

CITY OF BLOOMINGTON



PLAT COMMITTEE

May 16, 2022 @ 4:00 p.m.
Kelly Conference Room, #155
And via Zoom:

<https://bloomington.zoom.us/j/81744656579?pwd=dnptSXlJRWUxWEhZeGJHeHN6NERtQT09>

Meeting ID: 817 4465 6579
Password: 032517

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Meeting ID: 817 4465 6579

Password: 032517

ROLL CALL

MINUTES TO BE APPROVED: January 10, 2022

REPORTS, RESOLUTIONS, AND COMMUNICATIONS:

PETITION:

DP-45-21 **701 Club Inc.**
1503 W Arlington Rd
Request: Primary Plat approval for a 4-lot subdivision in the MN zoning district.
Case Manager: Eric Greulich

**Next Meeting Date: April 11, 2022

Updated: 5/13/2022

*Auxiliary aids for people with disabilities are available upon request with adequate notice.
Please call [812-349-3429](tel:812-349-3429) or e-mail human.rights@bloomington.in.gov.*

**BLOOMINGTON PLAT COMMITTEE
STAFF REPORT
Location: 1503 & 1505 W. Arlington Road**

**CASE #: DP-45-21
DATE: May 16, 2022**

PETITIONER: 701 Club Inc.
1503 W. Arlington Road, Bloomington

CONSULTANTS: Bynum Fanyo & Associates, Inc.
528 N. Walnut Street, Bloomington

REQUEST: The petitioner is requesting primary plat approval to allow for a 5 lot subdivision of 3.855 acres in the Mixed Use Neighborhood Scale (MN) zoning district. The petitioner is also requesting delegation of secondary plat approval to Staff.

REPORT: The property is located at 1503 and 1505 W. Arlington Road and is zoned Mixed-Use Neighborhood Scale (MN). Surrounding zoning includes Residential Medium Lot (R2) to the north, west, and south and Residential Multifamily (RM) to the east. The surrounding properties have been developed with a mix of single and multifamily residences. This site has several mature trees along the perimeter, but no closed canopy that would be subject to the tree preservation standards. There are no known sensitive environmental features. The site has been developed with two commercial buildings with parking in the rear.

The petitioner is requesting primary plat approval to allow a 5 lot subdivision in order to create 4 commercial lots and one common area lot for detention. Each of the two existing structures would be placed on their own lot. The property currently has one access drive on Arlington Road that would be placed in an access easement for the use of all of the lots. The internal drive for the property would be private. A 7' wide concrete sidewalk and tree plot with street trees not more than 40' from center are required along the property frontage and have been shown on the site plan.

20.06.060(b)(3)(E) PRIMARY PLAT REVIEW: The Plan Commission or Plat Committee shall review the primary subdivision petition and approve, approve with conditions, or deny the petition in accordance with Section 20.06.040(g) (Review and Decision), based on the general approval criteria in Section 20.06.040(d)(6) (Approval Criteria) and the following standards:

- i. All subdivision proposals shall be consistent with the need to minimize flood damage.
- ii. All subdivision proposals shall have public utilities and facilities such as sewer, gas, electrical, and water systems located and constructed to minimize flood damage.
- iii. All subdivision proposals shall have adequate drainage provided to reduce exposure to flood hazards
- iv. Base flood elevation data shall be provided for subdivision proposals and other proposed development (including manufactured home parks and subdivisions), which is greater than the lesser of 50 lots or five acres.
- v. All subdivision proposals shall minimize development in the SFHA and/or limit intensity of development permitted in the SFHA
- vi. All subdivision proposals shall ensure safe access into/out of SFHA for pedestrians and vehicles (especially emergency responders).

PROPOSED FINDING: This plat is being requested to be reviewed as a

Commercial/Employment Subdivision (CI). This site is not located in a 100-year regulated floodplain and the petitioner has designed an on-site stormwater management system to meet the City Standards. The site is currently served by public utilities. Base flood elevation data can be shown on the secondary plat, however this site is not located in a 100-year regulated floodplain so there is no established base flood elevation for this site. No portion of this property is located in a Special Flood Hazard Area (SFHA) and the property is accessed directly from Arlington Road, so there is adequate access for emergency service vehicles and personnel.

20.06.040(d)(6)(B) General Compliance Criteria

- i. Compliance with this UDO
- ii. Compliance with Other Applicable Regulations
- iii. Compliance with Utility, Service, and Improvement Standards
- iv. Compliance with Prior Approvals
- v. Consistency with Comprehensive Plans and Other Applicable Plans
- vi. Consistent with Intergovernmental Agreements
- vii. Minimization or Mitigation of Adverse Impacts
- viii. Adequacy of Road Systems
- ix. Provides Adequate Public Services and Facilities
- x. Rational Phasing Plan

PROPOSED FINDING: This plat meets all of the requirements of the UDO. No variances or waivers are required for this subdivision. There are no other known applicable regulations that would apply to this subdivision. Final approval from the City of Bloomington Utilities Department is required prior to the issuance of any permits. The property is designated as Urban Corridor in the Comprehensive Plan and this subdivision would be consistent with the goals and objectives of the Plan for a commercial lot subdivision. There are no known intergovernmental Agreements that pertain to this site. There are no expected adverse impacts as a result of this plat. The proposed plat is setting aside stormwater management areas for the entire property and will therefore improve overall stormwater management on the site. This site is immediately adjacent to Arlington Road which is a secondary arterial road. As part of this approval a new 7' wide concrete sidewalk and minimum 7' tree plot will be installed along the entire property frontage, thus improving pedestrian access along the site and street tree installation. No phasing is expected with the plat.

20.06.040(d)(6)(D) Additional Criteria Applicable to Primary Plats and Zoning Map Amendments (Including PUDs)

- i. Consistency with Comprehensive Plan and Other Applicable Plans
- ii. Consistent with Intergovernmental Agreements
- iii. Minimization or Mitigation of Adverse Impacts
- iv. Adequacy of Road Systems
- v. Provides Adequate Public Services and Facilities
- vi. Rational Phasing Plan

PROPOSED FINDING: There are no expected adverse impacts as a result of this plat. The petition is setting aside the required amount of open space. Adequate stormwater management areas are being set aside as required by City of Bloomington Utilities. There are no known natural, scenic, or historical features of significant importance on this site. There are no identified adverse fiscal impacts with this petition. The Department has heard from an adjacent neighbor who was concerned about possible impacts to their property as a result of possible development on this lot

and was assured that any development would have to meet all UDO standards. Access to this site is obtained from Arlington Road which is a secondary arterial road and will therefore not draw any traffic through residential streets. No problems with providing utility services to this site have been identified. The City of Bloomington Utilities Department must approve all utility connections and services prior to issuance of a grading permit. No phasing of the plat is expected.

PLAT REVIEW: The proposed subdivision is following the Commercial/Employment (C1) design standards.

Commercial/Employment Subdivision Standards:

Parent Tract Size (minimum required): None

Open Space Required: None

Block Length: The maximum block length allowed is 1,320 feet and the proposed private drive length is 247' which does not exceed the maximum block length allowed.

Cul-de-Sac Length: The minimum cul-de-sac length is 200' and the proposed drive is 247', which meets the minimum. The maximum cul-de-sac length is 600' and this petition does not exceed that standard.

Lot Establishment Standards: The minimum lot size in the MN zoning district is 5,000 square feet and the minimum lot width is 50'. All of the proposed lots meet these minimum standards.

Right-of-Way standards: Arlington Road is classified as a Neighborhood Connector typology and is required to have 74' of total dedication (37' from centerline). A total of 37' of right-of-way from centerline is required and has been shown. The internal drive will be private and is allowed.

Alternative Transportation: A 7' wide concrete sidewalk and 7' wide tree plot are required along the frontage and have been shown. There is an existing access drive that will remain and is proposed to be private. A condition of approval has been included to provide a pedestrian connection from the two new lots to the public sidewalk along Arlington at the time of development on Lots #4 or #5. This will be required at the time of development of those lots.

Environmental Considerations: There are no known regulated environmental features on this lot.

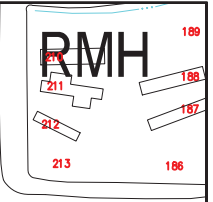
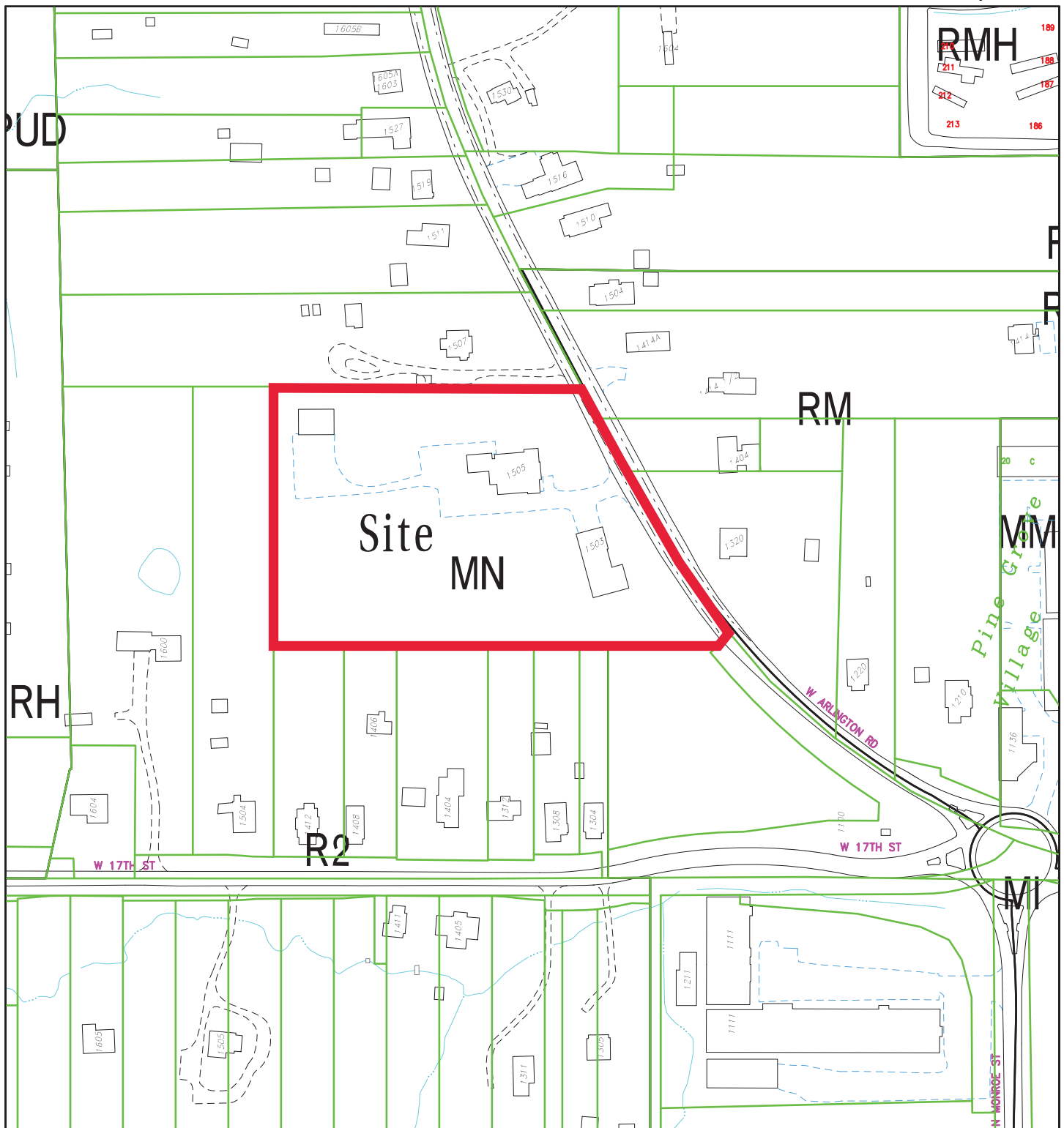
Bloomington Transit: Arlington Road is serviced by Bloomington Transit with a route that goes south along this property frontage. A bus stop is not needed for this project specifically, however an adjacent multifamily project on the east side of Arlington Road will be installing a bus stop adjacent to the nearby roundabout.

CONCLUSION: The proposed plat meets all of the UDO requirements for subdivision.

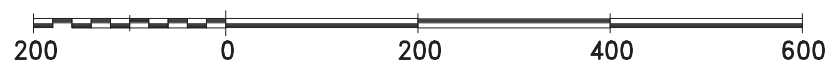
RECOMMENDATION: The Planning and Transportation Department recommends that the Plat Committee adopt the proposed findings and approve the primary plat of DP-45-21 with the following conditions:

1. Setback lines should be removed from the Common Area Lot #3.
2. All easements on secondary plat must use language outlined in the UDO.
3. A minimum 7' wide concrete sidewalk and street trees not more than 40' from center are

- required along the entire property frontage.
4. Secondary plat approval is delegated to staff.
 5. A pedestrian connection from the new lots to the sidewalk on Arlington Road is required at time of development of Lots #4 or #5.
 6. Installation of the detention pond is required at time of development of Lots #4 or #5.

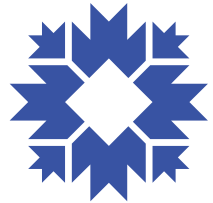


By: greulice
13 May 22



For reference only; map information NOT warranted.

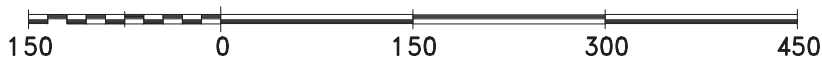
City of Bloomington
Planning



Scale: 1" = 200'

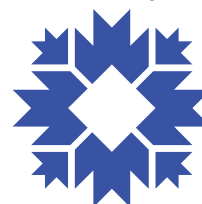


By: greulice
13 May 22



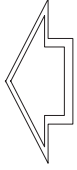
For reference only; map information NOT warranted.

City of Bloomington
Planning



Scale: 1" = 150'

ARLINGTON CIRCLE SUBDIVISION



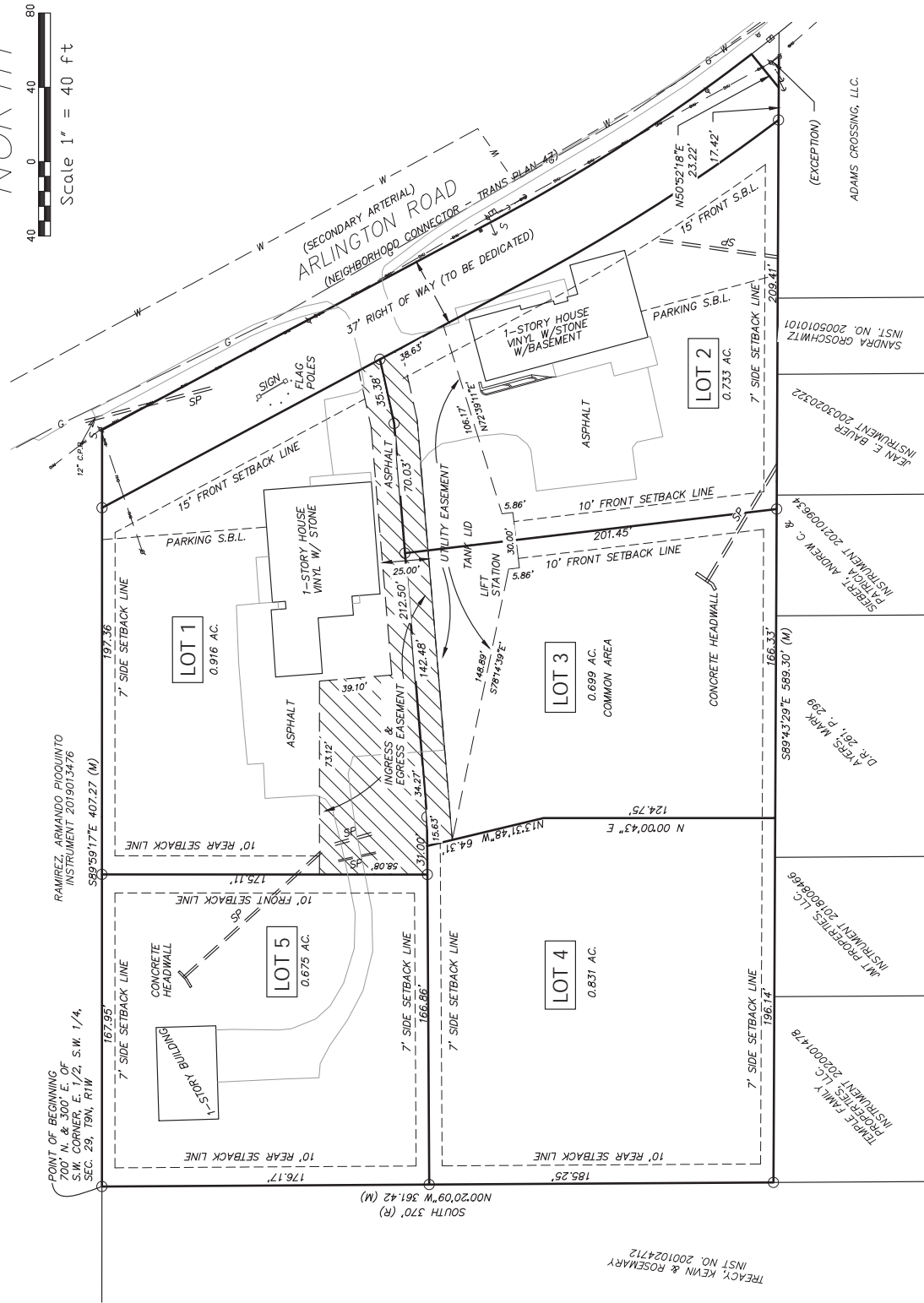
NORTH



Scale 1" = 40 ft

LEGEND

- = EXISTING HYDRANT
- = EXISTING STORM MANHOLE
- = EXISTING STORM CURB INLET
- = EXISTING SANITARY MANHOLE
- = EXISTING WATER METER
- = EXISTING GAS METER
- = REBAR FOUND
- = EXISTING POWER POLE
- = SECTION CORNER
- = REBAR (TO BE SET)
- = LOT LINE
- = SETBACK & EASEMENT LINE
- = INGRESS & EGRESS EASEMENT



OWNER/SUBDIVIDER/DEVELOPER
 NAME: 701 CLUB, INC.
 C/O JOSEPH A ROSS
 ADDRESS: 1503 W. ARLINGTON ROAD
 BLOOMINGTON, IN 47404
 TELEPHONE: 812-339-3440

DESIGN PROFESSIONALS
 NAME: BYNUM FANYO & ASSOCIATES, INC.
 ADDRESS: 528 NORTH WALNUT STREET
 BLOOMINGTON, INDIANA 47404
 TELEPHONE: 812-332-8030

SETBACK TABLE	
MN (MIXED USE CORRIDOR)	
FRONT YARD SETBACK	REAR YARD SETBACK
FRONT BUILD TO RANGE 15 TO 25	7
PARKING	20' BEHIND PRIMARY STRUCTURE FRONT WALL

FLOOD NOTE:
 According to Flood Insurance Rate Map (FIRM) this real estate is part of Community—Panel Number: 18105C 0141D, Effective Date: December 17, 2010. This property is located in Zone X, an area of minimal flood hazard.
 Source: FEMA

I affirm under penalties of perjury that I have taken reasonable care to recheck each social security number in this document, unless required by law.
 Charles D. Graham
 This instrument prepared by Charles D. Graham

TRACY, KEVIN & ROSEMARY
 INST. NO. 2001024712

TRIPLE FAMILY LLC
 INSTRUMENT 2000004748

MI PROPERTIES LLC
 INSTRUMENT 2010004746

ARCS MARK P. 299
 D.R. 201 P. 299

SHEET ANDREW C &
 INSTRUMENT 2021008254

JEAN E. BAUER
 INSTRUMENT 2003020222

SANDRA GROSCHEWITZ
 INST. NO. 20080101

ARLINGTON CIRCLE SUBDIVISION

SIDEWALK PLAN

LEGEND

- = EXISTING HYDRANT
- = EXISTING STORM MANHOLE
- = EXISTING STORM CURB INLET
- = EXISTING SANITARY MANHOLE
- = EXISTING WATER METER
- = EXISTING AC UNIT
- = EXISTING GAS METER
- = REBAR FOUND
- = EXISTING POWER POLE
- = SECTION CORNER
- = REBAR (TO BE SET)
- = LOT LINE
- = SETBACK & EASEMENT LINE
- = INGRESS & EGRESS EASEMENT

PLANT LIST

LEGEND	KEY	BOTANICAL NAME	COMMON NAME	QTY	SIZE & CONDITION
	QT	GLIODISIA TRACANTHOS INERMIS	THORNLESS HONEY LOCUST		2' CAL. B & B
	AR	ACER RUBRUM	RED SUNSET MAPLE		2' CAL. B & B

*CONTAINER OR BALL AND BURLAP CONDITION ACCEPTABLE
 NOTE: SPECIES SHOWN THAT ARE NOT LISTED IN THE CITY OF BLOOMINGTON ZONING ORDINANCE CHAPTER 200B TABLES OF RECOMMENDED PLANT MATERIALS ARE GIVEN BOTANICALLY COMPARABLE DENSITY VALUES.

STREET TREES TO BE PLANTED AT 40' O.C. INTERVALS

DO NOT CUT PLANT LEADER
 GUYS SECURED TO SINGLE RING OF #10 GALVANIZED WIRE ENCASED IN RUBBER HOSE.

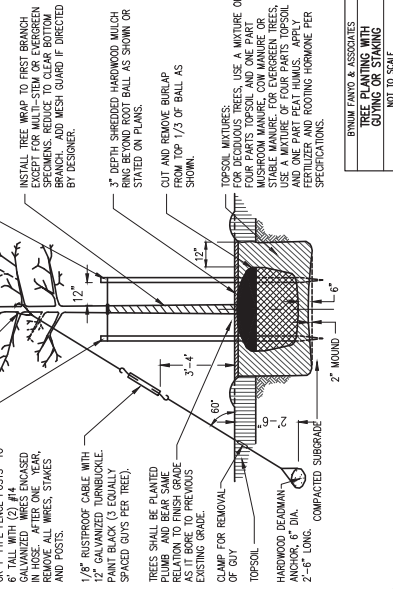
FOR ALL TREES UP TO 2-1/2" IN CALIBER, IN LIEU OF WIRE GUYS, INSTALL (2) 2" X 2" OR 2-1/2" DIA. STAKES OR T-TYPE FENCE POSTS TO GALVANIZED WIRE ENCASED IN RUBBER HOSE. AFTER ONE YEAR, REMOVE ALL WIRES, STAKES AND POSTS.

1/8" RUSTPROOF CABLE WITH PAINT BLACK (3 EQUALLY SPACED GOTS PER TREE).

TREES SHALL BE PLANTED PLUMB AND BEAR SAME RELATION TO FINISH GRADE AS PREVIOUS EXISTING GRADE.

CURB FOR REMOVAL OF CURB

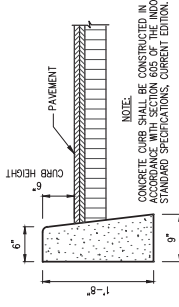
TOPSOIL MATTERS: USE A MIXTURE OF FOUR PARTS TOPSOIL AND ONE PART MUSHROOM MANURE, COW MANURE OR STABLE MANURE FOR EVERGREEN TREES. FOR ALL OTHER TREES, APPLY ONE PART GREAT HIMALS FERTILIZER AND ROOTING HORMONE PER SPECIFICATIONS.



BYNUM FANTYO & ASSOCIATES
 PREPARED BY BRYNUM FANTYO
 NOT TO SCALE

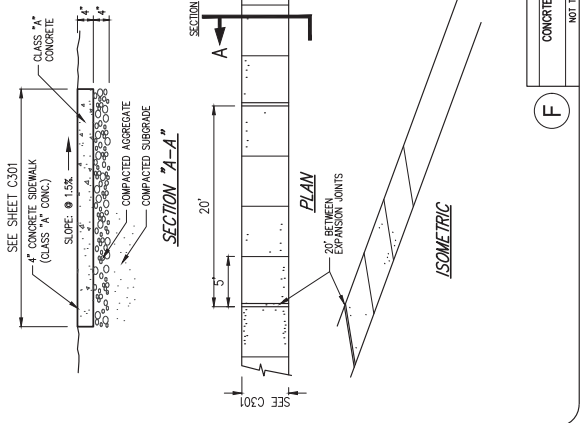
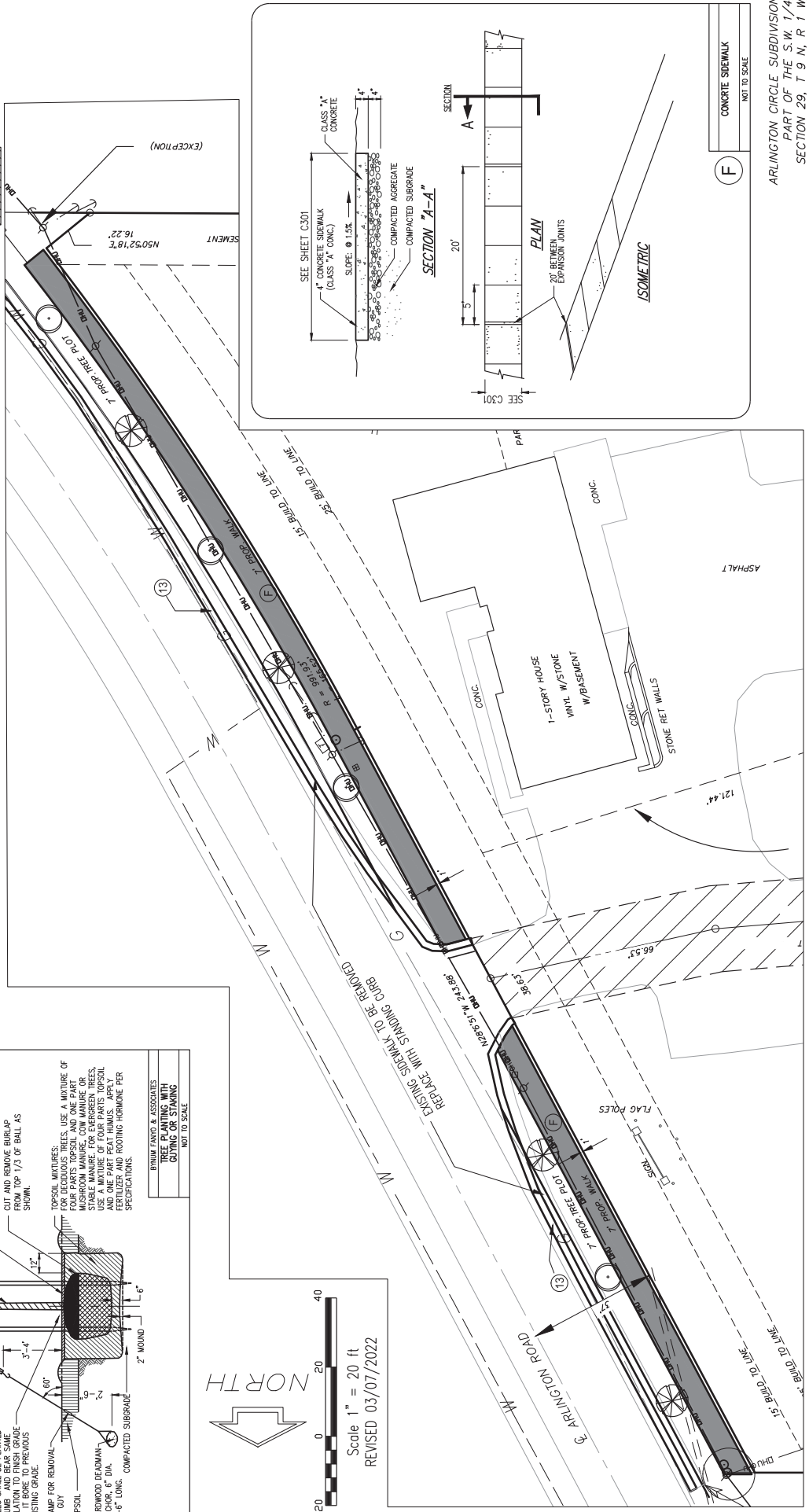


Scale 1" = 20 ft
 REVISED 03/07/2022



NOTE:
 CONCRETE CURB SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 605 OF THE INDIAN STANDARD SPECIFICATIONS, CURRENT EDITION.

13 CONCRETE STANDING CURB
 NOT TO SCALE



CONCRETE SIDEWALK
 NOT TO SCALE

ARLINGTON CIRCLE SUBDIVISION
 PART OF THE S.W. 1/4,
 SECTION 29, T. 9 N., R. 1 W.,
 MONROE COUNTY, INDIANA
 JOB NO. 5021091
 SHEET 1 OF 1

BASIN MAP

TOTAL BASIN 10.8 ACRES



NORTH



Scale 1" = 50 ft

TRAVEL PATH: TIME OF CONC

ARLINGTON ROAD

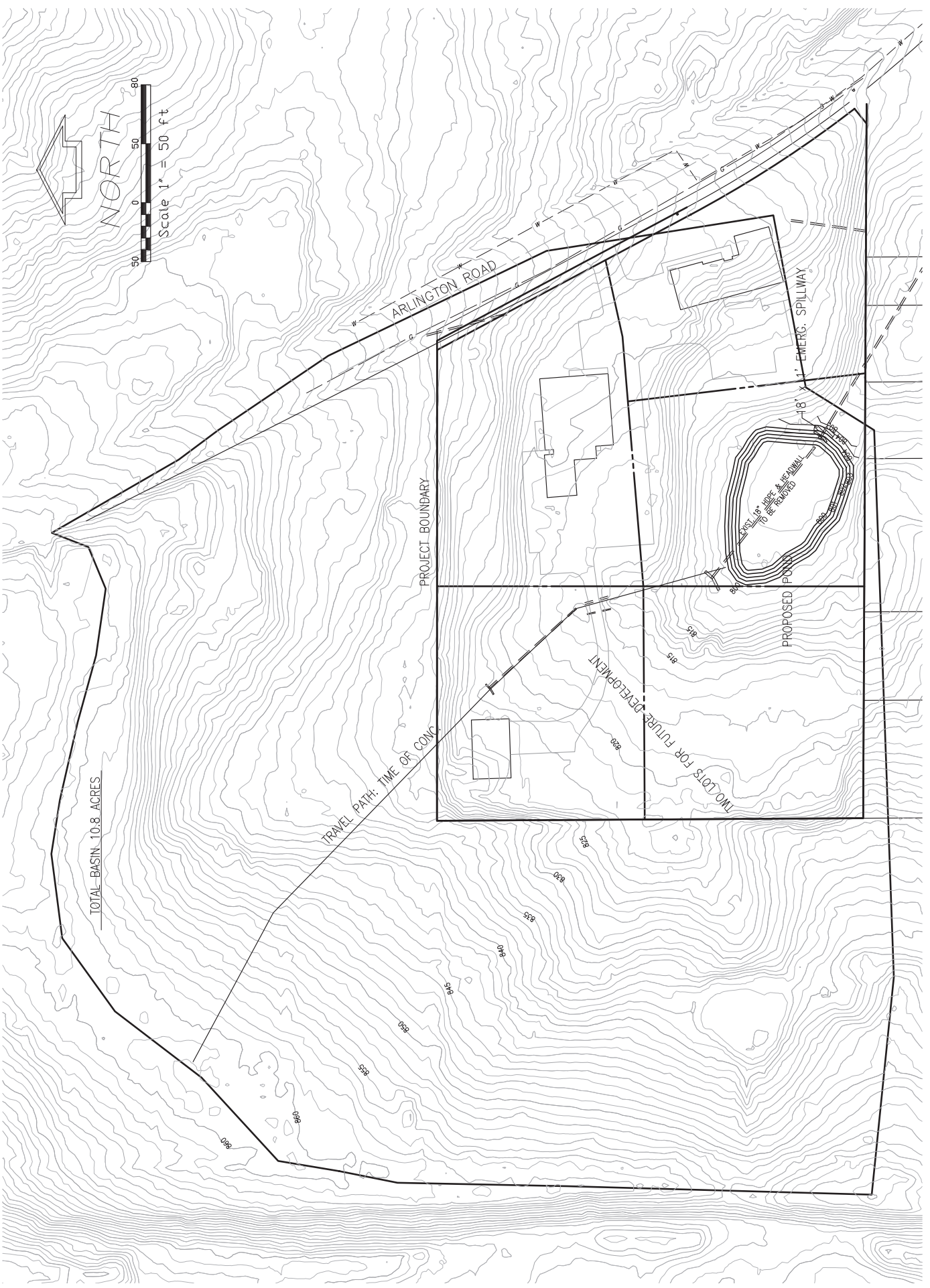
PROJECT BOUNDARY

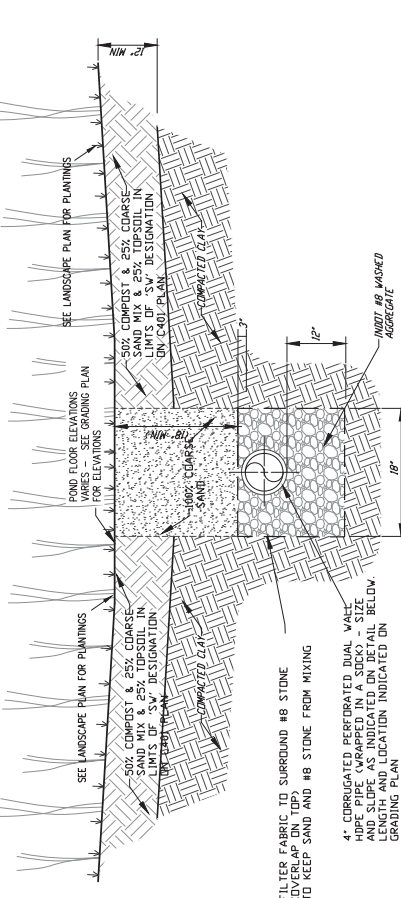
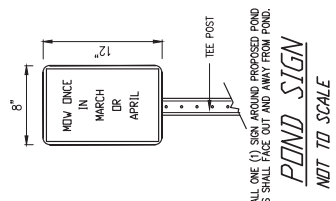
TWO LOTS FOR FUTURE DEVELOPMENT

PROPOSED POND

18" EMERG. SPILLWAY

EXC. 18" HIGH & 18" DIA. TO BE REMOVED





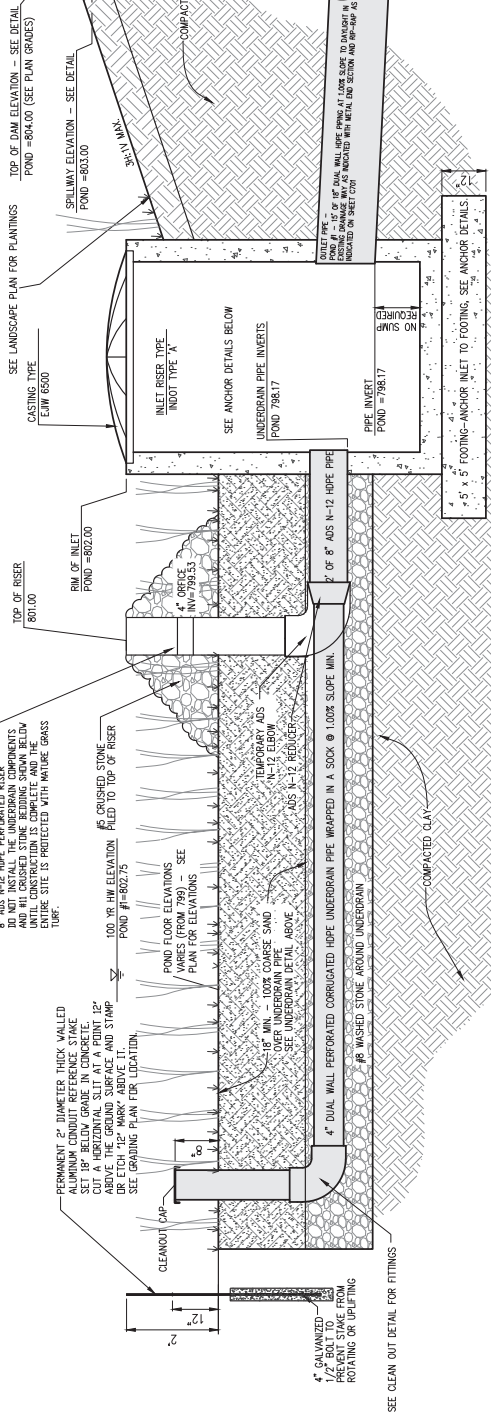
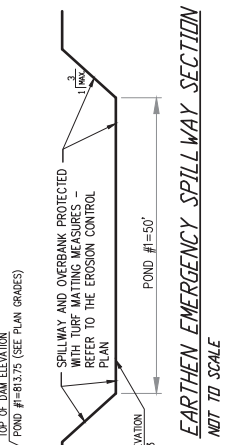
UD TYPICAL BIO-SWALE/WATER QUALITY POND UNDERDRAIN SYSTEM NOT TO SCALE

POST CONSTRUCTION:
UPON COMPLETION OF ALL SITE IMPROVEMENTS & BEFORE THE 8\"/>

DURING CONSTRUCTION (ONLY):
2\"/>

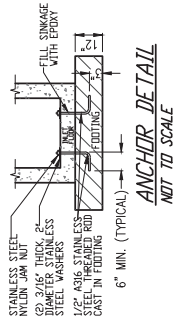
**PERMANENT 2\"/>

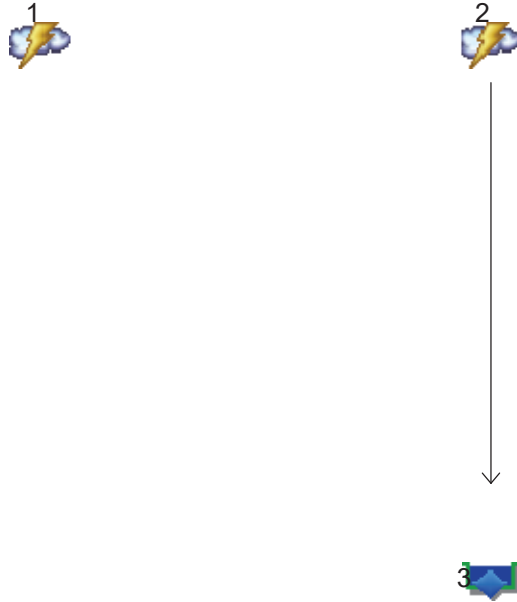
SEE GRADING PLAN FOR PLANTINGS**



TEMPORARY AND PERMANENT BIO-SWALE/WATER QUALITY POND DETAIL
NOT TO SCALE

REVISED 04/28/2022: ADDED OFFICE WATER QUALITY ELEVATION 799.53





Legend

Hyd.	Origin	Description
1	Rational	Pre DEVELOPED
2	Rational	Post DEVELOPED
3	Reservoir	POND DISCHARGE

Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

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	Rational	-----	-----	16.74	-----	-----	23.04	-----	-----	32.01	Pre DEVELOPED
2	Rational	-----	-----	17.34	-----	-----	23.84	-----	-----	33.07	Post DEVELOPED
3	Reservoir	2	-----	0.479	-----	-----	0.705	-----	-----	2.683	POND DISCHARGE

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

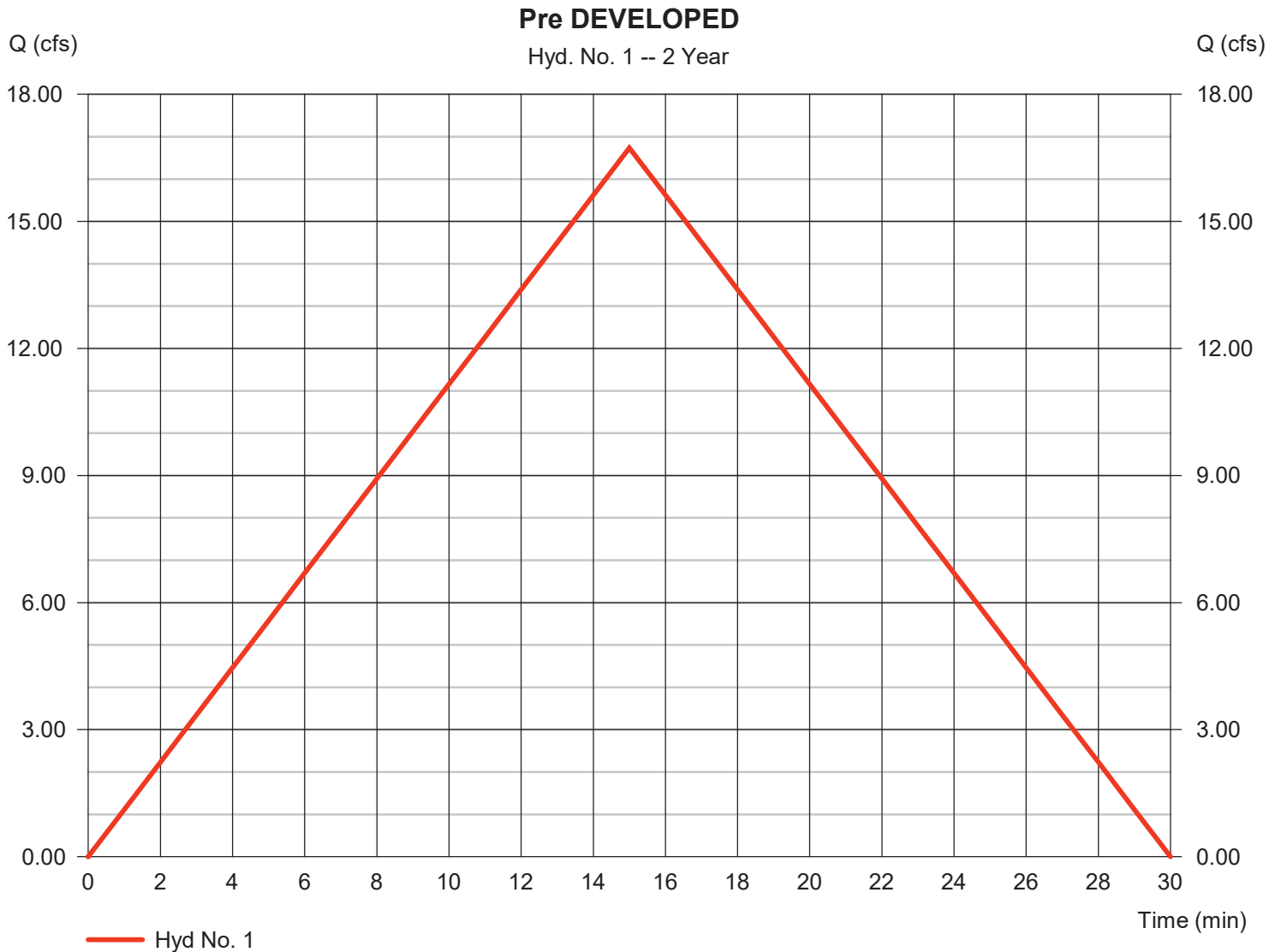
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Rational	16.74	1	15	15,062	-----	-----	-----	Pre DEVELOPED
2	Rational	17.34	1	14	14,567	-----	-----	-----	Post DEVELOPED
3	Reservoir	0.479	1	28	45,265	2	801.42	13,929	POND DISCHARGE

Hyd. No. 1

Pre DEVELOPED

Hydrograph type	= Rational	Peak discharge	= 16.74 cfs
Storm frequency	= 2 yrs	Time to peak	= 15 min
Time interval	= 1 min	Hyd. volume	= 15,062 cuft
Drainage area	= 10.800 ac	Runoff coeff.	= 0.44*
Intensity	= 3.522 in/hr	Tc by TR55	= 15.00 min
IDF Curve	= BLGTN Updated 2020.IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(6.500 x 0.32) + (4.300 x 0.15)] / 10.800



Hyd. No. 1

Pre DEVELOPED

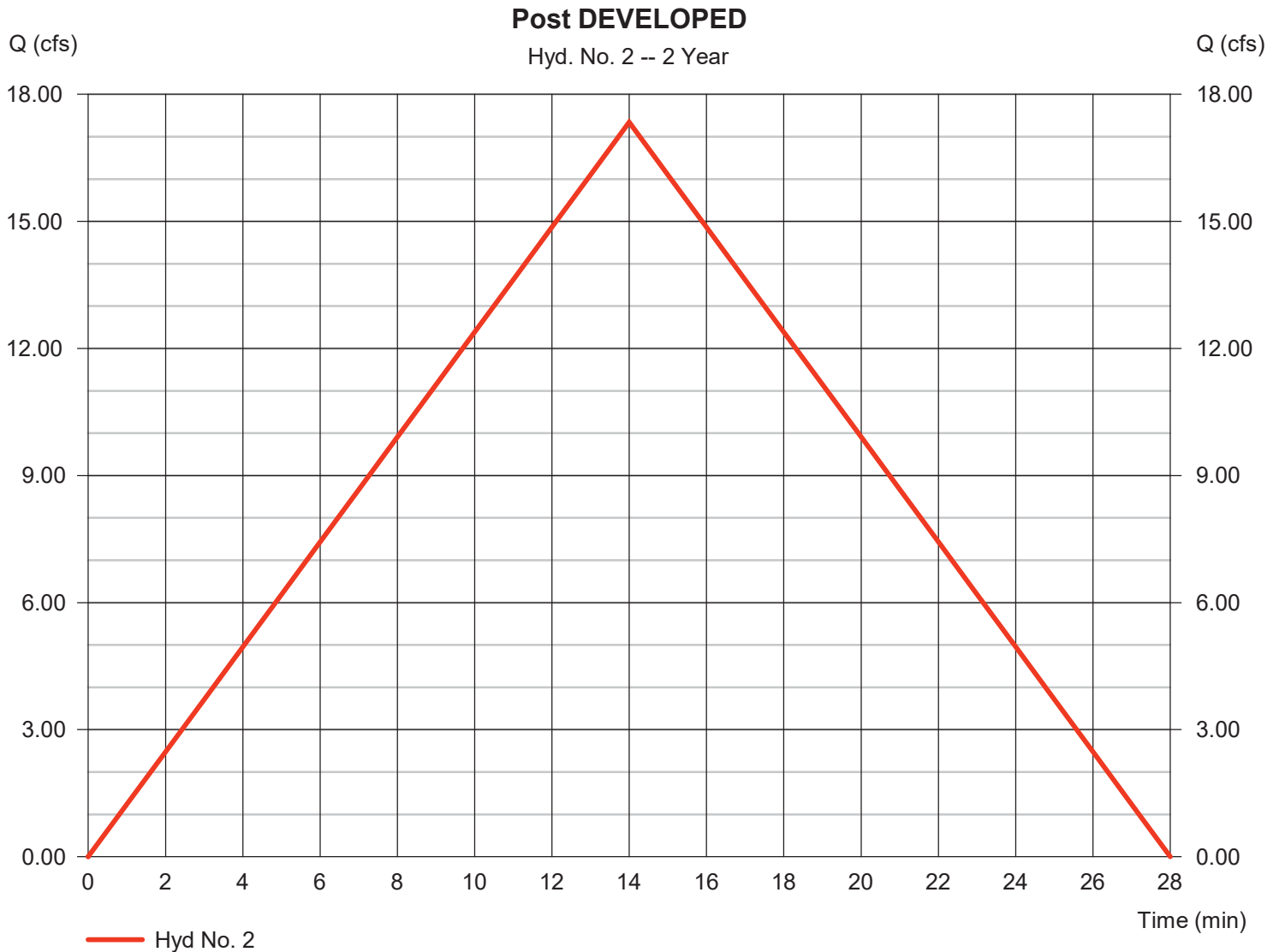
<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Sheet Flow				
Manning's n-value	= 0.400	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.13	0.00	0.00	
Land slope (%)	= 7.00	0.00	0.00	
Travel Time (min)	= 13.17	+ 0.00	+ 0.00	= 13.17
Shallow Concentrated Flow				
Flow length (ft)	= 310.00	0.00	0.00	
Watercourse slope (%)	= 10.00	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=5.10	0.00	0.00	
Travel Time (min)	= 1.01	+ 0.00	+ 0.00	= 1.01
Channel Flow				
X sectional flow area (sqft)	= 1.76	5.50	0.00	
Wetted perimeter (ft)	= 4.71	14.10	0.00	
Channel slope (%)	= 6.00	9.00	0.00	
Manning's n-value	= 0.015	0.050	0.015	
Velocity (ft/s)	=12.60	4.76	0.00	
Flow length (ft)	{{0}}100.0	119.0	0.0	
Travel Time (min)	= 0.13	+ 0.42	+ 0.00	= 0.55
Total Travel Time, Tc				15.00 min

Hyd. No. 2

Post DEVELOPED

Hydrograph type	= Rational	Peak discharge	= 17.34 cfs
Storm frequency	= 2 yrs	Time to peak	= 14 min
Time interval	= 1 min	Hyd. volume	= 14,567 cuft
Drainage area	= 10.800 ac	Runoff coeff.	= 0.44*
Intensity	= 3.649 in/hr	Tc by TR55	= 14.00 min
IDF Curve	= BLGTN Updated 2020.IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(4.300 x 0.61) + (6.500 x 0.32)] / 10.800



Hyd. No. 2

Post DEVELOPED

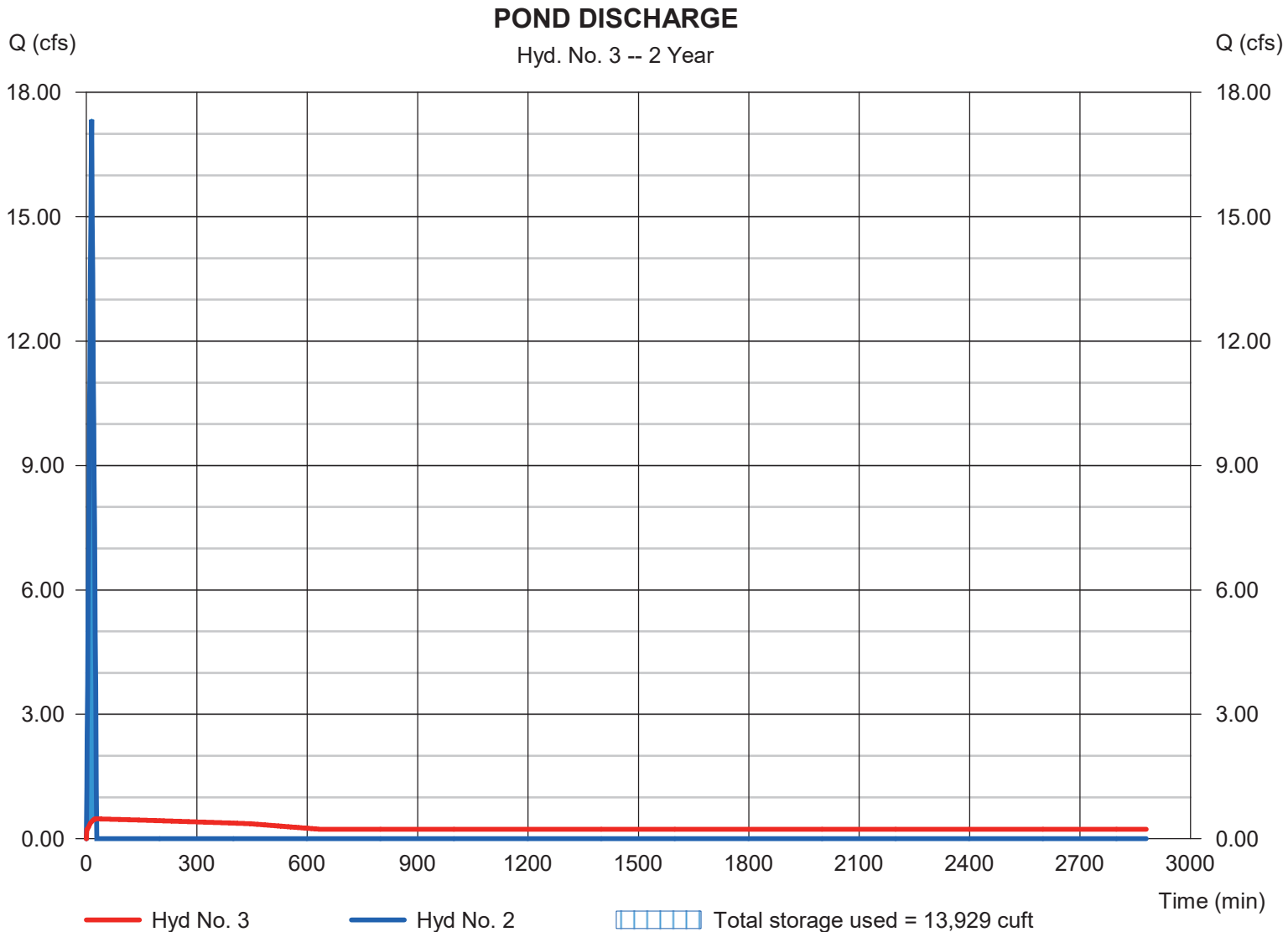
<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Sheet Flow				
Manning's n-value	= 0.400	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.13	0.00	0.00	
Land slope (%)	= 7.00	0.00	0.00	
Travel Time (min)	= 13.17	+ 0.00	+ 0.00	= 13.17
Shallow Concentrated Flow				
Flow length (ft)	= 310.00	0.00	0.00	
Watercourse slope (%)	= 10.00	0.00	0.00	
Surface description	= Paved	Paved	Paved	
Average velocity (ft/s)	=6.43	0.00	0.00	
Travel Time (min)	= 0.80	+ 0.00	+ 0.00	= 0.80
Channel Flow				
X sectional flow area (sqft)	= 1.75	5.50	0.00	
Wetted perimeter (ft)	= 4.71	14.10	0.00	
Channel slope (%)	= 6.00	9.00	0.00	
Manning's n-value	= 0.015	0.050	0.015	
Velocity (ft/s)	=12.53	4.76	0.00	
Flow length (ft)	{{0}}100.0	0.0	0.0	
Travel Time (min)	= 0.13	+ 0.00	+ 0.00	= 0.13
Total Travel Time, Tc				14.00 min

Hyd. No. 3

POND DISCHARGE

Hydrograph type	= Reservoir	Peak discharge	= 0.479 cfs
Storm frequency	= 2 yrs	Time to peak	= 28 min
Time interval	= 1 min	Hyd. volume	= 45,265 cuft
Inflow hyd. No.	= 2 - Post DEVELOPED	Max. Elevation	= 801.42 ft
Reservoir name	= POND B	Max. Storage	= 13,929 cuft

Storage Indication method used.



Pond No. 1 - POND B

Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Beginning Elevation = 799.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	799.00	00	0	0
1.00	800.00	6,695	3,348	3,348
2.00	801.00	7,667	7,181	10,529
3.00	802.00	8,697	8,182	18,711
4.00	803.00	9,784	9,241	27,951

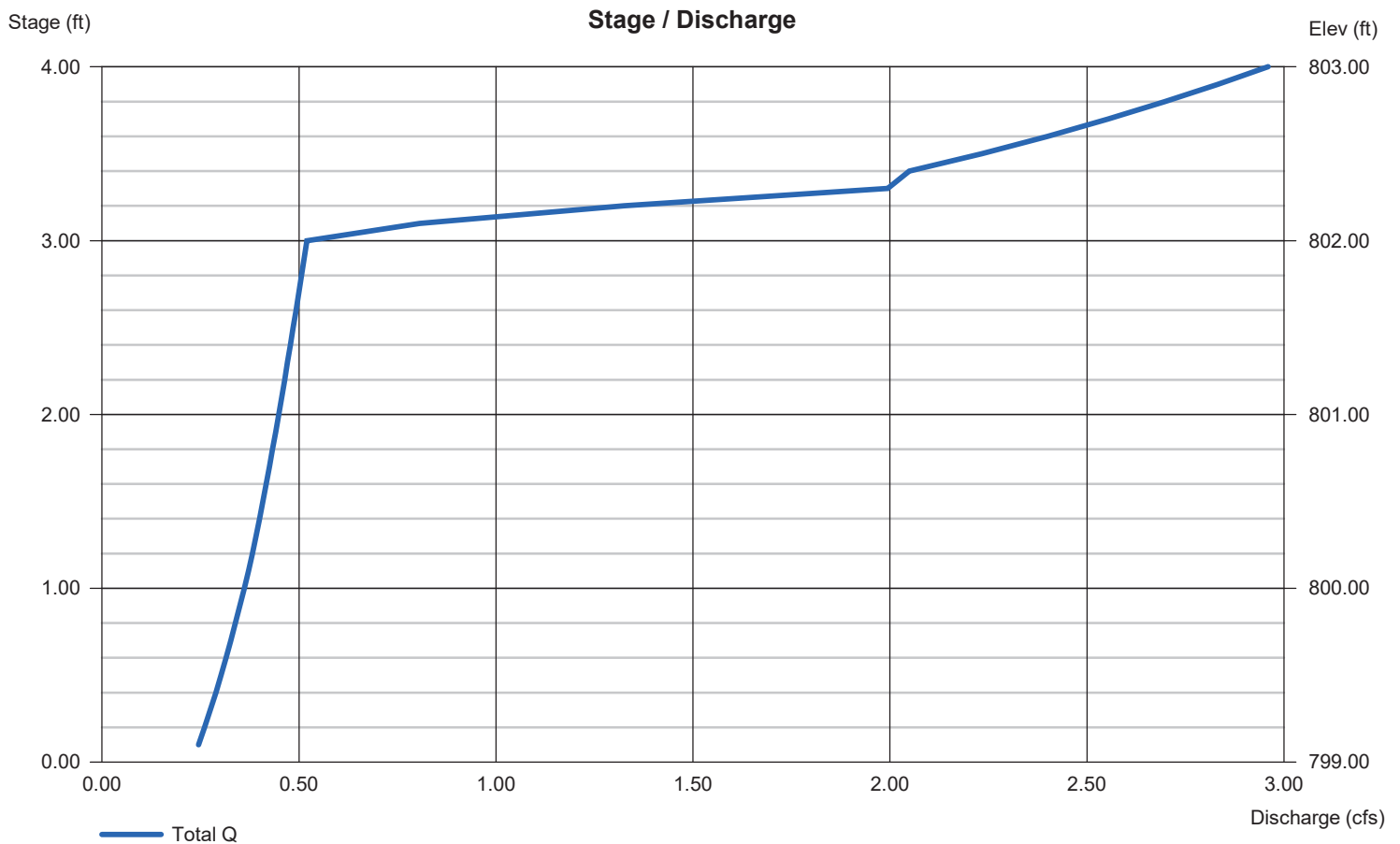
Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	4.00	0.00	0.00
Span (in)	= 18.00	4.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 798.17	798.17	0.00	0.00
Length (ft)	= 186.00	42.00	0.00	0.00
Slope (%)	= 3.02	1.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.40	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 2.66	0.00	0.00	0.00
Crest El. (ft)	= 802.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	---	---	---
Multi-Stage	= Yes	No	No	No
Exfil. (in/hr)	= 0.000 (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 Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

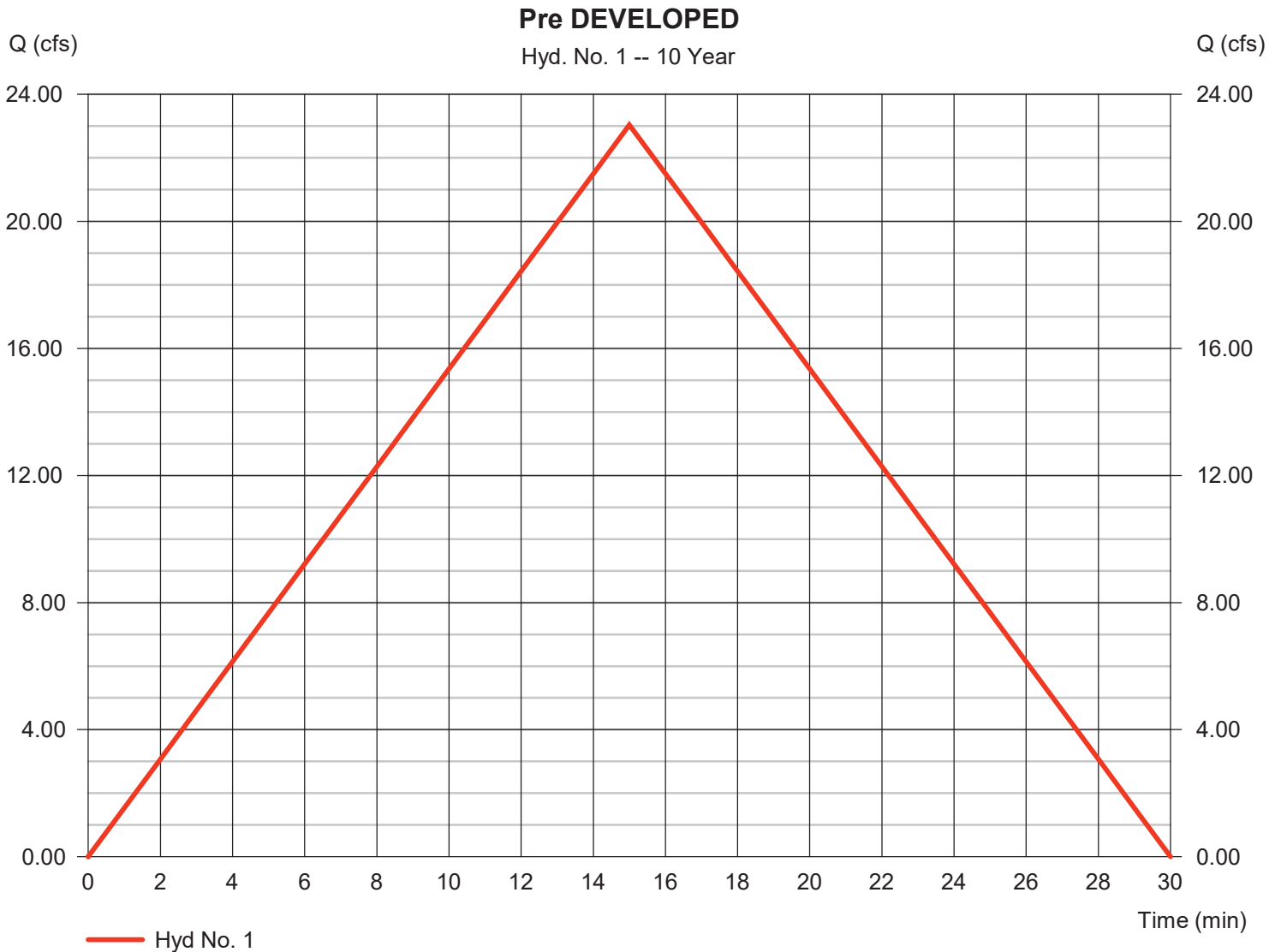
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description	
1	Rational	23.04	1	15	20,734	-----	-----	-----	Pre DEVELOPED	
2	Rational	23.84	1	14	20,022	-----	-----	-----	Post DEVELOPED	
3	Reservoir	0.705	1	28	48,317	2	802.06	19,307	POND DISCHARGE	
POND 2.gpw					Return Period: 10 Year			Wednesday, 04 / 13 / 2022		

Hyd. No. 1

Pre DEVELOPED

Hydrograph type	= Rational	Peak discharge	= 23.04 cfs
Storm frequency	= 10 yrs	Time to peak	= 15 min
Time interval	= 1 min	Hyd. volume	= 20,734 cuft
Drainage area	= 10.800 ac	Runoff coeff.	= 0.44*
Intensity	= 4.848 in/hr	Tc by TR55	= 15.00 min
IDF Curve	= BLGTN Updated 2020.IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(6.500 x 0.32) + (4.300 x 0.15)] / 10.800



Hyd. No. 2

Post DEVELOPED

Hydrograph type	= Rational	Peak discharge	= 23.84 cfs
Storm frequency	= 10 yrs	Time to peak	= 14 min
Time interval	= 1 min	Hyd. volume	= 20,022 cuft
Drainage area	= 10.800 ac	Runoff coeff.	= 0.44*
Intensity	= 5.016 in/hr	Tc by TR55	= 14.00 min
IDF Curve	= BLGTN Updated 2020.IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(4.300 x 0.61) + (6.500 x 0.32)] / 10.800

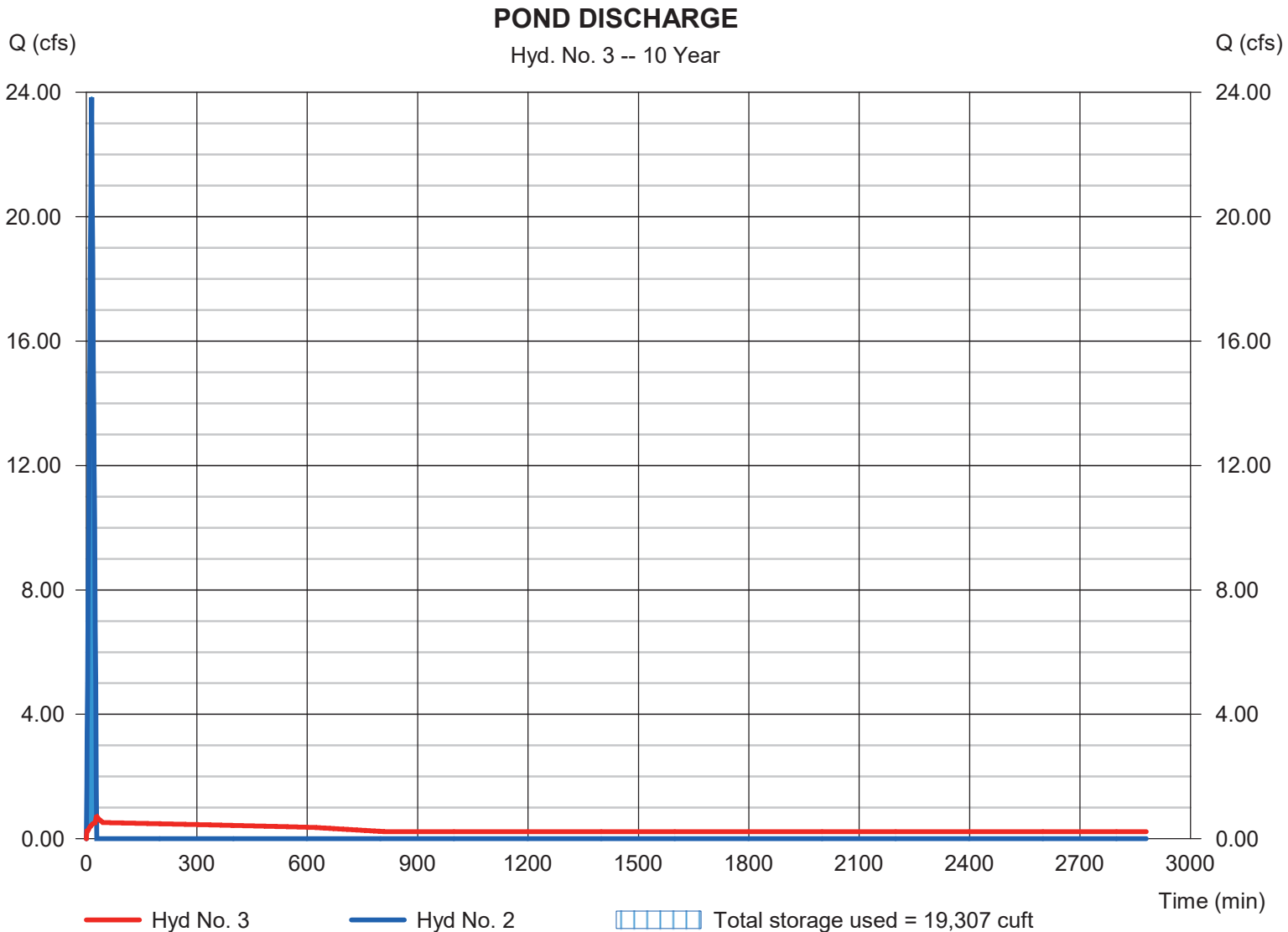


Hyd. No. 3

POND DISCHARGE

Hydrograph type	= Reservoir	Peak discharge	= 0.705 cfs
Storm frequency	= 10 yrs	Time to peak	= 28 min
Time interval	= 1 min	Hyd. volume	= 48,317 cuft
Inflow hyd. No.	= 2 - Post DEVELOPED	Max. Elevation	= 802.06 ft
Reservoir name	= POND B	Max. Storage	= 19,307 cuft

Storage Indication method used.



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

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	Rational	32.01	1	15	28,806	-----	-----	-----	Pre DEVELOPED	
2	Rational	33.07	1	14	27,778	-----	-----	-----	Post DEVELOPED	
3	Reservoir	2.683	1	27	55,200	2	802.79	26,013	POND DISCHARGE	
POND 2.gpw					Return Period: 100 Year			Wednesday, 04 / 13 / 2022		

Hyd. No. 1

Pre DEVELOPED

Hydrograph type	= Rational	Peak discharge	= 32.01 cfs
Storm frequency	= 100 yrs	Time to peak	= 15 min
Time interval	= 1 min	Hyd. volume	= 28,806 cuft
Drainage area	= 10.800 ac	Runoff coeff.	= 0.44*
Intensity	= 6.735 in/hr	Tc by TR55	= 15.00 min
IDF Curve	= BLGTN Updated 2020.IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(6.500 x 0.32) + (4.300 x 0.15)] / 10.800

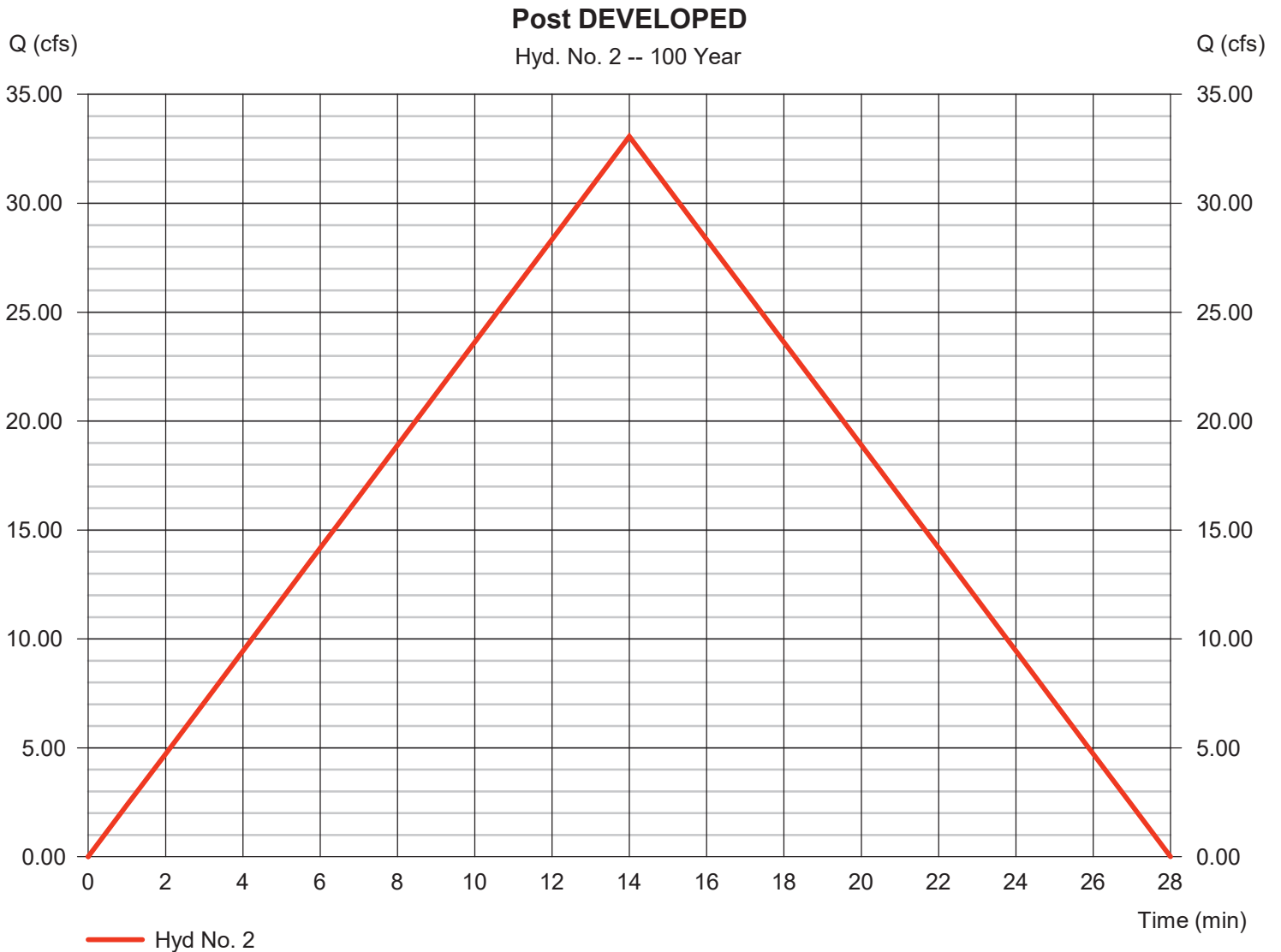


Hyd. No. 2

Post DEVELOPED

Hydrograph type	= Rational	Peak discharge	= 33.07 cfs
Storm frequency	= 100 yrs	Time to peak	= 14 min
Time interval	= 1 min	Hyd. volume	= 27,778 cuft
Drainage area	= 10.800 ac	Runoff coeff.	= 0.44*
Intensity	= 6.959 in/hr	Tc by TR55	= 14.00 min
IDF Curve	= BLGTN Updated 2020.IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(4.300 x 0.61) + (6.500 x 0.32)] / 10.800

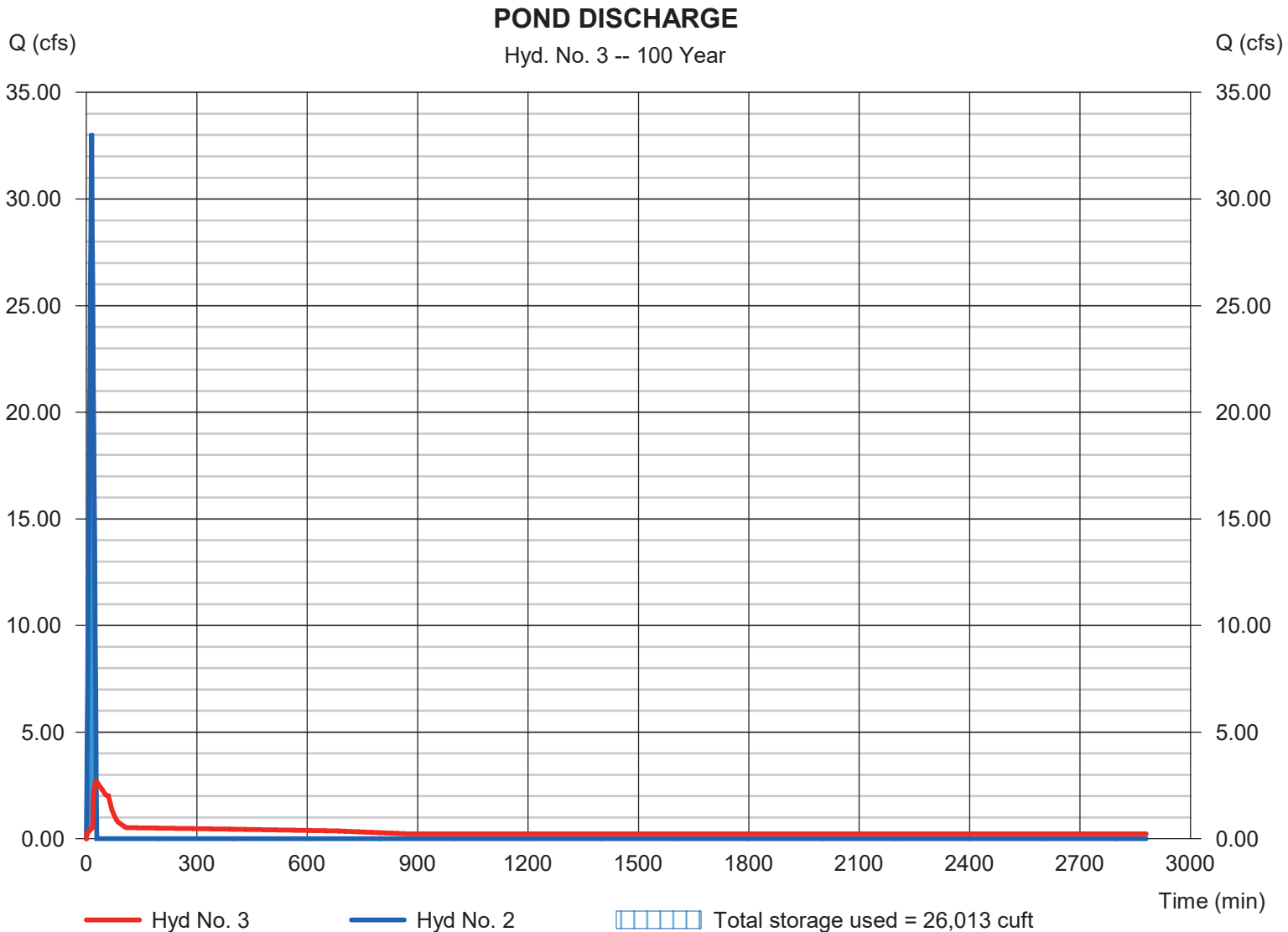


Hyd. No. 3

POND DISCHARGE

Hydrograph type	= Reservoir	Peak discharge	= 2.683 cfs
Storm frequency	= 100 yrs	Time to peak	= 27 min
Time interval	= 1 min	Hyd. volume	= 55,200 cuft
Inflow hyd. No.	= 2 - Post DEVELOPED	Max. Elevation	= 802.79 ft
Reservoir name	= POND B	Max. Storage	= 26,013 cuft

Storage Indication method used.



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	46.6468	9.5000	0.8650	-----
2	56.4828	9.8000	0.8643	-----
3	0.0000	0.0000	0.0000	-----
5	57.7440	9.2000	0.8173	-----
10	59.2126	8.7000	0.7906	-----
25	55.5095	7.5000	0.7370	-----
50	50.9219	6.3000	0.6907	-----
100	50.3253	5.8000	0.6627	-----

File name: BLGTN Updated 2020.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	4.62	3.57	2.93	2.50	2.18	1.94	1.75	1.60	1.47	1.36	1.27	1.19
2	5.50	4.28	3.52	3.00	2.63	2.34	2.11	1.93	1.77	1.65	1.54	1.44
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.60	5.16	4.27	3.66	3.22	2.88	2.61	2.39	2.21	2.06	1.92	1.81
10	7.48	5.85	4.85	4.17	3.67	3.29	2.99	2.74	2.54	2.37	2.22	2.09
25	8.63	6.73	5.60	4.83	4.27	3.84	3.50	3.23	3.00	2.80	2.64	2.49
50	9.54	7.41	6.16	5.32	4.72	4.26	3.90	3.60	3.35	3.15	2.97	2.81
100	10.40	8.08	6.74	5.84	5.19	4.70	4.31	3.99	3.73	3.50	3.31	3.14

Tc = time in minutes. Values may exceed 60.

Precip. file name: Sample.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	2.20	0.00	3.30	4.25	5.77	6.80	7.95
SCS 6-Hr	0.00	1.80	0.00	0.00	2.60	0.00	0.00	4.00
Huff-1st	0.00	1.55	0.00	2.75	4.00	5.38	6.50	8.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	1.75	0.00	2.80	3.90	5.25	6.00	7.10

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1503 W Arlington RD
Drainage & Water Quality Calculations
 March 11, 2022

Description:

The following are calculations for the design of a detention/water quality pond to be located at the south end of the property.

Sediment and Water Quality:

Initially outfitted with a perforated PE pipe riser, the pond will be used as a temporary sediment trap during construction. Once site improvements are complete and grass is established, it will be converted to permanent water quality/detention facility. The pond will be outfitted with perforated underdrain pipes contained in clean crushed stone and covered with amended soil.

Existing Conditions: (See basin Maps)

Basin Area = 10.8 ac

C-value = 60.19% 1 acre lots (0.32) + 39.81% woods – 12% slope (0.15)

C-value = 44

Tc = 15 mins

Proposed Conditions: (See basin Maps)

Basin Area = 10.8 ac

C-value = 23.88% impervious (0.95) + 15.93% grass (0.15) + 60.19% 1 acre lots (0.32)

Tc = mins

Pond:Stage/Storage Water Quality Calculations

Onsite Impervious Area = 60% Lots 3 and 4 – pond area = (0.6) (71586 sf) = 42952 sf

Water Quality Capture Volume: (Capture and retain 0.50" runoff)

Storage Required = (0.50 in / 12 in/ft) x 42952 sf = 1790 cf

Provide 1790 cf of storage min. for water quality.

West Pond Stage/Storage:

Elevation (ft)	Contour Area (sf)	Total Storage (cf)	
799	0	0	
800	6695	3348	Water Quality Storage Elevation = 799.53
801	7667	10529	
802	8697	18711	
803	9784	27951	

Emergency overflow spillway calculations:

Q_{100 year} = 32.01 cfs

Q_{100 year design} = 1.25 x 32 = 8.9 cfs; say 40 cfs

Required Weir Length (w/ depth of flow = 0.75') $L = Q / 3.33 \times H^{1.5}$

L = 18 feet

Summary:

The following table summarizes discharges in cfs for the listed return periods.

Detention Summary				
Return Period	Pre-Developed Discharge	Post-Developed Discharge	Allowable Discharge	(1) Actual Discharge
2 yr	16.74	17.34	16.74	0.48
10 yr	23.04	23.84	23.04	0.71
100 yr	32.01	33.07	32.01	2.68

(1) Actual Discharge = Pond Discharge