



# WESTTOWN TOWNSHIP

1039 Wilmington Pike  
West Chester, PA 19382  
PHONE: (610) 692-1930

P.O. Box 79  
Westtown, PA 19395  
FAX: (610) 692-9651

## **AMENDED CONDITIONAL USE APPLICATION**

**Date received:** \_\_\_\_\_ **Date of acceptance:** \_\_\_\_\_ **Date of rejection:** \_\_\_\_\_

**Location of proposed use**

1013 Shiloh Road; 1011 Shiloh Road;  
Address: 927 Shiloh Road; 1007 Shiloh Road City: West Chester State: PA Zip: 19382

Owner: Fox Clearing, LLC

67-2-23; 67-2-8;  
Tax parcel number(s): 67-2-9; 67-2-7.1 Zoning district: R-1 Acreage: 80.886

Proposed use of property: Flexible Residential Development to consist of 85 single-family homes

**Applicant information**

Applicant: Fox Clearing, LLC c/o Bill Briegel

Address: 227 Granite Run Drive, Suite 100 City: Lancaster State: PA Zip: 17601

Phone number: 717-464-9060 E-mail address: billb@keystonecustomhome.com

I (We) hereby make application for CONDITIONAL USE of the above-described property as provided for in Section 170-902(A) of the Westtown Township Zoning Ordinance, and do hereby acknowledge that I (we) have read this application and confirm that the above information is correct, and do further confirm that I (we) agree to comply with all provisions of the Westtown Township Zoning Ordinance applicable to this project.

\_\_\_\_\_  
**Signature of applicant** - Gregg I. Adelman, Esquire  
Attorney for Applicant

5/4/23  
\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**Signature of Zoning Officer** **Date**

**BEFORE THE BOARD OF SUPERVISORS OF  
WESTTOWN TOWNSHIP**

IN RE: CONDITIONAL USE APPLICATION :  
OF FOX CLEARING, LLC FOR A :  
FLEXIBLE RESIDENTIAL DEVELOPMENT :  
PURSUANT TO ARTICLE IX, SECTION 170-900:  
ET. SEQ. OF THE WESTTOWN TOWNSHIP : APPLICATION NO.  
ZONING ORDINANCE :

**AMENDED ADDENDUM TO CONDITIONAL USE APPLICATION**

**I. INTRODUCTION**

1. Fox Clearing, LLC (“**Applicant**”) by and through its attorneys, Kaplin Stewart Meloff Reiter & Stein, P.C., hereby submits this Amended Addendum to its Conditional Use Application as further described herein:

2. The Applicant is the owner or equitable owner of four parcels totaling approximately 80.886 +/- acres of land located along Shiloh Road in Westtown Township, Chester County, Pennsylvania (“**Township**”) as follows (collectively, the “**Property**”):

- a. UPI #67-2-23, consisting of 64.956 acres;
- b. UPI #67-2-8, consisting of 9.133 acres;
- c. UPI #67-2-9 consisting of 1.133 acres; and
- d. UPI #67-2-7.1 consisting of 5.664 acres.

3. A copy of the deed to UPI #67-2-23 and copies of the redacted agreements of sale for UPI ##67-2-8, 67-2-9 and 67-2-7.1 are attached as **Exhibit “A”**.

4. The Property is zoned R-1 Residential District.

5. Article IX, Section 170-902(A) of the Township Zoning Ordinance [Flexible Development Procedure] permits a flexible development of the Property by conditional use in the R-1 Residential District.

6. Section 170-903 of the Flexible Development Procedure permits single-family detached dwellings.

7. Applicant proposes to construct a residential development of the Property consisting of 85 single family homes in accordance with D.L. Howell & Associates, Inc.'s Conditional Use Plan, Sheets 1 through 37, dated March 17, 2023, attached as **Exhibit "B"** (**"Proposed Development"**).

8. The Proposed Development will also include the construction of internal streets, utilities, stormwater management facilities, landscaping, community recreation facilities and other improvements.

9. The Proposed Development will be serviced by public water. A copy of a will-serve letter from Aqua America, Inc. dated April 12, 2023 is attached as **Exhibit "C"**.

10. The Proposed Development will be serviced by public sewer. A copy of the sanitary sewer capacity letter from Westtown Township dated April 13, 2023 is attached as **Exhibit "D"**.

11. The Applicant evaluated the Proposed Development's traffic impact. A copy of Transportation Resource Group, Inc.'s Traffic Impact Study dated May 2021, last revised April 2023 is attached as **Exhibit "E"**.

12. A future homeowners' association will be created for the Proposed Development to own and maintain common and controlled facilities. A copy of a template for the future homeowners' association declaration is attached as **Exhibit "F"**.

## **II. PROPOSED DEVELOPMENT SITE DESIGN**

13. The Proposed Development's site design complies with the applicable requirements of Section 170-900 et seq. of the Flexible Development Procedure.

14. The base density of the Proposed Development under Section 170-904.A.(1) of the Flexible Development Procedure is 1.1 dwelling units per acre.

15. The Proposed Development provides 47.60 acres of open space, which exceeds the 40% minimum open space required (32.39 acres) under Section 170-904.C.2 of the Flexible Development Procedure.

16. The proposed open space in the Proposed Development is designed in accordance with the open space standards under Section 170-907 of the Flexible Development Procedure, where applicable.

17. The proposed single-family homes to be constructed in the Proposed Development are designed in accordance with Section 170-904.E of the Flexible Development Procedure.

18. The Proposed Development is designed in accordance with the design standards under Section 170-905 of the Flexible Development Procedure, including Section 170-905.A's Conservation Design requirements.

19. A site analysis of the Property pursuant to Section 170-905.A.1, is depicted on the Overall Existing Resources Plan, sheet 7 of 37, that is included as part of Exhibit "A".

#### **IV. PROPOSED DEVELOPMENT WITH DENSITY BONUSES**

20. Section 170-904.A.(2) of the Flexible Development Procedure permits the maximum density of a flexible development to be further increased where approved by the Board of Supervisors by conditional use.

21. Section 170-904.A.(2).(a) of the Flexible Development Procedure permits a density bonus of up to 0.075 dwelling units per acre for every 5% of the gross area of the tract that is permanently preserved as common open space above the minimum established under § 170-904.C.

22. As part of the Proposed Development, Applicant proposes to provide an extra 15.11% open space above what is required under § 170-904.C.

23. Applicant is entitled to add the 0.225 bonus density  $[0.075 * 3]$  to the base density of 1.1, for a total of 1.325 dwelling units/acre.

24. Applicant is permitted a maximum density of 86 units  $[1.325 \text{ D.U.} \times 65.418 \text{ acres}]$ .

25. Applicant is proposing a total density of 85 units in the Proposed Development.

**V. GENERAL CONDITIONAL USE CRITERIA**

26. Section 170-2009.D of the Township Zoning Ordinance sets forth the general standards applicable for approval of a conditional use application.

27. The Proposed Development complies with the applicable objective criteria set forth in Section 170-2009.D.(1)(a)-(h) as will be demonstrated at the hearing on this conditional use application.

Respectfully submitted,

**KAPLIN STEWART MELOFF REITER  
& STEIN, P.C.**

By:   
Gregg I. Adelman, Esquire

Attorneys for Applicant Fox Clearing, LLC

Dated: May 4, 2023

# **DEED & REDACTED LEASE**

11830611 B: 10533 P: 48 DEE  
05/06/2021 11:05:46 AM Page 1 of 16  
Rec Fees: \$160.75 Local: \$51,500.00 State: \$51,500.00  
Chris Pielli Recorder of Deeds, Chester County, PA

Prepared by and Return to:

Penn Transfer, LLC  
227 Granite Run Drive, Suite 100  
Lancaster, PA 17601

File No. PTShilohRoad



Consideration \$5,150,000.00  
Local Transfer \$51,500.00  
State Transfer \$51,500.00

Premises:

1013 Shiloh Road  
West Chester, PA 19382  
Parcel No 67-02-0023 UPI 67-2-23



This Indenture, made the 13<sup>th</sup> day of April, 2021,

Between

**Rhonda Stokes Vinson and Virginia Stokes Brubaker, Individually and as Executrixes of Estate of Lucille Stokes, Virginia Stokes Brubaker, Trustee of Lucille S. Stokes Irrevocable Living Trust dated April 10, 2009, Virginia Stokes Brubaker, Individually and as Co-Trustee, and Rhonda Stokes Vinson, Co-Trustee of Lucille S. Stokes Irrevocable Living Trust II dated July 10, 2014 Carolyn K. Stokes, Individually and as Executrix, and Ashlee K. Stokes-Goodman, Devisee, and Aimee K. Stokes, Devisee of Estate of Kenton S. Stokes and Carolyn K. Stokes, Aimee K. Stokes and Ashlee Stokes Goodman**

(hereinafter called the Grantors), of the one part, and

**Fox Clearing, LLC, a Pennsylvania Limited Liability Company**

(hereinafter called the Grantee), of the other part,

Witnesseth, that the said Grantors for and in consideration of the sum of **FIVE MILLION ONE HUNDRED FIFTY THOUSAND AND 00/100 (\$5,150,000.00)** lawful money of the United States of America, unto them well and truly paid by the said Grantee, at or before the sealing and delivery hereof, the receipt whereof is hereby acknowledged, have granted, bargained and sold, released and confirmed, and by these presents do grant, bargain and sell, release and confirm unto the said Grantee, its successors and assigns:

PREMISES "A"

ALL THAT CERTAIN tract, lot, or piece of ground with the buildings and improvements thereon erected, Situate in the Township of Westtown, County of Chester and Commonwealth of Pennsylvania described according to a plan of property of Mrs. Walter Rhoads White made by G.D. Housman, Civil Engineer, dated November 201,952, and last revised September 101,954.

BEGINNING at a point, a corner of land being retained by Eleanor White Roland, the said point being 26 feet South 22 degrees 34 minutes East from a stone, the said stone being 252.85 feet South 22 degrees 25 minutes 30 seconds East from a point on the Southerly side of a 50 feet wide right of way, the said

point being measure along the said Southerly side of the said right of way 50.19 feet South 78 degrees 4 minutes West from another point on the said Southerly side, the said other point being 16.13 feet North 83 degrees 22 minutes West from the intersection of the said Southerly side of the said right of way with the center line of Westtown Road, the said point of intersection being 155.5 feet North 25 degrees 52 minutes West from a point in the center line of Chester Creek, the said point in the center of Chester Creek being 4006.3 feet measured in a Northwesterly direction along the various courses of the said center line of Westtown Road from the intersection of the said center tree of Westtown Road with the center line of John Nys Way; thence from the said point of beginning and along land now or late of Westtown School, South 22 degrees 34 minutes East 741.83 feet to a marble stone, South 22 degrees 31 minutes 10 seconds East 405.17 feet to a marble stone and South 22 degrees 35 minutes East 435.76 feet to an iron pipe; thence along land now or late of Marshall Jones, South 60 degrees 20 minutes West 964.28 feet to an iron pipe; thence North 89 degrees 36 minutes West 784.95 feet to a point; thence along land of Francis H. Speckler and Elizabeth Speckler, his wife, North 23 degrees 45 minutes West 20 feet to a concrete marker and North 89 degrees and 36 minutes West 595.78 feet to a point in the center of Shiloh Road; thence along the same North 23 degrees 45 minutes West 188.99 feet to a point; thence along land or Harry W. Best and Marilyn W. Best, his wife, North 64 degrees 53 minutes East 21 feet to a point, North 62 degrees 57 minutes East 684.15 feet to a point and North 20 degrees 6 minutes 10 seconds East 74 feet to a point; thence along land of Martin L. Briner and Joyce W. Briner, his wife, South 69 degrees 53 minutes 0 seconds East 417.6 feet to a point, North 64 degrees 40 minutes East 95.4 feet to a point and North 28 degrees and 58 minutes West 685.36 feet to a point; thence along land now or late of John S. Barrett, Jr., North 66 degrees and 57 minutes East 211.35 feet to a stone and North 22 degrees 35 minutes 30 seconds West 682.90 feet to an iron pin; thence along land now or late of T. Van C. Phillips Estate, North 66 degrees 25 minutes 30 seconds East 495.79 feet to a point; thence along land of Daniel D. White and Holland & J. White, his wife, South 15 degrees 13 minutes East 29 feet to a point; thence along land being retained by Eleanor White Rowland, South 15 degrees 13 minutes East 35 feet to a point and North 72 degrees 37 minutes East, 623.8 feet to the first mentioned point and place of beginning.

EXCEPTING and always RESERVING out of the above granted land the free, sole, absolute and exclusive use of a right to hold all waters of Chester Creek and the branch or branches thereof, the premises late of James Gibson upon which the boarding school is located, shall forever be and remain a perfectly straight line all the way from the Spanish oak to a corner stone in Pierce Hollingsworth's land in a line of public road, as more fully recited and set out in Deed Book L, Volume 12, Page 39.

TOGETHER with the free right, use, liberty and privilege over a certain SQ feet Wide right of way established along the Southern line of land conveyed to Daniel D. White and Hollande J. White, his wife, as recorded in Deed Book T-25, Page 7, in common with the said Daniel D. White and Hollande J. White, his wife, and the grantors, their heirs and assigns, as and for a passageway from the lands herein conveyed to Westtown Road, subject to the proportionate cost of maintenance of the aforesaid right of way.

Under and subject to the right of Martin L. Briner and Joyce W. Briner, his wife, theirs and assigns, in common with the grantees herein, their heirs and assigns, to the right, use, liberty and privilege of a certain 40 feet wide right of way now in existence extending along the South line of lands of the said Martin L. Briner and Joyce W, Briner, his wife; and thence in a Westerly direction across the lands herein conveyed as and for a passageway for ingress and egress to and from Shiloh Road; Under and Subject also at all times hereafter to the proportionate cost of maintaining, paving and grading the said right of way.

ALSO EXCEPTING THEREFROM AND THEREOUT, the following two tracts of land:



ALL THAT CERTAIN piece or ground conveyed to Eleanor White Roland and Edgar H. Roland in Deed Book V-34 Page 493.

ALL THAT CERTAIN piece or ground conveyed to Henry M. Best and Madilyn W. Best in Deed Book U-38 Page 599.

PREMISES "B"

ALL THAT CERTAIN parcel or ground situate in the Towns hip or Westtown, County or Chester and Commonwealth of Pennsylvania, described according to a plan of property of Mrs. Walter Rhodes White, prepared by G. D. Housman & Son, Civil Engineers, dated November 20, 1952 and last revised March 26, 1969, as follows:

BEGINNING at an interior point on the line of lands dividing the property of Harry Best and Milton Stokes, the said interior point being measured along said line of lands 222.62 feet North 62 degrees 57 minutes East from a point and 210 feet North 64 degrees 53 minutes East from a point in the center line of Shiloh Road, the said point being 398.81 feet South 23 degrees 45 minutes East from another point in the center line of Shiloh Road, the said other point being the Northwestern most property corner of lands of Harry Bast; thence from the said point or beginning and passing through lands of Harry Bast the three following courses and distances: (1) North 61 degrees 43 minutes 30 seconds East, 376.26 feet to a pipe; (2) North 57 degrees 37 minutes East 78.85 feet to a pipe; (3) South 51 degree 04 minutes East 16.83 feet to a pipe; thence along the present dividing line between lands of Harry Bast and Milton Stokes South 62 degrees 57 minutes West, 461.53 feet to the first mentioned point and place of BEGINNING.  
point and place of beginning.

TRACT A:

BEING the same premises which John J, Keven and Georgette M. Keven, by Indenture dated 10/26/55 and recorded 10/26/55 in the Office of the Recorder of Deeds in and for the County of Chester in Deed Book 0-27 page 509, granted and conveyed unto Milton R. Stokes and Lucille S. Stokes.

AND BEING the same premises which Milton R. Stokes and Lucille S. Stokes, by Indenture dated 6/18/99 and recorded 7/1/99 in the Office of the Recorder of Deeds in and for the County of Chester in Record Book 4591 page 1625, granted and conveyed unto Milton R. Stokes and Lucille S. Stokes, as tenants in common.

AND the said Milton R. Stokes departed this life 4/27/06 leaving a will registered and probated in Chester County as Will No. 1506-1913, in which the said decedent appointed Lucille S. Stokes as Executrix to Whom Letters Testamentary were granted by the Register of Wills on 10/28/08.

BEING THE SAME PREMISES WHICH Lucille S. Stokes, individually and as Executrix of the Estate of Milton R. Stokes, deceased, by deed dated 4/10/09 and recorded April 29, 2009 granted and conveyed a 25% interest unto Lucille S. Stokes Irrevocable Trust.

AND THEREAFTER, Virginia Stokes Brubaker, as Trustee until the Lucille S. Stokes Irrevocable Trust, dated April 10, 2009, by deed dated 1/17/20 and recorded 1/13/21 in the Recorder's Office in and for Chester County in Record Book 10411, Page 2044, granted and conveyed its 25% interest unto Rhonda Stokes Vinson.

AND BEING THE SAME PREMISES WHICH Lucille S. Stokes, individually and as Executrix of the Estate of Milton R. Stokes, deceased by deed dated 7/10/2014 and recorded in the Office of the Recorder of Deeds in and for the County of Chester in Record Book 8987 page 34, granted and conveyed a 12.5% interest unto Lucille S. Stokes Irrevocable Trust II.

AND THEREAFTER, Rhonda Stokes Vinson, as Trustee under the Lucille S. Stokes Irrevocable Trust II, dated July 10, 2014, by deed dated 1/17/20 and recorded 1/13/21 in the Recorder's Office in and for Chester County, Pennsylvania in Record Book 10411, Page 2037, granted and conveyed its 12/5% interest unto Virginia Stokes Brubaker.

AND BEING the same premises which Lucille S. Stokes, individually as to her 50 interest and Lucille S. Stokes, Executrix of the Estate of Milton R. Stokes, deceased, by Re-Recorded Deed dated 9/17/09 and recorded 9/29/09 in the Office of the Recorder of Deeds in and for the County of Chester in Record Book 7781 page 120, granted and conveyed unto Lucille S. Stokes Irrevocable Living Trust, dated 4/10/09 (25%) interest, Lucille S. Stokes, individually (25% interest), Rhonda Stokes Vinson (25% interest) and Lucille S. Stokes, Executrix of the Estate of Milton R. Stokes, deceased, for continuing administration (25% interest), in fee,

AND BEING the same premises which Lucille S. Stokes, Executrix of the Estate of Milton R. Stokes, deceased, by Indenture dated 6/29/12 and recorded 7/3/12 in the Office of the Recorder of Deeds in and for the County of Chester in Record Book 8461 page 925, granted and conveyed unto Carolyn Stokes, Executrix of the Estate of Kenton S. Stokes (25% interest), in fee.

AND BEING the same premises which Lucille S. Stokes, by Indenture dated 7/10/14 and recorded 9/17/14 in the Office of the Recorder of Deeds in and for the County of Chester in Record Book 8987 page 34 granted and conveyed a 12.5% interest unto The Lucille S. Stokes Irrevocable Trust II.

AND THEREAFTER, BEING THE SAME PREMISES WHICH Lucille S. Stokes, individually and as Executrix of the Estate of Milton R. Stokes, deceased, by re-recorded deed dated September 17, 2009 and recorded September 29, 2009 in the Recorder's Office in and for Chester County, Pennsylvania in Record Book 7781, Page 120, granted and conveyed 25% unto Lucille S. Stokes Irrevocable Trust; 25% unto Lucille S. Stokes, individually; 25% to Rhonda Stokes Vinson and 25% to Lucille S. Stokes, Executrix of the Estate of Milton R. Stokes, deceased, for the continuing administration of the estate.

AND BEING THE SAME PREMISES WHICH Lucille S. Stokes, Executrix of the Estate of Milton R. Stokes, deceased, by deed dated 6/29/12 and recorded 9/17/14 in the Recorder's Office in and for Chester County, Pennsylvania in Record Book 8461, Page 925, granted and conveyed a 25% interest unto Carolyn Stokes, Executrix of the Estate of Kenton S. Stokes.

AND BEING THE SAME PREMISES WHICH Lucille S. Stokes, Executrix of the Estate of Milton R. Stokes, deceased, by deed dated 7/10/14 and recorded 7/3/14 in the Recorder's Office in and for Chester County, Pennsylvania in Record Book 8987, Page 34, granted and conveyed a 12.5% interest unto The Lucille S. Stokes Irrevocable Trust II.

AND THE SAID Lucille Stokes departed this life on 12/24/19 leaving a will registered and probated as Will No. 1520-0135, in which the said decedent appointed Virginia Stokes Brubaker and Rhonda Stokes Vinson To Whom Letters Testamentary were granted by the Register or Wills on 1/21/20.

Item 1B of the Will bequeathed her interest to the widow, Carolyn K. Stokes and their children, Ashlee K. Stokes Goodman and Aimee K. Stokes.

AND THEREAFTER, by deed dated April 17, 2021 and recorded April 7, 2021, Virginia Stokes Brubaker and Rhonda Stokes Vinson, as Co-Executrices of the Estate of Lucille S. Stokes, deceased, granted and conveyed the remaining 12.5% interest to Carolyn K. Stokes, Aimee K. Stokes and Ashlee Stokes Goodman, as tenants in common.

TRACT B:

BEING THE SAME PREMISES WHICH Harry M. Best and Marilyn W. Best, by Indenture dated 5/19/69 and recorded 5/21/69 in the Office of the Recorder of Deeds in and for the County of Chester in Deed Book U-38 page 596, granted and conveyed unto Milton R. Stokes and Lucille S. Stokes.

Together with all and singular the buildings and improvements, ways, streets, alleys, driveways, passages, waters, water-courses, rights, liberties, privileges, hereditaments and appurtenances, whatsoever unto the hereby granted premises belonging, or in anywise appertaining, and the reversions and remainders, rents, issues, and profits thereof; and all the estate, right, title, interest, property, claim and demand whatsoever of them, the said grantors, as well at law as in equity, of, in and to the same.

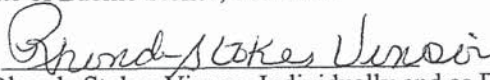
To have and to hold the said lot or piece of ground described above, with the buildings and improvements thereon erected, hereditaments and premises hereby granted, or mentioned and intended so to be, with the appurtenances, unto the said Grantee, their heirs and assigns, to and for the only proper use and behoof of the said Grantee, their heirs and assigns, forever.

And the said Grantor, for itself, its successors and assigns, does, by these presents, covenant, grant and agree, to and with the said Grantees, their heirs and assigns, that it, the said Grantor, and its successors and assigns, all and singular the hereditaments and premises herein described and granted, or mentioned and intended so to be, with the appurtenances, unto the said Grantees, their heirs and assigns, against it, the said Grantor, and its successors and assigns, will SPECIALLY WARRANT and defend against the lawful claims of all persons claiming by, through or under the said Grantor but not otherwise.

And the said, Executors of the aforesaid covenant, promise and agree to and with said Grantee, their heirs and assigns, that they, the said Executors of the aforementioned, have not done, committed, or knowingly or willingly suffered to be done or committed, any act, matter or thing whatsoever whereby the premises hereby granted, or any part thereof, is, are, shall or may be impeached, charged or encumbered, in title, charge, estate, or otherwise howsoever.

In Witness Whereof, the said Grantors caused these presents to be duly executed the day and year first above written.

Estate of Lucille Stokes, deceased

By:   
Rhonda Stokes Vinson, Individually and as Executrix

By: \_\_\_\_\_  
Virginia Stokes Brubaker, Individually and as Executrix

Lucille S. Stokes Irrevocable Living Trust dated April 10, 2009

By: \_\_\_\_\_  
Virginia Stokes Brubaker, Trustee

Lucille S. Stokes Irrevocable Living Trust II dated July 10, 2014

By: \_\_\_\_\_  
Virginia Stokes Brubaker, Individually and as Trustee

By: Rhonda Stokes Vinson  
Rhonda Stokes Vinson, Trustee

Estate of Kenton S. Stokes

By: \_\_\_\_\_  
Carolyn K. Stokes, Individually and as Executrix

By: \_\_\_\_\_  
Ashlee K. Stokes-Goodman, Devisee

By: \_\_\_\_\_  
Aimee K. Stokes, Devisee

\_\_\_\_\_  
Carolyn K. Stokes,


\_\_\_\_\_  
Ashlee K. Stokes-Goodman

\_\_\_\_\_  
Aimee K. Stokes

STATE OF New Jersey } ss  
COUNTY OF Mercer

On this 14<sup>th</sup> day of April, 2021, before me the undersigned officer, personally appeared RHONDA STOKES VINSON, individually and as Executrix of the Estate of Lucille S. Stokes, deceased, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument and acknowledged that she executed the same for the purposes therein contained.


IN WITNESS WHEREOF, I hereunto set my hand and official seal.

  
\_\_\_\_\_  
Notary Public  
My commission expires July 29<sup>th</sup> 2025  
NICHOLAS LEARY  
NOTARY PUBLIC  
STATE OF NEW JERSEY  
MY COMMISSION EXPIRES JULY 29, 2025

STATE OF New Jersey } ss  
COUNTY OF Mercer

On this 14<sup>th</sup> day of April, 2021, before me the undersigned officer, personally appeared RHONDA STOKES VINSON, individually and as Trustee of the Lucille S. Stokes Irrevocable Living Trust II dated July 10, 2014, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument and acknowledged that she executed the same for the purposes therein contained.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

  
\_\_\_\_\_  
Notary Public  
My commission expires July 29<sup>th</sup> 2025  
NICHOLAS LEARY  
NOTARY PUBLIC  
STATE OF NEW JERSEY  
MY COMMISSION EXPIRES JULY 29, 2025

AND THEREAFTER, by deed dated April 17, 2021 and recorded April 7, 2021, Virginia Stokes Brubaker and Rhonda Stokes Vinson, as Co-Executrices of the Estate of Lucille S. Stokes, deceased, granted and conveyed the remaining 12.5% interest to Carolyn K. Stokes, Aimee K. Stokes and Ashlee Stokes Goodman, as tenants in common.

TRACT B:

BEING THE SAME PREMISES WHICH Harry M. Best and Marilyn W. Best, by Indenture dated 5/19/69 and recorded 5/21/69 in the Office of the Recorder of Deeds in and for the County of Chester in Deed Book U-38 page 596, granted and conveyed unto Milton R. Stokes and Lucille S. Stokes.

Together with all and singular the buildings and improvements, ways, streets, alleys, driveways, passages, waters, water-courses, rights, liberties, privileges, hereditaments and appurtenances, whatsoever unto the hereby granted premises belonging, or in anywise appertaining, and the reversions and remainders, rents, issues, and profits thereof; and all the estate, right, title, interest, property, claim and demand whatsoever of them, the said grantors, as well at law as in equity, of, in and to the same.

To have and to hold the said lot or piece of ground described above, with the buildings and improvements thereon erected, hereditaments and premises hereby granted, or mentioned and intended so to be, with the appurtenances, unto the said Grantee, their heirs and assigns, to and for the only proper use and behoof of the said Grantee, their heirs and assigns, forever.

And the said Grantor, for itself, its successors and assigns, does, by these presents, covenant, grant and agree, to and with the said Grantees, their heirs and assigns, that it, the said Grantor, and its successors and assigns, all and singular the hereditaments and premises herein described and granted, or mentioned and intended so to be, with the appurtenances, unto the said Grantees, their heirs and assigns, against it, the said Grantor, and its successors and assigns, will SPECIALLY WARRANT and defend against the lawful claims of all persons claiming by, through or under the said Grantor but not otherwise.

And the said, Executors of the aforesaid covenant, promise and agree to and with said Grantee, their heirs and assigns, that they, the said Executors of the aforementioned, have not done, committed, or knowingly or willingly suffered to be done or committed, any act, matter or thing whatsoever whereby the premises hereby granted, or any part thereof, is, are, shall or may be impeached, charged or encumbered, in title, charge, estate, or otherwise howsoever.

In Witness Whereof, the said Grantors caused these presents to be duly executed the day and year first above written.

Estate of Lucille Stokes, deceased

By: \_\_\_\_\_  
Rhonda Stokes Vinson, Individually and as Executrix

By: Virginia Stokes Brubaker  
Virginia Stokes Brubaker, Individually and as Executrix

Lucille S. Stokes Irrevocable Living Trust dated April 10, 2009

By: Virginia Stokes Brubaker  
Virginia Stokes Brubaker, Trustee

Lucille S. Stokes Irrevocable Living Trust II dated July 10, ~~2004~~ 2014

By: Virginia Stokes Brubaker  
Virginia Stokes Brubaker, Individually and as Trustee

By: \_\_\_\_\_  
Rhonda Stokes Vinson, Trustee

Estate of Kenton S. Stokes

By: \_\_\_\_\_  
Carolyn K. Stokes, Individually and as Executrix

By: \_\_\_\_\_  
Ashlee K. Stokes-Goodman, Devisee

By: \_\_\_\_\_  
Aimee K. Stokes, Devisee

\_\_\_\_\_  
Carolyn K. Stokes,

\_\_\_\_\_  
Ashlee K. Stokes-Goodman

\_\_\_\_\_  
Aimee K. Stokes

STATE OF Virginia  
City  
COUNTY OF Harrisonburg

} ss



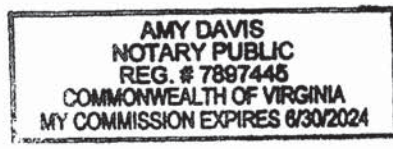
On this 14<sup>th</sup> day of April, 2021, before me the undersigned officer, personally appeared VIRGINIA STOKES BRUBAKER, individually and as Executrix of the Estate of Lucille S. Stokes, deceased, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument and acknowledged that she executed the same for the purposes therein contained.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Amy Davis  
Notary Public  
My commission expires 6/30/2024

STATE OF Virginia  
City  
COUNTY OF Harrisonburg

} ss



On this 14<sup>th</sup> day of April, 2021, before me the undersigned officer, personally appeared VIRGINIA STOKES BRUBAKER, individually and as Trustee of Lucille S. Stokes Irrevocable Living Trust dated April 10, 2009 known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument and acknowledged that she executed the same for the purposes therein contained.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Amy Davis  
Notary Public  
My commission expires 6/30/2024



STATE OF Virginia  
~~CITY~~  
COUNTY OF Hamsonburg

} ss



On this 14<sup>th</sup> day of April, 2021, before me the undersigned officer, personally appeared VIRGINIA STOKES BRUBAKER, individually and as Trustee of Lucille S. Stokes Irrevocable Living Trust II dated July 10, 2004, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument and acknowledged that she executed the same for the purposes therein contained.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Amy Davis  
Notary Public  
My commission expires 4/30/2024

Lucille S. Stokes Irrevocable Living Trust dated April 10, 2009

By: \_\_\_\_\_  
Virginia Stokes Brubaker, Trustee

Lucille S. Stokes Irrevocable Living Trust II dated July 10, 2014

By: \_\_\_\_\_  
Virginia Stokes Brubaker, Individually and as Trustee

By: \_\_\_\_\_  
Rhonda Stokes Vinson, Trustee

Estate of Kenton S. Stokes

By: Carolyn K. Stokes  
Carolyn K. Stokes, Individually and as Executrix

By: Ashlee K. Stokes-Goodman  
Ashlee K. Stokes-Goodman, Devisee

By: \_\_\_\_\_  
Aimee K. Stokes, Devisee

Carolyn K. Stokes

Carolyn K. Stokes,

Ashlee K. Stokes-Goodman


Ashlee K. Stokes-Goodman

\_\_\_\_\_  
Aimee K. Stokes

Commonwealth of Pennsylvania  
STATE OF \_\_\_\_\_ } ss  
COUNTY OF Montgomery

On this 13th day of April, 2021, before me the undersigned officer, personally appeared CAROLYN K. STOKES, individually and as Executrix of the Estate of Kenton S. Stokes, deceased, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument and acknowledged that she executed the same for the purposes therein contained.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.


  
\_\_\_\_\_  
Notary Public  
My commission expires \_\_\_\_\_

Commonwealth of Pennsylvania - Notary Seal  
SARA COLEMAN, Notary Public  
Montgomery County  
My Commission Expires April 26, 2023  
Commission Number 1348924

Commonwealth of Pennsylvania  
STATE OF \_\_\_\_\_ } ss  
COUNTY OF Montgomery

On this 13th day of April, 2021, before me the undersigned officer, personally appeared ASHLEE K. STOKES-GOODMAN, individually and as Devisee of the Estate of Kenton S. Stokes, deceased, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument and acknowledged that she executed the same for the purposes therein contained.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

  
\_\_\_\_\_  
Notary Public  
My commission expires \_\_\_\_\_

Commonwealth of Pennsylvania - Notary Seal  
SARA COLEMAN, Notary Public  
Montgomery County  
My Commission Expires April 26, 2023  
Commission Number 1348924

Lucille S. Stokes Irrevocable Living Trust dated April 10, 2009

By: \_\_\_\_\_  
Virginia Stokes Brubaker, Trustee

Lucille S. Stokes Irrevocable Living Trust II dated July 10, 2004

By: \_\_\_\_\_  
Virginia Stokes Brubaker, Individually and as Trustee

By: \_\_\_\_\_  
Rhonda Stokes Vinson, Trustee

Estate of Kenton S. Stokes


By: \_\_\_\_\_  
Carolyn K. Stokes, Individually and as Executrix

By: \_\_\_\_\_  
Ashlee K. Stokes-Goodman, Devisee

By:  \_\_\_\_\_  
Aimee K. Stokes, Devisee

\_\_\_\_\_  
Carolyn K. Stokes,

\_\_\_\_\_  
Ashlee K. Stokes-Goodman

  
\_\_\_\_\_  
Aimee K. Stokes

STATE OF Connecticut

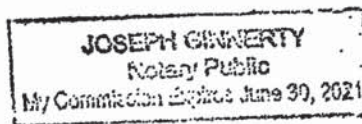
} ss Bristol

COUNTY OF Hartford

On this 15<sup>th</sup> day of April, 2021, before me the undersigned officer, personally appeared AIMEE K. STOKES, individually and as Devisee of the Estate of Kenton S. Stokes, deceased, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument and acknowledged that she executed the same for the purposes therein contained.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

*Joseph Gennerty*  
Notary Public  
My commission expires June 30, 2021



The precise residence and the complete post office address of the above-named Grantee is:

**227 Granite Run Drive  
Lancaster, PA 17601**

*[Signature]*  
On behalf of the Grantee

**AGREEMENT FOR SALE OF REAL ESTATE**

THIS AGREEMENT, made by and between Ivar and Jennifer Galilea with an address at 1011 Shiloh Rd, West Chester, Pennsylvania (hereinafter referred to as "Seller") and Fox Clearing LLC, a limited liability company with offices at 227 Granite Run Drive, Suite 100, Lancaster, Pennsylvania 17601 (hereinafter referred to as "Buyer");

WITNESSETH, that in consideration of the Purchase Price to be paid by Buyer to Seller, and in consideration of the promises herein set forth, and intending to be legally bound hereby, Seller agrees to sell unto Buyer, who agrees to purchase, the following Premises, under the following terms and conditions:

1. **PREMISES.** All that certain tract of land consisting of approximately 10.28 acres of land, together with the buildings and improvements together with rights of way, easements, open space, and all appurtenances thereon, having an address of 927 and 1011 Shiloh Road, West Chester, Pennsylvania 19382, located in Westtown Township, Chester County, Pennsylvania, and being identified on the tax map of Chester County as UPI Nos. 67-2-8 and 67-2-9, being part of the same premises as more particularly described in a Deed recorded in the Office of the Recorder of Deeds in and for Chester County, Pennsylvania (the "Recorders Office") in Book 4241, Page 2096 on October 7, 1997 and Book 7447, Page 1358 on June 3, 2008 (the "Premises").



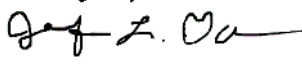
IN WITNESS WHEREOF, the parties hereto have executed this Agreement the days and year set forth below.

Date: 1/5/2023 | 5:04 AM PST

Ivar Galilea and Jennifer Galilea

DocuSigned by:  
  
By: 759F5BFD619A43E...  
Ivar Galilea


Date: 1/3/2023 | 10:21 AM PST

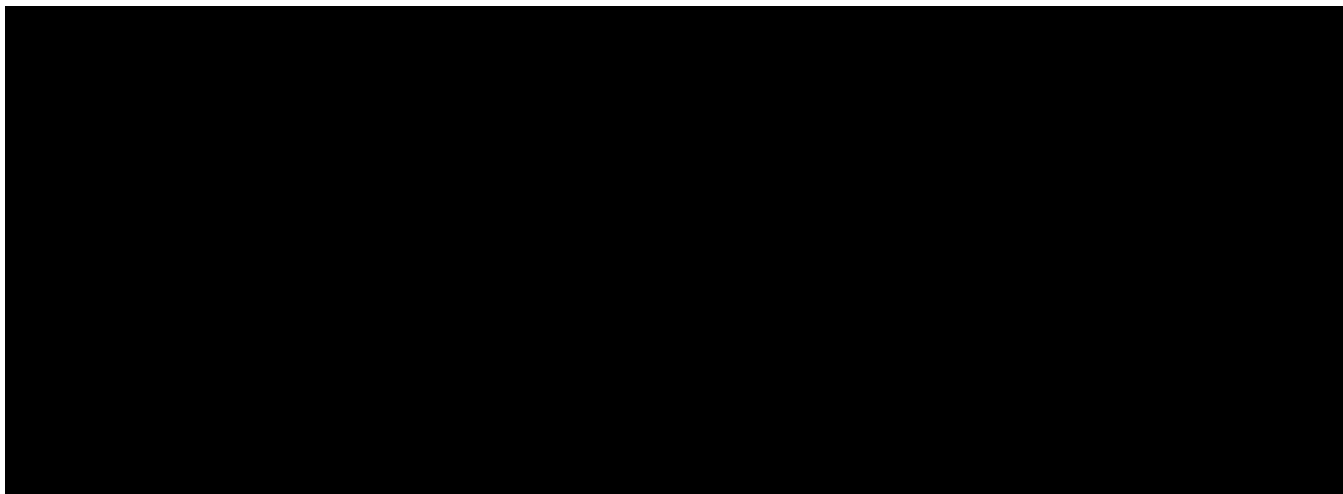
DocuSigned by:  
  
By: 2D0BC37B5C7845C...  
Jennifer Galilea

Fox Clearing LLC

By: KCH Holding Inc., Sole Member

Date: 1/1/2023 | 10:27 AM PST

DocuSigned by:  
  
By: 018B8D5C873542F...  
Jeffrey C. Rutt, President





**AGREEMENT FOR SALE OF REAL ESTATE**

THIS AGREEMENT, made by and between John and Christine O'Brien with an address at 1007 Shiloh Rd, West Chester, Pennsylvania (hereinafter referred to as "Seller") and Fox Clearing LLC, a limited liability company with offices at 227 Granite Run Drive, Suite 100, Lancaster, Pennsylvania 17601 (hereinafter referred to as "Buyer");

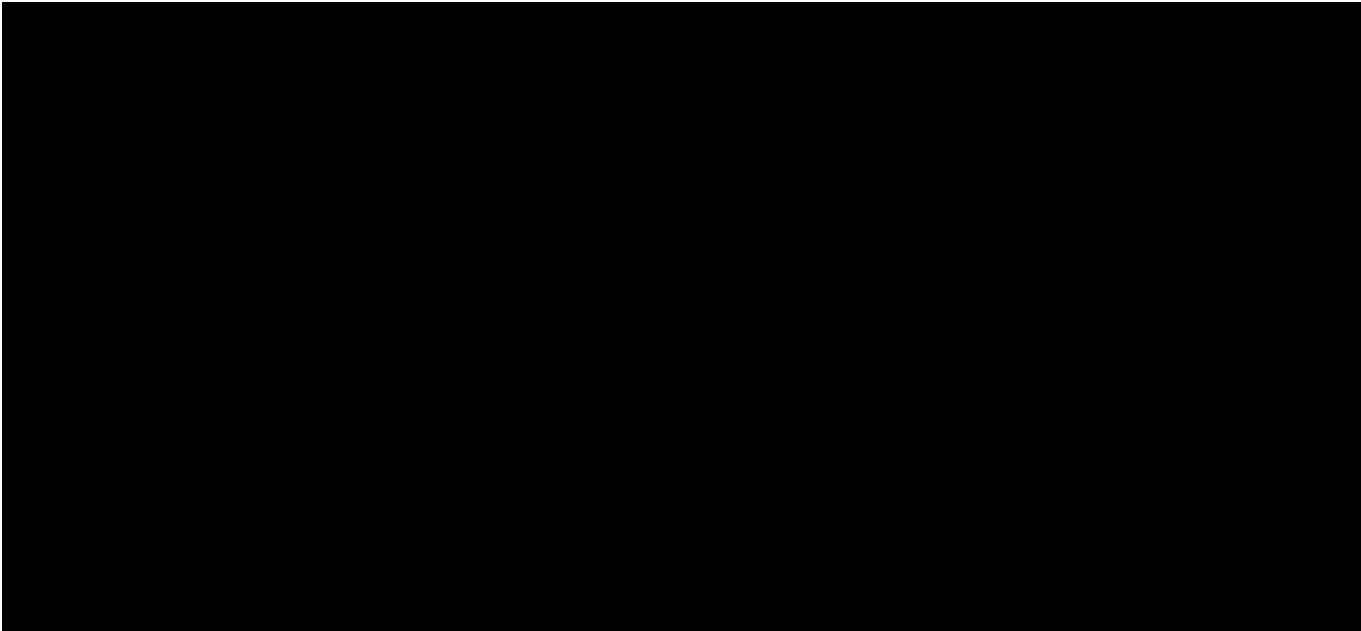
WITNESSETH, that in consideration of the Purchase Price to be paid by Buyer to Seller, and in consideration of the promises herein set forth, and intending to be legally bound hereby, Seller agrees to sell unto Buyer, who agrees to purchase, the following Premises, under the following terms and conditions:

1. **PREMISES.** All that certain tracts of land approximately 2.19 acres in size identified in Exhibit B to be subdivided from the entirety of the parcel, together with the rights of way, easements, open space, and all appurtenances thereon, having an address of 1007 Shiloh Road, West Chester, Pennsylvania 19382, located in Westtown Township, Chester County, Pennsylvania, and being identified on the tax map of Chester County as UPI 67-2-7.1, being part of the same premises as more particularly described in a Deed recorded in the Office of the Recorder of Deeds in and for Chester County, Pennsylvania (the "Recorders Office") in Book 4373, Page 1479 on June 29.

2. **DELIVERABLES.** Upon purchasing the Premises, Buyer shall also provide to Seller, in the sequence of development of the recorded Plan, the following items:

- A. A connection of the Seller's existing home to the public sanitary sewer service at Buyer's expense.
- B. Relocating or replacement of Seller's existing linear feet of fencing along the newly established boundary line with like kind fencing.
- C. Planting of several 10' to 12' pine trees on the Seller's property along the newly established boundary line with more specific locations to be mutually agreed upon, by Buyer and Seller, at the time of installation.

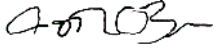




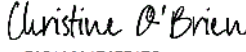
IN WITNESS WHEREOF, the parties hereto have executed this Agreement the days and year set forth below.

John O'Brien and Christine O'Brien

Date: 12/23/2022 | 12:40 PM PST

DocuSigned by:  
  
By: 7251A294E6774E5...  
John O'Brien


Date: 12/23/2022 | 12:37 PM PST

DocuSigned by:  
  
By: 7251A294E6774E5...  
Christine O'Brien

Fox Clearing LLC

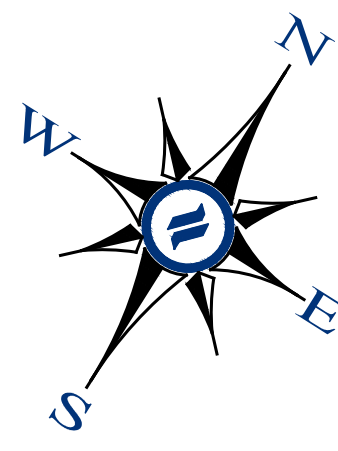
By: KCH Holding Inc., Sole Member

Date: 12/22/2022 | 2:42 PM PST

DocuSigned by:  
  
By: 018B8D5C873542F...  
Jeffrey C. Rutt, President

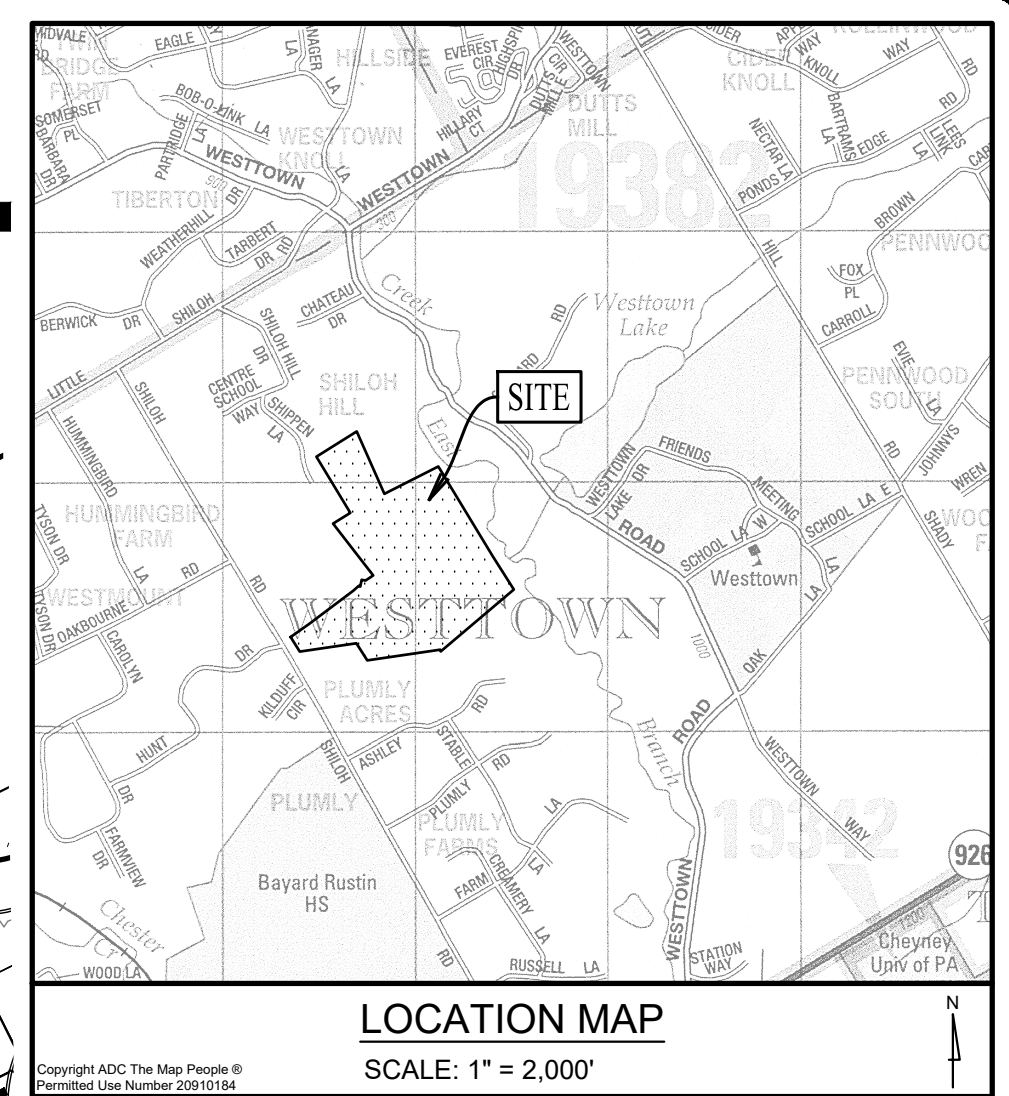
# **CONDITIONAL USE PLANS**





MATCHLINE - SEE SHEET C01.5

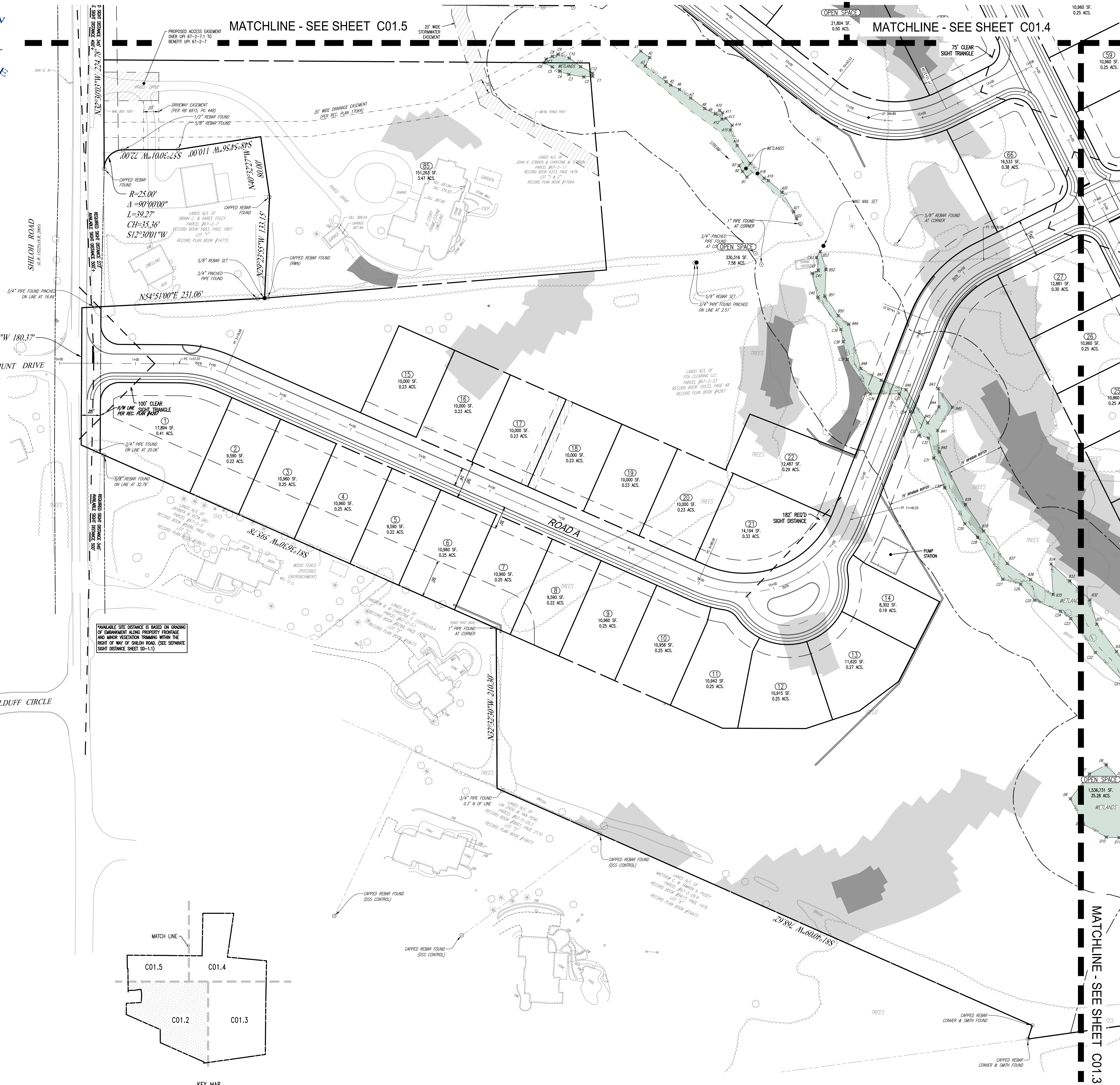
MATCHLINE - SEE SHEET C01.4



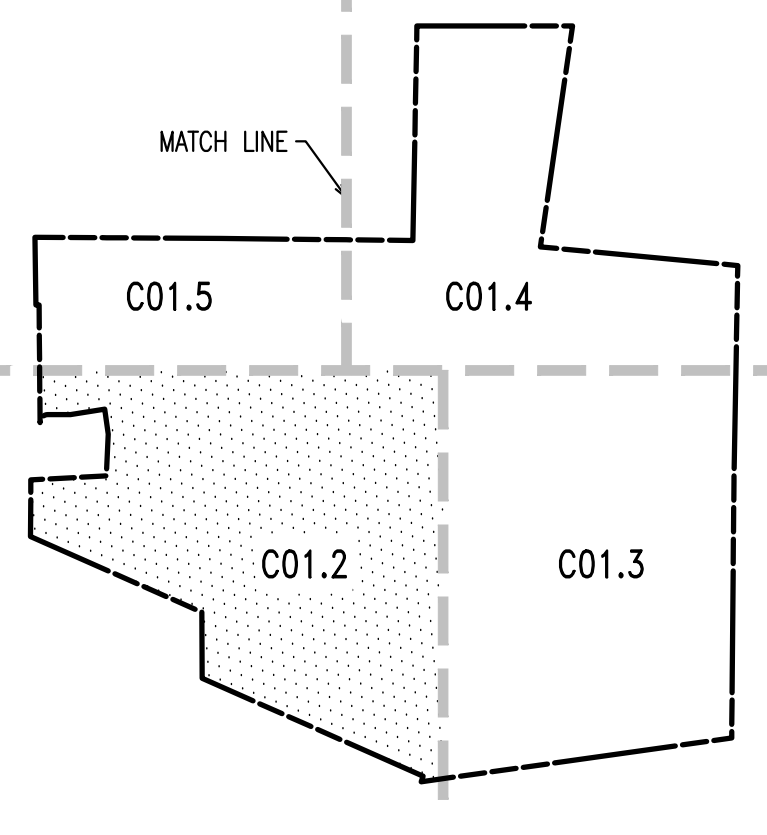
**DLHowell**

Civil Engineering  
Land Planning  
Environmental  
www.DLHowell.com

1250 Wrights Lane  
West Chester, PA 19380  
Phone: (610) 918-9002  
Fax: (610) 918-9003



MINIMUM SITE DISTANCE IS BASED ON GRADING OF EMBANKMENT ALONG PROPERTY FRONTAGE AND BUNKER VEGETATION TOWARD THE RIGHT OF WAY OF SHILOH ROAD. (SEE SEPARATE SIGHT DISTANCE SHEET SD-11)

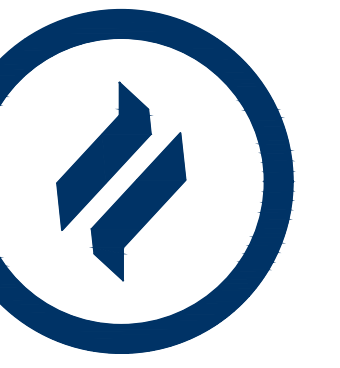


- LEGEND**
- EX. PROPERTY LINE
  - PROP. PROPERTY LINE
  - EX. RIGHT-OF-WAY
  - PROP. RIGHT-OF-WAY
  - EX. MONUMENT
  - PROP. MONUMENT
  - EX. IRON PIPE
  - PROP. IRON PIPE
  - EX. EASEMENT
  - PROP. EASEMENT
  - EX. WETLANDS
  - 242 EXISTING CONTOUR
  - 125.00 PROPOSED CONTOUR
  - EXISTING SPOT ELEV.
  - NEW SPOT ELEV.
  - GEB2 SOILS TYPE
  - SOILS LINE
  - EX. CONC. CURB
  - PROP. CONC. CURB
  - EX. EDGE OF PAVING
  - PROP. EDGE OF PAVING
  - EX. LIGHT POLE
  - PROP. LIGHT POLE
  - EX. FENCE
  - EX. MAIL BOX
  - EX. SIGN
  - PROP. SIGN
  - EXIST. PARKING SPACES
  - PROP. PARKING SPACES TO BE REMOVED
  - EX. TELE. LINE
  - PROP. TELE. LINE
  - EX. ELEC. LINE
  - PROP. ELEC. LINE
  - EX. UTILITY POLE
  - EX. GUY ANCHOR
  - EX. GAS LINE
  - PROP. GAS LINE
  - EX. GAS VALVE
  - PROP. GAS VALVE
  - EX. STORM SEWER LINE
  - PROP. STORM SEWER LINE
  - EX. STORM ALLEY
  - PROP. STORM INLET
  - PROP. STORM INLET ID
  - PROP. SEEPAGE BED
  - EX. SANITARY SEWER LINE
  - PROP. SAN. SEWER LINE
  - EX. SAN. SEWER LATERAL
  - PROP. SAN. SEWER LATERAL
  - EX. SANITARY MH. ID
  - EX. WATER LINE
  - PROP. WATER LINE
  - EX. WATER LATERAL
  - PROP. WATER LATERAL
  - EX. FIRE WATER LINE
  - PROP. FIRE WATER LINE
  - EX. WATER METER
  - PROP. WATER VALVE
  - EX. HYDRANT
  - PROP. HYDRANT
  - EX. MANHOLE
  - PROP. MANHOLE
  - ZONE AE FLOODPLAIN
  - 15% - 25% SLOPES
  - 25%+ SLOPES
  - WETLANDS

**SITE PLAN**  
SCALE: 1"=50'  
GRAPHIC SCALE  
1 inch = 50 feet

CONDITIONAL USE  
**SITE PLAN**  
CLIENT: FOX CLEARING, LLC  
PROJECT: STOKES ESTATE  
LOCATION: 1013 SHILOH ROAD  
WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

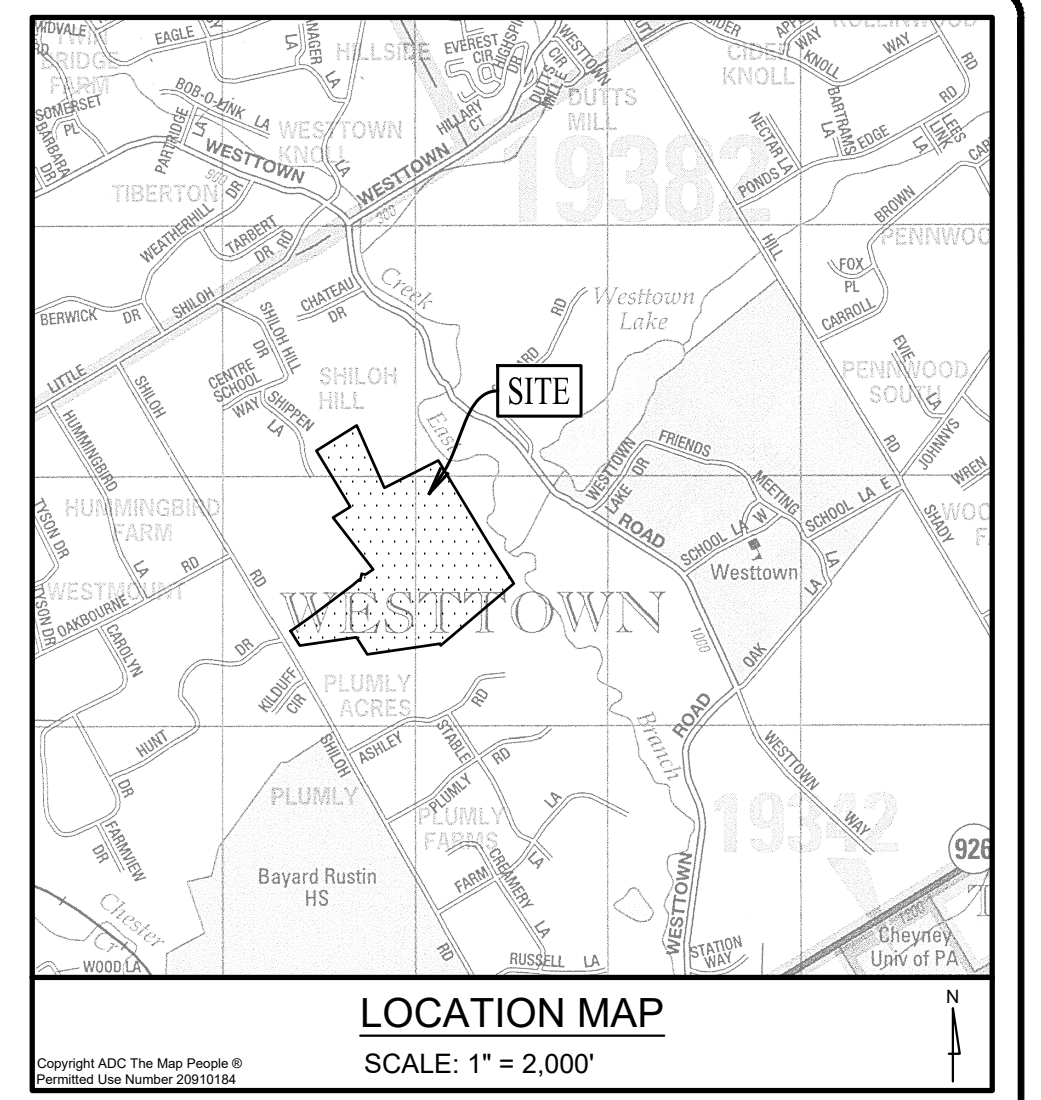
DATE: 04/14/23  
SCALE: 1"=50'  
DRAWN BY: ADM  
CHECKED BY: DWG  
PROJECT NO.: 3868  
CAD FILE: 04 SITE PLAN.dwg  
PLOTTER: 04/14/23  
DRAWING NO.: C01.2  
SHEET 02 of 37



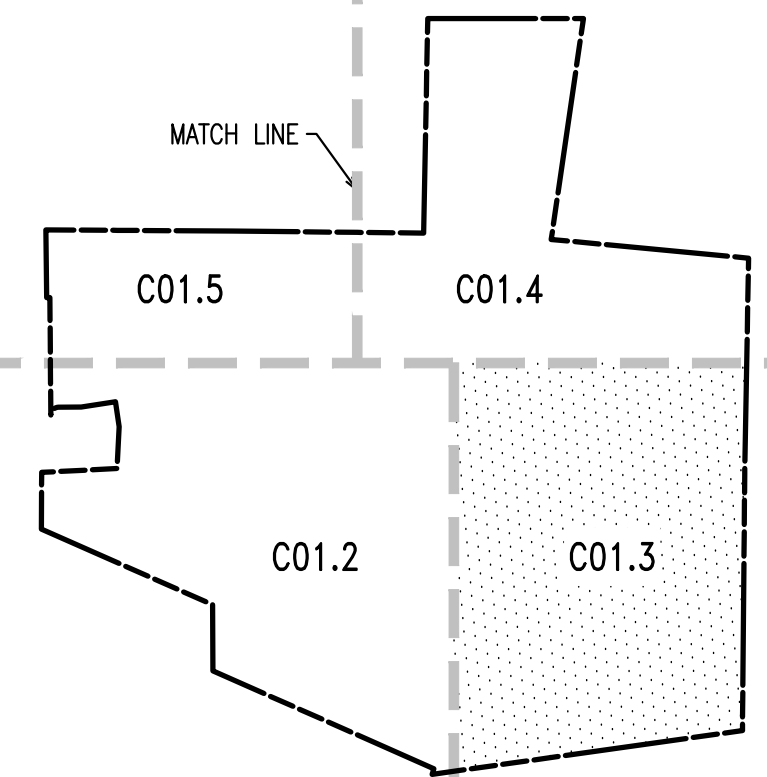
DLHowell

Civil Engineering  
Land Planning  
Environmental  
www.DLHowell.com

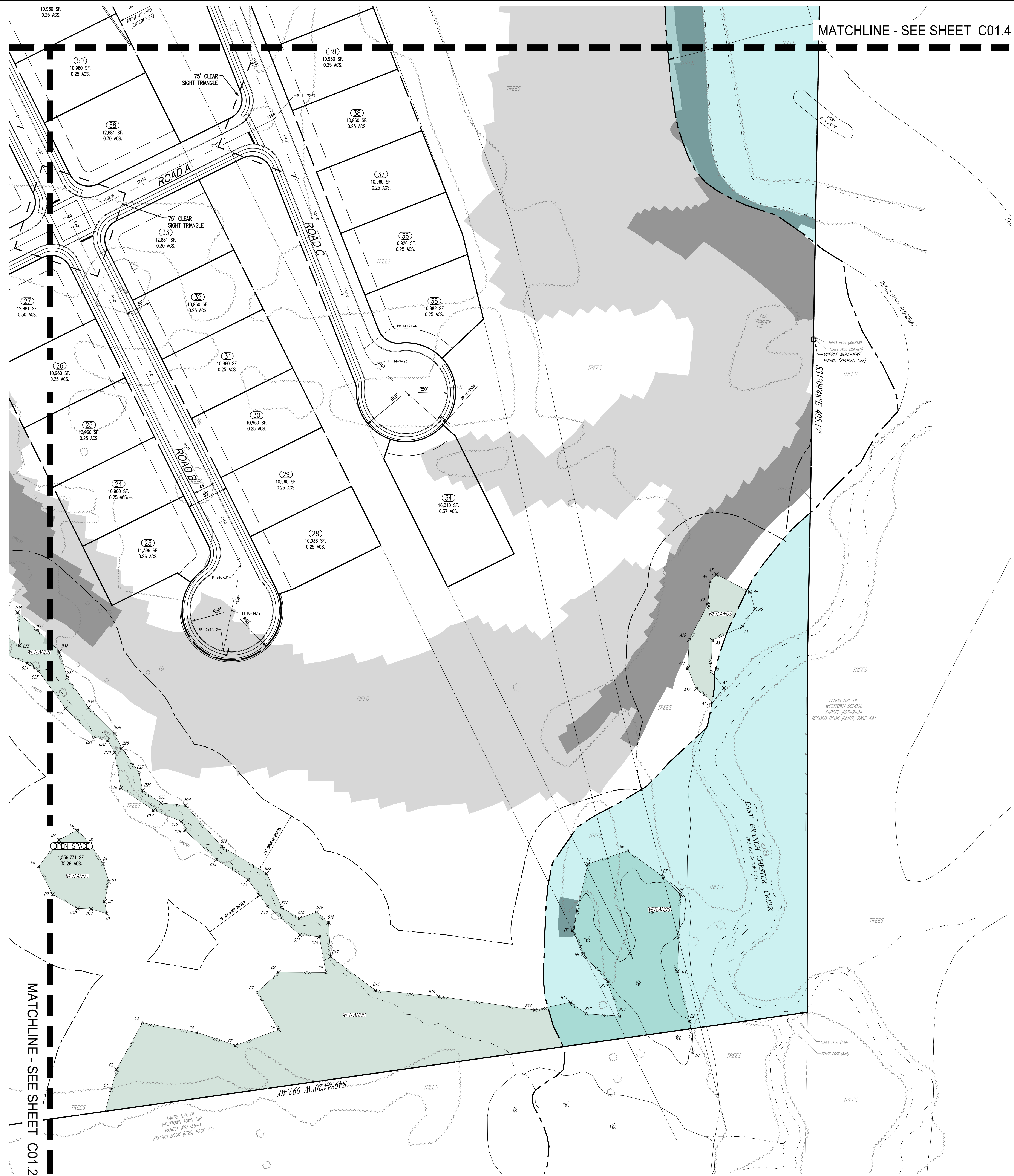
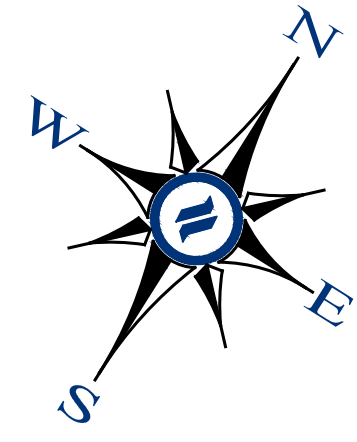
1250 Wrights Lane  
West Chester, PA 19380  
Phone: (610) 918-9002  
Fax: (610) 918-9003



LOCATION MAP  
SCALE: 1" = 2,000'



KEY MAP  
N.T.S.

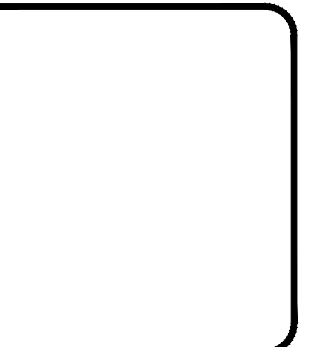
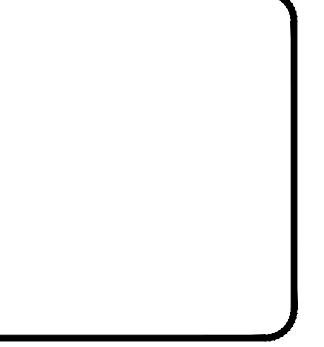


MATCHLINE - SEE SHEET C01.4

MATCHLINE - SEE SHEET C01.2

LEGEND

- EX. PROPERTY LINE
- PROP. PROPERTY LINE
- EX. RIGHT-OF-WAY
- PROP. RIGHT-OF-WAY
- EX. MONUMENT
- PROP. MONUMENT
- EX. IRON PIPE
- PROP. IRON PIPE
- EX. EASEMENT
- PROP. EASEMENT
- EX. WETLANDS
- 242 EXISTING CONTOUR
- 125.00 PROPOSED CONTOUR
- 123.00 EXISTING SPOT ELEV.
- 123.00 NEW SPOT ELEV.
- GEB2 SOILS TYPE
- SOILS LINE
- EX. CONC. CURB
- PROP. CONC. CURB
- EX. EDGE OF PAVING
- PROP. EDGE OF PAVING
- EX. LIGHT POLE
- PROP. LIGHT POLE
- EX. FENCE
- EX. MAIL BOX
- EX. SIGN
- PROP. SIGN
- EXIST. PARKING SPACES
- PROP. PARKING SPACES
- (FOR) TO BE REMOVED
- EX. TELE. LINE
- PROP. TELE. LINE
- EX. ELEC. LINE
- PROP. ELEC. LINE
- EX. UTILITY POLE
- PROP. UTILITY POLE
- EX. GUY ANCHOR
- EX. GAS LINE
- PROP. GAS LINE
- EX. GAS VALVE
- PROP. GAS VALVE
- EX. STORM SEWER LINE
- PROP. STORM SEWER LINE
- EX. STORM INLET
- PROP. STORM INLET
- EX. STORM INLET ID
- PROP. STORM INLET ID
- EX. SEEPAGE BED
- PROP. SEEPAGE BED
- EX. SANITARY SEWER LINE
- PROP. SAN. SEWER LINE
- EX. SAN. SEWER LATERAL
- PROP. SAN. SEWER LATERAL
- EX. SANITARY MH. ID
- PROP. SANITARY MH. ID
- EX. WATER LINE
- PROP. WATER LINE
- EX. WATER LATERAL
- PROP. WATER LATERAL
- EX. FIRE WATER LINE
- PROP. FIRE WATER LINE
- EX. WATER VALVE
- PROP. WATER VALVE
- EX. HYDRANT
- PROP. HYDRANT
- EX. MANHOLE
- PROP. MANHOLE
- ZONE AE FLOODPLAIN
- 15% - 25% SLOPES
- 25%+ SLOPES
- WETLANDS

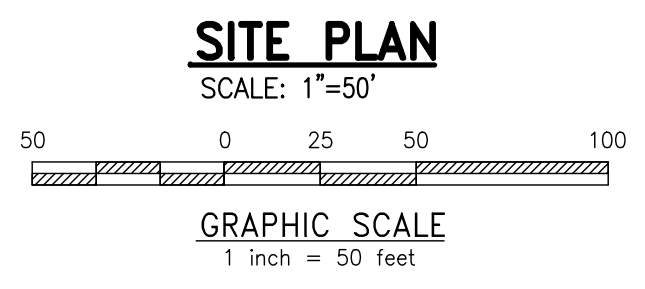


NO.	DATE	DESCRIPTION
8		
7		
6		
5		
4		
3		
2		
1		

CONDITIONAL USE  
SITE PLAN

CLIENT: FOX CLEARING, LLC  
PROJECT: STOKES ESTATE  
LOCATION: 1013 SHILOH ROAD  
WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE: 04/14/23  
SCALE: 1"=50'  
DRAWN BY: ADM  
CHECKED BY: DWG  
PROJECT NO.: 3868  
CAD FILE: 03 SITE PLAN.dwg  
PLOTTER: 04/14/23  
DRAWING NO.: C01.3  
SHEET 03 of 37



SITE PLAN  
SCALE: 1"=50'

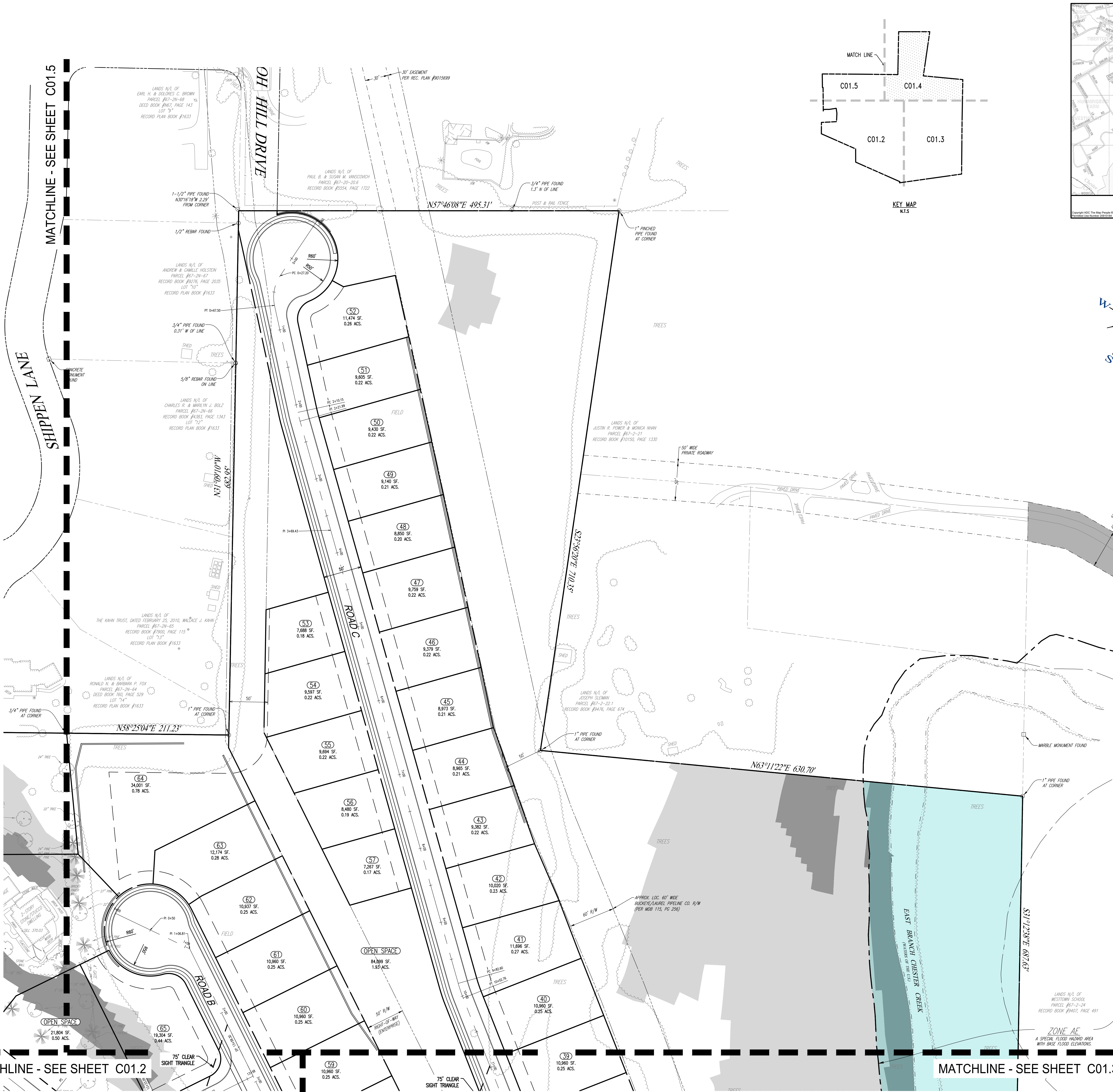
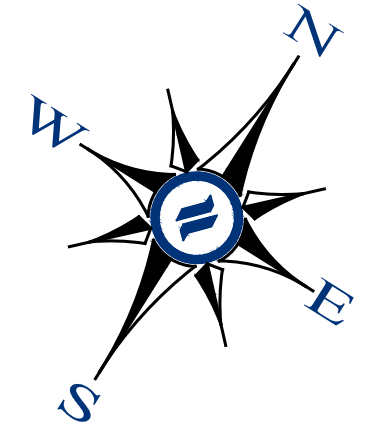
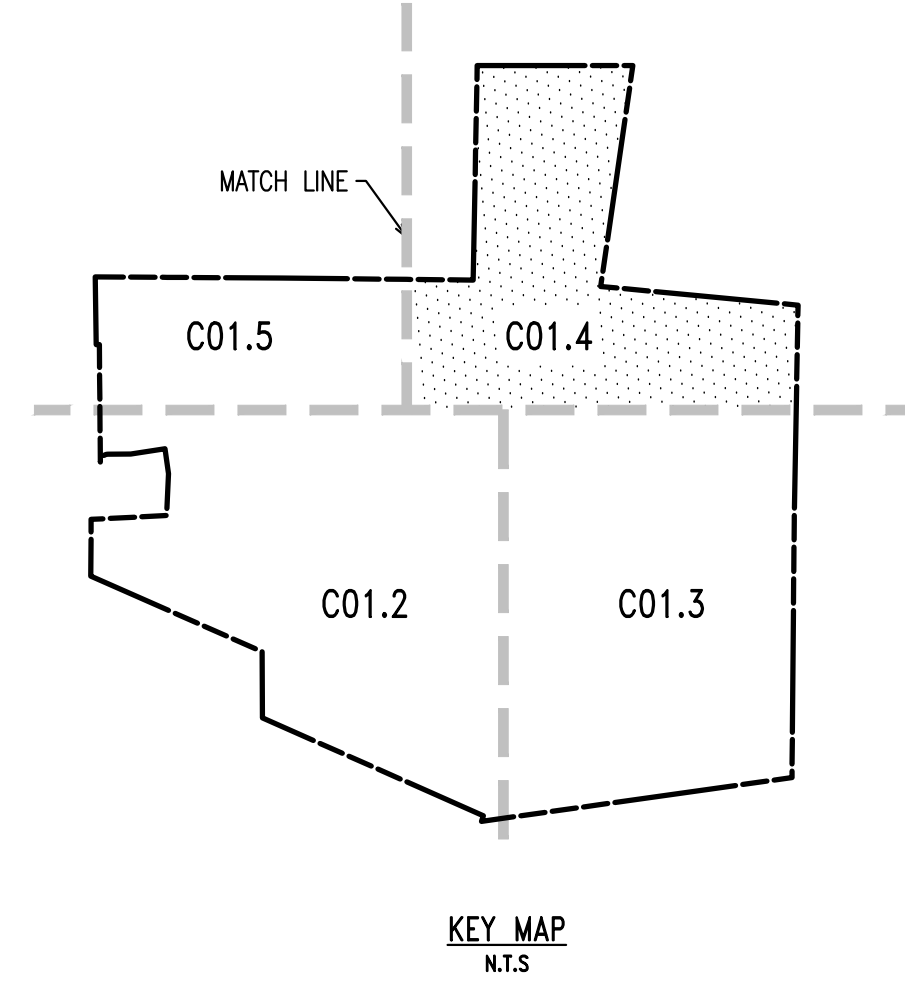
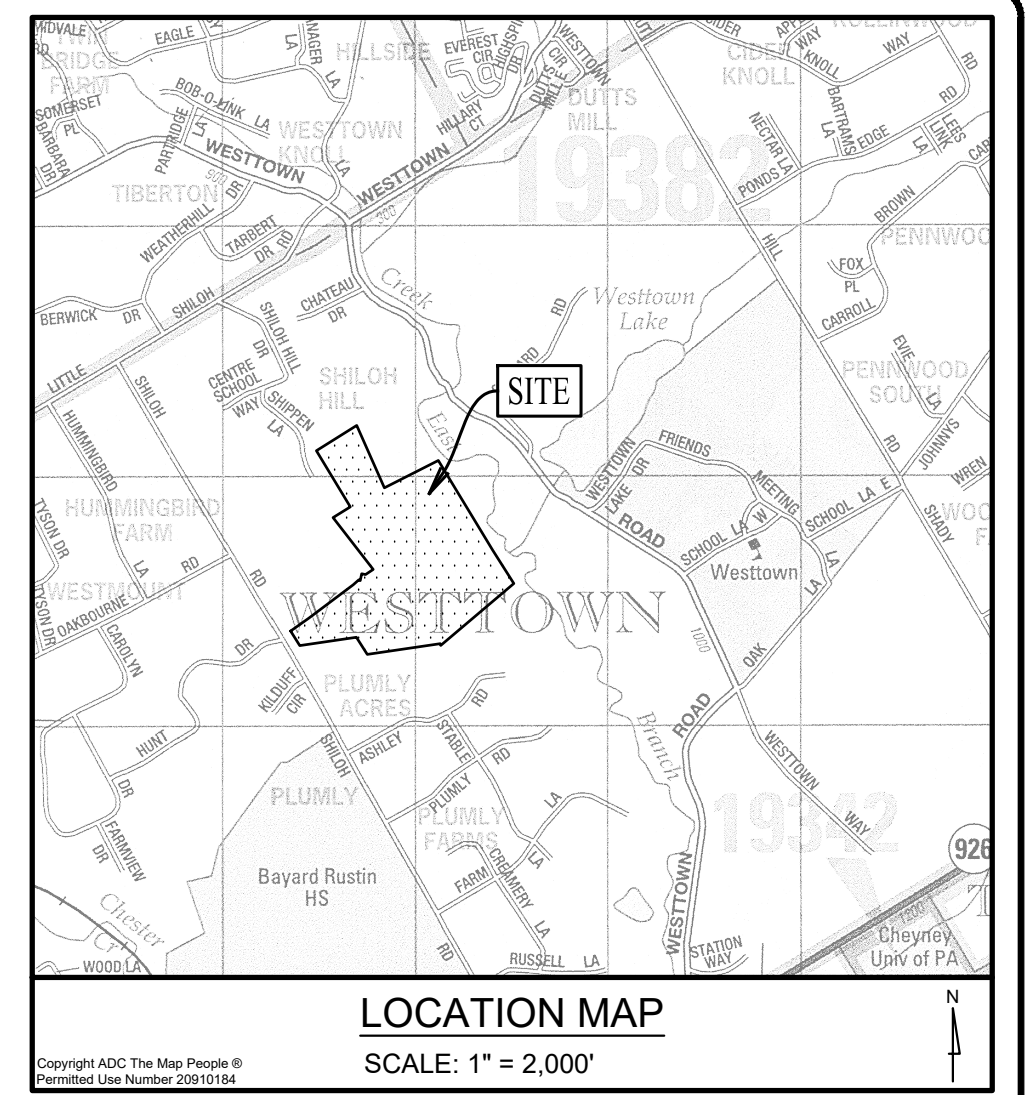
GRAPHIC SCALE  
1 inch = 50 feet



DLHowell

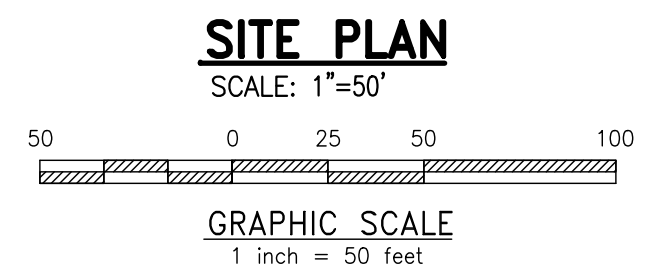
Civil Engineering  
Land Planning  
Environmental  
www.DLHowell.com

1250 Wrights Lane  
West Chester, PA 19380  
Phone: (610) 918-9002  
Fax: (610) 918-9003



LEGEND

- EX. PROPERTY LINE
- PROP. PROPERTY LINE
- EX. RIGHT-OF-WAY
- PROP. RIGHT-OF-WAY
- EX. MONUMENT
- PROP. MONUMENT
- EX. IRON PIPE
- PROP. IRON PIPE
- EX. EASEMENT
- PROP. EASEMENT
- EX. WETLANDS
- PROP. WETLANDS
- EX. EXISTING CONTOUR
- PROP. PROPOSED CONTOUR
- EX. NEW SPOT ELEV.
- PROP. NEW SPOT ELEV.
- EX. SOILS TYPE
- PROP. SOILS TYPE
- EX. CONC. CURB
- PROP. CONC. CURB
- EX. PROP. EDGE OF PAVING
- PROP. PROP. EDGE OF PAVING
- EX. LIGHT POLE
- PROP. LIGHT POLE
- EX. FENCE
- PROP. FENCE
- EX. MAIL BOX
- PROP. MAIL BOX
- EX. SIGN
- PROP. SIGN
- EX. EXIST. PARKING SPACES
- PROP. EXIST. PARKING SPACES
- EX. TELE. LINE
- PROP. TELE. LINE
- EX. ELEC. LINE
- PROP. ELEC. LINE
- EX. PROP. UTILITY POLE
- PROP. PROP. UTILITY POLE
- EX. GUY ANCHOR
- PROP. GUY ANCHOR
- EX. GAS LINE
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- PROP. GAS VALVE
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- PROP. SEEPAGE BED
- EX. SANITARY SEWER LINE
- PROP. SAN. SEWER LINE
- EX. SAN. SEWER LATERAL
- PROP. SAN. SEWER LATERAL
- EX. SANITARY MH. ID
- PROP. SANITARY MH. ID
- EX. WATER LINE
- PROP. WATER LINE
- EX. WATER LATERAL
- PROP. WATER LATERAL
- EX. FIRE WATER LINE
- PROP. FIRE WATER LINE
- EX. WATER VALVE
- PROP. WATER VALVE
- EX. HYDRANT
- PROP. HYDRANT
- EX. MANHOLE
- PROP. MANHOLE
- EX. WETLANDS
- PROP. WETLANDS
- EX. 15%+ SLOPES
- PROP. 15%+ SLOPES
- EX. 25%+ SLOPES
- PROP. 25%+ SLOPES
- EX. WETLANDS
- PROP. WETLANDS



SITE PLAN  
SCALE: 1"=50'

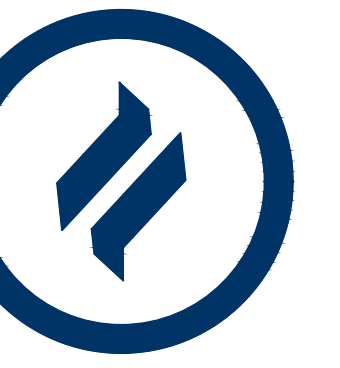
MATCHLINE - SEE SHEET C01.2

MATCHLINE - SEE SHEET C01.3

CONDITIONAL USE  
SITE PLAN

CLIENT: FOX CLEARING, LLC  
PROJECT: STOKES ESTATE  
LOCATION: 1013 SHILOH ROAD  
WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

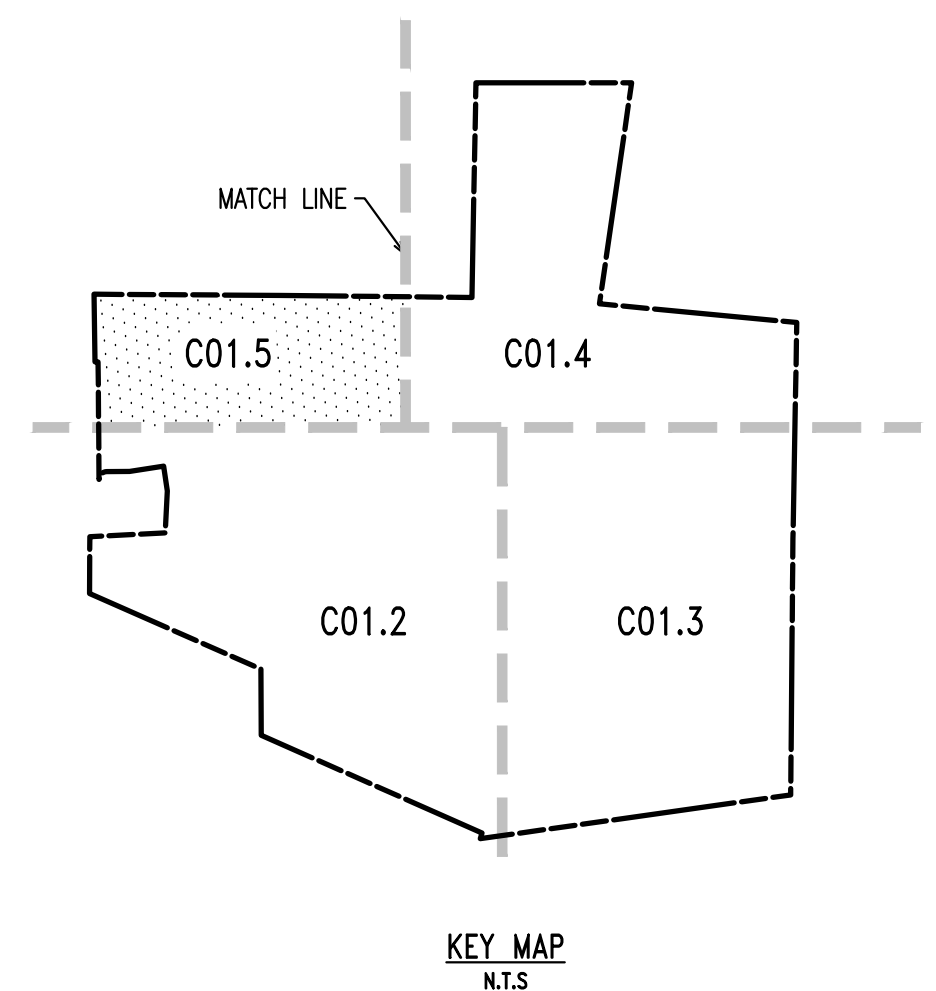
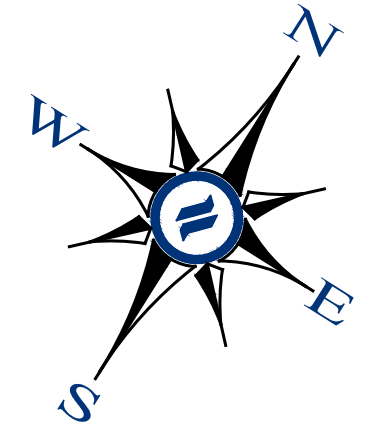
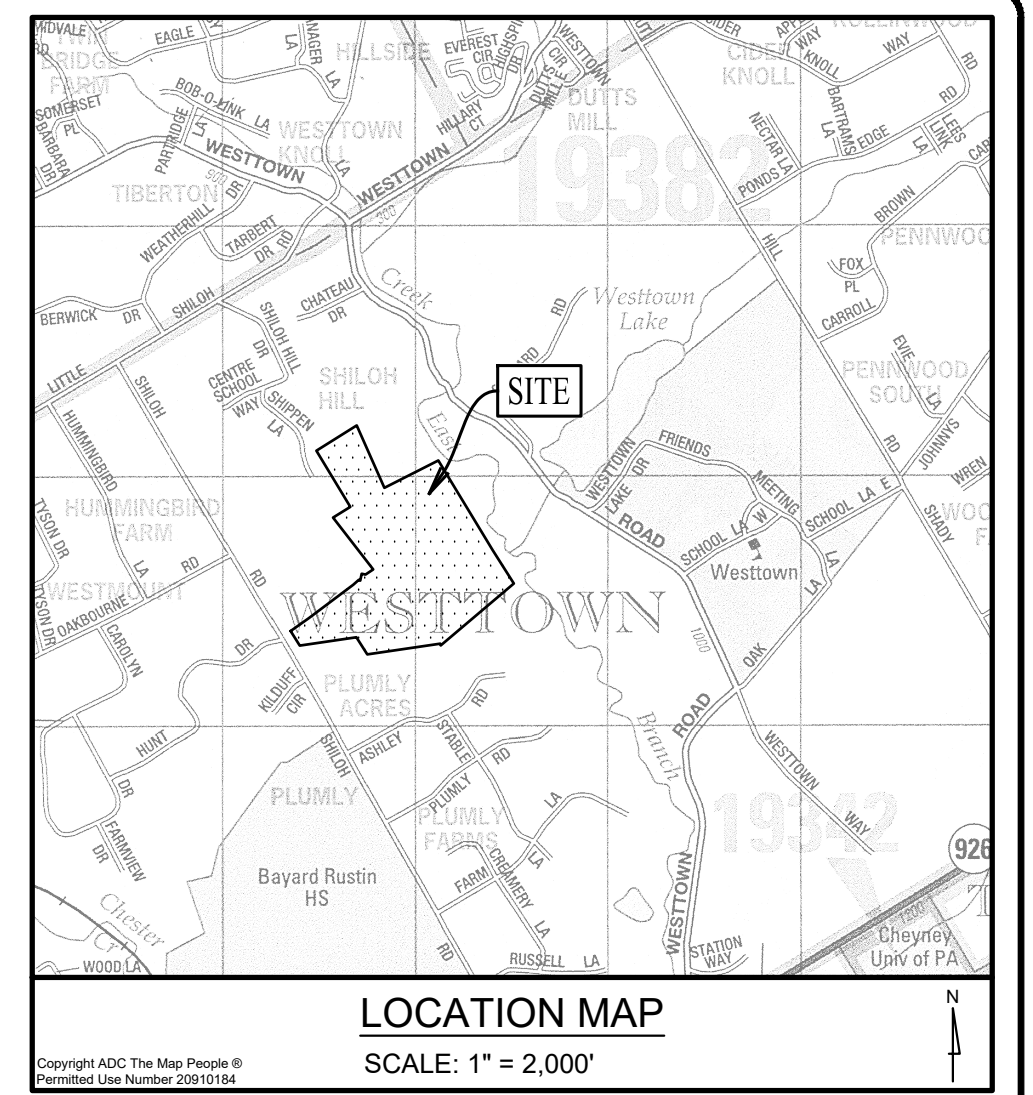
DATE:	04/14/23
SCALE:	1"=50'
DRAWN BY:	ADM
CHECKED BY:	DMG
PROJECT NO.:	3868
CAD FILE:	in SITE PLAN.dwg
PLOTTED:	04/14/23
DRAWING NO.:	C01.4
SHEET:	04 of 37



DLHowell

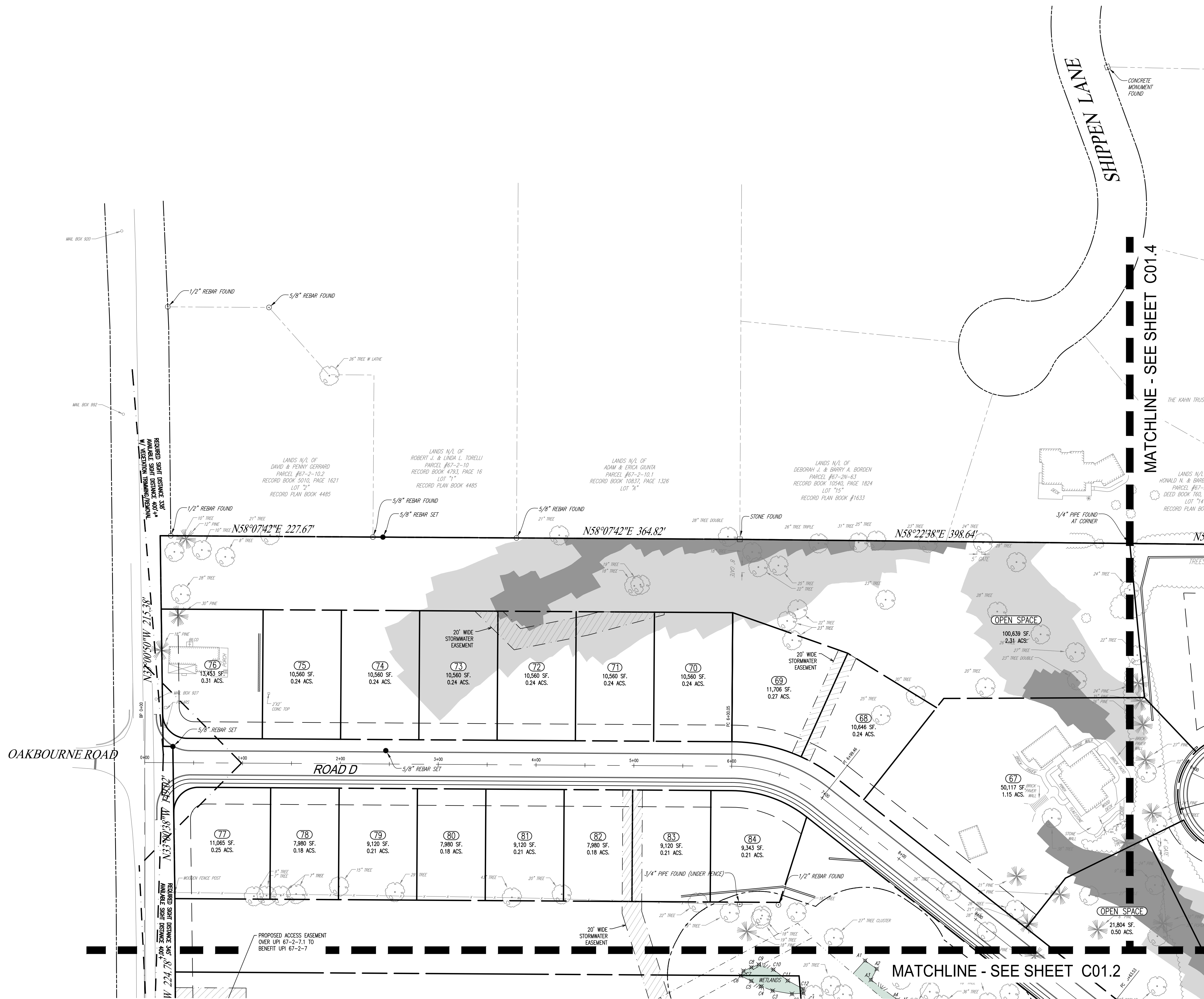
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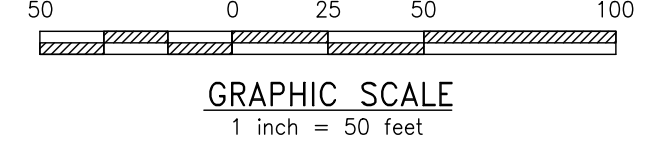
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- PROP. PROPERTY LINE
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- EX. MONUMENT
- PROP. MONUMENT
- EX. IRON PIPE
- PROP. IRON PIPE
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- PROP. EASEMENT
- EX. METLANDS
- 242 EXISTING CONTOUR
- 1228 PROPOSED CONTOUR
- EXISTING SPOT ELEV.
- NEW SPOT ELEV.
- SOILS TYPE
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- EX. WATER VALVE
- PROP. WATER VALVE
- EX. HYDRANT
- PROP. HYDRANT
- EX. MANHOLE
- PROP. MANHOLE
- ZONE AE FLOODPLAIN
- 15% - 25% SLOPES
- 25%+ SLOPES
- WETLANDS



SITE PLAN

SCALE: 1"=50'



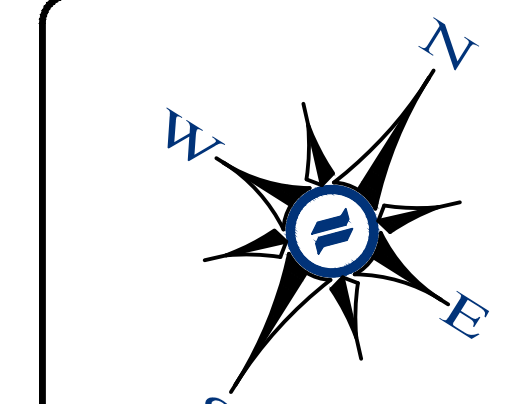
CONDITIONAL USE  
SITE PLAN

CLIENT: FOX CLEARING, LLC  
PROJECT: STOKES ESTATE  
LOCATION: 1013 SHILOH ROAD  
WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE:	04/14/23
SCALE:	1"=50'
DRAWN BY:	ADM
CHECKED BY:	DWG
PROJECT NO.:	3868
CAD FILE:	04 SITE PLAN.dwg
PLOTTED:	04/14/23
DRAWING NO.:	C01.5
SHEET:	05 of 37

NO.	DATE	DESCRIPTION
8		
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**MANAGEMENT AND MAINTENANCE OF OPEN SPACE AREAS**  
THE HOMEOWNERS ASSOCIATION WILL OWN ALL OPEN SPACE AREAS, INCLUDING THOSE LISTED BELOW. THE HOMEOWNERS ASSOCIATION, OR A PROFESSIONAL MANAGEMENT COMPANY SELECTED BY THE HOMEOWNERS ASSOCIATION, WILL BE RESPONSIBLE FOR THE MANAGEMENT AND MAINTENANCE OF THE OPEN SPACE AREAS IN ACCORDANCE WITH PROVISIONS SET FORTH IN THE DECLARATION OF COVENANTS, RESTRICTIONS, EASEMENTS, CHARGES AND LENS FOR THE STOKES RESIDENTIAL TRACT - A PLANNED COMMUNITY. FUNDING FOR THE MAINTENANCE OF THE OPEN SPACE WILL BE PROVIDED BY A CAPITAL CONTRIBUTION MADE BY EACH UNIT PURCHASER AT THE TIME OF SETTLEMENT WITH THE DEVELOPER, AS WELL AS BY AN ONGOING ANNUAL ASSESSMENT. THE OPEN SPACE FUNDING WILL PROVIDE FOR APPROPRIATE AND PROFESSIONAL MAINTENANCE OF ALL ASPECTS OF THE OPEN SPACE. THE TOWNSHIP WILL BE PROVIDED WITH THE RIGHT, IN THE HOMEOWNERS ASSOCIATION DECLARATION, TO UNDERTAKE THE MAINTENANCE OF THE OPEN SPACE IN THE EVENT THAT THE HOMEOWNERS ASSOCIATION FAILS TO PERFORM SUCH MAINTENANCE IN ACCORDANCE WITH THE FINAL OPEN SPACE MANAGEMENT PLAN. THE TOWNSHIP WILL HAVE THE ABILITY TO CHARGE THE HOMEOWNERS ASSOCIATION FOR ANY COSTS INCURRED IN MAINTAINING THE OPEN SPACE, AND RECORD LENS FOR ANY UNPAID COSTS INCURRED BY THE TOWNSHIP.

**WOODED AREAS**  
THE WOODED AREAS WILL BE LEFT IN THEIR NATURAL STATE AND MAINTAINED TO A LIMITED DEGREE TO PRESERVE THEIR HEALTH AND STABILITY. THIS SHALL BE ACCOMPLISHED BY THE REMOVAL OF DAMAGING INVASIVE SPECIES ALONG THE WOODLAND EDGES AND IN FOREST GAPS. LIVE AND DEAD TREES SHALL NOT BE CUT DOWN OR REMOVED UNLESS THEY POSE A THREAT TO HUMAN SAFETY. DEAD TREES SHALL BE LEFT STANDING AND LYING ON THE FOREST FLOOR FOR WILDLIFE HABITAT. THE REMOVAL OF NATIVE NON-INVASIVE TREES, SHRUBS, SEEDLINGS AND GROUNDCOVER IS NOT PERMITTED IN THE WOODED COMMON OPEN SPACE AREAS. THE COMMUNITY ASSOCIATION SHALL MONITOR THE WOODED AREAS.

**MEADOWS**  
ALL OF THE EXISTING AGRICULTURAL FIELDS WILL BE PLANTED WITH NATIVE GRASSES AND CONVERTED TO MEADOWS IF NOT ALREADY CONVERTED AT THE TIME OF CONSTRUCTION. STORMWATER MANAGEMENT AREAS SHALL BE SEEDED AND LANDSCAPED WITH INDIGENOUS SPECIES AND MAINTAINED AS NATURALIZED AREAS. NEWLY SEED MEADOW AREAS SHALL BE MOVED TO A HEIGHT OF SIX INCHES WHENEVER PLANTS REACH TWELVE INCHES IN HEIGHT FOR THE FIRST YEAR. THEREAFTER, AND FOR ESTABLISHED MEADOW AREAS NOW TO A HEIGHT OF 12 TO 18 INCHES ONCE ANNUALLY FROM TO APRIL 15.

**RIPARIAN CORRIDOR**  
LIMITING DISTURBANCE ADJACENT TO WETLANDS AND STREAMS WILL PROVIDE THE BEST PROTECTION FOR THESE AREAS. THE VEGETATION WITHIN THE WETLAND AND RIPARIAN CORRIDOR AREAS SHALL NOT BE DISTURBED. THE VEGETATION WILL PROVIDE AN EFFECTIVE BUFFER AND NATURALLY CONTROL EROSION AND SEDIMENTATION, ABSORB CHEMICALS AND EXCESS NUTRIENTS, AND PROMOTE INFILTRATION OF STORMWATER RUNOFF. ENCOURAGE WOODLAND GROWTH WITHIN THE CENTRAL RIPARIAN CORRIDOR, PARTICULARLY ADJACENT TO STREAM BANKS, TO PROMOTE SHADING OF THE WATER SURFACE. MONITOR AND CONTROL INVASIVE WEEDS TO PREVENT COMPETITION WITH NATIVE SPECIES. INSPECT ANNUALLY FOR COLONIZATION OF INVASIVE PLANTS. REMOVE INVASIVE PLANTS WITHOUT DISTURBING DESIRABLE SPECIES. LIMIT THE USE OF BROADLY APPLIED HERBICIDE SPRAYS IN FAVOR OF HAND REMOVAL AND LOCALIZED APPLICATION OF HERBICIDE SPRAYS (WHEN AND IS STILL). INSPECT RIPARIAN CORRIDOR AT A MINIMUM ONCE A YEAR AND AFTER SEVERE STORMS FOR EVIDENCE OF EROSION, SEDIMENT DEPOSITS, OR CONCENTRATED FLOW CHANNELS. REPAIRS SHOULD BE MADE AS SOON AS POSSIBLE TO HALT EROSION AND STABILIZE ANY AFFECTED AREAS. STABILIZE AREAS SUBJECT TO EROSION USING A NATIVE MEADOW SEED MIX IN MEADOW AREAS OR IN WOODED AREAS USING NATIVE SHRUBS AND/OR TREES CAPABLE OF QUICKLY GENERATING A DENSE FIBROUS ROOT SYSTEM, SUCH AS SHIRAZI DOGWOOD (SHIRAZI DOGWOOD), GRAY DOGWOOD, AND RED OAK (DOGWOOD), WILLOW, SPONGEMOSS, AND BAKER BIRCH. PERIODICALLY MONITOR STREAMBED FLOWS, PARTICULARLY AFTER SEVERE STORM EVENTS. NATURAL DEBRIS SHALL NOT BE REMOVED FROM THE STREAM BED, UNLESS IT IS SIGNIFICANTLY IMPEDING THE FLOW OF WATER IN THE STREAM AND CAUSING EXCESSIVE FLOODING. SHOULD DEBRIS REMOVAL BE NECESSARY, DEBRIS SHOULD BE LEFT AT A POINT JUST ABOVE THE STREAM BANK TO ENHANCE WILDLIFE HABITAT AND ENSURE NUTRIENT RECYCLING. REMOVAL OF DEBRIS SHOULD BE LIMITED TO THAT REQUIRED TO RETURN STREAM FLOW TO ITS NATURAL STATE. IF POSSIBLE, LIMIT ACTIVITIES WITHIN NATURALIZED AREAS, INCLUDING THE RIPARIAN CORRIDOR, BETWEEN APRIL 15 AND AUGUST 15. DISTURBANCE WITHIN THE PERIOD CAN BE DETRIMENTAL TO A VARIETY OF WILDLIFE.

**COMMON OPEN SPACE**  
THE COMMON OPEN SPACE AREAS SHALL SERVE AS AREAS FOR PASSIVE AND INFORMAL ACTIVE RECREATION. THESE AREAS ARE LOCATED THROUGHOUT THE COMMUNITY AND WILL GENERALLY BE KEPT AS MEADOW AND/OR LAWN AREAS. THE HOMEOWNERS ASSOCIATION SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE AREAS TO ENSURE THAT THESE AREAS PROVIDE A USABLE TRANSITION BETWEEN THE PROPOSED COMMUNITY AND THE NATURAL RESOURCE PROTECTION AREAS.

**STORMWATER MANAGEMENT BASIN AREAS**  
THE INFILTRATION BASIN AREAS SHALL BE MAINTAINED AS DIRECTED BY THE POST CONSTRUCTION STORMWATER MANAGEMENT PLAN.

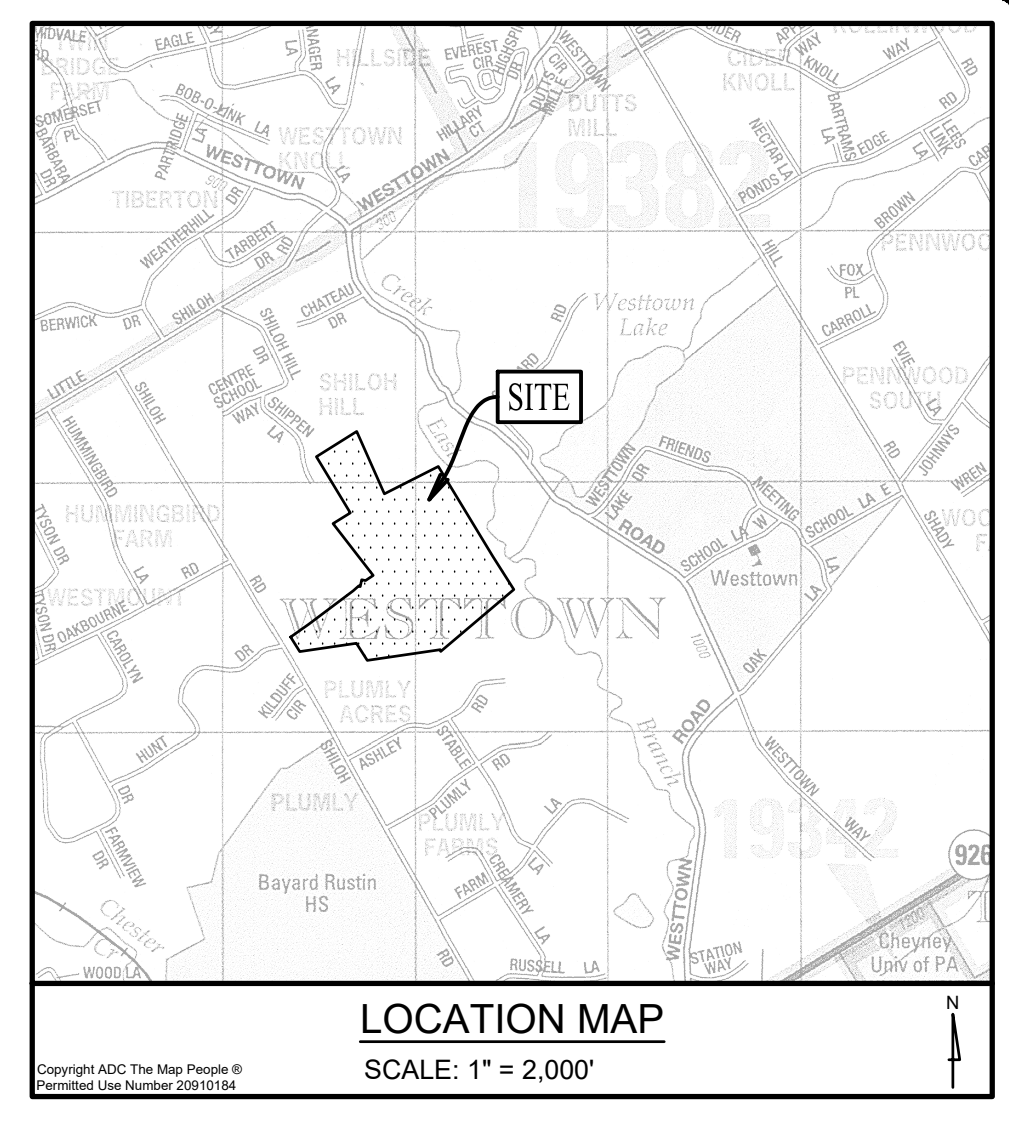
**LEGEND**

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- PROP. EASEMENT
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- 278 PROPOSED CONTOUR
- X 123.00 EXISTING SPOT ELEV.
- x 123.00 NEW SPOT ELEV.
- GEB2 SOILS TYPE
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- PROP. WATER VALVE
- EX. HYDRANT
- PROP. HYDRANT
- EX. MANHOLE
- PROP. MANHOLE



**GENERAL OPEN SPACE NOTES**

- THE DESIGNATED OPEN SPACE AREAS WILL BE OWNED AND MAINTAINED BY THE HOME OWNERS ASSOCIATION (HOA) WITHIN THE RESIDENTIAL TRACT AND WILL BE RESPONSIBLE FOR THE OPEN SPACE MANAGEMENT AND MAINTENANCE LISTED ON THIS SHEET.
- STORMWATER MANAGEMENT FACILITIES AND COMMON OPEN SPACE AREAS WILL BE MAINTAINED BY THE HOMEOWNERS ASSOCIATION. AREAS CONTAINED WITHIN PRIVATE LOTS WILL BE MAINTAINED BY THE LOT OWNER.
- THE HOMEOWNERS ASSOCIATION SHALL ENTER INTO AN ANNUAL CONTRACT FOR LAWN MAINTENANCE AND LANDSCAPING OF ALL OPEN SPACE AREAS. AREAS CONTAINED WITHIN PRIVATE LOTS WILL BE MAINTAINED BY THE LOT OWNER.
- ALL STRUCTURES PROPOSED WITHIN THE OPEN SPACE AREAS SHALL BE SITED TO HAVE MINIMAL IMPACT ON THE NATURAL AND CULTURAL RESOURCE VALUES.
- DESIGNATED OPEN SPACE SHALL BE RESTRICTED FROM FURTHER SUBDIVISION OR DEVELOPMENT BY DEED RESTRICTION, CONSERVATION EASEMENT, OR OTHER AGREEMENT IN A FORM ACCEPTABLE TO THE TOWNSHIP AND RECORDED IN THE RECORDER OF DEEDS OF CHESTER COUNTY.

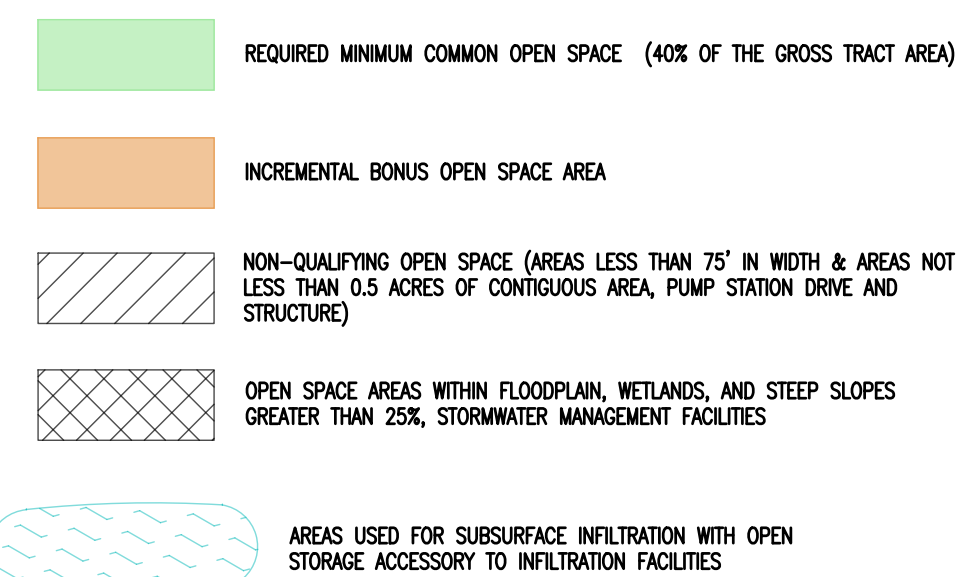


**OPEN SPACE**  
MINIMUM OPEN SPACE  
= 40% GROSS TRACT AREA

**REQUIRED**  
GROSS TRACT = 80,886 ACRES  
80,886 ACRES X 40% = 32,35 ACRES

**PROPOSED**  
GROSS OPEN SPACE = 47.60 ACRES (58.85% GROSS TRACT AREA)  
QUALIFYING MIN. REQUIRED OPEN SPACE = 32.39 ACRES (40.04% GROSS TRACT AREA)  
QUALIFYING INCREMENTAL BONUS O.S. = 15.22 ACRES (18.71% GROSS TRACT AREA)

\*\*SEE TABLE BELOW FOR TABULATION\*\*



	Min. Required Common Open Space Area (40%)					TOTAL
	1	2	3	4		
Gross Area (Acres)	19.19	6.58	6.5	0.5		32.77
- Areas less than 75' in width	0	0	0.31	0		0.31
- Areas less than 1/2 acre	0	0	0	0		0
- Non-infiltrating SWM Facilities	0	0	0	0		0
- Pump Station and other miscellaneous impervious	0.07	0	0	0		0.07
Qualifying Base Open Space	19.12	6.58	6.19	0.50		32.39
						40.04%

	1	2	3	4	TOTAL
Floodplain	2.78	2.28	0	0	5.06
Area of 25%+ Slopes	1.25	0.57	0.13	0.16	2.11
Wetland/Waterbodies	1.74	0	0.14	0	1.88
Area of Floodplain, wetland, slopes > 25% in Min. Required Common Open Space (Max. 50% allowed)	5.77	2.85	0.27	0.16	9.05
					27.94%

	Bonus Open Space Area						TOTAL
	B1	B2	B3	B4	B5	B6	
Gross Area (Acres)	4.58	3.92	1.93	2.32	1	1.08	14.83
- Areas less than 75' in width	0.13	0.49	1.15	0	0	0	1.77
- Areas less than 1/2 acre	0	0	0	0	0	0	0
- Floodplain	0	0	0	0	0	0	0
- Area of 25%+ Slopes (including proposed)	0	0.27	0	0.24	0	0	0.51
- Wetland/Waterbodies	0	0	0	0	0	0.01	0.01
- Impervious Surfaces	0	0	0	0	0	0	0
Stormwater Facilities	0	0	0	0.25	0	0.07	0.32
Qualifying Bonus Open Space	4.45	3.16	0.78	1.83	1	1	12.22
							15.11%

AREA AVAILABLE FOR ACTIVE RECREATION  
NET TRACT AREA = 2,840,590 S.F.  
AREA REQUIRED (10% NET TRACT AREA) X 10%  
= 284,059 SF -OR- 6.54 ACRES

AREA SUITABLE FOR ACTIVE RECREATION - 6.61 ACRES

NO.	DATE	DESCRIPTION
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CONDITIONAL USE  
OPEN SPACE PLAN

CLIENT: FOX CLEARING, LLC  
PROJECT: STOKES ESTATE  
LOCATION: 1013 SHILOH ROAD  
WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

**OPEN SPACE PLAN**  
SCALE: 1" = 100'

GRAPHIC SCALE  
1 inch = 100 feet

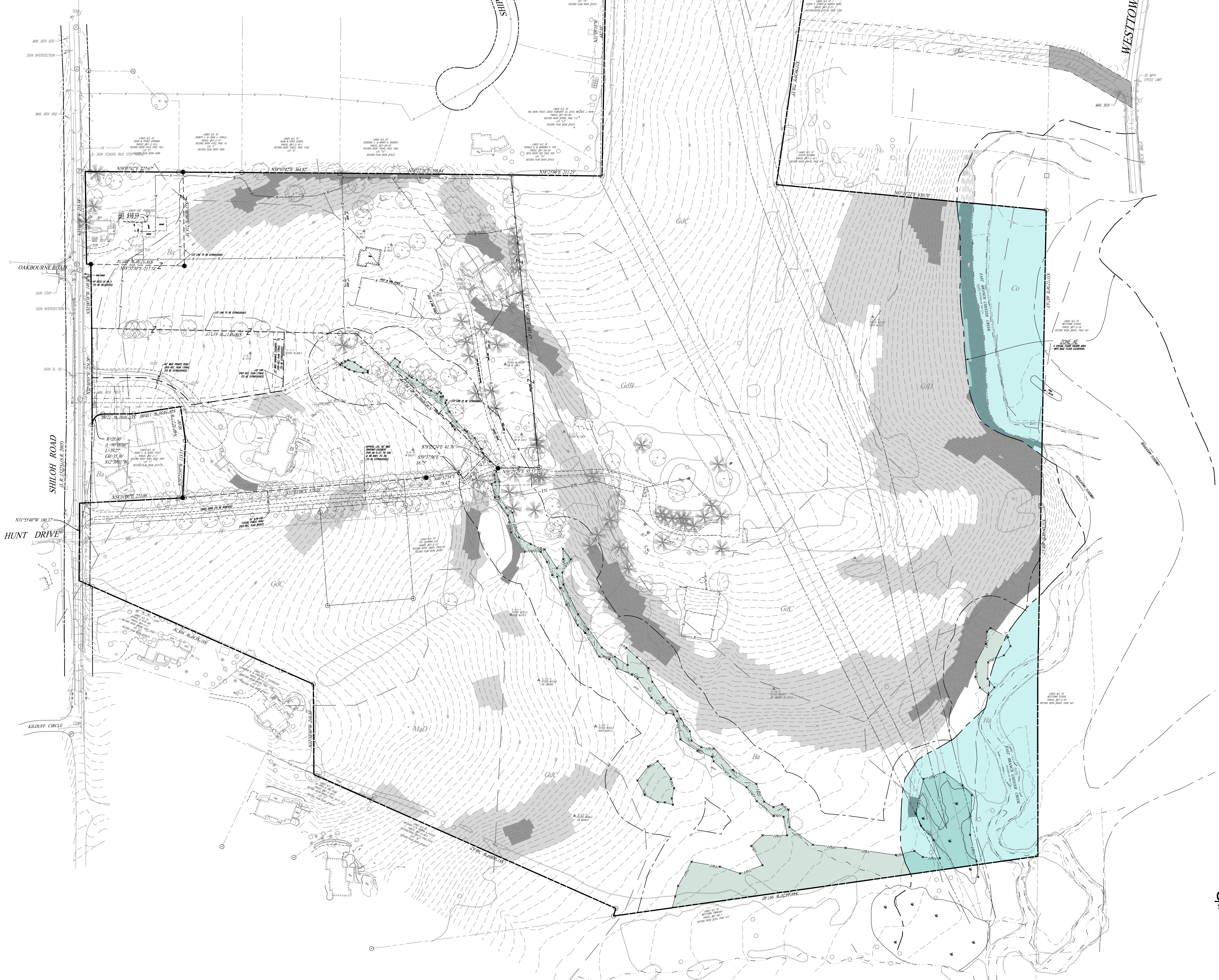
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CHECKED BY: DMG  
PROJECT NO.: 3868  
CAD FILE: 04 SITE PLAN.dwg  
PLOTTER: 04/14/23  
DRAWING NO.: C01.6  
SHEET 06 OF 37



BEDROCK GEOLOGY				
MAP SYMBOL	NAME	AGE	LITH1	LITH2
fgH	Felsic and intermediate gneiss	Precambrian	Felsic gneiss	Intermediate gneiss

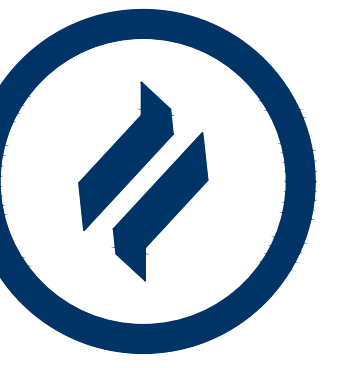
**SOILS LEGEND:**

SYMBOL	SOIL NAME
Bs	EDGEMONT CHANNERY LOAM, 3 TO 8 PERCENT SLOPES
Cs	COODERS Silt LOAM (INDICATIVELY SATED SOILS)
Gsb	GLAUCOSE GRANGELY LOAM, 3 TO 8 PERCENT SLOPES (INDICATIVELY SATED SOILS)
Gsc	GLAUCOSE GRANGELY LOAM, 8 TO 18 PERCENT SLOPES (INDICATIVELY SATED SOILS)
Gsf	GLAUCOSE GRANGELY LOAM, 8 TO 28 PERCENT SLOPES (INDICATIVELY SATED SOILS)
Hs	HANOVER Silt LOAM
MsD	MARSH Silt LOAM, 15 TO 25 PERCENT SLOPES
LvsB	LEWIS LOAM GLAUCOSE COMPLEX, 0 TO 8 PERCENT



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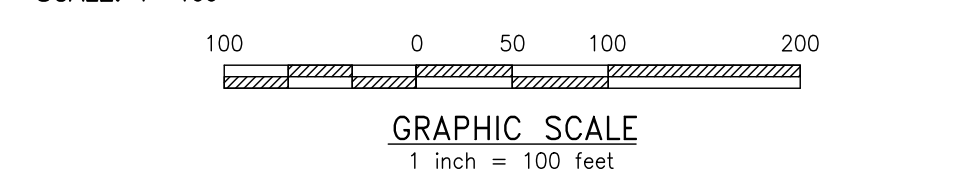
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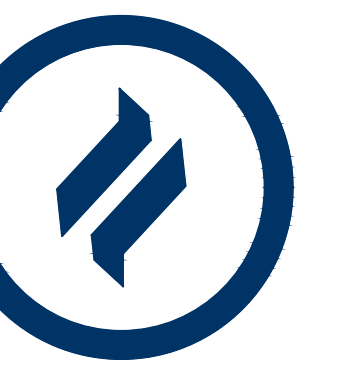
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**CONDITIONAL USE**  
**OVERALL EXISTING RESOURCES PLAN**  
CLIENT: FOX CLEARING, LLC  
PROJECT: STOKES ESTATE  
LOCATION: 1013 SHILOH ROAD  
WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE: 04/14/23  
SCALE: 1"=100'  
DRAWN BY: ADM  
CHECKED BY: DWG  
PROJECT NO.: 3868  
DATE: 04/14/23  
DRAWING NO.: C02.1  
SHEET 07 of 37

**OVERALL EXISTING RESOURCES PLAN**





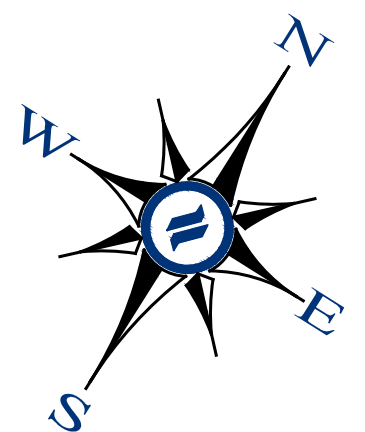
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**SOILS LEGEND:**

SYMBOL	SOIL NAME
Ba	EXCAVATED CHANNEL LOAM, 3 TO 8 PERCENT SLOPES
Co	COARSE SILT LOAM (UNSATURATED SHEAR SOILS)
GdB	GLAUDE QUARTZ LOAM, 3 TO 8 PERCENT SLOPES (SATURATED SHEAR SOILS)
GdC	GLAUDE QUARTZ LOAM, 9 TO 15 PERCENT SLOPES (SATURATED SHEAR SOILS)
GdF	GLAUDE QUARTZ LOAM, 6 TO 15 PERCENT SLOPES (UNSATURATED SHEAR SOILS)
MaD	MORRIS SILT LOAM, 15 TO 25 PERCENT SLOPES
MaE	MORRIS SILT LOAM, 15 TO 25 PERCENT SLOPES
MaF	MORRIS SILT LOAM, 15 TO 25 PERCENT SLOPES
MaG	MORRIS SILT LOAM, 15 TO 25 PERCENT SLOPES
MaH	MORRIS SILT LOAM, 15 TO 25 PERCENT SLOPES
MaI	MORRIS SILT LOAM, 15 TO 25 PERCENT SLOPES
MaJ	MORRIS SILT LOAM, 15 TO 25 PERCENT SLOPES
MaK	MORRIS SILT LOAM, 15 TO 25 PERCENT SLOPES
MaL	MORRIS SILT LOAM, 15 TO 25 PERCENT SLOPES
MaM	MORRIS SILT LOAM, 15 TO 25 PERCENT SLOPES
MaN	MORRIS SILT LOAM, 15 TO 25 PERCENT SLOPES
MaO	MORRIS SILT LOAM, 15 TO 25 PERCENT SLOPES
MaP	MORRIS SILT LOAM, 15 TO 25 PERCENT SLOPES
MaQ	MORRIS SILT LOAM, 15 TO 25 PERCENT SLOPES
MaR	MORRIS SILT LOAM, 15 TO 25 PERCENT SLOPES
MaS	MORRIS SILT LOAM, 15 TO 25 PERCENT SLOPES
MaT	MORRIS SILT LOAM, 15 TO 25 PERCENT SLOPES
MaU	MORRIS SILT LOAM, 15 TO 25 PERCENT SLOPES
MaV	MORRIS SILT LOAM, 15 TO 25 PERCENT SLOPES
MaW	MORRIS SILT LOAM, 15 TO 25 PERCENT SLOPES
MaX	MORRIS SILT LOAM, 15 TO 25 PERCENT SLOPES
MaY	MORRIS SILT LOAM, 15 TO 25 PERCENT SLOPES
MaZ	MORRIS SILT LOAM, 15 TO 25 PERCENT SLOPES



MATCHLINE - SEE SHEET C02.5

MATCHLINE - SEE SHEET C02.4



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---	EX. UTILITY POLE
---	PROP. UTILITY POLE
---	EX. GUY ANCHOR
---	PROP. GUY ANCHOR
---	EX. GAS LINE
---	PROP. GAS LINE
---	EX. GAS VALVE
---	PROP. GAS VALVE
---	EX. STORM SEWER LINE
---	PROP. STORM SEWER LINE
---	EX. STORM INLET
---	PROP. STORM INLET
---	EX. STORM INLET ID
---	PROP. STORM INLET ID
---	EX. SEEPAGE BED
---	PROP. SEEPAGE BED
---	EX. SANITARY SEWER LINE
---	PROP. SAN. SEWER LINE
---	EX. SAN. SEWER LATERAL
---	PROP. SAN. SEWER LATERAL
---	EX. SANITARY MH. ID
---	PROP. SANITARY MH. ID
---	EX. WATER LINE
---	PROP. WATER LINE
---	EX. WATER LATERAL
---	PROP. WATER LATERAL
---	EX. FIRE WATER LINE
---	PROP. FIRE WATER LINE
---	EX. WATER VALVE
---	PROP. WATER VALVE
---	EX. HYDRANT
---	PROP. HYDRANT
---	EX. MANHOLE
---	PROP. MANHOLE
---	EX. FLOODPLAIN
---	PROP. FLOODPLAIN
---	15% - 25% SLOPES
---	25%+ SLOPES
---	WETLANDS

NO.	DATE	DESCRIPTION
1		
2		
3		
4		
5		
6		
7		
8		

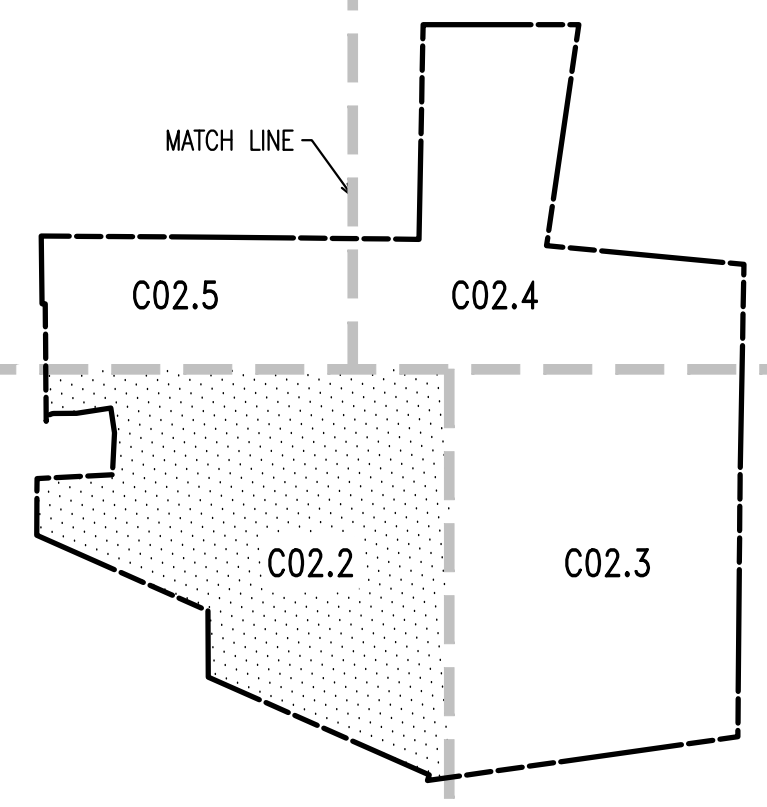
**CONDITIONAL USE  
EXISTING RESOURCES PLAN**

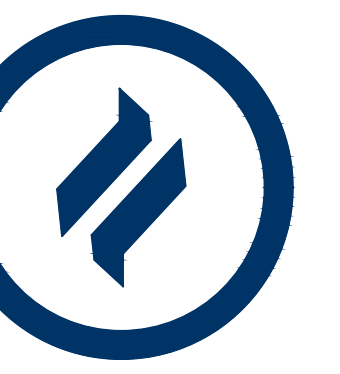
CLIENT: FOX CLEARING, LLC  
PROJECT: STOKES ESTATE  
LOCATION: 1013 SHILOH ROAD  
WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE: 04/14/23  
SCALE: 1"=50'  
DRAWN BY: ADM  
CHECKED BY: DWG  
PROJECT NO.: 3868  
DATE OF ORIGINAL EXISTING RESOURCES PLAN: 04/14/23  
DATE OF THIS PLAN: 04/14/23  
DRAWING NO.: C02.2  
SHEET 08 OF 37

**EXISTING RESOURCES PLAN**  
SCALE: 1"=50'

GRAPHIC SCALE  
1 inch = 50 feet

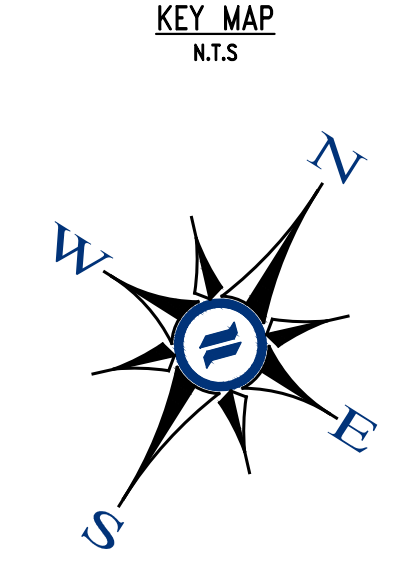
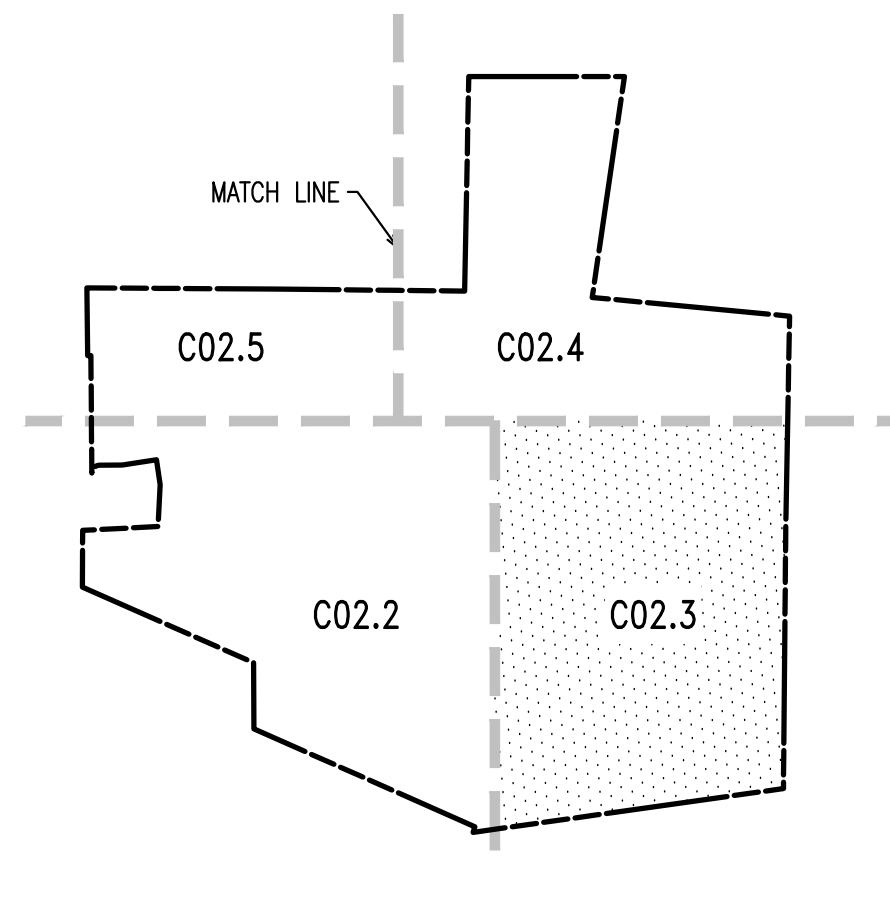




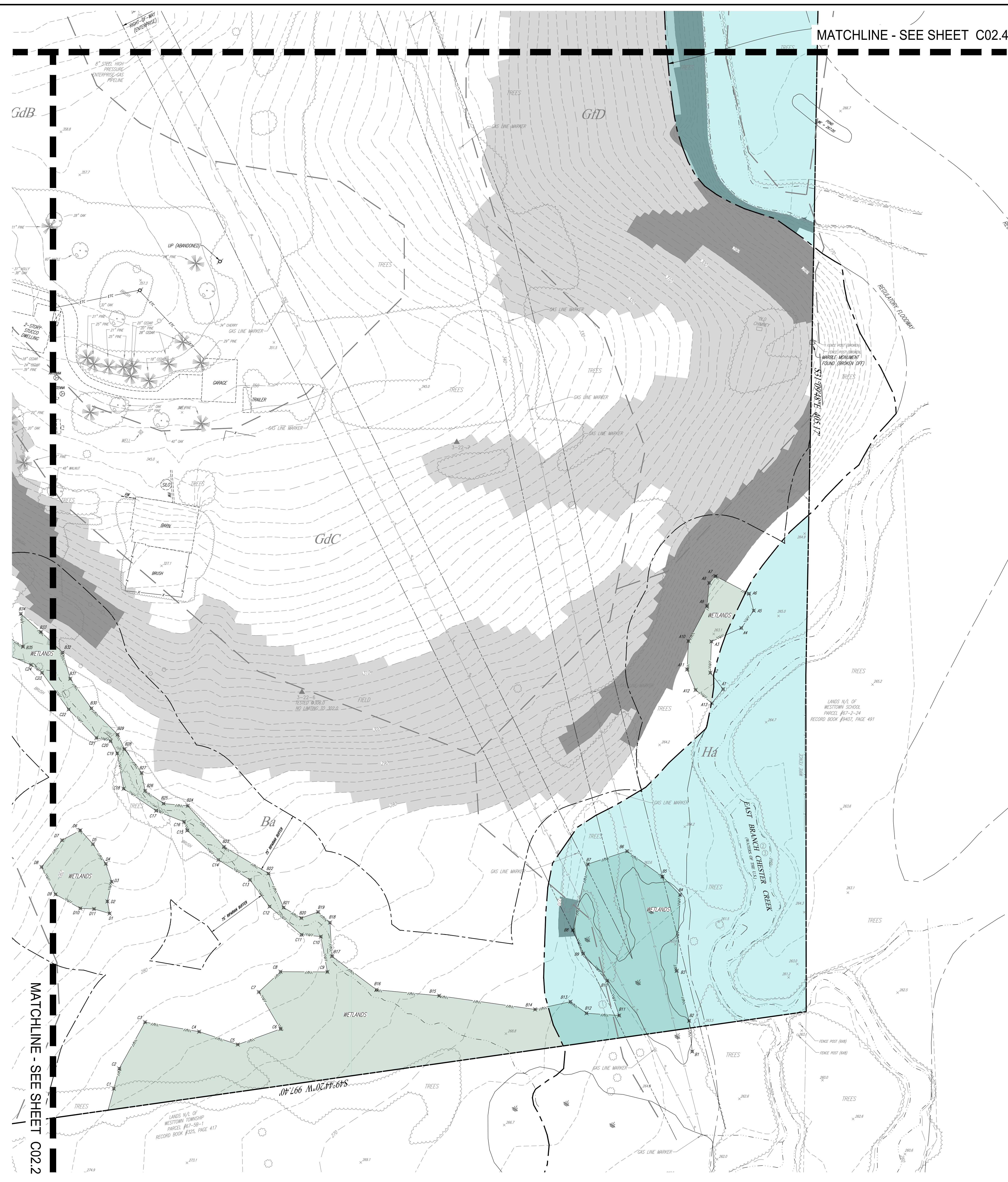
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MATCHLINE - SEE SHEET C02.4



LEGEND

- EX. PROPERTY LINE
- PROP. PROPERTY LINE
- EX. RIGHT-OF-WAY
- PROP. RIGHT-OF-WAY
- EX. MONUMENT
- PROP. MONUMENT
- EX. IRON PIPE
- PROP. IRON PIPE
- EX. EASEMENT
- PROP. EASEMENT
- EX. WETLANDS
- 242 EXISTING CONTOUR
- 123.00 PROPOSED CONTOUR
- 123.00 EXISTING SPOT ELEV.
- 123.00 NEW SPOT ELEV.
- GEB2 SOILS TYPE
- SOILS LINE
- EX. CONC. CURB
- PROP. CONC. CURB
- EX. EDGE OF PAVING
- PROP. EDGE OF PAVING
- EX. LIGHT POLE
- PROP. LIGHT POLE
- EX. FENCE
- EX. MAIL BOX
- EX. SIGN
- PROP. SIGN
- EXIST. PARKING SPACES
- PROP. PARKING SPACES
- (FOR)
- EX. TELE. LINE
- PROP. TELE. LINE
- EX. ELEC. LINE
- PROP. ELEC. LINE
- EX. UTILITY POLE
- PROP. UTILITY POLE
- EX. GUY ANCHOR
- EX. GAS LINE
- PROP. GAS LINE
- EX. GAS VALVE
- PROP. GAS VALVE
- EX. STORM SEWER LINE
- PROP. STORM SEWER LINE
- EX. STORM INLET
- PROP. STORM INLET
- EX. STORM INLET ID
- PROP. STORM INLET ID
- EX. SEEPAGE BED
- PROP. SEEPAGE BED
- EX. SANITARY SEWER LINE
- PROP. SAN. SEWER LINE
- EX. SAN. SEWER LATERAL
- PROP. SAN. SEWER LATERAL
- EX. SANITARY MH. ID
- PROP. SANITARY MH. ID
- EX. WATER LINE
- PROP. WATER LINE
- EX. WATER LATERAL
- PROP. WATER LATERAL
- EX. FIRE WATER LINE
- PROP. FIRE WATER LINE
- EX. WATER VALVE
- PROP. WATER VALVE
- EX. HYDRANT
- PROP. HYDRANT
- EX. MANHOLE
- PROP. MANHOLE
- ZONE AE FLOODPLAIN
- 15% - 25% SLOPES
- 25%+ SLOPES
- WETLANDS

SOILS LEGEND:

SYMBOL	SOIL NAME
Ba	CLAYSHIRE CHERRY LOAM, 3 TO 8 PERCENT SLOPES
Bb	CLAYSHIRE HILL LOAM (ANNUALLY SUITED SLOPES)
Ca	CLAYSHIRE GRASSY LOAM, 3 TO 8 PERCENT SLOPES (ANNUALLY SUITED SLOPES)
GdB	CLAYSHIRE GRASSY LOAM, 3 TO 8 PERCENT SLOPES (ANNUALLY SUITED SLOPES)
ESc	CLAYSHIRE GRASSY LOAM, 8 TO 15 PERCENT SLOPES (ANNUALLY SUITED SLOPES)
GdF	CLAYSHIRE GRASSY LOAM, 8 TO 25 PERCENT SLOPES (ANNUALLY SUITED SLOPES)
Hs	HEMPHILL SLOE LOAM
HsD	HEMPHILL SLOE LOAM, 15 TO 25 PERCENT SLOPES
LHb	LEHIGH LOAM CLAYSHIRE COMPLEX, 8 TO 15 PERCENT SLOPES

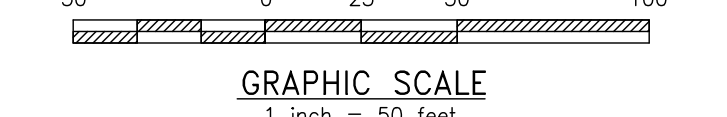
NO.	DATE	DESCRIPTION
8		
7		
6		
5		
4		
3		
2		
1		

CONDITIONAL USE  
EXISTING RESOURCES PLAN

CLIENT: FOX CLEARING, LLC  
PROJECT: STOKES ESTATE  
LOCATION: 1013 SHILOH ROAD  
WESTSTOWN TOWNSHIP, CHESTER COUNTY, PA

EXISTING RESOURCES PLAN

SCALE: 1"=50'



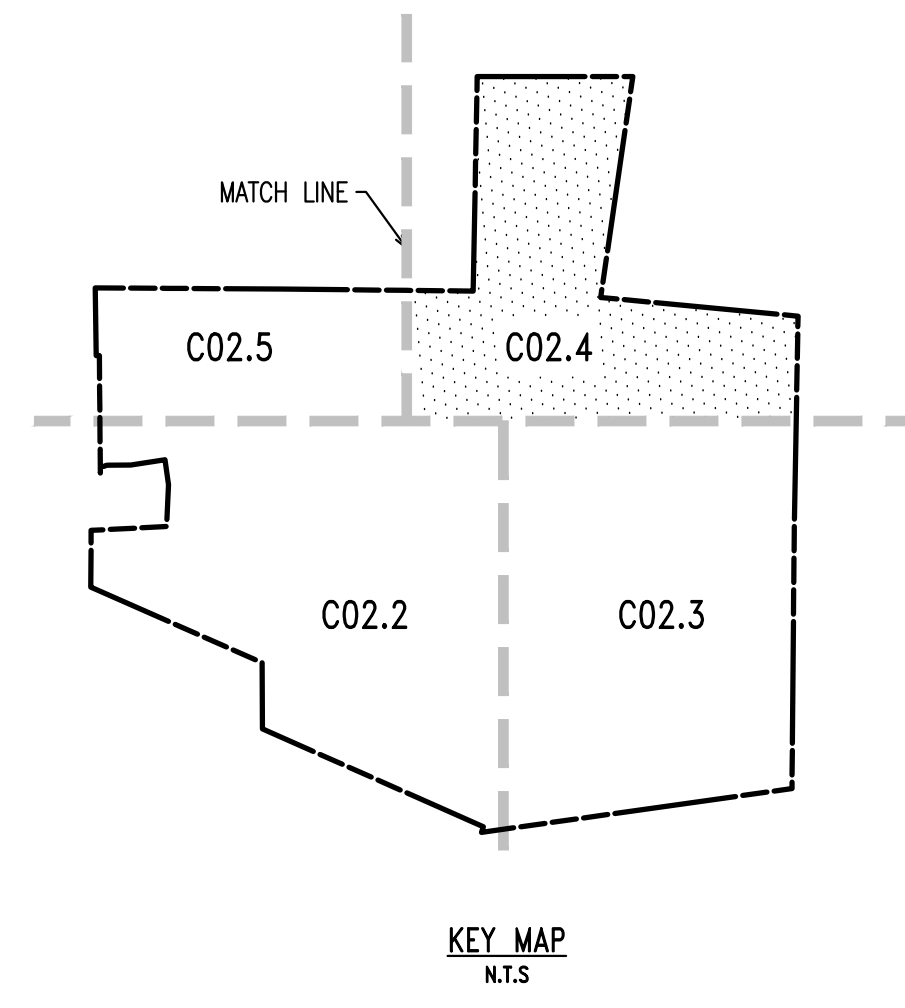
DATE:	04/14/23
SCALE:	1"=50'
DRAWN BY:	ADM
CHECKED BY:	DWG
PROJECT NO.:	3868
DATE:	04/14/23
DRAWING NO.:	C02.3
SHEET:	09 of 37



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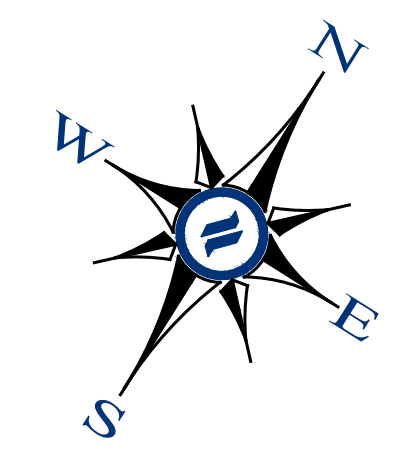
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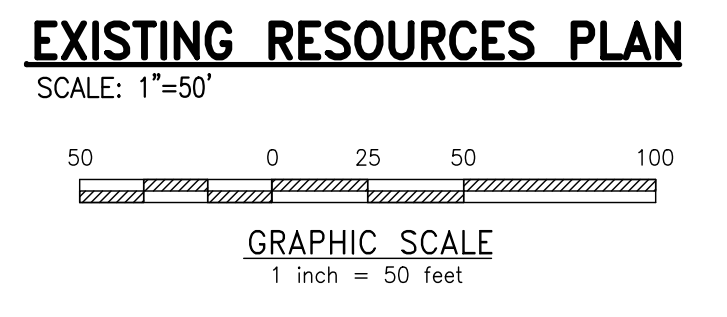
SOILS LEGEND:

SYMBOL	SOIL NAME
Bs	EDGEWATER SANDY LOAM, 3 TO 6 PERCENT SLOPES
Co	COORNS Silt LOAM (AGRICULTURALLY SAVED SOILS)
GdC	GLAUCOUS GRAY Silt LOAM, 3 TO 6 PERCENT SLOPES (AGRICULTURALLY SAVED SOILS)
GdC	GLAUCOUS GRAY Silt LOAM, 6 TO 15 PERCENT SLOPES (AGRICULTURALLY SAVED SOILS)
GdF	GLAUCOUS GRAY Silt LOAM, 6 TO 20 PERCENT SLOPES (AGRICULTURALLY SAVED SOILS)
Ho	HAWKWOOD Silt LOAM
MdC	MIDWAY Silt LOAM, 15 TO 25 PERCENT SLOPES
LvE	LEWIS Silt LOAM, 0 TO 6 PERCENT



LEGEND

- EX. PROPERTY LINE
- PROP. PROPERTY LINE
- EX. RIGHT-OF-WAY
- PROP. RIGHT-OF-WAY
- EX. MONUMENT
- PROP. MONUMENT
- EX. IRON PIPE
- PROP. IRON PIPE
- EX. EASEMENT
- PROP. EASEMENT
- EX. WETLANDS
- 242 EXISTING CONTOUR
- 125.00 PROPOSED CONTOUR
- NEW SPOT ELEV.
- GEB2 SOILS TYPE
- EX. CONC. CURB
- PROP. CONC. CURB
- EX. EDGE OF PAVING
- PROP. EDGE OF PAVING
- EX. LIGHT POLE
- PROP. LIGHT POLE
- EX. FENCE
- EX. MAIL BOX
- EX. SIGN
- PROP. SIGN
- EXIST. PARKING SPACES
- PROP. PARKING SPACES
- EX. TELE. LINE
- PROP. TELE. LINE
- EX. ELEC. LINE
- PROP. ELEC. LINE
- EX. UTILITY POLE
- PROP. UTILITY POLE
- EX. GUY ANCHOR
- EX. GAS LINE
- PROP. GAS LINE
- EX. GAS VALVE
- PROP. GAS VALVE
- EX. STORM SEWER LINE
- PROP. STORM SEWER LINE
- EX. STORM INLET
- PROP. STORM INLET
- EX. STORM INLET ID
- PROP. STORM INLET ID
- EX. SEEPAGE BED
- EX. SANITARY SEWER LINE
- PROP. SAN. SEWER LINE
- EX. SAN. SEWER LATERAL
- PROP. SAN. SEWER LATERAL
- EX. SANITARY MH. ID
- EX. WATER LINE
- PROP. WATER LINE
- EX. WATER LATERAL
- PROP. WATER LATERAL
- EX. FIRE WATER LINE
- PROP. FIRE WATER LINE
- EX. WATER VALVE
- PROP. WATER VALVE
- EX. HYDRANT
- PROP. HYDRANT
- EX. MANHOLE
- PROP. MANHOLE
- ZONE AE FLOODPLAIN
- 15% - 25% SLOPES
- 25%+ SLOPES
- WETLANDS



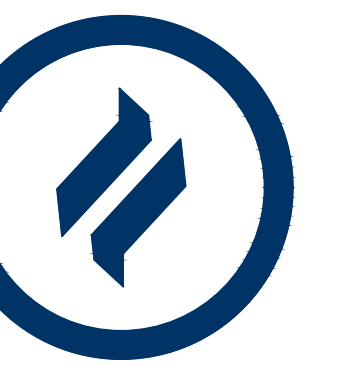
MATCHLINE - SEE SHEET C02.2

MATCHLINE - SEE SHEET C02.3

CONDITIONAL USE  
EXISTING RESOURCES PLAN

CLIENT: FOX CLEARING, LLC  
PROJECT: STOKES ESTATE  
LOCATION: 1013 SHILOH ROAD  
WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

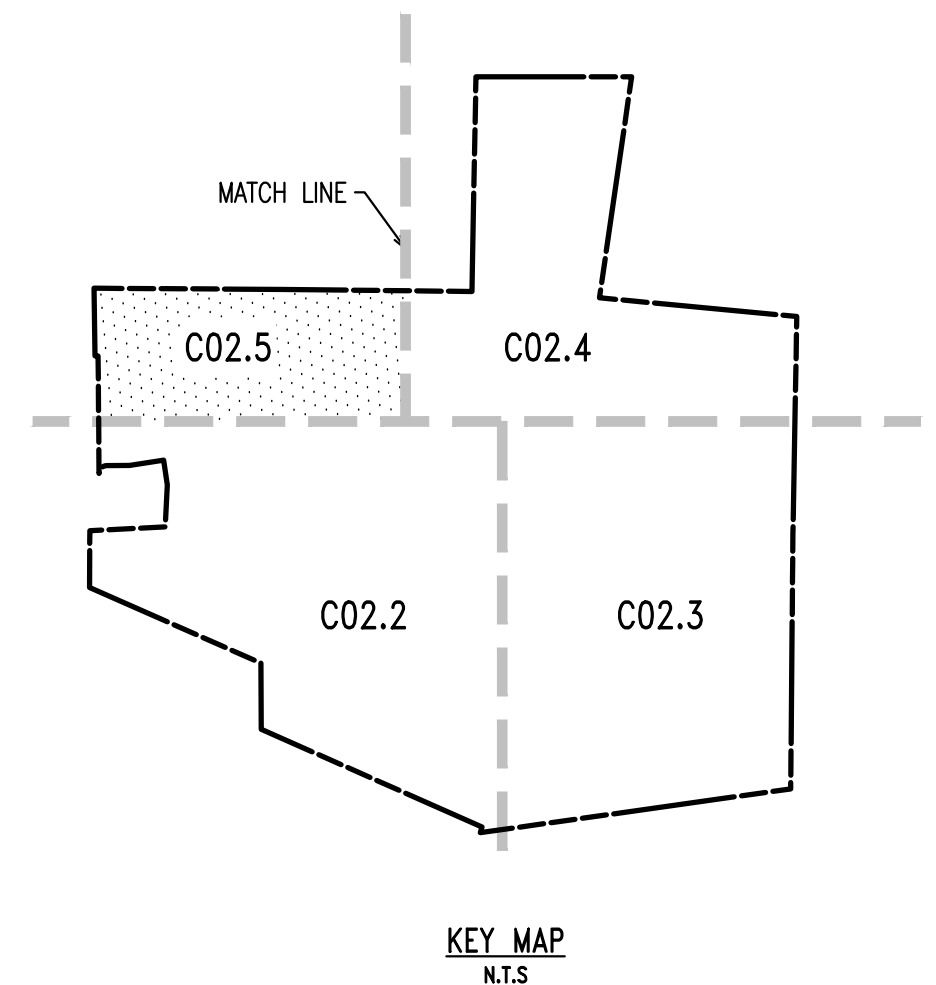
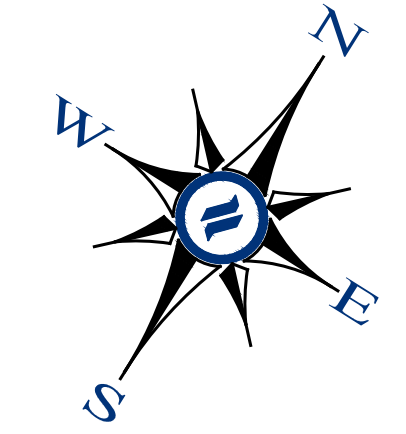
DATE:	04/14/23
SCALE:	1"=50'
DRAWN BY:	ADM
CHECKED BY:	DWG
PROJECT NO.:	3868
DATE FILED:	04/14/23
DATE OF ORIGINAL EXISTING RESOURCES PLAN:	
DRAWING NO.:	C02.4
SHEET:	10 of 37



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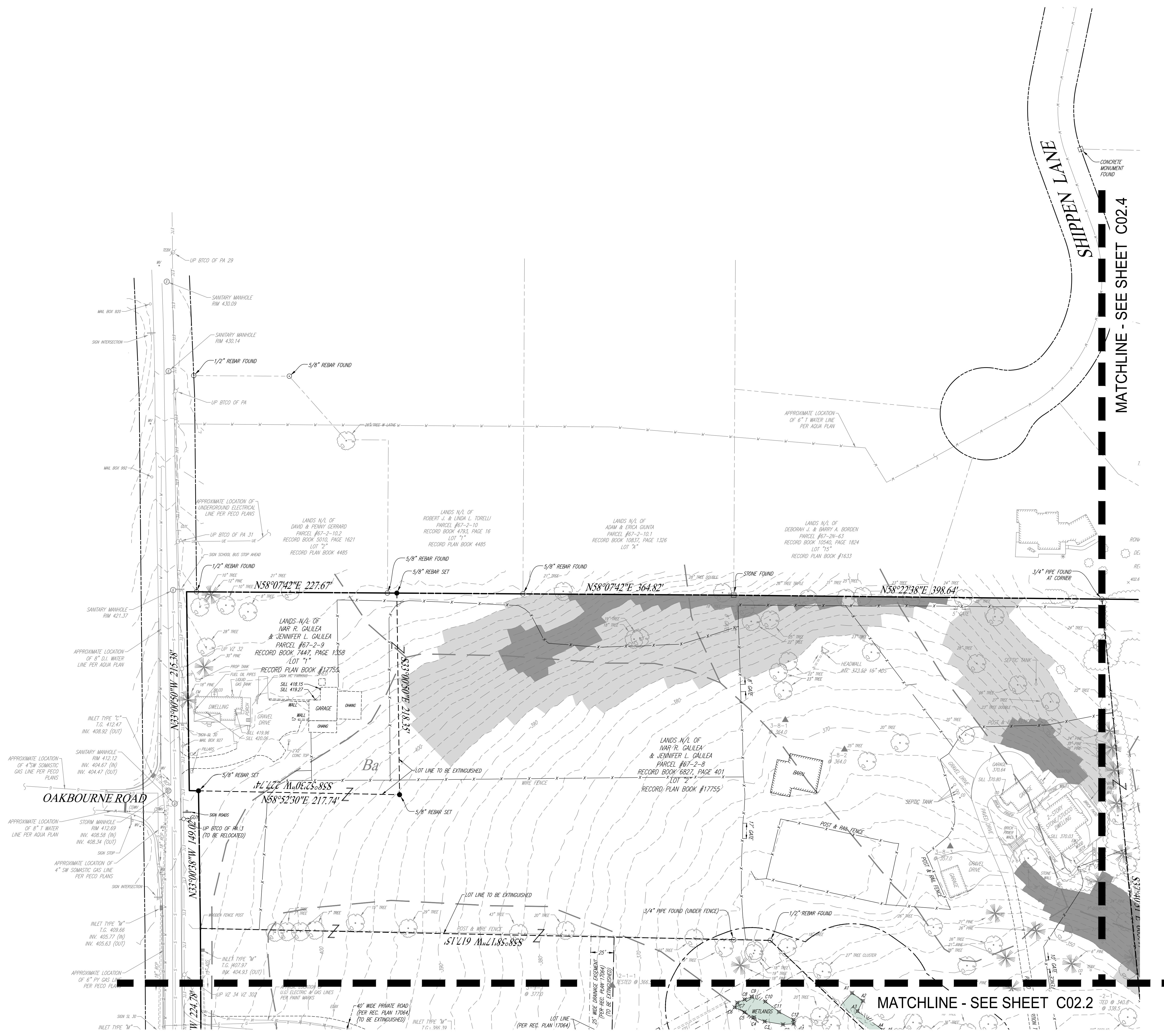


SOILS LEGEND:

SYMBOL	SOIL NAME
Ba	COARSE SANDY LOAM, 3 TO 6 PERCENT SLOPES
Co	COARSE SANDY LOAM (AGRICULTURALLY SAVED SOILS)
GaB	CLAYSTONE GRAVELLY LOAM, 3 TO 6 PERCENT SLOPES (AGRICULTURALLY SAVED SOILS)
GaC	CLAYSTONE GRAVELLY LOAM, 6 TO 15 PERCENT SLOPES (AGRICULTURALLY SAVED SOILS)
GaP	CLAYSTONE GRAVELLY LOAM, 6 TO 15 PERCENT SLOPES (AGRICULTURALLY SAVED SOILS)
Ms	MEDIUM SANDY LOAM
MsD	MEDIUM SANDY LOAM, 15 TO 25 PERCENT SLOPES
LvB	FRESH LAND CLAYSTONE COMPLEX, 0 TO 6 PERCENT

LEGEND

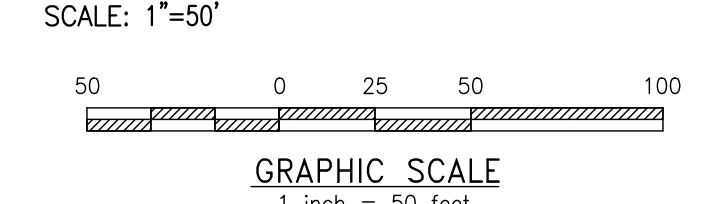
- EX. PROPERTY LINE
- PROP. PROPERTY LINE
- EX. RIGHT-OF-WAY
- PROP. RIGHT-OF-WAY
- EX. MONUMENT
- PROP. MONUMENT
- EX. IRON PIPE
- PROP. IRON PIPE
- EX. EASEMENT
- PROP. EASEMENT
- EX. METEADAGE
- 242 EXISTING CONTOUR
- 123.00 PROPOSED CONTOUR
- 123.00 EXISTING SPOT ELEV.
- 123.00 NEW SPOT ELEV.
- GEB2 SOILS TYPE
- SOILS LINE
- EX. CONC. CURB
- PROP. CONC. CURB
- EX. EDGE OF PAVING
- PROP. EDGE OF PAVING
- EX. LIGHT POLE
- PROP. LIGHT POLE
- EX. FENCE
- EX. MAIL BOX
- EX. SIGN
- PROP. SIGN
- EXIST. PARKING SPACES
- PROP. PARKING SPACES TO BE REMOVED
- EX. TELE. LINE
- PROP. TELE. LINE
- EX. ELEC. LINE
- PROP. ELEC. LINE
- EX. UTILITY POLE
- PROP. UTILITY POLE
- EX. GUY ANCHOR
- EX. GAS LINE
- PROP. GAS LINE
- EX. GAS VALVE
- PROP. GAS VALVE
- EX. STORM SEWER LINE
- PROP. STORM SEWER LINE
- EX. STORM INLET
- PROP. STORM INLET
- EX. STORM INLET ID
- PROP. STORM INLET ID
- EX. SEEPAGE BED
- PROP. SEEPAGE BED
- EX. SANITARY SEWER LINE
- PROP. SAN. SEWER LINE
- EX. SAN. SEWER LATERAL
- PROP. SAN. SEWER LATERAL
- EX. SANITARY MH. ID
- PROP. SANITARY MH. ID
- EX. WATER LINE
- PROP. WATER LINE
- EX. WATER LATERAL
- PROP. WATER LATERAL
- EX. FIRE WATER LINE
- PROP. FIRE WATER LINE
- EX. WATER VALVE
- PROP. WATER VALVE
- EX. HYDRANT
- PROP. HYDRANT
- EX. MANHOLE
- PROP. MANHOLE
- ZONE A/F FLOODPLAIN
- 15% - 25% SLOPES
- 25%+ SLOPES
- WETLANDS



MATCHLINE - SEE SHEET C02.4

MATCHLINE - SEE SHEET C02.2

EXISTING RESOURCES PLAN



CONDITIONAL USE  
EXISTING RESOURCES PLAN

CLIENT: FOX CLEARING, LLC  
PROJECT: STOKES ESTATE  
LOCATION: 1013 SHILOH ROAD  
WESTTOWNSHIP, CHESTER COUNTY, PA

DATE:	04/14/23
SCALE:	1"=50'
DRAWN BY:	ADM
CHECKED BY:	DWG
PROJECT NO.:	3868
DATE:	04/14/23
PROJECT NO.:	3868
DATE:	04/14/23
PROJECT NO.:	3868
DATE:	04/14/23
PROJECT NO.:	3868



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**GRADING & UTILITY GENERAL NOTES:**

- PRIOR TO STARTING CONSTRUCTION, ALL UTILITY SERVICES IN THE AREA SHALL BE LOCATED AND MEASURES TAKEN TO PROTECT THE EXISTING FACILITIES. ANY DAMAGE TO EXISTING FACILITIES SHALL BE IMMEDIATELY AND COMPLETELY REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE UTILITY "ONE-CALL" NUMBER 72 HOURS PRIOR TO COMMENCING ANY CONSTRUCTION ACTIVITIES ON THIS SITE. CONTRACTOR SHALL ALSO NOTIFY LOCAL WATER AND SEWER DEPARTMENTS TO MARK OUT THEIR UTILITIES IF NECESSARY.
- LOCATIONS OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM FIELD SURVEY AND EXISTING RECORDS. COMPLETENESS AND ACCURACY OF EXISTING UTILITY INFORMATION IS NOT GUARANTEED. PRIOR TO THE START OF ANY CONSTRUCTION, THE CONTRACTOR SHALL ACCURATELY FIELD MEASURE LOCATION AND ELEVATION OF EXISTING UTILITIES AT POINTS OF CONNECTION AND POTENTIAL CONFLICT. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER AND ENGINEER IN WRITING OF ANY DEVIATION FROM INFORMATION SHOWN ON THESE PLANS. CONSTRUCTION SHALL COMMENCE BEGINNING AT THE LOWEST INVERT (POINT OF CONNECTION) AND PROGRESS UP GRADIENT. INTERFACE POINTS (CROSSINGS) WITH EXISTING UNDERGROUND INSTALLATIONS SHALL BE FIELD VERIFIED BY TEST PIT PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- CONSTRUCTION SHALL BE LOCATED, AND MEASURES TAKEN TO PROTECT THE EXISTING FACILITIES IN ACCORDANCE WITH PENNSYLVANIA ACT 187. ANY DAMAGE TO EXISTING FACILITIES RESULTING FROM THE NEGLIGENCE OF THE CONTRACTOR SHALL BE IMMEDIATELY AND COMPLETELY REPAIRED AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO PROTECT ALL PERSONS, VEHICLES AND BUILDINGS WITHIN THE CONSTRUCTION AREAS FROM INJURY AND DAMAGE DURING THE COURSE OF WORK.
- SITE GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFIC BUILDING PERMIT PLAN FOR EACH INDIVIDUAL LOT.
- CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF EXISTING TOPOGRAPHIC INFORMATION PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION. CONTRACTOR TO ENSURE 1.0% MIN. SLOPE ON ASPHALT AND 2.0% MIN. ON GRASS, TO PREVENT PONDING. ANY DISCREPANCIES THAT MAY AFFECT THE PUBLIC SAFETY OR PROJECT COST, MUST BE IDENTIFIED TO THE ENGINEER IN WRITING IMMEDIATELY. PROCEEDING WITH CONSTRUCTION WITH DESIGN DISCREPANCIES IS DONE SO AT THE CONTRACTOR'S OWN RISK.
- ALL SITE IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPLICABLE LOCAL, COUNTY, STATE AND FEDERAL STATUTES AND REGULATIONS.
- ALL TRENCHING, SHORING AND EXCAVATING OPERATIONS SHALL BE PERFORMED IN COMPLIANCE WITH THE REQUIREMENTS OF THE U.S. DEPARTMENT OF LABOR, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).
- SCALED DIMENSIONS FROM THIS PLAN SHALL NOT BE USED FOR CONSTRUCTION WITHOUT CONFIRMATION FROM D.L. HOWELL & ASSOC., INC.
- SUBBASE MATERIAL FOR WALKS AND ASPHALT SHALL BE FREE OF ORGANICS AND OTHER UNSUITABLE MATERIALS. IF ANY UNSUITABLE SOIL IS ENCOUNTERED DURING EXCAVATION, THE CONTRACTOR SHALL REMOVE IT AND REPLACE TO THE RECOMMENDATIONS OUTLINED IN A GEOTECHNICAL EVALUATION PREPARED SPECIFICALLY FOR THIS SITE.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE LOCAL AUTHORITY OR GOVERNING AGENCY OF THE BEGINNING DATE OF CONSTRUCTION AND TO ENSURE THAT NO WORK IS PERFORMED WITHOUT THE REQUIRED PERMITS AND INSPECTIONS BY THE LOCAL AUTHORITY OR GOVERNING AGENCY.
- IF CONDITIONS ON THE GROUND DIFFER FROM THOSE SHOWN ON THE PLAN, THE CONTRACTOR SHALL NOTIFY IMMEDIATELY IN WRITING THE ENGINEER OF RECORD.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REQUIRED TRAFFIC CONTROL, SHEETING, SHORING AND BARRICADES OF OPEN EXCAVATIONS.
- THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND BE SOLELY RESPONSIBLE FOR AND HAVE CONTROL OVER CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES, SAFETY PRECAUTIONS, AND PROGRAMS IN CONNECTION WITH THE WORK AND FOR COORDINATION OF ALL PORTIONS OF THE WORK UNDER CONTRACT.
- CONTRACTOR SHALL REVIEW VARIOUS PHASES OF WORK WITH THE OWNER TO DETERMINE WHETHER ANY PHASE WILL CONFLICT WITH THE OWNER'S DAILY OPERATIONS. WHERE CONFLICT IS APPARENT THE CONTRACTOR SHALL COORDINATE WITH THE OWNER THE WORK TO BE PERFORMED SO AS TO BE THE LEAST DISRUPTIVE.
- ANY PAVING DAMAGED DURING CONSTRUCTION ACTIVITIES SHALL BE REMOVED TO SUBGRADE AND REPLACED WITH THE PAVING SECTION AT THE CONTRACTOR'S EXPENSE, AND SHALL MATCH THE EXISTING PAVING SECTION.
- THE PAVED AREAS WITHIN THE RIGHT-OF-WAY, THAT ARE DISTURBED DURING LATERAL INSTALLATION, SHALL BE MILLED AND OVERLAD WITH WEARING COURSE.
- IN ANY AREA SUBJECT TO VEHICULAR ACTIVITY DURING CONSTRUCTION, A MINIMUM OF 18 INCHES OF COVER SHALL BE MAINTAINED FOR ALL UNDERGROUND UTILITIES (STORMWATER, SANITARY SEWER, WATER, ELECTRIC, GAS, ETC.)
- ALL FILL SHALL BE COMPACTED TO PROVIDE STABILITY OF MATERIAL AND TO PREVENT UNDESIRABLE SETTLEMENTS. THE FILL SHALL BE SPREAD IN A SERIES OF LAYERS, NOT EXCEEDING EIGHT INCHES IN THICKNESS, AND BE COMPACTED BY A SHEEPSFOOT ROLLER OR OTHER APPROVED METHOD AFTER EACH LAYER IS SPREAD. THE TOWNSHIP ENGINEER MAY REQUIRE COMPACTION TESTS AND REPORTS.
- ALL STORM SEWER SHALL BE INSTALLED IN ACCORDANCE WITH WESTTOWNSHIP STANDARDS AND PENNDOT PUBLICATION 408 SPECIFICATIONS.
- ALL OTHER UTILITY LINES, INCLUDING, BUT NOT LIMITED TO, ELECTRIC, GAS, STREETLIGHT SUPPLY, CABLE TELEVISION, AND TELEPHONE, SHALL BE PLACED UNDERGROUND. INSTALLATION OF UTILITIES SHALL BE IN STRICT ACCORDANCE WITH THE ENGINEERING STANDARDS AND SPECIFICATIONS OF THE TOWNSHIP OR PUBLIC UTILITY CONCERNED. UNDERGROUND UTILITIES SHALL BE PUT IN PLACE, CONNECTED, AND APPROVED BEFORE THE STREETS ARE CONSTRUCTED WHERE SUCH UTILITIES LIE UNDER THE PROPOSED CARRYWAY AND BEFORE ANY PERSON IS PERMITTED TO OCCUPY ANY BUILDING SERVED BY SUCH FACILITIES.
- THE STORMWATER MANAGEMENT SYSTEMS HAVE BEEN DESIGNED ASSUMING 4,500 SF OF IMPERVIOUS COVER FOR EACH LOT. IF FUTURE IMPERVIOUS IS ADDED, IT MUST BE DIRECTED TO THE STORMWATER MANAGEMENT SYSTEM, OR OTHER PROVISIONS MUST BE ADDED.
- A MINIMUM 18" VERTICAL CLEARANCE SHOULD BE PROVIDED WHERE ANY AND ALL PLACES WHERE THE SEWER LATERALS AND WATER MAIN CROSS. A MINIMUM 18" VERTICAL CLEARANCE SHOULD ALSO BE PROVIDED WHERE THE SEWER LATERALS AND WATER SERVICE PIPING CROSS ALL STORM SEWERS.
- WHENEVER POSSIBLE, WATER SERVICE PIPING SHOULD CROSS ABOVE SANITARY OR STORM SEWER PIPING WITH THE MINIMUM 18" VERTICAL CLEARANCE. A CONCRETE ENCASUREMENT MUST BE UTILIZED WHEREVER THE 18" VERTICAL CLEARANCE CANNOT BE PROVIDED.
- A 10' MINIMUM HORIZONTAL SEPARATION DISTANCE AND A 18" MINIMUM VERTICAL SEPARATION DISTANCE SHALL BE PROVIDED BETWEEN THE GRAVITY SANITARY SEWERS AND WATER MAINS. A CONCRETE ENCASUREMENT MUST BE UTILIZED WHEREVER THE 18" VERTICAL CLEARANCE CANNOT BE PROVIDED.
- THE GRADE OF THE DRIVEWAY WITHIN 20 FEET OF THE PAVEMENT EDGE OR THE CURBLINE OF THE PUBLIC ROAD, TOWNSHIP OR STATE, SHALL NOT EXCEED 4%.
- THE SUBGRADE WITHIN THE LIMITS OF THE PROPOSED CARRYWAY SHALL BE SHAPED TO CONFORM TO THE LINE, GRADE AND CROSS-SECTION OF THE PROPOSED DRIVEWAY AND SHALL BE THOROUGHLY COMPACTED AS PER PENNDOT PUBLICATION 408. SUBGRADE SHALL BE SLOPED TO CORRESPOND TO THE SLOPE OF THE FINISHED ROAD SURFACE. BEFORE PLACING THE BASE COURSE, THE SUBGRADE SHALL BE DRESSED WITH ONE INCH OF FINE AGGREGATE.

**SOILS LEGEND:**

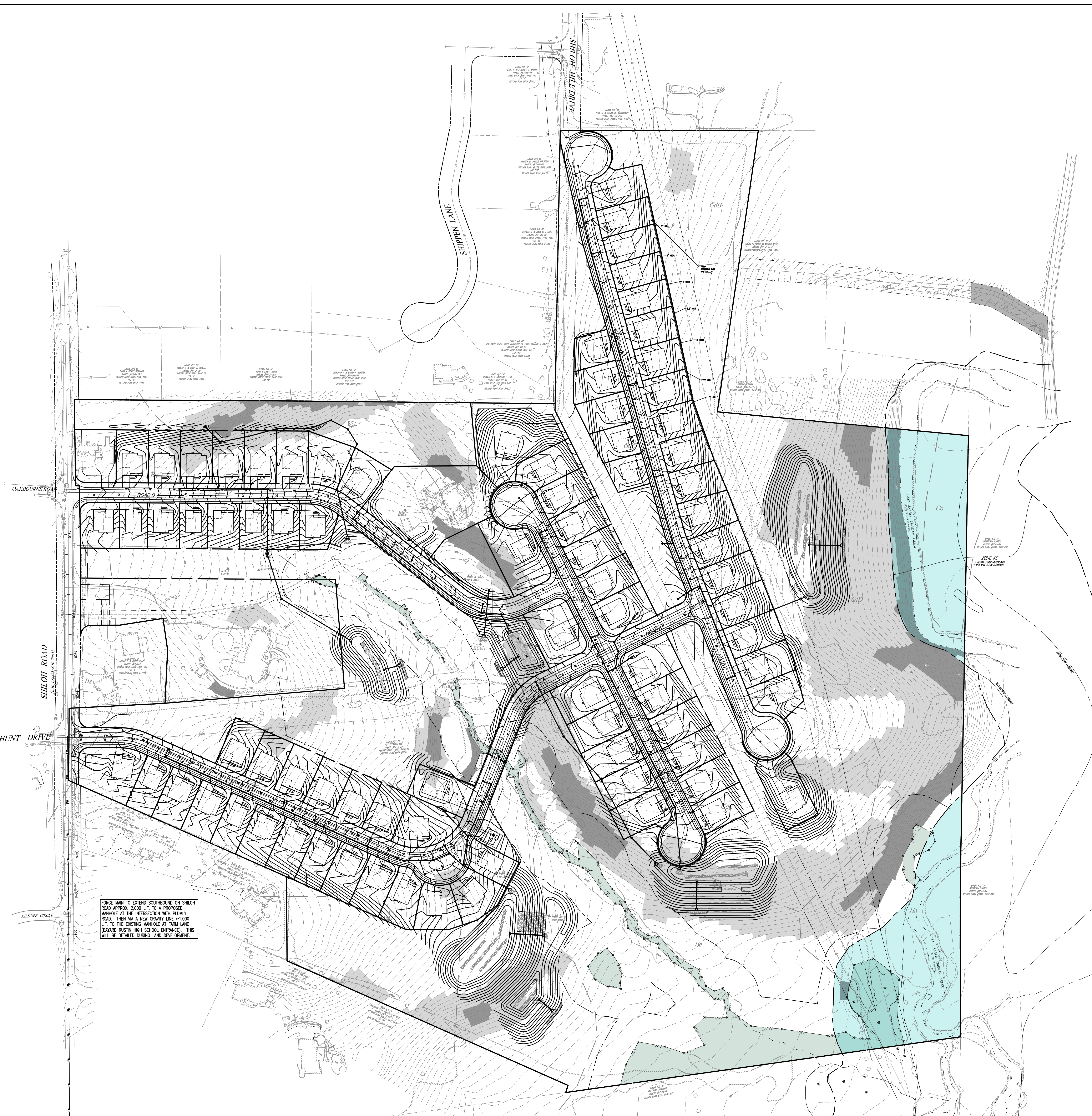
SYMBOL	SOIL NAME
Bs	CLAYSTONE CHALKY LOAM, 3 TO 8 PERCENT SLOPES
Cs	CLAYSTONE SILT LOAM (APPROXIMATELY SATED SOILS)
GCB	CLAYSTONE GRAVELLY LOAM, 3 TO 8 PERCENT SLOPES (APPROXIMATELY SATED SOILS)
GAC	CLAYSTONE GRAVELLY LOAM, 8 TO 15 PERCENT SLOPES (APPROXIMATELY SATED SOILS)
Gf	CLAYSTONE GRAVELLY LOAM, 8 TO 25 PERCENT SLOPES (NON-BINDABLE)
HA	MEDIUM SILT LOAM
Md	MEDIUM SILT LOAM, 15 TO 25 PERCENT SLOPES
LHd	LOW SILT LOAM CLAYSTONE COMPLEX, 5 TO 8 PERCENT

**LEGEND**

- EX. PROPERTY LINE
- PROP. PROPERTY LINE
- EX. RIGHT-OF-WAY
- PROP. RIGHT-OF-WAY
- EX. MONUMENT
- PROP. MONUMENT
- EX. IRON PIPE
- PROP. IRON PIPE
- EX. EASEMENT
- PROP. EASEMENT
- EX. NEIGHBOR
- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING SPOT ELEV.
- NEW SPOT ELEV.
- SOILS TYPE
- SOILS LINE
- EX. CONC. CURB
- PROP. CONC. CURB
- EX. EDGE OF PAVING
- PROP. EDGE OF PAVING
- EX. LIGHT POLE
- PROP. LIGHT POLE
- EX. FENCE
- EX. MAIL BOX
- EX. SIGN
- PROP. SIGN
- EXIST. PARKING SPACES
- PROP. PARKING SPACES
- EX. TELE. LINE
- PROP. TELE. LINE
- EX. ELEC. LINE
- PROP. ELEC. LINE
- EX. UTILITY POLE
- PROP. UTILITY POLE
- EX. GUY ANCHOR
- EX. GAS LINE
- PROP. GAS LINE
- EX. GAS VALVE
- PROP. GAS VALVE
- EX. STORM SEWER LINE
- PROP. STORM SEWER LINE
- EX. STORM INLET
- PROP. STORM INLET
- EX. STORM INLET ID
- PROP. STORM INLET ID
- EX. SEEPAGE BED
- PROP. SEEPAGE BED
- EX. SANITARY SEWER LINE
- PROP. SAN. SEWER LINE
- EX. SAN. SEWER LATERAL
- PROP. SAN. SEWER LATERAL
- EX. SANITARY MH. ID
- PROP. SANITARY MH. ID
- EX. WATER LINE
- PROP. WATER LINE
- EX. WATER LATERAL
- PROP. WATER LATERAL
- EX. FIRE WATER LINE
- PROP. FIRE WATER LINE
- EX. WATER VALVE
- PROP. WATER VALVE
- EX. HYDRANT
- PROP. HYDRANT
- EX. MANHOLE
- PROP. MANHOLE

- ZONE AE FLOODPLAIN
- 15% - 25% SLOPES
- 25%+ SLOPES
- WETLANDS

FORCE MAIN TO EXTEND SOUTHBOUND ON SHILOH ROAD APPROX. 2,000 LF. TO A PROPOSED MANHOLE AT THE INTERSECTION WITH PLUNKY ROAD. THEN IN A NEW GRAVITY LINE, +/-1,000 LF. TO THE EXISTING MANHOLE AT FARM LANE (BRAND HIGH SCHOOL ENTRANCE). THIS WILL BE DETAILED DURING LAND DEVELOPMENT.



**OVERALL GRADING FEASIBILITY PLAN**

SCALE: 1"=100'  
 GRAPHIC SCALE  
 1 inch = 100 feet

CONDITIONAL USE  
**OVERALL GRADING FEASIBILITY PLAN**  
 CLIENT: FOX CLEARING, LLC  
 PROJECT: STOKES ESTATE  
 LOCATION: 1013 SHILOH ROAD  
 WESTTOWNSHIP, CHESTER COUNTY, PA

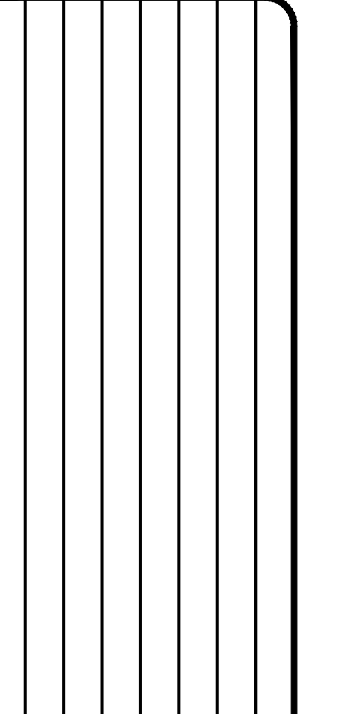
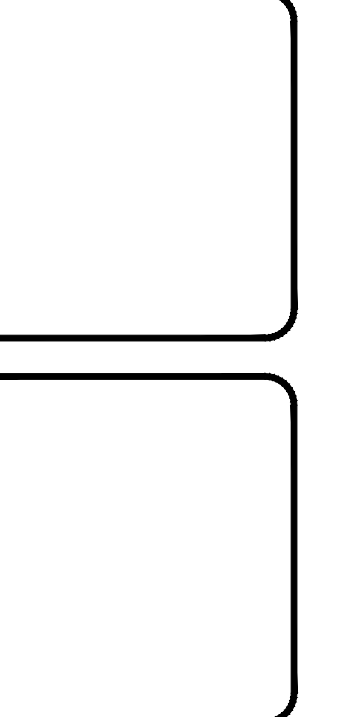
DATE:	04/14/23
SCALE:	1"=100'
DRAWN BY:	ADM
CHECKED BY:	DWG
PROJECT NO.:	3868
FILE NAME:	OVERALL GRADING FEASIBILITY PLAN.dwg
PLOTTED:	04/14/23
DRAWING NO.:	C03.1
SHEET:	12 of 37



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NO.	REV.	DATE	DESCRIPTION
8			
7			
6			
5			
4			
3			
2			
1			

CONDITIONAL USE  
**GRADING FEASIBILITY PLAN**  
CLIENT: FOX CLEARING, LLC  
PROJECT: STOKES ESTATE  
LOCATION: 1013 SHILOH ROAD  
WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE: 04/14/23  
SCALE: 1"=50'  
DRAWN BY: ADM  
CHECKED BY: DWG  
PROJECT NO.: 3868  
JOB FILE: GRADING FEASIBILITY PLAN.dwg  
PLOTTED: 04/14/23  
DRAWING NO.: C03.2  
SHEET 13 OF 37

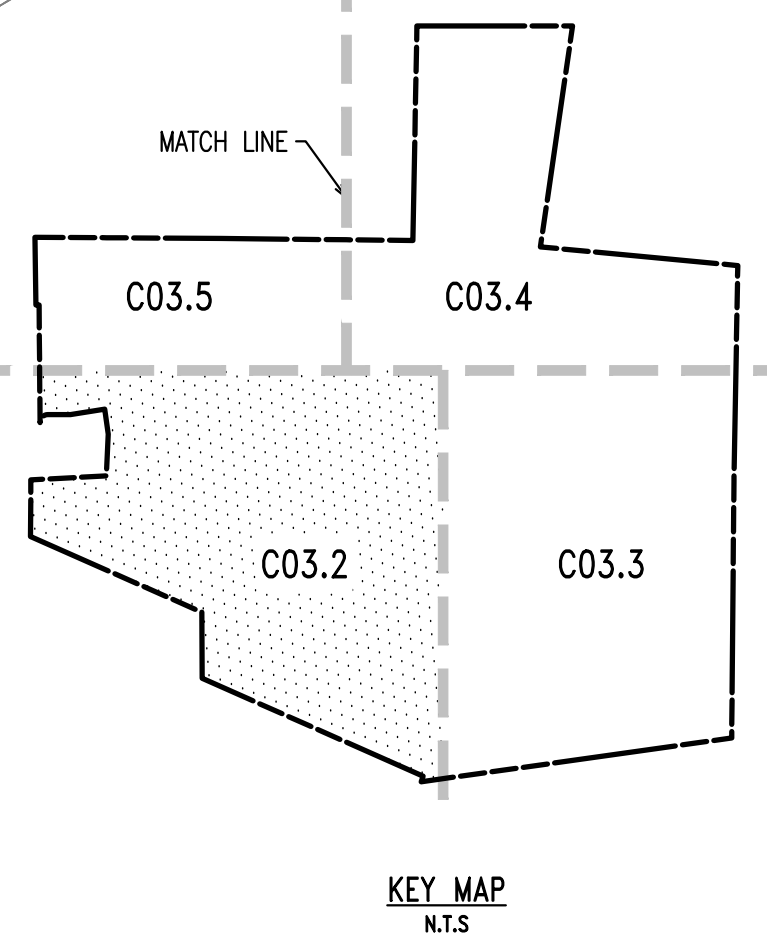


**SOILS LEGEND:**

SYMBOL	SOIL NAME
Ba	LOESSIAL CHERRY LAKE, 3 TO 8 PERCENT SLOPES
Ca	LOESSIAL SILT LOAM (APPROXIMATELY SLOPED SITES)
CaB	LOESSIAL CHERRY LAKE, 3 TO 8 PERCENT SLOPES (APPROXIMATELY SLOPED SITES)
CaC	LOESSIAL CHERRY LAKE, 8 TO 15 PERCENT SLOPES (APPROXIMATELY SLOPED SITES)
CaF	LOESSIAL CHERRY LAKE, 8 TO 15 PERCENT SLOPES (VERY BOLD)
Hs	HATFIELD SILT LOAM
Md	MADISON SILT LOAM, 15 TO 25 PERCENT SLOPES
LvB	IRISH LAKE SILTSTONE COMPLEX, 0 TO 8 PERCENT

**LEGEND**

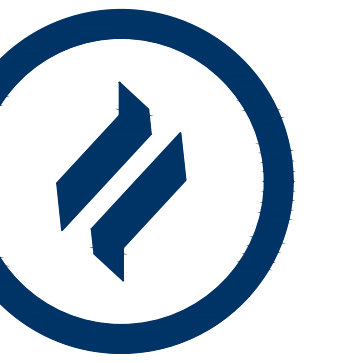
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---	EX. RIGHT-OF-WAY
---	PROP. RIGHT-OF-WAY
---	EX. MONUMENT
---	PROP. MONUMENT
---	EX. IRON PIPE
---	PROP. IRON PIPE
---	EX. EASEMENT
---	PROP. EASEMENT
---	EX. RETAINING WALL
---	PROP. RETAINING WALL
---	EX. EXISTING CONTOUR
---	PROP. PROPOSED CONTOUR
---	EX. EXISTING SPOT ELEV.
---	PROP. NEW SPOT ELEV.
---	EX. SOILS
---	PROP. SOILS
---	EX. CONC. CURB
---	PROP. CONC. CURB
---	EX. CONC. OF PAVING
---	PROP. CONC. OF PAVING
---	EX. EDGE OF PAVING
---	PROP. EDGE OF PAVING
---	EX. LIGHT POLE
---	PROP. LIGHT POLE
---	EX. FENCE
---	PROP. FENCE
---	EX. MAIL BOX
---	PROP. MAIL BOX
---	EX. SIGN
---	PROP. SIGN
---	EX. EXIST. PARKING SPACES
---	PROP. EXIST. PARKING SPACES
---	EX. TELE. LINE
---	PROP. TELE. LINE
---	EX. ELEC. LINE
---	PROP. ELEC. LINE
---	EX. UTILITY POLE
---	PROP. UTILITY POLE
---	EX. GUY ANCHOR
---	PROP. GUY ANCHOR
---	EX. GAS LINE
---	PROP. GAS LINE
---	EX. GAS VALVE
---	PROP. GAS VALVE
---	EX. STORM SEWER LINE
---	PROP. STORM SEWER LINE
---	EX. STORM INLET
---	PROP. STORM INLET
---	EX. STORM INLET ID
---	PROP. STORM INLET ID
---	EX. SEEPAGE BED
---	PROP. SEEPAGE BED
---	EX. SANITARY SEWER LINE
---	PROP. SAN. SEWER LINE
---	EX. SAN. SEWER LATERAL
---	PROP. SAN. SEWER LATERAL
---	EX. SANITARY MH. ID
---	PROP. SANITARY MH. ID
---	EX. WATER LINE
---	PROP. WATER LINE
---	EX. WATER LATERAL
---	PROP. WATER LATERAL
---	EX. FIRE WATER LINE
---	PROP. FIRE WATER LINE
---	EX. WATER VALVE
---	PROP. WATER VALVE
---	EX. HYDRANT
---	PROP. HYDRANT
---	EX. MANHOLE
---	PROP. MANHOLE
---	EX. ZONE A/F FLOODPLAIN
---	PROP. ZONE A/F FLOODPLAIN
---	EX. 15%+ SLOPES
---	PROP. 15%+ SLOPES
---	EX. 25%+ SLOPES
---	PROP. 25%+ SLOPES
---	EX. WETLANDS
---	PROP. WETLANDS



FORCE MAIN TO EXTEND SOUTHBOUND ON SHILOH ROAD APPROX. 2,000 LF. TO A PROPOSED MANHOLE AT THE INTERSECTION WITH PLUMLY ROAD. THEN VIA A NEW GRAVITY LINE ~1,000 LF. TO THE EXISTING MANHOLE AT FISH LAKE (BEYOND RUSTIN HIGH SCHOOL ENTRANCE). THIS WILL BE DETAILED DURING LAND DEVELOPMENT.

**GRADING FEASIBILITY PLAN**  
SCALE: 1"=50'  
GRAPHIC SCALE  
1 inch = 50 feet

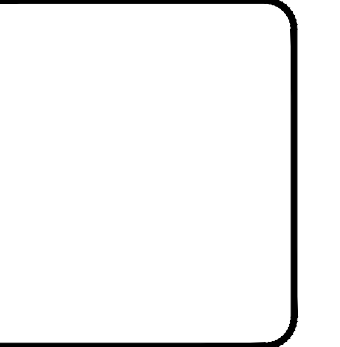
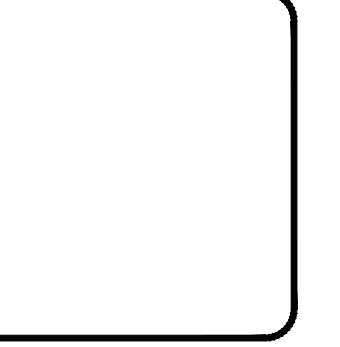




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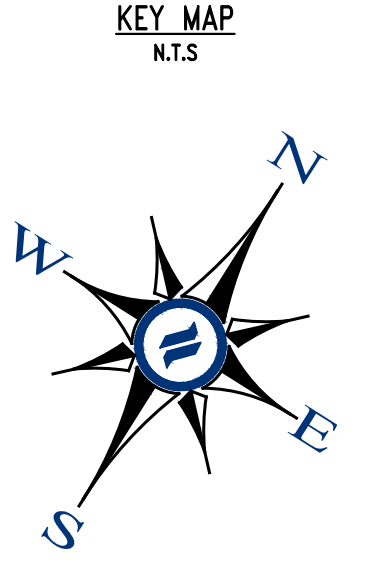
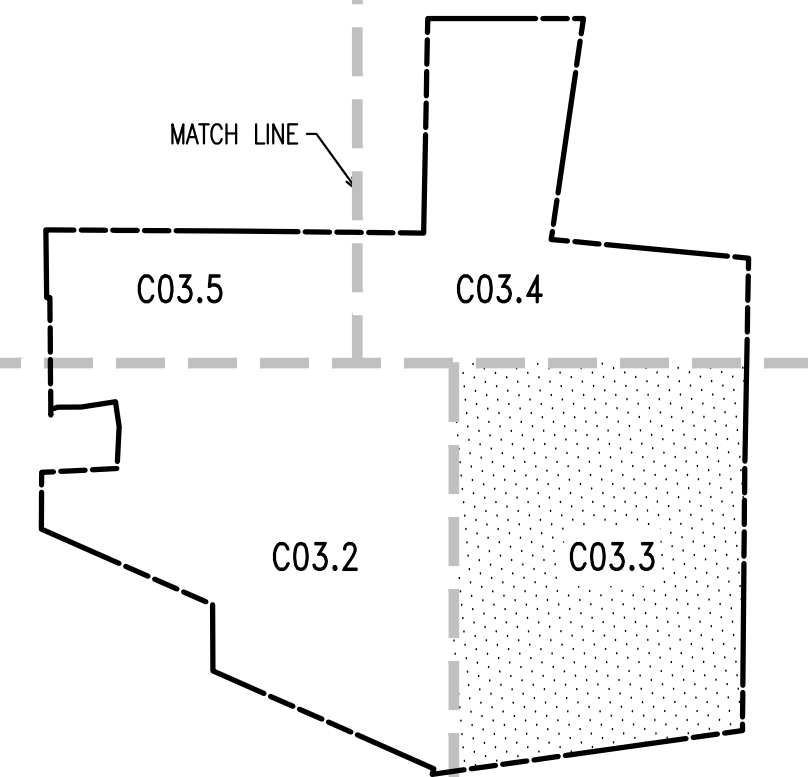


NO.	DATE	DESCRIPTION
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CONDITIONAL USE  
**GRADING FEASIBILITY PLAN**  
CLIENT: FOX CLEARING, LLC  
PROJECT: STOKES ESTATE  
LOCATION: 1013 SHILOH ROAD  
WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE: 04/14/23  
SCALE: 1"=50'  
DRAWN BY: ADM  
CHECKED BY: DWG  
PROJECT NO.: 3868  
CADD FILE: GRADING FEASIBILITY PLAN.dwg  
NO. SHEETS: 14  
DATE: 04/14/23  
DRAWING NO.: C03.3  
SHEET 14 of 37

MATCHLINE - SEE SHEET C03.4



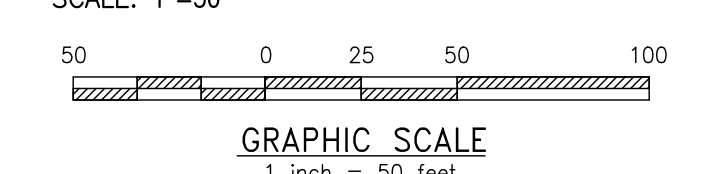
**SOILS LEGEND:**

SYMBOL	SOIL NAME
Sh	LOESSMONT CHANNERY LOAM, 3 TO 8 PERCENT SLOPES
Cs	COONROCK Silt LOAM (NONCOMPACTLY SORTED SANDS)
GaB	GLAUCOSE GRASSLY LOAM, 3 TO 8 PERCENT SLOPES (NONCOMPACTLY SORTED SANDS)
GaC	GLAUCOSE GRASSLY LOAM, 8 TO 15 PERCENT SLOPES (NONCOMPACTLY SORTED SANDS)
GaF	GLAUCOSE GRASSLY LOAM, 8 TO 15 PERCENT SLOPES (VERY BOLLUPLY)
Tu	HUMBOLDT Silt LOAM
MdD	MIDWAY Silt LOAM, 15 TO 25 PERCENT SLOPES
LmB	LEHIGH LOAM GLAUCOSE COMPLEX, 8 TO 8 PERCENT

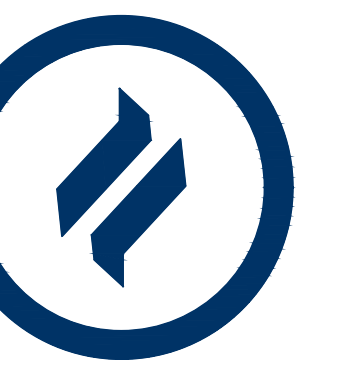
**LEGEND**

- EX. PROPERTY LINE
- PROP. PROPERTY LINE
- EX. RIGHT-OF-WAY
- PROP. RIGHT-OF-WAY
- EX. MONUMENT
- PROP. MONUMENT
- EX. IRON PIPE
- PROP. IRON PIPE
- EX. EASEMENT
- PROP. EASEMENT
- EX. WETLANDS
- 242 EXISTING CONTOUR
- (242) PROPOSED CONTOUR
- x 123.00 EXISTING SPOT ELEV.
- x 123.00 NEW SPOT ELEV.
- GEB2 SOILS TYPE
- SOILS LINE
- EX. CONC. CURB
- PROP. CONC. CURB
- EX. EDGE OF PAVING
- PROP. EDGE OF PAVING
- EX. LIGHT POLE
- PROP. LIGHT POLE
- EX. FENCE
- EX. MAIL BOX
- EX. SIGN
- PROP. SIGN
- EXIST. PARKING SPACES
- PROP. PARKING SPACES TO BE REMOVED
- (TDR) EX. TELE. LINE
- PROP. TELE. LINE
- EX. ELEC. LINE
- PROP. ELEC. LINE
- EX. UTILITY POLE
- EX. GUY ANCHOR
- EX. GAS LINE
- PROP. GAS LINE
- G.V. VALVE EX. GAS VALVE
- G.V. VALVE PROP. GAS VALVE
- EX. STORM SEWER LINE
- PROP. STORM SEWER LINE
- EX. STORM INLET
- PROP. STORM INLET
- PROP. STORM INLET ID
- PROP. SEEPAGE BED
- EX. SANITARY SEWER LINE
- PROP. SAN. SEWER LINE
- EX. SAN. SEWER LATERAL
- PROP. SAN. SEWER LATERAL
- EX. SANITARY MH. ID
- PROP. SANITARY MH. ID
- EX. WATER LINE
- PROP. WATER LINE
- EX. WATER LATERAL
- PROP. WATER LATERAL
- EX. FIRE WATER LINE
- PROP. FIRE WATER LINE
- EX. WATER VALVE
- PROP. WATER VALVE
- EX. HYDRANT
- PROP. HYDRANT
- EX. MANHOLE
- PROP. MANHOLE
- ZONE AE FLOODPLAIN
- 15% - 25% SLOPES
- 25%+ SLOPES
- WETLANDS

**GRADING FEASIBILITY PLAN**



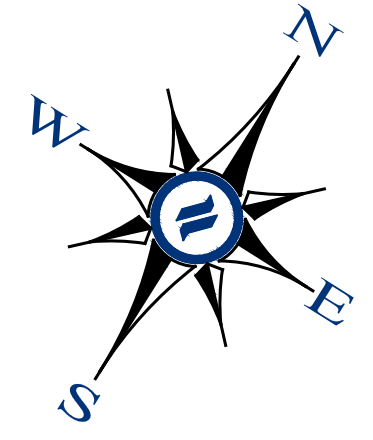
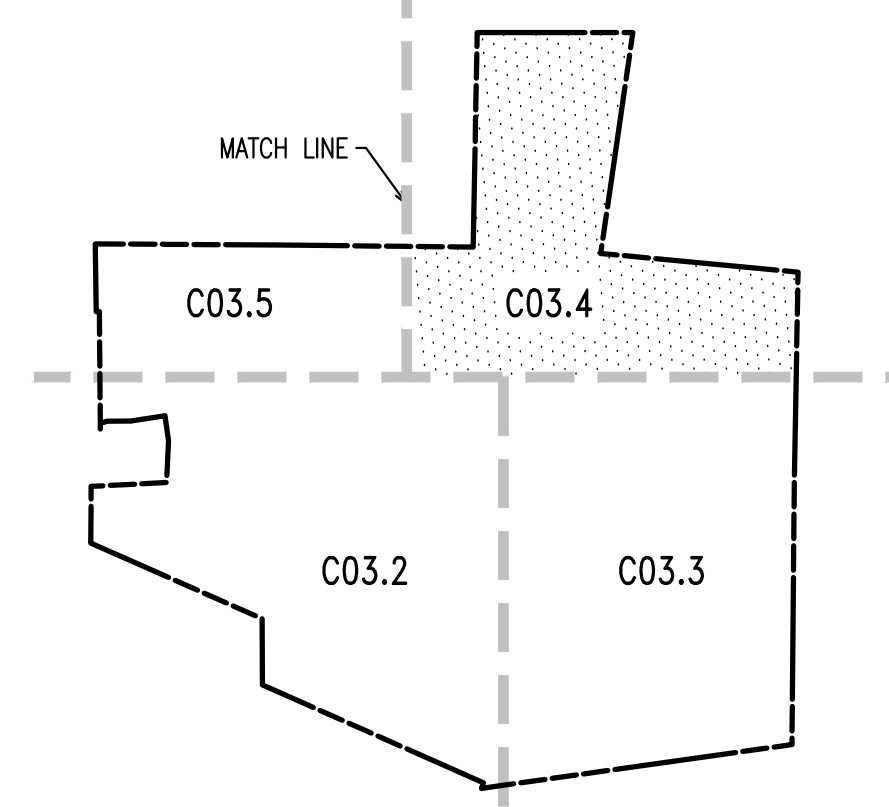
MATCHLINE - SEE SHEET C03.2



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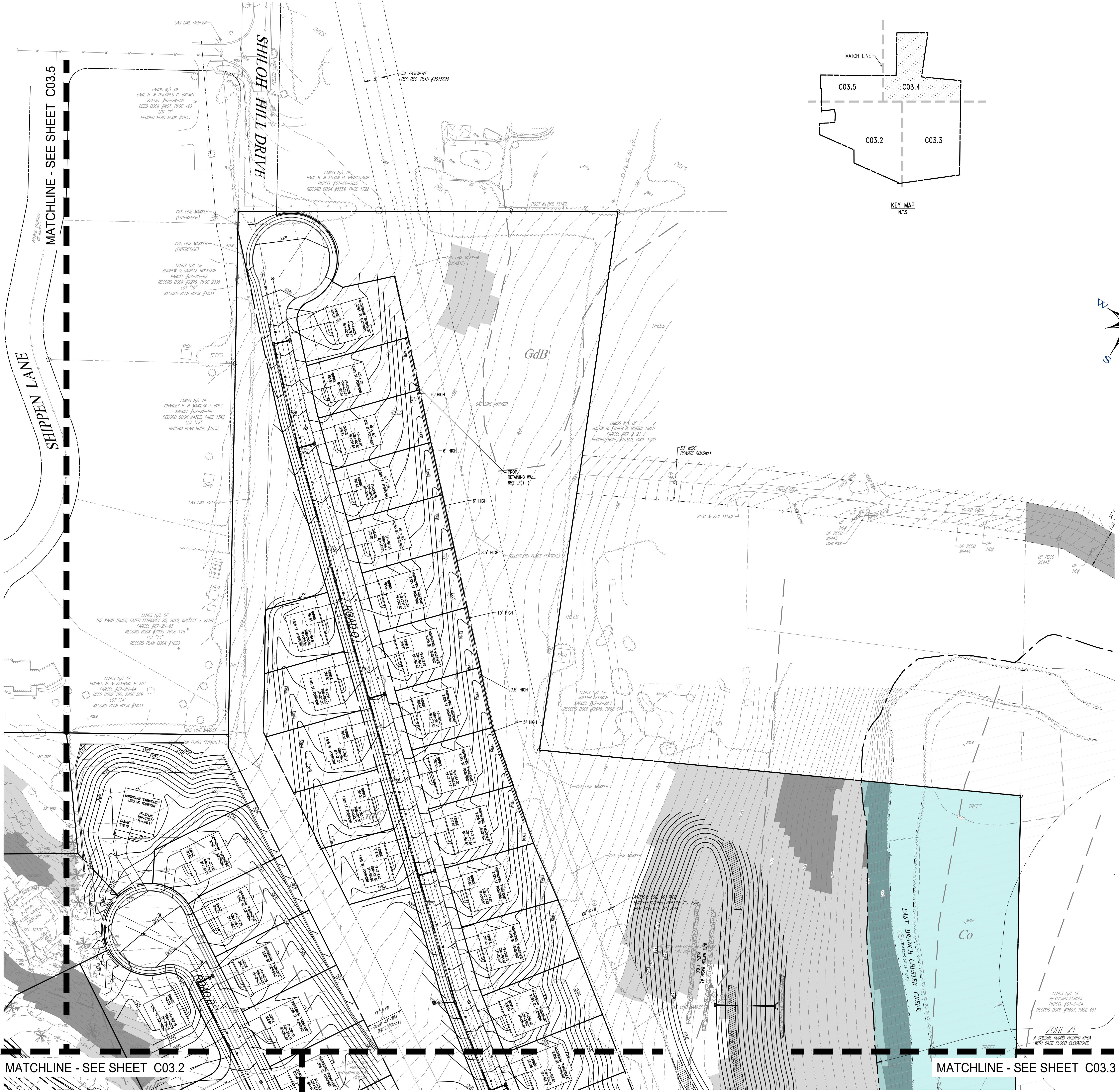


SOILS LEGEND:

SYMBOL	SOIL TYPE
Shaded area	CREOSOTE CONTAMINATED TO 8 PERCENT SLOPES
Shaded area	CREOSOTE SET LOW (NONDEVELOPED) SLOPES
Shaded area	GLASSSTONE SANDS (LOW TO 8 PERCENT SLOPES) (ARITHMETICALLY SLOPED SITES)
Shaded area	GLASSSTONE SANDS (LOW TO 15 PERCENT SLOPES) (ARITHMETICALLY SLOPED SITES)
Shaded area	GLASSSTONE SANDS (LOW TO 25 PERCENT SLOPES) (KEY BOUNDARY)
Shaded area	INTERIOR SET LOW
Shaded area	INTERIOR SET LOW TO 25 PERCENT SLOPES
Shaded area	UPPER LOW GLASSSTONE COMPLEX, 0 TO 8 PERCENT

LEGEND

--- (dashed)	EX. PROPERTY LINE
--- (solid)	PROP. PROPERTY LINE
--- (dashed)	EX. RIGHT-OF-WAY
--- (solid)	PROP. RIGHT-OF-WAY
□	EX. MONUMENT
■	PROP. MONUMENT
○	EX. IRON PIPE
●	PROP. IRON PIPE
---	EX. EASEMENT
---	PROP. EASEMENT
---	EX. RELIEF
---	PROP. RELIEF
---	EXISTING CONTOUR
---	PROPOSED CONTOUR
X 123.00	EXISTING SPOT ELEV.
X 123.00	NEW SPOT ELEV.
GEB2	SOILS TYPE
---	SOILS LINE
---	EX. CONC. CURB
---	PROP. CONC. CURB
---	EX. EDGE OF PAVING
---	PROP. EDGE OF PAVING
○	EX. LIGHT POLE
○	PROP. LIGHT POLE
---	EX. FENCE
---	PROP. FENCE
---	EX. MAIL BOX
---	PROP. MAIL BOX
---	EX. SIGN
---	PROP. SIGN
○	EXIST. PARKING SPACES
○	PROP. PARKING SPACES
(FORS)	EX. TELE. LINE
---	PROP. TELE. LINE
---	EX. ELEC. LINE
---	PROP. ELEC. LINE
---	EX. UTILITY POLE
---	PROP. UTILITY POLE
---	EX. GUY ANCHOR
---	PROP. GUY ANCHOR
---	EX. GAS LINE
---	PROP. GAS LINE
---	EX. GAS VALVE
---	PROP. GAS VALVE
---	EX. STORM SEWER LINE
---	PROP. STORM SEWER LINE
---	EX. STORM INLET
---	PROP. STORM INLET
---	EX. STORM INLET ID
---	PROP. STORM INLET ID
---	EX. SEEPAGE BED
---	PROP. SEEPAGE BED
---	EX. SANITARY SEWER LINE
---	PROP. SAN. SEWER LINE
---	EX. SAN. SEWER LATERAL
---	PROP. SAN. SEWER LATERAL
---	EX. SANITARY MH. ID
---	PROP. SANITARY MH. ID
---	EX. WATER LINE
---	PROP. WATER LINE
---	EX. WATER LATERAL
---	PROP. WATER LATERAL
---	EX. FIRE WATER LINE
---	PROP. FIRE WATER LINE
---	EX. WATER VALVE
---	PROP. WATER VALVE
---	EX. HYDRANT
---	PROP. HYDRANT
---	EX. MANHOLE
---	PROP. MANHOLE
---	ZONE AE FLOODPLAIN
---	15% - 25% SLOPES
---	25%+ SLOPES
---	WETLANDS



MATCHLINE - SEE SHEET C03.2

MATCHLINE - SEE SHEET C03.3

**GRADING FEASIBILITY PLAN**  
SCALE: 1"=50'

GRAPHIC SCALE  
1 inch = 50 feet

CONDITIONAL USE  
**GRADING FEASIBILITY PLAN**  
CLIENT: FOX CLEARING, LLC  
PROJECT: STOKES ESTATE  
LOCATION: 1013 SHILOH ROAD  
WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE:	04/14/23
SCALE:	1"=50'
DRAWN BY:	ADM
CHECKED BY:	DWG
PROJECT NO.:	3868
DATE FILED:	04/14/23
DATE PLOTTED:	04/14/23
DRAWING NO.:	C03.4
SHEET:	15 of 37



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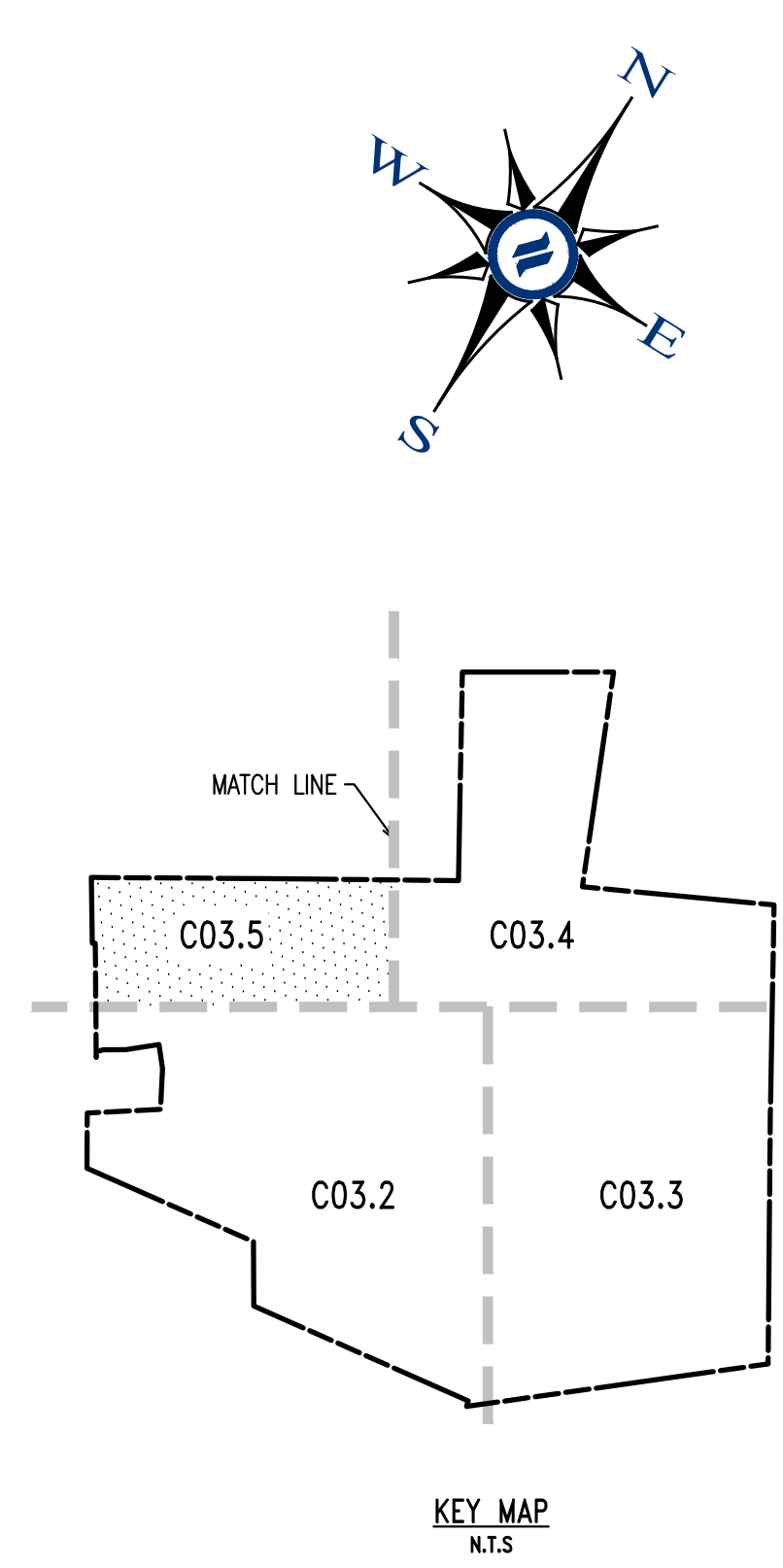
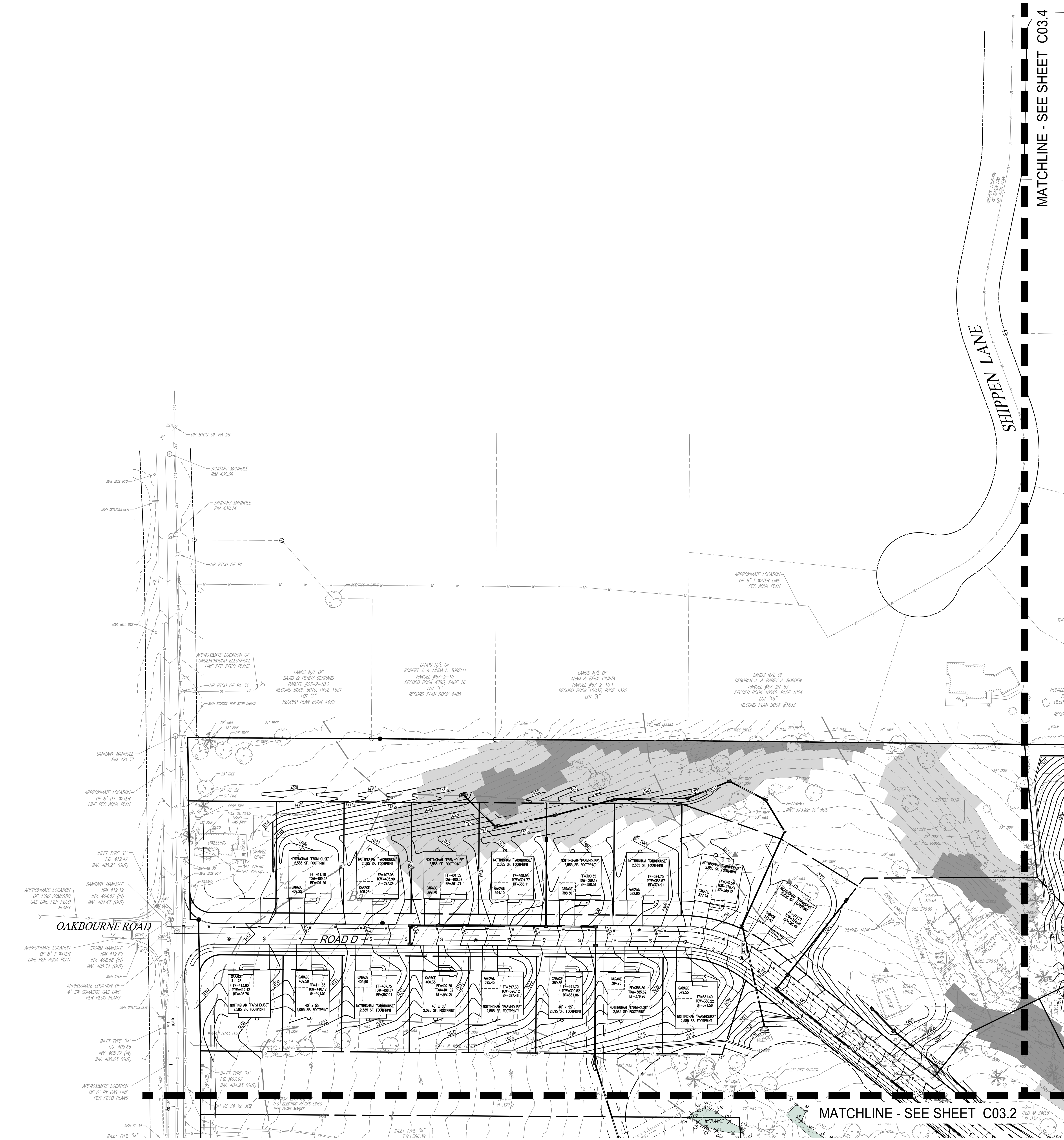
1250 Wrights Lane  
West Chester, PA 19380  
Phone: (610) 918-9002  
Fax: (610) 918-9003

**SOILS LEGEND:**

SYMBOL	SOIL TYPE
---	EXISTING CHANNEL, 1% TO 8 PERCENT SLOPES
---	CHANNEL, 1% TO 8 PERCENT SLOPES
---	CHANNEL, 8 TO 15 PERCENT SLOPES
---	CHANNEL, 15 TO 25 PERCENT SLOPES
---	CHANNEL, 25 PERCENT SLOPES
---	CHANNEL, 25 PERCENT SLOPES
---	CHANNEL, 25 PERCENT SLOPES
---	CHANNEL, 25 PERCENT SLOPES
---	CHANNEL, 25 PERCENT SLOPES

**LEGEND**

---	EX. PROPERTY LINE
---	PROP. PROPERTY LINE
---	EX. RIGHT-OF-WAY
---	PROP. RIGHT-OF-WAY
---	EX. MONUMENT
---	PROP. MONUMENT
---	EX. IRON PIPE
---	PROP. IRON PIPE
---	EX. EASEMENT
---	PROP. EASEMENT
---	EX. WETLAND
---	PROP. WETLAND
---	EXISTING CONTOUR
---	PROPOSED CONTOUR
---	EXISTING SPOT ELEV.
---	NEW SPOT ELEV.
---	SOILS TYPE
---	SOILS LINE
---	EX. CONC. CURB
---	PROP. CONC. CURB
---	EX. EDGE OF PAVING
---	PROP. EDGE OF PAVING
---	EX. LIGHT POLE
---	PROP. LIGHT POLE
---	EX. FENCE
---	EX. MAIL BOX
---	EX. SIGN
---	PROP. SIGN
---	EXIST. PARKING SPACES
---	PROP. PARKING SPACES
---	EX. TELE. LINE
---	PROP. TELE. LINE
---	EX. ELEC. LINE
---	PROP. ELEC. LINE
---	EX. UTILITY POLE
---	PROP. UTILITY POLE
---	EX. GUY ANCHOR
---	EX. GAS LINE
---	PROP. GAS LINE
---	EX. GAS VALVE
---	PROP. GAS VALVE
---	EX. STORM SEWER LINE
---	PROP. STORM SEWER LINE
---	EX. STORM INLET
---	PROP. STORM INLET
---	EX. STORM INLET ID
---	PROP. STORM INLET ID
---	EX. SANITARY SEWER LINE
---	PROP. SAN. SEWER LINE
---	EX. SAN. SEWER LATERAL
---	PROP. SAN. SEWER LATERAL
---	EX. WATER LINE
---	PROP. WATER LINE
---	EX. WATER LATERAL
---	PROP. WATER LATERAL
---	EX. WATER VALVE
---	PROP. WATER VALVE
---	EX. HYDRANT
---	PROP. HYDRANT
---	EX. MANHOLE
---	PROP. MANHOLE
---	ZONE A1 FLOODPLAIN
---	15%+ SLOPES
---	25%+ SLOPES
---	WETLANDS



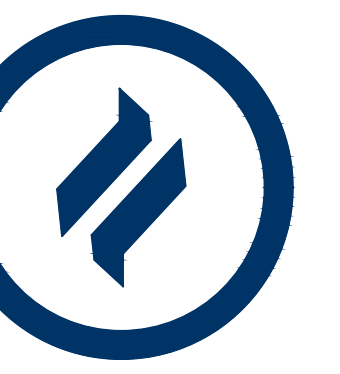
**GRADING FEASIBILITY PLAN**  
SCALE: 1"=50'

50 0 25 50 100  
GRAPHIC SCALE  
1 inch = 50 feet

CONDITIONAL USE  
**GRADING FEASIBILITY PLAN**

CLIENT: FOX CLEARING, LLC  
PROJECT: STOKES ESTATE  
LOCATION: 1013 SHILOH ROAD  
WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

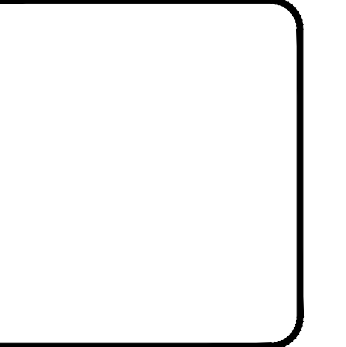
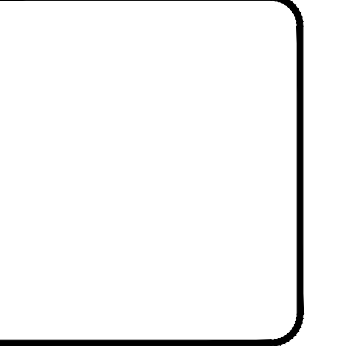
DATE:	04/14/23
SCALE:	1"=50'
DRAWN BY:	ADM
CHECKED BY:	DWG
PROJECT NO.:	3868
FILE NAME:	1013 SHILOH ROAD GRADING FEASIBILITY PLAN.dwg
PLOTTED:	04/14/23
DRAWING NO.:	C03.5
SHEET:	16 of 37



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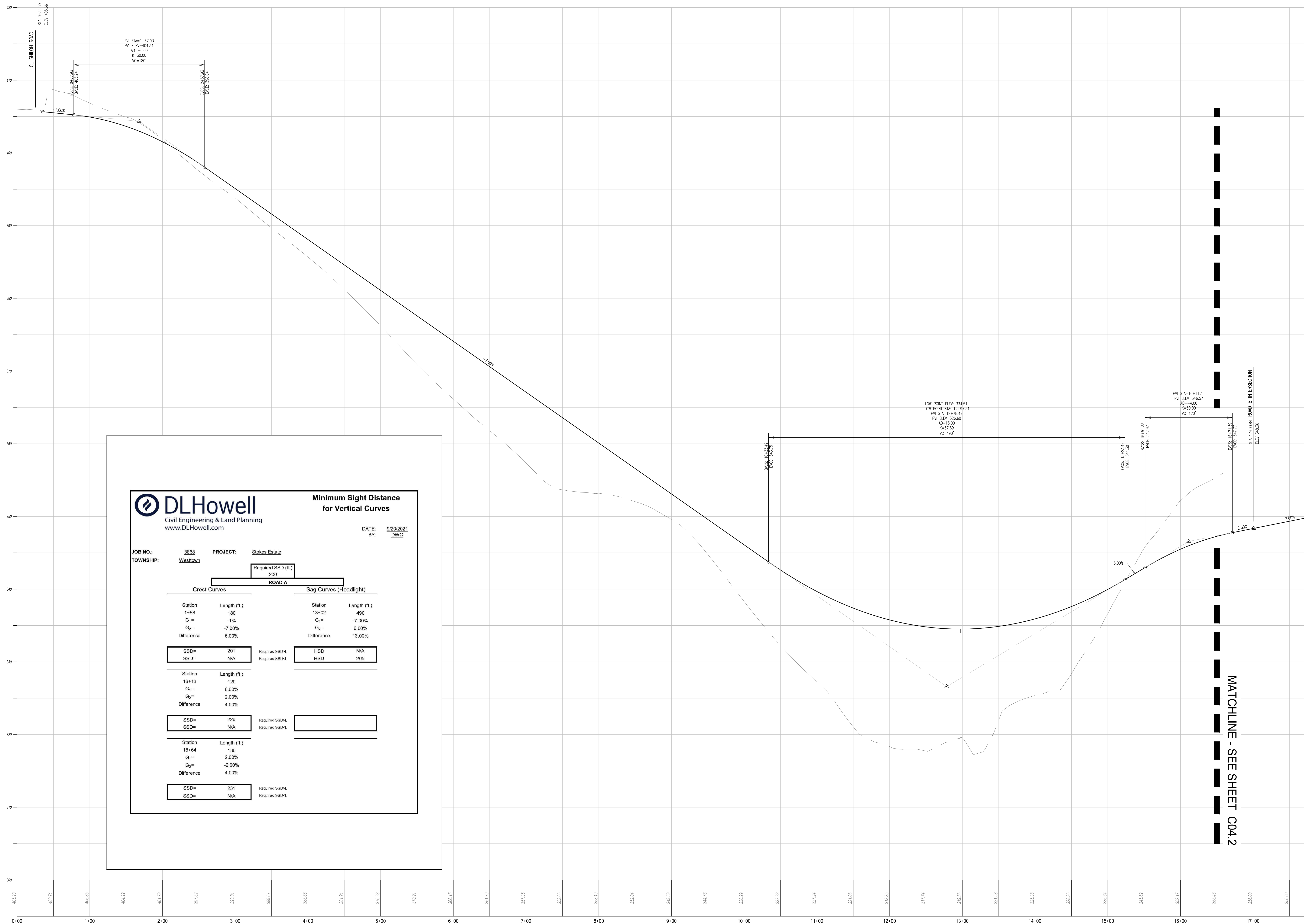


REV.	DATE	DESCRIPTION
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CONDITIONAL USE  
PROFILES

CLEAR: FOX CLEARING, LLC  
PROJECT: STOKES ESTATE  
LOCATION: 1013 SHILOH ROAD  
WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE: 04/14/23  
SCALE: 1"=50'  
DRAWN BY: ADM  
CHECKED BY: DWG  
PROJECT NO.: 3868  
CAD FILE: H PROFILES.dwg  
PLOTTER: 04/14/23  
DRAWING NO.: C04.1  
SHEET 17 of 37



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**Minimum Sight Distance  
for Vertical Curves**

DATE: 9/20/2021  
BY: DWG

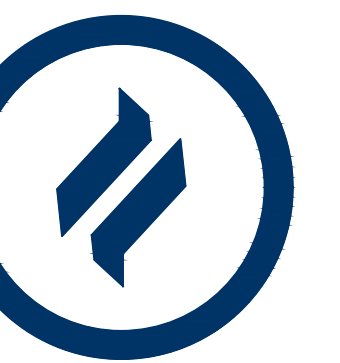
JOB NO.: 3868 PROJECT: Stokes Estate  
TOWNSHIP: Westtown

Required SSD (ft.)  
200

**ROAD A**

Crest Curves (Headlight)		Sag Curves (Headlight)	
Station	Length (ft.)	Station	Length (ft.)
1+68	180	13+02	490
G <sub>1</sub> =	-1%	G <sub>1</sub> =	-7.00%
G <sub>2</sub> =	-7.00%	G <sub>2</sub> =	6.00%
Difference	6.00%	Difference	13.00%
SSD=	201	Required SSD <sub>d</sub>	HSD
SSD=	N/A	Required SSD <sub>d</sub>	HSD
16+13	120		
G <sub>1</sub> =	6.00%		
G <sub>2</sub> =	2.00%		
Difference	4.00%		
SSD=	226	Required SSD <sub>d</sub>	
SSD=	N/A	Required SSD <sub>d</sub>	
18+64	130		
G <sub>1</sub> =	2.00%		
G <sub>2</sub> =	-2.00%		
Difference	4.00%		
SSD=	231	Required SSD <sub>d</sub>	
SSD=	N/A	Required SSD <sub>d</sub>	

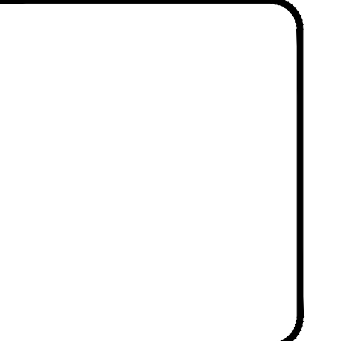
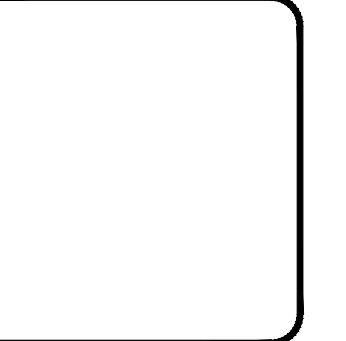
**ROAD A PROFILE**  
HORIZ. SCALE: 1"=50'  
VERT. SCALE: 1"=5'



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1250 Wrights Lane  
West Chester, PA 19380  
Phone: (610) 918-9002  
Fax: (610) 918-9003

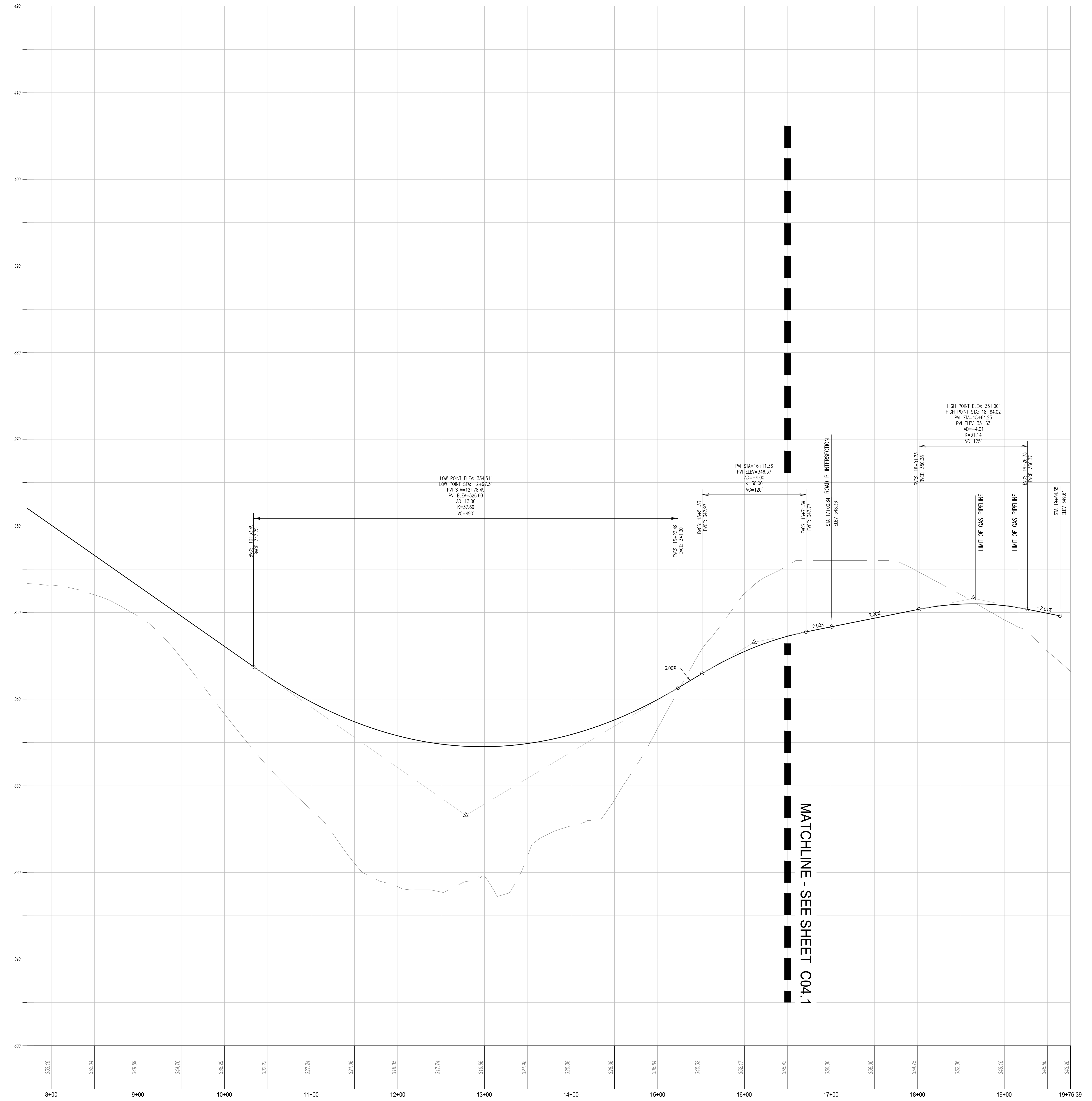


NO.	REV.	DATE	DESCRIPTION
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CONDITIONAL USE  
PROFILES

CLIENT: FOX CLEARING, LLC  
PROJECT: STOKES ESTATE  
LOCATION: 1013 SHILOH ROAD  
WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE: 04/14/23  
SCALE: 1"=50'  
DRAWN BY: ADM  
CHECKED BY: DWG  
PROJECT NO.: 3868  
CAD FILE: H PROFILES.dwg  
PLOTTER: 04/14/23  
DRAWING NO.: C04.2  
SHEET 18 of 37



ROAD A PROFILE  
HORIZ SCALE: 1"=50'  
VERT SCALE: 1"=5'

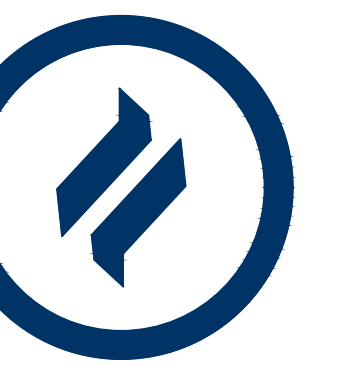
**DLHowell**  
Civil Engineering & Land Planning  
www.DLHowell.com

DATE: 9/20/2021  
BY: DWG

JOB NO.: 3868 PROJECT: Stokes Estate  
TOWNSHIP: Westtown

Required SSD (ft.)  
200

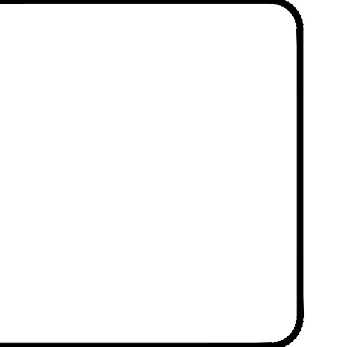
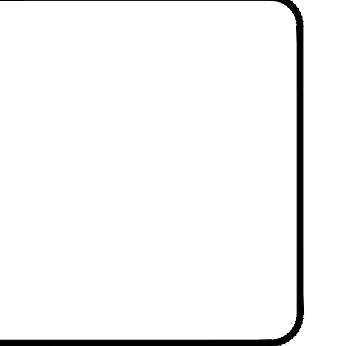
Crest Curves		Sag Curves (Headlight)	
Station	Length (ft.)	Station	Length (ft.)
1+68	180	13+02	450
G <sub>1</sub> =	-1%	G <sub>1</sub> =	-7.00%
G <sub>2</sub> =	-7.00%	G <sub>2</sub> =	6.00%
Difference	6.00%	Difference	13.00%
SSD=	201	Required SSD-L	HSD N/A
SSD=	N/A	Required SSD-L	HSD 205
Station	Length (ft.)		
16+13	120		
G <sub>1</sub> =	6.00%		
G <sub>2</sub> =	2.00%		
Difference	4.00%		
SSD=	226	Required SSD-L	
SSD=	N/A	Required SSD-L	
Station	Length (ft.)		
18+64	130		
G <sub>1</sub> =	2.00%		
G <sub>2</sub> =	-2.00%		
Difference	4.00%		
SSD=	231	Required SSD-L	
SSD=	N/A	Required SSD-L	



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Fax: (610) 918-9003

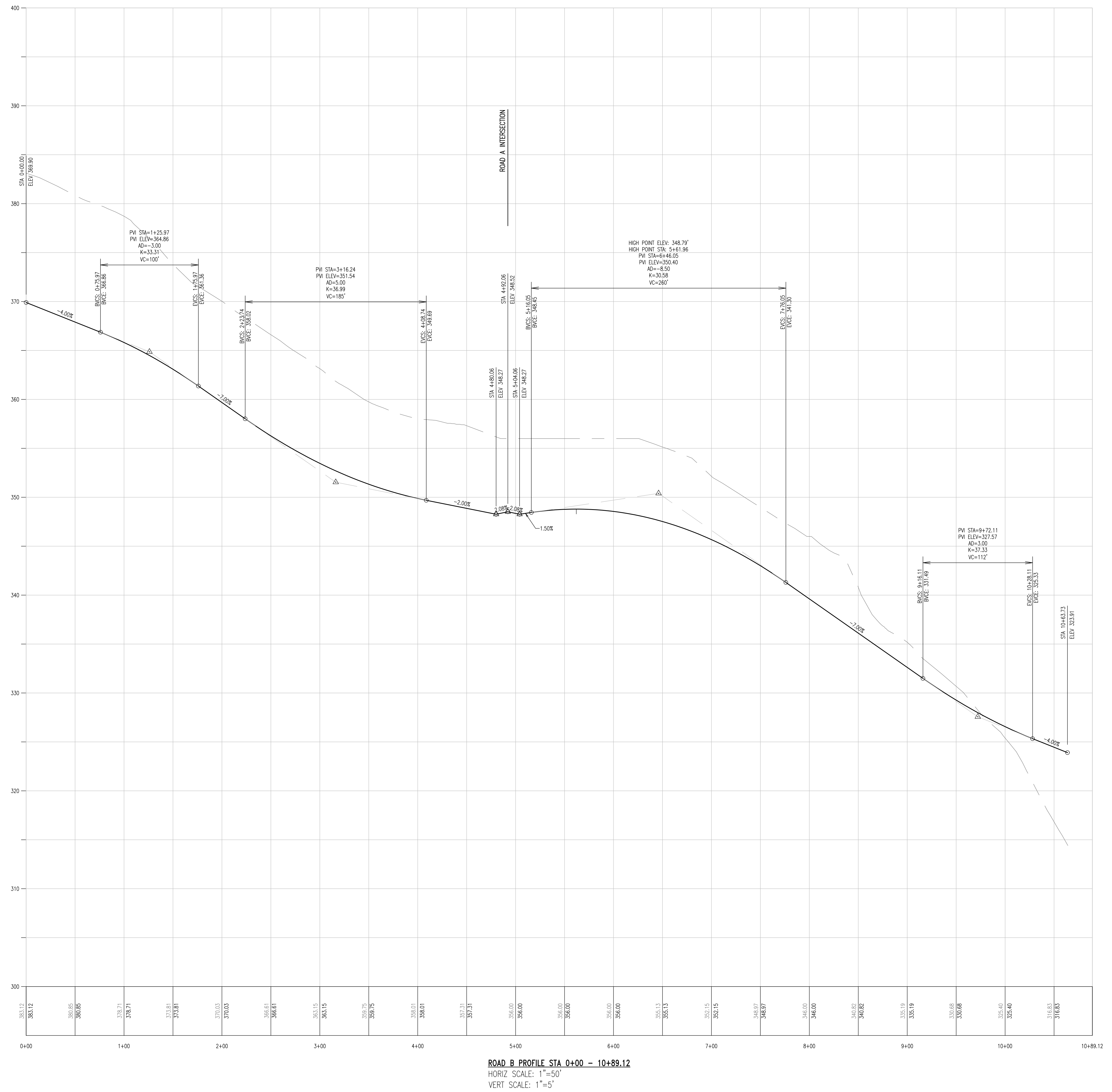


REV.	DATE	DESCRIPTION
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CONDITIONAL USE  
PROFILES

CLIENT: FOX CLEARING, LLC  
PROJECT: STOKES ESTATE  
LOCATION: 1013 SHILOH ROAD  
WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE:	04/14/23
SCALE:	1"=50'
DRAWN BY:	ADM
CHECKED BY:	DWG
PROJECT NO.:	3868
CAD FILE:	H_PROFILE.dwg
PLOTTED:	04/14/23
DRAWING NO.:	C04.3
SHEET:	19 of 37



Civil Engineering & Land Planning  
www.DLHowell.com

**Minimum Sight Distance  
for Vertical Curves**

DATE: 04/20/2021  
BY: DWG

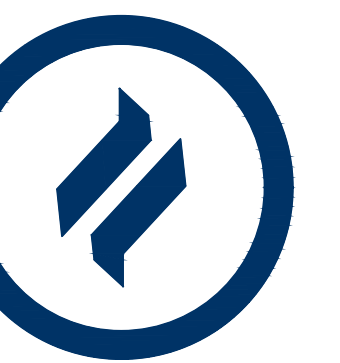
JOB NO.: 3868 PROJECT: Stokes Estate  
TOWNSHIP: Westtown

Crest Curves		Sag Curves (Headlight)	
Station	Length (ft.)	Station	Length (ft.)
1+20	100	3+12	185
G <sub>1</sub> =	-4.00%	G <sub>1</sub> =	-7.00%
G <sub>2</sub> =	-7.00%	G <sub>2</sub> =	-2.00%
Difference	3.00%	Difference	5.00%

SSD= 272	Required SSD-H	HSD	204
SSD= N/A	Required SSD-L	HSD	N/A

Station	Length (ft.)	Station	Length (ft.)
6+38	260	9+72	112
G <sub>1</sub> =	1.50%	G <sub>1</sub> =	-7.00%
G <sub>2</sub> =	-7.00%	G <sub>2</sub> =	-4.00%
Difference	8.50%	Difference	3.00%

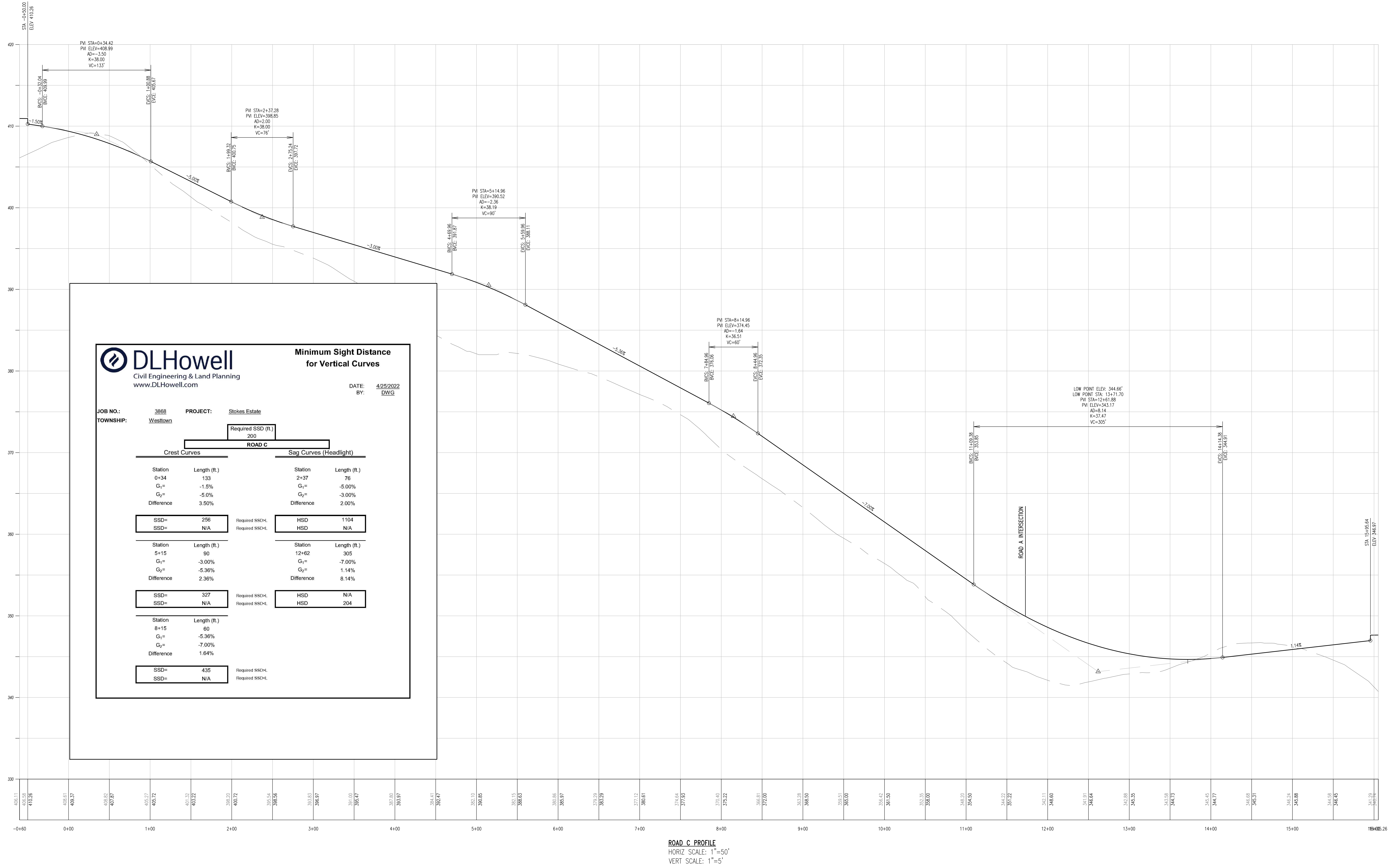
SSD= N/A	Required SSD-H	HSD	284
SSD= 262	Required SSD-L	HSD	N/A



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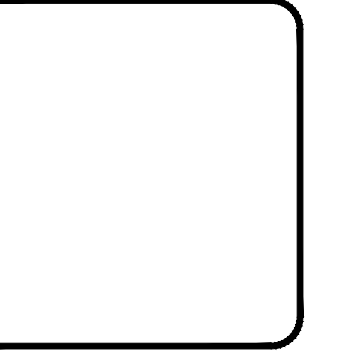
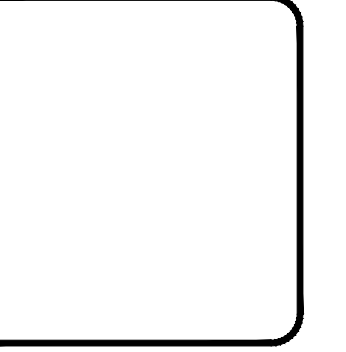
**DLHowell**  
Civil Engineering & Land Planning  
www.DLHowell.com

DATE: 4/25/2022  
BY: DWG

JOB NO.: 3868 PROJECT: Stokes Estate  
TOWNSHIP: Westtown

Required SSD (ft.)  
200

**ROAD C**

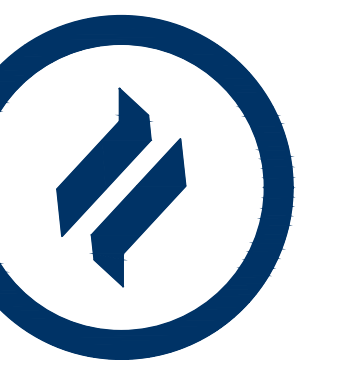


REV.	DATE	DESCRIPTION
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CONDITIONAL USE  
PROFILES

CLIENT: FOX CLEARING, LLC  
PROJECT: STOKES ESTATE  
LOCATION: 1013 SHILOH ROAD  
WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

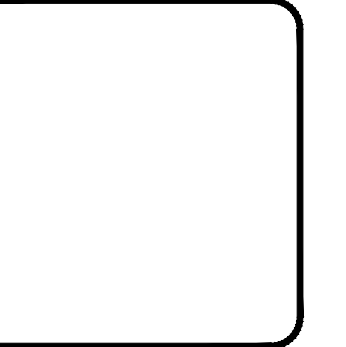
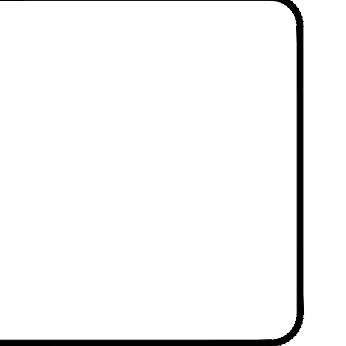
DATE:	04/14/23
SCALE:	1"=50'
DRAWN BY:	ADM
CHECKED BY:	DWG
PROJECT NO.:	3868
CAD FILE:	H_PROFILES.dwg
PLOTTED:	04/14/23
DRAWING NO.:	C04.4
SHEET:	20 of 37



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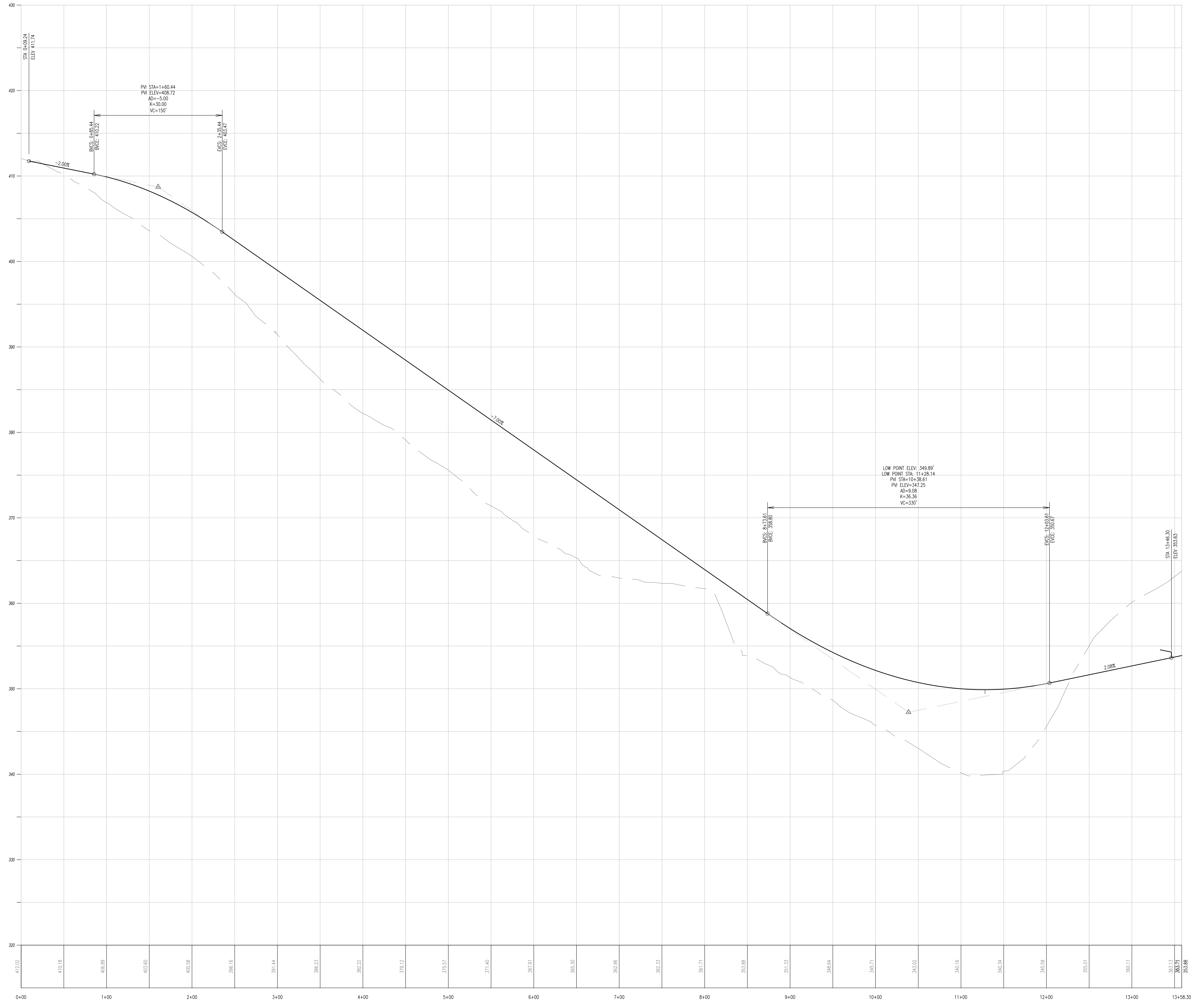


REV.	DATE	DESCRIPTION
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CONDITIONAL USE  
PROFILES

CLEAR: FOX CLEARING, LLC  
PROJECT: STOKES ESTATE  
LOCATION: 1013 SHILOH ROAD  
WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE: 04/14/23  
SCALE: 1"=50'  
DRAWN BY: ADM  
CHECKED BY: DWG  
PROJECT NO.: 3868  
CAD FILE: H PROFILES.dwg  
PLOTTER: 04/14/23  
DRAWING NO.: C04.5  
SHEET 21 of 37



ROAD D PROFILE  
HORIZ SCALE: 1"=50'  
VERT SCALE: 1"=5'

**DLHowell**  
Civil Engineering & Land Planning  
www.DLHowell.com

DATE: 3/10/2023  
BY: DWG

JOB NO.: 3868 PROJECT: Stokes Estate  
TOWNSHIP: Westtown

Required SSD (ft.)  
200

Crest Curves		Sag Curves (Headlight)	
Station	Length (ft.)	Station	Length (ft.)
0+34	150	10+38	330
G <sub>1</sub> =	-2.0%	G <sub>1</sub> =	-7.00%
G <sub>2</sub> =	-7.0%	G <sub>2</sub> =	2.68%
Difference	5.00%	Difference	9.68%

SSD=	208	Required SSD-L	
SSD=	N/A	Required SSD-L	
HSD	N/A	HSD	200

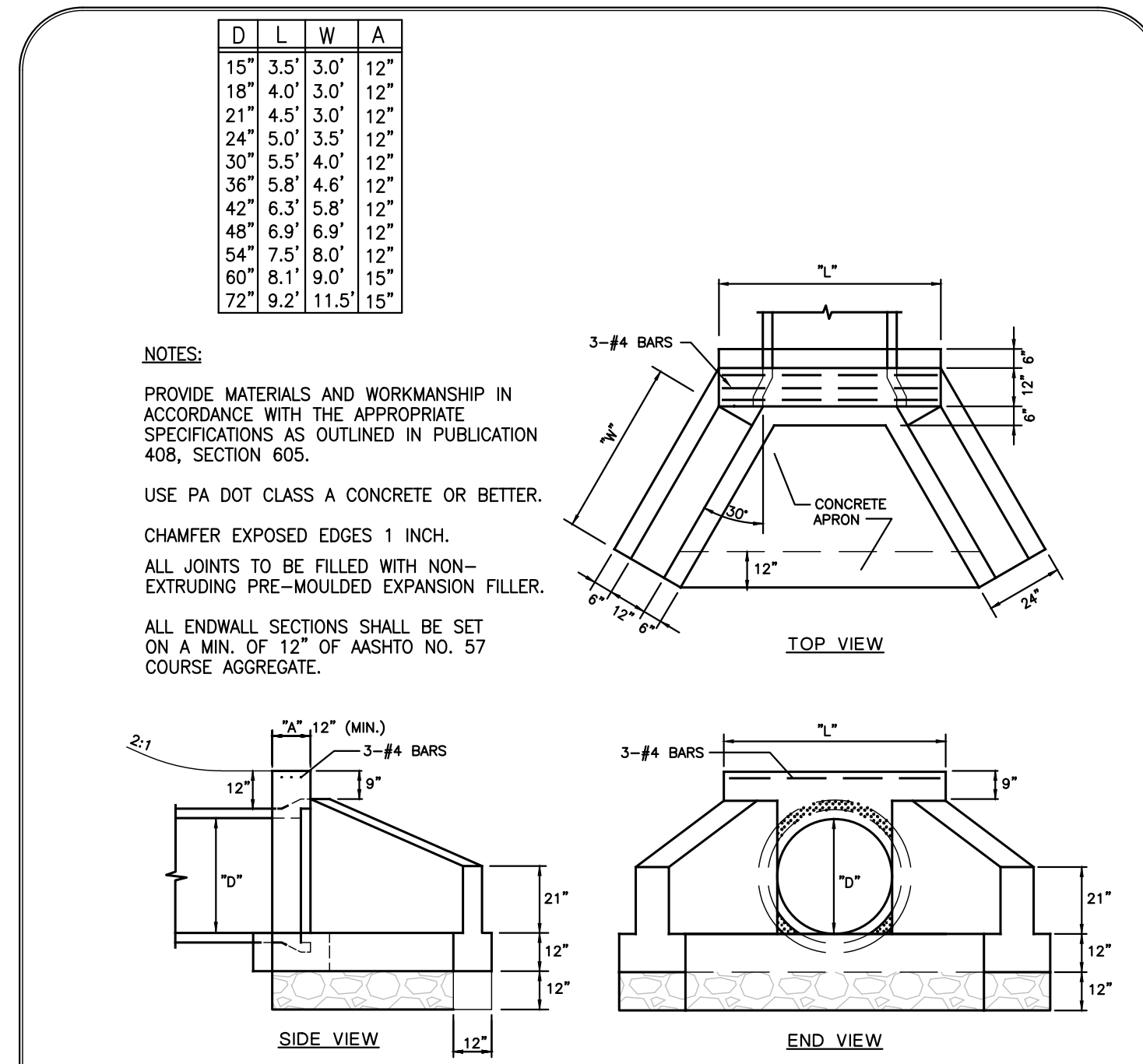
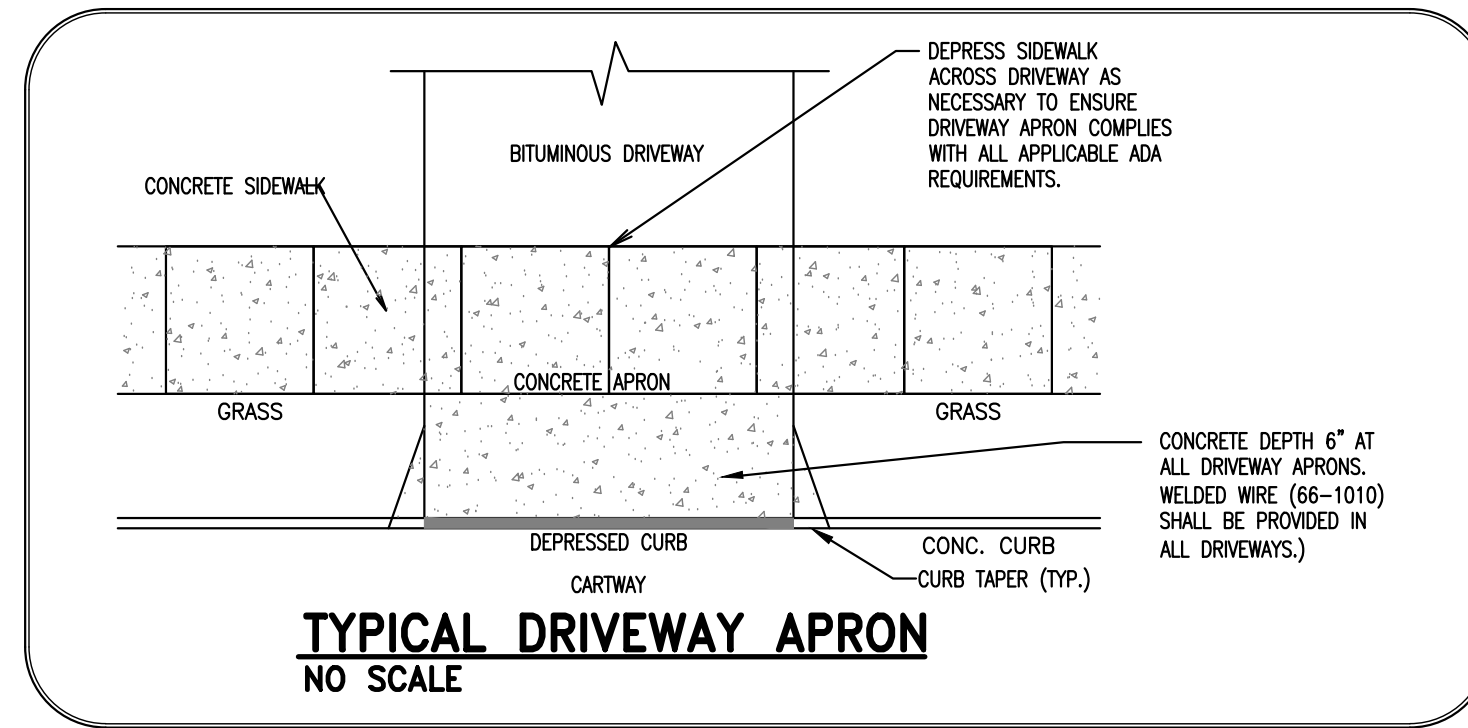




DLHowell

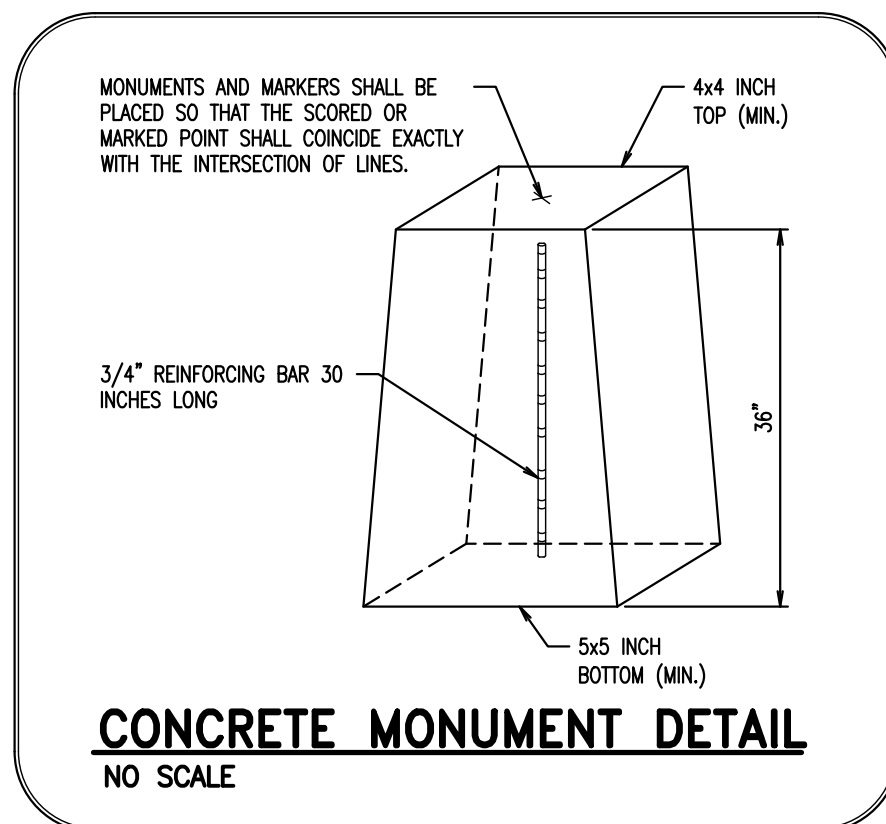
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1250 Wrights Lane  
West Chester, PA 19380  
Phone: (610) 918-9002  
Fax: (610) 918-9003

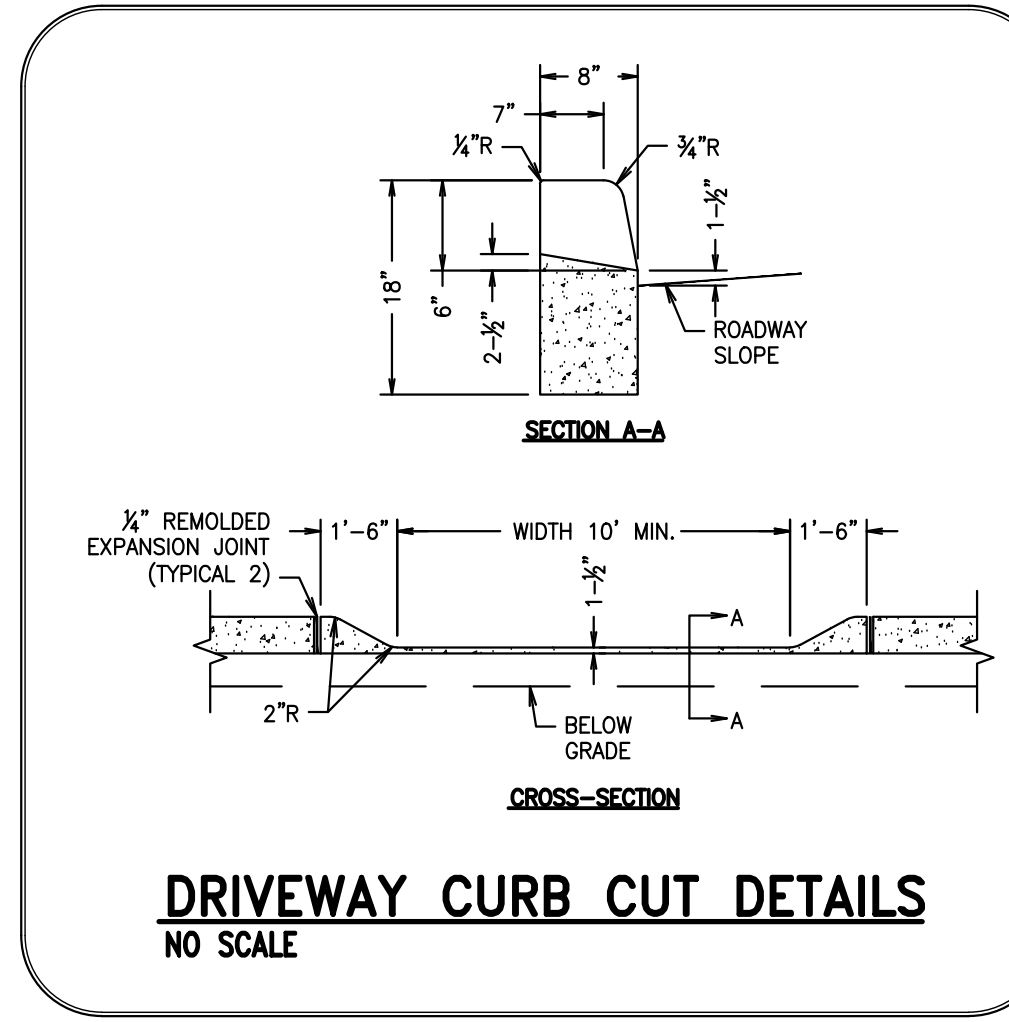


TYPICAL DRIVEWAY APRON NO SCALE

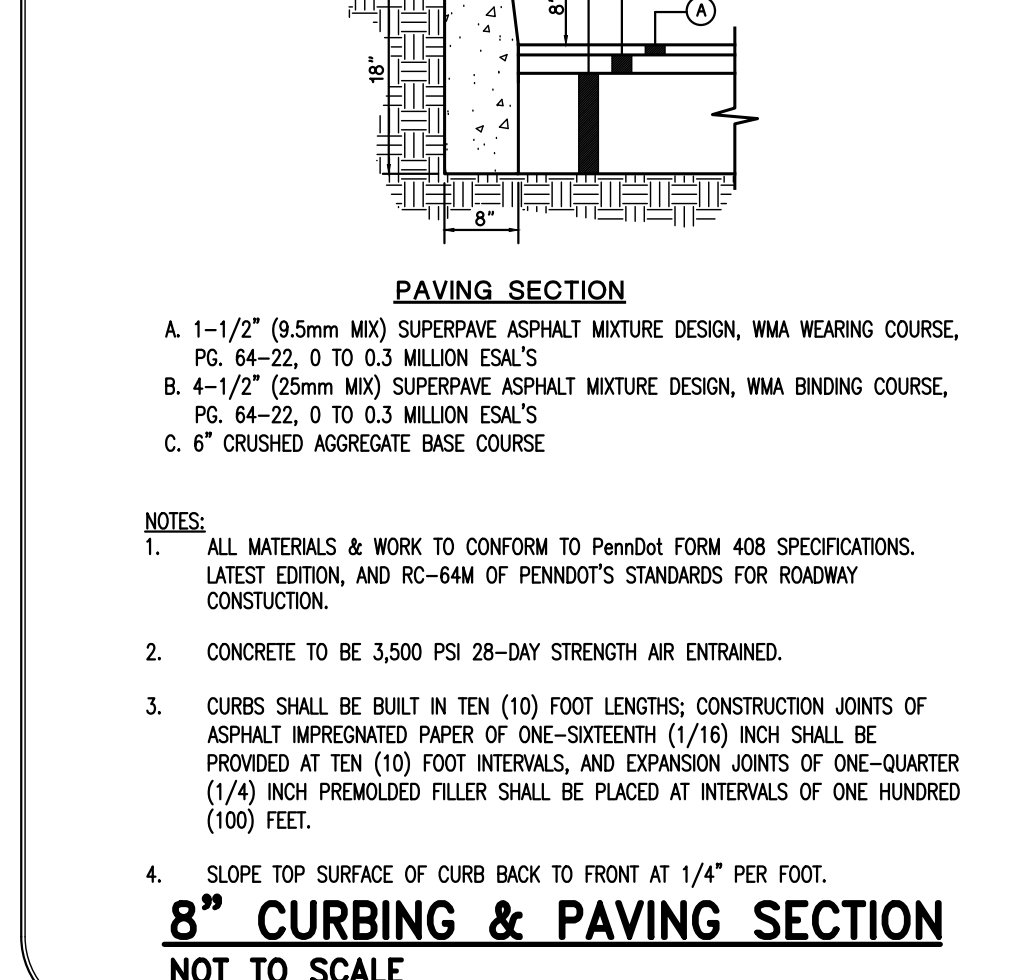
TYPE D-W ENDWALL NO SCALE



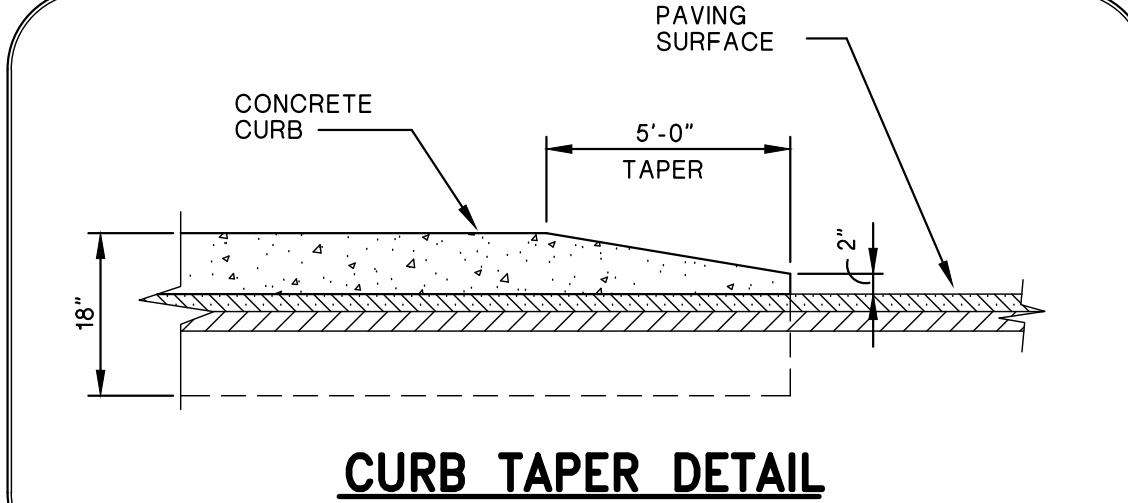
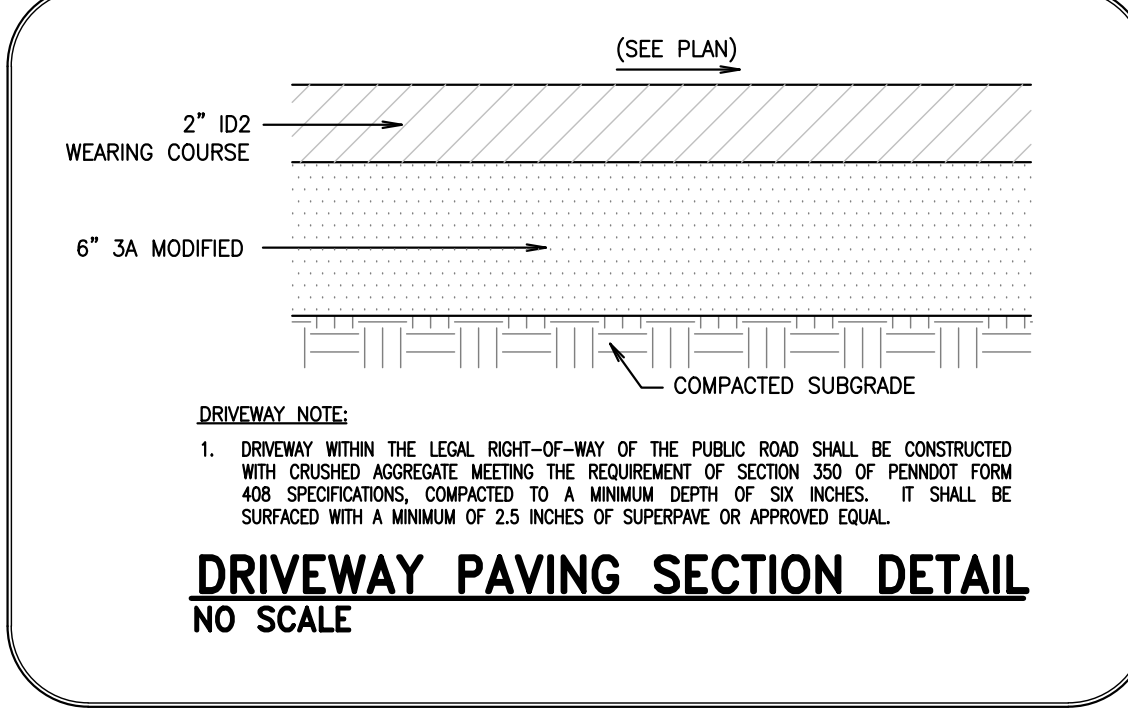
CONCRETE MONUMENT DETAIL NO SCALE



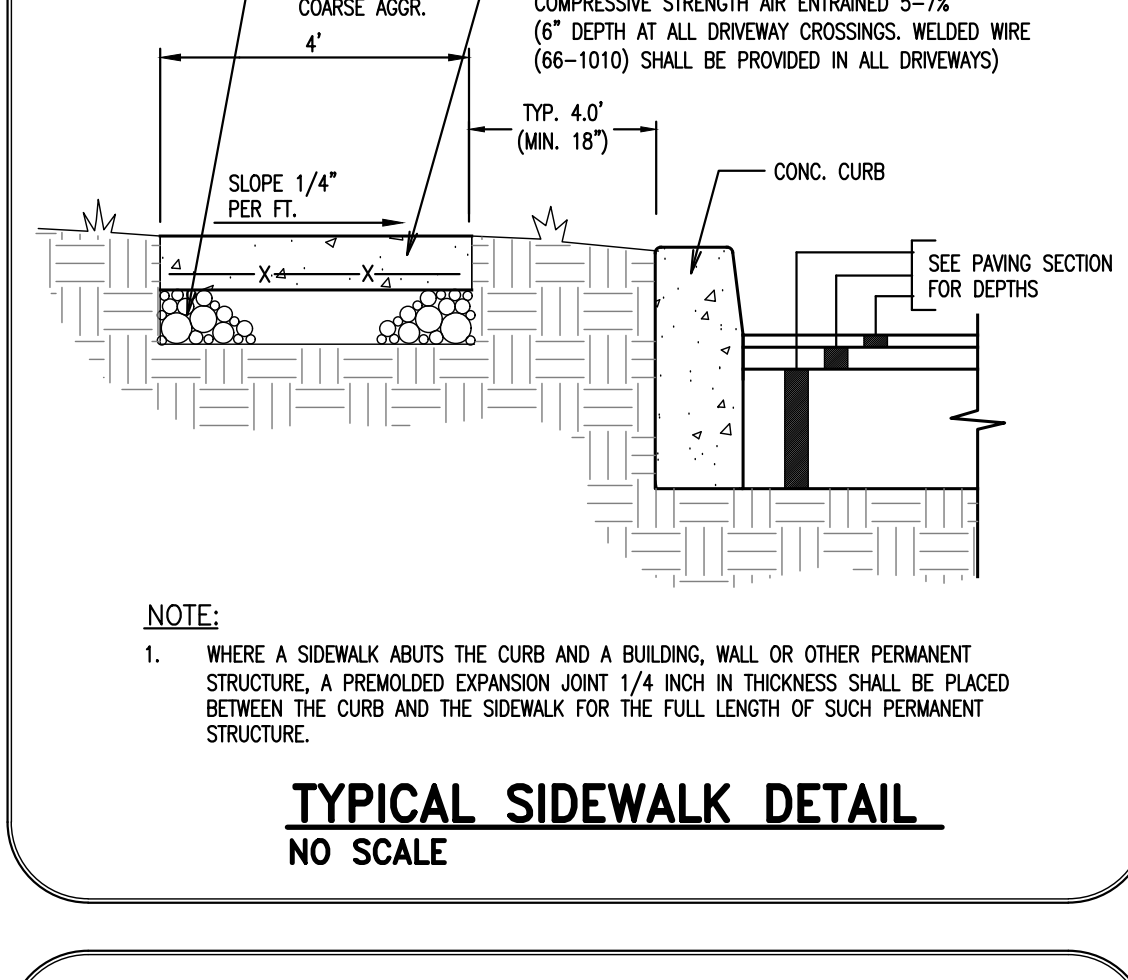
DRIVEWAY CURB CUT DETAILS NO SCALE



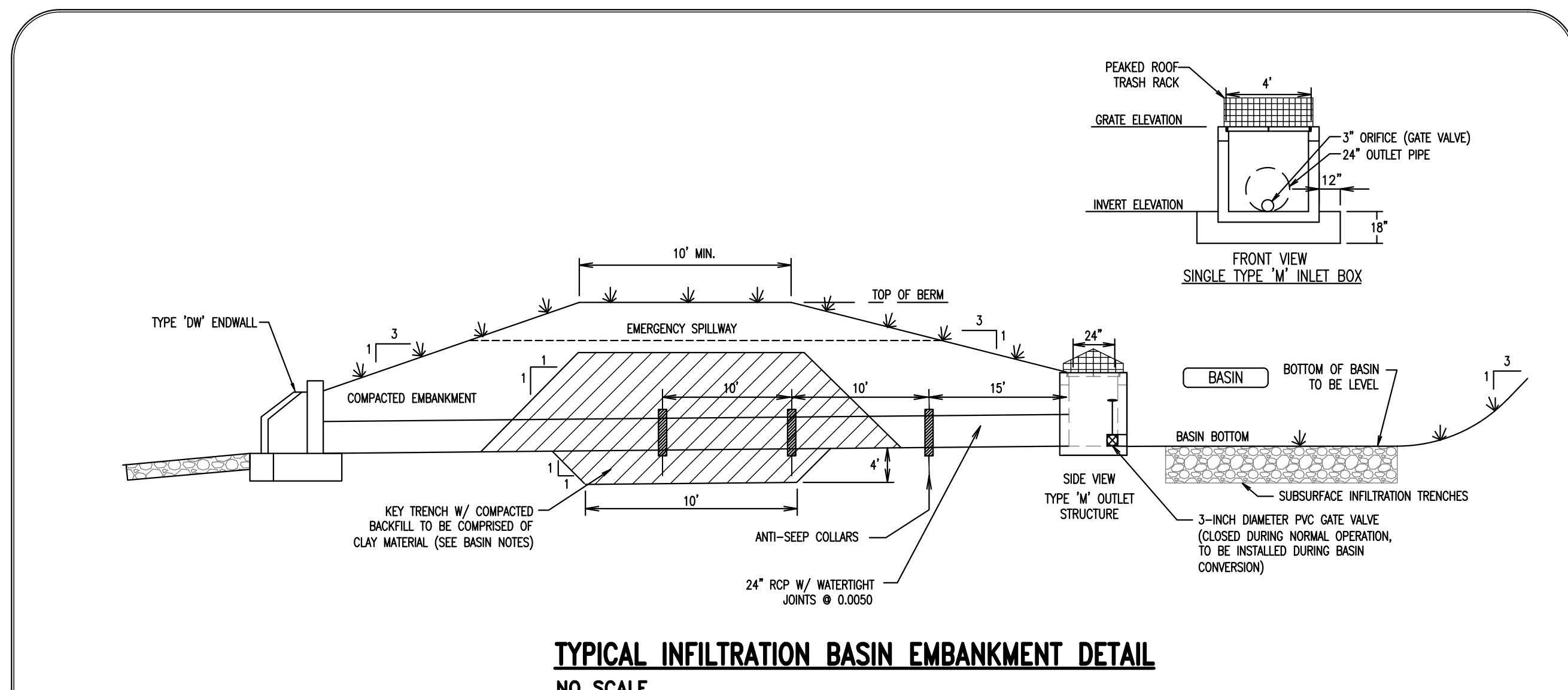
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CURB TAPER DETAIL NO SCALE

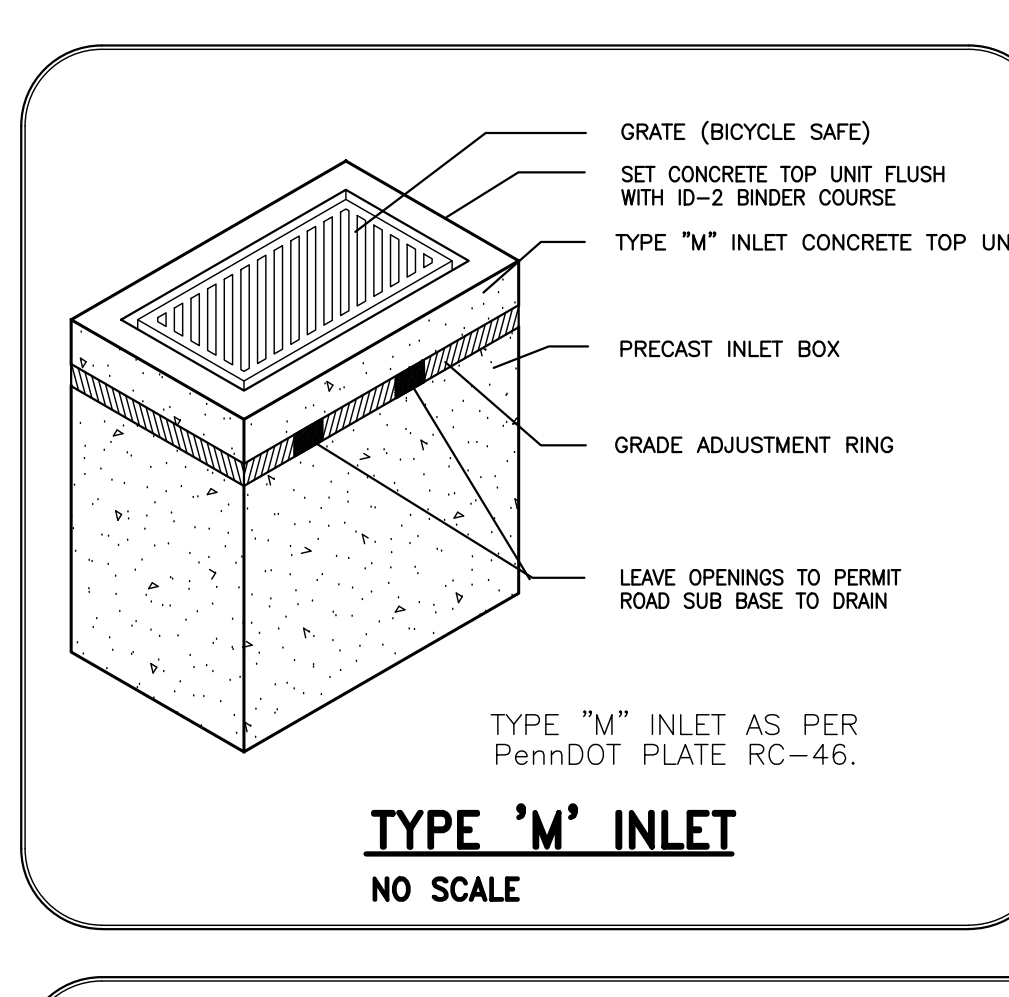


TYPICAL SIDEWALK DETAIL NO SCALE

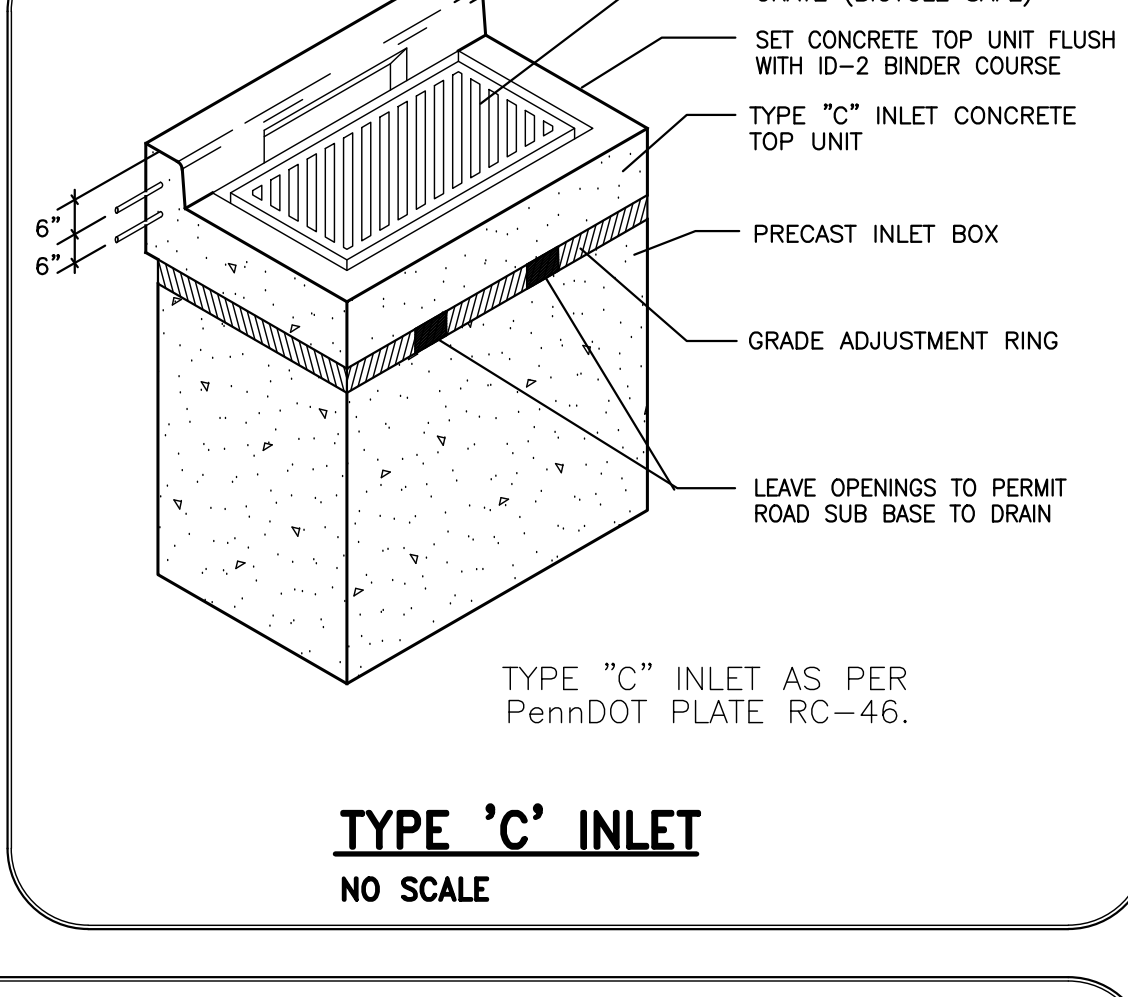


TYPICAL INFILTRATION BASIN EMBANKMENT DETAIL NO SCALE

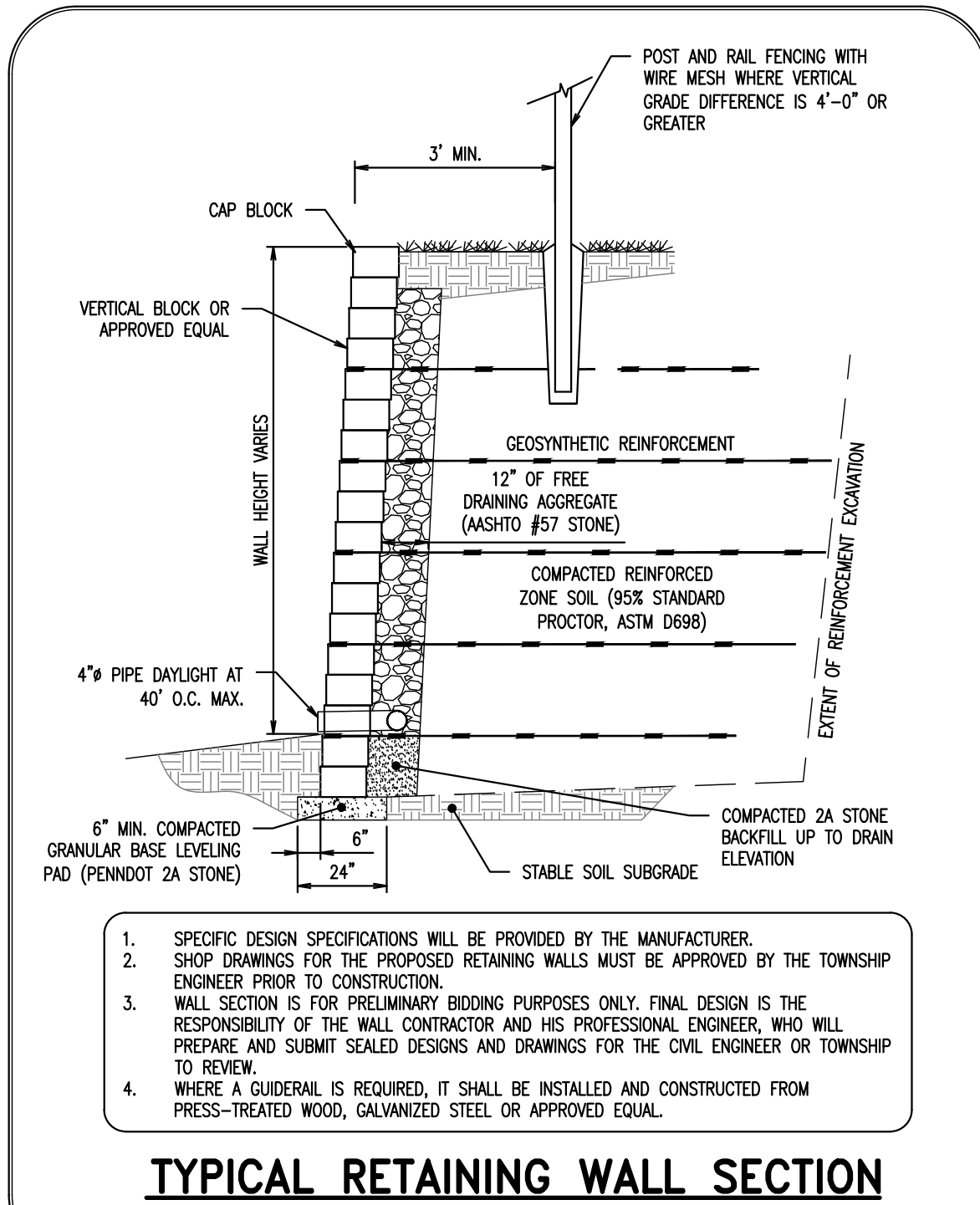
- STORMWATER INFILTRATION BASIN CONSTRUCTION SPECIFICATIONS; CONSTRUCTION SEQUENCE; EMBANKMENT CONSTRUCTION/COMPACTION NOTES; MAINTENANCE



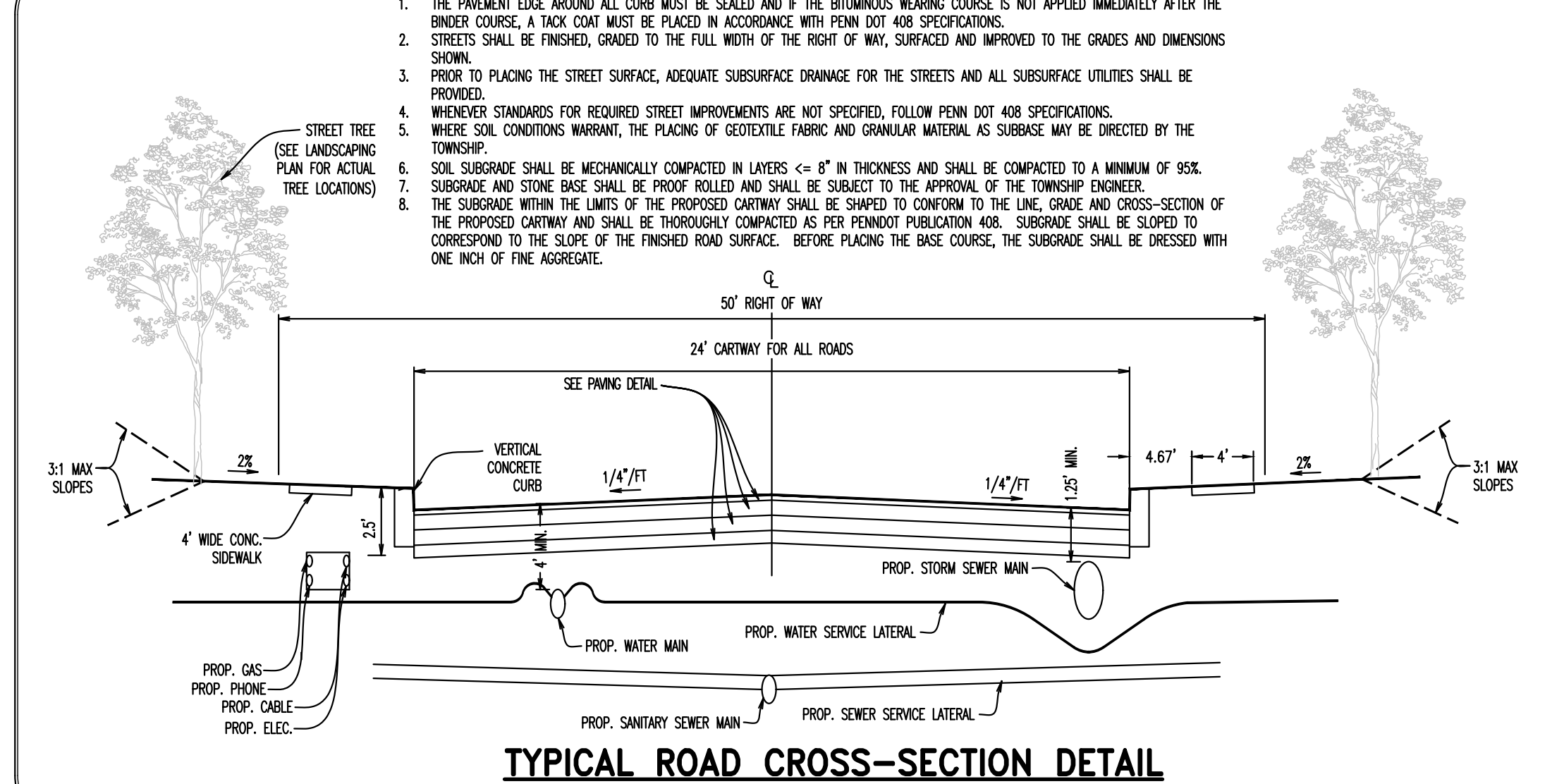
TYPE 'M' INLET NO SCALE



TYPE 'C' INLET NO SCALE



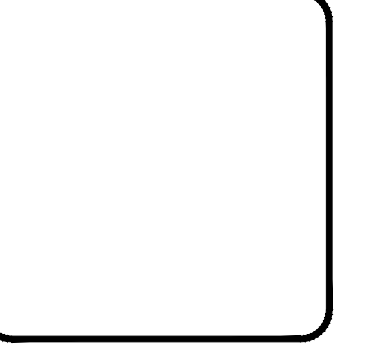
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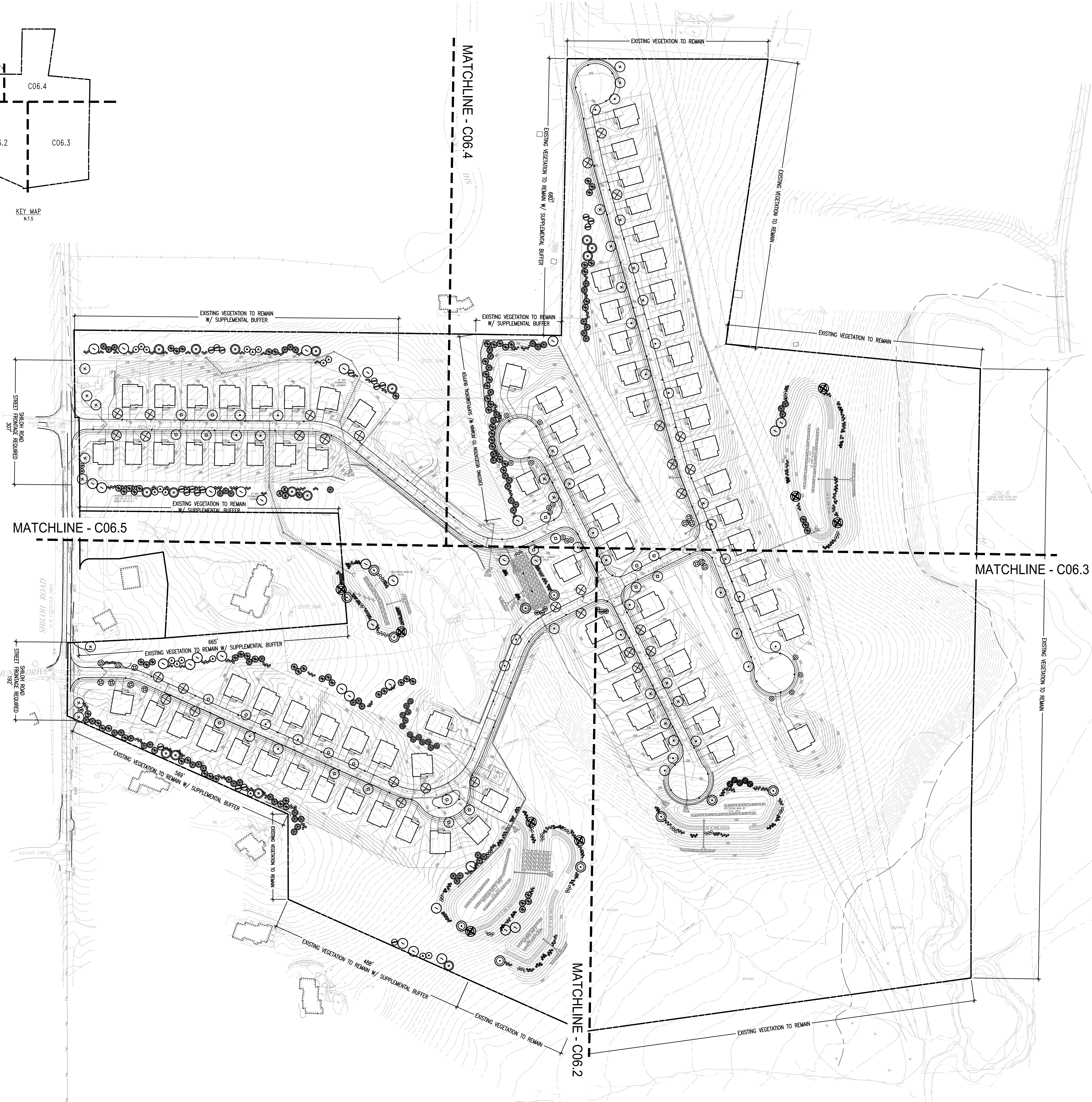
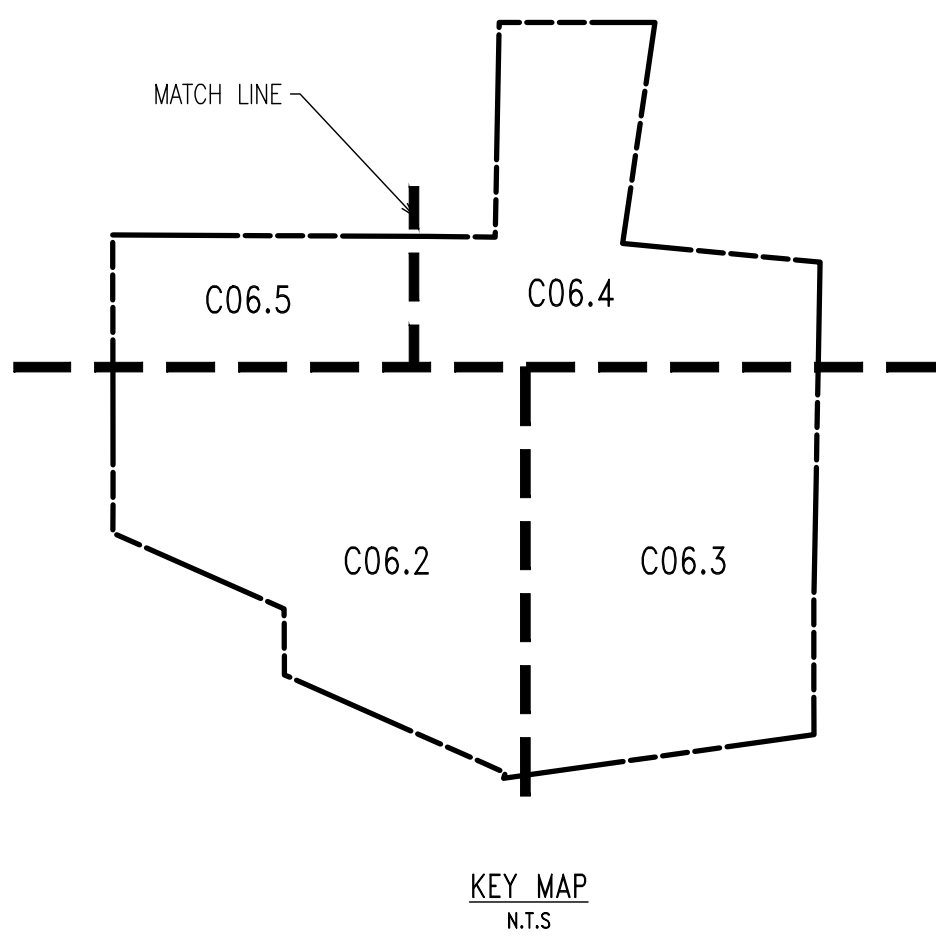
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Table with 2 columns: NO., DATE. Contains project details and revision information.

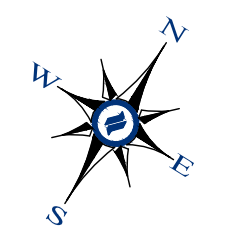


NO.	DESCRIPTION	DATE
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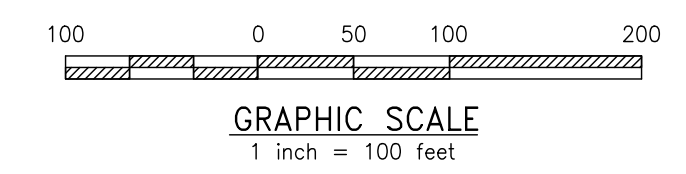


**SITE PLAN NOTES:**

- ALL LINES AND GRADE WORK NOT PRESENTLY ESTABLISHED AT THE SITE SHALL BE LAID OUT BY A REGISTERED LAND SURVEYOR OR PROFESSIONAL CIVIL ENGINEER EMPLOYED BY THE CONTRACTOR IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
- THIS PLAN TO BE USED FOR LANDSCAPING AND SITE IMPROVEMENT PURPOSES ONLY.
- PLANS CREATED FROM DRAWINGS FROM DL HOWELL ENGINEERING DATED, 04/12/2023.
- LOCATION OF ALL UNDERGROUND UTILITIES SHALL BE VERIFIED AND MARKED IN THE FIELD, PRIOR TO ANY DIGGING OPERATIONS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING EXISTING TREES AND PLANT MATERIAL WITHIN THE AREA OF PROPOSED IMPROVEMENTS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR DISPOSING OF ALL DEBRIS OFF-SITE. CLEAN-UP OF ALL PAVED AREAS (ROADWAYS, SIDEWALKS, ETC.); AND RESTORATION OF ALL DISTURBED LAWN AREAS.
- CONTRACTOR SHALL BE RESPONSIBLE TO REPAIR ANY DAMAGE TO UNDERGROUND UTILITIES DAMAGED.
- CONTRACTOR SHALL PROVIDE SCREENED PLANTING SOIL WHERE PLANTING IS TO OCCUR. 36" DEPTH, 6" DEPTH AT LAWN AREAS.
- FOLLOWING COMPLETION OF ALL PLANTING INSTALLATION WORK, THE CONTRACTOR SHALL BE REQUIRED TO RESTORE ALL DISTURBED LAWN AREAS.
- NO TREE SHALL BE PLANTED CLOSER THAN 10 FEET FROM AN UNDERGROUND UTILITY.
- ALL LINES ARE PARALLEL OR PERPENDICULAR UNLESS SHOWN OTHERWISE.
- VERIFY LAYOUT OF ALL PROPOSED WORK TO EXISTING CONDITIONS. REPORT DISCREPANCIES BEFORE ANY CLEARING OR EXCAVATION IS DONE.
- PROVIDE STAKED LAYOUT ON SITE FOR OWNER AND LANDSCAPE ARCHITECT'S REVIEW PRIOR TO COMMENCING WORK.
- ALL DIMENSIONS SHOWN ARE TO FACE OF MATERIALS, UNLESS SHOWN OTHERWISE.
- PLEASE NOTE: CLIENT DID NOT RETAIN STUART AND ASSOCIATES, LLC. TO PROVIDE LONG TERM MAINTENANCE SPECIFICATIONS FOR THE LANDSCAPE MATERIAL.
- CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING PA ONE CALL AND LOCATING ALL UNDERGROUND UTILITIES BEFORE ANY DIGGING OR PLANT REMOVAL OCCURS.
- CONTRACTOR SHALL INSTALL SILT FENCE IN ANY AREAS WHERE SOIL MAY RUNOFF INTO PARKING AREAS OR INTO EXISTING INLETS.
- FOLLOWING THE COMPLETION, THE EXISTING VEGETATION WILL BE INSPECTED FOR HEALTH AND QUALITY, AND IF NOT DEEMED IN GOOD CONDITION, REPLACED WITH THE EQUIVALENT COMPENSATORY PLANTINGS.
- V.I.F. = VERIFY IN FIELD.



**OVERALL LANDSCAPE PLAN**  
SCALE: 1"=100'



CONDITIONAL USE  
**OVERALL LANDSCAPE PLAN**  
CLIENT: FOX CLEARING, LLC  
PROJECT: STOKES PROPERTY  
LOCATION: 101.3 SHILOH ROAD  
WESTTOWN TWP., CHESTER COUNTY, PA

DATE:	04/14/23
SCALE:	1"=100'
DRAWN BY:	JPL
CHECKED BY:	PJS
PROJECT NO.:	3868
CAD FILE:	20230413_STOKES_TLP.dwg
PLOTTED:	04/14/23
DRAWING NO.:	<b>C06.1</b>
SHEET:	23 of 37



**SITE PLAN NOTES:**

1. ALL LINES AND GRADE WORK NOT PRESENTLY ESTABLISHED AT THE SITE SHALL BE LAID OUT BY A REGISTERED LAND SURVEYOR OR PROFESSIONAL CIVIL ENGINEER EMPLOYED BY THE CONTRACTOR IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
2. THIS PLAN TO BE USED FOR LANDSCAPING AND SITE IMPROVEMENT PURPOSES ONLY.
3. PLANS CREATED FROM DRAWINGS FROM DL HOWELL ENGINEERING DATED: 04/12/2023.
4. LOCATION OF ALL UNDERGROUND UTILITIES SHALL BE VERIFIED AND MARKED IN THE FIELD, PRIOR TO ANY DIGGING OPERATIONS.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING EXISTING TREES AND PLANT MATERIAL WITHIN THE AREA OF PROPOSED IMPROVEMENTS.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR DISPOSING OF ALL DEBRIS OFF-SITE, CLEAN-UP OF ALL PAVED AREAS (ROADWAYS, SIDEWALKS, ETC.); AND RESTORATION OF ALL DISTURBED LAWN AREAS.
7. CONTRACTOR SHALL BE RESPONSIBLE TO REPAIR ANY DAMAGE TO UNDERGROUND UTILITIES DAMAGED.
8. CONTRACTOR SHALL PROVIDE SCREENED PLANTING SOIL WHERE PLANTING IS TO OCCUR. 36" DEPTH, 6" DEPTH AT LAWN AREAS.
9. FOLLOWING COMPLETION OF ALL PLANTING INSTALLATION WORK, THE CONTRACTOR SHALL BE REQUIRED TO RESTORE ALL DISTURBED LAWN AREAS.
10. NO TREE SHALL BE PLANTED CLOSER THAN 10 FEET FROM AN UNDERGROUND UTILITY.
11. ALL LINES ARE PARALLEL OR PERPENDICULAR UNLESS SHOWN OTHERWISE.
12. VERIFY LAYOUT OF ALL PROPOSED WORK TO EXISTING CONDITIONS. REPORT DISCREPANCIES BEFORE ANY CLEARING OR EXCAVATION IS DONE.
13. PROVIDE STAKED LAYOUT ON SITE FOR OWNER AND LANDSCAPE ARCHITECT'S REVIEW PRIOR TO COMMENCING WORK.
14. ALL DIMENSIONS SHOWN ARE TO FACE OF MATERIALS, UNLESS SHOWN OTHERWISE.
15. PLEASE NOTE, CLIENT DID NOT RETAIN STUART AND ASSOCIATES, LLC, TO PROVIDE LONG TERM MAINTENANCE SPECIFICATIONS FOR THE LANDSCAPE MATERIAL.
16. CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING PA ONE CALL AND LOCATING ALL UNDERGROUND UTILITIES BEFORE ANY DIGGING OR PLANT REMOVAL OCCURS.
17. CONTRACTOR SHALL INSTALL SILT FENCE IN ANY AREAS WHERE SOIL MAY RUNOFF INTO PARKING AREAS OR INTO EXISTING INLETS.
18. FOLLOWING THE COMPLETION, THE EXISTING VEGETATION WILL BE INSPECTED FOR HEALTH AND QUALITY, AND IF NOT DEEMED IN GOOD CONDITION, REPLACED WITH THE EQUIVALENT COMPENSATORY PLANTINGS.
19. V.I.F. = VERIFY IN FIELD.

NO.	REV.	DATE	DESCRIPTION

CONDITIONAL USE  
**LANDSCAPE PLAN**

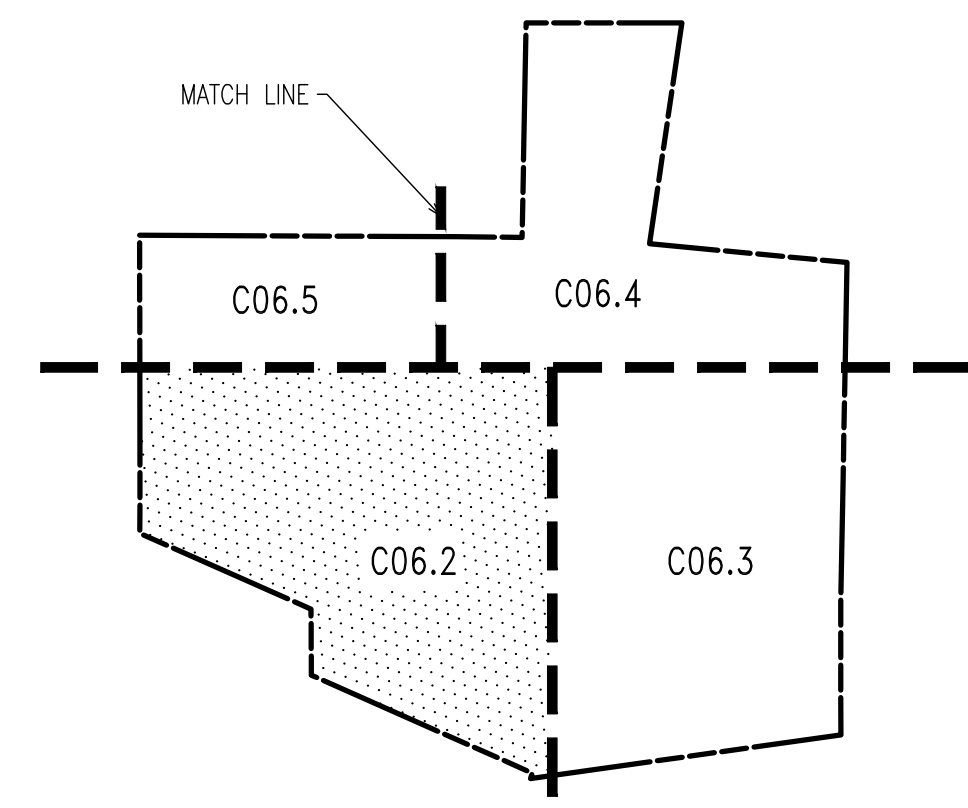
CLIENT: FOX CLEARING, LLC  
PROJECT: STOKES PROPERTY  
LOCATION: 1013 SHILOH ROAD  
WESTTOWN TWP., CHESTER COUNTY, PA

DATE:	04/14/23
SCALE:	1"=50'
DRAWN BY:	JPL
CHECKED BY:	PJS
PROJECT NO.:	3868
CAD FILE:	20230315_STOKES_TUP.dwg
PLOTTED:	04/14/23
DRAWING NO.:	<b>C06.2</b>
SHEET:	24 OF 37

MATCHLINE - C06.5

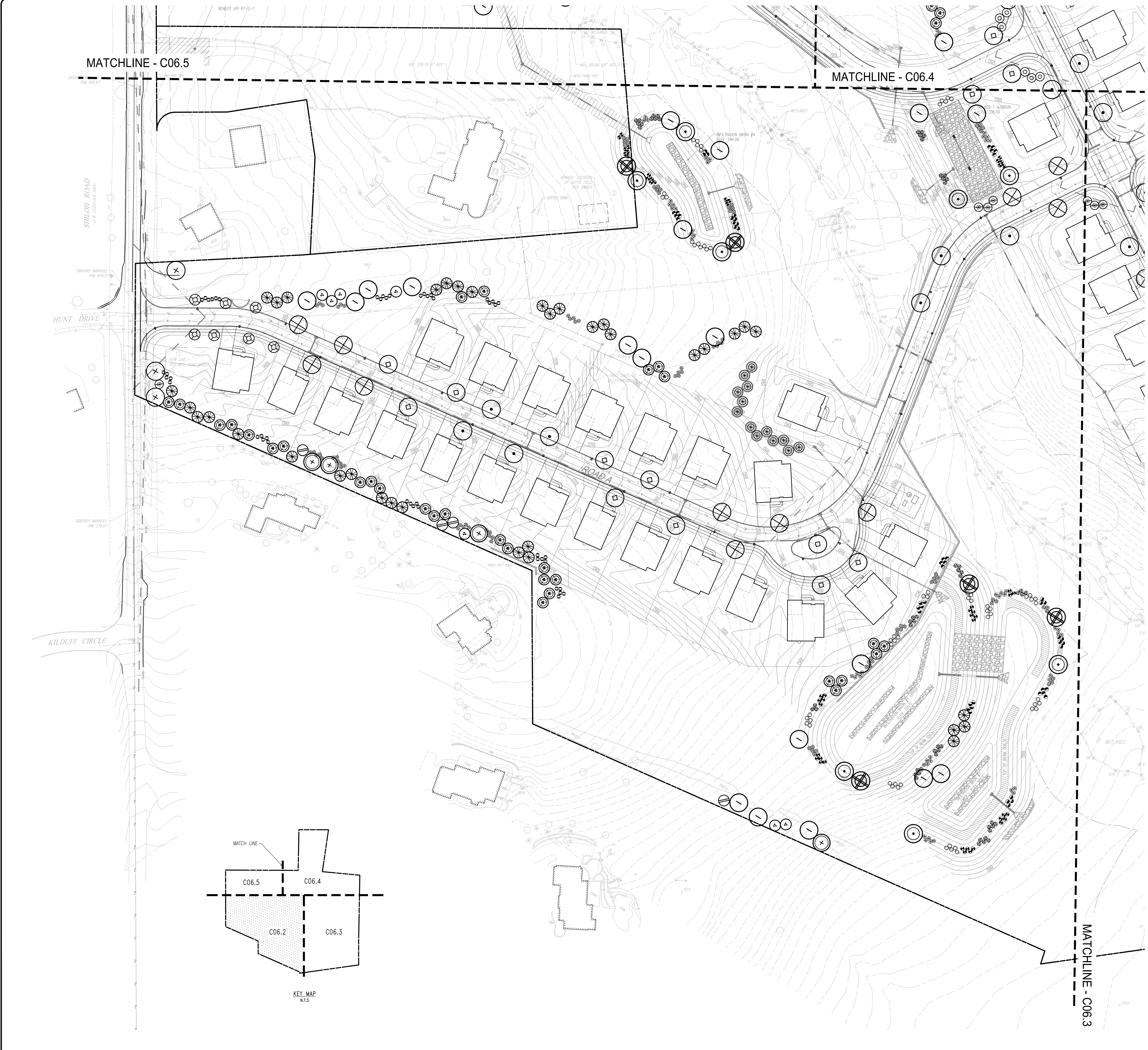
MATCHLINE - C06.4

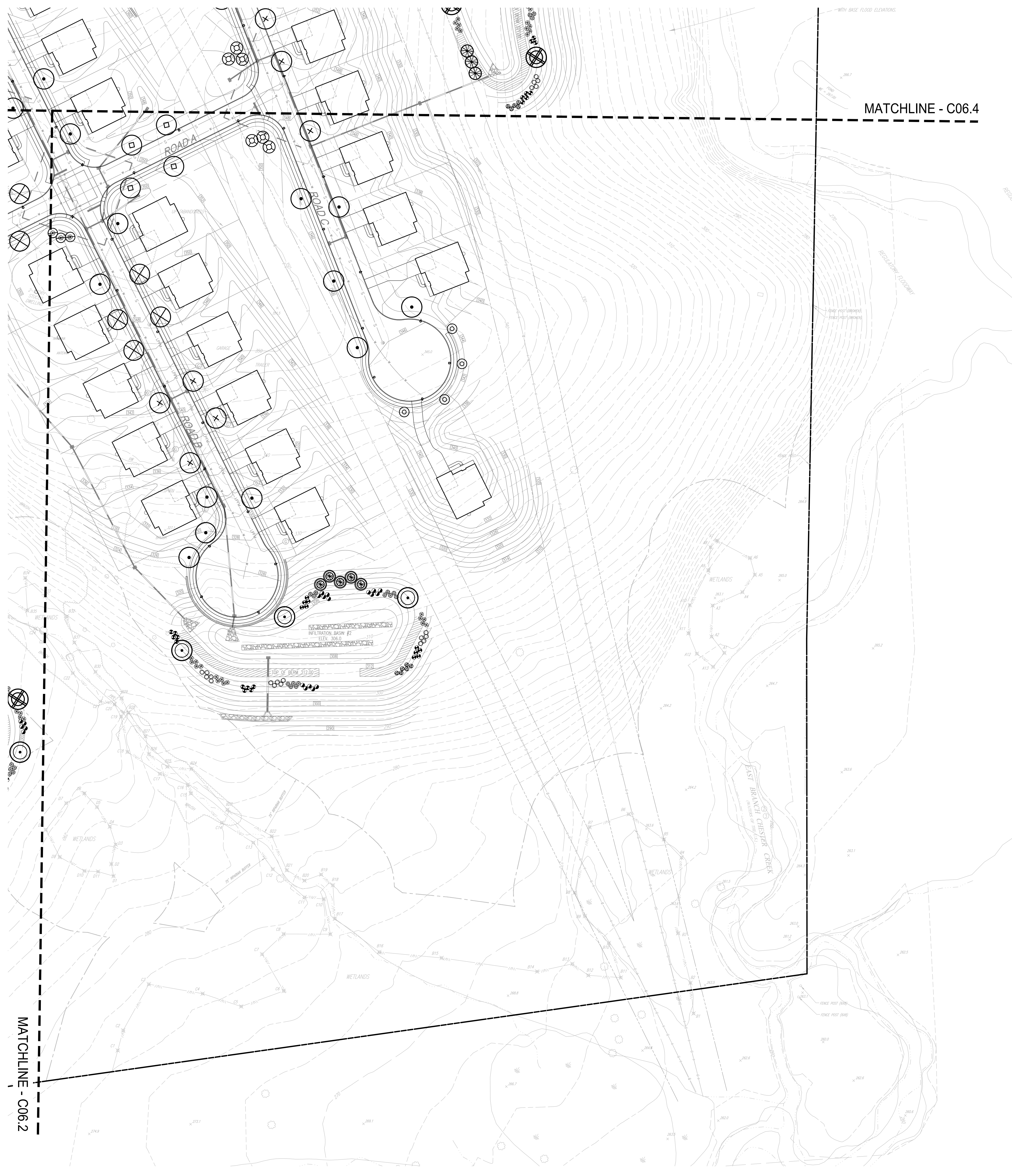
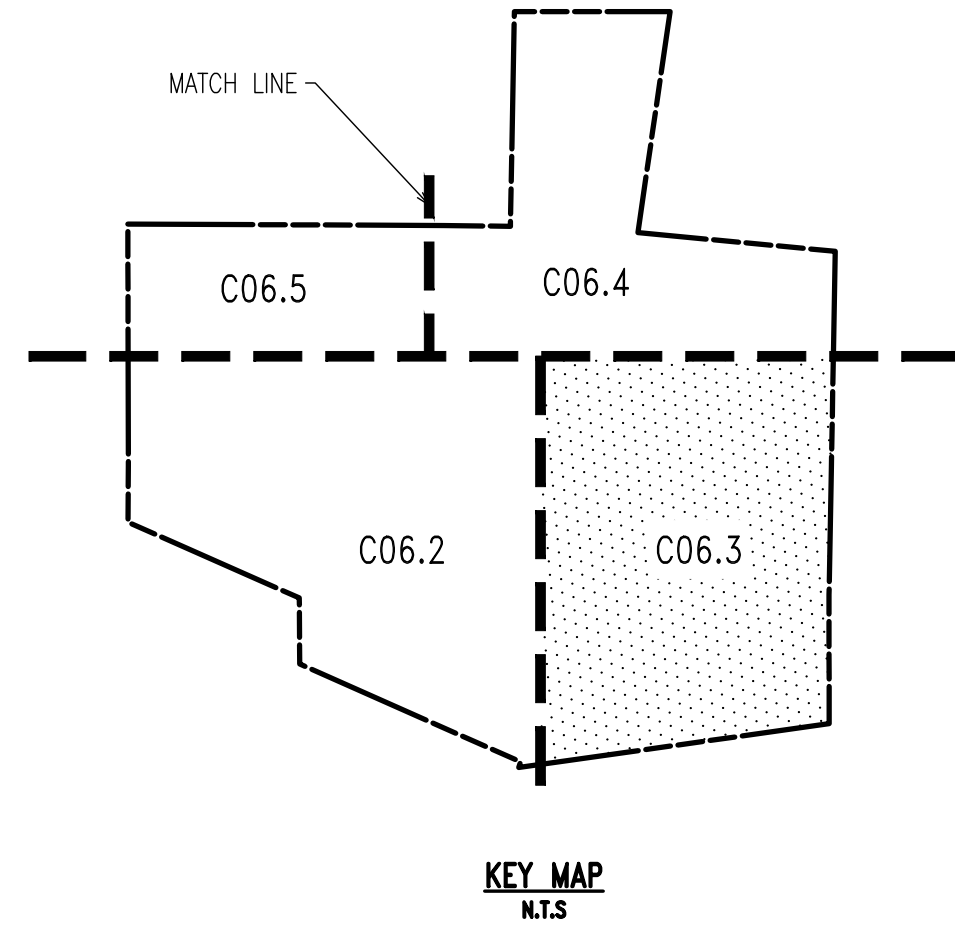
MATCHLINE - C06.3



**LANDSCAPE PLAN**  
SCALE: 1"=50'

GRAPHIC SCALE  
1 inch = 50 feet



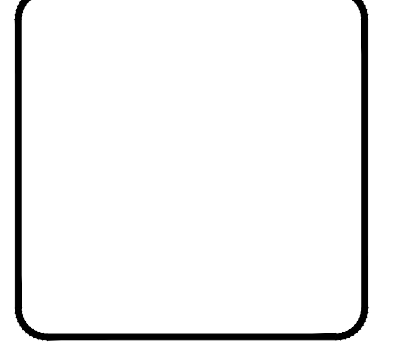


**SITE PLAN NOTES:**

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2. THIS PLAN TO BE USED FOR LANDSCAPING AND SITE IMPROVEMENT PURPOSES ONLY.
3. PLANS CREATED FROM DRAWINGS FROM DL HOWELL ENGINEERING DATED, 04/12/2023.
4. LOCATION OF ALL UNDERGROUND UTILITIES SHALL BE VERIFIED AND MARKED IN THE FIELD, PRIOR TO ANY DIGGING OPERATIONS.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING EXISTING TREES AND PLANT MATERIAL WITHIN THE AREA OF PROPOSED IMPROVEMENTS.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR DISPOSING OF ALL DEBRIS OFF-SITE, CLEANUP OF ALL PAVED AREAS (ROADWAYS, SIDEWALKS, ETC.), AND RESTORATION OF ALL DISTURBED LAWN AREAS.
7. CONTRACTOR SHALL BE RESPONSIBLE TO REPAIR ANY DAMAGE TO UNDERGROUND UTILITIES DAMAGED.
8. CONTRACTOR SHALL PROVIDE SCREENED PLANTING SOIL WHERE PLANTING IS TO OCCUR, 36" DEPTH, 6" DEPTH AT LAWN AREAS.
9. FOLLOWING COMPLETION OF ALL PLANTING INSTALLATION WORK, THE CONTRACTOR SHALL BE REQUIRED TO RESTORE ALL DISTURBED LAWN AREAS.
10. NO TREE SHALL BE PLANTED CLOSER THAN 10 FEET FROM AN UNDERGROUND UTILITY.
11. ALL LINES ARE PARALLEL OR PERPENDICULAR UNLESS SHOWN OTHERWISE.
12. VERIFY LAYOUT OF ALL PROPOSED WORK TO EXISTING CONDITIONS, REPORT DISCREPANCIES BEFORE ANY CLEARING OR EXCAVATION IS DONE.
13. PROVIDE STAKED LAYOUT ON SITE FOR OWNER AND LANDSCAPE ARCHITECT'S REVIEW PRIOR TO COMMENCING WORK.
14. ALL DIMENSIONS SHOWN ARE TO FACE OF MATERIALS, UNLESS SHOWN OTHERWISE.
15. PLEASE NOTE, CLIENT DID NOT RETAIN STUART AND ASSOCIATES, LLC, TO PROVIDE LONG TERM MAINTENANCE SPECIFICATIONS FOR THE LANDSCAPE MATERIAL.
16. CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING PA ONE CALL AND LOCATING ALL UNDERGROUND UTILITIES BEFORE ANY DIGGING OR PLANT REMOVAL OCCURS.
17. CONTRACTOR SHALL INSTALL SILT FENCE IN ANY AREAS WHERE SOIL MAY RUNOFF INTO PARKING AREAS OR INTO EXISTING INLETS.
18. FOLLOWING THE COMPLETION, THE EXISTING VEGETATION WILL BE INSPECTED FOR HEALTH AND QUALITY, AND IF NOT DEEMED IN GOOD CONDITION, REPLACED WITH THE EQUIVALENT COMPENSATORY PLANTINGS.
19. V.I.F. = VERIFY IN FIELD.

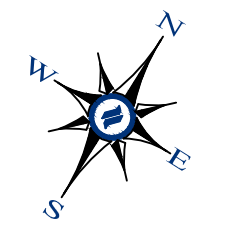


1250 Wrights Lane  
West Chester, PA 19380  
Phone: (610) 918-9002  
Fax: (610) 918-9003



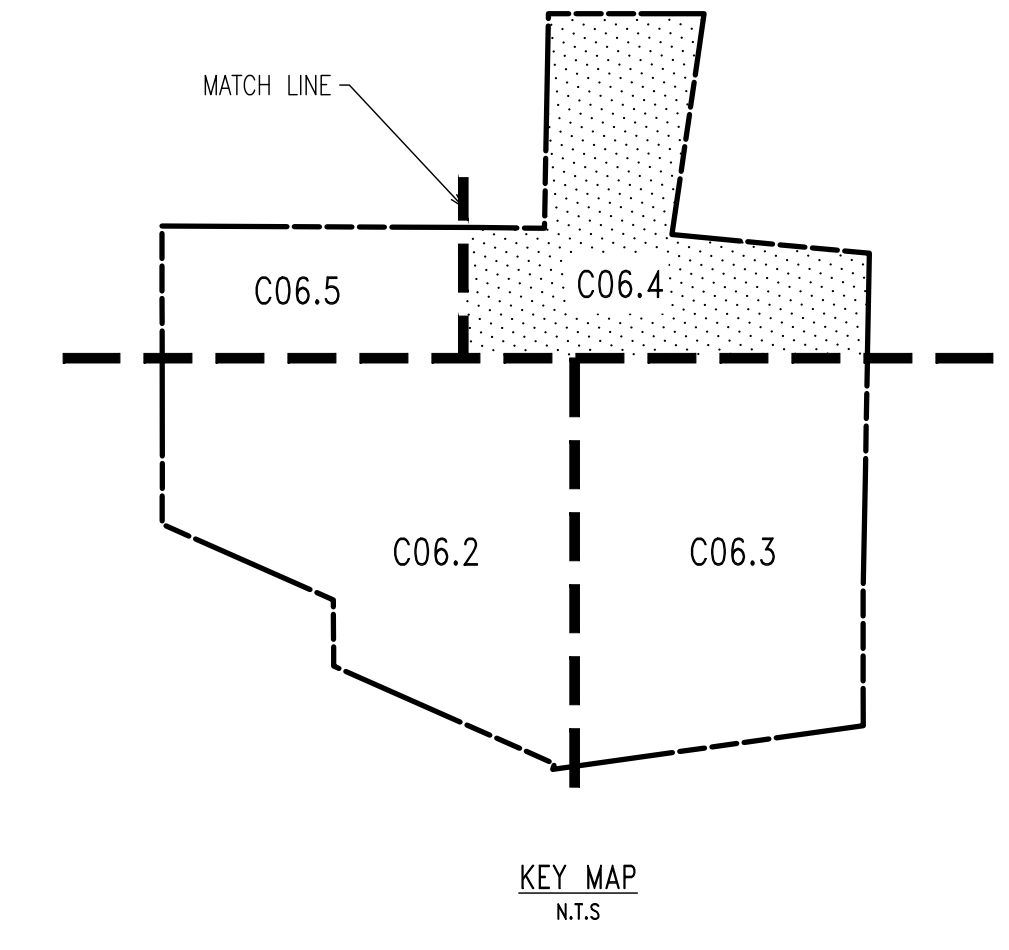
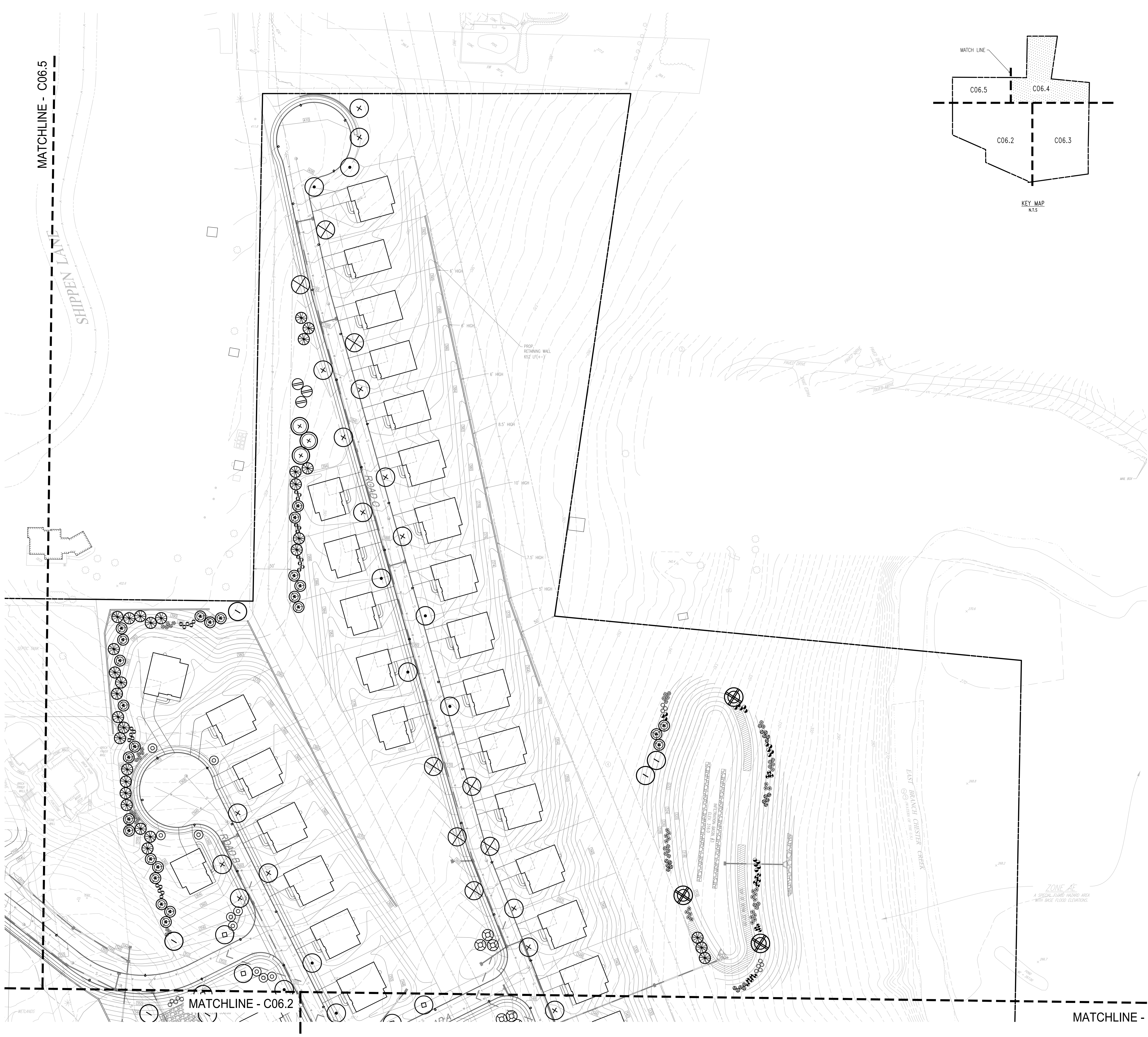
NO.	REV.	DATE	DESCRIPTION
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CONDITIONAL USE  
**LANDSCAPE PLAN**  
CLIENT: FOX CLEARING, LLC  
PROJECT: STOKES PROPERTY  
LOCATION: 1013 SHILOH ROAD  
WESTSTOWN TWP., CHESTER COUNTY, PA



**LANDSCAPE PLAN**  
SCALE: 1"=50'  
GRAPHIC SCALE  
1 inch = 50 feet

DATE:	04/14/23
SCALE:	1"=50'
DRAWN BY:	JPL
CHECKED BY:	PJS
PROJECT NO.:	3868
CAD FILE:	20230313_STOKES_TWP.dwg
PLOTTED:	04/14/23
DRAWING NO.:	C06.3
SHEET:	25 OF 37



- SITE PLAN NOTES:**
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  6. CONTRACTOR SHALL BE RESPONSIBLE FOR DISPOSING OF ALL DEBRIS OFF-SITE, CLEAN-UP OF ALL PAVED AREAS (ROADWAYS, SIDEWALKS, ETC.); AND RESTORATION OF ALL DISTURBED LAWN AREAS.
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Civil Engineering  
Land Planning  
Environmental  
www.DLHowell.com

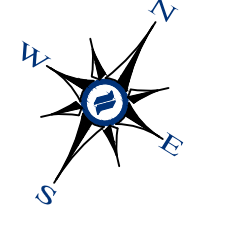
1250 Wrights Lane  
West Chester, PA 19380  
Phone: (610) 918-9002  
Fax: (610) 918-9003



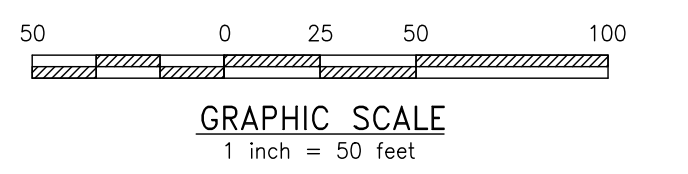
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CONDITIONAL USE  
**LANDSCAPE PLAN**  
CLIENT: FOX CLEARING, LLC  
PROJECT: STOKES PROPERTY  
LOCATION: 1013 SHILOH ROAD  
WESTTOWN TWP., CHESTER COUNTY, PA



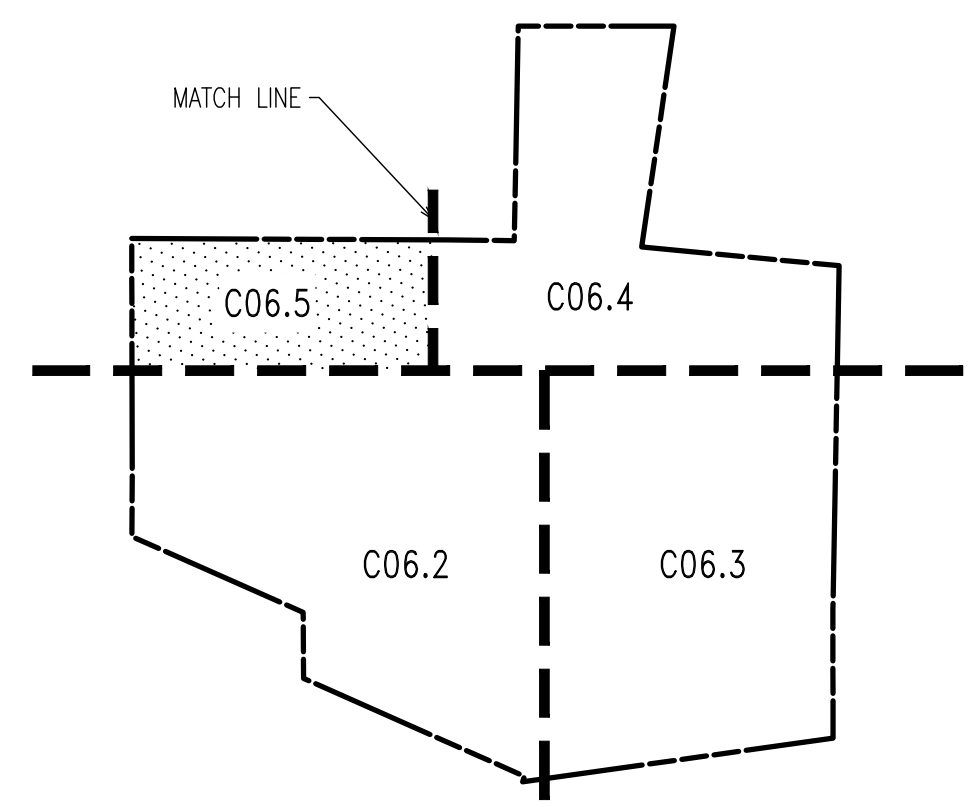
**LANDSCAPE PLAN**  
SCALE: 1"=50'



MATCHLINE - C06.3

MATCHLINE - C06.2

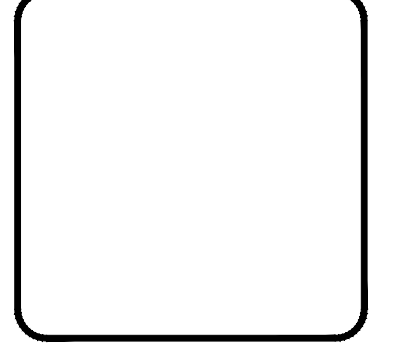
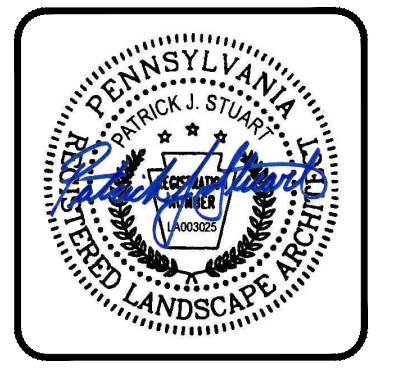
DATE: 04/14/23  
SCALE: 1"=50'  
DESIGN BY: JPL  
CHECKED BY: PJS  
PROJECT NO.: 3868  
CAD FILE: 030313\_STOKES\_TUP.dwg  
PLOTTED: 04/14/23  
DRAWING NO.: C06.4  
SHEET: 26 OF 37



KEY MAP  
N.T.S.



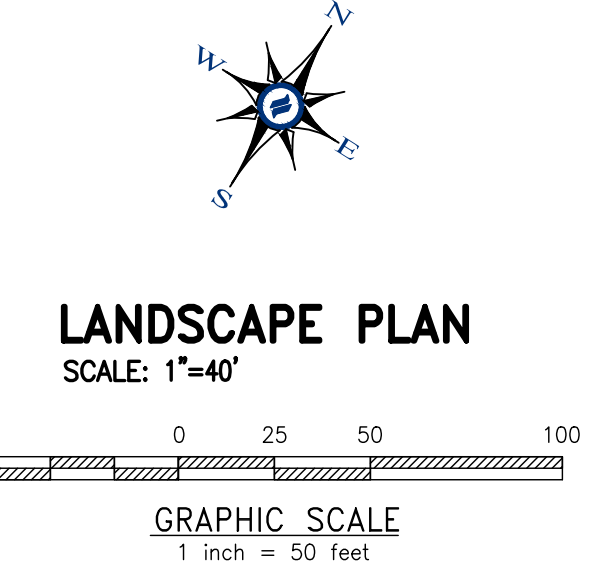
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CONDITIONAL USE  
LANDSCAPE PLAN  
CLIENT: FOX CLEARING, LLC  
PROJECT: STOKES PROPERTY  
LOCATION: 101.3 SHILOH ROAD  
WESTTOWN TWP., CHESTER COUNTY, PA

DATE:	04/14/23
SCALE:	1"=50'
DRAWN BY:	JPL
CHECKED BY:	PJS
PROJECT NO.:	3868
CAD FILE:	20230415_STOKES_LRP.dwg
PLOTTED:	04/14/23
DRAWING NO.:	C06.5
SHEET:	27 OF 37







**SITE PLAN NOTES:**

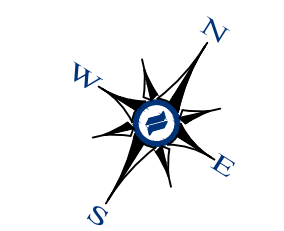
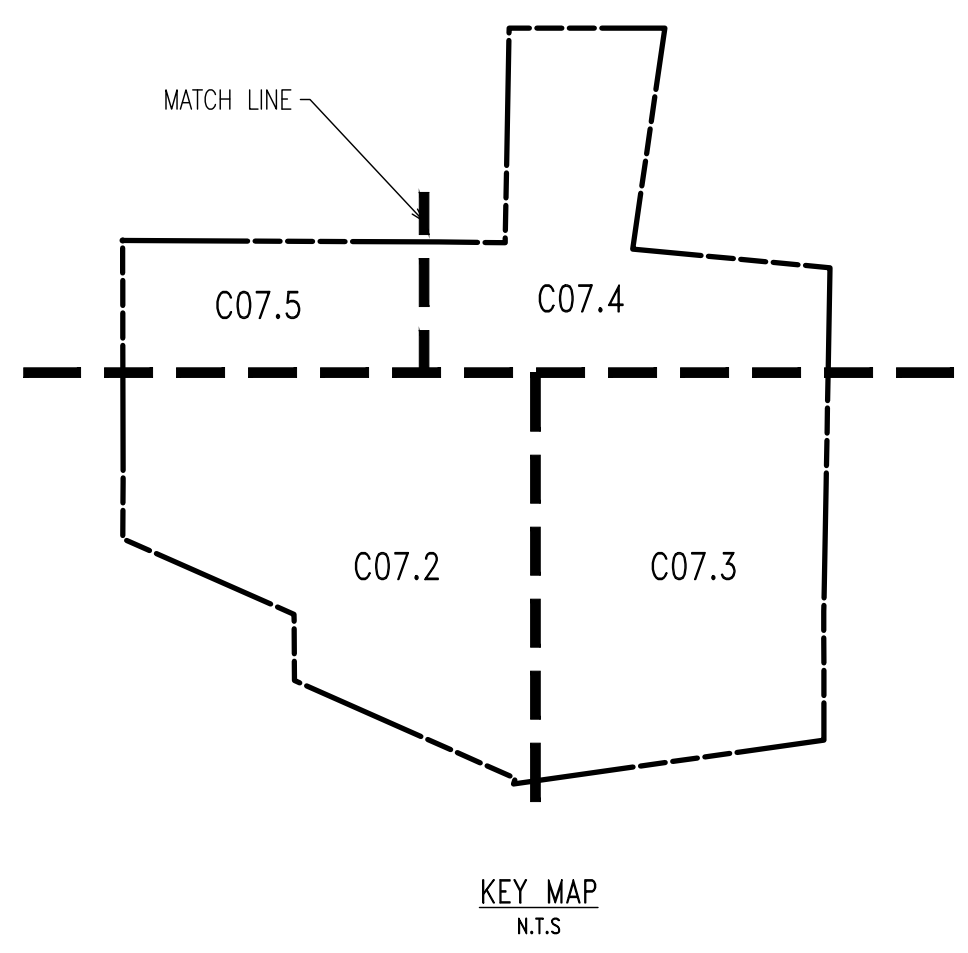
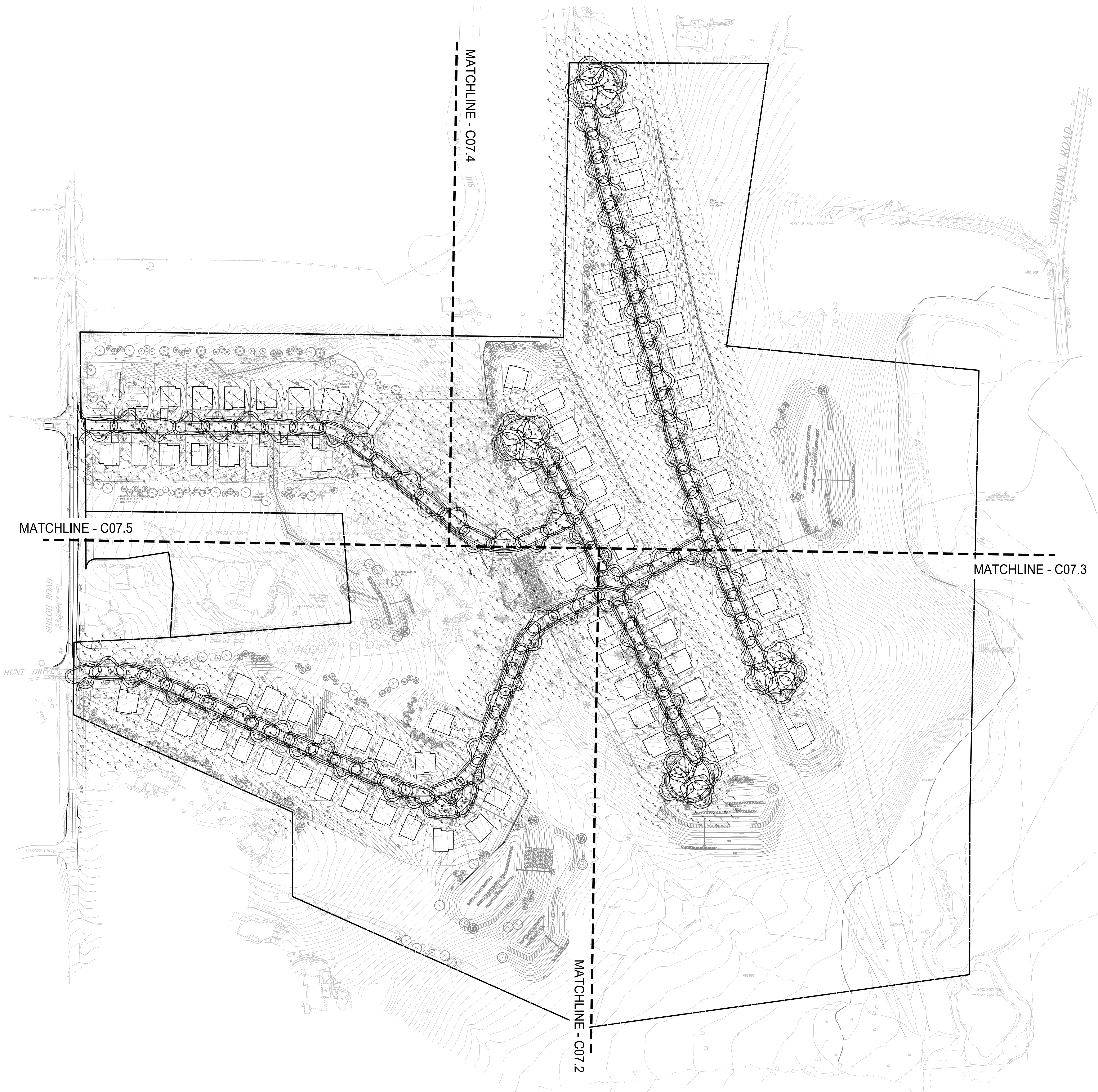
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**SPEC NOTES:**

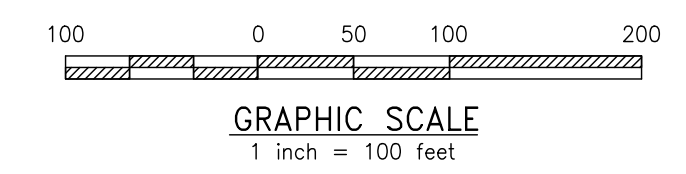
1. POST LIGHT TO BE INSTALLED ON MATCHING FINISH POLE.
2. FINISH/COLOR: BLACK
3. MOUNTING HEIGHT: 16'
4. SEE PLANS/SCHEDULE FOR DISTRIBUTION TYPE.
5. WATTAGE TO BE SELECTED BY CONTRACTOR.

**CONTRACTOR NOTES:**

1. GENERAL CONTRACTOR TO COORDINATE AND PROVIDE CONDUIT PER LIGHTING SHOWN.
2. CONTRACTOR TO PROVIDE LIGHTING SUBMITTAL FOR FINAL APPROVAL BY OWNER AND LANDSCAPE ARCHITECT.
3. REFER TO MANUFACTURER FOR INSTALLATION INSTRUCTIONS.



**OVERALL LANDSCAPE PLAN**  
SCALE: 1"=100'



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CONDITIONAL USE  
**OVERALL LIGHTING PLAN**

CLIENT: FOX CLEARING, LLC  
PROJECT: STOKES PROPERTY  
LOCATION: 101.3 SHILOH ROAD  
WESTTOWN TWP., CHESTER COUNTY, PA

DATE:	04/14/23
SCALE:	1"=100'
DRAWN BY:	JPL
CHECKED BY:	PJS
PROJECT NO.:	3868
CAD FILE:	20230413_STOKES_TLP.dwg
PLOTTED:	04/14/23
DRAWING NO.:	C07.1
SHEET:	29 of 37



MATCHLINE - C07.5

MATCHLINE - C07.4

SHILOH ROAD  
(R.E. 10/21/18, 2/20/19)

HUNT DRIVE

KILDUFF CIRCLE

**SITE PLAN NOTES:**

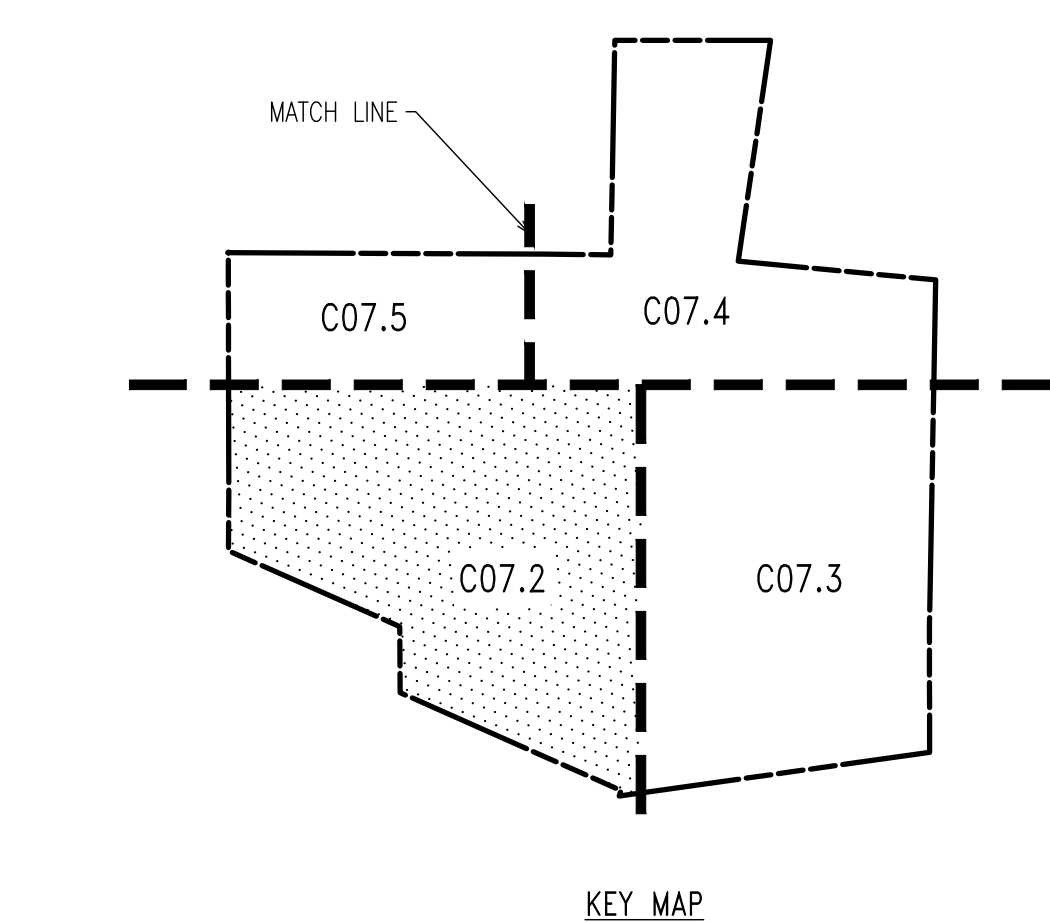
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**SPEC NOTES:**

1. POST LIGHT TO BE INSTALLED ON MATCHING FINISH POLE.
2. FINISH/COLOR: BLACK
3. MOUNTING HEIGHT: 16'
4. SEE PLANSCHEDULE FOR DISTRIBUTION TYPE
5. WATTAGE TO BE SELECTED BY CONTRACTOR.

**CONTRACTOR NOTES:**

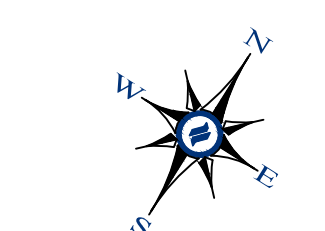
1. GENERAL CONTRACTOR TO COORDINATE AND PROVIDE CONDUIT PER LIGHTING SHOWN.
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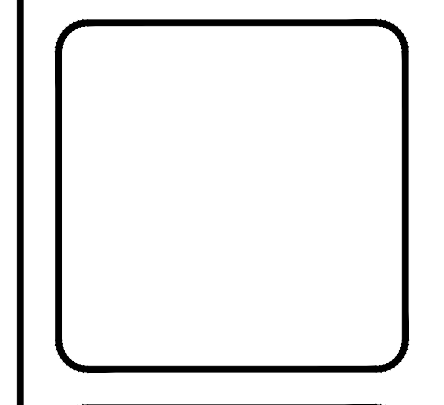
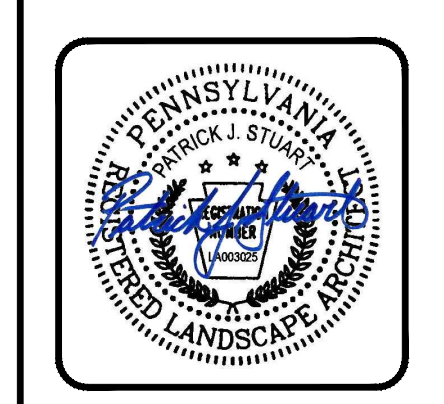
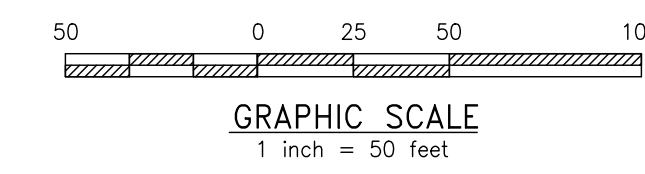
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⊙	A2	16	Lumenpulse	ALG-120/277-CSL-M80-30K-CRI 80-4	Allegra	1	6176	0.95	64

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
ROAD A	⊗	2.2 fc	4.4 fc	0.8 fc	5.5:1	2.8:1
ROAD A - ROUNDABOUT	⊗	1.5 fc	3.6 fc	0.5 fc	7.2:1	3.0:1
ROAD B	⊗	1.7 fc	4.1 fc	0.7 fc	5.9:1	2.4:1
ROAD C	⊗	2.0 fc	4.7 fc	0.5 fc	9.4:1	4.0:1
ROAD D	⊗	1.9 fc	4.5 fc	0.5 fc	9.0:1	3.8:1
ROAD E	⊗	1.7 fc	4.2 fc	0.6 fc	7.0:1	2.8:1
AREA	+	0.1 fc	4.7 fc	0.0 fc	N/A	N/A

**Note**  
 1. MOUNTING HEIGHT AT 16'  
 2. CALCULATIONS TAKEN AT GRADE  
 3. CALCULATIONS ARE ESTIMATIONS BASED ON THE INFORMATION PROVIDED AND MAY VARY WITH ACTUAL CONDITIONS



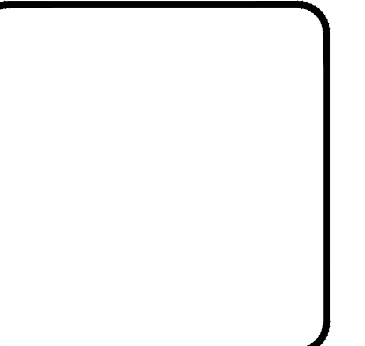
**LANDSCAPE PLAN**  
 SCALE: 1"=50'



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CONDITIONAL USE  
**LIGHTING PLAN**  
 CLIENT: FOX CLEARING, LLC  
 PROJECT: STOKES PROPERTY  
 LOCATION: 1013 SHILOH ROAD  
 WESTTOWN TWP., CHESTER COUNTY, PA

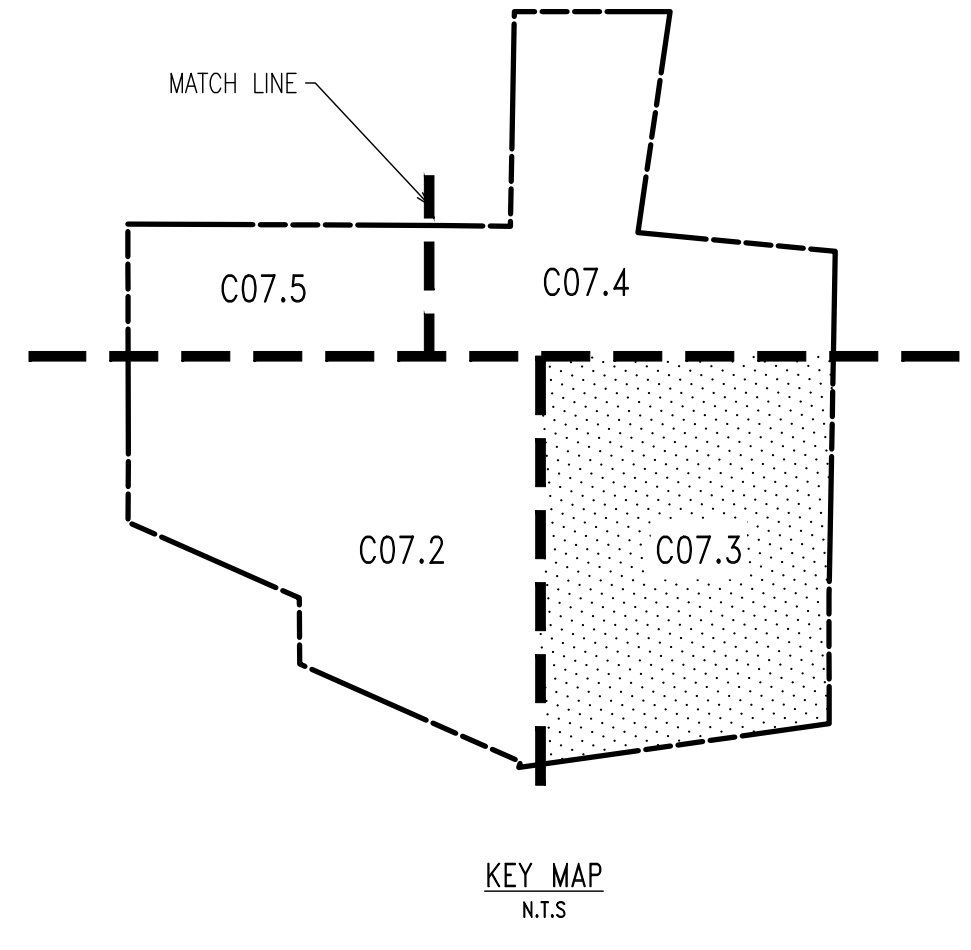
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 SCALE: 1"=50'  
 DRAWN BY: JPL  
 CHECKED BY: PJS  
 PROJECT NO.: 3868  
 CAD FILE: 20230315\_STOKES\_TLP.dwg  
 PLOTTED: 04/14/23  
 DRAWING NO.: C07.2  
 SHEET 30 OF 37



REV.	DATE	DESCRIPTION
1		
2		
3		
4		
5		
6		
7		

CONDITIONAL USE  
**LIGHTING PLAN**  
CLIENT: FOX CLEARING, LLC  
PROJECT: STOKES PROPERTY  
LOCATION: 101.3 SHILOH ROAD  
WESTTOWN TWP., CHESTER COUNTY, PA

DATE: 04/14/23  
SCALE: 1"=50'  
DRAWN BY: JPL  
CHECKED BY: PJS  
PROJECT NO.: 3868  
CAD FILE: 0030313\_STOKES\_TLP.dwg  
PLOTTED: 04/14/23  
DRAWING NO.: C07.3  
SHEET 31 OF 37



MATCHLINE - C07.4

MATCHLINE - C07.2

**SITE PLAN NOTES:**

- ALL LINES AND GRADE WORK NOT PRESENTLY ESTABLISHED AT THE SITE SHALL BE LAID OUT BY A REGISTERED LAND SURVEYOR OR PROFESSIONAL CIVIL ENGINEER EMPLOYED BY THE CONTRACTOR IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
- THIS PLAN TO BE USED FOR LANDSCAPING AND SITE IMPROVEMENT PURPOSES ONLY.
- PLANS CREATED FROM DRAWINGS FROM DL HOWELL ENGINEERING DATED, 04/12/2023.
- LOCATION OF ALL UNDERGROUND UTILITIES SHALL BE VERIFIED AND MARKED IN THE FIELD PRIOR TO ANY DIGGING OPERATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING EXISTING TREES AND PLANT MATERIAL WITHIN THE AREA OF PROPOSED IMPROVEMENTS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR DISPOSING OF ALL DEBRIS OFF-SITE, CLEAN-UP OF ALL PAVED AREAS (ROADWAYS, SIDEWALKS, ETC.), AND RESTORATION OF ALL DISTURBED LAWN AREAS.
- CONTRACTOR SHALL BE RESPONSIBLE TO REPAIR ANY DAMAGE TO UNDERGROUND UTILITIES DAMAGED.
- CONTRACTOR SHALL PROVIDE SCREENED PLANTING SOIL WHERE PLANTING IS TO OCCUR. 36" DEPTH 6" DEPTH AT LAWN AREAS.
- FOLLOWING COMPLETION OF ALL PLANTING INSTALLATION WORK, THE CONTRACTOR SHALL BE REQUIRED TO RESTORE ALL DISTURBED LAWN AREAS.
- NO TREE SHALL BE PLANTED CLOSER THAN 10 FEET FROM AN UNDERGROUND UTILITY.
- ALL LINES ARE PARALLEL OR PERPENDICULAR UNLESS SHOWN OTHERWISE.
- VERIFY LAYOUT OF ALL PROPOSED WORK TO EXISTING CONDITIONS. REPORT DISCREPANCIES BEFORE ANY CLEARING OR EXCAVATION IS DONE.
- PROVIDE STAKED LAYOUT ON SITE FOR OWNER AND LANDSCAPE ARCHITECT'S REVIEW PRIOR TO COMMENCING WORK.
- ALL DIMENSIONS SHOWN ARE TO FACE OF MATERIALS, UNLESS SHOWN OTHERWISE.
- PLEASE NOTE, CLIENT DID NOT RETAIN STUART AND ASSOCIATES, LLC, TO PROVIDE LONG TERM MAINTENANCE SPECIFICATIONS FOR THE LANDSCAPE MATERIAL.
- CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING PA ONE CALL AND LOCATING ALL UNDERGROUND UTILITIES BEFORE ANY DIGGING OR PLANT REMOVAL OCCURS.
- CONTRACTOR SHALL INSTALL SILT FENCE IN ANY AREAS WHERE SOIL MAY RUNOFF INTO PARKING AREAS OR INTO EXISTING INLETS. FOLLOWING THE COMPLETION, THE EXISTING VEGETATION WILL BE INSPECTED FOR HEALTH AND QUALITY, AND IF NOT DEEMED IN GOOD CONDITION, REPLACED WITH THE EQUIVALENT COMPENSATORY PLANTINGS.
- V.I.F. = VERIFY IN FIELD.

**SPEC NOTES:**

- POST LIGHT TO BE INSTALLED ON MATCHING FINISH POLE.
- FINISH/COLOR: BLACK
- MOUNTING HEIGHT: 16'
- SEE PLANSCHEDULE FOR DISTRIBUTION TYPE.
- WATTAGE TO BE SELECTED BY CONTRACTOR.

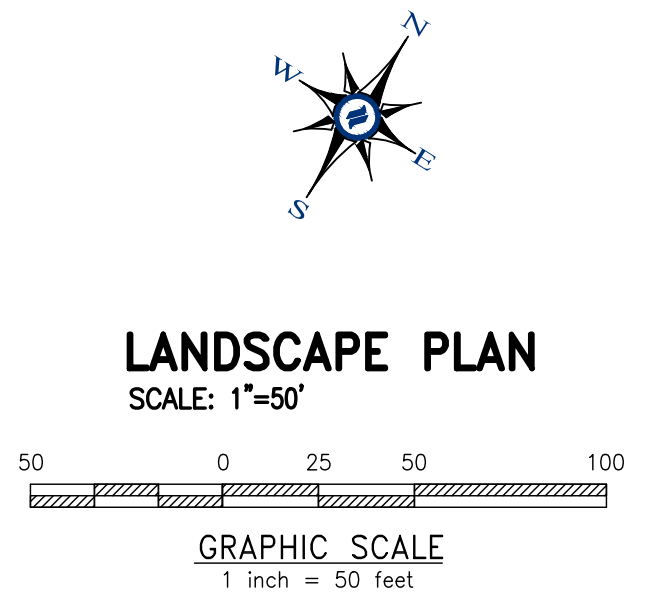
**CONTRACTOR NOTES:**

- GENERAL CONTRACTOR TO COORDINATE AND PROVIDE CONDUIT PER LIGHTING SHOWN.
- CONTRACTOR TO PROVIDE LIGHTING SUBMITTAL FOR FINAL APPROVAL BY OWNER AND LANDSCAPE ARCHITECT.
- REFER TO MANUFACTURER FOR INSTALLATION INSTRUCTIONS.

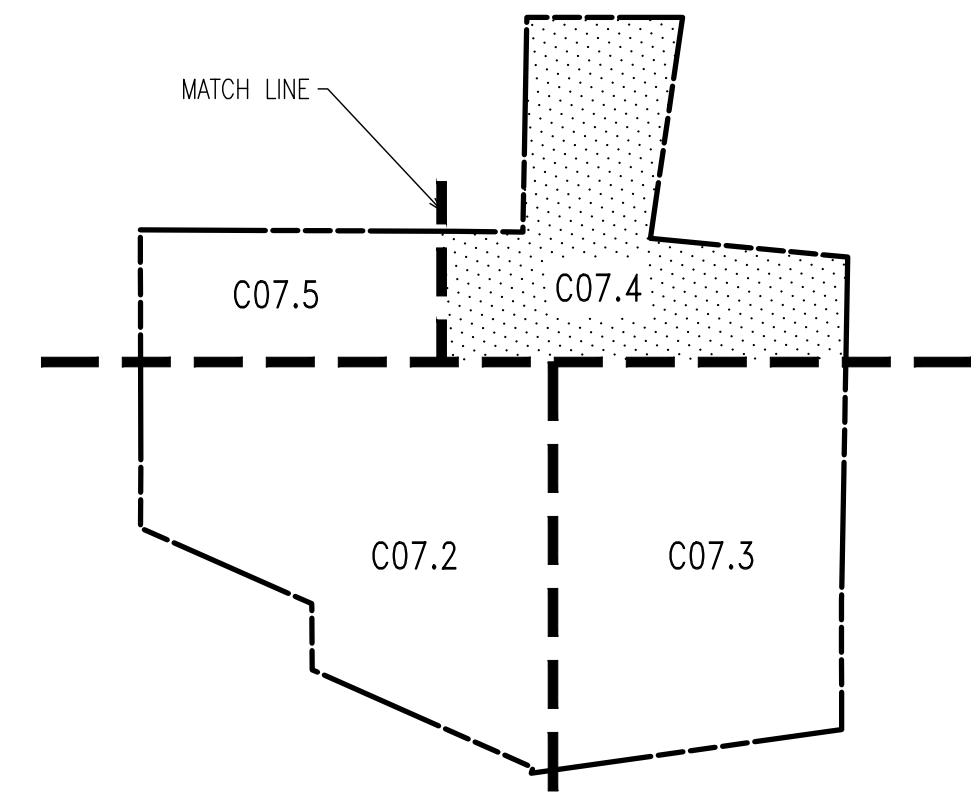
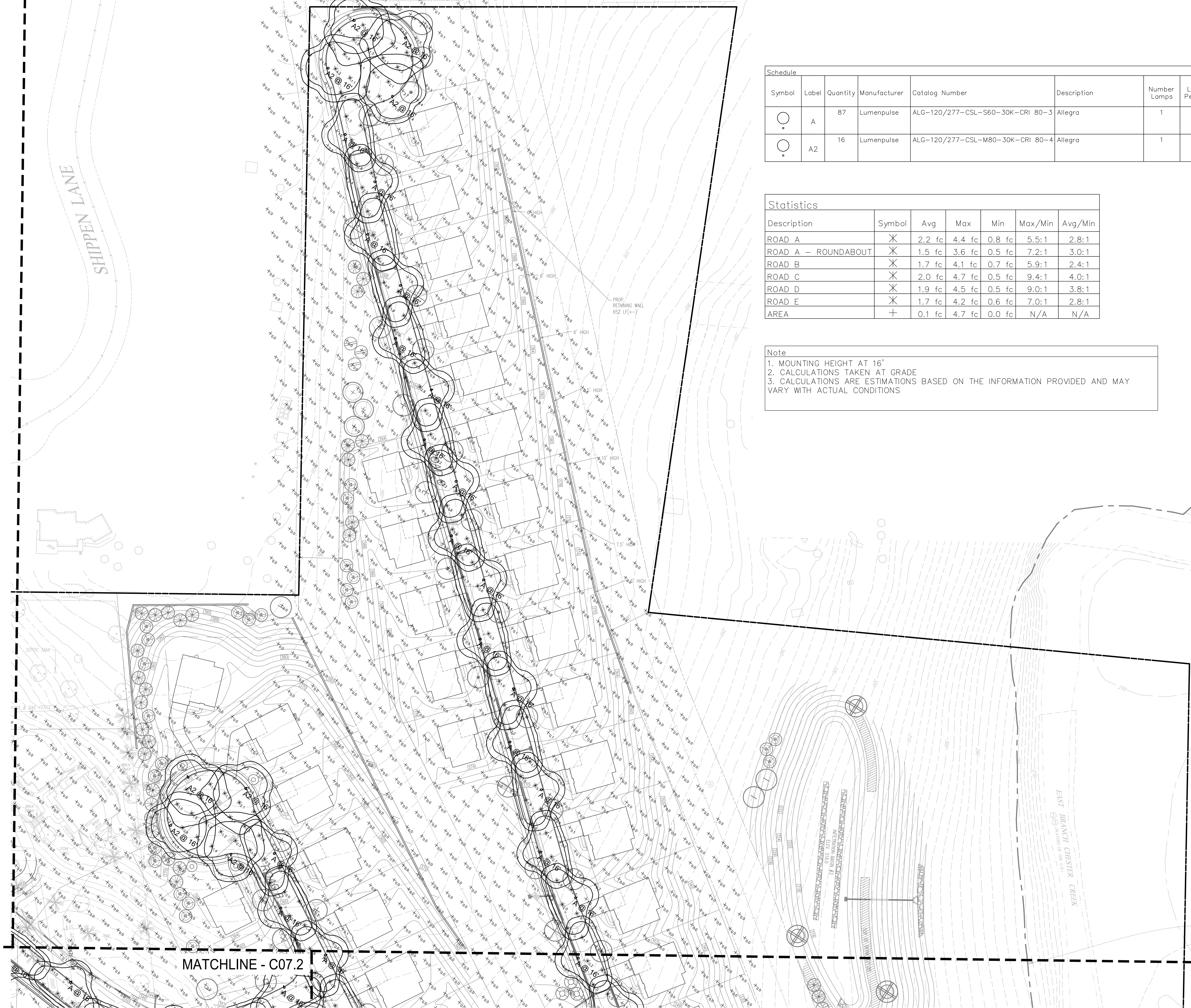
Symbol	Label	Quantity	Manufacturer	Catalog Number	Description	Number Lamps	Lumens Per Lamp	Light Loss Factor	Wattage
○	A	87	Lumenpulse	ALG-120/277-CSL-S60-30K-CRI 80-3	Allegra	1	5068	0.95	55
●	A2	16	Lumenpulse	ALG-120/277-CSL-M80-30K-CRI 80-4	Allegra	1	6176	0.95	64

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
ROAD A	✕	2.2 fc	4.4 fc	0.8 fc	5.5:1	2.8:1
ROAD A - ROUNDABOUT	✕	1.5 fc	3.6 fc	0.5 fc	7.2:1	3.0:1
ROAD B	✕	1.7 fc	4.1 fc	0.7 fc	5.9:1	2.4:1
ROAD C	✕	2.0 fc	4.7 fc	0.5 fc	9.4:1	4.0:1
ROAD D	✕	1.9 fc	4.5 fc	0.5 fc	9.0:1	3.8:1
ROAD E	✕	1.7 fc	4.2 fc	0.6 fc	7.0:1	2.8:1
AREA	+	0.1 fc	4.7 fc	0.0 fc	N/A	N/A

Note  
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2. CALCULATIONS TAKEN AT GRADE  
3. CALCULATIONS ARE ESTIMATIONS BASED ON THE INFORMATION PROVIDED AND MAY VARY WITH ACTUAL CONDITIONS



MATCHLINE - C07.5

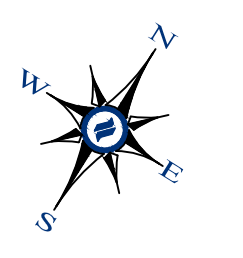


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 3. CALCULATIONS ARE ESTIMATIONS BASED ON THE INFORMATION PROVIDED AND MAY VARY WITH ACTUAL CONDITIONS

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  - THIS PLAN TO BE USED FOR LANDSCAPING AND SITE IMPROVEMENT PURPOSES ONLY.
  - PLANS CREATED FROM DRAWINGS FROM DL HOWELL ENGINEERING DATED, 04/12/2023.
  - LOCATION OF ALL UNDERGROUND UTILITIES SHALL BE VERIFIED AND MARKED IN THE FIELD, PRIOR TO ANY DIGGING OPERATIONS.
  - CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING EXISTING TREES AND PLANT MATERIAL WITHIN THE AREA OF PROPOSED IMPROVEMENTS.
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**LANDSCAPE PLAN**  
 SCALE: 1"=50'  
 0 25 50 100  
 GRAPHIC SCALE  
 1 inch = 50 feet

MATCHLINE - C07.3

MATCHLINE - C07.2

1250 Wrights Lane  
 West Chester, PA 19380  
 Phone: (610) 918-9002  
 Fax: (610) 918-9003



NO.	DESCRIPTION	DATE

CONDITIONAL USE  
**LIGHTING PLAN**  
 CLIENT: FOX CLEARING, LLC  
 PROJECT: STOKES PROPERTY  
 LOCATION: 1013 SHILOH ROAD  
 WESTMIN TWP., CHESTER COUNTY, PA

DATE: 04/14/23  
 SCALE: 1"=50'  
 DESIGN BY: JPL  
 CHECKED BY: PJS  
 PROJECT NO.: 3868  
 CAD FILE: 20230313\_STOKES\_TWP.dwg  
 PLOTTED: 04/14/23  
 DRAWING NO.: C07.4  
 SHEET 32 OF 37



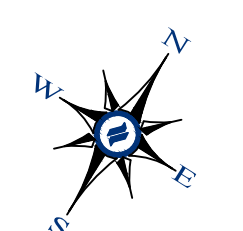
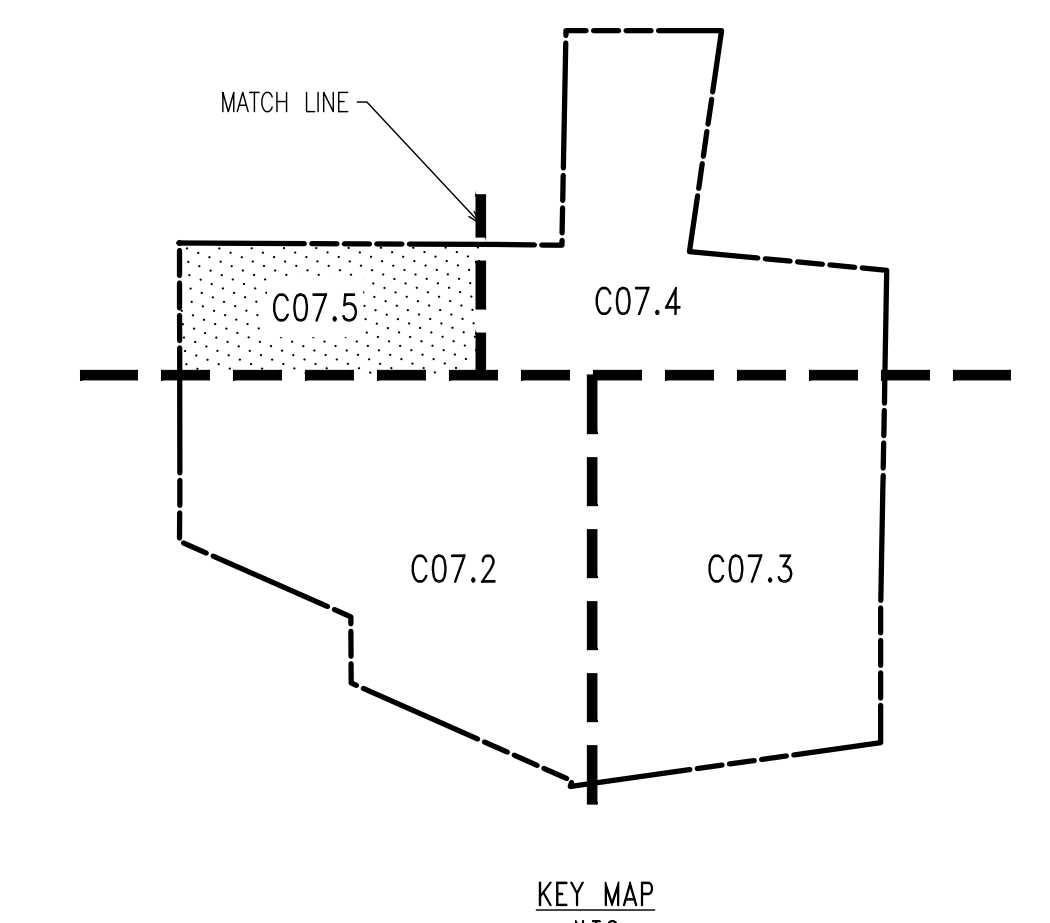
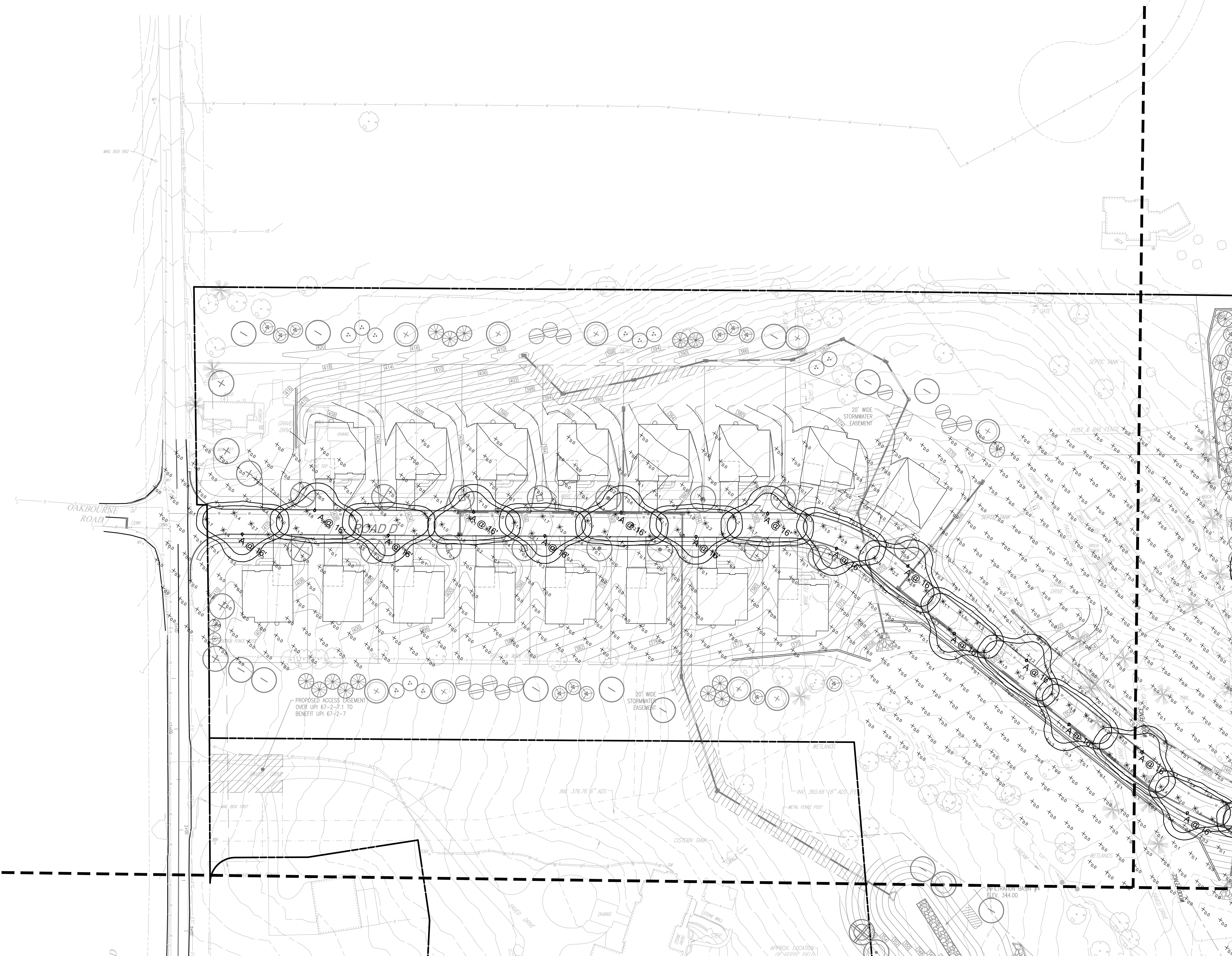
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**LANDSCAPE PLAN**  
SCALE: 1"=40'  
GRAPHIC SCALE  
1 inch = 30 feet

NO.	REV.	DATE	DESCRIPTION

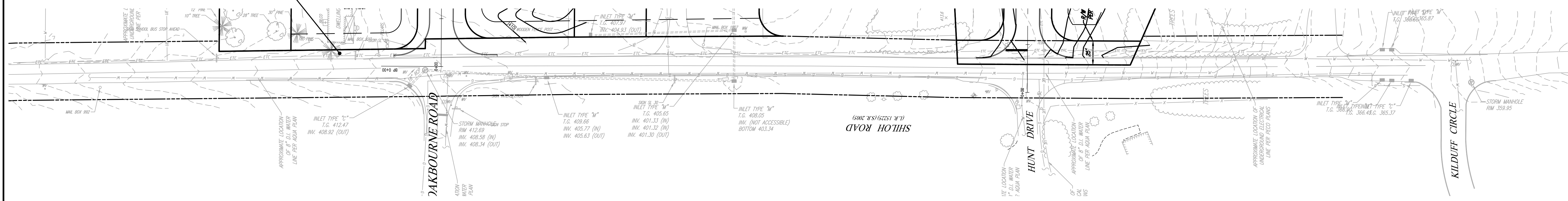
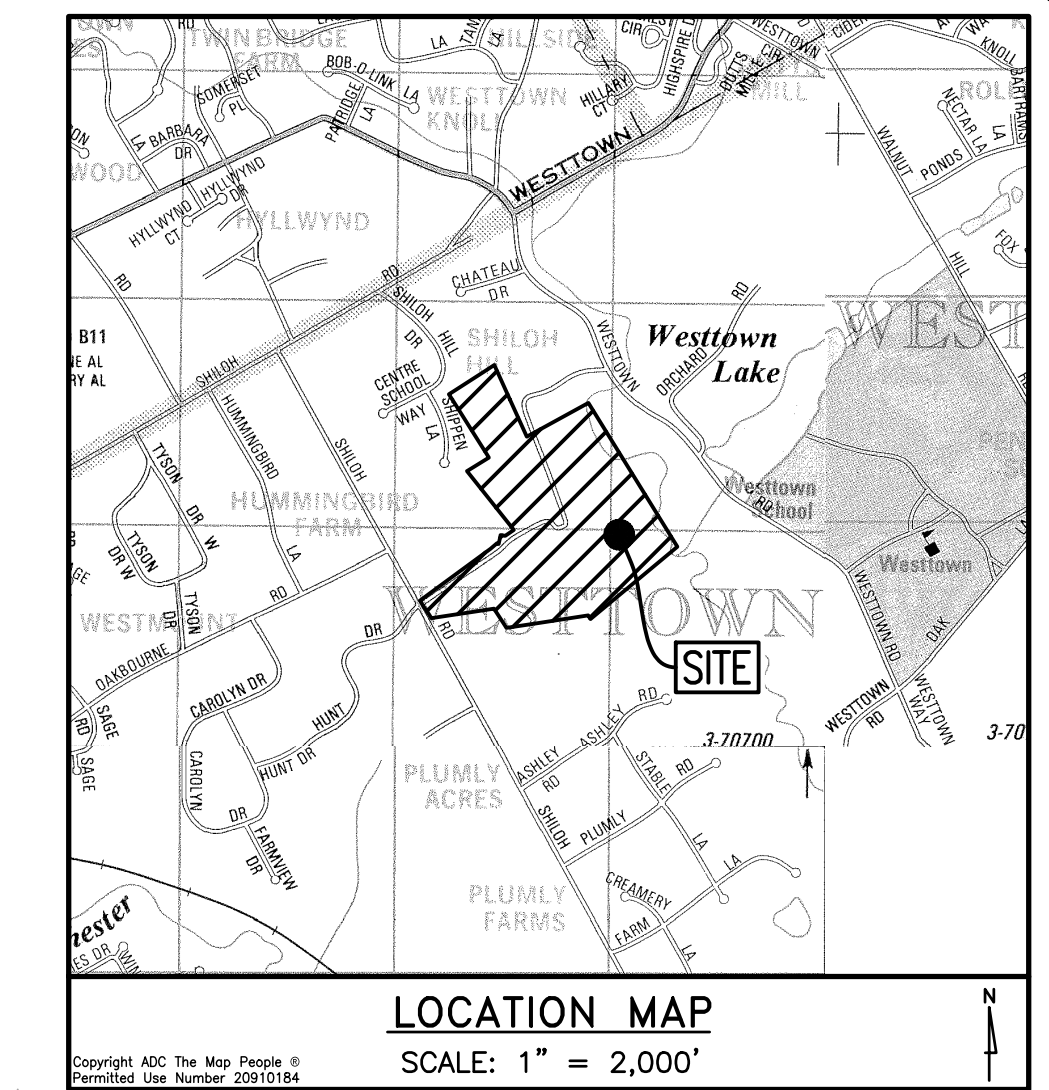
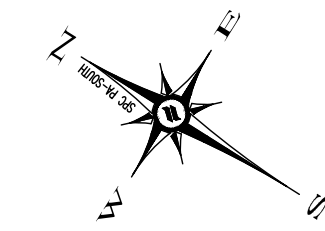
CONDITIONAL USE  
**LIGHTING PLAN**  
CLIENT: FOX CLEARING, LLC  
PROJECT: STOKES PROPERTY  
LOCATION: 1013 SHILOH ROAD  
WESTTOWN TWP., CHESTER COUNTY, PA

DATE: 04/14/23  
SCALE: 1"=50'  
DRAWN BY: JPL  
CHECKED BY: PJS  
PROJECT NO.: 3868  
CADD FILE: 3868\3868\_1013\_STOKES\_LRP.dwg  
PLOTTED: 04/14/23  
DRAWING NO.: **C07.5**  
SHEET 33 OF 37





GENERAL NOTE:  
TOPOGRAPHY AND PHYSICAL IMPROVEMENTS SHOWN ALONG SHILOH ROAD AND LITTLE SHILOH ROAD ARE FROM FIELD SURVEY BY HOWELL KLINE SURVEYING, LLC, PERFORMED JULY 28TH AND 29TH 2021, & JANUARY 2023.

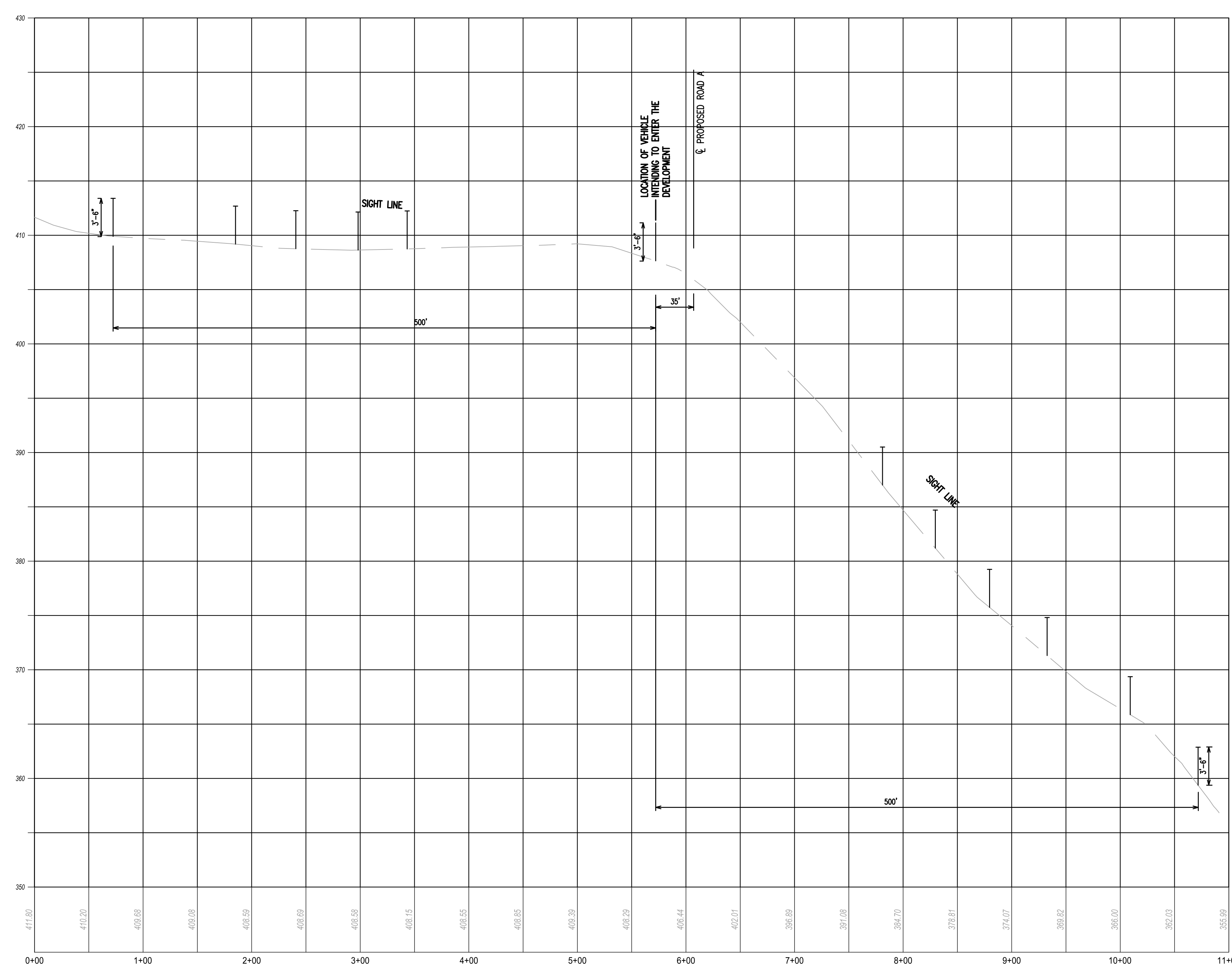
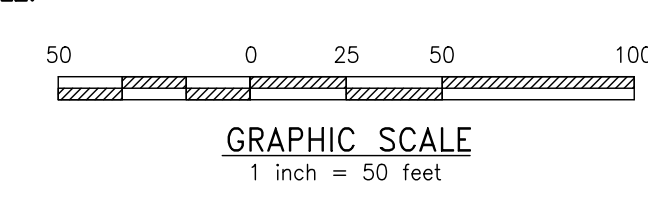


**Exiting Vehicle Safe Stopping Sight Distances**  
Posted Speed Limit on Shiloh Road is 30 mph

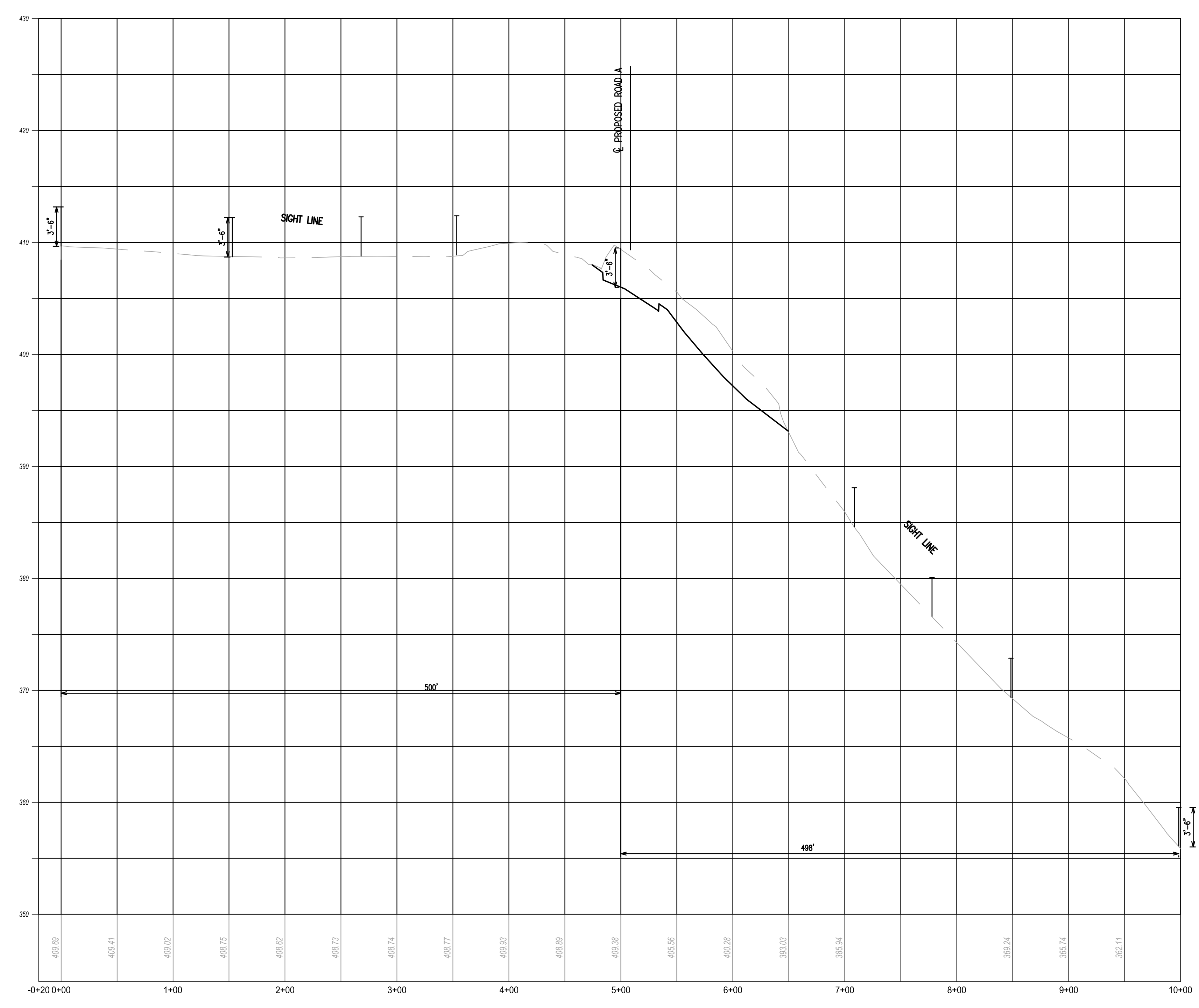
Direction	Grade of Approaching Vehicle	Speed	Available SSSD	Required SSSD	PennDOT Desirable SSSD**
Looking Right	-3%	30	+500'	204'	273'
Looking Right	-3%	40 (10 mph over)	+500'	331'	460'
Looking Left	+9%	30	500	178'	360'
Looking Left	+9%	40 (10 mph over)	+500'	277'	538'

\*\*PennDOT desirable sight distance values are provided for informational purposes only, and do not reflect a requirement per the Township's SALDO. Per Easttown Township SALDO Section 149-908.C. "Stopping sight distance at all intersections shall be in accordance with PennDOT standards." The "Required SSSD" noted on the table is the PennDOT Safe Stopping Sight Distance from PennDOT Chapter 441.8.(h) and is reflective of the SALDO requirement.

**SHILOH ROAD SIGHT DISTANCE ANALYSIS**  
SCALE: 1/50\_XREF



**SHILOH ROAD PROFILE**  
HORIZ SCALE: 1"=50'  
VERT SCALE: 1"=5'

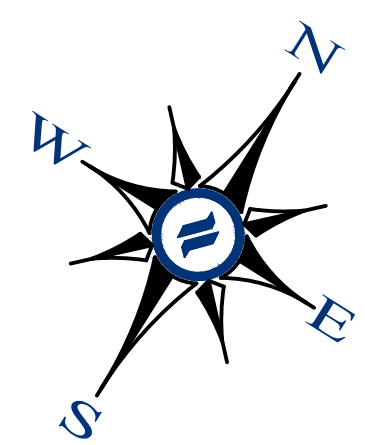


**SIGHT DISTANCE ROAD A @ SHILOH PROFILE**  
HORIZ SCALE: 1"=50'  
VERT SCALE: 1"=5'

NO.	DATE	DESCRIPTION
8		
7		
6		
5		
4		
3		
2		
1		

CONDITIONAL USE  
**SHILOH ROAD SIGHT DISTANCE ANALYSIS**  
OWNER: FOX CLEARING, LLC  
PREPARED BY: STOKES ESTATE  
LOCATION: 1013 SHILOH ROAD  
WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE:	04/14/23
SCALE:	1"=60'
DRAWN BY:	ADM
CHECKED BY:	DWG
PROJECT NO.:	3868
CAD FILE:	3868 Plots
PLOTTED:	04/14/23
DRAWING NO.:	SD-1.1
SHEET:	35 of 37



**DLHowell**  
Civil Engineering  
Land Planning  
Environmental  
www.DLHowell.com

1250 Wrights Lane  
West Chester, PA 19380  
Phone: (610) 918-9002  
Fax: (610) 918-9003

**GENERAL NOTES:**

1. THE PURPOSE OF THIS PLAN IS TO DEPICT A POSSIBLE ALTERNATIVE PLAN IN ORDER TO SAVE THE HISTORIC HOME. THE TOTAL PROPOSED LOTS WOULD STILL BE 65 TOTAL LOTS INCLUDING THE EXISTING HISTORIC HOME.

**RESIDENTIAL DEVELOPMENT**

ART. VI - R1 RESIDENTIAL DISTRICT  
SECT. 170-501.C. CONDITIONAL USES  
(3) RESIDENTIAL DEVELOPMENT (FLEXIBLE DEVELOPMENT PROCEDURE - ARTICLE IX)  
ART. IX - FLEXIBLE DEVELOPMENT PROCEDURE  
SECT. 170-901: PERMITTED USES  
A. SINGLE FAMILY DETACHED DWELLINGS  
SECT. 170-904: DENSITY STANDARDS  
BASE DENSITY = 1.1 D.U./ACRE OF TRACT AREA (SEE TRACT AREA CALCULATION)  
BONUS DENSITY = 1.5 D.U./ACRE OF TRACT AREA (MAXIMUM ACHIEVABLE)

AREA AND BULK REGULATIONS	REQUIRED	PROPOSED
MAX. NET RESIDENTIAL DENSITY	4 UNITS/ACRE	3.30 UNITS/ACRE
MIN. DISTANCE FROM CURB	30 FT.	30 FT.
MIN. DISTANCE BETWEEN BUILDINGS	30 FT.	30 FT.
MAX. BUILDING HEIGHT	3 STORES/38 FT.	<3 STORES/38 FT.
SETBACK FROM TRACT BOUNDARY	50'	50'

**TRACT AREA CALCULATION**

TRACT AREA (GROSS) = 3,523,402 SF. / 80,886 ACS (4)  
EX. LEGAL R/W = 4,663 SF.  
EX. UTILITY EASEMENTS = 280,525 SF.  
AREA EQUAL TO 75% OF:  
FLOODPLAIN = - 144,110 S.F.  
PROHIBITIVE SLOPES = - 70,941 S.F.  
WETLANDS = - 81,377 S.F.  
AREA EQUAL TO 25% OF SEASONALLY HIGH WATER TABLE SOILS = - 132,496 S.F.  
TRACT AREA = 2,849,590 S.F. (65,418 AC.)  
BASE DENSITY (1.1 MULTIPLIER) = 71 LOTS

**OPEN SPACE**

MINIMUM OPEN SPACE = 40% GROSS TRACT AREA  
REQUIRED GROSS TRACT = 80,886 ACRES  
80,886 ACRES X 40% = 32,354 ACRES  
PROPOSED GROSS OPEN SPACE = 47.85 ACRES (56.16% GROSS TRACT AREA)  
QUALIFYING MIN. REQUIRED OPEN SPACE = 32.69 ACRES (40.41% GROSS TRACT AREA)  
QUALIFYING INCREMENTAL BONUS O.S. = 12.22 ACRES (15.11% GROSS TRACT AREA)  
\*\*SEE TABLE BELOW FOR INFILTRATION\*\*

**DENSITY CALCULATION**

BASE DENSITY: 1.1 D.U. / TRACT AREA  
BONUS DENSITY: +0.075 D.U. / 5% OF ADDITIONAL OPEN SPACE = (15.02% EXTRA) = 0.075 \* 3 = 0.225 BONUS  
MAXIMUM DENSITY = 1.1 + 0.225 = 1.325 D.U. \* 65,418 ACS. = 86 LOTS ACHIEVABLE

RESIDENTIAL LOT AREA	25.74 ACRES
PROPOSED LOTS	83
DENSITY	3.20 D.U./AC.
AVERAGE SIZE	0.303 ACRES

- REQUIRED MINIMUM COMMON OPEN SPACE (40% OF THE GROSS TRACT AREA)
- HISTORIC HOME OPEN SPACE PARCEL (INCLUDED AS PART OF THE REQUIRED MINIMUM COMMON OPEN SPACE)
- INCREMENTAL BONUS OPEN SPACE AREA
- NON-QUALIFYING OPEN SPACE (AREAS LESS THAN 75' IN WIDTH & AREAS NOT LESS THAN 0.25 ACRES OF CONTIGUOUS AREA)
- OPEN SPACE AREAS WITHIN FLOODPLAIN, WETLANDS, AND STEEP SLOPES GREATER THAN 25%
- AREAS USED FOR SUBSURFACE INFILTRATION WITH OPEN STORAGE ACCESSORY TO INFILTRATION FACILITIES

Qualifying Base Open Space	Min. Required Common Open Space Area (40%)					TOTAL
	1	2	3	4	5	
Gross Area (Acres)	17.4	6.58	6.5	0.5	2.94	33.02
Area less than 75' in width	0	0	0.31	0	0	0.31
Area less than 1/2 acre	0	0	0	0	0	0
Non-infiltrating SWM Facilities	0	0	0	0	0	0
Pump Station and other miscellaneous impervious	0.02	0	0	0	0	0.02
	17.38	6.58	6.19	0.50	2.94	32.69
						40.41%

Floodplain	Bonus Open Space Area					TOTAL
	1	2	3	4	5	
Area of 25%+ Slopes	2.78	2.28	0	0	0	5.06
Wetland/Waterbodies	1.25	0.57	0.13	0.16	0	2.11
Area of Floodplain, Wetland, Slopes > 25% in Min. Required Common Open Space (Min. 10% allowed)	1.74	0	0.16	0	0	1.90
	5.77	2.85	0.27	0.16	0	9.05
						27.68%

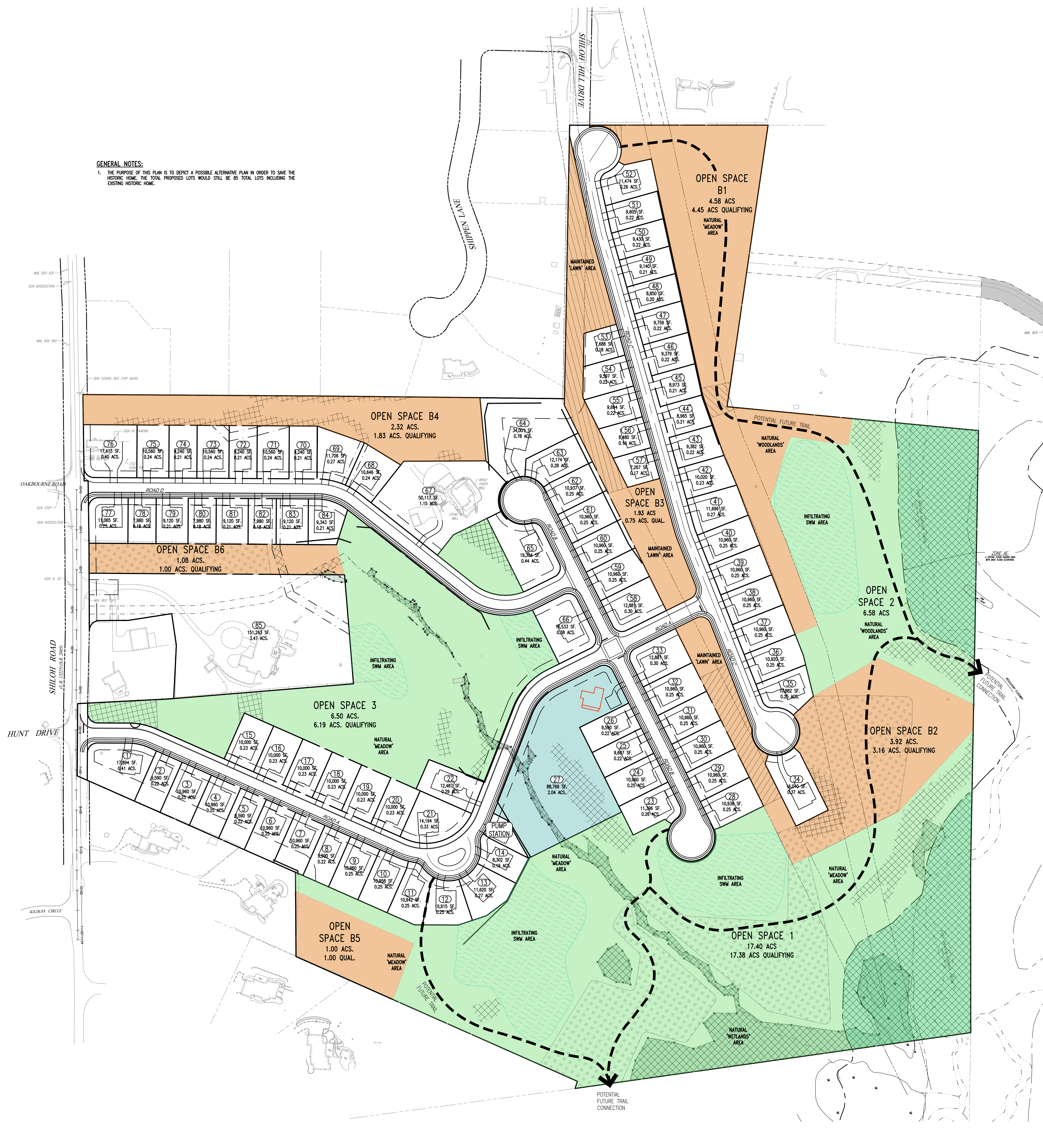
Qualifying Bonus Open Space	Bonus Open Space Area						TOTAL
	B1	B2	B3	B4	B5	B6	
Gross Area (Acres)	4.58	3.92	1.93	2.32	1	1.08	14.83
Area less than 75' in width	0.33	0.49	1.15	0	0	0	1.97
Area less than 1/2 acre	0	0	0	0	0	0	0
Floodplain	0	0	0	0	0	0	0
Area of 25%+ Slopes (including proposed)	0	0.27	0	0.34	0	0	0.61
Wetland/Waterbodies	0	0	0	0	0	0.01	0.01
Impervious Surfaces	0	0	0	0	0	0	0
Stormwater Facilities	0	0	0.35	0	0.07	0.33	0.75
	4.45	3.36	0.78	1.83	1.00	1.22	11.11%

AREA AVAILABLE FOR ACTIVE RECREATION  
NET TRACT AREA = 2,849,590 S.F.  
AREA REQUIRED (10% NET TRACT AREA) X 10% = 284,959 S.F. OR - 6.54 ACRES  
AREA SUITABLE FOR ACTIVE RECREATION = 6.61 ACRES

**ALTERNATIVE SITE PLAN WITH HISTORIC HOME**

SCALE: 1:100\_AREF  
GRAPHIC SCALE  
1" = 100' FEET

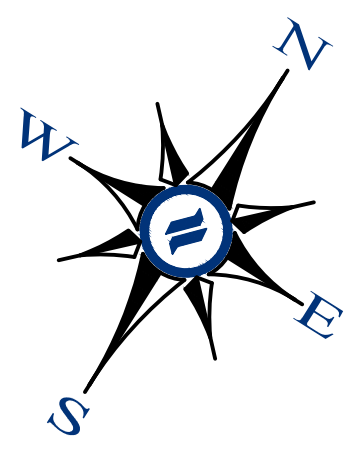
- LEGEND**
- EX. PROPERTY LINE
  - PROP. PROPERTY LINE
  - EX. RIGHT-OF-WAY
  - PROP. RIGHT-OF-WAY
  - EX. MONUMENT
  - PROP. MONUMENT
  - EX. IRON PIPE
  - PROP. IRON PIPE
  - EX. EASEMENT
  - PROP. EASEMENT
  - EX. EXISTING CONTOUR
  - PROP. CONTOUR
  - EX. EXISTING SPOT ELEV.
  - PROP. NEW SPOT ELEV.
  - EX. SOILS TYPE
  - PROP. SOILS TYPE
  - EX. CONC. CURB
  - PROP. CONC. CURB
  - EX. LIGHT POLE
  - PROP. LIGHT POLE
  - EX. FENCE
  - PROP. FENCE
  - EX. SIGN
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  - EX. EXIST. PARKING SPACES
  - PROP. PARKING SPACES
  - EX. TELE. LINE
  - PROP. TELE. LINE
  - EX. ELEC. LINE
  - PROP. ELEC. LINE
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  - PROP. GAS LINE
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  - PROP. GAS VALVE
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  - PROP. STORM INLET ID
  - EX. SEEPAGE BED
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  - EX. SANITARY SEWER LINE
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  - EX. SAN. SEWER LATERAL
  - PROP. SAN. SEWER LATERAL
  - EX. SANITARY MH. ID
  - PROP. SANITARY MH. ID
  - EX. WATER LINE
  - PROP. WATER LINE
  - EX. WATER LATERAL
  - PROP. WATER LATERAL
  - EX. FIRE WATER LINE
  - PROP. FIRE WATER LINE
  - EX. WATER VALVE
  - PROP. WATER VALVE
  - EX. HYDRANT
  - PROP. HYDRANT
  - EX. MANHOLE
  - PROP. MANHOLE
  - ZONE AE FLOODPLAIN
  - 15% - 25% SLOPES
  - 25%+ SLOPES
  - WETLANDS



NO.	DESCRIPTION	DATE
8		
7		
6		
5		
4		
3		
2		
1		

**CONDITIONAL USE**  
**ALTERNATIVE SITE PLAN WITH HISTORIC HOME**  
CLIENT: FOX CLEARING, LLC  
PROJECT: STOKES ESTATE  
LOCATION: 1013 SHILOH ROAD  
WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE: 04/14/23  
SCALE: 1"=100'  
DRAWN BY: ADM  
CHECKED BY: DWG  
PROJECT NO.: 3868  
DATE OF PLAN HISTORY OPERATIONS: 04/14/23  
DRAWING NO.: C01.1A  
SHEET 36 OF 37



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Fax: (610) 918-9003

**GENERAL NOTES:**  
1. THE PURPOSE OF THIS PLAN IS TO DEPICT A POSSIBLE ALTERNATIVE PLAN IN WHICH THERE ARE NO INDIVIDUAL PROPOSED SINGLE-FAMILY LOTS.

**RESIDENTIAL DEVELOPMENT**  
ART. VI - R1 RESIDENTIAL DISTRICT  
SECT. 170-501.C. CONDITIONAL USES  
(2). RESIDENTIAL DEVELOPMENT (FLEXIBLE DEVELOPMENT PROCEDURE - ARTICLE IX)  
ART. IX - FLEXIBLE DEVELOPMENT PROCEDURE  
SECT. 170-903. PERMITTED USES  
A. SINGLE FAMILY DETACHED DWELLINGS  
SECT. 170-904. DENSITY STANDARDS  
BASE DENSITY = 1.1 D.U./ACRE OF TRACT AREA (\*SEE TRACT AREA CALCULATION)  
BONUS DENSITY = 1.5 D.U./ACRE OF TRACT AREA (MAXIMUM ACHIEVABLE)

AREA AND BULK REGULATIONS	REQUIRED	PROPOSED
MAX. NET RESIDENTIAL DENSITY	4 UNITS/ACRE	3.30 UNITS/ACRE
MIN. DISTANCE FROM CURB	30 FT.	30 FT.
MIN. DISTANCE BETWEEN BUILDINGS	30 FT.	30 FT.
MAX. BUILDING HEIGHT	3 STORES/38 FT.	<3 STORES/38 FT.
SETBACK FROM TRACT BOUNDARY	50'	50'

**TRACT AREA CALCULATION**

TRACT AREA (GROSS)	3,523,402 S.F. / 80,886 ACS.(6)
EX. LEGAL R/W	4,683 SF.
EX. UTILITY EASEMENTS	200,825 SF.
AREA EQUAL TO 75% OF:	
FLOODPLAIN	- 144,110 S.F.
PROHIBITIVE SLOPES	- 70,941 S.F.
WETLANDS	- 61,077 S.F.
AREA EQUAL TO 25% OF SEASONALLY HIGH WATER TABLE SOILS	- 132,496 S.F.
TRACT AREA =	2,840,590 S.F. (65,418 AC.)
BASE DENSITY (1.1 MULTIPLIER)=	71 LOTS

**OPEN SPACE**  
MINIMUM OPEN SPACE = 40% GROSS TRACT AREA  
REQUIRED GROSS TRACT = 80,886 ACRES  
80,886 ACRES X 40% = 32,354 ACRES  
PROPOSED GROSS OPEN SPACE = 47.60 ACRES (58.85% GROSS TRACT AREA)  
QUALIFYING MIN. REQUIRED OPEN SPACE = 32.38 ACRES (40.04% GROSS TRACT AREA)  
QUALIFYING INCREMENTAL BONUS O.S. = 12.22 ACRES (15.11% GROSS TRACT AREA)  
\*\*SEE TABLE BELOW FOR TABULATION\*\*

**DENSITY CALCULATION**

BASE DENSITY: 1.1 D.U. / TRACT AREA  
BONUS DENSITY: +0.075 D.U. / 5% OF ADDITIONAL OPEN SPACE = (15.02% EXTRA) = 0.075 \* 3 = 0.225 BONUS  
MAXIMUM DENSITY = 1.1 + 0.225 = 1.325 D.U. \* 65,418 ACS. = 86 DWELLING UNITS/ACHIEVABLE

**PRELIMINARY STEEP SLOPES (15-25%)**  
GROSS TRACT AREA = 80,886 ACS (3,523,402 SF)  
25% OF THE GROSS TRACT AREA = 880,850 SF  
AREA OF PRELIMINARY STEEP SLOPES = 547,921 SF < 25% OF THE TRACT AREA  
THEREFORE SECTION 170-402.B(3)(i) DOES NOT APPLY

- REQUIRED MINIMUM COMMON OPEN SPACE (40% OF THE GROSS TRACT AREA)
- INCREMENTAL BONUS OPEN SPACE AREA
- NON-QUALIFYING OPEN SPACE (AREAS LESS THAN 75' IN WIDTH & AREAS NOT LESS THAN 0.5 ACRES OF CONTIGUOUS AREA, PUMP STATION DRIVE AND STRUCTURE)
- OPEN SPACE AREAS WITHIN FLOODPLAIN, WETLANDS, AND STEEP SLOPES GREATER THAN 25% STORMWATER MANAGEMENT FACILITIES
- AREAS USED FOR SUBSURFACE INFILTRATION WITH OPEN STORAGE ACCESSORY TO INFILTRATION FACILITIES

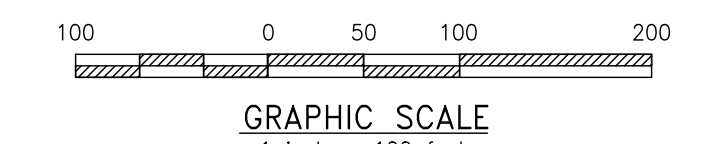
	Min. Required Common Open Space Area (40%)				TOTAL
	1	2	3	4	
Gross Area (Acres)	19.19	6.58	6.5	0.5	32.77
- Areas less than 75' in width	0	0	0.31	0	0.31
- Areas less than 1/2 acre	0	0	0	0	0
- Non-infiltrating SWM Facilities	0	0	0	0	0
- Pump Station and other miscellaneous impervious	0.07	0	0	0	0.07
Qualifying Base Open Space	19.12	6.58	6.19	0.50	32.39
					40.04%

Floodplain	2.78	2.28	0	0	5.06
Area of 25%+ Slopes	1.25	0.57	0.13	0.16	2.11
Wetland/Waterbodies	1.74	0	0.14	0	1.88
Area of Floodplain, wetland, slopes > 25% in Min. Required Common Open Space (Max. 50% allowed)	5.77	2.85	0.27	0.16	9.05
					27.94%

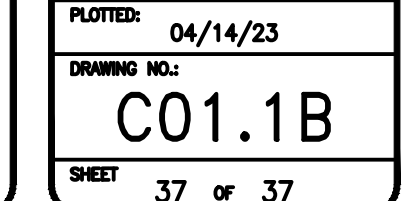
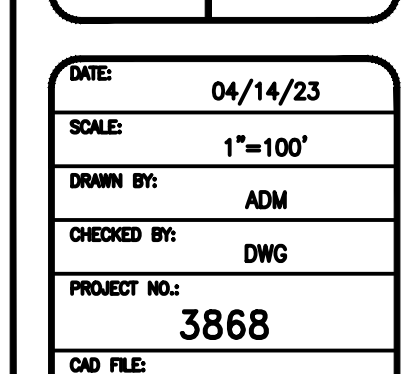
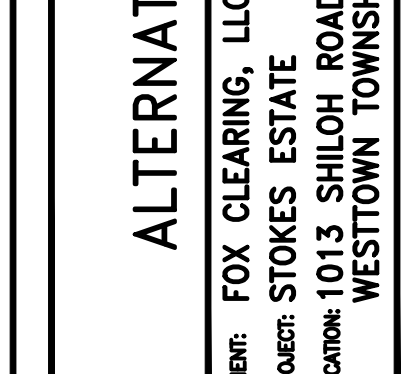
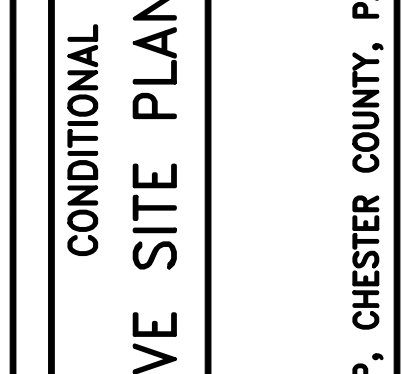
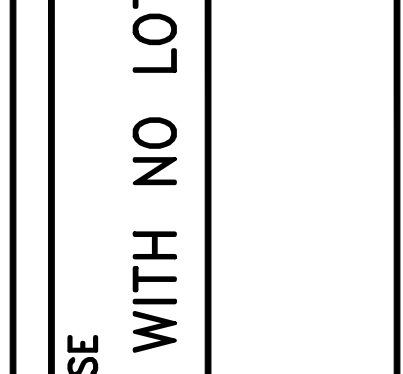
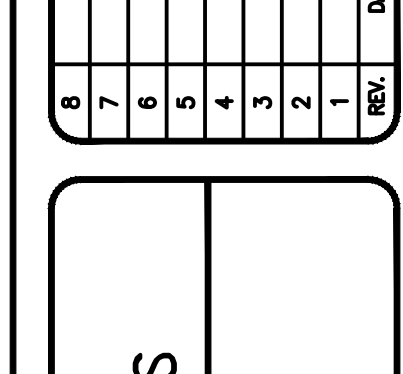
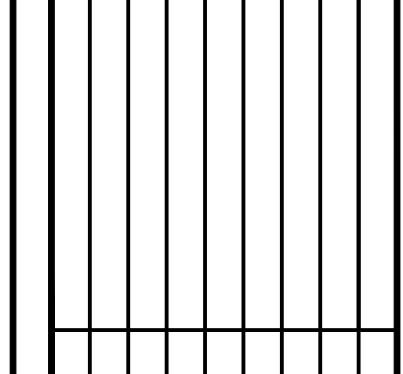
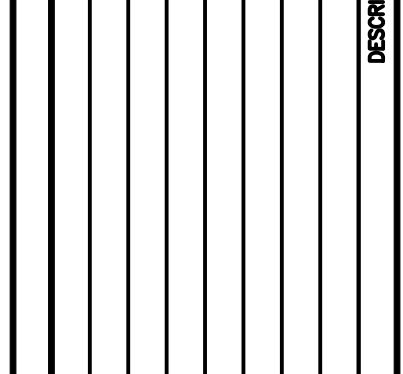
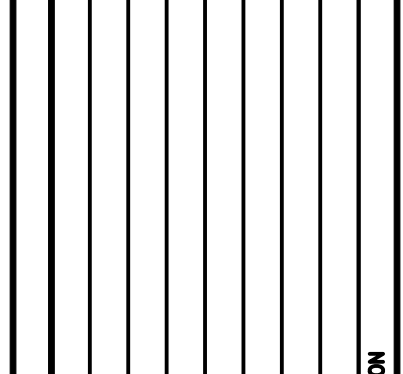
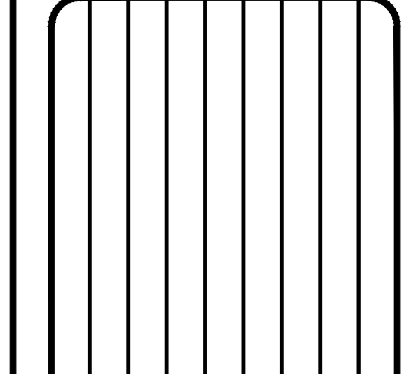
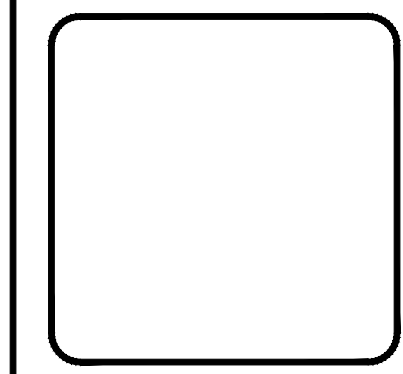
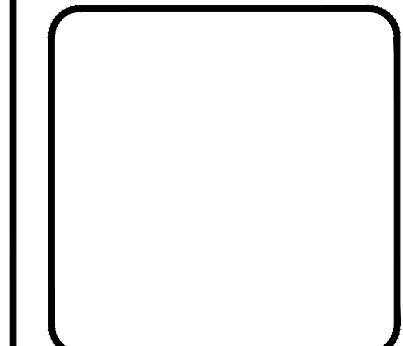
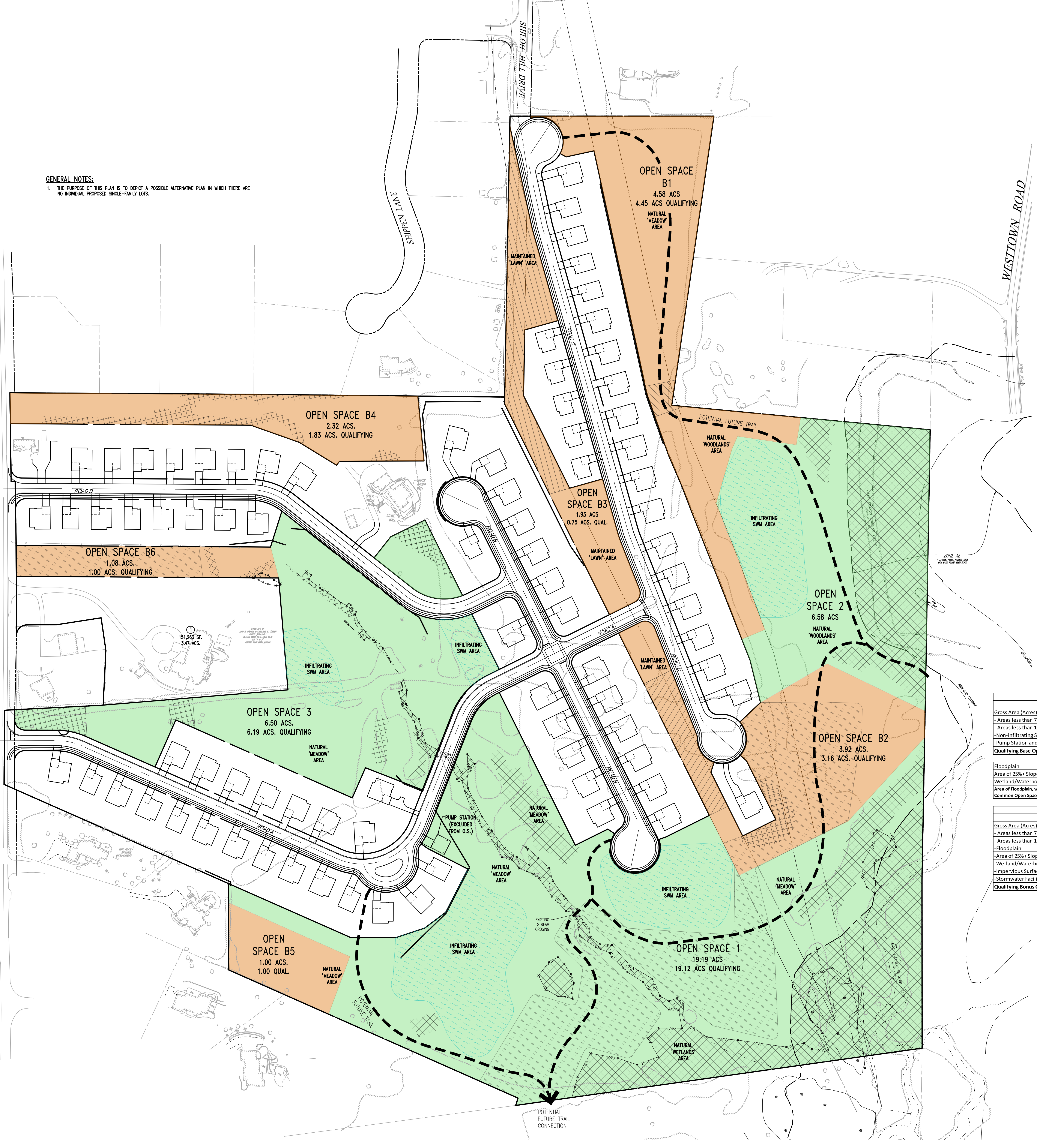
	Bonus Open Space Area						TOTAL
	B1	B2	B3	B4	B5	B6	
Gross Area (Acres)	4.58	3.92	1.93	2.32	1	1.08	14.83
- Areas less than 75' in width	0.13	0.49	1.15	0	0	0	1.77
- Areas less than 1/2 acre	0	0	0	0	0	0	0
Floodplain	0	0	0	0	0	0	0
Area of 25%+ Slopes (including proposed)	0	0.27	0	0.24	0	0	0.51
Wetland/Waterbodies	0	0	0	0	0	0	0.01
Impervious Surfaces	0	0	0	0	0	0	0
Stormwater Facilities	0	0	0	0.25	0	0.07	0.32
Qualifying Bonus Open Space	4.45	3.16	0.78	1.83	1	1	12.22
							15.11%

AREA AVAILABLE FOR ACTIVE RECREATION  
NET TRACT AREA = 2,840,590 S.F.  
AREA REQUIRED (10% NET TRACT AREA) X 10%  
284,059 SF -OR- 6.54 ACRES  
AREA SUITABLE FOR ACTIVE RECREATION - 6.61 ACRES

**ALTERNATIVE SITE PLAN WITH NO LOTS**  
SCALE: 1:100\_XREF



- LEGEND**
- EX. PROPERTY LINE
  - PROP. PROPERTY LINE
  - EX. RIGHT-OF-WAY
  - PROP. RIGHT-OF-WAY
  - EX. MONUMENT
  - PROP. MONUMENT
  - EX. IRON PIPE
  - PROP. IRON PIPE
  - EX. EASEMENT
  - PROP. EASEMENT
  - EX. EXISTING CONTOUR
  - PROP. PROPOSED CONTOUR
  - EX. EXISTING SPOT ELEV.
  - PROP. NEW SPOT ELEV.
  - EX. SOILS TYPE
  - PROP. SOILS TYPE
  - EX. CONC. CURB
  - PROP. CONC. CURB
  - EX. CONC. CURB
  - PROP. CONC. CURB
  - EX. LIGHT POLE
  - PROP. LIGHT POLE
  - EX. FENCE
  - PROP. FENCE
  - EX. MAIL BOX
  - PROP. MAIL BOX
  - EX. SIGN
  - PROP. SIGN
  - EX. EXIST. PARKING SPACES
  - PROP. EXIST. PARKING SPACES
  - EX. TELE. LINE
  - PROP. TELE. LINE
  - EX. ELEC. LINE
  - PROP. ELEC. LINE
  - EX. PROP. UTILITY POLE
  - PROP. PROP. UTILITY POLE
  - EX. GUY ANCHOR
  - PROP. GUY ANCHOR
  - EX. GAS LINE
  - PROP. GAS LINE
  - EX. GAS VALVE
  - PROP. GAS VALVE
  - EX. STORM SEWER LINE
  - PROP. STORM SEWER LINE
  - EX. STORM INLET
  - PROP. STORM INLET
  - EX. STORM INLET ID
  - PROP. STORM INLET ID
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  - EX. SANITARY SEWER LINE
  - PROP. SAN. SEWER LINE
  - EX. SAN. SEWER LATERAL
  - PROP. SAN. SEWER LATERAL
  - EX. SANITARY MH. ID
  - PROP. SANITARY MH. ID
  - EX. WATER LINE
  - PROP. WATER LINE
  - EX. WATER LATERAL
  - PROP. WATER LATERAL
  - EX. FIRE WATER LINE
  - PROP. FIRE WATER LINE
  - EX. WATER VALVE
  - PROP. WATER VALVE
  - EX. HYDRANT
  - PROP. HYDRANT
  - EX. MANHOLE
  - PROP. MANHOLE
  - ZONE AE FLOODPLAIN
  - 15%-25% SLOPES
  - 25%+ SLOPES
  - WETLANDS



CONDITIONAL USE  
ALTERNATIVE SITE PLAN WITH NO LOTS

CLIENT: FOX CLEARING, LLC  
PROJECT: STOKES ESTATE  
LOCATION: 1013 SHILOH ROAD  
WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE: 04/14/23  
SCALE: 1"=100'  
DRAWN BY: ADM  
CHECKED BY: DWG  
PROJECT NO.: 3868  
CADD FILE: PLN No Lots Option.dwg  
PLOTTER: 04/14/23  
DRAWING NO.: C01.1B  
SHEET 37 of 37



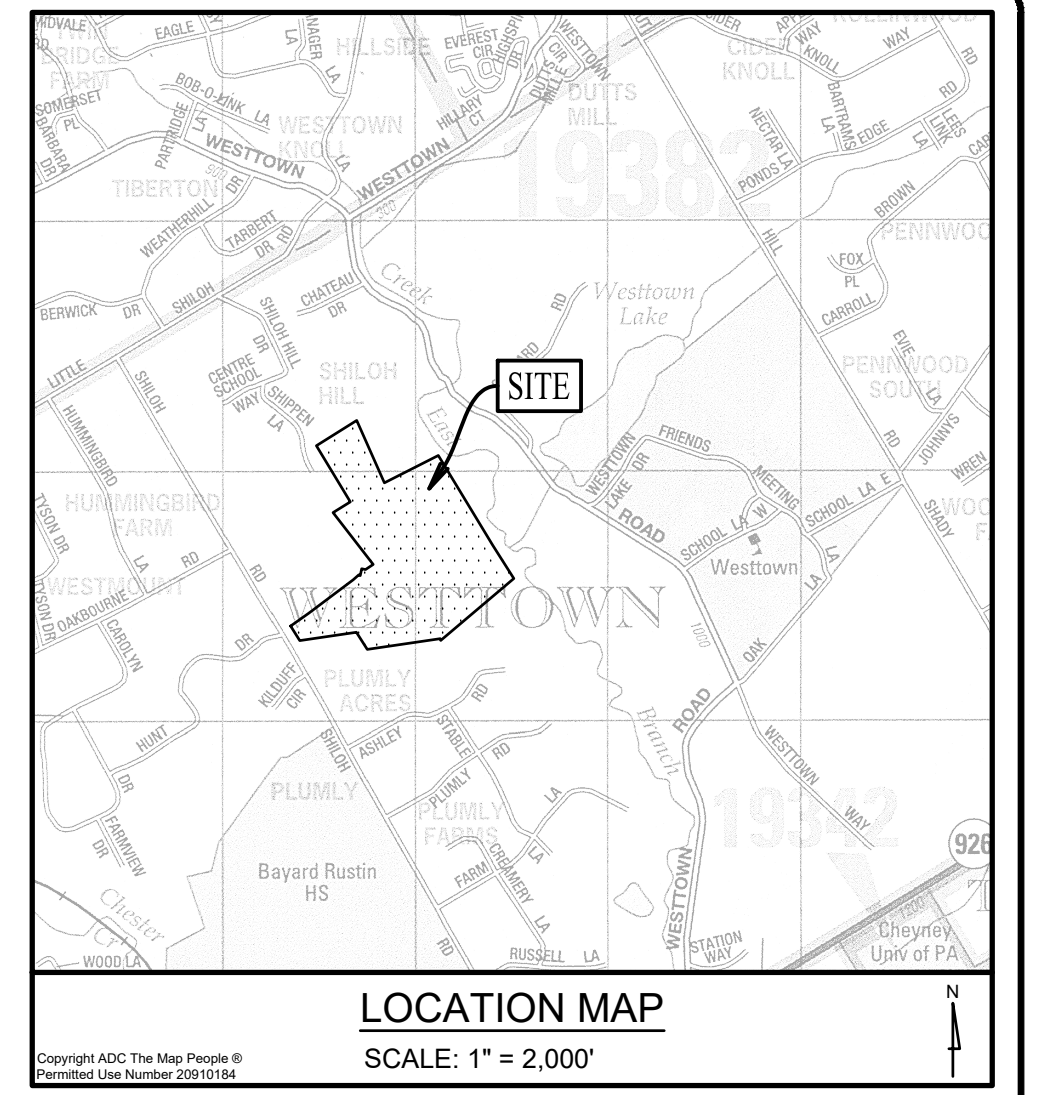
# **CONSERVATION DESIGN PLAN**



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**CONSERVATION DESIGN NARRATIVE**

STEP 1 ADD THE FOLLOWING TO THE EXISTING FEATURES PLAN: WETLANDS, 100 YEAR FLOODPLAIN, SLOPES 15 TO 25%, SLOPES 25%+. THESE ARE PRIMARY CONSERVATION AREAS.

STEP 2 ADD WOODLANDS, TREELINES, SPECIMEN TREES 18"+, SCENIC VIEWS FROM INSIDE THE SITE, SCENIC VIEWS FROM EXISTING STREETS AND TRAILS, RIDGE LINES, THESE ARE SECONDARY CONSERVATION AREAS. ADD LOCATIONS OF EXISTING FEATURES WITHIN 150' SOLES WITH SEASONAL HIGH WATER TABLE, AND BUILDINGS WITH HISTORIC STRUCTURES AND OPEN SPACES.

STEP 3 ADD AREAS OF OPEN SPACE INTENDED TO REMAIN UN-BUILT.

STEP 4 MAP ALL REMAINING AREAS THAT HAVE POTENTIAL TO BE DEVELOPED.

STEP 5 LAND DEVELOPMENT ACTIVITY SHALL NOT BE PERMITTED WITHIN MORE THAN 50% OF SECONDARY CONSERVATION AREAS. (SEE CALCULATION ON SHEET 2 OF 2 OF THE CONSERVATION PLANS)

STEP 6 LAYOUT STREETS AND TRAILS IN POTENTIAL DEVELOPMENT AREAS.

STEP 7 DRAW LOT LINES WITHIN DEVELOPMENT AREAS.

BEDROCK GEOLOGY				
MAP SYMBOL	NAME	AGE	LITH1	LITH2
fgh	Felsic and intermediate gneiss	Precambrian	Felsic gneiss	Intermediate gneiss

Primary Conservation Areas		Acs.
Floodplain		4.41
Wetlands		1.83
Slopes 25%+		2.23
Slopes 15-25%		12.58
<b>Total Area</b>		<b>21.05</b>

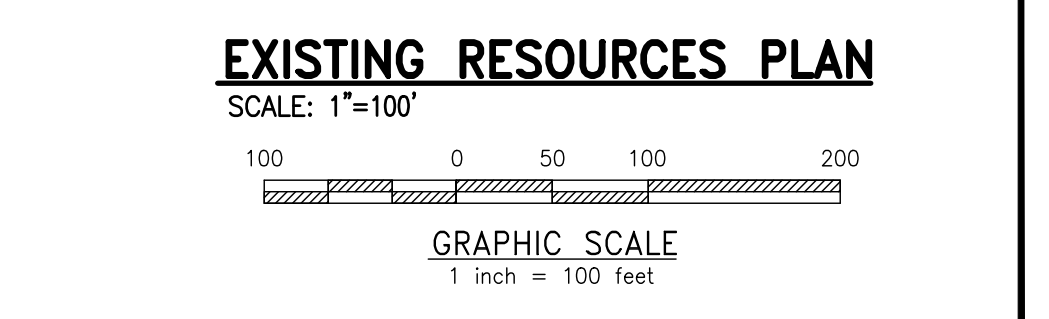
  

Secondary Conservation Areas Outside of primary		Acs.
Woodlands, Treelines, Specimen Trees		5.56
Scenic Views, Ridgelines		0.00
Scenic View from existing streets		0.00
<b>Total Area</b>		<b>5.56</b>

\*RESOURCES ARE CALCULATED AS OUTSIDE HIGHER CLASS RESOURCES SHOWN ON THE PLANS. RESOURCES DO NOT OVERLAP.

### LEGEND

- OPEN SPACE LINE
- RIDGE LINE
- STEEP SLOPES 15-25
- STEEP SLOPES 25+
- ZONE AE FLOODPLAIN
- WETLANDS
- PIPELINE EASEMENT
- SOILS WITH SEASONAL HIGH WATER TABLE

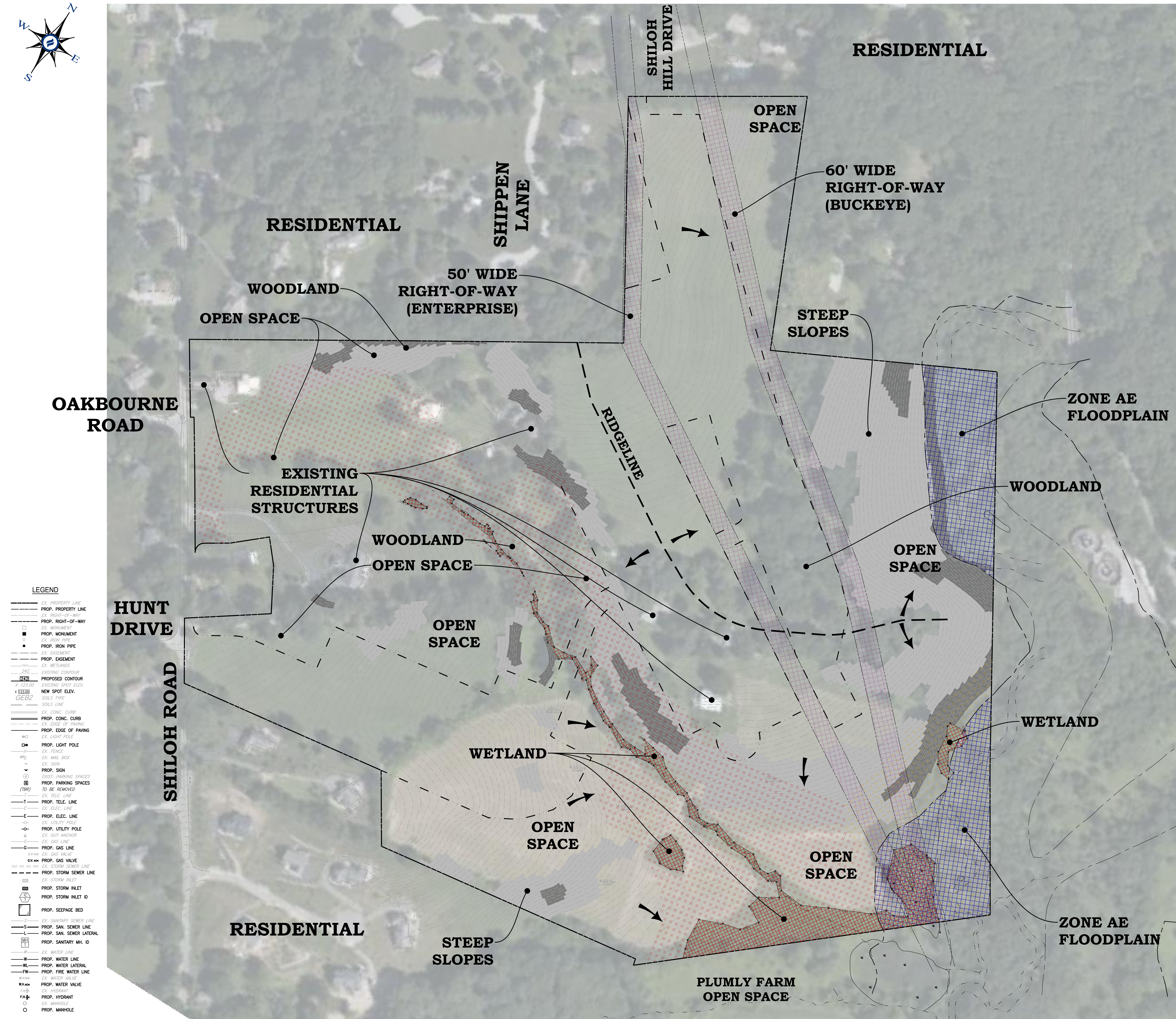


NO.	DATE	DESCRIPTION
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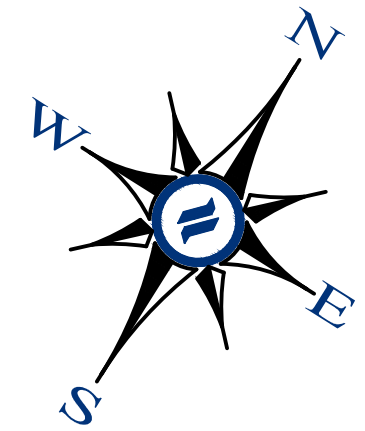
**EXISTING RESOURCES PLAN**

CLIENT: FOX CLEARING, LLC  
 PROJECT: STOKES ESTATE  
 LOCATION: 1013 SHILOH ROAD  
 WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE: 03/17/23  
 SCALE: 1"=100'  
 DRAWN BY: ADM  
 CHECKED BY: DWG  
 PROJECT NO.: 3868  
 CAD FILE: 03\_Generalized Design Plotting  
 PLOTTED: 03/17/23  
 DRAWING NO.: CP1.1  
 SHEET 1 of 2



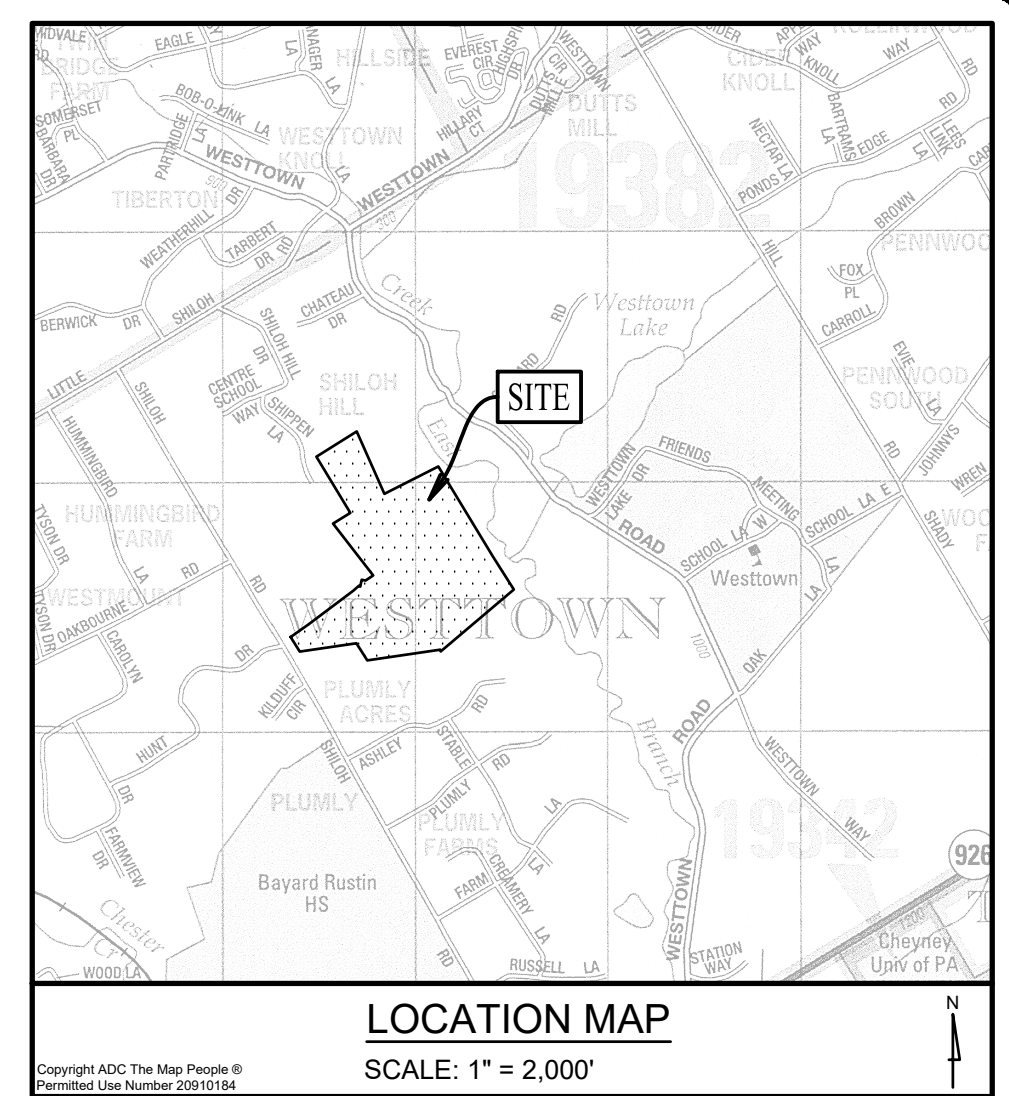
- LEGEND**
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  - PROP. PROPERTY LINE
  - EX. RIGHT-OF-WAY
  - PROP. RIGHT-OF-WAY
  - EX. MONUMENT
  - PROP. MONUMENT
  - EX. IRON PIPE
  - PROP. IRON PIPE
  - EX. EASEMENT
  - PROP. EASEMENT
  - EX. WETLANDS
  - EX. WETLANDS
  - EX. PROPOSED CONTOUR
  - PROP. PROPOSED CONTOUR
  - EX. EXISTING SPOT ELEV.
  - PROP. EXISTING SPOT ELEV.
  - EX. NEW SPOT ELEV.
  - PROP. NEW SPOT ELEV.
  - EX. SOILS TYPE
  - PROP. SOILS TYPE
  - EX. CONC. CURB
  - PROP. CONC. CURB
  - EX. EDGE OF PAVING
  - PROP. EDGE OF PAVING
  - EX. LIGHT POLE
  - PROP. LIGHT POLE
  - EX. MAIL BOX
  - PROP. MAIL BOX
  - EX. SIGN
  - PROP. SIGN
  - EX. EXIST. PARKING SPACES
  - PROP. EXIST. PARKING SPACES
  - EX. TO BE REMOVED
  - PROP. TO BE REMOVED
  - EX. TELE. LINE
  - PROP. TELE. LINE
  - EX. ELEC. LINE
  - PROP. ELEC. LINE
  - EX. UTILITY POLE
  - PROP. UTILITY POLE
  - EX. GAS VALVE
  - PROP. GAS VALVE
  - EX. STORM SEWER LINE
  - PROP. STORM SEWER LINE
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  - PROP. STORM INLET ID
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  - EX. SANITARY SEWER LINE
  - PROP. SAN. SEWER LINE
  - EX. SAN. SEWER LATERAL
  - PROP. SAN. SEWER LATERAL
  - EX. SANITARY MH. ID
  - PROP. SANITARY MH. ID
  - EX. WATER LINE
  - PROP. WATER LINE
  - EX. WATER LATERAL
  - PROP. WATER LATERAL
  - EX. FIRE WATER LINE
  - PROP. FIRE WATER LINE
  - EX. WATER VALVE
  - PROP. WATER VALVE
  - EX. HYDRANT
  - PROP. HYDRANT
  - EX. MANHOLE
  - PROP. MANHOLE



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Phone: (610) 918-9002  
Fax: (610) 918-9003



BEDROCK GEOLOGY				
MAP SYMBOL	NAME	AGE	LITH1	LITH2
fgH	Felsic and intermediate gneiss	Precambrian	Felsic gneiss	Intermediate gneiss

Primary Conservation Areas	Ac.
Floodplain	4.41
Wetlands	1.83
Slopes 25%+	2.23
Slopes 15-25%	12.58
<b>Total Area</b>	<b>21.05</b>

Secondary Conservation Areas Outside of primary	Ac.
Woodlands, Treelines, Specimen Trees	5.56
Scenic Views, Ridgelines	0.00
Scenic View from existing streets	0.00
<b>Total Area</b>	<b>5.56</b>

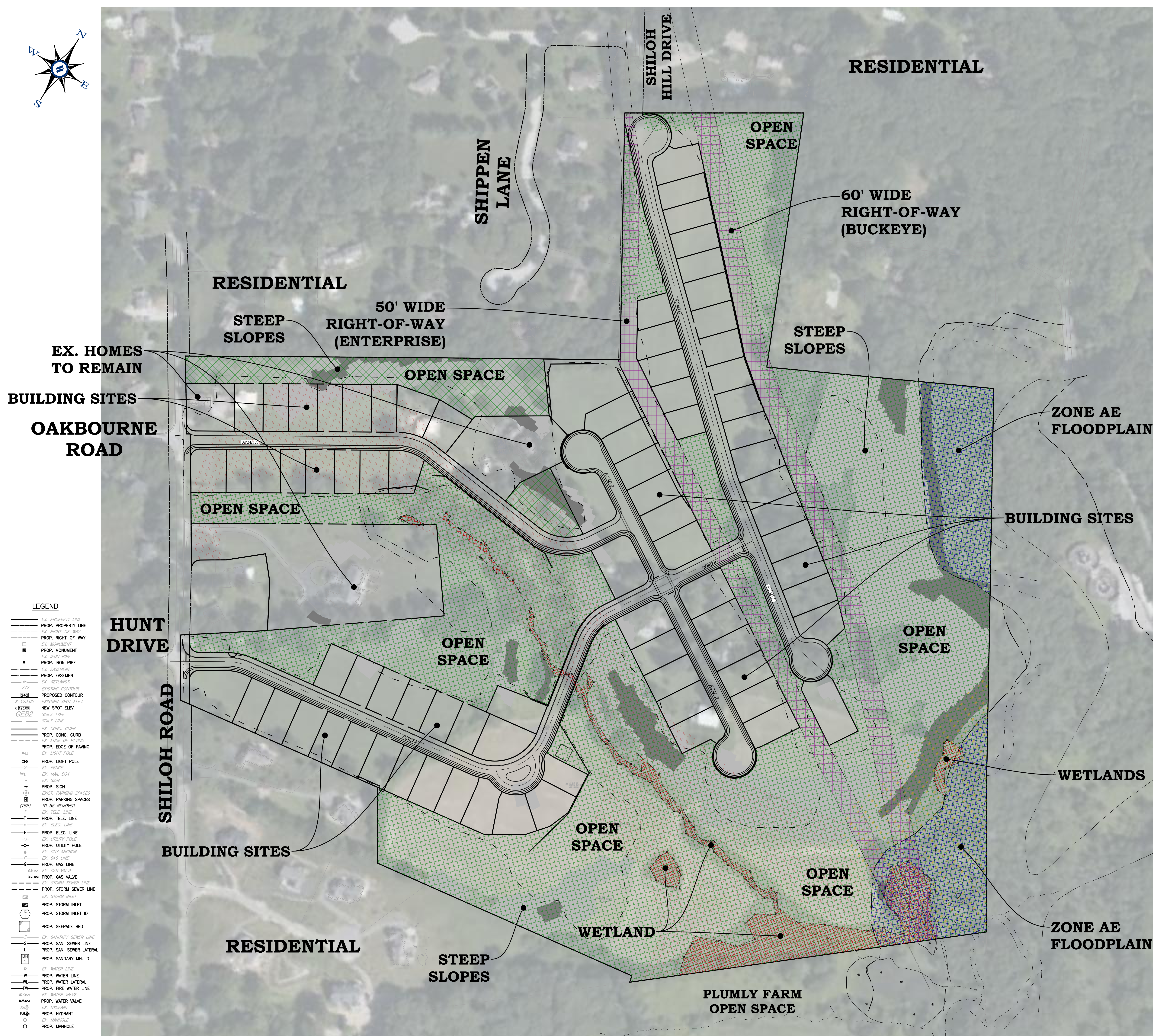
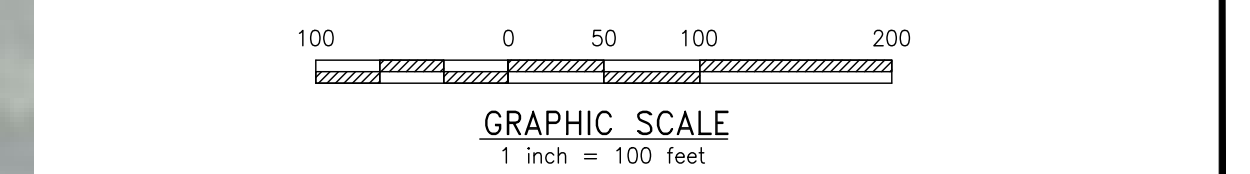
\*RESOURCES ARE CALCULATED AS OUTSIDE HIGHER CLASS RESOURCES SHOWN ON THE PLANS. RESOURCES DO NOT OVERLAP.

SECONDARY CONSERVATION DISTURBED TOTAL AREA 2.50 ACRES (45%)  
MAX. 50% ALLOWED

**LEGEND**

- OPEN SPACE
- STEEP SLOPES 15-25
- STEEP SLOPES 25+
- ZONE AE FLOODPLAIN
- WETLANDS
- PIPELINE EASEMENT
- SOILS WITH SEASONAL HIGH WATER TABLE
- PROPOSED LIMIT OF DISTURBANCE

**POTENTIAL DEVELOPMENT AREA CONCEPT PLAN**



- LEGEND**
- EX. PROPERTY LINE
  - PROP. PROPERTY LINE
  - PROP. RIGHT-OF-WAY
  - EX. MONUMENT
  - PROP. MONUMENT
  - EX. IRON PIPE
  - PROP. IRON PIPE
  - EX. EASEMENT
  - PROP. EASEMENT
  - EX. WETLANDS
  - PROP. WETLANDS
  - EX. CONC. CURB
  - PROP. CONC. CURB
  - EX. EDGE OF PAVING
  - PROP. EDGE OF PAVING
  - EX. LIGHT POLE
  - PROP. LIGHT POLE
  - EX. FENCE
  - PROP. FENCE
  - EX. MAIL BOX
  - PROP. MAIL BOX
  - EX. SIGN
  - PROP. SIGN
  - EX. EXIST. PARKING SPACES
  - PROP. PARKING SPACES
  - EX. SOILS LINE
  - PROP. TELE. LINE
  - EX. ELEC. LINE
  - PROP. ELEC. LINE
  - EX. UTILITY POLE
  - PROP. UTILITY POLE
  - EX. GAS LINE
  - PROP. GAS LINE
  - EX. PROP. GAS VALVE
  - PROP. STORM SEWER LINE
  - EX. STORM SEWER LINE
  - EX. STORM INLET
  - PROP. STORM INLET
  - EX. STORM INLET ID
  - PROP. STORM INLET ID
  - EX. SEEPAGE BED
  - PROP. SANITARY SEWER LINE
  - EX. SAN. SEWER LINE
  - PROP. SAN. SEWER LATERAL
  - EX. SANITARY MH. ID
  - PROP. SANITARY MH. ID
  - EX. WATER LINE
  - PROP. WATER LINE
  - EX. WATER LATERAL
  - PROP. WATER LATERAL
  - EX. FIRE WATER LINE
  - PROP. FIRE WATER LINE
  - EX. WATER VALVE
  - PROP. WATER VALVE
  - EX. HYDRANT
  - PROP. HYDRANT
  - EX. MANHOLE
  - PROP. MANHOLE

NO.	DATE	DESCRIPTION
8		
7		
6		
5		
4		
3		
2		
1		

POTENTIAL DEVELOPMENT AREA CONCEPT MAP

CLIENT: FOX CLEARING, LLC  
PROJECT: STOKES ESTATE  
LOCATION: 1013 SHILOH ROAD  
WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE: 03/17/23  
SCALE: 1"=100'  
DRAWN BY: ADM  
CHECKED BY: DWG  
PROJECT NO.: 3868  
CAD FILE: 02 Generative Design Planning  
PLOTTED: 03/17/23  
DRAWING NO.: CP1.2  
SHEET 2 of 2

# **AQUA WILL-SERVE LETTER**



April 12, 2023

Dave Gibbons, P.E.  
D.L. Howell & Associates  
1250 Wrights Lane  
West Chester, PA 19380

**Re:** Water Availability  
1013 Shiloh Road  
Westtown Township, Chester County

Dear Mr. Gibbons:

This letter will serve as confirmation that the above referenced property is situated within Aqua Pennsylvania Inc.'s ("Aqua") service territory. Service will be provided in accordance with Aqua's Rules and Regulations.

Service to this proposed development will require a main extension. Aqua has mains abutting this property in both Shiloh Road and Shiloh Hill Drive. Based on density and service reliability, service will require a tie-in to both mains.

Main extension projects are done under Aqua's standard Builder's Extension Agreement ("BEA"). You will be required to prepare a main extension plan and submit to this office for review and approval. Once approved, the developer will enter into the BEA and install the water main with a pre-qualified contractor.

Flow data information may be obtained from our Production Department. Please email a request to [SEPAflowrequest@aquaamerica.com](mailto:SEPAflowrequest@aquaamerica.com) containing the address, street, cross street and municipality and all pertinent contact information.

This letter is valid for one year from the date first written above. If I can be of further assistance, you may contact me at (610) 645-4230.

Sincerely,

A handwritten signature in black ink that reads "Michael Linkiewicz". The signature is written in a cursive style with a long, sweeping underline.

Michael Linkiewicz  
New Business Representative

# **PUBLIC SEWER WILL-SERVE LETTER**



## WESTTOWN TOWNSHIP

1039 Wilmington Pike  
West Chester, PA 19382  
610—692-1930  
email: [administration@westtown.org](mailto:administration@westtown.org)

Post Office Box 79  
Westtown, PA 19395  
FAX 610-692-9651  
[www.westtownpa.org](http://www.westtownpa.org)

April 13, 2023

Dave Gibbons, PE  
DL Howell & Associates, Inc  
1250 Wrights Lane  
West Chester, PA 19380

Re: Chapter 94 Capacity and Flow Allocation  
Updated Stokes Estate Subdivision  
927/1011, 1007 and 1013 Shiloh Rd

Dear Mr. Gibbons:

This letter certifies that there is sufficient capacity in Westtown Township's sanitary sewer collection, conveyance and treatment systems, via the Rustin Pump Station and Chester Creek Wastewater Treatment Plant, at the current time to accept flows from 85 proposed new single family connections in the Stokes Estate and adjacent parcels, including three existing dwellings that would be connected to public sewer.

Please do not hesitate to contact me or Mark Gross, Public Works Director, if you have any questions about this matter.

Sincerely,

Jonathan Altshul  
Township Manager

Cc: Mila Carter, Director of Planning & Zoning  
Mark Gross, Director of Public Works  
Bill Malin, PE, Carroll Engineering

# **TRANSPORTATION IMPACT STUDY**



# Stokes Estate Residential Project Traffic Impact Study

## Westtown Township, Chester County

Prepared for submission to:

**Westtown Township**

Revised April 2023  
Revised November 2022  
Revised April 2022  
May 2021



# Stokes Estate Residential Project

## Traffic Impact Study

Westtown Township  
Chester County, Pennsylvania

prepared for submission to:

**Westtown Township**

prepared by



PA Office  
2 East Market Street, Suite 2  
York, PA 17401-1206  
T: (717) 846-4660

MD Office  
901 Dulaney Valley Road, Suite 805  
Towson, MD 21204-2624  
T: (443) 275-2344

[www.consulttrg.com](http://www.consulttrg.com)



**Jon A. Seitz, P.E., PTOE**  
**Pennsylvania P.E. No. 039625**

Project No. 278.012.21

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## SCOPE AND NATURE OF PROPOSED DEVELOPMENT

This report describes the transportation impact analysis for the proposed residential development located in Westtown Township, Chester County. The development is proposed east of Shiloh Road (T-626) and west of the east branch of the Chester Creek. See Figure 1 for a site location map. The site is referred to as the Stokes Estate Tract, which is currently undeveloped. Keystone Custom Homes has recently purchased the adjacent Galilea and O'Brien lots to reconfigure the planned single family residential development. The proposed development will now include a maximum of 86 residential units comprised of up to 82 new residential lots, plus the four existing residential dwellings (Galilea – 2 houses, O'Brien, and the existing historic home). The development will have full movement access onto Shiloh Road via two separate connections, one forming a 4-legged intersection opposite Hunt Drive, and the other forming a 4-legged intersection opposite Oakbourne Road. The development will consist entirely of single family (detached) homes. The development tract measures 64.956 acres. A site plan which depicts the scope and nature of the proposed development is attached as Figure 2.

Keystone Custom Homes would like to obtain the necessary approval so that they can institute construction as early as the Fall of 2023. They anticipate full buildout of the development in 2028. A design year of 2033 was used for the analysis.

The purpose of this study is to identify significant traffic problems associated with the ability of the existing roadways to accommodate the volume of traffic anticipated from the development and to assure safe and efficient site access. If necessary, improvements will be recommended to mitigate the impact of development traffic on the surrounding roadway network. This study is prepared in accordance with Westtown Township's guidelines on traffic impact studies as detailed in Chapter 149 of their Subdivision and Land Development Ordinance (SALDO).

## DESCRIPTION OF PROPOSED ACCESS POINTS

The project is proposed to include two primary access points. The first access point is proposed on Shiloh Road (T-626) directly across from the existing Hunt Drive (T-546), creating a four-legged intersection. The second access point is also proposed on Shiloh Road (T-626), but directly across from the existing Oakbourne Road (T-359), creating a four-legged intersection. Stop sign control will remain on Hunt Drive and Oakbourne Road, and the proposed access road will also be stop controlled. Free-flow traffic on Shiloh Road would remain unchanged. In this area, Shiloh Road, is slightly rolling, with the Hunt Drive – proposed access intersection located at the apex of a hill, therefore allowing sight distance in excess of the Township requirements when appropriate embankment removal on the Stokes Estate property is performed. The speed limit on Shiloh Road is posted at 30 mph. SALDO Section 149-908 was used to determine the sight distance at the proposed access intersections. The SALDO sight distance criteria calls for clear sight triangles of 75 feet for roadways below collector level and 100 feet for roadways at collector level. According to the 2019 Westtown Township Comprehensive Plan, Shiloh Road is classified as a Township owned collector road. Details of the sight distance will be shown on the land development plans.

Field views were conducted at the access point and study intersections and forms are included in the Appendices showing lane widths, grades, and traffic control.

## EXISTING CONDITIONS

The development is proposed in a mainly residential area of Westtown Township. The West Chester Bayard Rustin High School is located south of the site just north of S.R.0926. The major roadway system in the study area is comprised of state and township roads. Table 1 summarizes the roadway system characteristics for the roadways in Westtown Township, while Figure 3 shows the existing lane configuration and traffic control at the study intersections.

**Table 1: Roadway System Characteristics**

Road Name	Ownership (State or Township)	Number of Travel Lanes	Lane Widths	Shoulder Widths	Speed Limit	ADT	Functional Classification
Street Road	S.R.0926	2	12'	4'	45 mph	11,900	Arterial Highway
Westtown Thornton Road	S.R.2005	2	11'	2'	35 mph	2,400	Local Road
Westtown Road	S.R.2007	2	10'	1'-2'	35 mph	2,000	Collector
Little Shiloh Road	S.R.2005/ T-367	2	10'	2'	25 mph	4,400	Collector
Shiloh Road	T-626	2	10'	1'-2'	30 mph	5,800	Collector
Hunt Drive	T-546	2	10'	curbed	Not Posted	300	Local Road
Oakbourne Road	T-359	2	10'	1'	35 mph	1,900	Collector
Shiloh Hill Drive	T-559	2	10'	curbed	Not Posted	200	Local Road

The ADT volumes on the state roadways were obtained from PennDOT's Traffic Information Repository (TIRe) website. ADT volumes on the Township roads were calculated using the PM peak hour volumes and a "k" factor of 10. The right-of-way on Shiloh Road is 68' per the PennDOT signal plan at S.R.0926. Right-of-way on Shiloh Road in the vicinity of the access roadway opposite Hunt Drive is shown on the site plan developed by D.L. Howell & Associates, Inc., the project's civil engineer.

Based on the characteristics of the proposed development, the weekday AM and PM peak hours were analyzed. Turning movement counts were conducted on Tuesday, October 5, 2021 from 6:00 AM to 9:00 AM and 2:00 PM to 6:00 PM at the following study intersections:

- Street Road (S.R.0926)/Shiloh Road (T-626) – Westtown Thornton Road (S.R.2005)
- Hunt Drive (T-546)/Shiloh Road (T-626)
- Oakbourne Road (T-359)/Shiloh Road (T-626)
- Little Shiloh Road (S.R.2005 – T-367)/Shiloh Road (T-626)
- Little Shiloh Road (T-367)/Shiloh Hill Drive (T-559)
- Little Shiloh Road (T-367) – Falcon Lane/Westtown Road (S.R.2007)

All intersections in the study area are unsignalized except for the Street Road (S.R.0926)/Shiloh Road (T-626) – Westtown Thornton Road intersection which is signalized. Five of the six study intersections are “off-site intersections”. Only one intersection, Hunt Drive/Shiloh Road is an “on-site intersection”, due to the construction of a new fourth leg for the intersection which provides direct access to the proposed development.

Counts were recorded in 15-minute intervals, with the peak hour being selected from the four highest consecutive 15-minute periods. The following AM and PM peak hours occurred at the study intersections:

<b><u>Intersection</u></b>	<b><u>AM Peak Hour</u></b>	<b><u>PM Peak Hour</u></b>
Street Road (S.R.0926)/Shiloh Road (T-626) – Westtown Thornton Road (S.R.2005)	7:15 AM – 8:15 AM	4:45 PM – 5:45 PM
Hunt Drive (T-546)/Shiloh Road (T-626)	7:00 AM – 8:00 AM	4:45 PM – 5:45 PM
Oakbourne Road (T-359)/Shiloh Road (T-626)	7:00 AM – 8:00 AM	4:45 PM – 5:45 PM
Little Shiloh Road (S.R.2005 – T-367)/Shiloh Road (T-626)	7:00 AM – 8:00 AM	4:45 PM – 5:45 PM
Little Shiloh Road (T-367)/Shiloh Hill Drive (T-559)	7:15 AM – 8:15 AM	5:00 PM – 6:00 PM
Little Shiloh Road (T-367) – Falcon Lane/Westtown Road (S.R.2007)	7:30 AM – 8:30 AM	5:00 PM – 6:00 PM

In order to analyze the intersections conservatively, no “common peak hour” was determined. Since the peak traffic volumes were used at each respective intersection, there was no “balancing” between the study intersections. Figure 4 in the Appendices shows the existing weekday AM and PM peak hour traffic volumes at the study intersections. Details of the TMC counts are included in the Appendices. Since these new traffic counts were conducted after September 7, 2021 no COVID-19 adjustments are required in accordance with PennDOT Strike-off-Letter 494-21-07.



## CALCULATION OF INTERSECTION CAPACITY

This section discusses the methodology used in calculating levels of service and capacity analysis at the study intersections. The Highway Capacity Manual (6<sup>th</sup> Ed.) procedures were used to determine level of service (LOS) and capacity for intersections. Synchro version 11.1, build 2, revision 9 (11.1.2.9) was used for the analysis. Unsignalized intersections are rarely at capacity from an overall standpoint. Traffic movements from minor crossroads and major road left turns are largely affected by the distribution of gaps in the major street traffic stream, and motorist judgment in choosing gaps through which to execute their maneuvers. Gaps in the traffic stream depend on several factors, including the type of maneuvers being executed, type of minor street control, the average speed of the major street and geometric and environmental conditions. LOS criteria for unsignalized and signalized intersections are based on control delay (in seconds per vehicle) to motorists. Various factors affect delay, including traffic volumes, lane configurations and widths, traffic signal phasing and cycle lengths, trucks percentages, etc. All the methodologies and factors identified in Section 19-804 (A)(4) were used in the analysis.

LOS ranges from “A” to “F” with “A” having the most favorable performance. PennDOT’s “Policy and Procedures for Transportation Impact Studies” suggests new intersections must be designed to at least operate at an LOS C or better for rural conditions and an LOS D or better for urban conditions. Also, the overall intersection LOS for “With Development” scenarios should be no worse than “Without Development” scenarios. Level of service ranges for unsignalized and signalized intersections can be found in Table 2.

**Table 2: Level of Service Ranges – Unsignalized and Signalized Intersections**

Level of Service	Expected Traffic Delay	Average Control Delay <sup>(1)</sup>	Control Delay <sup>(2)</sup>
A	Little or No Delay	<10	<10
B	Short Traffic Delays	>10 and ≤15	>10 and ≤ 20
C	Average Traffic Delays	>15 and ≤ 25	>20 and ≤ 35
D	Long Traffic Delays	>25 and ≤ 35	>35 and ≤ 55
E	Very Long Traffic Delays	>35 and ≤ 50	>55 and ≤ 80
F	Failure, Extreme Congestion	>50	>80

<sup>(1)</sup> UNSIGNALIZED – SEC/VEH  
<sup>(2)</sup> SIGNALIZED – SEC/VEH

## ESTIMATE OF TRIP GENERATION

The level of traffic likely to be generated by the proposed development has been estimated using procedures in the Institute of Transportation Engineers (ITE) Trip Generation Manual (11<sup>th</sup> Ed. 2021) to determine the potential traffic impact on the study intersections. Land use code 210, Single-family Detached Housing was utilized for the development. The number of new units (82) was used as the independent variable. The four existing residences (Galilea- 2 houses, O'Brien and the existing historic home) were already included as part of the existing traffic counts. Details of this trip generation analysis can be found in the Appendices. Table 1 summarizes the estimated site trip generation for the proposed development during the typical weekday AM and PM peak hours and during the typical weekday.

**Table 3: Estimated Site Trip Generation**

Land Use (Code)	# New Units	AM Peak Hour			PM Peak Hour			ADWT
		Enter	Exit	Total	Enter	Exit	Total	
Single-Family Detached Housing (210)	82	16	46	62	52	30	82	841

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## DISTRIBUTION OF TRAFFIC

Figure 5 shows the trip distribution percentages for the new site traffic on the roadway system. The site trip distribution was based on a cordon line methodology which used the traffic volumes entering and exiting the study area. The trip distribution was favored to Street Road (S.R.0926) for eastbound traffic accessing the Greater Philadelphia area and Street Road (S.R.0926) to the west for traffic to access U.S. 202. The proposed distribution used for the new site traffic is as follows:

- 25% oriented to/from the east on Street Road (S.R.0926)
- 25% oriented to/from the west on Street Road (S.R.0926)
- 15% oriented to/from the west on Little Shiloh Road (S.R.2005)
- 20% oriented to/from the north on Westtown Road (S.R.2007)
- 5% oriented to/from the south on Westtown Thornton Road
- 10% oriented to/from the west on Oakbourne Road

Figure 6 shows the site trips generated by the proposed development and assigned to the roadway network. Details of the site trip distribution and assignment are included in the Appendices.

## COMPARISON OF COUNTS AND CAPACITIES, EXISTING

Based on the level of service methodologies previously discussed, an analysis of existing conditions was analyzed. Table A in the Appendices shows the results of the existing level of service/capacity analysis. Figure 7 graphically shows the existing level of service results at the study intersections during the AM and PM peak hours. As shown in Table A, the study intersections are all operating at an overall LOS B or better, except for the Street Road (S.R.0926)/Shiloh Road (T-626) – Westtown Thornton Road (S.R.2005) signalized intersection which operates at an overall LOS E during the AM and the PM peak hours based on the existing signal timings. The northbound approach is operating at an LOS F during both the peak hours.

## COMPARISON OF COUNTS AND CAPACITIES, FUTURE

An analysis of future conditions for both the No Build (Without Development) and Build (With Development) scenarios was completed for the 2028 opening year and the 2033 design year.

Some level of external traffic growth on the roadway system can be expected even without the proposed development. This growth can be attributed to a nominal increase in through traffic and traffic generated by developments outside the study area. There are no known developments planned within the immediate study area to be included in the base traffic volumes. A 0.54 percent average annual growth rate was used to factor the existing traffic counts to the opening year 2028 and the design year 2033 as recommended by PennDOT Bureau of Planning and Research's Table "Growth Factors for August 2022 to July 2023". Figures 8 and 9 in the Appendices show the AM and PM opening year (2028) and design year (2033) peak hour without development traffic volumes at the study intersections.

A level of service analysis was conducted at the study intersections for both the opening year (2028) and the design year (2033) without development scenarios to determine the future level of service without the proposed development. Traffic signal timings were optimized for both the Build and No Build scenarios. Table A in the Appendices shows the results of the level of service analysis, while Figures 10 and 11 in the Appendices graphically show the level of service results for the 2028 and 2033 No Build conditions. During both scenarios, all unsignalized intersections will continue to operate at an overall LOS B or better, except for the signalized intersection of Street Road (S.R.0926)/Shiloh Road (T-626) – Westtown Thornton Road (S.R.2005), which will operate at an overall LOS D during the AM and PM peak hours during both the 2028 and 2033 years.

The opening year (2028) and the design year (2033) with development peak hour volumes were derived by combining existing traffic, growth in background and through traffic, and the site trips generated by the proposed development. Figures 12 and 13 in the Appendices shows the AM and PM opening year (2028) and design year (2033) with development traffic volumes at the study intersections.

A level of service analysis was conducted at the study area intersections for the opening year (2028) and design year (2033) with development scenario to determine the level of service with the proposed development. Table A in the Appendices shows the results of the level of service analysis, and Figures 14 and 15 in the Appendices show the peak hour opening year (2028) and design year (2033) level of service results. As with the No Build conditions, the unsignalized intersections will continue to operate at an overall LOS B or better. In the year 2028 and 2033, the signalized intersection will operate at an overall LOS D during the AM and PM peak hours.

As shown in Table A in the Appendices, the change in overall level of service results at the study intersections between future without development and future with development scenarios either remains unchanged or shows less than a ten-second variance in overall delay. The site access intersection is forecasted to operate at an overall LOS A during the peak hours.

## NECESSARY IMPROVEMENTS

The proposed access intersection with Shiloh Road (T-626) will operate with acceptable levels of service. Additionally, the need for left and right turn lanes on Shiloh Road (T-626) at the access intersection was evaluated for with development traffic conditions utilizing PennDOT guidelines outlined in Publication 46 Chapter 11.17. The analysis found that neither left nor right turn lanes are warranted at the access intersection. Details of the turn lane analysis are included in the Appendices.

The impact of the project on the local roadway system and study intersections is minimal. Discounting the existing traffic from the historic farmhouse, O'Brien and Galilea properties, the project will generate 62 new trips during the AM peak hour and 81 PM peak hour trips. No physical roadway improvements are needed to mitigate the impacts of the site and no turning movement restrictions need to be placed on the proposed access points.

## CONDITIONAL USE DISCUSSION

As presented in the Township's Zoning Code in regard to Conditional Use cases,

*"The burden of proof shall be upon the applicant to prove to the satisfaction of the Board of Supervisors, by credible evidence, that the use will not result in or substantially add to a significant traffic hazard or significant traffic congestion. The peak traffic generated by the development shall be accommodated in a safe and efficient manner. Such analysis shall consider any improvements to streets that the applicant is committed to complete or fund."*

After reviewing the data contained in this traffic impact study (TIS), including the crash analysis, I believe the use will not result in or substantially add to a significant traffic hazard or significant traffic congestion. The site trips from the development shall be accommodated in a safe and efficient manner as demonstrated in this TIS.

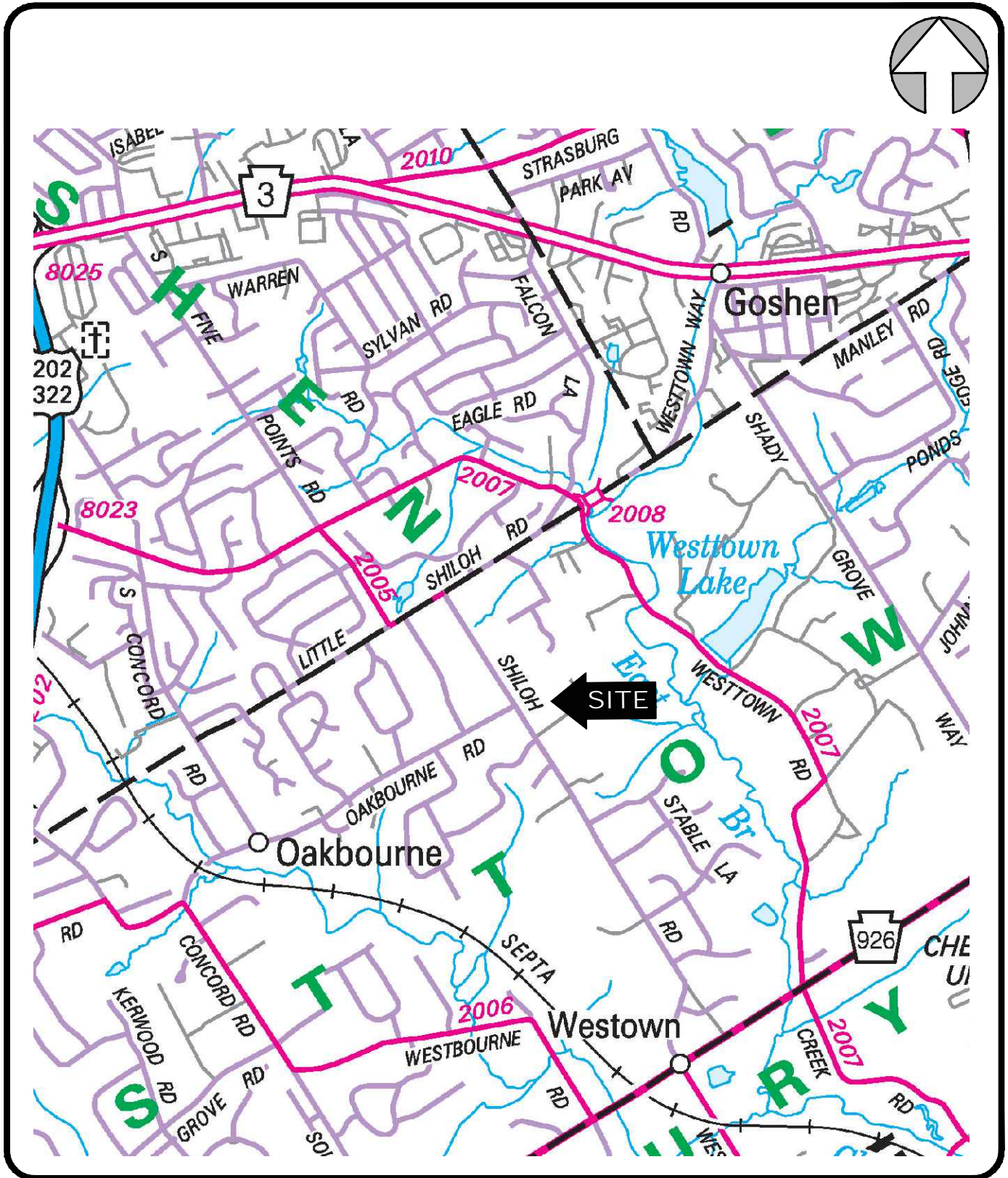
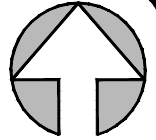
## TECHNICAL APPENDICES

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## FIGURES

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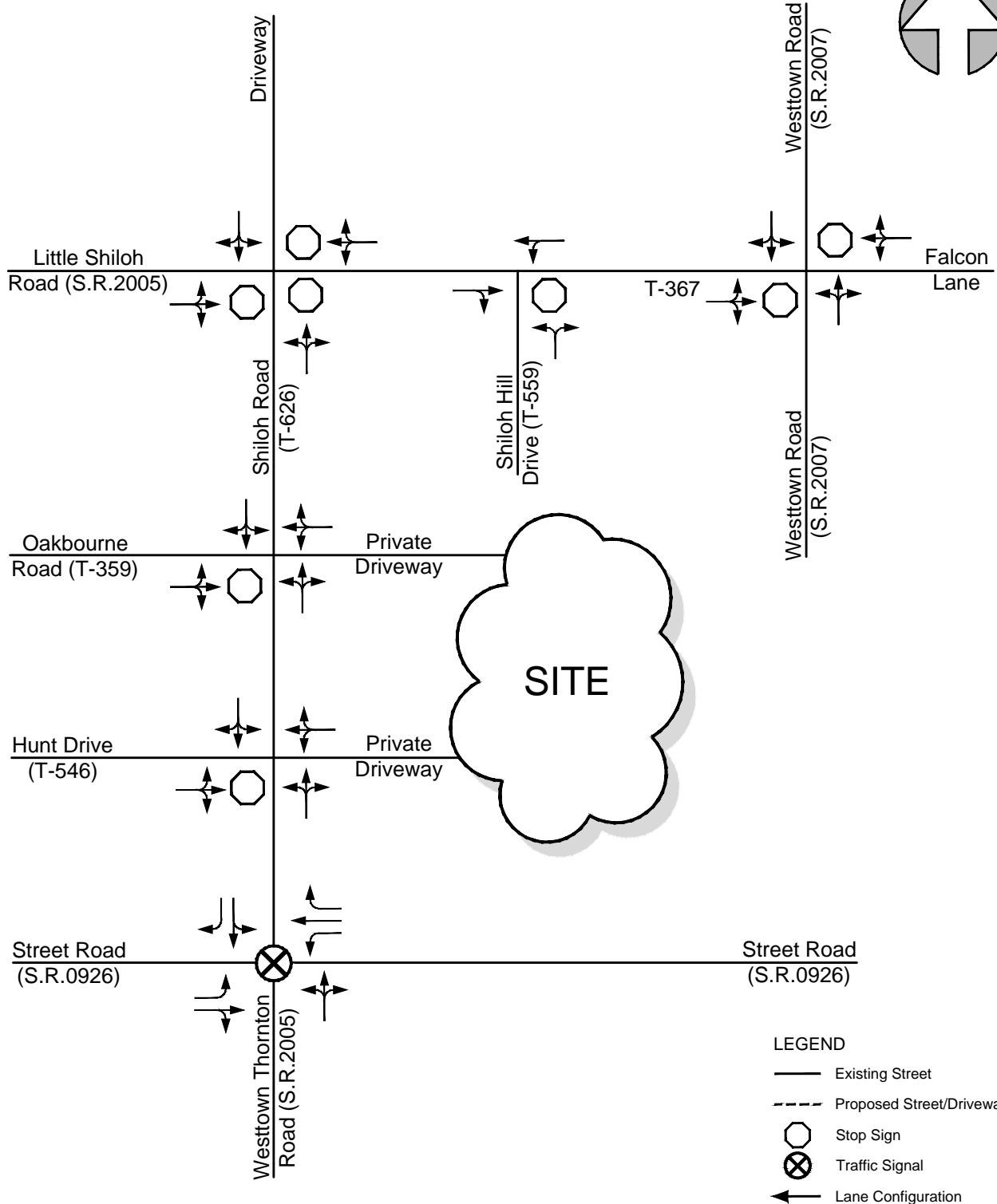
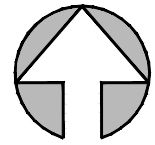




**FIGURE 1**  
SITE LOCATION

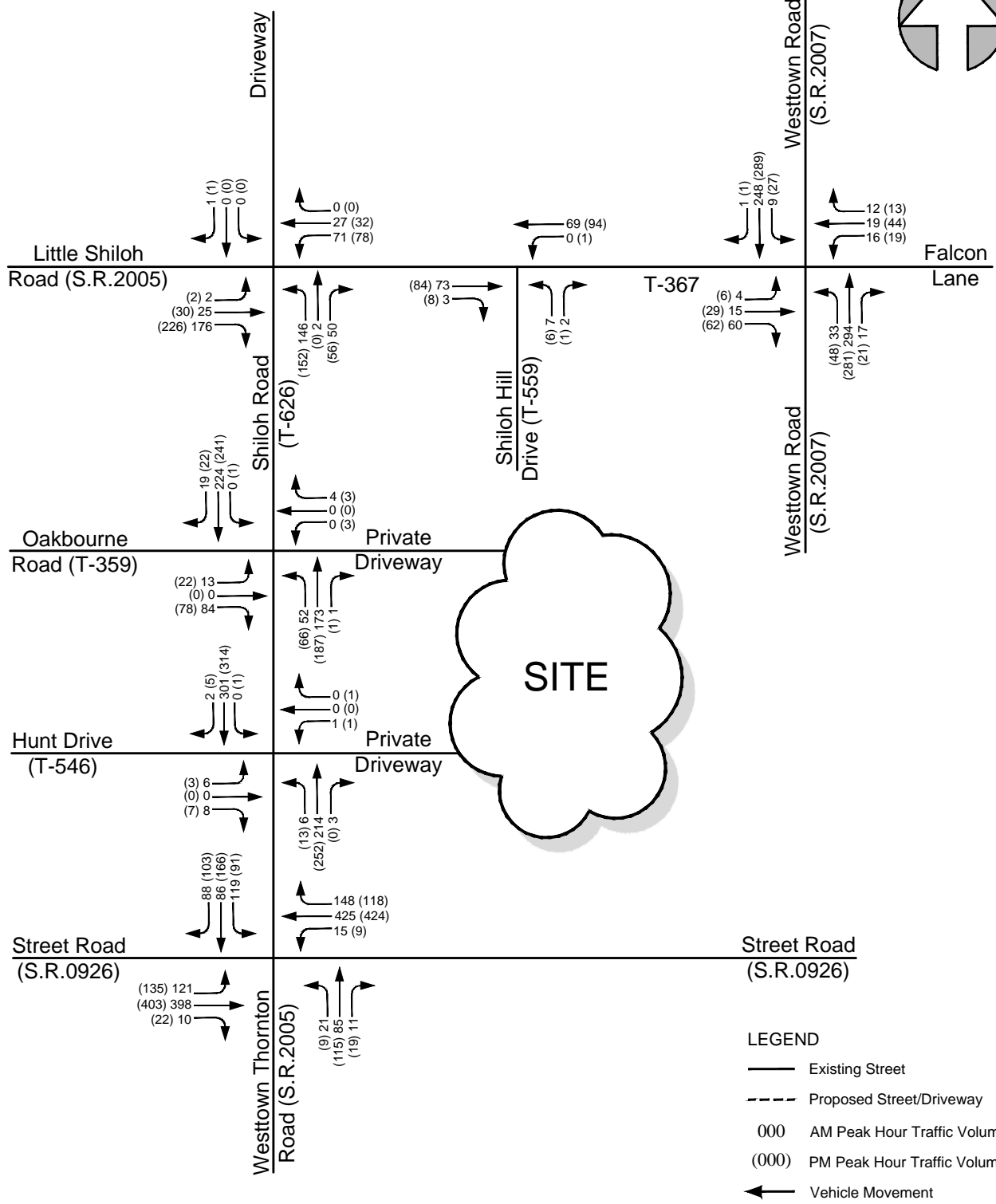
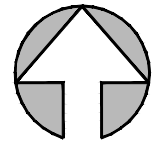
**TRAFFIC IMPACT STUDY**  
Stokes Estate Residential Project  
WESTTOWN TOWNSHIP  
CHESTER COUNTY, PA





**FIGURE 3**  
EXISTING LANE CONFIGURATION  
AND TRAFFIC CONTROL

**TRAFFIC IMPACT STUDY**  
Stokes Estate Residential Project  
  
WESTTOWN TOWNSHIP  
CHESTER COUNTY, PA



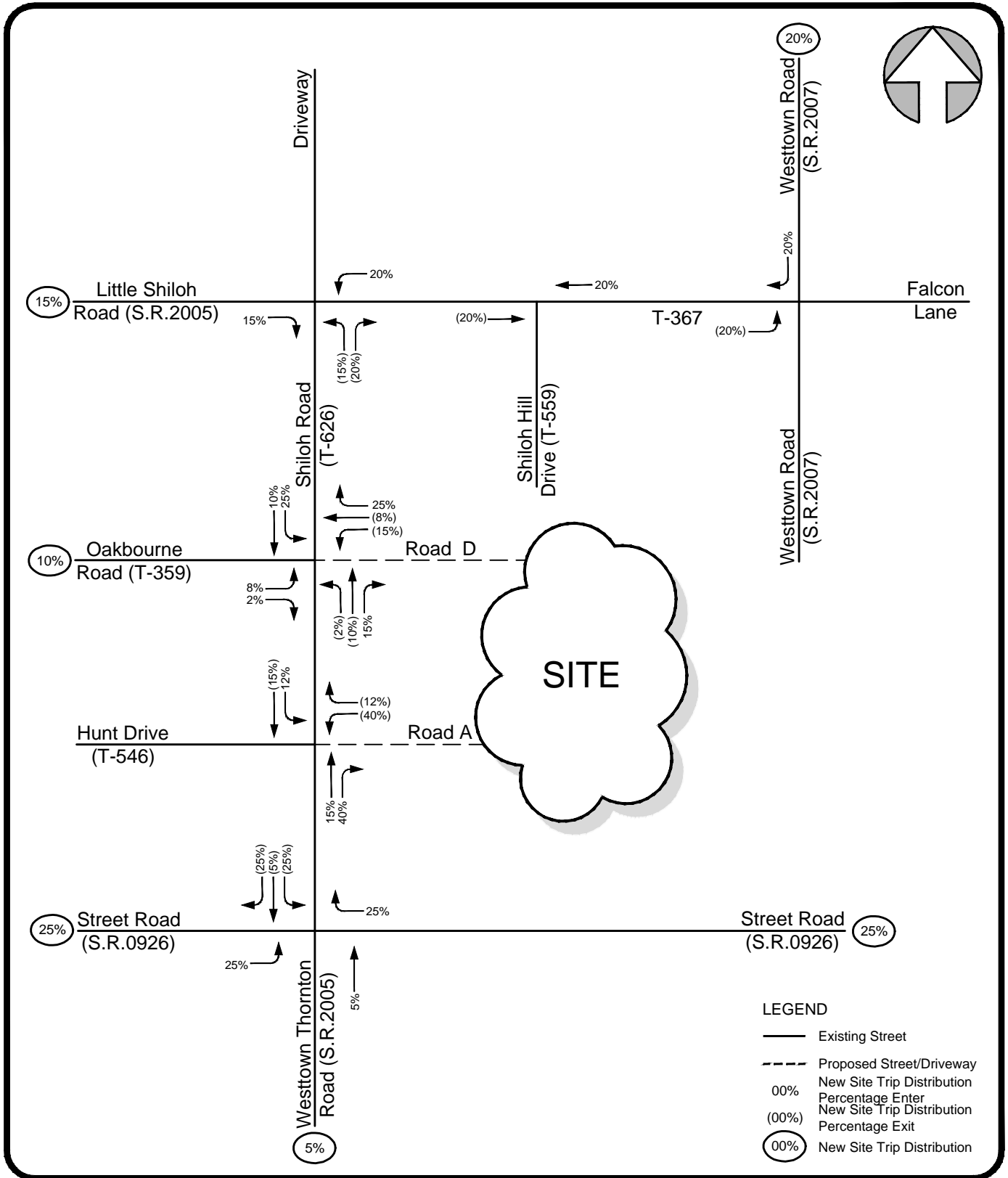
**LEGEND**

- Existing Street
- - - Proposed Street/Driveway
- 000 AM Peak Hour Traffic Volume
- (000) PM Peak Hour Traffic Volume
- ← Vehicle Movement



**FIGURE 4**  
EXISTING PEAK HOUR TRAFFIC VOLUMES

**TRAFFIC IMPACT STUDY**  
Stokes Estate Residential Project  
  
WESTTOWN TOWNSHIP  
CHESTER COUNTY, PA



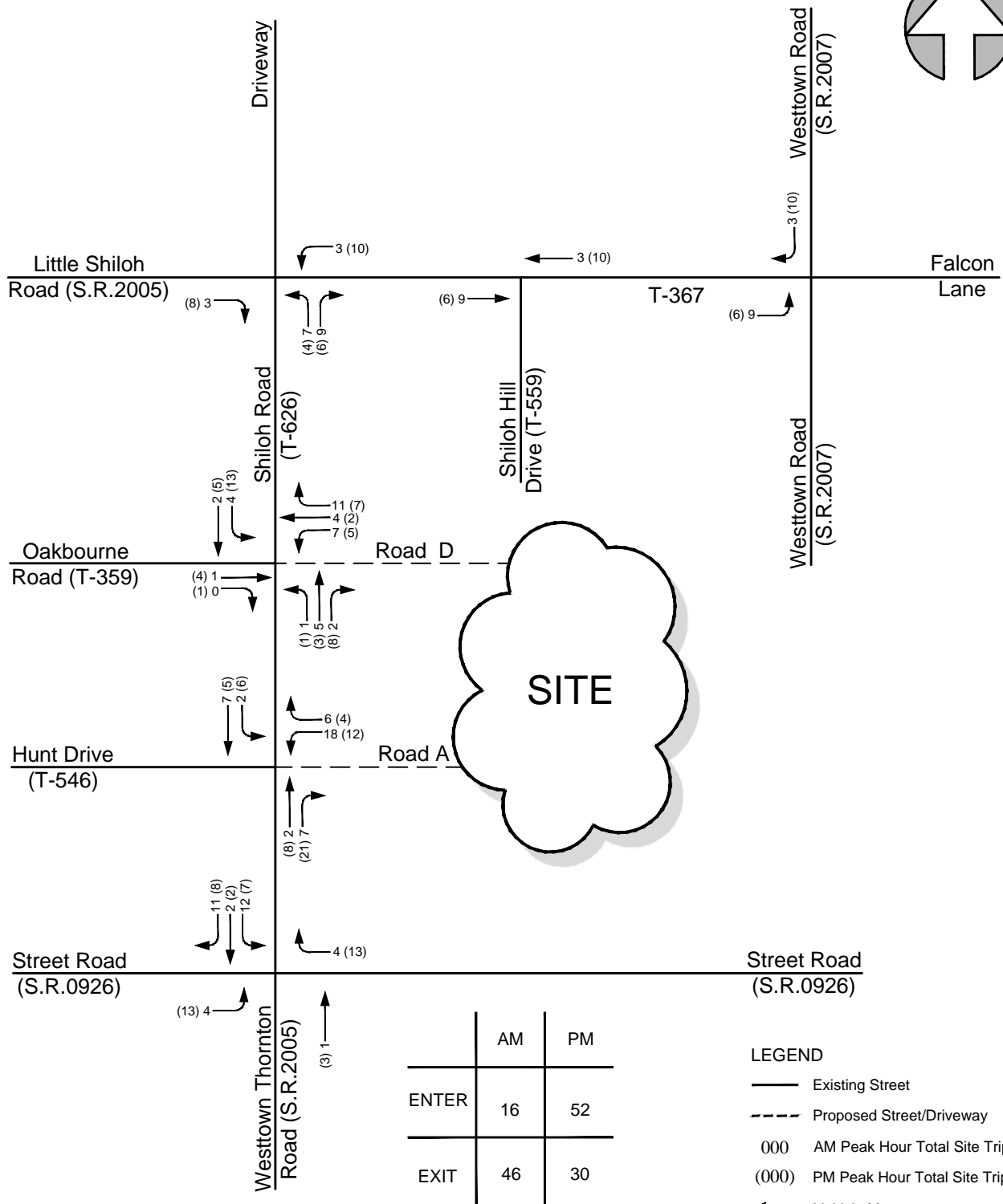
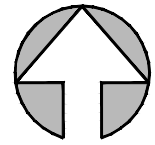
**FIGURE 5**

NEW SITE TRIP DISTRIBUTION AND ASSIGNMENT

**TRAFFIC IMPACT STUDY**

Stokes Estate Residential Project

WESTTOWN TOWNSHIP  
CHESTER COUNTY, PA



- LEGEND**
- Existing Street
  - - - Proposed Street/Driveway
  - 000 AM Peak Hour Total Site Trips
  - (000) PM Peak Hour Total Site Trips
  - ← Vehicle Movement



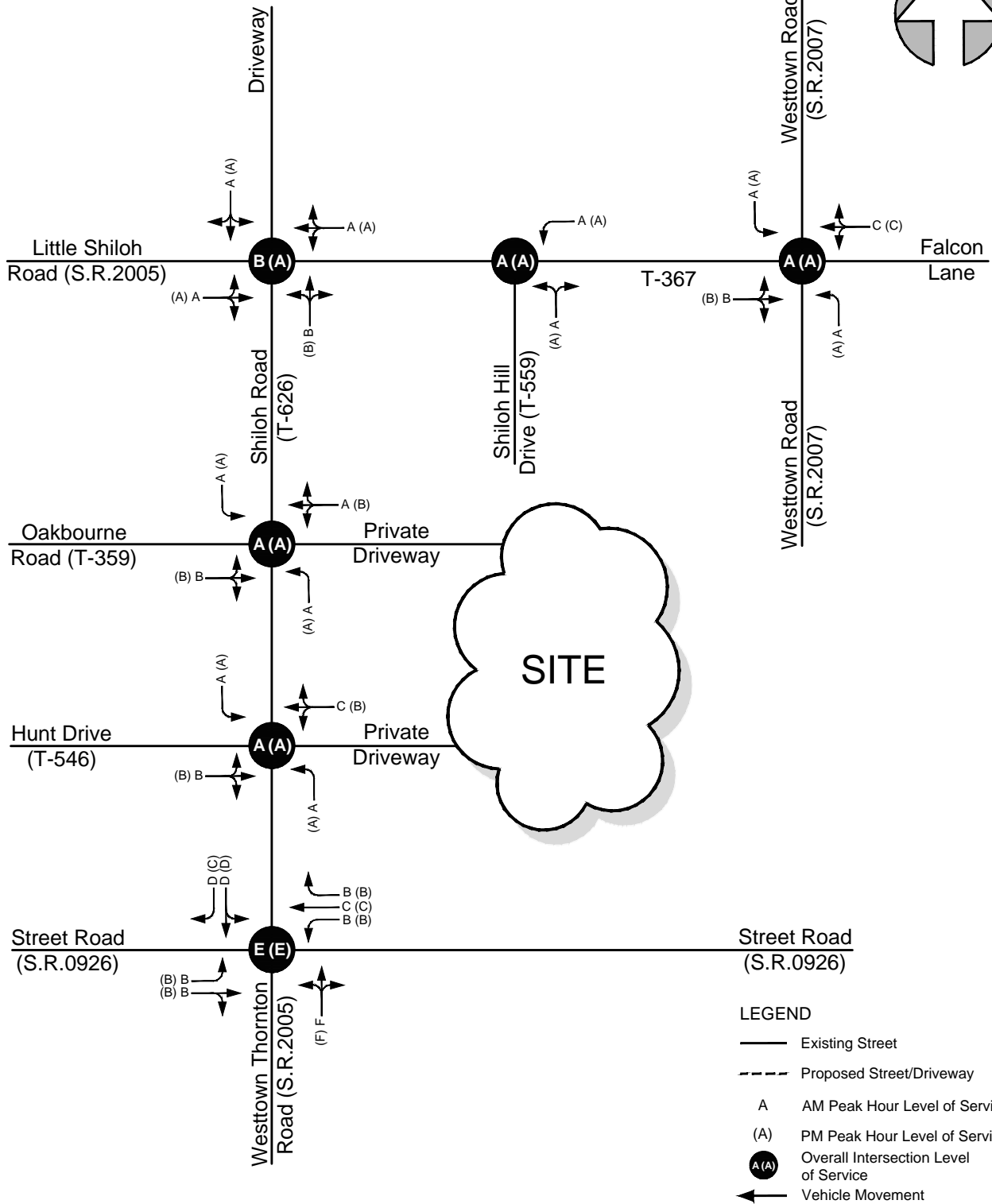
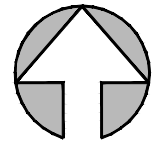
**FIGURE 6**

TOTAL SITE TRIPS  
AM & PM PEAK HOURS

**TRAFFIC IMPACT STUDY**

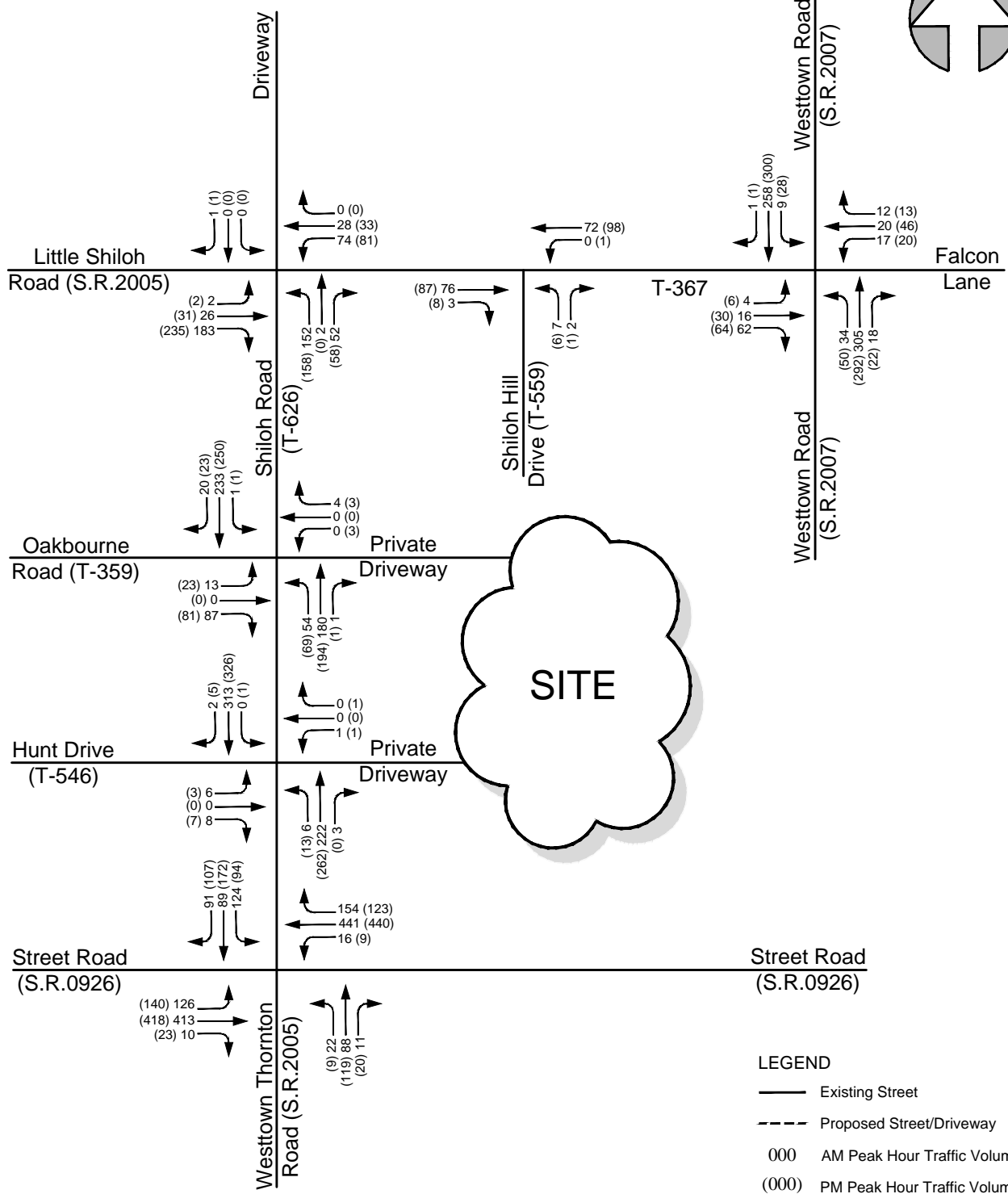
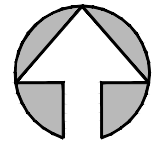
Stokes Estate Residential Project

WESTTOWN TOWNSHIP  
CHESTER COUNTY, PA



**FIGURE 7**  
EXISTING PEAK HOUR  
LEVEL OF SERVICE RESULTS

**TRAFFIC IMPACT STUDY**  
  
Stokes Estate Residential Project  
  
WESTTOWN TOWNSHIP  
CHESTER COUNTY, PA



**FIGURE 8**

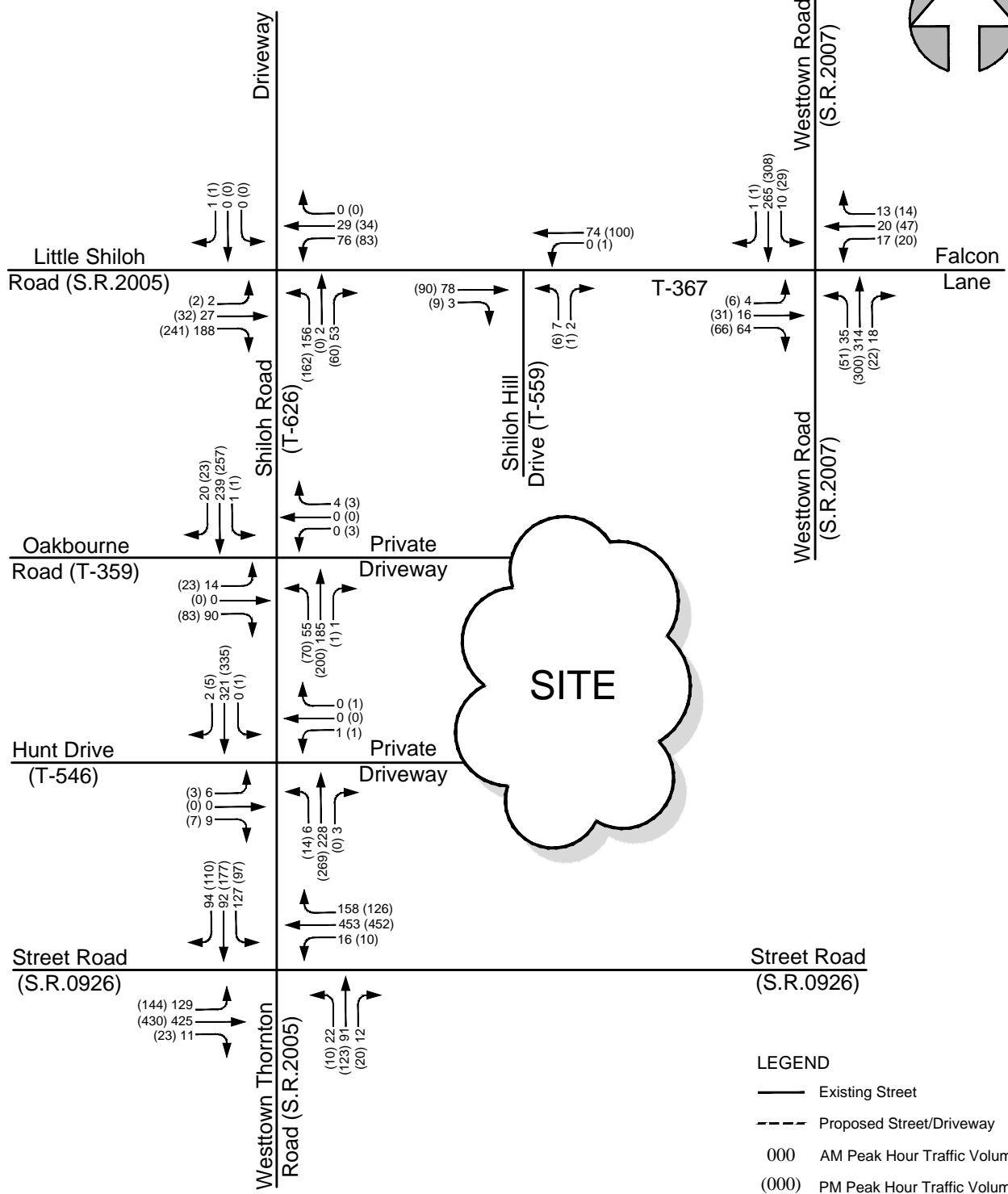
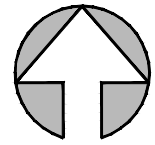
OPENING YEAR (2028)  
NO BUILD PEAK HOUR  
TRAFFIC VOLUMES

**TRAFFIC IMPACT STUDY**

Stokes Estate Residential Project

WESTTOWN TOWNSHIP  
CHESTER COUNTY, PA





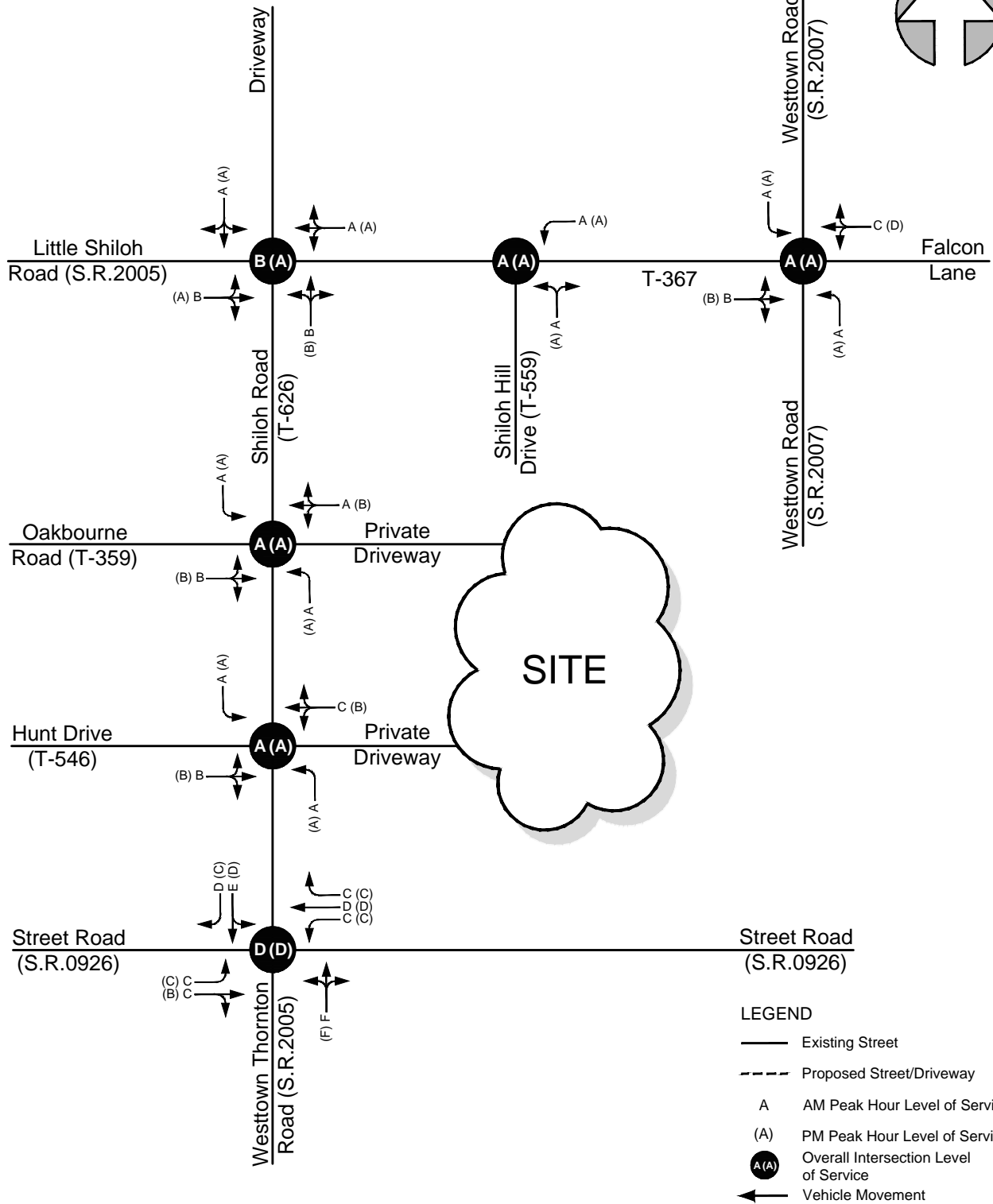
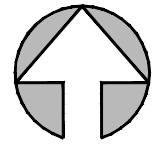
**FIGURE 9**

DESIGN YEAR (2033)  
NO BUILD PEAK HOUR  
TRAFFIC VOLUMES

**TRAFFIC IMPACT STUDY**

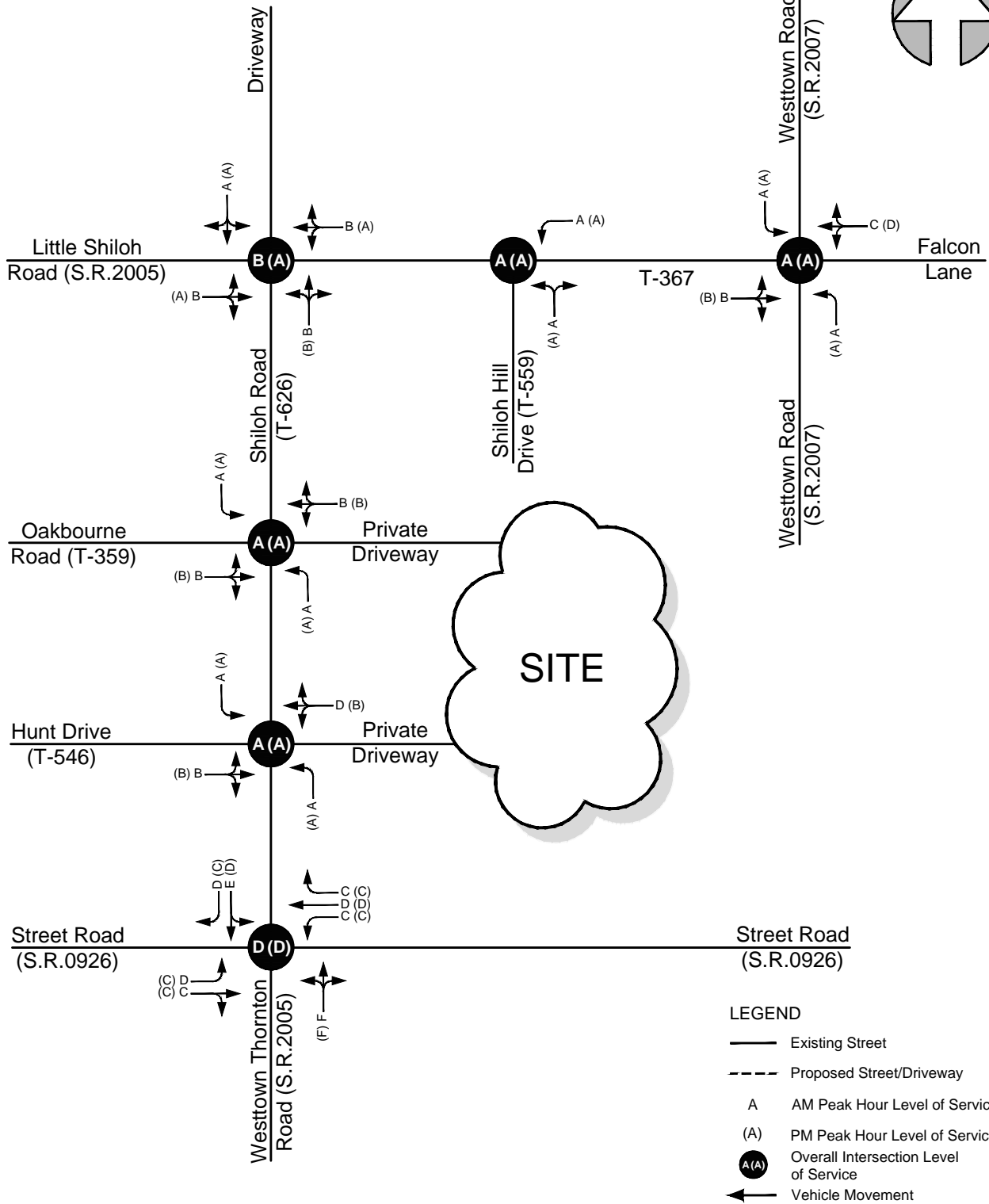
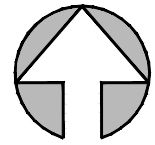
Stokes Estate Residential Project

WESTTOWN TOWNSHIP  
CHESTER COUNTY, PA



**FIGURE 10**  
 OPENING YEAR (2028)  
 NO BUILD PEAK HOUR  
 LEVELS OF SERVICE

**TRAFFIC IMPACT STUDY**  
 Stokes Estate Residential Project  
 WESTTOWN TOWNSHIP  
 CHESTER COUNTY, PA



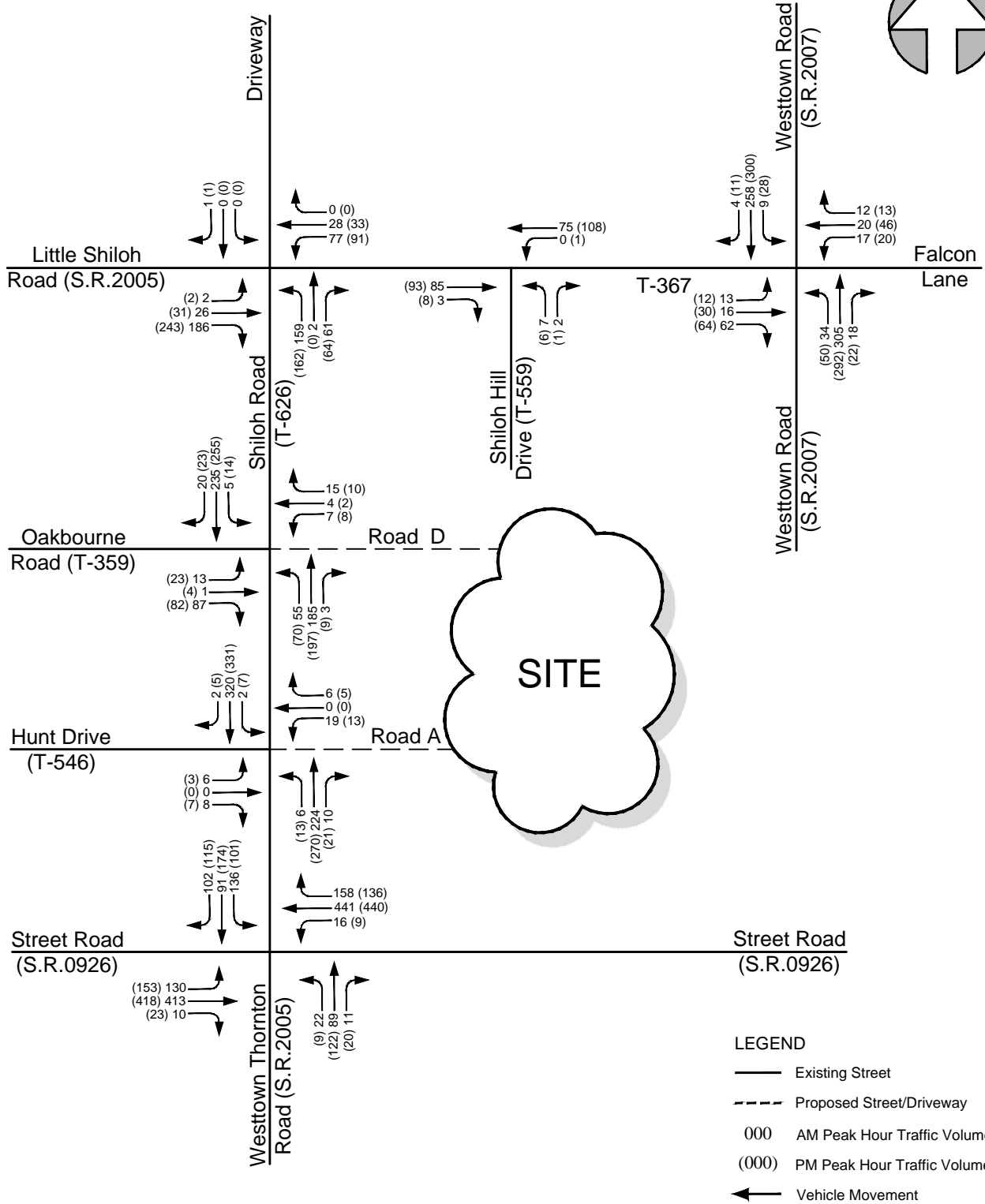
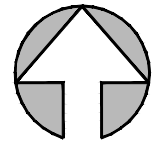
**FIGURE 11**

DESIGN YEAR (2033)  
NO BUILD PEAK HOUR  
LEVELS OF SERVICE

**TRAFFIC IMPACT STUDY**

Stokes Estate Residential Project

WESTTOWN TOWNSHIP  
CHESTER COUNTY, PA



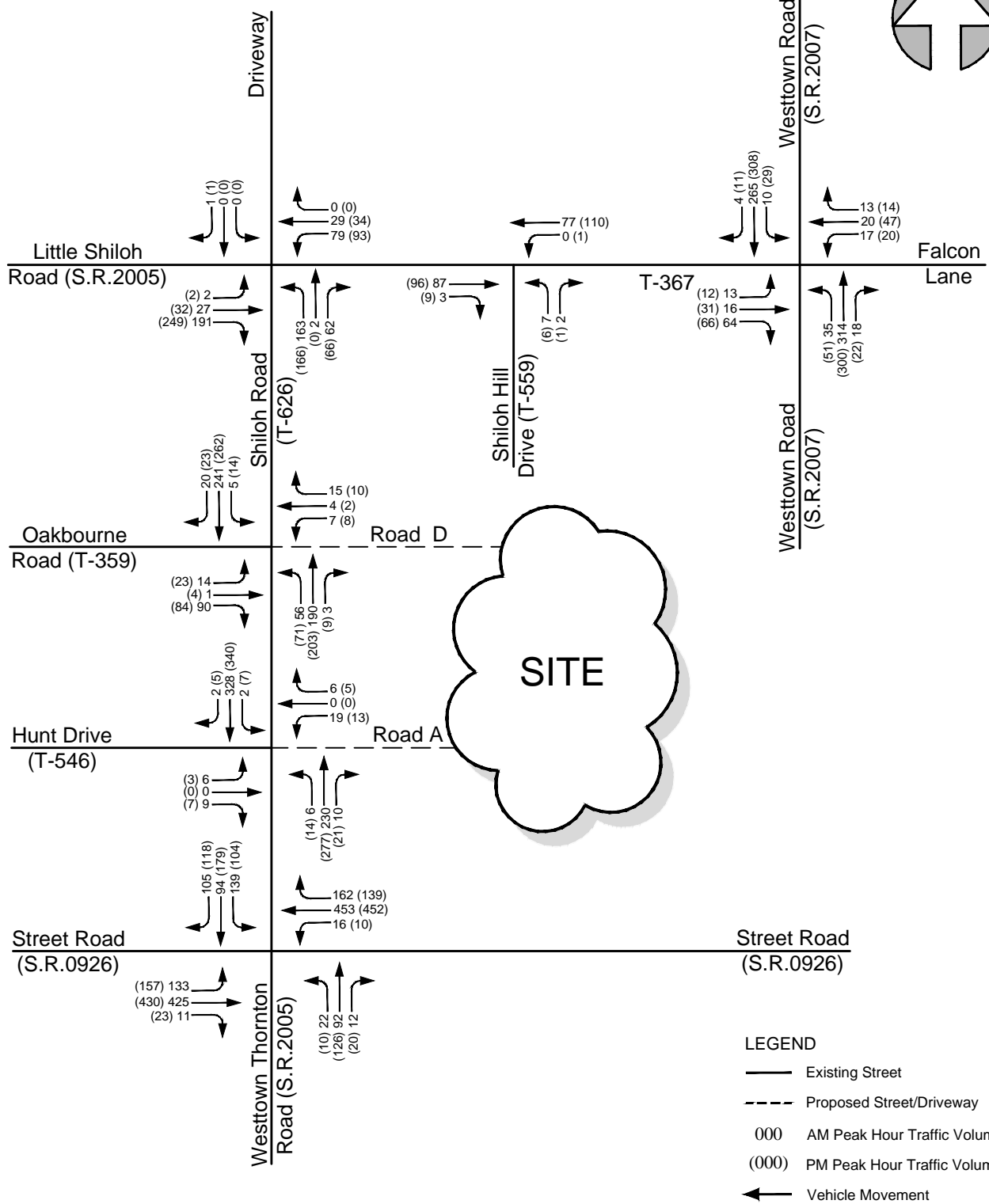
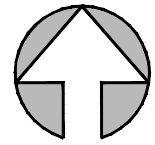
**FIGURE 12**

OPENING YEAR (2028)  
BUILD PEAK HOUR  
TRAFFIC VOLUMES

**TRAFFIC IMPACT STUDY**

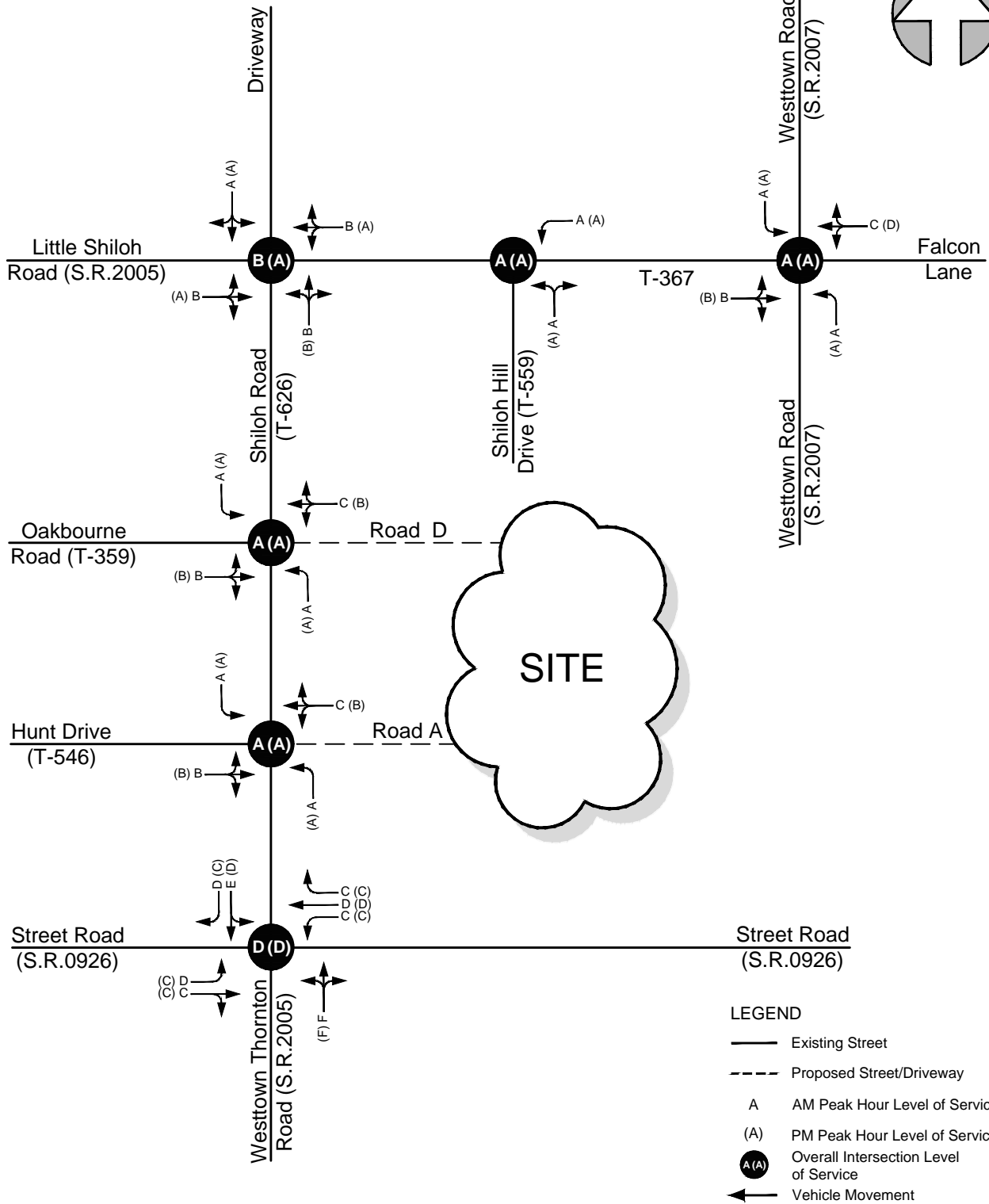
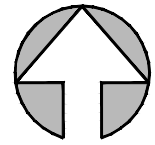
Stokes Estate Residential Project

WESTTOWN TOWNSHIP  
CHESTER COUNTY, PA



**FIGURE 13**  
 DESIGN YEAR (2033)  
 BUILD PEAK HOUR  
 TRAFFIC VOLUMES

**TRAFFIC IMPACT STUDY**  
 Stokes Estate Residential Project  
 WESTTOWN TOWNSHIP  
 CHESTER COUNTY, PA



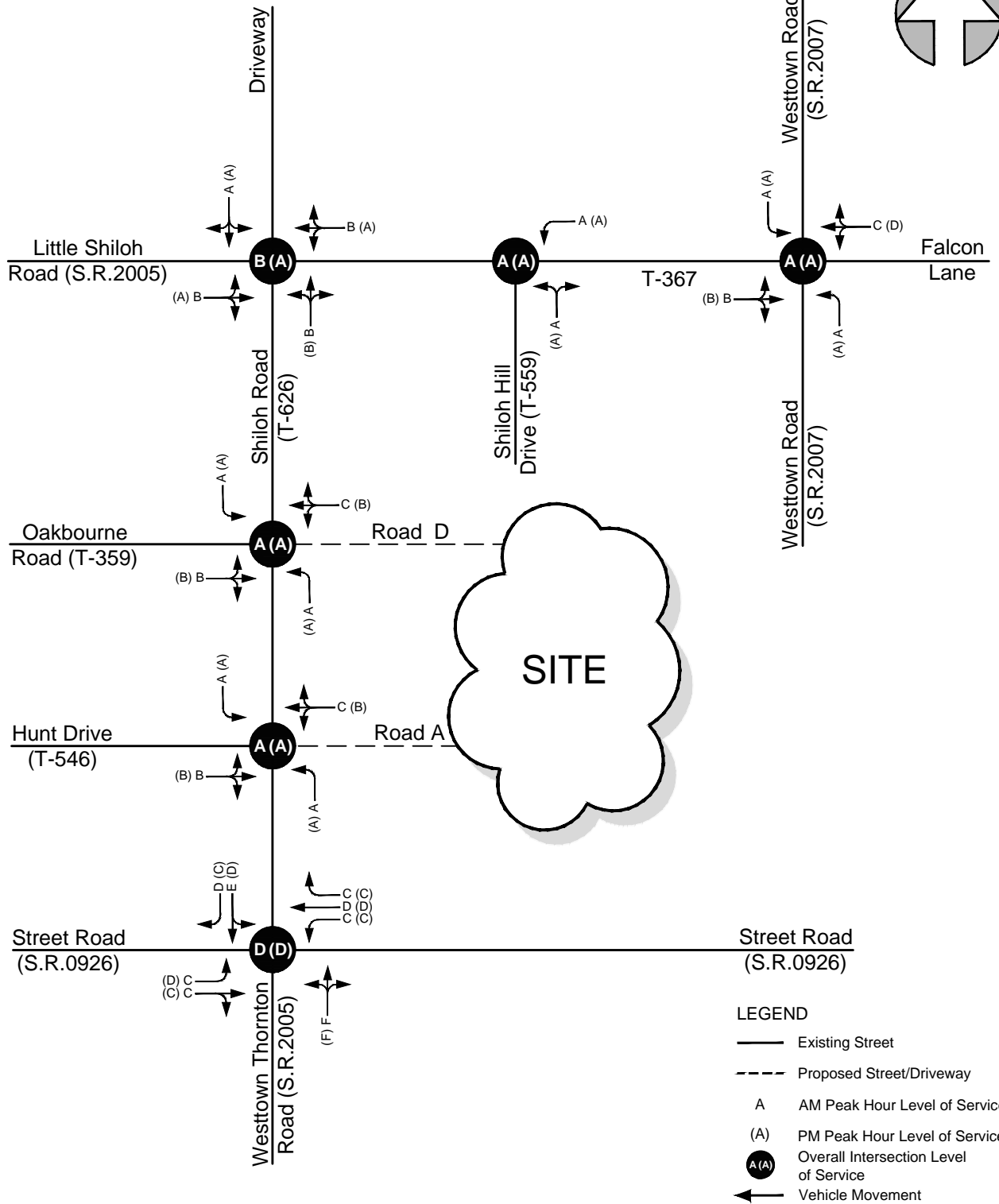
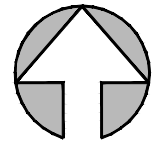
**FIGURE 14**

OPENING YEAR (2028)  
BUILD PEAK HOUR  
LEVELS OF SERVICE

**TRAFFIC IMPACT STUDY**

Stokes Estate Residential Project

WESTTOWN TOWNSHIP  
CHESTER COUNTY, PA



**FIGURE 15**

DESIGN YEAR (2033)  
 BUILD PEAK HOUR  
 LEVELS OF SERVICE

**TRAFFIC IMPACT STUDY**

Stokes Estate Residential Project

WESTTOWN TOWNSHIP  
 CHESTER COUNTY, PA

## LEVELS OF SERVICE / QUEUE TABLES

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**Table A**  
**Future Intersection Level of Service Results**

Intersection	Approach (Movement)	Existing Traffic Volumes		2028 Traffic Volumes w/out Development		2028 Traffic Volumes with Development		2033 Traffic Volumes w/out Development		2033 Traffic Volumes with Development	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Street Road (S.R.0926) / Shiloh Road (T-626) - Westtown Thornton Road (S.R.2005)	EB	B	B	C	C	C	C	C	C	C	C
	EBL	B	B	C	C	D	C	D	C	D	C
	EBTR	B	B	C	B	C	C	C	C	C	C
	WB	C	C	D	D	D	D	D	D	D	D
	WBL	B	B	C	C	C	C	C	C	C	C
	WBT	C	C	D	D	D	D	D	D	D	D
	WBR	B	B	C	C	C	C	C	C	C	C
	NB	F (528.5)	F (414.2)	F (155.1)	F (116.0)	F (159.5)	F (125.6)	F (171.5)	F (133.4)	F (176.1)	F (141.8)
	SB	D	D	E	D	E	D	E	D	E	D
	SBLT	D	E	E	D	E	D	E	D	E	D
	SBR	D	C	D	C	D	C	D	C	D	C
OVERALL	E (64.8)	E (60.9)	D (46.1)	D (39.6)	D (48.2)	D (41.1)	D (49.3)	D (42.2)	D (51.9)	D (43.6)	
Hunt Drive (T-546) / Shiloh Road (T-626)	EB	B	B	B	B	B	B	B	B	B	B
	WB	C	B	C	B	C	B	D	B	C	B
	NBL	A	A	A	A	A	A	A	A	A	A
	SBL	A	A	A	A	A	A	A	A	A	A
	OVERALL	A (0.5)	A (0.4)	A (0.5)	A (0.4)	A (1.2)	A (0.8)	A (0.5)	A (0.4)	A (1.3)	A (0.8)
Oakbourne Road (T-359) / Shiloh Road (T-626)	EB	B	B	B	B	B	B	B	B	B	B
	WB	A	B	A	B	C	B	B	B	C	B
	NBL	A	A	A	A	A	A	A	A	A	A
	SBL	A	A	A	A	A	A	A	A	A	A
	OVERALL	A (3.1)	A (2.9)	A (3.2)	A (3.0)	A (3.8)	A (3.4)	A (3.3)	A (3.0)	A (4.0)	A (3.4)
Little Shiloh Road (S.R.2005/T-367) / Shiloh Road (T-626)	EB	A	A	B	A	B	A	B	A	B	A
	WB	A	A	A	A	B	A	B	A	B	A
	NB	B	B	B	B	B	B	B	B	B	B
	SB	A	A	A	A	A	A	A	A	A	A
	OVERALL	B (10.4)	A (9.6)	B (10.7)	A (9.8)	B (11.0)	A (10.0)	B (10.9)	A (10.0)	B (11.3)	A (10.2)
Little Shiloh Road (T-367) / Shiloh Hill Drive (T-559)	WBL	A	A	A	A	A	A	A	A	A	A
	NB	A	A	A	A	A	A	A	A	A	A
	OVERALL	A (0.5)	A (0.4)	A (0.5)	A (0.4)	A (0.5)	A (0.4)	A (0.5)	A (0.4)	A (0.5)	A (0.3)
Little Shiloh Road (T-367) - Falcoln Lane / Westtown Road (S.R.2007)	EB	B	B	B	B	B	B	B	B	B	B
	WB	C	C	C	D	C	D	C	D	C	D
	NBL	A	A	A	A	A	A	A	A	A	A
	SBL	A	A	A	A	A	A	A	A	A	A
	OVERALL	A (2.9)	A (4.6)	A (3.0)	A (4.9)	A (3.2)	A (5.0)	A (3.1)	A (5.0)	A (3.3)	A (5.2)

**Table B**  
**Queue Analysis (In Feet) - HCM (6th Edition)**

Intersection	Lanes	Existing Storage / Proposed Storage (in feet)	Existing Traffic Volumes		2028 Traffic Volumes without Development		2028 Traffic Volumes with Development	
			AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Street Road (S.R.0926) / Shiloh Road (T-626) - Westtown Thornton Road (S.R.2005)	EBL	125'	83	63	135	98	145	115
	EBTR	+800'	280	210	375	300	375	303
	WBL	100'	13	5	18	8	18	8
	WBT	+800'	420	298	570	423	570	425
	WBR	175'	130	73	168	103	173	115
	NB	+800'	548	498	345	293	353	310
	SBLT	+800'	303	318	355	308	403	323
	SBR	150'	3	95	130	110	150	3
Hunt Drive (T-546) / Shiloh Road (T-626)	EB	+500'	5	3	5	3	5	3
	WB	+500'	0	0	0	0	13	3
	NBL	+500'	0	0	0	3	0	3
	SBL	+500'	0	0	0	0	0	0
Oakbourne Road (T-359) / Shiloh Road (T-626)	EB	+500'	25	15	28	15	28	18
	WB	+500'	0	0	0	0	10	5
	NBL	+500'	8	5	8	8	8	8
	SBL	+500'	0	0	0	0	0	0
Little Shiloh Road (S.R.2005 / T-367) / Shiloh Road (T-626)	EB	+500'	40	38	45	43	45	45
	WB	+500'	20	15	20	18	23	20
	NB	+500'	48	35	53	38	60	40
	SB	+500'	0	0	0	0	0	0
Little Shiloh Road (S.R.2005) / Shiloh Hill Drive (T-559)	WBL	+500'	0	0	0	0	0	0
	NB	+500'	0	0	0	0	0	0
Little Shiloh Road (T-367) - Falcoln Lane / Westtown Road (S.R.2007)	EB	+500'	13	18	13	20	15	23
	WB	+500'	15	33	15	38	15	38
	NBL	260'	3	5	3	5	3	5
	SBL	+500'	0	3	0	3	0	3

Table B (cont.)

## Queue Analysis (In Feet) - HCM (6th Edition)

Intersection	Lanes	Existing Storage / Proposed Storage (in feet)	Existing Traffic Volumes		2033 Traffic Volumes without Development		2033 Traffic Volumes with Development	
			AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Street Road (S.R.0926) / Shiloh Road (T-626) - Westtown Thornton Road (S.R.2005)	EBL	125'	83	63	148	105	160	123
	EBTR	+800'	280	210	390	313	390	318
	WBL	100'	13	5	20	8	20	8
	WBT	+800'	420	298	603	440	603	445
	WBR	175'	130	73	173	105	178	120
	NB	+800'	548	498	373	323	380	338
	SBLT	+800'	303	318	378	330	430	343
	SBR	150'	3	95	138	115	155	125
Hunt Drive (T-546) / Shiloh Road (T-626)	EB	+500'	5	3	5	3	5	3
	WB	+500'	0	0	0	0	13	3
	NBL	+500'	0	0	0	3	0	3
	SBL	+500'	0	0	0	0	0	0
Oakbourne Road (T-359) / Shiloh Road (T-626)	EB	+500'	25	15	28	15	30	18
	WB	+500'	0	0	0	0	10	5
	NBL	+500'	8	5	8	8	8	8
	SBL	+500'	0	0	0	0	0	0
Little Shiloh Road (S.R.2005 / T-367) / Shiloh Road (T-626)	EB	+500'	40	38	48	43	50	48
	WB	+500'	20	15	23	18	23	20
	NB	+500'	48	35	55	40	63	43
	SB	+500'	0	0	0	0	0	0
Little Shiloh Road (S.R.2005) / Shiloh Hill Drive (T-559)	WBL	+500'	0	0	0	0	0	0
	NB	+500'	0	0	0	0	0	0
Little Shiloh Road (T-367) - Falcoln Lane / Westtown Road (S.R.2007)	EB	+500'	13	18	13	20	15	23
	WB	+500'	15	33	18	40	18	40
	NBL	260'	3	5	3	5	3	5
	SBL	+500'	0	3	0	3	0	3

Table C

Queue Analysis (In Feet) - Synchro

Intersection	Lanes	Existing Storage / Proposed Storage (in feet)	Existing Traffic Volumes				2028 Traffic Volumes without Development				2028 Traffic Volumes with Development				2033 Traffic Volumes without Development				2033 Traffic Volumes with Development			
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
			50th	95th	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th
Street Road (S.R.0926) / Shiloh Road (T-626) - Westtown Thornton Road (S.R.2005)	EBL	125'	48	62	38	65	61	103	58	117	64	113	64	146	68	121	58	127	72	130	64	153
	EBTR	+800'	216	220	147	214	278	281	227	321	278	281	227	321	291	291	231	326	291	291	231	326
	WBL	100'	8	18	3	13	9	21	4	16	9	21	4	16	9	21	5	17	9	21	5	17
	WBT	+800'	316	318	210	307	387	387	293	450	387	387	293	450	403	401	300	458	403	401	300	458
	WBR	175'	84	105	47	84	102	126	65	112	105	129	73	123	105	129	66	113	108	132	73	123
	NB	+800'	119	203	79	225	108	140	102	171	110	142	104	183	113	145	106	187	114	147	108	191
	SBLT	+800'	163	224	137	326	198	246	184	304	214	271	192	320	205	256	193	329	234	282	201	344
	SBR	150'	64	103	50	113	77	106	67	118	88	118	73	127	80	110	70	123	90	121	75	130

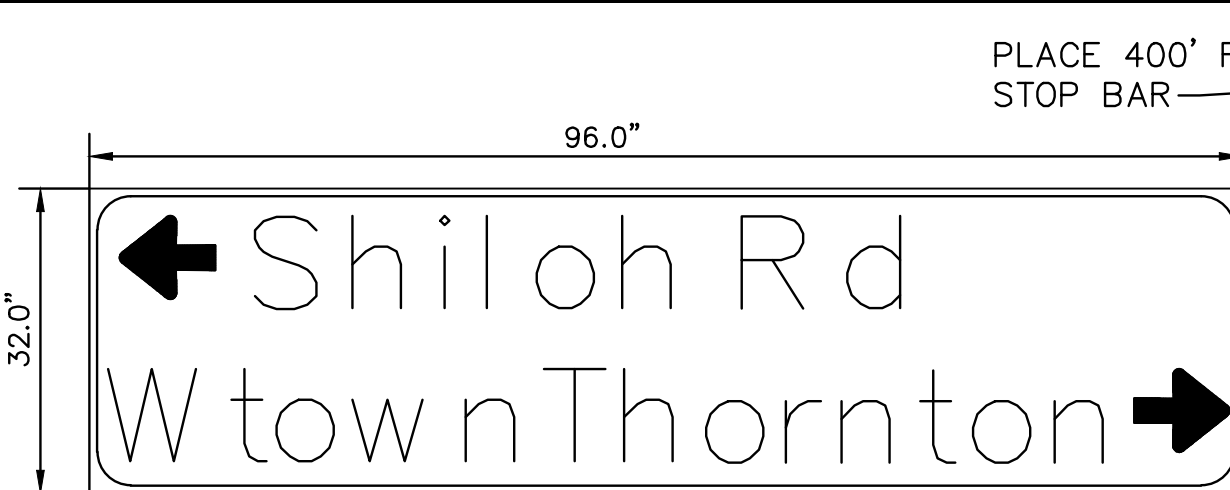
## EXISTING CONDITIONS (Signal Plans, Sketches)

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SIGN TABULATION			
PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
A	R10-6L	24"x30"	STOP HERE ON RED
B	R3-7L	30"x30"	LEFT LANE MUST TURN LEFT
C	R3-7R	30"x30"	RIGHT LANE MUST TURN RIGHT
D	R10-3R	9"x12"	PUSH BUTTON FOR GREEN LIGHT
E	R10-3L	9"x12"	PUSH BUTTON FOR GREEN LIGHT
F	D3-4	16"x75"	Street Rd
G	D3-5	96"x32"	Shiloh Rd Wtown Thornton
L	D3-5	96"x32"	Wtown Thornton Shiloh Rd
J	R10-11	24"x30"	NO TURN ON RED
K	W3-3	36"x36"	SIGNAL AHEAD
M	R10-12	30"x36"	LEFT TURN YIELD ON GREEN
N	R10-11	30"x36"	NO TURN ON RED



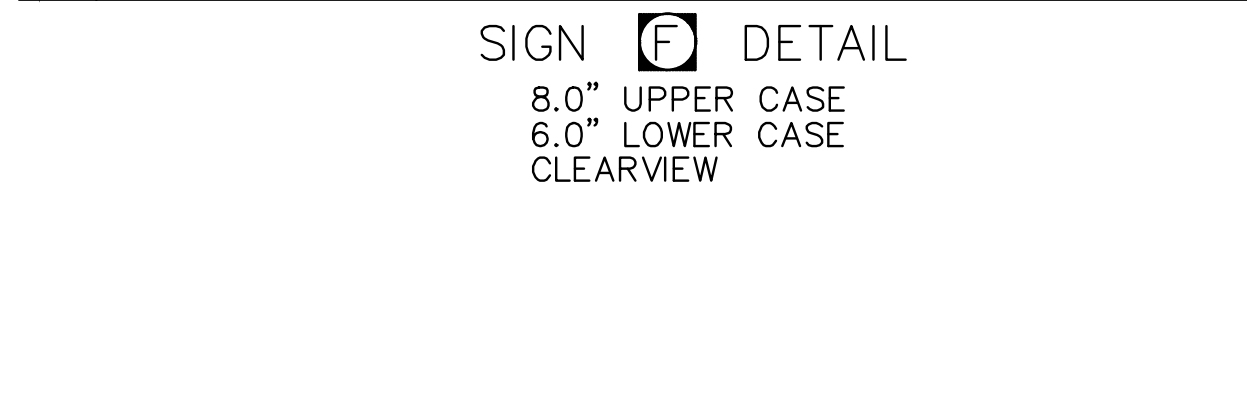
SIGN F DETAIL  
8.0" UPPER CASE  
6.0" LOWER CASE  
CLEARVIEW



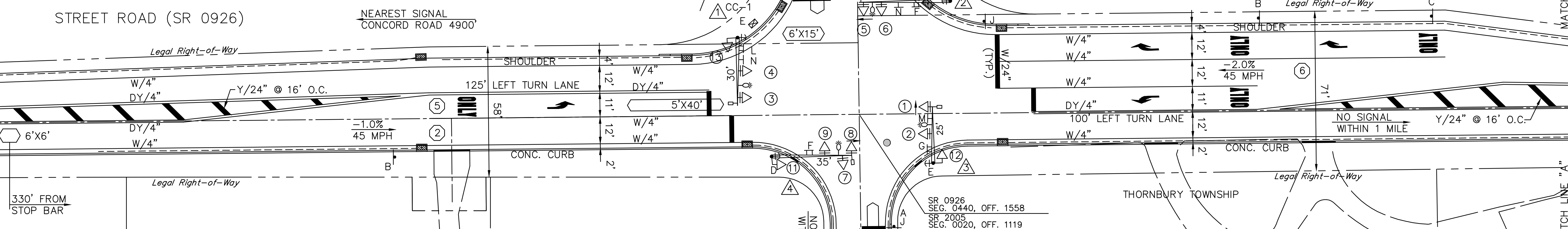
SIGN C DETAIL  
10.0" UPPER CASE  
8.0" LOWER CASE  
CLEARVIEW



SIGN D DETAIL  
10.0" UPPER CASE  
8.0" LOWER CASE  
CLEARVIEW



SIGN E DETAIL  
8.0" UPPER CASE  
6.0" LOWER CASE  
CLEARVIEW



Time	Vehicle	Ped	Totals
6:00 AM TO 7:00 AM			
7:00 AM TO 8:00 AM			
8:00 AM TO 9:00 AM	132	13	145
9:00 AM TO 10:00 AM	108	12	120
10:00 AM TO 11:00 AM	40	8	48
11:00 AM TO 12:00 PM	75	7	82
12:00 PM TO 1:00 PM	62	6	68
1:00 PM TO 2:00 PM	84	8	92
2:00 PM TO 3:00 PM	75	7	82
3:00 PM TO 4:00 PM	59	6	65
4:00 PM TO 5:00 PM	70	7	77
5:00 PM TO 6:00 PM	59	6	65
6:00 PM TO 7:00 PM	66	6	72
Totals	98	80	178

COUNT DATE 1/22/02

PHASE	MOVEMENT, SEQUENCE AND TIMING DIAGRAM												
	INTERVAL	1	2	3	4	5	6	7	8	9	10	11	12
1		G	Y	R									
2		G	Y	R									
3,4		R	R	R									
5		R	R	R									
6,7		R	R	R									
8		R	R	R									
9		R	R	R									
10		R	R	R									
11		G	Y	R									
12		R	R	R									
13		R	R	R									

PHASE	EMERGENCY PRE-EMPTION DIAGRAM												
	INTERVAL	13	14	15	16	17	18	19	20	21	22	23	24
1		G	Y	R									
2		G	Y	R									
3,4		R	R	R									
5		R	R	R									
6,7		R	R	R									
8		R	R	R									
9		R	R	R									
10		R	R	R									
11		R	R	R									
12		R	R	R									
13		R	R	R									

\*\* FOR DURATION OF PRE-EMPTION

OPERATION NOTES

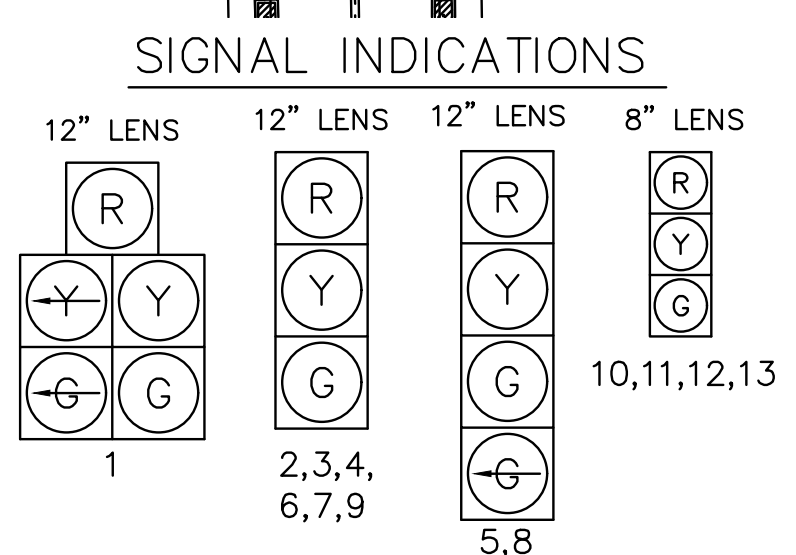
① G/Y IF FOLLOWED BY PHASE 2+6.

② G IF FOLLOWED BY PHASE 2+6.

③ SIGNAL TO REMAIN GREEN WHEN RETURNING TO PHASE 2+6

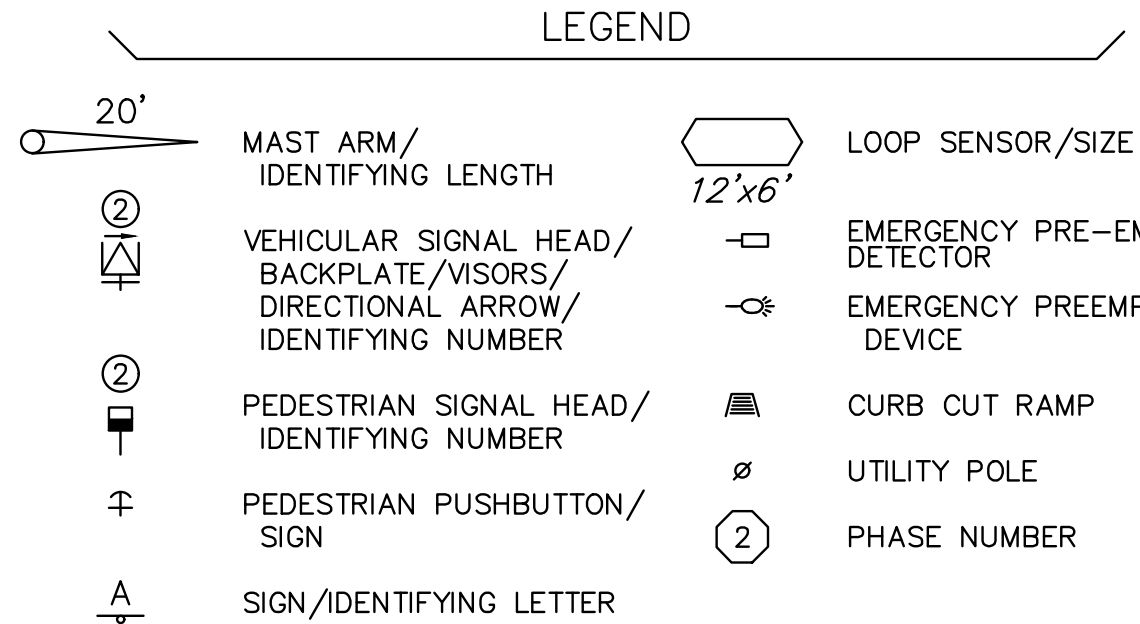
MAX 2 TO OPERATE MON.-FRI. 6:00 AM TO 9:00 AM

MAX 1 TO OPERATE AT ALL OTHER TIMES



EMERGENCY PRE-EMPTION NOTES:

- CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE EASTBOUND & WESTBOUND APPROACHES OF STREET ROAD AND THE SOUTHBOUND APPROACH OF SHILOH ROAD AND NORTHBOUND APPROACH OF WESTTOWN THORNTON ROAD WITH A FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION. THIS EMERGENCY BEACON SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT, AND SHALL FLASH WHEN THE EMERGENCY VEHICLE HAS CONTROL OF THE INTERSECTION FOR THE APPROPRIATE APPROACH.
- THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS IMMEDIATELY, FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS, ACCORDINGLY, THEN THE GREEN INTERVAL FOR THE PREEMPTED PHASE SHALL FOLLOW.
- THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTION PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE.
- IF SIGNALS HAVE BEEN ACTIVATED BY PEDESTRIAN PUSHBUTTON, AND THE SIGNAL IS PRE-EMPTED, THE PEDESTRIAN TIME SHALL BE SPLIT BETWEEN PED "WALK" AND PED "CLEAR". THE PED "WALK" INTERVAL SHALL TERMINATE IMMEDIATELY, FOLLOWED BY THE PED "CLEAR" INTERVAL, THIS INTERVAL SHALL TIME OUT FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES, BEFORE GOING INTO EMERGENCY PRE-EMPTION.
- IF THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, ARE FLASHING ALL SIGNALS SHALL REMAIN FLASHING.
- IF ADDITIONAL PRE-EMPTION PHASES ARE ACTIVATED WHILE IN PRE-EMPTION, THE ORIGINAL PRE-EMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PRE-EMPTION PHASE.
- UPON COMPLETION OF PRE-EMPTION, PHASE 2,4,6 OR 8 IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 4 SHALL FOLLOW.
- IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED. PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.



FIXED	2	5	2		5	2		3	4	2		3	4	2
MINIMUM	3	5	2		5	2		3	4	2		3	4	2
SEC./ACT.														
MAX. INITIAL														
PASSAGE	3	5			3							3		
TBR														
TTR														
MIN. GAP														
MAX 1	7							13				7		
MAX 2	7							18				7		
PEDESTRIAN								15*				15*		
MEMORY	NON-LOCK				MIN. RECALL			NON-LOCK				LOCK		

\* UPON PEDESTRIAN ACTUATION ONLY

SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS 1,2,3,4,5,6,7,8,9

SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS & LOUVERS 10,11,12,13

### GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES, NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS IS THE RESPONSIBILITY OF THE PERMITTEE.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 68.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 FT. ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.

ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

THE MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNALS MEASURED AT RIGHT ANGLES TO THE APPROACH SHALL BE 8 FEET.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF ACT 187, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, EFFECTIVE DATE DECEMBER 19, 1996.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT FOR REVIEW PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-7800 SERIES.

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION  
ENGINEERING DISTRICT 6-0

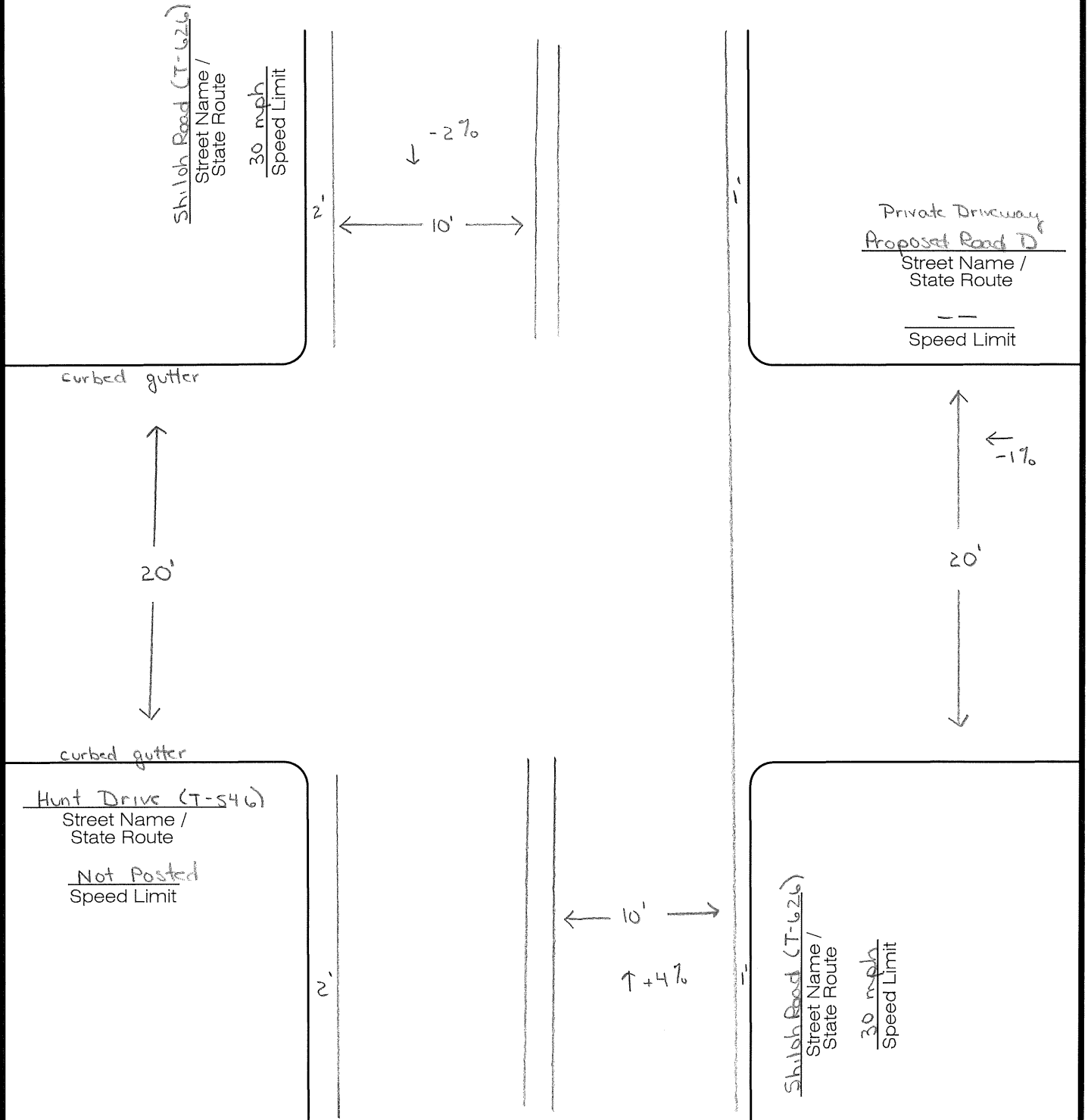
COUNTY: CHESTER  
MUNICIPALITY: WESTTOWN TOWNSHIP AND THORNBURY TOWNSHIP  
INTERSECTION: STREET ROAD (SR 0926)  
WESTTOWN THORNTON ROAD (SR 2005) AND SHILOH ROAD

NO.	REVISION	DES./REV.	DATE	REV.	DATE	RECOM.	DATE
1	"RELOCATE SHILOH ROAD" NEW DRAWING						

# SITE INVENTORY - FIELD SHEET



Intersection: Shiloh Road (T-626) / Hunt Drive (T-546) - Proposed Road D  
 Project Name: Stokes Estates Residential Dev. Municipality: Westtown Township  
 Project Number: 278 612.21 Recorder(s): JAS / LJS Date: 4/16/21



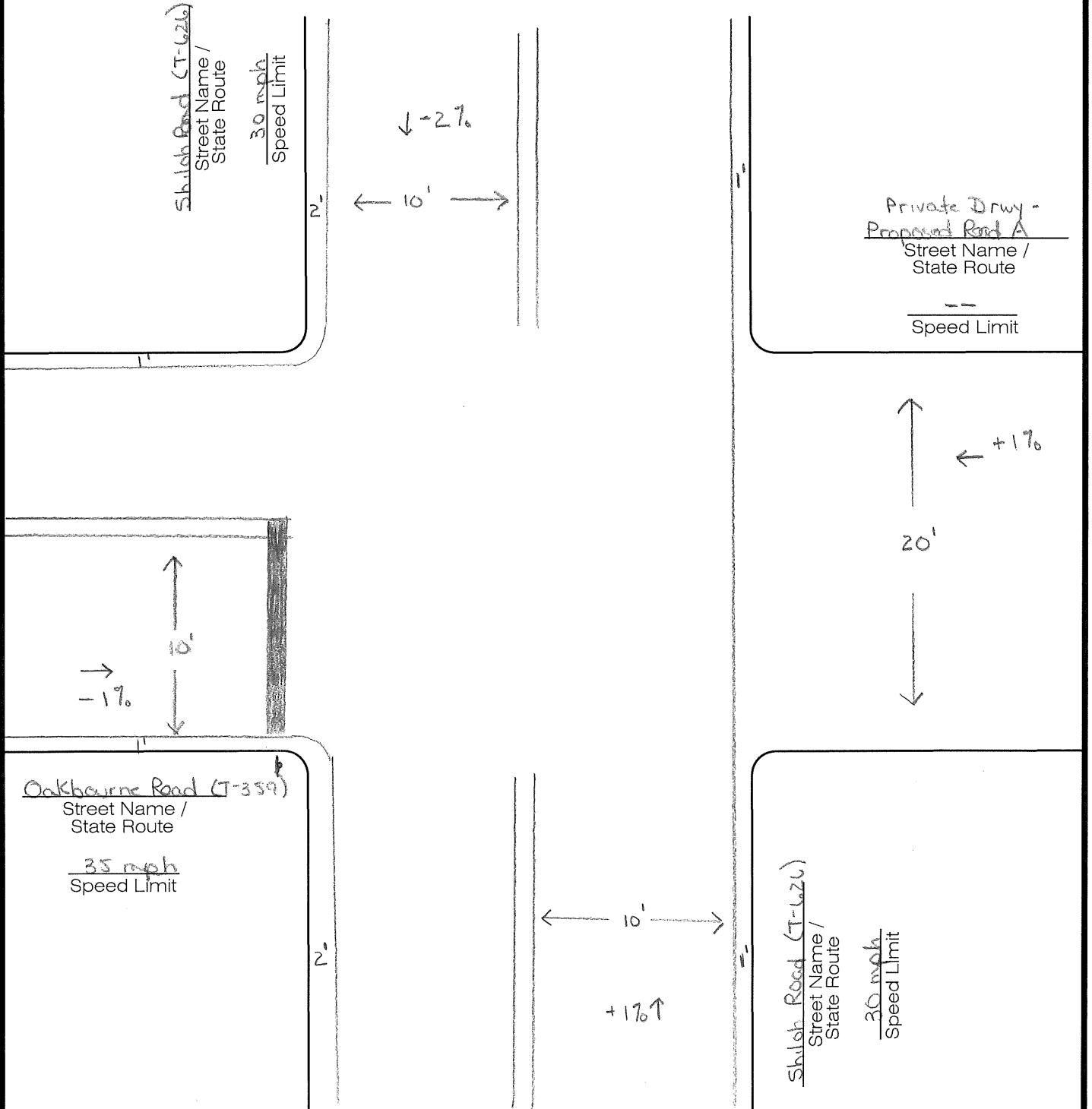
- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. Identify lane configuration and lane widths</li> <li>2. Note shoulder widths / type and / or curb</li> <li>3. Note any medians, islands, or channelization</li> <li>4. Note grade of approaches</li> <li>5. Note sight distance and restrictions</li> </ol> | <ol style="list-style-type: none"> <li>6. Identify segment / offset if state road</li> <li>7. Note surrounding land uses</li> <li>8. Note signs, traffic control, pavement markings, bus stops, and parking locations</li> <li>9. Take pictures in ALL four directions</li> </ol> |
|---|---|



# SITE INVENTORY - FIELD SHEET



Intersection: Shiloh Road (T-626)/Oakbourne Road (T-359) - Proposed Road A  
 Project Name: Stokes Estate Residential Dev. Municipality: Westtown Township  
 Project Number: 278.021.21 Recorder(s): JAS / LJS Date: 4/16/21



- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. Identify lane configuration and lane widths</li> <li>2. Note shoulder widths / type and / or curb</li> <li>3. Note any medians, islands, or channelization</li> <li>4. Note grade of approaches</li> <li>5. Note sight distance and restrictions</li> </ol> | <ol style="list-style-type: none"> <li>6. Identify segment / offset if state road</li> <li>7. Note surrounding land uses</li> <li>8. Note signs, traffic control, pavement markings, bus stops, and parking locations</li> <li>9. Take pictures in ALL four directions</li> </ol> |
|---|---|





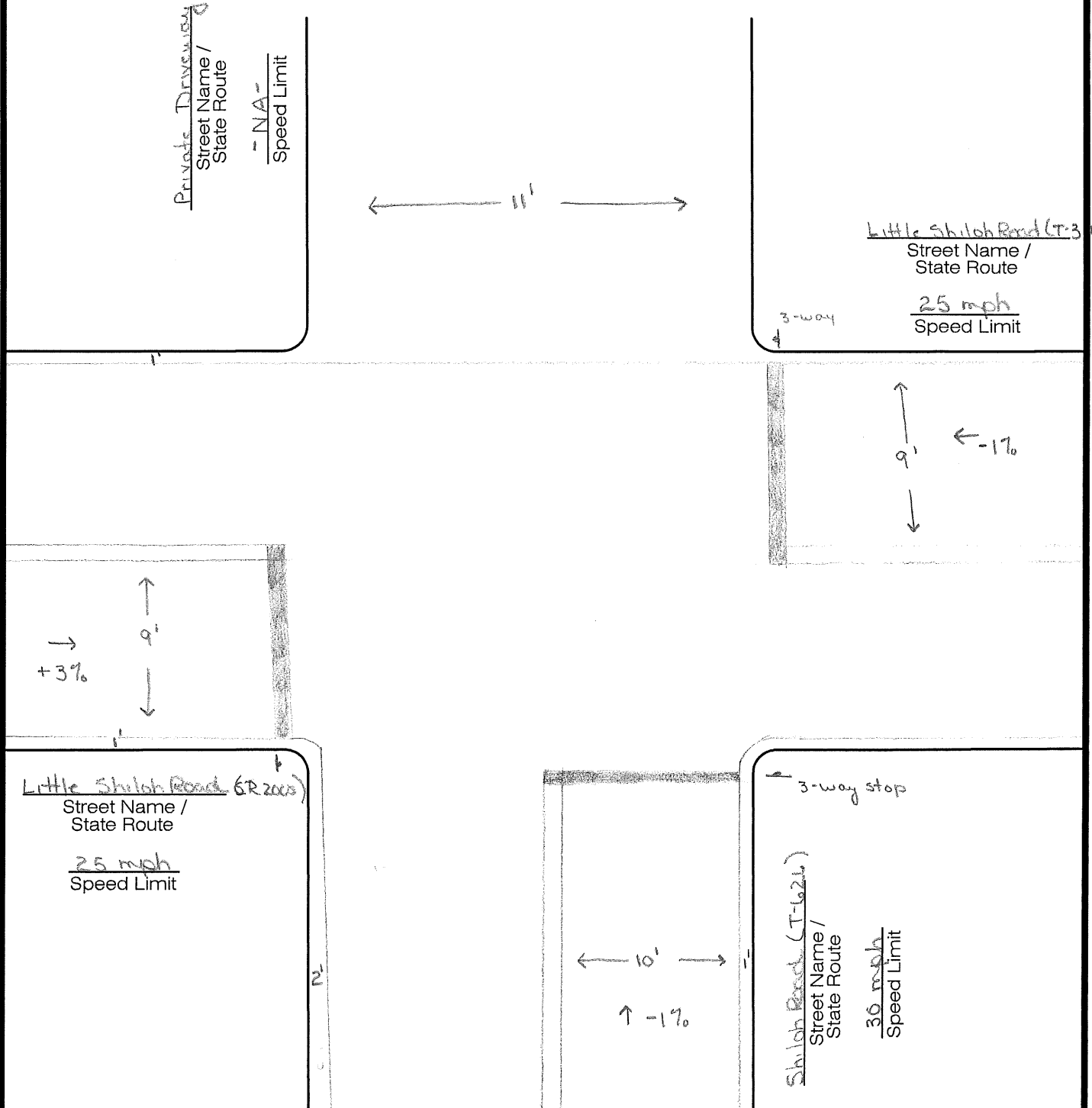
# SITE INVENTORY - FIELD SHEET



Intersection: Shiloh Road (T-626) / Little Shiloh Road (SR2005)

Project Name: Stokes Estates Residential Dev Municipality: Westtown Township

Project Number: 278.021.21 Recorder(s): JAS / LIS Date: 4/16/21



1. Identify lane configuration and lane widths
2. Note shoulder widths / type and / or curb
3. Note any medians, islands, or channelization
4. Note grade of approaches
5. Note sight distance and restrictions
6. Identify segment / offset if state road
7. Note surrounding land uses
8. Note signs, traffic control, pavement markings, bus stops, and parking locations
9. Take pictures in ALL four directions



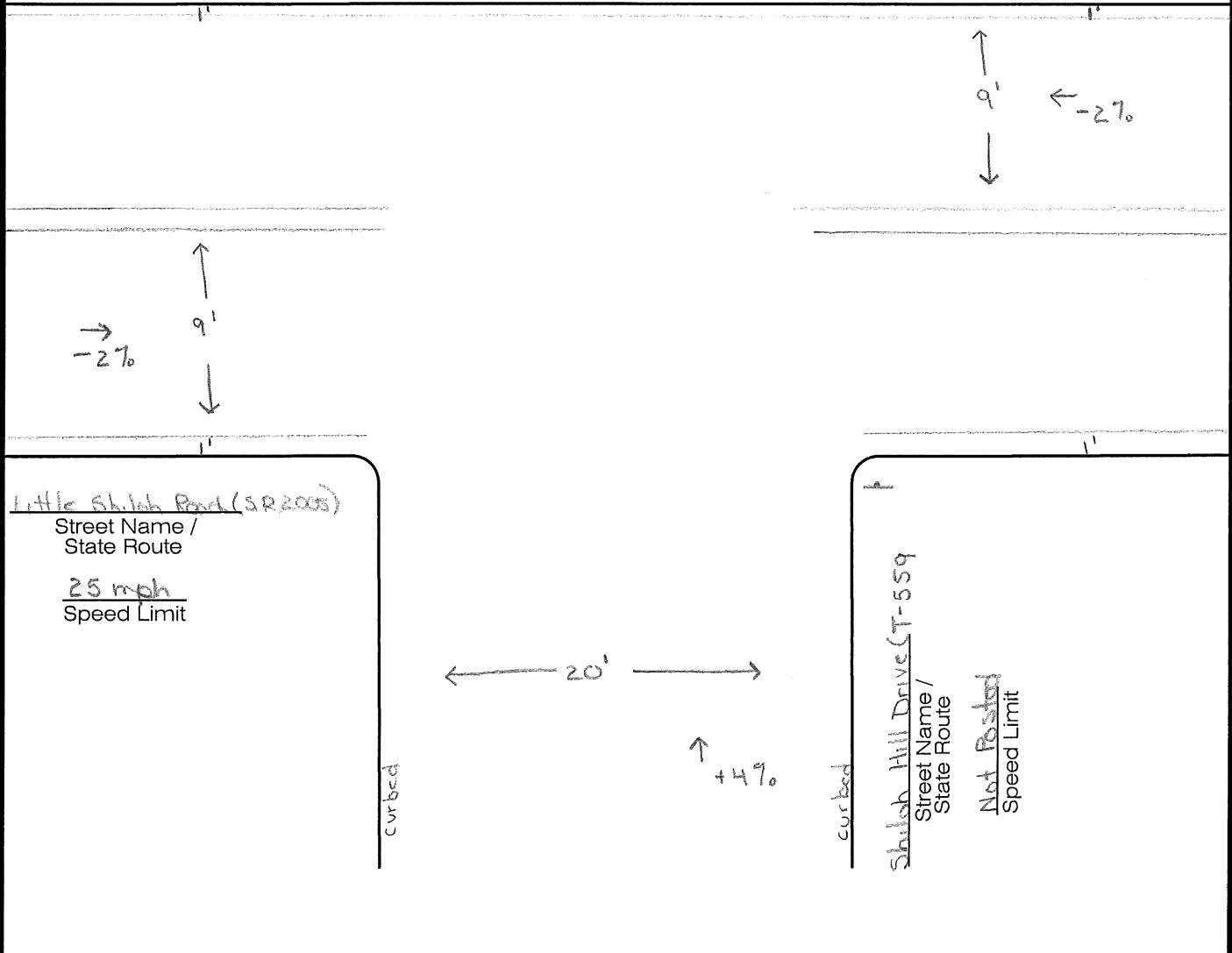
# SITE INVENTORY - FIELD SHEET



Intersection: Little Shiloh Road (S.R 2005) / Shiloh Hill Drive (T-559)

Project Name: Stokes Estates Residential Dev. Municipality: Westtown Township

Project Number: 278.021.21 Recorder(s): JAS/LJS Date: 4/16/21



Little Shiloh Road (SR 2005)  
 Street Name /  
 State Route  
25 mph  
 Speed Limit

Shiloh Hill Drive (T-559)  
 Street Name /  
 State Route  
 Not Posted  
 Speed Limit

- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. Identify lane configuration and lane widths</li> <li>2. Note shoulder widths / type and / or curb</li> <li>3. Note any medians, islands, or channelization</li> <li>4. Note grade of approaches</li> <li>5. Note sight distance and restrictions</li> </ol> | <ol style="list-style-type: none"> <li>6. Identify segment / offset if state road</li> <li>7. Note surrounding land uses</li> <li>8. Note signs, traffic control, pavement markings, bus stops, and parking locations</li> <li>9. Take pictures in ALL four directions</li> </ol> |
|---|---|



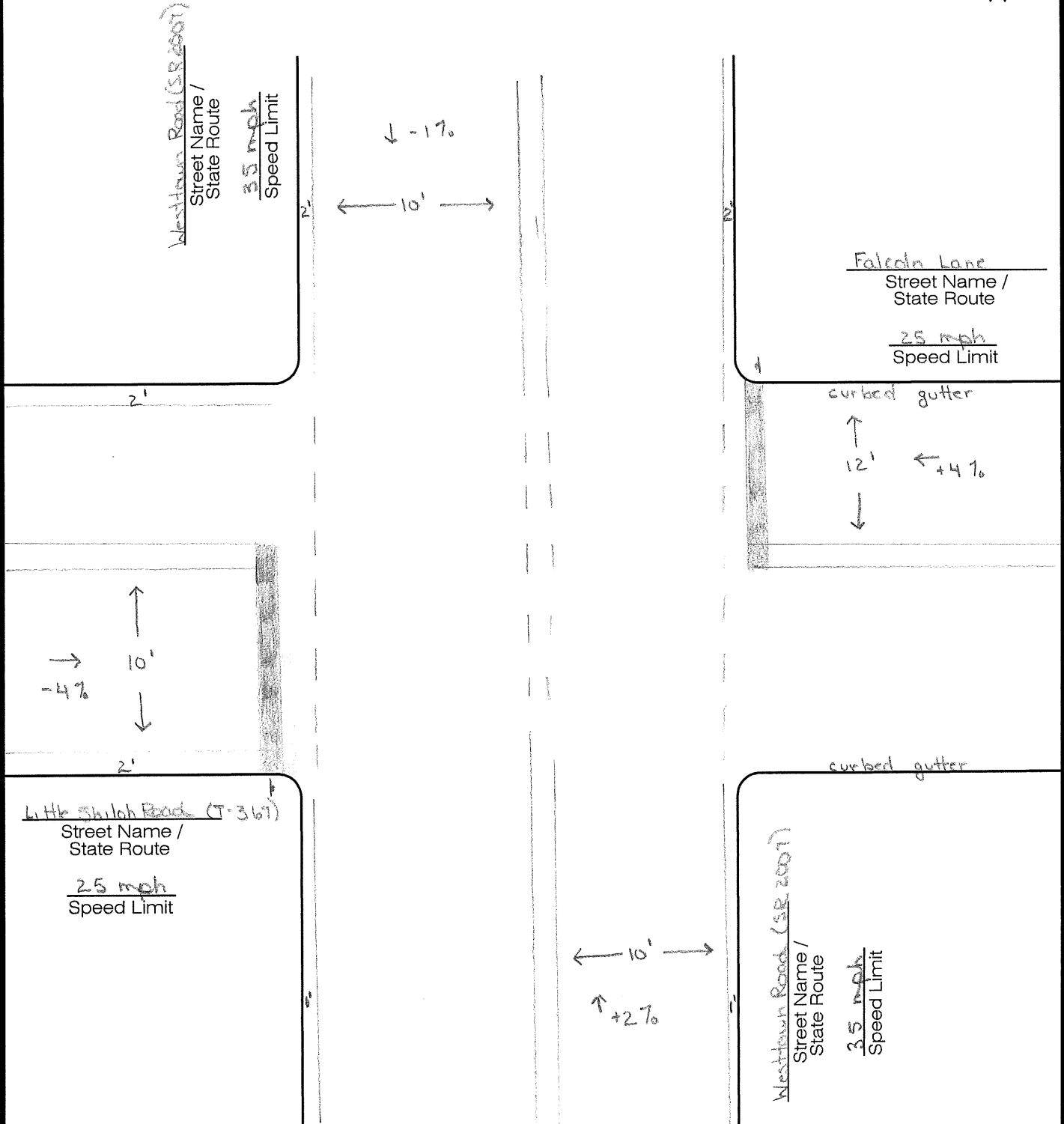
# SITE INVENTORY - FIELD SHEET



Intersection: Little Shiloh Road (T-367) - Falcoln Lane / Westtown Road (SR 2007)

Project Name: Stokes Estates Residential Dev. Municipality: Westtown Township

Project Number: 278,021,21 Recorder(s): JAS/LJS Date: 4/16/21



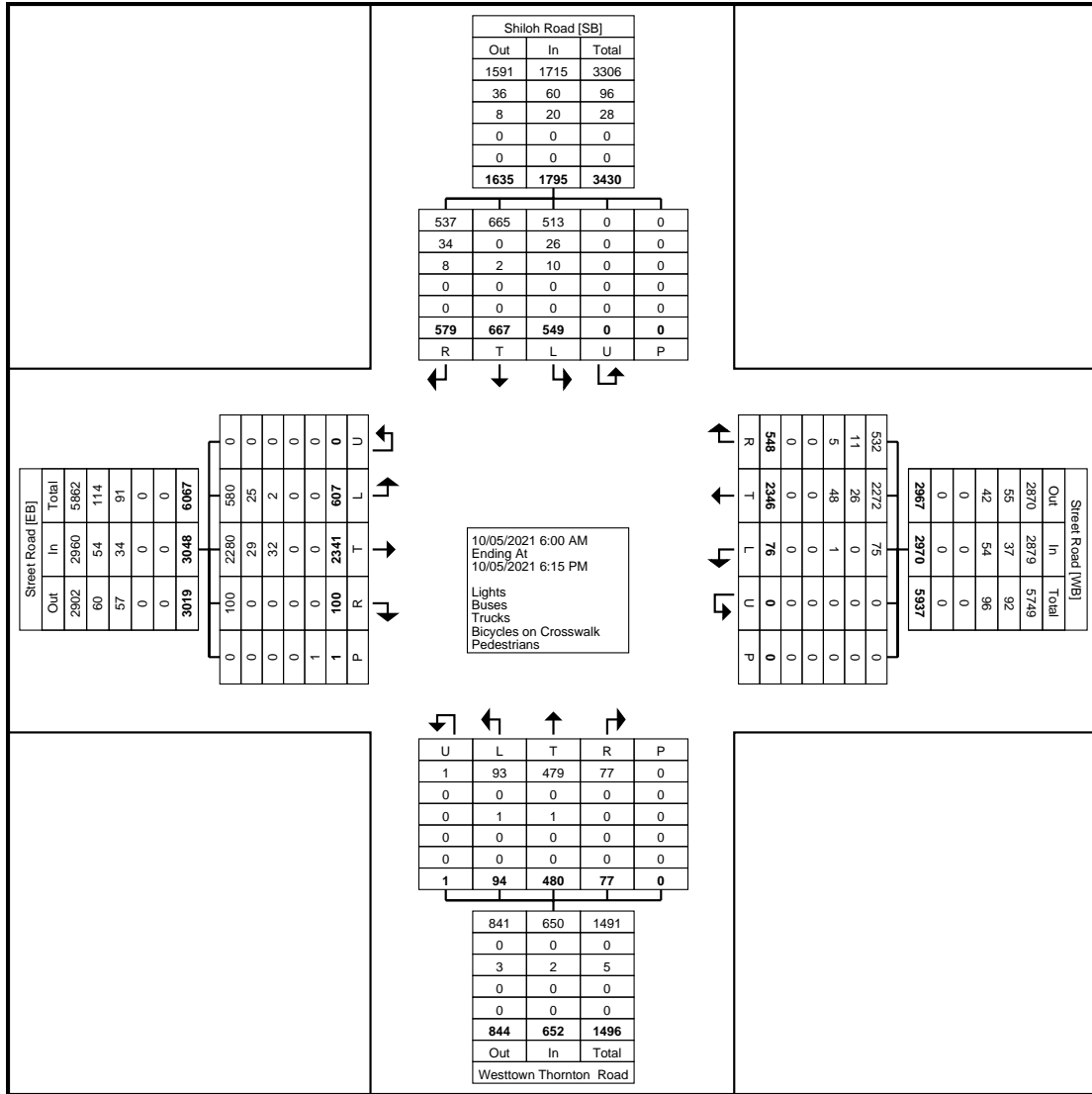
- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. Identify lane configuration and lane widths</li> <li>2. Note shoulder widths / type and / or curb</li> <li>3. Note any medians, islands, or channelization</li> <li>4. Note grade of approaches</li> <li>5. Note sight distance and restrictions</li> </ol> | <ol style="list-style-type: none"> <li>6. Identify segment / offset if state road</li> <li>7. Note surrounding land uses</li> <li>8. Note signs, traffic control, pavement markings, bus stops, and parking locations</li> <li>9. Take pictures in ALL four directions</li> </ol> |
|---|---|



## TRAFFIC COUNTS

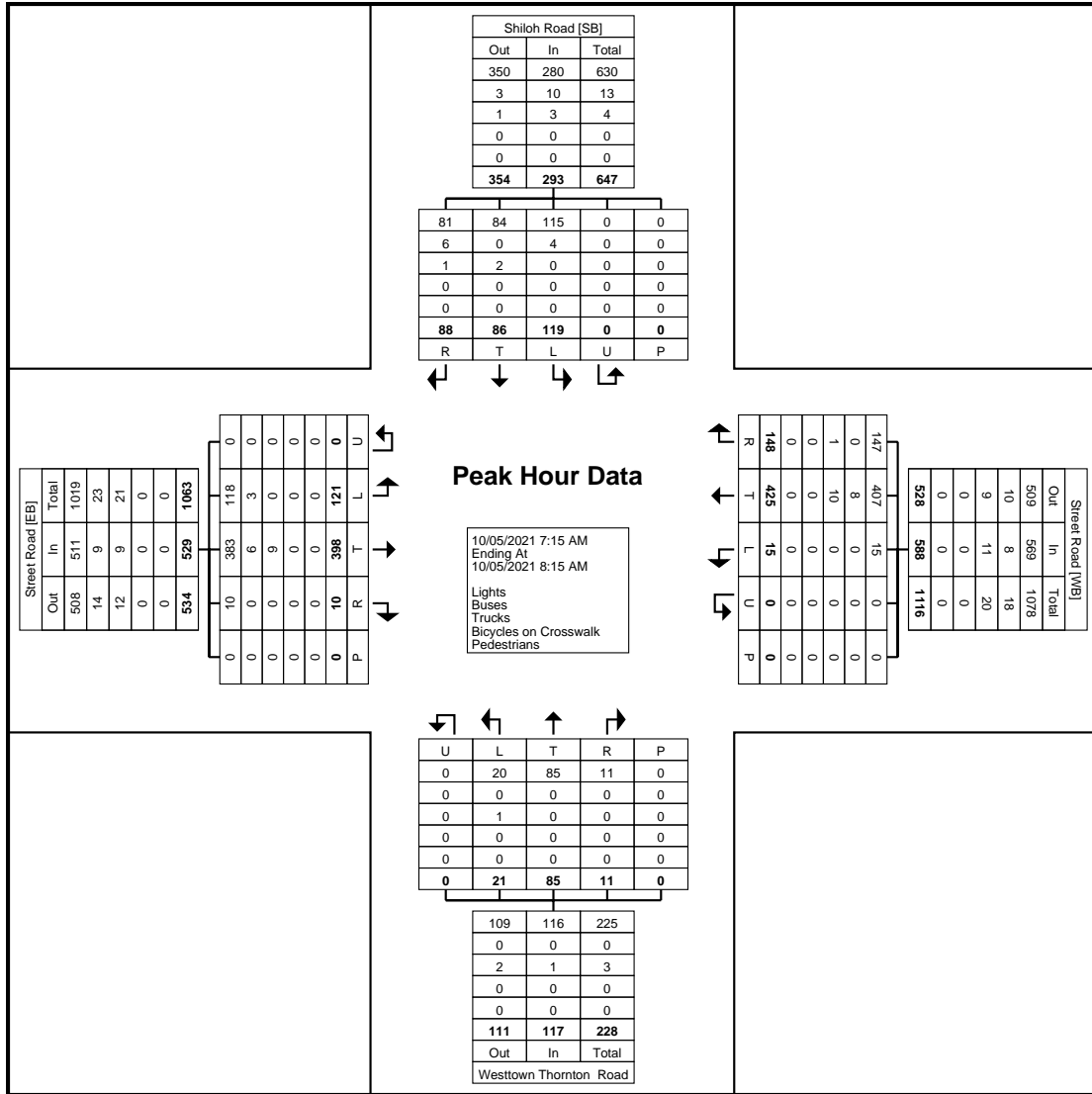
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Turning Movement Data Plot

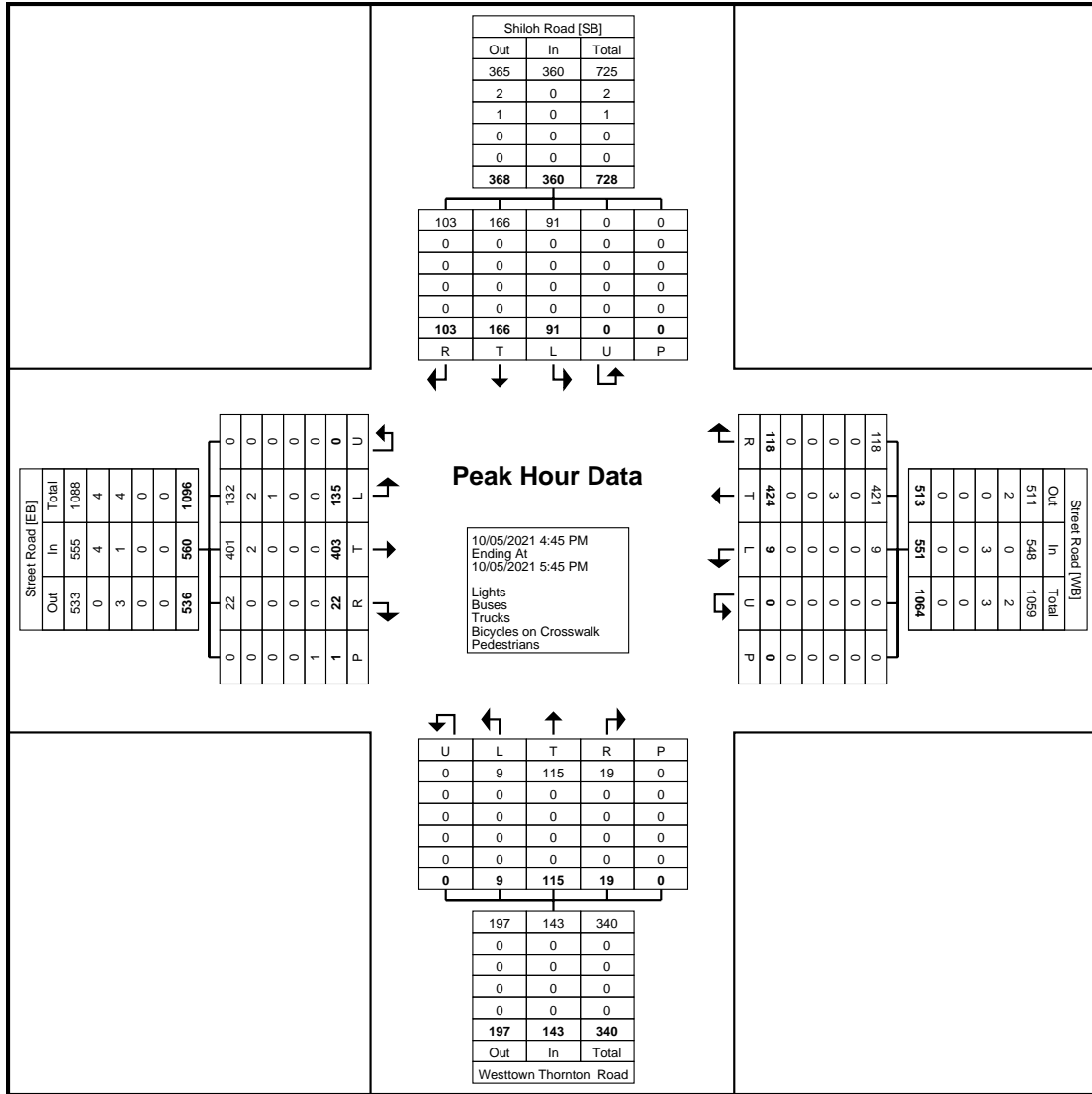




Turning Movement Peak Hour Data Plot (7:15 AM)

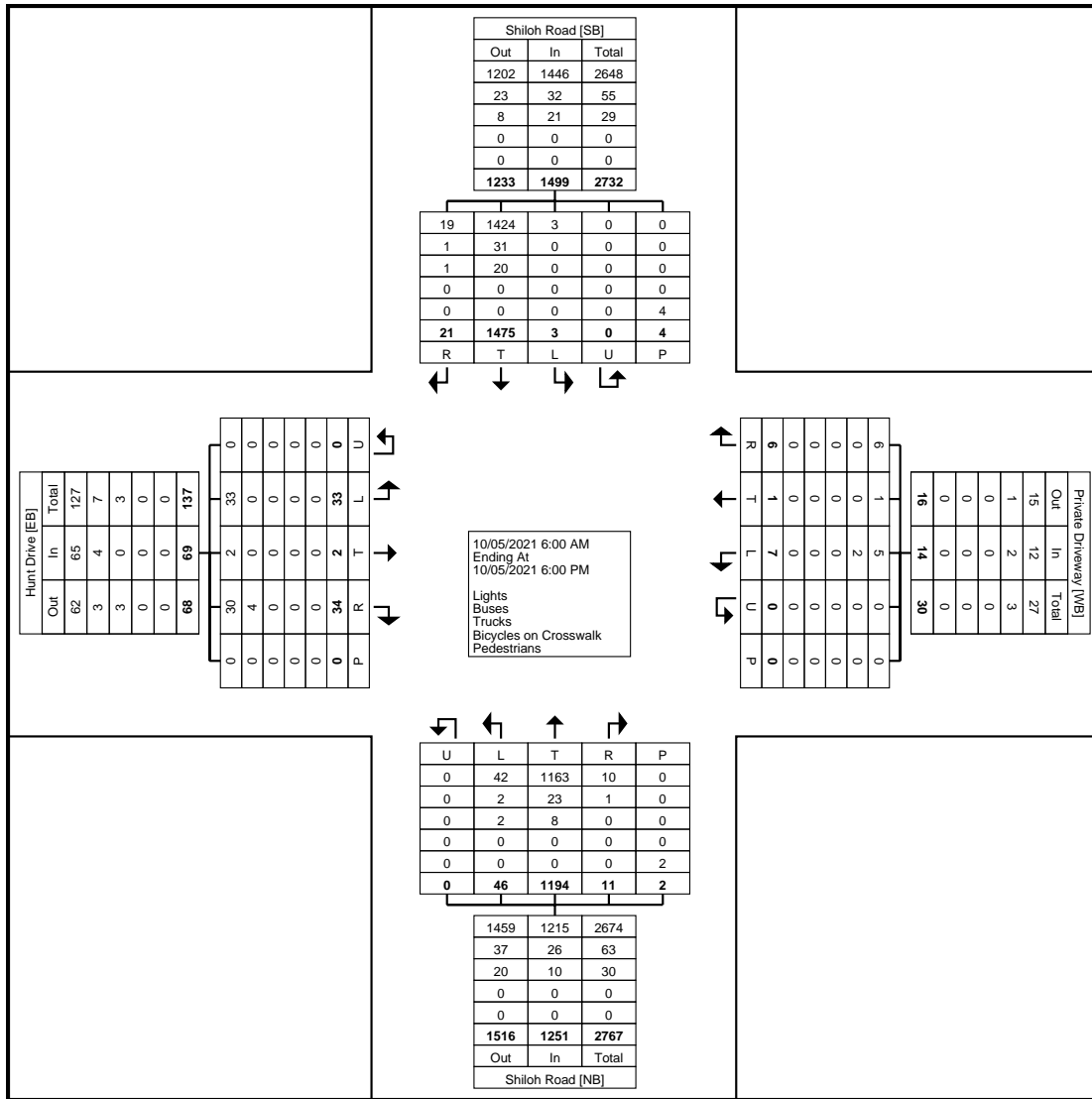






Turning Movement Peak Hour Data Plot (4:45 PM)





Turning Movement Data Plot



www.TSTData.com  
184 Baker Rd

Coatesville, Pennsylvania, United States 19320  
610-466-1469  
Serving Transportation Professionals Since 1995

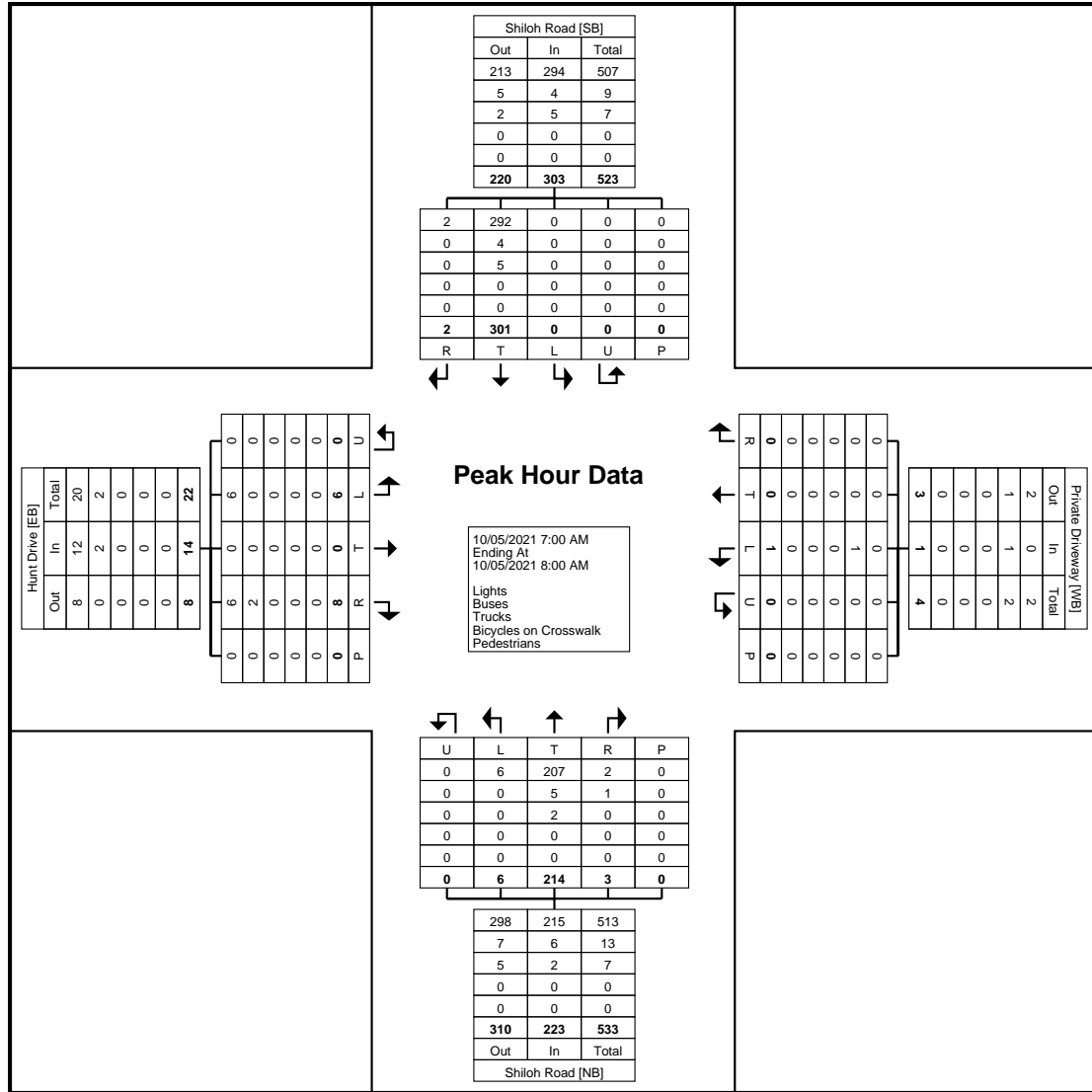
Chester County, PA  
Shiloh Rd & Hunt Dr  
Tuesday, October 5, 2021  
Location: 39.946701, -  
75.554599

Count Name: Shiloh Rd & Hunt Drive  
Site Code:  
Start Date: 10/05/2021  
Page No: 3

### Turning Movement Peak Hour Data (7:00 AM)

Start Time	Hunt Drive Eastbound						Private Driveway Westbound						Shiloh Road Northbound						Shiloh Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	0	0	2	0	0	2	1	0	0	0	0	1	2	25	0	0	0	27	0	97	0	0	0	97	127
7:15 AM	3	0	5	0	0	8	0	0	0	0	0	0	2	87	2	0	0	91	0	125	1	0	0	126	225
7:30 AM	2	0	1	0	0	3	0	0	0	0	0	0	1	56	1	0	0	58	0	38	0	0	0	38	99
7:45 AM	1	0	0	0	0	1	0	0	0	0	0	0	1	46	0	0	0	47	0	41	1	0	0	42	90
Total	6	0	8	0	0	14	1	0	0	0	0	1	6	214	3	0	0	223	0	301	2	0	0	303	541
Approach %	42.9	0.0	57.1	0.0	-	-	100.0	0.0	0.0	0.0	-	-	2.7	96.0	1.3	0.0	-	-	0.0	99.3	0.7	0.0	-	-	-
Total %	1.1	0.0	1.5	0.0	-	2.6	0.2	0.0	0.0	0.0	-	0.2	1.1	39.6	0.6	0.0	-	41.2	0.0	55.6	0.4	0.0	-	56.0	-
PHF	0.500	0.000	0.400	0.000	-	0.438	0.250	0.000	0.000	0.000	-	0.250	0.750	0.615	0.375	0.000	-	0.613	0.000	0.602	0.500	0.000	-	0.601	0.601
Lights	6	0	6	0	-	12	0	0	0	0	-	0	6	207	2	0	-	215	0	292	2	0	-	294	521
% Lights	100.0	-	75.0	-	-	85.7	0.0	-	-	-	-	0.0	100.0	96.7	66.7	-	-	96.4	-	97.0	100.0	-	-	97.0	96.3
Buses	0	0	2	0	-	2	1	0	0	0	-	1	0	5	1	0	-	6	0	4	0	0	-	4	13
% Buses	0.0	-	25.0	-	-	14.3	100.0	-	-	-	-	100.0	0.0	2.3	33.3	-	-	2.7	-	1.3	0.0	-	-	1.3	2.4
Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	2	0	0	-	2	0	5	0	0	-	5	7
% Trucks	0.0	-	0.0	-	-	0.0	0.0	-	-	-	-	0.0	0.0	0.9	0.0	-	-	0.9	-	1.7	0.0	-	-	1.7	1.3
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Chester County, PA  
Shiloh Rd & Hunt Dr  
Tuesday, October 5, 2021  
Location: 39.946701, -75.554599



Turning Movement Peak Hour Data Plot (7:00 AM)



www.TSTData.com  
184 Baker Rd

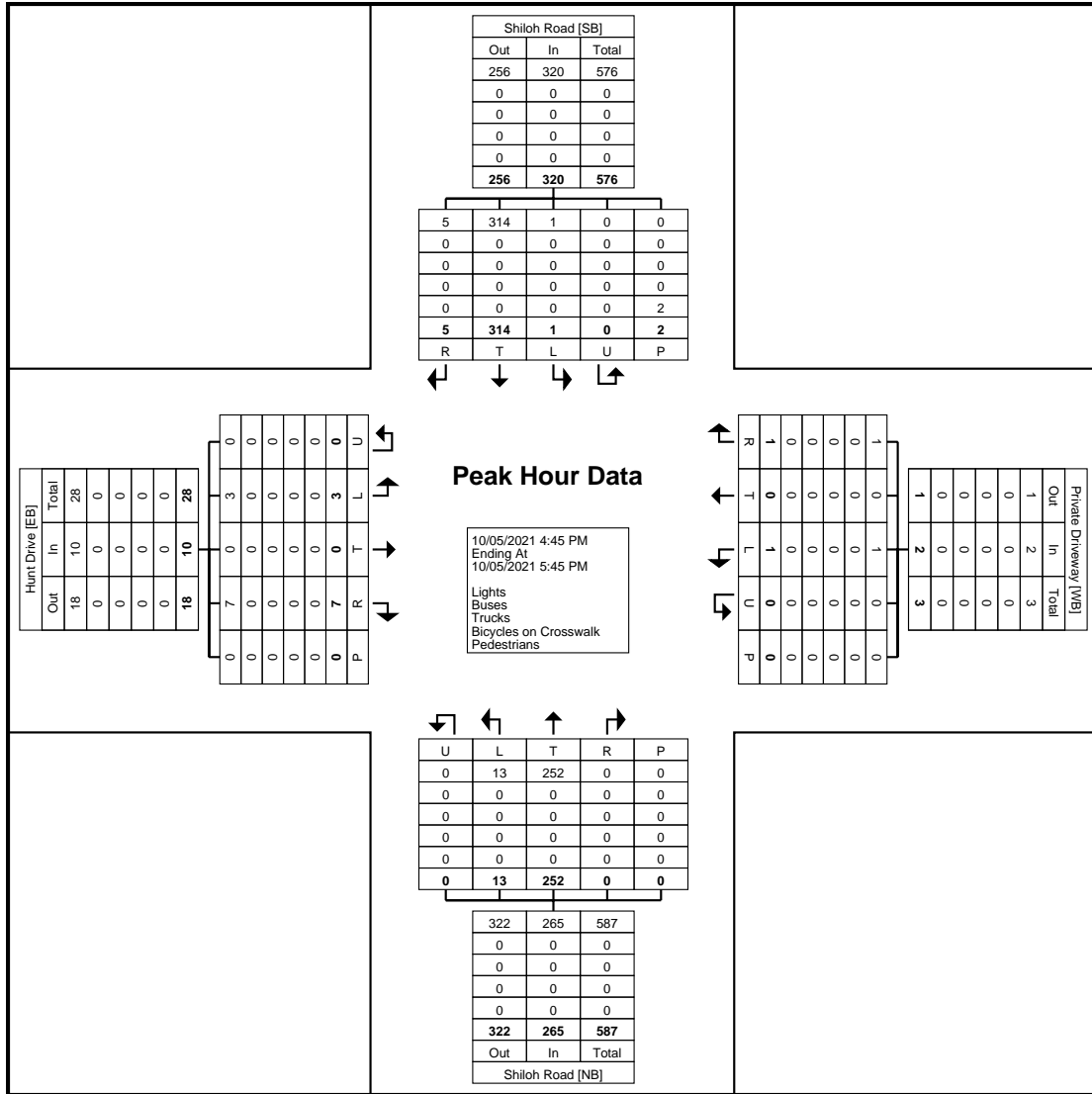
Coatesville, Pennsylvania, United States 19320  
610-466-1469  
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Chester County, PA  
Shiloh Rd & Hunt Dr  
Tuesday, October 5, 2021  
Location: 39.946701, -  
75.554599

Count Name: Shiloh Rd & Hunt Drive  
Site Code:  
Start Date: 10/05/2021  
Page No: 5

### Turning Movement Peak Hour Data (4:45 PM)

Start Time	Hunt Drive Eastbound						Private Driveway Westbound						Shiloh Road Northbound						Shiloh Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:45 PM	0	0	1	0	0	1	0	0	0	0	0	0	4	45	0	0	0	49	0	75	0	0	0	75	125
5:00 PM	1	0	3	0	0	4	0	0	1	0	0	1	4	67	0	0	0	71	1	71	0	0	2	72	148
5:15 PM	1	0	1	0	0	2	1	0	0	0	0	1	1	68	0	0	0	69	0	84	1	0	0	85	157
5:30 PM	1	0	2	0	0	3	0	0	0	0	0	0	4	72	0	0	0	76	0	84	4	0	0	88	167
<b>Total</b>	<b>3</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>13</b>	<b>252</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>265</b>	<b>1</b>	<b>314</b>	<b>5</b>	<b>0</b>	<b>2</b>	<b>320</b>	<b>597</b>
<b>Approach %</b>	<b>30.0</b>	<b>0.0</b>	<b>70.0</b>	<b>0.0</b>	<b>-</b>	<b>-</b>	<b>50.0</b>	<b>0.0</b>	<b>50.0</b>	<b>0.0</b>	<b>-</b>	<b>-</b>	<b>4.9</b>	<b>95.1</b>	<b>0.0</b>	<b>0.0</b>	<b>-</b>	<b>-</b>	<b>0.3</b>	<b>98.1</b>	<b>1.6</b>	<b>0.0</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Total %</b>	<b>0.5</b>	<b>0.0</b>	<b>1.2</b>	<b>0.0</b>	<b>-</b>	<b>1.7</b>	<b>0.2</b>	<b>0.0</b>	<b>0.2</b>	<b>0.0</b>	<b>-</b>	<b>0.3</b>	<b>2.2</b>	<b>42.2</b>	<b>0.0</b>	<b>0.0</b>	<b>-</b>	<b>44.4</b>	<b>0.2</b>	<b>52.6</b>	<b>0.8</b>	<b>0.0</b>	<b>-</b>	<b>53.6</b>	<b>-</b>
<b>PHF</b>	<b>0.750</b>	<b>0.000</b>	<b>0.583</b>	<b>0.000</b>	<b>-</b>	<b>0.625</b>	<b>0.250</b>	<b>0.000</b>	<b>0.250</b>	<b>0.000</b>	<b>-</b>	<b>0.500</b>	<b>0.813</b>	<b>0.875</b>	<b>0.000</b>	<b>0.000</b>	<b>-</b>	<b>0.872</b>	<b>0.250</b>	<b>0.935</b>	<b>0.313</b>	<b>0.000</b>	<b>-</b>	<b>0.909</b>	<b>0.894</b>
<b>Lights</b>	<b>3</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>-</b>	<b>10</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>-</b>	<b>2</b>	<b>13</b>	<b>252</b>	<b>0</b>	<b>0</b>	<b>-</b>	<b>265</b>	<b>1</b>	<b>314</b>	<b>5</b>	<b>0</b>	<b>-</b>	<b>320</b>	<b>597</b>
<b>% Lights</b>	<b>100.0</b>	<b>-</b>	<b>100.0</b>	<b>-</b>	<b>-</b>	<b>100.0</b>	<b>100.0</b>	<b>-</b>	<b>100.0</b>	<b>-</b>	<b>-</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>-</b>	<b>-</b>	<b>100.0</b>	<b>100.0</b>
<b>Buses</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-</b>	<b>0</b>	<b>0</b>
<b>% Buses</b>	<b>0.0</b>	<b>-</b>	<b>0.0</b>	<b>-</b>	<b>-</b>	<b>0.0</b>	<b>0.0</b>	<b>-</b>	<b>0.0</b>	<b>-</b>	<b>-</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>-</b>	<b>-</b>	<b>0.0</b>	<b>0.0</b>
<b>Trucks</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-</b>	<b>0</b>	<b>0</b>
<b>% Trucks</b>	<b>0.0</b>	<b>-</b>	<b>0.0</b>	<b>-</b>	<b>-</b>	<b>0.0</b>	<b>0.0</b>	<b>-</b>	<b>0.0</b>	<b>-</b>	<b>-</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>-</b>	<b>-</b>	<b>0.0</b>	<b>0.0</b>
<b>Bicycles on Crosswalk</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>-</b>	<b>-</b>
<b>% Bicycles on Crosswalk</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0.0</b>	<b>-</b>	<b>-</b>
<b>Pedestrians</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>2</b>	<b>-</b>	<b>-</b>
<b>% Pedestrians</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>100.0</b>	<b>-</b>	<b>-</b>

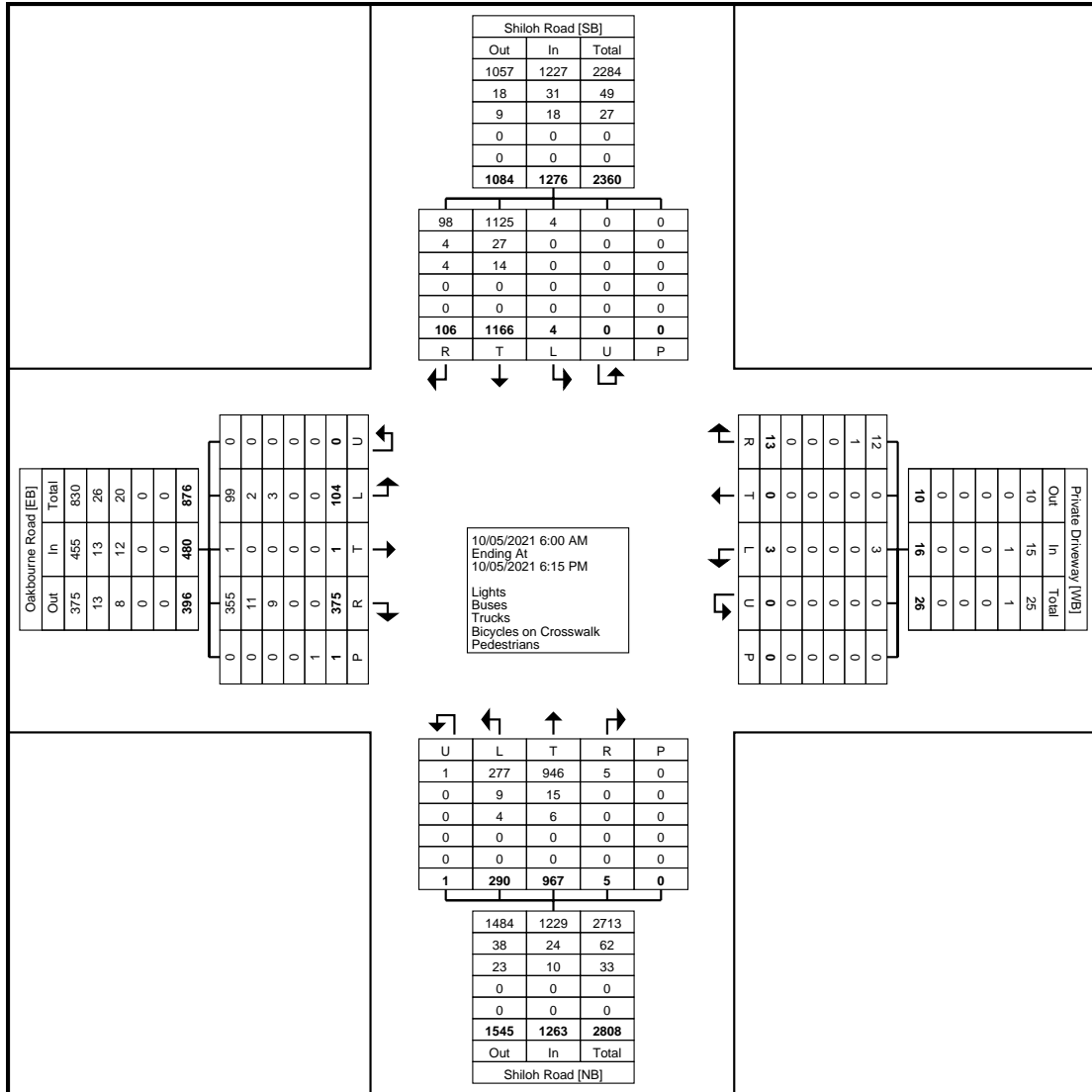


Turning Movement Peak Hour Data Plot (4:45 PM)





Chester County, PA  
Shiloh Rd & Oakbourne Rd  
Tuesday, October 5, 2021  
Location: 39.94812, -75.55575



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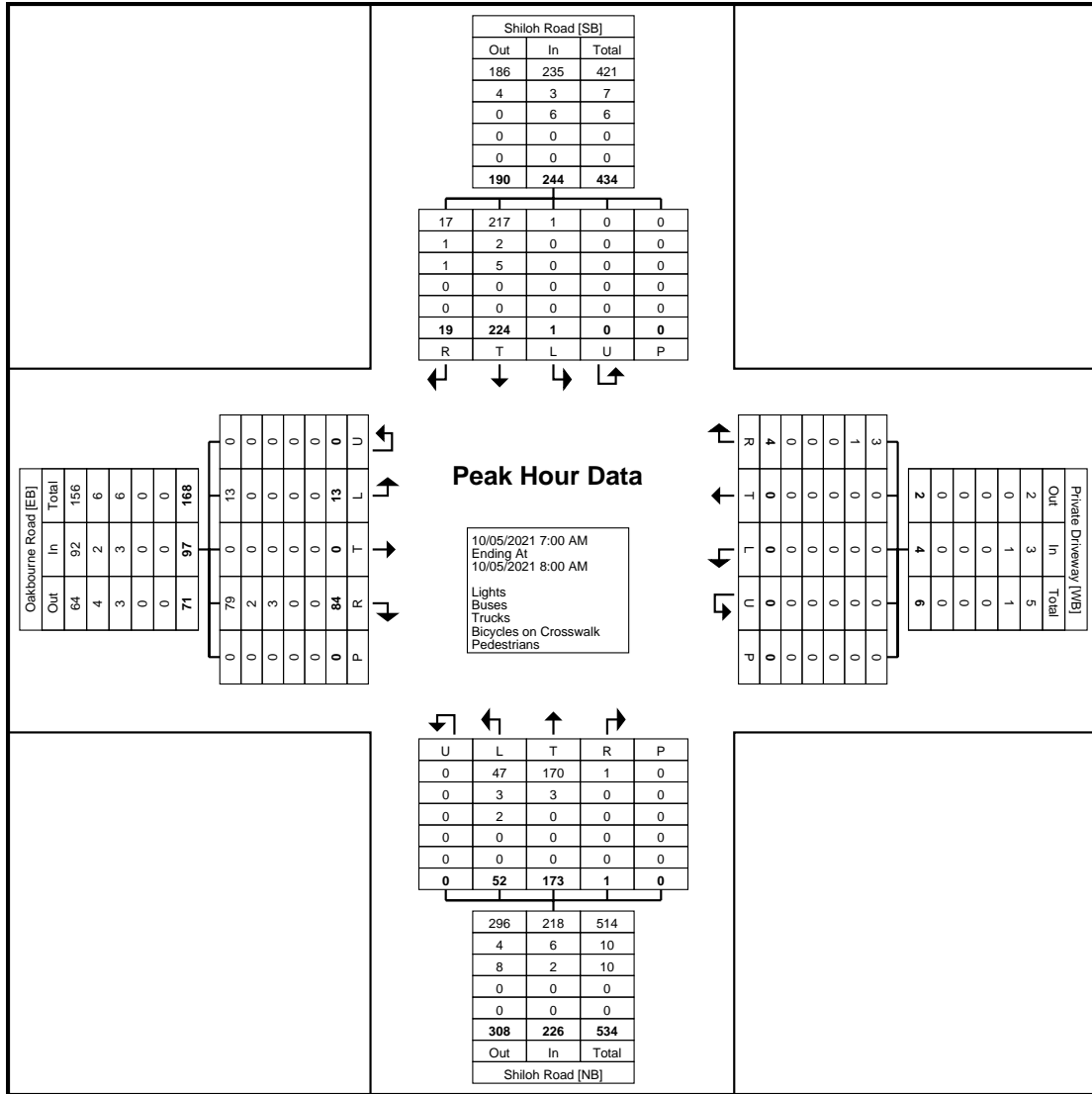
Count Name: Shiloh Rd &  
Oakbourne Rd  
Site Code:  
Start Date: 10/05/2021  
Page No: 3

Chester County, PA  
Shiloh Rd & Oakbourne Rd  
Tuesday, October 5, 2021  
Location: 39.94812, -75.55575

### Turning Movement Peak Hour Data (7:00 AM)

Start Time	Oakbourne Road Eastbound						Private Driveway Westbound						Shiloh Road Northbound						Shiloh Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	1	0	21	0	0	22	0	0	2	0	0	2	4	23	0	0	0	27	1	77	5	0	0	83	134
7:15 AM	1	0	39	0	0	40	0	0	1	0	0	1	18	70	1	0	0	89	0	90	3	0	0	93	223
7:30 AM	5	0	8	0	0	13	0	0	1	0	0	1	19	44	0	0	0	63	0	28	7	0	0	35	112
7:45 AM	6	0	16	0	0	22	0	0	0	0	0	0	11	36	0	0	0	47	0	29	4	0	0	33	102
Total	13	0	84	0	0	97	0	0	4	0	0	4	52	173	1	0	0	226	1	224	19	0	0	244	571
Approach %	13.4	0.0	86.6	0.0	-	-	0.0	0.0	100.0	0.0	-	-	23.0	76.5	0.4	0.0	-	-	0.4	91.8	7.8	0.0	-	-	-
Total %	2.3	0.0	14.7	0.0	-	17.0	0.0	0.0	0.7	0.0	-	0.7	9.1	30.3	0.2	0.0	-	39.6	0.2	39.2	3.3	0.0	-	42.7	-
PHF	0.542	0.000	0.538	0.000	-	0.606	0.000	0.000	0.500	0.000	-	0.500	0.684	0.618	0.250	0.000	-	0.635	0.250	0.622	0.679	0.000	-	0.656	0.640
Lights	13	0	79	0	-	92	0	0	3	0	-	3	47	170	1	0	-	218	1	217	17	0	-	235	548
% Lights	100.0	-	94.0	-	-	94.8	-	-	75.0	-	-	75.0	90.4	98.3	100.0	-	-	96.5	100.0	96.9	89.5	-	-	96.3	96.0
Buses	0	0	2	0	-	2	0	0	1	0	-	1	3	3	0	0	-	6	0	2	1	0	-	3	12
% Buses	0.0	-	2.4	-	-	2.1	-	-	25.0	-	-	25.0	5.8	1.7	0.0	-	-	2.7	0.0	0.9	5.3	-	-	1.2	2.1
Trucks	0	0	3	0	-	3	0	0	0	0	-	0	2	0	0	0	-	2	0	5	1	0	-	6	11
% Trucks	0.0	-	3.6	-	-	3.1	-	-	0.0	-	-	0.0	3.8	0.0	0.0	-	-	0.9	0.0	2.2	5.3	-	-	2.5	1.9
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Chester County, PA  
Shiloh Rd & Oakbourne Rd  
Tuesday, October 5, 2021  
Location: 39.94812, -75.55575



Turning Movement Peak Hour Data Plot (7:00 AM)



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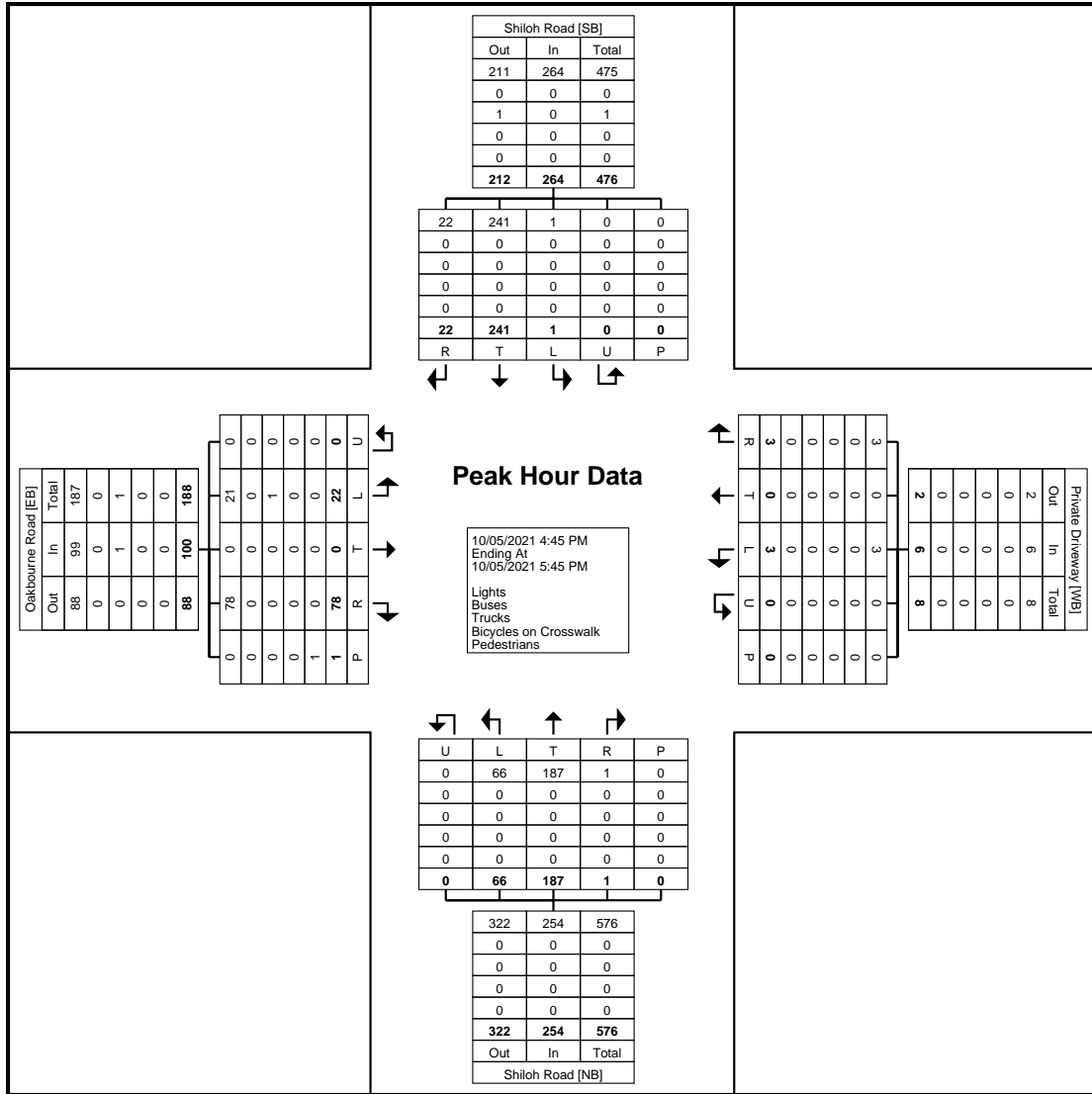
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Count Name: Shiloh Rd &  
Oakbourne Rd  
Site Code:  
Start Date: 10/05/2021  
Page No: 5

Chester County, PA  
Shiloh Rd & Oakbourne Rd  
Tuesday, October 5, 2021  
Location: 39.94812, -75.55575

### Turning Movement Peak Hour Data (4:45 PM)

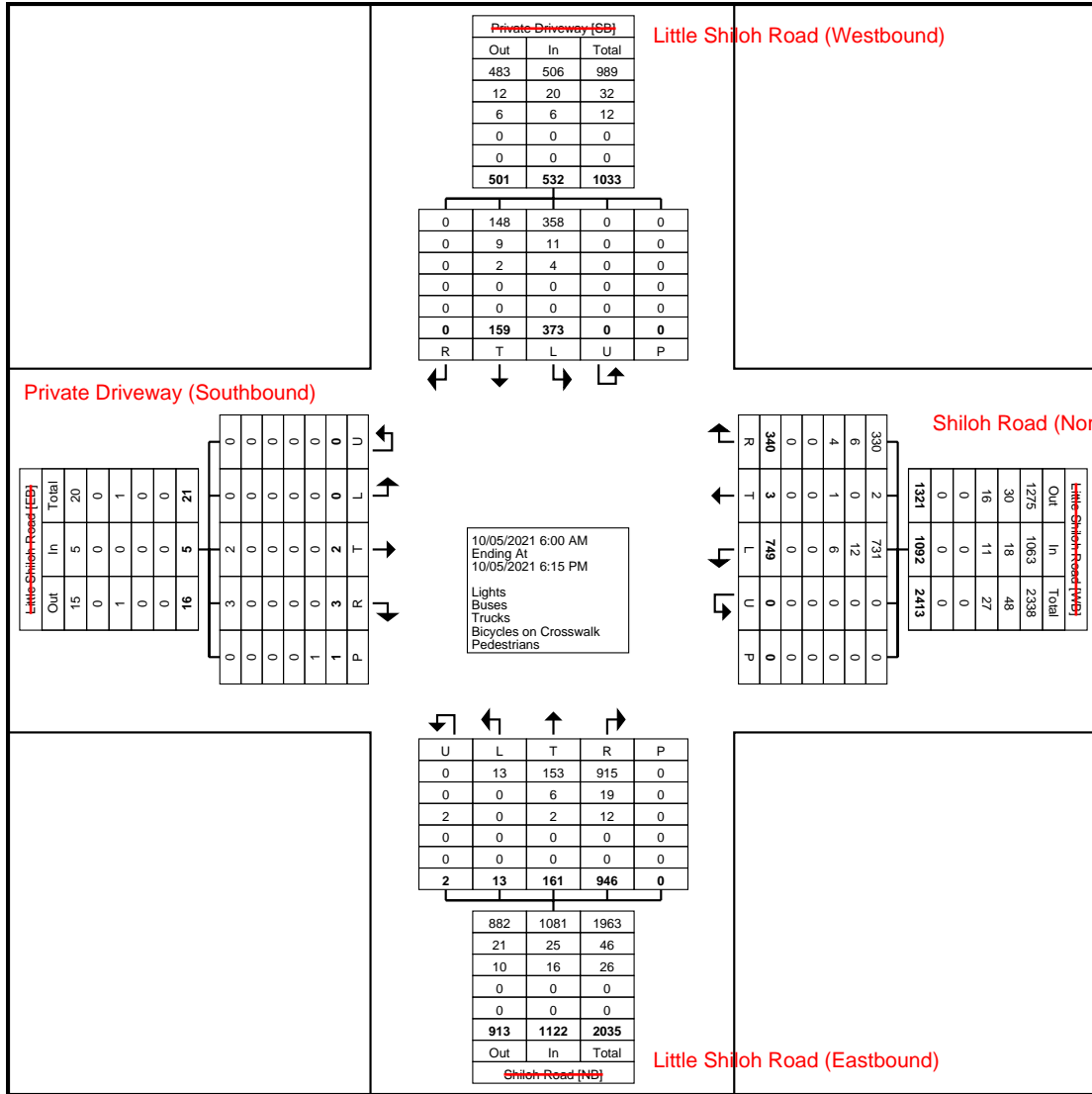
Start Time	Oakbourne Road Eastbound						Private Driveway Westbound						Shiloh Road Northbound						Shiloh Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:45 PM	5	0	13	0	1	18	1	0	1	0	0	2	10	36	0	0	0	46	0	63	7	0	0	70	136
5:00 PM	6	0	23	0	0	29	2	0	0	0	0	2	16	49	1	0	0	66	0	48	4	0	0	52	149
5:15 PM	4	0	26	0	0	30	0	0	1	0	0	1	20	51	0	0	0	71	1	58	7	0	0	66	168
5:30 PM	7	0	16	0	0	23	0	0	1	0	0	1	20	51	0	0	0	71	0	72	4	0	0	76	171
<b>Total</b>	<b>22</b>	<b>0</b>	<b>78</b>	<b>0</b>	<b>1</b>	<b>100</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>66</b>	<b>187</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>254</b>	<b>1</b>	<b>241</b>	<b>22</b>	<b>0</b>	<b>0</b>	<b>264</b>	<b>624</b>
Approach %	22.0	0.0	78.0	0.0	-	-	50.0	0.0	50.0	0.0	-	-	26.0	73.6	0.4	0.0	-	-	0.4	91.3	8.3	0.0	-	-	-
Total %	3.5	0.0	12.5	0.0	-	16.0	0.5	0.0	0.5	0.0	-	1.0	10.6	30.0	0.2	0.0	-	40.7	0.2	38.6	3.5	0.0	-	42.3	-
PHF	0.786	0.000	0.750	0.000	-	0.833	0.375	0.000	0.750	0.000	-	0.750	0.825	0.917	0.250	0.000	-	0.894	0.250	0.837	0.786	0.000	-	0.868	0.912
Lights	21	0	78	0	-	99	3	0	3	0	-	6	66	187	1	0	-	254	1	241	22	0	-	264	623
% Lights	95.5	-	100.0	-	-	99.0	100.0	-	100.0	-	-	100.0	100.0	100.0	100.0	-	-	100.0	100.0	100.0	100.0	-	-	100.0	99.8
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Buses	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Trucks	1	0	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Trucks	4.5	-	0.0	-	-	1.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.2
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Turning Movement Peak Hour Data Plot (4:45 PM)



Chester County, PA  
Shiloh Rd & Little Shiloh Rd  
Tuesday, October 5, 2021  
Location: 39.952875, -  
75.559402



Turning Movement Data Plot





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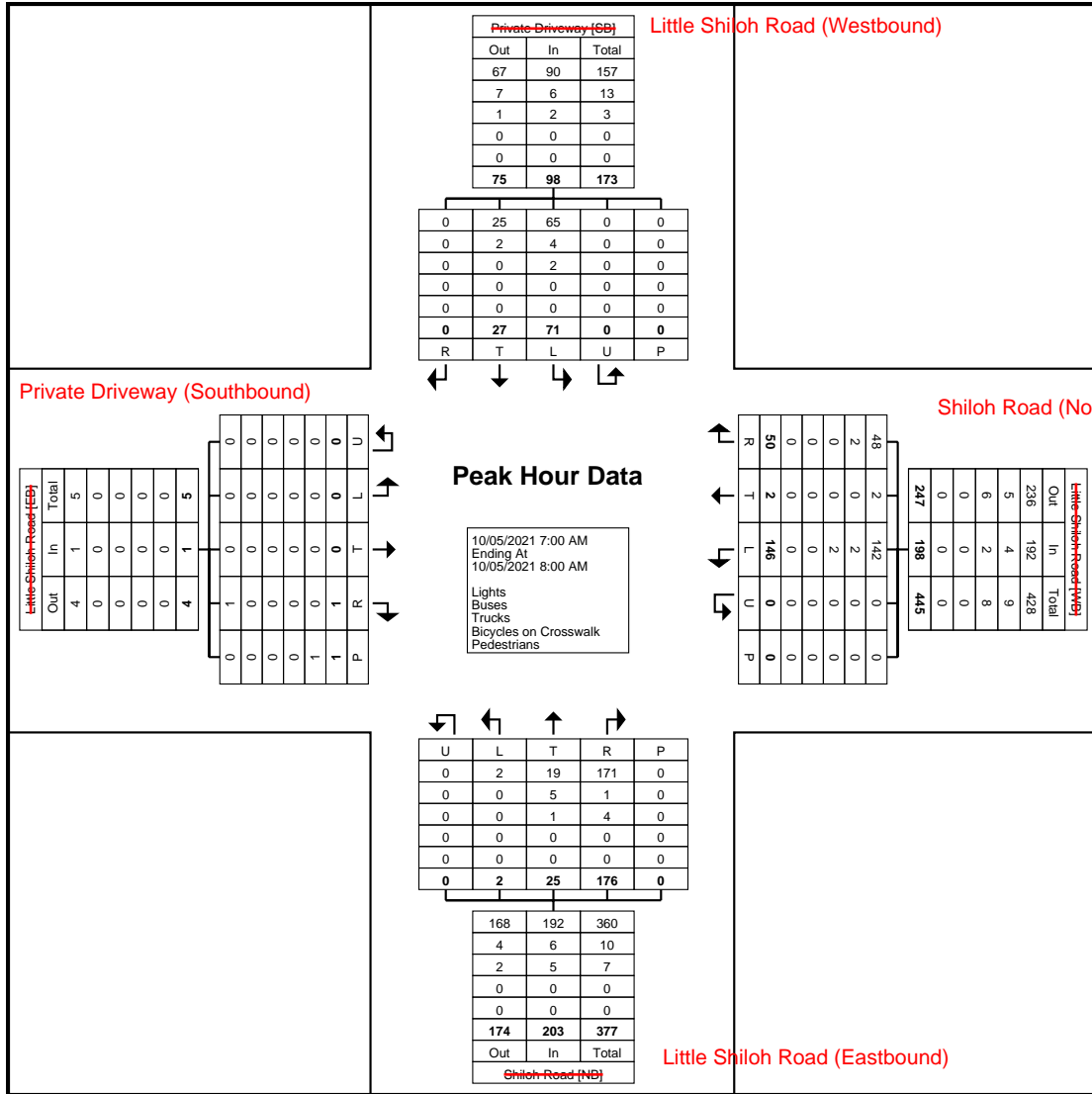
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Chester County, PA  
Shiloh Rd & Little Shiloh Rd  
Tuesday, October 5, 2021  
Location: 39.952875, -  
75.559402

Count Name: Shiloh Rd & Little  
Shiloh Rd  
Site Code:  
Start Date: 10/05/2021  
Page No: 3

### Turning Movement Peak Hour Data (7:00 AM)

Start Time	Private Driveway Little Shiloh Road Eastbound Southbound						Shiloh Road Little Shiloh Road Westbound Northbound						Little Shiloh Road Shiloh Road Northbound Eastbound						Little Shiloh Road Private Driveway Southbound Westbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	0	0	1	0	0	1	23	1	5	0	0	29	0	9	70	0	0	79	19	2	0	0	0	21	130
7:15 AM	0	0	0	0	1	0	51	0	23	0	0	74	0	9	65	0	0	74	28	9	0	0	0	37	185
7:30 AM	0	0	0	0	0	0	38	1	14	0	0	53	0	3	20	0	0	23	10	6	0	0	0	16	92
7:45 AM	0	0	0	0	0	0	34	0	8	0	0	42	2	4	21	0	0	27	14	10	0	0	0	24	93
Total	0	0	1	0	1	1	146	2	50	0	0	198	2	25	176	0	0	203	71	27	0	0	0	98	500
Approach %	0.0	0.0	100.0	0.0	-	-	73.7	1.0	25.3	0.0	-	-	1.0	12.3	86.7	0.0	-	-	72.4	27.6	0.0	0.0	-	-	-
Total %	0.0	0.0	0.2	0.0	-	0.2	29.2	0.4	10.0	0.0	-	39.6	0.4	5.0	35.2	0.0	-	40.6	14.2	5.4	0.0	0.0	-	19.6	-
PHF	0.000	0.000	0.250	0.000	-	0.250	0.716	0.500	0.543	0.000	-	0.669	0.250	0.694	0.629	0.000	-	0.642	0.634	0.675	0.000	0.000	-	0.662	0.676
Lights	0	0	1	0	-	1	142	2	48	0	-	192	2	19	171	0	-	192	65	25	0	0	-	90	475
% Lights	-	-	100.0	-	-	100.0	97.3	100.0	96.0	-	-	97.0	100.0	76.0	97.2	-	-	94.6	91.5	92.6	-	-	-	91.8	95.0
Buses	0	0	0	0	-	0	2	0	2	0	-	4	0	5	1	0	-	6	4	2	0	0	-	6	16
% Buses	-	-	0.0	-	-	0.0	1.4	0.0	4.0	-	-	2.0	0.0	20.0	0.6	-	-	3.0	5.6	7.4	-	-	-	6.1	3.2
Trucks	0	0	0	0	-	0	2	0	0	0	-	2	0	1	4	0	-	5	2	0	0	0	-	2	9
% Trucks	-	-	0.0	-	-	0.0	1.4	0.0	0.0	-	-	1.0	0.0	4.0	2.3	-	-	2.5	2.8	0.0	-	-	-	2.0	1.8
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Turning Movement Peak Hour Data Plot (7:00 AM)



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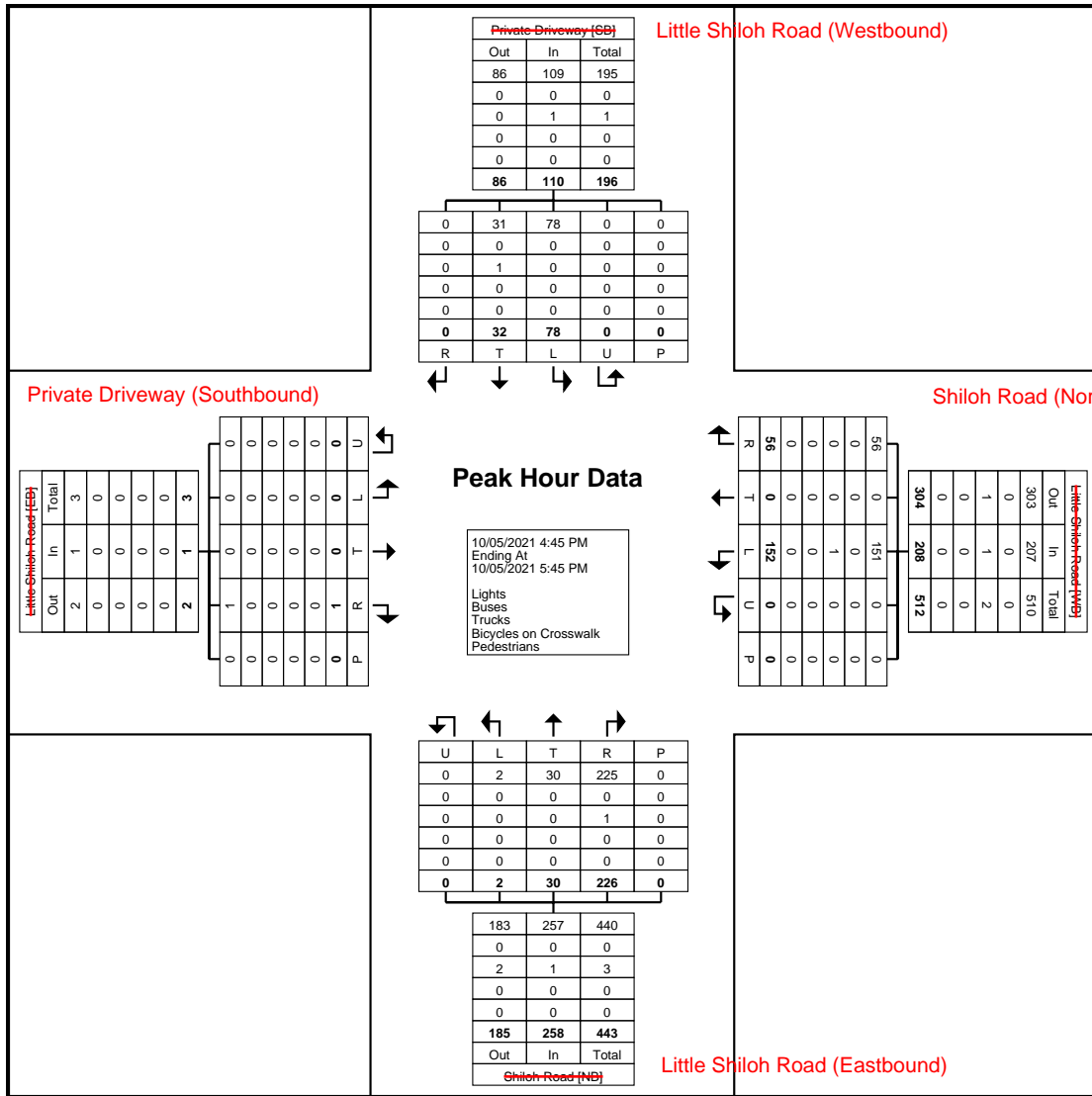
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Chester County, PA  
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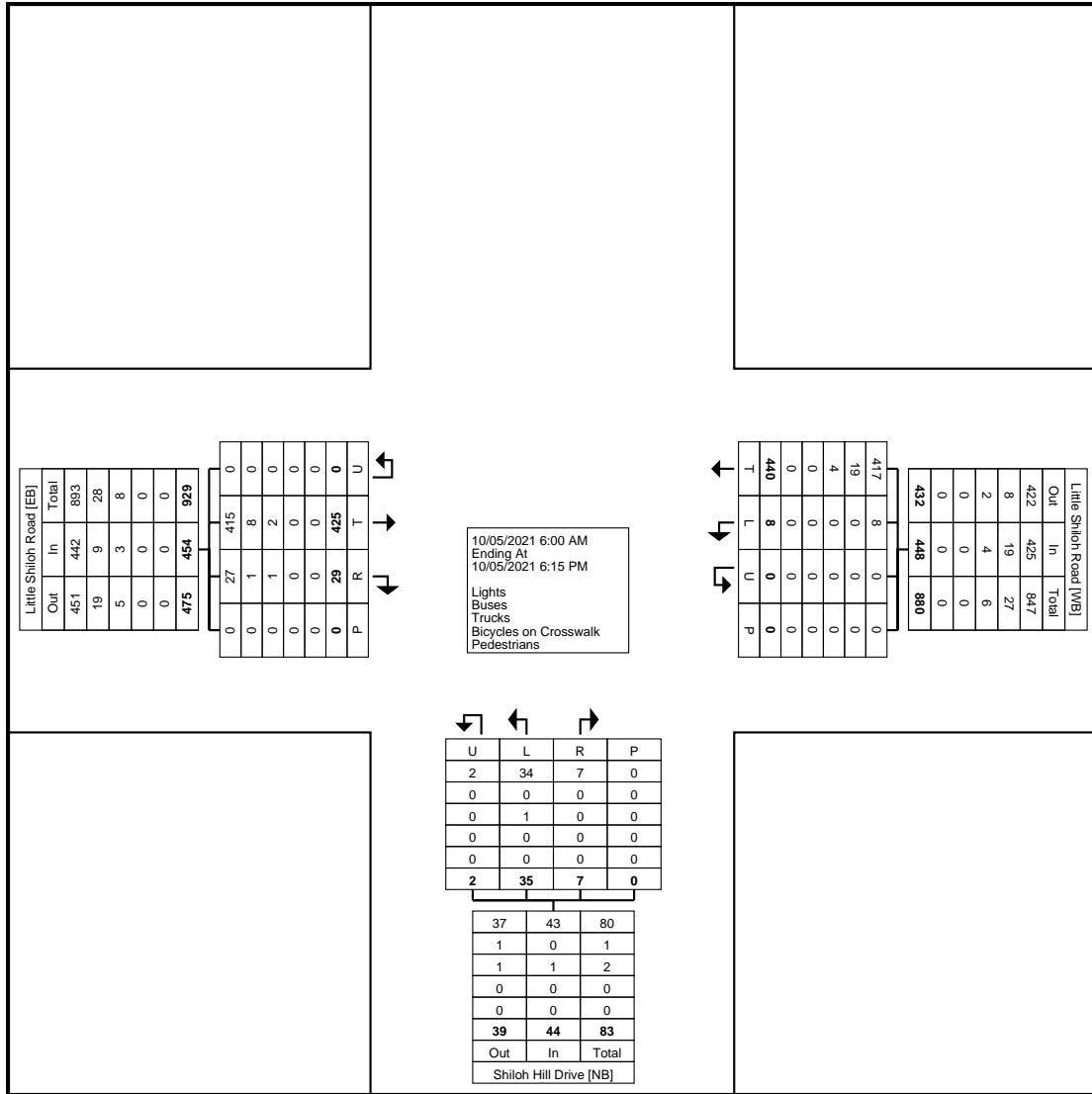
### Turning Movement Peak Hour Data (4:45 PM)

Start Time	Private Driveway Little Shiloh Road Eastbound Southbound						Shiloh Road Little Shiloh Road Westbound Northbound						Little Shiloh Road Shiloh Road Northbound Eastbound						Little Shiloh Road Private Driveway Southbound Westbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:45 PM	0	0	0	0	0	0	30	0	9	0	0	39	1	2	61	0	0	64	19	5	0	0	0	24	127
5:00 PM	0	0	0	0	0	0	39	0	14	0	0	53	0	8	40	0	0	48	17	6	0	0	0	23	124
5:15 PM	0	0	1	0	0	1	44	0	15	0	0	59	1	14	58	0	0	73	23	12	0	0	0	35	168
5:30 PM	0	0	0	0	0	0	39	0	18	0	0	57	0	6	67	0	0	73	19	9	0	0	0	28	158
Total	0	0	1	0	0	1	152	0	56	0	0	208	2	30	226	0	0	258	78	32	0	0	0	110	577
Approach %	0.0	0.0	100.0	0.0	-	-	73.1	0.0	26.9	0.0	-	-	0.8	11.6	87.6	0.0	-	-	70.9	29.1	0.0	0.0	-	-	-
Total %	0.0	0.0	0.2	0.0	-	0.2	26.3	0.0	9.7	0.0	-	36.0	0.3	5.2	39.2	0.0	-	44.7	13.5	5.5	0.0	0.0	-	19.1	-
PHF	0.000	0.000	0.250	0.000	-	0.250	0.864	0.000	0.778	0.000	-	0.881	0.500	0.536	0.843	0.000	-	0.884	0.848	0.667	0.000	0.000	-	0.786	0.859
Lights	0	0	1	0	-	1	151	0	56	0	-	207	2	30	225	0	-	257	78	31	0	0	-	109	574
% Lights	-	-	100.0	-	-	100.0	99.3	-	100.0	-	-	99.5	100.0	100.0	99.6	-	-	99.6	100.0	96.9	-	-	-	99.1	99.5
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Buses	-	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0
Trucks	0	0	0	0	-	0	1	0	0	0	-	1	0	0	1	0	-	1	0	1	0	0	-	1	3
% Trucks	-	-	0.0	-	-	0.0	0.7	-	0.0	-	-	0.5	0.0	0.0	0.4	-	-	0.4	0.0	3.1	-	-	-	0.9	0.5
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



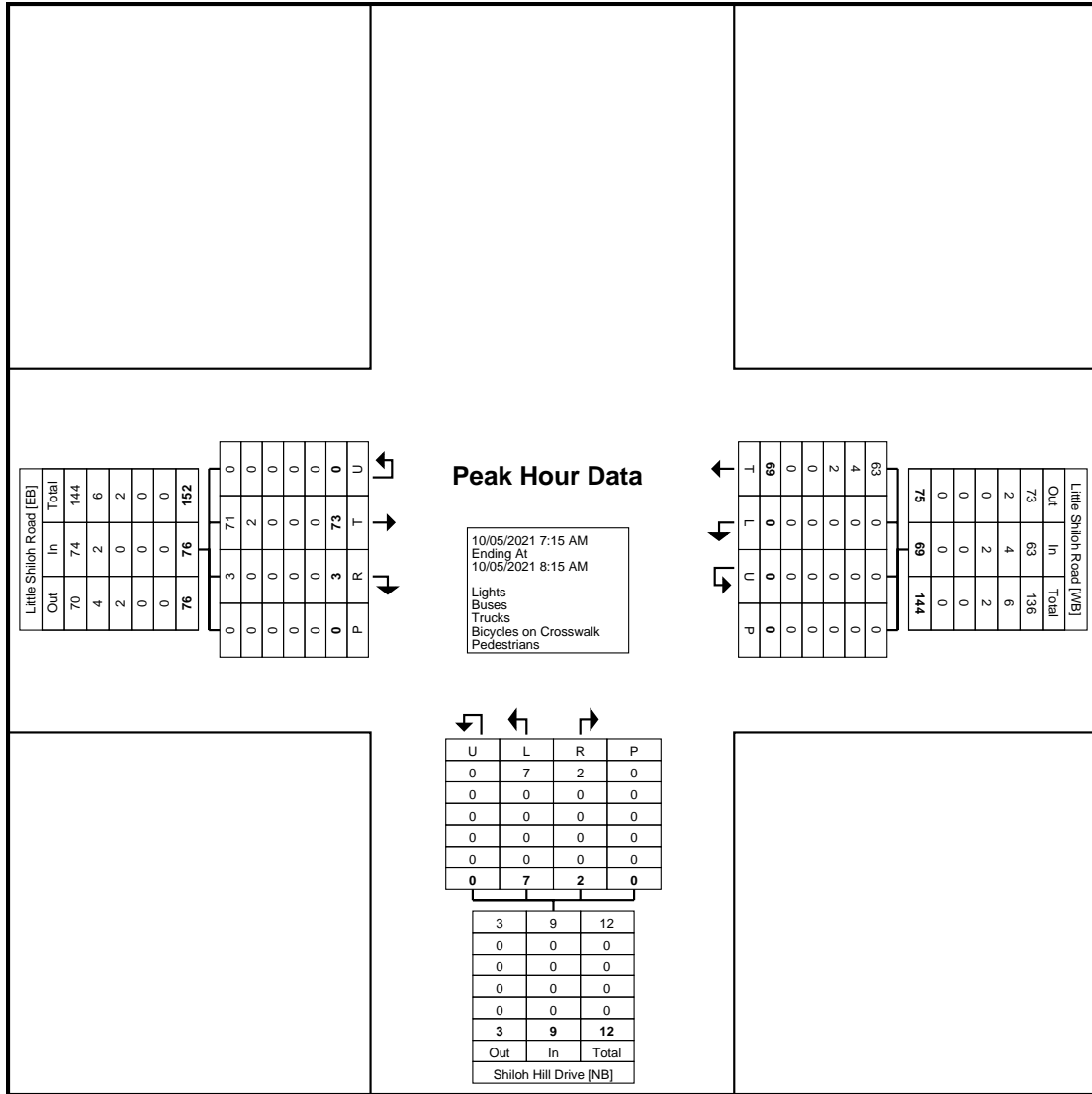
Turning Movement Peak Hour Data Plot (4:45 PM)





Turning Movement Data Plot

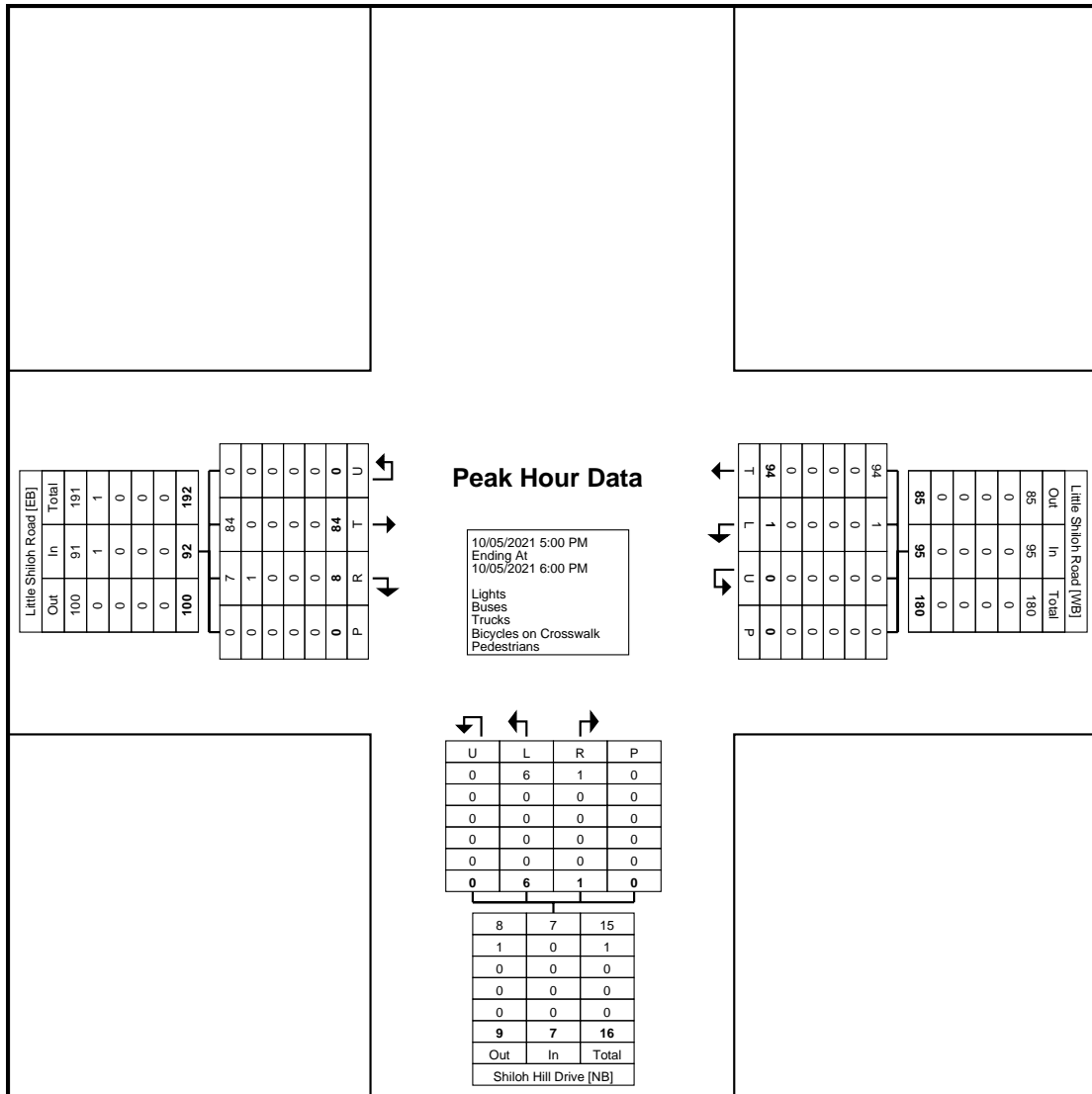




Turning Movement Peak Hour Data Plot (7:15 AM)

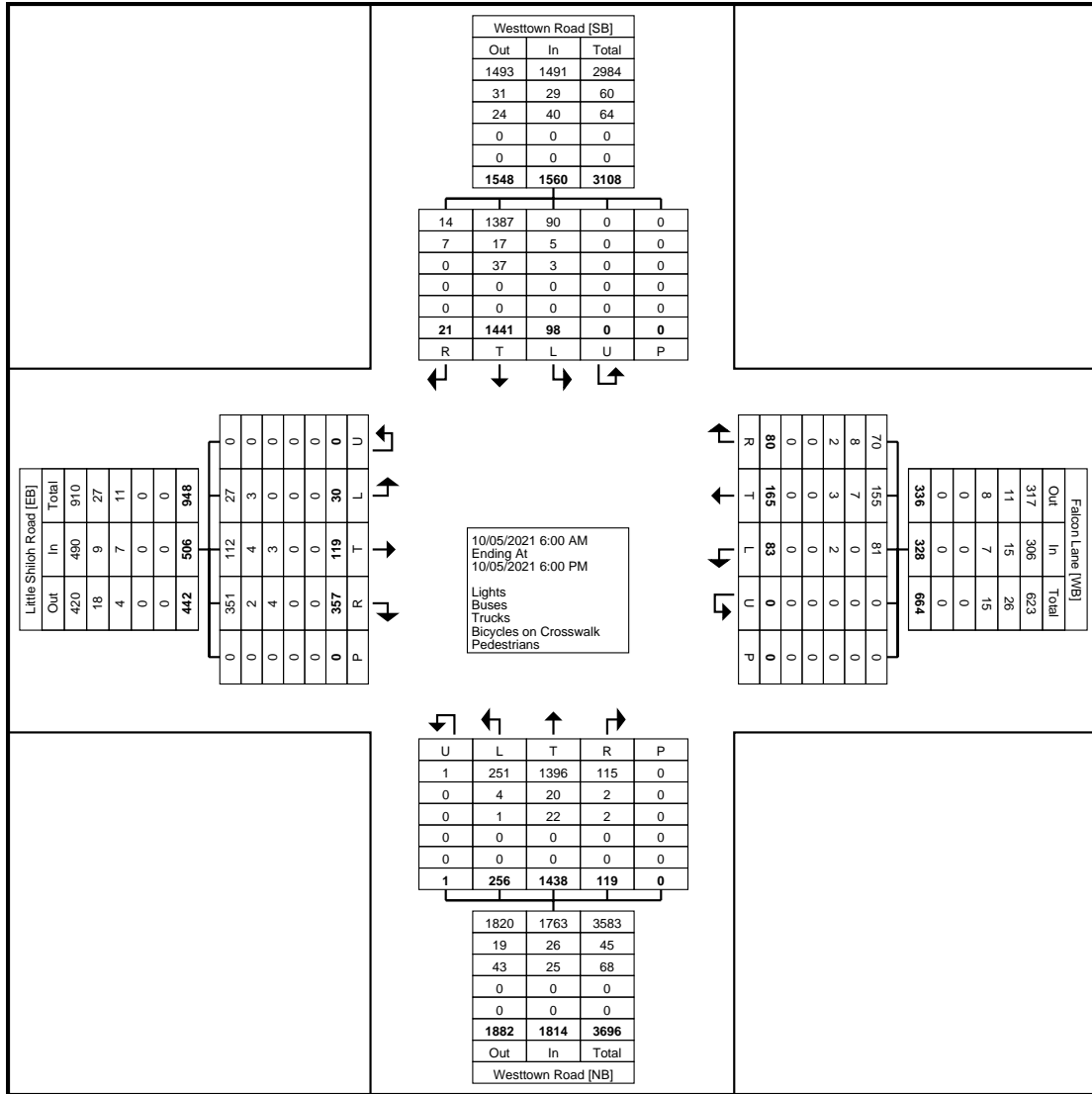






Turning Movement Peak Hour Data Plot (5:00 PM)





Turning Movement Data Plot



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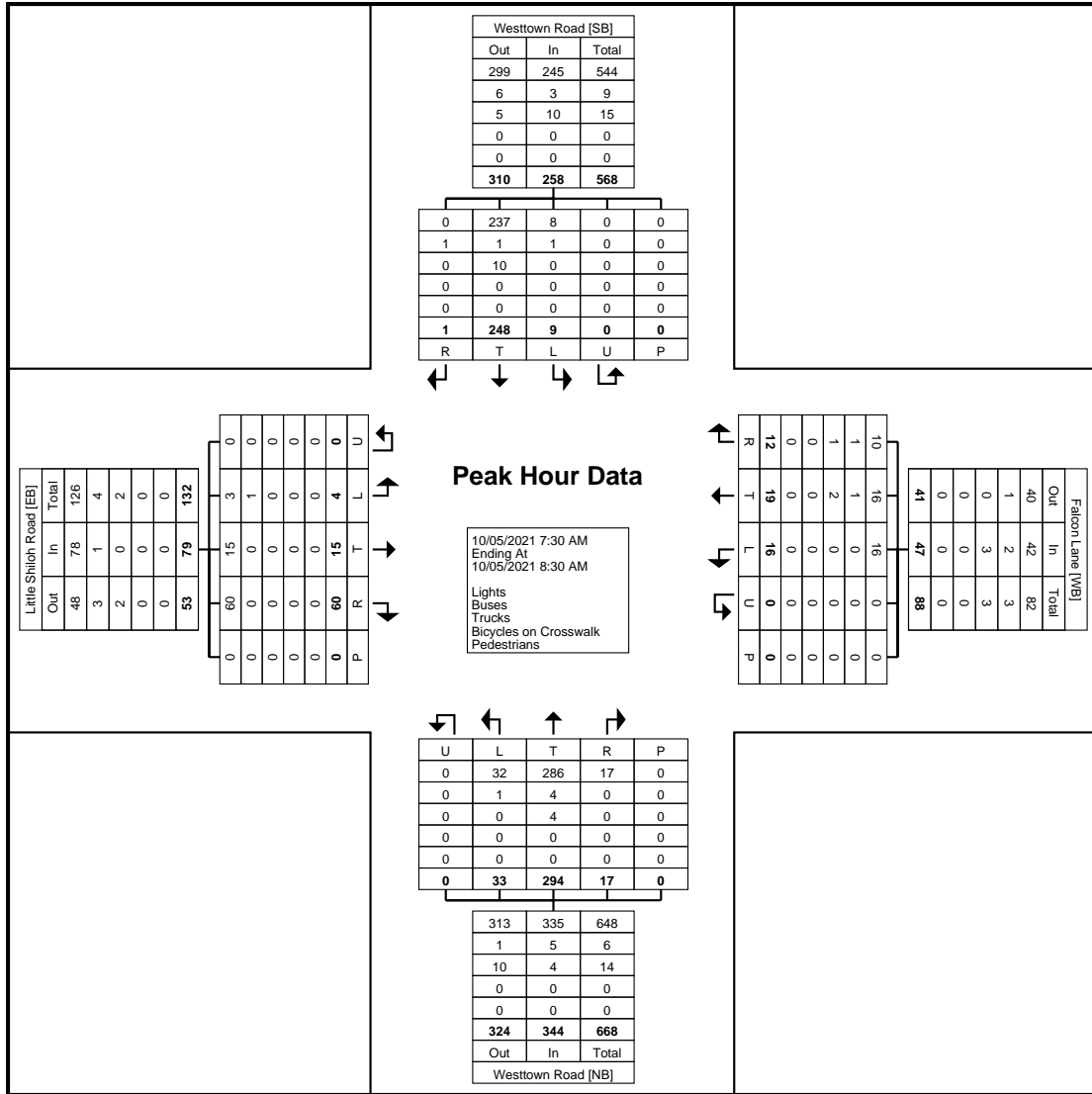
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Chester County, PA  
Westtown Rd & Little Shiloh  
Rd/Falcon Lane  
Tuesday, October 5, 2021  
Location: 39.95684, -75.552712

Count Name: Westtown Rd &  
Little Shiloh Rd-Falcon Ln  
Site Code:  
Start Date: 10/05/2021  
Page No: 3

### Turning Movement Peak Hour Data (7:30 AM)

Start Time	Little Shiloh Road Eastbound						Falcon Lane Westbound						Westtown Road Northbound						Westtown Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:30 AM	1	1	20	0	0	22	5	3	5	0	0	13	4	62	3	0	0	69	1	53	1	0	0	55	159
7:45 AM	1	4	12	0	0	17	2	6	2	0	0	10	14	82	2	0	0	98	2	74	0	0	0	76	201
8:00 AM	1	6	18	0	0	25	4	6	3	0	0	13	6	82	9	0	0	97	1	64	0	0	0	65	200
8:15 AM	1	4	10	0	0	15	5	4	2	0	0	11	9	68	3	0	0	80	5	57	0	0	0	62	168
Total	4	15	60	0	0	79	16	19	12	0	0	47	33	294	17	0	0	344	9	248	1	0	0	258	728
Approach %	5.1	19.0	75.9	0.0	-	-	34.0	40.4	25.5	0.0	-	-	9.6	85.5	4.9	0.0	-	-	3.5	96.1	0.4	0.0	-	-	-
Total %	0.5	2.1	8.2	0.0	-	10.9	2.2	2.6	1.6	0.0	-	6.5	4.5	40.4	2.3	0.0	-	47.3	1.2	34.1	0.1	0.0	-	35.4	-
PHF	1.000	0.625	0.750	0.000	-	0.790	0.800	0.792	0.600	0.000	-	0.904	0.589	0.896	0.472	0.000	-	0.878	0.450	0.838	0.250	0.000	-	0.849	0.905
Lights	3	15	60	0	-	78	16	16	10	0	-	42	32	286	17	0	-	335	8	237	0	0	-	245	700
% Lights	75.0	100.0	100.0	-	-	98.7	100.0	84.2	83.3	-	-	89.4	97.0	97.3	100.0	-	-	97.4	88.9	95.6	0.0	-	-	95.0	96.2
Buses	1	0	0	0	-	1	0	1	1	0	-	2	1	4	0	0	-	5	1	1	1	0	-	3	11
% Buses	25.0	0.0	0.0	-	-	1.3	0.0	5.3	8.3	-	-	4.3	3.0	1.4	0.0	-	-	1.5	11.1	0.4	100.0	-	-	1.2	1.5
Trucks	0	0	0	0	-	0	0	2	1	0	-	3	0	4	0	0	-	4	0	10	0	0	-	10	17
% Trucks	0.0	0.0	0.0	-	-	0.0	0.0	10.5	8.3	-	-	6.4	0.0	1.4	0.0	-	-	1.2	0.0	4.0	0.0	-	-	3.9	2.3
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Turning Movement Peak Hour Data Plot (7:30 AM)



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Chester County, PA  
Westtown Rd & Little Shiloh  
Rd/Falcon Lane  
Tuesday, October 5, 2021  
Location: 39.95684, -75.552712

Count Name: Westtown Rd &  
Little Shiloh Rd-Falcon Ln  
Site Code:  
Start Date: 10/05/2021  
Page No: 5

### Turning Movement Peak Hour Data (5:00 PM)

Start Time	Little Shiloh Road Eastbound						Falcon Lane Westbound						Westtown Road Northbound						Westtown Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
5:00 PM	1	5	14	0	0	20	8	10	4	0	0	22	15	60	5	0	0	80	6	80	0	0	0	86	208
5:15 PM	0	8	14	0	0	22	5	14	3	0	0	22	14	78	2	0	0	94	5	82	0	0	0	87	225
5:30 PM	4	9	14	0	0	27	2	13	1	0	0	16	11	81	6	0	0	98	10	65	1	0	0	76	217
5:45 PM	1	7	20	0	0	28	4	7	5	0	0	16	7	62	8	1	0	78	6	62	0	0	0	68	190
Total	6	29	62	0	0	97	19	44	13	0	0	76	47	281	21	1	0	350	27	289	1	0	0	317	840
Approach %	6.2	29.9	63.9	0.0	-	-	25.0	57.9	17.1	0.0	-	-	13.4	80.3	6.0	0.3	-	-	8.5	91.2	0.3	0.0	-	-	-
Total %	0.7	3.5	7.4	0.0	-	11.5	2.3	5.2	1.5	0.0	-	9.0	5.6	33.5	2.5	0.1	-	41.7	3.2	34.4	0.1	0.0	-	37.7	-
PHF	0.375	0.806	0.775	0.000	-	0.866	0.594	0.786	0.650	0.000	-	0.864	0.783	0.867	0.656	0.250	-	0.893	0.675	0.881	0.250	0.000	-	0.911	0.933
Lights	6	29	62	0	-	97	18	44	13	0	-	75	47	279	21	1	-	348	27	285	1	0	-	313	833
% Lights	100.0	100.0	100.0	-	-	100.0	94.7	100.0	100.0	-	-	98.7	100.0	99.3	100.0	100.0	-	99.4	100.0	98.6	100.0	-	-	98.7	99.2
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Trucks	0	0	0	0	-	0	1	0	0	0	-	1	0	2	0	0	-	2	0	4	0	0	-	4	7
% Trucks	0.0	0.0	0.0	-	-	0.0	5.3	0.0	0.0	-	-	1.3	0.0	0.7	0.0	0.0	-	0.6	0.0	1.4	0.0	-	-	1.3	0.8
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

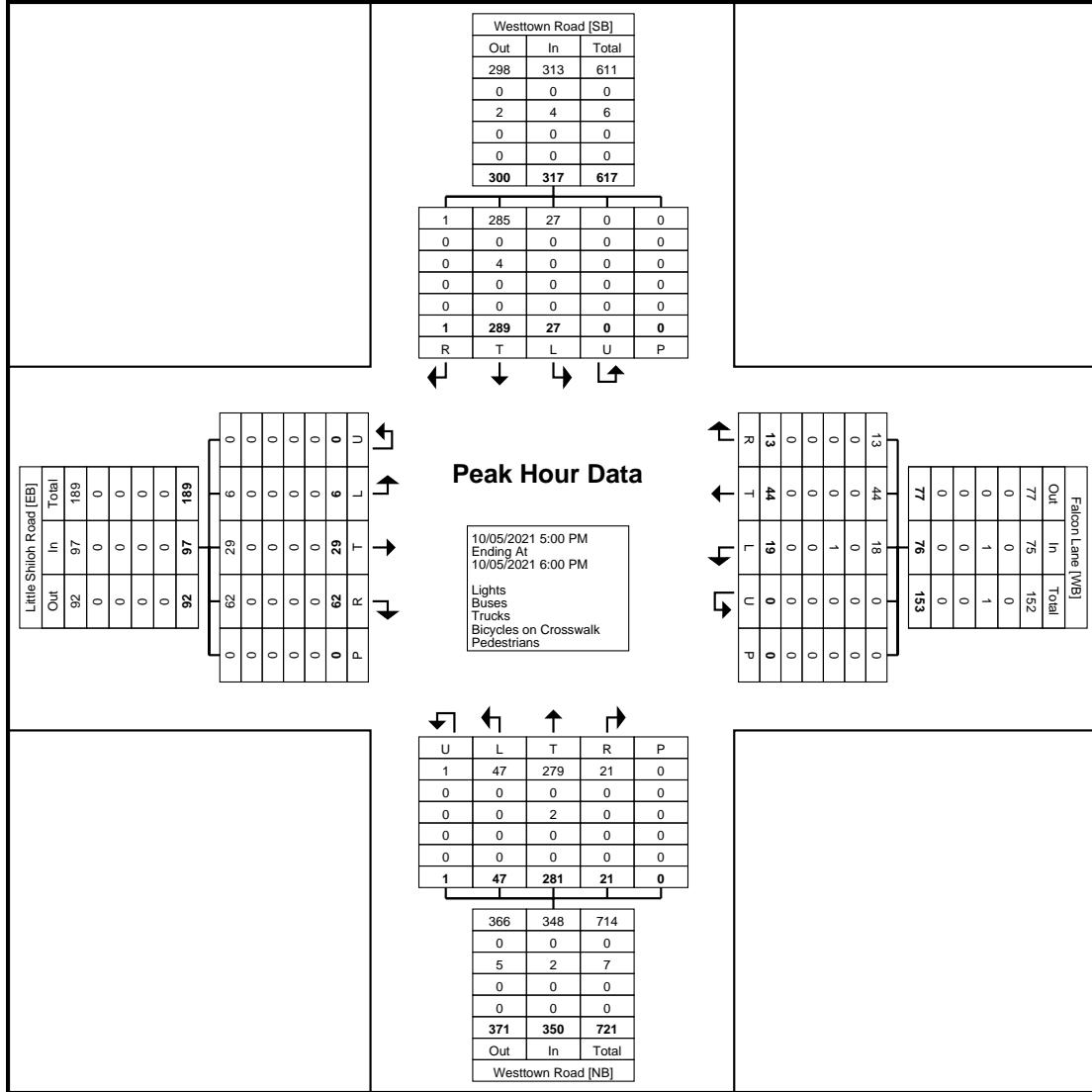


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Count Name: Westtown Rd &  
Little Shiloh Rd-Falcon Ln  
Site Code:  
Start Date: 10/05/2021  
Page No: 6

Chester County, PA  
Westtown Rd & Little Shiloh  
Rd/Falcon Lane  
Tuesday, October 5, 2021  
Location: 39.95684, -75.552712



Turning Movement Peak Hour Data Plot (5:00 PM)



## TRIP GENERATION WORKSHEETS

---

# Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units  
On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 174

Avg. Num. of Dwelling Units: 246

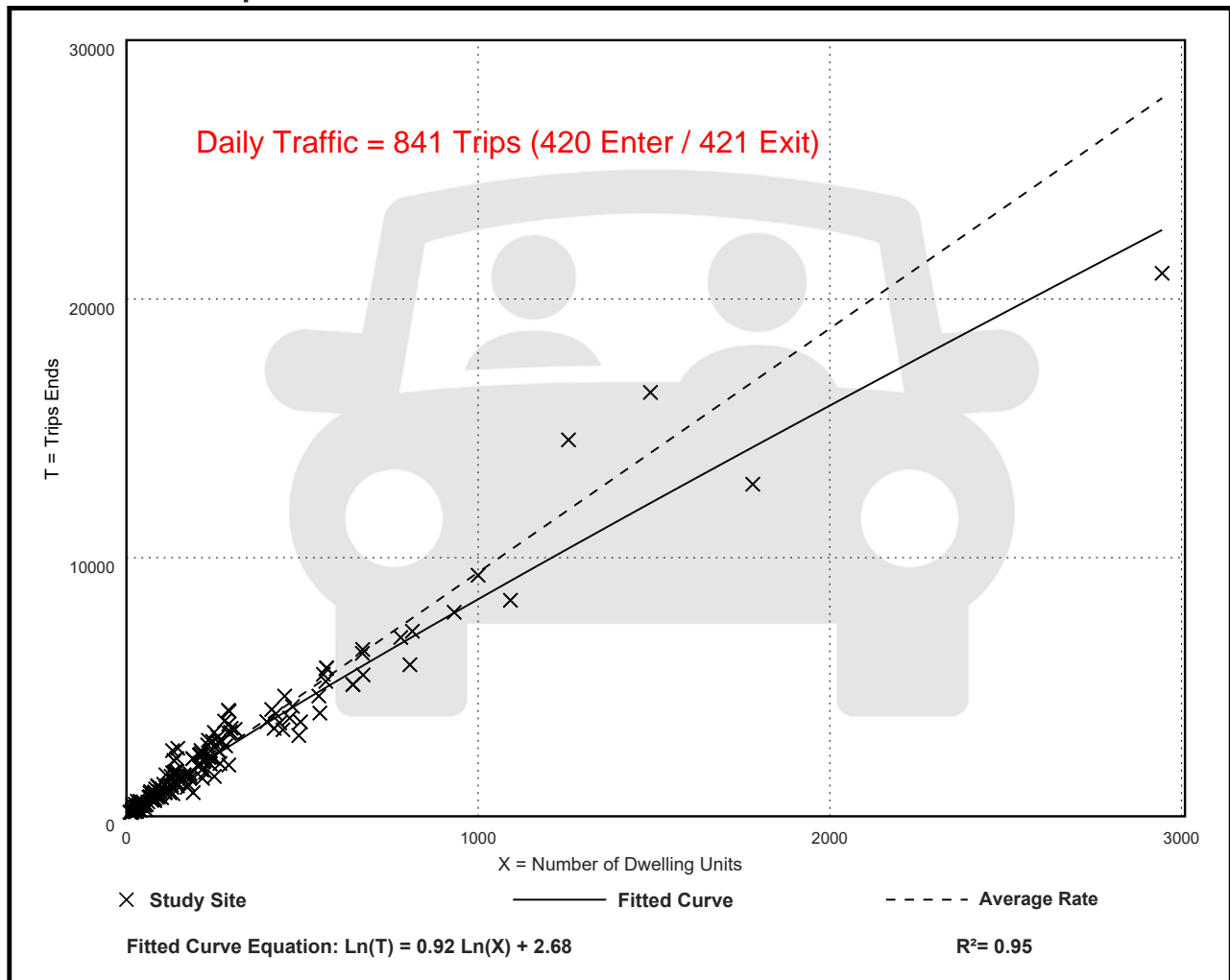
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.43	4.45 - 22.61	2.13

## Data Plot and Equation

82 Units



# Single-Family Detached Housing (210)

## Vehicle Trip Ends vs: Dwelling Units

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: 192

Avg. Num. of Dwelling Units: 226

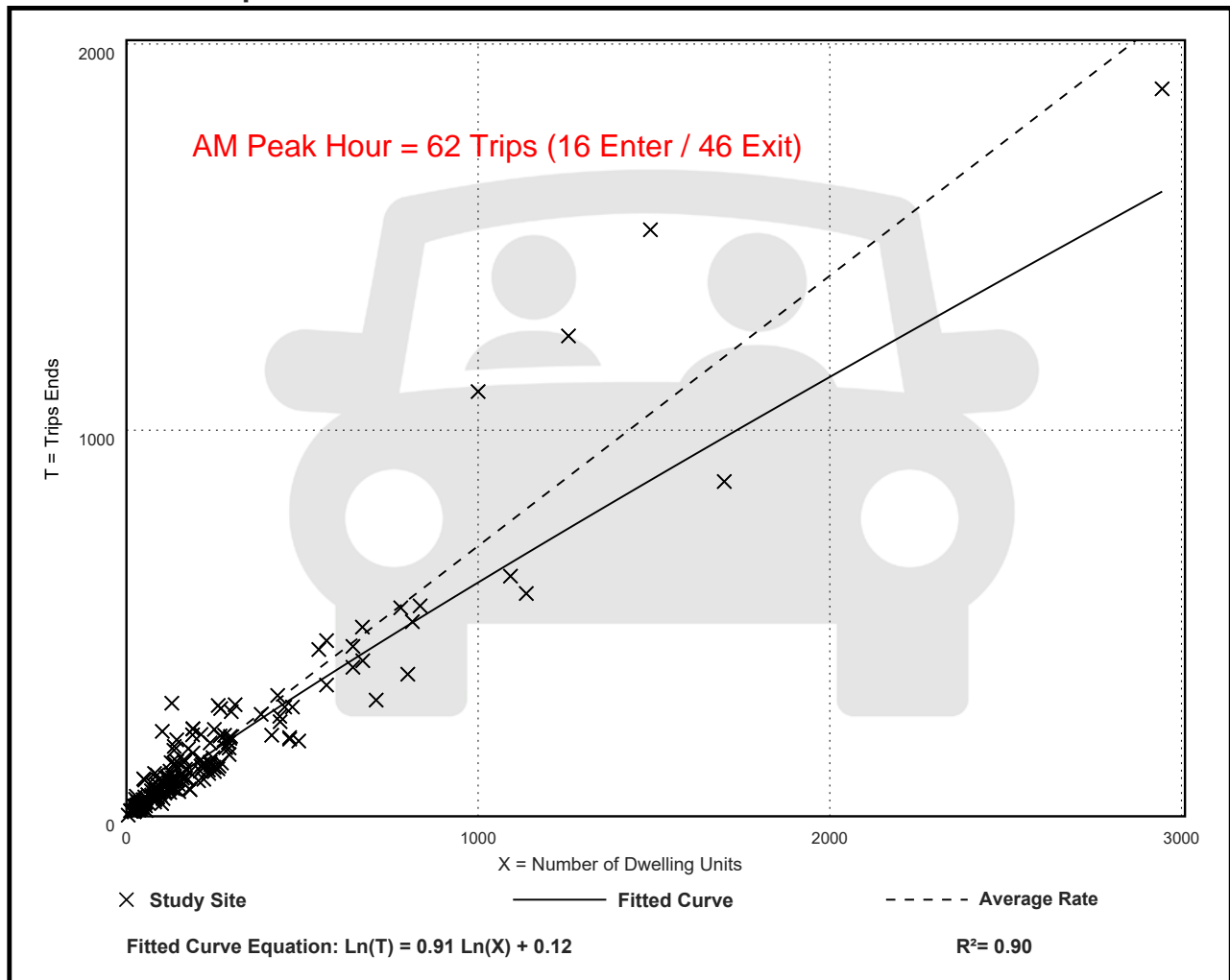
Directional Distribution: 26% entering, 74% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.70	0.27 - 2.27	0.24

## Data Plot and Equation

82 Units



# Single-Family Detached Housing (210)

## Vehicle Trip Ends vs: Dwelling Units

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: 208

Avg. Num. of Dwelling Units: 248

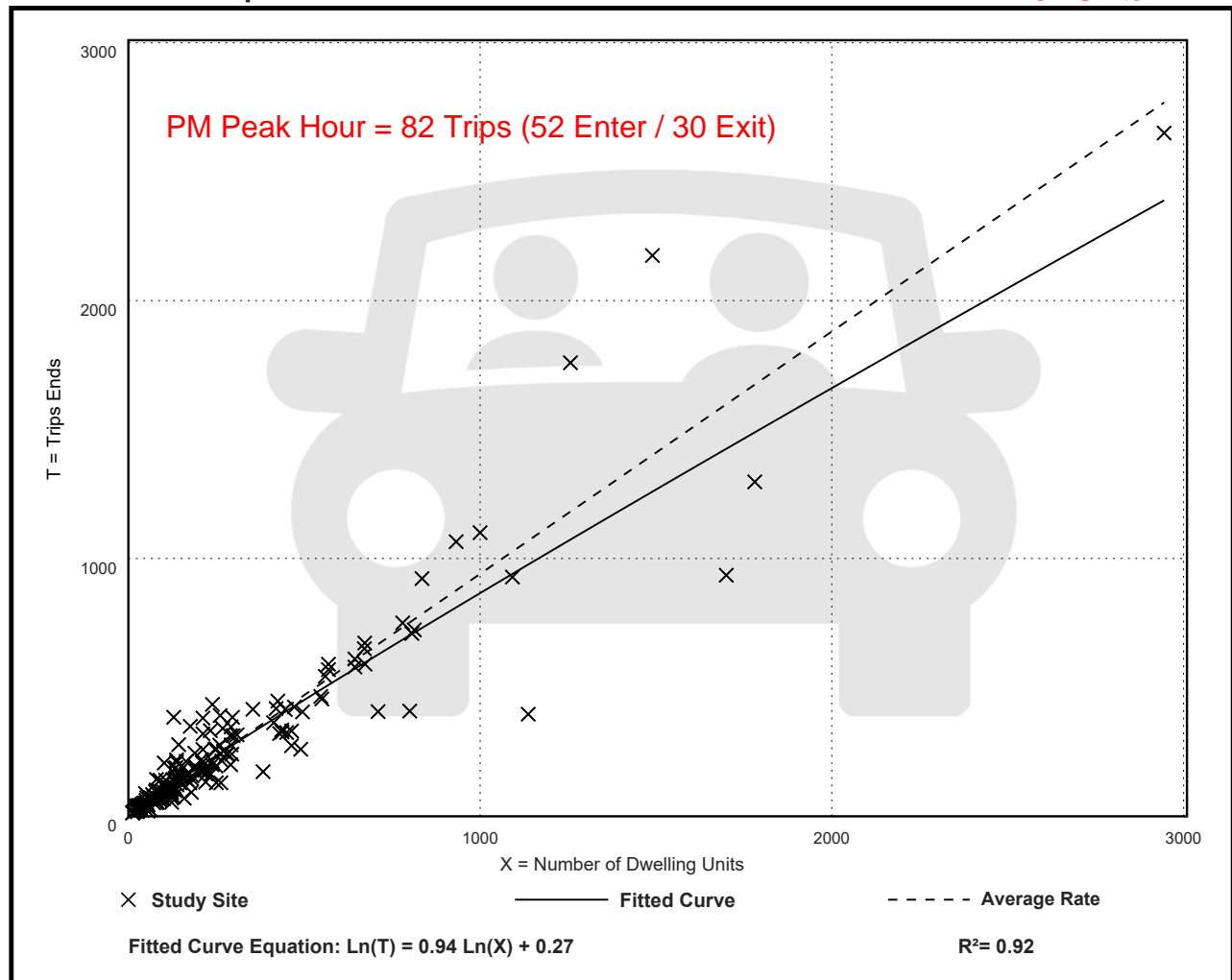
Directional Distribution: 63% entering, 37% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.94	0.35 - 2.98	0.31

## Data Plot and Equation

82 Units



## TRIP DISTRIBUTION

---

Trip Distribution Methodology  
Cordon Line

Project: Stokes Estate Residential  
Project #: 278.012.21  
Computed by: JAS

Using the Cordon Line Methodology, the volume entering and exiting the the study area was used to determine the trip distribution.

	AM Peak Trips	% AM Peak Hr Trips	PM Peak Trips	% PM Peak Hr Trips	Comb. Peak Trips	% Combined Peak Trips	% Assumed for Analysis
<b>TOTAL TRAFFIC ENTERING/EXITING STUDY AREA</b>	3,520	100%	3,748	100%	7,268	100%	100%
Little Shiloh Road to the West	377	10.7%	443	11.8%	820	11.3%	15%
Westtown Road to the North	568	16.1%	617	16.5%	1,185	16.3%	20%
Street Road to the East	1,116	31.7%	1,064	28.4%	2,180	30.0%	25%
Westtown Thornton Road to the South	228	6.5%	340	9.1%	568	7.8%	5%
Street Road to the West	1,063	30.2%	1,096	29.2%	2,159	29.7%	25%
Oakbourne Road to the West	168	4.8%	188	5.0%	356	4.9%	10%

## INTERSECTION TRAFFIC VOLUME WORKSHEETS

---

SITE IMPACT TRAFFIC EVALUATION

----- GENERAL INFORMATION FOR SITETRIP WORKSHEET -----

Title: **Stokes Estate Residential Development**  
**TRANSPORTATION IMPACT STUDY**  
 Location: **Westtown Township, Chester County**  
 Performed By: **LJS** Date: **03/04/22**

Intersection 1: **Shiloh Road - Westtown Thornton Rd /Street Road (S.R.0926)** Site A: **Residential (Site)**  
 Intersection 2: **Shiloh Road / Hunt Drive** Site B: **(Site)**  
 Intersection 3: **Shiloh Road / Oakbourne Road** Site C: **(Site)**  
 Intersection 4: **Shiloh Road / Little Shiloh Road (S.R.2005)** Site D: **(Site)**  
 Intersection 5: **Shiloh Hill Drive / Little Shiloh Road (S.R.2005)** Site E: **(Site)**  
 Intersection 6: **Westtown Road (S.R.2007) / Little Shiloh Road (S.R.2005) - Falcon Lane** Site F: **(Site)**  
 Intersection 7: **( STREET NAMES )** Design Hour: **AM Peak**  
 Intersection 8: **( STREET NAMES )** Design Year: **2028**  
 Intersection 9: **( STREET NAMES )** Background Factor: **1.04**  
 Intersection 10: **( STREET NAMES )** Background Growth Rate **0.54**  
 Intersection 11: **( STREET NAMES )**  
 Intersection 12: **( STREET NAMES )**

----- EXISTING AND FUTURE TRAFFIC WITHOUT DEVELOPMENT -----

APPROACH	EXISTING TRAFFIC	Committed Developments		PHF	RTOR	Trucks	Truck Percentage
		FUTURE TRAFFIC W/O COM DEV	FUTURE TRAFFIC W/ COM DEV				
<b>INTERSECTION 1: Shiloh Road - Westtown Thornton Rd /Street Road (S.R.0926)</b>							
EB LEFT	121	126	126			3	2%
THROUGH	398	413	413			15	4%
RIGHT	10	10	10			0	0%
WB LEFT	15	16	16			0	0%
THROUGH	425	441	441			18	4%
RIGHT	148	154	154		1	1	1%
NB LEFT	21	22	22			1	5%
THROUGH	85	88	88			0	0%
RIGHT	11	11	11		1	0	0%
SB LEFT	119	124	124			4	3%
THROUGH	86	89	89			2	2%
RIGHT	88	91	91		0	7	8%
***TOTAL***	1527	1585	1585	0.72		51	
<b>INTERSECTION 2: Shiloh Road / Hunt Drive</b>							
EB LEFT	6	6	6			0	0%
THROUGH	0	0	0			0	0%
RIGHT	8	8	8		0	2	25%
WB LEFT	1	1	1			1	100%
THROUGH	0	0	0			0	0%
RIGHT	0	0	0		0	0	0%
NB LEFT	6	6	6			0	0%
THROUGH	214	222	222			7	3%
RIGHT	3	3	3		0	1	33%
SB LEFT	0	0	0			0	0%
THROUGH	301	313	313			9	3%
RIGHT	2	2	2		0	0	0%
***TOTAL***	541	561	561	0.60		20	
<b>INTERSECTION 3: Shiloh Road / Oakbourne Road</b>							
EB LEFT	13	13	13			0	0%
THROUGH	0	0	0			0	0%
RIGHT	84	87	87		0	5	6%
WB LEFT	0	0	0			0	0%
THROUGH	0	0	0			0	0%
RIGHT	4	4	4		0	1	25%
NB LEFT	52	54	54			5	10%
THROUGH	173	180	180			3	2%
RIGHT	1	1	1		0	0	0%
SB LEFT	1	1	1			0	0%
THROUGH	224	233	233			7	3%
RIGHT	19	20	20		0	2	11%
***TOTAL***	571	593	593	0.64		23	
<b>INTERSECTION 4: Shiloh Road / Little Shiloh Road (S.R.2005)</b>							
EB LEFT	2	2	2			0	0%
THROUGH	25	26	26			6	24%
RIGHT	176	183	183		0	5	3%
WB LEFT	71	74	74			6	8%
THROUGH	27	28	28			2	7%
RIGHT	0	0	0		0	0	0%
NB LEFT	146	152	152			4	3%
THROUGH	2	2	2			0	0%
RIGHT	50	52	52		0	2	4%
SB LEFT	0	0	0			0	0%
THROUGH	0	0	0			0	0%
RIGHT	1	1	1		0	0	0%
***TOTAL***	500	520	520	0.68		25	
<b>INTERSECTION 5: Shiloh Hill Drive / Little Shiloh Road (S.R.2005)</b>							
EB LEFT	0	0	0			0	0%
THROUGH	73	76	76			2	3%
RIGHT	3	3	3		0	0	0%
WB LEFT	0	0	0			0	0%
THROUGH	69	72	72			6	9%
RIGHT	0	0	0		0	0	0%
NB LEFT	7	7	7			0	0%
THROUGH	0	0	0			0	0%
RIGHT	2	2	2		0	0	0%
SB LEFT	0	0	0			0	0%
THROUGH	0	0	0			0	0%
RIGHT	0	0	0		0	0	0%
***TOTAL***	154	160	160	0.70		8	
<b>INTERSECTION 6: Westtown Road (S.R.2007) / Little Shiloh Road (S.R.2005) - Falcon Lane</b>							
EB LEFT	4	4	4			1	25%
THROUGH	15	16	16			0	0%
RIGHT	60	62	62		0	0	0%
WB LEFT	16	17	17			0	0%
THROUGH	19	20	20			3	16%
RIGHT	12	12	12		0	2	17%
NB LEFT	33	34	34			1	3%
THROUGH	294	305	305			8	3%
RIGHT	17	18	18		0	0	0%
SB LEFT	9	9	9			1	11%
THROUGH	248	258	258			11	4%
RIGHT	1	1	1		0	1	100%
***TOTAL***	728	756	756	0.91		28	





SITE IMPACT TRAFFIC EVALUATION

----- GENERAL INFORMATION FOR SITETRIP WORKSHEET -----

Title: Stokes Estate Residential Development  
 TRANSPORTATION IMPACT STUDY  
 Location: Westtown Township, Chester County  
 Performed By: LJS Date: 03/04/22

Intersection 1: Shiloh Road - Westtown Thornton Rd /Street Road (S.R.2005) Site A: Residential (Site)  
 Intersection 2: Shiloh Road / Hunt Drive Site B: (Site)  
 Intersection 3: Shiloh Road / Oakbourne Road Site C: (Site)  
 Intersection 4: Shiloh Road / Little Shiloh Road (S.R.2005) Site D: (Site)  
 Intersection 5: Shiloh Hill Drive / Little Shiloh Road (S.R.2005) Site E: (Site)  
 Intersection 6: Westtown Road (S.R.2007) / Little Shiloh Road (S.R.2005) Site F: (Site)  
 Intersection 7: ( STREET NAMES ) Design Hour: PM Peak  
 Intersection 8: ( STREET NAMES ) Design Year: 2028  
 Intersection 9: ( STREET NAMES ) Background Factor: 1.04  
 Intersection 10: ( STREET NAMES ) Background Growth Rate 0.54  
 Intersection 11: ( STREET NAMES )  
 Intersection 12: ( STREET NAMES )

----- EXISTING AND FUTURE TRAFFIC WITHOUT DEVELOPMENT -----

APPROACH	EXISTING TRAFFIC	Committed Developments		PHF	RTOR	Trucks	Truck Percentage
		FUTURE TRAFFIC W/O COM DEV	FUTURE TRAFFIC W/ COM DEV				
<b>INTERSECTION 1: Shiloh Road - Westtown Thornton Rd /Street Road (S.R.0926)</b>							
EB LEFT	135	140	140			3	2%
THROUGH	403	418	418			2	0%
RIGHT	22	23	23			0	0%
WB LEFT	9	9	9			0	0%
THROUGH	424	440	440			3	1%
RIGHT	118	123	123			2	0%
NB LEFT	9	9	9			0	0%
THROUGH	115	119	119			0	0%
RIGHT	19	20	20			0	0%
SB LEFT	91	94	94			0	0%
THROUGH	166	172	172			0	0%
RIGHT	103	107	107			1	0%
***TOTAL***	1614	1674	1674	0.88		8	
<b>INTERSECTION 2: Shiloh Road / Hunt Drive</b>							
EB LEFT	3	3	3			0	0%
THROUGH	0	0	0			0	0%
RIGHT	7	7	7			0	0%
WB LEFT	1	1	1			0	0%
THROUGH	0	0	0			0	0%
RIGHT	1	1	1			0	0%
NB LEFT	13	13	13			0	0%
THROUGH	252	262	262			0	0%
RIGHT	0	0	0			0	0%
SB LEFT	1	1	1			0	0%
THROUGH	314	326	326			0	0%
RIGHT	5	5	5			0	0%
***TOTAL***	597	619	619	0.89		0	
<b>INTERSECTION 3: Shiloh Road / Oakbourne Road</b>							
EB LEFT	22	23	23			1	5%
THROUGH	0	0	0			0	0%
RIGHT	78	81	81			0	0%
WB LEFT	3	3	3			0	0%
THROUGH	0	0	0			0	0%
RIGHT	3	3	3			0	0%
NB LEFT	66	69	69			0	0%
THROUGH	187	194	194			0	0%
RIGHT	1	1	1			0	0%
SB LEFT	1	1	1			0	0%
THROUGH	241	250	250			0	0%
RIGHT	22	23	23			0	0%
***TOTAL***	624	648	648	0.91		1	
<b>INTERSECTION 4: Shiloh Road / Little Shiloh Road (S.R.2005)</b>							
EB LEFT	2	2	2			0	0%
THROUGH	30	31	31			0	0%
RIGHT	226	235	235			0	1%
WB LEFT	78	81	81			0	0%
THROUGH	32	33	33			1	3%
RIGHT	0	0	0			0	0%
NB LEFT	152	158	158			1	1%
THROUGH	0	0	0			0	0%
RIGHT	56	58	58			0	0%
SB LEFT	0	0	0			0	0%
THROUGH	0	0	0			0	0%
RIGHT	1	1	1			0	0%
***TOTAL***	577	599	599	0.86		3	
<b>INTERSECTION 5: Shiloh Hill Drive / Little Shiloh Road (S.R.2005)</b>							
EB LEFT	0	0	0			0	0%
THROUGH	84	87	87			0	0%
RIGHT	8	8	8			0	13%
WB LEFT	1	1	1			0	0%
THROUGH	94	98	98			0	0%
RIGHT	0	0	0			0	0%
NB LEFT	6	6	6			0	0%
THROUGH	0	0	0			0	0%
RIGHT	1	1	1			0	0%
SB LEFT	0	0	0			0	0%
THROUGH	0	0	0			0	0%
RIGHT	0	0	0			0	0%
***TOTAL***	194	201	201	0.90		1	
<b>INTERSECTION 6: Westtown Road (S.R.2007) / Little Shiloh Road (S.R.2005) - Falcon Lane</b>							
EB LEFT	6	6	6			0	0%
THROUGH	29	30	30			0	0%
RIGHT	62	64	64			0	0%
WB LEFT	19	20	20			1	5%
THROUGH	44	46	46			0	0%
RIGHT	13	13	13			0	0%
NB LEFT	48	50	50			0	0%
THROUGH	281	292	292			2	1%
RIGHT	21	22	22			0	0%
SB LEFT	27	28	28			0	0%
THROUGH	289	300	300			4	1%
RIGHT	1	1	1			0	0%
***TOTAL***	840	872	872	0.93		7	



SITE IMPACT TRAFFIC EVALUATION

----- GENERAL INFORMATION FOR SITETRIP WORKSHEET -----

Title: Stokes Estate Residential Development  
 TRANSPORTATION IMPACT STUDY  
 Location: Westtown Township, Chester County  
 Performed By: LJS Date: 03/04/22

Intersection 1: Shiloh Road - Westtown Thornton Rd /Street Road (S.R.2005) Site A: Residential (Site)  
 Intersection 2: Shiloh Road / Hunt Drive Site B: (Site)  
 Intersection 3: Shiloh Road / Oakbourne Road Site C: (Site)  
 Intersection 4: Shiloh Road / Little Shiloh Road (S.R.2005) Site D: (Site)  
 Intersection 5: Shiloh Hill Drive / Little Shiloh Road (S.R.2005) Site E: (Site)  
 Intersection 6: Westtown Road (S.R.2007) / Little Shiloh Road (S.R.2005) Site F: (Site)  
 Intersection 7: ( STREET NAMES ) Design Hour: AM Peak  
 Intersection 8: ( STREET NAMES ) Design Year: 2033  
 Intersection 9: ( STREET NAMES ) Background Factor: 1.07  
 Intersection 10: ( STREET NAMES ) Background Growth Rate 0.54  
 Intersection 11: ( STREET NAMES )  
 Intersection 12: ( STREET NAMES )

----- EXISTING AND FUTURE TRAFFIC WITHOUT DEVELOPMENT -----

APPROACH	EXISTING TRAFFIC	Committed Developments		PHF	RTOR	Trucks	Truck Percentage
		FUTURE TRAFFIC W/O COM DEV	FUTURE TRAFFIC W/ COM DEV				
<b>INTERSECTION 1: Shiloh Road - Westtown Thornton Rd /Street Road (S.R.0926)</b>							
EB LEFT	121	129	129			3	2%
THROUGH	398	425	425			15	4%
RIGHT	10	11	11			0	0%
WB LEFT	15	16	16			0	0%
THROUGH	425	453	453			18	4%
RIGHT	148	158	158		1	1	1%
NB LEFT	21	22	22			1	5%
THROUGH	85	91	91			0	0%
RIGHT	11	12	12		1	0	0%
SB LEFT	119	127	127			4	3%
THROUGH	86	92	92			2	2%
RIGHT	88	94	94		0	7	8%
***TOTAL***	1527	1630	1630	0.72			
<b>INTERSECTION 2: Shiloh Road / Hunt Drive</b>							
EB LEFT	6	6	6			0	0%
THROUGH	0	0	0			0	0%
RIGHT	8	9	9		0	2	25%
WB LEFT	1	1	1			1	100%
THROUGH	0	0	0			0	0%
RIGHT	0	0	0		0	0	0%
NB LEFT	6	6	6			0	0%
THROUGH	214	228	228			7	3%
RIGHT	3	3	3		0	1	33%
SB LEFT	0	0	0			0	0%
THROUGH	301	321	321			9	3%
RIGHT	2	2	2		0	0	0%
***TOTAL***	541	576	576	0.60			
<b>INTERSECTION 3: Shiloh Road / Oakbourne Road</b>							
EB LEFT	13	14	14			0	0%
THROUGH	0	0	0			0	0%
RIGHT	84	90	90		0	5	6%
WB LEFT	0	0	0			0	0%
THROUGH	0	0	0			0	0%
RIGHT	4	4	4		0	0	0%
NB LEFT	52	55	55			5	10%
THROUGH	173	185	185			3	2%
RIGHT	1	1	1		0	0	0%
SB LEFT	1	1	1			0	0%
THROUGH	224	239	239			7	3%
RIGHT	19	20	20		0	2	11%
***TOTAL***	571	609	609	0.64			
<b>INTERSECTION 4: Shiloh Road / Little Shiloh Road (S.R.2005)</b>							
EB LEFT	2	2	2			0	0%
THROUGH	25	27	27			6	24%
RIGHT	176	188	188		0	5	3%
WB LEFT	71	76	76			6	8%
THROUGH	27	29	29			2	7%
RIGHT	0	0	0		0	0	0%
NB LEFT	146	156	156			4	3%
THROUGH	2	2	2			0	0%
RIGHT	50	53	53		0	2	4%
SB LEFT	0	0	0			0	0%
THROUGH	0	0	0			0	0%
RIGHT	1	1	1		0	0	0%
***TOTAL***	500	534	534	0.68			
<b>INTERSECTION 5: Shiloh Hill Drive / Little Shiloh Road (S.R.2005)</b>							
EB LEFT	0	0	0			0	0%
THROUGH	73	78	78			2	3%
RIGHT	3	3	3		0	0	0%
WB LEFT	0	0	0			0	0%
THROUGH	69	74	74			6	9%
RIGHT	0	0	0		0	0	0%
NB LEFT	7	7	7			0	0%
THROUGH	0	0	0			0	0%
RIGHT	2	2	2		0	0	0%
SB LEFT	0	0	0			0	0%
THROUGH	0	0	0			0	0%
RIGHT	0	0	0		0	0	0%
***TOTAL***	154	164	164	0.70			
<b>INTERSECTION 6: Westtown Road (S.R.2007) / Little Shiloh Road (S.R.2005) - Falcon Lane</b>							
EB LEFT	4	4	4			1	25%
THROUGH	15	16	16			0	0%
RIGHT	60	64	64		0	0	0%
WB LEFT	16	17	17			0	0%
THROUGH	19	20	20			3	16%
RIGHT	12	13	13		0	2	17%
NB LEFT	33	35	35			1	3%
THROUGH	294	314	314			8	3%
RIGHT	17	18	18		0	0	0%
SB LEFT	9	10	10			1	11%
THROUGH	248	265	265			11	4%
RIGHT	1	1	1		0	1	100%
***TOTAL***	728	777	777	0.91			



SITE IMPACT TRAFFIC EVALUATION

----- GENERAL INFORMATION FOR SITETRIP WORKSHEET -----

Title: Stokes Estate Residential Development  
 TRANSPORTATION IMPACT STUDY  
 Location: Westtown Township, Chester County  
 Performed By: LJS Date: 03/04/22

Intersection 1: Shiloh Road - Westtown Thornton Rd /Street Road (S.R.2005) Site A: Residential (Site)  
 Intersection 2: Shiloh Road / Hunt Drive Site B: (Site)  
 Intersection 3: Shiloh Road / Oakbourne Road Site C: (Site)  
 Intersection 4: Shiloh Road / Little Shiloh Road (S.R.2005) Site D: (Site)  
 Intersection 5: Shiloh Hill Drive / Little Shiloh Road (S.R.2005) Site E: (Site)  
 Intersection 6: Westtown Road (S.R.2007) / Little Shiloh Road (S.R.2005) Site F: (Site)  
 Intersection 7: ( STREET NAMES ) Design Hour: PM Peak  
 Intersection 8: ( STREET NAMES ) Design Year: 2033  
 Intersection 9: ( STREET NAMES ) Background Factor: 1.07  
 Intersection 10: ( STREET NAMES ) Background Growth Rate 0.54  
 Intersection 11: ( STREET NAMES )  
 Intersection 12: ( STREET NAMES )

----- EXISTING AND FUTURE TRAFFIC WITHOUT DEVELOPMENT -----

APPROACH	EXISTING TRAFFIC	Committed Developments		PHF	RTOR	Trucks	Truck Percentage
		FUTURE TRAFFIC W/O COM DEV	FUTURE TRAFFIC W/ COM DEV				
<b>INTERSECTION 1: Shiloh Road - Westtown Thornton Rd /Street Road (S.R.0926)</b>							
EB LEFT	135	144	144			3	2%
THROUGH	403	430	430			2	0%
RIGHT	22	23	23			0	0%
WB LEFT	9	10	10			0	0%
THROUGH	424	452	452			3	1%
RIGHT	118	126	126			2	0%
NB LEFT	9	10	10			0	0%
THROUGH	115	123	123			0	0%
RIGHT	19	20	20			0	0%
SB LEFT	91	97	97			0	0%
THROUGH	166	177	177			0	0%
RIGHT	103	110	110			1	0%
***TOTAL***	1614	1722	1722	0.88			
<b>INTERSECTION 2: Shiloh Road / Hunt Drive</b>							
EB LEFT	3	3	3			0	0%
THROUGH	0	0	0			0	0%
RIGHT	7	7	7			0	0%
WB LEFT	1	1	1			0	0%
THROUGH	0	0	0			0	0%
RIGHT	1	1	1			0	0%
NB LEFT	13	14	14			0	0%
THROUGH	252	269	269			0	0%
RIGHT	0	0	0			0	0%
SB LEFT	1	1	1			0	0%
THROUGH	314	335	335			0	0%
RIGHT	5	5	5			0	0%
***TOTAL***	597	636	636	0.89			
<b>INTERSECTION 3: Shiloh Road / Oakbourne Road</b>							
EB LEFT	22	23	23			1	5%
THROUGH	0	0	0			0	0%
RIGHT	78	83	83			0	0%
WB LEFT	3	3	3			0	0%
THROUGH	0	0	0			0	0%
RIGHT	3	3	3			0	0%
NB LEFT	66	70	70			0	0%
THROUGH	187	200	200			0	0%
RIGHT	1	1	1			0	0%
SB LEFT	1	1	1			0	0%
THROUGH	241	257	257			0	0%
RIGHT	22	23	23			0	0%
***TOTAL***	624	664	664	0.91			
<b>INTERSECTION 4: Shiloh Road / Little Shiloh Road (S.R.2005)</b>							
EB LEFT	2	2	2			0	0%
THROUGH	30	32	32			0	0%
RIGHT	226	241	241			1	0%
WB LEFT	78	83	83			0	0%
THROUGH	32	34	34			1	3%
RIGHT	0	0	0			0	0%
NB LEFT	152	162	162			1	1%
THROUGH	0	0	0			0	0%
RIGHT	56	60	60			0	0%
SB LEFT	0	0	0			0	0%
THROUGH	0	0	0			0	0%
RIGHT	1	1	1			0	0%
***TOTAL***	577	615	615	0.86			
<b>INTERSECTION 5: Shiloh Hill Drive / Little Shiloh Road (S.R.2005)</b>							
EB LEFT	0	0	0			0	0%
THROUGH	84	90	90			0	0%
RIGHT	8	9	9			1	13%
WB LEFT	1	1	1			0	0%
THROUGH	94	100	100			0	0%
RIGHT	0	0	0			0	0%
NB LEFT	6	6	6			0	0%
THROUGH	0	0	0			0	0%
RIGHT	1	1	1			0	0%
SB LEFT	0	0	0			0	0%
THROUGH	0	0	0			0	0%
RIGHT	0	0	0			0	0%
***TOTAL***	194	207	207	0.90			
<b>INTERSECTION 6: Westtown Road (S.R.2007) / Little Shiloh Road (S.R.2005) - Falcon Lane</b>							
EB LEFT	6	6	6			0	0%
THROUGH	29	31	31			0	0%
RIGHT	62	66	66			0	0%
WB LEFT	19	20	20			1	5%
THROUGH	44	47	47			0	0%
RIGHT	13	14	14			0	0%
NB LEFT	48	51	51			0	0%
THROUGH	281	300	300			2	1%
RIGHT	21	22	22			0	0%
SB LEFT	27	29	29			0	0%
THROUGH	289	308	308			4	1%
RIGHT	1	1	1			0	0%
***TOTAL***	840	895	895	0.93			



## GROWTH RATE INFORMATION

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Growth Factors for August 2022 to July 2023				
County	Urban Interstate	Rural Interstate	Urban Non-Interstate	Rural Non-Interstate
ADAMS	*	*	0.50	0.60
ALLEGHENY	0.98	*	0.00	0.43
ARMSTRONG	0.80	*	0.00	0.37
BEAVER	0.64	2.05	0.00	0.30
BEDFORD	*	2.20	0.00	0.39
BERKS	1.34	2.53	0.32	0.58
BLAIR	0.86	2.34	0.00	0.40
BRADFORD	1.06	*	0.00	0.48
BUCKS	1.35	2.63	0.22	0.58
BUTLER	1.66	2.88	0.29	0.71
CAMBRIA	0.35	*	0.00	0.19
CAMERON	*	*	*	0.12
CARBON	1.42	2.68	0.28	0.60
CENTRE	1.79	2.75	0.79	0.74
CHESTER	1.77	2.92	0.54	0.77
CLARION	0.79	2.23	0.00	0.37
CLEARFIELD	0.61	1.94	0.00	0.31
CLINTON	1.10	2.36	0.02	0.48
COLUMBIA	1.10	2.32	0.06	0.48
CRAWFORD	0.74	2.12	0.00	0.36
CUMBERLAND	1.63	2.79	0.59	0.69
DAUPHIN	1.54	*	0.35	0.66
DELAWARE	1.27	*	0.00	*
ELK	*	*	0.00	0.30
ERIE	0.96	2.31	0.00	0.43
FAYETTE	0.86	*	0.00	0.39
FOREST	*	*	*	0.96
FRANKLIN	1.71	2.81	0.73	0.72
FULTON	*	2.33	*	0.50
GREENE	0.73	2.28	0.00	0.36
HUNTINGDON	*	2.49	0.00	0.49
INDIANA	0.94	*	0.00	0.44
JEFFERSON	*	2.32	0.00	0.46
JUNIATA	*	*	*	0.53
LACKAWANNA	0.99	2.36	0.00	0.44
LANCASTER	1.66	2.84	0.60	0.70
LAWRENCE	0.69	2.18	0.00	0.33
LEBANON	*	2.55	0.48	0.62
LEHIGH	1.75	3.09	0.53	0.75
LUZERNE	1.04	2.41	0.00	0.47
LYCOMING	0.99	2.37	0.00	0.44
MCKEAN	0.60	*	0.00	0.30
MERCER	0.92	2.52	0.00	0.43
MIFFLIN	1.17	*	0.00	0.51
MONROE	1.77	2.88	0.79	0.75
MONTGOMERY	1.29	*	0.27	0.55
MONTOUR	1.30	2.68	0.00	0.57
NORTHAMPTON	1.80	3.16	0.47	0.78
NORTHUMBERLAND	1.00	2.28	0.00	0.43
PERRY	*	*	0.24	0.54
PHILADELPHIA	1.18	*	0.05	*
PIKE	1.72	2.72	0.86	0.73
POTTER	*	*	*	0.35
SCHUYLKILL	1.00	2.45	0.00	0.45
SNYDER	1.23	*	0.21	0.54
SOMERSET	0.60	2.06	0.00	0.34
SULLIVAN	*	*	*	0.37
SUSQUEHANNA	1.09	2.43	0.00	0.47
TIOGA	*	*	*	0.42
UNION	1.54	2.68	0.44	0.63
VENANGO	*	1.91	0.00	0.27
WARREN	*	*	0.00	0.35
WASHINGTON	1.22	2.74	0.00	0.55
WAYNE	*	2.53	0.31	0.58
WESTMORELAND	0.89	2.18	0.00	0.40
WYOMING	*	*	0.00	0.44
YORK	1.57	2.89	0.47	0.69

\* = Functional Class Doesn't Exist in County

Questions? Please contact Andrew O'Neill at the Bureau of Planning and Research, 717-346-3250 or [andoneill@pa.gov](mailto:andoneill@pa.gov)

**NOTE:** The projected growth factors are derived using historical VMT (Vehicle Miles Traveled) data (1994 to 2021), as well as Woods and Poole demographic and economic data. The factors should be compounded when calculating future values. The factors should not be used to project traffic beyond a 20-year period. Please be aware that these factors are estimates, and unforeseen events (opening of shopping centers, fast food franchises, gas stations, etc) could cause growth to change over time.

## CAPACITY AND QUEUE ANALYSIS WORKSHEETS

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### Critical Headway and Follow-up Headway Calculations

Equation 19-30

$$t_{c,x} = t_{c,base} + t_{c,hv}P_{hv} + t_{c,g}G - t_{3,lt}$$

from HCM 6 Manual

Equation 19-31

$$t_{f,x} = t_{f,base} + t_{f,hv}P_{hv}$$

Shiloh Road / Hunt Drive - Driveway		$t_{c,base}$	$t_{c,hv}$	$P_{hv}$	$t_{c,g}$	G	$t_{3,lt}$	Critical Headway $t_{c,x}$	$t_{f,base}$	$t_{f,hv}$	$P_{hv}$	Follow-up Headway $t_{f,x}$
AM Peak	EBL	7.1	1	0	0.2	-2	0	6.7	3	0.9	0	3.0
	EBT	6.5	1	0	0.2	-2	0	6.1	4	0.9	0	4.0
	EBR	6.2	1	0.25	0.1	-2	0	6.3	3.1	0.9	0.25	3.3
	WBL	7.1	1	1	0.2	-1	0	7.9	3	0.9	1	3.9
	WBT	6.5	1	0	0.2	-1	0	6.3	4	0.9	0	4.0
	WBR	6.2	1	0	0.1	-1	0	6.1	3.1	0.9	0	3.1
	NBL	4.3	1	0	0	4	0	4.3	3	0.9	0	3.0
SBL	4.3	1	0	0	-2	0	4.3	3	0.9	0	3.0	
PM Peak	EBL	7.1	1	0	0.2	-2	0	6.7	3	0.9	0	3.0
	EBT	6.5	1	0	0.2	-2	0	6.1	4	0.9	0	4.0
	EBR	6.2	1	0	0.1	-2	0	6.0	3.1	0.9	0	3.1
	WBL	7.1	1	0	0.2	-1	0	6.9	3	0.9	0	3.0
	WBT	6.5	1	0	0.2	-1	0	6.3	4	0.9	0	4.0
	WBR	6.2	1	0	0.1	-1	0	6.1	3.1	0.9	0	3.1
	NBL	4.3	1	0	0	4	0	4.3	3	0.9	0	3.0
SBL	4.3	1	0	0	-2	0	4.3	3	0.9	0	3.0	

Shiloh Road / Hunt Drive - Proposed Access		$t_{c,base}$	$t_{c,hv}$	$P_{hv}$	$t_{c,g}$	G	$t_{3,lt}$	Critical Headway $t_{c,x}$	$t_{f,base}$	$t_{f,hv}$	$P_{hv}$	Follow-up Headway $t_{f,x}$
AM Peak	EBL	7.1	1	0	0.2	-2	0	6.7	3	0.9	0	3.0
	EBT	6.5	1	0.02	0.2	-2	0	6.1	4	0.9	0.02	4.0
	EBR	6.2	1	0.25	0.1	-2	0	6.3	3.1	0.9	0.25	3.3
	WBL	7.1	1	0.02	0.2	-1	0	6.9	3	0.9	0.02	3.0
	WBT	6.5	1	0.02	0.2	-1	0	6.3	4	0.9	0.02	4.0
	WBR	6.2	1	0.02	0.1	-1	0	6.1	3.1	0.9	0.02	3.1
	NBL	4.3	1	0	0	4	0	4.3	3	0.9	0	3.0
SBL	4.3	1	0.02	0	-2	0	4.3	3	0.9	0.02	3.0	
PM Peak	EBL	7.1	1	0	0.2	-2	0	6.7	3	0.9	0	3.0
	EBT	6.5	1	0.02	0.2	-2	0	6.1	4	0.9	0.02	4.0
	EBR	6.2	1	0	0.1	-2	0	6.0	3.1	0.9	0	3.1
	WBL	7.1	1	0.02	0.2	-1	0	6.9	3	0.9	0.02	3.0
	WBT	6.5	1	0.02	0.2	-1	0	6.3	4	0.9	0.02	4.0
	WBR	6.2	1	0.02	0.1	-1	0	6.1	3.1	0.9	0.02	3.1
	NBL	4.3	1	0	0	4	0	4.3	3	0.9	0	3.0
SBL	4.3	1	0.02	0	-2	0	4.3	3	0.9	0.02	3.0	

Shiloh Road / Oakbourne Road - Driveway		$t_{c,base}$	$t_{c,hv}$	$P_{hv}$	$t_{c,g}$	G	$t_{3,lt}$	Critical Headway $t_{c,x}$	$t_{f,base}$	$t_{f,hv}$	$P_{hv}$	Follow-up Headway $t_{f,x}$
AM Peak	EBL	7.1	1	0	0.2	-1	0	6.9	3	0.9	0	3.0
	EBT	6.5	1	0	0.2	-1	0	6.3	4	0.9	0	4.0
	EBR	6.2	1	0.06	0.1	-1	0	6.2	3.1	0.9	0.06	3.2
	WBL	7.1	1	0	0.2	1	0	7.3	3	0.9	0	3.0
	WBT	6.5	1	0	0.2	1	0	6.7	4	0.9	0	4.0
	WBR	6.2	1	0.25	0.1	1	0	6.6	3.1	0.9	0.25	3.3
	NBL	4.3	1	0.1	0	1	0	4.4	3	0.9	0.1	3.1
SBL	4.3	1	0	0	-2	0	4.3	3	0.9	0	3.0	
PM Peak	EBL	7.1	1	0.05	0.2	-1	0	7.0	3	0.9	0.05	3.0
	EBT	6.5	1	0	0.2	-1	0	6.3	4	0.9	0	4.0
	EBR	6.2	1	0	0.1	-1	0	6.1	3.1	0.9	0	3.1
	WBL	7.1	1	0	0.2	1	0	7.3	3	0.9	0	3.0
	WBT	6.5	1	0	0.2	1	0	6.7	4	0.9	0	4.0
	WBR	6.2	1	0	0.1	1	0	6.3	3.1	0.9	0	3.1
	NBL	4.3	1	0	0	1	0	4.3	3	0.9	0	3.0
SBL	4.3	1	0	0	-2	0	4.3	3	0.9	0	3.0	





















Shiloh Road / Oakbourne Road - Proposed Access		$t_{c,base}$	$t_{c,hv}$	$P_{hv}$	$t_{c,g}$	G	$t_{3,lt}$	Critical Headway $t_{c,x}$	$t_{f,base}$	$t_{f,hv}$	$P_{hv}$	Follow-up Headway $t_{f,x}$
AM Peak	EBL	7.1	1	0	0.2	-1	0	6.9	3	0.9	0	3.0
	EBT	6.5	1	0.02	0.2	-1	0	6.3	4	0.9	0.02	4.0
	EBR	6.2	1	0.06	0.1	-1	0	6.2	3.1	0.9	0.06	3.2
	WBL	7.1	1	0.02	0.2	1	0	7.3	3	0.9	0.02	3.0
	WBT	6.5	1	0.02	0.2	1	0	6.7	4	0.9	0.02	4.0
	WBR	6.2	1	0.25	0.1	1	0	6.6	3.1	0.9	0.25	3.3
	NBL	4.3	1	0.1	0	1	0	4.4	3	0.9	0.1	3.1
SBL	4.3	1	0.02	0	-2	0	4.3	3	0.9	0.02	3.0	
PM Peak	EBL	7.1	1	0.05	0.2	-1	0	7.0	3	0.9	0.05	3.0
	EBT	6.5	1	0.02	0.2	-1	0	6.3	4	0.9	0.02	4.0
	EBR	6.2	1	0	0.1	-1	0	6.1	3.1	0.9	0	3.1
	WBL	7.1	1	0.02	0.2	1	0	7.3	3	0.9	0.02	3.0
	WBT	6.5	1	0.02	0.2	1	0	6.7	4	0.9	0.02	4.0
	WBR	6.2	1	0.02	0.1	1	0	6.3	3.1	0.9	0.02	3.1
	NBL	4.3	1	0	0	1	0	4.3	3	0.9	0	3.0
SBL	4.3	1	0.02	0	-2	0	4.3	3	0.9	0.02	3.0	

Little Shiloh Road / Shiloh Hill Drive		$t_{c,base}$	$t_{c,hv}$	$P_{hv}$	$t_{c,g}$	G	$t_{3,lt}$	Critical Headway $t_{c,x}$	$t_{f,base}$	$t_{f,hv}$	$P_{hv}$	Follow-up Headway $t_{f,x}$
AM Peak	NBL	7.1	1	0	0.2	4	0.7	7.2	3	0.9	0	3.0
	NBR	6.2	1	0	0.1	4	0	6.6	3.1	0.9	0	3.1
	WBL	4.3	1	0	0	-2	0	4.3	3	0.9	0	3.0
PM Peak	NBL	7.1	1	0	0.2	4	0.7	7.2	3	0.9	0	3.0
	NBR	6.2	1	0	0.1	4	0	6.6	3.1	0.9	0	3.1
	WBL	4.3	1	0	0	-2	0	4.3	3	0.9	0	3.0

Little Shiloh Road - Falcon Lane / Westtown Road		$t_{c,base}$	$t_{c,hv}$	$P_{hv}$	$t_{c,g}$	G	$t_{3,lt}$	Critical Headway $t_{c,x}$	$t_{f,base}$	$t_{f,hv}$	$P_{hv}$	Follow-up Headway $t_{f,x}$
AM Peak	EBL	7.1	1	0.25	0.2	-4	0	6.6	3	0.9	0.25	3.2
	EBT	6.5	1	0	0.2	-4	0	5.7	4	0.9	0	4.0
	EBR	6.2	1	0	0.1	-4	0	5.8	3.1	0.9	0	3.1
	WBL	7.1	1	0	0.2	4	0	7.9	3	0.9	0	3.0
	WBT	6.5	1	0.16	0.2	4	0	7.5	4	0.9	0.16	4.1
	WBR	6.2	1	0.17	0.1	4	0	6.8	3.1	0.9	0.17	3.3
	NBL	4.3	1	0.03	0	2	0	4.3	3	0.9	0.03	3.0
SBL	4.3	1	0.11	0	-1	0	4.4	3	0.9	0.11	3.1	
PM Peak	EBL	7.1	1	0	0.2	-4	0	6.3	3	0.9	0	3.0
	EBT	6.5	1	0	0.2	-4	0	5.7	4	0.9	0	4.0
	EBR	6.2	1	0	0.1	-4	0	5.8	3.1	0.9	0	3.1
	WBL	7.1	1	0.05	0.2	4	0	8.0	3	0.9	0.05	3.0
	WBT	6.5	1	0	0.2	4	0	7.3	4	0.9	0	4.0
	WBR	6.2	1	0	0.1	4	0	6.6	3.1	0.9	0	3.1
	NBL	4.3	1	0	0	2	0	4.3	3	0.9	0	3.0
SBL	4.3	1	0	0	-1	0	4.3	3	0.9	0	3.0	





















1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

Existing Traffic Volumes - AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	121	398	10	15	425	148	21	85	11	119	86	88
Future Volume (veh/h)	121	398	10	15	425	148	21	85	11	119	86	88
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1809	1780	1837	1875	1818	1860	926	996	996	1906	1921	1835
Adj Flow Rate, veh/h	168	553	14	21	590	206	29	118	15	165	119	122
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Percent Heavy Veh, %	2	4	0	0	4	1	5	0	0	3	2	8
Cap, veh/h	313	979	25	387	763	661	15	59	8	197	142	283
Arrive On Green	0.08	0.57	0.56	0.42	0.42	0.42	0.07	0.08	0.07	0.17	0.18	0.18
Sat Flow, veh/h	1723	1729	44	846	1818	1577	174	708	90	1084	782	1555
Grp Volume(v), veh/h	168	0	567	21	590	206	162	0	0	284	0	122
Grp Sat Flow(s),veh/h/ln	1723	0	1773	846	1818	1577	972	0	0	1866	0	1555
Q Serve(g_s), s	4.8	0.0	19.4	1.5	26.6	8.3	8.0	0.0	0.0	14.0	0.0	6.6
Cycle Q Clear(g_c), s	4.8	0.0	19.4	6.5	26.6	8.3	8.0	0.0	0.0	14.0	0.0	6.6
Prop In Lane	1.00		0.02	1.00		1.00	0.18		0.09	0.58		1.00
Lane Grp Cap(c), veh/h	313	0	1004	387	763	661	82	0	0	339	0	283
V/C Ratio(X)	0.54	0.00	0.56	0.05	0.77	0.31	1.99	0.00	0.00	0.84	0.00	0.43
Avail Cap(c_a), veh/h	313	0	1153	458	915	794	82	0	0	372	0	310
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.6	0.0	13.2	19.5	23.8	18.5	43.8	0.0	0.0	37.9	0.0	34.6
Incr Delay (d2), s/veh	1.8	0.0	1.1	0.1	4.8	0.6	484.7	0.0	0.0	14.3	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.3	0.0	11.2	0.5	16.8	5.2	21.9	0.0	0.0	12.1	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.5	0.0	14.3	19.7	28.5	19.0	528.5	0.0	0.0	52.2	0.0	35.7
LnGrp LOS	B	A	B	B	C	B	F	A	A	D	A	D
Approach Vol, veh/h		735			817			162				406
Approach Delay, s/veh		15.4			25.9			528.5				47.3
Approach LOS		B			C			F				D
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		60.0		22.3	14.0	46.0		13.0				
Change Period (Y+Rc), s		7.0		6.0	7.0	7.0		6.0				
Max Green Setting (Gmax), s		61.0		18.0	7.0	47.0		7.0				
Max Q Clear Time (g_c+1), s		21.4		16.0	7.3	29.1		10.0				
Green Ext Time (p_c), s		18.0		0.3	0.0	9.9		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				64.8								
HCM 6th LOS				E								
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												













1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

Existing Traffic Volumes - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	121	398	10	15	425	148	21	85	11	119	86	88
Future Volume (vph)	121	398	10	15	425	148	21	85	11	119	86	88
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	12	12	11	12	12	11	11	11	12	12	12
Grade (%)		-1%			-2%			12%			-4%	
Storage Length (ft)	125		0	100		175	0		0	0		150
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996				0.850		0.987				0.850
Flt Protected	0.950			0.950				0.991			0.972	
Satd. Flow (prot)	1629	1734	0	1670	1748	1530	0	1586	0	0	1740	1445
Flt Permitted	0.152			0.451				0.991			0.972	
Satd. Flow (perm)	261	1734	0	793	1748	1530	0	1586	0	0	1740	1445
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1768			2485			1371			5597	
Travel Time (s)		26.8			37.7			26.7			109.0	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles (%)	2%	4%	0%	0%	4%	1%	5%	0%	0%	3%	2%	8%
Adj. Flow (vph)	168	553	14	21	590	206	29	118	15	165	119	122
Shared Lane Traffic (%)												
Lane Group Flow (vph)	168	567	0	21	590	206	0	162	0	0	284	122
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.07	1.07	1.11	1.06	1.06	1.21	1.21	1.21	1.05	1.05	1.05
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		0	1	0	1	1		1	1	1
Detector Template							Left			Left		
Leading Detector (ft)	35	336		0	336	0	20	30		20	30	35
Trailing Detector (ft)	-5	330		0	330	0	0	-10		0	-10	-5
Detector 1 Position(ft)	-5	330		0	330	0	0	-10		0	-10	-5
Detector 1 Size(ft)	40	6		6	6	6	20	40		20	40	40
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	pm+pt	NA		Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases	2			6		6						4
Detector Phase	5	2		6	6	6	8	8		4	4	4
Switch Phase												

1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

Existing Traffic Volumes - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	3.0	17.0		17.0	17.0	17.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	14.0	25.0		25.0	25.0	25.0	21.0	21.0		21.0	21.0	21.0
Total Split (s)	14.0	68.0		54.0	54.0	54.0	13.0	13.0		24.0	24.0	24.0
Total Split (%)	13.3%	64.8%		51.4%	51.4%	51.4%	12.4%	12.4%		22.9%	22.9%	22.9%
Maximum Green (s)	7.0	61.0		47.0	47.0	47.0	7.0	7.0		18.0	18.0	18.0
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0		5.0			5.0	5.0
Lead/Lag	Lead			Lag			Lag					
Lead-Lag Optimize?	Yes			Yes			Yes					
Vehicle Extension (s)	3.0	5.0		5.0	5.0	5.0	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	2.7		2.7	2.7	2.7	3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	35.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	10.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Recall Mode	None	Min		Min	Min	Min	None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)		8.0		8.0	8.0	8.0	8.0	8.0		8.0	8.0	8.0
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	0
Act Effct Green (s)	50.2	50.2		36.0	36.0	36.0		8.1			18.5	18.5
Actuated g/C Ratio	0.54	0.54		0.39	0.39	0.39		0.09			0.20	0.20
v/c Ratio	0.65	0.61		0.07	0.87	0.35		1.18			0.82	0.43
Control Delay	23.0	17.5		17.4	40.6	21.3		173.9			58.3	40.5
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Delay	23.0	17.5		17.4	40.6	21.3		173.9			58.3	40.5
LOS	C	B		B	D	C		F			E	D
Approach Delay		18.8			35.1			173.9			53.0	
Approach LOS		B			D			F			D	
90th %ile Green (s)	7.0	61.0		47.0	47.0	47.0	7.0	7.0		18.0	18.0	18.0
90th %ile Term Code	Max	Hold		Max	Max	Max	Max	Max		Max	Max	Max
70th %ile Green (s)	7.0	57.6		43.6	43.6	43.6	7.0	7.0		18.0	18.0	18.0
70th %ile Term Code	Max	Hold		Gap	Gap	Gap	Max	Max		Max	Max	Max
50th %ile Green (s)	7.0	50.3		36.3	36.3	36.3	7.0	7.0		18.0	18.0	18.0
50th %ile Term Code	Max	Hold		Gap	Gap	Gap	Max	Max		Max	Max	Max
30th %ile Green (s)	7.0	43.7		29.7	29.7	29.7	7.0	7.0		18.0	18.0	18.0
30th %ile Term Code	Max	Hold		Gap	Gap	Gap	Max	Max		Max	Max	Max
10th %ile Green (s)	7.0	35.7		21.7	21.7	21.7	7.0	7.0		14.9	14.9	14.9
10th %ile Term Code	Max	Hold		Gap	Gap	Gap	Max	Max		Gap	Gap	Gap
Stops (vph)	55	258		9	370	96		84			172	75
Fuel Used(gal)	3	9		0	15	4		6			12	5
CO Emissions (g/hr)	184	653		28	1046	295		415			836	339
NOx Emissions (g/hr)	36	127		6	204	57		81			163	66
VOC Emissions (g/hr)	43	151		7	242	68		96			194	79
Dilemma Vehicles (#)	0	6		0	10	0		4			10	0
Queue Length 50th (ft)	48	216		8	316	84		~119			163	64
Queue Length 95th (ft)	62	220		18	318	105		#203			#224	103
Internal Link Dist (ft)		1688			2405			1291			5517	
Turn Bay Length (ft)	125			100		175						150
Base Capacity (vph)	260	1170		414	913	799		137			359	299

1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

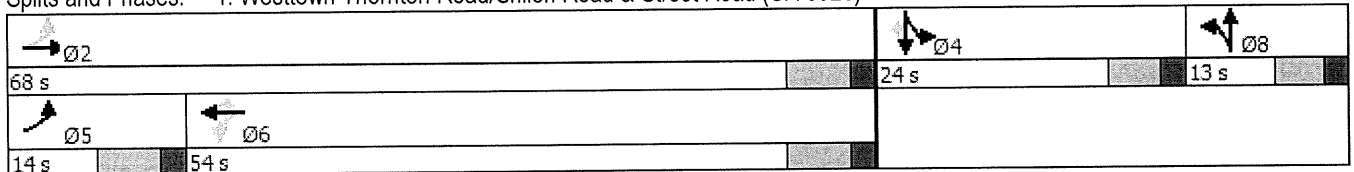
Existing Traffic Volumes - AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0		0	0	0		0			0	0
Spillback Cap Reductn	0	0		0	0	0		0			0	0
Storage Cap Reductn	0	0		0	0	0		0			0	0
Reduced v/c Ratio	0.65	0.48		0.05	0.65	0.26		1.18			0.79	0.41

Intersection Summary





















Area Type: Other  
 Cycle Length: 105  
 Actuated Cycle Length: 93  
 Natural Cycle: 85  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 1.18  
 Intersection Signal Delay: 43.5  
 Intersection LOS: D  
 Intersection Capacity Utilization 69.5%  
 ICU Level of Service C  
 Analysis Period (min) 15  
 90th %ile Actuated Cycle: 105  
 70th %ile Actuated Cycle: 101.6  
 50th %ile Actuated Cycle: 94.3  
 30th %ile Actuated Cycle: 87.7  
 10th %ile Actuated Cycle: 76.6  
 ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

























1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)  
 2028 Traffic Volumes without Development - AM Peak













												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	126	413	10	16	441	154	22	88	11	124	89	91
Future Volume (veh/h)	126	413	10	16	441	154	22	88	11	124	89	91
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1809	1780	1837	1875	1818	1860	926	996	996	1906	1921	1835
Adj Flow Rate, veh/h	175	574	14	22	612	214	31	122	15	172	124	126
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Percent Heavy Veh, %	2	4	0	0	4	1	5	0	0	3	2	8
Cap, veh/h	239	883	22	294	682	592	28	108	13	198	143	284
Arrive On Green	0.08	0.51	0.50	0.38	0.38	0.38	0.14	0.15	0.14	0.17	0.18	0.18
Sat Flow, veh/h	1723	1731	42	830	1818	1577	179	706	87	1085	782	1555
Grp Volume(v), veh/h	175	0	588	22	612	214	168	0	0	296	0	126
Grp Sat Flow(s),veh/h/ln	1723	0	1773	830	1818	1577	972	0	0	1866	0	1555
Q Serve(g_s), s	6.2	0.0	25.3	2.1	33.0	10.2	16.0	0.0	0.0	16.1	0.0	7.5
Cycle Q Clear(g_c), s	6.2	0.0	25.3	12.9	33.0	10.2	16.0	0.0	0.0	16.1	0.0	7.5
Prop In Lane	1.00		0.02	1.00		1.00	0.18		0.09	0.58		1.00
Lane Grp Cap(c), veh/h	239	0	904	294	682	592	149	0	0	341	0	284
V/C Ratio(X)	0.73	0.00	0.65	0.07	0.90	0.36	1.12	0.00	0.00	0.87	0.00	0.44
Avail Cap(c_a), veh/h	239	0	920	302	699	606	149	0	0	341	0	284
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.5	0.0	18.7	28.4	30.6	23.5	44.2	0.0	0.0	41.6	0.0	37.8
Incr Delay (d2), s/veh	10.9	0.0	2.2	0.2	15.0	0.8	110.9	0.0	0.0	20.6	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.4	0.0	15.0	0.7	22.8	6.7	13.8	0.0	0.0	14.2	0.0	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.5	0.0	20.9	28.6	45.6	24.3	155.1	0.0	0.0	62.2	0.0	38.9
LnGrp LOS	C	A	C	C	D	C	F	A	A	E	A	D
Approach Vol, veh/h		763			848			168			422	
Approach Delay, s/veh		24.0			39.8			155.1			55.3	
Approach LOS		C			D			F			E	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		59.1		24.0	14.0	45.1		21.0				
Change Period (Y+Rc), s		7.0		6.0	7.0	7.0		6.0				
Max Green Setting (Gmax), s		53.0		18.0	7.0	39.0		15.0				
Max Q Clear Time (g_c+I1), s		27.3		18.1	8.7	35.5		18.0				
Green Ext Time (p_c), s		14.4		0.0	0.0	2.6		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				46.1								
HCM 6th LOS				D								
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

2028 Traffic Volumes without Development - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	413	10	16	441	154	22	88	11	124	89	91
Future Volume (vph)	126	413	10	16	441	154	22	88	11	124	89	91
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	12	12	11	12	12	11	11	11	12	12	12
Grade (%)		-1%			-2%			12%			-4%	
Storage Length (ft)	125		0	100		175	0		0	0		150
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996				0.850		0.988				0.850
Flt Protected	0.950			0.950				0.991			0.972	
Satd. Flow (prot)	1629	1734	0	1670	1748	1530	0	1587	0	0	1740	1445
Flt Permitted	0.107			0.393				0.991			0.972	
Satd. Flow (perm)	183	1734	0	691	1748	1530	0	1587	0	0	1740	1445
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1768			2485			1371			5597	
Travel Time (s)		26.8			37.7			26.7			109.0	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles (%)	2%	4%	0%	0%	4%	1%	5%	0%	0%	3%	2%	8%
Adj. Flow (vph)	175	574	14	22	613	214	31	122	15	172	124	126
Shared Lane Traffic (%)												
Lane Group Flow (vph)	175	588	0	22	613	214	0	168	0	0	296	126
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.07	1.07	1.11	1.06	1.06	1.21	1.21	1.21	1.05	1.05	1.05
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		0	1	0	1	1		1	1	1
Detector Template							Left			Left		
Leading Detector (ft)	35	336		0	336	0	20	30		20	30	35
Trailing Detector (ft)	-5	330		0	330	0	0	-10		0	-10	-5
Detector 1 Position(ft)	-5	330		0	330	0	0	-10		0	-10	-5
Detector 1 Size(ft)	40	6		6	6	6	20	40		20	40	40
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	pm+pt	NA		Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases	2			6		6						4
Detector Phase	5	2		6	6	6	8	8		4	4	4
Switch Phase												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	3.0	17.0		17.0	17.0	17.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	14.0	25.0		25.0	25.0	25.0	21.0	21.0		21.0	21.0	21.0
Total Split (s)	14.0	60.0		46.0	46.0	46.0	21.0	21.0		24.0	24.0	24.0
Total Split (%)	13.3%	57.1%		43.8%	43.8%	43.8%	20.0%	20.0%		22.9%	22.9%	22.9%
Maximum Green (s)	7.0	53.0		39.0	39.0	39.0	15.0	15.0		18.0	18.0	18.0
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0		5.0			5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	5.0		5.0	5.0	5.0	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	2.7		2.7	2.7	2.7	3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	35.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	10.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Recall Mode	None	Min		Min	Min	Min	None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)		8.0		8.0	8.0	8.0	8.0	8.0		8.0	8.0	8.0
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	0
Act Effct Green (s)	51.8	51.8		37.7	37.7	37.7		14.8			19.1	19.1
Actuated g/C Ratio	0.51	0.51		0.37	0.37	0.37		0.15			0.19	0.19
v/c Ratio	0.85	0.67		0.09	0.95	0.38		0.73			0.91	0.47
Control Delay	52.3	23.2		22.1	56.4	25.8		61.5			74.2	44.6
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Delay	52.3	23.2		22.1	56.4	25.8		61.5			74.2	44.6
LOS	D	C		C	E	C		E			E	D
Approach Delay		29.9			47.8			61.5			65.4	
Approach LOS		C			D			E			E	
90th %ile Green (s)	7.0	53.0		39.0	39.0	39.0	15.0	15.0		18.0	18.0	18.0
90th %ile Term Code	Max	Hold		Max	Max	Max	Max	Max		Max	Max	Max
70th %ile Green (s)	7.0	53.0		39.0	39.0	39.0	15.0	15.0		18.0	18.0	18.0
70th %ile Term Code	Max	Hold		Max	Max	Max	Max	Max		Max	Max	Max
50th %ile Green (s)	7.0	53.0		39.0	39.0	39.0	15.0	15.0		18.0	18.0	18.0
50th %ile Term Code	Max	Hold		Max	Max	Max	Max	Max		Max	Max	Max
30th %ile Green (s)	7.0	53.0		39.0	39.0	39.0	14.2	14.2		18.0	18.0	18.0
30th %ile Term Code	Max	Hold		Max	Max	Max	Gap	Gap		Max	Max	Max
10th %ile Green (s)	7.0	42.3		28.3	28.3	28.3	10.0	10.0		17.9	17.9	17.9
10th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Gap		Gap	Gap	Gap
Stops (vph)	63	304		11	383	108		109			182	79
Fuel Used(gal)	4	11		0	17	5		4			13	5
CO Emissions (g/hr)	250	743		33	1184	324		247			922	356
NOx Emissions (g/hr)	49	145		6	230	63		48			179	69
VOC Emissions (g/hr)	58	172		8	274	75		57			214	83
Dilemma Vehicles (#)	0	6		0	18	0		6			9	0
Queue Length 50th (ft)	61	278		9	387	102		108			198	77
Queue Length 95th (ft)	#103	281		21	387	126		140			#246	106
Internal Link Dist (ft)		1688			2405			1291			5517	
Turn Bay Length (ft)	125			100		175						150
Base Capacity (vph)	207	924		273	690	604		250			326	271

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0		0	0	0		0			0	0
Spillback Cap Reductn	0	0		0	0	0		0			0	0
Storage Cap Reductn	0	0		0	0	0		0			0	0
Reduced v/c Ratio	0.85	0.64		0.08	0.89	0.35		0.67			0.91	0.46





















Intersection Summary

Area Type: Other  
 Cycle Length: 105  
 Actuated Cycle Length: 101.7  
 Natural Cycle: 85  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.95  
 Intersection Signal Delay: 46.0  
 Intersection LOS: D  
 Intersection Capacity Utilization 70.8%  
 ICU Level of Service C  
 Analysis Period (min) 15  
 90th %ile Actuated Cycle: 105  
 70th %ile Actuated Cycle: 105  
 50th %ile Actuated Cycle: 105  
 30th %ile Actuated Cycle: 104.2  
 10th %ile Actuated Cycle: 89.2  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)





















Ø2	Ø4	Ø8
60 s	24 s	21 s
Ø5	Ø6	
14 s	46 s	

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










												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	413	10	16	441	158	22	89	11	136	91	102
Future Volume (veh/h)	130	413	10	16	441	158	22	89	11	136	91	102
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1809	1780	1837	1875	1818	1860	926	996	996	1906	1921	1835
Adj Flow Rate, veh/h	181	574	14	22	612	219	31	124	15	189	126	142
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Percent Heavy Veh, %	2	4	0	0	4	1	5	0	0	3	2	8
Cap, veh/h	239	883	22	294	682	592	27	109	13	204	136	284
Arrive On Green	0.08	0.51	0.50	0.38	0.38	0.38	0.14	0.15	0.14	0.17	0.18	0.18
Sat Flow, veh/h	1723	1731	42	830	1818	1577	177	709	86	1119	746	1555
Grp Volume(v), veh/h	181	0	588	22	612	219	170	0	0	315	0	142
Grp Sat Flow(s),veh/h/ln	1723	0	1773	830	1818	1577	972	0	0	1865	0	1555
Q Serve(g_s), s	6.4	0.0	25.3	2.1	33.0	10.5	16.0	0.0	0.0	17.3	0.0	8.5
Cycle Q Clear(g_c), s	6.4	0.0	25.3	12.9	33.0	10.5	16.0	0.0	0.0	17.3	0.0	8.5
Prop In Lane	1.00		0.02	1.00		1.00	0.18		0.09	0.60		1.00
Lane Grp Cap(c), veh/h	239	0	904	294	682	592	149	0	0	340	0	284
V/C Ratio(X)	0.76	0.00	0.65	0.07	0.90	0.37	1.14	0.00	0.00	0.93	0.00	0.50
Avail Cap(c_a), veh/h	239	0	920	302	699	606	149	0	0	340	0	284
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.6	0.0	18.7	28.4	30.6	23.6	44.2	0.0	0.0	42.1	0.0	38.3
Incr Delay (d2), s/veh	13.0	0.0	2.2	0.2	15.0	0.8	115.3	0.0	0.0	30.4	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.8	0.0	15.0	0.7	22.8	6.9	14.1	0.0	0.0	16.1	0.0	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.7	0.0	20.9	28.6	45.6	24.4	159.5	0.0	0.0	72.5	0.0	39.6
LnGrp LOS	D	A	C	C	D	C	F	A	A	E	A	D
Approach Vol, veh/h		769			853			170				457
Approach Delay, s/veh		24.6			39.7			159.5				62.3
Approach LOS		C			D			F				E
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		59.1		24.0	14.0	45.1		21.0				
Change Period (Y+Rc), s		7.0		6.0	7.0	7.0		6.0				
Max Green Setting (Gmax), s		53.0		18.0	7.0	39.0		15.0				
Max Q Clear Time (g_c+I1), s		27.3		19.3	8.9	35.5		18.0				
Green Ext Time (p_c), s		14.4		0.0	0.0	2.6		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				48.2								
HCM 6th LOS				D								
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	413	10	16	441	158	22	89	11	136	91	102
Future Volume (vph)	130	413	10	16	441	158	22	89	11	136	91	102
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	12	12	11	12	12	11	11	11	12	12	12
Grade (%)		-1%			-2%			12%				-4%
Storage Length (ft)	125		0	100		175	0		0	0		150
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frnt		0.996				0.850		0.988				0.850
Flt Protected	0.950			0.950				0.991			0.971	
Satd. Flow (prot)	1629	1734	0	1670	1748	1530	0	1587	0	0	1738	1445
Flt Permitted	0.107			0.393				0.991			0.971	
Satd. Flow (perm)	183	1734	0	691	1748	1530	0	1587	0	0	1738	1445
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1768			2485			1371			5597	
Travel Time (s)		26.8			37.7			26.7			109.0	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles (%)	2%	4%	0%	0%	4%	1%	5%	0%	0%	3%	2%	8%
Adj. Flow (vph)	181	574	14	22	613	219	31	124	15	189	126	142
Shared Lane Traffic (%)												
Lane Group Flow (vph)	181	588	0	22	613	219	0	170	0	0	315	142
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.07	1.07	1.11	1.06	1.06	1.21	1.21	1.21	1.05	1.05	1.05
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		0	1	0	1	1		1	1	1
Detector Template							Left			Left		
Leading Detector (ft)	35	336		0	336	0	20	30		20	30	35
Trailing Detector (ft)	-5	330		0	330	0	0	-10		0	-10	-5
Detector 1 Position(ft)	-5	330		0	330	0	0	-10		0	-10	-5
Detector 1 Size(ft)	40	6		6	6	6	20	40		20	40	40
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	pm+pt	NA		Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases	2			6		6						4
Detector Phase	5	2		6	6	6	8	8		4	4	4
Switch Phase												

1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)  
 2028 Traffic Volumes with Development - AM Peak





















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	3.0	17.0		17.0	17.0	17.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	14.0	25.0		25.0	25.0	25.0	21.0	21.0		21.0	21.0	21.0
Total Split (s)	14.0	60.0		46.0	46.0	46.0	21.0	21.0		24.0	24.0	24.0
Total Split (%)	13.3%	57.1%		43.8%	43.8%	43.8%	20.0%	20.0%		22.9%	22.9%	22.9%
Maximum Green (s)	7.0	53.0		39.0	39.0	39.0	15.0	15.0		18.0	18.0	18.0
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0		5.0			5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	5.0		5.0	5.0	5.0	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	2.7		2.7	2.7	2.7	3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	35.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	10.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Recall Mode	None	Min		Min	Min	Min	None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)		8.0		8.0	8.0	8.0	8.0	8.0		8.0	8.0	8.0
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	0
Act Effct Green (s)	51.8	51.8		37.8	37.8	37.8		14.8			19.1	19.1
Actuated g/C Ratio	0.51	0.51		0.37	0.37	0.37		0.15			0.19	0.19
v/c Ratio	0.87	0.67		0.09	0.95	0.39		0.74			0.97	0.53
Control Delay	57.3	23.2		22.1	56.5	26.0		62.0			86.0	46.5
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Delay	57.3	23.2		22.1	56.5	26.0		62.0			86.0	46.5
LOS	E	C		C	E	C		E			F	D
Approach Delay		31.2			47.8			62.0			73.7	
Approach LOS		C			D			E			E	
90th %ile Green (s)	7.0	53.0		39.0	39.0	39.0	15.0	15.0		18.0	18.0	18.0
90th %ile Term Code	Max	Hold		Max	Max	Max	Max	Max		Max	Max	Max
70th %ile Green (s)	7.0	53.0		39.0	39.0	39.0	15.0	15.0		18.0	18.0	18.0
70th %ile Term Code	Max	Hold		Max	Max	Max	Max	Max		Max	Max	Max
50th %ile Green (s)	7.0	53.0		39.0	39.0	39.0	15.0	15.0		18.0	18.0	18.0
50th %ile Term Code	Max	Hold		Max	Max	Max	Max	Max		Max	Max	Max
30th %ile Green (s)	7.0	53.0		39.0	39.0	39.0	14.4	14.4		18.0	18.0	18.0
30th %ile Term Code	Max	Hold		Max	Max	Max	Gap	Gap		Max	Max	Max
10th %ile Green (s)	7.0	42.4		28.4	28.4	28.4	10.1	10.1		18.0	18.0	18.0
10th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Gap		Max	Max	Max
Stops (vph)	65	304		11	383	112		110			192	90
Fuel Used(gal)	4	11		0	17	5		4			15	6
CO Emissions (g/hr)	267	743		33	1185	334		250			1020	403
NOx Emissions (g/hr)	52	145		6	231	65		49			198	78
VOC Emissions (g/hr)	62	172		8	275	77		58			236	93
Dilemma Vehicles (#)	0	6		0	18	0		6			10	0
Queue Length 50th (ft)	64	278		9	387	105		110			~214	88
Queue Length 95th (ft)	#113	281		21	387	129		142			#271	118
Internal Link Dist (ft)		1688			2405			1291			5517	
Turn Bay Length (ft)	125			100		175						150
Base Capacity (vph)	207	923		272	689	603		250			325	270

























1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

2033 Traffic Volumes without Development - AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	129	425	11	16	453	158	22	91	12	127	92	94
Future Volume (veh/h)	129	425	11	16	453	158	22	91	12	127	92	94
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1809	1780	1837	1875	1818	1860	926	996	996	1906	1921	1835
Adj Flow Rate, veh/h	179	590	15	22	629	219	31	126	17	176	128	131
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Percent Heavy Veh, %	2	4	0	0	4	1	5	0	0	3	2	8
Cap, veh/h	232	885	23	284	687	596	26	108	15	196	143	283
Arrive On Green	0.08	0.51	0.50	0.38	0.38	0.38	0.14	0.15	0.14	0.17	0.18	0.18
Sat Flow, veh/h	1723	1729	44	817	1818	1577	173	703	95	1081	786	1555
Grp Volume(v), veh/h	179	0	605	22	629	219	174	0	0	304	0	131
Grp Sat Flow(s),veh/h/ln	1723	0	1772	817	1818	1577	971	0	0	1867	0	1555
Q Serve(g_s), s	6.3	0.0	26.4	2.1	34.4	10.5	16.0	0.0	0.0	16.7	0.0	7.9
Cycle Q Clear(g_c), s	6.3	0.0	26.4	14.1	34.4	10.5	16.0	0.0	0.0	16.7	0.0	7.9
Prop In Lane	1.00		0.02	1.00		1.00	0.18		0.10	0.58		1.00
Lane Grp Cap(c), veh/h	232	0	908	284	687	596	149	0	0	339	0	283
V/C Ratio(X)	0.77	0.00	0.67	0.08	0.92	0.37	1.17	0.00	0.00	0.90	0.00	0.46
Avail Cap(c_a), veh/h	232	0	916	288	696	603	149	0	0	339	0	283
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.9	0.0	18.9	29.1	30.9	23.5	44.4	0.0	0.0	42.1	0.0	38.2
Incr Delay (d2), s/veh	14.9	0.0	2.5	0.2	17.4	0.8	127.1	0.0	0.0	24.9	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.9	0.0	15.6	0.8	24.1	6.9	14.9	0.0	0.0	15.1	0.0	5.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.8	0.0	21.4	29.3	48.3	24.3	171.5	0.0	0.0	67.0	0.0	39.4
LnGrp LOS	D	A	C	C	D	C	F	A	A	E	A	D
Approach Vol, veh/h		784			870			174				435
Approach Delay, s/veh		25.3			41.8			171.5				58.7
Approach LOS		C			D			F				E
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		59.5		24.0	14.0	45.5		21.0				
Change Period (Y+Rc), s		7.0		6.0	7.0	7.0		6.0				
Max Green Setting (Gmax), s		53.0		18.0	7.0	39.0		15.0				
Max Q Clear Time (g_c+1), s		28.4		18.7	8.8	36.9		18.0				
Green Ext Time (p_c), s		14.3		0.0	0.0	1.6		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			49.3									
HCM 6th LOS			D									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												













1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

2033 Traffic Volumes without Development - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	129	425	11	16	453	158	22	91	12	127	92	94
Future Volume (vph)	129	425	11	16	453	158	22	91	12	127	92	94
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	12	12	11	12	12	11	11	11	12	12	12
Grade (%)		-1%			-2%			12%			-4%	
Storage Length (ft)	125		0	100		175	0		0	0		150
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996				0.850		0.987				0.850
Flt Protected	0.950			0.950				0.991			0.972	
Satd. Flow (prot)	1629	1734	0	1670	1748	1530	0	1586	0	0	1740	1445
Flt Permitted	0.097			0.376				0.991			0.972	
Satd. Flow (perm)	166	1734	0	661	1748	1530	0	1586	0	0	1740	1445
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1768			2485			1371			5597	
Travel Time (s)		26.8			37.7			26.7			109.0	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles (%)	2%	4%	0%	0%	4%	1%	5%	0%	0%	3%	2%	8%
Adj. Flow (vph)	179	590	15	22	629	219	31	126	17	176	128	131
Shared Lane Traffic (%)												
Lane Group Flow (vph)	179	605	0	22	629	219	0	174	0	0	304	131
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.07	1.07	1.11	1.06	1.06	1.21	1.21	1.21	1.05	1.05	1.05
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		0	1	0	1	1		1	1	1
Detector Template							Left			Left		
Leading Detector (ft)	35	336		0	336	0	20	30		20	30	35
Trailing Detector (ft)	-5	330		0	330	0	0	-10		0	-10	-5
Detector 1 Position(ft)	-5	330		0	330	0	0	-10		0	-10	-5
Detector 1 Size(ft)	40	6		6	6	6	20	40		20	40	40
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	pm+pt	NA		Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases	2			6		6						4
Detector Phase	5	2		6	6	6	8	8		4	4	4
Switch Phase												

1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

2033 Traffic Volumes without Development - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	3.0	17.0		17.0	17.0	17.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	14.0	25.0		25.0	25.0	25.0	21.0	21.0		21.0	21.0	21.0
Total Split (s)	14.0	60.0		46.0	46.0	46.0	21.0	21.0		24.0	24.0	24.0
Total Split (%)	13.3%	57.1%		43.8%	43.8%	43.8%	20.0%	20.0%		22.9%	22.9%	22.9%
Maximum Green (s)	7.0	53.0		39.0	39.0	39.0	15.0	15.0		18.0	18.0	18.0
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0		5.0			5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	5.0		5.0	5.0	5.0	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	2.7		2.7	2.7	2.7	3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	35.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	10.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Recall Mode	None	Min		Min	Min	Min	None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)		8.0		8.0	8.0	8.0	8.0	8.0		8.0	8.0	8.0
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	0
Act Effct Green (s)	52.5	52.5		38.4	38.4	38.4		15.0			19.0	19.0
Actuated g/C Ratio	0.51	0.51		0.37	0.37	0.37		0.15			0.19	0.19
v/c Ratio	0.90	0.68		0.09	0.96	0.38		0.75			0.94	0.49
Control Delay	64.6	23.8		22.2	59.3	25.9		63.4			80.8	45.4
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Delay	64.6	23.8		22.2	59.3	25.9		63.4			80.8	45.4
LOS	E	C		C	E	C		E			F	D
Approach Delay		33.1			50.0			63.4			70.1	
Approach LOS		C			D			E			E	
90th %ile Green (s)	7.0	53.0		39.0	39.0	39.0	15.0	15.0		18.0	18.0	18.0
90th %ile Term Code	Max	Hold		Max	Max	Max	Max	Max		Max	Max	Max
70th %ile Green (s)	7.0	53.0		39.0	39.0	39.0	15.0	15.0		18.0	18.0	18.0
70th %ile Term Code	Max	Hold		Max	Max	Max	Max	Max		Max	Max	Max
50th %ile Green (s)	7.0	53.0		39.0	39.0	39.0	15.0	15.0		18.0	18.0	18.0
50th %ile Term Code	Max	Hold		Max	Max	Max	Max	Max		Max	Max	Max
30th %ile Green (s)	7.0	53.0		39.0	39.0	39.0	14.7	14.7		18.0	18.0	18.0
30th %ile Term Code	Max	Hold		Max	Max	Max	Gap	Gap		Max	Max	Max
10th %ile Green (s)	7.0	45.5		31.5	31.5	31.5	10.5	10.5		18.0	18.0	18.0
10th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Gap		Max	Max	Max
Stops (vph)	66	318		11	390	111		114			187	83
Fuel Used(gal)	4	11		0	18	5		4			14	5
CO Emissions (g/hr)	279	774		33	1232	333		259			969	370
NOx Emissions (g/hr)	54	151		6	240	65		50			188	72
VOC Emissions (g/hr)	65	179		8	286	77		60			224	86
Dilemma Vehicles (#)	0	6		0	18	0		6			9	0
Queue Length 50th (ft)	68	291		9	403	105		113			205	80
Queue Length 95th (ft)	#121	291		21	401	129		145			#256	110
Internal Link Dist (ft)		1688			2405			1291			5517	
Turn Bay Length (ft)	125			100		175						150
Base Capacity (vph)	199	915		258	683	598		247			322	268

1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)  
 2033 Traffic Volumes without Development - AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0		0	0	0		0			0	0
Spillback Cap Reductn	0	0		0	0	0		0			0	0
Storage Cap Reductn	0	0		0	0	0		0			0	0
Reduced v/c Ratio	0.90	0.66		0.09	0.92	0.37		0.70			0.94	0.49

Intersection Summary

Area Type: Other  
 Cycle Length: 105  
 Actuated Cycle Length: 102.5  
 Natural Cycle: 95  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.96  
 Intersection Signal Delay: 49.0  
 Intersection LOS: D  
 Intersection Capacity Utilization 71.8%  
 ICU Level of Service C  
 Analysis Period (min) 15  
 90th %ile Actuated Cycle: 105  
 70th %ile Actuated Cycle: 105  
 50th %ile Actuated Cycle: 105  
 30th %ile Actuated Cycle: 104.7  
 10th %ile Actuated Cycle: 93  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

Ø2	Ø4	Ø8
60 s	24 s	21 s
Ø5	Ø6	
14 s	46 s	

# 1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

## 2033 Traffic Volumes with Development - AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	133	425	11	16	453	162	22	92	12	139	94	105
Future Volume (veh/h)	133	425	11	16	453	162	22	92	12	139	94	105
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1809	1780	1837	1875	1818	1860	926	996	996	1906	1921	1835
Adj Flow Rate, veh/h	185	590	15	22	629	225	31	128	17	193	131	146
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Percent Heavy Veh, %	2	4	0	0	4	1	5	0	0	3	2	8
Cap, veh/h	231	885	23	284	687	596	26	108	14	202	137	283
Arrive On Green	0.08	0.51	0.50	0.38	0.38	0.38	0.14	0.15	0.14	0.17	0.18	0.18
Sat Flow, veh/h	1723	1729	44	817	1818	1577	171	706	94	1111	754	1555
Grp Volume(v), veh/h	185	0	605	22	629	225	176	0	0	324	0	146
Grp Sat Flow(s),veh/h/ln	1723	0	1772	817	1818	1577	971	0	0	1865	0	1555
Q Serve(g_s), s	6.6	0.0	26.4	2.1	34.4	10.8	16.0	0.0	0.0	18.0	0.0	8.9
Cycle Q Clear(g_c), s	6.6	0.0	26.4	14.1	34.4	10.8	16.0	0.0	0.0	18.0	0.0	8.9
Prop In Lane	1.00		0.02	1.00		1.00	0.18		0.10	0.60		1.00
Lane Grp Cap(c), veh/h	231	0	908	284	687	596	149	0	0	339	0	283
V/C Ratio(X)	0.80	0.00	0.67	0.08	0.92	0.38	1.18	0.00	0.00	0.96	0.00	0.52
Avail Cap(c_a), veh/h	231	0	916	288	696	603	149	0	0	339	0	283
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.9	0.0	18.9	29.1	30.9	23.6	44.4	0.0	0.0	42.6	0.0	38.6
Incr Delay (d2), s/veh	17.8	0.0	2.5	0.2	17.4	0.8	131.7	0.0	0.0	37.2	0.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.4	0.0	15.6	0.8	24.1	7.1	15.2	0.0	0.0	17.2	0.0	6.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.7	0.0	21.4	29.3	48.3	24.4	176.1	0.0	0.0	79.8	0.0	40.2
LnGrp LOS	D	A	C	C	D	C	F	A	A	E	A	D
Approach Vol, veh/h		790			876			176				470
Approach Delay, s/veh		26.1			41.7			176.1				67.5
Approach LOS		C			D			F				E
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		59.5		24.0	14.0	45.5		21.0				
Change Period (Y+Rc), s		7.0		6.0	7.0	7.0		6.0				
Max Green Setting (Gmax), s		53.0		18.0	7.0	39.0		15.0				
Max Q Clear Time (g_c+I1), s		28.4		20.0	9.1	36.9		18.0				
Green Ext Time (p_c), s		14.3		0.0	0.0	1.6		0.0				





















### Intersection Summary

HCM 6th Ctrl Delay	51.9
HCM 6th LOS	D

### Notes













User approved pedestrian interval to be less than phase max green.

1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)  
 2033 Traffic Volumes with Development - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	133	425	11	16	453	162	22	92	12	139	94	105
Future Volume (vph)	133	425	11	16	453	162	22	92	12	139	94	105
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	12	12	11	12	12	11	11	11	12	12	12
Grade (%)		-1%			-2%			12%			-4%	
Storage Length (ft)	125		0	100		175	0		0	0		150
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996				0.850		0.987				0.850
Flt Protected	0.950			0.950				0.991			0.971	
Satd. Flow (prot)	1629	1734	0	1670	1748	1530	0	1586	0	0	1738	1445
Flt Permitted	0.097			0.376				0.991			0.971	
Satd. Flow (perm)	166	1734	0	661	1748	1530	0	1586	0	0	1738	1445
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1768			2485			1371			5597	
Travel Time (s)		26.8			37.7			26.7			109.0	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles (%)	2%	4%	0%	0%	4%	1%	5%	0%	0%	3%	2%	8%
Adj. Flow (vph)	185	590	15	22	629	225	31	128	17	193	131	146
Shared Lane Traffic (%)												
Lane Group Flow (vph)	185	605	0	22	629	225	0	176	0	0	324	146
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.07	1.07	1.11	1.06	1.06	1.21	1.21	1.21	1.05	1.05	1.05
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		0	1	0	1	1		1	1	1
Detector Template							Left			Left		
Leading Detector (ft)	35	336		0	336	0	20	30		20	30	35
Trailing Detector (ft)	-5	330		0	330	0	0	-10		0	-10	-5
Detector 1 Position(ft)	-5	330		0	330	0	0	-10		0	-10	-5
Detector 1 Size(ft)	40	6		6	6	6	20	40		20	40	40
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	pm+pt	NA		Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases	2			6		6						4
Detector Phase	5	2		6	6	6	8	8		4	4	4
Switch Phase												

1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

2033 Traffic Volumes with Development - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	3.0	17.0		17.0	17.0	17.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	14.0	25.0		25.0	25.0	25.0	21.0	21.0		21.0	21.0	21.0
Total Split (s)	14.0	60.0		46.0	46.0	46.0	21.0	21.0		24.0	24.0	24.0
Total Split (%)	13.3%	57.1%		43.8%	43.8%	43.8%	20.0%	20.0%		22.9%	22.9%	22.9%
Maximum Green (s)	7.0	53.0		39.0	39.0	39.0	15.0	15.0		18.0	18.0	18.0
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0		5.0			5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	5.0		5.0	5.0	5.0	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	2.7		2.7	2.7	2.7	3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	35.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	10.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Recall Mode	None	Min		Min	Min	Min	None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)		8.0		8.0	8.0	8.0	8.0	8.0		8.0	8.0	8.0
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	0
Act Effct Green (s)	52.5	52.5		38.4	38.4	38.4		15.0			19.0	19.0
Actuated g/C Ratio	0.51	0.51		0.37	0.37	0.37		0.15			0.19	0.19
v/c Ratio	0.93	0.68		0.09	0.96	0.39		0.76			1.01	0.54
Control Delay	71.1	23.8		22.2	59.4	26.1		63.9			95.4	47.4
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Delay	71.1	23.8		22.2	59.4	26.1		63.9			95.4	47.4
LOS	E	C		C	E	C		E			F	D
Approach Delay		34.9			49.9			63.9			80.5	
Approach LOS		C			D			E			F	
90th %ile Green (s)	7.0	53.0		39.0	39.0	39.0	15.0	15.0		18.0	18.0	18.0
90th %ile Term Code	Max	Hold		Max	Max	Max	Max	Max		Max	Max	Max
70th %ile Green (s)	7.0	53.0		39.0	39.0	39.0	15.0	15.0		18.0	18.0	18.0
70th %ile Term Code	Max	Hold		Max	Max	Max	Max	Max		Max	Max	Max
50th %ile Green (s)	7.0	53.0		39.0	39.0	39.0	15.0	15.0		18.0	18.0	18.0
50th %ile Term Code	Max	Hold		Max	Max	Max	Max	Max		Max	Max	Max
30th %ile Green (s)	7.0	53.0		39.0	39.0	39.0	14.9	14.9		18.0	18.0	18.0
30th %ile Term Code	Max	Hold		Max	Max	Max	Gap	Gap		Max	Max	Max
10th %ile Green (s)	7.0	45.5		31.5	31.5	31.5	10.6	10.6		18.0	18.0	18.0
10th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Gap		Max	Max	Max
Stops (vph)	68	319		11	390	114		114			195	94
Fuel Used(gal)	4	11		0	18	5		4			15	6
CO Emissions (g/hr)	300	775		33	1233	342		263			1077	417
NOx Emissions (g/hr)	58	151		6	240	67		51			210	81
VOC Emissions (g/hr)	70	180		8	286	79		61			250	97
Dilemma Vehicles (#)	0	6		0	18	0		6			10	0
Queue Length 50th (ft)	72	291		9	403	108		114			~234	90
Queue Length 95th (ft)	#130	291		21	401	132		147			#282	121
Internal Link Dist (ft)		1688			2405			1291			5517	
Turn Bay Length (ft)	125			100		175						150
Base Capacity (vph)	199	914		258	682	597		247			322	268

# 1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

## 2033 Traffic Volumes with Development - AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0		0	0	0		0			0	0
Spillback Cap Reductn	0	0		0	0	0		0			0	0
Storage Cap Reductn	0	0		0	0	0		0			0	0
Reduced v/c Ratio	0.93	0.66		0.09	0.92	0.38		0.71			1.01	0.54

**Intersection Summary**

Area Type: Other

Cycle Length: 105

Actuated Cycle Length: 102.6

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 52.1

Intersection LOS: D

Intersection Capacity Utilization 72.7%

ICU Level of Service C

Analysis Period (min) 15

90th %ile Actuated Cycle: 105

70th %ile Actuated Cycle: 105

50th %ile Actuated Cycle: 105

30th %ile Actuated Cycle: 104.9

10th %ile Actuated Cycle: 93.1

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

### Splits and Phases: 1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

Ø2	Ø4	Ø8
60 s	24 s	21 s
Ø5	Ø6	
14 s	46 s	























1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

Existing Traffic Volumes - PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	403	22	9	424	118	9	115	19	91	166	103
Future Volume (veh/h)	135	403	22	9	424	118	9	115	19	91	166	103
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1809	1837	1837	1875	1860	1875	996	996	996	1949	1949	1949
Adj Flow Rate, veh/h	153	458	25	10	482	134	10	131	22	103	189	117
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	0	0	0	1	0	0	0	0	0	0	0
Cap, veh/h	369	937	51	436	711	607	6	75	13	114	209	278
Arrive On Green	0.09	0.54	0.53	0.38	0.38	0.38	0.08	0.10	0.08	0.16	0.17	0.17
Sat Flow, veh/h	1723	1726	94	914	1860	1589	60	780	131	676	1240	1652
Grp Volume(v), veh/h	153	0	483	10	482	134	163	0	0	292	0	117
Grp Sat Flow(s),veh/h/ln	1723	0	1820	914	1860	1589	970	0	0	1915	0	1652
Q Serve(g_s), s	4.0	0.0	13.7	0.6	18.0	4.7	8.0	0.0	0.0	12.5	0.0	5.3
Cycle Q Clear(g_c), s	4.0	0.0	13.7	0.6	18.0	4.7	8.0	0.0	0.0	12.5	0.0	5.3
Prop In Lane	1.00		0.05	1.00		1.00	0.06		0.13	0.35		1.00
Lane Grp Cap(c), veh/h	369	0	989	436	711	607	93	0	0	322	0	278
V/C Ratio(X)	0.41	0.00	0.49	0.02	0.68	0.22	1.75	0.00	0.00	0.91	0.00	0.42
Avail Cap(c_a), veh/h	382	0	1357	614	1074	917	93	0	0	322	0	278
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.5	0.0	11.8	16.0	21.4	17.3	37.7	0.0	0.0	34.1	0.0	31.0
Incr Delay (d2), s/veh	0.7	0.0	0.8	0.0	2.4	0.4	376.5	0.0	0.0	27.7	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.5	0.0	8.4	0.2	11.9	2.9	19.9	0.0	0.0	12.7	0.0	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.2	0.0	12.6	16.1	23.8	17.7	414.2	0.0	0.0	61.8	0.0	32.0
LnGrp LOS	B	A	B	B	C	B	F	A	A	E	A	C
Approach Vol, veh/h		636			626			163			409	
Approach Delay, s/veh		13.3			22.4			414.2			53.3	
Approach LOS		B			C			F			D	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		51.2		19.0	13.4	37.8		13.0				
Change Period (Y+Rc), s		7.0		6.0	7.0	7.0		6.0				
Max Green Setting (Gmax), s		61.0		13.0	7.0	47.0		7.0				
Max Q Clear Time (g_c+I1), s		15.7		14.5	6.5	20.5		10.0				
Green Ext Time (p_c), s		15.7		0.0	0.0	10.3		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			60.9									
HCM 6th LOS			E									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												













# 1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

## Existing Traffic Volumes - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	403	22	9	424	118	9	115	19	91	166	103
Future Volume (vph)	135	403	22	9	424	118	9	115	19	91	166	103
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	12	12	11	12	12	11	11	11	12	12	12
Grade (%)		-1%			-2%			12%			-4%	
Storage Length (ft)	125		0	100		175	0		0	0		150
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frts		0.992				0.850		0.982				0.850
Flt Protected	0.950			0.950				0.997			0.983	
Satd. Flow (prot)	1629	1795	0	1670	1800	1545	0	1601	0	0	1805	1561
Flt Permitted	0.195			0.488				0.997			0.983	
Satd. Flow (perm)	334	1795	0	858	1800	1545	0	1601	0	0	1805	1561
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1768			2485			1371			5597	
Travel Time (s)		26.8			37.7			26.7			109.0	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	2%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	153	458	25	10	482	134	10	131	22	103	189	117
Shared Lane Traffic (%)												
Lane Group Flow (vph)	153	483	0	10	482	134	0	163	0	0	292	117
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.07	1.07	1.11	1.06	1.06	1.21	1.21	1.21	1.05	1.05	1.05
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		0	1	0	1	1		1	1	1
Detector Template							Left			Left		
Leading Detector (ft)	35	336		0	336	0	20	30		20	30	35
Trailing Detector (ft)	-5	330		0	330	0	0	-10		0	-10	-5
Detector 1 Position(ft)	-5	330		0	330	0	0	-10		0	-10	-5
Detector 1 Size(ft)	40	6		6	6	6	20	40		20	40	40
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	pm+pt	NA		Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases	2			6		6						4
Detector Phase	5	2		6	6	6	8	8		4	4	4
Switch Phase												

# 1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

## Existing Traffic Volumes - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	3.0	17.0		17.0	17.0	17.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	14.0	25.0		25.0	25.0	25.0	21.0	21.0		21.0	21.0	21.0
Total Split (s)	14.0	68.0		54.0	54.0	54.0	13.0	13.0		19.0	19.0	19.0
Total Split (%)	14.0%	68.0%		54.0%	54.0%	54.0%	13.0%	13.0%		19.0%	19.0%	19.0%
Maximum Green (s)	7.0	61.0		47.0	47.0	47.0	7.0	7.0		13.0	13.0	13.0
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0		5.0			5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	5.0		5.0	5.0	5.0	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	2.7		2.7	2.7	2.7	3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	35.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	10.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Recall Mode	None	Min		Min	Min	Min	None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)		8.0		8.0	8.0	8.0	8.0	8.0		8.0	8.0	8.0
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	0
Act Effct Green (s)	40.0	40.0		25.9	25.9	25.9		8.1			14.1	14.1
Actuated g/C Ratio	0.51	0.51		0.33	0.33	0.33		0.10			0.18	0.18
v/c Ratio	0.50	0.53		0.04	0.81	0.26		0.99			0.90	0.42
Control Delay	15.9	14.9		16.6	35.2	19.8		109.2			65.2	35.9
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Delay	15.9	14.9		16.6	35.2	19.8		109.2			65.2	35.9
LOS	B	B		B	D	B		F			E	D
Approach Delay		15.1			31.6			109.2			56.9	
Approach LOS		B			C			F			E	
90th %ile Green (s)	7.0	50.9		36.9	36.9	36.9	7.0	7.0		13.0	13.0	13.0
90th %ile Term Code	Max	Hold		Gap	Gap	Gap	Max	Max		Max	Max	Max
70th %ile Green (s)	7.0	42.9		28.9	28.9	28.9	7.0	7.0		13.0	13.0	13.0
70th %ile Term Code	Max	Hold		Gap	Gap	Gap	Max	Max		Max	Max	Max
50th %ile Green (s)	7.0	37.7		23.7	23.7	23.7	7.0	7.0		13.0	13.0	13.0
50th %ile Term Code	Max	Hold		Gap	Gap	Gap	Max	Max		Max	Max	Max
30th %ile Green (s)	7.0	34.0		20.0	20.0	20.0	7.0	7.0		13.0	13.0	13.0
30th %ile Term Code	Max	Hold		Gap	Gap	Gap	Max	Max		Max	Max	Max
10th %ile Green (s)	7.0	31.0		17.0	17.0	17.0	7.0	7.0		13.0	13.0	13.0
10th %ile Term Code	Max	Hold		Min	Min	Min	Max	Max		Max	Max	Max
Stops (vph)	64	260		7	363	77		109			206	88
Fuel Used(gal)	3	9		0	14	3		5			15	6
CO Emissions (g/hr)	194	657		18	1006	233		378			1073	390
NOx Emissions (g/hr)	38	128		4	196	45		74			209	76
VOC Emissions (g/hr)	45	152		4	233	54		88			249	90
Dilemma Vehicles (#)	0	8		0	8	0		7			14	0
Queue Length 50th (ft)	38	147		3	210	47		79			137	50
Queue Length 95th (ft)	65	214		13	307	84		#225			#326	113
Internal Link Dist (ft)		1688			2405			1291			5517	
Turn Bay Length (ft)	125			100		175						150
Base Capacity (vph)	304	1432		530	1112	954		164			325	281

Lanes, Volumes, Timings

Synchro 11 Report

G:\Projects\278 - KEYSTONE CUSTOM HOMES\278.012.21 - Shiloh Road Residential\Traffic\April 2023 Analysis\Existing Traffic Volumes (PM Peak).s

# 1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

## Existing Traffic Volumes - PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0		0	0	0		0			0	0
Spillback Cap Reductn	0	0		0	0	0		0			0	0
Storage Cap Reductn	0	0		0	0	0		0			0	0
Reduced v/c Ratio	0.50	0.34		0.02	0.43	0.14		0.99			0.90	0.42

### Intersection Summary

Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 78.3  
 Natural Cycle: 85  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.99  
 Intersection Signal Delay: 38.4  
 Intersection LOS: D  
 Intersection Capacity Utilization 79.0%  
 ICU Level of Service D  
 Analysis Period (min) 15  
 90th %ile Actuated Cycle: 89.9  
 70th %ile Actuated Cycle: 81.9  
 50th %ile Actuated Cycle: 76.7  
 30th %ile Actuated Cycle: 73  
 10th %ile Actuated Cycle: 70  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

### Splits and Phases: 1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)





















Ø2 68 s		Ø4 19 s		Ø6 13 s	
Ø5 14 s	Ø6 54 s				

1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)  
 2028 Traffic Volumes without Development - PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	418	23	9	440	123	9	119	20	94	172	107
Future Volume (veh/h)	140	418	23	9	440	123	9	119	20	94	172	107
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1809	1837	1837	1875	1860	1875	996	996	996	1949	1949	1949
Adj Flow Rate, veh/h	159	475	26	10	500	140	10	135	23	107	195	122
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	0	0	0	1	0	0	0	0	0	0	0
Cap, veh/h	280	815	45	325	603	515	10	132	22	129	234	313
Arrive On Green	0.08	0.47	0.46	0.32	0.32	0.32	0.16	0.17	0.16	0.18	0.19	0.19
Sat Flow, veh/h	1723	1726	94	899	1860	1589	58	779	133	679	1237	1652
Grp Volume(v), veh/h	159	0	501	10	500	140	168	0	0	302	0	122
Grp Sat Flow(s),veh/h/ln	1723	0	1820	899	1860	1589	970	0	0	1915	0	1652
Q Serve(g_s), s	5.4	0.0	19.0	0.8	23.5	6.2	16.0	0.0	0.0	14.4	0.0	6.1
Cycle Q Clear(g_c), s	5.4	0.0	19.0	5.2	23.5	6.2	16.0	0.0	0.0	14.4	0.0	6.1
Prop In Lane	1.00		0.05	1.00		1.00	0.06		0.14	0.35		1.00
Lane Grp Cap(c), veh/h	280	0	859	325	603	515	164	0	0	363	0	313
V/C Ratio(X)	0.57	0.00	0.58	0.03	0.83	0.27	1.02	0.00	0.00	0.83	0.00	0.39
Avail Cap(c_a), veh/h	280	0	905	348	649	554	164	0	0	425	0	367
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.1	0.0	18.2	25.0	29.5	23.7	39.4	0.0	0.0	37.1	0.0	33.5
Incr Delay (d2), s/veh	2.7	0.0	1.5	0.1	9.7	0.6	76.6	0.0	0.0	11.6	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.9	0.0	12.0	0.3	16.9	4.1	11.7	0.0	0.0	12.3	0.0	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.8	0.0	19.7	25.1	39.2	24.3	116.0	0.0	0.0	48.7	0.0	34.3
LnGrp LOS	C	A	B	C	D	C	F	A	A	D	A	C
Approach Vol, veh/h		660			650			168				424
Approach Delay, s/veh		20.7			35.8			116.0				44.6
Approach LOS		C			D			F				D
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		50.6		22.9	14.0	36.6		21.0				
Change Period (Y+Rc), s		7.0		6.0	7.0	7.0		6.0				
Max Green Setting (Gmax), s		46.0		20.0	7.0	32.0		15.0				
Max Q Clear Time (g_c+I1), s		21.0		16.4	7.9	26.0		18.0				
Green Ext Time (p_c), s		11.9		0.5	0.0	3.6		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			39.6									
HCM 6th LOS			D									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												













1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

2028 Traffic Volumes without Development - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	418	23	9	440	123	9	119	20	94	172	107
Future Volume (vph)	140	418	23	9	440	123	9	119	20	94	172	107
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	12	12	11	12	12	11	11	11	12	12	12
Grade (%)		-1%			-2%			12%			-4%	
Storage Length (ft)	125		0	100		175	0		0	0		150
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992				0.850		0.982				0.850
Flt Protected	0.950			0.950				0.997				0.983
Satd. Flow (prot)	1629	1795	0	1670	1800	1545	0	1601	0	0	1805	1561
Flt Permitted	0.142			0.480				0.997				0.983
Satd. Flow (perm)	243	1795	0	844	1800	1545	0	1601	0	0	1805	1561
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1768			2485			1371			5597	
Travel Time (s)		26.8			37.7			26.7			109.0	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	2%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	159	475	26	10	500	140	10	135	23	107	195	122
Shared Lane Traffic (%)												
Lane Group Flow (vph)	159	501	0	10	500	140	0	168	0	0	302	122
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.07	1.07	1.11	1.06	1.06	1.21	1.21	1.21	1.05	1.05	1.05
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		0	1	0	1	1		1	1	1
Detector Template							Left			Left		
Leading Detector (ft)	35	336		0	336	0	20	30		20	30	35
Trailing Detector (ft)	-5	330		0	330	0	0	-10		0	-10	-5
Detector 1 Position(ft)	-5	330		0	330	0	0	-10		0	-10	-5
Detector 1 Size(ft)	40	6		6	6	6	20	40		20	40	40
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	pm+pt	NA		Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases	2			6		6						4
Detector Phase	5	2		6	6	6	8	8		4	4	4
Switch Phase												

1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

2028 Traffic Volumes without Development - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	3.0	17.0		17.0	17.0	17.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	14.0	25.0		25.0	25.0	25.0	21.0	21.0		21.0	21.0	21.0
Total Split (s)	14.0	53.0		39.0	39.0	39.0	21.0	21.0		26.0	26.0	26.0
Total Split (%)	14.0%	53.0%		39.0%	39.0%	39.0%	21.0%	21.0%		26.0%	26.0%	26.0%
Maximum Green (s)	7.0	46.0		32.0	32.0	32.0	15.0	15.0		20.0	20.0	20.0
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0		5.0			5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	5.0		5.0	5.0	5.0	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	2.7		2.7	2.7	2.7	3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	35.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	10.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Recall Mode	None	Min		Min	Min	Min	None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)		8.0		8.0	8.0	8.0	8.0	8.0		8.0	8.0	8.0
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	0
Act Effct Green (s)	42.8	42.8		28.6	28.6	28.6		14.3			19.3	19.3
Actuated g/C Ratio	0.46	0.46		0.31	0.31	0.31		0.15			0.21	0.21
v/c Ratio	0.68	0.60		0.04	0.90	0.29		0.68			0.81	0.38
Control Delay	32.3	22.7		23.4	52.0	26.6		53.7			53.7	37.1
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Delay	32.3	22.7		23.4	52.0	26.6		53.7			53.7	37.1
LOS	C	C		C	D	C		D			D	D
Approach Delay		25.0			46.1			53.7			49.0	
Approach LOS		C			D			D			D	
90th %ile Green (s)	7.0	46.0		32.0	32.0	32.0	15.0	15.0		20.0	20.0	20.0
90th %ile Term Code	Max	Hold		Max	Max	Max	Max	Max		Max	Max	Max
70th %ile Green (s)	7.0	46.0		32.0	32.0	32.0	15.0	15.0		20.0	20.0	20.0
70th %ile Term Code	Max	Hold		Max	Max	Max	Max	Max		Max	Max	Max
50th %ile Green (s)	7.0	46.0		32.0	32.0	32.0	15.0	15.0		20.0	20.0	20.0
50th %ile Term Code	Max	Hold		Max	Max	Max	Max	Max		Max	Max	Max
30th %ile Green (s)	7.0	40.3		26.3	26.3	26.3	12.9	12.9		18.5	18.5	18.5
30th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Gap		Gap	Gap	Gap
10th %ile Green (s)	7.0	31.2		17.2	17.2	17.2	8.9	8.9		13.1	13.1	13.1
10th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Gap		Gap	Gap	Gap
Stops (vph)	76	314		8	387	88		132			233	88
Fuel Used(gal)	3	11		0	17	4		4			15	6
CO Emissions (g/hr)	243	769		20	1158	262		285			1077	405
NOx Emissions (g/hr)	47	150		4	225	51		55			210	79
VOC Emissions (g/hr)	56	178		5	268	61		66			250	94
Dilemma Vehicles (#)	0	7		0	17	0		8			14	0
Queue Length 50th (ft)	58	227		4	293	65		102			184	67
Queue Length 95th (ft)	#117	321		16	#450	112		#171			#304	118
Internal Link Dist (ft)		1688			2405			1291			5517	
Turn Bay Length (ft)	125			100		175						150
Base Capacity (vph)	234	925		305	652	559		281			416	359

1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

2028 Traffic Volumes without Development - PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0		0	0	0		0			0	0
Spillback Cap Reductn	0	0		0	0	0		0			0	0
Storage Cap Reductn	0	0		0	0	0		0			0	0
Reduced v/c Ratio	0.68	0.54		0.03	0.77	0.25		0.60			0.73	0.34

Intersection Summary

Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 92.6  
 Natural Cycle: 85  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.90  
 Intersection Signal Delay: 40.1  
 Intersection LOS: D  
 Intersection Capacity Utilization 80.7%  
 ICU Level of Service D  
 Analysis Period (min) 15  
 90th %ile Actuated Cycle: 100  
 70th %ile Actuated Cycle: 100  
 50th %ile Actuated Cycle: 100  
 30th %ile Actuated Cycle: 90.7  
 10th %ile Actuated Cycle: 72.2  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.





















Splits and Phases: 1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

Ø2	Ø4	Ø8
53 s	26 s	21 s
Ø5	Ø6	
14 s	39 s	



1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

2028 Traffic Volumes with Development - PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	153	418	23	9	440	136	9	122	20	101	174	115
Future Volume (veh/h)	153	418	23	9	440	136	9	122	20	101	174	115
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1809	1837	1837	1875	1860	1875	996	996	996	1949	1949	1949
Adj Flow Rate, veh/h	174	475	26	10	500	155	10	139	23	115	198	131
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	0	0	0	1	0	0	0	0	0	0	0
Cap, veh/h	276	810	44	321	600	512	9	132	22	137	235	321
Arrive On Green	0.08	0.47	0.46	0.32	0.32	0.32	0.16	0.17	0.16	0.18	0.19	0.19
Sat Flow, veh/h	1723	1726	94	899	1860	1589	56	784	130	703	1211	1652
Grp Volume(v), veh/h	174	0	501	10	500	155	172	0	0	313	0	131
Grp Sat Flow(s),veh/h/ln	1723	0	1820	899	1860	1589	970	0	0	1914	0	1652
Q Serve(g_s), s	6.1	0.0	19.2	0.8	23.7	7.0	16.0	0.0	0.0	15.0	0.0	6.6
Cycle Q Clear(g_c), s	6.1	0.0	19.2	5.5	23.7	7.0	16.0	0.0	0.0	15.0	0.0	6.6
Prop In Lane	1.00		0.05	1.00		1.00	0.06		0.13	0.37		1.00
Lane Grp Cap(c), veh/h	276	0	855	321	600	512	163	0	0	372	0	321
V/C Ratio(X)	0.63	0.00	0.59	0.03	0.83	0.30	1.06	0.00	0.00	0.84	0.00	0.41
Avail Cap(c_a), veh/h	276	0	898	343	645	550	163	0	0	422	0	364
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.7	0.0	18.5	25.4	29.9	24.2	39.7	0.0	0.0	37.1	0.0	33.6
Incr Delay (d2), s/veh	4.6	0.0	1.6	0.1	10.0	0.7	85.9	0.0	0.0	12.9	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.6	0.0	12.1	0.3	17.0	4.6	12.4	0.0	0.0	12.9	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.3	0.0	20.1	25.5	39.9	24.9	125.6	0.0	0.0	50.1	0.0	34.4
LnGrp LOS	C	A	C	C	D	C	F	A	A	D	A	C
Approach Vol, veh/h		675			665			172			444	
Approach Delay, s/veh		21.7			36.2			125.6			45.4	
Approach LOS		C			D			F			D	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		50.7		23.5	14.0	36.7		21.0				
Change Period (Y+Rc), s		7.0		6.0	7.0	7.0		6.0				
Max Green Setting (Gmax), s		46.0		20.0	7.0	32.0		15.0				
Max Q Clear Time (g_c+I1), s		21.2		17.0	8.6	26.2		18.0				
Green Ext Time (p_c), s		11.9		0.5	0.0	3.5		0.0				

Intersection Summary





















HCM 6th Ctrl Delay	41.1
HCM 6th LOS	D

Notes













User approved pedestrian interval to be less than phase max green.

1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

2028 Traffic Volumes with Development - PM Peak













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	418	23	9	440	136	9	122	20	101	174	115
Future Volume (vph)	153	418	23	9	440	136	9	122	20	101	174	115
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	12	12	11	12	12	11	11	11	12	12	12
Grade (%)		-1%			-2%			12%			-4%	
Storage Length (ft)	125		0	100		175	0		0	0		150
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992				0.850		0.982				0.850
Flt Protected	0.950			0.950				0.997			0.982	
Satd. Flow (prot)	1629	1795	0	1670	1800	1545	0	1601	0	0	1803	1561
Flt Permitted	0.139			0.480				0.997			0.982	
Satd. Flow (perm)	238	1795	0	844	1800	1545	0	1601	0	0	1803	1561
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1768			2485			1371			5597	
Travel Time (s)		26.8			37.7			26.7			109.0	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	2%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	174	475	26	10	500	155	10	139	23	115	198	131
Shared Lane Traffic (%)												
Lane Group Flow (vph)	174	501	0	10	500	155	0	172	0	0	313	131
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.07	1.07	1.11	1.06	1.06	1.21	1.21	1.21	1.05	1.05	1.05
Turning Speed (mph)	15		9	15			9	15		9	15	9
Number of Detectors	1	1		0	1	0	1	1		1	1	1
Detector Template							Left			Left		
Leading Detector (ft)	35	336		0	336	0	20	30		20	30	35
Trailing Detector (ft)	-5	330		0	330	0	0	-10		0	-10	-5
Detector 1 Position(ft)	-5	330		0	330	0	0	-10		0	-10	-5
Detector 1 Size(ft)	40	6		6	6	6	20	40		20	40	40
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	pm+pt	NA		Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases	2			6		6						4
Detector Phase	5	2		6	6	6	8	8		4	4	4
Switch Phase												

1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)  
 2028 Traffic Volumes with Development - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	3.0	17.0		17.0	17.0	17.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	14.0	25.0		25.0	25.0	25.0	21.0	21.0		21.0	21.0	21.0
Total Split (s)	14.0	53.0		39.0	39.0	39.0	21.0	21.0		26.0	26.0	26.0
Total Split (%)	14.0%	53.0%		39.0%	39.0%	39.0%	21.0%	21.0%		26.0%	26.0%	26.0%
Maximum Green (s)	7.0	46.0		32.0	32.0	32.0	15.0	15.0		20.0	20.0	20.0
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0		5.0			5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	5.0		5.0	5.0	5.0	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	2.7		2.7	2.7	2.7	3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	35.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	10.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Recall Mode	None	Min		Min	Min	Min	None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)		8.0		8.0	8.0	8.0	8.0	8.0		8.0	8.0	8.0
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	0
Act Effct Green (s)	42.9	42.9		28.7	28.7	28.7		14.4			19.7	19.7
Actuated g/C Ratio	0.46	0.46		0.31	0.31	0.31		0.15			0.21	0.21
v/c Ratio	0.76	0.61		0.04	0.90	0.33		0.70			0.82	0.40
Control Delay	38.8	23.0		23.4	52.5	27.3		54.6			55.5	37.5
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Delay	38.8	23.0		23.4	52.5	27.3		54.6			55.5	37.5
LOS	D	C		C	D	C		D			E	D
Approach Delay		27.1			46.2			54.6			50.2	
Approach LOS		C			D			D			D	
90th %ile Green (s)	7.0	46.0		32.0	32.0	32.0	15.0	15.0		20.0	20.0	20.0
90th %ile Term Code	Max	Hold		Max	Max	Max	Max	Max		Max	Max	Max
70th %ile Green (s)	7.0	46.0		32.0	32.0	32.0	15.0	15.0		20.0	20.0	20.0
70th %ile Term Code	Max	Hold		Max	Max	Max	Max	Max		Max	Max	Max
50th %ile Green (s)	7.0	46.0		32.0	32.0	32.0	15.0	15.0		20.0	20.0	20.0
50th %ile Term Code	Max	Hold		Max	Max	Max	Max	Max		Max	Max	Max
30th %ile Green (s)	7.0	40.6		26.6	26.6	26.6	13.3	13.3		19.6	19.6	19.6
30th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Gap		Gap	Gap	Gap
10th %ile Green (s)	7.0	31.4		17.4	17.4	17.4	9.2	9.2		13.9	13.9	13.9
10th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Gap		Gap	Gap	Gap
Stops (vph)	83	315		8	388	97		134			241	95
Fuel Used(gal)	4	11		0	17	4		4			16	6
CO Emissions (g/hr)	279	772		20	1162	290		292			1121	436
NOx Emissions (g/hr)	54	150		4	226	57		57			218	85
VOC Emissions (g/hr)	65	179		5	269	67		68			260	101
Dilemma Vehicles (#)	0	6		0	17	0		8			14	0
Queue Length 50th (ft)	64	227		4	293	73		104			192	73
Queue Length 95th (ft)	#146	321		16	#450	123		#183			#320	127
Internal Link Dist (ft)		1688			2405			1291			5517	
Turn Bay Length (ft)	125			100		175						150
Base Capacity (vph)	230	918		303	646	554		278			412	356

# 1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

## 2028 Traffic Volumes with Development - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0		0	0	0		0			0	0
Spillback Cap Reductn	0	0		0	0	0		0			0	0
Storage Cap Reductn	0	0		0	0	0		0			0	0
Reduced v/c Ratio	0.76	0.55		0.03	0.77	0.28		0.62			0.76	0.37

**Intersection Summary**

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 93.2

Natural Cycle: 85

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 41.2      Intersection LOS: D

Intersection Capacity Utilization 81.3%      ICU Level of Service D

Analysis Period (min) 15

90th %ile Actuated Cycle: 100

70th %ile Actuated Cycle: 100






50th %ile Actuated Cycle: 100

30th %ile Actuated Cycle: 92.5

10th %ile Actuated Cycle: 73.5

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

### Splits and Phases: 1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

 Ø2		 Ø4		 Ø8	
53 s		26 s		21 s	
 Ø5	 Ø6				
14 s	39 s				

# 1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

## 2033 Traffic Volumes without Development - PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	144	430	23	10	452	126	10	123	20	97	177	110
Future Volume (veh/h)	144	430	23	10	452	126	10	123	20	97	177	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1809	1837	1837	1875	1860	1875	996	996	996	1949	1949	1949
Adj Flow Rate, veh/h	164	489	26	11	514	143	11	140	23	110	201	125
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	0	0	0	1	0	0	0	0	0	0	0
Cap, veh/h	274	823	44	318	614	525	10	130	21	130	237	316
Arrive On Green	0.08	0.48	0.47	0.33	0.33	0.33	0.16	0.17	0.16	0.18	0.19	0.19
Sat Flow, veh/h	1723	1729	92	888	1860	1589	61	781	128	677	1238	1652
Grp Volume(v), veh/h	164	0	515	11	514	143	174	0	0	311	0	125
Grp Sat Flow(s),veh/h/ln	1723	0	1821	888	1860	1589	970	0	0	1915	0	1652
Q Serve(g_s), s	5.7	0.0	19.9	0.9	24.6	6.4	16.0	0.0	0.0	15.1	0.0	6.4
Cycle Q Clear(g_c), s	5.7	0.0	19.9	6.3	24.6	6.4	16.0	0.0	0.0	15.1	0.0	6.4
Prop In Lane	1.00		0.05	1.00		1.00	0.06		0.13	0.35		1.00
Lane Grp Cap(c), veh/h	274	0	866	318	614	525	161	0	0	367	0	316
V/C Ratio(X)	0.60	0.00	0.59	0.03	0.84	0.27	1.08	0.00	0.00	0.85	0.00	0.40
Avail Cap(c_a), veh/h	274	0	909	339	658	562	161	0	0	398	0	343
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.6	0.0	18.4	25.7	29.8	23.7	40.2	0.0	0.0	37.7	0.0	34.0
Incr Delay (d2), s/veh	3.5	0.0	1.6	0.1	10.1	0.6	93.2	0.0	0.0	14.8	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.2	0.0	12.5	0.3	17.6	4.2	12.9	0.0	0.0	13.2	0.0	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.1	0.0	20.1	25.7	39.9	24.3	133.4	0.0	0.0	52.5	0.0	34.8
LnGrp LOS	C	A	C	C	D	C	F	A	A	D	A	C
Approach Vol, veh/h		679			668			174				436
Approach Delay, s/veh		21.3			36.3			133.4				47.4
Approach LOS		C			D			F				D
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		51.8		23.4	14.0	37.8		21.0				
Change Period (Y+Rc), s		7.0		6.0	7.0	7.0		6.0				
Max Green Setting (Gmax), s		47.0		19.0	7.0	33.0		15.0				
Max Q Clear Time (g_c+I1), s		21.9		17.1	8.2	27.1		18.0				
Green Ext Time (p_c), s		12.3		0.3	0.0	3.7		0.0				

### Intersection Summary





















HCM 6th Ctrl Delay	42.2
HCM 6th LOS	D

### Notes

User approved pedestrian interval to be less than phase max green.












# 1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

## 2033 Traffic Volumes without Development - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	430	23	10	452	126	10	123	20	97	177	110
Future Volume (vph)	144	430	23	10	452	126	10	123	20	97	177	110
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	12	12	11	12	12	11	11	11	12	12	12
Grade (%)		-1%			-2%			12%			-4%	
Storage Length (ft)	125		0	100		175	0		0	0		150
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992				0.850		0.982				0.850
Flt Protected	0.950			0.950				0.997			0.983	
Satd. Flow (prot)	1629	1795	0	1670	1800	1545	0	1601	0	0	1805	1561
Flt Permitted	0.136			0.474				0.997			0.983	
Satd. Flow (perm)	233	1795	0	833	1800	1545	0	1601	0	0	1805	1561
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1768			2485			1371			5597	
Travel Time (s)		26.8			37.7			26.7			109.0	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	2%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	164	489	26	11	514	143	11	140	23	110	201	125
Shared Lane Traffic (%)												
Lane Group Flow (vph)	164	515	0	11	514	143	0	174	0	0	311	125
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.07	1.07	1.11	1.06	1.06	1.21	1.21	1.21	1.05	1.05	1.05
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		0	1	0	1	1		1	1	1
Detector Template							Left			Left		
Leading Detector (ft)	35	336		0	336	0	20	30		20	30	35
Trailing Detector (ft)	-5	330		0	330	0	0	-10		0	-10	-5
Detector 1 Position(ft)	-5	330		0	330	0	0	-10		0	-10	-5
Detector 1 Size(ft)	40	6		6	6	6	20	40		20	40	40
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	pm+pt	NA		Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases	2			6		6						4
Detector Phase	5	2		6	6	6	8	8		4	4	4
Switch Phase												

# 1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

## 2033 Traffic Volumes without Development - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	3.0	17.0		17.0	17.0	17.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	14.0	25.0		25.0	25.0	25.0	21.0	21.0		21.0	21.0	21.0
Total Split (s)	14.0	54.0		40.0	40.0	40.0	21.0	21.0		25.0	25.0	25.0
Total Split (%)	14.0%	54.0%		40.0%	40.0%	40.0%	21.0%	21.0%		25.0%	25.0%	25.0%
Maximum Green (s)	7.0	47.0		33.0	33.0	33.0	15.0	15.0		19.0	19.0	19.0
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0		5.0			5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	5.0		5.0	5.0	5.0	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	2.7		2.7	2.7	2.7	3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	35.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	10.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Recall Mode	None	Min		Min	Min	Min	None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)		8.0		8.0	8.0	8.0	8.0	8.0		8.0	8.0	8.0
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	0
Act Effct Green (s)	43.7	43.7		29.5	29.5	29.5		14.5			19.1	19.1
Actuated g/C Ratio	0.47	0.47		0.32	0.32	0.32		0.16			0.20	0.20
v/c Ratio	0.72	0.61		0.04	0.90	0.29		0.70			0.84	0.39
Control Delay	34.7	22.6		22.8	51.8	26.1		55.3			58.7	38.2
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Delay	34.7	22.6		22.8	51.8	26.1		55.3			58.7	38.2
LOS	C	C		C	D	C		E			E	D
Approach Delay		25.6			45.9			55.3			52.8	
Approach LOS		C			D			E			D	
90th %ile Green (s)	7.0	47.0		33.0	33.0	33.0	15.0	15.0		19.0	19.0	19.0
90th %ile Term Code	Max	Hold		Max	Max	Max	Max	Max		Max	Max	Max
70th %ile Green (s)	7.0	47.0		33.0	33.0	33.0	15.0	15.0		19.0	19.0	19.0
70th %ile Term Code	Max	Hold		Max	Max	Max	Max	Max		Max	Max	Max
50th %ile Green (s)	7.0	47.0		33.0	33.0	33.0	15.0	15.0		19.0	19.0	19.0
50th %ile Term Code	Max	Hold		Max	Max	Max	Max	Max		Max	Max	Max
30th %ile Green (s)	7.0	41.1		27.1	27.1	27.1	13.3	13.3		19.0	19.0	19.0
30th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Gap		Max	Max	Max
10th %ile Green (s)	7.0	32.2		18.2	18.2	18.2	9.4	9.4		14.5	14.5	14.5
10th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Gap		Gap	Gap	Gap
Stops (vph)	76	322		8	397	89		137			238	92
Fuel Used(gal)	4	11		0	17	4		4			16	6
CO Emissions (g/hr)	253	789		21	1188	266		298			1128	419
NOx Emissions (g/hr)	49	154		4	231	52		58			219	81
VOC Emissions (g/hr)	59	183		5	275	62		69			261	97
Dilemma Vehicles (#)	0	7		0	18	0		8			14	0
Queue Length 50th (ft)	58	231		5	300	66		106			193	70
Queue Length 95th (ft)	#127	326		17	#458	113		#187			#329	123
Internal Link Dist (ft)		1688			2405			1291			5517	
Turn Bay Length (ft)	125			100		175						150
Base Capacity (vph)	229	932		306	662	568		277			391	338

1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

2033 Traffic Volumes without Development - PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0		0	0	0		0			0	0
Spillback Cap Reductn	0	0		0	0	0		0			0	0
Storage Cap Reductn	0	0		0	0	0		0			0	0
Reduced v/c Ratio	0.72	0.55		0.04	0.78	0.25		0.63			0.80	0.37

Intersection Summary

Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 93.5  
 Natural Cycle: 85  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.90  
 Intersection Signal Delay: 41.2  
 Intersection LOS: D  
 Intersection Capacity Utilization 82.1%  
 ICU Level of Service E  
 Analysis Period (min) 15  
 90th %ile Actuated Cycle: 100  
 70th %ile Actuated Cycle: 100  
 50th %ile Actuated Cycle: 100  
 30th %ile Actuated Cycle: 92.4  
 10th %ile Actuated Cycle: 75.1  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

54 s		25 s		21 s	
14 s	40 s				



1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

2033 Traffic Volumes with Development - PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	157	430	23	10	452	139	10	126	20	104	179	118
Future Volume (veh/h)	157	430	23	10	452	139	10	126	20	104	179	118
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1809	1837	1837	1875	1860	1875	996	996	996	1949	1949	1949
Adj Flow Rate, veh/h	178	489	26	11	514	158	11	143	23	118	203	134
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	0	0	0	1	0	0	0	0	0	0	0
Cap, veh/h	271	819	44	315	612	523	10	130	21	138	237	323
Arrive On Green	0.08	0.47	0.46	0.33	0.33	0.33	0.15	0.17	0.15	0.19	0.20	0.20
Sat Flow, veh/h	1723	1729	92	888	1860	1589	60	784	126	704	1210	1652
Grp Volume(v), veh/h	178	0	515	11	514	158	177	0	0	321	0	134
Grp Sat Flow(s),veh/h/ln	1723	0	1821	888	1860	1589	971	0	0	1914	0	1652
Q Serve(g_s), s	6.3	0.0	20.1	0.9	24.8	7.2	16.0	0.0	0.0	15.7	0.0	6.9
Cycle Q Clear(g_c), s	6.3	0.0	20.1	6.5	24.8	7.2	16.0	0.0	0.0	15.7	0.0	6.9
Prop In Lane	1.00		0.05	1.00		1.00	0.06		0.13	0.37		1.00
Lane Grp Cap(c), veh/h	271	0	862	315	612	523	160	0	0	375	0	323
V/C Ratio(X)	0.66	0.00	0.60	0.03	0.84	0.30	1.10	0.00	0.00	0.86	0.00	0.41
Avail Cap(c_a), veh/h	271	0	903	335	653	558	160	0	0	395	0	341
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.1	0.0	18.7	26.0	30.1	24.2	40.5	0.0	0.0	37.8	0.0	34.1
Incr Delay (d2), s/veh	5.7	0.0	1.7	0.1	10.4	0.7	101.3	0.0	0.0	16.2	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.9	0.0	12.7	0.3	17.8	4.8	13.5	0.0	0.0	13.7	0.0	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.8	0.0	20.4	26.1	40.5	24.9	141.8	0.0	0.0	54.0	0.0	34.9
LnGrp LOS	C	A	C	C	D	C	F	A	A	D	A	C
Approach Vol, veh/h		693			683			177			455	
Approach Delay, s/veh		22.3			36.7			141.8			48.4	
Approach LOS		C			D			F			D	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		51.8		23.9	14.0	37.8		21.0				
Change Period (Y+Rc), s		7.0		6.0	7.0	7.0		6.0				
Max Green Setting (Gmax), s		47.0		19.0	7.0	33.0		15.0				
Max Q Clear Time (g_c+I1), s		22.1		17.7	8.8	27.3		18.0				
Green Ext Time (p_c), s		12.3		0.2	0.0	3.5		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			43.6									
HCM 6th LOS			D									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												













1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

2033 Traffic Volumes with Development - PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	157	430	23	10	452	139	10	126	20	104	179	118
Future Volume (vph)	157	430	23	10	452	139	10	126	20	104	179	118
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	12	12	11	12	12	11	11	11	12	12	12
Grade (%)		-1%			-2%			12%			-4%	
Storage Length (ft)	125		0	100		175	0		0	0		150
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992				0.850		0.982				0.850
Flt Protected	0.950			0.950				0.997			0.982	
Satd. Flow (prot)	1629	1795	0	1670	1800	1545	0	1601	0	0	1803	1561
Flt Permitted	0.134			0.474				0.997			0.982	
Satd. Flow (perm)	230	1795	0	833	1800	1545	0	1601	0	0	1803	1561
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1768			2485			1371			5597	
Travel Time (s)		26.8			37.7			26.7			109.0	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	2%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	178	489	26	11	514	158	11	143	23	118	203	134
Shared Lane Traffic (%)												
Lane Group Flow (vph)	178	515	0	11	514	158	0	177	0	0	321	134
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.07	1.07	1.11	1.06	1.06	1.21	1.21	1.21	1.05	1.05	1.05
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		0	1	0	1	1		1	1	1
Detector Template							Left			Left		
Leading Detector (ft)	35	336		0	336	0	20	30		20	30	35
Trailing Detector (ft)	-5	330		0	330	0	0	-10		0	-10	-5
Detector 1 Position(ft)	-5	330		0	330	0	0	-10		0	-10	-5
Detector 1 Size(ft)	40	6		6	6	6	20	40		20	40	40
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	pm+pt	NA		Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases	2			6		6						4
Detector Phase	5	2		6	6	6	8	8		4	4	4
Switch Phase												

1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

2033 Traffic Volumes with Development - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	3.0	17.0		17.0	17.0	17.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	14.0	25.0		25.0	25.0	25.0	21.0	21.0		21.0	21.0	21.0
Total Split (s)	14.0	54.0		40.0	40.0	40.0	21.0	21.0		25.0	25.0	25.0
Total Split (%)	14.0%	54.0%		40.0%	40.0%	40.0%	21.0%	21.0%		25.0%	25.0%	25.0%
Maximum Green (s)	7.0	47.0		33.0	33.0	33.0	15.0	15.0		19.0	19.0	19.0
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0		5.0			5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	5.0		5.0	5.0	5.0	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	2.7		2.7	2.7	2.7	3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	35.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	10.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Recall Mode	None	Min		Min	Min	Min	None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)		8.0		8.0	8.0	8.0	8.0	8.0		8.0	8.0	8.0
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	0
Act Effct Green (s)	43.8	43.8		29.6	29.6	29.6		14.6			19.3	19.3
Actuated g/C Ratio	0.47	0.47		0.32	0.32	0.32		0.16			0.21	0.21
v/c Ratio	0.78	0.62		0.04	0.90	0.32		0.71			0.87	0.42
Control Delay	41.3	22.7		22.8	52.1	26.7		56.0			61.4	38.8
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Delay	41.3	22.7		22.8	52.1	26.7		56.0			61.4	38.8
LOS	D	C		C	D	C		E			E	D
Approach Delay		27.5			45.7			56.0			54.7	
Approach LOS		C			D			E			D	
90th %ile Green (s)	7.0	47.0		33.0	33.0	33.0	15.0	15.0		19.0	19.0	19.0
90th %ile Term Code	Max	Hold		Max	Max	Max	Max	Max		Max	Max	Max
70th %ile Green (s)	7.0	47.0		33.0	33.0	33.0	15.0	15.0		19.0	19.0	19.0
70th %ile Term Code	Max	Hold		Max	Max	Max	Max	Max		Max	Max	Max
50th %ile Green (s)	7.0	47.0		33.0	33.0	33.0	15.0	15.0		19.0	19.0	19.0
50th %ile Term Code	Max	Hold		Max	Max	Max	Max	Max		Max	Max	Max
30th %ile Green (s)	7.0	41.2		27.2	27.2	27.2	13.6	13.6		19.0	19.0	19.0
30th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Gap		Max	Max	Max
10th %ile Green (s)	7.0	32.5		18.5	18.5	18.5	9.6	9.6		15.4	15.4	15.4
10th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Gap		Gap	Gap	Gap
Stops (vph)	83	323		8	398	100		138			242	99
Fuel Used(gal)	4	11		0	17	4		4			17	6
CO Emissions (g/hr)	290	791		21	1191	296		305			1170	450
NOx Emissions (g/hr)	56	154		4	232	58		59			228	88
VOC Emissions (g/hr)	67	183		5	276	69		71			271	104
Dilemma Vehicles (#)	0	7		0	18	0		8			14	0
Queue Length 50th (ft)	64	231		5	300	73		108			201	75
Queue Length 95th (ft)	#153	326		17	#458	123		#191			#344	130
Internal Link Dist (ft)		1688			2405			1291			5517	
Turn Bay Length (ft)	125			100		175						150
Base Capacity (vph)	228	927		305	659	565		276			388	336

1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)  
 2033 Traffic Volumes with Development - PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0		0	0	0		0			0	0
Spillback Cap Reductn	0	0		0	0	0		0			0	0
Storage Cap Reductn	0	0		0	0	0		0			0	0
Reduced v/c Ratio	0.78	0.56		0.04	0.78	0.28		0.64			0.83	0.40

**Intersection Summary**

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 93.9

Natural Cycle: 85

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 42.4      Intersection LOS: D

Intersection Capacity Utilization 82.7%      ICU Level of Service E

Analysis Period (min) 15

90th %ile Actuated Cycle: 100

70th %ile Actuated Cycle: 100

50th %ile Actuated Cycle: 100

30th %ile Actuated Cycle: 92.8

10th %ile Actuated Cycle: 76.5

# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Westtown Thornton Road/Shiloh Road & Street Road (SR 0926)

Ø2	Ø4	Ø8
54 s	25 s	21 s
Ø5	Ø6	
14 s	40 s	

2: Shiloh Road & Hunt Drive/Driveway  
Existing Traffic Volumes - AM Peak













Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	6	0	8	1	0	0	6	214	3	0	301	2
Future Vol, veh/h	6	0	8	1	0	0	6	214	3	0	301	2
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, %	-	-2	-	-	-1	-	-	4	-	-	-2	-
Peak Hour Factor	60	60	60	60	60	60	60	60	60	60	60	60
Heavy Vehicles, %	0	0	25	100	0	0	0	3	33	0	3	0
Mvmt Flow	10	0	13	2	0	0	10	357	5	0	502	3

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	884	886	504	890	885	360	505	0	0	362	0	0
Stage 1	504	504	-	380	380	-	-	-	-	-	-	-
Stage 2	380	382	-	510	505	-	-	-	-	-	-	-
Critical Hdwy	6.7	6.1	6.3	7.9	6.3	6.1	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	5.7	5.1	-	6.9	5.3	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.7	5.1	-	6.9	5.3	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.3	3.9	4	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	327	315	564	204	300	734	804	-	-	902	-	-
Stage 1	662	576	-	544	631	-	-	-	-	-	-	-
Stage 2	767	643	-	452	559	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	323	310	564	197	295	734	804	-	-	902	-	-
Mov Cap-2 Maneuver	323	310	-	197	295	-	-	-	-	-	-	-
Stage 1	651	576	-	535	621	-	-	-	-	-	-	-
Stage 2	755	633	-	441	559	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13.9		23.4		0.3		0	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	804	-	-	427	197	902	-	-
HCM Lane V/C Ratio	0.012	-	-	0.055	0.008	-	-	-
HCM Control Delay (s)	9.5	0	-	13.9	23.4	0	-	-
HCM Lane LOS	A	A	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0	-	-

2: Shiloh Road & Hunt Drive/Driveway  
Existing Traffic Volumes - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	6	0	8	1	0	0	6	214	3	0	301	2
Future Volume (vph)	6	0	8	1	0	0	6	214	3	0	301	2
Ideal Flow (vphpl)	1800	1900	1800	1900	1900	1900	1800	1800	1900	1900	1800	1800
Lane Width (ft)	10	12	10	12	10	12	10	10	12	12	10	10
Grade (%)		-2%			-1%			4%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.924						0.998			0.999	
Flt Protected		0.979			0.950			0.999				
Satd. Flow (prot)	0	1521	0	0	847	0	0	1589	0	0	1646	0
Flt Permitted		0.979			0.950			0.999				
Satd. Flow (perm)	0	1521	0	0	847	0	0	1589	0	0	1646	0
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		1089			451			5597			607	
Travel Time (s)		29.7			12.3			127.2			13.8	
Peak Hour Factor	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Heavy Vehicles (%)	0%	0%	25%	100%	0%	0%	0%	3%	33%	0%	3%	0%
Adj. Flow (vph)	10	0	13	2	0	0	10	357	5	0	502	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	23	0	0	2	0	0	372	0	0	505	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.16	0.99	1.16	0.99	1.09	0.99	1.20	1.20	1.03	0.99	1.16	1.16
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	27.2%						ICU Level of Service A					
Analysis Period (min)	15											

2: Shiloh Road & Hunt Drive/Driveway  
 2028 Traffic Volumes without Development - AM Peak













Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	6	0	8	1	0	0	6	222	3	0	313	2
Future Vol, veh/h	6	0	8	1	0	0	6	222	3	0	313	2
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, %	-	-2	-	-	-1	-	-	4	-	-	-2	-
Peak Hour Factor	60	60	60	60	60	60	60	60	60	60	60	60
Heavy Vehicles, %	0	0	25	100	0	0	0	3	33	0	3	0
Mvmt Flow	10	0	13	2	0	0	10	370	5	0	522	3

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	917	919	524	923	918	373	525	0	0	375	0	0
Stage 1	524	524	-	393	393	-	-	-	-	-	-	-
Stage 2	393	395	-	530	525	-	-	-	-	-	-	-
Critical Hdwy	6.7	6.1	6.3	7.9	6.3	6.1	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	5.7	5.1	-	6.9	5.3	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.7	5.1	-	6.9	5.3	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.3	3.9	4	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	311	303	549	193	288	722	791	-	-	893	-	-
Stage 1	646	565	-	534	623	-	-	-	-	-	-	-
Stage 2	755	635	-	439	548	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	307	298	549	186	283	722	791	-	-	893	-	-
Mov Cap-2 Maneuver	307	298	-	186	283	-	-	-	-	-	-	-
Stage 1	636	565	-	525	613	-	-	-	-	-	-	-
Stage 2	743	625	-	428	548	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	14.3		24.5		0.2		0	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	791	-	-	410	186	893	-	-
HCM Lane V/C Ratio	0.013	-	-	0.057	0.009	-	-	-
HCM Control Delay (s)	9.6	0	-	14.3	24.5	0	-	-
HCM Lane LOS	A	A	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0	-	-

2: Shiloh Road & Hunt Drive/Driveway  
 2028 Traffic Volumes without Development - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	6	0	8	1	0	0	6	222	3	0	313	2
Future Volume (vph)	6	0	8	1	0	0	6	222	3	0	313	2
Ideal Flow (vphpl)	1800	1900	1800	1900	1900	1900	1800	1800	1900	1900	1800	1800
Lane Width (ft)	10	12	10	12	10	12	10	10	12	12	10	10
Grade (%)		-2%			-1%			4%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.924						0.998			0.999	
Flt Protected		0.979			0.950			0.999				
Satd. Flow (prot)	0	1521	0	0	847	0	0	1589	0	0	1646	0
Flt Permitted		0.979			0.950			0.999				
Satd. Flow (perm)	0	1521	0	0	847	0	0	1589	0	0	1646	0
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		1089			451			5597			607	
Travel Time (s)		29.7			12.3			127.2			13.8	
Peak Hour Factor	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Heavy Vehicles (%)	0%	0%	25%	100%	0%	0%	0%	3%	33%	0%	3%	0%
Adj. Flow (vph)	10	0	13	2	0	0	10	370	5	0	522	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	23	0	0	2	0	0	385	0	0	525	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.16	0.99	1.16	0.99	1.09	0.99	1.20	1.20	1.03	0.99	1.16	1.16
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	27.6%						ICU Level of Service A					
Analysis Period (min)	15											



2: Shiloh Road & Hunt Drive/Driveway  
 2028 Traffic Volumes with Development - AM Peak

**Intersection**

Int Delay, s/veh 1.2













Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	0	8	19	0	6	6	224	10	2	320	2
Future Vol, veh/h	6	0	8	19	0	6	6	224	10	2	320	2
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, %	-	-2	-	-	-1	-	-	4	-	-	-2	-
Peak Hour Factor	60	60	60	60	60	60	60	60	60	60	60	60
Heavy Vehicles, %	0	2	25	2	2	2	0	3	2	2	3	0
Mvmt Flow	10	0	13	32	0	10	10	373	17	3	533	3

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	948	951	535	949	944	382	536	0	0	390	0	0
Stage 1	541	541	-	402	402	-	-	-	-	-	-	-
Stage 2	407	410	-	547	542	-	-	-	-	-	-	-
Critical Hdwy	6.7	6.12	6.3	6.92	6.32	6.12	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	5.7	5.12	-	5.92	5.32	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.7	5.12	-	5.92	5.32	-	-	-	-	-	-	-
Follow-up Hdwy	3	4.018	3.3	3	4.018	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	297	289	541	280	276	712	784	-	-	882	-	-
Stage 1	633	553	-	729	614	-	-	-	-	-	-	-
Stage 2	743	623	-	608	536	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	288	283	541	269	270	712	784	-	-	882	-	-
Mov Cap-2 Maneuver	288	283	-	269	270	-	-	-	-	-	-	-
Stage 1	623	550	-	717	604	-	-	-	-	-	-	-
Stage 2	721	613	-	590	533	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.7	18.1	0.2	0.1
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	784	-	-	393	316	882	-	-
HCM Lane V/C Ratio	0.013	-	-	0.059	0.132	0.004	-	-
HCM Control Delay (s)	9.7	0	-	14.7	18.1	9.1	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.5	0	-	-

2: Shiloh Road & Hunt Drive/Driveway  
 2028 Traffic Volumes with Development - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	6	0	8	19	0	6	6	224	10	2	320	2
Future Volume (vph)	6	0	8	19	0	6	6	224	10	2	320	2
Ideal Flow (vphpl)	1800	1900	1800	1900	1900	1900	1800	1800	1900	1900	1800	1800
Lane Width (ft)	10	12	10	12	10	12	10	10	12	12	10	10
Grade (%)		-2%			-1%			4%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.924			0.968			0.994			0.999	
Flt Protected		0.979			0.963			0.999				
Satd. Flow (prot)	0	1521	0	0	1629	0	0	1589	0	0	1646	0
Flt Permitted		0.979			0.963			0.999				
Satd. Flow (perm)	0	1521	0	0	1629	0	0	1589	0	0	1646	0
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		1089			451			5597			607	
Travel Time (s)		29.7			12.3			127.2			13.8	
Peak Hour Factor	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Heavy Vehicles (%)	0%	2%	25%	2%	2%	2%	0%	3%	2%	2%	3%	0%
Adj. Flow (vph)	10	0	13	32	0	10	10	373	17	3	533	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	23	0	0	42	0	0	400	0	0	539	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.16	0.99	1.16	0.99	1.09	0.99	1.20	1.20	1.03	0.99	1.16	1.16
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	28.9%						ICU Level of Service A					
Analysis Period (min)	15											

2: Shiloh Road & Hunt Drive/Driveway  
 2033 Traffic Volumes without Development - AM Peak













Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	6	0	9	1	0	0	6	228	3	0	321	2
Future Vol, veh/h	6	0	9	1	0	0	6	228	3	0	321	2
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, %	-	-2	-	-	-1	-	-	4	-	-	-2	-
Peak Hour Factor	60	60	60	60	60	60	60	60	60	60	60	60
Heavy Vehicles, %	0	0	25	100	0	0	0	3	33	0	3	0
Mvmt Flow	10	0	15	2	0	0	10	380	5	0	535	3

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	940	942	537	947	941	383	538	0	0	385	0	0
Stage 1	537	537	-	403	403	-	-	-	-	-	-	-
Stage 2	403	405	-	544	538	-	-	-	-	-	-	-
Critical Hdwy	6.7	6.1	6.3	7.9	6.3	6.1	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	5.7	5.1	-	6.9	5.3	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.7	5.1	-	6.9	5.3	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.3	3.9	4	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	301	294	540	185	280	712	783	-	-	886	-	-
Stage 1	636	558	-	526	617	-	-	-	-	-	-	-
Stage 2	746	630	-	431	542	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	297	289	540	178	276	712	783	-	-	886	-	-
Mov Cap-2 Maneuver	297	289	-	178	276	-	-	-	-	-	-	-
Stage 1	626	558	-	518	607	-	-	-	-	-	-	-
Stage 2	734	620	-	419	542	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.4	25.4	0.2	0
HCM LOS	B	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	783	-	-	407	178	886	-	-
HCM Lane V/C Ratio	0.013	-	-	0.061	0.009	-	-	-
HCM Control Delay (s)	9.7	0	-	14.4	25.4	0	-	-
HCM Lane LOS	A	A	-	B	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0	-	-

2: Shiloh Road & Hunt Drive/Driveway  
 2033 Traffic Volumes without Development - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	6	0	9	1	0	0	6	228	3	0	321	2
Future Volume (vph)	6	0	9	1	0	0	6	228	3	0	321	2
Ideal Flow (vphpl)	1800	1900	1800	1900	1900	1900	1800	1800	1900	1900	1800	1800
Lane Width (ft)	10	12	10	12	10	12	10	10	12	12	10	10
Grade (%)		-2%			-1%			4%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.919						0.998			0.999	
Flt Protected		0.980			0.950			0.999				
Satd. Flow (prot)	0	1503	0	0	847	0	0	1589	0	0	1646	0
Flt Permitted		0.980			0.950			0.999				
Satd. Flow (perm)	0	1503	0	0	847	0	0	1589	0	0	1646	0
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		1089			451			5597			607	
Travel Time (s)		29.7			12.3			127.2			13.8	
Peak Hour Factor	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Heavy Vehicles (%)	0%	0%	25%	100%	0%	0%	0%	3%	33%	0%	3%	0%
Adj. Flow (vph)	10	0	15	2	0	0	10	380	5	0	535	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	25	0	0	2	0	0	395	0	0	538	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.16	0.99	1.16	0.99	1.09	0.99	1.20	1.20	1.03	0.99	1.16	1.16
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	28.0%						ICU Level of Service A					
Analysis Period (min)	15											

2: Shiloh Road & Hunt Drive/Driveway  
 2033 Traffic Volumes with Development - AM Peak













Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	6	0	9	19	0	6	6	230	10	2	328	2
Future Vol, veh/h	6	0	9	19	0	6	6	230	10	2	328	2
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, %	-	-2	-	-	-1	-	-	4	-	-	-2	-
Peak Hour Factor	60	60	60	60	60	60	60	60	60	60	60	60
Heavy Vehicles, %	0	2	25	2	2	2	0	3	2	2	3	0
Mvmt Flow	10	0	15	32	0	10	10	383	17	3	547	3

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	972	975	549	974	968	392	550	0	0	400	0	0
Stage 1	555	555	-	412	412	-	-	-	-	-	-	-
Stage 2	417	420	-	562	556	-	-	-	-	-	-	-
Critical Hdwy	6.7	6.12	6.3	6.92	6.32	6.12	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	5.7	5.12	-	5.92	5.32	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.7	5.12	-	5.92	5.32	-	-	-	-	-	-	-
Follow-up Hdwy	3	4.018	3.3	3	4.018	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	287	280	531	269	268	703	776	-	-	875	-	-
Stage 1	622	546	-	720	608	-	-	-	-	-	-	-
Stage 2	734	618	-	596	529	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	278	274	531	257	262	703	776	-	-	875	-	-
Mov Cap-2 Maneuver	278	274	-	257	262	-	-	-	-	-	-	-
Stage 1	611	543	-	708	598	-	-	-	-	-	-	-
Stage 2	711	607	-	576	526	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	14.9		18.8		0.2		0.1	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	776	-	-	389	303	875	-	-
HCM Lane V/C Ratio	0.013	-	-	0.064	0.138	0.004	-	-
HCM Control Delay (s)	9.7	0	-	14.9	18.8	9.1	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.5	0	-	-

2: Shiloh Road & Hunt Drive/Driveway  
 2033 Traffic Volumes with Development - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	6	0	9	19	0	6	6	230	10	2	328	2
Future Volume (vph)	6	0	9	19	0	6	6	230	10	2	328	2
Ideal Flow (vphpl)	1800	1900	1800	1900	1900	1900	1800	1800	1900	1900	1800	1800
Lane Width (ft)	10	12	10	12	10	12	10	10	12	12	10	10
Grade (%)		-2%			-1%			4%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.919			0.968			0.994			0.999	
Flt Protected		0.980			0.963			0.999				
Satd. Flow (prot)	0	1503	0	0	1629	0	0	1589	0	0	1646	0
Flt Permitted		0.980			0.963			0.999				
Satd. Flow (perm)	0	1503	0	0	1629	0	0	1589	0	0	1646	0
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		1089			451			5597			607	
Travel Time (s)		29.7			12.3			127.2			13.8	
Peak Hour Factor	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Heavy Vehicles (%)	0%	2%	25%	2%	2%	2%	0%	3%	2%	2%	3%	0%
Adj. Flow (vph)	10	0	15	32	0	10	10	383	17	3	547	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	25	0	0	42	0	0	410	0	0	553	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.16	0.99	1.16	0.99	1.09	0.99	1.20	1.20	1.03	0.99	1.16	1.16
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	29.3%						ICU Level of Service A					
Analysis Period (min)	15											

2: Shiloh Road & Hunt Drive/Driveway  
Existing Traffic Volumes - PM Peak













Intersection												
Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	3	0	7	1	0	1	13	252	0	1	314	5
Future Vol, veh/h	3	0	7	1	0	1	13	252	0	1	314	5
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, %	-	-2	-	-	-1	-	-	4	-	-	-2	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	3	0	8	1	0	1	15	283	0	1	353	6

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	672	671	356	675	674	283	359	0	0	283	0	0
Stage 1	358	358	-	313	313	-	-	-	-	-	-	-
Stage 2	314	313	-	362	361	-	-	-	-	-	-	-
Critical Hdwy	6.7	6.1	6	6.9	6.3	6.1	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	5.7	5.1	-	5.9	5.3	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.7	5.1	-	5.9	5.3	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	4	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	449	410	745	430	393	810	904	-	-	961	-	-
Stage 1	787	657	-	816	672	-	-	-	-	-	-	-
Stage 2	830	684	-	768	642	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	441	401	745	419	385	810	904	-	-	961	-	-
Mov Cap-2 Maneuver	441	401	-	419	385	-	-	-	-	-	-	-
Stage 1	771	656	-	800	659	-	-	-	-	-	-	-
Stage 2	812	670	-	759	641	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.9	11.5	0.4	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	904	-	-	617	552	961	-	-
HCM Lane V/C Ratio	0.016	-	-	0.018	0.004	0.001	-	-
HCM Control Delay (s)	9	0	-	10.9	11.5	8.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-

2: Shiloh Road & Hunt Drive/Driveway  
Existing Traffic Volumes - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	3	0	7	1	0	1	13	252	0	1	314	5
Future Volume (vph)	3	0	7	1	0	1	13	252	0	1	314	5
Ideal Flow (vphpl)	1800	1900	1800	1900	1900	1900	1800	1800	1900	1900	1800	1800
Lane Width (ft)	10	12	10	12	10	12	10	10	12	12	10	10
Grade (%)		-2%			-1%			4%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr't		0.902			0.932						0.998	
Flt Protected		0.987			0.976			0.997				
Satd. Flow (prot)	0	1708	0	0	1621	0	0	1641	0	0	1693	0
Flt Permitted		0.987			0.976			0.997				
Satd. Flow (perm)	0	1708	0	0	1621	0	0	1641	0	0	1693	0
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		1089			451			5597			607	
Travel Time (s)		29.7			12.3			127.2			13.8	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	3	0	8	1	0	1	15	283	0	1	353	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	11	0	0	2	0	0	298	0	0	360	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.16	0.99	1.16	0.99	1.09	0.99	1.20	1.20	1.03	0.99	1.16	1.16
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	34.3%						ICU Level of Service A					
Analysis Period (min)	15											



2: Shiloh Road & Hunt Drive/Driveway  
 2028 Traffic Volumes without Development - PM Peak













Intersection												
Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕		↕			↕			↕			
Traffic Vol, veh/h	3	0	7	1	0	1	13	262	0	1	326	5
Future Vol, veh/h	3	0	7	1	0	1	13	262	0	1	326	5
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, %	-	-2	-	-	-1	-	-	4	-	-	-2	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	3	0	8	1	0	1	15	294	0	1	366	6

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	696	695	369	699	698	294	372	0	0	294	0	0
Stage 1	371	371	-	324	324	-	-	-	-	-	-	-
Stage 2	325	324	-	375	374	-	-	-	-	-	-	-
Critical Hdwy	6.7	6.1	6	6.9	6.3	6.1	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	5.7	5.1	-	5.9	5.3	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.7	5.1	-	5.9	5.3	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	4	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	433	398	733	415	381	799	895	-	-	952	-	-
Stage 1	775	649	-	805	665	-	-	-	-	-	-	-
Stage 2	819	677	-	756	634	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	426	390	733	404	373	799	895	-	-	952	-	-
Mov Cap-2 Maneuver	426	390	-	404	373	-	-	-	-	-	-	-
Stage 1	760	648	-	789	652	-	-	-	-	-	-	-
Stage 2	801	663	-	747	633	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	11.1		11.7		0.4		0	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	895	-	-	603	537	952	-	-
HCM Lane V/C Ratio	0.016	-	-	0.019	0.004	0.001	-	-
HCM Control Delay (s)	9.1	0	-	11.1	11.7	8.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0	0	-	-

2: Shiloh Road & Hunt Drive/Driveway  
 2028 Traffic Volumes without Development - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	3	0	7	1	0	1	13	262	0	1	326	5
Future Volume (vph)	3	0	7	1	0	1	13	262	0	1	326	5
Ideal Flow (vphpl)	1800	1900	1800	1900	1900	1900	1800	1800	1900	1900	1800	1800
Lane Width (ft)	10	12	10	12	10	12	10	10	12	12	10	10
Grade (%)		-2%			-1%			4%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.902			0.932						0.998	
Flt Protected		0.987			0.976			0.998				
Satd. Flow (prot)	0	1708	0	0	1621	0	0	1643	0	0	1693	0
Flt Permitted		0.987			0.976			0.998				
Satd. Flow (perm)	0	1708	0	0	1621	0	0	1643	0	0	1693	0
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		1089			451			5597			607	
Travel Time (s)		29.7			12.3			127.2			13.8	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	3	0	8	1	0	1	15	294	0	1	366	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	11	0	0	2	0	0	309	0	0	373	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.16	0.99	1.16	0.99	1.09	0.99	1.20	1.20	1.03	0.99	1.16	1.16
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	34.8%						ICU Level of Service A					
Analysis Period (min)	15											

2: Shiloh Road & Hunt Drive/Driveway  
 2028 Traffic Volumes with Development - PM Peak

















Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕↕			↕↕			↕↕			↕↕		
Traffic Vol, veh/h	3	0	7	13	0	5	13	270	21	7	331	5
Future Vol, veh/h	3	0	7	13	0	5	13	270	21	7	331	5
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, %	-	-2	-	-	-1	-	-	4	-	-	-2	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	3	0	8	15	0	6	15	303	24	8	372	6

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	739	748	375	740	739	315	378	0	0	327	0	0
Stage 1	391	391	-	345	345	-	-	-	-	-	-	-
Stage 2	348	357	-	395	394	-	-	-	-	-	-	-
Critical Hdwy	6.7	6.1	6	6.9	6.3	6.1	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	5.7	5.1	-	5.9	5.3	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.7	5.1	-	5.9	5.3	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	4	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	406	373	727	389	362	778	891	-	-	928	-	-
Stage 1	757	638	-	784	652	-	-	-	-	-	-	-
Stage 2	797	657	-	737	622	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	393	361	727	375	350	778	891	-	-	928	-	-
Mov Cap-2 Maneuver	393	361	-	375	350	-	-	-	-	-	-	-
Stage 1	741	631	-	768	638	-	-	-	-	-	-	-
Stage 2	775	643	-	721	615	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.3	13.6	0.4	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	891	-	-	579	438	928	-	-
HCM Lane V/C Ratio	0.016	-	-	0.019	0.046	0.008	-	-
HCM Control Delay (s)	9.1	0	-	11.3	13.6	8.9	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.1	0	-	-

2: Shiloh Road & Hunt Drive/Driveway  
 2028 Traffic Volumes with Development - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	7	13	0	5	13	270	21	7	331	5
Future Volume (vph)	3	0	7	13	0	5	13	270	21	7	331	5
Ideal Flow (vphpl)	1800	1900	1800	1900	1900	1900	1800	1800	1900	1900	1800	1800
Lane Width (ft)	10	12	10	12	10	12	10	10	12	12	10	10
Grade (%)		-2%			-1%			4%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.902			0.961			0.991			0.998	
Flt Protected		0.987			0.966			0.998			0.999	
Satd. Flow (prot)	0	1708	0	0	1654	0	0	1628	0	0	1692	0
Flt Permitted		0.987			0.966			0.998			0.999	
Satd. Flow (perm)	0	1708	0	0	1654	0	0	1628	0	0	1692	0
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		1089			451			5597			607	
Travel Time (s)		29.7			12.3			127.2			13.8	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	3	0	8	15	0	6	15	303	24	8	372	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	11	0	0	21	0	0	342	0	0	386	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.16	0.99	1.16	0.99	1.09	0.99	1.20	1.20	1.03	0.99	1.16	1.16
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	33.4%
	ICU Level of Service A
Analysis Period (min)	15

2: Shiloh Road & Hunt Drive/Driveway  
 2033 Traffic Volumes without Development - PM Peak













Intersection													
Int Delay, s/veh	0.4												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↕			↕			↕			↕			
Traffic Vol, veh/h	3	0	7	1	0	1	14	269	0	1	335	5	
Future Vol, veh/h	3	0	7	1	0	1	14	269	0	1	335	5	
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, %	-	-2	-	-	-1	-	-	4	-	-	-2	-	
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89	
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0	
Mvmt Flow	3	0	8	1	0	1	16	302	0	1	376	6	

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	716	715	379	719	718	302	382	0	0	302	0	0
Stage 1	381	381	-	334	334	-	-	-	-	-	-	-
Stage 2	335	334	-	385	384	-	-	-	-	-	-	-
Critical Hdwy	6.7	6.1	6	6.9	6.3	6.1	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	5.7	5.1	-	5.9	5.3	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.7	5.1	-	5.9	5.3	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	4	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	420	388	724	402	372	791	888	-	-	946	-	-
Stage 1	766	643	-	795	659	-	-	-	-	-	-	-
Stage 2	809	671	-	746	628	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	412	379	724	391	363	791	888	-	-	946	-	-
Mov Cap-2 Maneuver	412	379	-	391	363	-	-	-	-	-	-	-
Stage 1	749	642	-	778	645	-	-	-	-	-	-	-
Stage 2	790	656	-	737	627	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	11.2		11.9		0.5		0	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	888	-	-	590	523	946	-	-
HCM Lane V/C Ratio	0.018	-	-	0.019	0.004	0.001	-	-
HCM Control Delay (s)	9.1	0	-	11.2	11.9	8.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0	0	-	-

2: Shiloh Road & Hunt Drive/Driveway  
 2033 Traffic Volumes without Development - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	3	0	7	1	0	1	14	269	0	1	335	5
Future Volume (vph)	3	0	7	1	0	1	14	269	0	1	335	5
Ideal Flow (vphpl)	1800	1900	1800	1900	1900	1900	1800	1800	1900	1900	1800	1800
Lane Width (ft)	10	12	10	12	10	12	10	10	12	12	10	10
Grade (%)		-2%			-1%			4%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.902			0.932						0.998	
Flt Protected		0.987			0.976			0.997				
Satd. Flow (prot)	0	1708	0	0	1621	0	0	1641	0	0	1693	0
Flt Permitted		0.987			0.976			0.997				
Satd. Flow (perm)	0	1708	0	0	1621	0	0	1641	0	0	1693	0
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		1089			451			5597			607	
Travel Time (s)		29.7			12.3			127.2			13.8	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	3	0	8	1	0	1	16	302	0	1	376	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	11	0	0	2	0	0	318	0	0	383	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.16	0.99	1.16	0.99	1.09	0.99	1.20	1.20	1.03	0.99	1.16	1.16
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	36.1%
Analysis Period (min)	15
	ICU Level of Service A

2: Shiloh Road & Hunt Drive/Driveway  
 2033 Traffic Volumes with Development - PM Peak

















Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕↕			↕↕			↕↕				↕↕	
Traffic Vol, veh/h	3	0	7	13	0	5	14	277	21	7	340	5
Future Vol, veh/h	3	0	7	13	0	5	14	277	21	7	340	5
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, %	-	-2	-	-	-1	-	-	4	-	-	-2	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	3	0	8	15	0	6	16	311	24	8	382	6

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	759	768	385	760	759	323	388	0	0	335	0	0
Stage 1	401	401	-	355	355	-	-	-	-	-	-	-
Stage 2	358	367	-	405	404	-	-	-	-	-	-	-
Critical Hdwy	6.7	6.1	6	6.9	6.3	6.1	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	5.7	5.1	-	5.9	5.3	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.7	5.1	-	5.9	5.3	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	4	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	394	364	718	377	353	770	884	-	-	922	-	-
Stage 1	748	632	-	775	646	-	-	-	-	-	-	-
Stage 2	787	652	-	728	616	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	381	352	718	363	341	770	884	-	-	922	-	-
Mov Cap-2 Maneuver	381	352	-	363	341	-	-	-	-	-	-	-
Stage 1	732	625	-	758	632	-	-	-	-	-	-	-
Stage 2	764	638	-	712	609	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.5	13.9	0.4	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	884	-	-	567	425	922	-	-
HCM Lane V/C Ratio	0.018	-	-	0.02	0.048	0.009	-	-
HCM Control Delay (s)	9.1	0	-	11.5	13.9	8.9	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.1	0	-	-

2: Shiloh Road & Hunt Drive/Driveway  
 2033 Traffic Volumes with Development - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	7	13	0	5	14	277	21	7	340	5
Future Volume (vph)	3	0	7	13	0	5	14	277	21	7	340	5
Ideal Flow (vphpl)	1800	1900	1800	1900	1900	1900	1800	1800	1900	1900	1800	1800
Lane Width (ft)	10	12	10	12	10	12	10	10	12	12	10	10
Grade (%)		-2%			-1%			4%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.902			0.961			0.991			0.998	
Flt Protected		0.987			0.966			0.998			0.999	
Satd. Flow (prot)	0	1708	0	0	1654	0	0	1628	0	0	1692	0
Flt Permitted		0.987			0.966			0.998			0.999	
Satd. Flow (perm)	0	1708	0	0	1654	0	0	1628	0	0	1692	0
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		1089			451			5597			607	
Travel Time (s)		29.7			12.3			127.2			13.8	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	3	0	8	15	0	6	16	311	24	8	382	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	11	0	0	21	0	0	351	0	0	396	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.16	0.99	1.16	0.99	1.09	0.99	1.20	1.20	1.03	0.99	1.16	1.16
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	34.5%					ICU Level of Service A						
Analysis Period (min)	15											



### 3: Shiloh Road & Oakbourne Road/Driveway Existing Traffic Volumes - AM Peak













Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	13	0	84	0	0	4	52	173	1	1	224	19
Future Vol, veh/h	13	0	84	0	0	4	52	173	1	1	224	19
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, %	-	-1	-	-	1	-	-	1	-	-	-2	-
Peak Hour Factor	64	64	64	64	64	64	64	64	64	64	64	64
Heavy Vehicles, %	0	0	6	0	0	25	10	2	0	0	3	11
Mvmt Flow	20	0	131	0	0	6	81	270	2	2	350	30

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	805	803	365	868	817	271	380	0	0	272	0	0
Stage 1	369	369	-	433	433	-	-	-	-	-	-	-
Stage 2	436	434	-	435	384	-	-	-	-	-	-	-
Critical Hdwy	6.9	6.3	6.16	7.3	6.7	6.6	4.4	-	-	4.3	-	-
Critical Hdwy Stg 1	5.9	5.3	-	6.3	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.9	5.3	-	6.3	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.2	3	4	3.3	3.1	-	-	3	-	-
Pot Cap-1 Maneuver	352	334	705	290	299	750	856	-	-	969	-	-
Stage 1	761	637	-	670	571	-	-	-	-	-	-	-
Stage 2	700	599	-	668	602	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	319	296	705	215	265	750	856	-	-	969	-	-
Mov Cap-2 Maneuver	319	296	-	215	265	-	-	-	-	-	-	-
Stage 1	677	635	-	596	508	-	-	-	-	-	-	-
Stage 2	617	533	-	542	600	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.9	9.8	2.2	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	856	-	-	607	750	969	-	-
HCM Lane V/C Ratio	0.095	-	-	0.25	0.008	0.002	-	-
HCM Control Delay (s)	9.6	0	-	12.9	9.8	8.7	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	1	0	0	-	-

### 3: Shiloh Road & Oakbourne Road/Driveway Existing Traffic Volumes - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	13	0	84	0	0	4	52	173	1	1	224	19
Future Volume (vph)	13	0	84	0	0	4	52	173	1	1	224	19
Ideal Flow (vphpl)	1800	1900	1800	1900	1900	1900	1800	1800	1900	1900	1800	1800
Lane Width (ft)	10	12	10	12	10	12	10	10	12	12	10	10
Grade (%)		-1%			1%			1%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frts		0.883			0.865			0.999			0.989	
Fit Protected		0.993						0.989				
Satd. Flow (prot)	0	1591	0	0	1221	0	0	1591	0	0	1620	0
Fit Permitted		0.993						0.989				
Satd. Flow (perm)	0	1591	0	0	1221	0	0	1591	0	0	1620	0
Link Speed (mph)		35			25			30			30	
Link Distance (ft)		1059			481			607			2010	
Travel Time (s)		20.6			13.1			13.8			45.7	
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Heavy Vehicles (%)	0%	0%	6%	0%	0%	25%	10%	2%	0%	0%	3%	11%
Adj. Flow (vph)	20	0	131	0	0	6	81	270	2	2	350	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	151	0	0	6	0	0	353	0	0	382	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.16	0.99	1.16	1.01	1.10	1.01	1.18	1.18	1.01	0.99	1.16	1.16
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	49.0%						ICU Level of Service A					
Analysis Period (min)	15											

### 3: Shiloh Road & Oakbourne Road/Driveway 2028 Traffic Volumes without Development - AM Peak













Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	13	0	87	0	0	4	54	180	1	1	233	20
Future Vol, veh/h	13	0	87	0	0	4	54	180	1	1	233	20
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, %	-	-1	-	-	1	-	-	1	-	-	-2	-
Peak Hour Factor	64	64	64	64	64	64	64	64	64	64	64	64
Heavy Vehicles, %	0	0	6	0	0	25	10	2	0	0	3	11
Mvmt Flow	20	0	136	0	0	6	84	281	2	2	364	31

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	837	835	380	902	849	282	395	0	0	283	0	0
Stage 1	384	384	-	450	450	-	-	-	-	-	-	-
Stage 2	453	451	-	452	399	-	-	-	-	-	-	-
Critical Hdwy	6.9	6.3	6.16	7.3	6.7	6.6	4.4	-	-	4.3	-	-
Critical Hdwy Stg 1	5.9	5.3	-	6.3	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.9	5.3	-	6.3	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.2	3	4	3.3	3.1	-	-	3	-	-
Pot Cap-1 Maneuver	335	320	692	274	286	738	845	-	-	961	-	-
Stage 1	747	628	-	655	561	-	-	-	-	-	-	-
Stage 2	686	589	-	653	592	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	302	281	692	200	251	738	845	-	-	961	-	-
Mov Cap-2 Maneuver	302	281	-	200	251	-	-	-	-	-	-	-
Stage 1	659	626	-	578	495	-	-	-	-	-	-	-
Stage 2	600	519	-	523	590	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13.2		9.9		2.2		0	
HCM LOS	B		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WB Ln1	SBL	SBT	SBR
Capacity (veh/h)	845	-	-	593	738	961	-	-
HCM Lane V/C Ratio	0.1	-	-	0.263	0.008	0.002	-	-
HCM Control Delay (s)	9.7	0	-	13.2	9.9	8.8	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	1.1	0	0	-	-

3: Shiloh Road & Oakbourne Road/Driveway  
 2028 Traffic Volumes without Development - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	13	0	87	0	0	4	54	180	1	1	233	20
Future Volume (vph)	13	0	87	0	0	4	54	180	1	1	233	20
Ideal Flow (vphpl)	1800	1900	1800	1900	1900	1900	1800	1800	1900	1900	1800	1800
Lane Width (ft)	10	12	10	12	10	12	10	10	12	12	10	10
Grade (%)		-1%			1%			1%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.882			0.865			0.999			0.989	
Flt Protected		0.994						0.989				
Satd. Flow (prot)	0	1591	0	0	1221	0	0	1591	0	0	1620	0
Flt Permitted		0.994						0.989				
Satd. Flow (perm)	0	1591	0	0	1221	0	0	1591	0	0	1620	0
Link Speed (mph)		35			25			30			30	
Link Distance (ft)		1059			481			607			2010	
Travel Time (s)		20.6			13.1			13.8			45.7	
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Heavy Vehicles (%)	0%	0%	6%	0%	0%	25%	10%	2%	0%	0%	3%	11%
Adj. Flow (vph)	20	0	136	0	0	6	84	281	2	2	364	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	156	0	0	6	0	0	367	0	0	397	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.16	0.99	1.16	1.01	1.10	1.01	1.18	1.18	1.01	0.99	1.16	1.16
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	50.3%
Analysis Period (min)	15
	ICU Level of Service A

### 3: Shiloh Road & Oakbourne Road/Driveway 2028 Traffic Volumes with Development - AM Peak













Intersection												
Int Delay, s/veh	3.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	13	1	87	7	4	15	55	185	3	5	235	20
Future Vol, veh/h	13	1	87	7	4	15	55	185	3	5	235	20
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, %	-	-1	-	-	1	-	-	1	-	-	-2	-
Peak Hour Factor	64	64	64	64	64	64	64	64	64	64	64	64
Heavy Vehicles, %	0	2	6	2	2	25	10	2	2	2	3	11
Mvmt Flow	20	2	136	11	6	23	86	289	5	8	367	31

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	877	865	383	932	878	292	398	0	0	294	0	0
Stage 1	399	399	-	464	464	-	-	-	-	-	-	-
Stage 2	478	466	-	468	414	-	-	-	-	-	-	-
Critical Hdwy	6.9	6.32	6.16	7.32	6.72	6.6	4.4	-	-	4.3	-	-
Critical Hdwy Stg 1	5.9	5.32	-	6.32	5.72	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.9	5.32	-	6.32	5.72	-	-	-	-	-	-	-
Follow-up Hdwy	3	4.018	3.2	3	4.018	3.3	3.1	-	-	3	-	-
Pot Cap-1 Maneuver	315	306	689	259	273	728	843	-	-	952	-	-
Stage 1	733	616	-	641	549	-	-	-	-	-	-	-
Stage 2	665	577	-	637	580	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	269	266	689	186	237	728	843	-	-	952	-	-
Mov Cap-2 Maneuver	269	266	-	186	237	-	-	-	-	-	-	-
Stage 1	644	609	-	563	482	-	-	-	-	-	-	-
Stage 2	558	507	-	504	574	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.8	16.8	2.2	0.2
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	843	-	-	566	346	952	-	-
HCM Lane V/C Ratio	0.102	-	-	0.279	0.117	0.008	-	-
HCM Control Delay (s)	9.8	0	-	13.8	16.8	8.8	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	1.1	0.4	0	-	-

3: Shiloh Road & Oakbourne Road/Driveway  
 2028 Traffic Volumes with Development - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	13	1	87	7	4	15	55	185	3	5	235	20
Future Volume (vph)	13	1	87	7	4	15	55	185	3	5	235	20
Ideal Flow (vphpl)	1800	1900	1800	1900	1900	1900	1800	1800	1900	1900	1800	1800
Lane Width (ft)	10	12	10	12	10	12	10	10	12	12	10	10
Grade (%)		-1%			1%			1%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.884			0.922			0.998			0.990	
Fit Protected		0.994			0.986			0.989			0.999	
Satd. Flow (prot)	0	1595	0	0	1392	0	0	1589	0	0	1620	0
Fit Permitted		0.994			0.986			0.989			0.999	
Satd. Flow (perm)	0	1595	0	0	1392	0	0	1589	0	0	1620	0
Link Speed (mph)		35			25			30			30	
Link Distance (ft)		1059			481			607			2010	
Travel Time (s)		20.6			13.1			13.8			45.7	
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Heavy Vehicles (%)	0%	2%	6%	2%	2%	25%	10%	2%	2%	2%	3%	11%
Adj. Flow (vph)	20	2	136	11	6	23	86	289	5	8	367	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	158	0	0	40	0	0	380	0	0	406	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.16	0.99	1.16	1.01	1.10	1.01	1.18	1.18	1.01	0.99	1.16	1.16
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	45.2%
ICU Level of Service	A
Analysis Period (min)	15

3: Shiloh Road & Oakbourne Road/Driveway  
 2033 Traffic Volumes without Development - AM Peak













Intersection													
Int Delay, s/veh	3.3												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕			↕			↕			↕		
Traffic Vol, veh/h	14	0	90	0	0	4	55	185	1	1	239	20	
Future Vol, veh/h	14	0	90	0	0	4	55	185	1	1	239	20	
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, %	-	-1	-	-	1	-	-	1	-	-	-2	-	
Peak Hour Factor	64	64	64	64	64	64	64	64	64	64	64	64	
Heavy Vehicles, %	0	0	6	0	0	25	10	2	0	0	3	11	
Mvmt Flow	22	0	141	0	0	6	86	289	2	2	373	31	

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	858	856	389	925	870	290	404	0	0	291	0	0
Stage 1	393	393	-	462	462	-	-	-	-	-	-	-
Stage 2	465	463	-	463	408	-	-	-	-	-	-	-
Critical Hdwy	6.9	6.3	6.16	7.3	6.7	6.6	4.4	-	-	4.3	-	-
Critical Hdwy Stg 1	5.9	5.3	-	6.3	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.9	5.3	-	6.3	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.2	3	4	3.3	3.1	-	-	3	-	-
Pot Cap-1 Maneuver	324	312	684	264	278	730	839	-	-	955	-	-
Stage 1	739	623	-	644	554	-	-	-	-	-	-	-
Stage 2	676	582	-	643	587	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	291	273	684	190	243	730	839	-	-	955	-	-
Mov Cap-2 Maneuver	291	273	-	190	243	-	-	-	-	-	-	-
Stage 1	649	621	-	565	486	-	-	-	-	-	-	-
Stage 2	588	511	-	509	585	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.6	10	2.2	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	839	-	-	579	730	955	-	-
HCM Lane V/C Ratio	0.102	-	-	0.281	0.009	0.002	-	-
HCM Control Delay (s)	9.8	0	-	13.6	10	8.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	1.1	0	0	-	-

3: Shiloh Road & Oakbourne Road/Driveway  
 2033 Traffic Volumes without Development - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	14	0	90	0	0	4	55	185	1	1	239	20
Future Volume (vph)	14	0	90	0	0	4	55	185	1	1	239	20
Ideal Flow (vphpl)	1800	1900	1800	1900	1900	1900	1800	1800	1900	1900	1800	1800
Lane Width (ft)	10	12	10	12	10	12	10	12	10	12	10	10
Grade (%)		-1%			1%			1%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.883			0.865			0.999			0.990	
Flt Protected		0.993						0.989				
Satd. Flow (prot)	0	1592	0	0	1221	0	0	1591	0	0	1622	0
Flt Permitted		0.993						0.989				
Satd. Flow (perm)	0	1592	0	0	1221	0	0	1591	0	0	1622	0
Link Speed (mph)		35			25			30			30	
Link Distance (ft)		1059			481			607			2010	
Travel Time (s)		20.6			13.1			13.8			45.7	
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Heavy Vehicles (%)	0%	0%	6%	0%	0%	25%	10%	2%	0%	0%	3%	11%
Adj. Flow (vph)	22	0	141	0	0	6	86	289	2	2	373	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	163	0	0	6	0	0	377	0	0	406	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.16	0.99	1.16	1.01	1.10	1.01	1.18	1.18	1.01	0.99	1.16	1.16
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	51.2%
	ICU Level of Service A
Analysis Period (min)	15



### 3: Shiloh Road & Oakbourne Road/Driveway 2033 Traffic Volumes with Development - AM Peak













Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	14	1	90	7	4	15	56	190	3	5	241	20
Future Vol, veh/h	14	1	90	7	4	15	56	190	3	5	241	20
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, %	-	-1	-	-	1	-	-	1	-	-	-2	-
Peak Hour Factor	64	64	64	64	64	64	64	64	64	64	64	64
Heavy Vehicles, %	0	2	6	2	2	25	10	2	2	2	3	11
Mvmt Flow	22	2	141	11	6	23	88	297	5	8	377	31

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	899	887	393	956	900	300	408	0	0	302	0	0
Stage 1	409	409	-	476	476	-	-	-	-	-	-	-
Stage 2	490	478	-	480	424	-	-	-	-	-	-	-
Critical Hdwy	6.9	6.32	6.16	7.32	6.72	6.6	4.4	-	-	4.3	-	-
Critical Hdwy Stg 1	5.9	5.32	-	6.32	5.72	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.9	5.32	-	6.32	5.72	-	-	-	-	-	-	-
Follow-up Hdwy	3	4.018	3.2	3	4.018	3.3	3.1	-	-	3	-	-
Pot Cap-1 Maneuver	304	297	680	249	265	720	836	-	-	946	-	-
Stage 1	724	610	-	630	542	-	-	-	-	-	-	-
Stage 2	655	570	-	627	573	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	258	256	680	176	229	720	836	-	-	946	-	-
Mov Cap-2 Maneuver	258	256	-	176	229	-	-	-	-	-	-	-
Stage 1	632	603	-	550	473	-	-	-	-	-	-	-
Stage 2	546	498	-	491	567	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.3	17.3	2.2	0.2
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	836	-	-	551	333	946	-
HCM Lane V/C Ratio	0.105	-	-	0.298	0.122	0.008	-
HCM Control Delay (s)	9.8	0	-	14.3	17.3	8.8	0
HCM Lane LOS	A	A	-	B	C	A	A
HCM 95th %tile Q(veh)	0.3	-	-	1.2	0.4	0	-

3: Shiloh Road & Oakbourne Road/Driveway  
 2033 Traffic Volumes with Development - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	14	1	90	7	4	15	56	190	3	5	241	20
Future Volume (vph)	14	1	90	7	4	15	56	190	3	5	241	20
Ideal Flow (vphpl)	1800	1900	1800	1900	1900	1900	1800	1800	1900	1900	1800	1800
Lane Width (ft)	10	12	10	12	10	12	10	10	12	12	10	10
Grade (%)		-1%			1%			1%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.885			0.922			0.998			0.990	
Flt Protected		0.993			0.986			0.989			0.999	
Satd. Flow (prot)	0	1596	0	0	1392	0	0	1589	0	0	1620	0
Flt Permitted		0.993			0.986			0.989			0.999	
Satd. Flow (perm)	0	1596	0	0	1392	0	0	1589	0	0	1620	0
Link Speed (mph)		35			25			30			30	
Link Distance (ft)		1059			481			607			2010	
Travel Time (s)		20.6			13.1			13.8			45.7	
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Heavy Vehicles (%)	0%	2%	6%	2%	2%	25%	10%	2%	2%	2%	3%	11%
Adj. Flow (vph)	22	2	141	11	6	23	88	297	5	8	377	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	165	0	0	40	0	0	390	0	0	416	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.16	0.99	1.16	1.01	1.10	1.01	1.18	1.18	1.01	0.99	1.16	1.16
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	46.2%						ICU Level of Service A					
Analysis Period (min)	15											

3: Shiloh Road & Oakbourne Road/Driveway  
Existing Traffic Volumes - PM Peak

















Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	22	0	78	3	0	3	66	187	1	1	241	22
Future Vol, veh/h	22	0	78	3	0	3	66	187	1	1	241	22
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, %	-	-1	-	-	1	-	-	1	-	-	-2	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	5	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	24	0	86	3	0	3	73	205	1	1	265	24

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	632	631	277	674	643	206	289	0	0	206	0	0
Stage 1	279	279	-	352	352	-	-	-	-	-	-	-
Stage 2	353	352	-	322	291	-	-	-	-	-	-	-
Critical Hdwy	7	6.3	6.1	7.3	6.7	6.3	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	5.95	5.3	-	6.3	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.95	5.3	-	6.3	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	4	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	452	415	816	400	381	884	956	-	-	1021	-	-
Stage 1	848	694	-	748	623	-	-	-	-	-	-	-
Stage 2	773	648	-	779	664	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	420	379	816	334	348	884	956	-	-	1021	-	-
Mov Cap-2 Maneuver	420	379	-	334	348	-	-	-	-	-	-	-
Stage 1	775	693	-	684	569	-	-	-	-	-	-	-
Stage 2	704	592	-	696	663	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	11.4		12.5		2.4		0	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	956	-	-	676	485	1021	-	-
HCM Lane V/C Ratio	0.076	-	-	0.163	0.014	0.001	-	-
HCM Control Delay (s)	9.1	0	-	11.4	12.5	8.5	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.6	0	0	-	-

3: Shiloh Road & Oakbourne Road/Driveway  
Existing Traffic Volumes - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	0	78	3	0	3	66	187	1	1	241	22
Future Volume (vph)	22	0	78	3	0	3	66	187	1	1	241	22
Ideal Flow (vphpl)	1800	1900	1800	1900	1900	1900	1800	1800	1900	1900	1800	1800
Lane Width (ft)	10	12	10	12	10	12	10	10	12	12	10	10
Grade (%)		-1%			1%			1%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.894			0.932						0.989	
Fl <sub>t</sub> Protected		0.989			0.976			0.987				
Satd. Flow (prot)	0	1670	0	0	1605	0	0	1650	0	0	1678	0
Fl <sub>t</sub> Permitted		0.989			0.976			0.987				
Satd. Flow (perm)	0	1670	0	0	1605	0	0	1650	0	0	1678	0
Link Speed (mph)		35			25			30			30	
Link Distance (ft)		1059			481			607			2010	
Travel Time (s)		20.6			13.1			13.8			45.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	24	0	86	3	0	3	73	205	1	1	265	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	110	0	0	6	0	0	279	0	0	290	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.16	0.99	1.16	1.01	1.10	1.01	1.18	1.18	1.01	0.99	1.16	1.16
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	45.5%						ICU Level of Service A					
Analysis Period (min)	15											

3: Shiloh Road & Oakbourne Road/Driveway  
 2028 Traffic Volumes without Development - PM Peak













Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	23	0	81	3	0	3	69	194	1	1	250	23
Future Vol, veh/h	23	0	81	3	0	3	69	194	1	1	250	23
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, %	-	-1	-	-	1	-	-	1	-	-	-2	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	5	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	25	0	89	3	0	3	76	213	1	1	275	25

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	657	656	288	700	668	214	300	0	0	214	0	0
Stage 1	290	290	-	366	366	-	-	-	-	-	-	-
Stage 2	367	366	-	334	302	-	-	-	-	-	-	-
Critical Hdwy	7	6.3	6.1	7.3	6.7	6.3	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	5.95	5.3	-	6.3	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.95	5.3	-	6.3	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	4	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	434	402	805	383	368	874	948	-	-	1015	-	-
Stage 1	836	687	-	734	614	-	-	-	-	-	-	-
Stage 2	759	639	-	766	657	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	402	365	805	317	334	874	948	-	-	1015	-	-
Mov Cap-2 Maneuver	402	365	-	317	334	-	-	-	-	-	-	-
Stage 1	760	686	-	667	558	-	-	-	-	-	-	-
Stage 2	687	581	-	681	656	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.6	12.9	2.4	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	948	-	-	659	465	1015	-	-
HCM Lane V/C Ratio	0.08	-	-	0.173	0.014	0.001	-	-
HCM Control Delay (s)	9.1	0	-	11.6	12.9	8.6	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0.6	0	0	-	-

3: Shiloh Road & Oakbourne Road/Driveway  
 2028 Traffic Volumes without Development - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	23	0	81	3	0	3	69	194	1	1	250	23
Future Volume (vph)	23	0	81	3	0	3	69	194	1	1	250	23
Ideal Flow (vphpl)	1800	1900	1800	1900	1900	1900	1800	1800	1900	1900	1800	1800
Lane Width (ft)	10	12	10	12	10	12	10	10	12	12	10	10
Grade (%)		-1%			1%			1%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.895			0.932						0.989	
Flt Protected		0.989			0.976			0.987				
Satd. Flow (prot)	0	1672	0	0	1605	0	0	1650	0	0	1678	0
Flt Permitted		0.989			0.976			0.987				
Satd. Flow (perm)	0	1672	0	0	1605	0	0	1650	0	0	1678	0
Link Speed (mph)		35			25			30			30	
Link Distance (ft)		1059			481			607			2010	
Travel Time (s)		20.6			13.1			13.8			45.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	25	0	89	3	0	3	76	213	1	1	275	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	114	0	0	6	0	0	290	0	0	301	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.16	0.99	1.16	1.01	1.10	1.01	1.18	1.18	1.01	0.99	1.16	1.16
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	46.9%						ICU Level of Service A					
Analysis Period (min)	15											

### 3: Shiloh Road & Oakbourne Road/Driveway 2028 Traffic Volumes with Development - PM Peak

















Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	23	4	82	8	2	10	70	197	9	14	255	23
Future Vol, veh/h	23	4	82	8	2	10	70	197	9	14	255	23
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, %	-	-1	-	-	1	-	-	1	-	-	-2	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	5	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	25	4	90	9	2	11	77	216	10	15	280	25

Major/Minor	Minor2		Minor1			Major1		Major2				
Conflicting Flow All	705	703	293	745	710	221	305	0	0	226	0	0
Stage 1	323	323	-	375	375	-	-	-	-	-	-	-
Stage 2	382	380	-	370	335	-	-	-	-	-	-	-
Critical Hdwy	7	6.3	6.1	7.3	6.7	6.3	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	5.95	5.3	-	6.3	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.95	5.3	-	6.3	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	4	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	403	379	800	356	347	866	944	-	-	1005	-	-
Stage 1	803	666	-	725	608	-	-	-	-	-	-	-
Stage 2	745	631	-	730	634	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	363	338	800	287	309	866	944	-	-	1005	-	-
Mov Cap-2 Maneuver	363	338	-	287	309	-	-	-	-	-	-	-
Stage 1	728	654	-	658	551	-	-	-	-	-	-	-
Stage 2	664	572	-	632	623	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.3		13.7		2.3		0.4	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	944	-	-	613	436	1005	-	-
HCM Lane V/C Ratio	0.081	-	-	0.195	0.05	0.015	-	-
HCM Control Delay (s)	9.2	0	-	12.3	13.7	8.6	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0.7	0.2	0	-	-

### 3: Shiloh Road & Oakbourne Road/Driveway 2028 Traffic Volumes with Development - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	4	82	8	2	10	70	197	9	14	255	23
Future Volume (vph)	23	4	82	8	2	10	70	197	9	14	255	23
Ideal Flow (vphpl)	1800	1900	1800	1900	1900	1900	1800	1800	1900	1900	1800	1800
Lane Width (ft)	10	12	10	12	10	12	10	10	12	12	10	10
Grade (%)		-1%			1%			1%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.898			0.932			0.996			0.989	
Flt Protected		0.990			0.980			0.987			0.998	
Satd. Flow (prot)	0	1680	0	0	1612	0	0	1643	0	0	1675	0
Flt Permitted		0.990			0.980			0.987			0.998	
Satd. Flow (perm)	0	1680	0	0	1612	0	0	1643	0	0	1675	0
Link Speed (mph)		35			25			30			30	
Link Distance (ft)		1059			481			607			2010	
Travel Time (s)		20.6			13.1			13.8			45.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	25	4	90	9	2	11	77	216	10	15	280	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	119	0	0	22	0	0	303	0	0	320	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.16	0.99	1.16	1.01	1.10	1.01	1.18	1.18	1.01	0.99	1.16	1.16
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

#### Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	49.3%
Analysis Period (min)	15
	ICU Level of Service A



3: Shiloh Road & Oakbourne Road/Driveway  
 2033 Traffic Volumes without Development - PM Peak













Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	23	0	83	3	0	3	70	200	1	1	257	23
Future Vol, veh/h	23	0	83	3	0	3	70	200	1	1	257	23
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, %	-	-1	-	-	1	-	-	1	-	-	-2	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	5	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	25	0	91	3	0	3	77	220	1	1	282	25

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	673	672	295	717	684	221	307	0	0	221	0	0
Stage 1	297	297	-	375	375	-	-	-	-	-	-	-
Stage 2	376	375	-	342	309	-	-	-	-	-	-	-
Critical Hdwy	7	6.3	6.1	7.3	6.7	6.3	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	5.95	5.3	-	6.3	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.95	5.3	-	6.3	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	4	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	424	394	798	372	360	866	943	-	-	1009	-	-
Stage 1	829	682	-	725	608	-	-	-	-	-	-	-
Stage 2	751	634	-	758	652	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	392	357	798	306	326	866	943	-	-	1009	-	-
Mov Cap-2 Maneuver	392	357	-	306	326	-	-	-	-	-	-	-
Stage 1	752	681	-	658	551	-	-	-	-	-	-	-
Stage 2	679	575	-	671	651	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.7	13.1	2.4	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	943	-	-	652	452	1009	-	-
HCM Lane V/C Ratio	0.082	-	-	0.179	0.015	0.001	-	-
HCM Control Delay (s)	9.2	0	-	11.7	13.1	8.6	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0.6	0	0	-	-

### 3: Shiloh Road & Oakbourne Road/Driveway 2033 Traffic Volumes without Development - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	23	0	83	3	0	3	70	200	1	1	257	23
Future Volume (vph)	23	0	83	3	0	3	70	200	1	1	257	23
Ideal Flow (vphpl)	1800	1900	1800	1900	1900	1900	1800	1800	1900	1900	1800	1800
Lane Width (ft)	10	12	10	12	10	12	10	12	10	12	10	10
Grade (%)		-1%			1%			1%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.894			0.932						0.989	
Flt Protected		0.989			0.976			0.987				
Satd. Flow (prot)	0	1670	0	0	1605	0	0	1650	0	0	1678	0
Flt Permitted		0.989			0.976			0.987				
Satd. Flow (perm)	0	1670	0	0	1605	0	0	1650	0	0	1678	0
Link Speed (mph)		35			25			30			30	
Link Distance (ft)		1059			481			607			2010	
Travel Time (s)		20.6			13.1			13.8			45.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	25	0	91	3	0	3	77	220	1	1	282	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	116	0	0	6	0	0	298	0	0	308	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.16	0.99	1.16	1.01	1.10	1.01	1.18	1.18	1.01	0.99	1.16	1.16
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	47.8%						ICU Level of Service A					
Analysis Period (min)	15											

### 3: Shiloh Road & Oakbourne Road/Driveway 2033 Traffic Volumes with Development - PM Peak














Intersection													
Int Delay, s/veh	3.4												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↕			↕			↕			↕			
Traffic Vol, veh/h	23	4	84	8	2	10	71	203	9	14	262	23	
Future Vol, veh/h	23	4	84	8	2	10	71	203	9	14	262	23	
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, %	-	-1	-	-	1	-	-	1	-	-	-2	-	
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91	
Heavy Vehicles, %	5	0	0	0	0	0	0	0	0	0	0	0	
Mvmt Flow	25	4	92	9	2	11	78	223	10	15	288	25	

Major/Minor	Minor2		Minor1			Major1		Major2				
Conflicting Flow All	722	720	301	763	727	228	313	0	0	233	0	0
Stage 1	331	331	-	384	384	-	-	-	-	-	-	-
Stage 2	391	389	-	379	343	-	-	-	-	-	-	-
Critical Hdwy	7	6.3	6.1	7.3	6.7	6.3	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	5.95	5.3	-	6.3	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.95	5.3	-	6.3	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	4	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	392	371	792	345	339	858	938	-	-	1000	-	-
Stage 1	795	661	-	716	602	-	-	-	-	-	-	-
Stage 2	737	625	-	721	629	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	352	329	792	276	301	858	938	-	-	1000	-	-
Mov Cap-2 Maneuver	352	329	-	276	301	-	-	-	-	-	-	-
Stage 1	719	649	-	647	544	-	-	-	-	-	-	-
Stage 2	655	565	-	621	618	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.4		14		2.3		0.4	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	938	-	-	605	423	1000	-	-
HCM Lane V/C Ratio	0.083	-	-	0.202	0.052	0.015	-	-
HCM Control Delay (s)	9.2	0	-	12.4	14	8.7	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0.7	0.2	0	-	-

### 3: Shiloh Road & Oakbourne Road/Driveway 2033 Traffic Volumes with Development - PM Peak

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕			↕			↕			↕		
Traffic Volume (vph)	23	4	84	8	2	10	71	203	9	14	262	23	
Future Volume (vph)	23	4	84	8	2	10	71	203	9	14	262	23	
Ideal Flow (vphpl)	1800	1900	1800	1900	1900	1900	1800	1800	1900	1900	1800	1800	
Lane Width (ft)	10	12	10	12	10	12	10	10	12	12	10	10	
Grade (%)		-1%			1%			1%			-2%		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.897			0.932			0.996			0.990		
Flt Protected		0.990			0.980			0.988			0.998		
Satd. Flow (prot)	0	1678	0	0	1612	0	0	1645	0	0	1676	0	
Flt Permitted		0.990			0.980			0.988			0.998		
Satd. Flow (perm)	0	1678	0	0	1612	0	0	1645	0	0	1676	0	
Link Speed (mph)		35			25			30			30		
Link Distance (ft)		1059			481			607			2010		
Travel Time (s)		20.6			13.1			13.8			45.7		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	
Heavy Vehicles (%)	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Adj. Flow (vph)	25	4	92	9	2	11	78	223	10	15	288	25	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	121	0	0	22	0	0	311	0	0	328	0	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No	
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(ft)		0			0			0			0		
Link Offset(ft)		0			0			0			0		
Crosswalk Width(ft)		16			16			16			16		
Two way Left Turn Lane													
Headway Factor	1.16	0.99	1.16	1.01	1.10	1.01	1.18	1.18	1.01	0.99	1.16	1.16	
Turning Speed (mph)	15		9	15		9	15		9	15		9	
Sign Control		Stop			Stop			Free			Free		
<b>Intersection Summary</b>													
Area Type:	Other												
Control Type:	Unsignalized												
Intersection Capacity Utilization	50.2%						ICU Level of Service A						
Analysis Period (min)	15												

#### 4: Shiloh Road/Private Driveway & Little Shiloh Road Existing Traffic Volumes - AM Peak

##### Intersection

















Intersection Delay, s/veh	10.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	25	176	71	27	0	146	2	50	0	0	1
Future Vol, veh/h	2	25	176	71	27	0	146	2	50	0	0	1
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Heavy Vehicles, %	0	24	3	8	7	0	3	0	4	0	0	0
Mvmt Flow	3	37	259	104	40	0	215	3	74	0	0	1
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.8	9.8	11.3	7.8
HCM LOS	A	A	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	74%	1%	72%	0%
Vol Thru, %	1%	12%	28%	0%
Vol Right, %	25%	87%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	198	203	98	1
LT Vol	146	2	71	0
Through Vol	2	25	27	0
RT Vol	50	176	0	1
Lane Flow Rate	291	299	144	1
Geometry Grp	1	1	1	1
Degree of Util (X)	0.4	0.358	0.211	0.002
Departure Headway (Hd)	4.943	4.323	5.264	4.816
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	722	827	677	748
Service Time	3.013	2.377	3.333	2.816
HCM Lane V/C Ratio	0.403	0.362	0.213	0.001
HCM Control Delay	11.3	9.8	9.8	7.8
HCM Lane LOS	B	A	A	A
HCM 95th-tile Q	1.9	1.6	0.8	0

4: Shiloh Road/Private Driveway & Little Shiloh Road  
Existing Traffic Volumes - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	25	176	71	27	0	146	2	50	0	0	1
Future Volume (vph)	2	25	176	71	27	0	146	2	50	0	0	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	9	9	9	9	12	10	10	10	12	11	12
Grade (%)		3%			-1%			-1%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.883						0.966			0.865	
Flt Protected		0.999			0.965			0.964				
Satd. Flow (prot)	0	1333	0	0	1458	0	0	1523	0	0	1505	0
Flt Permitted		0.999			0.965			0.964				
Satd. Flow (perm)	0	1333	0	0	1458	0	0	1523	0	0	1505	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		1782			1077			2010			249	
Travel Time (s)		48.6			29.4			45.7			6.8	
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Heavy Vehicles (%)	0%	24%	3%	8%	7%	0%	3%	0%	4%	0%	0%	0%
Adj. Flow (vph)	3	37	259	104	40	0	215	3	74	0	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	299	0	0	144	0	0	292	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.25	1.25	1.22	1.22	1.07	1.16	1.16	1.16	1.07	1.12	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	47.2%						ICU Level of Service A					
Analysis Period (min)	15											

#### 4: Shiloh Road/Private Driveway & Little Shiloh Road 2028 Traffic Volumes without Development - AM Peak

##### Intersection













Intersection Delay, s/veh	10.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	26	183	74	28	0	152	2	52	0	0	1
Future Vol, veh/h	2	26	183	74	28	0	152	2	52	0	0	1
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Heavy Vehicles, %	0	24	3	8	7	0	3	0	4	0	0	0
Mvmt Flow	3	38	269	109	41	0	224	3	76	0	0	1
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10.1	9.9	11.7	7.9
HCM LOS	B	A	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	74%	1%	73%	0%
Vol Thru, %	1%	12%	27%	0%
Vol Right, %	25%	87%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	206	211	102	1
LT Vol	152	2	74	0
Through Vol	2	26	28	0
RT Vol	52	183	0	1
Lane Flow Rate	303	310	150	1
Geometry Grp	1	1	1	1
Degree of Util (X)	0.42	0.377	0.222	0.002
Departure Headway (Hd)	4.988	4.369	5.318	4.9
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	715	816	669	735
Service Time	3.066	2.429	3.395	2.9
HCM Lane V/C Ratio	0.424	0.38	0.224	0.001
HCM Control Delay	11.7	10.1	9.9	7.9
HCM Lane LOS	B	B	A	A
HCM 95th-tile Q	2.1	1.8	0.8	0

4: Shiloh Road/Private Driveway & Little Shiloh Road  
 2028 Traffic Volumes without Development - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	2	26	183	74	28	0	152	2	52	0	0	1
Future Volume (vph)	2	26	183	74	28	0	152	2	52	0	0	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	9	9	9	9	12	10	10	10	12	11	12
Grade (%)		3%			-1%			-1%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.883						0.966			0.865	
Flt Protected					0.965			0.964				
Satd. Flow (prot)	0	1335	0	0	1458	0	0	1523	0	0	1505	0
Flt Permitted					0.965			0.964				
Satd. Flow (perm)	0	1335	0	0	1458	0	0	1523	0	0	1505	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		1782			1077			2010			249	
Travel Time (s)		48.6			29.4			45.7			6.8	
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Heavy Vehicles (%)	0%	24%	3%	8%	7%	0%	3%	0%	4%	0%	0%	0%
Adj. Flow (vph)	3	38	269	109	41	0	224	3	76	0	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	310	0	0	150	0	0	303	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.25	1.25	1.22	1.22	1.07	1.16	1.16	1.16	1.07	1.12	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	48.4%						ICU Level of Service A					
Analysis Period (min)	15											



4: Shiloh Road/Private Driveway & Little Shiloh Road  
 2028 Traffic Volumes with Development - AM Peak













Intersection	
Intersection Delay, s/veh	11
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	26	186	77	28	0	159	2	61	0	0	1
Future Vol, veh/h	2	26	186	77	28	0	159	2	61	0	0	1
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Heavy Vehicles, %	0	24	3	8	7	0	3	0	4	0	0	0
Mvmt Flow	3	38	274	113	41	0	234	3	90	0	0	1
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10.3	10.1	12.2	8
HCM LOS	B	B	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	72%	1%	73%	0%
Vol Thru, %	1%	12%	27%	0%
Vol Right, %	27%	87%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	222	214	105	1
LT Vol	159	2	77	0
Through Vol	2	26	28	0
RT Vol	61	186	0	1
Lane Flow Rate	326	315	154	1
Geometry Grp	1	1	1	1
Degree of Util (X)	0.453	0.388	0.231	0.002
Departure Headway (Hd)	5	4.437	5.393	4.98
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	712	802	659	723
Service Time	3.083	2.504	3.478	2.98
HCM Lane V/C Ratio	0.458	0.393	0.234	0.001
HCM Control Delay	12.2	10.3	10.1	8
HCM Lane LOS	B	B	B	A
HCM 95th-tile Q	2.4	1.8	0.9	0

4: Shiloh Road/Private Driveway & Little Shiloh Road  
 2028 Traffic Volumes with Development - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	2	26	186	77	28	0	159	2	61	0	0	1
Future Volume (vph)	2	26	186	77	28	0	159	2	61	0	0	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	9	9	9	9	12	10	10	10	12	11	12
Grade (%)		3%			-1%			-1%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.883						0.963			0.865	
Fit Protected					0.965			0.965				
Satd. Flow (prot)	0	1335	0	0	1458	0	0	1520	0	0	1505	0
Fit Permitted					0.965			0.965				
Satd. Flow (perm)	0	1335	0	0	1458	0	0	1520	0	0	1505	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		1782			1077			2010			249	
Travel Time (s)		48.6			29.4			45.7			6.8	
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Heavy Vehicles (%)	0%	24%	3%	8%	7%	0%	3%	0%	4%	0%	0%	0%
Adj. Flow (vph)	3	38	274	113	41	0	234	3	90	0	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	315	0	0	154	0	0	327	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.25	1.25	1.22	1.22	1.07	1.16	1.16	1.16	1.07	1.12	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

















Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	49.7%
ICU Level of Service	A
Analysis Period (min)	15

#### 4: Shiloh Road/Private Driveway & Little Shiloh Road 2033 Traffic Volumes without Development - AM Peak

Intersection												
Intersection Delay, s/veh	10.9											
Intersection LOS	B											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	27	188	76	29	0	156	2	53	0	0	1
Future Vol, veh/h	2	27	188	76	29	0	156	2	53	0	0	1
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Heavy Vehicles, %	0	24	3	8	7	0	3	0	4	0	0	0
Mvmt Flow	3	40	276	112	43	0	229	3	78	0	0	1
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	10.3			10.1			11.9			8		
HCM LOS	B			B			B			A		
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	74%	1%	72%	0%								
Vol Thru, %	1%	12%	28%	0%								
Vol Right, %	25%	87%	0%	100%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	211	217	105	1								
LT Vol	156	2	76	0								
Through Vol	2	27	29	0								
RT Vol	53	188	0	1								
Lane Flow Rate	310	319	154	1								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.433	0.39	0.23	0.002								
Departure Headway (Hd)	5.021	4.399	5.353	4.959								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	711	811	664	726								
Service Time	3.104	2.464	3.435	2.959								
HCM Lane V/C Ratio	0.436	0.393	0.232	0.001								
HCM Control Delay	11.9	10.3	10.1	8								
HCM Lane LOS	B	B	B	A								
HCM 95th-tile Q	2.2	1.9	0.9	0								













4: Shiloh Road/Private Driveway & Little Shiloh Road  
 2033 Traffic Volumes without Development - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	27	188	76	29	0	156	2	53	0	0	1
Future Volume (vph)	2	27	188	76	29	0	156	2	53	0	0	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	9	9	9	9	12	10	10	10	12	11	12
Grade (%)		3%			-1%			-1%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.883						0.966			0.865	
Flt Protected					0.965			0.964				
Satd. Flow (prot)	0	1334	0	0	1458	0	0	1523	0	0	1505	0
Flt Permitted					0.965			0.964				
Satd. Flow (perm)	0	1334	0	0	1458	0	0	1523	0	0	1505	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		1782			1077			2010			249	
Travel Time (s)		48.6			29.4			45.7			6.8	
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Heavy Vehicles (%)	0%	24%	3%	8%	7%	0%	3%	0%	4%	0%	0%	0%
Adj. Flow (vph)	3	40	276	112	43	0	229	3	78	0	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	319	0	0	155	0	0	310	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.25	1.25	1.22	1.22	1.07	1.16	1.16	1.16	1.07	1.12	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	49.2%						ICU Level of Service A					
Analysis Period (min)	15											

#### 4: Shiloh Road/Private Driveway & Little Shiloh Road 2033 Traffic Volumes with Development - AM Peak

Intersection												
Intersection Delay, s/veh	11.3											
Intersection LOS	B											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	27	191	79	29	0	163	2	62	0	0	1
Future Vol, veh/h	2	27	191	79	29	0	163	2	62	0	0	1
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Heavy Vehicles, %	0	24	3	8	7	0	3	0	4	0	0	0
Mvmt Flow	3	40	281	116	43	0	240	3	91	0	0	1
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	10.6			10.3			12.5			8.1		
HCM LOS	B			B			B			A		
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	72%	1%	73%	0%								
Vol Thru, %	1%	12%	27%	0%								
Vol Right, %	27%	87%	0%	100%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	227	220	108	1								
LT Vol	163	2	79	0								
Through Vol	2	27	29	0								
RT Vol	62	191	0	1								
Lane Flow Rate	334	324	159	1								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.467	0.402	0.24	0.002								
Departure Headway (Hd)	5.035	4.47	5.429	5.045								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	708	796	654	714								
Service Time	3.125	2.543	3.522	3.045								
HCM Lane V/C Ratio	0.472	0.407	0.243	0.001								
HCM Control Delay	12.5	10.6	10.3	8.1								
HCM Lane LOS	B	B	B	A								
HCM 95th-tile Q	2.5	2	0.9	0								

4: Shiloh Road/Private Driveway & Little Shiloh Road  
 2033 Traffic Volumes with Development - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	2	27	191	79	29	0	163	2	62	0	0	1
Future Volume (vph)	2	27	191	79	29	0	163	2	62	0	0	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	9	9	9	9	12	10	10	10	12	11	12
Grade (%)		3%			-1%			-1%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.883						0.963			0.865	
Flt Protected					0.965			0.965				
Satd. Flow (prot)	0	1335	0	0	1458	0	0	1520	0	0	1505	0
Flt Permitted					0.965			0.965				
Satd. Flow (perm)	0	1335	0	0	1458	0	0	1520	0	0	1505	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		1782			1077			2010			249	
Travel Time (s)		48.6			29.4			45.7			6.8	
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Heavy Vehicles (%)	0%	24%	3%	8%	7%	0%	3%	0%	4%	0%	0%	0%
Adj. Flow (vph)	3	40	281	116	43	0	240	3	91	0	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	324	0	0	159	0	0	334	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.25	1.25	1.22	1.22	1.07	1.16	1.16	1.16	1.07	1.12	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	50.6%						ICU Level of Service A					
Analysis Period (min)	15											

#### 4: Shiloh Road/Private Driveway & Little Shiloh Road Existing Traffic Volumes - PM Peak













Intersection	
Intersection Delay, s/veh	9.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	30	226	78	32	0	152	0	56	0	0	1
Future Vol, veh/h	2	30	226	78	32	0	152	0	56	0	0	1
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	0	0	0	0	3	0	1	0	0	0	0	0
Mvmt Flow	2	35	263	91	37	0	177	0	65	0	0	1
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.4	9.1	10.2	7.6
HCM LOS	A	A	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	73%	1%	71%	0%
Vol Thru, %	0%	12%	29%	0%
Vol Right, %	27%	88%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	208	258	110	1
LT Vol	152	2	78	0
Through Vol	0	30	32	0
RT Vol	56	226	0	1
Lane Flow Rate	242	300	128	1
Geometry Grp	1	1	1	1
Degree of Util (X)	0.324	0.345	0.177	0.001
Departure Headway (Hd)	4.83	4.145	4.969	4.562
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	740	867	720	777
Service Time	2.884	2.181	3.016	2.636
HCM Lane V/C Ratio	0.327	0.346	0.178	0.001
HCM Control Delay	10.2	9.4	9.1	7.6
HCM Lane LOS	B	A	A	A
HCM 95th-tile Q	1.4	1.5	0.6	0

4: Shiloh Road/Private Driveway & Little Shiloh Road  
Existing Traffic Volumes - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	2	30	226	78	32	0	152	0	56	0	0	1
Future Volume (vph)	2	30	226	78	32	0	152	0	56	0	0	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	9	9	9	9	12	10	10	10	12	11	12
Grade (%)		3%			-1%			-1%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.882						0.964			0.865	
Flt Protected					0.966			0.965				
Satd. Flow (prot)	0	1407	0	0	1559	0	0	1559	0	0	1505	0
Flt Permitted					0.966			0.965				
Satd. Flow (perm)	0	1407	0	0	1559	0	0	1559	0	0	1505	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		1782			1077			2010			249	
Travel Time (s)		48.6			29.4			45.7			6.8	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	0%	0%	0%	3%	0%	1%	0%	0%	0%	0%	0%
Adj. Flow (vph)	2	35	263	91	37	0	177	0	65	0	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	300	0	0	128	0	0	242	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.25	1.25	1.22	1.22	1.07	1.16	1.16	1.16	1.07	1.12	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	52.0%						ICU Level of Service A					
Analysis Period (min)	15											



#### 4: Shiloh Road/Private Driveway & Little Shiloh Road 2028 Traffic Volumes without Development - PM Peak














Intersection	
Intersection Delay, s/veh	9.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	31	235	81	33	0	158	0	58	0	0	1
Future Vol, veh/h	2	31	235	81	33	0	158	0	58	0	0	1
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	0	0	0	0	3	0	1	0	0	0	0	0
Mvmt Flow	2	36	273	94	38	0	184	0	67	0	0	1
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.6	9.2	10.4	7.7
HCM LOS	A	A	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	73%	1%	71%	0%
Vol Thru, %	0%	12%	29%	0%
Vol Right, %	27%	88%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	216	268	114	1
LT Vol	158	2	81	0
Through Vol	0	31	33	0
RT Vol	58	235	0	1
Lane Flow Rate	251	312	133	1
Geometry Grp	1	1	1	1
Degree of Util (X)	0.34	0.362	0.185	0.001
Departure Headway (Hd)	4.87	4.181	5.013	4.621
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	733	857	712	765
Service Time	2.929	2.221	3.067	2.704
HCM Lane V/C Ratio	0.342	0.364	0.187	0.001
HCM Control Delay	10.4	9.6	9.2	7.7
HCM Lane LOS	B	A	A	A
HCM 95th-tile Q	1.5	1.7	0.7	0

4: Shiloh Road/Private Driveway & Little Shiloh Road  
 2028 Traffic Volumes without Development - PM Peak

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕			↕			↕			↕		
Traffic Volume (vph)	2	31	235	81	33	0	158	0	58	0	0	1	
Future Volume (vph)	2	31	235	81	33	0	158	0	58	0	0	1	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	
Lane Width (ft)	12	9	9	9	9	12	10	10	10	12	11	12	
Grade (%)		3%			-1%			-1%			0%		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.881						0.964			0.865		
Flt Protected					0.966			0.965					
Satd. Flow (prot)	0	1406	0	0	1559	0	0	1559	0	0	1505	0	
Flt Permitted					0.966			0.965					
Satd. Flow (perm)	0	1406	0	0	1559	0	0	1559	0	0	1505	0	
Link Speed (mph)		25			25			30			25		
Link Distance (ft)		1782			1077			2010			249		
Travel Time (s)		48.6			29.4			45.7			6.8		
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	
Heavy Vehicles (%)	0%	0%	0%	0%	3%	0%	1%	0%	0%	0%	0%	0%	
Adj. Flow (vph)	2	36	273	94	38	0	184	0	67	0	0	1	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	311	0	0	132	0	0	251	0	0	1	0	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No	
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(ft)		0			0			0			0		
Link Offset(ft)		0			0			0			0		
Crosswalk Width(ft)		16			16			16			16		
Two way Left Turn Lane													
Headway Factor	1.09	1.25	1.25	1.22	1.22	1.07	1.16	1.16	1.16	1.07	1.12	1.07	
Turning Speed (mph)	15		9	15		9	15		9	15		9	
Sign Control		Stop			Stop			Stop			Stop		
<b>Intersection Summary</b>													
Area Type:	Other												
Control Type:	Unsignalized												
Intersection Capacity Utilization	53.4%					ICU Level of Service A							
Analysis Period (min)	15												

4: Shiloh Road/Private Driveway & Little Shiloh Road  
 2028 Traffic Volumes with Development - PM Peak













Intersection	
Intersection Delay, s/veh	10
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	31	243	91	33	0	162	0	64	0	0	1
Future Vol, veh/h	2	31	243	91	33	0	162	0	64	0	0	1
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	0	0	0	0	3	0	1	0	0	0	0	0
Mvmt Flow	2	36	283	106	38	0	188	0	74	0	0	1
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.8	9.4	10.7	7.8
HCM LOS	A	A	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	72%	1%	73%	0%
Vol Thru, %	0%	11%	27%	0%
Vol Right, %	28%	88%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	226	276	124	1
LT Vol	162	2	91	0
Through Vol	0	31	33	0
RT Vol	64	243	0	1
Lane Flow Rate	263	321	144	1
Geometry Grp	1	1	1	1
Degree of Util (X)	0.358	0.377	0.203	0.002
Departure Headway (Hd)	4.909	4.227	5.064	4.697
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	728	847	704	752
Service Time	2.977	2.275	3.127	2.79
HCM Lane V/C Ratio	0.361	0.379	0.205	0.001
HCM Control Delay	10.7	9.8	9.4	7.8
HCM Lane LOS	B	A	A	A
HCM 95th-tile Q	1.6	1.8	0.8	0

4: Shiloh Road/Private Driveway & Little Shiloh Road  
 2028 Traffic Volumes with Development - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	2	31	243	91	33	0	162	0	64	0	0	1
Future Volume (vph)	2	31	243	91	33	0	162	0	64	0	0	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	9	9	9	9	12	10	10	10	12	11	12
Grade (%)		3%			-1%			-1%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.881						0.962			0.865	
Flt Protected					0.965			0.965				
Satd. Flow (prot)	0	1406	0	0	1559	0	0	1556	0	0	1505	0
Flt Permitted					0.965			0.965				
Satd. Flow (perm)	0	1406	0	0	1559	0	0	1556	0	0	1505	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		1782			1077			2010			249	
Travel Time (s)		48.6			29.4			45.7			6.8	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	0%	0%	0%	3%	0%	1%	0%	0%	0%	0%	0%
Adj. Flow (vph)	2	36	283	106	38	0	188	0	74	0	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	321	0	0	144	0	0	262	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.25	1.25	1.22	1.22	1.07	1.16	1.16	1.16	1.07	1.12	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	55.1%						ICU Level of Service B					
Analysis Period (min)	15											

#### 4: Shiloh Road/Private Driveway & Little Shiloh Road 2033 Traffic Volumes without Development - PM Peak













Intersection	
Intersection Delay, s/veh	10
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	32	241	83	34	0	162	0	60	0	0	1
Future Vol, veh/h	2	32	241	83	34	0	162	0	60	0	0	1
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	0	0	0	0	3	0	1	0	0	0	0	0
Mvmt Flow	2	37	280	97	40	0	188	0	70	0	0	1
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.8	9.3	10.6	7.8
HCM LOS	A	A	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	73%	1%	71%	0%
Vol Thru, %	0%	12%	29%	0%
Vol Right, %	27%	88%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	222	275	117	1
LT Vol	162	2	83	0
Through Vol	0	32	34	0
RT Vol	60	241	0	1
Lane Flow Rate	258	320	136	1
Geometry Grp	1	1	1	1
Degree of Util (X)	0.351	0.374	0.191	0.002
Departure Headway (Hd)	4.897	4.206	5.044	4.664
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	731	851	707	757
Service Time	2.961	2.251	3.104	2.753
HCM Lane V/C Ratio	0.353	0.376	0.192	0.001
HCM Control Delay	10.6	9.8	9.3	7.8
HCM Lane LOS	B	A	A	A
HCM 95th-tile Q	1.6	1.7	0.7	0

4: Shiloh Road/Private Driveway & Little Shiloh Road  
 2033 Traffic Volumes without Development - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	2	32	241	83	34	0	162	0	60	0	0	1
Future Volume (vph)	2	32	241	83	34	0	162	0	60	0	0	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	9	9	9	9	12	10	10	10	12	11	12
Grade (%)		3%			-1%			-1%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.882						0.963			0.865	
Flt Protected					0.966			0.965				
Satd. Flow (prot)	0	1407	0	0	1559	0	0	1558	0	0	1505	0
Flt Permitted					0.966			0.965				
Satd. Flow (perm)	0	1407	0	0	1559	0	0	1558	0	0	1505	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		1782			1077			2010			249	
Travel Time (s)		48.6			29.4			45.7			6.8	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	0%	0%	0%	3%	0%	1%	0%	0%	0%	0%	0%
Adj. Flow (vph)	2	37	280	97	40	0	188	0	70	0	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	319	0	0	137	0	0	258	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.25	1.25	1.22	1.22	1.07	1.16	1.16	1.16	1.07	1.12	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	54.3%
Analysis Period (min)	15
	ICU Level of Service A

#### 4: Shiloh Road/Private Driveway & Little Shiloh Road 2033 Traffic Volumes with Development - PM Peak













Intersection	
Intersection Delay, s/veh	10.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	32	249	93	34	0	166	0	66	0	0	1
Future Vol, veh/h	2	32	249	93	34	0	166	0	66	0	0	1
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	0	0	0	0	3	0	1	0	0	0	0	0
Mvmt Flow	2	37	290	108	40	0	193	0	77	0	0	1
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10	9.5	10.9	7.9
HCM LOS	A	A	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	72%	1%	73%	0%
Vol Thru, %	0%	11%	27%	0%
Vol Right, %	28%	88%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	232	283	127	1
LT Vol	166	2	93	0
Through Vol	0	32	34	0
RT Vol	66	249	0	1
Lane Flow Rate	270	329	148	1
Geometry Grp	1	1	1	1
Degree of Util (X)	0.37	0.389	0.209	0.002
Departure Headway (Hd)	4.939	4.255	5.098	4.743
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	723	842	700	744
Service Time	3.008	2.306	3.164	2.841
HCM Lane V/C Ratio	0.373	0.391	0.211	0.001
HCM Control Delay	10.9	10	9.5	7.9
HCM Lane LOS	B	A	A	A
HCM 95th-tile Q	1.7	1.9	0.8	0

#### 4: Shiloh Road/Private Driveway & Little Shiloh Road 2033 Traffic Volumes with Development - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	2	32	249	93	34	0	166	0	66	0	0	1
Future Volume (vph)	2	32	249	93	34	0	166	0	66	0	0	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	9	9	9	9	12	10	10	10	12	11	12
Grade (%)		3%			-1%			-1%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.881						0.961			0.865	
Flt Protected					0.965			0.965				
Satd. Flow (prot)	0	1406	0	0	1558	0	0	1555	0	0	1505	0
Flt Permitted					0.965			0.965				
Satd. Flow (perm)	0	1406	0	0	1558	0	0	1555	0	0	1505	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		1782			1077			2010			249	
Travel Time (s)		48.6			29.4			45.7			6.8	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	0%	0%	0%	3%	0%	1%	0%	0%	0%	0%	0%
Adj. Flow (vph)	2	37	290	108	40	0	193	0	77	0	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	329	0	0	148	0	0	270	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.25	1.25	1.22	1.22	1.07	1.16	1.16	1.16	1.07	1.12	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	56.1%						ICU Level of Service B					
Analysis Period (min)	15											



5: Shiloh Hill Drive & Little Shiloh Road  
Existing Traffic Volumes - AM Peak

Intersection						
Int Delay, s/veh	0.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖		↘
Traffic Vol, veh/h	73	3	0	69	7	2
Future Vol, veh/h	73	3	0	69	7	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	-2	4	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	3	0	0	9	0	0
Mvmt Flow	104	4	0	99	10	3

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	0	0	108	0
Stage 1	-	-	-	106
Stage 2	-	-	-	99
Critical Hdwy	-	-	4.3	-
Critical Hdwy Stg 1	-	-	-	6.2
Critical Hdwy Stg 2	-	-	-	6.2
Follow-up Hdwy	-	-	3	-
Pot Cap-1 Maneuver	-	-	1103	-
Stage 1	-	-	-	1045
Stage 2	-	-	-	1054
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	1103	-
Mov Cap-2 Maneuver	-	-	-	866
Stage 1	-	-	-	1045
Stage 2	-	-	-	1054

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	893	-	-	1103	-
HCM Lane V/C Ratio	0.014	-	-	-	-
HCM Control Delay (s)	9.1	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

5: Shiloh Hill Drive & Little Shiloh Road  
Existing Traffic Volumes - AM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕			↕	↕	
Traffic Volume (vph)	73	3	0	69	7	2
Future Volume (vph)	73	3	0	69	7	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	9	9	9	9	10	10
Grade (%)	-2%			-2%	4%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.995				0.969	
Flt Protected					0.963	
Satd. Flow (prot)	1582	0	0	1501	1536	0
Flt Permitted					0.963	
Satd. Flow (perm)	1582	0	0	1501	1536	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	1077			1334	597	
Travel Time (s)	29.4			36.4	16.3	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	3%	0%	0%	9%	0%	0%
Adj. Flow (vph)	104	4	0	99	10	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	108	0	0	99	13	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	10	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.21	1.21	1.21	1.21	1.20	1.20
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	14.2%
Analysis Period (min)	15
	ICU Level of Service A

5: Shiloh Hill Drive & Little Shiloh Road  
 2028 Traffic Volumes without Development - AM Peak

Intersection						
Int Delay, s/veh	0.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	76	3	0	72	7	2
Future Vol, veh/h	76	3	0	72	7	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	-2	4	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	3	0	0	9	0	0
Mvmt Flow	109	4	0	103	10	3

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	113	0	214
Stage 1	-	-	-	-	111
Stage 2	-	-	-	-	103
Critical Hdwy	-	-	4.3	-	7.2
Critical Hdwy Stg 1	-	-	-	-	6.2
Critical Hdwy Stg 2	-	-	-	-	6.2
Follow-up Hdwy	-	-	3	-	3
Pot Cap-1 Maneuver	-	-	1099	-	854
Stage 1	-	-	-	-	1038
Stage 2	-	-	-	-	1049
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1099	-	854
Mov Cap-2 Maneuver	-	-	-	-	854
Stage 1	-	-	-	-	1038
Stage 2	-	-	-	-	1049

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	881	-	-	1099	-
HCM Lane V/C Ratio	0.015	-	-	-	-
HCM Control Delay (s)	9.1	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

5: Shiloh Hill Drive & Little Shiloh Road  
 2028 Traffic Volumes without Development - AM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	76	3	0	72	7	2
Future Volume (vph)	76	3	0	72	7	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	9	9	9	9	10	10
Grade (%)	-2%			-2%	4%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.995				0.969	
Flt Protected					0.963	
Satd. Flow (prot)	1582	0	0	1501	1536	0
Flt Permitted					0.963	
Satd. Flow (perm)	1582	0	0	1501	1536	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	1077			1334	597	
Travel Time (s)	29.4			36.4	16.3	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	3%	0%	0%	9%	0%	0%
Adj. Flow (vph)	109	4	0	103	10	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	113	0	0	103	13	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	10	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.21	1.21	1.21	1.21	1.20	1.20
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	14.4%
Analysis Period (min)	15
	ICU Level of Service A

5: Shiloh Hill Drive & Little Shiloh Road  
 2028 Traffic Volumes with Development - AM Peak

**Intersection**

Int Delay, s/veh      0.5

**Movement**                    EBT    EBR    WBL    WBT    NBL    NBR

Lane Configurations	↗			↖	↘	
Traffic Vol, veh/h	85	3	0	75	7	2
Future Vol, veh/h	85	3	0	75	7	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	-2	4	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	3	0	0	9	0	0
Mvmt Flow	121	4	0	107	10	3

**Major/Minor**                    Major1                    Major2                    Minor1

Conflicting Flow All	0	0	125	0	230	123
Stage 1	-	-	-	-	123	-
Stage 2	-	-	-	-	107	-
Critical Hdwy	-	-	4.3	-	7.2	6.6
Critical Hdwy Stg 1	-	-	-	-	6.2	-
Critical Hdwy Stg 2	-	-	-	-	6.2	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	1088	-	832	977
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	1043	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1088	-	832	977
Mov Cap-2 Maneuver	-	-	-	-	832	-
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	1043	-

**Approach**                    EB                    WB                    NB

HCM Control Delay, s	0	0	9.3
HCM LOS			A

**Minor Lane/Major Mvmt**                    NBLn1    EBT    EBR    WBL    WBT

Capacity (veh/h)	860	-	-	1088	-
HCM Lane V/C Ratio	0.015	-	-	-	-
HCM Control Delay (s)	9.3	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

5: Shiloh Hill Drive & Little Shiloh Road  
 2028 Traffic Volumes with Development - AM Peak

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	85	3	0	75	7	2
Future Volume (vph)	85	3	0	75	7	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	9	9	9	9	10	10
Grade (%)	-2%			-2%	4%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.996				0.969	
Flt Protected					0.963	
Satd. Flow (prot)	1584	0	0	1501	1536	0
Flt Permitted					0.963	
Satd. Flow (perm)	1584	0	0	1501	1536	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	1077			1334	597	
Travel Time (s)	29.4			36.4	16.3	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	3%	0%	0%	9%	0%	0%
Adj. Flow (vph)	121	4	0	107	10	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	125	0	0	107	13	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	10	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.21	1.21	1.21	1.21	1.20	1.20
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	14.9%			ICU Level of Service A		
Analysis Period (min)	15					

5: Shiloh Hill Drive & Little Shiloh Road  
 2033 Traffic Volumes without Development - AM Peak

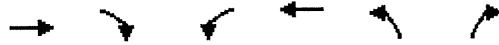
Intersection						
Int Delay, s/veh	0.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔		↔
Traffic Vol, veh/h	78	3	0	74	7	2
Future Vol, veh/h	78	3	0	74	7	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	-2	4	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	3	0	0	9	0	0
Mvmt Flow	111	4	0	106	10	3

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	115	0	219	113
Stage 1	-	-	-	-	113	-
Stage 2	-	-	-	-	106	-
Critical Hdwy	-	-	4.3	-	7.2	6.6
Critical Hdwy Stg 1	-	-	-	-	6.2	-
Critical Hdwy Stg 2	-	-	-	-	6.2	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	1097	-	847	991
Stage 1	-	-	-	-	1035	-
Stage 2	-	-	-	-	1045	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1097	-	847	991
Mov Cap-2 Maneuver	-	-	-	-	847	-
Stage 1	-	-	-	-	1035	-
Stage 2	-	-	-	-	1045	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	875	-	-	1097	-
HCM Lane V/C Ratio	0.015	-	-	-	-
HCM Control Delay (s)	9.2	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

5: Shiloh Hill Drive & Little Shiloh Road  
 2033 Traffic Volumes without Development - AM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔		↔
Traffic Volume (vph)	78	3	0	74	7	2
Future Volume (vph)	78	3	0	74	7	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	9	9	9	9	10	10
Grade (%)	-2%			-2% 4%		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.995				0.969	
Flt Protected					0.963	
Satd. Flow (prot)	1582	0	0	1501	1536	0
Flt Permitted					0.963	
Satd. Flow (perm)	1582	0	0	1501	1536	0
Link Speed (mph)	25			25		
Link Distance (ft)	1077			1334 597		
Travel Time (s)	29.4			36.4 16.3		
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	3%	0%	0%	9%	0%	0%
Adj. Flow (vph)	111	4	0	106	10	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	115	0	0	106	13	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0 10		
Link Offset(ft)	0			0 0		
Crosswalk Width(ft)	16			16 16		
Two way Left Turn Lane						
Headway Factor	1.21	1.21	1.21	1.21	1.20	1.20
Turning Speed (mph)	9		15		15 9	
Sign Control	Free			Free		Stop

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	14.5% ICU Level of Service A
Analysis Period (min)	15



5: Shiloh Hill Drive & Little Shiloh Road  
 2033 Traffic Volumes with Development - AM Peak

Intersection						
Int Delay, s/veh	0.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Vol, veh/h	87	3	0	77	7	2
Future Vol, veh/h	87	3	0	77	7	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	-2	4	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	3	0	0	9	0	0
Mvmt Flow	124	4	0	110	10	3

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	128	0	236
Stage 1	-	-	-	-	126
Stage 2	-	-	-	-	110
Critical Hdwy	-	-	4.3	-	7.2
Critical Hdwy Stg 1	-	-	-	-	6.2
Critical Hdwy Stg 2	-	-	-	-	6.2
Follow-up Hdwy	-	-	3	-	3
Pot Cap-1 Maneuver	-	-	1086	-	825
Stage 1	-	-	-	-	1018
Stage 2	-	-	-	-	1039
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1086	-	825
Mov Cap-2 Maneuver	-	-	-	-	825
Stage 1	-	-	-	-	1018
Stage 2	-	-	-	-	1039

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	854	-	-	1086	-
HCM Lane V/C Ratio	0.015	-	-	-	-
HCM Control Delay (s)	9.3	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

5: Shiloh Hill Drive & Little Shiloh Road  
 2033 Traffic Volumes with Development - AM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (vph)	87	3	0	77	7	2
Future Volume (vph)	87	3	0	77	7	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	9	9	9	9	10	10
Grade (%)	-2%			-2%	4%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.996				0.969	
Flt Protected					0.963	
Satd. Flow (prot)	1584	0	0	1501	1536	0
Flt Permitted					0.963	
Satd. Flow (perm)	1584	0	0	1501	1536	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	1077			1334	597	
Travel Time (s)	29.4			36.4	16.3	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	3%	0%	0%	9%	0%	0%
Adj. Flow (vph)	124	4	0	110	10	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	128	0	0	110	13	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	10	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.21	1.21	1.21	1.21	1.20	1.20
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	15.0%
Analysis Period (min)	15
	ICU Level of Service A

5: Shiloh Hill Drive & Little Shiloh Road  
Existing Traffic Volumes - PM Peak

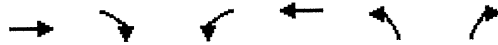
Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Vol, veh/h	84	8	1	94	6	1
Future Vol, veh/h	84	8	1	94	6	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	-2	4	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	13	0	0	0	0
Mvmt Flow	93	9	1	104	7	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	102	0	204
Stage 1	-	-	-	-	98
Stage 2	-	-	-	-	106
Critical Hdwy	-	-	4.3	-	7.2
Critical Hdwy Stg 1	-	-	-	-	6.2
Critical Hdwy Stg 2	-	-	-	-	6.2
Follow-up Hdwy	-	-	3	-	3
Pot Cap-1 Maneuver	-	-	1108	-	868
Stage 1	-	-	-	-	1056
Stage 2	-	-	-	-	1045
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1108	-	867
Mov Cap-2 Maneuver	-	-	-	-	867
Stage 1	-	-	-	-	1056
Stage 2	-	-	-	-	1044

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	885	-	-	1108	-
HCM Lane V/C Ratio	0.009	-	-	0.001	-
HCM Control Delay (s)	9.1	-	-	8.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

5: Shiloh Hill Drive & Little Shiloh Road  
Existing Traffic Volumes - PM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	84	8	1	94	6	1
Future Volume (vph)	84	8	1	94	6	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	9	9	9	9	10	10
Grade (%)	-2%			-2%	4%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.988				0.983	
Flt Protected					0.958	
Satd. Flow (prot)	1598	0	0	1636	1550	0
Flt Permitted					0.958	
Satd. Flow (perm)	1598	0	0	1636	1550	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	1077			1334	597	
Travel Time (s)	29.4			36.4	16.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	13%	0%	0%	0%	0%
Adj. Flow (vph)	93	9	1	104	7	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	102	0	0	105	8	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	10	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.21	1.21	1.21	1.21	1.20	1.20
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	16.1%
Analysis Period (min)	15
	ICU Level of Service A

5: Shiloh Hill Drive & Little Shiloh Road  
 2028 Traffic Volumes without Development - PM Peak










Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	87	8	1	98	6	1
Future Vol, veh/h	87	8	1	98	6	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	-2	4	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	13	0	0	0	0
Mvmt Flow	97	9	1	109	7	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	106	0	213
Stage 1	-	-	-	-	102
Stage 2	-	-	-	-	111
Critical Hdwy	-	-	4.3	-	7.2
Critical Hdwy Stg 1	-	-	-	-	6.2
Critical Hdwy Stg 2	-	-	-	-	6.2
Follow-up Hdwy	-	-	3	-	3
Pot Cap-1 Maneuver	-	-	1105	-	855
Stage 1	-	-	-	-	1050
Stage 2	-	-	-	-	1038
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1105	-	854
Mov Cap-2 Maneuver	-	-	-	-	854
Stage 1	-	-	-	-	1050
Stage 2	-	-	-	-	1037

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	873	-	-	1105	-
HCM Lane V/C Ratio	0.009	-	-	0.001	-
HCM Control Delay (s)	9.2	-	-	8.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

5: Shiloh Hill Drive & Little Shiloh Road  
 2028 Traffic Volumes without Development - PM Peak

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	87	8	1	98	6	1
Future Volume (vph)	87	8	1	98	6	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	9	9	9	9	10	10
Grade (%)	-2%			-2%	4%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.989				0.983	
Flt Protected					0.958	
Satd. Flow (prot)	1601	0	0	1636	1550	0
Flt Permitted					0.958	
Satd. Flow (perm)	1601	0	0	1636	1550	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	1077			1334	597	
Travel Time (s)	29.4			36.4	16.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	13%	0%	0%	0%	0%
Adj. Flow (vph)	97	9	1	109	7	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	106	0	0	110	8	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	10	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.21	1.21	1.21	1.21	1.20	1.20
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	16.3%			ICU Level of Service A		
Analysis Period (min)	15					

5: Shiloh Hill Drive & Little Shiloh Road  
 2028 Traffic Volumes with Development - PM Peak

Intersection

Int Delay, s/veh 0.4

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	93	8	1	108	6	1
Future Vol, veh/h	93	8	1	108	6	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	-2	4	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	13	0	0	0	0
Mvmt Flow	103	9	1	120	7	1

Major/Minor Major1 Major2 Minor1

Conflicting Flow All	0	0	112	0	230	108
Stage 1	-	-	-	-	108	-
Stage 2	-	-	-	-	122	-
Critical Hdwy	-	-	4.3	-	7.2	6.6
Critical Hdwy Stg 1	-	-	-	-	6.2	-
Critical Hdwy Stg 2	-	-	-	-	6.2	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	1099	-	832	998
Stage 1	-	-	-	-	1042	-
Stage 2	-	-	-	-	1023	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1099	-	831	998
Mov Cap-2 Maneuver	-	-	-	-	831	-
Stage 1	-	-	-	-	1042	-
Stage 2	-	-	-	-	1022	-

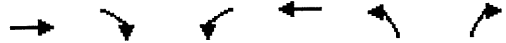
Approach EB WB NB

HCM Control Delay, s	0	0.1	9.3
HCM LOS			A

Minor Lane/Major Mvmt NBLn1 EBT EBR WBL WBT

Capacity (veh/h)	851	-	-	1099	-
HCM Lane V/C Ratio	0.009	-	-	0.001	-
HCM Control Delay (s)	9.3	-	-	8.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

5: Shiloh Hill Drive & Little Shiloh Road  
 2028 Traffic Volumes with Development - PM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (vph)	93	8	1	108	6	1
Future Volume (vph)	93	8	1	108	6	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	9	9	9	9	10	10
Grade (%)	-2%			-2%	4%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.989				0.983	
Flt Protected					0.958	
Satd. Flow (prot)	1601	0	0	1636	1550	0
Flt Permitted					0.958	
Satd. Flow (perm)	1601	0	0	1636	1550	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	1077			1334	597	
Travel Time (s)	29.4			36.4	16.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	13%	0%	0%	0%	0%
Adj. Flow (vph)	103	9	1	120	7	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	112	0	0	121	8	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	10	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.21	1.21	1.21	1.21	1.20	1.20
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other  
 Control Type: Unsignalized  
 Intersection Capacity Utilization 16.8% ICU Level of Service A  
 Analysis Period (min) 15



5: Shiloh Hill Drive & Little Shiloh Road  
 2033 Traffic Volumes without Development - PM Peak

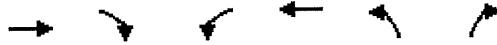
Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	90	9	1	100	6	1
Future Vol, veh/h	90	9	1	100	6	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	-2	4	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	13	0	0	0	0
Mvmt Flow	100	10	1	111	7	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	110	0	218
Stage 1	-	-	-	-	105
Stage 2	-	-	-	-	113
Critical Hdwy	-	-	4.3	-	7.2
Critical Hdwy Stg 1	-	-	-	-	6.2
Critical Hdwy Stg 2	-	-	-	-	6.2
Follow-up Hdwy	-	-	3	-	3
Pot Cap-1 Maneuver	-	-	1101	-	849
Stage 1	-	-	-	-	1046
Stage 2	-	-	-	-	1035
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1101	-	848
Mov Cap-2 Maneuver	-	-	-	-	848
Stage 1	-	-	-	-	1046
Stage 2	-	-	-	-	1034

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	867	-	-	1101	-
HCM Lane V/C Ratio	0.009	-	-	0.001	-
HCM Control Delay (s)	9.2	-	-	8.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

5: Shiloh Hill Drive & Little Shiloh Road  
 2033 Traffic Volumes without Development - PM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↘	↙
Traffic Volume (vph)	90	9	1	100	6	1
Future Volume (vph)	90	9	1	100	6	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	9	9	9	9	10	10
Grade (%)	-2%			-2%	4%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.988				0.983	
Flt Protected					0.958	
Satd. Flow (prot)	1598	0	0	1636	1550	0
Flt Permitted					0.958	
Satd. Flow (perm)	1598	0	0	1636	1550	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	1077			1334	597	
Travel Time (s)	29.4			36.4	16.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	13%	0%	0%	0%	0%
Adj. Flow (vph)	100	10	1	111	7	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	110	0	0	112	8	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	10	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.21	1.21	1.21	1.21	1.20	1.20
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	16.4%
Analysis Period (min)	15
	ICU Level of Service A

5: Shiloh Hill Drive & Little Shiloh Road  
 2033 Traffic Volumes with Development - PM Peak

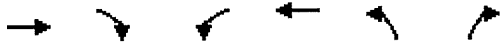
Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶			↷	↶	↷
Traffic Vol, veh/h	96	9	1	110	6	1
Future Vol, veh/h	96	9	1	110	6	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	-2	4	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	13	0	0	0	0
Mvmt Flow	107	10	1	122	7	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	117	0	236
Stage 1	-	-	-	-	112
Stage 2	-	-	-	-	124
Critical Hdwy	-	-	4.3	-	7.2
Critical Hdwy Stg 1	-	-	-	-	6.2
Critical Hdwy Stg 2	-	-	-	-	6.2
Follow-up Hdwy	-	-	3	-	3
Pot Cap-1 Maneuver	-	-	1095	-	825
Stage 1	-	-	-	-	1036
Stage 2	-	-	-	-	1020
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1095	-	824
Mov Cap-2 Maneuver	-	-	-	-	824
Stage 1	-	-	-	-	1036
Stage 2	-	-	-	-	1019

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	844	-	-	1095	-
HCM Lane V/C Ratio	0.009	-	-	0.001	-
HCM Control Delay (s)	9.3	-	-	8.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

5: Shiloh Hill Drive & Little Shiloh Road  
 2033 Traffic Volumes with Development - PM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	96	9	1	110	6	1
Future Volume (vph)	96	9	1	110	6	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	9	9	9	9	10	10
Grade (%)	-2%			-2%	4%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.988				0.983	
Flt Protected					0.958	
Satd. Flow (prot)	1599	0	0	1636	1550	0
Flt Permitted					0.958	
Satd. Flow (perm)	1599	0	0	1636	1550	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	1077			1334	597	
Travel Time (s)	29.4			36.4	16.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	13%	0%	0%	0%	0%
Adj. Flow (vph)	107	10	1	122	7	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	117	0	0	123	8	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	10	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.21	1.21	1.21	1.21	1.20	1.20
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	17.0%
Analysis Period (min)	15
	ICU Level of Service A

6: Westtown Road & Little Shiloh Road/Falcoln Lane  
Existing Traffic Volumes - AM Peak

















Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕↕			↕↕			↕↕			↕↕		
Traffic Vol, veh/h	4	15	60	16	19	12	33	294	17	9	248	1
Future Vol, veh/h	4	15	60	16	19	12	33	294	17	9	248	1
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, %	-	-4	-	-	4	-	-	2	-	-	-1	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	25	0	0	0	16	17	3	3	0	11	4	100
Mvmt Flow	4	16	66	18	21	13	36	323	19	10	273	1

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	716	708	274	740	699	333	274	0	0	342	0	0
Stage 1	294	294	-	405	405	-	-	-	-	-	-	-
Stage 2	422	414	-	335	294	-	-	-	-	-	-	-
Critical Hdwy	6.6	5.7	5.8	7.9	7.46	6.77	4.3	-	-	4.4	-	-
Critical Hdwy Stg 1	5.55	4.7	-	6.9	6.46	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.55	4.7	-	6.9	6.46	-	-	-	-	-	-	-
Follow-up Hdwy	3.2	4	3.1	3	4.144	3.3	3	-	-	3.1	-	-
Pot Cap-1 Maneuver	409	424	838	317	297	677	968	-	-	883	-	-
Stage 1	812	719	-	651	525	-	-	-	-	-	-	-
Stage 2	704	654	-	724	604	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	362	399	838	270	280	677	968	-	-	883	-	-
Mov Cap-2 Maneuver	362	399	-	270	280	-	-	-	-	-	-	-
Stage 1	775	710	-	621	501	-	-	-	-	-	-	-
Stage 2	631	624	-	643	596	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	11.3		18.2		0.9		0.3	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	968	-	-	657	324	883	-	-
HCM Lane V/C Ratio	0.037	-	-	0.132	0.159	0.011	-	-
HCM Control Delay (s)	8.9	0	-	11.3	18.2	9.1	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.6	0	-	-

6: Westtown Road & Little Shiloh Road/Falcoln Lane  
 Existing Traffic Volumes - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	15	60	16	19	12	33	294	17	9	248	1
Future Volume (vph)	4	15	60	16	19	12	33	294	17	9	248	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	10	10	10	10	10	10
Grade (%)		-4%			4%			2%			-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.896			0.966			0.993				
Flt Protected		0.998			0.983			0.995			0.998	
Satd. Flow (prot)	0	1515	0	0	1513	0	0	1598	0	0	1611	0
Flt Permitted		0.998			0.983			0.995			0.998	
Satd. Flow (perm)	0	1515	0	0	1513	0	0	1598	0	0	1611	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1334			1906			874			1028	
Travel Time (s)		36.4			52.0			17.0			20.0	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	25%	0%	0%	0%	16%	17%	3%	3%	0%	11%	4%	100%
Adj. Flow (vph)	4	16	66	18	21	13	36	323	19	10	273	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	86	0	0	52	0	0	378	0	0	284	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.10	1.10	1.10	1.19	1.19	1.19	1.16	1.16	1.16
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	48.2%						ICU Level of Service A					
Analysis Period (min)	15											

6: Westtown Road & Little Shiloh Road/Falcoln Lane  
 2028 Traffic Volumes without Development - AM Peak

















Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕↔			↕↔			↕↔			↕↔		
Traffic Vol, veh/h	4	16	62	17	20	12	34	305	18	9	258	1
Future Vol, veh/h	4	16	62	17	20	12	34	305	18	9	258	1
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, %	-	-4	-	-	4	-	-	2	-	-	-1	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	25	0	0	0	16	17	3	3	0	11	4	100
Mvmt Flow	4	18	68	19	22	13	37	335	20	10	284	1

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	742	734	285	767	724	345	285	0	0	355	0	0
Stage 1	305	305	-	419	419	-	-	-	-	-	-	-
Stage 2	437	429	-	348	305	-	-	-	-	-	-	-
Critical Hdwy	6.6	5.7	5.8	7.9	7.46	6.77	4.3	-	-	4.4	-	-
Critical Hdwy Stg 1	5.55	4.7	-	6.9	6.46	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.55	4.7	-	6.9	6.46	-	-	-	-	-	-	-
Follow-up Hdwy	3.2	4	3.1	3	4.144	3.3	3	-	-	3.1	-	-
Pot Cap-1 Maneuver	394	412	827	302	286	665	959	-	-	873	-	-
Stage 1	803	713	-	637	516	-	-	-	-	-	-	-
Stage 2	692	646	-	710	596	-	-	-	-	-	-	-
Platoon blocked, %	-											
Mov Cap-1 Maneuver	345	387	827	255	269	665	959	-	-	873	-	-
Mov Cap-2 Maneuver	345	387	-	255	269	-	-	-	-	-	-	-
Stage 1	764	703	-	606	491	-	-	-	-	-	-	-
Stage 2	617	615	-	626	588	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	11.5		19.1		0.8		0.3	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	959	-	-	641	308	873	-	-
HCM Lane V/C Ratio	0.039	-	-	0.141	0.175	0.011	-	-
HCM Control Delay (s)	8.9	0	-	11.5	19.1	9.2	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.6	0	-	-

6: Westtown Road & Little Shiloh Road/Falcoln Lane  
 2028 Traffic Volumes without Development - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	16	62	17	20	12	34	305	18	9	258	1
Future Volume (vph)	4	16	62	17	20	12	34	305	18	9	258	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	10	10	10	10	10	10
Grade (%)		-4%			4%			2%			-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr't		0.898			0.967			0.993				
Flt Protected		0.998			0.983			0.995			0.998	
Sat'd. Flow (prot)	0	1519	0	0	1516	0	0	1598	0	0	1611	0
Flt Permitted		0.998			0.983			0.995			0.998	
Sat'd. Flow (perm)	0	1519	0	0	1516	0	0	1598	0	0	1611	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1334			1906			874			1028	
Travel Time (s)		36.4			52.0			17.0			20.0	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	25%	0%	0%	0%	16%	17%	3%	3%	0%	11%	4%	100%
Adj. Flow (vph)	4	18	68	19	22	13	37	335	20	10	284	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	90	0	0	54	0	0	392	0	0	295	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.10	1.10	1.10	1.19	1.19	1.19	1.16	1.16	1.16
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	50.0%
Analysis Period (min)	15
	ICU Level of Service A



6: Westtown Road & Little Shiloh Road/Falcoln Lane  
 2028 Traffic Volumes with Development - AM Peak













Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Vol, veh/h	13	16	62	17	20	12	34	305	18	9	258	4
Future Vol, veh/h	13	16	62	17	20	12	34	305	18	9	258	4
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, %	-	-4	-	-	4	-	-	2	-	-	-1	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	25	0	0	0	16	17	3	3	0	11	4	100
Mvmt Flow	14	18	68	19	22	13	37	335	20	10	284	4

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	743	735	286	768	727	345	288	0	0	355	0	0
Stage 1	306	306	-	419	419	-	-	-	-	-	-	-
Stage 2	437	429	-	349	308	-	-	-	-	-	-	-
Critical Hdwy	6.6	5.7	5.8	7.9	7.46	6.77	4.3	-	-	4.4	-	-
Critical Hdwy Stg 1	5.55	4.7	-	6.9	6.46	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.55	4.7	-	6.9	6.46	-	-	-	-	-	-	-
Follow-up Hdwy	3.2	4	3.1	3	4.144	3.3	3	-	-	3.1	-	-
Pot Cap-1 Maneuver	394	411	826	301	284	665	957	-	-	873	-	-
Stage 1	802	712	-	637	516	-	-	-	-	-	-	-
Stage 2	692	646	-	708	594	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	345	386	826	254	267	665	957	-	-	873	-	-
Mov Cap-2 Maneuver	345	386	-	254	267	-	-	-	-	-	-	-
Stage 1	764	702	-	606	491	-	-	-	-	-	-	-
Stage 2	617	615	-	624	586	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.3		19.3		0.8		0.3	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	957	-	-	590	306	873	-	-
HCM Lane V/C Ratio	0.039	-	-	0.169	0.176	0.011	-	-
HCM Control Delay (s)	8.9	0	-	12.3	19.3	9.2	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.6	0	-	-

6: Westtown Road & Little Shiloh Road/Falcoln Lane  
 2028 Traffic Volumes with Development - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	13	16	62	17	20	12	34	305	18	9	258	4
Future Volume (vph)	13	16	62	17	20	12	34	305	18	9	258	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	10	10	10	10	10	10
Grade (%)		-4%			4%			2%			-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.908			0.967			0.993			0.998	
Fit Protected		0.993			0.983			0.995			0.998	
Satd. Flow (prot)	0	1493	0	0	1516	0	0	1598	0	0	1594	0
Fit Permitted		0.993			0.983			0.995			0.998	
Satd. Flow (perm)	0	1493	0	0	1516	0	0	1598	0	0	1594	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1334			1906			874			1028	
Travel Time (s)		36.4			52.0			17.0			20.0	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	25%	0%	0%	0%	16%	17%	3%	3%	0%	11%	4%	100%
Adj. Flow (vph)	14	18	68	19	22	13	37	335	20	10	284	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	100	0	0	54	0	0	392	0	0	298	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.10	1.10	1.10	1.19	1.19	1.19	1.16	1.16	1.16
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	46.7%
Analysis Period (min)	15
	ICU Level of Service A

6: Westtown Road & Little Shiloh Road/Falcoln Lane  
 2033 Traffic Volumes without Development - AM Peak













Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕↕		↕↕			↕↕			↕↕			
Traffic Vol, veh/h	4	16	64	17	20	13	35	314	18	10	265	1
Future Vol, veh/h	4	16	64	17	20	13	35	314	18	10	265	1
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, %	-	-4	-	-	4	-	-	2	-	-	-1	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	25	0	0	0	16	17	3	3	0	11	4	100
Mvmt Flow	4	18	70	19	22	14	38	345	20	11	291	1

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	763	755	292	789	745	355	292	0	0	365	0	0
Stage 1	314	314	-	431	431	-	-	-	-	-	-	-
Stage 2	449	441	-	358	314	-	-	-	-	-	-	-
Critical Hdwy	6.6	5.7	5.8	7.9	7.46	6.77	4.3	-	-	4.4	-	-
Critical Hdwy Stg 1	5.55	4.7	-	6.9	6.46	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.55	4.7	-	6.9	6.46	-	-	-	-	-	-	-
Follow-up Hdwy	3.2	4	3.1	3	4.144	3.3	3	-	-	3.1	-	-
Pot Cap-1 Maneuver	382	402	821	290	276	656	954	-	-	866	-	-
Stage 1	795	708	-	625	508	-	-	-	-	-	-	-
Stage 2	683	640	-	699	589	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	332	376	821	243	258	656	954	-	-	866	-	-
Mov Cap-2 Maneuver	332	376	-	243	258	-	-	-	-	-	-	-
Stage 1	755	697	-	594	483	-	-	-	-	-	-	-
Stage 2	606	608	-	614	580	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.6	19.7	0.9	0.3
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	954	-	-	634	299	866	-	-
HCM Lane V/C Ratio	0.04	-	-	0.146	0.184	0.013	-	-
HCM Control Delay (s)	8.9	0	-	11.6	19.7	9.2	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.7	0	-	-

6: Westtown Road & Little Shiloh Road/Falcoln Lane  
 2033 Traffic Volumes without Development - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	4	16	64	17	20	13	35	314	18	10	265	1
Future Volume (vph)	4	16	64	17	20	13	35	314	18	10	265	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	10	10	10	10	10	10
Grade (%)		-4%			4%			2%			-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.897			0.966			0.993				
Flt Protected		0.998			0.983			0.995			0.998	
Satd. Flow (prot)	0	1518	0	0	1513	0	0	1598	0	0	1611	0
Flt Permitted		0.998			0.983			0.995			0.998	
Satd. Flow (perm)	0	1518	0	0	1513	0	0	1598	0	0	1611	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1334			1906			874			1028	
Travel Time (s)		36.4			52.0			17.0			20.0	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	25%	0%	0%	0%	16%	17%	3%	3%	0%	11%	4%	100%
Adj. Flow (vph)	4	18	70	19	22	14	38	345	20	11	291	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	92	0	0	55	0	0	403	0	0	303	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.10	1.10	1.10	1.19	1.19	1.19	1.16	1.16	1.16
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	50.5%						ICU Level of Service A					
Analysis Period (min)	15											

6: Westtown Road & Little Shiloh Road/Falcoln Lane  
 2033 Traffic Volumes with Development - AM Peak













Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	13	16	64	17	20	13	35	314	18	10	265	4
Future Vol, veh/h	13	16	64	17	20	13	35	314	18	10	265	4
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, %	-	-4	-	-	4	-	-	2	-	-	-1	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	25	0	0	0	16	17	3	3	0	11	4	100
Mvmt Flow	14	18	70	19	22	14	38	345	20	11	291	4

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	764	756	293	790	748	355	295	0	0	365	0	0
Stage 1	315	315	-	431	431	-	-	-	-	-	-	-
Stage 2	449	441	-	359	317	-	-	-	-	-	-	-
Critical Hdwy	6.6	5.7	5.8	7.9	7.46	6.77	4.3	-	-	4.4	-	-
Critical Hdwy Stg 1	5.55	4.7	-	6.9	6.46	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.55	4.7	-	6.9	6.46	-	-	-	-	-	-	-
Follow-up Hdwy	3.2	4	3.1	3	4.144	3.3	3	-	-	3.1	-	-
Pot Cap-1 Maneuver	382	402	820	289	275	656	952	-	-	866	-	-
Stage 1	794	707	-	625	508	-	-	-	-	-	-	-
Stage 2	683	640	-	698	587	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	332	376	820	242	257	656	952	-	-	866	-	-
Mov Cap-2 Maneuver	332	376	-	242	257	-	-	-	-	-	-	-
Stage 1	754	696	-	594	483	-	-	-	-	-	-	-
Stage 2	606	608	-	613	578	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.5	19.8	0.9	0.3
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	952	-	-	582	298	866	-
HCM Lane V/C Ratio	0.04	-	-	0.176	0.184	0.013	-
HCM Control Delay (s)	8.9	0	-	12.5	19.8	9.2	0
HCM Lane LOS	A	A	-	B	C	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.7	0	-

6: Westtown Road & Little Shiloh Road/Falcoln Lane  
 2033 Traffic Volumes with Development - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	13	16	64	17	20	13	35	314	18	10	265	4
Future Volume (vph)	13	16	64	17	20	13	35	314	18	10	265	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	10	10	10	10	10	10
Grade (%)		-4%			4%			2%			-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.907			0.966			0.993			0.998	
Flt Protected		0.993			0.983			0.995			0.998	
Satd. Flow (prot)	0	1492	0	0	1513	0	0	1598	0	0	1594	0
Flt Permitted		0.993			0.983			0.995			0.998	
Satd. Flow (perm)	0	1492	0	0	1513	0	0	1598	0	0	1594	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1334			1906			874			1028	
Travel Time (s)		36.4			52.0			17.0			20.0	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	25%	0%	0%	0%	16%	17%	3%	3%	0%	11%	4%	100%
Adj. Flow (vph)	14	18	70	19	22	14	38	345	20	11	291	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	102	0	0	55	0	0	403	0	0	306	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.10	1.10	1.10	1.19	1.19	1.19	1.16	1.16	1.16
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	47.2%						ICU Level of Service A					
Analysis Period (min)	15											

6: Westtown Road & Little Shiloh Road/Falcoln Lane  
Existing Traffic Volumes - PM Peak

















Intersection												
Int Delay, s/veh	4.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	6	29	62	19	44	13	48	281	21	27	289	1
Future Vol, veh/h	6	29	62	19	44	13	48	281	21	27	289	1
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, %	-	-4	-	-	4	-	-	2	-	-	-1	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	5	0	0	0	1	0	0	1	0
Mvmt Flow	6	31	67	20	47	14	52	302	23	29	311	1

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	818	799	312	837	788	314	312	0	0	325	0	0
Stage 1	370	370	-	418	418	-	-	-	-	-	-	-
Stage 2	448	429	-	419	370	-	-	-	-	-	-	-
Critical Hdwy	6.3	5.7	5.8	8	7.3	6.6	4.3	-	-	4.4	-	-
Critical Hdwy Stg 1	5.3	4.7	-	6.95	6.3	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.3	4.7	-	6.95	6.3	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	4	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	395	383	801	259	273	745	939	-	-	921	-	-
Stage 1	809	677	-	634	541	-	-	-	-	-	-	-
Stage 2	744	646	-	633	574	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	305	344	801	204	245	745	939	-	-	921	-	-
Mov Cap-2 Maneuver	305	344	-	204	245	-	-	-	-	-	-	-
Stage 1	754	651	-	591	504	-	-	-	-	-	-	-
Stage 2	617	602	-	532	552	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.4	24.8	1.2	0.8
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	939	-	-	535	262	921	-	-
HCM Lane V/C Ratio	0.055	-	-	0.195	0.312	0.032	-	-
HCM Control Delay (s)	9.1	0	-	13.4	24.8	9	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.7	1.3	0.1	-	-

6: Westtown Road & Little Shiloh Road/Falcoln Lane  
Existing Traffic Volumes - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	29	62	19	44	13	48	281	21	27	289	1
Future Volume (vph)	6	29	62	19	44	13	48	281	21	27	289	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	10	10	10	10	10	10
Grade (%)		-4%			4%			2%			-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.913			0.977			0.992			0.996	
Flt Protected		0.997			0.988			0.993			0.996	
Satd. Flow (prot)	0	1560	0	0	1682	0	0	1625	0	0	1666	0
Flt Permitted		0.997			0.988			0.993			0.996	
Satd. Flow (perm)	0	1560	0	0	1682	0	0	1625	0	0	1666	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1334			1906			874			1028	
Travel Time (s)		36.4			52.0			17.0			20.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	0%	5%	0%	0%	0%	1%	0%	0%	1%	0%
Adj. Flow (vph)	6	31	67	20	47	14	52	302	23	29	311	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	104	0	0	81	0	0	377	0	0	341	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.10	1.10	1.10	1.19	1.19	1.19	1.16	1.16	1.16
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	47.5%						ICU Level of Service A					
Analysis Period (min)	15											



6: Westtown Road & Little Shiloh Road/Falcoln Lane  
 2028 Traffic Volumes without Development - PM Peak

Intersection												
Int Delay, s/veh	4.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	30	64	20	46	13	50	292	22	28	300	1
Future Vol, veh/h	6	30	64	20	46	13	50	292	22	28	300	1
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, %	-	-4	-	-	4	-	-	2	-	-	-1	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	5	0	0	0	1	0	0	1	0
Mvmt Flow	6	32	69	22	49	14	54	314	24	30	323	1

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	850	830	324	868	818	326	324	0	0	338	0	0
Stage 1	384	384	-	434	434	-	-	-	-	-	-	-
Stage 2	466	446	-	434	384	-	-	-	-	-	-	-
Critical Hdwy	6.3	5.7	5.8	8	7.3	6.6	4.3	-	-	4.4	-	-
Critical Hdwy Stg 1	5.3	4.7	-	6.95	6.3	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.3	4.7	-	6.95	6.3	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	4	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	378	370	790	245	261	733	930	-	-	911	-	-
Stage 1	797	670	-	619	531	-	-	-	-	-	-	-
Stage 2	729	638	-	619	565	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	285	330	790	190	233	733	930	-	-	911	-	-
Mov Cap-2 Maneuver	285	330	-	190	233	-	-	-	-	-	-	-
Stage 1	740	643	-	574	493	-	-	-	-	-	-	-
Stage 2	597	592	-	515	542	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.8	27	1.3	0.8
HCM LOS	B	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	930	-	-	518	247	911	-
HCM Lane V/C Ratio	0.058	-	-	0.208	0.344	0.033	-
HCM Control Delay (s)	9.1	0	-	13.8	27	9.1	0
HCM Lane LOS	A	A	-	B	D	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.8	1.5	0.1	-

6: Westtown Road & Little Shiloh Road/Falcoln Lane  
 2028 Traffic Volumes without Development - PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	6	30	64	20	46	13	50	292	22	28	300	1
Future Volume (vph)	6	30	64	20	46	13	50	292	22	28	300	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	10	10	10	10	10	10
Grade (%)		-4%			4%			2%			-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.913			0.978			0.992				
Flt Protected		0.997			0.987			0.993			0.996	
Satd. Flow (prot)	0	1560	0	0	1681	0	0	1625	0	0	1666	0
Flt Permitted		0.997			0.987			0.993			0.996	
Satd. Flow (perm)	0	1560	0	0	1681	0	0	1625	0	0	1666	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1334			1906			874			1028	
Travel Time (s)		36.4			52.0			17.0			20.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	0%	5%	0%	0%	0%	1%	0%	0%	1%	0%
Adj. Flow (vph)	6	32	69	22	49	14	54	314	24	30	323	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	107	0	0	85	0	0	392	0	0	354	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.10	1.10	1.10	1.19	1.19	1.19	1.16	1.16	1.16
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	49.4%
Analysis Period (min)	15
	ICU Level of Service A

6: Westtown Road & Little Shiloh Road/Falcoln Lane  
 2028 Traffic Volumes with Development - PM Peak













Intersection												
Int Delay, s/veh	5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	12	30	64	20	46	13	50	292	22	28	300	11
Future Vol, veh/h	12	30	64	20	46	13	50	292	22	28	300	11
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, %	-	-4	-	-	4	-	-	2	-	-	-1	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	5	0	0	0	1	0	0	1	0
Mvmt Flow	13	32	69	22	49	14	54	314	24	30	323	12

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	855	835	329	874	829	326	335	0	0	338	0	0
Stage 1	389	389	-	434	434	-	-	-	-	-	-	-
Stage 2	466	446	-	440	395	-	-	-	-	-	-	-
Critical Hdwy	6.3	5.7	5.8	8	7.3	6.6	4.3	-	-	4.4	-	-
Critical Hdwy Stg 1	5.3	4.7	-	6.95	6.3	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.3	4.7	-	6.95	6.3	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	4	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	376	368	785	242	256	733	922	-	-	911	-	-
Stage 1	792	667	-	619	531	-	-	-	-	-	-	-
Stage 2	729	638	-	613	557	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	282	328	785	187	228	733	922	-	-	911	-	-
Mov Cap-2 Maneuver	282	328	-	187	228	-	-	-	-	-	-	-
Stage 1	735	640	-	574	493	-	-	-	-	-	-	-
Stage 2	597	592	-	509	534	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.5	27.7	1.3	0.8
HCM LOS	B	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	922	-	-	492	242	911	-	-
HCM Lane V/C Ratio	0.058	-	-	0.232	0.351	0.033	-	-
HCM Control Delay (s)	9.1	0	-	14.5	27.7	9.1	0	-
HCM Lane LOS	A	A	-	B	D	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.9	1.5	0.1	-	-

6: Westtown Road & Little Shiloh Road/Falcoln Lane  
 2028 Traffic Volumes with Development - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	12	30	64	20	46	13	50	292	22	28	300	11
Future Volume (vph)	12	30	64	20	46	13	50	292	22	28	300	11
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	10	10	10	10	10	10
Grade (%)		-4%			4%			2%				-1%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.918			0.978			0.992			0.996	
Flt Protected		0.994			0.987			0.993			0.996	
Satd. Flow (prot)	0	1564	0	0	1681	0	0	1625	0	0	1660	0
Flt Permitted		0.994			0.987			0.993			0.996	
Satd. Flow (perm)	0	1564	0	0	1681	0	0	1625	0	0	1660	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1334			1906			874			1028	
Travel Time (s)		36.4			52.0			17.0			20.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	0%	5%	0%	0%	0%	1%	0%	0%	1%	0%
Adj. Flow (vph)	13	32	69	22	49	14	54	314	24	30	323	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	114	0	0	85	0	0	392	0	0	365	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.10	1.10	1.10	1.19	1.19	1.19	1.16	1.16	1.16
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	47.0%						ICU Level of Service A					
Analysis Period (min)	15											

6: Westtown Road & Little Shiloh Road/Falcoln Lane  
 2033 Traffic Volumes without Development - PM Peak













Intersection												
Int Delay, s/veh	5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	6	31	66	20	47	14	51	300	22	29	308	1
Future Vol, veh/h	6	31	66	20	47	14	51	300	22	29	308	1
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, %	-	-4	-	-	4	-	-	2	-	-	-1	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	5	0	0	0	1	0	0	1	0
Mvmt Flow	6	33	71	22	51	15	55	323	24	31	331	1

Major/Minor	Minor2	Minor1		Major1		Major2						
Conflicting Flow All	872	851	332	891	839	335	332	0	0	347	0	0
Stage 1	394	394	-	445	445	-	-	-	-	-	-	-
Stage 2	478	457	-	446	394	-	-	-	-	-	-	-
Critical Hdwy	6.3	5.7	5.8	8	7.3	6.6	4.3	-	-	4.4	-	-
Critical Hdwy Stg 1	5.3	4.7	-	6.95	6.3	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.3	4.7	-	6.95	6.3	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	4	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	367	362	782	235	252	723	924	-	-	904	-	-
Stage 1	788	664	-	608	524	-	-	-	-	-	-	-
Stage 2	720	632	-	607	558	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	272	321	782	180	224	723	924	-	-	904	-	-
Mov Cap-2 Maneuver	272	321	-	180	224	-	-	-	-	-	-	-
Stage 1	730	636	-	563	485	-	-	-	-	-	-	-
Stage 2	585	585	-	501	535	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.1	28.6	1.2	0.8
HCM LOS	B	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	924	-	-	507	238	904	-
HCM Lane V/C Ratio	0.059	-	-	0.218	0.366	0.034	-
HCM Control Delay (s)	9.1	0	-	14.1	28.6	9.1	0
HCM Lane LOS	A	A	-	B	D	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.8	1.6	0.1	-

6: Westtown Road & Little Shiloh Road/Falcoln Lane  
 2033 Traffic Volumes without Development - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	6	31	66	20	47	14	51	300	22	29	308	1
Future Volume (vph)	6	31	66	20	47	14	51	300	22	29	308	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	10	10	10	10	10	10
Grade (%)		-4%			4%			2%			-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frnt		0.913			0.977			0.992				
Flt Protected		0.997			0.988			0.993			0.996	
Satd. Flow (prot)	0	1560	0	0	1682	0	0	1625	0	0	1666	0
Flt Permitted		0.997			0.988			0.993			0.996	
Satd. Flow (perm)	0	1560	0	0	1682	0	0	1625	0	0	1666	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1334			1906			874			1028	
Travel Time (s)		36.4			52.0			17.0			20.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	0%	5%	0%	0%	0%	1%	0%	0%	1%	0%
Adj. Flow (vph)	6	33	71	22	51	15	55	323	24	31	331	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	110	0	0	88	0	0	402	0	0	363	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.10	1.10	1.10	1.19	1.19	1.19	1.16	1.16	1.16
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	50.2%						ICU Level of Service A					
Analysis Period (min)	15											

6: Westtown Road & Little Shiloh Road/Falcoln Lane  
 2033 Traffic Volumes with Development - PM Peak













Intersection												
Int Delay, s/veh	5.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕↔			↕↔			↕↔			↕↔		
Traffic Vol, veh/h	12	31	66	20	47	14	51	300	22	29	308	11
Future Vol, veh/h	12	31	66	20	47	14	51	300	22	29	308	11
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, %	-	-4	-	-	4	-	-	2	-	-	-1	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	5	0	0	0	1	0	0	1	0
Mvmt Flow	13	33	71	22	51	15	55	323	24	31	331	12

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	877	856	337	896	850	335	343	0	0	347	0	0
Stage 1	399	399	-	445	445	-	-	-	-	-	-	-
Stage 2	478	457	-	451	405	-	-	-	-	-	-	-
Critical Hdwy	6.3	5.7	5.8	8	7.3	6.6	4.3	-	-	4.4	-	-
Critical Hdwy Stg 1	5.3	4.7	-	6.95	6.3	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.3	4.7	-	6.95	6.3	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	4	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	365	360	777	233	248	723	916	-	-	904	-	-
Stage 1	784	662	-	608	524	-	-	-	-	-	-	-
Stage 2	720	632	-	603	550	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	269	319	777	178	220	723	916	-	-	904	-	-
Mov Cap-2 Maneuver	269	319	-	178	220	-	-	-	-	-	-	-
Stage 1	725	634	-	562	485	-	-	-	-	-	-	-
Stage 2	584	585	-	497	527	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.9	29.1	1.3	0.8
HCM LOS	B	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	916	-	-	481	235	904	-
HCM Lane V/C Ratio	0.06	-	-	0.244	0.371	0.034	-
HCM Control Delay (s)	9.2	0	-	14.9	29.1	9.1	0
HCM Lane LOS	A	A	-	B	D	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.9	1.6	0.1	-

6: Westtown Road & Little Shiloh Road/Falcoln Lane  
 2033 Traffic Volumes with Development - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	12	31	66	20	47	14	51	300	22	29	308	11
Future Volume (vph)	12	31	66	20	47	14	51	300	22	29	308	11
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	10	10	10	10	10	10
Grade (%)		-4%			4%			2%			-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frnt		0.918			0.977			0.992			0.996	
Flt Protected		0.994			0.988			0.993			0.996	
Satd. Flow (prot)	0	1564	0	0	1682	0	0	1625	0	0	1660	0
Flt Permitted		0.994			0.988			0.993			0.996	
Satd. Flow (perm)	0	1564	0	0	1682	0	0	1625	0	0	1660	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1334			1906			874			1028	
Travel Time (s)		36.4			52.0			17.0			20.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	0%	5%	0%	0%	0%	1%	0%	0%	1%	0%
Adj. Flow (vph)	13	33	71	22	51	15	55	323	24	31	331	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	117	0	0	88	0	0	402	0	0	374	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.10	1.10	1.10	1.19	1.19	1.19	1.16	1.16	1.16
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	47.9%						ICU Level of Service A					
Analysis Period (min)	15											



## TURN LANE ANALYSIS WORKSHEETS

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## Turn Lane Warrant and Length Analysis Workbook

### STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="4/18/2023"/> Conducted By: <input type="text" value="LJS"/> Checked By: <input type="text" value="JAS"/> Agency/Company Name: <input type="text" value="TRG, Inc."/>
Intersection & Approach Description: <input type="text" value="Shiloh Road (T-626) / Hunt Drive - Proposed Road A NORTHBOUND"/>	
Analysis Period: <input type="text" value="2033 Build"/> Design Hour: <input type="text" value="AM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="30"/> Type of Terrain: <input type="text" value="Rolling"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> Type of Analysis: <input type="text" value="Left Turn Lane"/> Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

### VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	6	0.0%	6
	Through	-	230	3.0%	241
	Right	Yes	10	33.0%	15
Opposing	Left	Yes	2	2.0%	3
	Through	-	328	3.0%	343
	Right	Yes	2	0.0%	2

Advancing Volume:	<input type="text" value="262"/>
Opposing Volume:	<input type="text" value="348"/>
Left Turn Volume:	<input type="text" value="6"/>
% Left Turns in Advancing Volume:	<input type="text" value="2.29%"/>

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	6	0.0%	N/A
	Through	-	230	3.0%	N/A
	Right	-	10	33.0%	N/A

Advancing Volume:	<input type="text" value="N/A"/>
Right Turn Volume:	<input type="text" value="N/A"/>

### TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="Figure 1"/> Warrant Met?: <input type="text" value="No"/>	Applicable Warrant Figure: <input type="text" value="N/A"/> Warrant Met?: <input type="text" value="N/A"/>

### TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="6"/> Cycles Per Hour (Assumed): <input type="text" value="60"/> Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>
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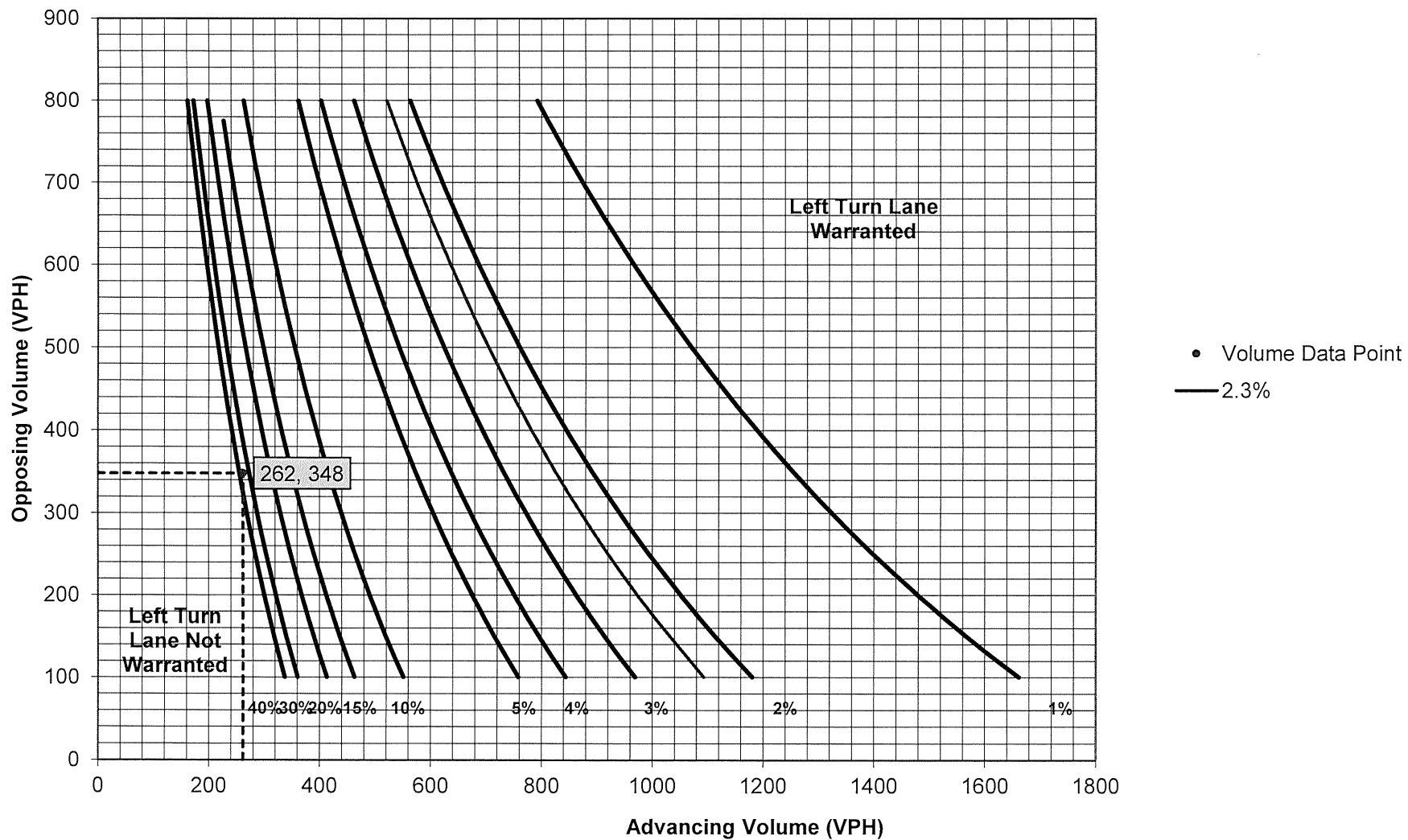
Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Left Turn Lane Storage Length:	<input type="text" value="N/A"/>	Feet

Additional Findings:

Additional Comments / Justifications:

**Figure 1. Warrant for left turn lanes on two-lane roadways**  
 (speeds to 35 mph, unsignalized and signalized intersections)  
 (L = % Left Turns in Advancing Volume)



## Turn Lane Warrant and Length Analysis Workbook

### STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/>	Analysis Date: <input type="text" value="4/18/2023"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="LJS"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JAS"/>
	Agency/Company Name: <input type="text" value="TRG, Inc."/>
Intersection & Approach Description: <input type="text" value="Shiloh Road (T-626) / Hunt Drive - Proposed Road A SOUTHBOUND"/>	
Analysis Period: <input type="text" value="2033 Build"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="AM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	<b>Type of Analysis</b>
Posted Speed Limit (MPH): <input type="text" value="30"/>	
Type of Terrain: <input type="text" value="Rolling"/>	
	Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

### VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	2	2.0%	3
	Through	-	328	3.0%	343
	Right	Yes	2	0.0%	2
Opposing	Left	Yes	6	0.0%	6
	Through	-	230	3.0%	241
	Right	Yes	10	33.0%	15

Advancing Volume:	<input type="text" value="348"/>
Opposing Volume:	<input type="text" value="262"/>
Left Turn Volume:	<input type="text" value="3"/>
% Left Turns in Advancing Volume: <input type="text" value="0.86%"/>	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	2	2.0%	N/A
	Through	-	328	3.0%	N/A
	Right	-	2	0.0%	N/A

Advancing Volume:	<input type="text" value="N/A"/>
Right Turn Volume:	<input type="text" value="N/A"/>

### TURN LANE WARRANT FINDINGS

<p style="text-align: center;"><b>Left Turn Lane Warrant Findings</b></p> <p>Applicable Warrant Figure: <input style="width: 80%;" type="text" value="Figure 1"/></p> <p>Warrant Met?: <input style="width: 80%;" type="text" value="No"/></p>	<p style="text-align: center;"><b>Right Turn Lane Warrant Findings</b></p> <p>Applicable Warrant Figure: <input style="width: 80%;" type="text" value="N/A"/></p> <p>Warrant Met?: <input style="width: 80%;" type="text" value="N/A"/></p>
--	---

### TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="3"/>	
Cycles Per Hour (Assumed): <input type="text" value="60"/>	
Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>

PennDOT Publication 46, Exhibit 11-6

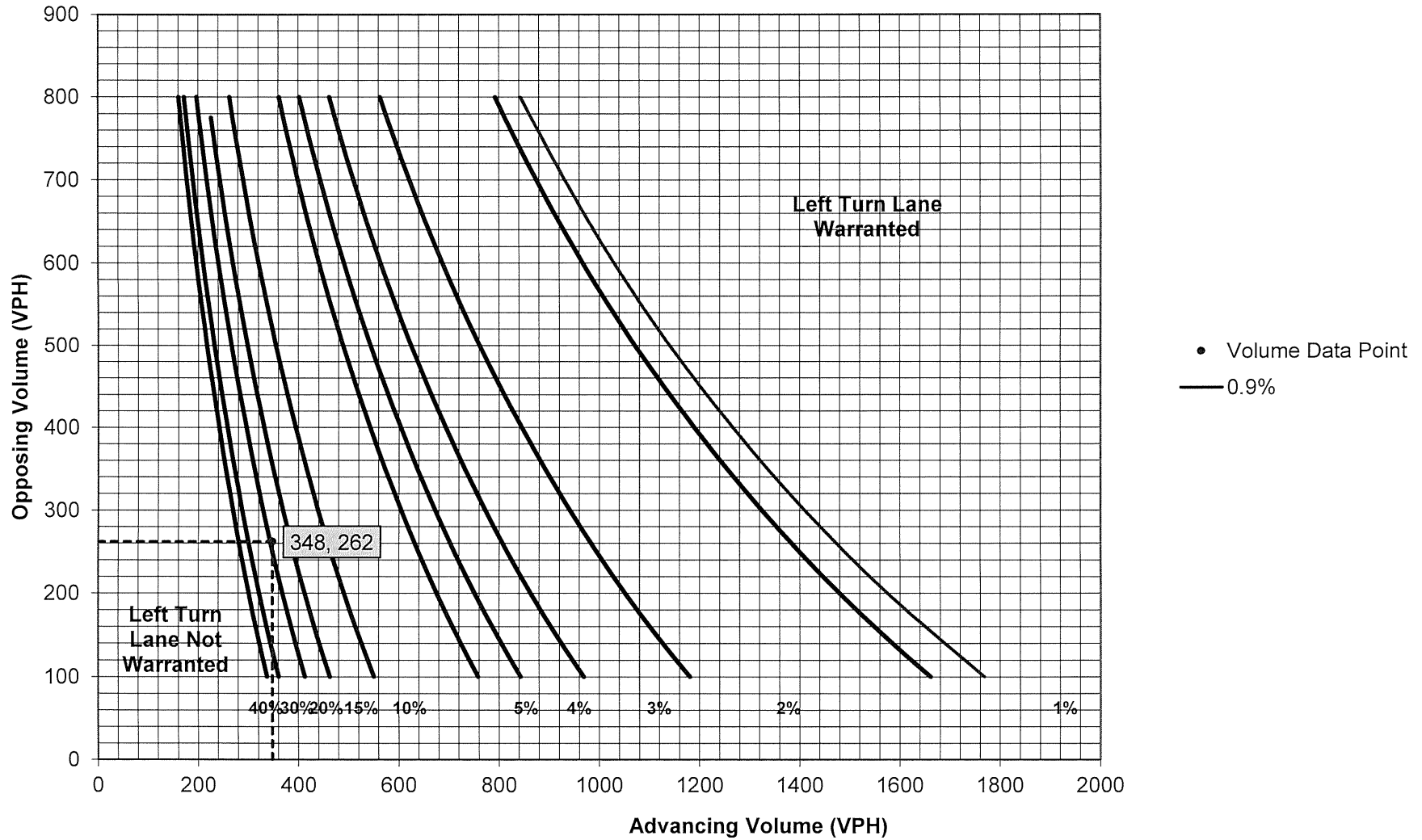
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	<input style="width: 80%;" type="text" value="N/A"/>	Feet
Condition B:	<input style="width: 80%;" type="text" value="N/A"/>	Feet
Condition C:	<input style="width: 80%;" type="text" value="N/A"/>	Feet
Required Left Turn Lane Storage Length:	<input style="width: 80%;" type="text" value="N/A"/>	Feet

Additional Findings:

Additional Comments / Justifications:

**Figure 1. Warrant for left turn lanes on two-lane roadways**  
 (speeds to 35 mph, unsignalized and signalized intersections)  
 (L = % Left Turns in Advancing Volume)



## Turn Lane Warrant and Length Analysis Workbook

### STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Westtown Township	Analysis Date: 4/18/2023	
County: Chester County	Conducted By: LJS	
PennDOT Engineering District: 6	Checked By: JAS	
	Agency/Company Name: TRG, Inc.	
Intersection & Approach Description: Shiloh Road (T-626) / Hunt Drive - Proposed Road A NORTHBOUND		
Analysis Period: 2033 Build	Number of Approach Lanes: 1	
Design Hour: PM Peak Hour	Undivided or Divided Highway: Undivided	
Intersection Control: Unsignalized	<b>Type of Analysis</b>	
Posted Speed Limit (MPH): 30		Left or Right-Turn Lane Analysis?: Left Turn Lane
Type of Terrain: Rolling		

### VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	14	0.0%	14
	Through	-	277	0.0%	277
	Right	Yes	21	2.0%	22
Opposing	Left	Yes	7	2.0%	8
	Through	-	340	0.0%	340
	Right	Yes	5	0.0%	5

Advancing Volume:	313
Opposing Volume:	353
Left Turn Volume:	14
% Left Turns in Advancing Volume: 4.47%	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	14	0.0%	N/A
	Through	-	277	0.0%	N/A
	Right	-	21	2.0%	N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

### TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <b>Figure 1</b>	Applicable Warrant Figure: <b>N/A</b>
Warrant Met?: <b>No</b>	Warrant Met?: <b>N/A</b>

### TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized	
Design Hour Volume of Turning Lane: 14	
Cycles Per Hour (Assumed): 60	
Cycles Per Hour (If Known):	Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

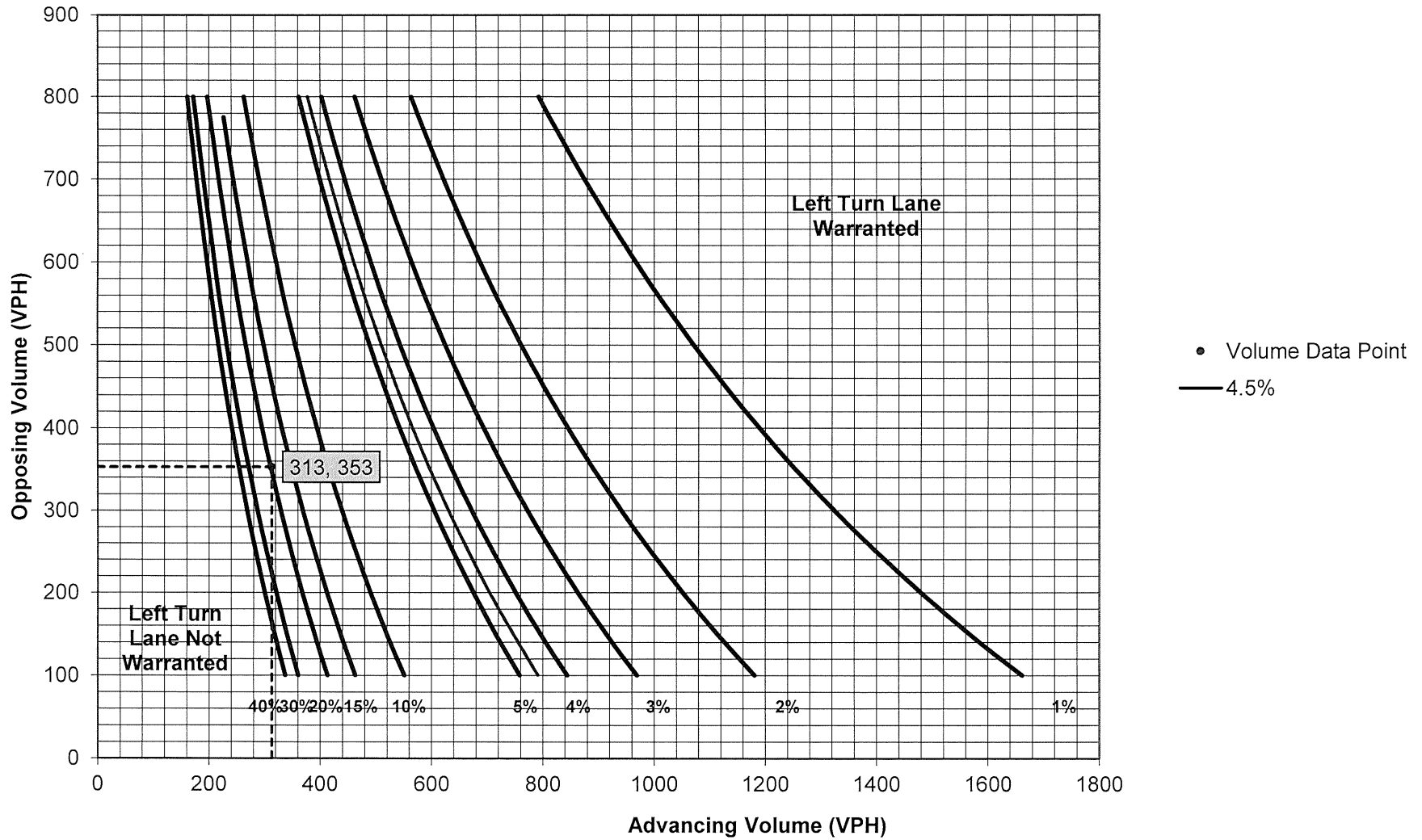
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	N/A	Feet

Additional Findings:  
N/A

Additional Comments / Justifications:

**Figure 1. Warrant for left turn lanes on two-lane roadways  
(speeds to 35 mph, unsignalized and signalized intersections)**  
(L = % Left Turns in Advancing Volume)



## Turn Lane Warrant and Length Analysis Workbook

### STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="4/18/2023"/> Conducted By: <input type="text" value="LJS"/> Checked By: <input type="text" value="JAS"/> Agency/Company Name: <input type="text" value="TRG, Inc."/>
Intersection & Approach Description: <input type="text" value="Shiloh Road (T-626) / Hunt Drive - Proposed Road A SOUTHBOUND"/>	
Analysis Period: <input type="text" value="2033 Build"/> Design Hour: <input type="text" value="PM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="30"/> Type of Terrain: <input type="text" value="Rolling"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> Type of Analysis: <input type="text" value="Left Turn Lane"/> Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

### VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	7	2.0%	8
	Through	-	340	0.0%	340
	Right	Yes	5	0.0%	5
Opposing	Left	Yes	14	0.0%	14
	Through	-	277	0.0%	277
	Right	Yes	21	2.0%	22

Advancing Volume:	<input type="text" value="353"/>
Opposing Volume:	<input type="text" value="313"/>
Left Turn Volume:	<input type="text" value="8"/>
% Left Turns in Advancing Volume: <input type="text" value="2.27%"/>	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	7	2.0%	N/A
	Through	-	340	0.0%	N/A
	Right	-	5	0.0%	N/A

Advancing Volume:	<input type="text" value="N/A"/>
Right Turn Volume:	<input type="text" value="N/A"/>

### TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="Figure 1"/> Warrant Met?: <input type="text" value="No"/>	Applicable Warrant Figure: <input type="text" value="N/A"/> Warrant Met?: <input type="text" value="N/A"/>

### TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="8"/> Cycles Per Hour (Assumed): <input type="text" value="60"/> Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>
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PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

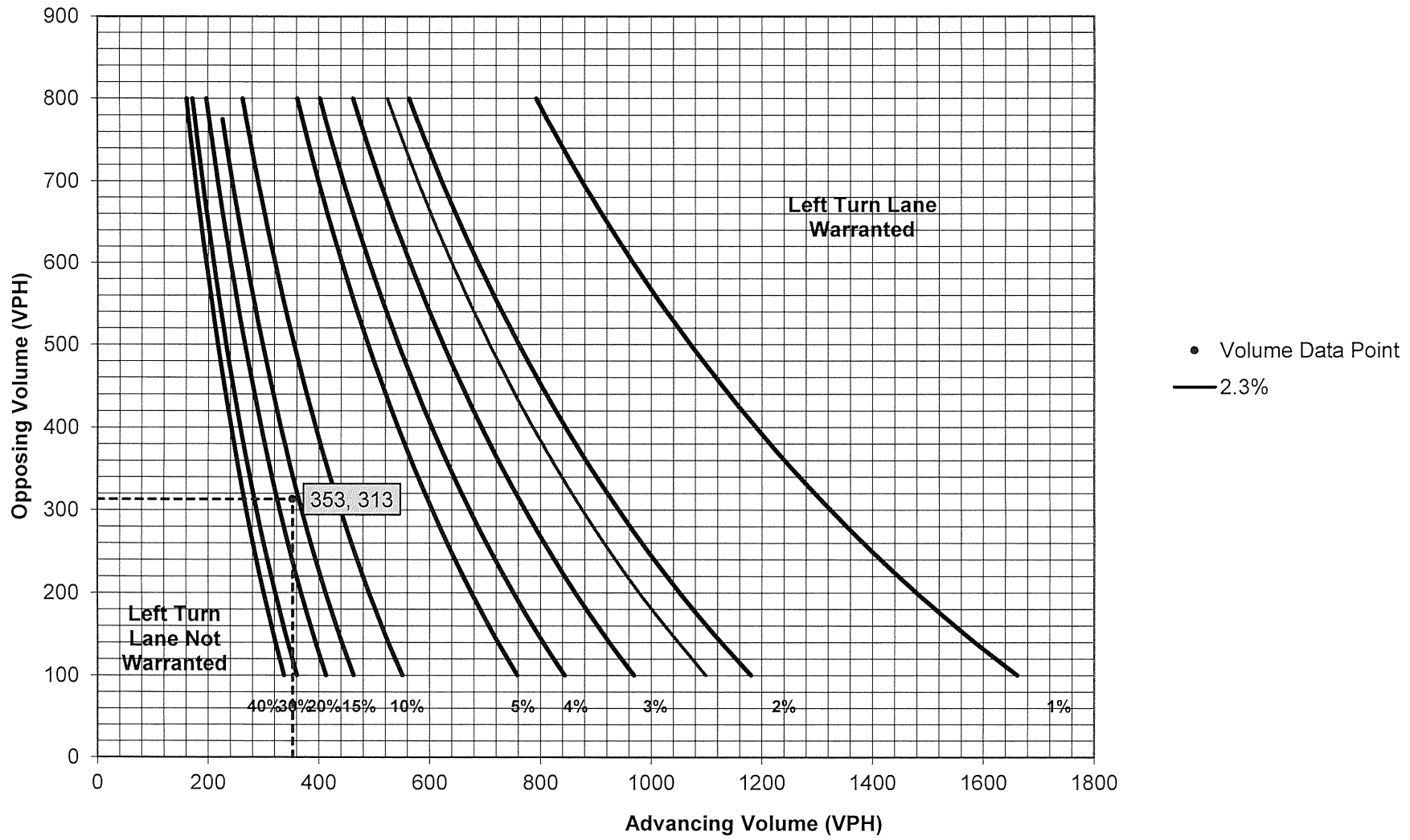
Left Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Left Turn Lane Storage Length:	<input type="text" value="N/A"/>	Feet

Additional Findings:

Additional Comments / Justifications:



**Figure 1. Warrant for left turn lanes on two-lane roadways**  
**(speeds to 35 mph, unsignalized and signalized intersections)**  
 (L = % Left Turns in Advancing Volume)



## Turn Lane Warrant and Length Analysis Workbook

### STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Westtown Township	Analysis Date: 4/18/2023
County: Chester County	Conducted By: LJS
PennDOT Engineering District: 6	Checked By: JAS
	Agency/Company Name: TRG, Inc.
Intersection & Approach Description: Shiloh Road (T-626) / Oakboun Rd - Proposed Road D NORTHBOUND	
Analysis Period: 2033 Build	Number of Approach Lanes: 1
Design Hour: AM Peak Hour	Undivided or Divided Highway: Undivided
Intersection Control: Unsignalized	<b>Type of Analysis</b>
Posted Speed Limit (MPH): 30	
Type of Terrain: Rolling	Left or Right-Turn Lane Analysis?: Left Turn Lane

### VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	56	10.0%	65
	Through	-	190	2.0%	196
	Right	Yes	3	2.0%	4
Opposing	Left	Yes	5	2.0%	6
	Through	-	241	3.0%	252
	Right	Yes	20	11.0%	24

Advancing Volume:	265
Opposing Volume:	282
Left Turn Volume:	65

% Left Turns in Advancing Volume: 24.53%

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	56	10.0%	N/A
	Through	-	190	2.0%	N/A
	Right	-	3	2.0%	N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

### TURN LANE WARRANT FINDINGS

<p style="text-align: center;"><b>Left Turn Lane Warrant Findings</b></p> <p>Applicable Warrant Figure: <b>Figure 1</b></p> <p>Warrant Met?: <b>No</b></p>	<p style="text-align: center;"><b>Right Turn Lane Warrant Findings</b></p> <p>Applicable Warrant Figure: <b>N/A</b></p> <p>Warrant Met?: <b>N/A</b></p>
--	---

### TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized	
Design Hour Volume of Turning Lane: 65	
Cycles Per Hour (Assumed): 60	
Cycles Per Hour (If Known):	Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

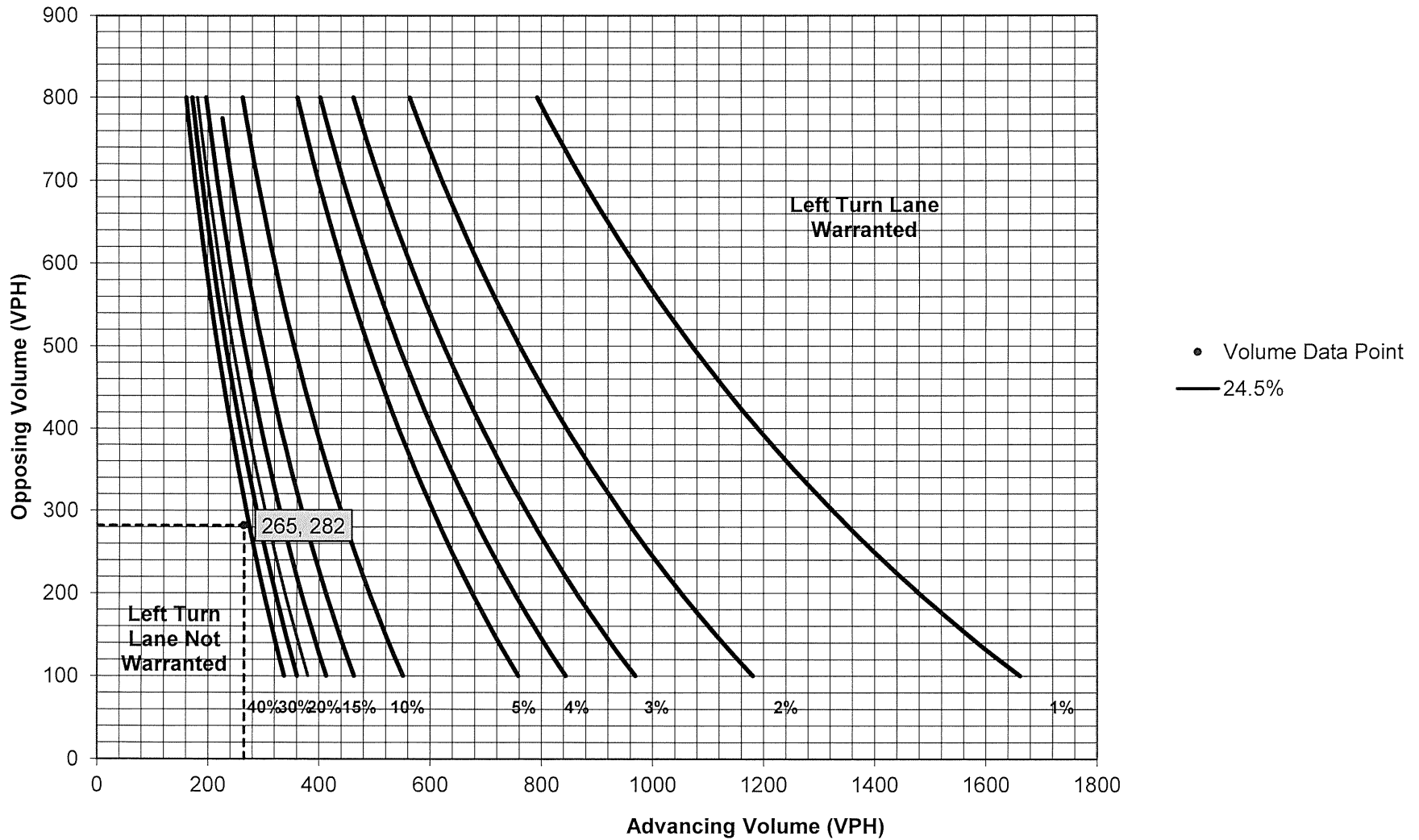
Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

**Figure 1. Warrant for left turn lanes on two-lane roadways**  
**(speeds to 35 mph, unsignalized and signalized intersections)**  
 (L = % Left Turns in Advancing Volume)



## Turn Lane Warrant and Length Analysis Workbook

### STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/>	Analysis Date: <input type="text" value="4/18/2023"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="LJS"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JAS"/>
	Agency/Company Name: <input type="text" value="TRG, Inc."/>
Intersection & Approach Description: <input type="text" value="Shiloh Road (T-626) / Oakboune Rd - Proposed Road D SOUTHBOUND"/>	
Analysis Period: <input type="text" value="2033 Build"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="AM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	<b>Type of Analysis</b>
Posted Speed Limit (MPH): <input type="text" value="30"/>	
Type of Terrain: <input type="text" value="Rolling"/>	
	Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

### VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	5	2.0%	6
	Through	-	241	3.0%	252
	Right	Yes	20	11.0%	24
Opposing	Left	Yes	56	10.0%	65
	Through	-	190	2.0%	196
	Right	Yes	3	2.0%	4

Advancing Volume:	<input type="text" value="282"/>
Opposing Volume:	<input type="text" value="265"/>
Left Turn Volume:	<input type="text" value="6"/>
% Left Turns in Advancing Volume: <input type="text" value="2.13%"/>	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	5	2.0%	N/A
	Through	-	241	3.0%	N/A
	Right	-	20	11.0%	N/A

Advancing Volume:	<input type="text" value="N/A"/>
Right Turn Volume:	<input type="text" value="N/A"/>

### TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="Figure 1"/>	Applicable Warrant Figure: <input type="text" value="N/A"/>
Warrant Met?: <input type="text" value="No"/>	Warrant Met?: <input type="text" value="N/A"/>

### TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="6"/>	
Cycles Per Hour (Assumed): <input type="text" value="60"/>	
Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>

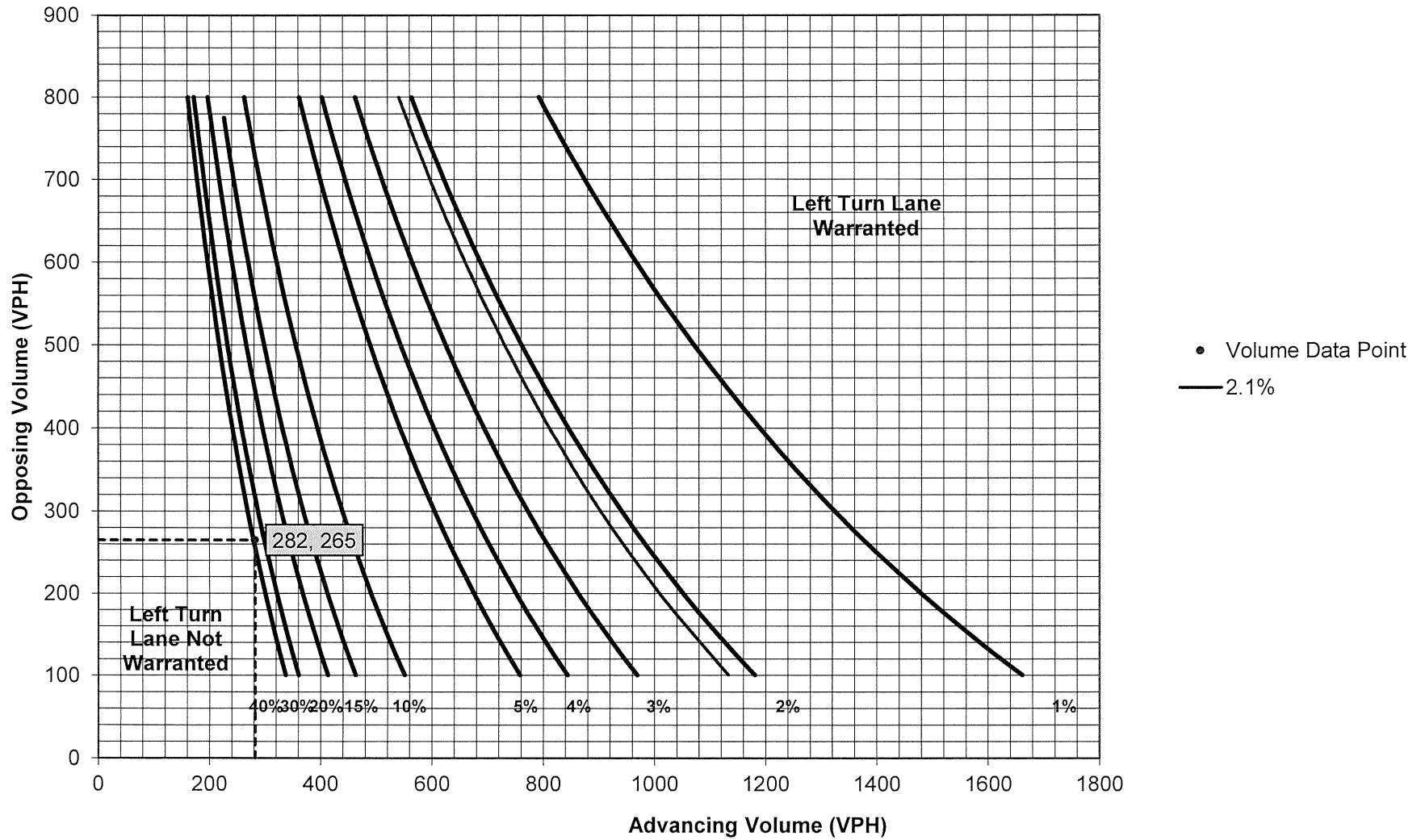
Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Left Turn Lane Storage Length:	<input type="text" value="N/A"/>	Feet

Additional Findings:

Additional Comments / Justifications:

**Figure 1. Warrant for left turn lanes on two-lane roadways**  
 (speeds to 35 mph, unsignalized and signalized intersections)  
 (L = % Left Turns in Advancing Volume)



## Turn Lane Warrant and Length Analysis Workbook

### STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Westtown Township	Analysis Date: 4/18/2023
County: Chester County	Conducted By: LJS
PennDOT Engineering District: 6	Checked By: JAS
	Agency/Company Name: TRG, Inc.
Intersection & Approach Description: Shiloh Road (T-626) / Oakboun Rd - Proposed Road D NORTHBOUND	
Analysis Period: 2033 Build	Number of Approach Lanes: 1
Design Hour: PM Peak Hour	Undivided or Divided Highway: Undivided
Intersection Control: Unsignalized	<b>Type of Analysis</b>
Posted Speed Limit (MPH): 30	
Type of Terrain: Rolling	

### VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	71	0.0%	71
	Through	-	203	2.0%	210
	Right	Yes	9	2.0%	10
Opposing	Left	Yes	14	2.0%	15
	Through	-	262	2.0%	270
	Right	Yes	23	0.0%	23

Advancing Volume:	291
Opposing Volume:	308
Left Turn Volume:	71
% Left Turns in Advancing Volume: 24.40%	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	71	0.0%	N/A
	Through	-	203	2.0%	N/A
	Right	-	9	2.0%	N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

### TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <b>Figure 1</b>	Applicable Warrant Figure: <b>N/A</b>
Warrant Met?: <b>No</b>	Warrant Met?: <b>N/A</b>

### TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized	
Design Hour Volume of Turning Lane: 71	
Cycles Per Hour (Assumed): 60	
Cycles Per Hour (If Known):	Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

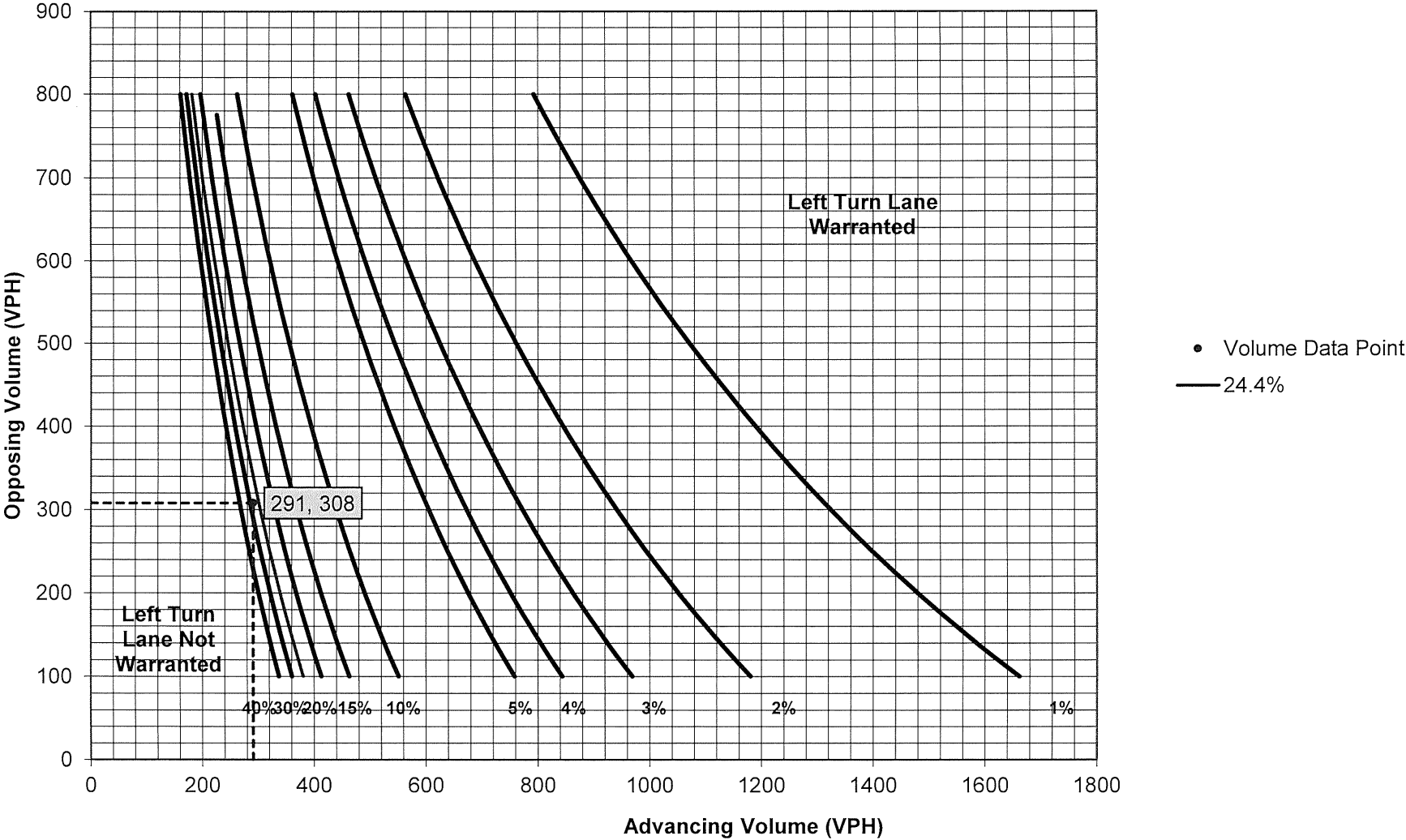
Left Turn Lane Storage Length, Condition A:	<b>N/A</b>	Feet
Condition B:	<b>N/A</b>	Feet
Condition C:	<b>N/A</b>	Feet
Required Left Turn Lane Storage Length:	<b>N/A</b>	Feet

Additional Findings:  
N/A

Additional Comments / Justifications:

**Figure 1. Warrant for left turn lanes on two-lane roadways  
(speeds to 35 mph, unsignalized and signalized intersections)**

(L = % Left Turns in Advancing Volume)



# Turn Lane Warrant and Length Analysis Workbook

## STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Westtown Township	Analysis Date: 4/18/2023	
County: Chester County	Conducted By: LJS	
PennDOT Engineering District: 6	Checked By: JAS	
	Agency/Company Name: TRG, Inc.	
Intersection & Approach Description: Shiloh Road (T-626) / Oakbourn Rd - Proposed Road D SOUTHBOUND		
Analysis Period: 2033 Build	Number of Approach Lanes: 1	
Design Hour: PM Peak Hour	Undivided or Divided Highway: Undivided	
Intersection Control: Unsignalized	<b>Type of Analysis</b>	
Posted Speed Limit (MPH): 30		Left or Right-Turn Lane Analysis?: Left Turn Lane
Type of Terrain: Rolling		

## VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	14	2.0%	15
	Through	-	262	2.0%	270
	Right	Yes	23	0.0%	23
Opposing	Left	Yes	71	0.0%	71
	Through	-	203	2.0%	210
	Right	Yes	9	2.0%	10

Advancing Volume:	308
Opposing Volume:	291
Left Turn Volume:	15
% Left Turns in Advancing Volume: 4.87%	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	14	2.0%	N/A
	Through	-	262	2.0%	N/A
	Right	-	23	0.0%	N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

## TURN LANE WARRANT FINDINGS

<p style="text-align: center;"><b>Left Turn Lane Warrant Findings</b></p> <p>Applicable Warrant Figure: <b>Figure 1</b></p> <p>Warrant Met?: <b>No</b></p>		<p style="text-align: center;"><b>Right Turn Lane Warrant Findings</b></p> <p>Applicable Warrant Figure: <b>N/A</b></p> <p>Warrant Met?: <b>N/A</b></p>
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## TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized	Average # of Vehicles/Cycle: N/A
Design Hour Volume of Turning Lane: 15	
Cycles Per Hour (Assumed): 60	
Cycles Per Hour (If Known):	

Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

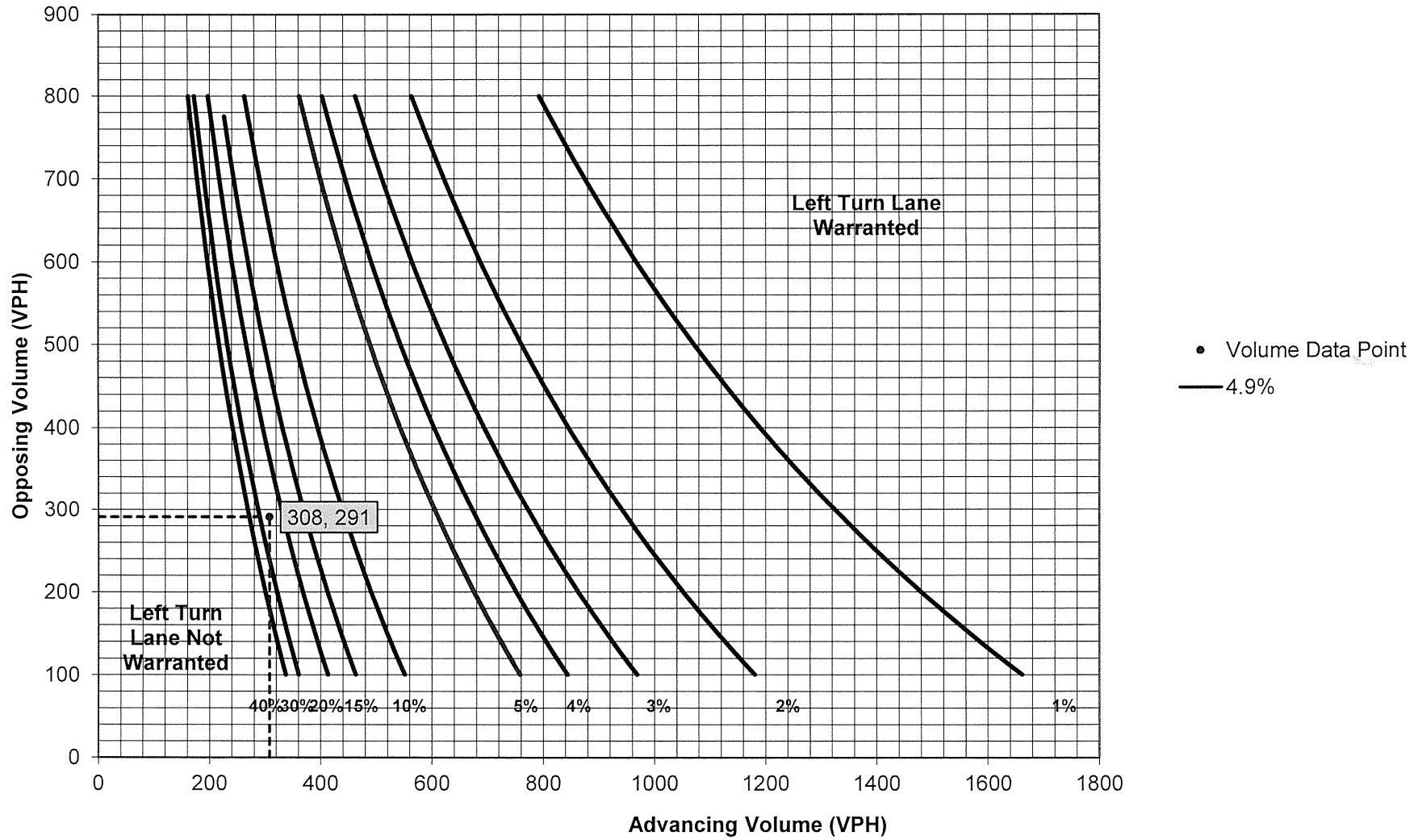
Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	N/A	Feet

Additional Findings: N/A

Additional Comments / Justifications:



**Figure 1. Warrant for left turn lanes on two-lane roadways  
(speeds to 35 mph, unsignalized and signalized intersections)**  
(L = % Left Turns in Advancing Volume)



## Turn Lane Warrant and Length Analysis Workbook

### STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Westtown Township	Analysis Date:	4/18/2023		
County:	Chester County	Conducted By:	LJS		
PennDOT Engineering District:	6	Checked By:	JAS		
		Agency/Company Name:	TRG, Inc.		
Intersection & Approach Description: Shiloh Road (T-626) / Hunt Drive - Proposed Road A NORTHBOUND					
Analysis Period:	2033 Build	Number of Approach Lanes:	1		
Design Hour:	AM Peak Hour	Undivided or Divided Highway:	Undivided		
Intersection Control:	Unsignalized	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 2px;">Type of Analysis</td> </tr> <tr> <td style="padding: 2px;">Right Turn Lane</td> </tr> </table>		Type of Analysis	Right Turn Lane
Type of Analysis					
Right Turn Lane					
Posted Speed Limit (MPH):	30				
Type of Terrain:	Rolling				
		Left or Right-Turn Lane Analysis?:	Right Turn Lane		

### VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	6	0.0%	N/A
	Through	-	230	3.0%	N/A
	Right	Yes	10	33.0%	N/A
Opposing	Left	Yes	2	2.0%	N/A
	Through	-	328	3.0%	N/A
	Right	Yes	2	0.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume: <span style="border: 1px solid black; padding: 2px;">N/A</span>	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	6	0.0%	6
	Through	-	230	3.0%	241
	Right	-	10	33.0%	15

Advancing Volume:	262
Right Turn Volume:	15

### TURN LANE WARRANT FINDINGS

<b>Left Turn Lane Warrant Findings</b>	<b>Right Turn Lane Warrant Findings</b>
Applicable Warrant Figure: <span style="border: 1px solid black; padding: 2px; font-weight: bold;">N/A</span>  Warrant Met?: <span style="border: 1px solid black; padding: 2px; font-weight: bold;">N/A</span>	Applicable Warrant Figure: <span style="border: 1px solid black; padding: 2px; font-weight: bold;">Figure 9</span>  Warrant Met?: <span style="border: 1px solid black; padding: 2px; font-weight: bold;">No</span>

### TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized		
Design Hour Volume of Turning Lane:	15		
Cycles Per Hour (Assumed):	60		
Cycles Per Hour (If Known):		Average # of Vehicles/Cycle:	N/A

PennDOT Publication 46, Exhibit 11-6

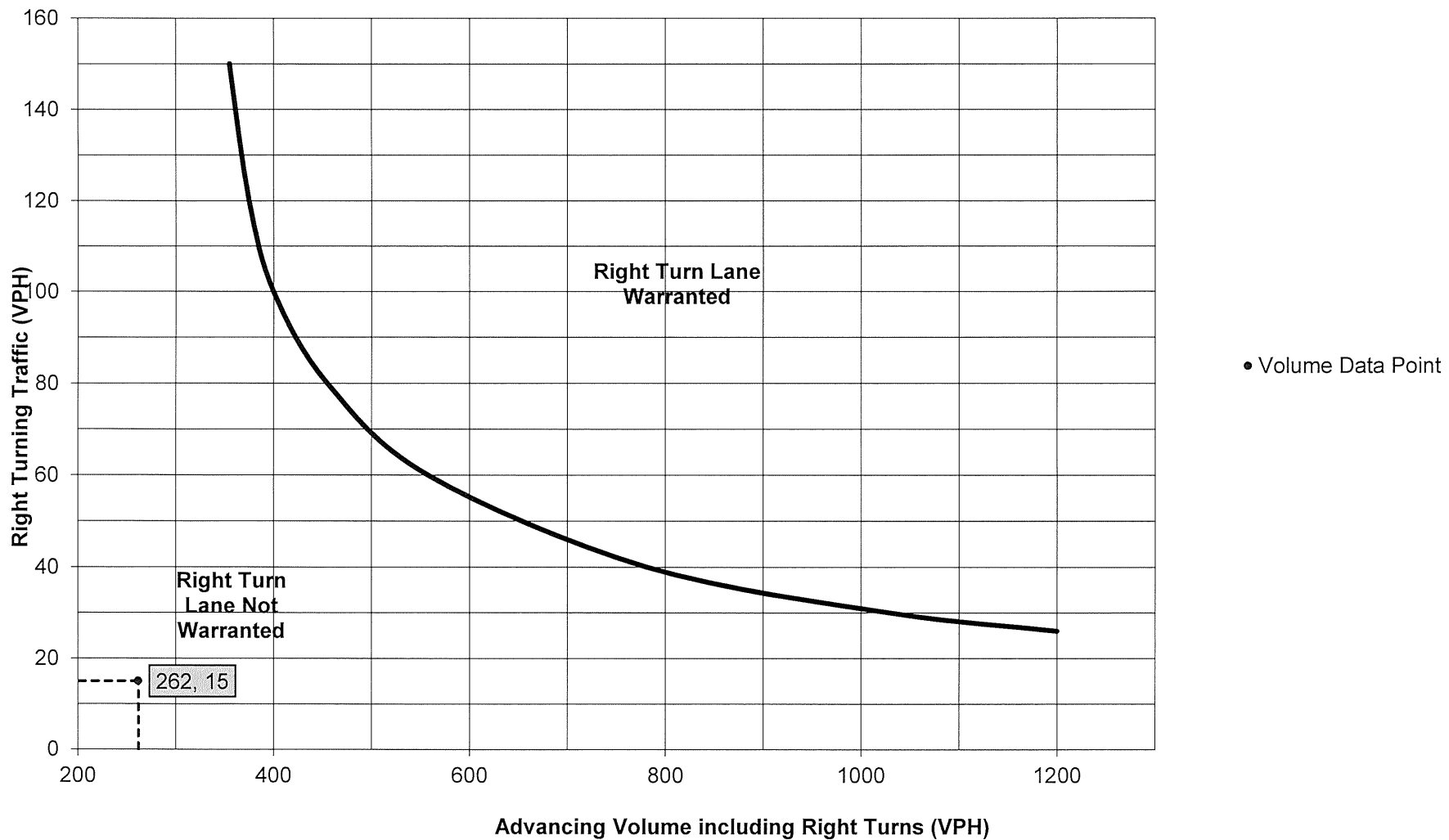
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings: N/A

Additional Comments / Justifications:

**Figure 9. Warrant for right turn lanes on two-lane roadways  
(40 mph or lower speeds, unsignalized and signalized intersections)**



## Turn Lane Warrant and Length Analysis Workbook

### STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Westtown Township	Analysis Date: 4/18/2023
County: Chester County	Conducted By: LJS
PennDOT Engineering District: 6	Checked By: JAS
	Agency/Company Name: TRG, Inc.
Intersection & Approach Description: Shiloh Road (T-626) / Hunt Drive - Proposed Road A SOUTHBOUND	
Analysis Period: 2033 Build	Number of Approach Lanes: 1
Design Hour: AM Peak Hour	Undivided or Divided Highway: Undivided
Intersection Control: Unsignalized	Type of Analysis: Right Turn Lane
Posted Speed Limit (MPH): 30	
Type of Terrain: Rolling	
Left or Right-Turn Lane Analysis?: Right Turn Lane	

### VOLUME CALCULATIONS

#### Left Turn Lane Volume Calculations

Movement	Include?	Volume	% Trucks	PCEV	
Advancing	Left	2	2.0%	N/A	Advancing Volume: N/A
	Through	328	3.0%	N/A	
	Right	2	0.0%	N/A	
Opposing	Left	6	0.0%	N/A	Opposing Volume: N/A
	Through	230	3.0%	N/A	
	Right	10	33.0%	N/A	
					Left Turn Volume: N/A
					% Left Turns in Advancing Volume: N/A

#### Right Turn Lane Volume Calculations

Movement	Include?	Volume	% Trucks	PCEV	
Advancing	Left	2	2.0%	3	Advancing Volume: 348
	Through	328	3.0%	343	
	Right	2	0.0%	2	
					Right Turn Volume: 2

### TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A	Applicable Warrant Figure: Figure 9
Warrant Met?: N/A	Warrant Met?: No

### TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized	Average # of Vehicles/Cycle: N/A
Design Hour Volume of Turning Lane: 2	
Cycles Per Hour (Assumed): 60	
Cycles Per Hour (If Known):	

#### PennDOT Publication 46, Exhibit 11-6

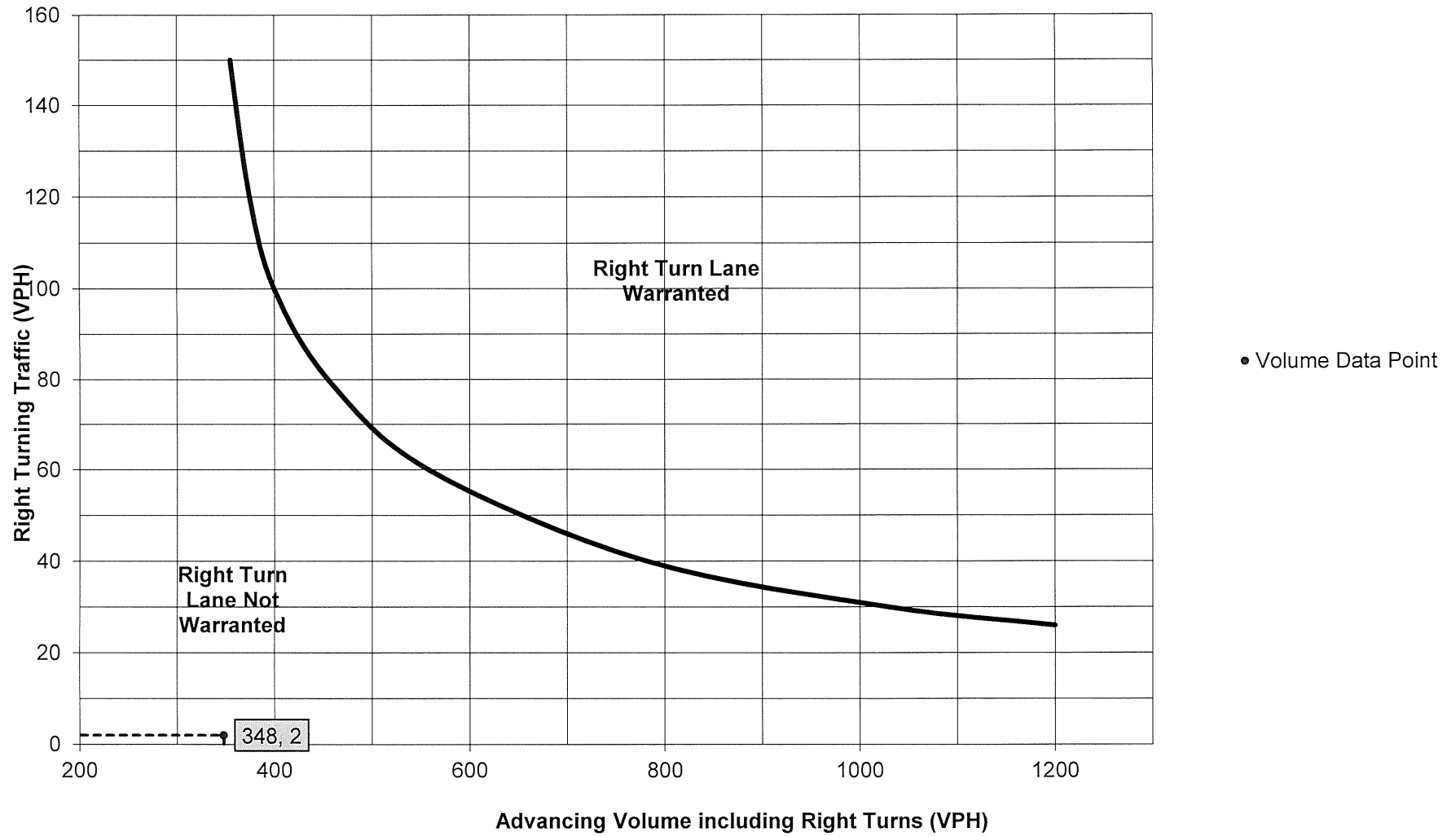
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings: N/A

Additional Comments / Justifications:

**Figure 9. Warrant for right turn lanes on two-lane roadways  
(40 mph or lower speeds, unsignalized and signalized intersections)**



## Turn Lane Warrant and Length Analysis Workbook

### STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Westtown Township	Analysis Date: 4/18/2023
County: Chester County	Conducted By: LJS
PennDOT Engineering District: 6	Checked By: JAS
	Agency/Company Name: TRG, Inc.
Intersection & Approach Description: Shiloh Road (T-626) / Hunt Drive - Proposed Road A NORTHBOUND	
Analysis Period: 2033 Build	Number of Approach Lanes: 1
Design Hour: PM Peak Hour	Undivided or Divided Highway: Undivided
Intersection Control: Unsignalized	<b>Type of Analysis</b>
Posted Speed Limit (MPH): 30	
Type of Terrain: Rolling	Left or Right-Turn Lane Analysis?: Right Turn Lane

### VOLUME CALCULATIONS

Left Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes	14	0.0%	N/A	Advancing Volume: N/A	
	Through	-	277	0.0%	N/A		Opposing Volume: N/A
	Right	Yes	21	2.0%	N/A		Left Turn Volume: N/A
Opposing	Left	Yes	7	2.0%	N/A	% Left Turns in Advancing Volume: N/A	
	Through	-	340	0.0%	N/A		
	Right	Yes	5	0.0%	N/A		

Right Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes	14	0.0%	14	Advancing Volume: 313	
	Through	-	277	0.0%	277		Right Turn Volume: 22
	Right	-	21	2.0%	22		

### TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <b>N/A</b>	Applicable Warrant Figure: <b>Figure 9</b>
Warrant Met?: <b>N/A</b>	Warrant Met?: <b>No</b>

### TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized	Average # of Vehicles/Cycle: N/A
Design Hour Volume of Turning Lane: 22	
Cycles Per Hour (Assumed): 60	
Cycles Per Hour (If Known):	

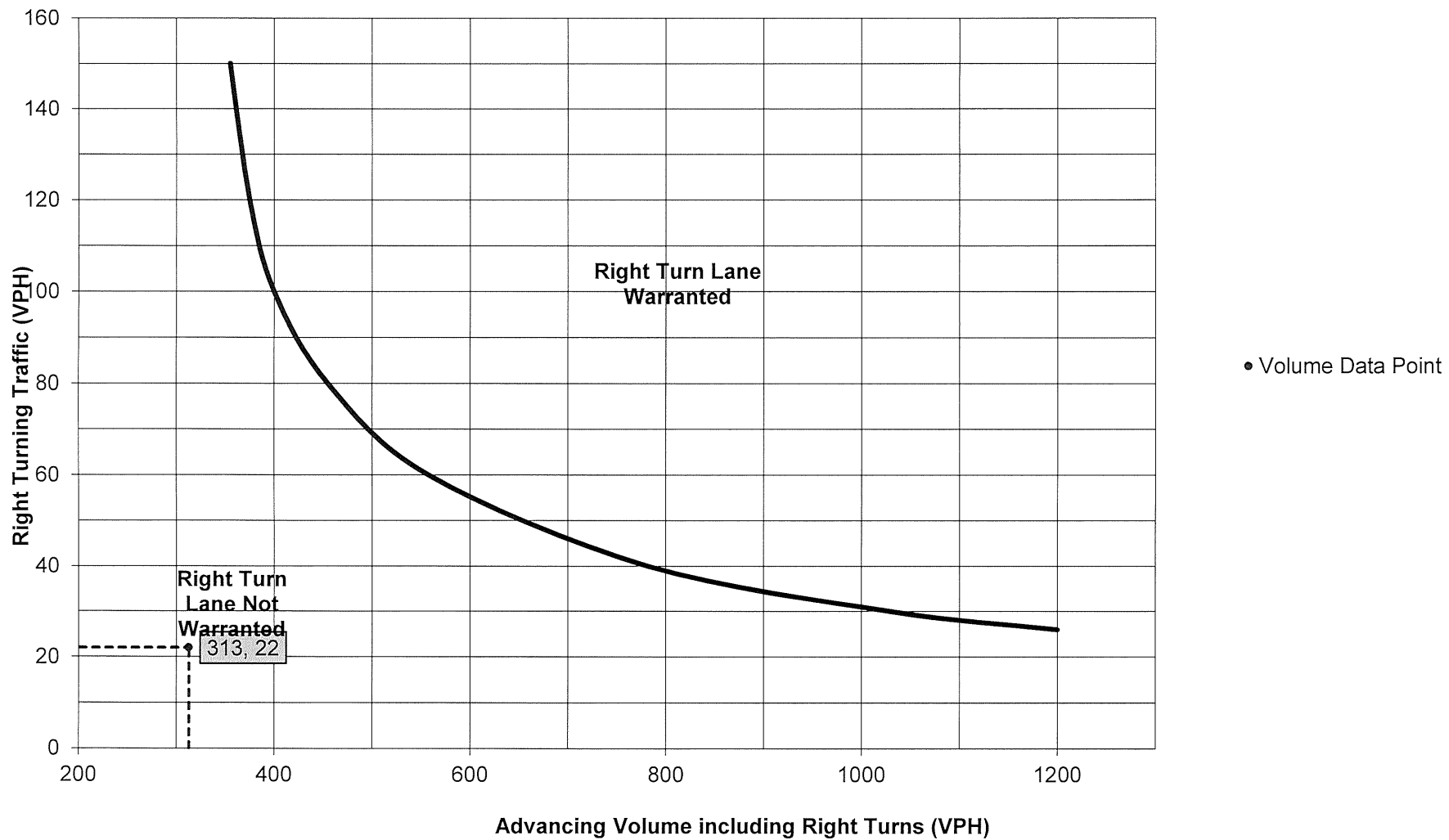
Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	<b>N/A</b>	Feet
Condition B:	<b>N/A</b>	Feet
Condition C:	<b>N/A</b>	Feet
Required Right Turn Lane Storage Length:	<b>N/A</b>	Feet

Additional Findings: N/A

Additional Comments / Justifications:

Figure 9. Warrant for right turn lanes on two-lane roadways  
(40 mph or lower speeds, unsignalized and signalized intersections)



## Turn Lane Warrant and Length Analysis Workbook

### STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Westtown Township	Analysis Date:	4/18/2023
County:	Chester County	Conducted By:	LJS
PennDOT Engineering District:	6	Checked By:	JAS
		Agency/Company Name:	TRG, Inc.
Intersection & Approach Description: Shiloh Road (T-626) / Hunt Drive - Proposed Road A SOUTHBOUND			
Analysis Period:	2033 Build	Number of Approach Lanes:	1
Design Hour:	PM Peak Hour	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized	<b>Type of Analysis</b>	
Posted Speed Limit (MPH):	30	Left or Right-Turn Lane Analysis?:	
Type of Terrain:	Rolling	Right Turn Lane	

### VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	7	2.0%	N/A
	Through	-	340	0.0%	N/A
	Right	Yes	5	0.0%	N/A
Opposing	Left	Yes	14	0.0%	N/A
	Through	-	277	0.0%	N/A
	Right	Yes	21	2.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	
N/A	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	7	2.0%	8
	Through	-	340	0.0%	340
	Right	-	5	0.0%	5

Advancing Volume:	353
Right Turn Volume:	5

### TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <b>N/A</b>	Applicable Warrant Figure: <b>Figure 9</b>
Warrant Met?: <b>N/A</b>	Warrant Met?: <b>No</b>

### TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized	
Design Hour Volume of Turning Lane:	5	
Cycles Per Hour (Assumed):	60	
Cycles Per Hour (If Known):		Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

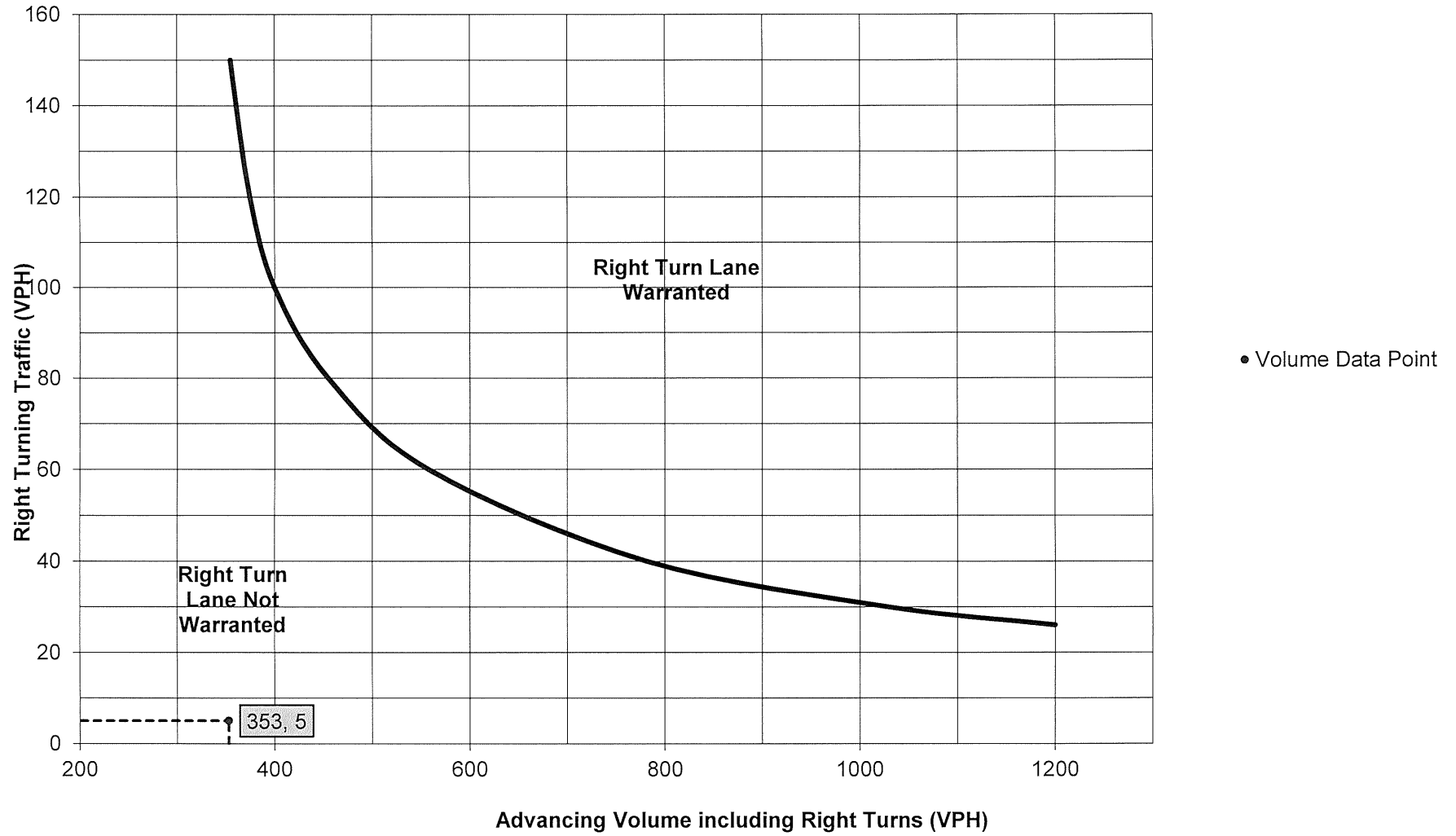
Right Turn Lane Storage Length, Condition A:	<b>N/A</b>	Feet
Condition B:	<b>N/A</b>	Feet
Condition C:	<b>N/A</b>	Feet
Required Right Turn Lane Storage Length:	<b>N/A</b>	Feet

Additional Findings:  
N/A

Additional Comments / Justifications:



**Figure 9. Warrant for right turn lanes on two-lane roadways  
(40 mph or lower speeds, unsignalized and signalized intersections)**



## Turn Lane Warrant and Length Analysis Workbook

### STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Westtown Township	Analysis Date: 4/18/2023
County: Chester County	Conducted By: LJS
PennDOT Engineering District: 6	Checked By: JAS
	Agency/Company Name: TRG, Inc.
Intersection & Approach Description: Shiloh Road (T-626) / Oakbourn Rd - Proposed Road D NORTHBOUND	
Analysis Period: 2033 Build	Number of Approach Lanes: 1
Design Hour: AM Peak Hour	Undivided or Divided Highway: Undivided
Intersection Control: Unsignalized	<b>Type of Analysis</b>
Posted Speed Limit (MPH): 30	
Type of Terrain: Rolling	
	Left or Right-Turn Lane Analysis?: Right Turn Lane

### VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	56	10.0%	N/A
	Through	-	190	2.0%	N/A
	Right	Yes	3	2.0%	N/A
Opposing	Left	Yes	5	2.0%	N/A
	Through	-	241	3.0%	N/A
	Right	Yes	20	11.0%	N/A

Advancing Volume:   
 Opposing Volume:   
 Left Turn Volume:   
 % Left Turns in Advancing Volume:

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	56	10.0%	65
	Through	-	190	2.0%	196
	Right	-	3	2.0%	4

Advancing Volume:   
 Right Turn Volume:

### TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="N/A"/>	Applicable Warrant Figure: <input type="text" value="Figure 9"/>
Warrant Met?: <input type="text" value="N/A"/>	Warrant Met?: <input type="text" value="No"/>

### TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>
Design Hour Volume of Turning Lane: 4	
Cycles Per Hour (Assumed): 60	
Cycles Per Hour (If Known): <input type="text"/>	

PennDOT Publication 46, Exhibit 11-6

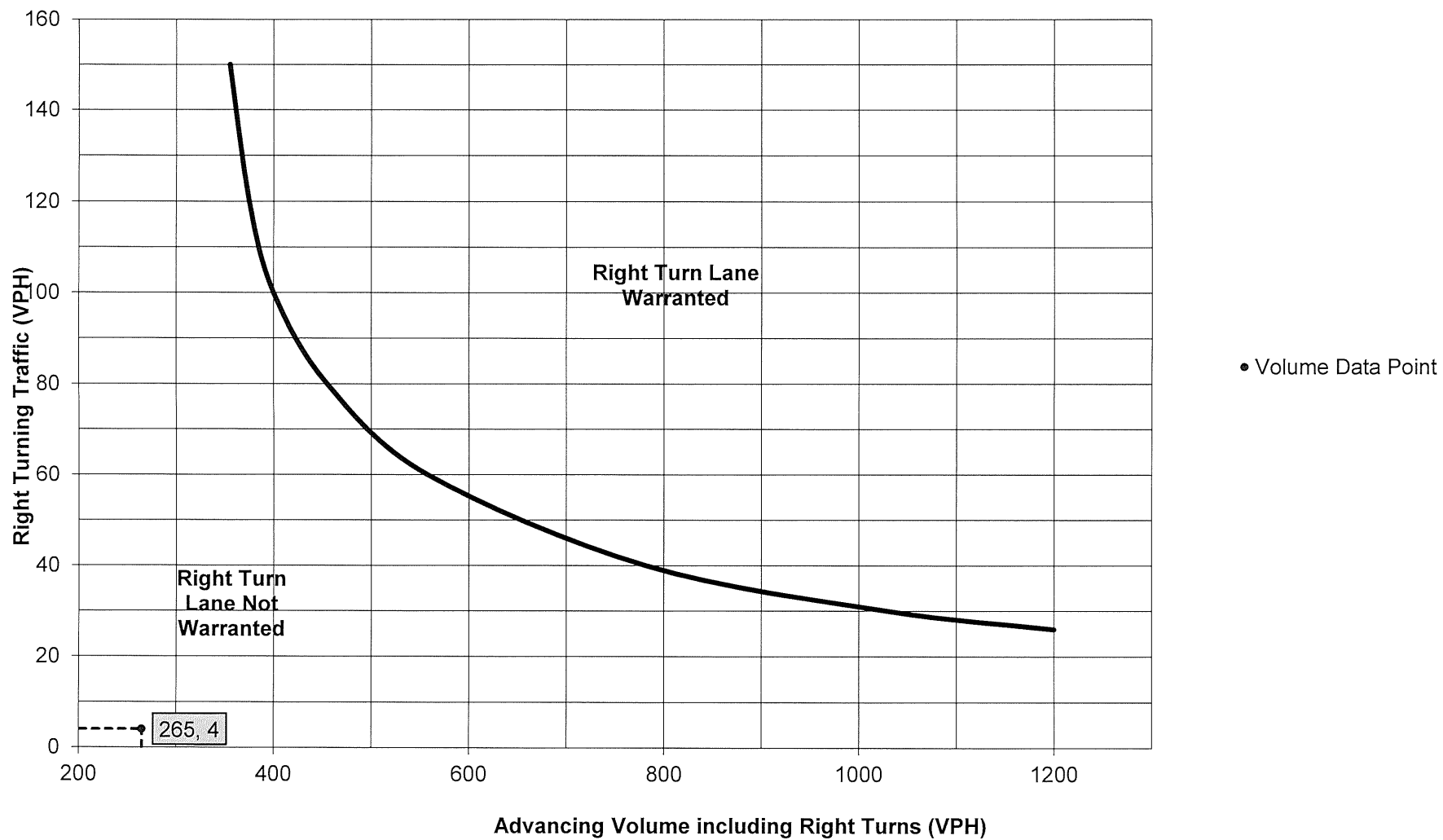
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Right Turn Lane Storage Length:	<input type="text" value="N/A"/>	Feet

Additional Findings:

Additional Comments / Justifications:

Figure 9. Warrant for right turn lanes on two-lane roadways  
(40 mph or lower speeds, unsignalized and signalized intersections)



## Turn Lane Warrant and Length Analysis Workbook

### STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/>	Analysis Date: <input type="text" value="4/18/2023"/>	
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="LJS"/>	
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JAS"/>	
	Agency/Company Name: <input type="text" value="TRG, Inc."/>	
Intersection & Approach Description: <input type="text" value="Shiloh Road (T-626) / Oakbounne Rd - Proposed Road D SOUTHBOUND"/>		
Analysis Period: <input type="text" value="2033 Build"/>	Number of Approach Lanes: <input type="text" value="1"/>	
Design Hour: <input type="text" value="AM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>	
Intersection Control: <input type="text" value="Unsignalized"/>	<b>Type of Analysis</b>	
Posted Speed Limit (MPH): <input type="text" value="30"/>		Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>
Type of Terrain: <input type="text" value="Rolling"/>		

### VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	5	2.0%	N/A
	Through	-	241	3.0%	N/A
	Right	Yes	20	11.0%	N/A
Opposing	Left	Yes	56	10.0%	N/A
	Through	-	190	2.0%	N/A
	Right	Yes	3	2.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume: <input style="width: 100px;" type="text" value="N/A"/>	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	5	2.0%	6
	Through	-	241	3.0%	252
	Right	-	20	11.0%	24

Advancing Volume:	282
Right Turn Volume:	24

### TURN LANE WARRANT FINDINGS

<p style="text-align: center;"><b>Left Turn Lane Warrant Findings</b></p> <p>Applicable Warrant Figure: <input style="width: 80px;" type="text" value="N/A"/></p> <p>Warrant Met?: <input style="width: 80px;" type="text" value="N/A"/></p>	<p style="text-align: center;"><b>Right Turn Lane Warrant Findings</b></p> <p>Applicable Warrant Figure: <input style="width: 80px;" type="text" value="Figure 9"/></p> <p>Warrant Met?: <input style="width: 80px;" type="text" value="No"/></p>
--	---

### TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="24"/>	
Cycles Per Hour (Assumed): <input type="text" value="60"/>	
Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input style="width: 100px;" type="text" value="N/A"/>

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

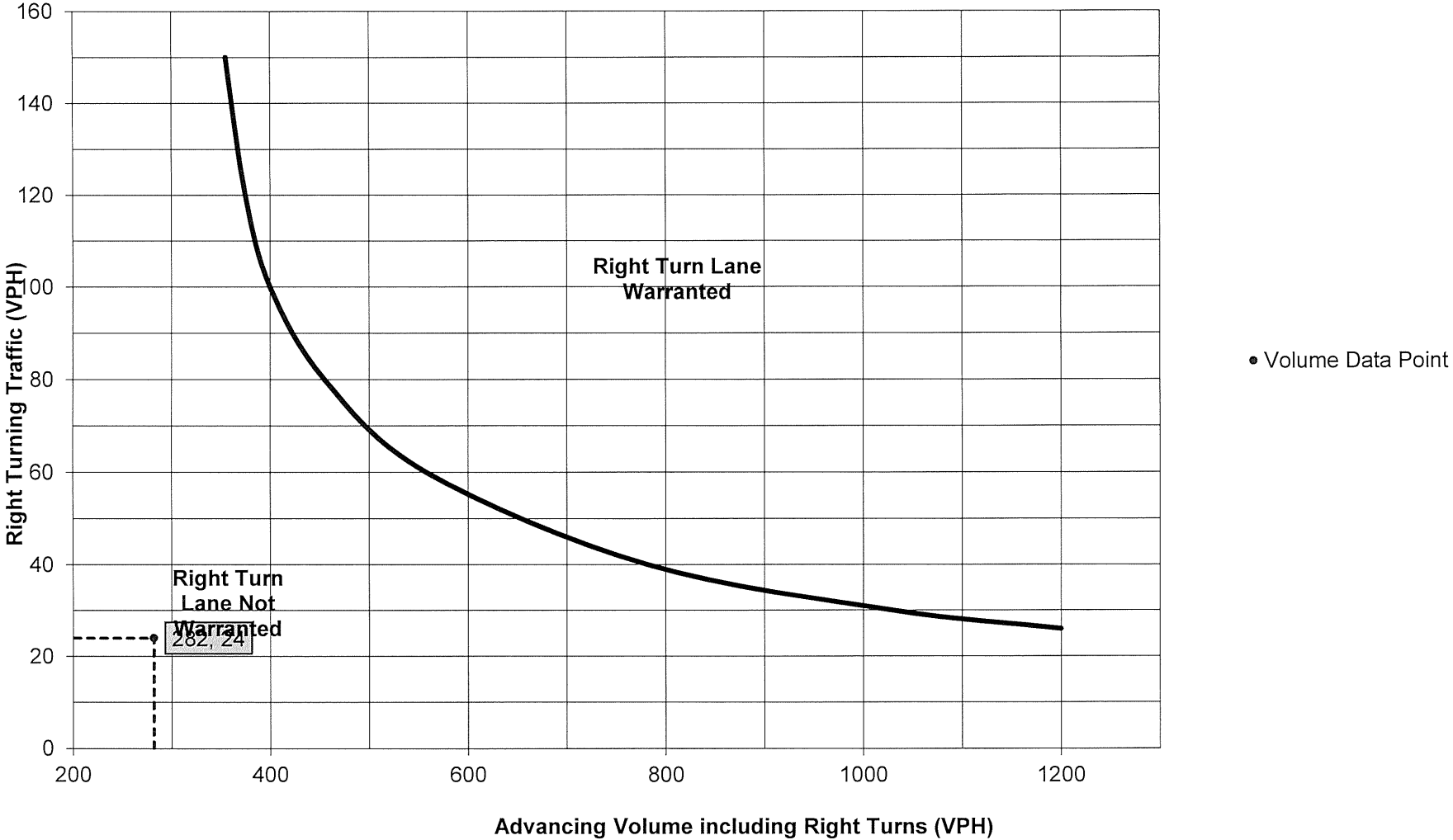
Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 9. Warrant for right turn lanes on two-lane roadways  
(40 mph or lower speeds, unsignalized and signalized intersections)



## Turn Lane Warrant and Length Analysis Workbook

### STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Westtown Township	Analysis Date: 4/18/2023
County: Chester County	Conducted By: LIS
PennDOT Engineering District: 6	Checked By: JAS
	Agency/Company Name: TRG, Inc.
Intersection & Approach Description: Shiloh Road (T-626) / Oakboune Rd - Proposed Road D NORTHBOUND	
Analysis Period: 2033 Build	Number of Approach Lanes: 1
Design Hour: PM Peak Hour	Undivided or Divided Highway: Undivided
Intersection Control: Unsignalized	
Posted Speed Limit (MPH): 30	Type of Analysis
Type of Terrain: Rolling	Left or Right-Turn Lane Analysis?: Right Turn Lane

### VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	71	0.0%	N/A
	Through	-	203	2.0%	N/A
	Right	Yes	9	2.0%	N/A
Opposing	Left	Yes	14	2.0%	N/A
	Through	-	262	2.0%	N/A
	Right	Yes	23	0.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	71	0.0%	71
	Through	-	203	2.0%	210
	Right	-	9	2.0%	10

Advancing Volume:	291
Right Turn Volume:	10

### TURN LANE WARRANT FINDINGS

<p style="text-align: center;"><b>Left Turn Lane Warrant Findings</b></p> <p>Applicable Warrant Figure: <span style="border: 1px solid black; padding: 2px 10px;">N/A</span></p> <p>Warrant Met?: <span style="border: 1px solid black; padding: 2px 10px;">N/A</span></p>	<p style="text-align: center;"><b>Right Turn Lane Warrant Findings</b></p> <p>Applicable Warrant Figure: <span style="border: 1px solid black; padding: 2px 10px;">Figure 9</span></p> <p>Warrant Met?: <span style="border: 1px solid black; padding: 2px 10px;">No</span></p>
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### TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized	Average # of Vehicles/Cycle: <span style="border: 1px solid black; padding: 2px 10px;">N/A</span>
Design Hour Volume of Turning Lane: 10	
Cycles Per Hour (Assumed): 60	
Cycles Per Hour (If Known):	

PennDOT Publication 46, Exhibit 11-6

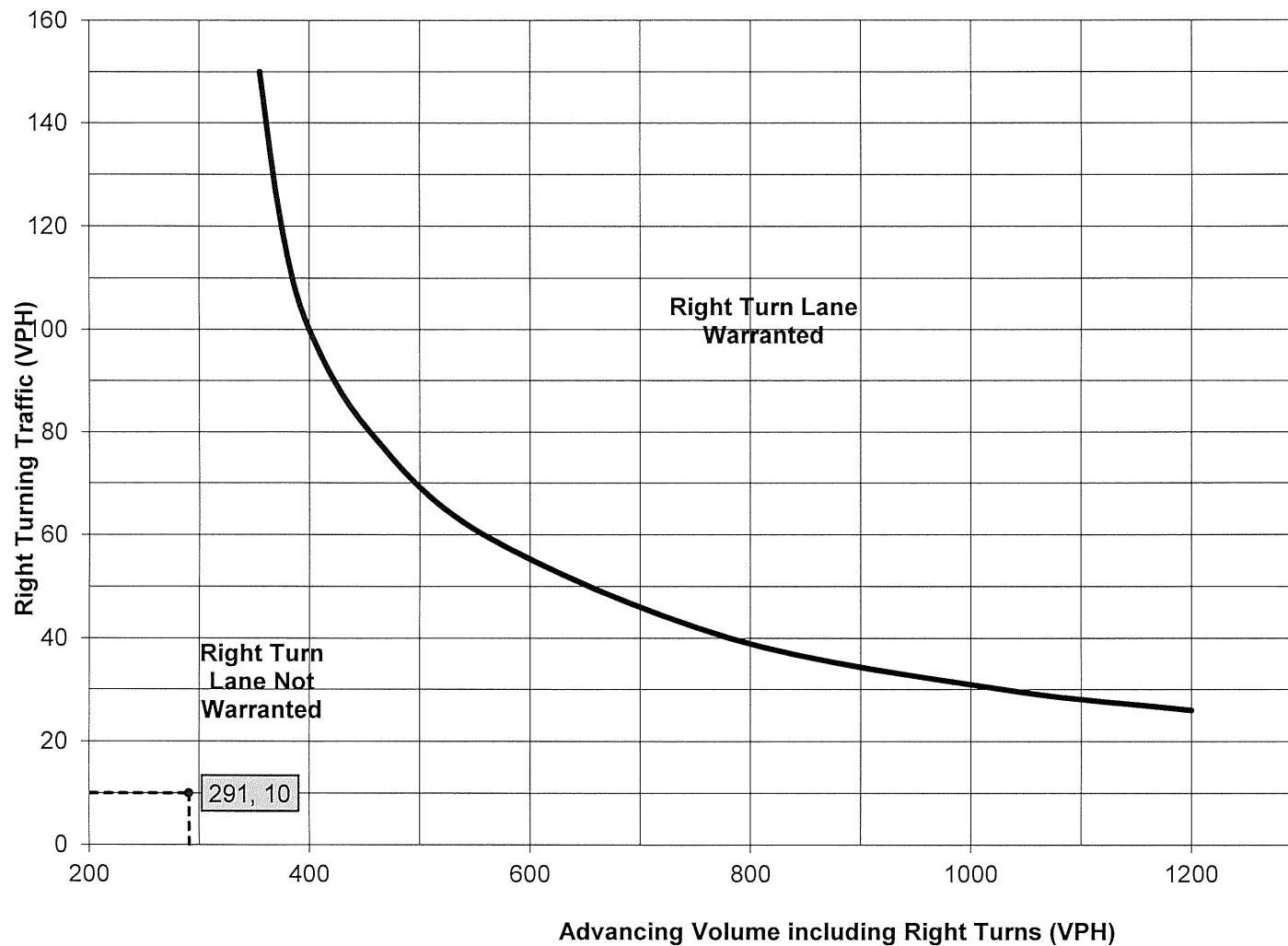
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:  
N/A

Additional Comments / Justifications:

Figure 9. Warrant for right turn lanes on two-lane roadways  
(40 mph or lower speeds, unsignalized and signalized intersections)



• Volume Data Point

## Turn Lane Warrant and Length Analysis Workbook

### STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Westtown Township	Analysis Date: 4/18/2023
County: Chester County	Conducted By: LIS
PennDOT Engineering District: 6	Checked By: JAS
	Agency/Company Name: TRG, Inc.
Intersection & Approach Description: Shiloh Road (T-626) / Oakbourn Rd - Proposed Road D SOUTHBOUND	
Analysis Period: 2033 Build	Number of Approach Lanes: 1
Design Hour: PM Peak Hour	Undivided or Divided Highway: Undivided
Intersection Control: Unsignalized	
Posted Speed Limit (MPH): 30	Type of Analysis
Type of Terrain: Rolling	Left or Right-Turn Lane Analysis?: Right Turn Lane

### VOLUME CALCULATIONS

#### Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV	
Advancing	Left	Yes	14	2.0%	N/A	Advancing Volume: N/A
	Through	-	262	2.0%	N/A	Opposing Volume: N/A
	Right	Yes	23	0.0%	N/A	Left Turn Volume: N/A
Opposing	Left	Yes	71	0.0%	N/A	
	Through	-	203	2.0%	N/A	
	Right	Yes	9	2.0%	N/A	% Left Turns in Advancing Volume: N/A

#### Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV	
Advancing	Left	Yes	14	2.0%	15	Advancing Volume: 308
	Through	-	262	2.0%	270	Right Turn Volume: 23
	Right	-	23	0.0%	23	

### TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A	Applicable Warrant Figure: <b>Figure 9</b>
Warrant Met?: N/A	Warrant Met?: <b>No</b>

### TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized	
Design Hour Volume of Turning Lane: 23	
Cycles Per Hour (Assumed): 60	
Cycles Per Hour (If Known):	Average # of Vehicles/Cycle: N/A

#### PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

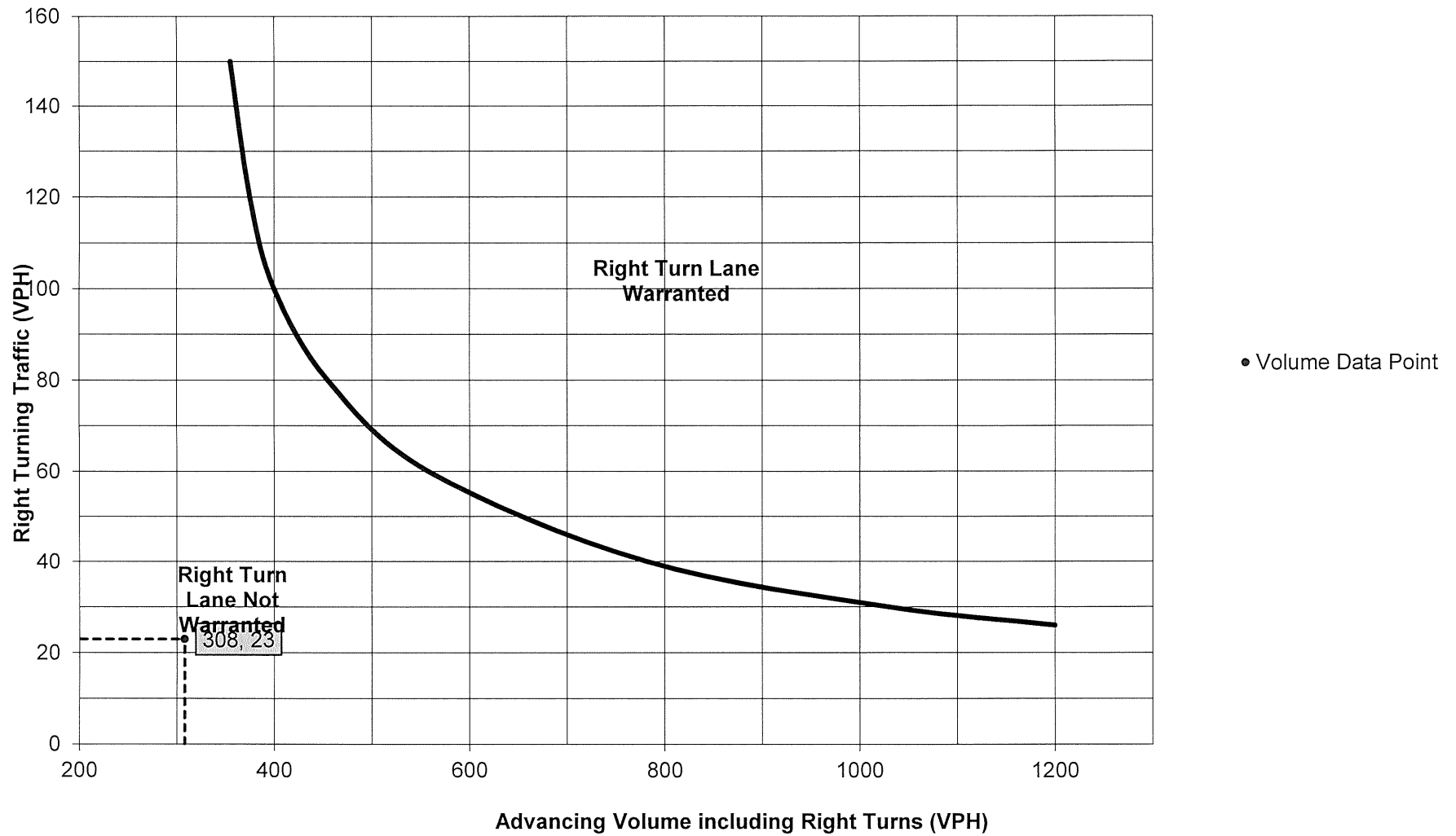
Additional Findings:

N/A

Additional Comments / Justifications:



Figure 9. Warrant for right turn lanes on two-lane roadways  
(40 mph or lower speeds, unsignalized and signalized intersections)



## CORRESPONDENCE

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**ALBERT FEDERICO CONSULTING, LLC**

*Traffic Engineering and Mobility Solutions*

133 Rutgers Avenue  
Swarthmore, PA 19081

September 16, 2021

*via email only*

Maggie Dobbs, AICP  
Director of Planning & Zoning  
1039 Wilmington Pike  
West Chester, PA 19382

**Re:** Stokes Estate (Fox Clearing, LLC)  
Conditional Use - Traffic Review  
Westtown Township, Chester County

**Ms. Dobbs:**

As requested, a technical review of the following materials has been completed relative to the Westtown Township Zoning Ordinance as well as reasonable and customary standards of Traffic Engineering practice:

- Comment Response Letter, prepared by DL Howell, dated August 27, 2021
- Conditional Use Plan for Stokes Estate, prepared by DL Howell, revised August 31, 2021

The applicant is proposing to develop sixty-eight residential dwelling units immediately south of Shiloh Hill Drive (TR 559) and east of Shiloh Road (TR 626). Vehicular access is proposed via a new street connection to Shiloh Road and an extension of Little Shiloh Road (TR 367). On-site circulation is proposed via new internal streets and sidewalks. The plan also includes four cul-de-sacs.

Please note that this review should be considered preliminary and subject to change based on the submission of revised materials to address the comments presented herein.

The following comments are offered for the Township's consideration:

1. Conditional Use Plan
  - a. Additional information should be submitted to demonstrate that:
    - i. PennDOT stopping sight distances are provided at the intersections of Shiloh Road at Road "A", and Shiloh Hill Drive at Little Shiloh Road. This should include design assumptions, consideration of vehicles turning left into the site and vertical profiles of Shiloh Road and Little Shiloh Road. *{§149-908C}*

**The comment remains outstanding. The submitted Sight Distance exhibits should be revised to:**

- 1) Clearly indicate the source of the survey.**
- 2) Ensure stationing is consistent between the plan and profiles.**



ALBERT FEDERICO CONSULTING, LLC

3) Amend the table to include sight distances from PA 67 §441.8(h)(1).

4) Provide additional information regarding the obstruction to the right of Road A (approximate STA 5+30).

**The applicant must meet this code requirement or request a waiver. Based on the submitted materials a waiver would not be supported.**

- ii. Code compliant access can be provided from the Vanscovich property (Parcel 67-20-20.6) to the proposed Shiloh Hill Drive extension. *{§170-513E}*  
**The comment remains outstanding. The Applicant has requested to address this at Land Development. The Applicant must provide a driveway to Shiloh Hill Drive for the Vanscovich property that complies all applicable codes.**
- iii. **The Applicant must provide an access to the Galilea property (Parcel 67-2-8) that complies all applicable codes. *{§170-513E}***
- b. A continuous collector street and trails shall be developed as part of the development to provide internal through connection as required by the Board of Supervisors. *{§170-503C(3)}*
  - i. As submitted, Road "A", "B" and "C" (aka Shiloh Hill Drive extension) do not provide a continuous collector street.  
**The comment has been resolved.**
  - ii. The site is proximate to several proposed trails and a recommended bike route. Consideration should be given to future connectivity.  
**The comment remains outstanding. The Applicant has stated a willingness to discuss the issue further. It is recommended that the Board considers requiring easements to provide a future connection to proposed trails to the east and south of the property as illustrated in the Trails and Bikeways Map of the Township Comprehensive Plan.**
- c. The following issues may be addressed at Land Development but are noted here as the resolution could impact the overall number of proposed dwellings:
  - i. The Applicant should confirm that Road B is the same or greater width than Shiloh Hill Drive. *{§149-901B}*  
**The comment has been resolved.**
  - ii. Cul-de-sac's "A" and "C" do not meet the required minimum length. *{§149-901F}*  
**The comment has been resolved.**
  - iii. The internal streets are designed to Minor Road standards. *{§149-903A.3}*  
**The comment has been resolved.**
  - iv. The cul-de-sac right-of-way and turnaround cartway paving do not meet the required minimum radii. *{§149-903A.4}*  
**The comment has been resolved.**



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- v. Shiloh Road is classified as a Collector; the Board may require dedication of an additional five feet of right way along the site frontage. *{§149-903C.1}*  
**The comment remains outstanding. It is recommended that the Board considers requiring a perpetual offer of dedication of Right-of-Way along the Shiloh Road frontage.**
- vi. A number of the vertical curves along the proposed internal streets do not provide the required minimum sight distance. *{§149-906A}*  
**The comment remains outstanding. The minimum Rate of Vertical Curvature for sag curves along Minor Roads is 37.0. The applicant must meet this code requirement or request a waiver. Based on the submitted materials a waiver would not be supported.**
- vii. The internal streets do not appear to provide the required level areas approaching intersections. *{§149-907E}*  
**The comment remains outstanding. The grade of Road "C" exceeds 2% approaching Road "A". The applicant must meet this code requirement or request a waiver. Based on the submitted materials a waiver would not be supported.**
- viii. Road "B" does not meet the minimum block length between "C" and "D". *{§149-913B}*  
**The comment remains outstanding. The block of Road "A" between Roads "B" and "C" is less than 500 feet. The applicant must meet this code requirement or request a waiver. Based on the submitted materials a waiver would not be supported.**
- ix. The Applicant should confirm that adequate sight distance can be provided for the driveway accessing Lot 68. *{§149-915.K5}*  
**The comment has been resolved.**
- x. The Applicant should provide confirmation that the proposed grading of the internal streets will permit the construction of crosswalks in accordance with applicable accessibility standards. *{§149-916B}*  
**The comment remains outstanding. The centerline grade of Road "C" at Road "A" exceeds the permitted cross-slope for an accessible crossing. The applicant must meet this code requirement or request a waiver. Based on the submitted materials a waiver would not be supported.**
- xi. The centerline grade of Road "A" exceeds 7% in several locations. Grades between 7% and 10% require the recommendation of the Township Engineer and Board approval. Based on the submitted materials the steeper grades are not recommended. *{§149-904B}*
- xii. Road "A" is proposed to be constructed with a minimum (150') horizontal radius and significant sag vertical curve, including approach grades at or exceeding 7%. Sharp horizontal curvature should not be introduced near the bottom of a steep grade approaching or near the low point of a pronounced sag vertical curve.



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- xiii. **The block of Road "A" between Roads "B" and "C" does not provide sufficient depth for two tiers of lots. Layouts with a single tier of lots is subject to Board approval. The Applicant should provide additional information supporting the proposed block layout. {§149-913G}**
- xiv. **The Applicant should confirm that compliant driveways can be provided for Lots 14, 15, 47 and 50. {§149-915C}**
- xv. **The Applicant should confirm that providing adequate sight distance does not unduly impact the building envelope of Lot 67.**

2. Traffic Impact Study

- a. The study should address sight distance at the intersection of Shiloh Hill Drive at Little Shiloh Road. {§149-804A(2)d}

**The comment remains outstanding. The applicant must meet this code requirement or request a waiver. Based on the submitted materials a waiver would not be supported.**

- b. The future condition analyses assume the traffic signal at Shiloh Road/Westtown-Thornton Road and Street Road is re-timed, reducing green times along Street Road (a PennDOT designated Critical Corridor) in favor of the minor approaches.

**The comment remains outstanding. It is recommended that the Board consider a condition requiring the Applicant to contribute to the re-timing of the signal as assumed in the Study.**

- c. The following issues may be addressed at Land Development:

- i. Traffic counts must be completed between April and November. {§149-804A(3)g} *There is no objection to the Applicant requesting a Waiver.*

**The comment remains outstanding. The Applicant has indicated that a waiver will be requested during Land Development. Consistent with PennDOT SOL 494-20-04, projects analyzed using adjusted traffic volumes should be reevaluated after all of the Governor's restrictions are lifted. New traffic counts should be completed at the intersections of Shiloh Road/Westtown-Thornton Road and Shiloh Road/Hunt Drive while school is in session.**

- ii. Additional information should be provided regarding the distribution of project traffic, specifically the significant skew towards the Shiloh Road access and lack of traffic assigned to Oakbourne Road and north Westtown Road. {§149-804A(6)}

**This comment has been resolved.**

3. Additional items

- a. **The number of accesses was discussed at length during the September 8<sup>th</sup> Planning Commission meeting. From a transportation perspective two accesses are preferred due to improved resident mobility, community connectivity and emergency service response. If a determination were made to limit the property to a single public access, then the extension of an existing public road (Shiloh Hill Drive) would be preferred over a new connection to a more heavily traveled road (Shiloh Road).**



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With respect to the subject Conditional Use Application, the burden of proof shall be upon the applicant to prove to the satisfaction of the Board of Supervisors, by credible evidence, that the use will not result in or substantially add to a significant traffic hazard or significant traffic congestion. The peak traffic generated by the development shall be accommodated in a safe and efficient manner. Such analysis shall consider any improvements to streets that the applicant is committed to complete or fund. {§170-2009.D(1)(h)}

*Based on the preceding, the Applicant has not demonstrated compliance with the conditional use criteria in §170-2009.D(1)(h).*

Please do not hesitate to contact me at 610.608.4336 or [albert@federico-consulting.com](mailto:albert@federico-consulting.com) should you have any questions or require additional information.

Sincerely,

A handwritten signature in black ink, appearing to read 'A. Federico', written over a horizontal line.

Albert Federico, P.E., PTOE



**ALBERT FEDERICO CONSULTING, LLC**



# **DRAFT DECLARATION**

UPI # Part of 390-52304-0-0000

Part of 390-37646-0-0000

Part of 390-52847-0-0000

**DRAFT**

**SAMPLE**

**DECLARATION OF PLANNED COMMUNITY**

**OF**

***SOMERFORD AT STONER FARM,  
A PLANNED COMMUNITY***

Pursuant to the provisions of the  
Pennsylvania Uniform Planned Community Act,  
68 Pa.C.S. §5101, et seq.

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**DECLARATION*****SOMERFORD AT STONER FARM,  
a Planned Community*****ARTICLE I.****SUBMISSION; DEFINED TERMS**

Section 1.1 Declarant; Property; County; Name. Sonshine Holding LP, a Pennsylvania limited partnership, with offices at 227 Granite Run Drive, Suite 100, Lancaster, Pennsylvania 17601 ("Declarant"), is the owner and equitable owner in fee simple of the Real Estate located in Manheim Township, Lancaster County, Pennsylvania, the legal description of which is designated Exhibit "A" and attached hereto. Declarant, and Lancaster Bible College solely as the title owner of a portion of the Real Estate to which Declarant is equitable owner as further described in the Joinder hereto attached, hereby submit the Real Estate including all easements, rights and appurtenances thereunto belonging and the buildings and improvements erected or to be erected thereon (collectively, the "Property") to the provisions of the Pennsylvania Uniform Planned Community Act, 68 Pa.C.S. §5101 et seq. (the "Act"), and hereby creates with respect to the Property a Flexible Planned Community, to be known as "Sommerford at Stoner Farm, a Planned Community" (the "Planned Community").

Section 1.2 Easements and Licenses. Included among the easements, rights and appurtenances referred to in Section 1.1 above are the following recorded easements and licenses, covering the Real Estate hereby submitted to the Act:

1.2.1 Any restrictions on use, occupancy and alienations set forth in the Public Offering Statement and the attachments thereto.

1.2.2 Unrecorded easements, discrepancies or conflicts in boundary lines, shortage in area and encroachments which an accurate and complete survey would disclose.

1.2.3 Title to that part of the premises lying in the bed and right of way of all roads, driveways and alleyways is subject to public and private rights therein.

1.2.4 Rights granted to Defense Plant Corporation as in Record Book F-37, Page 515, as assigned to Texas Eastern Transmission Corporation as in Record Book C-39, Page 342, and as amended in Record Book 2508, Page 536.

1.2.5 Notice of Condemnation-Eminent Domain Proceedings with the Commonwealth of Pennsylvania Department of Highways as in Record Book A-57, Page 929.

1.2.6 Access rights retained in Record Book 3681, Page 441, and Instrument No. 5106249 and by Agreement Regarding Access Rights as in Instrument No. 5106250.

1.2.7 Rights granted to Sun Oil Company as in a Right-of-Way Agreement dated April 12, 1930, and recorded in Record Book B-30, Page 47.

1.2.8 Rights granted to the Township of Manheim as in Record Book W-74, Page 385.

1.2.9 Application for ACT 319 (Clean and Green) as set forth in Record Book 5169, Page 649, as continued in Document Id No. 5980614 and 6086615, and Termination of Act 319 (Clean and Green) to be recorded.

1.2.10 Matters shown on a plan recorded in Plan Book J-163, Page 96, including notes on said plan.

1.2.11 Matters shown on a plan recorded in Plan Book J-213, Page 133, including notes on said plan.

1.2.12 Existing Detention Basin Easement as shown in Plan Book J-213, Page 133.

1.2.13 Sanitary sewer easement to the Manheim Township Municipal Authority as shown in Plan Book J-213, Page 133.

1.2.14 Rights granted to Susquehanna Pipe Line Company as in Deed Book B, Volume 31, Page 575 and as in Deed Book E, Volume 57, Page 678.

1.2.15 Rights granted to Defense Plant Corporation as in Deed Book F, Volume 37, Page 515, assigned to Texas Eastern Pennsylvania Corporation as in Deed Book C, Volume 39, Page 342, and Supplement to Easement as in Deed Book W, Volume 66, Page 971.

1.2.16 Rights granted to Manheim Township Municipal Authority as in Deed Book T, Volume 56, Page 436 and as in Deed Book T, Volume 56, Page 456

1.2.17 Subject to a Declaration of Taking by the Commonwealth of Pennsylvania Department of Highways recorded in Deed Book A, Volume 57, Page 929.

1.2.18 Sewer Line Right of Way and Easement dated September 28, 1970, between Herbert M. Royer and Rhelda E. Royer and the Lancaster School of the Bible recorded in Deed Book I, Volume 60, Page 624.

1.2.19 Matters shown on a plan recorded in Plan Book J-192, Page 58, including matters shown on said plan.

1.2.20 Rights and conditions set forth in a Deed dated March 27, 1996, from Rhelda E. Royer to the Lancaster Bible College as in Record Book 4915, Page 525.

1.2.21 Applications for ACT 319 (Clean and Green) as set forth in Record Book 5427, Page 397 and as in Record Book 5166, Page 680 and Termination of Act 319 (Clean and Green) to be recorded subsequent to the recording of this Declaration.

1.2.22 Rights granted to PPL Electric Utilities Corporation as in Record Book 6993, Page 442.

1.2.23 Declaration to Establish Agricultural Security Area by Manheim Township as in Document Id No. 5357166.

1.2.24 Grant of Easement dated December 9, 1977, between Martha R. Stoner, H. Raymond Stoner and Township of Manheim recorded in Deed Book W, Volume 74, Page 385.

1.2.25 Matters shown on a plan recorded in Plan Book J-227, Page 73, including notes on said plan.

1.2.26 Matters shown on a plan recorded in Plan Book 2017—0177-J, including notes on said plan.

1.2.27 Rights granted to Defense Plant Corporation as in Deed Book A, Volume 36, Page 254, assigned to Texas Eastern Transmission Corporation as in Deed Book C, Volume 39, Page 342 and Additional Right-of-way as in Record Book 2594, Page 571.

1.2.28 Conditions and rights set forth in Deed Book Z, Volume 44, Page 35.

1.2.29 Conditions and rights set forth in Deed Book G, Volume 45, Page 142 (to be terminated of record).

1.2.30 Subject to a Declaration of Taking by the Commonwealth of Pennsylvania Department of Highways recorded in Deed Book E, Volume 57, Page 1.

1.2.31 Provisions of acts of assembly authorizing the Commonwealth of Pennsylvania, Department of Transportation, to extend boundary lines of state roads.

1.2.32 Matters shown on the Final Phase I - Subdivision and Land Development Plan for Stoner Farm, prepared by RGS Associates, including notes on said plan to be recorded concurrently herewith, and any future subdivision and land development plans and the notes thereon for future phases of the Planned Community.

1.2.33 Matters shown on the Plats and Plans for Somerford at Stoner Farm attached hereto as Exhibit "C", and to be recorded concurrently herewith, including notes on said plan.

1.2.34 Stormwater Drainage Easement and Maintenance Agreement (affecting Farmette Lot – Lot 126) to be recorded concurrently herewith.

1.2.35 Deed of Easement (affecting Farmette Lot – Lot 126) to be recorded concurrently herewith.

1.2.36 Stormwater Management Agreement and Declaration Easement between Declarant and Township to be recorded concurrently herewith and any subsequent agreements regarding future phases of the Planned Community.

Section 1.3 Maximum Number of Units. The maximum number of Units to be created by the Declarant is one hundred twenty four (124).

Section 1.4 Defined Terms.



1.4.1 Capitalized terms not otherwise defined herein or in the Plats and Plans shall have the meanings specified or used in the Act.

1.4.2 The following terms are used or defined in general terms in the Act and shall have specific meanings herein as follows:

A. "Allocated Interests" means the Common Expense Liability and votes in the Association allocated to each Unit.

B. "Annual Assessment" means a Unit's individual share of the anticipated Common Expenses for each fiscal year as reflected in the budget adopted by the Executive Board for such year.

C. "Association" means the Unit Owners' Association of the Planned Community and shall be known as the "Somerset at Stoner Farm Community Association" a Pennsylvania non-profit corporation.

D. "Bylaws" means the rules and regulations, as from time to time in effect, for the governance of the Association and for the regulation of the organization of the Association. The Bylaws shall be binding upon the Association and all Lot Owners, notwithstanding that such Bylaws or any amendments thereto are not recorded.

E. "Committee" means the Architectural Standards Committee described in Section 8.1.1.

F. "Common Elements" means the Common Facilities or Controlled Facilities.

G. "Common Expense Liability" means the liability for Common Expenses allocated to each Unit under §5208 (relating to allocation of votes and common expense liabilities.).

H. "Common Expenses" means the expenditures made by or financial liabilities of the Association, together with any allocations to reserves. The term includes General Common Expenses and Limited Common Expenses.

I. "Common Facilities" means any Real Estate within the Planned Community which is owned by the Association or leased to the Association. The term does not include a Unit.

J. "Controlled Facilities" means any Real Estate within the Planned Community whether or not a part of a Unit, that is not a Common Facility but is maintained, improved, repaired, replaced, regulated, managed, insured or controlled by the Association.

K. "Convertible Real Estate" means any part of the Property identified as "Convertible Real Estate" on the Plats and Plans and/or as

described in Exhibit "D", within which Declarant reserves the right to create additional Units and/or Limited Common Elements, pursuant to Section 5211 of the Act.

L. "Declarant" means the Declarant described in Section 1.1 above and all successors to any Special Declarant Rights. The term excludes a person holding interest in the Real Estate solely as security for an obligation and a person whose interest in the Real Estate will not be conveyed to Unit Owner.

M. "Declaration" means this document, as the same may be amended from time to time.

N. "Dedicated Improvements" shall mean and refer to those improvements that may be made by the Declarant, and upon completion may be offered for dedication to the Association, the Township, the municipal authority, a utility service company or some other third party as further described in Section 3.9 ("Dedicated Improvements").

O. "Dwelling" means a single-family-detached residential house to be constructed and form a part of each Unit. The term "Dwelling" may also be inclusive of all portions of the Lot on which such Dwelling is located and all other structures located on such Lot, unless the context otherwise clearly requires.

P. "Executive Board" means the body, regardless of name, designated in the Declaration to act on behalf of the Association.

Q. "Farmette Lot" means Lot 126 as shown on the Plats and Plans, which lot is not part of the Planned Community but is subject to certain Stormwater Drainage Easement and Maintenance Agreement as further described in Section 5.4 below and to a Deed of Easement as further described in Section 5.5 below, which easements benefit the Planned Community and obligate the Association to maintain the stormwater management facilities and to enforce the Deed of Easement as further described in the aforementioned sections below.

R. "Flexible Planned Community" means a Planned Community containing Withdrawable or Convertible Real Estate or a Planned Community to which Additional Real Estate may be added or a combination thereof

S. "General Common Expenses" means all Common Expenses other than Limited Common Expenses.

T. "Identifying Number" means a symbol or address that identifies only one Unit in a Planned Community.

U. "Limited Common Elements" means a Limited Common Facility or a Limited Controlled Facility.

V. "Limited Common Expenses" means the Common Expenses incurred for maintenance, repair and/or replacement of certain Limited Common Elements which are to be assessed against the Units to which such Limited Common Elements are assigned.

W. "Limited Common Facility" means a portion of the Common Facilities allocated by or pursuant to the Declaration or by the operation of §5202 (2) or (3) for the exclusive use of one or more but fewer than all of the Units.

X. "Limited Controlled Facility" means a portion of the Controlled Facilities, other than Controlled Facilities which are themselves part of a Unit, allocated by or pursuant to the Declaration or by operation of §5202 (2) or (3) for the exclusive use of one or more but fewer than all of the Units.

Y. Lot" means a separate and subdivided parcel of land as shown on the Plan, which has been approved for the construction of a Dwelling thereon, and such term shall be deemed to include any Dwelling now or hereafter located on such Lot. The Lot and Dwelling together are synonymous with the term "Unit" as used and defined in the Act.

Z. "Person" means a natural person, corporation, partnership, limited liability company, association, trust or other entity or combination thereof.

AA. "Planned Community" means Real Estate with respect to which a person, by virtue of ownership of an interest in any portion of the Real Estate, is or may become obligated by covenant, easement or agreement imposed on the owner's interest to pay any amount for real property taxes, insurance, maintenance, repair, improvement, utility services, management, administration or regulation of any part of the Real Estate other than the portion or interest owned solely by the person.

BB. "Plats and Plans" means the plats and plans attached hereto as Exhibit "C" as the same may be amended from time to time.

CC. "Property" means the Property described in Section 1.1.

DD. "Purchaser" means a person other than a Declarant who, by means of a disposition, acquires a legal or equitable interest in a Unit, other than either a leasehold interest of less than twenty (20) years, including renewal options, or as security for an obligation.

EE. "Real Estate" means any fee, leasehold or other estate or interest in, over or under land, including structures, fixtures and other

improvements and interests which by custom, usage or law pass with a conveyance of land though not described in the contract of sale or instrument of conveyance.

FF. “Rules and Regulations” means such rules and regulations as are promulgated by the Executive Board from time to time, with respect to various details of the use of all or any portion of the Property, either supplementing or elaborating upon the provisions in the Declaration or the Bylaws.

GG. “Township” means Manheim Township.

HH. “Unit” means a physical portion of the Planned Community designated for separate ownership or occupancy, the boundaries of which are described pursuant to §5205 (relating to contents of declaration; all planned communities) and a portion of which may be designated by the Declaration as part of the Controlled Facilities or Limited Controlled Facilities.

II. “Unit Owner” means a Declarant or other person who owns a Unit. The term does not include a person having an interest in a Unit solely as security.

JJ. “Withdrawable Real Estate” means any part of the Property identified as “Withdrawable Real Estate” on the plats and plans and/or as described in Exhibit “E”, so long as Declarant’s rights to withdraw such Real Estate from the Flexible Planned Community continue to exist.

**ARTICLE II.**  
**ALLOCATION OF PERCENTAGE INTERESTS, VOTES AND**  
**COMMON EXPENSE LIABILITIES; UNIT IDENTIFICATION**  
**AND BOUNDARIES**

Section 2.1 Percentage Interests, Votes and Common Expense Liabilities.

2.1.1 Attached as Exhibit “B” hereto is a list of all Units initially declared by their Identifying Numbers and the Percentage Interest appurtenant to each Unit. The Percentage Interest appurtenant to each Unit is a fraction, the numerator of which is the particular Unit and the denominator of which is the total number of Units within the Planned Community. As additional Units are created from Convertible Real Estate, the Percentage Interest shall be determined in accordance with 2.1.1, with all Units having an equal Percentage Interest.

2.1.2 Each Unit shall have the number of votes in the Association equal to its Percentage Interest.

2.1.3 The share of Common Expense Liability appurtenant to each Unit shall be in proportion to its Percentage Interest.

Section 2.2 Unit Boundaries.

2.2.1 The title lines or boundaries of each Unit are situated as shown on the Plats and Plans and are identical to the boundaries of each Lot as shown on the recorded subdivision plans.

2.2.2 Each Unit consists of the space and any improvements now or hereafter placed within the following boundaries of the Unit. The vertical title lines or boundaries of the Unit shall be the vertical planes, extended to intersections with each other and without any upper or lower boundaries, which vertical planes shall be located on the lines showing the dimensions and location of the Units, as more particularly shown on the Plats and Plans.

2.2.3 Each Unit Owner may construct or have constructed buildings and other improvements upon, above and beneath the surface of their Unit strictly in accordance with this Declaration and with the provisions of all applicable laws and ordinances. Any improvements constructed upon each of the Units shall become part of that Unit as and when it is constructed, and no part of any improvements located upon a Unit shall be considered a Common Element. Notwithstanding the foregoing, any improvement constructed within a Unit which is intended to serve more than one Unit (such as a common utility line or sidewalk) shall be deemed to be subject to an easement in favor of all other Unit Owners which reasonably require the use of such improvement. Common Expense Liability appurtenant to each Unit shall be in proportion to its Percentage Interest.

Section 2.3 Relocation of Unit Boundaries; Subdivision and Conversion of Units. Relocation of boundaries between Units and subdivision or conversion of Units will be permitted subject to compliance with the provisions therefor in §5214 and §5215 of the Act. In the case of a Unit owned by a Declarant, if a Declarant converts all of a Unit to Common Elements, the amendment to the Declaration must reallocate among the Unit Owners votes in the Association and Common Expense Liability formerly allocated to the converted Unit on a pro rata basis. Notwithstanding the foregoing, any subdivision of Units which are the equivalent to lots shown on the recorded subdivision plan for the Planned Community shall be subject to any restrictions on further subdivision as set forth in the notes of the recorded subdivision plan.

Section 2.4 Convertible Real Estate.

2.4.1 Reservation of Option. Declarant explicitly reserves the option, in accordance with the provisions of the Act, until the expiration of ten (10) years from the date of recordation of this Declaration, to create Units and/or Limited Common Elements within and from the Convertible Real Estate as described in Exhibit "D" attached hereto and made a part hereof. The Declarant shall have the right to transfer the options and rights reserved in this Section 2.4.1 by a Transfer of Special Declarant Rights made pursuant to Section 5304 of the Act.

2.4.2 Approval. This option may be exercised by the Declarant without the consent or approval of any Unit Owner or holder of a mortgage for any Unit, excepting any approval required by the Township or any governmental agency.

2.4.3 Termination of Option. This option shall not terminate prior to its expiration ten (10) years from the date of the recording of this Declaration, except by amendment to this Declaration.

2.4.4 Limitation of Option. Declarant expressly reserves the right to create Units and/or Limited Common Elements in and from the Convertible Real Estate, at any time, at different times, in any order, and without limitation, provided however, that the Convertible Real Estate shall not exceed the property as described in Exhibit "D". Declarant shall not be required to create Units or Limited Common Elements within the Convertible Real Estate.

2.4.5 No Assurances as to Convertible Real Estate. The Declarant makes no assurances with respect to the exact location or dimensions of any building that the Declarant may build or Units or Limited Common Facilities that the Declarant may create within the Convertible Real Estate, except that barring such amendments to the subdivision and land use approvals of the Property as may be sought and obtained by the Declarant, buildings and Units, to the extent they are built or created, shall be located in the areas shown on the Plats and Plans. The Declarant makes no assurances with regard to the time in which any Unit or Limited Common Facilities will be created in the Convertible Real Estate, if at all. The Declarant makes no assurances as to the location, size, architectural style, quality of construction or principal materials employed in the construction of any buildings to be erected within the Convertible Real Estate, provided, however, that any such buildings or improvements shall be constructed in accordance with the applicable governmental approvals. The Declarant makes no assurances as to the nature, type, size or maximum number of Limited Common Facilities, if any, it may create within the Convertible Real Estate. The Declarant makes no assurances with regard to the boundaries of the portions of the Convertible Real Estate which may be converted and/or withdrawn, or the order in which they may be converted, except that the Convertible Real Estate shall not exceed the property described in Exhibit "D".

2.4.6 Restrictions. All restrictions in this Declaration affecting use, occupancy and alienation of Units, as well as other provisions of the Declaration, shall apply to such Units and Lots as may be created within the Convertible Real Estate, except that differentiations may be made by Declarant as to such Units and Lots to reflect and account for considerations that are particular to the Convertible/Withdrawable Real Estate.

2.4.7 Voting Strength and Common Expense Liability. The Percentage Interest of Common Expense Liability of each Unit in the Community at the time this Declaration is recorded may be increased or decreased by any actions made pursuant to the conversion option reserved in this Article, and any change in the share of Common Expense Liability shall be made using the formula for obtaining Unit Percentage Interest as set forth in this Declaration. The date for assigning assessments and granting voting rights to Units created pursuant to the conversion option reserved in this Article shall be the date of recording of the Amendment to the Declaration effecting such creation.

2.4.8 Use. Any and all Units created pursuant to the conversion option reserved in this Article shall be restricted exclusively to residential use, pursuant to Section 8.2.1 of this Declaration.

2.4.9 Procedure for converting Convertible Real Estate. Upon Declarant's election to exercise the options reserved in this Article, as to all or any portion of the Convertible Real Estate, Declarant shall, at its own cost and expense, prepare, execute and record an amendment to this Declaration in accordance with the provisions of the Act, so as to convert such Convertible Real Estate and create Units, Limited Common Facilities, or both. The Declarant shall have this right to amend without the approval of any Unit Owner or any mortgagee holding, insuring or guaranteeing a lien against any Unit. Any such amendment(s) shall be effective upon recordation with the Lancaster County Recorder of Deeds Office.

2.4.10 Maximum Number of Units. The maximum number of Units that may be created within the real property described in Exhibit "A" is one hundred twenty four (124) Units.

Section 2.5 Additional Real Estate. The Community has no Additional Real Estate.

Section 2.6 Withdrawable Real Estate. Declarant hereby explicitly reserves an option, until the tenth (10th) anniversary of the recording of this Declaration, to withdraw Withdrawable Real Estate from the Planned Community from time to time in compliance with §5212 of the Act, without the consent of any Unit Owner or holder of a mortgage on any Unit. This option to withdraw may be terminated prior to such anniversary only upon the filing of an amendment to this Declaration by Declarant. Declarant expressly reserves the right to withdraw any or all portions of the Withdrawable Real Estate at any time, at different times, in any order, without limitation and without any requirement that any other Real Estate be withdrawn, added or converted, except as set forth in §5212 of the Act; provided, however, that the Withdrawable Real Estate shall not exceed the area described as such on Exhibit "E" hereto. There are no other limitations on this option to withdraw the Withdrawable Real Estate from the Planned Community.

Section 2.7 Easements Regarding Withdrawable Real Estate.

If and when Withdrawable Real Estate is withdrawn from the Property in accordance with the provisions of this Declaration, the following reciprocal easements shall be created and granted in favor of and against the Unit Owners and the Association, on the one hand, and the owners and occupants of the portion of the Withdrawable Real Estate withdrawn from the Property, on the other hand:

2.7.1 A non-exclusive easement and right-of-way over, on, and upon any roads and streets created within the Property for ingress and egress to and from any public streets serving the Property.

2.7.2 The right of access for the placement and maintenance of underground utility facilities to serve any owner of any portion of the Property, including, inter alia, electrical, gas (including without limitation propane gas), telephone, sewer and water lines provided that the exercise of said rights does not materially interfere with the existing utility facilities.

2.7.3 The right to use and gain access to existing utility facilities located on the Property, including, inter alia, the waterlines, sanitary sewer and storm sewer facilities, and to tie into said facilities, together with the right to install and maintain new utility facilities, provided that the exercise of such rights does not materially interfere with the existing utility facilities.

2.7.4 The right to enter upon the Property at reasonable times for the purpose of laying, constructing, inspecting, maintaining, repairing or removing said utility facilities.

2.7.5 Prior to withdrawing Withdrawable Real Estate, the Declarant shall execute and record a Declaration of Reciprocal Easements creating the rights above, subject, inter alia, to the following conditions:

A. The party exercising such easement rights for the installation of utility facilities shall be solely responsible for all expenses of whatever nature with regard to the initial construction and installation of said utility facilities.

B. Any party exercising the easement right to install utility facilities over, under or through the Property shall observe all applicable laws pertaining thereto. All work shall be done during reasonable times, following reasonable notice to any party who will be affected by the work, and shall be done in a manner which shall not unreasonably interfere with the use of the Property by the owners and occupants thereof.

C. The party exercising such easement right, at its sole cost, shall promptly restore the Property to its original condition.

D. The expense of operating, maintaining and repairing any area or facility, subject to a reciprocal easement, shall be equitably apportioned among the owners using said areas or easements, considering all pertinent use factors.

E. The party exercising any easement right shall indemnify and hold harmless all other owners within the Property from all loss, damage, claims or expenses, including reasonable attorneys' fees, resulting from its negligent or improper exercise of the easements and other rights granted herein.

**ARTICLE III.  
ALLOCATION AND RESTRICTION OF COMMON FACILITIES,  
CONTROLLED FACILITIES, LIMITED COMMON FACILITIES AND LIMITED  
CONTROLLED FACILITIES**

Section 3.1 Common Facilities. Declarant has indicated on the Plats and Plans the areas of Real Estate that are to be used as Common Facilities. Upon completion of the Common Facilities by Declarant the same will be conveyed in their entirety to the Association by Declarant or a successor to the interest of Declarant by the later of the date



of conveyance or lease of the last Unit. Without limiting the generality of Section 1.4.2I hereof, the following portions of the Property are hereby designated as Common Facilities:

3.1.1 Open Space Area Lot 127, unless and until the Open Space Area Lot 127 is dedicated to and accepted by the Township as park land/open space to be dedicated for recreational use, which deed of dedication is to be recorded after the recording of this Declaration.

3.1.2 The streets located or to be located within the Planned Community known as Bluegrass Road, Telford Avenue, Barclay Drive, Homestead Lane, Stoner Lane, Groff Lane and Hershey Lane together with all easements located therein, unless and until the streets are dedicated to and accepted by the Township as public streets. Barclay Drive, Groff Lane and Hershey Lane are to be located within a future phase of the Planned Community.

3.1.3 The landscape island dividing Telford Avenue as shown on the Plats and Plans.

3.1.4 Any other area shown and identified as such on the Plats and Plans.

Section 3.2 Binding Obligation. The obligation of Declarant to convey or lease to the Association the Common Facilities shall be binding on Declarant and any successor in interest of Declarant whether or not the successor succeeds to any Special Declarant Rights. The conveyance of the Common Facilities will be for no consideration other than the Association's acceptance of the conveyance.

Section 3.3 Ownership of Common Facilities prior to Association. Declarant will own the Common Facilities prior to the conveyance to the Association.

Section 3.4 Limited Common Facilities. Those portions of the Common Facilities serving only one or more, but fewer than all, Units within the Planned Community are Limited Common Facilities allocated only to the Unit or Units which they serve. Without limiting the generality of Section 1.4.2X hereof, the following portions of the Property are hereby designated as Limited Common Facilities:

3.4.1 Any areas shown and identified as such on the Plats and Plans.

Section 3.5 Controlled Facilities. Those portions of the Real Estate, whether or not a part of a Unit, that are not a Common Facility and which are maintained, improved, regulated, managed, insured and controlled by the Association. Without limiting the generality of Section 1.4.2J, hereof, the following portions of the Property are designated as Controlled Facilities:

3.5.1 Storm water lines and inlets and other stormwater management facilities located within stormwater drainage easements not located in the streets as shown on the Plats and Plans;

3.5.2 Sanitary sewer lines located within sanitary sewer easements not located in the streets and not dedicated pursuant to Section 3.9 as shown on the Plats and Plans;

3.5.3 Utility, maintenance and emergency access easements as shown on the Plats and Plans;

3.5.4 Stormwater drainage easements as shown on the Plats and Plans, except that the Unit Owner will be responsible for mowing the grass within the easement areas;

3.5.5 Sanitary sewer easements as shown on the Plats and Plans;

3.5.6 Such portions of the sidewalks adjacent to the detention basin located on Unit No. 73 (to be created from the Convertible/Withdrawable Real Estate in a future phase of the Planned Community);

3.5.7 Retaining walls as shown on the Plats and Plans. The Association shall have a perpetual easement to enter upon such Units having said retaining walls as shown on the Plats and Plans for the purposes of maintaining said walls;

3.5.8 The mailbox cluster(s) as shown on the Plats and Plans, provided that each Unit Owner shall be responsible for any lost or damaged key(s) and for rekeying his mailbox for any reason;

3.5.9 The proposed trail connection;

3.5.10 The monument signs as shown on the Plats and Plans and all lines providing power to the same. The Association shall have a perpetual easement to enter upon such Units having said monuments as shown on the Plats and Plans for the purposes of maintaining said monuments; and

3.5.11 Any other area shown and identified as such on the Plats and Plans.

Section 3.6 Limited Controlled Facilities. Those portions of Controlled Facilities, other than the Controlled Facilities which are themselves part of a Unit allocated by or pursuant to the Declaration for the exclusive use of one or more but fewer than all of the Units. The following portions of the Property are designated as Limited Controlled Facilities:

3.6.1 Concrete curbs and sidewalks appurtenant to a Unit; provided, however, that each Unit Owner shall have the responsibility for repairing or replacing the sidewalks in front of their Unit and for snow and ice removal from the sidewalks in front of their Unit;

3.6.2 The mailbox cluster(s) as shown on the Plats and Plans, provided, however, that each Unit Owner shall be responsible for the cost of the key and any necessary rekeying of the mailbox assigned to his Unit; and

3.6.3 Any areas shown and identified as such on the Plats and Plans.

Section 3.7 Use of Sidewalk. All Unit Owners, their families, guests and invitees, shall have a non-exclusive easement for pedestrian uses over and upon all sidewalks even if those sidewalks are designated as Limited Controlled Facilities appurtenant to one or more Units.

Section 3.8 Changes by Executive Board. Subject to any limitation herein, the Executive Board may make any additions, alterations or improvements to the Common Elements which in its judgment it deems necessary.

Section 3.9 Dedicated Improvements The following improvements may be offered by Declarant for dedication to the Township, the Municipal Authority, a Utility Service Provider or some other third party:

3.9.1 Water lines, sanitary sewer lines, storm sewer lines and utility facilities, except for that portion of any water line or sewer line located within the boundaries of a Unit and connecting the Dwelling to a water main or sewer main, which shall be maintained, repaired and replaced by the Unit Owner.

3.9.2 The pipes, inlets, and related storm sewer facilities located within the public right-of-way.

3.9.3 The streets within the Community known as Bluegrass Road, Telford Avenue, Barclay Drive, Homestead Lane, Stoner Lane, Groff Lane and Hershey Lane, together with all easements located therein, if offered for dedication to the Township by Declarant, and if the Township accepts the offer of dedication. In the event that the Township does not accept the offer of dedication for the streets, then the Declarant shall convey the streets to the Association and the Association shall accept such conveyance so that the streets will be owned and maintained by the Association as a Common Facility.

3.9.4 Lot 127 as identified on the Plats and Plans.

3.9.5 Any other area shown and identified as such on the Plats and Plans.

#### **ARTICLE IV. MAINTENANCE, REPAIR AND REPLACEMENT RESPONSIBILITIES**

Section 4.1 Maintenance Responsibilities. The Units, including all improvements constructed thereon, shall be maintained and repaired by each Unit Owner, and the Common Elements as defined in this Declaration shall be maintained and repaired by the Association in accordance with the provisions of §5307 of the Act, except as expressly set forth to the contrary in this Declaration or the By-Laws.

Section 4.2 Association Maintains Common Elements. The Association shall maintain, repair and replace all of the Common Elements, Controlled Facilities and Limited Controlled Facilities, as defined in this Declaration (except the portions of the Limited Common Elements which are required by this Declaration or By-Laws to be maintained, repaired or replaced by the Unit Owner) so that the same are in good order and repair and in an attractive condition consistent with a residential community, and in connection therewith, the Association shall continually keep and maintain, or cause to be continually kept and maintained, all improvements to the Common Elements, Controlled Facilities and Limited Controlled Facilities in a safe, sightly and serviceable condition which repair and maintenance shall include replacement, cleaning, lighting, painting, landscaping, mowing, walks, interim pump station and drainage facilities, directional signs and lighting facilities as necessary from time to time and reconstruction of stormwater facilities to Township

standards. Maintenance of the Common Elements by the Association includes the payment of all utility charges applicable to the Common Elements. Provided, however, that each Unit Owner shall be responsible for snow removal in front of their respective Units.

Upon approval of the permittee's notice of termination by the Pennsylvania Department of Environmental Protection ("DEP") or by an authorized county conservation district, it shall be deemed that the Association, and if required each Unit Owner, agree to and shall become responsible for compliance with the storm water management facilities' permit terms and conditions, including the long-term operation and maintenance of post construction storm water best management practices in accordance with applicable requirements and as described in the Final Subdivision Plan and the Post Construction Stormwater Management Plan ("PCSM") and any subsequent subdivision plan and PCSM plans for future phases of the Planned Community. Except as otherwise stated herein, the Declarant shall remain responsible for compliance with other obligations with respect to storm water management facilities as may be required by the Final Subdivision Plan, the PCSM Plan, the Declaration or the Stormwater Management Agreement and Declaration of Easement with the Township (which is being recorded concurrently herewith) until such time as the obligations of the Declarant may cease.

Section 4.3 Units and Limited Common Elements. Each Unit Owner shall maintain, repair and replace, at his own expense, all portions of his Unit and the Limited Common Elements appurtenant thereto in a safe, clean condition, except the portions which are required by this Declaration or By-Laws to be maintained, repaired or replaced by the Association.

Section 4.4 Association Maintains Stormwater Management Facilities on Farmette Lot.

The Association shall maintain the stormwater management facilities located within the stormwater drainage easements on the Farmette Lot (Lot 126) as further described in Section 5.4 below.

## **ARTICLE V. EASEMENTS**

Section 5.1 Easements. In addition to and in supplementation of the easements provided for by §5216 (easement for encroachment), §5217 (Declarant offices, models and signs and §5218 (easement to facilitate completion, conversion and expansion) of the Act, the following easements are hereby created:

5.1.1 Common Elements. Declarant reserves the right to place one or more models, management offices and sales offices, and construction trailers on any portion of the Common Elements in such manner, of such size and in such locations as Declarant deems appropriate. Declarant may from time to time relocate models, management offices and sales offices, and construction trailers to different locations within the Common Elements. Declarant shall have the right to remove any such models, management offices and sales offices, and construction trailers from the Common Elements at any time up to thirty (30) days after Declarant ceases to be a Unit Owner. Upon the relocation of a model or office constituting a Common Element, Declarant may remove all personal property and fixtures therefrom. Any fixtures not so removed shall be deemed Common Elements, and

any personal property not so removed shall be deemed the property of the Association. In addition, Declarant reserves the right with respect to its marketing of Units to use the Common Facilities for the ingress and egress of Declarant and its officers, employees, agents, contractors and subcontractors. The Declarant shall also have the right until the conveyance of the last Unit it owns to erect signs on the Property in connection with its marketing of Units. Any damage to the Common Facilities resulting from this easement shall be repaired by the Declarant within a reasonable time after the completion of its sales of the Units or termination of such use of the Common Facilities, whichever shall first occur. The Declarant agrees to indemnify and to hold the Association harmless from all liabilities resulting from the use of the Common Facilities in conjunction with the marketing of Units. The rights reserved for the Declarant by this Section 5.1 shall remain in effect for as long as the Declarant shall remain a Unit Owner in the Planned Community. This Section shall not be amended without the prior written consent of the Declarant.

5.1.2 Signs. Subject to any limitation in the Declaration, Declarant may maintain signs in Declarant's Units and on the Common Elements advertising Units in the Planned Community owned by Declarant for sale or lease.

5.1.3 Units. Declarant shall have the right to locate, relocate and maintain offices and models used only in connection with management of or sale or rental of Units owned by Declarant in the Planned Community in Declarant's Unit or Units in the Planned Community notwithstanding the fact that the Declaration would otherwise preclude use of Units for such purposes, but subject to all other provisions in Declaration, including without limitation, modification or elimination of Declarant's rights under this subsection by specific reference thereto.

5.1.4 Utility Easements. The Units and Common Elements, which includes Common Facilities and/or Controlled Facilities, shall be, and are hereby, made subject to easements in favor of Declarant, appropriate utility and service companies and governmental agencies or authorities for such utility and service lines and equipment as may be necessary or desirable to serve any portion of the Property. The easements created in this Section 5.1.4 shall include, without limitation, rights of Declarant, or the providing utility or service company, or governmental agency or authority to install, lay, maintain, repair, relocate and replace gas lines, pipes and conduits, water mains and pipes, sewer and drain lines, telephone wires and equipment, television equipment and facilities (cable or otherwise), electric wires, conduits and equipment and ducts and vents over, under, through, along and on the Units and Common Elements.

5.1.5 Reciprocal Non-exclusive Easement for Use of Utility Systems. Subject to compliance with applicable laws and regulations, and subject to obtaining the prior written consent of the Executive Board, which consent will not be unreasonably withheld, delayed or conditioned, the Common Elements (including but not limited to the Limited Common Elements) shall be and are hereby made subject to a permanent, mutual, reciprocal, non-exclusive easement and right to tie into (and maintain and repair such tie in) and use the sanitary and storm sewers, water lines and other utilities as may be constructed on the Common Elements for the mutual and reciprocal benefit of the Units, provided that such use shall not overburden such utilities or unreasonably interfere with the use thereof by the

owners and occupants of the other Units. The Association shall have the right to dedicate any utilities to a public utility or other proper entity.

5.1.6 Declarant's Easement to Correct Drainage. Declarant reserves an easement on, over and under those portions of the Common Elements, Controlled Facilities and Limited Controlled Facilities for the purpose of maintaining, reconstructing and correcting drainage of surface water in order to maintain reasonable standards of health, safety and appearance. The easement created by this Section 5.1.6 expressly includes the right to cut any trees, bushes, or shrubbery, to grade the soil, or to take any other action reasonably necessary to achieve this purpose, following which Declarant shall restore the affected property as closely to its original condition as practicable.

5.1.7 Declarant's Easement for Development of Convertible Real Estate. The Declarant reserves an easement on, over and under Common Elements for all purposes relating to the construction, development, leasing and sale of improvements on the Convertible Real Estate. This easement shall include without limitation, the right of vehicular and pedestrian ingress and egress, the right to park motor vehicles and to engage in construction and marketing activities of any nature whatsoever, including the movement and storage of building materials and equipment, the conduct of sales, leasing and management activities, the maintenance of models and offices, construction trailers, and the erection and maintenance of directional and promotional signs. The Declarant's easement hereunder shall remain in full force and effect on, over and under any portions of the Withdrawable Real Estate, even after said portion(s) have been withdrawn from the Community.

5.1.8 Declarant's Landscaping Easement. Declarant reserves an easement on, over and under those portions of the Common Elements, Controlled Facilities and Limited Controlled Facilities for the purpose of planting and maintaining trees, shrubs and all other landscaping required by the Plats and Plans.

Section 5.2 Temporary Easement for Construction. During such time as the Declarant is conducting construction activities within the Property, the Declarant reserves unto itself, its agents, employees and contractors, the right to enter onto the unimproved portions of any Unit within the Planned Community as may reasonably be necessary to facilitate the Declarant's construction, repair or replacement activities, provided however that the Declarant shall take reasonable steps to minimize any interference with a unit Owner's use of his or her Unit and shall promptly repair any damage to a Unit resulting from the Declarant's exercise of the rights it has pursuant to this Article.

### Section 5.3 Township Rights.

5.3.1 Township's Easement for Inspection of Stormwater Facilities. Declarant grants to the Township an easement for ingress, egress and regress for the purpose of inspecting, cleaning, repairing or reconstructing Common Elements, including drainage facilities, subject to the provisions of this Section 5.3. It is understood that the Township shall have the right but not obligation to inspect, clean, repair or reconstruct Common Elements.

5.3.2 Cost of Township's Maintenance Activities. If the Township performs maintenance or repair activities for all or any portion of the Common Elements in accordance with Section 5.3.1 above, the Township shall have the right to impose a Municipal Lien (*See* 53 P.S. §7106, as amended) against the Association and/or directly against the Unit Owners for the costs incurred by the Township, together with any other amounts collectible by the Township under the Pennsylvania Municipal Lien Law, as amended from time to time.

5.3.3 Pennsylvania Municipalities Planning Code. The rights of the Township set forth in Section 5.3.1 above and the provisions of Section 5.3.2 above are imposed consistent with the requirements of the Pennsylvania Municipalities Planning Code and shall be construed consistent with the rights of the Association with respect to the imposition of assessments, the creation of liens for same, and the collection of same as provided herein or in the Act.

#### Section 5.4 Stormwater Drainage Easements on Farmette Lot.

Declarant, as the current owner of the Farmette Lot (Lot 126), and the Association have entered into a Stormwater Drainage Easement and Maintenance Agreement ("Stormwater Agreement"), which is to be recorded concurrently herewith. As further described in the Stormwater Easement Agreement, the Farmette Lot is subject to certain stormwater management easements so that stormwater can drain from the Planned Community into the stormwater management facilities to be constructed on the Farmette Lot within said easements. Declarant shall initially construct the stormwater management facilities on the Farmette Lot. Thereafter, the Association shall be responsible to reconstruct, maintain, repair and replace said stormwater management facilities on the Farmette Lot and to regrade as necessary to permit the continued flow of stormwater onto the Farmette Lot. The Association is granted an access easement onto the Farmette Lot in order to perform such maintenance. Any expenses incurred by the Association in connection with the maintenance, repair, and replacement of the stormwater management facilities on the Farmette Lot and with the Stormwater Agreement, including any enforcement actions, shall be Common Expenses and assessed against the Units in accordance with their respective Common Expense Liability and Percentage Interest.

#### Section 5.5 Deed of Easement on Farmette Lot.

Declarant, as the current owner of the Farmette Lot (Lot 126), and the Association have entered into a Deed of Easement, which is to be recorded concurrently herewith ("Deed of Easement"). The Deed of Easement (1) restricts the owner of the Farmette Lot from performing any construction, alteration, remodeling or any other activity that would substantially affect the historically significant exterior features of the buildings located thereon unless the prior permission of the Association is obtained; (2) requires the said owner to maintain and keep the Farmette Lot in a state of good order, repair and condition as further described therein; (3) prohibits any commercial or business use or other change or alteration in the use of the Farmette Lot; (4) prohibits any further subdivision of the Farmette Lot; and (5) prohibits additional construction, alteration, remodeling and/or other activities on the Farmette Lot as more fully set forth in the terms and conditions of the Deed of Easement unless otherwise approved in writing by the Association and permitted by the Township in writing. The Association is granted access to the Farmette Lot to verify and enforce the owner's compliance with its obligations in the Deed of

Easement. In addition, the Township has the right to enter the Farmette Lot and further has the right, but not the duty or obligation, to take such corrective measures as the Township seems necessary or appropriate to enforce the terms of the Deed of Easement. The Deed of Easement may not be amended or terminated without the consent and approval of the Township. Any expenses incurred by the Association in connection with the Deed of Easement shall be Common Expenses and assessed against the Units in accordance with their respective Common Expense Liability and Percentage Interest.

#### Section 5.6 Mailbox Easement on Lot 126.

Declarant as the owner of Lot 126 hereby grants an easement to the Association and Unit Owners over such southwestern portion of Lot 126 between Unit 19 and Unit 20 as shown on the Plats and Plans labeled as "Mailbox Easement" for access to the mailbox cluster that will be located within said easement. The Association shall be responsible to maintain, improve, regulate, manage, insure and control the mailbox cluster to be located within the Mailbox Easement; provided, however, that each Unit Owner shall be responsible for the cost of the key and any necessary rekeying of the mailbox assigned to his Unit.

### ARTICLE VI. COMPLETION OF COMMON FACILITIES

Section 6.1 Time for Completion. Improvements to Common Facilities will be completed no later than the date of the conveyance or lease by Declarant of the last Unit Declarant reserves the right to include in the Planned Community or the date of the rights under § 5211 of the Act.

Section 6.2 Responsibility for Common Facilities Until Completed. Until the Common Facilities are conveyed to the Association, Declarant shall be solely responsible for real estate taxes assessed against or allocable to the Common Facilities and for all other expenses in connection with the Common Facilities.

Section 6.3 Bonding of Common Facilities. Declarant is providing financial security to the Township to assure completion of the Common Facilities.

### ARTICLE VII. AMENDMENT OF DECLARATION

Section 7.1 Amendment Generally. This Declaration, including the Plats and Plans, may be amended only by vote of at least sixty-seven (67%) percent of the Association, except unanimous consent of all Unit Owners affected shall be required to create or increase Special Declarant rights, alter the terms or provisions governing the completion or conveyance or lease of Common Facilities or increase the number of Units or change in the boundaries of any Unit, the Common Expense Liability or voting strength in the Association allocated to a Unit, or the uses to which a Unit is restricted. No Declaration provisions pursuant to which any Special Declarant rights have been reserved to a Declarant shall be amended without the express written joinder of Declarant in such amendment. This section shall not apply to an amendment executed by a Declarant under §5210 (e) or (f) (relating to Plats and Plans), or amendments executed by the Association under §5107 (relating to eminent domain), §5209 (relating to Limited Common Elements),



§5215 (relating to subdivision or conversion of Units) or amendments executed by certain Unit Owners under §5209(b), §5214(a) (relating to relocation of boundaries between Units), §5215, and §5220(b) (relating to termination of Planned Community). No Declaration provisions providing for any rights or protections of the Township, including the provisions of Section 5.3, shall be amended without the consent of the Township.

**Section 7.2 Technical Corrections.** If any amendment to the Declaration is necessary in the judgment of the Executive Board to cure an ambiguity, correct or supplement any provision of the Declaration, including Plats and Plans, that is defective, missing or inconsistent with any other provision of the Declaration or the Act or conform to the requirements of any agency or entity that has established national or regional standards with respect to loans secured by mortgages or deeds of trust or units in planned community or so called "PUD" projects, such as Federal National Mortgage Association and the Federal Home Loan Mortgage Corporation, the Executive Board may adopt an appropriate corrective amendment without the approval of the Unit Owners or the holders of liens on the Planned Community, upon receipt of an opinion from independent legal counsel to the effect that the proposed amendment is permitted by the terms of §5219 of the Act.

**Section 7.3 Rights of Secured Lenders.** Annexation of additional properties, mergers and consolidations, dedication of Common Areas, and amendment of the Declaration, require prior approval of HUD/VA as long as Declarant exercises his Special Declarant rights which extend for a period of seven (7) years from the date of the first conveyance of a Unit to a person other than Declarant; provided, however, that Declarant's special rights will terminate sixty (60) days after conveyance of seventy-five (75%) percent of the Units which may be created to Unit Owners other than Declarant. Declarant's special rights which entitle him to unilaterally convert convertible real estate, cause mergers and consolidations and appoint or remove the Executive Board, extend from the date of the first conveyance of a Unit to a person other than Declarant for not more than seven (7) years; provided, however, that Declarant's special rights will terminate sixty (60) days after conveyance of seventy-five (75%) percent of the Units which may be created to Unit Owners other than Declarant.

## **ARTICLE VIII. USE RESTRICTIONS**

**Section 8.1 Architectural Standards.** The occupancy and use of the Units and Common Elements shall be subject to the following:

### 8.1.1 Creation.

A. There shall be an architectural committee (referred to as the "Architectural Standards Committee" or "Committee") for the Planned Community. The Committee shall have a minimum of three (3) members, each of whom shall, notwithstanding the expiration of the period referred to in the provisions hereof, serve as such until the earlier to occur of (i) his or her resignation from the Committee, or (ii) his or her replacement pursuant to the following provisions of this Section by the Declarant or the Executive Board.

B. The Declarant shall have the exclusive right from time to time to designate and replace the members of the Committee until the earlier to occur of (i) the seventh (7th) anniversary of the date of the first conveyance of a Unit to a person other than the Declarant, or (ii) sixty (60) days after conveyance of seventy-five (75%) percent of the Units which may be created to Unit Owners other than Declarant. Thereafter, the Executive Board shall have the exclusive right to designate and replace the members of the Architectural Standards Committee who will serve at the pleasure of the Executive Board.

#### 8.1.2 Approval.

A. Subject to the operation and effect of the provisions of this Article VIII, and except for any improvements by Declarant, no improvement(s) or other structure of any kind whatsoever shall be constructed, reconstructed, placed, maintained or modified (other than: (i) exterior repainting in the same color as the existing color, upon prior written approval of the Committee, and (ii) interior painting or other modifications not visible from or affecting the exterior of the dwelling), and no landscaping on a lot shall be altered, unless such action and such improvement has been approved expressly and in writing by the Committee, which shall have the absolute right to refuse to grant such approval for an aesthetic or other reasonable cause, and to withhold such approval until plans and specifications, showing in reasonable detail the nature, kind, shape, height, materials, location and approximate cost of such improvement, have been submitted to and approved by the Committee expressly and in writing. In considering whether to grant such approval, the Committee may consider the suitability of such proposed improvement with relation to such Unit and the other Units, and may base such consideration upon such, if any, information concerning the nature, kind, shape, heights, materials, location and approximate cost of such improvement as is furnished to the Committee, as aforesaid, all to the end that such improvement shall be in harmony with and have no adverse effect upon its immediate surroundings and the other Units.

B. If any Unit Owner submits to the Committee a written application for approval of any improvement, as aforesaid, and if the Committee has not disapproved, in writing, said application within sixty (60) days of receipt thereof, such approval shall thereupon be deemed to have been given; provided, however, that any written requests for approval together with all plans and specifications or other specifications and information as may be required by the Committee shall be submitted to the Committee by registered or certified mail or in person.

C. The affirmative vote of a majority of the members of the Committee shall be required for it to take any action; provided that such majority may designate one member to act for it.

D. Construction of any alterations or structures in accordance with plans and specifications approved by the Committee pursuant to the provisions hereof shall be commenced within six (6) months following the date of approval and completed within twelve (12) months of commencement thereof, or within such other period as the Committee shall specify in its approval. If the event construction is not commenced and completed within the aforesaid periods, then approval of the plans and specifications by the Committee shall be conclusively deemed to have lapsed and compliance with the provisions of this Article shall again be required. After construction, all structures and alterations shall be maintained continuously in strict conformity with the plans and specifications so approved and all applicable law.

E. The approval of the Committee of any structure or alteration shall in no way be deemed to relieve the Unit Owner from its obligation to obtain any and all governmental permits and approvals necessary for such Structure or alterations.

F. If any Structure is altered, erected, placed or maintained on any Lot other than in accordance with approved plans and specifications therefor, this Declaration and applicable law, such action shall be deemed to be a violation of the provisions of this Declaration and, promptly after the Association gives written notice thereof to its Owner, such structure shall be removed or restored to its condition prior to such action, and such use shall cease, so as to terminate such violation. If within thirty (30) days after having been given such notice, such Owner has not taken reasonable steps to terminate such violation, any agent of the Association may enter upon such Lot and take such steps as are reasonably necessary to terminate such violation. Such Owner shall be personally liable to the Association for the cost thereof, to the same extent as he is liable for an assessment levied against such Lot, and, upon the failure of the Owner to pay such cost within ten (10) days after such Owner's receipt of written demand therefor from the Association, the Association may establish a lien therefor upon such Lot in accordance with and subject to the provisions of this Declaration applicable to an assessment lien.

8.1.3 Any member of the Committee, upon the occurrence of a violation of the provisions of this Declaration, and after the Association or the Committee gives written notice thereof to the Owner of the applicable Lot, at any reasonable time, may enter upon and inspect any Lot and the exterior of any structure thereon to ascertain whether the maintenance, construction or alteration of such structure or alteration are in accordance with the provisions hereof.

8.1.4 Upon completion of construction of any structure or alteration in accordance with the provisions hereof, the Committee, upon request of the applicant shall issue a certificate of compliance ("Certificate") identifying such structure and the Lot on which such structure is placed, and stating that the structure has been completed pursuant to the terms hereof. The Certificate shall be retained in the records of the Association. Any

Certificate issued pursuant hereto shall be prima facie evidence of the facts therein stated, and as to any title insurer, such Certificate shall be conclusive evidence that all structures on the Lot noted in the Certificate complies with the provisions hereof.

Section 8.2 Prohibited Uses and Nuisances. Except for the activities of Declarant during original development:

8.2.1 Residential Purposes Only. Units shall be used as dwelling houses for residential purposes only. No Unit may be used as a boarding house (with multiple families in one dwelling), hostel, bed-and-breakfast or similar use or as a vacation rental, such as Airbnb, Vrbo, Homeaway. No store, tavern, beauty salon, barbershop or other public commercial or industrial establishment, with the exception of home occupations as specifically permitted under the Township Zoning Ordinance, shall be maintained therein. Declarant reserves the right to maintain Units as a model single family residence for display to prospective purchasers. These model Units shall comply with all other restrictions and covenants set forth in this Declaration. No temporary structure of any kind, such as, but not limited to, sheds, trailers, tents, shacks, barns or outbuildings shall be erected, placed or maintained on any Unit.

8.2.2 Storage of Vehicles and Equipment. No outside storage of unregistered vehicles, motorized off-road vehicles, lawn mowing equipment or snowmobiles shall be permitted. Boats, campers, recreational vehicles, trailers of any type, or commercial vans or vehicles may be stored outside if they are parked on a paved parking pad parallel with the garage and a plant buffer is provided between the parking pad and the side boundary of the Unit.

8.2.3 Operation of Off-Road Vehicles. No motorized off-road recreational vehicles may be operated on any Lot or any public or private road, sidewalk or walking path in the Planned Community.

8.2.4 Reception Equipment. No radio aerial, antenna or satellite or other signal receiving dish, or other aerial or antenna for reception or transmission, shall be placed or kept on a Unit outside of a dwelling, except on the following terms:

A. An Owner may install, maintain and use on its Unit one (or, if approved, more than one) Small Antenna (as hereinafter defined) in the rear yard of a dwelling on the Unit, at such location, and screened from view from adjacent dwellings in such a manner and using such trees, landscaping or other screening material, as are approved by the Committee, in accordance with the terms of this Declaration. Notwithstanding the foregoing terms of this subsection, (i) if the requirement that a Small Antenna installed on a Unit be placed in the rear yard of a dwelling would impair such Small Antenna's installation, maintenance or use, then it may be installed, maintained and used at another approved location on such Unit where such installation, maintenance or use would not be impaired; (ii) if and to the extent that the requirement that such Small Antenna be screened would result in any such impairment, such approval shall be on terms not requiring such screening; and (iii) if the prohibition against installing, maintaining and using more than one (1) Small Antenna on a Unit would

result in any such impairment, then such Owner may install on such Unit additional Small Antenna as are needed to prevent such impairment (but such installation shall otherwise be made in accordance with this subsection).

B. In determining whether to grant any approval pursuant to this Section, neither Declarant, the Committee nor the Executive Board shall withhold such approval, or grant it subject to any condition, if and to the extent that doing so would result in an impairment.

C. As used herein, (i) "impair" has the meaning given it in 47 Code of Federal Regulations Part 1, Section 1.4000, as hereafter amended; and (ii) "Small Antenna" means any antenna (and accompanying mast, if any) of a type, the impairment of the installation, maintenance or use of which is the subject of such Federal regulation. Such antennae are currently defined thereunder as, generally, being one (1) meter or less in diameter or diagonal measurement and designed to receive certain types of broadcast or other distribution services or programming.

8.2.5 Fuel and Utility Storage. Outside above ground or below ground fuel storage tanks or other utility storage devices are prohibited. This provision does not include propane or similar tanks used in connection with normal residential gas or similar grills or outdoor cooking equipment.

8.2.6 Waste Disposal. All dumping, burning or storage of waste materials shall be performed only in compliance with applicable laws, ordinances and regulations.

8.2.7 Temporary Structures. Temporary Structures shall be permitted only during construction and shall be removed not later than thirty (30) days after completion of construction.

8.2.8 Signs. No signs shall be permitted except for (i) one permanent sign indicating the name of the owner of a Unit; (ii) one temporary sign relating to construction then being performed on such Unit; and (iii) one temporary sign indicating that such Unit is being offered for sale. No sign permitted under this paragraph shall be of a size greater than eighteen (18) inches by twenty-four (24) inches. This Section 8.2.8 shall not apply to signs erected by Declarant while the Property is being developed.

8.2.9 Offensive Activities. No obnoxious, dangerous or offensive activity or nuisance and no business, trade or commercial activity of any kind shall be conducted or maintained upon any part of a Unit.

8.2.10 Animals. No animal, fowl or other livestock shall be kept or maintained on any Unit, except for domestic house pets which are not kept, bred or maintained for commercial or business uses or purposes. Such domestic pets shall not be kept or maintained in numbers which may cause annoyance to neighboring Unit Owners. No domestic house pets permitted under this Section 8.2.10 may be housed outside and any such outdoor structures (for example, dog houses) are strictly prohibited. Whenever any such domestic house pets are outside, they shall be kept on leashes or otherwise under the

direct and immediate control of their owners. Unit Owners shall be responsible for promptly cleaning up after any domestic animals maintained by them and shall not permit any animal waste to accumulate on their Unit or on any portion of the Planned Community.

8.2.11 Further Subdivision. There shall be no further subdivision of any Unit by a Unit Owner other than the Declarant.

8.2.12 Dwelling size. No more than one (1) dwelling house may be constructed on each Unit. All dwelling houses and accessory buildings must meet all setback, yard and other requirements of all applicable ordinances and regulations.

8.2.13 Accessory Buildings. All gazebos and other fully or partially enclosed buildings or structures which are not part of a dwelling house shall be considered Accessory Buildings. Accessory buildings shall be permitted only within rear yard areas (i.e., behind the rear façade of the dwelling) on any Lot in the Planned Community; provided, however, all Accessory Buildings must be consistent with the design, materials and appearance of the home constructed on such Lot and shall be subject to the approval of the Committee.

8.2.14 Swing Sets. Swing sets and similar play equipment shall be located only within the rear yard area (i.e. behind the rear façade of the dwelling) of any Lot within the Planned Community.

8.2.15 Clothesline. No outdoor clotheslines shall be permitted.

8.2.16 Driveways. All driveways shall be paved with asphalt. Shared or multiple driveways shall be permitted only if required by the approved subdivision plan of the Planned Community. Patios, walkways and other impervious surface areas shall be constructed of materials similar to any driveway or driveways constructed on the Unit.

8.2.17 Roofing. Roofing materials shall be asphalt or fiberglass shingles.

8.2.18 Siding. Siding materials shall be stone (natural or man-made), brick, vinyl, cement or dryvit.

8.2.19 Shutters. All windows on the front façade of the dwelling shall have color-matching vinyl shutters.

8.2.20 Fences. All fences or freestanding walls shall be constructed of either black wrought iron or black anodized aluminum. No fence shall be greater than four (4) feet in height. No fencing shall be permitted in any front yard area of a Unit and no privacy fencing shall be permitted that creates a solid wall.

8.2.21 Lighting. Exterior lighting shall be shielded to prevent glare and shall not directly light areas beyond Unit boundaries. Post lights shall be installed and maintained as required by the Township. No decorative holiday lighting shall be placed on any dwelling earlier than November 25th annually and said lights shall be removed no later than January 25th.

8.2.22 Garages. Each Unit on which a house is constructed shall also have constructed on such Unit an attached garage for the storage of not less than two motor vehicles.

8.2.23 Hot Tubs and Saunas. Any outdoor hot tub, sauna or similar must be approved as to style, design and placement by the Committee.

8.2.24 Swimming Pools. All above-ground swimming pools shall be prohibited. For purposes of the preceding sentence, "above-ground swimming pool" shall be defined as any artificial or man-made pool or tank of water, any part of which extends more than six (6) inches above the level of the surrounding ground as graded. In-ground pools must conform to all applicable requirements of law and such other requirements as set forth herein. All in-ground pools must be surrounded by a fence, which shall be constructed so as not to have openings, holes or gaps larger than six (6) inches in any dimension and shall be constructed of black wrought iron or black anodized aluminum. All gates and doors shall be equipped with a self-closing and self-latching device for keeping the gate or door securely closed at all times when not in actual use, except that the door of any dwelling which forms a part of the enclosure need not be so equipped. No inflatable pools of a temporary nature larger than a four (4) foot diameter, eight (8) inch height "kiddie pool" will be permitted at any time and any "kiddie pool" must be emptied daily and stored inside.

8.2.25 Use of Streets. Until or unless they are accepted for dedication to the public, the streets within the Planned Community shall be used only for vehicular transportation and pedestrian travel of the Unit Owners, occupants, invitees and not as playgrounds, or for skateboarding, basketball, street hockey or any other athletic or recreational purposes and such use is prohibited without the prior written consent of the Executive Board.

8.2.26 Use of Common Facilities. There shall be no obstruction of the Common Facilities. Nothing may be constructed, placed or stored on the Common Facilities without the prior consent of the Executive Board. Nothing may be done on the Common Facilities that would in any way interfere with the use and enjoyment of any other Unit Owner or occupant within the Planned Community. The Executive Board may impose additional restrictions on the use of the Common Facilities as it deems necessary or advisable. Solar panels and similar facilities are permitted to be placed and/or erected on or within the open space areas of the Common Facilities subject to approval of the Declarant during the period of Declarant control and subject to approval of any applicable governmental agencies. Upon expiration of the period of Declarant Control, solar panels and similar facilities are permitted to be placed and/or erected on or within the open space areas of the Common Facilities subject to approval of the Executive Board and subject to approval of any applicable governmental agencies.

8.2.27 Laws and Ordinances. Each Unit Owner shall promptly comply with all laws, statutes, ordinances, rules and regulations of federal, state and/or municipal governments or authorities applicable to the use, occupancy, construction, improvement, and maintenance of any Unit, including any improvements or facilities erected thereupon. Without limiting the generality of the foregoing, all improvements constructed within or upon a Unit by a Unit Owner shall meet all applicable local, county or other building codes and municipal requirements including, but not limited to zoning requirements. The obligation to comply with all governmental requirements, including without limitation, the

obligation to obtain any required governmental permits and/or approvals, shall rest with the Unit Owner and not the Executive Board, the Architectural Standards Committee, or the Association. The approval by the Architectural Standards Committee of a Unit Owner's proposed improvements shall not relieve the Unit Owner of his obligation to design and construct the proposed improvements in accordance with the requirements of applicable building codes, laws, ordinances, rules, or regulations of any governmental authority or any other applicable agency, nor shall such approval constitute nor be construed as certification by the Architectural Standards Committee, the Executive Board or the Association that the proposed improvements meet or otherwise comply with architectural, engineering, or construction industry standards, or applicable building codes, laws, ordinances, rules, or regulations of any governmental authority or any other applicable agency. Neither the Declarant, the Architectural Standards Committee, the Executive Board, nor the Association shall be liable for any defects in any plans or specifications submitted, revised or approved, or any defects in construction undertaken in accordance with such plans and specifications, and the Unit Owner undertaking the construction, reconstruction, renovation or installation of any improvements within the Planned Community shall indemnify and hold harmless all of the foregoing from and against all costs, expenses, damages and claims whatsoever arising out of such Unit Owner's improvement activities.

8.2.28 Care of Lots. Owners shall, at all times, maintain their Unit and all appurtenances thereto in good repair and in a state of neat appearance, including but not limited to, the seeding, watering and mowing of all lawns and yards, keeping all sidewalks, if any, neat, clean and in good repair, and free of ice and snow, the pruning and cutting and replacement, as need and required, of all trees and shrubbery and the painting (or other appropriate external care) of all structures on the Unit, all in a manner and with such frequency as is consistent with good property management and maintenance. If, in the opinion of the Committee, any Owner fails to perform the duties imposed hereunder, the Association, on affirmative action of a majority of the Executive Board, after fifteen (15) days written notice to such Owner to remedy the condition in question, and upon failure of the Owner to remedy the condition, shall have the right (but not the obligation), through its agents and employees, to enter upon the Unit in question and to repair, maintain, repaint and restore the Unit and the improvements or structures thereon, and the cost thereof shall be a binding, personal obligation of such Unit Owner, as an additional assessment on the Unit.

8.2.29 No Structures within Storm Water Facilities and Stormwater Easements. No temporary or permanent structures shall be constructed or placed in, or shall obstruct or interfere with, any stormwater easements or storm water facilities as shown on the Plats and Plans or any amendments thereto, the Final Subdivision Plan or any subsequent subdivision and land development plans with respect to the Real Estate. For example, no shed, trampoline or soccer net shall be placed within a detention basin located within a Unit or a Common Element. The Association shall have the right to remove such structures upon the failure of the Unit Owner to remove such structure within thirty (30) days written notice to do so from the Association to the Unit Owner.

8.2.30 BMPs and Notice of Termination of NPDES Permit. The Final Subdivision Plan and PCSM Plan (including those for future phases of the Planned Community) contain



certain best management practices and operation and maintenance requirements set by the DEP (together, the "BMPs"). The Association, and if required each Unit Owner, shall cooperate with the Declarant and DEP, to the extent such BMPs may affect one or more Units, in order to ensure compliance with all BMPs within the Planned Community, including but limited to, the execution of any Notice of Termination, without any consideration, upon termination of the NPDES permit or any other permit, associated with the Real Estate and any other documents or procedures required by the DEP or the Township to transfer or otherwise conclude Declarant's obligations under the NPDES Permit, the BMPs, the PCSM Plans or any other stormwater management related document or plan.

8.2.31 These conditions, reservations, covenants and restrictions shall apply to all Units shown on the Plats and Plans whether vacant or improved and to all structures erected or to be erected thereon as well as to the alteration or improvement of or addition to any such structures.

8.2.32 Reasonable Rules and Regulations, not in conflict with the provisions of this Declaration, concerning the use and enjoyment of the Property, may be promulgated from time to time by the Executive Board, subject to the right of the Association to change such Rules and Regulations. Copies of the then current Rules and Regulations and any amendments thereto shall be furnished to all Unit Owners by the Executive Board promptly after the adoption of such Rules and Regulations or any amendments thereto.

8.2.33 Fines. In addition to any right the Executive Board has pursuant to the Act and other provisions stated herein, the Executive Board may set a reasonable fine of \$25.00 per day for any violation of any of the restrictions set forth above and other reasonable rules and regulations promulgated by the Executive Board, if not cured within a reasonable period of time as set forth in the notice to a Unit Owner which notice clearly sets forth the violation and the time for corrective action to be taken by the Unit Owner. Before any fine may be imposed, the Unit Owner shall be given an opportunity to be heard and to be represented by counsel before the Executive Committee. Notice of such hearing, including the charges that may be imposed, shall be given to the Unit Owner, at least ten (10) days in advance thereof. The aforementioned fine shall commence at the expiration of the time period for corrective action and continue until such corrective action has been taken by the Unit Owner. The fine shall be a lien on the Unit Owner's property in accordance with Section 10.13 below.

8.2.34 Suspension of Voting Rights. The voting rights of a Unit Owner shall be suspended for any violation of any of the restrictions set forth above and other reasonable rules and regulations promulgated by the Executive Board, if not cured within a reasonable period of time as set forth in the notice to a Unit Owner which notice clearly sets forth the violation and the time for corrective action to be taken by the Unit Owner. Before the voting rights of a Unit Owner may be suspended, the Unit Owner shall be given an opportunity to be heard and to be represented by counsel before the Executive Committee. Notice of such hearing, including the suspension of voting rights shall be given to the Unit Owner, at least ten (10) days in advance thereof. The suspension of voting rights shall commence at the expiration of the time period for corrective action and continue until such corrective action has been taken by the Unit Owner.

8.2.35 Limitations on Application of Restrictions. Notwithstanding anything herein to the contrary, the restrictions set forth in this Section 8.2 shall not apply to the Declarant, or the Declarant's agents or employees during the course of construction or repair of improvements upon any portion of the Planned Community to the extent that the restrictions would interfere with such construction or repair activities.

Section 8.3 Survival of Article VIII. The uses, restrictions and architectural standards as set forth in this Article VIII shall survive the termination of the Planned Community. It is the intent of Declarant that the use restrictions shall run with the land.

## **ARTICLE IX. LEASING**

Section 9.1 Leasing. The Unit Owner of any Unit may lease his respective property subject to the following terms and conditions:

9.1.1 Any lease between a Unit Owner and a lessee must be in writing.

9.1.2 The lease shall in no way relieve the Owner of any duty or obligation imposed by this Declaration.

9.1.3 A Unit Owner shall deliver a copy of the Declaration, the Bylaws and Rules and Regulations (the "Community Documents") to the Unit Owner's tenant or occupant ("Tenant") at the time any lease agreement is executed, and the Tenant shall sign a receipt therefor. Copies of any amendments to the Declaration, the Bylaws and Rules and Regulations received by the Unit Owner during the term of the Lease Agreement shall be forwarded by the Unit Owner to the Tenant upon receipt if the amendment(s) affect the Tenant's occupancy of the Unit; and

9.1.4 The rights of any Tenant of a Unit shall be subject to, and each Tenant shall be bound by the Community Documents, and a default thereunder shall constitute a default under the lease; and

9.1.5 The lease shall state that it is subject in all respects to, and that the lessee shall comply with all of the provisions of, the Declaration, the By-Laws and Rules and Regulations and that failure of the lessee to comply with any of the terms of the aforementioned documents shall be a default under the lease; and

9.1.6 A Unit Owner shall provide the Executive Board with the name(s) of the Tenant(s), the address of the leased Unit, the number of Tenants of the Unit and a copy of the receipt referred to in Section 9.1.3 within ten (10) days after execution of the Lease Agreement; and

9.1.7 A Unit Owner intending to lease or sublease his Unit shall provide his new mailing address, if at a location other than his Unit, to the Executive Board within ten (10) days after vacating his Unit.

Section 9.2 Exceptions. Notwithstanding the foregoing, the provisions of this Article IX shall not apply to Units leased or subleased by the Declarant.

**ARTICLE X.**  
**BUDGETS; COMMON EXPENSES; ASSESSMENTS AND ENFORCEMENT**

Section 10.1 Definition of Common Expenses. Common Expenses shall include:

10.1.1 Expenses of administration, maintenance, and repair or replacement of the Common Elements and/or Controlled Facilities;

10.1.2 Expenses declared to be Common Expenses by the Planned Community Documents or the Act, including but not limited to the expenses incurred by the Association in connection with (a) the stormwater management facilities located on the Farmette Lot as described in Section 5.4 above and (b) the Deed of Easement described in Section 5.5 above;

10.1.3 Expenses agreed upon as Common Expenses by the Association; and

10.1.4 Such reserves as may be established by the Association, whether held in trust or by the Association, for repair, replacement or addition to the Common Elements and/or Controlled Facilities or any real or personal property acquired or held by the Association.

Section 10.2 Apportionment of Common Expenses. All Common Expenses shall be assessed against all Units in accordance with their respective Percentage Interests as shown on Exhibit "B" of this Declaration. Common expenses related to Limited Common Elements or Limited Controlled Facilities are assessed in equal shares against the Unit to which the Limited Common Elements or Limited Controlled Facilities were assigned at the time.

Section 10.3 Quarterly Payments. All Common Expense assessments made in order to meet the requirements of the Association's annual budget shall be on a calendar year basis and payments shall be due and payable in quarterly payments due and payable on the first day of January, April, July and October of each year or as otherwise determined by the Executive Board. Special assessments shall be due and payable in one or more monthly payments, in advance, on the first day of each month, as determined by the Executive Board.

Section 10.4 Subordination of Certain Charges. Any fees, charges, late charges, fines and interest which may be levied by the Executive Board pursuant to §5302 (a) (10), (11) and (12) of the Act, shall be subordinate to the lien of a first mortgage on a Unit.

Section 10.5 Surplus. The budget of the Association shall segregate Limited Common Expenses from general Common Expenses. Any amounts accumulated from assessments for Limited Common Expenses and income from the operation of Limited Common Elements to which such Limited Common Expenses pertain in excess of the amount required for actual Limited Common Expenses shall be held by the Association as reserves for future Limited Common Expenses. Any amounts accumulated from

assessments for general Common Expenses and income from the operation of the Common Elements to which such general Common Expenses pertain in excess of the amount required for actual general Common Expenses shall be held by the Association as reserves for future general Common Expenses.

Section 10.6 Assignment of Income Rights. The Association may assign its rights to future income, including payments made on account of assessments for general Common Expenses and Limited Common Expenses, to secure any loan obtained by the Association for repairs, replacements or capital improvements to the Common Elements.

Section 10.7 Special Allocation of Expenses.

10.7.1 Any Common Expense associated with the maintenance, repair or replacement of a Limited Common Element or Limited Controlled Facility shall be assessed in equal shares against the Units to which that Limited Common Element or Limited Controlled Facility was assigned at the time the expense occurred.

10.7.2 Any Common Expense benefiting fewer than all of the Units shall be assessed exclusively against the Units benefited.

10.7.3 The costs of insurance shall be assessed in proportion to risk, and the costs of any utilities that are separately metered to each Unit shall be assessed in proportion to usage.

10.7.4 If a Common Expense is caused by the negligence or misconduct of any Unit Owner, the Association may assess that expense exclusively against his Unit.

Section 10.8 Commencement of Common Expense Assessments. In general, Common Expense assessments may begin as of the date of conveyance of the first Unit to a Unit Owner other than the Declarant.

Section 10.9 Personal Liability of Unit Owners. The Owner of a Unit at the time a Common Expense assessment or portion thereof is due and payable is personally liable for the assessment. Personal liability for the assessment shall not pass to a successor in title to the Unit unless said successor agrees to assume the obligation.

Section 10.10 No Waiver of Liability for Common Expense. No Unit Owner may exempt himself from liability for payment of the Common Expenses by waiver of the use or enjoyment of the Common Elements or by abandonment of the Unit against which the assessments are made.

Section 10.11 Acceleration of Common Expense Assessments. In the event of default for a period of ten (10) days by any Unit Owner in the payment of any Common Expense assessment levied against his Unit, the Executive Board shall have the right to declare all unpaid assessments for the pertinent fiscal year to be immediately due and payable.

Section 10.12 Confessions of Judgment. IN ORDER TO EXPEDITE THE EXECUTIVE BOARD'S COLLECTION OF ANY DELINQUENT ASSESSMENT,

EACH UNIT OWNER (BY ACCEPTANCE OF THE DEED TO HIS UNIT) SHALL BE DEEMED TO HAVE APPOINTED ANY ONE OR MORE EXECUTIVE BOARD MEMBERS THE ATTORNEY-IN-FACT FOR SUCH UNIT OWNER TO CONFESS JUDGMENT AGAINST SUCH UNIT OWNER IN ANY COURT OF COMPETENT JURISDICTION IN PENNSYLVANIA, FOR ANY SUCH UNPAID ASSESSMENT(S), WHICH APPOINTMENT (BEING FOR SECURITY) SHALL BE IRREVOCABLE; AND FOR SO DOING A COPY OF THIS SECTION 10.12 AND SAID DEED, BOTH VERIFIED BY AFFIDAVIT, SHALL BE A SUFFICIENT WARRANT. THE AUTHORITY GRANTED HEREIN TO CONFESS JUDGMENT SHALL NOT BE EXHAUSTED BY ANY EXERCISE THEREOF BUT SHALL CONTINUE FROM TIME TO TIME AND AT ALL TIMES UNTIL THIS DECLARATION SHALL BE TERMINATED.

Section 10.13 Lien.

10.13.1 The Association has a statutory lien on a Unit for any assessment levied against that Unit or fines imposed against the Unit Owner from the time the assessment or fine becomes delinquent. Fees, including attorneys' fees, late charges, fines and interest charged pursuant to the Act and the Community Documents are enforceable as assessments under this Section. If an assessment is payable in installments, and one or more installments is not paid when due, the entire outstanding balance of the assessment becomes effective as a lien from the due date of the delinquent installment.

10.13.2 Recording of this Declaration constitutes record notice and perfection of the lien. No further recordation of any claim of lien for assessment under this Section is required.

10.13.3 Any lien for delinquent Common Expense assessments or other charges that the Association has on a Unit will be subordinate to a first mortgage on the Unit, if the mortgage was recorded before the due date of the assessment or the due date of the unpaid installment, if the assessment is payable in installments.

10.13.4 If a holder of a first mortgage on a Unit forecloses that mortgage, the purchaser at the foreclosure sale is not liable for any unpaid assessments against that Unit which became due before the sale, other than the assessments which are prior to that mortgage in accordance with the provisions of the Act. Any unpaid assessments not satisfied from the proceeds of sale become Common Expenses collectible from all the Unit Owners, including the purchaser.

10.13.5 Any fees, including attorney's fees, late charges, fines and interest which may be levied by the Executive Board pursuant to §5302(a) (10), (11) and (12) of the Act, shall be subordinate to the lien of a first mortgage on a Unit.

10.13.6 The Association's lien may be foreclosed in like manner as a mortgage on real property.

10.13.7 This Section does not prohibit actions to recover sums for which this Section creates a lien or prohibit the Association from taking a deed in lieu of foreclosure.

10.13.8 A judgment or decree in any action brought under this Section shall include costs and reasonable attorneys' fees for the prevailing party.

10.13.9 A lien for unpaid assessments is extinguished unless proceedings to enforce the lien are instituted within three (3) years after the assessments become payable; provided, that if an Owner of a Unit subject to a lien under this Section files a petition for relief under the United States Bankruptcy Code, the period of time for instituting proceedings to enforce the automatic stay of proceedings under Section 362 of the Bankruptcy Code is lifted.

10.13.10 Any payments received by the Association in the discharge of a Unit Owner's obligation may, at the Association's discretion, be applied to the oldest balance due.

Section 10.14 Association Records. During the period of Declarant control, the Association shall keep financial records sufficiently detailed to enable the Association to comply with §5407 of the Act. All financial and other records shall be made reasonably available for examination by any Unit Owner and his authorized agents.

Section 10.15 Certificate of Payment of Common Expense Assessments. On written request, the Association shall furnish to a Unit Owner a statement in recordable form setting forth the amount of unpaid assessments currently levied against the Unit and any credits of surplus in favor of his Unit as required by §5315(g) of the Act. The statement shall be furnished within ten (10) business days after receipt of the request and is binding on the Association, the Executive Board and every Unit Owner.

## **ARTICLE XI. RIGHTS OF PERMITTED MORTGAGEES**

Section 11.1 Entitlement of Mortgagee. Upon the specific written request of a holder of a mortgage on a Unit or its servicer to the Executive Board, the mortgagee shall be entitled to receive some or all of the following as designated in the request:

11.1.1 Copies of budgets, notices of assessment, or any other notices or statements provided under this Declaration by the Executive Board to the Owner of the Unit covered by the mortgage;

11.1.2 Any audited or unaudited financial statements of the Association which are prepared for the Association and distributed to the Unit Owners;

11.1.3 Copies of notices of meetings of the Unit Owners and the right to designate a representative to attend such meetings;

11.1.4 Notice of the decision of the Unit Owners to make any material amendment to this Declaration;

11.1.5 Notice of any default by the Owner of the Unit which is subject to the mortgage, where such default is not cured by the Unit Owner within thirty (30) days after the giving of notice by the Association to the Unit Owner of the existence of the default;

11.1.6 The right to examine the books and records of the Executive Board at any reasonable time; or

11.1.7 Notice of any decision by the Executive Board to terminate professional management and assume self-management of the Property.

Section 11.2 Requirements for Request by Mortgagee. The request of a mortgagee or its servicer shall specify which of the above items it desires to receive and shall indicate the address to which any notices or documents shall be sent by the Executive Board. The Executive Board need not inquire into the validity of any request made by a mortgagee hereunder.

Section 11.3 Failure to Comply. Failure to comply with the requirements set forth above shall in no way invalidate otherwise proper actions of the Association and the Executive Board.

**ARTICLE XII.  
EXECUTIVE BOARD; DECLARANT'S RIGHTS;  
SPECIAL DECLARANT RIGHTS**

Section 12.1 Control. Subject to the provisions below, Declarant's control of the Association will extend from the date of the first conveyance of a Unit to a person other than Declarant for a period of not more than seven (7) years, provided, however, that notwithstanding the foregoing, Declarant's control shall terminate regardless no later than the earlier of sixty (60) days after conveyance of seventy-five (75%) percent of the Units which may be created to Unit Owners other than Declarant, or two (2) years after all Declarants have ceased to offer Units for sale in the ordinary course of business.

12.1.1 Until the 60th day after conveyance of twenty-five (25%) percent of the Units which may be created to Unit Owners other than Declarant, Declarant shall have the right to appoint and remove any and all officers and members of the Executive Board. Declarant may not unilaterally remove any members of the Executive Board elected by Unit Owners other than Declarant.

12.1.2 Not later than sixty (60) days after conveyance of twenty-five (25%) percent of the Units which may be created to Unit Owners other than Declarant, at least one (1) member and not less than twenty-five (25%) percent of the members of the Executive Board shall be elected by Unit Owners other than Declarant. Not later than sixty (60) days after conveyance of fifty (50%) percent of the Units which may be created to Unit Owners other than Declarant, not less than thirty-three (33%) percent of the members of the Executive Board shall be elected by Unit Owners other than Declarant.

12.1.3 Not later than the termination of any period of Declarant control, the Unit Owners shall elect an Executive Board of at least three (3) members, at least a majority of whom shall be Unit Owners, provided that the Executive Board may consist of two (2) members, both of whom shall be Unit Owners, if the Planned Community consists of two (2) Units. The Executive Board shall elect the Officers and the Board and Officers shall take office upon election.

## Section 12.2 Declarant Rights.

12.2.1 Notwithstanding any other provisions contained herein, for so long as the Declarant continues to own any Units, the following provisions shall be deemed to be in full force and effect, none of which, except as hereinafter provided, shall be construed so as to relieve the Declarant from any obligations of a Unit Owner to pay assessments as to each Unit within which has been erected a residential Dwelling for which a certificate of occupancy has been issued.

A. Declarant shall have the unrestricted right to sell or lease any Unit which the Declarant owns, or to use and occupy the same, upon such terms and conditions as it shall deem to be in its own best interests.

B. Declarant shall have the right to transact on the Property any business necessary to complete the construction of Units, Common Facilities and improvements and to consummate the sale of Units, including but not limited to the right to maintain models, display signs, sales offices, management offices, employees in an office, the right of use of the Common Facilities for such purpose as Declarant may deem appropriate, the right to maintain construction equipment, including construction trailers, and to conduct construction activities on the Property.

C. Declarant shall have the absolute right to make any alterations in or improvements to any Unit owned by Declarant, including the right to alter the boundaries between two (2) or more Units owned by Declarant, and, in connection with any such alterations or improvements, to revise the Plan and the shares of one or more of such Units; provided that no such revision shall affect the shares of any Units not owned by Declarant, except with the consent of the Owners of such Units and their respective mortgagee, if any. An appropriate amendment to this Declaration reflecting any such revision in the shares, and revised Plan indicating any such alterations in the boundaries of any such Units, need not be submitted to or approved by any other party whatsoever, but shall be executed solely by the Declarant and recorded.

D. The Declarant reserves all Special Declarant Rights (meaning the reservation of options or other rights for the benefit of the Declarant as provided in section 5103 of the Act), and such additional rights reserved for the benefit of the Declarant as set forth in this Declaration, the Plan and the Bylaws of the Association.



### Section 12.3 Transfer of Special Declarant Rights.

12.3.1 No Special Declarant Rights created or reserved under this subsection may be transferred except by an instrument evidencing the transfer recorded in the Recorder of Deeds Office of Lancaster County, Pennsylvania. The instrument shall be indexed in the name of Somerford at Stoner Farm in both the grantor and grantee index as well as in the name of Declarant in the grantor index and the name of the transferee in the grantee index. The instrument is not effective unless executed by the transferee.

12.3.2 Upon transfer of any Special Declarant Rights, the liability of the transferor Declarant and the liabilities and obligations of successors to Special Declarant Rights shall be determined in accordance with section 5304 of the Act.

12.3.3 Nothing in this Section subjects any successor to a Special Declarant Right to any claims against or other obligations of a transferor Declarant other than claims and obligations arising under this Declaration or the Act.

### Section 12.4 Restrictions on Declarant-Related Actions.

12.4.1 So long as a Declarant shall own any Units, no Declarant-related amendment shall be made to this Declaration or to any other governing document, nor shall any Declarant related governing document be executed, adopted or promulgated by, the Executive Board or the Association unless such Declarant related amendment or governing document shall be specifically approved in writing by Declarant.

12.4.2 For purposes of subparagraph 12.4.1., above, an amendment or governing document which does any of the following shall be considered to be Declarant-related:

- A. Discriminates or tends to discriminate against a Declarant as a Unit Owner, or otherwise.
- B. Directly or indirectly, by its provisions or in practical application, relates to any Declarant in a manner different from the manner in which it relates to other Unit Owners.
- C. Modifies the definitions provided for herein in a manner which alters Declarant's rights or status.
- D. Alters any previously recorded or written agreement with any public or quasi-public agencies, utility companies, political subdivisions, public authorities or other similar agencies or bodies, respecting zoning suspension, streets, roads, drives, easements or facilities.
- E. Alters or repeals any of Declarant's rights or any provision applicable to Declarant's rights as provided for by any provision of this Declaration or of any other governing document applicable to Declarant.

Section 12.5 Limitation of Liability. Except as is set forth in the Act, as the same applies to structural defects, the Declarant shall not be liable to any Unit Owner, their heirs,

executors or assigns, the Association, the Executive Board, any officer, any committee member, any mortgagee and/or other lienholder, any guest or invitee, and/or any other party whatsoever for any damage, loss or prejudice suffered or claimed whatsoever and for any reason whatsoever. Furthermore, any Owner or Owners, the Association and/or other occupant and/or any other party and/or the Executive Board, or any member thereof, or any officer who shall initiate or cause to initiate and/or bring and/or file any claim, demand, law suit or other legal proceeding against the Declarant for any reason whatsoever, if unsuccessful in said claim, demand, law suit or other legal proceedings, shall pay to the Declarant, on demand, the costs incurred by the Declarant, including attorneys' fees and court costs incurred in the defense of any such claim, demand, lawsuit or other legal proceeding of any kind or nature whatsoever.

### **ARTICLE XIII. POWERS OF THE ASSOCIATION AND LIMITATION OF LIABILITY**

Section 13.1 Powers of the Association. Subject to the provisions of this Declaration, the Association shall have all of the powers designated in §5302 of the Act, including the right to assign its right to receive future income, including payments made on account of any assessment against any Unit for Common Expenses and Limited Common Expenses.

Section 13.2 Conveyance or Encumbrance of the Common Elements. Provided that Unit Owners entitled to cast at least eighty percent (80%) of the votes in Association, at least eighty percent (80%) of which affirmative votes are allocated to Units not owned by the Declarant, agree, any one or more portions of the Common Elements may be conveyed or subjected to a security interest by the Association. Any conveyance or encumbrance of the Common Elements by the Association shall be effected in strict accordance with §5318 of the Act.

Section 13.3 Judgments Against the Association. Any creditor of the Association pursuant to a security interest shall exercise its rights against the Common Elements before its judgment lien on any Unit may be enforced. Otherwise, as a general rule, any judgment for money against the Association, upon perfection as a lien on real property, shall not be a lien on the Common Elements, but shall constitute a lien against all of the Units in the Community at the time the judgment was entered. Any Unit Owner may have his or her Unit released from the lien of the judgment upon payment of that portion of the lien attributable to his Unit in accordance with §5319(c) of the Act. After payment, the Association may not assess or have a lien against that Unit Owner's Unit for any portion of the Common Expense incurred in connection with that lien. A judgment indexed against the Association must be indexed against the Community and the Association, and when so indexed, shall constitute notice of the lien against the Units.

#### Section 13.4 Standard of Conduct.

13.4.1 In the performance of their duties, the officers and members of the Executive Board shall stand in a fiduciary relation to the Association and shall perform their duties, including duties as members of any committee of the Board upon which they may serve, in good faith, in a manner they reasonably believe to be in the best interests of

the Association and with such care, including reasonable inquiry, skill and diligence, as a person of ordinary prudence would use under similar circumstances.

13.4.2 In discharging the duties of their respective positions, the Executive Board members and officers may, in considering the best interests of the Association, consider the effects of any action upon employees and upon suppliers of the Association and upon communities in which the Planned Community is located, and all other pertinent factors. The consideration of those factors shall not constitute a violation of the standards described above.

13.4.3 Absent breach of fiduciary duty, lack of good faith or self-dealing, actions taken as an Executive Board member or officer or any failure to take any action shall be presumed to be in the best interest of the Association.

Section 13.5 Good Faith Reliance. In performing his duties, an officer or Executive Board member shall be entitled to rely in good faith on information, opinions, reports or statements, including financial statements and other financial data, in each case prepared or presented by any of the following:

13.5.1 One or more other officers or employees of the Association whom the officer or Executive Board member reasonably believes to be reliable and competent in the matters presented.

13.5.2 Counsel, public accountants or other persons as to matters which the officer or Executive Board member reasonably believes to be within the professional or expert competence of such person.

13.5.3 A committee of the Executive Board upon which he does not serve, duly designated in accordance with law, as to matters within its designated authority, which committee the officer or Executive Board member reasonably believes to merit confidence.

An officer or Executive Board member shall not be considered to be acting in good faith if he has knowledge concerning the matter in question that would cause his reliance to be unwarranted.

Section 13.6 Limited Liability. No Executive Board member or officer, in his capacity as such, shall be personally liable for monetary damages for any action taken, or any failure to take any action, unless he has breached or failed to perform the duties of his office under the standards described above; provided, however, that the provisions of this Section 13.6 shall not apply to the responsibility or liability of an Executive Board member or officer pursuant to any criminal statute, or to the liability of an Executive Board member or officer for the payment of taxes pursuant to local, state, or federal law.

Section 13.7 Indemnification. To the extent permitted under Pennsylvania law, each member of the Executive Board, in his capacity as an Executive Board member, officer or both, shall be indemnified by the Association against all expenses and liabilities, including attorneys' fees, reasonably incurred by or imposed upon him in connection with any proceeding in which he may become involved by reason of his being or having been a member and/or officer of the Executive Board, or any settlement of any such proceeding,

whether or not he is an Executive Board member, officer or both at the time such expenses are incurred, except in such cases wherein such Executive Board member and/or officer is adjudged to be in breach of the standards of conduct described above; provided that, in the event of a settlement, this indemnification shall apply only if and when the Executive Board (with the affected member abstaining if he is then an Executive Board member) approves such settlement and reimbursement as being in the best interests of the Association; and provided further that, indemnification hereunder with respect to any criminal action or proceeding is permitted only if such Executive Board member and/or officer had no reasonable cause to believe his conduct was unlawful. The indemnification by the Unit Owners set forth in this Section 13.7 shall be paid by the Association on behalf of the Unit Owners and shall constitute a Common Expense and shall be assessed and collectible as such. Such right of indemnification shall not be deemed exclusive of any other rights to which such Executive Board member and/or officer may be entitled as a matter of law or agreement or by vote of the Unit Owners or otherwise.

To the extent permissible under Pennsylvania law, expenses incurred by an Executive Board member or officer in defending a civil or criminal action, suit or proceeding shall be paid by the Association in advance of the final disposition of such action, suit or proceeding upon the request of the Executive Board member or officer, after the Association has received an undertaking by or on behalf of such person to repay such amount if it shall ultimately be determined that he is not entitled to be indemnified by the Association.

Section 13.8 Directors & Officers Insurance. The Executive Board shall obtain insurance to satisfy the indemnification obligation of the Association and all Unit Owners set forth in Section 13.7, if and to the extent available at reasonable cost.

#### **ARTICLE XIV. INSURANCE**

Section 14.1 Coverage. Commencing no later than the date on which title to the first Unit is conveyed and to the extent reasonably available, the Executive Board shall obtain and maintain insurance coverage as set forth in Section 14.2 and Section 14.3 and in accordance with the provisions of Section 5312 of the Act. If such insurance is not reasonably available, and the Executive Board determines that any insurance described herein will not be maintained, the Executive Board shall cause notice of that fact to be hand-delivered or sent prepaid by United States Mail to all Unit Owners at their respective last known addresses.

Section 14.2 Property Insurance. Subject to the provisions of Section 14.4 below, the Association shall obtain and maintain all property insurance required to be maintained by the Association by Section 5312 of the Act.

Section 14.3 Liability Insurance. The Association shall obtain and maintain comprehensive general liability insurance, including medical payments insurance, in an amount reasonably determined by the Executive Board but in no event less than One Million Dollars (\$1,000,000.00), covering all occurrences commonly insured against for death, bodily injury and property damage arising out of or in connection with the use, ownership or maintenance of the Common Elements. The policy shall name any managing agent as an additional insured.

Section 14.4 Unit Owner Policies. Each Unit Owner shall be solely responsible for obtaining all property and liability insurance on his Unit in compliance with Section 5312 of the Act, including (1) property insurance on any dwelling located upon the Unit insuring against all common risks of direct physical loss in an amount at least equal to the full replacement value of the dwelling, exclusive of land, excavations, foundations and other items normally excluded from property policies, and (2) comprehensive general liability insurance covering all occurrences commonly insured against for death, bodily injury and property damage, arising out of or in connection with the use, ownership or maintenance of the Unit in an amount not less than Three Hundred Thousand Dollars (\$300,000.00), or such other amount as may be reasonably determined from time to time by the Executive Board.

Section 14.5 Other Provisions. Insurance policies carried by the Association pursuant to this Article shall provide that:

14.5.1 Each Unit Owner is an insured person under the policy with respect to liability arising out of his membership in the Association.

14.5.2 The insurer waives its rights to subrogation under the policy against any Unit Owner or member of his household.

14.5.3 No act or omission by any Unit Owner, unless acting within the scope of his authority on behalf of the Association, will void the policy or be a condition to recovery under the policy.

14.5.4 If, at the time of a loss under the policy, there is other insurance in the name of a Unit Owner covering the same risk covered by the policy, the Association's policy provides primary insurance.

14.5.5 The insurer may not cancel or refuse to renew the policy until thirty (30) days after notice of the proposed cancellation or non-renewal has been mailed to the Association, each Unit Owner and each holder of a security interest to whom a certificate or memorandum of insurance has been issued, at their respective last known addresses.

Section 14.6 Fidelity Bonds. The Association shall maintain a blanket fidelity bond or similar security for anyone who either handles or is responsible for funds held or administered by the Association, whether or not he receives compensation for his services. The bond shall name the Association as obligee and shall cover the maximum funds that will be in the custody of the Association or the manager at any time while the bond is in force, and in no event less than the sum of three months' Common Expense Liability and reserve funds on deposit. The bond shall include a provision that calls for thirty (30) days' written notice to the Association before the bond can be canceled or substantially modified for any reason. However, if cancellation is for nonpayment of premiums, only ten (10) days' notice shall be required.

Section 14.7 Worker's Compensation Insurance. The Executive Board shall obtain and maintain worker's compensation insurance to meet the requirements of the laws of the Commonwealth of Pennsylvania.

Section 14.8 Indemnification Insurance. The Executive Board shall obtain directors' and officers' liability insurance to satisfy the indemnification obligations set forth in Section 13.8 hereof, if and to the extent available at a reasonable cost.

Section 14.9 Other Insurance. The Association may carry other insurance that the Executive Board considers necessary or advisable to protect the Association or the Unit Owners.

Section 14.10 Premiums and Deductibles. Insurance premiums and deductibles for policies maintained by the Association shall be a Common Expense, unless the deductible may be charged against one or more Unit Owners pursuant to Section 5314(c)(4) of the Act.

## **ARTICLE XV. RIGHTS TO NOTICE AND COMMENT; NOTICE AND HEARING**

Section 15.1 Right to Notice and Comment. Before the Executive Board amends the Bylaws or the Rules and Regulations, whenever the Community Documents require that an action be taken after "Notice and Comment", and at any other time the Executive Board determines, the Unit Owners have the right to receive notice of the proposed action and the right to comment orally or in writing. Notice of the proposed action shall be given to each Unit Owner in writing and shall be delivered personally or by mail to all Unit Owners at such address as appears in the records of the Association, or published in a newsletter or similar publication that is routinely circulated to all Unit Owners. The notice shall be given not less than five (5) days before the proposed action is to be taken.

Section 15.2 Right to Notice and Hearing. Whenever the Community Documents require that an action be taken after "Notice and Hearing," the following procedure shall be observed: The party proposing to take the action (e.g., the Executive Board, a committee, an officer, the manager, etc.) shall give written notice of the proposed action to all Unit Owners or occupants of Units whose interest would be significantly affected by the proposed action. The notice shall include a general statement of the proposed action and the date, time and place of the hearing. At the hearing, the affected person shall have the right, personally or by a representative, to give testimony orally, in writing or both (as specified in the notice), subject to reasonable rules of procedure established by the party conducting the meeting to assure a prompt and orderly resolution of the issues. Such evidence shall be considered in making the decision but shall not bind the decision makers. The affected person shall be notified of the decision in the same manner in which notice of the meeting was given.

Section 15.3 Appeals. Any person having a right to Notice and Hearing shall have the right to appeal to the Executive Board from a decision of any person or persons other than the Executive Board by filing a written notice of appeal with the Executive Board within ten (10) days after being notified of the decision. The Executive Board shall conduct a hearing within thirty (30) days, giving the same notice and observing the same

procedures as were required for the original meeting. Otherwise, the decisions of the Executive Board are final.

**ARTICLE XVI.  
TERMINATION OF THE COMMUNITY**

Section 16.1 Procedure for Termination. Except in the case of a taking of all of the Units in the Planned Community by eminent domain, the Planned Community may be terminated by agreement of Unit Owners of Units to which at least eighty percent (80%) of the votes in the Association are allocated, at least eighty percent (80%) of which affirmative votes shall be allocated to Units not owned by the Declarant.

**ARTICLE XVII.  
INTERPRETATION**

Section 17.1 Interpretation. The provisions of this Declaration shall be liberally construed in order to effectuate the Declarant's desire to create a uniform plan for development and operation of the Planned Community. The headings preceding the various paragraphs of this Declaration and the Table of Contents are intended solely for the convenience of readers of this Declaration.

**ARTICLE XVIII.  
SEVERABILITY**

Section 18.1 Severability. The provisions of this Declaration shall be deemed independent and severable, and the invalidity or unenforceability of any provision or portion thereof shall not affect the validity or enforceability of any other provision or portion thereof unless such deletion shall destroy the uniform plan for development and operation of the planned community which this Declaration is intended to create.

[signature page to follow]

IN WITNESS WHEREOF, the Declarant has executed this Declaration this 15<sup>th</sup> day of DECEMBER, 2020.

Attest:

SONSHINE HOLDING LP,  
By: JOSIAH, LLC, its General Partner

Sarah K. Young

By: William C. Briegel  
William C. Briegel, Assistant Vice President

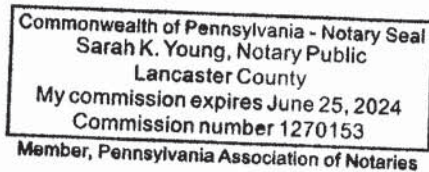
COMMONWEALTH OF PENNSYLVANIA :  
: SS  
COUNTY OF LANCASTER :

On this, the 15<sup>th</sup> day DECEMBER, 2020, before me, the undersigned officer, personally appeared William C. Briegel, known to me (or satisfactorily proven) to be the person whose name is subscribed as Assistant Vice President of Josiah, LLC, the General Partner of Sonshine Holding LP, and that he as such Assistant Vice President, being authorized to do so, executed the within instrument for the purposes therein contained.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Sarah K. Young (SEAL)  
Notary Public

My Commission Expires:





**JOINDER AND CONSENT OF TITLE OWNER**

Lancaster Bible College is the title owner of certain portions of the Real Estate to be submitted to the Planned Community Act, which portions are part of the Convertible/ Withdrawable Real Estate shown on the Plats and Plans as Lot 128. Said portions of the Real Estate owned by Lancaster Bible College are part of two tracts being subdivided so that they can be part of the Planned Community, which tracts of land are identified as follows: (1) part of Parcel ID 390-52847-0-0000 and part of the lands described in a deed recorded in Deed Book 5210, Page 326 in the Lancaster County Recorder of Deeds Office; and (2) part of Parcel ID 390-37646-0-0000 and part of the lands described in a deed recorded as Document #5395788 and part of the lands described in a deed recorded as Document #5535345 in the Lancaster County Recorder of Deeds Office. Declarant is the equitable owner of said portions of the Real Estate owned by Lancaster Bible College to be submitted to the Planned Community Act, and Lancaster Bible College intends to convey such portions of the Real Estate to Declarant, which conveyance will occur after the recording of this Declaration. Accordingly, Lancaster Bible College is joining in this Declaration for the sole purpose of submitting those portions of the Real Estate that it owns to the Planned Community Act to be part of the Convertible/Withdrawable Real Estate known as Lot 128 as shown on the Plats and Plans. In no event is Lot 125, which is also part of the lands owned by Lancaster Bible College, being submitted to the Planned Community Act as part of the Planned Community.

LANCASTER BIBLE COLLEGE:

By: *Matthew Mason*  
Matthew Mason, Vice President of Finance

NOTE: At the time of the recording of this Declaration all parties named above shall be indexed in the Grantor/Grantee indices of the Office of the Recorder of Deeds in and for Lancaster County, Pennsylvania.

COMMONWEALTH OF PENNSYLVANIA :  
: SS  
COUNTY OF LANCASTER :

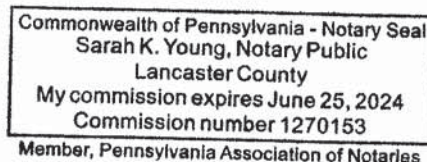
On this, the 15<sup>TH</sup> day DECEMBER, 2020, before me, the undersigned officer, personally appeared Matthew Mason, known to me (or satisfactorily proven) to be the person whose name is subscribed as Vice President of Finance of Lancaster Bible College, and that he as such Vice President of Finance, being authorized to do so, executed the within instrument for the purposes therein contained.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

*Sarah K. Young* (SEAL)  
Notary Public

My Commission Expires:

7517686.10



**EXHIBIT "A"**  
**Submitted Real Estate**

Legal Description

Stoner Farm - Overall Tract  
Final Subdivision and Land Development Plan

ALL THAT CERTAIN tract of land situate north of Eden Road (T-717) , and east side of U.S. Route 222 (S.R. 0222), in Manheim Township, Lancaster County, Pennsylvania; known as lands of 1051 Eden Road LP and lands of Lancaster Bible College as shown on a Final Subdivision and Land Development Plan for Stoner Farm (Phase 1), prepared by RGS Associates, Drawing Number: 2017332-087, Dated March 4, 2020, and recorded in and for the Office of the Lancaster County Recorder of Deeds in Instrument No. 2020-0462-J , and being more fully bounded and described as follows:

BEGINNING AT A POINT, a concrete monument found on the eastern line of lands, now or formerly, of Manheim Township, said point also being in line of lands, now or formerly, of Jean Herr, thence extending along lands, now or formerly, of Jean Herr and along the terminus of Bluegrass Road, respectively, N09°31'33"E, 354.60' to a point on the northern line of Bluegrass Road; thence extending along the Bluegrass Road and lands, now or formerly, of June Uhler, respectively, S71°43'38"W, 479.85' to a point on the eastern right-of-way line of U.S. Route 222 (SR 0222), having passed over a 1" pipe found at the corner of lands, now or formerly, of June Uhler, 25.48' from the terminus of the aforementioned line; thence extending along the eastern right-of-way line of U.S. 222, the following four courses and distances: 1) on a line curving to the right, having a radius of 3,124.17', an arc length of 459.11', and a chord bearing of N22°44'12"E, 458.70' to a point, 2) N63°03'12"W, 20.00' to a point, 3) on a line curving to the right, having a radius of 3,144.17', an arc length of 1,263.50' and a chord bearing of N38°27'32"E, 1,255.01' to a point, and 3) N49°58'16"E, 399.28' to a rebar found at the corner of lands, now or formerly, of Manheim Township; thence extending along lands, now or formerly, of Manheim Township the following twelve courses and distances: 1) S51°21'23"E, 385.46' to a point, 2) N87°42'46"E, 677.27' to a rebar found, 3) S02°17'14"E, 211.15' to a rebar found, 4) S63°35'56"E, 178.19' to a rebar found, 5) S26°24'04"W 471.93' to a point, 6) S71°24'04"W, 28.28' to a point, 7) S26°24'04"W, 11.82' to a point, 8) N55°11'56"W, 35.38' to a point, 9) S26°24'04"W, 286.90' to a point, 10) S70°40'06"E, 55.42' to a point, 11) S26°24'04"W, 173.33' to a rebar found, 12) S71°50'46"W, 1,082.57' to a point, and 13) S71°55'51"W, 570.77' to the POINT OF BEGINNING.

CONTAINING:        56.724 Acres

EXCEPTING AND RESERVING the following tracts of land, being Lot 125, Lot 126 and Lot 127 as shown on the Plats and Plans and the Final Subdivision and Land Development Plan for Stoner Farm (Phase 1), prepared by RGS Associates, Drawing Number: 2017332-087, Dated March 4, 2020, and recorded in and for the Office of the Lancaster County Recorder of Deeds in Instrument No. 2020-0462-J , which lots are not and shall not be part of the Planned Community, and being more fully bounded and described as follows:

Stoner Farm - Lot 125  
Final Subdivision and Land Development Plan

ALL THAT CERTAIN tract of land situate north of Eden Road (T-717), and east of U.S. Route 222 (S.R. 0222), in Manheim Township, Lancaster County, Pennsylvania; known as Lot 125, as shown on a Final Subdivision and Land Development Plan for Stoner Farm (Phase 1), prepared by RGS Associates, Drawing Number: 2017332-087, Dated March 4, 2020, and recorded in and for the Office of the Lancaster County Recorder of Deeds in Instrument No. 2020-0462-J, and being more fully bounded and described as follows:

BEGINNING AT A POINT, a 1" pipe found on the northern line of Bluegrass road, thence extending to the eastern right-of-way line of U.S. Route 222 (SR 0222), ) S71°43'38"W, 25.48' to a point, thence extending along the eastern right-of-way line of U.S. 222, on a line curving to the right, having a radius of 3,124.17', an arc length of 284.09', and a chord bearing of N21°07'54"E, 283.99' to a point, thence extending along Lot 128 the following three courses and distances: 1) S82°21'56"E, 168.60' to a point, 2) on a line curving to the left, having a radius of 200.00', and arc length of 90.43', and a chord bearing of S05°19'09"E, 89.67' to a point, 3) S18°16'22"E, 58.39' to a point, the northern line of Bluegrass Road, thence extending along the northern line of Bluegrass Road, S71°43'38"W, 311.83 to the POINT OF BEGINNING.

CONTAINING: 1.050 AC.

Stoner Farm - Lot 126  
Final Subdivision and Land Development Plan

ALL THAT CERTAIN tract of land situate north of Eden Road (T-717), and east of U.S. Route 222 (S.R. 0222), in Manheim Township, Lancaster County, Pennsylvania; known as Lot 126, as shown on a Final Subdivision and Land Development Plan for Stoner Farm (Phase 1), prepared by RGS Associates, Drawing Number: 2017332-087, Dated March 4, 2020, and recorded in and for the Office of the Lancaster County Recorder of Deeds in Instrument No. 2020-0462-J, and being more fully bounded and described as follows:

BEGINNING AT A POINT in line of lands now or formerly, of Manheim Township, said point also being a corner of Lot 19, as shown on the aforementioned plan, thence extending along Lot 19, S77°55'27"W, 204.82' to a point right-of-way of Bluegrass Road; thence extending along Bluegrass Road, on a line curving to the left, having a radius of 50.00', and arc length of 57.55' and a chord bearing of N45°03'02"W, 54.43' to a point, a corner of Lot 20; thence extending along Lot 20 and various other lots within Phase 1, the following eight courses and distances: 1) N11°58'28"E, 135.16' to a point, 2) S71°50'46"W, 130.29' to a point, 3) S18°09'14"E, 15.41' to a point, 4) S71°50'46"W, 66.00' to a point, 5) S18°09'14"E, 34.69' to a point, 6) S71°50'46"W, 149.99' to a point, 7) N18°09'14"W, 432.94' to a point, and 8) S71°50'46"W, 110.00' to a point on the eastern right-of way of Homestead Lane; thence extending along Homestead Land N18°09'14"W, 17.02' to a point on the northern right-of way of Stoner Lane; thence extending along Stoner Lane, S71°50'46"W, 192.35' to a point, a corner of Lot 128, Remaining Lands; thence

extending along Lot 128, the following eleven courses and distances: 1) N18°09'14"W, 110.24' to a point, 2) S71°50'46"W, 216.85' to a point, 3) S85°03'33"W, 59.23' to a point, 4) S03°09'43"W, 109.00' to a point, 5) on a line curving to the right, having a radius of 325.00', an arc length of 41.14' and a chord bearing of N83°12'41"W, 41.12' to a point, 6) N10°24'55"E, 124.07' to a point, 7) N85°16'27"E, 48.05' to a point, 8) N 36°28'50"E, 121.74' to a point, 9) N63°14'52"E, 84.00' to a point, 10) N46°18'58"E, 170.41' to a point, 11) N35°18'44"E, 247.91' to a point in line of Lot 127, lands to be conveyed to Manheim Township; thence extending along Lot 127, the following three courses and distances: 1) S40°18'21"E, 334.66' to a point, 2) N35°41'51"E, 84.11' to a point, and 3) N06°17'13"W 79.40' to a point, a corner of Lot 129, Remaining Lands; thence extending along Lot 129, the following fourteen courses and distances: 1) N86°40'30"E, 135.54' to a point, 2) N38°17'44"E, 16.88' to a point, 3) on a line curving to the left, having a radius of 50.00', and arc length of 92.45' to a point, having a chord bearing N75°19'34"E, 79.83' to a point, 4) on a line curving to the right, having a radius of 20.00', and arc length of 20.61', and a chord bearing of N51°52'47"E, 19.71' to a point, 5) on a line curving to the right, having a radius of 150.00', an arc length of 16.52' and a chord bearing of N84°33'28"E, 16.51' to a point, 6) N87°42'46"E, 193.55' to a point, 7) on a line curving to the right, having a radius of 150.00', an arc length of 103.60' and a chord bearing of S72°30'01"E, 101.56' to a point, 8) S37°17'12"W, 103.87' to a point, 9) S07°24'38"E, 56.96' to a point, S00°50'21"E, 75.00' to a point, 10) S03°07'59"E, 87.74' to a point, 11) S11°44'09"E, 102.88' to a point, 12) N64°27'07"E, 125.00' to a point, on a line curving to the left, having a radius of 235.00', an arc length of 135.83' and a chord bearing of S42°06'22"E, 133.94' to a point in line of lands, now or formerly, of Manheim Township; thence extending along lands, now or formerly, of Manheim Township the following six courses and distances: 1) S26°24'04"W, 24.86' to a point, 2) S71°24'04"W, 28.28' to a point, 3) S26°24'04"W, 11.82' to a point, 4) N55°11'56"W, 35.38' to a point, 5) S26°24'04"W, 286.90' to a point, and 6) S70°40'06"E, 39.79' to the POINT OF BEGINNING.

CONTAINING: 13.493 Acres

Stoner Farm - Lot 127  
Final Subdivision and Land Development Plan

ALL THAT CERTAIN tract of land situate north of Eden Road (T-717), and on the east side of U.S. Route 222 (S.R. 0222), in Manheim Township, Lancaster County, Pennsylvania; known as Lot 127, as shown on a Final Subdivision and Land Development Plan for Stoner Farm (Phase 1), prepared by RGS Associates, Drawing Number: 2017332-087, Dated March 4, 2020, and recorded in and for the Office of the Lancaster County Recorder of Deeds in Instrument No. 2020-0462-J, and being more fully bounded and described as follows:

BEGINNING AT A POINT, a corner of Lot 128 as shown on the aforementioned plan, said point also being on the eastern right-of-way of U.S. Route 222, thence extending along the right-of-way of U.S. Route 222, N49°58'16"E, 326.64' rebar found, a corner of lands, now or formerly, of Manheim Township, of which the herein described tract is to be joined in common with; thence extending along lands, now or formerly, of Manheim Township the following five courses and distances: 1) S51°21'23"E, 385.46' to a point, 2) N87°42'46"E, 677.27' to a rebar found, 3) S02°17'14"E, 211.15' to a rebar found, 4) S63°35'56"E, 178.19' to a rebar found and 5) S26°24'04"W, 126.62' to a point, a corner of Lot 129 Remaining Lands; thence extending along

Lot 129 the following eleven courses and distances: 1) N03°26'57"W, 108.93' to a point, 2) S86°33'03"W, 208.62' to a point, 3) on a line curving to the left, having a radius of 200.00', an arc length of 36.95' and a chord bearing of N21°08'40"W, 36.90' to a point, 4) N63°33'46"E, 128.42' to a point, 5) N31°12'46"W, 99.47' to a point, 6) N60°28'30"W, 151.27' to a point, 7) N80°11'05"W, 113.65' to a point, 8) S87°42'46"W, 303.72' to a point, 9) S71°20'24"W, 113.01' to a point, 10) S22°01'06"W, 125.66' to a point, 11) S03°26'57"E, 73.49' to a point, a corner of Lot 126, Remaining Lands; thence extending along Lot 126 the following three courses and distances: 1) S06°17'13"E, 79.40' to a point, 1) S35°41'51"W, 84.11' to a point, and 3) N40°18'21"W, 334.66' to a point, a corner of Lot 128, Remaining Lands; thence extending along Lot 128 N52°21'54"W, 279.40' to the POINT OF BEGINNING.

CONTAINING: 4.960 Acres

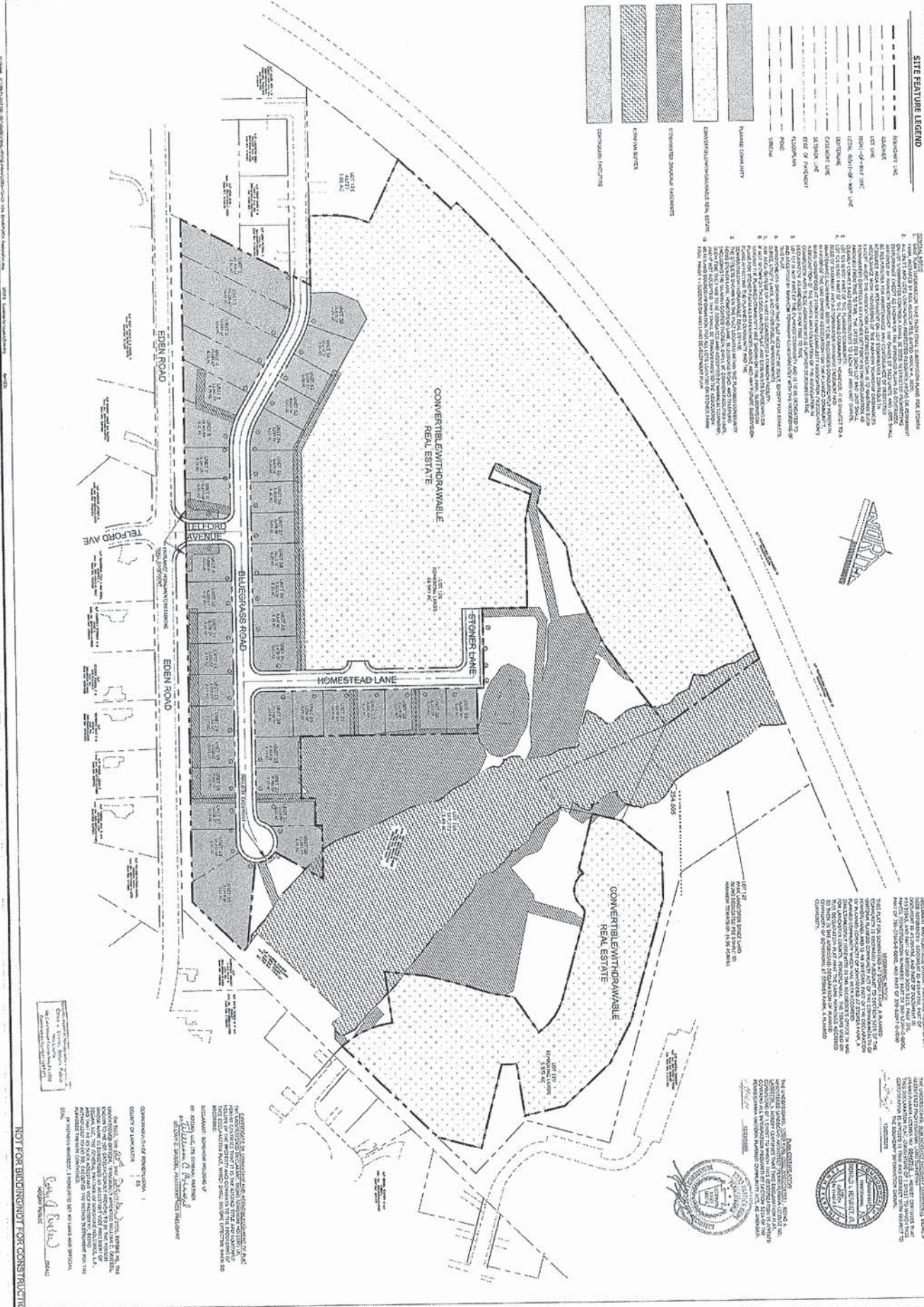
Prepared by Hershey Surveying, Inc.  
November 25, 2020

**EXHIBIT "B"**  
**Units by Identifying Numbers and Percentage Interest**

Unit Identifying No.	Percentage Interest Common Expense Liability
1	2.38%
2	2.38%
3	2.38%
4	2.38%
5	2.38%
6	2.38%
7	2.38%
8	2.38%
9	2.38%
10	2.38%
11	2.38%
12	2.38%
13	2.38%
14	2.38%
15	2.38%
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54	2.38%
55	2.38%
56	2.38%
57	2.38%
58	2.38%
59	2.38%
60	2.38%
61	2.38%

**EXHIBIT "C"**  
**Plats and Plans**

The Plats and Plans of Somerford at Stoner Farm, a Planned Community, attached hereto, are recorded as a part of this document in the Office of the Recorder of Deeds of Lancaster County, Pennsylvania.

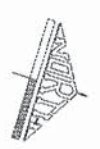


SITE FEATURE LEGEND

	ADJACENT
	LOT 158-2
	LOT 158-3
	LOT 158-4
	LOT 158-5
	LOT 158-6
	LOT 158-7
	LOT 158-8
	LOT 158-9
	LOT 158-10
	LOT 158-11
	LOT 158-12
	LOT 158-13
	LOT 158-14
	LOT 158-15
	LOT 158-16
	LOT 158-17
	LOT 158-18
	LOT 158-19
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	LOT 158-24
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	LOT 158-42
	LOT 158-43
	LOT 158-44
	LOT 158-45
	LOT 158-46
	LOT 158-47
	LOT 158-48
	LOT 158-49
	LOT 158-50

**GENERAL NOTES:**

1. THIS SITE PLAN IS THE FINAL DESIGN AND CONSTRUCTION OF THE PROJECT. ANY CHANGES TO THE DESIGN MUST BE APPROVED BY THE ENGINEER AND THE CITY ENGINEER.
2. THE ENGINEER HAS CONDUCTED A VISUAL SURVEY OF THE SITE AND HAS FOUND IT TO BE SUITABLE FOR THE PROPOSED DEVELOPMENT.
3. THE ENGINEER HAS CONDUCTED A VISUAL SURVEY OF THE SITE AND HAS FOUND IT TO BE SUITABLE FOR THE PROPOSED DEVELOPMENT.
4. THE ENGINEER HAS CONDUCTED A VISUAL SURVEY OF THE SITE AND HAS FOUND IT TO BE SUITABLE FOR THE PROPOSED DEVELOPMENT.
5. THE ENGINEER HAS CONDUCTED A VISUAL SURVEY OF THE SITE AND HAS FOUND IT TO BE SUITABLE FOR THE PROPOSED DEVELOPMENT.
6. THE ENGINEER HAS CONDUCTED A VISUAL SURVEY OF THE SITE AND HAS FOUND IT TO BE SUITABLE FOR THE PROPOSED DEVELOPMENT.
7. THE ENGINEER HAS CONDUCTED A VISUAL SURVEY OF THE SITE AND HAS FOUND IT TO BE SUITABLE FOR THE PROPOSED DEVELOPMENT.
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9. THE ENGINEER HAS CONDUCTED A VISUAL SURVEY OF THE SITE AND HAS FOUND IT TO BE SUITABLE FOR THE PROPOSED DEVELOPMENT.
10. THE ENGINEER HAS CONDUCTED A VISUAL SURVEY OF THE SITE AND HAS FOUND IT TO BE SUITABLE FOR THE PROPOSED DEVELOPMENT.



**GENERAL NOTES:**

1. THIS SITE PLAN IS THE FINAL DESIGN AND CONSTRUCTION OF THE PROJECT. ANY CHANGES TO THE DESIGN MUST BE APPROVED BY THE ENGINEER AND THE CITY ENGINEER.
2. THE ENGINEER HAS CONDUCTED A VISUAL SURVEY OF THE SITE AND HAS FOUND IT TO BE SUITABLE FOR THE PROPOSED DEVELOPMENT.
3. THE ENGINEER HAS CONDUCTED A VISUAL SURVEY OF THE SITE AND HAS FOUND IT TO BE SUITABLE FOR THE PROPOSED DEVELOPMENT.
4. THE ENGINEER HAS CONDUCTED A VISUAL SURVEY OF THE SITE AND HAS FOUND IT TO BE SUITABLE FOR THE PROPOSED DEVELOPMENT.
5. THE ENGINEER HAS CONDUCTED A VISUAL SURVEY OF THE SITE AND HAS FOUND IT TO BE SUITABLE FOR THE PROPOSED DEVELOPMENT.
6. THE ENGINEER HAS CONDUCTED A VISUAL SURVEY OF THE SITE AND HAS FOUND IT TO BE SUITABLE FOR THE PROPOSED DEVELOPMENT.
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8. THE ENGINEER HAS CONDUCTED A VISUAL SURVEY OF THE SITE AND HAS FOUND IT TO BE SUITABLE FOR THE PROPOSED DEVELOPMENT.
9. THE ENGINEER HAS CONDUCTED A VISUAL SURVEY OF THE SITE AND HAS FOUND IT TO BE SUITABLE FOR THE PROPOSED DEVELOPMENT.
10. THE ENGINEER HAS CONDUCTED A VISUAL SURVEY OF THE SITE AND HAS FOUND IT TO BE SUITABLE FOR THE PROPOSED DEVELOPMENT.

NOT FOR BIDDING/NOT FOR CONSTRUCTION

CONTRACT NO. 19-203-001  
 PROJECT NO. 19-203-001  
 SHEET NO. 1 OF 1

**COMMISSIONER OF LANDSCAPE ARCHITECTURE**  
 STATE OF PENNSYLVANIA  
 REG. NO. 11983  
 EXP. 12/31/2023

**LAND PLANNING AND ARCHITECTURE**  
 CIVIL ENGINEERING  
 REGISTERED PROFESSIONAL ENGINEER  
 STATE OF PENNSYLVANIA  
 REG. NO. 11983  
 EXP. 12/31/2023

<b>SOMERFORD AT STONER FARM</b> A PLANNED COMMUNITY	PROJECT NO. 19-203-001 SHEET NO. 1 OF 1	SCALE 1" = 100' 	DATE: 12/23/2020		SEAL _____ TITLE:
			PROJECT NO. 19-203-001		
LAND PLANNING AND ARCHITECTURE CIVIL ENGINEERING REGISTERED PROFESSIONAL ENGINEER STATE OF PENNSYLVANIA REG. NO. 11983 EXP. 12/31/2023		ARCHITECT: TERRY KURR REGISTERED: TPK DRAWN BY: F.W.W. CHECKED BY: TPK		SEAL _____ TITLE:	





**EXHIBIT "D"**  
**Convertible Real Estate**  
**Legal Descriptions for Lot 128 and Lot 129**

Stoner Farm - Lot 128  
Final Subdivision and Land Development Plan

ALL THAT CERTAIN tract of land situate north of Eden Road (T-717), and on the east side of U.S. Route 222 (S.R. 0222), in Manheim Township, Lancaster County, Pennsylvania; known as Lot 128, as shown on a Final Subdivision and Land Development Plan for Stoner Farm (Phase 1), prepared by RGS Associates, Drawing Number: 2017332-087, Dated March 4, 2020, and recorded in and for the Office of the Lancaster County Recorder of Deeds in Instrument No. 2020-0462-J, and being more fully bounded and described as follows:

BEGINNING AT A POINT, a corner of Lot 125 as shown on the aforementioned plan, said point also being on the eastern right-of-way of U.S. Route 222, thence extending along the right-of-way of U.S. Route 222 the following four courses and distances: 1) on a line curving to the right, having a radius of 3,125.17', an arc length of 175.02', and a chord bearing of N25°20'30"E, 175.00' to a point, 2) N63°03'12"W, 20.00' to a point, 3) on a line curving to the right, having a radius of 3,144.17', an arc length of 1,263.50', and a chord bearing of N38°27'32"E, 1,255.01' to a point, and 4) N49°58'16"E, 72.63' to a point, a corner of Lot 127, lands to be conveyed to Manheim Township; thence extending along Lot 127, S52°21'54"E, 279.40' to a point, a corner of Lot 126, Remaining Lands; thence extending along Lot 126 the following eleven courses and distances: 1) S35°18'44"W, 247.91' to a point, 2) S46°18'58"W, 170.41' to a point, 3) S63°14'52"W, 84.00' to a point, 4) S36°28'50"W, 121.74' to a point, 5) S85°16'27"W, 48.05' to a point, 6) S10°24'55"W, 124.07' to a point, 7) on a line curving to the left, having a radius of 325.00', and arc length of 41.14', and a chord bearing of S83°12'41"E, 41.12' to a point, 8) N03°09'43"E, 109.00' to a point, 9) N85°03'33"E, 59.23' to a point, 10) N71°50'46"E, 216.85' to a point, 11) S18°09'14"E, 110.24' to a point on the Phase 1 terminus of Stoner Land; thence extending along the Phase 1 Stoner Lane, Homestead Lane and along various lot within Phase 1 the following fourteen courses and distances: 1) S18°09'14"E, 50.00' to a point, 2) N71°50'46"E, 122.35' to a point, 3) on a line curving to the right, having a radius of 20.00', an arc length of 31.42', and a chord bearing of S63°09'14"E, 28.28' to a point, 4) S18°09'14"E, 190.00' to a point, 5) on a line curving to the right, having a radius of 20.00', an arc length of 31.42', and a chord bearing of S26°50'46"W, 28.28' to a point, 6) S18°09'14"E, 50.00' to a point, 7) on a line curving to the right, having a radius of 20.00', an arc length of 31.42', and a chord bearing of S63°09'14"E, 28.28' to a point, 8) S18°09'14"E, 95.00' to a point, 9) S71°50'46"W, 534.70' to a point, 10) on a line curving to the right, having a radius of 35.00', an arc length of 18.38', and a chord bearing of S86°53'18"W, 18.17' to a point, 11) N78°04'09"W, 341.20' to a point, 12) S45°22'15"W, 48.76' to a point, 13) S04°16'48"W, 54.82' to a point, and 14) S18°16'22"E, 63.44' to a point on the north right-of-way of Bluegrass Road; thence extending along Bluegrass Road, S71°43'38"W, 187.20' to a point, a corner of Lot 125; thence extending along Lot 125 the following three courses and distances: 1) N18°16'22"W, 58.39' to a point, 2) on a line curving to the right, having a radius of 200.00', and arc length of 90.43' and a chord bearing of N05°19'09"W, 89.67' to a point, and 3) N82°21'56"W, 168.60' to the POINT OF BEGINNING.

CONTAINING: 18.943 Acres

Stoner Farm - Lot 129  
Final Subdivision and Land Development Plan

ALL THAT CERTAIN tract of land situate north of Eden Road (T-717), and east of U.S. Route 222 (S.R. 0222), in Manheim Township, Lancaster County, Pennsylvania; known as Lot 129, as shown on a Final Subdivision and Land Development Plan for Stoner Farm (Phase 1), prepared by RGS Associates, Drawing Number: 2017332-087, Dated March 4, 2020, and recorded in and for the Office of the Lancaster County Recorder of Deeds in Instrument No. 2020-0462-J, and being more fully bounded and described as follows:

BEGINNING AT A POINT in line of lands, now or formerly, of Manheim Township, said point also being a corner of Lot 126, Remaining Lands, thence extending along Lot 126 the following fourteen courses and distances: 1) on a line curving to the right, having a radius of 235.00', and arc length of 135.83', and a chord bearing of N42°06'22"W, 133.94' to a point, 2) S64°27'07"W, 125.00' to a point, 3) N11°44'09"W, 102.88' to a point, 4) N03°07'59"W, 87.74' to a point, 5) N00°50'21"W, 75.00' to a point, 6) N07°24'38"W, 56.96' to a point, 7) N37°17'12"E, 103.87' to a point, 8) on a line curving to the left, having a radius of 150.00', an arc length of 103.60', and a chord bearing of N72°30'01"W, 101.56' to a point, 9) S87°42'46"W, 193.55' to a point, 10) on a line curving to the left, having a radius of 150.00', and arc length of 16.52', and a chord bearing of S84°33'28"W, 16.51' to a point, 11) on a line curving to the left, having a radius of 20.00', an arc length of 20.61', and a chord bearing of S51°52'47"W, 19.71' to a point, 12) on a line curving to the right, having a radius of 50.00', an arc length of 92.45', and a chord bearing of S75°19'34"W, 79.83' to a point, 13) S 38°17'44"W, 16.88' to a point, and 14) S86°40'30"W, 135.54' to a point, a corner of Lot 127, lands to be conveyed to Manheim Township; thence extending along Lot 127, the following eleven courses and distances: 1) N03°26'57"W, 73.49' to a point, 2) N 22°01'06"E, 125.66' to a point, 3) N71°20'24"E, 113.01' to a point, 4) N87°42'46"E, 303.72' to a point, 5) S80°11'05"E, 113.65' to a point, 6) S 60°28'30"E, 151.27' to a point, 7) S31°12'42"E, 99.47' to a point, 8) S63°33'46"W, 128.42' to a point 9) on a line curving to the right, having a radius of 200.00', an arc length of 36.95' and a chord bearing of S21°08'40"E, 36.90' to a point, 10) N86°33'03"E, 208.62' to a point, and S03°26'57"E, 108.93' to a point in line of lands, now or formerly, of Manheim Township; thence extending along lands, now or formerly, of Manheim Township, S26°24'04"W, 320.45' to the POINT OF BEGINNING.

CONTAINING:        5.572 Acres

Prepared by Hershey Surveying, Inc.  
November 25, 2020

**EXHIBIT "E"**  
**Withdrawable Real Estate**  
**Legal Descriptions for Lot 128 and Lot 129**

Stoner Farm - Lot 128  
Final Subdivision and Land Development Plan

ALL THAT CERTAIN tract of land situate north of Eden Road (T-717), and on the east side of U.S. Route 222 (S.R. 0222), in Manheim Township, Lancaster County, Pennsylvania; known as Lot 128, as shown on a Final Subdivision and Land Development Plan for Stoner Farm (Phase 1), prepared by RGS Associates, Drawing Number: 2017332-087, Dated March 4, 2020, and recorded in and for the Office of the Lancaster County Recorder of Deeds in Instrument No. 2020-0462-J, and being more fully bounded and described as follows:

BEGINNING AT A POINT, a corner of Lot 125 as shown on the aforementioned plan, said point also being on the eastern right-of-way of U.S. Route 222, thence extending along the right-of-way of U.S. Route 222 the following four courses and distances: 1) on a line curving to the right, having a radius of 3,125.17', an arc length of 175.02', and a chord bearing of N25°20'30"E, 175.00' to a point, 2) N63°03'12"W, 20.00' to a point, 3) on a line curving to the right, having a radius of 3,144.17', an arc length of 1,263.50', and a chord bearing of N38°27'32"E, 1,255.01' to a point, and 4) N49°58'16"E, 72.63' to a point, a corner of Lot 127, lands to be conveyed to Manheim Township; thence extending along Lot 127, S52°21'54"E, 279.40' to a point, a corner of Lot 126, Remaining Lands; thence extending along Lot 126 the following eleven courses and distances: 1) S35°18'44"W, 247.91' to a point, 2) S46°18'58"W, 170.41' to a point, 3) S63°14'52"W, 84.00' to a point, 4) S36°28'50"W, 121.74' to a point, 5) S85°16'27"W, 48.05' to a point, 6) S10°24'55"W, 124.07' to a point, 7) on a line curving to the left, having a radius of 325.00', and arc length of 41.14', and a chord bearing of S83°12'41"E, 41.12' to a point, 8) N03°09'43"E, 109.00' to a point, 9) N85°03'33"E, 59.23' to a point, 10) N71°50'46"E, 216.85' to a point, 11) S18°09'14"E, 110.24' to a point on the Phase 1 terminus of Stoner Land; thence extending along the Phase 1 Stoner Lane, Homestead Lane and along various lot within Phase 1 the following fourteen courses and distances: 1) S18°09'14"E, 50.00' to a point, 2) N71°50'46"E, 122.35' to a point, 3) on a line curving to the right, having a radius of 20.00', an arc length of 31.42', and a chord bearing of S63°09'14"E, 28.28' to a point, 4) S18°09'14"E, 190.00' to a point, 5) on a line curving to the right, having a radius of 20.00', an arc length of 31.42', and a chord bearing of S26°50'46"W, 28.28' to a point, 6) S18°09'14"E, 50.00' to a point, 7) on a line curving to the right, having a radius of 20.00', an arc length of 31.42', and a chord bearing of S63°09'14"E, 28.28' to a point, 8) S18°09'14"E, 95.00' to a point, 9) S71°50'46"W, 534.70' to a point, 10) on a line curving to the right, having a radius of 35.00', an arc length of 18.38', and a chord bearing of S86°53'18"W, 18.17' to a point, 11) N78°04'09"W, 341.20' to a point, 12) S45°22'15"W, 48.76' to a point, 13) S04°16'48"W, 54.82' to a point, and 14) S18°16'22"E, 63.44' to a point on the north right-of-way of Bluegrass Road; thence extending along Bluegrass Road, S71°43'38"W, 187.20' to a point, a corner of Lot 125; thence extending along Lot 125 the following three courses and distances: 1) N18°16'22"W, 58.39' to a point, 2) on a line curving to the right, having a radius of 200.00', and arc length of 90.43' and a chord bearing of N05°19'09"W, 89.67' to a point, and 3) N82°21'56"W, 168.60' to the POINT OF BEGINNING.

CONTAINING: 18.943 Acres

Stoner Farm - Lot 129  
Final Subdivision and Land Development Plan

ALL THAT CERTAIN tract of land situate north of Eden Road (T-717), and east of U.S. Route 222 (S.R. 0222), in Manheim Township, Lancaster County, Pennsylvania; known as Lot 129, as shown on a Final Subdivision and Land Development Plan for Stoner Farm (Phase 1), prepared by RGS Associates, Drawing Number: 2017332-087, Dated March 4, 2020, and recorded in and for the Office of the Lancaster County Recorder of Deeds in Instrument No. 2020-0462-J, and being more fully bounded and described as follows:

BEGINNING AT A POINT in line of lands, now or formerly, of Manheim Township, said point also being a corner of Lot 126, Remaining Lands, thence extending along Lot 126 the following fourteen courses and distances: 1) on a line curving to the right, having a radius of 235.00', and arc length of 135.83', and a chord bearing of N42°06'22"W, 133.94' to a point, 2) S64°27'07"W, 125.00' to a point, 3) N11°44'09"W, 102.88' to a point, 4) N03°07'59"W, 87.74' to a point, 5) N00°50'21"W, 75.00' to a point, 6) N07°24'38"W, 56.96' to a point, 7) N37°17'12"E, 103.87' to a point, 8) on a line curving to the left, having a radius of 150.00', an arc length of 103.60', and a chord bearing of N72°30'01"W, 101.56' to a point, 9) S87°42'46"W, 193.55' to a point, 10) on a line curving to the left, having a radius of 150.00', and arc length of 16.52', and a chord bearing of S84°33'28"W, 16.51' to a point, 11) on a line curving to the left, having a radius of 20.00', an arc length of 20.61', and a chord bearing of S51°52'47"W, 19.71' to a point, 12) on a line curving to the right, having a radius of 50.00', an arc length of 92.45', and a chord bearing of S75°19'34"W, 79.83' to a point, 13) S 38°17'44"W, 16.88' to a point, and 14) S86°40'30"W, 135.54' to a point, a corner of Lot 127, lands to be conveyed to Manheim Township; thence extending along Lot 127, the following eleven courses and distances: 1) N03°26'57"W, 73.49' to a point, 2) N 22°01'06"E, 125.66' to a point, 3) N71°20'24"E, 113.01' to a point, 4) N87°42'46"E, 303.72' to a point, 5) S80°11'05"E, 113.65' to a point, 6) S 60°28'30"E, 151.27' to a point, 7) S31°12'42"E, 99.47' to a point, 8) S63°33'46"W, 128.42' to a point 9) on a line curving to the right, having a radius of 200.00', an arc length of 36.95' and a chord bearing of S21°08'40"E, 36.90' to a point, 10) N86°33'03"E, 208.62' to a point, and S03°26'57"E, 108.93' to a point in line of lands, now or formerly, of Manheim Township; thence extending along lands, now or formerly, of Manheim Township, S26°24'04"W, 320.45' to the POINT OF BEGINNING.

CONTAINING:        5.572 Acres

Prepared by Hershey Surveying, Inc.  
November 25, 2020

## **EXHIBIT B**

***BYLAWS***

***OF***

***SOMERFORD AT STONER FARM***  
***COMMUNITY ASSOCIATION***

**BYLAWS**

**OF**

***SOMERFORD AT STONER FARM COMMUNITY ASSOCIATION***

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**BYLAWS  
OF  
*SOMERFORD AT STONER FARM  
COMMUNITY ASSOCIATION.***

**ARTICLE I.  
INTRODUCTORY PROVISIONS**

Section 1.1 Applicability. These Bylaws provide for the governance of the non-profit corporation known as Somerford at Stoner Farm Community Association (“corporation” or “Association”) pursuant to the requirements of Section 5306 of the Pennsylvania Uniform Planned Community Act (“Act”) with respect to the Planned Community, known as Somerford at Stoner Farm, a Planned Community, created by the recording of the Declaration of Somerford at Stoner Farm, A Planned Community, among the land records of Lancaster County, Pennsylvania.

Section 1.2 Definitions. Capitalized terms used herein without definition shall have the meanings specified for such terms in the Declaration to which these Bylaws pertain or, if not defined therein, the meanings specified or used for such terms in the Act.

Section 1.3 Compliance. Pursuant to the provisions of the Act, every Unit Owner and all Persons entitled to occupy a Unit shall comply with these Bylaws.

Section 1.4 Office. The initial registered office of the corporation shall be 227 Granite Run Drive, Suite 100, Lancaster, PA 17601. Otherwise, the The office of the Planned Community, the corporation, and the Executive Board shall be located at the Property or at such other place as may be designated from time to time by the Executive Board.

Section 1.5 Incorporation of Statutory Law. The corporation shall be a non-profit corporation pursuant to the laws of the Commonwealth of Pennsylvania. The “Board of Directors” described therein shall be referred to herein and in the Declaration as the “Executive Board.”

**ARTICLE II.  
THE ASSOCIATION FOR THE PLANNED COMMUNITY**

Section 2.1 Composition. The corporation which serves as the Association for the Planned Community is hereby organized on the date hereof as a non-profit corporation. The Association shall have members consisting of all of the Unit Owners acting as a group in accordance with the Act, the Declaration and these Bylaws. The corporation shall have the

responsibility of administering the Planned Community, establishing the means and methods of collecting assessments and charges, arranging for the management of the Planned Community and performing all of the other acts that may be required or permitted to be performed by the corporation pursuant to the Act and the Declaration. The foregoing responsibilities shall be performed by the Executive Board as more particularly set forth in these Bylaws.

Section 2.2 Annual Meetings. The annual meetings of the corporation shall be held on the third Thursday of September of each year unless such date shall occur on a holiday, in which event the meetings shall be held on the succeeding Monday. At such annual meetings the Executive Board shall be elected by ballot of the Unit Owners in accordance with the requirements of Section 3.3 of these Bylaws and such other business as may properly come before the meeting may be transacted.

Section 2.3 Place of Meetings. Meetings of the corporation shall be held at the principal office of the corporation or at such other suitable place convenient to the Unit Owners as may be designated by the Executive Board.

Section 2.4 Special Meetings.

2.4.1 The President shall call a special meeting of the corporation if so directed by resolution of the Executive Board or upon a petition signed and presented to the Secretary by Unit Owners entitled to cast at least twenty-five percent of the votes in the Association. The notice of any special meeting shall state the time, place and purpose thereof. Such meeting shall be held within forty-five (45) days after receipt by the President of such resolution or petition; provided, however, if the purpose includes the consideration of the rejection of a budget or capital expenditure pursuant to Section 5.8 below, such meeting shall be held within fifteen (15) days after receipt by the President of such resolution or petition. No business shall be transacted at a special meeting except as stated in the notice.

2.4.2 Within sixty (60) days after conveyance of twenty-five (25%) percent of the Units to Unit Owners other than the Declarant, a special meeting of the Association shall be held at which at least one (1) member and not less than twenty-five (25%) percent of the members of the Executive Board shall be elected by Unit Owners other than Declarant. Not later than sixty (60) days after conveyance of fifty (50%) percent of the Units which may be created to Unit Owners other than the Declarant, not less than thirty-three (33%) percent of the members of the Executive Board shall be elected by Unit Owners other than the Declarant.

2.4.3 Not later than the termination of any period of Declarant control, the Unit Owners shall elect an Executive Board of at least three (3) members, all of whom shall be Unit Owners, provided that the Executive Board may consist of two (2) members, both of whom shall be Unit Owners, if the Planned Community consists of two (2) units. Such

successor members shall serve until the annual meeting of the corporation following the meeting at which they were elected.

2.4.4 Notwithstanding the foregoing, if any meeting required pursuant to Sections 2.4.2 and 2.4.3 above could be held on the date an annual meeting of the corporation is scheduled, then such meeting(s) shall be held concurrently with such annual meeting.

Section 2.5 Notice of Meetings. The Secretary shall give to each Unit Owner a notice of each annual or regularly-scheduled meeting of the corporation at least ten (10) but not more than sixty (60) days, and of each special meeting of the Unit Owners at least ten (10) but not more than forty-five (45) days, prior to such meeting, stating the time, place and purpose thereof, including, without limitation, any proposed budget or assessment changes, the general nature of any proposed amendment to the Bylaws or Declaration, and any proposal to remove an Executive Board member or Officer. The giving of a notice of meeting in the manner provided in this Section and Section 9.1 of these Bylaws shall be considered service of notice.

Section 2.6 Adjournment of Meetings. If at any meeting of the Association a quorum is not present, Unit Owners entitled to cast a majority of the votes represented at such meeting may adjourn the meeting to a time not less than forty-eight (48) hours after the time for which the original meeting was called.

Section 2.7 Voting. Voting at all meetings of the Association shall be on a percentage basis and the percentages of the vote to which each Unit Owner is entitled shall be the Percentage Interest assigned to such Unit Owner's Unit in the Declaration. If the owner of a Unit is a corporation, joint venture, partnership or unincorporated association, the natural person who shall be entitled to cast the vote for such unit shall be the natural person named in a certificate executed by such entity pursuant to its governing documents. If the owner of a Unit is a trust, the trustee or trustees shall be deemed to be the owner for voting purposes. Where the ownership of a Unit is in more than one (1) Person, the Person who shall be entitled to cast the vote of such Unit shall be the natural person named in a certificate executed by all of the owners of such Unit and filed with the Secretary or, in the absence of such named person from the meeting, the natural person who shall be entitled to cast the vote of such Unit shall be the natural person owning such Unit who is present. If more than one (1) of the multiple Owners is present, then such vote shall be cast only in accordance with their unanimous agreement pursuant to Section 5310(a) of the Act. There shall be deemed to be unanimous agreement if any one of the multiple Owners casts the votes allocated to that Unit without protest being made promptly to the Person presiding over the meeting by any of the other Owners of the Unit. Such certificate shall be valid until revoked by a subsequent certificate similarly executed. Subject to the requirements of the Act, wherever the approval or disapproval of a Unit Owner is required by the Act, the Declaration or these Bylaws, such approval or disapproval shall be made only by the natural person who would be entitled to cast the vote of such Unit at any meeting of the Association. Except with respect to election of members of the Executive Board and except where a greater

number is required by the Act, the Declaration or these Bylaws, the Owners of more than fifty (50%) percent of the aggregate Percentage Interests in the Planned Community voting in person or by proxy at one (1) time at a duly convened meeting at which a quorum is present is required to adopt decisions at any meeting of the corporation. Any specified percentage of the Unit Owners means the Unit Owners owning such Percentage Interests in the aggregate. In all elections for Executive Board members, each Unit Owner shall be entitled to cast for each vacancy to be filled at such election the number of votes allocated to the Unit or Units owned by such Unit Owner as provided in the Declaration. Those candidates for election receiving the greatest number of votes cast in such elections shall be elected. Except as set forth in Section 2.4.2, if the Declarant owns or holds title to one (1) or more Units, the Declarant shall have the right at any meeting of the Association to cast the votes to which such Unit or Units are entitled. No votes allocated to a Unit owned by the Association may be cast. There shall be no cumulative or class voting.

Section 2.8 Proxies. A vote may be cast in person or by proxy. If a Unit is owned by more than one (1) Person, each Owner of the Unit may vote or register protest to the casting of votes by the other Owners of the Unit through a duly executed proxy. Such proxy may be granted by any Unit Owner in favor of only another Unit Owner, a holder of a mortgage on a Unit or the Declarant. Proxies shall be duly executed in writing, shall be valid only for the particular meeting designated therein and must be filed with the Secretary before the appointed time of the meeting. Such proxy shall be deemed revoked only upon actual receipt by the Person presiding over the meeting of written notice of revocation from the grantor(s) of the proxy. No proxy shall be valid for a period in excess of one (1) year after the execution thereof. A proxy is void if it is not dated or purports to be revocable without notice.

Section 2.9 Quorum. Except as set forth below, the presence in person or by proxy of Unit Owners of twenty-five (25%) percent or more of the aggregate Percentage Interests at the commencement of all meetings shall constitute a quorum at all meetings of the Unit Owners Association. If a meeting is adjourned pursuant to Section 2.6 above, the quorum at such second meeting shall be deemed present throughout any meeting of the Association if persons entitled to cast ten (10%) percent of the votes which may be cast for the election of the Executive Board are present in person or by proxy at the beginning of the meeting.

Section 2.10 Conduct of Meetings. The President (or in the President's absence, the Vice President) shall preside over all meetings of the corporation, and the Secretary shall keep the minutes of the meeting and record in a minute book all resolutions adopted at the meeting as well as a record of all transactions occurring thereat. The President may appoint a person to serve as parliamentarian at any meeting of the corporation. The then current edition of Robert's Rules of Order shall govern the conduct of all meetings of the corporation when not in conflict with the Declaration, these Bylaws or the Act. All votes shall be tallied by tellers appointed by the President.

**ARTICLE III.  
EXECUTIVE BOARD**

Section 3.1 Number and Qualification. The affairs of the Association shall be governed by an Executive Board. The Executive Board shall be composed of at least three (3) natural persons, all of whom shall be Unit Owners or designees of the Declarant.

Section 3.2 Delegation of Powers; Managing Agent. The Executive Board may employ for the Planned Community a “Managing Agent” at a compensation established by the Executive Board. The Managing Agent shall perform such duties and services as the Executive Board shall authorize, including, but not limited to, all of the duties listed in the Act, the Declaration and these Bylaws; provided, however, where a Managing Agent does not have the power to act under the Act, the Declaration or these Bylaws, such duties shall be performed as advisory to the Executive Board. The Executive Board may delegate to the Managing Agent all of the powers granted to the Executive Board by the Act, the Declaration and these Bylaws other than the following powers:

3.2.1 to adopt the annual budget and any amendment thereto or to assess any Common Expenses;

3.2.2 to adopt, repeal or amend Rules and Regulations;

3.2.3 to designate signatories on corporate bank accounts;

3.2.4 to borrow money on behalf of the corporation;

3.2.5 to acquire, convey, and mortgage Units or Common Elements;

3.2.6 to grant easements, leases, licenses, and concessions over the Common Elements without the express approval of the Executive Board of such action.

Any contract with the Managing Agent must provide that it may be terminated with cause on no more than thirty (30) days' written notice and without cause on no more than ninety (90) days' written notice. The term of any such contract may not exceed one (1) year.

Section 3.3 Election and Term of Office.

3.3.1 At the annual meeting of the corporation, the election of members of the Executive Board shall be held. The term of office of any Executive Board member to be elected (except as set forth in Sections 2.4.2 and 2.4.3 and Section 3.5 hereof) shall be fixed at three (3) years. The members of the Executive Board shall hold office until the earlier to occur of the election of their respective successors or their death, adjudication of incompetency, removal, or resignation. An Executive Board member may serve an unlimited number of terms and may succeed himself.

3.3.2 Persons qualified to be members of the Executive Board may be nominated for election only as follows:

(a) Any Unit Owner may submit to the Secretary at least thirty (30) days before the meeting at which the election is to be held a nominating petition signed by Unit Owners owning at least ten (10) Units in the aggregate, together with a statement that the person nominated is willing to serve on the Executive Board and a biographical sketch of the nominee. The Secretary shall mail or hand deliver the submitted items to every Unit Owner along with the notice of such meeting; and

(b) Nominations may be submitted from the Floor at the meeting at which the election is held for each vacancy on the Executive Board for which no more than one (1) person has been nominated by petition.

Section 3.4 Removal or Resignation of Members of the Executive Board. Except with respect to members designated by the Declarant, at any regular or special meeting of the corporation duly called, any one (1) or more of the members of the Executive Board may be removed with or without cause by Unit Owners entitled to cast a majority of all votes in the Association and a successor may then and there be elected to fill the vacancy thus created. Any Unit Owner proposing removal of a Board member shall give notice thereof to the Secretary. Any member whose removal has been proposed by a Unit Owner shall be given at least ten (10) days' notice by the Secretary of the time, place and purpose of the meeting and shall be given an opportunity to be heard at the meeting. A member of the Executive Board may resign at any time and shall be deemed to have resigned upon transfer of title to his Unit. The Declarant shall have the right to remove and replace any or all members appointed by the Declarant in accordance with the Act.

Section 3.5 Vacancies. Except as set forth in Section 3.4 above with respect to members appointed by the Declarant, vacancies in the Executive Board caused by any reason other than the removal of a member by a vote of Unit Owners shall be filled by a vote of a majority of the remaining members at a special meeting of the Executive Board held for such purpose promptly after the occurrence of any such vacancy, even though the members present at such meeting may constitute less than a quorum. Each person so elected shall be a member of the Executive Board for the remainder of the term of the member being replaced and until a successor shall be elected at the next annual meeting of the Association at which such seat is to be filled upon expiration of the term of his predecessor.

Section 3.6 Organization Meeting. The first meeting of the Executive Board following each annual meeting of the corporation shall be held within ten (10) days thereafter at such time and place as shall be fixed by the President (even if he is the outgoing President) at the meeting at which such Executive Board shall have been elected, and no notice shall be necessary to the

newly elected members of the Executive Board in order legally to constitute such meeting, if a majority of the Executive Board members shall be present at such meeting.

Section 3.7 Regular Meetings. Regular meetings of the Executive Board may be held at such time and place as shall be determined from time to time by a majority of the members, but such meetings shall be held at least four (4) times during each fiscal year. Notice of regular meetings of the Executive Board shall be given to each member, by mail or telecopy, at least three (3) business days prior to the day named for such meeting.

Section 3.8 Special Meetings. Special meetings of the Executive Board may be called by the President on at least three (3) business days' notice to each member, given by mail or telecopy, which notice shall state the time, place and purpose of the meeting. Special meetings of the Executive Board shall be called by the President or Secretary in like manner and on like notice on the written request of at least two (2) members of the Executive Board.

Section 3.9 Waiver of Notice. Any member may at any time, in writing, waive notice of any meeting of the Executive Board, and such waiver shall be deemed equivalent to the giving of such notice. Attendance by a member at any meeting of the Executive Board shall constitute a waiver of notice by him of the time, place and purpose of such meeting. If all members are present at any meeting of the Executive Board, no notice shall be required and any business may be transacted at such meeting.

Section 3.10 Quorum of the Executive Board. A quorum is deemed present throughout any meeting of the Executive Board if persons entitled to cast fifty (50%) percent of the votes on the Board are present at the beginning of the meeting. The votes of a majority of the members present at a meeting at which a quorum is present shall constitute the decision of the Executive Board. If at any meeting of the Executive Board there shall be less than a quorum present, a majority of those present may adjourn the meeting from time to time. At any such adjourned meeting at which a quorum is present, any business which might have been transacted at the meeting originally called may be transacted without further notice. One (1) or more members of the Executive Board may participate in and be counted for quorum purposes at any meeting by means of conference telephone or similar communication equipment by means of which all persons participating in the meeting can hear each other.

Section 3.11 Compensation. No member of the Executive Board shall receive any compensation from the corporation for acting as such, but may be reimbursed for any expenses incurred in the performance of his duties.

Section 3.12 Conduct of Meetings. The President shall preside over all meetings of the Executive Board and the Secretary shall keep a minute book of the Executive Board meetings, recording therein all resolutions adopted by the Executive Board and a record of all transactions and proceedings occurring at such meetings. The then current edition of Robert's Rules of Order shall govern the conduct of the meetings of the Executive Board if and to the extent not in conflict with the Declaration, these Bylaws or the Act.



Section 3.13 Action Without Meeting. Any action by the Executive Board required or permitted to be taken at any meeting may be taken without a meeting if all of the members of the Executive Board shall individually or collectively consent in writing to such action. Any such written consent shall be filed with the minutes of the proceedings of the Executive Board.

Section 3.14 Validity of Contracts with Interested Executive Board Members. No contract or other transaction between the corporation and one (1) or more of its Executive Board members or between the corporation and any corporation, firm or association in which one (1) or more of the Executive Board members are directors or officers, or are financially interested, shall be void or voidable because such Executive Board member or members are present at any meeting of the Executive Board which authorized or approved the contract or transaction or because his or their votes are counted, if the circumstances specified in either of the following subparagraphs exists:

3.14.1 The fact that an Executive board member is also such a director or officer or has such financial interest is disclosed or known to the Executive Board and is noted in the minutes thereof, and the Executive Board authorizes, approves or ratifies the contract or transaction in good faith by a vote sufficient for the purpose without counting the vote or votes of such Executive Board member or members; or

3.14.2 The contract or transaction is made in good faith and is not unconscionable to the corporation at the time it is authorized, approved or ratified.

Section 3.15 Inclusion of Interested Board Members in the Quorum. Any Executive Board member holding such director or officer position or having such financial interest in another corporation, firm or association may be counted in determining the presence of a quorum at a meeting of the Executive Board or a committee thereof which authorizes, approves or ratifies a contract or transaction of the type described in Section 3.14 hereof.

#### **ARTICLE IV. OFFICERS**

Section 4.1 Designation. The principal officers of the Association shall be the President, the Vice President, the Secretary and the Treasurer, all of whom shall be elected by the Executive Board. The Executive Board may appoint an assistant treasurer, an assistant secretary and such other officers as in its judgment may be necessary. The President and Vice President shall be members of the Executive Board. Any other officers may, but need not, be Unit Owners or members of the Executive Board.

Section 4.2 Election of Officers. The officers of the Association shall be elected annually by the Executive Board at the organization meeting of each new Board and shall hold office at the pleasure of the Executive Board.

Section 4.3 Removal of Officers. Upon the affirmative vote of a majority of all members of the Executive Board, any officer may be removed, either with or without cause, and a successor may be elected at any meeting of the Executive Board called for such purpose.

Section 4.4 President. The President shall be the chief executive officer of the corporation, preside at all meetings of the corporation and of the Executive Board and have all of the general powers and duties which are incident to the office of president of a corporation organized under the laws of Pennsylvania including without limitation the power to appoint committees from among the Unit Owners from time to time as the President may in his discretion decide is appropriate to assist in the conduct of the affairs of the corporation. The President shall cease holding such office at such time as the President ceases to be a member of the Executive Board.

Section 4.5 Vice President. The Vice President shall take the place of the President and perform the duties of the President whenever the President shall be absent or unable to act. If neither the President nor the Vice President is able to act, the Executive Board shall appoint some other member of the Executive Board to act in the place of the President, on an interim basis. The Vice President shall also perform such other duties as shall from time to time be delegated or assigned to the Vice President by the Executive Board or by the President. The Vice President shall cease holding such office at such time as the Vice President ceases to be a member of the Executive Board.

Section 4.6 Secretary. The Secretary shall keep the minutes of all meetings of the corporation and of the Executive Board, have charge of such books and papers as the Executive Board may direct, maintain a register setting forth the place to which all notices to Unit Owners and holders of mortgages on any Units hereunder shall be delivered and, in general, perform all the duties incident to the office of secretary of a corporation organized under the laws of Pennsylvania. The Secretary shall, upon request, provide any Person, or cause to be provided to any Person entitled thereto a written statement or certification of the information required to be provided by the corporation pursuant to Sections 5315(h), 5407(a) and 5407(b) of the Act and Section 5.6 and Section 5.11 below.

Section 4.7 Treasurer. The Treasurer shall have the responsibility for the safekeeping of corporate funds and securities, be responsible for keeping full and accurate financial records and books of account showing all receipts and disbursements, and for the preparation of all required financial data and be responsible for the deposit of all monies in the name of the Executive Board, the corporation or the Managing Agent, in such depositories as may from time to time be designated by the Executive Board and, in general, perform all the duties incident to the office of treasurer of a corporation organized under the laws of Pennsylvania.

Section 4.8 Execution of Documents. All agreements, contracts, deeds, leases, checks and other instruments of the corporation for expenditures or obligations in excess of Five Thousand Dollars (\$5,000) shall be executed by any two (2) officers of the corporation. All such

instruments for expenditures or obligations of Five Thousand Dollars (\$5,000) or less may be executed by any one (1) officer of the corporation.

Section 4.9 Compensation of Officers. No officer who is also a member of the Executive Board shall receive any compensation from the corporation for acting as such officer, but may be reimbursed for any out-of-pocket expenses incurred in performing such officer's duties; provided, however, the Secretary and Treasurer may be compensated for their services if the Executive Board determines such compensation to be appropriate.

## **ARTICLE V. COMMON EXPENSES; BUDGETS**

Section 5.1 Fiscal Year. The fiscal year of the Association shall be the calendar year unless otherwise determined by the Executive Board; provided, however, that the first fiscal year shall begin upon the recordation of the Declaration.

Section 5.2 Preparation and Approval of Budget.

5.2.1 On or before the first day of November of each year (or sixty (60) days before the beginning of the fiscal year if the fiscal year is other than the calendar year), the Executive Board shall adopt an annual budget for the Association containing an estimate of the total amount considered necessary to pay the cost of maintenance, management, operation, repair and replacement of the Common Elements, and the cost of wages, materials, insurance premiums, services, supplies and other expenses that may be declared to be Common Expenses by the Act, the Declaration, these Bylaws or a resolution of the corporation and which will be required during the ensuing fiscal year for the administration, operation, maintenance and repair of the Property and the rendering to the Unit Owners of all related services. Such budget shall also include such reasonable amounts as the Executive Board considers necessary to provide working capital, a general operating reserve and reserves for contingencies and replacements.

5.2.2 On or before the next succeeding fifth (5th) day of November (or fifty-five (55) days before the beginning of the fiscal year if the fiscal year is other than the calendar year), the Executive Board shall make the budget available for inspection at the Association office and shall send to each Unit Owner a copy of the budget in a reasonably itemized form that sets forth the amount of the Common Expenses. Such budget shall constitute the basis for determining each Unit Owner's assessments for General Common Expenses and Limited Common Expenses for the corporation and shall automatically take effect at the beginning of the fiscal year for which it is adopted, subject to Section 5.8 below.

5.2.3 The Executive Board shall make reasonable efforts to meet the deadlines set forth above, but compliance with such deadlines shall not be a condition precedent to the effectiveness of any budget.

Section 5.3 Assessment and Payment of Common Expenses.

5.3.1 General Common Expenses. The Executive Board shall calculate the annual assessment for General Common Expenses, as defined in the Declaration, against each Unit by multiplying (a) the total amount of the estimated funds required for the operation of the Property set forth in the budget adopted by the Executive Board for the fiscal year in question, after deducting any income expected to be received from sources other than Common Expense assessments by (b) the Percentage Interest (expressed in decimal form) allocated to such Unit, and dividing the resultant product by (c) the number of calendar months in such fiscal year and multiplying the resultant product by (d) three (3). Such assessments shall be deemed to have been adopted and assessed quarterly on a calendar year basis and shall be due and payable on the first (1st) day of January, April, June and October of each year or as otherwise determined by the Executive Board, and shall be a lien against each Unit Owner's Unit as provided in the Act and the Declaration. Within ninety (90) days after the end of each fiscal year, the Executive Board shall prepare and deliver to each Unit Owner and to each record holder of a mortgage on a Unit who has registered an address with the Secretary an itemized accounting of the Common Expenses and funds received during such fiscal year less expenditures actually incurred and sums paid into reserves. Any net shortage with regard to General Common Expenses, after application of such reserves as the Executive Board may determine, shall be assessed promptly against the Unit Owners in accordance with their Percentage Interests and shall be payable in one (1) or more monthly assessments, as the Executive Board may determine.

5.3.2 Reserves. The Executive Board shall build up and maintain reasonable reserves for working capital, operations, contingencies and replacements. Extraordinary expenditures not originally included in the annual budget which may become necessary during the year may be charged first against such reserves. If the reserves are deemed to be inadequate for any reason, including non-payment of any Unit Owner's assessments, the Executive Board may at any time levy further assessments for General Common Expense which shall be assessed against the Unit Owners according to their respective Percentage Interests and shall be payable in one (1) or more monthly assessments as the Executive Board may determine.

Section 5.4 Further Assessments. The Executive Board shall serve notice on all Unit Owners of any further assessments pursuant to Sections 5.3.1, 5.3.2 or otherwise as permitted or required by the Act, the Declaration and these Bylaws by a statement in writing giving the amount and reasons therefor, and such further assessments shall, unless otherwise specified in the notice, become effective with the next annual assessment which is due more than ten (10) days after the delivery of such notice of further assessments. All Unit Owners so assessed shall be obligated to pay the amount of such assessments. Such assessments shall be a lien as of the effective date as set forth in the preceding Sections 5.3.1 and 5.3.2.

Section 5.5 Initial Budget. At or prior to the time assessment of Common Expenses commences, the Executive Board shall adopt the budget, as described in this Article, for the period commencing on the date the Executive Board determines that assessments shall begin and ending on the last day of the fiscal year during which such commencement date occurs. Assessments shall be levied and become a lien against the Unit Owners during such period as is provided in Section 5.3 above.

Section 5.6 Delivery of Approved Budget and Notice of Capital Expenditure; Effect of Failure to Prepare or Adopt Budget. The Executive Board shall deliver to all Unit Owners copies of each budget approved by the Executive Board and notice of any capital expenditure approved by the Executive Board promptly after each such approval. The failure or delay of the Executive Board to prepare or adopt a budget for any fiscal year shall not constitute a waiver or release in any manner of a Unit Owner's obligation to pay such Unit Owner's allocable share of the Common Expenses as herein provided whenever the same shall be determined and, in the absence of any annual budget or adjusted budget, each Unit Owner shall continue to pay each assessment at the rate established for the previous fiscal year until the new annual or adjusted budget shall have been adopted.

Section 5.7 Accounts; Audits. All sums collected by the Executive Board with respect to assessments against the Unit Owners or from any other source may be commingled into a single fund. All books and records of the Association shall be kept in accordance with good and accepted accounting practices, and the same shall be audited at least once each year by an independent accountant retained by the Executive Board.

Section 5.8 Rejection of Budget; Limitations on Expenditures and Borrowing. Anything herein to the contrary notwithstanding, the corporation, by majority vote of all votes in the corporation, may reject any budget or capital expenditure approved by the Executive Board, within thirty (30) days after approval by the Executive Board. The power of the Executive Board to expend funds, incur expenses or borrow money on behalf of the corporation is subject to the requirement that the consent of Unit Owners entitled to cast at least two-thirds (2/3) of the votes in the corporation obtained at a meeting duly called and held for such purpose in accordance with the provisions of these Bylaws, shall be required to (i) expend funds or incur expenses that it is reasonably anticipated will cause the aggregate amount of all expenses in the budget (including reserves) to be exceeded by more than five (5%) percent of such aggregate amount after taking into account any projected increases in income, and (ii) to borrow money so that loans of the corporation then outstanding would exceed five (5%) percent of such aggregate amount.

Section 5.9 Payment of Common Expenses. Each Unit Owner shall pay the Common Expenses and Controlled Facility Expenses (hereafter "Common Expenses") assessed by the Executive Board pursuant to the provisions of this Article V. No Unit Owner may exempt himself from liability for his contribution toward Common Expenses by waiver of the use or enjoyment of any of the Common Elements or by abandonment of his Unit. No Unit Owner shall be liable for the payment of any part of the Common Expenses assessed against his Unit

subsequent to the date of recordation of a conveyance by him in fee of such Unit. The purchaser of a Unit shall be jointly and severally liable with the selling Unit Owner for all unpaid assessments against the latter for his proportionate share of the Common Expenses up to the time of such recordation, without prejudice for the purchaser's right to recover from the selling Unit Owner amounts paid by the purchaser therefor; provided, however, that any such purchaser shall be entitled to a statement setting forth the amount of the unpaid assessments against the selling Unit Owner within five (5) days following a written request therefor to the Executive Board or Managing Agent and such purchaser shall not be liable for, nor shall the Unit conveyed be subject to a lien for, any unpaid assessments with respect to the time period covered by such statement, in excess of the amount therein set forth; and, provided further that, subject to Section 3315(b)(2) of the Act, each record holder of a mortgage on a Unit who comes into possession of a Unit by virtue of foreclosure or by deed or assignment in lieu of foreclosure, or any purchaser at a foreclosure sale, shall take the Unit free of any claims for unpaid assessments or charges against such Unit which accrue prior to the time such holder comes into possession thereof, except for claims for a pro rata share of such assessments or charges resulting from a pro rata reallocation of such assessments or charges to all Units including the mortgaged Unit.

Section 5.10 Collection of Assessments. The Executive Board or the Managing Agent, at the request of the Executive Board, shall take prompt action to collect any assessments for Common Expenses due from any Unit Owner which remain unpaid for more than thirty (30) days from the due date for payment thereof. Any assessment not paid within five (5) days after its due date shall accrue a late charge in the amount of five (5%) percent of the overdue assessment in addition to interest at the rate of fifteen (15%) percent per annum or such other rate as may be determined by the Executive Board.

Section 5.11 Statement of Common Expenses. The Executive Board shall promptly provide any Unit Owner, purchaser or proposed mortgagee so requesting the same in writing with a written statement of all unpaid assessments for Common Expenses due from such Unit Owner. The Executive Board may impose a reasonable charge for the preparation of such statement to cover the cost of its preparation, to the extent permitted by the Act.

## **ARTICLE VI. COMPLIANCE AND DEFAULT**

Section 6.1 Relief. Each Unit Owner shall be governed by, and shall comply with, all of the terms of Declaration, these Bylaws, the Rules and Regulations and the Act, as any of the same may be amended from time to time. In addition to the remedies provided in the Act and the Declaration, a default by a Unit Owner shall entitle the Association, acting through its Executive Board or through the Managing Agent, to the following relief:

6.1.1 Additional Liability. Each Unit Owner shall be liable for the expense of all maintenance, repair or replacement rendered necessary by his act, neglect or carelessness or the act, neglect or carelessness of his tenants, guests, invitees or licensees,

but only to the extent that such expense is not covered by the proceeds of insurance carried by the Executive Board. Such liability shall include any increase in casualty insurance premiums occasioned by improper use, misuse, occupancy or abandonment of any Unit or its appurtenances. Nothing contained herein, however, shall be construed as modifying any waiver by any insurance company of its rights of subrogation.

6.1.2 Costs and Attorneys' Fees. In any proceeding arising out of any alleged default by a Unit Owner, the prevailing party shall be entitled to recover the costs of such proceeding and such reasonable attorney's fees as may be determined by the court.

6.1.3 No Waiver of Rights. The failure of the corporation, the Executive Board or of a Unit Owner to enforce any right, provision, covenant or condition which may be granted by the Declaration, these Bylaws, the Executive Board Rules and Regulations or the Act shall not constitute a waiver of the right of the corporation, the Executive Board or the Unit Owner to enforce such right, provision, covenant or condition in the future. All rights, remedies and privileges granted to the corporation, the Executive Board or any Unit Owner pursuant to any term, provision, covenant or condition of the Declaration, these Bylaws, the Rules and Regulations or the Act shall be deemed to be cumulative and the exercise of any one (1) or more thereof shall not be deemed to constitute an election of remedies, nor shall it preclude the party exercising the same from exercising such other privileges as may be granted to such party by the Declaration, these Bylaws, the Rules and Regulations or the Act or at law or in equity.

6.1.4 Abating and Enjoining Violations by Unit Owners. The violation of any of the Executive Board Rules and Regulations adopted by the Executive Board, the breach of any Bylaw contained herein or the breach of any provision of the Declaration or the Act shall give the Executive Board the right, in addition to any other rights: (a) to enter the Unit in which, or as to which, such violation or breach exists and summarily to abate and remove, at the expense of the defaulting Unit Owner, any structure, thing or condition that may exist therein contrary to the intent and meaning of the provisions hereof, and the Executive Board shall not thereby be deemed guilty in any manner of trespass; or (b) to enjoin, abate or remedy by appropriate legal proceedings, either at law or in equity, the continuance of any such breach.

6.1.5 Fines. In addition to any right the Executive Board has pursuant to the Planned Community Act and other provisions stated herein, the Executive Board may set a reasonable fine of \$25.00 per day for any violation of any of the matters set forth above and other reasonable rules and regulations promulgated by the Executive Board, if not cured within a reasonable period of time as set forth in the notice to a Unit Owner which notice clearly sets forth the violation and the time for corrective action to be taken by the Unit Owner. Before any fine may be imposed, the Unit Owner shall be given an opportunity to be heard and to be represented by counsel before the Executive Committee. Notice of such hearing, including the charges that may be imposed, shall be

given to the Unit Owner, at least ten (10) days in advance thereof. The aforementioned fine shall commence at the expiration of the time period for corrective action and continue until such corrective action has been taken by the Unit Owner. The fine shall be a lien on the Unit Owner's property.

6.1.6 Suspension of Voting Rights. The voting rights of a Unit Owner shall be suspended for any violation of any of the matters set forth above and other reasonable rules and regulations promulgated by the Executive Board, if not cured within a reasonable period of time as set forth in the notice to a Unit Owner which notice clearly sets forth the violation and the time for corrective action to be taken by the Unit Owner. Before any fine may be imposed, the Unit Owner shall be given an opportunity to be heard and to be represented by counsel before the Executive Committee. Notice of such hearing, including the suspension of voting rights shall be given to the Unit Owner, at least ten (10) days in advance thereof. The suspension of voting rights shall commence at the expiration of the time period for corrective action and continue until such corrective action has been taken by the Unit Owner.

## **ARTICLE VII. AMENDMENTS**

Section 7.1 Amendments to Bylaws. These Bylaws may be modified or amended only by vote of Unit Owners entitled to cast a majority of the votes in the corporation, except as otherwise expressly set forth herein or in the Act; provided, however, that until the date on which all Declarant-appointed Board members voluntarily resign or are required to resign pursuant to Article 12 of the Declaration, Section 2.4 and Section 3.4 of the By-Laws, and this Section 7.1 may not be amended without the consent in writing of the Declarant. Additionally, if any amendment is necessary in the judgment of the Executive Board to cure any ambiguity or to correct or supplement any provision of these Bylaws that is defective, missing or inconsistent with any other provision hereof, or with the Act or the Declaration, or if such amendment is necessary to conform to the requirements of the Federal National Mortgage Association or the Federal Home Loan Mortgage Corporation with respect to planned community projects, then at any time and from time to time the Executive Board may effect an appropriate corrective amendment without the approval of the Unit Owners or the holders of any liens on all or any part of the Property, upon receipt by the Executive Board of an opinion from independent legal counsel to the effect that the proposed amendment is permitted by the terms of this sentence.

Section 7.2 Approval of Mortgagees. These Bylaws contain provisions concerning various rights and interests of record holders of mortgages on Units. Such provisions in these Bylaws are to be construed as covenants for the protection of such holders on which they may rely in making loans secured by such mortgages. Accordingly, no amendment or modification of these Bylaws impairing or affecting such rights, priorities, remedies or interests of such a holder shall be adopted without the prior written consent of such holders who have registered an address with the Secretary.



Section 7.3 Amendments to the Declaration. Any two (2) officers or Executive Board members of the corporation may prepare, execute, certify and record amendments to the Declaration on behalf of the Association.

Section 7.4 HUD/VA Rights. HUD/VA has the right to veto amendments as long as the Declarant is in control of the Board of the homeowner's association.

## **ARTICLE VIII. DISPUTE RESOLUTION**

### Section 8.1 Alternative Dispute Resolution.

In addition to the other methods contemplated by the Act, the Declaration, or these Bylaws, two or more Unit Owners or a Unit Owner and the Association may resolve any dispute between or among them concerning or arising under the Act, the Declaration, the Rules and Regulations or these Bylaws, where all parties, including the Association in all instances, mutually agree to settle such dispute by arbitration or mediation. Nothing in this Section shall be construed to affect or impair the right of a Unit Owner, the Declarant or the Association to pursue a private cause of action or seek other relief. Any alternative dispute resolution, including, arbitration and mediation, shall be limited to disputes where all parties, including the Association, agree to such alternative dispute resolution. Further, nothing in this Section 8.1 shall limit the Association's rights to collect any amounts owing by a Unit Owner pursuant to the Act, the Declaration or these Bylaws (collectively the "Collection Proceedings"), and the Association shall be deemed not to consent to having any such Collection Proceedings submitted to arbitration or mediation unless the Executive Board consents to such arbitration or mediation in writing.

### Section 8.2 Mediation.

If the Executive Board or a Unit Owner wishes to use mediation to settle a dispute as provided in Section 8.1 above, then the disputing party should first give written notice to the other party(s), including the Association, of its desire to use mediation, including a detailed description of the dispute and the name(s) of mediators the disputing party is willing to agree to as mediator. If the Executive Board or Unit Owner receives a request to use mediation to resolve a dispute, such responding party shall respond to such request in writing within seven (7) business days of receiving the request for mediation. If the Association does not respond within such seven (7) business day period to a request for mediation concerning a Collection Proceeding, it is deemed to not agree to use mediation with respect to such Collection Proceeding. If a Unit Owner or the Association (for the Association, with respect to all matters other than Collection Proceedings) does not respond within such seven (7) business day period, it is deemed to agree to use mediation. Within fourteen (14) days of receiving the request for mediation, the responding party shall send to the disputing party a written notice outlining its description of the dispute and the name(s) of the mediators the responding party is willing to

agree to as mediator. If the parties are unable to agree on the name of a mediator, the parties agree to jointly submit a request for appoint of a mediator to an independent third party for selection. The parties shall each bear their own attorney's fees related to such mediation and shall equally share the costs and fees associated with the mediator and the mediation process, unless otherwise agreed by the parties before or as part of the mediation settlement.

### Section 8.3 Arbitration.

If the Executive Board or a Unit Owner wishes to use arbitration to settle a dispute as provided in Section 8.1 above, then the disputing party should first give written notice to the other party(ies), including the Association, of its desire to use arbitration, including a detailed description of the dispute, a list of the remedies its seeks in arbitration, and the name(s) of arbitrators the disputing party is willing to agree to as arbitrator. If the Executive Board or Unit Owner receives a request to use arbitration to resolve a dispute, such responding party shall respond to such request within seven (7) business days of receiving the request for arbitration. If the Association does not respond within such seven (7) business day period to a request for arbitration concerning a Collection Proceeding, it is deemed to not agree to use arbitration with respect to such Collection Proceeding. If a Unit Owner or the Association (for the Association, with respect to all matters other than Collection Proceedings) does not respond within such seven (7) business day period, it is deemed to agree to use arbitration. Within fourteen (14) days of receiving the request for mediation, the responding party shall send to the disputing party a written notice outlining its description of the dispute, the list of remedies its seeks in arbitration, and the name(s) of the arbitrators the responding party is willing to agree to. If the parties are unable to agree on the name of an arbitrator, the parties agree to jointly submit a request for appoint of an arbitrator to an independent third party for selection. The parties shall each bear their own attorney's fees related to such arbitrator and shall equally share the costs and fees associated with the arbitrator and the arbitration process, unless otherwise agreed by the parties before or as part of the mediation settlement.

### Section 8.4 Qualified Arbitrators and Mediators.

The Association may develop a roster of qualified mediators and arbitrators who agree to accept appointments under these Bylaws. Such a roster will be made available to the Unit Owners upon request and may be amended from time to time by the Executive Board.

## **ARTICLE IX. MISCELLANEOUS**

Section 9.1 Notices. All notices, demands, bills, statements or other communications under these Bylaws shall be in writing and shall be deemed to have been duly given if delivered personally or if sent by registered or certified mail, return receipt, postage prepaid (or otherwise as the Act may permit), (i) if to a Unit Owner, at the single address which the Unit Owner shall designate in writing and file with the Secretary or, if no such address is designated, at the address

of the Unit of such Owner, or (ii) if to the corporation, the Executive Board or to the Managing Agent, at the principal office of the Managing Agent or at such other address as shall be designated by notice in writing to the Unit Owners pursuant to this Section. If a Unit is owned by more than one (1) Person, each such Person who so designates a single address in writing to the Secretary shall be entitled to receive all notices hereunder.

Section 9.2 Captions. The captions herein are inserted only as a matter of convenience and for reference, and in no way define, limit or describe the scope of these Bylaws or the intent of any provision thereof.

Section 9.3 Gender. The use of the masculine gender in these Bylaws shall be deemed to include the feminine and neuter genders and the use of the singular shall be deemed to include the plural, and vice versa, whenever the context so requires.

## **EXHIBIT C**

## AGREEMENT FOR SALE OF REAL ESTATE AND HOME CONSTRUCTION

This purchase agreement (the "Agreement") is made as of the [MONTHDAY] day of [MONTH], [YEAR], by and between [OWNER], 227 Granite Run Drive, Suite 100, Lancaster, PA 17601 ("Seller"), and [BUYERS], (hereinafter individually and collectively known as "Buyer").

### Buyer's Current Contact Information

	<u>Buyer</u>	<u>Co-Buyer</u>
<b>Address:</b>	[BUYER1 ADDRESS]	[BUYER2 ADDRESS]
<b>City, State &amp; Zip Code:</b>	[BUYER1 CSZ]	[BUYER2 CSZ]
<b>Home Phone:</b>	[BUYER1 PHONEH]	[BUYER2 PHONEH]
<b>Work Phone:</b>	[BUYER1 PHONEW]	[BUYER2 PHONEW]
<b>Cell Phone:</b>	[BUYER1 PHONEM]	[BUYER2 PHONEM]
<b>Email Address:</b>	[BUYER1 EMAIL]	[BUYER2 EMAIL]

**For and in consideration of the mutual covenants set forth herein, and intending to be legally bound hereby, the parties hereto agree as follows:**

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### 1) Premises

Seller agrees to sell unto Buyer, who agrees to purchase, the Premises as herein defined, together with a single family home/townhouse/duplex home (the "Home") thereon erected, under terms and conditions as herein set forth. The Premises is defined as follows:

<b>Community:</b>	[COMMUNITY]
<b>Homesite Number:</b>	[LOT NUMBER]
<b>Commonly Known as:</b>	[LOT ADDRESS]
<b>Municipality:</b>	[MUNICIPALITY]
<b>County:</b>	[COUNTY]
<b>Model / Plan Type:</b>	[MODEL INFO]

### 2) Consideration and Basis for Agreement

Seller agrees with the Buyer to erect, construct, and complete in a good, substantial and workmanlike manner the following Home according to the Specifications attached hereto and signed by the parties (the "Specifications") and the Plans approved by the parties (the "Plans"):

- a. Seller shall use only new materials as described in the attached Specifications unless otherwise stated; maintain order on the job; be responsible for all work and payment of subcontractors; and keep and leave the premises in a good and presentable condition. The residence shall be constructed per the approved Plans.
- b. Model homes, and any advertising or promotional materials used or displayed by Seller, are for display purposes only, are not the basis of this Agreement, and do not constitute a representation as to the design or construction of the Home. The obligations of the Seller under this Agreement shall be determined solely by reference to the Plans and Specifications referred to above and the terms of this Agreement. Description of work, contract price, payment schedule, and special considerations related to this specific job are set forth in addenda to this Agreement known as the Agreement Documents, which may or may not be attached hereto and are made a part hereof, which include, but are not limited to, Seller Addendums, Recorded Plat Plan, Affiliated Business Disclosure, Standard Plan for the home plan chosen, KeyChoices Builders Agreement Summary, Key Choices Summary, Living Choice Agreement Summary (LC), Final Living Choice Agreement Summary (FLC), Final Decorating Choices Agreement Summary (FDCA), Personal Choice Requests (PCR) (most of which will be completed after this date), site plan, Specifications, and standard floor Plans, and Buyer's Estimate of Closing Costs, Buyer acknowledges that Plans, Specifications, and marketing materials and displays are informational only, and mitnor adjustments to Plans, changes or modifications to Specifications, and substitution of supplies,

materials, or products is likely and in no way affects this Agreement or the ability by Seller to make any change without notice to Buyer.

- c. Seller makes no representation with respect to homesite grades, homesite area, options, facades, location of walks and driveways, personal property, fences, patios, decks, recreational facilities, landscaping, decorating items, and other items in or about the model home which are for display purposes only and are not included in the Purchase Price, unless otherwise expressly provided herein.
- d. Except as set forth in the Public Offering Statement if any, Seller makes no representation with respect to the home type, size, style, price range or location of other homes to be built in this sub-division or in other sub-divisions in the vicinity of the Premises. Buyer acknowledges that all site Plans, generalized development Plans, plats or renderings which may have been exhibited showing or indicating home types, the location of the homes on homesites, grading or landscaping are projections only and are not binding upon Seller, and no representative of Seller is authorized to make any representation with regard to these items. In addition, Seller makes no representations as to the location of utility transformers and utility pedestals on the Premises as solely the utility companies, and not the Seller, determine the location of these facilities.
- e. Buyer is aware that there may be a separate Owner of the land and they may have a separate agreement with Seller to subordinate their interest to Seller while the Home is under construction and prior to Settlement. This means that Seller may not own or have title to the purchased homesite; title shall be transferred to the Buyer at Settlement.
- f. Buyer is aware of, has seen, and accepts the Premises, including any detention basins, swales, drainage easements, right-of-ways and clear site triangles, or any other homesite restrictions, which may affect the described homesite.
- g. Buyer further acknowledges that there are many accepted methods of calculating the square footage of structures. In its marketing brochure and documents, Seller may use different methods of calculating the square footage of the home and makes no representations as the actual square footage of the home, regardless of the method utilized.
- h. Seller provides multiple elevations for each of the models offered in a community. The same model and elevation cannot be placed on adjoining homesites. Seller reserves the right to make exceptions to this policy.
- i. Unless otherwise provided by addendum attached to this Agreement and listed below, Buyer specifically warrants that they are not represented by a Buyer's Agent, or Realtor in negotiating this Agreement.

**Agent Name:** [COOP AGENT NAME]

**Company:** [COOP AGENT COMPANY]

**Address:** [COOP AGENT ADDRESS]

**City, State, Zip:** [COOP AGENT CSZ]

**Phone:** [COOP AGENT PHONE]

**Email:** [COOP AGENT EMAIL]

- j. Home to Sell

| R1 | Non-Contingent – Construction of New Home is not subject to the sale of my existing home

| R2 |

Contingent – 'Keystone Home to Sell Advantage': (\$175.00 includes Price Guarantee, Incentive lock, and The Home Evaluation of current home, programs and lenders available to you)

### 3) Purchase Price & Payments

Buyer agrees to pay to Seller for the Premises, including the options listed on the KeyChoices

Summary, the sum of [QUOTE TOTAL TEXT] Dollars (\$[QUOTE TOTAL]) (the "Purchase Price") as shown on the KeyChoices Builder's Agreement Summary attached and made part of this agreement. Buyer acknowledges that this Purchase Price will be amended from time to time until the final total Purchase Price is determined upon completion of Buyer's LC, FLC, FDCA, and PCRs.

**PAYMENT TERMS AS FOLLOWS:**

Description	Date Due	Amount
1) Deposit(s) at signing this Agreement		\$ DEPOSIT1
2) Additional Deposit (Cash/Check) due before	DATE_DEPOSIT2	\$ DEPOSIT2
3) Additional Deposit (Cash/Check) due before	DATE_DEPOSIT3	\$ DEPOSIT3
4) The balance in immediately available funds on the date of Settlement		\$ BALANCE

a. The normal and customary Deposit as earnest money is 7% of the sales price. If the initial Deposit is less than 7%, Purchaser shall sign a Promissory Note for the balance of the deposit. Upon receipt of the full Deposit, the Promissory Note will be voided. Deposit is required even for 100% mortgage loan where no down payment is required. Deposit will be returned at Settlement.

b. Payment of transfer taxes and recordation fees:

PA - Seller shall pay ½ of such taxes and Buyer will pay ½ of such taxes

MD – State transfer tax is .5% paid by buyer, if First Time MD Homebuyer the State transfer tax is .25% paid by the seller. County transfer tax and recordation taxes are paid by the buyer in all transaction

c. Applicable real estate taxes, association assessments (if any) and municipal assessments shall be prorated between Buyer and Seller as of the date of Settlement on a fiscal year basis. Any interim assessment of real estate taxes resulting from the construction of the Home shall be borne by Buyer.

d. If any checks are returned Non-Sufficient Funds, Buyer agrees to pay a \$50.00 service fee.

e. If Buyer or Buyer's lender delays Settlement, interest will be charged on the total Purchase Price of the home at 10% per annum, until Settlement occurs. However, this late charge shall not be construed as a waiver on the part of Seller of any of Seller's rights or remedies. The parties constituting Buyer shall be jointly and severally liable hereunder.

**4) Mortgage Contingency**

Within three business (3) days after Seller's execution of this Agreement, Buyer, at Buyer's expense, shall submit an application for a **Conventional** or **Government** (FHA, VA, USDA or other) loan to a Preferred Lender of the Seller in the principal amount of \$|LOAN\_PRINCIPAL| with a maximum interest rate of |LOAN\_PERCENT|% and a minimum term of |TERM| years. or such interest rate and terms as the Buyer may qualify for since financing is based on credit scores, employment history, debt to income ratios, etc. of which Seller may have no knowledge. Buyer agrees to complete a financial form/statement for Seller and hereby authorizes any lender processing the mortgage application to provide any information to Seller as requested by Seller, including credit scores. Buyer agrees to diligently apply for, negotiate and attempt in good faith to obtain a mortgage loan commitment from the lender, in a form reasonably acceptable to Seller. Buyer shall keep Seller informed of the status of Buyer's loan application. If Buyer, in Seller's sole discretion, does not use good faith efforts in attempting to procure a mortgage loan, Buyer shall be in default of this Agreement and Seller may exercise any remedies it may have hereunder.

If, within thirty (30) days from the date this Agreement has been signed by both Buyer and Seller (the "Commitment Period"), Buyer has not obtained a commitment for mortgage financing (the "Commitment"), Seller may, at its sole discretion, elect to terminate this Agreement by written notice to Buyer. If the buyer fails to notify Seller, in writing, of Buyer's inability to secure a mortgage within thirty (30) days from the date of this Agreement, this mortgage contingency shall be deemed for all purposes to be satisfied. If the Commitment is not issued in spite of Buyer's good faith efforts, the Seller may terminate the Agreement and, in that event, Seller shall refund the Deposit, after which neither party shall have any further obligation or liability to the other. In the event Seller does not terminate the Agreement, Seller, at its option, may extend the Commitment Period for additional thirty (30) day periods during which time Buyer shall continue to diligently seek financing in good faith. Buyer shall continue to seek satisfaction of this financing contingency and Seller shall have the right, but not the obligation, to attempt to obtain for Buyer a Commitment in the amount set forth above at a rate not exceeding the rate set forth above. Buyer shall cooperate with Seller and any mortgage lender as may be necessary in order to effectuate the issuance of such Commitment and to close said loan, all at the sole expense of Buyer. In no event shall Seller have any liability to Buyer whatsoever

on account of any lender's refusal to approve Buyer's loan application or to make the loan after issuance of a Commitment for any reason, other than the obligation of Seller to refund the Deposit to Buyer if required by this Agreement.

After issuance of the Commitment, Buyer shall continue to work in good faith with the Lender to ensure that the Commitment does not lapse or is not terminated. The Commitment shall not be modified by Buyer without the prior written consent of the Seller. If the Commitment is revoked, lapses or is terminated by the lender for any reason not caused by Seller, Buyer shall be in default of this Agreement, and Seller shall have the right to exercise any remedies it may have under this Agreement, including, but not limited to, retention of the Deposit. If the Commitment is contingent on any conditions imposed by the lender, the Buyer is responsible for meeting all such conditions. If the Lender requires preparation of a home location survey, or "as built survey," Seller shall prepare such survey at Buyer's expense. Unless required by the appropriate jurisdiction, the home location survey shall not include staking of homesite boundaries.

Any incentive offered in section 11c is conditioned upon the Buyer using a Seller's Preferred mortgage lender to whom Buyer intends to make application for mortgage financing for the purchase of the Premises (the "Lender"), as provided in Section 4 of the Agreement. Buyer agrees to comply with any time schedules established by the Lender for delivery of documents and information (the "Time Schedules"), and Buyer understands that the times established in the Time Schedules are of the essence of the Agreement. In the event that Buyer fails to provide any requested documents or information within time periods established in the Time Schedules, the Incentive for which provision is made herein shall be reduced by Three Thousand Dollars (\$3,000.00).

## 5) Warranty

Upon the execution of this Agreement, Buyer shall be given access to an electronic record of all Warranties offered by Seller, and Buyer shall have a period of three (3) days from the date of execution to review the Warranties. If Buyer has provided Seller with no written objections to any Warranty within such time period, Buyer shall be deemed to have accepted the terms of all Warranties.

- a. Seller Limited Warranty - Buyer acknowledges that he/she has been afforded the opportunity to review the limited warranty to be provided by Seller, which is the limited warranty made by Keystone Custom Homes, Inc., the builder of the home, prior to execution of this Agreement, and agrees to accept this warranty being given to Buyer.
- b. **THE WARRANTIES IN SECTION #5 OF THIS AGREEMENT ARE THE ONLY WARRANTIES APPLICABLE TO THE PREMISES. NO IMPLIED WARRANTY (WHETHER OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE) IS GIVEN ON ANY PORTIONS OF THE PREMISES. NO WARRANTY, EXPRESSED OR IMPLIED, IS GIVEN AS TO THE ITEMS OF PERSONAL PROPERTY BEING SOLD [OR AS TO ANY "CONSUMER PRODUCT," AS SUCH TERM IS DEFINED IN 15 U.S.C. §2301(1)]. THE SELLER HAS NOT AUTHORIZED ANY PERSON TO MODIFY THE TERMS OF THE WARRANTIES DESCRIBED HEREIN. THE SELLER ASSUMES NO LIABILITY OR OBLIGATIONS ON ACCOUNT OF REPRESENTATIONS MADE BY ANY OTHER PERSON. THE OBLIGATIONS OF SELLER ARE LIMITED SOLELY TO THE REPAIR OR REPLACEMENT OF THE DEFECTIVE COMPONENT AND DO NOT EXTEND TO ANY DAMAGE OR HARM RESULTING THEREBY OR THEREFROM. THE SELLER SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL DAMAGES OR PERSONAL INJURIES ARISING FROM BREACH OF ANY OF THE LIMITED WARRANTIES DESCRIBED IN THIS AGREEMENT. IF ANY DEFECT IS DISCOVERED DURING THE APPLICABLE WARRANTY PERIOD, SELLER SHALL HAVE THE EXCLUSIVE RIGHT TO DETERMINE WHETHER THE DEFECT SHALL BE CORRECTED BY REPAIR, ADJUSTMENT OR REPLACEMENT. NO LIMITED WARRANTY CONTAINED HEREIN COVERS A DEFECTIVE PORTION OF THE PREMISES WHICH HAS BEEN SUBJECT TO ALTERATION, MISUSE OR ACCIDENTAL DAMAGE (CAUSED BY PERSONS OTHER THAN SELLER'S EMPLOYEES AND AGENTS) OR HAS NOT BEEN AFFORDED REASONABLE CARE.**
- c. Seller Twenty-Year Structural Warranty – In addition to warranties provided under §5411 of the Pennsylvania Uniform Planned Communities Act, Buyer acknowledges that he/she has been afforded the opportunity to review Seller's 20-Year Warranty prior to execution of this Agreement, and agrees to accept this warranty.
- d. Manufacturer Warranties – Seller hereby assigns to Buyer the manufacturer warranties on all appliances, equipment, and other consumer products to be installed on the Premises. It is the sole responsibility of the Buyer to make any claims under the manufacturer warranties.



## 6) Pre-Conditions to Construction

- a. All cash payments as required in paragraph 3 within the time provided.
- b. A written Mortgage Commitment signed by Buyer, as required within the time period indicated in paragraph 4 above.
- c. All necessary governmental approvals and permits. Buyer understands that all Deposits become non-refundable at the time **APPLICATION** is made for Building and/or Sewer Permits or thirty (30) days from this date, whichever is sooner, except in the case of extensions of the Commitment Period by Seller. Once Seller breaks ground on the home, has any remaining contingencies that have not been met prior to that point are deemed satisfied.
- d. All permits required for Home construction shall be obtained by Seller and all fees that may be required therefore will be paid by Seller. Should the Buyer own the lot to be built on, Seller will obtain the same permits that would be required if the Seller owned the lot. Any permits required beyond those permits are the responsibility of the Buyer.
- e. In the event that the KeyChoices Pre-Construction dates identified in the Buyer Timeline for Mortgage Application, Living Choices, Final Living Choices, and Decorating Choices are not met due to Buyer non-performance, Buyer agrees and understands that Seller has the right to postpone the established Break Ground Date. Buyer will be placed in the next available date that coincides with the Buyer's ability to comply with the KeyChoices Pre-Construction dates. Buyer also understands and agrees that should Seller need to remove a job from a schedule slot due to Buyer's non-performance of specified Pre-Construction dates, the Buyer will be charged via KeyChoices Delay in Start Option for the corresponding delayed period of time (minimum of 1 month).
- f. Seller requires Homesite Settlement to occur if "Construction-to-Permanent" financing is used or Seller is building on Buyer's Homesite; or, receipt of an unconditional mortgage commitment if End-loan financing is being used, 30 days prior to the Break Ground Date.
- g. Seller shall ensure that any contractor or subcontractor engaged in the construction of the Home shall maintain builder workman's compensation, liability, and builder's risk insurance while Home is under construction.
  - i. If the buyer chooses to use a construction loan, the Buyer shall obtain and maintain fire and extended coverage insurance, (including theft coverage) with Seller being named as additional insured while the home is under construction and as required by the Buyer's lender. This coverage must be obtained by Homesite Settlement.
- h. Seller reserves the right to require Buyer to execute a Promissory Note secured by a mortgage in a form acceptable to Seller in an amount equal to the construction cost of the Home if the Buyer's Home is to be built on a homesite not owned by Seller or one of its affiliated companies or if Buyer does not provide the minimum earnest money of 7% of the Purchase Price at the signing of this contract.
- i. In accordance with PA Act 1, 2011 – Buyer has been advised of and understands the initial cost of including a sprinkler as an option made available through KeyChoices. The Buyers has the ability to purchase the option if desired at the Buyer's expense. Additionally, the Buyer understands that it is recommended for an installed sprinkler system to be inspected and maintained on a regular basis by a professional. The system includes, but is not limited to, the water tank, pump, piping and heads. Failure to do so may result in the system not performing as designed or potential leaks, which can cause significant water damage in some cases. Lastly, the Buyer has been provided the Internet link for the State Commissioner's website that discusses the possible benefits of installing an automatic sprinkler. If the Buyer does not have Internet access, Buyer may request this information to be printed for them through the New Home Advisor. The website address is [www.osfc.state.pa.us](http://www.osfc.state.pa.us)
- j. Living Choices are defined as any Choice that affects the construction drawings. Design Gallery Choices are defined as a color or finish material upgrade including floor covering material type changes. All Buyer Choices affecting Plans must be finalized at the Final Living Choices (FLC) Meeting. All Design Gallery Choices must be finalized at the Final Design Gallery Choices (FDC) meeting as referenced on the Buyer Timeline.
- k. Buyer is encouraged to visit the Home while it is under construction. While Buyer is prohibited from entering the premises on his or her own, Buyer may contact Seller or the New Home Advisor handling this transaction to accompany Buyer to visit the Home at a mutually agreeable time. When entering the Premises, Buyer

acknowledges the fact that Buyer is aware of the dangerous conditions that are inherently present on a residential construction site. Buyer accepts that visitors be limited to only those listed as Buyer on this Agreement. Buyer will be solely responsible for protecting themselves during visits to any construction site by wearing safety equipment as may be designated by Seller. Buyer hereby releases Seller, its subcontractors and representatives from any and all liability for accidents or damage that may occur to them, and their personal property on the job site during the entire term of construction. Finally, Buyer agree(s) that they will not bring or allow any children onto the job site at any time. Seller at its sole discretion reserves the right to withdraw privileges and restrict access to the home site during construction.

- I. Unless otherwise provided by addendum attached to this Agreement, Buyer specifically warrants that this Agreement and Buyer's ability to qualify for the mortgage loan described in paragraph 4 above is in no way is contingent upon the sale, rental, settlement or other disposition of any other property owned by the Buyer.

## 7) Adjacent Land Uses

Seller makes no representations as to the proposed or approved uses for land adjacent to the Premises or the subdivision, which contains the Premises.

## 8) Completion of Construction

- a. All construction shall be subject to the sole supervision and control of Seller. Buyer or Buyer's agent shall not enter into any other contracts or agreements with any other contractor or entity for the performing any work on the premises during the term of this Agreement unless provisions are made in the Specifications or Seller consents in writing to the same. The Buyer is not permitted to do any work, furnish materials, or apply any materials to the Premises until after final Settlement. Buyer acknowledges that part of the consideration for Seller issuing its 20-Year Structural Warranty is Buyer's covenant to comply with this section. Upon breach of this provision by Buyer, Seller may elect to void the 20-Year Structural Warranty. In addition, to the extent that Buyer's breach of this provision causes damage to the construction project or harm to Seller, Seller may elect to void other warranties hereunder to the extent of such damage or harm. This provision shall survive Settlement.
- b. Seller shall see that there shall be no lien filed by anyone working under Seller, for work or labor done, or materials furnished in the performance of the work embraced in this Agreement.
- c. Buyer agrees that Seller may show the home while under construction and prior to Settlement of the home.
- d. When trees exist on the premises, Seller may remove or leave any trees or other vegetation on the premises in Seller's sole discretion. Seller will make reasonable effort to avoid damage; however, in no event will Seller be liable for any damage to trees.
- e. Seller will deliver the Home at time of Settlement with up to 30,000 square feet (or the entire homesite, whichever is less) of disturbed homesite area graded and seeded, weather permitting.
- f. Maintenance of the lawn, including watering, reseeding, erosion and washouts after Settlement, is the Buyer's sole responsibility. Seller does not guarantee the quantity or quality of growth of grass.
- g. In the event that Seller encounters sub-par soil that would require costs in excess of those determined by Seller to be commercially reasonable to make the lot buildable, Seller has the right to terminate this agreement.
- h. Subject to paragraph k below, completion of the Home is anticipated according to the buyer timeline in KeyChoices.
- i. All excavation, backfilling and grading will be the responsibility of the Seller. If Buyer requests fill to be hauled onto or from Buyer's homesite, beyond what is needed to obtain a Use &Occupancy permit, this expense shall be an extra to the Buyer.
- j. In the event that the construction of the Home and completion of grading, etc. to the Premises shall be Substantially Complete on the Settlement date, Settlement shall be completed as provided in paragraph 11 of this Agreement. Substantially Complete shall be defined as the issuance of a residential use permit by the local jurisdiction, even if such items as landscaping, exterior concrete (including, but not limited to, footings needed for deck construction), driveways, final grading, and exterior painting may not be completed due to weather conditions. Buyer agrees to sign any waiver that may be required by the local jurisdiction in order to obtain a residential use permit prior to completion of the above listed items. Seller agrees that any such uncompleted

items shall be completed by the next-occurring May 31<sup>st</sup>. Seller further reserves the right to enter the property after Settlement to complete such exterior items, without the prior approval of Buyer and Buyer agrees that there will be no holdback or escrow of any part of the Purchase Price. Any escrows required by the lender will be the Buyer's responsibility. Buyer's occupancy of the Premises shall constitute Buyer acceptance of completion of the terms of this Agreement. The entire balance and/or final installment shall be due and payable in full at completion of Settlement according to Buyer's timeline in Key Choices and prior to such occupancy.

- k. In the event of delays caused beyond the Seller's reasonable control and occurring without its fault or negligence, the time for Settlement (as defined in paragraph 10) shall be extended for a period of time equal to the length of the delay attributable to such cause, and Seller shall not be liable for damages for any such delay or failure to perform. Seller bases its construction on a client schedule in Key Choices (website address: [www.Keystonecustomhome.com](http://www.Keystonecustomhome.com)) called "Buyer timeline" and makes all attempts to meet the Estimated Settlement Date of Buyer's Home. Buyer is provided with this date approximately 30 days prior to final completion. There are instances that upon the scheduled date, due to unforeseen circumstances Seller may not be in receipt of Buyer's final draw payment or occupancy permit. Therefore, Seller strongly suggests that Buyer does not schedule move-in on that same date. Seller will not be held responsible if a delay occurs.
- l. Buyer and Seller shall inspect the Premises and the Home prior to Settlement ("Pre-Settlement Inspection") and shall note, on the Pre-Settlement Inspection Report provided by Seller, those items, which, in Seller's sole discretion, require completion or corrective action pursuant to this Agreement. Seller shall undertake to complete all such items prior to Settlement; however, Settlement shall not be delayed, nor shall funds be held in escrow, if such work is not completed before Settlement.
- m. The Seller reserves the right to enter the Premises for the purpose of adjusting the grading, removal or planting of trees and other landscaping as well as drainage systems on the Premises, the adjacent Premises, or the common areas. In such event, Seller shall regrade and reseed any disturbed area. This provision shall survive Settlement.

## 9) Seller Changes

- a. Seller shall have the right to substitute materials of similar pattern and design and substantially equivalent quality, in Seller's sole discretion
- b. Seller reserves the right to make changes in the Plans and Specifications, for the purposes of mechanical installations, building code and site requirements, reasonable architectural design improvements, brands of products or equipment, vendors and suppliers subsequent to the date of this Agreement.
- c. Location of the home on the homesite, walkways, number of steps, driveways, or the final grading of the Premises is at Seller's sole option and discretion. Final grade, slopes, and elevations will vary depending upon field conditions. Seller does not represent that the final grade will match the topographical plot plan for described homesite due to potential modifications to street and walk elevations and neighboring properties, etc. Seller reserves the right to reverse the plan of the home.
- d. Subject to any architectural guidelines applicable to the subdivision or stated in the Homeowner's Association documents, Seller reserves the right to refine, revise or change the housing types to be sold in any subdivision. Buyer acknowledges that the placement of the homes in specific locations within a subdivision is subject to change, however any resetting shall conform to all applicable zoning and community boundary and setback requirements.
- e. Buyer acknowledges that the location, existence, size and features of tot lots, trails, community entry features and monuments, and recreational facilities within the community (collectively the "Facilities"), if any, are subject to change. No representations as to the location, size, features, or construction schedule of such Facilities are the basis of this agreement.

## 10) Settlement and Delivery

- a. Settlement shall be held at the office of Seller at which time, upon payment in full of the Purchase Price, Seller shall execute and deliver fee simple title to the Premises by special warranty deed to the Buyer conveying the Premises and possession shall be delivered to Buyer ("Settlement"). Formal tender of deed and purchase money are waived.

- b. Settlement shall be held no later than thirty (30) days after Seller provides Buyer with written notice that the construction of the Home is substantially completed, ready for occupancy, and that an Occupancy Permit has been issued by the municipality having jurisdiction over the Premises.
- c. In the event Settlement has not occurred within two (2) years from the date this Agreement has been signed by both Buyer and Seller (the "Outside Delivery Date"), as extended for the period of any delay due to causes outside of the reasonable control of Seller and constituting a lawful excuse for such delay, then Buyer shall have the right to cancel this Agreement by notice thereof to Seller and/or pursue specific performance, damages and any other rights and remedies available to Buyer at law or in equity.

## 11) Closing Costs / Incentives

- a. Buyer shall pay all Closing Costs associated with Settlement, including all recordation fees, except as otherwise provided in paragraph 3(b) above. For purposes of this Agreement, "Closing Costs" are defined as all costs associated with Settlement including, but not limited to, escrow and pro rata items such as tax pro ration and tax escrows, fire insurance premiums, mortgage insurance premiums, mortgage interest, title examination, survey and lender fees, state and local transfer taxes and title insurance costs and policy premiums, costs of deed and document preparation, attorneys' fees, settlement fees, notary fees, mortgage release and messenger fees.
- b. Should Buyer choose providers for Mortgage or Title other than Seller's preferred companies, current incentive indicated below will be reduced by 3%. Buyer agrees to pay all Settlement charges that Seller may incur other than the Seller's portion of the transfer tax, all costs associated with mortgage releases, escrows, and any taxes prorated to Buyer.
- c. Should Buyer select Seller's Preferred Lender for mortgage financing and Seller's Preferred Title Company for title insurance and Settlement, Seller may pay an incentive of \$ **SEE INCENTIVE FORM** (or the actual Closing Costs, whichever is less) at Settlement, to be applied for the benefit of Buyer to the payment of title insurance premium and endorsements, then to the Closing Costs other than pre-paid items such as insurance, HOA fees, loan discount points, buy down fees, or rate lock-in fees. In any event, the total of such costs payable by Seller shall not exceed those amounts allowed by Federal or State financing guidelines. Any Closing Costs paid by Seller shall be subtracted from any incentives or discounts provided by Seller.

## 12) Appraisals

In the process of securing mortgage financing for the purchase of the Premises, Buyer may be asked to provide or to fund an appraisal of the Premises. Appraisals are used by mortgage lenders to determine the amount which the mortgage lender is willing to loan toward the purchase of the appraised property. This appraised value may not be the same as the Purchase Price of the Premises, which includes unique options chosen by the Buyer and which reflects the housing market at the time of the execution of the Agreement of Sale.

An appraisal takes into account many factors, including, but not limited to, the contract Purchase Price, the value it determines of other homes in the geographic area, the price paid in recent sales of similar homes in comparable areas, the perceived marketability of the Premises in the resale market, considering design, location, options, etc., lending underwriting standards adopted by the mortgage lender or imposed by applicable law, and the expected return to be realized in the event of a forced sale of the Premises in a distressed situation after payment of expenses of foreclosure and of resale after forced sale.

The Purchase Price is the price to be paid by Buyer for the Premises, regardless of any appraised value, and is determined by agreement between Seller and Buyer. Seller is not in any way warranting that the Purchase Price will be greater than, equal to, or less than the appraised value as determined by a mortgage lender for loan purposes, and Buyer's obligation to purchase the Premises. The Purchase Price is in no way related to any appraised value of the Premises as determined by any mortgage lender for its purposes, and it is binding upon Buyer, regardless of the results of any appraisal of the Premises by or for a mortgage lender.

## 13) Title

- a. Seller represents that there are no pending eminent domain proceedings and no appropriations by filing of state highway plans in the Recorder's Office affecting the Premises, of which Seller has knowledge; except as set forth below, no portion of the Premises, except within utility reserve strips and developments or as shown on the Plan or within legal limits of highways, is, or at Settlement will be, subject to any currently used easement for any

underground electric or telephone cable or sewer, gas, or water pipe serving other than these Premises, any petroleum products pipeline or sewers or public storm sewer, or any other easement which is not apparent upon reasonable physical inspection; no present use or condition of the Premises violates any enforceable building or use restriction in the chain of title; no assessment for any public improvement has been made against the Premises which remains unpaid, and no work has been commenced on any public improvement being financed on an assessment basis on, adjacent to, or benefiting the Premises, of which Seller has knowledge, and no notice or order has been received by Seller or his agent from any governmental authority requiring the doing of work or correction of conditions on the Premises which has not been complied with. Seller represents, warrants, covenants and agrees that it shall not (i) voluntarily permit any event or occurrence, (ii) take any action, or (iii) fail or refuse to take any action, the failure or refusal of which would result in the imposition of any lien, encumbrance, easement, limitation, covenant, restriction or otherwise affect title to the Premises after the effective date of this Agreement, other than HOA documents and as described in such documents, without written notice to Buyer and the prior written consent of Buyer. Notwithstanding anything herein to the contrary, at Settlement, Seller shall discharge and release any liens, mortgages, deed of trust, or other monetary encumbrances affecting the Premises to be conveyed with the Purchase Price proceeds to be applied at Settlement for this purpose. Seller further warrants that it is the sole owner or equitable owner of the Premises.

- b. At Settlement, title to the Premises shall be good and marketable, insurable as such by a reputable American Land Title Association (ALTA) title insurance company subject, however, to (i) easements, covenants, conditions and restrictions of record, (ii) zoning and other applicable laws and regulations, and (iii) such facts as an accurate survey and personal inspection of the Premises would reflect, provided the same do not render title uninsurable. If title cannot be delivered at Settlement in compliance with this paragraph, and upon receipt of written notice thereof by Buyer, Seller may, but is not obligated to, determine that any title defects are of such character that they may readily be remedied by legal action. In the event Seller determines that such legal steps are a reasonable means to perfect title to the Premises, such actions, if Seller elects to undertake same, must be taken promptly by Seller at Seller's sole expense, in which case the time herein specified for Settlement will be extended for the period of time necessary for such action. If Seller cannot perfect title or is unable to perfect title after taking reasonable legal actions, Seller shall promptly notify Buyer in writing and Buyer shall have the right, at Buyer's option, to either (i) terminate this Agreement by written notice to Seller within ten (10) days after receipt of Seller's notice and receive full refund of all Deposits, or (ii) waive any title defects and proceed to Settlement.
- c. The Premises is sold subject to easements, if any, created or to be created, prior to or after Settlement, for the installation of utilities, storm water management or drainage facilities, street lights and/or additional covenants, encumbrances, restrictions or easements which may be placed on record by the Seller, or the developer of the Premises, before or after execution of this Agreement, for the benefit of the Premises and/or the community of which it is a part. If such easements are required after Settlement, Buyer agrees to cooperate with Seller in executing and delivering any and all documents related to such easements when and as requested. After Settlement, Buyer grants Seller, or its designees, the right to enter upon the Homesite and permission to perform all site work as may be required by local governmental authorities and utilities. This provision shall survive Settlement.
- d. If the Buyer chooses to use the preferred title company, the standard Basic Owner's Policy will be given and the Buyer will have the option to purchase an Enhanced Owner's Policy.
- e. On End Loan mortgage transactions: if Buyer's Title Insurance agent, company or attorney requires a release of subcontractor liens, Buyer shall pay Seller the cost of obtaining the same. Seller's preferred title Company does not require this release

#### **14) Default**

- a. Default of any aspect of the Mortgage Contingency renders the Deposit non-refundable.
- b. If the Buyer shall fail to make full and timely Settlement hereunder or shall otherwise breach or default under this Agreement and the default is not cured within 20 days after notice from Seller, the Deposit may be retained by Seller as liquidated damages or on account of actual damages, and not as a penalty, in which event Buyer and Seller shall be relieved from further liability hereunder. Notwithstanding the previous sentence, there is no cure

provision for default of a mortgage contingency. Seller may at its sole judgment seek to obtain a judgment under the obligation of the Promissory Note.

- c. In the event of a breach of this Agreement by Seller despite good faith efforts to perform, Buyer's sole remedy under this Agreement shall be the recovery of the Deposit. **UNLESS OTHERWISE PROHIBITED BY APPLICABLE LAW, IN NO EVENT WILL SELLER BE LIABLE FOR ANY NON-ECONOMIC DAMAGES OR ANY PUNITIVE, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR FOR DAMAGES FOR DELAYS AND BUYER HEREBY RELEASES AND WAIVES ANY CLAIMS FOR SUCH DAMAGES. BUYER HEREBY RELEASES AND WAIVES ANY RIGHT TO DEMAND "SPECIFIC PERFORMANCE" BY SELLER OF THIS AGREEMENT.**

## 15) Agricultural Area Information

The Premises may be located within an area where land is used for agricultural production. Buyers and other users of this property may be subjected to inconvenience and discomfort arising from normal and accepted agricultural practices and operations, including but not limited to, noise, odors, dust, the operation of machinery of any kind (including aircraft), the storage, disposal and use of manure, the application of fertilizers, soil amendments, herbicides and pesticides. Buyers and users of this property should be prepared to accept such inconveniences and discomforts from normal agricultural operations and are hereby put on official notice that section 4 of the Pennsylvania law regarding the PROTECTION OF AGRICULTURAL OPERATIONS FROM NUISANCE SUITS AND ORDINANCES, known as the "Right to Farm Act", 3 P.S. §951, *et seq.*, may bar them from obtaining a legal judgment against such normal agricultural operations

## 16) Naturally Occurring Gases

A small percentage of homes in the United States experience elevated levels of radon gas and/or methane gas or other naturally occurring gases. These are naturally occurring gases which rise up and escape from the soil. This phenomenon can occur in any home, regardless of the type of home or who builds it. The Seller claims no expertise in the measurement or reduction of these gases in homes, nor does Seller provide any advice to homeowners as to acceptable levels or possible health hazards of the gases. As to radon, homeowners may wish to obtain a test kit that meets the EPA protocol for measuring the level of radon gas in their homes. EPA publishes a list which provides information on EPA-approved suppliers of such test kits. Buyer agrees that this Agreement is not conditioned upon testing results for naturally occurring gases, or the presence or lack of such gases affecting the Premises. Upon Settlement, Buyer shall be deemed to have accepted the Premises as to the presence of these gases now or in the future and Seller shall be released from any and all claims related to or arising from the presence of naturally occurring gases. Buyers seeking further information should contact the U.S. Environmental Protection Agency or their state environmental protection office. Seller will install preparatory work only for a radon mitigation system. This agreement is not contingent on radon testing.

## 17) Energy Efficiency and Possible Biological Impurities.

Modern homes, including the Premises, are built tightly to slow the escape of warm air in the winter and the escape of cool air in the summer. These tight construction techniques also help reduce the entrance into the home of certain naturally-occurring, organic, often airborne, and often invisible contaminants such as (without limitation) animal dander, dust, dust mites, fungi, all forms of mold, bacteria and pollen (collectively, Biological Impurities"). However, Biological Impurities brought into the home (through the natural circulation of air, generated by or carried into the home by or upon people, animals or things, including building materials) can become trapped and actively grow in the tightly constructed home unless they are affirmatively removed. Whether or not Buyer as a homeowner experience mold growth depends largely on how Buyer manages and maintains the home. Seller's responsibility is limited to things that we can control. As explained in the written warranty, provided by a separate instrument Seller will repair or replace defects in construction (defects defined as a failure to comply with reasonable standards of residential construction) for a period of years equal to the length of the warranty furnished. Seller shall not be responsible for any damages caused by mold, or by some other agent, that may be associated with defects in our construction to include, but not limited to Premises damage, personal injury, loss of income, emotional distress, death, loss of use, loss of value, and adverse health effects, or any other effects. **ANY IMPLIED WARRANTIES, INCLUDING AN IMPLIED WARRANTY OF HABITABILITY, OR AN IMPLIED WARRANTY OF REASONABLE WORKMANSHIP, ARE HEREBY WAIVED AND DISCLAIMED.** Within the home, Biological Impurities can cause allergies or other more serious health effects for the occupants. According to some experts, Biological Impurities cannot be completely eliminated or excluded from residential construction such as the Premises. Notwithstanding the

immediately preceding sentence, it is Buyer's sole responsibility after settlement on the Premises to implement periodic, careful inspections and maintenance procedures in an effort to minimize the existence and effect of Biological Impurities within the Premises. The Seller does not claim any expertise regarding the identification, remediation or possible health consequences of Biological Impurities; if Buyer would like more information, Buyer should contact the U.S. Environmental Protection Agency, state or local authorities. Seller will not be responsible for any damages caused by mold, or by any other agents described above, to include but not limited to Premises damage, personal injury, loss of income, death, emotional distress, loss of use, loss of value, and adverse health effects, or any other effects. **ANY IMPLIED WARRANTIES, INCLUDING AN IMPLIED WARRANTY OF HABITABILITY, OR AN IMPLIED WARRANTY OF REASONABLE WORKMANSHIP, ARE HEREBY WAIVED AND DISCLAIMED.**

## 18) Sink Holes

Sink holes are areas where the surface of the ground subsides or collapses as a result of underground erosion of subsurface rock or soils, principally limestone. If a sink hole occurs where a home or other improvements have been constructed it can cause extensive structural damage, and even result in complete loss. Seller has no actual knowledge of the existence of any sink hole or sink hole risk upon the Premises, but makes no other warranty with regard thereto. Buyer assumes the risk of the occurrence of any sink hole on the Premises after the date of Settlement. Damages resulting from sink holes are not covered by Keystone Custom Homes Twenty Year Limited Warranty; Buyer is advised to purchase sink hole insurance coverage

## 19) Oral Agreements

Unless oral statements or promises are reduced to writing and included in this Agreement, they shall not be binding upon the parties. By including the terms below, the Buyer and Seller are making them part of this Agreement. THIS SECTION SHOULD NOT BE LEFT BLANK IF YOU ARE RELYING ON ANY ORAL STATEMENTS OR PROMISES. This Agreement, with all attachments hereto, all of which are incorporated herein and are made a part hereof, constitute the whole agreement between the parties, and no representation, warranty, or statement made by either party, other than as set forth herein, shall be of any effect. The following oral statements or promises have been made by the Seller, the Seller's agent or the Buyer. Performance of each of these statements or promises is incorporated into each party's obligation to fully perform the terms of this Agreement (if none, so state "None"):

## 20) Brokerage

The legislature and the State Real Estate Commission require that certain disclosures be included in agreements for the sale of real Premises. The following disclosures are made in accordance with Title 49, Section 35.333 of the Pennsylvania Code

- a. The zoning classification of the Premises **SINGLE FAMILY RESIDENCE**. Unless the Premises is zoned solely or primarily to permit single family dwellings, the failure of the Agreement to contain the zoning classification shall render the Agreement voidable at the option of the Buyer and, if voided, deposits tendered by the Buyer shall be returned to the Buyer without a requirement of court action. Such notice to void this agreement must be exercised within seven days of acceptance of the agreement.
- b. A Real Estate Recovery Fund exists to reimburse any person who has obtained a final civil judgment against a Pennsylvania real estate licensee owing to fraud, misrepresentation, or deceit in a real estate transaction and who has been unable to collect the judgment after exhausting all legal and equitable remedies. For complete details about the Fund, call (717) 783-3658.
- c. Access to a public road may require issuance of a highway occupancy permit from the Department of Transportation. Seller shall arrange for any required highway occupancy permits.
- d. It is expressly understood and agreed between the parties that Seller and any agent, subagent or broker and their licensees involved in the transaction are agents for the Seller, not the Buyer, (unless otherwise disclosed in writing) and that this was disclosed during the initial interview. **No agent of Seller has authority to make any representations, warranties, covenants or agreements in respect to the Premises.** Seller's agent may perform services for Buyer in connection with financing, insurance and document preparation. Upon acceptance of this agreement by both the Buyer and the Seller, payments of Deposit money received by the broker on account of the sale - regardless of the form of payment and the person designated as payee (if payment is made by an instrument) - shall be held by the listing broker in an escrow account pending consummation of the sale or a prior termination thereof. Additional option payments received will be held by Seller and are not refundable.

## **21) Community and School Information**

School district and boundary information may be obtained only by contacting the appropriate County or City School Board.

## **22) Subordination**

Buyer agrees that its rights under this Agreement are and shall be subordinate to those of Seller's construction lender for this Premises, and Buyer further agrees that this Agreement is and shall be subordinate to any lien placed on the Premises by Seller's construction lender.

## **23) Successors and Assigns**

This Agreement shall be binding on the parties and their heirs, legal representatives and permitted assigns. This Agreement cannot be assigned by Buyer without the prior written consent of the Seller, which may be withheld at Seller's sole discretion.

## **24) Time of the Essence**

TIME IS OF THE ESSENCE FOR THIS AGREEMENT. This means that the failure to do what is required within the timeframes specified in this Agreement is a breach of the Agreement.

## **25) Picture Release**

Buyer hereby gives Seller, its successors and assigns, full permission to use, publish, and copyright photographic prints and any other reproductions of the Premises, or any part thereof, for advertising, publicity, and for any and all bona fide commercial purposes whatsoever.

## **26) Disputes**

Any claims, controversy or disputes arising out of this Agreement or relating to the interpretation of this

Agreement, or any subcontract or sub subcontract, shall be decided by binding arbitration. Arbitration shall be in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association that are in effect at the time of the arbitration. The arbitration shall take place in Lancaster County Pennsylvania. Should any party refuse or neglect to appear or to participate in arbitration proceedings, the arbitrator is empowered to decide the controversy in accordance with whatever evidence is presented. If buyer initiates Arbitration or litigation and fails to prevail on its claims, Seller shall be entitled to an award of attorney's fees and all costs and fees in defending the Buyer's claims. In the event that Seller initiates arbitration regarding a failure of Buyers to make payment in accordance with the payment terms and is awarded any money by the Arbitrator, Buyer shall be liable to Seller for all costs, fees and attorney's fees. Otherwise, all parties shall share the costs of Arbitration equally. Judgment on the award of the arbitrator may be entered in any Court having jurisdiction thereof.

## **27) Cumulative Remedies**

All remedies for which provision is made herein shall be cumulative. Any failure by Seller to exercise any rights hereunder or failure by Seller to take any action as a result of Buyer's default hereunder shall not be construed as a waiver of such default or remedy. Any retention of any sum paid down hereunder may be retained by Seller as either liquidated damages or on account of actual loss or damages, at Seller's election.

## **28) Severability**

The parties hereto have negotiated and prepared the terms of this Agreement in good faith with the intent that each and every one of the terms, covenants and conditions herein be binding upon and inure to the benefit of the respective parties. Accordingly, if any one or more of the terms, provisions, promises, covenants or conditions of this Agreement or the application thereof to any person or circumstance shall be adjudged to any extent invalid, unenforceable, void or voidable for any reasonable whatsoever by a court of competent jurisdiction or an arbitration tribunal, such provision shall be as narrowly construed as possible, and each and all of the remaining terms, provisions, promises, covenants and conditions of this Agreement or their application to other persons or circumstances shall not be affected thereby and shall be valid and enforcement to the fullest extent permitted by law. To the extent this Agreement is in violation of applicable law, then the parties agree to negotiate in good faith to amend the Agreement, to the extent possible consistent with its purposes, to conform to law.



## 29) Miscellaneous

All notices and communications under this Agreement shall be in writing and shall be deemed duly given if (i) mailed by registered mail or certified mail, return receipt requested, first class postage prepaid, (ii) delivered by overnight courier, or (iii) sent by facsimile with transmission verification, (iv) supplied by sales manager, (v) emailed with return receipt received, if to Seller to Seller's main office at the address listed on page 1 of this agreement, and if to Buyer to his address given above. The parties shall be responsible for notifying each other of any change of address. This Agreement (including any notices thereof) shall not be recorded. Where the context requires, words in the singular shall be substituted for the plural and vice versa, and words in the masculine shall be substituted by any gender. This Agreement, its formation and enforceability shall be governed by the laws of the Commonwealth of Pennsylvania without regard for conflicts of law principles. Any rules of interpretation wherein this Agreement is constructed against its drafter are waived.

### **For Maryland Buyers only:**

1) *Your home builder has agreed to submit to arbitration any consumer complaint that cannot be resolved through mediation, using the arbitration program provided by the Consumer Protection Division of the Office of the Attorney General. If you are unable to resolve a dispute between you and your home builder, you may file a complaint with the Consumer Protection Division. If mediation is unsuccessful, your complaint will be arbitrated with the program provided by the Consumer Protection Division. Complaints can be filed by writing to the Consumer Protection Division, 200 St. Paul Place, 16<sup>th</sup> Floor, Baltimore, MD 21202, or by filing online at <http://www.marylandattorneygeneral.gov/Pages/Complaints/newhomeconstruction.aspx>. The Consumer Protection Division can also be contacted by calling (410) 528-8662.*

2. *The Buyer has the right to and will be provided a consumer information pamphlet as provided under the Home Builder Registration Act.*

3. *The Home shall be constructed in accordance with all applicable building codes in effect at the time of the construction of the Home. The Seller shall comply with, in the construction of the Home, guidelines adopted at the time of the Agreement by the National Association of Home Builders and these guidelines shall prevail in the performance of the Agreement and any adjudication of a claim arising from the Agreement.*

4. *The Seller's Maryland Home Builder Registration Act registration number is 2937.*

**In witness whereof, the parties hereto have hereunto set their hands and seals the day and year first above written.**

I acknowledge receipt of a copy of this Agreement. I have carefully read and reviewed its terms, and I agree to its provisions.

**Buyer 1 Signature:** |SIGNATURE\_2|

**Date:** |DATESIGNED\_2|

**Buyer 2 Signature:** |SIGNATURE\_3|

**Date:** |DATESIGNED\_3|

|DATESIGNED\_4|

**Seller Signature:** |SIGNATURE\_4|

**Date:**

Dawn Herr, Assistant Vice President

Created on: [NOW] MHBR No. 2937

Stoner Farms, A Planned Community  
2021 OPERATING BUDGET

rev.12-14-20  
SMB

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTAL
TOTAL LOTS	126	126	126	126	126	126	126	126	126	126	126	126	1,260
TOTAL HOMES P1	42	42	42	42	42	42	42	42	42	42	42	42	420
	1	1	2	4	5	5	6	6	7	8	10	13	130
ANNUAL ASSESS.	4,200			4,200			4,200			4,200			16,800
INITIATION FEES	0	400	400	800	400		400		400	400	800	1,200	5,200
TOTAL INCOME	4,200	400	400	5,000	400	0	4,600	0	400	4,600	800	1,200	22,000

OPERATING EXPENSES

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTAL
INSURANCE	0	0	0	520	0	0	0	0	0	0	0	0	520
SERVICE	0	0	0	0	100	0	0	0	0	0	0	0	100
MAINT.:LAWN	0	0	250	625	725	625	725	525	625	625	0	0	4,725
MNGMT.COSTS	357	357	357	357	357	357	357	357	357	357	357	357	4,284
PROF.FEES	0	0	0	220	0	0	0	0	0	0	0	0	220
GEN. EXPENSE	25	25	25	25	25	25	25	25	25	25	25	25	300
CAP. RESERVES	100	100	100	100	100	100	100	100	100	100	100	100	1,200
TOTAL EXP.	482	482	732	1,847	1,307	1,107	1,207	1,007	1,107	1,107	482	482	11,349
NET OPT.INC.	3,718	(82)	(332)	3,153	(907)	(1,107)	3,393	(1,007)	(707)	3,493	318	718	10,651
OPER. BAL. :	3,718	3,636	3,304	6,457	5,550	4,443	7,836	6,829	6,122	9,615	9,933	10,651	10,651
INTEREST INC.													0
RES. INCOME	100	100	100	100	100	100	100	100	100	100	100	100	1,200
RES.BALANCE	0	100	200	300	400	500	600	700	800	900	1,000	1,100	\$1,200
Operating:			\$0										\$10,651
Capital Reserves:			\$0										\$1,200

ENDING CASH BALANCES

NUMBER OF UNITS P1: 42  
INITIATION FEE AT SETTLEMENT: \$400.00  
Quarterly HOA fee \$100.00



# **PRELIMINARY SWM REPORT**

# PRELIMINARY STORMWATER MANAGEMENT REPORT

for

## **STOKES ESTATE 85 RESIDENTIAL LOTS**

Residential Development  
Westtown Township  
Chester County, Pennsylvania

March 17, 2023

Howell Job# 3868

Prepared for:

Fox Clearing, LLC  
227 Granite Run Drive, Suite 100  
Lancaster, PA 17601

Prepared by:

## **HOWELL ENGINEERING**

1250 Wrights Lane, West Chester, PA 19380  
Phone: 610-918-9002 Fax: 610-918-9003

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Appendix B	Peak Flow Summary
Appendix C	SCS Runoff Coefficients Calculations
Appendix D	SCS Hydrograph Reports & Basin Routings
Appendix E	USDA NRCS Soil Report
Appendix F	Stormwater Infiltration Testing Report

## **1.0 INTRODUCTION**

This Stormwater Management Report presents the preliminary permanent control measures/facilities required to support construction activities for the Stokes Estate Residential Development . The 80 +/-acre combined tract is located in Westtown Township (Figure 1-1).

The proposed land development consists of constructing 82 residential dwelling units combined with three (3) existing dwellings (total 85 homes), access roads, stormwater management facilities, and public utilities. Two (2) access points to the parcel will be off Shiloh Road. The buildings and roads will be constructed to comply with design standards and safety requirements of the Townships and local Fire Marshals.

## **1.1 LAND USE**

The existing land is currently utilized for agriculture and residential with pastures for livestock, with a few hedgerows and mature trees scattered throughout, mostly along the existing driveway and near the existing residence and outbuildings. The site generally drains to two separate water bodies, where the southern portion of the property drains to an Unnamed Tributary to the East Branch of Chester Creek that flows through the property, and the eastern end of the site drains directly to the East Branch of Chester Creek, also on the property. Therefore, the entire site is located in the Chester Creek watershed. Per Pennsylvania Department of Environmental Protection, 25 Pa. Code, 93.9g "Water Quality Standards" Chester Creek is classified as Trout Stocking Fishery (TSF).

## **1.2 SITE SOILS**

Site soils mapping provided by the United States Department of Agriculture Natural Resources Conservation Service – Web Soil Survey. According to the Web Soil Survey mapping, the following soil types are located within the project study area;

Baile Silt Loam (Ba)  
Codorus Silt Loam (Co)  
Gladstone Gravelly Loam (GdB) (GdC) (GfD)  
Hatboro Silt Loam (Ha)  
Manor Loam (MaD)  
Urban land – Gladstone complex, 0 to 8 percent

Refer to Appendix E for Soils Map and report.

### 1.3 SOIL/GEOLOGIC LIMITATIONS:

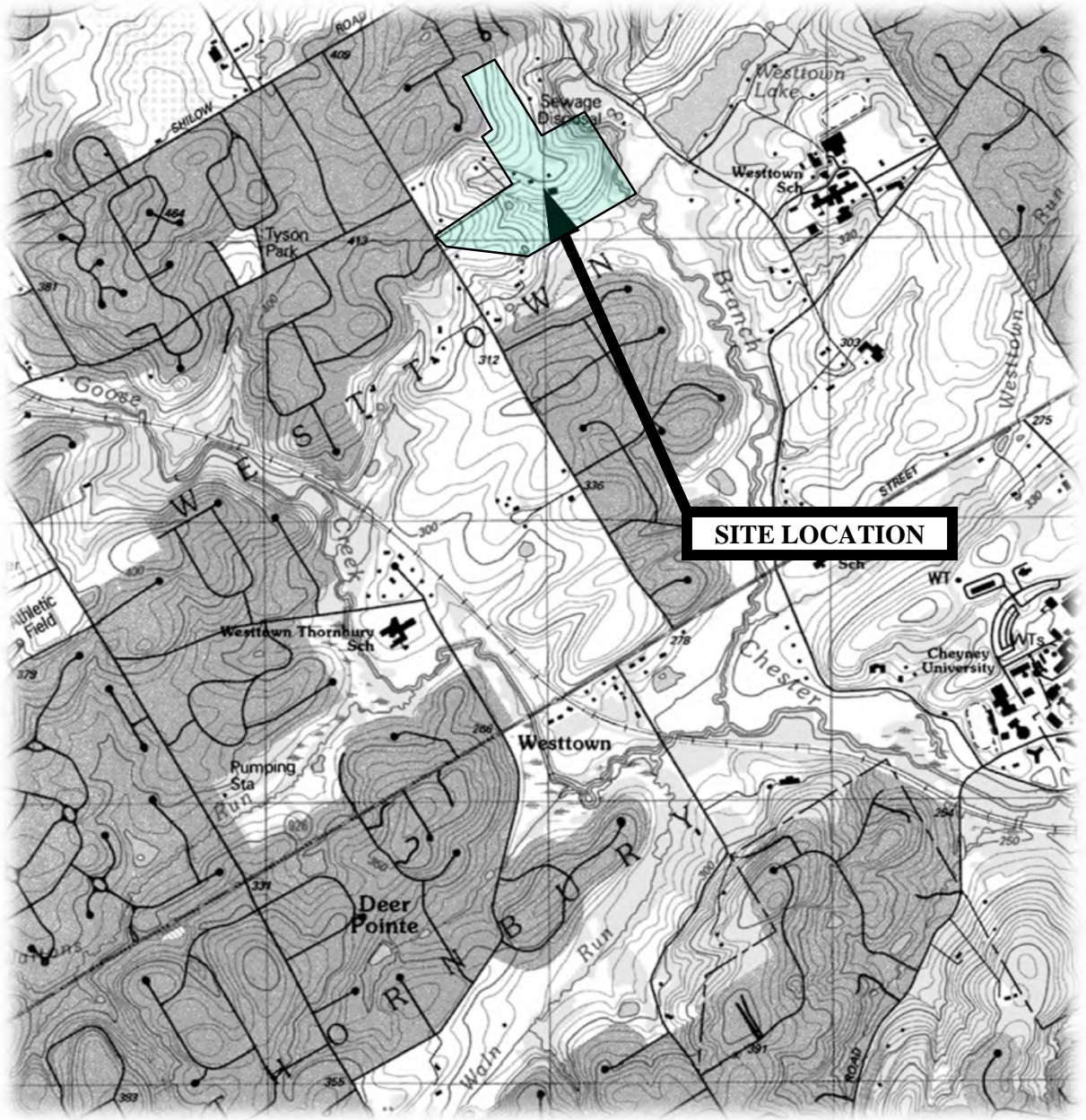
Some groundwater and rock were encountered in a few locations during infiltration testing. Howell has taken into consideration these known soil limitations when designing the infiltration BMPs for the project. The stormwater infiltration facilities have either been relocated to areas where limiting areas weren't encountered or has been set a minimum of 2 feet higher than any prohibitive soil limitation elevations witnessed during infiltration testing and adequate infiltration results have been achieved at the adjusted elevations.

If during construction, any other unknown soil limitation (i.e. bedrock or high water) is discovered the contractor is responsible for immediately contacting the site geo-technical engineer, design engineer, conservation district and the township engineer for an appropriate solution. The site design drawings contain a pumped water filter bag detail which should be utilized if any excavations need to be dewatered due to high groundwater or excessive rainfall.

#### **Geologic formations/soil conditions that may have the potential to cause pollution:**

Furthermore, there are no known geologic formations or soil conditions that have the potential to cause pollution during earth disturbance activities. If during construction, an unknown geologic formations or soil conditions is discovered the contractor is responsible for immediately contacting the Chester County Conservation District and the design engineer.





Source:  
 United States Department of the Interior Geological Survey  
 7.5 Minute Series (Topographic) Map  
 West Chester, Pennsylvania Quadrangle  
 Scale 1:24000

 **DLHowell**  
 Civil Engineering & Land Planning  
[www.DLHowell.com](http://www.DLHowell.com)

Stokes Estate  
 Westtown Township  
 Chester County, Pennsylvania

**Figure Number:**  
**FIGURE 1-1**

**Title:**  
**SITE LOCATION MAP**

## 2.0 RUNOFF MANAGEMENT

The purpose of the stormwater management design is to quantify and control stormwater runoff generated by the modifications of the ground surface conditions to the site (i.e. roads, buildings, driveways, etc.). Post-development stormwater management is achieved at the site through five (5) combination surface/subsurface infiltration basins strategically located throughout the site to control runoff.

The infiltration basins with stone beds have been designed utilizing Soil Conservation Service (SCS) method for infiltration and peak flow requirements and Westtown Township regulations for peak flow calculations (See Appendices for worksheets). The stormwater management control for this project was designed to include all impervious surfaces associated with this subdivision application, with an assumption of 3,800 SF of impervious coverage per single family lot. These systems are designed to provide an overall reduction in the post-developed runoff for the 2-year, 10-year, 25-year, 50-year, and 100-year, 24-hour storm event to less than 50% of the pre-development runoff rates for the equivalent storm events based on the Chester Creek Watershed Release Rate Map. A stormwater conveyance system will be utilized to convey runoff from the proposed improvements to the proposed stormwater facilities. The stormwater conveyance system will be designed to convey flows up to the 100-year storm event. Flows to the pipes will be generated using the Universal Rational Method and the pipes sized using Manning's Method and Hydraulic Grade Line calculations will also be provided. The infiltration basins have been designed and sized to fully infiltrate the increase in volume, pre to post-development for the 2-year storm as required by the NPDES Phase II regulations.

## 3.0 NPDES STORMWATER COMPLIANCE

As stated above, the infiltration facilities have been designed and sized to fully infiltrate the 2-year increase in volume; therefore the NPDES Phase II infiltration requirement has been met. Furthermore, as described above, the infiltration basins have been designed to incorporate Pennsylvania Department of Environmental Protection's infiltration guidelines, as stated in Appendix C of the Pennsylvania Stormwater Best Management Practices Manual dated December 2006. The stormwater management systems have been designed to maximize infiltration best management practice (BMP) technologies and minimize point source discharges. This plan will further act to perform/provide the following:

- Preserve the integrity of stream channels and maintain and protect the physical, biological and chemical qualities of the receiving stream by utilizing several BMPs to handle the increase in runoff and volume prior to reaching the stream.
- Prevent an increase in the rate of stormwater runoff by utilizing BMPs to reduce the peak flow rate of all storm events up to the 100 year to below the equivalent storm in the pre developed condition.
- Minimize any increase in stormwater runoff volume by utilizing infiltration BMPs which are designed and sized to fully infiltrate the 2-year increase in volume.
- Minimize impervious areas
- Maximize the protection of existing drainage features and existing vegetation by capturing stormwater runoff from the proposed impervious areas then conveying the flow to stormwater BMPs facilities prior to any release to the existing stream, thereby protecting it from any sediment.
- Minimize land clearing and grading by protecting and preserving the majority of the existing woodlands, and natural areas.
- Minimize soil compaction by specifying the installation of orange construction fencing to protect the areas of the proposed infiltration BMPs.
- Utilize other structural or nonstructural BMPs that prevent or minimize changes in stormwater runoff. The structural BMPs are infiltration beds, and water quality filters, while the non-

structural BMPs are protecting existing riparian buffers, minimizing total disturbed area, and protecting sensitive features.

Howell Engineering has designed Best management Practices (BMP's) consistent with Chapter 6 of the PA Stormwater Best Management Practices Manual within the stormwater collection and conveyance system in addition to infiltrating the net increase in volume from pre to post-development for the 2-year storm event.

**The applicant has been able to demonstrate compliance with 102.8(b), through the use of infiltration.**

Permanent BMP's proposed for the developed site are as follows:

- Vegetated Swales
- Infiltration Basins/Beds
- Forebays
- Level Spreaders

#### 4.0 CONCLUSIONS

Howell Engineering has completed a preliminary stormwater engineering design for the proposed project in Westtown Township, Chester County, Pennsylvania. Using site-specific topography, soils, land cover, hydrologic data, and Township Ordinances, Howell Engineering designed the stormwater management system for the proposed facilities. The objective of the stormwater design was to develop site-specific stormwater management structures that reduced post-development runoff to pre-development runoff rates and provided volumetric storage per PADEP NPDES Phase II requirements. Post-development stormwater management is achieved through a stormwater collection system consisting of curbed inlets, swales, catch basins, and stormwater infiltration basins/beds.

**APPENDIX A**  
**STORMWATER VOLUME CALCULATIONS**

## CHANGE IN RUNOFF VOLUME FOR 2-YR STORM EVENT

Worksheet 4, Pennsylvania Stormwater Best Management Practices Manual

Chapter 8

**PROJECT:** Stokes Estate  
**Drainage Area:** DP001 Chester Creek  
**2-Year Rainfall:** 3.2 **in**

**Total Site Area:** \_\_\_\_\_ **acres**  
**Protected Site Area:** \_\_\_\_\_ **acres**  
**Managed Area:** 13.67 **acres**

### Existing Conditions

Cover Type/Conditions	Soil Type	Area (sf)	Area (ac)	CN	S	la (0.2*S)	Q Runoff <sup>1</sup> (in)	Runoff Volume <sup>2</sup> (ft <sup>3</sup> )
Woodland	A		0.00	25	30.0000	6.0000	0.29	
Meadow	A		0.00	30	23.3333	4.6667	0.10	
Impervious	A		0.00	98	0.20	0.04	2.97	
Woodland	B		0.00	55	8.1818	1.6364	0.25	
Meadow	B	672,131	15.43	58	7.2414	1.4483	0.34	19,111
Meadow (20% Imperv)	B		0.00	58	7.2414	1.4483	0.34	
Impervious (80%)	B		0.00	98	0.2041	0.0408	2.97	
Woodland	C		0.00	70	4.2857	0.8571	0.83	
Meadow	C		0.00	71	4.0845	0.8169	0.88	
Impervious	C		0.00	98	0.2041	0.0408	2.97	
Woodland	D		0.00	77	2.9870	0.5974	1.21	
Meadow	D		0.00	78	2.8205	0.5641	1.27	
Impervious	D		0.00	98	0.2041	0.0408	2.97	
<b>TOTAL:</b>		<b>672,131</b>	<b>15.43</b>					<b>19,111</b>

### Developed Conditions

Cover Type/Conditions	Soil Type	Area (sf)	Area (ac)	CN	S	la (0.2*S)	Q Runoff <sup>1</sup> (in)	Runoff Volume <sup>2</sup> (ft <sup>3</sup> )
Lawn	B	323,952	7.44	61	6.3934	1.2787	0.44	11,985
Impervious	N/A	153,121	3.52	98	0.2041	0.0408	2.97	37,865
Meadow	B	118,483	2.72	58	7.2414	1.4483	0.34	3,369
			0.00					
			0.00					
			0.00					
			0.00					
			0.00					
<b>TOTAL:</b>		<b>595,556</b>	<b>13.67</b>					<b>53,220</b>

**2-Year Volume Increase (ft<sup>3</sup>): 34,108**

2-Year Volume Increase = Developed Conditions Runoff Volume - Existing Conditions Runoff Volume

1. Runoff (in) =  $Q = (P - 0.2S)^2 / (P + 0.8S)$

P = 2-Year Rainfall (in)

S =  $(1000/CN) - 10$

2. Runoff Volume (CF) =  $Q \times \text{Area} \times 1/12$

Q = Runoff (in)

Area = Land Use Area (Sq. Ft)

**Note: Runoff Volume must be calculated for EACH land use type/condition and HSGI.  
The use of a weighted CN value for volume calculations is not acceptable.**

## CHANGE IN RUNOFF VOLUME FOR 2-YR STORM EVENT

Worksheet 4, Pennsylvania Stormwater Best Management Practices Manual

Chapter 8

**PROJECT:** Rustin Residential  
**Drainage Area:** DP002 UNT Chester Creek  
**2-Year Rainfall:** 3.2 in

**Total Site Area:** \_\_\_\_\_ acres  
**Protected Site Area:** \_\_\_\_\_ acres  
**Managed Area:** 20.97 acres

### Existing Conditions

Cover Type/Conditions	Soil Type	Area (sf)	Area (ac)	CN	S	la (0.2*S)	Q Runoff <sup>1</sup> (in)	Runoff Volume <sup>2</sup> (ft <sup>3</sup> )
Woodland	A		0.00	25	30.0000	6.0000	0.29	
Meadow	A		0.00	30	23.3333	4.6667	0.10	
Impervious	A		0.00	98	0.20	0.04	2.97	
Woodland	B		0.00	55	8.1818	1.6364	0.25	
Meadow	B	745,375	17.11	58	7.2414	1.4483	0.34	21,194
Meadow (20% Imperv)	B		0.00	58	7.2414	1.4483	0.34	
Impervious (80%)	B		0.00	98	0.2041	0.0408	2.97	
Woodland	C		0.00	70	4.2857	0.8571	0.83	
Meadow	C	91,390	2.10	71	4.0845	0.8169	0.88	6,687
Impervious	C		0.00	98	0.2041	0.0408	2.97	
Woodland	D		0.00	77	2.9870	0.5974	1.21	
Meadow	D		0.00	78	2.8205	0.5641	1.27	
Impervious	D		0.00	98	0.2041	0.0408	2.97	
<b>TOTAL:</b>		<b>836,765</b>	<b>19.21</b>					<b>27,882</b>

### Developed Conditions

Cover Type/Conditions	Soil Type	Area (sf)	Area (ac)	CN	S	la (0.2*S)	Q Runoff <sup>1</sup> (in)	Runoff Volume <sup>2</sup> (ft <sup>3</sup> )
Lawn	C	75,360	1.73	74	3.5135	0.7027	1.04	6,516
Lawn	B	563,811	12.94	61	6.3934	1.2787	0.44	20,859
Impervious	N/A	274,153	6.29	98	0.2041	0.0408	2.97	67,795
			0.00					
			0.00					
			0.00					
			0.00					
			0.00					
			0.00					
<b>TOTAL:</b>		<b>913,324</b>	<b>20.97</b>					<b>95,170</b>

**2-Year Volume Increase (ft<sup>3</sup>): 67,289**

2-Year Volume Increase = Developed Conditions Runoff Volume - Existing Conditions Runoff Volume

1. Runoff (in) =  $Q = (P - 0.2S)^2 / (P + 0.8S)$

P = 2-Year Rainfall (in)

S =  $(1000/CN) - 10$

2. Runoff Volume (CF) =  $Q \times \text{Area} \times 1/12$

Q = Runoff (in)

Area = Land Use Area (Sq. Ft)

**Note: Runoff Volume must be calculated for EACH land use type/condition and HSGI. The use of a weighted CN value for volume calculations is not acceptable.**

## CHANGE IN RUNOFF VOLUME FOR 2-YR STORM EVENT

Worksheet 4, Pennsylvania Stormwater Best Management Practices Manual

Chapter 8

**PROJECT:** Stokes Estate  
**Drainage Area:** DP003 UNT Chester Creek  
**2-Year Rainfall:** 3.2 **in**

**Total Site Area:** \_\_\_\_\_ **acres**  
**Protected Site Area:** \_\_\_\_\_ **acres**  
**Managed Area:** 7.87 **acres**

### Existing Conditions

Cover Type/Conditions	Soil Type	Area (sf)	Area (ac)	CN	S	la (0.2*S)	Q Runoff <sup>1</sup> (in)	Runoff Volume <sup>2</sup> (ft <sup>3</sup> )
Woodland	A		0.00	25	30.0000	6.0000	0.29	
Meadow	A		0.00	30	23.3333	4.6667	0.10	
Impervious	A		0.00	98	0.20	0.04	2.97	
Woodland	B		0.00	55	8.1818	1.6364	0.25	
Meadow	B	104,108	2.39	58	7.2414	1.4483	0.34	2,960
Meadow (20% Imperv)	B		0.00	58	7.2414	1.4483	0.34	
Impervious (80%)	B		0.00	98	0.2041	0.0408	2.97	
Woodland	C		0.00	70	4.2857	0.8571	0.83	
Meadow	C	211,266	4.85	71	4.0845	0.8169	0.88	15,459
Impervious	C		0.00	98	0.2041	0.0408	2.97	
Woodland	D		0.00	77	2.9870	0.5974	1.21	
Meadow	D	41,382	0.95	78	2.8205	0.5641	1.27	4,391
Impervious	D		0.00	98	0.2041	0.0408	2.97	
<b>TOTAL:</b>		<b>356,756</b>	<b>8.19</b>					<b>22,811</b>

### Developed Conditions

Cover Type/Conditions	Soil Type	Area (sf)	Area (ac)	CN	S	la (0.2*S)	Q Runoff <sup>1</sup> (in)	Runoff Volume <sup>2</sup> (ft <sup>3</sup> )
Lawn	B	49,632	1.14	61	6.3934	1.2787	0.44	1,836
Impervious	N/A	98,822	2.27	98	0.2041	0.0408	2.97	24,438
Lawn	C	175,962	4.04	78	2.8205	0.5641	1.27	18,672
Lawn	D	32,340	0.74	81	2.3457	0.4691	1.47	3,959
			0.00					
			0.00					
			0.00					
			0.00					
<b>TOTAL:</b>		<b>356,756</b>	<b>8.19</b>					<b>48,905</b>

**2-Year Volume Increase (ft<sup>3</sup>): 26,094**

2-Year Volume Increase = Developed Conditions Runoff Volume - Existing Conditions Runoff Volume

1. Runoff (in) =  $Q = (P - 0.2S)^2 / (P + 0.8S)$

P = 2-Year Rainfall (in)

S =  $(1000/CN) - 10$

2. Runoff Volume (CF) =  $Q \times \text{Area} \times 1/12$

Q = Runoff (in)

Area = Land Use Area (Sq. Ft)

**Note: Runoff Volume must be calculated for EACH land use type/condition and HSGI.**

**The use of a weighted CN value for volume calculations is not acceptable.**



**STRUCTURAL BMP VOLUME CREDITS**

Worksheet 5, Pennsylvania Stormwater Best Management Practices Manual

Chapter 8

**PROJECT:** Stokes Estate  
**Sub-Basin** Chester Creek DP001

**Required Control Volume** 34,108 **Cubic Feet**  
**Non-Structural Volume Credit** 0 **Cubic Feet**  
**Structure Volume Requirement** 34,108 **Cubic Feet**

Section	Proposed BMP	Area (sf)	Storage Volume (ft <sup>3</sup> )
6.4.1	Porous Pavement		
6.4.2	Infiltration Basin		35,889
6.4.3	Infiltration Bed		
6.4.4	Infiltration Trench		
6.4.5	Rain Garden/Bioretenion		
6.4.6	Dry Well/Seepage Pit		
6.4.7	Constructed Filter		
6.4.8	Vegetated Swale		
6.4.9	Vegetated Filter Strip		
6.4.10	Infiltration Berm		
6.5.1	Vegetated Roof		
6.5.2	Capture and Re-Use		
6.6.1	Constructed Wetlands		
6.6.2	Wet Pond/Retention Basin		
6.6.3	Dry Extended Detention Basin		
6.6.4	Water Quality Filters		
6.7.1	Riparian Buffer Restoration		
6.7.2	Landscape Restoration / Reforestation		
6.7.3	Soil Amendment		
6.8.1	Level Spreader		
6.8.2	Special Storage Areas		
	Other		
		<b>0</b>	<b>35,889</b>

<b>Total Structural Volume (cf)</b>	<b>35,889</b>
<b>Structural Volume Requirement (cf)</b>	<b>34,108</b>
<b>DIFFERENCE</b>	<b>1,781</b>





**STRUCTURAL BMP VOLUME CREDITS**

Worksheet 5, Pennsylvania Stormwater Best Management Practices Manual

Chapter 8

**PROJECT:** Stokes Estate  
**Sub-Basin** UNT Chester Creek DP002

**Required Control Volume** 67,289 **Cubic Feet**  
**Non-Structural Volume Credit** 0 **Cubic Feet**  
**Structure Volume Requirement** 67,289 **Cubic Feet**

Section	Proposed BMP	Area (sf)	Storage Volume (ft <sup>3</sup> )
6.4.2	Infiltration Basin 1 Combined		34,254
6.4.2	Infiltration Basin 2		33,072
6.4.3	Infiltration Bed(s)		
6.4.5	Rain Garden/Bioretenion		
6.4.6	Dry Well/Seepage Pit		
6.4.7	Constructed Filter		
6.4.8	Vegetated Swale		
6.4.9	Vegetated Filter Strip		
6.4.10	Infiltration Berm		
6.5.1	Vegetated Roof		
6.5.2	Capture and Re-Use		
6.6.1	Constructed Wetlands		
6.6.2	Wet Pond/Retention Basin		
6.6.3	Dry Extended Detention Basin		
6.6.4	Water Quality Filters		
6.7.1	Riparian Buffer Restoration		
6.7.2	Landscape Restoration / Reforestation		
6.7.3	Soil Amendment		
6.8.1	Level Spreader		
6.8.2	Special Storage Areas		
	Other		
		<b>0</b>	<b>67,326</b>

<b>Total Structural Volume (cf)</b>	<b>67,326</b>
<b>Structural Volume Requirement (cf)</b>	<b>67,289</b>
<b>DIFFERENCE</b>	<b>37</b>



**STRUCTURAL BMP VOLUME CREDITS**

Worksheet 5, Pennsylvania Stormwater Best Management Practices Manual

Chapter 8

**PROJECT:** Stokes Estate  
**Sub-Basin** UNT Chester Creek DP003

**Required Control Volume** 26,094 **Cubic Feet**  
**Non-Structural Volume Credit** 0 **Cubic Feet**  
**Structure Volume Requirement** 26,094 **Cubic Feet**

Section	Proposed BMP	Area (sf)	Storage Volume (ft <sup>3</sup> )
6.4.2	Basin 4		14,188
6.4.3	UG Bed 1 w/ Basin		12,096
6.4.3	Infiltration Bed(s)		
6.4.5	Rain Garden/Bioretenion		
6.4.6	Dry Well/Seepage Pit		
6.4.7	Constructed Filter		
6.4.8	Vegetated Swale		
6.4.9	Vegetated Filter Strip		
6.4.10	Infiltration Berm		
6.5.1	Vegetated Roof		
6.5.2	Capture and Re-Use		
6.6.1	Constructed Wetlands		
6.6.2	Wet Pond/Retention Basin		
6.6.3	Dry Extended Detention Basin		
6.6.4	Water Quality Filters		
6.7.1	Riparian Buffer Restoration		
6.7.2	Landscape Restoration / Reforestation		
6.7.3	Soil Amendment		
6.8.1	Level Spreader		
6.8.2	Special Storage Areas		
	Other		
		<b>0</b>	<b>26,284</b>

<b>Total Structural Volume (cf)</b>	<b>26,284</b>
<b>Structural Volume Requirement (cf)</b>	<b>26,094</b>
<b>DIFFERENCE</b>	<b>190</b>

**INFILTRATION VOLUME CALCULATION**  
**Basin 1 Upper**

PROJECT NAME: Stokes Estate  
 LOCATION: Westtown Township  
 PREPARED BY: DWG DATE: 3/30/2021  
 CHECKED BY: DLH DATE: \_\_\_\_\_

WATER SURFACE ELEVATION (FEET)	AREA AREA (SQ.FT.)	AVERAGE AREA (SQ.FT.)	DIFFERENCE IN ELEVATION (FEET)	STORAGE VOLUME (CUBIC FEET)	
				INCREMENTAL	TOTAL
320.00	13,236				0
		14,996	2.00	29991	
322.00	16,755				29,991
		18,686	2.00	37372	
324.00	20,617				67,363
		22,559	2.00	45117	
326.00	24,500				112,480

<u>Proposed Infiltration Volume</u>	
Elevation	Storage Volume (CF)
322.00	29,991
<u>322.50</u>	<u>39,334</u>
324.00	67,363
<b>Volume = 39,334 CF</b>	

\*Only 34,254 CF drains to the basin in the 2 year storm, therefore only 34,254 CF is being taken credit for



**INFILTRATION VOLUME CALCULATION  
Basin 1 Lower**

PROJECT NAME: Stokes Estate  
 LOCATION: Westtown Township  
 PREPARED BY: DWG DATE: 3/30/2021  
 CHECKED BY: DLH DATE: \_\_\_\_\_

WATER SURFACE ELEVATION (FEET)	AREA AREA (SQ.FT.)	AVERAGE AREA (SQ.FT.)	DIFFERENCE IN ELEVATION (FEET)	STORAGE VOLUME (CUBIC FEET)	
				INCREMENTAL	TOTAL
302.00	2,215				0
		3,094	2.00	6187	
304.00	3,972				6,187
		7,254	2.00	14507	
306.00	10,535				20,694
		12,703	2.00	25405	
308.00	14,870				46,099

<u>Proposed Infiltration Volume</u>	
Elevation	Storage Volume (CF)
302.00	0
<u>304.00</u>	<u>6,187</u>
304.00	6,187
<b>Volume = 6,187 CF</b>	

\*the full two year volume to the upper basin is proposed to be infiltrated, the lower basin will infiltrate the volume that drains directly to it.



**INFILTRATION VOLUME CALCULATION**  
**Basin 2**

PROJECT NAME: Stokes Estate  
 LOCATION: Westtown Township  
 PREPARED BY: DWG DATE: 3/30/2021  
 CHECKED BY: DLH DATE: \_\_\_\_\_

WATER SURFACE ELEVATION (FEET)	AREA AREA (SQ.FT.)	AVERAGE AREA (SQ.FT.)	DIFFERENCE IN ELEVATION (FEET)	STORAGE VOLUME (CUBIC FEET)	
				INCREMENTAL	TOTAL
306.00	8,255				0
		10,349	2.00	20698	
308.00	12,443				20,698
		14,558	2.00	29116	
310.00	16,673				49,814
		18,892	2.00	37783	
312.00	21,110				87,597

<u>Proposed Infiltration Volume</u>	
Elevation	Storage Volume (CF)
308.00	20,698
<b><u>306.85</u></b>	<b><u>3,956</u></b>
310.00	49,814
<b>Volume = 3,956 CF</b>	



**INFILTRATION VOLUME CALCULATION  
Basin 3**

PROJECT NAME: Stokes Estate  
 LOCATION: Westtown Township  
 PREPARED BY: DWG DATE: 3/30/2021  
 CHECKED BY: DLH DATE: \_\_\_\_\_

WATER SURFACE ELEVATION (FEET)	AREA AREA (SQ.FT.)	AVERAGE AREA (SQ.FT.)	DIFFERENCE IN ELEVATION (FEET)	STORAGE VOLUME (CUBIC FEET)	
				INCREMENTAL	TOTAL
316.00	15,345				0
		17,505	2.00	35010	
318.00	19,665				35,010
		21,938	2.00	43876	
320.00	24,211				78,886
		25,391	1.00	25391	
321.00	26,570				104,277

<u>Proposed Infiltration Volume</u>	
Elevation	Storage Volume (CF)
318.00	35,010
<u>318.50</u>	<u>45,979</u>
320.00	78,886
<b>Volume = 45,979 CF</b>	

\*Only 35,889 CF drains to the basin in the 2 year storm, therefore only 35,889 CF is being taken credit for

**INFILTRATION VOLUME CALCULATION**  
**Basin 4**

PROJECT NAME: Stokes Estate  
 LOCATION: Westtown Township  
 PREPARED BY: DWG DATE: 3/17/2023  
 CHECKED BY: DLH DATE: \_\_\_\_\_

WATER SURFACE ELEVATION (FEET)	AREA AREA (SQ.FT.)	AVERAGE AREA (SQ.FT.)	DIFFERENCE IN ELEVATION (FEET)	STORAGE VOLUME (CUBIC FEET)	
				INCREMENTAL	TOTAL
342.00	Stone				0
			2.00	0	
344.00	4,413				1,063
		5,565	2.00	11130	
346.00	6,717				12,193
		7,982	2.00	15963	
348.00	9,246				28,156
		10,623	2.00	21246	
350.00	12,000				49,402

<u>Proposed Infiltration Volume</u>	
Elevation	Storage Volume (CF)
346.00	12,193
<u>346.25</u>	<u>14,188</u>
348.00	28,156
<b>Volume = 14,188 CF</b>	



**INFILTRATION VOLUME CALCULATION  
UG BED 1 w/ Basin**

PROJECT NAME: Stokes Estate  
 LOCATION: Westtown Township  
 PREPARED BY: DWG DATE: 3/17/2023  
 CHECKED BY: DLH DATE: \_\_\_\_\_

WATER SURFACE ELEVATION (FEET)	AREA AREA (SQ.FT.)	AVERAGE AREA (SQ.FT.)	DIFFERENCE IN ELEVATION (FEET)	STORAGE VOLUME (CUBIC FEET)	
				INCREMENTAL	TOTAL
336.00	Stone				0
			3.00	0	
339.00	Stone				6,750
			1.00	0	
340.00	3,380				11,253
		4,215	2.00	8430	
342.00	5,050				19,683
		5,998	2.00	11995	
344.00	6,945				31,678

<u>Proposed Infiltration Volume</u>	
Elevation	Storage Volume (CF)
340.00	11,253
<u>340.20</u>	<u>12,096</u>
342.00	19,683
<b>Volume = 12,096 CF</b>	



**APPENDIX B**  
**TOWNSHIP POST DEVELOPMENT**  
**FLOW REDUCTION SUMMARIES**



# Stormwater Summary

## Peak Flow Reduction Requirements

DATE: 9/30/2021  
BY: DWG

JOB NO.: 3868      PROJECT: Stokes Estate      TOWNSHIP: Westtown  
DESCRIPTION: Stormwater Summary DP001 Chester Creek

				% Reduction
1-year	Pre-Developed	1.30 cfs	<i>Hydrograph 1</i>	55%
1-year	Post-Developed	0.58 cfs	<i>Hydrograph 8</i>	
2-year	Pre-Developed	4.32 cfs	<i>Hydrograph 1</i>	73%
2-year	Post-Developed	1.15 cfs	<i>Hydrograph 8</i>	
5-year	Pre-Developed	12.58 cfs	<i>Hydrograph 1</i>	82%
5-year	Post-Developed	2.31 cfs	<i>Hydrograph 8</i>	
10-year	Pre-Developed	20.75 cfs	<i>Hydrograph 1</i>	84%
10-year	Post-Developed	3.34 cfs	<i>Hydrograph 8</i>	
25-year	Pre-Developed	33.98 cfs	<i>Hydrograph 1</i>	80%
25-year	Post-Developed	6.86 cfs	<i>Hydrograph 8</i>	
50-year	Pre-Developed	46.28 cfs	<i>Hydrograph 1</i>	53%
50-year	Post-Developed	21.53 cfs	<i>Hydrograph 8</i>	
100-year	Pre-Developed	60.31 cfs	<i>Hydrograph 1</i>	52%
100-year	Post-Developed	29.04 cfs	<i>Hydrograph 8</i>	

### CHESTER CREEK 0.50 RELEASE RATE AREA

Post Developed 2 Year Flow = <b>1.15 cfs</b> Pre Developed 1 Year Flow = <b>1.30 cfs</b>	SATISFIED
Post Developed 5 Year Flow = <b>2.31 cfs</b> 50% Pre Developed 5 Year Flow = <b>6.29 cfs</b>	SATISFIED
Post Developed 10 Year Flow = <b>3.34 cfs</b> 50% Pre Developed 10 Year Flow = <b>10.38 cfs</b>	SATISFIED
Post Developed 25 Year Flow = <b>6.86 cfs</b> 50% Pre Developed 25 Year Flow = <b>16.99 cfs</b>	SATISFIED
Post Developed 50 Year Flow = <b>21.53 cfs</b> 50% Pre Developed 50Year Flow = <b>23.14 cfs</b>	SATISFIED
Post Developed 100 Year Flow = <b>29.04 cfs</b> 50% Pre Developed 100 Year Flow = <b>30.16 cfs</b>	SATISFIED



# Stormwater Summary

## Peak Flow Reduction Requirements

DATE: 9/30/2021  
BY: DWG

JOB NO.: 3868      PROJECT: Stokes Estate      TOWNSHIP: Westtown  
DESCRIPTION: Stormwater Summary DP002 UNT Chester Creek

				% Reduction
1-year	Pre-Developed	2.47 cfs	<i>Hydrograph 2</i>	83%
1-year	Post-Developed	0.42 cfs	<i>Hydrograph 16</i>	
2-year	Pre-Developed	6.85 cfs	<i>Hydrograph 2</i>	86%
2-year	Post-Developed	0.96 cfs	<i>Hydrograph 16</i>	
5-year	Pre-Developed	18.02 cfs	<i>Hydrograph 2</i>	88%
5-year	Post-Developed	2.12 cfs	<i>Hydrograph 16</i>	
10-year	Pre-Developed	28.64 cfs	<i>Hydrograph 2</i>	89%
10-year	Post-Developed	3.17 cfs	<i>Hydrograph 16</i>	
25-year	Pre-Developed	45.70 cfs	<i>Hydrograph 2</i>	86%
25-year	Post-Developed	6.17 cfs	<i>Hydrograph 16</i>	
50-year	Pre-Developed	46.28 cfs	<i>Hydrograph 2</i>	54%
50-year	Post-Developed	21.32 cfs	<i>Hydrograph 16</i>	
100-year	Pre-Developed	79.34 cfs	<i>Hydrograph 2</i>	52%
100-year	Post-Developed	37.69 cfs	<i>Hydrograph 16</i>	

### CHESTER CREEK 0.50 RELEASE RATE AREA

<b>Post Developed 2 Year Flow = 0.96 cfs</b> <b>Pre Developed 1 Year Flow = 2.47 cfs</b>	SATISFIED
<b>Post Developed 5 Year Flow = 2.12 cfs</b> <b>50% Pre Developed 5 Year Flow = 9.01 cfs</b>	SATISFIED
<b>Post Developed 10 Year Flow = 3.17 cfs</b> <b>50% Pre Developed 10 Year Flow = 14.32 cfs</b>	SATISFIED
<b>Post Developed 25 Year Flow = 6.17 cfs</b> <b>50% Pre Developed 25 Year Flow = 22.85 cfs</b>	SATISFIED
<b>Post Developed 50 Year Flow = 21.32 cfs</b> <b>50% Pre Developed 50Year Flow = 23.14 cfs</b>	SATISFIED
<b>Post Developed 100 Year Flow = 37.69 cfs</b> <b>50% Pre Developed 100 Year Flow = 39.67 cfs</b>	SATISFIED



# Stormwater Summary

## Peak Flow Reduction Requirements

DATE: 3/13/2023  
 BY: DWG  
 REV: 0

JOB NO.: 3868  
 DESCRIPTION:

PROJECT: Stokes Estate  
Stormwater Summary DP003 UNT Chester Creek

TOWNSHIP: Westtown

1-year	Pre-Developed	4.79 cfs	Hydrograph 3
1-year	Post-Developed	0.97 cfs	Hydrograph 23
1-year	Peak Flow (Outside LOD) <sup>1</sup>	0.27 cfs	Hydrograph 4
2-year	Pre-Developed	8.02 cfs	Hydrograph 3
2-year	Post-Developed	1.59 cfs	Hydrograph 23
2-year	Peak Flow (Outside LOD) <sup>1</sup>	0.57 cfs	Hydrograph 4
5-year	Pre-Developed	14.55 cfs	Hydrograph 3
5-year	Post-Developed	2.82 cfs	Hydrograph 23
5-year	Peak Flow (Outside LOD) <sup>1</sup>	1.20 cfs	Hydrograph 4
10-year	Pre-Developed	20.20 cfs	Hydrograph 3
10-year	Post-Developed	3.88 cfs	Hydrograph 23
10-year	Peak Flow (Outside LOD) <sup>1</sup>	1.77 cfs	Hydrograph 4
25-year	Pre-Developed	28.88 cfs	Hydrograph 3
25-year	Post-Developed	10.00 cfs	Hydrograph 23
25-year	Peak Flow (Outside LOD) <sup>1</sup>	2.65 cfs	Hydrograph 4
50-year	Pre-Developed	36.78 cfs	Hydrograph 3
50-year	Post-Developed	16.17 cfs	Hydrograph 23
50-year	Peak Flow (Outside LOD) <sup>1</sup>	3.46 cfs	Hydrograph 4
100-year	Pre-Developed	45.54 cfs	Hydrograph 3
100-year	Post-Developed	25.00 cfs	Hydrograph 23
100-year	Peak Flow (Outside LOD) <sup>1</sup>	4.36 cfs	Hydrograph 4

<sup>1</sup>This area is outside the regulated activity (ORA) (or outside the limit of disturbance (LOD)), therefore is not subject to peak flow rate control requirements. As such, the flow from the area outside the LOD is added to the Pre Developed flow that is within the regulated activity to determine the allowable post developed flow.

### CHESTER CREEK 0.50 RELEASE RATE AREA

<b>Post Developed 2 Year Flow = 1.59 cfs</b> <b>Pre Developed 1 Year Flow + 2 Year Outside LOD = 5.36 cfs</b>	SATISFIED
<b>Post Developed 5 Year Flow = 2.82 cfs</b> <b>50% Pre Developed 5 Year Flow + 5 Year Outside LOD = 8.48 cfs</b>	SATISFIED
<b>Post Developed 10 Year Flow = 3.88 cfs</b> <b>50% Pre Developed 10 Year Flow + 10 Year Outside LOD = 11.87 cfs</b>	SATISFIED
<b>Post Developed 25 Year Flow = 10.00 cfs</b> <b>50% Pre Developed 25 Year Flow + 25 Year Outside LOD = 17.09 cfs</b>	SATISFIED
<b>Post Developed 50 Year Flow = 16.17 cfs</b> <b>50% Pre Developed 50 Year Flow + 50 Year Outside LOD = 21.85 cfs</b>	SATISFIED
<b>Post Developed 100 Year Flow = 25.00 cfs</b> <b>50% Pre Developed 100 Year Flow + 100 Year Outside LOD = 27.13 cfs</b>	SATISFIED



SOIL CONSERVATION SERVICE  
 HYDROLOGIC DATA FOR WATERSHED  
 RUNOFF COMPUTATIONS

DATE: 3/29/2021  
 BY: DWG

JOB NO.: 3868 PROJECT: Stokes Estate  
 DESCRIPTION: PREDEVELOPED AREA CHESTER CREEK DP001

TOWNSHIP: Westtown

Total Area: 15.43 acres

Symbol	Soil Name	Hydrological Soil Group	Land Use	Hydrologic Condition	Soil Runoff Curve Number	Area acres	Complex Number acres	Comment
GdB	Gladstone	B	Meadow	Good	58	15.43	894.94	
	Loam	B	Woods	Good	55	0.00	0.00	
Ba	Baile Silt	C	Meadow	Good	71	0.00	0.00	
	Loam	C	Woods	Good	70	0.00	0.00	

**Total Area** 15.43 894.94

Weighted Soil Complex Number  $\frac{894.9}{15.4} = \boxed{58.0}$

\*SEE HYDRAFLOW REPORT FOR TIME OF CONCENTRATION



SOIL CONSERVATION SERVICE  
 HYDROLOGIC DATA FOR WATERSHED  
 RUNOFF COMPUTATIONS

DATE: 3/29/2021  
 BY: DWG

JOB NO.: 3868 PROJECT: Stokes Estate  
 DESCRIPTION: PREDEVELOPED AREA UNT CHESTER CREEK DP002

TOWNSHIP: Westtown

Total Area: 19.21 acres

Symbol	Soil Name	Hydrological Soil Group	Land Use	Hydrologic Condition	Soil Runoff Curve Number	Area acres	Complex Number acres	Comment
GdB	Gladstone	B	Meadow	Good	58	17.11	992.38	
	Loam	B	Woods	Good	55	0.00	0.00	
Ba	Baile Silt	C	Meadow	Good	71	2.10	149.10	
	Loam	C	Woods	Good	70	0.00	0.00	

**Total Area** 19.21 1141.48

Weighted Soil Complex Number  $\frac{1141.5}{19.2} = 59.4$

\*SEE HYDRAFLOW REPORT FOR TIME OF CONCENTRATION



SOIL CONSERVATION SERVICE  
 HYDROLOGIC DATA FOR WATERSHED  
 RUNOFF COMPUTATIONS

DATE: 3/29/2021  
 BY: DWG

JOB NO.: 3868 PROJECT: Stokes Estate  
 DESCRIPTION: PREDEVELOPED AREA UNT CHESTER CREEK DP003

TOWNSHIP: Westtown

Total Area: 8.19 acres

Symbol	Soil Name	Hydrological Soil Group	Land Use	Hydrologic Condition	Soil Runoff Curve Number	Area acres	Complex Number acres	Comment
GdB	Gladstone	B	Meadow	Good	58	2.39	138.62	
	Loam	B	Woods	Good	55	0.00	0.00	
Ba	Baile Silt	C	Meadow	Good	71	4.85	344.35	
	Loam	C	Woods	Good	70	0.00	0.00	
Ca	Califon	D	Meadow	Good	80	0.95	76.00	

**Total Area** 8.19 558.97

Weighted Soil Complex Number  $\frac{559.0}{8.2} = 68.3$

\*SEE HYDRAFLOW REPORT FOR TIME OF CONCENTRATION



SOIL CONSERVATION SERVICE  
HYDROLOGIC DATA FOR WATERSHED  
RUNOFF COMPUTATIONS

DATE: 3/29/2021  
BY: DWG

JOB NO.: 3868      PROJECT: Stokes Estate  
DESCRIPTION: PREDEVELOPED AREA UNT CHESTER CREEK DP003

TOWNSHIP: Westtown

Total Area:            0.81 acres

Symbol	Soil Name	Hydrological Soil Group	Land Use	Hydrologic Condition	Soil Runoff Curve Number	Area acres	Complex Number acres	Comment
GdB	Gladstone	B	Meadow	Good	58	0.73	42.34	
	Loam	B	Woods	Good	55	0.00	0.00	
Ba	Baile Silt Loam	B	Impervious	N/A	98	0.08	7.84	Existing Drive
		C	Meadow	Good	71	0.00	0.00	
		C	Woods	Good	70	0.00	0.00	

**Total Area**            0.81            50.18

Weighted Soil Complex Number             $\frac{50.2}{0.8}$             =            62.0

*ASSUMES 5 MINUTE TIME OF CONCENTRATION*





SOIL CONSERVATION SERVICE  
 HYDROLOGIC DATA FOR WATERSHED  
 RUNOFF COMPUTATIONS

DATE: 3/29/2021  
 BY: DWG

JOB NO.: 3868 PROJECT: Stokes Estate  
 DESCRIPTION: POST DEVELOPED BASIN 3

TOWNSHIP: Westtown

Total Area: 12.15 acres

Symbol	Soil Name	Hydrological Soil Group	Land Use	Hydrologic Condition	Soil Runoff Curve Number	Area acres	Complex Number acres	Comment
GdB	Gladstone	B	Meadow	Good	58	2.47	143.26	
	Loam	B	Lawn	Good	61	6.25	381.38	
Ba	Baile Silt Loam	N/A	Impervious	N/A	98	3.43	335.94	
		C	Meadow	Good	71	0.00	0.00	
		C	Lawn	Good	74	0.00	0.00	

Total Area 12.15 860.57

Weighted Soil Complex Number  $\frac{860.6}{12.2} = 70.8$

ASSUMES 5 MINUTE TIME OF CONCENTRATION



SOIL CONSERVATION SERVICE  
HYDROLOGIC DATA FOR WATERSHED  
RUNOFF COMPUTATIONS

DATE: 3/29/2021  
BY: DWG

JOB NO.: 3868      PROJECT: Stokes Estate  
DESCRIPTION: POST DEVELOPED BYPASS DP002

TOWNSHIP: Westtown

Total Area: 1.49 acres

Symbol	Soil Name	Hydrological Soil Group	Land Use	Hydrologic Condition	Soil Runoff Curve Number	Area acres	Complex Number acres	Comment
GdB	Gladstone	B	Meadow	Good	58	0.00	0.00	
	Loam	B	Lawn	Good	61	1.40	85.40	
Ba	Baile Silt	N/A	Impervious	N/A	98	0.09	8.55	
		C	Meadow	Good	71	0.00	0.00	
	Loam	C	Lawn	Good	74	0.00	0.00	

**Total Area**      1.49      93.95

Weighted Soil Complex Number  $\frac{93.9}{1.5} = \boxed{63.2}$

*ASSUMES 5 MINUTE TIME OF CONCENTRATION*



SOIL CONSERVATION SERVICE  
 HYDROLOGIC DATA FOR WATERSHED  
 RUNOFF COMPUTATIONS

DATE: 3/29/2021  
 BY: DWG

JOB NO.: 3868 PROJECT: Stokes Estate  
 DESCRIPTION: POST DEVELOPED BASIN 1

TOWNSHIP: Westtown

Total Area: 10.95 acres

Symbol	Soil Name	Hydrological Soil Group	Land Use	Hydrologic Condition	Soil Runoff Curve Number	Area acres	Complex Number acres	Comment
GdB	Gladstone	B	Meadow	Good	58	0.00	0.00	
	Loam	B	Lawn	Good	61	7.57	461.77	
Ba	Baile Silt	N/A	Impervious	N/A	98	3.08	301.86	
		C	Meadow	Good	71	0.00	0.00	
	Loam	C	Lawn	Good	74	0.30	22.20	

Total Area 10.95 785.83

Weighted Soil Complex Number  $\frac{785.8}{11.0} = 71.8$

ASSUMES 5 MINUTE TIME OF CONCENTRATION



SOIL CONSERVATION SERVICE  
 HYDROLOGIC DATA FOR WATERSHED  
 RUNOFF COMPUTATIONS

DATE: 3/29/2021  
 BY: DWG

JOB NO.: 3868 PROJECT: Stokes Estate  
 DESCRIPTION: POST DEVELOPED BASIN 2

TOWNSHIP: Westtown

Total Area: 8.54 acres

Symbol	Soil Name	Hydrological Soil Group	Land Use	Hydrologic Condition	Soil Runoff Curve Number	Area acres	Complex Number acres	Comment
GdB	Gladstone	B	Meadow	Good	58	0.00	0.00	
	Loam	B	Lawn	Good	61	4.41	269.01	
Ba	Baile Silt	N/A	Impervious	N/A	98	3.23	316.23	
		C	Meadow	Good	71	0.00	0.00	
	Loam	C	Lawn	Good	74	0.90	66.60	

Total Area 8.54 651.84

Weighted Soil Complex Number  $\frac{651.8}{8.5} = 76.4$

ASSUMES 5 MINUTE TIME OF CONCENTRATION



SOIL CONSERVATION SERVICE  
 HYDROLOGIC DATA FOR WATERSHED  
 RUNOFF COMPUTATIONS

DATE: 3/29/2021  
 BY: DWG

JOB NO.: 3868 PROJECT: Stokes Estate  
 DESCRIPTION: POST DEVELOPED BYPASS DP002

TOWNSHIP: Westtown

Total Area: 1.54 acres

Symbol	Soil Name	Hydrological Soil Group	Land Use	Hydrologic Condition	Soil Runoff Curve Number	Area acres	Complex Number acres	Comment
GdB	Gladstone	B	Meadow	Good	58	0.00	0.00	
	Loam	B	Lawn	Good	61	1.54	93.94	
Ba	Baile Silt	N/A	Impervious	N/A	98	0.00	0.00	
		C	Meadow	Good	71	0.00	0.00	
	Loam	C	Lawn	Good	74	0.00	0.00	

**Total Area** 1.54 93.94

Weighted Soil Complex Number  $\frac{93.9}{1.5} = 61.0$

ASSUMES 5 MINUTE TIME OF CONCENTRATION



SOIL CONSERVATION SERVICE  
 HYDROLOGIC DATA FOR WATERSHED  
 RUNOFF COMPUTATIONS

DATE: 3/13/2023  
 BY: DWG

JOB NO.: 3868 PROJECT: Stokes Estate  
 DESCRIPTION: POST DEVELOPED BASIN 4

TOWNSHIP: Westtown

Total Area: 4.42 acres

Symbol	Soil Name	Hydrological Soil Group	Land Use	Hydrologic Condition	Soil Runoff Curve Number	Area acres	Complex Number acres	Comment
GdB	Gladstone	B	Meadow	Good	58	0.00	0.00	
	Loam	B	Lawn	Good	61	1.77	107.97	
Ba	Baile Silt	N/A	Impervious	N/A	98	1.30	127.47	
		C	Meadow	Good	71	0.00	0.00	
	Loam	C	Lawn	Good	74	1.35	99.90	

Total Area 4.42 335.34

Weighted Soil Complex Number  $\frac{335.3}{4.4} = 75.9$

ASSUMES 5 MINUTE TIME OF CONCENTRATION



SOIL CONSERVATION SERVICE  
HYDROLOGIC DATA FOR WATERSHED  
RUNOFF COMPUTATIONS

DATE: 3/13/2023  
BY: DWG

JOB NO.: 3868      PROJECT: Stokes Estate  
DESCRIPTION: POST DEVELOPED UG BED 1

TOWNSHIP: Westtown

Total Area:            2.82 acres

Symbol	Soil Name	Hydrological Soil Group	Land Use	Hydrologic Condition	Soil Runoff Curve Number	Area acres	Complex Number acres	Comment
GdB	Gladstone	B	Meadow	Good	58	0.00	0.00	
	Loam	B	Lawn	Good	61	0.72	43.92	
		N/A	Impervious	N/A	98	1.08	105.53	
Ba	Baile Silt	C	Meadow	Good	71	0.00	0.00	
	Loam	C	Lawn	Good	74	1.02	75.48	

**Total Area**            2.82            224.93

Weighted Soil                            224.9                            =            79.9  
Complex Number                            2.8

*ASSUMES 5 MINUTE TIME OF CONCENTRATION*



SOIL CONSERVATION SERVICE  
HYDROLOGIC DATA FOR WATERSHED  
RUNOFF COMPUTATIONS

DATE: 3/29/2021  
BY: DWG

JOB NO.: 3868      PROJECT: Stokes Estate  
DESCRIPTION: POST DEVELOPED BYPASS DP002

TOWNSHIP: Westtown

Total Area: 1.34 acres

Symbol	Soil Name	Hydrological Soil Group	Land Use	Hydrologic Condition	Soil Runoff Curve Number	Area acres	Complex Number acres	Comment
GdB	Gladstone	B	Meadow	Good	58	0.00	0.00	
	Loam	B	Lawn	Good	61	0.80	48.80	
Ba	Baile Silt	N/A	Impervious	N/A	98	0.09	8.55	
		C	Meadow	Good	71	0.00	0.00	
	Loam	C	Lawn	Good	74	0.45	33.30	

Total Area      1.34      90.65

Weighted Soil Complex Number       $\frac{90.6}{1.3}$       =      67.8

*ASSUMES 5 MINUTE TIME OF CONCENTRATION*



**APPENDIX D**  
**HYDRAFLOW HYDROGRAPH REPORTS**

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# Hydrograph Return Period Recap

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

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	-----	1.295	4.322	-----	12.58	20.75	33.98	46.28	60.31	Pre Developed DP001
2	SCS Runoff	-----	2.474	6.847	-----	18.02	28.64	45.70	61.46	79.34	Pre Developed DP002
3	SCS Runoff	-----	4.785	8.022	-----	14.55	20.20	28.88	36.78	45.54	Pre Developed DP003
4	SCS Runoff	-----	0.265	0.566	-----	1.200	1.766	2.654	3.460	4.363	Pre Developed DP003 ORA
5	SCS Runoff	-----	11.58	17.70	-----	29.68	39.83	55.13	68.94	84.16	Post Basin 3
6	Reservoir	5	0.000	0.000	-----	0.543	1.424	6.253	19.64	24.38	Basin 3 Routed
7	SCS Runoff	-----	0.583	1.146	-----	2.314	3.349	4.966	6.425	8.052	Post Bypass DP001
8	Combine	6, 7	0.583	1.146	-----	2.314	3.349	6.859	21.53	29.04	Post Total DP001
10	SCS Runoff	-----	11.30	16.97	-----	28.01	37.29	51.31	63.94	77.75	Post Basin 1
11	Reservoir	10	0.000	0.000	-----	0.510	1.244	3.633	10.69	30.18	Basin 1 Upper Routed
12	Reservoir	11	0.000	0.000	-----	0.375	0.928	2.071	5.226	13.13	Basin 1 Lower Routed
13	SCS Runoff	-----	12.13	17.09	-----	26.44	34.26	46.02	56.20	67.22	Post Basin 2
14	Reservoir	13	0.000	0.120	-----	0.682	1.706	5.509	18.98	33.12	Basin 2 Routed
15	SCS Runoff	-----	0.417	0.956	-----	2.121	3.170	4.826	6.335	8.028	Post Bypass DP002
16	Combine	12, 14, 15	0.417	0.956	-----	2.121	3.170	6.169	21.32	37.69	Post Total DP002
18	SCS Runoff	-----	6.085	8.620	-----	13.42	17.42	23.48	28.74	34.43	Post to Basin 4
19	Reservoir	18	0.000	0.111	-----	0.503	1.282	3.119	4.373	10.28	Basin 4 Routed
20	SCS Runoff	-----	4.701	6.430	-----	9.677	12.38	16.34	19.73	23.40	Post to Bed 1/Basin
21	Reservoir	20	0.000	0.073	-----	0.351	1.100	4.714	7.370	10.57	UG Bed 1/Basin Routed
22	SCS Runoff	-----	0.972	1.588	-----	2.821	3.883	5.505	6.944	8.571	Post Bypass DP003
23	Combine	19, 21, 22	0.972	1.588	-----	2.821	3.883	10.00	16.17	25.00	Post Total DP003

# Hydrograph Summary Report

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

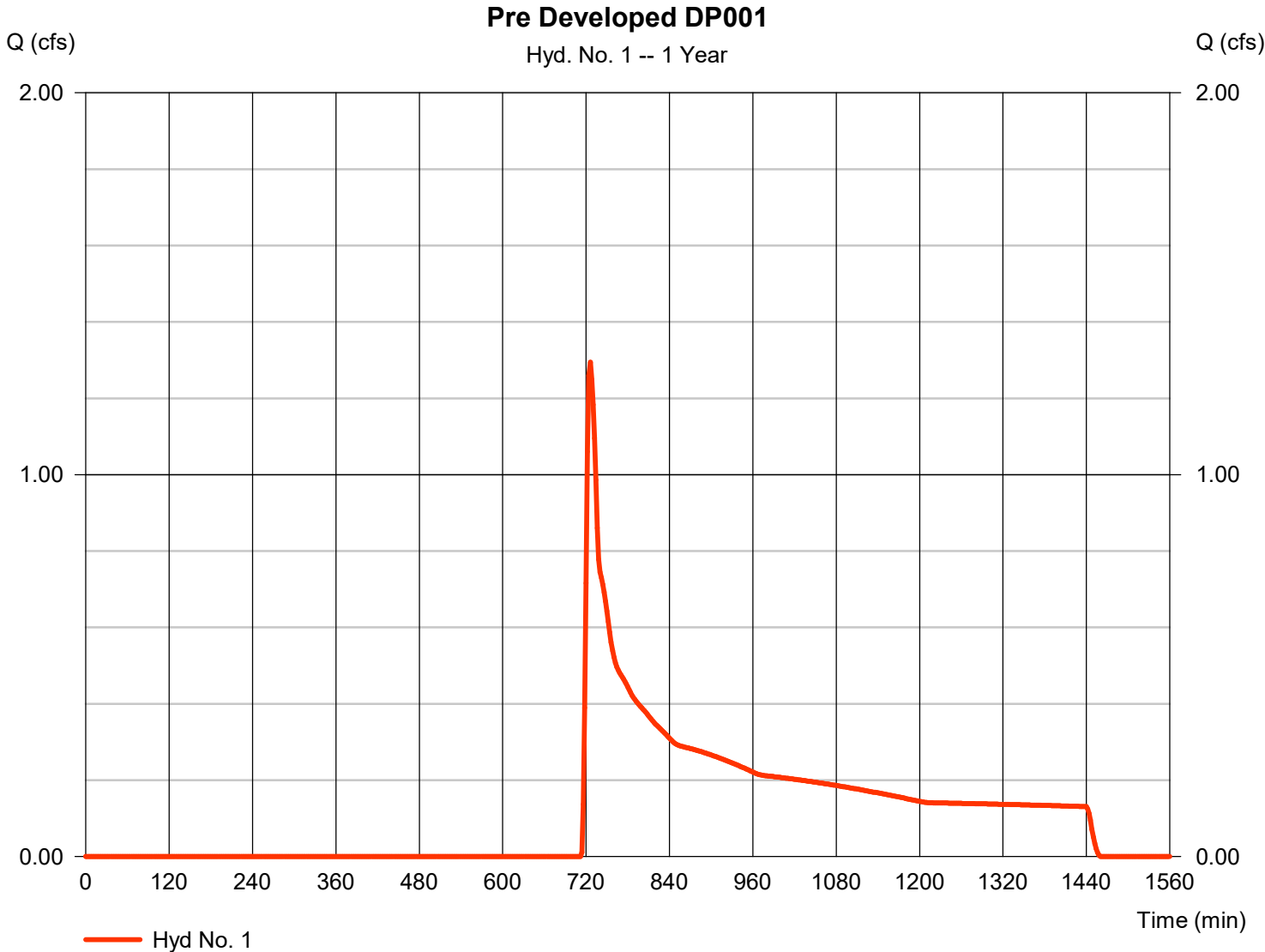
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description	
1	SCS Runoff	1.295	2	726	10,628	-----	-----	-----	Pre Developed DP001	
2	SCS Runoff	2.474	2	724	15,638	-----	-----	-----	Pre Developed DP002	
3	SCS Runoff	4.785	2	722	15,004	-----	-----	-----	Pre Developed DP003	
4	SCS Runoff	0.265	2	718	787	-----	-----	-----	Pre Developed DP003 ORA	
5	SCS Runoff	11.58	2	718	24,233	-----	-----	-----	Post Basin 3	
6	Reservoir	0.000	2	n/a	0	5	317.29	24,233	Basin 3 Routed	
7	SCS Runoff	0.583	2	718	1,570	-----	-----	-----	Post Bypass DP001	
8	Combine	0.583	2	718	1,570	6, 7	-----	-----	Post Total DP001	
10	SCS Runoff	11.30	2	718	23,379	-----	-----	-----	Post Basin 1	
11	Reservoir	0.000	2	n/a	0	10	321.56	23,379	Basin 1 Upper Routed	
12	Reservoir	0.000	2	n/a	0	11	302.20	0.000	Basin 1 Lower Routed	
13	SCS Runoff	12.13	2	718	24,366	-----	-----	-----	Post Basin 2	
14	Reservoir	0.000	2	n/a	0	13	308.25	24,366	Basin 2 Routed	
15	SCS Runoff	0.417	2	720	1,355	-----	-----	-----	Post Bypass DP002	
16	Combine	0.417	2	720	1,355	12, 14, 15	-----	-----	Post Total DP002	
18	SCS Runoff	6.085	2	718	12,240	-----	-----	-----	Post to Basin 4	
19	Reservoir	0.000	2	n/a	0	18	346.01	12,240	Basin 4 Routed	
20	SCS Runoff	4.701	2	718	9,401	-----	-----	-----	Post to Bed 1/Basin	
21	Reservoir	0.000	2	n/a	0	20	339.59	9,401	UG Bed 1/Basin Routed	
22	SCS Runoff	0.972	2	718	2,149	-----	-----	-----	Post Bypass DP003	
23	Combine	0.972	2	718	2,149	19, 21, 22	-----	-----	Post Total DP003	
SWM.gpw					Return Period: 1 Year			Wednesday, 03 / 22 / 2023		

# Hydrograph Report

## Hyd. No. 1

Pre Developed DP001

Hydrograph type	= SCS Runoff	Peak discharge	= 1.295 cfs
Storm frequency	= 1 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 10,628 cuft
Drainage area	= 15.430 ac	Curve number	= 58
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.00 min
Total precip.	= 2.70 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484





# TR55 Tc Worksheet

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

## Hyd. No. 1

Pre Developed DP001

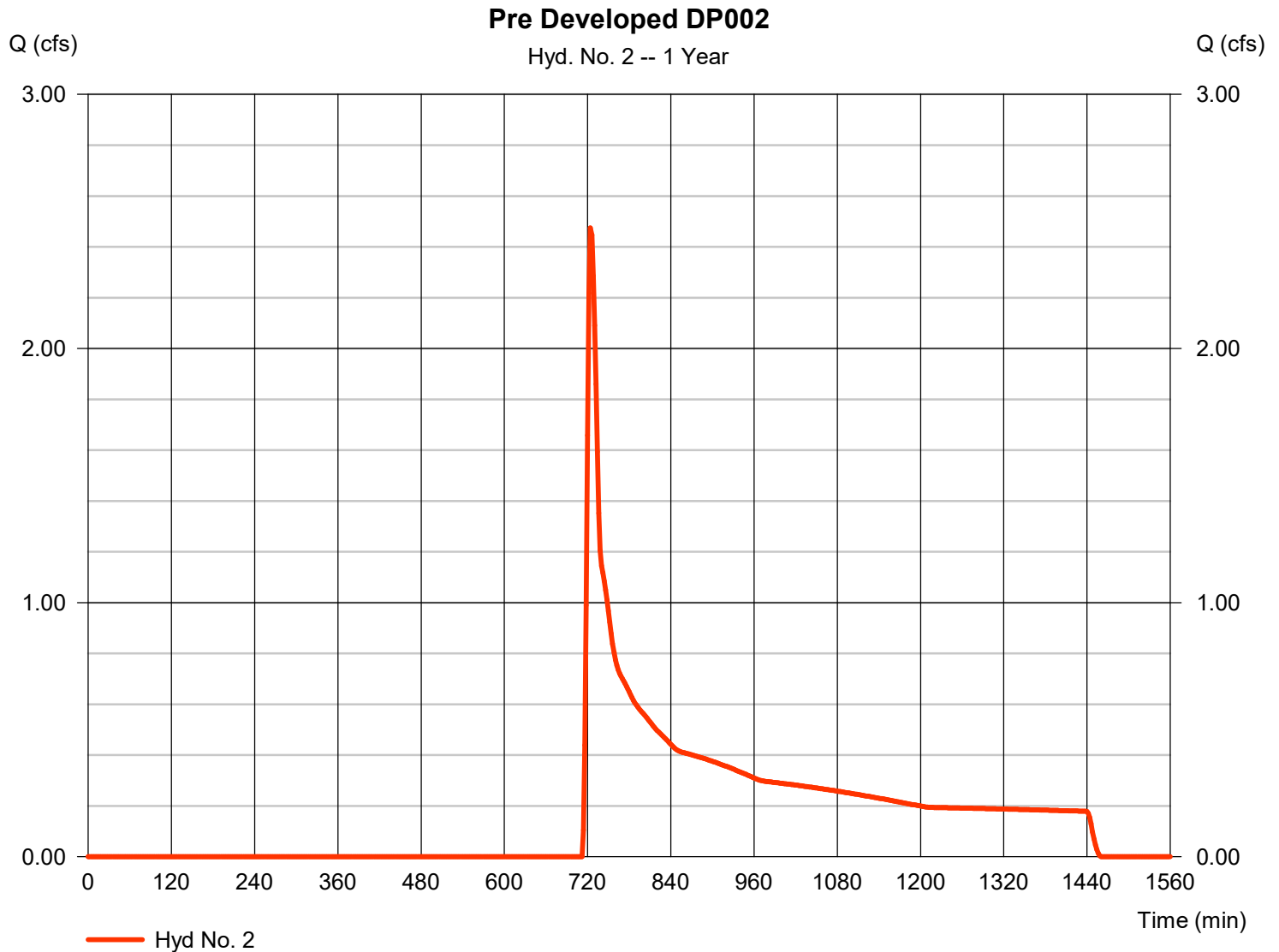
<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
<b>Sheet Flow</b>				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.20	0.00	0.00	
Land slope (%)	= 4.00	0.00	0.00	
<b>Travel Time (min)</b>	<b>= 10.81</b>	<b>+ 0.00</b>	<b>+ 0.00</b>	<b>= 10.81</b>
<b>Shallow Concentrated Flow</b>				
Flow length (ft)	= 330.00	0.00	0.00	
Watercourse slope (%)	= 9.00	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=4.84	0.00	0.00	
<b>Travel Time (min)</b>	<b>= 1.14</b>	<b>+ 0.00</b>	<b>+ 0.00</b>	<b>= 1.14</b>
<b>Channel Flow</b>				
X sectional flow area (sqft)	= 0.00	0.00	0.00	
Wetted perimeter (ft)	= 0.00	0.00	0.00	
Channel slope (%)	= 0.00	0.00	0.00	
Manning's n-value	= 0.015	0.015	0.015	
Velocity (ft/s)	=0.00	0.00	0.00	
Flow length (ft)	{{0}}0.0	0.0	0.0	
<b>Travel Time (min)</b>	<b>= 0.00</b>	<b>+ 0.00</b>	<b>+ 0.00</b>	<b>= 0.00</b>
<b>Total Travel Time, Tc .....</b>				<b>12.00 min</b>

# Hydrograph Report

## Hyd. No. 2

Pre Developed DP002

Hydrograph type	= SCS Runoff	Peak discharge	= 2.474 cfs
Storm frequency	= 1 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 15,638 cuft
Drainage area	= 19.210 ac	Curve number	= 59.4
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.00 min
Total precip.	= 2.70 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# TR55 Tc Worksheet

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

## Hyd. No. 2

Pre Developed DP002

<u>Description</u>	<u>A</u>		<u>B</u>		<u>C</u>		<u>Totals</u>
<b>Sheet Flow</b>							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.20		0.00		0.00		
Land slope (%)	= 7.00		0.00		0.00		
<b>Travel Time (min)</b>	<b>= 8.65</b>	<b>+</b>	<b>0.00</b>	<b>+</b>	<b>0.00</b>	<b>=</b>	<b>8.65</b>
<b>Shallow Concentrated Flow</b>							
Flow length (ft)	= 957.00		0.00		0.00		
Watercourse slope (%)	= 8.90		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=4.81		0.00		0.00		
<b>Travel Time (min)</b>	<b>= 3.31</b>	<b>+</b>	<b>0.00</b>	<b>+</b>	<b>0.00</b>	<b>=</b>	<b>3.31</b>
<b>Channel Flow</b>							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00		0.00		0.00		
Flow length (ft)	{{0}}0.0		0.0		0.0		
<b>Travel Time (min)</b>	<b>= 0.00</b>	<b>+</b>	<b>0.00</b>	<b>+</b>	<b>0.00</b>	<b>=</b>	<b>0.00</b>
<b>Total Travel Time, Tc .....</b>							<b>12.00 min</b>

# Hydrograph Report

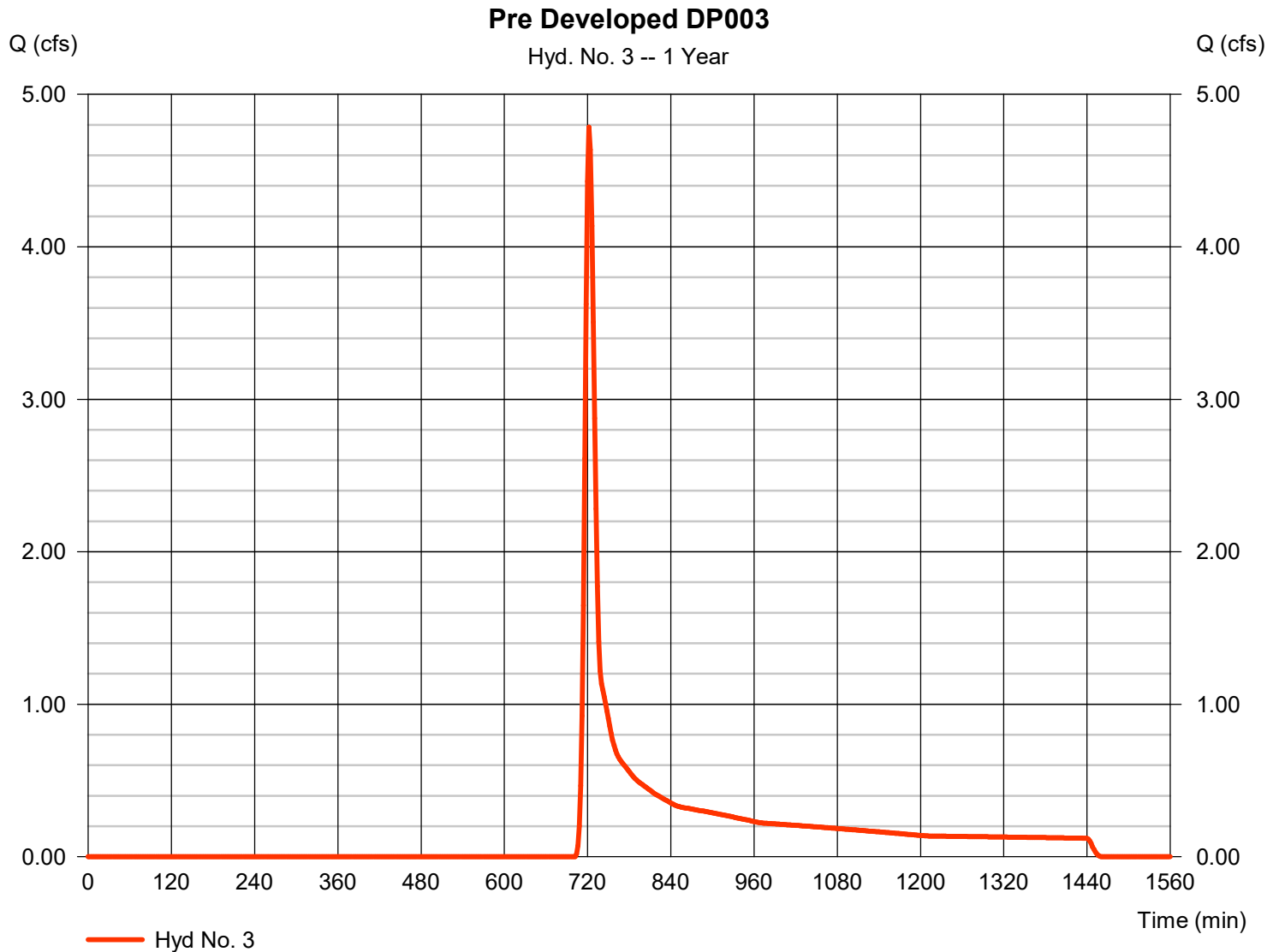
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 3

Pre Developed DP003

Hydrograph type	= SCS Runoff	Peak discharge	= 4.785 cfs
Storm frequency	= 1 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 15,004 cuft
Drainage area	= 8.190 ac	Curve number	= 68.3
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.00 min
Total precip.	= 2.70 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# TR55 Tc Worksheet

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

## Hyd. No. 3

Pre Developed DP003

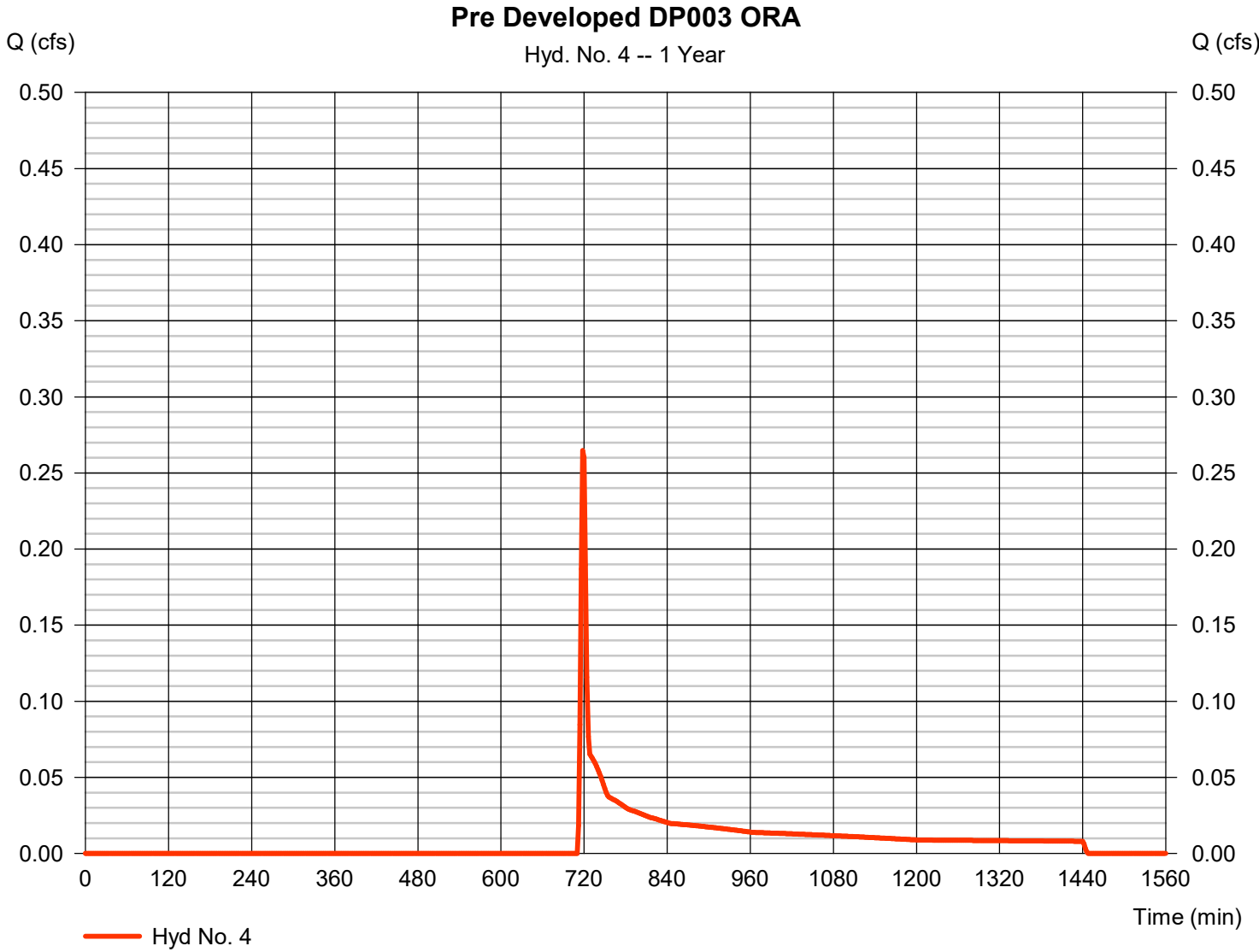
<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
<b>Sheet Flow</b>				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.20	0.00	0.00	
Land slope (%)	= 10.00	0.00	0.00	
<b>Travel Time (min)</b>	<b>= 7.50</b>	<b>+ 0.00</b>	<b>+ 0.00</b>	<b>= 7.50</b>
<b>Shallow Concentrated Flow</b>				
Flow length (ft)	= 566.00	0.00	0.00	
Watercourse slope (%)	= 8.80	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=4.79	0.00	0.00	
<b>Travel Time (min)</b>	<b>= 1.97</b>	<b>+ 0.00</b>	<b>+ 0.00</b>	<b>= 1.97</b>
<b>Channel Flow</b>				
X sectional flow area (sqft)	= 1.50	0.00	0.00	
Wetted perimeter (ft)	= 3.00	0.00	0.00	
Channel slope (%)	= 3.40	0.00	0.00	
Manning's n-value	= 0.035	0.015	0.015	
Velocity (ft/s)	=4.93	0.00	0.00	
Flow length (ft)	440.0	0.0	0.0	
<b>Travel Time (min)</b>	<b>= 1.49</b>	<b>+ 0.00</b>	<b>+ 0.00</b>	<b>= 1.49</b>
<b>Total Travel Time, Tc</b> .....				<b>11.00 min</b>

# Hydrograph Report

## Hyd. No. 4

Pre Developed DP003 ORA

Hydrograph type	= SCS Runoff	Peak discharge	= 0.265 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 787 cuft
Drainage area	= 0.810 ac	Curve number	= 62
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.70 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

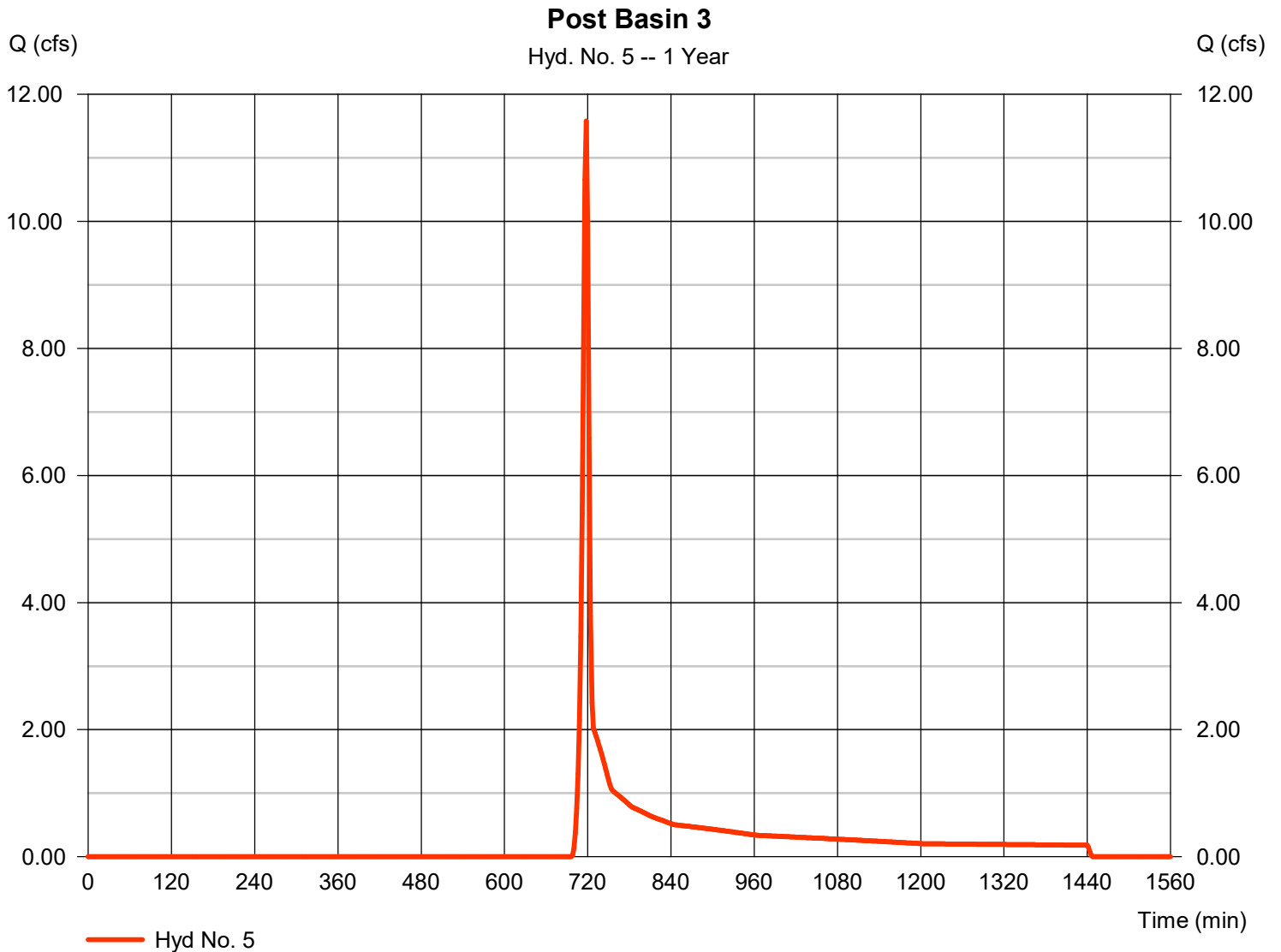
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Wednesday, 03 / 22 / 2023

## Hyd. No. 5

Post Basin 3

Hydrograph type	= SCS Runoff	Peak discharge	= 11.58 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 24,233 cuft
Drainage area	= 12.150 ac	Curve number	= 70.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.70 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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

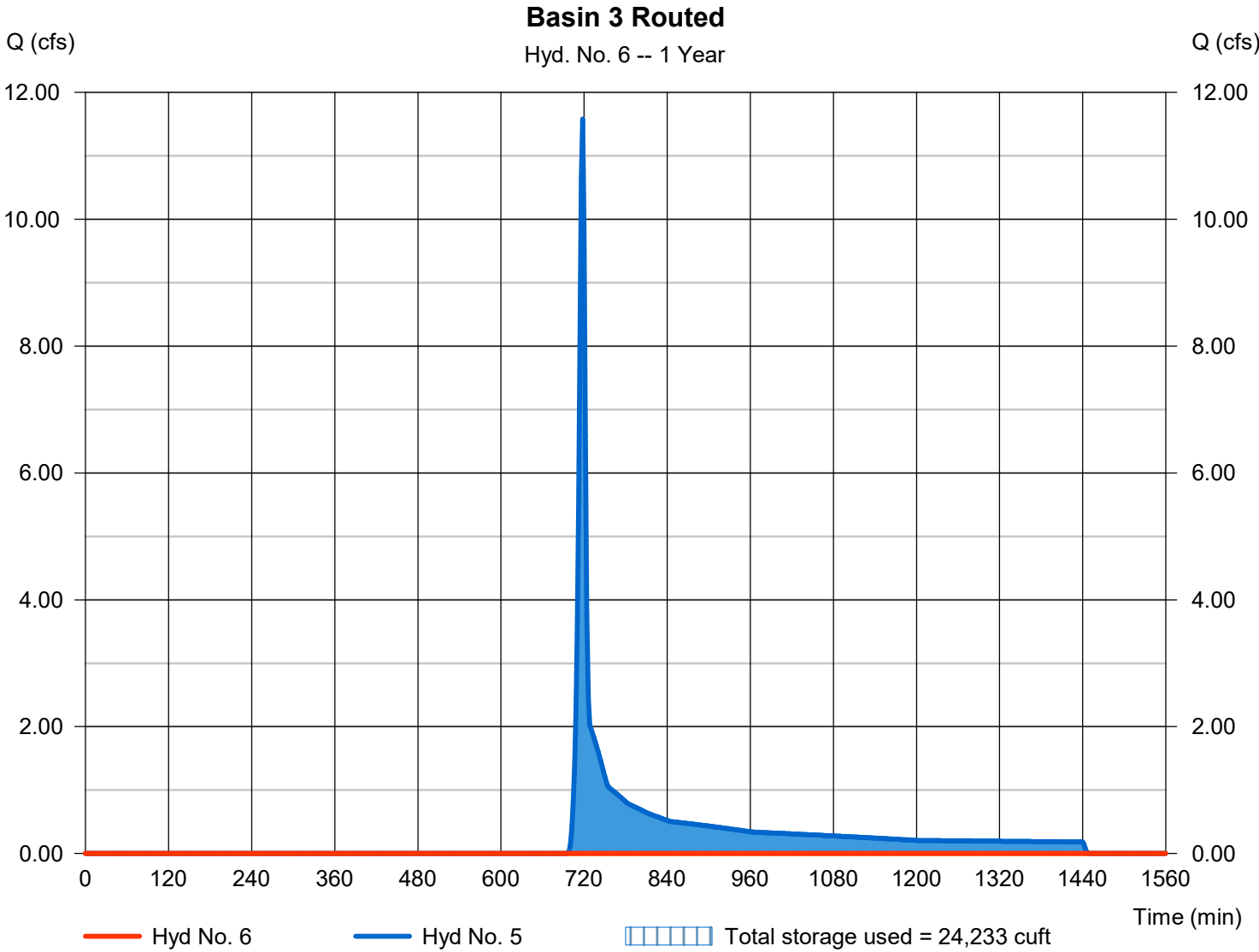
Wednesday, 03 / 22 / 2023

## Hyd. No. 6

Basin 3 Routed

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 5 - Post Basin 3	Max. Elevation	= 317.29 ft
Reservoir name	= Basin 3	Max. Storage	= 24,233 cuft

Storage Indication method used.





# Pond Report

## Pond No. 5 - Basin 3

### Pond Data

Capacity = 105,955 cuft, Inlet elevation = 321.00 ft, Outlet elevation = 314.00 ft, Depth = 7.00 ft, Beginning Elevation = 314.00 ft

### Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	314.00	2,000	0	0
0.20	314.20	2,000	159	159
0.40	314.40	2,000	159	318
0.60	314.60	2,000	159	478
0.80	314.80	2,000	159	637
1.00	314.99	2,000	159	796
1.19	315.19	2,000	159	955
1.39	315.39	2,000	159	1,114
1.59	315.59	2,000	159	1,274
1.79	315.79	2,000	159	1,433
1.99	315.99	2,000	159	1,592
2.00	316.00	15,345	87	1,679
4.00	318.00	19,665	35,010	36,689
6.00	320.00	24,211	43,876	80,565
7.00	321.00	26,570	25,390	105,955

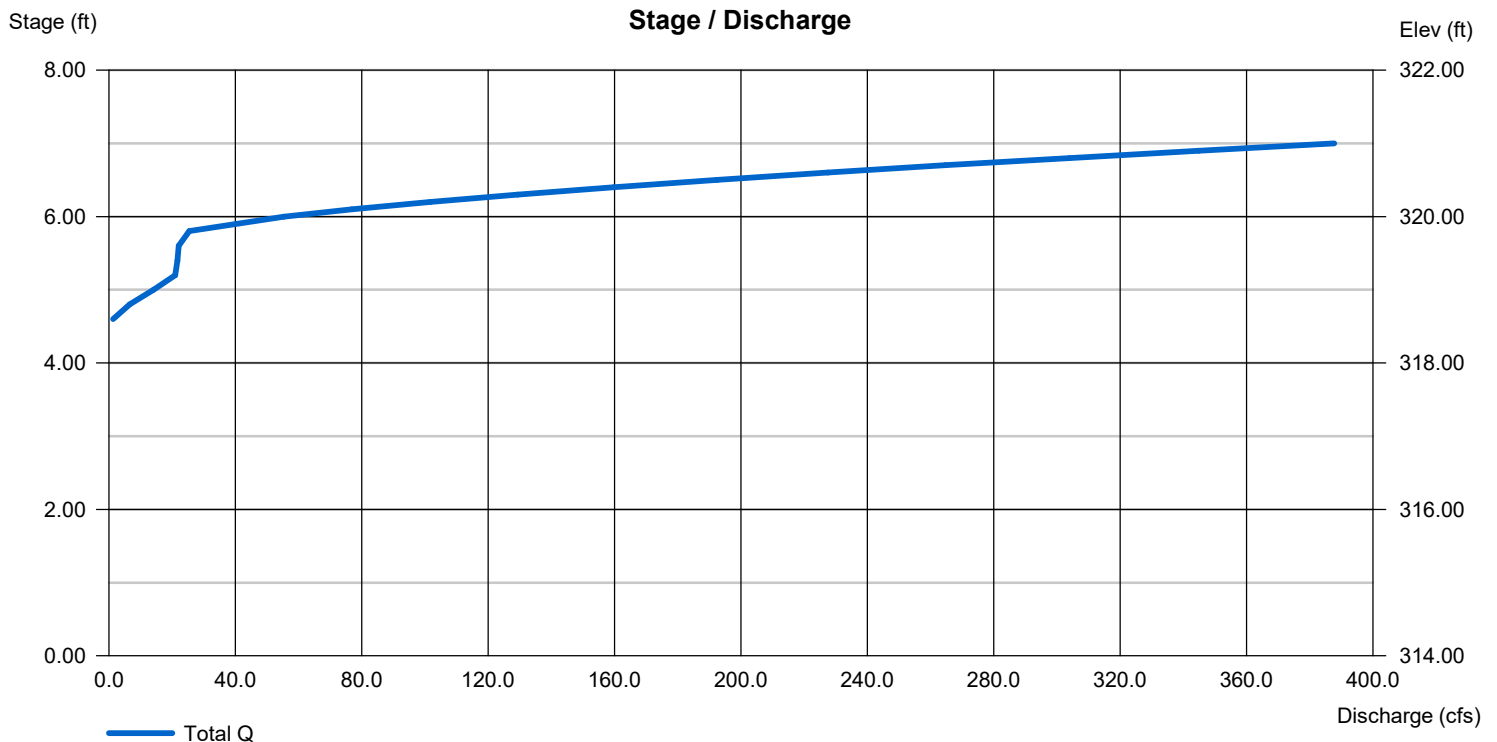
### Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	Inactive	0.00	0.00
Span (in)	= 18.00	5.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 312.00	318.00	0.00	0.00
Length (ft)	= 50.00	0.00	0.00	0.00
Slope (%)	= 5.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

### Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.00	Inactive	100.00	0.00
Crest El. (ft)	= 318.50	318.00	319.75	0.00
Weir Coeff.	= 3.33	3.33	2.60	3.33
Weir Type	= 1	Rect	Broad	---
Multi-Stage	= Yes	Yes	No	No
Exfil.(in/hr)	= 0.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



# Hydrograph Report

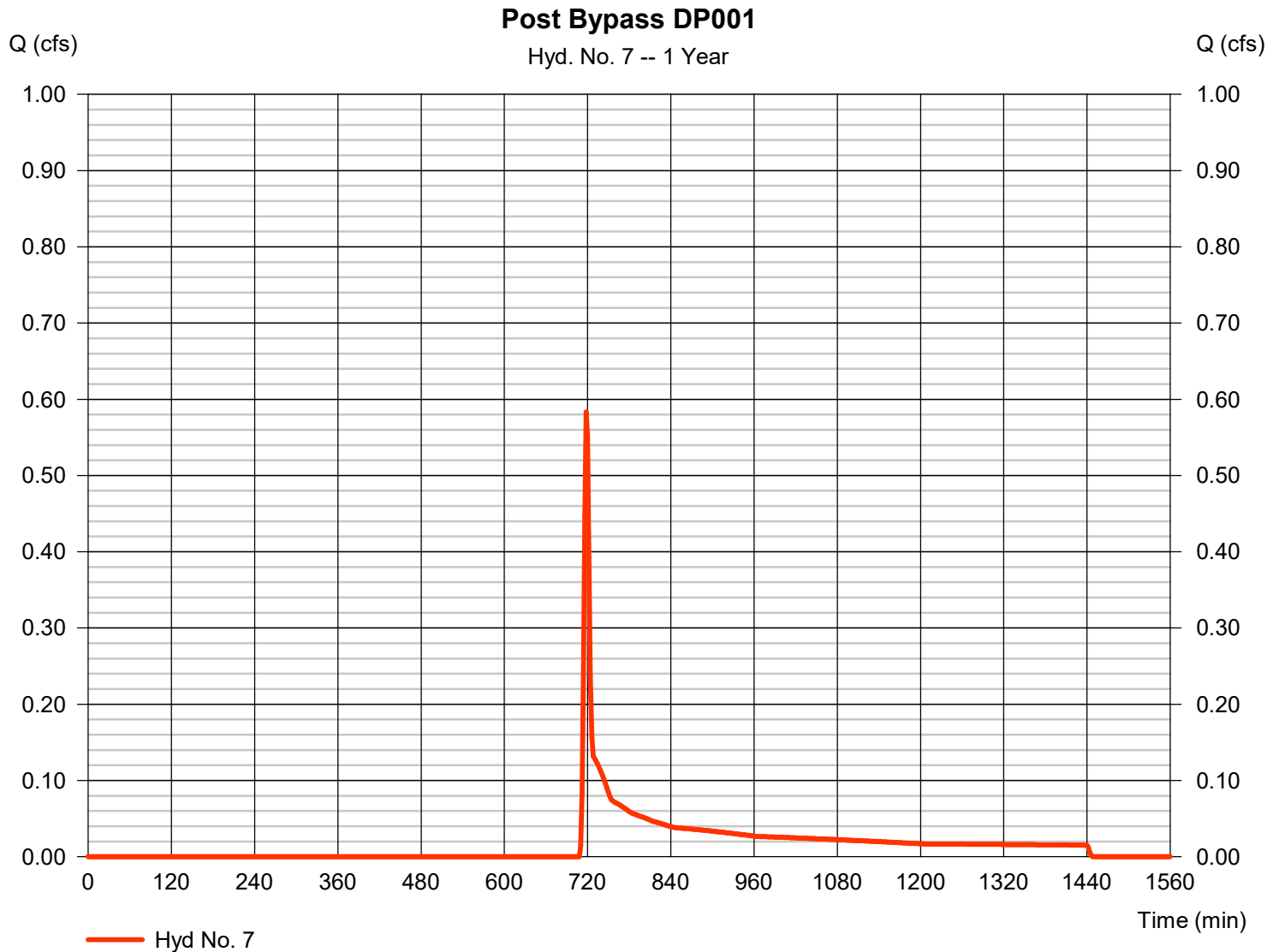
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 7

Post Bypass DP001

Hydrograph type	= SCS Runoff	Peak discharge	= 0.583 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 1,570 cuft
Drainage area	= 1.440 ac	Curve number	= 63.2
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.70 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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

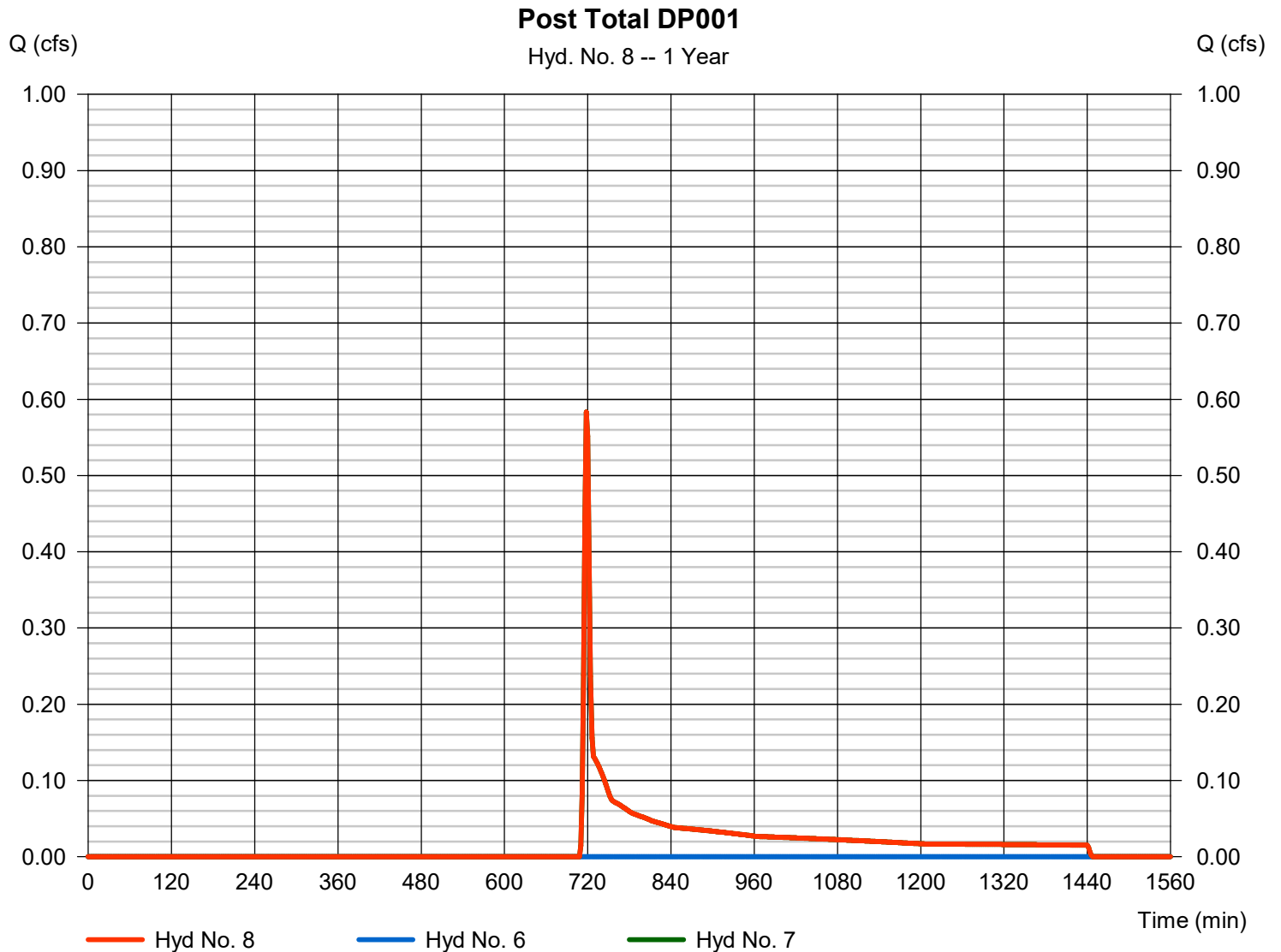
Wednesday, 03 / 22 / 2023

## Hyd. No. 8

Post Total DP001

Hydrograph type = Combine  
Storm frequency = 1 yrs  
Time interval = 2 min  
Inflow hyds. = 6, 7

Peak discharge = 0.583 cfs  
Time to peak = 718 min  
Hyd. volume = 1,570 cuft  
Contrib. drain. area = 1.440 ac



# Hydrograph Report

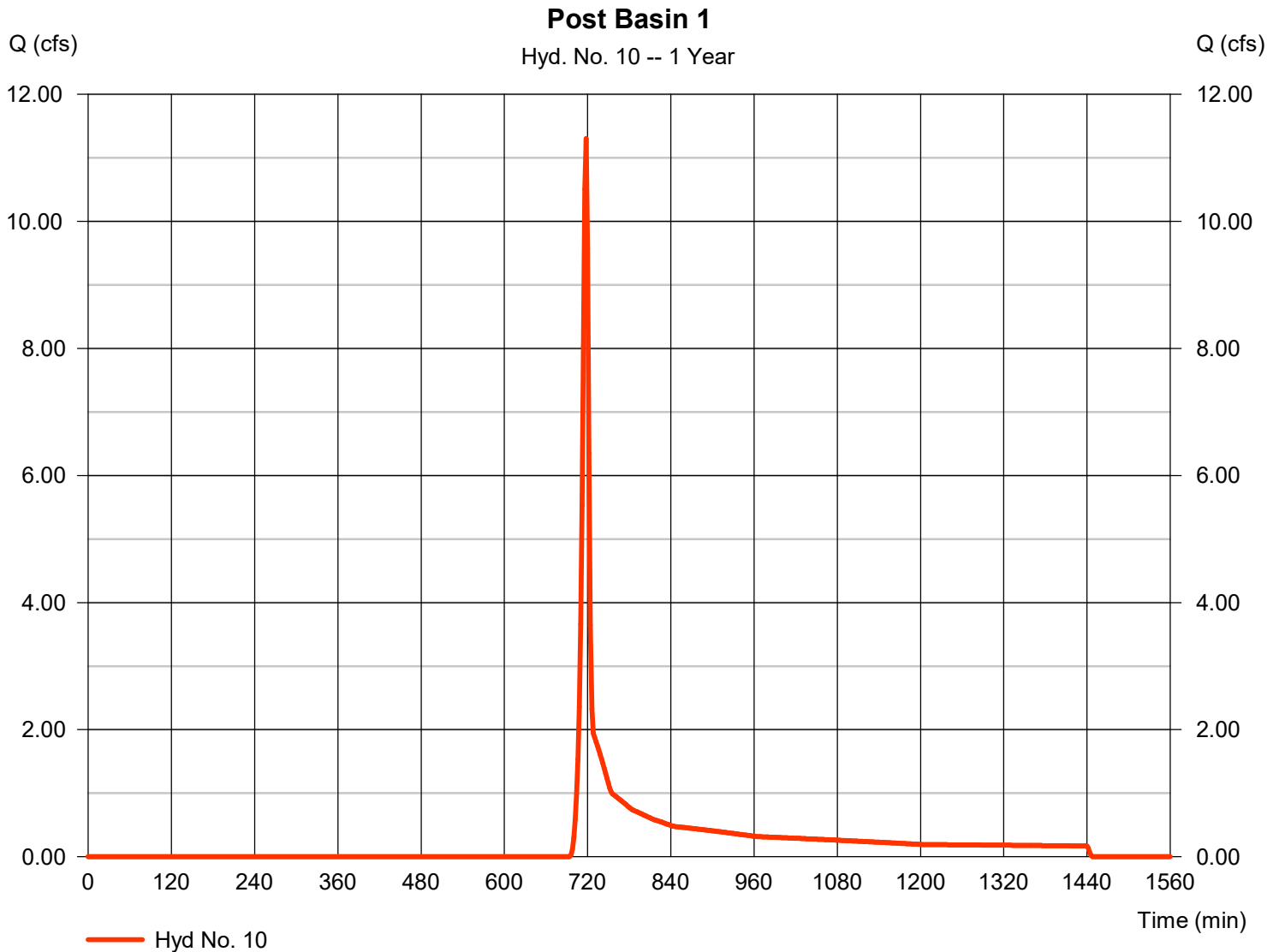
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

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## Hyd. No. 10

Post Basin 1

Hydrograph type	= SCS Runoff	Peak discharge	= 11.30 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 23,379 cuft
Drainage area	= 10.950 ac	Curve number	= 71.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.70 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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

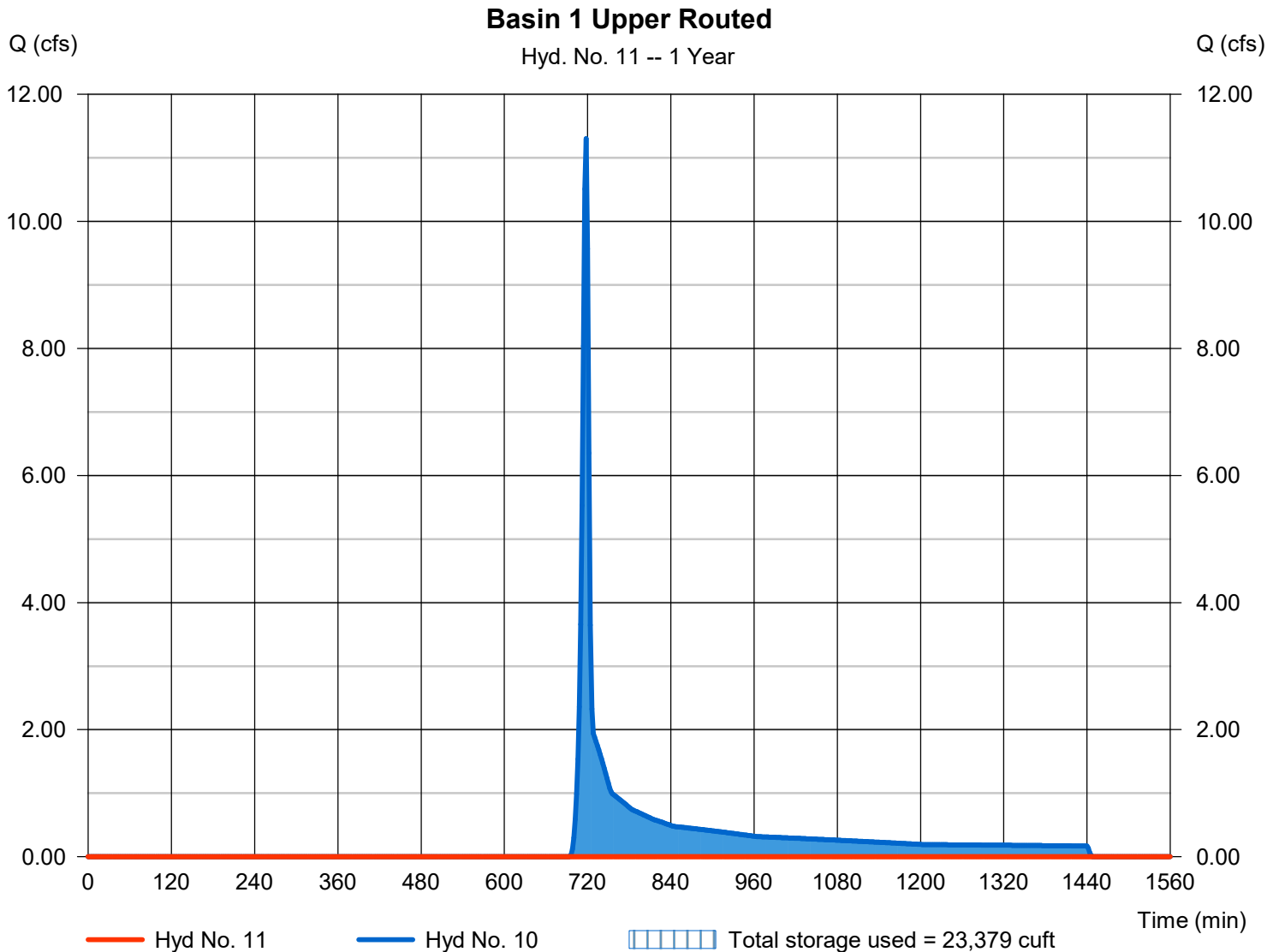
Wednesday, 03 / 22 / 2023

## Hyd. No. 11

Basin 1 Upper Routed

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 10 - Post Basin 1	Max. Elevation	= 321.56 ft
Reservoir name	= Basin 1 Upper	Max. Storage	= 23,379 cuft

Storage Indication method used.



## Pond No. 2 - Basin 1 Upper

### Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Beginning Elevation = 320.00 ft

### Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	320.00	13,236	0	0
2.00	322.00	16,755	29,991	29,991
4.00	324.00	20,617	37,372	67,363
6.00	326.00	24,500	45,117	112,480

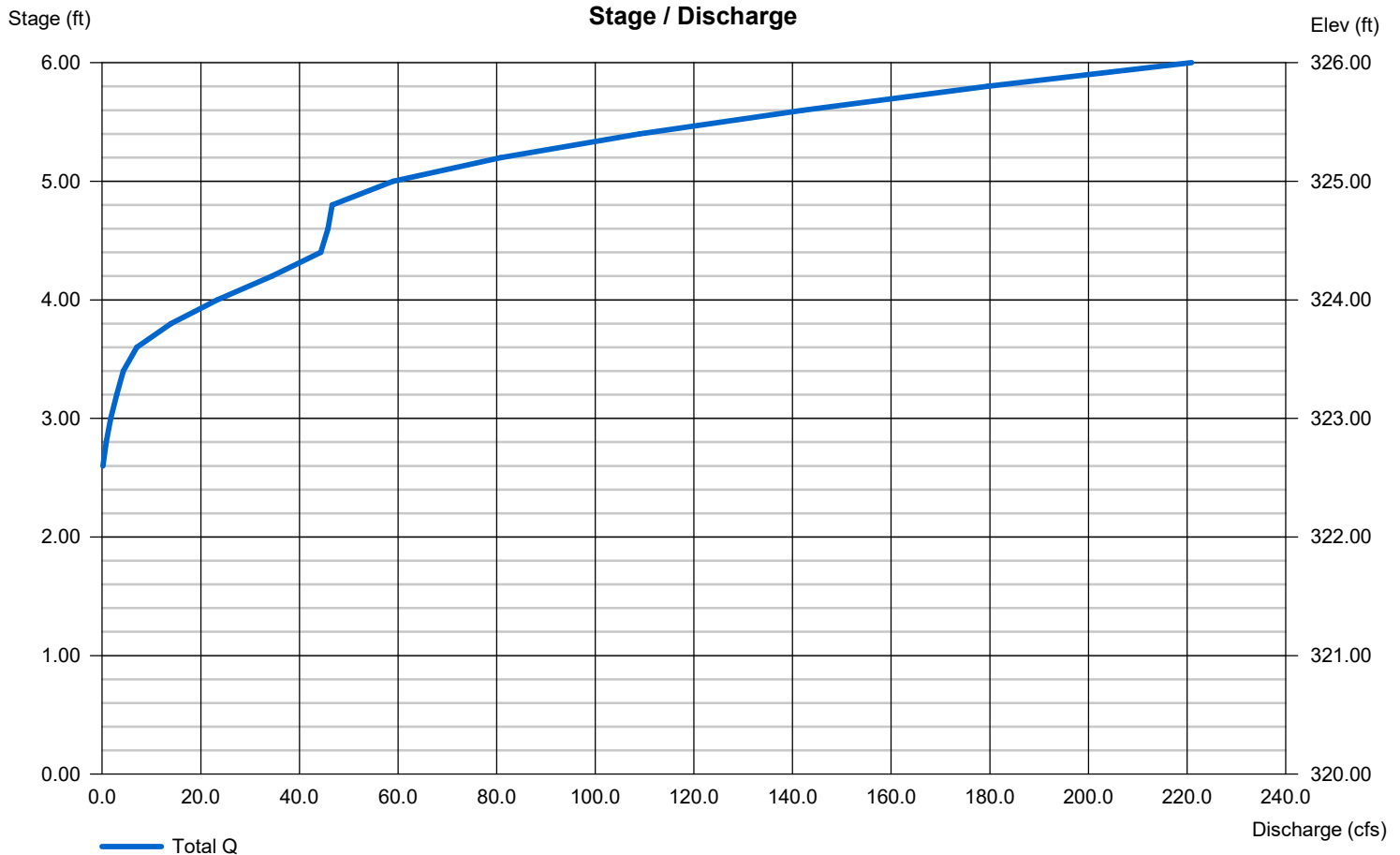
### Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 24.00	0.00	0.00	0.00
Span (in)	= 24.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 314.00	0.00	0.00	0.00
Length (ft)	= 50.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

### Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.00	1.50	50.00	0.00
Crest El. (ft)	= 323.50	322.50	324.80	0.00
Weir Coeff.	= 3.33	3.33	2.60	3.33
Weir Type	= 1	Rect	Broad	---
Multi-Stage	= Yes	Yes	No	No
Exfil.(in/hr)	= 0.000 (by Contour)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



# Hydrograph Report

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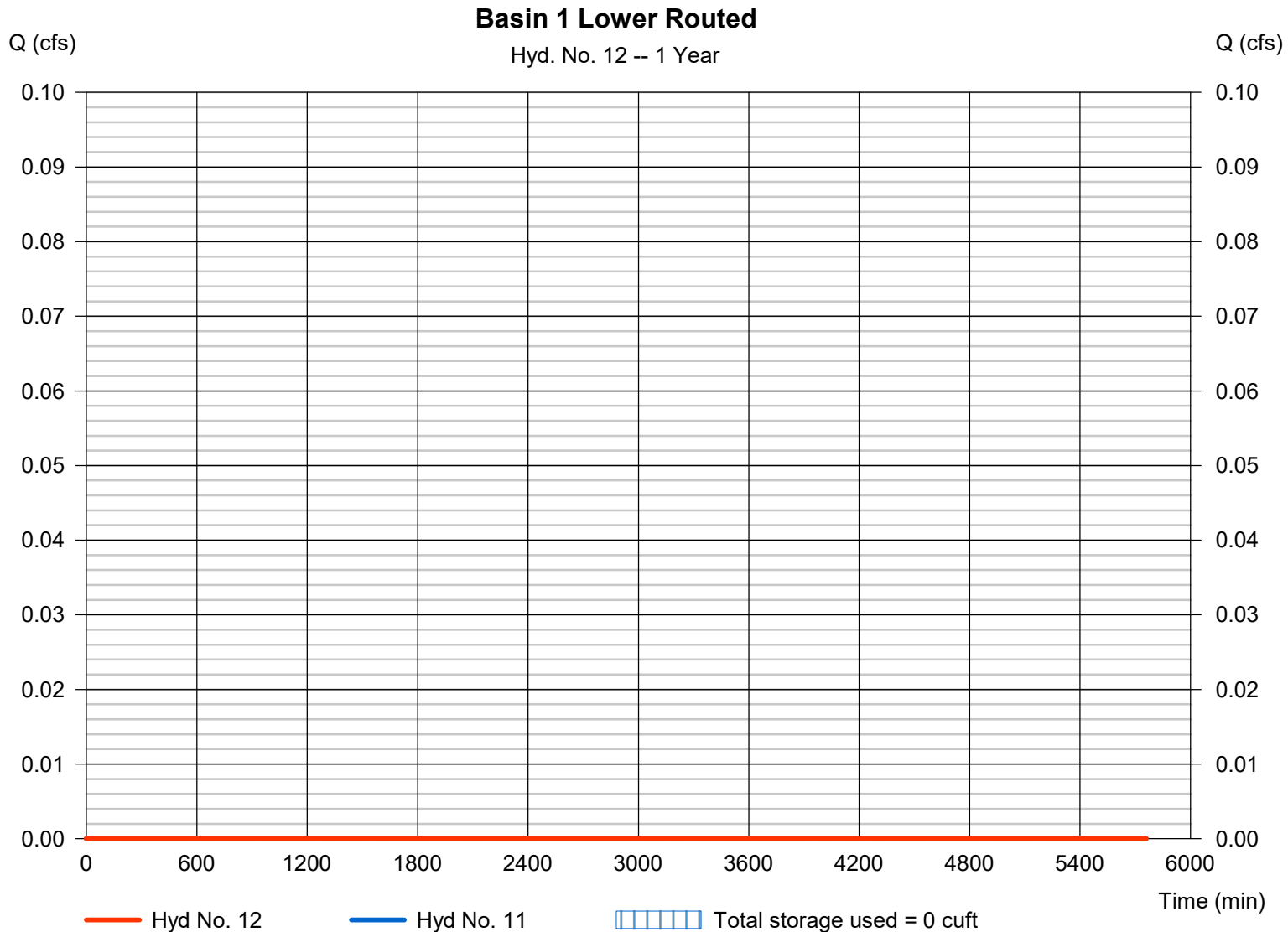
Wednesday, 03 / 22 / 2023

## Hyd. No. 12

### Basin 1 Lower Routed

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 11 - Basin 1 Upper Routed	Max. Elevation	= 302.20 ft
Reservoir name	= Basin 1 Lower	Max. Storage	= 0 cuft

Storage Indication method used.



## Pond No. 1 - Basin 1 Lower

### Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Beginning Elevation = 302.00 ft

### Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	302.00	2,215	0	0
2.00	304.00	3,972	6,187	6,187
4.00	306.00	10,535	14,507	20,694
6.00	308.00	14,870	25,405	46,099

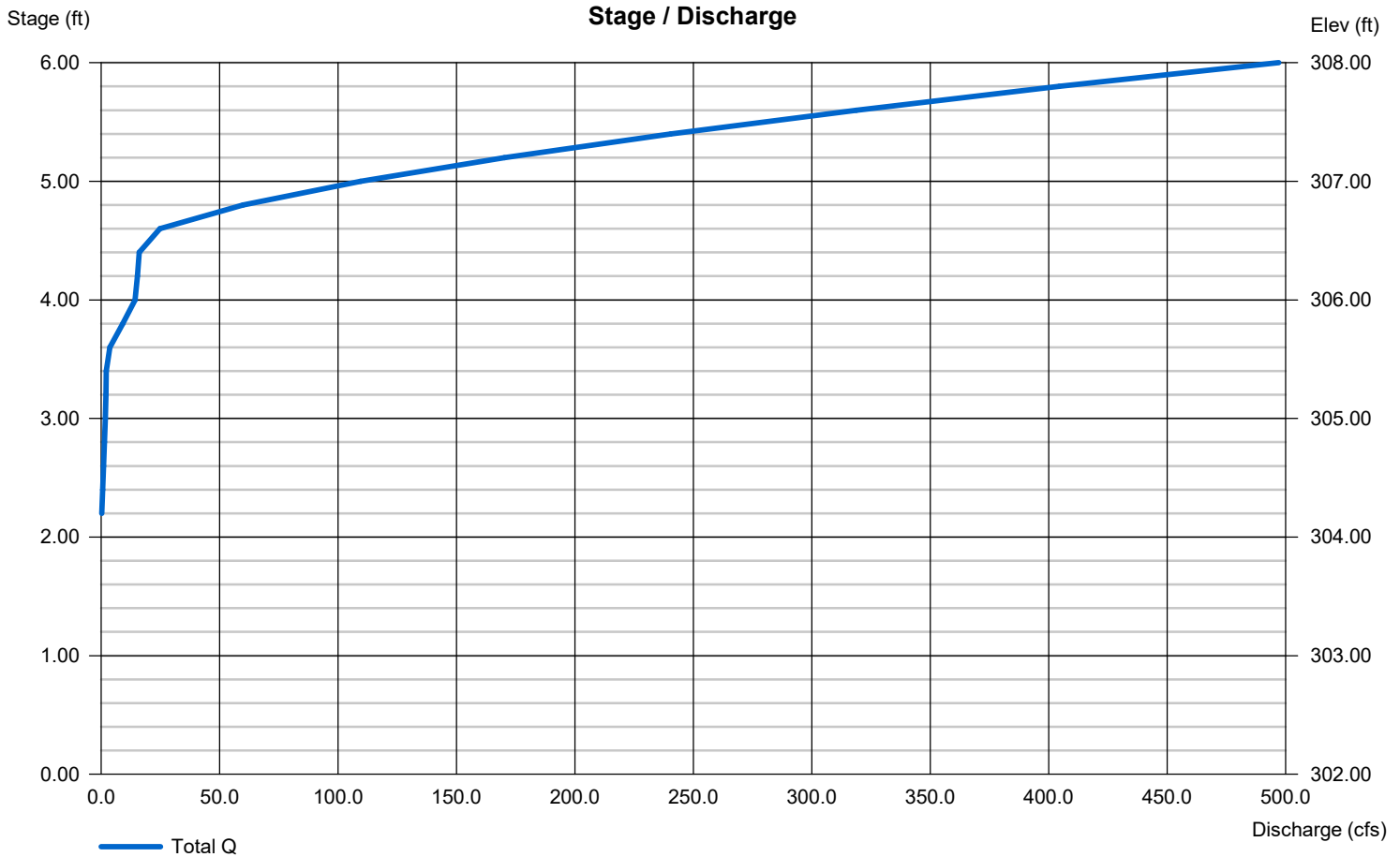
### Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	9.00	0.00	0.00
Span (in)	= 18.00	9.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 302.00	304.00	0.00	0.00
Length (ft)	= 50.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

### Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.00	100.00	0.00	0.00
Crest El. (ft)	= 305.50	306.50	0.00	0.00
Weir Coeff.	= 3.33	2.60	3.33	3.33
Weir Type	= 1	Broad	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 0.000 (by Contour)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).





# Hydrograph Report

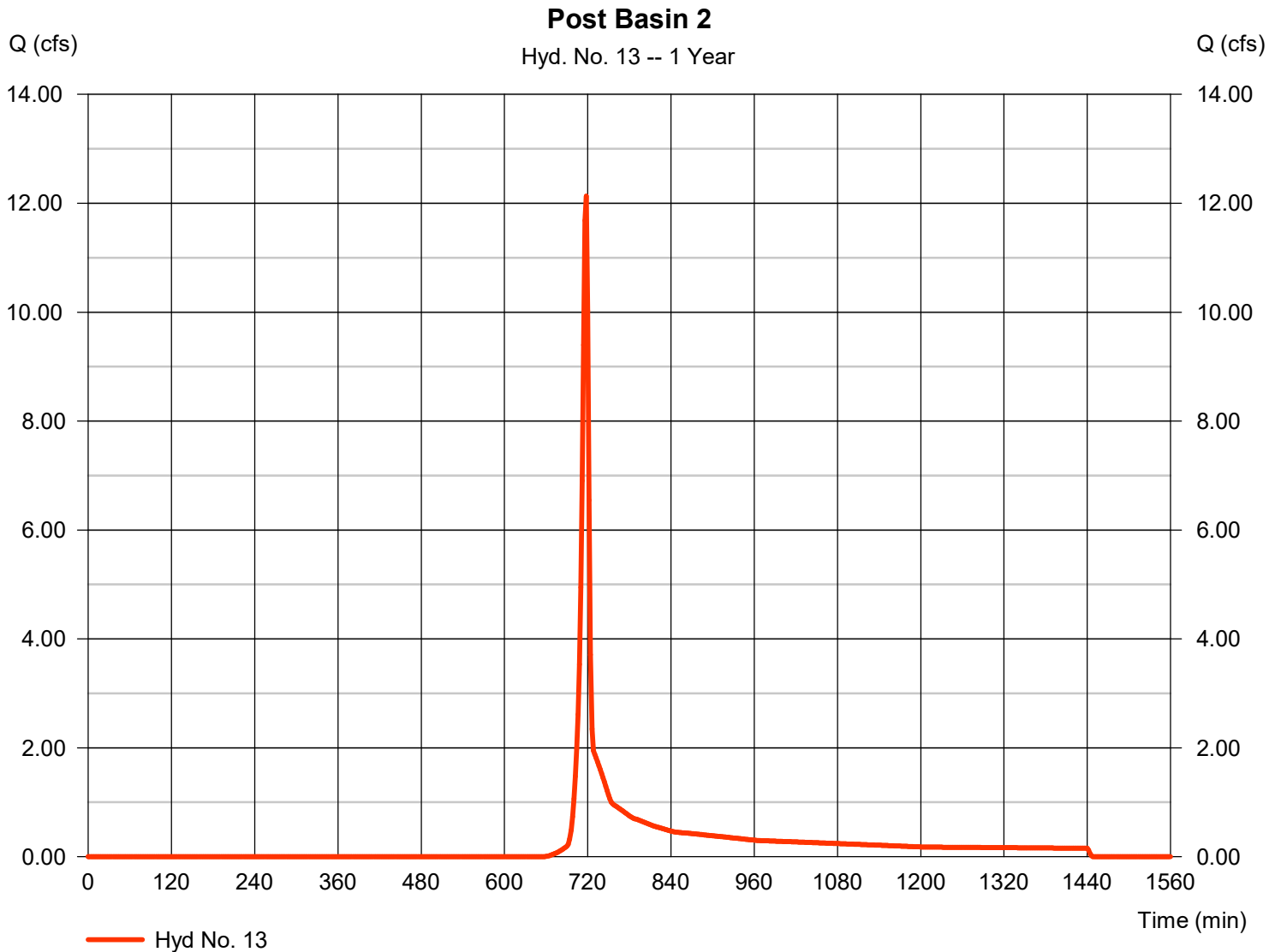
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 13

### Post Basin 2

Hydrograph type	= SCS Runoff	Peak discharge	= 12.13 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 24,366 cuft
Drainage area	= 8.540 ac	Curve number	= 76.4
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.70 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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

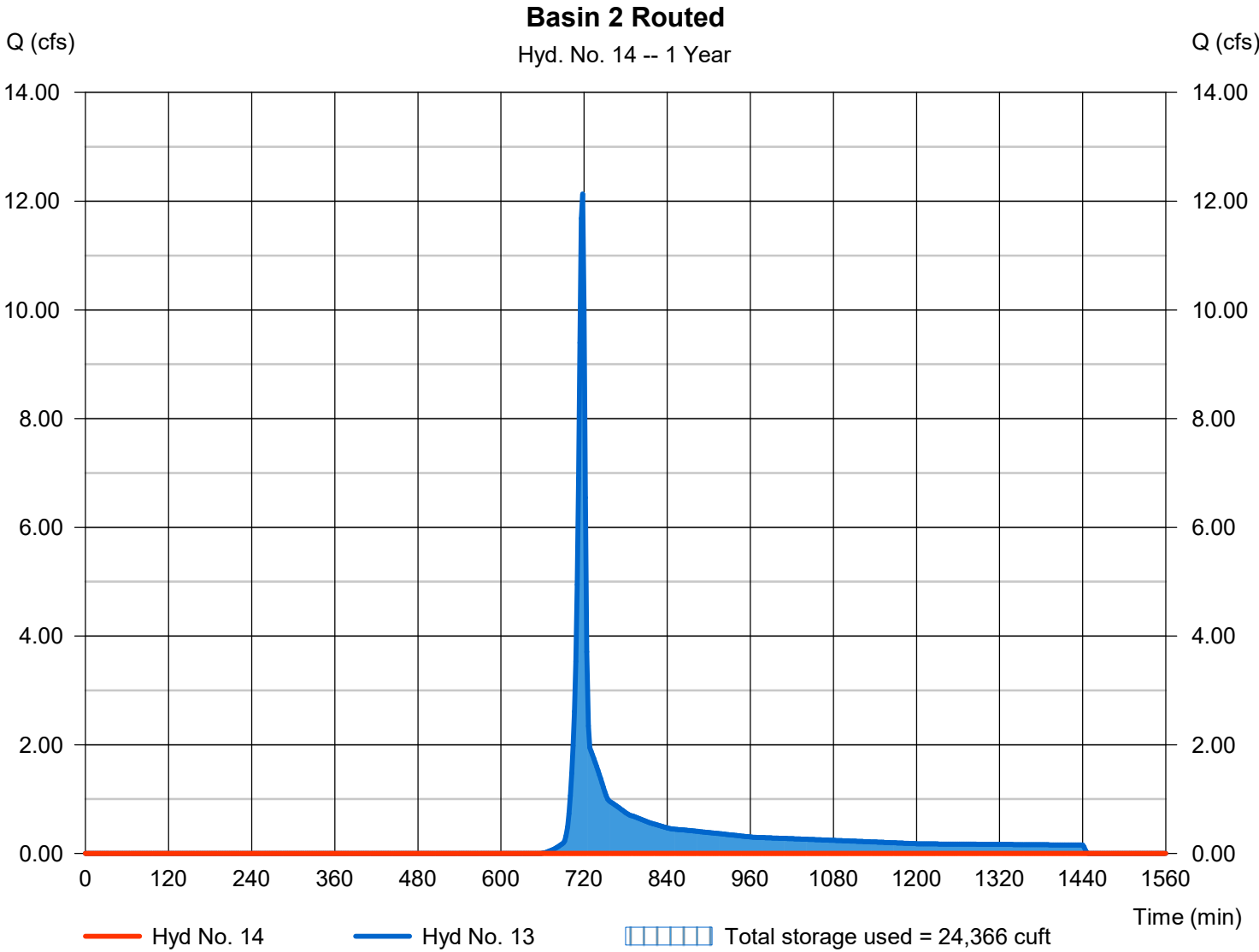
Wednesday, 03 / 22 / 2023

## Hyd. No. 14

Basin 2 Routed

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 13 - Post Basin 2	Max. Elevation	= 308.25 ft
Reservoir name	= Basin 2	Max. Storage	= 24,366 cuft

Storage Indication method used.



## Pond No. 3 - Basin 2

### Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Beginning Elevation = 306.00 ft

### Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	306.00	8,255	0	0
2.00	308.00	12,443	20,698	20,698
4.00	310.00	16,673	29,116	49,814
6.00	312.00	21,110	37,783	87,597

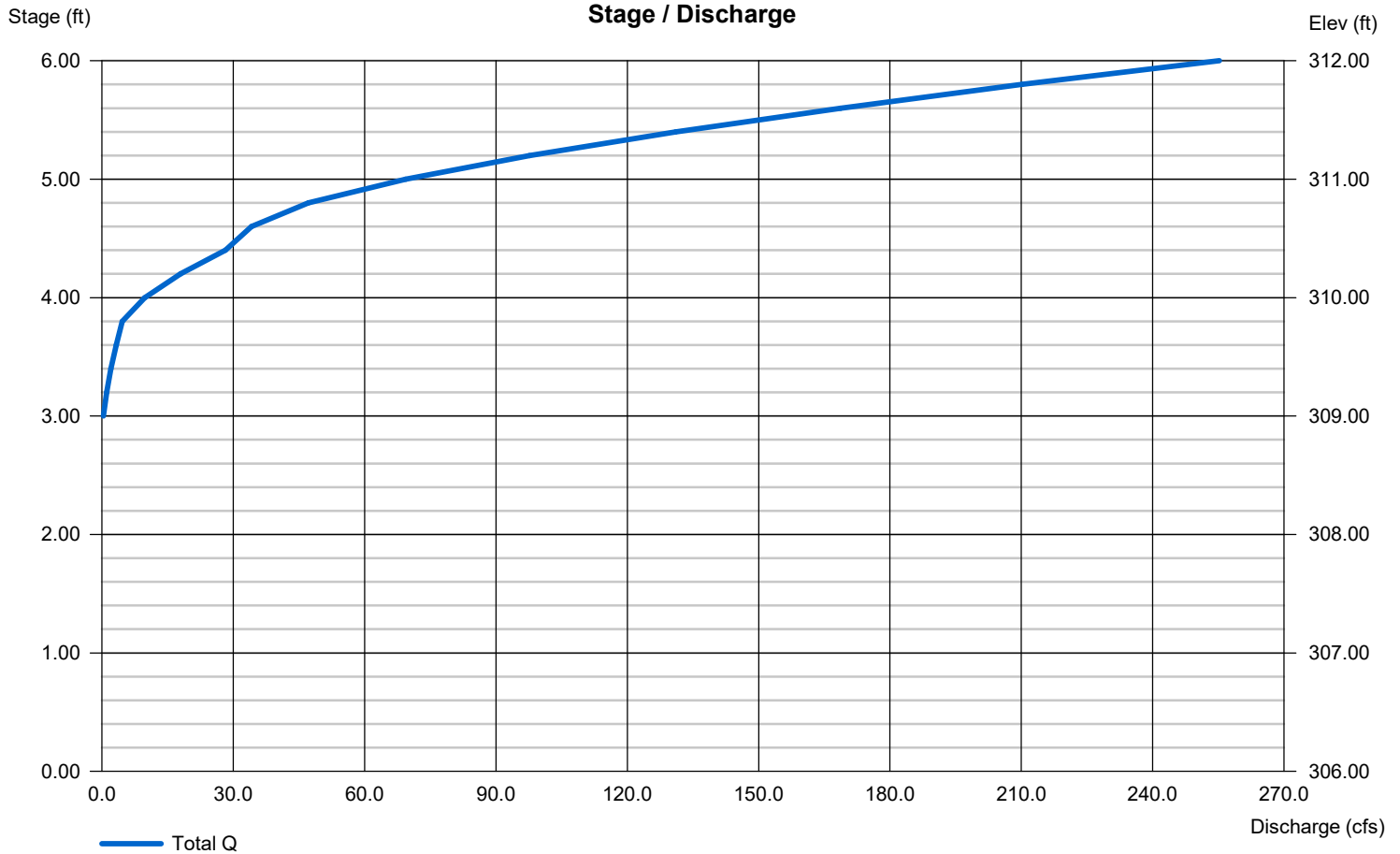
### Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 24.00	0.00	0.00	0.00
Span (in)	= 24.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 304.00	0.00	0.00	0.00
Length (ft)	= 50.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

### Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.00	1.50	50.00	0.00
Crest El. (ft)	= 309.80	308.85	310.60	0.00
Weir Coeff.	= 3.33	3.33	2.60	3.33
Weir Type	= 1	Rect	Broad	---
Multi-Stage	= Yes	Yes	No	No
Exfil.(in/hr)	= 0.000 (by Contour)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



# Hydrograph Report

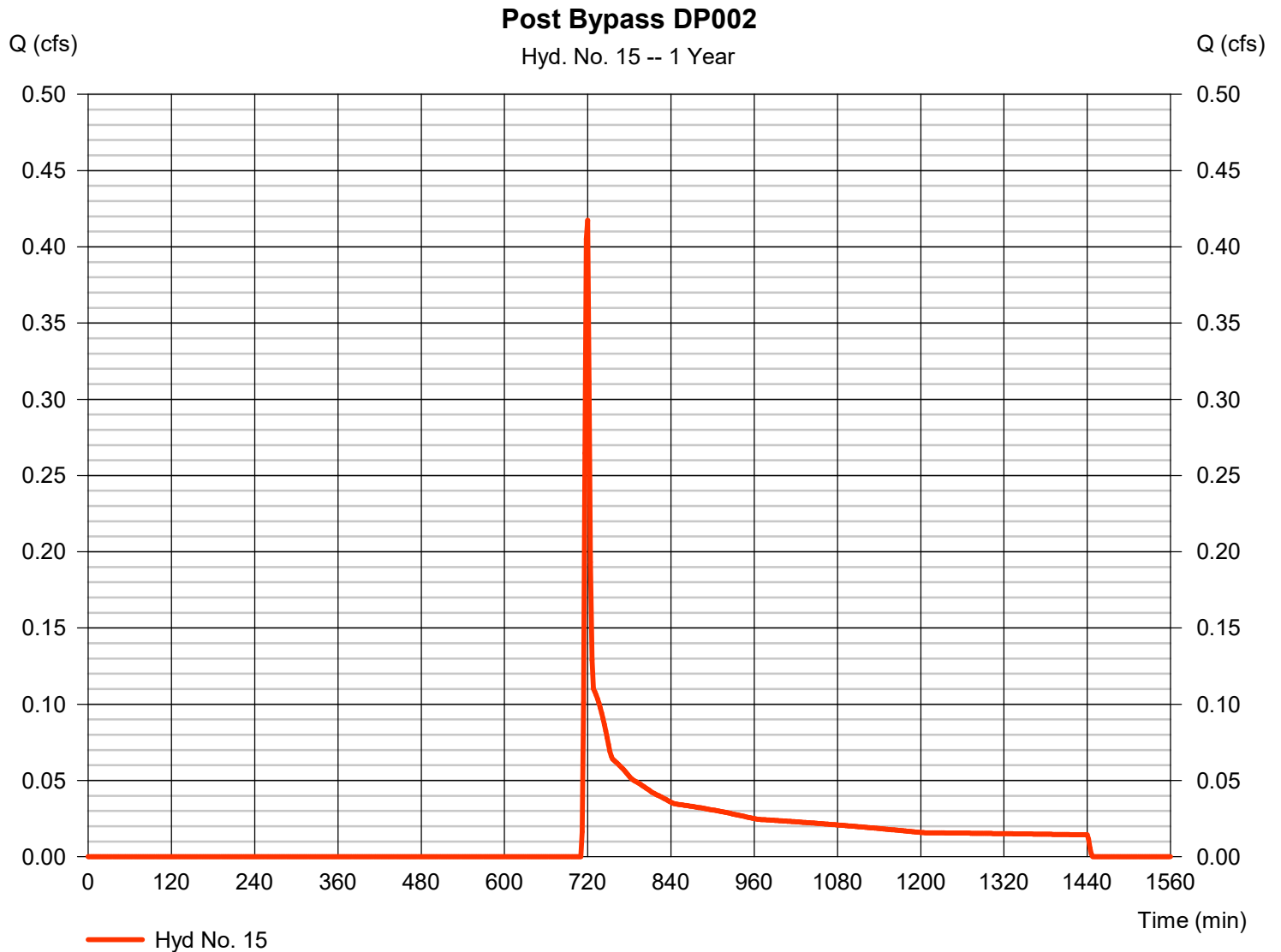
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 15

Post Bypass DP002

Hydrograph type	= SCS Runoff	Peak discharge	= 0.417 cfs
Storm frequency	= 1 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 1,355 cuft
Drainage area	= 1.540 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.70 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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

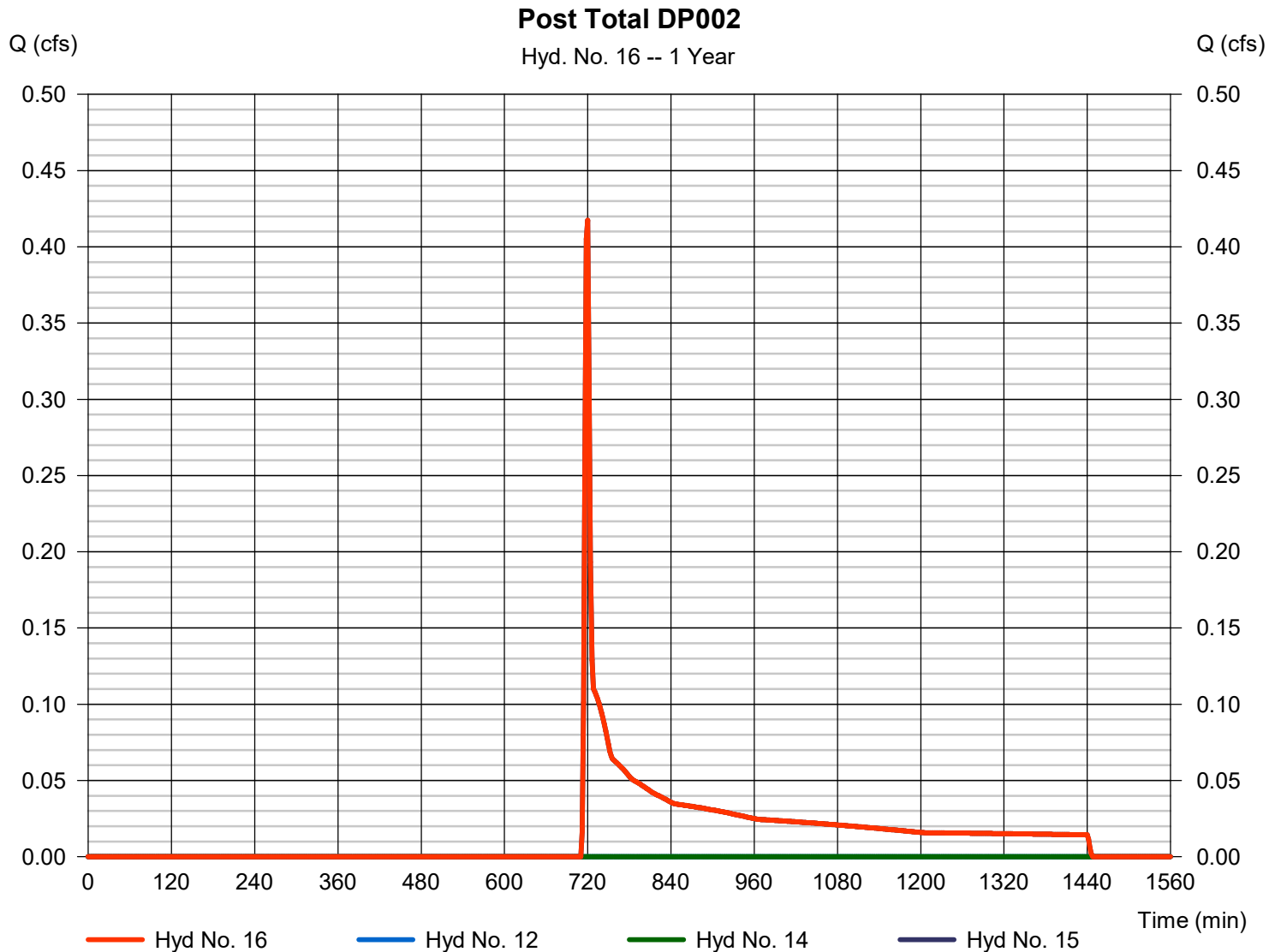
Wednesday, 03 / 22 / 2023

## Hyd. No. 16

Post Total DP002

Hydrograph type = Combine  
Storm frequency = 1 yrs  
Time interval = 2 min  
Inflow hyds. = 12, 14, 15

Peak discharge = 0.417 cfs  
Time to peak = 720 min  
Hyd. volume = 1,355 cuft  
Contrib. drain. area = 1.540 ac



# Hydrograph Report

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

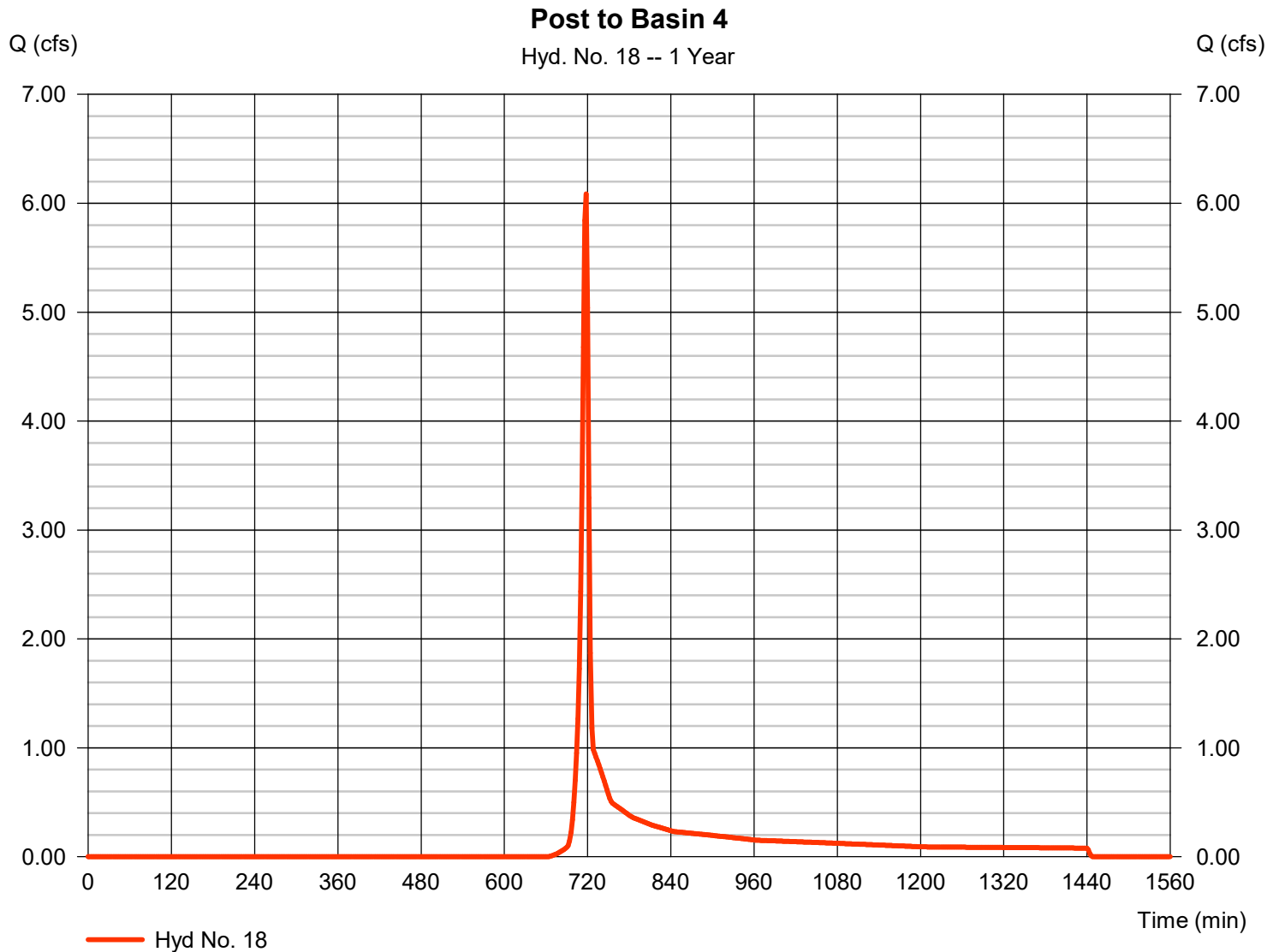
Wednesday, 03 / 22 / 2023

## Hyd. No. 18

Post to Basin 4

Hydrograph type	= SCS Runoff	Peak discharge	= 6.085 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 12,240 cuft
Drainage area	= 4.420 ac	Curve number	= 75.9*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.70 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(0.910 x 61) + (2.270 x 98) + (3.040 x 78)] / 4.420



# Hydrograph Report

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

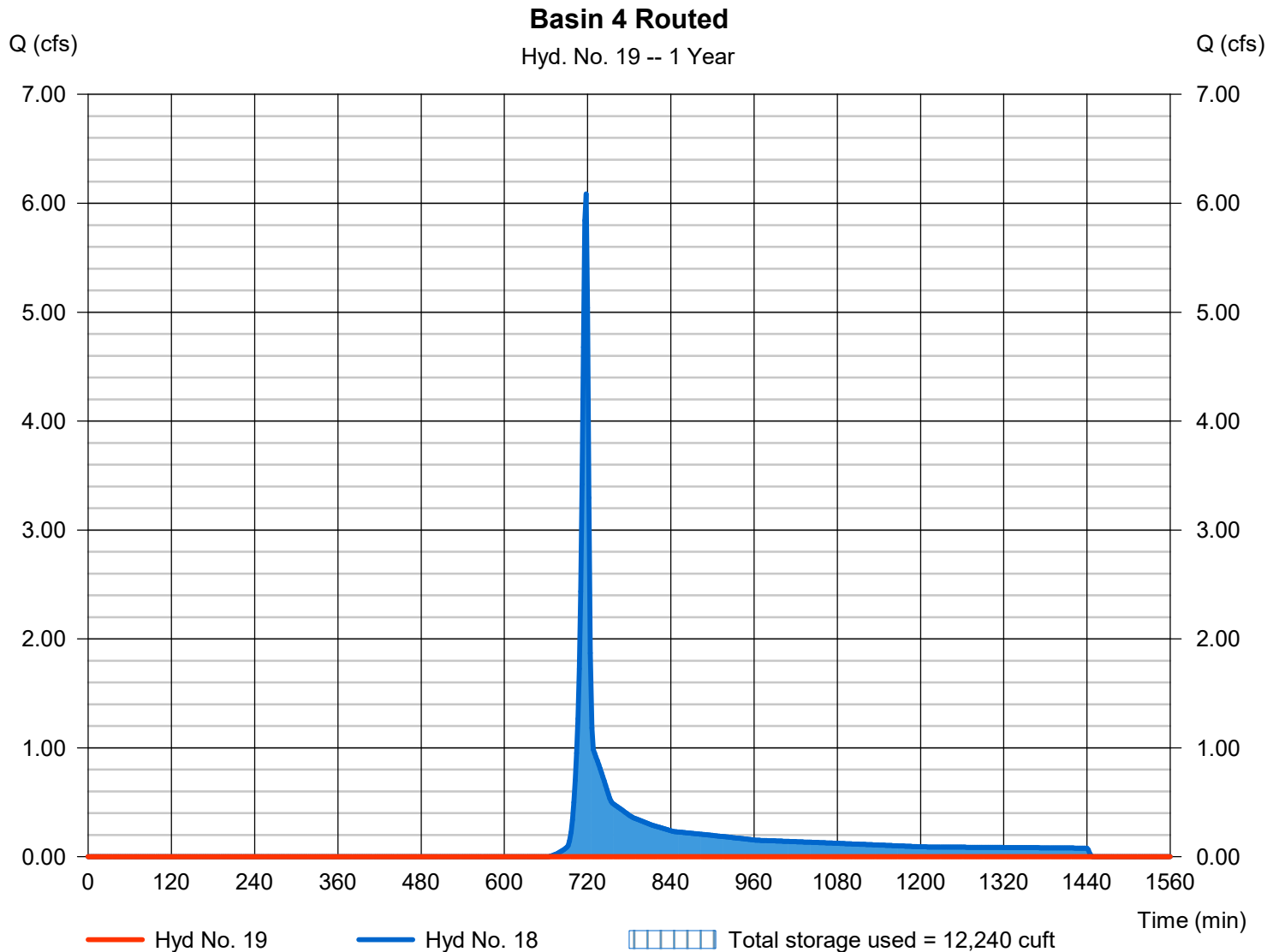
Wednesday, 03 / 22 / 2023

## Hyd. No. 19

Basin 4 Routed

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 18 - Post to Basin 4	Max. Elevation	= 346.01 ft
Reservoir name	= Basin 4	Max. Storage	= 12,240 cuft

Storage Indication method used.



# Pond Report

## Pond No. 7 - Basin 4

### Pond Data

Capacity = 49,402 cuft, Inlet elevation = 342.00 ft, Outlet elevation = 342.00 ft, Depth = 0.00 ft, Beginning Elevation = 342.00 ft

### Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	342.00	1,300	0	0
0.20	342.20	1,300	103	103
0.40	342.40	1,300	103	207
0.60	342.60	1,300	103	310
0.80	342.80	1,300	103	414
1.00	342.99	1,300	103	517
1.19	343.19	1,300	103	621
1.39	343.39	1,300	103	724
1.59	343.59	1,300	103	828
1.79	343.79	1,300	103	931
1.99	343.99	1,300	103	1,035
2.00	344.00	4,413	29	1,063
4.00	346.00	6,717	11,130	12,193
6.00	348.00	9,246	15,963	28,156
8.00	350.00	12,000	21,246	49,402

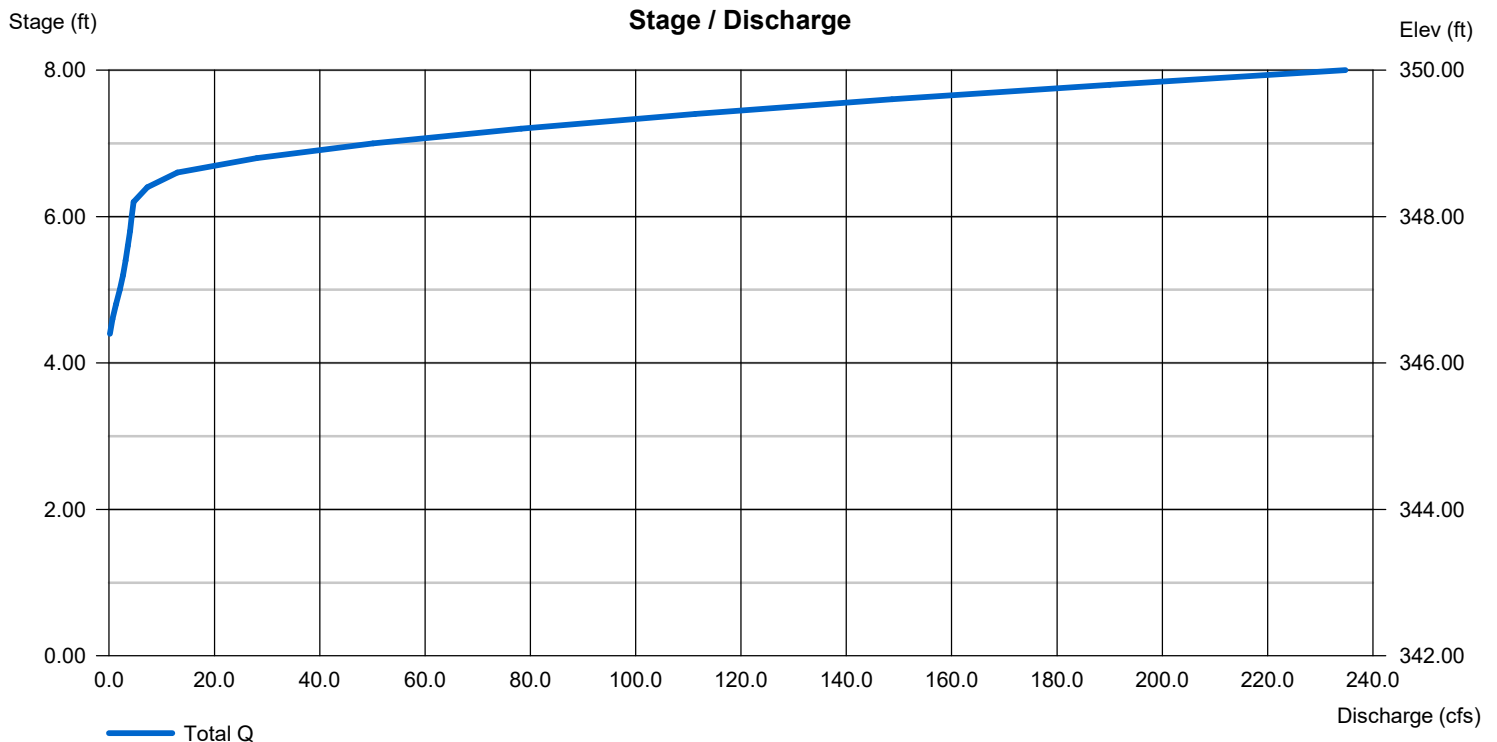
### Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	12.00	0.00	0.00
Span (in)	= 18.00	12.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 344.00	346.20	0.00	0.00
Length (ft)	= 50.00	0.00	0.00	0.00
Slope (%)	= 2.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

### Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.00	0.00	50.00	0.00
Crest El. (ft)	= 348.25	0.00	348.60	0.00
Weir Coeff.	= 3.33	3.33	2.60	3.33
Weir Type	= 1	---	Broad	---
Multi-Stage	= Yes	No	No	No
Exfil. (in/hr)	= 0.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).





# Hydrograph Report

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

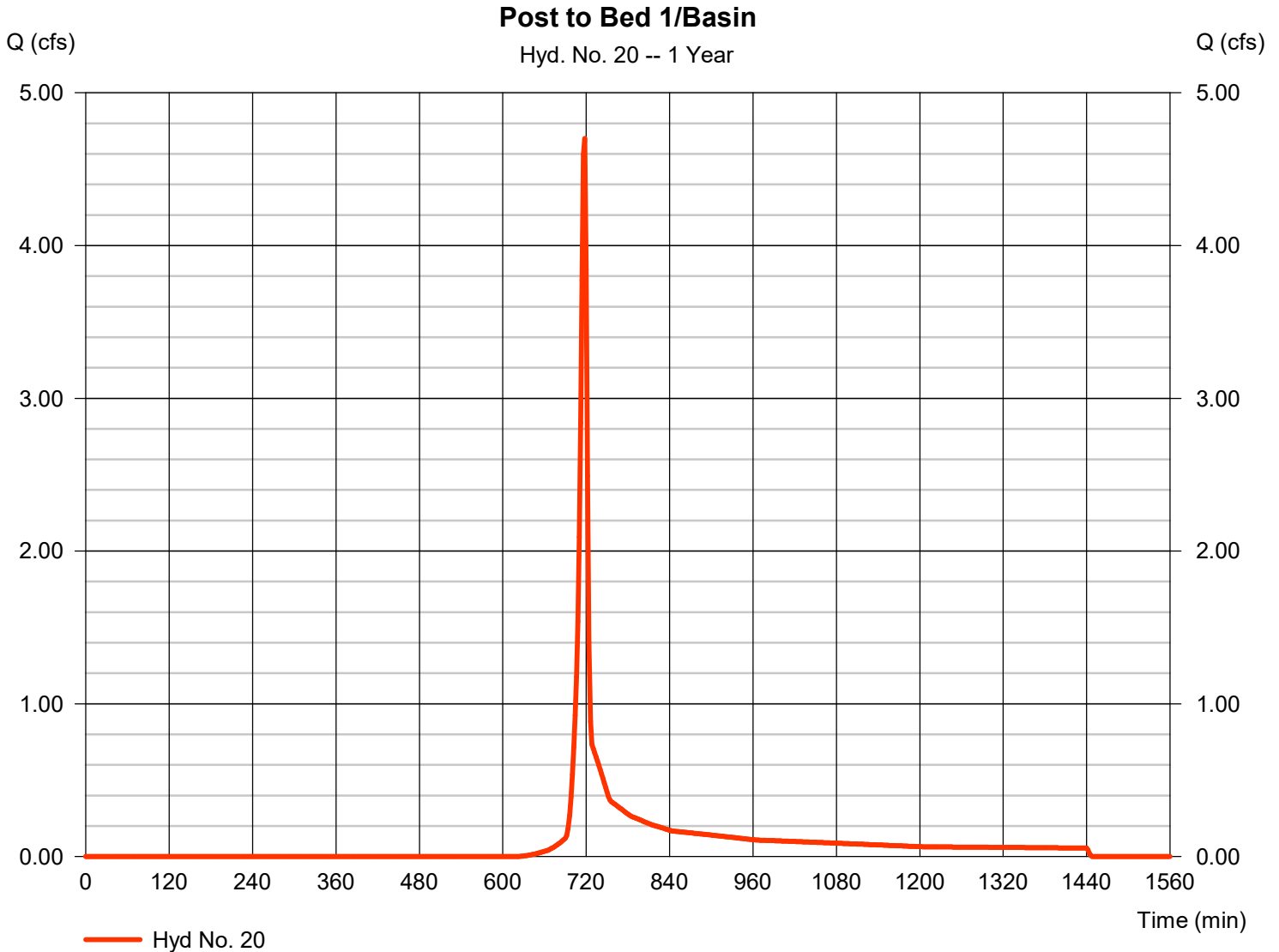
Wednesday, 03 / 22 / 2023

## Hyd. No. 20

Post to Bed 1/Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 4.701 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 9,401 cuft
Drainage area	= 2.820 ac	Curve number	= 79.1*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.70 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(0.910 x 61) + (2.270 x 98) + (3.040 x 78)] / 2.820



# Hydrograph Report

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

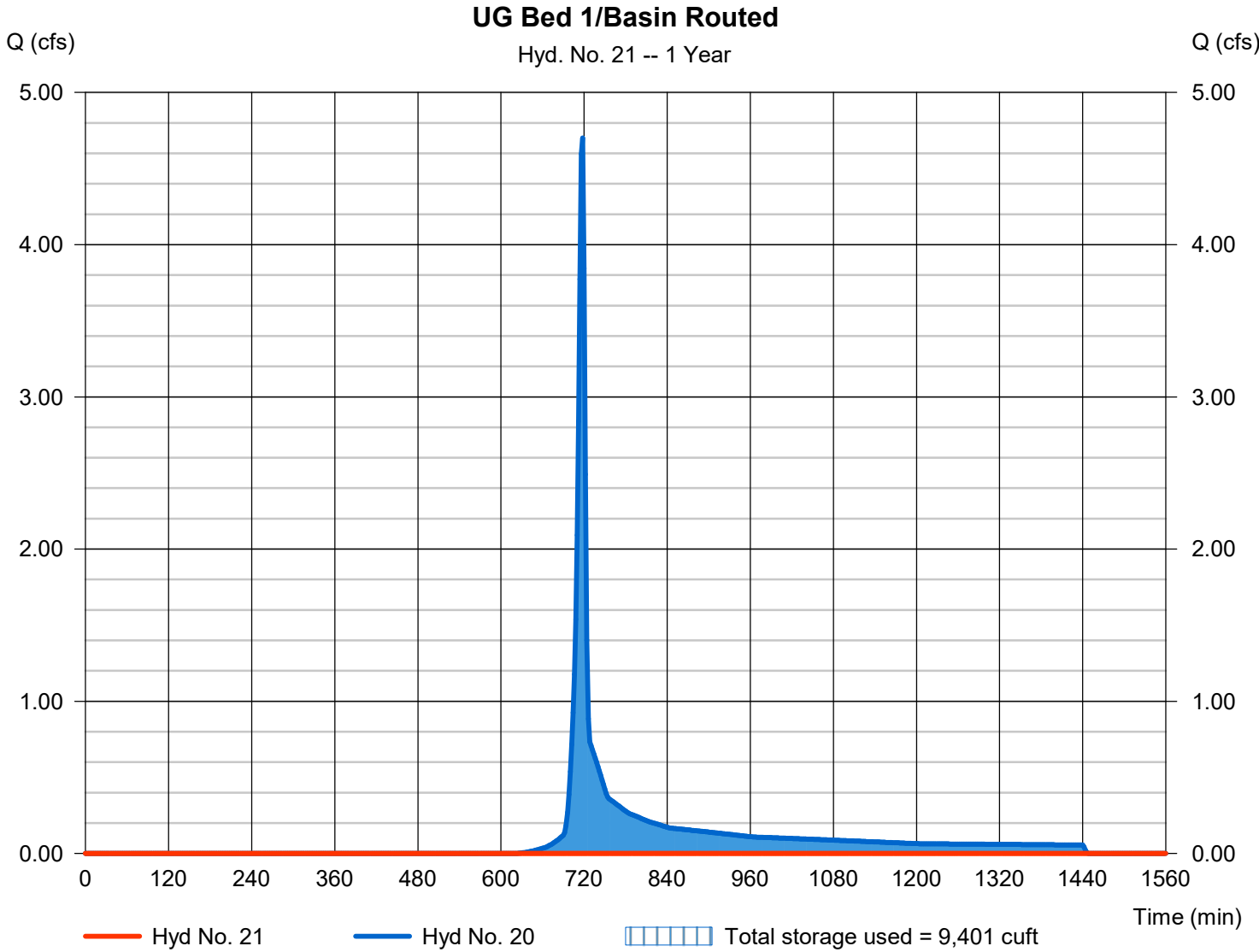
Wednesday, 03 / 22 / 2023

## Hyd. No. 21

UG Bed 1/Basin Routed

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 20 - Post to Bed 1/Basin	Max. Elevation	= 339.59 ft
Reservoir name	= UG Bed 1/Basin	Max. Storage	= 9,401 cuft

Storage Indication method used.



# Pond Report

## Pond No. 6 - UG Bed 1/Basin

### Pond Data

Catchment - 1.00 ac, Inlet Elevation - 336.00 ft, Outlet Elevation - 336.00 ft, Depth - 0.00 ft, Inlet Area - 1.00 ac, Outlet Area - 1.00 ac, Inlet Slope - 0.00, Outlet Slope - 0.00, Inlet Elevation - 336.00 ft, Outlet Elevation - 336.00 ft

### Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	336.00	5,625	0	0
0.30	336.30	5,625	675	675
0.60	336.60	5,625	675	1,350
0.90	336.90	5,625	675	2,025
1.20	337.20	5,625	675	2,700
1.50	337.50	5,625	675	3,375
1.80	337.80	5,625	675	4,050
2.10	338.10	5,625	675	4,725
2.40	338.40	5,625	675	5,400
2.70	338.70	5,625	675	6,075
3.00	339.00	5,625	675	6,750
4.00	340.00	3,380	4,503	11,253
6.00	342.00	5,050	8,430	19,683
8.00	344.00	6,945	11,995	31,678

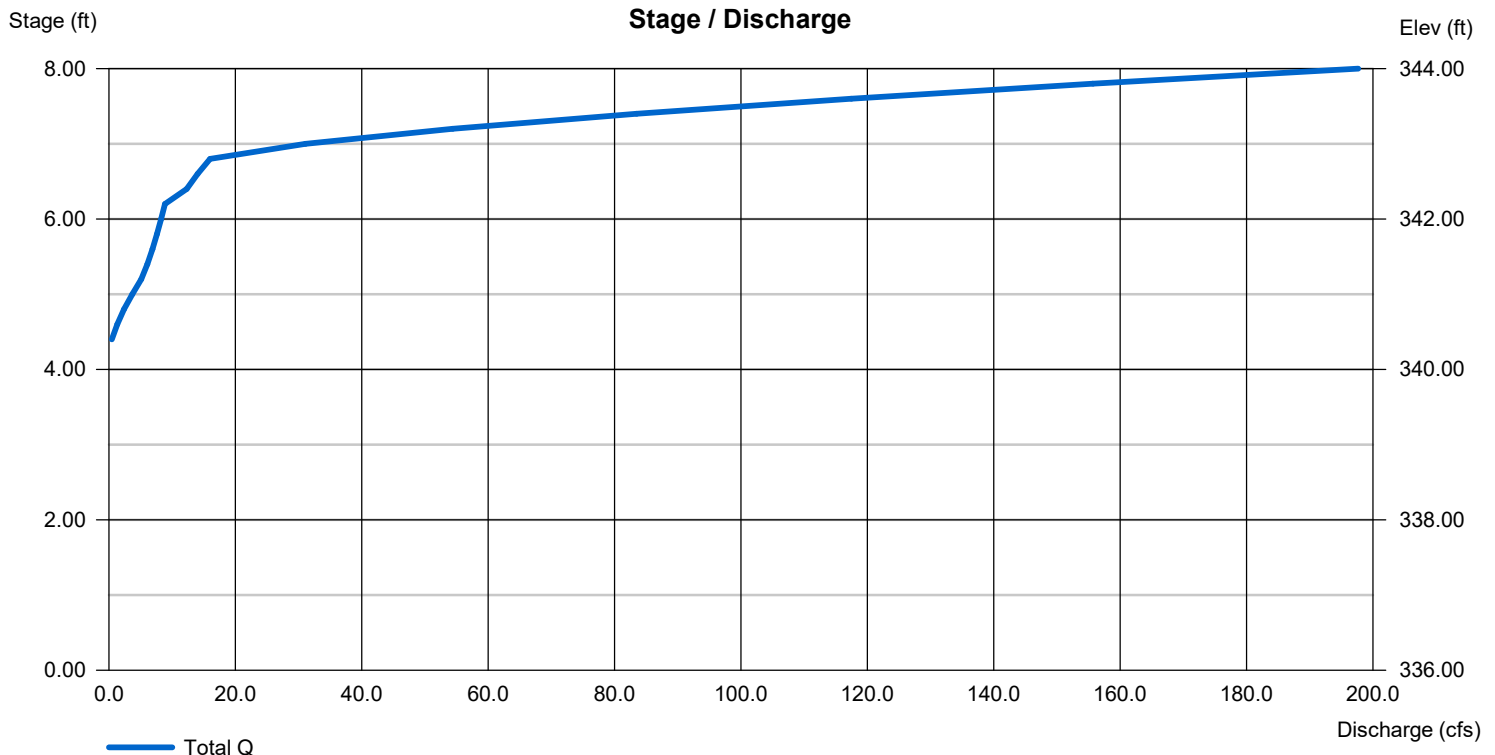
### Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15.00	12.00	0.00	0.00
Span (in)	= 15.00	18.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 336.00	340.20	0.00	0.00
Length (ft)	= 50.00	0.00	0.00	0.00
Slope (%)	= 2.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

### Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.00	0.00	50.00	0.00
Crest El. (ft)	= 342.20	0.00	342.75	0.00
Weir Coeff.	= 3.33	3.33	2.60	3.33
Weir Type	= 1	---	Broad	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 0.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

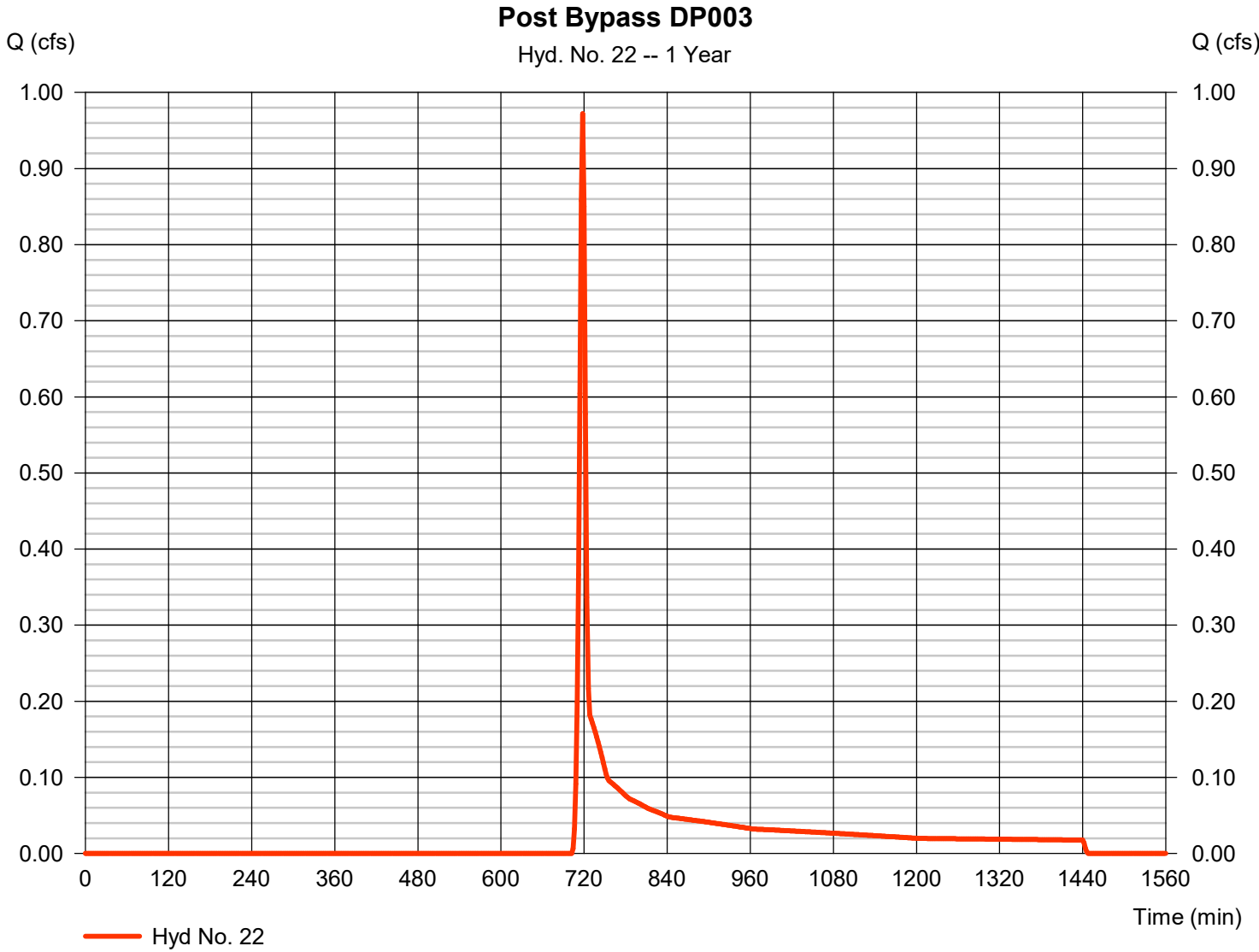


# Hydrograph Report

## Hyd. No. 22

Post Bypass DP003

Hydrograph type	= SCS Runoff	Peak discharge	= 0.972 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 2,149 cuft
Drainage area	= 1.340 ac	Curve number	= 67.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.70 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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

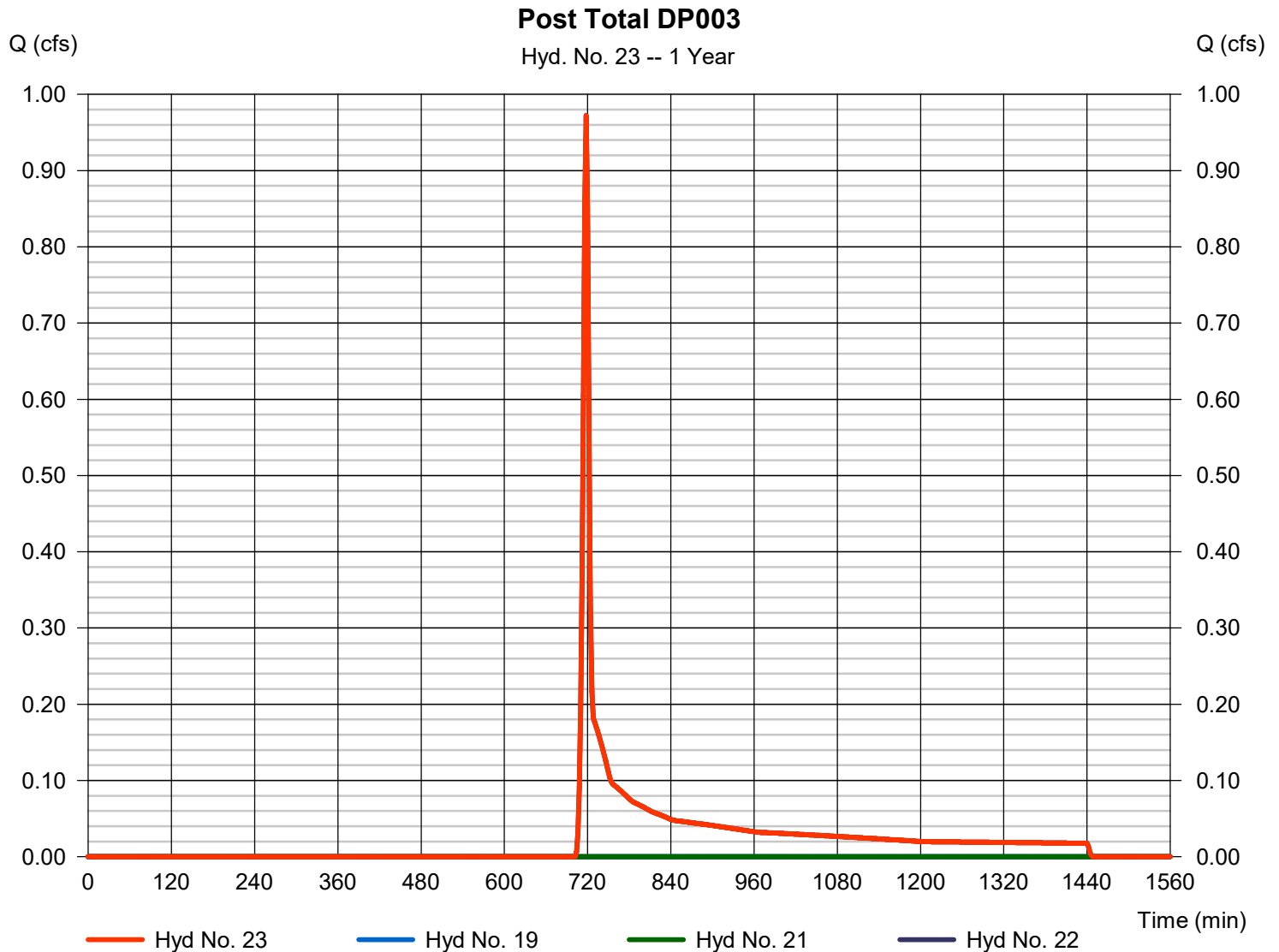
Wednesday, 03 / 22 / 2023

## Hyd. No. 23

Post Total DP003

Hydrograph type = Combine  
Storm frequency = 1 yrs  
Time interval = 2 min  
Inflow hyds. = 19, 21, 22

Peak discharge = 0.972 cfs  
Time to peak = 718 min  
Hyd. volume = 2,149 cuft  
Contrib. drain. area = 1.340 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	4.322	2	724	19,687	-----	-----	-----	Pre Developed DP001	
2	SCS Runoff	6.847	2	724	27,873	-----	-----	-----	Pre Developed DP002	
3	SCS Runoff	8.022	2	722	22,888	-----	-----	-----	Pre Developed DP003	
4	SCS Runoff	0.566	2	718	1,326	-----	-----	-----	Pre Developed DP003 ORA	
5	SCS Runoff	17.70	2	718	35,889	-----	-----	-----	Post Basin 3	
6	Reservoir	0.000	2	n/a	0	5	317.95	35,889	Basin 3 Routed	
7	SCS Runoff	1.146	2	718	2,583	-----	-----	-----	Post Bypass DP001	
8	Combine	1.146	2	718	2,583	6, 7	-----	-----	Post Total DP001	
10	SCS Runoff	16.97	2	718	34,254	-----	-----	-----	Post Basin 1	
11	Reservoir	0.000	2	n/a	0	10	322.23	34,254	Basin 1 Upper Routed	
12	Reservoir	0.000	2	n/a	0	11	302.20	0.000	Basin 1 Lower Routed	
13	SCS Runoff	17.09	2	718	34,170	-----	-----	-----	Post Basin 2	
14	Reservoir	0.120	2	1444	1,815	13	308.88	33,546	Basin 2 Routed	
15	SCS Runoff	0.956	2	718	2,327	-----	-----	-----	Post Bypass DP002	
16	Combine	0.956	2	718	4,142	12, 14, 15	-----	-----	Post Total DP002	
18	SCS Runoff	8.620	2	718	17,240	-----	-----	-----	Post to Basin 4	
19	Reservoir	0.111	2	1308	3,441	18	346.32	14,787	Basin 4 Routed	
20	SCS Runoff	6.430	2	718	12,890	-----	-----	-----	Post to Bed 1/Basin	
21	Reservoir	0.073	2	1390	793	20	340.23	12,231	UG Bed 1/Basin Routed	
22	SCS Runoff	1.588	2	718	3,299	-----	-----	-----	Post Bypass DP003	
23	Combine	1.588	2	718	7,533	19, 21, 22	-----	-----	Post Total DP003	
SWM.gpw					Return Period: 2 Year			Wednesday, 03 / 22 / 2023		

# Hydrograph Report

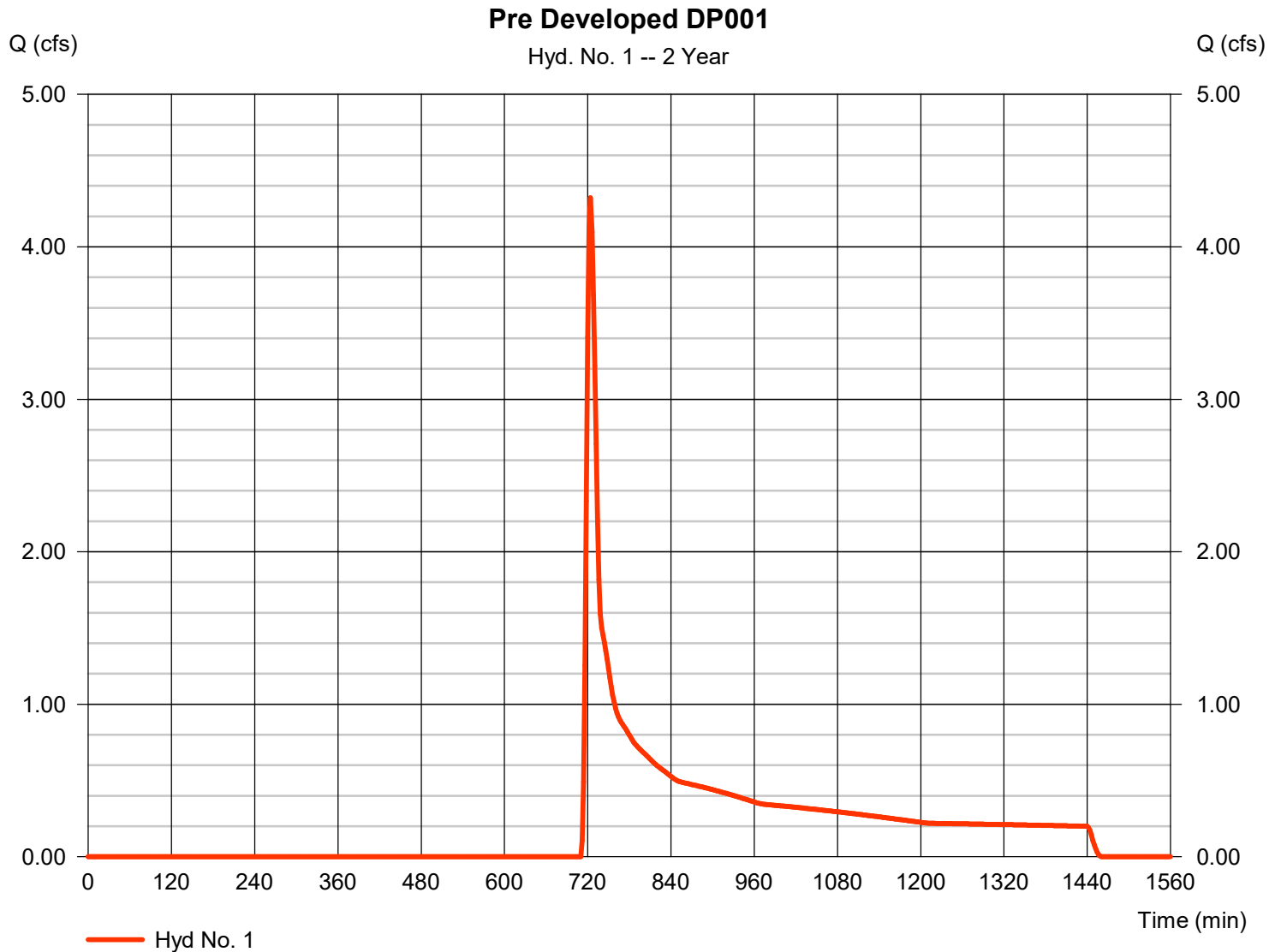
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 1

Pre Developed DP001

Hydrograph type	= SCS Runoff	Peak discharge	= 4.322 cfs
Storm frequency	= 2 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 19,687 cuft
Drainage area	= 15.430 ac	Curve number	= 58
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

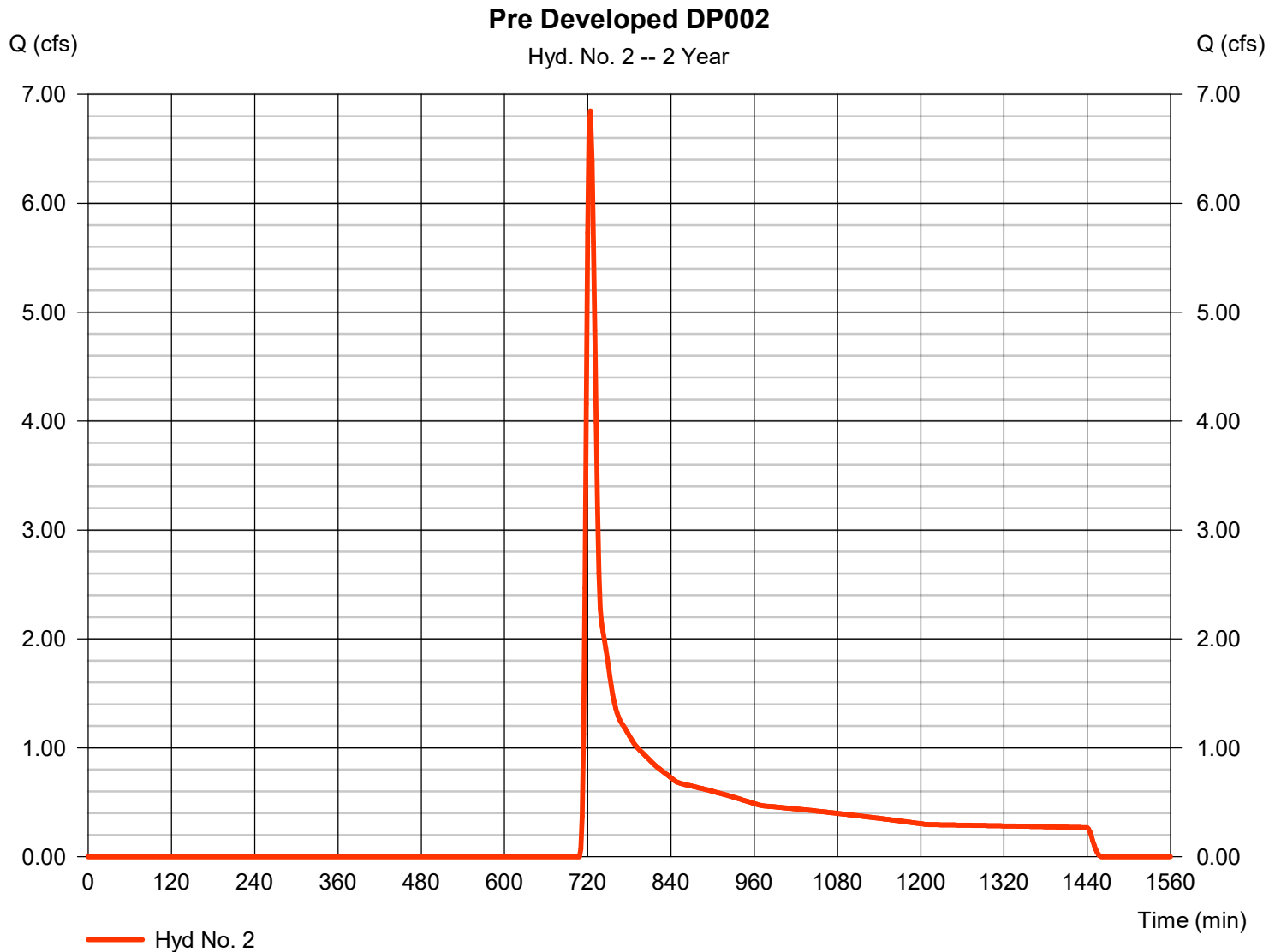
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 2

Pre Developed DP002

Hydrograph type	= SCS Runoff	Peak discharge	= 6.847 cfs
Storm frequency	= 2 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 27,873 cuft
Drainage area	= 19.210 ac	Curve number	= 59.4
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484





# Hydrograph Report

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

Wednesday, 03 / 22 / 2023

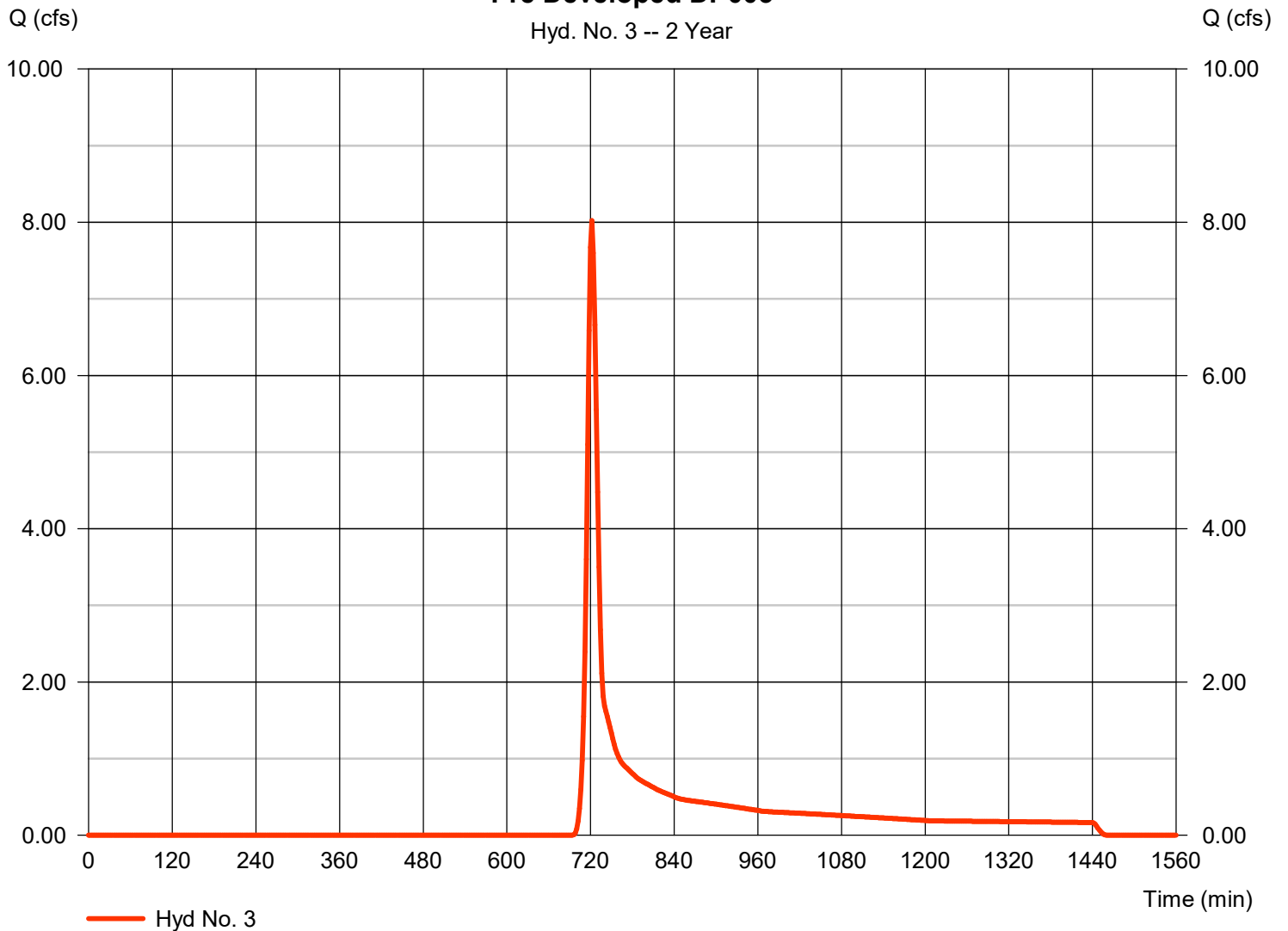
## Hyd. No. 3

Pre Developed DP003

Hydrograph type	= SCS Runoff	Peak discharge	= 8.022 cfs
Storm frequency	= 2 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 22,888 cuft
Drainage area	= 8.190 ac	Curve number	= 68.3
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

### Pre Developed DP003

Hyd. No. 3 -- 2 Year



# Hydrograph Report

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

Wednesday, 03 / 22 / 2023

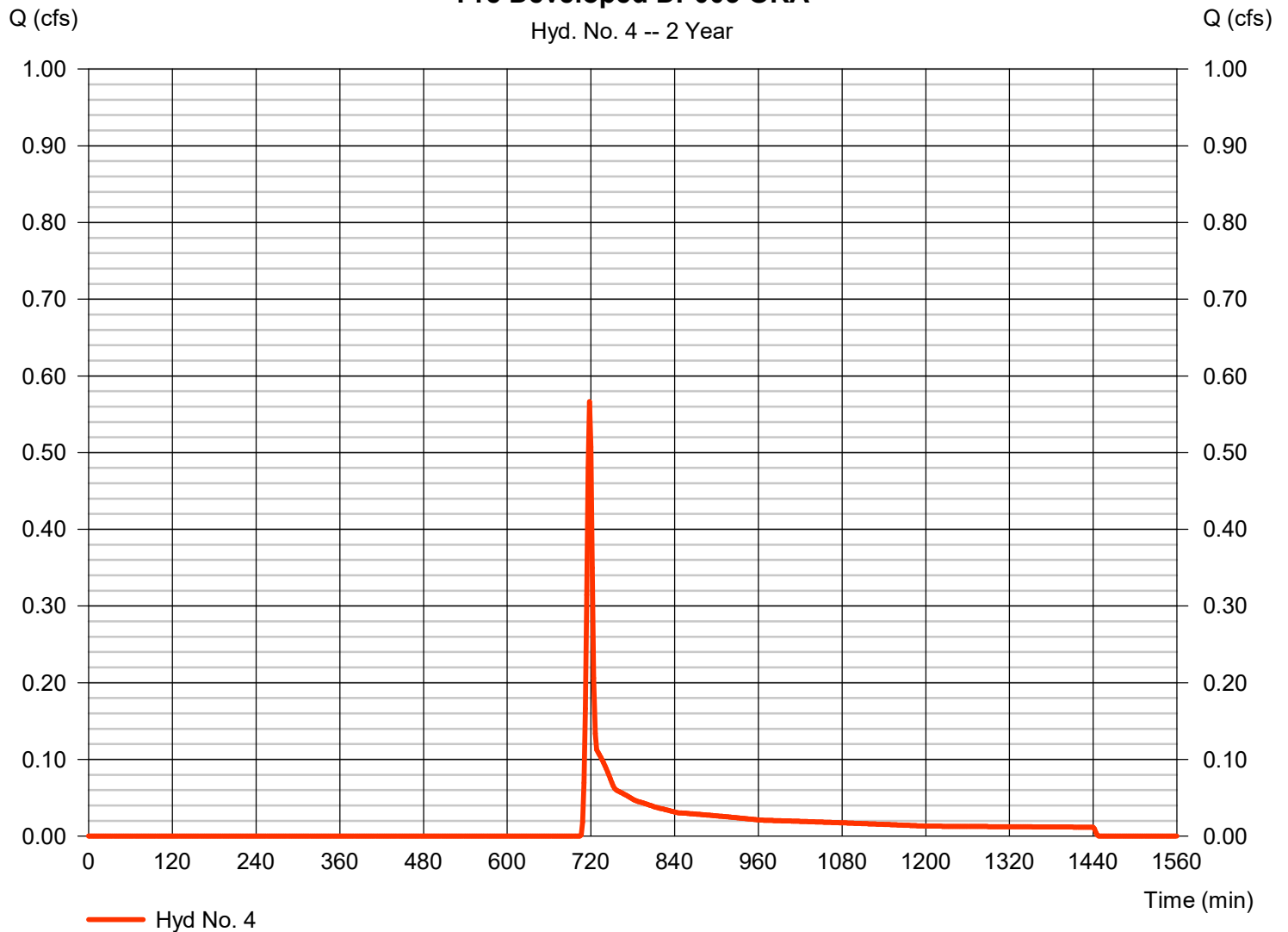
## Hyd. No. 4

Pre Developed DP003 ORA

Hydrograph type	= SCS Runoff	Peak discharge	= 0.566 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 1,326 cuft
Drainage area	= 0.810 ac	Curve number	= 62
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

### Pre Developed DP003 ORA

Hyd. No. 4 -- 2 Year



# Hydrograph Report

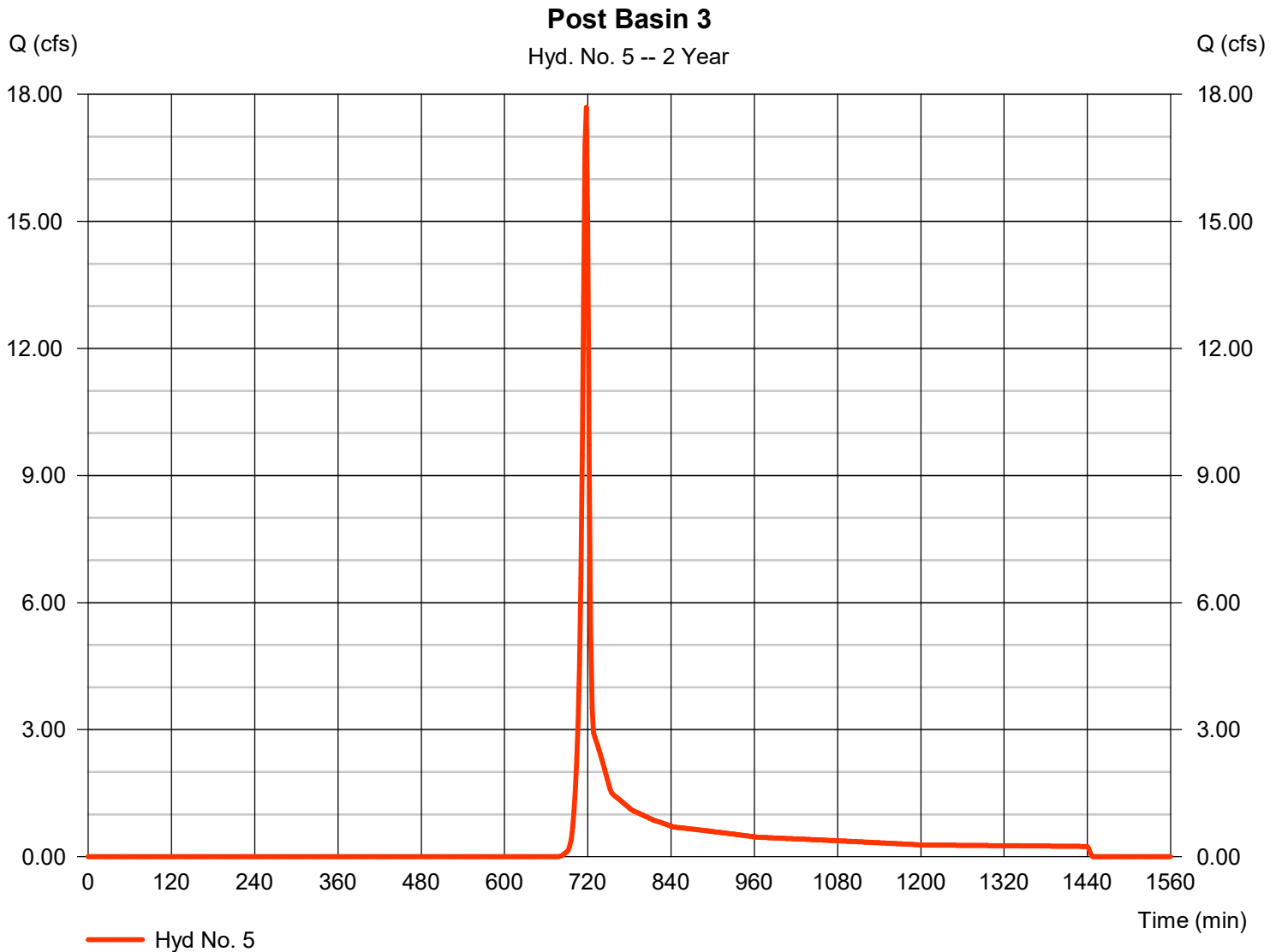
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 5

Post Basin 3

Hydrograph type	= SCS Runoff	Peak discharge	= 17.70 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 35,889 cuft
Drainage area	= 12.150 ac	Curve number	= 70.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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

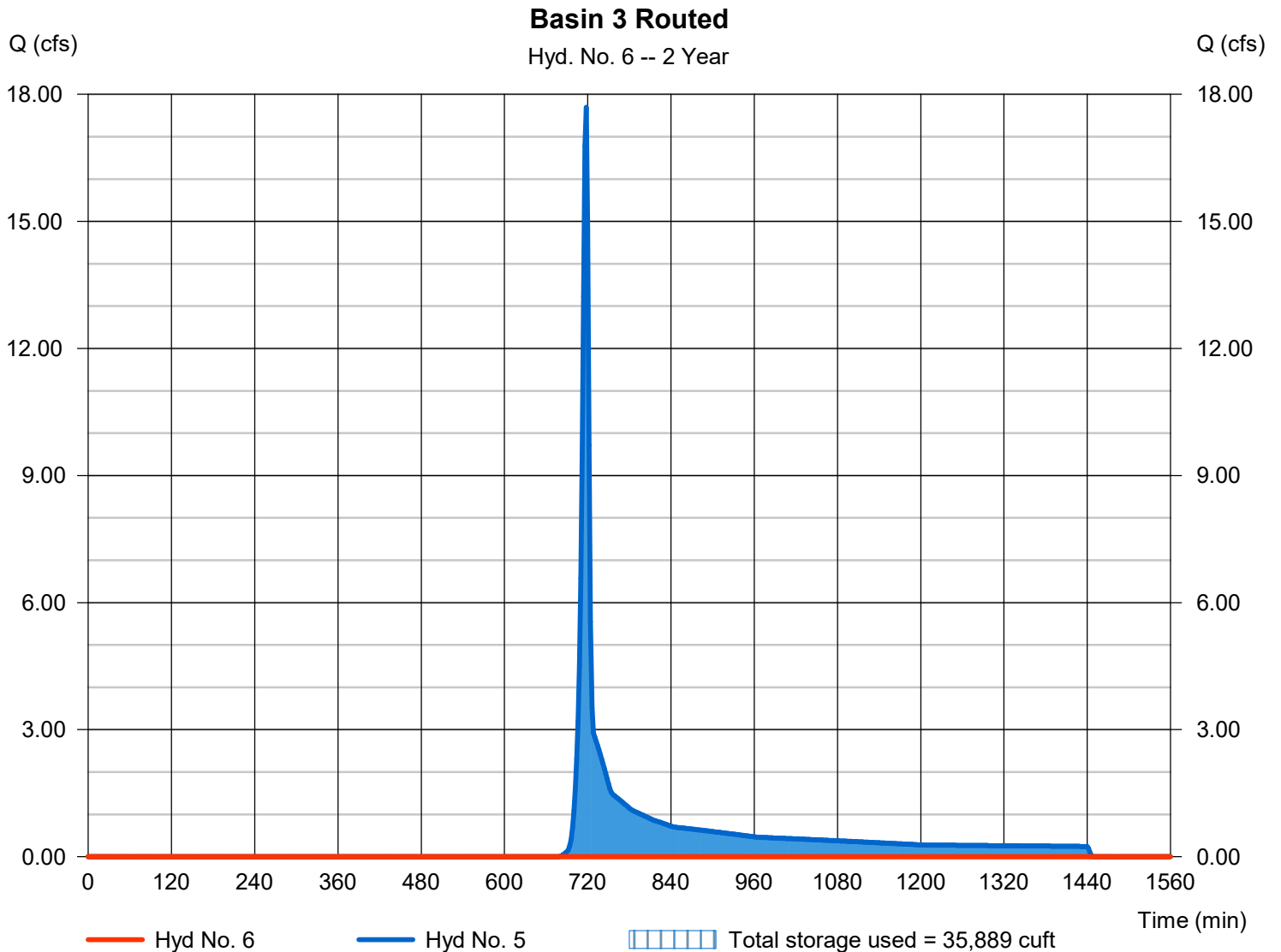
Wednesday, 03 / 22 / 2023

## Hyd. No. 6

Basin 3 Routed

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 5 - Post Basin 3	Max. Elevation	= 317.95 ft
Reservoir name	= Basin 3	Max. Storage	= 35,889 cuft

Storage Indication method used.



# Hydrograph Report

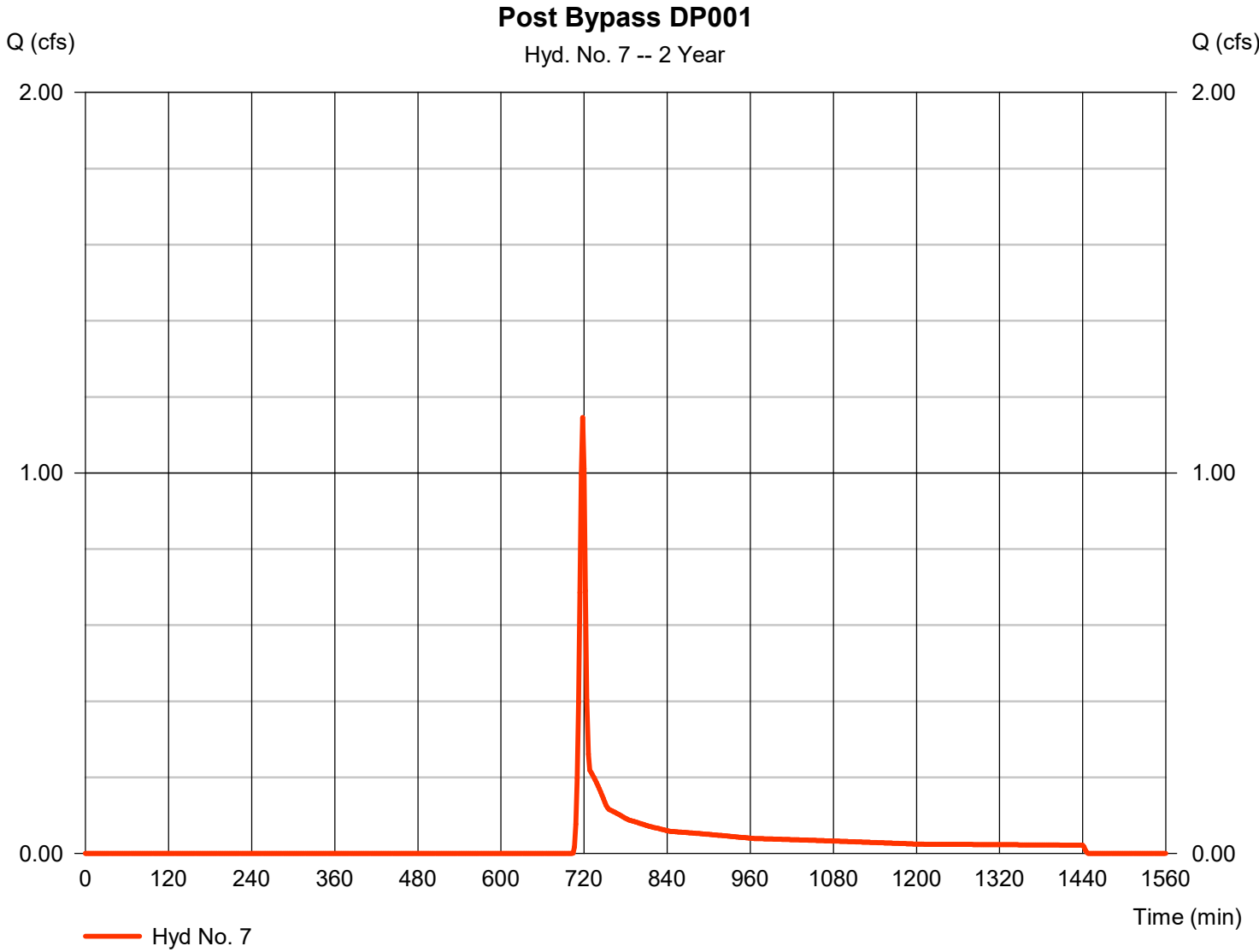
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 7

Post Bypass DP001

Hydrograph type	= SCS Runoff	Peak discharge	= 1.146 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 2,583 cuft
Drainage area	= 1.440 ac	Curve number	= 63.2
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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

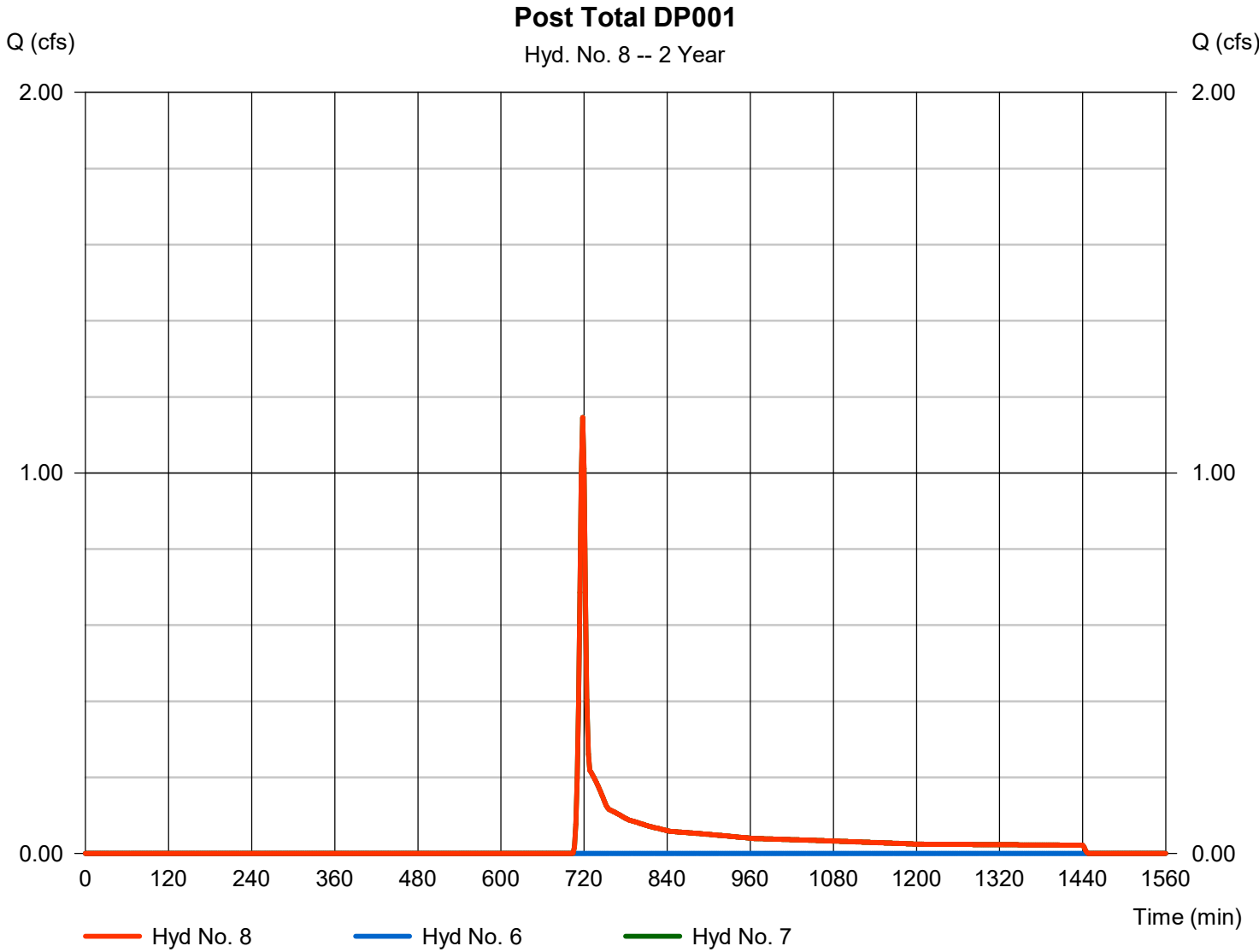
Wednesday, 03 / 22 / 2023

## Hyd. No. 8

Post Total DP001

Hydrograph type = Combine  
Storm frequency = 2 yrs  
Time interval = 2 min  
Inflow hyds. = 6, 7

Peak discharge = 1.146 cfs  
Time to peak = 718 min  
Hyd. volume = 2,583 cuft  
Contrib. drain. area = 1.440 ac

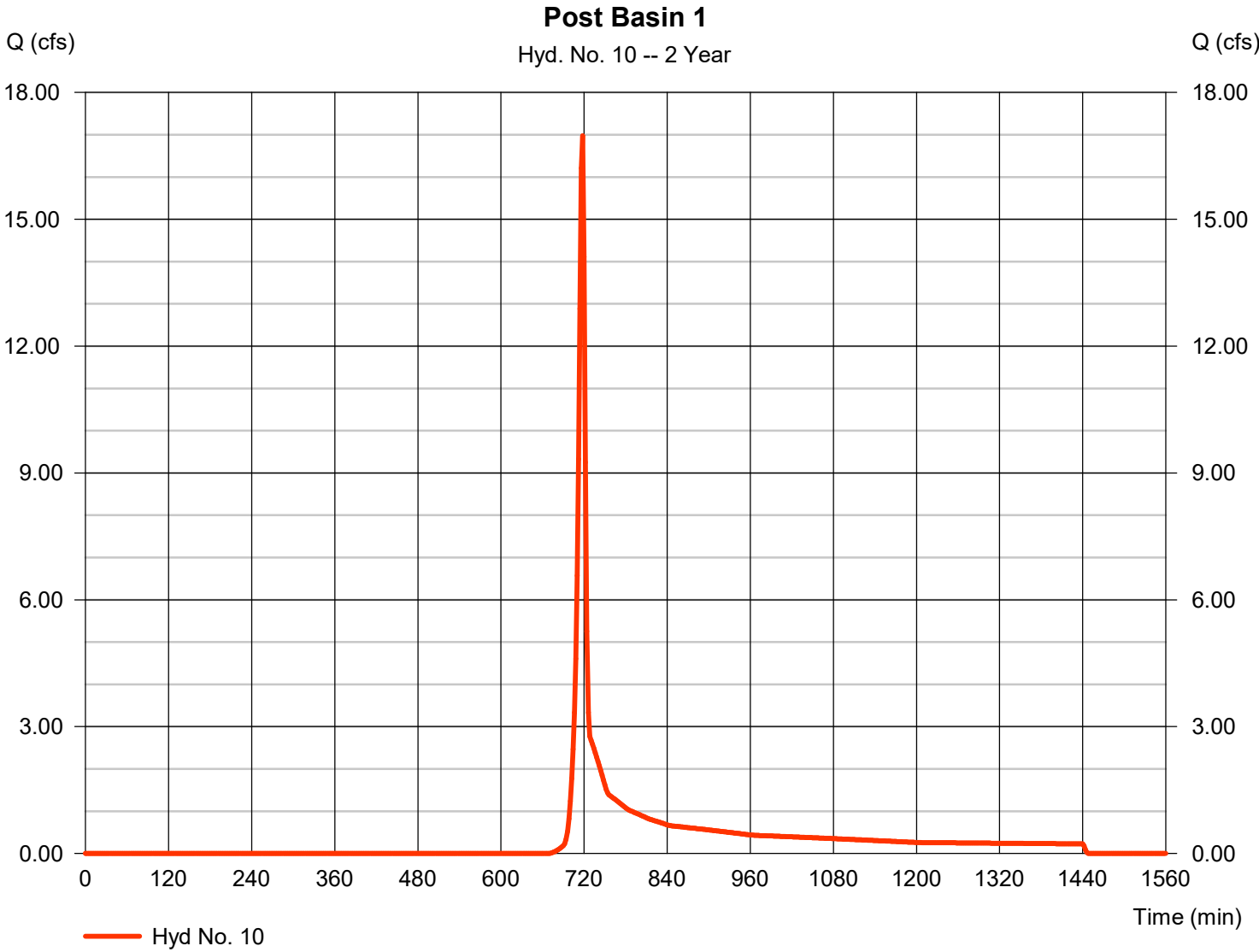


# Hydrograph Report

## Hyd. No. 10

### Post Basin 1

Hydrograph type	= SCS Runoff	Peak discharge	= 16.97 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 34,254 cuft
Drainage area	= 10.950 ac	Curve number	= 71.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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

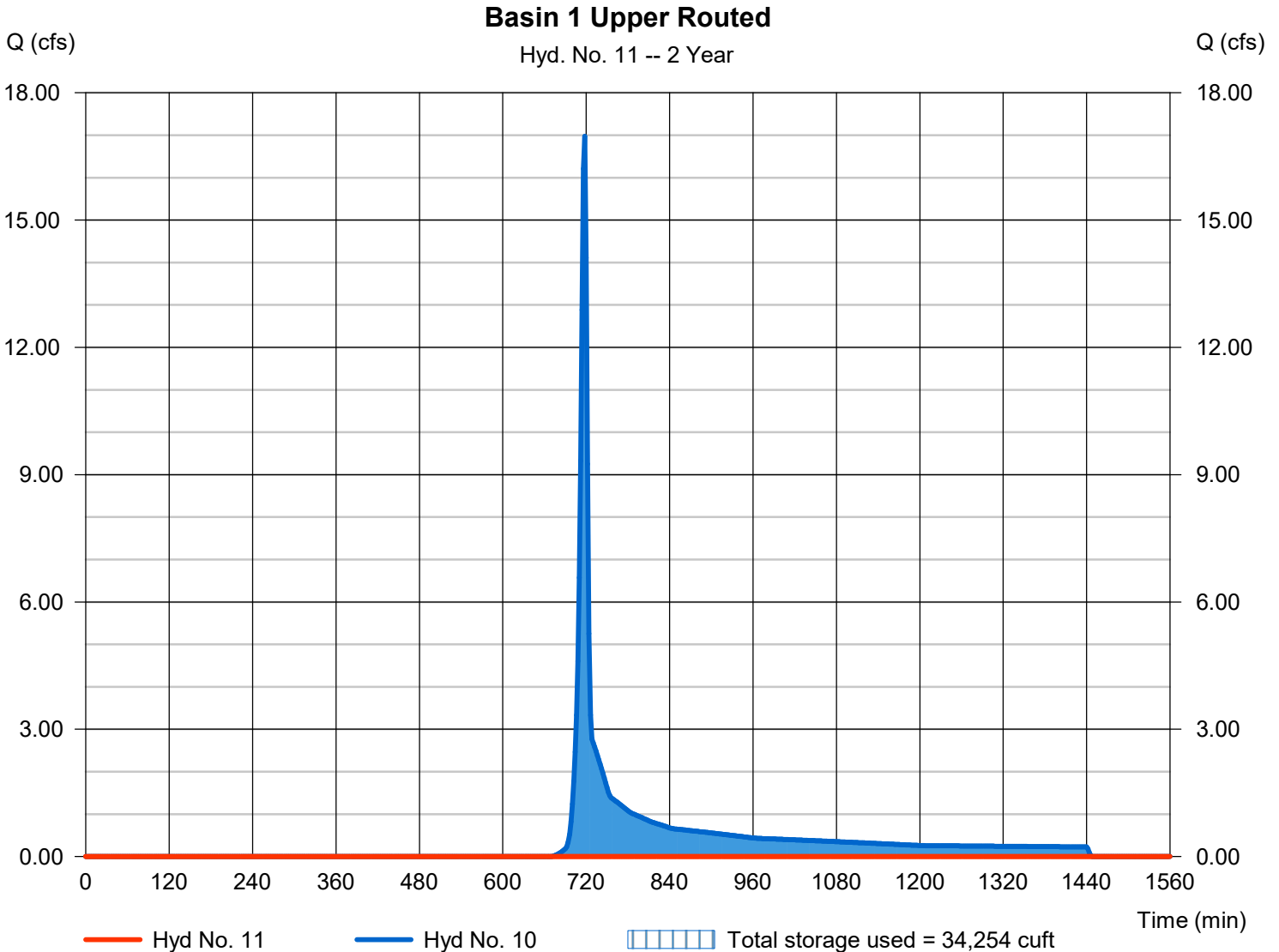
Wednesday, 03 / 22 / 2023

## Hyd. No. 11

Basin 1 Upper Routed

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 10 - Post Basin 1	Max. Elevation	= 322.23 ft
Reservoir name	= Basin 1 Upper	Max. Storage	= 34,254 cuft

Storage Indication method used.





# Hydrograph Report

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

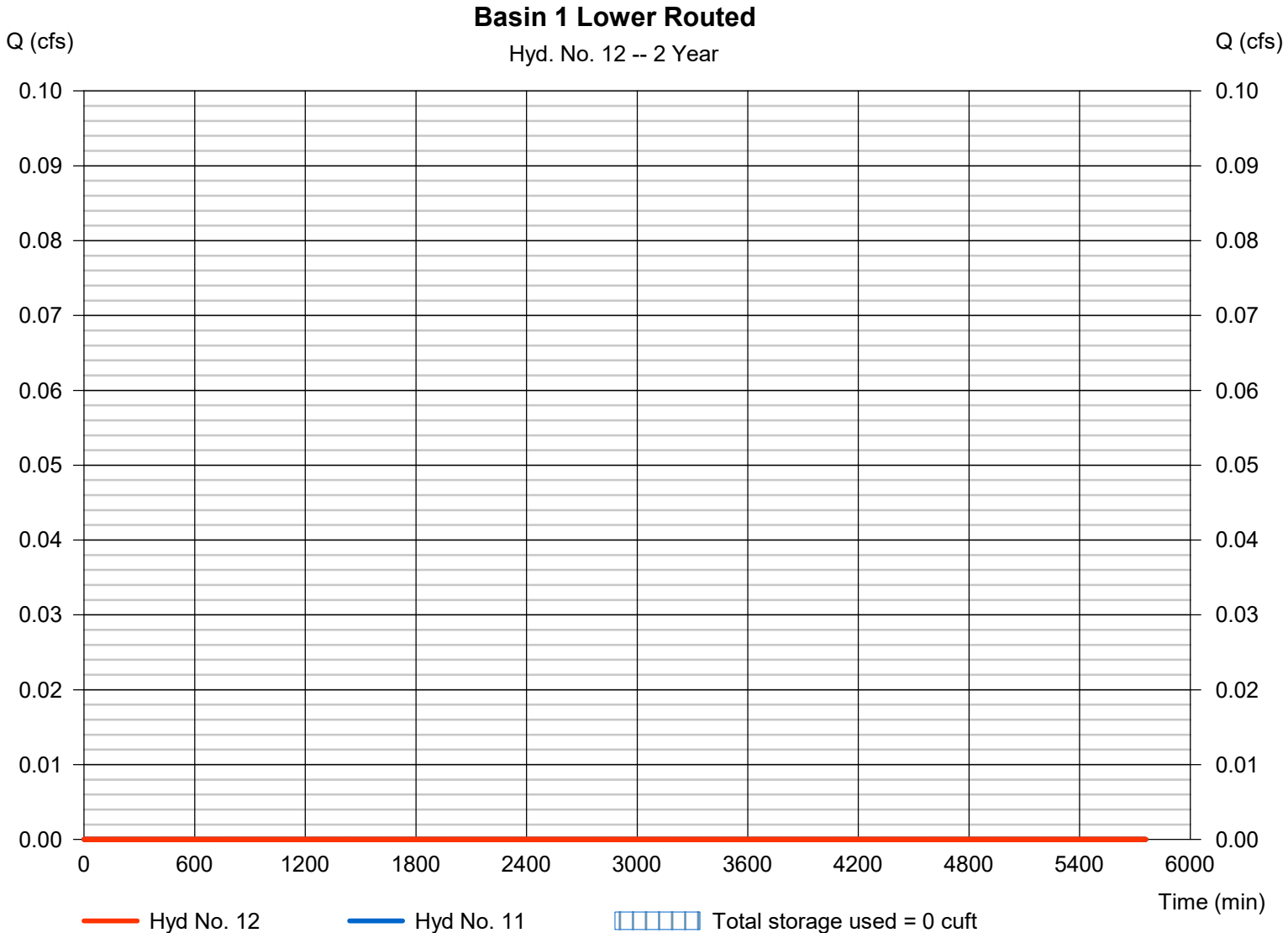
Wednesday, 03 / 22 / 2023

## Hyd. No. 12

### Basin 1 Lower Routed

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 11 - Basin 1 Upper Routed	Max. Elevation	= 302.20 ft
Reservoir name	= Basin 1 Lower	Max. Storage	= 0 cuft

Storage Indication method used.

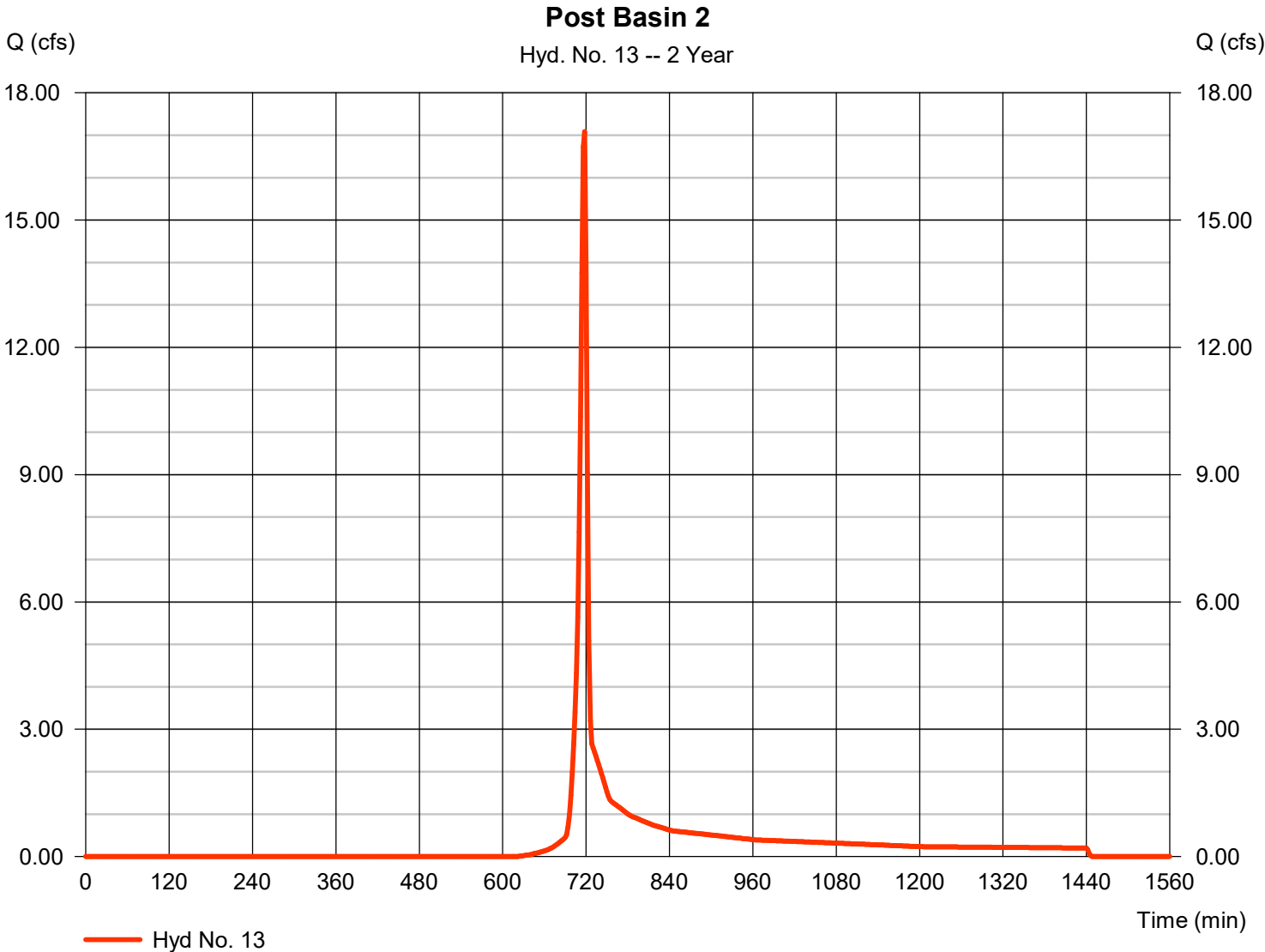


# Hydrograph Report

## Hyd. No. 13

### Post Basin 2

Hydrograph type	= SCS Runoff	Peak discharge	= 17.09 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 34,170 cuft
Drainage area	= 8.540 ac	Curve number	= 76.4
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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

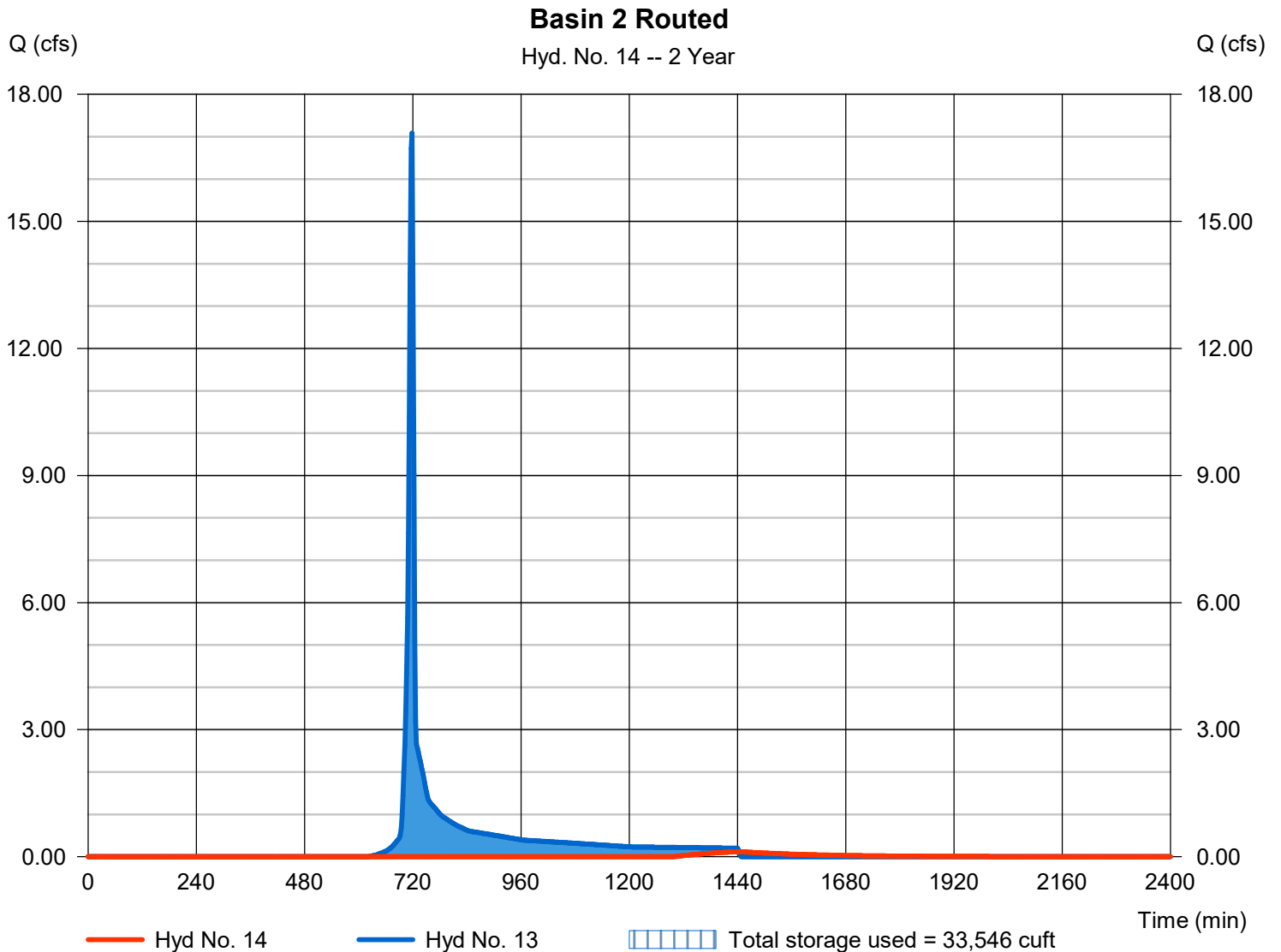
Wednesday, 03 / 22 / 2023

## Hyd. No. 14

Basin 2 Routed

Hydrograph type	= Reservoir	Peak discharge	= 0.120 cfs
Storm frequency	= 2 yrs	Time to peak	= 1444 min
Time interval	= 2 min	Hyd. volume	= 1,815 cuft
Inflow hyd. No.	= 13 - Post Basin 2	Max. Elevation	= 308.88 ft
Reservoir name	= Basin 2	Max. Storage	= 33,546 cuft

Storage Indication method used.



# Hydrograph Report

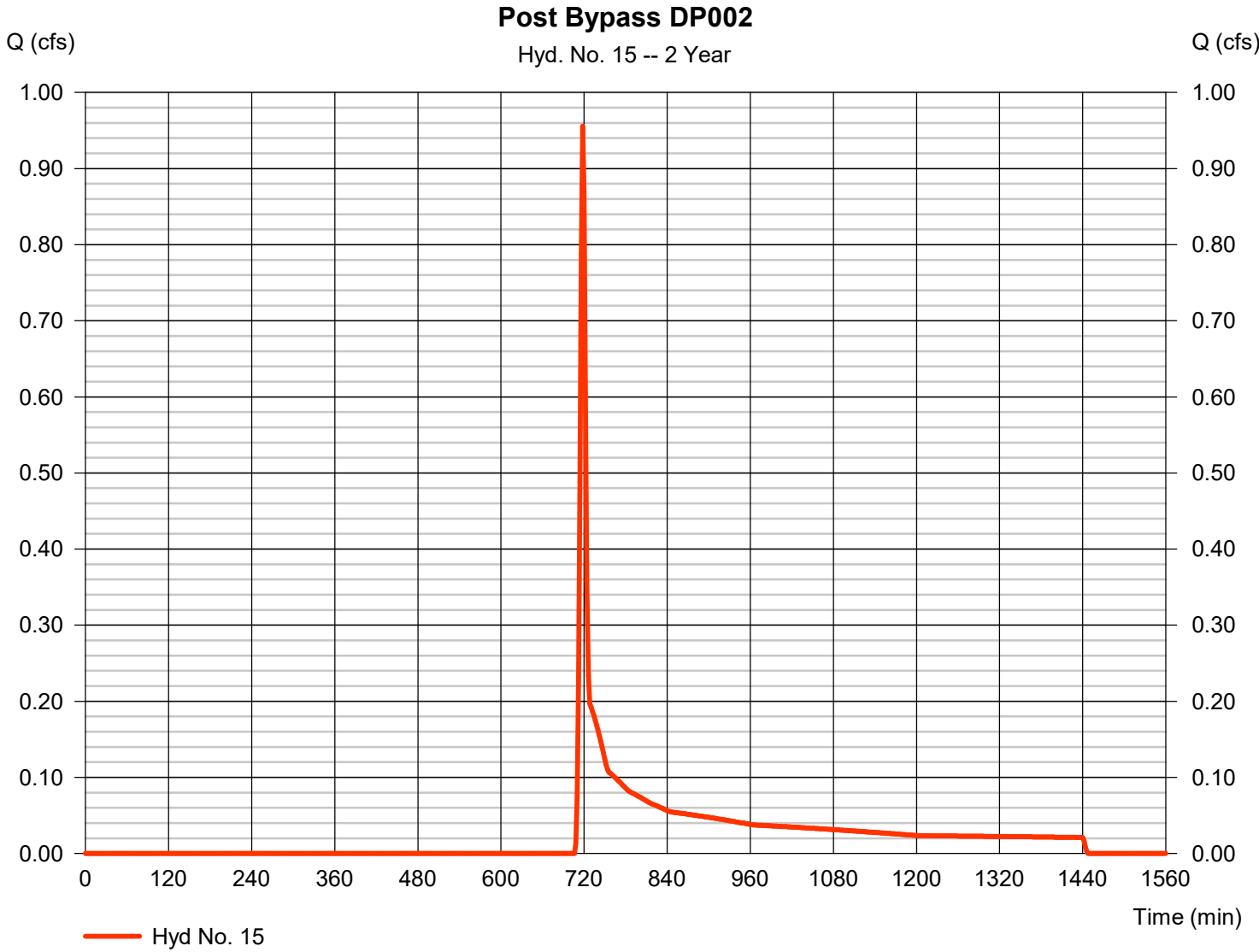
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## Hyd. No. 15

Post Bypass DP002

Hydrograph type	= SCS Runoff	Peak discharge	= 0.956 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 2,327 cuft
Drainage area	= 1.540 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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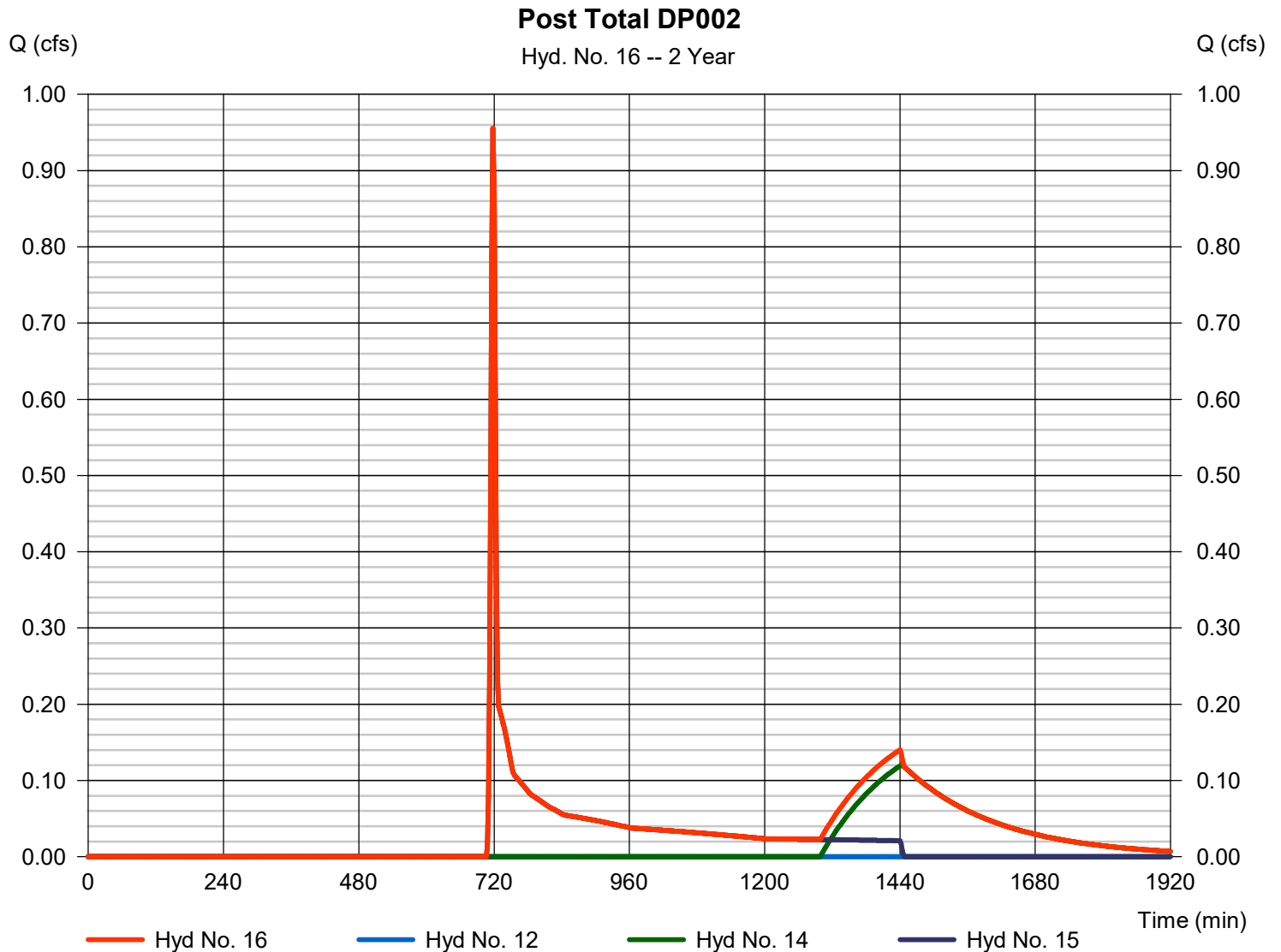
Wednesday, 03 / 22 / 2023

## Hyd. No. 16

Post Total DP002

Hydrograph type = Combine  
Storm frequency = 2 yrs  
Time interval = 2 min  
Inflow hyds. = 12, 14, 15

Peak discharge = 0.956 cfs  
Time to peak = 718 min  
Hyd. volume = 4,142 cuft  
Contrib. drain. area = 1.540 ac



# Hydrograph Report

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

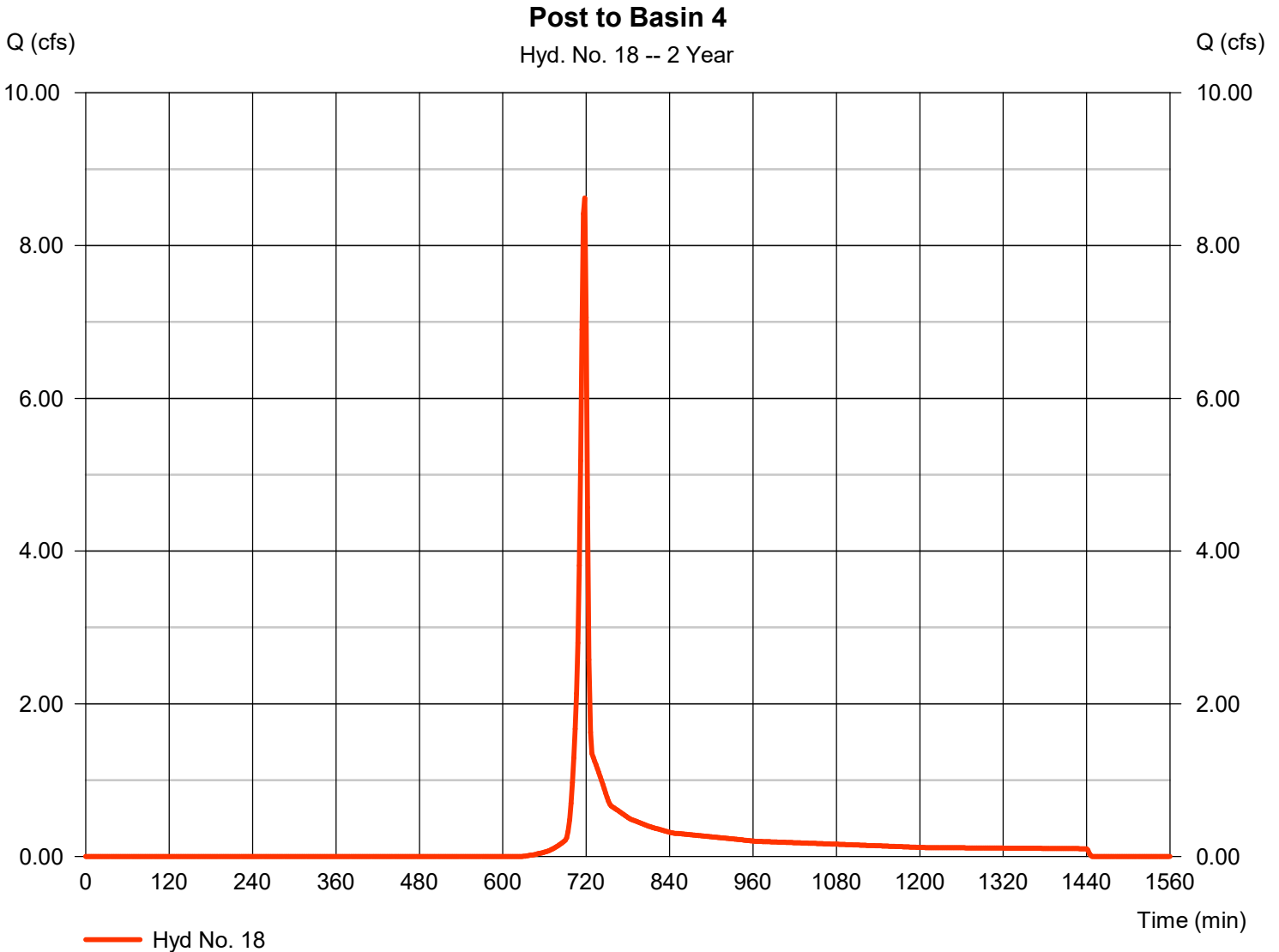
Wednesday, 03 / 22 / 2023

## Hyd. No. 18

Post to Basin 4

Hydrograph type	= SCS Runoff	Peak discharge	= 8.620 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 17,240 cuft
Drainage area	= 4.420 ac	Curve number	= 75.9*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(0.910 x 61) + (2.270 x 98) + (3.040 x 78)] / 4.420



# Hydrograph Report

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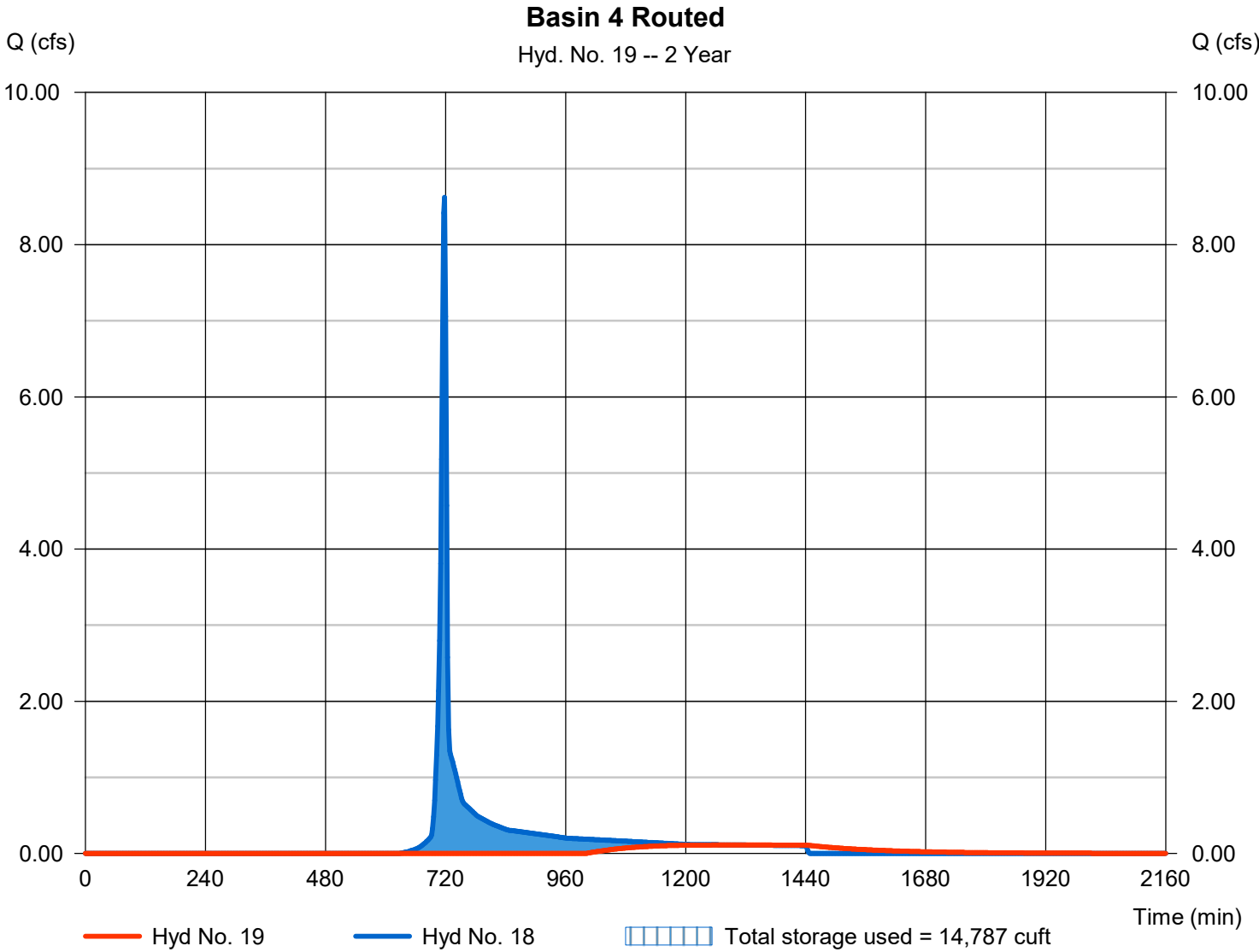
Wednesday, 03 / 22 / 2023

## Hyd. No. 19

Basin 4 Routed

Hydrograph type	= Reservoir	Peak discharge	= 0.111 cfs
Storm frequency	= 2 yrs	Time to peak	= 1308 min
Time interval	= 2 min	Hyd. volume	= 3,441 cuft
Inflow hyd. No.	= 18 - Post to Basin 4	Max. Elevation	= 346.32 ft
Reservoir name	= Basin 4	Max. Storage	= 14,787 cuft

Storage Indication method used.



# Hydrograph Report

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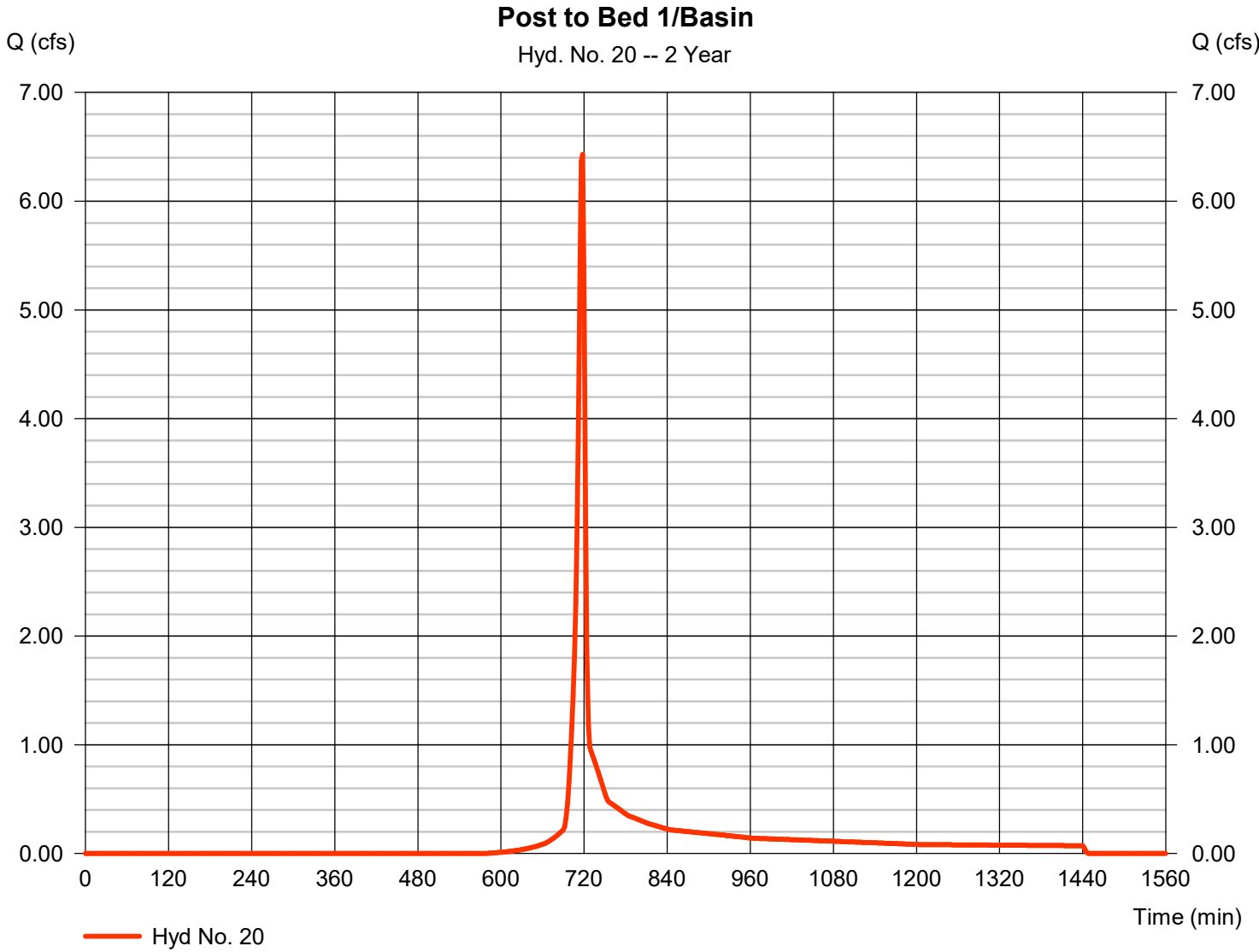
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## Hyd. No. 20

Post to Bed 1/Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 6.430 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 12,890 cuft
Drainage area	= 2.820 ac	Curve number	= 79.1*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(0.910 x 61) + (2.270 x 98) + (3.040 x 78)] / 2.820





# Hydrograph Report

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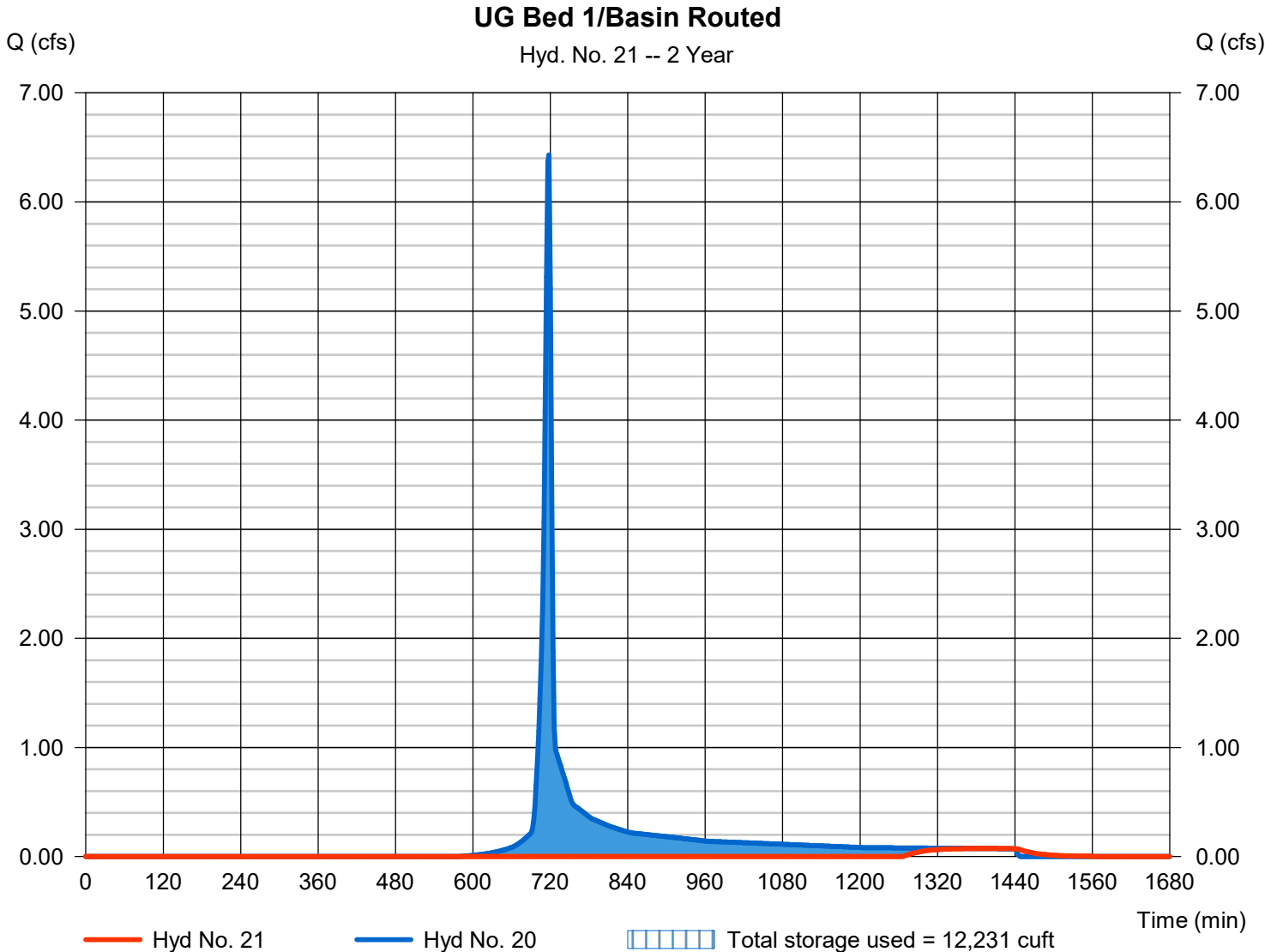
Wednesday, 03 / 22 / 2023

## Hyd. No. 21

UG Bed 1/Basin Routed

Hydrograph type	= Reservoir	Peak discharge	= 0.073 cfs
Storm frequency	= 2 yrs	Time to peak	= 1390 min
Time interval	= 2 min	Hyd. volume	= 793 cuft
Inflow hyd. No.	= 20 - Post to Bed 1/Basin	Max. Elevation	= 340.23 ft
Reservoir name	= UG Bed 1/Basin	Max. Storage	= 12,231 cuft

Storage Indication method used.

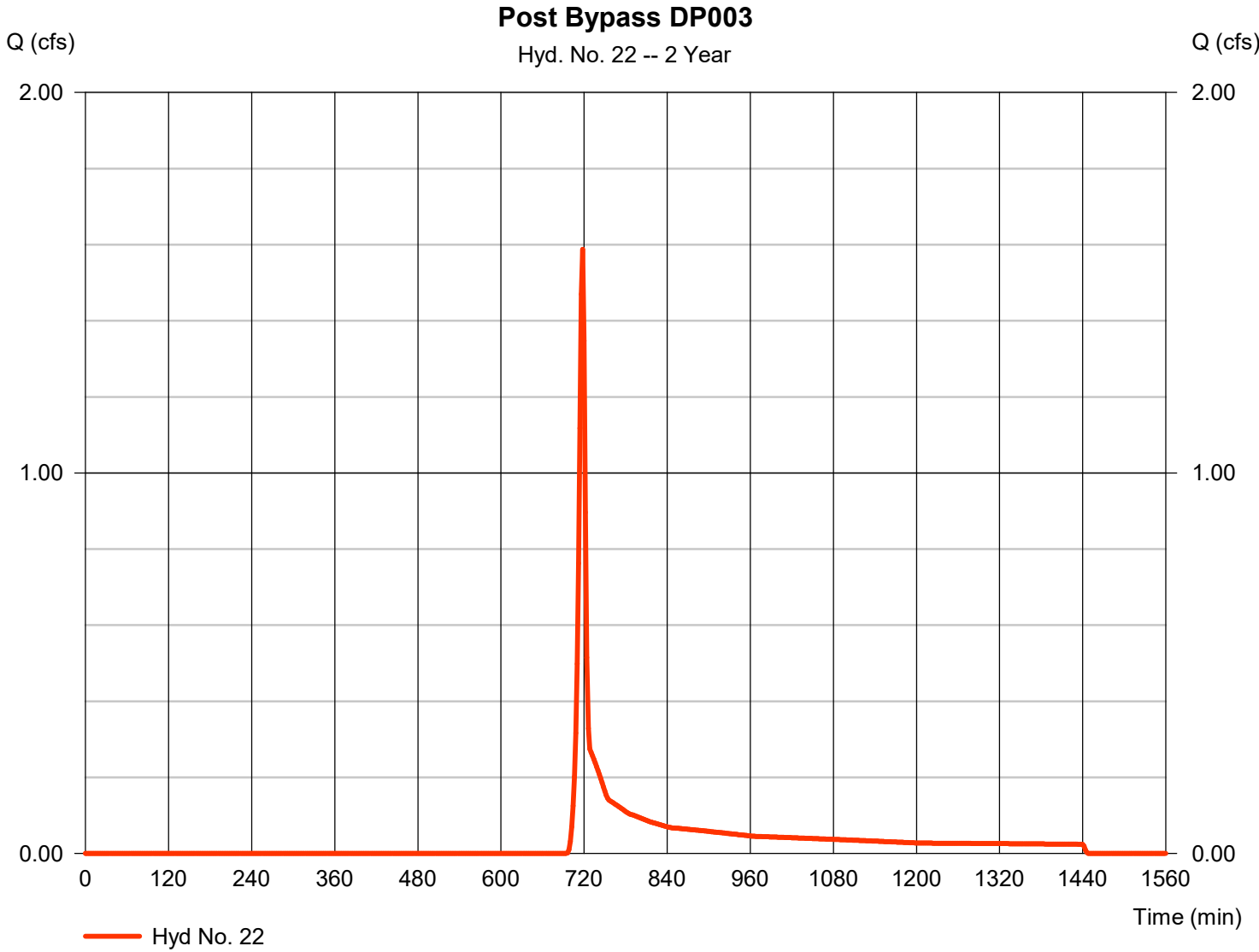


# Hydrograph Report

## Hyd. No. 22

Post Bypass DP003

Hydrograph type	= SCS Runoff	Peak discharge	= 1.588 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 3,299 cuft
Drainage area	= 1.340 ac	Curve number	= 67.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

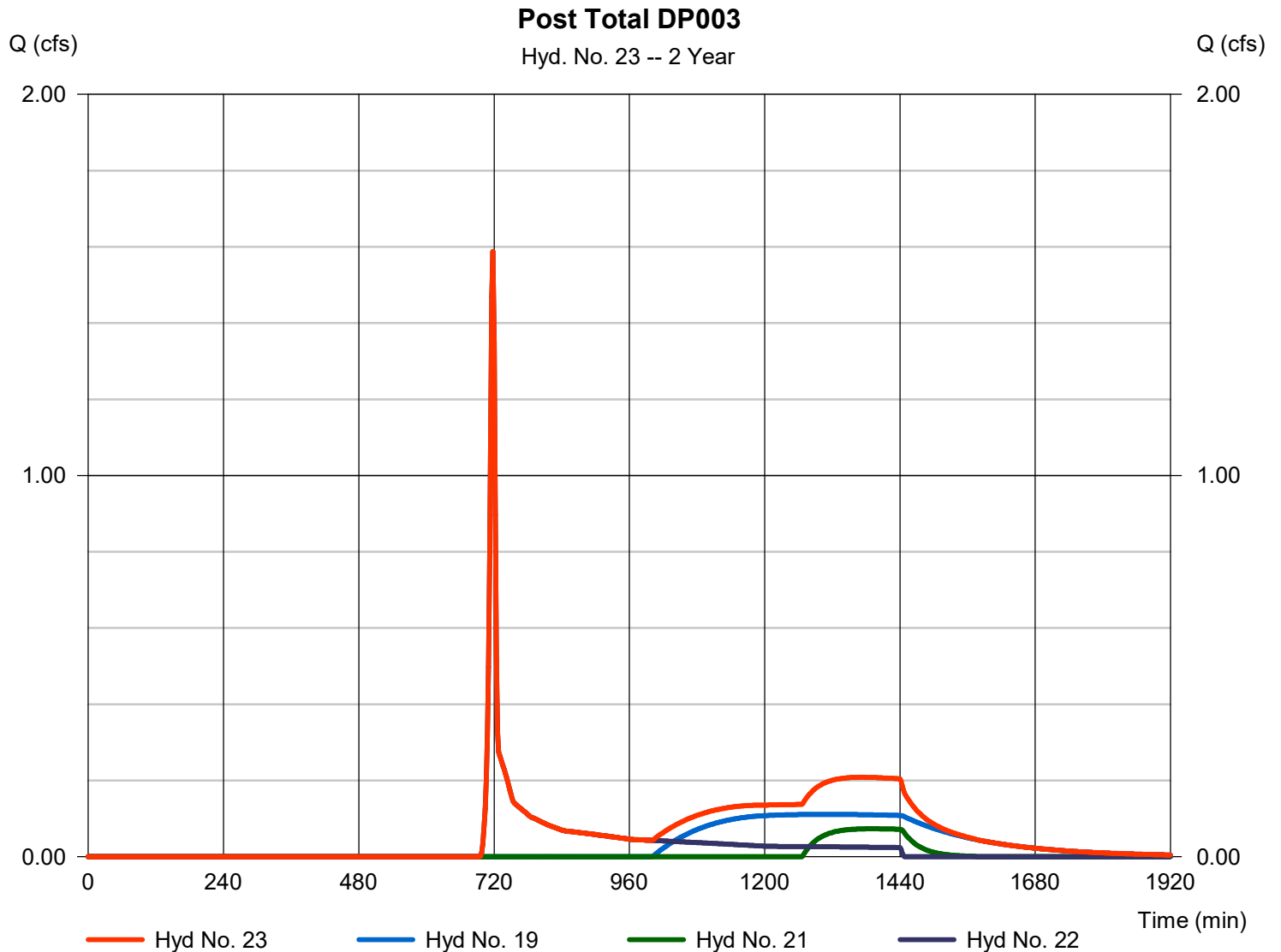
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## Hyd. No. 23

Post Total DP003

Hydrograph type	= Combine	Peak discharge	= 1.588 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 7,533 cuft
Inflow hyds.	= 19, 21, 22	Contrib. drain. area	= 1.340 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	12.58	2	722	40,519	-----	-----	-----	Pre Developed DP001	
2	SCS Runoff	18.02	2	722	55,435	-----	-----	-----	Pre Developed DP002	
3	SCS Runoff	14.55	2	722	39,080	-----	-----	-----	Pre Developed DP003	
4	SCS Runoff	1.200	2	718	2,500	-----	-----	-----	Pre Developed DP003 ORA	
5	SCS Runoff	29.68	2	718	59,371	-----	-----	-----	Post Basin 3	
6	Reservoir	0.543	2	1094	13,903	5	318.49	47,347	Basin 3 Routed	
7	SCS Runoff	2.314	2	718	4,767	-----	-----	-----	Post Bypass DP001	
8	Combine	2.314	2	718	18,670	6, 7	-----	-----	Post Total DP001	
10	SCS Runoff	28.01	2	718	56,002	-----	-----	-----	Post Basin 1	
11	Reservoir	0.510	2	1086	18,513	10	322.71	43,189	Basin 1 Upper Routed	
12	Reservoir	0.375	2	1362	12,317	11	304.32	8,514	Basin 1 Lower Routed	
13	SCS Runoff	26.44	2	718	53,176	-----	-----	-----	Post Basin 2	
14	Reservoir	0.682	2	918	20,822	13	309.11	36,790	Basin 2 Routed	
15	SCS Runoff	2.121	2	718	4,472	-----	-----	-----	Post Bypass DP002	
16	Combine	2.121	2	718	37,611	12, 14, 15	-----	-----	Post Total DP002	
18	SCS Runoff	13.42	2	718	26,965	-----	-----	-----	Post to Basin 4	
19	Reservoir	0.503	2	830	13,166	18	346.54	16,497	Basin 4 Routed	
20	SCS Runoff	9.677	2	716	19,544	-----	-----	-----	Post to Bed 1/Basin	
21	Reservoir	0.351	2	828	7,446	20	340.35	12,744	UG Bed 1/Basin Routed	
22	SCS Runoff	2.821	2	718	5,670	-----	-----	-----	Post Bypass DP003	
23	Combine	2.821	2	718	26,283	19, 21, 22	-----	-----	Post Total DP003	
SWM.gpw					Return Period: 5 Year			Wednesday, 03 / 22 / 2023		

# Hydrograph Report

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

Wednesday, 03 / 22 / 2023

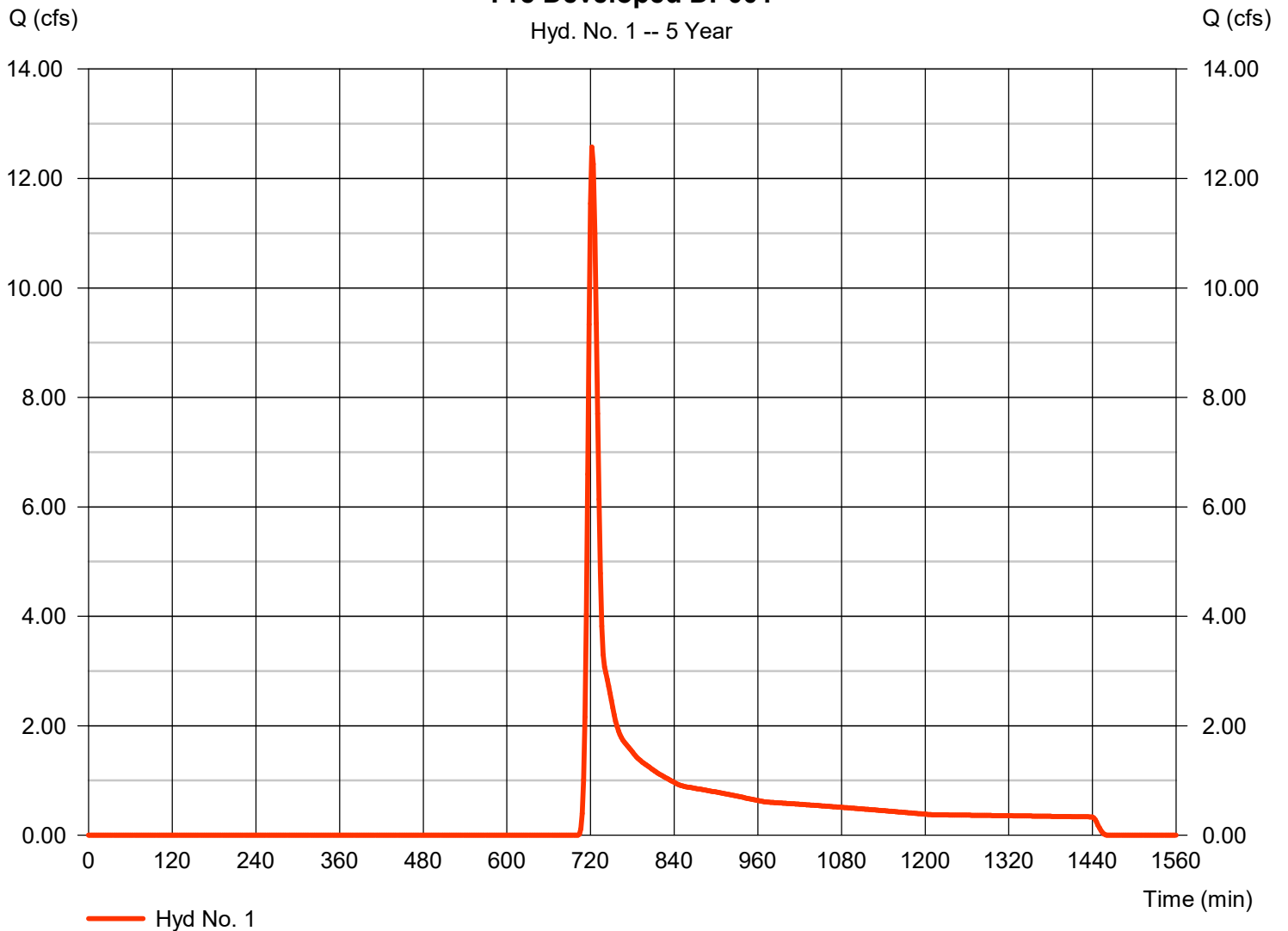
## Hyd. No. 1

Pre Developed DP001

Hydrograph type	= SCS Runoff	Peak discharge	= 12.58 cfs
Storm frequency	= 5 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 40,519 cuft
Drainage area	= 15.430 ac	Curve number	= 58
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

### Pre Developed DP001

Hyd. No. 1 -- 5 Year



# Hydrograph Report

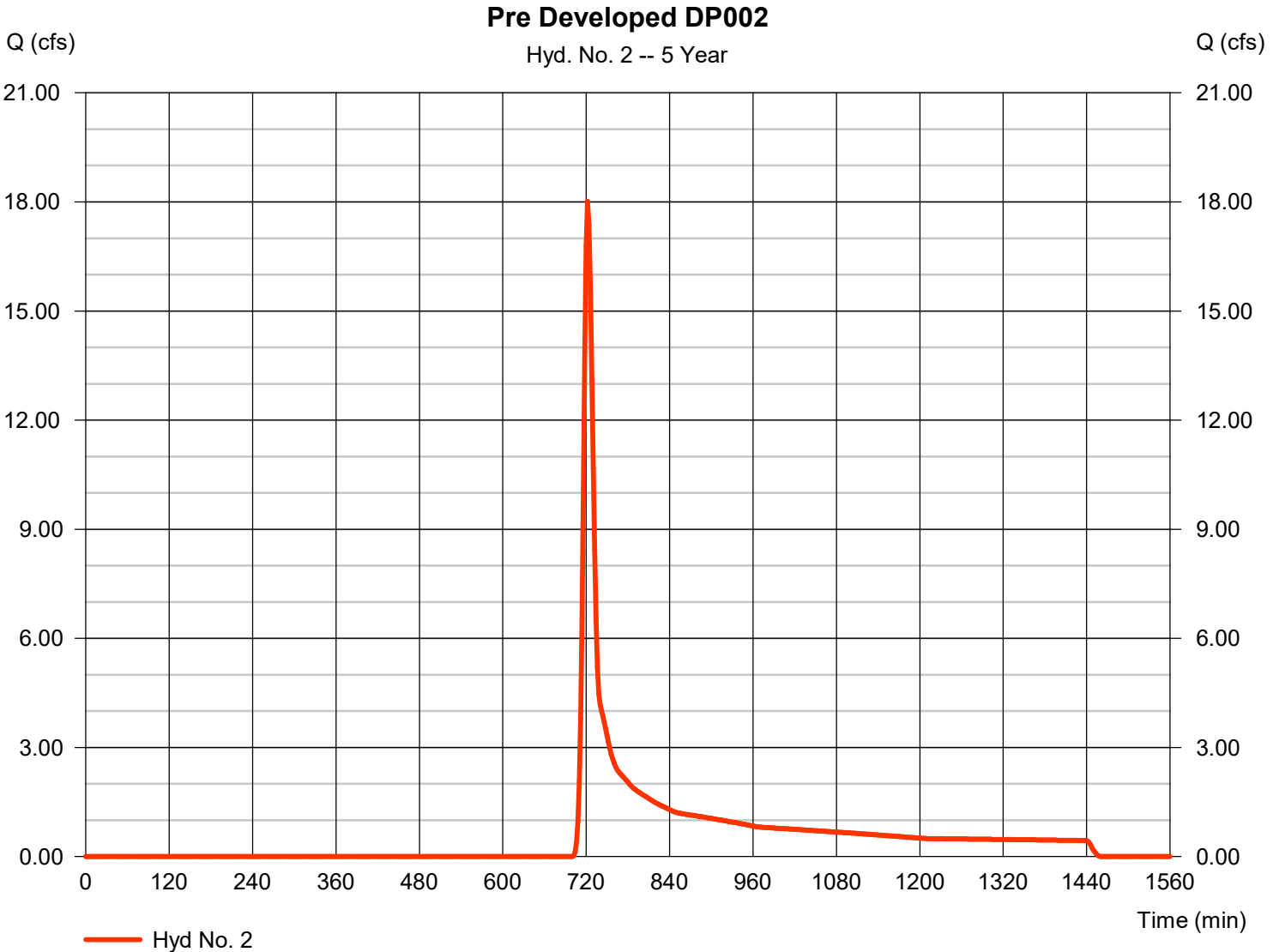
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## Hyd. No. 2

Pre Developed DP002

Hydrograph type	= SCS Runoff	Peak discharge	= 18.02 cfs
Storm frequency	= 5 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 55,435 cuft
Drainage area	= 19.210 ac	Curve number	= 59.4
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

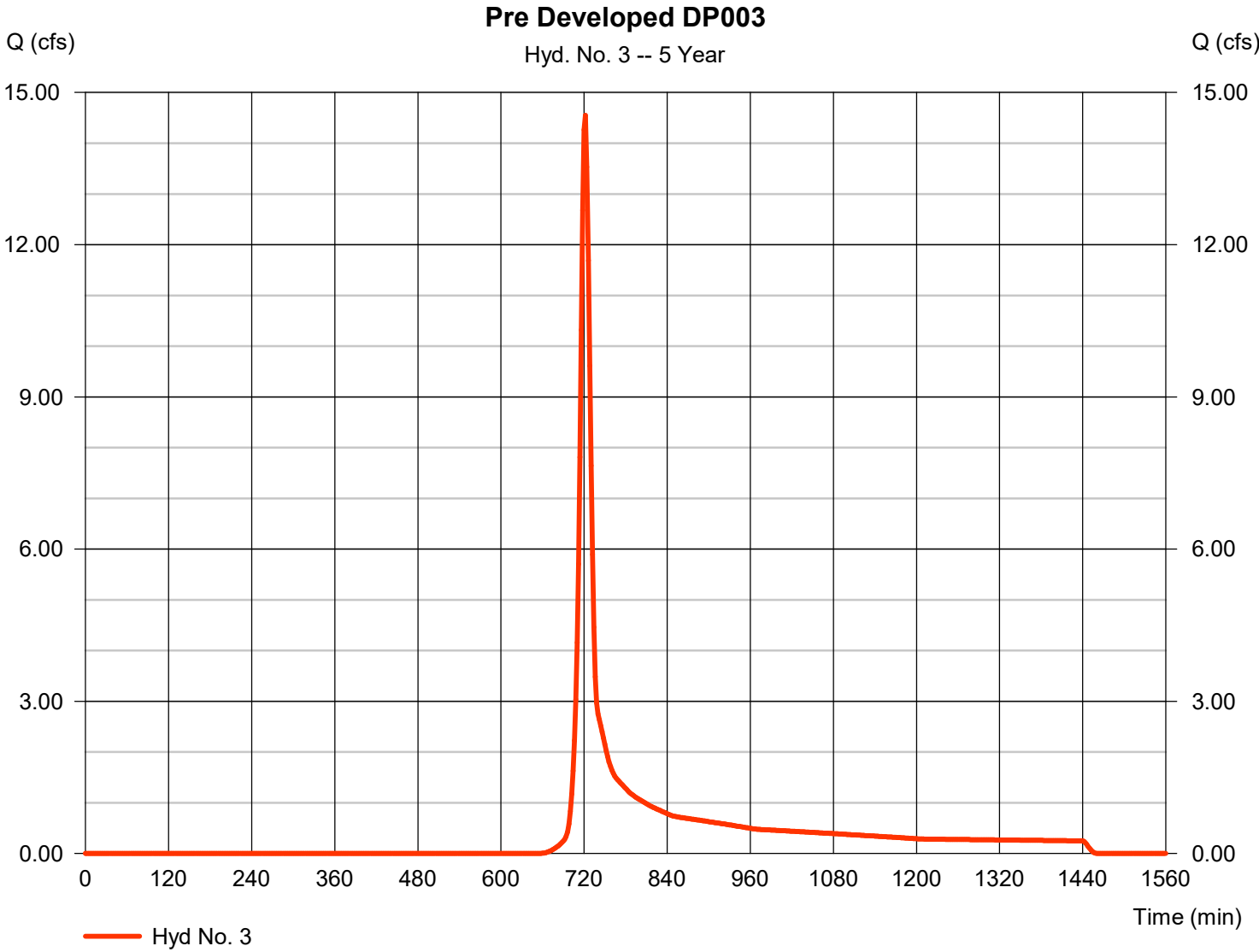


# Hydrograph Report

## Hyd. No. 3

Pre Developed DP003

Hydrograph type	= SCS Runoff	Peak discharge	= 14.55 cfs
Storm frequency	= 5 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 39,080 cuft
Drainage area	= 8.190 ac	Curve number	= 68.3
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

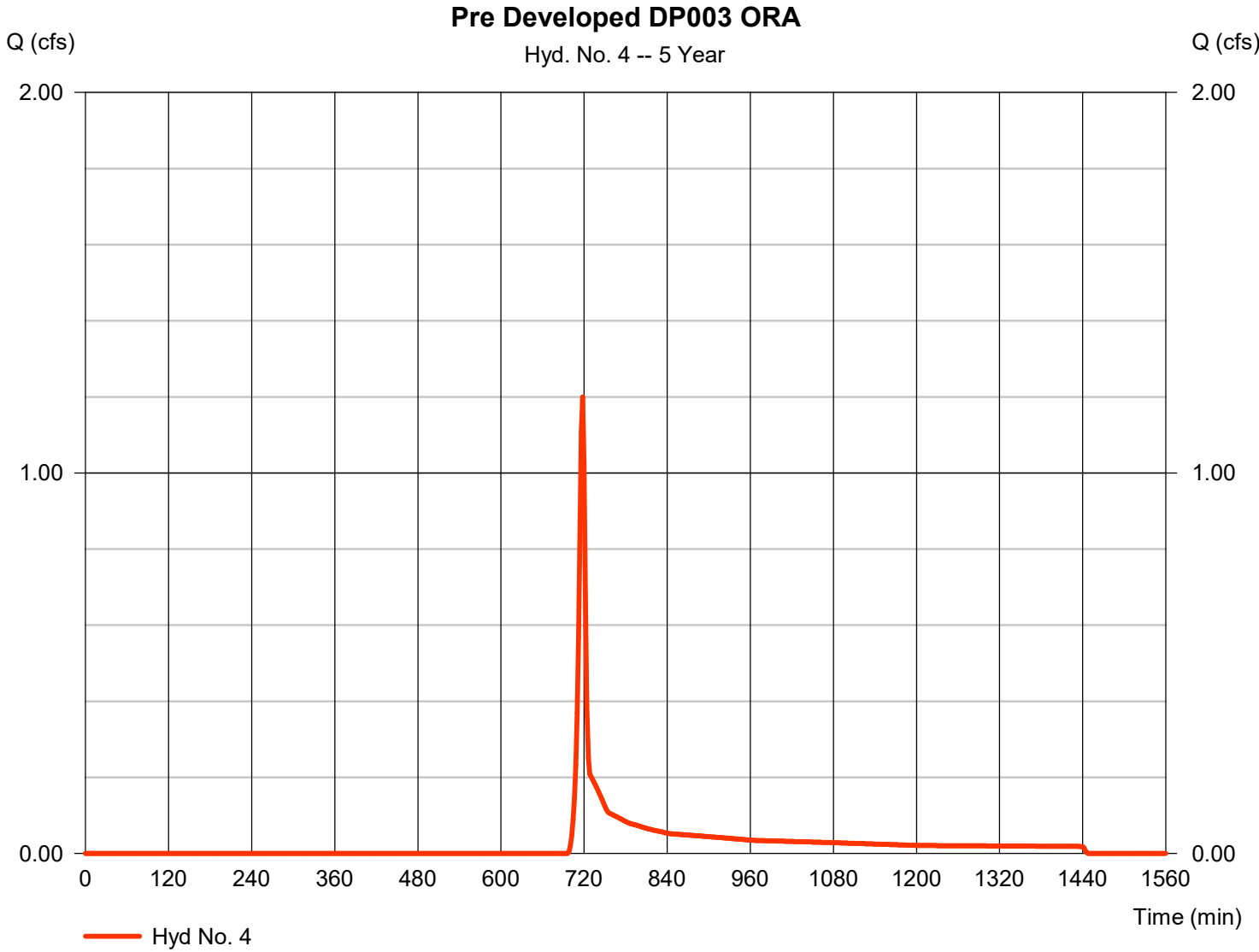


# Hydrograph Report

## Hyd. No. 4

Pre Developed DP003 ORA

Hydrograph type	= SCS Runoff	Peak discharge	= 1.200 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 2,500 cuft
Drainage area	= 0.810 ac	Curve number	= 62
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484





# Hydrograph Report

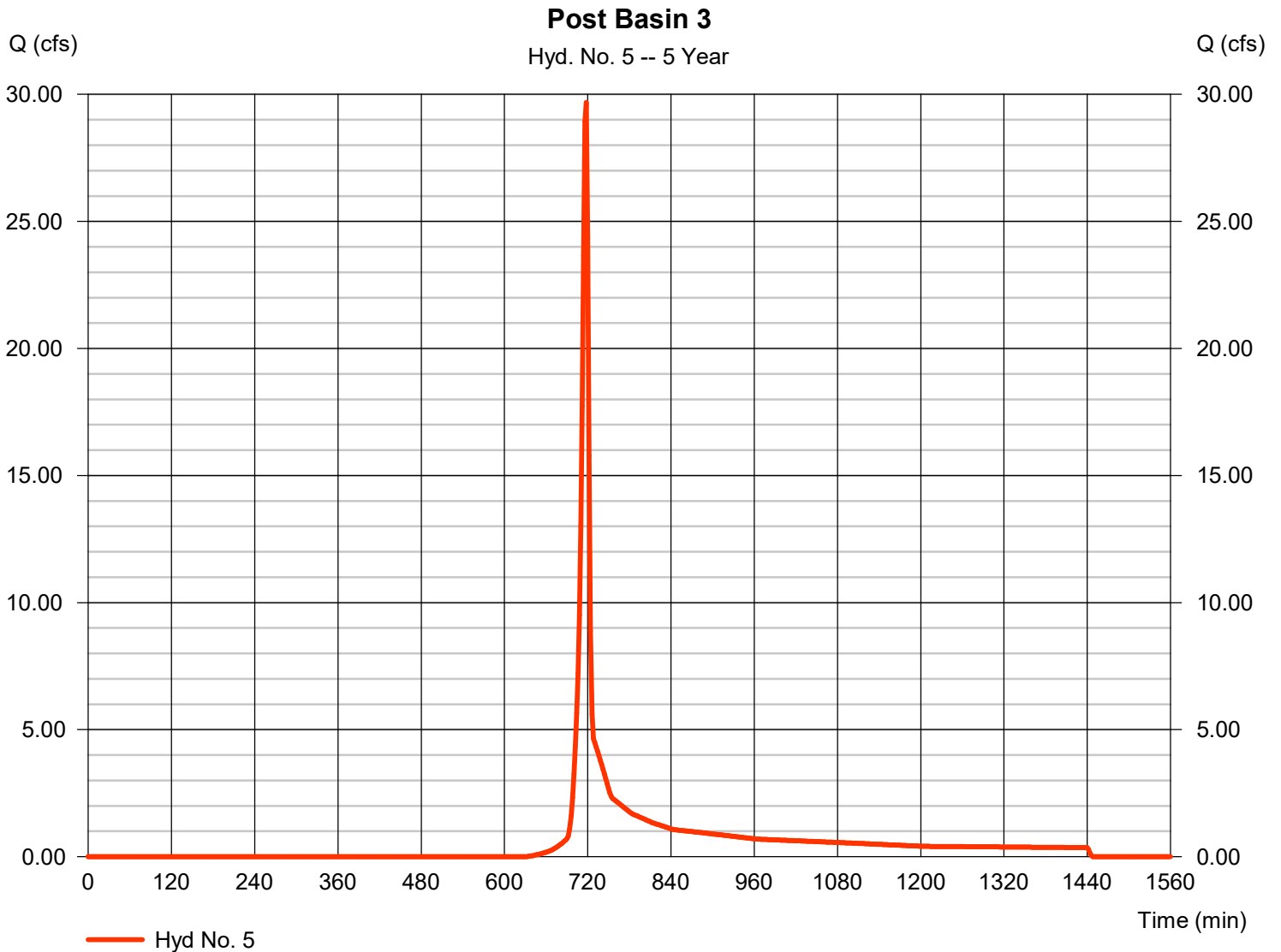
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Wednesday, 03 / 22 / 2023

## Hyd. No. 5

Post Basin 3

Hydrograph type	= SCS Runoff	Peak discharge	= 29.68 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 59,371 cuft
Drainage area	= 12.150 ac	Curve number	= 70.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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

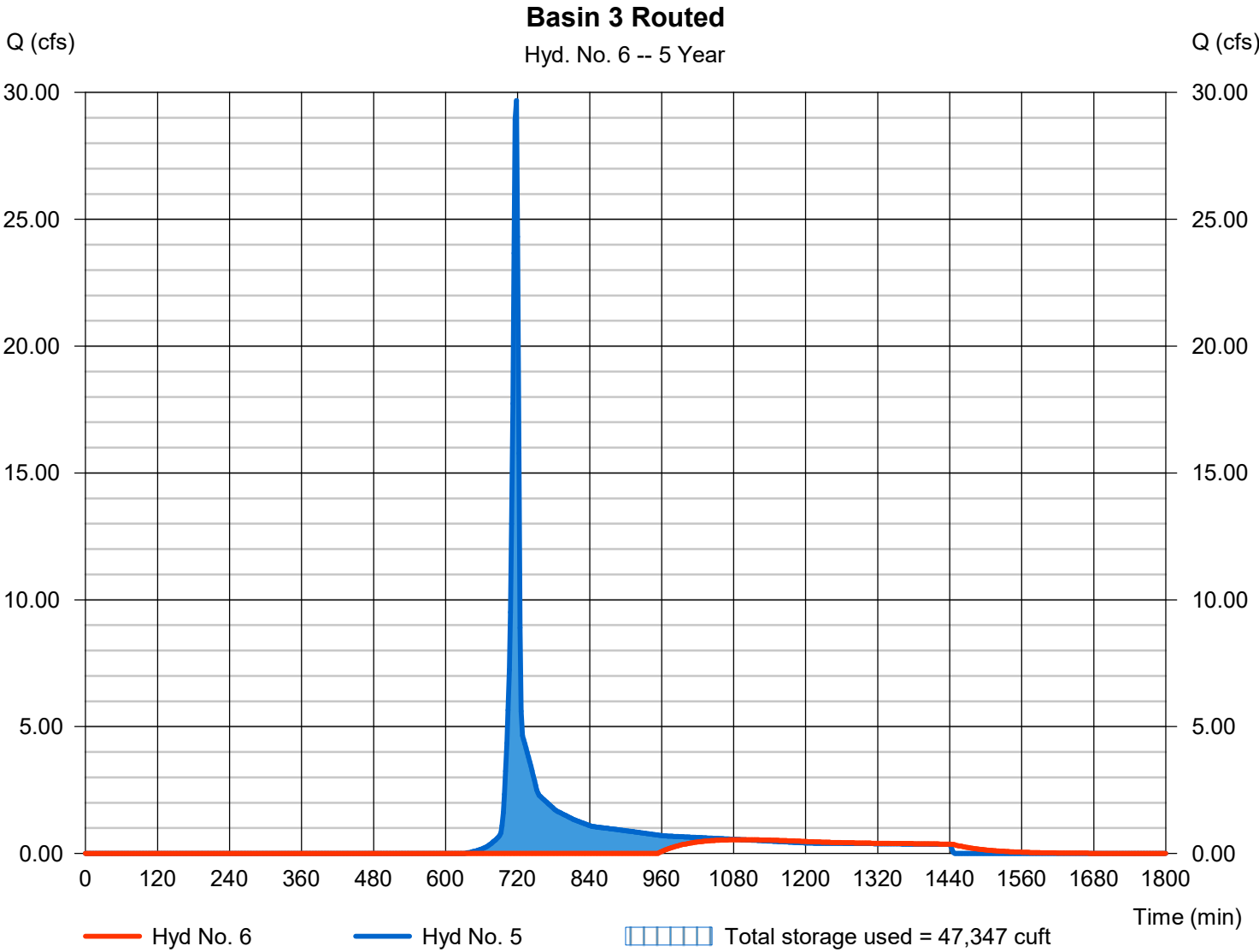
Wednesday, 03 / 22 / 2023

## Hyd. No. 6

Basin 3 Routed

Hydrograph type	= Reservoir	Peak discharge	= 0.543 cfs
Storm frequency	= 5 yrs	Time to peak	= 1094 min
Time interval	= 2 min	Hyd. volume	= 13,903 cuft
Inflow hyd. No.	= 5 - Post Basin 3	Max. Elevation	= 318.49 ft
Reservoir name	= Basin 3	Max. Storage	= 47,347 cuft

Storage Indication method used.



# Hydrograph Report

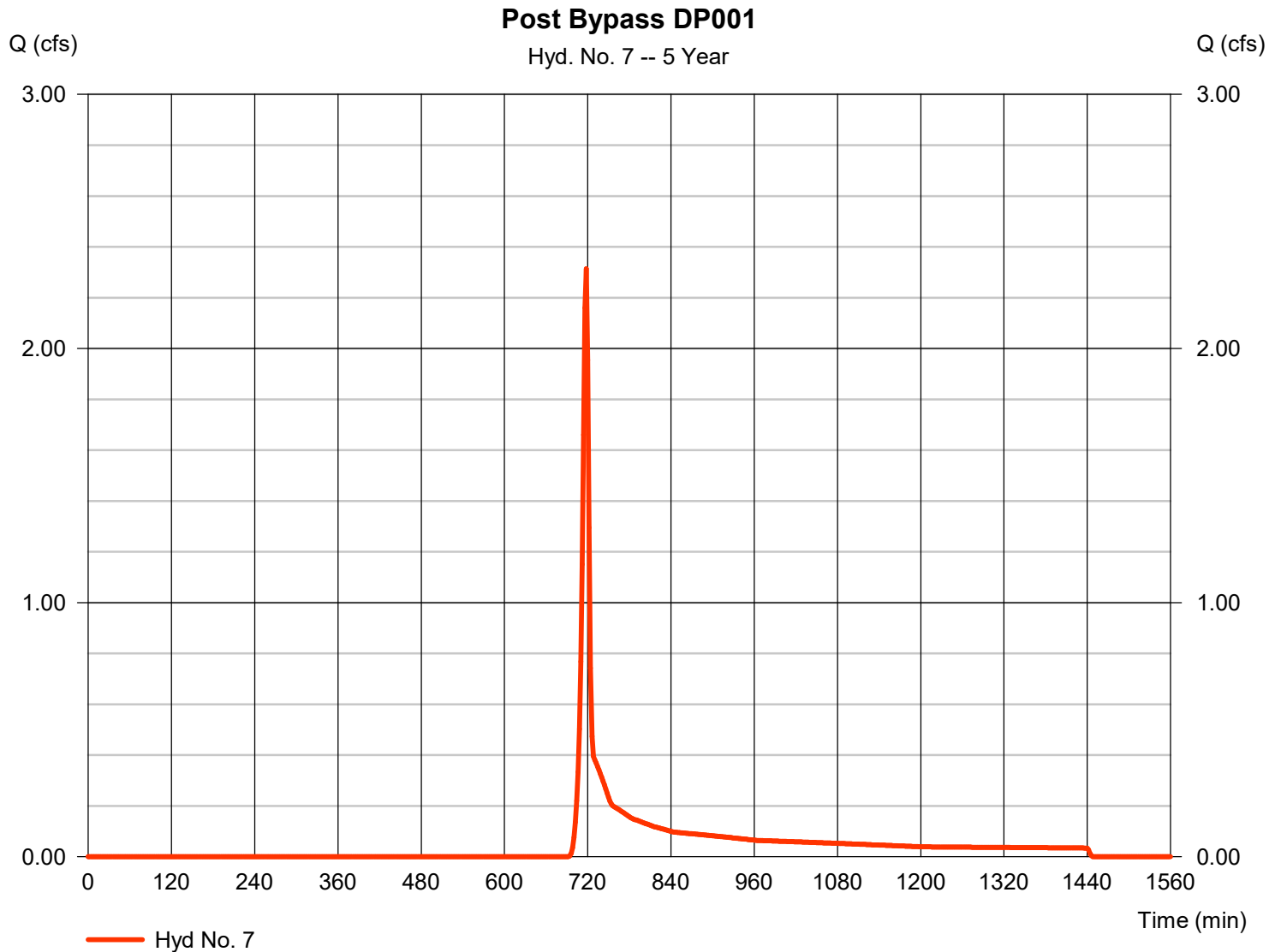
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## Hyd. No. 7

Post Bypass DP001

Hydrograph type	= SCS Runoff	Peak discharge	= 2.314 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 4,767 cuft
Drainage area	= 1.440 ac	Curve number	= 63.2
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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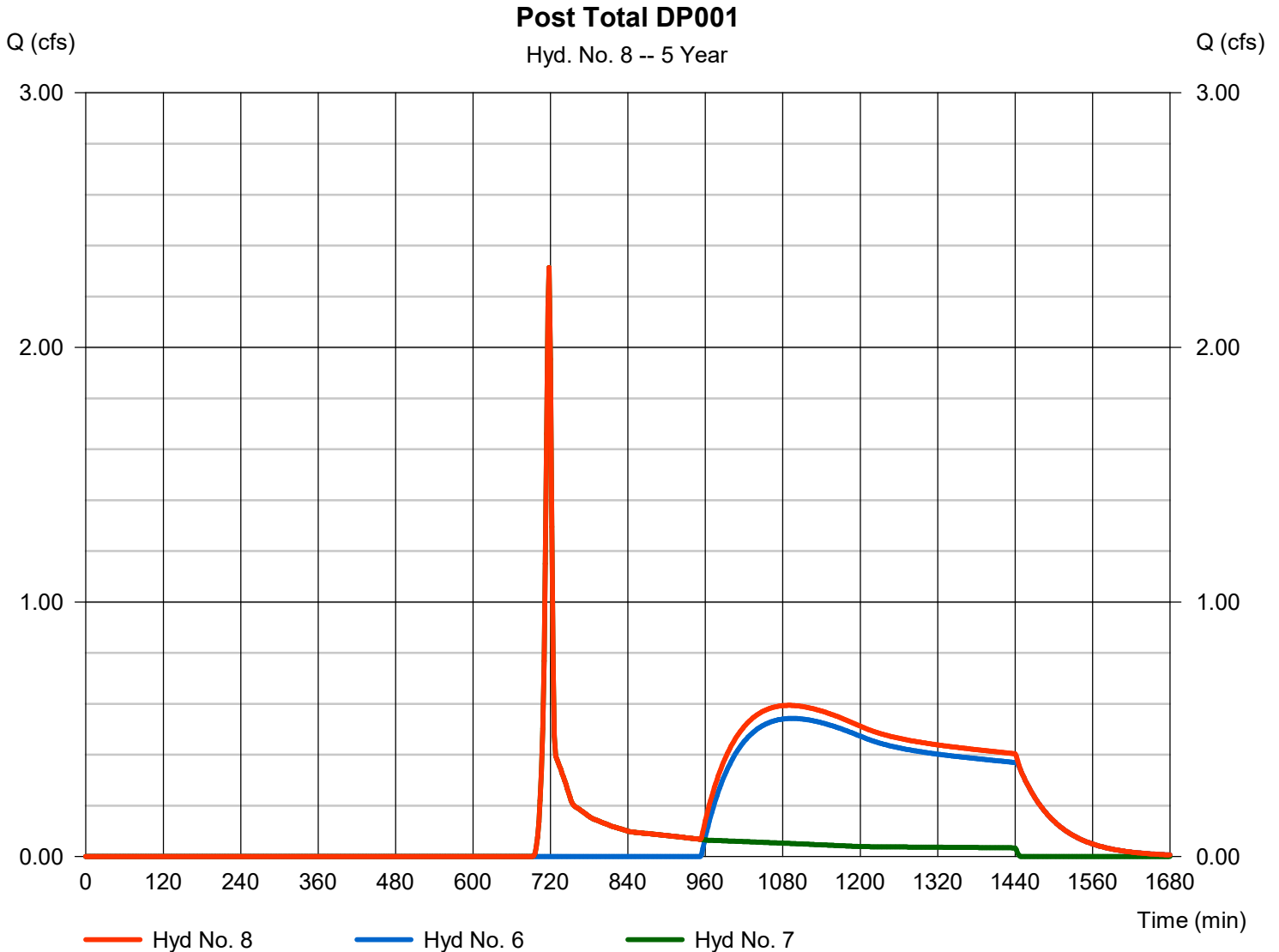
Wednesday, 03 / 22 / 2023

## Hyd. No. 8

Post Total DP001

Hydrograph type = Combine  
Storm frequency = 5 yrs  
Time interval = 2 min  
Inflow hyds. = 6, 7

Peak discharge = 2.314 cfs  
Time to peak = 718 min  
Hyd. volume = 18,670 cuft  
Contrib. drain. area = 1.440 ac



# Hydrograph Report

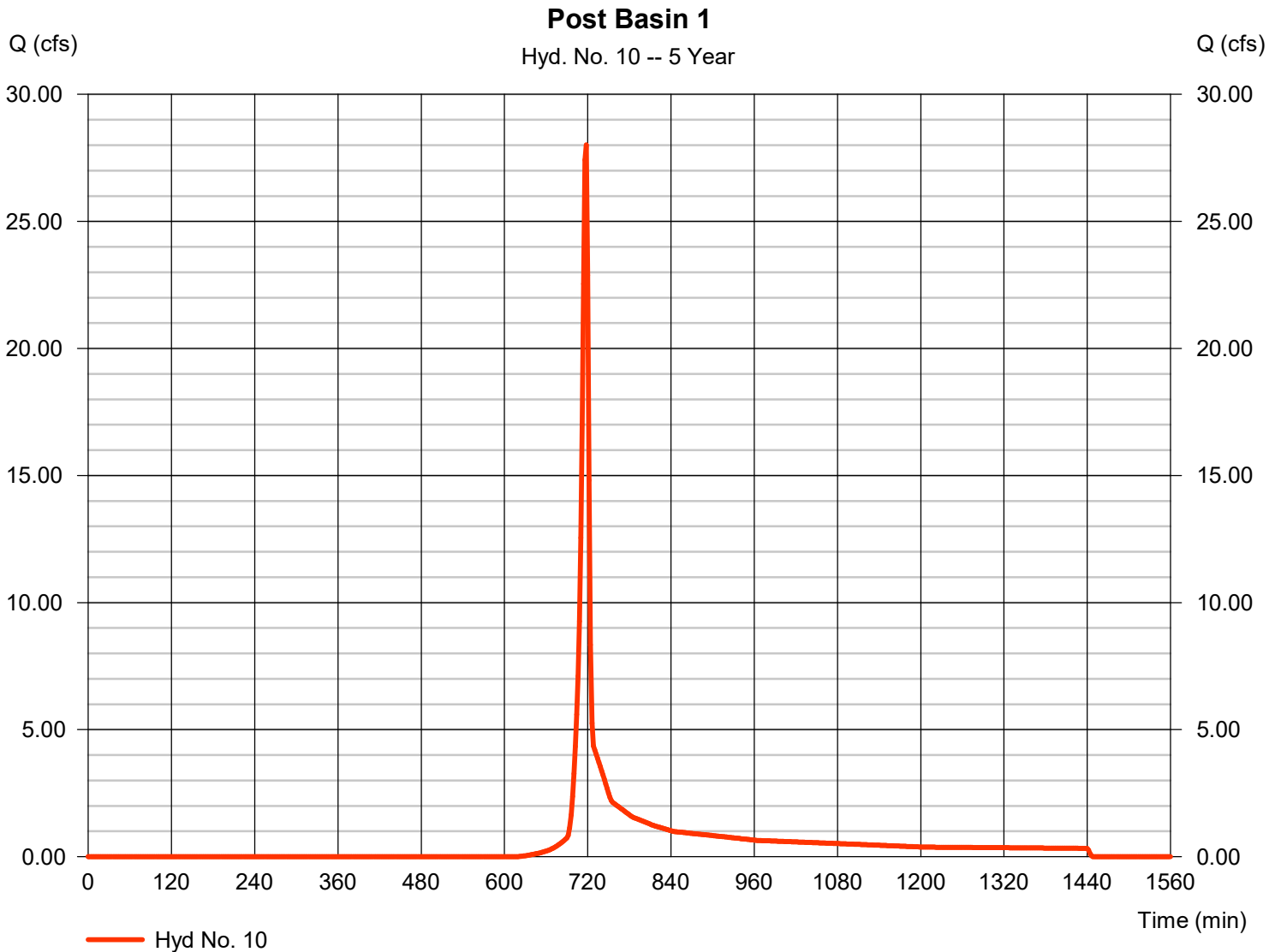
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## Hyd. No. 10

Post Basin 1

Hydrograph type	= SCS Runoff	Peak discharge	= 28.01 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 56,002 cuft
Drainage area	= 10.950 ac	Curve number	= 71.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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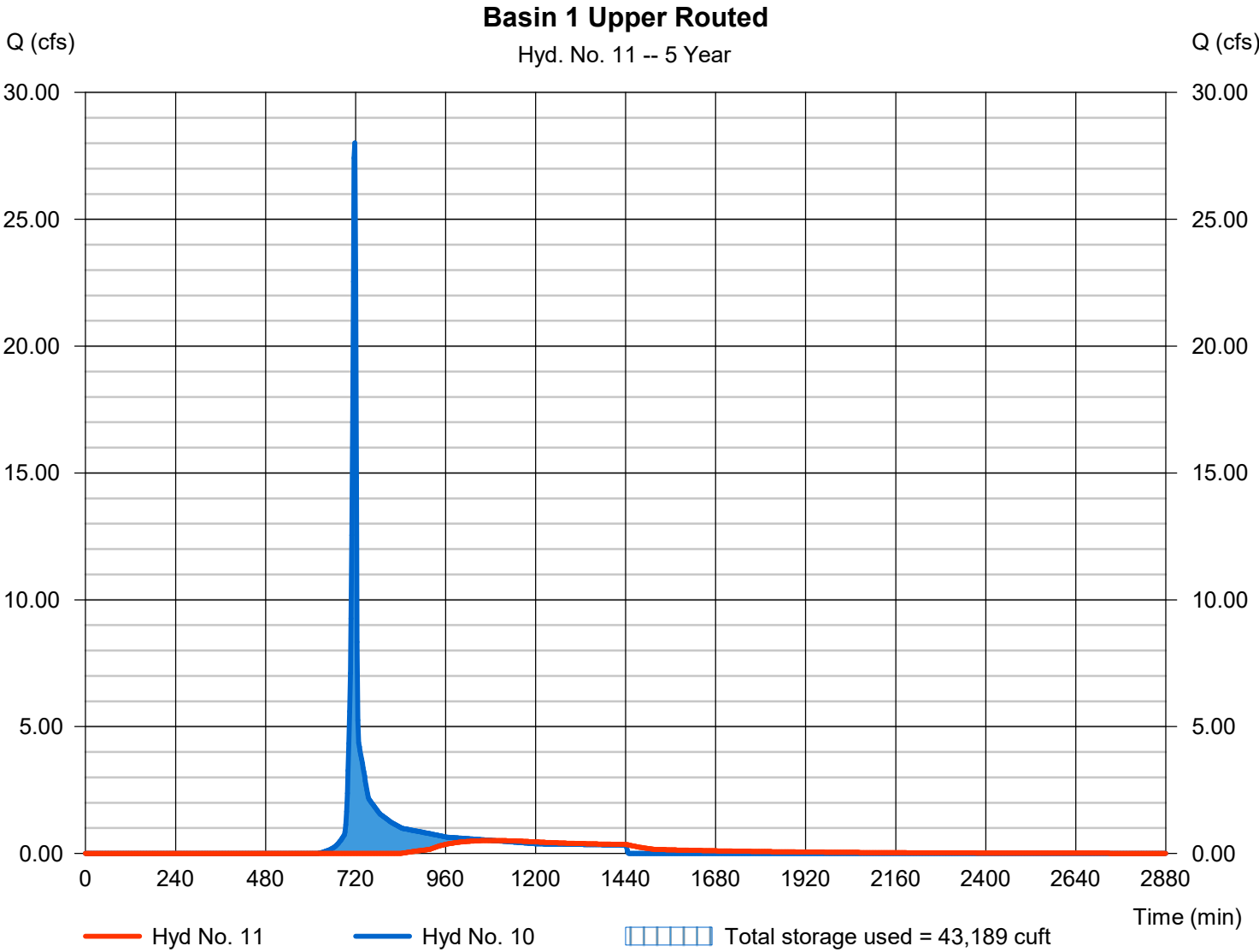
Wednesday, 03 / 22 / 2023

## Hyd. No. 11

Basin 1 Upper Routed

Hydrograph type	= Reservoir	Peak discharge	= 0.510 cfs
Storm frequency	= 5 yrs	Time to peak	= 1086 min
Time interval	= 2 min	Hyd. volume	= 18,513 cuft
Inflow hyd. No.	= 10 - Post Basin 1	Max. Elevation	= 322.71 ft
Reservoir name	= Basin 1 Upper	Max. Storage	= 43,189 cuft

Storage Indication method used.



# Hydrograph Report

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

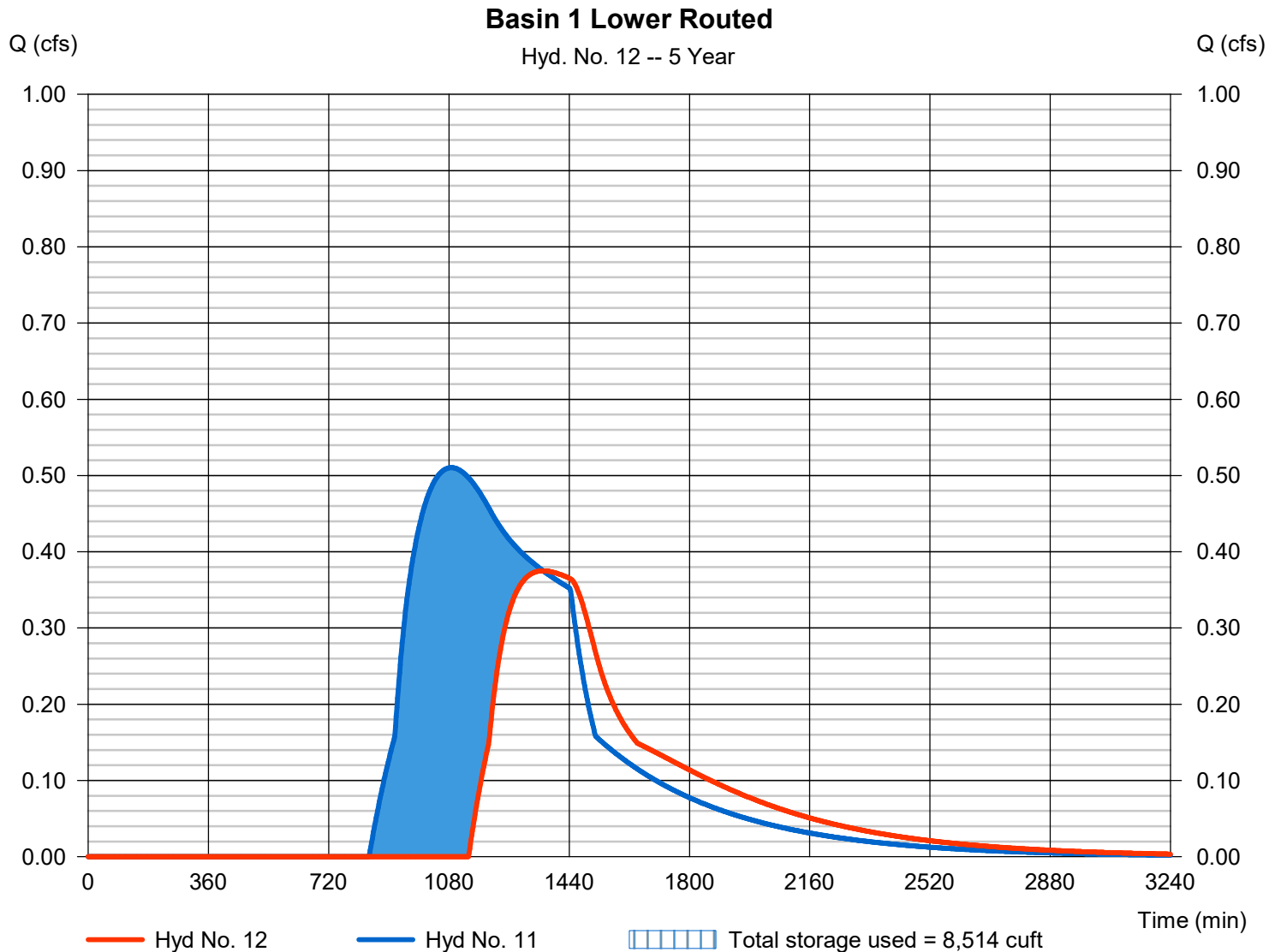
Wednesday, 03 / 22 / 2023

## Hyd. No. 12

### Basin 1 Lower Routed

Hydrograph type	= Reservoir	Peak discharge	= 0.375 cfs
Storm frequency	= 5 yrs	Time to peak	= 1362 min
Time interval	= 2 min	Hyd. volume	= 12,317 cuft
Inflow hyd. No.	= 11 - Basin 1 Upper Routed	Max. Elevation	= 304.32 ft
Reservoir name	= Basin 1 Lower	Max. Storage	= 8,514 cuft

Storage Indication method used.



# Hydrograph Report

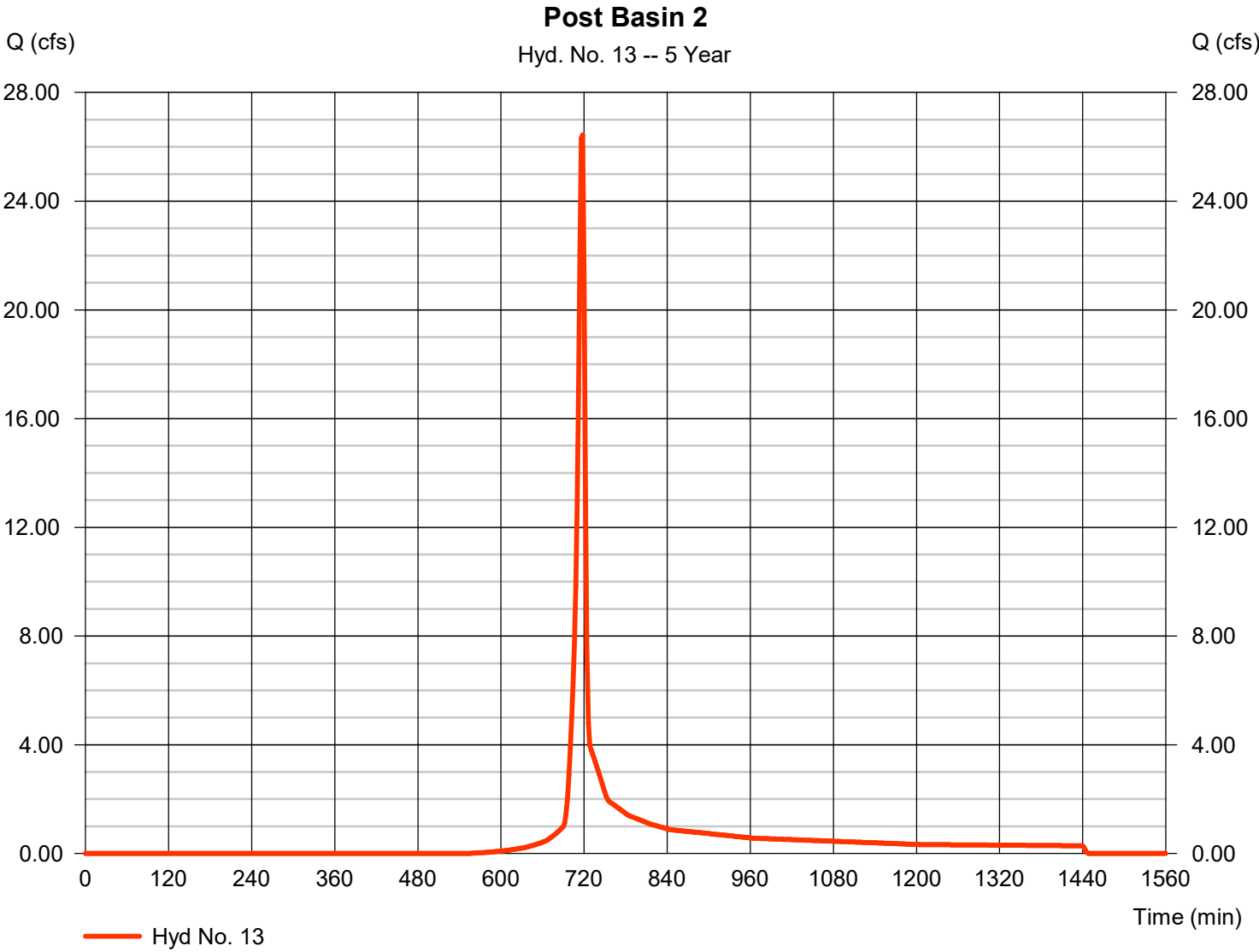
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## Hyd. No. 13

Post Basin 2

Hydrograph type	= SCS Runoff	Peak discharge	= 26.44 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 53,176 cuft
Drainage area	= 8.540 ac	Curve number	= 76.4
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484





# Hydrograph Report

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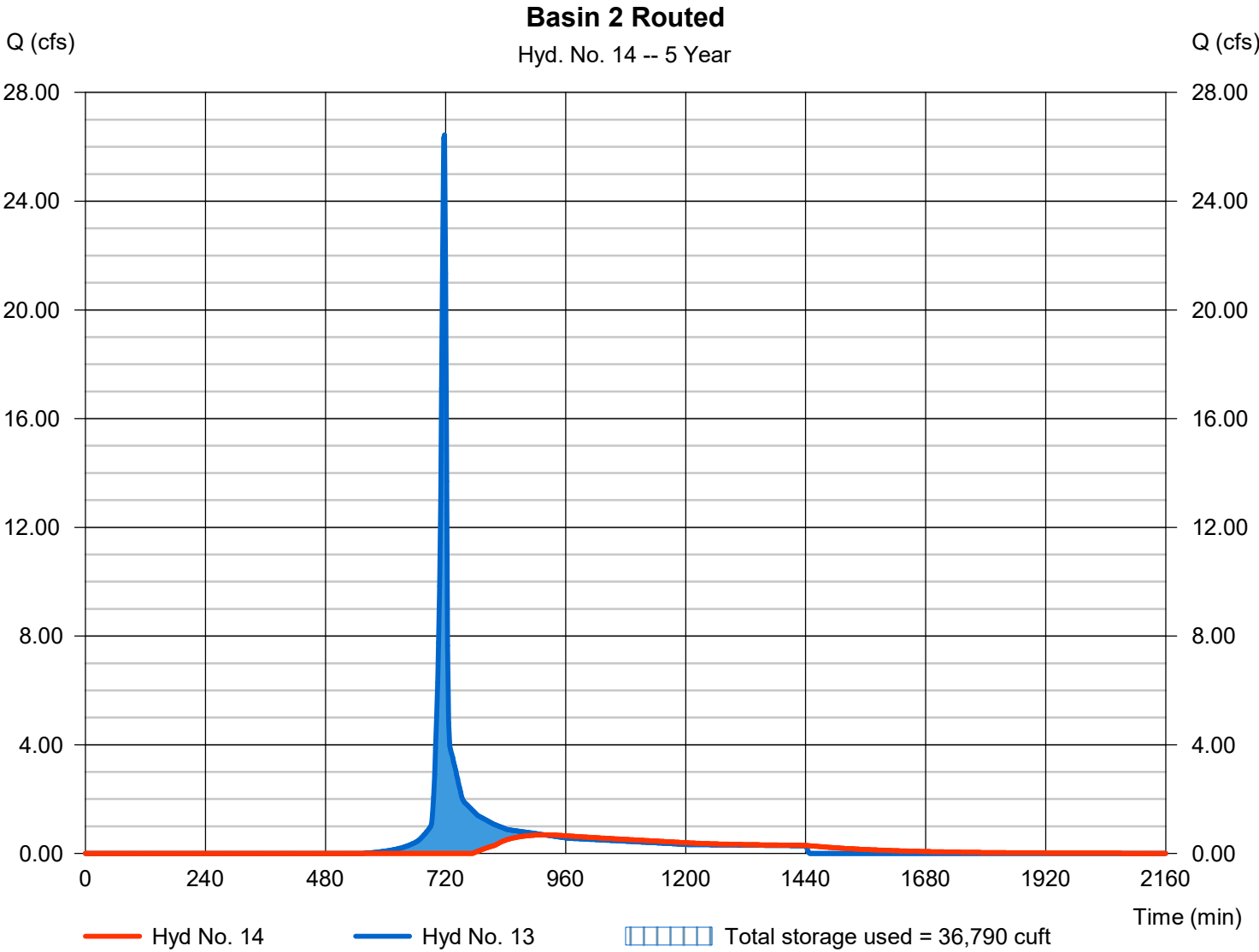
Wednesday, 03 / 22 / 2023

## Hyd. No. 14

Basin 2 Routed

Hydrograph type	= Reservoir	Peak discharge	= 0.682 cfs
Storm frequency	= 5 yrs	Time to peak	= 918 min
Time interval	= 2 min	Hyd. volume	= 20,822 cuft
Inflow hyd. No.	= 13 - Post Basin 2	Max. Elevation	= 309.11 ft
Reservoir name	= Basin 2	Max. Storage	= 36,790 cuft

Storage Indication method used.

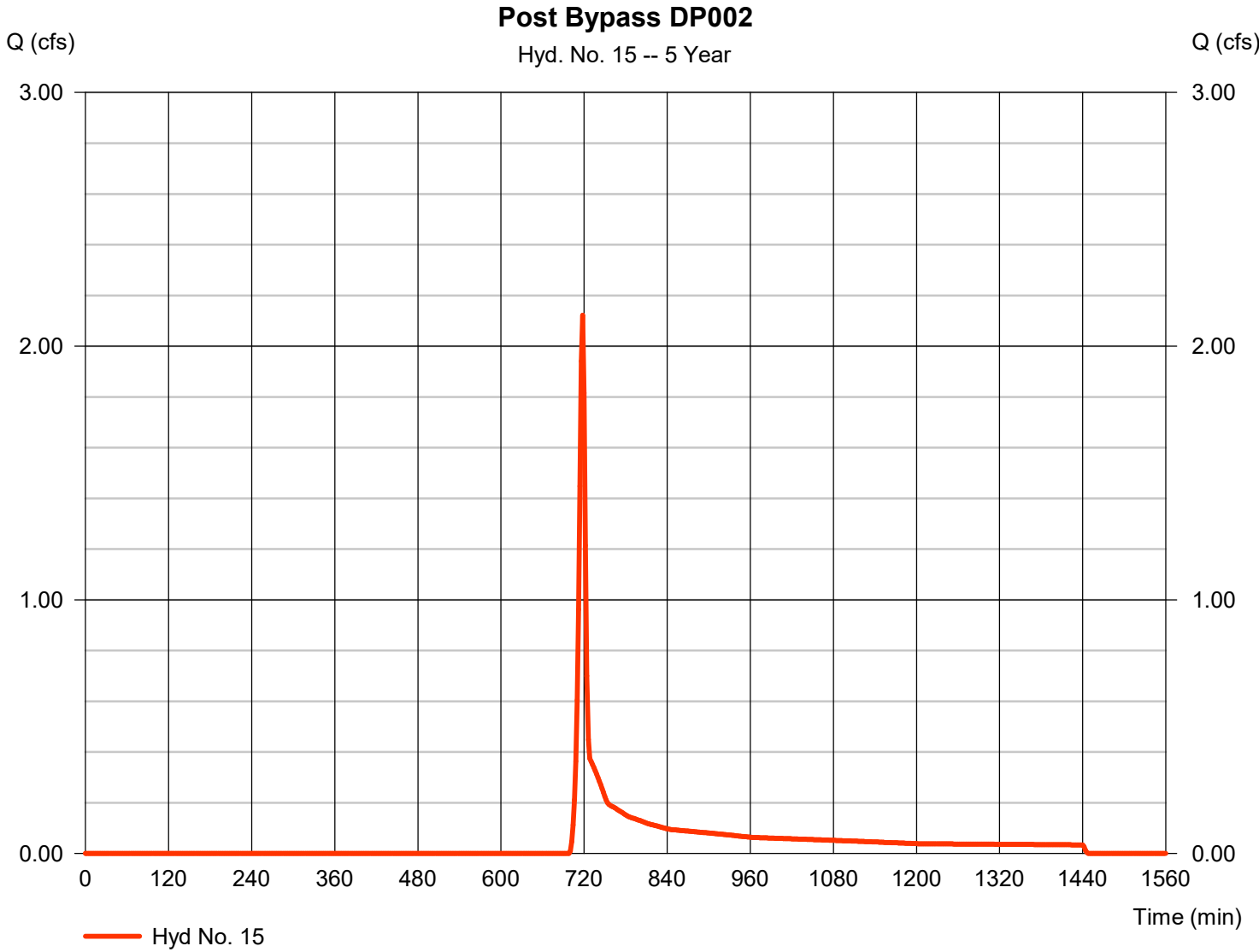


# Hydrograph Report

## Hyd. No. 15

Post Bypass DP002

Hydrograph type	= SCS Runoff	Peak discharge	= 2.121 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 4,472 cuft
Drainage area	= 1.540 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

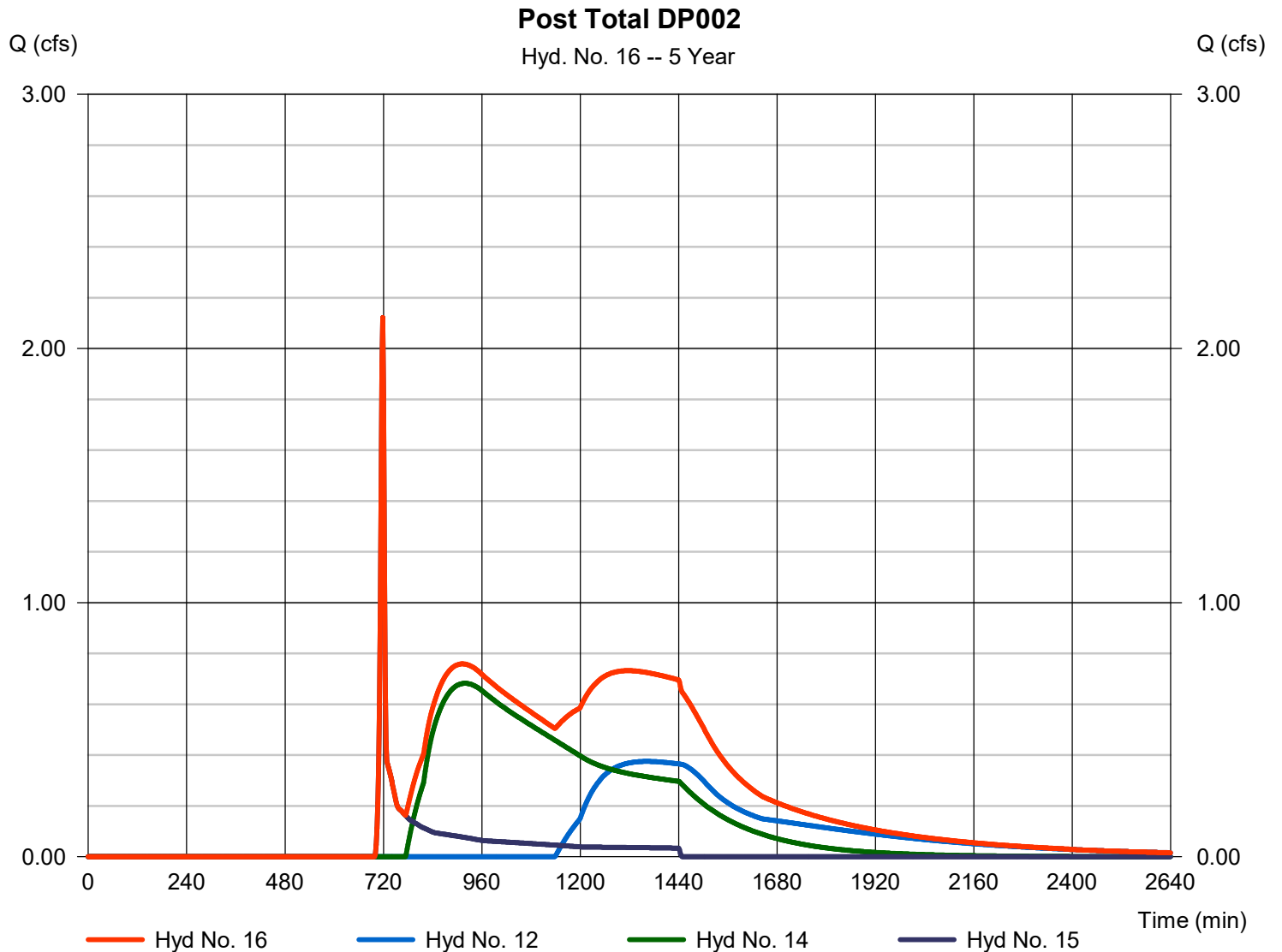
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

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## Hyd. No. 16

Post Total DP002

Hydrograph type	= Combine	Peak discharge	= 2.121 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 37,611 cuft
Inflow hyds.	= 12, 14, 15	Contrib. drain. area	= 1.540 ac



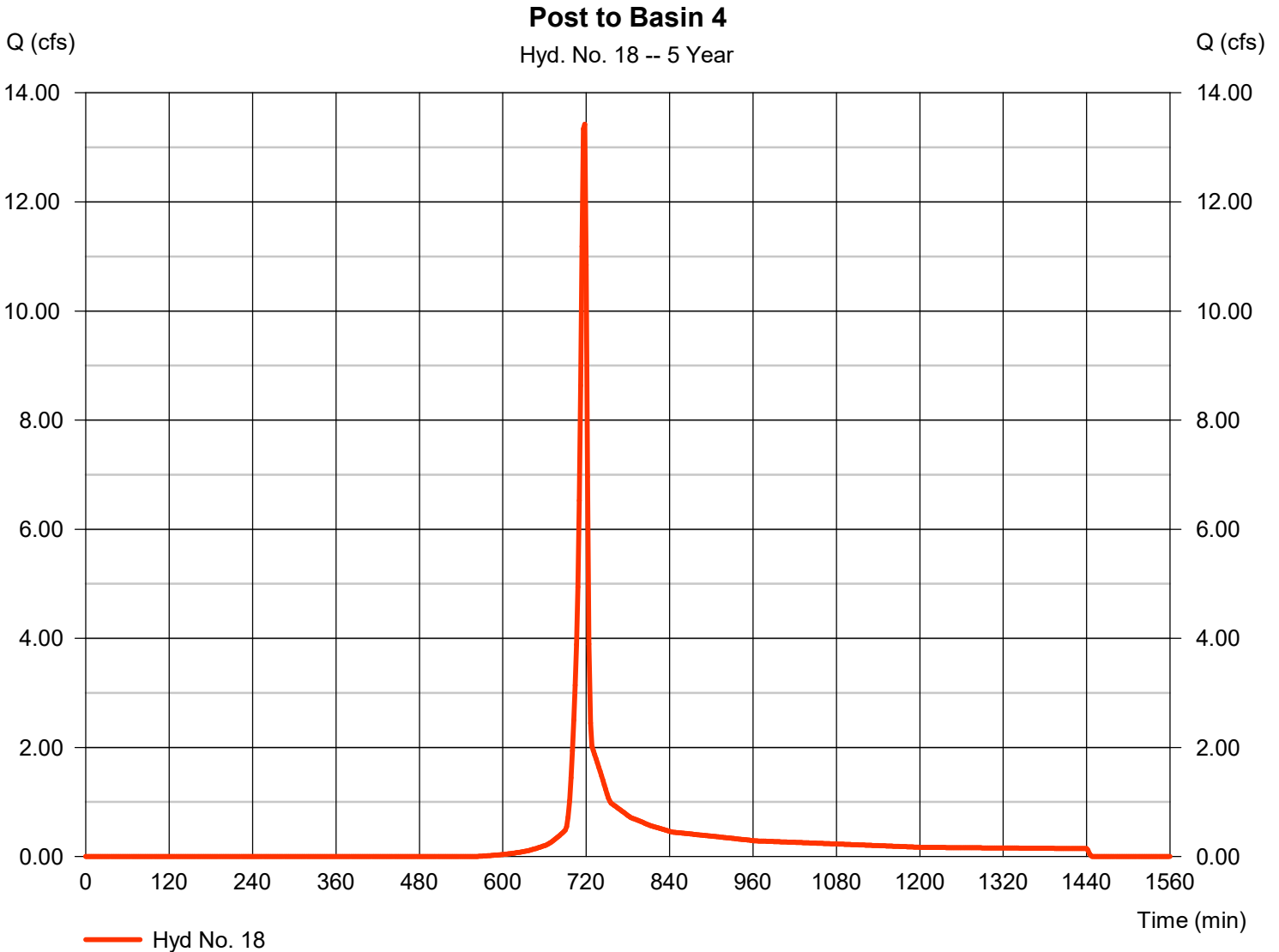
# Hydrograph Report

## Hyd. No. 18

Post to Basin 4

Hydrograph type	= SCS Runoff	Peak discharge	= 13.42 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 26,965 cuft
Drainage area	= 4.420 ac	Curve number	= 75.9*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(0.910 x 61) + (2.270 x 98) + (3.040 x 78)] / 4.420



# Hydrograph Report

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

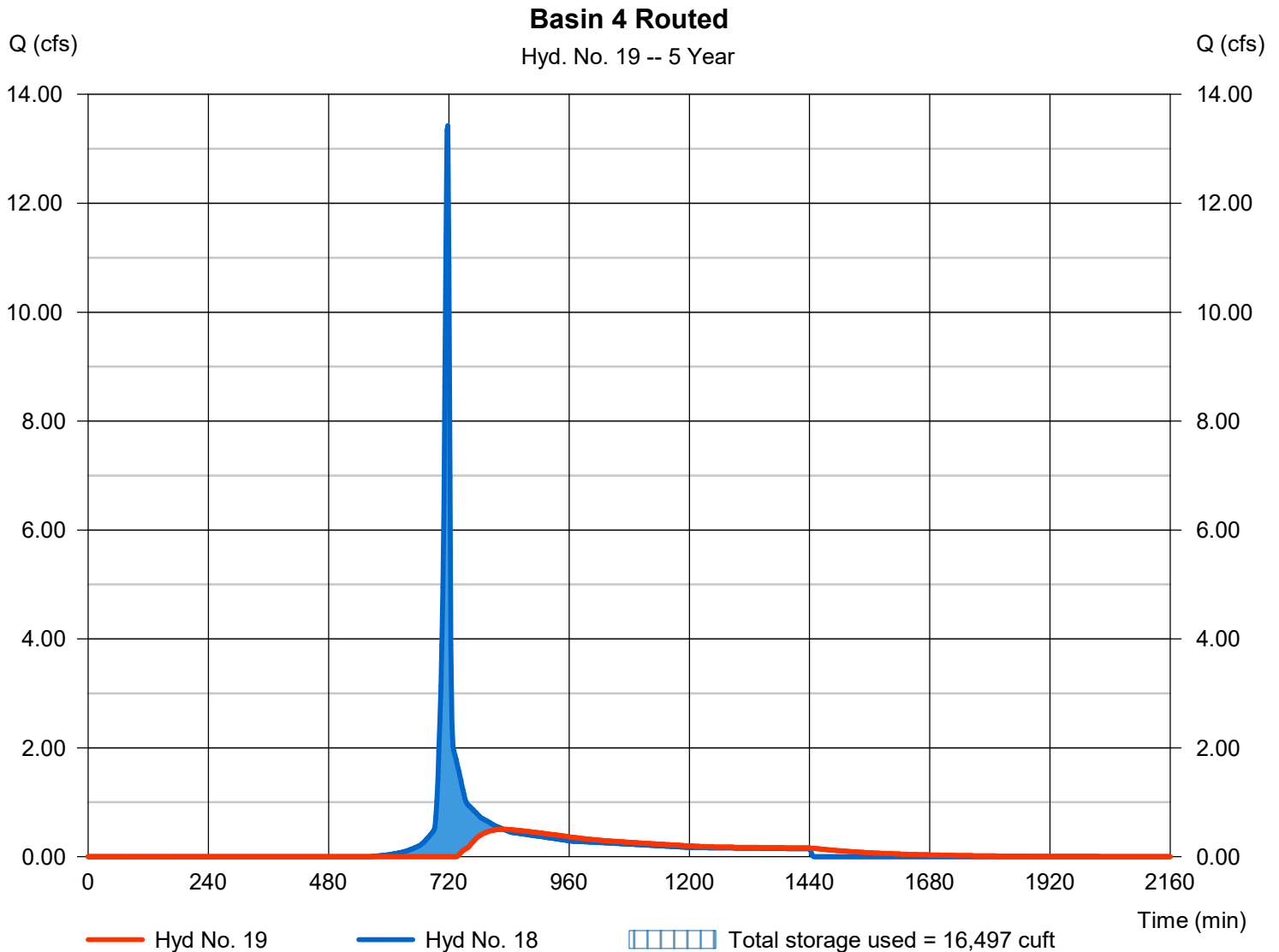
Wednesday, 03 / 22 / 2023

## Hyd. No. 19

Basin 4 Routed

Hydrograph type	= Reservoir	Peak discharge	= 0.503 cfs
Storm frequency	= 5 yrs	Time to peak	= 830 min
Time interval	= 2 min	Hyd. volume	= 13,166 cuft
Inflow hyd. No.	= 18 - Post to Basin 4	Max. Elevation	= 346.54 ft
Reservoir name	= Basin 4	Max. Storage	= 16,497 cuft

Storage Indication method used.



# Hydrograph Report

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

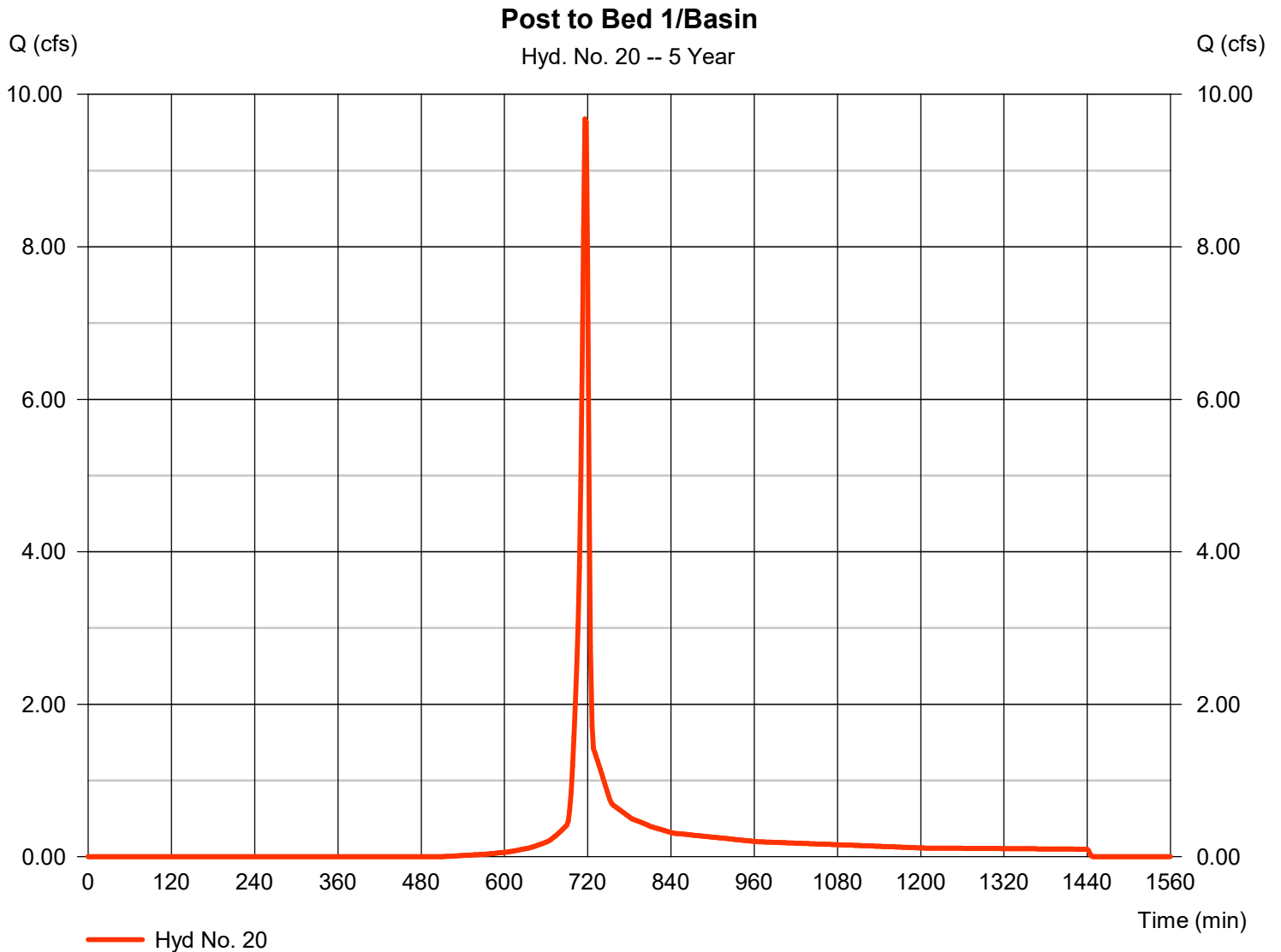
Wednesday, 03 / 22 / 2023

## Hyd. No. 20

Post to Bed 1/Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 9.677 cfs
Storm frequency	= 5 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 19,544 cuft
Drainage area	= 2.820 ac	Curve number	= 79.1*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(0.910 x 61) + (2.270 x 98) + (3.040 x 78)] / 2.820



# Hydrograph Report

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

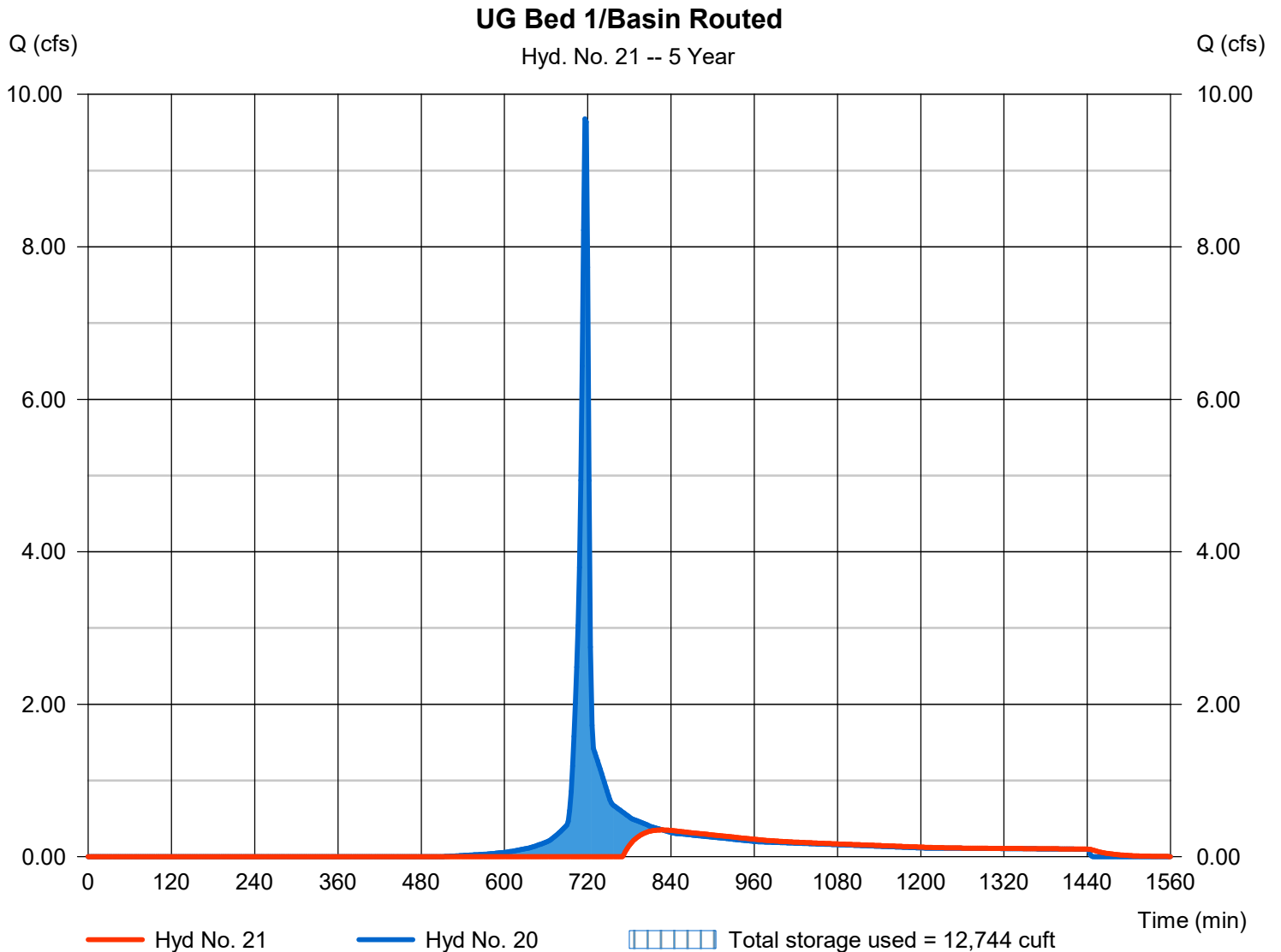
Wednesday, 03 / 22 / 2023

## Hyd. No. 21

UG Bed 1/Basin Routed

Hydrograph type	= Reservoir	Peak discharge	= 0.351 cfs
Storm frequency	= 5 yrs	Time to peak	= 828 min
Time interval	= 2 min	Hyd. volume	= 7,446 cuft
Inflow hyd. No.	= 20 - Post to Bed 1/Basin	Max. Elevation	= 340.35 ft
Reservoir name	= UG Bed 1/Basin	Max. Storage	= 12,744 cuft

Storage Indication method used.



# Hydrograph Report

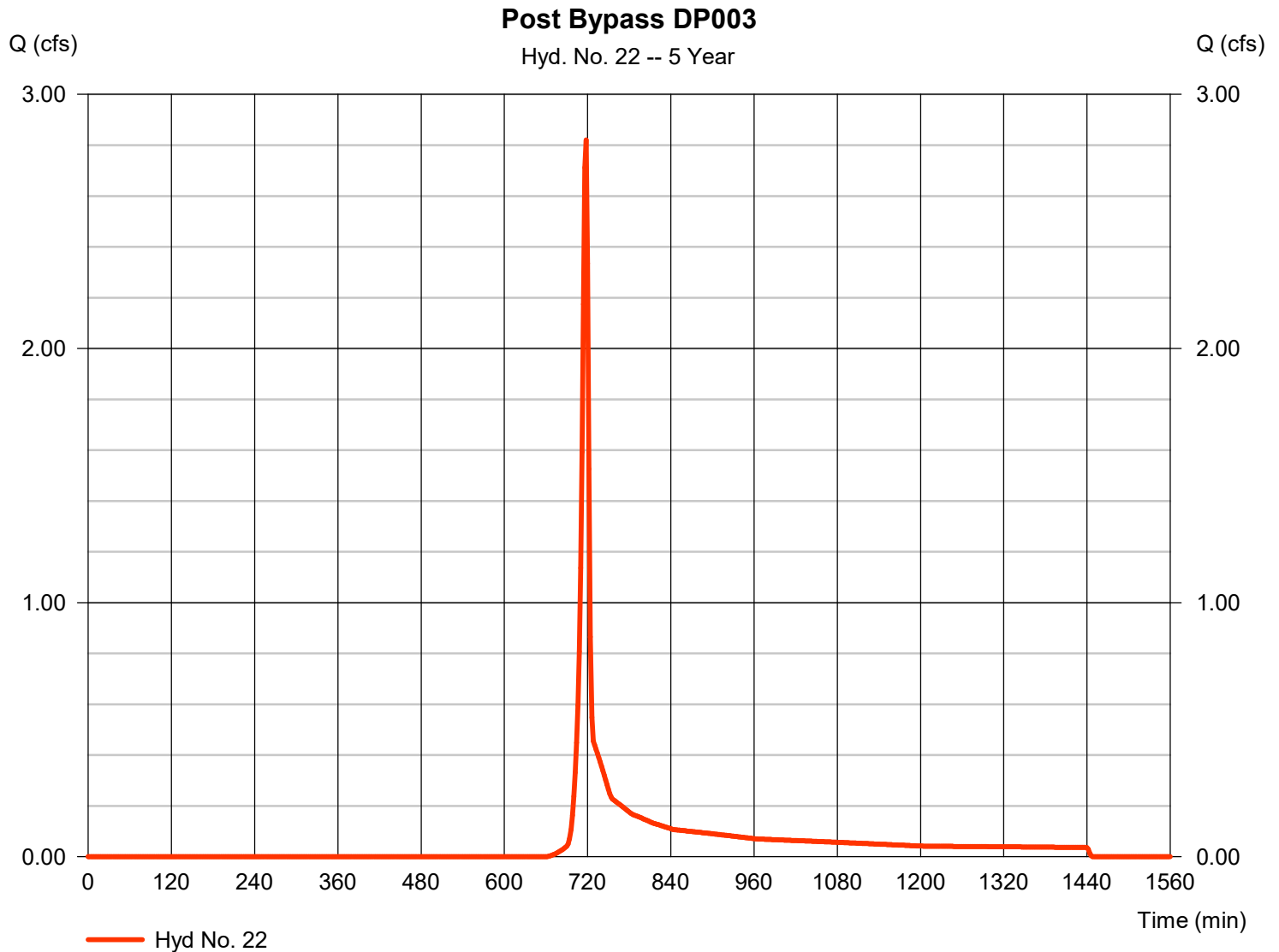
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 22

Post Bypass DP003

Hydrograph type	= SCS Runoff	Peak discharge	= 2.821 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 5,670 cuft
Drainage area	= 1.340 ac	Curve number	= 67.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484





# Hydrograph Report

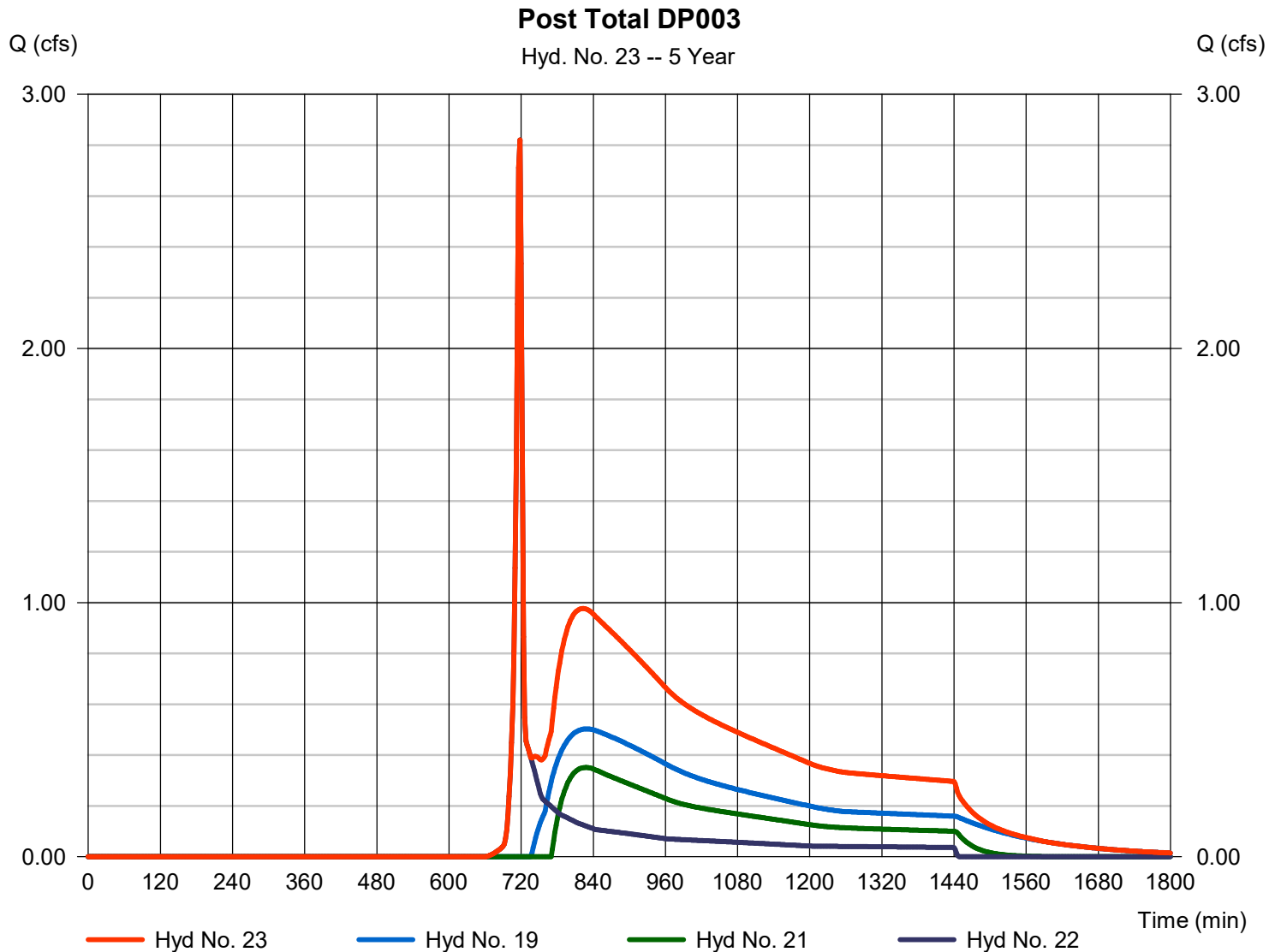
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 23

Post Total DP003

Hydrograph type	= Combine	Peak discharge	= 2.821 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 26,283 cuft
Inflow hyds.	= 19, 21, 22	Contrib. drain. area	= 1.340 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	20.75	2	722	60,334	-----	-----	-----	Pre Developed DP001	
2	SCS Runoff	28.64	2	722	81,339	-----	-----	-----	Pre Developed DP002	
3	SCS Runoff	20.20	2	722	53,341	-----	-----	-----	Pre Developed DP003	
4	SCS Runoff	1.766	2	718	3,580	-----	-----	-----	Pre Developed DP003 ORA	
5	SCS Runoff	39.83	2	718	79,751	-----	-----	-----	Post Basin 3	
6	Reservoir	1.424	2	838	34,284	5	318.61	49,983	Basin 3 Routed	
7	SCS Runoff	3.349	2	718	6,757	-----	-----	-----	Post Bypass DP001	
8	Combine	3.349	2	718	41,040	6, 7	-----	-----	Post Total DP001	
10	SCS Runoff	37.29	2	718	74,773	-----	-----	-----	Post Basin 1	
11	Reservoir	1.244	2	848	37,284	10	322.89	46,611	Basin 1 Upper Routed	
12	Reservoir	0.928	2	996	31,087	11	304.57	10,321	Basin 1 Lower Routed	
13	SCS Runoff	34.26	2	716	69,196	-----	-----	-----	Post Basin 2	
14	Reservoir	1.706	2	788	36,842	13	309.33	40,115	Basin 2 Routed	
15	SCS Runoff	3.170	2	718	6,463	-----	-----	-----	Post Bypass DP002	
16	Combine	3.170	2	718	74,392	12, 14, 15	-----	-----	Post Total DP002	
18	SCS Runoff	17.42	2	716	35,181	-----	-----	-----	Post to Basin 4	
19	Reservoir	1.282	2	754	21,383	18	346.79	18,533	Basin 4 Routed	
20	SCS Runoff	12.38	2	716	25,081	-----	-----	-----	Post to Bed 1/Basin	
21	Reservoir	1.100	2	748	12,984	20	340.55	13,588	UG Bed 1/Basin Routed	
22	SCS Runoff	3.883	2	718	7,766	-----	-----	-----	Post Bypass DP003	
23	Combine	3.883	2	718	42,133	19, 21, 22	-----	-----	Post Total DP003	
SWM.gpw					Return Period: 10 Year			Wednesday, 03 / 22 / 2023		

# Hydrograph Report

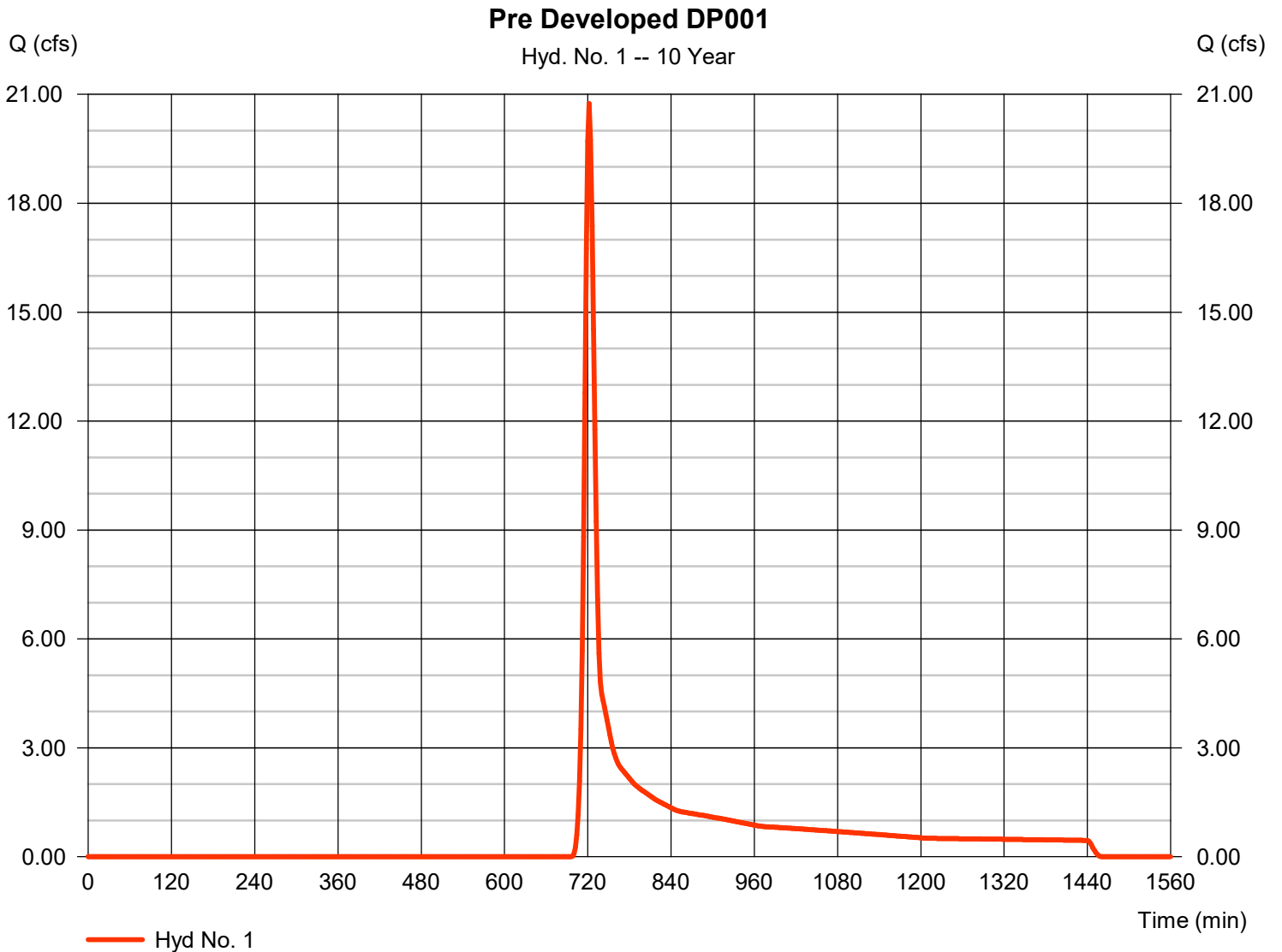
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 1

Pre Developed DP001

Hydrograph type	= SCS Runoff	Peak discharge	= 20.75 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 60,334 cuft
Drainage area	= 15.430 ac	Curve number	= 58
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.00 min
Total precip.	= 4.77 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

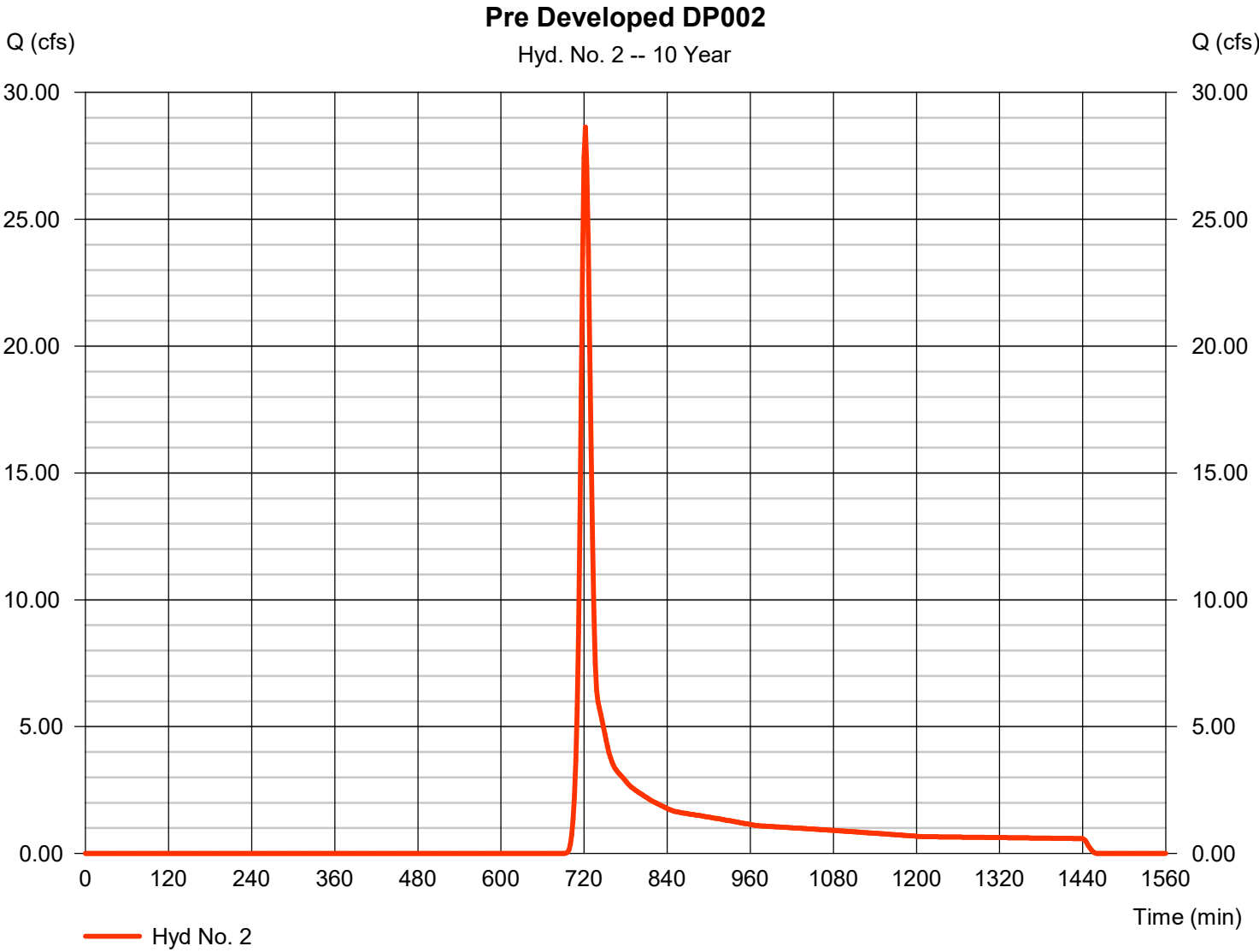


# Hydrograph Report

## Hyd. No. 2

Pre Developed DP002

Hydrograph type	= SCS Runoff	Peak discharge	= 28.64 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 81,339 cuft
Drainage area	= 19.210 ac	Curve number	= 59.4
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.00 min
Total precip.	= 4.77 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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

Wednesday, 03 / 22 / 2023

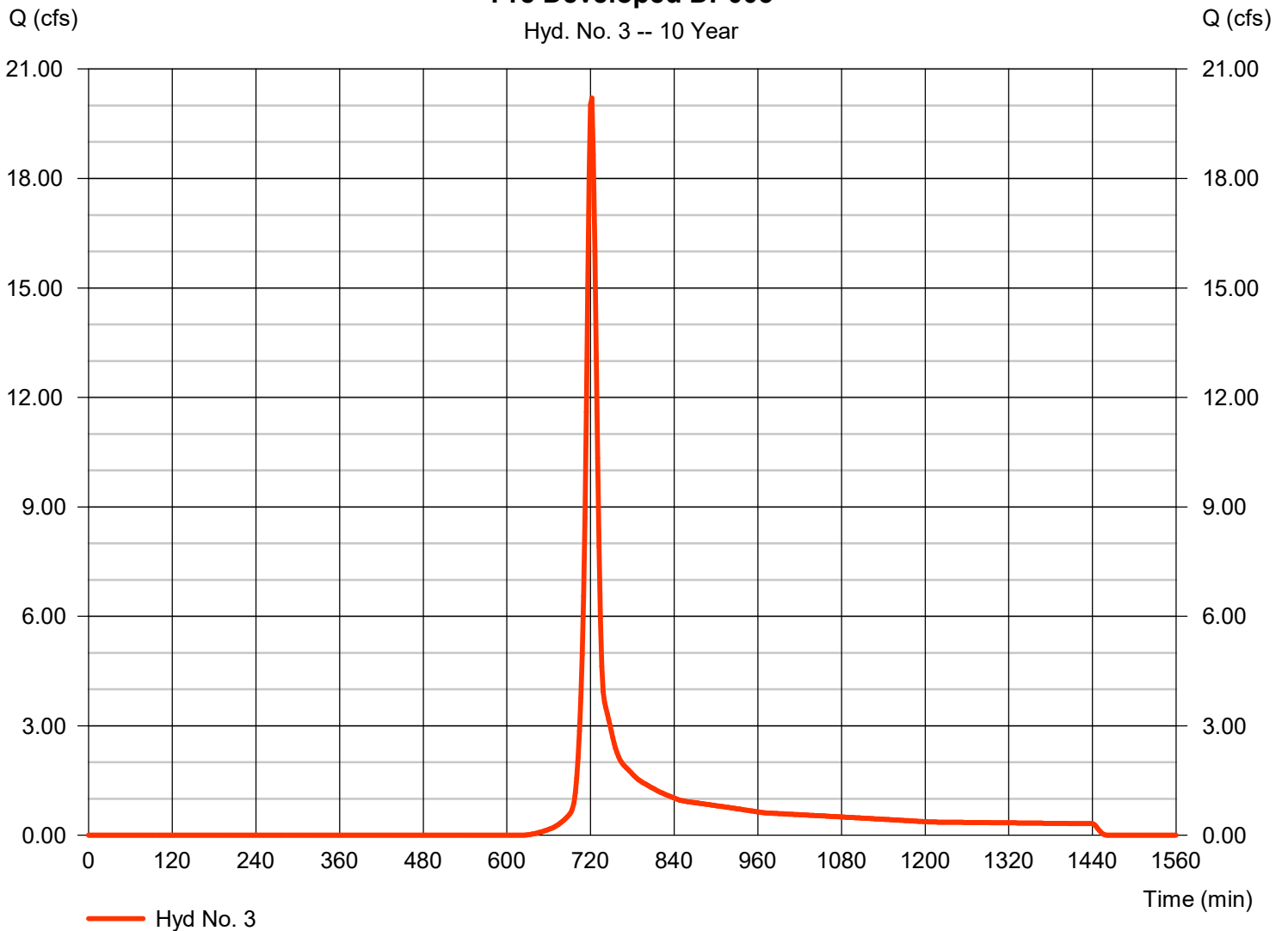
## Hyd. No. 3

Pre Developed DP003

Hydrograph type	= SCS Runoff	Peak discharge	= 20.20 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 53,341 cuft
Drainage area	= 8.190 ac	Curve number	= 68.3
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.00 min
Total precip.	= 4.77 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

### Pre Developed DP003

Hyd. No. 3 -- 10 Year



# Hydrograph Report

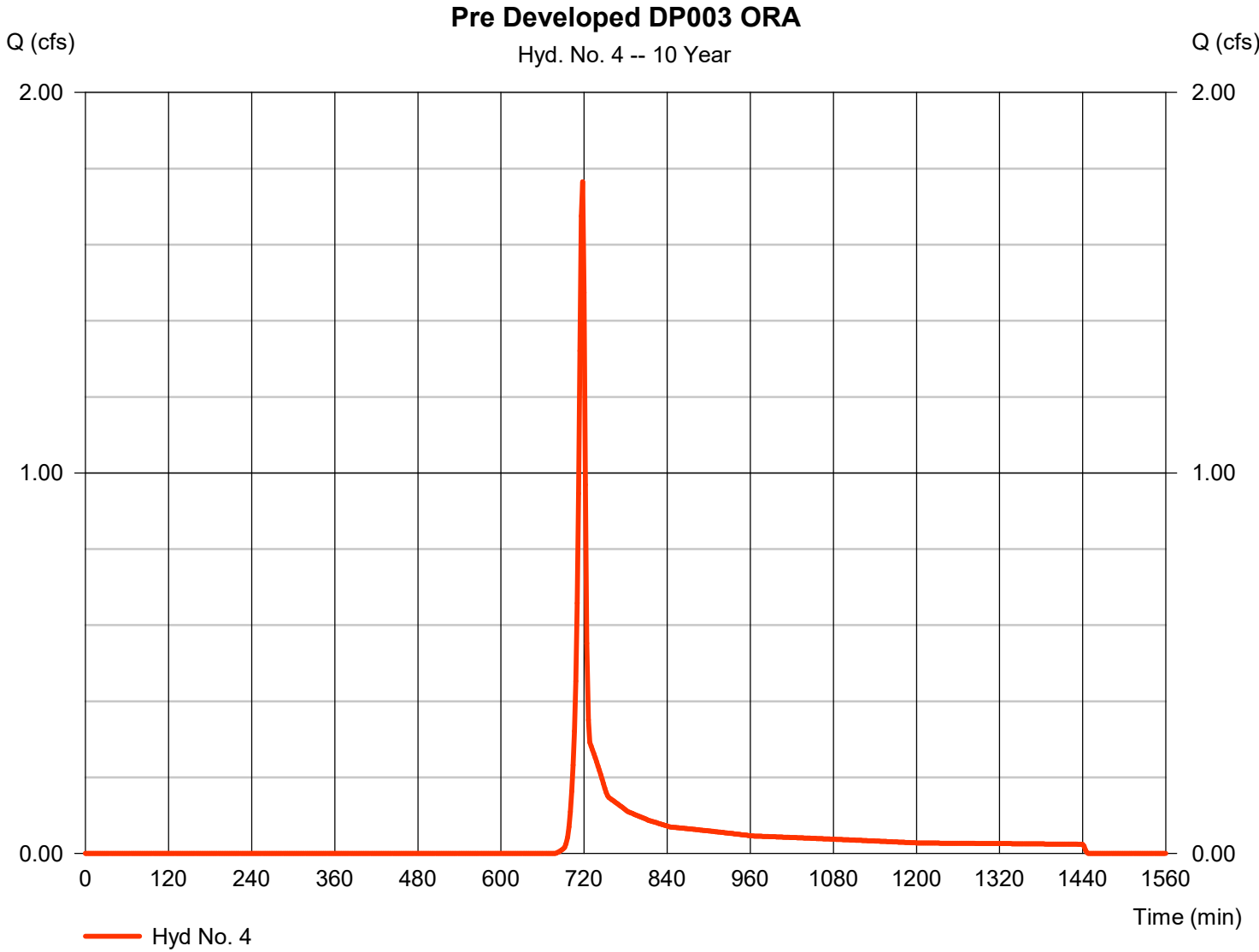
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 4

Pre Developed DP003 ORA

Hydrograph type	= SCS Runoff	Peak discharge	= 1.766 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 3,580 cuft
Drainage area	= 0.810 ac	Curve number	= 62
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.77 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

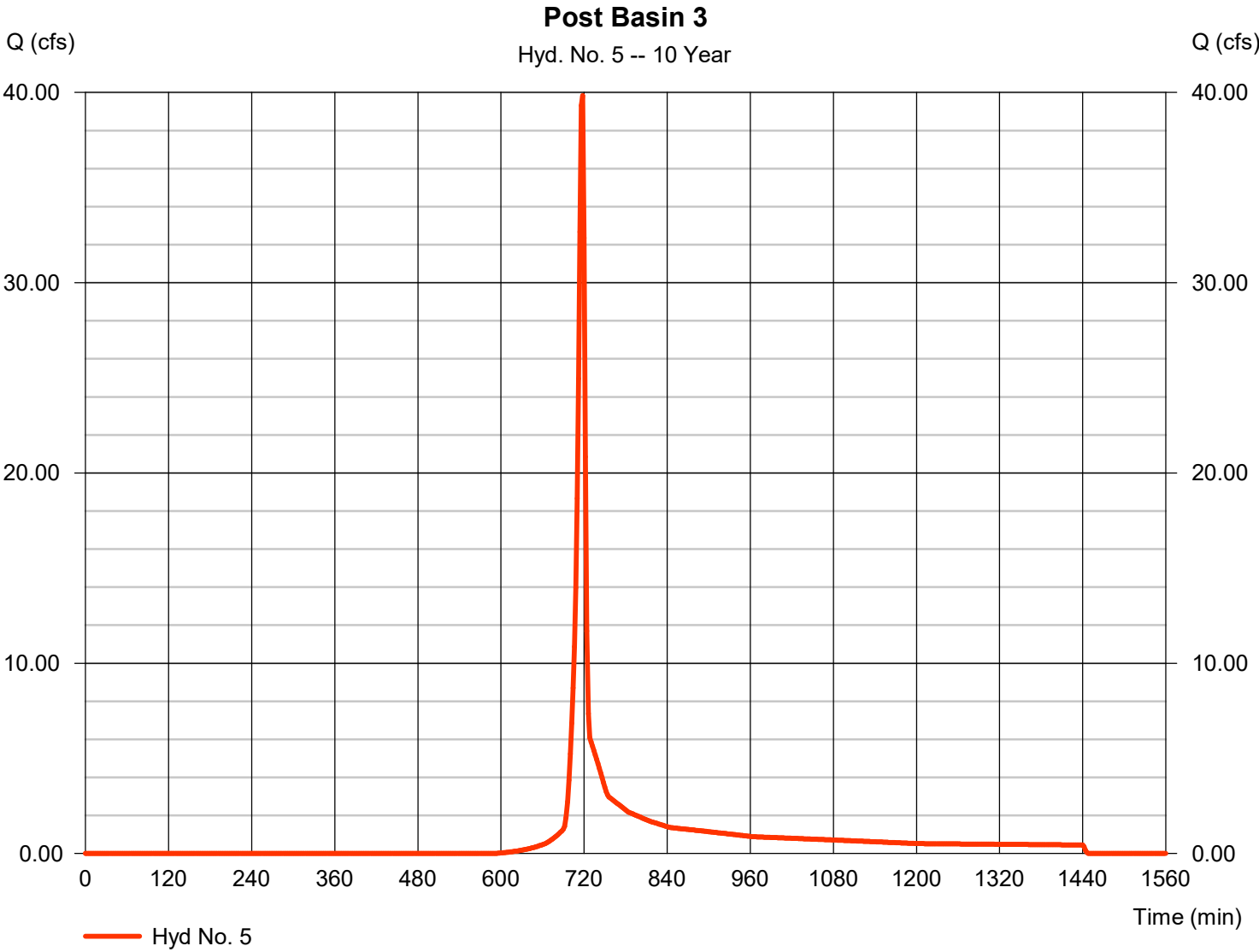


# Hydrograph Report

## Hyd. No. 5

### Post Basin 3

Hydrograph type	= SCS Runoff	Peak discharge	= 39.83 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 79,751 cuft
Drainage area	= 12.150 ac	Curve number	= 70.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.77 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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

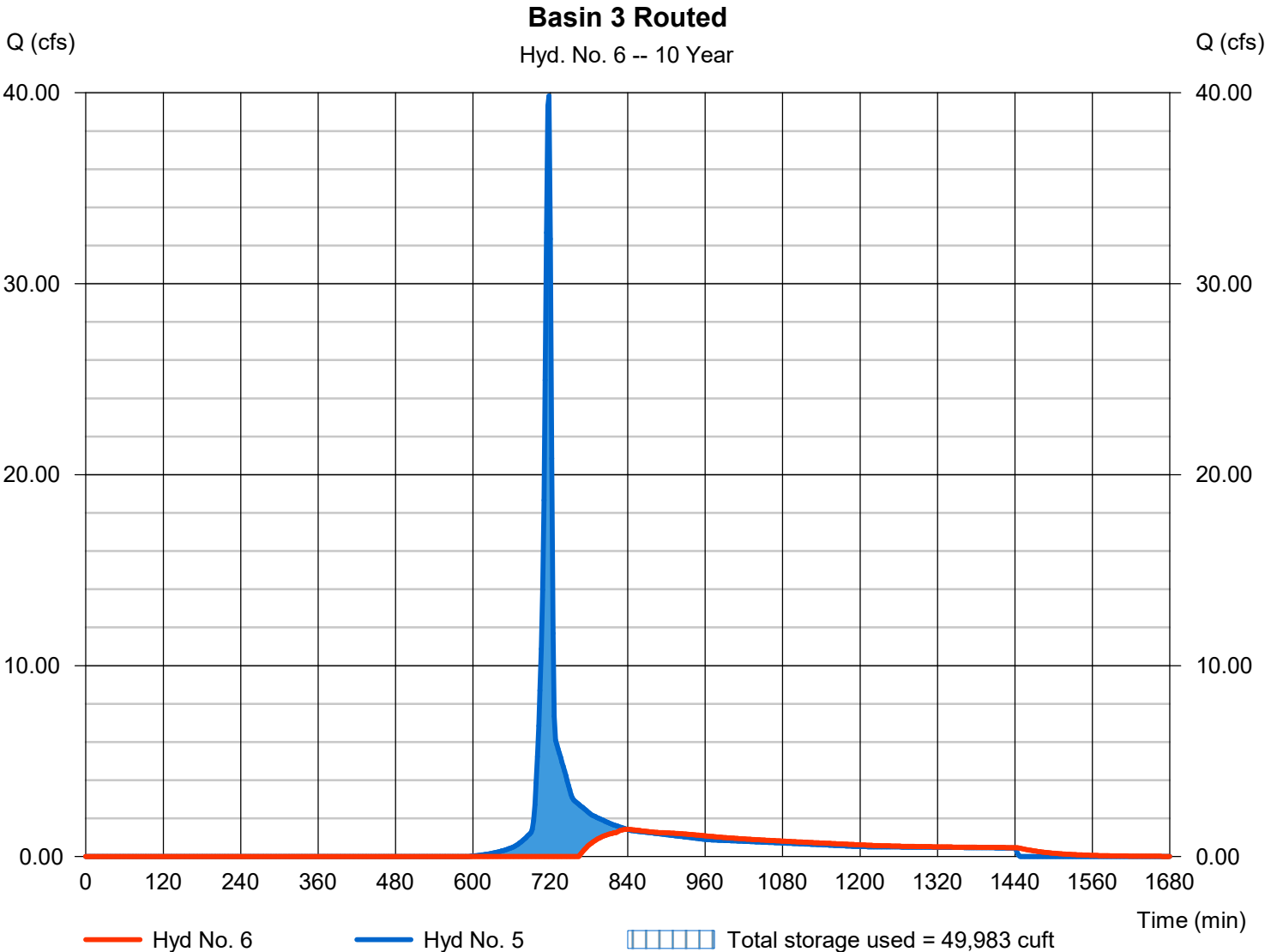
Wednesday, 03 / 22 / 2023

## Hyd. No. 6

Basin 3 Routed

Hydrograph type	= Reservoir	Peak discharge	= 1.424 cfs
Storm frequency	= 10 yrs	Time to peak	= 838 min
Time interval	= 2 min	Hyd. volume	= 34,284 cuft
Inflow hyd. No.	= 5 - Post Basin 3	Max. Elevation	= 318.61 ft
Reservoir name	= Basin 3	Max. Storage	= 49,983 cuft

Storage Indication method used.





# Hydrograph Report

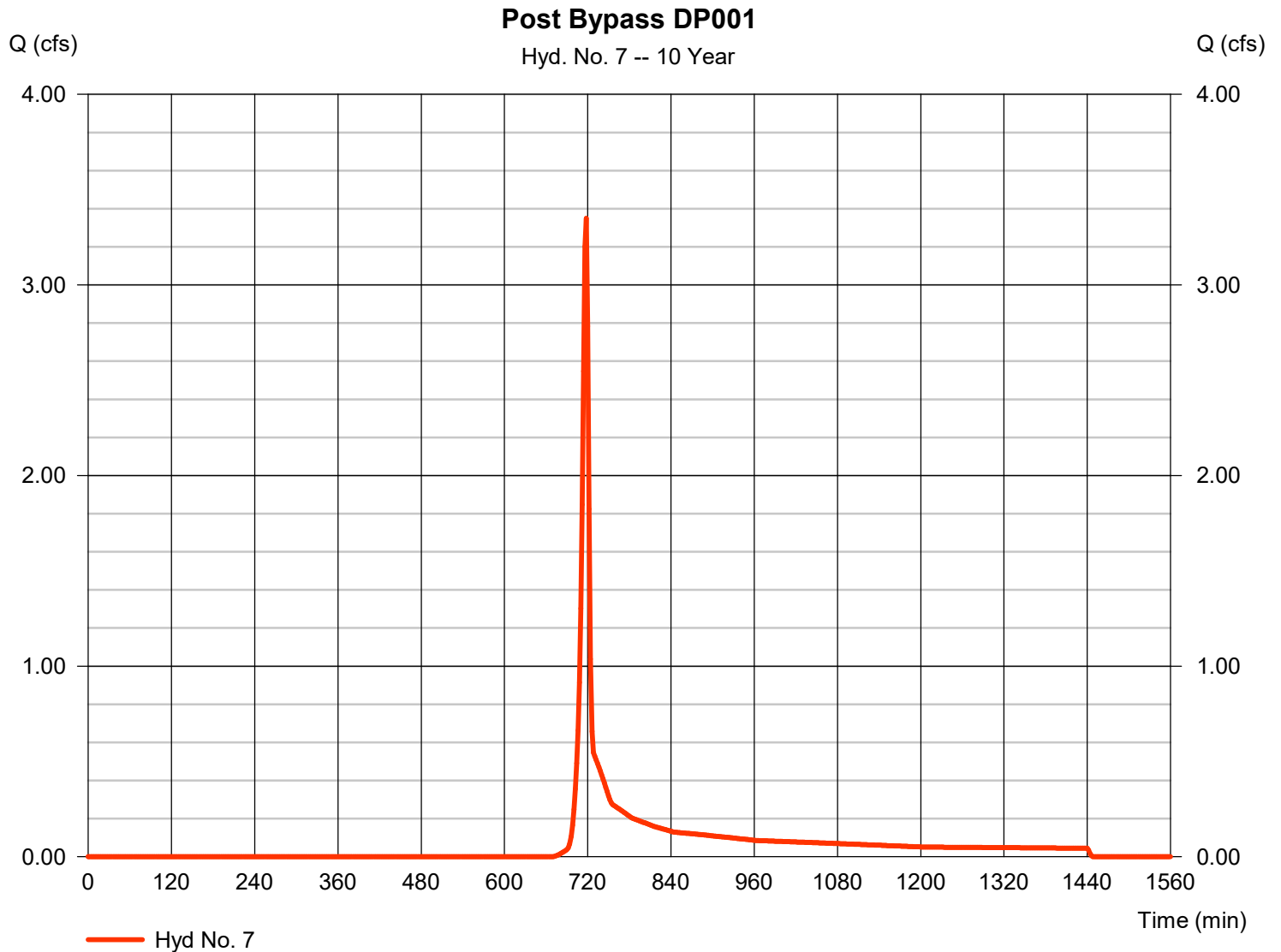
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 7

Post Bypass DP001

Hydrograph type	= SCS Runoff	Peak discharge	= 3.349 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 6,757 cuft
Drainage area	= 1.440 ac	Curve number	= 63.2
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.77 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

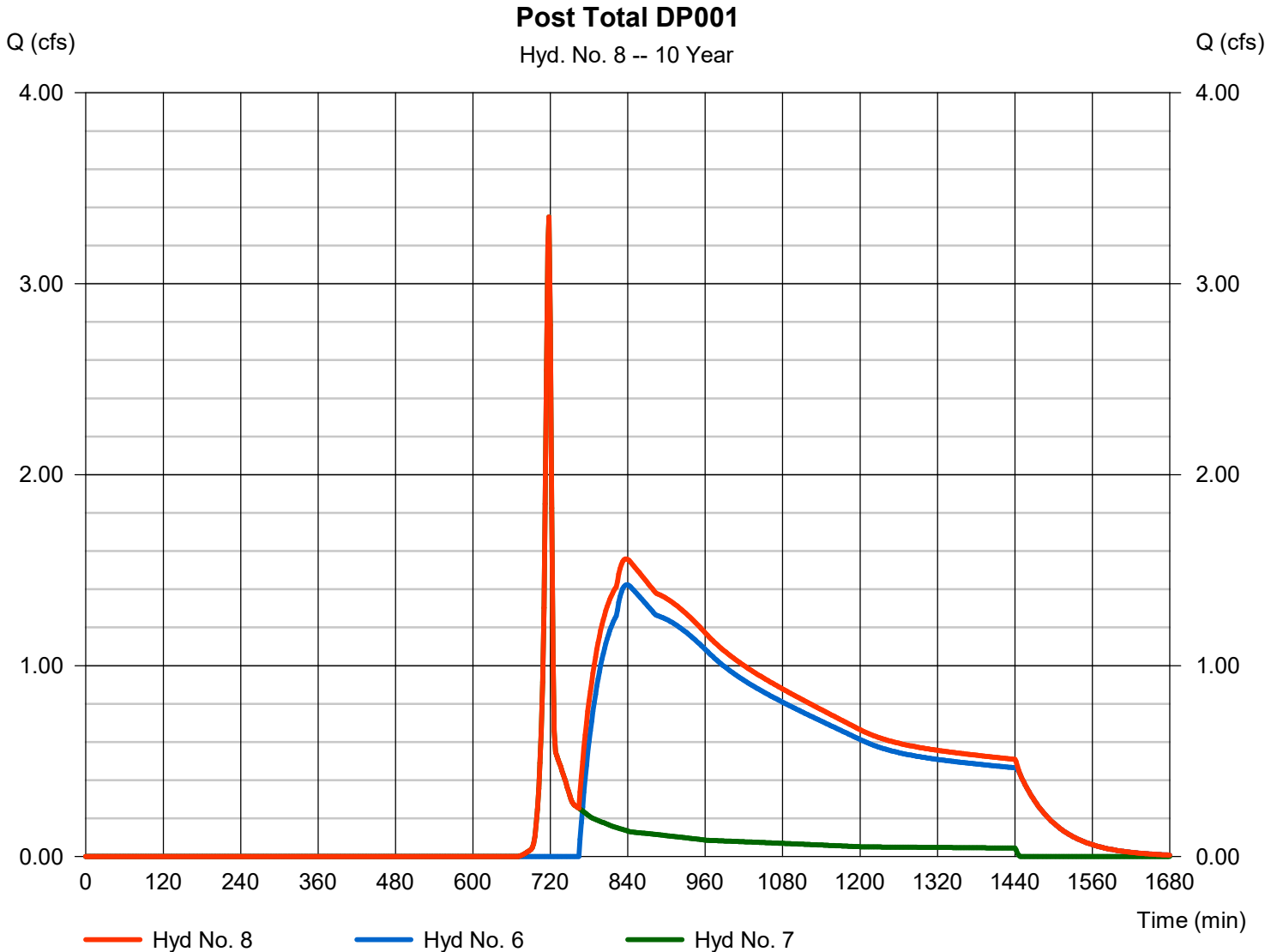
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

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## Hyd. No. 8

Post Total DP001

Hydrograph type	= Combine	Peak discharge	= 3.349 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 41,040 cuft
Inflow hyds.	= 6, 7	Contrib. drain. area	= 1.440 ac

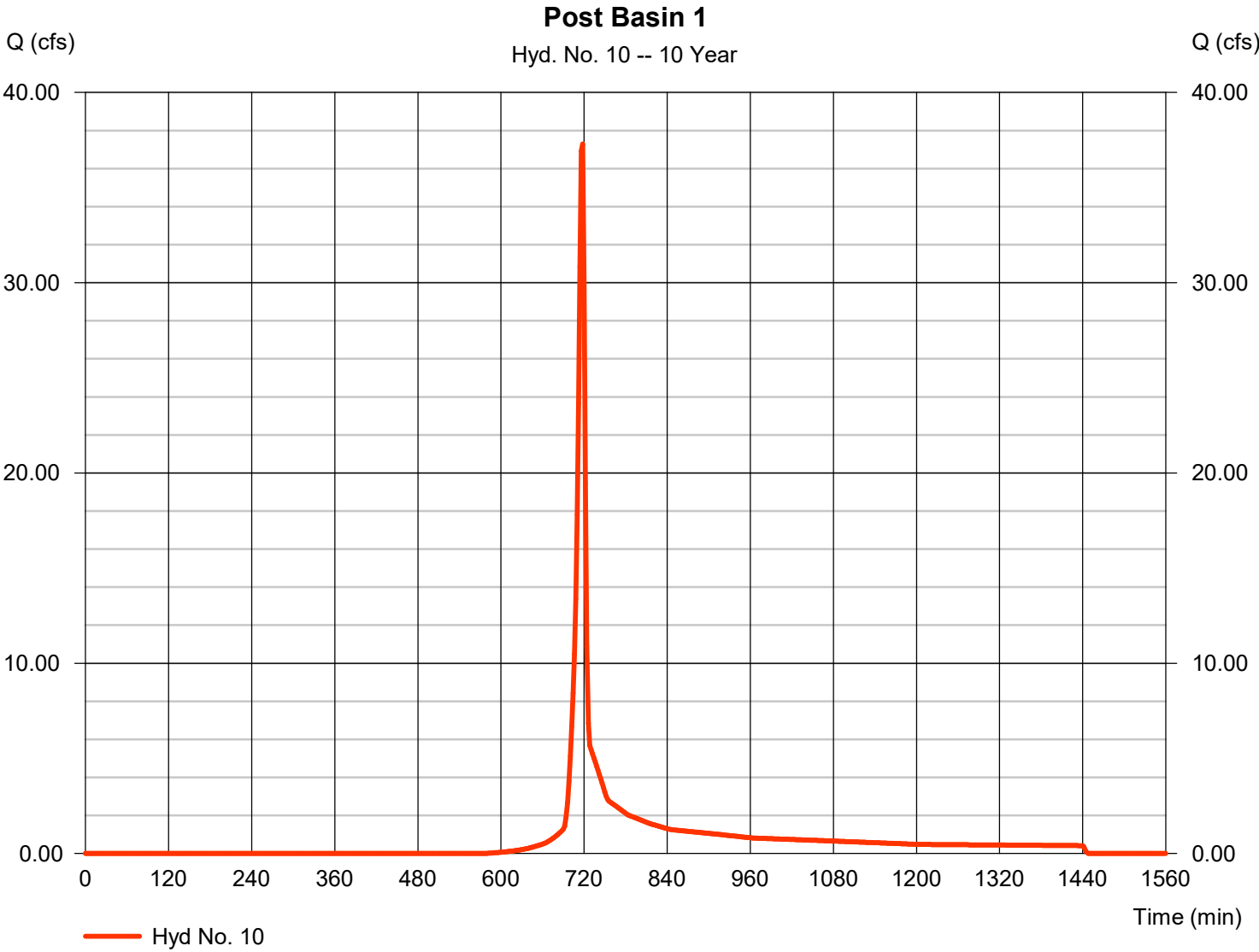


# Hydrograph Report

## Hyd. No. 10

### Post Basin 1

Hydrograph type	= SCS Runoff	Peak discharge	= 37.29 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 74,773 cuft
Drainage area	= 10.950 ac	Curve number	= 71.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.77 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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

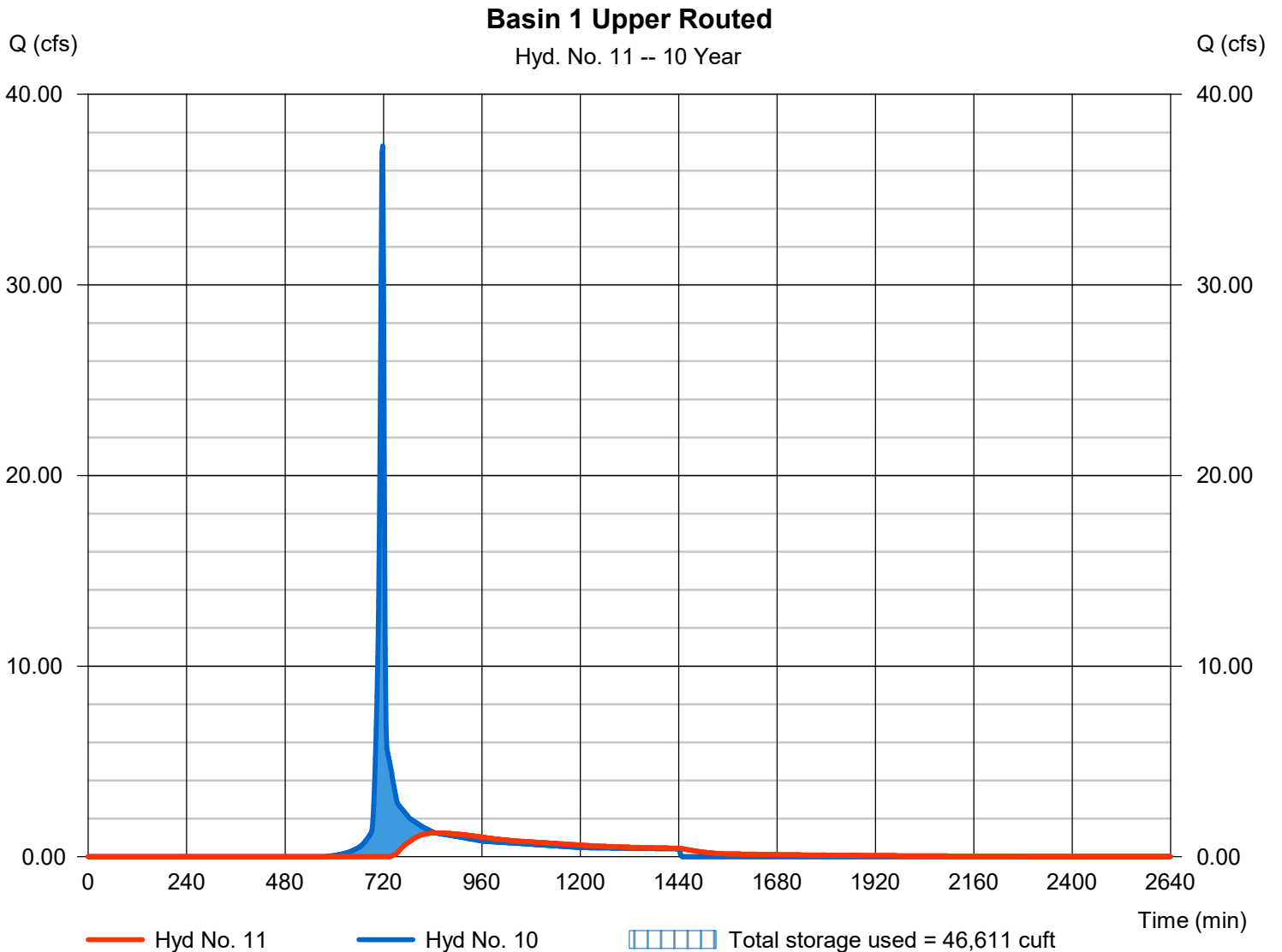
Wednesday, 03 / 22 / 2023

## Hyd. No. 11

Basin 1 Upper Routed

Hydrograph type	= Reservoir	Peak discharge	= 1.244 cfs
Storm frequency	= 10 yrs	Time to peak	= 848 min
Time interval	= 2 min	Hyd. volume	= 37,284 cuft
Inflow hyd. No.	= 10 - Post Basin 1	Max. Elevation	= 322.89 ft
Reservoir name	= Basin 1 Upper	Max. Storage	= 46,611 cuft

Storage Indication method used.



# Hydrograph Report

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

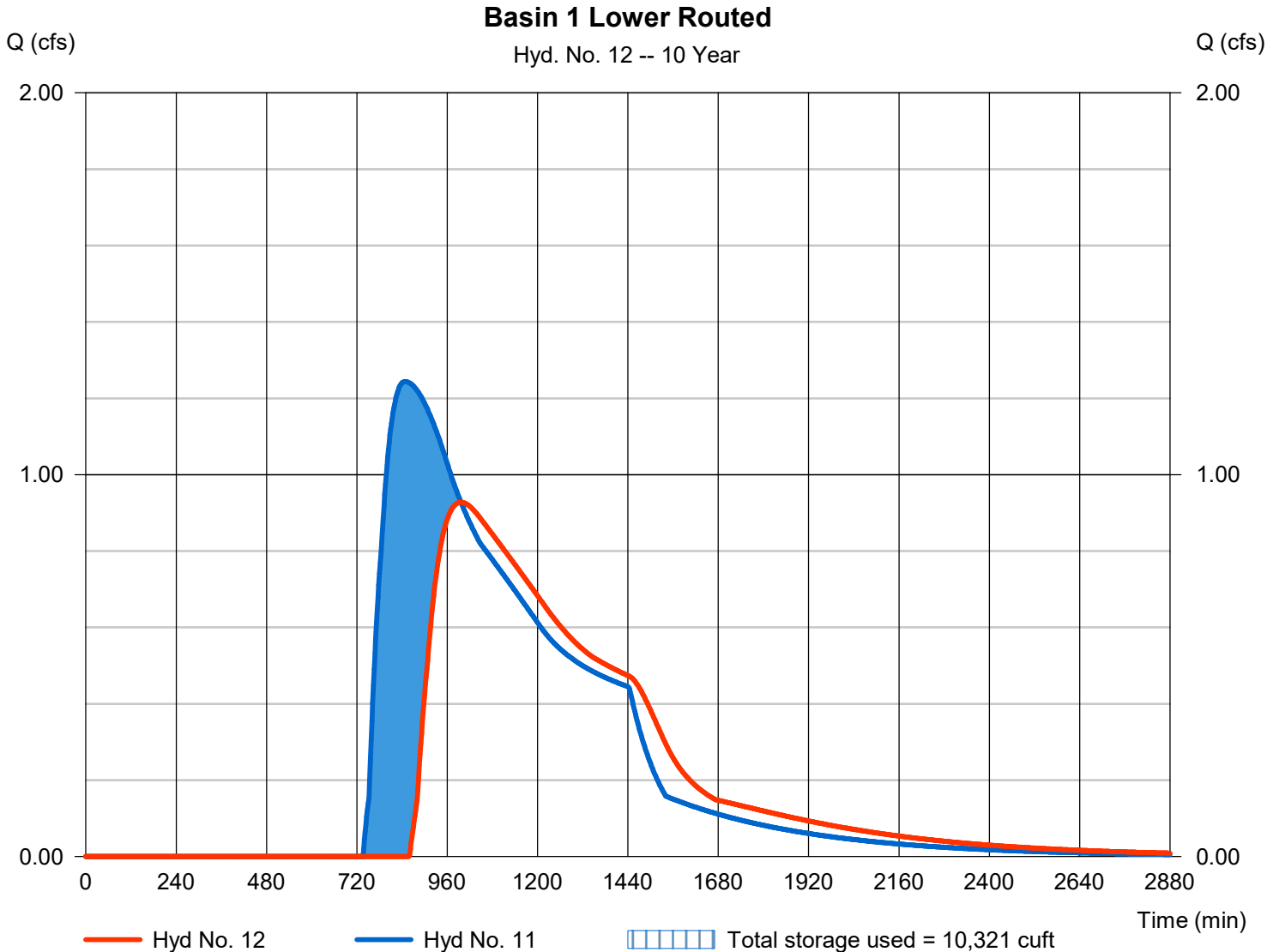
Wednesday, 03 / 22 / 2023

## Hyd. No. 12

### Basin 1 Lower Routed

Hydrograph type	= Reservoir	Peak discharge	= 0.928 cfs
Storm frequency	= 10 yrs	Time to peak	= 996 min
Time interval	= 2 min	Hyd. volume	= 31,087 cuft
Inflow hyd. No.	= 11 - Basin 1 Upper Routed	Max. Elevation	= 304.57 ft
Reservoir name	= Basin 1 Lower	Max. Storage	= 10,321 cuft

Storage Indication method used.

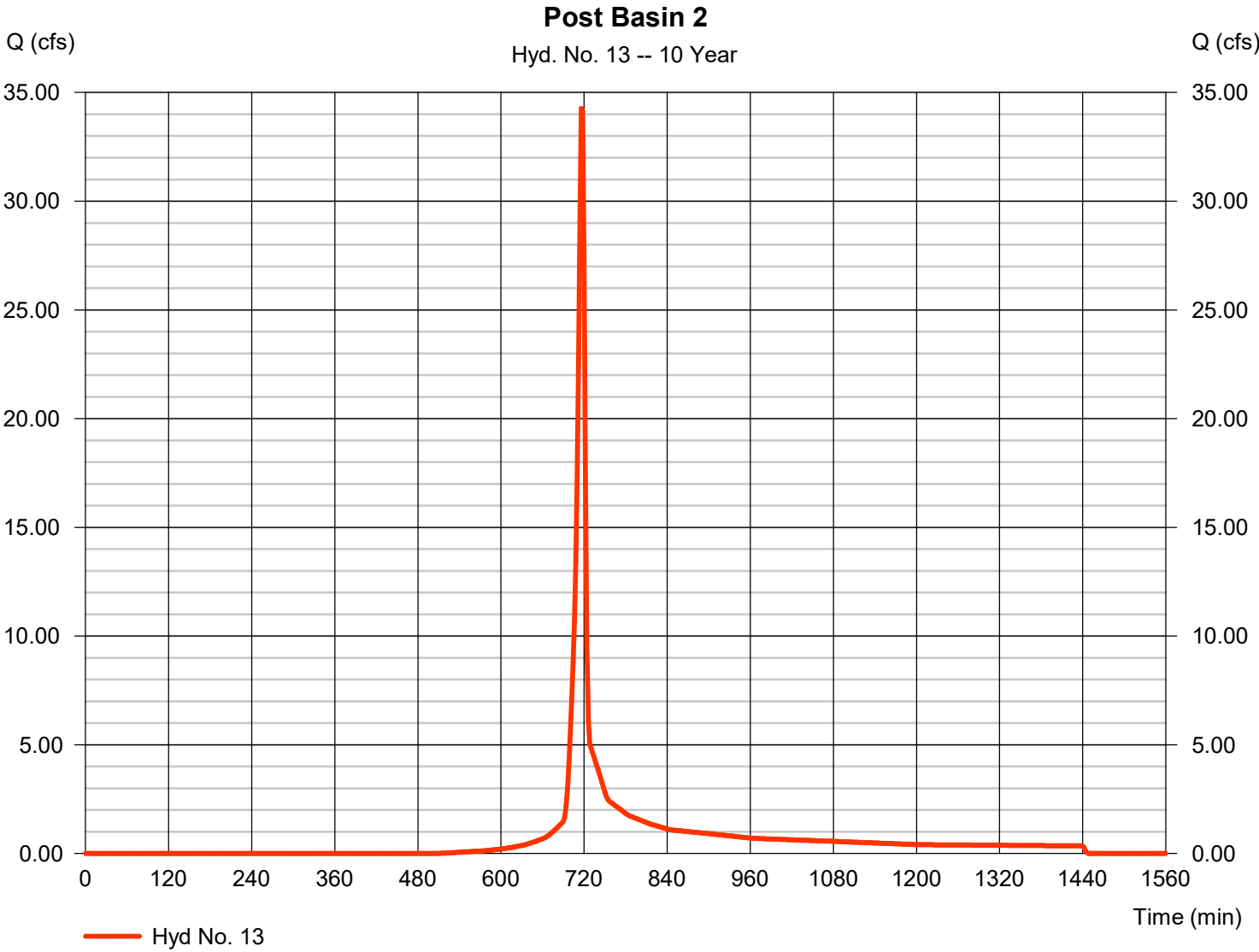


# Hydrograph Report

## Hyd. No. 13

### Post Basin 2

Hydrograph type	= SCS Runoff	Peak discharge	= 34.26 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 69,196 cuft
Drainage area	= 8.540 ac	Curve number	= 76.4
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.77 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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

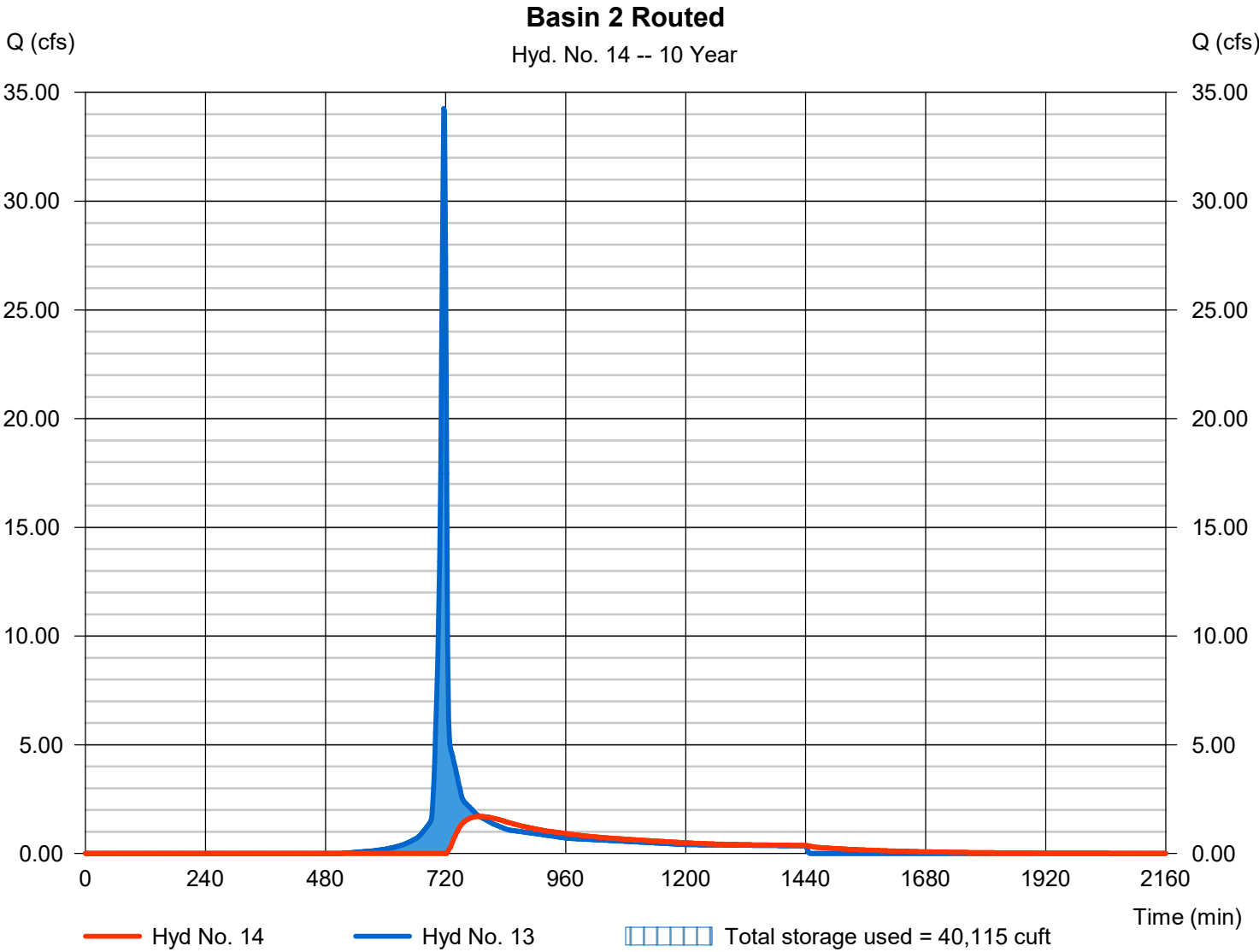
Wednesday, 03 / 22 / 2023

## Hyd. No. 14

Basin 2 Routed

Hydrograph type	= Reservoir	Peak discharge	= 1.706 cfs
Storm frequency	= 10 yrs	Time to peak	= 788 min
Time interval	= 2 min	Hyd. volume	= 36,842 cuft
Inflow hyd. No.	= 13 - Post Basin 2	Max. Elevation	= 309.33 ft
Reservoir name	= Basin 2	Max. Storage	= 40,115 cuft

Storage Indication method used.

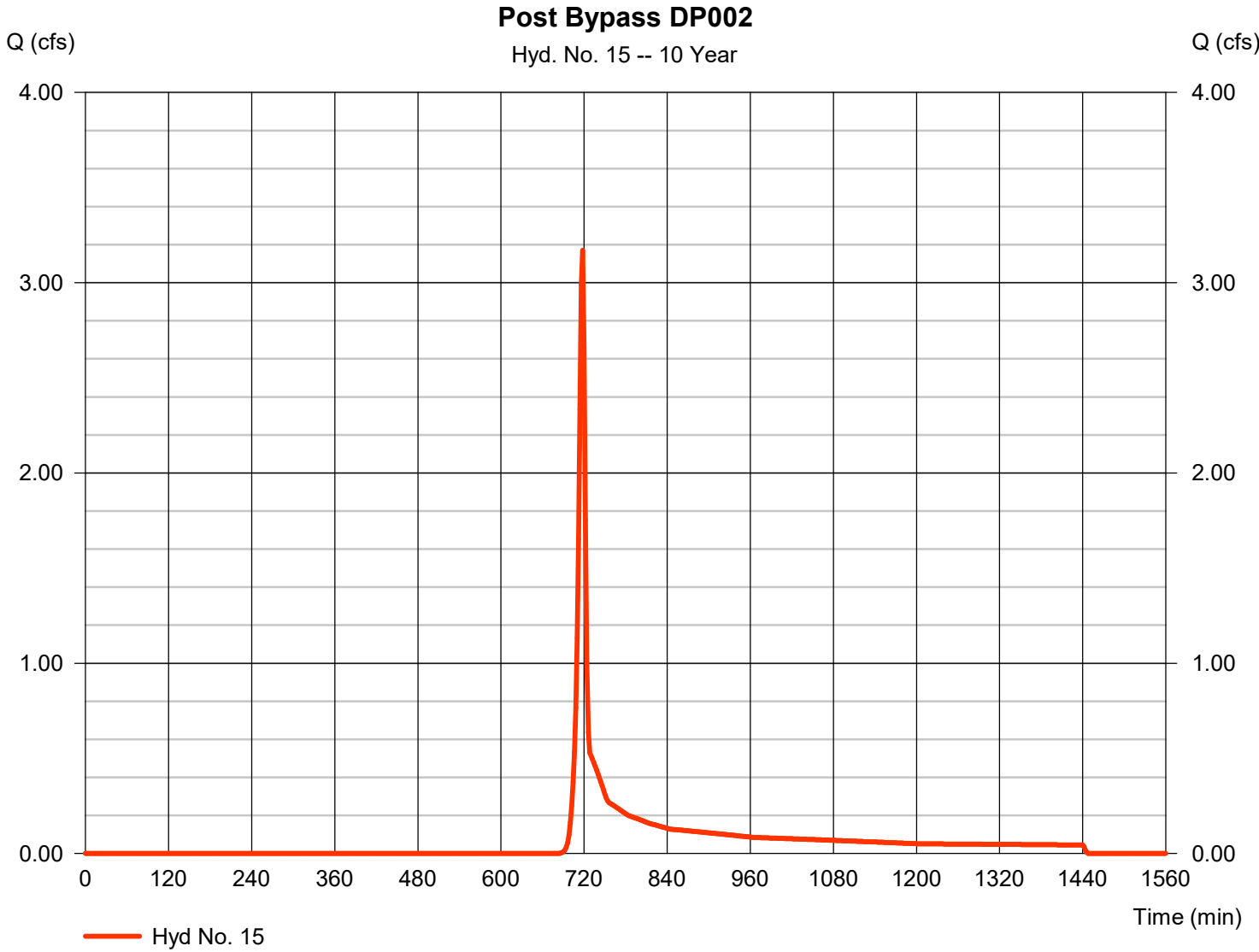


# Hydrograph Report

## Hyd. No. 15

Post Bypass DP002

Hydrograph type	= SCS Runoff	Peak discharge	= 3.170 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 6,463 cuft
Drainage area	= 1.540 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.77 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484





# Hydrograph Report

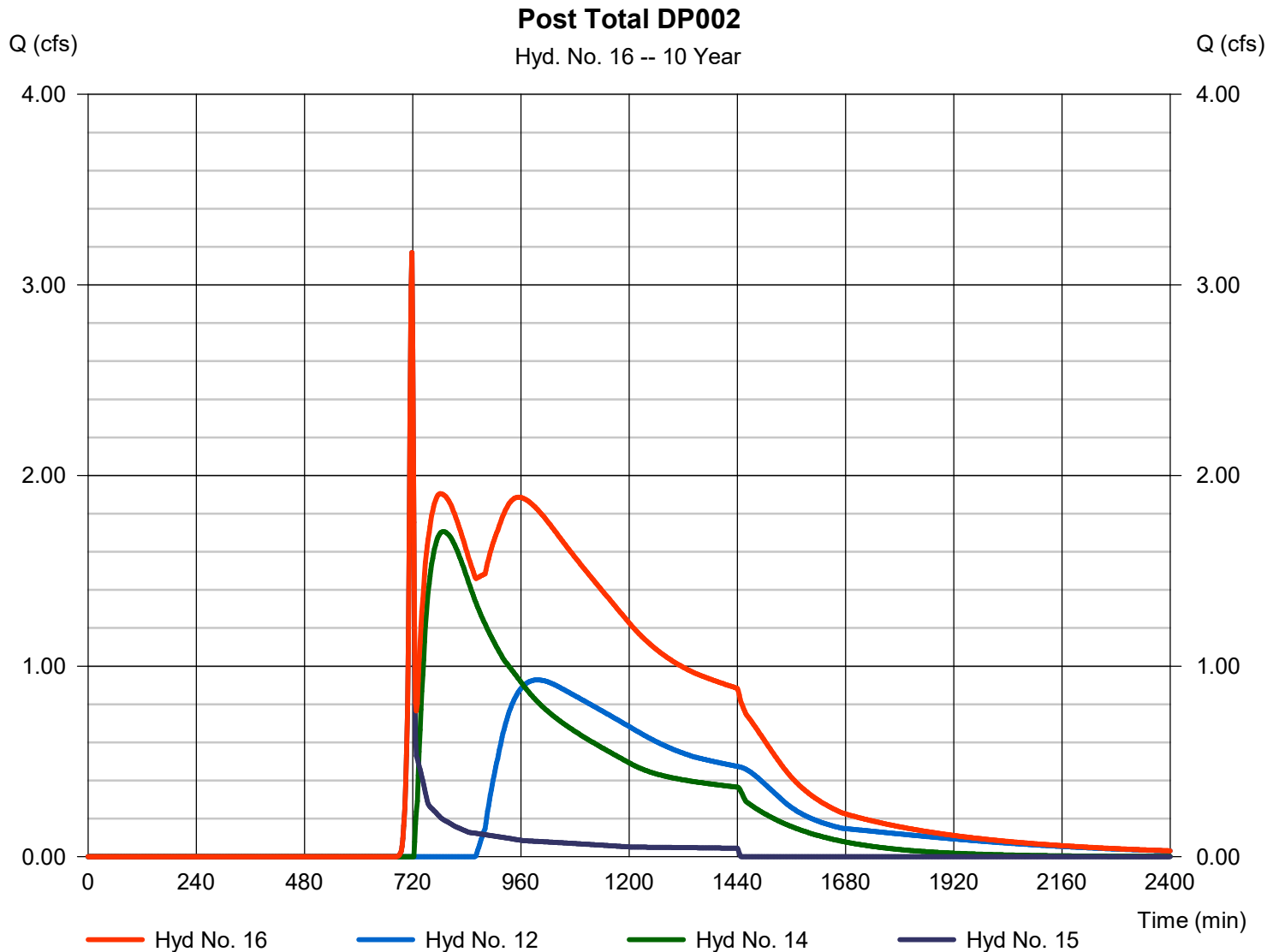
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

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## Hyd. No. 16

Post Total DP002

Hydrograph type	= Combine	Peak discharge	= 3.170 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 74,392 cuft
Inflow hyds.	= 12, 14, 15	Contrib. drain. area	= 1.540 ac



# Hydrograph Report

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

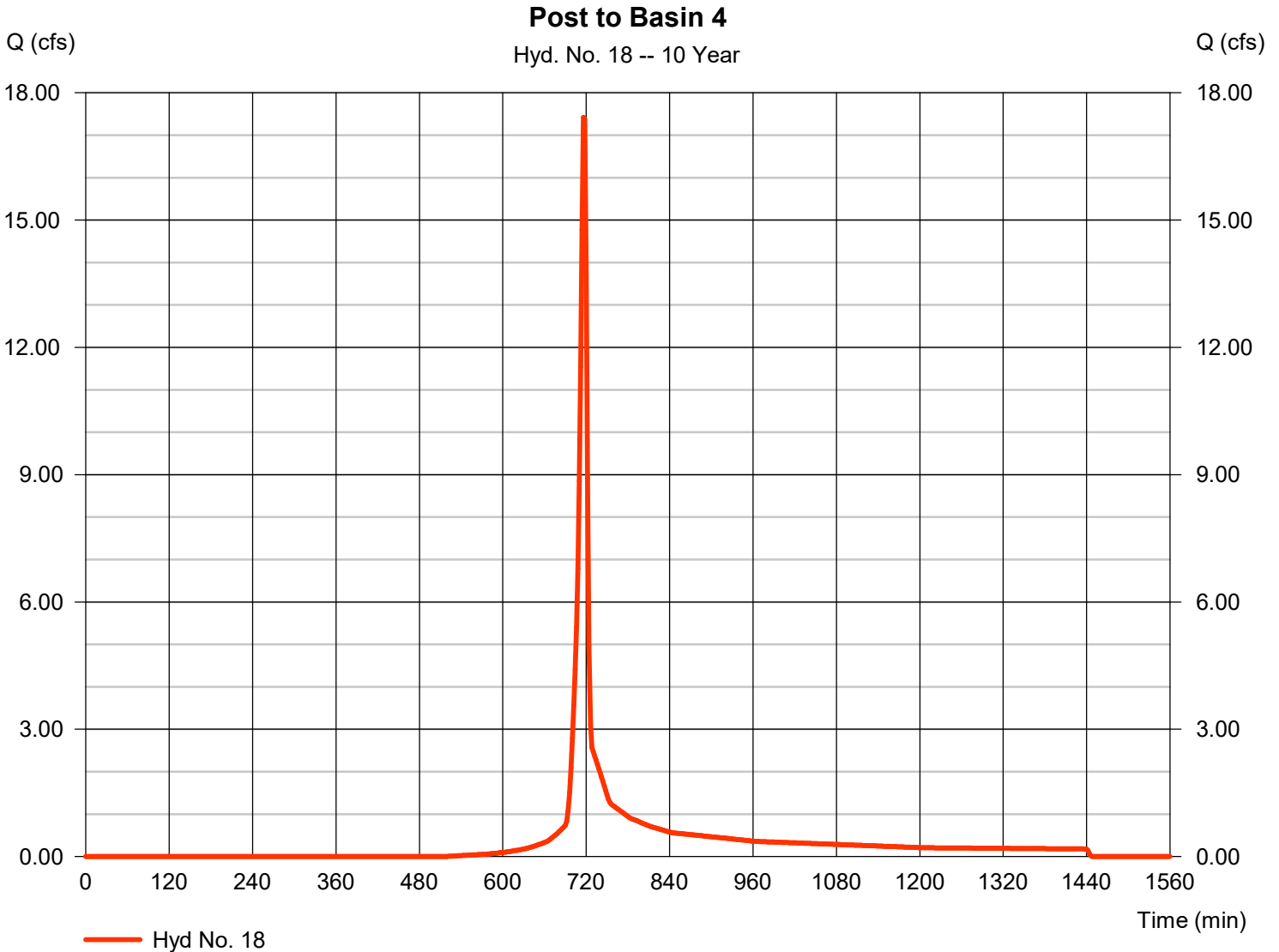
Wednesday, 03 / 22 / 2023

## Hyd. No. 18

Post to Basin 4

Hydrograph type	= SCS Runoff	Peak discharge	= 17.42 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 35,181 cuft
Drainage area	= 4.420 ac	Curve number	= 75.9*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.77 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(0.910 x 61) + (2.270 x 98) + (3.040 x 78)] / 4.420



# Hydrograph Report

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

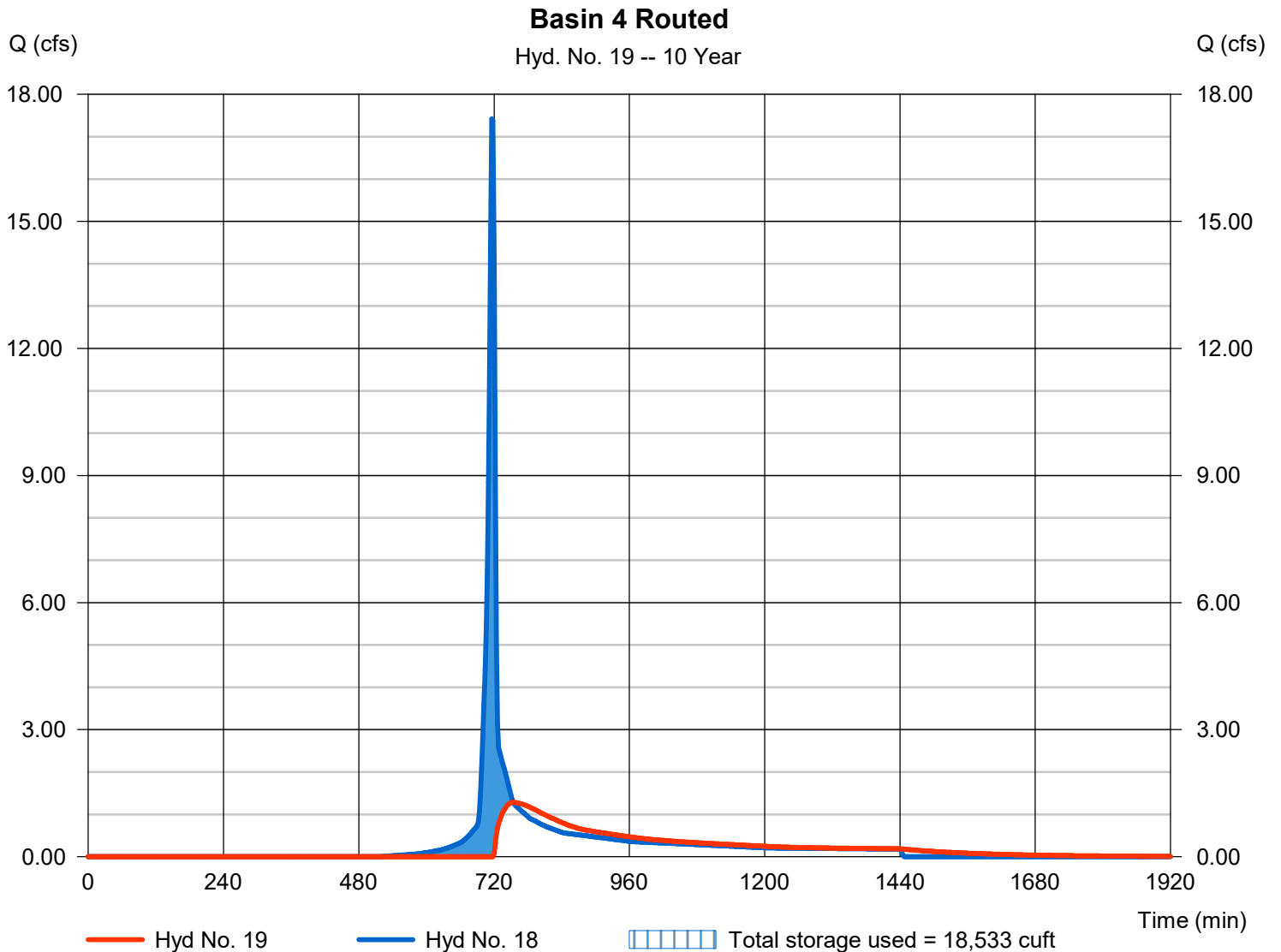
Wednesday, 03 / 22 / 2023

## Hyd. No. 19

Basin 4 Routed

Hydrograph type	= Reservoir	Peak discharge	= 1.282 cfs
Storm frequency	= 10 yrs	Time to peak	= 754 min
Time interval	= 2 min	Hyd. volume	= 21,383 cuft
Inflow hyd. No.	= 18 - Post to Basin 4	Max. Elevation	= 346.79 ft
Reservoir name	= Basin 4	Max. Storage	= 18,533 cuft

Storage Indication method used.



# Hydrograph Report

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

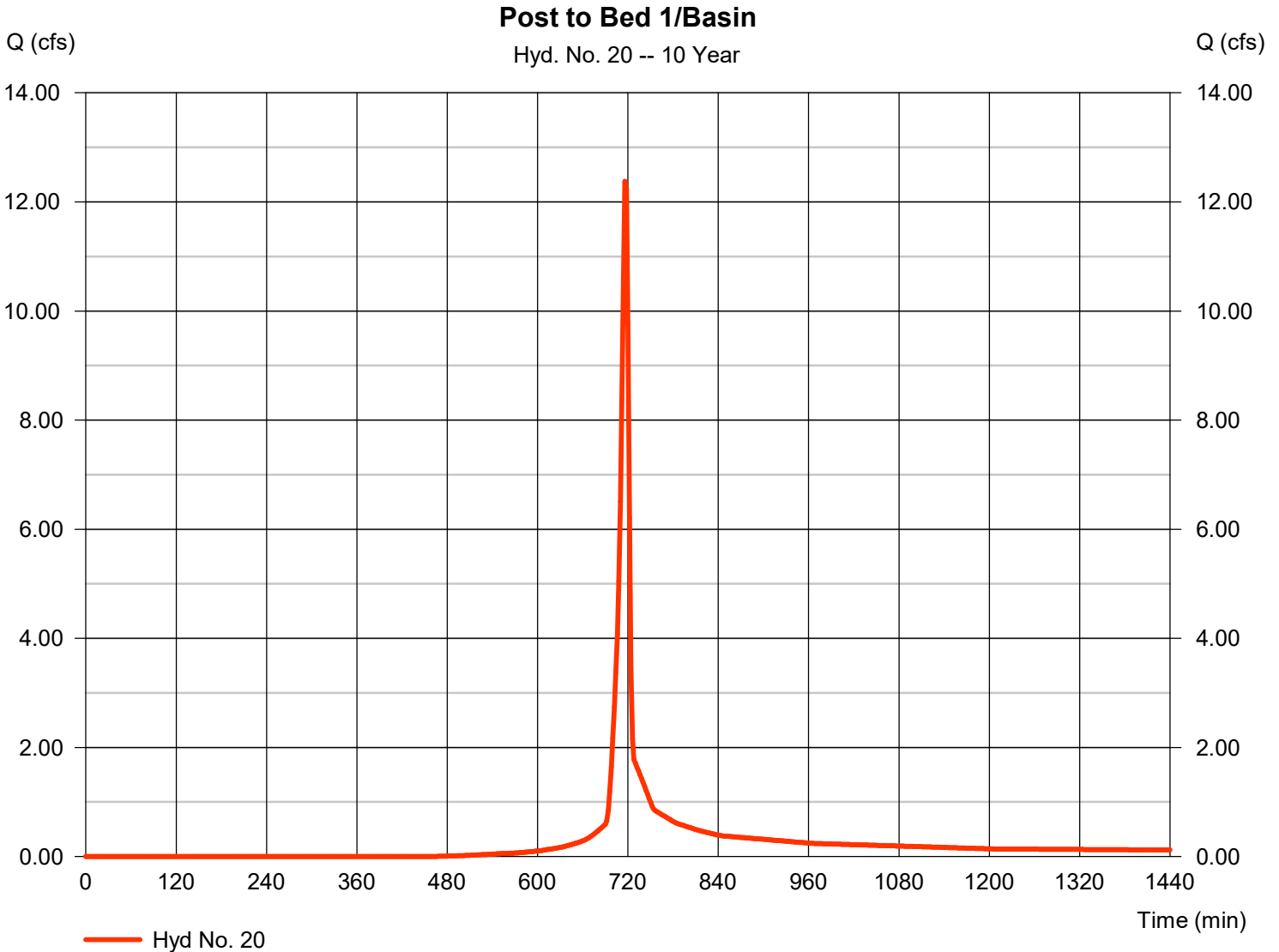
Wednesday, 03 / 22 / 2023

## Hyd. No. 20

Post to Bed 1/Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 12.38 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 25,081 cuft
Drainage area	= 2.820 ac	Curve number	= 79.1*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.77 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(0.910 x 61) + (2.270 x 98) + (3.040 x 78)] / 2.820



# Hydrograph Report

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

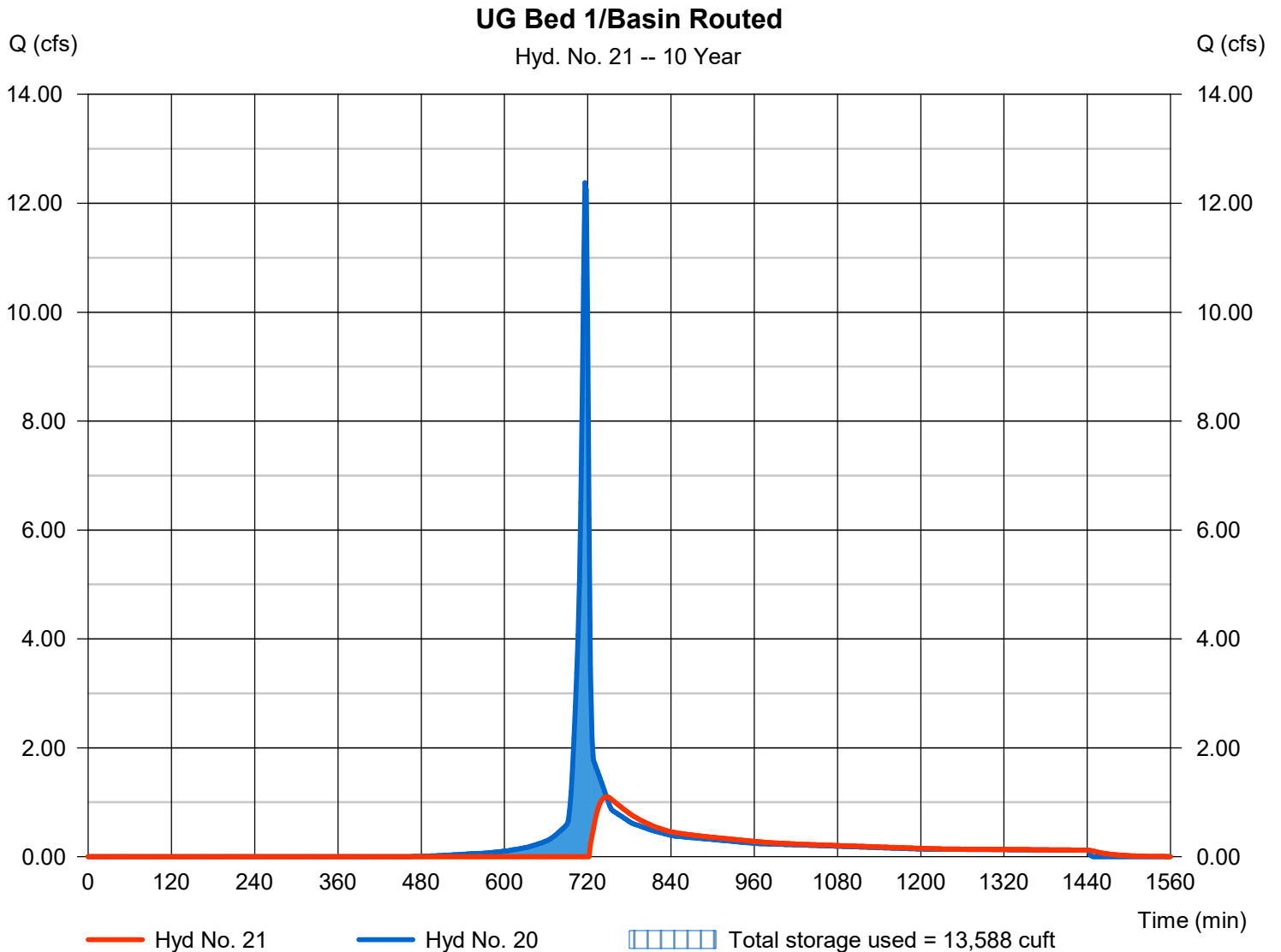
Wednesday, 03 / 22 / 2023

## Hyd. No. 21

UG Bed 1/Basin Routed

Hydrograph type	= Reservoir	Peak discharge	= 1.100 cfs
Storm frequency	= 10 yrs	Time to peak	= 748 min
Time interval	= 2 min	Hyd. volume	= 12,984 cuft
Inflow hyd. No.	= 20 - Post to Bed 1/Basin	Max. Elevation	= 340.55 ft
Reservoir name	= UG Bed 1/Basin	Max. Storage	= 13,588 cuft

Storage Indication method used.



# Hydrograph Report

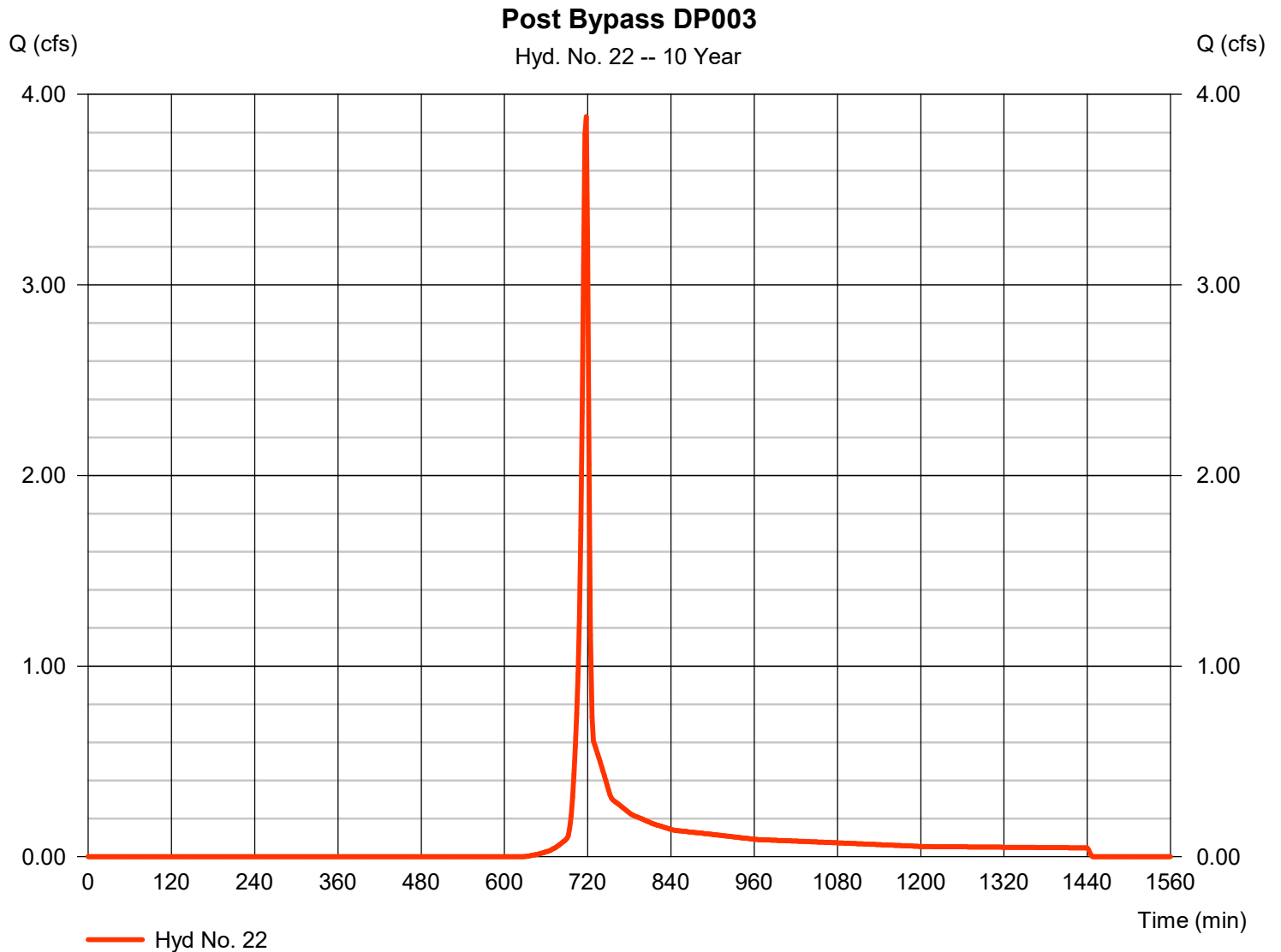
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

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## Hyd. No. 22

Post Bypass DP003

Hydrograph type	= SCS Runoff	Peak discharge	= 3.883 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 7,766 cuft
Drainage area	= 1.340 ac	Curve number	= 67.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.77 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

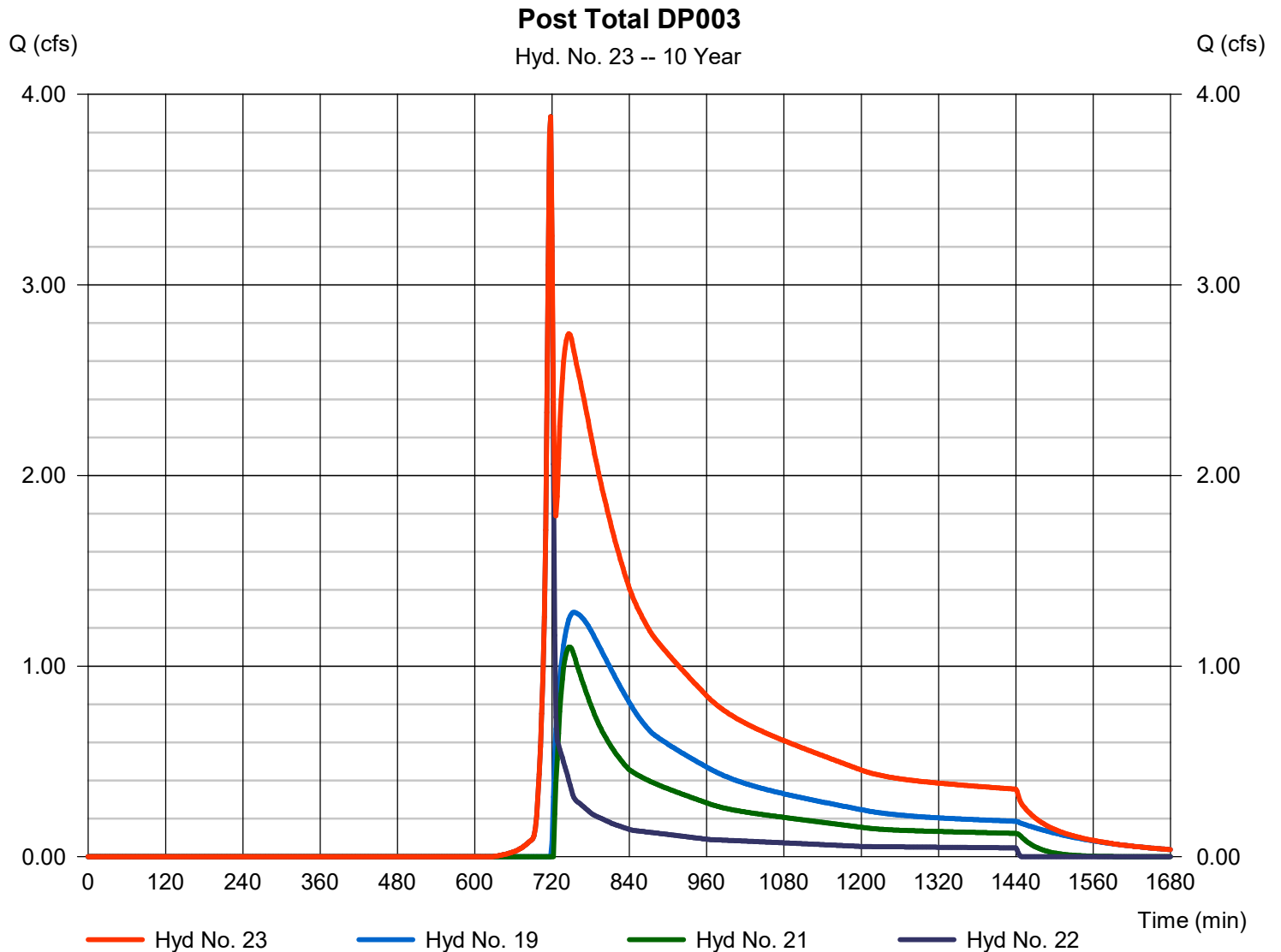
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 23

Post Total DP003

Hydrograph type	= Combine	Peak discharge	= 3.883 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 42,133 cuft
Inflow hyds.	= 19, 21, 22	Contrib. drain. area	= 1.340 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	33.98	2	722	92,948	-----	-----	-----	Pre Developed DP001	
2	SCS Runoff	45.70	2	722	123,600	-----	-----	-----	Pre Developed DP002	
3	SCS Runoff	28.88	2	722	75,557	-----	-----	-----	Pre Developed DP003	
4	SCS Runoff	2.654	2	718	5,315	-----	-----	-----	Pre Developed DP003 ORA	
5	SCS Runoff	55.13	2	718	111,161	-----	-----	-----	Post Basin 3	
6	Reservoir	6.253	2	740	65,694	5	318.79	53,978	Basin 3 Routed	
7	SCS Runoff	4.966	2	718	9,933	-----	-----	-----	Post Bypass DP001	
8	Combine	6.859	2	740	75,627	6, 7	-----	-----	Post Total DP001	
10	SCS Runoff	51.31	2	716	103,585	-----	-----	-----	Post Basin 1	
11	Reservoir	3.633	2	756	66,096	10	323.31	54,387	Basin 1 Upper Routed	
12	Reservoir	2.071	2	874	59,899	11	305.33	15,802	Basin 1 Lower Routed	
13	SCS Runoff	46.02	2	716	93,362	-----	-----	-----	Post Basin 2	
14	Reservoir	5.509	2	736	61,008	13	309.83	47,406	Basin 2 Routed	
15	SCS Runoff	4.826	2	718	9,678	-----	-----	-----	Post Bypass DP002	
16	Combine	6.169	2	736	130,585	12, 14, 15	-----	-----	Post Total DP002	
18	SCS Runoff	23.48	2	716	47,598	-----	-----	-----	Post to Basin 4	
19	Reservoir	3.119	2	732	33,800	18	347.38	23,223	Basin 4 Routed	
20	SCS Runoff	16.34	2	716	33,358	-----	-----	-----	Post to Bed 1/Basin	
21	Reservoir	4.714	2	724	21,261	20	341.15	16,082	UG Bed 1/Basin Routed	
22	SCS Runoff	5.505	2	718	11,037	-----	-----	-----	Post Bypass DP003	
23	Combine	10.00	2	722	66,098	19, 21, 22	-----	-----	Post Total DP003	
SWM.gpw					Return Period: 25 Year			Wednesday, 03 / 22 / 2023		



# Hydrograph Report

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

Wednesday, 03 / 22 / 2023

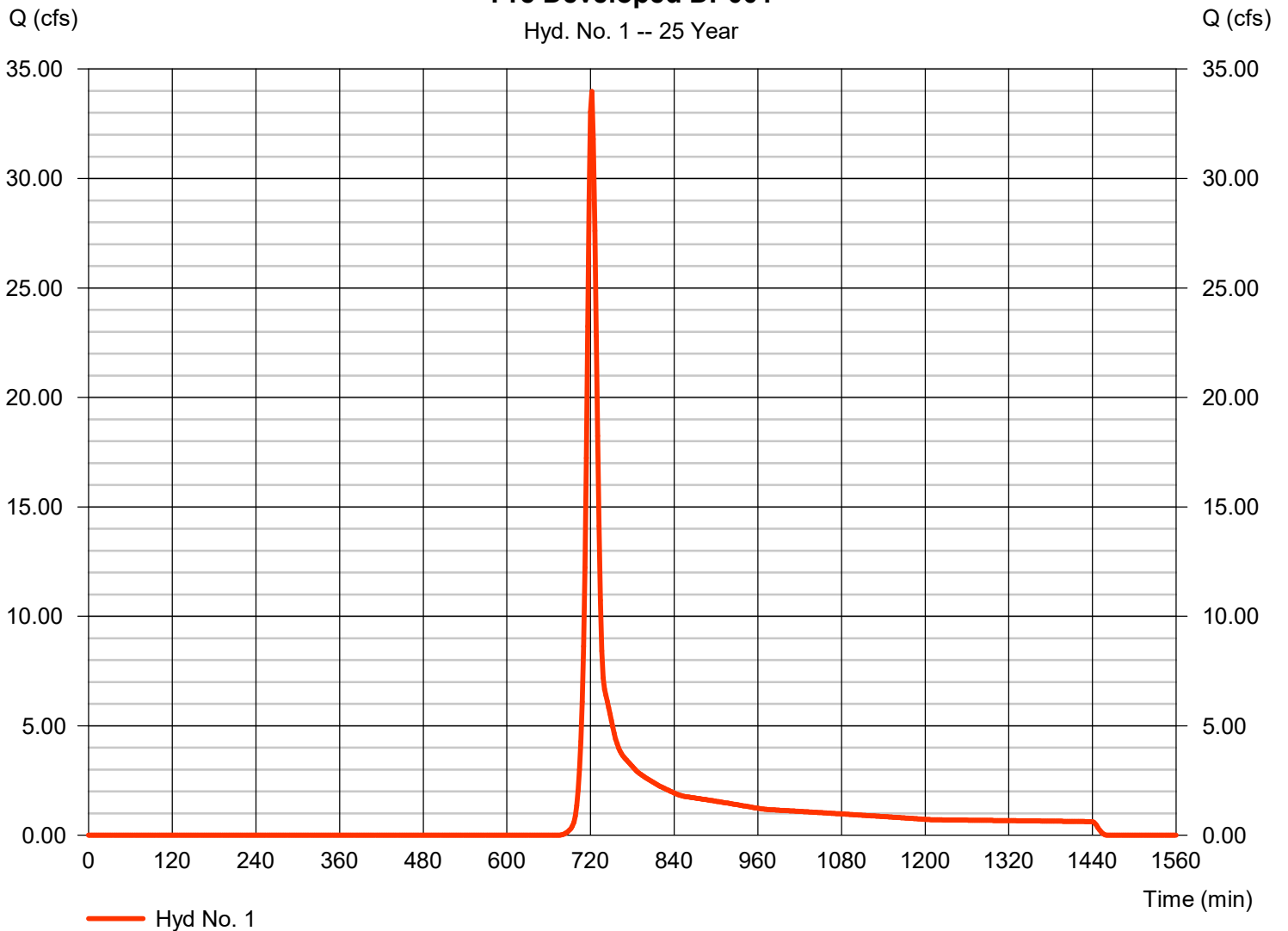
## Hyd. No. 1

Pre Developed DP001

Hydrograph type	= SCS Runoff	Peak discharge	= 33.98 cfs
Storm frequency	= 25 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 92,948 cuft
Drainage area	= 15.430 ac	Curve number	= 58
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.00 min
Total precip.	= 5.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

### Pre Developed DP001

Hyd. No. 1 -- 25 Year



# Hydrograph Report

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

Wednesday, 03 / 22 / 2023

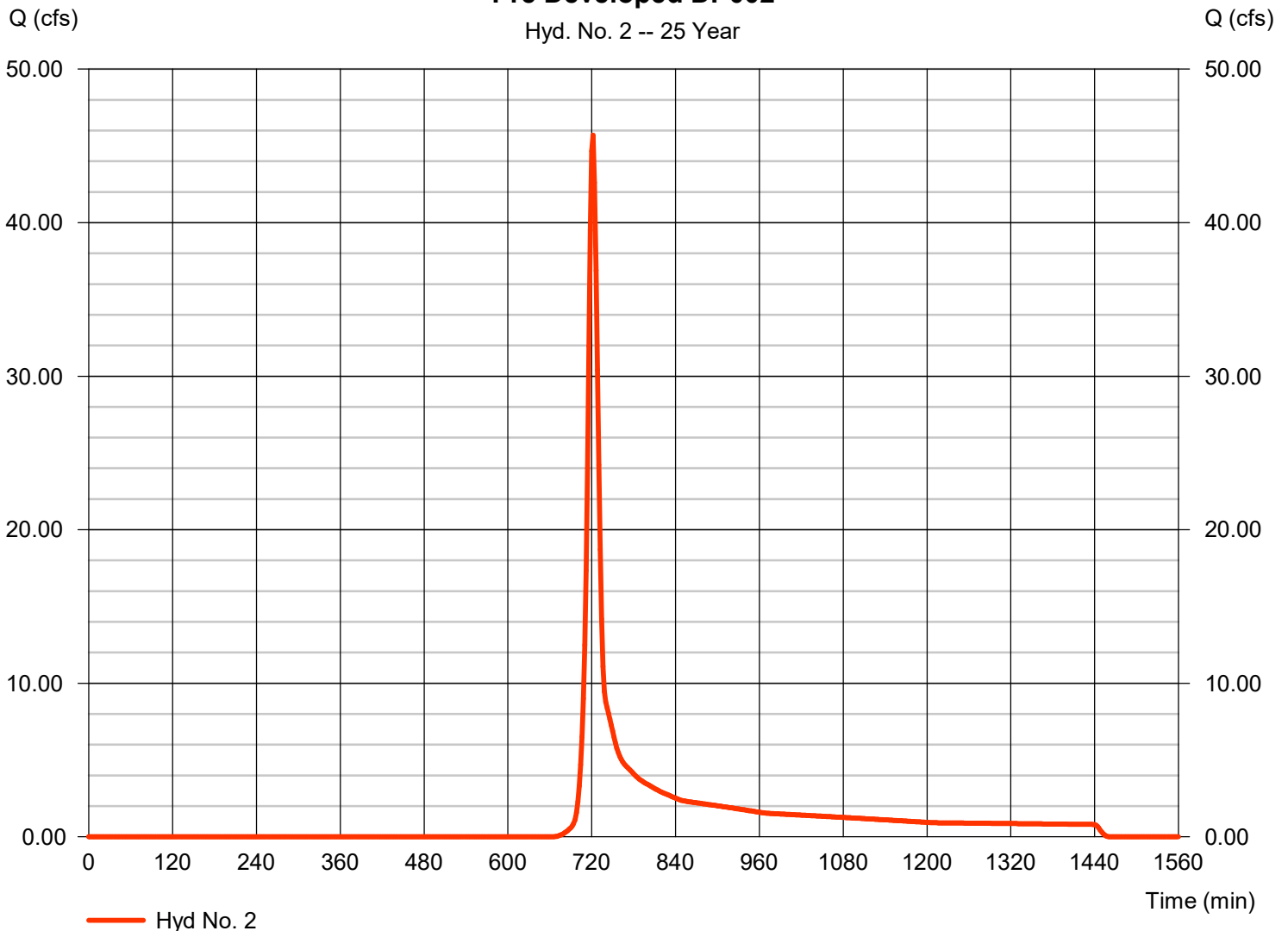
## Hyd. No. 2

Pre Developed DP002

Hydrograph type	= SCS Runoff	Peak discharge	= 45.70 cfs
Storm frequency	= 25 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 123,600 cuft
Drainage area	= 19.210 ac	Curve number	= 59.4
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.00 min
Total precip.	= 5.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

### Pre Developed DP002

Hyd. No. 2 -- 25 Year



# Hydrograph Report

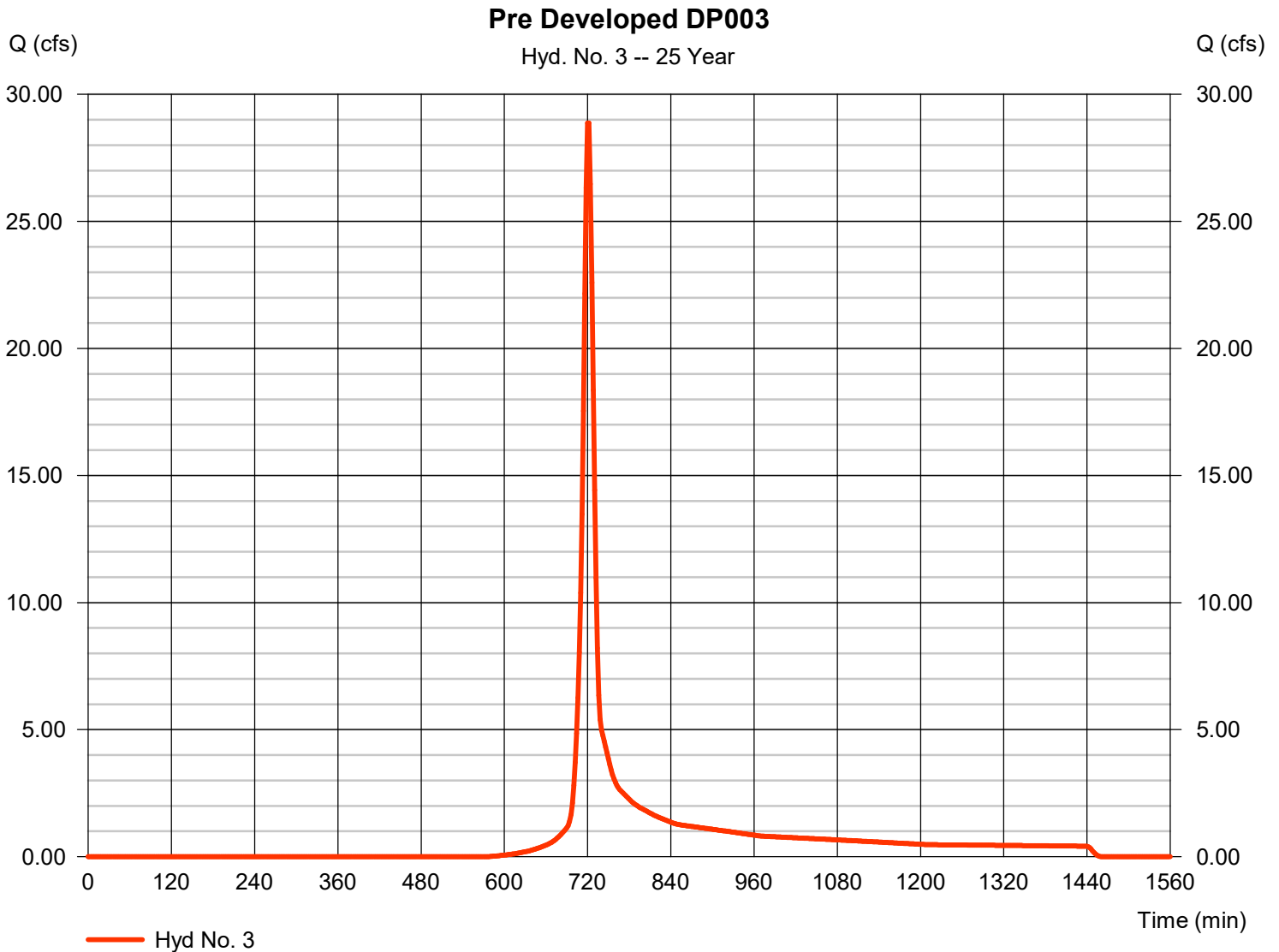
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 3

Pre Developed DP003

Hydrograph type	= SCS Runoff	Peak discharge	= 28.88 cfs
Storm frequency	= 25 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 75,557 cuft
Drainage area	= 8.190 ac	Curve number	= 68.3
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.00 min
Total precip.	= 5.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

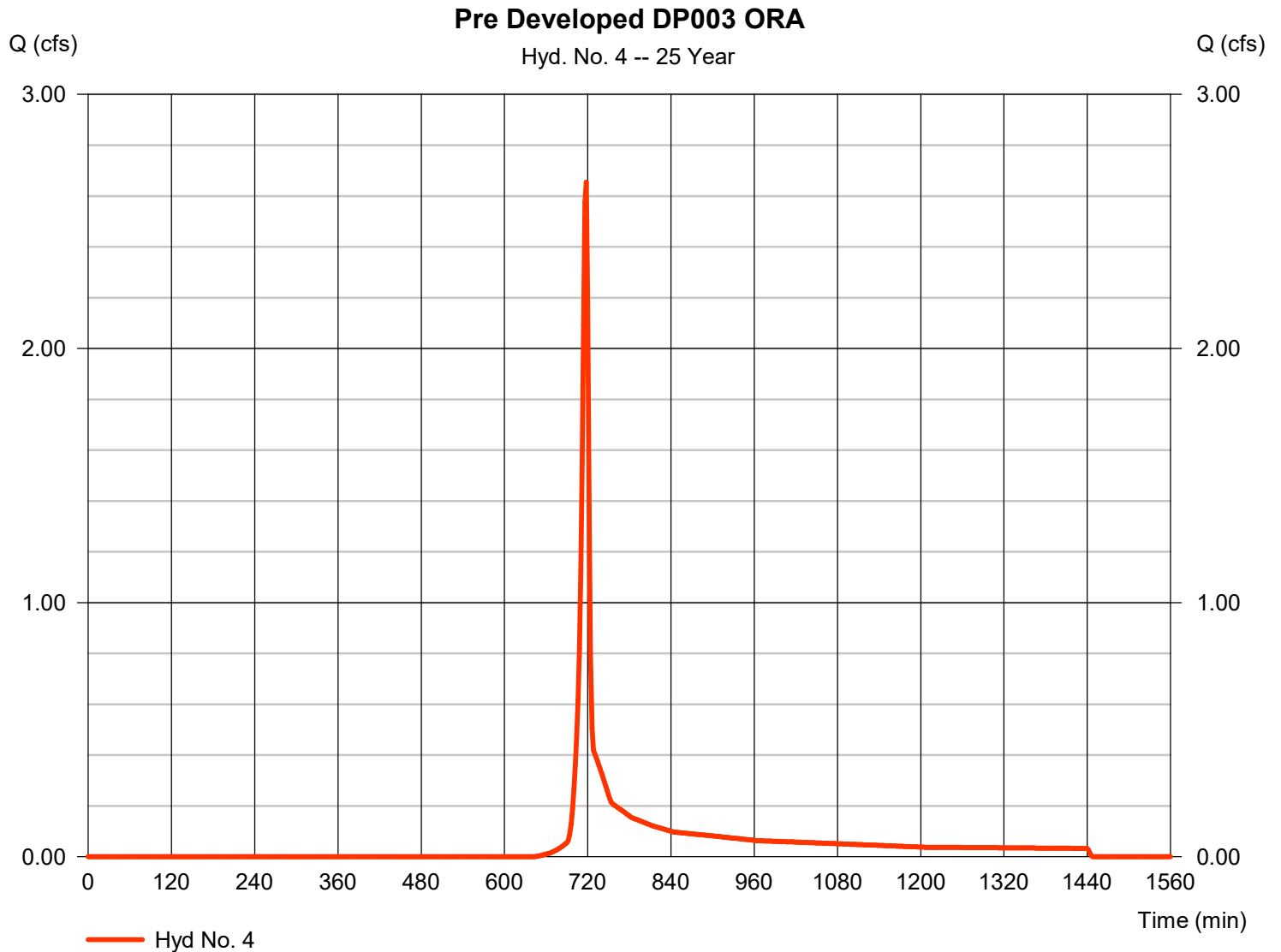
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 4

Pre Developed DP003 ORA

Hydrograph type	= SCS Runoff	Peak discharge	= 2.654 cfs
Storm frequency	= 25 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 5,315 cuft
Drainage area	= 0.810 ac	Curve number	= 62
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

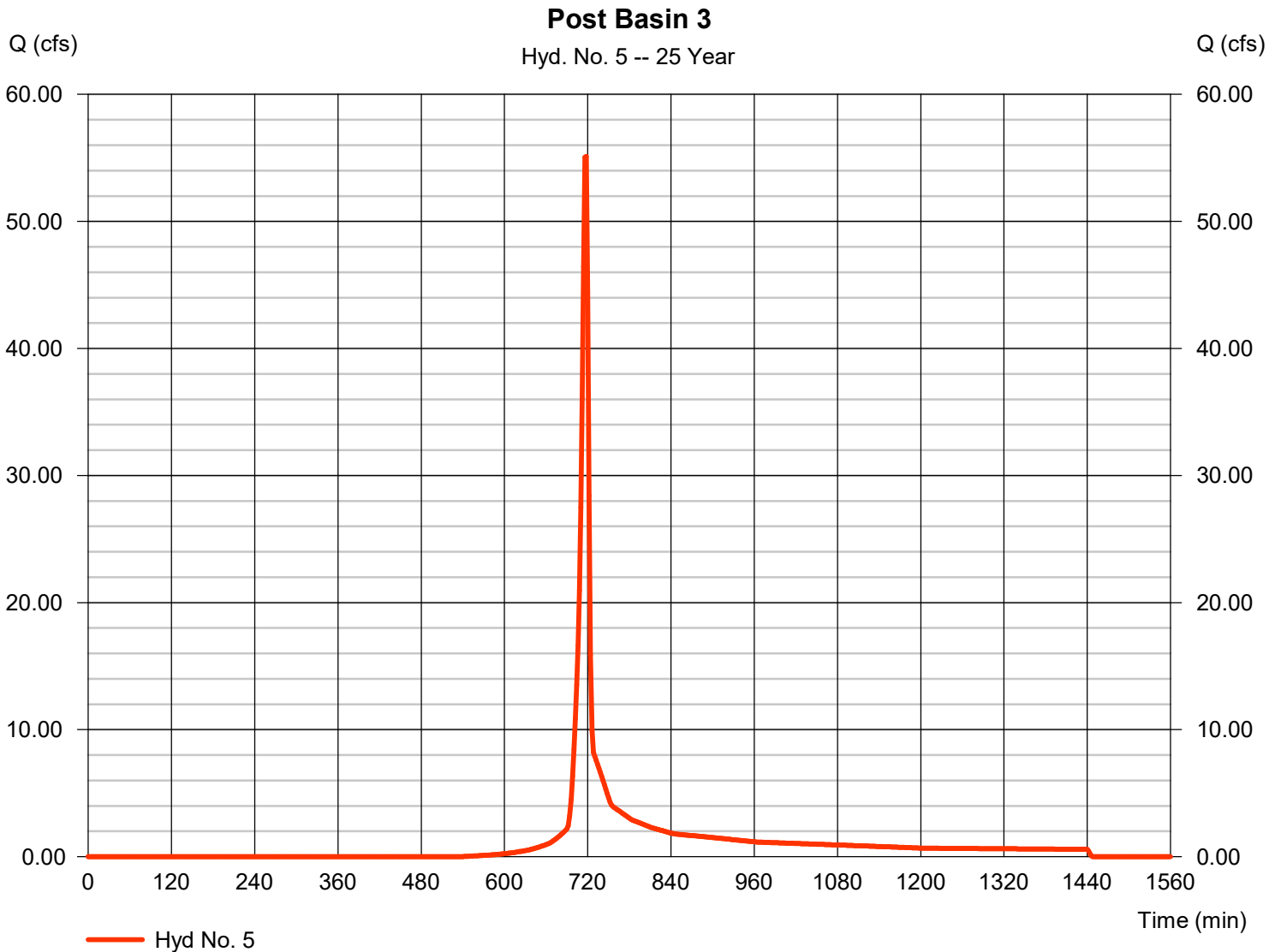
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 5

### Post Basin 3

Hydrograph type	= SCS Runoff	Peak discharge	= 55.13 cfs
Storm frequency	= 25 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 111,161 cuft
Drainage area	= 12.150 ac	Curve number	= 70.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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

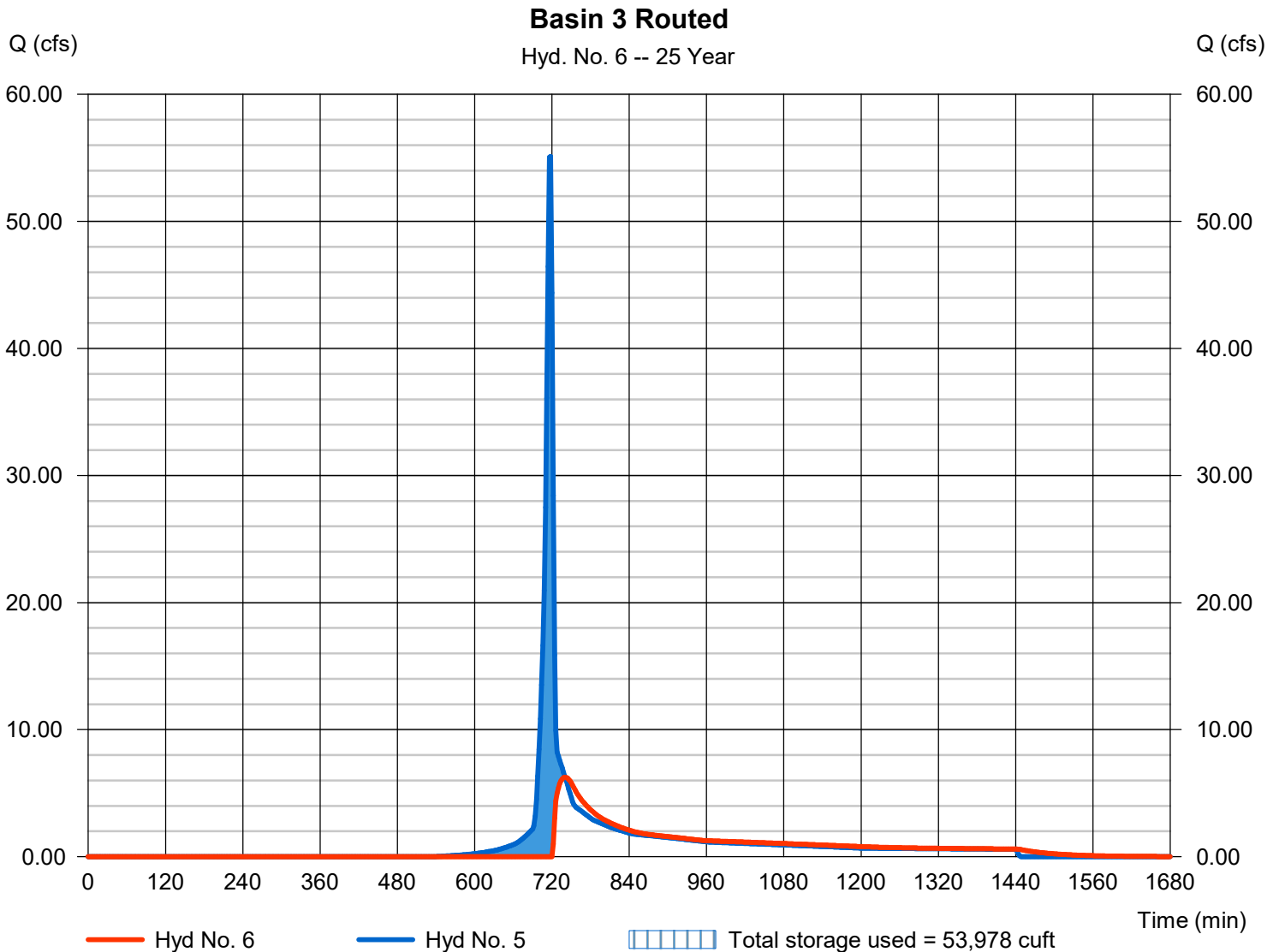
Wednesday, 03 / 22 / 2023

## Hyd. No. 6

Basin 3 Routed

Hydrograph type	= Reservoir	Peak discharge	= 6.253 cfs
Storm frequency	= 25 yrs	Time to peak	= 740 min
Time interval	= 2 min	Hyd. volume	= 65,694 cuft
Inflow hyd. No.	= 5 - Post Basin 3	Max. Elevation	= 318.79 ft
Reservoir name	= Basin 3	Max. Storage	= 53,978 cuft

Storage Indication method used.



# Hydrograph Report

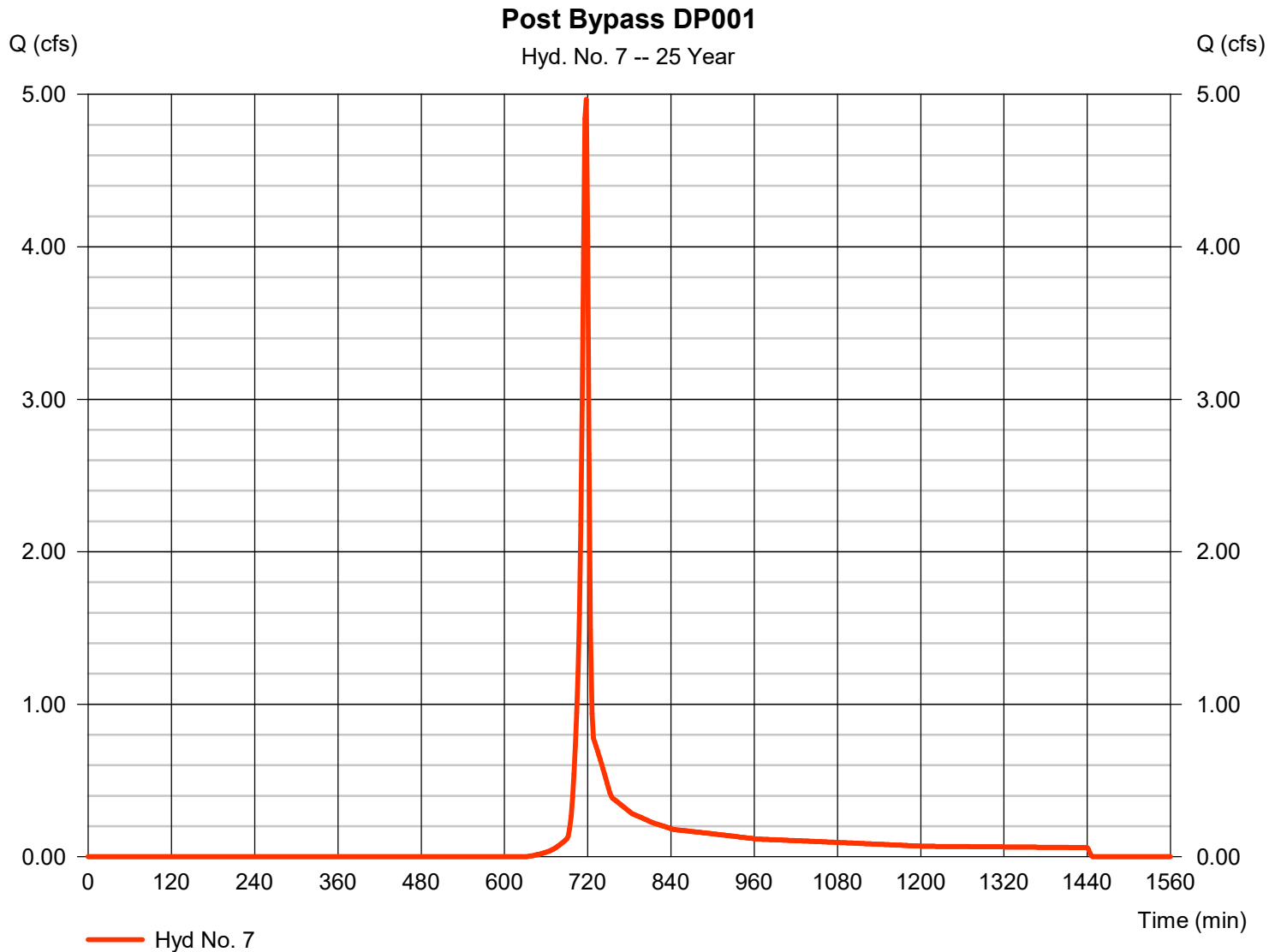
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 7

Post Bypass DP001

Hydrograph type	= SCS Runoff	Peak discharge	= 4.966 cfs
Storm frequency	= 25 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 9,933 cuft
Drainage area	= 1.440 ac	Curve number	= 63.2
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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

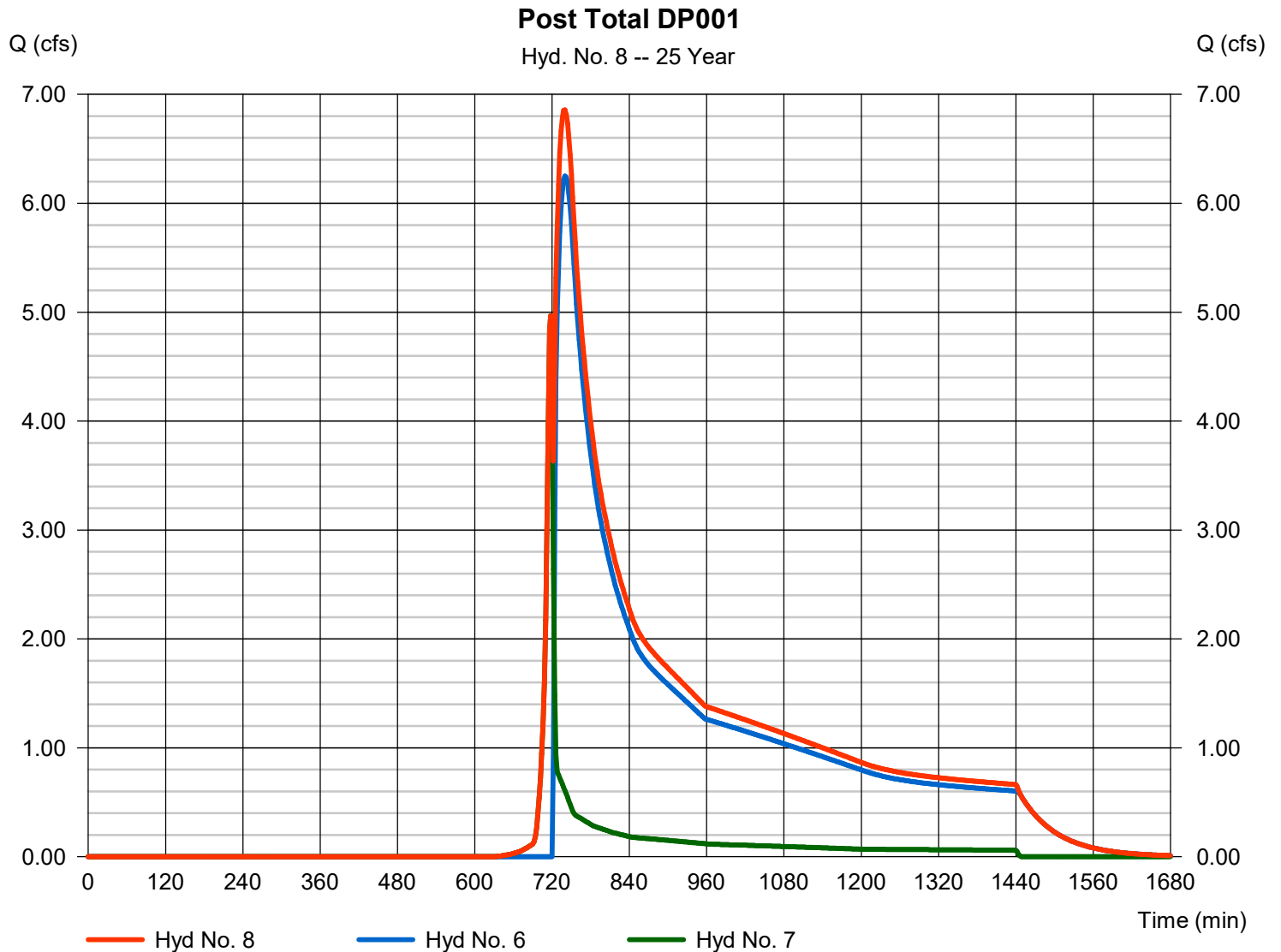
Wednesday, 03 / 22 / 2023

## Hyd. No. 8

Post Total DP001

Hydrograph type = Combine  
 Storm frequency = 25 yrs  
 Time interval = 2 min  
 Inflow hyds. = 6, 7

Peak discharge = 6.859 cfs  
 Time to peak = 740 min  
 Hyd. volume = 75,627 cuft  
 Contrib. drain. area = 1.440 ac





# Hydrograph Report

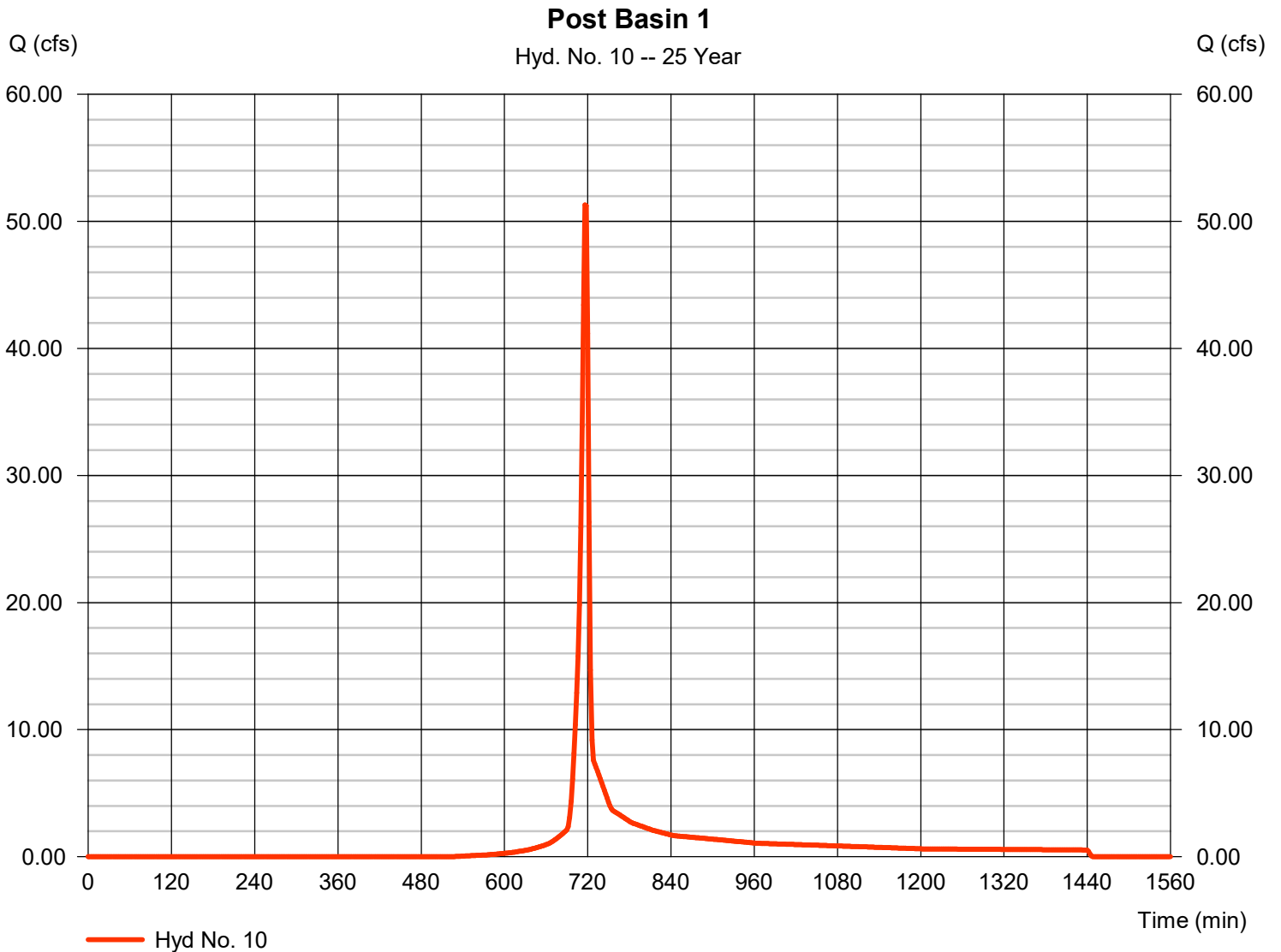
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 10

Post Basin 1

Hydrograph type	= SCS Runoff	Peak discharge	= 51.31 cfs
Storm frequency	= 25 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 103,585 cuft
Drainage area	= 10.950 ac	Curve number	= 71.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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

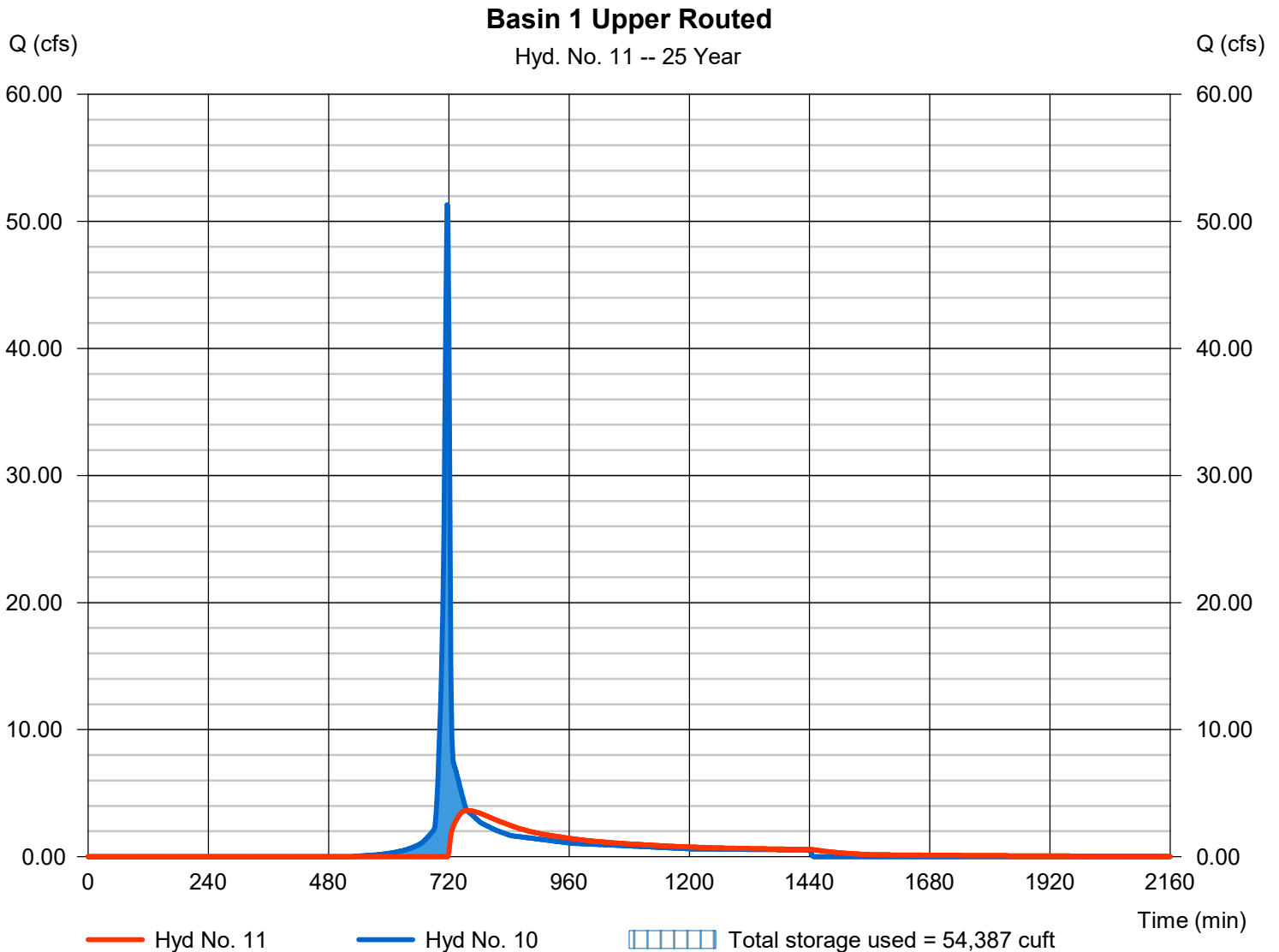
Wednesday, 03 / 22 / 2023

## Hyd. No. 11

Basin 1 Upper Routed

Hydrograph type	= Reservoir	Peak discharge	= 3.633 cfs
Storm frequency	= 25 yrs	Time to peak	= 756 min
Time interval	= 2 min	Hyd. volume	= 66,096 cuft
Inflow hyd. No.	= 10 - Post Basin 1	Max. Elevation	= 323.31 ft
Reservoir name	= Basin 1 Upper	Max. Storage	= 54,387 cuft

Storage Indication method used.



# Hydrograph Report

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

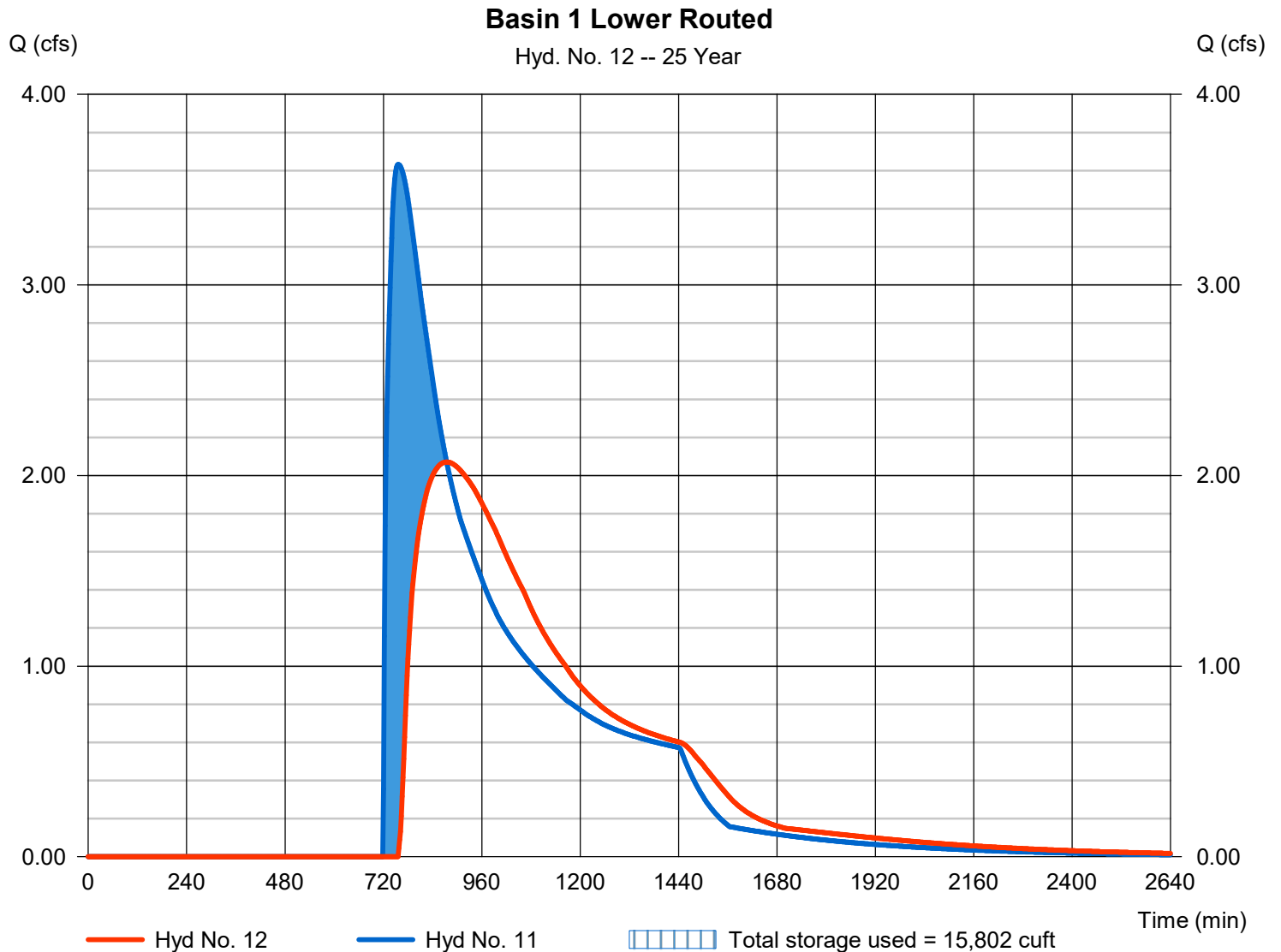
Wednesday, 03 / 22 / 2023

## Hyd. No. 12

Basin 1 Lower Routed

Hydrograph type	= Reservoir	Peak discharge	= 2.071 cfs
Storm frequency	= 25 yrs	Time to peak	= 874 min
Time interval	= 2 min	Hyd. volume	= 59,899 cuft
Inflow hyd. No.	= 11 - Basin 1 Upper Routed	Max. Elevation	= 305.33 ft
Reservoir name	= Basin 1 Lower	Max. Storage	= 15,802 cuft

Storage Indication method used.



# Hydrograph Report

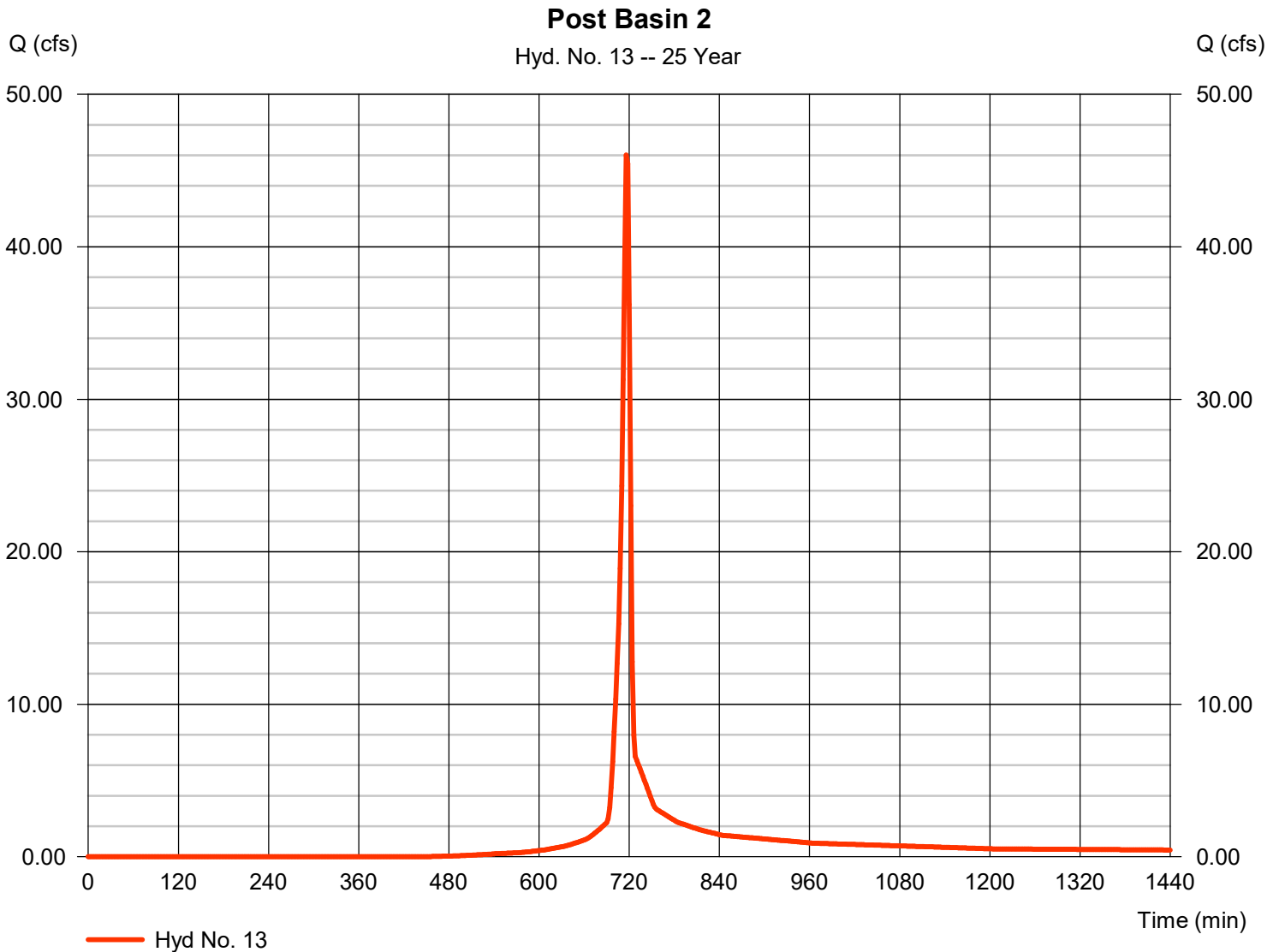
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 13

### Post Basin 2

Hydrograph type	= SCS Runoff	Peak discharge	= 46.02 cfs
Storm frequency	= 25 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 93,362 cuft
Drainage area	= 8.540 ac	Curve number	= 76.4
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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

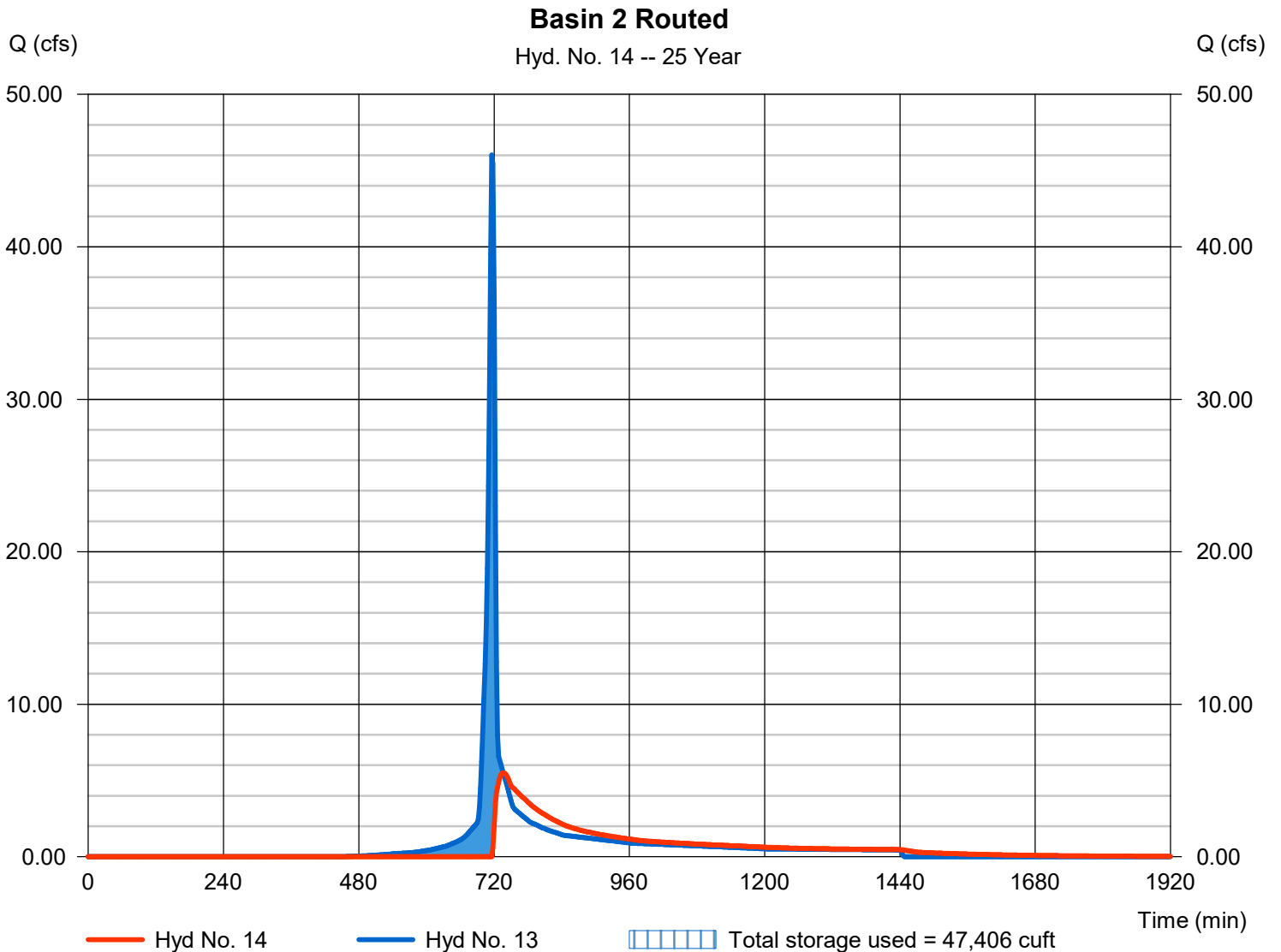
Wednesday, 03 / 22 / 2023

## Hyd. No. 14

Basin 2 Routed

Hydrograph type	= Reservoir	Peak discharge	= 5.509 cfs
Storm frequency	= 25 yrs	Time to peak	= 736 min
Time interval	= 2 min	Hyd. volume	= 61,008 cuft
Inflow hyd. No.	= 13 - Post Basin 2	Max. Elevation	= 309.83 ft
Reservoir name	= Basin 2	Max. Storage	= 47,406 cuft

Storage Indication method used.



# Hydrograph Report

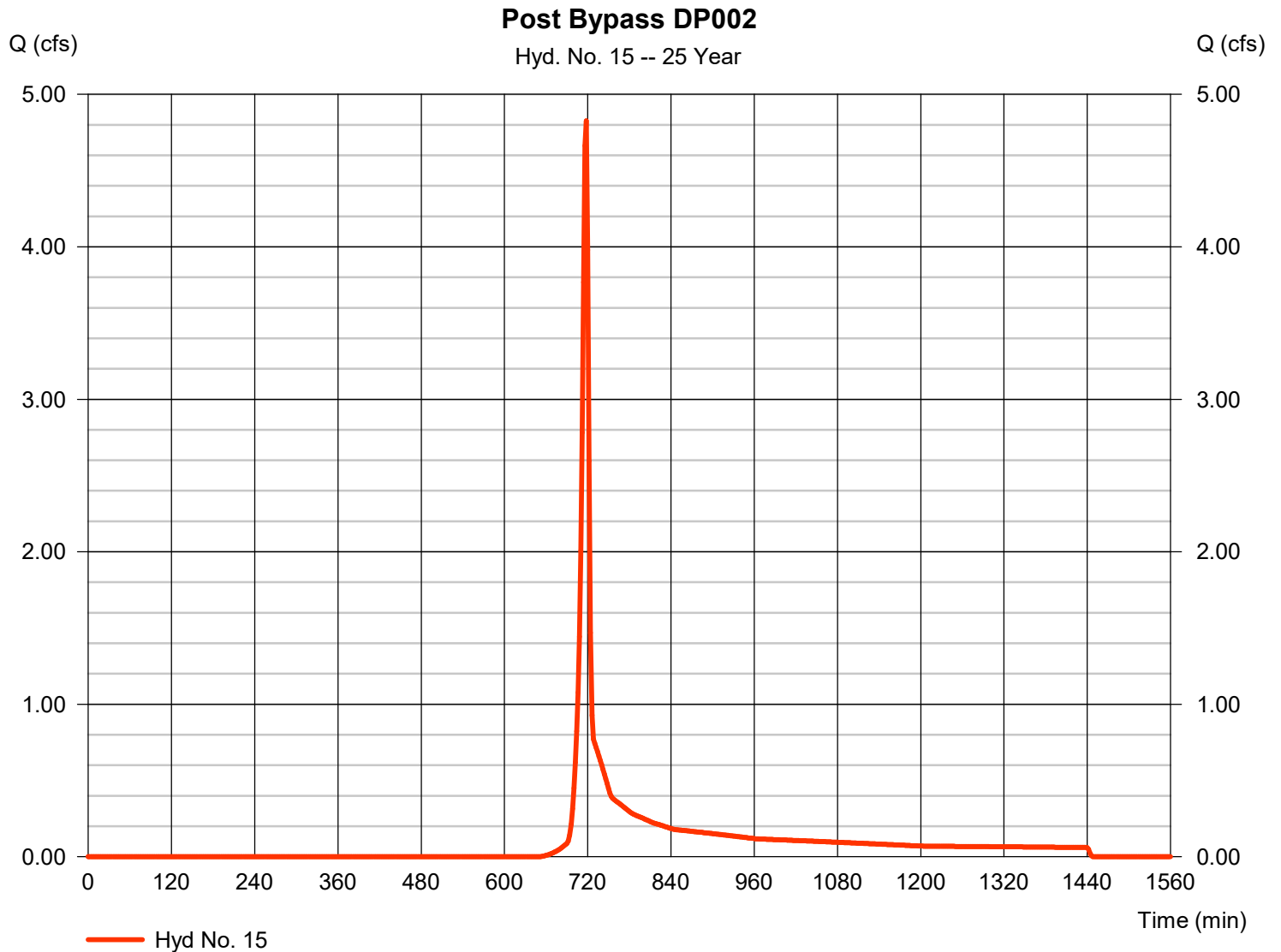
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 15

Post Bypass DP002

Hydrograph type	= SCS Runoff	Peak discharge	= 4.826 cfs
Storm frequency	= 25 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 9,678 cuft
Drainage area	= 1.540 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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

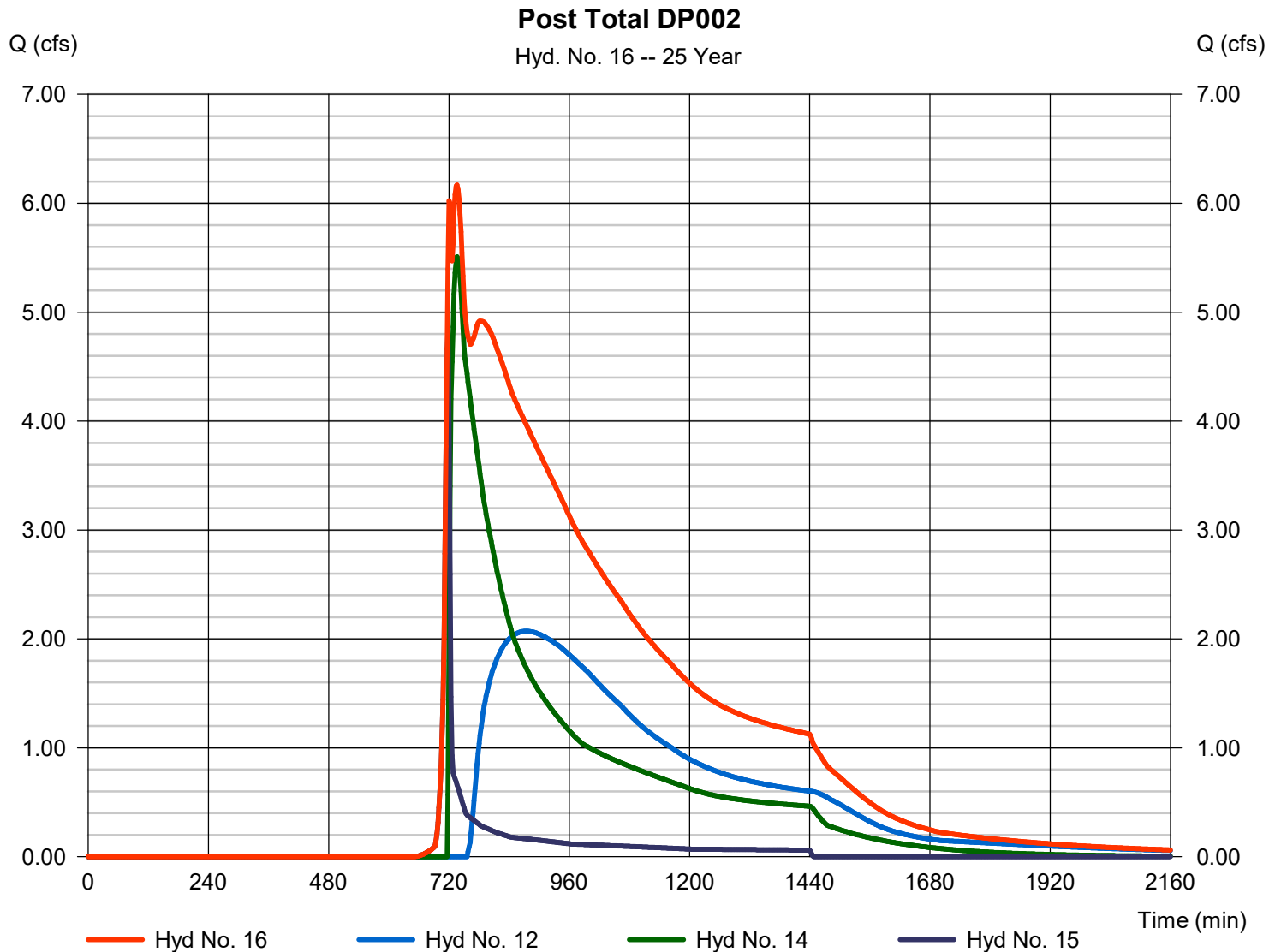
Wednesday, 03 / 22 / 2023

## Hyd. No. 16

Post Total DP002

Hydrograph type = Combine  
 Storm frequency = 25 yrs  
 Time interval = 2 min  
 Inflow hyds. = 12, 14, 15

Peak discharge = 6.169 cfs  
 Time to peak = 736 min  
 Hyd. volume = 130,585 cuft  
 Contrib. drain. area = 1.540 ac



# Hydrograph Report

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

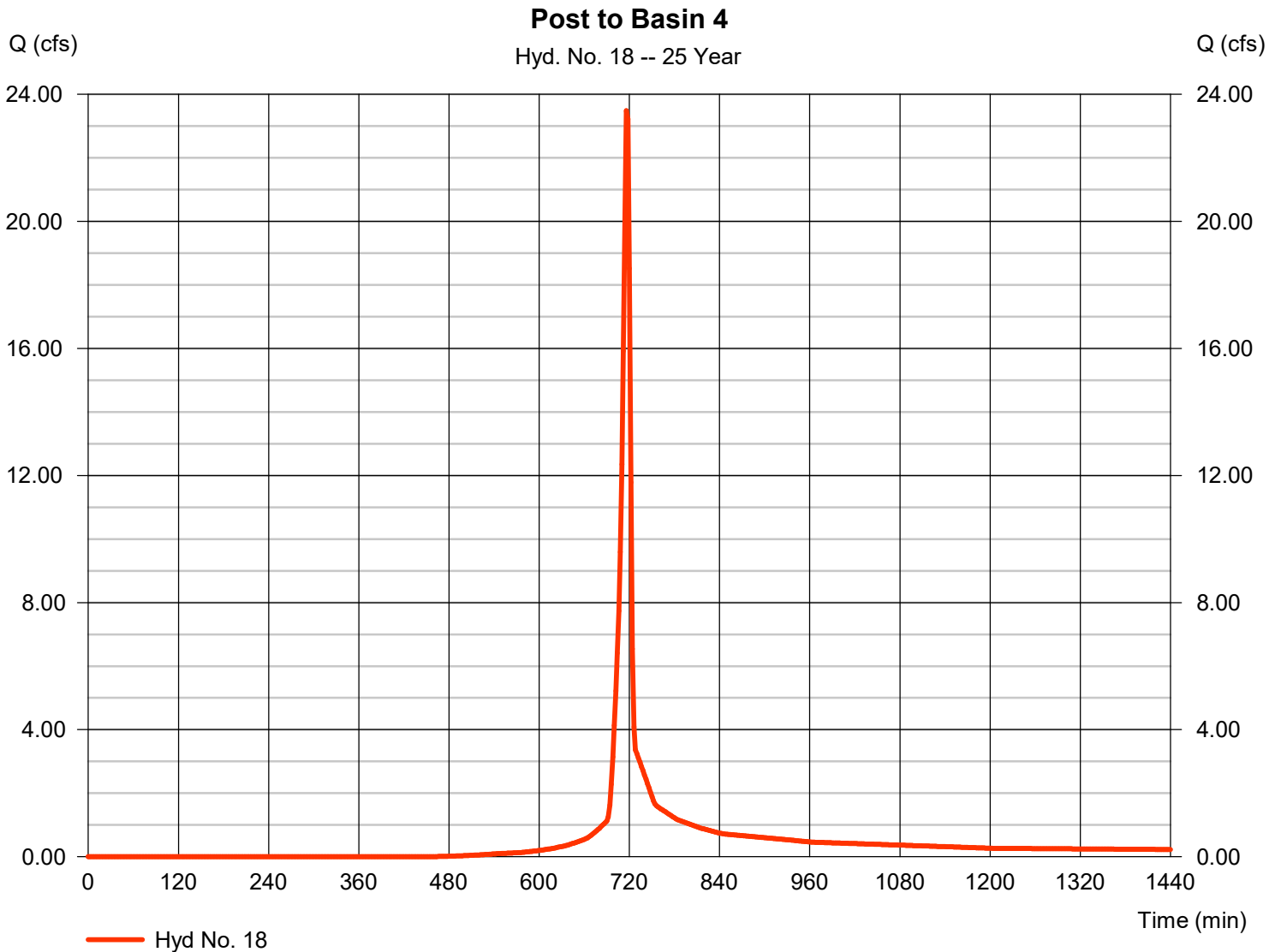
Wednesday, 03 / 22 / 2023

## Hyd. No. 18

Post to Basin 4

Hydrograph type	= SCS Runoff	Peak discharge	= 23.48 cfs
Storm frequency	= 25 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 47,598 cuft
Drainage area	= 4.420 ac	Curve number	= 75.9*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(0.910 x 61) + (2.270 x 98) + (3.040 x 78)] / 4.420





# Hydrograph Report

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

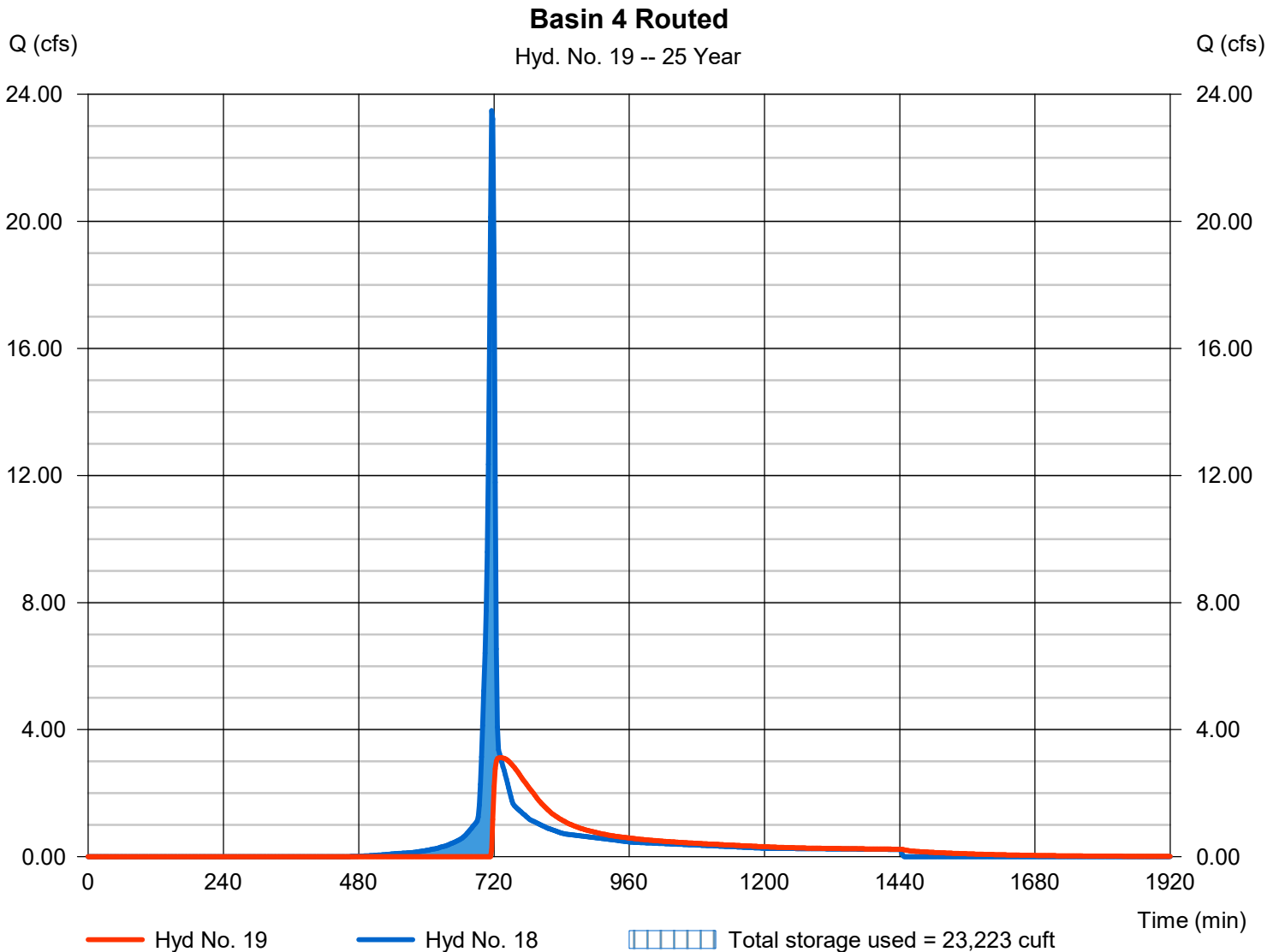
Wednesday, 03 / 22 / 2023

## Hyd. No. 19

Basin 4 Routed

Hydrograph type	= Reservoir	Peak discharge	= 3.119 cfs
Storm frequency	= 25 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 33,800 cuft
Inflow hyd. No.	= 18 - Post to Basin 4	Max. Elevation	= 347.38 ft
Reservoir name	= Basin 4	Max. Storage	= 23,223 cuft

Storage Indication method used.



# Hydrograph Report

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

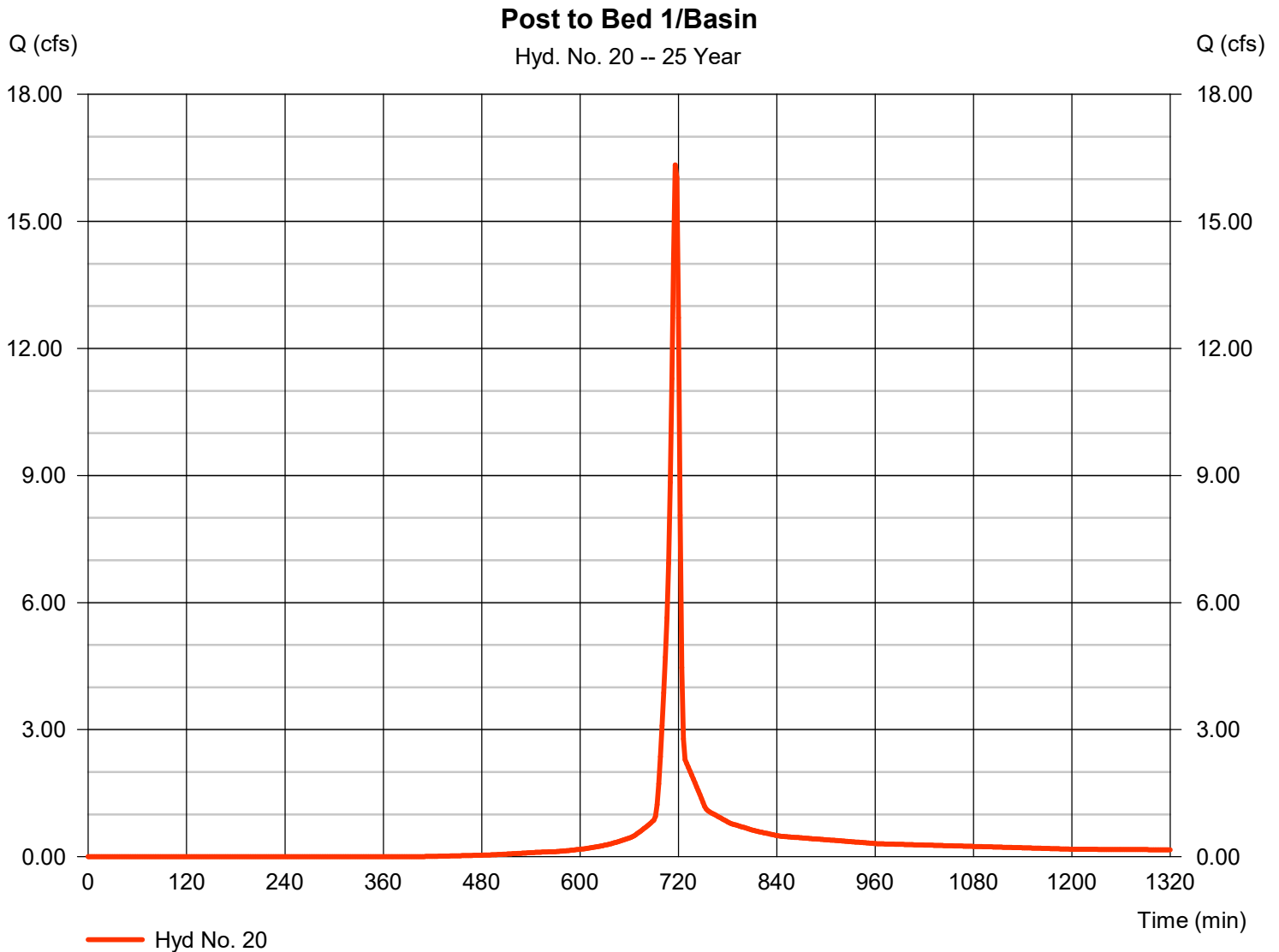
Wednesday, 03 / 22 / 2023

## Hyd. No. 20

Post to Bed 1/Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 16.34 cfs
Storm frequency	= 25 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 33,358 cuft
Drainage area	= 2.820 ac	Curve number	= 79.1*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(0.910 x 61) + (2.270 x 98) + (3.040 x 78)] / 2.820



# Hydrograph Report

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

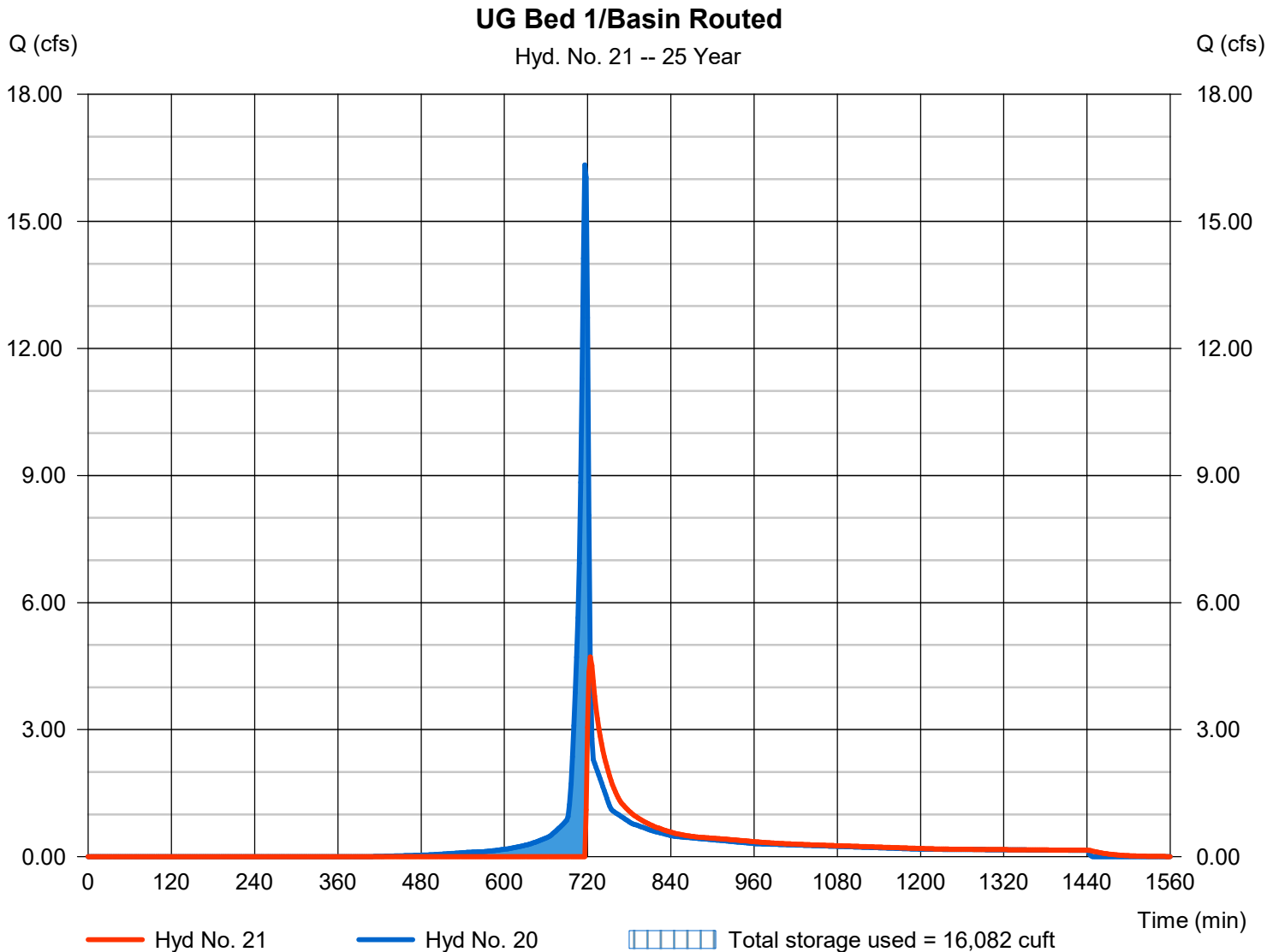
Wednesday, 03 / 22 / 2023

## Hyd. No. 21

UG Bed 1/Basin Routed

Hydrograph type	= Reservoir	Peak discharge	= 4.714 cfs
Storm frequency	= 25 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 21,261 cuft
Inflow hyd. No.	= 20 - Post to Bed 1/Basin	Max. Elevation	= 341.15 ft
Reservoir name	= UG Bed 1/Basin	Max. Storage	= 16,082 cuft

Storage Indication method used.



# Hydrograph Report

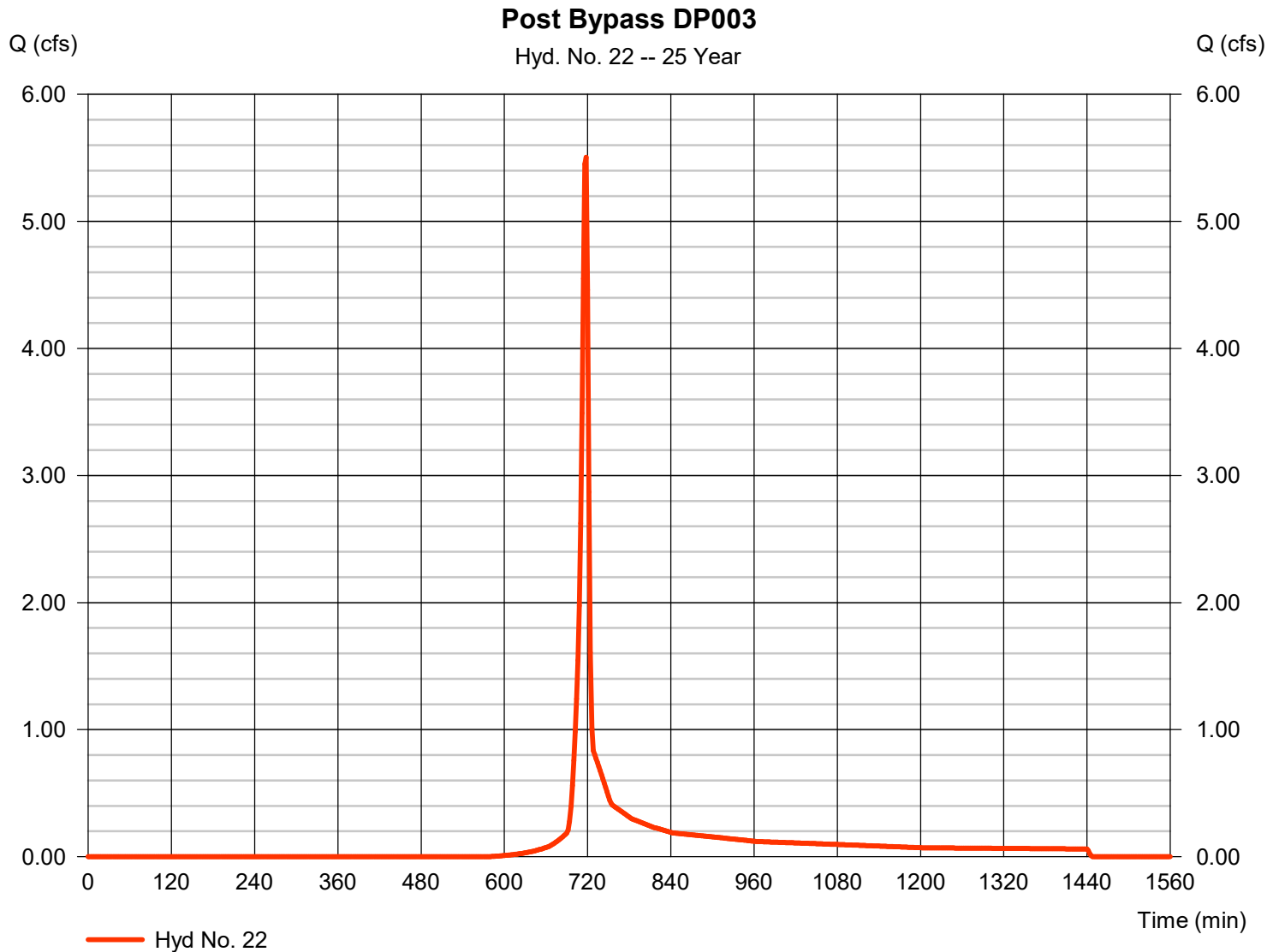
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 22

Post Bypass DP003

Hydrograph type	= SCS Runoff	Peak discharge	= 5.505 cfs
Storm frequency	= 25 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 11,037 cuft
Drainage area	= 1.340 ac	Curve number	= 67.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

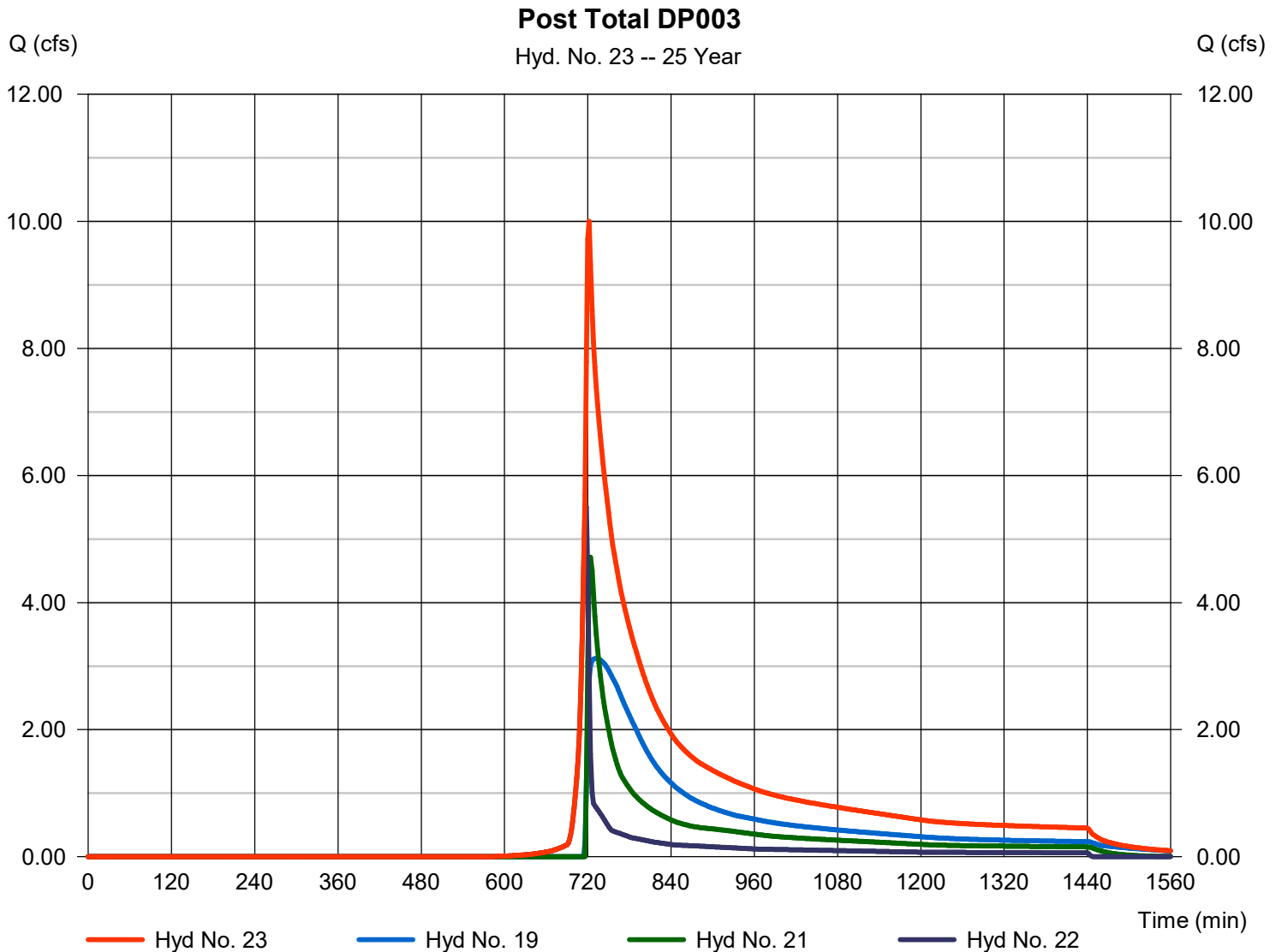
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 23

Post Total DP003

Hydrograph type	= Combine	Peak discharge	= 10.00 cfs
Storm frequency	= 25 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 66,098 cuft
Inflow hyds.	= 19, 21, 22	Contrib. drain. area	= 1.340 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	46.28	2	722	123,698	-----	-----	-----	Pre Developed DP001	
2	SCS Runoff	61.46	2	722	163,179	-----	-----	-----	Pre Developed DP002	
3	SCS Runoff	36.78	2	720	95,632	-----	-----	-----	Pre Developed DP003	
4	SCS Runoff	3.460	2	718	6,921	-----	-----	-----	Pre Developed DP003 ORA	
5	SCS Runoff	68.94	2	716	139,306	-----	-----	-----	Post Basin 3	
6	Reservoir	19.64	2	724	93,838	5	319.16	62,202	Basin 3 Routed	
7	SCS Runoff	6.425	2	718	12,860	-----	-----	-----	Post Bypass DP001	
8	Combine	21.53	2	724	106,698	6, 7	-----	-----	Post Total DP001	
10	SCS Runoff	63.94	2	716	129,320	-----	-----	-----	Post Basin 1	
11	Reservoir	10.69	2	726	91,830	10	323.71	61,860	Basin 1 Upper Routed	
12	Reservoir	5.226	2	772	85,633	11	305.66	18,217	Basin 1 Lower Routed	
13	SCS Runoff	56.20	2	716	114,655	-----	-----	-----	Post Basin 2	
14	Reservoir	18.98	2	724	82,300	13	310.22	53,973	Basin 2 Routed	
15	SCS Runoff	6.335	2	718	12,668	-----	-----	-----	Post Bypass DP002	
16	Combine	21.32	2	722	180,602	12, 14, 15	-----	-----	Post Total DP002	
18	SCS Runoff	28.74	2	716	58,554	-----	-----	-----	Post to Basin 4	
19	Reservoir	4.373	2	728	44,756	18	348.04	28,565	Basin 4 Routed	
20	SCS Runoff	19.73	2	716	40,599	-----	-----	-----	Post to Bed 1/Basin	
21	Reservoir	7.370	2	724	28,502	20	341.74	18,600	UG Bed 1/Basin Routed	
22	SCS Runoff	6.944	2	718	13,999	-----	-----	-----	Post Bypass DP003	
23	Combine	16.17	2	720	87,257	19, 21, 22	-----	-----	Post Total DP003	
SWM.gpw					Return Period: 50 Year			Wednesday, 03 / 22 / 2023		

# Hydrograph Report

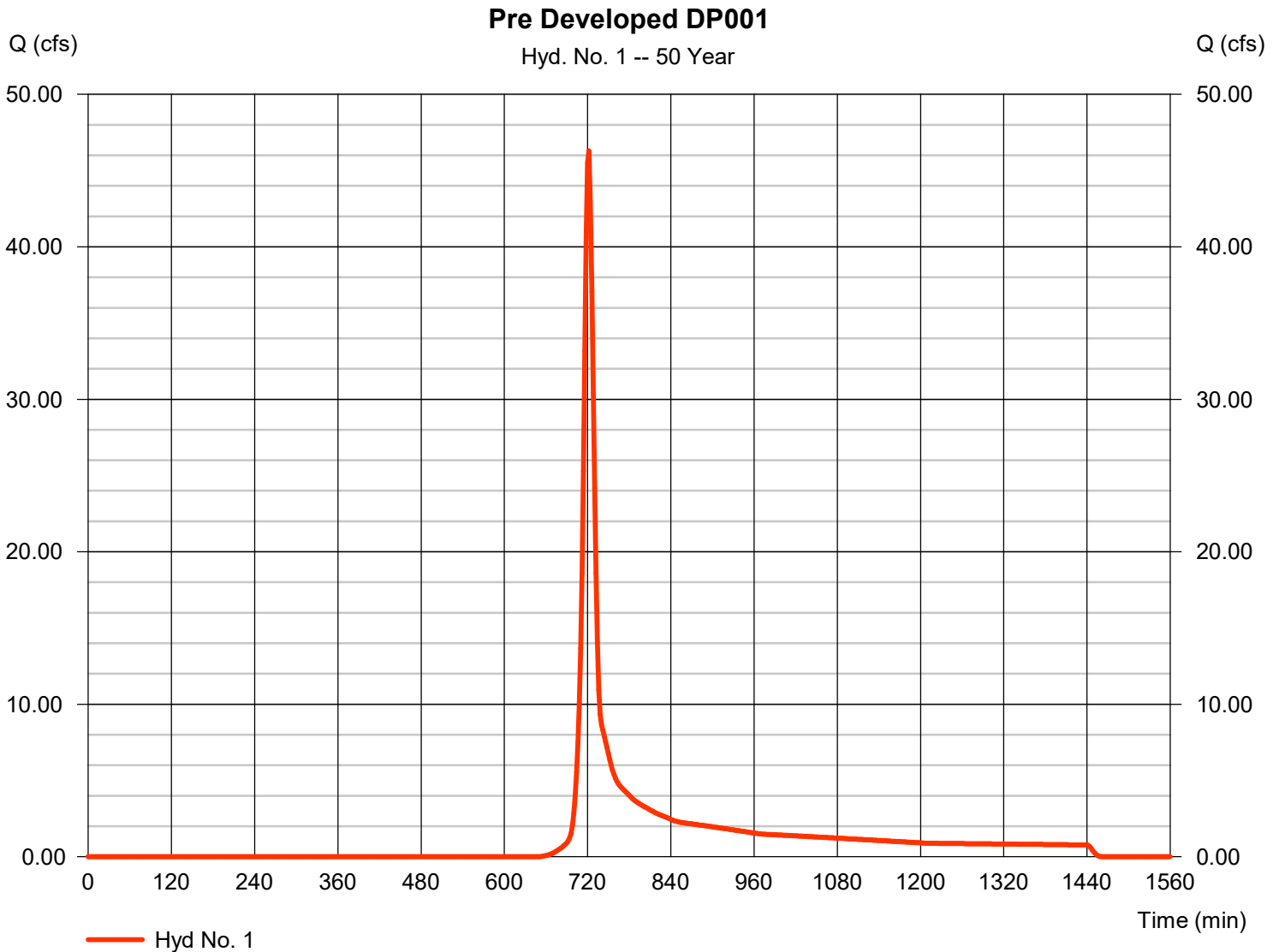
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 1

Pre Developed DP001

Hydrograph type	= SCS Runoff	Peak discharge	= 46.28 cfs
Storm frequency	= 50 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 123,698 cuft
Drainage area	= 15.430 ac	Curve number	= 58
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.00 min
Total precip.	= 6.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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

Wednesday, 03 / 22 / 2023

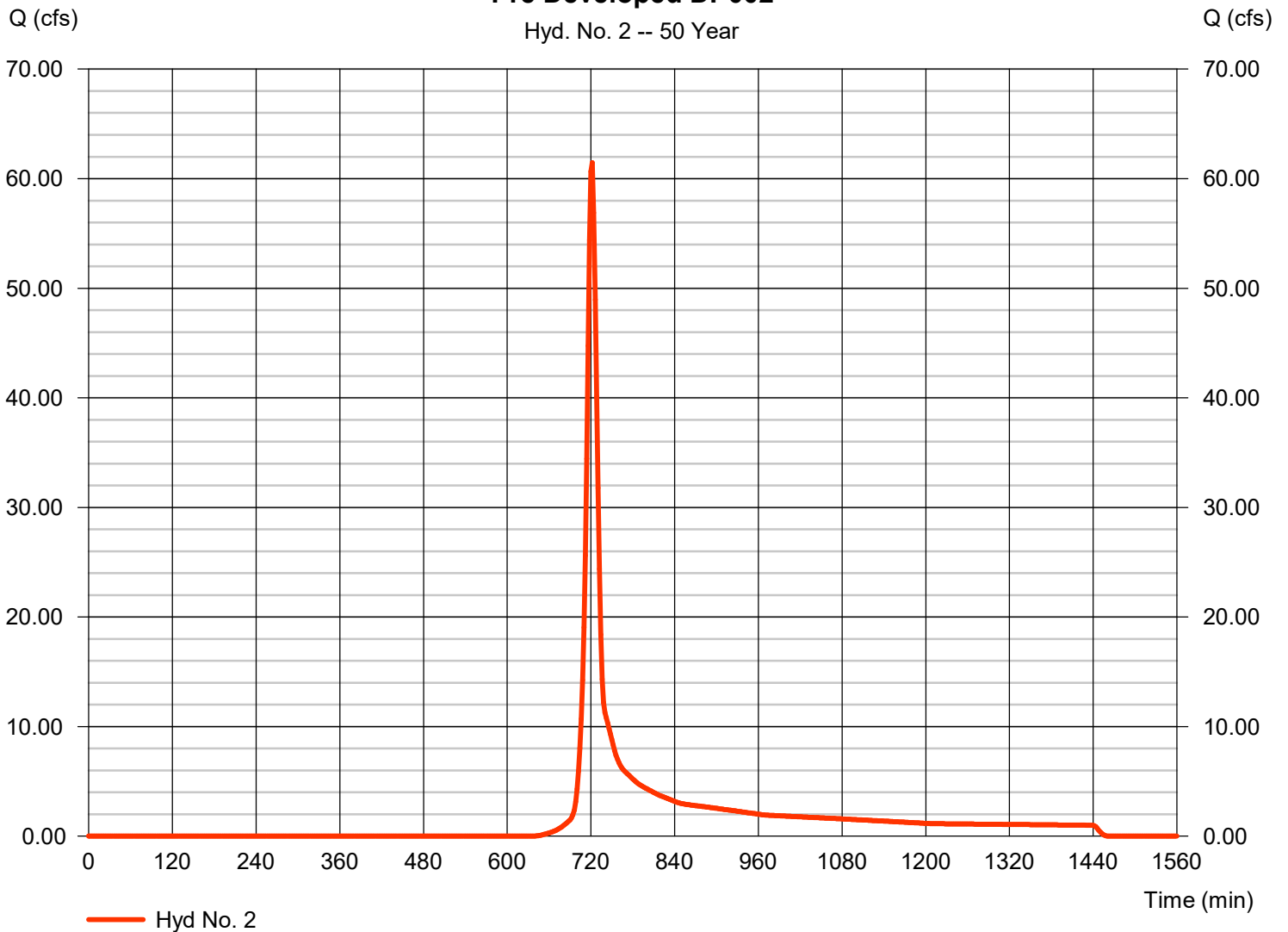
## Hyd. No. 2

Pre Developed DP002

Hydrograph type	= SCS Runoff	Peak discharge	= 61.46 cfs
Storm frequency	= 50 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 163,179 cuft
Drainage area	= 19.210 ac	Curve number	= 59.4
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.00 min
Total precip.	= 6.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

### Pre Developed DP002

Hyd. No. 2 -- 50 Year





# Hydrograph Report

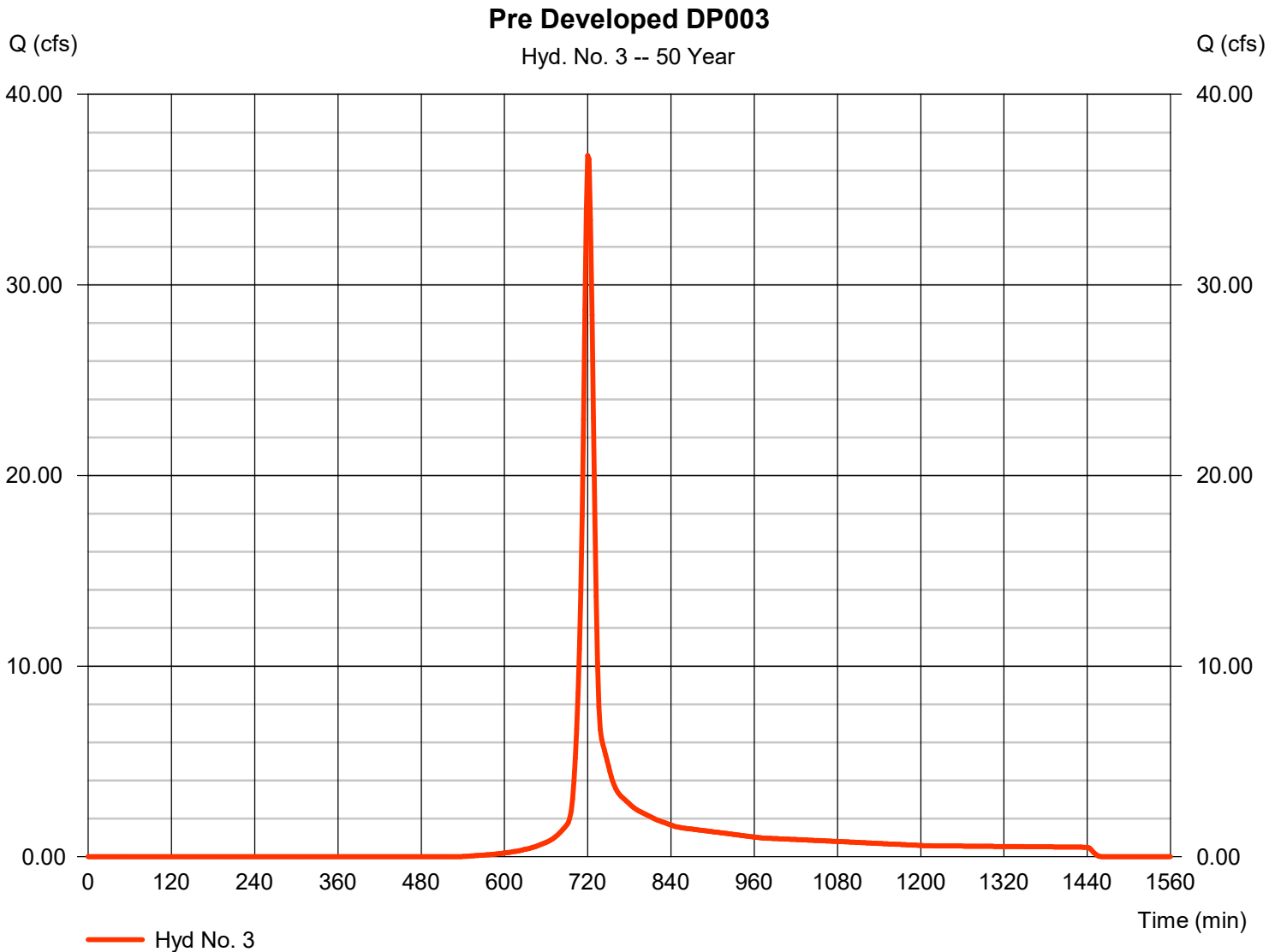
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 3

Pre Developed DP003

Hydrograph type	= SCS Runoff	Peak discharge	= 36.78 cfs
Storm frequency	= 50 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 95,632 cuft
Drainage area	= 8.190 ac	Curve number	= 68.3
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.00 min
Total precip.	= 6.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

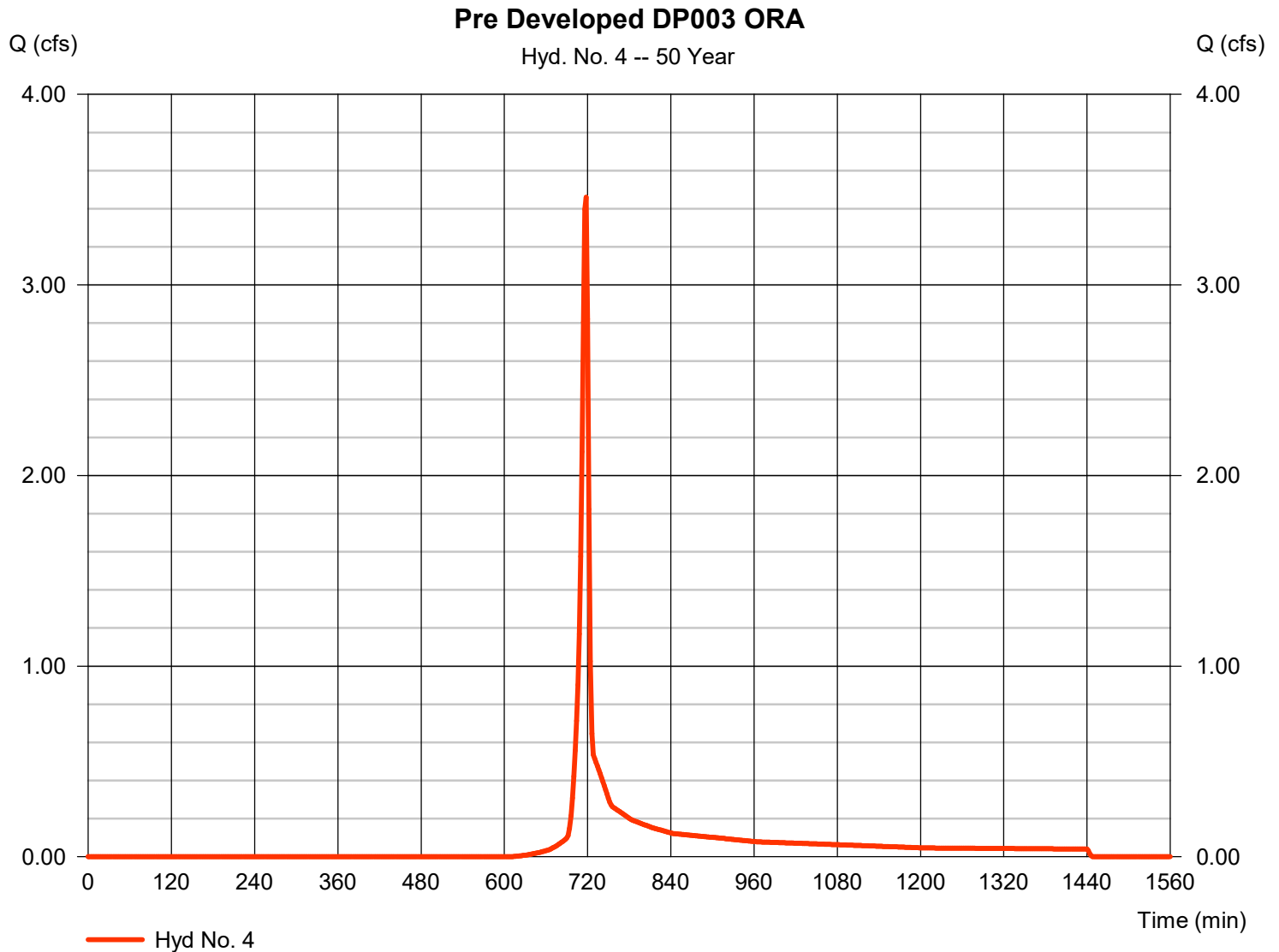
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 4

Pre Developed DP003 ORA

Hydrograph type	= SCS Runoff	Peak discharge	= 3.460 cfs
Storm frequency	= 50 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 6,921 cuft
Drainage area	= 0.810 ac	Curve number	= 62
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

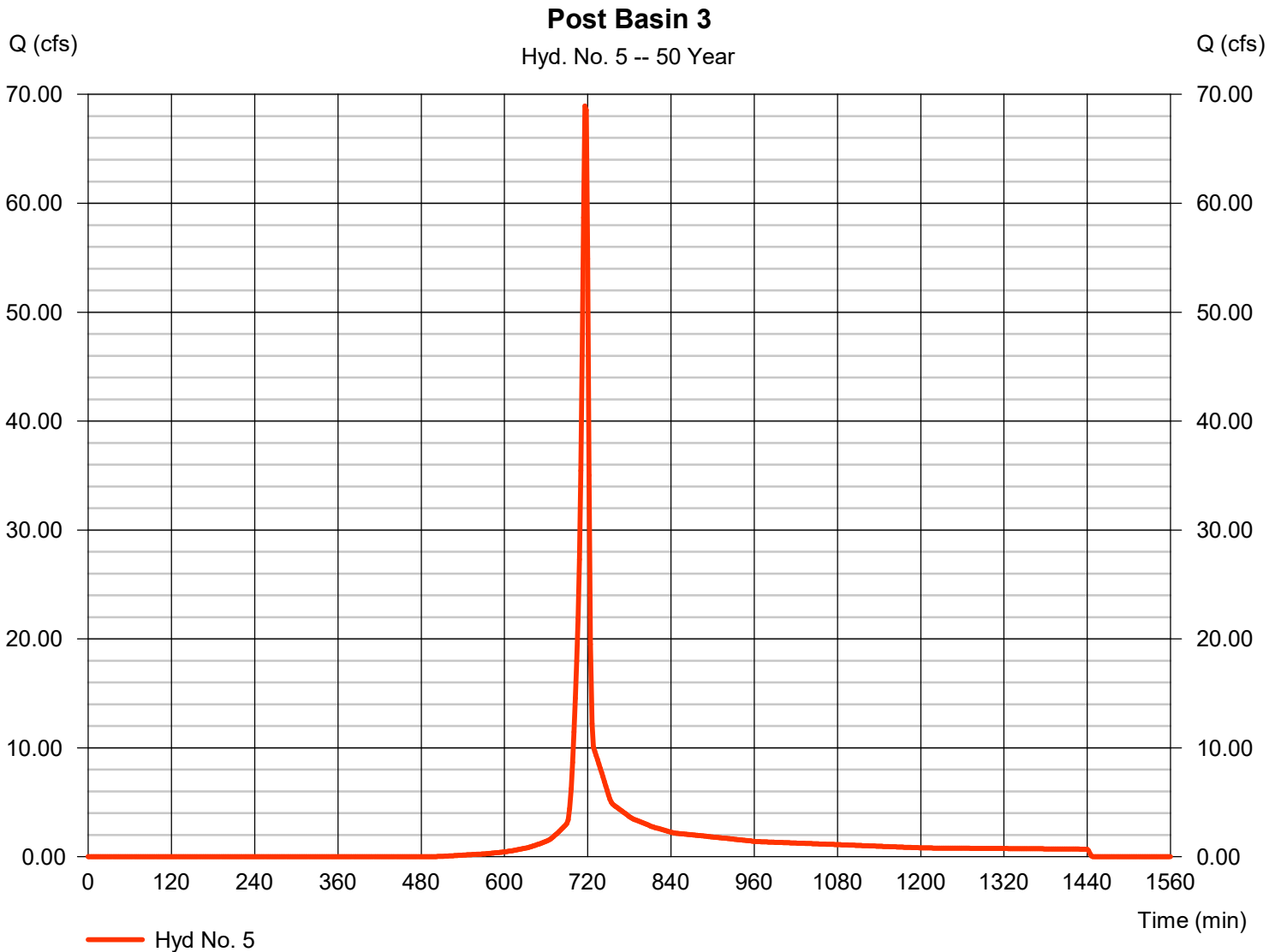
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 5

Post Basin 3

Hydrograph type	= SCS Runoff	Peak discharge	= 68.94 cfs
Storm frequency	= 50 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 139,306 cuft
Drainage area	= 12.150 ac	Curve number	= 70.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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

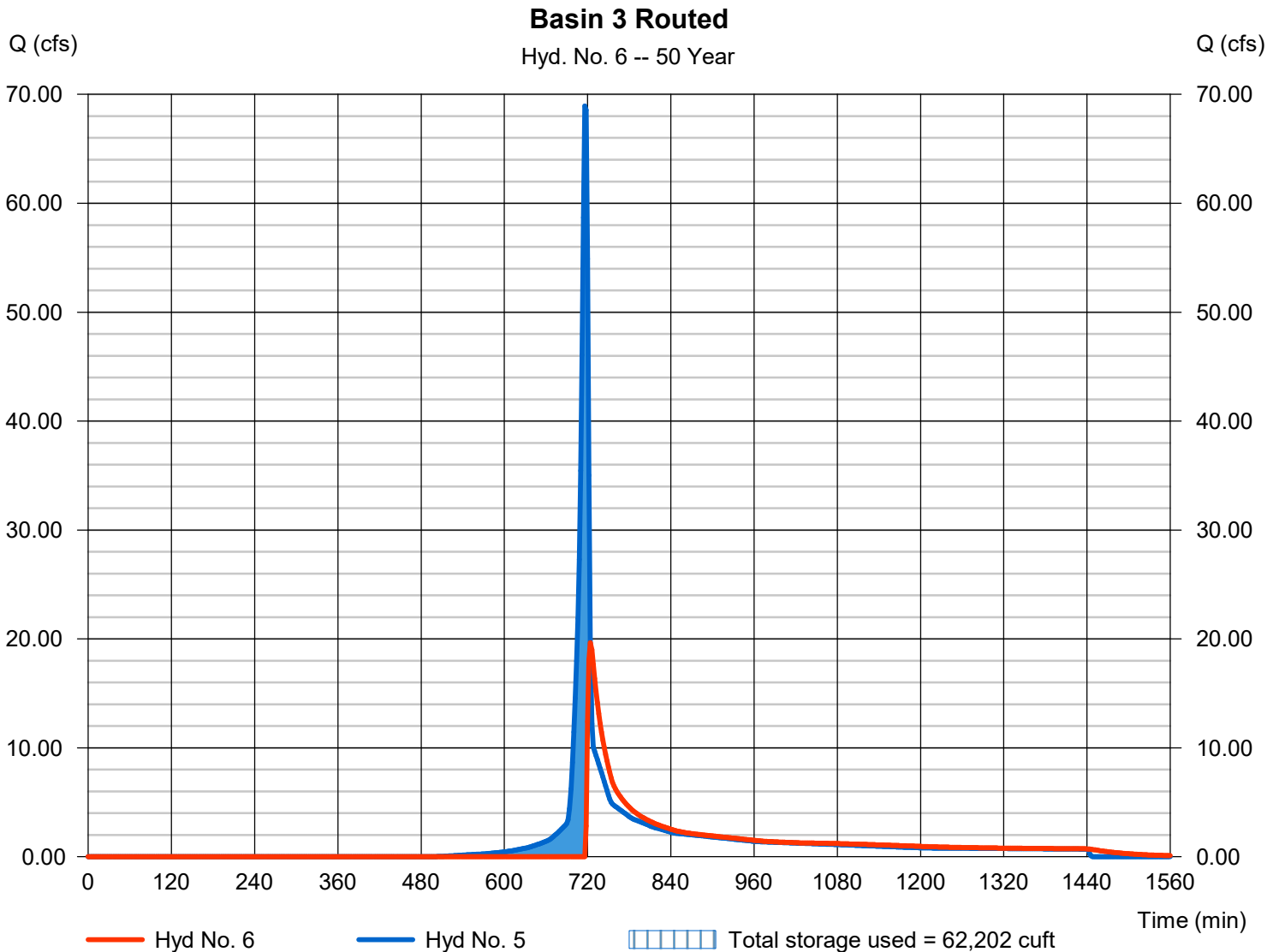
Wednesday, 03 / 22 / 2023

## Hyd. No. 6

Basin 3 Routed

Hydrograph type	= Reservoir	Peak discharge	= 19.64 cfs
Storm frequency	= 50 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 93,838 cuft
Inflow hyd. No.	= 5 - Post Basin 3	Max. Elevation	= 319.16 ft
Reservoir name	= Basin 3	Max. Storage	= 62,202 cuft

Storage Indication method used.



# Hydrograph Report

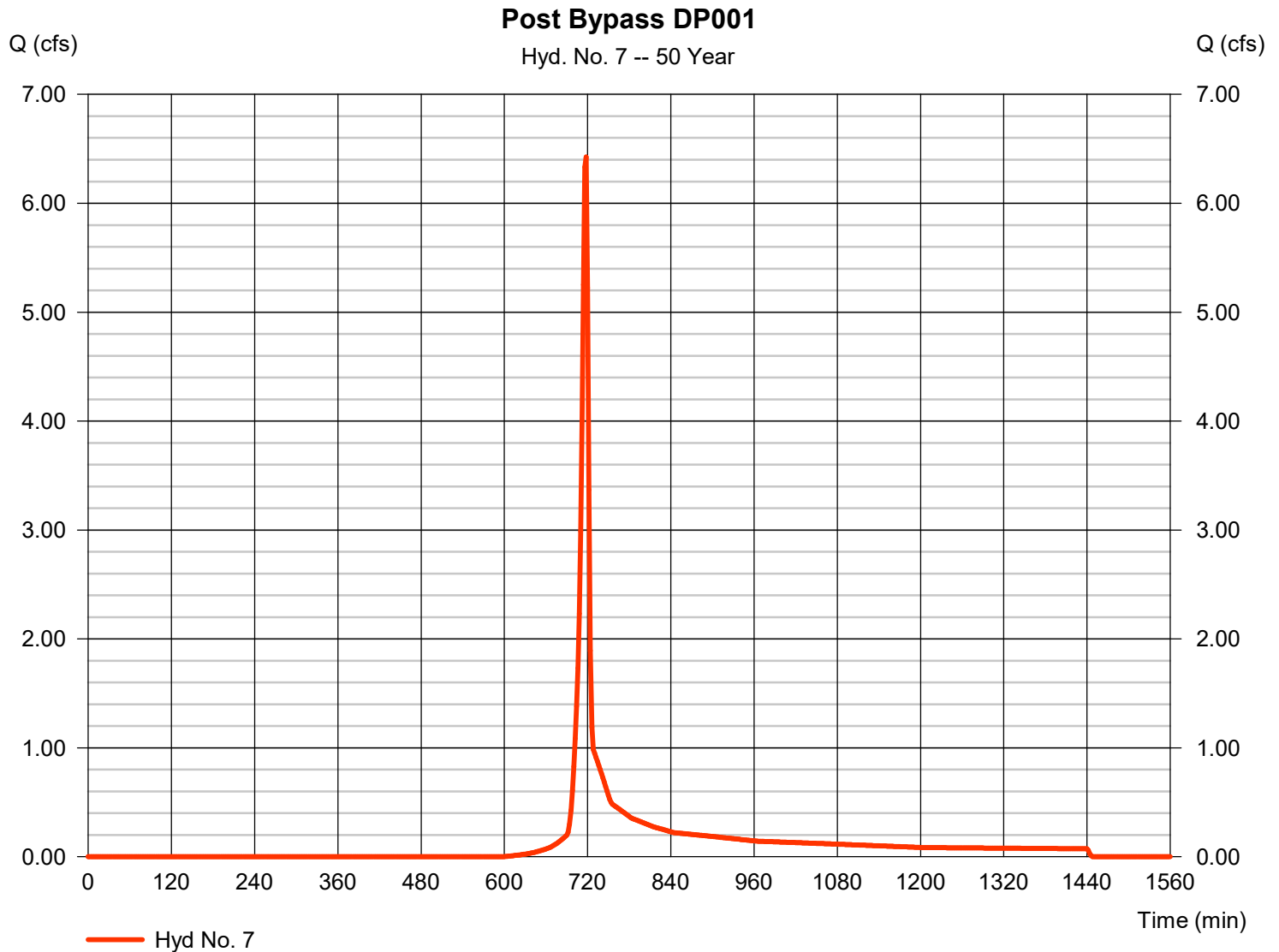
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 7

Post Bypass DP001

Hydrograph type	= SCS Runoff	Peak discharge	= 6.425 cfs
Storm frequency	= 50 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 12,860 cuft
Drainage area	= 1.440 ac	Curve number	= 63.2
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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

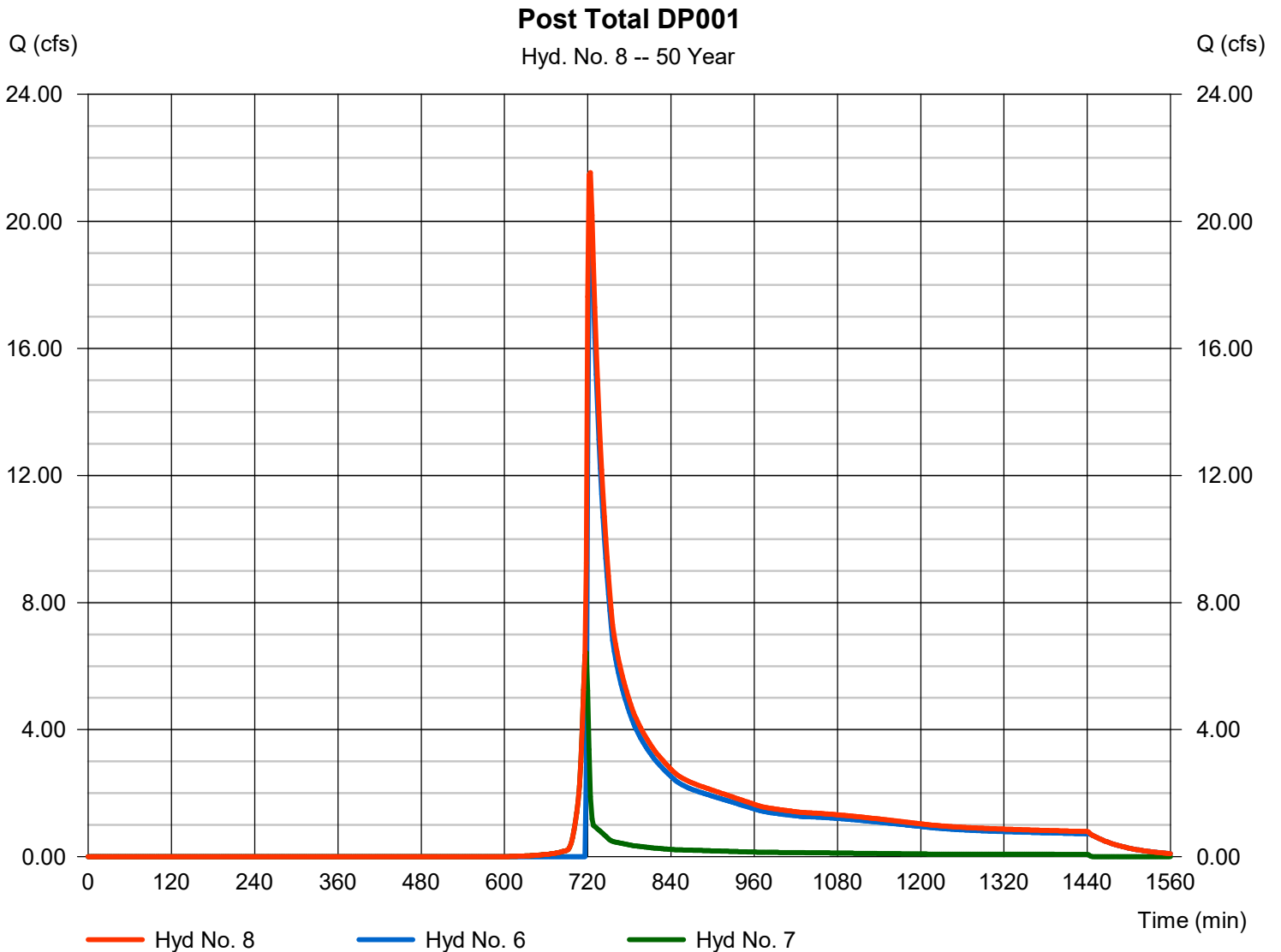
Wednesday, 03 / 22 / 2023

## Hyd. No. 8

Post Total DP001

Hydrograph type = Combine  
 Storm frequency = 50 yrs  
 Time interval = 2 min  
 Inflow hyds. = 6, 7

Peak discharge = 21.53 cfs  
 Time to peak = 724 min  
 Hyd. volume = 106,698 cuft  
 Contrib. drain. area = 1.440 ac



# Hydrograph Report

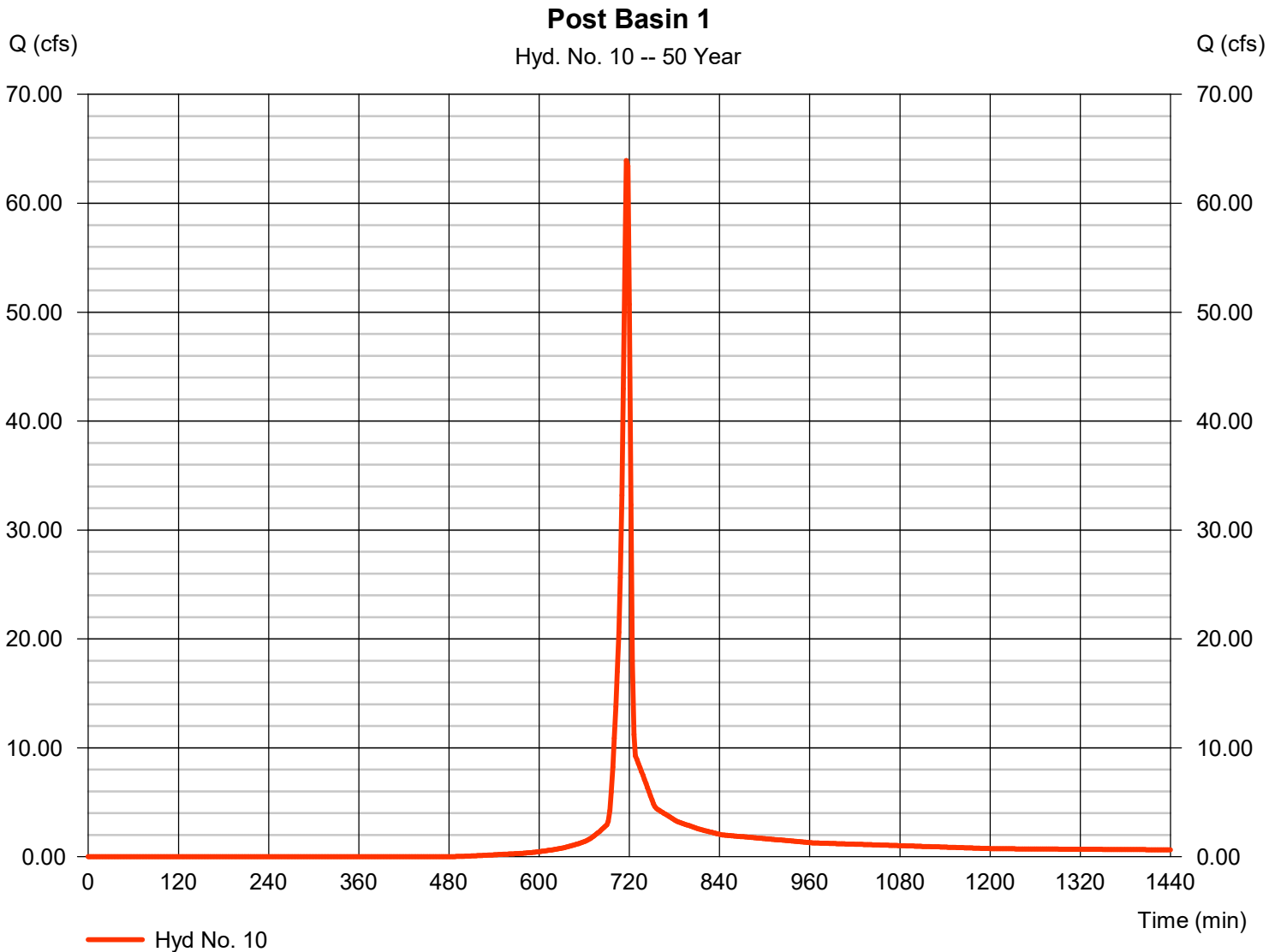
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

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## Hyd. No. 10

### Post Basin 1

Hydrograph type	= SCS Runoff	Peak discharge	= 63.94 cfs
Storm frequency	= 50 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 129,320 cuft
Drainage area	= 10.950 ac	Curve number	= 71.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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

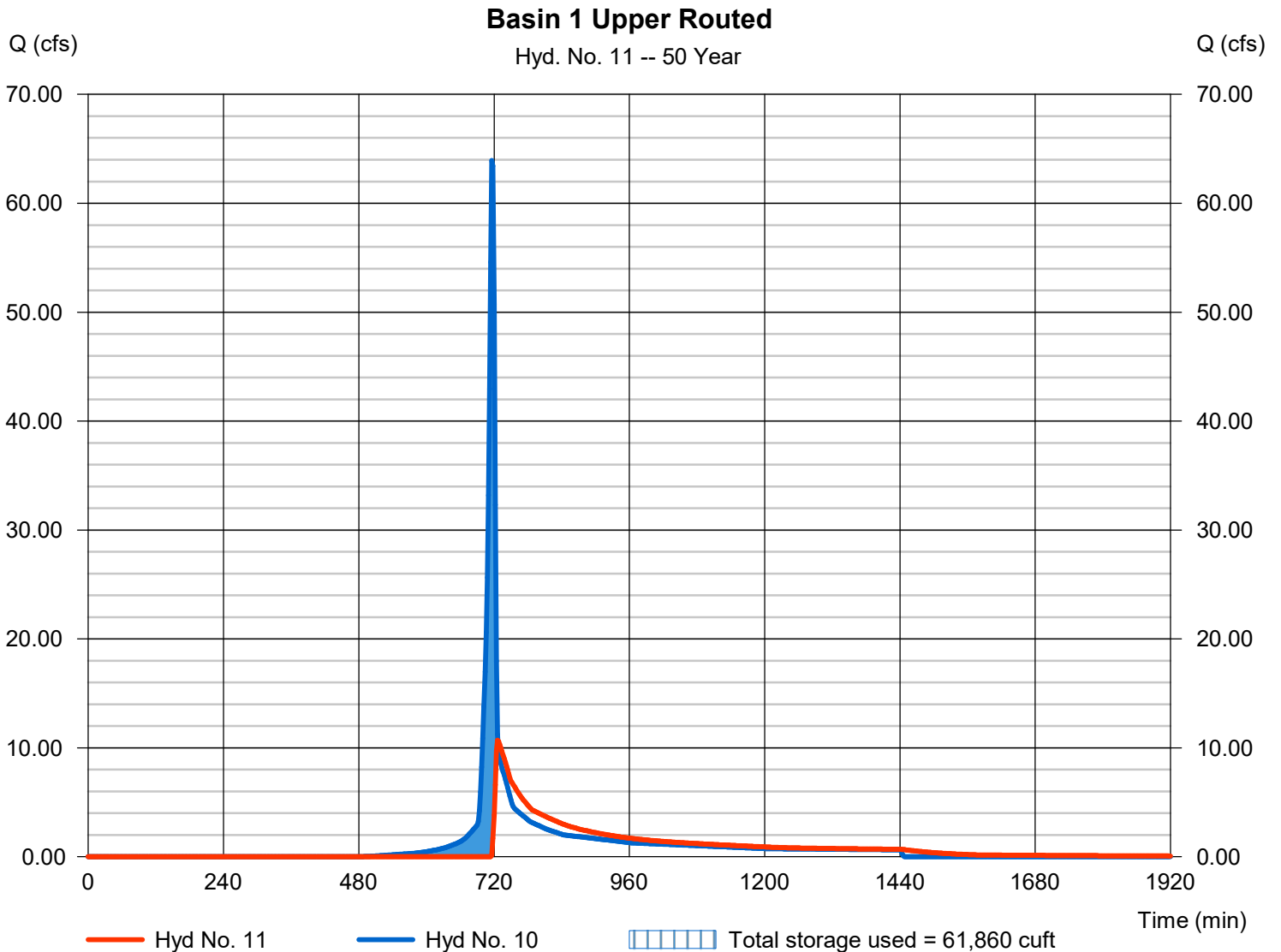
Wednesday, 03 / 22 / 2023

## Hyd. No. 11

Basin 1 Upper Routed

Hydrograph type	= Reservoir	Peak discharge	= 10.69 cfs
Storm frequency	= 50 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 91,830 cuft
Inflow hyd. No.	= 10 - Post Basin 1	Max. Elevation	= 323.71 ft
Reservoir name	= Basin 1 Upper	Max. Storage	= 61,860 cuft

Storage Indication method used.





# Hydrograph Report

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

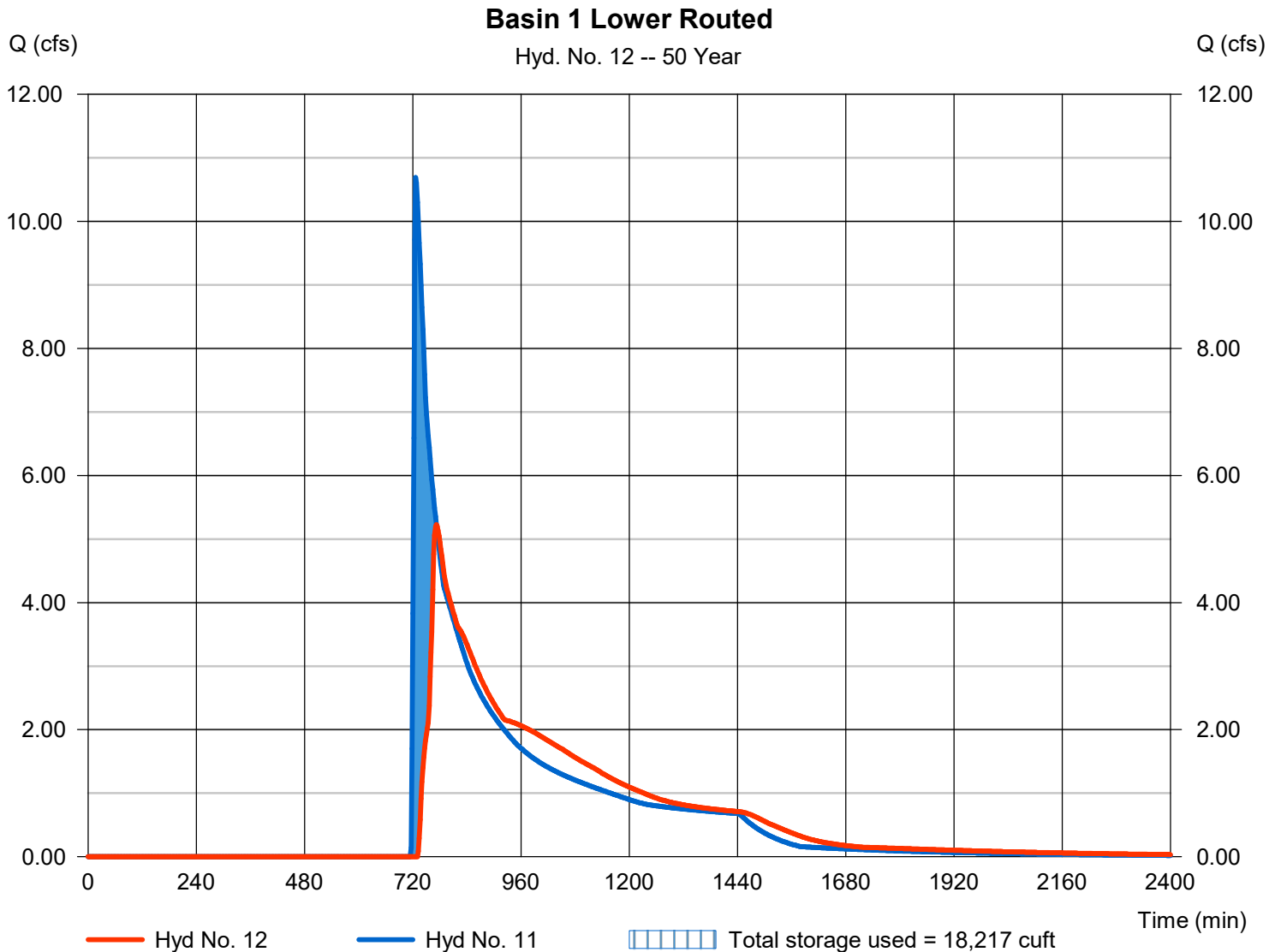
Wednesday, 03 / 22 / 2023

## Hyd. No. 12

Basin 1 Lower Routed

Hydrograph type	= Reservoir	Peak discharge	= 5.226 cfs
Storm frequency	= 50 yrs	Time to peak	= 772 min
Time interval	= 2 min	Hyd. volume	= 85,633 cuft
Inflow hyd. No.	= 11 - Basin 1 Upper Routed	Max. Elevation	= 305.66 ft
Reservoir name	= Basin 1 Lower	Max. Storage	= 18,217 cuft

Storage Indication method used.



# Hydrograph Report

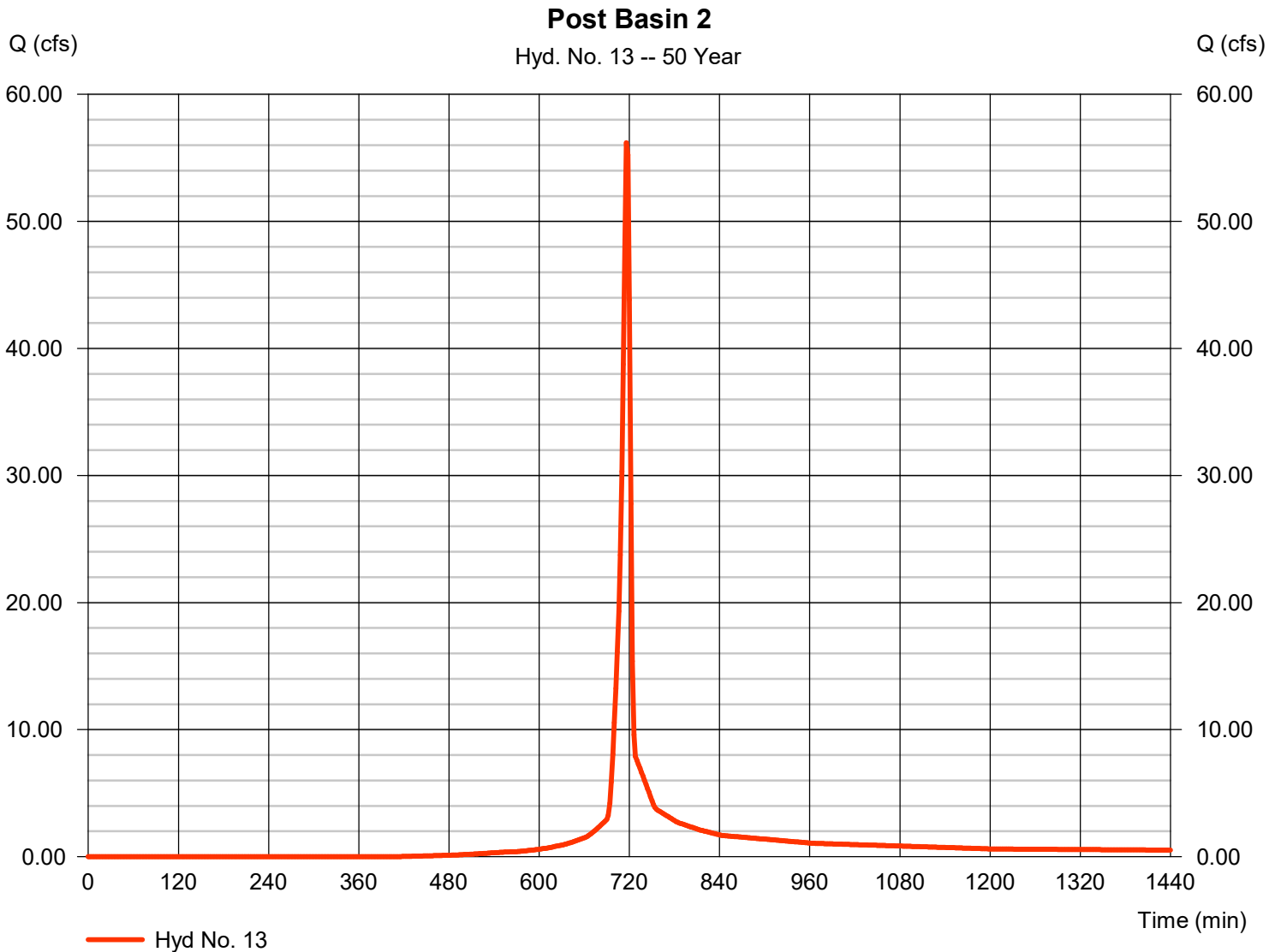
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## Hyd. No. 13

Post Basin 2

Hydrograph type	= SCS Runoff	Peak discharge	= 56.20 cfs
Storm frequency	= 50 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 114,655 cuft
Drainage area	= 8.540 ac	Curve number	= 76.4
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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

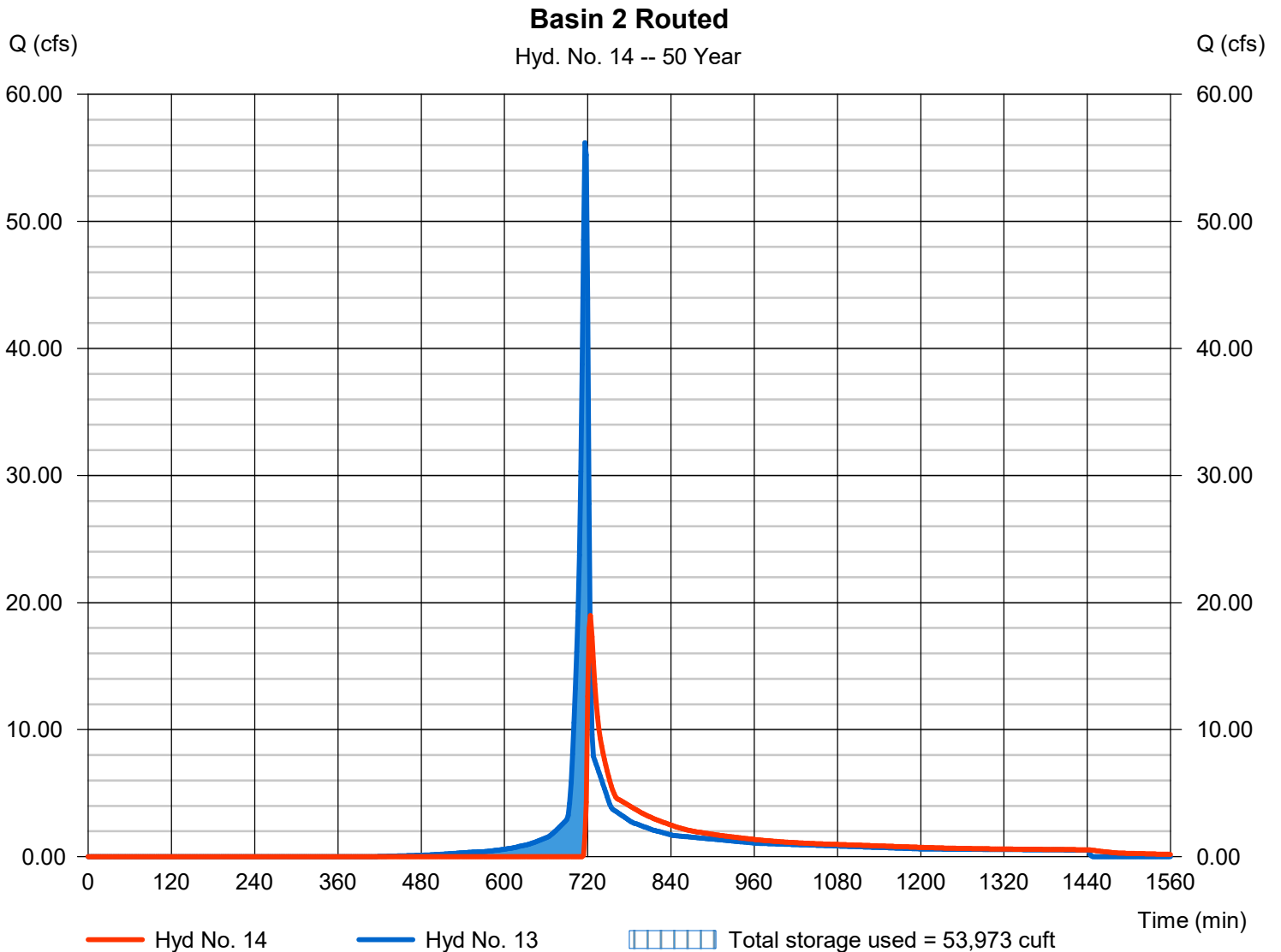
Wednesday, 03 / 22 / 2023

## Hyd. No. 14

Basin 2 Routed

Hydrograph type	= Reservoir	Peak discharge	= 18.98 cfs
Storm frequency	= 50 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 82,300 cuft
Inflow hyd. No.	= 13 - Post Basin 2	Max. Elevation	= 310.22 ft
Reservoir name	= Basin 2	Max. Storage	= 53,973 cuft

Storage Indication method used.



# Hydrograph Report

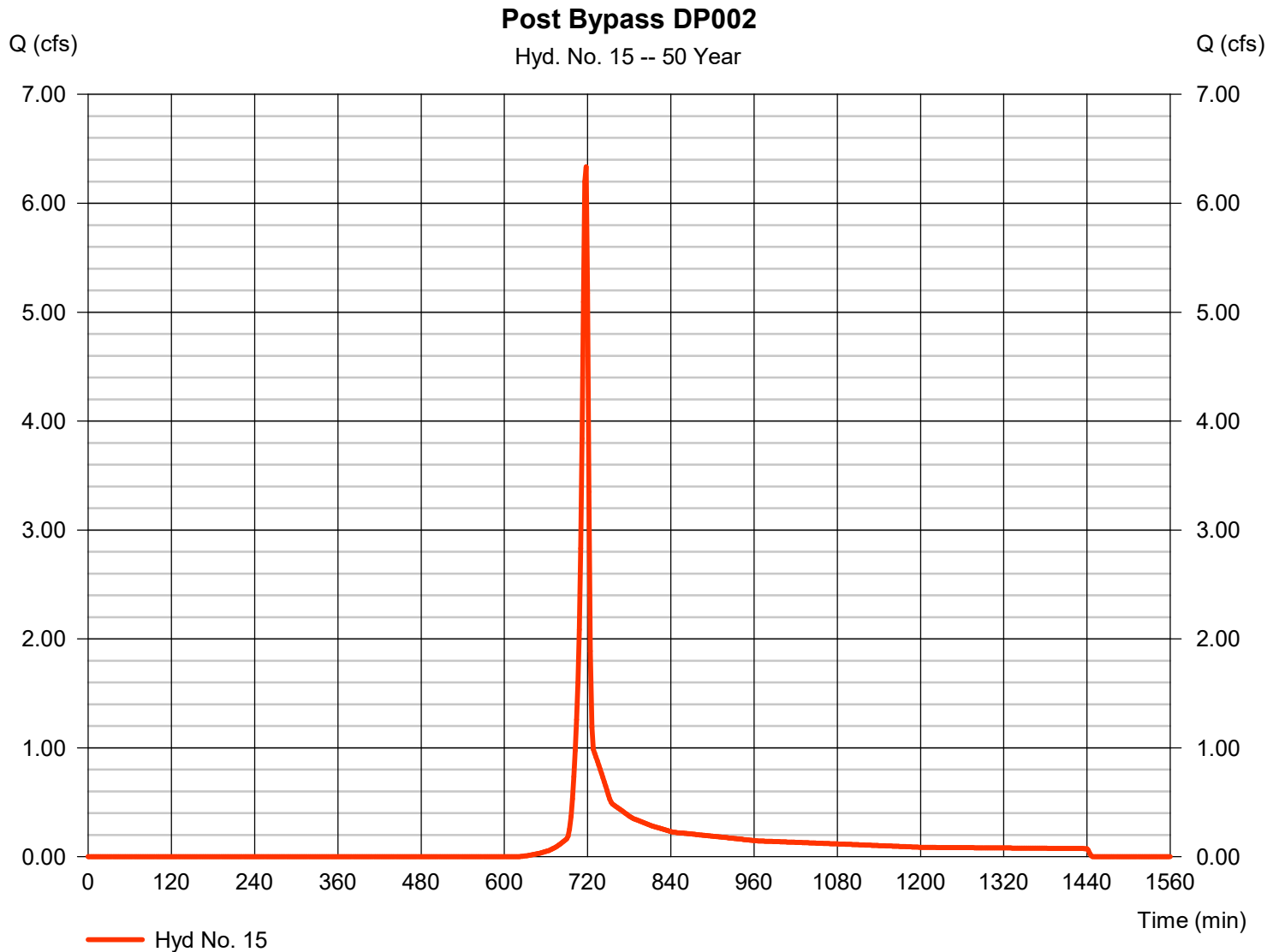
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

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## Hyd. No. 15

Post Bypass DP002

Hydrograph type	= SCS Runoff	Peak discharge	= 6.335 cfs
Storm frequency	= 50 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 12,668 cuft
Drainage area	= 1.540 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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

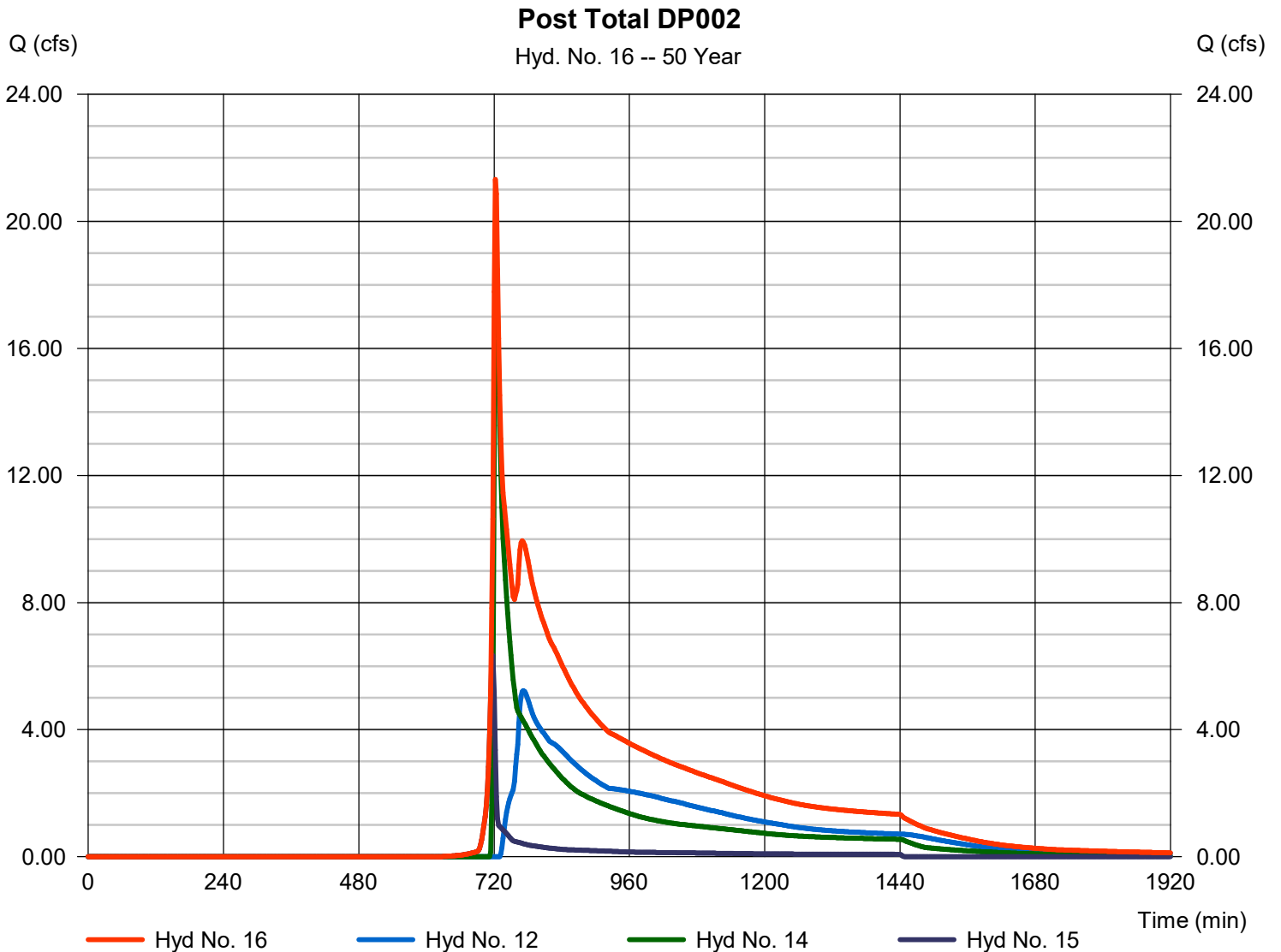
Wednesday, 03 / 22 / 2023

## Hyd. No. 16

Post Total DP002

Hydrograph type = Combine  
 Storm frequency = 50 yrs  
 Time interval = 2 min  
 Inflow hyds. = 12, 14, 15

Peak discharge = 21.32 cfs  
 Time to peak = 722 min  
 Hyd. volume = 180,602 cuft  
 Contrib. drain. area = 1.540 ac



# Hydrograph Report

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

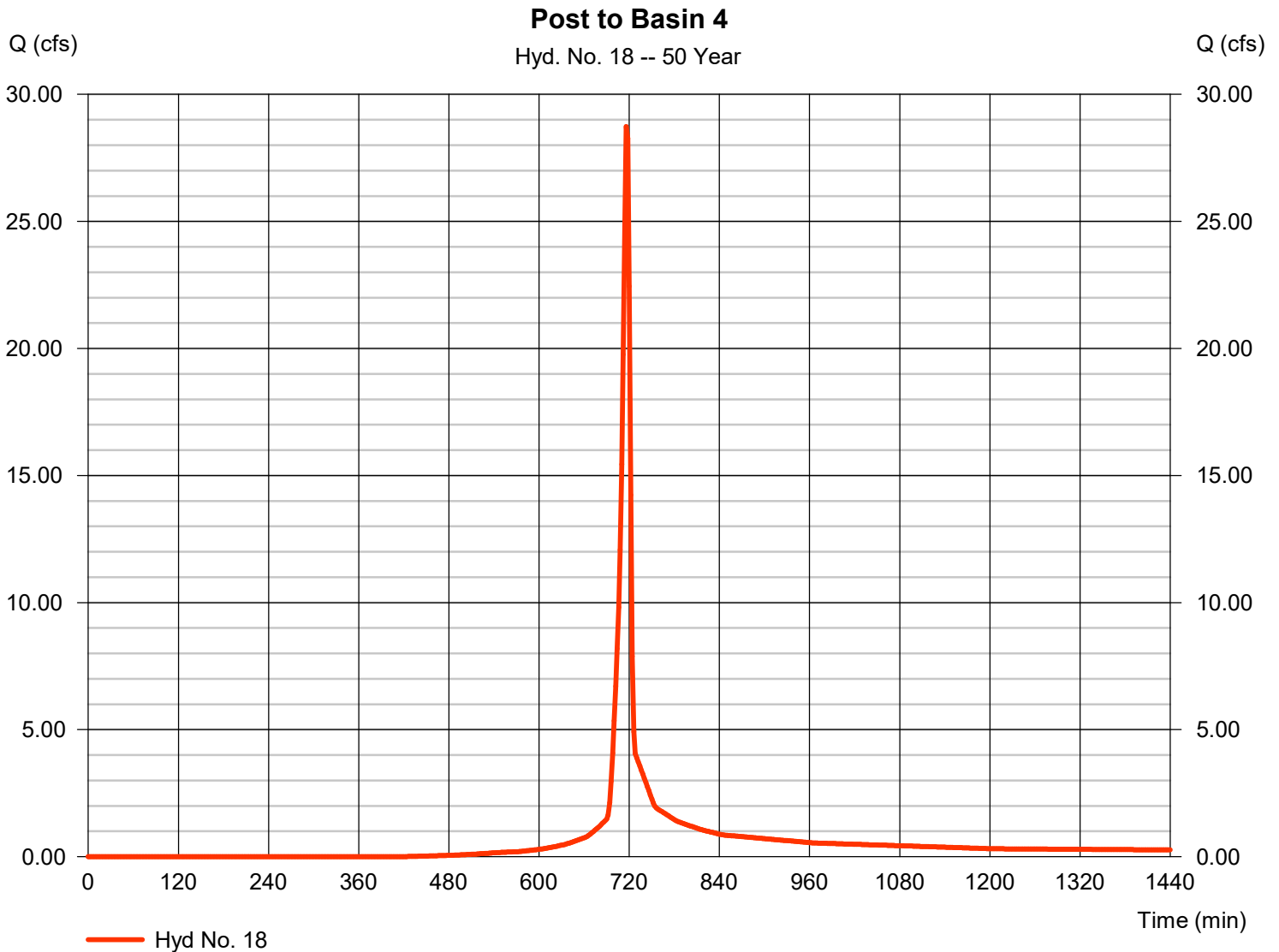
Wednesday, 03 / 22 / 2023

## Hyd. No. 18

Post to Basin 4

Hydrograph type	= SCS Runoff	Peak discharge	= 28.74 cfs
Storm frequency	= 50 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 58,554 cuft
Drainage area	= 4.420 ac	Curve number	= 75.9*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(0.910 x 61) + (2.270 x 98) + (3.040 x 78)] / 4.420



# Hydrograph Report

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

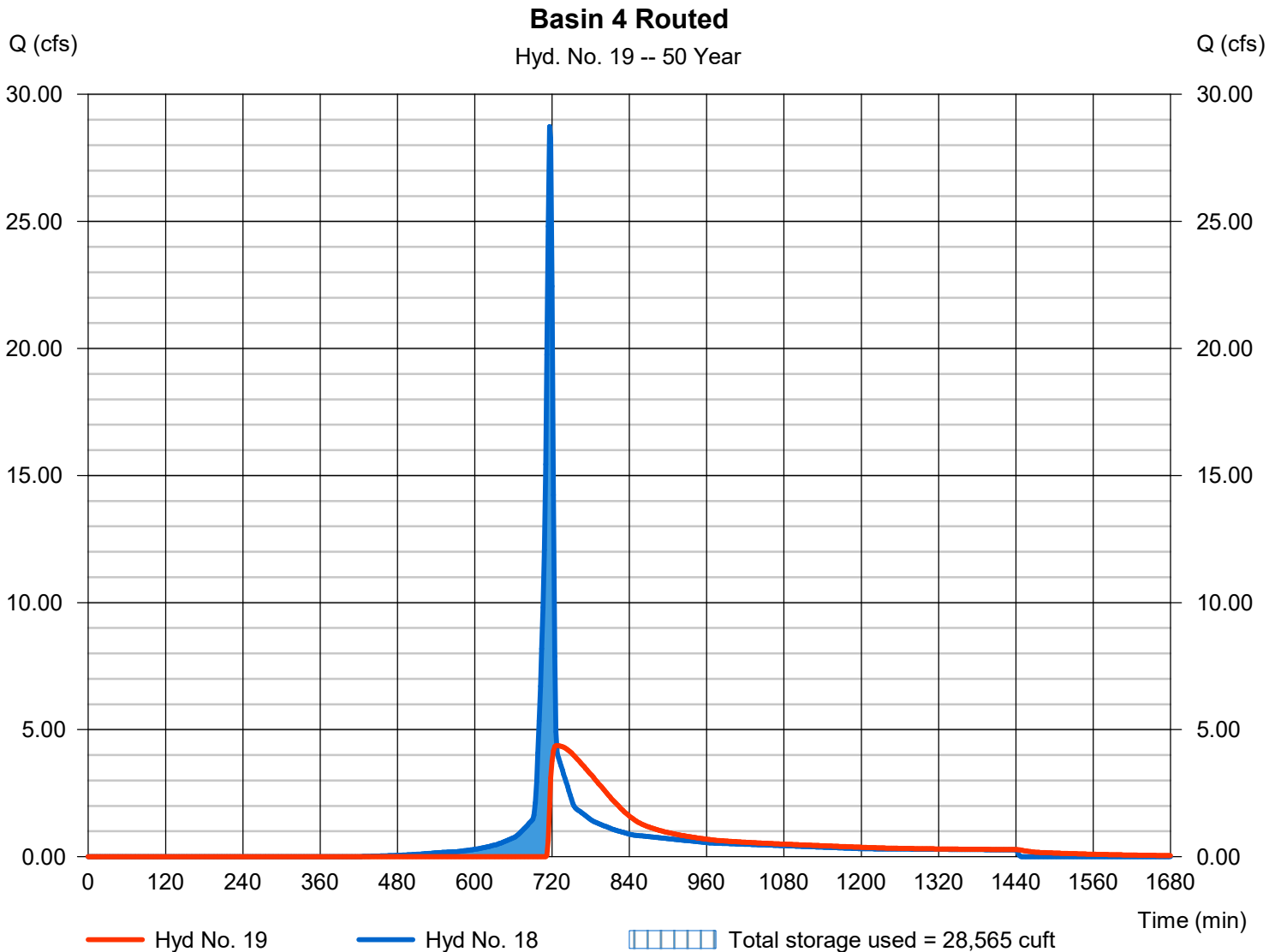
Wednesday, 03 / 22 / 2023

## Hyd. No. 19

Basin 4 Routed

Hydrograph type	= Reservoir	Peak discharge	= 4.373 cfs
Storm frequency	= 50 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 44,756 cuft
Inflow hyd. No.	= 18 - Post to Basin 4	Max. Elevation	= 348.04 ft
Reservoir name	= Basin 4	Max. Storage	= 28,565 cuft

Storage Indication method used.



# Hydrograph Report

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

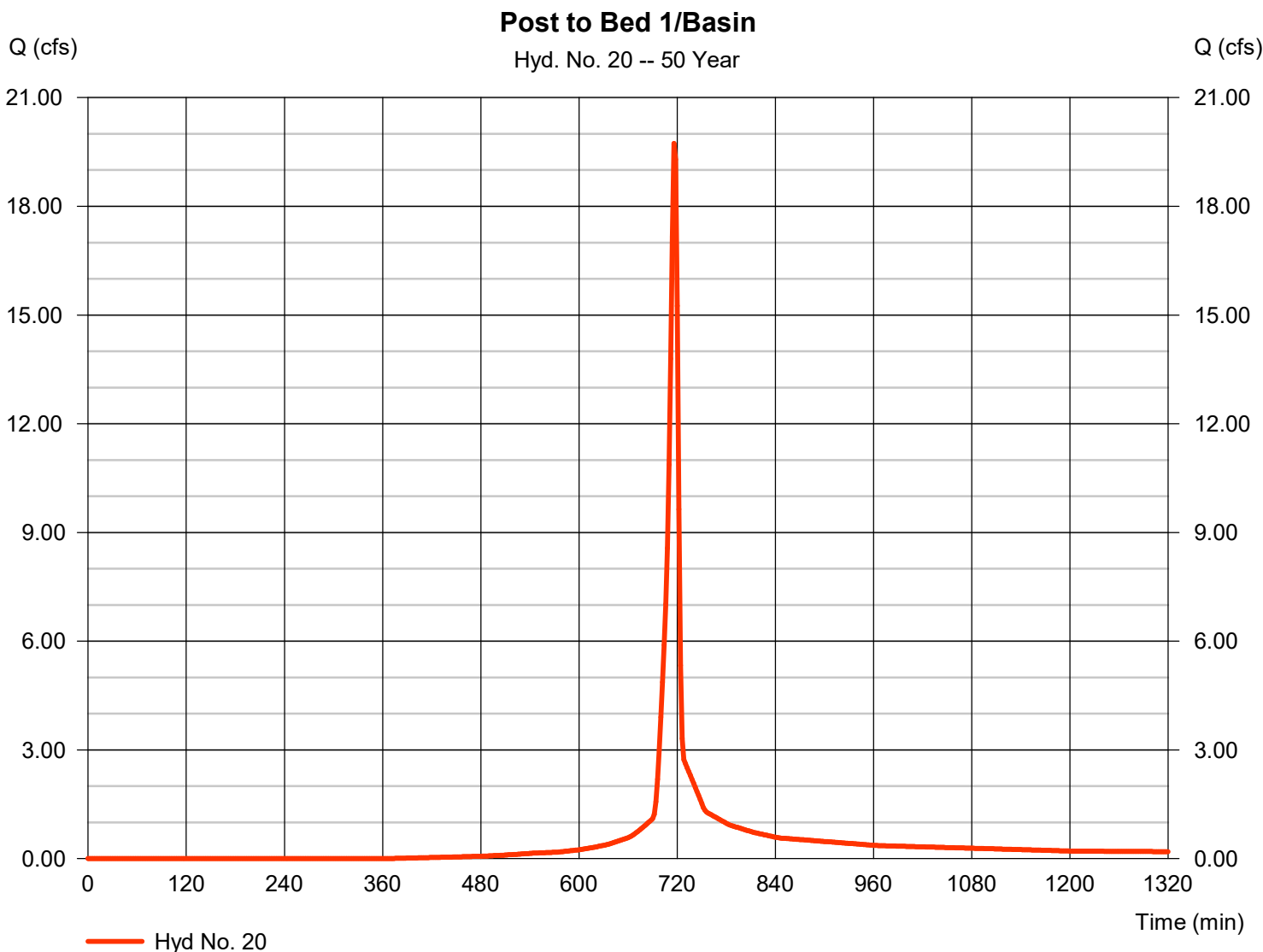
Wednesday, 03 / 22 / 2023

## Hyd. No. 20

Post to Bed 1/Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 19.73 cfs
Storm frequency	= 50 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 40,599 cuft
Drainage area	= 2.820 ac	Curve number	= 79.1*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(0.910 x 61) + (2.270 x 98) + (3.040 x 78)] / 2.820





# Hydrograph Report

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

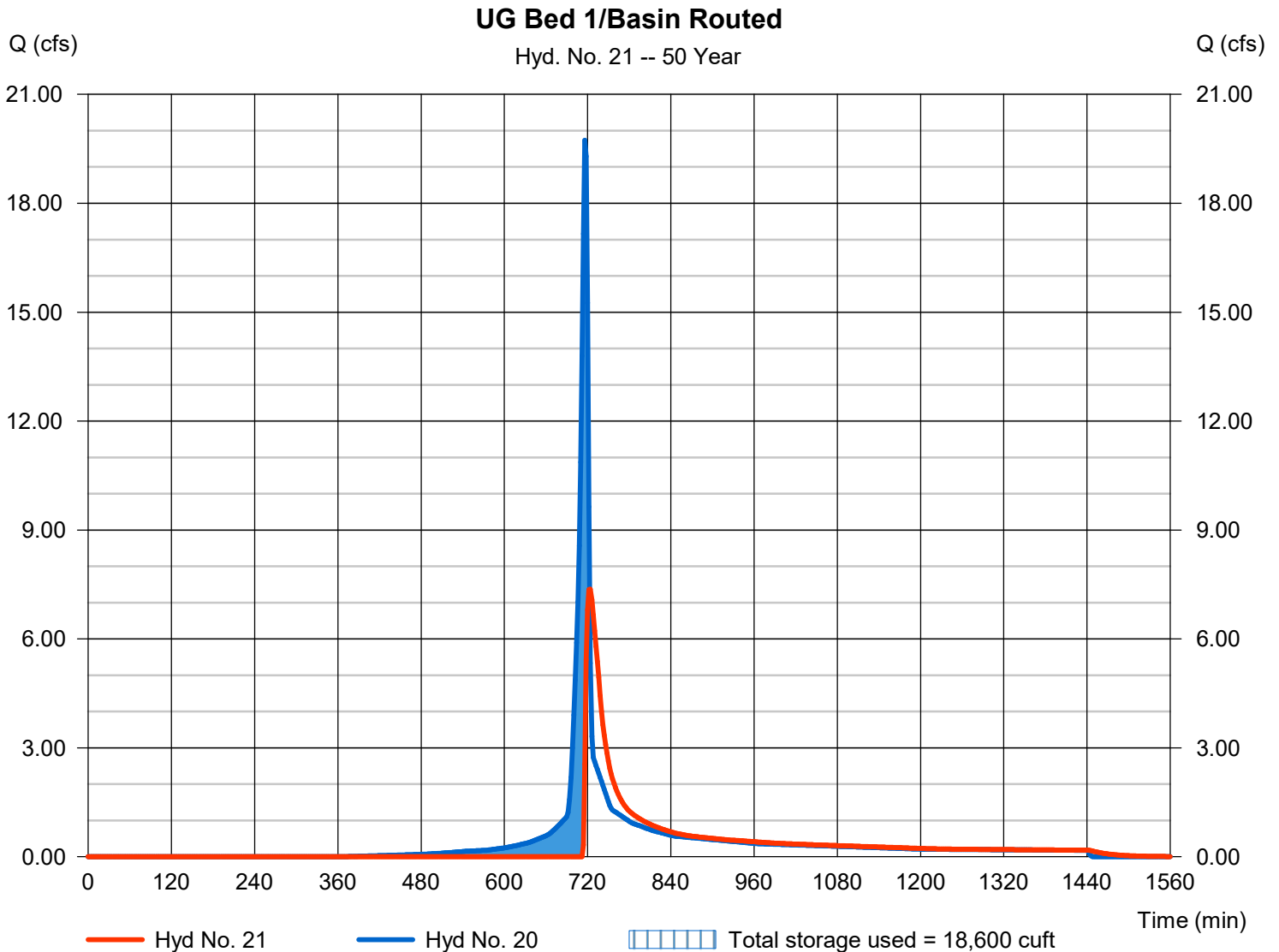
Wednesday, 03 / 22 / 2023

## Hyd. No. 21

UG Bed 1/Basin Routed

Hydrograph type	= Reservoir	Peak discharge	= 7.370 cfs
Storm frequency	= 50 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 28,502 cuft
Inflow hyd. No.	= 20 - Post to Bed 1/Basin	Max. Elevation	= 341.74 ft
Reservoir name	= UG Bed 1/Basin	Max. Storage	= 18,600 cuft

Storage Indication method used.



# Hydrograph Report

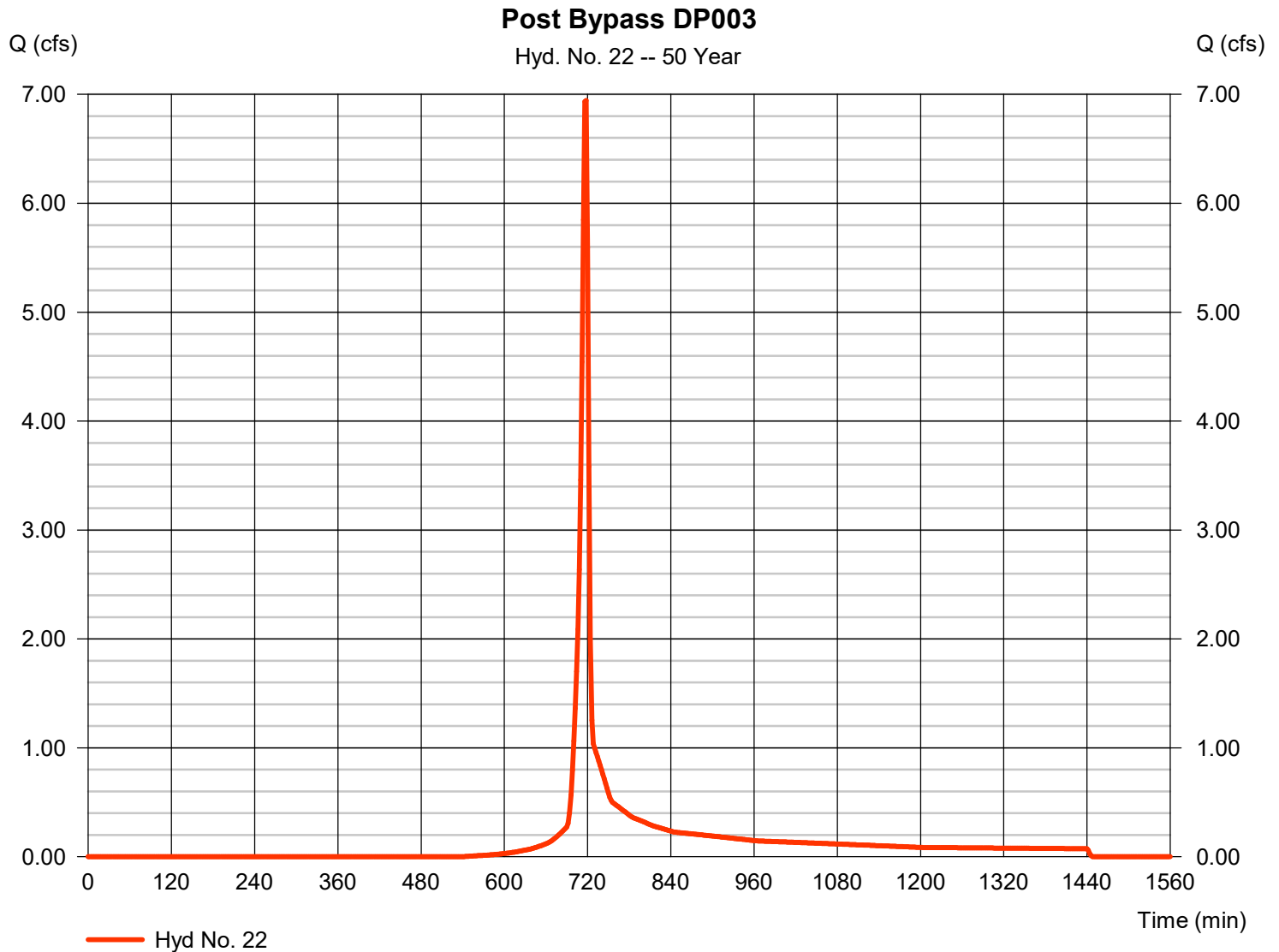
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

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## Hyd. No. 22

Post Bypass DP003

Hydrograph type	= SCS Runoff	Peak discharge	= 6.944 cfs
Storm frequency	= 50 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 13,999 cuft
Drainage area	= 1.340 ac	Curve number	= 67.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

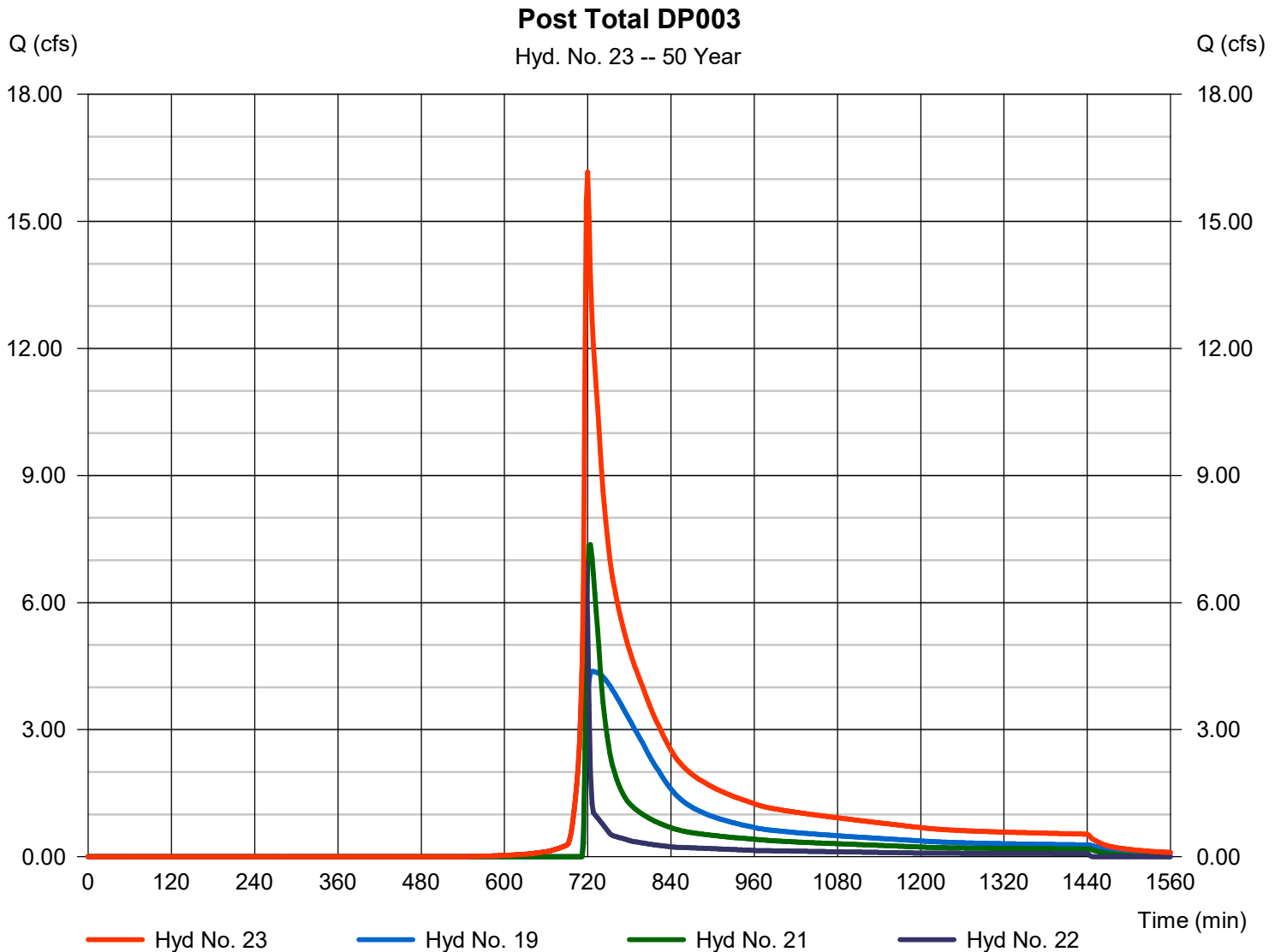
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

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## Hyd. No. 23

Post Total DP003

Hydrograph type	= Combine	Peak discharge	= 16.17 cfs
Storm frequency	= 50 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 87,257 cuft
Inflow hyds.	= 19, 21, 22	Contrib. drain. area	= 1.340 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	60.31	2	722	159,136	-----	-----	-----	Pre Developed DP001	
2	SCS Runoff	79.34	2	722	208,579	-----	-----	-----	Pre Developed DP002	
3	SCS Runoff	45.54	2	720	118,084	-----	-----	-----	Pre Developed DP003	
4	SCS Runoff	4.363	2	718	8,749	-----	-----	-----	Pre Developed DP003 ORA	
5	SCS Runoff	84.16	2	716	170,598	-----	-----	-----	Post Basin 3	
6	Reservoir	24.38	2	724	125,131	5	319.74	74,844	Basin 3 Routed	
7	SCS Runoff	8.052	2	718	16,178	-----	-----	-----	Post Bypass DP001	
8	Combine	29.04	2	718	141,309	6, 7	-----	-----	Post Total DP001	
10	SCS Runoff	77.75	2	716	157,867	-----	-----	-----	Post Basin 1	
11	Reservoir	30.18	2	722	120,378	10	324.12	70,140	Basin 1 Upper Routed	
12	Reservoir	13.13	2	738	114,181	11	305.96	20,385	Basin 1 Lower Routed	
13	SCS Runoff	67.22	2	716	138,052	-----	-----	-----	Post Basin 2	
14	Reservoir	33.12	2	722	105,698	13	310.57	60,504	Basin 2 Routed	
15	SCS Runoff	8.028	2	718	16,080	-----	-----	-----	Post Bypass DP002	
16	Combine	37.69	2	720	235,959	12, 14, 15	-----	-----	Post Total DP002	
18	SCS Runoff	34.43	2	716	70,605	-----	-----	-----	Post to Basin 4	
19	Reservoir	10.28	2	724	56,806	18	348.51	33,532	Basin 4 Routed	
20	SCS Runoff	23.40	2	716	48,517	-----	-----	-----	Post to Bed 1/Basin	
21	Reservoir	10.57	2	722	36,419	20	342.30	21,484	UG Bed 1/Basin Routed	
22	SCS Runoff	8.571	2	716	17,315	-----	-----	-----	Post Bypass DP003	
23	Combine	25.00	2	722	110,541	19, 21, 22	-----	-----	Post Total DP003	
SWM.gpw					Return Period: 100 Year			Wednesday, 03 / 22 / 2023		

# Hydrograph Report

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

Wednesday, 03 / 22 / 2023

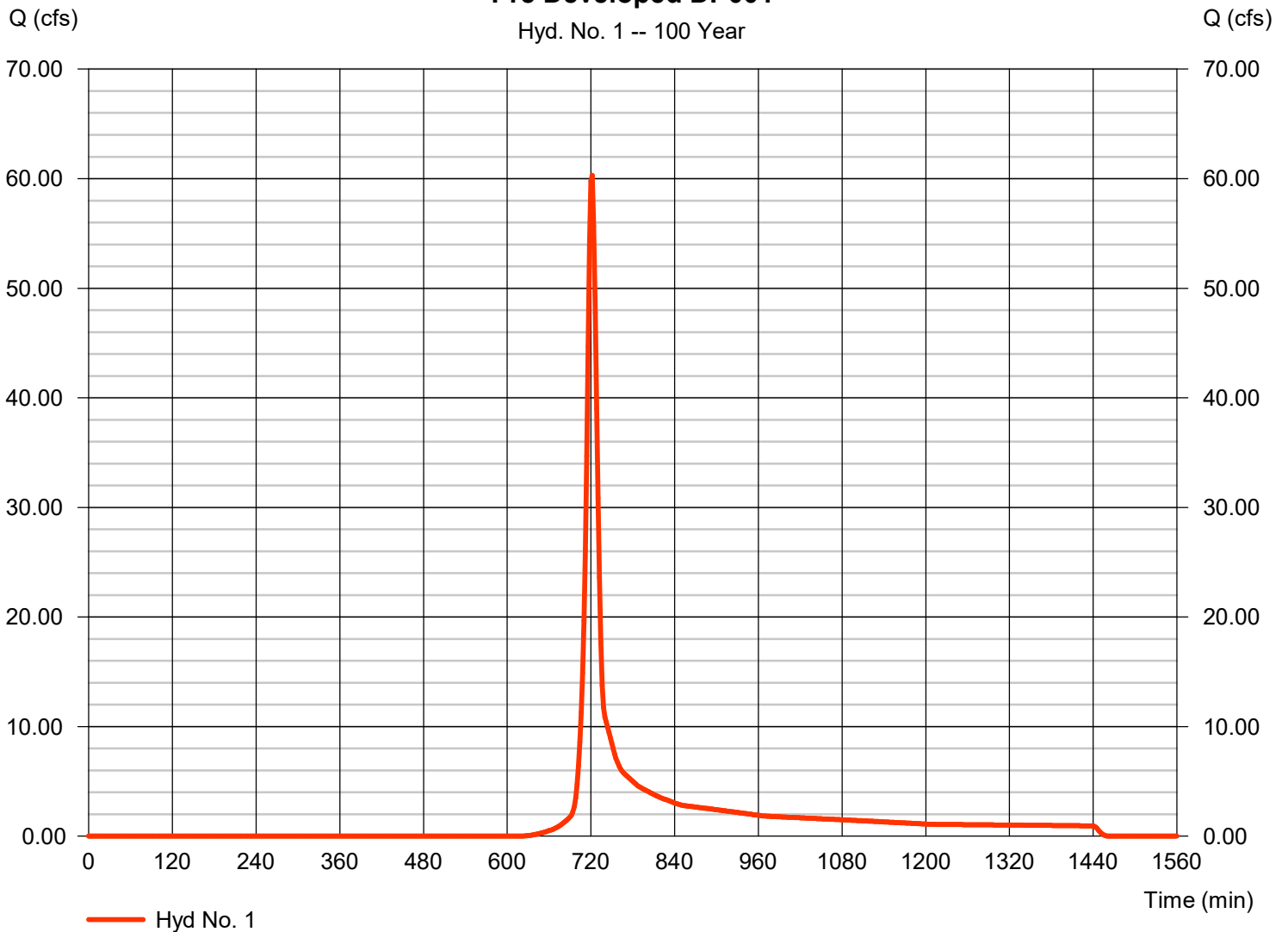
## Hyd. No. 1

Pre Developed DP001

Hydrograph type	= SCS Runoff	Peak discharge	= 60.31 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 159,136 cuft
Drainage area	= 15.430 ac	Curve number	= 58
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.00 min
Total precip.	= 7.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

### Pre Developed DP001

Hyd. No. 1 -- 100 Year



# Hydrograph Report

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

Wednesday, 03 / 22 / 2023

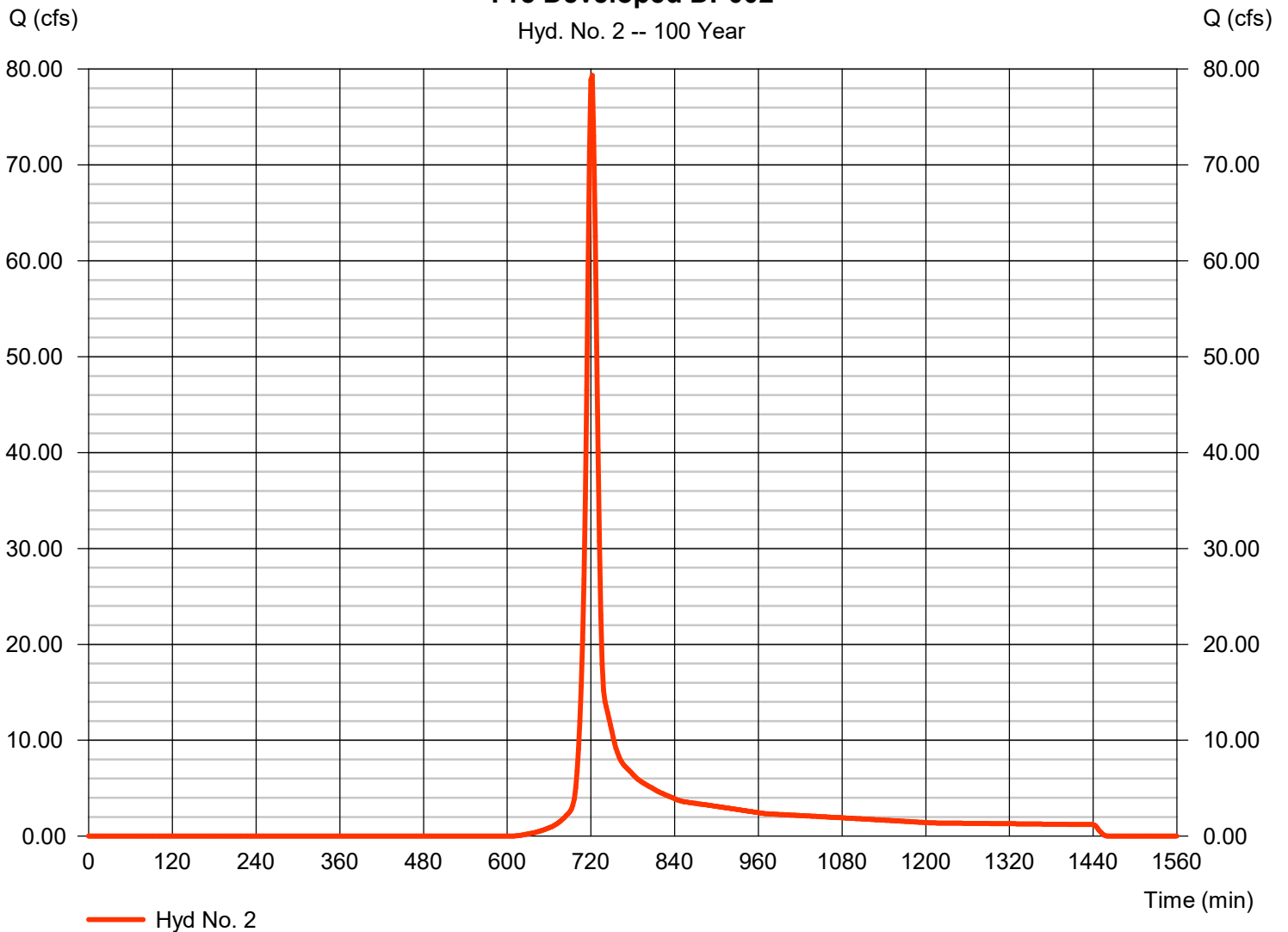
## Hyd. No. 2

Pre Developed DP002

Hydrograph type	= SCS Runoff	Peak discharge	= 79.34 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 208,579 cuft
Drainage area	= 19.210 ac	Curve number	= 59.4
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.00 min
Total precip.	= 7.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

### Pre Developed DP002

Hyd. No. 2 -- 100 Year



# Hydrograph Report

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

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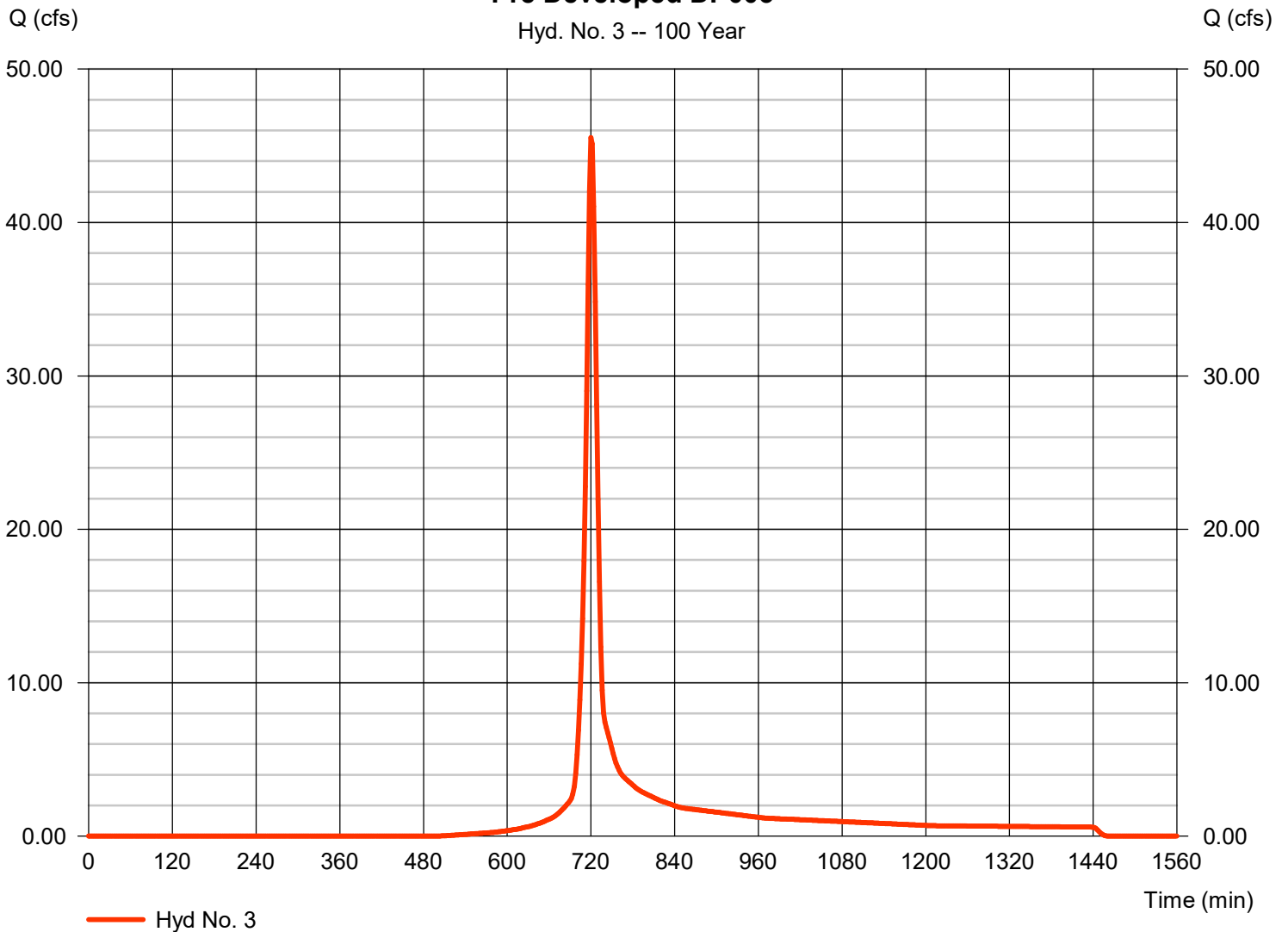
## Hyd. No. 3

Pre Developed DP003

Hydrograph type	= SCS Runoff	Peak discharge	= 45.54 cfs
Storm frequency	= 100 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 118,084 cuft
Drainage area	= 8.190 ac	Curve number	= 68.3
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.00 min
Total precip.	= 7.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

### Pre Developed DP003

Hyd. No. 3 -- 100 Year



# Hydrograph Report

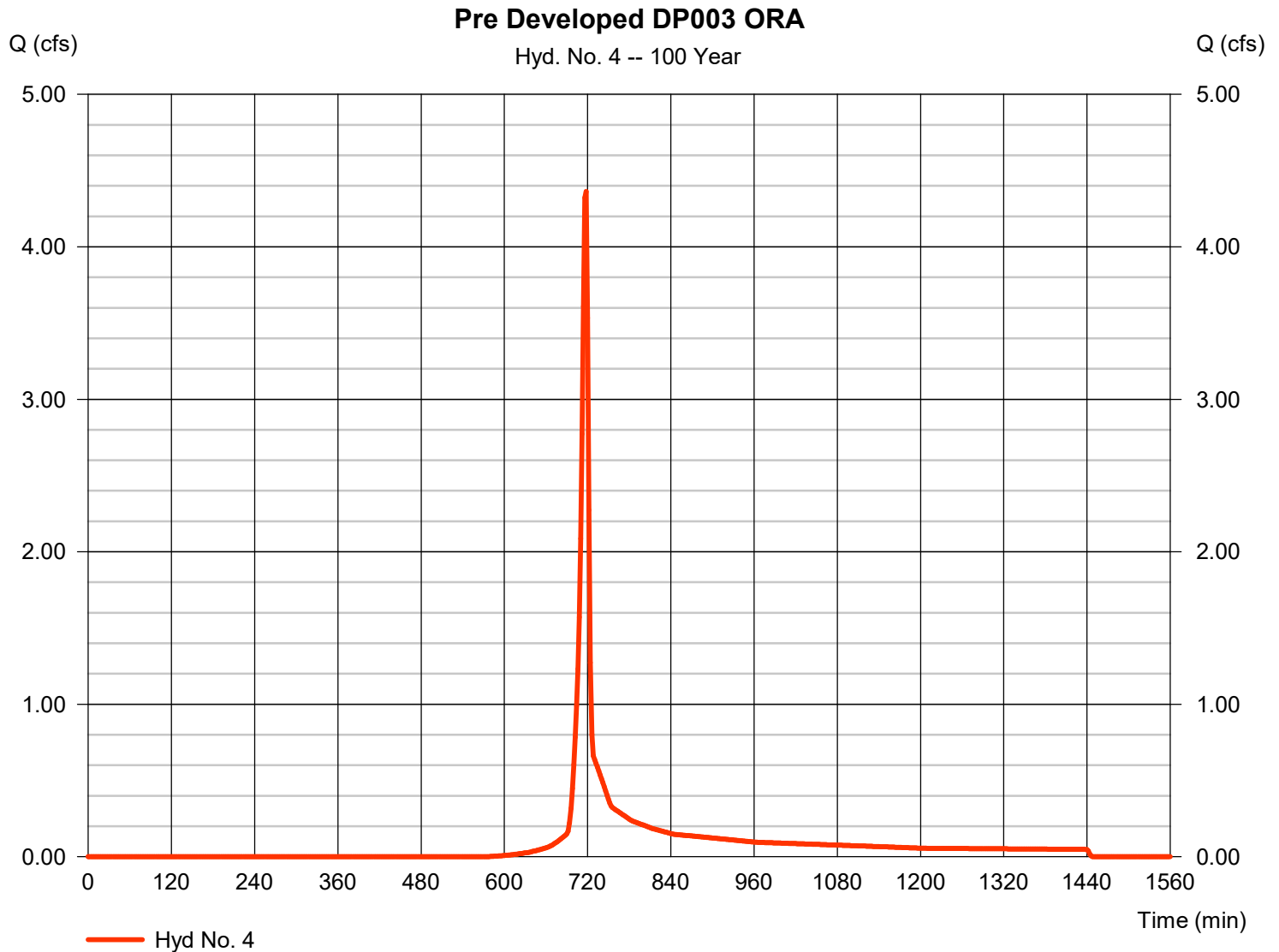
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 4

Pre Developed DP003 ORA

Hydrograph type	= SCS Runoff	Peak discharge	= 4.363 cfs
Storm frequency	= 100 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 8,749 cuft
Drainage area	= 0.810 ac	Curve number	= 62
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484





# Hydrograph Report

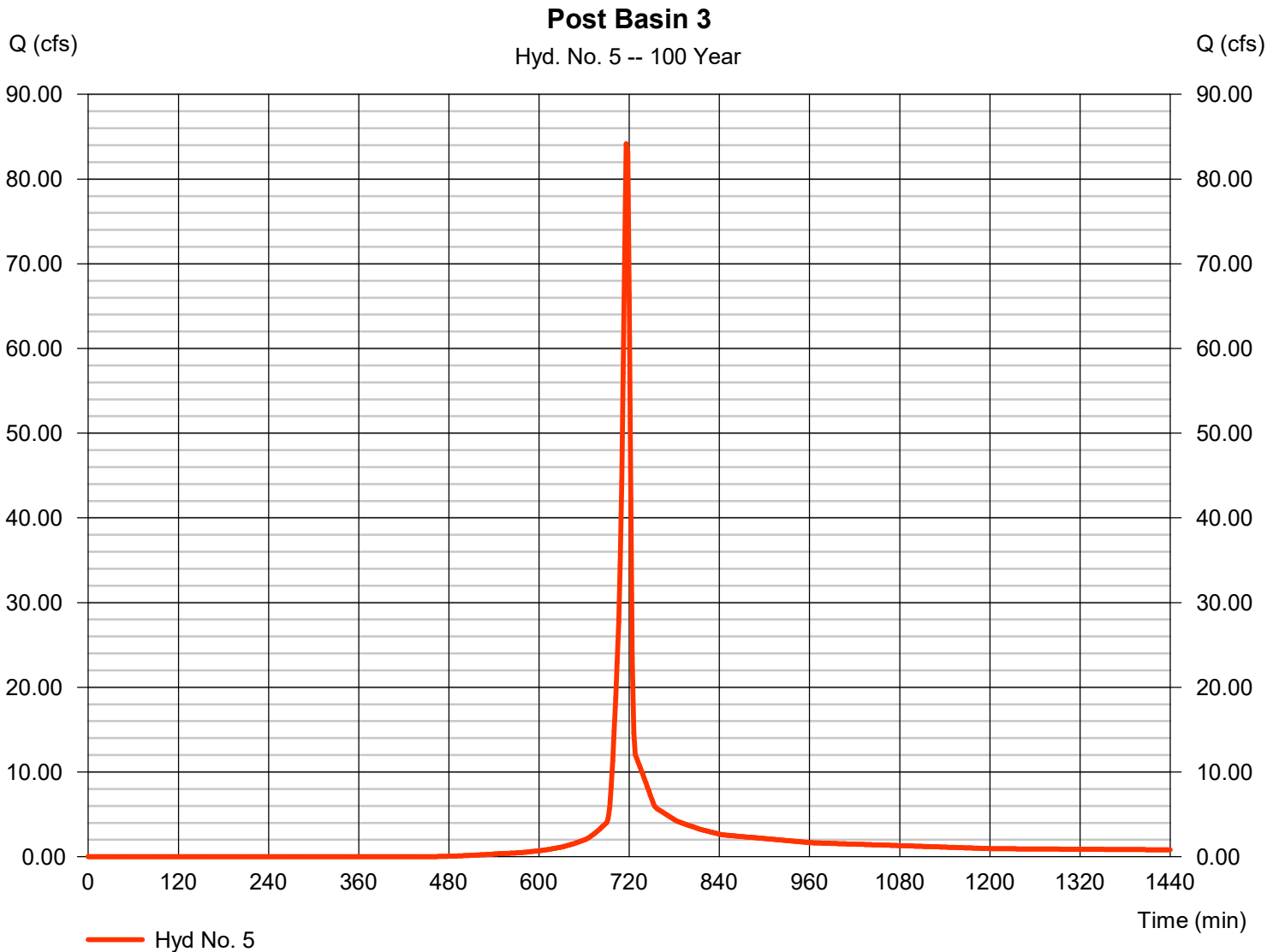
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## Hyd. No. 5

Post Basin 3

Hydrograph type	= SCS Runoff	Peak discharge	= 84.16 cfs
Storm frequency	= 100 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 170,598 cuft
Drainage area	= 12.150 ac	Curve number	= 70.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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

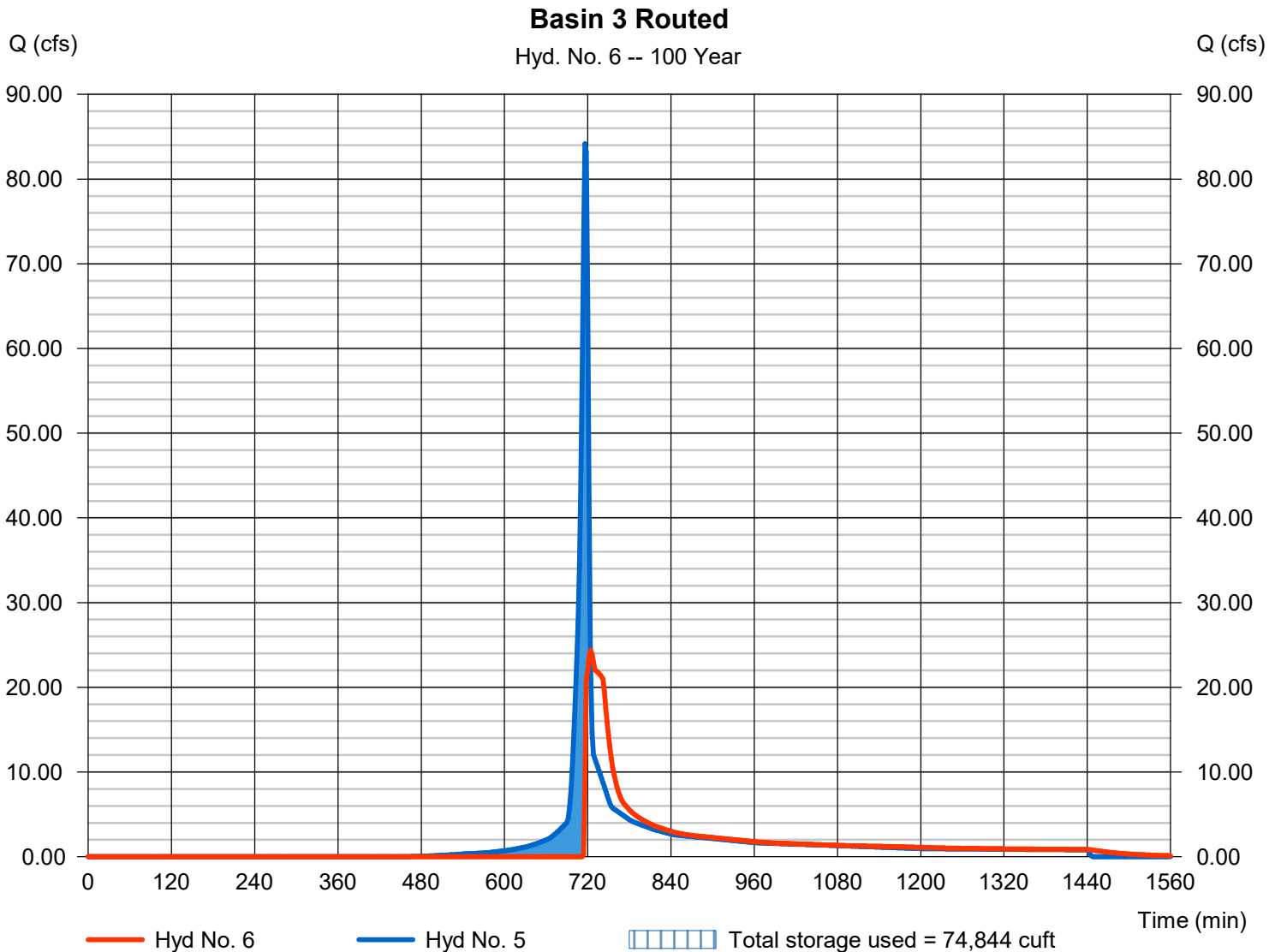
Wednesday, 03 / 22 / 2023

## Hyd. No. 6

Basin 3 Routed

Hydrograph type	= Reservoir	Peak discharge	= 24.38 cfs
Storm frequency	= 100 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 125,131 cuft
Inflow hyd. No.	= 5 - Post Basin 3	Max. Elevation	= 319.74 ft
Reservoir name	= Basin 3	Max. Storage	= 74,844 cuft

Storage Indication method used.



# Hydrograph Report

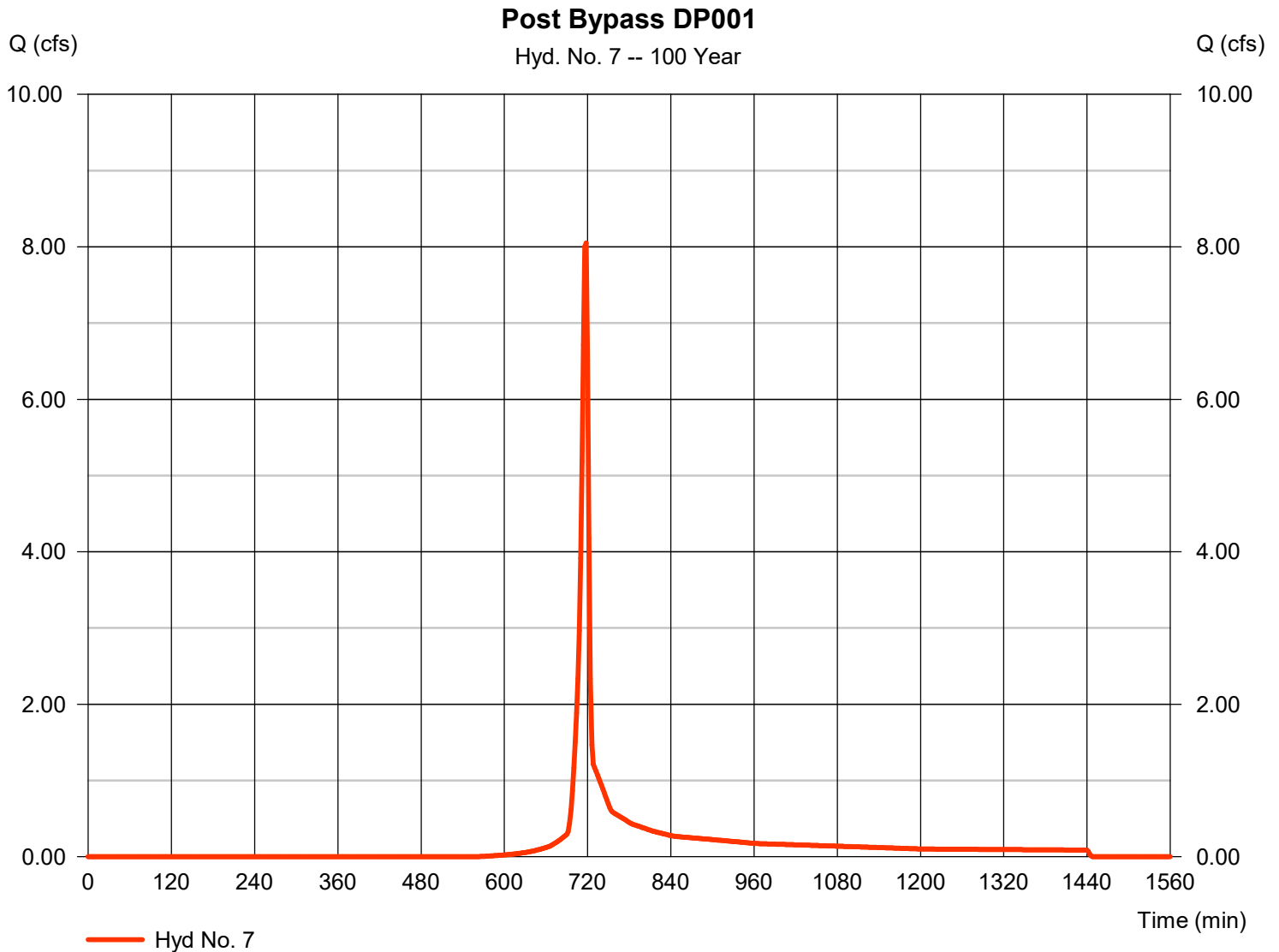
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 7

Post Bypass DP001

Hydrograph type	= SCS Runoff	Peak discharge	= 8.052 cfs
Storm frequency	= 100 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 16,178 cuft
Drainage area	= 1.440 ac	Curve number	= 63.2
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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

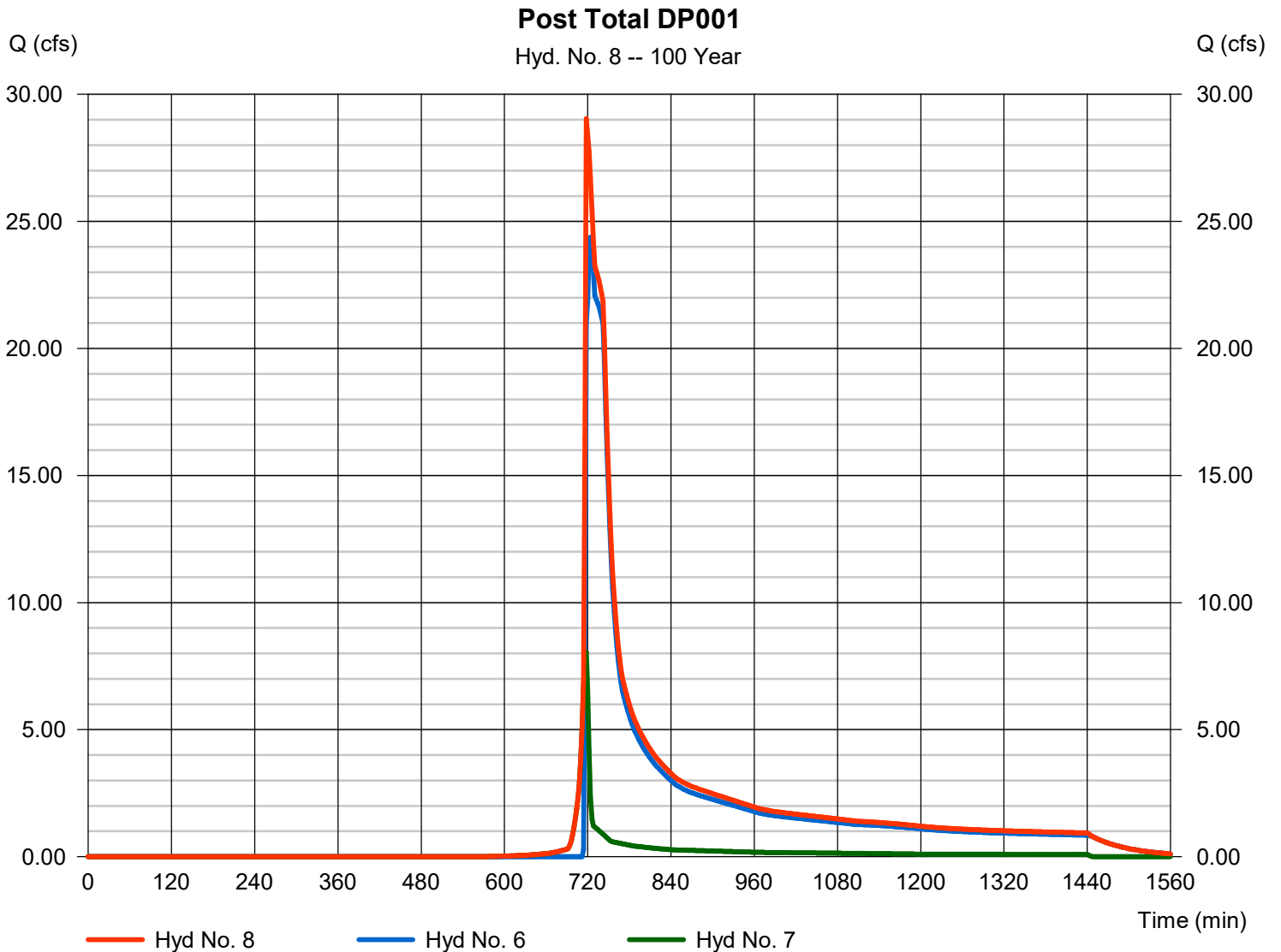
Wednesday, 03 / 22 / 2023

## Hyd. No. 8

Post Total DP001

Hydrograph type = Combine  
 Storm frequency = 100 yrs  
 Time interval = 2 min  
 Inflow hyds. = 6, 7

Peak discharge = 29.04 cfs  
 Time to peak = 718 min  
 Hyd. volume = 141,309 cuft  
 Contrib. drain. area = 1.440 ac



# Hydrograph Report

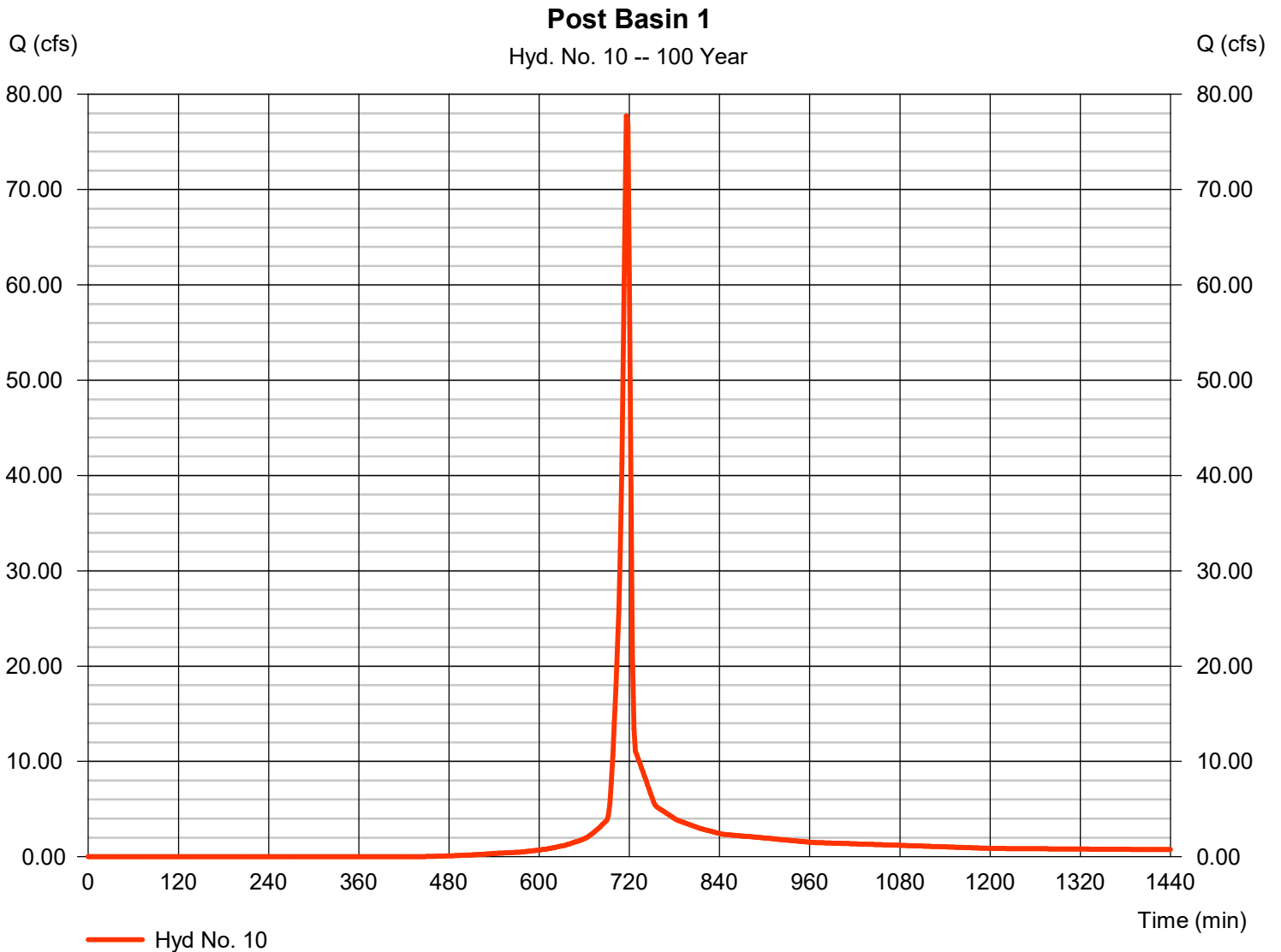
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 10

Post Basin 1

Hydrograph type	= SCS Runoff	Peak discharge	= 77.75 cfs
Storm frequency	= 100 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 157,867 cuft
Drainage area	= 10.950 ac	Curve number	= 71.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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

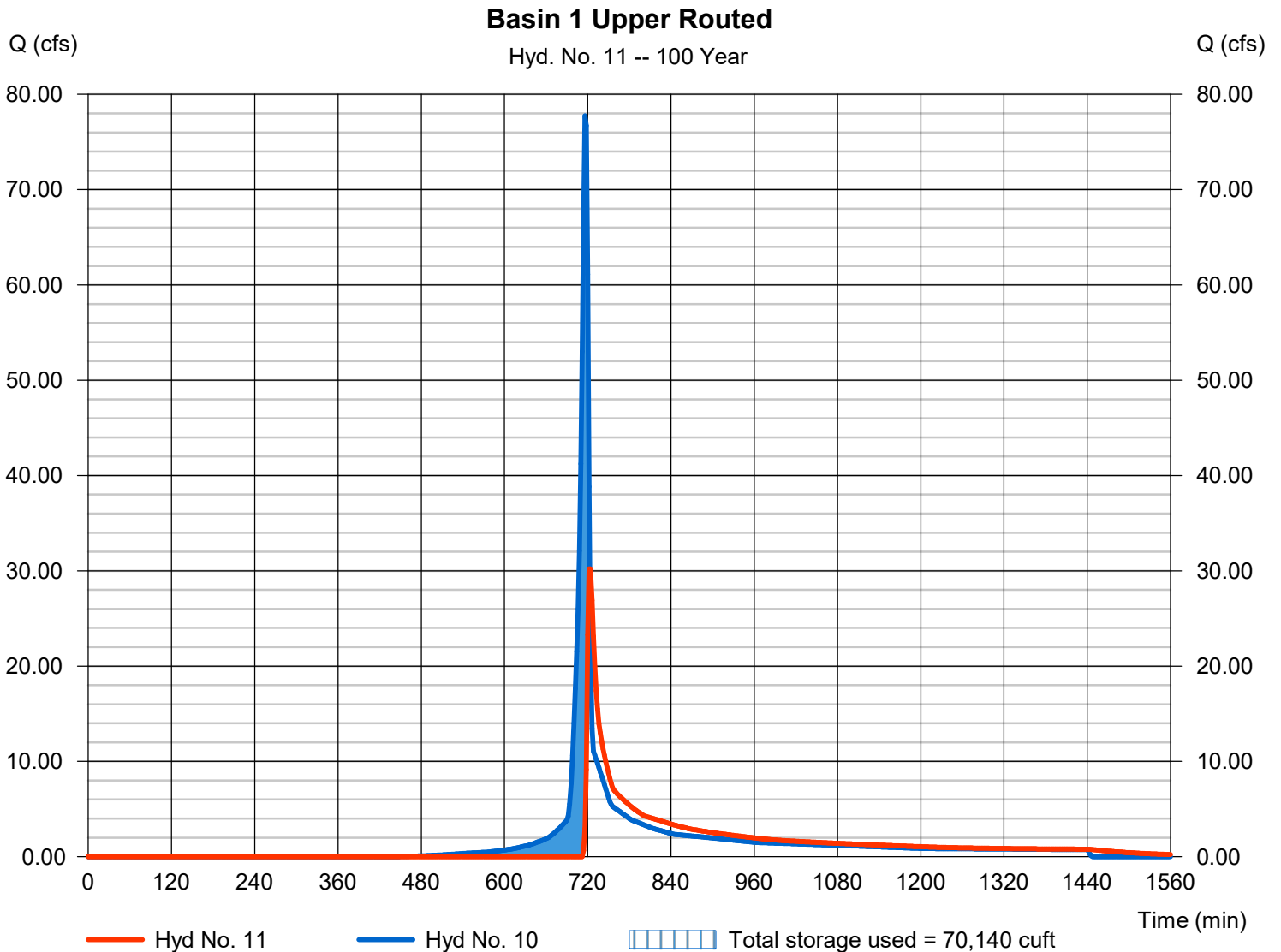
Wednesday, 03 / 22 / 2023

## Hyd. No. 11

Basin 1 Upper Routed

Hydrograph type	= Reservoir	Peak discharge	= 30.18 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 120,378 cuft
Inflow hyd. No.	= 10 - Post Basin 1	Max. Elevation	= 324.12 ft
Reservoir name	= Basin 1 Upper	Max. Storage	= 70,140 cuft

Storage Indication method used.



# Hydrograph Report

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

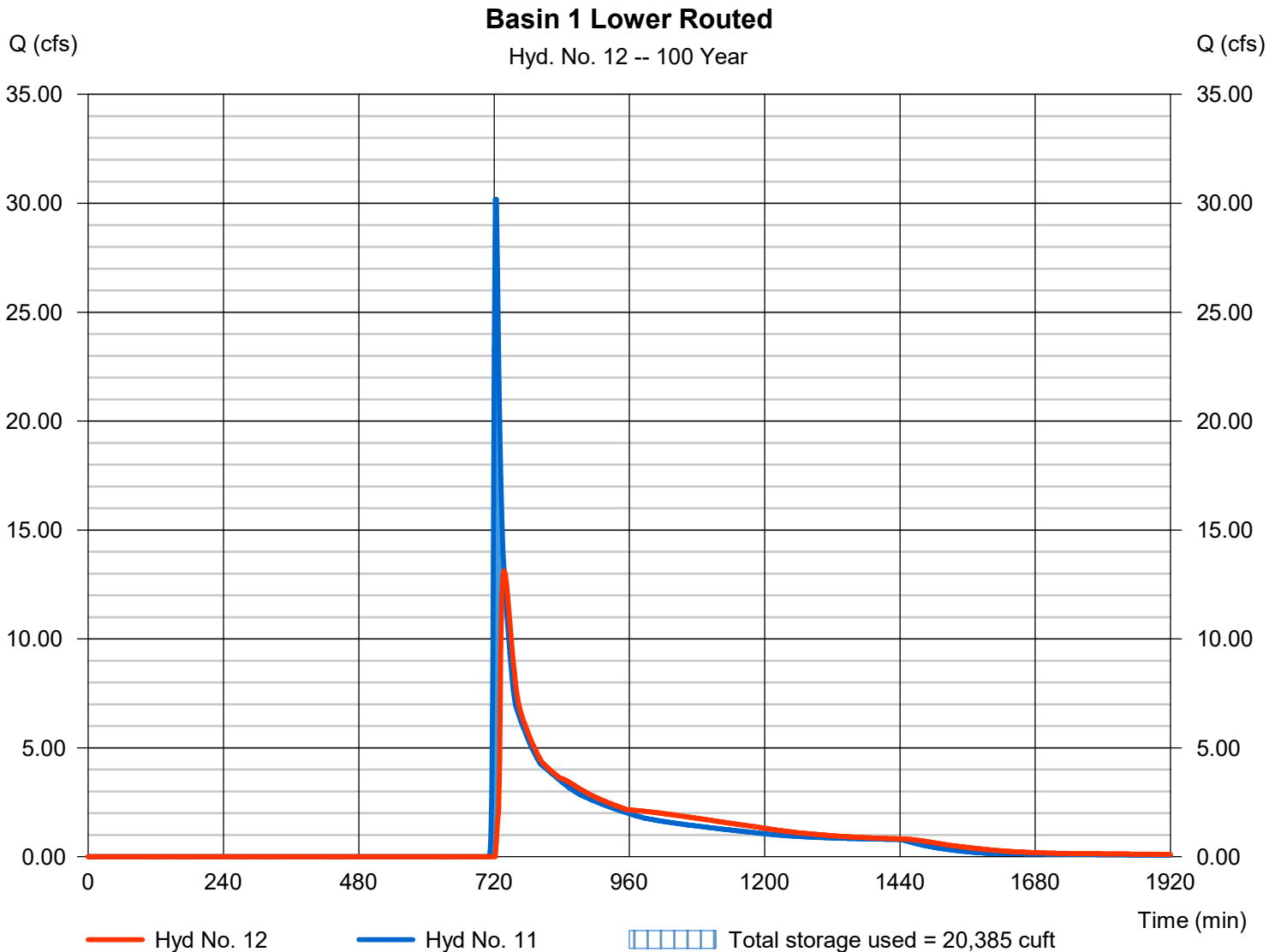
Wednesday, 03 / 22 / 2023

## Hyd. No. 12

Basin 1 Lower Routed

Hydrograph type	= Reservoir	Peak discharge	= 13.13 cfs
Storm frequency	= 100 yrs	Time to peak	= 738 min
Time interval	= 2 min	Hyd. volume	= 114,181 cuft
Inflow hyd. No.	= 11 - Basin 1 Upper Routed	Max. Elevation	= 305.96 ft
Reservoir name	= Basin 1 Lower	Max. Storage	= 20,385 cuft

Storage Indication method used.



# Hydrograph Report

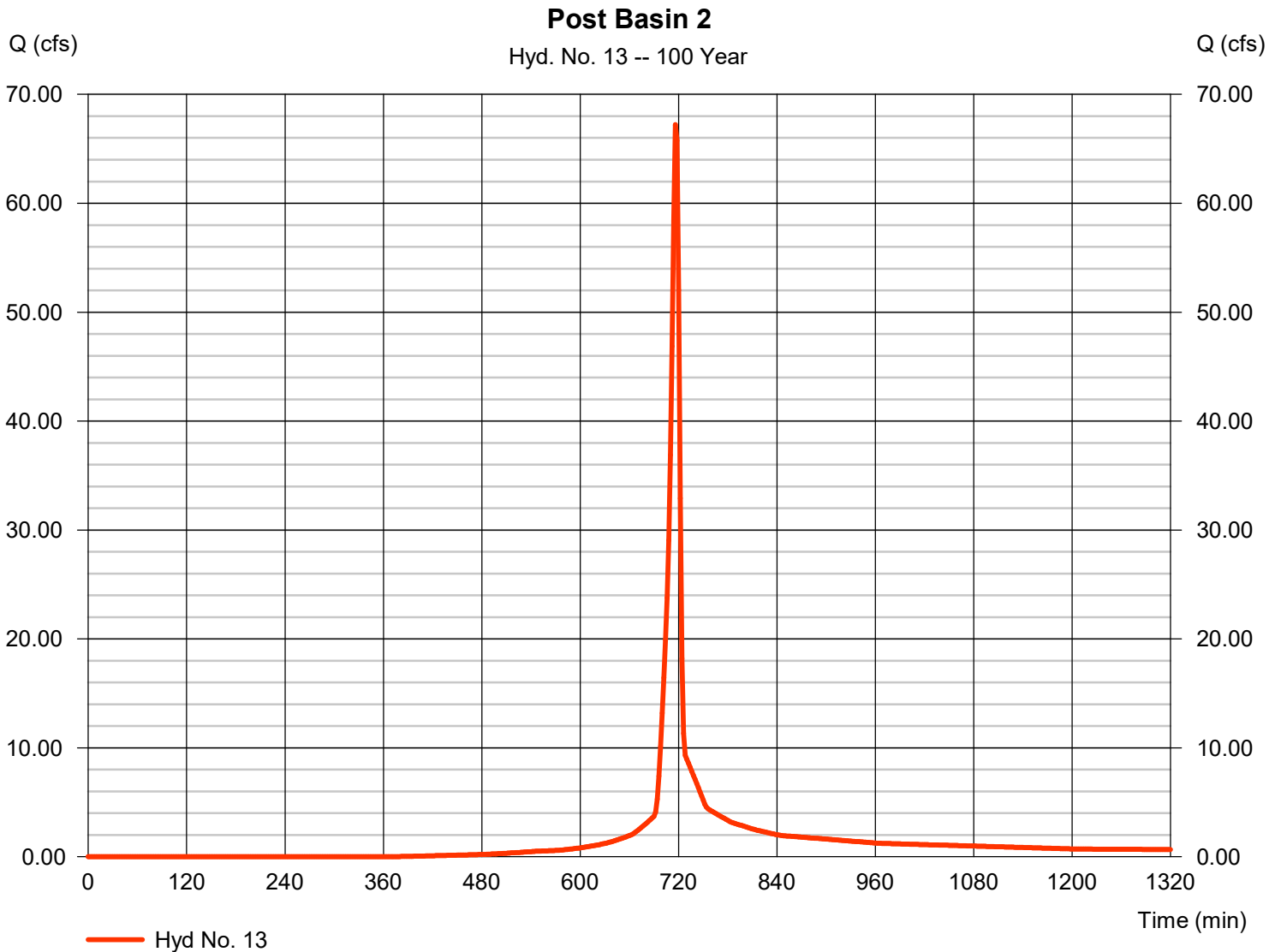
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 13

### Post Basin 2

Hydrograph type	= SCS Runoff	Peak discharge	= 67.22 cfs
Storm frequency	= 100 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 138,052 cuft
Drainage area	= 8.540 ac	Curve number	= 76.4
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484





# Hydrograph Report

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

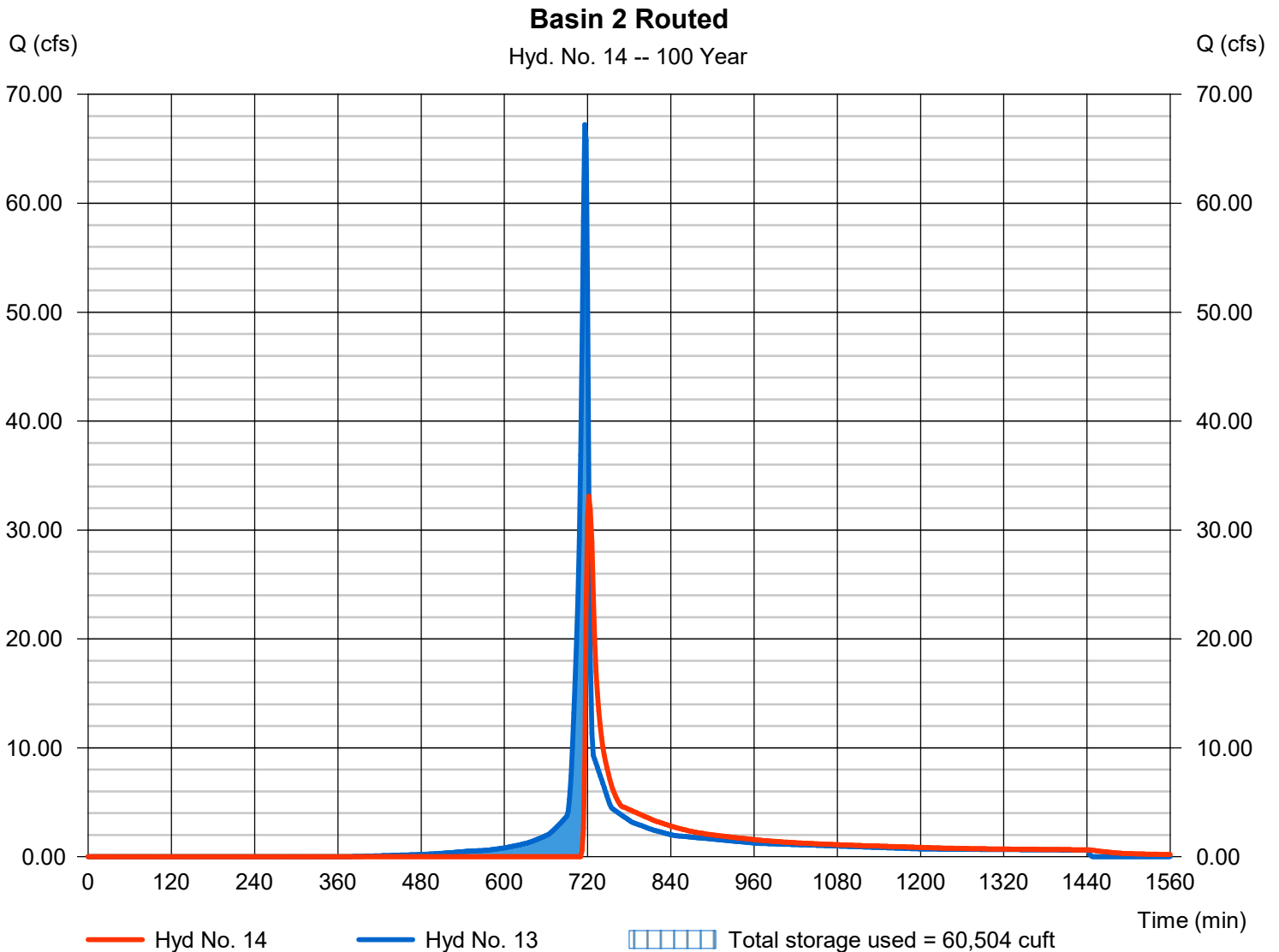
Wednesday, 03 / 22 / 2023

## Hyd. No. 14

Basin 2 Routed

Hydrograph type	= Reservoir	Peak discharge	= 33.12 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 105,698 cuft
Inflow hyd. No.	= 13 - Post Basin 2	Max. Elevation	= 310.57 ft
Reservoir name	= Basin 2	Max. Storage	= 60,504 cuft

Storage Indication method used.



# Hydrograph Report

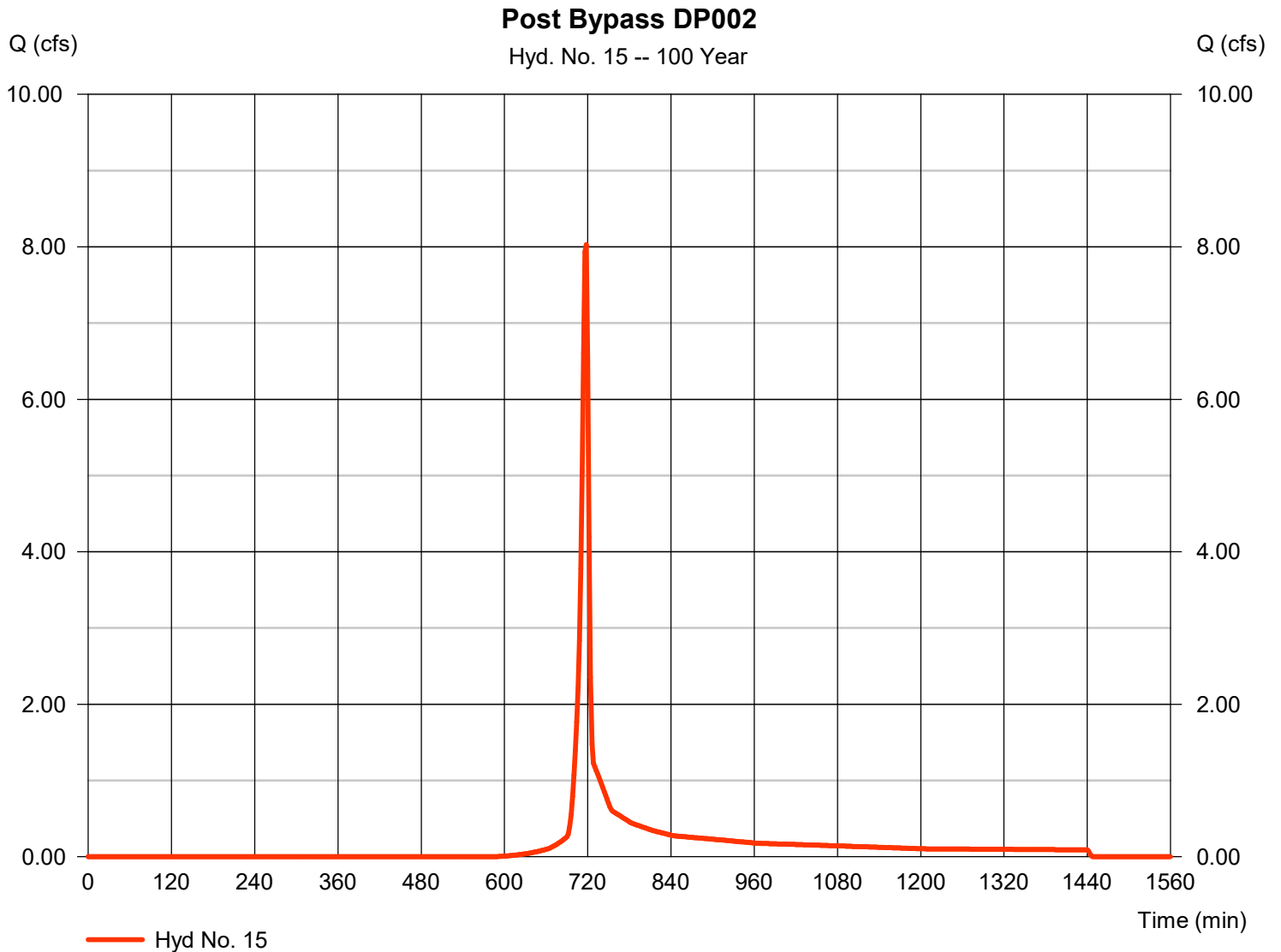
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 15

Post Bypass DP002

Hydrograph type	= SCS Runoff	Peak discharge	= 8.028 cfs
Storm frequency	= 100 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 16,080 cuft
Drainage area	= 1.540 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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

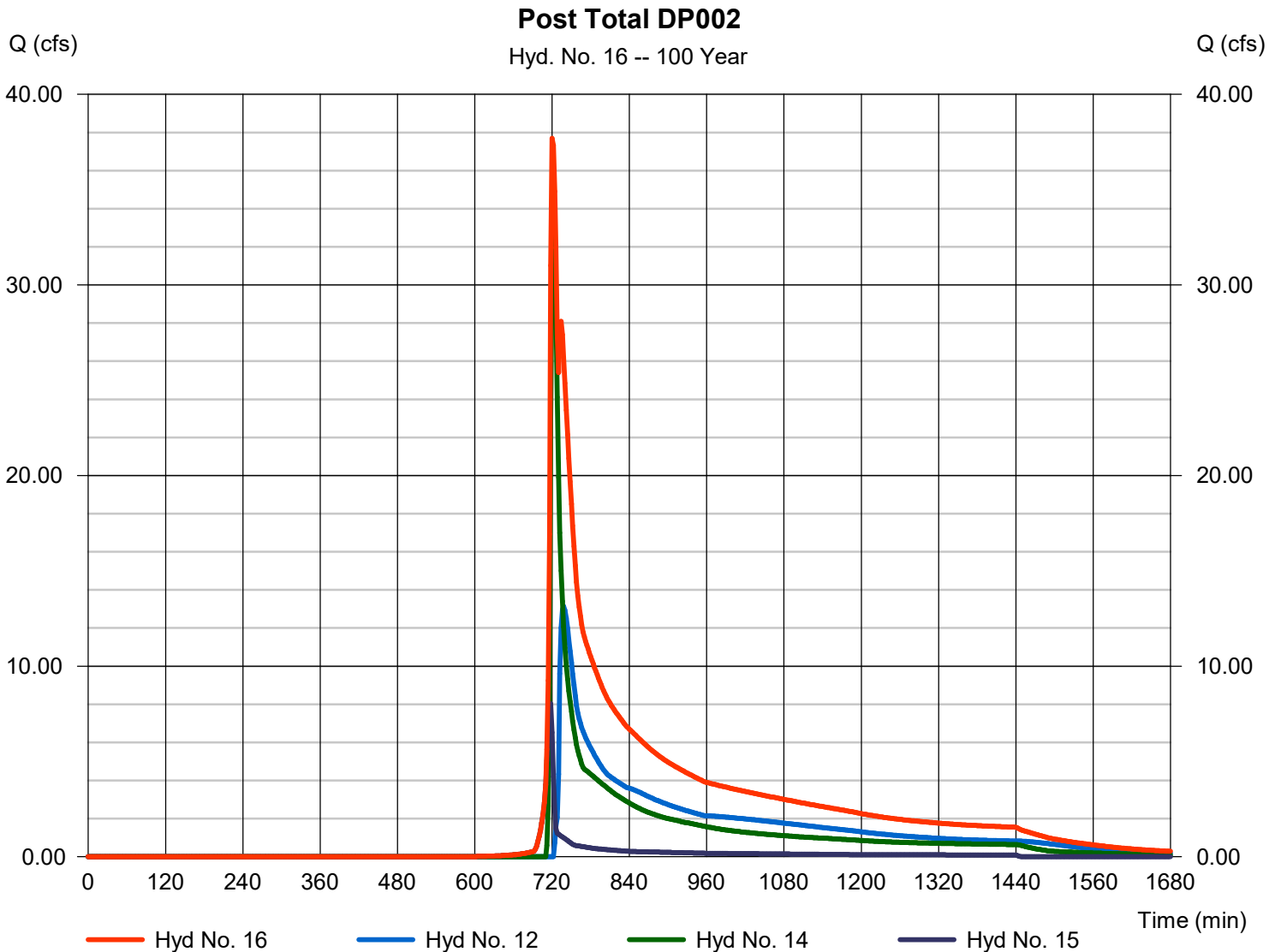
Wednesday, 03 / 22 / 2023

## Hyd. No. 16

Post Total DP002

Hydrograph type = Combine  
 Storm frequency = 100 yrs  
 Time interval = 2 min  
 Inflow hyds. = 12, 14, 15

Peak discharge = 37.69 cfs  
 Time to peak = 720 min  
 Hyd. volume = 235,959 cuft  
 Contrib. drain. area = 1.540 ac



# Hydrograph Report

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

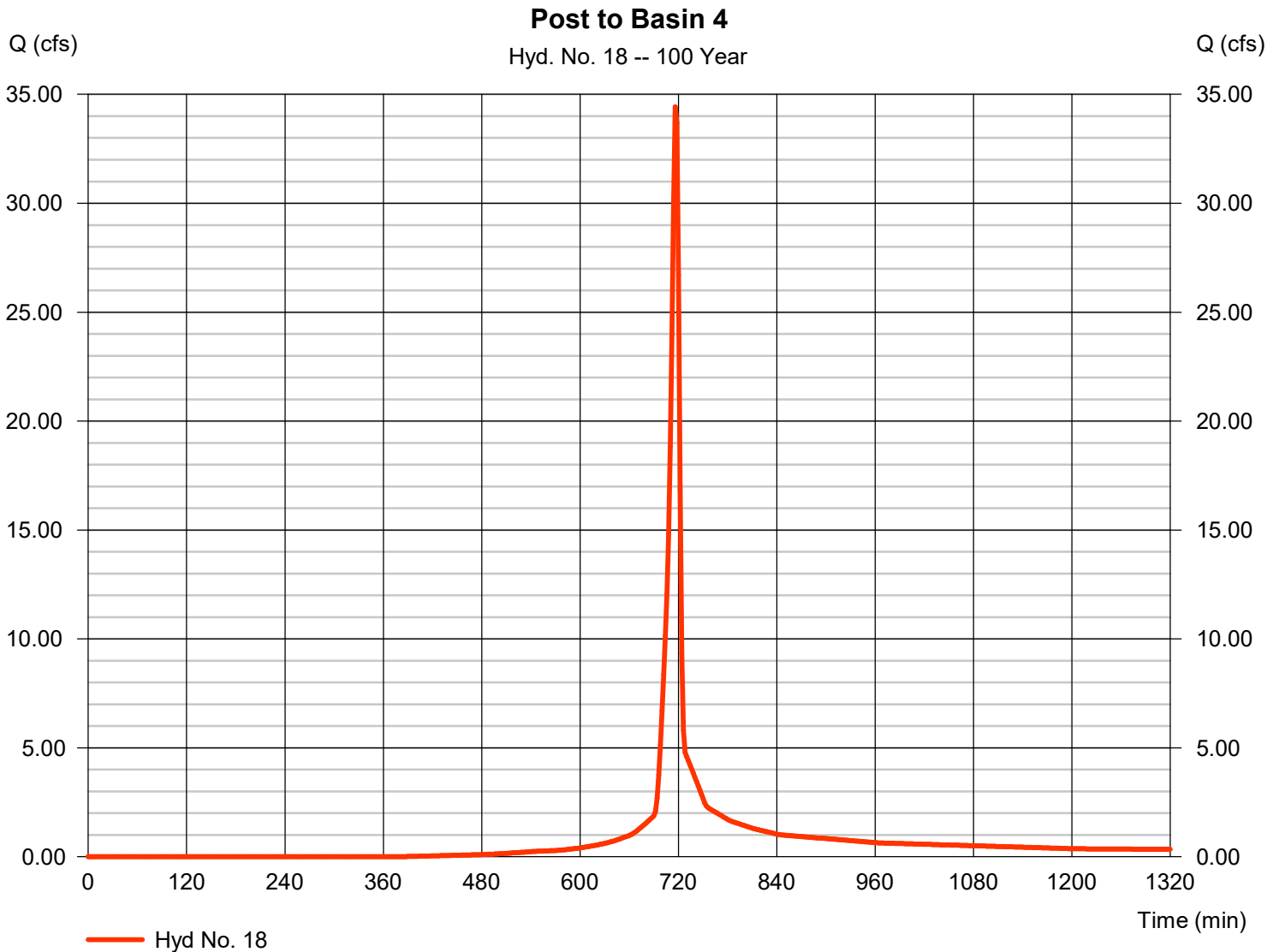
Wednesday, 03 / 22 / 2023

## Hyd. No. 18

Post to Basin 4

Hydrograph type	= SCS Runoff	Peak discharge	= 34.43 cfs
Storm frequency	= 100 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 70,605 cuft
Drainage area	= 4.420 ac	Curve number	= 75.9*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(0.910 x 61) + (2.270 x 98) + (3.040 x 78)] / 4.420



# Hydrograph Report

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

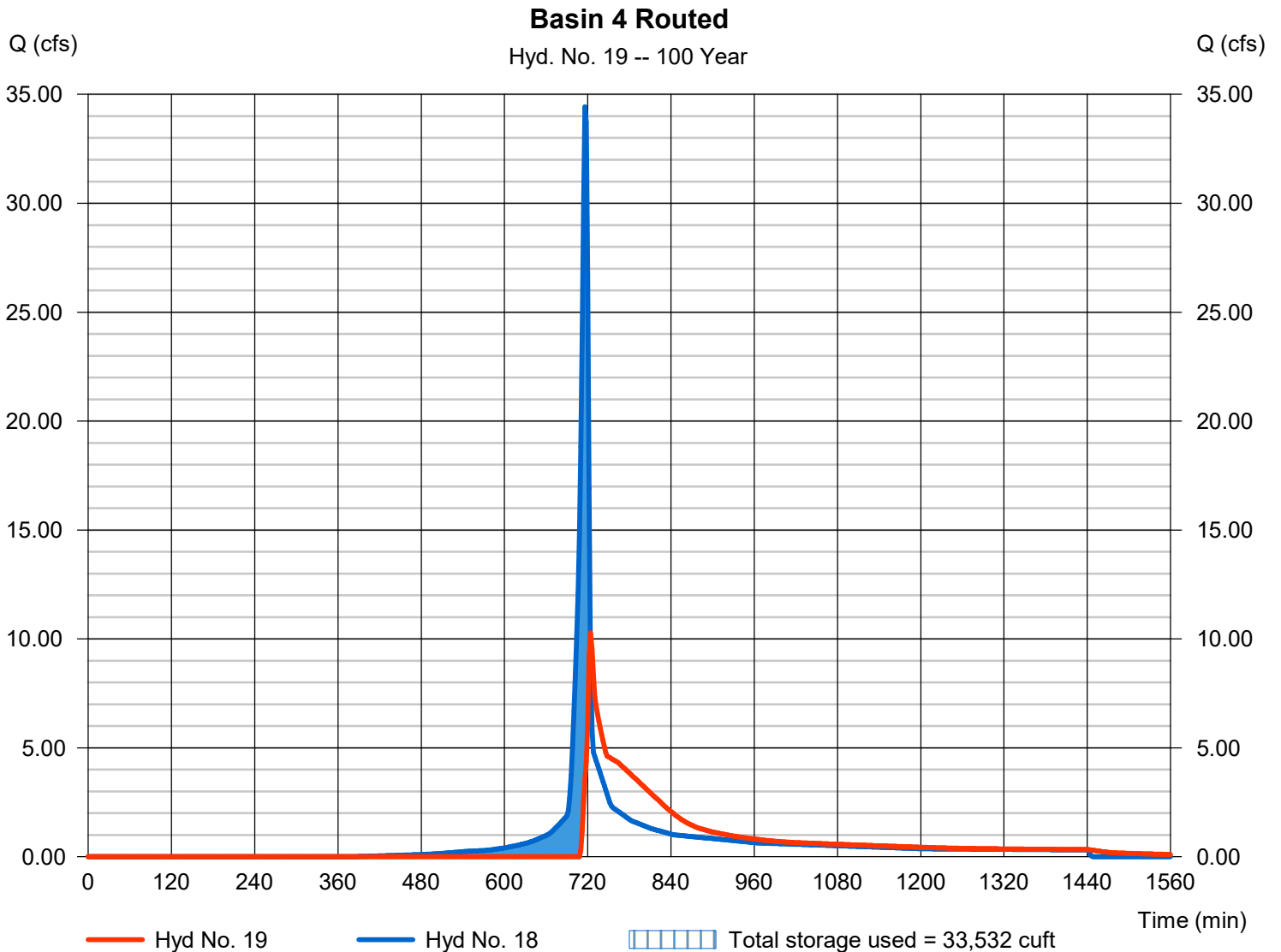
Wednesday, 03 / 22 / 2023

## Hyd. No. 19

Basin 4 Routed

Hydrograph type	= Reservoir	Peak discharge	= 10.28 cfs
Storm frequency	= 100 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 56,806 cuft
Inflow hyd. No.	= 18 - Post to Basin 4	Max. Elevation	= 348.51 ft
Reservoir name	= Basin 4	Max. Storage	= 33,532 cuft

Storage Indication method used.



# Hydrograph Report

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

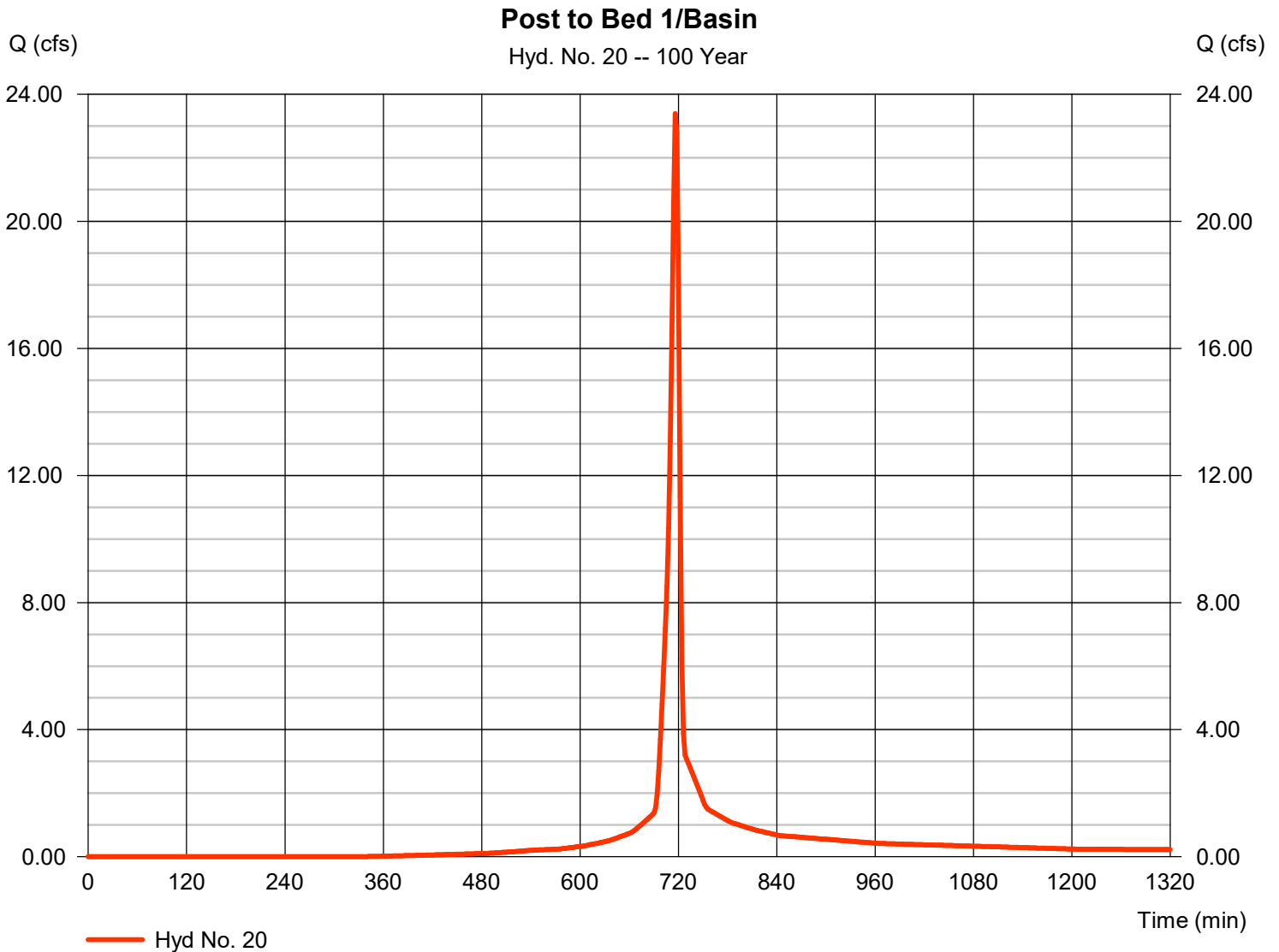
Wednesday, 03 / 22 / 2023

## Hyd. No. 20

Post to Bed 1/Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 23.40 cfs
Storm frequency	= 100 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 48,517 cuft
Drainage area	= 2.820 ac	Curve number	= 79.1*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(0.910 x 61) + (2.270 x 98) + (3.040 x 78)] / 2.820



# Hydrograph Report

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

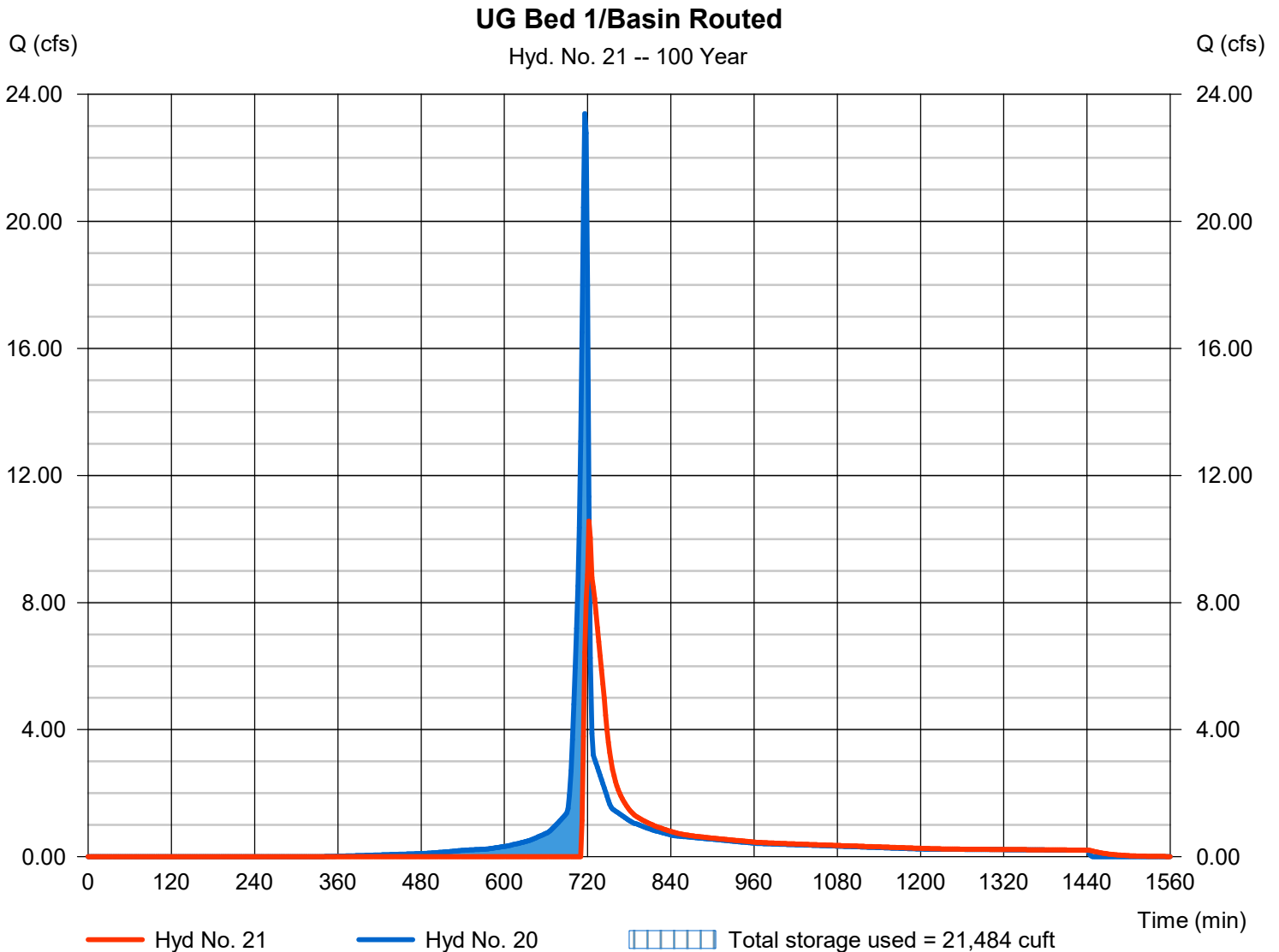
Wednesday, 03 / 22 / 2023

## Hyd. No. 21

UG Bed 1/Basin Routed

Hydrograph type	= Reservoir	Peak discharge	= 10.57 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 36,419 cuft
Inflow hyd. No.	= 20 - Post to Bed 1/Basin	Max. Elevation	= 342.30 ft
Reservoir name	= UG Bed 1/Basin	Max. Storage	= 21,484 cuft

Storage Indication method used.



# Hydrograph Report

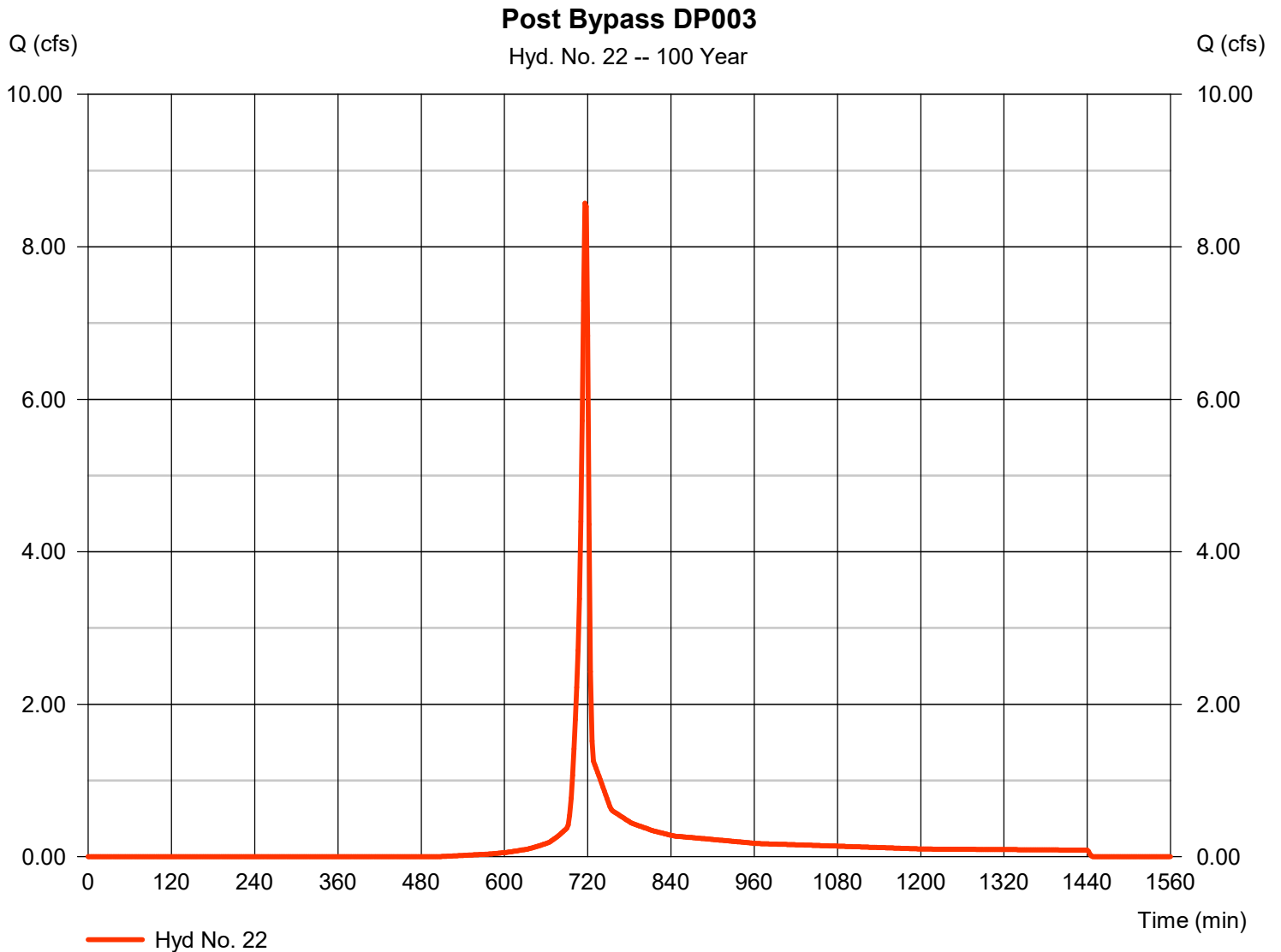
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 03 / 22 / 2023

## Hyd. No. 22

Post Bypass DP003

Hydrograph type	= SCS Runoff	Peak discharge	= 8.571 cfs
Storm frequency	= 100 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 17,315 cuft
Drainage area	= 1.340 ac	Curve number	= 67.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484





# Hydrograph Report

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

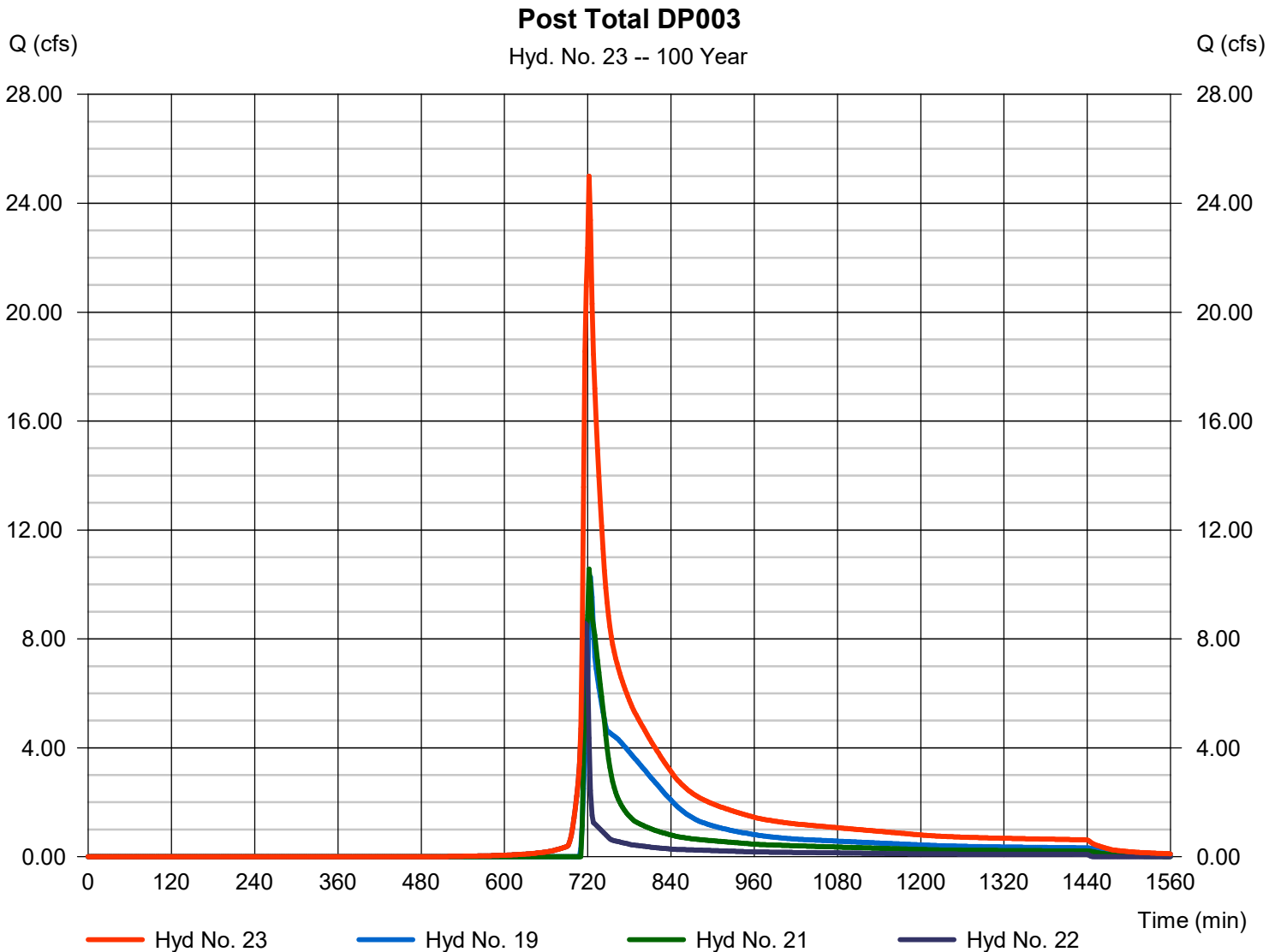
Wednesday, 03 / 22 / 2023

## Hyd. No. 23

Post Total DP003

Hydrograph type = Combine  
 Storm frequency = 100 yrs  
 Time interval = 2 min  
 Inflow hyds. = 19, 21, 22

Peak discharge = 25.00 cfs  
 Time to peak = 722 min  
 Hyd. volume = 110,541 cuft  
 Contrib. drain. area = 1.340 ac



**APPENDIX E**  
**USDA NRCS SOIL REPORT**



United States  
Department of  
Agriculture

**NRCS**

Natural  
Resources  
Conservation  
Service

A product of the National  
Cooperative Soil Survey,  
a joint effort of the United  
States Department of  
Agriculture and other  
Federal agencies, State  
agencies including the  
Agricultural Experiment  
Stations, and local  
participants

# Custom Soil Resource Report for Chester County, Pennsylvania

## Stokes



# Preface

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Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist ([http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2\\_053951](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951)).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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# How Soil Surveys Are Made

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Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

## Custom Soil Resource Report

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and



## Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

# Soil Map

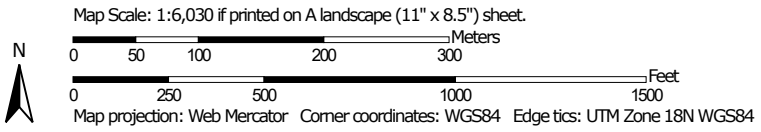
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The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

# Custom Soil Resource Report Soil Map



Soil Map may not be valid at this scale.



### 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: Chester County, Pennsylvania  
 Survey Area Data: Version 13, Jun 5, 2020

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

Date(s) aerial images were photographed: May 26, 2019—Jul 10, 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
Ba	Baile silt loam	11.2	16.9%
Co	Codorus silt loam	1.1	1.6%
GdB	Gladstone gravelly loam, 3 to 8 percent slopes	6.0	9.1%
GdC	Gladstone gravelly loam, 8 to 15 percent slopes	32.3	49.0%
GfD	Gladstone gravelly loam, 8 to 25 percent slopes, very bouldery	5.5	8.4%
Ha	Hatboro silt loam	6.0	9.1%
MaD	Manor loam, 15 to 25 percent slopes	3.8	5.8%
UrIB	Urban land-Gladstone complex, 0 to 8 percent slopes	0.1	0.1%
<b>Totals for Area of Interest</b>		<b>66.0</b>	<b>100.0%</b>

## 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

## Custom Soil Resource Report

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.

## Chester County, Pennsylvania

### Ba—Baile silt loam

#### Map Unit Setting

*National map unit symbol:* pjb7  
*Elevation:* 200 to 2,000 feet  
*Mean annual precipitation:* 35 to 55 inches  
*Mean annual air temperature:* 45 to 61 degrees F  
*Frost-free period:* 110 to 235 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Baile and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Baile

##### Setting

*Landform:* Depressions  
*Landform position (two-dimensional):* Footslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Linear, concave  
*Across-slope shape:* Concave, linear  
*Parent material:* Local alluvium over residuum weathered from mica schist

##### Typical profile

*Ap - 0 to 10 inches:* silt loam  
*Btg - 10 to 40 inches:* silt loam  
*Cg - 40 to 60 inches:* loam

##### Properties and qualities

*Slope:* 0 to 3 percent  
*Depth to restrictive feature:* 60 to 99 inches to lithic bedrock  
*Drainage class:* Poorly drained  
*Runoff class:* Very high  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* About 0 to 6 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water capacity:* High (about 11.0 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 5w  
*Hydrologic Soil Group:* C/D  
*Hydric soil rating:* Yes

#### Minor Components

##### Glenville

*Percent of map unit:* 9 percent  
*Landform:* Hillslopes  
*Landform position (two-dimensional):* Footslope, backslope

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*Landform position (three-dimensional):* Side slope, head slope  
*Down-slope shape:* Linear, concave  
*Across-slope shape:* Concave, linear  
*Hydric soil rating:* No

### **Manor**

*Percent of map unit:* 2 percent  
*Landform:* Hills  
*Landform position (two-dimensional):* Shoulder, backslope  
*Landform position (three-dimensional):* Side slope, nose slope  
*Down-slope shape:* Linear, convex  
*Across-slope shape:* Convex, linear  
*Hydric soil rating:* No

### **Chester**

*Percent of map unit:* 2 percent  
*Landform:* Hills  
*Landform position (two-dimensional):* Summit, shoulder  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Linear, convex  
*Across-slope shape:* Convex, linear  
*Hydric soil rating:* No

### **Glenelg**

*Percent of map unit:* 2 percent  
*Landform:* Hillslopes  
*Landform position (two-dimensional):* Summit, shoulder, backslope  
*Landform position (three-dimensional):* Interfluve, side slope  
*Down-slope shape:* Linear, convex  
*Across-slope shape:* Convex, linear  
*Hydric soil rating:* No

## **Co—Codus silt loam**

### **Map Unit Setting**

*National map unit symbol:* pjfx  
*Elevation:* 200 to 2,000 feet  
*Mean annual precipitation:* 35 to 50 inches  
*Mean annual air temperature:* 45 to 57 degrees F  
*Frost-free period:* 120 to 220 days  
*Farmland classification:* All areas are prime farmland

### **Map Unit Composition**

*Codus and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Codorus**

#### **Setting**

*Landform:* Flood plains



## Custom Soil Resource Report

*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium derived from gneiss and/or alluvium derived from mica schist

### Typical profile

*Ap - 0 to 12 inches:* silt loam  
*Bw - 12 to 48 inches:* silt loam  
*C - 48 to 60 inches:* silt loam

### Properties and qualities

*Slope:* 0 to 3 percent  
*Depth to restrictive feature:* 72 to 99 inches to lithic bedrock  
*Drainage class:* Moderately well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.60 to 2.00 in/hr)  
*Depth to water table:* About 18 to 36 inches  
*Frequency of flooding:* OccasionalNone  
*Frequency of ponding:* None  
*Available water capacity:* Moderate (about 8.5 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2w  
*Hydrologic Soil Group:* C  
*Hydric soil rating:* No

## Minor Components

### Hatboro

*Percent of map unit:* 8 percent  
*Landform:* Flood plains  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Concave, linear  
*Across-slope shape:* Concave, linear  
*Hydric soil rating:* Yes

### Glenville

*Percent of map unit:* 4 percent  
*Landform:* Hillslopes  
*Landform position (two-dimensional):* Footslope, backslope  
*Landform position (three-dimensional):* Side slope, head slope  
*Down-slope shape:* Linear, concave  
*Across-slope shape:* Concave, linear  
*Hydric soil rating:* No

### Baile

*Percent of map unit:* 3 percent  
*Landform:* Depressions  
*Landform position (two-dimensional):* Footslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Linear, concave  
*Across-slope shape:* Concave, linear

*Hydric soil rating:* Yes

## **GdB—Gladstone gravelly loam, 3 to 8 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 2v7gk  
*Elevation:* 250 to 1,200 feet  
*Mean annual precipitation:* 30 to 64 inches  
*Mean annual air temperature:* 46 to 79 degrees F  
*Frost-free period:* 131 to 178 days  
*Farmland classification:* All areas are prime farmland

### **Map Unit Composition**

*Gladstone and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Gladstone**

#### **Setting**

*Landform:* Hills  
*Landform position (two-dimensional):* Shoulder  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Loamy colluvium derived from granite and gneiss and/or loamy residuum weathered from granite and gneiss

#### **Typical profile**

*Ap - 0 to 10 inches:* gravelly loam  
*Bt1 - 10 to 22 inches:* sandy clay loam  
*Bt2 - 22 to 37 inches:* loam  
*C - 37 to 66 inches:* sandy loam  
*R - 66 to 76 inches:* bedrock

#### **Properties and qualities**

*Slope:* 3 to 8 percent  
*Depth to restrictive feature:* 60 to 80 inches to lithic bedrock  
*Drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.06 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water capacity:* Moderate (about 8.4 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2e  
*Hydrologic Soil Group:* B  
*Hydric soil rating:* No

**Minor Components**

**Califon**

*Percent of map unit: 5 percent*  
*Landform: Flats*  
*Landform position (two-dimensional): Foothlope*  
*Landform position (three-dimensional): Base slope*  
*Down-slope shape: Concave*  
*Across-slope shape: Linear*  
*Hydric soil rating: No*

**Annandale**

*Percent of map unit: 5 percent*  
*Landform: Hills*  
*Landform position (two-dimensional): Summit*  
*Landform position (three-dimensional): Interfluve*  
*Down-slope shape: Convex*  
*Across-slope shape: Linear*  
*Hydric soil rating: No*

**Parker**

*Percent of map unit: 5 percent*  
*Landform: Hills*  
*Landform position (two-dimensional): Shoulder*  
*Landform position (three-dimensional): Side slope*  
*Down-slope shape: Convex*  
*Across-slope shape: Linear*  
*Hydric soil rating: No*

**GdC—Gladstone gravelly loam, 8 to 15 percent slopes**

**Map Unit Setting**

*National map unit symbol: 2v7gl*  
*Elevation: 250 to 1,200 feet*  
*Mean annual precipitation: 30 to 64 inches*  
*Mean annual air temperature: 46 to 79 degrees F*  
*Frost-free period: 170 to 240 days*  
*Farmland classification: Farmland of statewide importance*

**Map Unit Composition**

*Gladstone and similar soils: 85 percent*  
*Minor components: 15 percent*  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Gladstone**

**Setting**

*Landform: Hillslopes*  
*Landform position (two-dimensional): Shoulder*  
*Landform position (three-dimensional): Side slope*

## Custom Soil Resource Report

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Parent material:* Loamy colluvium derived from granite and gneiss and/or loamy residuum weathered from granite and gneiss

### Typical profile

*Ap - 0 to 10 inches:* gravelly loam

*Bt1 - 10 to 22 inches:* gravelly sandy clay loam

*Bt2 - 22 to 37 inches:* gravelly loam

*C - 37 to 66 inches:* gravelly sandy loam

*R - 66 to 76 inches:* bedrock

### Properties and qualities

*Slope:* 8 to 15 percent

*Depth to restrictive feature:* 65 to 67 inches to lithic bedrock

*Drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Very low to high (0.00 to 5.95 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water capacity:* Moderate (about 6.1 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* B

*Hydric soil rating:* No

### Minor Components

#### Parker

*Percent of map unit:* 5 percent

*Landform:* Hillslopes

*Landform position (two-dimensional):* Shoulder

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Convex

*Across-slope shape:* Linear

*Hydric soil rating:* No

#### Califon

*Percent of map unit:* 5 percent

*Landform:* Flats

*Landform position (two-dimensional):* Footslope

*Landform position (three-dimensional):* Base slope

*Down-slope shape:* Concave

*Across-slope shape:* Linear

*Hydric soil rating:* No

#### Annandale

*Percent of map unit:* 5 percent

*Landform:* Hillslopes

*Landform position (two-dimensional):* Summit

*Landform position (three-dimensional):* Interfluvium

*Down-slope shape:* Convex

*Across-slope shape:* Linear

*Hydric soil rating:* No

## **GfD—Gladstone gravelly loam, 8 to 25 percent slopes, very bouldery**

### **Map Unit Setting**

*National map unit symbol:* wphh  
*Elevation:* 200 to 1,200 feet  
*Mean annual precipitation:* 40 to 48 inches  
*Mean annual air temperature:* 45 to 55 degrees F  
*Frost-free period:* 150 to 190 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Gladstone, very bouldery, and similar soils:* 90 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Gladstone, Very Bouldery**

#### **Setting**

*Landform:* Hillslopes  
*Landform position (two-dimensional):* Summit, shoulder  
*Landform position (three-dimensional):* Nose slope, side slope  
*Down-slope shape:* Linear, convex  
*Across-slope shape:* Linear, convex  
*Parent material:* Local colluvium and residuum weathered from granite and gneiss

#### **Typical profile**

*A - 0 to 10 inches:* gravelly loam  
*Bt - 10 to 42 inches:* gravelly clay loam  
*C - 42 to 68 inches:* very gravelly loam  
*R - 68 to 78 inches:* bedrock

#### **Properties and qualities**

*Slope:* 8 to 25 percent  
*Surface area covered with cobbles, stones or boulders:* 1.6 percent  
*Depth to restrictive feature:* 60 to 100 inches to lithic bedrock  
*Drainage class:* Well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to high (0.00 to 6.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water capacity:* Moderate (about 6.9 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* A  
*Hydric soil rating:* No

## Minor Components

### Cokesbury

*Percent of map unit:* 5 percent

*Landform:* Depressions

*Landform position (two-dimensional):* Toeslope, footslope

*Landform position (three-dimensional):* Base slope

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Hydric soil rating:* Yes

### Califon

*Percent of map unit:* 5 percent

*Landform:* Hills

*Landform position (two-dimensional):* Backslope, footslope

*Landform position (three-dimensional):* Head slope

*Down-slope shape:* Concave, linear

*Across-slope shape:* Concave, linear

*Hydric soil rating:* No

## Ha—Hatboro silt loam

### Map Unit Setting

*National map unit symbol:* 1lwqq

*Elevation:* 200 to 800 feet

*Mean annual precipitation:* 36 to 50 inches

*Mean annual air temperature:* 48 to 57 degrees F

*Frost-free period:* 140 to 200 days

*Farmland classification:* Not prime farmland

### Map Unit Composition

*Hatboro and similar soils:* 95 percent

*Minor components:* 5 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Hatboro

#### Setting

*Landform:* Flood plains

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Concave, linear

*Across-slope shape:* Concave, linear

*Parent material:* Alluvium derived from metamorphic and sedimentary rock

#### Typical profile

*Ap - 0 to 9 inches:* silt loam

*Bg - 9 to 44 inches:* silt loam

*Cg - 44 to 56 inches:* sandy clay loam

*C - 56 to 70 inches:* stratified gravelly sand to clay

## Custom Soil Resource Report

### Properties and qualities

*Slope:* 0 to 3 percent  
*Depth to restrictive feature:* 60 to 99 inches to lithic bedrock  
*Drainage class:* Poorly drained  
*Runoff class:* Very high  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.60 to 2.00 in/hr)  
*Depth to water table:* About 0 to 6 inches  
*Frequency of flooding:* FrequentNone  
*Frequency of ponding:* None  
*Available water capacity:* High (about 9.7 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4w  
*Hydrologic Soil Group:* B/D  
*Hydric soil rating:* Yes

### Minor Components

#### Glenville

*Percent of map unit:* 5 percent  
*Landform:* Hillslopes  
*Landform position (two-dimensional):* Footslope, backslope  
*Landform position (three-dimensional):* Side slope, head slope  
*Down-slope shape:* Linear, concave  
*Across-slope shape:* Concave, linear  
*Hydric soil rating:* No

## MaD—Manor loam, 15 to 25 percent slopes

### Map Unit Setting

*National map unit symbol:* 2tmcg  
*Elevation:* 250 to 1,000 feet  
*Mean annual precipitation:* 40 to 55 inches  
*Mean annual air temperature:* 48 to 57 degrees F  
*Frost-free period:* 150 to 192 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Manor and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Manor

#### Setting

*Landform:* Hillslopes  
*Landform position (two-dimensional):* Shoulder, backslope, summit  
*Landform position (three-dimensional):* Side slope

## Custom Soil Resource Report

*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Parent material:* Residuum weathered from mica schist

### Typical profile

*A1 - 0 to 2 inches:* loam  
*A2 - 2 to 6 inches:* sandy loam  
*Bw1 - 6 to 13 inches:* fine sandy loam  
*Bw2 - 13 to 22 inches:* fine sandy loam  
*C1 - 22 to 30 inches:* fine sandy loam  
*C2 - 30 to 44 inches:* channery coarse sand  
*C3 - 44 to 53 inches:* loamy sand  
*C4 - 53 to 83 inches:* channery loamy sand  
*Cr - 83 to 108 inches:* bedrock  
*R - 108 to 138 inches:* bedrock

### Properties and qualities

*Slope:* 15 to 25 percent  
*Surface area covered with cobbles, stones or boulders:* 0.0 percent  
*Depth to restrictive feature:* 59 to 100 inches to paralithic bedrock; 100 to 128 inches to lithic bedrock  
*Drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low (0.01 to 0.07 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water capacity:* Moderate (about 8.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* B  
*Hydric soil rating:* No

### Minor Components

#### Glenville

*Percent of map unit:* 5 percent  
*Landform:* Drainageways, swales  
*Landform position (two-dimensional):* Footslope, backslope  
*Landform position (three-dimensional):* Base slope, head slope, interfluvium  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Hydric soil rating:* No

#### Mt. airy

*Percent of map unit:* 5 percent  
*Landform:* Hillslopes  
*Landform position (two-dimensional):* Backslope, summit, shoulder  
*Landform position (three-dimensional):* Nose slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

#### Blocktown

*Percent of map unit:* 5 percent



## Custom Soil Resource Report

*Landform:* Hillslopes  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

### UrIB—Urban land-Gladstone complex, 0 to 8 percent slopes

#### Map Unit Setting

*National map unit symbol:* 1r3cq  
*Elevation:* 200 to 1,200 feet  
*Mean annual precipitation:* 36 to 48 inches  
*Mean annual air temperature:* 44 to 57 degrees F  
*Frost-free period:* 130 to 190 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Urban land:* 65 percent  
*Gladstone and similar soils:* 25 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Urban Land

##### Setting

*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Pavement, buildings and other artificially covered areas

##### Typical profile

*C - 0 to 6 inches:* variable

##### Properties and qualities

*Slope:* 0 to 8 percent  
*Depth to restrictive feature:* 10 to 100 inches to lithic bedrock  
*Available water capacity:* Very low (about 0.0 inches)

##### Interpretive groups

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

#### Description of Gladstone

##### Setting

*Landform:* Hillslopes  
*Landform position (two-dimensional):* Summit, shoulder  
*Landform position (three-dimensional):* Nose slope, side slope  
*Down-slope shape:* Linear, convex

## Custom Soil Resource Report

*Across-slope shape:* Linear, convex

*Parent material:* Local colluvium and residuum weathered from granite and gneiss

### Typical profile

*A - 0 to 10 inches:* gravelly loam

*C - 10 to 42 inches:* gravelly clay loam

*2Ap - 42 to 68 inches:* gravelly loam

*R - 68 to 78 inches:* bedrock

### Properties and qualities

*Slope:* 0 to 8 percent

*Depth to restrictive feature:* 60 to 100 inches to lithic bedrock

*Drainage class:* Well drained

*Runoff class:* Very low

*Capacity of the most limiting layer to transmit water (Ksat):* Very low to high (0.00 to 6.00 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water capacity:* Moderate (about 6.9 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 2e

*Hydrologic Soil Group:* A

*Hydric soil rating:* No

### Minor Components

#### Cokesbury

*Percent of map unit:* 5 percent

*Landform:* Depressions

*Landform position (two-dimensional):* Toeslope, footslope

*Landform position (three-dimensional):* Base slope

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Hydric soil rating:* Yes

#### Califon

*Percent of map unit:* 5 percent

*Landform:* Hills

*Landform position (two-dimensional):* Backslope, footslope

*Landform position (three-dimensional):* Head slope

*Down-slope shape:* Concave, linear

*Across-slope shape:* Concave, linear

*Hydric soil rating:* No

**APPENDIX E**  
**STORMWATER INFILTRATION TESTING REPORT**

# **STORMWATER INFILTRATION REPORT**

**FOR**

**1013 SHILOH ROAD  
WESTTOWN TOWNSHIP  
CHESTER COUNTY**

**PREPARED FOR:**

**Keystone Custom Homes**

**PREPARED BY:**

**D.L. Howell & Associates, Inc.  
1250 Wrights Lane  
West Chester, PA 19380**

**March 2021**

**Stormwater Infiltration Test Report**  
**1013 Shiloh Road**  
**Westtown Township**  
**Chester County**

On Monday and Tuesday, March 22-23, 2021, D.L. Howell and Associates, Inc. performed hydraulic conductivity tests for the proposed stormwater management areas for the property located at 1013 Shiloh Road in Westtown Township, Chester County. The purpose of the hydraulic conductivity testing was to determine site suitability for the proposed stormwater infiltration areas associated with proposed improvements at the site (see development plan).

Testing was conducted in general accordance with the Pennsylvania Department of Environmental Protection (PADEP)'s Pennsylvania Stormwater Best Management Practices Manual specifications, in a cased, sealed, borehole utilizing the falling head method designed to measure the vertical hydraulic conductivity of the soil. An approximate five-inch diameter borehole was hand dug to the depth of the proposed bottom elevation of the infiltration structure and a 3-inch diameter PVC casing was installed. A mixture of bentonite and soil was placed around the annulus of the casing and packed to seal the casing in place. The casing was presoaked immediately prior to the start of the test to simulate field saturated conditions. A measured amount of water was poured into the sealed casing to begin the 30-minute presoak. After the final 30-minute presoaking period, the water in the casing was adjusted to a known depth and consecutively re-adjusted after each reading and the drop of the water column is measured. The test continued until the readings became stabilized or for a maximum of eight readings. A stabilized rate of drop means a difference of ¼ inch or less of drop between the highest and lowest readings of four consecutive readings.

Within the site, four hydraulic conductivity tests were conducted at the elevations associated with the proposed bottom of the infiltration structures. One deep test pit was excavated at each infiltration test location to identify limiting conditions such as mottling, depth of bedrock, and depth of groundwater. Testing was to be conducted within the footprint of the proposed infiltration structures.

- Infiltration Test 3-23-1 was conducted at approximately  $\pm 5.0$  feet below existing grade, which corresponds to an approximate infiltration elevation of 317.0. One deep test pit was excavated at this location to a depth of 7.0 feet below existing grade. During excavation, rock was encountered at a depth of approximately 7.0 feet below existing grade.

Based on the hydraulic conductivity testing located within the footprint of the infiltration structure, D.L. Howell & Associates, Inc., recommends the following infiltration rate for the soils underlying Test 3-23-1: an infiltration rate of 1.50 inches per hour shall be used.

- Infiltration Test 3-23-2 was conducted at approximately  $\pm 4.0$  feet below existing grade, which corresponds to an approximate infiltration elevation of 314.0. One deep test pit was excavated at this location to a depth of 6.0 feet below existing grade. No limiting conditions were identified at the time of excavation.

Based on the hydraulic conductivity testing located within the footprint of the infiltration structure, D.L. Howell & Associates, Inc., recommends the following infiltration rate for the soils underlying Test 3-23-2: an infiltration rate of 1.14 inches per hour shall be used.

- Infiltration Test 3-23-3 was conducted at approximately  $\pm 3.5$  feet below existing grade, which corresponds to an approximate infiltration elevation of 303.5. One deep test pit was excavated at this location to a depth of 5.5 feet below existing grade. During excavation, rock was encountered at a depth of approximately 5.5 feet below existing grade.

Based on the hydraulic conductivity testing located within the footprint of the infiltration structure, D.L. Howell & Associates, Inc., recommends the following infiltration rate for the soils underlying Test 3-23-3: an infiltration rate of 1.68 inches per hour shall be used.

- Infiltration Test 3-23-4 was conducted at approximately  $\pm 5.0$  feet below existing grade, which corresponds to an approximate infiltration elevation of 298.0. One deep test pit was excavated at this location to a depth of 7.0 feet below existing grade. During excavation, groundwater was encountered at a depth of approximately 7.0 feet below existing grade.

Based on the hydraulic conductivity testing located within the footprint of the infiltration structure, D.L. Howell & Associates, Inc., recommends the following infiltration rate for the soils underlying Test 3-23-4: an infiltration rate of 1.96 inches per hour shall be used.

- Infiltration Test 3-22-5 was conducted at approximately  $\pm 6.0$  feet below existing grade, which corresponds to an approximate infiltration elevation of 334.0. One deep test pit was excavated at this location to a depth of 8.0 feet below existing grade. No limiting conditions were encountered at the time of excavation.

Based on the hydraulic conductivity testing located within the footprint of the infiltration structure, D.L. Howell & Associates, Inc., recommends the following infiltration rate for the soils underlying Test 3-22-5: an infiltration rate of 2.81 inches per hour shall be used.

- Infiltration Test 3-22-6 was conducted at approximately  $\pm 2.0$  feet below existing grade, which corresponds to an approximate infiltration elevation of 306.0. One

deep test pit was excavated at this location to a depth of 6.0 feet below existing grade. No limiting conditions were encountered at the time of excavation.

Based on the hydraulic conductivity testing located within the footprint of the infiltration structure, D.L. Howell & Associates, Inc., recommends the following infiltration rate for the soils underlying Test 3-22-6: an infiltration rate of 2.93 inches per hour shall be used.

- Infiltration Test 3-22-7 was conducted at approximately  $\pm 2.0$  feet below existing grade, which corresponds to an approximate infiltration elevation of 336.0. One deep test pit was excavated at this location to a depth of 4.0 feet below existing grade. During excavation, rock was encountered at a depth of approximately 4.0 feet below existing grade.

Based on the hydraulic conductivity testing located within the footprint of the infiltration structure, D.L. Howell & Associates, Inc., recommends the following infiltration rate for the soils underlying Test 3-22-7: an infiltration rate of 0.88 inches per hour shall be used.

- Infiltration Test 3-22-8 was conducted at approximately  $\pm 2.0$  feet below existing grade, which corresponds to an approximate infiltration elevation of 314.0. One deep test pit was excavated at this location to a depth of 4.0 feet below existing grade. During excavation, rock was encountered at a depth of approximately 4.0 feet below existing grade.

Based on the hydraulic conductivity testing located within the footprint of the infiltration structure, D.L. Howell & Associates, Inc., recommends the following infiltration rate for the soils underlying Test 3-22-8: an infiltration rate of 0.43 inches per hour shall be used.

Please reference plan drawings for exact locations and visual representation of infiltration tests and test pits. Results of the hydraulic conductivity testing and soil horizon descriptions can be found in the enclosed attachments.

### **Hydraulic Conductivity Calculation**

Coefficient of Permeability:  $K = [A/(F*D*t)] \times \ln(h1 / h2)$

Where:

- K = permeability (inches per hour)
- A = cross sectional area of cased hole
- F = shape factor (2.75 constant of flat bottom)
- D = cased hole diameter
- t = time for head change from h1 to h2
- h1 = initial height of water column in casing
- h2 = final height of water column in casing

\*Reference *Soil Hydraulic Conductivity Analysis Form* for infiltration testing data and *Soil Morphology Form* for soil profile data.





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## Stormwater Infiltration Testing &

## Hydraulic Conductivity Calculations

JOB NO.: 3868  
LOCATION: 1013 Shiloh Road  
MUNICIPALITY: Westtown Township, Chester County, Pa.  
DESCRIPTION: Stormwater Infiltration Testing

DATE: 3/22/2021  
BY: DD

### Field Test Results

WEATHER CONDITIONS: SUNNY      TEMPERATURE: 62 °F  
PRECIPITATION IN LAST 24 HOURS: None

Hole #	Depth (Inches)	Readings								
		Pre-Soak	1st	2nd	3rd	4th	5th	6th	7th	8th
<b>Test 3-22-5</b>	72									
Time(min.)		30	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>
Drop(inches)		15.00	14.75	14.75	14.50	14.50	n/a	n/a	n/a	n/a
Initial Water Level Depth (inches)		18	18	18	18	18	n/a	n/a	n/a	n/a

Hole #	Depth (Inches)	Readings								
		Pre-Soak	1st	2nd	3rd	4th	5th	6th	7th	8th
<b>Test 3-22-6</b>	24									
Time(min.)		30	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>
Drop(inches)		15.25	15.00	14.75	14.75	14.75	n/a	n/a	n/a	n/a
Initial Water Level Depth (inches)		18	18	18	18	18	n/a	n/a	n/a	n/a

### Determination of Hydraulic Conductivity (Kv)

$$Kv = [ A/(F*D*t) ] * \ln(h1/h2)$$

- Kv* = Vertical Permeability
- A* = Cross-sectional area of cased hole
- F* = shape factor (2.75 constant for flat bottom)
- D* = cased hole diameter
- t* = time for head to change from h1 to h2
- h1* = initial height of water column in casing
- h2* = final height of water column in casing

#### Test 3-22-5 Results

<b>2.8062</b>	(in/hour)
7.06858	(Sq.in.)
2.75	(Units)
3	(Inches)
0.5	(hrs.)
18	(Inches)
3.50	(Inches)

#### Test 3-22-6 Results

<b>2.93319</b>	(in/hour)
7.06858	(Sq.in.)
2.75	(Units)
3	(Inches)
0.5	(hrs.)
18	(Inches)
3.25	(Inches)



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## Stormwater Infiltration Testing &

## Hydraulic Conductivity Calculations

JOB NO.: 3868  
LOCATION: 1013 Shiloh Road  
MUNICIPALITY: Westtown Township, Chester County, Pa.  
DESCRIPTION: Stormwater Infiltration Testing

DATE: 3/22/2021  
BY: DD

### Field Test Results

WEATHER CONDITIONS: SUNNY      TEMPERATURE: 62 °F  
PRECIPITATION IN LAST 24 HOURS: None

Hole #	Depth (Inches)	Readings								
		Pre-Soak	1st	2nd	3rd	4th	5th	6th	7th	8th
<b>Test 3-22-7</b>	24									
Time(min.)		30	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>
Drop(inches)		7.25	7.25	7.25	7.25	7.25	n/a	n/a	n/a	n/a
Initial Water Level Depth (inches)		18	18	18	18	18	n/a	n/a	n/a	n/a

Hole #	Depth (Inches)	Readings								
		Pre-Soak	1st	2nd	3rd	4th	5th	6th	7th	8th
<b>Test 3-22-8</b>	24									
Time(min.)		30	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>
Drop(inches)		4.25	4.00	4.00	4.00	4.00	n/a	n/a	n/a	n/a
Initial Water Level Depth (inches)		18	18	18	18	18	n/a	n/a	n/a	n/a

### Determination of Hydraulic Conductivity (Kv)

$$Kv = [ A/(F*D*t) ] * \ln(h1/h2)$$

- Kv* = Vertical Permeability
- A* = Cross-sectional area of cased hole
- F* = shape factor (2.75 constant for flat bottom)
- D* = cased hole diameter
- t* = time for head to change from *h1* to *h2*
- h1* = initial height of water column in casing
- h2* = final height of water column in casing

#### Test 3-22-7 Results

<b>0.8833</b>	(in/hour)
7.06858	(Sq.in.)
2.75	(Units)
3	(Inches)
0.5	(hrs.)
18	(Inches)
10.75	(Inches)

#### Test 3-22-8 Results

<b>0.43065</b>	(in/hour)
7.06858	(Sq.in.)
2.75	(Units)
3	(Inches)
0.5	(hrs.)
18	(Inches)
14.00	(Inches)



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Stormwater Infiltration Testing &

Hydraulic Conductivity Calculations

JOB NO.: 3868  
 LOCATION: 1013 Shiloh Road  
 MUNICIPALITY: Westtown Township, Chester County, Pa.  
 DESCRIPTION: Stormwater Infiltration Testing

DATE: 3/23/2021  
 BY: DD

**Field Test Results**

WEATHER CONDITIONS: SUNNY      TEMPERATURE: 64 °F  
 PRECIPITATION IN LAST 24 HOURS: None

Hole #	Depth (Inches)	Readings								
		Pre-Soak	1st	2nd	3rd	4th	5th	6th	7th	8th
<b>Test 3-23-1</b>	60									
Time(min.)		30	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>
Drop(inches)		11.75	10.50	10.50	10.50	10.50	n/a	n/a	n/a	n/a
Initial Water Level Depth (inches)		18	18	18	18	18	n/a	n/a	n/a	n/a

Hole #	Depth (Inches)	Readings								
		Pre-Soak	1st	2nd	3rd	4th	5th	6th	7th	8th
<b>Test 3-23-2</b>	48									
Time(min.)		30	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>
Drop(inches)		10.50	8.75	8.75	8.75	8.75	n/a	n/a	n/a	n/a
Initial Water Level Depth (inches)		18	18	18	18	18	n/a	n/a	n/a	n/a

**Determination of Hydraulic Conductivity (Kv)**

$$Kv = [ A/(F*D*t) ] * \ln(h1/h2)$$

- Kv* = Vertical Permeability
- A* = Cross-sectional area of cased hole
- F* = shape factor (2.75 constant for flat bottom)
- D* = cased hole diameter
- t* = time for head to change from h1 to h2
- h1* = initial height of water column in casing
- h2* = final height of water column in casing

**Test 3-23-1 Results**

<b>1.5002</b>	(in/hour)
7.06858	(Sq.in.)
2.75	(Units)
3	(Inches)
0.5	(hrs.)
18	(Inches)
7.50	(Inches)

**Test 3-23-2 Results**

<b>1.14082</b>	(in/hour)
7.06858	(Sq.in.)
2.75	(Units)
3	(Inches)
0.5	(hrs.)
18	(Inches)
9.25	(Inches)



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## Stormwater Infiltration Testing &

## Hydraulic Conductivity Calculations

JOB NO.: 3868  
LOCATION: 1013 Shiloh Road  
MUNICIPALITY: Westtown Township, Chester County, Pa.  
DESCRIPTION: Stormwater Infiltration Testing

DATE: 3/23/2021  
BY: DD

### Field Test Results

WEATHER CONDITIONS: SUNNY      TEMPERATURE: 64 °F  
PRECIPITATION IN LAST 24 HOURS: None

Hole #	Depth (Inches)	Readings								
		Pre-Soak	1st	2nd	3rd	4th	5th	6th	7th	8th
<b>Test 3-23-3</b>	42									
Time(min.)		30	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>
Drop(inches)		11.75	11.25	11.25	11.25	11.25	n/a	n/a	n/a	n/a
Initial Water Level Depth (inches)		18	18	18	18	18	n/a	n/a	n/a	n/a

Hole #	Depth (Inches)	Readings								
		Pre-Soak	1st	2nd	3rd	4th	5th	6th	7th	8th
<b>Test 3-23-4</b>	60									
Time(min.)		30	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>
Drop(inches)		12.25	12.25	12.25	12.25	12.25	n/a	n/a	n/a	n/a
Initial Water Level Depth (inches)		18	18	18	18	18	n/a	n/a	n/a	n/a

### Determination of Hydraulic Conductivity (Kv)

$$Kv = [ A/(F*D*t) ] * \ln(h1/h2)$$

- Kv* = Vertical Permeability
- A* = Cross-sectional area of cased hole
- F* = shape factor (2.75 constant for flat bottom)
- D* = cased hole diameter
- t* = time for head to change from h1 to h2
- h1* = initial height of water column in casing
- h2* = final height of water column in casing

#### Test 3-23-3 Results

<b>1.68075</b>	(in/hour)
7.06858	(Sq.in.)
2.75	(Units)
3	(Inches)
0.5	(hrs.)
18	(Inches)
6.75	(Inches)

#### Test 3-23-4 Results

<b>1.95551</b>	(in/hour)
7.06858	(Sq.in.)
2.75	(Units)
3	(Inches)
0.5	(hrs.)
18	(Inches)
5.75	(Inches)

## Soil Morphology Form



PIT NUMBER: TP 3-23-1    DLH NUMBER: 3868    INVESTIGATOR: DWD  
 DATE: 3/23/2021    STATE: PA    COUNTY: CHESTER  
 MUNICIPALITY: WESTTOWN TOWNSHIP    CLIENT: KEYSTONE CUSTOM HOMES  
 SUBDIVISION: STOKES ESTATE    SITE LOCATION: 1013 SHILOH ROAD  
 MORPHOLOGIC DETERMINATION:    SEWAGE    **STORMWATER**    SHWT SOILS

Horizon	Depth		Boundary		Color	Texture	%CFs	REDOX			Structure	Consistence	NOTES
	Upper	Lower	Distrnct	Topo				A	S	C			
	0	11	A	W	10 YR 4/2	SILT LOAM	0				GRAN	FRI	
	11	46	A	W	10 YR 5/6	SILTY CLAY	0				MA	FIRM	
	46	84			VAR	SANDY SILT	0				GRAN	LO	

COMMENTS: This Deep Test Pit was conducted at Test 3-23-1. During excavation, rock was encountered at a depth of approximately 84 inches below existing grade.

SOIL TYPE: LIMITING CONDITION: Rock Type: Water <b>Rock</b> Mottling Depth: ~84"	Soil Drainage Class: Excessively Drained    Somewhat Poorly Drained <b>Well Drained</b> Poorly Drained Moderately Well Drained    Very Poorly Drained	Soil Scientist Signature:
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WEATHER: 64° Sunny    METHOD: Excavator  
 SLOPE: \_\_\_\_\_    EXCAVATION DEPTH: 84"  
 COVER: Meadow    LANDSCAPE POSITION: SW

REDOX – Redoxymorphic features (Drainage Mottling) A/S/C – Abundance/Size/Contrast  
 Roots/Pores – f – few, c – common, m – many / f – fine, m – medium, c – coarse

### Soil Morphology Form



PIT NUMBER: TP 3-23-2      DLH NUMBER: 3868      INVESTIGATOR: DWD  
 DATE: 3/23/2021      STATE: PA      COUNTY: CHESTER  
 MUNICIPALITY: WESTTOWN TOWNSHIP      CLIENT: KEYSTONE CUSTOM HOMES  
 SUBDIVISION: STOKES ESTATE      SITE LOCATION: 1013 SHILOH ROAD  
 MORPHOLOGIC DETERMINATION:      SEWAGE      **STORMWATER**      SHWT SOILS

Horizon	Depth		Boundary		Color	Texture	%CFs	REDOX			Structure	Consistence	NOTES
	Upper	Lower	Distrinct	Topo				A	S	C			
	0	9	A	W	10 YR 4/2	SILT LOAM	0				GRAN	FRI	
	9	35	A	IR	10 YR 5/6	SILTY CLAY	0				MA	FIRM	
	35	72			VAR	SANDY SILT	0				GRAN	FRI	

COMMENTS: This Deep Test Pit was conducted at Test 3-23-2. No limiting conditions were identified at the time of excavation.

SOIL TYPE: LIMITING CONDITION: Type:    Water    Rock    Mottling Depth: +72"	Soil Drainage Class: Excessively Drained      Somewhat Poorly Drained <b>Well Drained</b> Poorly Drained Moderately Well Drained    Very Poorly Drained	Soil Scientist Signature:
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WEATHER: 64° Sunny      METHOD: Excavator  
 SLOPE: \_\_\_\_\_      EXCAVATION DEPTH: 72"  
 COVER: Meadow      LANDSCAPE POSITION: S

REDOX – Redoxymorphic features (Drainage Mottling) A/S/C – Abundance/Size/Contrast  
 Roots/Pores – f – few, c – common, m – many / f – fine, m – medium, c – coarse

### Soil Morphology Form



PIT NUMBER: TP 3-23-3 DLH NUMBER: 3868 INVESTIGATOR: DWD  
 DATE: 3/23/2021 STATE: PA COUNTY: CHESTER  
 MUNICIPALITY: WESTTOWN TOWNSHIP CLIENT: KEYSTONE CUSTOM HOMES  
 SUBDIVISION: STOKES ESTATE SITE LOCATION: 1013 SHILOH ROAD  
 MORPHOLOGIC DETERMINATION: SEWAGE **STORMWATER** SHWT SOILS

Horizon	Depth		Boundary		Color	Texture	%CFs	REDOX			Structure	Consistence	NOTES
	Upper	Lower	Distrinct	Topo				A	S	C			
	0	11	A	W	10 YR 4/2	SILT LOAM	0				GRAN	FRI	
	11	47	A	W	10 YR 5/6	SILTY CLAY	0				MA	FIRM	
	47	66			10 YR 3/4	STONY SILT	<20				GRAN	LO	

COMMENTS: This Deep Test Pit was conducted at Test 3-23-1. During excavation, rock was encountered at a depth of approximately 66 inches below existing grade.

SOIL TYPE: LIMITING CONDITION: Rock Type: Water <b>Rock</b> Mottling Depth: ~66"	Soil Drainage Class: Excessively Drained      Somewhat Poorly Drained <b>Well Drained</b> Poorly Drained Moderately Well Drained      Very Poorly Drained	Soil Scientist Signature:
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WEATHER: 64° Sunny METHOD: Excavator  
 SLOPE: \_\_\_\_\_ EXCAVATION DEPTH: 66"  
 COVER: Meadow LANDSCAPE POSITION: S

REDOX – Redoxymorphic features (Drainage Mottling) A/S/C – Abundance/Size/Contrast  
 Roots/Pores – f – few, c – common, m – many / f – fine, m – medium, c – coarse

## Soil Morphology Form



PIT NUMBER: TP 3-23-4 DLH NUMBER: 3868 INVESTIGATOR: DWD  
 DATE: 3/23/2021 STATE: PA COUNTY: CHESTER  
 MUNICIPALITY: WESTTOWN TOWNSHIP CLIENT: KEYSTONE CUSTOM HOMES  
 SUBDIVISION: STOKES ESTATE SITE LOCATION: 1013 SHILOH ROAD  
 MORPHOLOGIC DETERMINATION: SEWAGE **STORMWATER** SHWT SOILS

Horizon	Depth		Boundary		Color	Texture	%CFs	REDOX			Structure	Consistence	NOTES
	Upper	Lower	Distrinct	Topo				A	S	C			
	0	8	A	W	10 YR 4/2	SILT LOAM	0				GRAN	FRI	
	8	31	A	W	10 YR 4/4	SILTY CLAY	0				MA	FIRM	
	31	47	G	W	10 YR 6/4	SILT LOAM	0				MA	FRI	
	47	84			VAR	SANDY SILT					GRAN	LO	

COMMENTS: This Deep Test Pit was conducted at Test 3-23-4. During excavation, groundwater was encountered at a depth of approximately 84 inches below existing grade.

SOIL TYPE:  LIMITING CONDITION: Groundwater Type: <b>Water</b> <b>Rock</b> Mottling Depth: ~84"	Soil Drainage Class:  Excessively Drained      Somewhat Poorly Drained <b>Well Drained</b> Poorly Drained Moderately Well Drained      Very Poorly Drained	Soil Scientist Signature:
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WEATHER: 64° Sunny METHOD: Excavator  
 SLOPE: \_\_\_\_\_ EXCAVATION DEPTH: 84"  
 COVER: Meadow LANDSCAPE POSITION: S

REDOX – Redoxymorphic features (Drainage Mottling) A/S/C – Abundance/Size/Contrast  
 Roots/Pores – f – few, c – common, m – many / f – fine, m – medium, c – coarse



### Soil Morphology Form



PIT NUMBER: TP 3-22-1 DLH NUMBER: 3868 INVESTIGATOR: DWD  
 DATE: 3/22/2021 STATE: PA COUNTY: CHESTER  
 MUNICIPALITY: WESTTOWN TOWNSHIP CLIENT: KEYSTONE CUSTOM HOMES  
 SUBDIVISION: STOKES ESTATE SITE LOCATION: 1013 SHILOH ROAD  
 MORPHOLOGIC DETERMINATION: SEWAGE **STORMWATER** SHWT SOILS

Horizon	Depth		Boundary		Color	Texture	%CFs	REDOX			Structure	Consistence	NOTES
	Upper	Lower	Distrinct	Topo				A	S	C			
	0	5	A	W	10 YR 4/2	SILT LOAM	0				SBK	FRI	
	5	50	A	W	7.5 YR 4/3	SILTY CLAY	0				MA	FIRM	
	50	96			VAR	SILT LOAM	0				GRAN	FRI	

COMMENTS: This Deep Test Pit was conducted at Test 3-22-5. No limiting conditions were identified at the time of excavation.

SOIL TYPE:	Soil Drainage Class:	Soil Scientist Signature:
LIMITING CONDITION:	Excessively Drained      Somewhat Poorly Drained	
Type:    Water    Rock    Mottling	Well Drained <b>Poorly Drained</b>	
Depth: +96"	Moderately Well Drained      Very Poorly Drained	

WEATHER: 62° Sunny METHOD: Excavator  
 SLOPE: \_\_\_\_\_ EXCAVATION DEPTH: 96"  
 COVER: Meadow LANDSCAPE POSITION: SW

REDOX – Redoxymorphic features (Drainage Mottling) A/S/C – Abundance/Size/Contrast  
 Roots/Pores – f – few, c – common, m – many / f – fine, m – medium, c – coarse

### Soil Morphology Form



PIT NUMBER: TP 3-22-6 DLH NUMBER: 3868 INVESTIGATOR: DWD  
 DATE: 3/22/2021 STATE: PA COUNTY: CHESTER  
 MUNICIPALITY: WESTTOWN TOWNSHIP CLIENT: KEYSTONE CUSTOM HOMES  
 SUBDIVISION: STOKES ESTATE SITE LOCATION: 1013 SHILOH ROAD  
 MORPHOLOGIC DETERMINATION: SEWAGE **STORMWATER** SHWT SOILS

Horizon	Depth		Boundary		Color	Texture	%CFs	REDOX			Structure	Consistence	NOTES
	Upper	Lower	Distrinct	Topo				A	S	C			
	0	7	A	W	10 YR 4/2	SILT LOAM	0				MA	FRI	
	7	35	A	W	10 YR 4/3	SILTY CLAY	0				MA	FIRM	
	35	72			VAR	SANDY SILT	0				GRAN	FRI	

COMMENTS: This Deep Test Pit was conducted at Test 3-22-6. No limiting conditions were identified at the time of excavation.

SOIL TYPE: LIMITING CONDITION: Rock Type: Water <b>Rock</b> Mottling Depth: ~84"	Soil Drainage Class: Excessively Drained      Somewhat Poorly Drained Well Drained <b>Poorly Drained</b> Moderately Well Drained      Very Poorly Drained	Soil Scientist Signature:
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WEATHER: 62° Sunny METHOD: Excavator  
 SLOPE: \_\_\_\_\_ EXCAVATION DEPTH: 84"  
 COVER: Meadow LANDSCAPE POSITION: SW

REDOX – Redoxymorphic features (Drainage Mottling) A/S/C – Abundance/Size/Contrast  
 Roots/Pores – f – few, c – common, m – many / f – fine, m – medium, c – coarse

### Soil Morphology Form



PIT NUMBER: TP 3-22-7 DLH NUMBER: 3868 INVESTIGATOR: DWD  
 DATE: 3/22/2021 STATE: PA COUNTY: CHESTER  
 MUNICIPALITY: WESTTOWN TOWNSHIP CLIENT: KEYSTONE CUSTOM HOMES  
 SUBDIVISION: STOKES ESTATE SITE LOCATION: 1013 SHILOH ROAD  
 MORPHOLOGIC DETERMINATION: SEWAGE **STORMWATER** SHWT SOILS

Horizon	Depth		Boundary		Color	Texture	%CFs	REDOX			Structure	Consistence	NOTES
	Upper	Lower	Distrinct	Topo				A	S	C			
	0	4	A	W	10 YR 4/2	SILT LOAM	0				GRAN	FRI	
	4	48			10 YR 5/4	STONY SILT	<20				GRAN	FRI	

COMMENTS: This Deep Test Pit was conducted at Test 3-22-7. During excavation, rock was encountered at a depth of approximately 48 inches below existing grade.

SOIL TYPE: LIMITING CONDITION: Rock Type: Water <b>Rock</b> Mottling Depth: ~48"	Soil Drainage Class: Excessively Drained      Somewhat Poorly Drained Well Drained                  Poorly Drained <b>Moderately Well Drained</b> Very Poorly Drained	Soil Scientist Signature:
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WEATHER: 62° Sunny METHOD: Excavator  
 SLOPE: \_\_\_\_\_ EXCAVATION DEPTH: 48"  
 COVER: Meadow LANDSCAPE POSITION: NE

REDOX – Redoxymorphic features (Drainage Mottling) A/S/C – Abundance/Size/Contrast  
 Roots/Pores – f – few, c – common, m – many / f – fine, m – medium, c – coarse

### Soil Morphology Form



PIT NUMBER: TP 3-22-8 DLH NUMBER: 3868 INVESTIGATOR: DWD  
 DATE: 3/22/2021 STATE: PA COUNTY: CHESTER  
 MUNICIPALITY: WESTTOWN TOWNSHIP CLIENT: KEYSTONE CUSTOM HOMES  
 SUBDIVISION: STOKES ESTATE SITE LOCATION: 1013 SHILOH ROAD  
 MORPHOLOGIC DETERMINATION: SEWAGE **STORMWATER** SHWT SOILS

Horizon	Depth		Boundary		Color	Texture	%CFs	REDOX			Structure	Consistence	NOTES
	Upper	Lower	Distrinct	Topo				A	S	C			
	0	3	A	W	10 YR 3/1	SILT LOAM	0				GRAN	FRI	
	3	11	A	W	2.5 Y 5/3	SILTY CLAY	0				MA	FRI	
	11	31	G	W	10 YR 5/6	SILTY CLAY	0				MA	FRI	
	31	48			10 YR 4/4	STONY SILT	<20				GRAN	FRI	

COMMENTS: This Deep Test Pit was conducted at Test 3-22-8. During excavation, rock was encountered at a depth of approximately 48 inches below existing grade.

SOIL TYPE: LIMITING CONDITION: Rock Type: Water <b>Rock</b> Mottling Depth: ~48"	Soil Drainage Class: Excessively Drained      Somewhat Poorly Drained Well Drained                  Poorly Drained <b>Moderately Well Drained</b> Very Poorly Drained	Soil Scientist Signature:
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WEATHER: 62° Sunny METHOD: Excavator  
 SLOPE: \_\_\_\_\_ EXCAVATION DEPTH: 48"  
 COVER: Woodlands LANDSCAPE POSITION: NE

REDOX – Redoxymorphic features (Drainage Mottling) A/S/C – Abundance/Size/Contrast  
 Roots/Pores – f – few, c – common, m – many / f – fine, m – medium, c – coarse

# STORMWATER INFILTRATION REPORT

FOR

**1007, 1011, 1013 SHILOH ROAD  
WESTTOWN TOWNSHIP  
CHESTER COUNTY**

PREPARED FOR:

**Keystone Custom Homes  
227 Granite Run Drive, Suite 100  
Lancaster, PA 17601**

PREPARED BY:

**Howell Engineering  
1250 Wrights Lane  
West Chester, PA 19380**

February 2023

**Stormwater Infiltration Test Report**  
**1007, 1011, 1013 Shiloh Road**  
**Westtown Township**  
**Chester County**

On Wednesday-Thursday, February 1-2, 2023, Howell Engineering performed hydraulic conductivity tests for the proposed stormwater management areas for the properties located at 1107, 1011, and 1013 Shiloh Road in Westtown Township, Chester County. The purpose of the hydraulic conductivity testing was to determine site suitability for the proposed stormwater infiltration area associated with proposed improvements at the site (see development plan).

Testing was conducted in general accordance with the Pennsylvania Department of Environmental Protection (PADEP)'s Pennsylvania Stormwater Best Management Practices Manual specifications, in a cased, sealed, borehole utilizing the falling head method designed to measure the vertical hydraulic conductivity of the soil. An approximate five-inch diameter borehole was hand dug to the depth of the proposed bottom elevation of the infiltration structure and a 3-inch diameter PVC casing was installed. A mixture of bentonite and soil was placed around the annulus of the casing and packed to seal the casing in place. The casing was presoaked immediately prior to the start of the test to simulate field saturated conditions. A measured amount of water was poured into the sealed casing to begin the 30-minute presoak. After the final 30-minute presoaking period, the water in the casing was adjusted to a known depth and consecutively re-adjusted after each reading and the drop of the water column is measured. The test continued until the readings became stabilized or for a maximum of eight readings. A stabilized rate of drop means a difference of ¼ inch or less of drop between the highest and lowest readings of four consecutive readings.

On lot 1007 Shiloh Road (O'Brien property), one hydraulic conductivity test was conducted within the proposed infiltration area at the elevation associated with the proposed bottom of the infiltration structure. One deep test pit was excavated at this infiltration test to identify limiting conditions such as mottling, depth of bedrock, and depth of groundwater. Testing was to be conducted within the footprint of the proposed infiltration structure.

- Infiltration Test 2-1-1 was conducted at approximately  $\pm 6.0$  feet below existing grade, which corresponds to an approximate infiltration elevation of 336.50. One deep test pit was excavated at this location to a depth of 9.0 feet below existing grade. During excavation, redoximorphic features were identified between 6-54 inches below existing grade. It is the opinion of Howell Engineering the observed redox was a result of variable permeability within that specific soil horizon and not an indication of a seasonably high water table.

Based on the hydraulic conductivity testing located within the footprint of the infiltration structure, Howell Engineering recommends the following infiltration rate for the soils underlying Test 2-1-1: an infiltration rate of 0.15 inches per hour shall be used.

On lot 1011 Shiloh Road (Galilea property), one hydraulic conductivity test was conducted within the proposed infiltration area at the elevation associated with the proposed bottom of the infiltration structure. One deep test pit was excavated at this infiltration test to identify limiting conditions such as mottling, depth of bedrock, and depth of groundwater. Testing was to be conducted within the footprint of the proposed infiltration structure.

- Infiltration Test 2-2-1 was conducted at approximately  $\pm$  4.0 feet below existing grade, which corresponds to an approximate infiltration elevation of 332.2. One deep test pit was excavated at this location to a depth of 76 inches below existing grade. During excavation, groundwater was encountered at a depth of approximately 76 inches below existing grade.

Based on the hydraulic conductivity testing located within the footprint of the infiltration structure, Howell Engineering recommends the following infiltration rate for the soils underlying Test 2-2-1: an infiltration rate of 0.20 inches per hour shall be used.

- A second infiltration test (2-2-2) was proposed on this property. During excavation, groundwater was encountered at a depth of approximately 26 inches below existing grade. AS a result of the groundwater encountered, no infiltration testing was conducted at this location.

On lot 1013 Shiloh Road (Stokes property), one hydraulic conductivity test was conducted within the proposed infiltration area at the elevation associated with the proposed bottom of the infiltration structure. One deep test pit was excavated at this infiltration test to identify limiting conditions such as mottling, depth of bedrock, and depth of groundwater. Testing was to be conducted within the footprint of the proposed infiltration structure.

- Infiltration Test 2-2-3 was conducted at approximately  $\pm$  7.0 feet below existing grade, which corresponds to an approximate infiltration elevation of 336.0. One deep test pit was excavated at this location to a depth of 9.0 feet below existing grade. No limiting conditions were identified at the time of excavation.

Based on the hydraulic conductivity testing located within the footprint of the infiltration structure, Howell Engineering recommends the following infiltration rate for the soils underlying Test 2-2-3: an infiltration rate of 0.77 inches per hour shall be used.

Please reference plan drawings for exact locations and visual representation of infiltration tests and test pits. Results of the hydraulic conductivity testing and soil horizon descriptions can be found in the enclosed attachments.

### **Hydraulic Conductivity Calculation**

Coefficient of Permeability:  $K = [A/(F*D*t)] \times \ln (h1 / h2)$

Where:        K = permeability (inches per hour)  
               A = cross sectional area of cased hole  
               F = shape factor (2.75 constant of flat bottom)  
               D = cased hole diameter  
               t = time for head change from h1 to h2  
               h1 = initial height of water column in casing  
               h2 = final height of water column in casing

\*Reference *Soil Hydraulic Conductivity Analysis Form* for infiltration testing data and *Soil Morphology Form* for soil profile data.



JOB NO.: 3868  
 LOCATION: 1011-1013 Shiloh Road  
 MUNICIPALITY: Westtown Township, Chester County, Pa.  
 DESCRIPTION: Stormwater Infiltration Testing

DATE: 2/2/2023  
 BY: DWD

**Field Test Results**

WEATHER CONDITIONS: SUNNY TEMPERATURE: 43 °F  
 PRECIPITATION IN LAST 24 HOURS: None

Hole #	Depth (Inches)	Readings								
		Pre-Soak	1st	2nd	3rd	4th	5th	6th	7th	8th
<b>Test 2-2-1</b>	48									
Time(min.)		30	30	30	30	30	30	30	30	30
Drop(inches)		2.50	2.00	2.00	2.00	2.00	n/a	n/a	n/a	n/a
Initial Water Level Depth (inches)		18	18	18	18	18	n/a	n/a	n/a	n/a

Hole #	Depth (Inches)	Readings								
		Pre-Soak	1st	2nd	3rd	4th	5th	6th	7th	8th
<b>Test 2-2-3</b>	84									
Time(min.)		30	30	30	30	30	30	30	30	30
Drop(inches)		8.75	6.50	6.50	6.50	6.50	n/a	n/a	n/a	n/a
Initial Water Level Depth (inches)		18	18	18	18	18	n/a	n/a	n/a	n/a

**Determination of Hydraulic Conductivity (Kv)**

$$Kv = [ A/F*D*t ] * \ln(h1/h2)$$

- Kv* = Vertical Permeability
- A* = Cross-sectional area of cased hole
- F* = shape factor (2.75 constant for flat bottom)
- D* = cased hole diameter
- t* = time for head to change from h1 to h2
- h1* = initial height of water column in casing
- h2* = final height of water column in casing

Test 2-2-1 Results

<b>0.201833</b>	(in/hour)
7.068583	(Sq.in.)
2.75	(Units)
3	(Inches)
0.5	(hrs.)
18	(Inches)
16.00	(Inches)

Test 2-2-3 Results

<b>0.767733</b>	(in/hour)
7.068583	(Sq.in.)
2.75	(Units)
3	(Inches)
0.5	(hrs.)
18	(Inches)
11.50	(Inches)

JOB NO.: 3868  
 LOCATION: 1007 Shiloh Road  
 MUNICIPALITY: Westtown Township, Chester County, Pa.  
 DESCRIPTION: Stormwater Infiltration Testing

DATE: 2/1/2023  
 BY: DWD

### Field Test Results

WEATHER CONDITIONS: SUNNY      TEMPERATURE: 41 °F  
 PRECIPITATION IN LAST 24 HOURS: None

Hole #	Depth (Inches)	Readings								
		Pre-Soak	1st	2nd	3rd	4th	5th	6th	7th	8th
<b>Test 2-1-1</b>	72									
Time(min.)		30	30	30	30	30	30	30	30	30
Drop(inches)		1.50	1.50	1.50	1.50	1.50	n/a	n/a	n/a	n/a
Initial Water Level Depth (inches)		18	18	18	18	18	18	18	n/a	n/a

Hole #	Depth (Inches)	Readings								
		Pre-Soak	1st	2nd	3rd	4th	5th	6th	7th	8th
<b>Test</b>										
Time(min.)		30	30	30	30	30	30	30	30	30
Drop(inches)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Initial Water Level Depth (inches)		18	18	18	18	18	n/a	n/a	n/a	n/a

### Determination of Hydraulic Conductivity (Kv)

$$Kv = [ A/F \cdot D \cdot t ] \cdot \ln(h1/h2)$$

*Kv = Vertical Permeability*  
*A = Cross-sectional area of cased hole*  
*F = shape factor (2.75 constant for flat bottom)*  
*D = cased hole diameter*  
*t = time for head to change from h1 to h2*  
*h1 = initial height of water column in casing*  
*h2 = final height of water column in casing*

#### Test 2-1-1 Results

<b>0.1491</b>	(in/hour)
7.06858	(Sq.in.)
2.75	(Units)
3	(Inches)
0.5	(hrs.)
18	(Inches)
16.50	(Inches)

#### Test Results

	(in/hour)
7.0686	(Sq.in.)
2.75	(Units)
3	(Inches)
0.5	(hrs.)
18	(Inches)
	(Inches)

**Test Permeability**      **0.15 (in./hr)**

### Soil Morphology Form



PIT NUMBER: TP 2-1-1      JOB NUMBER: 3868      INVESTIGATOR: DWD  
 DATE: 2/1/2023      STATE: PA      COUNTY: CHESTER  
 MUNICIPALITY: WESTTOWN TOWNSHIP      CLIENT: KEYSTONE CUSTOM HOMES  
 SUBDIVISION: N/A      SITE LOCATION: 1007 SHILOH RD  
 MORPHOLOGIC DETERMINATION:      SEWAGE      **STORMWATER**      SHWT SOILS

Horizon	Depth		Boundary		Color	Texture	%CFs	REDOX			Structure	Consistence	NOTES
	Upper	Lower	Distrnct	Topo				A	S	C			
	0	6	G	S	10 YR 4/2	SILT LOAM	0				GRAN	FRI	
	6	54	A	W	10 YR 6/4	SILTY CLAY	0				MA	VFIRM	
	54	88	A	W	10 YR 4/3	STONY SILT	<20				GRAN	FIRM	
	88	108			10 YR 5/4	SILT LOAM	0				GRAN	LO	

COMMENTS: This Deep Test Pit was conducted at Test 2-1-1. Redoximorphic (redox) features were encountered from approximately 6-54 inches below existing grade.

SOIL TYPE:  LIMITING CONDITION: Type:    Water    Rock    Mottling Depth: +108"	Soil Drainage Class:  Excessively Drained      Somewhat Poorly Drained Well Drained <b>Poorly Drained</b> Moderately Well Drained      Very Poorly Drained	Soil Scientist Signature:
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WEATHER: 41° Mostly Sunny      METHOD: Excavator  
 SLOPE: \_\_\_\_\_      EXCAVATION DEPTH: 108"  
 COVER: Lawn      LANDSCAPE POSITION: N

REDOX – Redoxymorphic features (Drainage Mottling) A/S/C – Abundance/Size/Contrast  
 Roots/Pores – f – few, c – common, m – many / f – fine, m – medium, c – coarse

### Soil Morphology Form



PIT NUMBER: TP 2-2-1      JOB NUMBER: 3868      INVESTIGATOR: DWD  
 DATE: 2/2/2023      STATE: PA      COUNTY: CHESTER  
 MUNICIPALITY: WESTTOWN TOWNSHIP      CLIENT: KEYSTONE CUSTOM HOMES  
 SUBDIVISION: N/A      SITE LOCATION: 1011 SHILOH RD  
 MORPHOLOGIC DETERMINATION:      SEWAGE      **STORMWATER**      SHWT SOILS

Horizon	Depth		Boundary		Color	Texture	%CFs	REDOX			Structure	Consistence	NOTES
	Upper	Lower	Distrinct	Topo				A	S	C			
	0	6	G	S	10 YR 4/2	SILT LOAM	0				GRAN	FRI	
	6	20	A	W	10 YR 4/4	SILTY CLAY	0				MA	FRI	
	20	48	A	W	2.5 Y 6/4	SILTY CLAY	0				MA	FIRM	
	48	76			10 YR 5/1	SANDY SILT	0				GRAN	FRI	

COMMENTS: This Deep Test Pit was conducted at Test 2-2-1. Groundwater was encountered at approximately 76 inches below existing grade.

SOIL TYPE: LIMITING CONDITION: Groundwater Type: <b>Water</b> Rock    Mottling Depth: ~76"	Soil Drainage Class: Excessively Drained <b>Somewhat Poorly Drained</b> Well Drained                  Poorly Drained Moderately Well Drained    Very Poorly Drained	Soil Scientist Signature:
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WEATHER: 43° Mostly Sunny      METHOD: Excavator  
 SLOPE: \_\_\_\_\_      EXCAVATION DEPTH: 76"  
 COVER: Lawn      LANDSCAPE POSITION: E

REDOX – Redoxymorphic features (Drainage Mottling) A/S/C – Abundance/Size/Contrast  
 Roots/Pores – f – few, c – common, m – many / f – fine, m – medium, c – coarse

### Soil Morphology Form



PIT NUMBER: TP 2-2-3      JOB NUMBER: 3868      INVESTIGATOR: DWD  
 DATE: 2/2/2023      STATE: PA      COUNTY: CHESTER  
 MUNICIPALITY: WESTTOWN TOWNSHIP      CLIENT: KEYSTONE CUSTOM HOMES  
 SUBDIVISION: N/A      SITE LOCATION: 1013 SHILOH RD  
 MORPHOLOGIC DETERMINATION:      SEWAGE      **STORMWATER**      SHWT SOILS

Horizon	Depth		Boundary		Color	Texture	%CFs	REDOX			Structure	Consistence	NOTES
	Upper	Lower	District	Topo				A	S	C			
	0	7	G	S	10 YR 4/3	SILT LOAM	0				GRAN	FRI	
	7	35	A	W	10 YR 5/4	SILTY CLAY	0				MA	FRI	
	35	108			VAR	SANDY SILT	0				GRAN	FRI	

COMMENTS: This Deep Test Pit was conducted at Test 2-2-3. No limiting conditions were identified at the time of excavation.

SOIL TYPE: LIMITING CONDITION: Type:    Water    Rock    Mottling Depth: +108"	Soil Drainage Class: Excessively Drained      Somewhat Poorly Drained Well Drained              Poorly Drained <b>Moderately Well Drained</b> Very Poorly Drained	Soil Scientist Signature:
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WEATHER: 43° Mostly Sunny      METHOD: Excavator  
 SLOPE: \_\_\_\_\_      EXCAVATION DEPTH: 108"  
 COVER: Lawn      LANDSCAPE POSITION: W

REDOX – Redoxymorphic features (Drainage Mottling) A/S/C – Abundance/Size/Contrast  
 Roots/Pores – f – few, c – common, m – many / f – fine, m – medium, c – coarse

# STORMWATER INFILTRATION REPORT

FOR

**1007 & 1011 SHILOH ROAD  
WESTTOWN TOWNSHIP  
CHESTER COUNTY**

PREPARED FOR:

**Keystone Custom Homes  
227 Granite Run Drive, Suite 100  
Lancaster, PA 17601**

PREPARED BY:

**Howell Engineering  
1250 Wrights Lane  
West Chester, PA 19380**

March 2023

**Stormwater Infiltration Test Report**  
**1007 & 1011 Shiloh Road**  
**Westtown Township**  
**Chester County**

On Wednesday-Thursday, March 8-9, 2023, Howell Engineering performed hydraulic conductivity tests for the proposed stormwater management areas for the properties located at 1007 and 1011 Shiloh Road in Westtown Township, Chester County. The purpose of the hydraulic conductivity testing was to determine site suitability for the proposed stormwater infiltration area associated with proposed improvements at the site (see development plan).

Testing was conducted in general accordance with the Pennsylvania Department of Environmental Protection (PADEP)'s Pennsylvania Stormwater Best Management Practices Manual specifications, in a cased, sealed, borehole utilizing the falling head method designed to measure the vertical hydraulic conductivity of the soil. An approximate five-inch diameter borehole was hand dug to the depth of the proposed bottom elevation of the infiltration structure and a 3-inch diameter PVC casing was installed. A mixture of bentonite and soil was placed around the annulus of the casing and packed to seal the casing in place. The casing was presoaked immediately prior to the start of the test to simulate field saturated conditions. A measured amount of water was poured into the sealed casing to begin the 30-minute presoak. After the final 30-minute presoaking period, the water in the casing was adjusted to a known depth and consecutively re-adjusted after each reading and the drop of the water column is measured. The test continued until the readings became stabilized or for a maximum of eight readings. A stabilized rate of drop means a difference of ¼ inch or less of drop between the highest and lowest readings of four consecutive readings.

On lot 1007 Shiloh Road (Obrien property), two hydraulic conductivity tests were conducted within the proposed infiltration areas at the elevations associated with the proposed bottom of the infiltration structures. One deep test pit was excavated at each infiltration test to identify limiting conditions such as mottling, depth of bedrock, and depth of groundwater. Testing was to be conducted within the footprint of the proposed infiltration structure.

- Infiltration Test 3-9-1 was conducted at approximately  $\pm 3.0$  feet below existing grade, which corresponds to an approximate infiltration elevation of 377.0. One deep test pit was excavated at this location to a depth of 5.0 feet below existing grade. During excavation, rock was encountered at a depth of approximately 61 inches below existing grade.

Based on the hydraulic conductivity testing located within the footprint of the infiltration structure, Howell Engineering recommends the following infiltration rate for the soils underlying Test 3-9-1: an infiltration rate of 0.175 inches per hour shall be used.

- Infiltration Test 3-9-2 was conducted at approximately  $\pm 8.0$  feet below existing grade, which corresponds to an approximate infiltration elevation of 342.0. One deep test pit was excavated at this location to a depth of 10.0 feet below existing grade. No limiting conditions were identified at the time of excavation.

Based on the hydraulic conductivity testing located within the footprint of the infiltration structure, Howell Engineering recommends the following infiltration rate for the soils underlying Test 3-9-2: an infiltration rate of 2.376 inches per hour shall be used.

On lot 1011 Shiloh Road (Galilea property), three hydraulic conductivity tests were conducted within the proposed infiltration areas at the elevations associated with the proposed bottom of the infiltration structures. One deep test pit was excavated at each infiltration test to identify limiting conditions such as mottling, depth of bedrock, and depth of groundwater. Testing was to be conducted within the footprint of the proposed infiltration structures.

- Infiltration Test 3-8-1 was conducted at approximately  $\pm 8.0$  feet below existing grade, which corresponds to an approximate infiltration elevation of 364.0. One deep test pit was excavated at this location to a depth of 10.0 feet below existing grade. No limiting conditions were identified at the time of excavation.

Based on the hydraulic conductivity testing located within the footprint of the infiltration structure, Howell Engineering recommends the following infiltration rate for the soils underlying Test 3-8-1: an infiltration rate of 4.855 inches per hour shall be used.

- Infiltration Test 3-8-2 was conducted at approximately  $\pm 4.0$  feet below existing grade, which corresponds to an approximate infiltration elevation of 362.0. One deep test pit was excavated at this location to a depth of 6.0 feet below existing grade. No limiting conditions were identified at the time of excavation.

Based on the hydraulic conductivity testing located within the footprint of the infiltration structure, Howell Engineering recommends the following infiltration rate for the soils underlying Test 3-8-2: an infiltration rate of 0.284 inches per hour shall be used.

- Infiltration Test 3-8-3 was conducted at approximately  $\pm 4.0$  feet below existing grade, which corresponds to an approximate infiltration elevation of 357.0. One deep test pit was excavated at this location to a depth of 6.0 feet below existing grade. During excavation, redoximorphic features were identified from approximately 41-72 inches below existing grade.



Based on the hydraulic conductivity testing located within the footprint of the infiltration structure, Howell Engineering recommends the following infiltration rate for the soils underlying Test 3-8-3: an infiltration rate of 0.123 inches per hour shall be used.

Please reference plan drawings for exact locations and visual representation of infiltration tests and test pits. Results of the hydraulic conductivity testing and soil horizon descriptions can be found in the enclosed attachments.

### **Hydraulic Conductivity Calculation**

Coefficient of Permeability:  $K = [A/(F*D*t)] \times \ln(h1 / h2)$

Where:           K = permeability (inches per hour)  
                  A = cross sectional area of cased hole  
                  F = shape factor (2.75 constant of flat bottom)  
                  D = cased hole diameter  
                  t = time for head change from h1 to h2  
                  h1 = initial height of water column in casing  
                  h2 = final height of water column in casing

\*Reference *Soil Hydraulic Conductivity Analysis Form* for infiltration testing data and *Soil Morphology Form* for soil profile data.



Local Knowhow. Engineered.

Stormwater Infiltration Testing &

Hydraulic Conductivity Calculations

JOB NO.: 3868  
 LOCATION: 1007 Shiloh Road  
 MUNICIPALITY: Westtown Township, Chester County, Pa.  
 DESCRIPTION: Stormwater Infiltration Testing

DATE: 3/9/2023  
 BY: DWD

**Field Test Results**

WEATHER CONDITIONS: SUNNY      TEMPERATURE: 48 °F  
 PRECIPITATION IN LAST 24 HOURS: None

Hole #	Depth (Inches)	Readings								
		Pre-Soak	1st	2nd	3rd	4th	5th	6th	7th	8th
<b>Test 3-9-1</b>	36									
Time(min.)		30	30	30	30	30	30	30	30	30
Drop(inches)		2.50	2.00	1.75	1.75	1.75	n/a	n/a	n/a	n/a
Initial Water Level Depth (inches)		18	18	18	18	18	n/a	n/a	n/a	n/a

Hole #	Depth (Inches)	Readings								
		Pre-Soak	1st	2nd	3rd	4th	5th	6th	7th	8th
<b>Test 3-9-2</b>	96									
Time(min.)		30	30	30	30	30	30	30	30	30
Drop(inches)		13.50	13.50	13.50	13.50	13.50	n/a	n/a	n/a	n/a
Initial Water Level Depth (inches)		18	18	18	18	18	n/a	n/a	n/a	n/a

**Determination of Hydraulic Conductivity (Kv)**

$$Kv = [ A/F \cdot D \cdot t ] \cdot \ln(h1/h2)$$

- Kv* = Vertical Permeability
- A* = Cross-sectional area of cased hole
- F* = shape factor (2.75 constant for flat bottom)
- D* = cased hole diameter
- t* = time for head to change from h1 to h2
- h1* = initial height of water column in casing
- h2* = final height of water column in casing

Test 3-9-1 Results

Test 3-9-2 Results

<b>0.17526</b>	(in/hour)
7.06858	(Sq.in.)
2.75	(Units)
3	(Inches)
0.5	(hrs.)
18	(Inches)
16.25	(Inches)

<b>2.375548</b>	(in/hour)
7.068583	(Sq.in.)
2.75	(Units)
3	(Inches)
0.5	(hrs.)
18	(Inches)
4.50	(Inches)

JOB NO.: 3868  
 LOCATION: 1011 Shiloh Road  
 MUNICIPALITY: Westtown Township, Chester County, Pa.  
 DESCRIPTION: Stormwater Infiltration Testing

DATE: 3/8/2023  
 BY: DWD

## Field Test Results

WEATHER CONDITIONS: Mostly Sunny      TEMPERATURE: 48 °F  
 PRECIPITATION IN LAST 24 HOURS: None

Hole #	Depth (Inches)	Readings								
		Pre-Soak	1st	2nd	3rd	4th	5th	6th	7th	8th
<b>Test 3-8-1</b>	96									
Time(min.)		30	10	10	10	10	10	10	10	10
Drop(inches)		18.00	11.50	11.00	11.00	11.00	11.00	n/a	n/a	n/a
Initial Water Level Depth (inches)		18	18	18	18	18	18	n/a	n/a	n/a

Hole #	Depth (Inches)	Readings								
		Pre-Soak	1st	2nd	3rd	4th	5th	6th	7th	8th
<b>Test 3-8-2</b>	48									
Time(min.)		30	30	30	30	30	30	30	30	30
Drop(inches)		3.50	3.00	2.75	2.75	2.75	n/a	n/a	n/a	n/a
Initial Water Level Depth (inches)		18	18	18	18	18	n/a	n/a	n/a	n/a

Hole #	Depth (Inches)	Readings								
		Pre-Soak	1st	2nd	3rd	4th	5th	6th	7th	8th
<b>Test 3-8-3</b>	48									
Time(min.)		30	30	30	30	30	30	30	30	30
Drop(inches)		1.50	1.50	1.25	1.25	1.25	n/a	n/a	n/a	n/a
Initial Water Level Depth (inches)		18	18	18	18	18	n/a	n/a	n/a	n/a

## Determination of Hydraulic Conductivity (Kv)

$$Kv = [ A / (F * D * t) ] * \ln(h1/h2)$$

	Test 3-8-1 Results	Test 3-8-2 Results	Test 3-8-3 Results
<b>Kv = Vertical Permeability</b>	<b>4.85528</b> (in/hour)	<b>0.2841</b> (in/hour)	<b>0.12333</b> (in/hour)
<b>A = Cross-sectional area of cased hole</b>	7.06858 (Sq.in.)	7.06858 (Sq.in.)	7.06858 (Sq.in.)
<b>F = shape factor (2.75 constant for flat bottom)</b>	2.75 (Units)	2.75 (Units)	2.75 (Units)
<b>D = cased hole diameter</b>	3 (Inches)	3 (Inches)	3 (Inches)
<b>t = time for head to change from h1 to h2</b>	0.16667 (hrs.)	0.5 (hrs.)	0.5 (hrs.)
<b>h1 = initial height of water column in casing</b>	18 (Inches)	18 (Inches)	18 (Inches)
<b>h2 = final height of water column in casing</b>	7.00 (Inches)	15.25 (Inches)	16.75 (Inches)

### Soil Morphology Form



PIT NUMBER: TP 3-9-1      JOB NUMBER: 3868      INVESTIGATOR: DWD  
 DATE: 3/9/2023      STATE: PA      COUNTY: CHESTER  
 MUNICIPALITY: WESTTOWN TOWNSHIP      CLIENT: KEYSTONE CUSTOM HOMES  
 SUBDIVISION: N/A      SITE LOCATION: 1007 SHILOH RD  
 MORPHOLOGIC DETERMINATION:      SEWAGE      **STORMWATER**      SHWT SOILS

Horizon	Depth		Boundary		Color	Texture	%CFs	REDOX			Structure	Consistence	NOTES
	Upper	Lower	Distrnct	Topo				A	S	C			
	0	10	A	W	10 YR 4/2	SILT LOAM	0				GRAN	FRI	
	10	37	A	W	7.5 YR 4/4	SILTY CLAY	0				MA	VFIRM	
	37	61			7.5 YR 4/6	STONY SILT	<20				GRAN	FRI	

COMMENTS: This Deep Test Pit was conducted at Test 3-9-1. During excavation, rock was encountered at a depth of approximately 61 inches below existing grade.

SOIL TYPE: LIMITING CONDITION: Rock Type: Water <b>Rock</b> Mottling Depth: approx. 61"	Soil Drainage Class: Excessively Drained <b>Somewhat Poorly Drained</b> Well Drained      Poorly Drained Moderately Well Drained      Very Poorly Drained	Soil Scientist Signature:
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WEATHER: 48° Mostly Sunny      METHOD: Excavator  
 SLOPE: \_\_\_\_\_      EXCAVATION DEPTH: 61"  
 COVER: Lawn      LANDSCAPE POSITION: N

REDOX – Redoxymorphic features (Drainage Mottling) A/S/C – Abundance/Size/Contrast  
 Roots/Pores – f – few, c – common, m – many / f – fine, m – medium, c – coarse

### Soil Morphology Form



PIT NUMBER: TP 3-9-2      JOB NUMBER: 3868      INVESTIGATOR: DWD  
 DATE: 3/9/2023      STATE: PA      COUNTY: CHESTER  
 MUNICIPALITY: WESTTOWN TOWNSHIP      CLIENT: KEYSTONE CUSTOM HOMES  
 SUBDIVISION: N/A      SITE LOCATION: 1007 SHILOH RD  
 MORPHOLOGIC DETERMINATION:      SEWAGE      **STORMWATER**      SHWT SOILS

Horizon	Depth		Boundary		Color	Texture	%CFs	REDOX			Structure	Consistence	NOTES
	Upper	Lower	Distrnct	Topo				A	S	C			
	0	6	A	W	10 YR 4/2	SILT LOAM	0				SBK	FRI	
	6	24	G	S	10 YR 4/6	SILT LOAM	0				MA	FRI	
	24	57	G	S	10 YR 4/3	SILT LOAM	0				GRAN	FRI	
	57	120			VAR	SANDY SILT	0				GRAN	LO	some large rock

COMMENTS: This Deep Test Pit was conducted at Test 3-9-2. No limiting conditions were identified at the time of excavation.

SOIL TYPE: LIMITING CONDITION: Type:    Water    Rock    Mottling Depth: +120"	Soil Drainage Class: Excessively Drained      Somewhat Poorly Drained <b>Well Drained</b> Poorly Drained Moderately Well Drained    Very Poorly Drained	Soil Scientist Signature:
---	--	---------------------------

WEATHER: 48° Mostly Sunny      METHOD: Excavator  
 SLOPE: \_\_\_\_\_      EXCAVATION DEPTH: 120"  
 COVER: Lawn      LANDSCAPE POSITION: E

REDOX – Redoxymorphic features (Drainage Mottling) A/S/C – Abundance/Size/Contrast  
 Roots/Pores – f – few, c – common, m – many / f – fine, m – medium, c – coarse

### Soil Morphology Form



PIT NUMBER: TP 3-8-1      JOB NUMBER: 3868      INVESTIGATOR: DWD  
 DATE: 3/8/2023      STATE: PA      COUNTY: CHESTER  
 MUNICIPALITY: WESTTOWN TOWNSHIP      CLIENT: KEYSTONE CUSTOM HOMES  
 SUBDIVISION: N/A      SITE LOCATION: 1011 SHILOH RD  
 MORPHOLOGIC DETERMINATION:      SEWAGE      **STORMWATER**      SHWT SOILS

Horizon	Depth		Boundary		Color	Texture	%CFs	REDOX			Structure	Consistence	NOTES
	Upper	Lower	Distrnct	Topo				A	S	C			
	0	4	A	W	10 YR 4/2	SILT LOAM	0				SBK	FIRM	
	4	33	G	S	7.5 YR 4/4	SILTY CLAY	0				MA	FRI	
	33	59	A	C	VAR	SILTY CLAY	0				MA	FRI	
	59	120			VAR	SANDY SILT	0				GRAN	LO	

COMMENTS: This Deep Test Pit was conducted at Test 3-8-1. No limiting conditions were identified at the time of excavation.

SOIL TYPE: LIMITING CONDITION: Type:    Water    Rock    Mottling Depth: +120"	Soil Drainage Class: Excessively Drained      Somewhat Poorly Drained <b>Well Drained</b> Poorly Drained Moderately Well Drained    Very Poorly Drained	Soil Scientist Signature:
---	--	---------------------------

WEATHER: 48° Mostly Sunny      METHOD: Excavator  
 SLOPE: \_\_\_\_\_      EXCAVATION DEPTH: 120"  
 COVER: Pasture      LANDSCAPE POSITION: N

REDOX – Redoxymorphic features (Drainage Mottling) A/S/C – Abundance/Size/Contrast  
 Roots/Pores – f – few, c – common, m – many / f – fine, m – medium, c – coarse

### Soil Morphology Form



PIT NUMBER: TP 3-8-2      JOB NUMBER: 3868      INVESTIGATOR: DWD  
 DATE: 3/8/2023      STATE: PA      COUNTY: CHESTER  
 MUNICIPALITY: WESTTOWN TOWNSHIP      CLIENT: KEYSTONE CUSTOM HOMES  
 SUBDIVISION: N/A      SITE LOCATION: 1011 SHILOH RD  
 MORPHOLOGIC DETERMINATION:      SEWAGE      **STORMWATER**      SHWT SOILS

Horizon	Depth		Boundary		Color	Texture	%CFs	REDOX			Structure	Consistence	NOTES
	Upper	Lower	Distrnct	Topo				A	S	C			
	0	7	A	W	10 YR 5/2	SILT LOAM	0				SBK	FIRM	
	7	45	G	S	10 YR 5/8	SILTY CLAY	0				MA	VFIRM	
	45	72			10 YR 3/3	SILT LOAM	0				GRAN	FRI	

COMMENTS: This Deep Test Pit was conducted at Test 3-8-2. No limiting conditions were identified at the time of excavation.

SOIL TYPE:  LIMITING CONDITION: Type:    Water    Rock    Mottling Depth: +72"	Soil Drainage Class: Excessively Drained <b>Somewhat Poorly Drained</b> Well Drained                Poorly Drained Moderately Well Drained    Very Poorly Drained	Soil Scientist Signature:
--	--	---------------------------

WEATHER: 48° Mostly Sunny      METHOD: Excavator  
 SLOPE: \_\_\_\_\_      EXCAVATION DEPTH: 72"  
 COVER: Pasture      LANDSCAPE POSITION: N

REDOX – Redoxymorphic features (Drainage Mottling) A/S/C – Abundance/Size/Contrast  
 Roots/Pores – f – few, c – common, m – many / f – fine, m – medium, c – coarse

## Soil Morphology Form



PIT NUMBER: TP 3-8-3      JOB NUMBER: 3868      INVESTIGATOR: DWD  
 DATE: 3/8/2023      STATE: PA      COUNTY: CHESTER  
 MUNICIPALITY: WESTTOWN TOWNSHIP      CLIENT: KEYSTONE CUSTOM HOMES  
 SUBDIVISION: N/A      SITE LOCATION: 1011 SHILOH RD  
 MORPHOLOGIC DETERMINATION:      SEWAGE      **STORMWATER**      SHWT SOILS

Horizon	Depth		Boundary		Color	Texture	%CFs	REDOX			Structure	Consistence	NOTES
	Upper	Lower	Distrinct	Topo				A	S	C			
	0	13	A	W	10 YR 4/2	SILT LOAM	0				MA	FRI	
	13	41	G	S	10 YR 5/6	SILTY CLAY	0				MA	FIRM	
	41	72			10 YR 6/4	SILTY CLAY	0	f	c	d	MA	FIRM	

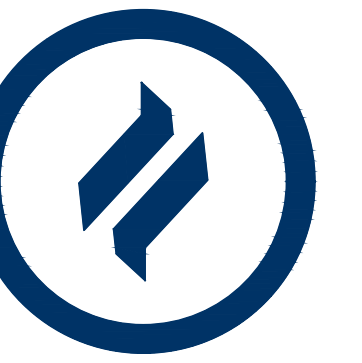
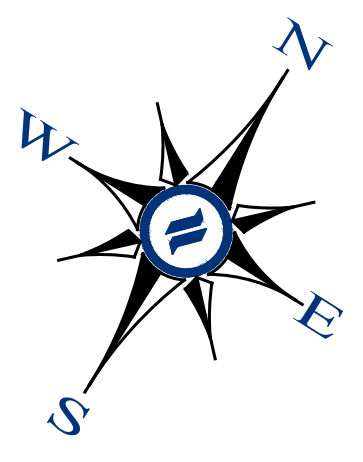
COMMENTS: This Deep Test Pit was conducted at Test 3-8-3. During excavation, redoximorphic features were identified at approximatley 41-72 inches below exiting grade.

SOIL TYPE:  LIMITING CONDITION: Redox  Type: Water    Rock <b>Mottling</b>  Depth: approx 41-72"	Soil Drainage Class:  Excessively Drained      Somewhat Poorly Drained  Well Drained <b>Poorly Drained</b>  Moderately Well Drained      Very Poorly Drained	Soil Scientist Signature:
--	--	---------------------------

WEATHER: 48° Mostly Sunny      METHOD: Excavator  
 SLOPE: \_\_\_\_\_      EXCAVATION DEPTH: 72"  
 COVER: Pasture      LANDSCAPE POSITION: SE

REDOX – Redoxymorphic features (Drainage Mottling) A/S/C – Abundance/Size/Contrast  
 Roots/Pores – f – few, c – common, m – many / f – fine, m – medium, c – coarse





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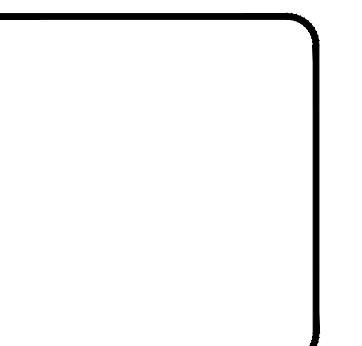
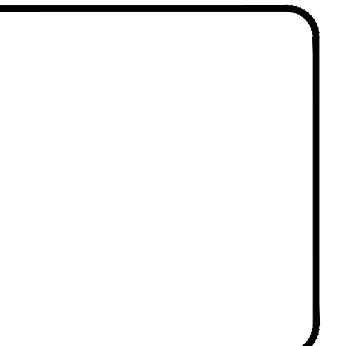
Civil Engineering  
Land Planning  
Environmental  
www.DLHowell.com

1250 Wrights Lane  
West Chester, PA 19380  
Phone: (610) 918-9002  
Fax: (610) 918-9003



**LEGEND**

---	EX. PROPERTY LINE
---	PROP. PROPERTY LINE
---	EX. RIGHT-OF-WAY
---	PROP. RIGHT-OF-WAY
□	EX. MONUMENT
■	PROP. MONUMENT
○	EX. IRON PIPE
●	PROP. IRON PIPE
---	EX. EASEMENT
---	PROP. EASEMENT
---	EX. RELIANCE
---	PROP. RELIANCE
---	EX. 242 EXISTING CONTOUR
---	PROP. 242 PROPOSED CONTOUR
---	EX. 123.00 EXISTING SPOT ELEV.
---	PROP. 123.00 NEW SPOT ELEV.
---	EX. GEB2 SOILS LINE
---	PROP. SOILS LINE
---	EX. CONC. CURB
---	PROP. CONC. CURB
---	EX. STITCH PAVING
---	PROP. STITCH PAVING
---	EX. EDGE OF PAVING
---	PROP. EDGE OF PAVING
○	EX. LIGHT POLE
○	PROP. LIGHT POLE
---	EX. FENCE
---	PROP. FENCE
---	EX. MAIL BOX
---	PROP. MAIL BOX
---	EX. SIGN
---	PROP. SIGN
○	EX. PARKING SPACES
○	PROP. PARKING SPACES
(FDR)	EX. TELE. LINE
(FDR)	PROP. TELE. LINE
---	EX. ELEC. LINE
---	PROP. ELEC. LINE
---	EX. UTILITY POLE
---	PROP. UTILITY POLE
---	EX. GUY ANCHOR
---	PROP. GUY ANCHOR
---	EX. GAS LINE
---	PROP. GAS LINE
---	EX. GAS VALVE
---	PROP. GAS VALVE
---	EX. STORM SEWER LINE
---	PROP. STORM SEWER LINE
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---	PROP. STORM INLET ID
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---	PROP. SAN. SEWER LATERAL
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---	PROP. WATER LINE
---	EX. WATER LATERAL
---	PROP. WATER LATERAL
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---	PROP. FIRE WATER LINE
---	EX. WATER VALVE
---	PROP. WATER VALVE
---	EX. HYDRANT
---	PROP. HYDRANT
---	EX. MANHOLE
---	PROP. MANHOLE
---	EX. ZONE AE FLOODPLAIN
---	PROP. ZONE AE FLOODPLAIN
---	EX. 15% - 25% SLOPES
---	PROP. 15% - 25% SLOPES
---	EX. 25%+ SLOPES
---	PROP. 25%+ SLOPES
---	EX. WETLANDS
---	PROP. WETLANDS



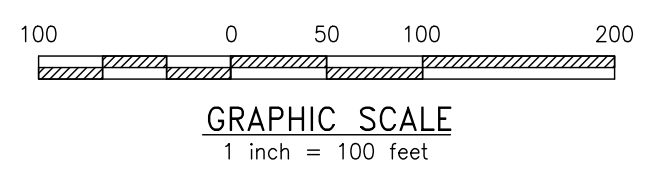
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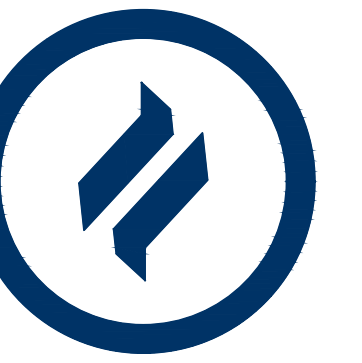
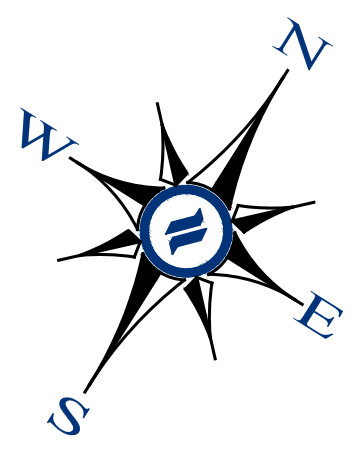
**PRE-DEVELOPED DRAINAGE AREA PLAN**

CLIENT: FOX CLEARING, LLC  
 PROJECT: STOKES ESTATE  
 LOCATION: 1013 SHILOH ROAD  
 WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE:	09/01/21
SCALE:	1"=100'
DRAWN BY:	ADM
CHECKED BY:	DWG
PROJECT NO.:	3868
CAD FILE:	Drainage Area Plan.dwg
PLOTTED:	09/01/21
DRAWING NO.:	SWM-1
SHEET:	1 of 2

**PRE-DEVELOPED DRAINAGE AREA PLAN**  
SCALE: 1"=100'

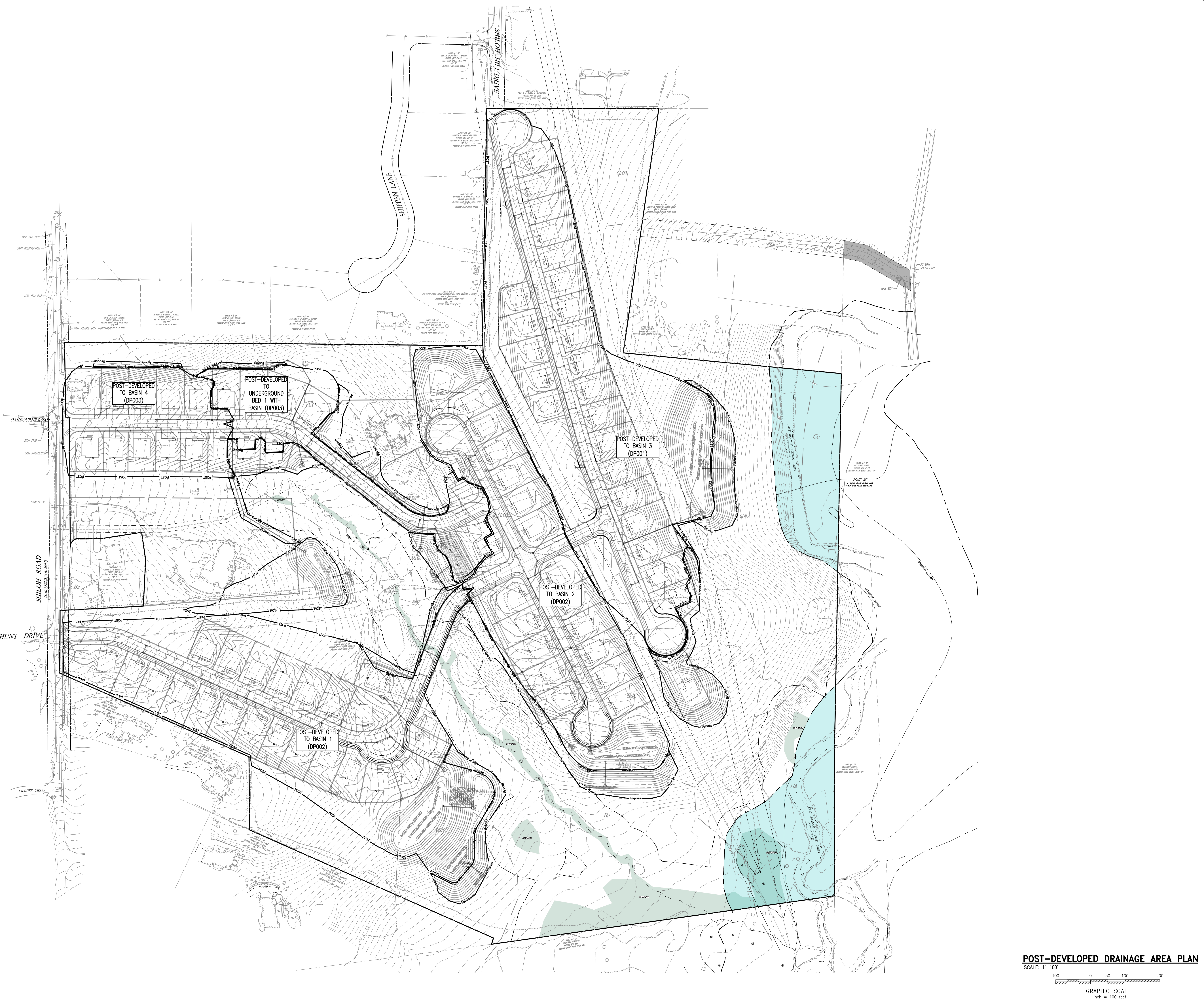




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**LEGEND**

- EX. PROPERTY LINE
- PROP. PROPERTY LINE
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- PROP. RIGHT-OF-WAY
- EX. MONUMENT
- PROP. MONUMENT
- EX. IRON PIPE
- PROP. IRON PIPE
- EX. EASEMENT
- PROP. EASEMENT
- EX. RELIEF
- 242 EXISTING CONTOUR
- 125.00 PROPOSED CONTOUR
- 125.00 EXISTING SPOT ELEV.
- 125.00 NEW SPOT ELEV.
- GEB2 SOILS TYPE
- SOILS LINE
- EX. CONC. CURB
- PROP. CONC. CURB
- EX. SIDE OF PAVING
- PROP. EDGE OF PAVING
- EX. LIGHT POLE
- PROP. LIGHT POLE
- EX. FENCE
- EX. MAIL BOX
- EX. SIGN
- PROP. SIGN
- EXIST. PARKING SPACES
- PROP. PARKING SPACES TO BE REMOVED
- EX. TELE. LINE
- PROP. TELE. LINE
- EX. ELEC. LINE
- PROP. ELEC. LINE
- EX. UTILITY POLE
- EX. GUY ANCHOR
- EX. GAS LINE
- PROP. GAS LINE
- EX. GAS VALVE
- PROP. GAS VALVE
- EX. STORM SEWER LINE
- PROP. STORM SEWER LINE
- EX. STORM ALLET
- PROP. STORM INLET
- PROP. STORM INLET ID
- PROP. SEEPAGE BED
- EX. SANITARY SEWER LINE
- PROP. SAN. SEWER LINE
- EX. SAN. SEWER LATERAL
- PROP. SAN. SEWER LATERAL
- EX. SANITARY MH. ID
- PROP. SANITARY MH. ID
- EX. WATER LINE
- PROP. WATER LINE
- EX. WATER LATERAL
- PROP. WATER LATERAL
- EX. FIRE WATER LINE
- PROP. FIRE WATER LINE
- EX. WATER VALVE
- PROP. WATER VALVE
- EX. HYDRANT
- PROP. HYDRANT
- EX. MANHOLE
- PROP. MANHOLE
- ZONE A6 FLOODPLAIN
- 15% - 25% SLOPES
- 25%+ SLOPES
- WETLANDS

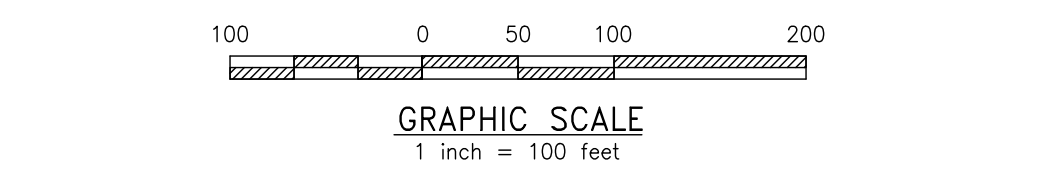


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**POST-DEVELOPED DRAINAGE AREA PLAN**  
 CLIENT: FOX CLEARING, LLC  
 PROJECT: STOKES ESTATE  
 LOCATION: 1013 SHILOH ROAD  
 WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE:	09/01/21
SCALE:	1"=100'
DRAWN BY:	ADM
CHECKED BY:	DWG
PROJECT NO.:	3868
CAD FILE:	Shiloh Area Plan.dwg
PLOTTED:	09/01/21
DRAWING NO.:	SWM-2
SHEET:	2 of 2

**POST-DEVELOPED DRAINAGE AREA PLAN**



# **CONCEPTUAL EXTERIOR ELEVATIONS**



Augusta Traditional



Augusta Heritage



Augusta Manor



Augusta Vintage



Augusta Farmhouse



Augusta Bordeaux



First Floor  
9ft. First Floor Ceilings



Second Floor



Devonshire Traditional



Devonshire Farmhouse



Devonshire Vintage



Devonshire Manor



Devonshire Heritage



First Floor  
9ft. Ceilings



Second Floor  
8ft. Ceilings



Ethan Traditional



Ethan Heritage



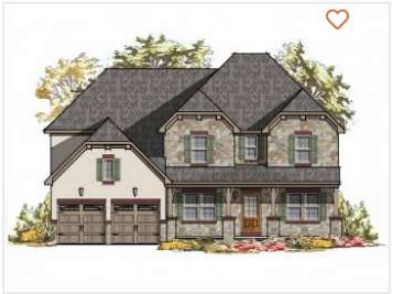
Ethan Farmhouse



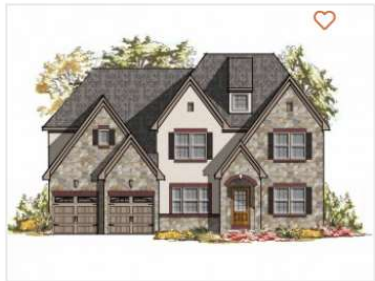
Ethan English Cottage



Ethan Manor



Ethan Bordeaux



Ethan Normandy



First Floor



Second Floor



Hawthorne Traditional



Hawthorne Heritage



Hawthorne Farmhouse



Hawthorne Vintage

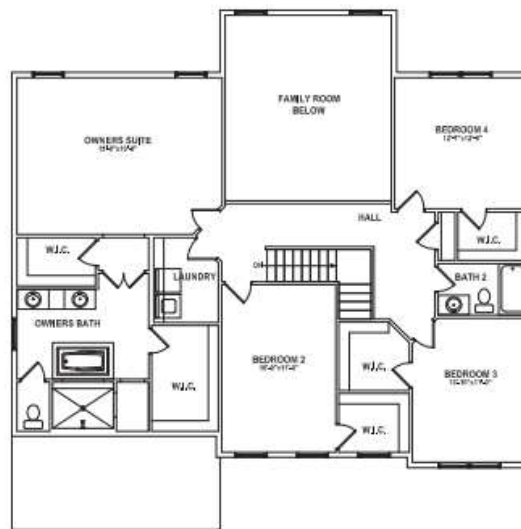


Hawthorne Manor

Options shown: Entry Package 2, and One Level Garage



First Floor



Second Floor



Nottingham Traditional



Nottingham Heritage



Nottingham Vintage



Nottingham Farmhouse



Nottingham Manor



Nottingham Bordeaux



Nottingham Normandy



First Floor



Second Floor





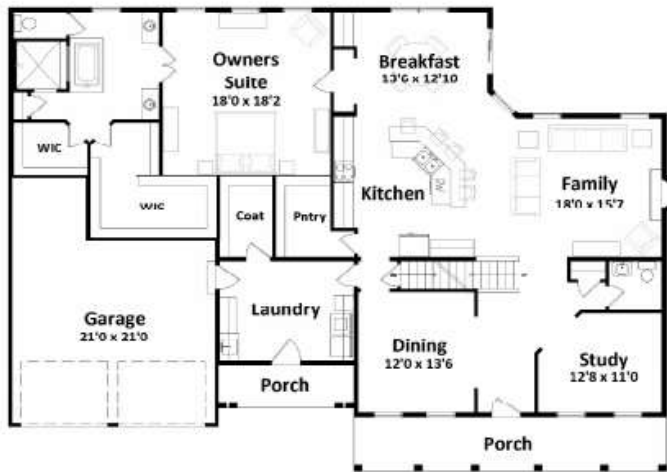
Lexington Traditional



Lexington Heritage



Lexington Vintage



First Floor



Second Floor