



LEO S. LUTZ  
Mayor

EVAN M. GABEL  
Solicitor

HEATHER ZINK  
Borough Council President

MARK E. STIVERS  
Borough Manager

## COLUMBIA BOROUGH PLANNING COMMISSION

Paul W. Myers Council Chamber, 308 Locust Street, Columbia

December 20, 2022 – 7:00 p.m.

### Final Agenda

*This meeting will be live streamed to the Borough's Facebook page as a convenience and is not meant to replace in-person participation in the meeting.*

- 1) Call to Order:
- 2) Moment of Silence:
- 3) Pledge of Allegiance:
- 4) Approval of Minutes:
  - a) Consider approval of the Planning Commission Meeting Minutes from November 15, 2022, Regular Meeting
- 5) Zoning Hearing(s) Consider Motion to Recommend to Zoning Hearing Board:
  - a) None
- 6) Engineer's Review(s) of SALDO Applications:
  - a) 237, 239, 243 & 245 South Fifth Street – Habitat for Humanity – Consider motion to approve land development plan
  - b) 305 Locust Street – GK 315 Locust Street Apartments – Consider motion to approve a modification of plan processing procedures
  - c) 305 Locust Street and 315 Locust Street – Cross easement and maintenance agreement – Consider motion to approve agreement
- 7) Demolition Applications Consider Motion to Recommend to Borough Council:
  - a) None
- 8) Action Items:
  - a) None
- 9) Discussion Items:
  - a) Project Updates



10) Old Business (for discussion):

11) New Business (for discussion):

12) Public Comments and Questions:

**Civility and Decorum:** Borough officials and members of the public are expected to conduct themselves with civility and to accord each other a measure of dignity and respect. Shouting, foul language, personal insults, threats, attacks, or any conduct that disrupts the flow of business is out of order.

13) Motion to Adjourn:

**Next Meeting Scheduled for January 17, 2023**

If you are person with a disability wishing to attend this meeting and require an accommodation to participate in the meeting, please contact the Columbia Borough Office at (717) 684-2467 at least 24 hours prior to the meeting.

MINUTES  
COLUMBIA BOROUGH PLANNING COMMISSION  
November 15, 2022

**MEMBERS IN ATTENDANCE:**

Mary Wickenheiser, Chairperson  
Tiffani Lynn, Vice-Chairperson  
Brad Lynn, Secretary  
Justin Evans  
Marilyn Kress Hartman  
Kelly Murphy  
Annette White

**STAFF IN ATTENDANCE:**

Sharon Cino, Planning and Zoning Manager  
Deb LaClair, Administrative Assistant

**GUESTS IN ATTENDANCE:**

Alyssa Shultz, Dumkopf LLC – 3 Shawnee Avenue

**CALL TO ORDER:**

Chairperson Wickenheiser called this regular meeting of the Columbia Borough Planning Commission to order on Tuesday, November 15, 2022, at 7:00 p.m.

There was a moment of silence and the pledge to the flag.

**APPROVAL OF MINUTES:**

Kelly Murphy motioned to approve the Regular Planning Commission meeting minutes from October 18, 2022, and Justin Evans seconded. All favored this motion.

**ZONING HEARING(S):**

There were no hearings for review at tonight's meeting.

**ENGINEER'S REVIEW(S):**

There were no reviews by the Borough Engineer.

**DEMOLITION APPLICATION(S):**

3 Shawnee Avenue – Alyssa Shultz, Dumkopf LLC, stated they submitted a demolition application to demolish the dwelling and pole barn at 3 Shawnee Avenue. She presented pictures of the interior of the dwelling and talked about the state of disrepair and concerns for safety. Alyssa explained the property was purchased by Chris Smiley, Dumkopf LLC. She pointed out the location of the dwelling, pole barn and garage on the plans. Mary Wickenheiser added the dwelling was a 2-story wood frame structure that has been vacant for some time. Alyssa clarified the dwelling and metal pole barn would be demolished and the garage would remain. Annette and Justin both questioned the condition of the dwelling. Alyssa stated the dwelling has been unoccupied for at least 2 years with deterioration of the

foundation and bowing of floors causing windows to fall out of the frames. Mary asked what the intention was of the property after demolition. Alyssa stated they had no plans for that property at this time. Mary asked about the on-lot septic system. Alyssa stated they would be filling that in as part of the demolition contract. Marilyn asked if it was possible they would construct another dwelling. Alyssa stated no, but they have discussed construction of a pole barn. There were no further questions from the Commission.

Brad Lynn motioned to recommend to Columbia Borough Council the demolition of the existing residential dwelling, pole barn and on-lot septic system located at 3 Shawnee Avenue and Tiffani Lynn seconded. All favored this motion.

**ACTION ITEMS:**

Kelly Murphy motioned to recommend to Borough Council the reappointment of Annette White to the Planning Commission, per Annette's correspondence, for a 4-year term ending December 31, 2026, and Tiffani Lynn seconded. All favored this motion.

Tiffani Lynn motioned to recommend to Borough Council the placement of 318 Poplar Street into the Land Bank program and Justin Evans seconded. All favored this motion.

Kelly Murphy motioned to recommend to Borough Council the placement of 349 North Second Street into the Land Bank program and Tiffani Lynn seconded. All favored this motion.

Kelly Murphy motioned to recommend to Borough Council the placement of 1005 Spruce Street into the Land Bank program and Tiffani Lynn seconded. All favored this motion.

**DISCUSSION ITEMS:**

Sharon Cino provided an update on land bank properties.

Sharon stated the Ad Hoc Committee for the Comprehensive Plan will be meeting next year to finish review before handing the plan over to the Planning Commission. Mary reminded everyone that there will also be work on an Official Map and Zoning Ordinance changes by the Commission.

Sharon stated that the Lancaster County Planning Commission was looking for board members and if anyone was interested to reach out to the Borough Manager.

Mary Wickenheiser pointed out the Planning Commission meeting dates for 2023 with the only change being in May because of primary election day. The Commission Members agreed to the change in May and those dates would be forwarded for advertisement.

**OLD BUSINESS:**

There were no items under old business.

**NEW BUSINESS:**

There were no items under new business.

**PUBLIC COMMENTS AND QUESTIONS:**

There were no comments or questions from the public.

**ADJOURNMENT:**

Justin Evans motioned to adjourn this meeting of the Columbia Borough Planning Commission at 7:27 p.m. and Tiffani Lynn seconded. All favored this motion.

Respectfully submitted,

Brad Lynn, Secretary

SUBDIVISION AND LAND DEVELOPMENT

190 Attachment 2

Borough of Columbia

Appendix B

Application for Consideration of a Subdivision and/or Land Development Plan

For Borough Use Only:

File No. \_\_\_\_\_

Date of Receipt/Filing: \_\_\_\_\_

Planning Commission Meeting Date: \_\_\_\_\_

Planning Commission Meeting Date: \_\_\_\_\_

The undersigned hereby applies for approval under the Subdivision and Land Development Ordinance of the Borough of Columbia for the Plan, submitted herewith and described below:

1. Application Classification:

- |                                      |                                |
|--------------------------------------|--------------------------------|
| _____ Sketch Plan                    | <u>X</u> Preliminary Plan      |
| <u>X</u> Final Plan                  | _____ Consolidation Plan       |
| _____ Centerline Separation Plan     | _____ Revised Subdivision Plan |
| _____ Lot Add-On Plan                | _____ Modified Final Plan      |
| <u>X</u> Waiver/Modification Process |                                |

2. Plan Name: FINAL SUBDIVISION/LAND DEVELOPMENT PLAN FOR LANCASTER LEBANON HABITAT FOR HUMANITY  
Consultant Project No.: 202116  
Plan Date: 11/7/2022

3. Project Location: 237, 239, 243, 245 SOUTH FIFTH STREET, COLUMBIA, PA

4. Name of Property Owners(s): LANCASTER COUNTY LAND BANK AUTHORITY  
Address: 28 PENN SQUARE, SUITE 200, LANCASTER, PA 17603 Phone No.: 717-394-0793  
Source of Title: 6638511, 6638511 Account No.: 110-63391-0-0000  
Second Property Owners(s): LANCASTER COUNTY LAND BANK AUTHORITY 110-63391-0-0000  
Address: SAME AS ABOVE Phone No.: SAME AS ABOVE  
Source of Title: 6507662, 6507623 Account No.: 110-58424-0-0000  
110-57744-0-0000

5. Land Use and Number of Lots and/or Units (indicate answer by number):  
\_\_\_\_\_ Single Family Detached \_\_\_\_\_ Commercial  
\_\_\_\_\_ Multi-Family Attached \_\_\_\_\_ Industrial  
\_\_\_\_\_ Agricultural \_\_\_\_\_ Institutional  
\_\_\_\_\_ Mixed Use 4 Other (please specify) SINGLE FAMILY TOWNHOUSE (ROWHOUSE)

6. Name of Applicant (if other than owner): LANCASTER LEBANON HABITAT FOR HUMANITY  
Address: 443 FAIRVIEW AVENUE, LANCASTER, PA 17603 Phone No.: 717-392-8836

7. Firm which prepared the plan: ML SAXINGER AND ASSOCIATES, INC.  
Address: 780 EDEN ROAD, LANCASTER, PA 17601 Phone No.: 717-291-1767  
Person Responsible for the Plan: MICHAEL L. SAXINGER, PLA

COLUMBIA CODE

8. Zoning District: HDR-HIGH DENSITY RESIDENTIAL  
 Is a Zoning Variance, Special Exception, and/or Conditional Use Approval Necessary?  Y/  
 N If yes, please specify:  
FLEXIBLE RESIDENTIAL DEVELOPMENT BY CONDITIONAL USE APPROVAL  
GRANTED MAY 24, 2022
9. Net Acreage of Parent Tract(s): 0.284 AC  
 Gross Acreage of Parent Tract(s): 0.284 AC  
 Square Feet of Ground Floor Area: 2721 SF
10. Type of Water Supply Proposed:  
 Public Owned Community  Privately Owned Community  
 Private On-Lot Well
11. Type of Sanitary Wastewater Disposal Proposed:  
 Public  Private Community  
 Community On-Lot  Individual On-Lot
12. Sewage Facilities Plan Revision or Supplement Number N/A PER DEP  
 Date Submitted \_\_\_\_\_ 20\_\_\_\_
13. Lineal Feet of New Street: N/A  
 Identify all Street(s) Not Proposed for Dedication: N/A
14. Acreage Proposed for Park or Other Public Use: N/A

The undersigned hereby represents that, to the best of his knowledge and belief, all information listed above is true, correct, and complete.

\_\_\_\_\_, 20\_\_\_\_  
Signature of Landowner or Applicant Date

\_\_\_\_\_, 20\_\_\_\_  
Signature of Landowner or Applicant Date

We do hereby request the Lancaster County Planning Commission review the enclosed subdivision or land development plan in accordance with the Pennsylvania Municipalities Planning Code, as amended, Article V, Section 502.

Michael J. A. Fyfe, P.L.A. Agent for Owner 11/10/22  
Signature Title Date

For LCPC Use Only:

LCPC File No. \_\_\_\_\_

Date of Receipt: \_\_\_\_\_, 20\_\_\_\_

Lancaster County Planning Commission Meeting Date: \_\_\_\_\_

SUBDIVISION AND LAND DEVELOPMENT

190 Attachment 3

Borough of Columbia

Appendix C
Application for Consideration of a Modification

For Borough Use Only:

File No. \_\_\_\_\_

Date of Receipt/Filing: \_\_\_\_\_

Planning Commission Meeting Date: \_\_\_\_\_

Planning Commission Meeting Date: \_\_\_\_\_

The undersigned hereby applies for approval of a modification/waiver, submitted herewith and described below:

- 1. Plan Name: FINAL SUBDIVISION/LAND DEVELOPMENT PLAN FOR LANCASTER LEBANON HABITAT FOR HUMANITY
Plan No.: 202116 Plan Date: 11/7/2022
2. Project Location: 237, 239, 243, 245 SOUTH FIFTH STREET
3. Name of Property Owners(s): LANCASTER COUNTY LAND BANK AUTHORITY
Address: 28 PENN SQUARE, SUITE 200, LANCASTER PA 17603 Phone No.: 717-394-0793
Source of Title: 6638511, 6638511 Account No.: 110-63391-0-0000, 110-63391-0-0000
Second Property Owners(s): LANCASTER COUNTY LAND BANK AUTHORITY
Address: SAME AS ABOVE Phone No.: SAME AS ABOVE
Source of Title: 6507662, 6507623 Account No.: 110-58424-0-0000, 110-63391-0-0000
4. Specific section of the Subdivision and Land Development Ordinance for which a modification is requested: SEE ATTACHED LETTER

The Proposed Alternative to the Requirement: SEE ATTACHED LETTER

Justification for the Modification/Waiver: SEE ATTACHED LETTER

The undersigned hereby represents that, to the best of their knowledge and belief, all information listed above is true, correct, and complete.

Signature Michael J. Syj, R.L.A., Agent for Owner Date 11/10/22

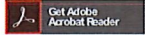




**LANCASTER COUNTY  
PLANNING**  
Lancaster, Pennsylvania

**SUBDIVISION AND/OR LAND DEVELOPMENT  
PLAN PROCESSING APPLICATION**

150 N Queen Street | Suite 320 | Lancaster, PA 17603 | 717-299-8333 | lancastercountyplanning.org



*For Department Use Only*

|                    |                 |     |           |               |         |             |  |
|--------------------|-----------------|-----|-----------|---------------|---------|-------------|--|
| LCPC File #        | Date of Receipt |     |           |               |         |             |  |
| Dept. Meeting Date | DGA             | DRA | Preserved | Clean & Green | PennDOT | PA Turnpike |  |
| Utilities          |                 |     |           |               |         |             |  |
| Phone              | Electric        | Gas | Cable     |               |         |             |  |

**Project Review Information**

**1. Municipality(ies)** Borough of Columbia

**2. Application Classification**

|  |  |
|--|--|
| <input checked="" type="checkbox"/> Subdivision Plan | <input checked="" type="checkbox"/> Land Development Plan                              |
| <input type="checkbox"/> Centerline Plan             | <input type="checkbox"/> Minor Plan  |
| <input checked="" type="checkbox"/> Final Plan       | <input type="checkbox"/> Memorandums of Understanding (MOUs) <i>(attach checklist)</i> |
| <input type="checkbox"/> Lot Add-on Plan             | <input type="checkbox"/> Planning Module   |
|  | <input checked="" type="checkbox"/> Preliminary Plan                                   |
|  | <input type="checkbox"/> Revised Final Plan  |

**3. Plan Name** Final Subdivision and Land Development Plan for Lancaster Lebanon Habitat for Humanity

**Consultant Project No.** 202116      **Plan Date** 11/07/2022

**4. Project Description** Subdivision and Land Development Plan to reconfigure 4 existing lots into 4 proposed lots with 4 townhomes, with parking and stormwater facilities

**5. Project Location (Direction and Distance)** 80' South of the intersection of S. 5th St and Ave. N along the East side of S. 5th St.

**Property Owner Information**

**6. Name of Property Owner(s)** Lancaster County Land Bank Authority

Address 28 Penn Square, Suite 200

|                         |  |           |                        |
|-------------------------|--|-----------|------------------------|
| City Lancaster          | State PA   | Zip 17603 | Phone # (717) 394-0793 |
| Deed # 6638511, 6638511 | Acct. # (13-digit) 1106339100000 , 1106339100000 |           |                        |

**Name of Second Property Owner(s)** Same as above

Address same as above

|                        |  |     |         |
|------------------------|--|-----|---------|
| City                   | State  | Zip | Phone # |
| Deed # 6507662,6507623 | Acct. # (13-digit) 1105842400000 , 1105774400000 |     |         |

*(Attach a separate sheet for additional owners; please provide all information listed above for all additional owners.)*

**Applicant Information (if other than the Owner)**

**7. Name of Applicant** Lancaster Lebanon Habitat for Humanity      E-mail andrew@llhfh.org

Address 443 Fairview Avenue

|                |          |           |                        |
|----------------|----------|-----------|------------------------|
| City Lancaster | State PA | Zip 17603 | Phone # (717) 392-8836 |
| Fax #          |          |           |                        |

**Applicant Information (cont'd)**

8. Consulting Firm ML Saxinger and Associates, Inc. E-mail mls@mlsaxinger.com

Project Manager Michael Saxinger, PLA

Address 780 Eden Road

City Lancaster State PA Zip 17601 Phone # (717) 291-1767

Fax #

**Plan Information**

9. Existing Zoning District(s)

Is / was a Zoning Variance, Special Exception, and / or Conditional Use Approval Necessary?  Yes  No  
*(If yes, attach municipal minutes of decision for this application.)*

10. Existing Land Use (check all that apply)

Agricultural  Institutional  Multi-Family (Attached)  
 Commercial  Mixed Use  Undeveloped / Vacant  
 Industrial  Single-Family (Detached)  Other (specify)

11. Subject Property Acreage 0.284

Gross Acreage of All Tracts 0.284 Net Acreage of All Tracts 0.284  
*(Total acreage of tract minus road, utilities, park land.)*

**12. Proposed Lots and Units**

| TYPE                | # OF LOTS | # OF UNITS | TYPE                                   | # OF LOTS | # OF UNITS |
|---------------------|-----------|------------|--|-----------|------------|
| <b>Total Number</b> |           |            | Mixed Use                              |           |            |
| Agricultural        |           |            | Single-Family (Detached)               |           |            |
| Commercial          |           |            | Multi-Family (Attached)                |           |            |
| Industrial          |           |            | Other (specify) Single Family Attached | 4         | 4          |
| Institutional       |           |            | Other (specify)                        |           |            |

| Existing and Proposed Building Areas  | TOTAL SQ. FEET |
|---|----------------|
| Total Square Feet of <b>Proposed</b> Ground Floor Area (Building Footprint) | 2,721.00       |
| Total Square Feet of <b>Existing</b> Structures (All Floors)                | 2,400.00       |
| Total Square Feet of <b>Proposed</b> Structures (All Floors)                | 4,885.00       |
| Total Square Feet (or Acres) of <b>Proposed</b> Parkland / Other Public Use |                |

**Water Supply and Sewage Disposal**

| 13. Sewer and Water Services   | PUBLIC   | PRIVATE COMMUNITY        | PRIVATE ON-LOT           |
|--------------------------------|--|--------------------------|--------------------------|
| Existing Water / Provider Name | <input checked="" type="checkbox"/> Columbia Water | <input type="checkbox"/> | <input type="checkbox"/> |
| Existing Sewer / Provider Name | <input checked="" type="checkbox"/> LASA           | <input type="checkbox"/> | <input type="checkbox"/> |
| Proposed Water / Provider Name | <input checked="" type="checkbox"/> Columbia Water | <input type="checkbox"/> | <input type="checkbox"/> |
| Proposed Sewer / Provider Name | <input checked="" type="checkbox"/> LASA           | <input type="checkbox"/> | <input type="checkbox"/> |
| DEP Module Number              | N/A  |                          |                          |


The undersigned hereby represents that, to the best of his/her knowledge and belief, all information listed above is true, correct, and complete.

\_\_\_\_\_  
 Signature of Landowner or Applicant  
 Date \_\_\_\_\_

\_\_\_\_\_  
 Signature of Landowner or Applicant  
 Date \_\_\_\_\_

**FOR MUNICIPAL USE ONLY**

We do hereby request the Lancaster County Planning Department/Commission review the enclosed Subdivision and/or Land Development Plan in accordance with the Pennsylvania Municipalities Planning Code, Article V, Section 502.

  
 Signature

Borough Manager  
 Title

Municipality Borough of Columbia Phone 717.684.2467 Date 11/10/2022



**SUBDIVISION AND/OR LAND DEVELOPMENT  
PLAN PROCESSING APPLICATION**  
**Application Fees Schedule**

*For Department Use Only*



|                |                               |
|----------------|-------------------------------|
| LCPC File #    | Date of Receipt               |
| Submitted Fees | Refunded Fees <i>(if any)</i> |

| Fees Schedule for Advisory Plan Reviews  |                       |
|--|-----------------------|
|  | FEE / ITEM            |
| <b>A. Preliminary and Final Plans Base Fee</b>   | <b>\$ 100.00</b>      |
| \$15.00 <i>additional</i> for each lot   | <b>\$ 15.00</b>       |
| \$15.00 <i>additional</i> for each unit  | <b>\$ 15.00</b>       |
| \$15.00 <i>additional</i> for each 1,000 sq. feet of new or expanded ground floor area for each principal building   | <b>\$ 15.00</b>       |
| <b>B. Combined Subdivision &amp; Land Development Plans (Preliminary or Final) Base Fee</b>  | <b>\$ 100.00</b>      |
| 50% of the combined separate fee for each plan type  |                       |
| <b>C. Memorandums of Understanding (MOUs)</b>  | 50% of the above fees |
| <b>Other Planning Fees</b>   |                       |
| <b>D. Planning Module Review</b>   | <b>\$ 150.00</b>      |
| <b>Fee Calculation Notes</b>   |                       |
| <ul style="list-style-type: none"> <li>• Lot number calculations include residual or "parent" lot. It is only counted when proposing a subdivision.</li> <li>• Square foot calculations are to be rounded up. It is only for proposed commercial / industrial buildings (footprint only).</li> </ul> |                       |

**Calculations to be completed by the applicant**

| Calculations of Filing Fees   |                  |
|-------------------------------|------------------|
|                               | LINE TOTAL       |
| <b>Base Fee</b>               | <b>\$ 100.00</b> |
| <b>Lots</b>                   | <b>\$ 60.00</b>  |
| <b>Units</b>                  | <b>\$ 60.00</b>  |
| <b>Square Feet</b>            | <b>\$ 0.00</b>   |
| <b>Planning Module Review</b> | <b>\$ 0.00</b>   |
| <b>TOTAL</b>                  | <b>\$ 220.00</b> |

**Questions**

Contact the Applications Coordinator at 717-299-8333 for any submittal questions.



**SURVEY NOTES:**

- BENCHMARK: MAG NAIL SET IN EDGE OF PAVEMENT ON AVENUE N, 5.1 FEET NORTHWEST FROM SANITARY MANHOLE IN THE MIDDLE OF AVENUE N. ELEVATION= 309.80 NAVD 88 DATUM.
- THIS PROPERTY WAS SURVEYED USING THE CURRENT DEEDS OF RECORD AND WITHOUT THE BENEFIT OF A "TITLE SEARCH". THIS SURVEY DOES NOT GUARANTEE OR IMPLY THAT THE PROPERTY IS NOT AFFECTED BY RIGHT-OF-WAY, EASEMENTS, RESTRICTIONS, ETC. WHICH MAY BE DISCOVERED BY A COMPLETE "TITLE SEARCH".
- UNDERGROUND UTILITY LOCATIONS ARE APPROXIMATE AND WERE DETERMINED FROM VISIBLE LOCATION. ACT 121 UTILITY RESPONSES AND/OR BEST AVAILABLE PLAN INFORMATION. (LAND GRANT SURVEYORS, LLC. CANNOT GUARANTEE THE EXACT LOCATION OF UNDERGROUND UTILITIES OR STRUCTURES, AN EXACT LOCATION OR THE EXISTENCE OF OR NONEXISTENCE OF UNDERGROUND UTILITIES CAN ONLY BE OBTAINED BY SUBSURFACE EXPLORATION, WHICH IS NOT PART OF THIS CONTRACT PERFORMANCE).
- BASIS OF BEARINGS TAKEN FROM A REALIZATION OF THE PENNSYLVANIA STATE PLANE COORDINATE SYSTEM SOUTH ZONE NAD 83.
- INFORMATION OBTAINED FROM LANCASTER COUNTY GIS DATA SHOWN ON THIS PLAN HAS NOT BEEN FIELD VERIFIED. ALL GIS DATA OBTAINED FROM LANCASTER COUNTY IS LOCATED OFF-SITE FOR PLANNING PURPOSES ONLY. "LIMITATION OF LIABILITY: WHILE LANCASTER HAS NO INDICATION OR REASON TO BELIEVE THAT THERE ARE ANY INACCURACIES OR DEFECTS IN INFORMATION INCORPORATED IN THIS WORK, THE COUNTY MAKES NO REPRESENTATIONS OF ANY KIND, INCLUDING, BUT NOT LIMITED TO, THE WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE, NOR ARE ANY SUCH WARRANTIES TO BE IMPLIED OR INFERRED, WITH RESPECT TO THE INFORMATION OR DATA FURNISHED HEREIN."
- PERMANENT MONUMENTS (M), MAG NAILS AND LOT MARKERS (O) SHALL BE SET UPON COMPLETION OF FINAL GRADING AT THE LOCATIONS SHOWN ON THE FINAL PLAN.

**GENERAL NOTES:**

- ANY REVISIONS MADE TO THESE PLANS AFTER THE DATE OF PLAN PREPARATION OR LATEST REVISION DATE SHALL NOT BE THE RESPONSIBILITY OF MLSAXINGER & ASSOCIATES, INC.
- THESE PLANS HAVE BEEN PREPARED FOR LAND DEVELOPMENT PLAN REVIEW PURPOSES, AND WHILE THEY MAY ILLUSTRATE CERTAIN CONSTRUCTION INFORMATION, THEY ARE NOT INTENDED TO BE CONSTRUCTION DOCUMENTS. DO NOT SCALE FROM THESE DRAWINGS. ALL IMPROVEMENTS INSTALLED BY THE DEVELOPER SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE COLUMBIA BOROUGH SUBDIVISION AND LAND DEVELOPMENT ORDINANCE REGULATIONS AND THE LANCASTER AREA SEWER AUTHORITY (LASA) SPECIFICATIONS FOR SEWER LINE INSTALLATION. WHERE NONE APPLY, THE SPECIFICATIONS OF THE PENNSYLVANIA DEPARTMENT OF TRANSPORTATION SHALL BE ADHERED TO.
- A PRE-CONSTRUCTION MEETING SHALL BE HELD PRIOR TO THE START OF CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY PERMITS FROM COLUMBIA BOROUGH RELATIVE TO THE CONSTRUCTION OF THIS PLAN.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL, TRENCH BARRICADING AND COVERINGS, SHEETING AND SHORING AND BRACING AS REQUIRED TO INSTALL ALL UNDERGROUND UTILITIES.
- NOTHING SHALL BE PLACED, PLANTED, SET, PUT OR MAINTAINED WITHIN THE AREA OF ANY EASEMENT THAT MAY ADVERSELY AFFECT THE FUNCTION OF THE EASEMENT OR CONFLICT WITH THE PURPOSE OR ARRANGEMENT OF THE EASEMENT.
- COLUMBIA BOROUGH IS NOT RESPONSIBLE FOR MAINTENANCE OF ANY AREA NOT DEDICATED TO AND ACCEPTED FOR PUBLIC USE, AND THAT NO ALTERATION TO SWALES, OR BASINS, OR PLACEMENT OF STRUCTURES SHALL BE PERMITTED WITHIN ANY EASEMENT.
- SIGNAGE WILL BE OWNED AND MAINTAINED BY THE INDIVIDUAL LOT OWNERS. ALL SITE SIGNAGE SHALL COMPLY WITH THE COLUMBIA BOROUGH ZONING ORDINANCE.
- ALL LAWN AND LANDSCAPING SHALL BE MAINTAINED BY THE LOT OWNER.
- NO STRUCTURE, PLANTING, EXCAVATION, NOR OTHER VISUAL OBSTRUCTION SHALL BE PERMITTED AT A HEIGHT GREATER THAN THREE (3) FEET WITHIN THE CLEAR SIGHT TRIANGLE AREA. A PUBLIC RIGHT-OF-WAY SHALL BE RESERVED FOR REMOVING ANY VISUAL OBSTRUCTION WITHIN THE CLEAR SIGHT TRIANGLE.
- ALL CONCRETE CURBING IS 8 INCH (8") VERTICAL CURB THE SPOT ELEVATIONS ALONG THE CONCRETE CURB LINE INDICATED ON THE GRADING PLAN ARE TO THE BOTTOM OF CURB UNLESS OTHERWISE NOTED.
- THE PARKING DATA CHART LOCATED ON THE COVER SHEET INDICATES THE NUMBER OF PARKING SPACES AS REQUIRED BY THE COLUMBIA BOROUGH ZONING ORDINANCE FOR THE SPECIFIC LOT USE.
- IT IS THE OWNERS RESPONSIBILITY TO KEEP ALL EXISTING PERMITS CURRENT. M. SAXINGER & ASSOCIATES, INCORPORATED TAKES NO RESPONSIBILITY FOR PERMITS THAT EXPIRE AFTER THE RECORDING OF THIS PLAN AT THE LANCASTER COUNTY RECORDER OF DEEDS OFFICE.
- ALL PROPOSED SIGNS MUST RECEIVE SEPARATE APPROVAL FROM THE BOROUGH ZONING OFFICER PRIOR TO INSTALLATION.
- ALL CONSTRUCTION SHALL BE SUBJECTED TO THE REQUIREMENTS OF THE PENNSYLVANIA UNIFORM CONSTRUCTION CODE, AS ADOPTED BY THE BOROUGH.
- ALL HANDICAP PARKING SPACES SHALL BE CONSTRUCTED TO MEET ADA REQUIREMENTS.
- PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED ALL PLANS AND OTHER DOCUMENTS BY ALL OF THE PERMITTING AUTHORITIES.
- THE OWNER/CONTRACTOR SHALL BE FAMILIAR WITH AND RESPONSIBLE FOR ANY/ALL CERTIFICATIONS, INSPECTIONS, ETC. REQUIRED BY ALL GOVERNING JURISDICTIONAL AGENCIES DURING AND AFTER CONSTRUCTION FOR SIGN-OFF AND CERTIFICATE OF OCCUPANCY ISSUANCE, INCLUDING BUT NOT LIMITED TO PROCUREMENT OF SERVICES, SCHEDULING OF FIELD OBSERVATIONS AND COORDINATION WITH REPRESENTATIVES OF THE APPROPRIATE PARTIES.
- THESE PLANS ARE BASED ON INFORMATION PROVIDED TO MLSAXINGER & ASSOCIATES, INC. (MLS) AT THE TIME OF PLAN PREPARATION. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND NOTIFY MLS IF ACTUAL SITE CONDITIONS DIFFER FROM THOSE SHOWN ON THE PLAN, OR IF THE PROPOSED WORK WOULD BE INHIBITED BY ANY OTHER SITE FEATURES.
- ALL DIMENSIONS SHOWN ON THE PLANS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY OWNER IN WRITING IF ANY DISCREPANCIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION. NO EXTRA COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR WORK HAVING TO BE REDONE DUE TO DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THESE PLANS IF SUCH NOTIFICATION HAS NOT BEEN GIVEN.
- CONTRACTOR SHALL REFER TO THE ARCHITECTURAL/BUILDING PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF ENTRY/EXIT POINTS, ELEVATIONS, PRECISE BUILDING DIMENSIONS, EXACT BUILDING UTILITY LOCATIONS.
- DEBRIS SHALL NOT BE BURIED ON THE SUBJECT SITE AND ALL UNSUITABLE EXCAVATED MATERIAL AND DEBRIS (SOLID WASTE) SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL TOWN, COUNTY, STATE AND FEDERAL LAWS AND APPLICABLE CODES.
- CONTRACTOR IS RESPONSIBLE FOR ALL SHORING REQUIRED DURING EXCAVATION (TO BE PERFORMED IN ACCORDANCE WITH CURRENT OSHA STANDARDS) AND ANY ADDITIONAL PROVISIONS TO ASSURE STABILITY OF CONTIGUOUS STRUCTURES, AS FIELD CONDITIONS DICTATE. CONTRACTOR IS TO EXERCISE EXTREME CARE WHEN PERFORMING ANY WORK.
- ACTIVITIES ADJACENT TO PAVEMENT, STRUCTURES, ETC. TO REMAIN. CONTRACTOR SHALL BE RESPONSIBLE FOR TAKING THE APPROPRIATE MEASURES AS NECESSARY TO ENSURE THE STRUCTURAL STABILITY OF SIDEWALKS AND PAVEMENT TO REMAIN, AND TO PROVIDE A SAFE WORK AREA.
- CONTRACTOR IS RESPONSIBLE FOR REPAIRING THE DAMAGE DONE TO ANY EXISTING ITEM DURING CONSTRUCTION SUCH AS BUT NOT LIMITED TO DRAINAGE, UTILITIES, PAVEMENT, STRIPING, CURB, ETC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR AND SHALL REPLACE ALL SIGNAL INTERCONNECT CABLE, CONDUITS, AND ANY UNDERGROUND ACCESSORY EQUIPMENT DAMAGED DURING CONSTRUCTION. REPAIR SHALL BE EQUAL TO OR BETTER THAN EXISTING CONDITIONS. CONTRACTOR IS RESPONSIBLE TO DOCUMENT ALL EXISTING DAMAGE AND NOTIFY THE OWNER PRIOR TO CONSTRUCTION START.
- ALL CONCRETE SHALL HAVE THE MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS AS INDICATED IN SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS, DETAILS AND/OR GEOTECHNICAL REPORT.
- THE LANDSCAPE ARCHITECT IS NOT RESPONSIBLE FOR CONSTRUCTION METHODS/MEANS FOR COMPLETION OF THE WORK DEPICTED ON THESE PLANS NOR ANY CONFLICTS/SCOPE REVISIONS WHICH RESULT FROM SAME. CONTRACTOR IS RESPONSIBLE FOR DETERMINING METHODS/MEANS FOR COMPLETION OF THE WORK PRIOR TO THE COMMENCEMENT OF CONSTRUCTION AND NOTIFICATION OF OWNER AND LANDSCAPE ARCHITECT OF RECORD WHEN A CONFLICT IS IDENTIFIED.
- THE LANDSCAPE ARCHITECT OF RECORD IS NOT RESPONSIBLE FOR JOB SITE SAFETY NOR HAS HE BEEN RETAINED FOR SUCH PURPOSES.
- MLS SHALL REVIEW AND APPROVE OR TAKE OTHER APPROPRIATE ACTION ON THE CONTRACTOR SUBMITTALS, SUCH AS SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND OTHER DATA, WHICH THE CONTRACTOR IS REQUIRED TO SUBMIT, BUT ONLY FOR THE LIMITED PURPOSE OF CHECKING FOR CONFORMANCE WITH THE DESIGN CONCEPT AND THE INFORMATION SHOWN IN THE CONSTRUCTION MEANS OR METHODS, COORDINATION OF THE WORK WITH OTHER TRADES, OR CONSTRUCTION SAFETY PRECAUTIONS, ALL OF WHICH ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. MLS'S REVIEW SHALL BE CONDUCTED WITH REASONABLE PROMPTNESS WHILE ALLOWING SUFFICIENT TIME TO PERMIT ADEQUATE REVIEW. REVIEW OF A SPECIFIC ITEM SHALL NOT INDICATE THAT MLS HAS REVIEWED THE ENTIRE ASSEMBLY OF WHICH THE ITEM IS A COMPONENT. MLS SHALL NOT BE RESPONSIBLE FOR ANY DEVIATIONS FROM THE CONSTRUCTION DOCUMENTS NOT BROUGHT TO THE ATTENTION OF MLS IN WRITING BY THE CONTRACTOR. MLS SHALL NOT BE REQUIRED TO REVIEW PARTIAL SUBMISSIONS OR THOSE FOR WHICH SUBMISSIONS OF CORRELATED ITEMS HAVE NOT BEEN RECEIVED.
- IF THE CONTRACTOR DEVIATES FROM THE PLANS AND SPECIFICATIONS, INCLUDING THE NOTES CONTAINED THEREON, WITHOUT FIRST OBTAINING PRIOR WRITTEN AUTHORIZATION FOR SUCH DEVIATIONS FROM THE OWNER AND LANDSCAPE ARCHITECT, IT SHALL BE RESPONSIBLE FOR THE PAYMENT OF ALL COSTS TO CORRECT ANY WORK DONE, ALL FINES OR PENALTIES ASSESSED WITH RESPECT THERETO AND ALL COMPENSATORY OR PUNITIVE DAMAGES RESULTING THEREFROM. THE CONTRACTOR SHALL INDEMNIFY AND HOLD THE OWNER AND LANDSCAPE ARCHITECT HARMLESS FROM ALL SUCH COSTS TO CORRECT ANY SUCH WORK AND FROM ALL SUCH FINES AND PENALTIES, COMPENSATION AND PUNITIVE DAMAGES AND COSTS OF ANY NATURE RESULTING THEREFROM.
- UPON COMPLETION OF GRADING, AND PRIOR TO THE AS-BUILT SURVEY, THE SURVEYOR SHALL INSTALL ALL PROPERTY MONUMENTATION, AS NOTED ON THE FINAL SUBDIVISION PLAN.
- THE WETLAND INVESTIGATION WAS PERFORMED BY MLSAXINGER & ASSOCIATES, INC. IN APRIL 2022. NO WETLANDS EXIST ON SITE.
- THE OWNERS SHALL OPERATE THE PROPOSED FACILITY IN CONFORMANCE WITH ALL FEDERAL, STATE, AND LOCAL RULES AND REGULATIONS.

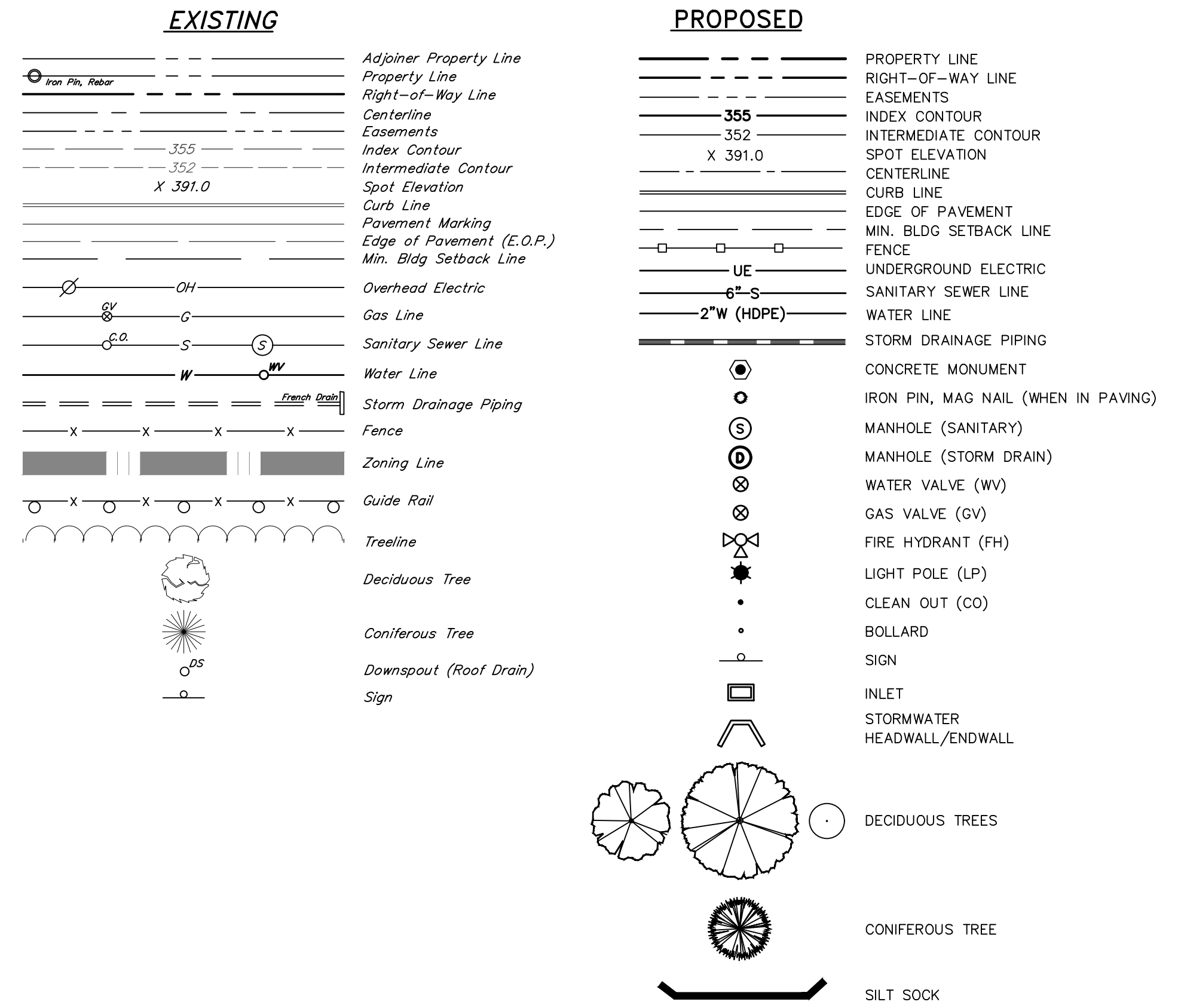
**SANITARY SEWER NOTES:**

- A MINIMUM OF 4 FEET OF COVER IS REQUIRED OVER ALL SANITARY SEWER MAINS. A MINIMUM OF 3 FEET OF COVER IS REQUIRED OVER ALL SANITARY SEWER LATERALS. THE SEWER LINE SHALL BE CONSTRUCTED TO THE LINE AND GRADE SHOWN ON THE PLANS.
- ALL SANITARY SEWER IMPROVEMENTS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE LANCASTER AREA SEWER AUTHORITY (LASA) SPECIFICATIONS.
- THE CONTRACTOR IS RESPONSIBLE FOR FIELD TESTING AND RECORD DRAWINGS PER LASA REQUIREMENTS.
- SHOP DRAWINGS SHALL BE SUBMITTED TO LASA FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
- LASA SHALL RECEIVE NOTIFICATION NO LESS THAN TWO (2) WEEKS PRIOR TO THE START OF CONSTRUCTION. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD WITH THE AUTHORITY AND A CONSTRUCTION SCHEDULE AND EMERGENCY CONTACT LIST SHALL BE SUBMITTED TO LASA PRIOR TO STARTING THE WORK.
- TESTING OF ALL SANITARY SEWER FACILITIES SHALL BE DONE IN THE PRESENCE OF LASA PERSONNEL OR REPRESENTATIVES, AND IN ACCORDANCE WITH LASA'S REQUIREMENTS.
- NO SANITARY SEWER FACILITIES WILL BE OFFERED FOR DEDICATION.
- A MINIMUM VERTICAL SEPARATION OF 18" SHALL BE MAINTAINED BETWEEN ALL WATER (INCLUDING STORM WATER) AND SEWER CROSSINGS. IF THE CLEARANCE CAN NOT BE MAINTAINED, A CONCRETE ENCASEMENT SHALL BE PROVIDED.
- LASA MUST BE NOTIFIED AT LEAST 7 DAYS IN ADVANCE OF CONNECTION INTO THE EXISTING SANITARY SEWER LINE.
- NON-SANITARY SEWER DISCHARGES TO THE SANITARY SEWER ARE PROHIBITED.

**WATER SERVICE NOTES:**

- THE PROPOSED DWELLINGS WILL BE SERVICED BY PUBLIC WATER.

**LEGEND**



PENNSYLVANIA ACT 121 (2008) REQUIRES NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE COMMONWEALTH.

DATE: 11/10/2022 BY: RJP SERIAL NO.: 20223140248

**NOTES: UNDERGROUND UTILITY LINE PROTECTION ACT**

IN COMPLIANCE WITH AND PURSUANT TO THE PROVISIONS OF 73 P.S. §176, AS AMENDED BY ACT 121 OF 2008, LAND GRANT SURVEYORS, LLC HAS PERFORMED THE FOLLOWING REQUIREMENTS IN PREPARING THESE DRAWINGS THAT INCLUDE EXCAVATION OR DEMOLITION WORK AT SITES WITHIN THE POLITICAL SUBDIVISION AND/OR LAND DEVELOPMENT SHOWN ON THE DRAWINGS HEREIN:

- PURSUANT TO 73 P.S. §176(2), LAND GRANT SURVEYORS, LLC HAS REQUESTED LINE AND FACILITY INFORMATION FROM THE ONE CALL SYSTEM NOT LESS THAN TEN (10) NOR MORE THAN NINETY (90) BUSINESS DAYS BEFORE FINAL DESIGN IS TO BE COMPLETED. IF SUCH INFORMATION WAS OBTAINED MORE THAN NINETY (90) DAYS BEFORE FINAL DESIGN IS TO BE COMPLETED, LAND GRANT SURVEYORS, LLC HAS STATED IN THE REQUEST THAT THE WORK IS PRELIMINARY.
- PURSUANT TO 73 P.S. §176(3), LAND GRANT SURVEYORS, LLC HAS SHOWN, UPON REQUEST THESE DRAWINGS, THE POSITION AND TYPE OF EACH FACILITY OWNER'S LINE, AS DERIVES PURSUANT TO THE REQUEST MADE AS REQUIRED BY 73 P.S. §176(2), THE NAME OF THE FACILITY OWNER AND THE FACILITY OWNER'S DESIGNATED OFFICE ADDRESS AND TELEPHONE NUMBER.
- PURSUANT TO 73 P.S. §176(5), LAND GRANT SURVEYORS, LLC HAS CALLED THE ONE CALL SYSTEM AND SHOWN AS PROOF, THE SERIAL NUMBER OF THE ONE CALL NOTICE AND THE TOLL FREE NUMBER OF THE ONE CALL SYSTEM ON THE DRAWINGS NEAR THE SERIAL NUMBER.
- IF, PURSUANT TO 73 P.S. §176(2), LAND GRANT SURVEYORS, LLC HAS REQUESTED LINE AND FACILITY INFORMATION FROM THE ONE CALL SYSTEM MORE THAN NINETY (90) DAYS BEFORE FINAL DESIGN IS TO BE COMPLETED, LAND GRANT SURVEYORS, LLC HAS INDICATED THAT THE REQUEST IS PRELIMINARY AND THE SERIAL NUMBER OF SAID REQUEST IS SHOWN ON THE DRAWINGS HEREIN.

LAND GRANT SURVEYORS, LLC DOES NOT REPRESENT, WARRANT, ASSURE OR GUARANTEE THAT THE INFORMATION RECEIVED PURSUANT TO THE ONE CALL SYSTEM REQUEST AND AS REFLECTED ON THESE DRAWINGS IS ACCURATE OR CORRECT. FURTHERMORE, LAND GRANT SURVEYORS, LLC, INCLUDES THE INFORMATION ONLY PURSUANT TO THE REQUIREMENTS OF THE UNDERGROUND UTILITY LINE PROTECTION ACT, AS AMENDED BY ACT 121 OF 2008.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION BY CALLING THE PENNSYLVANIA ONE CALL SYSTEM 1-800-242-1776 A MINIMUM OF THREE (3) DAYS PRIOR TO EXCAVATING OR WITH CAREFUL EXPLORATORY WORK, AT THE CONTRACTOR'S RISK, PRIOR TO CONSTRUCTION FOR THOSE PRIVATE LINES WHICH ARE NOT ABLE TO BE LOCATED THROUGH THE ONE CALL PROCESS. IT MAY BECOME NECESSARY IN THE FIELD TO ADJUST THE PROPOSED UTILITY LOCATION TO RESOLVE AND UTILITY CROSSING CONFLICTS WHICH MAY OCCUR. LAND GRANT SURVEYORS, LLC SHALL BE NOTIFIED IMMEDIATELY OF ANY SUCH CONFLICTS ARE ENCOUNTERED. THE INFORMATION CONTAINED IN THIS SECTION AS IT RELATES TO THE DUTIES OF CONTRACTORS DOES NOT CONSTITUTE OR ADVISE AND IN NO WAY REPRESENTS THE EXTENT OF THE CONTRACTOR'S DUTIES PURSUANT TO THE UNDERGROUND UTILITY LINE PROTECTION ACT. CONTRACTORS WITH QUESTIONS REGARDING THE UNDERGROUND UTILITY LINE PROTECTION ACT SHOULD CONSULT WITH AN ATTORNEY IMMEDIATELY.

**UTILITY LIST:**

CONTACT PA ONE CALL AT 1-800-242-1776 FOR INDIVIDUAL UTILITY TELEPHONE NUMBERS.

**COMPANY-COLUMBIA BOROUGH**  
ADDRESS:388 LOCUST STREET  
COLUMBIA, PA 17512  
CONTACT:JAKE GRAHAM  
EMAIL:jgraham@columbiapsa.net

**COMPANY-COMCAST**  
ADDRESS:338 BALTIMORE RD  
SHIPPENSBURG, PA 17257  
CONTACT:WILLIAM MAVS  
EMAIL:wilma\_mavs@comcast.com

**COMPANY-LANCASTER AREA SEWER AUTHORITY**  
ADDRESS:130 CENTERVILLE RD  
LANCASTER, PA 17603  
CONTACT:JOHN VILGA  
EMAIL:JVILGA@LASA.ORG

**COMPANY-COLUMBIA WATER COMPANY**  
ADDRESS:220 LOCUST STREET  
PO BOX 380  
COLUMBIA, PA 17512  
CONTACT:DAVID LEVINS  
EMAIL:DLLEVINS@COLUMBIAWATER.NET

**COMPANY-PPL ELECTRIC UTILITIES CORPORATION**  
ADDRESS:34 SUSSUEHANNA TRL  
NORTHAMBERLAND, PA 17857  
CONTACT:DOUG HAUPT  
EMAIL:dghaupt@ppweb.com

**COMPANY-LUMEN CENTURY LINK**  
ADDRESS:200 TECHNOLOGY DRIVE PITTSBURGH, PA 15219  
CONTACT: DAN SHENTO@LUMEN.COM  
EMAIL: DAN SHENTO@LUMEN.COM

**COMPANY-SIGI UTILITIES INC**  
ADDRESS:1301 AIP DR  
MIDDLETOWN, PA 17057  
CONTACT:STEPHEN BATEMAN  
EMAIL:sbateman@sigi.com

**Saxinger & Associates, Inc.**  
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780 Eden Road Lancaster, PA 17601  
phone: 717.291.1767  
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**FINAL SUBDIVISION & LAND DEVELOPMENT PLAN**

SUBJECT:  
**HABITAT FOR HUMANITY**  
237, 239, 243, 245, 5. FIFTH ST.  
COLUMBIA, PA

SHEET TITLE:  
**NOTES / LEGEND**

CLIENT:  
**LANCASTER LEBANON HABITAT FOR HUMANITY**  
443 FAIRVIEW AVE  
LANCASTER, PA 17603

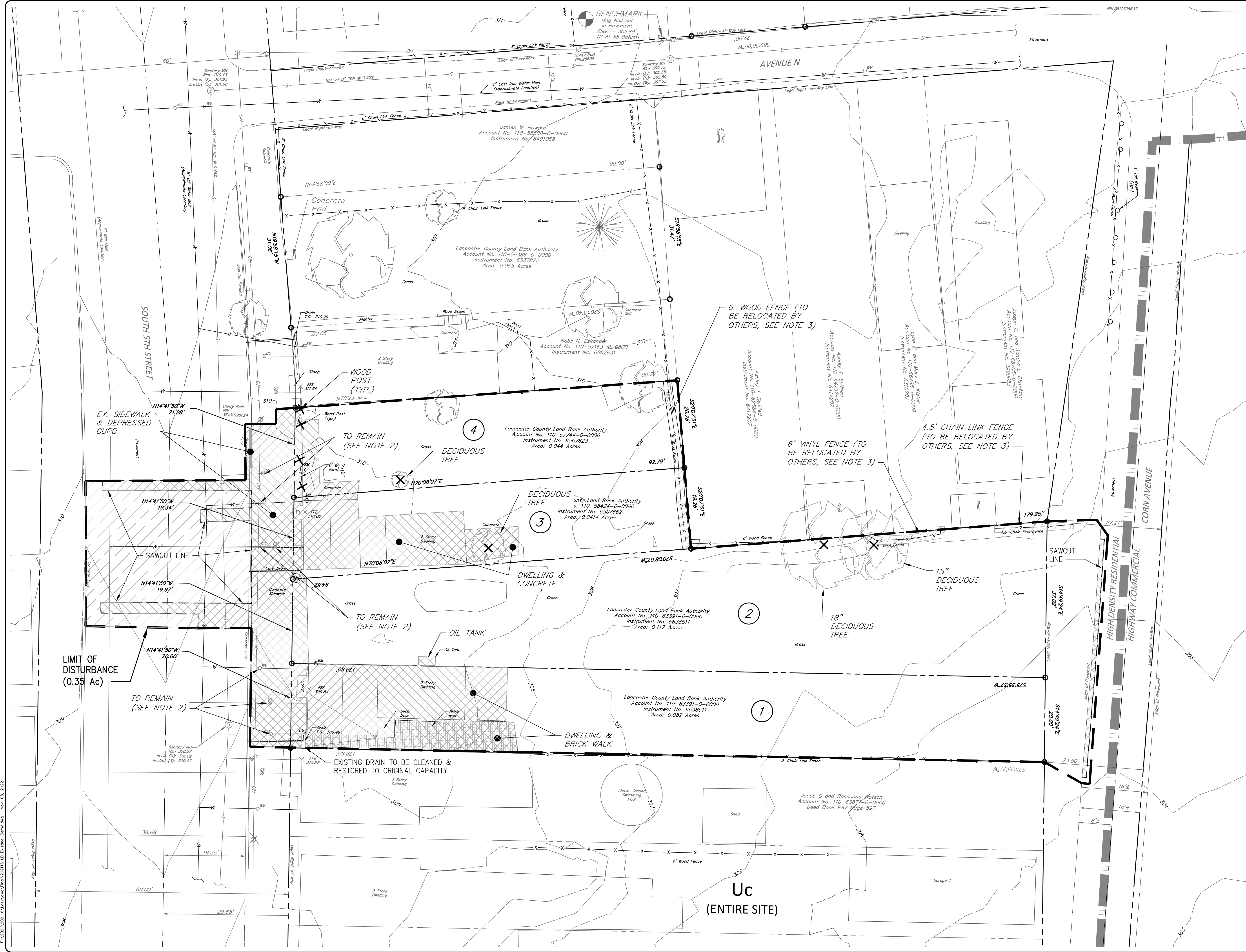
DESIGNED BY: MLS DATE: 11/07/2022

CHECKED BY: MLS PROJ. NO.: 202116

DRAWN BY: JDS SHEET NO.: 2 OF 17

SCALE: AS NOTED

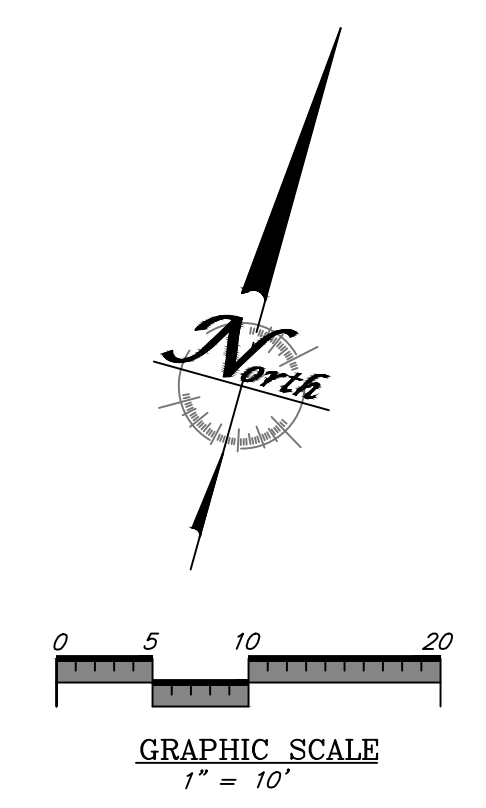
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**LEGEND**

|                                      |  |
|--------------------------------------|--|
| IMPERVIOUS SURFACES TO BE REMOVED    |  |
| FEATURE(S) TO BE REMOVED             |  |
| LIMIT OF DISTURBANCE/DEMOLITION LINE |  |
| FEATURE(S) TO BE RELOCATED           |  |
| MACADAM TO BE MILLED                 |  |

- NOTES:**
- EXISTING DWELLINGS HAVE BEEN DEMOLISHED AND ARE SHOWN TO DOCUMENT THE AMOUNT OF EXISTING IMPERVIOUS COVER THAT IS/WAS AFFECTED ON THE PROPERTIES.
  - CONTRACTOR TO TAKE CAUTION WHEN REMOVING SIDEWALK SO AS TO NOT DAMAGE EXISTING SEWER OR WATER TO REMAIN.
  - AFFECTED LOT OWNERS SHALL BE NOTIFIED TO RELOCATE, OR REMOVE, EXISTING FENCING THAT IS CURRENTLY ENCRANCHING ON LOTS 2, 3, AND 4.



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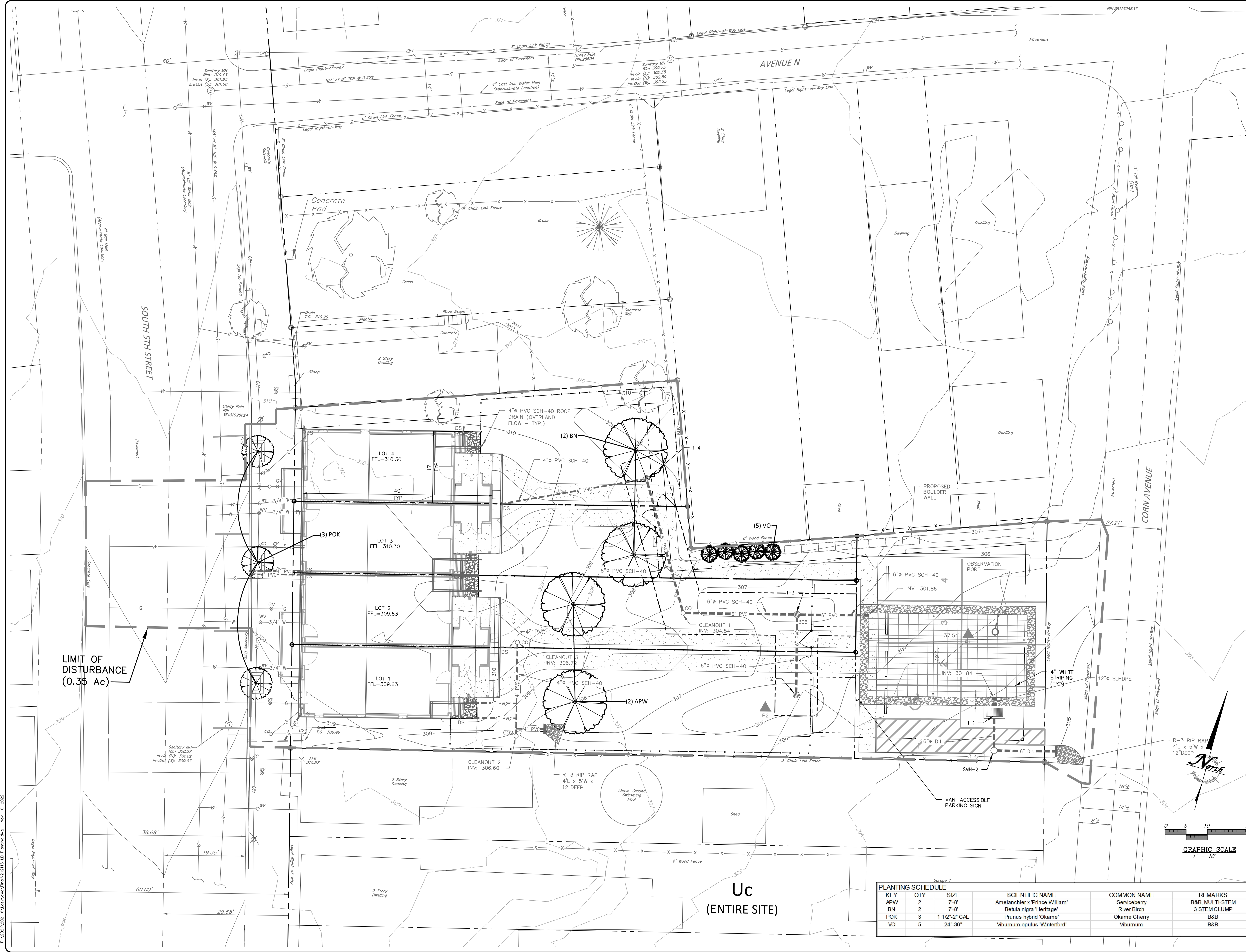
**FINAL SUBDIVISION & LAND DEVELOPMENT PLAN**

SUBJECT:  
**HABITAT FOR HUMANITY**  
 237, 239, 243, 245, S. FIFTH ST.  
 COLUMBIA, PA

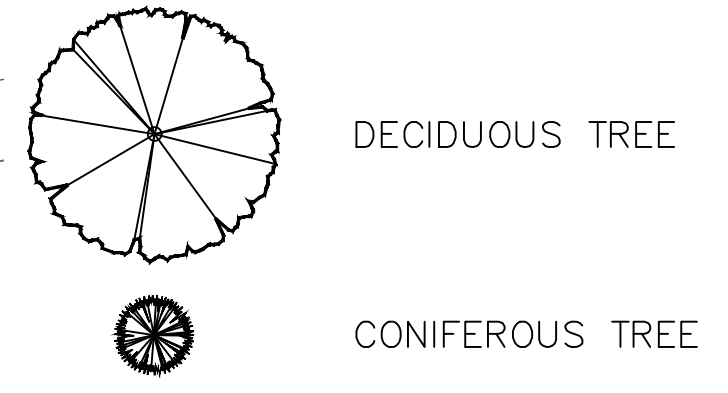
SHEET TITLE:  
**EXISTING CONDITIONS / DEMO PLAN**

CLIENT:  
**LANCASTER LEBANON HABITAT FOR HUMANITY**  
 443 FAIRVIEW AVE.  
 LANCASTER, PA 17603

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| DESIGNED BY: | MLS      | DATE:      | 11/07/2022 |
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**PLANT LEGEND**



**PLANTING NOTES**

1. ALL PLANTS SHALL BE OF THE SIZE AND ROOT CONDITION SPECIFIED IN THE PLANT LIST, NURSERY GROWN, AND SHALL HAVE DENSE FOLIAGE, CHARACTERISTIC OF EACH SPECIES. THEY SHALL MEET ALL APPLICABLE STANDARDS OF THE AMERICAN ASSOCIATION OF NURSERYMEN.
2. ALL PLANTS SHALL BE GUARANTEED BY THE LANDSCAPE CONTRACTOR FOR A PERIOD OF ONE YEAR AFTER ACCEPTANCE. THEY SHALL BE ALIVE AND IN SATISFACTORY GROWTH AT THE END OF THE GUARANTEE PERIOD.
3. ALL DECIDUOUS TREES SHALL BE SECURED BY THE APPROPRIATE STAKING METHOD DETAIL USING DOUBLE STRAND GALVANIZED WIRE, RUBBER HOSE COVERING AT THE TREE TRUNK WHEN SPECIFIED.
4. ALL TREE SAUCERS SHALL BE COVERED WITH A MINIMUM OF 3" OR APPROVED EQUAL, LAYER OF WOOD CHIP OR SHREDED BARK MULCH.
5. ALL DAMAGED LAWN OR PAVED AREAS RESULTING FROM PLANTING OPERATIONS SHALL BE REPAIRED IN KIND BY THE PLANTING CONTRACTOR.
6. VERIFICATION OF PLANT QUANTITIES SHALL BE THE RESPONSIBILITY OF THE PLANTING CONTRACTOR.
7. ALL PLANTS HAVE BEEN LOCATED WITH RESPECT TO KNOWN OR EXISTING OR PROPOSED UTILITIES. HOWEVER, THE CONTRACTOR SHALL VERIFY THE LOCATION OF UTILITIES BEFORE COMMENCING WITH THE WORK AND SHALL BE RESPONSIBLE FOR REPAIR OF ANY DAMAGES RESULTING FROM PLANTING OPERATIONS.
8. THE LANDSCAPE ARCHITECT SHALL BE NOTIFIED OF ANY RELOCATION OF PLANTS MADE NECESSARY BY UTILITIES OR OTHER EXISTING FEATURES PREVENTING THE CONTRACTOR FROM IMPLEMENTATION OF THE PLANTING PLAN, AS DRAWN. SUCH NOTIFICATION SHALL BE MADE BEFORE THE FIELD CHANGE IS CARRIED OUT. NO PLANT MATERIALS ARE TO BE SUBSTITUTED WITHOUT PRIOR APPROVAL OF THE LANDSCAPE ARCHITECT.
9. COMPLETE FERTILIZER OR NEUTRAL CHARACTER, WITH SOME ELEMENTS DERIVED FROM ORGANIC SOURCES AND CONTAINING FOLLOWING PERCENTAGES OF AVAILABLE PLANT NUTRIENTS:  
 A. FOR TREES AND SHRUBS, PROVIDE FERTILIZER WITH NOT LESS THAN 5% TOTAL NITROGEN, 10% AVAILABLE PHOSPHORIC ACID, AND 5% SOLUBLE POTASH.

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**FINAL SUBDIVISION & LAND DEVELOPMENT PLAN**

SUBJECT:  
**HABITAT FOR HUMANITY**  
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 COLUMBIA, PA

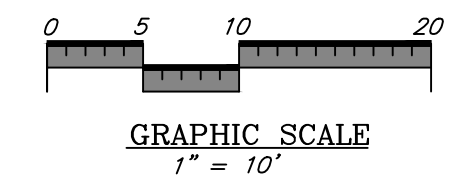
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**PLANTING PLAN**

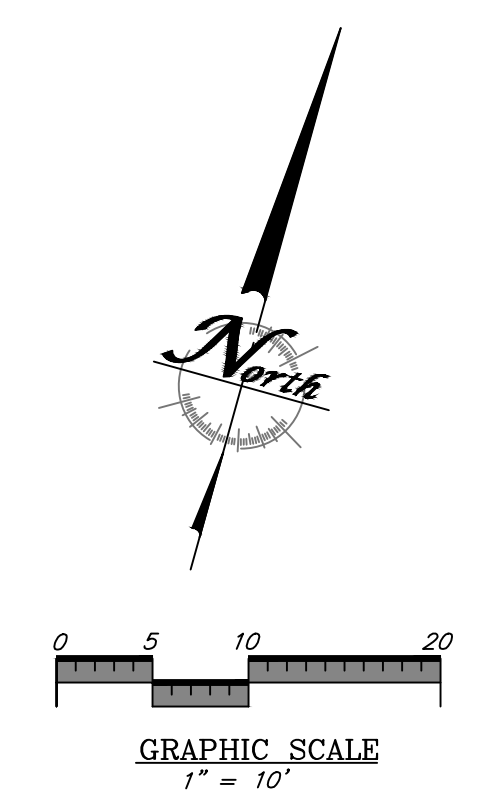
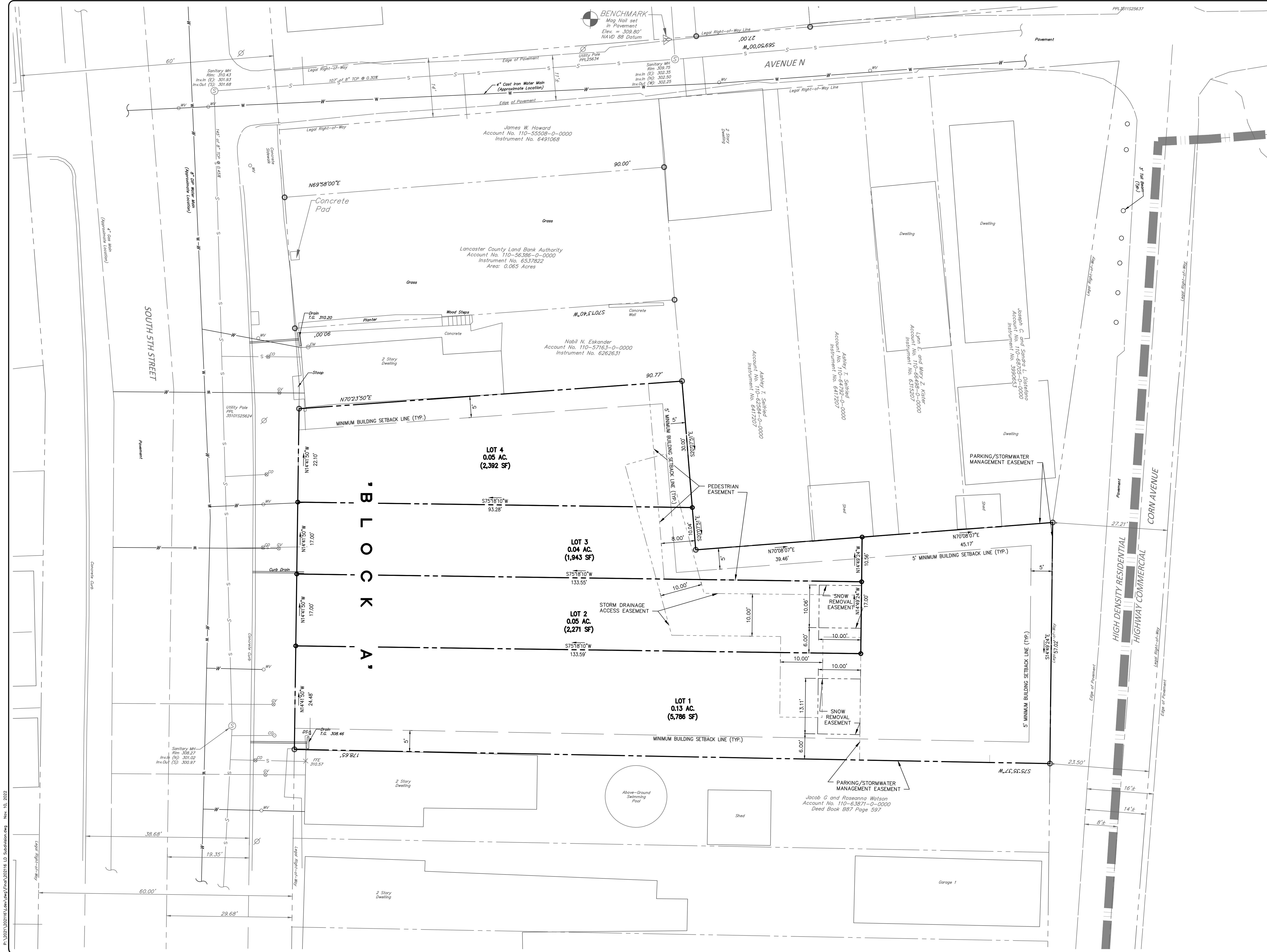
CLIENT:  
**LANCASTER LEBANON HABITAT FOR HUMANITY**  
 443 FAIRVIEW AVE.  
 LANCASTER, PA 17603

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| DESIGNED BY: | MLS      | DATE:      | 11/07/2022 |
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**PLANTING SCHEDULE**

| KEY | QTY | SIZE          | SCIENTIFIC NAME              | COMMON NAME  | REMARKS         |
|-----|-----|---------------|------------------------------|--------------|-----------------|
| APW | 2   | 7'-8"         | Amelanchier x Prince William | Serviceberry | B&B, MULTI-STEM |
| BN  | 2   | 7'-8"         | Betula nigra 'Heritage'      | River Birch  | 3 STEM CLUMP    |
| POK | 3   | 1 1/2"-2" CAL | Prunus hybrid 'Okame'        | Okame Cherry | B&B             |
| VO  | 5   | 24"-36"       | Viburnum opulus 'Winterford' | Viburnum     | B&B             |





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FINAL  
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 LAND DEVELOPMENT PLAN

SUBJECT:  
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 COLUMBIA, PA

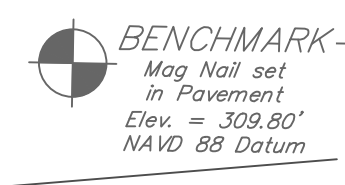
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 SUBDIVISION PLAN

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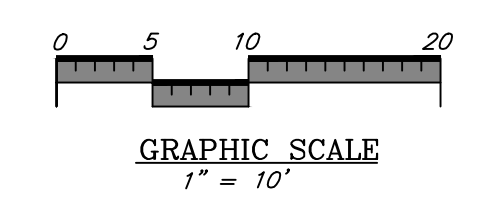
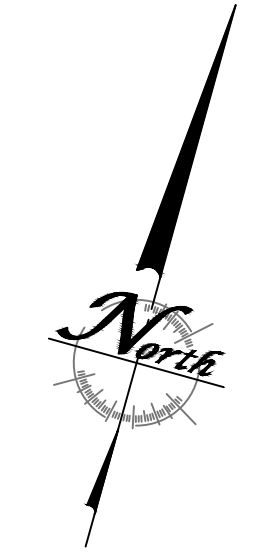
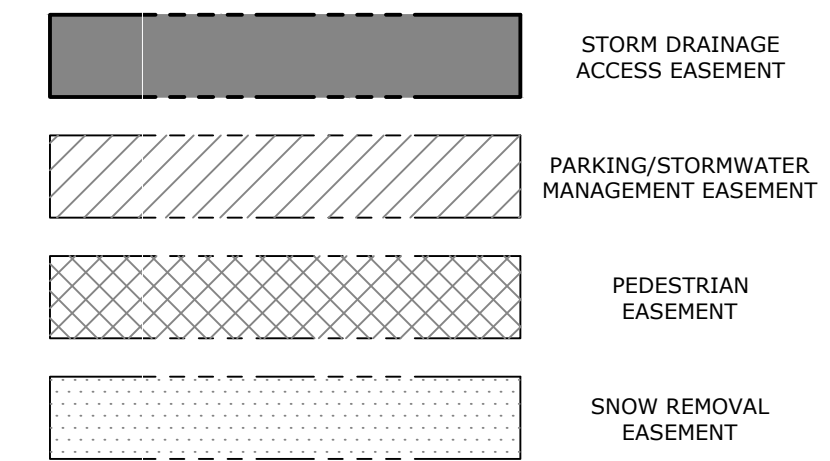
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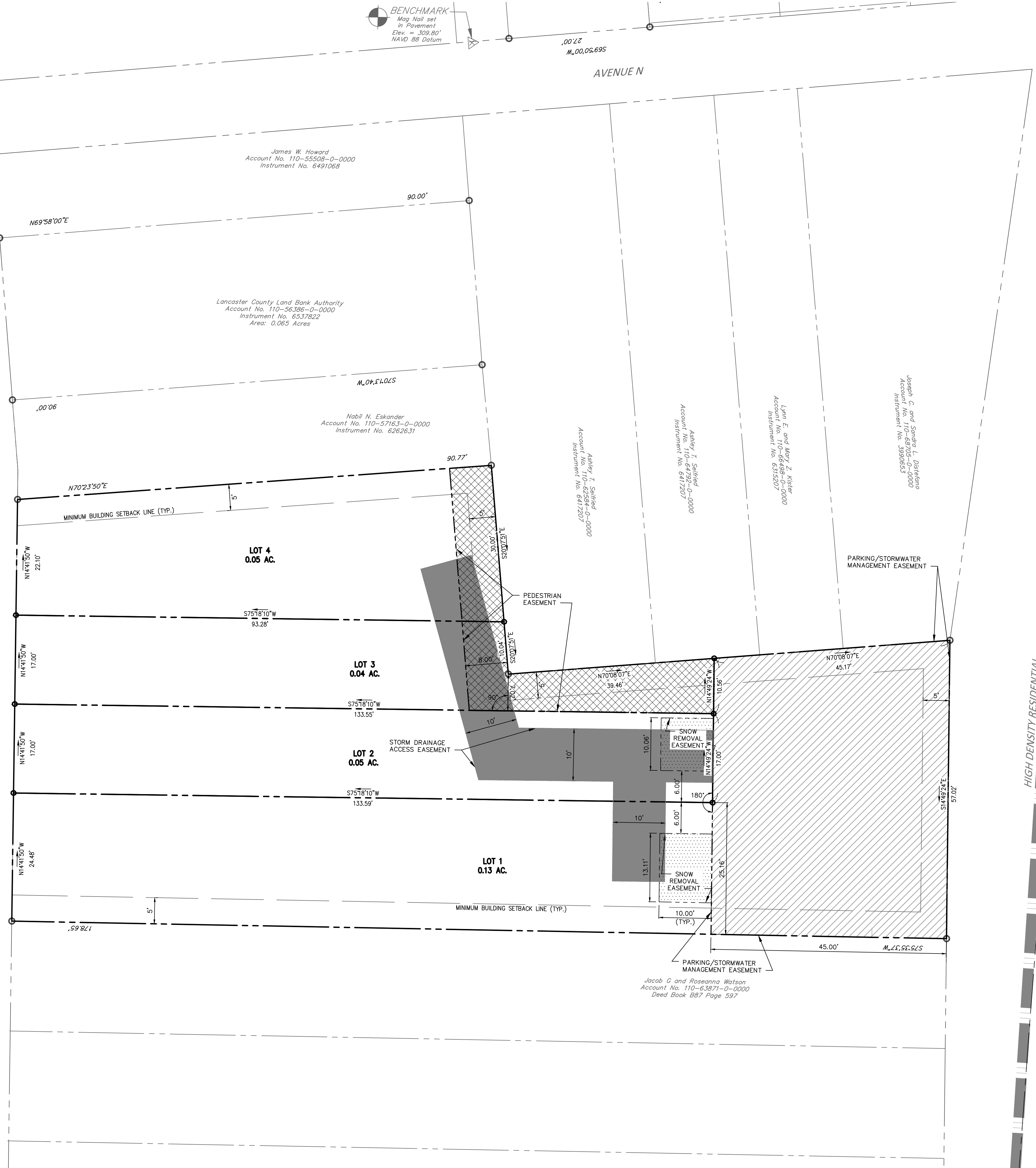
EASEMENT HATCH LEGEND



SOUTH 5TH STREET

AVENUE N

HIGH DENSITY RESIDENTIAL  
HIGHWAY COMMERCIAL  
CORN AVENUE



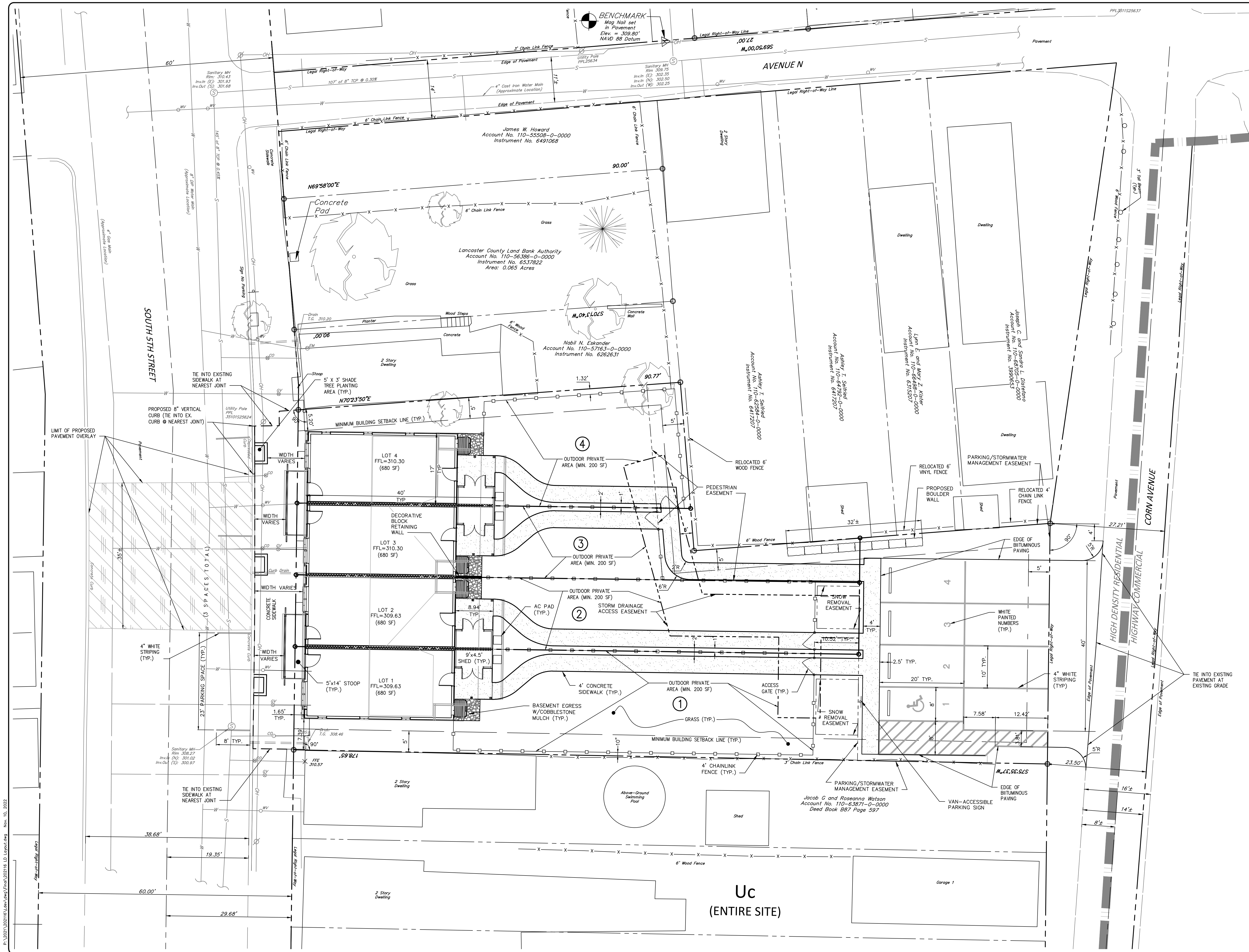
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FINAL  
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LAND DEVELOPMENT PLAN  
SUBJECT:  
**HABITAT FOR HUMANITY**  
237, 239, 243, 245, S. FIFTH ST.  
COLUMBIA, PA  
SHEET TITLE:  
**EASEMENT PLAN**

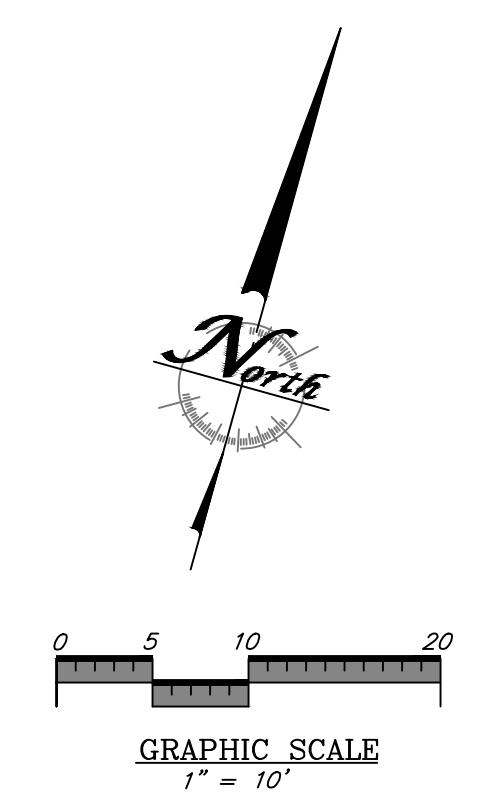
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DESIGNED BY: MLS DATE: 11/07/2022  
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**NOTES:**  
 1. SEE SUBDIVISION PLAN FOR LOT BEARING AND DISTANCE DIMENSIONS.



**Saxinger & Associates, Inc.**  
 Land Development Consultants • Landscape Architecture  
 780 Eden Road Lancaster, PA 17601  
 phone 717.291.1767  
 www.mlsaxinger.com

**FINAL SUBDIVISION & LAND DEVELOPMENT PLAN**

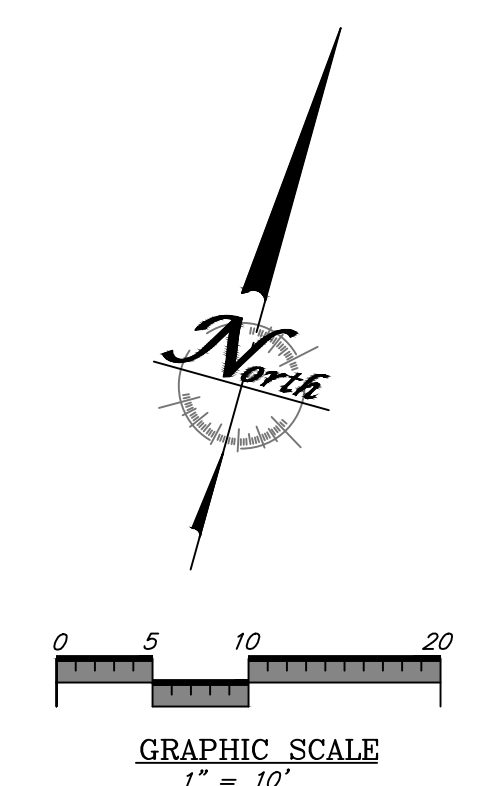
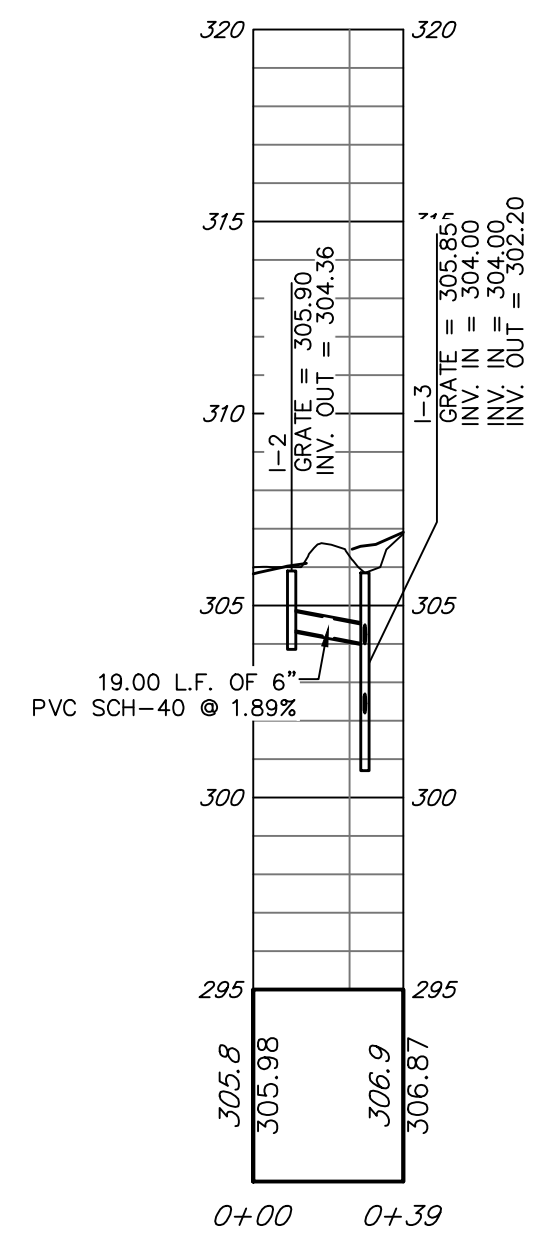
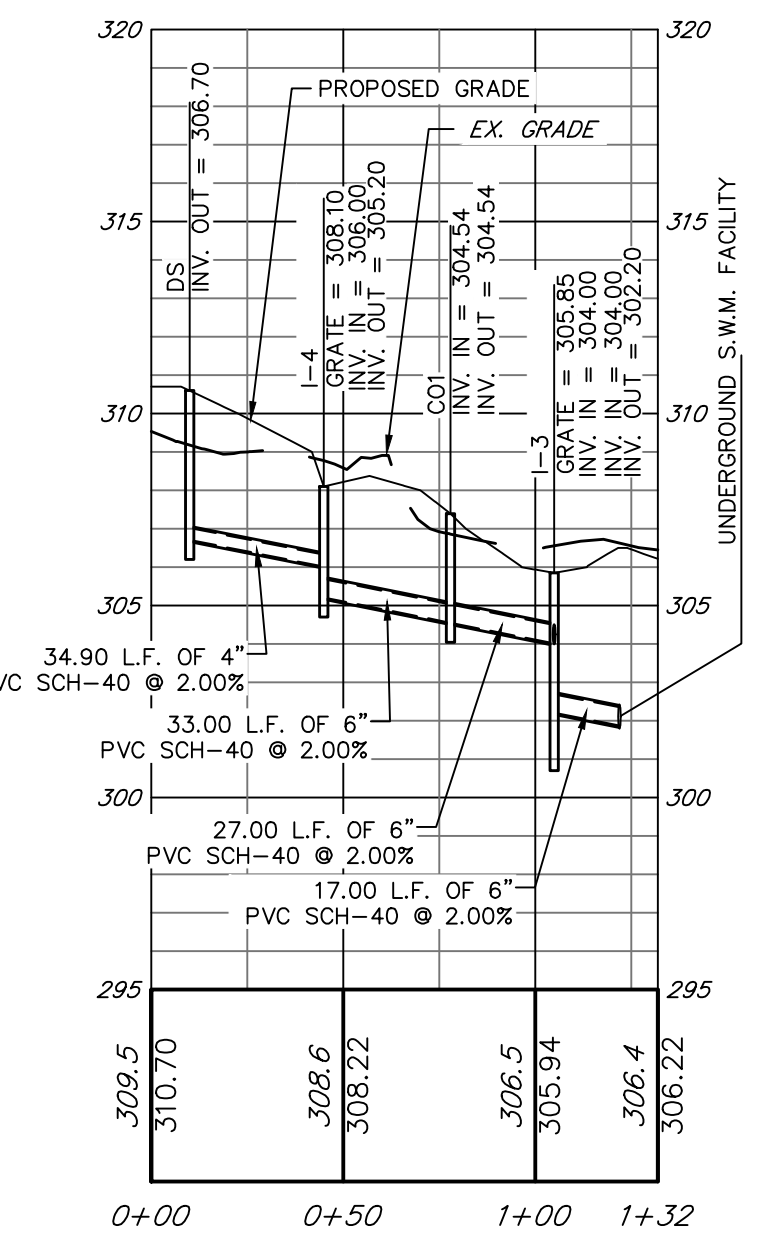
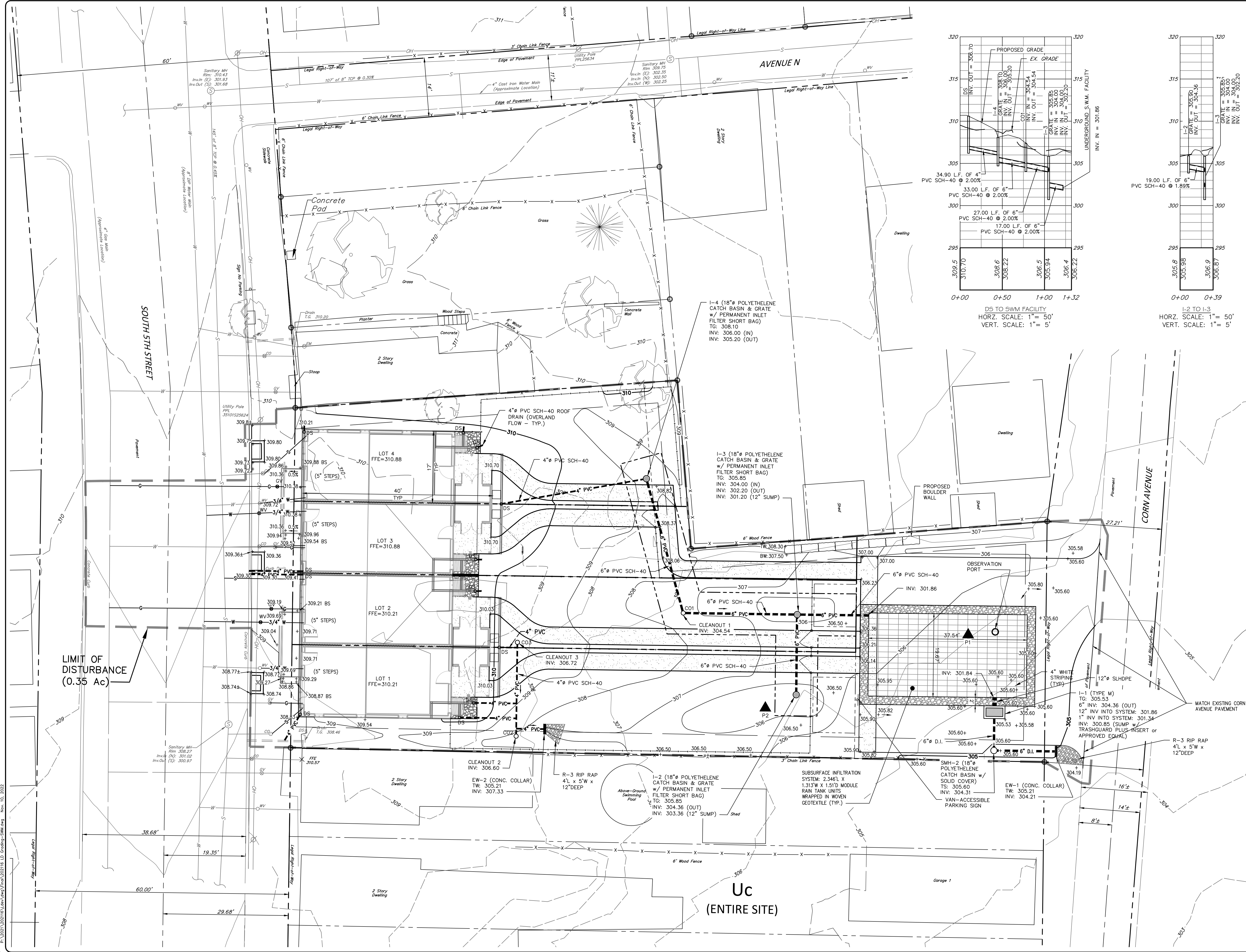
**HABITAT FOR HUMANITY**  
 237, 239, 243, 245, 5, FIFTH ST.  
 COLUMBIA, PA

**LAND DEVELOPMENT/LAYOUT PLAN**

**LANCASTER LEBANON HABITAT FOR HUMANITY**  
 443 FAIRVIEW AVE.  
 LANCASTER, PA 17603

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**Saxinger & Associates, Inc.**  
Land Development Consultants • Landscape Architecture  
780 Eden Road Lancaster, PA 17601  
phone 717.291.1767  
www.msaxinger.com

**FINAL SUBDIVISION & LAND DEVELOPMENT PLAN**

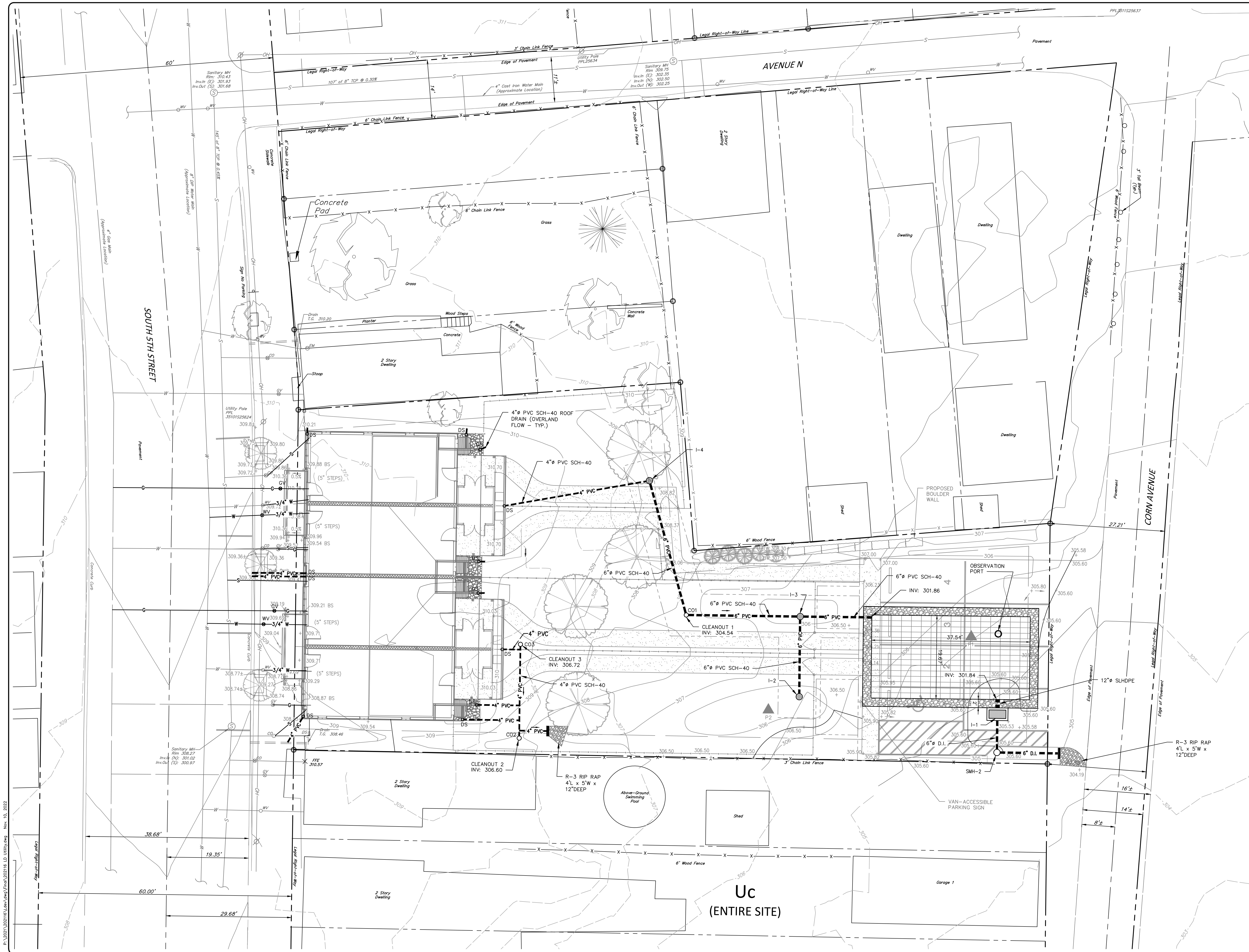
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**HABITAT FOR HUMANITY**  
237, 239, 243, 245, 5, FIFTH ST.  
COLUMBIA, PA

SHEET TITLE:  
**GRADING / SWM PLAN**

CLIENT:  
**LANCASTER LEBANON HABITAT FOR HUMANITY**  
443 FAIRVIEW AVE.  
LANCASTER, PA 17603

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- NOTES:**
1. ALL WATER APPURTENANCES AND WATER METERS SHALL BE INSTALLED IN ACCORDANCE WITH THE COLUMBIA WATER COMPANY.
  2. WATER SERVICE LATERALS SHALL BE 3/4" SERVICE LINES.
  3. ALL SEWER APPURTENANCES SHALL BE INSTALLED IN ACCORDANCE WITH THE LANCASTER AREA SEWER AUTHORITY'S INSTALLATION STANDARDS.
  4. MAINTAIN 18" MIN. CLEARANCE FROM WATER SERVICE LINES AND SANITARY LINES.
  5. PROPOSED GAS LINES SHOWN ON THIS PLAN ARE APPROXIMATE LOCATION. THE UTILITY COMPANY WILL DETERMINE THE FINAL LOCATIONS OF ALL GAS LINES AND METERS.



**Saxinger & Associates, Inc.**  
 Land Development Consultants • Landscape Architecture  
 780 Eden Road Lancaster, PA 17601  
 phone 717.291.1767  
 www.mlsaxinger.com

**FINAL SUBDIVISION & LAND DEVELOPMENT PLAN**

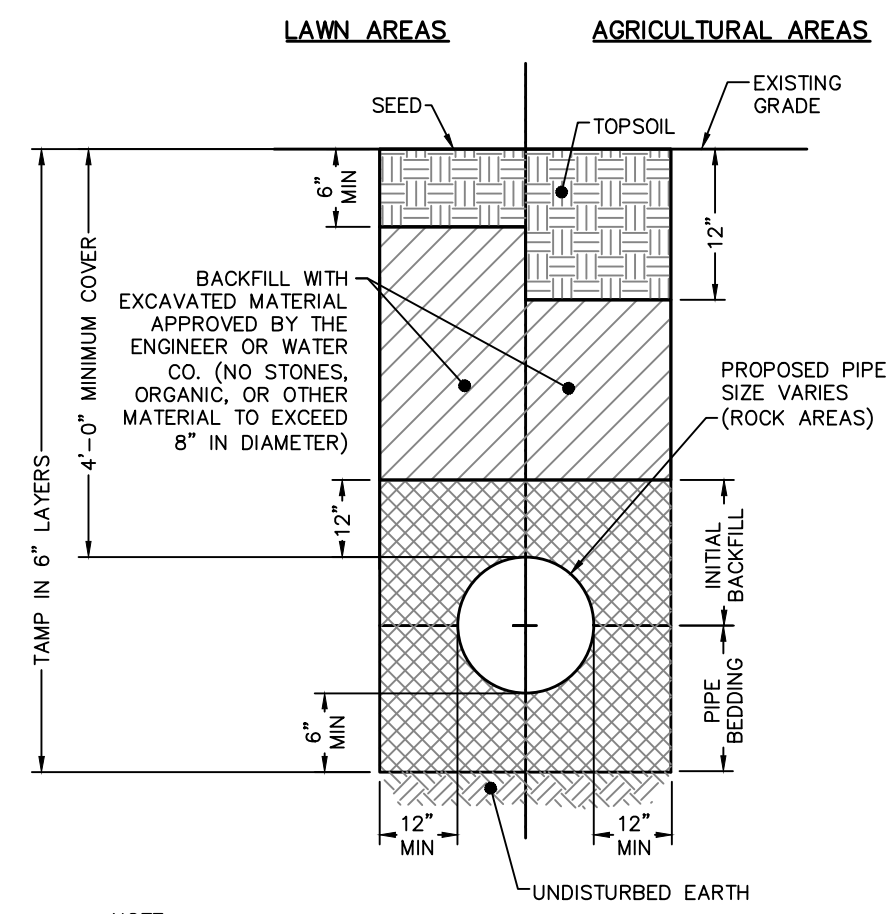
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**HABITAT FOR HUMANITY**  
 237, 239, 243, 245, S. FIFTH ST.  
 COLUMBIA, PA

SHEET TITLE:  
**UTILITY PLAN**

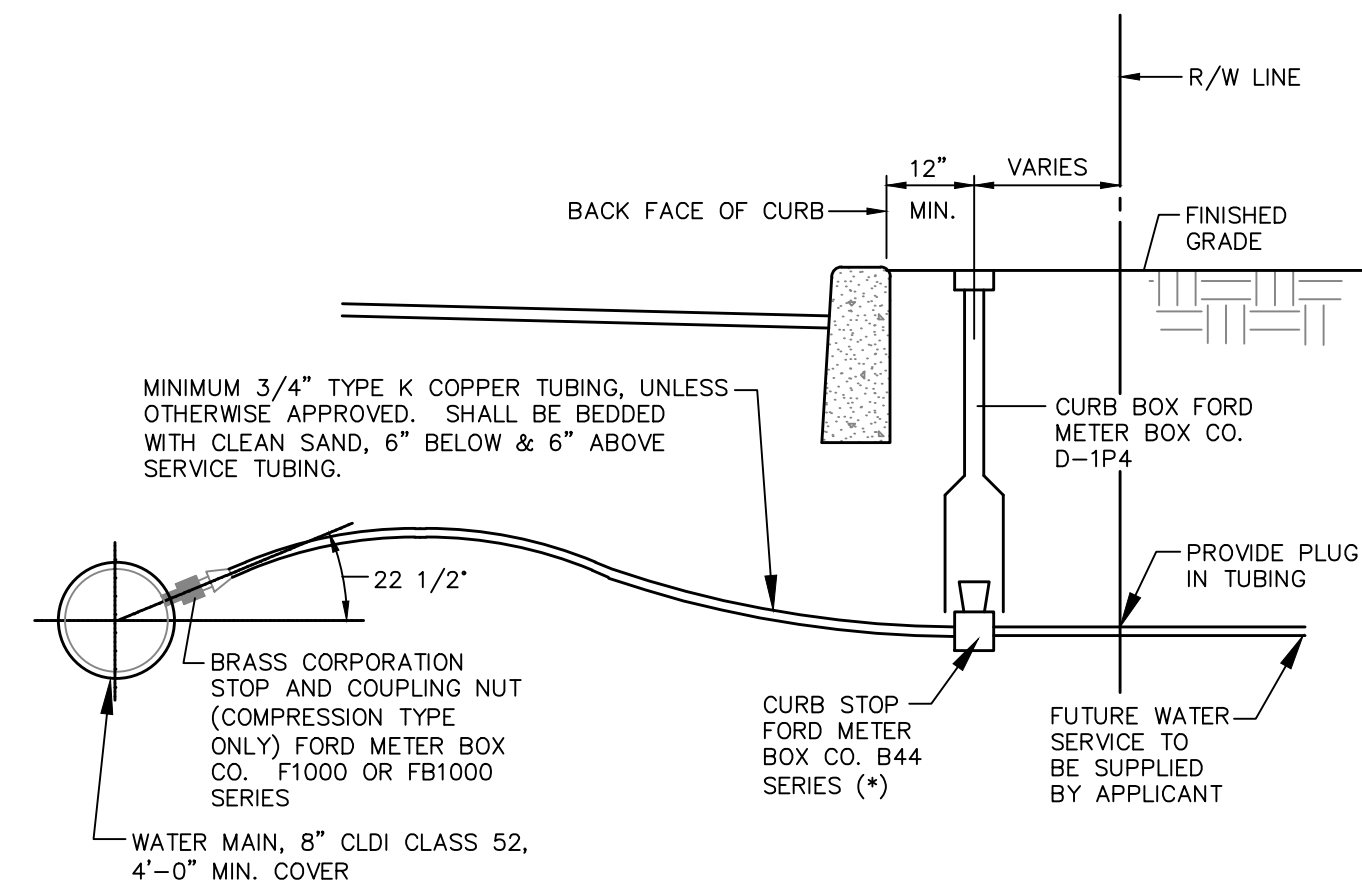
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**LANCASTER LEBANON HABITAT FOR HUMANITY**  
 443 FAIRVIEW AVE.  
 LANCASTER, PA 17603

DESIGNED BY: MLS DATE: 11/07/2022  
 CHECKED BY: MLS PROJ. NO. 202116  
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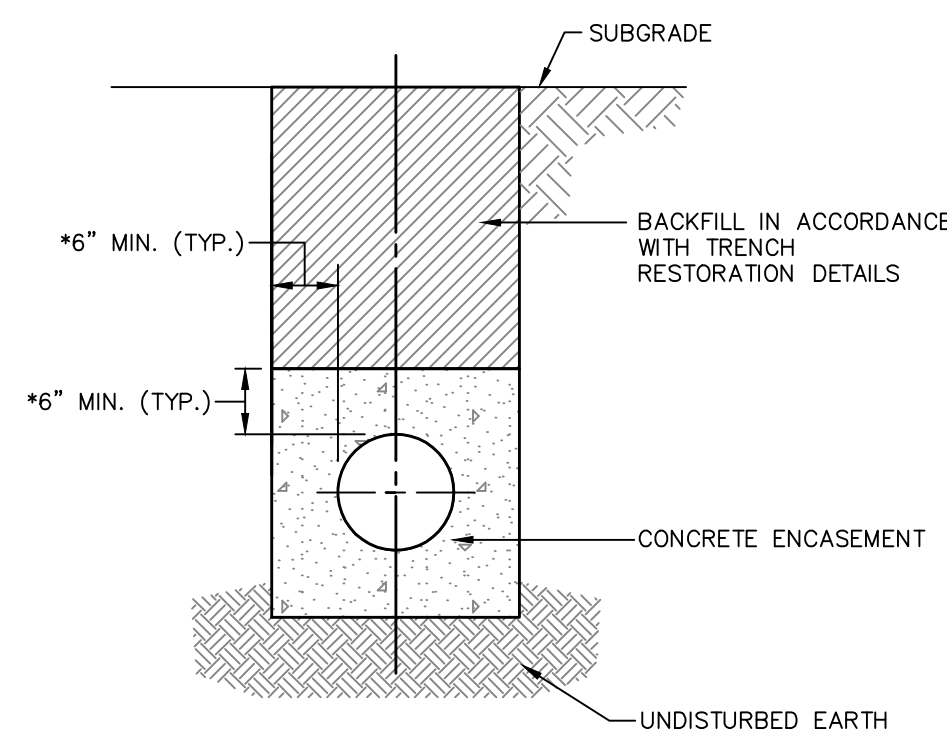


NOTE:  
PIPE BEDDING & INITIAL BACKFILL TO BE AASHTO #8.  
**THE COLUMBIA WATER COMPANY**  
**TRENCH RESTORATION**  
**LAWN/AGRICULTURAL AREAS**  
NOT TO SCALE



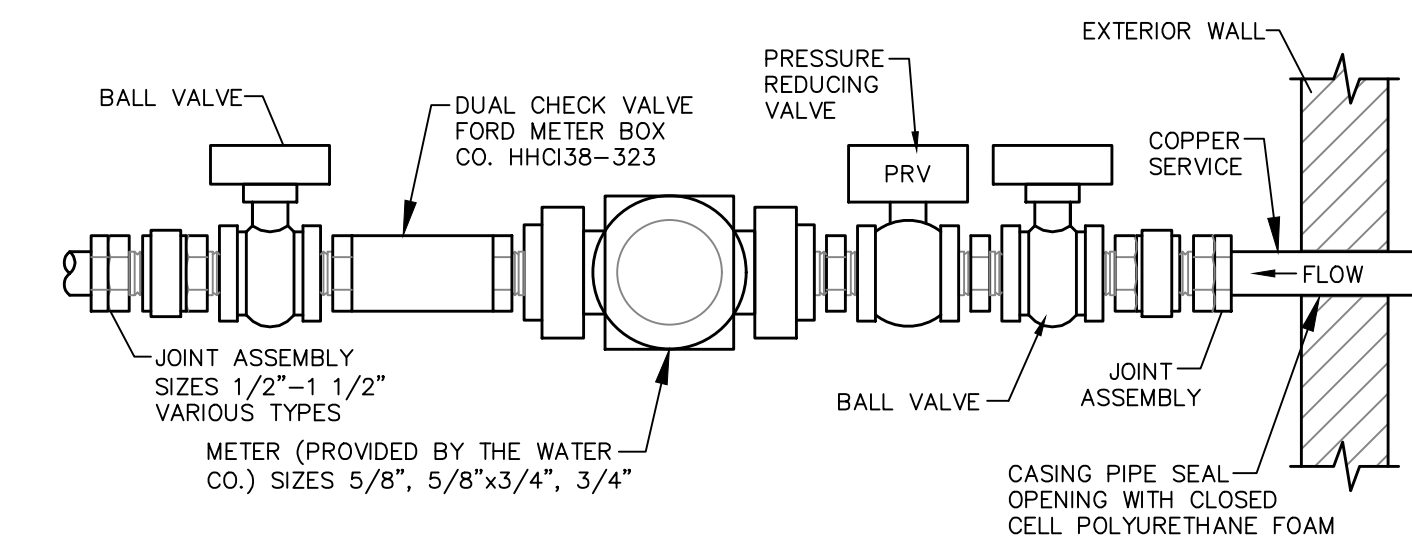
\* SEE "TECHNICAL SPECIFICATIONS FOR CONSTRUCTION OF WATER MAINS AND APPURTENANCES TO BE CONNECTED TO THE PUBLIC WATER SYSTEM OF THE COLUMBIA WATER COMPANY" FOR USE OF INSULATED CURB STOPS.

**THE COLUMBIA WATER COMPANY**  
**STANDARD WATER SERVICE LINE**  
**INSTALLATION (ROADWAY/CURBING)**  
NOT TO SCALE

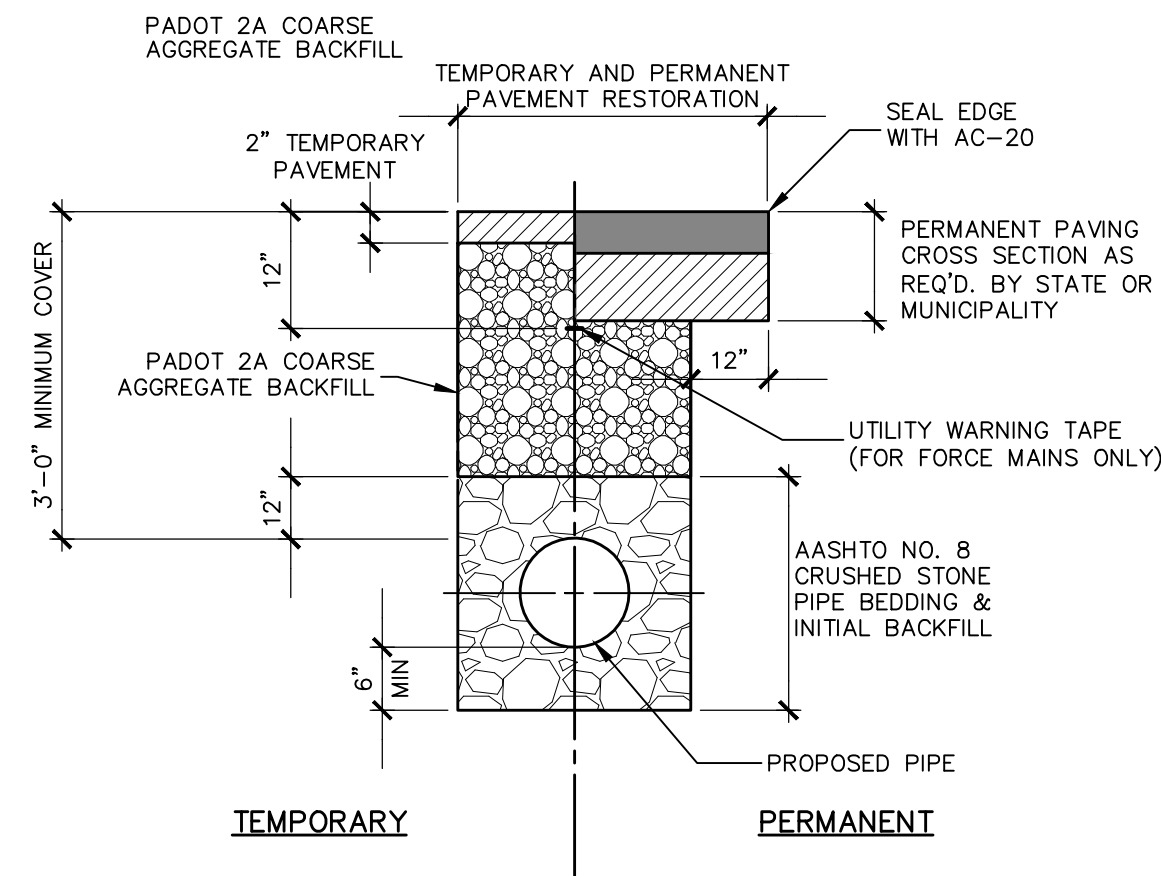


\* 6" MINIMUM THICKNESS FOR PIPES UP TO 24 INCHES DIAMETER.  
9" MINIMUM THICKNESS FOR PIPES 24 INCHES DIAMETER AND GREATER.

**THE COLUMBIA WATER COMPANY**  
**STANDARD CONCRETE ENCASEMENT**  
NOT TO SCALE

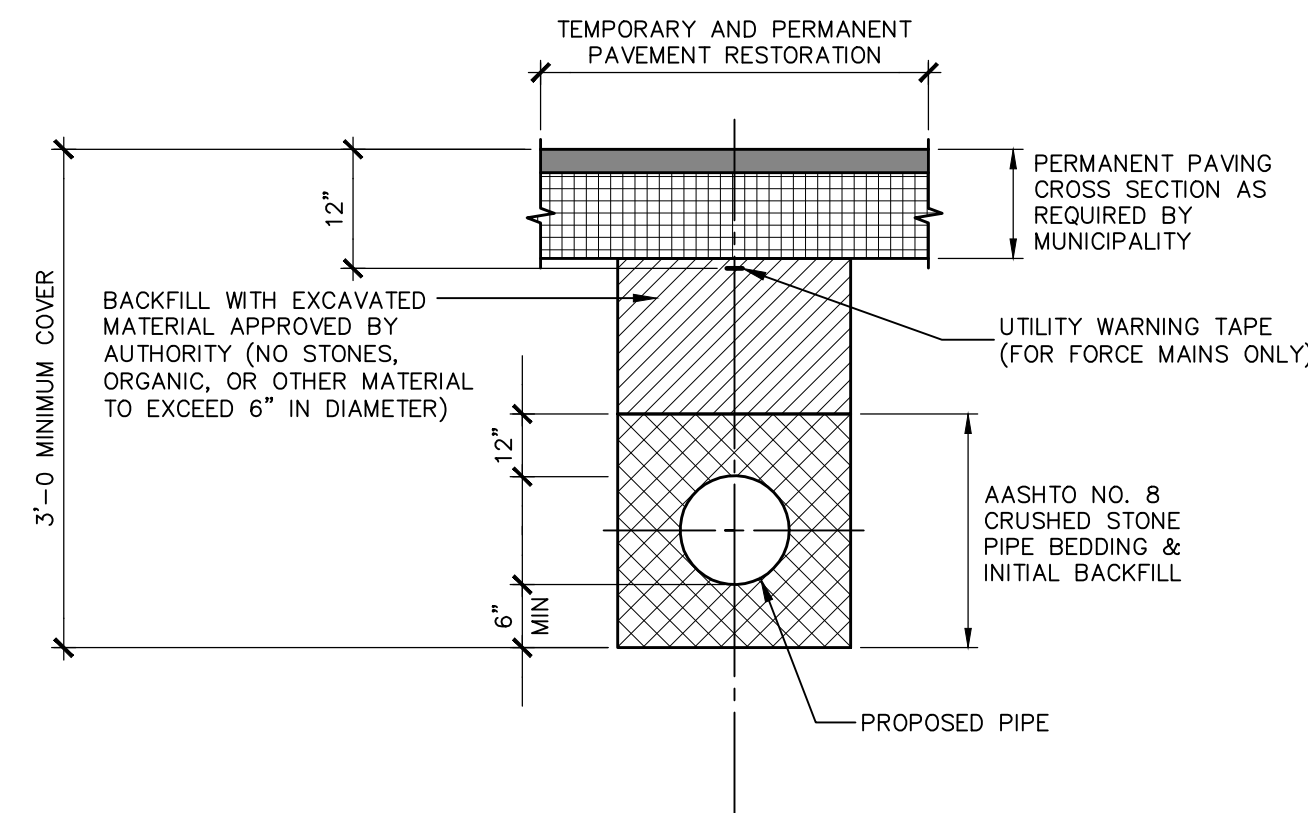


**THE COLUMBIA WATER COMPANY**  
**STANDARD RESIDENTIAL WATER**  
**METER INSTALLATION**  
NOT TO SCALE

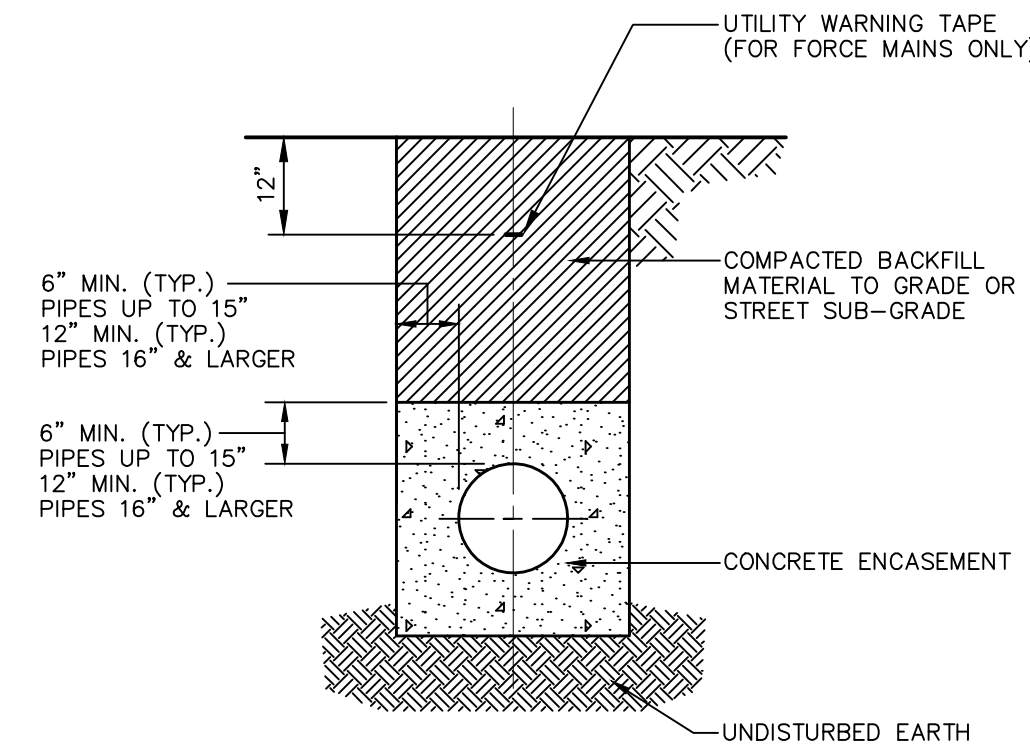


(TYPICAL FOR STATE HIGHWAYS, BOROUGH & TOWNSHIP ROADS, SHOULDERS & DRIVEWAYS)

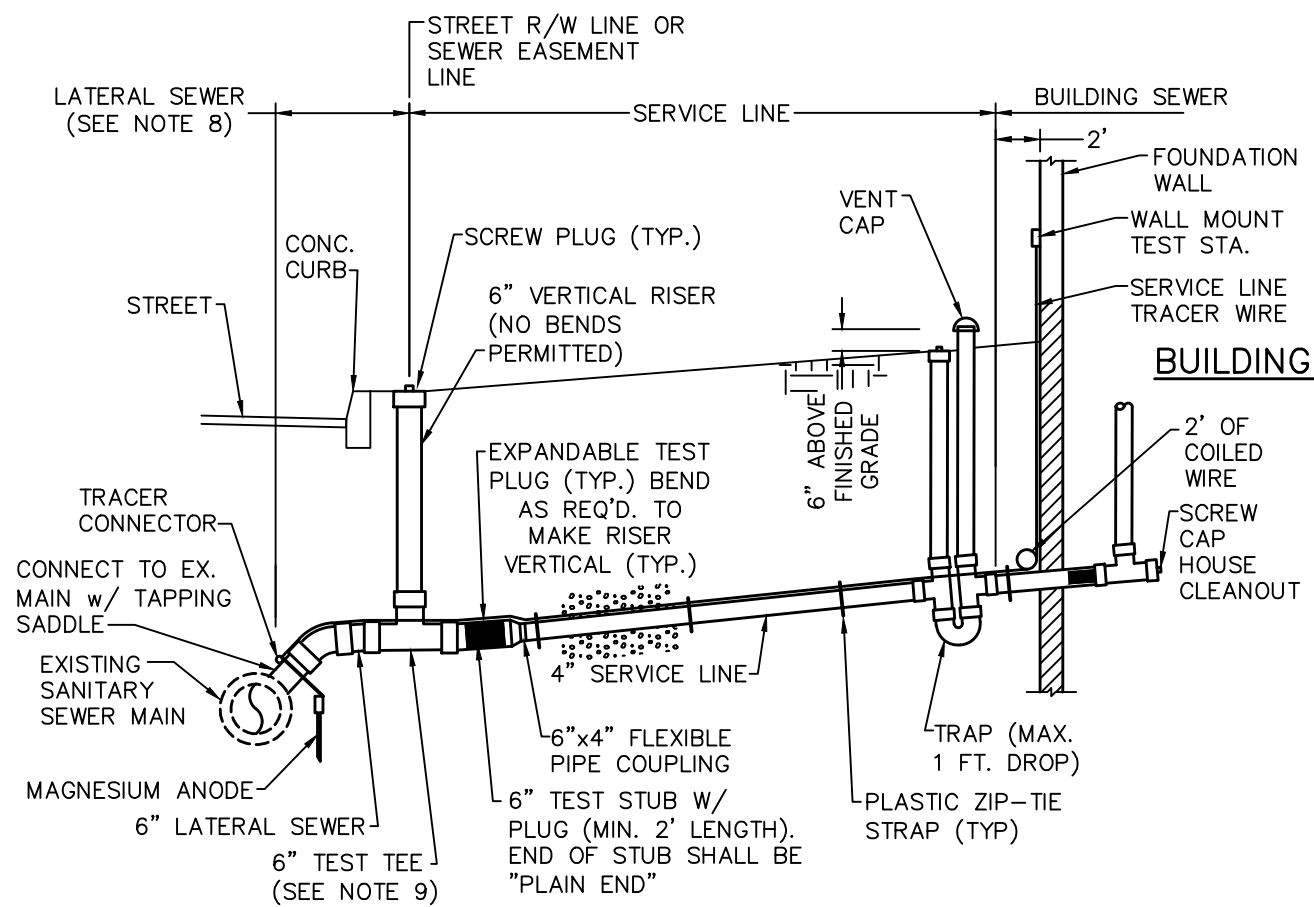
**TRENCH RESTORATION EXISTING PAVED AREAS**  
NOT TO SCALE



**TRENCH RESTORATION NEW ROADWAYS**  
NOT TO SCALE



**CONCRETE ENCASEMENT DETAIL**  
NOT TO SCALE



- NOTES:
1. PROVIDE 6" OF AASHTO NO. 8 (1B) STONE BELOW PIPE AND 12" ABOVE PIPE (TYPICAL ENTIRE LENGTH OF LATERAL).
  2. MINIMUM SLOPE = 1/8" PER FT.
  3. MINIMUM DEPTH OF COVER = 3 FT
  4. PIPE MATERIALS:  
SERVICE LINE - PVC SDR 35 (TRAP TO BE SCH 40 GLUE JOINTS WITH FLEXIBLE PIPE COUPLINGS CONNECTING TO SDR 35 PIPE ON BOTH SIDES)  
- CAST IRON
  5. TO CONDUCT AIR TESTING OF SERVICE LINE, INSTALL EXPANDABLE PLUGS AT LOCATIONS SHOWN. AT COMPLETION OF AIR TESTING, REMOVE PLUGS, & INSTALL RISER ON 6" LATERAL SEWER TEST TEE.
  6. NO SEWER SERVICE LINE VENT CAPS SHALL BE INSTALLED WITHIN A 100-YR FLOOD PLAIN OR WITHIN FLOOD PRONE AREAS.
  7. NO VENT CAPS OR CLEANOUTS SHALL BE INSTALLED IN DRIVEWAYS OR OTHER PAVED AREAS, UNLESS SPECIFICALLY APPROVED BY LASA.
  8. THE LATERAL SEWER SHALL BE INSTALLED TO THE EDGE OF THE SEWER EASEMENT FOR SEWERS LOCATED IN AN EASEMENT OR TO THE STREET RIGHT-OF-WAY AS A MINIMUM, OR TO SUCH POINT, AS REQUIRED, TO CLEAR STREET SIDEWALKS AND UNDERGROUND UTILITIES.
  9. SET 6" TEST TEE AT 1% SLOPE TO PERMIT VERTICAL RISER INSTALLATION W/ NO BENDS

- NOTES FOR TRACER WIRE INSTALLATION FOR SEWER SERVICE LINE:
1. TRACER WIRE 12 GAUGE COPPER-CLAD STEEL REINFORCED WIRE; COPPERHEAD 1230G-HS (GREEN) OR EQUAL.
  2. ALL TRACER WIRE CONNECTIONS SHALL BE "SNAKEBITE LOCKING CONNECTOR", "3-M-SCOTCHLOCK DBY", OR EQUAL. USE OF CONNECTORS SHALL BE MINIMIZED.
  3. NEW SERVICE LINE CONNECTING TO EXISTING LATERAL: PROVIDE MAGNESIUM ANODE (1 LB MIN) REQUIRED WHEN NO TRACER WIRE IS EXISTING ON THE LATERAL.
  4. WIRE TO BE SECURED TO LOWER QUADRANT OF PVC PIPE WITH PLASTIC ZIP TIES AT 5 FT INTERVALS.
  5. TEST STATION IS TO BE MOUNTED ON BUILDING WITH 3/4 INCH PVC CONDUIT - 2' REVEAL ABOVE GRADE, COPPERHEAD COBRA T3-12-001
  6. CONDUIT SHALL EXTEND TO ELEVATION OF BUILDING SEWER OR 4' BELOW GRADE, WHICHEVER IS LESS.
  7. SERVICE LINE SLOPES GREATER THAN 20% REQUIRE CONCRETE ANCHORS FOR STEEPLY SLOPED PIPES (LASA DETAIL 44).

**LATERAL SEWER AND SERVICE LINE INSTALLATION DETAIL**  
NOT TO SCALE

**Saxinger & Associates, Inc.**  
Land Development Consultants • Landscape Architecture  
780 Eden Road Lancaster, PA 17601  
phone 717.291.1767  
www.mlsaxinger.com

FINAL  
SUBDIVISION #  
LAND DEVELOPMENT PLAN

SUBJECT:  
**HABITAT FOR HUMANITY**  
237, 239, 243, 245, S. FIFTH ST.  
COLUMBIA, PA

SHEET TITLE:  
UTILITY DETAILS

CLIENT:  
**LANCASTER LEBANON**  
**HABITAT FOR HUMANITY**  
443 FAIRVIEW AVE.  
LANCASTER, PA 17603

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| DESIGNED BY: | MLS      | DATE:      | 11/07/2022 |
| CHECKED BY:  | MLS      | PROJ. NO.: | 202116     |
| DRAWN BY:    | JDS      | SHEET NO.: |            |
| SCALE:       | AS NOTED |            | 10 of 17   |

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**Planning Department**

150 North Queen Street | Suite 320  
Lancaster, Pennsylvania 17603  
Phone: 717-299-8333  
www.lancastercountypanning.org

**County Commissioners**  
Ray D'Agostino, Chairman  
Joshua G. Parsons, Vice Chairman  
John B. Trescot, Commissioner

**Executive Director**  
Scott W. Standish

**MEMORANDUM**

22LP

**To:** Mark E. Stivers, Manager  
Columbia Borough

**From:** Gwen E. Newell, RLA, AICP *GN*  
Senior Planner

**Regional Planner(s):** Alex W. Rohrbaugh, AICP *AWR*  
Senior Planner - Metro Planning Area

**Date:** December 6, 2022

**Re:** Advisory Plan Review Comments  
LCPC # 22-53, Lancaster Lebanon Habitat for Humanity  
Columbia Borough

The Pennsylvania Municipalities Planning Code establishes standards and procedures for the review of Subdivision and Land Development Plans. The Lancaster County Planning Department offers the following advisory comments and recommendations, which are for your consideration in the application of municipal subdivision and land development regulations to this project.

**GENERAL INFORMATION**

**Subject:** Final Subdivision / Land Development Plan  
**Proposal:** Reconfigure lot lines for Lots 1-4, construct 4 townhouse units, and provide parking and stormwater management  
**Owner(s):** Lancaster County Land Bank Authority  
**Applicant:** Lancaster Lebanon Habitat for Humanity  
**Firm:** Saxinger & Associates, Inc.  
**Received:** November 17, 2022

**LOCATION**

**Parcel ID #:** 1105842400000 / 1106361600000 / 1106339100000 / 1105774400000  
**Address:** 237-245 South Fifth Street, Columbia PA 17512  
**Location:** Southeast quadrant of South Fifth Street and Avenue N intersection  
**Places2040:** The project site is located within the Columbia-Marietta Urban Growth Area and within the Urban Character Zone.

**PATTERN**

**Zoning:** High Density Residential  
**Project Density:** 15.3 du/ac  
**Present Use:** Residential



**TIMING**

Utilities: Public water and sewer service exists

**RECOMMENDATIONS**

Based upon this review, the Lancaster County Planning Department offers the following comments and recommendations:

**PLACES2040 COMMENTARY**

The project relates to these specific places2040 big ideas and policies:

**Creating Great Places**

Provide a greater supply and diversity of housing to own and rent. The project helps diversify the county's housing stock by providing townhouse units.

**Growing Responsibly**

Prioritize infill and redevelopment in Urban Growth Areas. The project redevelops existing residential lots served by water, sewer, and streets.

Build more compactly and efficiently. The project provides density consistent with the surrounding neighborhood and above the recommended average of 6.5 du/ac.

**SITE DESIGN COMMENTARY**

1. County records identify the Tax Account # of Lot 2 as 1106361600000, not 1106339100000. Owner information on Sheet 1 of 17 should be confirmed and corrected on the plans to be recorded.
2. Revised deeds for the resultant lots should be recorded as part of this plan approval. Recording new deeds with a perimeter legal description may avoid possible confusion during future title research of the affected properties.
3. A Shared Access Easement Agreement should be provided and recorded as part of the plan approval. This agreement should note the ownership, rights, and maintenance responsibilities associated with the access easement. The agreement should clarify that Columbia Borough is not responsible for any agreement arbitration.
4. To ensure equitable access for all residents, ADA compliant sidewalk width should be provided between the proposed street tree planting areas and the proposed porches to meet the required sidewalk width that ensures equitable access for all residents.

Please note that no land shall be conveyed, transferred, or agreed to be sold, nor shall the construction of any improvements be initiated, until authorized by the local municipal officials.

---

\* \* \*

JDH/GEN/AWR/mr

Copy: Michael Saxinger, ML Saxinger & Associates, Inc. (Lancaster)

S:\COMMUNPL\LCPC\2022\12-12-22\FINAL\22-53 Lancaster Lebanon Habitat for Humanity AWR.docx





December 14, 2022

Mr. Mark Stivers, Borough Manager  
Borough of Columbia  
308 Locust Street  
Columbia, PA 17512

Re: Habitat for Humanity  
**Preliminary/Final Land Development Plan**  
Columbia Borough, Lancaster County, PA  
Engineer's Project No. 3981.3.08.02

Dear Mark:

We have reviewed the above-referenced Final Subdivision/Land Development, dated 11/07/2022, prepared by Saxinger & Associates, Inc. We offer the following comments:

**Zoning Ordinance Comments**

1. The BC final approval on 5/24/22 shall be noted on the plans for the minimum lot requirements (220-27.D).
2. Any earth disturbance over 5,000 square feet of land area shall require the approval of an adequate erosion and sedimentation control plan to the Lancaster County Conservation District (220-32.B).
3. The Borough fire officials shall be provided the opportunity to review the plan for fire lane requirements (220-44.D).

**Subdivision and Land Development Ordinance Comments**

1. A note shall be provided on the plans requiring an as-built plan, and a CAD file be provided to the Borough prior to final recording (190-18.H.1.e, & 190-43.B.4).
2. The existing lot markers shall be called out on the plans. If none were found, proposed markers shall be placed. (190-24.B.3.K; 190-25.B.3.K; 190-43).
3. A certificate shall be provided on the cover sheet for the Lancaster County Recorder of deeds (190-25-B.4.E).
4. The following certificates shall be fully and properly executed (190-25B(4)(a)):
  - a. Engineer's Certificate
  - b. Survey Certificate
  - c. Certificate of Ownership
  - d. The LCPC Certificate
5. Written water and sewer connection approval shall be provided for all dwellings (190-25.B.4.N).
6. Financial security is required for proposed improvements (190-28). An opinion of probable cost shall be submitted for review.



## **C.S. DAVIDSON, INC.**

7. The Borough shall determine if lighting is required to be installed for the proposed parking areas (190-40.A.3.C, 190-47). Traditionally, lighting is not required for residential parking areas at the rear of residential properties. This shared parking area could be interpreted as a parking lot requiring lighting.
8. The street tree type and size shall be approved by the Borough Shade Tree Commission (190-46.C.6.D.5; 190-46-C.11.C).
9. Residential Land Developments shall provide for the dedication of recreation land/facilities and/or the payment of fees in lieu thereof (190-36). The project proposes a net increase of two residential dwellings with the construction of four dwellings following the removal of two existing ones.

### **Waivers**

1. The applicant is requesting a modification request for the minimum pipe size of 15" (184.17.G.1). The applicant would like to use 6" pipes. Reviewing the 100-year storm, no issues as shown with this pipe size. The drainage areas are small enough that all calculations show these pipes are sufficient. We recommend approval of this waiver request.
2. Minimum pipe depth of 1 foot below the ground surface or to the manufacturer's specification (184-17.G.6). The applicant is requesting a modification on this requirement. They have an outlet pipe that is shallow. They are proposing ductile iron for added strength and will own and maintain the pipe. This pipe is next to a parking area but not within it and is outside of the roadway. We recommend approval of this waiver request.
3. A preliminary plan is required to be submitted for this application prior to the submission of a final plan (190-18). The applicant has requested a waiver of this requirement and proposes to proceed to final plan submission. We recommend approval of this waiver request.
4. The plan scale shall be 20 to 100 feet to an inch (190-24-A.1). The applicant has requested a modification of this section; they are using ten feet to one-inch scale, which provides more detail on this small plan. We recommend approval of this waiver request.
5. Where pedestrian access is provided outside of the street right of way, a pedestrian easement shall have a minimum width of ten feet (190-42.B.6). The applicant is asking for a modification of this section due to the small size of the lots the privacy fencing allows for only 7'. This issue was discussed with the Planning Commission at the sketch plan phase of the plan. We agreed to support this waiver with the understanding the applicant is providing as much space as reasonably feasible.

### **Stormwater Ordinance Comments**

1. A note shall be added to the plans stating that an approved set of plans shall be available on-site throughout the duration of regulated activities (184-12-B).
2. A fence detail shall be provided. We have concerns about the stormwater getting trapped by the fence and it preventing surface flow between properties from getting to the inlets.
3. A note shall be added to the R-Tank and H-20 Loads Section view that two feet of separation shall be provided from any limiting layer (184-17.I.3). We recommend probing with a metal rod at several locations around the basin footprint during construction.



**C.S. DAVIDSON, INC.**

4. The soil testing indicates that the infiltration rates are over 10" per hour. The applicant shall consider a limiting method for the base of the BMP (184-17.I.4). Sink holes become a concern with infiltration rates this high.
5. Infiltration testing shall be provided, and locations shown on the plans.
6. The note in the R-Tank and H-20 Loads Section view shall indicate no bottom geotextile shall be provided (184-17.I.6).
7. A note on the plans shall indicate if the property is located within a designated floodplain (184-18.C).
8. The applicant shall provide additional spot elevations to detail the overland flow path of water from the downspouts to the proposed inlets. We have some concerns about all the water getting to the intended inlets or flowing onto neighboring properties (184-18.E).
9. The contractor shall provide a construction sequence to provide evidence that at no point flows will be greater onsite than current conditions (184-21.D).
10. The limit of disturbance shall be shown on the E&S plans, with a call out for the total area (184-22.E.7).
11. A table shall be provided with the assumed impervious square footage for each lot and for the stormwater BMP (184-22.E.10).
12. Provide a complete operation and maintenance plan for all structural and nonstructural BMPs, as required by 184-36 (184-24D) (Section 405.D, 602, & 603). This plan shall be placed on a sheet, which shall be recorded.
13. The applicant shall provide a user agreement among the four (4) properties for the underground stormwater infiltration BMP if it is to be split among them. If not, the O&M shall state who is responsible for the maintenance of what items. This agreement shall discuss how the maintenance and repair costs will be split among the responsible properties.
14. The owner's certification on the plan cover shall indicate that they are aware of the O&M of the facilities (184-22.E.20).
15. We recommend the small section of the existing curb that is being replaced match the existing height. Revise the note on the plans and general note 14 and provide top and bottom of curb elevations (184-22.E.23.e).
16. A summary table shall be provided, including all the items in section 184-22.E.23.i.
17. Note that the submission of an as-built plan is required upon project completion, and a certificate of completion is required prior to the full and final release of financial security (184-32 and 33) (Section 509.A).
18. The record owner of the development site shall sign and record an operation and maintenance (O&M) agreement covering all stormwater management facilities which are to be privately owned. The O&M plan and agreement shall be recorded as a restrictive covenant agreement that runs with the land (Section 184-34.E).



**C.S. DAVIDSON, INC.**

19. The applicant shall provide a specified amount for the municipal maintenance fund prior to final plan approval (184-34).

If you have any questions regarding this review, please do not hesitate to contact me directly at (717) 814-4537 or [djr@csdavidson.com](mailto:djr@csdavidson.com).

Sincerely,

  
Derek J. Rinaldo, E.I.T.

DJR/RGM/cah  
Copy: Saxinger & Associates, Inc. (via email)

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LANCASTER COUNTY  
CONSERVATION DISTRICT

*Conserving Natural Resources for Our Future*

COPY

December 8, 2022

Lancaster Lebanon Habitat for Humanity  
443 Fairview Avenue  
Lancaster, PA 17603

RE: **Project Name – Habitat for Humanity**  
LCCD Plan ID: ESP03898  
Columbia Borough, Lancaster County

Dear Applicant:

I have reviewed the Erosion and Sediment Pollution Control Plan dated November 7, 2022 and revised December 7, 2022 for the above referenced project. If the Erosion and Sediment Pollution Control Plan is fully implemented as described, it should be adequate to meet the intent of the rules and regulations adopted under the PA Clean Streams Law relating to erosion and sedimentation control.

The Conservation District reviews this plan solely to determine whether it is adequate to satisfy the requirements of 25 PA Code §102.1 et seq. the erosion control regulations of the Department of Environmental Protection. By a determination that the plan is adequate to meet those requirements, neither the Conservation District nor the County assumes any responsibility for the implementation of the plan or the proper construction and operations of the facilities contained in the plan.

A representative of the Lancaster County Conservation District may conduct periodic inspections of the erosion and sedimentation control facilities during the construction of this project. The approved Erosion and Sediment Pollution Control Plan must be available at the site of the earthmoving activity at all times.

Yours for a better environment,

Ryan Riebling  
Resource Conservationist

C: Columbia Borough  
MLSaxinger & Associates – Michael Saxinger

RR/slk

RECEIVED

DEC 14 2022



## **Hydrological Study**

for

**Lancaster Lebanon Habitat for Humanity**

**237 – 245 S. Fifth Street**

Columbia Borough, Lancaster County, PA

November 7, 2022

Prepared by:



**Saxinger & Associates, Inc.**

LAND DEVELOPMENT SERVICES

LANDSCAPE ARCHITECTURE

780 Eden Road, Lancaster, PA 17601

Phone: 717-291-1767

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**STORM WATER MANAGEMENT NARRATIVE  
FOR  
HABITAT FOR HUMANITY – 237-245 S. FIFTH ST.  
COLUMBIA BOROUGH, LANCASTER COUNTY, PA**

This narrative is considered a part of the storm water management plan for the Lancaster Lebanon Habitat for Humanity development proposed at 237 – 245 S. Fifth Street in Columbia Borough, PA. Currently, there are four lots with dwellings (now demolished) on two of the lots. The project proposes four reconfigured lots with four new dwellings that include attached sheds, a front stoop and rear patio area. Also proposed is an subsurface infiltration stormwater system beneath an eight-space parking area. The total area of the onsite stormwater management project area is 0.296 acres. The total proposed impervious area is 6,960 square feet (0.16 acres).

Runoff from lots 1-3 roof area that front on S. Fifth Street will be directed via downspout to the curb line along S. Fifth Street. Lot 4 roof area will be directed to the rear of the units and into the subsurface infiltration system. Any additional impervious area draining to S. Fifth Street will sheet flow to the curb line. The rear of the dwellings and sidewalk, as well as most of the parking area will be directed to the subsurface infiltration system.

The attached storm water management calculations demonstrate compliance with the requirements of the Columbia Borough Storm Water Management Ordinance No. 940-2022 and the PA DEP Pennsylvania Stormwater Best Management Practices (BMP) Manual requirements.

**HYDROLOGY**

There are two points of interest, POI-1 and POI-2 (see Drainage Area Maps in the Appendix of this report).

**POI-1:**

Runoff from pre-development drainage area A (Pre-A) either sheet flows in a westerly direction to S. Fifth Street or is piped through the curb to the curb line of S. Fifth St. Runoff then flows south along the curb line.

Post development drainage area C (Post C) that drains to POI-1, has a reduction of drainage area resulting in a reduction of the post development runoff. Runoff will continue to be piped, or will sheet flow, to the curb line of S. Fifth St.

**POI-2:**

Runoff from pre-development drainage area B (Pre-B) flows in a southerly direction to POI-2 located in the SE corner of the properties along the property line and the Right of Way of Corn Avenue, and ultimately +/- 200' to an existing inlet located west of the properties within the Corn Avenue Right of Way.



The post development drainage area D (Post D) drains to the proposed subsurface infiltration system. Post D includes the rear roof area for lots 1-3, the entire roof area for lot 4 and all rear sidewalks. The change in pre versus post runoff volume for the 2-year 24-hour storm for POI-2 is designed to infiltrate within 24 hours to utilize the entire subsurface system for rate control. The infiltration system is designed to have a zero release rate above grade for the 1-year through 100-year storms in order to restrict discharge closer than 10 feet from the adjoining property line to meet Ordinance requirements. All rate reduction for the 1-year through the 100-year storms will be through infiltration. Storms larger than the 100-year storm that flow through the subsurface infiltration system can outfall via a 6" outlet with the elevation set higher than the maximum elevation of the routed 100-year storm as well as outfall through the I-1 grate. Once released, the runoff will follow the pre-development path to the existing inlet located west of the properties.

The storm water from this site enters the Columbia Borough stormwater system, which discharges to an unnamed tributary to the Susquehanna River and is classified by PA Chapter 93 as WWF/MF or Warm-Water Fishery/Migratory Fish.

### **SOILS**

The soil on the site is Urban Land (Uc). Uc soil does not have a Hydrologic Group rating. To be conservative, Hydrologic Group D soil classification is being utilized for the stormwater calculations. On-site testing indicated that the soil is adequate for infiltration in the area of the infiltration system.

### **LAND USE AND VEGETATION**

As stated previously, two of the four lots had an existing dwelling, both now are demolished. The remaining two lots are grass covered. The minimal amount of disturbance possible to construct the proposed improvements will occur. As noted on the plans, the contractor shall take care to ensure there are no site disturbances outside the limit of disturbance delineated on the plans.

### **DESIGN METHOD**

The Standard Rational Method ( $Q=CIA$ ) was utilized to determine the peak runoff rate for the 1, 2, 5, 10, 25, 50, and 100-year storm events. Hydrographs are computed assuming time to peak occurring at three (3) times the  $T_c$  of the controlled watershed, and with the time to the end of storm event at seven (7) times the  $T_c$ . The post-development peak rate of runoff leaving the site for the 1-year through 100-year storm events is less than the pre-development runoff for the same storm events. All storms greater than the 1-year storm event are reduced to below their pre-development runoff values.

Volume calculations are based on the DEP worksheets (Worksheet 4) which utilize the SCS, TR-55 method that considers the 2 year 24-hour storm event.

Time of Concentration (Tc) – All pre-development Tc calculations are located prior to the pre-development hydrographs in the hydrological study. All post-development Tc calculations exceeding 5 minutes are located prior to the post-development hydrographs.

The rainfall intensities for the Q = CIA formula are taken from the NOAA IDF curves. See the Appendix to this report.

Water quality measures are being provided by filters within the yard inlets, a device that captures debris, sediment and floatables (Trash Guard Plus or approved equal) within I-1, and infiltration in the subsurface infiltration system. See the drainage area maps at the end of this report for additional information.

The following table summarizes the total peak runoff for the pre-developed and post-developed conditions.

**TOTAL PEAK RUNOFF SUMMARY (CFS):**

| <b><u>Rational Runoff Coefficient</u></b><br><b><u>Storm Event</u></b> | <b><u>&lt; 25-year Storm</u></b> |                     |                     |                      | <b><u>&gt;25-year Storm</u></b> |                      |                       |
|--|----------------------------------|---------------------|---------------------|----------------------|---------------------------------|----------------------|-----------------------|
|  | <b><u>1 yr.</u></b>              | <b><u>2 yr.</u></b> | <b><u>5 yr.</u></b> | <b><u>10 yr.</u></b> | <b><u>25 yr.</u></b>            | <b><u>50 yr.</u></b> | <b><u>100 yr.</u></b> |
| Pre-Development A (POI-1)  | 0.094                            | 0.112               | 0.132               | 0.147                | 0.188                           | 0.203                | 0.217                 |
| Pre-Development B (POI-2)  | 0.170                            | 0.203               | 0.243               | 0.271                | 0.396                           | 0.427                | 0.456                 |
| Post C undetained (POI-1)  | 0.090                            | 0.108               | 0.127               | 0.141                | 0.178                           | 0.191                | 0.204                 |
| Post E undetained (POI-2)  | 0.073                            | 0.087               | 0.102               | 0.114                | 0.139                           | 0.150                | 0.160                 |
| Underground System (POI-2)   | 0.027                            | 0.029               | 0.031               | 0.033                | 0.037                           | 0.039                | 0.042                 |
| Combined Discharges (POI-2)  | 0.091                            | 0.106               | 0.123               | 0.135                | 0.162                           | 0.173                | 0.184                 |

**AREA AND C-FACTOR CALCULATIONS**

C-Factors, acreage, soil type, vegetative cover, and slope were determined based on the site survey, a site visit, and existing maps of record. Runoff coefficients (C) were assigned for each land use in accordance with the Columbia Borough Storm Water Management Ordinance No. 940-2022. Weighted C's were calculated for the drainage areas when determining peak flows.

**VOLUME MANAGEMENT**

901 cf is the required volume to be infiltrated in accordance with the Columbia Borough and DEP requirements (Worksheet 4). In the post development condition, 1,801 cf can be infiltrated and treated by the underground infiltration system

## **BMP DESIGN**

The BMP is designed to help clean the runoff from the proposed impervious surfaces first flush. Runoff generated from the rear dwelling roof areas, patios, walkways, and parking surfaces will be managed by subsurface infiltration bed. The system will provide water quality by the nature of its filtering design. In addition, the inlets to the system will have pre-treatment filters and sumped bottoms to keep grass and other pollutants out of the system.

# Hydrograph Return Period Recap

Hydrograph 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                 | -----         | 0.094              | 0.112 | ----- | 0.132 | 0.147 | 0.164 | 0.177 | 0.189  | Pre-A (POI-1) <25      |
| 2        | Rational                 | -----         | 0.108              | 0.129 | ----- | 0.152 | 0.169 | 0.188 | 0.203 | 0.217  | Pre-A (POI-1) >25      |
| 3        | Rational                 | -----         | 0.170              | 0.203 | ----- | 0.243 | 0.271 | 0.304 | 0.327 | 0.350  | Pre B (POI-2) <25      |
| 4        | Rational                 | -----         | 0.222              | 0.265 | ----- | 0.317 | 0.353 | 0.396 | 0.427 | 0.456  | Pre B (POI-2) >25      |
| 5        | Rational                 | -----         | 0.090              | 0.108 | ----- | 0.127 | 0.141 | 0.158 | 0.169 | 0.181  | Post C (POI-1) <25     |
| 6        | Rational                 | -----         | 0.102              | 0.121 | ----- | 0.143 | 0.159 | 0.178 | 0.191 | 0.204  | Post C (POI-2) >25     |
| 7        | Rational                 | -----         | 0.073              | 0.087 | ----- | 0.102 | 0.114 | 0.127 | 0.137 | 0.146  | Post E (POI-2) <25     |
| 8        | Rational                 | -----         | 0.080              | 0.095 | ----- | 0.112 | 0.125 | 0.139 | 0.150 | 0.160  | Post E (POI-2) >25     |
| 9        | Rational                 | -----         | 0.490              | 0.585 | ----- | 0.689 | 0.766 | 0.856 | 0.921 | 0.984  | Post D (POI-2) <25     |
| 10       | Rational                 | -----         | 0.564              | 0.673 | ----- | 0.793 | 0.881 | 0.985 | 1.060 | 1.132  | Post D (POI-2) >25     |
| 11       | Reservoir                | 9             | 0.027              | 0.029 | ----- | 0.031 | 0.033 | 0.034 | 0.036 | 0.037  | Underground System <25 |
| 12       | Reservoir                | 10            | 0.029              | 0.031 | ----- | 0.033 | 0.035 | 0.037 | 0.039 | 0.042  | Underground System >25 |
| 13       | Combine                  | 7, 11,        | 0.091              | 0.106 | ----- | 0.123 | 0.135 | 0.149 | 0.159 | 0.169  | POI-2 Combined <25     |
| 14       | Combine                  | 8, 12,        | 0.099              | 0.115 | ----- | 0.133 | 0.147 | 0.162 | 0.173 | 0.184  | POI-2 Combines >25     |
| 15       | Rational                 | -----         | 0.118              | 0.141 | ----- | 0.166 | 0.184 | 0.206 | 0.222 | 0.237  | I-2 >25                |
| 16       | Rational                 | -----         | 0.185              | 0.221 | ----- | 0.260 | 0.289 | 0.323 | 0.348 | 0.371  | I-3 >25                |
| 17       | Rational                 | -----         | 0.100              | 0.120 | ----- | 0.141 | 0.156 | 0.175 | 0.188 | 0.201  | I-4 >25                |

# 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                 | 0.094           | 1                   | 15                 | 141                   | -----         | -----                  | -----                   | Pre-A (POI-1) <25      |   |
| 2                | Rational                 | 0.108           | 1                   | 15                 | 162                   | -----         | -----                  | -----                   | Pre-A (POI-1) >25      |   |
| 3                | Rational                 | 0.170           | 1                   | 30                 | 511                   | -----         | -----                  | -----                   | Pre B (POI-2) <25      |   |
| 4                | Rational                 | 0.222           | 1                   | 30                 | 666                   | -----         | -----                  | -----                   | Pre B (POI-2) >25      |   |
| 5                | Rational                 | 0.090           | 1                   | 15                 | 135                   | -----         | -----                  | -----                   | Post C (POI-1) <25     |   |
| 6                | Rational                 | 0.102           | 1                   | 15                 | 153                   | -----         | -----                  | -----                   | Post C (POI-2) >25     |   |
| 7                | Rational                 | 0.073           | 1                   | 15                 | 109                   | -----         | -----                  | -----                   | Post E (POI-2) <25     |   |
| 8                | Rational                 | 0.080           | 1                   | 15                 | 120                   | -----         | -----                  | -----                   | Post E (POI-2) >25     |   |
| 9                | Rational                 | 0.490           | 1                   | 15                 | 735                   | -----         | -----                  | -----                   | Post D (POI-2) <25     |   |
| 10               | Rational                 | 0.564           | 1                   | 15                 | 846                   | -----         | -----                  | -----                   | Post D (POI-2) >25     |   |
| 11               | Reservoir                | 0.027           | 1                   | 48                 | 728                   | 9             | 302.44                 | 678                     | Underground System <25 |   |
| 12               | Reservoir                | 0.029           | 1                   | 48                 | 839                   | 10            | 302.58                 | 786                     | Underground System >25 |   |
| 13               | Combine                  | 0.091           | 1                   | 15                 | 837                   | 7, 11,        | -----                  | -----                   | POI-2 Combined <25     |   |
| 14               | Combine                  | 0.099           | 1                   | 15                 | 959                   | 8, 12,        | -----                  | -----                   | POI-2 Combines >25     |   |
| 15               | Rational                 | 0.118           | 1                   | 15                 | 177                   | -----         | -----                  | -----                   | I-2 >25                |   |
| 16               | Rational                 | 0.185           | 1                   | 15                 | 278                   | -----         | -----                  | -----                   | I-3 >25                |   |
| 17               | Rational                 | 0.100           | 1                   | 15                 | 150                   | -----         | -----                  | -----                   | I-4 >25                |   |
| S 5th Street.gpw |                          |                 |                     |                    | Return Period: 1 Year |               |                        | Tuesday, 11 / 1 / 2022  |                        | 6 |

# 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                 | 0.112           | 1                   | 15                 | 168                   | -----         | -----                  | -----                   | Pre-A (POI-1) <25      |   |
| 2                | Rational                 | 0.129           | 1                   | 15                 | 193                   | -----         | -----                  | -----                   | Pre-A (POI-1) >25      |   |
| 3                | Rational                 | 0.203           | 1                   | 30                 | 610                   | -----         | -----                  | -----                   | Pre B (POI-2) <25      |   |
| 4                | Rational                 | 0.265           | 1                   | 30                 | 796                   | -----         | -----                  | -----                   | Pre B (POI-2) >25      |   |
| 5                | Rational                 | 0.108           | 1                   | 15                 | 161                   | -----         | -----                  | -----                   | Post C (POI-1) <25     |   |
| 6                | Rational                 | 0.121           | 1                   | 15                 | 182                   | -----         | -----                  | -----                   | Post C (POI-2) >25     |   |
| 7                | Rational                 | 0.087           | 1                   | 15                 | 130                   | -----         | -----                  | -----                   | Post E (POI-2) <25     |   |
| 8                | Rational                 | 0.095           | 1                   | 15                 | 143                   | -----         | -----                  | -----                   | Post E (POI-2) >25     |   |
| 9                | Rational                 | 0.585           | 1                   | 15                 | 878                   | -----         | -----                  | -----                   | Post D (POI-2) <25     |   |
| 10               | Rational                 | 0.673           | 1                   | 15                 | 1,010                 | -----         | -----                  | -----                   | Post D (POI-2) >25     |   |
| 11               | Reservoir                | 0.029           | 1                   | 48                 | 870                   | 9             | 302.61                 | 816                     | Underground System <25 |   |
| 12               | Reservoir                | 0.031           | 1                   | 48                 | 1,002                 | 10            | 302.77                 | 944                     | Underground System >25 |   |
| 13               | Combine                  | 0.106           | 1                   | 15                 | 1,000                 | 7, 11,        | -----                  | -----                   | POI-2 Combined <25     |   |
| 14               | Combine                  | 0.115           | 1                   | 15                 | 1,145                 | 8, 12,        | -----                  | -----                   | POI-2 Combines >25     |   |
| 15               | Rational                 | 0.141           | 1                   | 15                 | 211                   | -----         | -----                  | -----                   | I-2 >25                |   |
| 16               | Rational                 | 0.221           | 1                   | 15                 | 331                   | -----         | -----                  | -----                   | I-3 >25                |   |
| 17               | Rational                 | 0.120           | 1                   | 15                 | 179                   | -----         | -----                  | -----                   | I-4 >25                |   |
| S 5th Street.gpw |                          |                 |                     |                    | Return Period: 2 Year |               |                        | Tuesday, 11 / 1 / 2022  |                        | 7 |

# 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                 | 0.132           | 1                   | 15                 | 198                   | -----         | -----                  | -----                   | Pre-A (POI-1) <25      |   |
| 2                | Rational                 | 0.152           | 1                   | 15                 | 228                   | -----         | -----                  | -----                   | Pre-A (POI-1) >25      |   |
| 3                | Rational                 | 0.243           | 1                   | 30                 | 729                   | -----         | -----                  | -----                   | Pre B (POI-2) <25      |   |
| 4                | Rational                 | 0.317           | 1                   | 30                 | 951                   | -----         | -----                  | -----                   | Pre B (POI-2) >25      |   |
| 5                | Rational                 | 0.127           | 1                   | 15                 | 190                   | -----         | -----                  | -----                   | Post C (POI-1) <25     |   |
| 6                | Rational                 | 0.143           | 1                   | 15                 | 215                   | -----         | -----                  | -----                   | Post C (POI-2) >25     |   |
| 7                | Rational                 | 0.102           | 1                   | 15                 | 154                   | -----         | -----                  | -----                   | Post E (POI-2) <25     |   |
| 8                | Rational                 | 0.112           | 1                   | 15                 | 168                   | -----         | -----                  | -----                   | Post E (POI-2) >25     |   |
| 9                | Rational                 | 0.689           | 1                   | 15                 | 1,034                 | -----         | -----                  | -----                   | Post D (POI-2) <25     |   |
| 10               | Rational                 | 0.793           | 1                   | 15                 | 1,190                 | -----         | -----                  | -----                   | Post D (POI-2) >25     |   |
| 11               | Reservoir                | 0.031           | 1                   | 48                 | 1,026                 | 9             | 302.80                 | 967                     | Underground System <25 |   |
| 12               | Reservoir                | 0.033           | 1                   | 49                 | 1,182                 | 10            | 302.99                 | 1,119                   | Underground System >25 |   |
| 13               | Combine                  | 0.123           | 1                   | 15                 | 1,180                 | 7, 11,        | -----                  | -----                   | POI-2 Combined <25     |   |
| 14               | Combine                  | 0.133           | 1                   | 15                 | 1,350                 | 8, 12,        | -----                  | -----                   | POI-2 Combines >25     |   |
| 15               | Rational                 | 0.166           | 1                   | 15                 | 249                   | -----         | -----                  | -----                   | I-2 >25                |   |
| 16               | Rational                 | 0.260           | 1                   | 15                 | 390                   | -----         | -----                  | -----                   | I-3 >25                |   |
| 17               | Rational                 | 0.141           | 1                   | 15                 | 211                   | -----         | -----                  | -----                   | I-4 >25                |   |
| S 5th Street.gpw |                          |                 |                     |                    | Return Period: 5 Year |               |                        | Tuesday, 11 / 1 / 2022  |                        | 8 |

# 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                 | 0.147           | 1                   | 15                 | 220                | -----         | -----                  | -----                   | Pre-A (POI-1) <25      |
| 2        | Rational                 | 0.169           | 1                   | 15                 | 253                | -----         | -----                  | -----                   | Pre-A (POI-1) >25      |
| 3        | Rational                 | 0.271           | 1                   | 30                 | 812                | -----         | -----                  | -----                   | Pre B (POI-2) <25      |
| 4        | Rational                 | 0.353           | 1                   | 30                 | 1,060              | -----         | -----                  | -----                   | Pre B (POI-2) >25      |
| 5        | Rational                 | 0.141           | 1                   | 15                 | 211                | -----         | -----                  | -----                   | Post C (POI-1) <25     |
| 6        | Rational                 | 0.159           | 1                   | 15                 | 238                | -----         | -----                  | -----                   | Post C (POI-2) >25     |
| 7        | Rational                 | 0.114           | 1                   | 15                 | 171                | -----         | -----                  | -----                   | Post E (POI-2) <25     |
| 8        | Rational                 | 0.125           | 1                   | 15                 | 187                | -----         | -----                  | -----                   | Post E (POI-2) >25     |
| 9        | Rational                 | 0.766           | 1                   | 15                 | 1,148              | -----         | -----                  | -----                   | Post D (POI-2) <25     |
| 10       | Rational                 | 0.881           | 1                   | 15                 | 1,322              | -----         | -----                  | -----                   | Post D (POI-2) >25     |
| 11       | Reservoir                | 0.033           | 1                   | 49                 | 1,141              | 9             | 302.94                 | 1,079                   | Underground System <25 |
| 12       | Reservoir                | 0.035           | 1                   | 49                 | 1,314              | 10            | 303.15                 | 1,248                   | Underground System >25 |
| 13       | Combine                  | 0.135           | 1                   | 15                 | 1,311              | 7, 11,        | -----                  | -----                   | POI-2 Combined <25     |
| 14       | Combine                  | 0.147           | 1                   | 15                 | 1,501              | 8, 12,        | -----                  | -----                   | POI-2 Combines >25     |
| 15       | Rational                 | 0.184           | 1                   | 15                 | 276                | -----         | -----                  | -----                   | I-2 >25                |
| 16       | Rational                 | 0.289           | 1                   | 15                 | 433                | -----         | -----                  | -----                   | I-3 >25                |
| 17       | Rational                 | 0.156           | 1                   | 15                 | 235                | -----         | -----                  | -----                   | I-4 >25                |



# 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                 | 0.164           | 1                   | 15                 | 246                    | -----         | -----                  | -----                   | Pre-A (POI-1) <25      |    |
| 2                | Rational                 | 0.188           | 1                   | 15                 | 283                    | -----         | -----                  | -----                   | Pre-A (POI-1) >25      |    |
| 3                | Rational                 | 0.304           | 1                   | 30                 | 912                    | -----         | -----                  | -----                   | Pre B (POI-2) <25      |    |
| 4                | Rational                 | 0.396           | 1                   | 30                 | 1,189                  | -----         | -----                  | -----                   | Pre B (POI-2) >25      |    |
| 5                | Rational                 | 0.158           | 1                   | 15                 | 236                    | -----         | -----                  | -----                   | Post C (POI-1) <25     |    |
| 6                | Rational                 | 0.178           | 1                   | 15                 | 267                    | -----         | -----                  | -----                   | Post C (POI-2) >25     |    |
| 7                | Rational                 | 0.127           | 1                   | 15                 | 191                    | -----         | -----                  | -----                   | Post E (POI-2) <25     |    |
| 8                | Rational                 | 0.139           | 1                   | 15                 | 209                    | -----         | -----                  | -----                   | Post E (POI-2) >25     |    |
| 9                | Rational                 | 0.856           | 1                   | 15                 | 1,284                  | -----         | -----                  | -----                   | Post D (POI-2) <25     |    |
| 10               | Rational                 | 0.985           | 1                   | 15                 | 1,478                  | -----         | -----                  | -----                   | Post D (POI-2) >25     |    |
| 11               | Reservoir                | 0.034           | 1                   | 49                 | 1,277                  | 9             | 303.11                 | 1,211                   | Underground System <25 |    |
| 12               | Reservoir                | 0.037           | 1                   | 49                 | 1,471                  | 10            | 303.34                 | 1,400                   | Underground System >25 |    |
| 13               | Combine                  | 0.149           | 1                   | 15                 | 1,468                  | 7, 11,        | -----                  | -----                   | POI-2 Combined <25     |    |
| 14               | Combine                  | 0.162           | 1                   | 15                 | 1,680                  | 8, 12,        | -----                  | -----                   | POI-2 Combines >25     |    |
| 15               | Rational                 | 0.206           | 1                   | 15                 | 309                    | -----         | -----                  | -----                   | I-2 >25                |    |
| 16               | Rational                 | 0.323           | 1                   | 15                 | 485                    | -----         | -----                  | -----                   | I-3 >25                |    |
| 17               | Rational                 | 0.175           | 1                   | 15                 | 263                    | -----         | -----                  | -----                   | I-4 >25                |    |
| S 5th Street.gpw |                          |                 |                     |                    | Return Period: 25 Year |               |                        | Tuesday, 11 / 1 / 2022  |                        | 10 |

# 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                 | 0.177           | 1                   | 15                 | 265                    | -----         | -----                  | -----                   | Pre-A (POI-1) <25      |    |
| 2                | Rational                 | 0.203           | 1                   | 15                 | 304                    | -----         | -----                  | -----                   | Pre-A (POI-1) >25      |    |
| 3                | Rational                 | 0.327           | 1                   | 30                 | 982                    | -----         | -----                  | -----                   | Pre B (POI-2) <25      |    |
| 4                | Rational                 | 0.427           | 1                   | 30                 | 1,280                  | -----         | -----                  | -----                   | Pre B (POI-2) >25      |    |
| 5                | Rational                 | 0.169           | 1                   | 15                 | 254                    | -----         | -----                  | -----                   | Post C (POI-1) <25     |    |
| 6                | Rational                 | 0.191           | 1                   | 15                 | 287                    | -----         | -----                  | -----                   | Post C (POI-2) >25     |    |
| 7                | Rational                 | 0.137           | 1                   | 15                 | 205                    | -----         | -----                  | -----                   | Post E (POI-2) <25     |    |
| 8                | Rational                 | 0.150           | 1                   | 15                 | 225                    | -----         | -----                  | -----                   | Post E (POI-2) >25     |    |
| 9                | Rational                 | 0.921           | 1                   | 15                 | 1,381                  | -----         | -----                  | -----                   | Post D (POI-2) <25     |    |
| 10               | Rational                 | 1.060           | 1                   | 15                 | 1,590                  | -----         | -----                  | -----                   | Post D (POI-2) >25     |    |
| 11               | Reservoir                | 0.036           | 1                   | 49                 | 1,374                  | 9             | 303.23                 | 1,306                   | Underground System <25 |    |
| 12               | Reservoir                | 0.039           | 1                   | 49                 | 1,582                  | 10            | 303.62                 | 1,509                   | Underground System >25 |    |
| 13               | Combine                  | 0.159           | 1                   | 15                 | 1,579                  | 7, 11,        | -----                  | -----                   | POI-2 Combined <25     |    |
| 14               | Combine                  | 0.173           | 1                   | 15                 | 1,807                  | 8, 12,        | -----                  | -----                   | POI-2 Combines >25     |    |
| 15               | Rational                 | 0.222           | 1                   | 15                 | 332                    | -----         | -----                  | -----                   | I-2 >25                |    |
| 16               | Rational                 | 0.348           | 1                   | 15                 | 521                    | -----         | -----                  | -----                   | I-3 >25                |    |
| 17               | Rational                 | 0.188           | 1                   | 15                 | 282                    | -----         | -----                  | -----                   | I-4 >25                |    |
| S 5th Street.gpw |                          |                 |                     |                    | Return Period: 50 Year |               |                        | Tuesday, 11 / 1 / 2022  |                        | 11 |

# 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                 | 0.189           | 1                   | 15                 | 283                     | -----         | -----                  | -----                   | Pre-A (POI-1) <25      |    |
| 2                | Rational                 | 0.217           | 1                   | 15                 | 325                     | -----         | -----                  | -----                   | Pre-A (POI-1) >25      |    |
| 3                | Rational                 | 0.350           | 1                   | 30                 | 1,049                   | -----         | -----                  | -----                   | Pre B (POI-2) <25      |    |
| 4                | Rational                 | 0.456           | 1                   | 30                 | 1,368                   | -----         | -----                  | -----                   | Pre B (POI-2) >25      |    |
| 5                | Rational                 | 0.181           | 1                   | 15                 | 272                     | -----         | -----                  | -----                   | Post C (POI-1) <25     |    |
| 6                | Rational                 | 0.204           | 1                   | 15                 | 306                     | -----         | -----                  | -----                   | Post C (POI-2) >25     |    |
| 7                | Rational                 | 0.146           | 1                   | 15                 | 219                     | -----         | -----                  | -----                   | Post E (POI-2) <25     |    |
| 8                | Rational                 | 0.160           | 1                   | 15                 | 240                     | -----         | -----                  | -----                   | Post E (POI-2) >25     |    |
| 9                | Rational                 | 0.984           | 1                   | 15                 | 1,476                   | -----         | -----                  | -----                   | Post D (POI-2) <25     |    |
| 10               | Rational                 | 1.132           | 1                   | 15                 | 1,699                   | -----         | -----                  | -----                   | Post D (POI-2) >25     |    |
| 11               | Reservoir                | 0.037           | 1                   | 49                 | 1,468                   | 9             | 303.34                 | 1,398                   | Underground System <25 |    |
| 12               | Reservoir                | 0.042           | 1                   | 49                 | 1,691                   | 10            | 303.89                 | 1,614                   | Underground System >25 |    |
| 13               | Combine                  | 0.169           | 1                   | 15                 | 1,688                   | 7, 11,        | -----                  | -----                   | POI-2 Combined <25     |    |
| 14               | Combine                  | 0.184           | 1                   | 15                 | 1,931                   | 8, 12,        | -----                  | -----                   | POI-2 Combines >25     |    |
| 15               | Rational                 | 0.237           | 1                   | 15                 | 355                     | -----         | -----                  | -----                   | I-2 >25                |    |
| 16               | Rational                 | 0.371           | 1                   | 15                 | 557                     | -----         | -----                  | -----                   | I-3 >25                |    |
| 17               | Rational                 | 0.201           | 1                   | 15                 | 302                     | -----         | -----                  | -----                   | I-4 >25                |    |
| S 5th Street.gpw |                          |                 |                     |                    | Return Period: 100 Year |               |                        | Tuesday, 11 / 1 / 2022  |                        | 12 |

**PRE-DEVELOPMENT CALCULATIONS**

**POI 1**

PRE A

# TR55 Tc Worksheet

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

## Hyd. No. 1

Pre-A (POI-1) <25

| <u>Description</u>                 | <u>A</u>      | <u>B</u>      | <u>C</u>      | <u>Totals</u>   |
|------------------------------------|---------------|---------------|---------------|-----------------|
| <b>Sheet Flow</b>                  |               |               |               |                 |
| Manning's n-value                  | = 0.150       | 0.011         | 0.011         |                 |
| Flow length (ft)                   | = 45.0        | 23.0          | 0.0           |                 |
| Two-year 24-hr precip. (in)        | = 2.99        | 2.99          | 0.00          |                 |
| Land slope (%)                     | = 3.30        | 2.26          | 0.00          |                 |
| <b>Travel Time (min)</b>           | <b>= 4.38</b> | <b>+ 0.37</b> | <b>+ 0.00</b> | <b>= 4.75</b>   |
| <b>Shallow Concentrated Flow</b>   |               |               |               |                 |
| Flow length (ft)                   | = 0.00        | 0.00          | 0.00          |                 |
| Watercourse slope (%)              | = 0.00        | 0.00          | 0.00          |                 |
| Surface description                | = Paved       | Paved         | Paved         |                 |
| Average velocity (ft/s)            | =0.00         | 0.00          | 0.00          |                 |
| <b>Travel Time (min)</b>           | <b>= 0.00</b> | <b>+ 0.00</b> | <b>+ 0.00</b> | <b>= 0.00</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           |                 |
| <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>4.75 min</b> |

# TR55 Tc Worksheet

## Hyd. No. 2

Pre-A (POI-1) >25

| <u>Description</u>                 | <u>A</u>      | <u>B</u>      | <u>C</u>      | <u>Totals</u>   |
|------------------------------------|---------------|---------------|---------------|-----------------|
| <b>Sheet Flow</b>                  |               |               |               |                 |
| Manning's n-value                  | = 0.150       | 0.011         | 0.011         |                 |
| Flow length (ft)                   | = 45.0        | 23.0          | 0.0           |                 |
| Two-year 24-hr precip. (in)        | = 2.99        | 2.99          | 0.00          |                 |
| Land slope (%)                     | = 3.30        | 2.26          | 0.00          |                 |
| <b>Travel Time (min)</b>           | <b>= 4.38</b> | <b>+ 0.37</b> | <b>+ 0.00</b> | <b>= 4.75</b>   |
| <b>Shallow Concentrated Flow</b>   |               |               |               |                 |
| Flow length (ft)                   | = 0.00        | 0.00          | 0.00          |                 |
| Watercourse slope (%)              | = 0.00        | 0.00          | 0.00          |                 |
| Surface description                | = Unpaved     | Paved         | Paved         |                 |
| Average velocity (ft/s)            | =0.00         | 0.00          | 0.00          |                 |
| <b>Travel Time (min)</b>           | <b>= 0.00</b> | <b>+ 0.00</b> | <b>+ 0.00</b> | <b>= 0.00</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>4.75 min</b> |

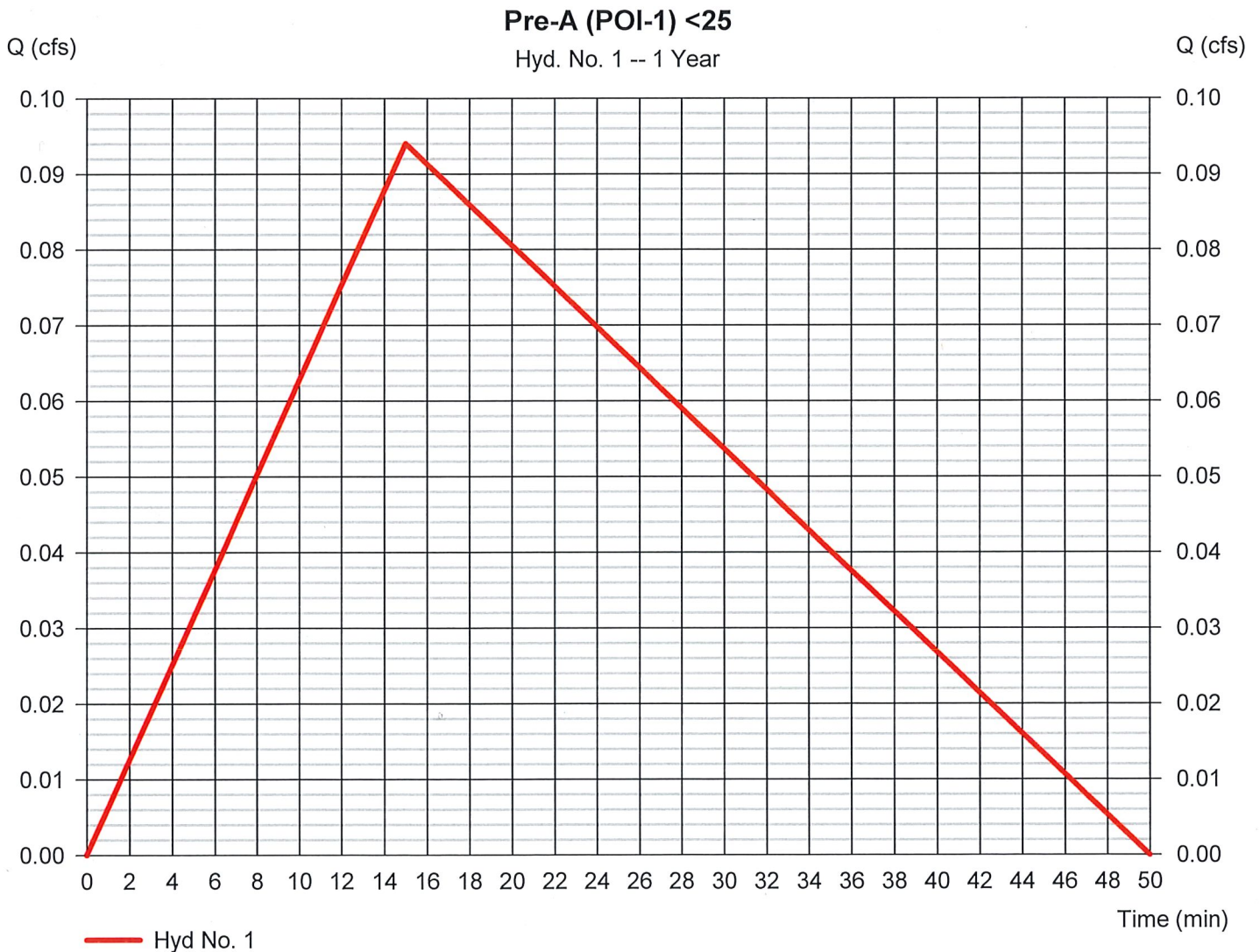
# Hydrograph Report

## Hyd. No. 1

Pre-A (POI-1) <25

|                 |                |                   |             |
|-----------------|----------------|-------------------|-------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.094 cfs |
| Storm frequency | = 1 yrs        | Time to peak      | = 15 min    |
| Time interval   | = 1 min        | Hyd. volume       | = 141 cuft  |
| Drainage area   | = 0.040 ac     | Runoff coeff.     | = 0.61*     |
| Intensity       | = 3.855 in/hr  | Tc by User        | = 5.00 min  |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7       |

\* Composite (Area/C) = [(0.026 x 0.86) + (0.016 x 0.21)] / 0.040



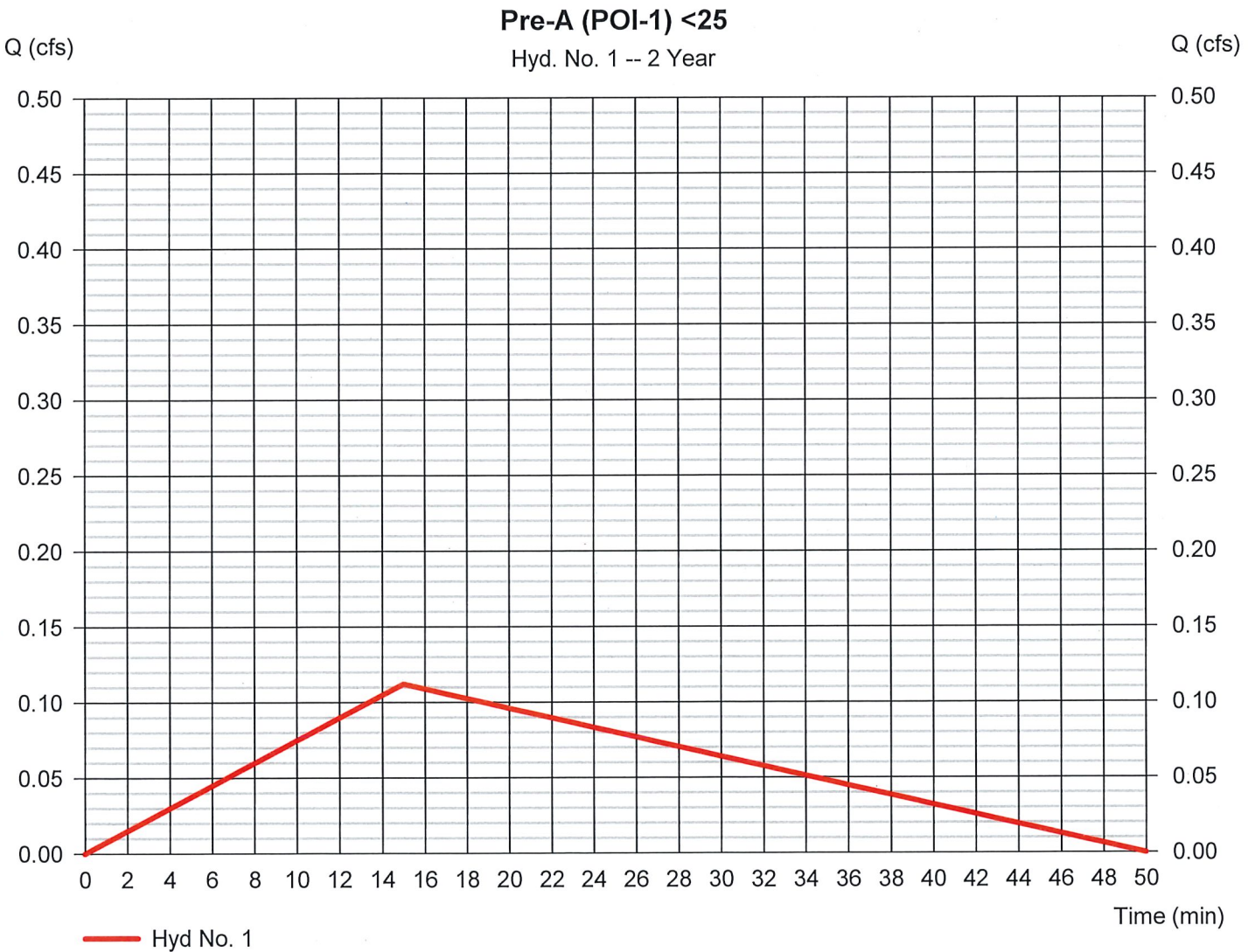
# Hydrograph Report

## Hyd. No. 1

Pre-A (POI-1) <25

|                 |                |                   |             |
|-----------------|----------------|-------------------|-------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.112 cfs |
| Storm frequency | = 2 yrs        | Time to peak      | = 15 min    |
| Time interval   | = 1 min        | Hyd. volume       | = 168 cuft  |
| Drainage area   | = 0.040 ac     | Runoff coeff.     | = 0.61*     |
| Intensity       | = 4.600 in/hr  | Tc by User        | = 5.00 min  |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7       |

\* Composite (Area/C) =  $[(0.026 \times 0.86) + (0.016 \times 0.21)] / 0.040$





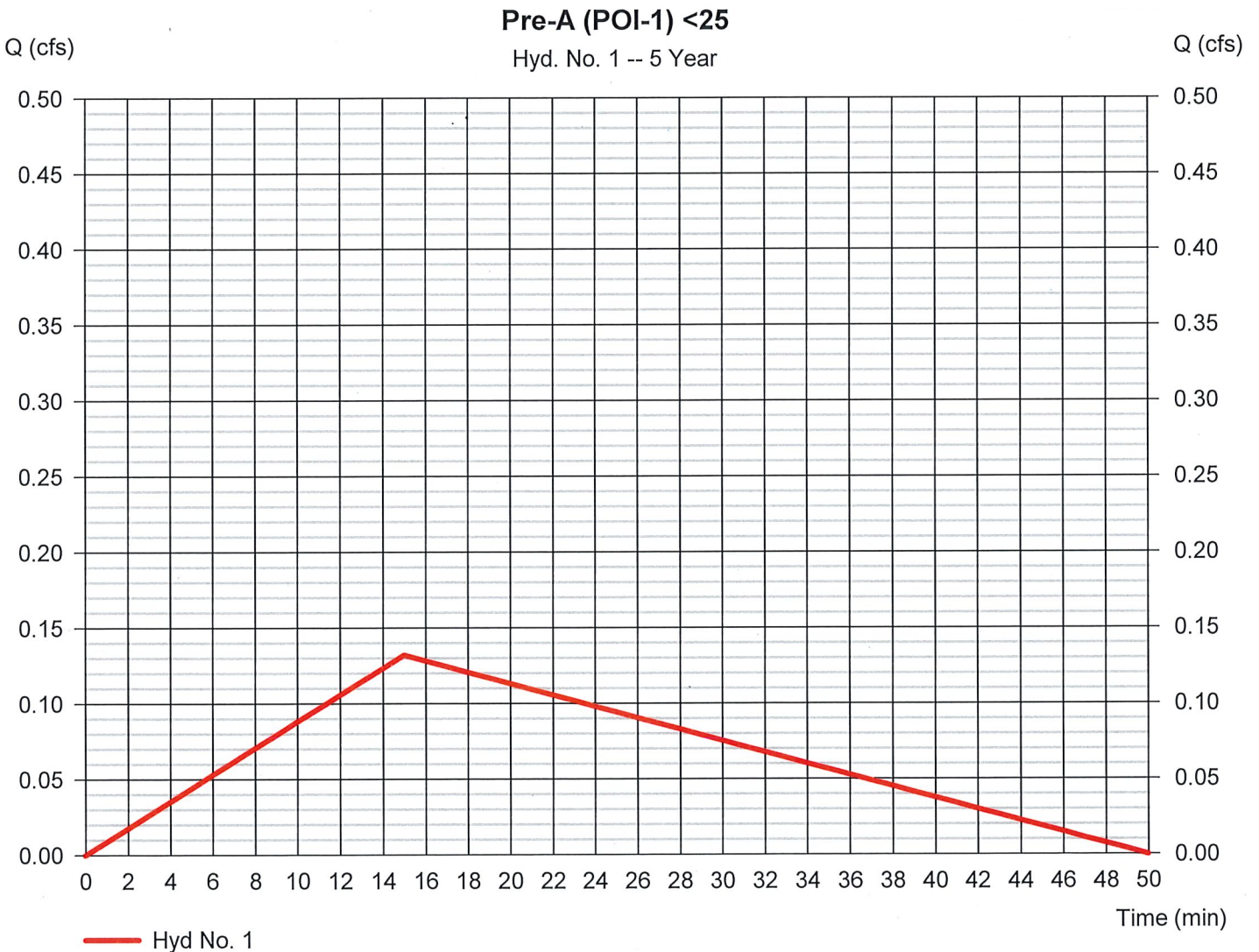
# Hydrograph Report

## Hyd. No. 1

Pre-A (POI-1) <25

|                 |                |                   |             |
|-----------------|----------------|-------------------|-------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.132 cfs |
| Storm frequency | = 5 yrs        | Time to peak      | = 15 min    |
| Time interval   | = 1 min        | Hyd. volume       | = 198 cuft  |
| Drainage area   | = 0.040 ac     | Runoff coeff.     | = 0.61*     |
| Intensity       | = 5.417 in/hr  | Tc by User        | = 5.00 min  |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7       |

\* Composite (Area/C) =  $[(0.026 \times 0.86) + (0.016 \times 0.21)] / 0.040$



# Hydrograph Report

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

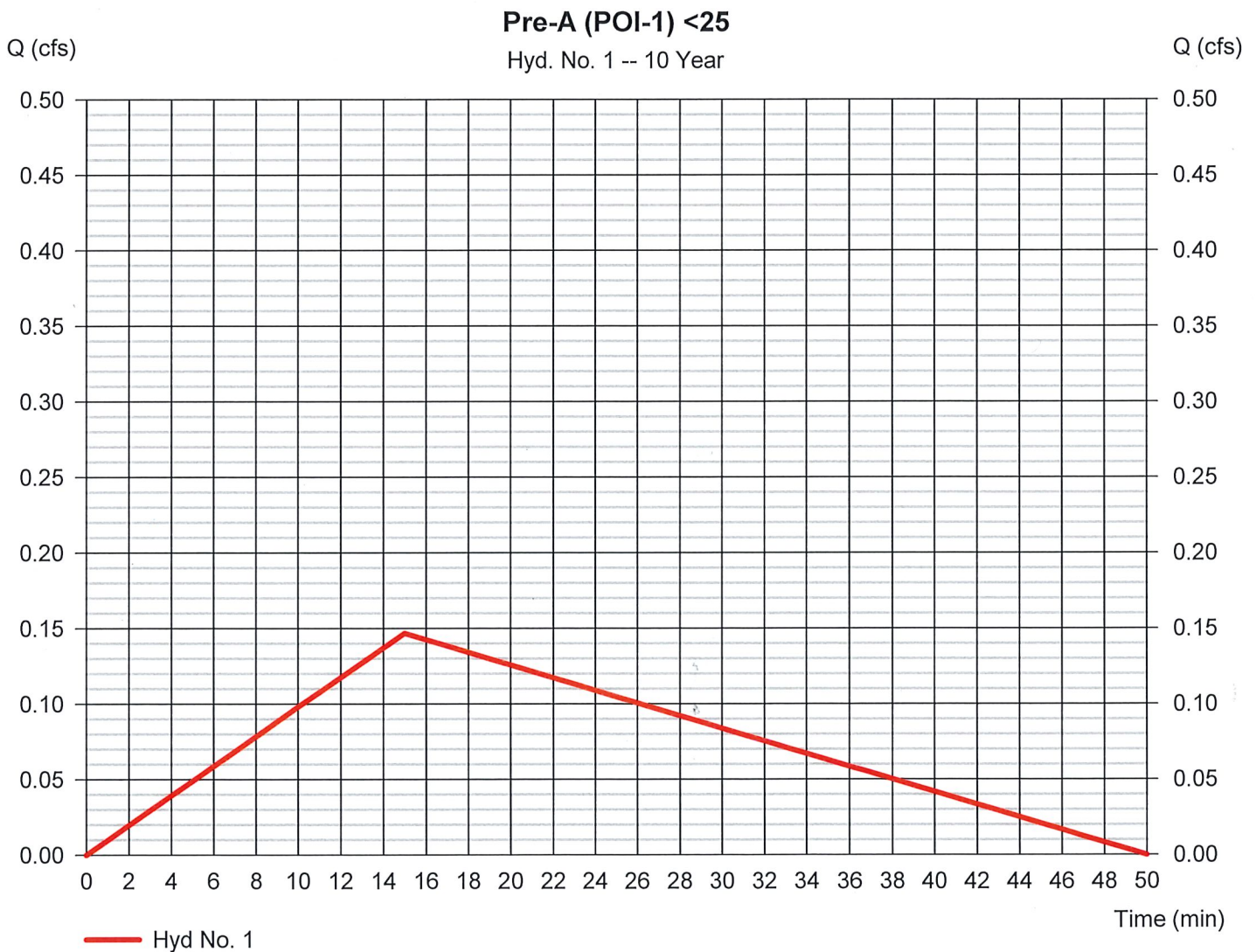
Tuesday, 11 / 1 / 2022

## Hyd. No. 1

Pre-A (POI-1) <25

|                 |                |                   |             |
|-----------------|----------------|-------------------|-------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.147 cfs |
| Storm frequency | = 10 yrs       | Time to peak      | = 15 min    |
| Time interval   | = 1 min        | Hyd. volume       | = 220 cuft  |
| Drainage area   | = 0.040 ac     | Runoff coeff.     | = 0.61*     |
| Intensity       | = 6.019 in/hr  | Tc by User        | = 5.00 min  |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7       |

\* Composite (Area/C) =  $[(0.026 \times 0.86) + (0.016 \times 0.21)] / 0.040$



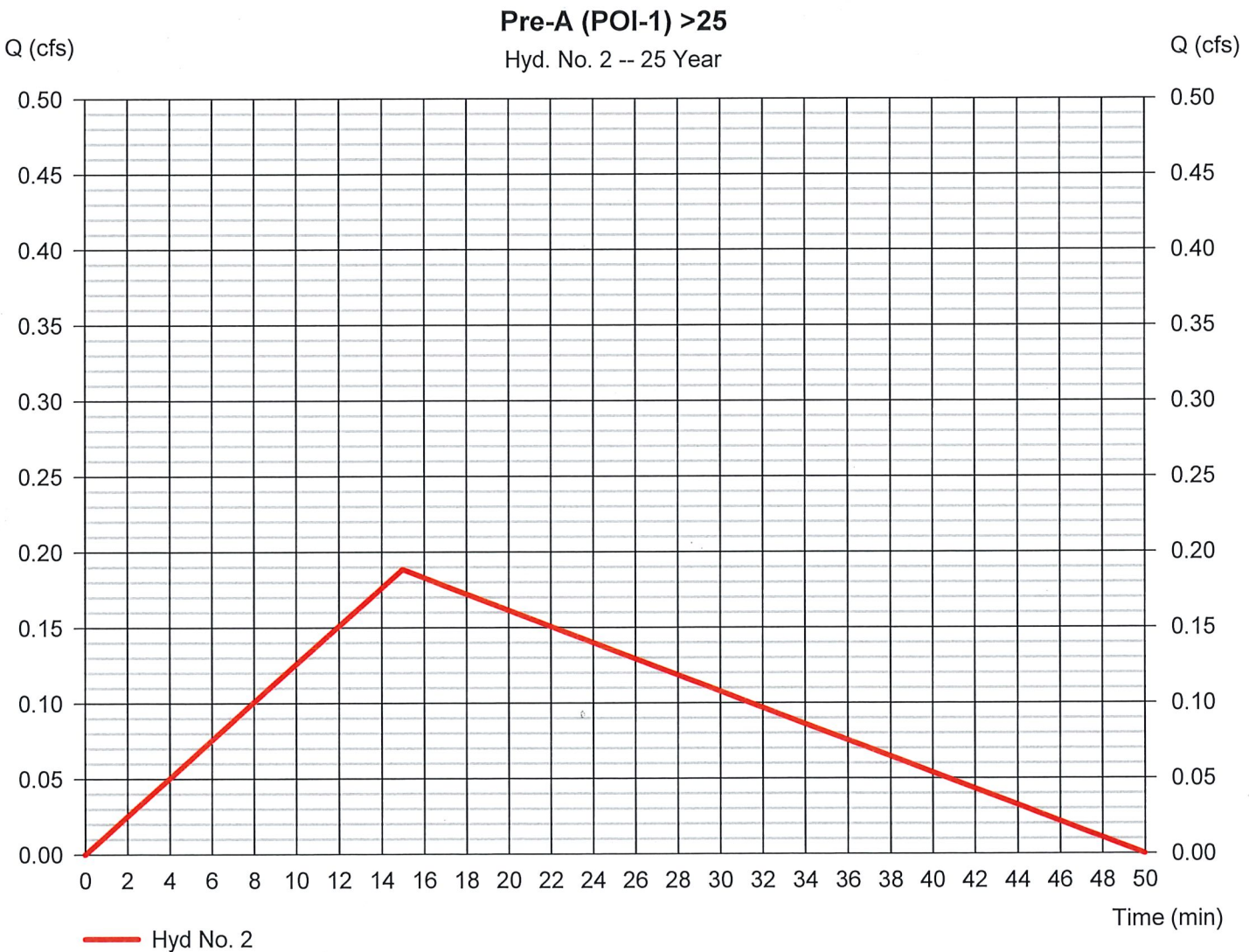
# Hydrograph Report

## Hyd. No. 2

Pre-A (POI-1) >25

|                 |                |                   |             |
|-----------------|----------------|-------------------|-------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.188 cfs |
| Storm frequency | = 25 yrs       | Time to peak      | = 15 min    |
| Time interval   | = 1 min        | Hyd. volume       | = 283 cuft  |
| Drainage area   | = 0.040 ac     | Runoff coeff.     | = 0.7*      |
| Intensity       | = 6.731 in/hr  | Tc by User        | = 5.00 min  |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7       |

\* Composite (Area/C) = [(0.026 x 0.96) + (0.016 x 0.27)] / 0.040



# Hydrograph Report

## Hyd. No. 2

Pre-A (POI-1) >25

|                 |                |                   |             |
|-----------------|----------------|-------------------|-------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.203 cfs |
| Storm frequency | = 50 yrs       | Time to peak      | = 15 min    |
| Time interval   | = 1 min        | Hyd. volume       | = 304 cuft  |
| Drainage area   | = 0.040 ac     | Runoff coeff.     | = 0.7*      |
| Intensity       | = 7.240 in/hr  | Tc by User        | = 5.00 min  |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7       |

\* Composite (Area/C) =  $[(0.026 \times 0.96) + (0.016 \times 0.27)] / 0.040$



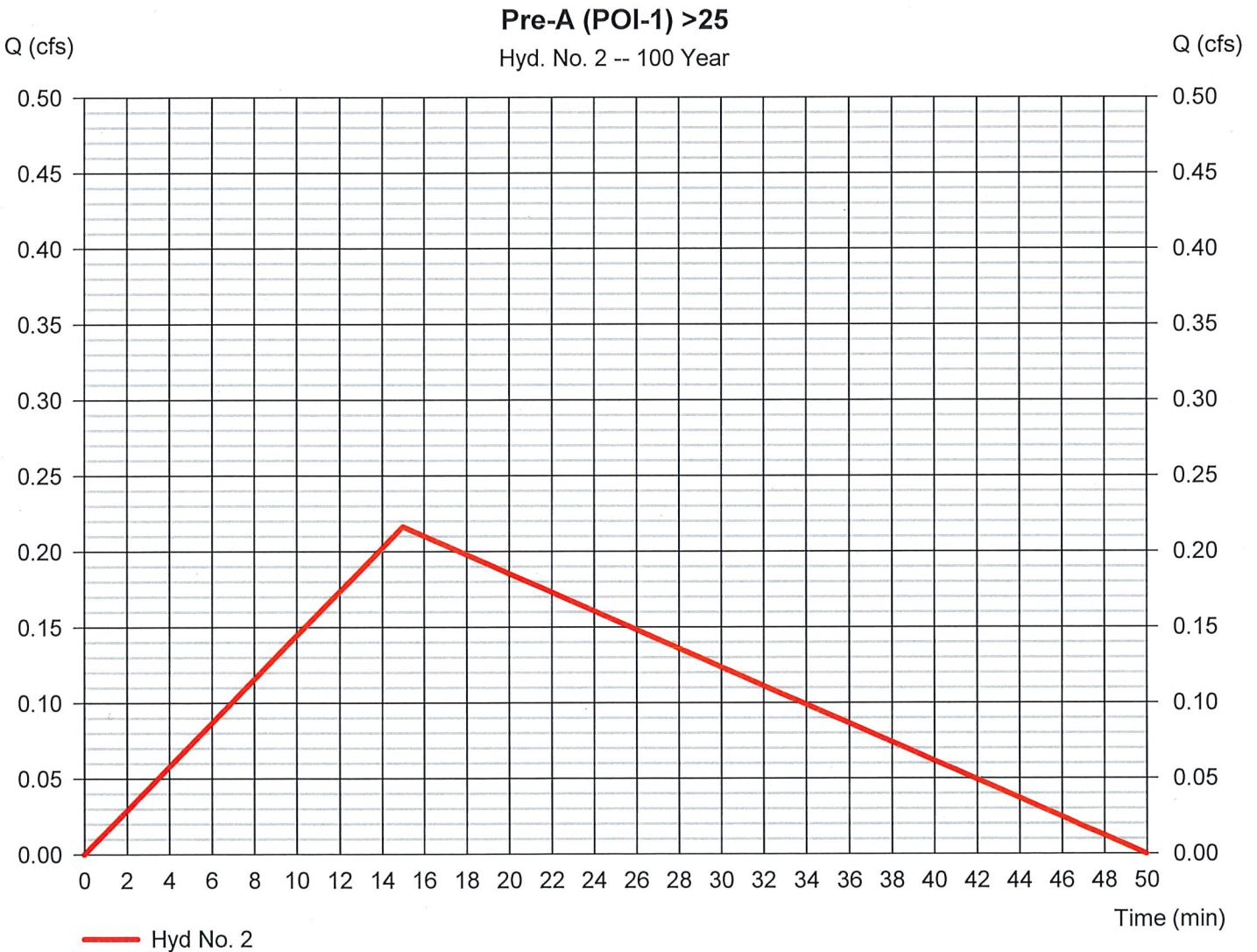
# Hydrograph Report

## Hyd. No. 2

Pre-A (POI-1) >25

|                 |                |                   |             |
|-----------------|----------------|-------------------|-------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.217 cfs |
| Storm frequency | = 100 yrs      | Time to peak      | = 15 min    |
| Time interval   | = 1 min        | Hyd. volume       | = 325 cuft  |
| Drainage area   | = 0.040 ac     | Runoff coeff.     | = 0.7*      |
| Intensity       | = 7.735 in/hr  | Tc by User        | = 5.00 min  |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7       |

\* Composite (Area/C) =  $[(0.026 \times 0.96) + (0.016 \times 0.27)] / 0.040$



**PRE-DEVELOPMENT CALCULATIONS**

**POI 2**

PRE B

# TR55 Tc Worksheet

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

## Hyd. No. 3

Pre B (POI-2) <25

| <u>Description</u>                 | <u>A</u>      | <u>B</u>             | <u>C</u>             | <u>Totals</u>    |
|------------------------------------|---------------|----------------------|----------------------|------------------|
| <b>Sheet Flow</b>                  |               |                      |                      |                  |
| Manning's n-value                  | = 0.150       | 0.011                | 0.011                |                  |
| Flow length (ft)                   | = 100.0       | 0.0                  | 0.0                  |                  |
| Two-year 24-hr precip. (in)        | = 2.99        | 0.00                 | 0.00                 |                  |
| Land slope (%)                     | = 2.50        | 0.00                 | 0.00                 |                  |
| <b>Travel Time (min)</b>           | <b>= 9.27</b> | <b>+</b> <b>0.00</b> | <b>+</b> <b>0.00</b> | <b>= 9.27</b>    |
| <b>Shallow Concentrated Flow</b>   |               |                      |                      |                  |
| Flow length (ft)                   | = 100.00      | 0.00                 | 0.00                 |                  |
| Watercourse slope (%)              | = 3.20        | 0.00                 | 0.00                 |                  |
| Surface description                | = Unpaved     | Paved                | Paved                |                  |
| Average velocity (ft/s)            | =2.89         | 0.00                 | 0.00                 |                  |
| <b>Travel Time (min)</b>           | <b>= 0.58</b> | <b>+</b> <b>0.00</b> | <b>+</b> <b>0.00</b> | <b>= 0.58</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                  |                  |
| <b>Travel Time (min)</b>           | <b>= 0.00</b> | <b>+</b> <b>0.00</b> | <b>+</b> <b>0.00</b> | <b>= 0.00</b>    |
| <b>Total Travel Time, Tc .....</b> |               |                      |                      | <b>10.00 min</b> |

# TR55 Tc Worksheet

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

## Hyd. No. 4

Pre B (POI-2) >25

| <u>Description</u>                 | <u>A</u>      | <u>B</u> | <u>C</u>    | <u>Totals</u>   |
|------------------------------------|---------------|----------|-------------|-----------------|
| <b>Sheet Flow</b>                  |               |          |             |                 |
| Manning's n-value                  | = 0.150       | 0.011    | 0.011       |                 |
| Flow length (ft)                   | = 100.0       | 0.0      | 0.0         |                 |
| Two-year 24-hr precip. (in)        | = 2.99        | 0.00     | 0.00        |                 |
| Land slope (%)                     | = 2.50        | 0.00     | 0.00        |                 |
| <b>Travel Time (min)</b>           | <b>= 9.27</b> | <b>+</b> | <b>0.00</b> | <b>+</b>        |
|                                    |               |          | <b>0.00</b> | <b>= 9.27</b>   |
| <b>Shallow Concentrated Flow</b>   |               |          |             |                 |
| Flow length (ft)                   | = 100.00      | 0.00     | 0.00        |                 |
| Watercourse slope (%)              | = 3.20        | 0.00     | 0.00        |                 |
| Surface description                | = Unpaved     | Paved    | Paved       |                 |
| Average velocity (ft/s)            | =2.89         | 0.00     | 0.00        |                 |
| <b>Travel Time (min)</b>           | <b>= 0.58</b> | <b>+</b> | <b>0.00</b> | <b>+</b>        |
|                                    |               |          | <b>0.00</b> | <b>= 0.58</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>= 0.00</b>   |
| <b>Total Travel Time, Tc</b> ..... |               |          |             | <b>9.85 min</b> |



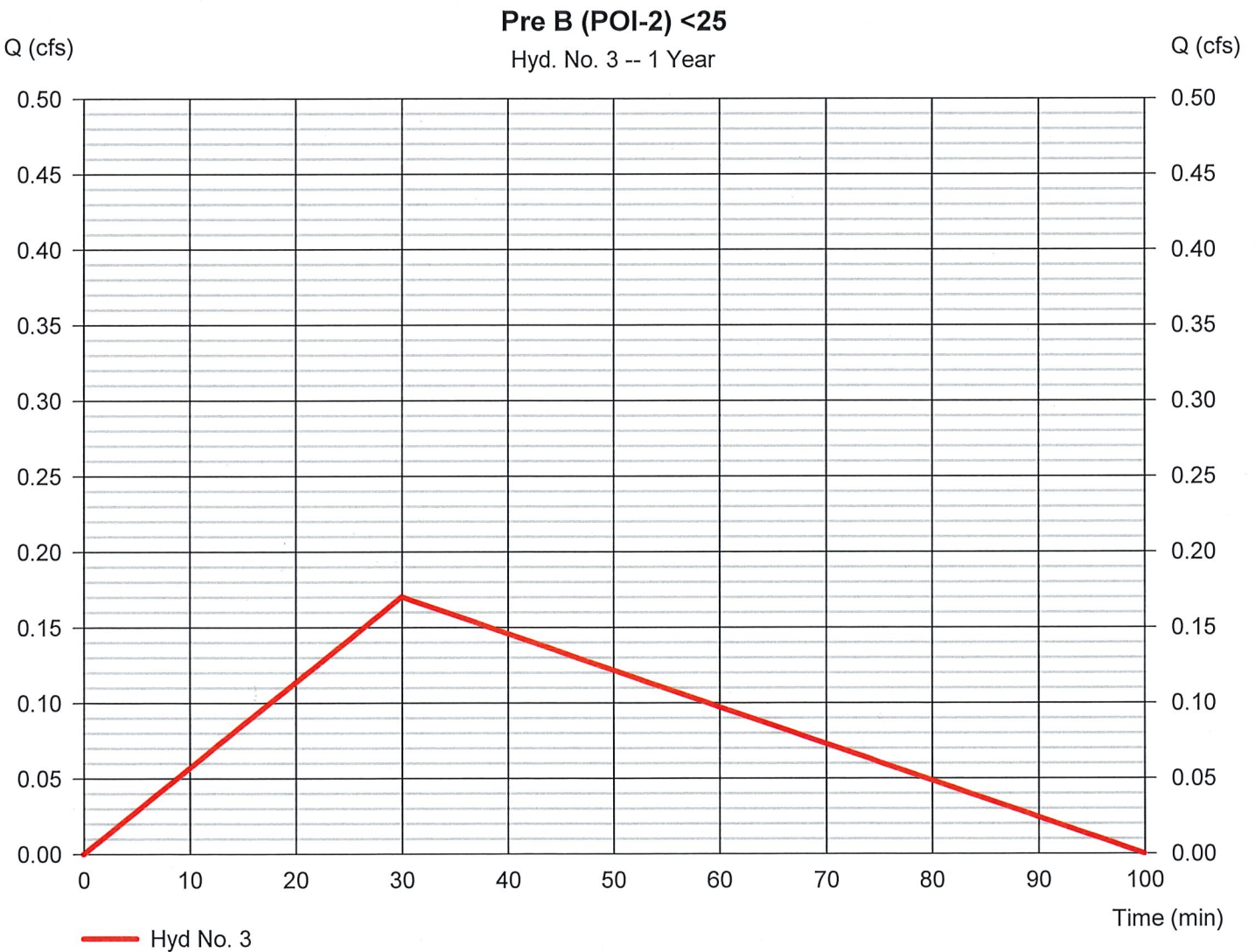
# Hydrograph Report

## Hyd. No. 3

Pre B (POI-2) <25

|                 |                |                   |             |
|-----------------|----------------|-------------------|-------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.170 cfs |
| Storm frequency | = 1 yrs        | Time to peak      | = 30 min    |
| Time interval   | = 1 min        | Hyd. volume       | = 511 cuft  |
| Drainage area   | = 0.240 ac     | Runoff coeff.     | = 0.23*     |
| Intensity       | = 3.085 in/hr  | Tc by TR55        | = 10.00 min |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7       |

\* Composite (Area/C) =  $[(0.009 \times 0.86) + (0.233 \times 0.21)] / 0.240$



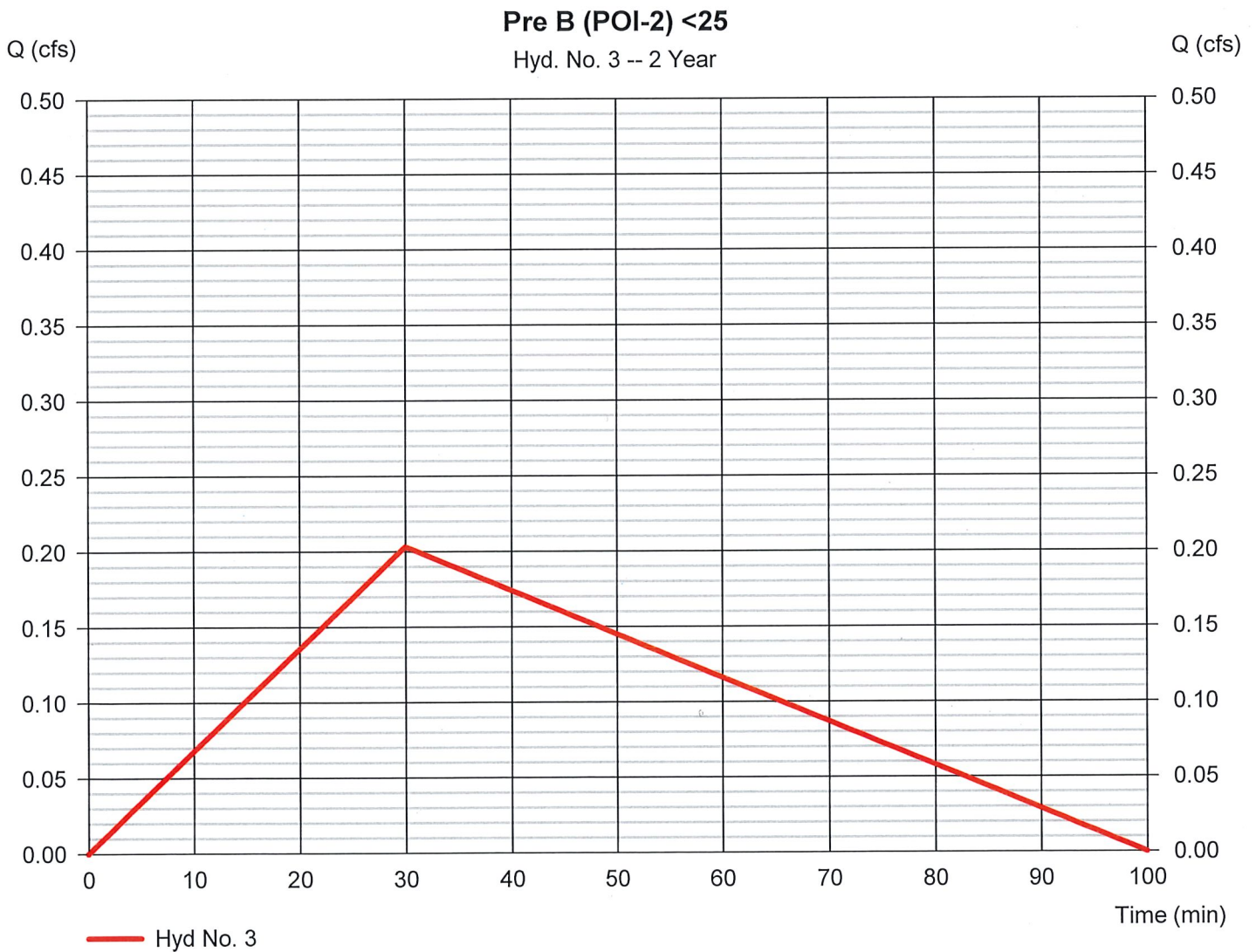
# Hydrograph Report

## Hyd. No. 3

Pre B (POI-2) <25

|                 |                |                   |             |
|-----------------|----------------|-------------------|-------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.203 cfs |
| Storm frequency | = 2 yrs        | Time to peak      | = 30 min    |
| Time interval   | = 1 min        | Hyd. volume       | = 610 cuft  |
| Drainage area   | = 0.240 ac     | Runoff coeff.     | = 0.23*     |
| Intensity       | = 3.685 in/hr  | Tc by TR55        | = 10.00 min |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7       |

\* Composite (Area/C) =  $[(0.009 \times 0.86) + (0.233 \times 0.21)] / 0.240$



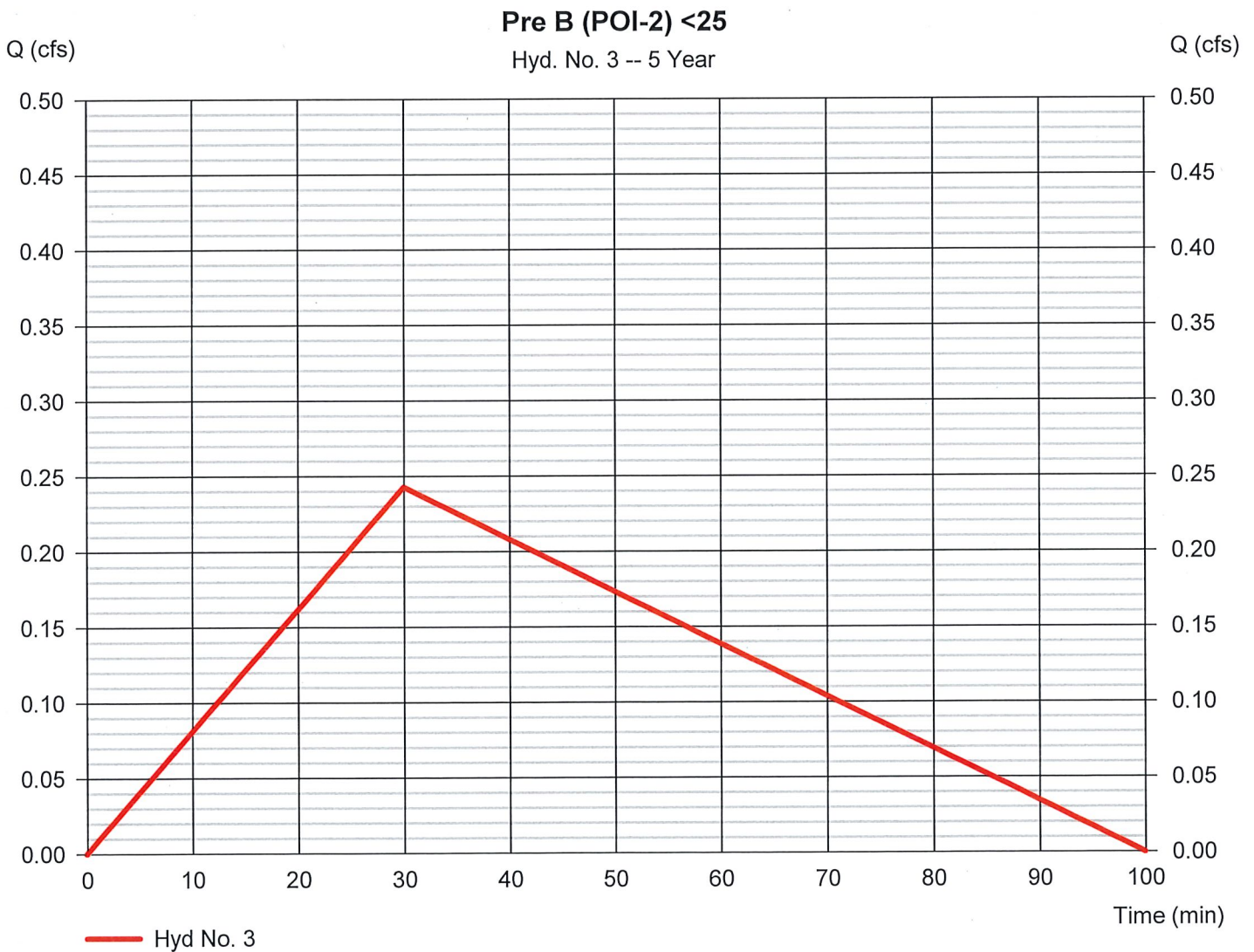
# Hydrograph Report

## Hyd. No. 3

Pre B (POI-2) <25

|                 |                |                   |             |
|-----------------|----------------|-------------------|-------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.243 cfs |
| Storm frequency | = 5 yrs        | Time to peak      | = 30 min    |
| Time interval   | = 1 min        | Hyd. volume       | = 729 cuft  |
| Drainage area   | = 0.240 ac     | Runoff coeff.     | = 0.23*     |
| Intensity       | = 4.401 in/hr  | Tc by TR55        | = 10.00 min |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7       |

\* Composite (Area/C) =  $[(0.009 \times 0.86) + (0.233 \times 0.21)] / 0.240$



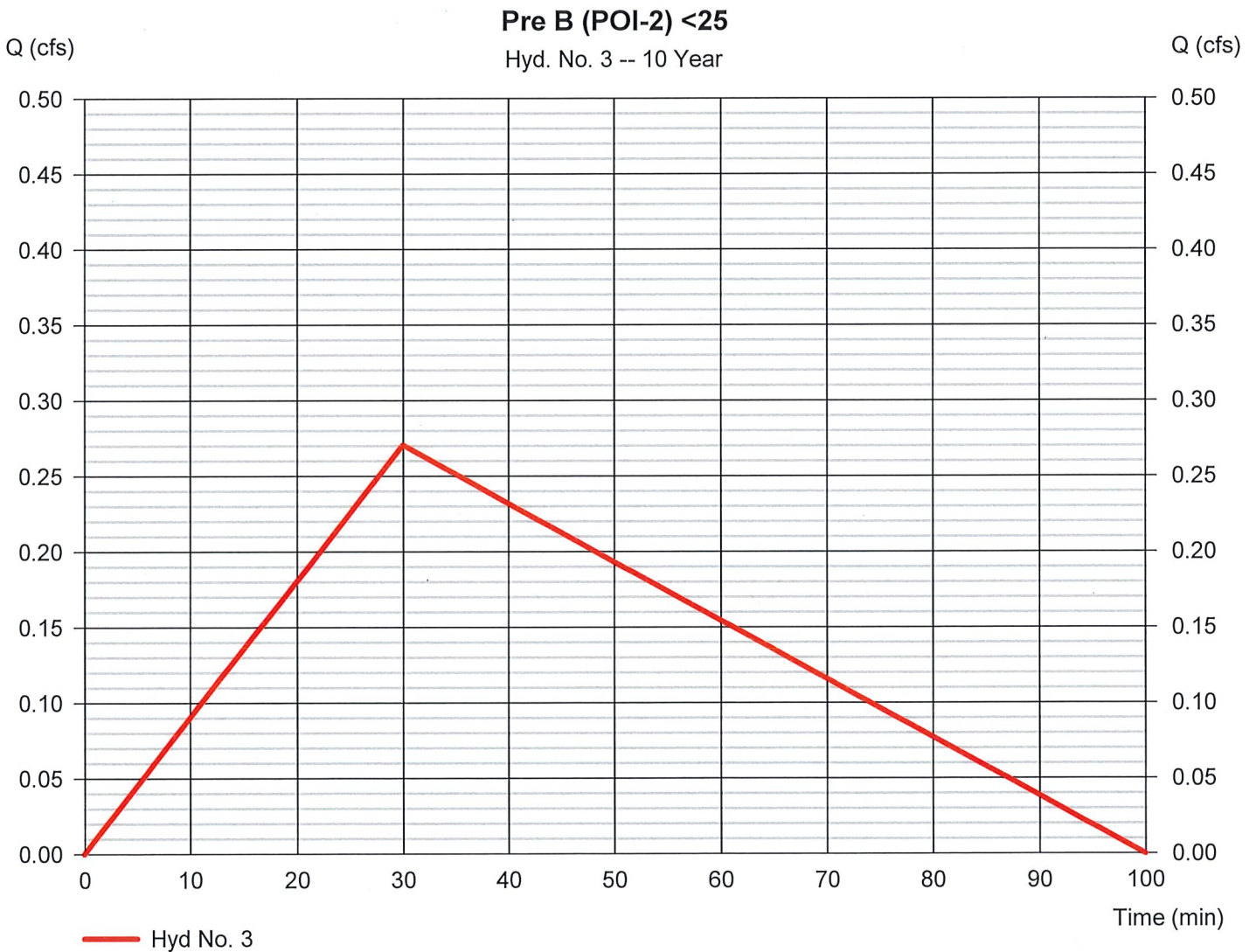
# Hydrograph Report

## Hyd. No. 3

Pre B (POI-2) <25

|                 |                |                   |             |
|-----------------|----------------|-------------------|-------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.271 cfs |
| Storm frequency | = 10 yrs       | Time to peak      | = 30 min    |
| Time interval   | = 1 min        | Hyd. volume       | = 812 cuft  |
| Drainage area   | = 0.240 ac     | Runoff coeff.     | = 0.23*     |
| Intensity       | = 4.905 in/hr  | Tc by TR55        | = 10.00 min |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7       |

\* Composite (Area/C) = [(0.009 x 0.86) + (0.233 x 0.21)] / 0.240



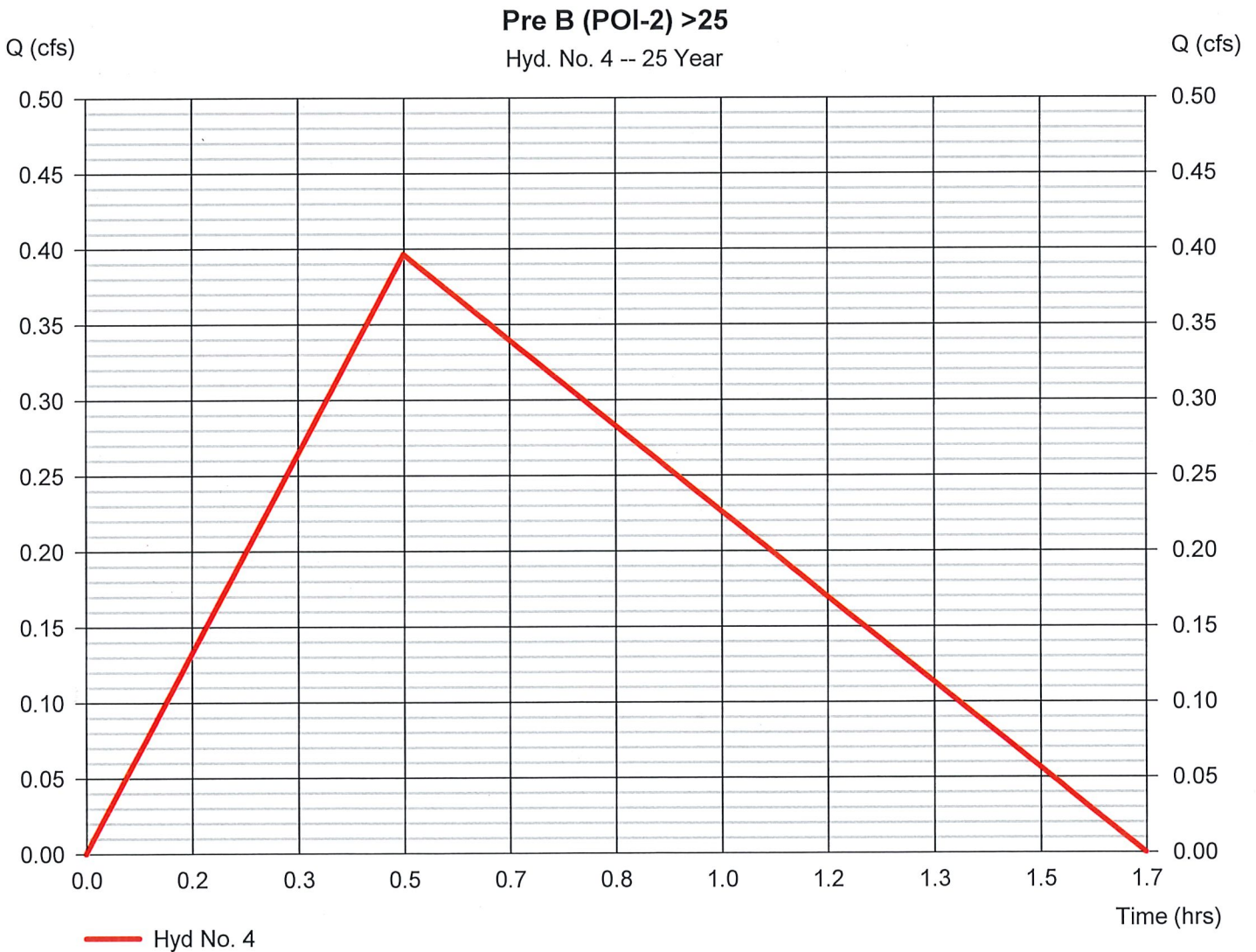
# Hydrograph Report

## Hyd. No. 4

Pre B (POI-2) >25

|                 |                |                   |              |
|-----------------|----------------|-------------------|--------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.396 cfs  |
| Storm frequency | = 25 yrs       | Time to peak      | = 0.50 hrs   |
| Time interval   | = 1 min        | Hyd. volume       | = 1,189 cuft |
| Drainage area   | = 0.240 ac     | Runoff coeff.     | = 0.3*       |
| Intensity       | = 5.507 in/hr  | Tc by TR55        | = 10.00 min  |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7        |

\* Composite (Area/C) = [(0.009 x 0.96) + (0.233 x 0.27)] / 0.240



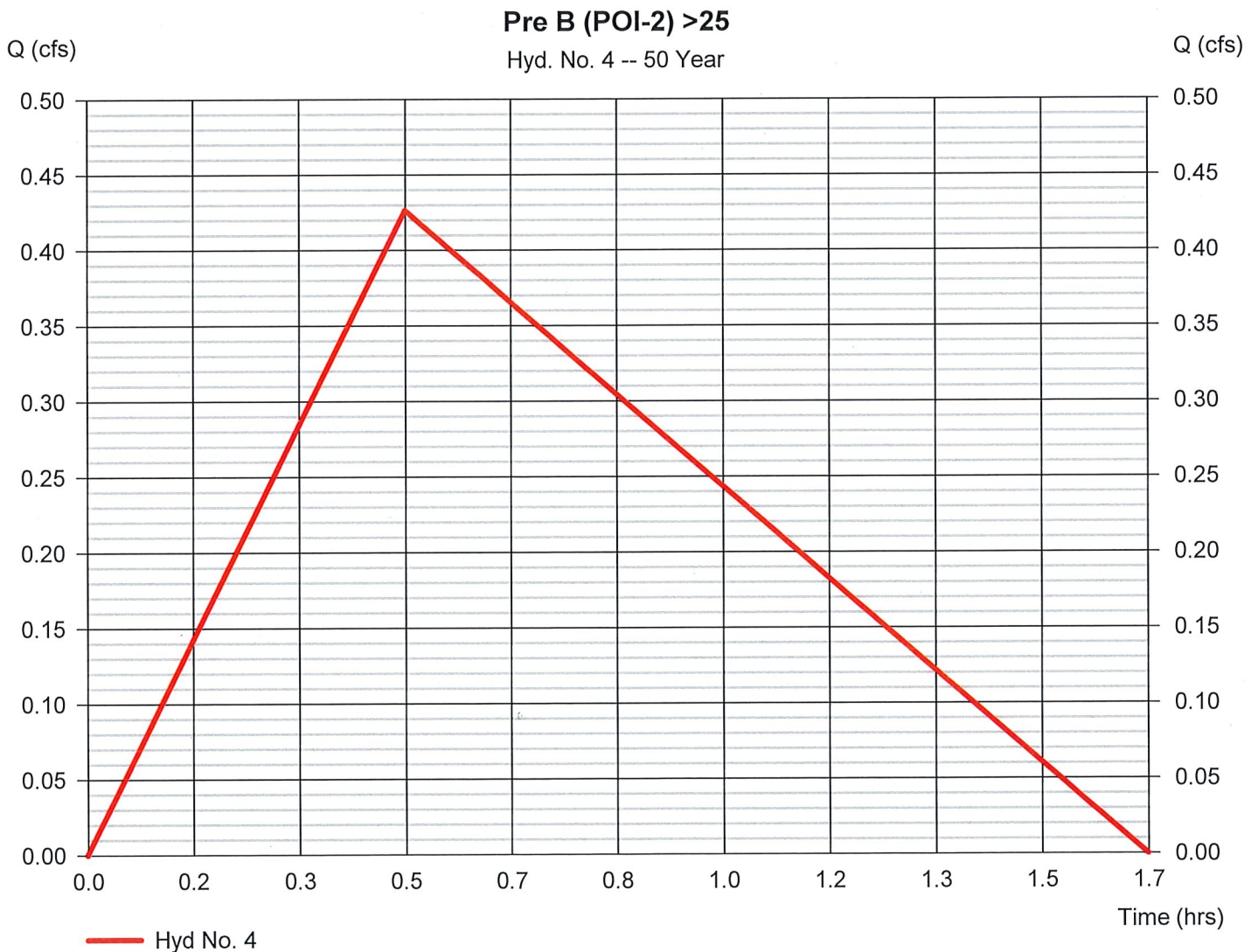
# Hydrograph Report

## Hyd. No. 4

Pre B (POI-2) >25

|                 |                |                   |              |
|-----------------|----------------|-------------------|--------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.427 cfs  |
| Storm frequency | = 50 yrs       | Time to peak      | = 0.50 hrs   |
| Time interval   | = 1 min        | Hyd. volume       | = 1,280 cuft |
| Drainage area   | = 0.240 ac     | Runoff coeff.     | = 0.3*       |
| Intensity       | = 5.927 in/hr  | Tc by TR55        | = 10.00 min  |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7        |

\* Composite (Area/C) =  $[(0.009 \times 0.96) + (0.233 \times 0.27)] / 0.240$



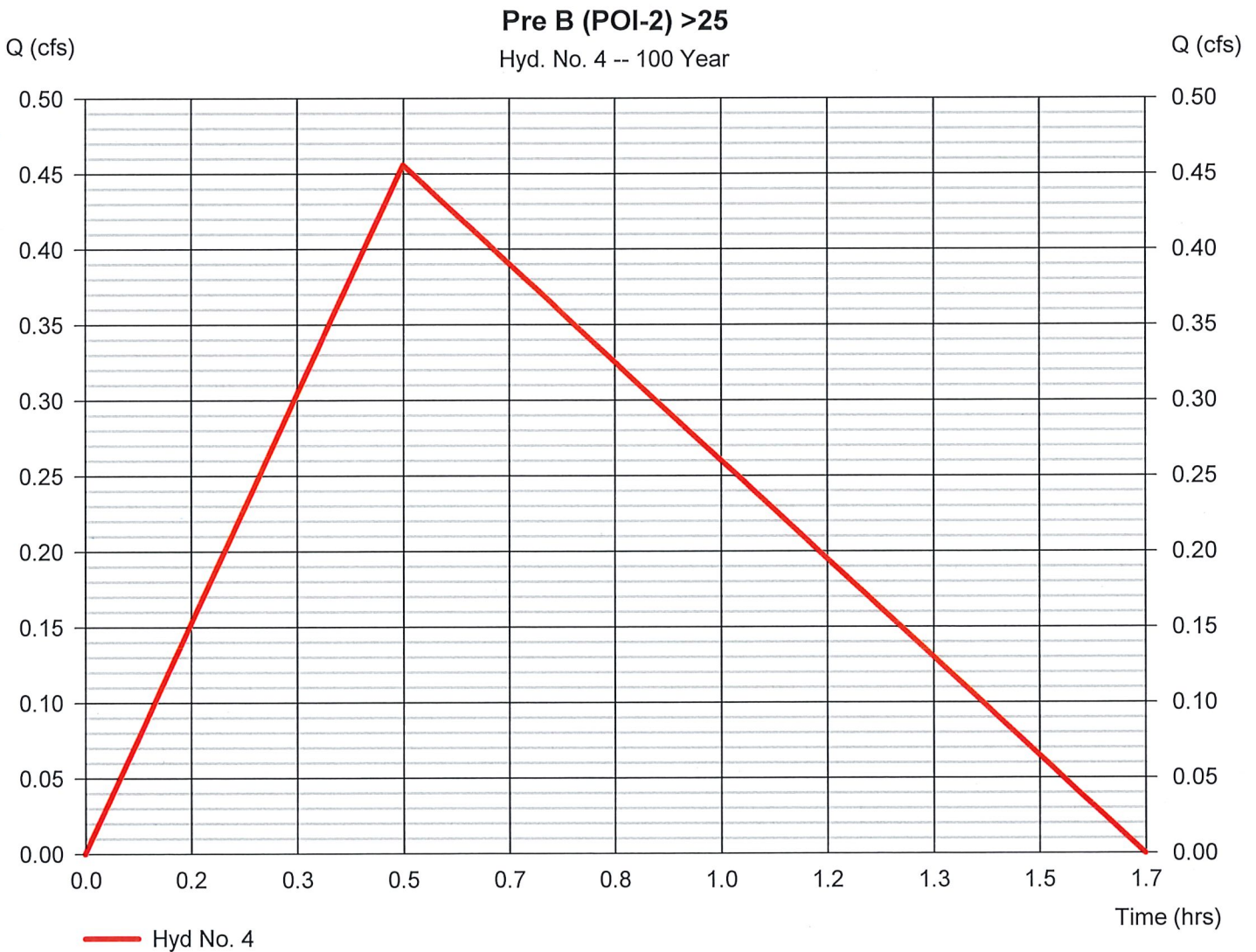
# Hydrograph Report

## Hyd. No. 4

Pre B (POI-2) >25

|                 |                |                   |              |
|-----------------|----------------|-------------------|--------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.456 cfs  |
| Storm frequency | = 100 yrs      | Time to peak      | = 0.50 hrs   |
| Time interval   | = 1 min        | Hyd. volume       | = 1,368 cuft |
| Drainage area   | = 0.240 ac     | Runoff coeff.     | = 0.3*       |
| Intensity       | = 6.334 in/hr  | Tc by TR55        | = 10.00 min  |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7        |

\* Composite (Area/C) =  $[(0.009 \times 0.96) + (0.233 \times 0.27)] / 0.240$



**POST-DEVELOPMENT CALCULATIONS**

**POI-1**

POST C



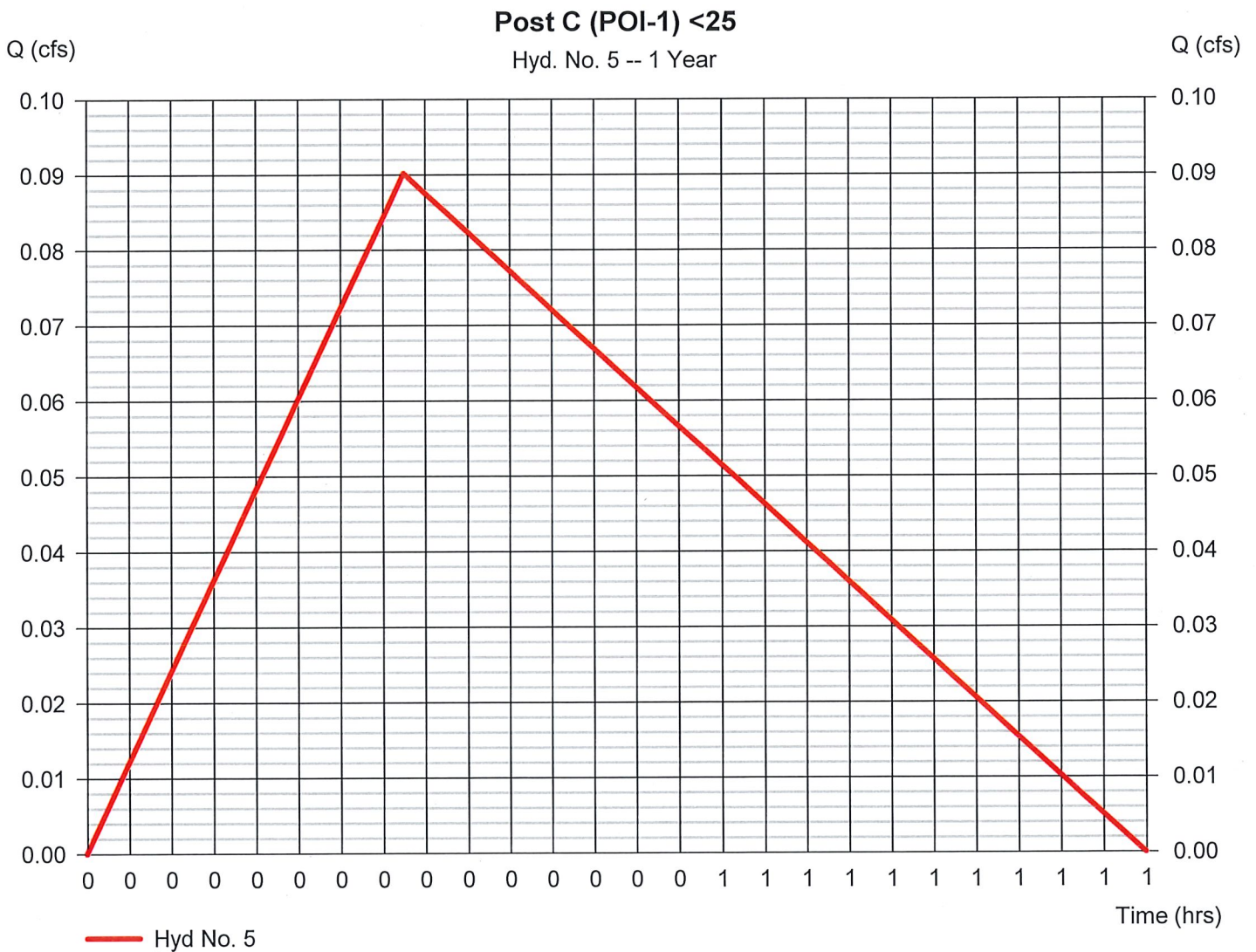
# Hydrograph Report

## Hyd. No. 5

Post C (POI-1) <25

|                 |                |                   |             |
|-----------------|----------------|-------------------|-------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.090 cfs |
| Storm frequency | = 1 yrs        | Time to peak      | = 0.25 hrs  |
| Time interval   | = 1 min        | Hyd. volume       | = 135 cuft  |
| Drainage area   | = 0.030 ac     | Runoff coeff.     | = 0.78*     |
| Intensity       | = 3.855 in/hr  | Tc by User        | = 5.00 min  |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7       |

\* Composite (Area/C) = [(0.022 x 0.86) + (0.003 x 0.21)] / 0.030



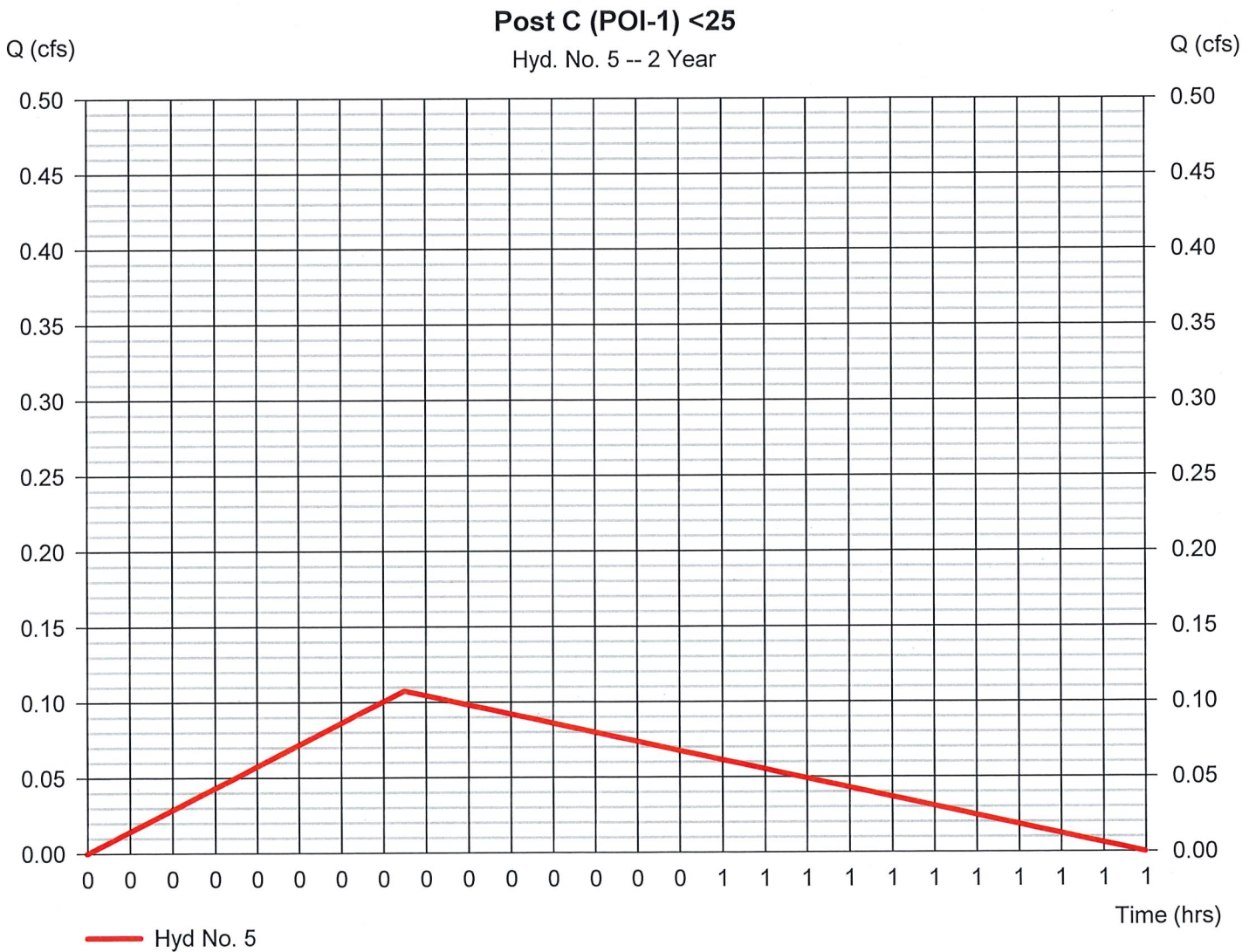
# Hydrograph Report

## Hyd. No. 5

Post C (POI-1) <25

|                 |                |                   |             |
|-----------------|----------------|-------------------|-------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.108 cfs |
| Storm frequency | = 2 yrs        | Time to peak      | = 0.25 hrs  |
| Time interval   | = 1 min        | Hyd. volume       | = 161 cuft  |
| Drainage area   | = 0.030 ac     | Runoff coeff.     | = 0.78*     |
| Intensity       | = 4.600 in/hr  | Tc by User        | = 5.00 min  |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7       |

\* Composite (Area/C) = [(0.022 x 0.86) + (0.003 x 0.21)] / 0.030



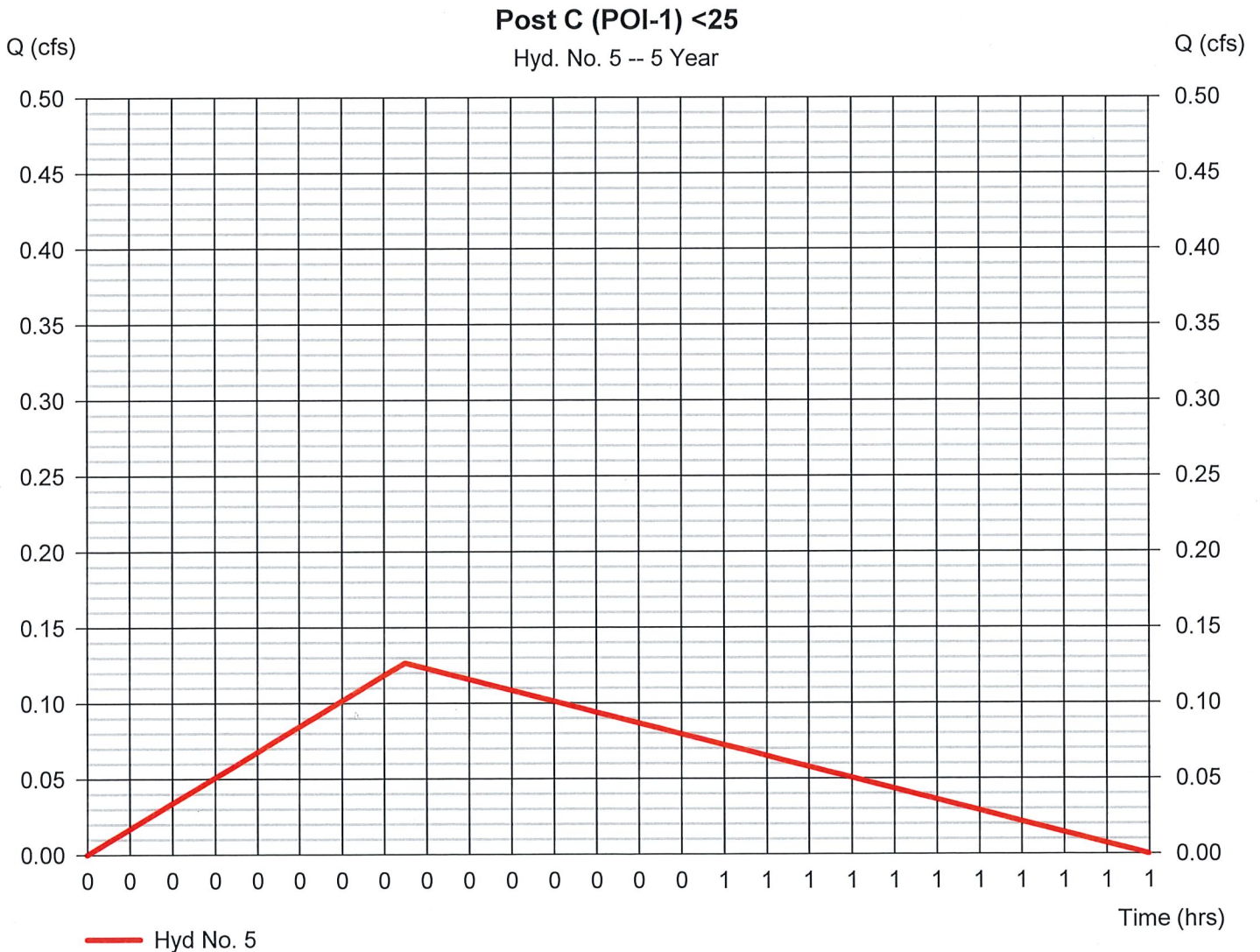
# Hydrograph Report

## Hyd. No. 5

Post C (POI-1) <25

|                 |                |                   |             |
|-----------------|----------------|-------------------|-------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.127 cfs |
| Storm frequency | = 5 yrs        | Time to peak      | = 0.25 hrs  |
| Time interval   | = 1 min        | Hyd. volume       | = 190 cuft  |
| Drainage area   | = 0.030 ac     | Runoff coeff.     | = 0.78*     |
| Intensity       | = 5.417 in/hr  | Tc by User        | = 5.00 min  |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7       |

\* Composite (Area/C) = [(0.022 x 0.86) + (0.003 x 0.21)] / 0.030



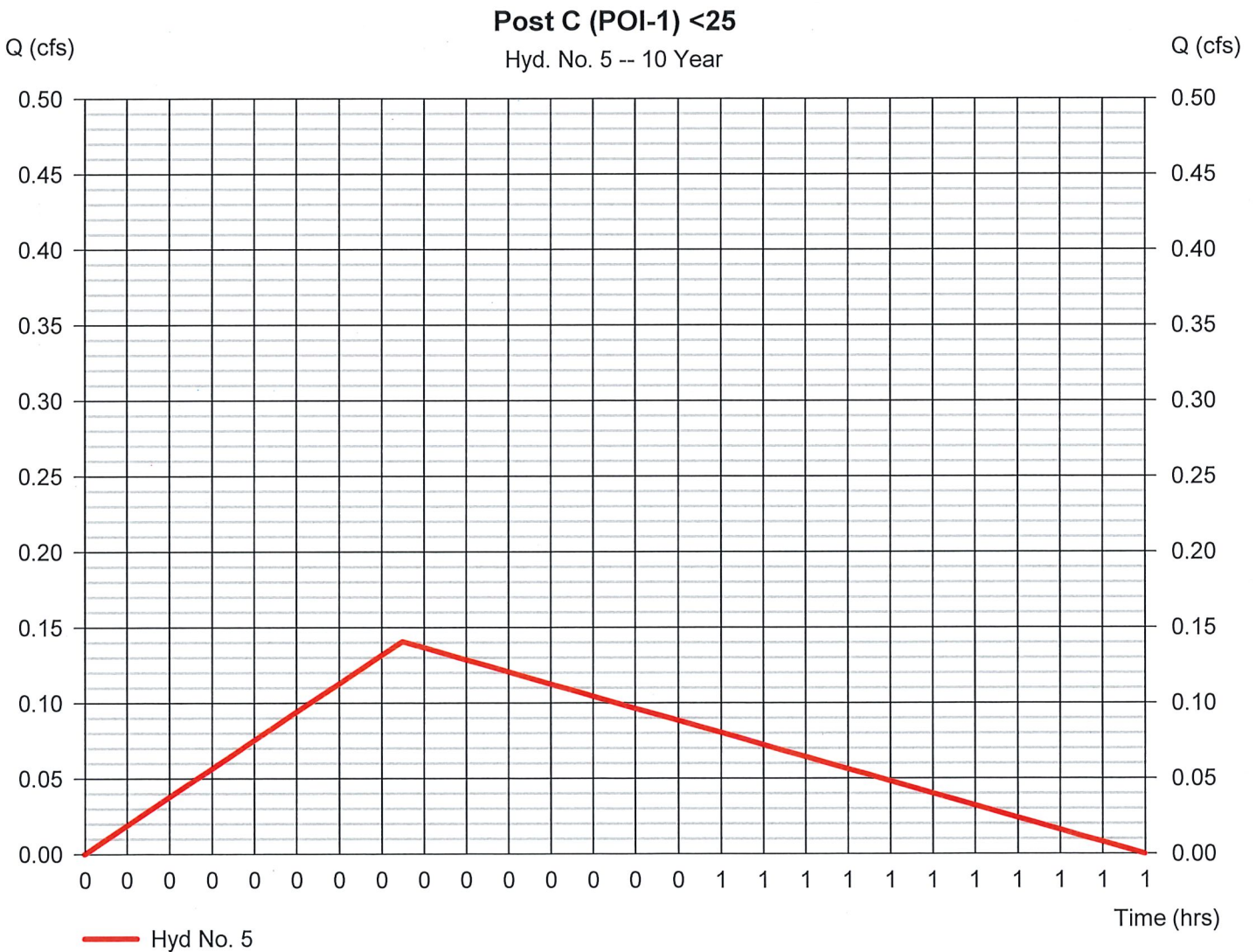
# Hydrograph Report

## Hyd. No. 5

Post C (POI-1) <25

|                 |                |                   |             |
|-----------------|----------------|-------------------|-------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.141 cfs |
| Storm frequency | = 10 yrs       | Time to peak      | = 0.25 hrs  |
| Time interval   | = 1 min        | Hyd. volume       | = 211 cuft  |
| Drainage area   | = 0.030 ac     | Runoff coeff.     | = 0.78*     |
| Intensity       | = 6.019 in/hr  | Tc by User        | = 5.00 min  |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7       |

\* Composite (Area/C) = [(0.022 x 0.86) + (0.003 x 0.21)] / 0.030



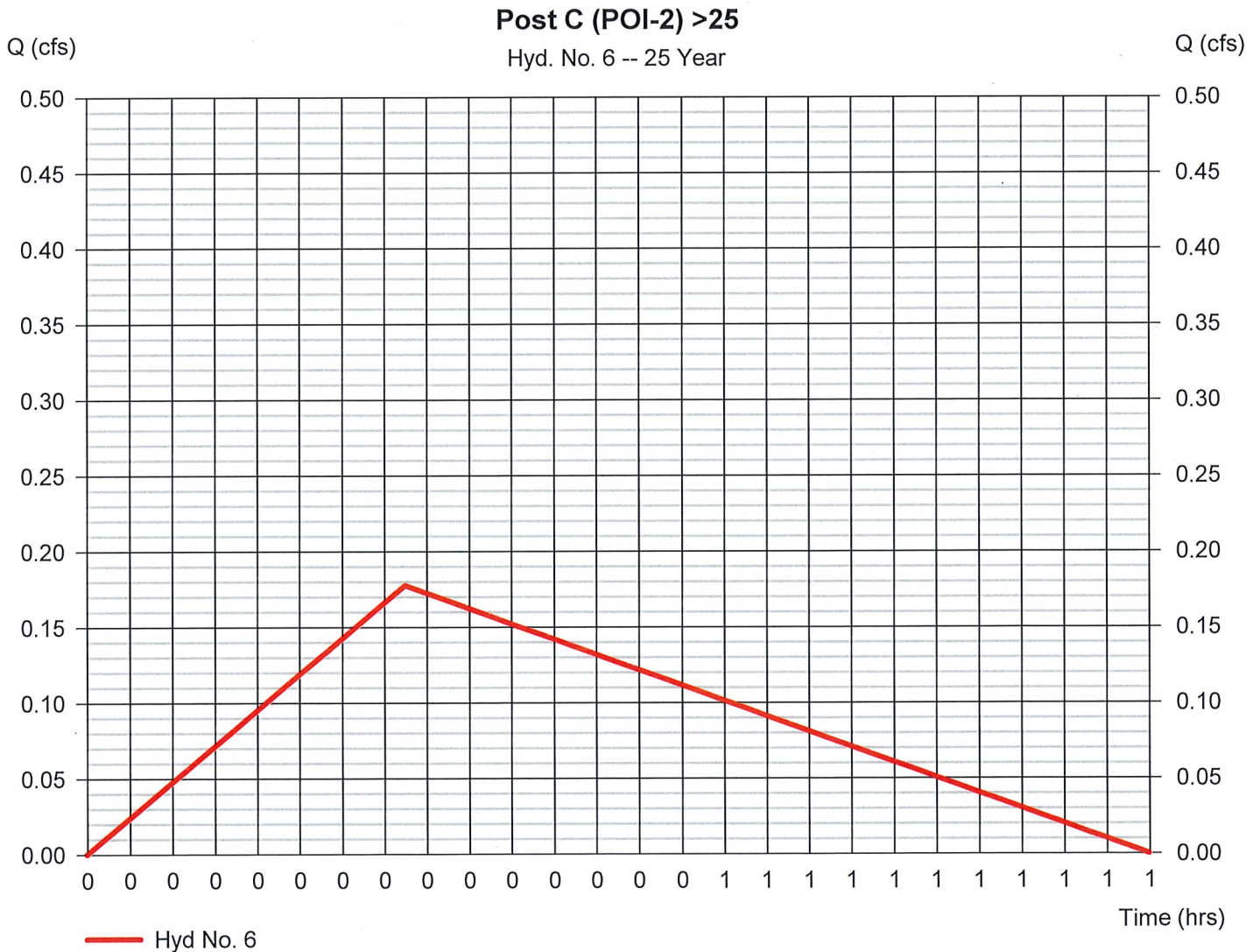
# Hydrograph Report

## Hyd. No. 6

Post C (POI-2) >25

|                 |                |                   |             |
|-----------------|----------------|-------------------|-------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.178 cfs |
| Storm frequency | = 25 yrs       | Time to peak      | = 0.25 hrs  |
| Time interval   | = 1 min        | Hyd. volume       | = 267 cuft  |
| Drainage area   | = 0.030 ac     | Runoff coeff.     | = 0.88*     |
| Intensity       | = 6.731 in/hr  | Tc by User        | = 5.00 min  |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7       |

\* Composite (Area/C) = [(0.022 x 0.96) + (0.003 x 0.27)] / 0.030



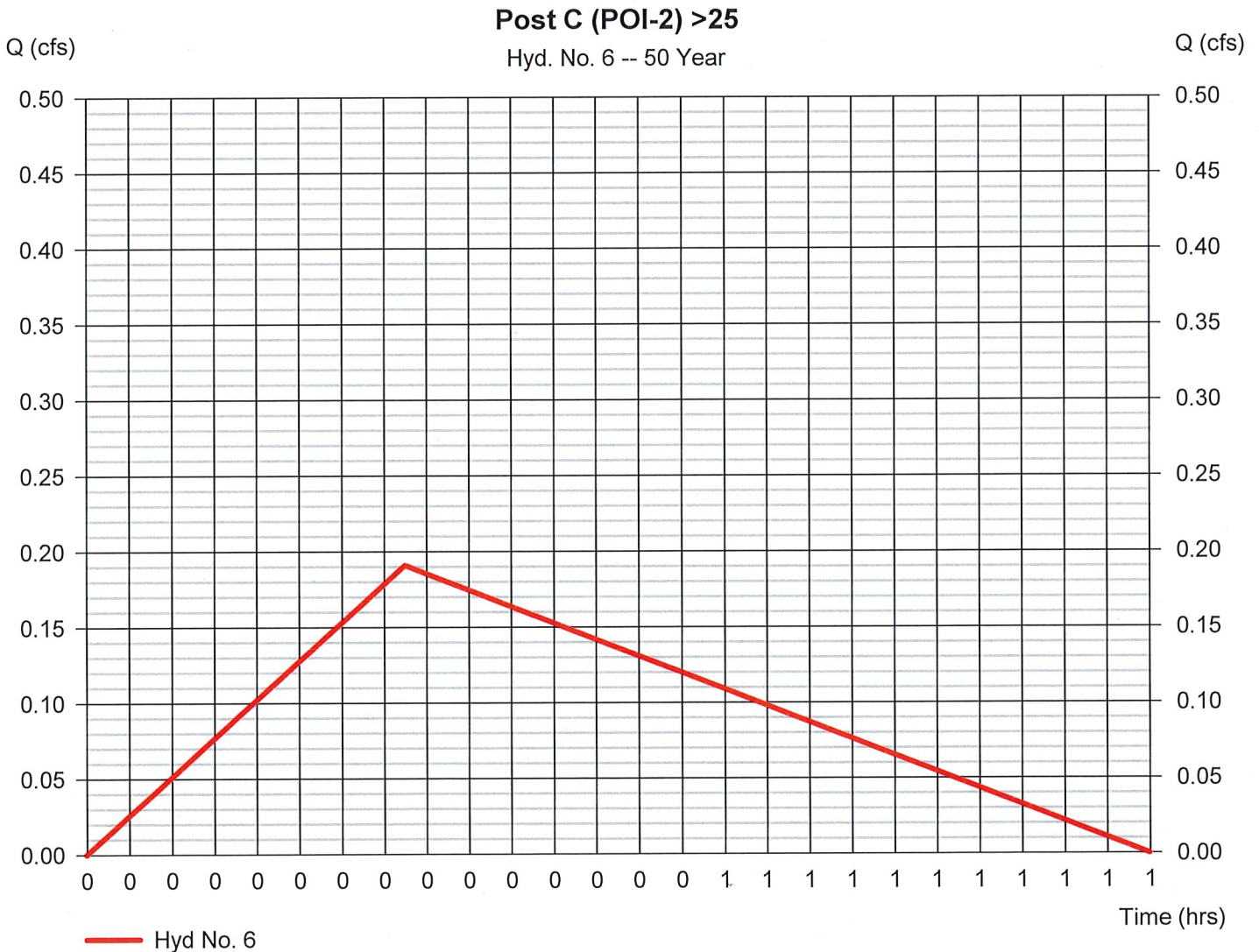
# Hydrograph Report

## Hyd. No. 6

Post C (POI-2) >25

|                 |                |                   |             |
|-----------------|----------------|-------------------|-------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.191 cfs |
| Storm frequency | = 50 yrs       | Time to peak      | = 0.25 hrs  |
| Time interval   | = 1 min        | Hyd. volume       | = 287 cuft  |
| Drainage area   | = 0.030 ac     | Runoff coeff.     | = 0.88*     |
| Intensity       | = 7.240 in/hr  | Tc by User        | = 5.00 min  |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7       |

\* Composite (Area/C) = [(0.022 x 0.96) + (0.003 x 0.27)] / 0.030



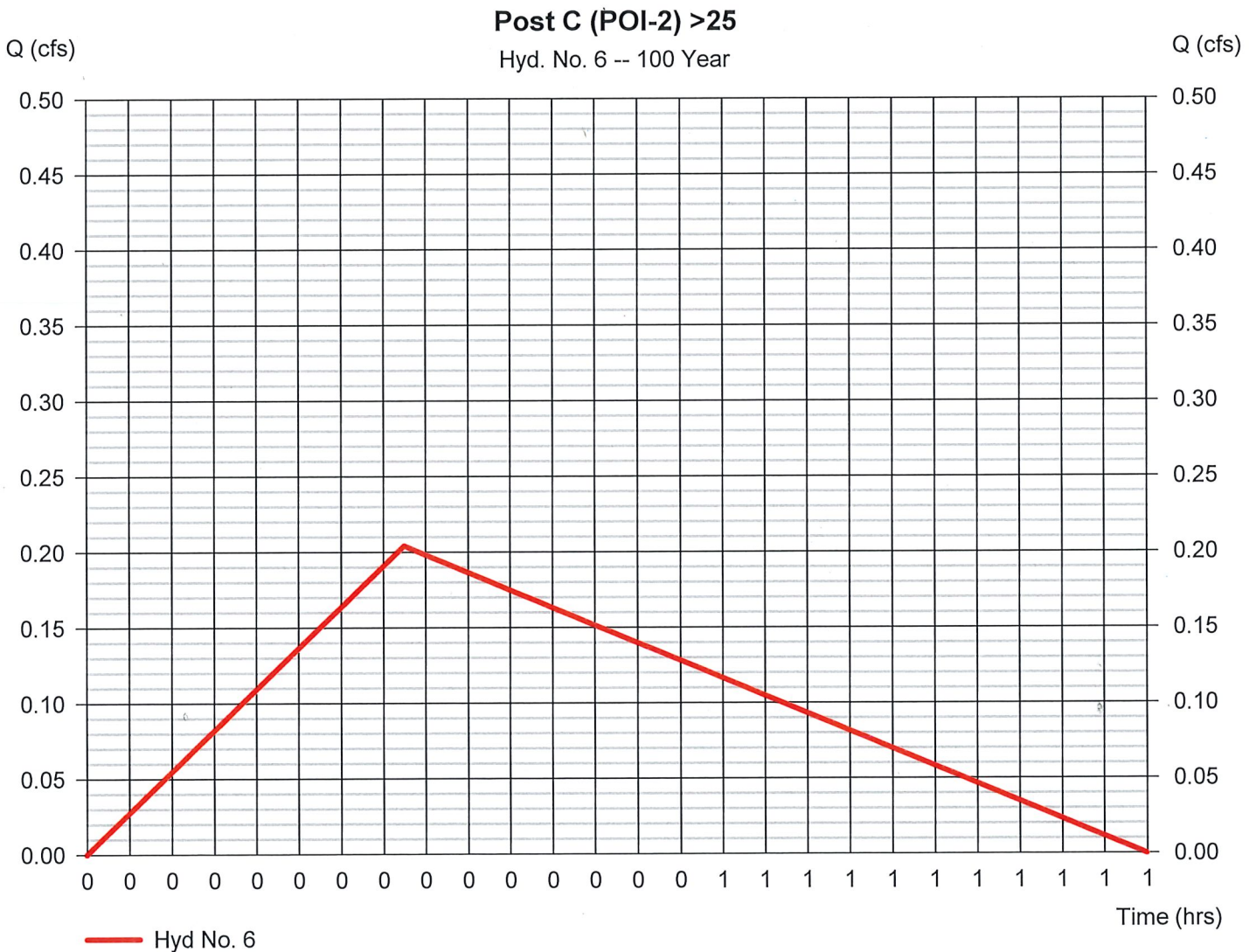
# Hydrograph Report

## Hyd. No. 6

Post C (POI-2) >25

|                 |                |                   |             |
|-----------------|----------------|-------------------|-------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.204 cfs |
| Storm frequency | = 100 yrs      | Time to peak      | = 0.25 hrs  |
| Time interval   | = 1 min        | Hyd. volume       | = 306 cuft  |
| Drainage area   | = 0.030 ac     | Runoff coeff.     | = 0.88*     |
| Intensity       | = 7.735 in/hr  | Tc by User        | = 5.00 min  |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7       |

\* Composite (Area/C) = [(0.022 x 0.96) + (0.003 x 0.27)] / 0.030



**POST-DEVELOPMENT CALCULATIONS**

**POI-2**

POST D - DA TO SUBSURFACE INFILTRATION SYSTEM

POST E

SUBSURFACE INFILTRATION SYSTEM ROUTING

POI-2 HYDROGRAPH COMBINATION (POST E + SUBSURFACE INFILTRATION  
SYSTEM ROUTING)



# Hydrograph Report

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

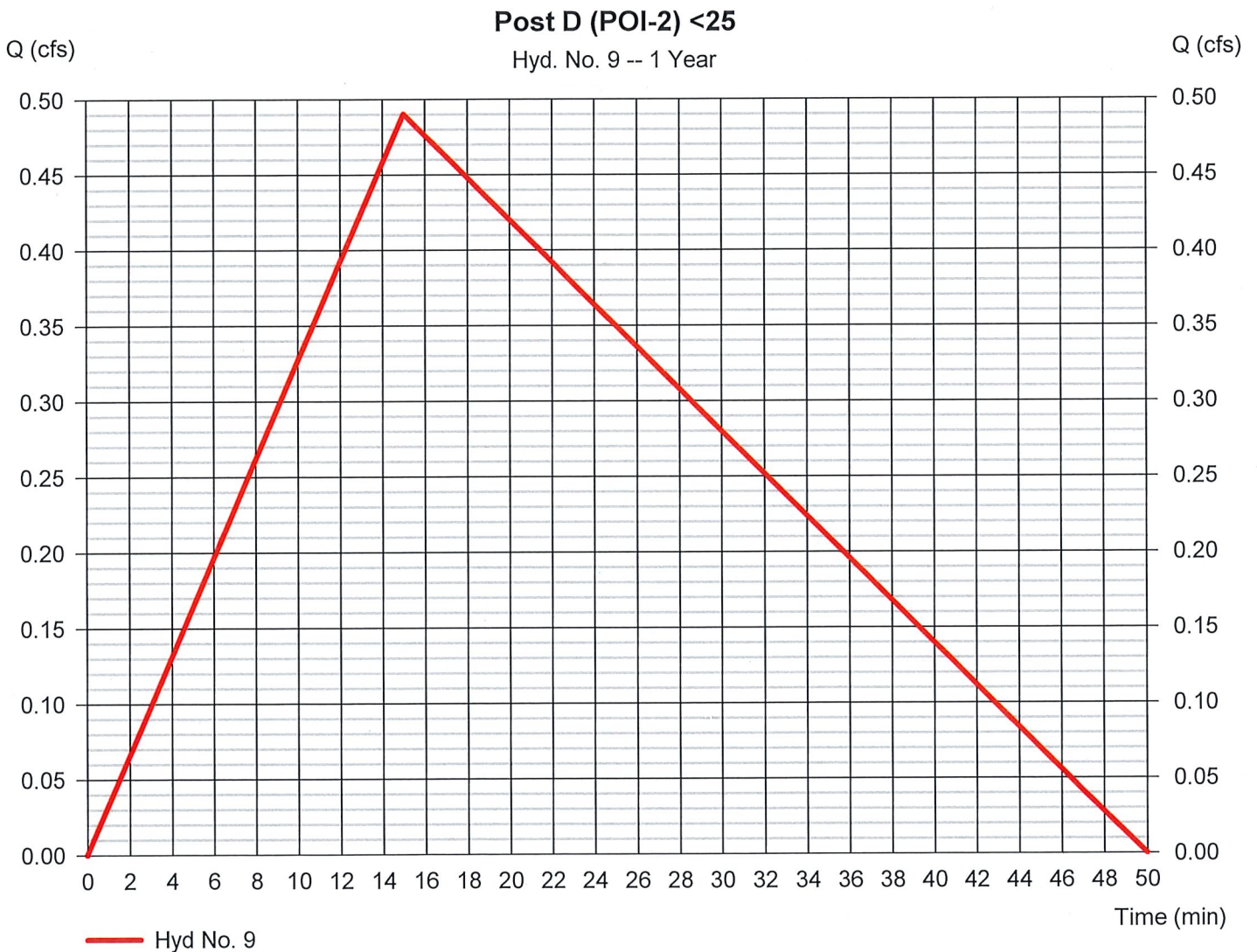
Wednesday, 11 / 2 / 2022

## Hyd. No. 9

Post D (POI-2) <25

|                 |                |                   |             |
|-----------------|----------------|-------------------|-------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.490 cfs |
| Storm frequency | = 1 yrs        | Time to peak      | = 15 min    |
| Time interval   | = 1 min        | Hyd. volume       | = 735 cuft  |
| Drainage area   | = 0.240 ac     | Runoff coeff.     | = 0.53*     |
| Intensity       | = 3.855 in/hr  | Tc by User        | = 5.00 min  |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7       |

\* Composite (Area/C) =  $[(0.120 \times 0.86) + (0.123 \times 0.21)] / 0.240$



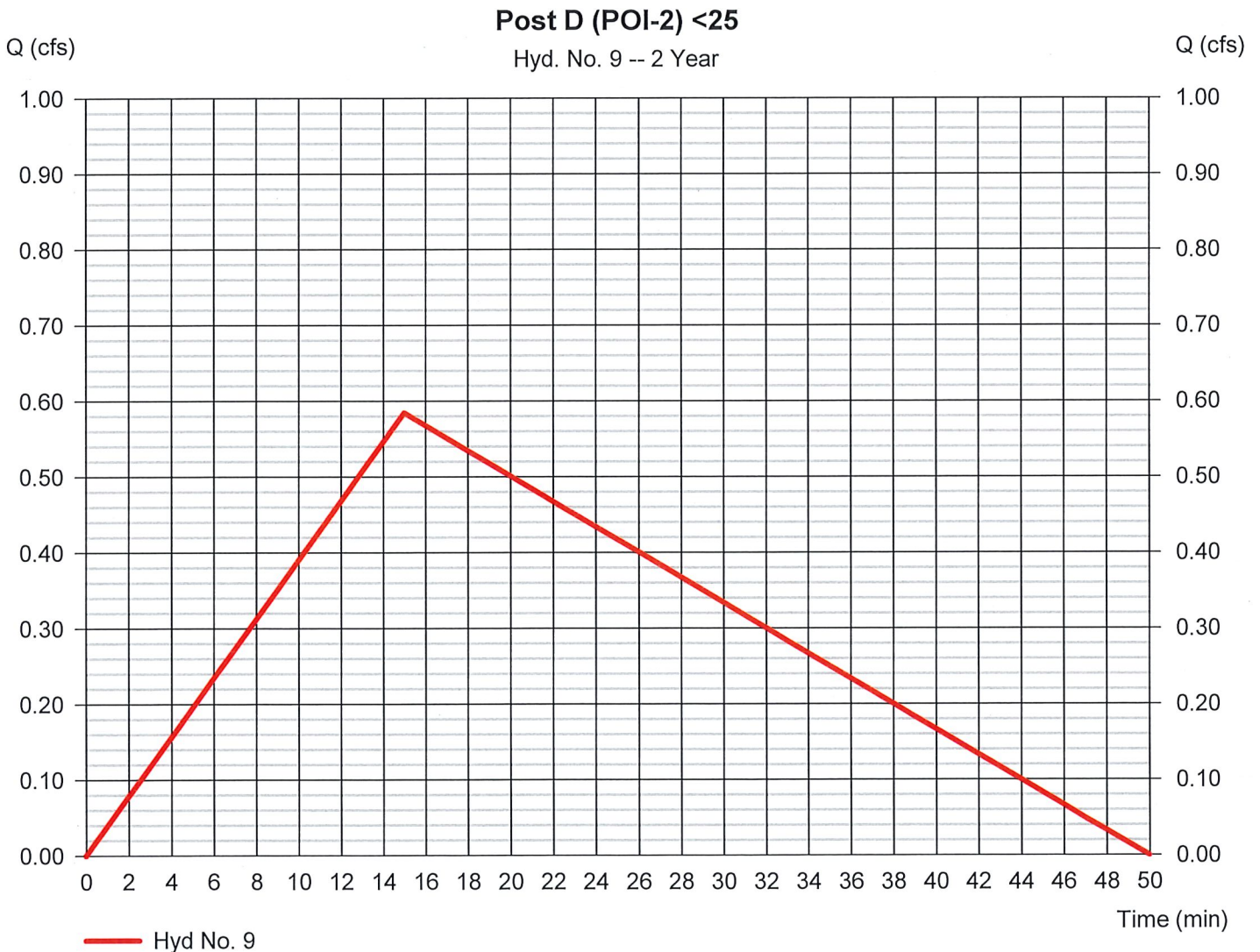
# Hydrograph Report

## Hyd. No. 9

Post D (POI-2) <25

|                 |                |                   |             |
|-----------------|----------------|-------------------|-------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.585 cfs |
| Storm frequency | = 2 yrs        | Time to peak      | = 15 min    |
| Time interval   | = 1 min        | Hyd. volume       | = 878 cuft  |
| Drainage area   | = 0.240 ac     | Runoff coeff.     | = 0.53*     |
| Intensity       | = 4.600 in/hr  | Tc by User        | = 5.00 min  |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7       |

\* Composite (Area/C) =  $[(0.120 \times 0.86) + (0.123 \times 0.21)] / 0.240$



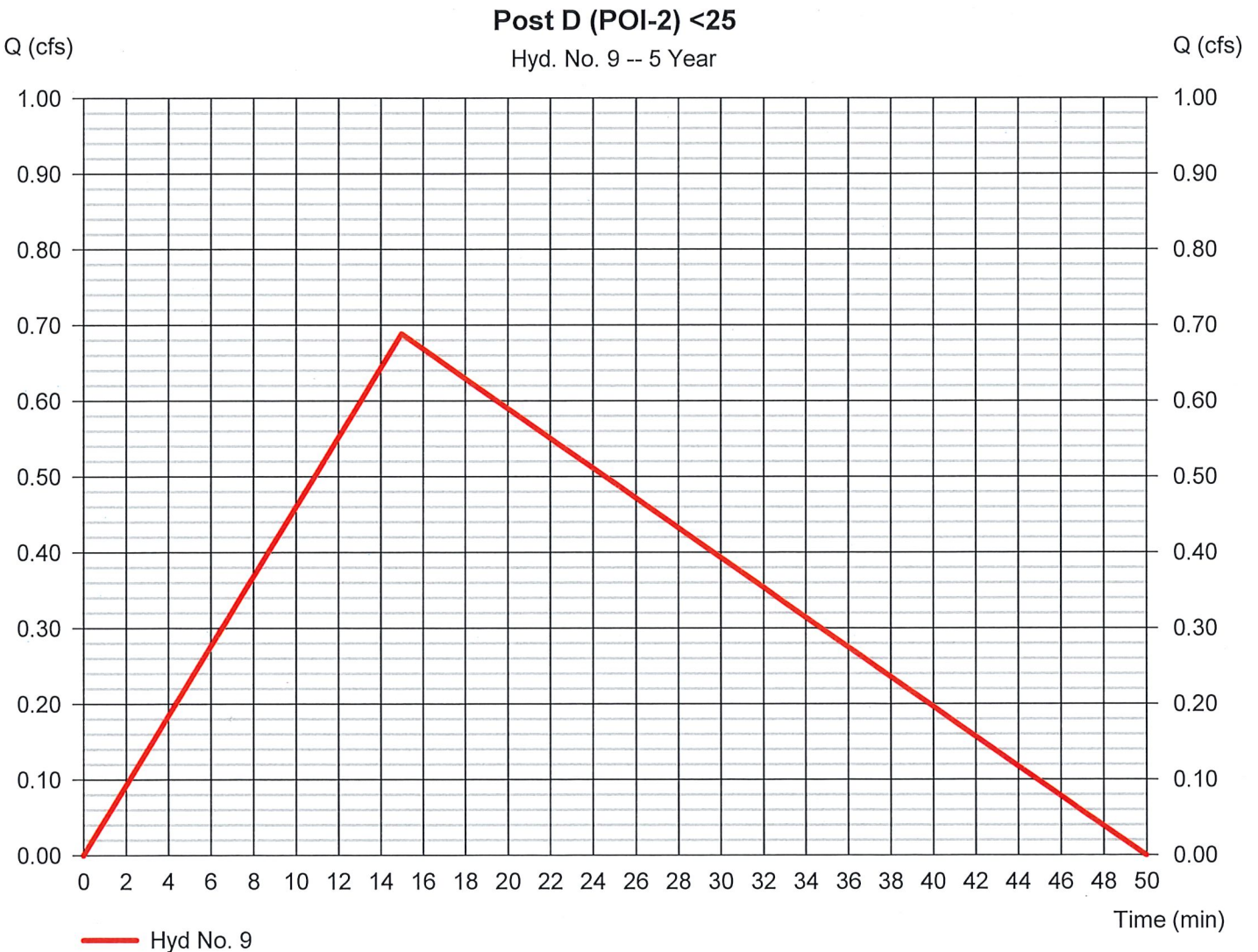
# Hydrograph Report

## Hyd. No. 9

Post D (POI-2) <25

|                 |                |                   |              |
|-----------------|----------------|-------------------|--------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.689 cfs  |
| Storm frequency | = 5 yrs        | Time to peak      | = 15 min     |
| Time interval   | = 1 min        | Hyd. volume       | = 1,034 cuft |
| Drainage area   | = 0.240 ac     | Runoff coeff.     | = 0.53*      |
| Intensity       | = 5.417 in/hr  | Tc by User        | = 5.00 min   |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7        |

\* Composite (Area/C) = [(0.120 x 0.86) + (0.123 x 0.21)] / 0.240



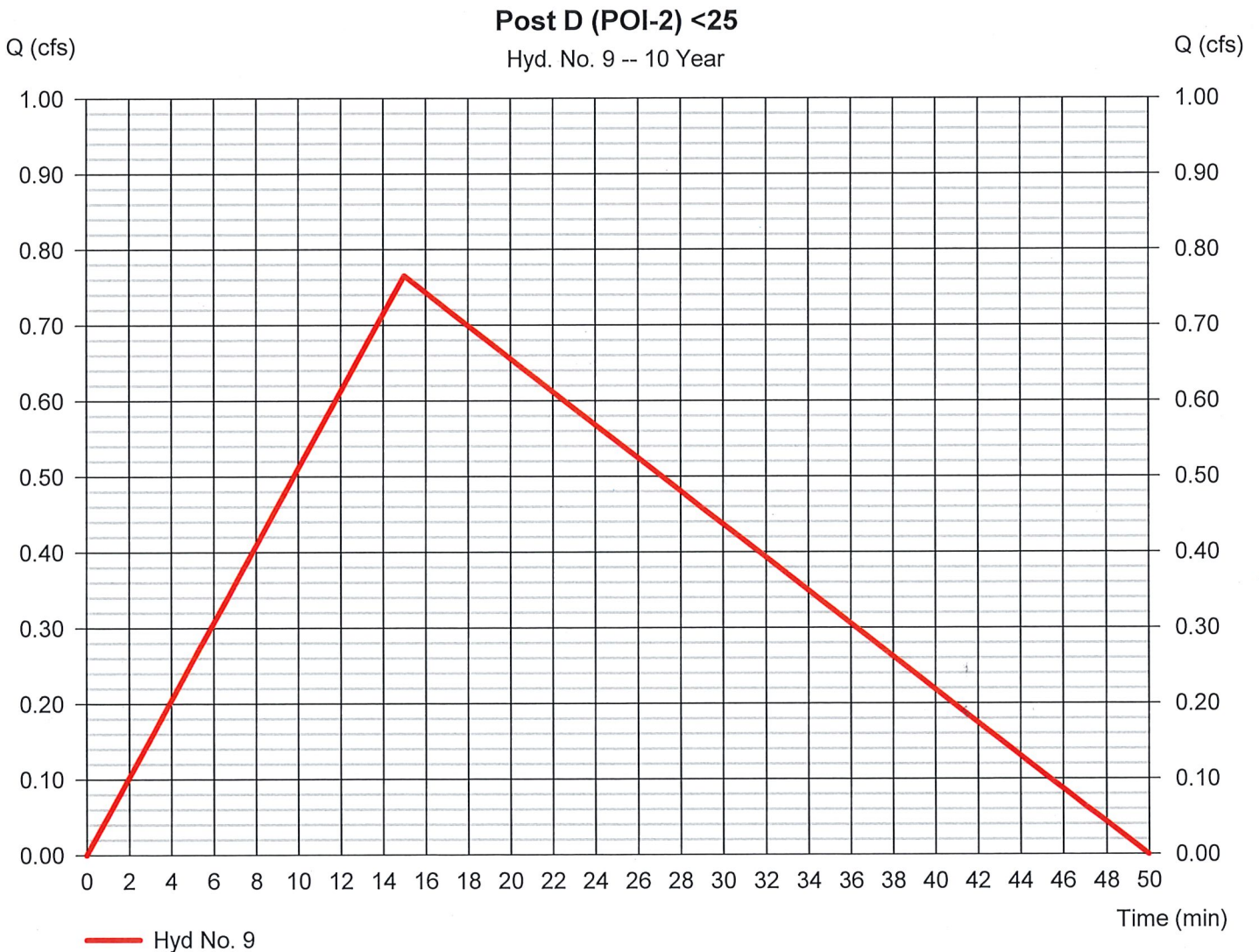
# Hydrograph Report

## Hyd. No. 9

Post D (POI-2) <25

|                 |                |                   |              |
|-----------------|----------------|-------------------|--------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.766 cfs  |
| Storm frequency | = 10 yrs       | Time to peak      | = 15 min     |
| Time interval   | = 1 min        | Hyd. volume       | = 1,148 cuft |
| Drainage area   | = 0.240 ac     | Runoff coeff.     | = 0.53*      |
| Intensity       | = 6.019 in/hr  | Tc by User        | = 5.00 min   |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7        |

\* Composite (Area/C) = [(0.120 x 0.86) + (0.123 x 0.21)] / 0.240



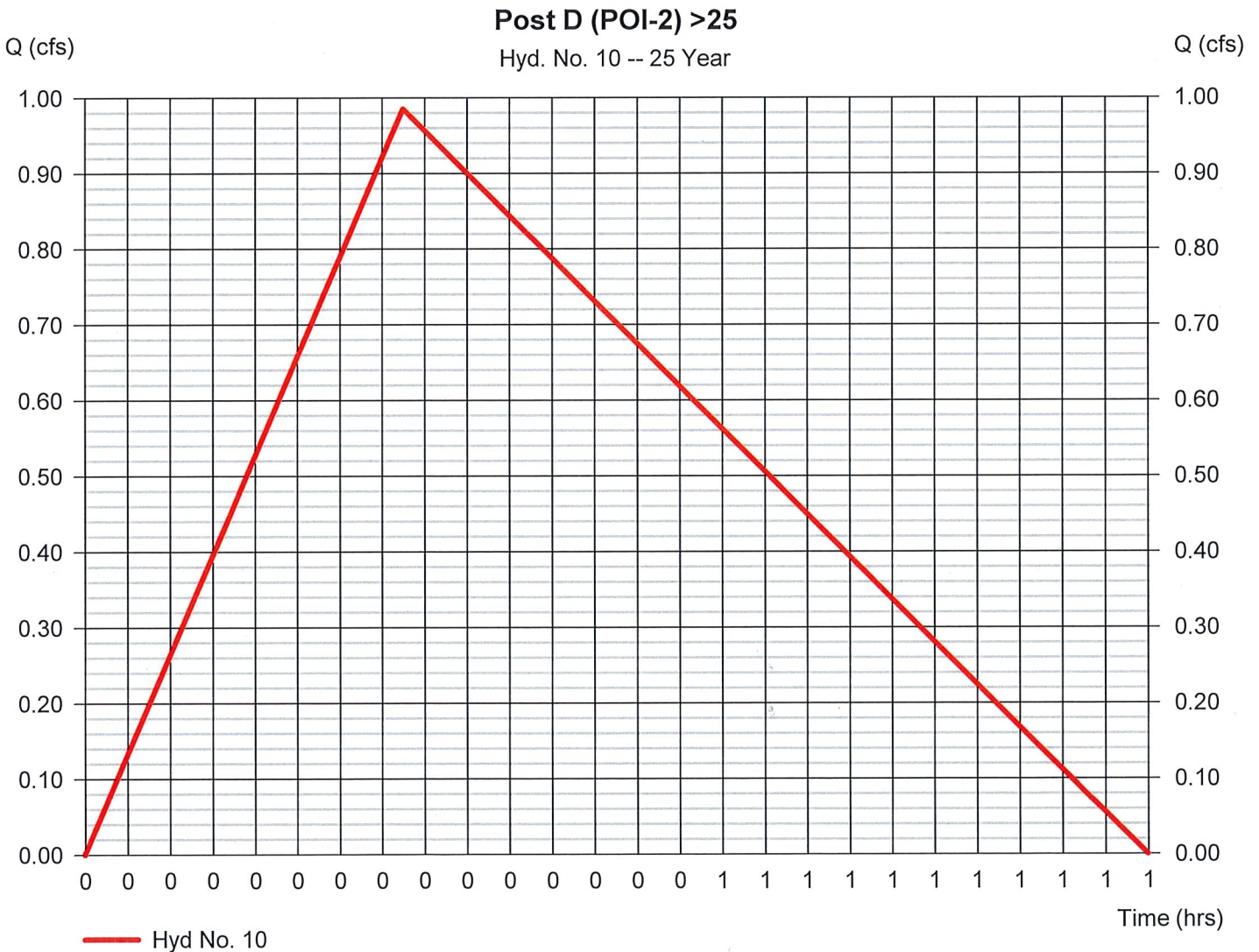
# Hydrograph Report

## Hyd. No. 10

Post D (POI-2) >25

|                 |                |                   |              |
|-----------------|----------------|-------------------|--------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.985 cfs  |
| Storm frequency | = 25 yrs       | Time to peak      | = 0.25 hrs   |
| Time interval   | = 1 min        | Hyd. volume       | = 1,478 cuft |
| Drainage area   | = 0.240 ac     | Runoff coeff.     | = 0.61*      |
| Intensity       | = 6.731 in/hr  | Tc by User        | = 5.00 min   |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7        |

\* Composite (Area/C) = [(0.120 x 0.96) + (0.123 x 0.27)] / 0.240



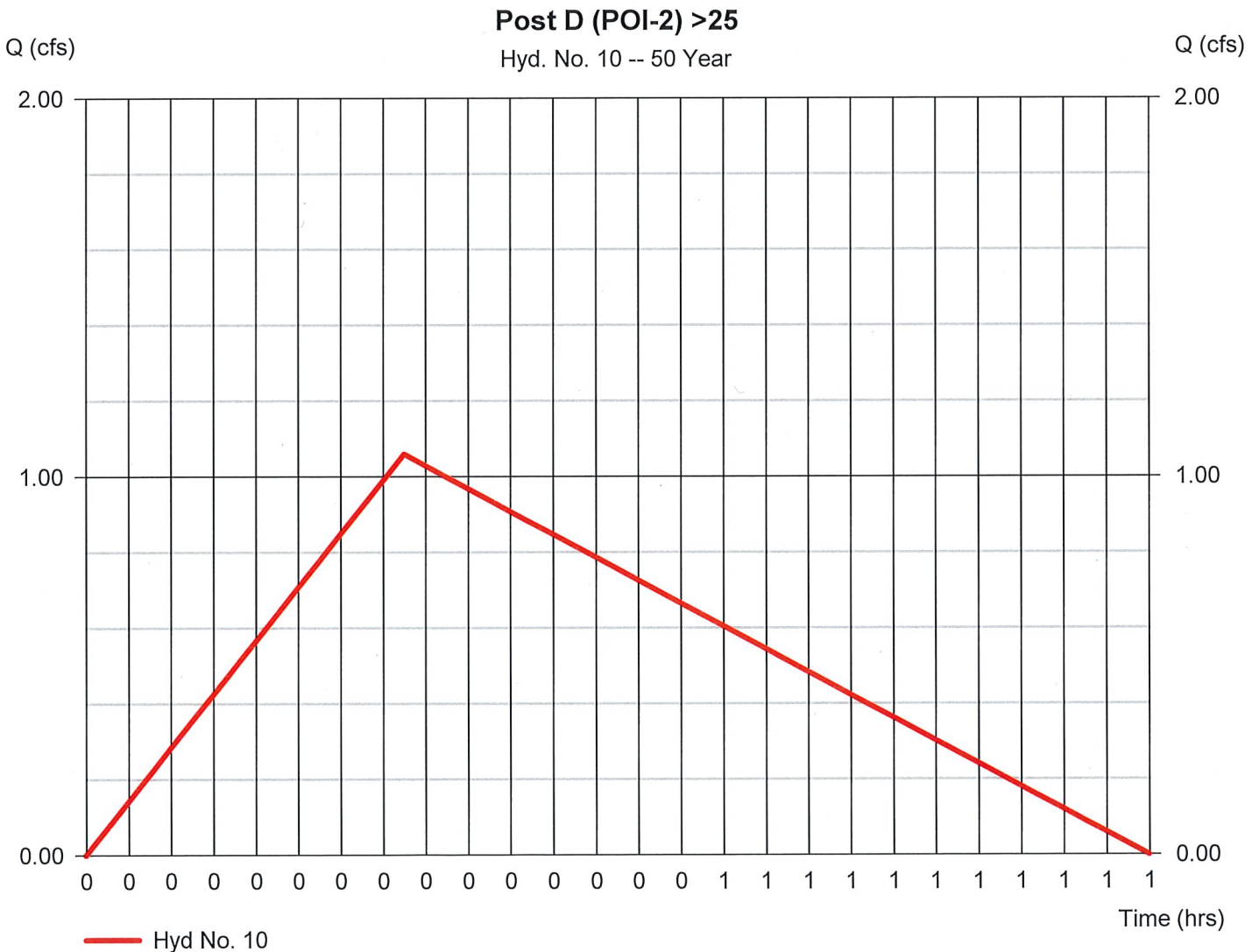
# Hydrograph Report

## Hyd. No. 10

Post D (POI-2) >25

|                 |                |                   |              |
|-----------------|----------------|-------------------|--------------|
| Hydrograph type | = Rational     | Peak discharge    | = 1.060 cfs  |
| Storm frequency | = 50 yrs       | Time to peak      | = 0.25 hrs   |
| Time interval   | = 1 min        | Hyd. volume       | = 1,590 cuft |
| Drainage area   | = 0.240 ac     | Runoff coeff.     | = 0.61*      |
| Intensity       | = 7.240 in/hr  | Tc by User        | = 5.00 min   |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7        |

\* Composite (Area/C) = [(0.120 x 0.96) + (0.123 x 0.27)] / 0.240



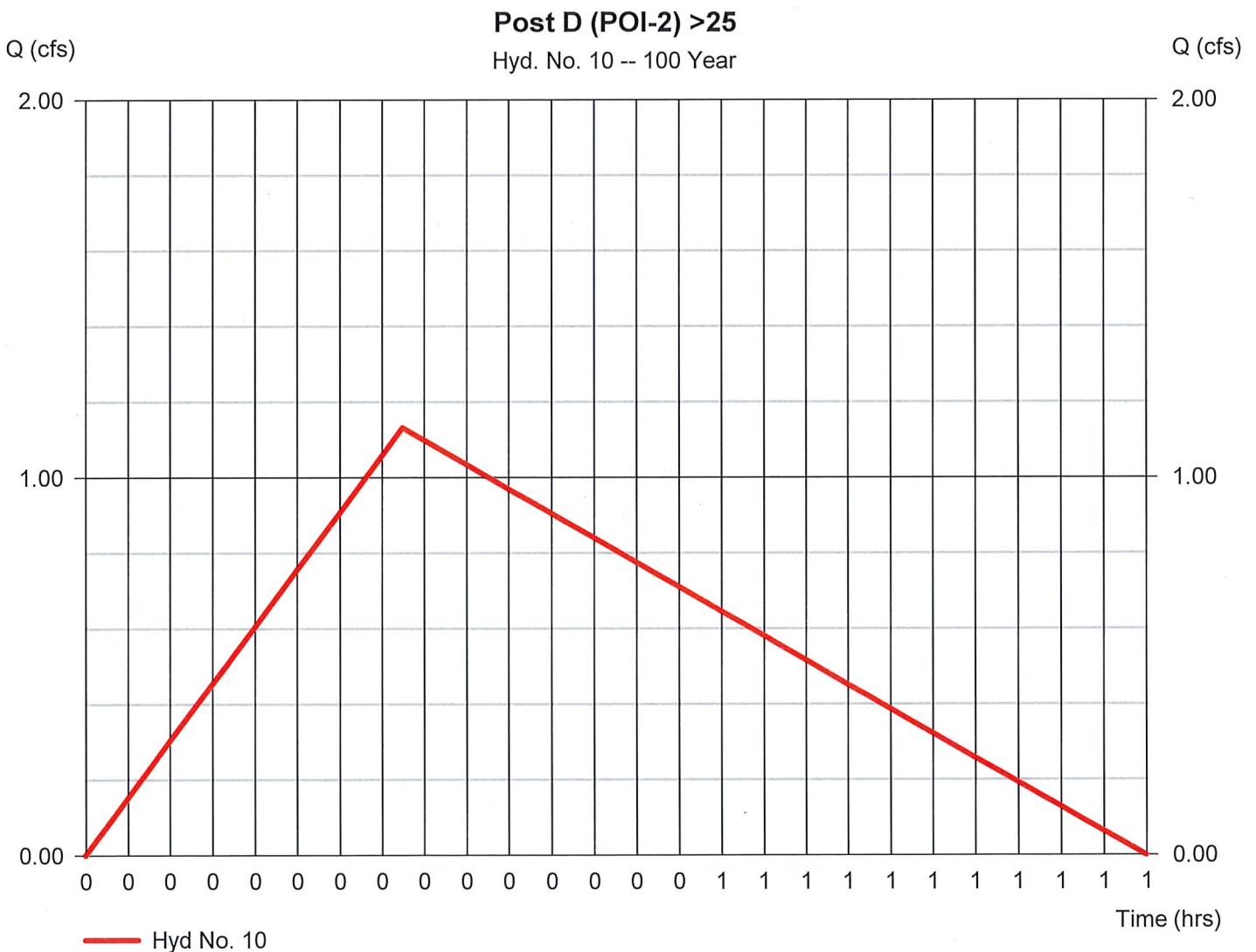
# Hydrograph Report

## Hyd. No. 10

Post D (POI-2) >25

|                 |                |                   |              |
|-----------------|----------------|-------------------|--------------|
| Hydrograph type | = Rational     | Peak discharge    | = 1.132 cfs  |
| Storm frequency | = 100 yrs      | Time to peak      | = 0.25 hrs   |
| Time interval   | = 1 min        | Hyd. volume       | = 1,699 cuft |
| Drainage area   | = 0.240 ac     | Runoff coeff.     | = 0.61*      |
| Intensity       | = 7.735 in/hr  | Tc by User        | = 5.00 min   |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7        |

\* Composite (Area/C) = [(0.120 x 0.96) + (0.123 x 0.27)] / 0.240



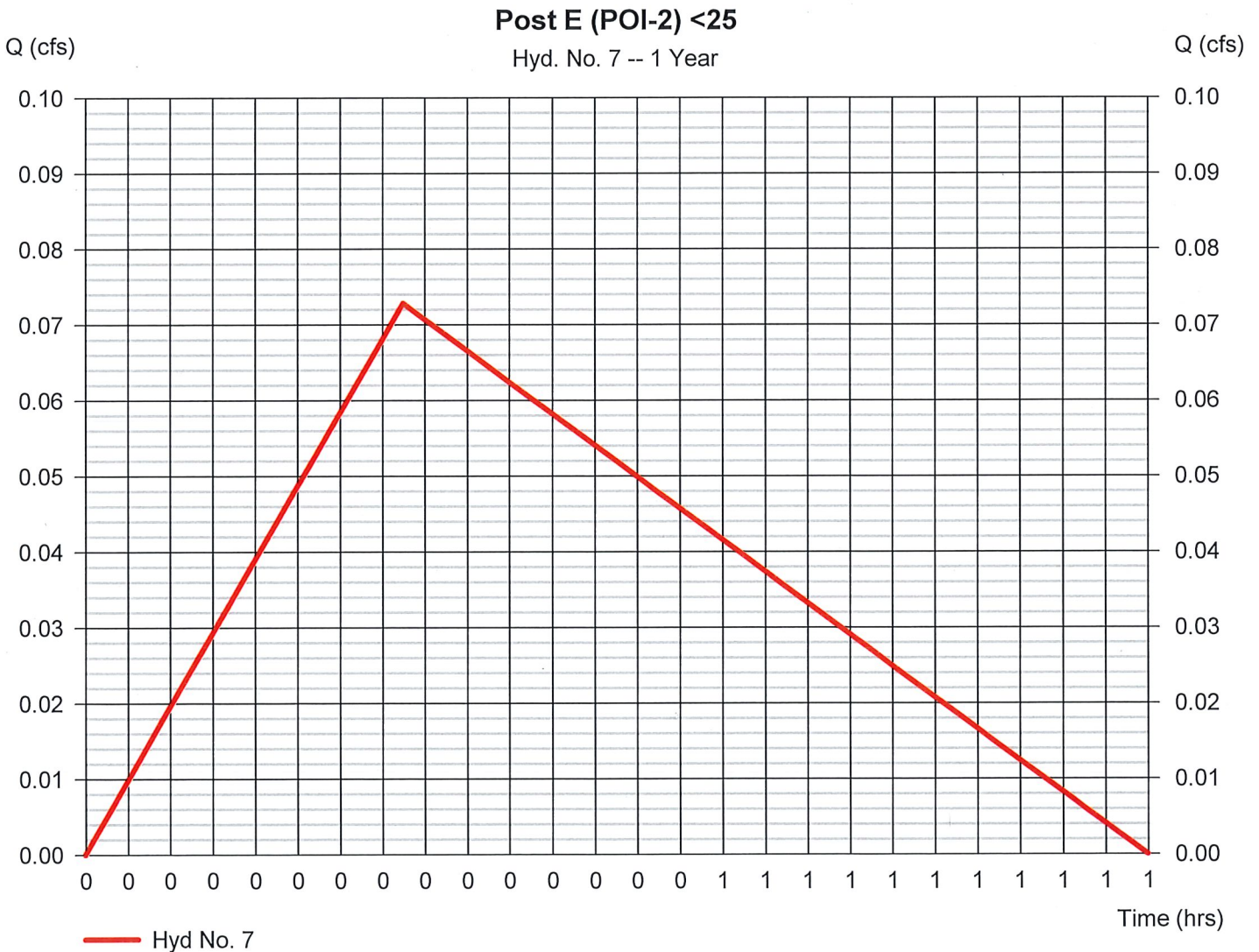
# Hydrograph Report

## Hyd. No. 7

Post E (POI-2) <25

|                 |                |                   |             |
|-----------------|----------------|-------------------|-------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.073 cfs |
| Storm frequency | = 1 yrs        | Time to peak      | = 0.25 hrs  |
| Time interval   | = 1 min        | Hyd. volume       | = 109 cuft  |
| Drainage area   | = 0.030 ac     | Runoff coeff.     | = 0.63*     |
| Intensity       | = 3.855 in/hr  | Tc by User        | = 5.00 min  |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7       |

\* Composite (Area/C) = [(0.020 x 0.86) + (0.013 x 0.27)] / 0.030





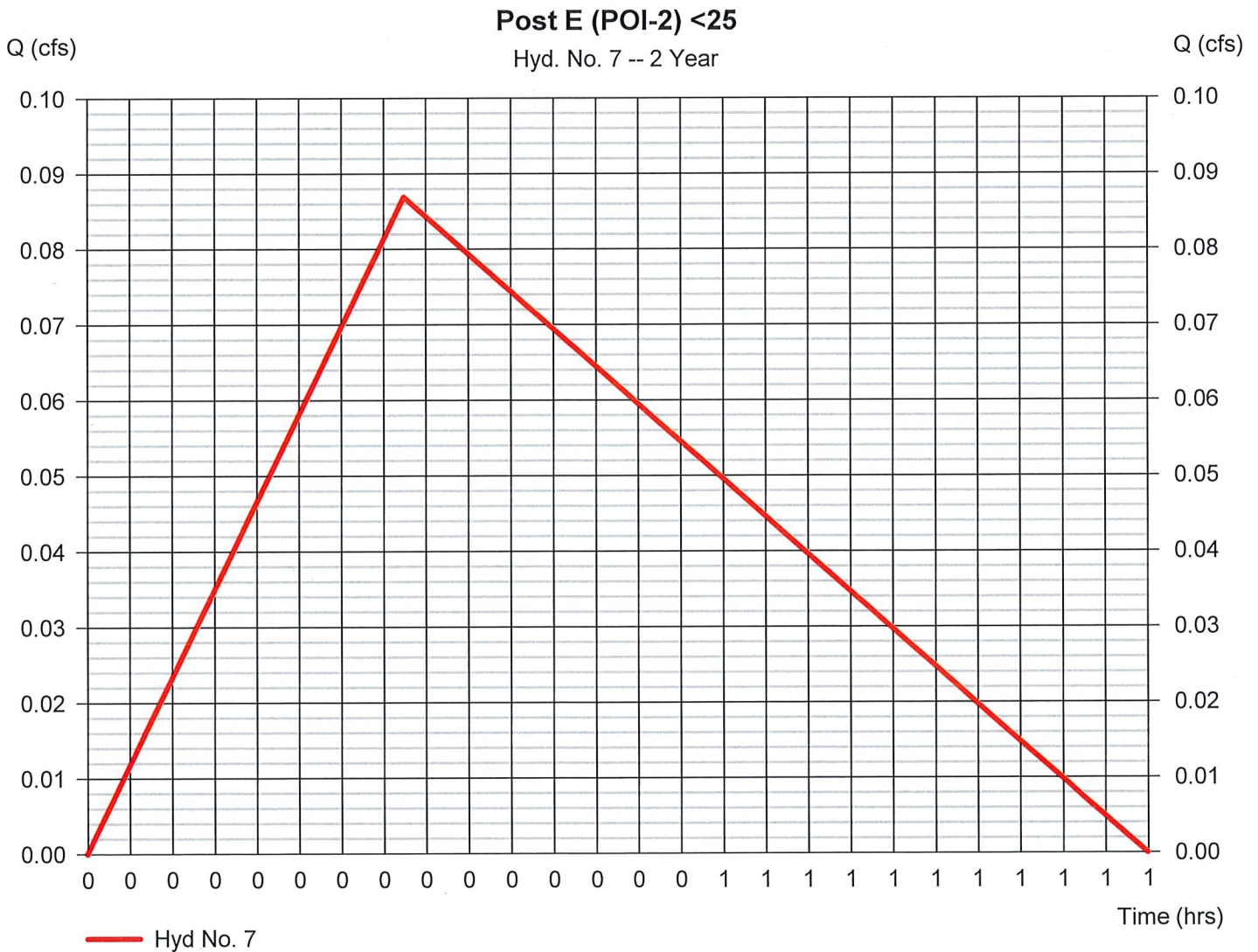
# Hydrograph Report

## Hyd. No. 7

Post E (POI-2) <25

|                 |                |                   |             |
|-----------------|----------------|-------------------|-------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.087 cfs |
| Storm frequency | = 2 yrs        | Time to peak      | = 0.25 hrs  |
| Time interval   | = 1 min        | Hyd. volume       | = 130 cuft  |
| Drainage area   | = 0.030 ac     | Runoff coeff.     | = 0.63*     |
| Intensity       | = 4.600 in/hr  | Tc by User        | = 5.00 min  |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7       |

\* Composite (Area/C) = [(0.020 x 0.86) + (0.013 x 0.27)] / 0.030



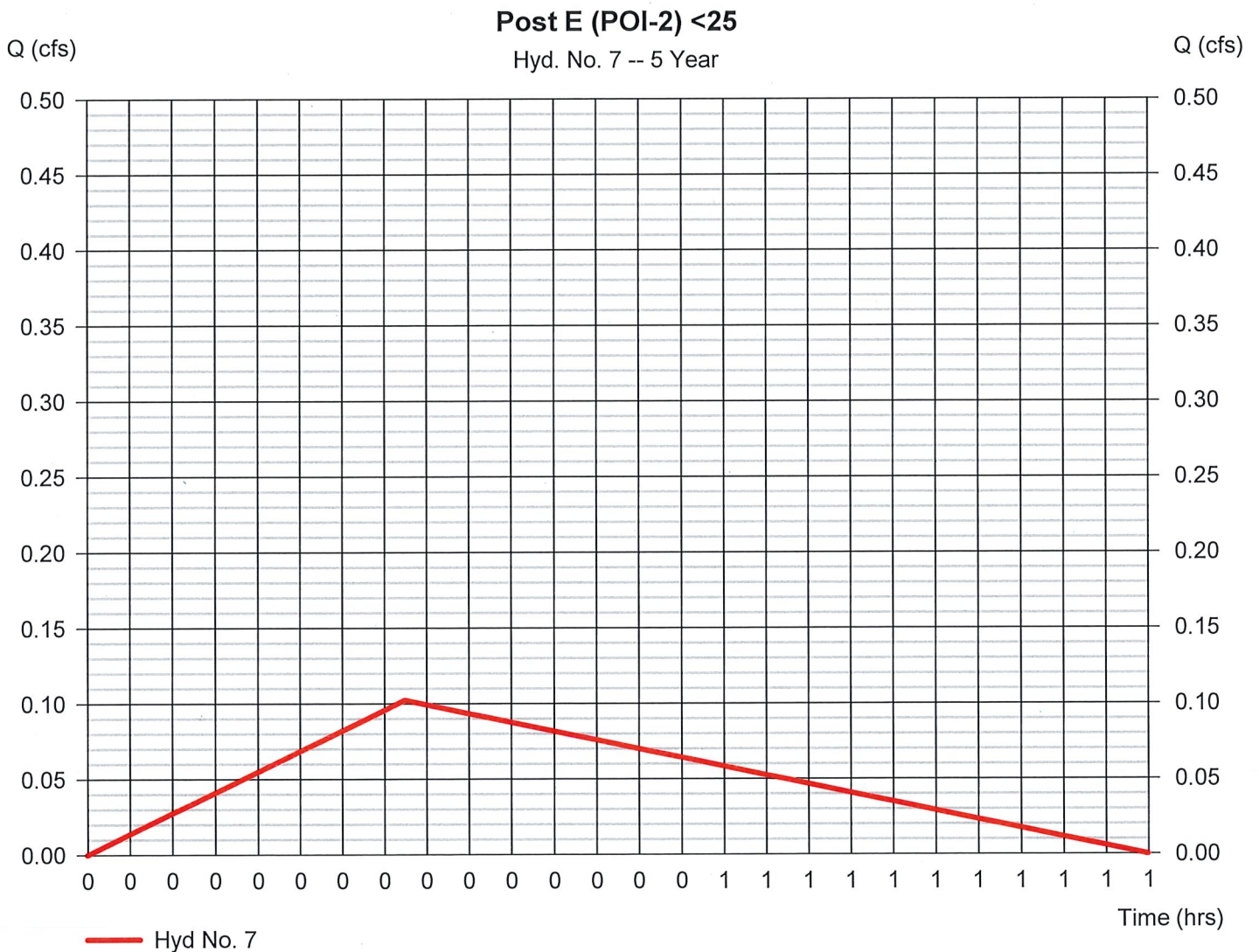
# Hydrograph Report

## Hyd. No. 7

Post E (POI-2) <25

|                 |                |                   |             |
|-----------------|----------------|-------------------|-------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.102 cfs |
| Storm frequency | = 5 yrs        | Time to peak      | = 0.25 hrs  |
| Time interval   | = 1 min        | Hyd. volume       | = 154 cuft  |
| Drainage area   | = 0.030 ac     | Runoff coeff.     | = 0.63*     |
| Intensity       | = 5.417 in/hr  | Tc by User        | = 5.00 min  |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7       |

\* Composite (Area/C) = [(0.020 x 0.86) + (0.013 x 0.27)] / 0.030



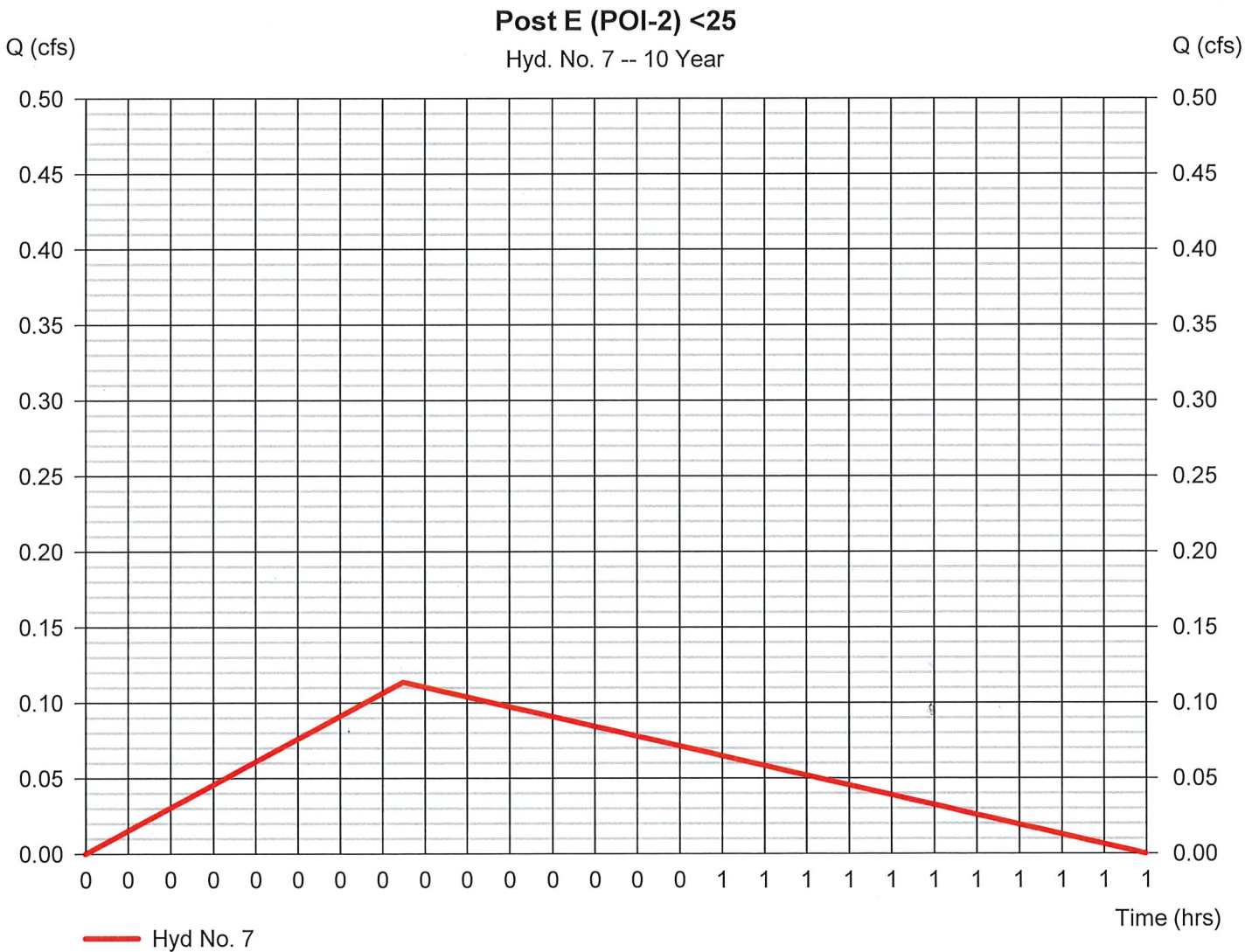
# Hydrograph Report

## Hyd. No. 7

Post E (POI-2) <25

|                 |                |                   |             |
|-----------------|----------------|-------------------|-------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.114 cfs |
| Storm frequency | = 10 yrs       | Time to peak      | = 0.25 hrs  |
| Time interval   | = 1 min        | Hyd. volume       | = 171 cuft  |
| Drainage area   | = 0.030 ac     | Runoff coeff.     | = 0.63*     |
| Intensity       | = 6.019 in/hr  | Tc by User        | = 5.00 min  |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7       |

\* Composite (Area/C) = [(0.020 x 0.86) + (0.013 x 0.27)] / 0.030



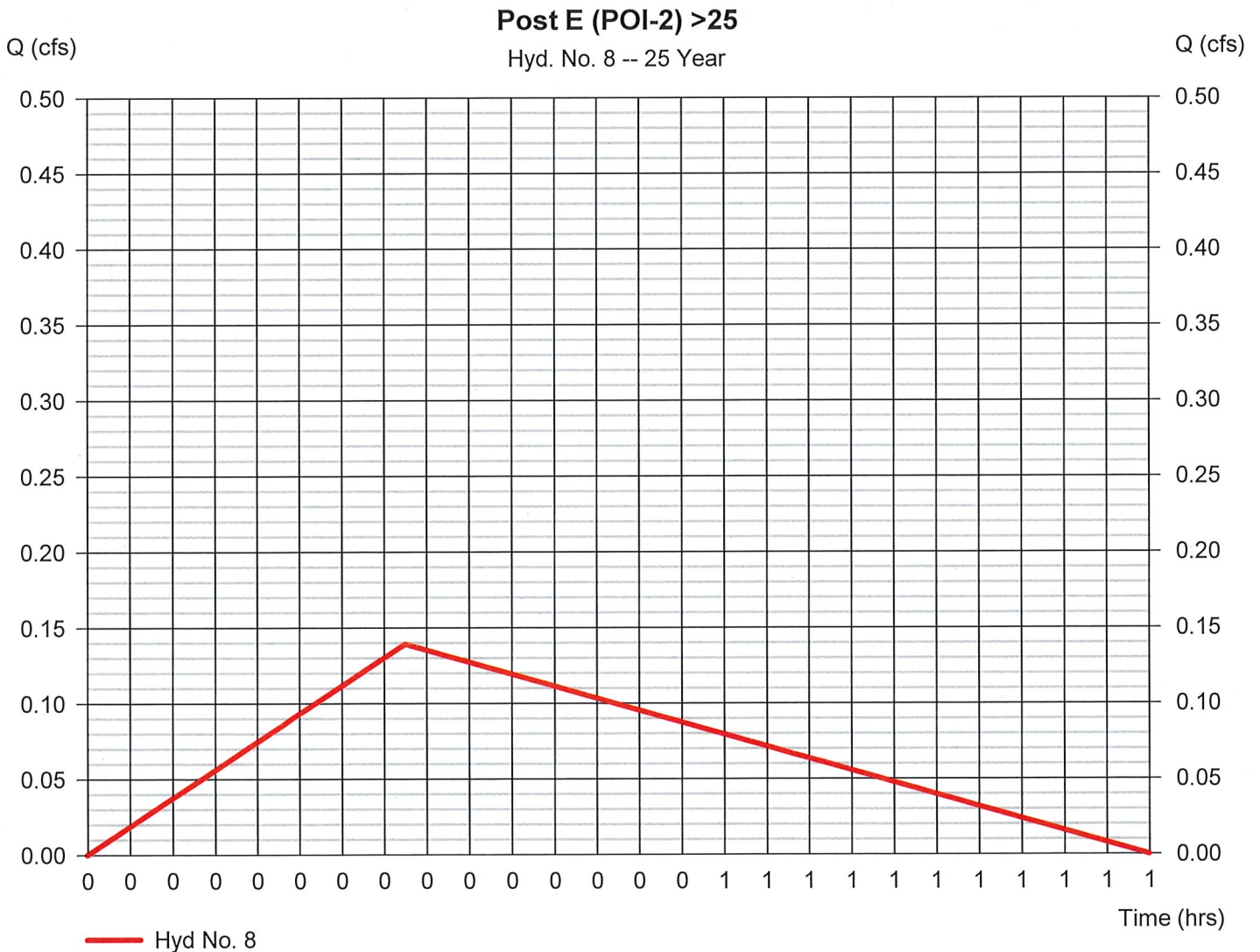
# Hydrograph Report

## Hyd. No. 8

Post E (POI-2) >25

|                 |                |                   |             |
|-----------------|----------------|-------------------|-------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.139 cfs |
| Storm frequency | = 25 yrs       | Time to peak      | = 0.25 hrs  |
| Time interval   | = 1 min        | Hyd. volume       | = 209 cuft  |
| Drainage area   | = 0.030 ac     | Runoff coeff.     | = 0.69*     |
| Intensity       | = 6.731 in/hr  | Tc by User        | = 5.00 min  |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7       |

\* Composite (Area/C) = [(0.020 x 0.96) + (0.013 x 0.27)] / 0.030



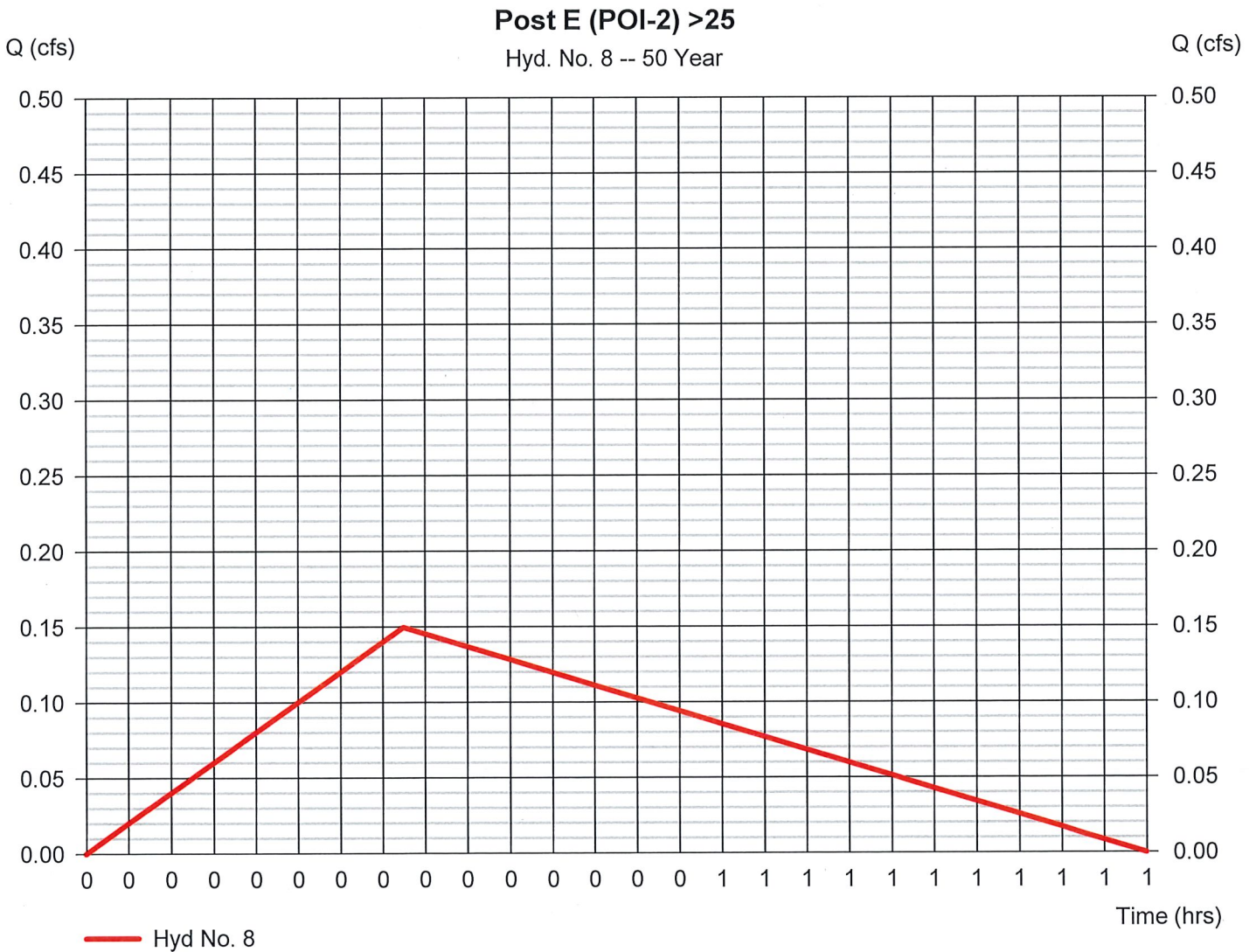
# Hydrograph Report

## Hyd. No. 8

Post E (POI-2) >25

|                 |                |                   |             |
|-----------------|----------------|-------------------|-------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.150 cfs |
| Storm frequency | = 50 yrs       | Time to peak      | = 0.25 hrs  |
| Time interval   | = 1 min        | Hyd. volume       | = 225 cuft  |
| Drainage area   | = 0.030 ac     | Runoff coeff.     | = 0.69*     |
| Intensity       | = 7.240 in/hr  | Tc by User        | = 5.00 min  |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7       |

\* Composite (Area/C) = [(0.020 x 0.96) + (0.013 x 0.27)] / 0.030



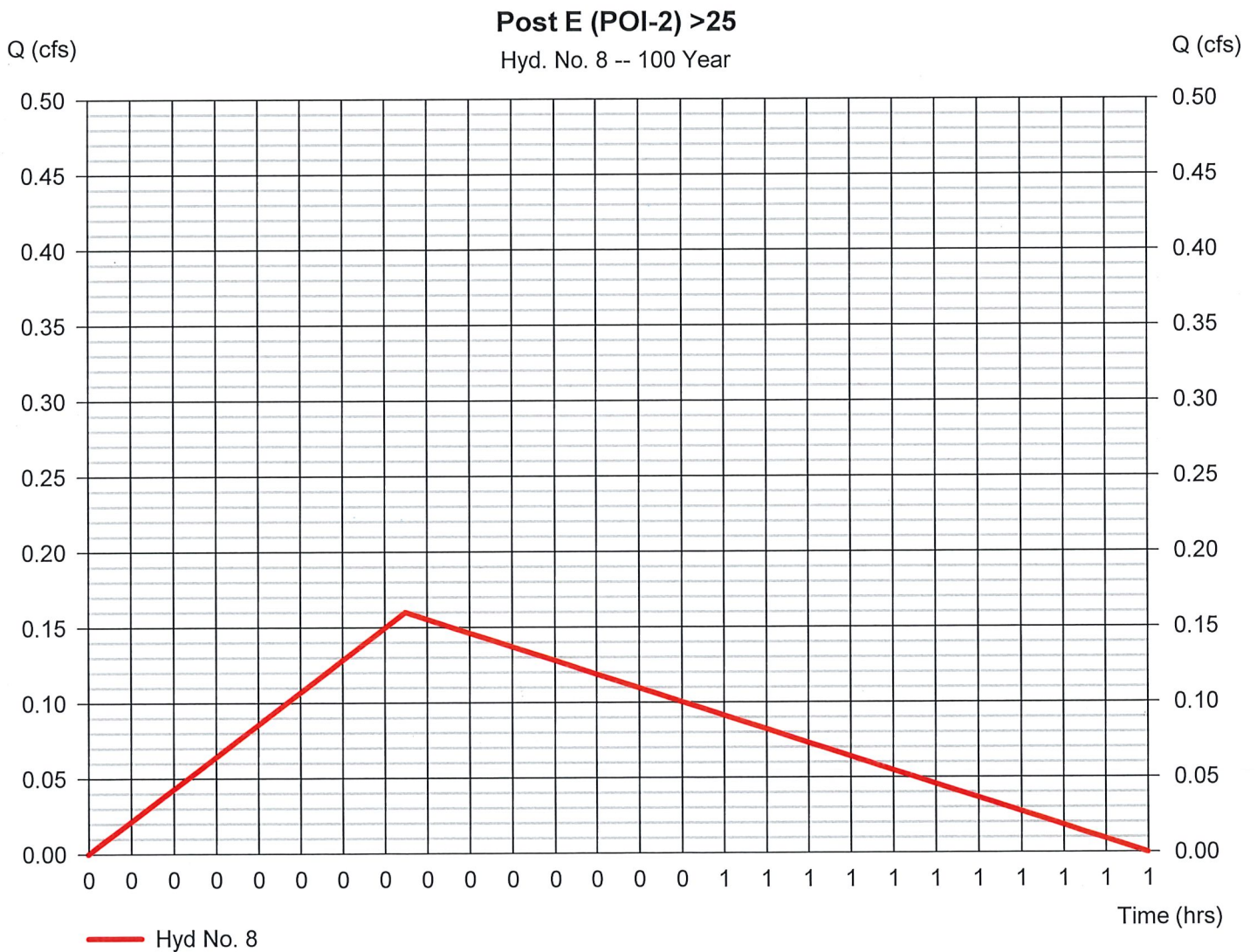
# Hydrograph Report

## Hyd. No. 8

Post E (POI-2) >25

|                 |                |                   |             |
|-----------------|----------------|-------------------|-------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.160 cfs |
| Storm frequency | = 100 yrs      | Time to peak      | = 0.25 hrs  |
| Time interval   | = 1 min        | Hyd. volume       | = 240 cuft  |
| Drainage area   | = 0.030 ac     | Runoff coeff.     | = 0.69*     |
| Intensity       | = 7.735 in/hr  | Tc by User        | = 5.00 min  |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7       |

\* Composite (Area/C) = [(0.020 x 0.96) + (0.013 x 0.27)] / 0.030



# Pond Report

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

Tuesday, 11 / 1 / 2022

## Pond No. 1 - STORM TANK STORAGE

### Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Beginning Elevation = 301.84 ft. Voids = 95.00%

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|------------|----------------|---------------------|----------------------|----------------------|
| 0.00       | 301.84         | 738                 | 0                    | 0                    |
| 0.50       | 302.34         | 738                 | 351 *                | 351                  |
| 1.00       | 302.84         | 738                 | 351 *                | 701                  |
| 1.51       | 303.35         | 738                 | 358 *                | 1,059                |

\* ADD TO  
STONE STORAGE

### Culvert / Orifice Structures

|                 | [A]    | [B]      | [C]  | [PrfRsr] |
|-----------------|--------|----------|------|----------|
| Rise (in)       | = 0.00 | Inactive | 0.00 | 0.00     |
| Span (in)       | = 0.00 | 0.00     | 0.00 | 0.00     |
| No. Barrels     | = 0    | 1        | 0    | 0        |
| Invert El. (ft) | = 0.00 | 0.00     | 0.00 | 0.00     |
| Length (ft)     | = 0.00 | 0.00     | 0.00 | 0.00     |
| Slope (%)       | = 0.00 | 0.00     | 0.00 | n/a      |
| N-Value         | = .013 | .012     | .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) | = 0.00               | 0.00 | 0.00 | 0.00 |
| Crest El. (ft) | = 0.00               | 0.00 | 0.00 | 0.00 |
| Weir Coeff.    | = 3.33               | 3.33 | 3.33 | 3.33 |
| Weir Type      | = 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).

### Stage / Storage / Discharge Table

| Stage ft | Storage cuft | Elevation ft | Clv A cfs | Clv B cfs | Clv C cfs | PrfRsr cfs | Wr A cfs | Wr B cfs | Wr C cfs | Wr D cfs | Exfil cfs | User cfs | Total cfs |
|----------|--------------|--------------|-----------|-----------|-----------|------------|----------|----------|----------|----------|-----------|----------|-----------|
| 0.00     | 0            | 301.84       | ---       | ---       | ---       | ---        | ---      | ---      | ---      | ---      | ---       | ---      | 0.000     |
| 0.50     | 351          | 302.34       | ---       | ---       | ---       | ---        | ---      | ---      | ---      | ---      | ---       | ---      | 0.000     |
| 1.00     | 701          | 302.84       | ---       | ---       | ---       | ---        | ---      | ---      | ---      | ---      | ---       | ---      | 0.000     |
| 1.51     | 1,059        | 303.35       | ---       | ---       | ---       | ---        | ---      | ---      | ---      | ---      | ---       | ---      | 0.000     |

# Pond Report

## Pond No. 3 - STONE STORAGE

### Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 301.34 ft. Voids = 40.00%

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|------------|----------------|---------------------|----------------------|----------------------|
| 0.00       | 301.34         | 983                 | 0                    | 0                    |
| 0.50       | 301.84         | 983                 | 197                  | 197                  |
| 0.51       | 301.85         | 245                 | 2                    | 199                  |
| 1.00       | 302.34         | 245                 | 48                   | 247                  |
| 1.50       | 302.84         | 245                 | 49                   | 296                  |
| 2.01       | 303.35         | 245                 | 50                   | 346                  |
| 2.02       | 303.36         | 983                 | 2                    | 349                  |
| 2.52       | 303.86         | 983                 | 197                  | 545                  |
| 3.02       | 304.36         | 983                 | 197                  | 742                  |
| 3.52       | 304.86         | 983                 | 197                  | 938                  |

### Culvert / Orifice Structures

|                 | [A]    | [B]  | [C]  | [PrfRsr] |
|-----------------|--------|------|------|----------|
| Rise (in)       | = 0.00 | 0.00 | 0.00 | 0.00     |
| Span (in)       | = 0.00 | 0.00 | 0.00 | 0.00     |
| No. Barrels     | = 0    | 0    | 0    | 0        |
| Invert El. (ft) | = 0.00 | 0.00 | 0.00 | 0.00     |
| Length (ft)     | = 0.00 | 0.00 | 0.00 | 0.00     |
| Slope (%)       | = 0.00 | 0.00 | 0.00 | n/a      |
| N-Value         | = .013 | .013 | .013 | n/a      |
| Orifice Coeff.  | = 0.60 | 0.60 | 0.60 | 0.60     |
| Multi-Stage     | = n/a  | No   | No   | No       |

### Weir Structures

|                | [A]                   | [B]  | [C]  | [D]  |
|----------------|-----------------------|------|------|------|
| Crest Len (ft) | = 0.00                | 0.00 | 0.00 | 0.00 |
| Crest El. (ft) | = 0.00                | 0.00 | 0.00 | 0.00 |
| Weir Coeff.    | = 3.33                | 3.33 | 3.33 | 3.33 |
| Weir Type      | = ---                 | ---  | ---  | ---  |
| Multi-Stage    | = No                  | No   | No   | No   |
| Exfil.(in/hr)  | = 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).

### Stage / Storage / Discharge Table

| Stage ft | Storage cuft | Elevation ft | Clv A cfs | Clv B cfs | Clv C cfs | PrfRsr cfs | Wr A cfs | Wr B cfs | Wr C cfs | Wr D cfs | Exfil cfs | User cfs | Total cfs |
|----------|--------------|--------------|-----------|-----------|-----------|------------|----------|----------|----------|----------|-----------|----------|-----------|
| 0.00     | 0            | 301.34       | ---       | ---       | ---       | ---        | ---      | ---      | ---      | ---      | ---       | ---      | 0.000     |
| 0.50     | 197          | 301.84       | ---       | ---       | ---       | ---        | ---      | ---      | ---      | ---      | ---       | ---      | 0.000     |
| 0.51     | 199          | 301.85       | ---       | ---       | ---       | ---        | ---      | ---      | ---      | ---      | ---       | ---      | 0.000     |
| 1.00     | 247          | 302.34       | ---       | ---       | ---       | ---        | ---      | ---      | ---      | ---      | ---       | ---      | 0.000     |
| 1.50     | 296          | 302.84       | ---       | ---       | ---       | ---        | ---      | ---      | ---      | ---      | ---       | ---      | 0.000     |
| 2.01     | 346          | 303.35       | ---       | ---       | ---       | ---        | ---      | ---      | ---      | ---      | ---       | ---      | 0.000     |
| 2.02     | 349          | 303.36       | ---       | ---       | ---       | ---        | ---      | ---      | ---      | ---      | ---       | ---      | 0.000     |
| 2.52     | 545          | 303.86       | ---       | ---       | ---       | ---        | ---      | ---      | ---      | ---      | ---       | ---      | 0.000     |
| 3.02     | 742          | 304.36       | ---       | ---       | ---       | ---        | ---      | ---      | ---      | ---      | ---       | ---      | 0.000     |
| 3.52     | 938          | 304.86       | ---       | ---       | ---       | ---        | ---      | ---      | ---      | ---      | ---       | ---      | 0.000     |



# Pond Report

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

Tuesday, 11 / 1 / 2022

**Pond No. 3 - STONE STORAGE + STORM TANK STORAGE FOR SW SYSTEM VOLUME STORAGE**

## Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Beginning Elevation = 301.34 ft Voids = 40.00%

## Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|------------|----------------|---------------------|----------------------|----------------------|
| 0.00       | 301.34         | 983                 | 0                    | 0                    |
| 0.50       | 301.84         | 983                 | 197                  | 197                  |
| 0.51       | 301.85         | 245                 | 2                    | 199                  |
| 1.00       | 302.34         | 245                 | 48 + 351 = 399       | 247 598              |
| 1.50       | 302.84         | 245                 | 49 + 351 = 399       | 296 997              |
| 2.01       | 303.35         | 245                 | 50 + 358 = 408       | 346 1405             |
| 2.02       | 303.36         | 983                 | 2                    | 349 1407             |
| 2.52       | 303.86         | 983                 | 197                  | 545 1604             |
| 3.02       | 304.36         | 983                 | 197                  | 742 1801             |
| 3.52       | 304.86         | 983                 | 197                  | 938 1998             |

## Culvert / Orifice Structures

|                 | [A]    | [B]  | [C]  | [PrfRsr] |
|-----------------|--------|------|------|----------|
| Rise (in)       | = 0.00 | 0.00 | 0.00 | 0.00     |
| Span (in)       | = 0.00 | 0.00 | 0.00 | 0.00     |
| No. Barrels     | = 0    | 0    | 0    | 0        |
| Invert El. (ft) | = 0.00 | 0.00 | 0.00 | 0.00     |
| Length (ft)     | = 0.00 | 0.00 | 0.00 | 0.00     |
| Slope (%)       | = 0.00 | 0.00 | 0.00 | n/a      |
| N-Value         | = .013 | .013 | .013 | n/a      |
| Orifice Coeff.  | = 0.60 | 0.60 | 0.60 | 0.60     |
| Multi-Stage     | = n/a  | No   | No   | No       |

## Weir Structures

|                | [A]                   | [B]  | [C]  | [D]  |
|----------------|-----------------------|------|------|------|
| Crest Len (ft) | = 0.00                | 0.00 | 0.00 | 0.00 |
| Crest El. (ft) | = 0.00                | 0.00 | 0.00 | 0.00 |
| Weir Coeff.    | = 3.33                | 3.33 | 3.33 | 3.33 |
| Weir Type      | = ---                 | ---  | ---  | ---  |
| Multi-Stage    | = No                  | No   | No   | No   |
| Exfil. (in/hr) | = 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).

## Stage / Storage / Discharge Table

| Stage ft | Storage cuft | Elevation ft | Clv A cfs | Clv B cfs | Clv C cfs | PrfRsr cfs | Wr A cfs | Wr B cfs | Wr C cfs | Wr D cfs | Exfil cfs | User cfs | Total cfs |
|----------|--------------|--------------|-----------|-----------|-----------|------------|----------|----------|----------|----------|-----------|----------|-----------|
| 0.00     | 0            | 301.34       | ---       | ---       | ---       | ---        | ---      | ---      | ---      | ---      | ---       | ---      | 0.000     |
| 0.50     | 197          | 301.84       | ---       | ---       | ---       | ---        | ---      | ---      | ---      | ---      | ---       | ---      | 0.000     |
| 0.51     | 199          | 301.85       | ---       | ---       | ---       | ---        | ---      | ---      | ---      | ---      | ---       | ---      | 0.000     |
| 1.00     | 247          | 302.34       | ---       | ---       | ---       | ---        | ---      | ---      | ---      | ---      | ---       | ---      | 0.000     |
| 1.50     | 296          | 302.84       | ---       | ---       | ---       | ---        | ---      | ---      | ---      | ---      | ---       | ---      | 0.000     |
| 2.01     | 346          | 303.35       | ---       | ---       | ---       | ---        | ---      | ---      | ---      | ---      | ---       | ---      | 0.000     |
| 2.02     | 349          | 303.36       | ---       | ---       | ---       | ---        | ---      | ---      | ---      | ---      | ---       | ---      | 0.000     |
| 2.52     | 545          | 303.86       | ---       | ---       | ---       | ---        | ---      | ---      | ---      | ---      | ---       | ---      | 0.000     |
| 3.02     | 742          | 304.36       | ---       | ---       | ---       | ---        | ---      | ---      | ---      | ---      | ---       | ---      | 0.000     |
| 3.52     | 938          | 304.86       | ---       | ---       | ---       | ---        | ---      | ---      | ---      | ---      | ---       | ---      | 0.000     |

# Pond Report

## Pond No. 2 - STORMWATER SYSTEM <25

### Pond Data

Pond storage is based on user-defined values.

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |   |
|------------|----------------|---------------------|----------------------|----------------------|---|
| 0.00       | 301.34         | n/a                 | 0                    | 0                    | * STONE STORAGE<br>PLUS STORM TANK<br>STORAGE |
| 0.50       | 301.84         | n/a                 | 197                  | 197                  |   |
| 0.51       | 301.85         | n/a                 | 2                    | 199                  |   |
| 1.00       | 302.34         | n/a                 | 399                  | 598                  |   |
| 1.50       | 302.84         | n/a                 | 399                  | 997                  |   |
| 2.01       | 303.35         | n/a                 | 408                  | 1,405                |   |
| 2.02       | 303.36         | n/a                 | 2                    | 1,407                |   |
| 2.52       | 303.86         | n/a                 | 197                  | 1,604                |   |
| 3.02       | 304.36         | n/a                 | 197                  | 1,801                |   |
| 3.52       | 304.86         | n/a                 | 197                  | 1,998                |   |

Handwritten notes: 302.72 (next to 302.34), 303.27 (100YR WSEL) (next to 303.86), 901 (REQ. INFIL. VOL.) (next to 997), 1616 (100YR VOL.) (next to 1,604), 6" OUTLET TO EW 3 (next to 1,801)

### Culvert / Orifice Structures

|                 | [A]      | [B]    | [C]  | [PrfRsr] |
|-----------------|----------|--------|------|----------|
| Rise (in)       | = 6.00   | 1.00   | 0.00 | 0.00     |
| Span (in)       | = 6.00   | 1.00   | 0.00 | 0.00     |
| No. Barrels     | = 1      | 1      | 0    | 0        |
| Invert El. (ft) | = 304.36 | 301.34 | 0.00 | 0.00     |
| Length (ft)     | = 19.00  | 0.00   | 0.00 | 0.00     |
| Slope (%)       | = 0.50   | 0.00   | 0.00 | n/a      |
| N-Value         | = .012   | .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               | 0.00 | 0.00 | 0.00 |
| Crest El. (ft) | = 305.53              | 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 Wet area) |      |      |      |
| TW Elev. (ft)  | = 0.00                |      |      |      |

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

### Stage / Storage / Discharge Table

| Stage ft | Storage cuft | Elevation ft | Clv A cfs | Clv B cfs | Clv C cfs | PrfRsr cfs | Wr A cfs | Wr B cfs | Wr C cfs | Wr D cfs | Exfil cfs | User cfs | Total cfs |
|----------|--------------|--------------|-----------|-----------|-----------|------------|----------|----------|----------|----------|-----------|----------|-----------|
| 0.00     | 0            | 301.34       | 0.00      | 0.00      | ---       | ---        | 0.00     | ---      | ---      | ---      | ---       | ---      | 0.000     |
| 0.50     | 197          | 301.84       | 0.00      | 0.02 ic   | ---       | ---        | 0.00     | ---      | ---      | ---      | ---       | ---      | 0.018     |
| 0.51     | 199          | 301.85       | 0.00      | 0.02 ic   | ---       | ---        | 0.00     | ---      | ---      | ---      | ---       | ---      | 0.018     |
| 1.00     | 598          | 302.34       | 0.00      | 0.03 ic   | ---       | ---        | 0.00     | ---      | ---      | ---      | ---       | ---      | 0.026     |
| 1.50     | 997          | 302.84       | 0.00      | 0.03 ic   | ---       | ---        | 0.00     | ---      | ---      | ---      | ---       | ---      | 0.032     |
| 2.01     | 1,405        | 303.35       | 0.00      | 0.04 ic   | ---       | ---        | 0.00     | ---      | ---      | ---      | ---       | ---      | 0.037     |
| 2.02     | 1,407        | 303.36       | 0.00      | 0.04 ic   | ---       | ---        | 0.00     | ---      | ---      | ---      | ---       | ---      | 0.037     |
| 2.52     | 1,604        | 303.86       | 0.00      | 0.04 ic   | ---       | ---        | 0.00     | ---      | ---      | ---      | ---       | ---      | 0.041     |
| 3.02     | 1,801        | 304.36       | 0.00      | 0.05 ic   | ---       | ---        | 0.00     | ---      | ---      | ---      | ---       | ---      | 0.045     |
| 3.52     | 1,998        | 304.86       | 0.00      | 0.05 ic   | ---       | ---        | 0.00     | ---      | ---      | ---      | ---       | ---      | 0.049     |

# Pond Report

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

Tuesday, 11 / 1 / 2022

## Pond No. 4 - STORMWATER SYSTEM >25

### Pond Data

Pond storage is based on user-defined values.

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) | * STONE STORAGE PLUS STORM TANK STORAGE |
|------------|----------------|---------------------|----------------------|----------------------|---|
| 0.00       | 301.34         | n/a                 | 0                    | 0                    |   |
| 0.50       | 301.84         | n/a                 | 197                  | 197                  |   |
| 0.51       | 301.85         | n/a                 | 2                    | 199                  |   |
| 1.00       | 302.34         | n/a                 | 399                  | 598                  |   |
| 1.50       | 302.84         | n/a                 | 399                  | 997                  |   |
| 2.01       | 303.35         | n/a                 | 408                  | 1,405                |   |
| 2.02       | 303.36         | n/a                 | 2                    | 1,407                |   |
| 2.52       | 303.86         | n/a                 | 197                  | 1,604                |   |
| 3.02       | 304.36         | n/a                 | 197                  | 1,801                |   |
| 3.52       | 304.86         | n/a                 | 197                  | 1,998                |   |

### Culvert / Orifice Structures

|                 | [A]      | [B]    | [C]  | [PrfRsr] |
|-----------------|----------|--------|------|----------|
| Rise (in)       | = 6.00   | 1.00   | 0.00 | 0.00     |
| Span (in)       | = 6.00   | 1.00   | 0.00 | 0.00     |
| No. Barrels     | = 1      | 1      | 0    | 0        |
| Invert El. (ft) | = 304.36 | 301.34 | 0.00 | 0.00     |
| Length (ft)     | = 19.00  | 0.00   | 0.00 | 0.00     |
| Slope (%)       | = 0.50   | 0.00   | 0.00 | n/a      |
| N-Value         | = .012   | .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               | 0.00 | 0.00 | 0.00 |
| Crest El. (ft) | = 305.53              | 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 Wet area) |      |      |      |
| TW Elev. (ft)  | = 0.00                |      |      |      |

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

### Stage / Storage / Discharge Table

| Stage ft | Storage cuft | Elevation ft | Clv A cfs | Clv B cfs | Clv C cfs | PrfRsr cfs | Wr A cfs | Wr B cfs | Wr C cfs | Wr D cfs | Exfil cfs | User cfs | Total cfs |
|----------|--------------|--------------|-----------|-----------|-----------|------------|----------|----------|----------|----------|-----------|----------|-----------|
| 0.00     | 0            | 301.34       | 0.00      | 0.00      | ---       | ---        | 0.00     | ---      | ---      | ---      | ---       | ---      | 0.000     |
| 0.50     | 197          | 301.84       | 0.00      | 0.02 ic   | ---       | ---        | 0.00     | ---      | ---      | ---      | ---       | ---      | 0.018     |
| 0.51     | 199          | 301.85       | 0.00      | 0.02 ic   | ---       | ---        | 0.00     | ---      | ---      | ---      | ---       | ---      | 0.018     |
| 1.00     | 598          | 302.34       | 0.00      | 0.03 ic   | ---       | ---        | 0.00     | ---      | ---      | ---      | ---       | ---      | 0.026     |
| 1.50     | 997          | 302.84       | 0.00      | 0.03 ic   | ---       | ---        | 0.00     | ---      | ---      | ---      | ---       | ---      | 0.032     |
| 2.01     | 1,405        | 303.35       | 0.00      | 0.04 ic   | ---       | ---        | 0.00     | ---      | ---      | ---      | ---       | ---      | 0.037     |
| 2.02     | 1,407        | 303.36       | 0.00      | 0.04 ic   | ---       | ---        | 0.00     | ---      | ---      | ---      | ---       | ---      | 0.037     |
| 2.52     | 1,604        | 303.86       | 0.00      | 0.04 ic   | ---       | ---        | 0.00     | ---      | ---      | ---      | ---       | ---      | 0.041     |
| 3.02     | 1,801        | 304.36       | 0.00      | 0.05 ic   | ---       | ---        | 0.00     | ---      | ---      | ---      | ---       | ---      | 0.045     |
| 3.52     | 1,998        | 304.86       | 0.00      | 0.05 ic   | ---       | ---        | 0.00     | ---      | ---      | ---      | ---       | ---      | 0.049     |

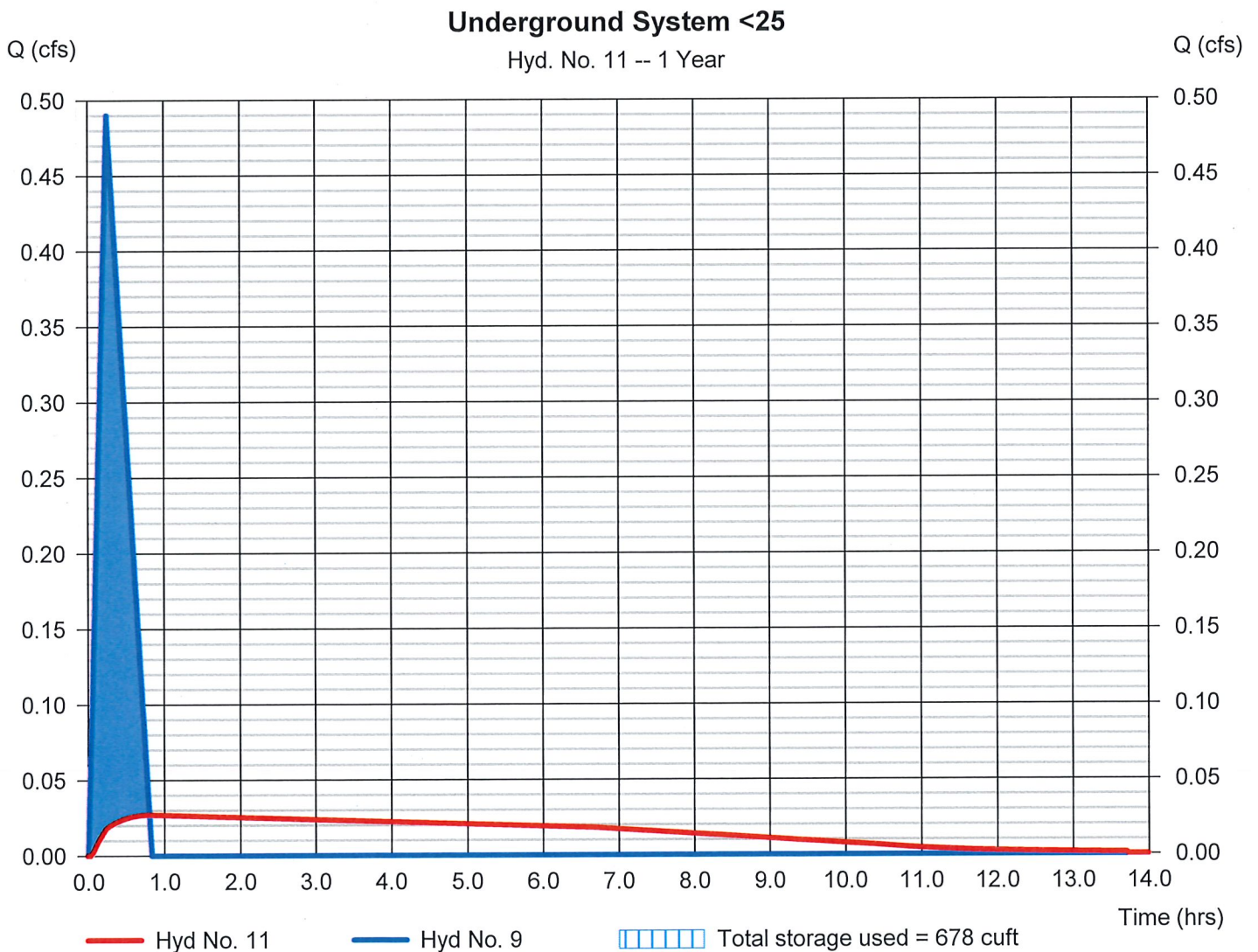
# Hydrograph Report

## Hyd. No. 11

Underground System <25

|                 |                          |                |             |
|-----------------|--------------------------|----------------|-------------|
| Hydrograph type | = Reservoir              | Peak discharge | = 0.027 cfs |
| Storm frequency | = 1 yrs                  | Time to peak   | = 0.80 hrs  |
| Time interval   | = 1 min                  | Hyd. volume    | = 728 cuft  |
| Inflow hyd. No. | = 9 - Post D (POI-2) <25 | Max. Elevation | = 302.44 ft |
| Reservoir name  | = STORMWATER SYSTEM <25  | Max. Storage   | = 678 cuft  |

Storage Indication method used.



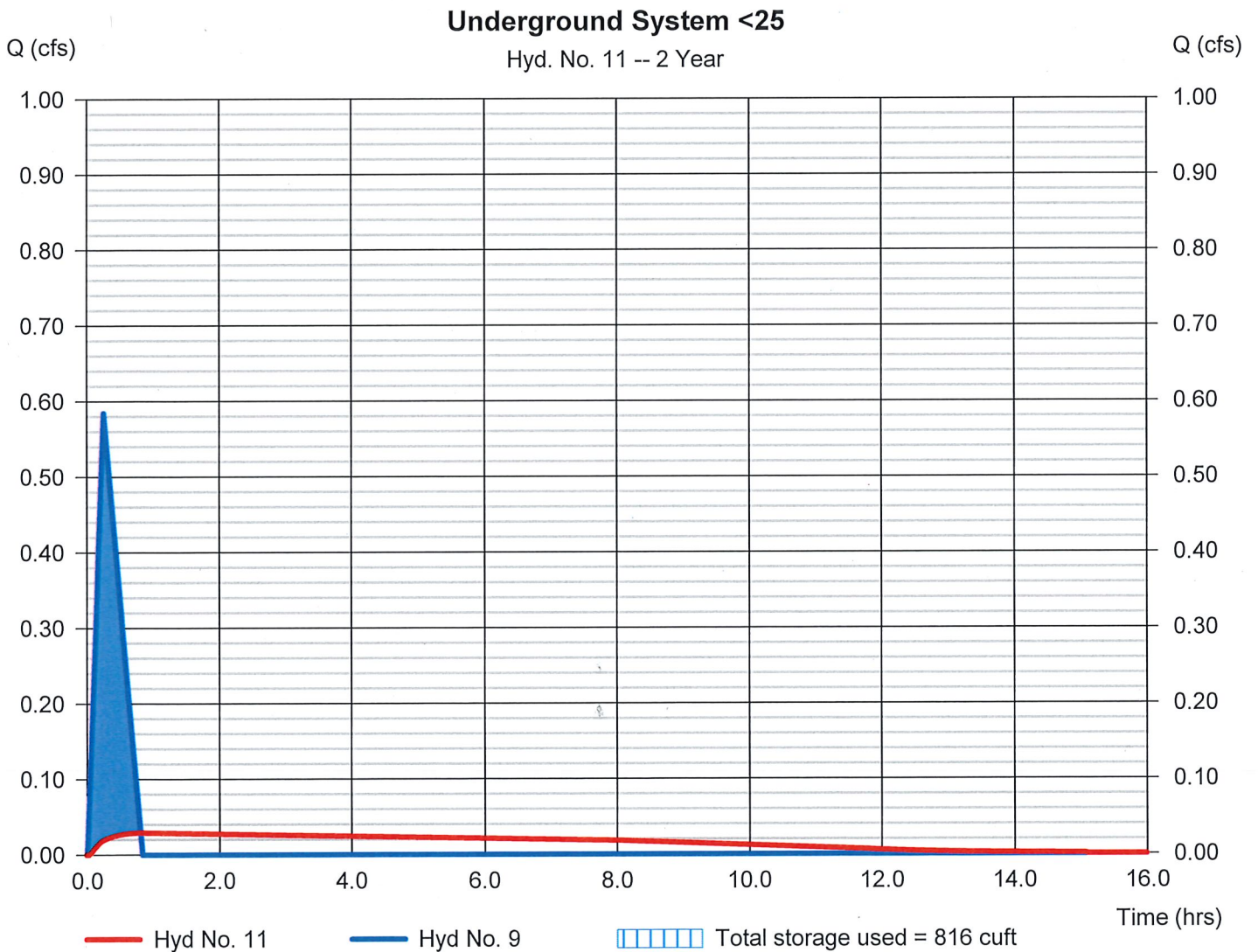
# Hydrograph Report

## Hyd. No. 11

Underground System <25

|                 |                          |                |             |
|-----------------|--------------------------|----------------|-------------|
| Hydrograph type | = Reservoir              | Peak discharge | = 0.029 cfs |
| Storm frequency | = 2 yrs                  | Time to peak   | = 0.80 hrs  |
| Time interval   | = 1 min                  | Hyd. volume    | = 870 cuft  |
| Inflow hyd. No. | = 9 - Post D (POI-2) <25 | Max. Elevation | = 302.61 ft |
| Reservoir name  | = STORMWATER SYSTEM <25  | Max. Storage   | = 816 cuft  |

Storage Indication method used.



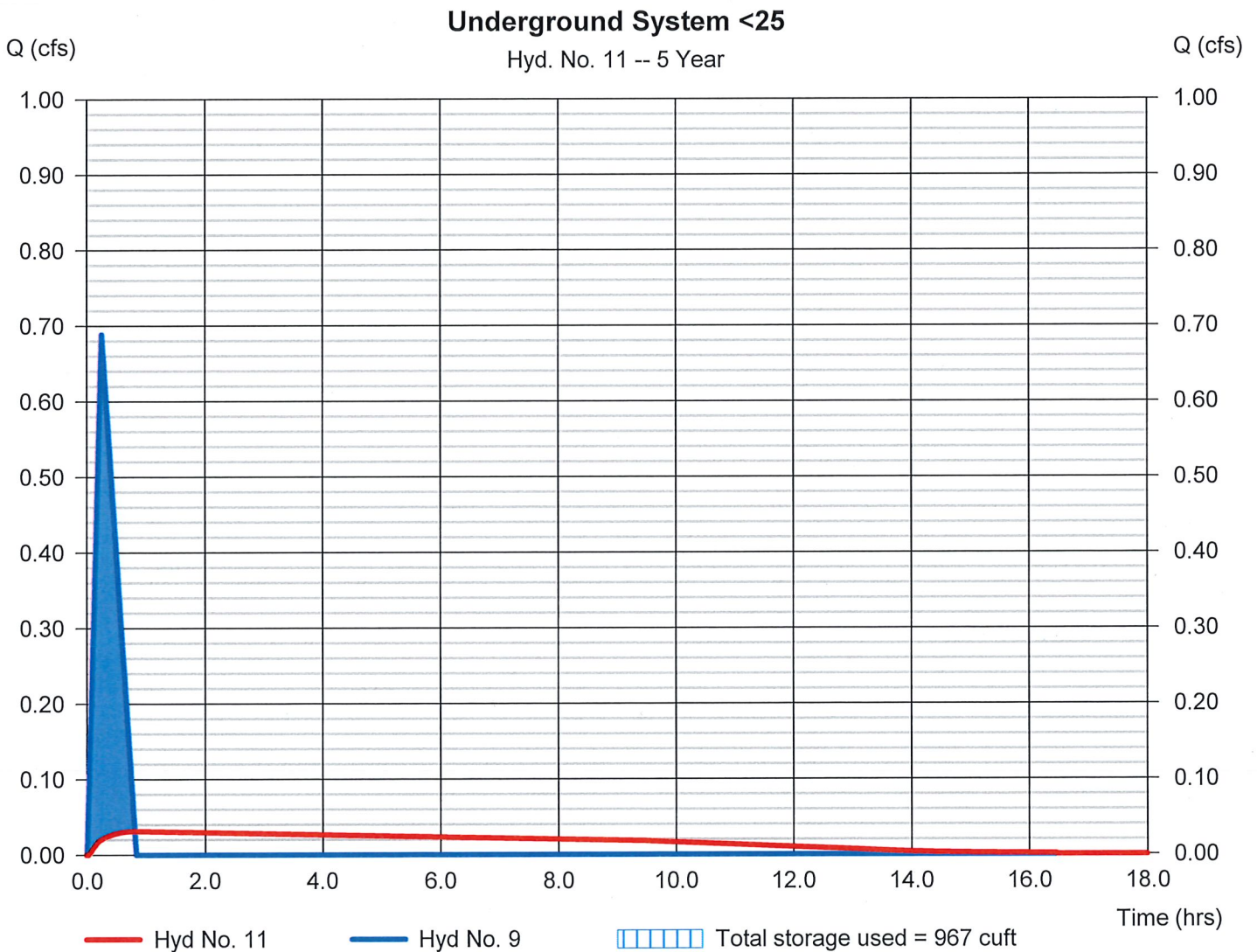
# Hydrograph Report

## Hyd. No. 11

### Underground System <25

|                 |                          |                |              |
|-----------------|--------------------------|----------------|--------------|
| Hydrograph type | = Reservoir              | Peak discharge | = 0.031 cfs  |
| Storm frequency | = 5 yrs                  | Time to peak   | = 0.80 hrs   |
| Time interval   | = 1 min                  | Hyd. volume    | = 1,026 cuft |
| Inflow hyd. No. | = 9 - Post D (POI-2) <25 | Max. Elevation | = 302.80 ft  |
| Reservoir name  | = STORMWATER SYSTEM <25  | Max. Storage   | = 967 cuft   |

Storage Indication method used.



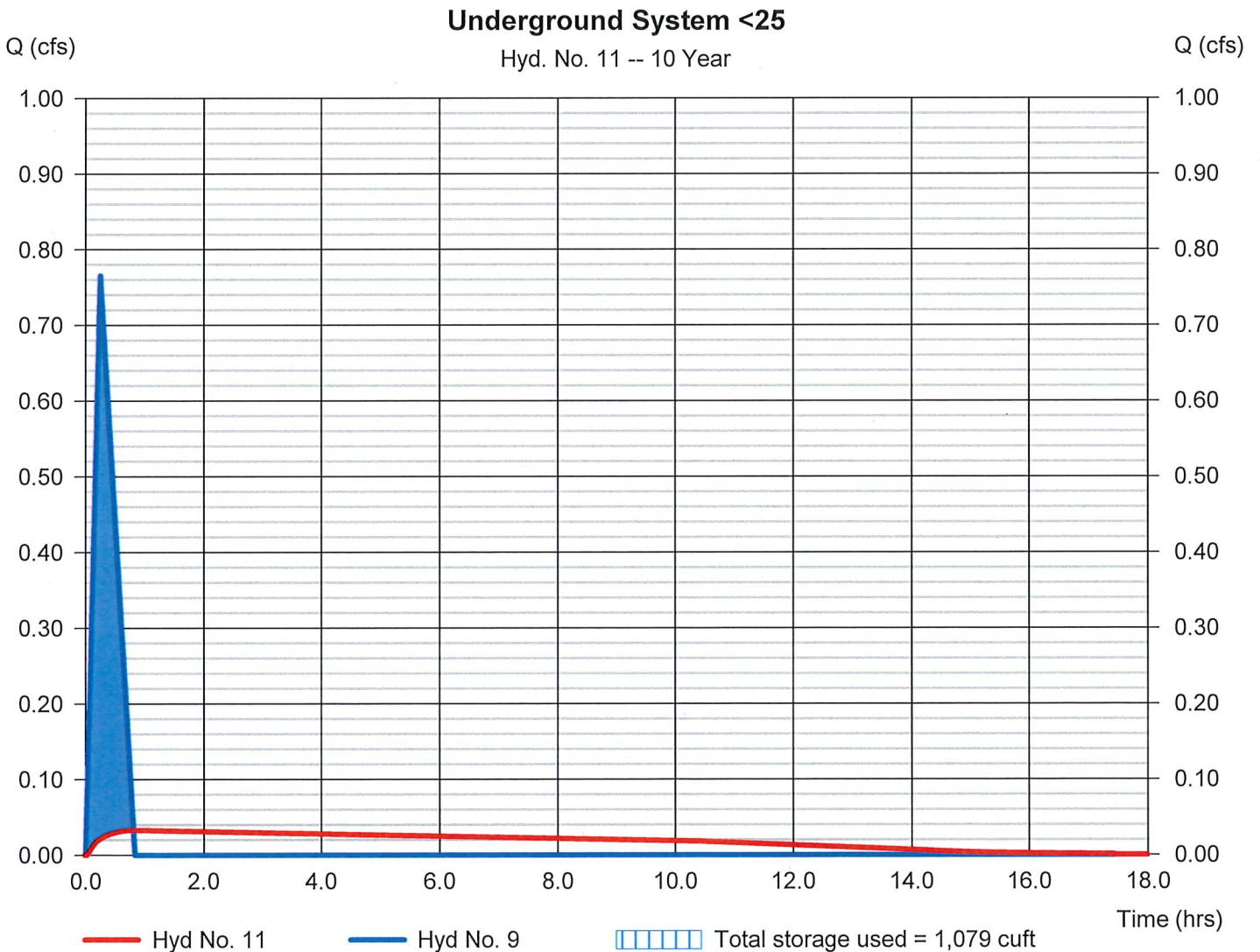
# Hydrograph Report

## Hyd. No. 11

Underground System <25

|                 |                          |                |              |
|-----------------|--------------------------|----------------|--------------|
| Hydrograph type | = Reservoir              | Peak discharge | = 0.033 cfs  |
| Storm frequency | = 10 yrs                 | Time to peak   | = 0.82 hrs   |
| Time interval   | = 1 min                  | Hyd. volume    | = 1,141 cuft |
| Inflow hyd. No. | = 9 - Post D (POI-2) <25 | Max. Elevation | = 302.94 ft  |
| Reservoir name  | = STORMWATER SYSTEM <25  | Max. Storage   | = 1,079 cuft |

Storage Indication method used.



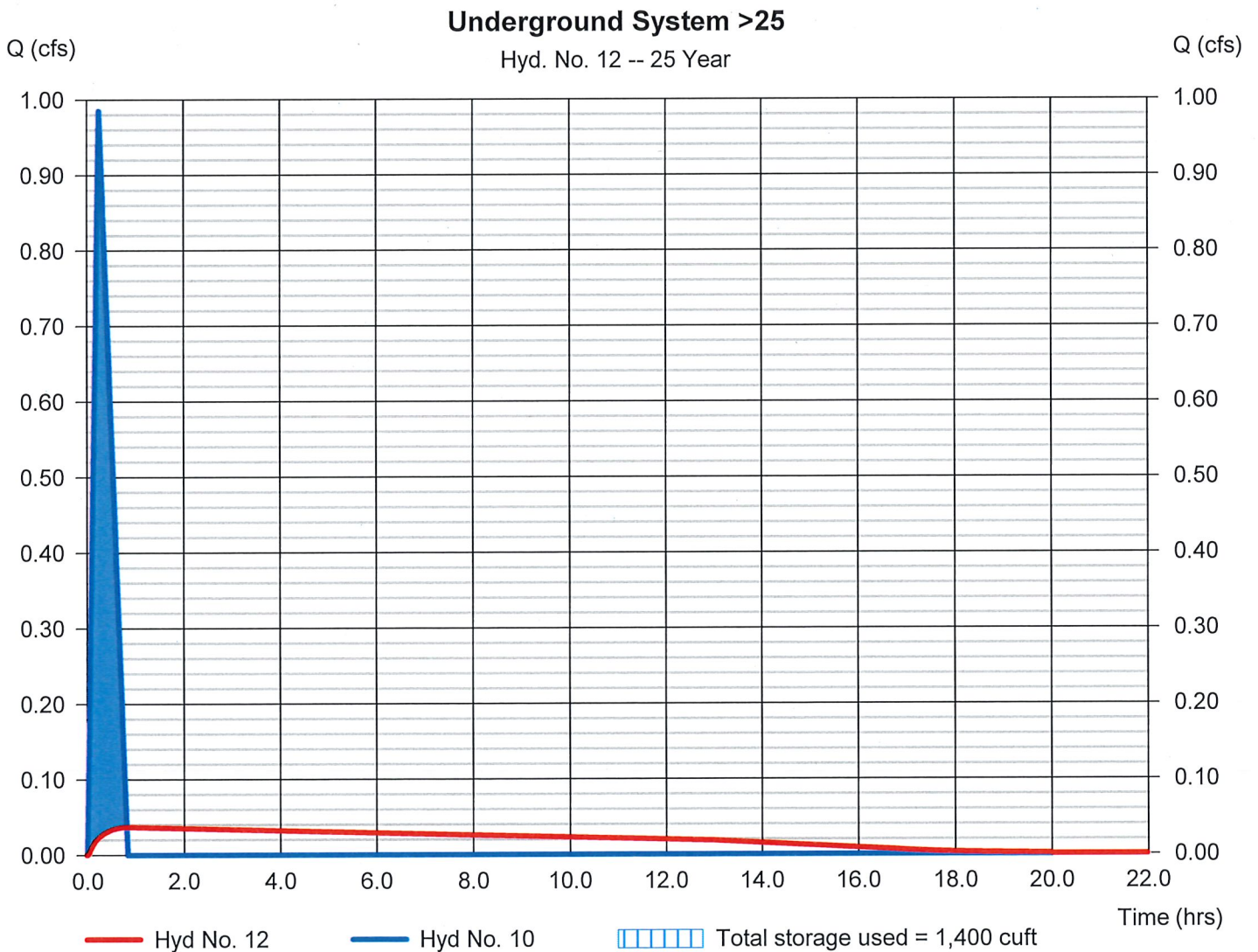
# Hydrograph Report

## Hyd. No. 12

Underground System >25

|                 |                           |                |              |
|-----------------|---------------------------|----------------|--------------|
| Hydrograph type | = Reservoir               | Peak discharge | = 0.037 cfs  |
| Storm frequency | = 25 yrs                  | Time to peak   | = 0.82 hrs   |
| Time interval   | = 1 min                   | Hyd. volume    | = 1,471 cuft |
| Inflow hyd. No. | = 10 - Post D (POI-2) >25 | Max. Elevation | = 303.34 ft  |
| Reservoir name  | = STORMWATER SYSTEM >25   | Max. Storage   | = 1,400 cuft |

Storage Indication method used.





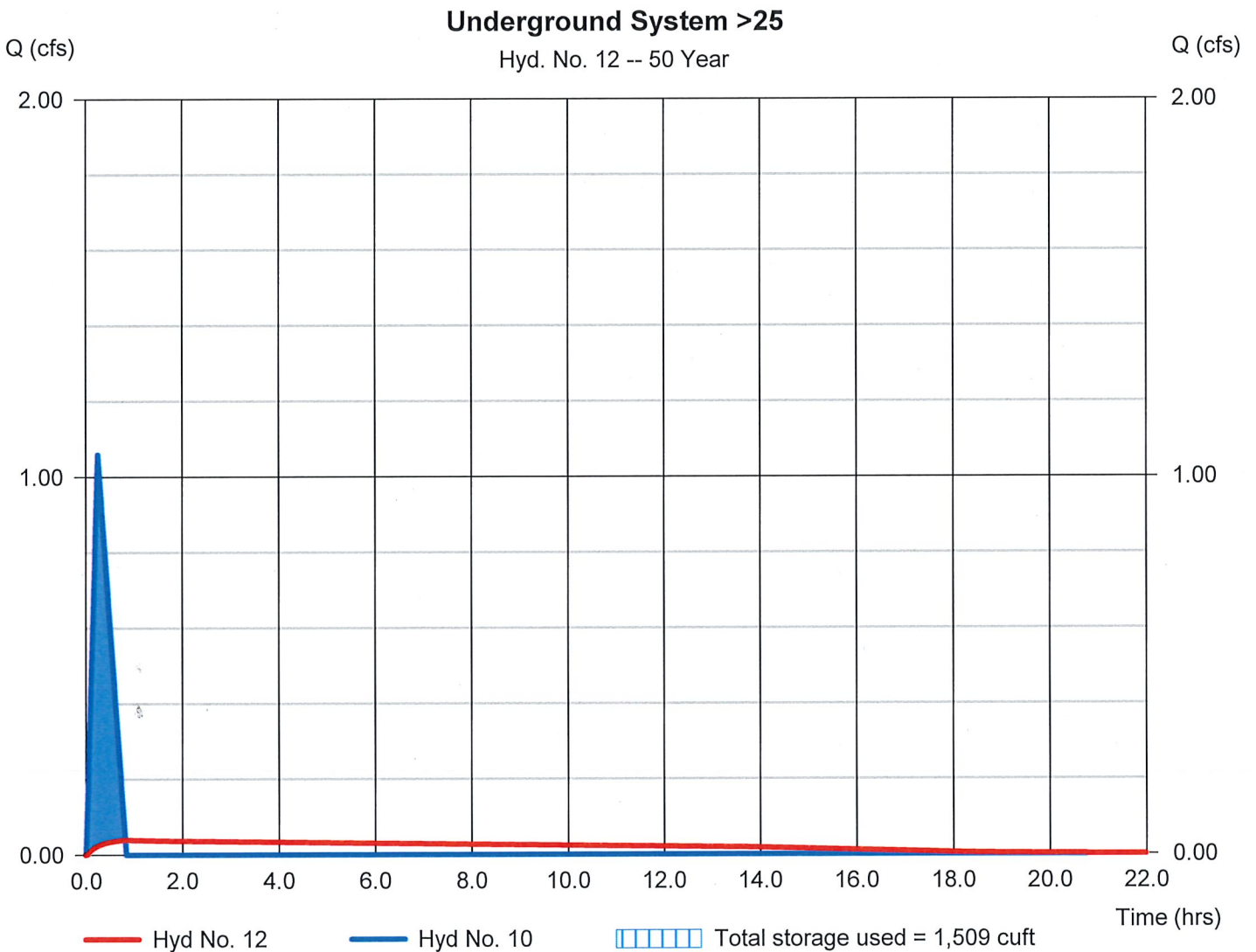
# Hydrograph Report

## Hyd. No. 12

Underground System >25

|                 |                           |                |              |
|-----------------|---------------------------|----------------|--------------|
| Hydrograph type | = Reservoir               | Peak discharge | = 0.039 cfs  |
| Storm frequency | = 50 yrs                  | Time to peak   | = 0.82 hrs   |
| Time interval   | = 1 min                   | Hyd. volume    | = 1,582 cuft |
| Inflow hyd. No. | = 10 - Post D (POI-2) >25 | Max. Elevation | = 303.62 ft  |
| Reservoir name  | = STORMWATER SYSTEM >25   | Max. Storage   | = 1,509 cuft |

Storage Indication method used.



66

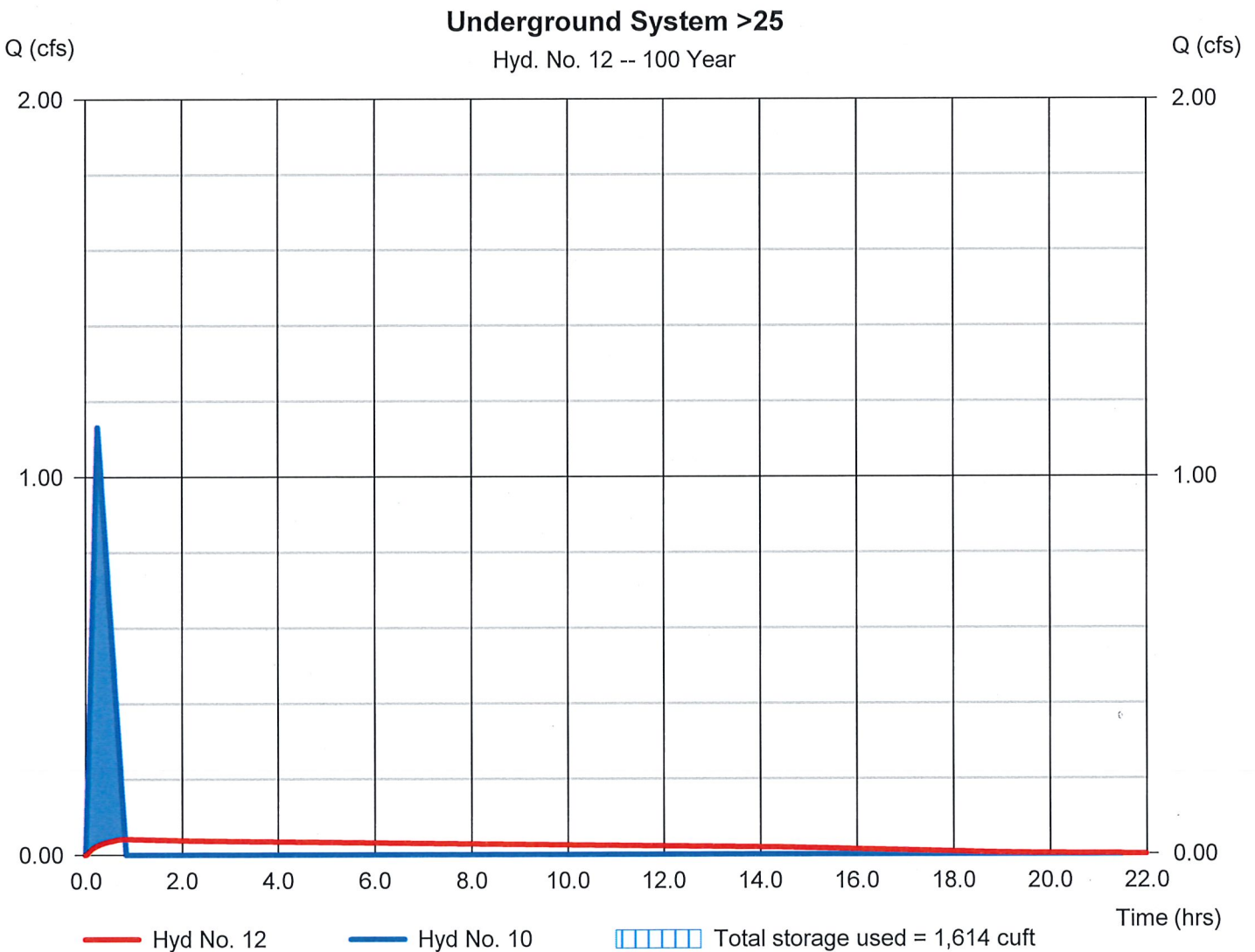
# Hydrograph Report

## Hyd. No. 12

Underground System >25

|                 |                           |                |              |
|-----------------|---------------------------|----------------|--------------|
| Hydrograph type | = Reservoir               | Peak discharge | = 0.042 cfs  |
| Storm frequency | = 100 yrs                 | Time to peak   | = 0.82 hrs   |
| Time interval   | = 1 min                   | Hyd. volume    | = 1,691 cuft |
| Inflow hyd. No. | = 10 - Post D (POI-2) >25 | Max. Elevation | = 303.89 ft  |
| Reservoir name  | = STORMWATER SYSTEM >25   | Max. Storage   | = 1,614 cuft |

Storage Indication method used.



# Hydrograph Report

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

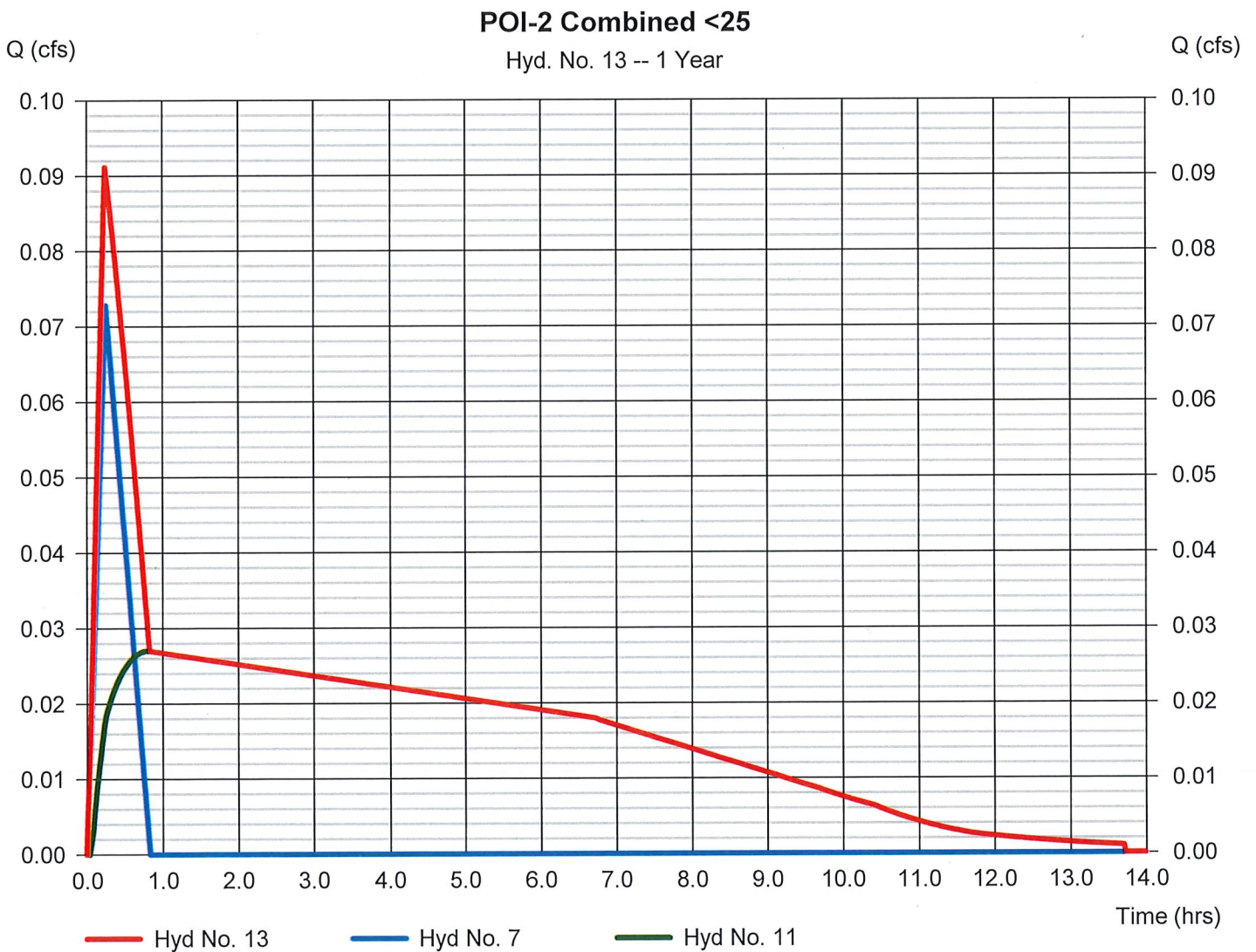
Tuesday, 11 / 1 / 2022

## Hyd. No. 13

POI-2 Combined <25

Hydrograph type = Combine  
Storm frequency = 1 yrs  
Time interval = 1 min  
Inflow hyds. = 7, 11

Peak discharge = 0.091 cfs  
Time to peak = 0.25 hrs  
Hyd. volume = 837 cuft  
Contrib. drain. area = 0.030 ac



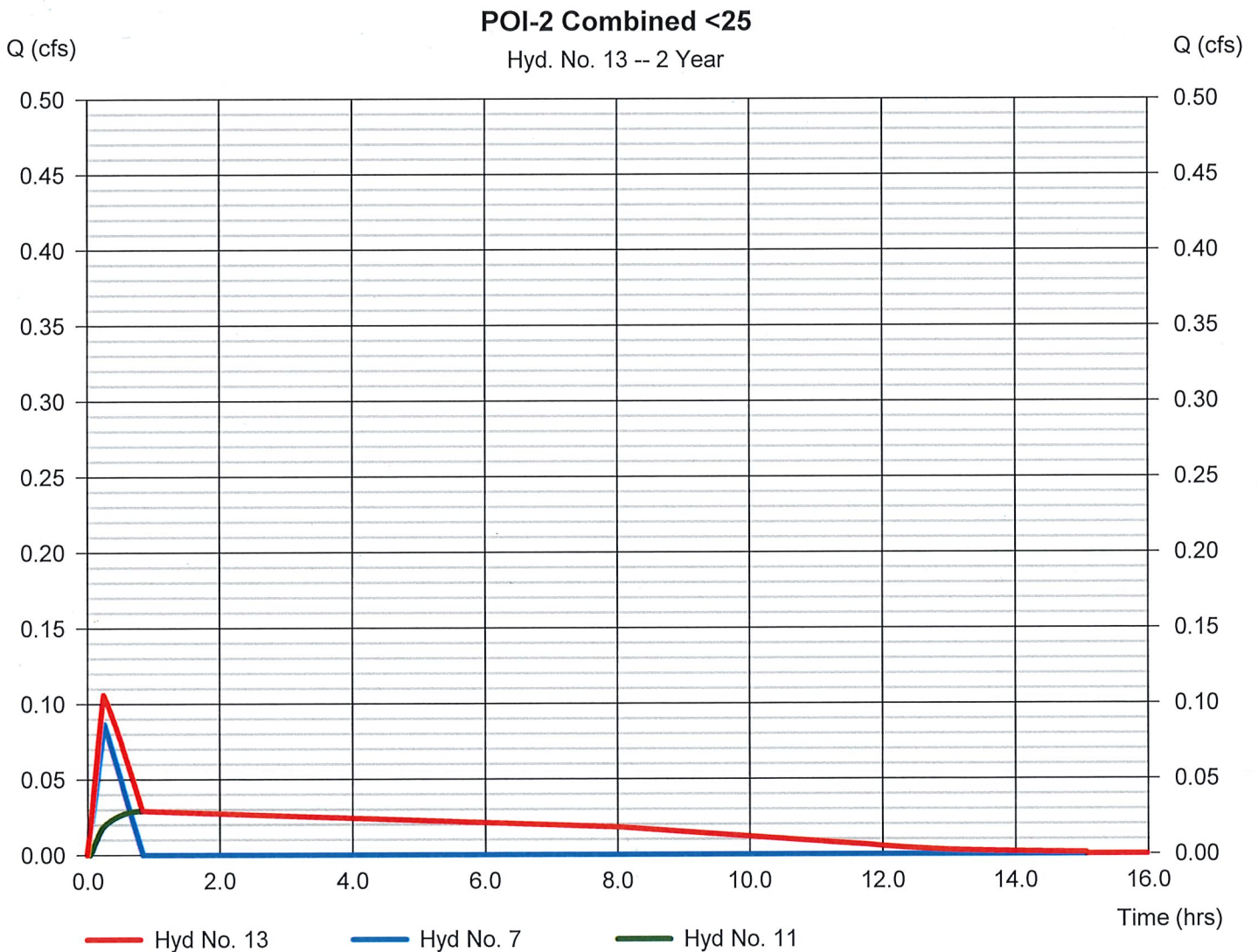
# Hydrograph Report

## Hyd. No. 13

POI-2 Combined <25

Hydrograph type = Combine  
Storm frequency = 2 yrs  
Time interval = 1 min  
Inflow hyds. = 7, 11

Peak discharge = 0.106 cfs  
Time to peak = 0.25 hrs  
Hyd. volume = 1,000 cuft  
Contrib. drain. area = 0.030 ac



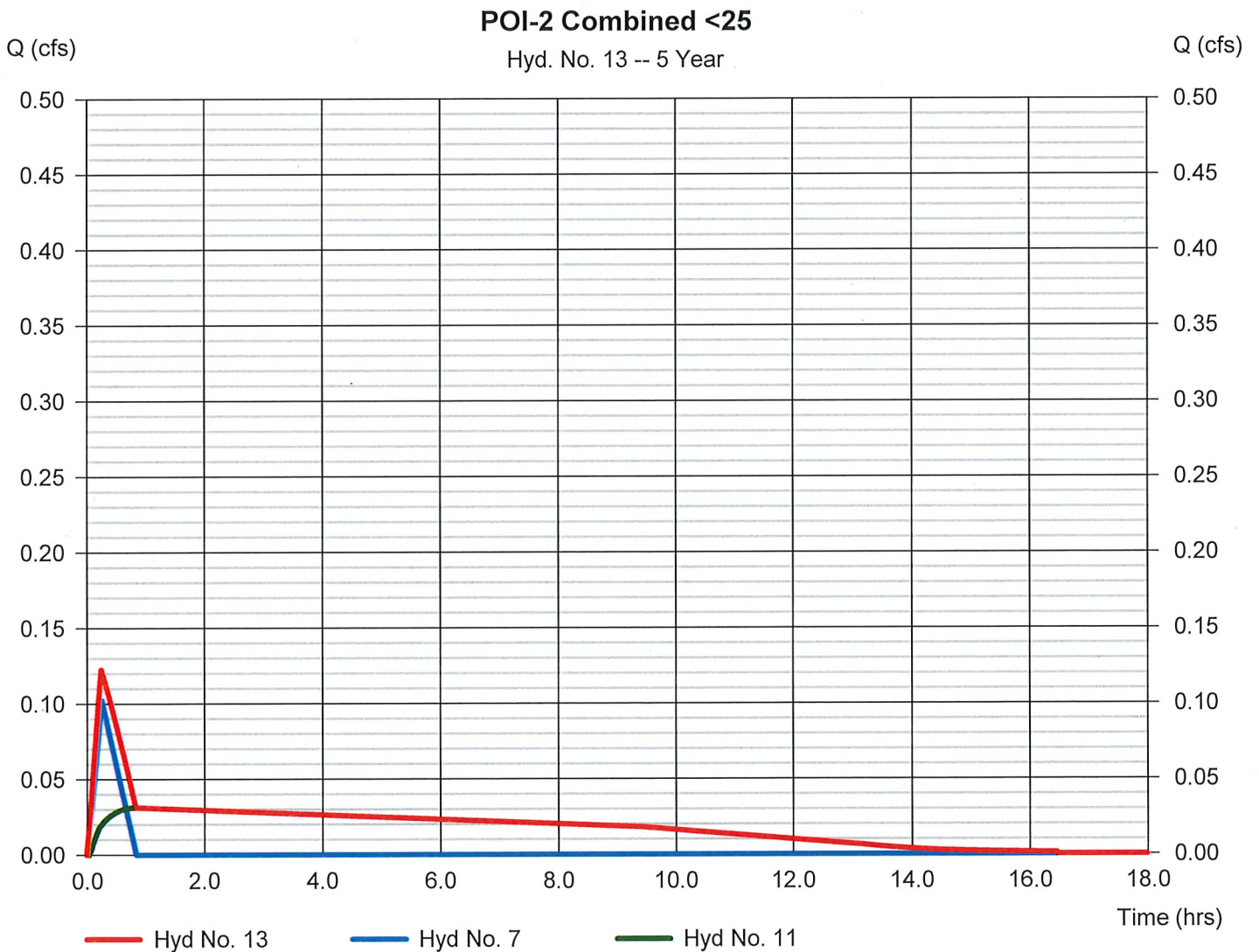
# Hydrograph Report

## Hyd. No. 13

POI-2 Combined <25

Hydrograph type = Combine  
Storm frequency = 5 yrs  
Time interval = 1 min  
Inflow hyds. = 7, 11

Peak discharge = 0.123 cfs  
Time to peak = 0.25 hrs  
Hyd. volume = 1,180 cuft  
Contrib. drain. area = 0.030 ac



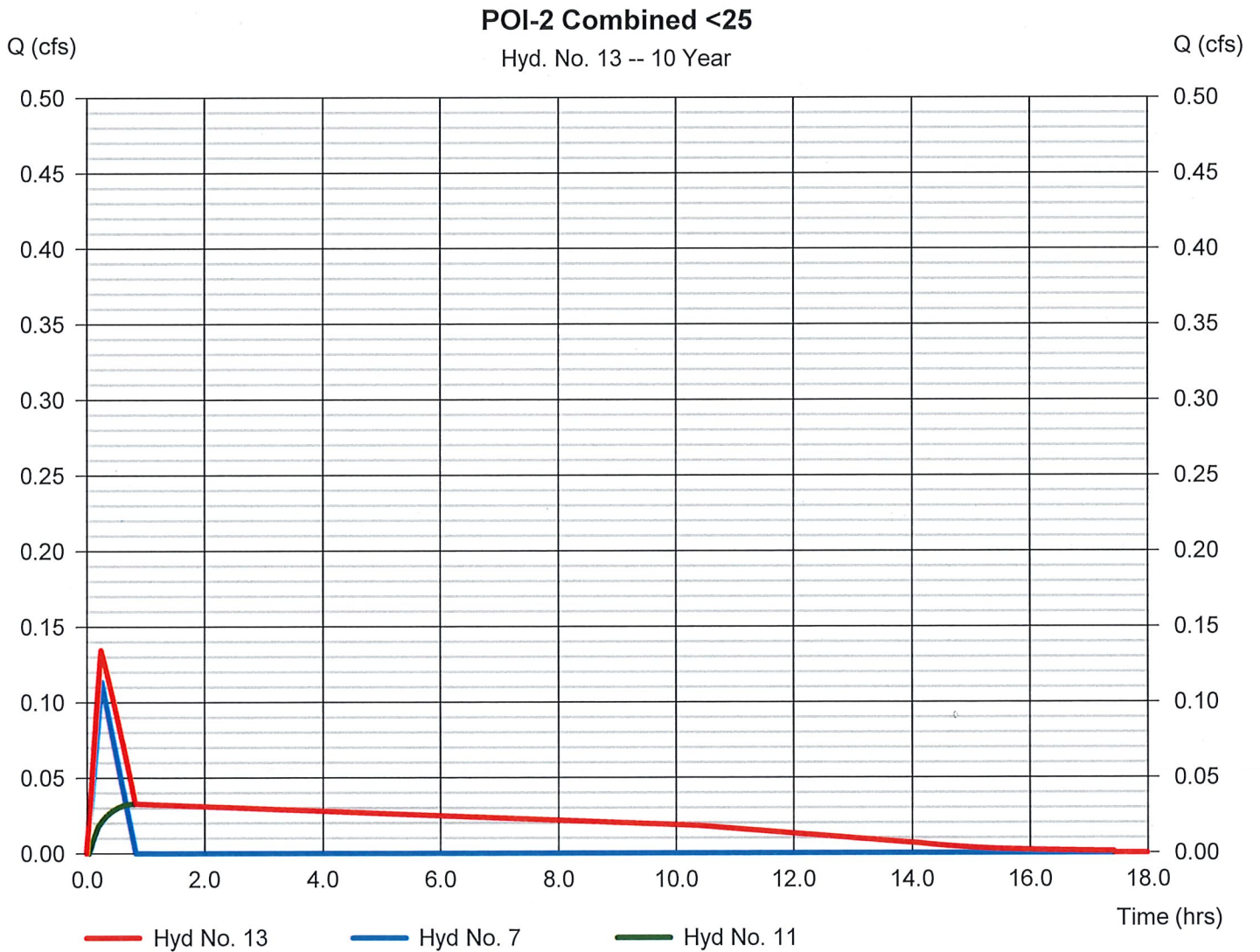
# Hydrograph Report

## Hyd. No. 13

POI-2 Combined <25

Hydrograph type = Combine  
Storm frequency = 10 yrs  
Time interval = 1 min  
Inflow hyds. = 7, 11

Peak discharge = 0.135 cfs  
Time to peak = 0.25 hrs  
Hyd. volume = 1,311 cuft  
Contrib. drain. area = 0.030 ac



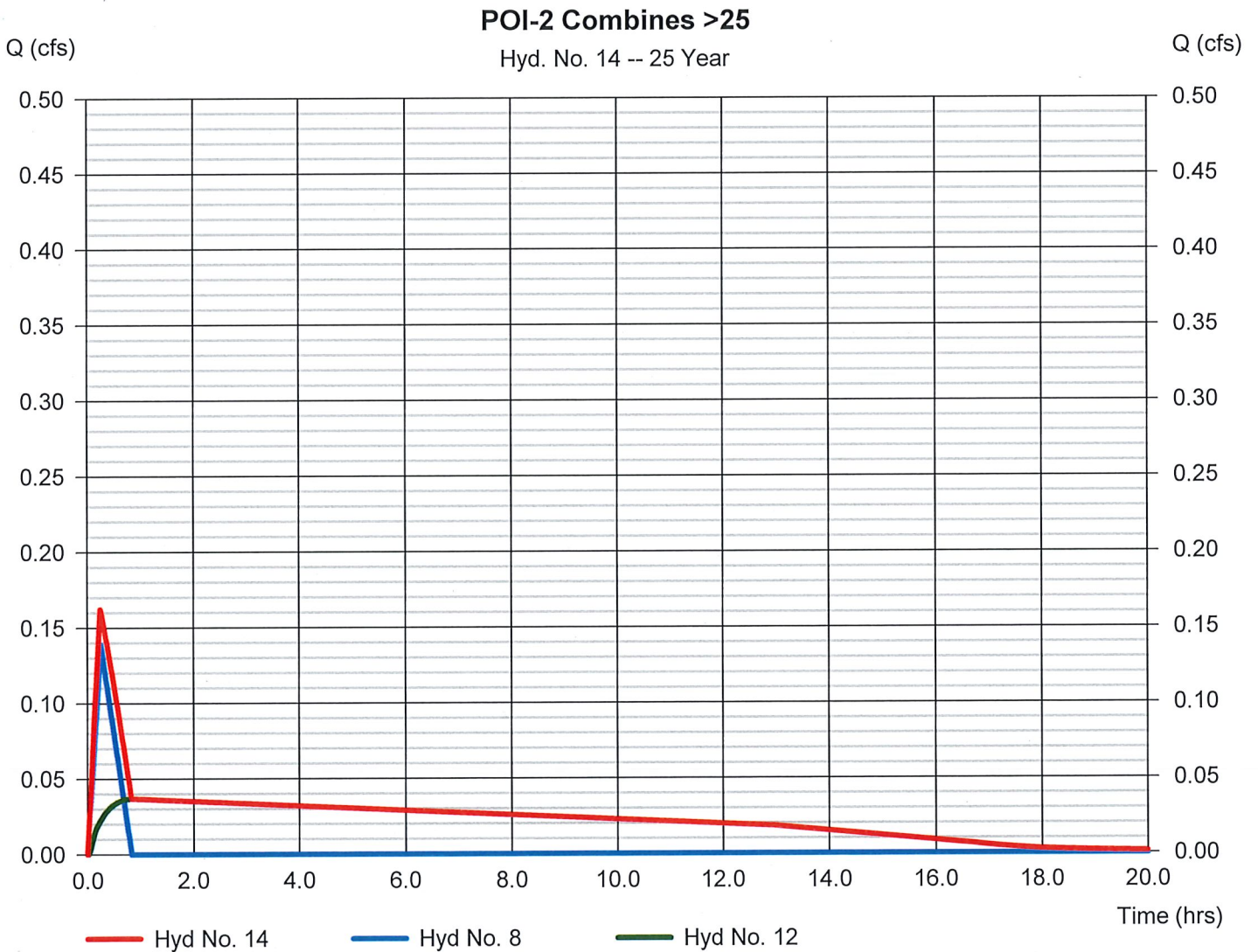
# Hydrograph Report

## Hyd. No. 14

POI-2 Combines >25

Hydrograph type = Combine  
Storm frequency = 25 yrs  
Time interval = 1 min  
Inflow hyds. = 8, 12

Peak discharge = 0.162 cfs  
Time to peak = 0.25 hrs  
Hyd. volume = 1,680 cuft  
Contrib. drain. area = 0.030 ac



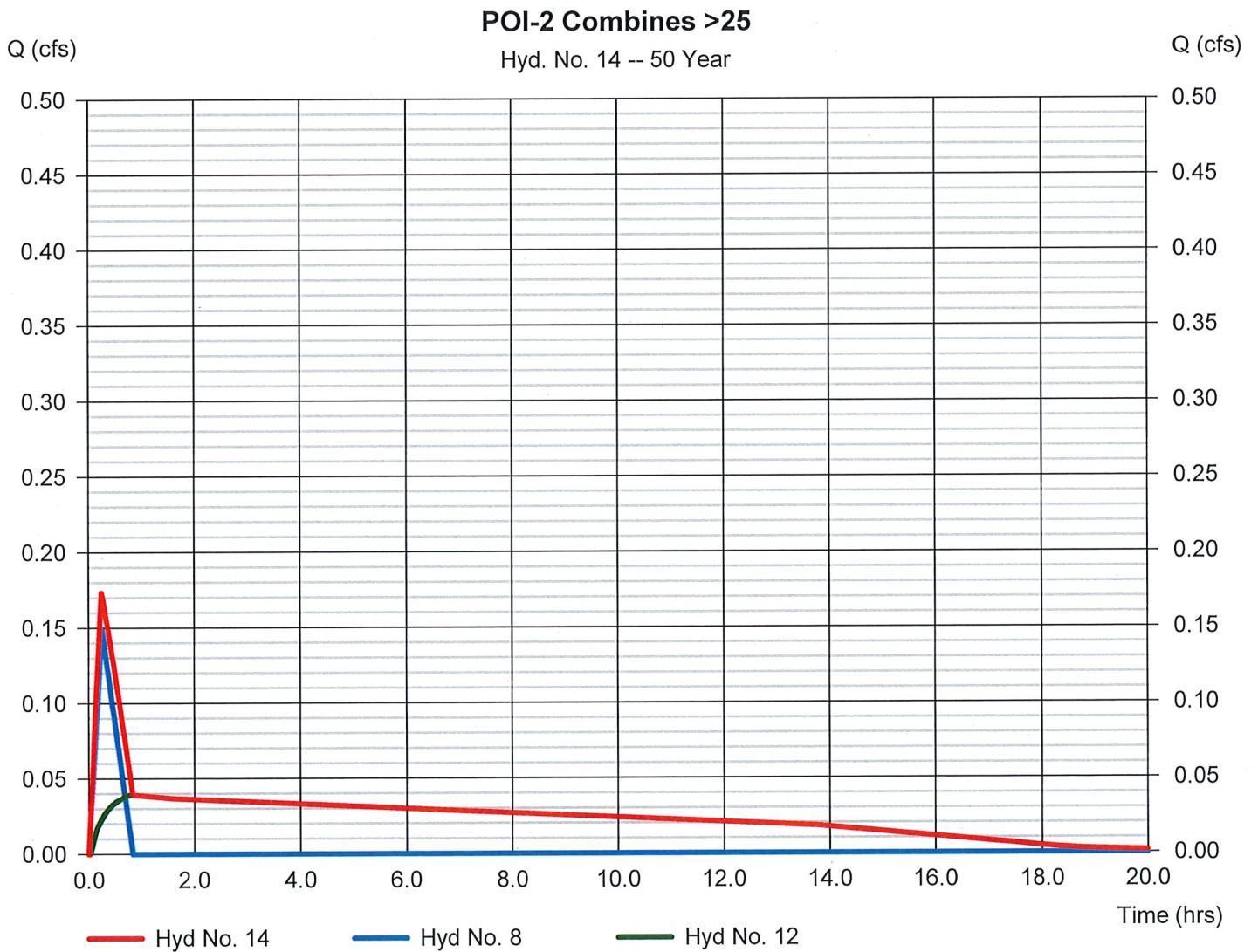
# Hydrograph Report

## Hyd. No. 14

POI-2 Combines >25

Hydrograph type = Combine  
Storm frequency = 50 yrs  
Time interval = 1 min  
Inflow hyds. = 8, 12

Peak discharge = 0.173 cfs  
Time to peak = 0.25 hrs  
Hyd. volume = 1,807 cuft  
Contrib. drain. area = 0.030 ac





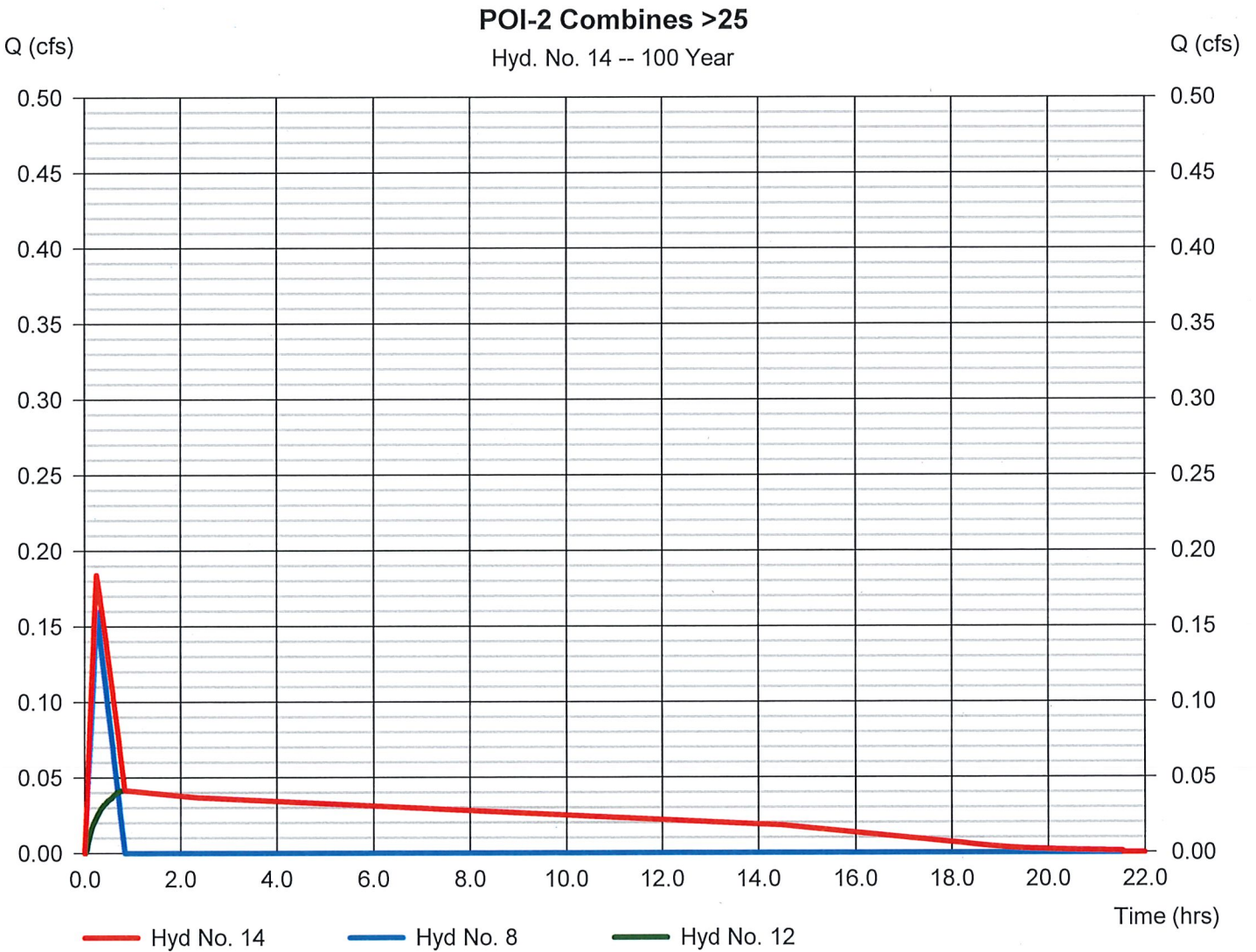
# Hydrograph Report

## Hyd. No. 14

POI-2 Combines >25

Hydrograph type = Combine  
Storm frequency = 100 yrs  
Time interval = 1 min  
Inflow hyds. = 8, 12

Peak discharge = 0.184 cfs  
Time to peak = 0.25 hrs  
Hyd. volume = 1,931 cuft  
Contrib. drain. area = 0.030 ac



## VOLUME AND WATER QUALITY CALCULATIONS

**WORKSHEET 4. CHANGE IN RUNOFF VOLUME FOR 2-YR STORM EVENT**

PROJECT: S 5th Street  
 Drainage Area: POI-1  
 2-Year Rainfall: 2.99 in  
 Total Site Area: 0.296 acres  
 Protected Site Area: 0.000 acres  
 Managed Area: 0.296 acres

Existing Conditions:

| Cover Type / Condition | 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> ) |
|------------------------|-----------|-----------|-----------|----|------|------------|----------------------------|---|
| MEADOW                 | D         | 714       | 0.02      | 78 | 2.82 | 0.56       | 1.12                       | 67  |
| IMPERVIOUS             | D         | 1,121     | 0.03      | 98 | 0.20 | 0.04       | 2.76                       | 258   |
|                        |           |           |           |    |      |            |                            |   |
| <b>TOTAL:</b>          |           |           | 0.04      |    |      |            |                            | 324   |

Developed Conditions:

| Cover Type / Condition | 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> ) |
|------------------------|-----------|-----------|-----------|----|------|------------|----------------------------|---|
| DENSE GRASS            | D         | 170       | 0.00      | 82 | 2.20 | 0.44       | 1.37                       | 19  |
| IMPERVIOUS             | D         | 937       | 0.02      | 98 | 0.20 | 0.04       | 2.76                       | 215   |
|                        |           |           |           |    |      |            |                            |   |
|                        |           |           |           |    |      |            |                            |   |
| <b>TOTAL:</b>          |           |           | 0.03      |    |      |            |                            | 235   |

**2-Year Volume Increase (ft<sup>3</sup>):** -90

**2-Year Volume Increase = Developed Conditions Runoff Volume - Existing Conditions Runoff Volume**

- Runoff (in) =  $Q = (P - 0.2S)^2 / (P + 0.8S)$  where  
 P = 2-Year Rainfall (in)  
 S =  $(1000 / CN) - 10$
- 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/conditions and HSGI. The use of a weighted CN value for volume calculations is not acceptable.**

**WORKSHEET 4. CHANGE IN RUNOFF VOLUME FOR 2-YR STORM EVENT**

PROJECT: S 5th Street  
 Drainage Area: POI-2  
 2-Year Rainfall: 2.99 in

Total Site Area: 0.296 acres  
 Protected Site Area: 0.000 acres  
 Managed Area: 0.296 acres

Existing Conditions:

| Cover Type / Condition | 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> ) |
|------------------------|-----------|-----------|-----------|----|------|------------|----------------------------|---|
| MEADOW                 | D         | 10,265    | 0.24      | 78 | 2.82 | 0.56       | 1.12                       | 959   |
| IMPERVIOUS             | D         | 799       | 0.02      | 98 | 0.20 | 0.04       | 2.76                       | 184   |
| <b>TOTAL:</b>          |           |           | 0.25      |    |      |            |                            | 1,143   |

Developed Conditions:

| Cover Type / Condition | 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> ) |
|------------------------|-----------|-----------|-----------|----|------|------------|----------------------------|---|
| DENSE GRASS            | D         | 5,774     | 0.13      | 82 | 2.20 | 0.44       | 1.37                       | 660   |
| IMPERVIOUS             | D         | 6,023     | 0.14      | 98 | 0.20 | 0.04       | 2.76                       | 1,384   |
| <b>TOTAL:</b>          |           |           | 0.27      |    |      |            |                            | 2,044   |

**2-Year Volume Increase (ft<sup>3</sup>): 901**

**2-Year Volume Increase = Developed Conditions Runoff Volume - Existing Conditions Runoff Volume**

1. Runoff (in) = Q =  $(P - 0.2S)^2 / (P + 0.8S)$  where

P = 2-Year Rainfall (in)

S =  $(1000 / CN) - 10$

2. Runoff Volume (CF) = Q x Area x 1/12

Q = Runoff (in)

Area = Land use area (sq ft)

**Note: Runoff Volume must be calculated for EACH land use type/conditions and HSGI. The use of a weighted CN value for volume calculations is not acceptable.**

## DE-WATERING CALCULATIONS

# 2 YR VOLUME



## Saxinger & Associates, Inc.

LAND DEVELOPMENT CONSULTANTS  
LANDSCAPE ARCHITECTURE  
780 Eden Road • Lancaster, PA 17601  
phone 717.291.1767

### DEWATERING CALCULATIONS - 2 YR VOLUME

• INFILTRATION RATE:  $11.7 \frac{\text{IN}}{\text{HR}} \text{ USE F.O.S. } 2 = 5.85 \text{ "/HR.}$

• DISCHARGE RATE :

$$\frac{5.85 \text{ "}}{\text{HR}} \times \frac{1 \text{ HR}}{60 \text{ MIN}} \times \frac{1 \text{ MIN}}{60 \text{ SEC}} \times \frac{1 \text{ FT}}{12 \text{ "}} =$$
$$5.85 \times 0.017 \times 0.017 \times 0.083 =$$
$$0.000140324 \text{ FTS}$$

• Bed area : 983 SF

Bed area x discharge rate :

$$983 \text{ SF} \times 0.000140324 \text{ FTS} :$$
$$= 0.138$$

• Need to infiltrate 901 CF for 2YR INCREASE

$$\frac{901}{0.138} \times \frac{1 \text{ MIN}}{60 \text{ SEC}} \times \frac{1 \text{ HR}}{60 \text{ MIN}} = 1.89 \text{ HRS}$$

# 100 YR VOLUME



## Saxinger & Associates, Inc.

LAND DEVELOPMENT CONSULTANTS  
LANDSCAPE ARCHITECTURE  
780 Eden Road • Lancaster, PA 17601  
phone 717.291.1767

### Dewatering Calculations - 100 YR VOLUME

- Infiltration rate: 11.7 in/hour use F.O.S 2 = 5.85"/HR
- Discharge rate:

$$\frac{5.85''}{\text{HR}} \times 0.017 \times 0.017 \times 0.083 = 0.000140324 \text{ FPS}$$

- Bed area: 983 SF

Bed area x discharge rate:

$$983 \text{ SF} \times 0.000140324 \text{ FPS} = 0.138$$

need to infiltrate: 1616 CF (100 YR VOLUME)

$$\frac{1616}{0.138} \times \frac{1 \text{ MIN}}{60 \text{ SEC}} \times \frac{1 \text{ HR}}{60 \text{ MIN}} = 3.32 \text{ HRS}$$

## PIPE CALCULATIONS



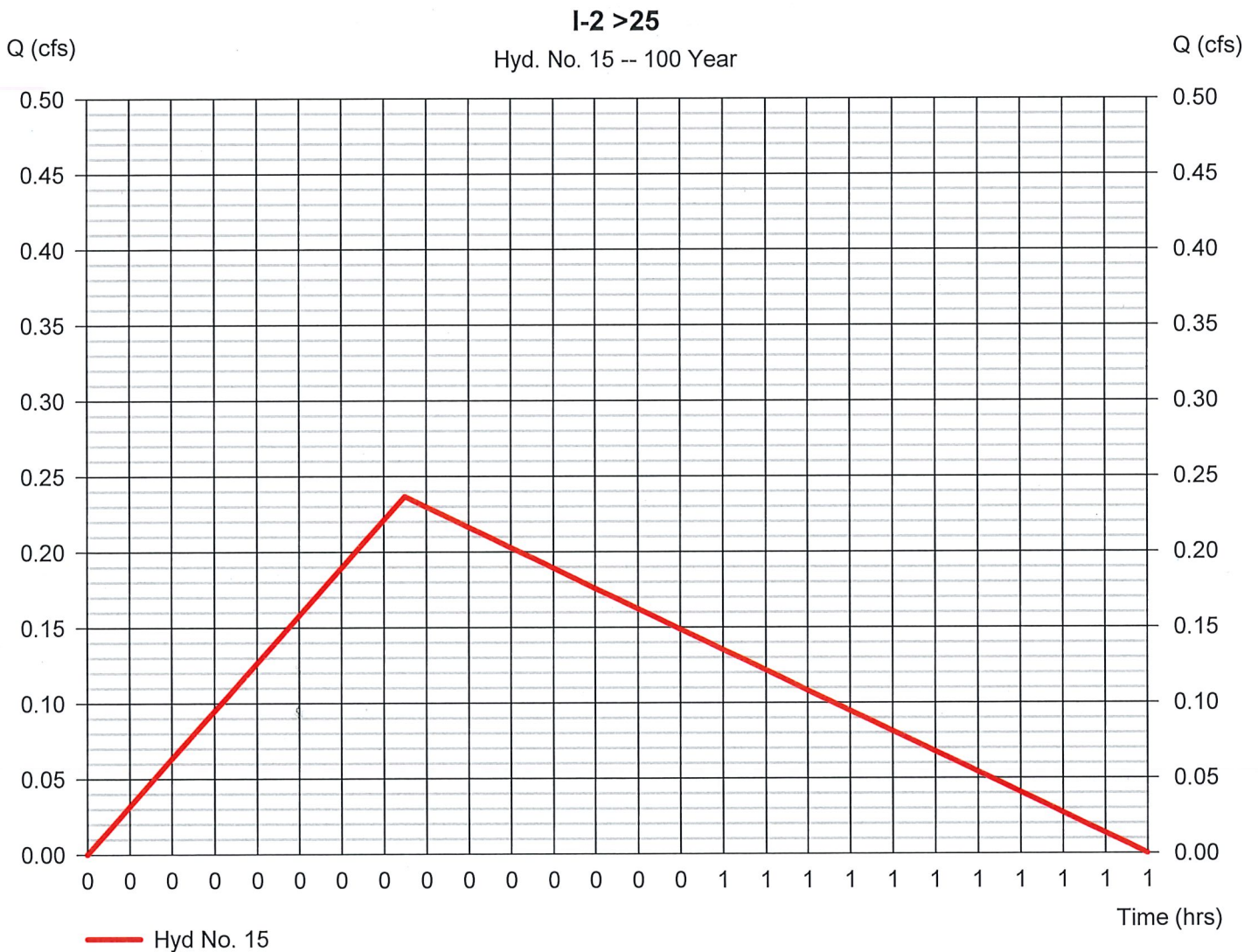
# Hydrograph Report

## Hyd. No. 15

I-2 >25

|                 |                |                   |             |
|-----------------|----------------|-------------------|-------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.237 cfs |
| Storm frequency | = 100 yrs      | Time to peak      | = 0.25 hrs  |
| Time interval   | = 1 min        | Hyd. volume       | = 355 cuft  |
| Drainage area   | = 0.060 ac     | Runoff coeff.     | = 0.51*     |
| Intensity       | = 7.735 in/hr  | Tc by User        | = 5.00 min  |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7       |

\* Composite (Area/C) = [(0.021 x 0.96) + (0.040 x 0.27)] / 0.060



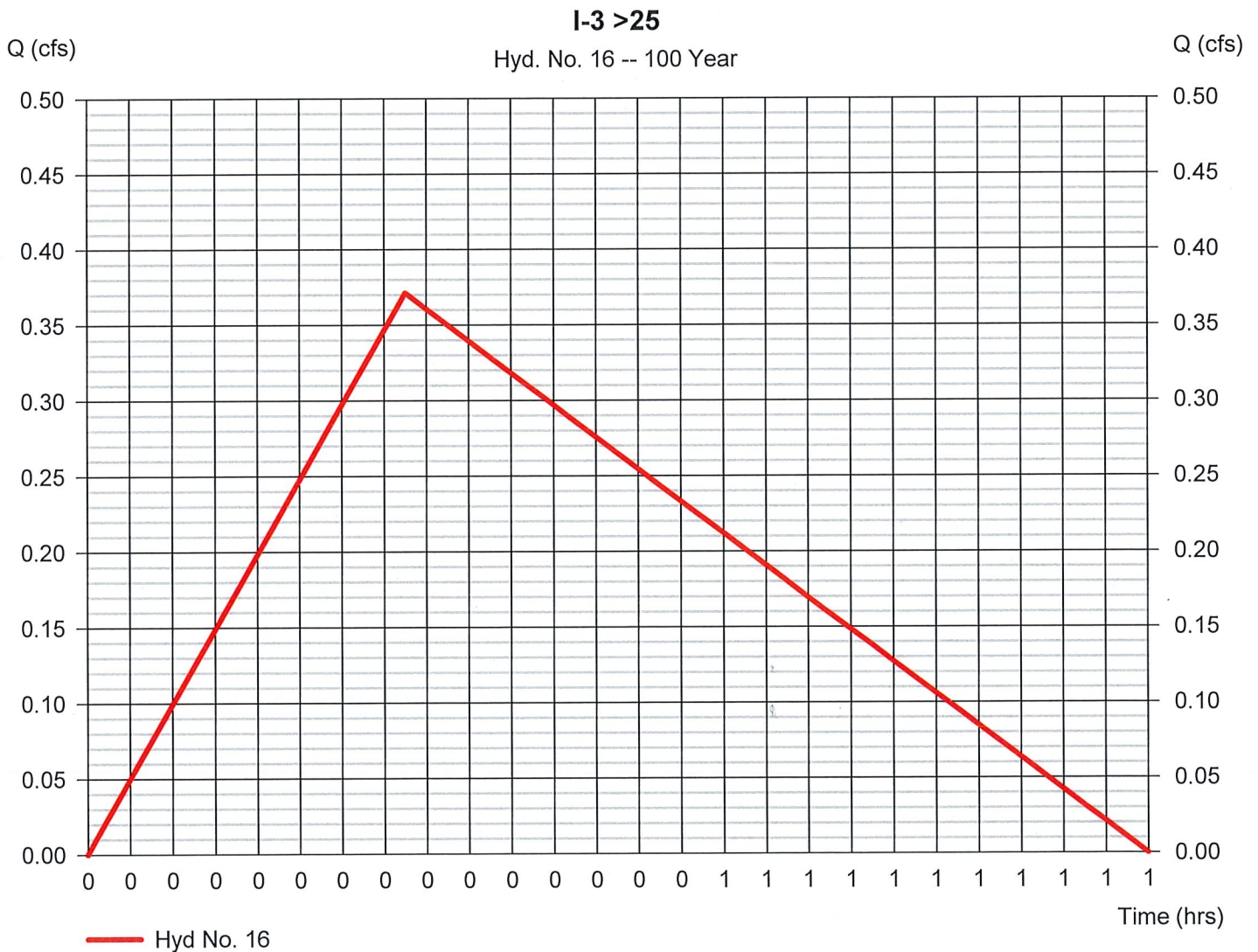
# Hydrograph Report

## Hyd. No. 16

I-3 >25

|                 |                |                   |             |
|-----------------|----------------|-------------------|-------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.371 cfs |
| Storm frequency | = 100 yrs      | Time to peak      | = 0.25 hrs  |
| Time interval   | = 1 min        | Hyd. volume       | = 557 cuft  |
| Drainage area   | = 0.080 ac     | Runoff coeff.     | = 0.6*      |
| Intensity       | = 7.735 in/hr  | Tc by User        | = 5.00 min  |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7       |

\* Composite (Area/C) = [(0.036 x 0.96) + (0.040 x 0.27)] / 0.080



# Hydrograph Report

## Hyd. No. 17

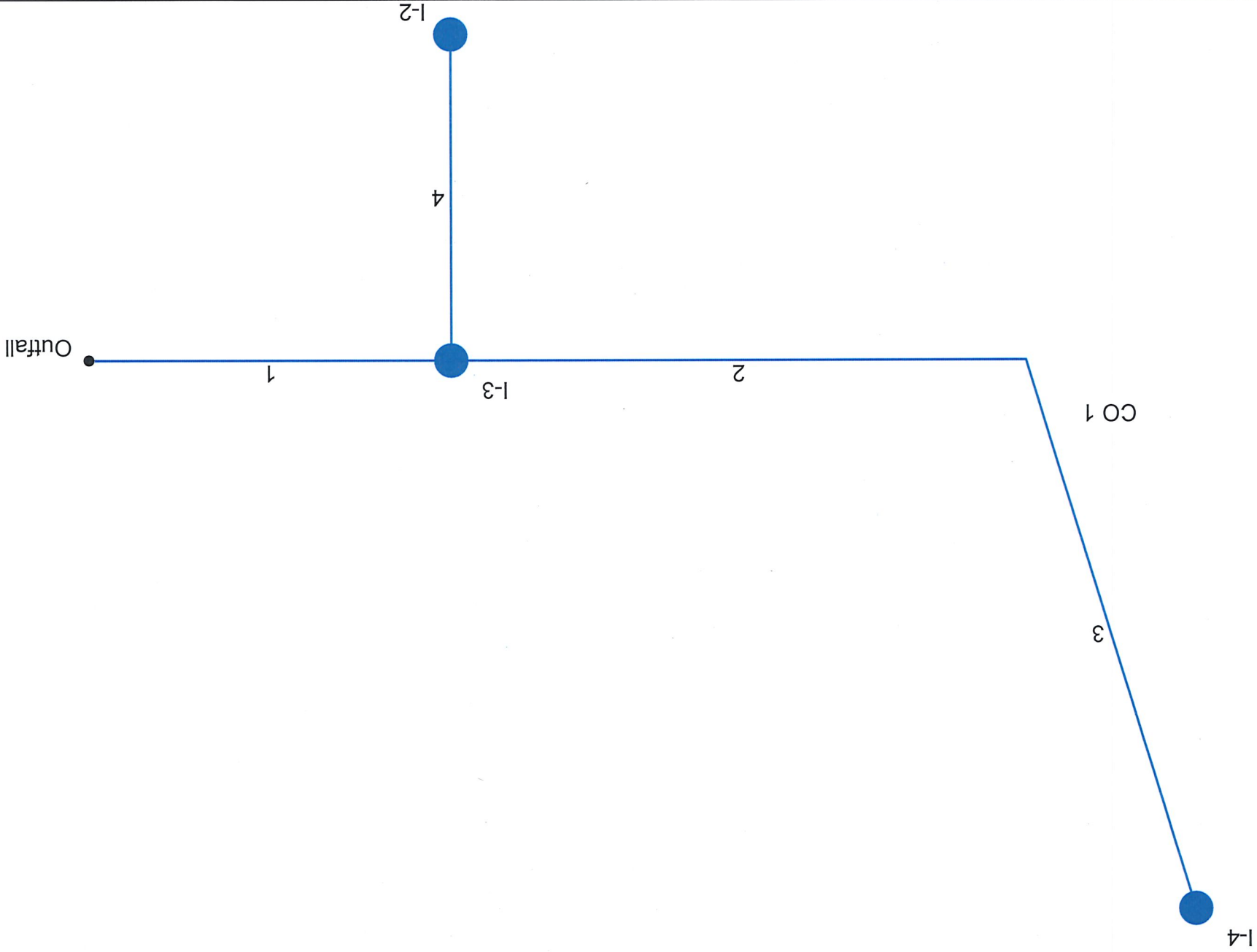
I-4 >25

|                 |                |                   |             |
|-----------------|----------------|-------------------|-------------|
| Hydrograph type | = Rational     | Peak discharge    | = 0.201 cfs |
| Storm frequency | = 100 yrs      | Time to peak      | = 0.25 hrs  |
| Time interval   | = 1 min        | Hyd. volume       | = 302 cuft  |
| Drainage area   | = 0.050 ac     | Runoff coeff.     | = 0.52*     |
| Intensity       | = 7.735 in/hr  | Tc by User        | = 5.00 min  |
| IDF Curve       | = Columbia.IDF | Asc/Rec limb fact | = 3/7       |

\* Composite (Area/C) = [(0.019 x 0.96) + (0.033 x 0.27)] / 0.050



S. 5th Street



# Storm Sewer Inventory Report

| Line No.      | Alignment      |                  |                  |           | Flow Data     |                |                  |                  | Physical Data     |                |                   |                    |            |             |                  | Line ID |                    |
|---------------|----------------|------------------|------------------|-----------|---------------|----------------|------------------|------------------|-------------------|----------------|-------------------|--------------------|------------|-------------|------------------|---------|--------------------|
|               | Dnstr Line No. | Line Length (ft) | Defl angle (deg) | Junc Type | Known Q (cfs) | Drng Area (ac) | Runoff Coeff (C) | Inlet Time (min) | Invert El Dn (ft) | Line Slope (%) | Invert El Up (ft) | Line Size (in)     | Line Shape | N Value (n) | J-Loss Coeff (K) |         | Inlet/ Rim El (ft) |
| 1             | End            | 17.000           | -180.000         | Grate     | 0.37          | 0.08           | 0.00             | 5.0              | 301.86            | 2.00           | 302.20            | 6                  | Cir        | 0.012       | 1.50             | 305.85  | I-3 to Subsurface  |
| 2             | 1              | 27.000           | 0.000            | None      | 0.00          | 0.00           | 0.00             | 0.0              | 304.00            | 2.00           | 304.54            | 6                  | Cir        | 0.012       | 0.98             | 307.33  | CO 1 to I-3        |
| 3             | 2              | 33.000           | 76.122           | Grate     | 0.20          | 0.00           | 0.00             | 0.0              | 304.54            | 2.00           | 305.20            | 6                  | Cir        | 0.012       | 1.00             | 308.10  | I-4 to CO 1        |
| 4             | 1              | 19.000           | -90.000          | Grate     | 0.24          | 0.00           | 0.00             | 0.0              | 304.00            | 1.89           | 304.36            | 6                  | Cir        | 0.012       | 1.00             | 305.85  | I-2 to I-3         |
| S. 5th Street |                |                  |                  |           |               |                |                  |                  |                   |                |                   | Number of lines: 4 |            |             | Date: 11/1/2022  |         |                    |

B6

# Storm Sewer Summary Report

| Line No. | Line ID                  | Flow rate (cfs) | Line Size (in) | Line shape | Line length (ft) | Invert EL Dn (ft) | Invert EL Up (ft) | Line Slope (%) | HGL Down (ft) | HGL Up (ft) | Minor loss (ft) | HGL Junct (ft) | Dns Line No. | Junction Type |
|----------|--------------------------|-----------------|----------------|------------|------------------|-------------------|-------------------|----------------|---------------|-------------|-----------------|----------------|--------------|---------------|
| 1        | I-3 to Subsurface System | 0.81            | 6              | Cir        | 17.000           | 301.86            | 302.20            | 2.000          | 304.36*       | 304.66*     | 0.40            | 305.06         | End          | Grate         |
| 2        | CO 1 to I-3              | 0.20            | 6              | Cir        | 27.000           | 304.00            | 304.54            | 2.000          | 305.31*       | 305.34*     | 0.02            | 305.36         | 1            | None          |
| 3        | I-4 to CO 1              | 0.20            | 6              | Cir        | 33.000           | 304.54            | 305.20            | 2.000          | 305.36        | 305.43      | n/a             | 305.51 j       | 2            | Grate         |
| 4        | I-2 to I-3               | 0.24            | 6              | Cir        | 19.000           | 304.00            | 304.36            | 1.895          | 305.31*       | 305.34*     | 0.02            | 305.36         | 1            | Grate         |

S. 5th Street

Number of lines: 4

Run Date: 11/1/2022

NOTES: Return period = 100 Yrs. ; \*Surcharged (HGL above crown). ; j - Line contains hyd. jump.

# Storm Sewer Tabulation

| Station |            | Len<br>(ft) | Drng Area    |               | Rnoff<br>coeff<br>(C) | Area x C |       | Tc             |               | Rain<br>(l)<br>(in/hr) | Total<br>flow<br>(cfs) | Cap<br>full<br>(cfs) | Vel<br>(ft/s) | Pipe         |              | Invert Elev |            | HGL Elev   |            | Grnd / Rim Elev |            | Line ID           |
|---------|------------|-------------|--------------|---------------|-----------------------|----------|-------|----------------|---------------|------------------------|------------------------|----------------------|---------------|--------------|--------------|-------------|------------|------------|------------|-----------------|------------|-------------------|
| Line    | To<br>Line |             | Incr<br>(ac) | Total<br>(ac) |                       | Incr     | Total | Inlet<br>(min) | Syst<br>(min) |                        |                        |                      |               | Size<br>(in) | Slope<br>(%) | Dn<br>(ft)  | Up<br>(ft) | Dn<br>(ft) | Up<br>(ft) | Dn<br>(ft)      | Up<br>(ft) |                   |
| 1       | End        | 17.000      | 0.08         | 0.08          | 0.00                  | 0.00     | 0.00  | 5.0            | 5.0           | 0.0                    | 0.81                   | 0.86                 | 4.14          | 6            | 2.00         | 301.86      | 302.20     | 304.36     | 304.66     | 304.86          | 305.85     | I-3 to Subsurface |
| 2       | 1          | 27.000      | 0.00         | 0.00          | 0.00                  | 0.00     | 0.00  | 0.0            | 0.5           | 0.0                    | 0.20                   | 0.86                 | 1.02          | 6            | 2.00         | 304.00      | 304.54     | 305.31     | 305.34     | 305.85          | 307.33     | CO 1 to I-3       |
| 3       | 2          | 33.000      | 0.00         | 0.00          | 0.00                  | 0.00     | 0.00  | 0.0            | 0.0           | 0.0                    | 0.20                   | 0.86                 | 1.68          | 6            | 2.00         | 304.54      | 305.20     | 305.36     | 305.43     | 307.33          | 308.10     | I-4 to CO 1       |
| 4       | 1          | 19.000      | 0.00         | 0.00          | 0.00                  | 0.00     | 0.00  | 0.0            | 0.0           | 0.0                    | 0.24                   | 0.84                 | 1.22          | 6            | 1.89         | 304.00      | 304.36     | 305.31     | 305.34     | 305.85          | 305.85     | I-2 to I-3        |

BB

S. 5th Street

Number of lines: 4

Run Date: 11/1/2022

NOTES: Intensity =  $42.87 / (\text{Inlet time} + 8.90)^{0.65}$ ; Return period = Yrs. 100 ; c = cir e = ellip b = box

# Inlet Report

| Line No | Inlet ID | Q = CIA<br>(cfs) | Q carry<br>(cfs) | Q capt<br>(cfs) | Q Byp<br>(cfs) | Junc Type | Curb Inlet |        | Grate Inlet |        |        | Gutter     |        |            |            |       |            | Inlet       |            |             | Byp Line No |           |
|---------|----------|------------------|------------------|-----------------|----------------|-----------|------------|--------|-------------|--------|--------|------------|--------|------------|------------|-------|------------|-------------|------------|-------------|-------------|-----------|
|         |          |                  |                  |                 |                |           | Ht (in)    | L (ft) | Area (sqft) | L (ft) | W (ft) | So (ft/ft) | W (ft) | Sw (ft/ft) | Sx (ft/ft) | n     | Depth (ft) | Spread (ft) | Depth (ft) | Spread (ft) |             | Depr (in) |
| 1       | I-3      | 0.37*            | 0.00             | 0.37            | 0.00           | Grate     | 0.0        | 0.00   | 0.59        | 1.50   | 1.50   | Sag        | 2.00   | 0.050      | 0.020      | 0.013 | 0.13       | 3.42        | 0.13       | 3.42        | 0.0         | Off       |
| 2       | CO 1     | 0.00             | 0.00             | 0.00            | 0.00           | None      | 0.0        | 0.00   | 0.00        | 0.00   | 0.00   | Sag        | 2.00   | 0.050      | 0.020      | 0.013 | 0.00       | 0.00        | 0.00       | 0.00        | 0.0         | 1         |
| 3       | I-4      | 0.20*            | 0.00             | 0.20            | 0.00           | Grate     | 0.0        | 0.00   | 0.59        | 1.50   | 1.50   | Sag        | 2.00   | 0.050      | 0.020      | 0.013 | 0.10       | 1.96        | 0.10       | 1.96        | 0.0         | 2         |
| 4       | I-2      | 0.24*            | 0.00             | 0.24            | 0.00           | Grate     | 0.0        | 0.00   | 0.59        | 1.50   | 1.50   | Sag        | 2.00   | 0.050      | 0.020      | 0.013 | 0.11       | 2.28        | 0.11       | 2.28        | 0.0         | 1         |

S. 5th Street

Number of lines: 4

Run Date: 11/1/2022

NOTES: Inlet N-Values = 0.016; Intensity =  $42.87 / (\text{Inlet time} + 8.90)^{0.65}$ ; Return period = 100 Yrs. ; \* Indicates Known Q added. All curb inlets are Horiz throat.



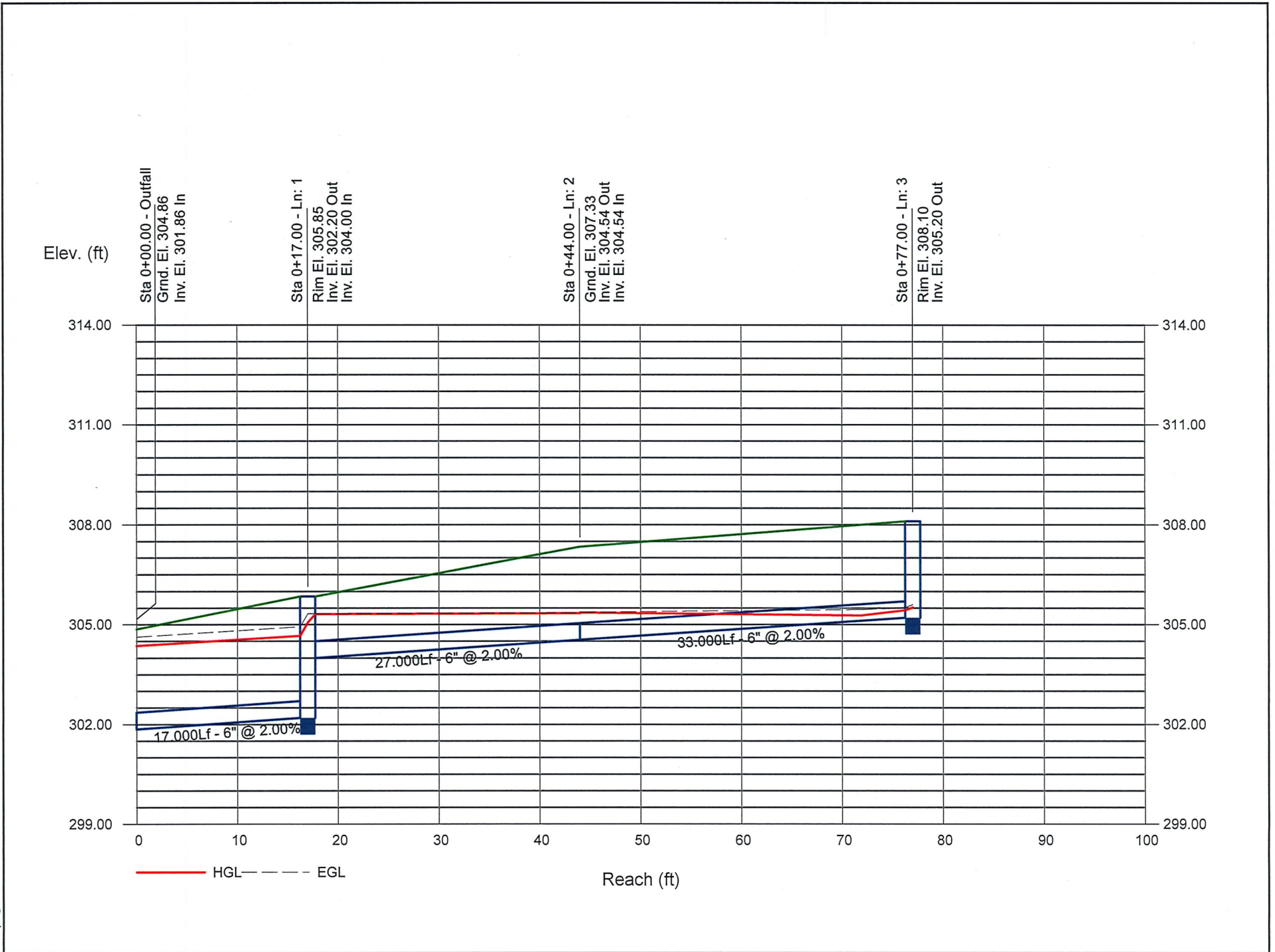
# FL-DOT Report

| Line No | To Line | Type of struc | n - Value | Len (ft) | Drainage Area        |                      |                      | Time of conc (min) | Time of Flow in sect (min) | Inten (l) (in/hr) | Total CA | Add Q (cfs)  | Inlet elev (ft) | Elev of HGL                |                            |              | Rise          | HGL          | ADD          |              | Date: 11/1/2022          |
|---------|---------|---------------|-----------|----------|----------------------|----------------------|----------------------|--------------------|----------------------------|-------------------|----------|--------------|-----------------|----------------------------|----------------------------|--------------|---------------|--------------|--------------|--------------|--------------------------|
|         |         |               |           |          | Increment (ac)       | Sub-Total (ac)       | Sum CA               |                    |                            |                   |          |              |                 | Elev of Crown              |                            |              | Span          | Pipe         | Full Flow    |              | Frequency: 100 yrs       |
|         |         |               |           |          |                      |                      |                      |                    |                            |                   |          |              |                 | Elev of Invert             |                            |              | Size (in)     | Slope (%)    | Vel (ft/s)   | Cap (cfs)    | Line description         |
|         |         |               |           |          |                      |                      |                      |                    |                            |                   |          |              |                 | Up (ft)                    | Down (ft)                  | Fall (ft)    |               |              |              |              |                          |
| 1       | End     | Grate         | 0.012     | 17.000   | 0.00<br>0.00<br>0.00 | 0.00<br>0.00<br>0.00 | 0.00<br>0.00<br>0.00 | 5.00               | 0.07                       | 0.00              | 0.00     | 0.37<br>0.81 | 305.85          | 304.66<br>302.70<br>302.20 | 304.36<br>302.36<br>301.86 | 0.30<br>0.34 | 6<br>6<br>Cir | 1.79<br>2.00 | 4.14<br>4.38 | 0.81<br>0.86 | I-3 to Subsurface System |
| 2       | 1       | None          | 0.012     | 27.000   | 0.00<br>0.00<br>0.00 | 0.00<br>0.00<br>0.00 | 0.00<br>0.00<br>0.00 | 0.54               | 0.44                       | 0.00              | 0.00     | 0.00<br>0.20 | 307.33          | 305.34<br>305.04<br>304.54 | 305.31<br>304.50<br>304.00 | 0.03<br>0.54 | 6<br>6<br>Cir | 0.11<br>2.00 | 1.02<br>4.38 | 0.20<br>0.86 | CO 1 to I-3              |
| 3       | 2       | Grate         | 0.012     | 33.000   | 0.00<br>0.00<br>0.00 | 0.00<br>0.00<br>0.00 | 0.00<br>0.00<br>0.00 | 0.00               | 0.54                       | 0.00              | 0.00     | 0.20<br>0.20 | 308.10          | 305.43<br>305.70<br>305.20 | 305.36<br>305.04<br>304.54 | 0.07<br>0.66 | 6<br>6<br>Cir | 0.21<br>2.00 | 1.68<br>4.38 | 0.20<br>0.86 | I-4 to CO 1              |
| 4       | 1       | Grate         | 0.012     | 19.000   | 0.00<br>0.00<br>0.00 | 0.00<br>0.00<br>0.00 | 0.00<br>0.00<br>0.00 | 0.00               | 0.26                       | 0.00              | 0.00     | 0.24<br>0.24 | 305.85          | 305.34<br>304.86<br>304.36 | 305.31<br>304.50<br>304.00 | 0.03<br>0.36 | 6<br>6<br>Cir | 0.16<br>1.89 | 1.22<br>4.26 | 0.24<br>0.84 | I-2 to I-3               |

NOTES: Intensity = 42.87 / (Inlet time + 8.90) ^ 0.65 (in/hr) ; Time of flow in section is based on full flow.

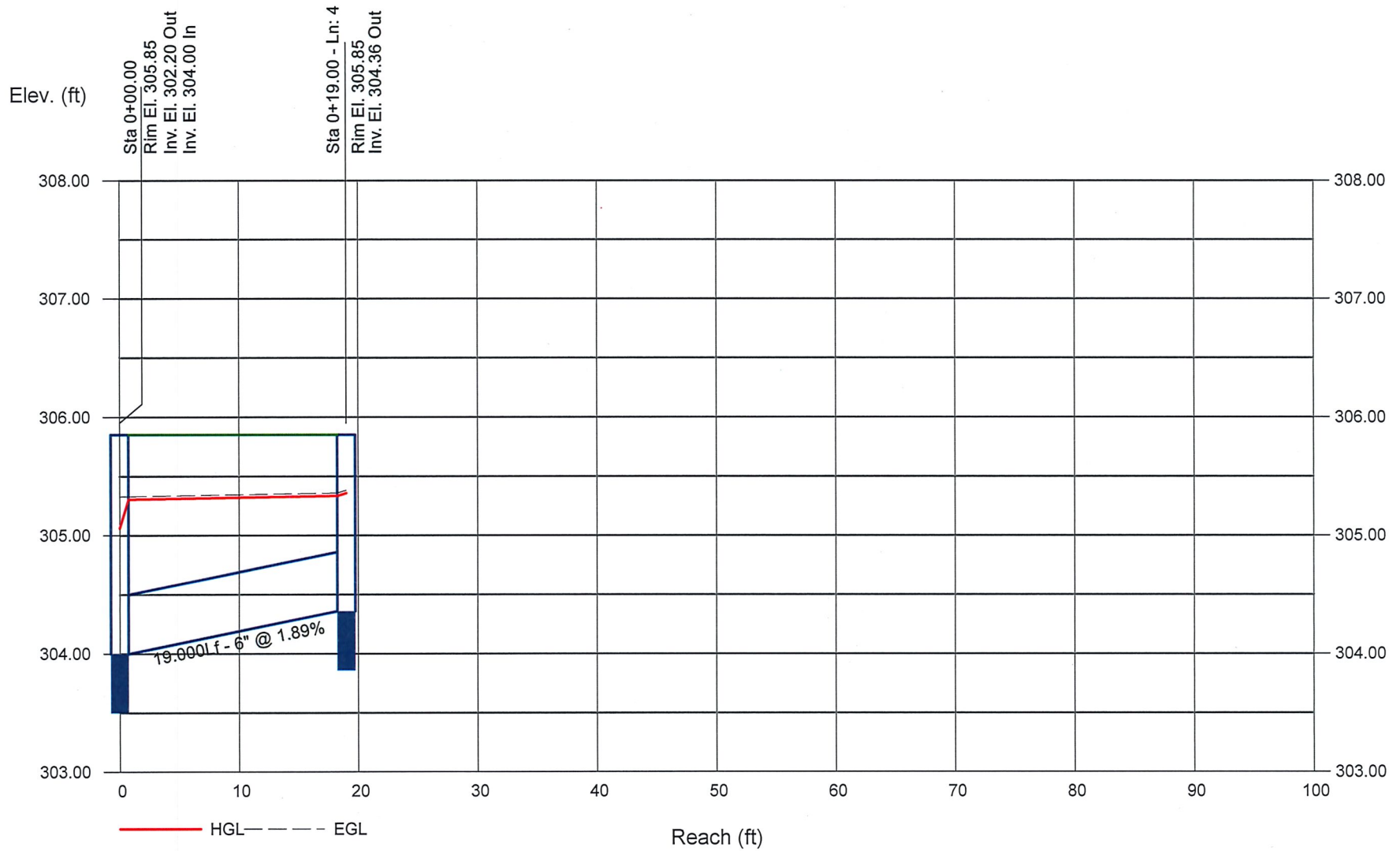
S. 5th Street

# Storm Sewer Profile



16

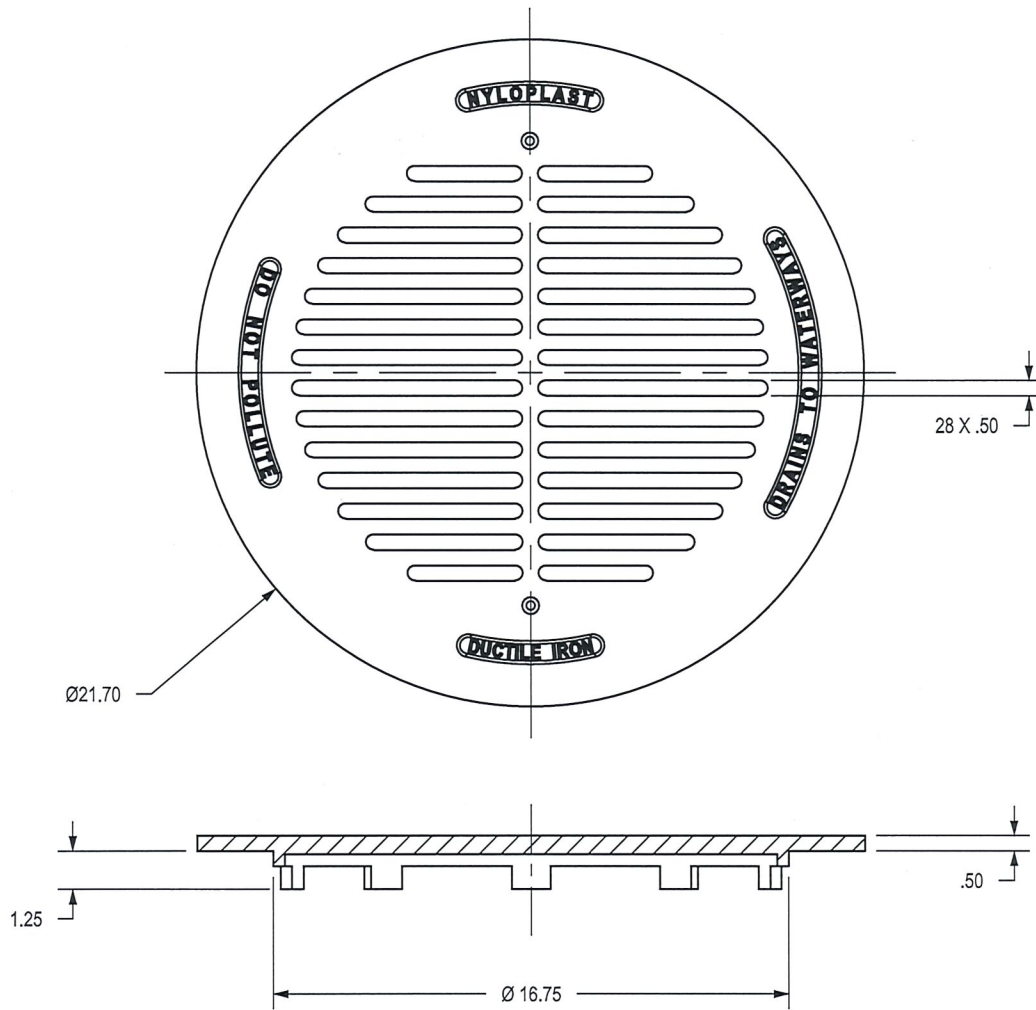
# Storm Sewer Profile



92


# 1801DI

APPROX. DRAIN AREA = 84.61 SQ IN  
 APPROX. WEIGHT = 47.22 LBS

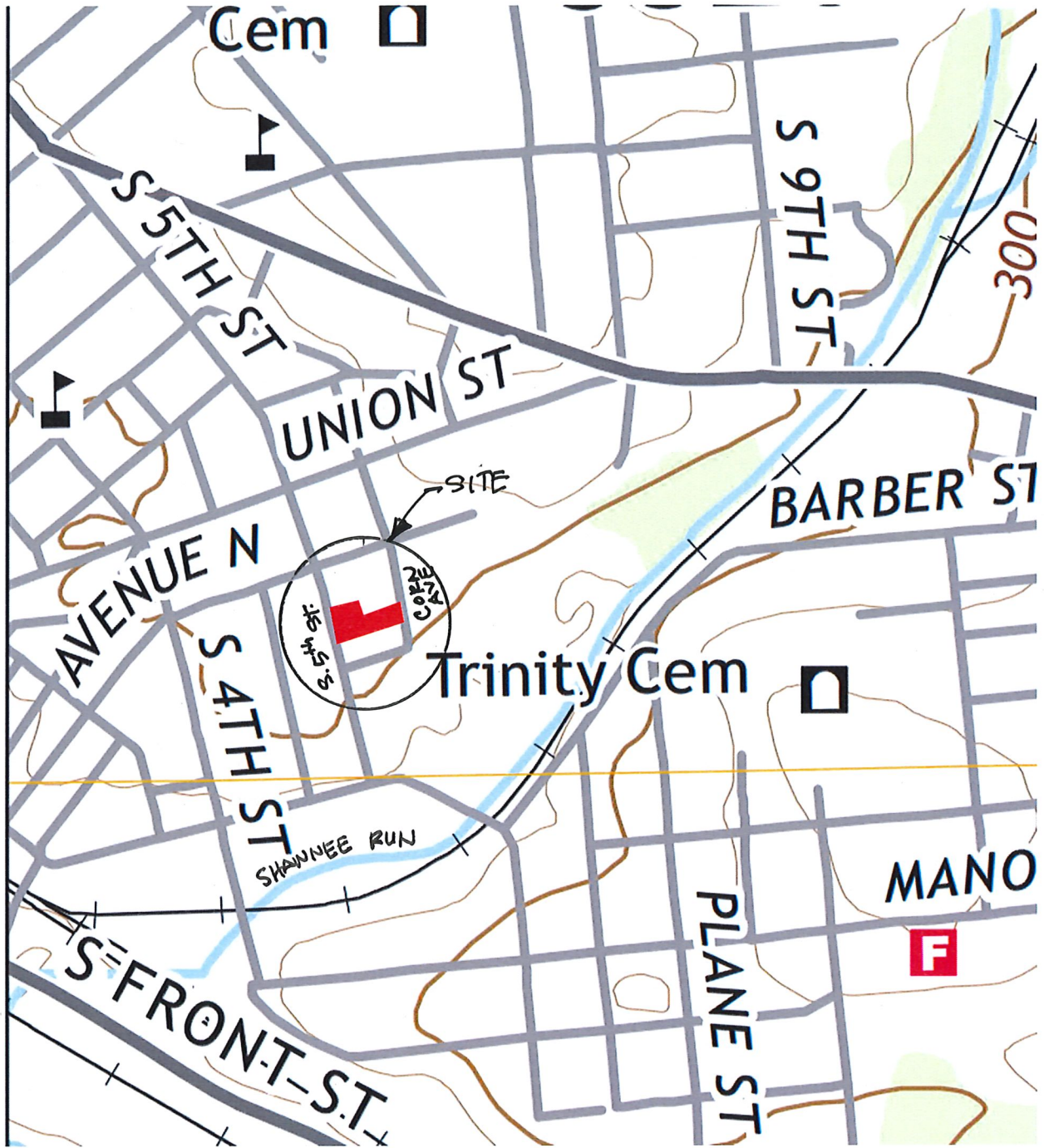


DIMENSIONS ARE FOR REFERENCE ONLY  
 ACTUAL DIMENSIONS MAY VARY  
 DIMENSIONS ARE IN INCHES  
 GRATE HAS LIGHT DUTY RATING  
 QUALITY: MATERIALS SHALL CONFORM TO ASTM A536 GRADE 70-50-05  
 PAINT: CASTINGS ARE FURNISHED WITH A BLACK PAINT  
 SIZE OF OPENING MEETS REQUIREMENTS OF AMERICAN DISABILITY  
 ACT AS STATED IN FEDERAL REGISTER PART III, DEPARTMENT OF  
 JUSTICE, 28 CFR PART 36.

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|   |  |  |
|---|--|--|
| DRAWN BY CJA<br>DATE 7-5-01<br>REVISED BY JJC<br>DATE 8-14-12<br>DWG SIZE A | MATERIAL<br>PROJECT NO./NAME<br>SCALE 1:6 SHEET 1 OF 1 | <br>3130 VERONA AVE<br>BUFORD, GA 30518<br>PHN (770) 932-2443<br>FAX (770) 932-2490<br>www.nyloplast-us.com<br>TITLE<br>18 IN DROP IN<br>DWG NO. 7001-110-074 REV D |
|---|--|--|

## APPENDICES



COLUMBIA EAST  
Not to Scale



NOAA Atlas 14, Volume 2, Version 3  
 Location name: Columbia, Pennsylvania, USA\*  
 Latitude: 40.03°, Longitude: -76.4963°  
 Elevation: m/ft\*\*  
 \* source: ESRI Maps  
 \*\* source: USGS



**POINT PRECIPITATION FREQUENCY ESTIMATES**

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

[PF\\_tabular](#) | [PF\\_graphical](#) | [Maps & aerals](#)

**PF tabular**

| PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) <sup>1</sup> |                                     |                        |                        |                        |                        |                        |                        |                        |                        |                        |
|--|-------------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Duration   | Average recurrence interval (years) |                        |                        |                        |                        |                        |                        |                        |                        |                        |
|  | 1                                   | 2                      | 5                      | 10                     | 25                     | 50                     | 100                    | 200                    | 500                    | 1000                   |
| 5-min  | 0.322<br>(0.290-0.359)              | 0.383<br>(0.345-0.427) | 0.452<br>(0.406-0.504) | 0.501<br>(0.449-0.558) | 0.561<br>(0.500-0.623) | 0.603<br>(0.536-0.669) | 0.644<br>(0.570-0.715) | 0.681<br>(0.600-0.757) | 0.725<br>(0.634-0.805) | 0.759<br>(0.659-0.843) |
| 10-min   | 0.514<br>(0.463-0.573)              | 0.612<br>(0.551-0.683) | 0.723<br>(0.650-0.807) | 0.802<br>(0.719-0.892) | 0.894<br>(0.798-0.993) | 0.961<br>(0.854-1.07)  | 1.02<br>(0.906-1.14)   | 1.08<br>(0.951-1.20)   | 1.15<br>(1.00-1.27)    | 1.20<br>(1.04-1.33)    |
| 15-min   | 0.643<br>(0.579-0.716)              | 0.770<br>(0.693-0.859) | 0.915<br>(0.822-1.02)  | 1.01<br>(0.909-1.13)   | 1.13<br>(1.01-1.26)    | 1.22<br>(1.08-1.35)    | 1.29<br>(1.15-1.44)    | 1.36<br>(1.20-1.51)    | 1.44<br>(1.26-1.60)    | 1.50<br>(1.30-1.67)    |
| 30-min   | 0.881<br>(0.793-0.982)              | 1.06<br>(0.957-1.19)   | 1.30<br>(1.17-1.45)    | 1.47<br>(1.32-1.64)    | 1.68<br>(1.50-1.87)    | 1.83<br>(1.63-2.03)    | 1.98<br>(1.75-2.20)    | 2.12<br>(1.87-2.36)    | 2.30<br>(2.01-2.55)    | 2.43<br>(2.11-2.70)    |
| 60-min   | 1.10<br>(0.989-1.22)                | 1.33<br>(1.20-1.49)    | 1.67<br>(1.50-1.86)    | 1.91<br>(1.72-2.13)    | 2.24<br>(1.99-2.48)    | 2.48<br>(2.21-2.76)    | 2.73<br>(2.42-3.03)    | 2.97<br>(2.62-3.31)    | 3.30<br>(2.88-3.66)    | 3.55<br>(3.08-3.94)    |
| 2-hr   | 1.31<br>(1.18-1.46)                 | 1.59<br>(1.43-1.77)    | 2.01<br>(1.81-2.24)    | 2.34<br>(2.10-2.60)    | 2.80<br>(2.50-3.10)    | 3.18<br>(2.82-3.51)    | 3.57<br>(3.15-3.95)    | 3.98<br>(3.48-4.41)    | 4.56<br>(3.95-5.05)    | 5.03<br>(4.31-5.57)    |
| 3-hr   | 1.42<br>(1.28-1.59)                 | 1.73<br>(1.56-1.93)    | 2.19<br>(1.97-2.44)    | 2.55<br>(2.29-2.84)    | 3.05<br>(2.72-3.38)    | 3.45<br>(3.06-3.83)    | 3.88<br>(3.42-4.30)    | 4.33<br>(3.79-4.79)    | 4.96<br>(4.29-5.49)    | 5.46<br>(4.68-6.06)    |
| 6-hr   | 1.76<br>(1.59-1.97)                 | 2.13<br>(1.92-2.39)    | 2.69<br>(2.42-3.01)    | 3.15<br>(2.82-3.52)    | 3.82<br>(3.39-4.25)    | 4.37<br>(3.86-4.85)    | 4.97<br>(4.36-5.51)    | 5.62<br>(4.88-6.22)    | 6.57<br>(5.62-7.26)    | 7.35<br>(6.21-8.14)    |
| 12-hr  | 2.14<br>(1.92-2.42)                 | 2.59<br>(2.32-2.93)    | 3.28<br>(2.94-3.71)    | 3.88<br>(3.46-4.37)    | 4.76<br>(4.21-5.35)    | 5.52<br>(4.84-6.18)    | 6.37<br>(5.52-7.11)    | 7.30<br>(6.25-8.14)    | 8.70<br>(7.31-9.69)    | 9.90<br>(8.20-11.0)    |
| 24-hr  | 2.47<br>(2.26-2.72)                 | 2.99<br>(2.74-3.29)    | 3.82<br>(3.49-4.20)    | 4.54<br>(4.14-4.97)    | 5.63<br>(5.09-6.14)    | 6.59<br>(5.90-7.16)    | 7.66<br>(6.79-8.30)    | 8.86<br>(7.75-9.59)    | 10.7<br>(9.19-11.5)    | 12.3<br>(10.4-13.2)    |
| 2-day  | 2.86<br>(2.63-3.16)                 | 3.47<br>(3.19-3.82)    | 4.43<br>(4.07-4.88)    | 5.25<br>(4.79-5.76)    | 6.45<br>(5.85-7.06)    | 7.49<br>(6.74-8.18)    | 8.63<br>(7.70-9.40)    | 9.89<br>(8.72-10.8)    | 11.8<br>(10.2-12.8)    | 13.4<br>(11.4-14.6)    |
| 3-day  | 3.03<br>(2.79-3.32)                 | 3.66<br>(3.38-4.02)    | 4.68<br>(4.30-5.13)    | 5.54<br>(5.07-6.06)    | 6.81<br>(6.20-7.43)    | 7.92<br>(7.15-8.62)    | 9.14<br>(8.18-9.93)    | 10.5<br>(9.29-11.4)    | 12.5<br>(10.9-13.6)    | 14.2<br>(12.3-15.5)    |
| 4-day  | 3.20<br>(2.95-3.49)                 | 3.86<br>(3.57-4.22)    | 4.92<br>(4.54-5.37)    | 5.82<br>(5.35-6.35)    | 7.17<br>(6.55-7.80)    | 8.34<br>(7.56-9.06)    | 9.64<br>(8.67-10.5)    | 11.1<br>(9.87-12.0)    | 13.2<br>(11.6-14.4)    | 15.1<br>(13.1-16.4)    |
| 7-day  | 3.75<br>(3.47-4.08)                 | 4.51<br>(4.18-4.92)    | 5.69<br>(5.26-6.19)    | 6.69<br>(6.17-7.28)    | 8.18<br>(7.50-8.88)    | 9.47<br>(8.62-10.3)    | 10.9<br>(9.83-11.8)    | 12.4<br>(11.1-13.5)    | 14.8<br>(13.0-16.0)    | 16.7<br>(14.6-18.2)    |
| 10-day   | 4.29<br>(3.99-4.64)                 | 5.15<br>(4.80-5.58)    | 6.42<br>(5.96-6.94)    | 7.47<br>(6.92-8.07)    | 8.99<br>(8.29-9.70)    | 10.3<br>(9.41-11.1)    | 11.6<br>(10.6-12.5)    | 13.1<br>(11.9-14.1)    | 15.3<br>(13.6-16.5)    | 17.1<br>(15.1-18.4)    |
| 20-day   | 5.84<br>(5.50-6.23)                 | 6.95<br>(6.54-7.42)    | 8.38<br>(7.88-8.95)    | 9.54<br>(8.95-10.2)    | 11.2<br>(10.4-11.9)    | 12.5<br>(11.6-13.3)    | 13.8<br>(12.8-14.7)    | 15.2<br>(14.0-16.2)    | 17.1<br>(15.7-18.3)    | 18.7<br>(17.0-20.0)    |
| 30-day   | 7.22<br>(6.83-7.66)                 | 8.54<br>(8.07-9.06)    | 10.1<br>(9.57-10.8)    | 11.4<br>(10.8-12.1)    | 13.2<br>(12.4-14.0)    | 14.6<br>(13.6-15.4)    | 16.0<br>(14.9-17.0)    | 17.4<br>(16.2-18.5)    | 19.4<br>(17.9-20.6)    | 20.9<br>(19.2-22.3)    |
| 45-day   | 9.11<br>(8.66-9.58)                 | 10.7<br>(10.2-11.3)    | 12.5<br>(11.9-13.2)    | 13.9<br>(13.2-14.6)    | 15.7<br>(14.9-16.5)    | 17.1<br>(16.2-17.9)    | 18.4<br>(17.4-19.3)    | 19.7<br>(18.6-20.7)    | 21.4<br>(20.1-22.6)    | 22.7<br>(21.2-23.9)    |
| 60-day   | 10.9<br>(10.4-11.4)                 | 12.8<br>(12.2-13.4)    | 14.8<br>(14.1-15.5)    | 16.3<br>(15.5-17.0)    | 18.2<br>(17.3-19.1)    | 19.6<br>(18.6-20.5)    | 21.0<br>(19.9-22.0)    | 22.3<br>(21.0-23.4)    | 23.9<br>(22.5-25.1)    | 25.1<br>(23.5-26.4)    |

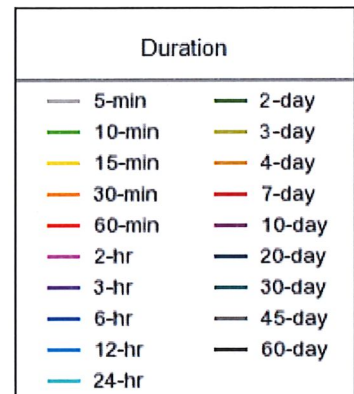
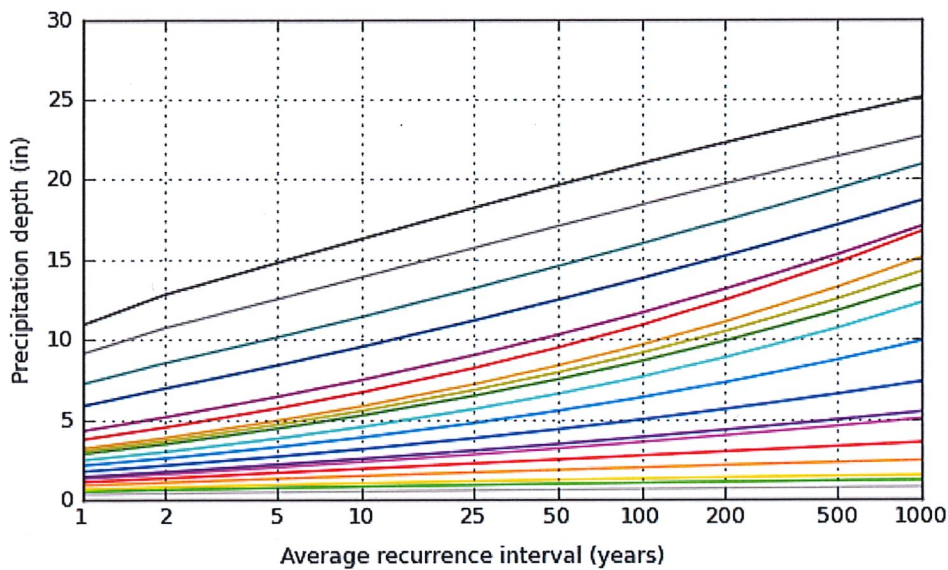
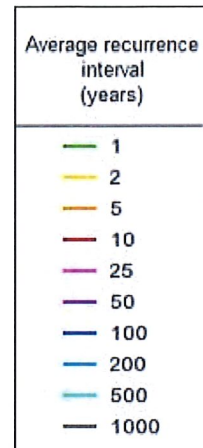
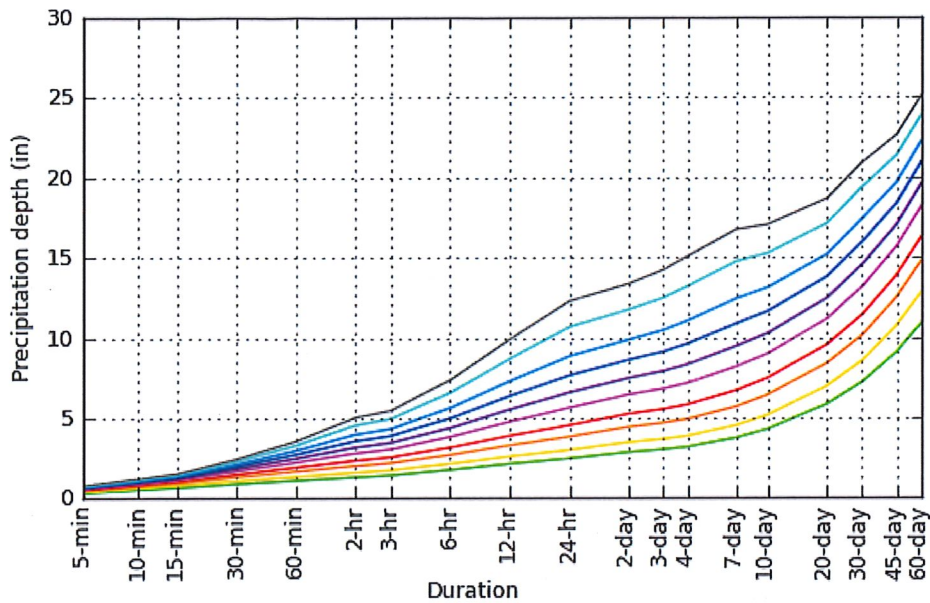
<sup>1</sup> Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

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**PF graphical**

PDS-based depth-duration-frequency (DDF) curves

Latitude: 40.0300°, Longitude: -76.4963°

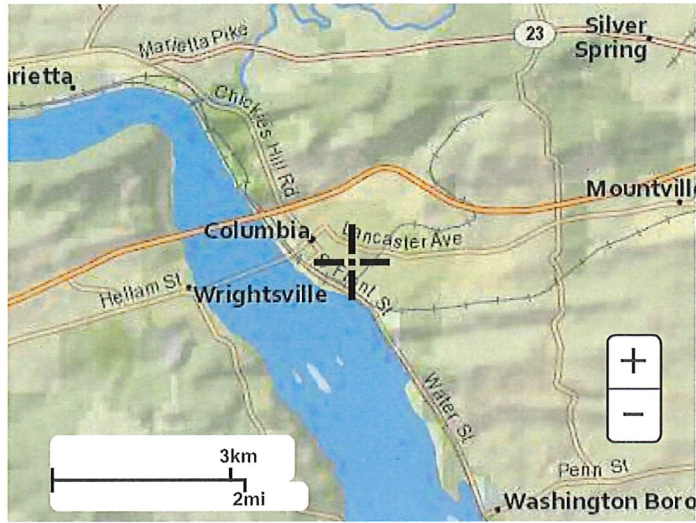


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Maps & aerials

Small scale terrain

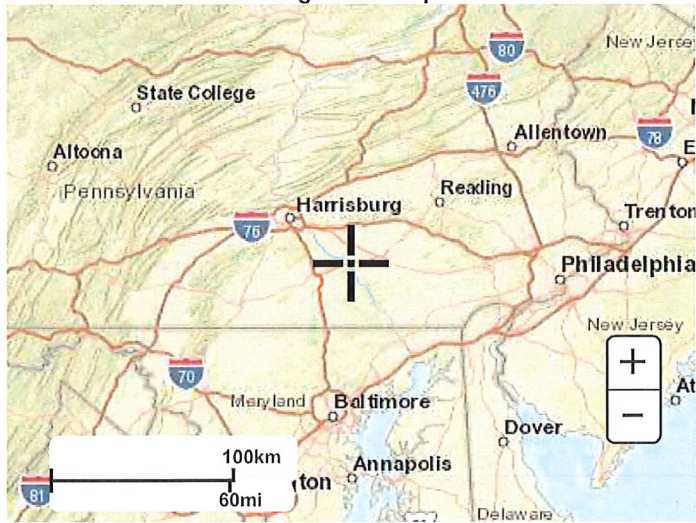




Large scale terrain



Large scale map



Large scale aerial



NOAA Atlas 14, Volume 2, Version 3  
 Location name: Columbia, Pennsylvania, USA\*  
 Latitude: 40.0301°, Longitude: -76.4964°  
 Elevation: 310 ft\*\*  
 \* source: ESRI Maps  
 \*\* source: USGS



**POINT PRECIPITATION FREQUENCY ESTIMATES**

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aerials](#)

**PF tabular**

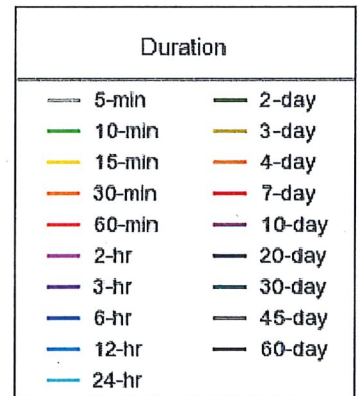
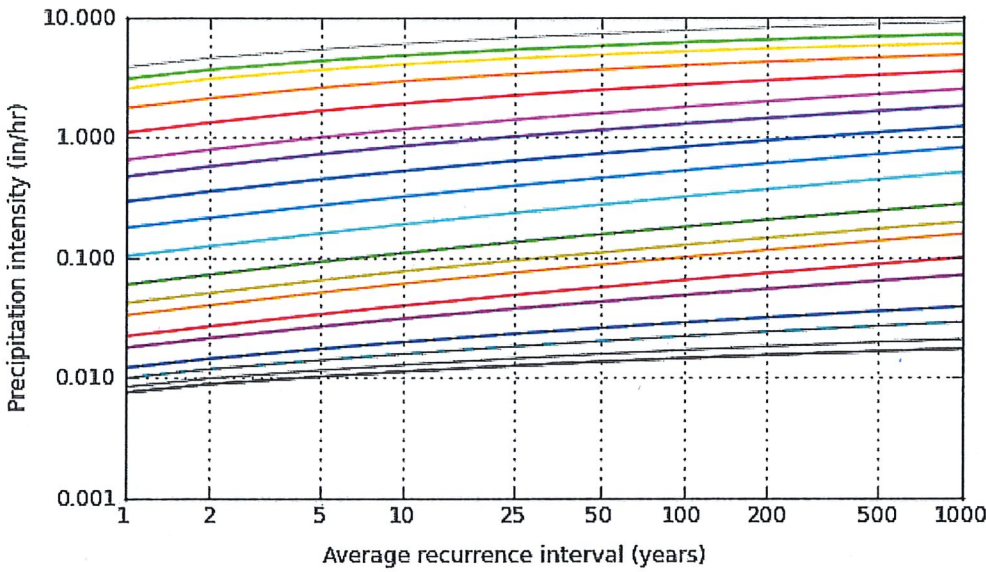
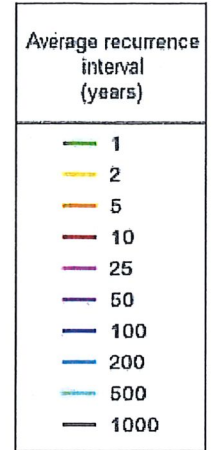
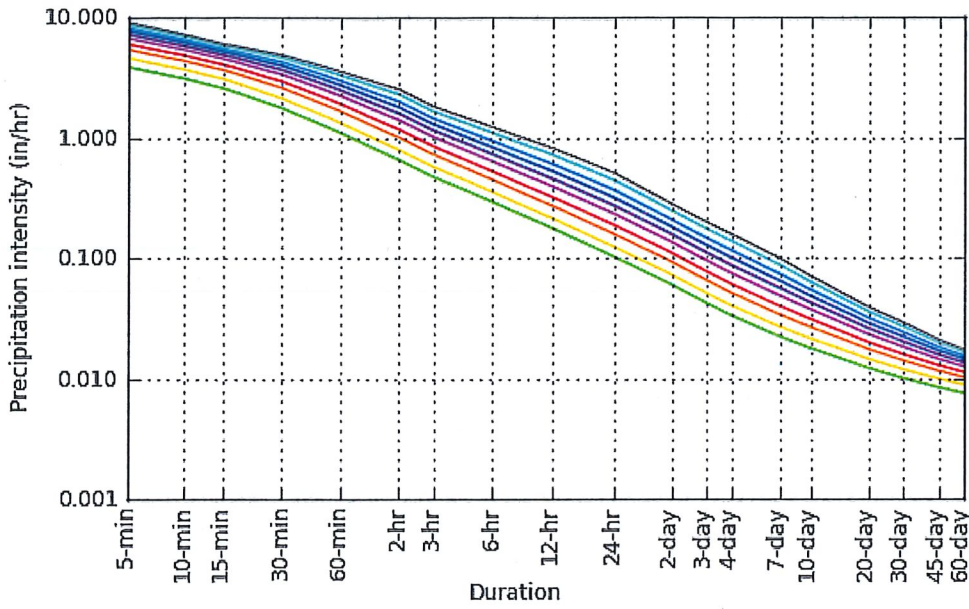
| PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour) <sup>1</sup> |                                     |                        |                        |                        |                        |                        |                        |                        |                        |                        |
|---|-------------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Duration  | Average recurrence interval (years) |                        |                        |                        |                        |                        |                        |                        |                        |                        |
|   | 1                                   | 2                      | 5                      | 10                     | 25                     | 50                     | 100                    | 200                    | 500                    | 1000                   |
| 5-min   | 3.86<br>(3.48-4.30)                 | 4.60<br>(4.14-5.12)    | 5.41<br>(4.87-6.05)    | 6.01<br>(5.39-6.70)    | 6.73<br>(6.00-7.48)    | 7.24<br>(6.43-8.03)    | 7.73<br>(6.84-8.57)    | 8.17<br>(7.20-9.07)    | 8.70<br>(7.61-9.65)    | 9.10<br>(7.91-10.1)    |
| 10-min  | 3.08<br>(2.78-3.43)                 | 3.67<br>(3.31-4.10)    | 4.34<br>(3.90-4.84)    | 4.81<br>(4.31-5.35)    | 5.36<br>(4.78-5.95)    | 5.76<br>(5.12-6.39)    | 6.14<br>(5.44-6.80)    | 6.47<br>(5.71-7.19)    | 6.88<br>(6.02-7.63)    | 7.16<br>(6.23-7.96)    |
| 15-min  | 2.57<br>(2.32-2.86)                 | 3.08<br>(2.77-3.43)    | 3.66<br>(3.29-4.08)    | 4.06<br>(3.64-4.51)    | 4.53<br>(4.04-5.03)    | 4.86<br>(4.32-5.40)    | 5.18<br>(4.58-5.74)    | 5.45<br>(4.80-6.05)    | 5.77<br>(5.05-6.40)    | 6.00<br>(5.21-6.66)    |
| 30-min  | 1.76<br>(1.59-1.96)                 | 2.13<br>(1.91-2.37)    | 2.60<br>(2.34-2.90)    | 2.94<br>(2.63-3.27)    | 3.36<br>(2.99-3.73)    | 3.66<br>(3.26-4.06)    | 3.96<br>(3.51-4.39)    | 4.24<br>(3.73-4.71)    | 4.59<br>(4.02-5.10)    | 4.85<br>(4.22-5.39)    |
| 60-min  | 1.10<br>(0.989-1.22)                | 1.33<br>(1.20-1.49)    | 1.67<br>(1.50-1.86)    | 1.91<br>(1.72-2.13)    | 2.24<br>(1.99-2.48)    | 2.48<br>(2.21-2.75)    | 2.73<br>(2.42-3.03)    | 2.97<br>(2.62-3.30)    | 3.30<br>(2.88-3.66)    | 3.54<br>(3.08-3.93)    |
| 2-hr  | 0.653<br>(0.590-0.728)              | 0.793<br>(0.716-0.883) | 1.00<br>(0.902-1.12)   | 1.17<br>(1.05-1.30)    | 1.40<br>(1.25-1.55)    | 1.59<br>(1.41-1.75)    | 1.78<br>(1.57-1.97)    | 1.99<br>(1.74-2.20)    | 2.28<br>(1.97-2.52)    | 2.51<br>(2.16-2.78)    |
| 3-hr  | 0.473<br>(0.427-0.529)              | 0.574<br>(0.519-0.642) | 0.727<br>(0.655-0.812) | 0.847<br>(0.761-0.944) | 1.01<br>(0.904-1.12)   | 1.15<br>(1.02-1.27)    | 1.29<br>(1.14-1.43)    | 1.44<br>(1.26-1.59)    | 1.65<br>(1.43-1.83)    | 1.82<br>(1.56-2.01)    |
| 6-hr  | 0.293<br>(0.265-0.329)              | 0.356<br>(0.321-0.399) | 0.449<br>(0.404-0.503) | 0.526<br>(0.471-0.588) | 0.637<br>(0.566-0.708) | 0.730<br>(0.645-0.810) | 0.830<br>(0.727-0.919) | 0.938<br>(0.814-1.04)  | 1.10<br>(0.937-1.21)   | 1.23<br>(1.04-1.36)    |
| 12-hr   | 0.178<br>(0.160-0.201)              | 0.215<br>(0.193-0.243) | 0.273<br>(0.244-0.308) | 0.322<br>(0.287-0.363) | 0.395<br>(0.349-0.444) | 0.458<br>(0.401-0.513) | 0.528<br>(0.458-0.590) | 0.605<br>(0.518-0.675) | 0.721<br>(0.606-0.803) | 0.820<br>(0.680-0.913) |
| 24-hr   | 0.103<br>(0.094-0.113)              | 0.124<br>(0.114-0.137) | 0.159<br>(0.146-0.175) | 0.189<br>(0.172-0.207) | 0.235<br>(0.212-0.256) | 0.274<br>(0.246-0.298) | 0.319<br>(0.283-0.346) | 0.369<br>(0.323-0.399) | 0.445<br>(0.382-0.480) | 0.511<br>(0.433-0.550) |
| 2-day   | 0.060<br>(0.055-0.066)              | 0.072<br>(0.066-0.080) | 0.092<br>(0.085-0.102) | 0.109<br>(0.100-0.120) | 0.134<br>(0.122-0.147) | 0.156<br>(0.140-0.170) | 0.180<br>(0.160-0.196) | 0.206<br>(0.182-0.224) | 0.245<br>(0.212-0.267) | 0.278<br>(0.238-0.304) |
| 3-day   | 0.042<br>(0.039-0.046)              | 0.051<br>(0.047-0.056) | 0.065<br>(0.060-0.071) | 0.077<br>(0.070-0.084) | 0.095<br>(0.086-0.103) | 0.110<br>(0.099-0.120) | 0.127<br>(0.114-0.138) | 0.146<br>(0.129-0.158) | 0.174<br>(0.151-0.189) | 0.198<br>(0.170-0.215) |
| 4-day   | 0.033<br>(0.031-0.036)              | 0.040<br>(0.037-0.044) | 0.051<br>(0.047-0.056) | 0.061<br>(0.056-0.066) | 0.075<br>(0.068-0.081) | 0.087<br>(0.079-0.094) | 0.100<br>(0.090-0.109) | 0.115<br>(0.103-0.125) | 0.138<br>(0.121-0.150) | 0.157<br>(0.136-0.171) |
| 7-day   | 0.022<br>(0.021-0.024)              | 0.027<br>(0.025-0.029) | 0.034<br>(0.031-0.037) | 0.040<br>(0.037-0.043) | 0.049<br>(0.045-0.053) | 0.056<br>(0.051-0.061) | 0.065<br>(0.059-0.070) | 0.074<br>(0.066-0.080) | 0.088<br>(0.078-0.095) | 0.100<br>(0.087-0.108) |
| 10-day  | 0.018<br>(0.017-0.019)              | 0.021<br>(0.020-0.023) | 0.027<br>(0.025-0.029) | 0.031<br>(0.029-0.034) | 0.037<br>(0.035-0.040) | 0.043<br>(0.039-0.046) | 0.049<br>(0.044-0.052) | 0.055<br>(0.049-0.059) | 0.064<br>(0.057-0.069) | 0.071<br>(0.063-0.077) |
| 20-day  | 0.012<br>(0.011-0.013)              | 0.014<br>(0.014-0.015) | 0.017<br>(0.016-0.019) | 0.020<br>(0.019-0.021) | 0.023<br>(0.022-0.025) | 0.026<br>(0.024-0.028) | 0.029<br>(0.027-0.031) | 0.032<br>(0.029-0.034) | 0.036<br>(0.033-0.038) | 0.039<br>(0.035-0.042) |
| 30-day  | 0.010<br>(0.009-0.011)              | 0.012<br>(0.011-0.013) | 0.014<br>(0.013-0.015) | 0.016<br>(0.015-0.017) | 0.018<br>(0.017-0.019) | 0.020<br>(0.019-0.021) | 0.022<br>(0.021-0.024) | 0.024<br>(0.022-0.026) | 0.027<br>(0.025-0.029) | 0.029<br>(0.027-0.031) |
| 45-day  | 0.008<br>(0.008-0.009)              | 0.010<br>(0.009-0.010) | 0.012<br>(0.011-0.012) | 0.013<br>(0.012-0.014) | 0.015<br>(0.014-0.015) | 0.016<br>(0.015-0.017) | 0.017<br>(0.016-0.018) | 0.018<br>(0.017-0.019) | 0.020<br>(0.019-0.021) | 0.021<br>(0.020-0.022) |
| 60-day  | 0.008<br>(0.007-0.008)              | 0.009<br>(0.008-0.009) | 0.010<br>(0.010-0.011) | 0.011<br>(0.011-0.012) | 0.013<br>(0.012-0.013) | 0.014<br>(0.013-0.014) | 0.015<br>(0.014-0.015) | 0.015<br>(0.015-0.016) | 0.017<br>(0.016-0.017) | 0.017<br>(0.016-0.018) |

<sup>1</sup> Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

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**PF graphical**

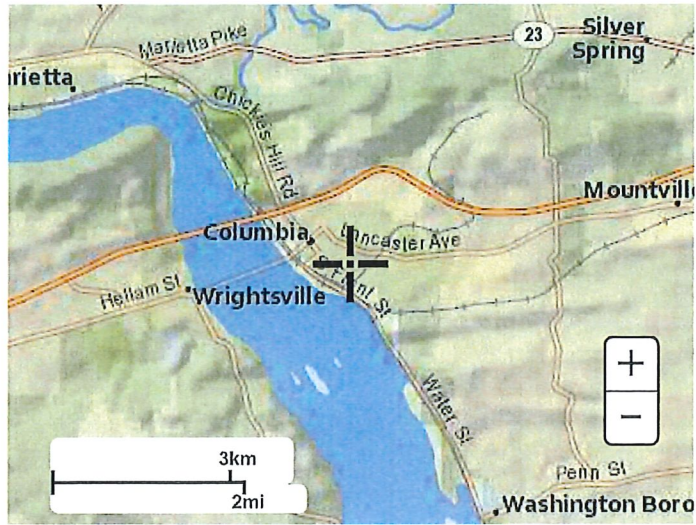
PDS-based intensity-duration-frequency (IDF) curves  
 Latitude: 40.0301°, Longitude: -76.4964°



Maps & aerials

Small scale terrain

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Large scale terrain



Large scale map



Large scale aerial



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[US Department of Commerce](#)  
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Silver Spring, MD 20910  
Questions?: [HDSC.Questions@noaa.gov](mailto:HDSC.Questions@noaa.gov)

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**TABLE 2**  
**RATIONAL RUNOFF COEFFICIENTS**  
 By Hydrologic Soils Group and Overland Slope (%)

| Land Use                         | A    |      |      | B    |      |      | C    |      |      | D    |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
|                                  | 0-2% | 2-6% | 6%+  | 0-2% | 2-6% | 6%+  | 0-2% | 2-6% | 6%+  | 0-2% | 2-6% | 6%+  |
| Cultivated Land                  | 0.08 | 0.13 | 0.16 | 0.11 | 0.15 | 0.21 | 0.14 | 0.19 | 0.26 | 0.18 | 0.23 | 0.31 |
|                                  | 0.14 | 0.18 | 0.22 | 0.16 | 0.21 | 0.28 | 0.20 | 0.25 | 0.34 | 0.24 | 0.29 | 0.41 |
| Pasture                          | 0.12 | 0.20 | 0.30 | 0.18 | 0.28 | 0.37 | 0.24 | 0.34 | 0.44 | 0.30 | 0.40 | 0.50 |
|                                  | 0.15 | 0.25 | 0.37 | 0.23 | 0.34 | 0.45 | 0.30 | 0.42 | 0.52 | 0.37 | 0.50 | 0.62 |
| Meadow                           | 0.10 | 0.16 | 0.25 | 0.14 | 0.22 | 0.30 | 0.20 | 0.28 | 0.30 | 0.24 | 0.30 | 0.40 |
|                                  | 0.14 | 0.22 | 0.30 | 0.20 | 0.28 | 0.37 | 0.26 | 0.35 | 0.44 | 0.20 | 0.40 | 0.50 |
| Forest                           | 0.05 | 0.08 | 0.11 | 0.08 | 0.11 | 0.14 | 0.10 | 0.13 | 0.16 | 0.12 | 0.16 | 0.20 |
|                                  | 0.08 | 0.11 | 0.14 | 0.10 | 0.14 | 0.18 | 0.12 | 0.16 | 0.20 | 0.15 | 0.20 | 0.25 |
| Residential<br>Lot Size 1/8 Acre | 0.25 | 0.28 | 0.31 | 0.27 | 0.30 | 0.25 | 0.30 | 0.33 | 0.38 | 0.33 | 0.36 | 0.42 |
|                                  | 0.33 | 0.37 | 0.40 | 0.35 | 0.39 | 0.44 | 0.38 | 0.42 | 0.49 | 0.41 | 0.43 | 0.34 |
| Lot Size 1/4 Acre                | 0.22 | 0.26 | 0.29 | 0.24 | 0.29 | 0.33 | 0.27 | 0.31 | 0.36 | 0.30 | 0.34 | 0.40 |
|                                  | 0.30 | 0.34 | 0.37 | 0.33 | 0.37 | 0.42 | 0.36 | 0.40 | 0.47 | 0.38 | 0.42 | 0.52 |
| Lot Size 1/3 Acre                | 0.19 | 0.23 | 0.26 | 0.22 | 0.26 | 0.30 | 0.25 | 0.29 | 0.34 | 0.28 | 0.32 | 0.39 |
|                                  | 0.28 | 0.32 | 0.35 | 0.30 | 0.35 | 0.39 | 0.33 | 0.38 | 0.45 | 0.36 | 0.40 | 0.50 |
| Lot Size 1/2 Acre                | 0.16 | 0.20 | 0.24 | 0.19 | 0.23 | 0.28 | 0.22 | 0.27 | 0.32 | 0.26 | 0.30 | 0.37 |
|                                  | 0.25 | 0.29 | 0.32 | 0.28 | 0.32 | 0.36 | 0.31 | 0.35 | 0.42 | 0.34 | 0.38 | 0.48 |
| Lot Size 1 Acre                  | 0.14 | 0.19 | 0.22 | 0.17 | 0.21 | 0.26 | 0.20 | 0.25 | 0.31 | 0.24 | 0.29 | 0.31 |
|                                  | 0.22 | 0.26 | 0.29 | 0.24 | 0.28 | 0.34 | 0.28 | 0.32 | 0.40 | 0.21 | 0.35 | 0.46 |
| Industrial                       | 0.67 | 0.68 | 0.68 | 0.68 | 0.68 | 0.69 | 0.68 | 0.69 | 0.69 | 0.69 | 0.69 | 0.70 |
|                                  | 0.85 | 0.85 | 0.86 | 0.85 | 0.86 | 0.86 | 0.86 | 0.86 | 0.87 | 0.86 | 0.86 | 0.88 |
| Commercial                       | 0.71 | 0.71 | 0.72 | 0.71 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 |
|                                  | 0.88 | 0.88 | 0.89 | 0.80 | 0.82 | 0.84 | 0.84 | 0.85 | 0.89 | 0.89 | 0.91 | 0.95 |
| Streets                          | 0.70 | 0.71 | 0.71 | 0.71 | 0.72 | 0.74 | 0.72 | 0.73 | 0.76 | 0.73 | 0.75 | 0.78 |
|                                  | 0.76 | 0.77 | 0.79 | 0.80 | 0.82 | 0.84 | 0.84 | 0.85 | 0.89 | 0.89 | 0.91 | 0.95 |
| Open Space                       | 0.03 | 0.10 | 0.14 | 0.08 | 0.10 | 0.19 | 0.12 | 0.17 | 0.24 | 0.16 | 0.21 | 0.28 |
|                                  | 0.11 | 0.16 | 0.20 | 0.14 | 0.19 | 0.26 | 0.18 | 0.23 | 0.32 | 0.22 | 0.27 | 0.39 |
| Parking                          | 0.85 | 0.85 | 0.87 | 0.85 | 0.86 | 0.87 | 0.85 | 0.86 | 0.87 | 0.85 | 0.86 | 0.87 |
|                                  | 0.95 | 0.96 | 0.97 | 0.95 | 0.96 | 0.97 | 0.95 | 0.96 | 0.97 | 0.95 | 0.96 | 0.97 |

Runoff coefficient is for storm recurrence intervals less than 25 years.

Runoff coefficients for storm recurrence intervals 25 years or more.

Source: Rawls, W.J., S.L. Wong and H.H. McCuen, 1981, "Comparison of Urban Flood Frequency Procedures", Preliminary Draft, U.S. Department of Agriculture, Soil Conservation Service, Baltimore, MD.

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TABLE 3  
 Roughness Coefficients (Manning's "n") for Overland Flow  
 (U.S. Army Corps of Engineers, HEC-1 Users Manual)

| <u>Surface Description</u>                | <u>n</u>    |
|---|-------------|
| Dense Growth                              | 0.4 – 0.5   |
| Pasture                                   | 0.3 – 0.4   |
| Lawns                                     | 0.2 – 0.3   |
| Bluegrass Sod                             | 0.2 – 0.5   |
| Short Grass Prairie                       | 0.1 – 0.2   |
| Sparse Vegetation                         | 0.05 – 0.13 |
| Bare Clay-Loam Soil (eroded)              | 0.01 – 0.03 |
| Concrete/Asphalt –                        |             |
| very shallow depths (less than 1/4 inch)  | 0.10 – 0.15 |
| small depths (1/4 inch to several inches) | 0.05 – 0.10 |

Roughness Coefficients (Manning's "n") for Sheet Flow  
 (U.S. Conservation Service Technical Release 55)

| <u>Surface Description</u>                                   | <u>n</u> |
|--|----------|
| Smooth Surfaces<br>(concrete, asphalt, gravel, or bare soil) | 0.011    |
| Fallow (no residue)  | 0.05     |
| Cultivated Soils:  |          |
| Residue Cover Less Than 20%                                  | 0.06     |
| Residue Cover Greater Than 20%                               | 0.17     |
| Grass:   |          |
| Short Prairie Grass  | 0.15     |
| Dense Grasses  | 0.24     |
| Bermuda Grass  | 0.41     |
| Range (natural)  | 0.13     |
| Woods:   |          |
| Light Underbrush   | 0.40     |
| Dense Underbrush   | 0.80     |

**TABLE 1**  
Runoff Curve Numbers  
[From NRCS (SCS) TR-55]

| LAND USE DESCRIPTION  | HYDROLOGICAL SOIL GROUP |              |    |    |    |    |
|---|-------------------------|--------------|----|----|----|----|
|   | A                       | B            | C  | D  |    |    |
| Open Space  | 44                      | 65           | 77 | 82 |    |    |
| Meadow  | 30**                    | 58           | 71 | 78 |    |    |
| Agricultural  | 59                      | 71           | 79 | 83 |    |    |
| Forest  | 36**                    | 60           | 73 | 79 |    |    |
| Commercial (85% Impervious)   | 89                      | 92           | 94 | 95 |    |    |
| Industrial (72% Impervious)   | 81                      | 88           | 91 | 93 |    |    |
| Institutional (50% Impervious)  | 71                      | 82           | 88 | 90 |    |    |
| Residential   |                         |              |    |    |    |    |
| Average Lot Size  |                         | % Impervious |    |    |    |    |
| 1/8 Acre or less  |                         | *65          | 77 | 85 | 90 | 92 |
| 1/8 – 1/3 Acre  |                         | 34           | 59 | 74 | 82 | 87 |
| 1/3 – 1 Acre  |                         | 23           | 53 | 69 | 90 | 85 |
| 1 – 4 Acre  |                         | 12           | 46 | 66 | 78 | 80 |
| Farmstead   | 59                      | 74           | 82 | 83 |    |    |
| Smooth Surfaces<br>(Concrete, Asphalt, Gravel or Bare Compacted Soil) | 98                      | 98           | 98 | 98 |    |    |
| Water   | 98                      | 98           | 98 | 98 |    |    |
| Mining Newly Graded Areas<br>(Pervious Areas Only)                    | 77                      | 86           | 91 | 94 |    |    |

\* Includes Multi-Family Housing unless justified lower density can be provided.

\*\* Caution - CN values under 40 may produce erroneous modeling results.

NOTE: Site conditions of bare earth or fallow shall be considered as meadow when choosing a CN value for existing undeveloped conditions.

NOTE: CN values consistent with the June 1986 release of the TR-55 (Urban Hydrology for Small Watersheds) may be utilized for consistency with PADEP Worksheets.

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United States  
Department of  
Agriculture

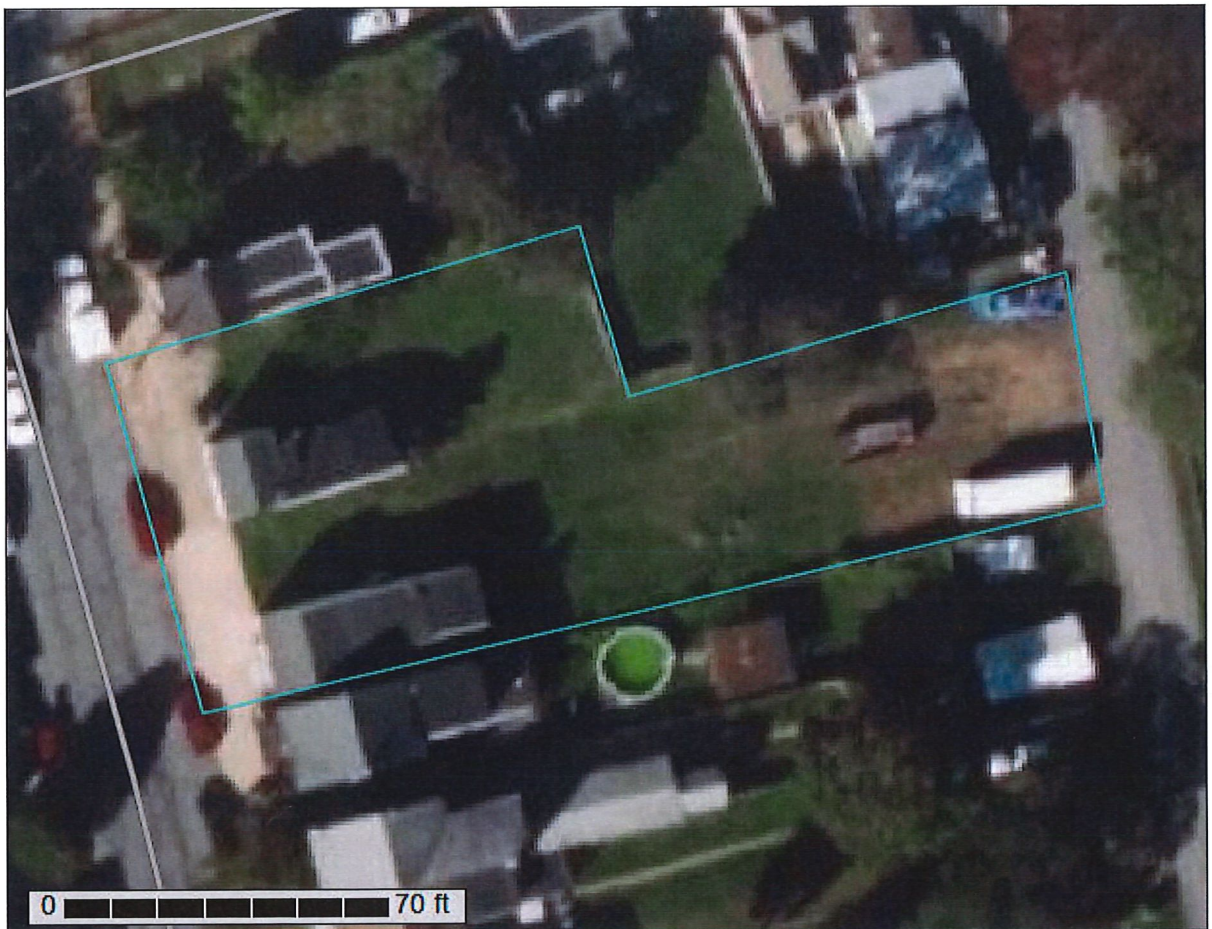
**NRCS**

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 Lancaster County, Pennsylvania

S. Fifth Street, Columbia



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October 18, 2022

# 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

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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

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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.







































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Soil Map



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### 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 1:15,800.

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: Lancaster County, Pennsylvania  
 Survey Area Data: Version 21, Sep 6, 2022

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

Date(s) aerial images were photographed: Jul 6, 2020—Nov 7, 2020

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.

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## Map Unit Legend

| Map Unit Symbol             | Map Unit Name | Acres in AOI | Percent of AOI |
|-----------------------------|---------------|--------------|----------------|
| Uc                          | Urban land    | 0.3          | 100.0%         |
| Totals for Area of Interest |               | 0.3          | 100.0%         |

## Map Unit Descriptions

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

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

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

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

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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.

## Lancaster County, Pennsylvania

### Uc—Urban land

#### Map Unit Setting

*National map unit symbol:* I6tp  
*Mean annual precipitation:* 36 to 50 inches  
*Mean annual air temperature:* 46 to 59 degrees F  
*Frost-free period:* 120 to 215 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

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

#### Description of Urban Land

##### Setting

*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Pavement, buildings and other artificially covered areas

##### Properties and qualities

*Slope:* 0 to 8 percent  
*Depth to restrictive feature:* 10 inches to densic material  
*Runoff class:* Very high

##### Interpretive groups

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

#### Minor Components

##### Udorthents, steep

*Percent of map unit:* 10 percent  
*Landform:* Mountains  
*Landform position (two-dimensional):* Summit, backslope  
*Landform position (three-dimensional):* Mountaintop  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

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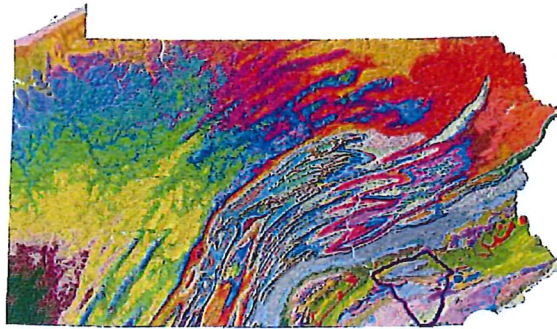
United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelp21043084>

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## LANCASTER GEOLOGICAL SOLUTIONS, LLC

November 4, 2022

Michael L. Saxinger, R.L.A.  
President ML Saxinger & Associates, Inc.  
P.O. Box 5142  
Lancaster, PA 17606-5142

RE: Karst Evaluation for Storm Water Management  
Habitat for Humanity  
237, 239, 243, & 245 South Fifth Street  
Columbia, PA 17512  
Columbia Borough, Lancaster County

Dear Mr. Saxinger:

This letter addresses Sections 309 of the Columbia Borough Stormwater Management Ordinance of for the submission of the proposed the storm water management facility(ies) at the above listed address. These sections of the ordinance are associated with karst or carbonate geology.

**Section 309 Carbonate Geology states:**

*In areas of carbonate geology, a geologist shall certify to the following:*

*A. No stormwater management facility will be placed in, over, or immediately adjacent to the following features:*

- 1. Closer than 100-feet from sinkholes;*
- 2. Closer than 100-feet from closed depressions;*

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3. Closer than 100-feet from caverns, intermittent lakes, or ephemeral streams;
4. Closer than 50-feet from lineaments in carbonate areas;
5. Closer than 50-feet from fracture traces;
6. Closer than 25-feet from bedrock pinnacles (surface or subsurface).

Karst features were not observed.

*B. Stormwater resulting from regulated activities shall not be discharged into sinkholes.*

Stormwater is not proposed to be discharged to sinkholes.

*C. If the developer can prove through analysis that the project site is an area underlain by carbonate geology, and such geologic conditions may result in sinkhole formations, then the project site is exempt from recharge requirements as described in Section 304, "Volume Control." However, the project site shall still be required to meet all other standards found in this Chapter.*

Infiltration is proposed for this site, see narrative below.

*D. It shall be the developer's responsibility to verify if the project site is underlain by carbonate geology. The following note shall be attached to all stormwater management plans and signed and sealed by the developer's registered professional: "I, \_\_\_\_\_, certify that the proposed stormwater management facility (circle one) is/is not underlain by carbonate geology."*

This note will be included on the stormwater management plans and will be signed/sealed by a professional geologist.

*E. Whenever a stormwater management facility will be located in an area underlain by carbonate geology, a geological evaluation of the proposed location by a geologist shall be conducted to determine susceptibility to sinkhole formation. The evaluation may include the use of impermeable liners to reduce or eliminate the separation distances listed in the BMP manual. Additionally, the evaluation shall, at a minimum, address soil permeability, depth to bedrock, seasonally high groundwater table, susceptibility for sinkhole formation, suitability of stormwater management facilities, subgrade stability, and maximum infiltration capacity in depth of water per unit area.*

This karst evaluation serves as the geologic evaluation, see narrative below.

*F. A detailed soils evaluation of the project site shall be performed to determine the suitability of recharge facilities. The evaluation shall be performed by a qualified*

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professional, and at a minimum, address soil permeability, depth to bedrock, susceptibility to sinkhole formation, and subgrade stability. The general process for designing the infiltration BMP shall be:

1. Site evaluation to determine general areas of suitability for infiltration practices.
2. Provide field percolation tests throughout the area proposed for development to determine appropriate percolation rate and/or hydraulic conductivity. At least one infiltration test must be included in each soil group, and at least one infiltration test must be conducted for every five lots proposed for development. Infiltration tests must be taken at the location and depth of all proposed infiltration structures.
3. Design infiltration structure for required storm volume based on all available data.

This karst evaluation serves as the geologic evaluation, see narrative below.

G. Extreme caution shall be exercised where infiltration is proposed in geologically susceptible areas such as strip mine or limestone areas. It is also extremely important that the design professional evaluate the possibility of groundwater contamination from the proposed infiltration/recharge facility and recommend a hydrogeologic study be performed if necessary. Whenever a basin is located in an area underlain by limestone, a geological evaluation of the proposed location shall be conducted to determine susceptibility to sinkhole formations. The design of all facilities over carbonate formations shall include measures to prevent groundwater contamination and, where necessary, sinkhole formation. The infiltration requirement in the high quality/exceptional waters shall be subject to the Department's 25 Pa.Code, Chapter 93, and anti-degradation regulations. A detailed hydrogeologic investigation may be required by the Borough, and where appropriate, the Borough may require the installation of an impermeable liner in detention basins.

This karst evaluation serves as the geologic evaluation, see narrative below.

The Site is underlain by bedrock of the Conestoga Formation as shown on <http://www.gis.dcnr.state.pa.us/geology/index.html>, Pennsylvania Geologic Survey's Web Mapping Application. The Conestoga Formation, as defined in *Engineering Characteristics of the Rocks of Pennsylvania*, is composed of medium gray impure limestone with graphitic shale partings. Beds are thin and crudely to poorly bedded. Fracturing is irregular, poorly formed, moderately abundant, widely spaced, and many are open with some filled with calcite and quartz. The overlying mantle varies in thickness and can be extremely thick in places. Pinnacles are common and characterize the soil bedrock interface of this formation. The Conestoga Formation is a carbonate rock.

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No karst features were observed at the site during infiltration testing on May 18, 2022. Review of aerial photography did not identify closed depressions karst features at the proposed storm water management facility(ies). No mapped sinkholes were observed at the Site or the <http://www.gis.dcnr.state.pa.us/geology/index.html> web site.

On May 18, 2022, test pits P1 and P2 were excavated to 60- and 84-inches, respectively, below grade to identify the soils and possible limiting zones. No limiting zones were identified in either test pit. The soils from each test pit are described below:

## Test Pit P1:

0 – 12" Topsoil, damp  
12" – 30" Urban fill – soil, bricks, ash  
30" – 60" Brown silty clay with some sand, damp

## Test Pit P2:

0 – 36" Urban fill – soil, bricks, ash  
36" – 84" Brown silty clay with some sand, damp

Infiltration testing was completed by Lancaster Geological Solutions, LLC at a depth of approximately 36-inches in test pit 1 and depths of 24- and 60-inches in test pit 2. An 8- and 12-inch double ring infiltrometer was used for all infiltration tests as per the Pennsylvania Stormwater BMP Manual. The infiltration rates were calculated as follows:

P1-36-inches: 9.15 in/hr  
P2-24-inches: 11.55 in/hr  
P2-60-inches: 11.50 in/hr

Susceptibility to sinkhole formation for infiltration of storm water is a risk in karst areas but may be minimized with sound engineering design and practices. The soil types, infiltration rates of the soils, depth to bedrock loading ratios, are parameters in determining the stability of the subgrade.

To minimize the susceptibility of sinkhole formation, the following tasks are recommended:

- Reduce the time between removal of topsoil and the construction.
- The area under the storm water management facility should not be impacted by construction vehicles so that storm water may infiltrate the soils as designed.
- Depth to bedrock varies in karst areas, pinnacles may be found during construction.

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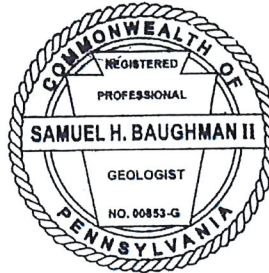
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If during installation of the stormwater management facility, throats, areas of soil piping, or other karst features are discovered, remediation of karst features can be accomplished as follows:

- Areas of soil piping should be excavated to determine the extent of piping. This entails excavation to bedrock to identify the throat. Remove all loose soil and rock.
- Use of non-woven geo-fabric to line the bottom of the excavation, the sidewalls do not require covering geo-fabric.
- Geo-grid can be installed along the sidewalls to strengthen the structure.
- Placement of reverse stone filter to permit drainage of water but not soils.
- Use of non-woven geo-fabric between rock layers and above the upper rock layer.
- Pinnacles can be removed below 24-inch separation between the BMP bottom and bedrock, then backfilled with amended soils or other suitable backfill.
- This process should be overseen by a professional geologist or engineer experienced in sinkhole remediation.

Specific design, measures, procedures, and materials shall be determined by the design engineer as part of the installation of the proposed SWM Facility. If any sinkholes or other karst features are discovered during construction, do not hesitate to contact me.

Sincerely,



Samuel H. Baughman II, M.S., P.G.  
Principal Geologist

attachments: infiltration and soil description sheets

## Limitations

This report and its observations, evaluations, interpretations, and conclusions are based solely upon the observations, data from the client, gathered by this author, and publicly available at the time of the study. The conclusions and interpretations are focused on the scope and purpose of this study and should not be construed as a more comprehensive investigation. If additional or contrary information to the conclusions stated herein, is

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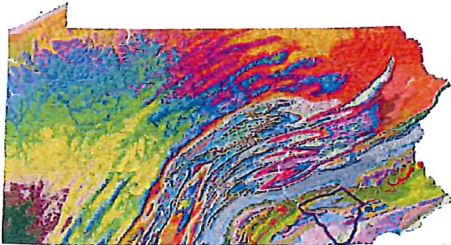
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obtained by any connected party, then Lancaster Geological Solutions, LLC and this author should be notified to allow critical evaluation.

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### Infiltration Test Results

Site: Habitat for Humanity 237, 239, 243, 245 S. Fifth Street, Columbia, PA

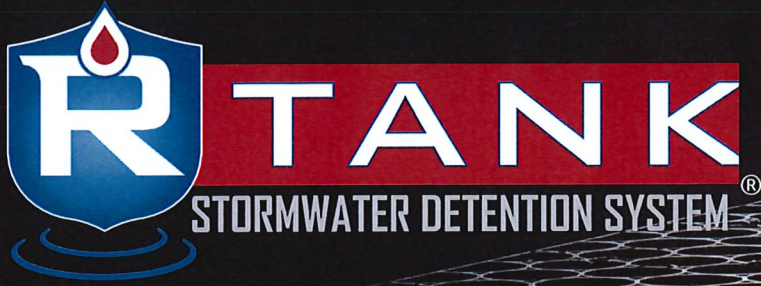
Date: 5/18/2022

| Test ID | Test Depth | Water Depth | Limiting Zones |       | Pre-Soak Drop* |        | Interval (minutes) | Water Drop (inches) |     |     |     |     |     |   |   | Infiltration Rate (in/hr) |       |
|---------|------------|-------------|----------------|-------|----------------|--------|--------------------|---------------------|-----|-----|-----|-----|-----|---|---|---------------------------|-------|
|         |            |             | type           | depth | first          | second |                    | 1                   | 2   | 3   | 4   | 5   | 6   | 7 | 8 |                           |       |
| P1      | 24"        | 9.5"        |                |       | 7"             | 2.5"   | 10                 | 1.9                 | 1.5 | 1.6 | 1.5 | 1.5 |     |   |   |                           | 9.15  |
| P2      | 24"        | 8.5"        |                |       | 6.5"           | 5.5"   | 10                 | 1.9                 | 2.3 | 1.9 | 1.9 | 2   | 1.9 |   |   |                           | 11.55 |
| P2      | 60"        | 9"          |                |       | 6.5"           | 5"     | 10                 | 2.1                 | 1.9 | 1.9 | 1.9 |     |     |   |   |                           | 11.7  |
|         |            |             |                |       |                |        |                    |                     |     |     |     |     |     |   |   |                           |       |
|         |            |             |                |       |                |        |                    |                     |     |     |     |     |     |   |   |                           |       |
|         |            |             |                |       |                |        |                    |                     |     |     |     |     |     |   |   |                           |       |
|         |            |             |                |       |                |        |                    |                     |     |     |     |     |     |   |   |                           |       |
|         |            |             |                |       |                |        |                    |                     |     |     |     |     |     |   |   |                           |       |
|         |            |             |                |       |                |        |                    |                     |     |     |     |     |     |   |   |                           |       |

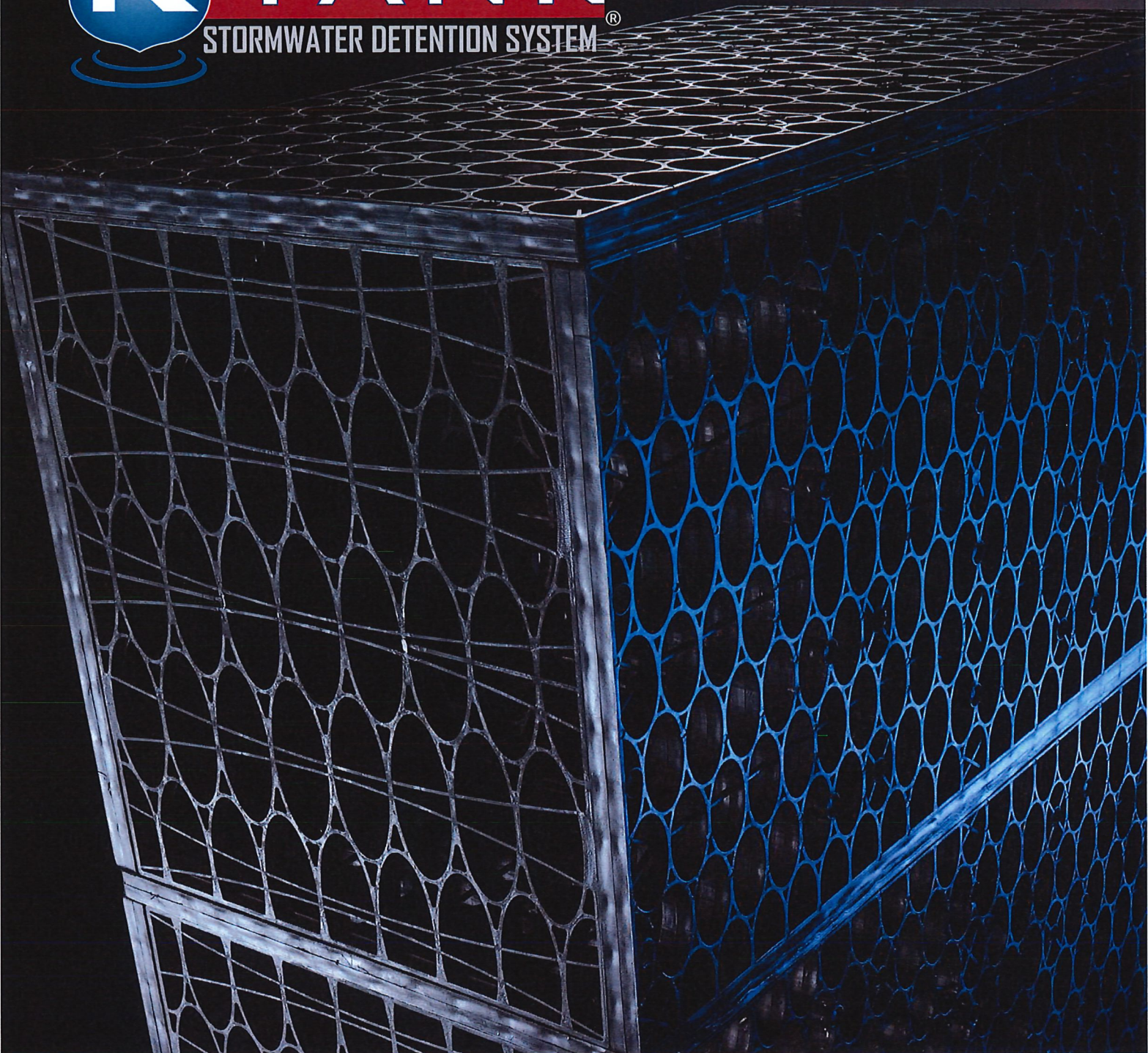
\*If the water drop after the second 30-minute pre-soak is 2-inches or more, the test interval is 10 minutes.  
If the water drop after the second 30-minute pre-soak is less than 2-inches, the test interval is 30 minutes.

Test complete when a minimum of eight (8) readings are completed or a stabilized rate of drop is obtained, whichever comes first. A stabilized rate of drop means a difference of 1/4-inch or less of drop between the highest and lowest of four (4) consecutive water level readings. The infiltration rate is the drop that occurs in the center ring during the final period or the average stabilized rate, expressed as in/hr, at this location.

PA Stormwater BMP Manual, Appendix C - Site Evaluation and Soil Testing recommended infiltration rate of 0.1 to 10 inches per hour (page 14 of 21).



**RTANK**  
STORMWATER DETENTION SYSTEM<sup>®</sup>



**LD HD SD UD XD**

LET'S GET IT DONE<sup>®</sup>

**ACF**  
ENVIRONMENTAL 128



# STORMWATER MANAGEMENT

## **IS YOUR STORMWATER SYSTEM TAKING UP TOO MUCH SPACE?**

Reduce the size with the R-Tank System, an efficient and versatile underground stormwater storage system. This system will reduce your underground stormwater storage system footprint to resolve a utility conflict or free up space for a future expansion.

It will also provide additional options for vehicular loading and cover depths, and deliver greater installation versatility.

## **DOES YOUR PROJECT REQUIRE A UNIQUE SOLUTION DUE TO DEPTH OR TRAFFIC LOADS?**

With five different module configurations, R-Tank provides system height options from 2" to over 7' deep. It also delivers support for HS-20 and HS-25 traffic, with cover depths from 6" to over 16'.

**With an unlimited array of system footprints and configurations, R-Tank solves tough stormwater problems by adapting to the needs of your site - whether you're designing a project at the beach with minimal depth over a water table or a deep system in the hills.**



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# R-TANK®

## BENEFITS

### HIGH CAPACITY

- 95% void internal area

### STRENGTH

- Easily supports traffic loading from parking lots and roads
- Module options for HS-20 and HS-25 rating with cover depths from 6 inches to 16 feet

### DESIGN & CONSTRUCTION VERSATILITY

- Modules can be combined into various shapes efficiently and effectively use space
- Varied height from 2 inches to 7 feet

### INCREASED INFILTRATION AND EXILFILTRATION

- Outer shell is 90% open
- Increases groundwater recharge, reducing post-construction discharge volumes

### EASY TO TRANSPORT

- Can be supplied unassembled for reduced delivery costs

### LIGHTWEIGHT AND QUICK TO INSTALL

- Installed by hand; no cranes required
- Reduces site access delays

### RECYCLED CONTENT

- Manufactured with recycled polypropylene



- Light Duty module (30 psi)
- Ideal for applications in green space
- Not rated for vehicular traffic
- 12" Minimum cover, 36" maximum cover
- Four internal plates



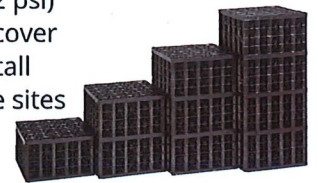
- Heavy Duty module (33.4 psi)
- Standard module for HS-20 traffic applications
- 20" Minimum cover,
- 84" Maximum cover
- Five internal plates



- Super Duty module (42.9 psi)
- Higher safety factors for shallow traffic applications and deeper cover
- 18" Minimum cover,
- 120" Maximum cover
- Five internal plates



- Ultra Duty module (134.2 psi)
- Traffic loads with 12" of cover
- Available from 14" - 66" tall
- Ideal for high water table sites



- Extreme Duty module (240.2 psi)
- Traffic loads with 6" cover
- 16.5' maximum cover
- Available from 2" - 10' tall
- 90% void



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# DESIGN CONSIDERATIONS

Many factors will influence the design of the R-Tank® system. While this list is not intended to be all-inclusive, the following design considerations are worth highlighting:

## 1. PRE-TREATMENT

Removing pollutants from runoff before they enter an underground detention system is the smart way to design & build a system. Trash Guard Plus® (see page 6) is a great tool for this. Be sure the system you select will remove, heavy sediments, gross pollutants (trash) and biodegradable debris.

## 2. BACKFILL MATERIALS

Backfill materials should be stone (<1.5" in diameter) or soil (GW, GP, SW or SP per the Unified Soil Classification System). Material must be free from lumps, debris and sharp objects that could cut the geotextile. See the R-Tank® narrative specification section 2.03 for additional information.

## 3. RUNOFF REDUCTION

Most designs incorporate an outlet to drain the system at a controlled rate and/or an overflow to prevent flooding in extreme events. Any infiltration that can be achieved on the site should also be taken advantage of. Consider raising the invert of your outlet or creating a sump to capture and infiltrate the water quality volume whenever possible.

## 4. WATER TABLE

While installing R-Tank® below the water table is manageable, a stable base must be created to account for the system's ability to drain water out or limit its ability to enter the system. If a liner is used to prevent ground water from entering, measures must be taken to prevent the system from floating.

## 5. CONSTRUCTION LOADS

Construction loads are often the heaviest loads the system will experience. Care must be taken during backfilling and compaction (see specification section 3.05), and post-installation construction traffic should be routed around the system (Install Guide step 12).

## 6. LATERAL LOADS

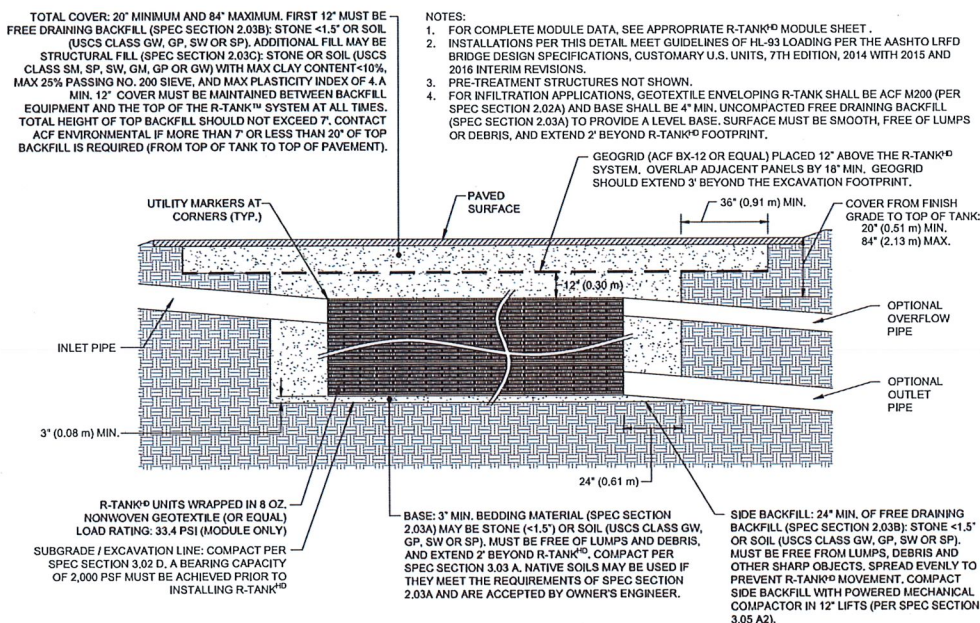
As systems get deeper, the loads acting on the sides of the tank increase. While vertical loads often control the design, lateral loads should also be considered.

## 7. R-TANK MODULES

Selecting the right module for your application is critical. See page 3 and the specs on the back of this brochure, for details. Our team is also here to help!

## 8. LOAD MODELING

A safety factor of >1.75 is required when designing an R-Tank System using the AASHTO LRFD Bridge Design Specifications. It is also necessary to run your own loading model with specific site requirements. Example models can be found in our Tech Note on loading capabilities, and minimum cover requirements can be found in the specs on the back of this brochure.



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# LOW IMPACT DESIGN & GREEN INFRASTRUCTURE

As much of the nation's Gray Infrastructure continues to decay, new concepts for rebuilding it are emerging through Green Infrastructure (GI) and Low Impact Development (LID). This type of reconstruction moves beyond traditional systems that do one thing well, to systems that accomplish multiple objectives simultaneously.

ACF Environmental has several technologies that dovetail with the goals of LID and GI and can play a significant role in the redevelopment process.



## R-TANK®



Pipe and stone are used in traditional systems to move and store runoff. R-Tank accomplishes the same purpose with several additional benefits.

- Stores and moves runoff
- Moves water slowly, increasing time of concentration
- Open system encourages infiltration
- Fully accessible for maintenance
- Stores 138% more water than stone
- Maximizes storage potential of GI practices
- Easily handles traffic loads
- Ships flat to reduce site disturbance



## PERMEABLE PAVEMENTS

Traditional pavements move vehicles efficiently, but are easily damaged by stormwater. ACF Environmental specializes in permeable pavements that handle traffic loads, while providing surface infiltration rates 10x higher than traditional pervious pavements, helping reduce the expense of long-term maintenance.

- Handles all vehicular loads
- Drains ten times faster than competing pervious pavements
- Reduces long-term maintenance costs
- Encourages infiltration
- Pair with R-Tank® to maximize water storage and transport



## FOCALPOINT

Traditional landscaping adds aesthetic value to projects, but has more potential. Many developers turn to bioretention, but are forced to surrender massive land areas and dedicate significant future funds to maintenance. FocalPoint reduces the space requirements and maintenance costs of bioretention by up to 90% while providing similar pollutant removal.

- Adds aesthetic value to properties
- Cleans runoff to improve water quality
- Reduces space requirements and maintenance costs of traditional bioretention systems
- Encourages infiltration to reduce volume of water discharged
- Pairs with R-Tank® to maximize water storage and transport

R-Tank maximizes the storage capabilities of bioretention and permeable pavement systems.



# MAINTENANCE

DESIGNING AN R-TANK SYSTEM WITH LONGEVITY & MAINTENANCE IN MIND IS A THREE-STEP PROCESS:

## 1. PREVENT

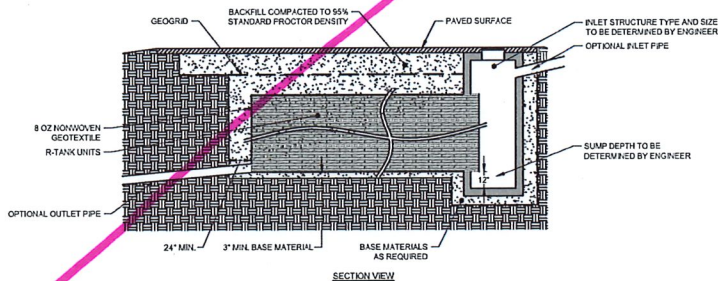
Keep debris and sediment out of the system by pre-treating runoff with the Trash Guard Plus® unit (see below). For a more centralized approach, you could consider having the R-Tank units penetrate the connecting structure, which allows the use of the R-Tank® as its own trash screen. This works best with a structure that includes a sump (see Inlet Connection drawing below).

## 2. ISOLATE

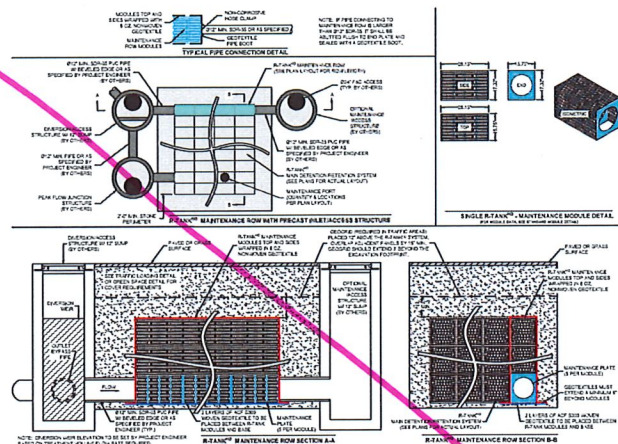
Trap solid pollutants inside the maintenance row (see Maintenance Row drawing below) where they can be easily removed, using the Maintenance Modules (available in LD, HD, and UD only). These modules are wrapped in geotextile to retain solids and are fully accessible by conventional jet-vac systems to remove captured pollutants.

## 3. PROTECT

Ensure a long system life by including maintenance ports to remove any pollutants that evade the pre-treatment system and maintenance row. Maintenance ports should be specified within 10' of inlet and outlet connections, and roughly 50' on center (see detail on page 7).



SECTION VIEW  
INLET CONNECTION



MAINTENANCE ROW

## MAINTENANCE PREVENTION

### TRASH GUARD PLUS®

Trash Guard Plus® is a patented stormwater pretreatment device that captures debris, sediment and floatables. Easy to install and maintain, it is a fraction of the cost of other pretreatment devices.

### BENEFITS

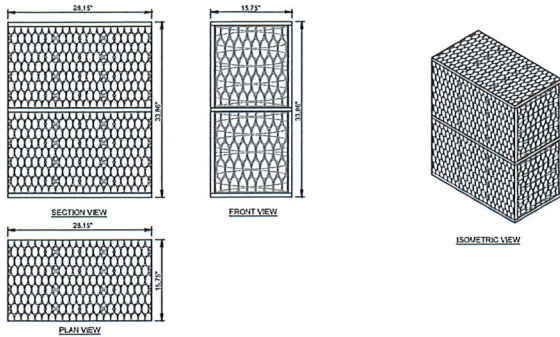
- Simple retrofit to existing catch basins
- Installs without heavy equipment
- Quick and easy assembly
- Adjusts to irregular catch basin bottoms and/or walls
- Eliminates stormwater trash at public parks, beaches, and waterways
- Removes harmful nutrients and regulated metals



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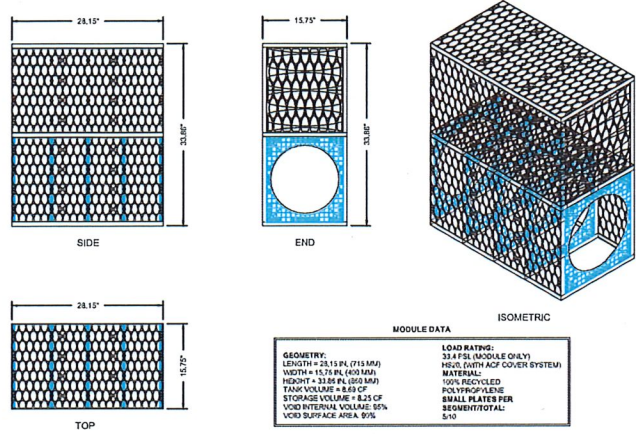
# TYPICAL DESIGN

## MODULE DRAWING - DOUBLE



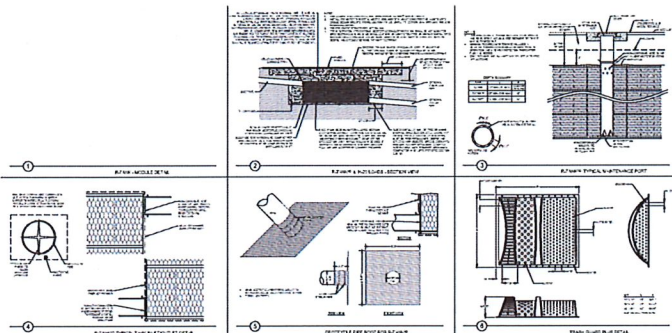
| MODULE DATA  |   |
|--|---|
| <b>GEOMETRY:</b> LENGTH = 28.15 PL (715 MM)<br>WIDTH = 15.73 PL (403 MM)<br>HEIGHT = 33.86 PL (860 MM)<br>TANK VOLUME = 8.89 CF<br>VOID INTERNAL VOLUME: 95%<br>VOID SURFACE AREA: 90% | <b>LOAD RATING:</b> 33.4 PSF (MODULE ONLY)<br>HSES, (WITH ACF COVER SYSTEM)<br><b>MATERIAL:</b> 100% RECYCLED<br>POLYPROPYLENE<br>SMALL PLATES PER<br>SEGMENT/TOTAL: 5/10 |

## MAINTENANCE MODULE - DOUBLE

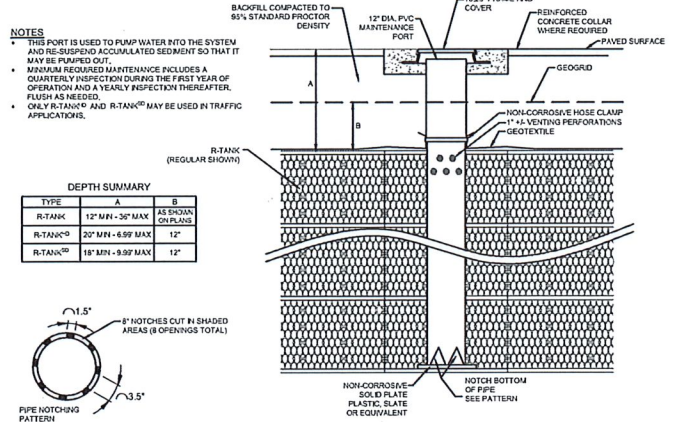


| MODULE DATA  |   |
|--|---|
| <b>GEOMETRY:</b> LENGTH = 28.15 PL (715 MM)<br>WIDTH = 15.73 PL (403 MM)<br>HEIGHT = 33.86 PL (860 MM)<br>TANK VOLUME = 8.89 CF<br>VOID INTERNAL VOLUME: 95%<br>VOID SURFACE AREA: 90% | <b>LOAD RATING:</b> 33.4 PSF (MODULE ONLY)<br>HSES, (WITH ACF COVER SYSTEM)<br><b>MATERIAL:</b> 100% RECYCLED<br>POLYPROPYLENE<br>SMALL PLATES PER<br>SEGMENT/TOTAL: 5/10 |

## COMPOSITE DETAILS



## MAINTENANCE PORT



## SELECTING THE RIGHT R-TANK MODULE

Cover Depth (inches)\*

**LD**

**HD**

**\* SD \***

**UD**

**XD**

|           |                          |                          |                          |                          |       |
|-----------|--------------------------|--------------------------|--------------------------|--------------------------|-------|
| Min. 6"   | Green Space - No Traffic | Green Space - No Traffic | Green Space - No Traffic | Green Space - No Traffic | HS-20 |
| 12"       | Green Space - No Traffic | Green Space - No Traffic | Green Space - No Traffic | HS-20**                  | HS-20 |
| 14"       | Green Space - No Traffic | Green Space - No Traffic | Green Space - No Traffic | HS-20                    | HS-20 |
| 18"       | Green Space - No Traffic | Green Space - No Traffic | HS-20                    | HS-20                    | HS-20 |
| 20"       | Green Space - No Traffic | HS-20                    | HS-20                    | HS-20                    | HS-20 |
| 24"       | Green Space - No Traffic | HS-20                    | HS-20                    | HS-20                    | HS-20 |
| 36"       | Green Space - No Traffic | HS-20                    | HS-20                    | HS-20                    | HS-20 |
| 48"       |                          | HS-20                    | HS-20                    | HS-20                    | HS-20 |
| 60"       |                          | HS-20                    | HS-20                    | HS-20                    | HS-20 |
| 72"       |                          | HS-20                    | HS-20                    |                          | HS-20 |
| 84"       |                          |                          | HS-20                    |                          | HS-20 |
| 120"      |                          |                          | HS-20                    |                          | HS-20 |
| 160"      |                          |                          |                          |                          | HS-20 |
| Max. 200" |                          |                          |                          |                          | HS-20 |

HS-20 designation based on AASHTO LRFD Bridge Design Spec for single lane traffic. HS-25 loading is available. Call ACF for details.

\*Cover depth is measured from top of module to finished grade or top of pavement

\*\*The UD module requires STONE backfill (not soil) on sides at this depth

# R-TANK SPECIFICATIONS



## DIMENSIONS & CAPACITY

| Module (Segments)  | Width (inch) | Length (inch) | Height (in/ft) | Volume (cf) | Capacity (cf) | Weight* (lbs) |
|--------------------|--------------|---------------|----------------|-------------|---------------|---------------|
| Mini               | 15.75        | 28.15         | 9.45"/0.79'    | 2.42        | 2.30          | 10.1/10.9     |
| Single(1)          | 15.75        | 28.15         | 17.32"/1.44'   | 4.44        | 4.22          | 15.7/17.3     |
| Single + Mini(1.5) | 15.75        | 28.15         | 25.98"/2.17'   | 6.67        | 6.33          | 23.6/25.9     |
| Double (2)         | 15.75        | 28.15         | 33.86"/2.82'   | 8.69        | 8.25          | 29.1/32.3     |
| Double + Mini(2.5) | 15.75        | 28.15         | 42.52"/3.54'   | 10.91       | 10.36         | 37.0/41.0     |
| Triple (3)         | 15.75        | 28.15         | 50.39"/4.20'   | 12.93       | 12.28         | 42.5/47.4     |
| Triple + Mini(3.5) | 15.75        | 28.15         | 59.06"/4.92'   | 15.15       | 14.39         | 50.4/56.0     |
| Quad(4)            | 15.75        | 28.15         | 66.93"/5.58'   | 17.17       | 16.31         | 55.9/62.4     |
| Quad + Mini(4.5)   | 15.75        | 28.15         | 75.59"/6.30'   | 19.39       | 18.42         | 63.8/71.0     |
| Pent(5)            | 15.75        | 28.15         | 83.46"/6.96'   | 21.41       | 20.34         | 69.3/77.4     |

\*Weights shown are for LD/HD modules.

## DIMENSIONS & CAPACITY

| Module (Segments) | Width (inch) | Length (inch) | Height (in/ft) | Volume (cf) | Capacity (cf) | Weight (lbs) |
|-------------------|--------------|---------------|----------------|-------------|---------------|--------------|
| Single (1)        | 15.75        | 28.15         | 9.45"/0.79'    | 2.42        | 2.30          | 10.95        |
| Double (2)        | 15.75        | 28.15         | 18.12"/1.51'   | 4.64        | 4.41          | 19.58        |
| Triple (3)        | 15.75        | 28.15         | 26.79"/2.23'   | 6.86        | 6.52          | 28.21        |
| Quad (4)          | 15.75        | 28.15         | 35.46"/2.96'   | 9.08        | 8.63          | 36.84        |
| Pent (5)          | 15.75        | 28.15         | 44.13"/3.68'   | 11.30       | 10.74         | 45.47        |
| Hex (6)           | 15.75        | 28.15         | 52.80"/4.40'   | 13.52       | 12.84         | 54.10        |
| Septa (7)         | 15.75        | 28.15         | 61.47"/5.12'   | 15.74       | 14.95         | 62.73        |
| Octo (8)          | 15.75        | 28.15         | 70.14"/5.85'   | 17.96       | 17.06         | 71.36        |
| Nono (9)          | 15.75        | 28.15         | 78.81"/6.57'   | 20.18       | 19.17         | 79.99        |
| Decka (10)        | 15.75        | 28.15         | 87.48"/7.29'   | 22.40       | 21.28         | 88.62        |



## DIMENSIONS & CAPACITY

| Module (Segments) | Width (inch) | Length (inch) | Height (in/ft) | Volume (cf) | Capacity (cf) | Weight (lbs) |
|-------------------|--------------|---------------|----------------|-------------|---------------|--------------|
| Single (1)        | 23.62        | 23.62         | 14.17"/1.18'   | 4.57        | 4.35          | 21.2         |
| Double (2)        | 23.62        | 23.62         | 27.17"/2.26'   | 8.77        | 8.33          | 39.0         |
| Triple (3)        | 23.62        | 23.62         | 40.16"/3.35'   | 12.97       | 12.32         | 56.8         |
| Quad (4)          | 23.62        | 23.62         | 53.15"/4.43'   | 17.16       | 16.30         | 74.6         |
| Pent (5)          | 23.62        | 23.62         | 66.14"/5.5'    | 21.35       | 20.29         | 92.4         |

## DIMENSIONS & CAPACITY

| Module (Segments) | Width (inch) | Length (inch) | Height (inch) | Volume (cf) | Capacity (cf) | Weight (lbs) |
|-------------------|--------------|---------------|---------------|-------------|---------------|--------------|
| Single (1)        | 19.68        | 23.62         | 1.97          | 0.53        | 0.48          | 4            |
| Double (2)        | 19.68        | 23.62         | 3.94          | 1.06        | 0.95          | 8            |
| Triple (3)        | 19.68        | 23.62         | 5.91          | 1.59        | 1.43          | 12           |
| Quad (4)          | 19.68        | 23.62         | 7.87          | 2.12        | 1.91          | 16           |
| Pent (5)          | 19.68        | 23.62         | 9.84          | 2.65        | 2.38          | 20           |

Note: XD modules may be stacked up to 10' tall (60 layers).

## SPECIFICATIONS

| Item                 | Description                              | LD                | HD           | SD           | UD           | XD           |
|----------------------|--|-------------------|--------------|--------------|--------------|--------------|
|                      |  | Value             | Value        | Value        | Value        | Value        |
| Void Area            | Volume available for water storage       | 95%               | 95%          | 95%          | 95%          | 90%          |
| Surface Area Void    | % of exterior available for infiltration | 90%               | 90%          | 90%          | 90%          | 90%          |
| Compressive Strength | ASTM D 2412/ ASTM F 2318                 | 30.0 psi          | 33.4 psi     | 42.9 psi     | 134.2 psi    | 240.2 psi    |
| Unit Weight          | Weight of plastic per cubic foot of tank | 3.29 lbs/cf       | 3.62 lbs/cf  | 3.96 lbs/cf  | 4.33 lbs/cf  | 7.55 lbs/cf  |
| Rib Thickness        | Thickness of load-bearing members        | 0.18"             | 0.18"        | 0.18"        | -            | -            |
| Service Temperature  | Safe temperature range for use           | -14 - 167° F      | -14 - 167° F | -14 - 167° F | -14 - 167° F | -14 - 167° F |
| Recycled Content     | Use of recycled polypropylene            | 100%              | 100%         | 100%         | 100%         | 100%         |
| Minimum Cover        | Cover required for HS-20 loading         | Not traffic rated | 20"          | 18"          | 12" - 14"    | 6"           |
|                      | Cover required for HS-25 loading         | Not traffic rated | 24"          | 18"          | 15" - 17"    | 6"           |
| Maximum Cover        | Maximum allowable cover depth            | 36"               | 6.99'        | 9.99'        | 5.0'         | 16.7'        |

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cls@mlsaxinger.com

---

**From:** Wagner, Timothy <tiwagner@pa.gov>  
**Sent:** Thursday, August 25, 2022 2:55 PM  
**To:** cls@mlsaxinger.com  
**Cc:** 'Michael L. Saxinger'  
**Subject:** RE: [External] Module exemption needed?

Are you sure about the addresses of these lots? With Corn Avenue parallel to South 5<sup>th</sup> this would be in the 200 block, so maybe 237-245 South 5<sup>th</sup>?

Be that as it may, if these are existing lots then no planning is required to build dwellings on them.

---

**From:** cls@mlsaxinger.com <cls@mlsaxinger.com>  
**Sent:** Thursday, August 25, 2022 2:02 PM  
**To:** Wagner, Timothy <tiwagner@pa.gov>  
**Cc:** 'Michael L. Saxinger' <mls@mlsaxinger.com>  
**Subject:** [External] Module exemption needed?

**ATTENTION:** This email message is from an external sender. Do not open links or attachments from unknown senders. To report suspicious email, use the [Report Phishing button in Outlook](#).

Hi Tim,

We have a 4-lot subdivision and land development proposed in Columbia Borough. There are four existing lots, three that have sanitary laterals to the cleanout location within the sidewalk and of those three, two have full service to the existing homes. Only one lot does not have a lateral (see yellow circle below) . The existing homes have been demolished and 4 proposed fee simple single-family homes are to be constructed. Do we need to apply for an exemption or any additional sewage planning? The addresses are 437-445 South 5<sup>th</sup> Street Columbia. Any direction would be very helpful. Thank you. Christine



Lancaster Area Sewer Authority  
130 Centerville Rd.  
Lancaster, PA 17603-4007

Tel. 717-299-4843  
Fax: 717-299-9658  
Website: [www.lasa.org](http://www.lasa.org)

September 2, 2022

Mr. Michael L. Saxinger, RLA  
Saxinger & Associates, Inc.  
780 Eden Road  
Lancaster, PA 17601

Reference: Lancaster Lebanon Habitat for Humanity - 237, 239, 243 & 245 South Fifth Street  
Columbia Borough  
Capacity Request  
LASA File No. 22-259

Dear Mr. Saxinger,

The purpose of this letter is to reply to your Application for Connection to the LASA Sewer System for the above referenced project in Columbia Borough.

Based on LASA's initial review of your application, there is capacity for two dwelling units still being maintained and capacity is being requested for two additional dwelling units. There appears to be sufficient capacity within the system for your project and you may proceed with the reservation of sanitary sewer capacity within the LASA sewage collection and treatment system to serve two additional dwelling units of residential sewage flow.

Please note that this letter is not intended to represent that capacity has been committed, reserved, or allocated for this project. LASA will make a commitment of capacity for this project only when the capacity is reserved.

Capacity can be reserved by one of two methods: 1) the then current tapping fee is paid in full, or 2) a capacity reserve fee is paid (refer to the enclosed information for the details about utilizing this option). This letter shall not be used to represent capacity for the preparation for approval of a PA DEP planning module or a planning model exemption.

Preliminary Plans should be submitted along with an escrow deposit of \$1,000 for our plan review.


Please note that all connections to the sewer system must be made in accordance with the latest edition of the Lancaster Area Sewer Authority Rules and Regulations.





If you have any questions, please call.

Sincerely,



Scot A. Fertich, PE  
Engineering Director

SAF/kgg

Enclosure





August 26, 2022

Christine Stivers, RLA  
Saxinger & Associates, Inc.  
780 Eden Road  
Lancaster, PA 17601

RE: 237, 239, 243 and 245 South 5<sup>th</sup> Street  
Columbia Borough  
Conditional Capacity Letter

Dear Ms. Stivers:

This letter will confirm that the Columbia Water Company has adequate capacity and is willing to serve the referenced proposed project. This project is expected to consist of four (4) single family attached dwelling units, where two water services exist and two are proposed. Additional water capacity is estimated to be 238 gallons per day per unit, or 476 gallons per day total. Please consider this a conditional water utility capacity letter pending compliance with the Columbia Water Company's administrative and technical requirements. This capacity is contingent upon installing water facilities in accordance with the Water Company's standards.

The Water Company will need to review and approve the water utility design drawings and the Applicant may be required to enter into a Water Service Agreement. We reviewed the preliminary grading/utility plan that was attached to your August 12, 2022 letter, and the proposed service line layout looked acceptable as proposed.

If you require additional information, please feel free to contact me.

Sincerely,

A handwritten signature in blue ink that reads "David T. Lewis". The signature is fluid and cursive, with the first name being the most prominent.

David T. Lewis, P.E.  
President and  
General Manager

**Columbia Water Company**

---

220 Locust Street ■ P.O. Box 350 ■ Columbia, PA 17512  
Phone: 717-684-2188 ■ Fax: 717-684-4566



# Columbia Borough Fire Department

726 Manor Street, P O Box 426, Columbia PA 17512-0426

**Scott K. Ryno, Fire Chief**

December 15, 2022

Christine L Stivers, RLA  
Saxinger & Associates, Inc.  
780 Eden Road  
Lancaster PA 17601

Dear Ms. Stivers,

Thank you for forwarding the plans for the proposed project on behalf of Habitat for Humanity located on South 5<sup>th</sup> Street in Columbia Borough.

I have reviewed the plans as presented and at this time the Fire Department has no concerns with the ability to provide fire protection to the proposed project.

If you have any questions or require further assistance from the Fire Department, please feel free to contact me at 717-684-5844 office or [chief@cbfd80.com](mailto:chief@cbfd80.com).

I appreciate the opportunity to review the plans/project.

Sincerely,

A handwritten signature in black ink that reads 'Scott K Ryno'.

Scott K Ryno, Fire Chief  
Columbia Borough Fire Department

CC: Columbia Borough  
FILE



LANCASTER COUNTY  
CONSERVATION DISTRICT

*Conserving Natural Resources for Our Future*

COPY

December 8, 2022

Lancaster Lebanon Habitat for Humanity  
443 Fairview Avenue  
Lancaster, PA 17603

RE: **Project Name – Habitat for Humanity**  
LCCD Plan ID: ESP03898  
Columbia Borough, Lancaster County

Dear Applicant:

I have reviewed the Erosion and Sediment Pollution Control Plan dated November 7, 2022 and revised December 7, 2022 for the above referenced project. If the Erosion and Sediment Pollution Control Plan is fully implemented as described, it should be adequate to meet the intent of the rules and regulations adopted under the PA Clean Streams Law relating to erosion and sedimentation control.

The Conservation District reviews this plan solely to determine whether it is adequate to satisfy the requirements of 25 PA Code §102.1 et seq. the erosion control regulations of the Department of Environmental Protection. By a determination that the plan is adequate to meet those requirements, neither the Conservation District nor the County assumes any responsibility for the implementation of the plan or the proper construction and operations of the facilities contained in the plan.

A representative of the Lancaster County Conservation District may conduct periodic inspections of the erosion and sedimentation control facilities during the construction of this project. The approved Erosion and Sediment Pollution Control Plan must be available at the site of the earthmoving activity at all times.

Yours for a better environment,

Ryan Riebling  
Resource Conservationist

C: Columbia Borough  
MLSaxinger & Associates – Michael Saxinger

RR/slk

RECEIVED

DEC 14 2022



Borough of Columbia

Appendix C
Application for Consideration of a Modification

For Borough Use Only:

File No. \_\_\_\_\_

Date of Receipt/Filing: \_\_\_\_\_

Planning Commission Meeting Date: \_\_\_\_\_

Planning Commission Meeting Date: \_\_\_\_\_

The undersigned hereby applies for approval of a modification/waiver, submitted herewith and described below:

1. Plan Name: 305 Locust Street
Plan No.: 1229-002 Plan Date: 12/5/2022

2. Project Location: \_\_\_\_\_

3. Name of Property Owners(s): GK 315 Locust St Apartments, LLC c/o Gary Myer
Address: 667 Ditz Drive, Manheim, PA 17545 Phone No.: 717-665-0100
Source of Title: Inst. # 6668867 Account No.: 1107757100000

Second Property Owners(s): \_\_\_\_\_
Address: \_\_\_\_\_ Phone No.: \_\_\_\_\_
Source of Title: \_\_\_\_\_ Account No.: \_\_\_\_\_

4. Specific section of the Subdivision and Land Development Ordinance for which a modification is requested: Article IV - Plan Processing Procedures

The Proposed Alternative to the Requirement: Provide a Sketch Plan as required with this application and at the end of project improvements, provide an As-built Plan.

Justification for the Modification/Waiver: Owner/manager was involved with adjoining property, 315 Locust Street Apartment project. After that plan's approval, it became apparent and necessary to share utilities between 305 and 315 Locust Street properties and their residential and commercial tenants. The legal owners of the two properties are not the same but they are collaborating on updating the needed shared utilities and pedestrian access and are finalizing easements for both. The improvements at 305 will occur within existing building footprint and parking for 305 tenants will be provided on the Burning Bridge Antique property with some other parking spaces serving 315.

The undersigned hereby represents that, to the best of their knowledge and belief, all information listed above is true, correct, and complete.

Signature [Handwritten Signature] Date 12/5/22

SUBDIVISION AND LAND DEVELOPMENT

DEC 05 2022

APPENDIX NO. 10

Application for Consideration of Subdivision and/or Land Development Plan

CBPC File No. \_\_\_\_\_
Date of receipt/filing: \_\_\_\_\_
(for Township use only)

The undersigned hereby applies for approval under the Columbia Borough Subdivision and Land Development Ordinance of 1989 for the (subdivision) (land development) plan submitted herewith and described below:

- 1. Plan name: Land Development for 305 Locust Street
Plan No: 1229-002 Plan date: December 5, 2022
2. Project location: 305 Locust Street
Municipality: Columbia Borough
3. Name of property owner(s): GK 315 Locust St Apartments, LLC c/o Gary Myer
Address: 667 Ditz Dr. Phone No: (717) 665-0100
Manheim, PA 17545
4. Land use and number of lots and/or units (indicate answer by number):
Single family (detached) 1 Commercial 1,060 SF
Multifamily (attached - sale) Industrial
2 Multifamily (attached - rental) Institutional
Mobile home park X (Other) Please specify Shared Easement Agreement for Pedestrians and Utilities
5. Total acreage: 0.07 AC - 305 Locust
6. Application classification: (check one)
Preliminary plan X Final plan
Lot add-on plan for processing in accordance with § 190-12C of the ordinance
Revised subdivision and/or land development plan for processing in accordance with § 190-12A of the ordinance
7. Name of applicant (if other than owner):
Address: Phone No:

COLUMBIA CODE

8. Firm which prepared plan: ELA Group, Inc.  
Address: 743 S. Broad St., Lititz, PA 17543 Phone No: 717-626-7271  
Person responsible for plan: Brent Good

9. Is a zoning change necessary No If yes, please specify:  
\_\_\_\_\_

10. Type of water supply proposed:  
 Public  
 Community  
 Individual

11. Type of sanitary sewage disposal proposed:  
 Public  
 Live  
 Capped  
 Community  
 Individual

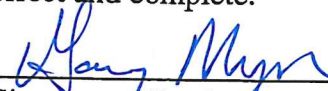
12. Lineal feet of new street None  
Identify all street(s) not proposed for dedication  
\_\_\_\_\_

13. Acreage proposed for park or other public use:  
None

14. Have plans been submitted to the municipality?  
Yes

The undersigned hereby represents that, to the best of his knowledge and belief, all information listed above is true, correct and complete.

Date: 12/5/22

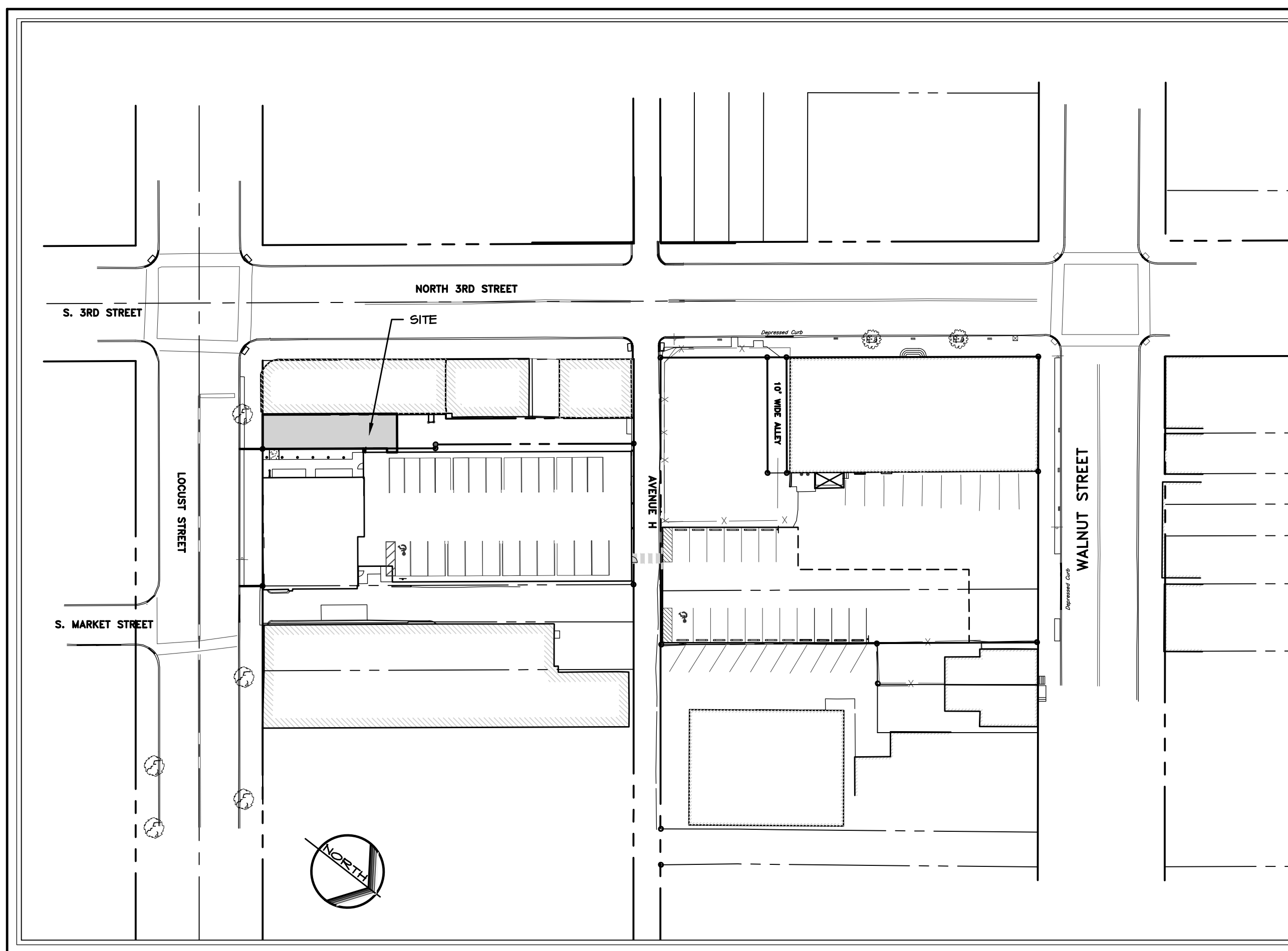
  
Signature of landowner or applicant

# SKETCH PLAN

## FOR 305 LOCUST STREET COLUMBIA BOROUGH - LANCASTER COUNTY - PENNSYLVANIA

### PLAN NOTES

- BENCHMARK: MAG NAIL SET IN DEPRESSED CURB AT THE WESTERN CORNER OF INTERSECTION OF NORTH 3RD STREET AND AVENUE H.  
ELEVATION= 289.44 NAVD 88 DATUM.
- SITE LATITUDE / LONGITUDE LOCATION: 40.03225°N, 76.50267°W
- THIS PROPERTY WAS SURVEYED USING THE CURRENT DEEDS OF RECORD AND WITHOUT THE BENEFIT OF A "TITLE SEARCH". THIS SURVEY DOES NOT GUARANTEE OR IMPLY THAT THE PROPERTY IS NOT AFFECTED BY RIGHT-OF-WAY, EASEMENTS, RESTRICTIONS, ETC. WHICH MAY BE DISCOVERED BY A COMPLETE "TITLE SEARCH".
- THIS PROPERTY DOES NOT LIE WITHIN A 100 YEAR FLOOD PLAIN ACCORDING TO FEMA FLOOD INSURANCE RATE MAP #4201G031F DATED APRIL 5, 2016.
- UNDERGROUND UTILITY LOCATIONS ARE APPROXIMATE AND WERE DETERMINED FROM VISIBLE LOCATION, ACT 121 UTILITY RESPONSES AND/OR BEST AVAILABLE PLAN INFORMATION. (LAND GRANT SURVEYORS, LLC, CANNOT GUARANTEE THE EXACT LOCATION OF UNDERGROUND UTILITIES OR STRUCTURES, AN EXACT LOCATION OR THE EXISTENCE OF OR NONEXISTENCE OF UNDERGROUND UTILITIES CAN ONLY BE OBTAINED BY SUBSURFACE EXPLORATION, WHICH IS NOT PART OF THIS CONTRACT PERFORMANCE).
- BASIS OF BEARINGS TAKEN FROM A REALIZATION OF THE PENNSYLVANIA STATE PLANE COORDINATE SYSTEM SOUTH ZONE NAD 83.
- SUBJECT PROPERTY IS LOCATED WITHIN THE HISTORIC DISTRICT. ONLY SUBJECT BUILDING'S FACADE IS DEEMED HISTORIC AND THEREFORE WILL BE PRESERVED.
- PROPOSED IMPROVEMENTS ARE COMPLIANT WITH THE AIRPORT DISTRICT OVERLAY OF CHAPTER 220, ZONING.



### UTILITY LISTING

CONTACT PA ONE CALL AT 1-800-242-1778 FOR INDIVIDUAL UTILITY TELEPHONE NUMBERS

**COLUMBIA BOROUGH**  
308 LOCUST ST  
COLUMBIA, PA, 175121121  
JAKE GRAHAM  
jgraham@columbiapa.net

**COMCAST CABLEVISION**  
1131 S DUKE ST  
LANCASTER, PA, 17602  
MARK DEATRICK  
mark\_deatrlick@comcast.com

**LANCASTER AREA SEWER AUTHORITY**  
130 CENTERVILLE RD  
LANCASTER, PA, 17603  
JOHN WILGA  
JVLGA@LASA.ORG

**COLUMBIA WATER COMPANY**  
220 LOCUST STREET  
PO BOX 350  
COLUMBIA, PA, 17512  
DAVID LEWIS  
DLEWIS@COLUMBIAWATER.NET

**PPL ELECTRIC UTILITIES CORPORATION**  
503 NEW MARKET ST  
WLKES BARRE, PA, 18702  
MARK SANTAYANA  
msantayana@pplweb.com

**CENTURYLINK**  
122 BALTIMORE ST  
PO BOX 896  
HANOVER, PA, 17331  
LEO HILBERT  
leo.hilbert@centurylink.com

**UNITED FIBER & DATA**  
840 W HAMILTON ST SUITE 220  
ALLEN TOWN, PA, 18101  
BRANDI LINDQUIST  
brandi@ufd.com

**UGI UTILITIES INC**  
1301 AIP DRIVE  
MIDDLETOWN, PA, 17057  
STEPHEN BATEMAN  
sbateman@ugi.com



### PROJECT SITE ADDRESS

305 LOCUST STREET  
COLUMBIA, PA 17512

### OWNER/DEVELOPER

6K 315 LOCUST ST APARTMENTS, LLC  
ATTN: MR. GARY MYER  
667 DITZ DRIVE  
MANHEIM, PA 17545

### SURVEYOR OF RECORD

LAND GRANT SURVEYORS  
3804 ASSEL DRIVE  
COLUMBIA, PA 17512  
(717) 285-1812

### SOURCE OF TITLE (INVOLVED PROPERTIES)

**305 LOCUST STREET**  
6K 315 LOCUST ST APARTMENTS, LLC  
Account No. 110-11643-0-0000  
Deed No. 05444238

**312-315 LOCUST STREET**  
315 LOCUST STREET LLC  
Account No. 110-920525-0-0000  
Deed No. 6164616

**307 LOCUST STREET**  
315 LOCUST STREET LLC  
Account No. 110-11643-0-0000  
Deed No. 05444238

**304-311 LOCUST STREET**  
315 LOCUST STREET LLC  
Account No. 110-11643-0-0000  
Deed No. 6164616

**25 N THIRD STREET**  
MURPHY ACQUISITIONS GROUP, LLC  
Account No. 110-66651-0-0000  
INSTRUMENT NO. 6633147

**316 WALNUT STREET**  
MURPHY ACQUISITIONS GROUP, LLC  
Account No. 110-64901-0-0000  
INSTRUMENT NO. 6633147

### SITE DATA

GROSS LOT AREA: 1 PROPERTY 2,914 SF (0.07 ACRES)  
PROPOSED USES: 2 APARTMENTS  
FIRST FLOOR COMMERCIAL USE 1,060 SF

DENSITY: 28.5 DU/AC

NUMBER OF LOTS: 1 EXISTING 1 PROPOSED

SANITARY SEWER: PUBLIC  
WATER: PUBLIC

HISTORIC BUILDING FACADE TO BE PRESERVED

### ZONING DATA

ZONING DISTRICT: DC - DOWNTOWN COMMERCIAL DISTRICT

AREA & YARD REQUIREMENTS

MINIMUM LOT AREA: 1,500 SF  
MINIMUM LOT WIDTH: 15 FEET  
MAXIMUM BUILDING COVERAGE PER LOT: 40%  
EXISTING BUILDING COVERAGE: 1,231 SF (0.03 AC) 41.5%  
PROPOSED BUILDING COVERAGE: 1,231 SF (0.03 AC) 41.5%

MINIMUM BUILDING SETBACK:  
FRONT: 0 FEET  
SIDE: 0 FEET  
REAR: 0 FEET

\* NEW LOT MEETS COMPLIANCE

### OFF-STREET PARKING DATA

PER ZONING ORDINANCE SECTION 220.41

| USE               | REQUIRED SPACES        | PROVIDED SPACES    |
|-------------------|------------------------|--------------------|
| 2 APARTMENTS      | 4 SPACES               | 4 OFF-SITE         |
| 1 COMMERCIAL USES | NONE PER 220-41.B.2(a) | EXISTING ON-STREET |

### ZONING ACTION

- FOR ADJOINING 315 LOCUST STREET -

PER PUBLIC MEETINGS ON 04/28/2021

THE ZONING HEARING BOARD GRANTED THE FOLLOWING RELIEF WITH CONDITIONS.

VARIANCES OF THE FOLLOWING:

- SEC. 220-11.6(1) TIME LIMITS ON APPROVALS TO BE A ONE YEAR EXTENSION, TWO YEARS TOTAL, FOR ZONING AND BUILDING PERMITS AND COMPLETION OF CONSTRUCTION.
- SEC. 220-25 FIRST FLOOR COMMERCIAL SPACE TO OCCUPY APPROXIMATELY 2,000 SQ. FT. OF FIRST FLOOR.
- SEC. 220-41A TO PERMIT THIRTY SEVEN (37) PARKING SPACES FOR THE APARTMENT UNITS.

### MODIFICATION SOUGHT

ART. IV, PLAN PROCESSING PROCEDURES



PENNSYLVANIA ACT 287 AS AMENDED BY ACT 50 (2017) REQUIRES NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE COMMONWEALTH.

DATE: 1/3/20 BY: JER SERIAL NO: 20200031581

### NOTES: UNDERGROUND UTILITY LINE PROTECTION ACT

- IN COMPLIANCE WITH AND PURSUANT TO THE PROVISIONS OF 73 P.S. §176, AS AMENDED BY ACT 121 OF 2008, LAND GRANT SURVEYORS, LLC, HAS PERFORMED THE FOLLOWING REQUIREMENTS IN PREPARING THESE DRAWINGS THAT INCLUDE EXCAVATION OR DEMOLITION WORK AT SITES WITHIN THE POLITICAL SUBDIVISION AND/OR LAND DEVELOPMENT SHOWN ON THE DRAWINGS HEREIN:
- PURSUANT TO 73 P.S. §176(2), LAND GRANT SURVEYORS, LLC HAS REQUESTED LINE AND FACILITY INFORMATION FROM THE ONE CALL SYSTEM NOT LESS THAN TEN (10) NOR MORE THAN NINETY (90) BUSINESS DAYS BEFORE FINAL DESIGN IS TO BE COMPLETED. IF SUCH INFORMATION WAS OBTAINED MORE THAN NINETY (90) DAYS BEFORE FINAL DESIGN IS TO BE COMPLETED, LAND GRANT SURVEYORS, LLC HAS STATED IN THE REQUEST THAT THE WORK IS PRELIMINARY.
  - PURSUANT TO 73 P.S. §176(3), LAND GRANT SURVEYORS, LLC HAS SHOWN, UPON REQUEST THESE DRAWINGS, THE POSITION AND TYPE OF EACH FACILITY OWNER'S LINE, AS DERIVED PURSUANT TO THE REQUEST MADE AS REQUIRED BY 73 P.S. §176(2), THE NAME OF THE FACILITY OWNER AND THE FACILITY OWNER'S DESIGNATED OFFICE ADDRESS AND TELEPHONE NUMBER.
  - PURSUANT TO 73 P.S. §176(5), LAND GRANT SURVEYORS, LLC HAS CALLED THE ONE CALL SYSTEM AND SHOWN AS PROOF, THE SERIAL NUMBER OF THE ONE CALL NOTICE AND THE TOLL FREE NUMBER OF THE ONE CALL SYSTEM ON THE DRAWINGS NEAR THE SERIAL NUMBER.
  - IF, PURSUANT TO 73 P.S. §176(2), LAND GRANT SURVEYORS, LLC HAS REQUESTED LINE AND FACILITY INFORMATION FROM THE ONE CALL SYSTEM MORE THAN NINETY (90) DAYS BEFORE FINAL DESIGN IS TO BE COMPLETED, LAND GRANT SURVEYORS, LLC HAS INDICATED THAT THE REQUEST IS PRELIMINARY AND THE SERIAL NUMBER OF SAID REQUEST IS SHOWN ON THE DRAWINGS HEREIN.

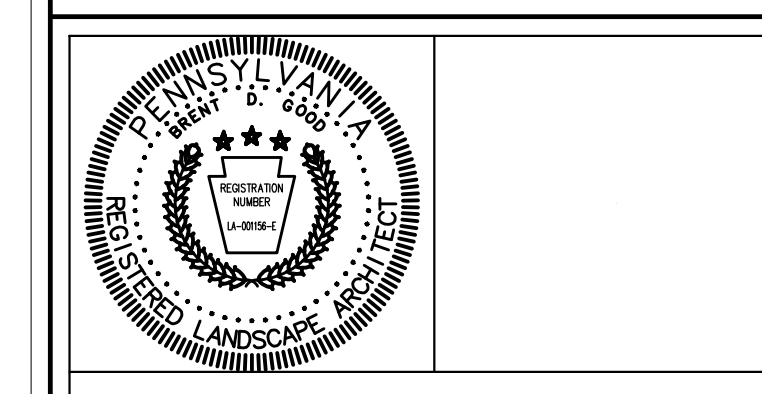
LAND GRANT SURVEYORS, LLC DOES NOT REPRESENT, WARRANT, ASSURE OR GUARANTEE THAT THE INFORMATION RECEIVED PURSUANT TO THE ONE CALL SYSTEM REQUEST AND AS REFLECTED ON THESE DRAWINGS IS ACCURATE OR CORRECT. FURTHERMORE, LAND GRANT SURVEYORS, LLC, INCLUDES THE INFORMATION ONLY PURSUANT TO THE REQUIREMENTS OF THE UNDERGROUND UTILITY LINE PROTECTION ACT, AS AMENDED BY ACT 121 OF 2008.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION BY CALLING THE PENNSYLVANIA ONE CALL SYSTEM 1-800-242-1778 A MINIMUM OF THREE (3) DAYS PRIOR TO EXCAVATING OR WITH CAREFUL EXPLORATORY WORK. AT THE CONTRACTOR'S RISK, PRIOR TO CONSTRUCTION FOR THOSE PRIVATE LINES WHICH ARE NOT ABLE TO BE LOCATED THROUGH THE ONE CALL PROCESS, IT MAY BECOME NECESSARY IN THE FIELD TO ADJUST THE PROPOSED UTILITY LOCATION TO ACCOMMODATE AND UTILITY CROSSING CONFLICTS WHICH MAY OCCUR. LAND GRANT SURVEYORS, LLC, SHALL BE NOTIFIED IMMEDIATELY OF ANY SUCH CONFLICTS ARE ENCOUNTERED. THE INFORMATION CONTAINED IN THIS SECTION AS IT RELATES TO THE DUTIES OF CONTRACTORS DOES NOT CONSTITUTE LEGAL ADVICE AND IN NO WAY REPRESENTS THE EXTENT OF THE CONTRACTOR'S DUTIES PURSUANT TO THE UNDERGROUND UTILITY LINE PROTECTION ACT. CONTRACTORS WITH QUESTIONS REGARDING THE UNDERGROUND UTILITY LINE PROTECTION ACT SHOULD CONSULT WITH AN ATTORNEY IMMEDIATELY.

| REVISIONS PER: | DATE: | BY: |
|----------------|-------|-----|
| 1. -           | -     | -   |
| 2. -           | -     | -   |
| 3. -           | -     | -   |
| 4. -           | -     | -   |
| 5. -           | -     | -   |

**EVA group, inc.**  
ENGINEERS + LANDSCAPE ARCHITECTS

743 S. BROAD ST.  
LITITZ, PA 17543  
(717) 626-7271  
elagroup.com



**SKETCH PLAN**

SUBJECT:  
**COVER SHEET**  
FOR  
305 LOCUST STREET  
COLUMBIA BOROUGH, LANCASTER COUNTY, PENNSYLVANIA

CLIENT:  
**GK 315 LOCUST ST APARTMENTS, LLC**  
ATTN: MR. GARY MYER  
667 DITZ DRIVE  
MANHEIM, PA 17545  
717-665-0100

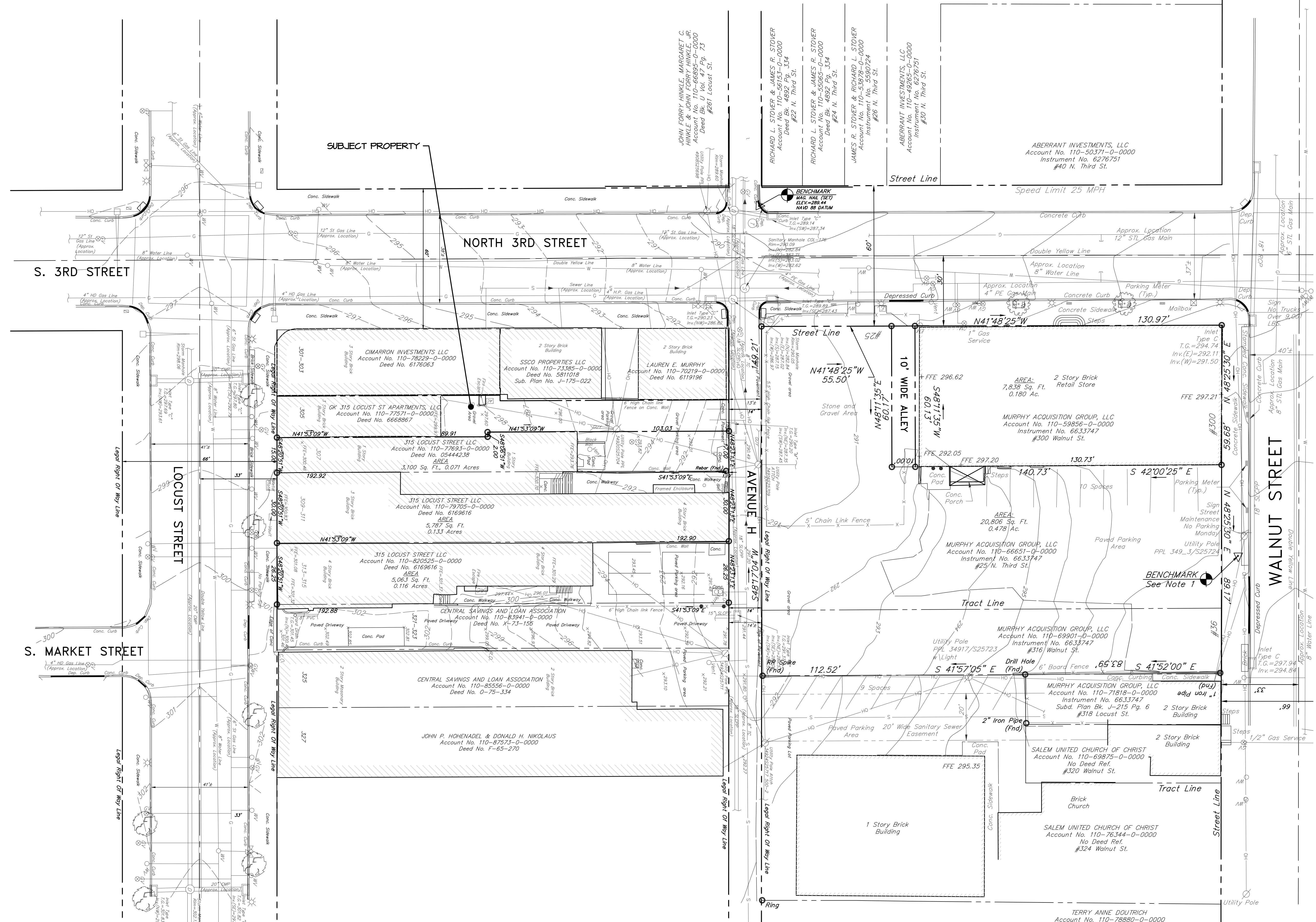
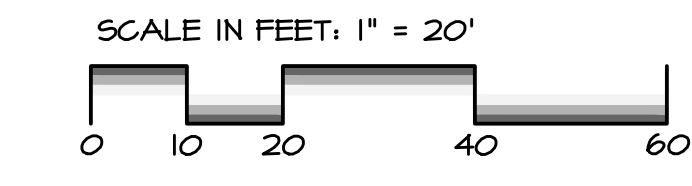
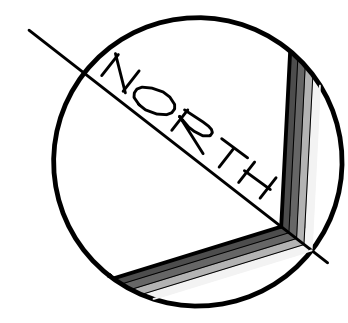
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|-----------|-----|--------------|--------------|
| MANAGER:  | BDG | DATE:        | DEC. 5, 2022 |
| DESIGNER: | BDG | PROJECT NO.: | 1229-002     |
| DRAWN BY: | BLM | SCALE:       | AS SHOWN     |

DRAWING NO.  
**1 of 3**



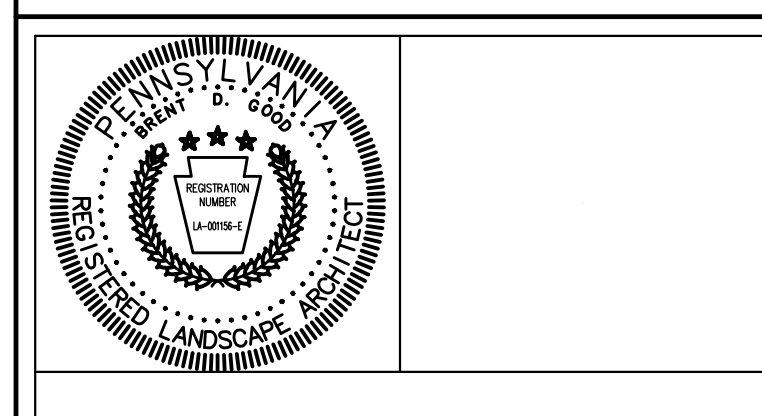
EXISTING LEGEND

- IRON PIPE, METER
- CONCRETE MONUMENT
- ADJOINER PROPERTY LINE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- CENTERLINE
- EASEMENTS
- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- SPOT ELEVATION
- CURB LINE
- EDGE OF PAVEMENT (E.O.P.)
- MIN. BLDG. SETBACK LINE
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- UNDERGROUND TELEPHONE
- GAS LINE
- SANITARY SEWER LINE
- SANITARY FORCE MAIN
- WATER LINE
- STORM DRAINAGE PIPING
- FENCE
- ZONING LINE
- GUIDE RAIL
- EDGE OF WATER (STREAM)
- FEMA 100 YEAR FLOODPLAIN
- TREE LINE
- DECIDUOUS TREES
- CONIFEROUS TREE
- SIGN
- WELL
- LIGHT POLE
- GROUND LIGHT
- ROOF DRAIN
- MAILBOX
- BOLLARD
- REFLECTOR POST
- TRAFFIC SIGNAL BOX
- TRAFFIC SIGNAL POLE
- TRAFFIC SIGNAL MAST



| REVISIONS PER: | DATE: | BY: |
|----------------|-------|-----|
| 1.             | -     | -   |
| 2.             | -     | -   |
| 3.             | -     | -   |
| 4.             | -     | -   |
| 5.             | -     | -   |

743 S. BROAD ST.  
LITITZ, PA 17543  
(717) 626-7271  
elagroup.com



**SKETCH PLAN**  
SUBJECT:  
**EXISTING CONDITIONS PLAN**  
FOR  
305 LOCUST STREET  
COLUMBIA BOROUGH, LANCASTER COUNTY, PENNSYLVANIA  
CLIENT:  
**GK 315 LOCUST ST APARTMENTS, LLC**  
ATTN: MR. GARY MYER  
867 DITZ DRIVE  
MANHEIM, PA 17545  
717-665-0100

|           |     |              |              |
|-----------|-----|--------------|--------------|
| MANAGER:  | BDG | DATE:        | DEC. 5, 2022 |
| DESIGNER: | BDG | PROJECT NO.: | 1229-002     |
| DRAWN BY: | BLM | SCALE:       | 1" = 20'     |

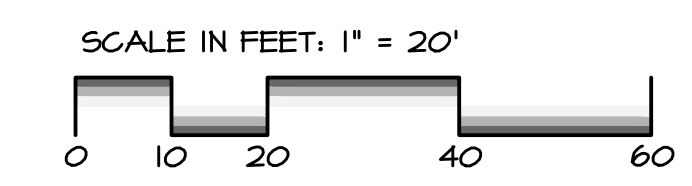
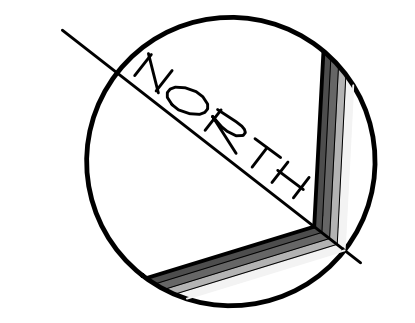
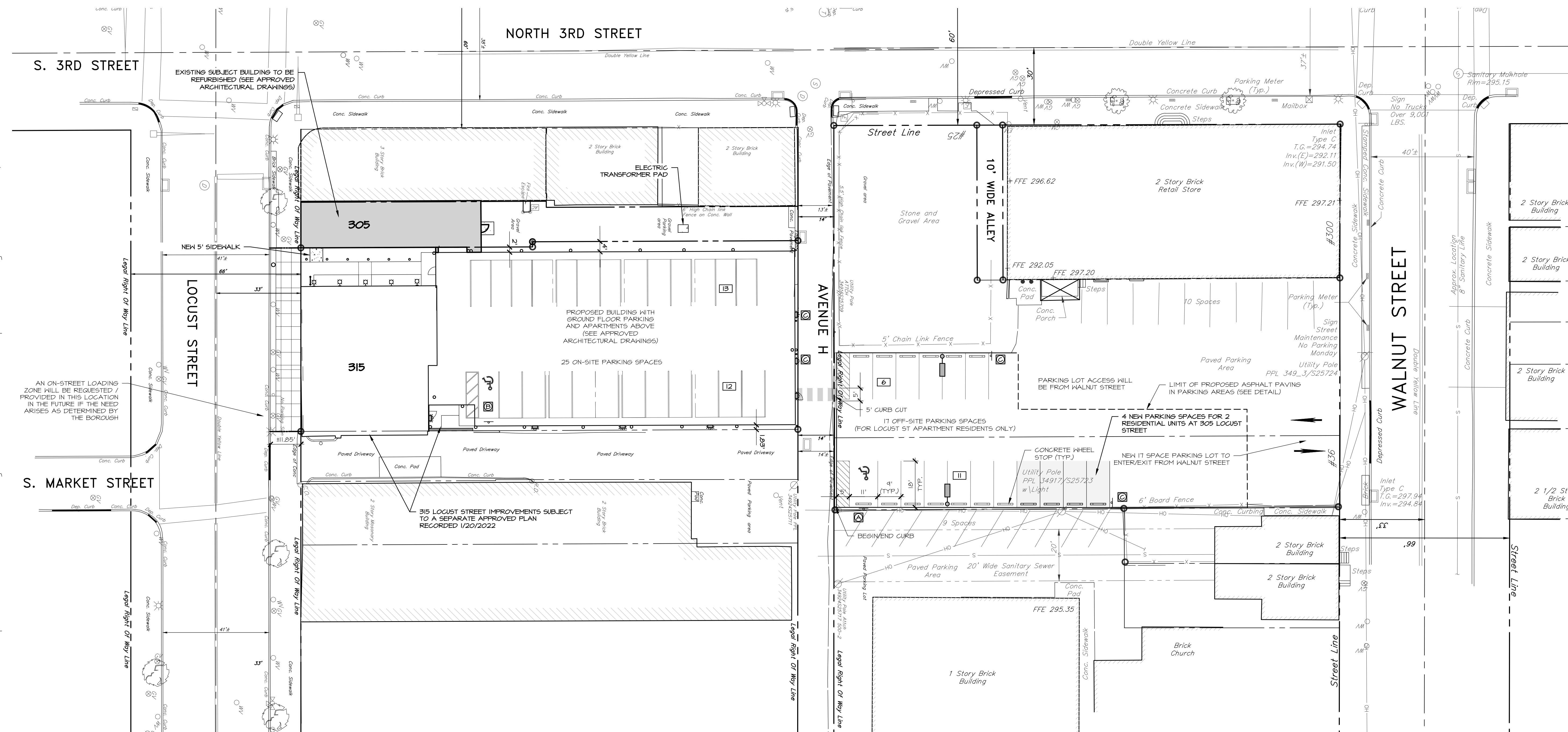
DRAWING NO.  
**2 of 3**

**TRAFFIC SIGNAGE LEGEND**

| SYMBOL | DESCRIPTION   | SIZE    | PA DOT DESIG.   | NOTES |
|--------|---|---------|-----------------|-------|
| A      | RESERVED PARKING-VAN ACCESSIBLE   | 12"x18" | RT-B W<br>RT-8A | -     |
| B      | RESERVED PARKING (HANDICAP)   | 12"x18" | RT-B            | -     |
| C      | LOCUST ST. APARTMENT RESIDENTS ONLY - UNAUTHORIZED VEHICLES WILL BE TOWED | 24"x24" |                 |       |

**SITE LAYOUT LEGEND**

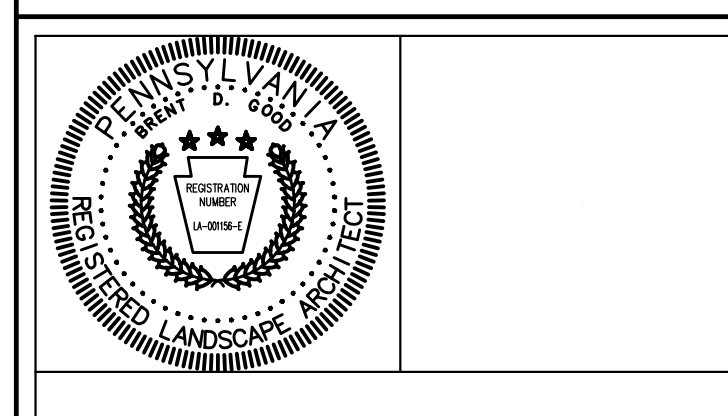
- PROPERTY LINE
  - EASEMENT LINE
  - CENTERLINE
  - RIGHT OF WAY LINE
  - BUILDING SETBACK LINE
  - FENCE LINE
  - CONCRETE CURB
  - CLEAR SIGHT TRIANGLE
  - PROPOSED STORMWATER BASIN
  - TREE LINE
- 
- CONCRETE PAVING
  - BITUMINOUS PAVING
  - PROPOSED SANITARY SEWER MANHOLE
  - PROPOSED STORM WATER INLET
  - PROPOSED YARD DRAIN
  - PROPOSED STORM WATER MANHOLE
  - PROPOSED FIRE HYDRANT
  - HANDICAP ACCESSIBLE PARKING
  - CONCRETE MONUMENT
  - IRON PIN
  - SIGNAGE
  - HEADWALL/ENDWALL



| REVISIONS PER: | DATE: | BY: |
|----------------|-------|-----|
| 1.             | -     | -   |
| 2.             | -     | -   |
| 3.             | -     | -   |
| 4.             | -     | -   |
| 5.             | -     | -   |

**EVA group, inc.**  
ENGINEERS • LANDSCAPE ARCHITECTS

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**SKETCH PLAN**  
SUBJECT:  
**SITE LAYOUT PLAN**  
FOR  
305 LOCUST STREET  
COLUMBIA BOROUGH, LANCASTER COUNTY, PENNSYLVANIA  
CLIENT:  
**GK 315 LOCUST ST APARTMENTS, LLC**  
ATTN: MR. GARY MYER  
867 DITZ DRIVE  
MANHEIM, PA 17545  
717-665-0100

|           |     |              |              |
|-----------|-----|--------------|--------------|
| MANAGER:  | BDG | DATE:        | DEC. 5, 2022 |
| DESIGNER: | BDG | PROJECT NO.: | 1229-002     |
| DRAWN BY: | BLM | SCALE:       | 1" = 20'     |

DRAWING NO.  
**3 of 3**

**A SITE LAYOUT PLAN**  
SCALE: 1" = 20'

DRAWING: C:\Users\brandon\ACCDocs\NELA\_Group\2224-002\_305\_4\_315\_Locust\_St\Project\_Files\CAD\_Data\Land\_Development\LAYOUT.dwg - PLOTTED: Dec 05, 2022 9:56 am

# ADDITION AND RENOVATIONS FOR LOCUST STREET APARTMENTS

305 LOCUST STREET, COLUMBIA, PA



667 DITZ DRIVE, MANHEIM, PENNSYLVANIA 17545  
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SEAL

ADDITION AND RENOVATIONS FOR  
LOCUST STREET APARTMENTS  
305 LOCUST STREET, COLUMBIA, PA

REVISIONS

| NO. | DESCRIPTION           | DATE     |
|-----|-----------------------|----------|
| 1   | CONSTRUCTION REVISION | 11/03/22 |

DWG DATE 09/13/22

PROJECT NO: 20.5012

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COVER SHEET

A00

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| SHEET LIST   |  |          |           |                       |
|--------------|--|----------|-----------|-----------------------|
| SHEET NUMBER | SHEET NAME   | REVISION | REV. DATE | REV. DESCRIPTION      |
| A00          | COVER SHEET  | 1        | 11/03/22  | CONSTRUCTION REVISION |
| A001         | CODE INFORMATION   |          |           |                       |
| A002         | DEMOLITION PLANS   |          |           |                       |
| A100         | BASEMENT PLAN  |          |           |                       |
| A101         | FLOOR PLANS  | 1        | 11/03/22  | CONSTRUCTION REVISION |
| A102         | REFLECTED CEILING PLANS                                  | 1        | 11/03/22  | CONSTRUCTION REVISION |
| A201         | EXTERIOR ELEVATIONS                                      |          |           |                       |
| A301         | BUILDING SECTION   | 1        | 11/03/22  | CONSTRUCTION REVISION |
| A302         | BUILDING SECTION/ ROOF PLAN                              | 1        | 11/03/22  | CONSTRUCTION REVISION |
| A501         | DETAILS  | 1        | 11/03/22  | CONSTRUCTION REVISION |
| A601         | DOOR SCHEDULE  |          |           |                       |
| S100         | GENERAL STRUCTURAL NOTES                                 |          |           |                       |
| S101         | FOUNDATION, LOBBY, LOW CANOPY, & 2ND FLOOR FRAMING PLANS |          |           |                       |
| S102         | THIRD FLOOR AND ROOF FRAMING PLAN                        |          |           |                       |
| S201         | STRUCTURAL AND TYPICAL DETAILS                           |          |           |                       |
| S301         | STRUCTURAL SECTIONS                                      |          |           |                       |
| S302         | STRUCTURAL SECTIONS                                      |          |           |                       |
| S401         | STRUCTURAL SCHEDULES AND DETAILS                         |          |           |                       |
| FP-1         | FIRE SPRINKLER RELOCATION PLAN                           |          |           |                       |
| FP-2         | FIRE SPRINKLER RELOCATION PLAN                           |          |           |                       |
| FP-3         | FIRE SPRINKLER RELOCATION PLAN                           |          |           |                       |
| M001         | MECHANICAL COVER SHEET                                   |          |           |                       |
| M101         | MECHANICAL FLOOR PLANS                                   |          |           |                       |
| M201         | HVAC DETAILS   |          |           |                       |
| P101         | SANITARY PLUMBING PLANS                                  |          |           |                       |
| P201         | DOMESTIC WATER PLUMBING PLANS                            |          |           |                       |
| P202         | DOMESTIC WATER PLUMBING PLANS                            |          |           |                       |
| E100         | ELECTRICAL SCHEDULES                                     |          |           |                       |
| E101         | ELECTRICAL FLOOR PLANS                                   |          |           |                       |
| E102         | ELECTRICAL SCHEDULES                                     |          |           |                       |

REVISION 1  
 • CHANGED ENTRANCE TO LOBBY 103  
 • REMOVED WATER CLOSET IN COMMERCIAL SPACE 101

### NOTES TO BUILDING OWNER:

- FURNITURE, APPLIANCES AND EQUIPMENT SHOWN IN ARCHITECTURAL PLANS ARE FOR COORDINATION PURPOSES ONLY, AND ARE NOT INCLUDED IN THE BUILDING PROVIDED UNLESS SPECIFICALLY NOTED AS SUCH ON THE PLANS.
- BUILDING SECURITY AND ALARM SYSTEMS ARE NOT INCLUDED IN THE BUILDING PROVIDED AND MUST BE COORDINATED SEPARATELY BY THE OWNER.
- BUILDING SIGNAGE IS NOT INCLUDED IN THE BUILDING PROVIDED AND MUST BE COORDINATED SEPARATELY BY THE OWNER.

### STANDARD ABBREVIATIONS

### SYMBOLS LEGEND

### GENERAL NOTES

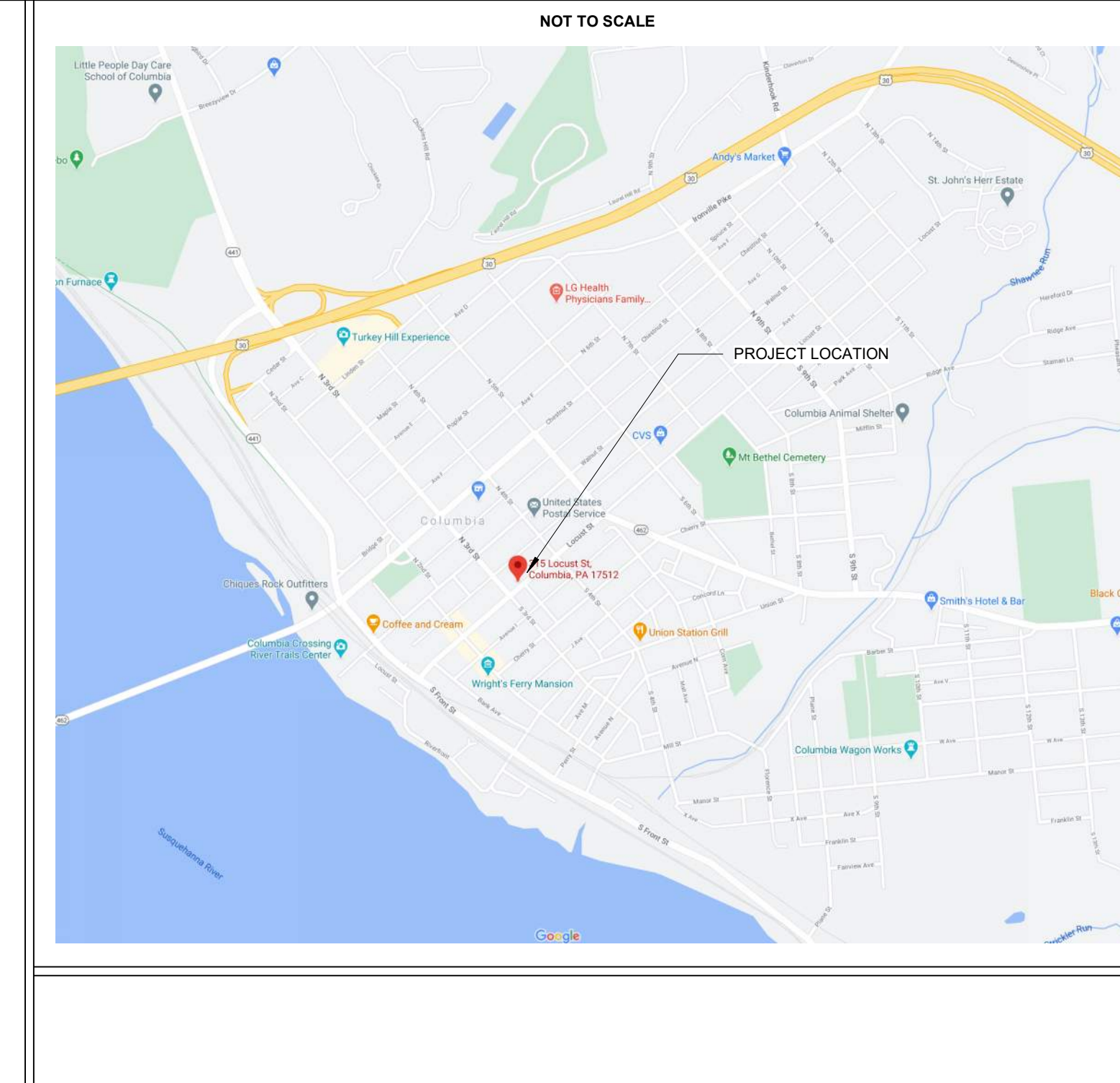
### SITE LOCATION MAP

### CONTRACTOR LIST

|                             |                              |                           |                           |
|-----------------------------|------------------------------|---------------------------|---------------------------|
| ABV ABOVE                   | EQ EQUAL                     | LH LEFT HAND              | S SOUTH                   |
| AFF ABOVE FINISHED FLOOR    | EQUIP EQUIPMENT              | LHR LEFT HAND REVERSE     | SCHSCHEDULE               |
| ACCACCESS                   | EPDM ETHYLENE PROPYLENE      | L LENGTH                  | SHT SHEET                 |
| APCACOUSTICAL PANEL CEILING | DIENE MONOMER                | LP LOW POINT              | SV SHEET VINYL            |
| ATCACOUSTICAL TILE CEILING  | EXIST EXISTING               | LVR LOUVER                | SIM SIMILAR               |
| ANIPACOUSTICAL WALL PANEL   | ETR EXISTING TO REMAIN       | MATL MATERIAL             | SCWD SOLID CORE WOOD DOOR |
| ADJ ADJUSTABLE              | EXP EXPANSION                | MFRMANUFACTURER           | STC SOUND TRANSMISSION    |
| A/C AIR CONDITIONING        | EXP JT EXPANSION JOINT       | MASMASONRY                | CLASSIFICATION            |
| ALT ALTERNATE               | EXT EXTERIOR                 | MO MASONRY OPENING        | SPEC SPECIFICATIONS       |
| ALUM ALUMINUM               | EIFS EXTERIOR INSULATION     | MAXMAXIMUM                | SOFT SQUARE FOOT          |
| ANCHANCHOR                  | AND FINISH SYSTEM            | STN STAIN                 | STL STEEL                 |
| ARCH ARCHITECT(URAL)        | FB FACE BRICK                | STOR STORAGE              | STRCT STRUCTURAL          |
| BSMT BASEMENT               | FE FEET OR FOOT              | SUSP SUSPENDED            | MTL METAL                 |
| BRGBEARING                  | FF FINISHED FLOOR            | TECH TECHNICAL            | TEMP TEMPERATURE          |
| BTWN BETWEEN                | FFE FINISHED FLOOR ELEVATION | THK THICKNESS             | T&G TONGUE AND GROOVE     |
| BIT BITUMINOUS              | FA FIRE ALARM                | T&B TOP AND BOTTOM        | TOMTOP OF MASONRY         |
| BLKG BLOCKING               | FE FIRE EXTINGUISHER         | TOR TOP OF ROOF           | TOT TOP OF SLAB           |
| BRKBRICK                    | MFGWB MISTURE RESISTANT      | TOS TOP OF STEEL          | TOW TOP OF WALL           |
| BLDG BUILDING               | FLG FLASHING                 | T TREAD                   | TYP TYPICAL               |
| CAB CABINET                 | FLR FLOOR                    | NTS NOT TO SCALE          | OC ON CENTER              |
| CPT CAPRET                  | FD FLOOR DRAIN               | OC ON CENTER              | OPP OPPOSITE              |
| CLG CEILING                 | FTG FOOTING                  | GC GENERAL CONTRACTOR     | OH OPPOSITE HAND          |
| CEMCEMENT                   | FCN FOUNDATION               | GYP GYPSUM                | OD OUTSIDE DIAMETER       |
| CTR CENTER                  | FURN FURNISHED               | GWB GYPSUM WALL BOARD     | PNT PAINT                 |
| CT CERAMIC TILE             | FUR FURRING                  | GYP BD GYPSUM BOARD       | PR PAIR                   |
| CLR CLEAR                   | COEFFICIENT                  | HVAC HEATING, VENTILATING | PRE-ENGINEERED METAL      |
| CLO CLOSET                  | NTS NOT TO SCALE             | AND AIR CONDITIONING      | HT HEIGHT                 |
| COL COLUMN                  | GAL GALLON                   |                           | HMD HOLLOW CORE WOOD DOOR |
| CONC CONCRETE               | GALV GALVANIZED              |                           | HM HOLLOW METAL           |
| CMU CONCRETE MASONRY UNIT   | GC GENERAL CONTRACTOR        |                           | HOR HORIZONTAL            |
| CONST CONSTRUCTION          | GYP GYPSUM                   |                           | INCL INCLUDED             |
| CJ CONTROL JOINT            | GWB GYPSUM WALL BOARD        |                           | ID INSIDE DIAMETER        |
| CB CORNER BEAD              | GYP BD GYPSUM BOARD          |                           | INFO INFORMATION          |
| CRSCOURSE                   | HVAC HEATING, VENTILATING    |                           | INT INTERIOR              |
| DEGREE                      | AND AIR CONDITIONING         |                           | JC JANITOR'S CLOSET       |
| DEMDEMOLITION / DEMOLISH    |                              |                           | JT JOINT                  |
| DET DETAIL                  |                              |                           | REF REFRIGERATOR          |
| DIA DIAMETER                |                              |                           | REIN REINFORCED           |
| DM DIMENSION                |                              |                           | REQD REQUIRED             |
| DW DISHWASHER               |                              |                           | REV REVISION              |
| DNSP DOWNSPOUT              |                              |                           | RH RIGHT HAND             |
| DN DOWN                     |                              |                           | RHR RIGHT HAND REVERSE    |
| DWG DRAWING                 |                              |                           | RD ROOF DRAIN             |
| DF DRINKING FOUNTAIN        |                              |                           | RM ROOM                   |
| EA EACH                     |                              |                           | RO ROUGH OPENING          |
| EW EACH WAY                 |                              |                           |                           |
| E EAST                      |                              |                           |                           |
| ELEC ELECTRIC               |                              |                           |                           |
| EWC ELECTRIC WATER COOLER   |                              |                           |                           |
| ELEV ELEVATOR               |                              |                           |                           |
| EMER EMERGENCY              |                              |                           |                           |
| ENR ENGINEER                |                              |                           |                           |
| ENT ENTRANCE                |                              |                           |                           |

|                        |                  |
|------------------------|------------------|
| COLUMN GRID            | 0                |
| DEMOLITION TAG         | 10               |
| DOOR TAG               | 101              |
| ELEVATION TAG          | A201 1           |
| ELEVATION MATERIAL TAG | 1                |
| LARGE SCALE PLAN       | A101             |
| NORTH ARROW            | ↑                |
| REVISION TAG           | △                |
| ROOM TAG               | ROOM NAME<br>101 |
| SECTION TAG            | 1<br>A101        |
| SIGNAGE TAG            | A                |
| SPOT ELEVATION TAG     | +                |
| TOILET ACCESSORY TAG   | T1               |
| WALL PARTITION TAG     | MF2              |
| WINDOW TAG             | W1               |

- NOTIFY ARCHITECT, IN WRITING, OF ANY DISCREPANCIES FOUND WITHIN THE CONSTRUCTION DOCUMENTS PRIOR TO BEGINNING OF WORK. THIS INCLUDES, BUT IS NOT LIMITED TO, ALL DIMENSIONS, FLOOR-TO-FLOOR HEIGHTS, TOP OF STEEL ELEVATIONS, MASONRY OPENING LOCATIONS AND SIZES, COLUMN LOCATIONS AND SIZES, AND SIMILAR CONDITIONS. FIELD VERIFY ALL EXISTING CONDITIONS WHERE NEW WORK IS REQUIRED TO TIE IN. THIS INCLUDES ALL DIMENSIONS AND CONSTRUCTION CONDITIONS WHETHER SHOWN ON PLANS OR NOT.
- COMPLY WITH, AND PERFORM ALL WORK IN ACCORDANCE WITH ALL APPLICABLE LAWS, STATUTES, ORDINANCES, LAWFUL ORDERS OF GOVERNMENTAL AUTHORITIES, BUILDING CODES, RULES AND REGULATIONS, UNLESS CONTRACT DOCUMENTS REQUIRE HIGHER OR GREATER STANDARD TO BE CONFORMED TO. IF PORTIONS OF THE CONTRACT DOCUMENTS ARE RECOGNIZED AS NOT MEETING THE STANDARD ESTABLISHED THEREBY, PROMPTLY NOTIFY ARCHITECT IN WRITING BEFORE PROCEEDING WITH WORK.
- EACH SUBCONTRACTOR SHALL BE ACQUAINTED WITH ALL WORK TO BE DONE, MATERIALS AND EQUIPMENT TO BE INSTALLED, AND COORDINATE THEIR WORK WITH OTHERS IN ADVANCE OF INSTALLING ANY SYSTEM OR PORTION THEREOF.
- EACH SUBCONTRACTOR WHO FAILS TO COORDINATE INSTALLATION OF HIS WORK WITH OTHER TRADES SHALL BEAR ALL COSTS OF EACH AFFECTED TRADE FOR DISCONNECTING, REMOVAL AND RE-INSTALLATION OF AFFECTED SYSTEMS, EQUIPMENT OR PORTION THEREOF.
- METAL WALL PANEL AND METAL ROOFING CONTRACTOR SHALL PROVIDE EFFECTIVE SEPARATION OF DISSIMILAR MATERIALS TO PREVENT GALVANIC ACTION.
- STUD WALL CONTRACTOR SHALL PROVIDE WOOD BLOCKING AS REQUIRED IN WALLS TO SUPPORT WALL-MOUNTED ITEMS.
- ALL WALL DIMENSIONS ARE TO FACE OF STUD OR CMU UNLESS NOTED OTHERWISE.



|  |
|--|
| <b>GENERAL CONTRACTOR</b><br>SPEEDWELL CONSTRUCTION, INC.<br>667 DITZ DRIVE, MANHEIM, PA 17545<br>PH: 717-665-0100, FAX: 717-665-0101<br>CONTACT: STEVE OBERHOLTZER<br>EMAIL: SOBERHOLTZER@SPEEDWELLCONSTRUCTION.COM |
| <b>ARCHITECT OF RECORD</b><br>SPEEDWELL DESIGN, L.L.C.<br>667 DITZ DRIVE, MANHEIM, PA 17545<br>PH: 717-665-0100, FAX: 717-665-0101<br>CONTACT: PETE WITMAIER<br>EMAIL: PWITMAIER@SPEEDWELLCONSTRUCTION.COM           |
| <b>STRUCTURAL ENGINEER</b><br>KENNETH B ROBINSON & ASSOCIATES<br>40 W. MAIN STREET, MECHANICSBURG, PA 17055<br>PH: 717-697-9250, FAX: 717-697-9251<br>CONTACT: KEN ROBINSON<br>EMAIL: KBR@KBRANDENGINEERING.COM      |
| <b>FIRE PROTECTION CONTRACTOR</b><br>METROPOLITAN FIRE PROTECTION<br>639 SUSSEX BLVD, BROOKMALL, PA 19008<br>PH: 484-421-3021, FAX: 717-697-9251<br>CONTACT: MIKE WYR<br>EMAIL: MWY@METFIRE.COM                      |
| <b>MECHANICAL CONTRACTOR</b><br>HALLER ENTERPRISES<br>212 BUCKY DR, LITITZ, PA 17543<br>PH: 717-625-1500, FAX: 717-697-9251<br>CONTACT: TODD POSTLETHWAIT<br>EMAIL: TPOSTLETHWAIT@HALLERENT.COM                      |
| <b>PLUMBING CONTRACTOR</b><br>WILE PLUMBING INC.<br>3296 MARIETTA AVE, LANCASTER, PA 17601<br>PH: 717-522-1161, FAX: 717-697-9251<br>CONTACT: DUSTIN GINGRICH<br>EMAIL: DUSTING@WILEPLUMBING.COM                     |
| <b>ELECTRICAL CONTRACTOR</b><br>LEGACY ELECTRICAL SERVICES<br>841 LITITZ RD, MANHEIM, PA 17545<br>PH: 717-653-2454, FAX: 717-697-9251<br>CONTACT: JOSH MELLOTT<br>EMAIL: JMELLOTT@LEGACYELECT.COM                    |



| NO. | REVISIONS   | DATE |
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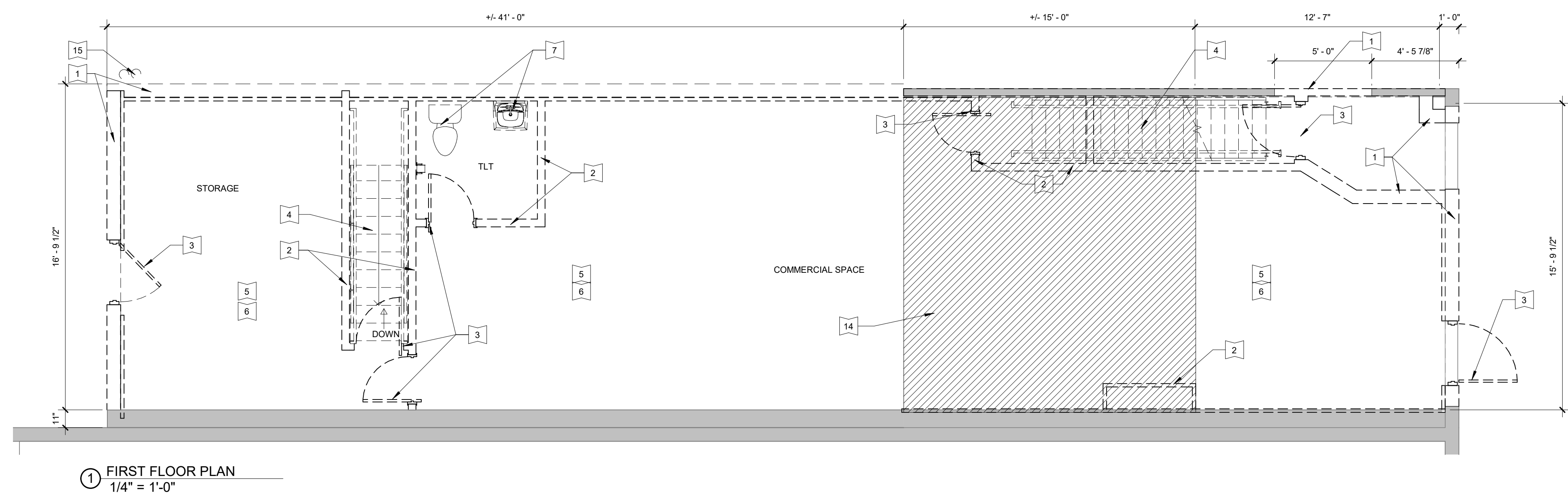
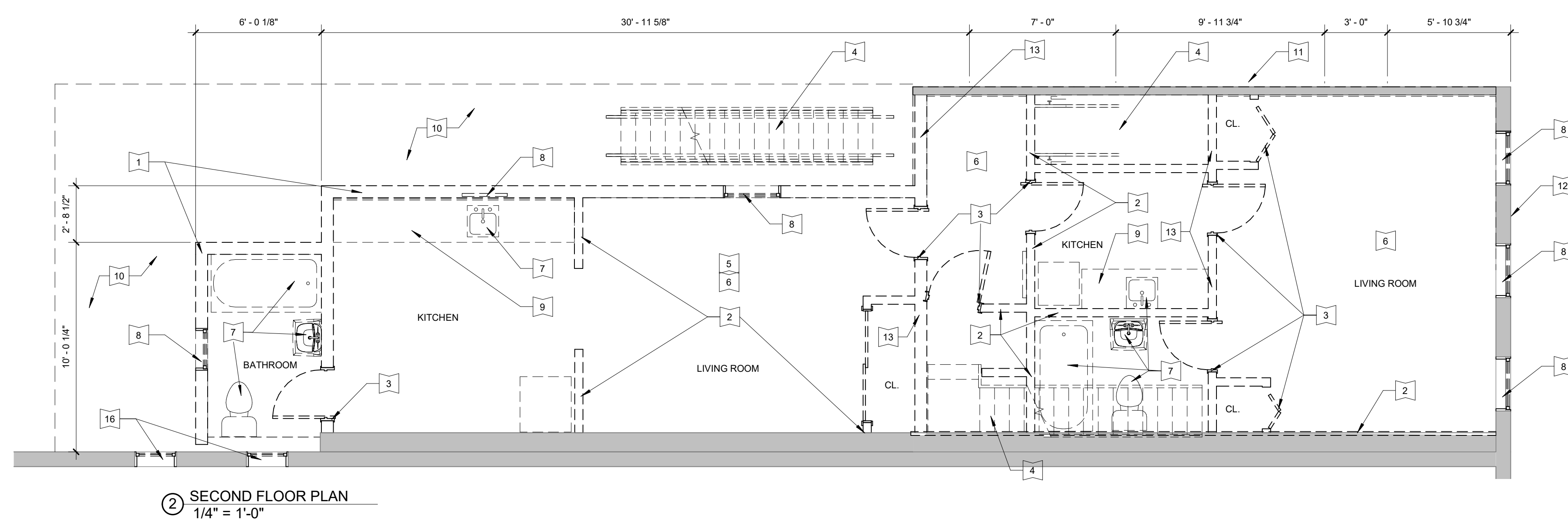
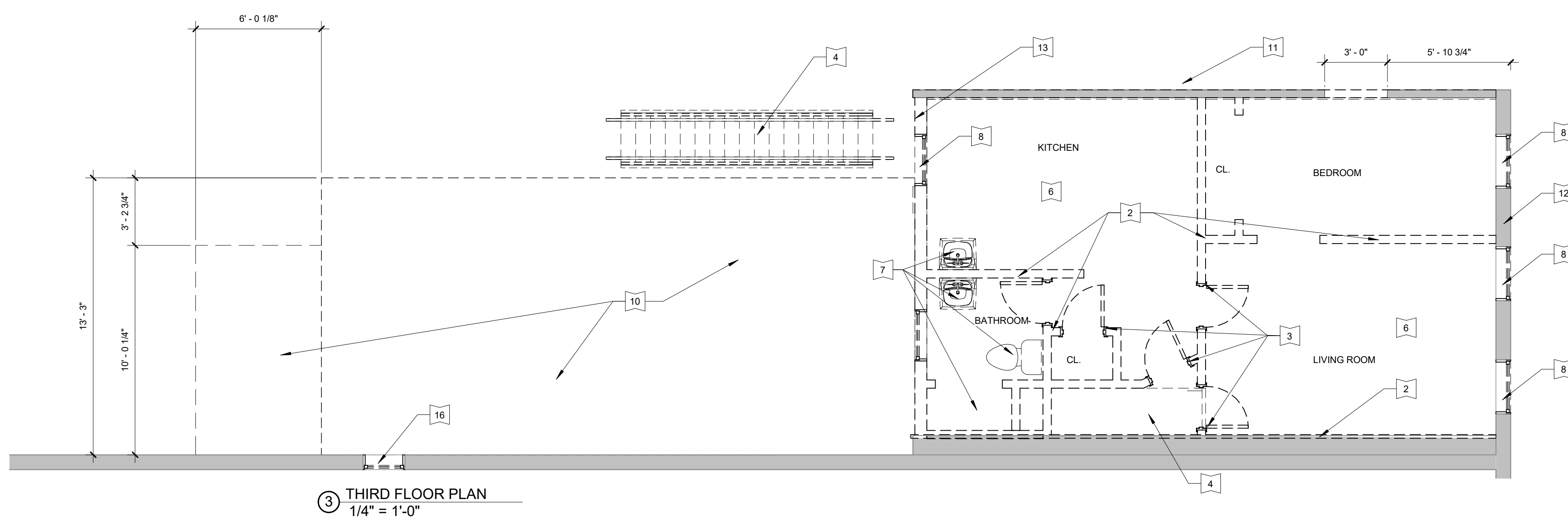
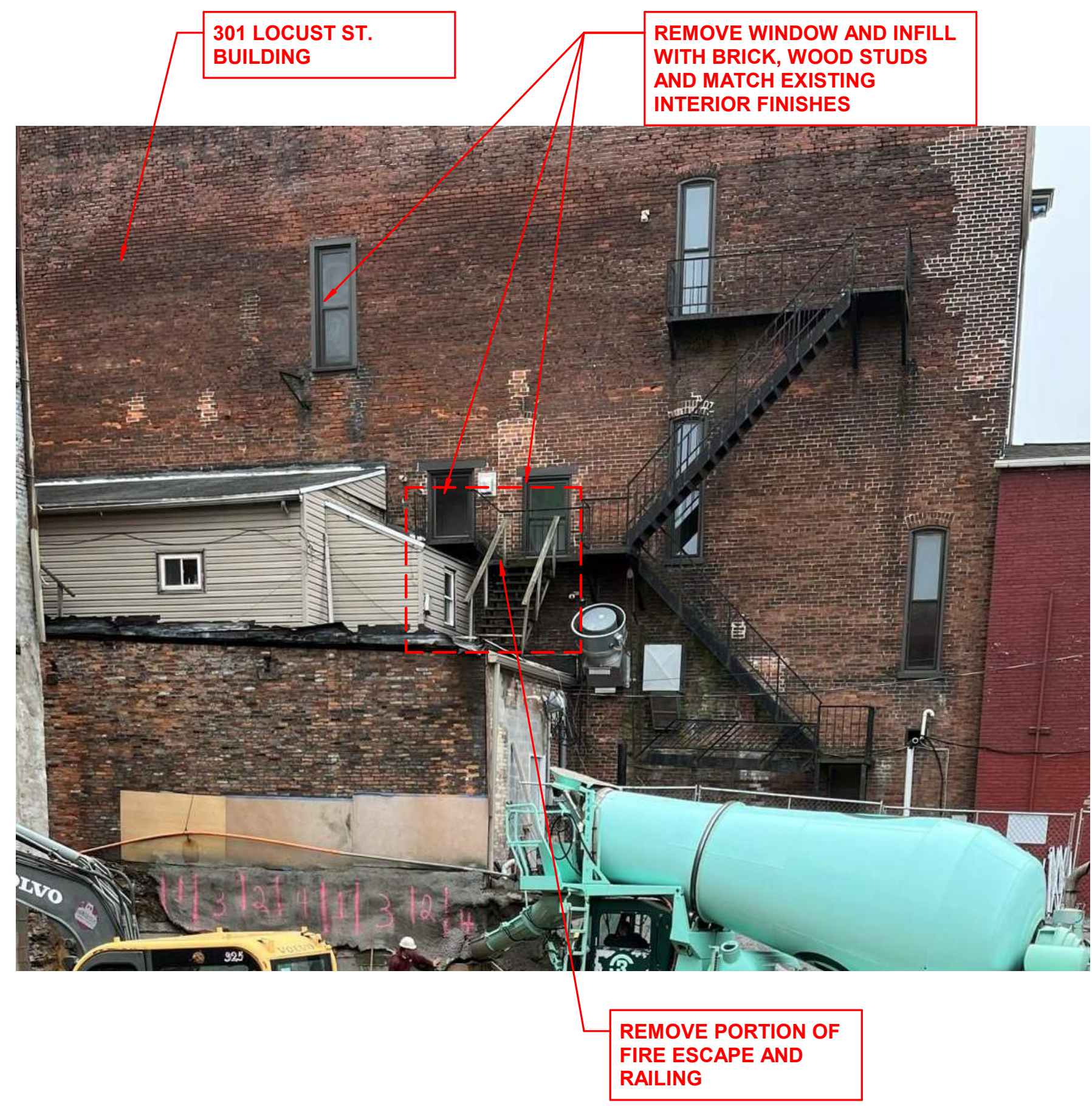
DWG DATE 09/13/22  
PROJECT NO: 20.5012  
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DEMOLITION PLANS

A002

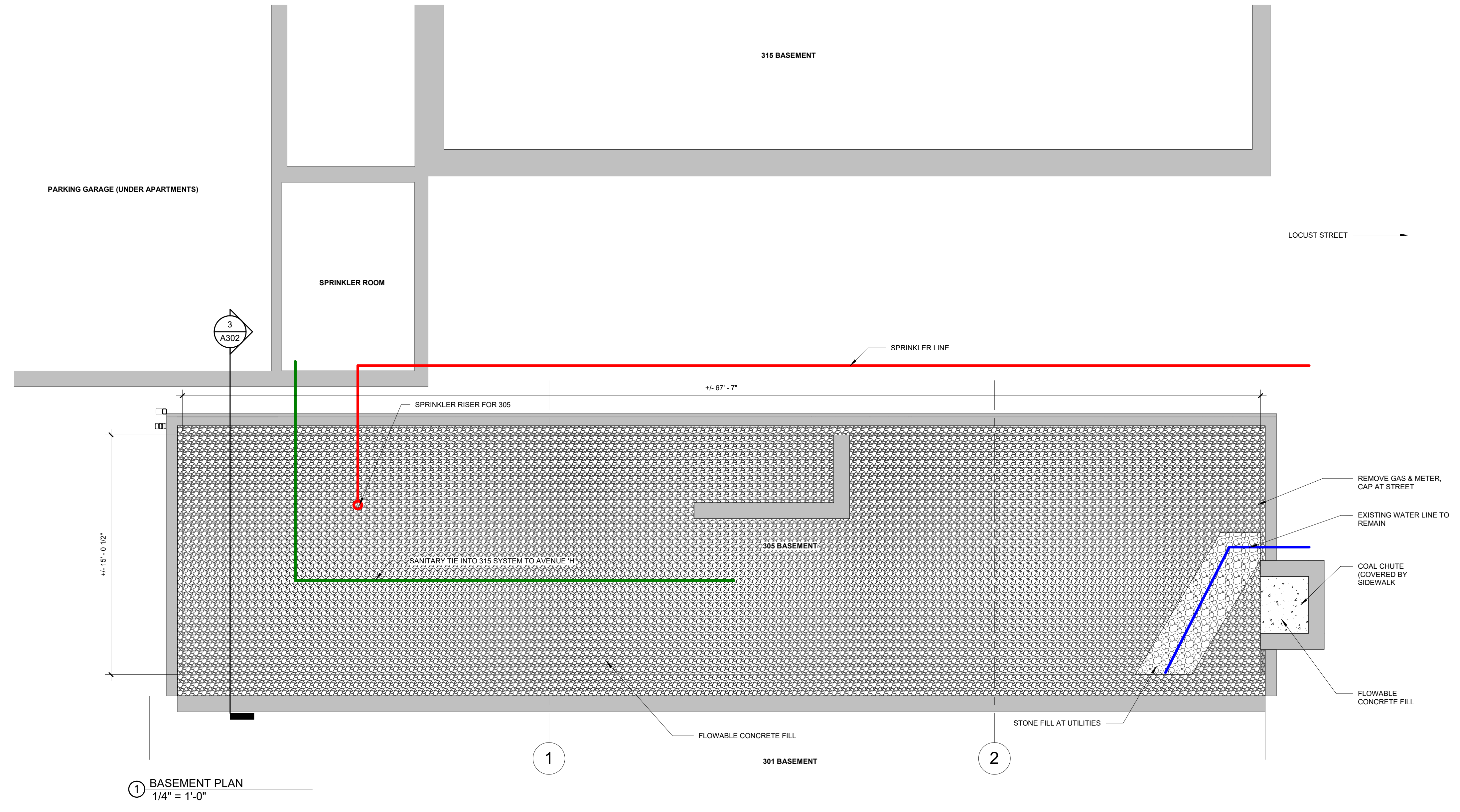
**DEMOLITION NOTES**

| NO. | DEMOLITION COMMENT   |
|-----|--|
| 1   | REMOVE EXTERIOR WALL   |
| 2   | REMOVE PARTITION   |
| 3   | REMOVE DOOR AND FRAME  |
| 4   | REMOVE STAIRS AND HANDRAILS  |
| 5   | REMOVE FLOOR AND STRUCTURE   |
| 6   | REMOVE CEILING AND LIGHT FIXTURES  |
| 7   | REMOVE PLUMBING FIXTURES   |
| 8   | REMOVE WINDOW  |
| 9   | REMOVE CASEWORK  |
| 10  | REMOVE ROOF AND STRUCTURE  |
| 11  | REMOVE SIDING  |
| 12  | REMOVE EXTERIOR PAINT  |
| 13  | REMOVE BEARING WALL & REPLACE WITH BEAM. SEE STRUCTURAL DWGS.                      |
| 14  | REMOVE PORTION OF SECOND FLOOR STRUCTURE. SEE STRUCTURAL DWG. FOR REPLACEMENT      |
| 15  | DEMO AND RELOCATE UNDERGROUND RAIN WATER CONDUCTOR TO ACCOMMODATE NEW CONSTRUCTION |
| 16  | DEMO WINDOW AND INFILL OPENING. SEE PHOTO ON A002                                  |



- GENERAL DEMOLITION NOTES:**
- DEMOLITION DRAWINGS INDICATE GENERAL SCOPE AND INTENT OF DEMOLITION WORK REQUIRED AND SHOULD NOT LIMIT IN ANY WAY FULL SCOPE OF DEMOLITION WORK. THIS INCLUDES REMOVAL OF ALL EXISTING CONSTRUCTION SYSTEMS, EQUIPMENT AND LOOSE FURNISHINGS NOT PREVIOUSLY REMOVED BY OWNER THAT IS REQUIRED TO ACCOMPLISH INTENT OF CONSTRUCTION DOCUMENTS AND NECESSARY TO PROVIDE FULLY FINISHED AND OPERATIONAL FACILITY.
  - REVIEW COMPLETE SET OF CONSTRUCTION DOCUMENTS INCLUDING SPECIFICATIONS AND VERIFY EXISTING CONDITIONS TO DETERMINE FULL SCOPE OF DEMOLITION WORK. NO ADDITIONAL COMPENSATION WILL BE CONSIDERED FOR WORK THAT COULD REASONABLY BE INFERRED FROM REVIEW OF DOCUMENTS AND SITE.
  - UNLESS NOTED OTHERWISE ALL EXISTING AREAS AFFECTED BY DEMOLITION ARE TO BE RESTORED TO MATCH EXISTING ADJACENT AREAS.
  - EACH SUBCONTRACTOR SHALL COORDINATE DEMOLITION REMOVAL WITH ALL DRAWINGS AND SPECIFICATIONS OF ALL DISCIPLINES. UNLESS NOTED OTHERWISE, DEMOLITION WORK INCLUDES REMOVING UTILITIES BACK TO SOURCE AND REINSTALLING CONSISTENT WITH EXISTING CONDITIONS.
  - EACH SUBCONTRACTOR SHALL COORDINATE WITH OWNER PRIOR TO REMOVING SALVAGEABLE ITEMS. OWNER SHALL HAVE OPTION OF KEEPING ANY OR ALL SALVAGEABLE ITEMS REMOVED FROM BUILDING.
  - MASONRY, ROOFING AND STUD WALL CONTRACTORS SHALL FURNISH AND INSTALL TEMPORARY SHORING TO SUPPORT EXISTING CONSTRUCTION SCHEDULED TO REMAIN UNTIL PERMANENT STRUCTURE IS IN PLACE. REPLACE OR REPAIR ANY DAMAGE TO EXISTING MATERIALS DUE TO TEMPORARY SHORING.
  - STUD WALL CONTRACTOR SHALL COORDINATE TEMPORARY PARTITION LOCATIONS WITH OWNER.
  - CONCRETE CONTRACTOR SHALL PATCH AND REPAIR FLOORS AND WALLS AS REQUIRED TO RECEIVE NEW FINISHES AFTER EXISTING CONSTRUCTION IS REMOVED.

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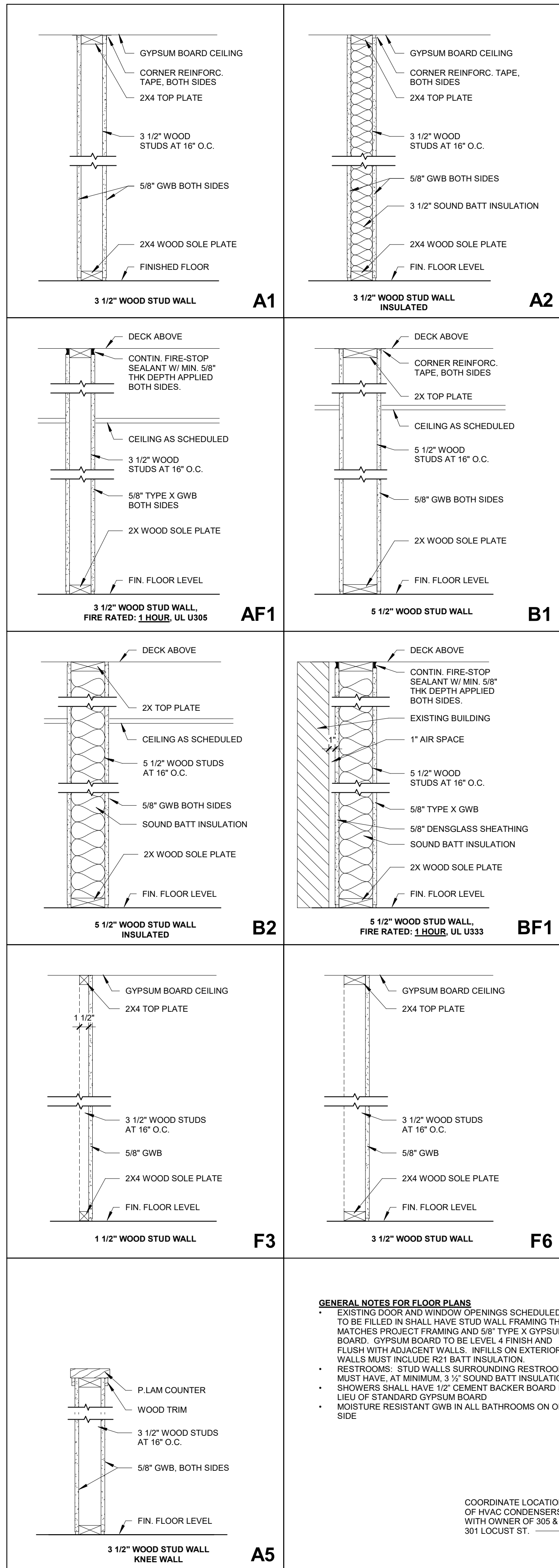
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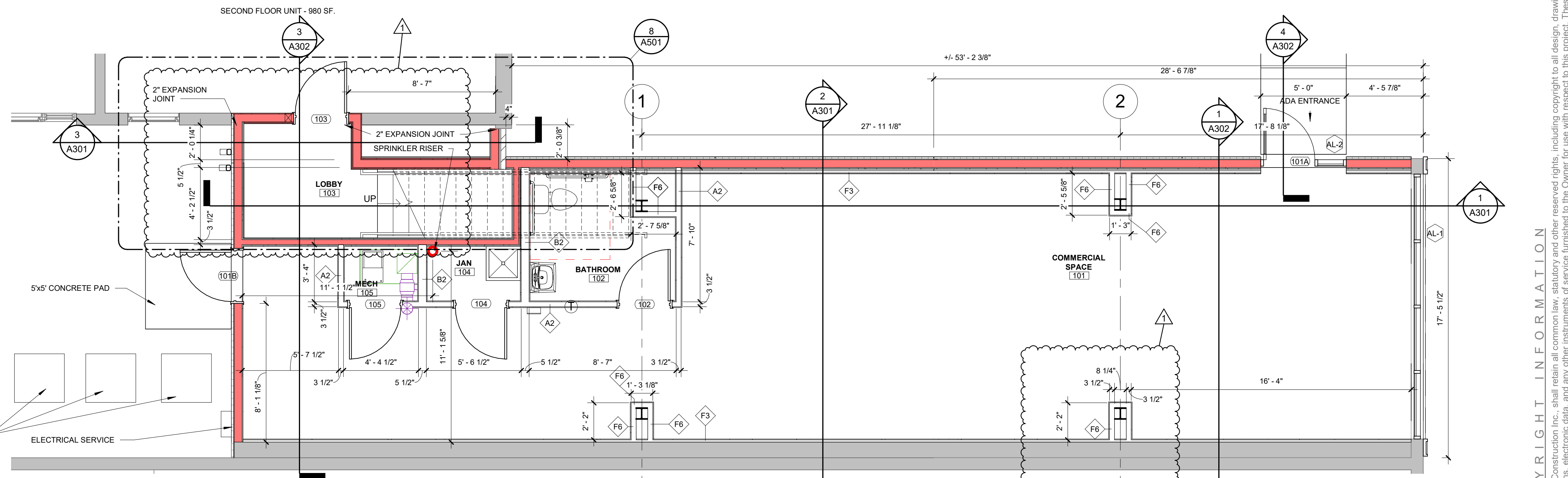
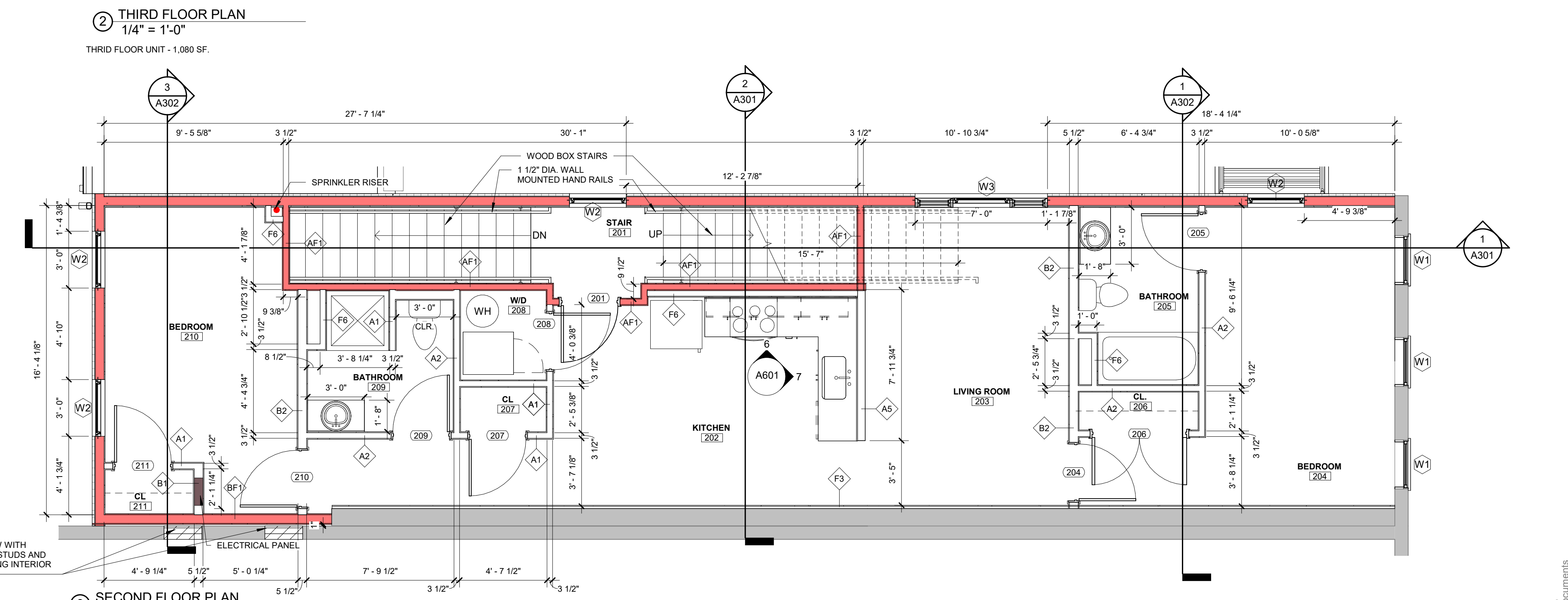
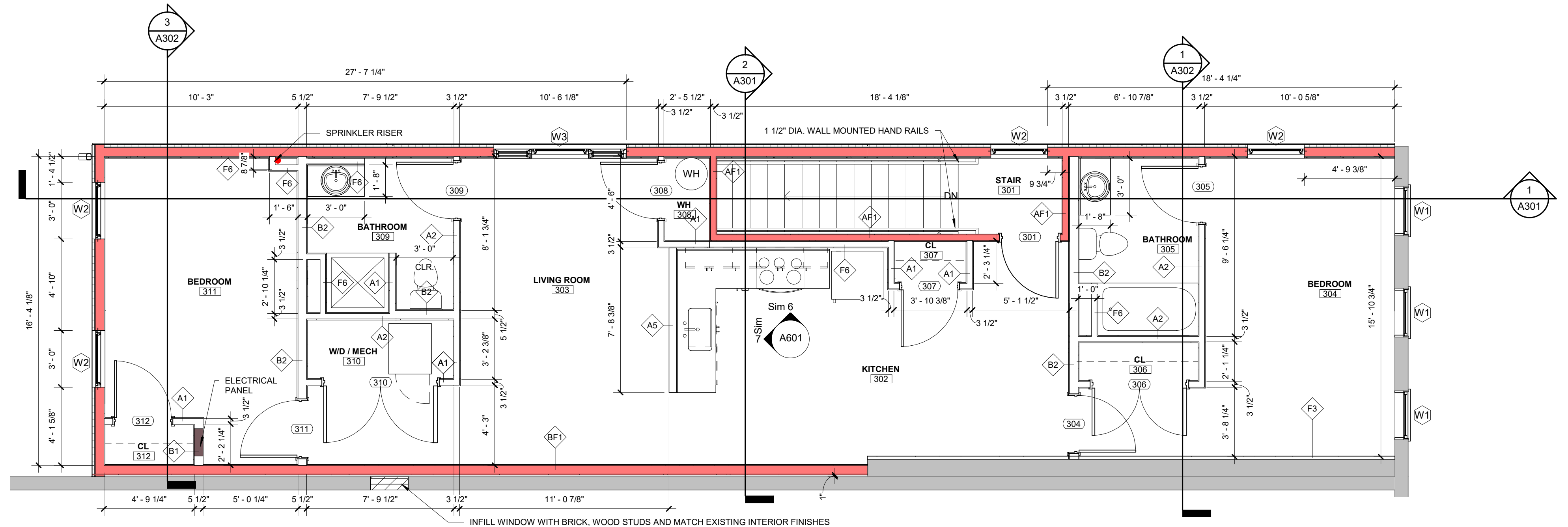
BASEMENT PLAN

A100

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**4 PARTITION TYPES**  
1" = 1'-0"



- GENERAL NOTES FOR FLOOR PLANS**
- EXISTING DOOR AND WINDOW OPENINGS SCHEDULED TO BE FILLED IN SHALL HAVE STUD WALL FRAMING THAT MATCHES PROJECT FRAMING AND 5/8" TYPE X GYPSUM BOARD. GYPSUM BOARD TO BE LEVEL 4 FINISH AND FLUSH WITH ADJACENT WALLS. INFILLS ON EXTERIOR WALLS MUST INCLUDE R21 BATT INSULATION.
  - RESTROOMS: STUD WALLS SURROUNDING RESTROOMS MUST HAVE AT MINIMUM 3/2" SOUND BATT INSULATION. SHOWERS SHALL HAVE 1/2" CEMENT BACKER BOARD IN LIEU OF STANDARD GYPSUM BOARD
  - MOISTURE RESISTANT GWB IN ALL BATHROOMS ON ONE SIDE

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FLOOR PLANS

SEAL

ADDITION AND RENOVATIONS FOR  
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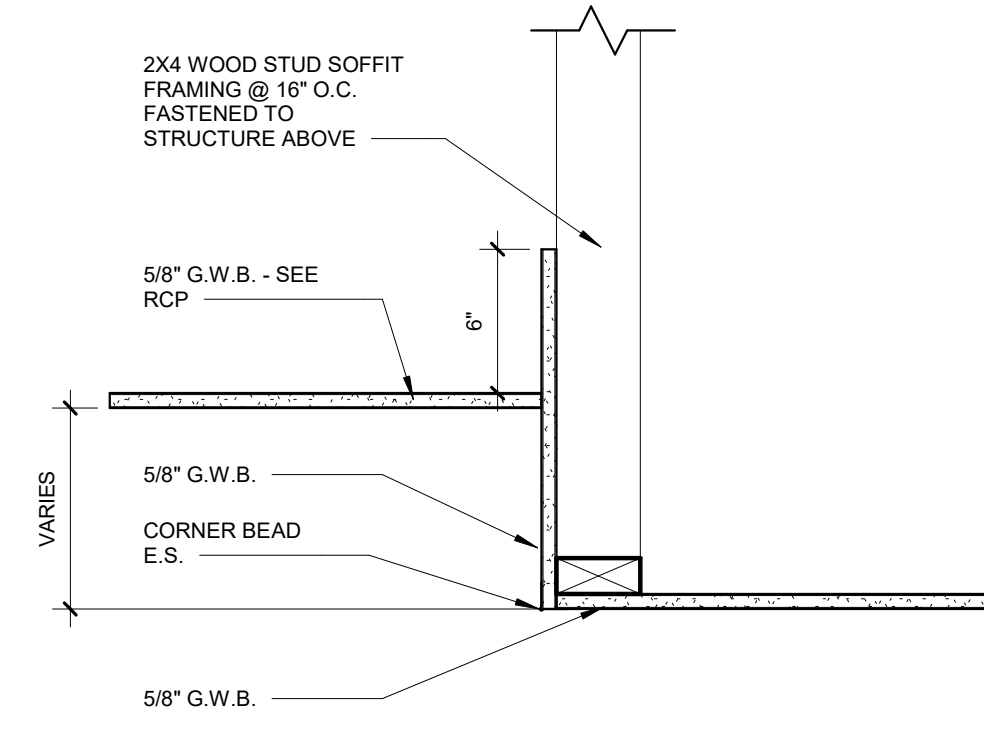
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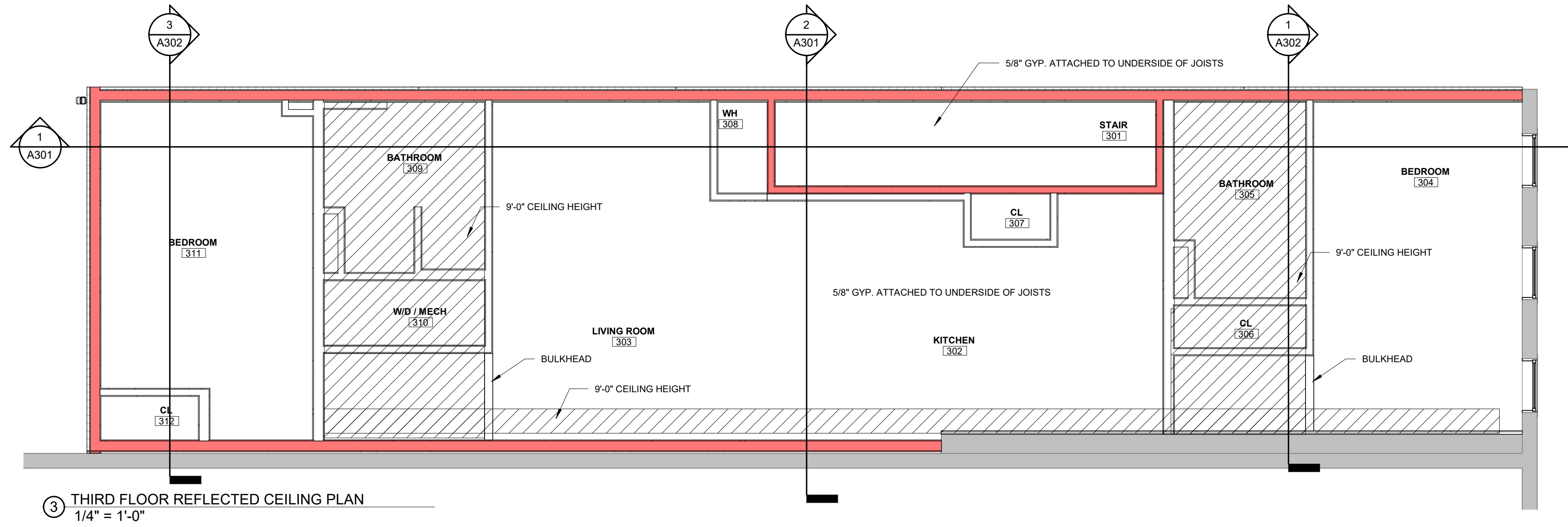
REFLECTED  
CEILING  
PLANS

A102

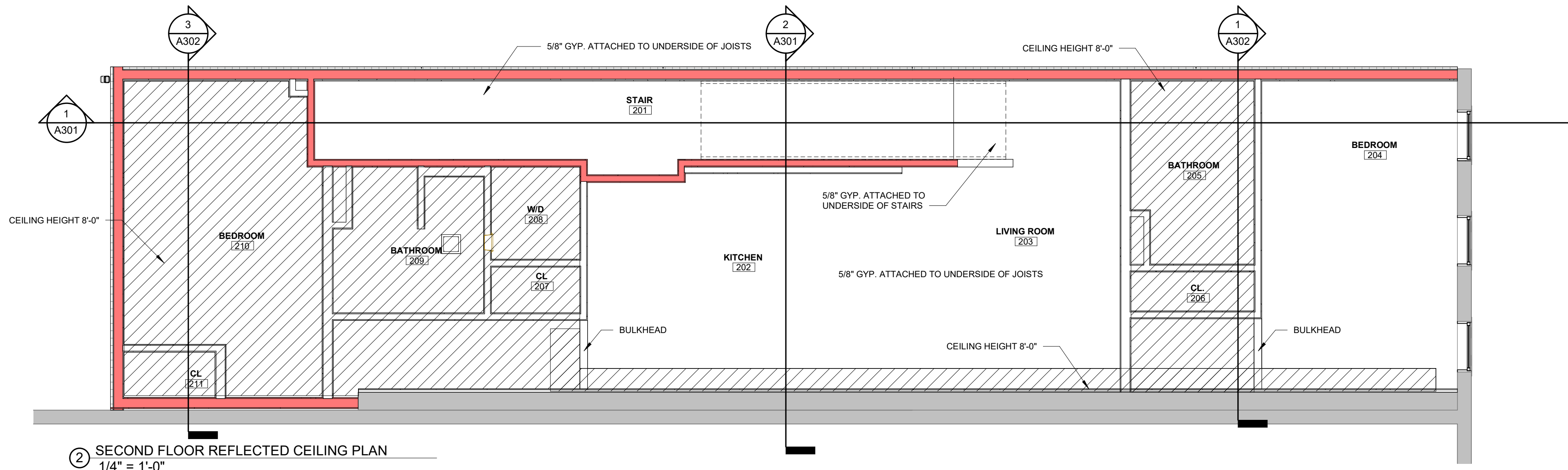
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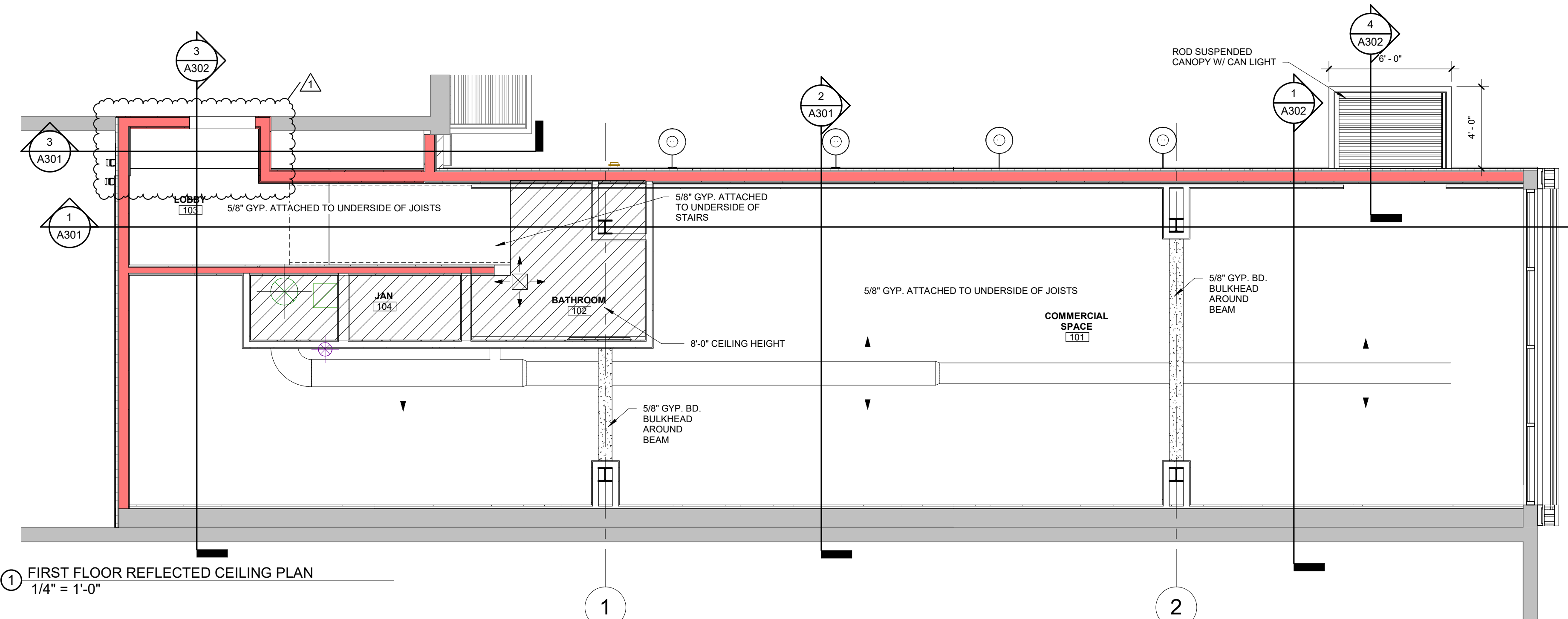
5 WOOD - GYP BULKHEAD  
1 1/2" = 1'-0"



3 THIRD FLOOR REFLECTED CEILING PLAN  
1/4" = 1'-0"



2 SECOND FLOOR REFLECTED CEILING PLAN  
1/4" = 1'-0"



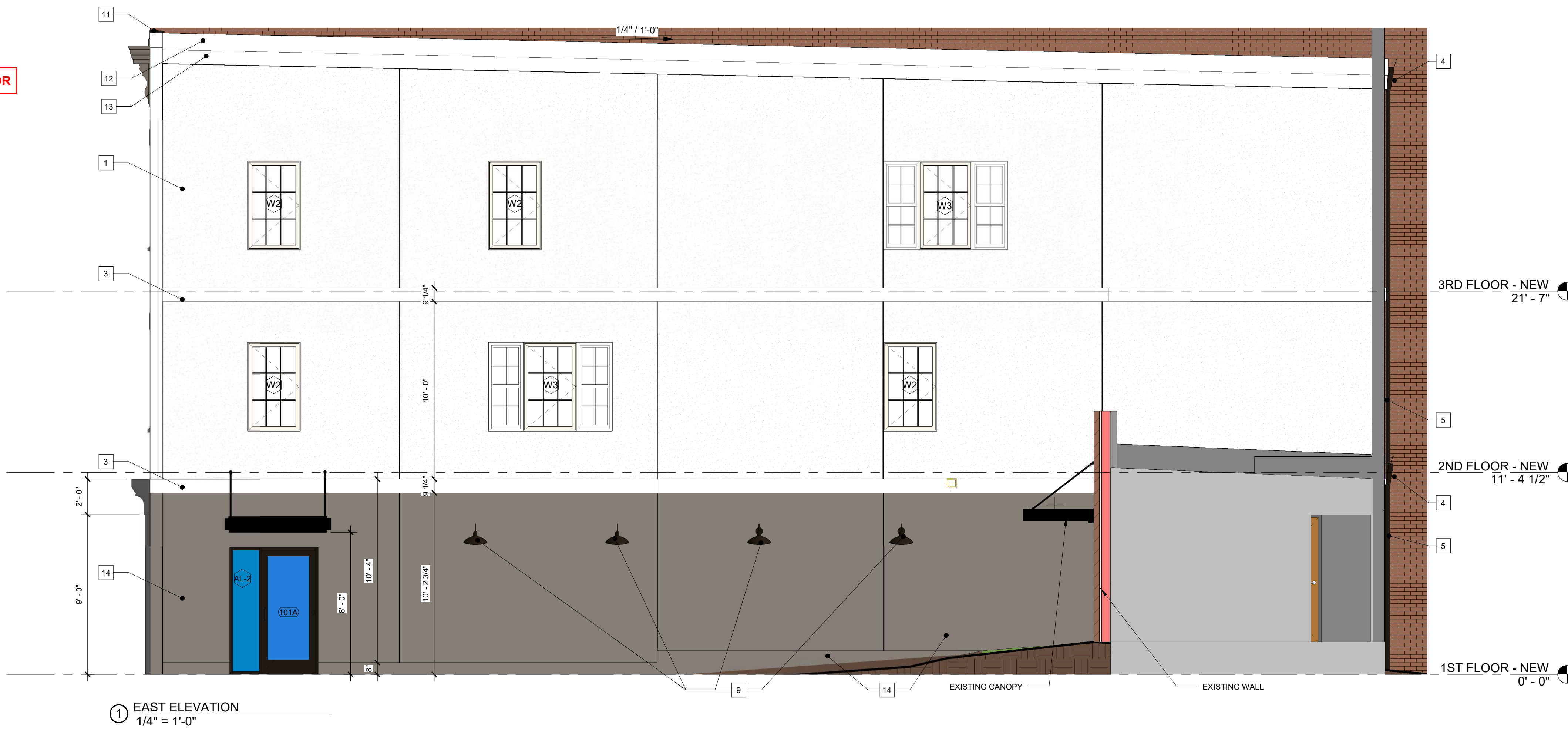
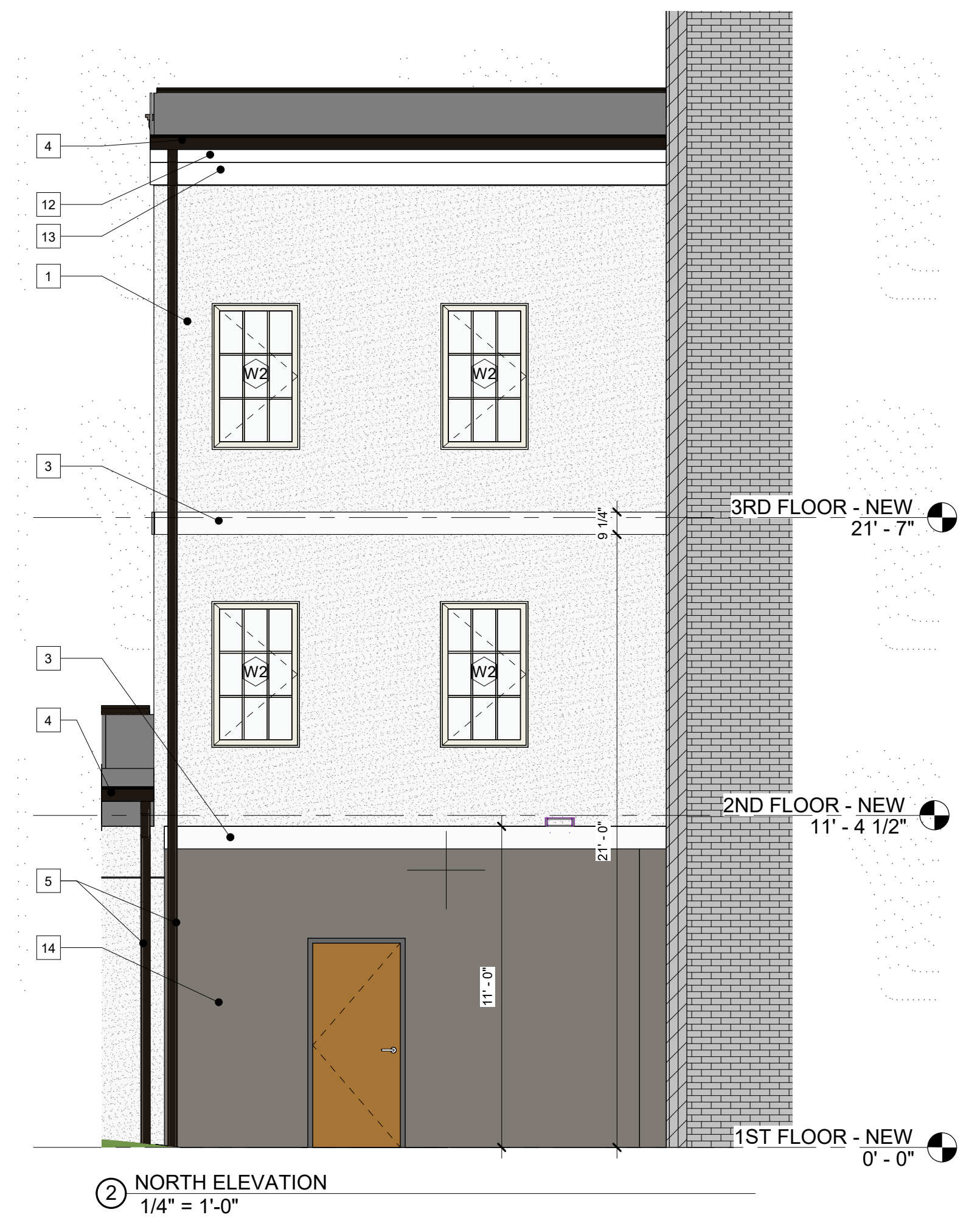
1 FIRST FLOOR REFLECTED CEILING PLAN  
1/4" = 1'-0"

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**EXTERIOR MATERIALS LEGEND**

- 1 - EIFS COLOR 1**  
MFR: DRYVIT OR EQUAL  
COLOR: DOVER SKY
- 2 - BRICK**  
MFR:  
STYLE:  
COLOR: MATCHING FRONT FACADE OF 305
- 3 - 1" EIFS BAND**  
COLOR: DOVER SKY
- 4 - GUTTERS**  
STYLE:  
SIZE:  
COLOR: BLACK
- 5 - DOWNSPOUTS**  
COLOR: BLACK
- 6 - PAINTED WOOD CORNICE**  
SPANISH CEDAR  
COLOR:
- 7 - PAINTED WOOD COLUMNS**  
SPANISH CEDAR  
COLOR:
- 8 - PAINTED WOOD PANELS**  
SPANISH CEDAR  
COLOR:
- 9 - WALL SCOFF**
- 10 - BRICK**  
MFR:  
STYLE:  
COLOR: MATCHING FRONT FACADE OF ADJACENT FLATS AT 315 APARTMENT ENTRANCE
- 11 - ALUM COPING**  
COLOR: BLACK
- 12 - 1X12 PVC WHITE FASCIA BOARD**  
COLOR: WHITE
- 13 - 1X10 PVC WHITE FASCIA BOARD**  
COLOR: WHITE
- 14 - EIFS COLOR 2**  
MFR: DRYVIT OR EQUAL  
COLOR: WINTER EVE  
PROVIDE PANSER MESH



ADDITION AND RENOVATIONS FOR  
LOCUST STREET APARTMENTS  
305 LOCUST STREET, COLUMBIA, PA

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| REVISIONS |  | NO. | DESCRIPTION | DATE |
|-----------|--|-----|-------------|------|
|           |  |     |             |      |
|           |  |     |             |      |
|           |  |     |             |      |
|           |  |     |             |      |

DWG DATE 09/13/22  
PROJECT NO: 20.5012  
DRAWING BY TG

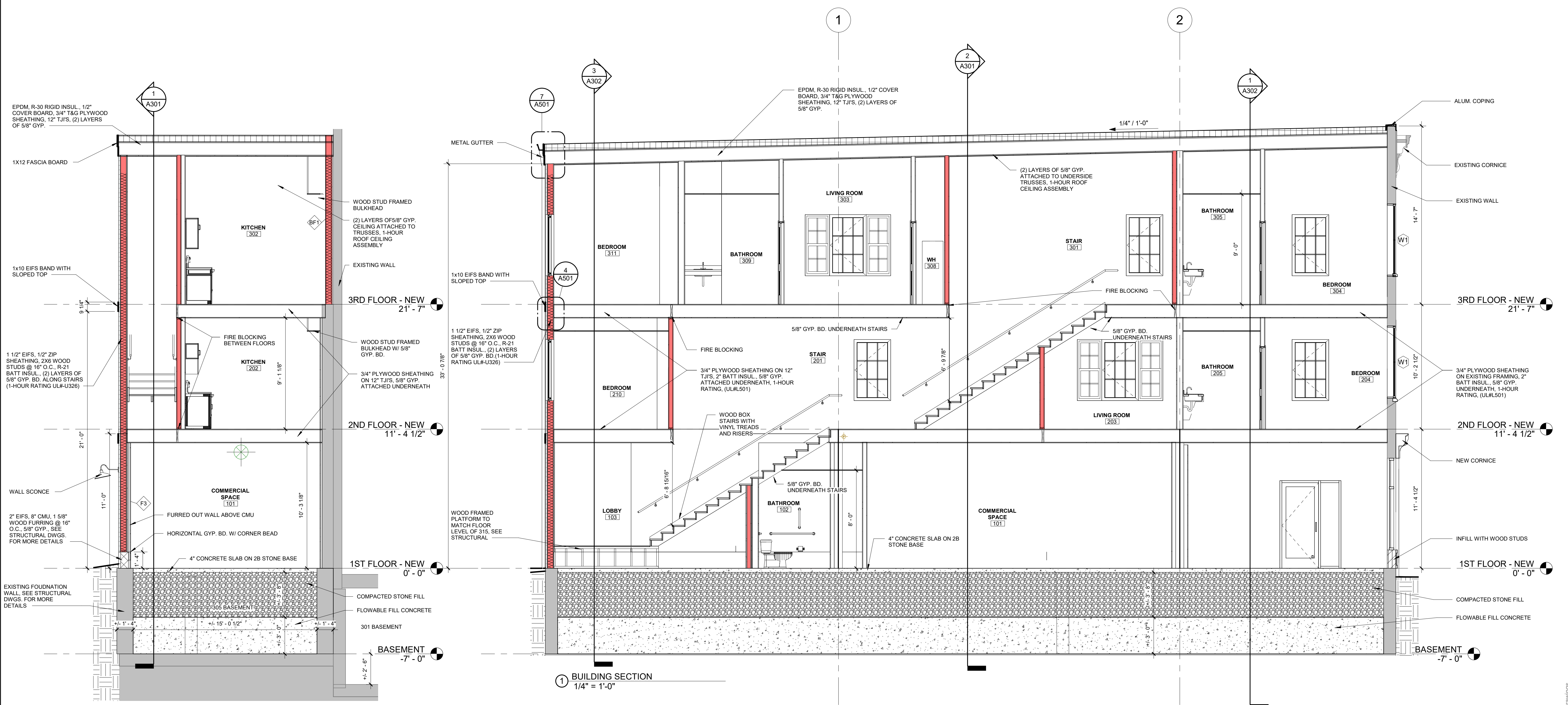
EXTERIOR ELEVATIONS

| NO. | DESCRIPTION           | DATE     |
|-----|-----------------------|----------|
| 1   | CONSTRUCTION/REVISION | 11/03/22 |

DWG DATE: 09/13/22  
PROJECT NO: 20.5012  
DRAWING BY: TG

**BUILDING SECTION**

A301

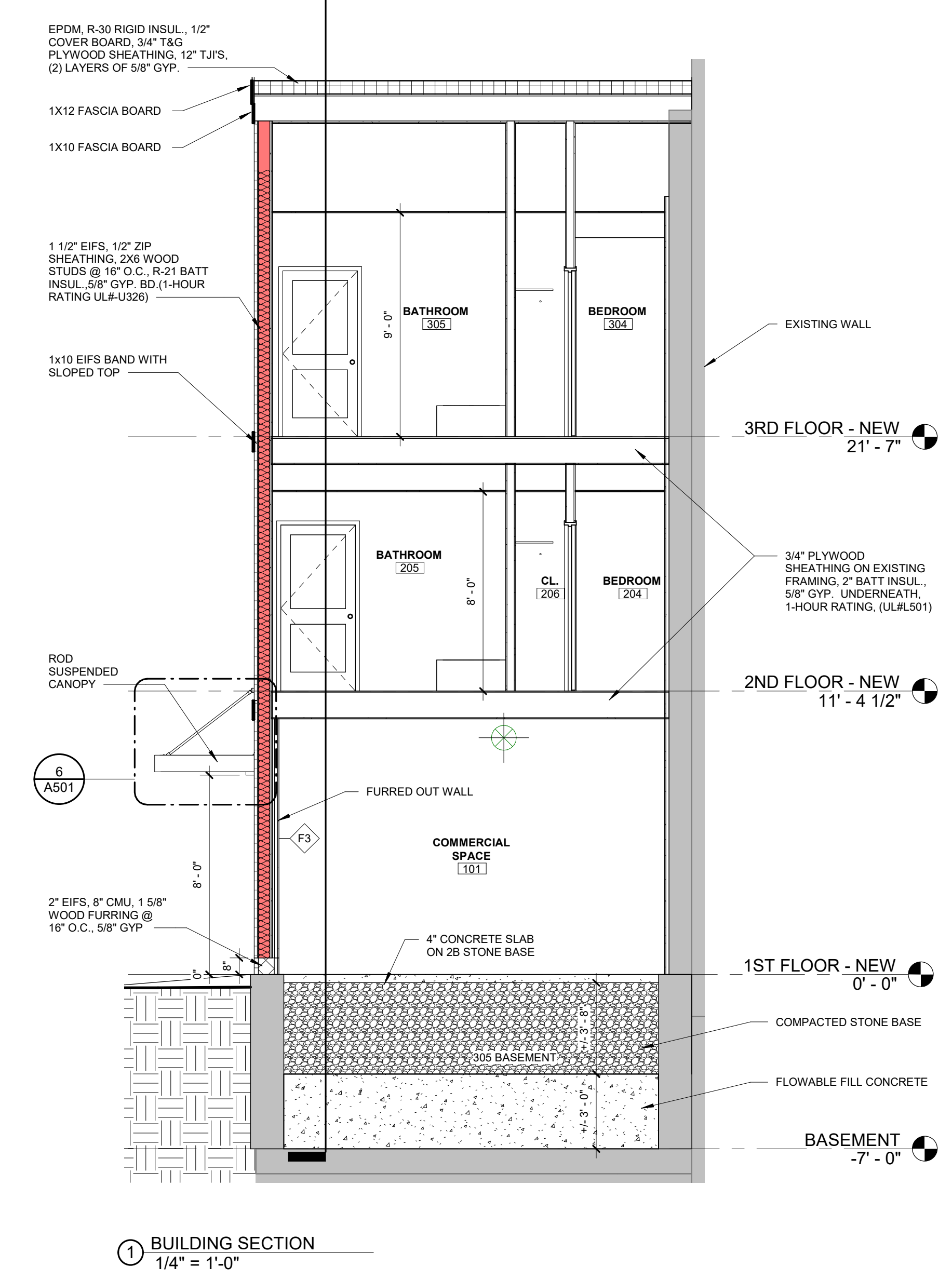
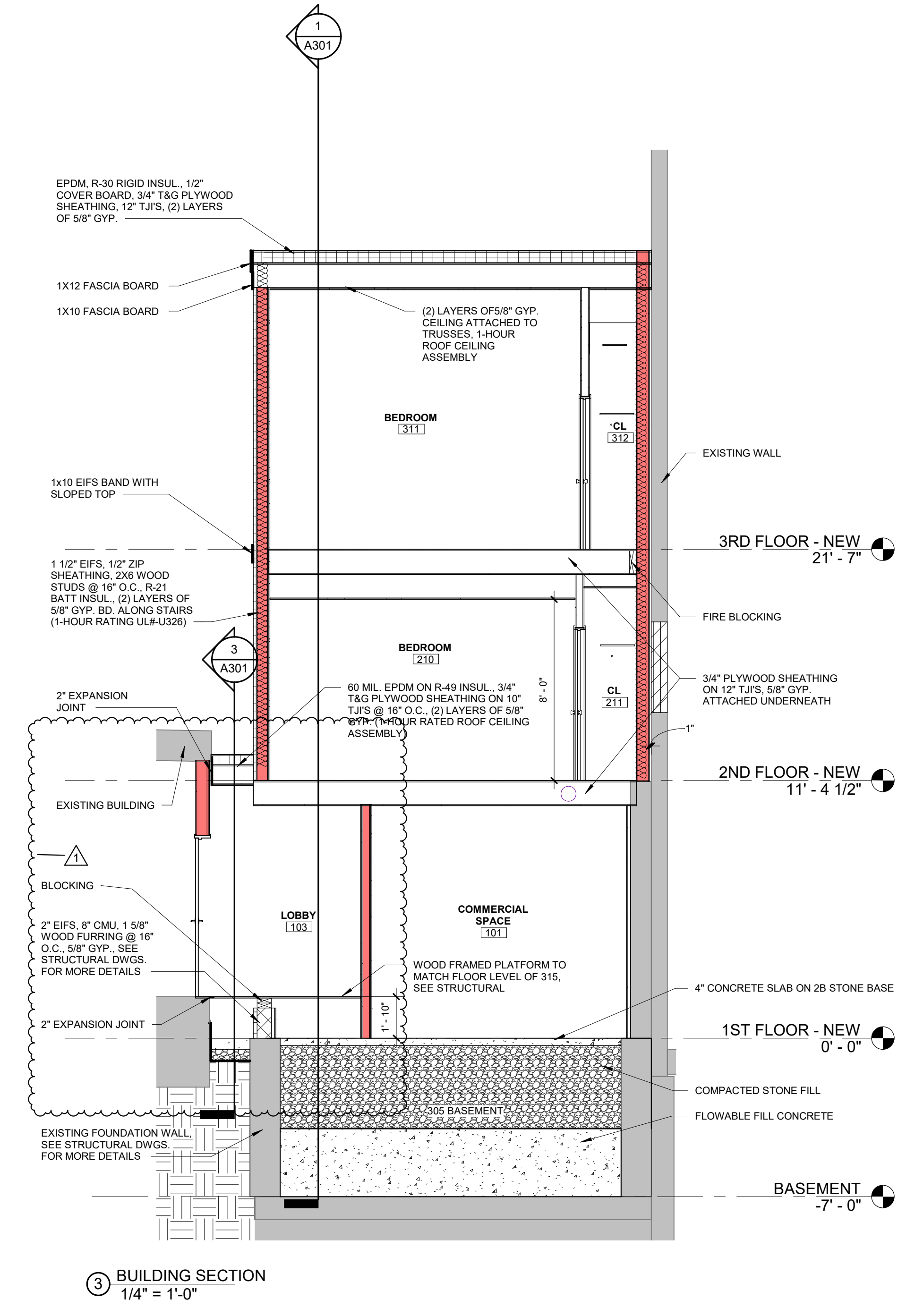
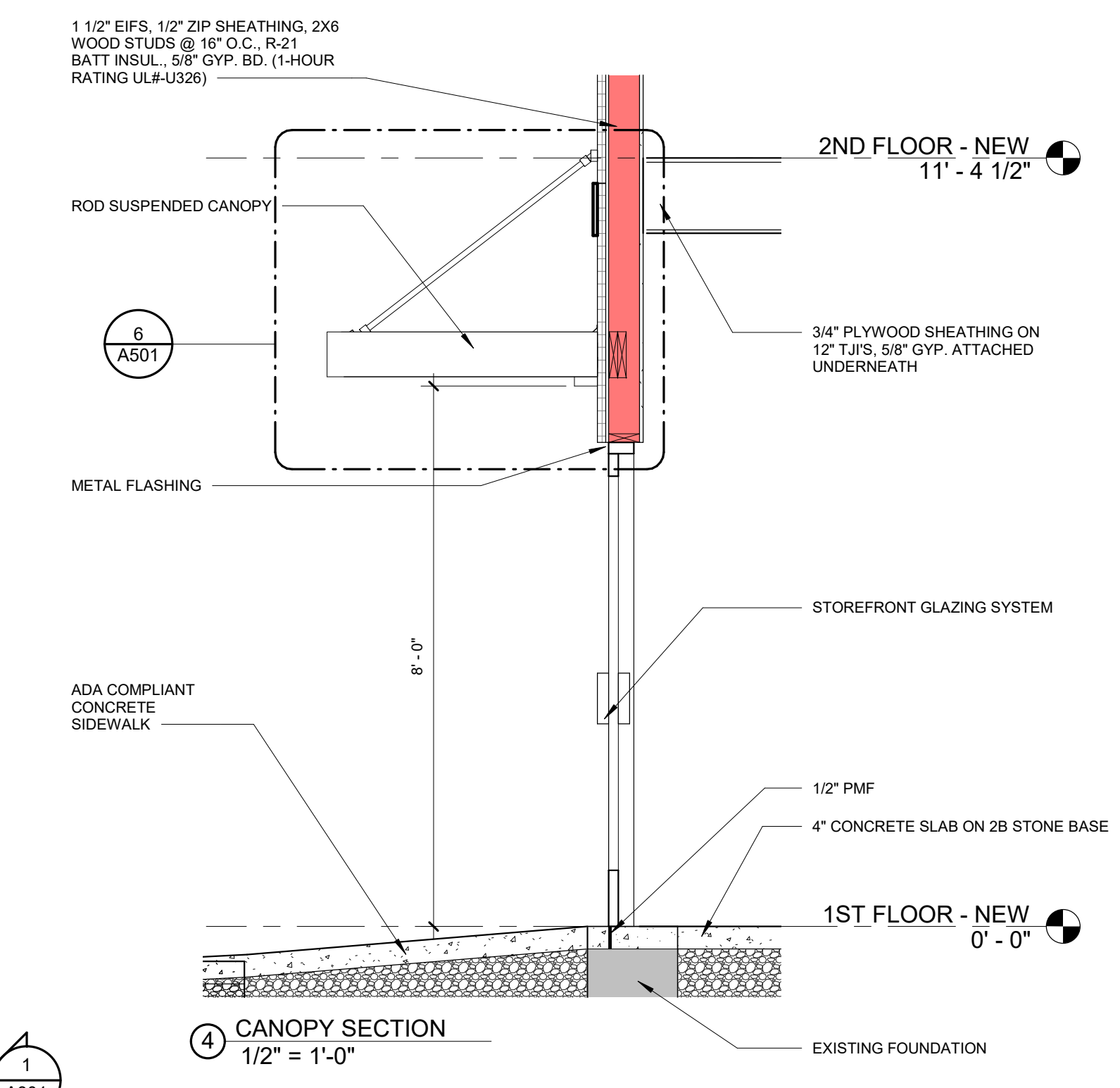
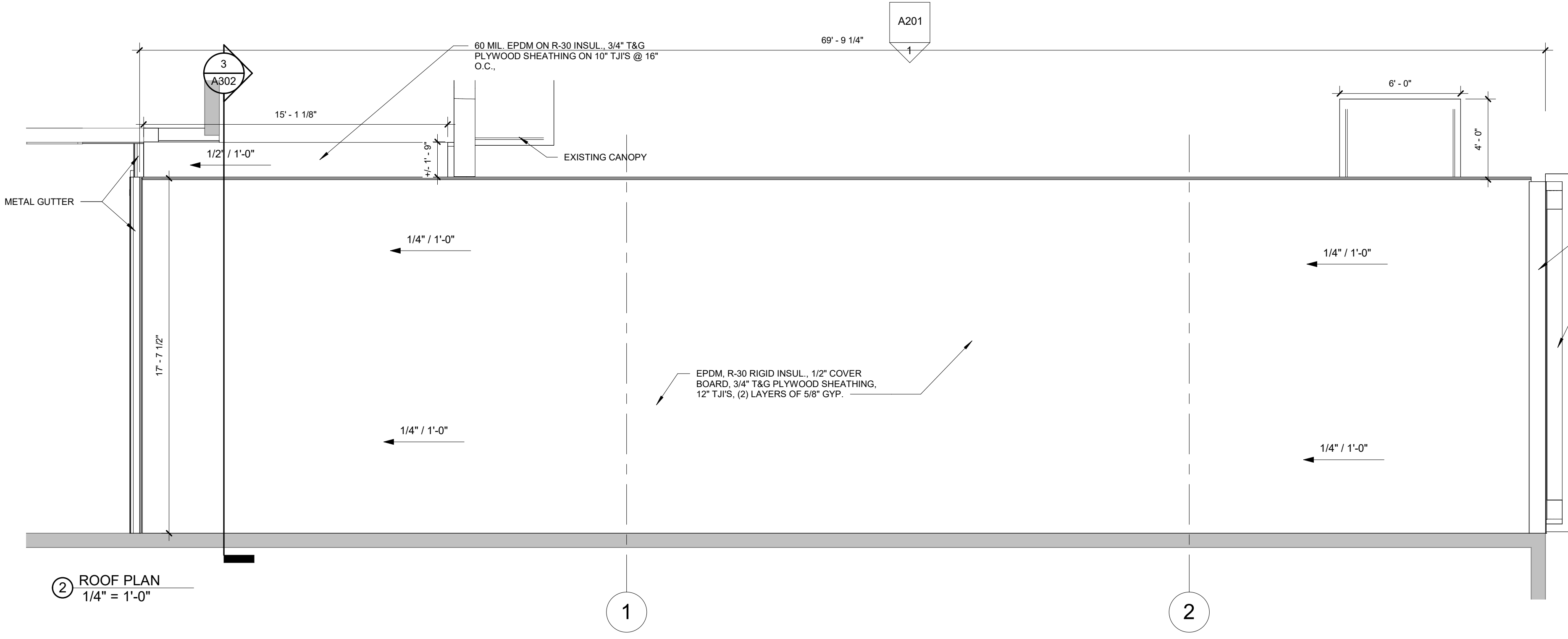


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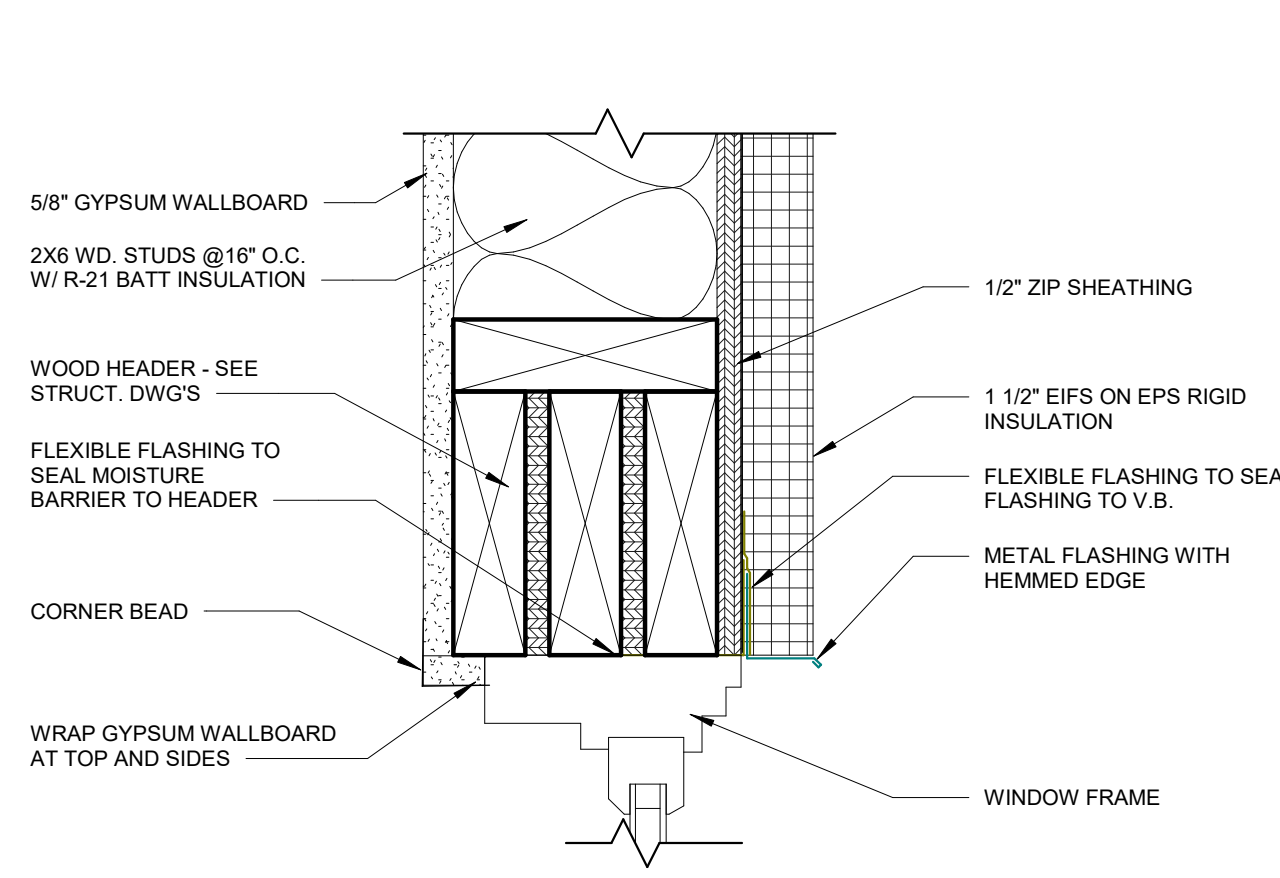
| NO. | DESCRIPTION           | DATE     |
|-----|-----------------------|----------|
| 1   | CONSTRUCTION/REVISION | 11/03/22 |

DWG DATE 09/13/22  
PROJECT NO: 20.5012  
DRAWING BY TG

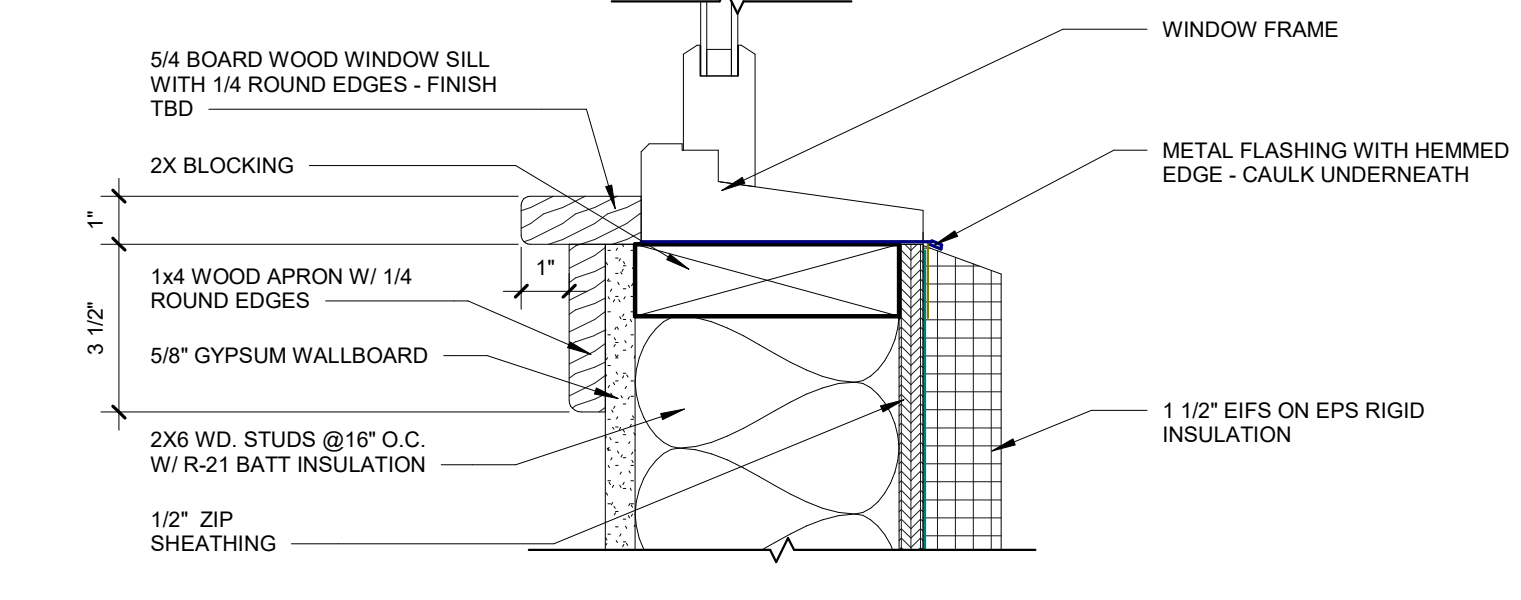
**BUILDING SECTION/  
ROOF PLAN**



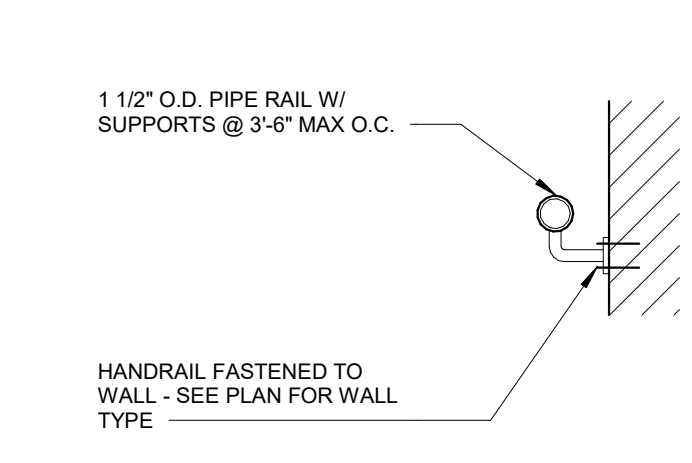
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1 WINDOW HEAD DETAIL EFIS  
 3" = 1'-0"

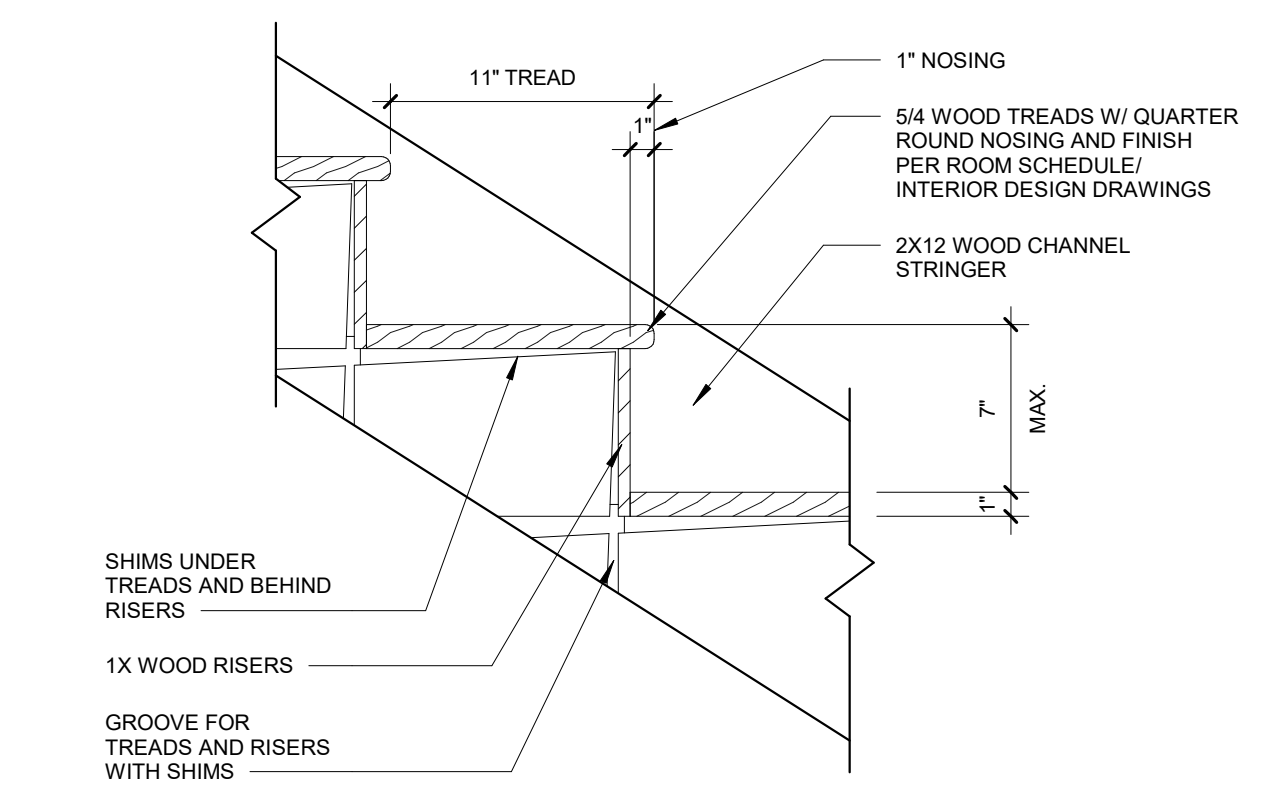


2 WINDOW SILL DETAIL EFIS  
 3" = 1'-0"

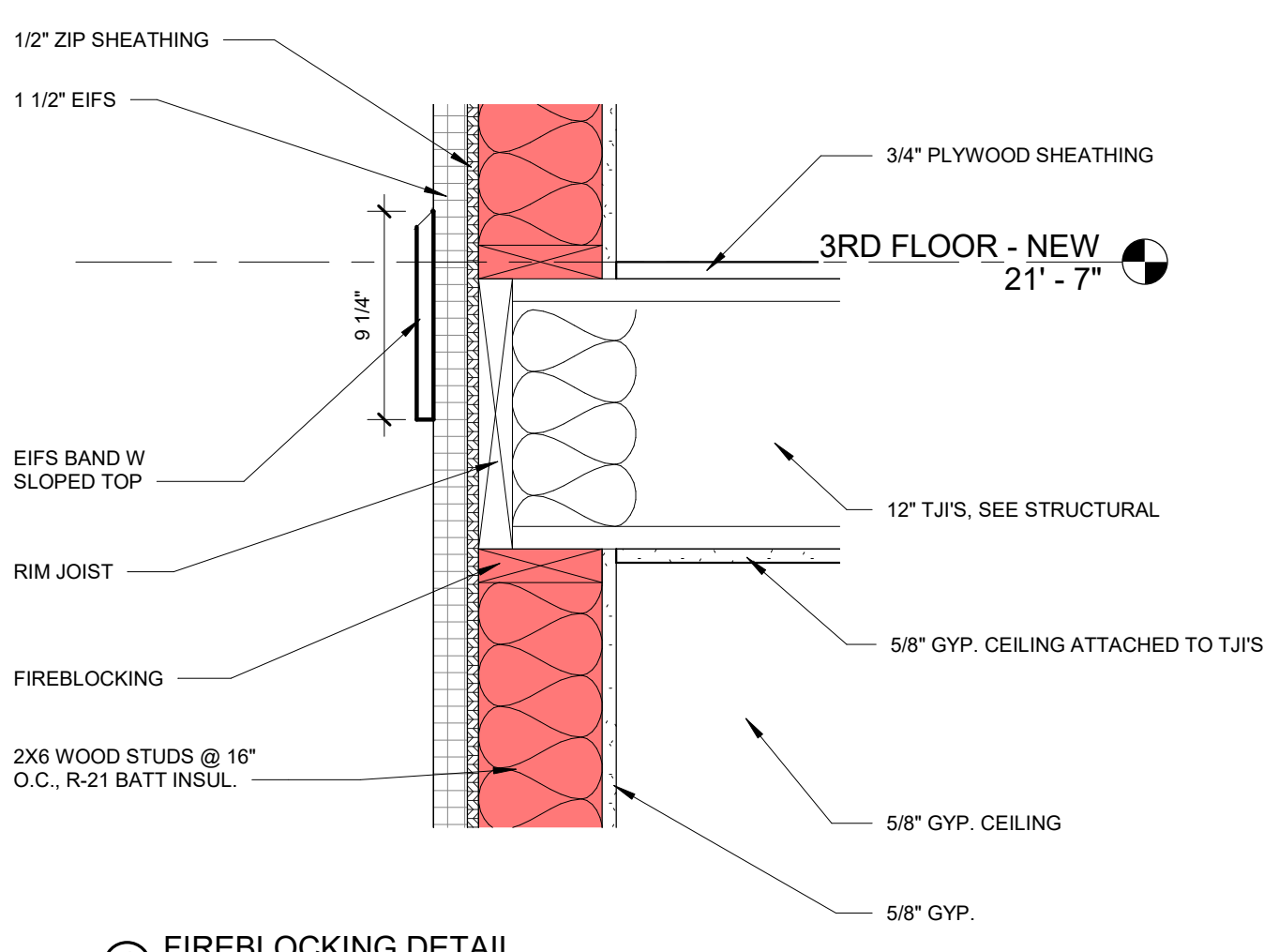


NOTE:  
 ALL STEEL TO BE PAINTED AND WELDED FULLY AROUND ATTACHMENT POINTS  
 RETURN HANDRAIL TO WALL AT ALL TERMINATIONS

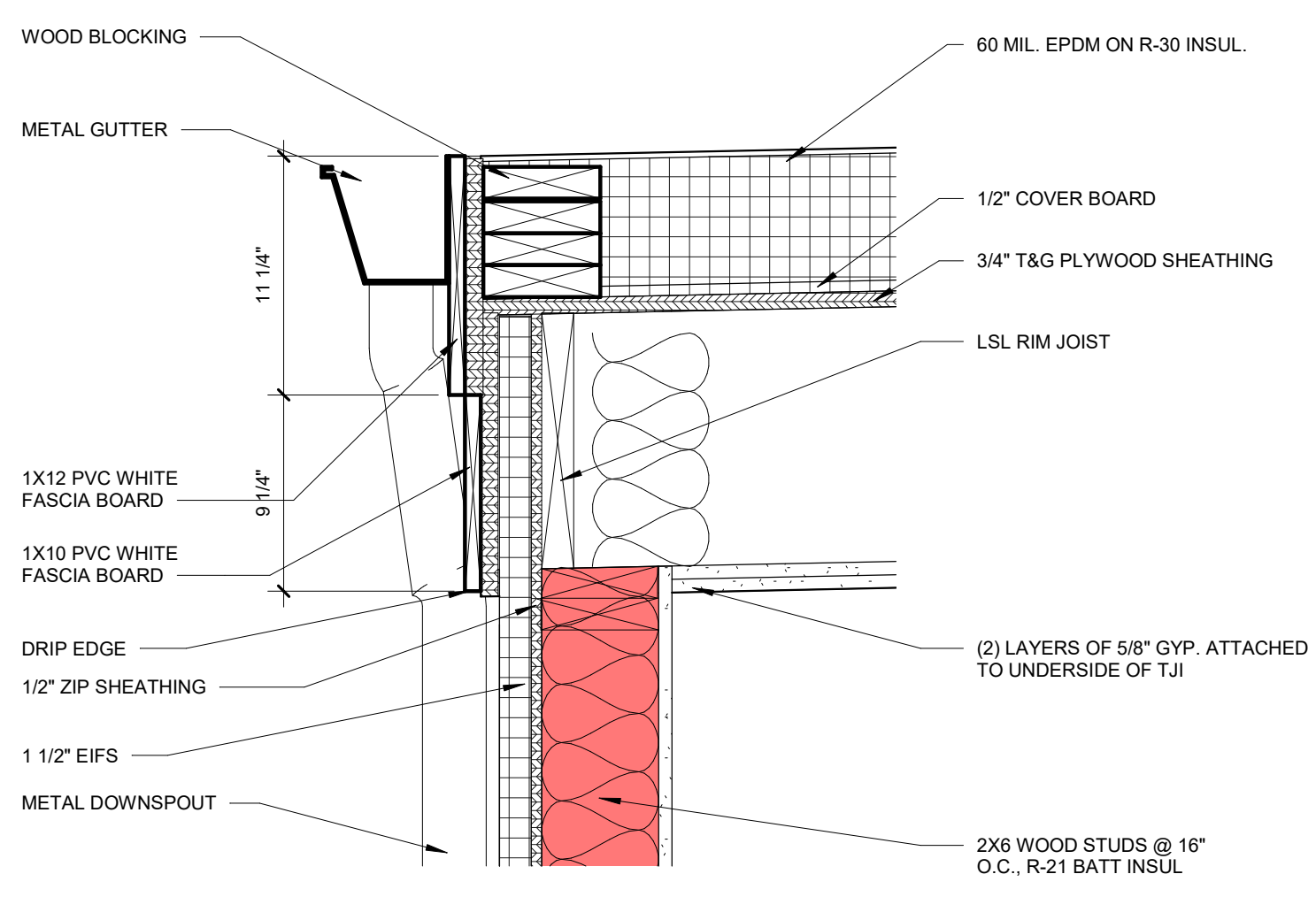
3 HANDRAIL AT WALL  
 1 1/2" = 1'-0"



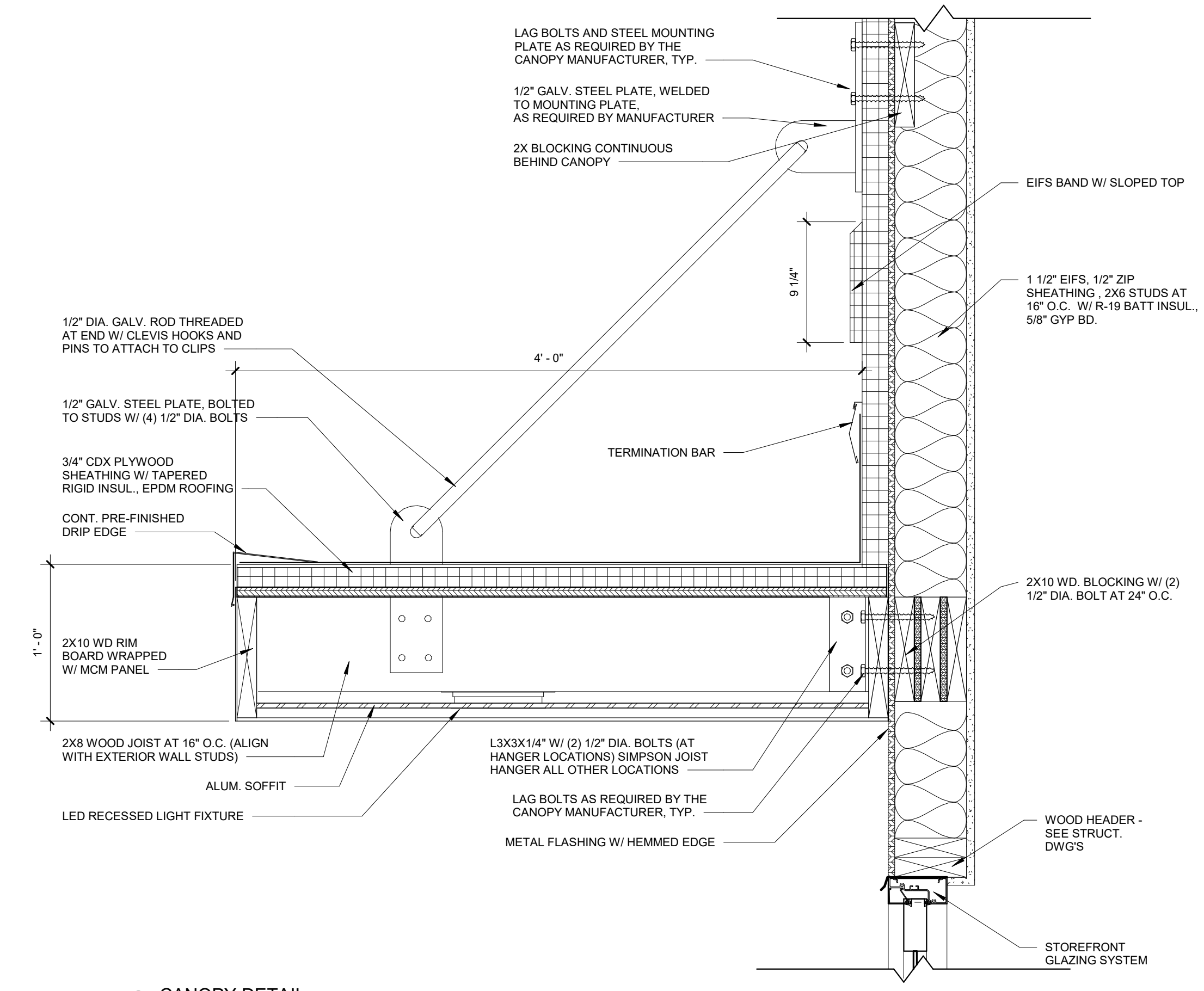
5 WOOD STAIR TREAD DETAIL - WOOD TREAD W NOSING  
 1 1/2" = 1'-0"



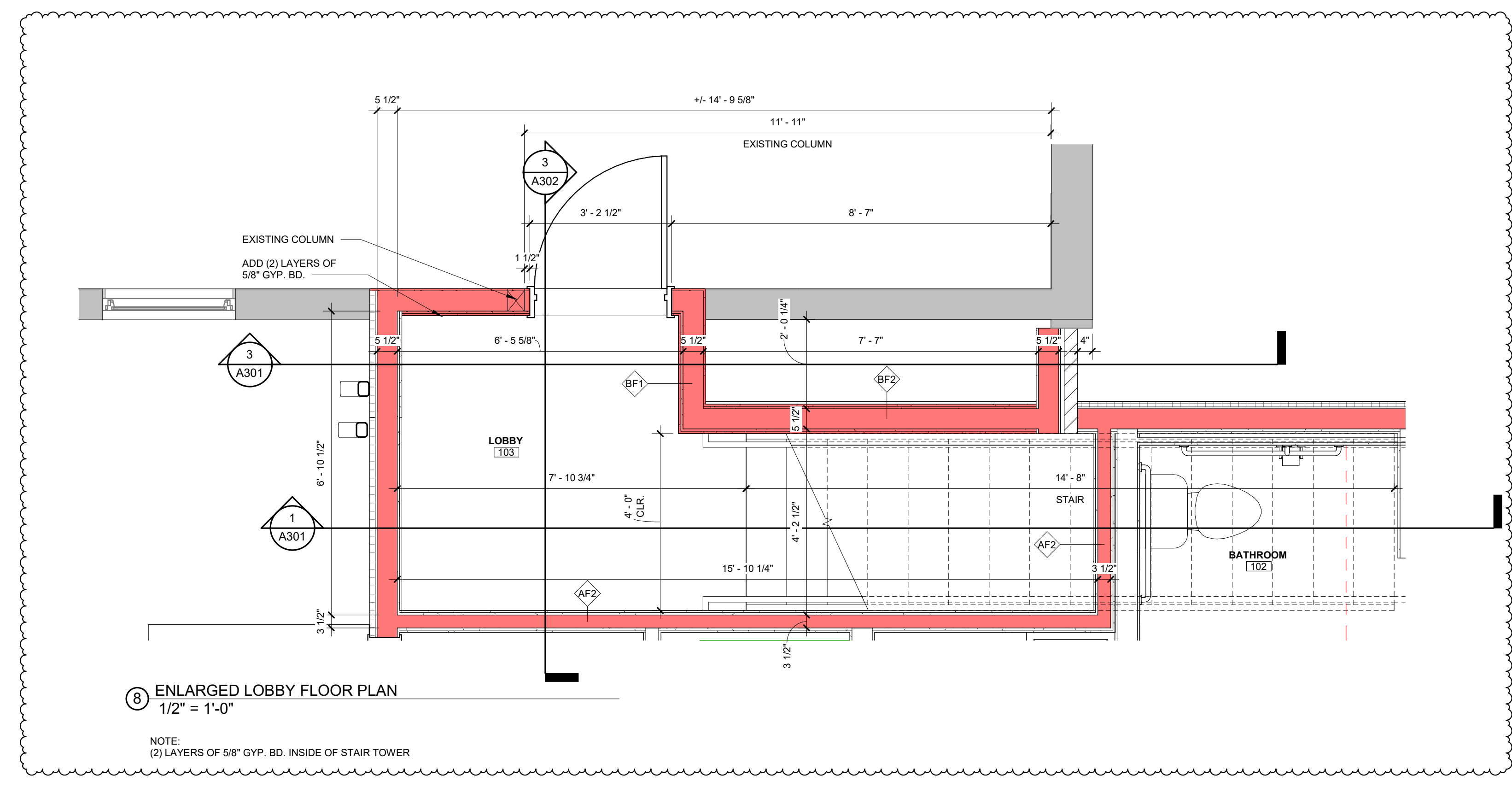
4 FIREBLOCKING DETAIL  
 1 1/2" = 1'-0"



7 ROOF DETAIL  
 1 1/2" = 1'-0"



6 CANOPY DETAIL  
 1 1/2" = 1'-0"



8 ENLARGED LOBBY FLOOR PLAN  
 1/2" = 1'-0"

NOTE:  
 (2) LAYERS OF 5/8" GYP. BD. INSIDE OF STAIR TOWER

ADDITION AND RENOVATIONS FOR  
 LOCUST STREET APARTMENTS  
 305 LOCUST STREET, COLUMBIA, PA

| REVISIONS |                       | DATE     |
|-----------|-----------------------|----------|
| NO.       | DESCRIPTION           |          |
| 1         | CONSTRUCTION/REVISION | 11/03/22 |

DWG DATE 09/13/22  
 PROJECT NO: 20.5012  
 DRAWING BY TG

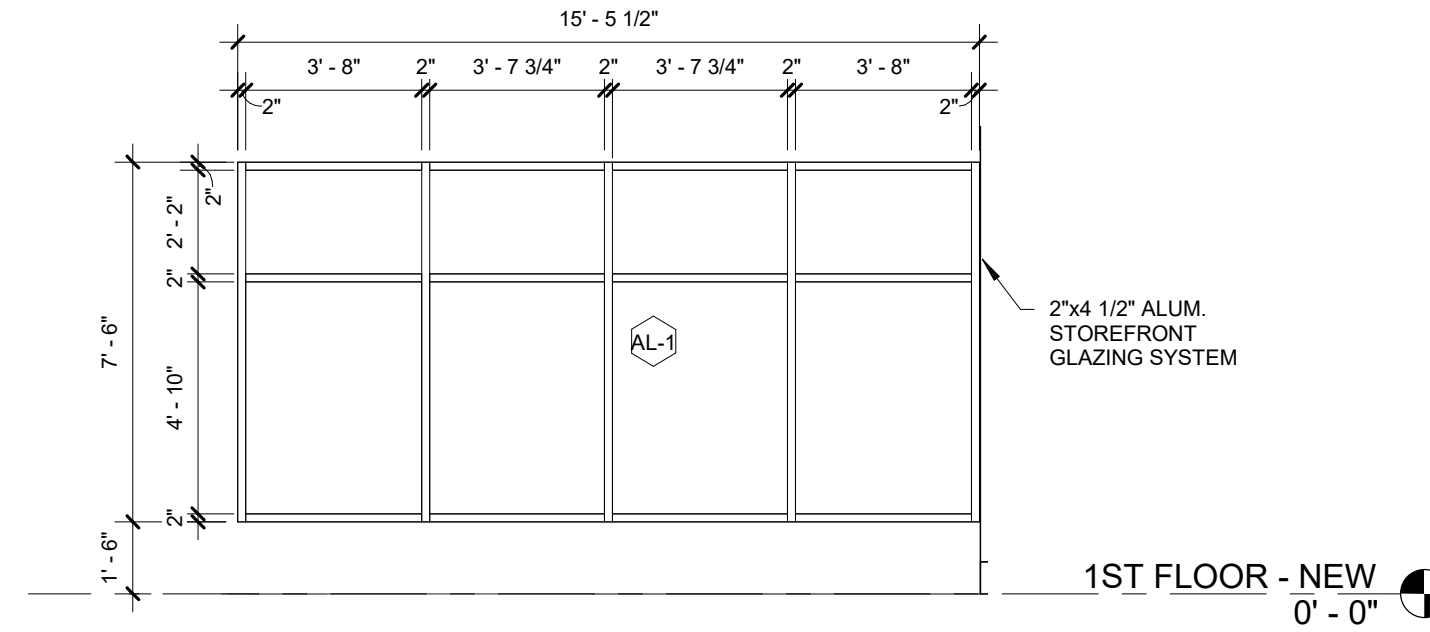
DETAILS

A501

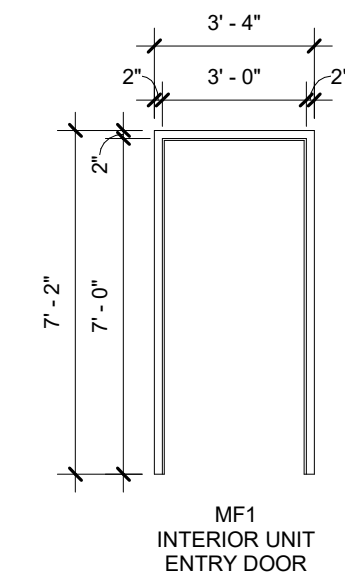
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| HARDWARE SET 1  |                        | HARDWARE SET 9                          |                             | HARDWARE SET 11                                |             | HARDWARE SET 12                            |            | HARDWARE SET 20                                |                      |
|---|------------------------|---|-----------------------------|--|-------------|--|------------|--|----------------------|
| EXTERIOR - ENTRANCE ALUM. FRAME DOOR: SINGLE          |                        | EXTERIOR - EXIT H.M. FRAME DOOR: SINGLE |                             | INTERIOR - PASSAGE SET WOOD FRAME DOOR: SINGLE |             | INTERIOR - LOCKSET WOOD FRAME DOOR: SINGLE |            | INTERIOR - PASSAGE SET WOOD FRAME DOOR: DOUBLE |                      |
| QTY.  | ITEM                   | QTY.                                    | ITEM                        | QTY.   | ITEM        | QTY.                                       | ITEM       | QTY.   | ITEM                 |
| 3   | BUTT HINGE             | 3                                       | BUTT HINGE NRP              | 3  | BUTT HINGE  | 3  | BUTT HINGE | 6  | BUTT HINGE           |
| 1   | PULL HANDLE            | 1                                       | RIM EXIT DEVICE - EXIT ONLY | 1  | PASSAGE SET | 1  | LOCKSET    | 1  | PASSAGE SET          |
| 1   | CYLINDER               | 1                                       | CLOSER - SURFACE MOUNT      | 1  | WALL STOP   | 1  | WALL STOP  | 2  | FLUSH BOLTS - MANUAL |
| 1   | EXIT DEVICE            | 1                                       | WALL STOP                   |  |             |  |            | 2  | WALL STOP            |
| 1   | CLOSER - SURFACE MOUNT | 1                                       | SWEEP                       |  |             |  |            |  |                      |
| 1   | SWEEP                  | 1                                       | THRESHOLD                   |  |             |  |            |  |                      |
| 1   | WEATHER STRIPPING      |   |                             |  |             |  |            |  |                      |
| 1   | THRESHOLD              |   |                             |  |             |  |            |  |                      |
| HARDWARE SET 27                                       |                        |   |                             |  |             |  |            |  |                      |
| INTERIOR - FIRE RATED LOCKSET H.M. FRAME DOOR: SINGLE |                        |   |                             |  |             |  |            |  |                      |
| QTY.  | ITEM                   |   |                             |  |             |  |            |  |                      |
| 3   | BUTT HINGE             |   |                             |  |             |  |            |  |                      |
| 1   | LOCKSET                |   |                             |  |             |  |            |  |                      |
| 1   | CLOSER - SURFACE MOUNT |   |                             |  |             |  |            |  |                      |
| 1   | SMOKE GASKET           |   |                             |  |             |  |            |  |                      |
| 1   | WALL STOP              |   |                             |  |             |  |            |  |                      |

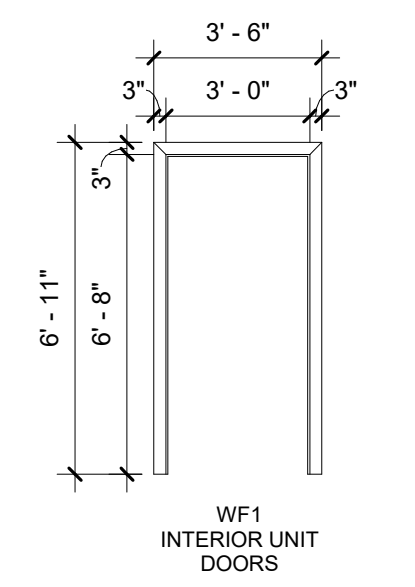
| DOOR SCHEDULE |           |               |            |        |           |          |       |           |           |       |             |              |          |          |  |
|---------------|-----------|---------------|------------|--------|-----------|----------|-------|-----------|-----------|-------|-------------|--------------|----------|----------|--|
| NUMBER        | DOOR TYPE | OPENING WIDTH | R.O. WIDTH | HEIGHT | UNDERCUT  | MATERIAL | FRAME |           |           |       | FIRE RATING | HARDWARE SET | SECURITY | COMMENTS |  |
|               |           |               |            |        |           |          | DEPTH | THROAT    | WIDTH     | HEAD  |             |              |          |          |  |
| 101A          | AL-G      | 3'-0"         | 3'-0"      | 7'-0"  |           | METAL    | MF1   | 0'-9 1/8" | 0'-8 1/8" | 0'-2" | 0'-2"       |              | 1        | Yes      |  |
| 101B          | F         | 3'-0"         | 3'-2 1/2"  | 7'-0"  | 0'-0 3/4" | WOOD     | MF1   | 0'-5 3/4" | 0'-4 3/4" | 0'-2" | 0'-2"       |              | 12       | No       |  |
| 102           | F         | 3'-0"         | 3'-2 1/2"  | 7'-0"  | 0'-0 3/4" | WOOD     | MF1   | 0'-5 3/4" | 0'-4 3/4" | 0'-2" | 0'-2"       |              | 12       | No       | NEEDS PANIC DEVICE AND FIRE RATED CLOSER |
| 103           | VF        | 3'-0"         | 3'-2 1/2"  | 7'-0"  | 0'-0 3/4" | WOOD     | MF1   | 0'-8 3/8" | 0'-7 3/8" | 0'-2" | 0'-2"       |              | 12       | No       |  |
| 104           | F         | 3'-0"         | 3'-2 1/2"  | 7'-0"  | 0'-0 3/4" | WOOD     | MF1   | 0'-5 3/4" | 0'-4 3/4" | 0'-2" | 0'-2"       | 90 MIN.      | 12       | No       |  |
| 105           | F         | 3'-0"         | 3'-2 1/2"  | 7'-0"  | 0'-0 3/4" | WOOD     | MF1   | 0'-5 3/4" | 0'-4 3/4" | 0'-2" | 0'-2"       |              | 12       | No       |  |
| 201           | FP        | 3'-0"         | 3'-2 1/2"  | 6'-8"  | 0'-0 3/4" | WOOD     | MF1   | 0'-5 3/4" | 0'-4 3/4" | 0'-2" | 0'-2"       |              | 27       | Yes      |  |
| 204           | FP        | 3'-0"         | 3'-2"      | 6'-8"  |           | WOOD     | WF1   | 0'-6 1/4" | 0'-4 3/4" | 0'-2" | 0'-2"       | 45 MIN.      | 12       | No       |  |
| 205           | FP        | 3'-0"         | 3'-2"      | 6'-8"  |           | WOOD     | WF1   | 0'-6 1/4" | 0'-4 3/4" | 0'-2" | 0'-2"       |              | 12       | No       |  |
| 206           | FP2       | 5'-0"         | 5'-2 1/2"  | 6'-8"  | 0'-0 3/4" | WOOD     | WF2   | 0'-5 3/4" | 0'-4 3/4" | 0'-2" | 0'-2"       |              | 20       | No       |  |
| 207           | FP        | 3'-0"         | 3'-2"      | 6'-8"  |           | WOOD     | WF1   | 0'-6 1/4" | 0'-4 3/4" | 0'-2" | 0'-2"       |              | 11       | No       |  |
| 208           | FP        | 3'-0"         | 3'-2"      | 6'-8"  |           | WOOD     | WF1   | 0'-6 1/4" | 0'-4 3/4" | 0'-2" | 0'-2"       |              | 11       | No       |  |
| 209           | FP        | 3'-0"         | 3'-2"      | 6'-8"  |           | WOOD     | WF1   | 0'-6 1/4" | 0'-4 3/4" | 0'-2" | 0'-2"       |              | 12       | No       |  |
| 210           | FP        | 3'-0"         | 3'-2"      | 6'-8"  |           | WOOD     | WF1   | 0'-6 1/4" | 0'-4 3/4" | 0'-2" | 0'-2"       |              | 12       | No       |  |
| 211           | FP        | 3'-0"         | 3'-2"      | 6'-8"  |           | WOOD     | WF1   | 0'-6 1/4" | 0'-4 3/4" | 0'-2" | 0'-2"       |              | 11       | No       |  |
| 301           | FP        | 3'-0"         | 3'-2 1/2"  | 6'-8"  | 0'-0 3/4" | WOOD     | MF1   | 0'-5 3/4" | 0'-4 3/4" | 0'-2" | 0'-2"       |              | 27       | Yes      |  |
| 304           | FP        | 3'-0"         | 3'-2"      | 6'-8"  |           | WOOD     | WF1   | 0'-6 1/4" | 0'-4 3/4" | 0'-2" | 0'-2"       | 45 MIN.      | 12       | No       |  |
| 305           | FP        | 3'-0"         | 3'-2"      | 6'-8"  |           | WOOD     | WF1   | 0'-6 1/4" | 0'-4 3/4" | 0'-2" | 0'-2"       |              | 12       | No       |  |
| 306           | FP2       | 5'-0"         | 5'-2 1/2"  | 6'-8"  | 0'-0 3/4" | WOOD     | WF2   | 0'-5 3/4" | 0'-4 3/4" | 0'-2" | 0'-2"       |              | 20       | No       |  |
| 307           | FP        | 3'-0"         | 3'-2"      | 6'-8"  |           | WOOD     | WF1   | 0'-6 1/4" | 0'-4 3/4" | 0'-2" | 0'-2"       |              | 11       | No       |  |
| 308           | FP        | 3'-0"         | 3'-2"      | 6'-8"  |           | WOOD     | WF1   | 0'-6 1/4" | 0'-4 3/4" | 0'-2" | 0'-2"       |              | 11       | No       |  |
| 309           | FP        | 3'-0"         | 3'-2"      | 6'-8"  |           | WOOD     | WF1   | 0'-6 1/4" | 0'-4 3/4" | 0'-2" | 0'-2"       |              | 12       | No       |  |
| 310           | FP2       | 6'-0"         | 6'-2 1/2"  | 7'-0"  | 0'-0 3/4" | WOOD     | WF1   | 0'-5 3/4" | 0'-4 3/4" | 0'-2" | 0'-2"       |              | 20       | No       |  |
| 311           | FP        | 3'-0"         | 3'-2"      | 6'-8"  |           | WOOD     | WF1   | 0'-6 1/4" | 0'-4 3/4" | 0'-2" | 0'-2"       |              | 12       | No       |  |
| 312           | FP        | 3'-0"         | 3'-2"      | 6'-8"  |           | WOOD     | WF1   | 0'-6 1/4" | 0'-4 3/4" | 0'-2" | 0'-2"       |              | 11       | No       |  |



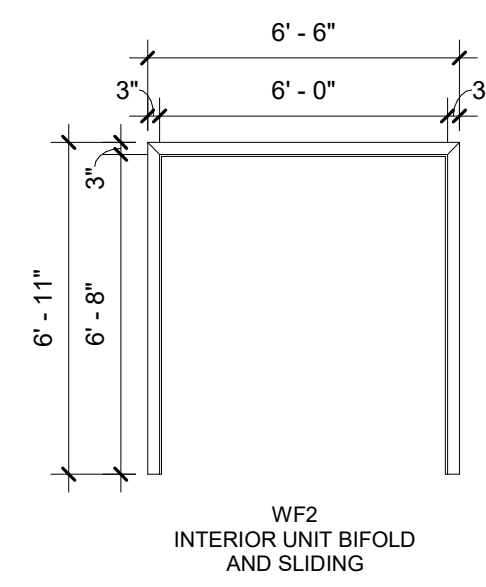
① AL-1  
1/4" = 1'-0"



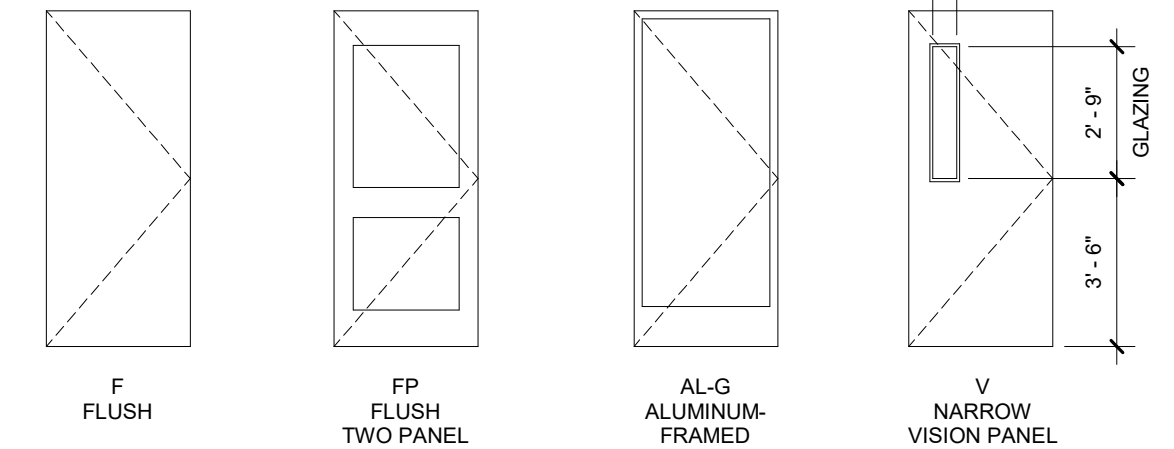
DOOR FRAMES - METAL  
1/4" = 1'-0"



DOOR FRAMES - WOOD  
1/4" = 1'-0"

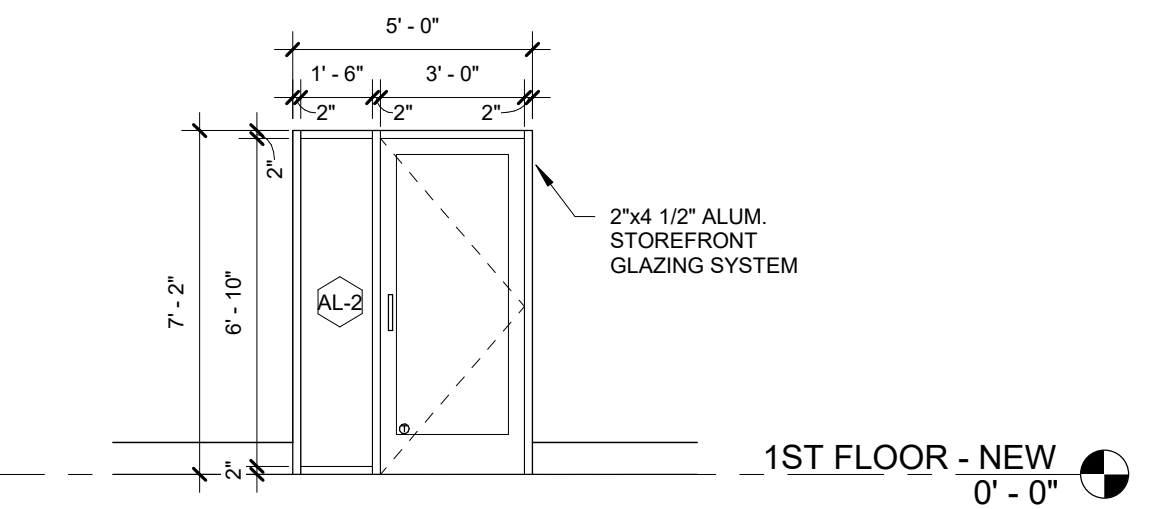


DOOR TYPES  
1/4" = 1'-0"

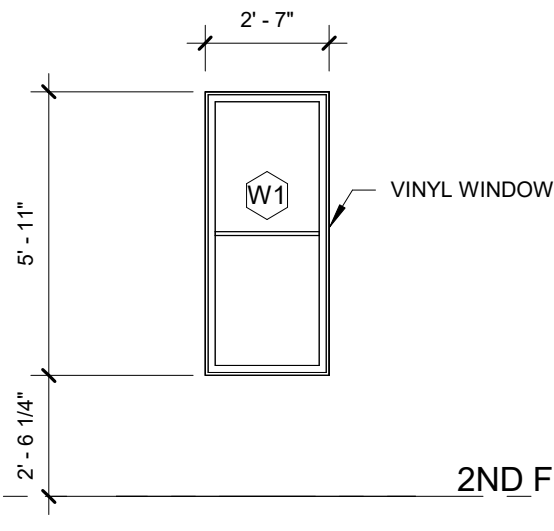


**DOOR TYPE KEY:**  
F = SINGLE FLUSH DOOR  
FP = DOUBLE FLUSH DOOR  
FZU = DOUBLE FLUSH DOORS WITH UNEVEN PANELS

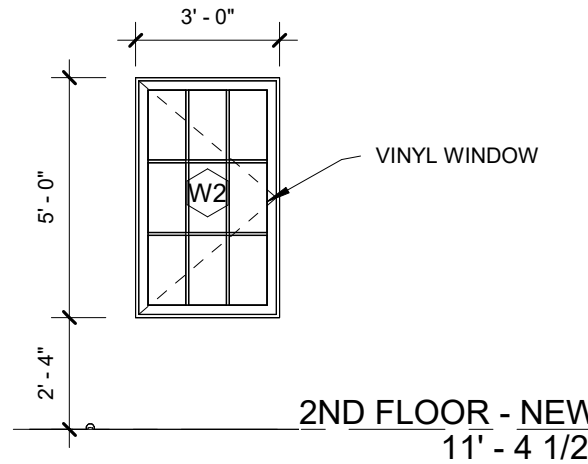
**NOTES:**  
1. ALL DOOR GLAZING SHALL BE SAFETY GLAZING UNLESS OTHERWISE NOTED.  
2. GLASS LITE MAXIMUM HEIGHT AT LOWEST POINT SHALL BE 3'-7" A.F.F.



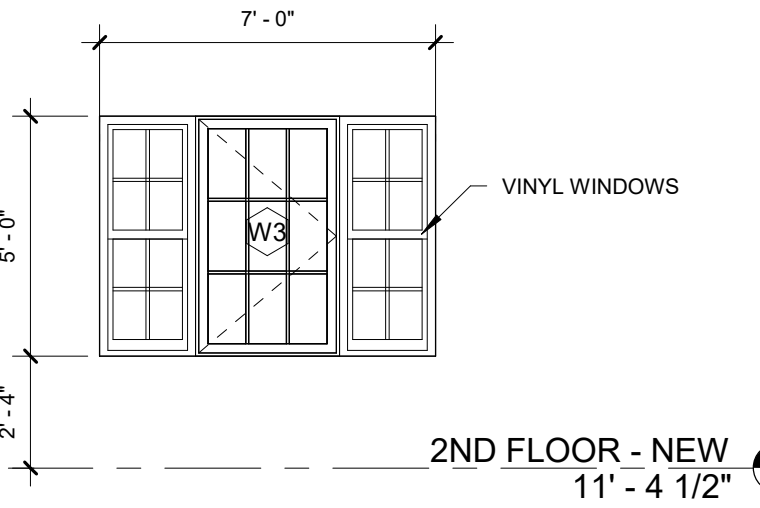
② AL-2  
1/4" = 1'-0"



③ W1  
1/4" = 1'-0"



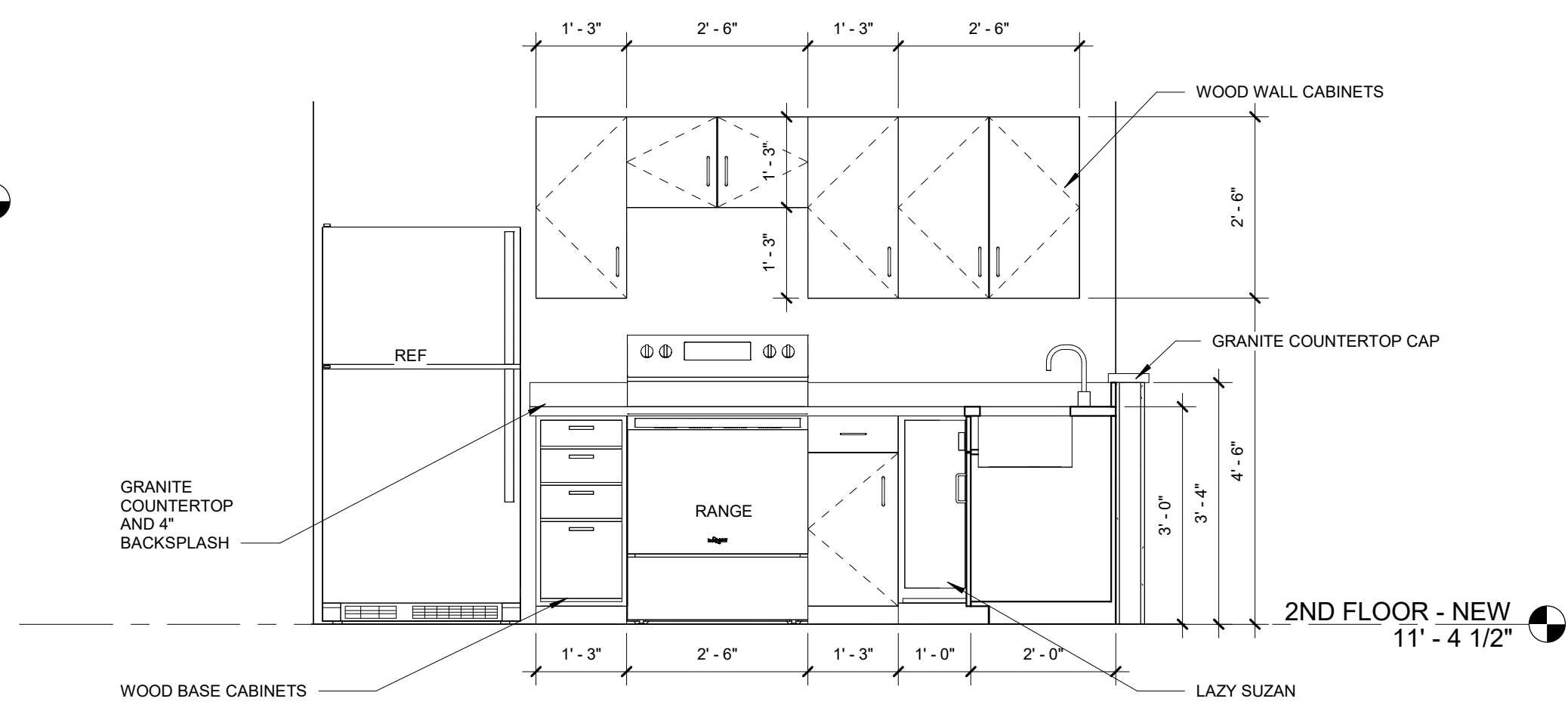
④ W2  
1/4" = 1'-0"



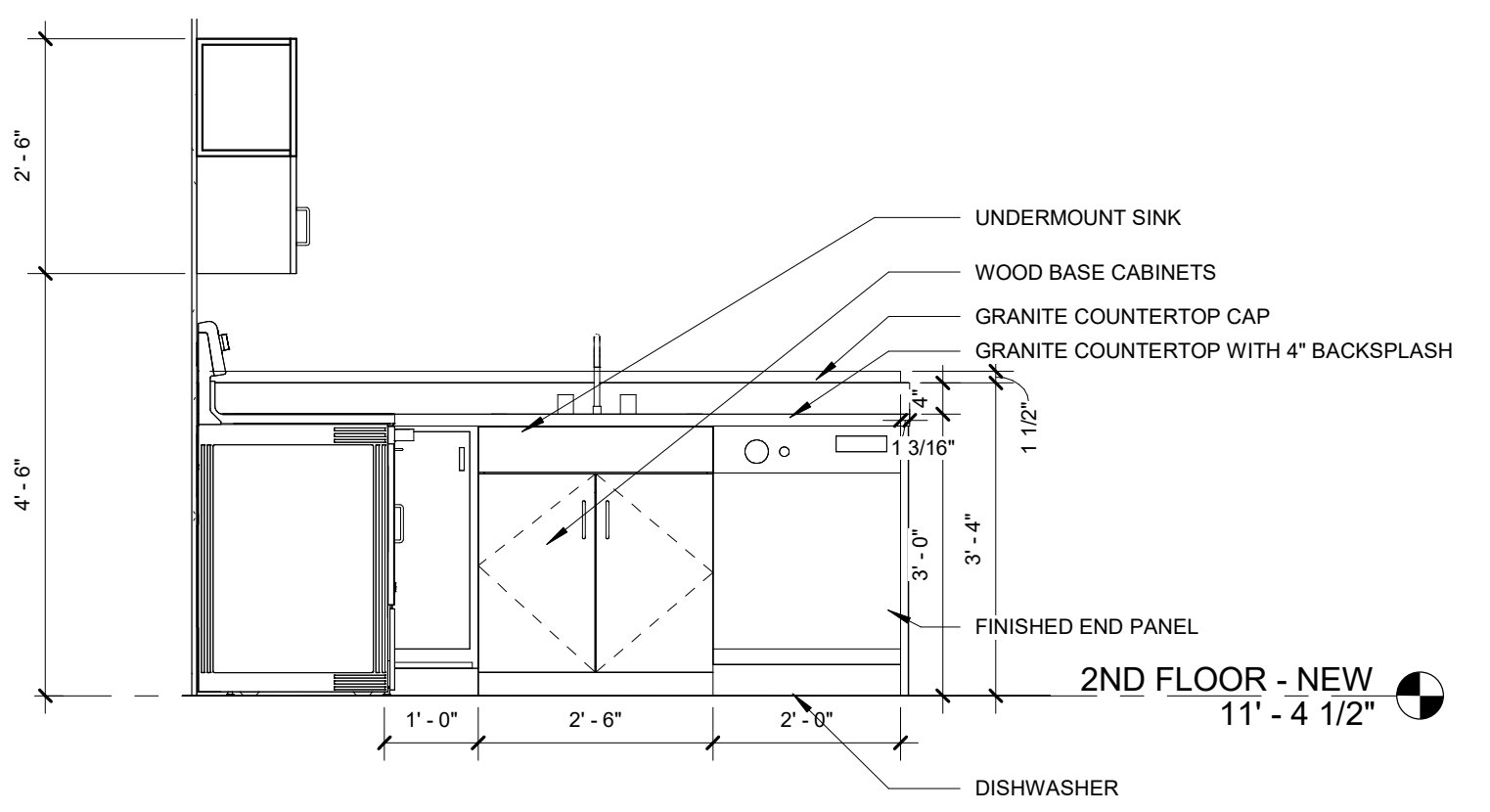
⑤ W3  
1/4" = 1'-0"

| FINISH LEGEND  |   |
|--|---|
| <b>CPT-1 = CARPET TILE</b><br>MFR: MOHAWK<br>STYLE: NEW BASICS III<br>COLOR: TBD                           | <b>PT-1 = PAINT</b><br>MFR: SHERWIN WILLIAMS<br>COLOR: GOSSAMER VEIL 9165<br>USE: TYPICAL WALLS   |
| <b>LVT-1 = LUXURY VINYL TILE</b><br>MFR: SHAW<br>SIZE: 6" X 48"<br>STYLE: RESIDE<br>COLOR: ASSURANCE 94730 | <b>PT-2 = PAINT</b><br>MFR: SHERWIN WILLIAMS<br>COLOR: GREEK VILLA 7551<br>USE: DOOR FRAMES, WINDOW TRIM  |
| <b>PL-1 = PLASTIC LAMINATE</b><br>MFR: WILSONART<br>COLOR: ASIAN NIGHT<br>LINE: STANDARD FINISHES          | <b>VT = VINYL TREADS AND RISERS</b><br>MFR: ARMSTRONG VINYL<br>COLOR: 911 SABLE   |
| <b>PL-2 = PLASTIC LAMINATE</b><br>MFR: WILSONART<br>COLOR: NATURAL COTTON<br>FINISH: STANDARD FINISHES     | <b>WD-1 = WOOD DOOR FINISH</b><br>MFR: VT INDUSTRIES<br>SERIES: ARCHITECTURAL WOOD DOORS<br>SPECIES: WHITE BIRCH<br>COLOR: T.B.D.<br>NOTE: SPEC IS FOR COLOR ONLY |

| ROOM FINISH SCHEDULE |                  |              |             |               |      |       |      |              |               |  |
|----------------------|------------------|--------------|-------------|---------------|------|-------|------|--------------|---------------|--|
| ROOM NUMBER          | ROOM NAME        | FLOOR FINISH | BASE FINISH | WALL FINISHES |      |       |      | CEILING TYPE | COMMENTS      |  |
|                      |                  |              |             | NORTH         | EAST | SOUTH | WEST |              |               |  |
| 101                  | COMMERCIAL SPACE | LVT          | WD          | PT-1          | PT-1 | PT-1  | PT-1 | GYP. - PT-2  |               |  |
| 102                  | BATHROOM         | LVT          | WD          | PT-1          | PT-1 | PT-1  | PT-1 | GYP. - PT-2  |               |  |
| 103                  | LOBBY            | LVT          | WD          | PT-1          | PT-1 | PT-1  | PT-1 | GYP. - PT-2  |               |  |
| 104                  | JAN              | LVT          | WD          | PT-1          | PT-1 | PT-1  | PT-1 | GYP. - PT-2  |               |  |
| 105                  | MECH             | LVT          | WD          | PT-1          | PT-1 | PT-1  | PT-1 | GYP. - PT-2  |               |  |
| 201                  | STAIR            | LVT/RUBBER   | WD          | PT-1          | PT-1 | PT-1  | PT-1 | GYP. - PT-2  | RUBBER TREADS |  |
| 202                  | KITCHEN          | LVT          | WD          | PT-1          | PT-1 | PT-1  | PT-1 | GYP. - PT-2  |               |  |
| 203                  | LIVING ROOM      | LVT          | WD          | PT-1          | PT-1 | PT-1  | PT-1 | GYP. - PT-2  |               |  |
| 204                  | BEDROOM          | CPT          | WD          | PT-1          | PT-1 | PT-1  | PT-1 | GYP. - PT-2  |               |  |
| 205                  | BATHROOM         | LVT          | WD          | PT-1          | PT-1 | PT-1  | PT-1 | GYP. - PT-2  |               |  |
| 206                  | CL               | CPT          | WD          | PT-1          | PT-1 | PT-1  | PT-1 | GYP. - PT-2  |               |  |
| 207                  | CL               | CPT          | WD          | PT-1          | PT-1 | PT-1  | PT-1 | GYP. - PT-2  |               |  |
| 208                  | WD               | LVT          | WD          | PT-1          | PT-1 | PT-1  | PT-1 | GYP. - PT-2  |               |  |
| 209                  | BATHROOM         | LVT          | WD          | PT-1          | PT-1 | PT-1  | PT-1 | GYP. - PT-2  |               |  |
| 210                  | BEDROOM          | CPT          | WD          | PT-1          | PT-1 | PT-1  | PT-1 | GYP. - PT-2  |               |  |
| 211                  | CL               | CPT          | WD          | PT-1          | PT-1 | PT-1  | PT-1 | GYP. - PT-2  |               |  |
| 301                  | STAIR            | LVT/RUBBER   | WD          | PT-1          | PT-1 | PT-1  | PT-1 | GYP. - PT-2  | RUBBER TREADS |  |
| 302                  | KITCHEN          | LVT          | WD          | PT-1          | PT-1 | PT-1  | PT-1 | GYP. - PT-2  |               |  |
| 303                  | LIVING ROOM      | LVT          | WD          | PT-1          | PT-1 | PT-1  | PT-1 | GYP. - PT-2  |               |  |
| 304                  | BEDROOM          | CPT          | WD          | PT-1          | PT-1 | PT-1  | PT-1 | GYP. - PT-2  |               |  |
| 305                  | BATHROOM         | LVT          | WD          | PT-1          | PT-1 | PT-1  | PT-1 | GYP. - PT-2  |               |  |
| 306                  | CL               | CPT          | WD          | PT-1          | PT-1 | PT-1  | PT-1 | GYP. - PT-2  |               |  |
| 307                  | CL               | CPT          | WD          | PT-1          | PT-1 | PT-1  | PT-1 | GYP. - PT-2  |               |  |
| 308                  | WH               | LVT          | WD          | PT-1          | PT-1 | PT-1  | PT-1 | GYP. - PT-2  |               |  |
| 309                  | BATHROOM         | LVT          | WD          | PT-1          | PT-1 | PT-1  | PT-1 | GYP. - PT-2  |               |  |
| 310                  | WD / MECH        | LVT          | WD          | PT-1          | PT-1 | PT-1  | PT-1 | GYP. - PT-2  |               |  |
| 311                  | BEDROOM          | CPT          | WD          | PT-1          | PT-1 | PT-1  | PT-1 | GYP. - PT-2  |               |  |
| 312                  | CL               | CPT          | WD          | PT-1          | PT-1 | PT-1  | PT-1 | GYP. - PT-2  |               |  |



⑥ KITCHEN ELEVATION A  
1/2" = 1'-0"



⑦ KITCHEN ELEVATION B  
1/2" = 1'-0"

COPYRIGHT INFORMATION  
Speedwell Construction Inc. shall retain all common law, statutory and other reserved rights, including copyright to all design, drawings, specifications, electronic data, and any other instruments of service furnished to the Owner for use with respect to this project. These documents may not be used by any other party, for this project or for any other project without the written consent of Speedwell Construction Inc.

ADDITION AND RENOVATIONS FOR  
LOCUST STREET APARTMENTS  
305 LOCUST STREET, COLUMBIA, PA

| NO. | REVISIONS | DATE |
|-----|-----------|------|
|     |           |      |
|     |           |      |
|     |           |      |

DWG DATE: 09/13/22  
PROJECT NO: 20.5012  
DRAWING BY: TG

DOOR SCHEDULE

**Prepared By & Return To:**

Frank J. Vargish, III  
Blakinger Thomas, PC  
28 Penn Square  
Lancaster, PA 17603  
(717) 509-7276

Parcel ID: 110-77571-0-0000 305 Locust Street, Columbia Borough, Lancaster County, PA  
110-82025-0-0000 315 Locust Street, Columbia Borough, Lancaster County, PA

**CROSS-EASEMENT AND MAINTENANCE AGREEMENT**

This CROSS-EASEMENTS AND MAINTENANCE AGREEMENT ("Agreement") is made this \_\_\_ day of \_\_\_\_\_, 2022 ("Effective Date"), by and between 315 LOCUST STREET LLC, a Pennsylvania limited liability company with a business address of 2715 Kimberly Road, Lancaster PA 17603 ("315 Locust"), and GK 315 LOCUST ST. APARTMENTS LLC, a Pennsylvania limited liability company with a business address of 667 Ditz Drive, Manheim PA 17545 ("GK").

Background: GK 315 is the owner of a certain parcel of land located at 305 Locust Street, in the Borough of Columbia, Lancaster County, Pennsylvania, Parcel ID 110-77571-0-0000 ("GK Parcel"). 315 Locust is the owner of a neighboring parcel of land known as 315 Locust Street, Borough of Columbia, Lancaster County, Pennsylvania known as Parcel ID 110-82025-0-0000 ("315 Parcel"). The 315 Parcel and the GK Parcel are herein at times referred to collectively as the "Parcels". Each of the respective owners of the Parcels is, from time to time, referred to herein as a "Parcel Owner" and collectively as the "Parcel Owners."

315 Locust desires to establish a utility easement over GK's Parcel ("Electric Utility Easement"). In consideration 315 Locust agrees to create an access easement over and across ~~the 315's~~ Parcel to provide pedestrian access to the GK's Parcel ("Shared Access Easement") and establish a utility easement over ~~the 315's~~ Parcel ("Utility Easement"). The Electric Utility Easement, Utility Easement and the Shared Access Easement are depicted on the Easement Plan attached herein and incorporated as Exhibit A.

NOW, THEREFORE, 315 Locust and GK, on behalf of themselves and their grantees, heirs, successors and assigns, hereby create the following easements for the benefit of the Parcel Owners and such Parcel Owners' grantees, successors and assigns, and in further consideration of this Agreement and the mutual covenants set forth herein, and intending to be legally bound, the parties agree as follows:

1. Recitals. The foregoing Background is incorporated herein by reference.
2. Electrical Utility Easement. GK hereby grants and declares for the benefit of 315 Locust a permanent easement and irrevocable right to use the Utility Easement on the GK Parcel to construct, service, maintain, repair, replace and rebuild electrical utility services as deemed necessary or appropriate to service the 315 Parcel, all as depicted on the Easement Plan.

3. Sewer, Water and Fire Suppression Utility Easement. 315 Locust hereby grants and declares for the benefit of GK a permanent easement and irrevocable right to use the- fire suppression, water, and sewer easement to construct, service, maintain, repair, replace and rebuild fire suppression and sewer utility services as GK deems necessary or appropriate to service the GK Parcel as depicted on the Easement Plan.

4. Grant of Access. GK hereby grants and declares for the benefit of 315 Locust a non-exclusive right of ingress and regress to and from and over all areas of the Parcel necessary or desirable to access the Utility Easement for purposes of constructing, reconstructing, maintaining, repairing, or replacing the electrical utility services.

5. Shared Access Easement over GK Parcel. 315 Locust hereby grants and declares for the benefit of GK a non-exclusive and permanent easement of ingress and egress and regress over the Shared Access Easement, including the vestibule located on the 315 Parcel, for the benefit of the GK Parcel as depicted on the Easement Plan.

6. Common Right. The easements and rights-of-way created over the Shared Access Easement on the 315 Parcel and the Electric Utility Easement on the GK Parcel, and the ~~315 Parcel~~ Utility Easements on the 315 Parcel shall be shared in common with the owners of the 315 Parcel and the GK Parcel, and shall inure to the benefit of the tenants, employees, guests, contractors and invitees of the owners and occupiers of the 315 Parcel and the GK Parcel.

7. Parking. Nothing herein contained shall be construed to convey parking rights. No vehicles shall be parked or stored within the Shared Access Easement or Utility Easement. Nothing shall be permitted to be stored within, and no improvement or structure shall encroach upon, the Shared Access Easement or Utility Easement.

8. Responsibility for Maintenance and Repair of Utility Easement. GK ~~315~~ shall bare all construction costs necessary to build the electrical utility service. All further cost for construction, maintenance, repair and replacement of the electrical utility service shall be done by GK ~~315~~.

9. Responsibility for Maintenance and Repair of Shared Access Easement. The Shared Access Easement shall be maintained in a safe and easily traversable condition, free of significant potholes or rutting. The Parcel Owners agree that costs for maintenance, repair and replacement of the access drive within the Shared Access Easement shall be shared equally. In the event that the Columbia Borough requires the installation of sidewalks, shade trees, and other improvements to or along the Shared Access Easement, such costs shall be split equally between the Parcel Owners. In the event that any Parcel Owner (or their guests, tenants or invitees) cause any damage to the improvements within the Shared Access Easement, such Parcel Owner shall promptly repair any such damage at such Parcel Owner's expense. The owner of the 315 Parcel shall be responsible for keeping the Shared Access Easement free of snow over two (2) inches deep, and the cost for such snow removal shall be borne equally by the Parcel Owners.

Formatted: Underline

10. Construction Easements. To the extent any Parcel Owner performs repair, maintenance, or reconstruction of the Shared Access Easement or Utility Easement as authorized in this Agreement, such Parcel Owners and their contractors and representatives shall have a temporary construction easement upon the entire Shared Access Easement and Utility Easement during the period of repair, maintenance, and reconstruction, and such Parcel Owners shall, at the completion of construction, restore the surface of the Shared Access Easement to substantially the same condition as at the beginning of the repair, maintenance or reconstruction.

11. Notices. Any notices required under this Agreement shall be mailed to the address of the Lot Owner as listed on the property tax records of Lancaster County.

12. Binding Covenants and Termination. The rights, obligations, covenants, and easements set forth herein shall run with the land and shall be binding upon and shall inure to the benefit of the Lot Owners, and their respective heirs, successors, and assigns.

IN WITNESS WHEREOF, and intending to be legally bound, the undersigned have executed this Agreement as of the date set forth above.

**“315 LOCUST”**

315 LOCUST STREET LLC

By: \_\_\_\_\_

\_\_\_\_\_, Member

By: \_\_\_\_\_

\_\_\_\_\_, Member

**“GK”**

GK 315 LOCUST ST. APARTMENTS LLC

By: \_\_\_\_\_

Gary C. Myer, Managing Member



COMMONWEALTH OF PENNSYLVANIA :  
 : SS:  
COUNTY OF \_\_\_\_\_ :

On this \_\_\_\_\_ day of \_\_\_\_\_, 2022, before me, the undersigned officer, personally appeared **Gary C. Myer**, who acknowledged himself to be the Managing Member of GK 315 LOCUST ST. APARTMENTS LLC, and that he as such Managing Member, being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of GK 315 LOCUST ST. APARTMENTS LLC by himself as such officer.

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

\_\_\_\_\_  
Notary Public

COMMONWEALTH OF PENNSYLVANIA :  
 : SS:  
COUNTY OF \_\_\_\_\_ :

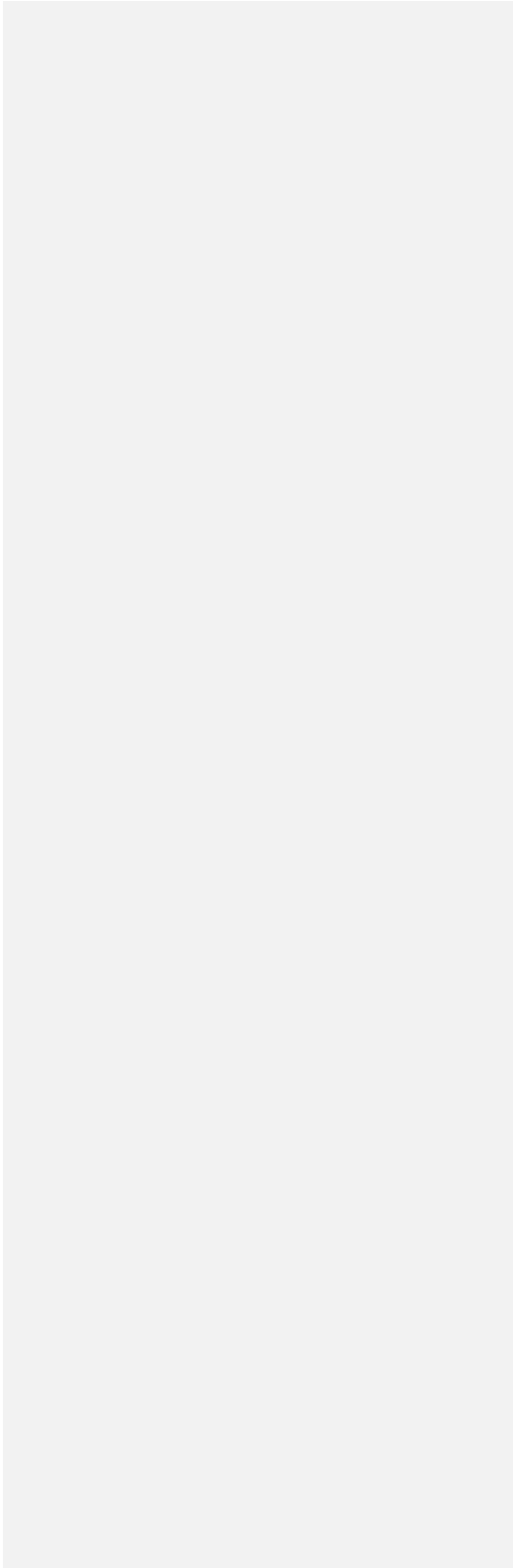
On this \_\_\_\_\_ day of \_\_\_\_\_, 2022, before me, the undersigned officer, personally appeared \_\_\_\_\_, who acknowledged himself to be the Managing Member of 315 LOCUST STREET LLC, and that he as such Managing Member, being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of 315 LOCUST STREET LLC by himself as such officer.

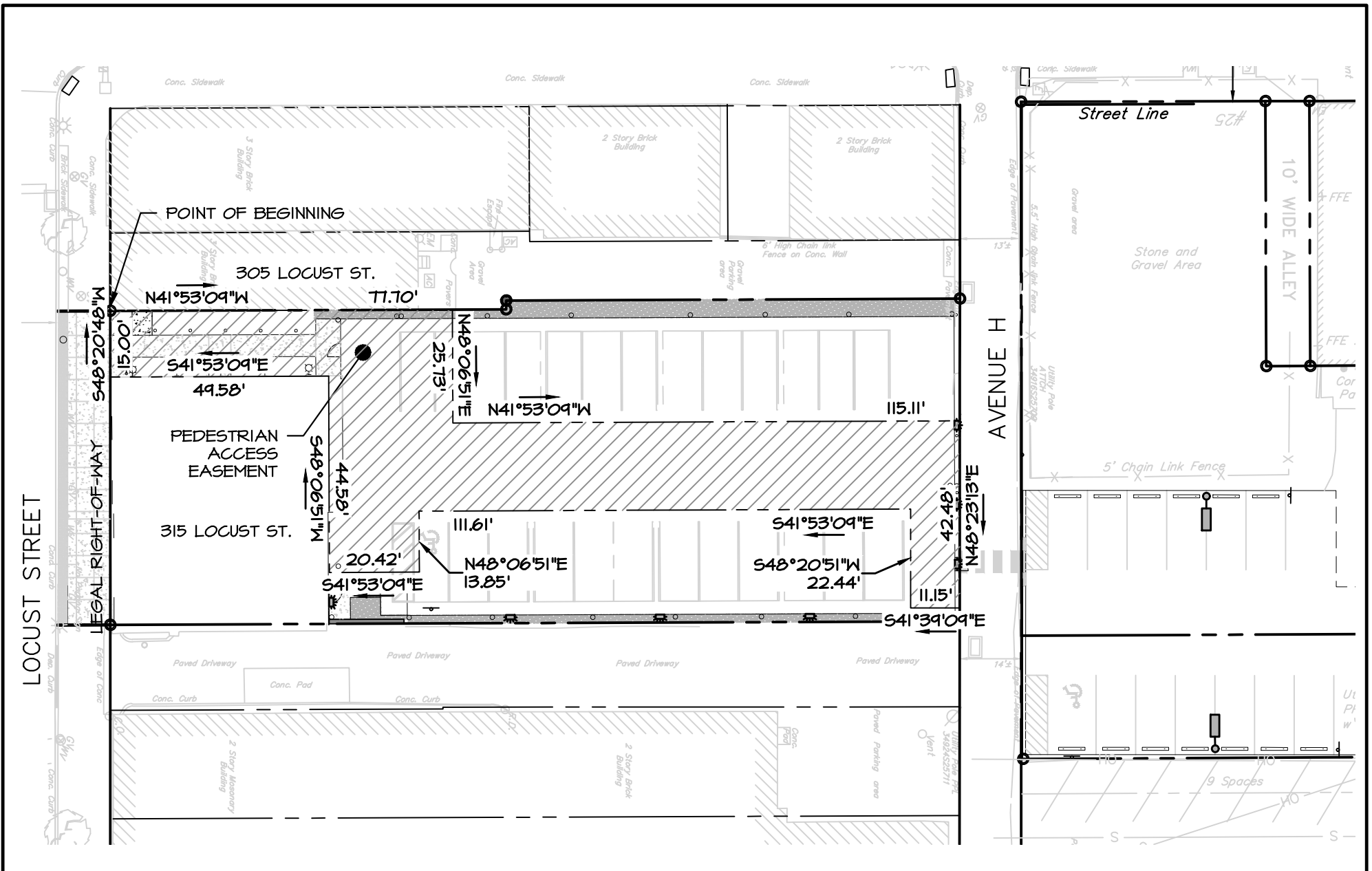
IN WITNESS WHEREOF, I have hereunto set my hand and notarial seal.

\_\_\_\_\_  
Notary Public

**EXHIBIT A**

Easement Plan





743 S. BROAD ST.  
LITITZ, PA 17543  
(717) 626-7271  
elagroup.com

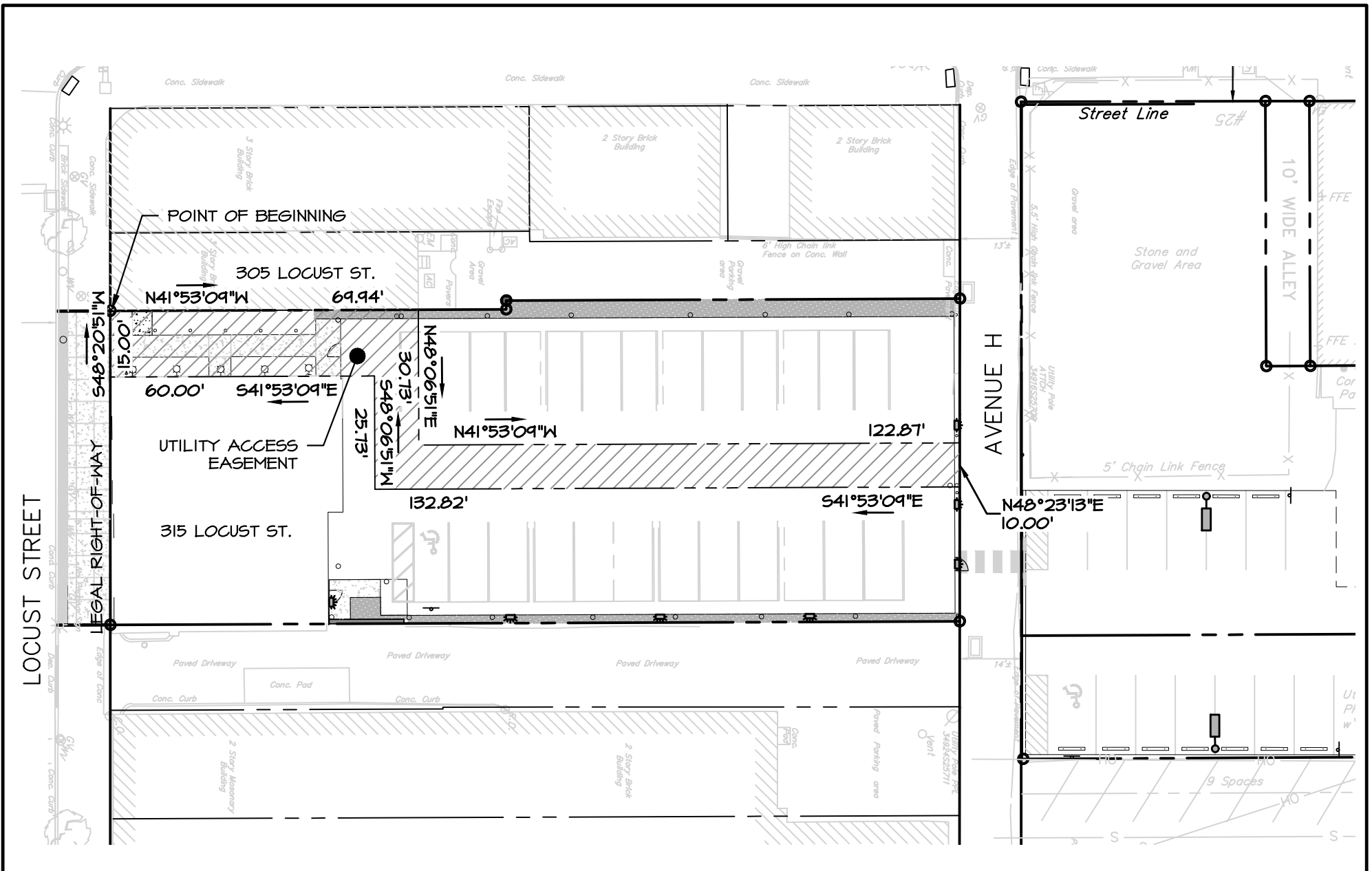
**PEDESTRIAN ACCESS EASEMENT EXHIBIT**  
SPEEDWELL CONSTRUCTION, INC.

305 & 315 LOCUST STREET  
COLUMBIA, PA 17543

JOB NUMBER:  
1229-001

SCALE: 1" = 30'  
DRAWN BY: TRS  
DATE: DEC. 1, 2022

DRAWING:  
N/A  
SKETCH:  
1 OF 1



LOCUST STREET

AVENUE H

Street Line

10' WIDE ALLEY

POINT OF BEGINNING

305 LOCUST ST.

315 LOCUST ST.

UTILITY ACCESS EASEMENT

**UTILITY ACCESS EASEMENT EXHIBIT**  
SPEEDWELL CONSTRUCTION, INC.

JOB NUMBER:  
1229-001

305 & 315 LOCUST STREET  
COLUMBIA, PA 17543

SCALE: 1" = 30'  
DRAWN BY: TRS  
DATE: DEC. 1, 2022

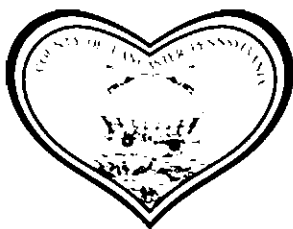
DRAWING: N/A  
SKETCH: 1 OF 1



743 S. BROAD ST.  
LITITZ, PA 17543  
(717) 626-7271  
elagroup.com

**Lancaster County**

Ann M. Hess  
 Recorder of Deeds  
 150 N. Queen Street  
 Suite 315  
 Lancaster, PA 17603  
 Phone: 717-299-8238  
 Fax: 717-299-8393



INSTRUMENT # : 6668867

RECORDED DATE: 03/10/2022 03:54:00 PM



4261188-0016U

**LANCASTER COUNTY ROD****OFFICIAL RECORDING COVER PAGE**

Page 1 of 5

**Document Type:** DEED**Transaction Reference:** eSecureFile : 14118195**Document Reference:****Transaction #:** 4051714 - 1 Doc(s)**Document Page Count:** 4**Operator Id:** hhair**RETURN TO:** (Simplifile)

Blakinger Thomas, PC - COLUMBIA BOROUGH  
 28 PENN SQ FL 3  
 LANCASTER, PA 17603  
 (717) 299-1100

**SUBMITTED BY:**

Blakinger Thomas, PC - COLUMBIA BOROUGH  
 28 PENN SQ FL 3  
 LANCASTER, PA 17603

**\* PROPERTY DATA:**

Parcel ID #: 110-77571-0-0000

Municipality: COLUMBIA BOROUGH (100%)

School District: COLUMBIA SD

**\* ASSOCIATED DOCUMENT(S):****FEES / TAXES:**

|                     |                   |
|---------------------|-------------------|
| RECORDING FEE: DEED | \$13.00           |
| CRC #6544           | \$2.00            |
| RIF #6543           | \$3.00            |
| WRIT TAX            | \$0.50            |
| AFF HSG #6557       | \$11.50           |
| PA SURCHARGE #6548  | \$40.25           |
| STATE RTT           | \$3,000.00        |
| COLUMBIA BOROUGH    | \$1,500.00        |
| COLUMBIA SD         | \$1,500.00        |
| <b>Total:</b>       | <b>\$6,070.25</b> |

INSTRUMENT # : 6668867

RECORDED DATE: 03/10/2022 03:54:00 PM

I hereby CERTIFY that this document is  
 recorded in the Recorder of Deeds Office in  
 Lancaster County, Pennsylvania.



**Ann M. Hess**  
 Recorder of Deeds

**PLEASE DO NOT DETACH**

THIS PAGE IS NOW PART OF THIS LEGAL DOCUMENT

NOTE: If document data differs from cover sheet, document data always controls.

\*COVER PAGE DOES NOT INCLUDE ALL DATA, PLEASE SEE INDEX AND DOCUMENT AFTER RECORDING FOR ADDITIONAL INFORMATION.

**Prepared By & Return To:**  
Frank J. Vargish III, Esquire  
Blakinger Thomas, PC  
28 Penn Square, P.O. Box 1889  
Lancaster, PA 17608-1889  
(717) 299-1100

**Parcel ID#:** 110-77571-0-0000

---

# THIS DEED

---

Made the 10<sup>th</sup> day of March, in the year Two Thousand and Twenty-two (2022);

**BETWEEN Jeffery J. Seibert and Melissa Seibert**, husband and wife, of the County of Lancaster and Commonwealth of Pennsylvania, hereinafter referred to as the "Grantors"

*AND*

**GK 315 Locust St. Apartments, LLC**, a Pennsylvania limited liability company, of the County of Lancaster and Commonwealth of Pennsylvania, hereinafter referred to as the "Grantee".

**WITNESSETH**, That in consideration of **Three Hundred Thousand and 00/100 Dollars (\$300,000.00)**, in hand paid, the receipt whereof is hereby acknowledged, the said Grantors hereby grant and convey to the said Grantee, its successors and assigns:

ALL THAT CERTAIN lot of ground, together with the three and two story brick and frame combination mercantile building and dwelling house thereon erected, situate on the north side of Locust Street, between North Third and North Fourth Street, known as 305 LOCUST STREET, in the Fourth Ward of the BOROUGH OF COLUMBIA, County of Lancaster and Commonwealth of Pennsylvania, bounded and described as follows:

BEGINNING at a point in the north line of Locust Street, 28.65 feet east of the northeast corner of North Third and Locust Streets, said point being a corner of land now or late of Robert M. Horner, et ux; thence extending along said land now or late of Robert M. Horner, et ux, the three following courses and distances: 1) in a northwardly direction parallel with North Third Street, 95.1 feet to a point; 2) thence in an eastwardly direction, parallel with Locust Street, 2.35 feet to a point and 3) thence in a northwardly direction, parallel with

North Third Street, 97.82 feet to the south line of Avenue H; thence extending in an eastwardly direction along the said south line of Avenue H, 13.35 feet to a point in line of land now or late of Sidney W. Orzack and Charles J. Cohen; thence extending along said land the three following courses and distances: 1) in a southwardly direction, parallel with North Third Street, 103.2 feet to a point; 2) thence extending in an eastwardly direction, parallel with Avenue H, 2 feet to a point and 3) extending thence in a southwardly direction, parallel with North Third Street, 89.71 feet to the north line of Locust Street; thence extending in a westwardly direction along the said north line of Locust Street, in width in front, 17.7 feet to the place of BEGINNING.

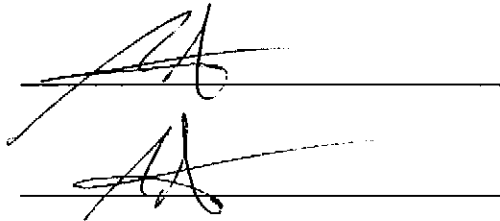
BEING THE SAME PREMISES which John M. Sheehy, Sr. and Dorothy L. Sheehy, by deed dated August 29, 1994 and recorded September 1, 1994, in the Recorder of Deeds Office in and for Lancaster County, Pennsylvania, in Deed Book 4438, Page 0157, granted and conveyed unto Jeffery J. Seibert and Melissa Seibert, husband and wife, grantors herein.

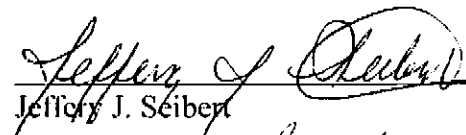
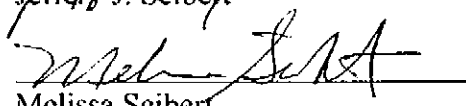
AND the said Grantors do hereby Specially warrant the property hereby conveyed.

IN WITNESS WHEREOF, said Grantors have hereunto set their hands and seals the day and year first above written.

SIGNED, SEALED AND DELIVERED

IN THE PRESENCE OF



 Seal  
Jeffery J. Seibert  
 Seal  
Melissa Seibert

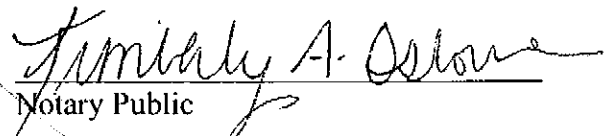
COMMONWEALTH OF PENNSYLVANIA

COUNTY OF LANCASTER

SS.

ON THIS, the 10<sup>th</sup> day of March, 2022, before me, a notary public, the undersigned officer, personally appeared **AARON D. HOLLIS**, I.D. No. 89297, known to me (or satisfactorily proven) to be a member of the bar of the highest court of said state and a subscribing witness to the within instrument, and certified that he was personally present when **Jeffery J. Seibert** and **Melissa Seibert**, husband and wife, whose names are subscribed to the within instrument executed the same, and that said persons acknowledged that they executed the same for the purpose therein contained.

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

  
Notary Public

Commonwealth of Pennsylvania - Notary Seal  
Kimberly A. Osborne, Notary Public  
Lancaster County  
My commission expires October 13, 2023  
Commission number 1293886  
Member, Pennsylvania Association of Notaries



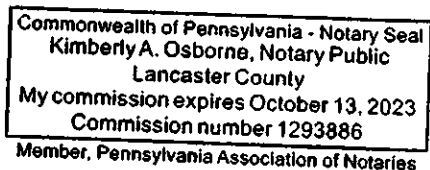
COMMONWEALTH OF PENNSYLVANIA

SS.

COUNTY OF LANCASTER

ON THIS, the 10<sup>th</sup> day of March, 2022, before me, a notary public, the undersigned officer, personally appeared **Jeffery J. Seibert and Melissa Seibert**, husband and wife, known to me (or satisfactorily proven) to be the persons whose names are subscribed to the within instrument, and that said persons acknowledged that they executed the same for the purpose therein contained.

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



*Kimberly A Osborne*  
 \_\_\_\_\_  
 Notary Public

I HEREBY CERTIFY that the precise address of the Grantee herein is 667 Ditz Road, Manheim, PA 17545.

*Aaron D. Hollis*  
 \_\_\_\_\_  
 Aaron D. Hollis, Esquire

BEFORE THE ZONING HEARING BOARD  
OF THE BOROUGH OF COLUMBIA

IN RE: :  
: :  
APPLICATION OF 315 LOCUST : Case No. 21-036  
STREET, LLC :  
:

**DECISION**

**I. FINDINGS OF FACT.**

1. Applicant is 315 Locust Street, LLC, 2715 Kimberly Road, Lancaster, Pennsylvania 17603 (“Applicant”).
2. The property which is the subject of this application is 307, 309, and 315 Locust Street, Columbia Borough, Lancaster County, Pennsylvania (the “Property”).
3. Applicant is the record owner of the Property.
4. The Property is located in the Downtown Commercial (DC) District as shown on the Official Zoning Map of the Borough of Columbia.
5. Notice of the hearing on the within application was duly advertised and posted in accordance with the provisions of the Pennsylvania Municipalities Planning Code (“MPC”) and the Columbia Borough Zoning Ordinance of 1999, codified as Chapter 220 of the Code of Ordinances of the Borough of Columbia (the “Zoning Ordinance”).
6. The hearing on the application was initially scheduled for February 24, 2021, was continued to March 31, 2021, and was further continued until April 28, 2021, at the request of Applicant.
7. A public hearing was held before the Zoning Hearing Board of the Borough of Columbia (the “Board”) on the Application on April 28, 2021.
8. Applicant agreed on the record that the commencement of the hearing was timely.
9. Applicant was represented at the hearing by Donald Murphy, Principal of Cimmaron Construction, Applicant’s Development Manager; Benjamin Deppen, Architect, employed by Speedwell Design; Brent Good, RLA, and Michelle Madzellan, P.E., of ELA Group, Inc.; and

its counsel, Michael Grab, Esquire.

10. Columbia Borough (the "Borough") appeared through Manager Mark Stivers and Solicitor Evan Gabel.

11. Columbia Borough Planning Commission appeared through its Chair, Mary Wickenheiser, and was recognized as a party.

12. Jeffery Seibert, 101 South 11th Street, Columbia, owner of 305 Locust Street, appeared and was recognized as a party.

13. Applicant submitted a Zoning Exhibit Plan consisting of Sheets 1 through 4 with its application which was also part of the Power Point presentation presented as Exhibit A-1 (the "Plan").

14. The Property is three adjoining lots on the north side of Locust Street extending northward to Avenue H. Plan.

15. Applicant proposes to combine the three existing lots into a single lot which will contain 0.32 acre. Plan.

16. The Property presently contains three adjoining multistory buildings fronting directly on Locust Street which are in disrepair. Exhibit A-1.

17. The structure on 307 Locust Street is two stories, is not an historic structure, and photographs Applicant presented as part of Exhibit A-1 show disrepair and structural damage. Exhibit A-1.

18. Applicant proposes to completely remove the building on 307 Locust Street.

19. The buildings on 309 and 315 Locust Street were used as hotels and have facades with historic value. Exhibit A-1.

20. Additions were constructed to the rears of the buildings on 309 Locust Street and 315 Locust Street which are narrower than the two portions fronting on Locust Street. Exhibit A-1.

21. There are severe structural issues with the rears of 309 and 315 Locust Street including a collapsed chimney, areas of brick without mortar and with missing brick, roof damage, and other structural issues. Exhibit A-1.

22. Applicant proposes to demolish the additions to the rear of 309 and 315 Locust beyond the areas outlined in red on Page 7 of Exhibit A-1.

23. After demolition, Applicant proposes to restore the fronts of 309 and 315 Locust and to construct a four-story apartment building which will connect to and extend from the portions of 309 and 315 Locust which will remain (the "New Structure").

24. Applicant proposes that approximate 2,000 square feet of the first floor of the New Structure fronting on Locust Street will have commercial uses.

25. The Property slopes downward from Locust Street to Avenue H, and there will be a basement in the New Structure accessible from Avenue H.

26. Applicant will improve the basement of the New Structure with 25 off-street parking spaces, one of which will be handicapped accessible, an area for trash disposal, and sprinkler and mechanical facilities. Plan.

27. Applicant will equip the access to the parking area in the New Structure with a door or gate to limit access to tenants of the New Structure.

28. The first floor of the New Structure will have the commercial space, four one-bedroom dwelling units, and four two-bedroom dwelling units. Exhibit A-1.

29. The second and third floors of the New Structure will each have four one-bedroom dwelling units and six two-bedroom dwelling units. Exhibit A-1.

30. The fourth floor of the New Structure will have four one-bedroom dwelling units and five two-bedroom dwelling units. Exhibit A-1.

31. Applicant proposes a total of 37 dwelling units, 16 one-bedroom dwelling units and 21 two-bedroom dwelling units.

32. The New Structure will be equipped with an elevator.

33. Applicant proposes that the entrance to the dwelling units will be separate from the entrance to the commercial space and will be through a vestibule which will have an area for mailboxes, package delivery, and similar matters.

34. The New Structure will extend beyond the footprint of the three existing buildings on the Property.

35. The building coverage will be approximately 87 percent.

36. Applicant will meet all setback requirements.

37. Ms. Madzellan presented a report as Exhibit A-3 which she prepared which stated that between 26 and 30 off-street parking spaces would be sufficient for the 37 dwelling units

proposed for the Property.

38. Ms. Madzelan's report presented as Exhibit A-3 concluded that the proposed use was midrise multifamily housing in a dense multi-use urban area. Exhibit A-3.

39. One of the criteria for dense multi-use urban area is short trips made convenient by walking, biking or transit in an area served by significant transit, either rail or bus, that enables a high level of transit usage to and from the area. Exhibit A-3.

40. Ms. Madzelan testified that there was a bus stop by the Property, but she did not know anything concerning the bus service.

41. Ms. Madzelan was unaware of any zoning ordinances that required less than one parking space for each newly constructed dwelling unit.

42. The Board finds the testimony of Ms. Madzelan to be not credible in her conclusion that 26 to 30 off-street parking spaces would be sufficient for 37 dwelling units.

43. Applicant agreed that the Board could impose a condition requiring Applicant to provide 12 off-street parking spaces within a 500 foot radius of the Property so that each dwelling unit would have one off-street parking space.

44. Applicant agreed that the Board could impose a condition limiting the one-bedroom apartments to two occupants and the two-bedroom apartments limited to three persons on the lease.

45. Applicant requested that the Board grant an extension of one year from the time periods within the Zoning Ordinance to obtain zoning permits and complete construction.

46. The Planning Commission recommended approval of the application.

47. The Mayor spoke in favor of the application.

48. The Borough, through the Borough Manager, recommended approval of the variances relating to the amount of commercial use in the first floor of the New Structure and the extension of time periods.

49. The Borough did not oppose a variance from the requirement of two off-street parking spaces per dwelling unit but requested that the Board require that Applicant provide one and one half off-street parking spaces per dwelling unit.

## II. CONCLUSIONS OF LAW

1. Within the Downtown Commercial (DC) District, the first floor of each building shall have commercial uses. Zoning Ordinance §220-25.

2. The Board of Supervisors may, by special exception, authorize a reduction in the amount of required off-street parking if the Applicant proves that the parking will be shared with another use with a different peak time of parking need or the Applicant proves that the parking demand for a particular use is unusually low because of some unusual and peculiar characteristic of the use. Zoning Ordinance §220-42.F.

3. “A special exception is a use that is expressly permitted by the zoning ordinance, absent a showing of detrimental effect on the community. The Applicants for a special exception has the burden to demonstrate that the proposed use satisfies the objective requirements of the ordinance.” *Morrell v. Zoning Hearing Board of Shrewsbury Township*, 17 A.3d 972, 975 (Pa. Cmwlth. 2011) (citation omitted).

4. “[I]t is the Board’s function to weigh the evidence before it”. *Lake Adventure, Inc. v. Zoning Hearing Board of Dingman Township*, 64 Pa. Commonwealth Ct. 551, 440 A.2d 1284 (1982). See also *Oxford Corporation v. Zoning Hearing Board of Oxford Borough*, 34 A.3d 286 (Pa. Cmwlth. 2011) (n.9).

5. Applicant did not demonstrate that Applicant met the specific and objective requirements of Section 220-42.F for the reduction in required parking.

6. “The burden on an applicant seeking zoning variance is heavy, and variances should be granted sparingly and only under exceptional circumstances.” *Fairview Township v. Fairview Township Zoning Hearing Board*, 233 A.3d 958, 963 (Pa. Cmwlth. 2020) (en banc).

7. An applicant seeking variances must demonstrate unnecessary hardship unique to the subject property as distinguished from hardship arising from the impact of the zoning regulations on the entire district or on the owner of the land. *Fowler v. City of Bethlehem Zoning Hearing Board*, 187 A.3d 287 (Pa. Cmwlth. 2018).

8. An applicant for a variance bears the burden of proving that unnecessary hardship will result if the variance is not granted and that the grant of the proposed variance will not be contrary to the public interest. *Valley View Civic Association v. Zoning Board of Adjustment*, 501 Pa. 550, 462 A.2d 637 (1983); *Schomaker v. Zoning Hearing Board of the Borough of*

*Franklin Park*, 994 A.2d 1196 (Pa. Cmwlth. 2010).

9. Variances “are granted on a case-by-case basis and then only when the applicant proves that the ordinance imposes upon him a unique hardship and that the approval of the variance will not have an adverse impact on the health, safety and welfare of the general public.” *Pietropaolo v. Zoning Hearing Board of Lower Merion Township*, 979 A.2d 969, 982 (Pa. Cmwlth. 2009).

10. The unique configuration of the existing buildings and their current distressed conditions constitute unnecessary hardship.

11. After a variance or other approval is granted by the Board, an Applicant must obtain a building permit within 12 months after the date of the approval and complete construction within twelve months after the date of issuance of the permits

12. The Zoning Hearing Board may extend the time period to obtain permits or complete construction. Zoning Ordinance §220-11.G(2)

13. Conditions must be attached to the granting of these variances to preserve and protect the surrounding neighborhood and the purposes of the Zoning Ordinance.

### **III. ADJUDICATION**

Based upon the foregoing findings of fact and conclusions of law, the Zoning Hearing Board of the Borough of Columbia grants the application of 315 Locust Street, LLC for a variance from the requirements of Section 220-25, Table of Uses, to authorize the erection of a new structure on the properties identified as 307, 309, and 315 Locust Street with approximately 2,000 square feet of commercial space on the first floor. The Board denies the request for a special exception pursuant to Section 220-42.F to modify the required parking for the proposed 37 dwelling units. The Board grants a variance from the requirements of Section 220-41.A of the Zoning Ordinance and approval under Section 220-42.E of the Zoning Ordinance to allow the creation of 37 dwelling units with 25 off-street parking spaces on the Property and 12 off-street parking spaces within 500 feet of the Property. The Board grants an extension of time under Section 220-11.G(1) of the Zoning Ordinance to allow Applicant two years from the date of this Decision to obtain a zoning permit and two years from the date of obtaining a zoning permit to complete construction. These variances and extensions of time

are subject to the following conditions which the Board deems necessary to protect the surrounding neighborhood and promote the purposes of the Zoning Ordinance and the MPC:

1. Applicant shall include provisions in the lease for each dwelling unit to limit tenants to one off-street parking space.

2. Applicant shall specifically assign each off-street parking space on the ground floor of the New Structure to a dwelling unit within the New Structure.

3. Applicant shall limit access to the parking garage in the basement of the New Structure in accordance with the testimony.

4. The Borough shall not grant certificates of occupancy to more than 25 dwelling units in the New Structure until Applicant has demonstrated that it has obtained not less than 12 additional parking spaces within 500 feet of the Property.

5. Applicant shall permanently attach the 12 additional off-street parking spaces to dwelling units on the Property in a form acceptable to the Borough Solicitor. The parking spaces must remain specifically limited for the use of residents of the Property as long as more than 25 dwelling units existing on the Property.

6. Applicant shall limit one bedroom apartments to occupancy by two persons.

7. Applicant shall limit occupancy of two bedroom apartments to three adults. A child may be a fourth occupant of a two-bedroom apartment.

8. Applicant shall require that all persons occupying the unit be listed on the lease.

9. Applicant shall obtain all permits and approvals required by applicable Borough ordinances, including, but not limited to, approval of a subdivision and land development plan and permits under the Uniform Construction Code.

10. Applicant shall at all times comply with and adhere to the evidence presented to the Board at the hearing held on April 28, 2021.

11. Applicant shall pay to the Borough one-half of the appearance fee of the court reporter in accordance with Section 908(7) of the MPC, and Applicant shall also reimburse the Borough for costs of advertising as a result of the continuances.

12. Any violation of the conditions contained in this Decision shall be considered a violation of the Zoning Ordinance and shall be subject to the penalties and remedies contained in the MPC.




13. The foregoing conditions shall be binding upon the Applicant, its successors and assigns.

ZONING HEARING BOARD OF THE  
BOROUGH OF COLUMBIA

\_\_\_\_\_  
Steven White, Vice Chairman

\_\_\_\_\_  
Jazz Preston

  
\_\_\_\_\_  
Nathan Bunty, Alternate

**DISSENT**

I dissent from the granting of the off-street parking variance. Applicant has not presented evidence of unnecessary hardship relating to the Property warranting the granting of the requested parking variance to allow 37 dwelling units with only one parking space per dwelling unit.

\_\_\_\_\_  
Terry Ann Doutrich

Dated and filed MAY 12, 2021, after hearing held on April 28, 2021.

The undersigned certifies that a copy of this Decision was served upon all parties on or prior to MAY 21, 2021.

  
\_\_\_\_\_

Columbia Borough

| Address  | Approved for acquisition | Acquired/pre-development | Sold to developer | Developed in house | Acquisition Funding Source | Rehab Funding Source | Completed | Sold to homeowner | Comments  |
|--|--------------------------|--------------------------|-------------------|--------------------|----------------------------|----------------------|-----------|-------------------|---|
| 304 Cherry Street         | X                        | X                        |                   | X                  | Local                      | LOC                  | X         | X                 |   |
| 511 Cherry Street         | X                        | X                        | X                 |                    | Local                      | Private              | X         | X                 |   |
| 208-210 Locust Street     | X                        | X                        | X                 |                    | Local                      | Private              |           |                   | Being sold to adjacent property owner   |
| 839 Blunston Street       | X                        | X                        | X                 |                    | CDBG                       | Private              | X         | X                 |   |
| 551 Avenue H              | X                        | X                        | X                 |                    | Local                      |                      |           |                   | Under Rehabilitation  |
| 494 Manor Street          | X                        | X                        | X                 |                    | CDBG                       | Private              | X         | X                 |   |
| 237-239 S. Fifth Street   | X                        | X                        |                   |                    | PHARE                      | PHARE                |           |                   | Demolished - Backfilled and seeded, grass currently growing. Awaiting next year's Habitat project |
| 233 S. Fifth Street       | X                        | X                        |                   |                    | PHARE                      | PHARE                |           |                   | Holding for later phase of Fifth Street project   |
| 149 S 5th Street          | X                        | X                        | X                 |                    | PHARE                      | PHARE                |           | X                 |   |
| 324 Union Street          | X                        | X                        | X                 |                    | CDBG                       | Private              | X         | X                 |   |
| 921 Spruce Street         | X                        | X                        |                   |                    | PHARE                      | Private              |           |                   | Under Rehabilitation  |
| 243 + 245 S. 5th Street  | X                        | X                        |                   |                    | PHARE                      | PHARE                |           |                   | Demolished - Backfilled and seeded, grass currently growing. Awaiting next year's Habitat project |
| 154 S. Fifth Street     | X                        |                          |                   |                    |                            |                      |           |                   | Have settled the estate and provided purchase agreement. Moving to settlement in coming weeks     |
| 156 S. Fifth Street     | X                        | X                        |                   |                    |                            |                      |           |                   | Acquired, awaiting acquisition of 154 S Fifth for larger project                                  |
| 149-151 Stump Ave       | X                        |                          |                   |                    |                            |                      |           |                   | Exploring possible routes for acquisition   |