY TO SEWERS MUST BE PLACED SO THAT THE BOTTOM OF THE WATER LINE WILL BE AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER LINE AT ITS HIGHEST POINT, UNLESS OTHERWISE NOTED IN THE PLANS. IF THIS DISTANCE MUST UNAVOIDABLY BE REDUCED, THE WATER LINE OR THE SEWER LINE MUST BE ENCASED IN WATERTIGHT PIPE WITH SEALED WATERTIGHT ENDS EXTENDING AT LEAST 10 FEET EITHER SIDE OF THE CROSSING, UNLESS OTHERWISE NOTED IN THE PLANS. ANY JOINT IN THE ENCASEMENT PIPE IS TO BE MECHANICALLY RESTRAINED. THE ENCASEMENT PIPE MAY BE VENTED TO THE SURFACE IF CARRYING WATER OR SEWER UNDER PRESSURE. WHERE A WATER LINE MUST UNAVOIDABLY PASS BENEATH THE SEWER LINE, AT LEAST 18 INCHES OF SEPARATION MUST BE MAINTAINED BETWEEN THE OUTSIDE OF THE TWO PIPES IN ADDITION TO THE PRECEDING ENCASEMENT REQUIREMENT, UNLESS OTHERWISE NOTED IN THE PLANS. EXCEPTIONS TO THIS MUST BE APPROVED IN WRITING BY BENSALEM TOWNSHIP.
19. A MINIMUM HORIZONTAL DISTANCE OF 3 FEET, UNLESS OTHERWISE NOTED IN THE PLANS, SHALL BE MAINTAINED BETWEEN WATER LINES AND OTHER UNDERGROUND OF A NONSANITARY NATURE (GAS, ELECTRIC, ETC.) EXCEPTIONS TO THIS MUST BE APPROVED IN WRITING BY BENSALEM TOWNSHIP.
20. ALL DIP SHALL BE CLASS 50 OR HIGHER, DUCTILE IRON FITTINGS SHALL BE CLASS 350, UNLESS OTHERWISE NOTED IN THE PLANS. ADEQUATE PROTECTIVE MEASURES AGAINST CORROSION SHALL BE USED.
21. TREES SHALL BE PLACED SO AS TO AVOID BURIED UTILITIES.
22. ALL UTILITY MAIN LENGTHS SHOWN ARE APPROXIMATE. ALL MANHOLE TOP ELEVATIONS ARE APPROXIMATE. CONTRACTOR SHALL SET MANHOLE COVER LEVEL WITH FINISH PAVEMENT GRADES.
23. PRESSURE PIPE TESTING SPECIFICATIONS SHALL REFERENCE BENSALEM TOWNSHIP AND/OR FIRE DEPARTMENT.
24. CONTRACTOR IS RESPONSIBLE FOR ALL NECESSARY INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES AND/OR UTILITY SERVICE COMPANIES. THIS AND THE FINAL CONNECTIONS OF THE SERVICE SHALL BE COMPLETED 30 DAYS PRIOR TO POSSESSION.
25. REFER TO BUILDING PLANS FOR SITE ELECTRICAL PLAN.
26. ALL REINFORCED CONCRETE PIPE SHALL BE CLASS III UNLESS OTHERWISE NOTED AND INSTALLED IN ACCORDANCE WITH THE APPROPRIATE APPROVING AUTHORITIES LATEST REQUIREMENTS AND SPECIFICATIONS OR AUTHORITY HAVING JURISDICTION SPECIFICATIONS, WHICHEVER IS MORE STRINGENT.

GENERAL PAVING AND GRADING NOTES:

1. ALL PAVING AND GRADING CONSTRUCTION MATERIALS AND METHODS SHALL MEET THE STANDARD SPECIFICATIONS AND REQUIREMENTS OF BENSALEM TOWNSHIP.
2. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES, UNLESS OTHERWISE NOTED IN THE PLANS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
3. ALL CUT OR FILL SLOPES SHALL BE 3:1 OR FLATTER UNLESS OTHERWISE NOTED.
4. PRECAST STRUCTURES MAY BE USED AT CONTRACTOR'S OPTION AND SHALL MEET ALL BENSALEM TOWNSHIP REQUIREMENTS/SPECIFICATIONS AT A MINIMUM.
5. THE CONTRACTOR SHALL ADHERE TO ALL TERMS & CONDITIONS AS OUTLINED IN THE EPA OR APPLICABLE STATE GENERAL NPDES PERMIT FOR STORM WATER DISCHARGE ASSOCIATED WITH CONSTRUCTION ACTIVITIES.
6. CONTRACTOR SHALL ADJUST AND/OR CUT EXISTING PAVEMENT AS NECESSARY TO ASSURE A SMOOTH FIT AND CONTINUOUS GRADE.
7. CONTRACTOR SHALL ASSURE POSITIVE DRAINAGE AWAY FROM BUILDINGS FOR ALL NATURAL AND PAVED AREAS.
8. TOPOGRAPHIC INFORMATION IS TAKEN FROM A TOPOGRAPHIC SURVEY BY A LICENSED PROFESSIONAL SURVEYOR AND MAPPER. IF THE CONTRACTOR DOES NOT ACCEPT EXISTING TOPOGRAPHY AS SHOWN ON THE PLANS, WITHOUT EXCEPTION, THEN THE CONTRACTOR SHALL SUPPLY, AT THEIR EXPENSE, A TOPOGRAPHIC SURVEY BY A REGISTERED LAND SURVEYOR TO THE OWNER FOR REVIEW.
9. ALL UNSURFACED AREAS DISTURBED BY GRADING OPERATION SHALL RECEIVE A MINIMUM OF 4 INCHES OF TOPSOIL, UNLESS OTHERWISE NOTED IN THE PLANS. CONTRACTOR SHALL APPLY STABILIZATION FABRIC TO ALL SLOPES 3H:1V OR STEEPER. CONTRACTOR SHALL STABILIZE DISTURBED AREAS IN ACCORDANCE WITH BENSALEM TOWNSHIP SPECIFICATIONS UNTIL A HEALTHY STAND OF VEGETATION IS OBTAINED.
10. CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE AUTHORITY HAVING JURISDICTION CODES AND BE CONSTRUCTED TO SAME.
11. ALL PAVING, CONSTRUCTION MATERIALS, AND WORKMANSHIP WITHIN RIGHT-OF-WAY SHALL BE IN ACCORDANCE WITH THE BENSALEM TOWNSHIP SPECIFICATIONS AND STANDARDS (LATEST EDITION) RESPECTIVELY.
12. ALL CONCRETE USED ON THE SITE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,500 PSI IN 28 DAYS, UNLESS OTHERWISE NOTED IN THE PLANS. ALL CONCRETE SIDEWALKS SHALL HAVE CONTROL JOINTS CUT ON 5-FOOT CENTERS AND EXPANSION JOINTS PLACED ON 60-FOOT CENTERS, CHANGES IN DIRECTION, AND ABUTTING SEPARATE POURS. CONTRACTION JOINT SPACING SHALL MATCH WIDTH OF SIDEWALK AND EXPANSION JOINTS ARE REQUIRED AT A MAXIMUM OF 25 FEET, UNLESS OTHERWISE NOTED IN THE PLANS. THIS WOULD MEAN 24 FEET FOR A 6 INCH CURB. PAVEMENT JOINTS SHALL BE SPACED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND/OR DETAILS.
13. THE CONTRACTOR SHALL ENSURE THAT ALL PLANTING AREAS (INTERIOR ISLANDS, FOUNDATION PLANTING AREAS, ETC.) ARE NOT COMPACTED AND DO NOT CONTAIN LIMEROCK OR OTHER MATERIAL (CLAY, SUBGRADE MATERIAL, MARL, ETC.) WHICH MAY ADVERSELY AFFECT DRAINAGE OF GREEN AREAS. THE CONTRACTOR SHALL ALSO EXCAVATE AND REMOVE ALL UNDESIRABLE MATERIAL FROM ALL AREAS ON THE SITE TO BE PLANTED AND BACKFILL WITH CLEAN, FREE DRAINING TOPSOIL.
14. CONTRACTOR IS SPECIFICALLY CAUTIONED, DEPENDING ON THE TIME OF YEAR AND PROJECT LOCATION, AS DEWATERING MAY BY REQUIRED.
15. IF DEWATERING IS REQUIRED, THE CONTRACTOR SHALL OBTAIN ANY APPLICABLE REQUIRED PERMITS. THE CONTRACTOR IS TO COORDINATE WITH THE OWNER AND ARCHITECT/ENGINEER PRIOR TO EXCAVATION.
16. STRIP TOPSOIL AND ORGANIC MATTER AND PAVING MATERIAL FROM ALL AREAS TO BE IMPERVIOUS. TOPSOIL SHALL BE STOCKPILED ON SITE FOR REPLACEMENT ON SLOPES AND ALL OTHER GREEN AND LANDSCAPE AREAS.
17. FIELD DENSITY TESTS SHALL BE TAKEN AT FREQUENCY AS REQUIRED IN THE SPECIFICATIONS OR AS REQUIRED BY THE BENSALEM TOWNSHIP REGULATORY AGENCY, WHICHEVER IS MORE STRINGENT.
18. CONTRACTOR SHALL ENSURE POSITIVE FLOW TO ALL INLETS WITHIN DRAINAGE BASINS TO PRECLUDE PONDED WATER.
19. THE CONTRACTOR SHALL TAKE ALL MEASURES NECESSARY TO CONTROL SEDIMENT, INCLUDING BUT NOT LIMITED TO THE INSTALLATION OF BARRIERS AT ALL LOCATIONS WHERE THE POSSIBILITY OF TRANSFERRING SUSPENDED SOLIDS INTO THE RECEIVING WATER BODY EXISTS DUE TO THE PROPOSED WORK. BARRIERS MUST BE MAINTAINED IN EFFECTIVE CONDITION AT ALL LOCATIONS UNTIL CONSTRUCTION IS COMPLETED.

CORE STATES GROUP
201 S. Maple Avenue, Suite 300
Ambler, PA 19002
Phone (215) 809-2125
MSwaggard@core-states.com

CLIENT

CHASE

811
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THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON DESIGN DRAWINGS, RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. CORE STATES, INC. DOES NOT GUARANTEE THAT LOCATIONS SHOWN ARE EXACT. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF UTILITIES.

REV	DATE	COMMENT	BY
1	08/24/21	BCCD, BCPC, AND TWP COMMENTS	CML

DOCUMENT
PRELIMINARY/ FINAL LAND DEVELOPMENT PLAN FOR CHASE BANK

SITE LOCATION
1729 STREET ROAD
BENSALEM, PA
19020

ENGINEER SEAL
COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
FRANCIS GREENE
ENGINEER
No. PE075817
08/26/2021
FRANCIS GREENE, P.E.
PA LICENSE #075817

SHEET TITLE
GENERAL NOTES

JOB #:	JPM-29391
DATE:	5/13/21
SCALE:	N/A
DRAWN BY:	CML
CHECKED BY:	FG

SHEET NO.
C2
SHEET 2 OF 23

NOTES:

1. PROPERTY KNOWN AND DESIGNATED AS PART OF PARCEL ID NO. 02-043-305 ON THE GIS PARCEL MAP OF BUCKS COUNTY, COMMONWEALTH OF PENNSYLVANIA, DATED: 7/16/2020.
2. LEASE AREA TO BE DETERMINED BY CLIENT
3. ONSITE UNDERGROUND UTILITIES WERE MARKED BY MASTER LOCATORS, 675 CONCORD ROAD, GLEN MILLS, PA 49342 ON JULY 23, 2020.
4. LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE. LOCATIONS AND SIZES ARE BASED ON PRIOR UTILITY MARK-OUTS, ABOVE GROUND STRUCTURES THAT WERE VISIBLE & ACCESSIBLE IN THE FIELD, AND THE MAPS AS LISTED IN THE REFERENCES AVAILABLE AT THE TIME OF THE SURVEY. AVAILABLE ASBUILT PLANS AND UTILITY MARKOUT DOES NOT ENSURE MAPPING OF ALL UNDERGROUND UTILITIES AND STRUCTURES. BEFORE ANY EXCAVATION IS TO BEGIN, ALL UNDERGROUND UTILITIES SHOULD BE VERIFIED AS TO THEIR LOCATION, SIZE AND TYPE BY THE PROPER UTILITY COMPANIES.
5. **THIS SURVEY WAS PREPARED WITH BENEFIT OF A TITLE COMMITMENT REPORT PREPARED BY CHICAGO TITLE INSURANCE COMPANY, COMMITMENT NO. PIT202141, HAVING A COMMITMENT DATE OF JULY 29, 2020, WHERE THE FOLLOWING SURVEY RELATED ITEMS APPEAR IN SCHEDULE B-II:**

(5) RESTRICTIONS SET FORTH IN THE FOLLOWING DEEDS:

A. FROM MINNIE B. HANSELL, WIDOW, TO CLINTON M. SMITH, ET UX., DATED JUNE 18, 1942 AND RECORDED IN DEED BOOK 717, PAGE 254.

B. FROM CLINTON M. SMITH, ET UX., TO ERNEST H. BUEHL, ET UX., DATED JUNE 19, 1942 AND RECORDED IN DEED BOOK 718, PAGE 310.

SUBJECT PROPERTY IS NOT PART OF THE LANDS DESCRIBED IN EITHER DOCUMENT.

(6) THE FOLLOWING RIGHTS OF WAY:

A. FROM ERNEST H. BUEHL, ET UX., TO PHILADELPHIA ELECTRIC COMPANY AND THE BELL TELEPHONE COMPANY OF PENNSYLVANIA, DATED MARCH 9, 1954 AND RECORDED IN DEED BOOK 1160, PAGE 22 **- SUBJECT PROPERTY IS NOT PART OF THE LANDS DESCRIBED.**

B. FROM HYMAN KORMAN, INC., TO THE BELL TELEPHONE COMPANY OF PENNSYLVANIA,DATED OCTOBER 26, 1962 AND RECORDED IN DEED BOOK 1683, PAGE 353 **- BLANKET IN NATURE, NOT PLOTTABLE, SUBJECT PROPERTY IS PART OF THE LANDS DESCRIBED.**

C. FROM HYMAN KORMAN, INC., TO PHILADELPHIA ELECTRIC COMPANY, DATED OCTOBER 8, 1964 AND RECORDED IN DEED BOOK 1781, PAGE 1170.
- BLANKET EASEMENT FOR GAS AND ELECTRIC LINES AND APPURTENANCES WITHIN AND ALONG STREET ROAD.

D. FROM HYMAN KORMAN, INC., TO PHILADELPHIA ELECTRIC COMPANY, DATED DECEMBER 19, 1966 AND RECORDED IN DEED BOOK 1855, PAGE 15 **- SUBJECT PROPERTY IS NOT PART OF THE LANDS DESCRIBED.**

(7) AGREEMENT BY AND BETWEEN THE SUPERVISORS OF THE TOWNSHIP OF BENSALEM AND HYMAN KORMAN, INC., DATED OCTBER 19, 1966 AND RECORDED IN DEED BOOK 1852, PAGE 818 **- CONDITIONS OF APPROVAL FOR A REFERENCED SITE PLAN NOT PROVIDED, UNABLE TO REVIEW. (CONDITIONS ARE BLANKET IN NATURE)**

(8) AGREEMENT REGARDING RECIPROCAL RIGHTS BY AND BETWEEN HYMAN KORMAN, INC., AND FOOD FAIR STORES, INC., DATED JULY 15, 1969 AND RECORDED IN DEED BOOK 1941, PAGE 958 **- THE AGREEMENT IS BETWEEN PREMISES "A" & PREMISES "B" OF INSTRUMENT #2015038887 AND IS BLANKET IN NATURE.**

(9) PARTY WALL AGREEMENT BY AND BETWEEN FOOD FAIR STORES, INC. AND V.N.P. ASSOCIATES, DATED MARCH 15, 1971 AND RECORDED IN DEED BOOK 1992, PAGE 211 **- PARTY WALLS DESCRIBED IN EXHIBITS A & B ARE LOCATED NORTHEAST OF THE SURVEYED PORTION OF THE SUBJECT PROPERTY, NOT SHOWN.**

(10) COURT ORDER FILED APRIL 5, 2019 AT CP NO. 2018-2229, A CERTIFIED COPY OF WHICH IS RECORDED AT INSTRUMENT NO. 2019-17560 **- BLANKET IN NATURE, NOT PLOTTABLE**.

(13) RECIPROCAL EASEMENT AGREEMENT BY AND BEWEEN FOOD FAIR STORES, INC., AND V.N.P. ASSOCIATES, DATED MARCH 15, 1971 AND RECORDED IN DEED BOOK 1992, PAGE 201; AND RELEASE DATED JULY 15, 1980 AND RECORDED IN DEED BOOK 2394, PAGE 122 **- BLANKET IN NATURE, NOT PLOTTABLE**.

6. ELEVATIONS ARE BASED UPON NAVD 1988
7. BY GRAPHIC PLOTTING, PROPERTY IS LOCATED IN FLOOD HAZARD ZONE X (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) PER NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAP NO. 42017C0502J, EFFECTIVE DATE: 3/16/2015 & MAP NO. 42017C0504K, EFFECTIVE DATE: 3/21/2017, OBTAINED FROM FEMA NFHL WEB SERVICE ON 07/17/2020.
8. THE LOCATION AND EXTENTS OF UNDERGROUND TANKS AND VAULTS, IF ANY EXIST, HAVE NOT BEEN DETERMINED BY THE SURVEYOR.
9. THERE WAS NO EVIDENCE OF RECENT EARTH MOVING WORK, BUILDING CONSTRUCTION, OR BUILDING ADDITIONS OBSERVED IN THE PROCESS OF CONDUCTING THE FIELD WORK.
10. THERE WERE NO CHANGES IN STREET RIGHT OF WAY LINES, EVIDENCE OF RECENT STREET OR SIDEWALK CONSTRUCTION, OR REPAIRS OBSERVED IN THE PROCESS OF CONDUCTING THE FIELD WORK.
11. THERE WAS NO EVIDENCE OF A FIELD DELINEATION OF WETLANDS OBSERVED IN THE PROCESS OF CONDUCTING THE FIELD WORK.

REFERENCES:

1. ALTA/ACSM LAND TITLE SURVEY, KMART, 1837 STREET ROAD, BENSALEM, PA, PREPARED BY FIRST ORDER, LLC FOR MKA, A NATIONAL LAND SERVICES GROUP, SHEETS 1 & 2 OF 2, LAST DATED MARCH 30, 2015.
2. SUBDIVISION PLAN, BROOKWOOD SHOPPING CENTER, PORTION OF LAND OF HYMAN KORMAN INC. SITUATE IN BENSALEM TWP., BUCKS CO., PENNA., PREPARED BY THE KORMAN CORPORATION, LAST REVISED 1/22/68, FILED IN THE BUCKS COUNTY CLERK'S OFFICE, RECORDED IN BK 64, PAGE 47 ON 3/19/69.
3. GAS & ELECTRIC MAPPING PROVIDED BY PECO, PRINTED 07/22/2020.
4. TELEPHONE MAPPING, STREET ROAD, 1ST. W/O MARION AVE.-HULMEVILLE ROAD, MAP #38, LAST DATED 08/2001.
5. GIS WATER MAPPING PROVIDED BY AQUA PENNSYLVANIA, DATED JUN 06, 2019, MAP AA-15 & MAP AA-16.
6. DRAWINGS FOR CONSTRUCTION, COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF HIGHWAYS, DISTRICT 6, BENSALEM TOWNSHIP, BUCKS COUNTY, ROUTE 252, SECTION 10, PREPARED BY YULE, STICKEN, JORDAN & MONEE ENGINEERS, APPROVAL DATE OF 03/03/1965 SHEET 9 OF 20.

TITLE REPORT EXHIBIT "A" LEGAL DESCRIPTION (PREMISES B):

ALL THAT CERTAIN PIECE OF PARCEL OF GROUND, SITUATE IN THE TOWNSHIP OF BENSALEM, COUNTY OF BUCKS AND COMMONWEALTH OF PENNSYLVANIA, AND DESCRIBED ACCORDING TO A CERTAIN "AS BUILT PLAN" MADE BY PENNONI ASSOCIATES, INC., CONSULTING ENGINEERS, DATED OCTOBER 19, 1970, AND LAST REVISED JANUARY 8, 1971, AS FOLLOWS:

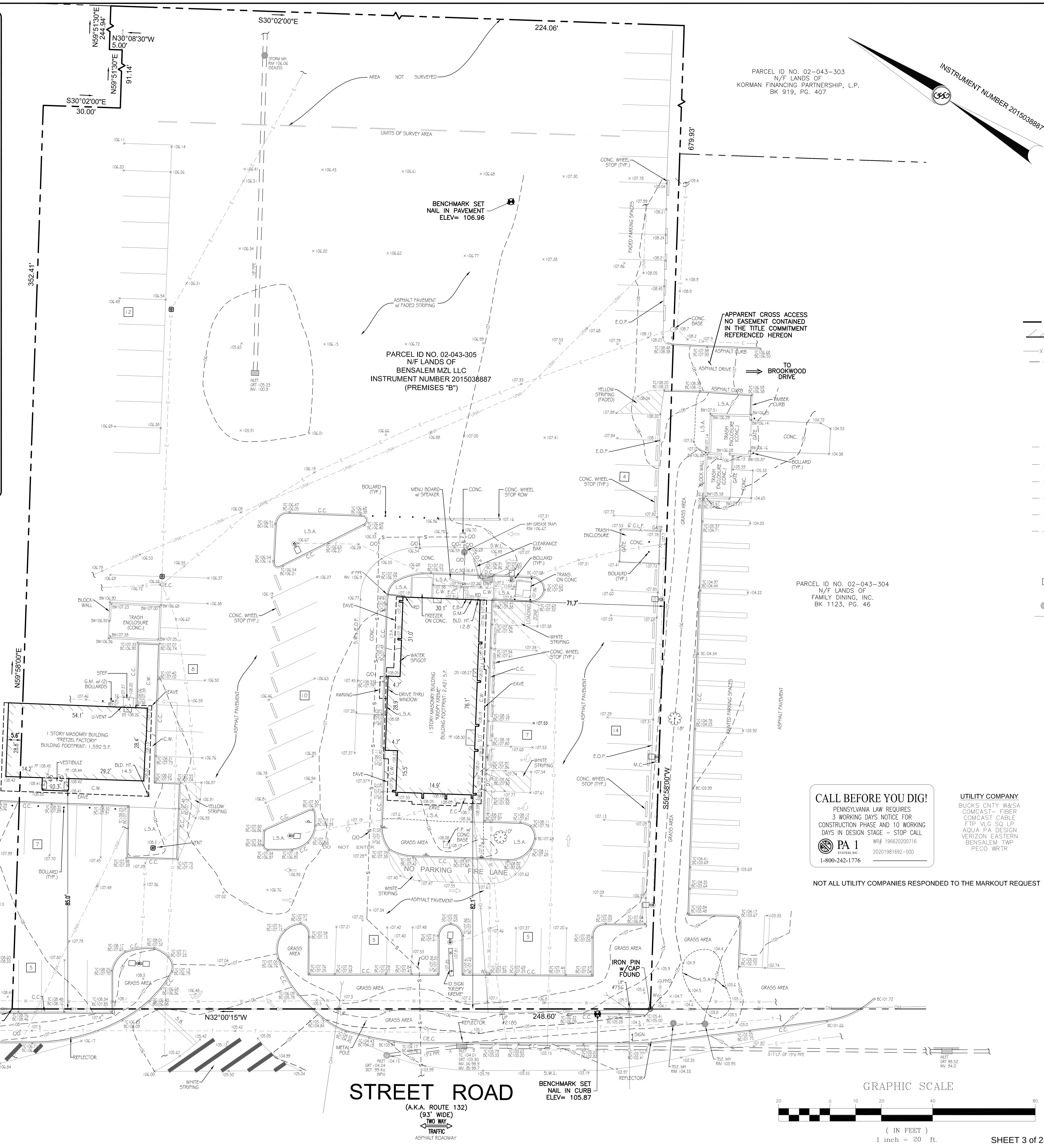
BEGINNING AT A POINT ON THE NORTHEASTERLY LEGAL RIGHT OF WAY LINE OF STREET ROAD (93 FEET WIDE) SAID POINT BEING THE THREE FOLLOWING COURSES AND DISTANCES FROM A POINT IN THE CENTER LINE OF HULMEVILLE ROAD AND THE ORIGINAL (OLD) CENTER LINE OF STREET ROAD (1) LEAVING HULMEVILLE ROAD SOUTHEASTWARDLY THROUGH THE BED OF STREET ROAD 600.00 FEET TO A POINT; (2) NORTH 59° 58' 00" EAST THROUGH THE BED OF STREET ROAD 72.95 FEET TO A POINT ON THE NORTHEASTERLY LEGAL RIGHT OF WAY OF STREET ROAD AFORESAID; AND (3) SOUTH 32° 00' 15" EAST ALONG THE NORTHEASTERLY LEGAL RIGHT OF WAY LINE OF STREET ROAD (193.50 FEET TO THE POINT OF BEGINNING) THENCE EXTENDING FROM SAID POINT OF BEGINNING NORTH 59° 58' 00" EAST 352.41 FEET TO A POINT; THENCE EXTENDING SOUTH 30° 02' 00" EAST 30.00 FEET TO A POINT; THENCE EXTENDING NORTH 59° 51' 30" EAST 91.14 FEET TO A POINT; THENCE EXTENDING NORTH 30° 08' 30" WEST 5.00 FEET TO A POINT; THENCE EXTENDING NORTH 59° 51' 30" EAST 244.94 FEET TO A POINT IN LINE OF LANDS NOW OR LATE OF HYMAN KORMAN, INC.; THENCE EXTENDING ALONG THE LAST MENTIONED LANDS THE TWO FOLLOWING COURSES AND DISTANCES; (1) SOUTH 30° 02' 00" EAST 224.06 FEET TO A POINT; AND (2) SOUTH 59° 58' 00" WEST 679.93 FEET TO A POINT ON THE NORTHEASTERLY LEGAL RIGHT OF WAY LINE OF STREET ROAD AFORESAID; THENCE EXTENDING NORTH 32° 00' 15" WEST ALONG THE NORTHEASTERLY LEGAL RIGHT OF WAY LINE OF STREET ROAD 248.60 FEET TO THE FIRST MENTIONED POINT AND PLACE OF BEGINNING.

BEING DESIGNATED AS TAX PARCEL NO. 2-43-305.

BEING PART OF THE SAME PROPERTY CONVEYED TO BENSALEM MZL LLC, BY DEED FROM BENSALEM REALTY ASSOCIATES, A PENNSYLVANIA LIMIT PARTNERSHIP, DATED JUNE 22, 2015 AND RECORDED JULY 2, 2015 AT INSTRUMENT NO. 2015038887.

ABBREVIATIONS

BLD. HT.	BUILDING HEIGHT
C.C.	CONCRETE CURB
C.L.F.	CHAIN LINK FENCE
C.W.	CONC. WALK
C/O	CLEANOUT
D.C.	DEPRESSED CURB
D.W.P.	DETECTABLE WARNING PAD
E.B.	ELECTRIC BOX
E.C.	ELECTRIC COVER
E.O.P.	EDGE OF PAVEMENT
F.P.	FLAG POLE
G.M.	GAS METER
GRT	GRATE
HYD.	HYDRANT
INV	INVERT
L.S.A.	LANDSCAPED AREA
M.C.	METAL COVER
MH	MANHOLE
NPV	NO PIPES VISIBLE
RD	ROOF DRAIN
S.B.	STOP BAR
S.W.L.	SOLID WHITE LINE
TRANS.	TRANSFORMER
UP	UTILITY POLE



VICINITY MAP

MAP LEGEND

	PROPERTY LINE
	EXIST. BUILDING FOOTPRINT AT GROUND LEVEL & DOORWAY
—X—X—	FENCE
—123—	EXISTING CONTOUR
x 12.34	EXISTING SPOT ELEVATION
x TC12.34	EXIST. TOP OF CURB ELEVATION
x BC12.34	EXIST. GUTTER ELEVATION
x BW12.34	EXIST. BOTTOM OF WALL ELEVATION
x DS12.34	DOOR SILL ELEVATION
x FF12.34	FINISHED FLOOR ELEVATION
—W—	APPROX. LOCATION U.G. WATER LINE PER UTILITY MARKOUT
—G—	APPROX. LOCATION U.G. GAS LINE PER UTILITY MARKOUT
—E—	APPROX. LOCATION U.G. ELECTRIC LINE PER UTILITY MARKOUT
—T—	APPROX. LOCATION U.G. TELEPHONE LINE PER UTILITY MARKOUT
—S—	APPROX. LOCATION U.G. SEWER LINE PER UTILITY MARKOUT
—UNK—	APPROX. LOCATION U.G. UNKNOWN LINE PER UTILITY MARKOUT
	HYDRANT
WV	WATER VALVE
G	GAS METER
	AREA LIGHT
	MANHOLE
	INLET
—OH—	OVERHEAD WIRES
	UTILITY POLE
	GUY ANCHOR
	BOLLARD
	SIGN
	HANDICAP PARKING SPACE
10	PARKING COUNT
1.0'	DENOTES OFFSET OF STRUCTURE AT GROUND LEVEL RELATIVE TO PROPERTY LINE
6"	TREE & TRUNK SIZE

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BENSALEM TWP
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NOT ALL UTILITY COMPANIES RESPONDED TO THE MARKOUT REQUEST

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

No.	DESCRIPTION OF REVISION	DRAWN:	DATE
3	REVISE TO ADD BENCHMARKS	W.B.	07-23-2021
2	MISCELLANEOUS REVISION	D.A.H.	11-23-2020
1	REVISE PER RECEIPT OF TITLE REPORT	R.M.C.	09-24-2020

ALTA/NSPS LAND TITLE SURVEY
PART OF PARCEL ID NO. 02-043-305
1729 STREET ROAD (PA ROUTE 132)
TOWNSHIP OF BENSALEM
COUNTY OF BUCKS
COMMONWEALTH OF PENNSYLVANIA

GALLAS SURVEYING GROUP
2865 U.S. ROUTE 1
NORTH BRUNSWICK, NJ 08902
TELE: 732-422-6700
FAX: 732-940-8786
www.gallassurvey.com

DATE	SCALE	DRAWN:	CHECKED:
09-22-2020	1"=20'	R.S.E.	K.G.G./C.J.O.
FIELD DATE	FIELD BOOK	PAGE	FIELD CREW
07-29-2020	137	72	K.C./O.D.
FILE NO.: G20144		DRAWING NAME/SHEET NO.: G20144.DWG 1 OF 1	

CERTIFIED TO:
CHICAGO TITLE INSURANCE COMPANY;
JPMORGAN CHASE BANK, N.A., A NATIONAL ASSOCIATION, ITS SUCCESSORS AND/OR ASSIGNS AS THEIR INTRESTS MAY APPEAR;

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2016 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 2, 3, 4, 5, 7(a),7(b)(1), 8, 9, 11, 13, 14, 16, 17, 18, 19 & 20 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON JULY 29, 2020.

NOT VALID UNLESS EMBOSSED WITH RAISED IMPRESSION OR BLUE INK SEAL

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL DAVID A. HINSON LAND SURVEYOR No. SU075574

07-23-2021
DATE

DAVID A. HINSON
PENNSYLVANIA PROFESSIONAL LAND SURVEYOR #SU-075574

ALERT TO CONTRACTOR:

PRIOR TO THE CONSTRUCTION OF OR CONNECTION TO ANY STORM DRAIN, SANITARY SEWER, WATER MAIN OR ANY OF THE DRY UTILITIES, THE CONTRACTOR SHALL EXCAVATE, VERIFY AND CALCULATE ALL POINTS OF CONNECTION AND ALL UTILITY CROSSINGS AND INFORM ENGINEER AND THE OWNER OF ANY CONFLICT OR REQUIRED DEVIATIONS FROM THE PLAN. NOTIFICATION SHALL BE MADE A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION. ENGINEER AND OWNER SHALL BE HELD HARMLESS IN THE EVENT THAT THE CONTRACTOR FAILS TO MAKE SUCH NOTIFICATION.

GENERAL NOTES:

1. THIS PROJECT REFERENCES A SURVEY PREPARED BY:
   GALLAS SURVEYING GROUP
   2865 US ROUTE 1
   NORTH BRUNSWICK, NJ 08902

   DATE: SEPTEMBER 22, 2020
   REVISED: NOVEMBER 23, 2020
   ALTA/NSPS LAND TITLE SURVEY
   PARCEL ID NO. 02-043-305
   1729 STREET ROAD (PA ROUTE 132)
   BENSALEM TOWNSHIP
   COUNTY OF BUCKS
   COMMONWEALTH OF PENNSYLVANIA

DEMO KEY NOTES:

A. EXISTING BUILDING TO BE REMOVED.
B. EXISTING CURB TO BE REMOVED.
C. EXISTING HARDSCAPE TO BE REMOVED.
D. EXISTING LANDSCAPE AREA TO CLEARED AND GRUBBED.
E. EXISTING SIGN TO BE REMOVED.
F. EXISTING LIGHT TO BE REMOVED.
G. EXISTING ON-SITE FENCE TO BE REMOVED.
H. EXISTING WHEEL STOP TO BE REMOVED. (TYP.)
I. EXISTING BOLLARD TO BE REMOVED. (TYP.)
J. EXISTING DETECTABLE WARNING PAD TO BE REMOVED.
K. EXISTING FREEZER TO BE REMOVED.
L. EXISTING MENU BOARD TO BE REMOVED.
M. EXISTING CLEARANCE BAR TO BE REMOVED.
N. EXISTING FLAG POLE TO BE REMOVED.
O. EXISTING TREE TO BE REMOVED.
P. EXISTING WATER SPIGOT TO BE REMOVED.
Q. EXISTING ROOF DRAIN TO BE REMOVED.
R. EXISTING ELECTRIC STRUCTURE TO BE REMOVED.
S. EXISTING GREASE TRAP TO BE REMOVED.
T. EXISTING CLEANOUT TO BE REMOVED. (TYP.)
U. EXISTING TRANSFORMER TO BE REMOVED.
V. EXISTING OVERHEAD WIRE TO BE REMOVED. CONTRACTOR TO COORDINATE WITH PECO FOR REMOVAL PRIOR TO CONSTRUCTION.
W. EXISTING ELECTRIC CONDUIT TO BE REMOVED. CONTRACTOR TO COORDINATE WITH PECO FOR REMOVAL PRIOR TO CONSTRUCTION.
X. EXISTING GAS METER TO BE REMOVED. CONTRACTOR TO COORDINATE WITH PECO FOR GAS LINE LOCATION AND REMOVAL PRIOR TO CONSTRUCTION.
Y. EXISTING GAS LINE TO BE REMOVED. CONTRACTOR TO COORDINATE WITH PECO FOR GAS LINE LOCATION AND REMOVAL PRIOR TO CONSTRUCTION.
Z. EXISTING SANITARY LINE TO BE REMOVED. CONTRACTOR TO COORDINATE WITH BUCKS COUNTY WATER AND SEWER AUTHORITY FOR LOCATION AND REMOVAL PRIOR TO CONSTRUCTION.
AA. EXISTING CURB TO REMAIN. CONTRACTOR TO PROTECT IN PLACE.
AB. EXISTING OVERHEAD UTILITY LINE TO REMAIN. CONTRACTOR TO PROTECT IN PLACE.
AC. EXISTING UTILITY POLE TO REMAIN. CONTRACTOR TO PROTECT IN PLACE.
AD. EXISTING SANITARY LINE TO REMAIN. CONTRACTOR TO PROTECT IN PLACE.
AE. EXISTING WATER LINE TO REMAIN. CONTRACTOR TO PROTECT IN PLACE.
AF. EXISTING ELECTRIC LINE TO REMAIN. CONTRACTOR TO PROTECT IN PLACE.
AG. EXISTING UNKNOWN UTILITY LINE TO REMAIN. CONTRACTOR TO PROTECT IN PLACE.
AH. EXISTING GAS LINE TO REMAIN. CONTRACTOR TO PROTECT IN PLACE.
AI. EXISTING WATER LINE TO BE REMOVED. CONTRACTOR TO COORDINATE WITH AQUA FOR LOCATION AND REMOVAL PRIOR TO CONSTRUCTION.
AJ. EXISTING WATER VALVE TO BE REMOVED. CONTRACTOR TO COORDINATE WITH AQUA FOR LOCATION AND REMOVAL PRIOR TO CONSTRUCTION.

DEMOLITION NOTES:

1. THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS AND CODES AND OBTAIN ALL REQUIRED PERMITS FOR ANY CONSTRUCTION ACTIVITY.
2. THE CONTRACTOR SHALL CONTACT 811 PENNSYLVANIA ONE CALL BEFORE PERFORMING ANY EXCAVATION WORK.
3. THE CONTRACTOR SHALL INSTALL ALL CONSTRUCTION FENCING AND EROSION AND SEDIMENT CONTROL DEVICES PRIOR TO THE START OF ANY DEMOLITION OR CONSTRUCTION ACTIVITY.
4. ALL STRUCTURES, UTILITIES, SITE IMPROVEMENTS AND TREES DESIGNATED ON THE DRAWINGS OR DIRECTED BY THE ENGINEER TO REMAIN SHALL BE PROTECTED FROM DAMAGE BY ALL CONSTRUCTION OPERATIONS. THIS SHALL BE ACCOMPLISHED BY ERECTING BARRIERS, GUARDS AND ENCLOSURES AS SHOWN ON THE DRAWINGS OR OTHER APPROVED MEANS. PROTECTION SHALL BE MAINTAINED UNTIL ALL WORK IN THE VICINITY OF THE WORK BEING PROTECTED HAS BEEN COMPLETED.
5. THE CONTRACTOR SHALL COMPLY WITH ALL DEMOLITION AND NEW CONSTRUCTION INSPECTIONS AS REQUIRED BY FEDERAL, STATE AND AUTHORITY HAVING JURISDICTION LAWS, REGULATIONS AND BUILDING CODES.
6. THE CONTRACTOR IS RESPONSIBLE FOR THE DEMOLITION, REMOVAL, AND DISPOSAL (IN A LOCATION APPROVED BY ALL AUTHORITIES HAVING JURISDICTION) ALL STRUCTURES, PADS, WALLS, FLUMES, FOUNDATIONS, PARKING, DRIVES, DRAINAGE, STRUCTURES, UTILITIES, ETC., SUCH THAT THE IMPROVEMENTS SHOWN ON THE REMAINING PLANS CAN BE CONSTRUCTED. UTILITIES ARE TO BE REMOVED TO THE RIGHT-OF-WAY, UNLESS OTHERWISE NOTED.
7. ALL FACILITIES TO BE REMOVED SHALL BE UNDERCUT TO SUITABLE MATERIAL AND BROUGHT TO GRADE WITH SUITABLE COMPACTED FILL MATERIAL PER THE CONTRACT DOCUMENTS.
8. CONTRACTOR IS TO REMOVE AND DISPOSE OF ALL DEBRIS, RUBBISH, VEGETATION FROM CLEARING AND GRUBBING, AND OTHER MATERIALS RESULTING FROM PREVIOUS AND CURRENT DEMOLITION OPERATIONS. DISPOSAL WILL BE IN ACCORDANCE WITH ALL LOCAL, STATE AND/OR FEDERAL REGULATIONS GOVERNING SUCH OPERATIONS. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED FOR DEMOLITION AND DISPOSAL.
9. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL DEBRIS FROM THE SITE AND DISPOSING THE DEBRIS IN A LAWFUL MANNER. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED FOR DEMOLITION AND DISPOSAL.
10. THE CONTRACTOR SHALL COORDINATE WITH RESPECTIVE UTILITY COMPANIES PRIOR TO THE REMOVAL AND/OR RELOCATION OF UTILITIES. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANY CONCERNING PORTIONS OF WORK WHICH MAY BE PERFORMED BY THE UTILITY COMPANY'S FORCES AND ANY FEES WHICH ARE TO BE PAID TO THE UTILITY COMPANY FOR THEIR SERVICES. THE CONTRACTOR IS RESPONSIBLE FOR PAYING ALL FEES AND CHARGES.
11. THE LOCATIONS OF ALL EXISTING UTILITIES SHOWN ON THIS PLAN HAVE BEEN DETERMINED FROM THE BEST INFORMATION AVAILABLE AND ARE GIVEN FOR THE CONVENIENCE OF THE CONTRACTOR. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THEIR ACCURACY. PRIOR TO THE START OF ANY DEMOLITION ACTIVITY, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES FOR ONSITE LOCATIONS OF EXISTING UTILITIES. THE CONTRACTOR SHALL PERFORM FIELD UTILITY LOCATE OF ALL STORMWATER MANAGEMENT FACILITIES THAT TRAVERSE THE SITE AND SOFTDIG AS NECESSARY TO AVOID DAMAGE TO THE SYSTEMS.
12. ALL EXISTING SEWERS, PIPING AND UTILITIES SHOWN ARE NOT TO BE INTERPRETED AS THE EXACT LOCATION, OR AS THE ONLY OBSTACLES THAT MAY OCCUR ON THE SITE. VERIFY EXISTING CONDITIONS AND PROCEED WITH CAUTION AROUND ANY ANTICIPATED FEATURES. GIVE NOTICE TO ALL UTILITY COMPANIES REGARDING DESTRUCTION AND REMOVAL OF ALL SERVICE LINES AND CAP ALL LINES BEFORE PROCEEDING WITH THE WORK. UTILITIES DETERMINED TO BE ABANDONED AND LEFT IN PLACE SHALL BE GROUTED IF UNDER BUILDING.
13. ELECTRICAL, TELEPHONE, CABLE, WATER, FIBER OPTIC CABLE AND/OR GAS LINES NEEDING TO BE REMOVED OR RELOCATED SHALL BE COORDINATED WITH THE AFFECTED UTILITY COMPANY AND REMOVED TO THE PROPERTY LINE. ADEQUATE TIME SHALL BE PROVIDED FOR RELOCATION AND CLOSE COORDINATION WITH THE UTILITY COMPANY IS NECESSARY TO PROVIDE A SMOOTH TRANSITION IN UTILITY SERVICE. CONTRACTOR SHALL PAY CLOSE ATTENTION TO EXISTING UTILITIES WITHIN ANY ROAD RIGHT OF WAY DURING CONSTRUCTION.
14. CONTRACTOR TO REPLACE ALL DEAD AND/OR DAMAGED TREES/ SHRUBS IN KIND.
15. ALL BELOW GRADE CONSTRUCTION INCLUDING BELOW- GRADE WALLS, SLABS AND TANKS ARE TO BE REMOVED.
16. PLAN DEPICTS ALL KNOWN STRUCTURES AND UTILITIES ABOVE AND/OR UNDERGROUND. ADDITIONAL UNDERGROUND UTILITIES AND/OR STRUCTURES MAY EXIST. CONTRACTOR SHALL NOTIFY ENGINEER OF RECORD IF ADDITIONAL UTILITIES OR STRUCTURES ARE ENCOUNTERED AND COORDINATE WITH THE MUNICIPALITY OR UTILITY COMPANY FOR PROPER REMOVAL OR RELOCATION.

DEMOLITION LEGEND

- PROPERTY BOUNDARY LINE
- CENTER LINE OF EXISTING ROADWAY
- ADJOINING PROPERTY LINE
- EXISTING BUILDING
- EXISTING EDGE OF PAVEMENT
- EXISTING FENCE
- DEMO CURB
- EXISTING 5' INTERVAL CONTOUR LINE
- EXISTING 1' INTERVAL CONTOUR LINE
- EXISTING TREE
- EXISTING UNKNOWN UTILITY LINE
- EXISTING GAS MAIN
- EXISTING UTILITY POLE
- EXISTING STORM STRUCTURES
- EXISTING SANITARY STRUCTURES
- EXISTING WATER MAIN
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- EXISTING UNDERGROUND ELECTRIC
- EXISTING TELEPHONE/ COMMUNICATION LINES
- EXISTING OVERHEAD WIRES
- EXISTING SANITARY
- EXISTING STORM
- EXISTING SIGN
- EXISTING LIGHT
- EXISTING BOLLARD
- DEMO SIGN
- DEMO LIGHT
- DEMO BOLLARD
- DEMO BUILDING
- DEMO CURB
- DEMO ASPHALT
- DEMO STRIPING
- DEMO TREE
- DEMO HARDSCAPE
- DEMO GAS MAIN
- DEMO WATER MAIN
- DEMO UNDERGROUND ELECTRIC
- DEMO OVERHEAD WIRES
- PROPOSED LIMIT OF DISTURBANCE (SHOWN FOR GRAPHICAL PURPOSES)

CORE STATES GROUP
201 S. Maple Avenue, Suite 300
Ambler, PA 19002
Phone (215) 809-2125
MSwaggard@core-states.com

CLIENT

CHASE

Know what's below. Call before you dig.
THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON DESIGN ENGINEERS RESEARCH AND/OR FIELD SURVEY AND IS NOT GUARANTEED. BY ENGINEERING THESE PLANS IN THE PRESENT FORM, THE DESIGN ENGINEER DOES NOT WARRANT THAT LOCATIONS SHOWN ARE EXACT. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF UNDERGROUND UTILITIES.

REVISIONS

REV	DATE	COMMENT	BY
1	08/24/21	BCCD, BCPC, AND TWP COMMENTS	CML

DOCUMENT
PRELIMINARY/ FINAL LAND DEVELOPMENT PLAN FOR CHASE BANK

SITE LOCATION
1729 STREET ROAD
BENSALEM, PA
19020

ENGINEER SEAL

COMMONWEALTH OF PENNSYLVANIA
REGISTERED
PROFESSIONAL
FRANCIS GREENE
ENGINEER
No. PE075817
PENNSYLVANIA
08/26/2021

FRANCIS GREENE, P.E.
PA LICENSE #075817

SHEET TITLE
EXISTING CONDITIONS & DEMOLITION PLAN

JOB #:	JPM-29391
DATE:	5/13/21
SCALE:	1" = 20'
DRAWN BY:	CML
CHECKED BY:	FG

SHEET NO.
C4
SHEET 4 OF 23

User: CLANG Plot Date/Time: Aug. 24, 21 - 16:41:00 Drawing: C:\Users\clang\appdata\local\temp\AcPublish_15640\JPM 29391-P-SITE.dwg :04 DEMO

ZONING DATA BENSALEM TOWNSHIP
(GC - GENERAL COMMERCIAL) - ENTIRE SITE AREA

ITEM	REQUIRED	EXISTING	PROPOSED	COMMENT
MIN. LOT AREA	7,200 S.F.	397,154 SF	397,154 SF	COMPLIANT
MAX BUILDING AREA	35%	26.0% (103,260 S.F.)	26.2% (104,159 S.F.)	COMPLIANT
MAX BUILDING HEIGHT	45 FT.	12.8'	21.50'	COMPLIANT
MIN. FRONT YARD	75 FT.	82.1'	78.93'	COMPLIANT
MIN. SIDE YARD	8 FT.	0'	0'	EXISTING NON-CONFORMITY
MIN. REAR YARD	35 FT.	69.8'	69.8'	COMPLIANT
MAX IMPERVIOUS SURFACE RATIO	60%	98.8%	97.5%	EXISTING NON-CONFORMITY
BUFFER YARDS	20 FT. LANDSCAPE BUFFER ADJACENT TO RESIDENCE DISTRICT OR PARK	0 FT	0	EXISTING NON-CONFORMITY

ZONING DATA BENSALEM TOWNSHIP
(GC - GENERAL COMMERCIAL) - LEASED AREA

ITEM	REQUIRED	EXISTING	PROPOSED	COMMENT
MIN. LOT AREA	7,200 S.F.	33,096 SF	33,096 S.F.	COMPLIANT
MAX BUILDING AREA	35%	7.3% (2,421 S.F.)	10.3% (3,320 S.F.)	COMPLIANT
MAX BUILDING HEIGHT	45 FT.	12.8'	21.50'	COMPLIANT
MIN. FRONT YARD	75 FT.	82.1'	78.93'	COMPLIANT
MIN. SIDE YARD	8 FT.	71.7'	26.58'	COMPLIANT
MIN. REAR YARD	35 FT.	522.8'	552.6'	COMPLIANT
MAX IMPERVIOUS SURFACE RATIO	60%	83.4%	68.2% (22,560 S.F.)	EXISTING NON-CONFORMITY
BUFFER YARDS	20 FT. LANDSCAPE BUFFER ADJACENT TO RESIDENCE DISTRICT OR PARK	N/A	N/A	N/A
PARKING SETBACK	25 FEET FROM THE BOUNDARY OF A PUBLIC STREET, ROAD OR HIGHWAY, NOR WITHIN 25 FEET FROM ANY OTHER PROP LINE	12.89 FT FROM THE R/W OF STREET ROAD	13.79 FT FROM THE R/W OF STREET ROAD	EXISTING NON-CONFORMITY

SITE AREA NOTES:

1. THE 397,154 SF. MENTIONED IN THE ENTIRE SITE AREA ZONING DATA TABLE ABOVE IS THE AREA OF PREMISE "A" AND "B" COMBINED. PER OUR SURVEY, PREMISE "B" IS 3.70 ACRES AND PREMISE "A" IS 5.40 ACRES. THOSE NUMBERS COMBINED ARE THE 397,154 SF OR 9.1 ACRES MENTIONED ABOVE.
2. THE LEASED AREA ZONING DATA TABLE ONLY INCLUDES THE CHASE BANK LEASED AREA.

SITE KEY NOTES:

A. PROPOSED 3,320 SF CHASE BANK BUILDING. REFER TO BUILDING PERMIT PLANS FOR DETAILS.
B. PROPOSED DRIVE-UP ATM CANOPY. REFER TO BUILDING PERMIT PLANS FOR DETAILS.
C. PROPOSED ADA COMPLIANT CURB RAMP WITH DETECTABLE WARNING SURFACE. REFER TO CONSTRUCTION DETAILS SHEET.
D. PROPOSED 9' X 18' PARKING SPACE (TYP.)
E. PROPOSED 8' X 18' ACCESSIBLE PARKING SPACE AND AISLE.
F. PROPOSED ASPHALT PAVEMENT. REFER TO CONSTRUCTION DETAILS SHEET.
G. PROPOSED CONCRETE PAD. REFER TO CONSTRUCTION DETAILS SHEET.
H. PROPOSED CONCRETE SIDEWALK. REFER TO CONSTRUCTION DETAILS SHEET.
I. PROPOSED 6" CONCRETE CURB. REFER TO CONSTRUCTION DETAILS SHEET.
J. PROPOSED LANDSCAPE AREA. REFER TO PLANTING PLAN SHEET LP-1 BY EVERGREEN DESIGN GROUP FOR PLANTINGS.
K. PROPOSED ASPHALT PAVEMENT REPAIR ALONG NEW CURBLINE. REFER TO CONSTRUCTION DETAILS SHEET.
L. PROPOSED TRASH ENCLOSURE. REFER TO BUILDING PERMIT PLANS FOR DETAILS
M. PROPOSED VAN ACCESSIBLE PARKING SIGN. REFER TO CONSTRUCTION DETAILS SHEET.
N. PROPOSED TYPE C INLET. REFER TO POST-CONSTRUCTION STORMWATER MANAGEMENT DETAILS.
O. PROPOSED LIGHT FIXTURE (TYP.). REFER TO LIGHTING DETAILS SHEET.
P. PROPOSED YARD DRAIN. REFER TO POST-CONSTRUCTION STORMWATER MANAGEMENT DETAILS
Q. PROPOSED 6" CLEANOUT. REFER TO CONSTRUCTION DETAILS.
R. PROPOSED BIKE RACK. REFER TO CONSTRUCTION DETAILS.
S. PROPOSED TRANSFORMER. CONTRACTOR TO COORDINATE WITH PECO.
T. PROPOSED 'STOP' SIGN. REFER TO CONSTRUCTION DETAILS SHEET.
U. PROPOSED 'DO NOT ENTER' SIGN. REFER TO CONSTRUCTION DETAILS SHEET.
V. PROPOSED SITE MARKINGS. REFER TO CONSTRUCTION DETAILS SHEET.
W. PROPOSED 36.9 SF CHASE WALL SIGN. REFER TO ARCHITECTURAL PLANS AND DETAILS.
X. PROPOSED 12.7 SF CHASE WALL SIGN. REFER TO ARCHITECTURAL PLANS AND DETAILS.
Y. PROPOSED 50 SF CHASE ILLUMINATED PYLON SIGN.
Z. PROPOSED 2.3 SF CHASE DIRECTIONAL SIGN.
AA. PROPOSED STORM MANHOLE. REFER TO POST-CONSTRUCTION STORMWATER MANAGEMENT DETAILS.
AB. PROPOSED WATER METER PIT. METER PIT TO BE COORDINATED WITH AQUA PA.
AC. PROPOSED CONCRETE ISLAND SEPARATING DRIVE-UP ATM AND BYPASS LANE.
AD. PROPOSED WATER VALVE. VALVE TO BE COORDINATED WITH AQUA PA.
AE. PROPOSED "NO PARKING FIRE LANE" SITE MARKINGS. REFER TO SHEET C19 FOR MARKING SPECIFICATIONS & REFER CONSTRUCTION DETAILS SHEET FOR FIRE LANE DETAILS.
AF. PROPOSED "NO PARKING FIRE LANE" SIGN. REFER TO CONSTRUCTION DETAILS SHEET.

ALERT TO CONTRACTOR:

PRIOR TO THE CONSTRUCTION OF OR CONNECTION TO ANY STORM DRAIN, SANITARY SEWER, WATER MAIN OR ANY OF THE DRY UTILITIES, THE CONTRACTOR SHALL EXCAVATE, VERIFY AND CALCULATE ALL POINTS OF CONNECTION AND ALL UTILITY CROSSINGS AND INFORM ENGINEER AND THE OWNER OF ANY CONFLICT OR REQUIRED DEVIATIONS FROM THE PLAN. NOTIFICATION SHALL BE MADE A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION. ENGINEER AND OWNER SHALL BE HELD HARMLESS IN THE EVENT THAT THE CONTRACTOR FAILS TO MAKE SUCH NOTIFICATION.

PRE VS POST IMPERVIOUS COVERAGE - LEASED AREA

	PERVIOUS	IMPERVIOUS	% IMPERVIOUS
PRE-CONSTRUCTION	5,491 SF	27,605 SF	83.4%
POST-CONSTRUCTION	10,536 SF	22,560 SF	68.2%

SITE NOTES:

1. REFER TO SHEET C2 FOR GENERAL NOTES.
2. REFER TO SHEET C4 FOR DEMOLITION PLAN.
3. REFER TO SHEET C6 FOR GRADING PLAN.
4. REFER TO SHEET C7 FOR UTILITY PLAN.
5. ALL DIMENSIONS ARE TO GROUND LEVEL IMPROVEMENTS (FACE OF CURB, CONCRETE SLAB, ETC.) UNLESS NOTED OTHERWISE. REFER TO ARCHITECTURAL PLANS FOR BUILDING AND CANOPY DETAILS.
6. ALL DIMENSIONS FROM PROPERTY LINES ARE PERPENDICULAR UNLESS OTHERWISE NOTED.
7. ANY ADJACENT EXISTING LANDSCAPE MATERIAL DISTURBED DURING CONSTRUCTION SHALL BE REPLACED PER LOCAL REGULATIONS.
8. A PERMIT WILL BE REQUIRED FOR ANY ALTERATIONS TO THE EXISTING SIGN AND FOR ANY PROPOSED SIGNS.
9. A LAND ALTERATION PERMIT WILL BE REQUIRED PRIOR TO THE START OF ANY GRADING, EXCAVATION, REMOVAL OF TOPSOIL, REMOVAL OF TREES OR REMOVAL OF ANY OTHER VEGETATIVE COVER.
10. PRIOR TO CONSTRUCTION, CONTRACTOR TO COORDINATE WITH THE SHOPPING CENTER REDEVELOPMENT TO MINIMIZE CONSTRUCTION IMPACT.

PARKING CALCULATIONS BENSALEM TOWNSHIP - LEASED AREA

ITEM	REQUIRED	EXISTING	PROPOSED
STANDARD PARKING SPACES	1 SPACES PER 200 S.F. GROSS FLOOR AREA. 3,293 S.F. BANK X (1 SPACES / 200 S.F.) = 17 SPACES	43 SPACES	28 SPACES
ADA PARKING STALLS	1 TO 25 TOTAL SPACES: 1 SPACE	2 SPACES	2 SPACES
TOTAL SPACES	18 SPACES	45 SPACES	30 SPACES
DRIVE-UP ATM STACKING SPACES	5 STACKING SPACES	N/A	5 STACKING SPACES
STANDARD PARKING STALL SIZE	9 FT X 18 FT	10 FT X 18 FT	9 FT X 18 FT
ADA PARKING STALL SIZE	12 FT X 18 FT	10 FT X 18 FT	8 X 18 FT
LOADING BAY STALL SIZE	12 FT X 65 FT	N/A	N/A

PARKING CALCULATIONS BENSALEM TOWNSHIP - ENTIRE SITE AREA

ITEM	REQUIRED	EXISTING (1)	PROPOSED (PER MASER CONSULTING) (1)	PROPOSED
STANDARD PARKING SPACES (1)	1 SPACES PER 200 S.F. GROSS FLOOR AREA. TOTAL SITE: 576 SPACES (2) 3,293 S.F. BANK X (1 SPACES / 200 S.F.) = 17 SPACES	434 SPACES	544 SPACES	527 SPACES
ADA PARKING STALLS	1 TO 25 TOTAL SPACES: 1 SPACE 401 TO 500 TOTAL SPACES: 9 SPACES 501 TO 1000 TOTAL SPACES: 2% OF TOTAL	12 SPACES	12 SPACES	12 SPACES
DRIVE-UP ATM STACKING SPACES	5 STACKING SPACES	N/A	N/A	5 STACKING SPACES
STANDARD PARKING STALL SIZE	9 FT X 18 FT	10 FT X 18 FT	9 FT X 18 FT & 10 FT X 18 FT	9 FT X 18 FT & 10 FT X 18 FT
ADA PARKING STALL SIZE	12 FT X 18 FT	10 FT X 18 FT	12 FT X 18 FT	12 FT X 18 FT & 8 X 18 FT
LOADING BAY STALL SIZE	12 FT X 65 FT	N/A	12 FT X 65 FT	12 FT X 65 FT

PARKING CALCULATION NOTES:

1. INFORMATION IS BASED ON PARKING CALCULATIONS ON SHEET 3 OF LAND DEVELOPMENT PLANS FOR BENSALEM MZL LLC BY MASER CONSULTING P.A. DATED 05-01-20 REVISED 02-11-21. PROJECT NUMBER 19003305A

STANDARD PARKING STALL REQUIREMENT CALCULATIONS

BUSINESS	TYPE	SIZE	PARKING REQUIREMENTS	PARKING
GROCERY	STRIP SHOPPING CENTER/RETAIL STORES	42,596 S.F.	5.5/1,000 S.F. OF LEASABLE AREA	235 SPACES
GENERAL RETAIL	STRIP SHOPPING CENTER/RETAIL STORES	56,526 S.F.	5.5/1,000 S.F. OF LEASABLE AREA	311 SPACES
PRETZEL FACTORY	RESTURAUNT	1,600 S.F.	ONE EMPLOYEE PLUS EITHER ONE FOR EVERY TWO SEATS OR ONE PER 50 S.F. OF FLOOR SPACE DEVOTED TO PATRON USE, WHICHEVER IS GREATER	2 EMPLOYEES + 250 S.F. PATRON USE = 7 (0 SEATS DEDICATED FOR PATRONS)
EXISTING KRISPY KREME (TBR)	RESTURAUNT	2,500 S.F.	ONE EMPLOYEE PLUS EITHER ONE FOR EVERY TWO SEATS OR ONE PER 50 S.F. OF FLOOR SPACE DEVOTED TO PATRON USE, WHICHEVER IS GREATER	3 EMPLOYEES + 1,000 S.F. PATRON USE = 23 (18 SEATS DEDICATED FOR PATRONS)
PROPOSED CHASE BANK	BANK	3,320 S.F.	ONE SPACE PER 200 S.F. OF FLOOR AREA	3,320 S.F. BANK X (1 SPACES / 200 S.F.) = 17 SPACES
TOTAL (REQUIRED)				570 SPACES
TOTAL (EXISTING)				434 SPACES
TOTAL PROPOSED (PER MASER CONSULTING)				544 SPACES
TOTAL (PROPOSED)				529 SPACES

SITE LEGEND

- PROPERTY BOUNDARY LINE
- CENTER LINE OF EXISTING ROADWAY
- ADJOINING PROPERTY LINE
- EXISTING BUILDING SETBACK LINE
- EXISTING BUILDING
- EXISTING EDGE OF PAVEMENT
- EXISTING FENCE
- DEMO CURB
- EXISTING TREE
- EXISTING UTILITY POLE
- EXISTING STORM STRUCTURES
- EXISTING SANITARY STRUCTURES
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- EXISTING SIGN
- EXISTING BOLLARD
- PROPOSED SAWCUT LINE
- PROPOSED CURB
- PROPOSED BUILDING
- PROPOSED ASPHALT
- PROPOSED CONCRETE
- PROPOSED STORM STRUCTURES
- PROPOSED WATER STRUCTURES
- PROPOSED PARKING COUNT
- CHASE LEASED AREA

CORE STATES GROUP
201 S. Maple Avenue, Suite 300
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Phone (215) 809-2125
MSwaggard@core-states.com

CLIENT

CHASE

Know what's below. Call before you dig.

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON DESIGN PLANS AND/OR FIELD SURVEYS AND THEREFORE ONLY APPROXIMATE. FIELD MEASUREMENTS TAKEN IN THE FIELD CORE STATES, INC. DOES NOT GUARANTEE THAT LOCATIONS SHOWN ARE EXACT. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANIES AT LEAST THREE WORKING DAYS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF UTILITIES.

REVISIONS

REV	DATE	COMMENT	BY
1	08/24/21	BCCD, BCPC, AND TWP COMMENTS	CML

DOCUMENT
PRELIMINARY/ FINAL LAND DEVELOPMENT PLAN FOR CHASE BANK

SITE LOCATION
1729 STREET ROAD
BENSALEM, PA
19020

ENGINEER SEAL

COMMONWEALTH OF PENNSYLVANIA
REGISTERED
PROFESSIONAL
FRANCIS GREENE
ENGINEER
No. PE075617
PENNSYLVANIA

08/26/2021

FRANCIS GREENE, P.E.
PA LICENSE #075817

SHEET TITLE
SITE PLAN

JOB #:	JPM-29391
DATE:	5/13/21
SCALE:	1" = 20'
DRAWN BY:	CML
CHECKED BY:	FG

SHEET NO.
C5.1
SHEET 5 OF 23

User: CLANG Plot Date/Time: Aug. 26, 21 - 09:04:44 Drawing: P:\J.P. Morgan Chase\Bensalem, PA (Bensalem)-JPM.29391\CIVIL\Drawings\Presentation\JPM.29391-P-SITE.dwg ,05.1 SITE

ALERT TO CONTRACTOR:

PRIOR TO THE CONSTRUCTION OF OR CONNECTION TO ANY STORM DRAIN, SANITARY SEWER, WATER MAIN OR ANY OF THE DRY UTILITIES, THE CONTRACTOR SHALL EXCAVATE, VERIFY AND CALCULATE ALL POINTS OF CONNECTION AND ALL UTILITY CROSSINGS AND INFORM ENGINEER AND THE OWNER OF ANY CONFLICT OR REQUIRED DEVIATIONS FROM THE PLAN. NOTIFICATION SHALL BE MADE A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION. ENGINEER AND OWNER SHALL BE HELD HARMLESS IN THE EVENT THAT THE CONTRACTOR FAILS TO MAKE SUCH NOTIFICATION.

ALTA/NSPS SURVEY DEED RESTRICTIONS, RIGHTS-OF-WAY AND AGREEMENTS

1. **THE ALTA/NSPS SURVEY WAS PREPARED WITH BENEFIT OF A TITLE COMMITMENT REPORT PREPARED BY CHICAGO TITLE INSURANCE COMPANY, COMMITMENT NO. PIT2021141, HAVING A COMMITMENT DATE OF JULY 29, 2020, WHERE THE FOLLOWING SURVEY RELATED ITEMS APPEAR IN SCHEDULE B-II:**

   5 RESTRICTIONS SET FORTH IN THE FOLLOWING DEEDS:

   A. FROM MINNIE B. HANSELL, WIDOW, TO CLINTON M. SMITH, ET UX., DATED JUNE 18, 1942 AND RECORDED IN DEED BOOK 717, PAGE 254**.**

   B. FROM CLINTON M. SMITH, ET UX., TO ERNEST H. BUEHL, ET UX., DATED JUNE 19, 1942 AND RECORDED IN DEED BOOK 718, PAGE 310.

   SUBJECT PROPERTY IS NOT PART OF THE LANDS DESCRIBED IN EITHER DOCUMENT.

   6 THE FOLLOWING RIGHTS OF WAY:

   A. FROM ERNEST H. BUEHL, ET UX., TO PHILADELPHIA ELECTRIC COMPANY AND THE BELL TELEPHONE COMPANY OF PENNSYLVANIA, DATED MARCH 9, 1954 AND RECORDED IN DEED BOOK 1160, PAGE 22 **- SUBJECT PROPERTY IS NOT PART OF THE LANDS DESCRIBED.**

   B. FROM HYMAN KORMAN, INC., TO THE BELL TELEPHONE COMPANY OF PENNSYLVANIA,DATED OCTOBER 26, 1962 AND RECORDED IN DEED BOOK 1683, PAGE 353 **- BLANKET IN NATURE, NOT PLOTTABLE, SUBJECT PROPERTY IS PART OF THE LANDS DESCRIBED.**

   C. FROM HYMAN KORMAN, INC., TO PHILADELPHIA ELECTRIC COMPANY, DATED OCTOBER 8, 1964 AND RECORDED IN DEED BOOK 1781, PAGE 1170.
   - BLANKET EASEMENT FOR GAS AND ELECTRIC LINES AND APPURTENANCES WITHIN AND ALONG STREET ROAD.

   D. FROM HYMAN KORMAN, INC., TO PHILADELPHIA ELECTRIC COMPANY, DATED DECEMBER 19, 1966 AND RECORDED IN DEED BOOK 1855, PAGE 15 **- SUBJECT PROPERTY IS NOT PART OF THE LANDS DESCRIBED.**

   7 AGREEMENT BY AND BETWEEN THE SUPERVISORS OF THE TOWNSHIP OF BENSALEM AND HYMAN KORMAN, INC., DATED OCTBER 19, 1966 AND RECORDED IN DEED BOOK 1852, PAGE 818 **- CONDITIONS OF APPROVAL FOR A REFERENCED SITE PLAN NOT PROVIDED, UNABLE TO REVIEW. (CONDITIONS ARE BLANKET IN NATURE)**

   8 AGREEMENT REGARDING RECIPROCAL RIGHTS BY AND BETWEEN HYMAN KORMAN, INC., AND FOOD FAIR STORES, INC., DATED JULY 15, 1969 AND RECORDED IN DEED BOOK 1941, PAGE 958 **- THE AGREEMENT IS BETWEEN PREMISES "A" & PREMISES "B" OF INSTRUMENT #2015038887 AND IS BLANKET IN NATURE.**

   9 PARTY WALL AGREEMENT BY AND BETWEEN FOOD FAIR STORES, INC. AND V.N.P. ASSOCIATES, DATED MARCH 15, 1971 AND RECORDED IN DEED BOOK 1992, PAGE 211 **- PARTY WALLS DESCRIBED IN EXHIBITS A & B ARE LOCATED NORTHEAST OF THE SURVEYED PORTION OF THE SUBJECT PROPERTY, NOT SHOWN.**

   10 COURT ORDER FILED APRIL 5, 2019 AT CP NO. 2018-2229, A CERTIFIED COPY OF WHICH IS RECORDED AT INSTRUMENT NO. 2019-17560 **- BLANKET IN NATURE, NOT PLOTTABLE**.

   13 RECIPROCAL EASEMENT AGREEMENT BY AND BEWEEN FOOD FAIR STORES, INC., AND V.N.P. ASSOCIATES, DATED MARCH 15, 1971 AND RECORDED IN DEED BOOK 1992, PAGE 201; AND RELEASE DATED JULY 15, 1980 AND RECORDED IN DEED BOOK 2394, PAGE 122 **- BLANKET IN NATURE, NOT PLOTTABLE**.

ALTA/NSPS SURVEY REFERENCES:

1. ALTA/ACSM LAND TITLE SURVEY, KMART, 1837 STREET ROAD, BENSALEM, PA, PREPARED BY FIRST ORDER, LLC FOR MKA, A NATIONAL LAND SERVICES GROUP, SHEETS 1 & 2 OF 2, LAST DATED MARCH 30, 2015.
2. SUBDIVISION PLAN, BROOKWOOD SHOPPING CENTER, PORTION OF LAND OF HYMAN KORMAN INC. SITUATE IN BENSALEM TWP., BUCKS CO., PENNA., PREPARED BY THE KORMAN CORPORATION, LAST REVISED 1/22/68, FILED IN THE BUCKS COUNTY CLERK'S OFFICE, RECORDED IN BK 64, PAGE 47 ON 3/19/69.
3. GAS & ELECTRIC MAPPING PROVIDED BY PECO, PRINTED 07/22/2020.
4. TELEPHONE MAPPING, STREET ROAD, 1ST. W/O MARION AVE.-HULMEVILLE ROAD, MAP #38, LAST DATED 08/2001.
5. GIS WATER MAPPING PROVIDED BY AQUA PENNSYLVANIA, DATED JUN 06, 2019, MAP AA-15 & MAP AA-16.
6. DRAWINGS FOR CONSTRUCTION, COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF HIGHWAYS, DISTRICT 6, BENSALEM TOWNSHIP, BUCKS COUNTY, ROUTE 252, SECTION 10, PREPARED BY YULE, STICKEN, JORDAN & MONEE ENGINEERS, APPROVAL DATE OF 03/03/1965 SHEET 9 OF 20.

SITE LEGEND

- PROPERTY BOUNDARY LINE
- CENTER LINE OF EXISTING ROADWAY
- ADJOINING PROPERTY LINE
- EXISTING BUILDING
- EXISTING EDGE OF PAVEMENT
- EXISTING FENCE
- DEMO CURB
- EXISTING TREE
- EXISTING UTILITY POLE
- EXISTING STORM STRUCTURES
- EXISTING SANITARY STRUCTURES
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- EXISTING SIGN
- EXISTING BOLLARD
- PROPOSED SAWCUT LINE
- PROPOSED CURB
- PROPOSED BUILDING
- PROPOSED ASPHALT
- PROPOSED CONCRETE
- PROPOSED STORM STRUCTURES
- PROPOSED WATER STRUCTURES
- CHASE LEASED AREA

GRAPHIC SCALE
20 10 5 0 20
1" = 20'

CORE STATES GROUP
201 S. Maple Avenue, Suite 300
Ambler, PA 19002
Phone (215) 809-2125
MSwaggard@core-states.com

CLIENT

CHASE

Know what's below. Call before you dig.

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON DESIGN DRAWINGS, RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. CORE STATES, INC. DOES NOT GUARANTEE THAT LOCATIONS SHOWN ARE EXACT. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF UTILITIES.

REVISIONS

REV	DATE	COMMENT	BY
1	08/24/21	BCCD, BCPC, AND TWP COMMENTS	CML

DOCUMENT
PRELIMINARY/ FINAL LAND DEVELOPMENT PLAN FOR CHASE BANK

SITE LOCATION
1729 STREET ROAD
BENSALEM, PA
19020

ENGINEER SEAL

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
FRANCIS GREENE
ENGINEER
No. PE075817
PENNSYLVANIA

08/26/2021
FRANCIS GREENE, P.E.
PA LICENSE #075817

SHEET TITLE
OVERALL SITE PLAN

JOB #:	JPM-29391
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SHEET NO.
C5.2
SHEET 6 OF 23

ALERT TO CONTRACTOR:

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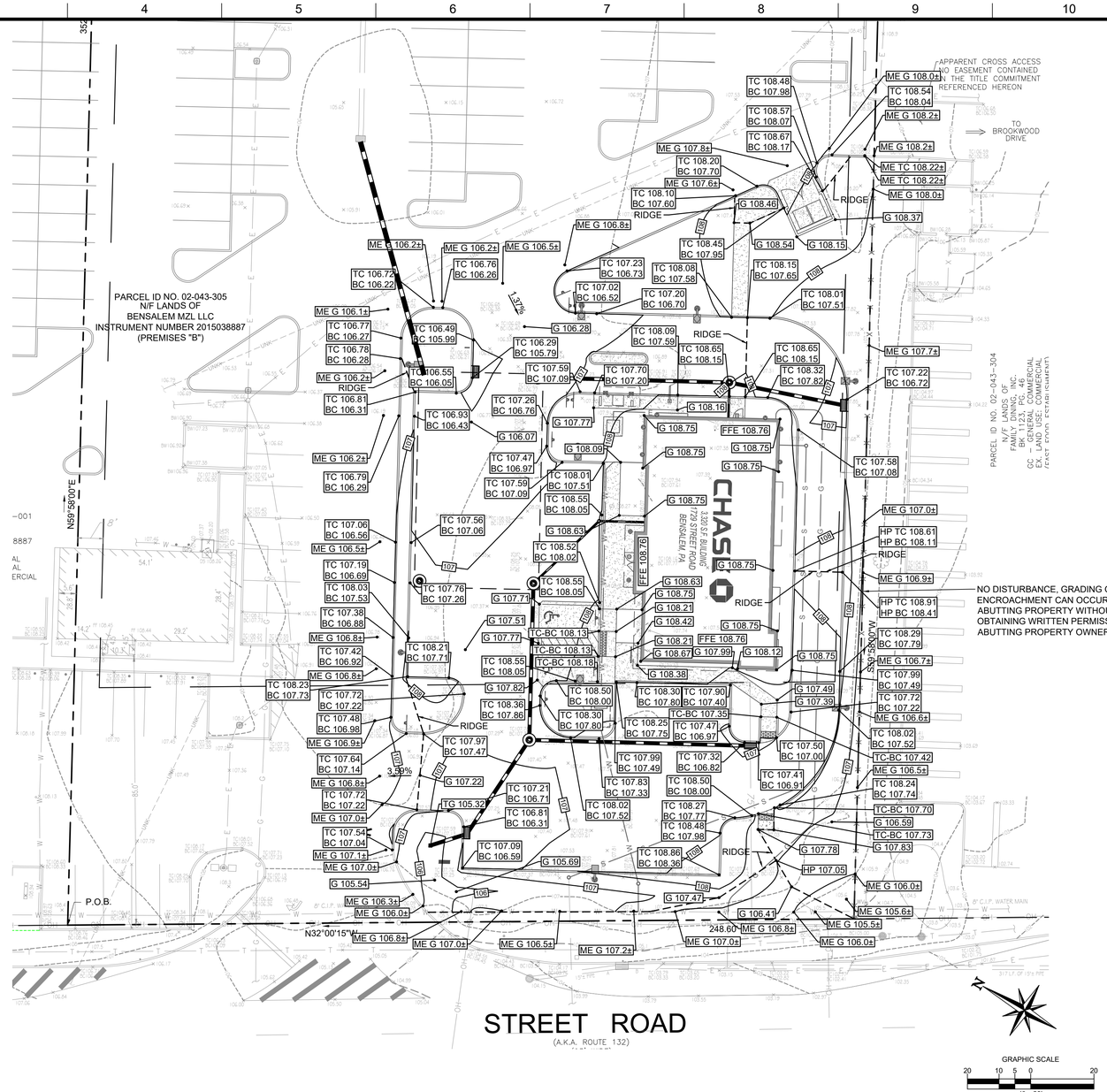

GRADING NOTES:

1. ALL PAVING AND GRADING CONSTRUCTION MATERIALS AND METHODS SHALL MEET THE STANDARD SPECIFICATIONS AND REQUIREMENTS OF THE MUNICIPALITY.
2. CONTRACTOR IS RESPONSIBLE FOR DEMOLITION OF EXISTING STRUCTURES INCLUDING REMOVAL OF ANY EXISTING UTILITIES SERVING THE STRUCTURE.
3. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
4. ALL CUT OR FILL SLOPES SHALL BE 3:1 OR FLATTER UNLESS OTHERWISE NOTED.
5. STORM PIPES TO BE CLEANED OUT TO REMOVE ALL SILT AND DEBRIS PRIOR TO FINAL INSPECTION.
6. EXISTING CONTOUR INTERVALS SHOWN AT 1.0 FOOT.
7. PROPOSED CONTOUR INTERVALS SHOWN AT 1.0 FOOT.
8. IF ANY EXISTING STRUCTURES TO REMAIN ARE DAMAGED DURING CONSTRUCTION IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO REPAIR AND/OR REPLACE THE EXISTING STRUCTURE AS NECESSARY TO RETURN IT TO EXISTING CONDITIONS OR BETTER.
9. ALL STORM PIPE ENTERING STRUCTURES SHALL BE GROUTED TO ASSURE CONNECTION AT STRUCTURE IS WATERTIGHT.
10. ALL STORM SEWER MANHOLES IN PAVED AREAS SHALL BE FLUSH WITH PAVEMENT, AND SHALL HAVE TRAFFIC BEARING RING & COVERS.
11. CONTRACTOR SHALL ADJUST AND/OR CUT EXISTING PAVEMENT AS NECESSARY TO ASSURE A SMOOTH FIT AND CONTINUOUS GRADE.
12. CONTRACTOR SHALL ASSURE POSITIVE DRAINAGE AWAY FROM BUILDINGS FOR ALL NATURAL AND PAVED AREAS.
13. TOPOGRAPHIC INFORMATION IS TAKEN FROM A TOPOGRAPHIC SURVEY BY GALLAS SURVEYING GROUP. IF THE CONTRACTOR DOES NOT ACCEPT EXISTING TOPOGRAPHY AS SHOWN ON THE PLANS, WITHOUT EXCEPTION, THEN THE CONTRACTOR SHALL SUPPLY, AT THEIR EXPENSE, A TOPOGRAPHIC SURVEY BY A REGISTERED LAND SURVEYOR TO THE OWNER FOR REVIEW.
14. ALL UNSURFACED AREAS DISTURBED BY GRADING OPERATION SHALL RECEIVE 4 INCHES OF TOPSOIL. CONTRACTOR SHALL APPLY STABILIZATION FABRIC TO ALL SLOPES 3H:1V OR STEEPER. CONTRACTOR SHALL STABILIZE DISTURBED AREAS IN ACCORDANCE WITH GOVERNING SPECIFICATIONS UNTIL A HEALTHY STAND OF VEGETATION IS OBTAINED.
15. CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE GOVERNING CODES AND BE CONSTRUCTED TO SAME.
16. ALL STORM STRUCTURES SHALL HAVE A SMOOTH UNIFORM POURED MORTAR INVERT FROM INVERT IN TO INVERT OUT, UNLESS OTHERWISE NOTED.
17. CONTRACTOR TO MAINTAIN 1.5% MAXIMUM CROSS-SLOPE ON ALL SIDEWALKS AND CROSSWALKS. CONTRACTOR TO MODIFY PAVEMENT GRADES AS NECESSARY TO MAINTAIN MAXIMUM CROSS-SLOPE IN CROSSWALKS.
18. CONTRACTOR TO PROVIDE POSITIVE DRAINAGE AWAY FROM ALL STRUCTURES WITH 2% MINIMUM SLOPE IN PERVIOUS AREAS AND 1.5% MINIMUM SLOPE IN PAVED AREAS UNLESS OTHERWISE NOTED.
19. IN ACCORDANCE WITH SALDO SECTION 201-106(C)(11)A., TOPSOIL SHALL NOT BE REMOVED FROM THE DEVELOPMENT SITE OR USED AS FILL.

GRADING LEGEND

- EXISTING PROPERTY BOUNDARY LINE
- EXISTING ADJOINING PROPERTY LINE
- PROPOSED RIDGE LINE
- EXISTING 5' INTERVAL CONTOUR LINE
- EXISTING 1' INTERVAL CONTOUR LINE
- PROPOSED 5' INTERVAL CONTOUR LINE
- PROPOSED 1' INTERVAL CONTOUR LINE
- PROPOSED SPOT SHOTS (G 107.25 / RIM 107.25 / TC 107.25)
- PROPOSED GRADING RIDGE LINE
- EXISTING CURB
- PROPOSED CURB
- PROPOSED MOUNTABLE CURB
- PROPOSED BUILDING
- EXISTING SANITARY STRUCTURES
- EXISTING WATER STRUCTURES
- EXISTING GAS MAIN
- EXISTING WATER MAIN
- EXISTING UNDERGROUND ELECTRIC
- EXISTING TELEPHONE
- EXISTING OVERHEAD WIRES
- EXISTING SANITARY
- EXISTING STORM
- PROPOSED WATER STRUCTURES
- PROPOSED STORM STRUCTURES
- PROPOSED SANITARY STRUCTURES
- PROPOSED STORM PIPE
- PROPOSED WATER
- PROPOSED SANITARY
- PROPOSED ELECTRIC
- PROPOSED GAS
- PROPOSED TEMPORARY CONSTRUCTION FENCE

CORE STATES GROUP
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REVISIONS

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PRELIMINARY/ FINAL LAND DEVELOPMENT PLAN FOR CHASE BANK

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19020

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COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL ENGINEER
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GRADING PLAN

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SHEET NO.

C6

SHEET 7 OF 23

UTILITY KEY NOTES:

A. PROPOSED 6" SCH 40 PVC ROOF DRAIN PIPE. (TYP.)
B. PROPOSED 4" SCH 40 PVC SANITARY SEWER PIPE. (TYP.). CONTRACTOR TO REUSE EXISTING SANITARY LATERAL AT STREET ROAD.
C. PROPOSED SANITARY SEWER CLEAN OUT. REFER TO CONSTRUCTION DETAILS SHEET.
D. PROPOSED PENNDOT TYPE C INLET GRATE WITH 36" SUMP WITH WEEP HOLES. REFER TO POST CONSTRUCTION STORMWATER MANAGEMENT DETAILS SHEET.
E. PROPOSED 12" YARD DRAIN.. REFER TO POST CONSTRUCTION STORMWATER MANAGEMENT DETAILS SHEET.
F. PROPOSED 12" HDPE STORM PIPE.
G. PROPOSED PRE-CAST MANHOLE. REFER TO POST CONSTRUCTION STORMWATER MANAGEMENT DETAILS SHEET.
H. PROPOSED ELECTRIC SERVICE LINE. CONTRACTOR TO COORDINATE WITH PECO FOR PERMANENT SERVICE FROM EXISTING UTILITY POLE.
I. PROPOSED TRANSFORMER. CONTRACTOR TO COORDINATE WITH PECO FOR PERMANENT SERVICE.
J. PROPOSED 1.25" GAS LINE. CONTRACTOR TO COORDINATE WITH PECO FOR PERMANENT SERVICE.
K. PROPOSED 1.5" TYPE K WATER LINE, TO BE APPROVED BY AQUA PA.
L. PROPOSED PRECAST METER PIT FOR LOW PRESSURE DOMESTIC WATER AND FIRE ASSEMBLIES, TO BE CONFIRMED BY CONTRACTOR. REFER TO PRECAST METER PIT BY AC MILLER PRECAST, ALTOMARE PRECAST, OR APPROVED EQUAL. METER PIT TO BE COORDINATE WITH AQUA PA. ACCESS DOOR FOR METER PIT TO BE SET IN PLACE FLUSH WITH LANDSCAPING.
M. PROPOSED WATER VALVE. NEW 1.5" WATER TAP TO BE INSTALLED TO EXISTING 8" WATER MAIN. CONTRACTOR TO COORDINATE WITH AQUA PA
N. APPROXIMATE SANITARY LINE CONNECTION TO EXISTING SANITARY SEWER TAP. CONTRACTOR TO COORDINATE WITH BUCKS COUNTY WATER AND SEWER AUTHORITY FOR CONNECTION. CONTRACTOR TO VERIFY ADEQUATE COVERAGE OF SANITARY PIPE IS PROVIDED AND CONTACT ENGINEER OF RECORD WITH ANY ISSUES. IF SEPARATION DISTANCE IS LESS THAN 2 FEET, CONCRETE ENCASE SANITARY PIPE.
O. PROPOSED SUBSURFACE DETENTION / INFILTRATION BASIN. REFER TO POST CONSTRUCTION STORMWATER MANAGEMENT DETAILS SHEET.
P. PROPOSED 15" HDPE OUTFALL PIPE TO EXISTING INLET.
Q. EXISTING FIRE HYDRANT LOCATED 73.33 FEET FROM THE SOUTHERN CORNER OF THE PROPOSED CHASE BANK AND 163.82 FT FROM THE FURTHEST NORTHEASTERN CORNER OF THE PROPOSED CHASE BANK.
R. EXISTING 8" C.I.P WATER MAIN.

STORM DRAIN SCHEDULE								
PIPE NAME	UPPER STRUCTURE	LOWER STRUCTURE	UPPER INVERT	LOWER INVERT	SIZE	LENGTH	SLOPE	MATERIAL
RD1	BLD1	CO1	103.50'	103.10'	6"	14.29	2.80%	6.0" PVC
RD2	CO1	A1	103.10'	102.60'	6"	28.63	1.75%	6.0" PVC
RD3	BLD2	A5	104.84'	103.50'	6"	11.13	12.00%	6.0" PVC
STM 7	A9	EX1	102.25'	101.15'	15"	76.36	1.44%	15" HDPE
STM1	A2	A1	102.80'	102.35'	12"	49.52	0.91%	12" HDPE
STM2	A3	A2	103.60'	102.80'	12"	69.91	1.14%	12" HDPE
STM3	A5	A4	103.00'	102.10'	12"	60.54	1.49%	12" HDPE
STM4	A6	A5	103.40'	103.00'	12"	36.79	1.09%	12" HDPE
STM5	A10	A2	103.17'	102.80'	12"	35.66	1.04%	12" HDPE
STM6	A11	A10	103.27'	103.17'	12"	12.10	0.83%	12" HDPE

STORM STRUCTURE TABLE				
STRUCTURE NAME	STRUCTURE TYPE	RIM	UPSTREAM PIPE NAME	DOWNSTREAM PIPE NAME
A1	PRECAST MANHOLE	107.49	STM1 RD2	
A2	PRECAST MANHOLE	107.38	STM5 STM2	STM1
A3	TYPE C INLET	106.90		STM2
A4	PRECAST MANHOLE	106.55	STM3	
A5	PRECAST MANHOLE	107.99	STM4 RD3	STM3
A6	TYPE C INLET	106.78		STM4
A7	TYPE C INLET	105.82		BASIN
A8	PRECAST MANHOLE	107.14		
A9	PRECAST MANHOLE	106.71		STM 7
A10	TYPE C INLET	106.38	STM6	STM5
A11	12" YARD DRAIN	105.32		STM6
BLD1	CLEANOUT	108.75		RD1
BLD2	ROOF DRAIN CONNECTION	108.75		RD3
CO1	CLEANOUT	107.81	RD1	RD2
EX1	EXISTING INLET	105.23	STM 7	

UTILITY NOTES:

1. THE PROPOSED BUILDING IS NOT TO BE SPRINKLERED.

UTILITY LEGEND

- EXISTING PROPERTY BOUNDARY LINE
- EXISTING ADJOINING PROPERTY LINE
- EXISTING CURB
- PROPOSED CURB
- PROPOSED MOUNTABLE
- PROPOSED BUILDING
- PROPOSED CONCRETE
- PROPOSED WATER STRUCTURES
- PROPOSED STORM STRUCTURES
- PROPOSED SANITARY STRUCTURES
- EXISTING SANITARY STRUCTURES
- EXISTING WATER STRUCTURES
- EXISTING GAS MAIN
- EXISTING WATER MAIN
- EXISTING UNDERGROUND ELECTRIC
- EXISTING TELEPHONE
- EXISTING OVERHEAD WIRES
- EXISTING SANITARY
- EXISTING STORM
- PROPOSED STORM PIPE
- PROPOSED WATER
- PROPOSED SANITARY
- PROPOSED ELECTRIC
- PROPOSED GAS
- ACTUAL TRAVEL DISTANCE FROM FIRE HYDRANT TO FURTHEST BUILDING CORNER

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C7
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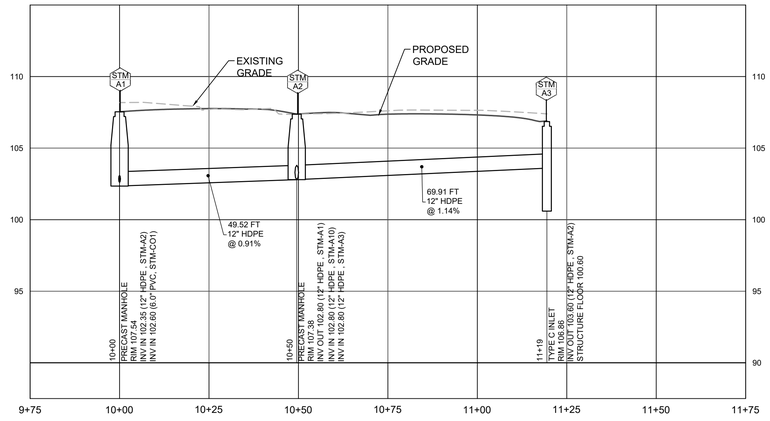
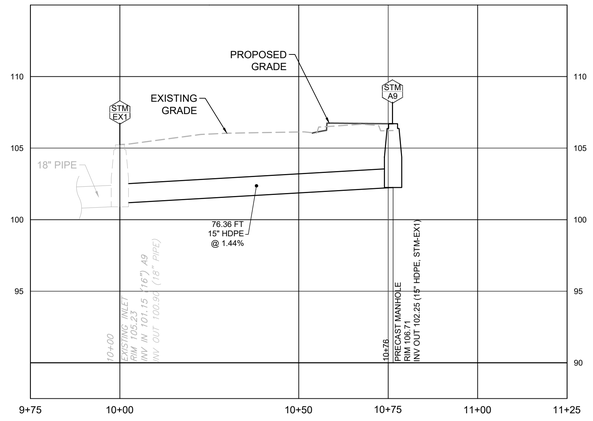
User: CLANG Plot Date/Time: Aug. 24, 21 - 16:41:26 Drawing: C:\Users\clang\appdata\local\temp\AcPublish_15640\JPM 29391-P-SITE.dwg :07 UTIL



A1 TO A3 PROFILE

SCALE
VERTICAL 1" = 5'
HORIZONTAL 1" = 20'



A9 TO EX1 PROFILE

SCALE
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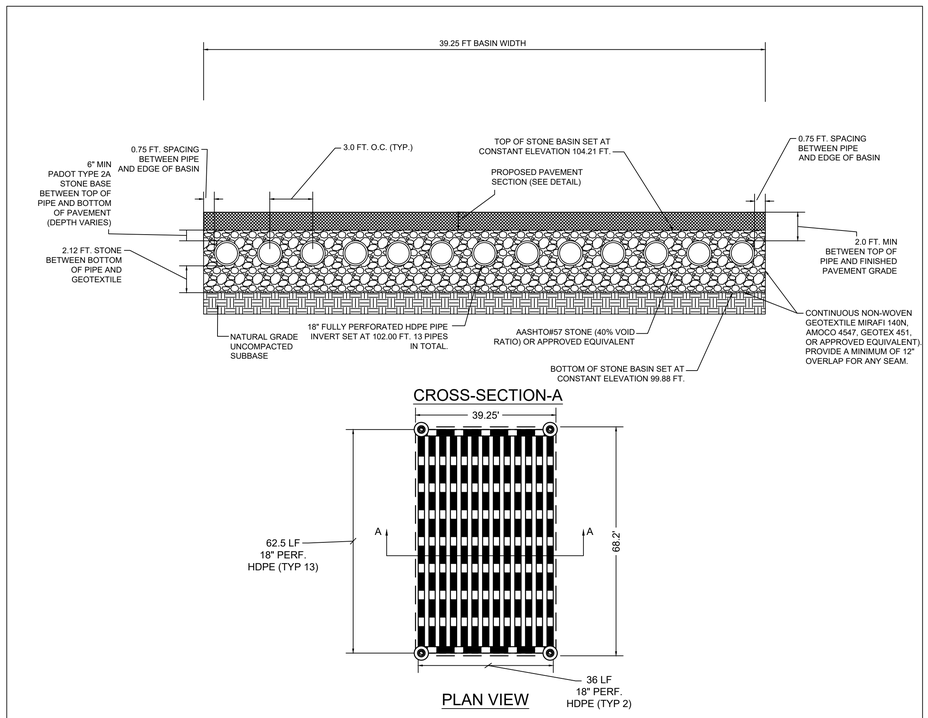
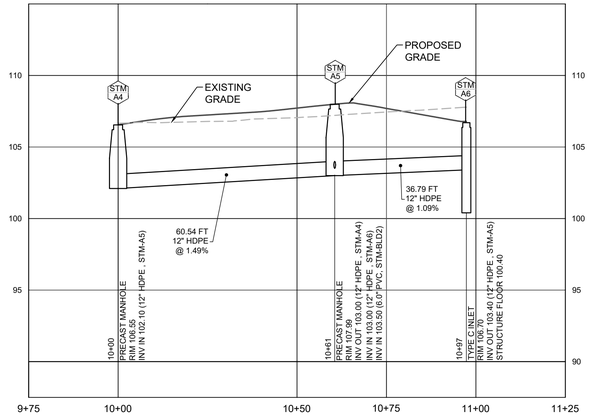


CROSS SECTION OF SUBSURFACE DETENTION / INFILTRATION BASIN

N.T.S.



A4 TO A6 PROFILE

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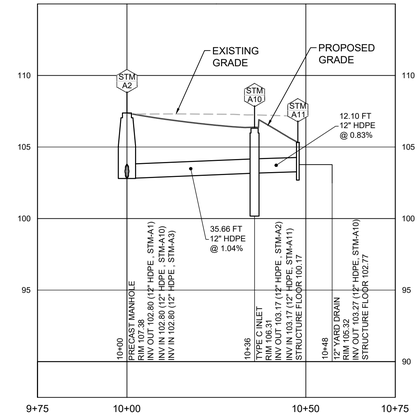
HORIZONTAL 1" = 20'



A2 TO A11 PROFILE

SCALE
VERTICAL 1" = 5'
HORIZONTAL 1" = 20'

CORE STATES GROUP
201 S. Maple Avenue, Suite 300
Ambler, PA 19002
Phone (215) 809-2125
MSwaggard@core-states.com

CLIENT

CHASE

811 Know what's below. Call before you dig.

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON DESIGN DRAWINGS, RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. CORE STATES, INC. DOES NOT GUARANTEE THAT LOCATIONS SHOWN ARE EXACT. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF UTILITIES.

REVISIONS

REV	DATE	COMMENT	BY
1	08/24/21	BCCD, BCPC, AND TWP COMMENTS	CML

DOCUMENT
PRELIMINARY/ FINAL LAND DEVELOPMENT PLAN FOR CHASE BANK

SITE LOCATION
1729 STREET ROAD
BENSALEM, PA
19020

ENGINEER SEAL

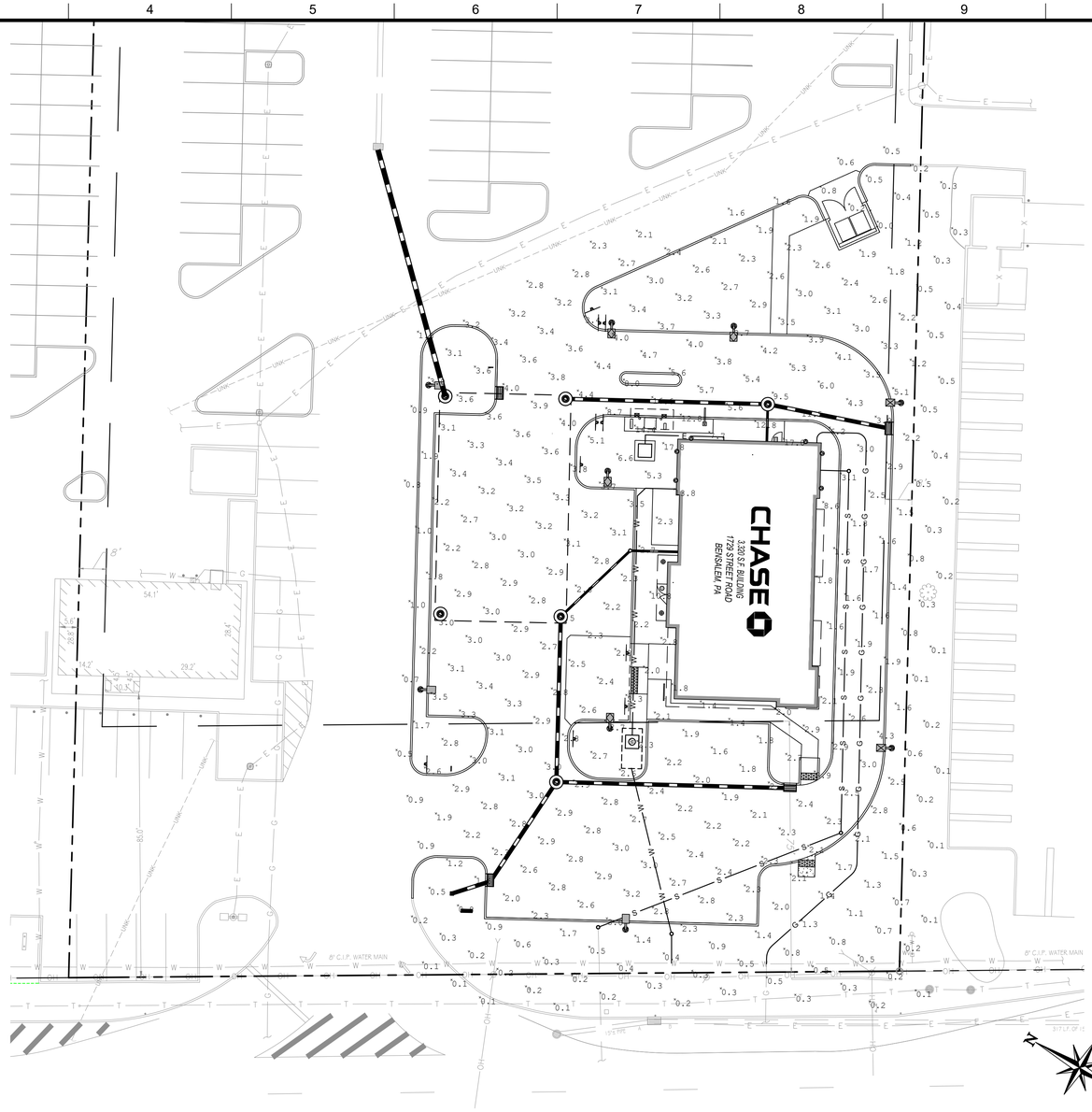
COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
FRANCIS GREENE
ENGINEER
No. PE075817
PENNSYLVANIA

08/26/2021
FRANCIS GREENE, P.E.
PA LICENSE #075817

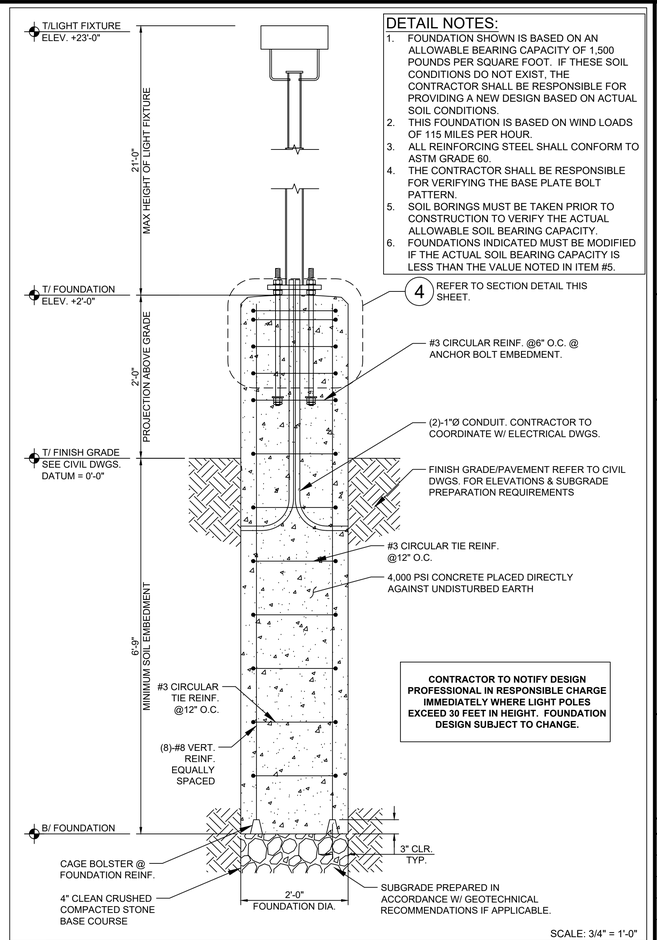
SHEET TITLE
STORM PROFILES

JOB #:	JPM-29391
DATE:	5/13/21
SCALE:	N/A
DRAWN BY:	CML
CHECKED BY:	FG

SHEET NO.
C8
SHEET 9 OF 23



GRAPHIC SCALE
20 10 5 0 20
1" = 20'



DETAIL NOTES:

1. FOUNDATION SHOWN IS BASED ON AN ALLOWABLE BEARING CAPACITY OF 1,500 POUNDS PER SQUARE FOOT. IF THESE SOIL CONDITIONS DO NOT EXIST, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A NEW DESIGN BASED ON ACTUAL SOIL CONDITIONS.
2. THIS FOUNDATION IS BASED ON WIND LOADS OF 115 MILES PER HOUR.
3. ALL REINFORCING STEEL SHALL CONFORM TO ASTM GRADE 60.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE BASE PLATE BOLT PATTERN.
5. SOIL BORINGS MUST BE TAKEN PRIOR TO CONSTRUCTION TO VERIFY THE ACTUAL ALLOWABLE SOIL BEARING CAPACITY.
6. FOUNDATIONS INDICATED MUST BE MODIFIED IF THE ACTUAL SOIL BEARING CAPACITY IS LESS THAN THE VALUE NOTED IN ITEM #5.

CONTRACTOR TO NOTIFY DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE IMMEDIATELY WHERE LIGHT POLES EXCEED 30 FEET IN HEIGHT. FOUNDATION DESIGN SUBJECT TO CHANGE.

SCALE: 3/4" = 1'-0"

1 LIGHT POLE FOUNDATION DETAIL

LIGHTING LEGEND

- EXISTING PROPERTY BOUNDARY LINE
- EXISTING ADJOINING PROPERTY LINE
- EXISTING ROAD CENTERLINE
- EXISTING CURB
- PROPOSED CURB
- PROPOSED BUILDING
- 1.9 FOOTCANDLE CALCULATION POINT
- PROPOSED SITE LIGHT FIXTURE

LUMINAIRE SCHEDULE

SYMBOL	MANUFACTURER	MODEL	CATALOG	QTY	DISTRIBUTION	MOUNT HT.
	COOPER LIGHTING	MCGRAW EDISON GLEON GALLEON LED	GLEON-AF-02-LED-E1-SL3-7030-HSS	2	TYPE 3	23'-0"
	COOPER LIGHTING	MCGRAW EDISON GLEON GALLEON LED	GLEON-AF-02-LED-E1-SL4-7030-HSS	3	TYPE 4	23'-0"
	COOPER LIGHTING	MCGRAW EDISON GLEON GALLEON LED	GLEON-AF-02-LED-E1-5WQ-7030	4	TYPE 5	23'-0"
	LF ILLUMINATION	5811 BULLET 5" FIXED DOWNLIGHT IP66	5811-1SA-T-20L-8040-W-D2-1-BB	1	TYPE 5	9'-10"
	LF ILLUMINATION	5811 BULLET 5" FIXED DOWNLIGHT IP66	5811-1SA-T-20L-8040-W-D2-1-BB-EM	2	TYPE 5	9'-10"
	LUMARK	XTOR CROSSTOUR LED	XTOR6B-W-BZ-MS/DIM-L20-CPP	1	TYPE 4	12'-0"
	CREE LIGHTING	LED SQUARE CANOPY	C-CP-A-SQ-49L-50K-DB	2	TYPE 5	10'-0"
	LUMIERE	LANTERRA 9004	9004-W2-RW-LED-4080-W-W-CS-L1-UNV-WIS	6	TYPE 5	9'-5"

CALCULATION SUMMARY

AREA	AVERAGE	MAX	MIN
LIGHTING ANALYSIS MEASURED AT GROUND ELEVATION	2.61 fc	17.8 fc	0.0 fc

LIGHTING NOTES:

1. ALL LIGHTING WAS DESIGNED WITH A LIGHT LOSS FACTOR OF 0.95. LIGHTING ANALYSIS WAS MEASURED AT GROUND ELEVATION
2. ALL PROPOSED FIXTURES ON TIMER TO OPERATE DURING NIGHT TIME HOURS, 30 MINUTES AFTER SUNSET AND 30 MINUTES BEFORE SUNRISE.
3. CONTRACTOR TO INSTALL FIXTURE ON COPPER LIGHTING POLE SSS-6-A-XX-S-Y-N-XX. MOUNT HEIGHTS ARE BASED ON HEIGHT ABOVE FINISHED ASPHALT GRADE.

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REVISIONS

REV	DATE	COMMENT	BY
1	08/24/21	BCCD, BCPC, AND TWP COMMENTS	CML

DOCUMENT
PRELIMINARY/ FINAL LAND DEVELOPMENT PLAN FOR CHASE BANK

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No. PE075817
COMMONWEALTH OF PENNSYLVANIA
FRANCIS GREENE, P.E.
PA LICENSE #075817
08/26/2021

SHEET TITLE
LIGHTING PLAN

JOB #:	JPM-29391
DATE:	5/13/21
SCALE:	1" = 20'
DRAWN BY:	CML
CHECKED BY:	FG

SHEET NO.
C9
SHEET 10 OF 23

Lumark

Catalog #		Type
Project		
Comments		Date
Prepared by		

DESCRIPTION

The patented Lumark Crosstour™ MAXX LED wall pack series of luminaries provides low-profile architectural style with super bright, energy-efficient LEDs. The rugged die-cast aluminum construction, back box with secure lock hinges, stainless steel hardware along with a sealed and gasketed optical compartment make Crosstour impervious to contaminants. The Crosstour MAXX wall luminaire is ideal for wall/surface, inverted mount for facade/canopy illumination, perimeter and site lighting. Typical applications include pedestrian walkways, building entrances, multi-use facilities, industrial facilities, perimeter parking areas, storage facilities, institutions, schools and loading docks.

SPECIFICATION FEATURES

Construction
Low-profile LED design with rugged one-piece, die-cast aluminum back box and hinged removable door. Matching housing styles incorporate both a full cutoff and refractive lens design. Full cutoff and refractive lens models are available in 58W, 81W and 102W. Patent pending secure lock hinge feature allows for safe and easy tool-less electrical connection with the supplied push-in connectors. Back box includes four 1/2" NPT threaded conduit entry points. The back box is secured by four lag bolts (supplied by others). External fin design extracts heat from the fixture surface. One-piece silicone gasket seals door and back box. Not recommended for car wash applications.

Optical
Silicone sealed optical LED chamber incorporates a custom engineered reflector providing high-efficiency illumination. Full cutoff models integrate an impact-resistant molded refractive prism optical lens assembly meeting requirements for Dark Sky compliance. Refractive lens models incorporate a molded lens assembly designed for maximum forward throw. Solid state LED Crosstour MAXX luminaries are thermally optimized with eight lumen packages in cool 5000K, neutral 4000K, or warm 3000K LED color temperature (CCT).

Electrical
LED driver is mounted to the die-cast aluminum housing for optimal heat sinking. LED thermal management system incorporates both conduction and natural convection to transfer heat rapidly away from the LED source. 58W, 81W and 102W models operate in -40°C to 40°C [-40°F to 104°F]. High ambient 50°C [122°F] models available in 58W and 81W models only. Crosstour MAXX luminaires maintain greater than 85% of initial light output after 72,000 hours of operation. Four half-inch NPT threaded conduit entry points allow for thru-branch wiring. Back box is an authorized electrical wiring compartment. Integral LED electronic driver incorporates surge protection. 120-277V 50/60Hz, 480V 60Hz, or 347V 60Hz electrical operation. 480V is compatible for use with 480V Wye systems only.

Emergency Egress
Optional integral cold weather battery emergency egress includes emergency operation test switch (available in 58W and 81W models only), an AC-ON indicator light and a premium extended rated sealed maintenance-free nickel-metal hydride battery pack. The separate emergency lighting LEDs are wired to provide redundant emergency lighting. Listed to UL Standard 924, Emergency Lighting.

Area and Site Pole Mounting
Optional extruded aluminum 6-1/2" arm features internal bolt guides for supplied twin support rods, allowing for easy positioning of the fixture during installation to pole. Supplied with round plate adapter plate. Optional tenon adapter fits 2-3/8" or 3-1/2" O.D. Tenon.

Finish
Crosstour MAXX is protected with a super TGIC carbon bronze or summit white polyester powder coat paint. Super TGIC powder coat paint finishes withstand extreme climate conditions while providing optimal color and gloss retention of the installed life.

Warranty
Five-year warranty.

XTOR
CROSSTOUR MAXX LED

APPLICATIONS:
WALL / SURFACE
INVERTED
SITE LIGHTING

CERTIFICATION DATA
UL/cUL Wet Location Listed
LM79 / LM80 Compliant
ROHS Compliant
NOM Compliant Models
3G Vibration Tested
UL924 Listed (CBP Models)
IP66 Rated
DesignLights Consortium® Qualified*

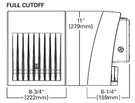
TECHNICAL DATA
40°C Ambient Temperature
External Supply Wiring 90°C Minimum

EPA
Effective Projected Area (Sq. Ft.):
XTOR6B, XTOR8B, XTOR12B=0.54
With Pole Mount Arm=0.98

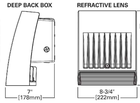
SHIPPING DATA:
Approximate Net Weight:
12-15 lbs. [5.4-6.8 kgs.]

DIMENSIONS

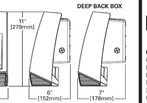
FULL CUTOFF



DEEP BACK BOX

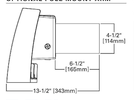


REFRACTIVE LENS



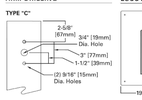
DEEP BACK BOX

OPTIONAL POLE MOUNT ARM

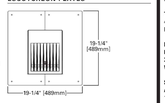


ARM DRILLING

TYPE "C"



ESCUTCHEON PLATES



EATON
Powering Business Worldwide

*www.designlights.org

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Steel Poles

Catalog #		Type
Project		
Comments		Date
Prepared by		

SSS SQUARE STRAIGHT STEEL

FEATURES
- ASTM Grade steel base plate with ASTM A366 base cover
- Hand hole assembly 3" x 5" on 5° and 6° pole; and 2" x 4" on 4° pole
- 10'-39' mounting heights
- Drilled or tenon (specify)

DESIGN CONSIDERATIONS

Wind induced vibrations resulting from steady, unidirectional winds and other aerodynamic forces, as well as vibration and coefficient of height factors for non-grounded mounted installations (e.g., installations on bridges or buildings) are not included in this document. The information contained herein is for general guidance only and is not a replacement for professional judgement. Consult with a professional, and local and federal standards, before ordering to ensure product is appropriate for the intended purpose and installation location. Also, please review Eaton's Light Pole White Paper for risk factors and design considerations. Learn more.

Specifications and dimensions subject to change without notice. Consult your lighting representative at Eaton or visit www.eaton.com/lighting for available options, accessories and ordering information.

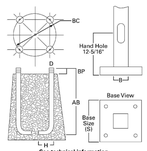
ORDERING INFORMATION

SAMPLE NUMBER: SSA5A20SFM1XG

Product Family	Shaft Size (Inches)[1]	Wall Thickness (Inches)	Mounting Height (Feet)	Base Type	Finish	Mounting Type	Number and Location of Arms	Arm Lengths (Feet)	Options (Add as Suffix)
SSS=Square Straight Steel	**4**=4" **5**=5" **6**=6"	**A**=0.120" **M**=0.188" **X**=0.250"	**10**=10' **15**=15' **20**=20' **25**=25' **30**=30' **35**=35' **39**=39'	**S**=Square Steel Base	**F**=Dark Bronze **G**=Galvanized Steel **J**=Summit White **K**=Carbon Bronze **L**=Dark Platinum **N**=Hartford Green **S**=Silver **T**=Graphite Metallic **V**=Grey **W**=White **X**=Custom Color **Y**=Black	**2**=2-3/8" O.D. Tenon (4" Long) **3**=3-1/2" O.D. Tenon (5" Long) **4**=4" O.D. Tenon (6" Long) **9**=3" O.D. Tenon (4" Long) **6**=2-3/8" O.D. Tenon (6" Long) **7**=4" O.D. Tenon (10" Long) **A**=Type A Drilling **C**=Type C Drilling **E**=Type E Drilling **F**=Type F Drilling **G**=Type G Drilling **J**=Type J Drilling **K**=Type K Drilling **M**=Type M Drilling **N**=Type N Drilling **S**=Standard Upsweep Arm **Z**=Type Z Drilling	**1**=Single **2**=2 at 180° **3**=Triple[2] **4**=4 at 90° **5**=2 at 90° **X**=None	**X**=None **2**=2' **3**=2.5' **4**=4' **6**=6' **8**=8'	**A**=1/2" Tapped Hub[3] **B**=3/4" Tapped Hub[3] **C**=Convenience Outlet[4] **E**=GFCI Convenience Outlet[4] **G**=Ground Lug **H**=Additional Hand Hole[5] **V**=Vibration Dampener

NOTES: 1. All shaft sizes nominal. 2. Square poles are 3 at 90°, round poles are 3 at 120°. 3. Tapped Hub is located 5" below the pole top and on the same side of pole as hand hole, unless specified otherwise. 4. Outlet is located 4" above base and on same side of pole as hand hole, unless specified otherwise. Receptacle not included, provision only. 5. Additional hand hole is located 12" below pole top and 90° from standard hand hole location, unless otherwise specified.

ANCHORAGE DATA



Pole	Template Number	Bolt Number	Bolt Circle (Inches)	Number of Bolts	Bolt Size (inches)
SSS4	TMP1	AB1	8.5 - 11.0	4	3/4 x 25 x 3
SSS5	TMP1	AB1	11.0	4	3/4 x 25 x 3
SSS6	TMP2	AB3	12.5	4	1 x 36 x 4

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Powering Business Worldwide

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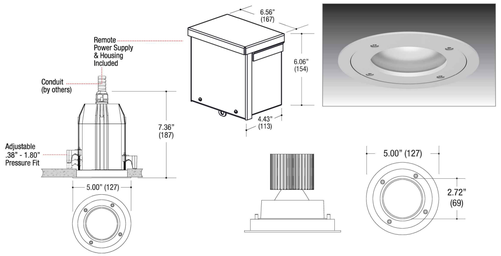
LF ILLUMINATION

BULLET
OUTDOOR RECESSED FIXED DOWNLIGHT
WET LOCATION - IP66 **LED**

PROJECT	TYPE	CATALOG NUMBER



DOWNLIGHT
- Recessed fixed downlight
- Die-cast aluminum trim
- Powder coat finish

HOUSING
- Extruded aluminum central housing
- Powder coat finish
- Dust and water jet light sealed
- **Ceiling Cut-Out - Ø4.65"**

LED SOURCE
- Field-changeable optic
- 20W / 1670lm, 80CRI / 3000K

ELECTRICAL
- Remotely installed LED driver included
- Separated primary wiring compartment with power supply
- Double cable entry for through wiring
- Superpure aluminum reflector
- Dimmable

MOUNTING
- Swing out pressure fit mounting clips
- Adjustable up to 1.80" max. ceiling thickness

LABELS
- Suitable for wet location
- IP66 rated

5 YEAR WARRANTY Limited

ORDERING INFO

SERIES	WATTAGE	CRI / COLOR	BEAM	DRIVER	VOLTAGE	FINISH	OPTIONS
5811-1SA-T **BULLET Recessed** Die-Cast Aluminum Trim Fixed Downlight Trimmed Fixture	**20L** 20W LED 1670 lm nom.	**8027** 80CRI / 2700K **8030** 80CRI / 3000K **8035** 80CRI / 3500K **8040** 80CRI / 4000K **9027** 90CRI / 2700K **9030** 90CRI / 3000K **9727** 97CRI / 2700K **9730** 97CRI / 3000K	**N** Narrow 25° **M** Medium 45° **W** Wide 55°	**DM** Dimming Multiple Forward/Reverse (@ 120V only) 0-10V Wires Present (@ 120-277V only **D3** Lutron Hi-lume,® Forward Phase 2 wire 1% (120V only) **DE** Lutron Hi-lume,® EcoSystem,® 1% w/Soft-On, Fade-to-Black,, 1% (120-277V only)	**1** 120V **U** 120-277V	**SS** Silver	**EM** Remotely Mounted Emergency LED Inverter (Field wiring required)

Ordering Example: **5811-1SA-T-20L-8030-M-DM-U-SS**

HEADQUARTERS
9200 Deering Avenue
Chatsworth CA 91311

Telephone: 818-885-1335
Toll Free: 855-885-1335
Fax: 818-576-1335

www.lfillumination.com

rev: 120419

Lumiere

Catalog #		Type
Project		
Comments		Date
Prepared by		

DESCRIPTION

Lanterra 9004-W1 (Up or Down) and 9004-W2 (Up and Down) are 4.25" O.D., line voltage cylinder fixtures with dimmable LED. The luminaire comes in various mountings, surface mount with integral driver in the housing, remote driver mount with round and square wall plates and square wall integral driver, all of which can be mounted over standard 4 inch j-box. The luminaire also comes with various field replaceable optics. It also comes with various lens, louvers and colors or dichroic filters, which can combine up to two at once to create multiple lighting effects. The fixture may be used indoors or outdoors and carries IP66 rating.

SPECIFICATION FEATURES

Material
Housing, hood and mounting stem are precision-machined from corrosion resistant billet stock 6061-T6 aluminum.

Finish
Fixtures constructed from 6061-T6 aluminum are double protected by an ROHS compliant chemical film undercoating and polyester powder coat paint finish, surpassing the rigorous demands of the outdoor environment. A variety of standard colors are available.

Hood
Hood is removable and accepts up to two internal accessories at once (lenses, louvers and filters) to achieve multiple lighting effects. Weep holes prevents water and mineral stains from collecting on the lens, even in the straight up position. The flush lens design reduces fixture length, minimizes debris collection and prevents water and mineral stains from collecting on the lens.

Gasket
Housing and hood are sealed with a high temperature silicone O-ring gasket to prevent water intrusion.

Lens
Tempered glass lens, factory sealed with high temperature silicone O-ring to prevent water intrusion and breakage due to thermal shock.

Hardware
Stainless steel hardware is standard to provide maximum corrosion resistance.

Electrical
Long life LED system coupled with electronic driver (120-277V/50-60Hz) is compatible with TRIAC (Trailing Edge), ELV (Forward phase) and 0-10V dimming to deliver optical performance. Light can be dimmed from 100-1% while maintaining constant CCT. It will operate in -30°C to 50°C unless noted otherwise. The driver incorporates surge protection. LEDs are available in 2700K, 3000K, 3500K at 80CRI and 90CRI, 4000K at 80CRI and 97CRI, 5000K at 80CRI and industry leading high output with 87% lumen maintenance at 60,000hrs.

Compliance
Components are UL recognized and luminaires are cULus listed for 50°C ambient environments unless noted otherwise, wet location listed, and ROHS compliant. IP66 Rated. DesignLights Consortium® Qualified and classified for both DLC Standard and DLC Premium, refer to www.designlights.org for details.

Warranty
Lumiere warrants the Lanterra series of fixtures against defects in material and workmanship for five (5) years. Auxiliary equipment such as LED drivers carries the original manufacturer's warranty.

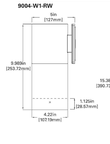
Lanterra 9004

LED
INTERIOR / EXTERIOR
CYLINDER FLOOD LIGHT
CERTIFICATION DATA
cULus - 1598
Wet Location Listed - IP66
LM79/LM80 Compliant
ROHS Compliant

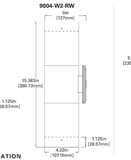
10W LED, L70/102,000 @25° Celcius
20W LED, L70/102,000 @25° Celcius
30W LED, L70/102,000 @25° Celcius

DIMENSIONS

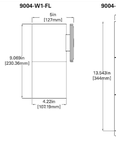
9004-W1-RW



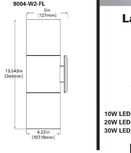
9004-W2-RW



9004-W1-FL



9004-W2-FL



ORDERING INFORMATION

SERIES	DIRECTION	HOOD	LED CCT & CRI	FIELD REPLACEABLE OPTIC I	FIELD REPLACEABLE OPTIC II	FINISH	LIGHT LEVEL	VOLTAGE	MOUNTING	OPTIONS
9004	W1 - Up or Down W2 - Up and Down	RW Standard - Recessed Lens with weep holes - Outdoor RI Recessed Lens with no weep holes - Indoor FL Flush lens hood	**Standard CRI** LED 2700 - 2700K, 80 CRI LED 3000 - 3000K, 90 CRI LED 3500 - 3500K, 80 CRI LED 4080 - 4000K, 80 CRI LED 4090 - 4000K, 90 CRI **Premium CRI** LED 2727 - 2700K, 97 CRI LED 3097 - 3000K, 97 CRI LED 3597 - 3500K, 97 CRI LED 4097 - 4000K, 97 CRI	S Spot M Medium F Flood W Wide Flood	S Spot M Medium F Flood W Wide Flood	**Standard Paint Finish** BK Black BZ Bronze DG Dry Silver WT White	L1 Light Level 1 (10W) L2 Light Level 2 (20W) L3 Light Level 3 (30W)	UNV 120-277V	RSM Surface Mount - Wall, Ceiling, Ground Round/Surface Mount- mounts directly to junction box Thermal Limitations Lumens otherwise noted NO 9004-W1-xxx (3 xxx RSM) NO 9004-W1-xxx (2 xxx WRSM) NO 9004-W2-xxx (2 xxx RSM) NO **Remote Driver Housing** WRS Remote Driver Housing - Round Wall Plate WRS1 Remote Driver Housing - Square Wall Plate Thermal Limitations Lumens otherwise noted NO 9004-W1-xxx (3 xxx WRs WR2) NO 9004-W1-xxx (2 xxx WRs WR1) NO 9004-W2-xxx (2 xxx WRs WR2) NO **Integral Driver Mount** WI Wall Integral Driver Plate Thermal Limitations Lumens otherwise noted NO 9004-W1-xxx (3 xxx WI) NO 9004-W1-WI-xxx (1 xxx WI) (NO	SVP02 Standalone integral sensor

Notes: 1. Only available for double head option (DH2)
2. 9004-W1 not available in L3
3. 9004-W2 not available in L2, L3
4. Only available for Single head, Up or down (W1) with RSM only
5. NO includes louver/wattage listed
6. Remote Driver distance up to 80', For L3 (30W) remote distance up to 15'

COOPER Lighting Solutions

TD506025EN
11-29-18

McGraw-Edison

Catalog #		Type
Project		
Comments		Date
Prepared by		

DESCRIPTION

The Galleon™ LED luminaire delivers exceptional performance in a highly scalable, low-profile design. Patented, high-efficiency AccuLED Optics™ system provides uniform and energy conscious illumination to walkways, parking lots, roadways, building areas and security lighting applications. IP66 rated and UL/cUL Listed for wet locations.

SPECIFICATION FEATURES

Construction
Extruded aluminum driver enclosure thermally isolated from Light Squares for optimal thermal performance. Heavy-wall, die-cast aluminum end caps enclose housing and die-cast aluminum heat sinks. A unique, patent pending interlocking housing and heat sink provides scalability with superior structural rigidity. 3G vibration tested and rated. Optional tool-less hardware available for ease of entry into electrical chamber. Housing is IP66 rated.

Optics
Patented, high-efficiency injection-molded AccuLED Optics technology. Optics are precisely designed to shape the distribution maximizing efficiency and application spacing. AccuLED Optics create consistent distributions with the scalability to meet customized application requirements. Offered standard in 4000K (+/- 275K) CCT 70 CRI. Optional 3000K, 5000K and 6000K CCT.

Electrical
LED drivers are mounted to removable tray assembly for ease of maintenance. 120-277V 50/60Hz, 347V 60Hz or 480V 60Hz operation. 480V is compatible for use with 480V Wye systems only. Standard with 0-10V dimming. Shipped standard with Cooper Lighting Solutions proprietary circuit module designed to withstand 10kV of transient line surge. The Galleon LED luminaire is suitable for operation in -40°C to 40°C ambient environments. For applications with ambient temperatures exceeding 40°C, specify the HA (High Ambient) option. Light Squares are IP66 rated. Greater than 90% lumen maintenance expected at 60,000 hours. Available in standard 1A drive current and optional 600mA, 800mA and 1200mA drive currents (nominal).

Mounting
STANDARD ARM MOUNT:
Extruded aluminum arm includes internal bolt guides allowing for easy positioning of fixture during mounting. When mounting two or more luminaires at 90° and 120° apart, the EA extended arm may be required. Refer to the arm mounting requirement table. Round pole adapter included. For wall mounting, specify wall mount bracket option. QUICK MOUNT ARM: Adapter is bolted directly to the pole. Quick mount arm slide into place on the adapter and is secured via two screws, facilitating quick and easy installation. The versatile, patent pending, quick mount arm accommodates multiple drill patterns ranging from 1-1/2" to 4-7/8". Removal of the door on the quick mount arm enables wiring of the fixture without having to access the driver compartment. A knock-out enables round pole mounting.

Finish
Housing finished in super durable TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Heat sink is powder coated black. Standard housing colors include black, bronze, grey, white, dark platinum and graphite metallic. RAL and custom color matches available.

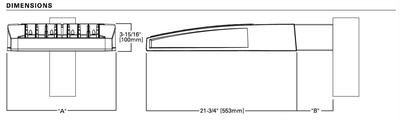
Warranty
Five-year warranty.

GLEON
GALLEON LED

1-10 Light Squares
Solid State LED

AREA/SITE LUMINAIRE

DIMENSIONS



DIMENSION DATA

Number of Light Squares	"A" Width	"B" Standard Arm Length	"B" Optional Arm Length [1]	Weight with Arm (lbs.)	EPA with Arm [2] (Sq. Ft.)
1-4	15-1/2" (394mm)	7" (178mm)	10" (254mm)	33 (15.0 kgs.)	0.96
5-6	21-5/8" (549mm)	7" (178mm)	10" (254mm)	44 (20.0 kgs.)	1.00
7-8	27-5/8" (702mm)	7" (178mm)	13" (330mm)	54 (24.5 kgs.)	1.07
9-10	33-3/4" (857mm)	7" (178mm)	16" (406mm)	63 (28.6 kgs.)	1.12

NOTES: 1. Optional arm length to be used when mounting two fixtures at 90° on a single pole. **2.** EPA calculated with optional arm length.

DRILLING PATTERN

TYPE "N"

COOPER Lighting Solutions

*www.designlights.org

TD500020EN
September 15, 2020 5:16 PM

C-CP-A-SQ-49L Series
LED Square Canopy Light
Replaces 100W PSMH

C-LITE
LED LIGHTING BY CREE

EXTREMELY DURABLE DESIGN WITH AN EFFICACY UP TO 115 LUMENS PER WATT!

PRODUCT SPECIFICATIONS

OVERVIEW
- Initial Delivered Lumens: 4,900
- CRI: ≥ 70
- CCT: Neutral White 4000K, Cool White 5000K
- Input Power: 44 Watts
- Dimmable: No
- Operating Minimum: -40°C (-40°F)
- Lifespan: Estimated >100,000 Hours
- Power Factor: > 0.9
- Total Harmonic Distortion: < 20%
- Limited Warranty: 5 Years*
- Replaces 100W PSMH

PERFORMANCE	DURABLE	RECOMMENDED USE	INPUT VOLTAGE
• Uses 66% less energy than comparable PSMH fixtures • Delivers nearly 25% more light than comparable PSMH fixtures • Type V5 distribution pattern	• Polyester powder-coat finish provides corrosion protection for long-lasting color • UV-stabilized lens designed to last	• Security • Entryways • Perimeter Lighting • Exterior canopies	• Universal (120V through 277V Operation)

ORDERING INFORMATION
Example: C-CP-A-SQ-49L-40K-WH

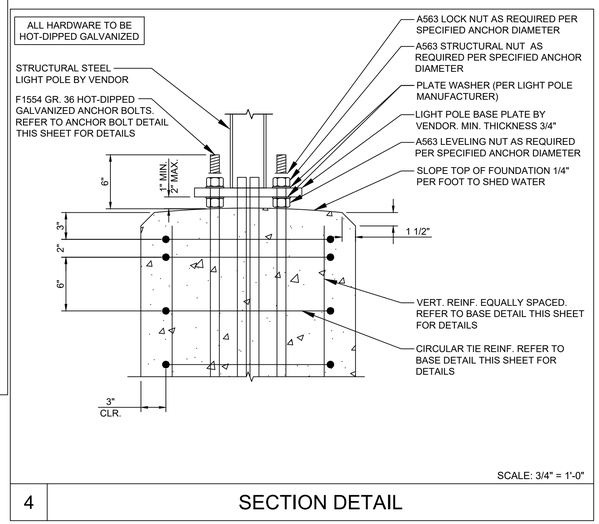
C-CP-A	SQ	49L		
PRODUCT	**STYLE**	**LUMEN PACKAGE**	**CCT**	**COLOR**
C-CP-A	**SQ** Square Canopy	**49L** 4,900 Lumens 44W	**40K** Neutral White (4000K) **50K** Cool White (5000K)	**DB** Dark Bronze **WH** White

CERTIFICATIONS:

US: c-lite.com T (800)236-6800 F (262)504-5415 Canada: www.cree.com/canada T (800)473-1234 F (800)890-7507

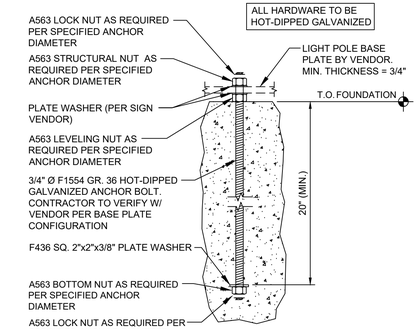
Rev. Date: 04/10/11/2018 For informational purposes only. Content is subject to change. *See lighting.cree.com/warranty for details

REFER TO LIGHTING PLAN FOR LIGHT POLE DETAIL



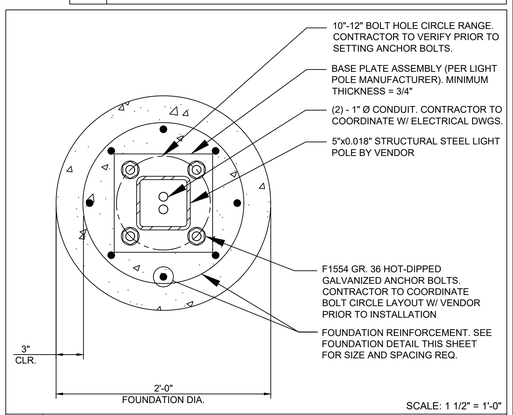
SCALE: 3/4" = 1'-0"

4 SECTION DETAIL



SCALE: 1 1/4" = 1'-0"

2 ANCHOR BOLT DETAIL



SCALE: 1 1/2" = 1'-0"

3 BASE DETAIL

CORE STATES GROUP
201 S. Maple Avenue, Suite 300
Ambler, PA 19002
Phone (215) 809-2125
MSwaggard@core-states.com

CLIENT

CHASE

Know what's below. Call before you dig.

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON DESIGN DRAWINGS ONLY AND THAT THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS AND MEASUREMENTS TAKEN IN THE FIELD. CORE STATES, INC. DOES NOT GUARANTEE THAT LOCATIONS SHOWN ARE EXACT. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 WORKING HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF UTILITIES.

REV	DATE	COMMENT	BY
1	08/24/21	BCCD, BCPC, AND TWP COMMENTS	CML

DOCUMENT
PRELIMINARY/ FINAL LAND DEVELOPMENT PLAN FOR CHASE BANK

SITE LOCATION
1729 STREET ROAD
BENSALEM, PA
19020

ENGINEER SEAL

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
FRANCIS GREENE
ENGINEER
No. PE075817
08/26/2021

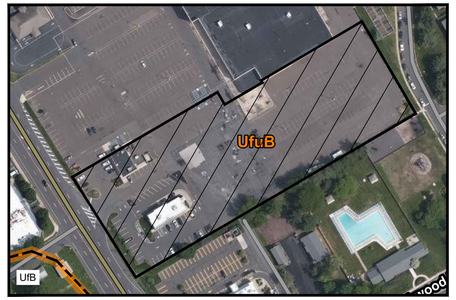
FRANCIS GREENE, P.E.
PA LICENSE #075817

SHEET TITLE
LIGHTING DETAILS

JOB #:	JPM-29391
DATE:	5/13/21
SCALE:	NTS
DRAWN BY:	CML
CHECKED BY:	FG

SHEET NO.
C10
SHEET 11 OF 23

GRAPHIC SCALE
20 10 5 0 20
1" = 20'



SOILS MAP
1" = 150'

CHAPTER 93 RECEIVING WATERSHED AND STREAM CLASSIFICATION:
- DELAWARE RIVER BASIN
- NESHAMINY CREEK WATERSHED
- BASIN, MEDIA WATER INTAKE TO NESHAMINY CREEK, **WWF, MF**

SOIL USE LIMITATIONS AND THEIR RESOLUTIONS PROVIDED:

CONTRACTOR SHALL CONSULT WITH GEOTECHNICAL ENGINEER TO DETERMINE SOIL LIMITATIONS AND RESOLUTIONS SPECIFIC TO THIS PROJECT.

1. SOIL TYPES POORLY SUITED AS SOURCES OF TOPSOIL RESTRICT OR PLACE CONDITIONS ON PLANNING VEGETATIVE STABILIZATION. ACIDIC, LOW FERTILITY, EXCESSIVE DRYNESS AND EXCESSIVE WETNESS LIMIT PLANT GROWTH.
   RESOLUTIONS: IDENTIFYING AND RESOLVING CHARACTERISTICS, THAT RENDER THE SOIL TYPES POORLY, SUITED AS TOPSOIL.

2. ACIDIC SOIL TYPES EXHIBITING PH REACTION VALUES LOWER THAN ABOUT 5.5, LIMIT VEGETATIVE STABILIZATION. SOIL TESTS MIGHT BE NECESSARY TO DETERMINE SITE SPECIFIC PH REACTION.
   RESOLUTIONS: APPLYING LIME CONSISTENT WITH RATES DETERMINED BY SOIL TESTING; SELECTING VEGETATIVE SPECIES TOLERANT TO ACIDIC SOIL CONDITIONS; AND IMPLEMENTING COMBINATIONS OF THESE AND/OR OTHER METHODS. SPECIFIC TOLERANCE INFORMATION IS PROVIDED IN TABLE 1 OF THE EROSION CONTROL & CONSERVATION PLANTINGS ON NONCROPLAND PUBLISHED BY PENN STATE.

3. LOW FERTILITY SOIL TYPES LACKING IN SUFFICIENT AMOUNTS OF ESSENTIAL PLANT NUTRIENTS SUCH AS: NITRPGEN, PHOSPHOROUS, POTASSIUM, SULFER, MAGNESIUM, CALCIUM, IRON, MANGANESE, BORON, CHLORINE, ZINC, COPPER AND MOLYBDENUM, LIMIT VEGETATION STABILIZATION. SOIL TESTS MIGHT BE NECESSARY TO DETERMINE SITE SPECIFIC SOIL FERTILITY.
   RESOLUTIONS: INCORPORATING SOIL NUTRIENTS CONSISTENT WITH RATES DETERMINED BY SOIL TESTING; SELECTIVE VEGETATIVE SPECIES TOLERANT TO LOW FERTILITY SOIL CONDITIONS, AND IMPLEMENTING COMBINATIONS OF THESE AND/OR OTHER METHODS. SPECIFIC TOLERANCE INFORMATION IS PROVIDED IN TABLE 1 OF THE EROSION CONTROL & CONSERVATION PLANTINGS ON NONCROPLAND PUBLISHED BY PENN STATE.

4. ERODIBLE SOIL TYPES EXHIBITING K VALUES GREATER THAN 0.36 OR PLASTICITY INDEX VALUES LOWER THAN 10, LIMIT VEGETATIVE STABILIZATION OF CHANNELS.
   RESOLUTIONS: TEMPORARY CHANNEL LINING, PROVIDING PERMANENT CHANNEL LINING, DECREASING CHANNEL GRADE, INCREASING CHANNEL WIDTH, SELECTING VEGETATIVE WITH GREATER RETARDANCE, SELECTING PERMANENT LININGS OTHER THAN GRASSES, AND IMPLEMENTING COMBINATION OF THESE AND/OR METHODS. VEGETATIVE RETARDANCE INFORMATION IS PROVIDED IN TABLES 6 AND 7 OF THE EROSION AND SEDIMENT POLLUTION CONTROL MANUAL PUBLISHED BY PADEP.

5. WET SOIL TYPES HAVE EXCESSIVE ROOT ZONE AND SOIL MOISTURES. SOME SOIL SURVEYS INDICATE WETNESS, HIGH WATER TABLE AND FLOODING. THIS INDICATOR IS AFFECTED BY SOIL DISTURBANCE.
   RESOLUTIONS: SELECTING VEGETATIVE SPECIES TOLERANT TO WET CONDITIONS, TILING VEGETATIVE AREAS, AND IMPLEMENTING COMBINATIONS OF THESE AND/OR OTHER METHODS. SPECIFIC TOLERANCE INFORMATION IS PROVIDED IN TABLE 1 OF THE EROSION CONTROL & CONSERVATION PLANTINGS ON NONCROPLAND PUBLISHED BY THE PENN STATE.

6. DRY SOIL TYPES LACK SUFFICIENT ROOT ZONE SOIL MOISTURES. THIS INDICATOR IS AFFECTED BY SOIL DISTURBANCE.
   RESOLUTIONS: SELECTING VEGETATIVE SPECIES TOLERANT TO DRY CONDITIONS. IRRIGATING VEGETATED AREAS AND IMPLEMENTING COMBINATION OF THESE AND/OR OTHER METHODS. SPECIFIC TOLERANCE INFORMATION IS PROVIDED IN TABLE 1 OF THE EROSION CONTROL & CONSERVATION PLANTINGS ON NONCROPLAND PUBLISHED BY PENN STATE.

7. SOIL TYPES SUSCEPTIBLE TO SINKHOLE AND SOLUTION CHANNEL/CHAMBER FORMATION POSE LIMITATIONS ON LOCATING RESERVOIR AREAS OF SEDIMENT BASINS, SEDIMENT TRAPS, STORMWATER RETENTION BASINS, AND STORMWATER DETENTION BASINS.
   RESOLUTIONS: LOCATING THOSE FACILITIES ON OTHER SOIL TYPES, LINING RESERVOIR AREAS WITH IMPERMEABLE LINNINGS, LIMITING STANDING WATER DEPTHS, LIMITING RETENTION TIMES AND IMPLEMENTING COMBINATIONS OF THESE AND/OR OTHER METHODS.

8. SOIL TYPES THAT EXHIBIT INSTABILITY IN POND EMBANKMENTS OR SUSCEPTIBILITY TO PIPING AND SEEPING POSE LIMITATIONS ON PLANNING EMBANKMENTS OF SEDIMENT BASINS, SEDIMENT TRAPS, STORMWATER RETENTION BASINS AND STORMWATER DETENTION BASINS.
   RESOLUTIONS: IMPORTING OTHER SOIL FOR EMBANKMENT OF THOSE FACILITIES, LOCATING THOSE FACILITIES ON OTHER SOIL TYPES, LIMITING EMBANKMENT SLOPE STEEPNESS AND IMPLEMENTING COMBINATIONS OF THESE AND/OR OTHER METHODS.

9. SOIL THAT ARE DIFFICULT TO COMPACT, UNSUITABLE FOR WINTER GRADING, OR SUSCEPTIBLE TO FROST ACTION POSE LIMITATIONS ON PLANNING EMBANKMENTS OF SEDIMENT BASINS, SEDIMENT TRAPS, STORMWATER RETENTION BASINS AND STORMWATER DETENTION BASINS.
   RESOLUTIONS: IMPORTING OTHER SOIL FOR EMBANKMENT OF THOSE FACILITIES, LOCATING THOSE FACILITIES ON OTHER SOIL TYPES, NOT CONSTRUCTING EMBANKMENTS DURING PERIODS PRONE TO FROST AND IMPLEMENTING COMBINATIONS OF THESE AND/OR OTHER METHODS

10. SUSCEPTIBILITY FOR THE DEVELOPMENT OF SINKHOLE WITHIN IDENTIFIED SOILS.
    RESOLUTIONS: IN THE EVENT THAT PRESENCE OF A SINKHOLE IS DETECTED DURING THE COURSE OF WORK, CORRECTIVE MEASURES SHALL BE PERFORMED UNDER THE OBSERVATION AND GUIDANCE OF THE OWNER'S GEOTECHNICAL CONSULTANT.
    EXCAVATE THE LOOSE, WET SOILS SURROUNDING THE SINKHOLE TO EXPOSE THE SINKHOLE "THROAT" (THE OPENING IN THE ROCK) AND THE ADJACENT STABLE SOILS/ROCK WHERE POSSIBLE, THE EXCAVATION SHALL EXTEND A MINIMUM OF TWO FEET (2') BEYOND THE STABLE SOILS OR TO THE ROCK SURFACE, WHICHEVER IS ENCOUNTERED FIRST.
    FILL THE EXPOSED SINKHOLE "THROAT" WITH LEAN CONCRETE TO BLOCK THE MIGRATION OF THE UPPER LAYERS OF SOIL THROUGH THE ROCK OPENING.
    AFTER CONCRETE HAS CURED OVERNIGHT BACKFILL THE REMAINDER OF THE EXCAVATION WITH CLAYEY SOILS TO PROVIDE A LOW PERMEABILITY BARRIER. THE CLAYEY SOILS SHALL BE PLACED IN 8" LIFTS AND EACH LIFT COMPACTED BY REPEATED PASSES OF THE COMPACTION EQUIPMENT UNTIL STABLE. CARE SHALL BE TAKEN TO ASSURE THAT THE SOIL AT THE EDGES OF THE EXCAVATION ARE WELL COMPACTED.

EROSION AND SEDIMENT CONTROL NOTES

1. IN ACCORDANCE WITH SLDO SECTION 201-106(C)(11)A., TOPSOIL SHALL NOT BE REMOVED FROM THE DEVELOPMENT SITE OR USED AS FILL.

STOCKPILE NOTES

1. STOCKPILING PROPOSED ON ASPHALT. (SEE LOCATION ON PLAN)
2. EXCESS MATERIAL TO BE TAKEN TO SITE WITH AN APPROVED SEDIMENT AND EROSION CONTROL PERMIT.
3. ALL STOCKPILES LEFT AT THE END OF THE DAY NEED TO BE STABILIZED UNTIL THE NEXT REDISTURBANCE OR REMOVAL.

E&S LEGEND

- SOX — CS — COMPOST FILTER SOCK (12 INCH)
- IP — INLET PROTECTION
- TS — TOPSOIL STOCKPILE
- CE — CONSTRUCTION ENTRANCE W/ STONE DIVERSION BERM
- CW — CONCRETE WASHOUT
- LOD — LIMITS OF DISTURBANCE
- X — X — CF — PROPOSED TEMPORARY CONSTRUCTION FENCE

ALERT TO CONTRACTOR:

PRIOR TO THE CONSTRUCTION OF OR CONNECTION TO ANY STORM DRAIN, SANITARY SEWER, WATER MAIN OR ANY OF THE DRY UTILITIES, THE CONTRACTOR SHALL EXCAVATE, VERIFY AND CALCULATE ALL POINTS OF CONNECTION AND ALL UTILITY CROSSINGS AND INFORM ENGINEER AND THE OWNER OF ANY CONFLICT OR REQUIRED DEVIATIONS FROM THE PLAN. NOTIFICATION SHALL BE MADE A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION. ENGINEER AND OWNER SHALL BE HELD HARMLESS IN THE EVENT THAT THE CONTRACTOR FAILS TO MAKE SUCH NOTIFICATION.

SOIL SUITABILITY AND CHARACTERISTICS

DESIGNATION	SOIL	HYDROLOGIC SOIL GROUP	DESCRIPTION	DEPTH FROM SURFACE OF TYPICAL PROFILE	DEPTH TO SEASONAL HIGH WATER TABLE	DEPTH TO BEDROCK	PERMEABILITY	SHRINK SWELL POTENTIAL	HYDRIC SOIL	SUSCEPTIBILITY TO FROST HEAVING	FOR USE AS ROAD FILL	FOR USE AS TOPSOIL	FOR USE AS GRAVEL	FOR USE AS SAND
UfuB	URBAN LAND, 0 TO 8 PERCENT SLOPES	-	URBAN LAND: 90 PERCENT MINOR COMPONENTS: 10 PERCENT	-	GREATER THAN 78 INCHES	-	NOT RATED	NOT RATED	RATING: 0	NONE	NOT RATED	NOT RATED	NOT RATED	NOT RATED

CORE STATES GROUP
201 S. Maple Avenue, Suite 300
Ambler, PA 19002
Phone (215) 809-2125
MSwaggard@core-states.com

CLIENT
CHASE

Know what's below. Call before you dig.

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON DESIGN DRAWINGS, RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE MEASUREMENTS TAKEN IN THE FIELD. CORE STATES, INC. DOES NOT GUARANTEE THAT LOCATIONS SHOWN ARE EXACT. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF UTILITIES.

REVISIONS

REV	DATE	COMMENT	BY
1	08/24/21	BCCD, BCPC, AND TWP COMMENTS	CML

DOCUMENT
PRELIMINARY/ FINAL LAND DEVELOPMENT PLAN FOR CHASE BANK

SITE LOCATION
1729 STREET ROAD
BENSALEM, PA
19020

ENGINEER SEAL
COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
FRANCIS GREENE
ENGINEER
No. PE075817
PENNSYLVANIA

08/26/2021
FRANCIS GREENE, P.E.
PA LICENSE #075817

SHEET TITLE
EROSION & SEDIMENT CONTROL PLAN

JOB #:	JPM-29391
DATE:	5/13/21
SCALE:	1" = 20'
DRAWN BY:	CML
CHECKED BY:	FG

SHEET NO.
C11
SHEET 12 OF 23

User: CLANG Plot Date/Time: Aug. 24, 21 - 16:43:47 Drawing: C:\Users\clang\appdata\local\temp\AcPublish_15640\JPM 29391-P-EROS.dwg ,11 EROS

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GENERAL CONSERVATION NOTES AND SPECIFICATIONS

1. GENERAL INFORMATION

A. THIS EROSION AND SEDIMENT CONTROL PLAN SHALL BE AVAILABLE AT THE SITE.
B. NO SEDIMENT OR SEDIMENT LADEN WATER MUST BE ALLOWED TO LEAVE THE SITE WITHOUT FIRST BEING PROPERLY FILTERED.
C. ANY SEDIMENT THAT IS TRACKED ONTO THE ROAD MUST BE CLEANED OFF BEFORE THE END OF THE DAY.
D. DISTURBED AREAS ON WHICH EARTHMOVING ACTIVITIES HAVE CEASED AND WHICH WILL REMAIN EXPOSED SHALL BE STABILIZED IMMEDIATELY, EITHER TEMPORARILY OR PERMANENTLY, INCLUDING THE RESTORATION OF DRIVEWAYS, STOCKPILES, OFF-SITE UNDERGROUND UTILITY LINES AND GRADED PERIMETER AREAS. DURING NON-GERMINATION PERIODS, MULCH MUST BE APPLIED AT RECOMMENDED RATES. CRUSHED STONE ON PAVEMENT SUBGRADES IS CONSIDERED ADEQUATE PROTECTION.
E. AREAS THAT FAIL TO GERMINATE MUST BE RE-SEEDED OR MULCHED.
F. WHERE DISTURBED AREAS ARE DIFFICULT TO STABILIZE, NETTING SHOULD BE USED TO HOLD SEED AND MULCH IN PLACE; THIS IS ESPECIALLY IMPORTANT AROUND WATERCOURSES, IN SWALES AND AREAS OF CONCENTRATED FLOWS, STEEP SLOPES.
G. UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENTATION MUST BE MAINTAINED PROPERLY. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENT CONTROL AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, RE-GRADING, RE-SEEDING, RE-MULCHING, AND RE-NETTING, MUST BE PERFORMED IMMEDIATELY. IF AT ANY TIME PRIOR TO SITE STABILIZATION ANY E&SP PROBLEMS OCCUR WHICH REQUIRE ADDITIONAL CONTROLS, IMMEDIATE ACTION MUST BE TAKEN TO CORRECT THE PROBLEMS.
H. THE CONTRACTOR MUST DEVELOP AND COORDINATE WITH OWNER AND HAVE APPROVED BY THE COUNTY CONSERVATION DISTRICT, A SEPARATE EROSION AND SEDIMENT POLLUTION CONTROL PLAN FOR EACH SPOIL, BORROW OR OTHER WORK AREA NOT DETAILED ON THE PERMITTED PLANS, WHETHER LOCATED WITHIN OR OUTSIDE OF THE LIMITS OF CONSTRUCTION.
I. CONTRACTOR SHALL NOTIFY THE COUNTY CONSERVATION DISTRICT OF DISPOSAL METHOD AND LOCATION OF MATERIALS (IF ANY) TO BE REMOVED FROM SITE.
J. STANDARD FOR DISPOSAL OF MATERIALS ALL MATERIALS TO BE RECYCLED OR DISPOSED OF MUST DO SO IN ACCORDANCE WITH ALL APPLICABLE STATE AND LOCAL REGULATIONS. STOCKPILES TO BE HAULED OFF SITE MUST HAVE AN APPROVED EROSION AND SEDIMENT CONTROL PLAN AT THE DESTINATION LOCATION.
K. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN SOIL STABILIZATION THROUGHOUT CONSTRUCTION. ADDITIONAL MEASURES REQUIRED TO ENSURE ON-SITE AND OFF-SITE STABILIZATION IN AND ADJACENT TO CONSTRUCTION ACTIVITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND HALL BE AT NO COST TO THE OWNER. IMMEDIATE NOTIFICATION SHALL BE GIVEN TO THE OWNER AND ENGINEER SHOULD ADDITION STABILIZATION MEASURES BE NECESSARY; IN ACCORDANCE WITH THE NPDES AND/OR SWPPP REQUIREMENTS FOR THE PROJECT.

2. STANDARD FOR LAND GRADING

A. DEFINITION: RESHAPING THE GROUND SURFACE BY GRADING TO PLAN GRADES, WHICH ARE DETERMINED BY TOPOGRAPHIC SURVEY AND LAYOUT.
B. PROVISIONS SHALL BE MADE TO SAFELY CONDUCT SURFACE WATER TO STORM DRAINS OR SUITABLE WATER COURSES AND TO PREVENT SURFACE RUNOFF FROM DAMAGING CUT FACES AND FULL SLOPES.
C. ADJOINING PROPERTY SHALL BE PROTECTED FROM EXCAVATION AND FILLING OPERATIONS.
- INSTALLATION REQUIREMENTS
- TIMBER, LOGS, BRUSH, RUBBISH, ROCKS, STUMPS AND VEGETABLE MATTER WHICH WILL INTERFERE WITH THE GRADING OPERATION OR AFFECT THE PLANNED STABILITY OR FILL AREAS SHALL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH STANDARD FOR DISPOSAL OF MATERIALS.
- FILL MATERIAL IS TO BE FREE OF BRUSH, RUBBISH, TIMBER, LOGS, VEGETATIVE MATTER AND STUMPS IN AMOUNTS THAT WILL BE DETRIMENTAL TO CONSTRUCTING STABLE FILLS.
- ALL FILLS SHALL BE COMPACTED SUFFICIENTLY FOR THEIR INTENDED PURPOSE AND AS REQUIRED TO REDUCE SLIPPING, EROSION OR EXCESS SATURATION.
- ALL DISTURBED AREAS SHALL BE LEFT WITH A NEAT AND FINISHED APPEARANCE AND SHALL BE PROTECTED FROM EROSION.
- (SEE 1. D.)

3. STANDARD FOR UTILITY TRENCH EXCAVATION

A. LIMIT ADVANCE CLEARING AND GRUBBING OPERATIONS TO A DISTANCE EQUAL TO TWO TIMES THE LENGTH OF PIPE INSTALLATION THAT CAN BE COMPLETED IN ONE DAY.
B. LIMIT DAILY TRENCH EXCAVATION TO THE LENGTH OF PIPE PLACEMENT, PLUG INSTALLATION AND BACKFILLING THAT CAN BE COMPLETED THE SAME DAY. DAILY BACKFILLING OF THE TRENCH MAY BE DELAYED FOR A MAX. OF SIX DAYS FOR CERTAIN CASES REQUIRING TESTING OF THE INSTALLED PIPE.
C. WATER WHICH ACCUMULATES IN THE OPEN TRENCH WILL BE COMPLETELY REMOVED BY PUMPING TO A FACILITY FOR REMOVAL OF SEDIMENT (SEDIMENT FILTER BAG, SEE DETAIL) BEFORE PIPE PLACEMENT AND/OR BACKFILLING BEGINS.
D. ON THE DAY FOLLOWING PIPE PLACEMENT AND TRENCH BACKFILLING, THE DISTURBED AREA WILL BE GRADED TO FINAL CONTOURS AND APPROPRIATE TEMPORARY EROSION AND SEDIMENT POLLUTION CONTROL MEASURES / FACILITIES WILL BE INSTALLED. SEEDING AND MULCHING OF ALL DISTURBED AREAS WILL BE DONE IMMEDIATELY.
E. WORK CREWS AND EQUIPMENT FOR TRENCHING, PLACEMENT OF PIPE, PLUG CONSTRUCTION AND BACKFILLING WILL BE SELF CONTAINED AND SEPARATE FORM CLEARING AND GRUBBING AND SITE RESTORATION AND STABILIZATION OPERATIONS.
F. ALL SOIL EXCAVATED FROM THE TRENCH WILL BE PLACED ON THE UPHILL SIDE OF THE TRENCH.

4. STANDARD FOR TEMPORARY STABILIZATION

A. STANDARD FOR TEMPORARY STABILIZATION WITH FIBERMULCH
- MULCHING IS MOST APPLICABLE TO THOSE AREAS SUBJECT TO PERIODIC DISTURBANCE AND REWORKING IN ADDITION, STABILIZATION WITH FIBER MULCH SHALL BE USED DURING NON-GERMINATION PERIODS.
- PERFORM ALL CULTURAL OPERATIONS AT RIGHT ANGLES TO THE SLOPE.
- GRADE AS NEED AND FEASIBLE. SEE STANDARD FOR LAND GRADING.
- PROTECTIVE MATERIALS TO BE USED:
  - UNROTTED SMALL-GRAIN UN-CHOPPED STRAW OR HAY AT 3.0 TONS PER ACRE (4 TONS PER ACRE BETWEEN NOVEMBER 1 AND MARCH 1) SPREAD UNIFORMLY AND ANCHORED WITH LIQUID MULCH BINDER. BINDER PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH THE PRODUCT MANUFACTURER'S SPECIFICATIONS.
  - HYDROMULCHER. USE IS LIMITED TO FLATTER SLOPES AND DURING OPTIMUM SEEDING PERIODS IN SPRING AND FALL. LIQUID MULCH BINDERS: APPLY IMMEDIATELY AFTER PLACEMENT OF HAY OR STRAW MULCH TO MINIMIZE LOSS BY WIND OR WATER. PRODUCTS TO BE INSTALLED AT A RATE OF 1 TON PER ACRE (MINIMUM) OR PER MANUFACTURER'S SPECIFICATIONS.

B. STANDARD FOR TEMPORARY STABILIZATION WITH SEED
- DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE REDISTURBED WITHIN TWELVE (12) MONTHS MUST BE SEEDED AND MULCHED IMMEDIATELY WITH A TEMPORARY COVER.
- ALL AREAS TO BE PERMANENTLY SEEDED SHALL ALSO RECEIVE TEMPORARY SEEDING CONCURRENTLY.
- SEEDBED PREPARATION FOR TEMPORARY SEEDING.
  - PERFORM ALL CULTURAL OPERATIONS AT RIGHT ANGLES TO SLOPE.
  - APPLY AGRICULTURAL LIME AT A RATE OF 1 TONE PER ACRE.
  - APPLY 10-10-10 FERTILIZER AT A RATE OF 500 POUNDS PER ACRE.
  - WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF FOUR (4) INCHES.

C. SEEDING: SEE SEEDING SPECIFICATIONS.

5. STANDARD FOR PERMANENT STABILIZATION

A. SPECIFICATION FOR SEEDING SOIL TREATMENT FOR PERMANENT VEGETATIVE COVER
1. **SITE PREPARATION**
A. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION. SEEDING, MULCH APPLICATION AND ANCHORING, AND MAINTENANCE.
A. SUBSOIL SHOULD BE TESTED FOR LIME REQUIREMENT AND LIMESTONE, IF NEEDED, SHOULD BE APPLIED TO BRING SOIL PH TO BETWEEN 5.5 AND 7 AND INCORPORATED INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES.
B. IMMEDIATELY PRIOR TO TOPSOIL DISTRIBUTION, THE SURFACE SHOULD BE SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3-5 INCHES TO PROVIDE A GOOD BOND WITH THE TOPSOIL.
2. **APPLYING TOPSOIL**
A. TOPSOIL SHOULD BE HANDLED ONLY WHEN IT IS DRY ENOUGH TO WORK WITHOUT DAMAGING SOIL STRUCTURE.
B. ALL DISTURBED TOPSOIL ON-SITE IS TO BE REDISTRIBUTED ON-SITE IN AREAS NOT COVERED BY IMPERVIOUS SURFACES. NO REMOVAL OF TOPSOIL IS ALLOWED UNLESS APPROVED BY BENSALEM TOWNSHIP. UNIFORM APPLICATION TO A DEPTH OF 6-8 INCHES (UNSETTLED) IS RECOMMENDED. SOILS WITH A PH OF 4.0 OR LESS OR CONTAINING IRON SULFIDE SHALL BE COVERED WITH A MINIMUM DEPTH OF 12 INCHES OF SOIL HAVING A PH OF 5.0 OR MORE.
3. **SEEDBED PREPARATION**
A. A SOIL TEST SHALL BE CONDUCTED TO ACCURATELY DETERMINE NECESSARY SOIL AMENDMENTS.
B. PERFORM ALL CULTURAL OPERATIONS AT RIGHT ANGLES TO SLOPE.
C. SOIL MODIFICATIONS:
1. APPLY 10-10-20 RATED FERTILIZER AT A RATE OF 1000 POUNDS PER ACRE OR 25 POUNDS PER 1000 SQUARE FEET, OR AS DIRECTED BY SOIL TEST.
2. APPLY AGRICULTURAL LIME AT A RATE OF 6 TONS PER ACRE OR 240 POUNDS PER 1000 SQUARE FEET, OR AS DIRECTED BY SOIL TEST.
D. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES CONTINUE TILLAGE UNTIL A REASONABLY UNIFORM FINE SEEDBED IS PREPARED.
E. REMOVE FROM THE SURFACE ALL STONES ONE INCH (1") OR LARGER IN ANY DIMENSION, REMOVE ALL OTHER DEBRIS, SUCH AS WIRE, CABLE, TREE ROOTS, PIECES OF CONCRETE, CLODS, LUMPS OR OTHER UNSUITABLE MATERIAL.
F. INSPECT SEEDBED JUST BEFORE SEEDING. IF TRAFFIC HAS LEFT THE SOIL COMPACTED, THE AREA MUST BE RE-TILLED AND FIRMED AS ABOVE.
4. SEEDING: SEE SEEDING SPECIFICATIONS
5. SEED BED AREAS SHALL ALSO BE STABILIZED USING AN APPROVED METHOD (EG: HYDROMULCHING) AS OUTLINED IN ITEM 4.A. HEREIN.

B. STANDARD FOR PERMANENT STABILIZATION WITH SOD
1. METHODS AND MATERIALS
A. CULTIVATED SOD IS PREFERRED OVER NATIVE OR PASTURE SOD. SPECIFY "CERTIFIED SOD," OR OTHER HIGH QUALITY CULTIVATED SOD.
B. SOD SHOULD BE FREE OF WEEDS AND UNDESIRABLE COARSE WEEDY GRASSES.
C. SOD SHOULD BE OF UNIFORM THICKNESS, APPROXIMATELY 5/8 INCH, PLUS OR MINUS 1/4 INCH, AT TIME OF CUTTING. (EXCLUDES TOP GROWTH).
D. SOD SHOULD BE VIGOROUS AND DENSE AND BE ABLE TO RETAIN ITS OWN SHAPE AND WEIGHT WHEN SUSPENDED VERTICALLY WITH A FIRM GRASP FROM THE UPPER 0% OF THE STRIP. BROKEN PADS OR TORN AND UNEVEN ENDS WILL NOT BE ACCEPTABLE.
E. A SOD OF KENTUCKY 31 TALL FESCUE WITH BLUEGRASS, OR A FESCUE BLEND IS PREFERRED.
F. ONLY MOIST, FRESH UNHEATED SOD SHOULD BE USED. SOD SHOULD BE HARVESTED, DELIVERED AND INSTALLED WITHIN A PERIOD OF 36 HOURS.
2. SITE PREPARATIONS: SEE SPECIFICATION FOR SEEDING & SOIL TREATMENT FOR PERMANENT VEGETATIVE COVER (ITEM 5.A. ABOVE)
3. SOD PLACEMENT
A. SOD STRIPS SHOULD BE LAID ON THE CONTOUR, NEVER UP AND DOWN THE SLOPE, STARTING AT THE BOTTOM OF THE SLOPE AND WORKING UP. ON STEEP SLOPES, THE USE OF LADDERS WILL FACILITATE THE WORK AND PREVENT DAMAGE TO THE SOD. DURING PERIODS OF HIGH TEMPERATURE, LIGHTLY IRRIGATE THE SOIL IMMEDIATELY PRIOR TO LAYING THE SOD.
B. PLACE SOD STRIPS WITH SNUG EVEN JOINTS THAT ARE STAGGERED. OPEN SPACES INVITE EROSION.
C. ROLL OR TAMP SOD IMMEDIATELY FOLLOWING PLACEMENT TO INSURE SOLID CONTACT OF ROOT MAT AND SOIL SURFACE. DO NOT OVERLAP SOD. ALL JOINTS SHOULD BE BUTTED TIGHTLY IN ORDER TO PREVENT VOIDS, WHICH WOULD CAUSE DRYING OF THE ROOTS.
D. ON SLOPES GREATER THAN 3 TO 1, SECURE SOD TO SURFACE SOIL WITH WOOD PEGS, WIRE STAPLES OR A BIODEGRADABLE FASTENER.
E. SURFACE WATER CANNOT ALWAYS BE DIVERTED FROM FLOWING OVER THE FACE OF THE SLOPE, BUT A CAPPING STRIP OF HEAVY JUTE OR PLASTIC NETTING, PROPERLY SECURED, ALONG THE CROWN OF THE SLOPE AND EDGES WILL PROVIDE EXTRA PROTECTION AGAINST LIFTING AND UNDERCUTTING OF SOD. THE SAME TECHNIQUE CAN BE USED TO ANCHOR SOD IN WATER-CARRYING CHANNELS AND OTHER CRITICAL AREAS. WIRE STAPLES MUST BE USED TO ANCHOR NETTING IN CHANNEL WORK.
F. IMMEDIATELY FOLLOWING INSTALLATION, SOD SHOULD BE WATERED UNTIL MOISTURE PENETRATES THE SOIL LAYER BENEATH SOD TO A DEPTH OF 4 INCHES. MAINTAIN OPTIMUM MOISTURE FOR AT LEAST TWO WEEKS.
4. FOLLOW-UP INSPECTION: AFTER THE FIRST GROWING SEASON, THE SOD SHOULD BE INSPECTED TO DETERMINE IF ADDITIONAL FERTILIZATION OR LIMING IS NEEDED.

ALERT TO CONTRACTOR:

PRIOR TO THE CONSTRUCTION OF OR CONNECTION TO ANY STORM DRAIN, SANITARY SEWER, WATER MAIN OR ANY OF THE DRY UTILITIES, THE CONTRACTOR SHALL EXCAVATE, VERIFY AND CALCULATE ALL POINTS OF CONNECTION AND ALL UTILITY CROSSINGS AND INFORM ENGINEER AND THE OWNER OF ANY CONFLICT OR REQUIRED DEVIATIONS FROM THE PLAN. NOTIFICATION SHALL BE MADE A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION. ENGINEER AND OWNER SHALL BE HELD HARMLESS IN THE EVENT THAT THE CONTRACTOR FAILS TO MAKE SUCH NOTIFICATION.

EROSION AND SEDIMENT CONTROL SUPPLEMENTAL NOTES

E&S PLANNING AND DESIGN §102.4(B)(4]

THE FOLLOWING MEASURES ARE TAKEN TO MINIMIZE THE EXTENT AND DURATION OF EARTH DISTURBANCE:
- ACCESS THE SITE THRU DESIGNATED CONSTRUCTION ENTRANCE
- SEQUENCE CONSTRUCTION ACTIVITIES BY LIMITING DISTURBANCES TO A SPECIFIC TASK SUCH THAT EACH TASK IS COMPLETED BEFORE THE NEXT TASK IS INITIATED
- MAINTAIN EXISTING GRADES ON SITE WHERE PLAUSIBLE.

THE FOLLOWING MEASURES ARE TAKEN TO MAXIMIZE PROTECTION OF MISTING DRAINAGE FEATURES AND VEGETATION:
- ACCESS THE SITE THROUGH DESIGNATED CONSTRUCTION ENTRANCE
- UTILIZE THE EXISTING DRAINAGE PATTERNS AS MUCH AS POSSIBLE.
- MAINTAIN EXISTING DRAINAGE PATTERNS TO POI#1

THE FOLLOWING MEASURES ARE TAKEN TO MINIMIZE SOIL COMPACTION:
- ACCESS THE SITE THROUGH DESIGNATED CONSTRUCTION ENTRANCE
- USE OF TREADED MACHINERY MERE PRACTICAL DURING EARTHMOVING OPERATIONS

THE FOLLOWING MEASURES ARE TAKEN TO PREVENT OR MINIMIZE GENERATION OF INCREASED STORM WATER RUNOFF:
- UTILIZE PERIMETER CONTROLS SUCH AS SILT SOCK, SILT FENCE WHILE NOT OVERLOADING ANY SPECIFIC BMP ENSURING LONGER SUSTAINABILITY OF THE EROSION AND SEDIMENT CONTROLS

RECYCLING OR DISPOSAL OF MATERIALS §102.4(B}(5)(XI)
1.) ANTICIPATED CONSTRUCTION WASTES INCLUDE BUT ARE NOT LIMITED TO: ONE-STORY BUILDING, CURBING, SIDEWALK AND ASPHALT AREAS.
2.) ALL BUILDING MATERIAL AND WASTES MUST BE REMOVED FROM THE SITE AND RECYCLED OR RECYCLED IN ACCORDANCE WITH DEP5 SOLID WASTE REGULATIONS (25 PA CODE 260.1 ET SEQ., 271.1 ET SE., AND 287.1 ET SEQ.,) AND/OR ANY ADDITIONAL LOCAL, STATE, OR FEDERAL REGULATIONS. NO BUILDING MATERIALS (USED OR UNUSED) OR WATER MATERIALS SHALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT THE SITE.

POTENTIAL THERMAL IMPACT TO SURFACE WATERS §102.4(B}(5)(XIII)
THERMAL IMPACTS HAVE BEEN AVOIDED IN THE E&S CONDITION THROUGH THE USE OF SILT SOXX TO ENSURE THAT RUNOFF FILTERS THROUGH A MEDIA, WHICH SHOULD REDUCE THE WATER TEMPERATURE OF STORMWATER FLOWS THAT WOULD OTHERWISE COME DIRECTLY FROM THE PAVEMENT.

E&S PLAN DESIGNED AND IMPLEMENTED TO BE CONSISTENT WITH PCSM PLAN §102.4(B)(5)(XIV)
1.) THERE ARE NO EXISTING/ PROPOSED RIPARIAN BUFFERS OUTSIDE THE LIMIT OF DISTURBANCE

EXISITING/PROPOSED RIPARIAN FOREST BUFFERS §102.4(B)(5)(XV)
1.) THERE ARE NO EXISTING/PROPOSED RIPARIAN FOREST BUFFERS SHOWN ON THE PLAN MAPS.
2.) THERE ARE NO EXISTING/PROPOSED RIPARIAN FOREST BUFFERS OUTSIDE THE LIMIT OF DISTURBANCE.
3.) THERE ARE NO DELINEATED WETLANDS WITHIN THE PROPOSED LIMITS OF DISTURBANCE ON THIS SITE.

ANTIDEGRADATION ANALYSIS
EVALUATIONS OF NON-DISCHARGE ALTERNATIVE ONLY PERTAIN TO HQ OR EV WATERS PER THE PADEP & WATER QUALITY ANTIDEGRADATION DOCUMENT DATED NOV. 29, 2003. THE SUBJECT SITE IS LOCATED WITHIN THE NESHAMINY CREEK WATERSHED IN THE DELAWARE RIVER MAJOR RIVER BASIN. THE CLOSEST RECEIVING WATER IS NESHAMINY CREEK, MEDIA WATER INTAKE TO NESHAMINY CREEK WHICH HAS A WWF AND MF CHAPTER 93 CLASSIFICATION.

SEEDING SPECIFICATIONS

1. SEEDING DATES
A. SEEDING SHALL OCCUR BETWEEN MARCH 1ST AND MAY 15TH OR BETWEEN AUGUST 15TH AND NO LATER THAN OCTOBER 15TH.
B. IF SEEDING CANNOT BE CONDUCTED DURING THE TIMEFRAMES NOTED ABOVE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH THE LOCAL CONSERVATION DISTRICT AND ALL APPROPRIATE AGENCIES TO DETERMINE AN ACCEPTABLE MEANS IN WHICH TO STABILIZE THE SITE THROUGH THE NEXT GROWING SEASON.
2. SEED MIXTURES: SEED MIXTURE TO BE USED ON THIS SITE SHALL CONSIST OF THE FOLLOWING UNLESS OTHERWISE NOTED ON THE PLANS. RATES ARE IN THE FORM OF POUNDS PER ACRE (LB/A) PER PURE LIVE SEED (POUNDS / ACRE PLS). CONTRACTOR WILL NEED TO ADJUST ACCORDINGLY BASED ON THE SEED GERMINATION AND PURITY RATING (SEE ITEM #3 BELOW).
A. TEMPORARY SEED MIXTURES: DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE DISTURBED AGAIN WITHIN TWELVE (12) MONTHS MUST BE SEEDED WITH A TEMPORARY SEED MIXTURE AS FOLLOWS:
ANNUAL RYE (40 POUNDS / ACRE PLS)
OR SPRING OATS (96 POUNDS / ACRE PLS) OR WINTER RYE (168 POUNDS / ACRE PLS)
(REFERENCE: PENN STATE "EROSION CONTROL & CONSERVATION PLANTINGS ON NONCROPLAND", TABLE 5)
B. PERMANENT SEEDING SHALL CONSIST OF A NURSE CROP PLUS A PERMANENT SEED MIXTURE, AS FOLLOWS:
I. NURSE CROP (SELECT ONE):
ANNUAL RYE (10 POUNDS / ACRE PLS)
OR SPRING OATS (64 POUNDS / ACRE PLS) OR WINTER RYE (56 POUNDS / ACRE PLS)
(REFERENCE: PA DEP EROSION AND SEDIMENT CONTROL PROGRAM MANUAL, LATEST EDITION, TABLE 11.4, SEED MIX #1)
II. PERMANENT SEED MIX:
TALL FESCUES (64 POUNDS / ACRE PLS) OR FINE FESCUE (35 POUNDS / ACRE PLS)
OR KENTUCKY BLUEGRASS (25 POUNDS / ACRE PLS) PLUS REDTOP (3 POUNDS / ACRE PLS) OR PERENNIAL RYEGRASS (15 POUNDS / ACRE PLS)
(REFERENCE: PA DEP EROSION AND SEDIMENT CONTROL PROGRAM MANUAL, LATEST EDITION, TABLE 11.4, SEED MIX #2)
3. PURE LIVE SEED:
A. SEED USED FOR THE PURPOSE OF PERMANENT STABILIZATION SHALL BE LABELED WITH GERMINATION AND PURITY PERCENTAGES. UNLABELED SEED WILL BE REJECTED. SEED SHALL NOT BE USED MORE THAN ONE (1) YEAR BEYOND THE LABEL DATE.
B. DETERMINING THE PERCENT PURE LIVE SEED (PERCENT PLS) OF A LABELED SEED: MULTIPLY BY THE PERCENTAGE OF PURE SEED BY THE PERCENTAGE OF GERMINATION AND DIVIDE THE RESULT BY 100 ((% PURE X % GERMINATION) / 100)
C. DETERMINING THE ACTUAL SEED RATE: SIMPLY DIVIDE THE PERCENT PLS RATING OF THE SEED INTO THE PLS REQUIRED, AS NOTED ABOVE. THE RESULT IS THE POUNDS OF SEED REQUIRED. FOR EXAMPLE: IF THE REQUIRED RATE IS 64 POUNDS PLS, AND THE SEED IS RATED AT 35% PLS, DIVIDE 64 BY 0.35 TO GET 182.9 POUNDS, WHICH IS THE AMOUNT OF THAT SEED REQUIRED PER ACRE.
4. APPLICATION OF SEED: SEEDING SHALL BE APPLIED AND ESTABLISHED IN ACCORDANCE WITH THE "EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL" AS PUBLISHED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF WATER QUALITY PROTECTION (MOST RECENT EDITION).
A. SEED SHALL BE APPLIED IN A NON-COMPACTED, ROUGHENED TOPSOIL.
B. SEED MAY BE APPLIED THROUGH ANY OF THE FOLLOWING MEANS AND METHODS, OR OTHER ACCEPTED INDUSTRY PRACTICES, UNLESS SPECIFICALLY NOTED OTHERWISE ON THESE PLANS:
I. DRILL SEEDING
II. BROADCAST SEEDING (TWO DIRECTIONS)
III. HYDROSEEDING (TWO DIRECTIONS)
C. ALL SEED SHALL BE TEMPORARILY OR PERMANENTLY STABILIZED UNTIL A 70% PERENNIAL COVER IS ACHIEVED:
I. TEMPORARY STABILIZATION WITH STRAW:
1. STRAW MULCH SHALL BE APPLIED ON TOP OF THE FRESHLY SEEDED AREAS AT A RATE OF 3 TONS PER ACRE (4 TONS PER ACRE BETWEEN NOVEMBER 1ST AND MARCH 1ST).
2. STRAW SHALL BE STABILIZED WITH A WOOD OR PAPER FIBER MULCH AND TACKIFIER SOLUTION IN ACCORDANCE WITH THE PRODUCT MANUFACTURER'S SPECIFICATIONS.

5. IRRIGATION: NEW SEED APPLICATIONS SHOULD BE SUPPLIED WITH ADEQUATE WATER, A MINIMUM OF ¼" TWICE A DAY, UNTIL VEGETATION IS WELL ESTABLISHED (A MINIMUM OF 75% COVER).

SEQUENCE OF CONSTRUCTION BMP INSTALLATION AND REMOVAL

§102.4(b)(5)(vii)

- ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE FOLLOWING SEQUENCE. EACH STAGE SHALL BE COMPLETED IN COMPLIANCE WITH PENNSYLVANIA CODE CHAPTER 102 EROSION AND SEDIMENT CONTROL REGULATIONS BEFORE ANY FOLLOWING STAGE IS INITIATED. CLEARING AND GRUBBING SHALL BE LIMITED ONLY TO THOSE AREAS DESCRIBED IN EACH STAGE. UPON COMPLETION OR TEMPORARY CESSATION OF THE EARTH DISTURBANCE ACTIVITY THAT WILL EXCEED FOUR (4) DAYS, OR ANY STAGE THEREOF, THE PROJECT SITE SHALL BE IMMEDIATELY STABILIZED WITH THE APPROPRIATE TEMPORARY OR PERMANENT STABILIZATION.
- AT LEAST SEVEN (7) DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, THE OPERATOR SHALL INVITE ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES INCLUDING, BUT NOT LIMITED TO: THE LANDOWNER, ALL APPROPRIATE MUNICIPAL OFFICIALS, AND THE BENSALEM TOWNSHIP ENGINEER FOR AN ON-SITE PRE-CONSTRUCTION MEETING. ALSO, AT LEAST THREE (3) DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES SHALL NOTIFY THE PENNSYLVANIA ONE CALL SYSTEM INC. AT 1-800-242-1776 FOR BURIED UTILITIES LOCATION.
- BEFORE INITIATING ANY REVISION TO THE APPROVED EROSION AND SEDIMENT CONTROL PLAN OR REVISIONS TO OTHER PLANS WHICH MAY AFFECT THE EFFECTIVENESS OF THE APPROVED E&S CONTROL PLAN, THE OPERATOR MUST RECEIVE APPROVAL OF THE REVISIONS FROM THE BENSALEM TOWNSHIP ENGINEER. THE OPERATOR SHALL ASSURE THAT THE APPROVED EROSION AND SEDIMENT CONTROL PLAN IS PROPERLY AND COMPLETELY IMPLEMENTED. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO ELIMINATE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION.

1. INSTALL ROCK CONSTRUCTION ENTRANCE WITH STONE DIVERSION BERM AS DESIGNATED ON THE PLANS. REMOVE PAVING AS NECESSARY.
2. INSTALL TEMPORARY CONSTRUCTION FENCE ALONG THE SOUTHERN SIDE PROPERTY LINE AS SHOWN ON THE PLANS. INSTALLATION OF THE TEMPORARY CONSTRUCTION FENCE SHOULD TAKE PLACE PRIOR TO ANY CONSTRUCTION.
3. INSTALL ALL PERIMETER COMPOST FILTER SOCKS AND INLET PROTECTION WITHIN THE DESIGNATED LIMIT OF DISTURBANCE AS INDICATED ON THE PLANS. ONLY LIMITED CLEARING AND GRUBBING NECESSARY TO INSTALL THE PERIMETER EROSION AND SEDIMENT POLLUTION CONTROLS IS PERMITTED.
4. DEMOLISH EXISTING SITE FEATURES, AS NECESSARY, TO INSTALL EROSION CONTROL MEASURES FOR CONTROL DURING DEMOLITION ACTIVITIES. CONTRACTOR TO INSTALL PUMPED WATER FILTER BAG FOR USE DURING PUMPING OF WATER DURING CONSTRUCTION ACTIVITIES.
5. PLACE EXCESS MATERIAL IN SOIL STOCK PILE AREA AS SHOWN ON PLANS.
6. CONTRACTOR TO PROVIDE DUST CONTROL MEASURES DURING ALL DEMOLITION ACTIVITIES OF SITE WORK AND BUILDING WORK. CONTINUALLY SPRAY DISTURBED AREAS WITH WATER FROM MULTIPLE HOSES OR WATER TRUCK, AS NEEDED, TO MINIMIZE DUST DURING DEMOLITION OF SITE FEATURES. CONTRACTOR SHALL DISPOSE OF MATERIALS REMOVED ACCORDING TO LOCAL AND STATE REQUIREMENTS. IF ASBESTOS OR ANY OTHER REGULATED HAZARDOUS MATERIAL EXISTS WITHIN THE PROPERTY, IT SHALL BE REMOVED AND CERTIFICATIONS TO THAT EFFECT SHALL BE FILED WITH THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENT PROTECTION.
7. DEMOLISH EXISTING SITE FEATURES, BUILDING, AND UTILITIES PROPOSED TO BE REMOVED. DURING DEMOLITION OF UTILITIES ALL UTILITY SERVICES MUST BE MAINTAINED FOR NEIGHBORING PROPERTIES WHOSE UTILITIES CURRENTLY TRAVERSE THE SITE AND ARE PROPOSED TO BE REROUTED. COORDINATE WITH LOCAL UTILITY PROVIDERS IN ADVANCE OF CONSTRUCTION.
8. INITIATE THE NECESSARY EARTHWORK TO REACH THE GRADES INDICATED ON THE PLANS. BUILDING CONSTRUCTION MAY COMMENCE UPON ACCEPTANCE OF BUILDING PAD BY OWNER. THE CONCRETE WASHOUT MUST BE INSTALLED BEFORE ANY CONCRETE CAN BE POURED ON-SITE. CONTRACTOR MUST PERFORM BULK OF EARTHWORK TO BALANCE CUTS AND FILLS TO THE GREATEST EXTENT POSSIBLE. ALL AREAS DISTURBED DURING THE EARTHWORK PHASE OF CONSTRUCTION MUST BE TEMPORARILY SEEDED AND STABILIZED IN ACCORDANCE WITH THE GENERAL CONSERVATION NOTES AND SPECIFICATIONS AND SEEDING SPECIFICATIONS IF PERMANENT STABILIZATION CANNOT BE ACHIEVED WITHIN FOUR (4) DAYS.
9. **CRITICAL STAGE: INSTALLATION OF SUBSURFACE DETENTION / INFILTRATION BASIN & INITIATE STORM SEWER INSTALLATIONS INCLUDING NYLOPLAST ENVIROHOOD FOR THE FEATURES SHOW ON THE PLANS STARTING AT THE FURTHER DOWNSTREAM STRUCTURE. INLETS DISCHARGING TO THE BASIN MUST BE BLOCKED IMMEDIATELY AFTER INSTALLATION AND REMAIN BLOCKED UNTIL SITE IS FULLY STABILIZED TO PREVENT SEDIMENT FROM ENTERING BASIN. NO CONSTRUCTION EQUIPMENT, SUCH AS CRANES DURING BUILDING CONSTRUCTION, SHALL BE PARKED ON TOP OF THE SUBSURFACE DETENTION / MANAGED RELEASE BASINS TO AVOID DAMAGING THE BASIN OR OVER-COMPACTING THE SUBSURFACE SOILS AND REDUCING SITE INFILTRATION RATES. THE PERMITTEE SHALL PROVIDE ENGINEERING OVERSIGHT FOR THE INSTALLATION OF CRITICAL STAGE AND POST CONSTRUCTION STORMWATER BMPS. THE PERMITTEE SHALL PROVIDE ENGINEERING OVERSIGHT FOR THE INSTALLATION OF CRITICAL STAGE AND POST CONSTRUCTION STORMWATER BMPS. A LICENSED PROFESSIONAL OR DESIGNEE KNOWLEDGEABLE IN THE DESIGN AND CONSTRUCTION OF THE POST CONSTRUCTION BMPS SHALL CONDUCT THE OVERSIGHT.**
10. CONTINUE WITH THE BALANCE OF EARTHWORK INCLUDING UTILITY INSTALLATION (STORM PIPING, SANITARY LATERALS, WATER LATERALS, GAS, ELECTRIC, TELEPHONE, AND CABLE) WHERE APPLICABLE.
11. REPOSITION PERIMETER COMPOST FILTER SOCKS, INSTALL NEW INLET PROTECTION ON ALL NEWLY INSTALLED INLETS WITHIN THE PROPERTY AS SHOWN ON EROSION & SEDIMENT CONTROL PLAN PHASE II.
12. INSTALL CURBING AND INSTALL STONE BASE COURSE IN THE DRIVEWAY AND PARKING AREAS.
13. INITIATE FINAL GRADING AND PLACEMENT OF TOPSOIL IN ALL LANDSCAPE AREAS. AS SOON AS SLOPES, CHANNELS, DITCHES AND OTHER DISTURBED AREAS REACH FINAL GRADE, THEY MUST BE STABILIZED. ALL LANDSCAPE AREAS MUST BE STABILIZED AND PERMANENT SEEDING OR PLACEMENT OF SOD MUST BE APPLIED. WHEN FINAL GRADE IS ACHIEVED DURING NON-GERMINATING MONTHS, THE AREA SHOULD BE MULCHED UNTIL THE BEGINNING OF THE NEXT PLANTING SEASON. HOWEVER, THE AREA WILL NOT BE CONSIDERED STABILIZED UNTIL A MINIMUM UNIFORM 70% VEGETATIVE COVER OF EROSION RESISTANT PERENNIAL SPECIES HAS BEEN ACHIEVED. AS DISTURBED AREAS WITHIN A PROJECT APPROACH FINAL GRADE, PREPARATIONS SHOULD BE MADE FOR SEEDING AND MULCHING TO BEGIN. IN NO CASE SHOULD AN AREA EXCEEDING 15,000 SQUARE FEET, WHICH IS TO BE STABILIZED BY VEGETATION, REACH FINAL GRADE WITHOUT BEING SEEDED AND MULCHED. WAITING UNTIL EARTHMOVING IS COMPLETED BEFORE MAKING PREPARATIONS FOR SEEDING AND MULCHING IS NOT ACCEPTABLE. SEEDING AND MULCHING REQUIREMENTS ARE SPECIFIED IN THE GENERAL CONSERVATION NOTES AND SPECIFICATIONS.
14. INSTALL BITUMINOUS PAVEMENT AND CONCRETE INCLUDING SIDEWALKS.
15. **CRITICAL STAGE: SURVEY AS-BUILT SUBSURFACE STORM SEWER SYSTEM AND PROVIDE ENGINEER OF RECORD WITH AS-BUILT CONDITIONS TO CONFIRM SYSTEM HAS BEEN CONSTRUCTED TO MEET THE BENSALEM TOWNSHIP ORDINANCES.**
16. **CRITICAL STAGE: INSTALLATION OF BMP 6.7.2 LANDSCAPE RESTORATION. INSTALL FINAL VEGETATION AND LANDSCAPING SPECIFIED ON THE LANDSCAPE PLANTING PLAN.**
17. UPON SITE STABILIZATION (UNIFORM COVERAGE OR DENSITY OF 70% ACROSS ALL DISTURBED AREAS) AND NOTIFICATION TO AND INSPECTION FROM BENSALEM TOWNSHIP ENGINEER, REMOVE REMAINING EROSION AND SEDIMENT CONTROL FACILITIES. ANY AREA DISTURBED DURING THE REMOVAL OF EROSION AND SEDIMENT CONTROL FACILITIES SHALL BE STABILIZED IMMEDIATELY.
18. CLEAR SITE OF DEBRIS AND ALL UNWANTED MATERIALS. OPERATOR SHALL REMOVE FROM SITE, RECYCLE OR DISPOSE OF ALL BUILDING MATERIALS AND WASTES IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA. CODE 260.1 ET SEQ., 271.1 ET SEQ. THE CONTRACTOR SHALL NOT ILLEGALLY BURY, DUMP OR DISCHARGE ANY BUILDING MATERIAL OR WASTE AT THIS SITE.
19. DEMOBILIZE & CONTACT BENSALEM TOWNSHIP ENGINEER FOR FINAL SITE INSPECTIONS.

BUCKS COUNTY STANDARD E&S PLAN NOTES

1. STOCKPILE HEIGHTS MUST NOT EXCEED 35 FEET; STOCKPILE SLOPES MUST NOT EXCEED 2:1.
2. THE OPERATOR/RESPONSIBLE PERSON (O/RP) ON SITE SHALL ASSURE THAT THE APPROVED EROSION AND SEDIMENT CONTROL PLAN IS PROPERLY AND COMPLETELY IMPLEMENTED.
3. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE O/RP SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES (BMPS) TO ELIMINATE THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION.
4. THE O/RP SHALL ASSURE THAT AN EROSION AND SEDIMENT CONTROL PLAN HAS BEEN PREPARED AND APPROVED BY THE BUCKS COUNTY CONSERVATION DISTRICT AND IS BEING IMPLEMENTED AND MAINTAINED FOR ALL SOILS AND/OR ROCK SPOIL AND BORROW AREAS REGARDLESS OF THEIR LOCATIONS.
5. ALL PUMPING OF SEDIMENT-LADEN WATER SHALL BE THROUGH A SEDIMENT CONTROL BMP SUCH AS A PUMPED WATER FILTER BAG DISCHARGING OVER AN UNDISTURBED AREA.
6. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN MUST BE AVAILABLE ON THE PROJECT SITE AT ALL TIMES.
7. EROSION AND SEDIMENT BMPS MUST BE CONSTRUCTED, STABILIZED AND FUNCTIONAL BEFORE SITE DISTURBANCE BEGINS WITHIN THE TRIBUTARY AREAS OF THOSE BMPS.
8. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENT BMP CONTROLS MUST BE REMOVED. AREAS DISTURBED DURING THE REMOVAL OF THE BMPS MUST BE STABILIZED IMMEDIATELY.
9. AT LEAST SEVEN (7) DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITY, THE O/R SHALL INVITE ALL CONTRACTORS INVOLVED IN THAT ACTIVITY, THE LANDOWNER, ALL APPROPRIATE MUNICIPAL OFFICIALS, THE EROSION AND SEDIMENT CONTROL PLAN DESIGNER AND THE BUCKS COUNTY CONSERVATION DISTRICT TO A PRE-CONSTRUCTION MEETING. ALSO, AT LEAST THREE (3) DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITY, ALL CONTRACTORS INVOLVED IN THAT ACTIVITY SHALL NOTIFY THE PENNSYLVANIA ONE-CALL SYSTEM INC. AT 1-800-242- 1776 TO DETERMINE ANY UNDERGROUND UTILITIES LOCATIONS.
10. IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITY CEASES, THE O/RP SHALL STABILIZE ANY AREAS DISTURBED BY THE ACTIVITY. DURING NON-GERMINATING PERIODS, MULCH MUST BE APPLIED AT SPECIFIED RATES. DISTURBED AREAS THAT ARE NOT FINISHED GRADE AND WHICH WILL BE RE-DISTURBED WITHIN ONE YEAR MUST BE STABILIZED IN ACCORDANCE WITH TEMPORARY VEGETATIVE STABILIZATION SPECIFICATIONS. DISTURBED AREAS THAT ARE AT A FINISHED GRADE OR WHICH WILL NOT BE RE-DISTURBED WITHIN ONE YEAR MUST BE STABILIZED IN ACCORDANCE WITH PERMANENT VEGETATIVE STABILIZATION SPECIFICATIONS.
11. AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM UNIFORM 70% VEGETATIVE OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING AND OTHER MOVEMENTS.
12. UPON THE INSTALLATION OF TEMPORARY SEDIMENT BASIN RISER(S), A QUALIFIED SITE REPRESENTATIVE SHALL CONDUCT AN IMMEDIATE INSPECTION OF THE RISER(S), WHEREUPON THE BUCKS COUNTY CONSERVATION DISTRICT SHALL BE NOTIFIED IN WRITING THAT THE RISER IS SEALED (WATERTIGHT).
13. AT STREAM CROSSINGS, A 50-FOOT BUFFER SHALL BE MAINTAINED. ON BUFFERS, CLEARINGS, SOD DISTURBANCES AND EXCAVATIONS, EQUIPMENT TRAFFIC SHOULD BE MINIMIZED. ACTIVITY SUCH AS STACKING LOGS, BURNING CLEARED BRUSH, DISCHARGED RAINWATER FROM TRENCHES, WELDING PIPE SECTIONS, REFUELING AND MAINTAINING EQUIPMENT SHOULD BE AVOIDED WITHIN BUFFER ZONES.
14. UNTIL A SITE IS STABILIZED, ALL EROSION AND SEDIMENT BMPS MUST BE MAINTAINED PROPERLY. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION CONTROL BMPS AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEANOUT, REPAIR, REPLACEMENT, RE-GRADING, RESEEDING, RE-MULCHING AND RENETTING MUST BE PERFORMED IMMEDIATELY. IF EROSION AND SEDIMENT CONTROL BMPS FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPS, OR MODIFICATIONS OF THOSE INSTALLED, WILL BE REQUIRED.
15. SEDIMENT REMOVED FROM BMPS SHALL BE DISPOSED OF ON-SITE IN LANDSCAPED AREAS OUTSIDE OF STEEP SLOPES, WETLANDS, FLOODPLAINS OR DRAINAGE SWALES AND IMMEDIATELY STABILIZED OR PLACED IN SOIL STOCKPILES AND STABILIZED.
16. ALL BUILDING MATERIAL AND WASTES MUST BE REMOVED FROM THE SITE AND RECYCLED IN ACCORDANCE WITH DEP'S SOLID WASTE REGULATIONS (25 PA CODE 260.1 ET SEQ., 271.1 ET SEQ., AND 287.1 ET SEQ.) AND/OR ANY ADDITIONAL LOCAL, STATE OR FEDERAL REGULATIONS. NO BUILDING MATERIALS (USED OR UNUSED) OR WASTE MATERIALS SHALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT THE SITE.

CORE STATES GROUP
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Phone (215) 809-2125
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CLIENT

CHASE

811 Know what's below. Call before you dig.

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON DESIGN DRAWINGS, RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. CORE STATES, INC. DOES NOT GUARANTEE THAT LOCATIONS SHOWN ARE EXACT. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF UTILITIES.

REVISIONS

REV	DATE	COMMENT	BY
1	08/24/21	BCCD, BCPC, AND TWP COMMENTS	CML

DOCUMENT
PRELIMINARY/ FINAL LAND DEVELOPMENT PLAN FOR CHASE BANK

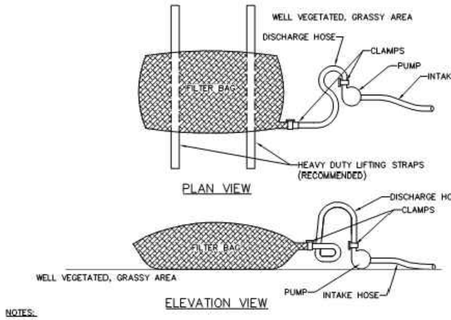
SITE LOCATION
1729 STREET ROAD
BENSALEM, PA
19020

ENGINEER SEAL
COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
FRANCIS GREENE
ENGINEER
No. PE075817
08/26/2021
FRANCIS GREENE, P.E.
PA LICENSE #075817

SHEET TITLE
EROSION & SEDIMENT CONTROL NOTES

JOB #:	JPM-29391
DATE:	5/13/21
SCALE:	N/A
DRAWN BY:	CML
CHECKED BY:	FG

SHEET NO.
C12



NOTES:

LOW VOLUME FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH, DOUBLE STITCHED "J" TYPE SEAMS. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS. HIGH VOLUME FILTER BAGS SHALL BE MADE FROM WOVEN GEOTEXTILES THAT MEET THE FOLLOWING STANDARDS:

PROPERTY	TEST METHOD	MINIMUM STANDARD
AVG. WIDE WIDTH STRENGTH	ASTM D-4884	60 LB/IN
GRAB TENSILE	ASTM D-4632	205 LB
PUNCTURE	ASTM D-4833	110 LB
MULLEN BURST	ASTM D-3786	350 PSI
UV RESISTANCE	ASTM D-4355	70%
AOS % RETAINED	ASTM D-4751	80 SIEVE

A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES SHALL BE PROVIDED. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME 1/2 FULL OF SEDIMENT. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED. BAGS SHALL BE PLACED ON STRAPS TO FACILITATE REMOVAL UNLESS BAGS COME WITH LIFTING STRAPS ALREADY ATTACHED.

BAGS SHALL BE LOCATED IN WELL-VEGETATED (GRASSY) AREA, AND DISCHARGE ONTO STABLE, EROSION RESISTANT AREAS. WHERE THIS IS NOT POSSIBLE, A GEOTEXTILE UNDERLAYMENT AND FLOW PATH SHALL BE PROVIDED. BAGS MAY BE PLACED ON FILTER STONE TO INCREASE DISCHARGE CAPACITY. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5%, FOR SLOPES EXCEEDING 5%, CLEAN ROCK OR OTHER NON-ERODIBLE AND NON-POLLUTING MATERIAL MAY BE PLACED UNDER THE BAG TO REDUCE SLOPE STEEPNESS.

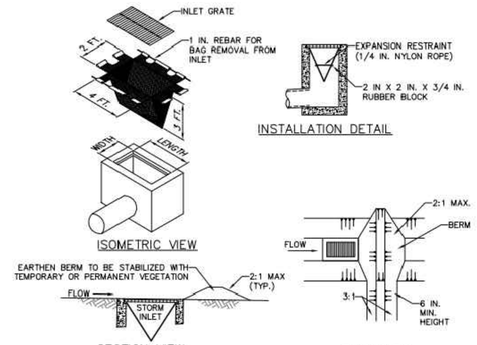
NO DOWNSLOPE SEDIMENT BARRIER IS REQUIRED FOR MOST INSTALLATIONS. COMPOST BERM OR COMPOST FILTER SOCK SHALL BE INSTALLED BELOW BAGS LOCATED IN HQ OR EV WATERSHEDS, WITHIN 50 FEET OF ANY RECEIVING SURFACE WATER OR WHERE GRASSY AREA IS NOT AVAILABLE.

THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED. A PIECE OF PVC PIPE IS RECOMMENDED FOR THIS PURPOSE.

THE PUMPING RATE SHALL BE NO GREATER THAN 750 GPM OR 1/2 THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHALL BE FLOATING AND SCREENED.

FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.

STANDARD CONSTRUCTION DETAIL #3-16
PUMPED WATER FILTER BAG
NOT TO SCALE



NOTES:

MAXIMUM DRAINAGE AREA = 1/2 ACRE.

INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS.

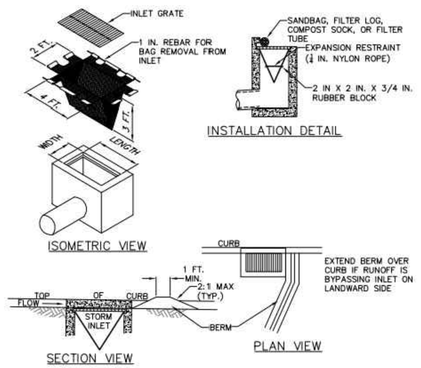
ROLLED EARTHEN BERM IN ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM ON ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. EARTHEN BERM IN CHANNEL SHALL BE MAINTAINED UNTIL PERMANENT STABILIZATION IS COMPLETED OR REMAIN PERMANENTLY.

AT A MINIMUM, THE FABRIC SHALL HAVE A MINIMUM GRAB TENSILE STRENGTH OF 120 LBS., A MINIMUM BURST STRENGTH OF 200 PSI, AND A MINIMUM TRAPEZOIDAL TEAR STRENGTH OF 50 LBS. FILTER BAGS SHALL BE CAPABLE OF TRAPPING ALL PARTICLES NOT PASSING A NO. 40 SIEVE.

INLET FILTER BAGS SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. BAGS SHALL BE EMPTIED AND RINSED OR REPLACED WHEN HALF FULL OR WHEN FLOW CAPACITY HAS BEEN REDUCED SO AS TO CAUSE FLOODING OR BYPASSING OF THE INLET. DAMAGED OR CLOGGED BAGS SHALL BE REPLACED. A SUPPLY SHALL BE MAINTAINED ON SITE FOR REPLACEMENT OF BAGS. ALL NEEDED REPAIRS SHALL BE INITIATED IMMEDIATELY AFTER THE INSPECTION. DISPOSE ACCUMULATED SEDIMENT AS WELL AS ALL USED BAGS ACCORDING TO THE PLAN NOTES.

DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.

STANDARD CONSTRUCTION DETAIL #4-16
FILTER BAG INLET PROTECTION - TYPE M INLET
NOT TO SCALE



NOTES:

MAXIMUM DRAINAGE AREA = 1/2 ACRE.

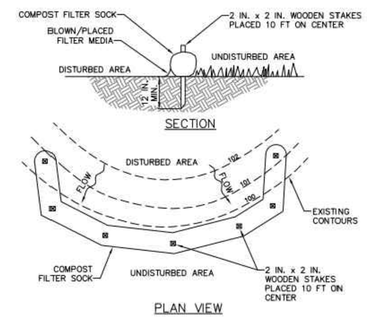
INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS.

ROLLED EARTHEN BERM SHALL BE MAINTAINED UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. SIX INCH MINIMUM HEIGHT ASPHALT BERM SHALL BE MAINTAINED UNTIL ROADWAY SURFACE RECEIVES FINAL COAT.
AT A MINIMUM, THE FABRIC SHALL HAVE A MINIMUM GRAB TENSILE STRENGTH OF 120 LBS, A MINIMUM BURST STRENGTH OF 200 PSI, AND A MINIMUM TRAPEZOIDAL TEAR STRENGTH OF 50 LBS. FILTER BAGS SHALL BE CAPABLE OF TRAPPING ALL PARTICLES NOT PASSING A NO. 40 SIEVE.

INLET FILTER BAGS SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. BAGS SHALL BE EMPTIED AND RINSED OR REPLACED WHEN HALF FULL OR WHEN FLOW CAPACITY HAS BEEN REDUCED SO AS TO CAUSE FLOODING OR BYPASSING OF THE INLET. DAMAGED OR CLOGGED BAGS SHALL BE REPLACED. A SUPPLY SHALL BE MAINTAINED ON SITE FOR REPLACEMENT OF BAGS. ALL NEEDED REPAIRS SHALL BE INITIATED IMMEDIATELY AFTER THE INSPECTION. DISPOSE OF ACCUMULATED SEDIMENT AS WELL AS ALL USED BAGS ACCORDING TO THE PLAN NOTES.

DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.

STANDARD CONSTRUCTION DETAIL #4-15
FILTER BAG INLET PROTECTION - TYPE C INLET
NOT TO SCALE



NOTES:

SOCK FABRIC SHALL MEET STANDARDS OF TABLE 4.1 OF THE PA DEP EROSION CONTROL MANUAL. COMPOST SHALL MEET THE STANDARDS OF TABLE 4.2 OF THE PA DEP EROSION CONTROL MANUAL.

COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE BARRIER SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT. MAXIMUM SLOPE LENGTH ABOVE ANY BARRIER SHALL NOT EXCEED THAT SPECIFIED FOR THE SIZE OF THE SOCK AND THE SLOPE OF ITS TRIBUTARY AREA.

TRAFFIC SHALL NOT BE PERMITTED TO CROSS COMPOST FILTER SOCKS.

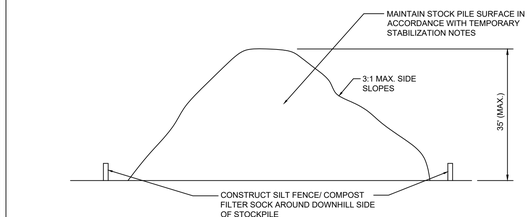
ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 THE ABOVE GROUND HEIGHT OF THE BARRIER AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.

COMPOST FILTER SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.

BIODEGRADABLE COMPOST FILTER SOCKS SHALL BE REPLACED AFTER 6 MONTHS; PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCK, STAKES SHALL BE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED. IN THE LATTER CASE, THE MESH SHALL BE CUT OPEN AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.

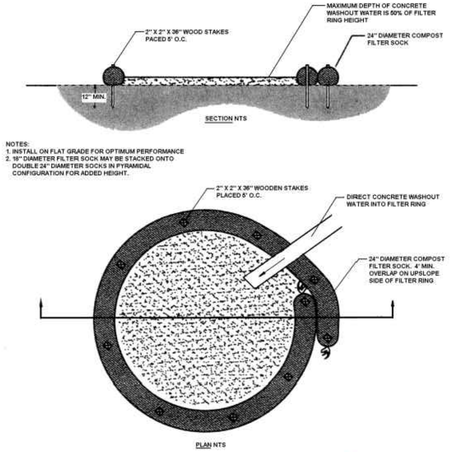
STANDARD CONSTRUCTION DETAIL #4-1
COMPOST FILTER SOCK
NOT TO SCALE



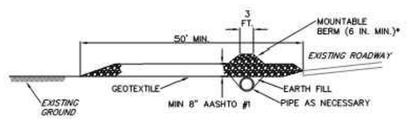
TEMPORARY STOCKPILE DETAIL
N.T.S.

Filtrexx

FIGURE 3.18
Typical Compost Sock Washout Installation



A suitable impervious geomembrane shall be placed at the location of the washout prior to installing the socks.
Adapted from Filtrexx



* MOUNTABLE BERM USED TO PROVIDE PROPER COVER FOR PIPE.

NOTES:

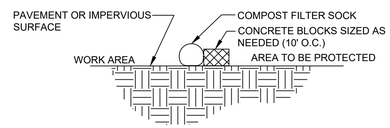
REMOVE TOPSOIL PRIOR TO INSTALLATION OF ROCK CONSTRUCTION ENTRANCE. EXTEND ROCK OVER FULL WIDTH OF ENTRANCE.

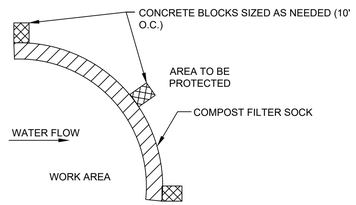
RUNOFF SHALL BE DIVERTED FROM ROADWAY TO A SUITABLE SEDIMENT REMOVAL BMP PRIOR TO ENTERING ROCK CONSTRUCTION ENTRANCE.

MOUNTABLE BERM SHALL BE INSTALLED WHEREVER OPTIONAL CULVERT PIPE IS USED AND PROPER PIPE COVER AS SPECIFIED BY MANUFACTURER IS NOT OTHERWISE PROVIDED. PIPE SHALL BE SIZED APPROPRIATELY FOR SIZE OF DITCH BEING CROSSED.

MAINTENANCE: ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. A STOCKPILE SHALL BE MAINTAINED ON SITE FOR THIS PURPOSE. ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE IMMEDIATELY. IF EXCESSIVE AMOUNTS OF SEDIMENT ARE BEING DEPOSITED ON ROADWAY, EXTEND LENGTH OF ROCK CONSTRUCTION ENTRANCE BY 50 FOOT INCREMENTS UNTIL CONDITION IS ALLEVIATED OR INSTALL WASH RACK. WASHING THE ROADWAY OR SWEEPING THE DEPOSITS INTO ROADWAY DITCHES, SEWERS, CULVERTS, OR OTHER DRAINAGE COURSES IS NOT ACCEPTABLE.

STANDARD CONSTRUCTION DETAIL #3-1
ROCK CONSTRUCTION ENTRANCE
NOT TO SCALE





NOTES

1. ALL SOCK FABRIC TO MEET STANDARDS OF TABLE 4.1 OF THE PA DEP EROSION CONTROL MANUAL.
2. ALL COMPOST MATERIAL SHALL MEET THE STANDARDS OF TABLE 4.2 OF THE PA DEP EROSION CONTROL MANUAL.
3. FILTER MEDIA TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

N.T.S.

COMPOST FILTER SOCK ON PAVEMENT (CS)

ALERT TO CONTRACTOR:

PRIOR TO THE CONSTRUCTION OF OR CONNECTION TO ANY STORM DRAIN, SANITARY SEWER, WATER MAIN OR ANY OF THE DRY UTILITIES, THE CONTRACTOR SHALL EXCAVATE, VERIFY AND CALCULATE ALL POINTS OF CONNECTION AND ALL UTILITY CROSSINGS AND INFORM ENGINEER AND THE OWNER OF ANY CONFLICT OR REQUIRED DEVIATIONS FROM THE PLAN. NOTIFICATION SHALL BE MADE A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION. ENGINEER AND OWNER SHALL BE HELD HARMLESS IN THE EVENT THAT THE CONTRACTOR FAILS TO MAKE SUCH NOTIFICATION.

CORE STATES GROUP
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MSwaggard@core-states.com

CLIENT
CHASE

811 Know what's below. Call before you dig.
THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON DESIGN DRAWINGS, RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. CORE STATES, INC. DOES NOT GUARANTEE THAT LOCATIONS SHOWN ARE EXACT. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF UTILITIES.

REVISIONS

REV	DATE	COMMENT	BY
1	08/24/21	BCCD, BCPC, AND TWP COMMENTS	CML

DOCUMENT
PRELIMINARY/ FINAL LAND DEVELOPMENT PLAN FOR CHASE BANK

SITE LOCATION
1729 STREET ROAD
BENSALEM, PA
19020

ENGINEER SEAL
COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
FRANCIS GREENE
ENGINEER
No. PE079817
COMMONWEALTH OF PENNSYLVANIA
08/26/2021
FRANCIS GREENE, P.E.
PA LICENSE #075817

SHEET TITLE
EROSION & SEDIMENT CONTROL DETAILS

JOB #:	JPM-29391
DATE:	5/13/21
SCALE:	N/A
DRAWN BY:	CML
CHECKED BY:	FG

SHEET NO.
C13
SHEET 14 OF 23

SOILS MAP
1" = 150'

CHAPTER 93 RECEIVING WATERSHED AND STREAM CLASSIFICATION:

- DELAWARE RIVER BASIN
- NESHAMINY CREEK WATERSHED
- BASIN, MEDIA WATER INTAKE TO NESHAMINY CREEK, **WWF, MF**

PCSM KEYNOTES

A. PROPOSED 12-INCH HDPE PIPE
B. PROPOSED 6-INCH PVC PIPE
C. PROPOSED PENNDOT TYPE C INLET. REFER TO POST CONSTRUCTION STORMWATER MANAGEMENT DETAILS SHEET.
D. PROPOSED SUBSURFACE DETENTION / INFILTRATION BASIN (BMP #1).
E. PROPOSED 12" YARD DRAIN. REFER TO POST CONSTRUCTION STORMWATER MANAGEMENT DETAILS SHEET.
F. PROPOSED PRECAST MANHOLE. REFER TO POST CONSTRUCTION STORMWATER MANAGEMENT DETAILS SHEET.
G. PROPOSED 15-INCH HDPE OUTFALL PIPE TO EXISTING INLET.
H. PROPOSED CLEANOUT. REFER TO CONSTRUCTION DETAILS SHEET.

SOIL USE LIMITATIONS AND THEIR RESOLUTIONS PROVIDED:

CONTRACTOR SHALL CONSULT WITH GEOTECHNICAL ENGINEER TO DETERMINE SOIL LIMITATIONS AND RESOLUTIONS SPECIFIC TO THIS PROJECT.

1. SOIL TYPES POORLY SUITED AS SOURCES OF TOPSOIL RESTRICT OR PLACE CONDITIONS ON PLANNING VEGETATIVE STABILIZATION. ACIDIC, LOW FERTILITY, EXCESSIVE DRYNESS AND EXCESSIVE WETNESS LIMIT PLANT GROWTH.
   RESOLUTIONS: IDENTIFYING AND RESOLVING CHARACTERISITICS, THAT RENDER THE SOIL TYPES POORLY, SUITED AS TOPSOIL.
2. ACIDIC SOIL TYPES EXHIBITING PH REACTION VALUES LOWER THAN ABOUT 5.5, LIMIT VEGETATIVE STABILIZATION. SOIL TESTS MIGHT BE NECESSARY TO DETERMINE SITE SPECIFIC PH REACTION.
   RESOLUTIONS: APPLYING LIME CONSISTENT WITH RATES DETERMINED BY SOIL TESTING; SELECTING VEGETATIVE SPECIES TOLERANT TO ACIDIC SOIL CONDITIONS; AND IMPLEMENTING COMBINATIONS OF THESE AND/OR OTHER METHODS. SPECIFIC TOLERANCE INFORMATION IS PROVIDED IN TABLE 1 OF THE EROSION CONTROL & CONSERVATION PLANTINGS ON NONCROPLAND PUBLISHED BY PENN STATE.
3. LOW FERTILITY SOIL TYPES LACKING IN SUFFICIENT AMOUNTS OF ESSENTIAL PLANT NUTRIENTS SUCH AS: NITRPGEN, PHOSPHOROUS, POTASSIUM, SULFER, MAGNESIUM, CALCIUM, IRON, MANGANESE, BORON, CHLORINE, ZINC, COPPER AND MOLYBDENUM, LIMIT VEGETATION STABILIZATION. SOIL TESTS MIGHT BE NECESSARY TO DETERMINE SITE SPECIFIC SOIL FERTILITY.
   RESOLUTIONS: INCORPORATING SOIL NUTRIENTS CONSISTENT WITH RATES DETERMINED BY SOIL TESTING; SELECTIVE VEGETATIVE SPECIES TOLERANT TO LOW FERTILITY SOIL CONDITIONS, AND IMPLEMENTING COMBINATIONS OF THESE AND/OR OTHER METHODS. SPECIFIC TOLERANCE INFORMATION IS PROVIDED IN TABLE 1 OF THE EROSION CONTROL & CONSERVATION PLANTINGS ON NONCROPLAND PUBLISHED BY PENN STATE.
4. ERODIBLE SOIL TYPES EXHIBITING K VALUES GREATER THAN 0.36 OR PLASTICITY INDEX VALUES LOWER THAN 10, LIMIT VEGETATIVE STABILIZATION OF CHANNELS.
   RESOLUTIONS: TEMPORARY CHANNEL LINING, PROVIDING PERMANENT CHANNEL LINING, DECREASING CHANNEL GRADE, INCREASING CHANNEL WIDTH, SELECTING VEGETATIVE WITH GREATER RETARDANCE, SELECTING PERMANENT LININGS OTHER THAN GRASSES, AND IMPLEMENTING COMBINATION OF THESE AND/OR METHODS. VEGETATIVE RETARDANCE INFORMATION IS PROVIDED IN TABLES 6 AND 7 OF THE EROSION AND SEDIMENT POLLUTION CONTROL MANUAL PUBLISHED BY PADEP.
5. WET SOIL TYPES HAVE EXCESSIVE ROOT ZONE AND SOIL MOISTURES. SOME SOIL SURVEYS INDICATE WETNESS, HIGH WATER TABLE AND FLOODING. THIS INDICATOR IS AFFECTED BY SOIL DISTURBANCE.
   RESOLUTIONS: SELECTING VEGETATIVE SPECIES TOLERANT TO WET CONDITIONS, TILING VEGETATIVE AREAS, AND IMPLEMENTING COMBINATIONS OF THESE AND/OR OTHER METHODS. SPECIFIC TOLERANCE INFORMATION IS PROVIDED IN TABLE 1 OF THE EROSION CONTROL & CONSERVATION PLANTINGS ON NONCROPLAND PUBLISHED BY THE PENN STATE.
6. DRY SOIL TYPES LACK SUFFICIENT ROOT ZONE SOIL MOISTURES. THIS INDICATOR IS AFFECTED BY SOIL DISTURBANCE.
   RESOLUTIONS: SELECTING VEGETATIVE SPECIES TOLERANT TO DRY CONDITIONS, IRRIGATING VEGETATED AREAS AND IMPLEMENTING COMBINATION OF THESE AND/OR OTHER METHODS. SPECIFIC TOLERANCE INFORMATION IS PROVIDED IN TABLE 1 OF THE EROSION CONTROL & CONSERVATION PLANTINGS ON NONCROPLAND PUBLISHED BY PENN STATE.
7. SOIL TYPES SUSCEPTIBLE TO SINKHOLE AND SOLUTION CHANNEL/CHAMBER FORMATION POSE LIMITATIONS ON LOCATING RESERVOIR AREAS OF SEDIMENT BASINS, SEDIMENT TRAPS, STORMWATER RETENTION BASINS, AND STORMWATER DETENTION BASINS.
   RESOLUTIONS: LOCATING THOSE FACILITIES ON OTHER SOIL TYPES, LINING RESERVOIR AREAS WITH IMPERMEABLE LINNINGS, LIMITING STANDING WATER DEPTHS, LIMITING RETENTION TIMES AND IMPLEMENTING COMBINATIONS OF THESE AND/OR OTHER METHODS.
8. SOIL TYPES THAT EXHIBIT INSTABILITY IN POND EMBANKMENTS OR SUSCEPTIBILITY TO PIPING AND SEEPING POSE LIMITATIONS ON PLANNING EMBANKMENTS OF SEDIMENT BASINS, SEDIMENT TRAPS, STORMWATER RETENTION BASINS AND STORMWATER DETENTION BASINS.
   RESOLUTIONS: IMPORTING OTHER SOIL FOR EMBANKMENT OF THOSE FACILITIES, LOCATING THOSE FACILITIES ON OTHER SOIL TYPES, LIMITING EMBANKMENT SLOPE STEEPNESS AND IMPLEMENTING COMBINATIONS OF THESE AND/OR OTHER METHODS.
9. SOIL THAT ARE DIFFICULT TO COMPACT, UNSUITABLE FOR WINTER GRADING, OR SUSCEPTIBLE TO FROST ACTION POSE LIMITATIONS ON PLANNING EMBANKMENTS OF SEDIMENT BASINS, SEDIMENT TRAPS, STORMWATER RETENTION BASINS AND STORMWATER DETENTION BASINS.
   RESOLUTIONS: IMPORTING OTHER SOIL FOR EMBANKMENT OF THOSE FACILITIES, LOCATING THOSE FACILITIES ON OTHER SOIL TYPES, NOT CONSTRUCTING EMBANKMENTS DURING PERIODS PRONE TO FROST AND IMPLEMENTING COMBINATIONS OF THESE AND/OR OTHER METHODS
10. SUSCEPTIBILITY FOR THE DEVELOPMENT OF SINKHOLE WITHIN IDENTIFIED SOILS.
    RESOLUTIONS: IN THE EVENT THAT PRESENCE OF A SINKHOLE IS DETECTED DURING THE COURSE OF WORK, CORRECTIVE MEASURES SHALL BE PERFORMED UNDER THE OBSERVATION AND GUIDANCE OF THE OWNER'S GEOTECHNICAL CONSULTANT.
    EXCAVATE THE LOOSE, WET SOILS SURROUNDING THE SINKHOLE TO EXPOSE THE SINKHOLE "THROAT" (THE OPENING IN THE ROCK) AND THE ADJACENT STABLE SOILS/ROCK WHERE POSSIBLE, THE EXCAVATION SHALL EXTEND A MINIMUM OF TWO FEET (2') BEYOND THE STABLE SOILS OR TO THE ROCK SURFACE, WHICHEVER IS ENCOUNTERED FIRST.
    FILL THE EXPOSED SINKHOLE "THROAT" WITH LEAN CONCRETE TO BLOCK THE MIGRATION OF THE UPPER LAYERS OF SOIL THROUGH THE ROCK OPENING.
    AFTER CONCRETE HAS CURED OVERNIGHT BACKFILL THE REMAINDER OF THE EXCAVATION WITH CLAYEY SOILS TO PROVIDE A LOW PERMEABILITY BARRIER. THE CLAYEY SOILS SHALL BE PLACED IN 6" LIFTS AND EACH LIFT COMPACTED BY REPEATED PASSES OF THE COMPACTION EQUIPMENT UNTIL STABLE. CARE SHALL BE TAKEN TO ASSURE THAT THE SOIL AT THE EDGES OF THE EXCAVATION ARE WELL COMPACTED.

PCSM NOTES:

1. THE STORMWATER FACILITIES SHOWN ON THESE PLANS ARE A BASIC AND PERPETUAL PART OF THE STORMWATER MANAGEMENT SYSTEM OF THE PROPOSED SITE LOCATED IN BENSALEM TOWNSHIP, BUCKS COUNTY, COMMONWEALTH OF PENNSYLVANIA, AND SUCH ARE TO BE PROTECTED AND PRESERVED IN ACCORDANCE WITH THE APPROVED FINAL PLANS BY THE OWNERS, THEIR SUCCESSORS AND ASSIGNS OF THESE LANDS. BENSALEM TOWNSHIP AND/OR ITS AGENTS RESERVE THE RIGHT AND PRIVILEGE TO ENTER UPON THESE LANDS FROM TIME TO TIME FOR THE INSPECTION OF THESE FACILITIES IN ORDER TO DETERMINE THAT PROPER OPERATION AND MAINTENANCE AND THAT THE STRUCTURAL AND DESIGN INTEGRITY IS BEING MAINTAINED BY THE OWNER.
2. AN INFILTRATION RATE OF 0.5 IN/HR WITH A FACTOR OF SAFETY OF 2 WAS USED FOR BASIN CALCULATIONS. PERCOLATION TESTS ARE TO BE CONDUCTED ON-SITE PRIOR TO CONSTRUCTION. IF THAT ASSUMED INFILTRATION RATE IS NOT ACHIEVED, THE CONTRACTOR IS TO CONTACT CORE STATES GROUP AND THE TOWNSHIP ENGINEER IMMEDIATELY.

ALERT TO CONTRACTOR:

PRIOR TO THE CONSTRUCTION OF OR CONNECTION TO ANY STORM DRAIN, SANITARY SEWER, WATER MAIN OR ANY OF THE DRY UTILITIES, THE CONTRACTOR SHALL EXCAVATE, VERIFY AND CALCULATE ALL POINTS OF CONNECTION AND ALL UTILITY CROSSINGS AND INFORM ENGINEER AND THE OWNER OF ANY CONFLICT OR REQUIRED DEVIATIONS FROM THE PLAN. NOTIFICATION SHALL BE MADE A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION. ENGINEER AND OWNER SHALL BE HELD HARMLESS IN THE EVENT THAT THE CONTRACTOR FAILS TO MAKE SUCH NOTIFICATION.

SOIL SUITABILITY AND CHARACTERISTICS

DESIGNATION	SOIL	HYDROLOGIC SOIL GROUP	DESCRIPTION	DEPTH FROM SURFACE OF TYPICAL PROFILE	DEPTH TO SEASONAL HIGH WATER TABLE	DEPTH TO BEDROCK	PERMEABILITY	SHRINK SWELL POTENTIAL	HYDRIC SOIL	SUSCEPTIBILITY TO FROST HEAVING	FOR USE AS ROAD FILL	FOR USE AS TOPSOIL	FOR USE AS GRAVEL	FOR USE AS SAND
UfuB	URBAN LAND, 0 TO 8 PERCENT SLOPES	-	URBAN LAND: 90 PERCENT MINOR COMPONENTS: 10 PERCENT	-	GREATER THAN 78 INCHES	-	NOT RATED	NOT RATED	RATING: 0	NONE	NOT RATED	NOT RATED	NOT RATED	NOT RATED

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CLIENT
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Know what's below. Call before you dig.
THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON DESIGN PLANS AND/OR FIELD SURVEY INFORMATION AND THEREFORE ONLY APPROXIMATE MEASUREMENTS TAKEN IN THE FIELD. CORE STATES, INC. DOES NOT GUARANTEE THAT LOCATIONS SHOWN ARE EXACT. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANIES FORTY-EIGHT HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF UTILITIES.

REVISIONS

REV	DATE	COMMENT	BY
1	08/24/21	BCCD, BCPC, AND TWP COMMENTS	CML

DOCUMENT
PRELIMINARY/ FINAL LAND DEVELOPMENT PLAN FOR CHASE BANK

SITE LOCATION
1729 STREET ROAD
BENSALEM, PA
19020

ENGINEER SEAL
COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
FRANCIS GREENE
ENGINEER
No. PE075817
PENNSYLVANIA
08/26/2021
FRANCIS GREENE, P.E.
PA LICENSE #075817

SHEET TITLE
POST CONSTRUCTION STORMWATER MANAGEMENT PLAN

JOB #:	JPM-29391
DATE:	5/13/21
SCALE:	1" = 20'
DRAWN BY:	CML
CHECKED BY:	FG

SHEET NO.
C14
SHEET 15 OF 23

P.C.S.W.M. B.M.P. INSPECTION AND MAINTENANCE NOTES

1. UNTIL THE SITE IS STABILIZED AND DURING THE CONSTRUCTION ACTIVITIES, ALL BMPS MUST BE MAINTAINED PROPERLY BY CONTRACTOR. ALL PERMANENT MAINTENANCE PROCEDURES SHALL BE PERFORMED BY THE DESIGNATED HOME OWNERS ASSOCIATION. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL BMPS AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN-OUT, REPAIR, REPLACEMENT, REGRADING, RESEEDING, REMULCHING AND RENETTING MUST BE PERFORMED IMMEDIATELY AND IN ACCORDANCE WITH THESE PROCEDUIRES, PLANS, AND DETAILS. ANY AREAS DISTURBED DURING MAINTENANCE MUST BE STABILIZED IMMEDIATELY IN ACCORDANCE WITH THE GENERAL CONSERVATION NOTES AND SPECIFICATIONS. ALL SITE INSPECTIONS MUST BE DOCUMENTED IN AN INSPECTION LOG KEPT FOR THIS PURPOSE INDICATING THE COMPLIANCE ACTIONS AND THE DATE, TIME AND NAME OF THE PERSON CONDUCTING THE INSPECTION. THE INSPECTION LOG MUST BE KEPT ON SITE AT ALL TIMES AND MADE AVAILABLE TO THE DISTRICT UPON REQUEST.

2. STORMWATER MANAGEMENT BASINS - BASINS SHALL BE INSPECTED FOR LITTER AND SEDIMENT ACCUMULATION ON AN ANNUAL BASIS OR AS DIRECTED BY THE TOWNSHIP ENGINEER. NEEDED MAINTENANCE SHALL BE INITIATED IMMEDIATELY AFTER THE INSPECTION. THE LITTER AND SEDIMENT MUST BE REMOVED TO RESTORE DESIGN CAPACITIES. THE LITTER AND SEDIMENT SHALL BE DISPOSED OF IN AN APPROVED MANNER AND IN ACCORDANCE WITH APPLICABLE STATE REGULATIONS. ANY AREAS DISTURBED DURING MAINTENANCE MUST BE STABILIZED IMMEDIATELY IN ACCORDANCE WITH THE GENERAL CONSERVATION NOTES AND SPECIFICATIONS.

3. WATER QUALITY INLETS SHALL BE INSPECTED CLOGGING OR SEDIMENT ACCUMULATION ON AN ANNUAL BASIS, AFTER A SIGNIFICANT RUNOFF EVENT, OR AS DIRECTED BY THE BENSALEM TOWNSHIP ENGINEER. NEEDED MAINTENANCE SHOULD BE INITIATED IMMEDIATELY AFTER THE INSPECTION. AREAS OF CLOGGING OR SEDIMENTATION SHALL BE BE CLEANED / REMOVED TO RESTORE DESIGN CAPACITIES. ANY REMOVED SEDIMENT SHALL BE DISPOSED OF IN AN APPROVED MANNER AND IN ACCORDANCE WITH APPLICABLE STATE REGULATIONS.

4. STORM DRAINAGE SYSTEMS - THE STORM WATER MANAGEMENT FACILITIES INCLUDING THE INLETS, STORM WATER PIPING, SWALES, AND BASINS ON THIS SITE SHALL BE MAINTAINED IN PROPER WORKING ORDER IN ACCORDANCE WITH THESE PLANS AND PER THE RECOMMENDATION OF THE STRUCTURE(S) MANUFACTURER(S). MAINTENANCE OF THESE STORM WATER MANAGEMENT FACILITIES, AS NOTED BELOW, SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER(S) UPON WHOSE PROPERTY THE FACILITIES ARE LOCATED.

5. ALL ON-SITE INLETS, MANHOLES, AND STORM WATER PIPING SHALL BE CLEARED OF DEBRIS EVERY THREE (3) MONTHS OR WHEN ACCUMULATION HINDERS OPERATION OF THE FACILITY.

6. ALL SEDIMENT/DEBRIS/OIL REMOVED FROM THE STORM WATER MANAGEMENT SYSTEM SHALL BE DISPOSED PER LOCAL, STATE, AND FEDERAL STANDARDS.

7. SHOULD ON-SITE EROSION OCCUR FROM THE LANDSCAPED AREAS, SOURCE OF EROSION SHALL BE IMMEDIATELY STABILIZED AND THE INLETS, MANHOLES, AND STORM WATER PIPING SHALL BE CHECKED FOR ACCUMULATION AND CLEARED IF ACCUMULATION OF SEDIMENT EXISTS.

GENERAL SEQUENCING NOTES FOR P.C.S.W.M. B.M.P.s

1.) A SITE INSPECTION AND APPROVAL BY THE BENSALEM TOWNSHIP ENGINEER IS REQUIRED PRIOR TO THE REMOVAL OR CONVERSION OF SEDIMENT TRAPS.

2.) CORE STATES GROUP SHALL BE NOTIFIED OF PRE-CONSTRUCTION MEETING DATE AND BMP CONSTRUCTION SCHEDULE.

3.) THE CONTRACTOR SHALL TAKE ALL STEPS NECESSARY TO LIMIT THE COMPACTION IN THE PROPOSED B.M.P. BOTTOMS.

4.) REFER TO THE BMP CONSTRUCTION DETAILS FOR THE CONSTRUCTION OF ALL PROPOSED STORMWATER MANAGEMENT WATER QUALITY BMP'S.

5.) REFER TO THE PCSWM PLAN AND DETAILS FOR SPECIFIC BMP CONSTRUCTION GUIDELINES.

6.) AS-BUILT PLANS OF THE STORMWATER BMPs FOR EACH PROJECT PHASE SHALL BE PROVIDED WITHIN SIX MONTHS FOLLOWING THE COMPLETION OF EACH PHASE. THE AS-BUILT PLANS SHALL BE SIGNED AND SEALED BY A PA REGISTERED PROFESSIONAL ENGINEER.

8.) A NOTICE OF TERMINATION (NOT) WILL BE REQUIRED TO BE SUBMITTED FOLLOWING APPROVAL OF THE FINAL AS-BUILT PLANS. PRIOR TO ACCEPTING THE NOT, THE TOWNSHIP STAFF WILL PERFORM A FINAL INSPECTION TO ENSURE SITE STABILIZATION AND VERIFY ADEQUATE INSTALLATION AND FUNCTION OF STORMWATER BMPs.

CRITICAL STAGES

LISTED BELOW ARE THE CRITICAL STAGES OF CONSTRUCTION. AN IMMEDIATE INSPECTION SHALL BE CONDUCTED BY A QUALIFIED REPRESENTATIVE, WHERE UPON THE PLYMOUTH TOWNSHIP ENGINEER SHALL BE NOTIFIED IN WRITING.

- CONSTRUCTION OF SUBSURFACE INFILTRATION / DETENTION BASIN
- INSTALLATION OF STORM SEWER/STRUCTURES & NYLOPLAST ENVIROHOOD
- INSTALLATION OF OUTLET CONTROL STRUCTURE.
- INSTALLATION OF NATIVE AND ADAPTIVE SPECIES FOR LANDSCAPE RESTORATION BMP

SUBSURFACE INFILTRATION / SLOW RELEASE DETENTION BASIN SYSTEM INSPECTION AND MAINTENANCE NOTES

SUBSURFACE INFILTRATION / SLOW RELEASE DETENTION BASIN SYSTEM - SYSTEM SHALL BE INSPECTED FOR SEDIMENT ACCUMULATION ON AN ANNUAL BASIS, AFTER A SIGNIFICANT RUNOFF EVENT OR AS DIRECTED BY THE MEDIA BOROUGH ENGINEER. NEEDED MAINTENANCE SHOULD BE INITIATED IMMEDIATELY AFTER THE INSPECTION. AREAS OF SEDIMENT ACCUMULATION MUST BE REMOVED TO RESTORE DESIGN CAPACITIES. ANY REMOVED SEDIMENT SHALL BE DISPOSED OF IN AN APPROVED MANNER AND IN ACCORDANCE WITH APPLICABLE STATE REGULATIONS. ANY AREAS DISTURBED DURING MAINTENANCE MUST BE STABILIZED IMMEDIATELY IN ACCORDANCE WITH THE GENERAL CONSERVATION NOTES AND SPECIFICATIONS.

P.C.S.W.M. SUPPLEMENTAL NOTES

GENERAL PCSM PLANNING AND DESIGN §102.8(B)

1. THE FOLLOWING MEASURES WERE TAKEN TO PRESERVE THE INTEGRITY OF STREAM CHANNELS AND TO MAINTAIN AND PROTECT THE PHYSICAL, BIOLOGICAL, AND CHEMICAL QUALITIES OF THE RECEIVING STREAM:
   - DIRECT RUNOFF FROM IMPERVIOUS SURFACES INCLUDING ROADWAYS TO BMPS.
   - USE NATIVE SPECIES, WHICH REQUIRE LESS FERTILIZATION AND CHEMICAL APPLICATION THAN NON-NATIVE SPECIES.
   - MAINTAIN GENERALLY THE SAME DRAINAGE PATTERNS AS IN THE EXISTING CONDITION
   - PERFORM SOIL AMENDMENTS, WHICH RESTORE SOIL POROSITY THROUGH TILLING AND COMPOSTING TO IMPROVE THE SOIL'S CAPACITY FOR INFILTRATION AND POLLUTANT REMOVAL.

2. THE FOLLOWING MEASURES WERE TAKEN TO PREVENT AN INCREASE IN THE RATE OF STORM WATER RUNOFF:
   - UTILIZE SUBSURFACE DETENTION AND INFILTRATION TO HELP REDUCE RUNOFF RATES
   - MINIMIZE IMPERVIOUS AREAS WHERE PRACTICAL.
   - MAINTAIN GENERALLY THE SAME DRAINAGE PATTERNS AS IN THE EXISTING CONDITION

3. THE FOLLOWING MEASURES WERE TAKEN TO MINIMIZE ANY INCREASE IN STORM WATER RUNOFF VOLUME:
   - UTILIZE SUBSURFACE INFILTRATION / SLOW RELEASE DETENTION BASIN TO HELP REDUCE RUNOFF VOLUME.
   - PROVIDE LANDSCAPE RESTORATION TO HELP REDUCE RUNOFF VOLUME.
   - MINIMIZE IMPERVIOUS AREAS WHERE PRACTICAL.
   - MAINTAIN GENERALLY THE SAME DRAINAGE PATTERNS AS IN THE EXISTING CONDITION
   - PROVIDE AMENDED SOILS THROUGHOUT THE SITE TO HELP REDUCE RUNOFF VOLUME.

4. THE FOLLOWING MEASURES WERE TAKEN TO MINIMIZE IMPERVIOUS AREAS:
   - INCREASE IN PERVIOUS AREA WITHIN LIMIT OF DISTURBANCE BY APPROXIMATELY 16%
   - ONLY PROVIDE SIDEWALK WHERE REQUIRED FOR PEDESTRIAN ACCESS.
   - MAXIMIZE THE NUMBER OF LANDSCAPED ISLAND WITHIN THE SITE.

5. THE FOLLOWING MEASURES ARE TAKEN TO MAXIMIZE PROTECTION OF EXISTING DRAINAGE FEATURES AND VEGETATION:
   - ACCESS THE SITE THRU DESIGNATED CONSTRUCTION ENTRANCE.
   - PROTECT WOODLANDS/EXISTING TREES WITH TREE PROTECTION FENCING.
   - MAINTAIN EXISTING FLOW PATH TO POI#1

6. THE FOLLOWING MEASURES WERE TAKEN TO MINIMIZE LAND CLEARING AND GRADING:
   - ADJUST ROAD SLOPE AND SITE GRADING SO THERE ARE NO DRASTIC PROPOSED CUTS OR FILLS TO EXISTING GRADES.
   - MAINTAIN EXISTING GRADES WITHIN THE SITE WHERE PLAUSIBLE.

7. THE FOLLOWING MEASURES ARE TAKEN TO MINIMIZE SOIL COMPACTION:
   - ACCESS THE SITE THRU DESIGNATED CONSTRUCTION ENTRANCE.
   - AS SPECIFIED IN THE CONSTRUCTION SEQUENCE, USE TREADED MACHINERY WHERE PRACTICAL DURING EARTHMOVING OPERATIONS.
   - GRADE SITE TO MINIMIZE EXTENT OF CUTS/FILLS.

8. THE FOLLOWING MEASURES WERE TAKEN TO UTILIZE OTHER STRUCTURAL OR NONSTRUCTURAL BMPS THAT PREVENT OR MINIMIZE CHANGES IN STORM WATER RUNOFF:
   - PROVIDE LANDSCAPE RESTORATION TO HELP REDUCE RUNOFF VOLUME.
   - MINIMIZE IMPERVIOUS AREAS WHERE PRACTICAL.

TYPES, DEPTH, SLOPE, LOCATIONS AND LIMITATION OF THE SOILS AND GEOLOGICAL FORMATIONS §102.8(F)(1)

1.) EXISTING SITE COVERAGE INCLUDES BUT IS NOT LIMITED TO ONE-STORY BUILDING, ASPHALT DRIVES, SIDEWALK, PARKING AREAS, AND AREAS OF SPARSE VEGETATION.

RECEIVING SURFACE WATERS §102.8(F)(5)

1.) THERE ARE NO HQ OR EV WATERSHEDS WITHIN THE SITE.
2.) THERE ARE NO EXISTING WETLANDS ON SITE.
3.) EXISTING & DESIGNATED USES FOR THE NESHAMINY CREEK ARE WWF & MF.

RECYCLING OR DISPOSAL OF MATERIALS §102.8(F)(11)

1.) ANTICIPATED CONSTRUCTION WASTES INCLUDE BUT ARE NOT LIMITED TO: ONE-STORY BUILDINGS, SIDEWALK AND ASPHALT AREAS.

2.) ALL BUILDING MATERIAL AND WASTES MUST BE REMOVED FROM THE SITE AND RECYCLED OR RECYCLED IN ACCORDANCE WITH DEP'S SOLID WASTE REGULATIONS (25 PA CODE 260.1 ET SEQ., 271.1 ET SE., AND 287.1 ET SEQ.,) AND/OR ANY ADDITIONAL LOCAL, STATE, OR FEDERAL REGULATIONS. NO BUILDING MATERIALS (USED OR UNUSED) OR WATER MATERIALS SHALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT THE SITE.

GEOLOGIC FORMATIONS OR SOIL CONDITIONS §102.8(F)(12)

1.) THERE ARE NO KNOWN GEOLOGICAL FORMATIONS/SOIL CONDITION ISSUES THAT HAVE THE POTENTIAL TO CAUSE POLLUTION.

POTENTIAL THERMAL IMPACT TO SURFACE WATERS §102.8(F)(13)

A POTENTIAL FOR THERMAL IMPACTS EXISTS IN INSTANCES WHERE SURFACE RUNOFF IS DIRECTLY CONVEYED TO A RECEIVING STREAM WITHOUT ADEQUATE ATTENUATION OR COOLING. TO AVOID THERMAL IMPACTS, THE FOLLOWING HAS BEEN EMPLOYED: UNDERGROUND SLOW RELEASE, AMENDED SOILS, AND LANDSCAPE RESTORATION. ALL OF THESE MEASURES WILL HELP TO CONTROL RUNOFF VOLUME AND RATE AND THEREBY PROVIDE ADDITIONAL COOLING TIME, THEREBY MINIMIZING THERMAL IMPACTS TO THE RECEIVING STREAM.

RIPARIAN FOREST BUFFER MANAGEMENT PLAN §102.8(F)(14)

1.) THERE ARE NO EXISTING/PROPOSED RIPARIAN FOREST BUFFERS SHOWN ON THE PLAN MAPS.

BMP MAINTENANCE SCHEDULE

BMP	SCHEDULE	INSPECTION TASK	MAINTENANCE	FAILURE INDICATORS
BMP 6.4.3 SUBSURFACE INFILTRATION / SLOW RELEASE DETENTION BASIN	4 TIMES PER YEAR	- INSPECT STRUCTURES - INSPECT FOR SEDIMENT ACCUMULATION & LITTER	NEEDED MAINTENANCE SHALL BE INITIATED IMMEDIATELY AFTER THE INSPECTION. THE LITTER AND SEDIMENT MUST BE REMOVED TO RESTORE DESIGN CAPACITIES. THE LITTER AND SEDIMENT SHALL BE DISPOSED OF IN AN APPROVED MANNER AND IN ACCORDANCE WITH APPLICABLE STATE REGULATIONS. ANY AREAS DISTURBED DURING MAINTENANCE MUST BE STABILIZED IMMEDIATELY IN ACCORDANCE WITH THE GENERAL CONSERVATION NOTES AND SPECIFICATIONS	FAILURE INDICATORS OF THE UNDERGROUND STORMWATER BASIN INCLUDE WHEN THE BASIN DOES NOT DEWATER OR SURCHARGING OF INLETS UPSTREAM OF THE BASIN OCCURS. A QUALIFIED INDIVIDUAL SHOULD PERFORM AND INVESTIGATION IN ORDER TO DETERMINE THE CAUSE OF FAILURE. REMEDIATION SHALL BE IN ACCORDANCE WITH THE QUALIFIED INDIVIDUAL'S RECOMMENDATIONS BASED ON THEIR INVESTIGATION.
	AFTER EACH STORM > 1"	- INSPECT STRUCTURES - CONFIRM OUTLET STRUCTURE IS FREE OF DEBRIS - CONFIRM OUTLET STRUCTURE ORIFICE IS NOT CLOGGED		
BMP 6.7.2. LANDSCAPE RESTORATION	ANNUALLY	- INSPECT FOR DYING/DEAD PLANT MATERIAL - INSPECT FOR INVASIVE SPECIES	ANY PLANT THAT IS FOUND TO BE DYING AND CANNOT BE SAVED SHALL BE REPLACED IN KIND. REMOVE INVASIVE SPECIES AND DISCARD IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.	FAILURE INDICATORS INCLUDE VEGETATION THAT FAILS TO ESTABLISH OR DIES OFF, OR AN EXCESSIVE GROWTH OF INVASIVE SPECIES. UPON OBSERVING A FAILURE INDICATOR, A QUALIFIED INDIVIDUAL, SUCH AS A LANDSCAPE ARCHITECT, SHALL BE CONSULTED TO DETERMINE THE EXACT CAUSE OF THE FAILURE. REMEDIATION SHALL BE IN ACCORDANCE WITH THE QUALIFIED INDIVIDUAL'S RECOMMENDATIONS.
BMP 6.6.4 WATER QUALITY FILTER: NYLOPLAST ENVIROHOOD	4 TIMES PER YEAR	- INSPECT STRUCTURES - CONFIRM HOOD IS FREE OF DEBRIS - CONFIRM HOOD MEDIA IS NOT CLOGGED - INSPECT FOR SEDIMENT ACCUMULATION	ANY REMOVED SEDIMENT SHALL BE DISPOSED OF IN AN APPROVED MANNER AND IN ACCORDANCE WITH APPLICABLE STATE REGULATIONS. FILTER SHALL BE REPLACED WITH EQUIVALENT HOOD WHEN CLEANING AND SEDIMENT REMOVAL DOES NOT RESTORE FUNCTIONAL USE AND WATER QUALITY TREATMENT.	FAILURE INDICATORS OF THE WATER QUALITY INLET INCLUDE WHEN THE DETENTION BASIN DOES NOT DEWATER OR SURCHARGING OF INLETS UPSTREAM OF THE BASIN OCCURS. A QUALIFIED INDIVIDUAL SHOULD PERFORM AND INVESTIGATION IN ORDER TO DETERMINE THE CAUSE OF FAILURE. REMEDIATION SHALL BE IN ACCORDANCE WITH THE QUALIFIED INDIVIDUAL'S RECOMMENDATIONS BASED ON THEIR INVESTIGATION.

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Ambler, PA 19002
Phone (215) 809-2125
MSwaggard@core-states.com

CLIENT

CHASE

Know what's below. Call before you dig.

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON DESIGN DRAWINGS, RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. CORE STATES, INC. DOES NOT GUARANTEE THAT LOCATIONS SHOWN ARE EXACT. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF UTILITIES.

REVISIONS

REV	DATE	COMMENT	BY
1	08/24/21	BCCD, BCPC, AND TWP COMMENTS	CML

DOCUMENT

PRELIMINARY/ FINAL LAND DEVELOPMENT PLAN FOR CHASE BANK

SITE LOCATION

1729 STREET ROAD
BENSALEM, PA
19020

ENGINEER SEAL

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
FRANCIS GREENE
ENGINEER
No. PE076172
PENNSYLVANIA

08/26/2021

FRANCIS GREENE, P.E.
PA LICENSE #075817

SHEET TITLE

POST CONSTRUCTION STORMWATER MANAGEMENT NOTES

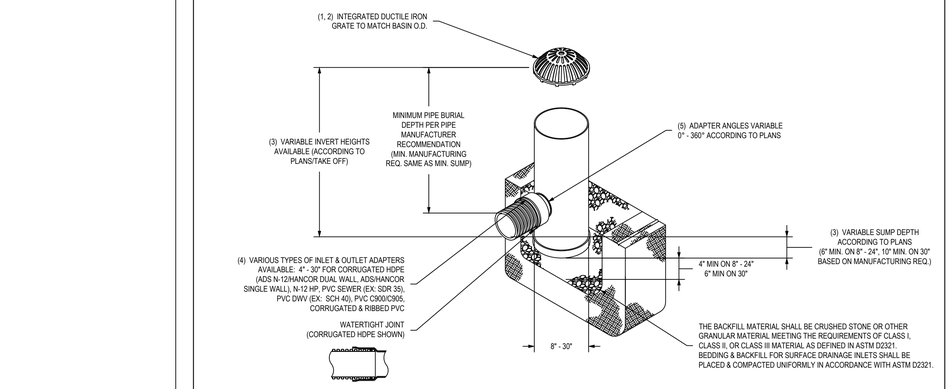
JOB #:	JPM-29391
DATE:	5/13/21
SCALE:	1" = 20'
DRAWN BY:	CML
CHECKED BY:	FG

SHEET NO.

C15

SHEET 16 OF 23

NYLOPLAST DRAIN BASIN WITH DOME GRATE



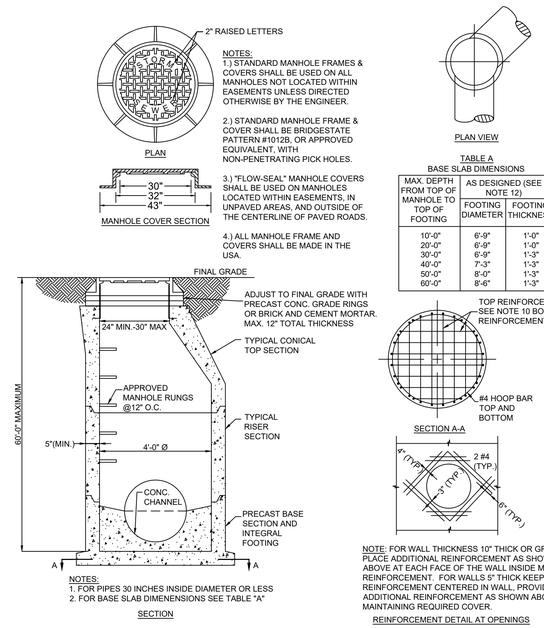
1 - 8" - 30" DOME GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2 - 8" & 10" DOME GRATES FIT ONTO THE DRAIN BASINS WITH THE USE OF A PVC BODY TOP. SEE DRAWING NO. 7001-110-045.
3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065.
4 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER (4" - 24").
5 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.
6 - 8" - 30" DOME GRATES HAVE NO LOAD RATING.

DRAWN BY	EBC	MATERIAL	
DATE	03-25-10		
REVISED BY	NMH	PROJECT NO./NAME	
DATE	03-11-16		
DWG SIZE	A	SCALE 1:40	SHEET 1 OF 1

Nyloplast
3130 VERONA AVE
BUFORD, GA 30518
PHN (770) 932-2443
FAX (770) 932-2490
www.nyloplast-us.com

TITLE: DRAIN BASIN WITH DOME GRATE QUICK SPEC-INSTALLATION DETAIL

DWG NO. 7001-110-397 REV D



NOTES:
1.) STANDARD MANHOLE FRAMES & COVERS SHALL BE USED ON ALL MANHOLES NOT LOCATED WITHIN EASEMENTS UNLESS DIRECTED OTHERWISE BY THE ENGINEER.

2.) STANDARD MANHOLE FRAME & COVER SHALL BE BRIDGESTATE PATTERN #1012B, OR APPROVED EQUIVALENT, WITH NON-PENETRATING PICK HOLES.

3.) "FLOW-SEAL" MANHOLE COVERS SHALL BE USED ON MANHOLES LOCATED WITHIN EASEMENTS, IN UNPAVED AREAS, AND OUTSIDE OF THE CENTERLINE OF PAVED ROADS.

4.) ALL MANHOLE FRAME AND COVERS SHALL BE MADE IN THE USA.

NOTES:
1. FOR PIPES 30 INCHES INSIDE DIAMETER OR LESS
2. FOR BASE SLAB DIMENENSIONS SEE TABLE "A"

SECTION

PLAN VIEW

TABLE A
BASE SLAB DIMENSIONS

MAX. DEPTH FROM TOP OF MANHOLE TO TOP OF FOOTING	AS DESIGNED (SEE NOTE 12)	
	FOOTING DIAMETER	FOOTING THICKNESS
10'-0"	6'-9"	1'-0"
20'-0"	6'-9"	1'-0"
30'-0"	6'-9"	1'-3"
40'-0"	7'-3"	1'-3"
50'-0"	8'-0"	1'-3"
60'-0"	8'-6"	1'-3"

NOTE: FOR WALL THICKNESS 10" THICK OR GREATER PLACE ADDITIONAL REINFORCEMENT AS SHOWN ABOVE AT EACH FACE OF THE WALL INSIDE MAIN REINFORCEMENT. FOR WALLS 5" THICK KEEP MAIN REINFORCEMENT CENTERED IN WALL, PROVIDE ADDITIONAL REINFORCEMENT AS SHOWN ABOVE, MAINTAINING REQUIRED COVER.

REINFORCEMENT DETAIL AT OPENINGS

NOTES:
1. PRECAST MANHOLES, MEETING THE REQUIREMENTS OF PUBLICATION 408 SPECIFICATIONS, SECTION 714, MAY BE SUBSTITUTED FOR THE STANDARD CAST-IN-PLACE MANHOLE.

2. CONSTRUCTION NOTES:

A. CONSTRUCT IN ACCORDANCE WITH PENNDOT PUBLICATION 408 SPECIFICATIONS, SECTIONS 605,606,714 AND ASTM C-478-90, STANDARD SPECIFICATIONS FOR PRECAST REINFORCEMENT CONCRETE MANHOLE SECTIONS AS MODIFIED HERE IN:

B. MINIMUM CONCRETE CLASS AA

C. PROVIDE EPOXY COATED STEEL REINFORCEMENT IN ACCORDANCE WITH ASTM A185, STEEL WELDED WIRE FABRIC ASTM A663 & A675, PLAIN BILLET STEEL BARDS OR ASTM A615, DEFORMED BILLET STEEL BARS PROVIDE MINIMUM YIELD STRENGTH OF 60,000 PSI.

D. CLEAR COVER FOR STEEL:
WALLS: 2"
FOOTINGS: 2' (TOP BARS), 1 1/2" (BOTTOM BARS) 1 1/2" (SIDE COVER)

3. PROVIDE 12" MINIMUM HORIZONTAL CLEARANCE BETWEEN OPENINGS LOCATED AT THE SAME DEPTH. PIPES NOT LOCATED AT THE SAME DEPTH MUST BE LOCATED VERTICALLY AT LEAST ONE TIMES MAXIMUM OPENING DIAMETER APART.

4. FOR RISERS OR BASE SECTIONS WITH OPENINGS, PROVIDE A MINIMUM HEIGHT OF SECTION EQUAL TO TWO TIMES THE LARGEST OPENING. CENTER OF OPENING TO BE LOCATED AT LEAST ONE TIMES THE OPENING FROM THE CLOSEST JOINT BETWEEN RISERS.

5. FOR PRECAST RISER OR BASE SECTIONS WITH ONE OPENING LOCATED AT DEPTHS TO 60' OR FOR SECTIONS WITH TWO OR MORE OPENINGS, LOCATED AT A DEPTH OF 16 FEET AND LESS, PROVIDE CIRCUMFERENTIAL REINFORCEMENT IN ACCORDANCE WITH REINFORCEMENT DETAIL AT OPENINGS.

FOR RISERS OR BASE SECTIONS WITH 2 OR MORE OPENINGS, LOCATED AT A DEPTH GREATER THAN 15 FEET, BUT LESS THAT OR EQUAL TO 30 FEET, PROVIDE CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.44 SQ/IN VERTICAL FOOT FOR THE DEPTH OF THE RISER OR BASE SECTION

FOR RISERS OR BASE SECTIONS WITH 2 OR MORE OPENINGS, LOCATED AT A DEPTH GREATER THAN 30 FEET, USE A 10 INCH THICK WALL RISER OR BASE SECTION WITH CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ/IN VERTICAL FOOT EACH FACE.

RISERS OR BASE SECTIONS WITH HOLES TO BE CLEARLY MARKED ALLOWABLE DEPTH.

6. PROVIDE ADDITIONAL REINFORCEMENT BARS AROUND OPENINGS AS SHOWN ON REINFORCEMENT DETAILS AT OPENINGS.

7. PROVIDE MANHOLE STEPS MEETING THE REQUIREMENTS OF PUBLICATION 408 SPECIFICATIONS, SECTION 605.2(C), ALTERNATE CONFIGURATIONS AND DIMENSIONS, AS APPROVED BY THE ENGINEER, MAY BE USED.

8. PROVIDE MINIMUM 1" SECTION DIMENSION FOR METAL STEPS. PROVIDE MAXIMUM 3/4" SECTION DIMENSION FOR NON-DETERIORATING MATERIAL STEPS.

9. MECHANICAL ANCHOR REQUIRED FOR INSTALLATION OF STEPS WITHOUT HOOKS.

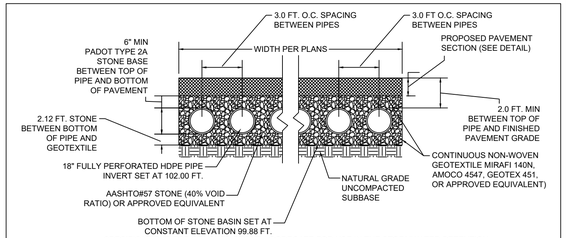
10. FOR FOOTING TOP REINFORCEMENT, BOTH DIRECTIONS, USE NO.19 (6) BARS AT 12" FOR DEPTHS TO 60' OR 0.30 IN²/FT WWF FOR DEPTHS TO 30' AND 0.32 IN²/FT WWF FOR DEPTHS GREATER THAN 30'. 6" MAXIMUM SPACING FOR WWF.

11. FOR FOOTING BOTTOM REINFORCEMENT, BOTH DIRECTIONS, USE NO. 13 (4) BARS AT 18" FOR DEPTHS TO 60' OR 0.15 IN²/FT WWF FOR DEPTHS TO 30' AND 0.16 IN²/FT WWF FOR DEPTHS GREATER THAN 30'. 6" MAXIMUM SPACING FOR WWF.

12. A SAFE BEARING CAPACITY OF (1.5 TONS PER SF) UNDER THE ENTIRE SLAB IS ASSU,ED TO DETERMINE THE BASE SIZE. WHEN THE SUBSOIL IS EXTREMELY POOR, PROCEED WITH CONSTRUCTION ONLY AFTER THE ENGINEER SPECIFIES ADEQUATE BASE DESIGN.

13. 2 - 1" WEEP HOLES TO BE INSTALLED ON ALL MANHOLES WITH ANY SUMP DEPTH

PRECAST STORM MANHOLE DETAILS
N.T.S.



SPECIFICATIONS FOR CRUSHED STONE AGGREGATE FOR USE IN THE STORMWATER DETENTION BASIN:

1. A UNIFORMLY GRADED CRUSHED STONE (AASHTO#57) PROVIDED THAT STONE IS PROPERLY CLEANED AND THAT A MINIMUM VOID RATIO OF 40% IS PROVIDED. HIGHER VOID THE RATIOS MAY BE SELECTED BY THE DESIGN ENGINEER, AND IF SO, THE DESIGN VOID RATIO SHALL GOVERN. IN ORDER TO INSURE THAT THE STONE USED IS PROPERLY CLEANED, IN ADDITION TO AASHTO DESIGNATION: M43-88 GRADATION, THE PERCENT PASSING THE NO. 200 SIEVE SHALL NOT EXCEED 0.2%

2. A CERTIFICATION FROM THE MANUFACTURER DOCUMENTING THE FULL GRADATION AND VOID RATIO SHALL BE OBTAINED.

3. WHEN, IN THE OPINION OF THE TOWNSHIP INSPECTOR OR THE GEOTECHNICAL ENGINEER, THE STONE IS NOT CONSISTENT WITH THE APPROVED SAMPLE, IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THE STONE RETESTED AND CERTIFIED BEFORE ANY ADDITIONAL STONE IS INSTALLED OR DELIVERED.

4. EXCAVATION OF THE INFILTRATION FACILITIES SHALL BE PERFORMED WITH EQUIPMENT WHICH WILL NOT COMPACT THE BOTTOM OF THE SEEPAGE BED/TRENCH, OR LIKE FACILITY.

5. THE BOTTOM OF THE TRENCH SHALL BE SCARIFIED PRIOR TO THE PLACEMENT OF AGGREGATE.

6. ONLY CLEAN AGGREGATE, FREE OF DEBRIS, SHALL BE ALLOWED.

7. THE TOP AND SIDES OF ALL SEEPAGE BEDS, TRENCHES, OR LIKE FACILITIES SHALL BE COVERED WITH CONTINUOUS NON-WOVEN GEOTEXTILE MIRAFI 140N, AMOCO 4547, GEOTEX 451, OR APPROVED EQUIVALENT. PROVIDE A MINIMUM OF 12" OVERLAP FOR ANY SEAM.

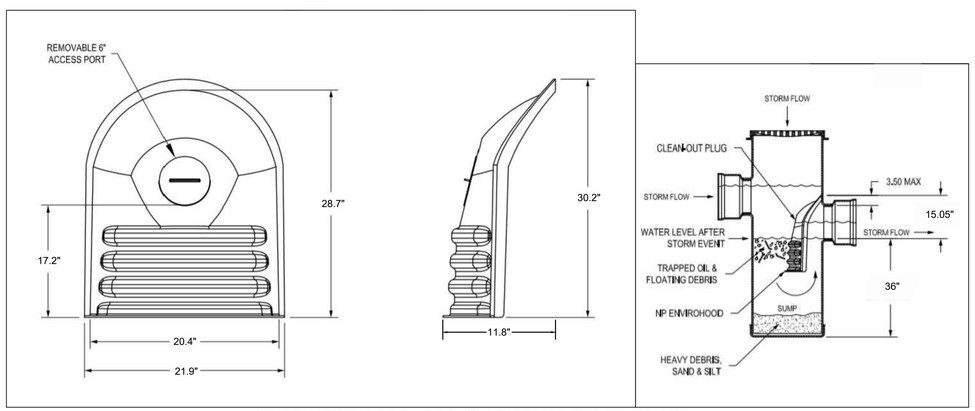
8. CONSTRUCTION OF ALL SUBSURFACE FACILITIES SHALL PREVENT SILT FROM CLOGGING THE AGGREGATE BACKFILL.

9. CONTRACTOR TO REVIEW AND IMPLEMENT PIPE BEDDING AND BACKFILL REQUIREMENTS RECOMMENDED BY THE SPECIFIC PIPE MANUFACTURER.

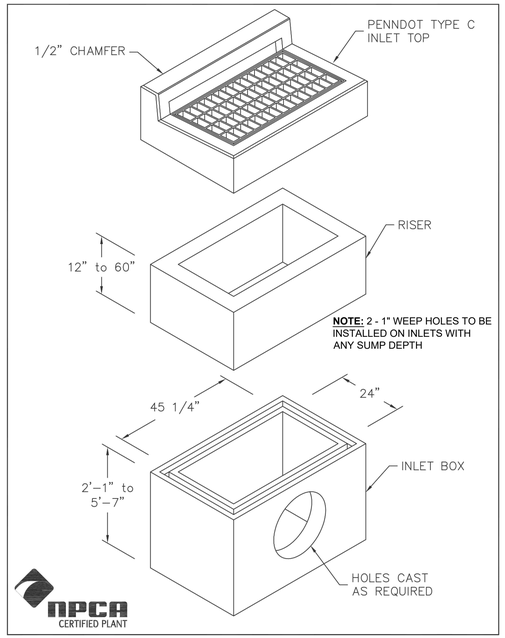
10.) ALL INFILTRATION BEDS SHALL BE LINED WITH CONTINUOUS NON-WOVEN GEOTEXTILE MIRAFI 140N, AMOCO 4547, GEOTEX 451, OR APPROVED EQUIVALENT AND BACKFILLED WITH CLEAN WASHED AGGREGATE. THESE SHALL BE KEPT CLEAN OF SOIL/SEDIMENT DURING THE INSTALLATION PROCESS. IF INSPECTION INDICATES THAT SOIL/SEDIMENT HAS CONTAMINATED THESE ITEMS, THE MATERIALS SHALL BE REPLACED AND/OR CLEANED AS NECESSARY.

11.) 2 AN ASSUMED 0.25 IN/HR INFILTRATION WAS USED FOR BASIN CALCULATIONS. PERCOLATION TESTS ARE TO BE CONDUCTED ON-SITE PRIOR TO CONSTRUCTION. IF THAT ASSUMED INFILTRATION RATE IS NOT ACHIEVED, THE CONTRACTOR IS TO CONTACT THE TOWNSHIP ENGINEER IMMEDIATELY.

CROSS SECTION OF SUBSURFACE DETENTION / INFILTRATION BASIN
N.T.S.



NYLOPLAST ENVIROHOOD (FLAT CONCRETE UP TO 18") DETAIL
N.T.S.



MONARCH PRECAST CONCRETE CORP.
425 NORTH DAUPHIN STREET ALLENTOWN, PA. 18109 PHONE (610) 435-6746
WWW.MONARCHPRECAST.COM FAX (610) 437-7133

PENNDOT STANDARD INLET BOX w/ TYPE C INLET TOP (RC-45M & RC-46M)

CORE STATES GROUP
201 S. Maple Avenue, Suite 300
Ambler, PA 19002
Phone (215) 809-2125
MSwaggard@core-states.com

CLIENT
CHASE

811 Know what's below. Call before you dig.
THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON DESIGN DRAWINGS, RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. CORE STATES, INC. DOES NOT GUARANTEE THAT LOCATIONS SHOWN ARE EXACT. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF UTILITIES.

REVISIONS

REV	DATE	COMMENT	BY
1	08/24/21	BCCD, BCPC, AND TWP COMMENTS	CML

DOCUMENT
PRELIMINARY/ FINAL LAND DEVELOPMENT PLAN FOR CHASE BANK

SITE LOCATION
1729 STREET ROAD
BENSALEM, PA
19020

ENGINEER SEAL
COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER FRANCIS GREENE ENGINEER No. PE079817 PENNSYLVANIA
08/26/2021
FRANCIS GREENE, P.E.
PA LICENSE #075817

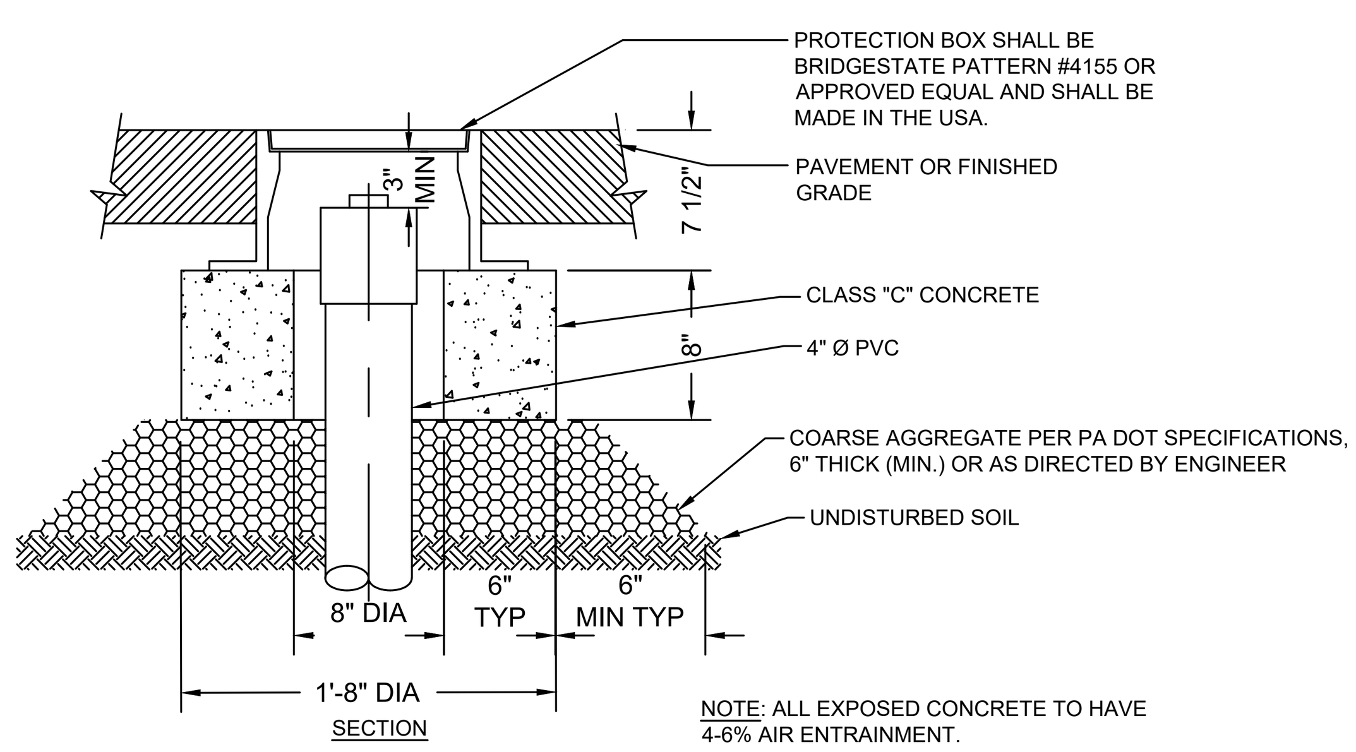
SHEET TITLE
POST CONSTRUCTION STORMWATER MANAGEMENT DETAILS

JOB #:	JPM-29391
DATE:	5/13/21
SCALE:	1" = 20'
DRAWN BY:	CML
CHECKED BY:	FG

SHEET NO.
C16
SHEET 17 OF 23

1 2 3 4 5 6 7 8 9 10 11 12 13

A B C D E F G H I



SANITARY LEADER CLEAN-OUT PROTECTION BOX DETAIL
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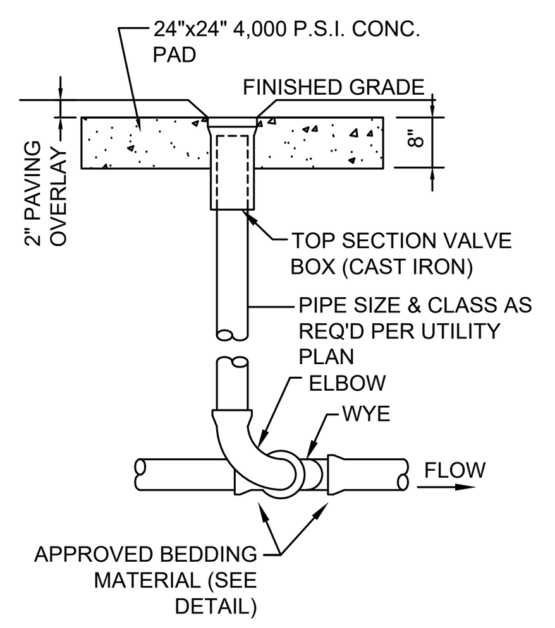
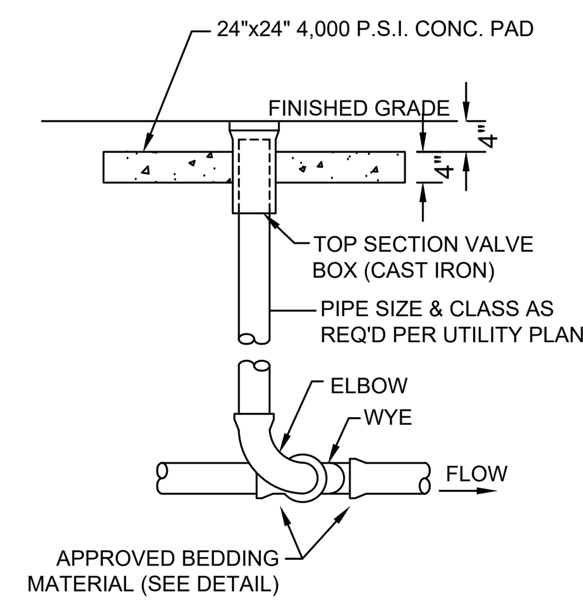
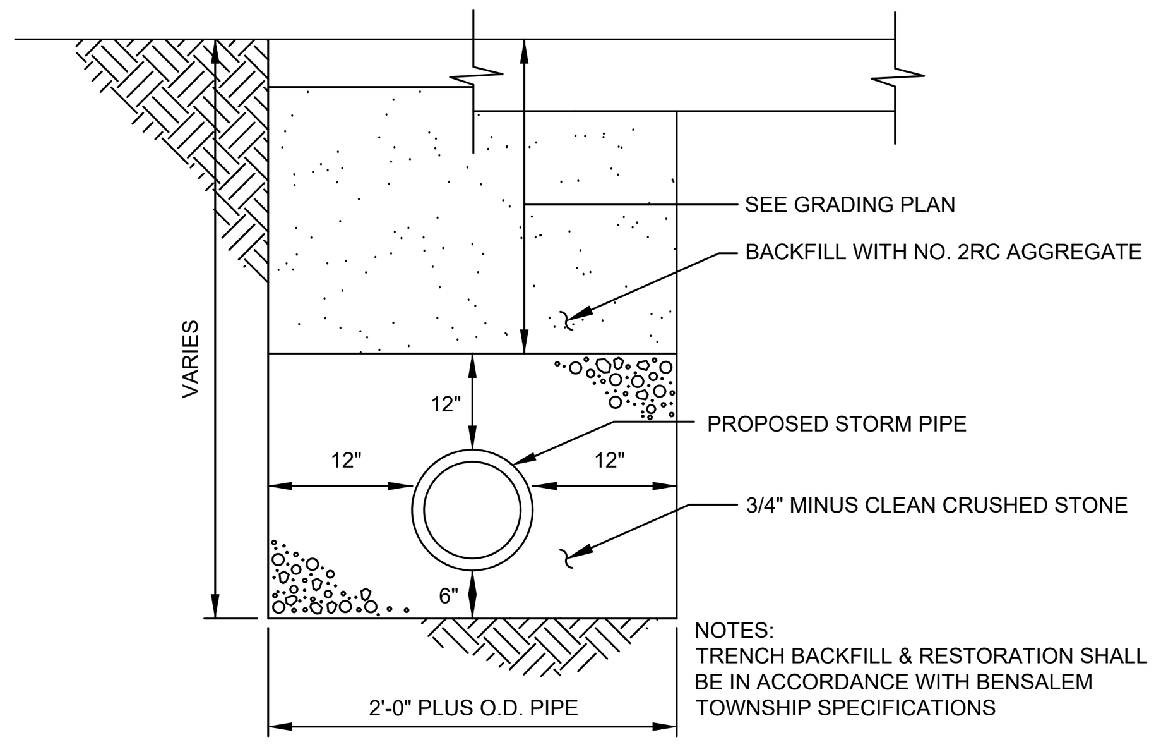


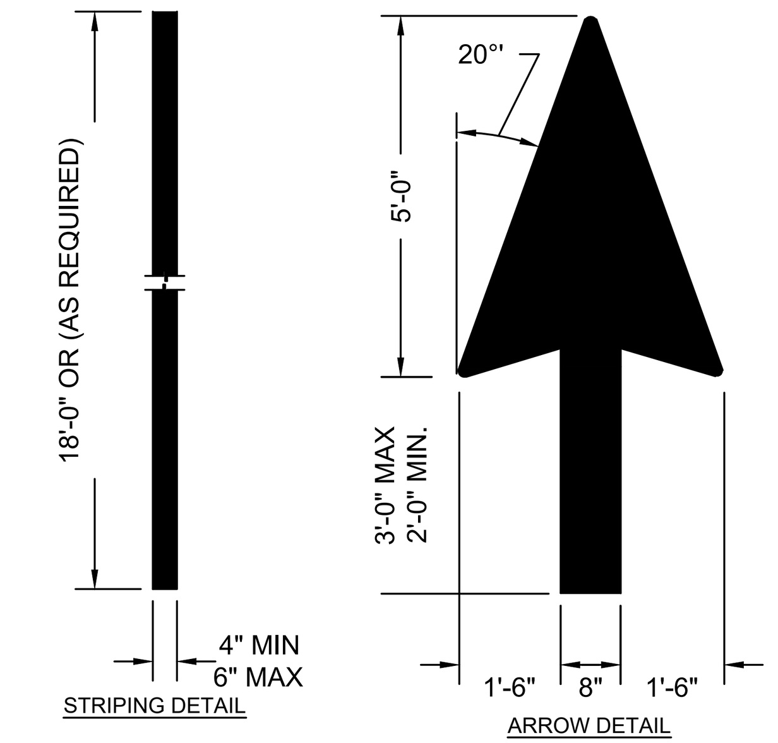
TYPICAL CLEANOUT DETAIL (PAVED AREAS)
N.T.S.



TYPICAL CLEANOUT DETAIL (LANDSCAPED AREAS)
N.T.S.

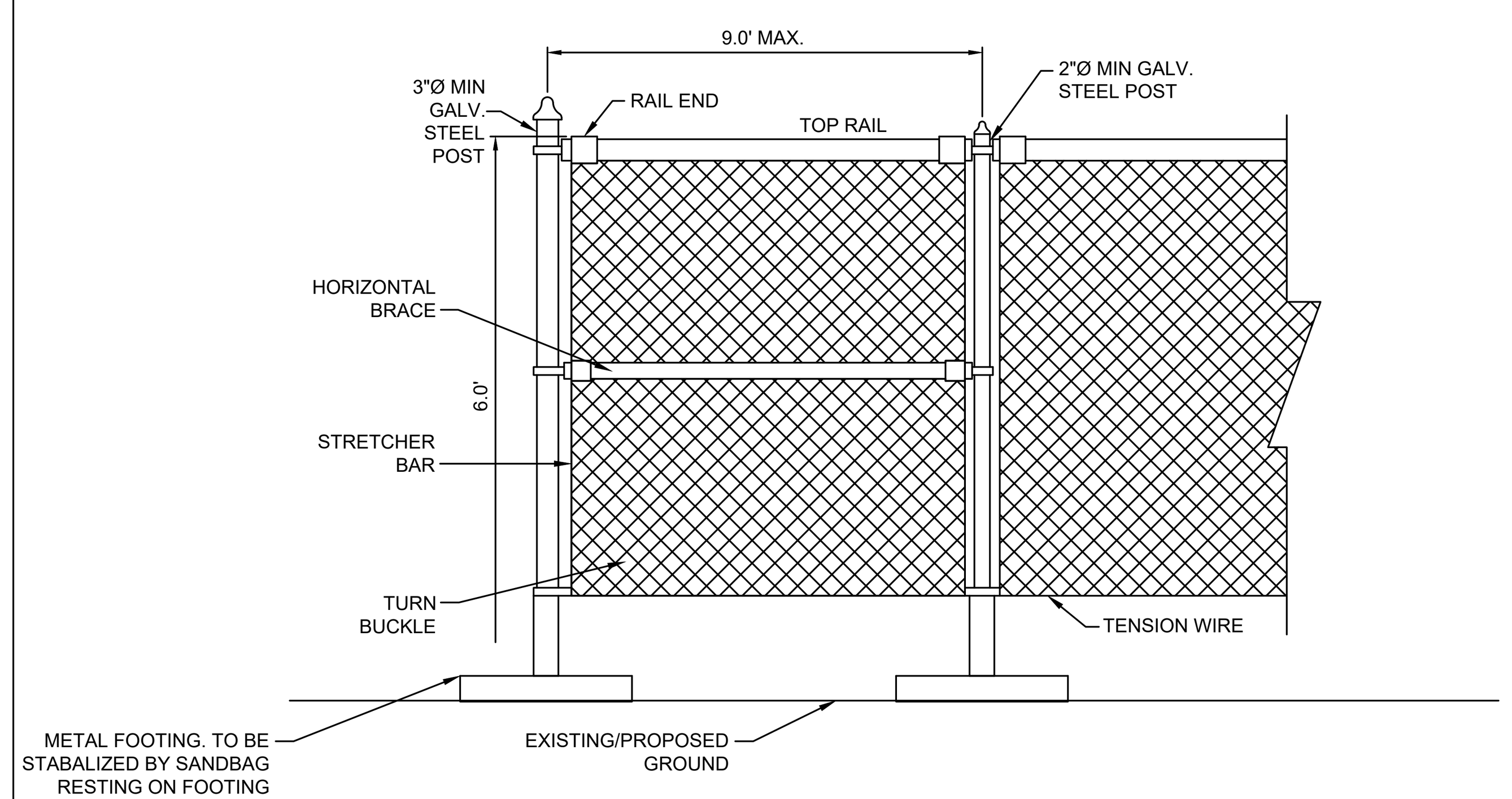


STORM SEWER TRENCH DETAIL
N.T.S.



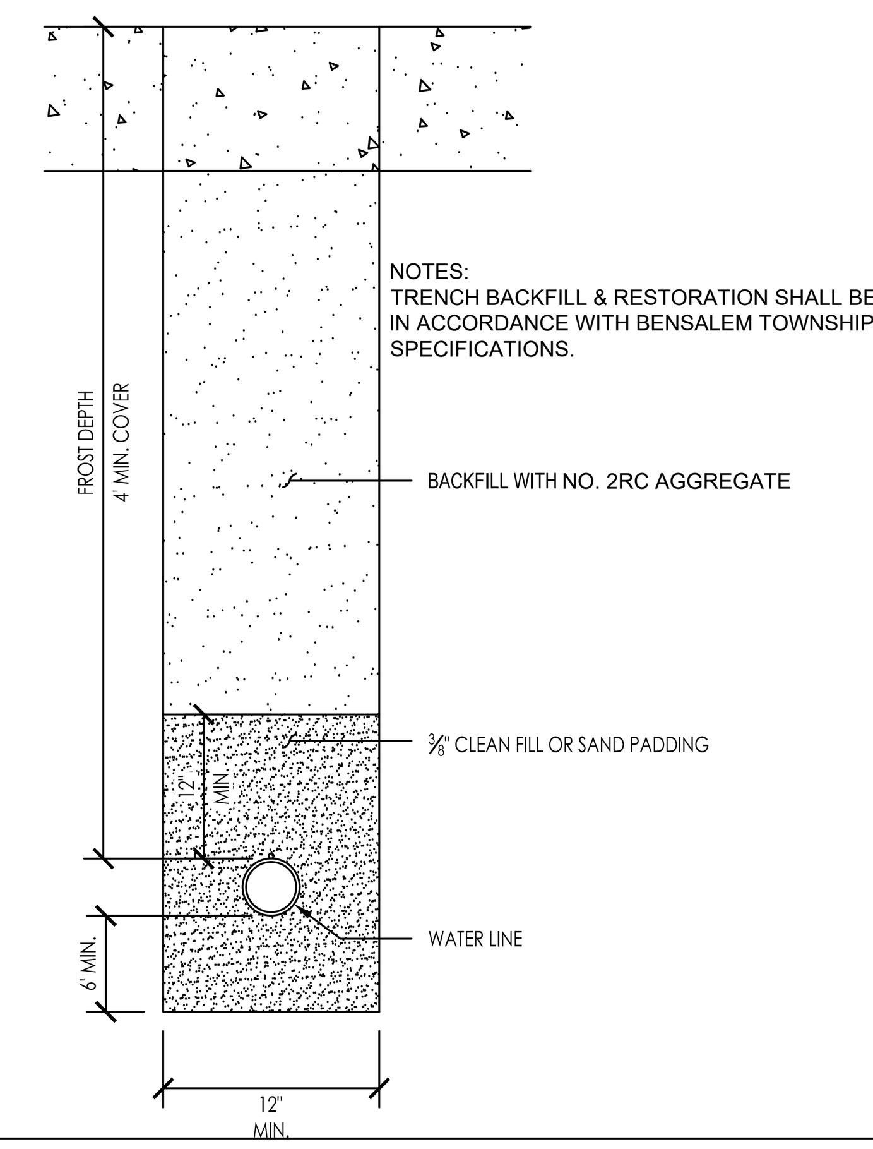
NOTE:
STRIPING TO THERMOPLASTIC REFLECTIVE WHITE PAINT, TYP. BUT USE YELLOW PAINT ON WHEN WHITE PAINT DOES NOT PROVIDE SUFFICIENT CONTRAST.

PAVEMENT STRIPING DETAIL
NTS

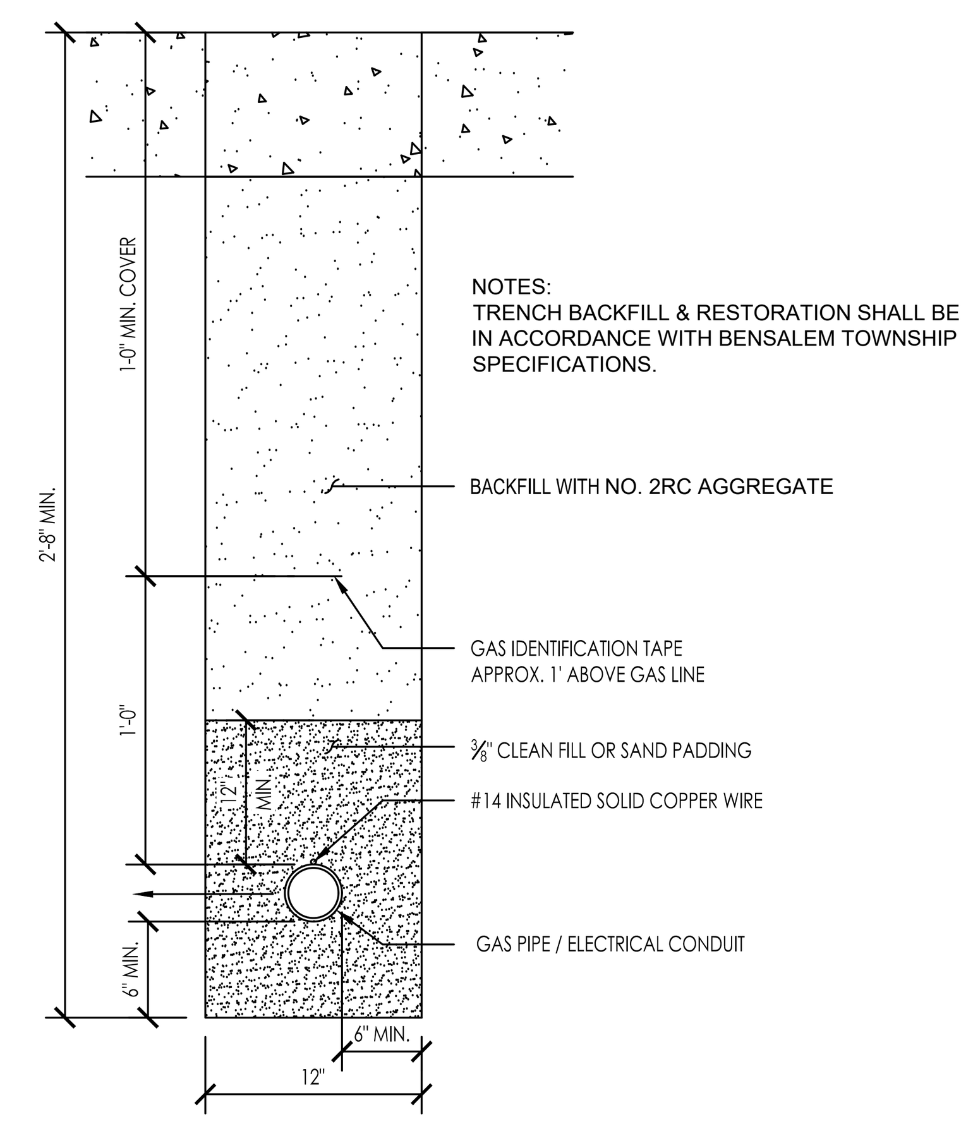


NOTE: FENCING IS TO ADHERE TO PENNDOT PUBLICATION 408/2020 SECTION 1016 - PROTECTIVE FENCE SPECIFICATIONS

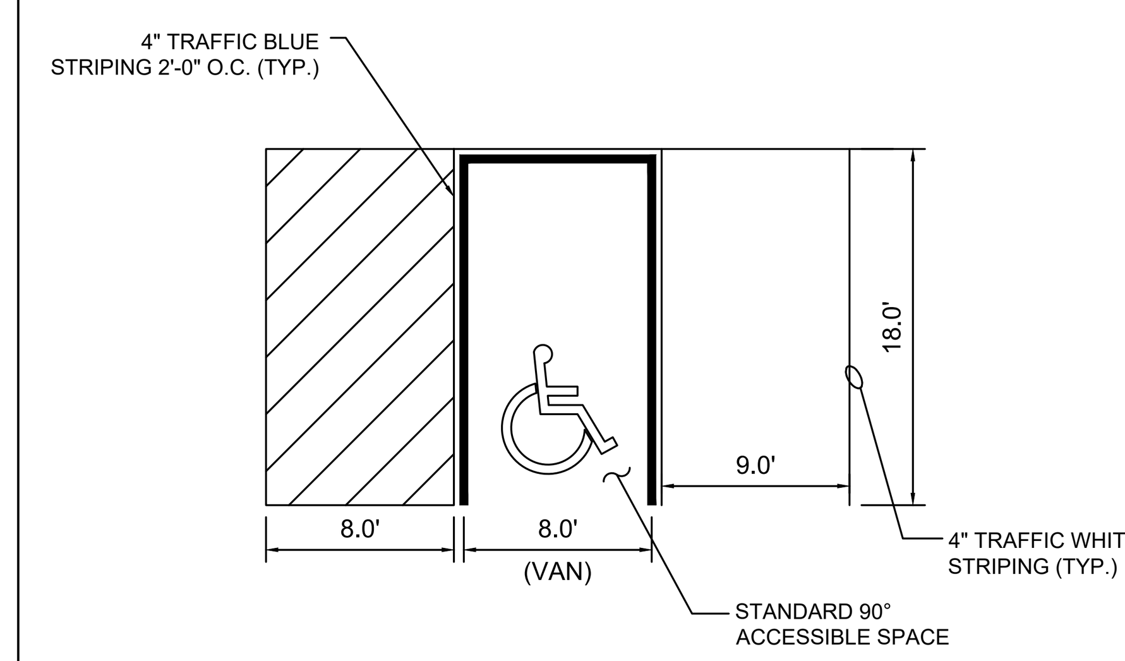
TEMPORARY CONSTRUCTION FENCE DETAIL
N.T.S.



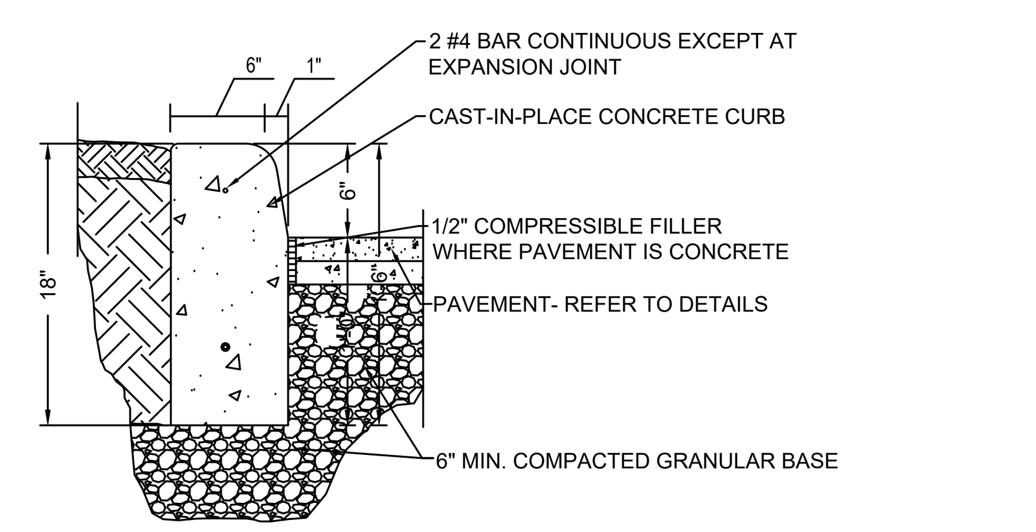
WATER TRENCH DETAIL
N.T.S.



GAS / ELECTRIC TRENCH DETAIL
N.T.S.

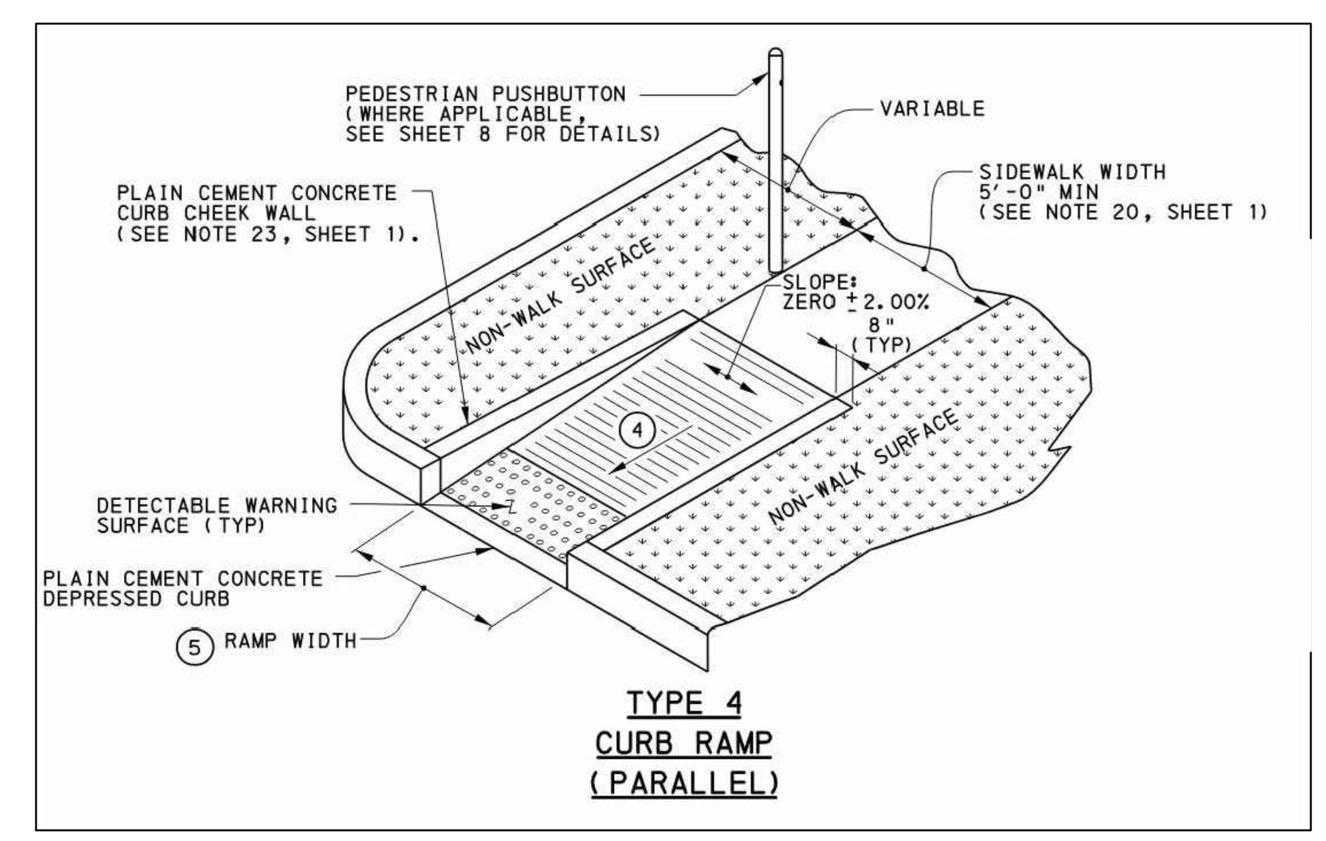


PARKING STRIPING DETAIL
NTS



NOTE:
CONCRETE CURB SHALL BE POURED WITH CLASS AAA CONCRETE WITH A 4,000 PSI 28-DAY COMPRESSIVE STRENGTH

ON-SITE CONCRETE CURB DETAIL
NTS



4 8.33% MAX RAMP SLOPE, SEE NOTE 8 SHEET 1.

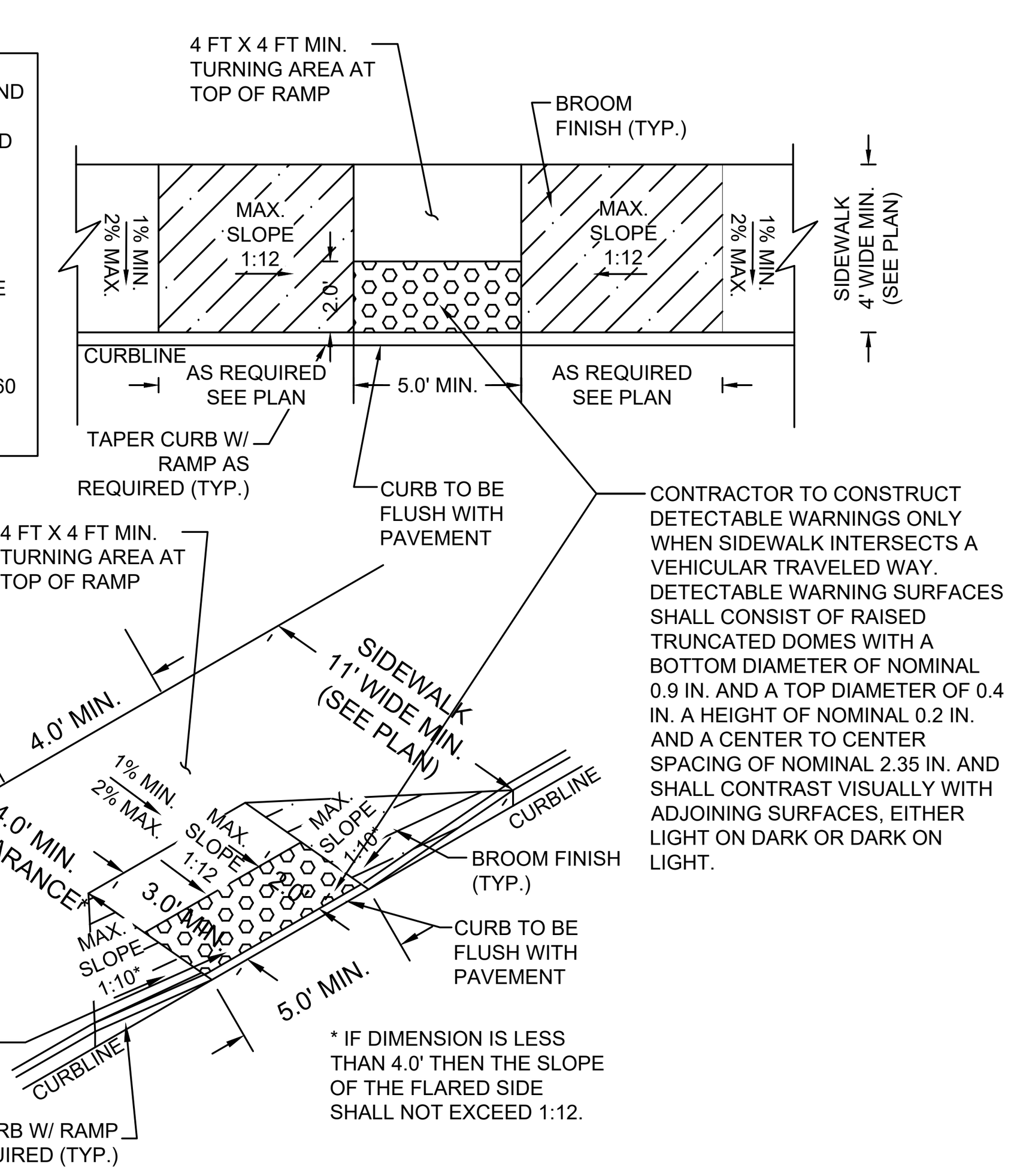
5 CURB RAMP WIDTH IS EQUAL TO SIDEWALK WIDTH WHEN THE SIDEWALK WIDTH IS GREATER THAN OR EQUAL TO THE MINIMUM 4'-0".

PENNDOT TYPE 4 CURB RAMP (PARALLEL) DETAIL
NTS

NOTES:
1.) CURB RAMPS MAY NOT EXTEND INTO ANY PORTION OF THE PARKING SPACE OR ASSOCIATED STRIPED ISLAND.

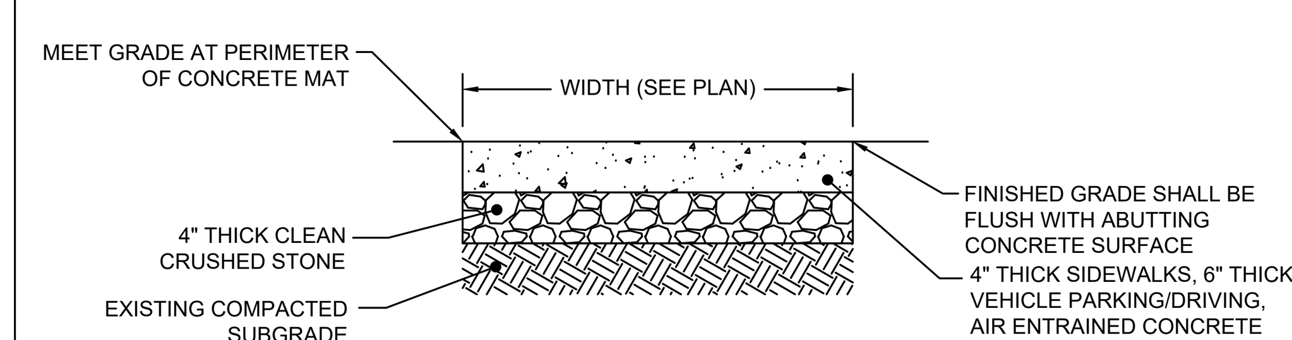
2.) CURB RAMPS, PAVEMENT MARKINGS, & APPLICABLE SIGNAGE SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST A.D.A. ACCESSIBILITY GUIDELINES.

3.) A LEVEL LANDING AREA 5.0' (60 INCHES) IN LENGTH SHALL BE PROVIDED BEHIND THE RAMP.

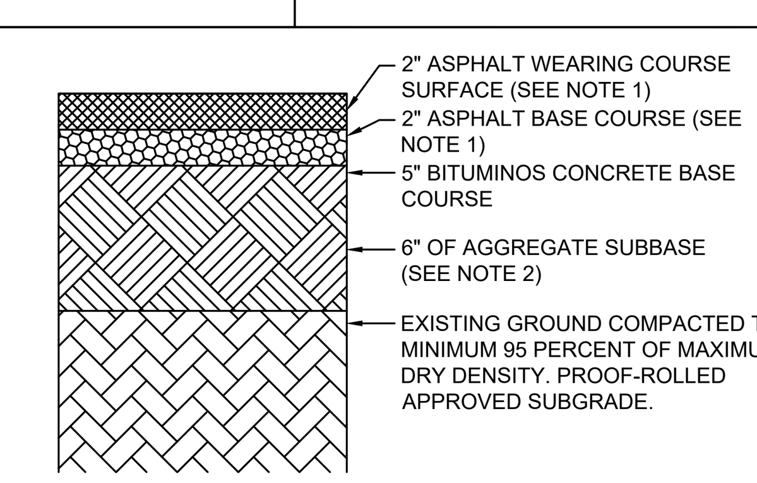


ADA CONCRETE RAMP DETAILS
NTS

NOTE: PROVIDE CONCRETE CONTROL AND EXPANSION JOINTS AS REQUIRED. CONTROL JOINTS SHALL BE AT EVERY 5 FEET, EXPANSION JOINTS SHALL BE EVERY 20 FEET AT FULL DEPTH.

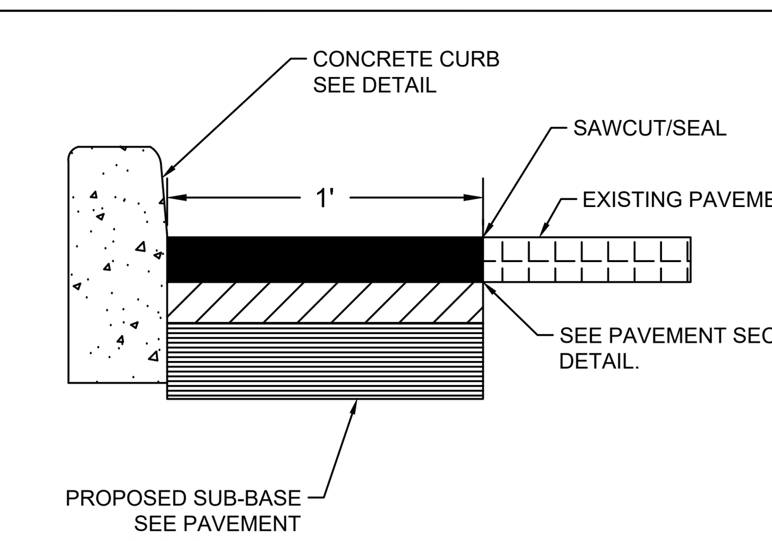


CONCRETE PAD AND SIDEWALK DETAIL
NTS



NOTE:
1. PENNDOT APPROVED ASPHALT MIX DESIGN
2. AGGREGATE BASE TO BE PENNDOT TYPE 2A CONFORMING TO PENNDOT PUBLICATIONS 408
3. SUBGRADE TO BE COMPACTED TO A MINIMUM OF 95 PERCENT OF THE MAXIMUM DRY DENSITY, AS DETERMINED BY THE MODIFIED PROCTOR TEST, ASTM D 1557, AND SHALL CONSIST OF LOAD-BEARING FILL OR EXISTING STRATUM A MATERIALS CAPABLE OF ACHIEVING A CBR VALUE OF 5. THE MOISTURE CONTENT OF THE MATERIAL SHOULD ALSO BE MAINTAINED WITHIN +/- 2 PERCENT OF THE OPTIMUM MOISTURE CONTENT.

ASPHALT PAVEMENT DETAIL
NTS



NOTES:
TRENCH BACKFILL & STREET RESTORATION SHALL BE IN ACCORDANCE WITH BENSALEM TOWNSHIP SPECIFICATIONS.

PAVEMENT RESTORATION DETAIL
NTS

CORE STATES GROUP
201 S. Maple Avenue, Suite 300
Ambler, PA 19002
Phone: (215) 809-2125
MSwaggard@core-states.com

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811 Know what's below. Call before you dig.

REV	DATE	COMMENT	BY
1	08/24/21	BCCD, BCPC, AND TWP COMMENTS	CML

DOCUMENT
PRELIMINARY/ FINAL LAND DEVELOPMENT PLAN FOR CHASE BANK

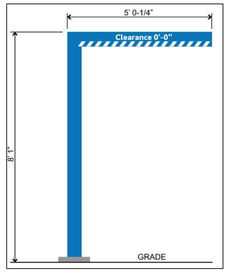
SITE LOCATION
1729 STREET ROAD
BENSALEM, PA
19020

ENGINEER SEAL
COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL FRANCIS GREENE ENGINEER No. PE075817
08/26/2021
FRANCIS GREENE, P.E.
PA LICENSE #075817

SHEET TITLE
CONSTRUCTION DETAILS

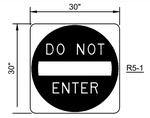
JOB #:	JPM-29391
DATE:	5/13/21
SCALE:	NTS
DRAWN BY:	CML
CHECKED BY:	FG

SHEET NO.
C17
SHEET 18 OF 23



DRIVE-UP ATM HEADACHE BAR DETAIL

N.T.S.

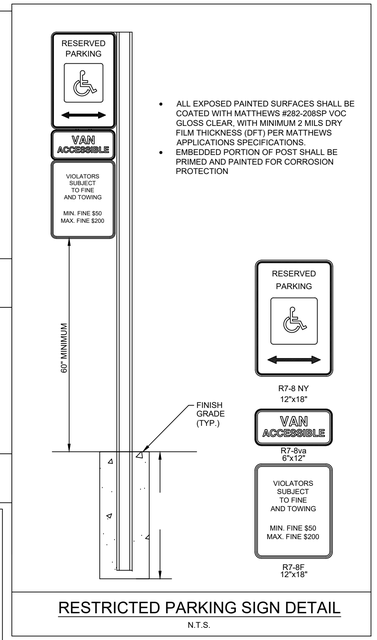


STANDARD RED AND WHITE SIGN

NOTE: ALL SIGNS SHALL MEET THE RETRO-REFLECTIVITY REQUIREMENTS OF MUTCD. ADDITIONALLY THE DATE OF THE MANUFACTURE SHOULD BE PERMANENTLY AFFIXED TO THE BACK OF THE SIGN.

"DO NOT ENTER" SIGN

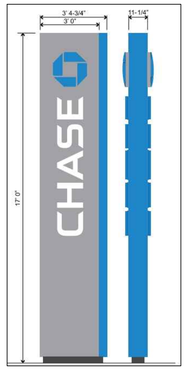
N.T.S.



- ALL EXPOSED PAINTED SURFACES SHALL BE COATED WITH MATTHEWS #282-208SP VOC GLOSS CLEAR, WITH MINIMUM 2 MILS DRY FILM THICKNESS (DFT) PER MATTHEWS APPLICATIONS SPECIFICATIONS.
- EMBEDDED PORTION OF POST SHALL BE PRIMED AND PAINTED FOR CORROSION PROTECTION

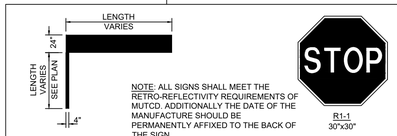
RESTRICTED PARKING SIGN DETAIL

N.T.S.



DOUBLE FACED ILLUMINATED PYLON SIGN DETAIL - 50 SF

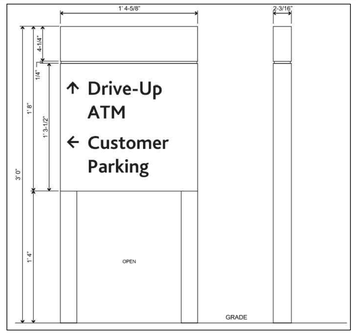
N.T.S.



NOTE: ALL SIGNS SHALL MEET THE RETRO-REFLECTIVITY REQUIREMENTS OF MUTCD. ADDITIONALLY THE DATE OF THE MANUFACTURE SHOULD BE PERMANENTLY AFFIXED TO THE BACK OF THE SIGN.

PAINTED STOP BAR & SIGN DETAIL

N.T.S.



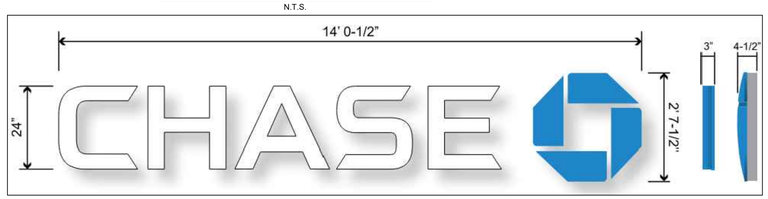
DOUBLE FACED NON-ILLUMINATED DIRECTIONAL SIGN DETAIL - 2.3 SF

N.T.S.

R7-8 NY
12"x18"
RED LETTERING, ARROW AND BORDER ON WHITE BACKGROUND AND LEGEND
R8-31

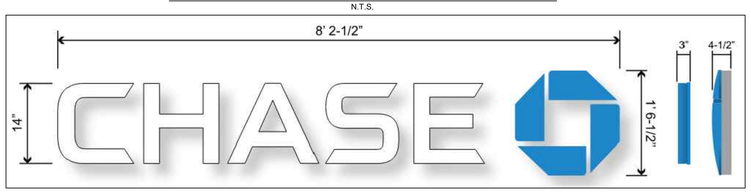
"NO PARKING FIRE LANE" R8-31 SIGN

N.T.S.



CHASE ILLUMINATED WALL SIGN DETAIL - 36.9 SF

N.T.S.

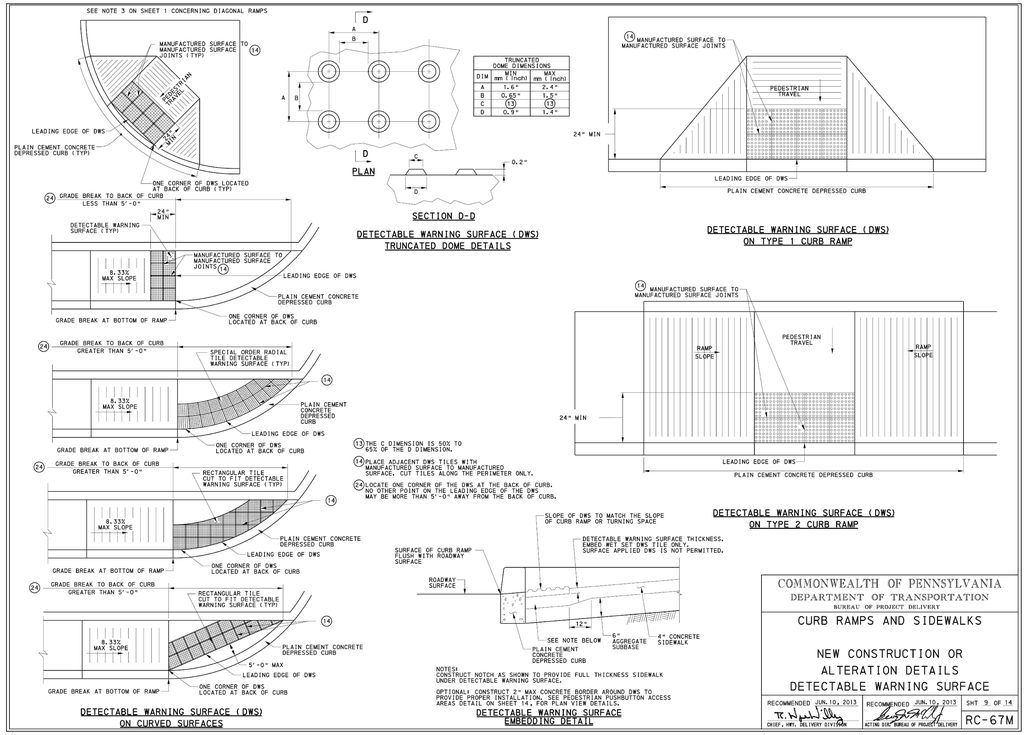


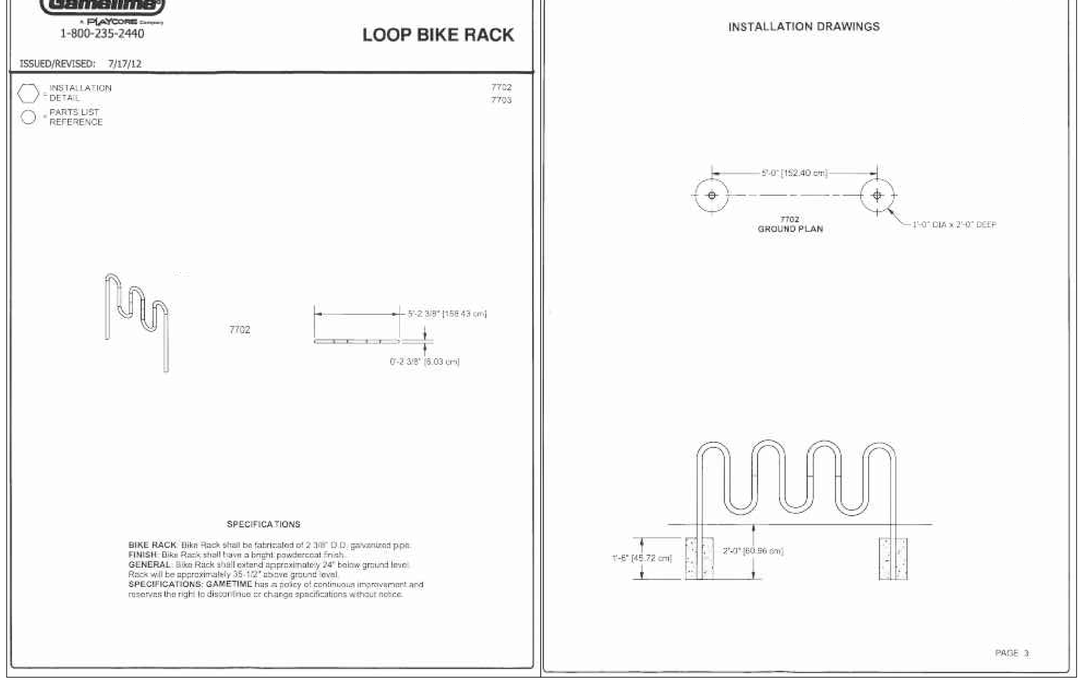
CHASE ILLUMINATED WALL SIGN DETAIL - 12.7 SF

N.T.S.

"NO PARKING FIRE LANE" PAINT DETAIL

N.T.S.





CORE STATES GROUP
201 S. Maple Avenue, Suite 300
Ambler, PA 19002
Phone (215) 809-2125
MSwaggard@core-states.com

CLIENT

CHASE

811 Know what's below. Call before you dig.

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON DESIGN SURVEY INFORMATION AND MAY NOT REFLECT ACTUAL CONDITIONS. ALL UTILITY MEASUREMENTS TAKEN IN THE FIELD. CORE STATES, INC. DOES NOT GUARANTEE THAT LOCATIONS SHOWN ARE EXACT. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANIES 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF UTILITIES.

REV	DATE	COMMENT	BY
1	08/24/21	BCCD, BCPC, AND TWP COMMENTS	CML

DOCUMENT
PRELIMINARY/ FINAL LAND DEVELOPMENT PLAN FOR CHASE BANK

SITE LOCATION
1729 STREET ROAD
BENSALEM, PA
19020

ENGINEER SEAL

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
FRANCIS GREENE
ENGINEER
No. PE075817
COMMONWEALTH OF PENNSYLVANIA

08/26/2021

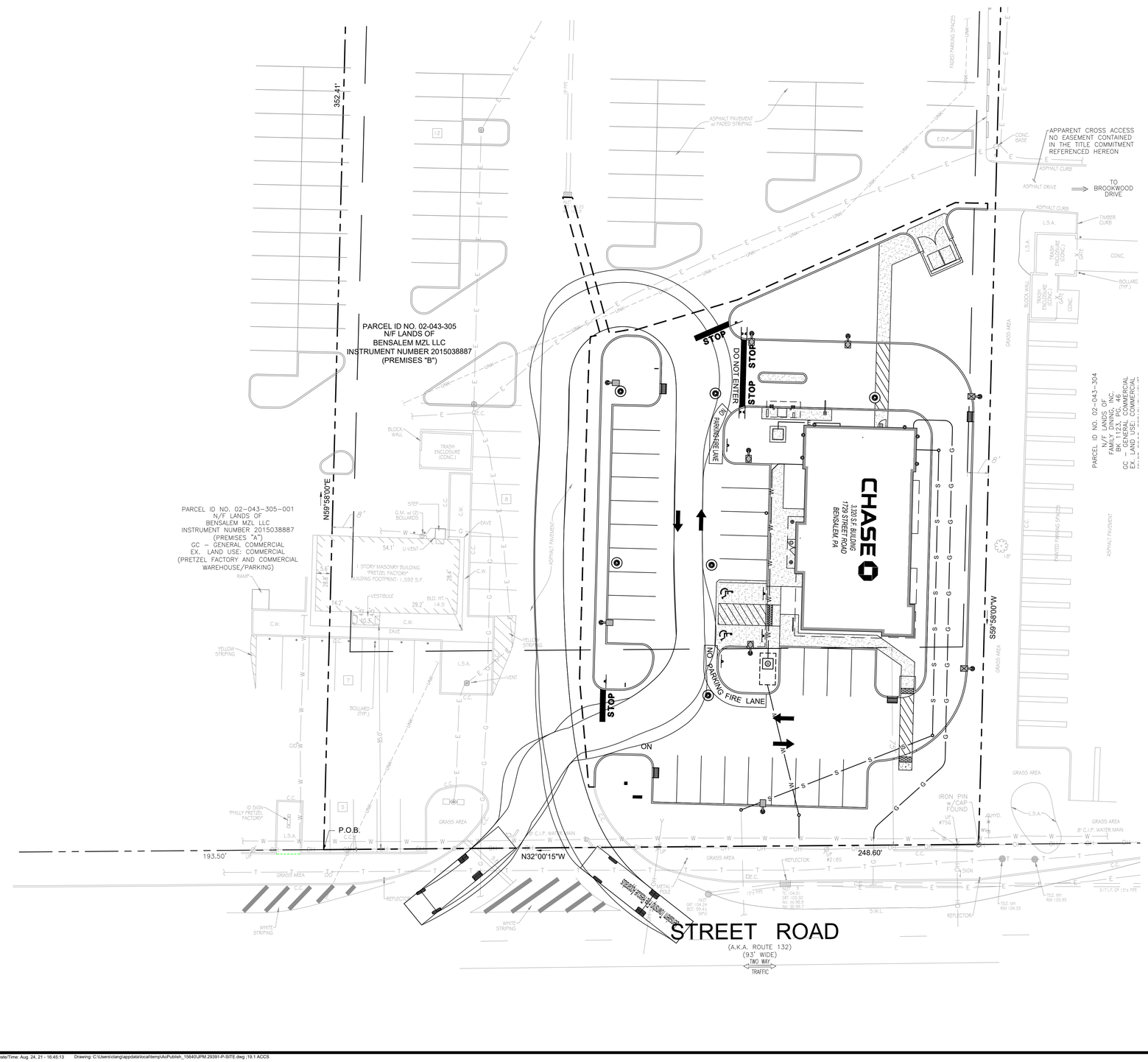
FRANCIS GREENE, P.E.
PA LICENSE #075817

SHEET TITLE
CONSTRUCTION DETAILS

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY
CURB RAMPS AND SIDEWALKS
NEW CONSTRUCTION OR ALTERATION DETAILS
DETECTABLE WARNING SURFACE
RECOMMENDED JUN 19, 2013 — CHIEF, PRE-TELENOVY DIVISION
RECOMMENDED JUN 19, 2013 — ACTING DEPUTY SECRETARY OF PROJECT DELIVERY
SHT 9 OF 14
RC-67M

JOB #:	JPM-29391
DATE:	5/13/21
SCALE:	NTS
DRAWN BY:	CML
CHECKED BY:	FG

SHEET NO.
C18
SHEET 19 OF 23



FIRE LANE AND EMERGENCY VEHICLE ACCESS WAY

1. FIRE LANES SHALL BE A MINIMUM 20' IN WIDTH, TO ALLOW FIRE APPARATUS AND OTHER EMERGENCY UNITS A CLEAR AND UNOBSTRUCTED TRAVEL LANE IN THE EVENT OF A FIRE OR OTHER EMERGENCY.
2. ALL CURBS IN THE DESIGNATED "AREA" ARE TO BE PAINTED WITH YELLOW TRAFFIC MARKING PAINT.
3. IN THE "AREA" DESIGNATED AS BEING THE "FIRE LANE", THE PAVEMENT SHALL BE MARKED WITH THE WORDS - "NO PARKING FIRE LANE". A LINE SHALL BE PAINTED RUNNING PARALLEL WITH THE CURB AND AT A DISTANCE OF 5 FEET FROM THE CURB, ALONG THE ENTIRE "AREA" DESIGNATED AS THE "FIRE LANE". WITHIN THIS "LANE" THE WORDS SHALL BE PAINTED, CENTERED WITH THIS "FIRE LANE".
4. THE WORDING IN THE "FIRE LANE" SHALL BEGIN 10 FEET FROM THE BEGINNING OF THE "FIRE LANE" AND SHALL TERMINATE 10 FEET FROM THE END OF THE "FIRE LANE". THE WORDING SHALL BE WRITTEN EVERY 100 FEET.

LETTER SPECIFICATIONS

"NO PARKING FIRE LANE"

THE SIZE OF EACH LETTER IS TO BE AS FOLLOWS:

A. EACH LETTER SHALL BE OF THE UPPER CASE OR CAPITALIZED VERSION.
B. EACH LETTER IS TO BE PAINTED IN BLOCK TYPE.
C. EACH LETTER SHALL BE 24 INCHES OR 36 INCHES IN HEIGHT.
D. BRUSH STROKE OF EACH LETTER SHALL BE 4 INCHES.
E. COLOR OF PAINT SHALL BE YELLOW AND SHALL BE TRAFFIC MARKING PAINT.
F. THE LINE WHICH IS TO RUN PARALLEL WITH THE CURB LINE AT A DISTANCE OF FIVE (5) FEET FROM SAID CURB SHALL BE OF AT LEAST 4 INCHES IN WIDTH AND NO GREATER THAN 6 INCHES.
G. THIS LINE SHALL BEGIN AT THE FARTHEST POINT OF THE "FIRE LANE" AND CONTINUE ALONG SAID FIRE LANE" AND TERMINATE AT THE OTHER FARTHEST MOST POINT OF THE SAID "FIRE LANE". THERE SHALL BE NO BREAKS IN THIS LINE. IT SHALL BE ONE CONTINUOUS LINE UNTIL ITS TERMINATION.
H. YELLOW TRAFFIC MARKING PAINT SHALL BE USED TO MAKE THE LINE.

WARNING SIGNS

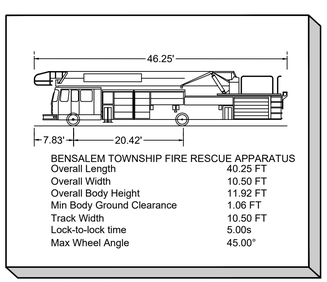
1. "NO PARKING FIRE LANE" SIGNS SHALL POSTED IN CONSPICUOUS LOCATIONS ALONG THE SAID "FIRE LANE".
2. THESE SIGNS SHALL BE VISIBLE TO PERSONS WHO WOULD ATTEMPT TO PARK IN THE "FIRE LANE".

LOCATION OF SIGNS

1. THE FIRE LANE SIGNS SHALL BE POSTED EITHER ON POST OR PILLARS ALONG THE FIRE LANE.
2. A SIGN SHALL BE PLACED AT THE BEGINNING OF THE "FIRE LANE" AND ALSO AT THE TERMINATION OF THE "FIRE LANE".
3. ADDITIONAL SIGNS SHALL BE PLACED AT 50 FOOT INTERVALS WITHIN THIS ZONE.
4. WHEN DEEMED NECESSARY BY THE FIRE OFFICIAL OR BY HIS DULY AUTHORIZED REPRESENTATIVE, SUCH SIGNS SHALL BE MOUNTED ON BOTH SIDES OF THE POST TO GIVE ADEQUATE AND TIMELY NOTICE OF REGULATIONS.
5. THE HEIGHT OF THE SIGNS SHALL BE NO LESS THAN SIX FEET AND NO GREATER THAN NINE FEET IN HEIGHT BEGINNING FROM THE CURB OR SIDEWALK TO THE UPPERMOST EDGE OF THE SIGN.

CONSTRUCTION OF SIGNS

1. THE DIMENSIONS OF THE SIGNS SHALL BE 12 INCHES IN WIDTH BY 18 INCHES IN HEIGHT.
2. THE SIGNS SHALL CONTAIN RED LETTERING ON A WHITE BACKGROUND WHICH SHALL BE PAINTED ON A METAL SIGN OR SIGN APPROVED BY THE FIRE OFFICIAL



BENSALEM TOWNSHIP FIRE RESCUE APPARATUS

Overall Length	40.25 FT
Overall Width	10.50 FT
Overall Body Height	11.92 FT
Min Body Ground Clearance	1.06 FT
Track Width	10.50 FT
Lock-to-lock time	5.00s
Max Wheel Angle	45.00°

BENSALEM TOWNSHIP FIRE RESCUE APPARATUS

SCALE: N.T.S

CORE STATES GROUP
201 S. Maple Avenue, Suite 300
Ambler, PA 19002
Phone (215) 809-2125
MSwaggard@core-states.com

CLIENT

CHASE

Know what's below. Call before you dig.

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REVISIONS

REV	DATE	COMMENT	BY
1	08/24/21	BCCD, BCPC, AND TWP COMMENTS	CML

DOCUMENT

PRELIMINARY/ FINAL LAND DEVELOPMENT PLAN FOR CHASE BANK

SITE LOCATION

1729 STREET ROAD
BENSALEM, PA
19020

ENGINEER SEAL

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL ENGINEER
FRANCIS GREENE
ENGINEER
License No. PE075817
08/26/2021

FRANCIS GREENE, P.E.
PA LICENSE #075817

SHEET TITLE

EMERGENCY ACCESS PLAN - A

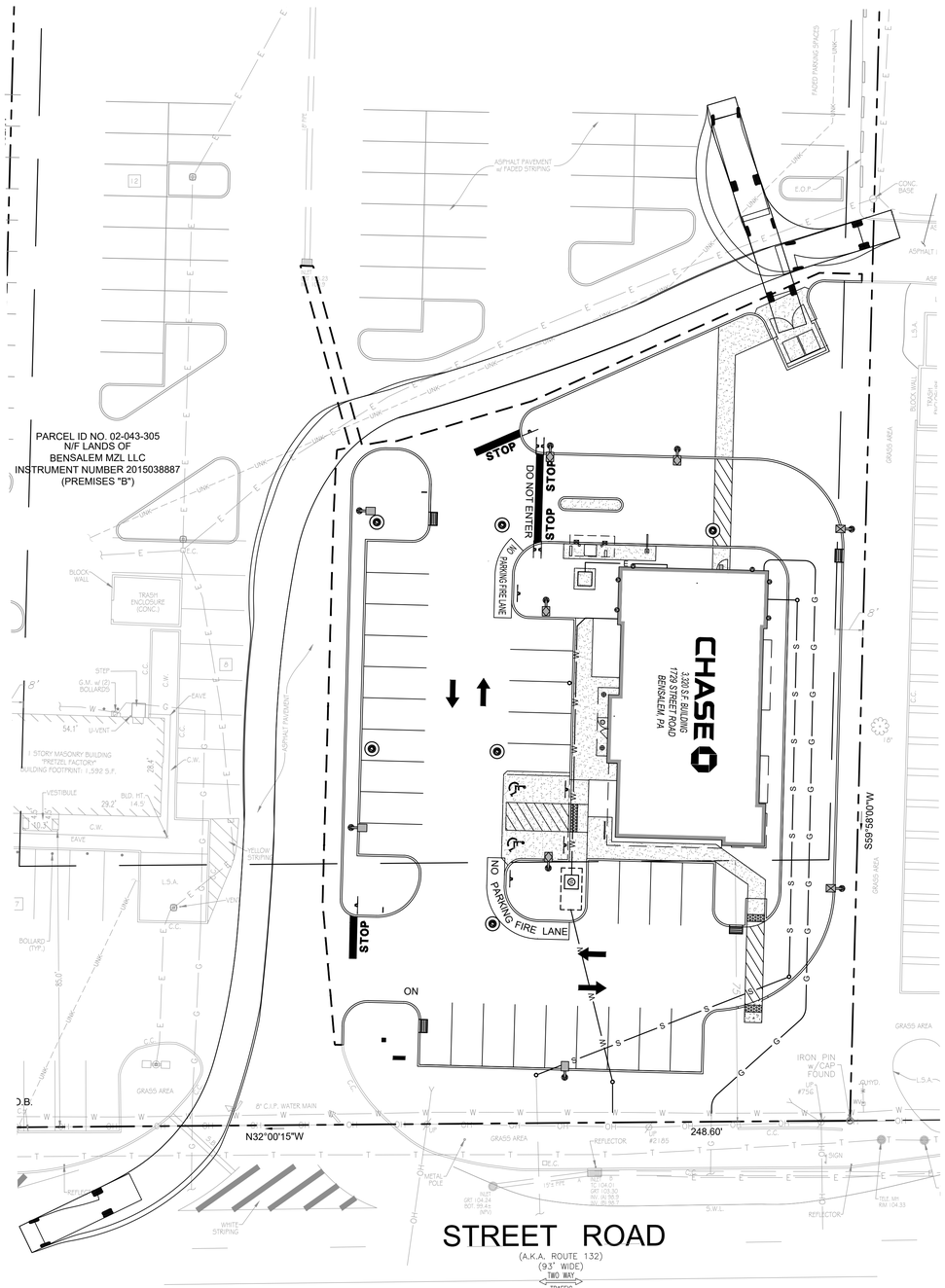
JOB #:	JPM-29391
DATE:	5/13/21
SCALE:	1" = 20'
DRAWN BY:	CML
CHECKED BY:	FG

SHEET NO.

C19.1

SHEET 20 OF 23

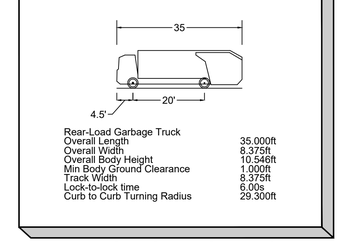
User: CLANG Plot Date/Time: Aug. 24, 21 - 16:45:13 Drawing: C:\Users\clang\appdata\local\temp\AcPublish_15640\JPM.29391-P-SITE.dwg ;19.1 ACCS



GARBAGE TRUCK - EGRESS

GARBAGE TRUCK - INGRESS

GRAPHIC SCALE
20 10 5 0 20
1" = 20'



Rear-Load Garbage Truck	
Overall Length	35.000ft
Overall Width	8.375ft
Overall Body Height	10.546ft
Min Body Ground Clearance	1.000ft
Track Width	8.375ft
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	29.300ft

REAR-LOAD GARBAGE TRUCK
SCALE: N.T.S

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Ambler, PA 19002
Phone (215) 809-2125
MSwaggard@core-states.com

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THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON DESIGN DRAWING, RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. CORE STATES, INC. DOES NOT GUARANTEE THAT LOCATIONS SHOWN ARE EXACT. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF UTILITIES.

REVISIONS

REV	DATE	COMMENT	BY
1	08/24/21	BCCD, BCPC, AND TWP COMMENTS	CML

DOCUMENT
PRELIMINARY/ FINAL LAND DEVELOPMENT PLAN FOR CHASE BANK

SITE LOCATION
1729 STREET ROAD
BENSALEM, PA
19020

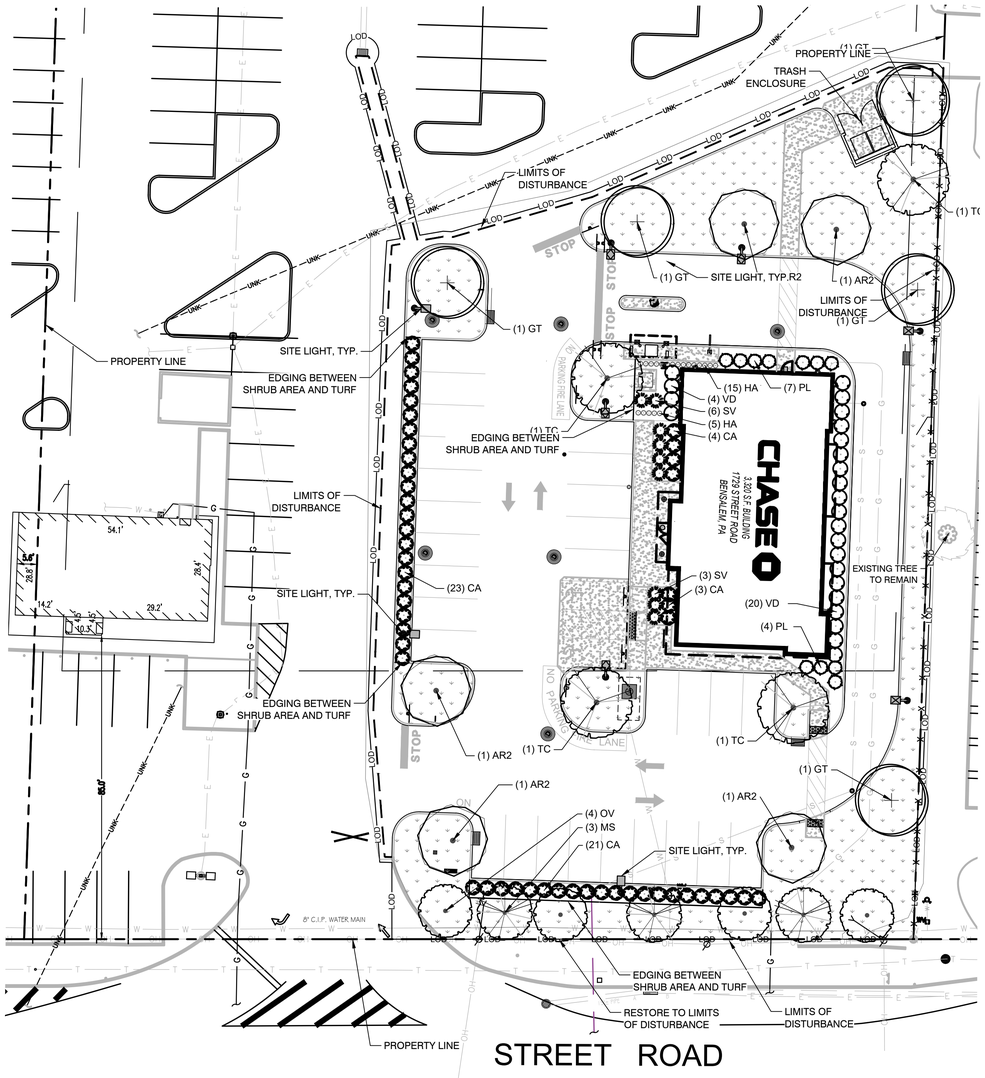
ENGINEER SEAL
COMMONWEALTH OF PENNSYLVANIA
PROFESSIONAL
FRANCIS GREENE
ENGINEER
No. PE078512
PENNSYLVANIA
08/26/2021
FRANCIS GREENE, P.E.
PA LICENSE #075817

SHEET TITLE
EMERGENCY ACCESS PLAN - B

JOB #:	JPM-29391
DATE:	5/13/21
SCALE:	1" = 20'
DRAWN BY:	CML
CHECKED BY:	FG

SHEET NO.
C19.2
SHEET 21 OF 23

User: CLANG Plot Date/Time: Aug. 24, 21 - 16:45:17 Drawing: C:\Users\clang\appdata\local\temp\AcPublish_15640\JPM 29391-P-SITE.dwg ;19.2 ACCS



PLANT SCHEDULE

TREES	CODE	QTY	BOTANICAL / COMMON NAME	CAL.	CONT.	SIZE
	AR2	5	Acer rubrum `Red Sunset` Red Sunset Maple	2.5" Cal.	Cont. or B&B	10`-12`
	GT	5	Gleditsia triacanthos Honey Locust	2.5" Cal.	Cont. or B&B	10`-12`
	MS	3	Malus x `Spring Snow` Spring Snow Crabapple - Fruitless	2.5" Cal.	Cont. or B&B	8`-10`
	OV	4	Ostrya virginiana American Hophornbeam	2.5" Cal.	Cont. or B&B	10`-12`
	TC	4	Tilia cordata Littleleaf Linden	2.5" Cal.	Cont. or B&B	10`-12`

SHRUBS	CODE	QTY	BOTANICAL / COMMON NAME	CONTAINER	SPACING	SIZE
	CA	51	Clethra alnifolia `Hummingbird` Summersweet	5 gal.	Per Plan	30" Min
	HA	20	Hakonechloa macra `All Gold` All Gold Japanese Forest Grass	1 gal.	Per Plan	18"
	PL	11	Physocarpus opulifolius `Little Devil` TM Dwarf Ninebark	5 gal.	Per Plan	30" Min
	SV	9	Spiraea alba latifolia Broad-Leaved Meadow-Sweet	5 gal.	Per Plan	30" Min
	VD	24	Viburnum dentatum `Arrowwood` Arrowwood Viburnum	5 gal.	Per Plan	30" Min

GROUND COVERS	CODE	QTY	BOTANICAL / COMMON NAME	CONT	SPACING	SIZE
	TURF	8,580 sf	Poa pratensis Kentucky Bluegrass	Sod		

LANDSCAPE CALCULATIONS

ZONING:	G-C (GENERAL COMMERCIAL)
LOT AREA:	33,096 SF (.76 ACRES)
STREET TREES	
STREET ROAD:	131 LF
STREET TREES REQUIRED:	7 TREES (MINIMUM 1 PER 20 LF OF FRONTAGE)
STREET TREES PROVIDED:	7 TREES
SITE TREES	10 TREES/ACRE + 1 PER 5 PARKING SPACES .76 ACRES * 10 = 8 + 30 PARKING SPACES/5 = 6
SITE TREES REQUIRED:	14 TREES
SITE TREES PROVIDED:	14 TREES
SCREEN BUFFER	N/A

GENERAL GRADING AND PLANTING NOTES

1. BY SUBMITTING A PROPOSAL FOR THE LANDSCAPE PLANTING SCOPE OF WORK, THE CONTRACTOR CONFIRMS THAT HE HAS READ, AND WILL COMPLY WITH, THE ASSOCIATED NOTES, SPECIFICATIONS, AND DETAILS WITH THIS PROJECT.
2. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL EXISTING VEGETATION (EXCEPT WHERE NOTED TO REMAIN).
3. IN THE CONTEXT OF THESE PLANS, NOTES, AND SPECIFICATIONS, "FINISH GRADE" REFERS TO THE FINAL ELEVATION OF THE SOIL SURFACE (NOT TOP OF MULCH) AS INDICATED ON THE GRADING PLANS.
   a. BEFORE STARTING WORK, THE LANDSCAPE CONTRACTOR SHALL VERIFY THAT THE ROUGH GRADES OF ALL LANDSCAPE AREAS ARE WITHIN +/-0.1' OF FINISH GRADE. SEE SPECIFICATIONS FOR MORE DETAILED INSTRUCTION ON TURF AREA AND PLANTING BED PREPARATION.
   b. CONSTRUCT AND MAINTAIN FINISH GRADES AS SHOWN ON GRADING PLANS, AND CONSTRUCT AND MAINTAIN SLOPES AS RECOMMENDED BY THE GEOTECHNICAL REPORT. ALL LANDSCAPE AREAS SHALL HAVE POSITIVE DRAINAGE AWAY FROM STRUCTURES AT THE MINIMUM SLOPE SPECIFIED IN THE REPORT AND ON THE GRADING PLANS, AND AREAS OF POTENTIAL PONDING SHALL BE REGRADED TO BLEND IN WITH THE SURROUNDING GRADES AND ELIMINATE PONDING POTENTIAL.
   c. THE LANDSCAPE CONTRACTOR SHALL DETERMINE WHETHER OR NOT THE EXPORT OF ANY SOIL WILL BE NEEDED, TAKING INTO ACCOUNT THE ROUGH GRADE PROVIDED, THE AMOUNT OF SOIL AMENDMENTS TO BE ADDED (**BASED ON A SOIL TEST**, PER SPECIFICATIONS), AND THE FINISH GRADES TO BE ESTABLISHED.
   d. ENSURE THAT THE FINISH GRADE IN SHRUB AREAS IMMEDIATELY ADJACENT TO WALKS AND OTHER WALKING SURFACES, AFTER INSTALLING SOIL AMENDMENTS, IS 3" BELOW THE ADJACENT FINISH SURFACE, IN ORDER TO ALLOW FOR PROPER MULCH DEPTH. TAPER THE SOIL SURFACE TO MEET FINISH GRADE, AS SPECIFIED ON THE GRADING PLANS, AT APPROXIMATELY 18" AWAY FROM THE WALKS.
   e. ENSURE THAT THE FINISH GRADE IN TURF AREAS IMMEDIATELY ADJACENT TO WALKS AND OTHER WALKING SURFACES, AFTER INSTALLING SOIL AMENDMENTS, IS 1" BELOW THE FINISH SURFACE OF THE WALKS. TAPER THE SOIL SURFACE TO MEET FINISH GRADE, AS SPECIFIED ON THE GRADING PLANS, AT APPROXIMATELY 18" AWAY FROM THE WALKS.
   f. SHOULD ANY CONFLICTS AND/OR DISCREPANCIES ARISE BETWEEN THE GRADING PLANS, GEOTECHNICAL REPORT, THESE NOTES AND PLANS, AND ACTUAL CONDITIONS, THE CONTRACTOR SHALL IMMEDIATELY BRING SUCH ITEMS TO THE ATTENTION OF THE LANDSCAPE ARCHITECT, GENERAL CONTRACTOR, AND OWNER.
4. ALL PLANT LOCATIONS ARE DIAGRAMMATIC. ACTUAL LOCATIONS SHALL BE VERIFIED WITH THE LANDSCAPE ARCHITECT OR DESIGNER PRIOR TO PLANTING. THE LANDSCAPE CONTRACTOR SHALL ENSURE THAT ALL REQUIREMENTS OF THE PERMITTING AUTHORITY ARE MET (I.E., MINIMUM PLANT QUANTITIES, PLANTING METHODS, TREE PROTECTION METHODS, ETC.).
   a. THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR DETERMINING PLANT QUANTITIES; PLANT QUANTITIES SHOWN ON LEGENDS AND CALLOUTS ARE FOR GENERAL INFORMATION ONLY. IN THE EVENT OF A DISCREPANCY BETWEEN THE PLAN AND THE PLANT LEGEND, THE PLANT QUANTITY AS SHOWN ON THE PLAN (FOR INDIVIDUAL SYMBOLS) OR CALLOUT (FOR GROUNDCOVER PATTERNS) SHALL TAKE PRECEDENCE.
   b. **NO SUBSTITUTIONS OF PLANT MATERIALS SHALL BE ALLOWED WITHOUT THE WRITTEN PERMISSION OF THE LANDSCAPE ARCHITECT AND TOWSHIP LANDSCAPE ARCHITECT.** IF SOME OF THE PLANTS ARE NOT AVAILABLE, THE LANDSCAPE CONTRACTOR SHALL NOTIFY THE LANDSCAPE ARCHITECT IN WRITING (VIA PROPER CHANNELS).
   c. THE CONTRACTOR SHALL, AT A MINIMUM, PROVIDE REPRESENTATIVE PHOTOS OF ALL PLANTS PROPOSED FOR THE PROJECT. THE CONTRACTOR SHALL ALLOW THE LANDSCAPE ARCHITECT AND THE OWNER/OWNER'S REPRESENTATIVE TO INSPECT, AND APPROVE OR REJECT, ALL PLANTS DELIVERED TO THE JOBSITE. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS FOR SUBMITTALS.
5. THE CONTRACTOR SHALL MAINTAIN THE LANDSCAPE IN A HEALTHY CONDITION FOR 90 DAYS AFTER ACCEPTANCE BY THE OWNER. REFER TO SPECIFICATIONS FOR CONDITIONS OF ACCEPTANCE FOR THE START OF THE MAINTENANCE PERIOD, AND FOR FINAL ACCEPTANCE AT THE END OF THE MAINTENANCE PERIOD.
6. SEE SPECIFICATIONS AND DETAILS FOR FURTHER REQUIREMENTS.

ROOT BARRIERS

THE CONTRACTOR SHALL INSTALL ROOT BARRIERS NEAR ALL NEWLY-PLANTED TREES THAT ARE LOCATED WITHIN FIVE (5) FEET OF PAVING OR CURBS. ROOT BARRIERS SHALL BE "CENTURY" OR "DEEP-ROOT" 24" DEEP PANELS (OR EQUAL). BARRIERS SHALL BE LOCATED IMMEDIATELY ADJACENT TO HARDSCAPE. INSTALL PANELS PER MANUFACTURER'S RECOMMENDATIONS. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR USE ROOT BARRIERS OF A TYPE THAT COMPLETELY ENCIRCLE THE ROOTBALL.

MULCHES

AFTER ALL PLANTING IS COMPLETE, CONTRACTOR SHALL INSTALL 3" THICK LAYER OF 1-1/2" SHREDDED WOOD MULCH, NATURAL (UNDYED), IN ALL PLANTING AREAS (EXCEPT FOR TURF AND SEEDED AREAS). CONTRACTOR SHALL SUBMIT SAMPLES OF ALL MULCHES TO LANDSCAPE ARCHITECT AND OWNER FOR APPROVAL PRIOR TO CONSTRUCTION. ABSOLUTELY NO EXPOSED GROUND SHALL BE LEFT SHOWING ANYWHERE ON THE PROJECT AFTER MULCH HAS BEEN INSTALLED (SUBJECT TO THE CONDITIONS AND REQUIREMENTS OF THE "GENERAL GRADING AND PLANTING NOTES" AND SPECIFICATIONS).

Scale 1" = 20'

EVERGREEN DESIGN GROUP
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1200 US Highway 22 E Suite 2000-2248
Bridgewater, NJ 08807
www.EvergreenDesignGroup.com

CORE STATES GROUP
201 S. Maple Avenue, Suite 300
Ambler, PA 19002
Phone (215) 809-2125
MSwaggard@core-states.com

CLIENT

CHASE

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REV	DATE	COMMENT	BY
1	08/03/21	BCCD, FIRE DEPT & TWP COMMENTS	CML

DOCUMENT

PRELIMINARY/ FINAL LAND DEVELOPMENT PLAN FOR CHASE BANK

SITE LOCATION

1729 STREET ROAD
BENSALEM, PA
19020

ENGINEER SEAL

COMMONWEALTH OF PENNSYLVANIA ERIC SHEPLEY REGISTERED LANDSCAPE ARCHITECT

Eric M. Shepley, R.L.A.
PA LICENSE #LA003179 8/6/21

SHEET TITLE

LANDSCAPE PLANTING

JOB #:	JPM-29391
DATE:	5/13/21
SCALE:	
DRAWN BY:	EMS
CHECKED BY:	RM

SHEET NO.

LP-1
22 OF 23

PLANTING SPECIFICATIONS

GENERAL

A. QUALIFICATIONS OF LANDSCAPE CONTRACTOR
   1. ALL LANDSCAPE WORK SHOWN ON THESE PLANS SHALL BE PERFORMED BY A SINGLE FIRM SPECIALIZING IN LANDSCAPE PLANTING.
   2. A LIST OF SUCCESSFULLY COMPLETED PROJECTS OF THIS TYPE, SIZE AND NATURE MAY BE REQUESTED BY THE OWNER FOR FURTHER QUALIFICATION MEASURES.
   3. THE LANDSCAPE CONTRACTOR SHALL HOLD A VALID CONTRACTOR'S LICENSE ISSUED BY THE APPROPRIATE LOCAL JURISDICTION.

B. SCOPE OF WORK
   1. WORK COVERED BY THESE SECTIONS INCLUDES THE FURNISHING AND PAYMENT OF ALL MATERIALS, LABOR, SERVICES, EQUIPMENT, LICENSES, TAXES AND ANY OTHER ITEMS THAT ARE NECESSARY FOR THE EXECUTION, INSTALLATION AND COMPLETION OF ALL WORK, SPECIFIED HEREIN AND / OR SHOWN ON THE LANDSCAPE PLANS, NOTES, AND DETAILS.
   2. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE LAWS, CODES AND REGULATIONS REQUIRED BY AUTHORITIES HAVING JURISDICTION OVER SUCH WORK, INCLUDING ALL INSPECTIONS AND PERMITS REQUIRED BY FEDERAL, STATE AND LOCAL AUTHORITIES IN SUPPLY, TRANSPORTATION AND INSTALLATION OF MATERIALS.
   3. THE LANDSCAPE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UNDERGROUND UTILITY LINES (WATER, SEWER, ELECTRICAL, TELEPHONE, GAS, CABLE, TELEVISION, ETC.) PRIOR TO THE START OF ANY WORK.

PRODUCTS

A. ALL MANUFACTURED PRODUCTS SHALL BE NEW.

B. CONTAINER AND BALLED-AND-BURLAPPED PLANTS:
   1. FURNISH NURSERY-GROWN PLANTS COMPLYING WITH ANSI Z60.1-2014. PROVIDE WELL-SHAPED, FULLY BRANCHED, HEALTHY, VIGOROUS STOCK FREE OF DISEASE, INSECTS, EGGS, LARVAE, AND DEFECTS SUCH AS KNOTS, SUN SCALD, INJURIES, ABRASIONS, AND DISFIGUREMENT. ALL PLANTS WITHIN A SPECIES SHALL HAVE SIMILAR SIZE, AND SHALL BE OF A FORM TYPICAL FOR THE SPECIES. ALL TREES SHALL BE OBTAINED FROM SOURCES WITHIN 200 MILES OF THE PROJECT SITE, AND WITH SIMILAR CLIMACTIC CONDITIONS.
   2. ROOT SYSTEMS SHALL BE HEALTHY, DENSELY BRANCHED ROOT SYSTEMS, NON-POT-BOUND, FREE FROM ENCIRCLING AND/OR GIRDLING ROOTS, AND FREE FROM ANY OTHER ROOT DEFECTS (SUCH AS J-SHAPED ROOTS).
   3. TREES MAY BE PLANTED FROM CONTAINERS OR BALLED-AND-BURLAPPED (B&B), UNLESS SPECIFIED ON THE PLANTING LEGEND. BARE-ROOT TREES ARE NOT ACCEPTABLE.
   4. ANY PLANT DEEMED UNACCEPTABLE BY THE LANDSCAPE ARCHITECT OR OWNER SHALL BE IMMEDIATELY REMOVED FROM THE SITE AND SHALL BE REPLACED WITH AN ACCEPTBLE PLANT OF LIKE TYPE AND SIZE AT THE CONTRACTOR'S OWN EXPENSE. ANY PLANTS APPEARING TO BE UNHEALTHY, EVEN IF DETERMINED TO STILL BE ALIVE, SHALL NOT BE ACCEPTED. THE LANDSCAPE ARCHITECT AND OWNER SHALL BE THE SOLE JUDGES AS TO THE ACCEPTABILITY OF PLANT MATERIAL.
   5. ALL TREES SHALL BE STANDARD IN FORM, UNLESS OTHERWISE SPECIFIED. TREES WITH CENTRAL LEADERS WILL NOT BE ACCEPTED IF LEADER IS DAMAGED OR REMOVED. PRUNE ALL DAMAGED TWIGS AFTER PLANTING.
   6. CALIPER MEASUREMENTS FOR STANDARD (SINGLE TRUNK) TREES SHALL BE AS FOLLOWS: SIX INCHES ABOVE THE ROOT FLARE FOR TREES UP TO AND INCLUDING FOUR INCHES IN CALIPER, AND TWELVE INCHES ABOVE THE ROOT FLARE FOR TREES EXCEEDING FOUR INCHES IN CALIPER.
   7. MULTI-TRUNK TREES SHALL BE MEASURED BY THEIR OVERALL HEIGHT, MEASURED FROM THE TOP OF THE ROOT BALL. WHERE CALIPER MEASUREMENTS ARE USED, THE CALIPER SHALL BE CALCULATED AS ONE-HALF OF THE SUM OF THE CALIPER OF THE THREE LARGEST TRUNKS.
   8. ANY TREE OR SHRUB SHOWN TO HAVE EXCESS SOIL PLACED ON TOP OF THE ROOT BALL, SO THAT THE ROOT FLARE HAS BEEN COMPLETELY COVERED, SHALL BE REJECTED.

C. SOD: PROVIDE WELL-ROOTED SOD OF THE VARIETY NOTED ON THE PLANS. SOD SHALL BE CUT FROM HEALTHY, MATURE TURF WITH SOIL THICKNESS OF 3/4" TO 1". EACH PALLET OF SOD SHALL BE ACCOMPANIED BY A CERTIFICATE FROM SUPPLIER STATING THE COMPOSITION OF THE SOD.

D. TOPSOIL: SANDY TO CLAY LOAM TOPSOIL, FREE OF STONES LARGER THAN ½ INCH, FOREIGN MATTER, PLANTS, ROOTS, AND SEEDS.

E. COMPOST: WELL-COMPOSTED, STABLE, AND WEED-FREE ORGANIC MATTER, pH RANGE OF 5.5 TO 8; MOISTURE CONTENT 35 TO 55 PERCENT BY WEIGHT; 100 PERCENT PASSING THROUGH 3/4-INCH SIEVE; SOLUBLE SALT CONTENT OF 5 TO 10 DECISIEMENS/M; NOT EXCEEDING 0.5 PERCENT INERT CONTAMINANTS AND FREE OF SUBSTANCES TOXIC TO PLANTINGS. NO MANURE OR ANIMAL-BASED PRODUCTS SHALL BE USED.

F. FERTILIZER: GRANULAR FERTILIZER CONSISTING OF NITROGEN, PHOSPHORUS, POTASSIUM, AND OTHER NUTRIENTS IN PROPORTIONS, AMOUNTS, AND RELEASE RATES RECOMMENDED IN A SOIL REPORT FROM A QUALIFIED SOIL-TESTING AGENCY (SEE BELOW).

G. MULCH: SIZE AND TYPE AS INDICATED ON PLANS, FREE FROM DELETERIOUS MATERIALS AND SUITABLE AS A TOP DRESSING OF TREES AND SHRUBS.

H. TREE STAKING AND GUYING
   1. STAKES: 6' LONG GREEN METAL T-POSTS.
   2. GUY AND TIE WIRE: ASTM A 641, CLASS 1, GALVANIZED-STEEL WIRE, 2-STRAND, TWISTED, 0.106 INCH DIAMETER.
   3. STRAP CHAFING GUARD: REINFORCED NYLON OR CANVAS AT LEAST 1-1/2 INCH WIDE, WITH GROMMETS TO PROTECT TREE TRUNKS FROM DAMAGE.

I. STEEL EDGING: PROFESSIONAL STEEL EDGING, 14 GAUGE THICK X 4 INCHES WIDE, FACTORY PAINTED DARK GREEN. ACCEPTABLE MANUFACTURERS INCLUDE COL-MET OR APPROVED EQUAL.

J. PRE-EMERGENT HERBICIDES: ANY GRANULAR, NON-STAINING PRE-EMERGENT HERBICIDE THAT IS LABELED FOR THE SPECIFIC ORNAMENTALS OR TURF ON WHICH IT WILL BE UTILIZED. PRE-EMERGENT HERBICIDES SHALL BE APPLIED PER THE MANUFACTURER'S LABELED RATES.

METHODS

A. SOIL PREPARATION
   1. BEFORE STARTING WORK, THE LANDSCAPE CONTRACTOR SHALL VERIFY THAT THE GRADE OF ALL LANDSCAPE AREAS ARE WITHIN +/-0.1' OF FINISH GRADE. THE CONTRACTOR SHALL NOTIFY THE OWNER IMMEDIATELY SHOULD ANY DISCREPANCIES EXIST.
   2. SOIL TESTING:
      a. AFTER FINISH GRADES HAVE BEEN ESTABLISHED, CONTRACTOR SHALL HAVE SOIL SAMPLES FROM THE PROJECT'S LANDSCAPE AREAS TESTED BY AN ESTABLISHED SOIL TESTING LABORATORY. EACH SAMPLE SUBMITTED TO THE LAB SHALL CONTAIN NO LESS THAN ONE QUART OF SOIL, TAKEN FROM BETWEEN THE SOIL SURFACE AND 6" DEPTH. IF NO SAMPLE LOCATIONS ARE INDICATED ON THE PLANS, THE CONTRACTOR SHALL TAKE A MINIMUM OF THREE SAMPLES FROM VARIOUS REPRESENTATIVE LOCATIONS FOR TESTING.
      b. THE CONTRACTOR SHALL HAVE THE SOIL TESTING LABORATORY PROVIDE RESULTS FOR THE FOLLOWING: SOIL TEXTURAL CLASS, GENERAL SOIL FERTILITY, pH, ORGANIC MATTER CONTENT, SALT (CEC), LIME, SODIUM ADSORPTION RATIO (SAR) AND BORON CONTENT.
      c. THE CONTRACTOR SHALL ALSO SUBMIT THE PROJECT'S PLANT LIST TO THE LABORATORY ALONG WITH THE SOIL SAMPLES.
      d. THE SOIL REPORT PRODUCED BY THE LABORATORY SHALL CONTAIN RECOMMENDATIONS FOR THE FOLLOWING (AS APPROPRIATE): SEPARATE SOIL PREPARATION AND BACKFILL MIX RECOMMENDATIONS FOR GENERAL ORNAMENTAL PLANTS, XERIC PLANTS, TURF, AND NATIVE SEED, AS WELL AS PRE-PLANT FERTILIZER APPLICATIONS AND RECOMMENDATIONS FOR ANY OTHER SOIL RELATED ISSUES. THE REPORT SHALL ALSO PROVIDE A FERTILIZER PROGRAM FOR THE ESTABLISHMENT PERIOD AND FOR LONG-TERM MAINTENANCE.
   3. THE CONTRACTOR SHALL INSTALL SOIL AMENDMENTS AND FERTILIZERS PER THE SOILS REPORT RECOMMENDATIONS. ANY CHANGE IN COST DUE TO THE SOIL REPORT RECOMMENDATIONS, EITHER INCREASE OR DECREASE, SHALL BE SUBMITTED TO THE OWNER WITH THE REPORT.
   4. FOR BIDDING PURPOSES ONLY, THE SOIL PREPARATION SHALL CONSIST OF THE FOLLOWING:
      a. TURF: INCORPORATE THE FOLLOWING AMENDMENTS INTO THE TOP 8" OF SOIL BY MEANS OF ROTOTILLING AFTER CROSS-RIPPING:
      i. NITROGEN STABILIZED ORGANIC AMENDMENT - 4 CU. YDS. PER 1,000 S.F.
      ii. PREPLANT TURF FERTILIZER (10-20-10 OR SIMILAR, SLOW RELEASE, ORGANIC) - 15 LBS PER 1,000 S.F.
      iii. "CLAY BUSTER" OR EQUAL - USE MANUFACTURER'S RECOMMENDED RATE
      b. TREES, SHRUBS, AND PERENNIALS: INCORPORATE THE FOLLOWING AMENDMENTS INTO THE TOP 8" OF SOIL BY MEANS OF ROTOTILLING AFTER CROSS-RIPPING:
      i. NITROGEN STABILIZED ORGANIC AMENDMENT - 4 CU. YDS. PER 1,000 S.F.
      ii. 12-12-12 FERTILIZER (OR SIMILAR, ORGANIC, SLOW RELEASE) - 10 LBS. PER CU. YD.
      iii. "CLAY BUSTER" OR EQUAL - USE MANUFACTURER'S RECOMMENDED RATE
      iv. IRON SULPHATE - 2 LBS. PER CU. YD.
   5. IN THE CONTEXT OF THESE PLANS, NOTES, AND SPECIFICATIONS, "FINISH GRADE" REFERS TO THE FINAL ELEVATION OF THE SOIL SURFACE (NOT TOP OF MULCH) AS INDICATED ON THE GRADING PLANS.
      a. BEFORE STARTING WORK, THE LANDSCAPE CONTRACTOR SHALL VERIFY THAT THE ROUGH GRADES OF ALL LANDSCAPE AREAS ARE WITHIN +/-0.1' OF FINISH GRADE. SEE SPECIFICATIONS FOR MORE DETAILED INSTRUCTION ON TURF AREA AND PLANTING BED PREPARATION.
      b. CONSTRUCT AND MAINTAIN FINISH GRADES AS SHOWN ON GRADING PLANS, AND CONSTRUCT AND MAINTAIN SLOPES AS RECOMMENDED BY THE GEOTECHNICAL REPORT. ALL LANDSCAPE AREAS SHALL HAVE POSITIVE DRAINAGE AWAY FROM STRUCTURES AT THE MINIMUM SLOPE SPECIFIED IN THE REPORT AND ON THE GRADING PLANS, AND AREAS OF POTENTIAL PONDING SHALL BE REGRADED TO BLEND IN WITH THE SURROUNDING GRADES AND ELIMINATE PONDING POTENTIAL.
      c. THE LANDSCAPE CONTRACTOR SHALL DETERMINE WHETHER OR NOT THE EXPORT OF ANY SOIL WILL BE NEEDED, TAKING INTO ACCOUNT THE ROUGH GRADE PROVIDED, THE AMOUNT OF SOIL AMENDMENTS TO BE ADDED (**BASED ON A SOIL TEST**, PER SPECIFICATIONS), AND THE FINISH GRADES TO BE ESTABLISHED.
      d. ENSURE THAT THE FINISH GRADE IN SHRUB AREAS IMMEDIATELY ADJACENT TO WALKS AND OTHER WALKING SURFACES, AFTER INSTALLING SOIL AMENDMENTS, IS 3" BELOW THE ADJACENT FINISH SURFACE, IN ORDER TO ALLOW FOR PROPER MULCH DEPTH. TAPER THE SOIL SURFACE TO MEET FINISH GRADE, AS SPECIFIED ON THE GRADING PLANS, AT APPROXIMATELY 18" AWAY FROM THE WALKS.
      e. ENSURE THAT THE FINISH GRADE IN TURF AREAS IMMEDIATELY ADJACENT TO WALKS AND OTHER WALKING SURFACES, AFTER INSTALLING SOIL AMENDMENTS, IS 1" BELOW THE FINISH SURFACE OF THE WALKS. TAPER THE SOIL SURFACE TO MEET FINISH GRADE, AS SPECIFIED ON THE GRADING PLANS, AT APPROXIMATELY 18" AWAY FROM THE WALKS.
      f. SHOULD ANY CONFLICTS AND/OR DISCREPANCIES ARISE BETWEEN THE GRADING PLANS, GEOTECHNICAL REPORT, THESE NOTES AND PLANS, AND ACTUAL CONDITIONS, THE CONTRACTOR SHALL IMMEDIATELY BRING SUCH ITEMS TO THE ATTENTION OF THE LANDSCAPE ARCHITECT, GENERAL CONTRACTOR, AND OWNER.
   6. ONCE SOIL PREPARATION IS COMPLETE, THE LANDSCAPE CONTRACTOR SHALL ENSURE THAT THERE ARE NO DEBRIS, TRASH, OR STONES LARGER THAN 1" REMAINING IN THE TOP 6" OF SOIL.

B. SUBMITTALS
   1. THE CONTRACTOR SHALL PROVIDE SUBMITTALS AND SAMPLES, IF REQUIRED, TO THE LANDSCAPE ARCHITECT, AND RECEIVE APPROVAL IN WRITING FOR SUCH SUBMITTALS BEFORE WORK COMMENCES.
   2. SUBMITTALS SHALL INCLUDE PHOTOS OF PLANTS WITH A RULER OR MEASURING STICK FOR SCALE, PHOTOS OR SAMPLES OF ANY REQUIRED MULCHES, AND SOIL TEST RESULTS AND PREPARATION RECOMMENDATIONS FROM THE TESTING LAB (INCLUDING COMPOST AND FERTILIZER RATES AND TYPES, AND OTHER AMENDMENTS FOR TREE/SHRUB, TURF, AND SEED AREAS AS MAY BE APPROPRIATE).
   3. SUBMITTALS SHALL ALSO INCLUDE MANUFACTURER CUT SHEETS FOR PLANTING ACCESSORIES SUCH AS TREE STAKES AND TIES, EDGING, AND LANDSCAPE FABRICS (IF ANY).
   4. WHERE MULTIPLE ITEMS ARE SHOWN ON A PAGE, THE CONTRACTOR SHALL CLEARLY INDICATE THE ITEM BEING CONSIDERED.

C. GENERAL PLANTING
   1. REMOVE ALL NURSERY TAGS AND STAKES FROM PLANTS.
   2. EXCEPT IN AREAS TO BE PLANTED WITH ORNAMENTAL GRASSES, APPLY PRE-EMERGENT HERBICIDES AT THE MANUFACTURER'S RECOMMENDED RATE.
   3. TRENCHING NEAR EXISTING TREES:
      a. CONTRACTOR SHALL NOT DISTURB ROOTS 1-1/2" AND LARGER IN DIAMETER WITHIN THE CRITICAL ROOT ZONE (CRZ) OF EXISTING TREES, AND SHALL EXERCISE ALL POSSIBLE CARE AND PRECAUTIONS TO AVOID INJURY TO TREE ROOTS, TRUNKS, AND BRANCHES. THE CRZ IS DEFINED AS A CIRCULAR AREA EXTENDING OUTWARD FROM THE TREE TRUNK, WITH A RADIUS EQUAL TO 1' FOR EVERY 1" OF TRUNK DIAMETER-AT-BREAST-HEIGHT (4.5' ABOVE THE AVERAGE GRADE AT THE TRUNK).
      b. ALL EXCAVATION WITHIN THE CRZ SHALL BE PERFORMED USING HAND TOOLS. NO MACHINE EXCAVATION OR TRENCHING OF ANY KIND SHALL BE ALLOWED WITHIN THE CRZ.
      c. ALTER ALIGNMENT OF PIPE TO AVOID TREE ROOTS 1-1/2" AND LARGER IN DIAMETER. WHERE TREE ROOTS 1-1/2" AND LARGER IN DIAMETER ARE ENCOUNTERED IN THE FIELD, TUNNEL UNDER SUCH ROOTS. WRAP EXPOSED ROOTS WITH SEVERAL LAYERS OF BURLAP AND KEEP MOIST. CLOSE ALL TRENCHES WITHIN THE CANOPY DRIP LINES WITHIN 24 HOURS.
      d. ALL SEVERED ROOTS SHALL BE HAND PRUNED WITH SHARP TOOLS AND ALLOWED TO AIR-DRY. DO NOT USE ANY SORT OF SEALERS OR WOUND PAINTS.

D. TREE PLANTING
   1. TREE PLANTING HOLES SHALL BE EXCAVATED TO MINIMUM WIDTH OF TWO TIMES THE WIDTH OF THE ROOTBALL, AND TO A DEPTH EQUAL TO THE DEPTH OF THE ROOTBALL LESS TWO TO FOUR INCHES.
   2. SCARIFY THE SIDES AND BOTTOM OF THE PLANTING HOLE PRIOR TO THE PLACEMENT OF THE TREE. REMOVE ANY GLAZING THAT MAY HAVE BEEN CAUSED DURING THE EXCAVATION OF THE HOLE.
   3. FOR CONTAINER AND BOX TREES, TO REMOVE ANY POTENTIALLY GIRDLING ROOTS AND OTHER ROOT DEFECTS, THE CONTRACTOR SHALL SHAVE A 1" LAYER OFF OF THE SIDES AND BOTTOM OF THE ROOTBALL OF ALL TREES JUST BEFORE PLACING INTO THE PLANTING PIT. DO NOT "TEASE" ROOTS OUT FROM THE ROOTBALL.
   4. INSTALL THE TREE ON UNDISTURBED SUBGRADE SO THAT THE TOP OF THE ROOTBALL IS TWO TO FOUR INCHES ABOVE THE SURROUNDING GRADE.
   5. BACKFILL THE TREE HOLE UTILIZING THE EXISTING TOPSOIL FROM ON-SITE. ROCKS LARGER THAN 1" DIA. AND ALL OTHER DEBRIS SHALL BE REMOVED FROM THE SOIL PRIOR TO THE BACKFILL. SHOULD ADDITIONAL SOIL BE REQUIRED TO ACCOMPLISH THIS TASK, USE STORED TOPSOIL FROM ON-SITE OR IMPORT ADDITIONAL TOPSOIL FROM OFF-SITE AT NO ADDITIONAL COST TO THE OWNER. IMPORTED TOPSOIL SHALL BE OF SIMILAR TEXTURAL CLASS AND COMPOSITION IN THE ON-SITE SOIL.
   6. TREES SHALL NOT BE STAKED UNLESS LOCAL CONDITIONS (SUCH AS HEAVY WINDS OR SLOPES) REQUIRE STAKES TO KEEP TREES UPRIGHT. SHOULD STAKING BE REQUIRED, THE TOTAL NUMBER OF TREE STAKES (BEYOND THE MINIMUMS LISTED BELOW) WILL BE LEFT TO THE LANDSCAPE CONTRACTOR'S DISCRETION. SHOULD ANY TREES FALL OR LEAN, THE LANDSCAPE CONTRACTOR SHALL STRAIGHTEN THE TREE, OR REPLACE IT SHOULD IT BECOME DAMAGED. TREE STAKING SHALL ADHERE TO THE FOLLOWING GUIDELINES:
      a. 1"-2" TREES — TWO STAKES PER TREE
      b. 2-1/2"-4" TREES — THREE STAKES PER TREE
      c. TREES OVER 4" CALIPER — GUY AS NEEDED
      d. MULTI-TRUNK TREES — THREE STAKES PER TREE MINIMUM, QUANTITY AND POSITIONS AS NEEDED TO STABILIZE THE TREE
   7. UPON COMPLETION OF PLANTING, CONSTRUCT AN EARTH WATERING BASIN AROUND THE TREE. COVER THE INTERIOR OF THE TREE RING WITH MULCH (TYPE AND DEPTH PER PLANS).

E. SHRUB, PERENNIAL, AND GROUNDCOVER PLANTING
   1. DIG THE PLANTING HOLES TWICE AS WIDE AND 2" LESS DEEP THAN EACH PLANT'S ROOTBALL. INSTALL THE PLANT IN THE HOLE. BACKFILL AROUND THE PLANT WITH SOIL AMENDED PER SOIL TEST RECOMMENDATIONS.
   2. WHEN PLANTING IS COMPLETE, INSTALL MULCH (TYPE AND DEPTH PER PLANS) OVER ALL PLANTING BEDS, COVERING THE ENTIRE PLANTING AREA.

F. SODDING
   1. SOD VARIETY TO BE AS SPECIFIED ON THE LANDSCAPE PLAN.
   2. LAY SOD WITHIN 24 HOURS FROM THE TIME OF STRIPPING. DO NOT LAY IF THE GROUND IS FROZEN.
   3. LAY THE SOD TO FORM A SOLID MASS WITH TIGHTLY FITTED JOINTS. BUTT ENDS AND SIDES OF SOD STRIPS - DO NOT OVERLAP. STAGGER STRIPS TO OFFSET JOINTS IN ADJACENT COURSES.
   4. ROLL THE SOD TO ENSURE GOOD CONTACT OF THE SOD'S ROOT SYSTEM WITH THE SOIL UNDERNEATH.
   5. WATER THE SOD THOROUGHLY WITH A FINE SPRAY IMMEDIATELY AFTER PLANTING TO OBTAIN AT LEAST SIX INCHES OF PENETRATION INTO THE SOIL BELOW THE SOD.

G. MULCH
   1. INSTALL MULCH TOPDRESSING, TYPE AND DEPTH PER MULCH NOTE, IN ALL PLANTING AREAS AND TREE RINGS.
   2. DO NOT INSTALL MULCH WITHIN 6" OF TREE ROOT FLARE AND WITHIN 24" OF HABITABLE STRUCTURES, EXCEPT AS MAY BE NOTED ON THESE PLANS. MULCH COVER WITHIN 6" OF CONCRETE WALKS AND CURBS SHALL NOT PROTRUDE ABOVE THE FINISH SURFACE OF THE WALKS AND CURBS. MULCH COVER WITHIN 12" OF WALLS SHALL BE AT LEAST 3" LOWER THAN THE TOP OF WALL.

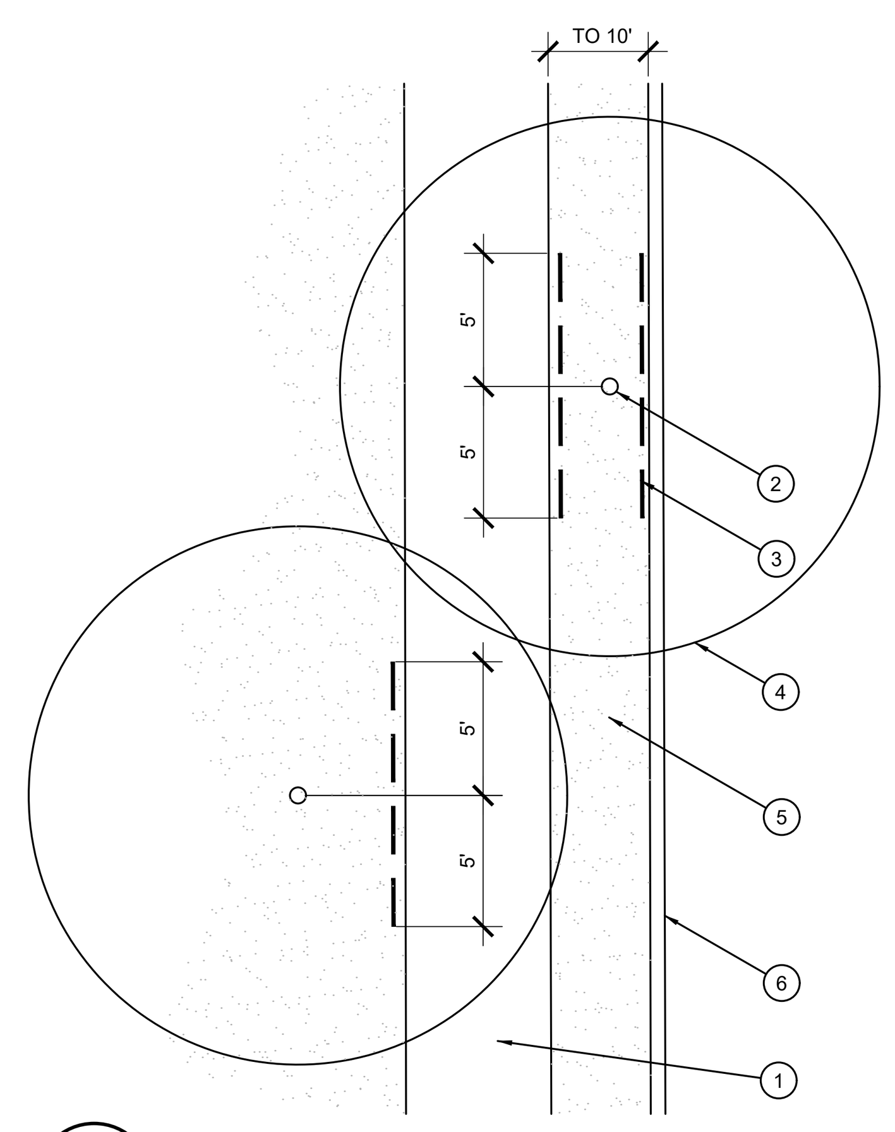
H. CLEAN UP
   1. DURING LANDSCAPE PREPARATION AND PLANTING, KEEP ALL PAVEMENT CLEAN AND ALL WORK AREAS IN A NEAT, ORDERLY CONDITION.
   2. DISPOSED LEGALLY OF ALL EXCAVATED MATERIALS OFF THE PROJECT SITE.

I. INSPECTION AND ACCEPTANCE
   1. UPON COMPLETION OF THE WORK, THE LANDSCAPE CONTRACTOR SHALL PROVIDE THE SITE CLEAN, FREE OF DEBRIS AND TRASH, AND SUITABLE FOR USE AS INTENDED. THE LANDSCAPE CONTRACTOR SHALL THEN REQUEST AN INSPECTION BY THE OWNER TO DETERMINE FINAL ACCEPTABILITY.
   2. WHEN THE INSPECTED PLANTING WORK DOES NOT COMPLY WITH THE CONTRACT DOCUMENTS, THE LANDSCAPE CONTRACTOR SHALL REPLACE AND/OR REPAIR THE REJECTED WORK TO THE OWNER'S SATISFACTION WITHIN 24 HOURS.
   3. THE LANDSCAPE MAINTENANCE PERIOD WILL NOT COMMENCE UNTIL THE LANDSCAPE WORK HAS BEEN RE-INSPECTED BY THE OWNER AND FOUND TO BE ACCEPTABLE. AT THAT TIME, A WRITTEN NOTICE OF FINAL ACCEPTANCE WILL BE ISSUED BY THE OWNER, AND THE MAINTENANCE AND GUARANTEE PERIODS WILL COMMENCE.

J. LANDSCAPE MAINTENANCE
   1. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL WORK SHOWN ON THESE PLANS FOR 90 DAYS BEYOND FINAL ACCEPTANCE OF ALL LANDSCAPE WORK BY THE OWNER. LANDSCAPE MAINTENANCE SHALL INCLUDE WEEKLY SITE VISITS FOR THE FOLLOWING ACTIONS (AS APPROPRIATE): PROPER PRUNING, RESTAKING OF TREES, RESETTING OF PLANTS THAT HAVE SETTLED, MOWING AND AERATION OF LAWNS, WEEDING, RESEEDING AREAS WHICH HAVE NOT GERMINATED WELL, TREATING FOR INSECTS AND DISEASES,REPLACEMENT OF MULCH, REMOVAL OF LITTER, REPAIRS TO THE IRRIGATION SYSTEM DUE TO FAULTY PARTS AND/OR WORKMANSHIP, AND THE APPROPRIATE WATERING OF ALL PLANTINGS. THE LANDSCAPE CONTRACTOR SHALL MAINTAIN THE IRRIGATION SYSTEM IN PROPER WORKING ORDER, WITH SCHEDULING ADJUSTMENTS BY SEASON TO MAXIMIZE WATER CONSERVATION.
   2. SHOULD SEEDED AND/OR SODDED AREAS NOT BE COVERED BY AN AUTOMATIC IRRIGATION SYSTEM, THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR WATERING THESE AREAS AND OBTAINING A FULL, HEALTHY STAND OF PLANTS AT NO ADDITIONAL COST TO THE OWNER.
   3. TO ACHIEVE FINAL ACCEPTANCE AT THE END OF THE MAINTENANCE PERIOD, ALL OF THE FOLLOWING CONDITIONS MUST OCCUR:
      a. THE LANDSCAPE SHALL SHOW ACTIVE, HEALTHY GROWTH (WITH EXCEPTIONS MADE FOR SEASONAL DORMANCY). ALL PLANTS NOT MEETING THIS CONDITION SHALL BE REJECTED AND REPLACED BY HEALTHY PLANT MATERIAL PRIOR TO FINAL ACCEPTANCE.
      b. ALL HARDSCAPE SHALL BE CLEANED PRIOR TO FINAL ACCEPTANCE.
      c. SODDED AREAS MUST BE ACTIVELY GROWING AND MUST REACH A MINIMUM HEIGHT OF 1 1/2 INCHES BEFORE FIRST MOWING. HYDROMULCHED AREAS SHALL SHOW ACTIVE, HEALTHY GROWTH. BARE AREAS LARGER THAN TWELVE SQUARE INCHES MUST BE RESODDED OR RESEEDED (AS APPROPRIATE) PRIOR TO FINAL ACCEPTANCE. ALL SODDED TURF SHALL BE NEATLY MOWED.

K. WARRANTY PERIOD, PLANT GUARANTEE AND REPLACEMENTS
   1. THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL TREES, SHRUBS, PERENNIALS, SOD, SEEDED/HYDROMULCHED AREAS, AND IRRIGATION SYSTEMS FOR A PERIOD OF ONE YEAR FROM THE DATE OF THE OWNER'S FINAL ACCEPTANCE (90 DAYS FOR ANNUAL PLANTS). THE CONTRACTOR SHALL REPLACE, AT HIS OWN EXPENSE AND TO THE SATISFACTION OF THE OWNER, ANY PLANTS WHICH DIE IN THAT TIME, OR REPAIR ANY PORTIONS OF THE IRRIGATION SYSTEM WHICH OPERATE IMPROPERLY.
   2. AFTER THE INITIAL MAINTENANCE PERIOD AND DURING THE GUARANTEE PERIOD, THE LANDSCAPE CONTRACTOR SHALL ONLY BE RESPONSIBLE FOR REPLACEMENT OF PLANTS WHEN PLANT DEATH CANNOT BE ATTRIBUTED DIRECTLY TO OVERWATERING OR OTHER DAMAGE BY HUMAN ACTIONS.

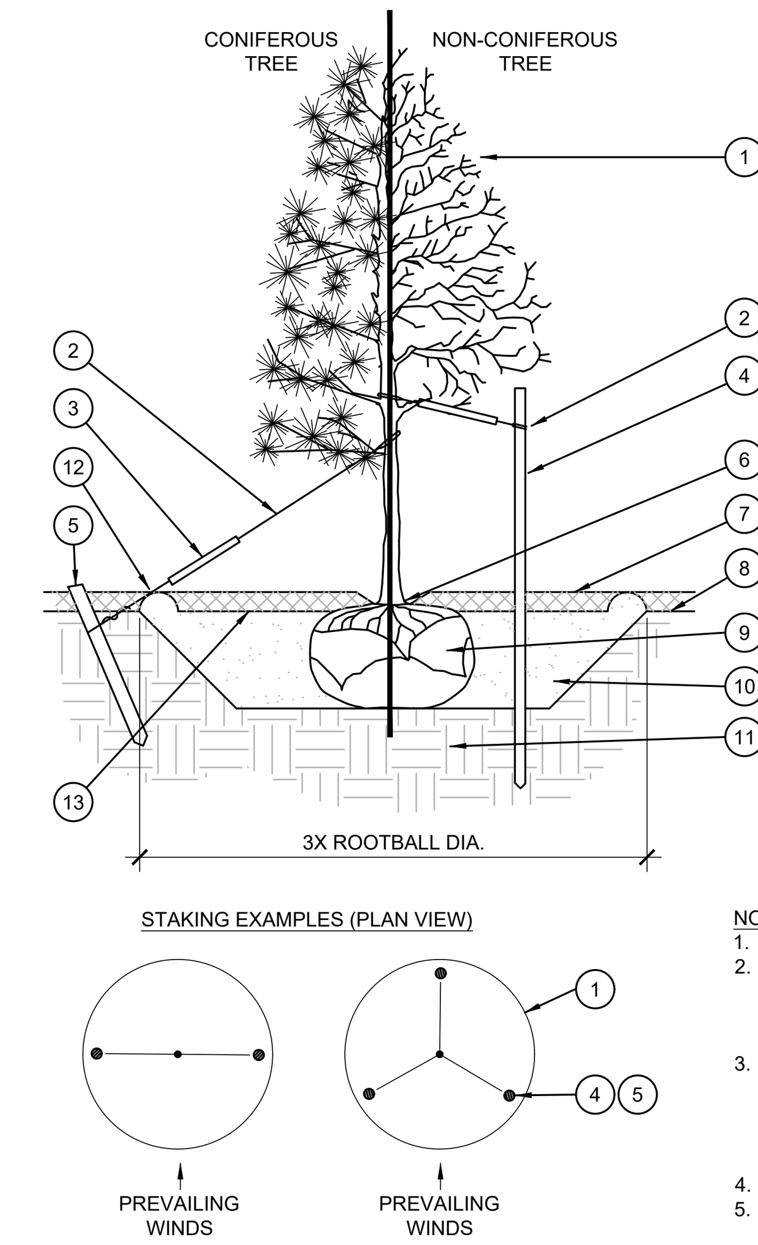
L. PROVIDE A MINIMUM OF (2) COPIES OF RECORD DRAWINGS TO THE OWNER UPON COMPLETION OF WORK. A RECORD DRAWING IS A RECORD OF ALL CHANGES THAT OCCURRED IN THE FIELD AND THAT ARE DOCUMENTED THROUGH CHANGE ORDERS, ADDENDA, OR CONTRACTOR/CONSULTANT DRAWING MARKUPS.



1. TYPICAL WALKWAY OR PAVING
2. TREE TRUNK
3. LINEAR ROOT BARRIER MATERIAL. SEE PLANTING NOTES FOR TYPE AND MANUFACTURER. INSTALL PER MANUFACTURER'S SPECIFICATIONS.
4. TREE CANOPY
5. TYPICAL PLANTING AREA
6. TYPICAL CURB AND GUTTER

NOTES:
1) INSTALL ROOT BARRIERS NEAR ALL NEWLY-PLANTED TREES THAT ARE LOCATED WITHIN FIVE (5) FEET OF PAVING OR CURBS.
2) BARRIERS SHALL BE LOCATED IMMEDIATELY ADJACENT TO HARDSCAPE. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR USE ROOT BARRIERS OF A TYPE THAT COMPLETELY ENCIRCLE THE ROOTBALL.

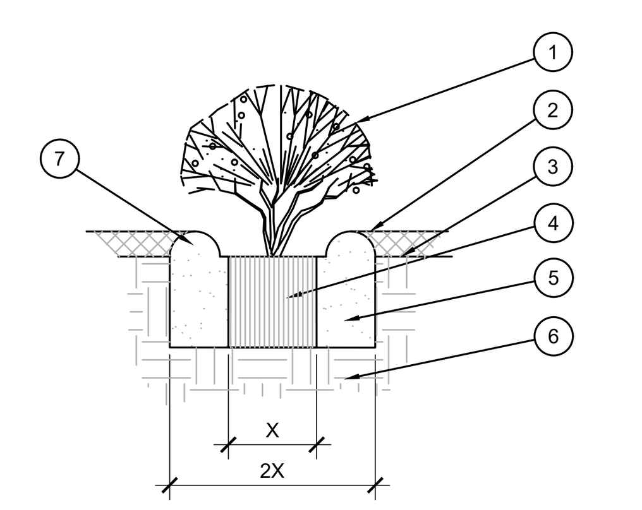
D — ROOT BARRIER - PLAN VIEW
SCALE: NOT TO SCALE



1. TREE CANOPY.
2. CINCH-TIES (24" BOX/2" CAL. TREES AND SMALLER) OR 12 GAUGE GALVANIZED WIRE WITH NYLON TREE STRAPS AT TREE AND STAKE (36" BOX/2.5" CAL. TREES AND LARGER). SECURE TIES OR STRAPS TO TRUNK JUST ABOVE LOWEST MAJOR BRANCHES.
3. 24" X 3/4" P.V.C. MARKERS OVER WIRES.
4. GREEN STEEL T-POSTS. EXTEND POSTS 12" MIN. INTO UNDISTURBED SOIL.
5. PRESSURE-TREATED WOOD DEADMAN, TWO PER TREE (MIN.). BURY OUTSIDE OF PLANTING PIT AND 18" MIN. INTO UNDISTURBED SOIL.
6. TRUNK FLARE.
7. MULCH, TYPE AND DEPTH PER PLANS. DO NOT PLACE MULCH WITHIN 6" OF TRUNK.
8. FINISH GRADE.
9. ROOT BALL.
10. BACKFILL. AMEND AND FERTILIZE ONLY AS RECOMMENDED IN SOIL FERTILITY ANALYSIS.
11. UNDISTURBED NATIVE SOIL.
12. 4" HIGH EARTHEN WATERING BASIN.
13. FINISH GRADE.

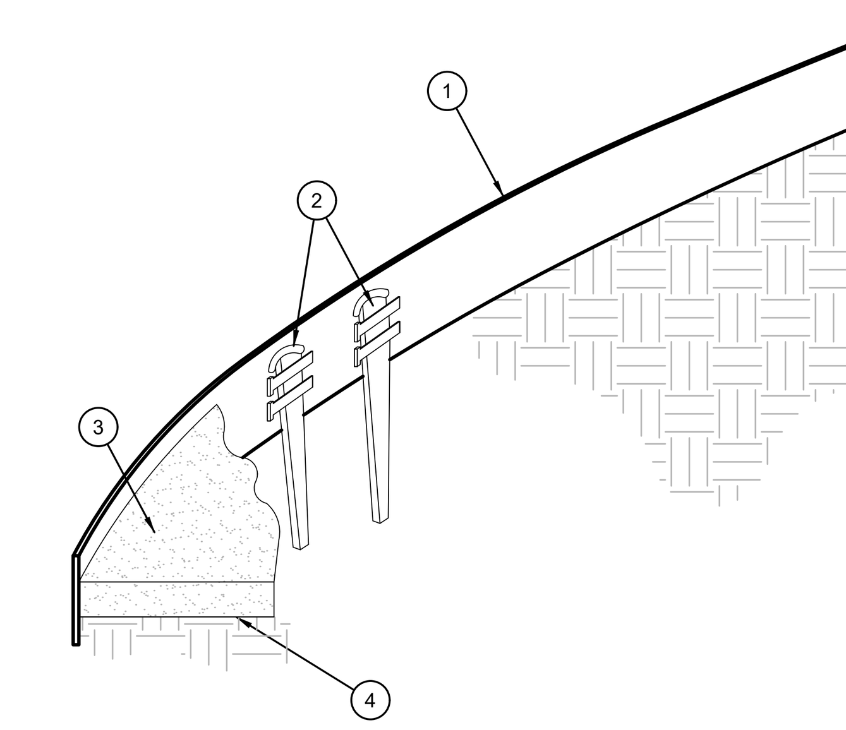
NOTES:
1. SCARIFY SIDES OF PLANTING PIT PRIOR TO SETTING TREE.
2. REMOVE EXCESS SOIL APPLIED ON TOP OF THE ROOTBALL THAT COVERS THE ROOT FLARE. THE PLANTING HOLE DEPTH SHALL BE SUCH THAT THE ROOTBALL RESTS ON UNDISTURBED SOIL, AND THE ROOT FLARE IS 2"-4" ABOVE FINISH GRADE.
3. FOR B&B TREES, CUT OFF BOTTOM 1/3 OF WIRE BASKET BEFORE PLACING TREE IN HOLE, CUT OFF AND REMOVE REMAINDER OF BASKET AFTER TREE IS SET IN HOLE, REMOVE ALL NYLON TIES, TWINE, ROPE, AND OTHER PACKING MATERIAL. REMOVE AS MUCH BURLAP FROM AROUND ROOTBALL AS IS PRACTICAL.
4. REMOVE ALL NURSERY STAKES AFTER PLANTING.
5. FOR TREES 36" BOX/2.5" CAL. AND LARGER, USE THREE STAKES OR DEADMEN (AS APPROPRIATE), SPACED EVENLY AROUND TREE.
6. STAKING SHALL BE TIGHT ENOUGH TO PREVENT TRUNK FROM BENDING, BUT LOOSE ENOUGH TO ALLOW SOME TRUNK MOVEMENT IN WIND.

A — TREE PLANTING
SCALE: NOT TO SCALE



1. SHRUB, PERENNIAL, OR ORNAMENTAL GRASS.
2. MULCH, TYPE AND DEPTH PER PLANS. PLACE NO MORE THAN 1" OF MULCH WITHIN 6" OF PLANT CENTER.
3. FINISH GRADE.
4. ROOT BALL.
5. BACKFILL. AMEND AND FERTILIZE ONLY AS RECOMMENDED IN SOIL FERTILITY ANALYSIS.
6. UNDISTURBED NATIVE SOIL.
7. 3" HIGH EARTHEN WATERING BASIN.

B — SHRUB AND PERENNIAL PLANTING
SCALE: NTS



1. ROLLED-TOP STEEL EDGING PER PLANS.
2. TAPERED STEEL STAKES.
3. MULCH, TYPE AND DEPTH PER PLANS.
4. FINISH GRADE.

NOTES:
1) INSTALL EDGING SO THAT STAKES WILL BE ON INSIDE OF PLANTING BED.
2) BOTTOM OF EDGING SHALL BE BURIED A MINIMUM OF 1" BELOW FINISH GRADE.
3) TOP OF MULCH SHALL BE 1" LOWER THAN TOP OF EDGING.

C — STEEL EDGING
SCALE: NOT TO SCALE

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CORE STATES GROUP
201 S. Maple Avenue, Suite 300
Ambler, PA 19002
Phone (215) 809-2125
MSwaggard@core-states.com

CLIENT
CHASE

811 Know what's below. Call before you dig.

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON DESIGN DRAWINGS, RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. CORE STATES, INC. DOES NOT GUARANTEE THAT LOCATIONS SHOWN ARE EXACT. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF UTILITIES.

REV	DATE	COMMENT	BY
1	08/03/21	BCCD, FIRE DEPT & TWP COMMENTS	CML

DOCUMENT
PRELIMINARY/ FINAL LAND DEVELOPMENT PLAN FOR CHASE BANK

SITE LOCATION
1729 STREET ROAD
BENSALEM, PA
19020

ENGINEER SEAL
PENNSYLVANIA ERIC SHEPLEY REGISTERED LANDSCAPE ARCHITECT REGISTRATION NUMBER LA003179
Eric M. Shepley, R.L.A.
PA LICENSE #LA003179
8/6/21

SHEET TITLE
LANDSCAPE DETAILS & SPECIFICATIONS

JOB #:	JPM-29391
DATE:	5/13/21
SCALE:	
DRAWN BY:	EMS
CHECKED BY:	RM

SHEET NO.
LP-2

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

SENT VIA ELECTRONIC MAIL ONLY

May 20, 2021

Mr. Thomas Newman, PE
Core States Group
201 South Maple Avenue, Suite 300
Ambler, PA 19002

Re: Planning Waiver
Chase Bank - Bensalem
DEP Code 1-09004-417-X
Bensalem Township
Bucks County

Dear Mr. Newman:

This letter is in reference to your application for Sewage Facilities Planning Modules for the renovation of a former Krispy Kreme restaurant building to accommodate a 3,320 square foot bank. This project is located at 1729 Street Road, in Bensalem Township ("Township"), Bucks County on Tax Map Parcel 02-043-305.

This project will be connected to the Bucks County Water and Sewer Authority ("BCWSA") collection system and will generate 180 gallons of sewage per day to be treated at the City of Philadelphia Northeast Water Pollution Control Facility.

This project does not meet the definition of a subdivision under the Pennsylvania Sewage Facilities Act. Therefore, no planning modules are required to be submitted to the Department of Environmental Protection (DEP).

This response is only a determination of planning requirements under the Pennsylvania Sewage Facilities Act concerning the above referenced project. We recommend that the applicant contact Bensalem Township regarding any additional local requirements applicable to this project.

If you have any questions or concerns, please contact me at 484.250.5184 or at kboettlin@pa.gov.

Sincerely,

Kelly Boettlin
Sewage Planning Specialist 2
Clean Water

Cc: Mr. Walters - Bucks County Planning Commission (via email)
Ms. Kostick - Bucks County Health Department (via email)
Mr. Farrell - Bensalem Township (via email)
Mr. Napoleon - Bucks County Water and Sewer Authority (via email)
Mr. Ponert - City of Philadelphia Water Department (via email)
JP Morgan Chase Bank, NA (via email)
Planning Section
Re

22

AGREEMENT REGARDING RECIPROCAL RIGHTS AS TO PARKING AND OTHER COMMON AREAS

THIS AGREEMENT, made this 15th day of July, 1969, by and between HYMAN KORMAN, INC., a Pennsylvania corporation, party of the first part, and FOOD FAIR STORES, INC., a Pennsylvania corporation, party of the second part.

WHEREAS, the party of the first part is the owner of the tract of land known as Brookwood Shopping Center located on Street Road between Hulmeville Road and Brookwood Drive in Bensalem Township, Bucks County, Pennsylvania as outlined in red on Exhibit "A" hereto ("the Korman Land"); and

WHEREAS, the party of the second part is the owner of a tract of land containing 10.465 acres, more or less, adjacent to the Korman Land and located in Bensalem Township, Bucks County, Pennsylvania as more fully described by metes and bounds on Exhibit "B" hereto ("the Food Fair Land"); and

WHEREAS, the parties of the first and second parts desire to set forth a mutual understanding to allow each other certain rights for parking within said areas of said shopping center wherefor they have entered into this Agreement.

WITNESS that for and in consideration of the sum of One Dollar ($1.00) and other good and valuable considerations and the mutual benefits to be derived

between each of the parties hereto by virtue of this Agreement, it is hereby agreed as follows:

1. The party of the first part hereby grants to the party of the second part, for the benefit only of the Food Fair Land, a non-exclusive easement to go upon, cross over and park upon the vacant and paved parking areas as the same shall from time to time exist and be located on the Korman Land. Party of the second part hereby grants to party of the first part, for the benefit only of the Korman Land, a non-exclusive easement to go upon, cross over and park upon the vacant and paved parking areas as the same shall from time to time exist and be located on the Food Fair Land.

2. This Agreement and the rights of the parties claiming any rights under this Agreement shall at all times be subject and subordinate to the rights of any and all future holders of a mortgage lien or liens on the Korman Land or the Food Fair Land and to any and all parties now or hereafter named or becoming beneficiaries under any deed of trust upon the Korman Land or the Food Fair Land. In the event of foreclosure or deed in lieu of foreclosure no such mortgagee, beneficiary or purchaser shall acquire any interest in that area of the parking area which has not actually been included within the description of the property mortgaged, that is to say, neither party hereto shall have the right to mortgage or pledge as security the reciprocal parking rights herein

granted to each other. In the event any mortgagee, beneficiary or trustee under any deed of trust shall hereafter request an affirmation in writing from the other party regarding the subordination herein, then the parties agree to execute a statement for the mortgagees benefit at such time.

3. The rights herein given are solely for the benefit of the owners (the parties of the first part and second part) of the Korman Land and of the Food Fair Land and their successors, assigns, agents, employees, customers, invitees, tenants, licensees and their respective customers and nothing herein contained shall be construed to give any rights in the Korman Land or in the Food Fair Land to the public or to any governmental authority or to the owners or tenants of any adjoining property. Nothing contained in this paragraph or in this Agreement in any way is intended to mean that the parking areas, driveway areas or other common areas on the Korman Land or the Food Fair Land are to be made available for public use at any time other than normal business hours of the shopping center on such land, and nothing contained in this Agreement is intended to preclude either party or its successors or assigns from closing to all users its parking areas, driveway areas or other areas owned by it within the said shopping center and each of the parties do in fact reserve unto themselves the right to close the public means of ingress, as well as the parking lots, driving areas and other areas on legal holidays, business holidays and Sundays. During such periods as any portions

of the Korman Land or the Food Fair Land shall not be used by the owners thereof as parking areas, all rights under this Agreement in such areas shall lapse.

4. Each of the parties hereto agrees that each shall only be liable for the repair, replacement and/or maintenance of areas within the confines of the property actually owned by it.

5. The respective owners of the Korman Land and the Food Fair Land shall indemnify and hold each other harmless from any and all liabilities, expenses, demands, claims or judgments arising from injury to person or property occurring on the land owned by it.

6. The rights created by this Agreement shall be subject and subordinate to any and all easements granted to public and private utility companies supplying service to, over, under or through the Korman Land or the Food Fair Land.

7. This Agreement may be modified or cancelled by the written consent of the parties hereto, their successors or assigns at any time and such modification or cancellation shall not require the consent or joinder of any other parties.

8. This Agreement and all rights and obligations set forth herein shall in any event terminate and be of no further force and effect as to the Korman Land from and after such time as it shall no longer be used

for retail store purposes and as to the Food Fair Land from and after such time as it shall no longer be used for retail store purposes.

IN WITNESS WHEREOF, the undersigned have caused this Agreement to be executed as of the day and year first above written.

HYMAN KORMAN, INC.

By _____

Attest _____

FOOD FAIR STORES, INC.

By _____

Attest _____

COMMONWEALTH OF PENNSYLVANIA :
SS.
COUNTY OF PHILADELPHIA :

On this, the 15th day of July, 1969, before me, a Notary Public, the undersigned officer, personally appeared Burton P. Korman, who acknowledged himself to be the Vice President of HYMAN KORMAN, INC., a corporation, and that he as such Vice President being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation by himself as .

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

Notary Public
My Commission Expires:

SAMUEL ROSENBAUM
Notary Public, Philadelphia, Philadelphia Co.
My Commission Expires July 15, 1972

COMMONWEALTH OF PENNSYLVANIA :
SS.
COUNTY OF PHILADELPHIA :

On this, the day of , 1969, before me, a Notary Public, the undersigned officer, personally appeared , who acknowledged himself to be the of FOOD FAIR STORES, INC., a corporation, and that he as such being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation by himself as .

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

Notary Public
My Commission Expires:

[Plot Plan to be attached]

EXHIBIT "A"

[Legal Description to be attached]

EXHIBIT "B"

HYMAN KORMAN, INC.
101 Greenwood Avenue
Jenkintown, Pennsylvania 19046

February 25, 1971

The Western Saving Fund
Society of Philadelphia
Philadelphia, Pennsylvania

Re: Bensalem Township
Bucks County, Pa.
J. M. Fields Store #621

Gentlemen:

Please be advised that the undersigned do hereby agree as follows:

1. That the term "parking areas" as used in the Agreement Regarding Reciprocal Rights As to Parking and Other Common Areas dated July 15, 1969 between Hyman Korman, Inc. and Food Fair Stores, Inc. includes all driveways, walkways, entrances and exits and the easements therein given include the right of ingress and egress to and from the parking areas.

2. No agreement will be entered into between the undersigned which will modify or cancel said Agreement Regarding Reciprocal Rights As to Parking and Other Common Areas without the consent of the first mortgagee of said Food Fair parcel of land except that the undersigned may enter into an agreement for the benefit of any mortgagee of the Korman parcel of land which agreement would be similar to this letter agreement and would state that the undersigned would not enter into any agreement to modify or cancel said Agreement Regarding Reciprocal Rights As to Parking and Other Common Areas without obtaining the consent of the mortgagee of said Korman parcel of land.

3. It is the intention of the Agreement Regarding Reciprocal Rights As to Parking and Other Common Areas that all rights and easements granted under said Agreement shall inure to the benefit of and may be used by the mortgagee, its successors and/or assigns (and any purchaser at foreclosure) and other parties listed under paragraph three of said Agreement.

COMMONWEALTH OF PENNSYLVANIA

COUNTY OF PHILADELPHIA :SS

On this the 25thday of February , 1971, before me, the subscriber, a notary public for the Commonwealth of Pennsylvania, personally appeared Berton E. Korman , who acknowledged himself to be the Executive Vice President of Hyman Korman, Inc. , a corporation, and that he as such Executive Vice President, being authorized to do so, executed the foregoing instrument for the purposes therein contained, by signing the name of the corporation by himself as Executive Vice President.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

Notary Public
My Commission Expires:

SAMUEL ROSENBAUM
Notary Public, Philadelphia, Philadelphia Co.
My Commission Expires July 15, 1972