Town of Louisa Planning Commission – Regular Meeting
212 Fredericksburg Avenue
Louisa, Virginia 23093
Monday, July 27, 2026

I. Call to Order - 5:00 PM

II. Administrative Items:

a. Invocation
b. Pledge of Allegiance
c. Adoption of the Agenda
d. Consent Agenda Items
    i. Approval of Minutes: June 29, 2026

III. Public Comment:

a. This section of the Planning Commission meeting provides citizens with the opportunity to discuss matters which are not listed on the printed agenda. Any person wishing to bring a matter to the Commissions attention under this section of the agenda should: (1) State their name and address; (2) State the matter that they wish to discuss and what action they would like the Committee to take. When appropriate or if requested, we will respond to direct questions in writing. Please limit comments to 3 minutes or less.

IV. Old Business:

a. Continue discussion of Louisa Station Site Plan

b. Continue discussion of Planning Commission Bylaws

c. Continue Town Comprehensive Plan discussion on the: "*County Growth"* Section and continue to Transportation section.

V. Comments/Discussion by Members of Planning Commission

VI. Adjournment

Planning Commission Meeting Minutes
Town of Louisa Planning Commission's Regularly Scheduled Meeting
Monday, June 29, 2026, at 5:00pm

Commission Members in Attendance:
Chairman: Maxine Butcher; Veronica Saxton; Cochran Garnett; and Roger Henry

Commission Members Absent:
Janet Matkins

Staff:
Stuart Turille, Town Manager; and Shiann Turpin, Deputy Clerk.

All copies, including reports, handouts and documents can be found following the minutes.

5:02 P.M. Convene Meeting

Ms. Butcher led the Pledge of Allegiance and Invocation

Approval of Agenda & Minutes

A motion to approve the consent agenda was made by Ms. Garnett and seconded by Ms. Saxton. The motion carried by a vote (4-0).

After reviewing the minutes for April 27, 2026, a motion to approve the meeting minutes as written was made by Ms. Garnett and was seconded by Ms. Saxton.
The motion carried by a vote (4-0).

New Business

Louisa Station Site Plan

Town Manager, Mr. Turille stated to the Commission this would be an introductory meeting regarding the zoning review of the Louisa Station Site Plan.

Rea T Williams III took to the floor and explained the process and plans for the Louisa Station. The discussion continued regarding traffic studies, water, and zoning for the property.

The Town Manager then discussed the code and process of his review he would be conducting for the Louisa Station Site Plan with the Commissioners.

By Laws

The Commission briefly discussed the Bylaws and Chair of the Planning Commission, Maxine Butcher, appointed commissioner Veronica Saxton to work on the Bylaws and for it to be presented at the next regular scheduled meeting on July 27, 2026.

Old Business

County Growth Section of the Comprehensive Plan

The commission reviewed edits and suggested revisions to the Comprehensive plan.

There were no additional comments from the Commission or staff.

A motion to adjourn was made by Ms. Saxton and seconded by Mr. Henry. All in favor.

The meeting adjourned at 7:04 P.M.

_____ _____

Maxine Butcher, Chair *Shiann Turpin, Deputy Clerk*

LOUISA STATION
CONSTRUCTION PLAN
TM 41-16- 1, 5,10, 11, 12, 13, 14
TOWN OF LOUISA, VIRGINIA

EXISTING ZONING: PUD - PLANNED UNIT DEVELOPMENT

APPLICANT/OWNER:

PR DevCO, LLC
ATTN: TORREY WILLIAMS
P.O. BOX 1787
LOUISA, VIRGINIA 23093

SITE STATISTICS:

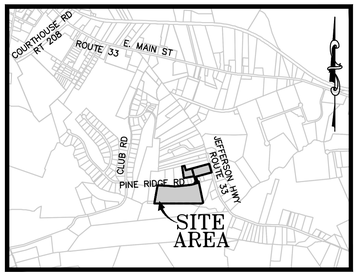
1.) TAX MAP: 41–16–1, 5, 10, 11, 12, 13, 14
2.) SITE AREA: 19.7962 ACRES
3.) EXISTING ZONING: RG – RESIDENTIAL GENERAL DISTRICT
PROPOSED ZONING: PUD – PLANNED UNIT DEVELOPMENT
4.) TRIP GENERATIONS: ITE MULTI FAMILY HOUSING LOW–RISE (220)
159 LOTS * 6.74 = 1,072 VPD
5.) CLUSTER MAILBOXES TO BE PROVIDED FOR ENTIRE SITE.
6.) NO EVIDENCE OF ANY PLACES OF BURIAL ON SITE.
7.) PROPERTY WITHIN ZONE A & X PER FLOOD INSURANCE RATE MAP, COMMUNITY–PANEL NO. 51009C 0175C; DATED 7/22/2020.
8.) THIS PROPERTY IS SERVICED BY PUBLIC WATER AND SEWER.

PARKING REQUIREMENTS:

USE	REQUIREMENT	CALCULATION
MULTIFAMILY–3 BEDROOM	2.5 SP/DU	2.5 SPACES/DU * 159 DU = 398 SPACES
		TOTAL REQUIRED = 398 SPACES
		TOTAL PROVIDED = 405 SPACES

WATER/SEWER USAGE:

USAGE	UNITS	USAGE	USAGE, GPD		
			AVG DAY	MAX DAY(X1.5)	PEAK HOUR(X4.0)
SINGLE–FAMILY ATTACHED DWELLING	159	300 GPD/DWELLING	47,700 GPD	71,550 GPD	190,800 GPD



LATITUDE 38.008961, LONGITUDE –77.989342

VICINITY MAP SCALE: 1"=2000'

0 2000 4000 6000

INDEX TO DRAWINGS

1 COVER SHEET
2 STANDARD NOTES & DETAILS
3 EXISTING CONDITIONS
4 OVERALL PLAN
5 GEOMETRIC PLAN
6 GEOMETRIC PLAN
7 GEOMETRIC PLAN
8 GRADING PLAN
9 GRADING PLAN
10 GRADING PLAN
11 UTILITY PLAN
12 UTILITY PLAN
13 UTILITY PLAN
14 EROSION CONTROL PHASE 1
15 EROSION CONTROL PHASE II
16 EROSION & SEDIMENT CONTROL NOTES & NARRATIVE
17 EROSION & SEDIMENT CONTROL NOTES & NARRATIVE CONT.
18 EROSION CONTROL DETAILS
19 STORM SEWER PROFILES
20 STORM SEWER CALCULATIONS
21 STORM SEWER DRAINAGE AREA MAP
22 SWM BMP PLAN AND DETAILS
23 SWM BMP BUBBLER SYSTEM DETAILS AND NOTES
24 SWM BMP DETAILS AND PROFILES
25 SWM BMP WETLANDS PLAN
26 SWM NARRATIVE AND CALCS
27 PRE-DEV POA DRAINAGE AREA MAP
28 POA CHANNEL CALCULATIONS
29 PRE-DEV SWM DRAINAGE AREA MAP
30 POST-DEV SWM DRAINAGE AREA MAP
31 PRE-DEV SHEET FLOW DRAINAGE AREA MAP
32 POST-DEV SHEET FLOW DRAINAGE AREA MAP
33 SHEET FLOW CALCULATIONS
34 SHEET FLOW CALCULATIONS
35 SHEET FLOW CALCULATIONS
36 EXISTING GROUND COVER GIS MAP
37 PRE-DEV VRRM LAND COVER MAP
38 POST-DEV VRRM LAND COVER MAP
39 OUTLET & CHANNEL CALCS
40 SOILS GROUP CN CALCS
41 EASEMENT PLAN
42 ENTRANCE PLAN-SIGHT DISTANCE
43 WATERLINE PROFILES
44 SANITARY SEWER PROFILES
45 SANITARY SEWER LATERAL TABLE
46 WATER AND SEWER DETAILS
47 WATER AND SEWER DETAILS
48 CULVERT CALCULATIONS
49 TRANSPORTATION MANAGEMENT PLAN
50 TURN LANE WARRANT ANALYSIS

GENERAL NOTES

1. ALL PUBLIC AND PRIVATE STREETS SHALL BE DESIGNED AND CONSTRUCTED TO THE APPLICABLE REQUIREMENTS AND SPECIFICATIONS OF THE TOWN OF LOUISA AND VDOT.
2. VDOT PERMIT REQUIRED FOR ENTRANCE IMPROVEMENTS WITHIN THE VDOT RIGHT–OF–WAY.
3. FINAL CONSTRUCTION PLANS SHALL MEET THE LOUISA COUNTY REQUIREMENTS FOR EROSION AND SEDIMENT CONTROL.

SOLID WASTE STATEMENT

SOLID WASTE IS PROPOSED TO BE COLLECTED BY INDIVIDUAL STREET–SIDE WASTE CONTAINERS FOR EACH UNIT AND PICKED UP BY A PRIVATE HAULER.

SITE PLAN CERTIFICATE:

I HEREBY CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF THIS PLAN IS CORRECT AND COMPLIES WITH THE REQUIREMENTS OF THE TOWN OF LOUISA, VA, AND THAT I AM A QUALIFIED PROFESSIONAL LICENSED IN VIRGINIA.

VA LICENSE #: 036528

Daniel C. Webb 4-29-26
SIGNATURE DATE

RESPONSIBLE LAND DISTURBER CERTIFICATE:

RLD# 036528

Daniel C. Webb 540.371.1209
NAME TELEPHONE #

Daniel C. Webb 4-29-26
SIGNATURE DATE

NOTE: THE R.L.D. MENTIONED ABOVE IS FOR THE PURPOSES OF PLAN APPROVAL ONLY. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL DESIGNATE A PERSON CERTIFIED BY THE VIRGINIA DCR AS THE R.L.D. FOR THIS PROJECT. THE CONTRACTOR SHALL NOTIFY THE OWNER IN WRITING, WITH THE ENGINEER COPIED, OF THE NAME AND R.L.D. NUMBER OF THE DESIGNEE.

W W WEBB AND ASSOCIATES
ENGINEERING - SURVEYING - LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
(540) 371-1209

REVISION BLOCK

DATE	DESCRIPTION	BY
2/13/26	PER TOWN COMMENTS	DCW
4/17/26	PER DEQ COMMENTS	SLB
4/29/26	PER TOWN AND VDOT COMMENTS	DCW
5/28/26	PER VDOT COMMENTS	DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO. 036528
5-28-26
PROFESSIONAL ENGINEER

W W WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

COVER SHEET

LOUISA STATION
TAX MAPS 41–16–10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE: AUGUST 14, 2025
SCALE: SHOWN
DESIGNED BY: DCW
DRAWN BY: SLB
CHECKED BY: DCW

ACAD FILE: 25D003ACP
DRAWING NO: 25–D–003

SHEET NO. 1 OF 50 SHEETS

VDOT LOUISA LAND USE GENERAL NOTES

1. All materials and construction within the public right of way shall be in accordance with the latest edition of the Virginia Department of Transportation's Road and Bridge Specifications, Road and Bridge Standards and Virginia Work Area Protection Manual.
2. Land Use Permits (LUP) shall be obtained from the Virginia Department of Transportation prior to beginning any construction within the existing state maintained right-of-way (including access).
3. VDOT requires notification 48 hours prior to commencing with initial construction activities. Please contact the appropriate permit office in which your proposed activities are to occur.
4. Approval of a detailed construction sequencing and maintenance of traffic plan for the work zone is a prerequisite for issuance of a Land Use Permit. The plan shall accommodate access to and construction within VDOT maintained right-of-way.
5. Work Zones – Requests for the implementation of temporary lane and shoulder closures on Interstate, Limited Access Primary Routes, and Secondary Routes must be entered into the VDOT Lane Closure Advisory Management System (LCAMS) by 12:00 pm on Thursday the week before the work is to take place for approval. Contact the Work Zone Coordinator at 540-717-4121 for questions and assistance. All lane/shoulder closures requiring LCAMS approval shall be entered into VA Traffic. Lane/Shoulder closures on primary and major secondary routes must also be entered in VA Traffic. Major secondary routes are defined as those listed in the Culpeper District Recommended Work Hours document. Just prior to the first cone going down, users must contact the TOC at 540-322-9500 to activate the work zone and when the last cone has been picked up to deactivate the work zone.
6. Permittee must notify Virginia Department of Transportation TOC when there is a crash in a work zone at 540-322-9500.
7. Prior to any construction, the contractor shall consult the developer's engineering consultant and verify the approval of the plans by all applicable federal, state and local agencies.
8. Contractor shall verify location and elevation of all underground utilities shown on plans in areas of construction prior to starting work. Contact the developer's engineering consultant immediately if location or elevation is different from that shown on plan. If there appears to be a conflict, or upon discovery of any utility not shown on this plan, call 'Miss Utility' at 811. The developer shall be responsible for the relocation of any utility within existing and proposed right of way required by the development.
9. The permittee or their agent must contact the VDOT Customer Service Center at 1-800-367-7623 a minimum of 48 hours prior to initiating any planned excavation within 1,000 feet of a signalized intersection and/or near VDOT ITS infrastructure. Excavation may proceed only after the VDOT regional utility location agent has notified the permittee that the utility marking has been completed. Additional information can be found at: http://www.virginiadot.org/business/resources/IIM/TE-383_Request_For_Marking_VDOT_Utility_Location.pdf 'Miss Utility' does not locate VDOT utilities.
10. The contractor shall verify the elevations of all points of connection of proposed work to existing curbs, sanitary lines, water lines, etc., prior to construction.
11. Design changes, specified materials changes and field changes from the approved plans shall be re-submitted to VDOT for approval prior to proceeding with the work. A letter of explanation shall accompany the proposed revision along with drainage calculations when appropriate.
12. VDOT approval of construction plans does not preclude the right to require additional facilities as deemed necessary for acceptance of the roads into the VDOT Secondary Road System based on field conditions or unapproved plan changes.
13. The engineer of record, whose professional seal is affixed to this plan, is responsible for compliance with all VDOT minimum standards. VDOT review and acceptance of these plans is not a guarantee by VDOT that the plan is without errors or omissions committed by the engineer of record.
14. VDOT approval of these plans will expire five (5) years from the date of approval for site plans and subdivision plans if construction has not started.
15. Preliminary design of the pavement structure for all subdivision streets shall be in accordance with the current edition of The Pavement Design Guide for Subdivision and Secondary Roads in Virginia. The completed design sheet appendix IV shall be included with the initial plan submittal for each proposed pavement section utilizing the predicted soil support value shown in Appendix I of The Pavement Design Guide or as reported in a geotechnical analysis of the on-site soils.
16. A copy of the complete CBR report shall be submitted to VDOT in conjunction with final pavement designs. All pavement design recommendations shall be performed in accordance with the current edition of Pavement Design Guide for Subdivision and Secondary Roads in Virginia.
17. All vegetation and organic material shall be removed from the right of way limits prior to conditioning of the subgrade.
18. Upon discovery of soils that are unsuitable for foundations, subgrades, or other roadway construction purposes, the developer or his designee, which may be the contractor, shall immediately engage a geotechnical engineer and notify VDOT. These areas shall be excavated below plan grade as directed by the geotechnical engineer, backfilled with suitable material and compacted in accordance with current VDOT specifications.
19. The necessity and locations for additional VDOT standard underdrains shall be determined at time of subgrade inspection. Video inspection of accessible outlet locations, mainline longitudinal connections, and longitudinal pipe for all pavement underdrains, cross drains, edgedrains and prefabricated geocomposite panel drains shall be conducted in accordance with Section 501 of the Road and Bridge Specifications and Virginia Test Method 108 – Post Installation Inspection of Underdrains, Crossdrains, and Edgedrains.
20. VDOT shall have performed the required field inspection (proof roll) prior to placement of the aggregate base course(s). Contact VDOT for subgrade inspection 48 hours prior to scheduling placement of aggregate base course(s).
21. The scheduling of aggregate base installation and subsequent paving activities shall accommodate forecasted weather conditions per Section 315 of The Road and Bridge Specifications.
22. VDOT shall have approved the aggregate base course(s) for depth, template and performed the required field inspection (proof roll) prior to placement of any asphalt concrete surface course(s). Contact VDOT for inspection of the aggregate base course(s) 48 hours prior to application of the surface course(s).
23. A licensed geotechnical engineer or his designee shall ascertain cause and certify recommended method of repair for all pavement structural failures prior to state acceptance.
24. VDOT shall be provided documentation by a licensed geotechnical engineer, certifying that all in-place pavements meet or exceed the approved pavement design thickness prior to state acceptance of the street. Cores are to be obtained verifying pavement thickness unless otherwise directed by VDOT. The Permit Inspector shall be contacted 24 hours prior to the core samples being taken.
25. All storm sewer design and construction shall be in accordance with latest VDOT Drainage Manual, Road and Bridge Standards, and IIMs.
26. All pre-cast units shall be VDOT approved. Certification and VDOT stamp are required on all units.
27. All concrete shall be class A3-AE (air entrained 3,000 PSI) unless otherwise specified.
28. All roadside ditches shown as paved on plans are to be paved in accordance with the standard typical section as shown on the plans. Any additional paving of the ditches, other than those shown on the road plans will be determined prior to acceptance of the roads into the VDOT secondary road system.
29. Road & Bridge Specifications Section 302, Drainage Structures addresses post installation visual/video camera inspection of storm sewer pipes and pipe culverts. Inspection frequency shall be in accordance with the specifications and/or as necessitated by the Engineer. Video inspection shall be conducted in accordance with Virginia Test Method (VTM) 123, Post Installation Inspection of Buried Storm Sewer Pipe and Pipe Culverts.
30. A construction entrance shall be installed on each individual lot prior to any lot grading or home construction activities and shall be adequately maintained until all construction traffic areas within the lot have been stabilized.
31. All entrances shall be designed and constructed in accordance with current VDOT standards. Residential lot access shall be provided per the following criteria:
    - All driveway entrances and entrance culverts shall conform to PE-1 private entrance standards unless otherwise approved by VDOT. No entrance culverts are to be installed within five (5) feet of a property corner.
    - VDOT standard CG-9D entrances shall be used when an entrance is required in curb and gutter neighborhoods unless otherwise approved by VDOT.
32. DRY GUTTER IS NOT ALLOWED IN VDOT RIGHT OF WAY EXCEPT AS SHOWN ON VDOT'S ENTRANCE STANDARD DETAILS.
33. THE DEVELOPER SHALL FURNISH AND INSTALL STOP SIGNS AND STOP BARS AT STREET INTERSECTIONS AND ALL REGULATORY SIGNAGE PER THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. ALL SIGNS MUST BE INSTALLED ON VDOT STANDARD STP-1 SIGN POSTS.
34. INSTALLATION, MAINTENANCE AND OPERATION OF STREET LIGHTING SHALL BE PROVIDED BY AND AT THE SOLE EXPENSE OF OTHERS. VDOT WILL ALLOW LIGHTING WITHIN THE RIGHT OF WAY BY LAND USE PERMIT (LUP) ONLY. LIGHTING ON CURB SECTIONS SHALL BE PLACED BEHIND THE CURB AND PREFERABLY BEHIND THE SIDEWALK. FOR SHOULDER SECTIONS, THE POLE SHALL BE PLACED A MINIMUM OF 10' FROM EDGE OF PAVEMENT AND BEHIND THE DITCH LINE. ALL LIGHTING PROPOSED WITHIN THE RIGHT OF WAY MUST BE DESIGNED IN ACCORDANCE WITH THE AASHTO GUIDE FOR ROADWAY LIGHTING AND SHALL MEET THE CURRENT ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA (IESNA) STANDARDS.
35. TRAFFIC SIGNALS REQUIRE AN INDIVIDUAL LAND USE PERMIT. THE APPLICANT SHALL BE RESPONSIBLE FOR THE DESIGN COSTS OF ANY TRAFFIC SIGNAL INSTALLATION OR MODIFICATION OF EXISTING SIGNALS. DESIGN PLANS MUST BE PREPARED AND SUBMITTED TO VDOT BY A LICENSED PROFESSIONAL ENGINEER FOR REVIEW AND APPROVAL. THIS INCLUDES THE FOUNDATION DESIGN AND ANY EQUIPMENT ASSOCIATED WITH THE COMPLETED TRAFFIC SIGNAL. ALL EQUIPMENT MUST BE APPROVED BY VDOT. SHOP DRAWINGS MUST BE SUBMITTED FOR REVIEW AND APPROVAL PRIOR TO FABRICATING ANY SIGNAL STRUCTURAL COMPONENTS.
36. SOIL STABILIZATION IS REQUIRED WITHIN 7 DAYS FOR ALL AREAS WHERE CLEARING, GRADING, EXCAVATION OR OTHER LAND DISTURBING ACTIVITIES HAVE PERMANENTLY CEASED OR WHERE LAND DISTURBANCE ACTIVITIES HAVE BEEN TEMPORARILY SUSPENDED FOR AN ANTICIPATED DURATION OF GREATER THAN 7 DAYS, OR UPON COMPLETION OF GRADING OPERATIONS FOR A SPECIFIED AREA. SOIL STABILIZATION SHALL BEGIN AS SOON AS PRACTICABLE, BUT NOT LATER THAN THE SEVEN DAYS FOLLOWING THE DAY WHEN LAND DISTURBING ACTIVITIES TEMPORARILY OR PERMANENTLY CEASED.
37. NO STRUCTURE SHALL BE CONSTRUCTED ON STATE MAINTAINED RIGHT OF WAYS, OR ON RIGHT OF WAYS INTENDED TO BE MAINTAINED BY VDOT UNLESS SAID STRUCTURES ARE SHOWN ON CONSTRUCTION PLANS APPROVED BY VDOT OR SUCH STRUCTURES ARE COVERED BY A VDOT LUP (OR BY A LETTER OF INTENT FROM THE RESIDENT ADMINISTRATOR/RESIDENT ENGINEER TO ISSUE SAID PERMIT AT THE TIME OF STATE ACCEPTANCE).
38. WHEN EXISTING PAVEMENT MARKINGS WITHIN STATE-MAINTAINED RIGHT-OF-WAY ARE TO BE ERADICATED, ALL ERADICATIONS SCARS SHALL BE OVERLAID WITH SURFACE MIX OR SLURRY SEAL #4. ALL NEW STRIPING REQUIRES THE USE OF THERMOPLASTIC PAVEMENT MARKINGS. CONTACT THE LAND USE PERMIT INSPECTOR TEN DAYS PRIOR TO PROCEEDING TO COORDINATE THE STRIPING LAYOUT.

VDOT LOUISA THE FOUR NOTES

FINAL PAVEMENT SECTIONS SHALL BE BASED ON ACTUAL CBR VALUES FOUND AND THE APPROPRIATE PAVEMENT SECTION DERIVED THEREFROM. CURBS ARE NOT TO BE SET UNTIL THE FINAL PAVEMENT SECTION IS ESTABLISHED BASED ON "IN SITU" CBR DETERMINATIONS."

THE APPLICANT SHALL RETAIN THE SERVICES OF A LICENSED GEOTECHNICAL ENGINEER TO PERFORM THE REQUIRED INSPECTION AND TESTING.

THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL TRAFFIC CONTROL DEVICES, SIGNAGE, EQUIPMENT, PERSONNEL, INCLUDING CERTIFIED TRAFFIC CONTROL; PERSONNEL, ETC. TO CONTROL TRAFFIC DURING CONSTRUCTION WITHIN VDOT RIGHT OF WAY. ALL TRAFFIC CONTROL SHALL BE IN STRICT ACCORDANCE WITH THE STANDARDS, GUIDELINES, POLICIES AND OBJECTIVES OF THE LATEST EDITION OF THE VIRGINIA WORK AREA PROTECTION MANUAL, MANUAL FOR UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND ALL VDOT PERMITS.

ANYONE SUBMITTING A MAINTENANCE OF TRAFFIC PLAN WHICH IS PART OF A TRAFFIC MAINTENANCE PLAN SHALL ALSO SUBMIT THE ACCREDITATION NUMBER FOR TAKING THE VDOT ADVANCED TRAFFIC CONTROL TRAINING.

GENERAL NOTES

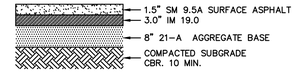
1. ALL CONSTRUCTION TO CONFORM TO EXISTING STATE AND COUNTY BUILDING CODES.
2. THE CONTRACTOR SHALL OBTAIN A PERMIT FROM THE RESIDENT ENGINEER PRIOR TO STARTING ANY CONSTRUCTION WITHIN ANY VDOT RIGHT OF WAY.
3. BEFORE DIGGING CALL MISS UTILITY OF CENTRAL VIRGINIA AT 1(800)257-7777.
4. EXISTING UTILITIES SHOWN IN A GENERAL WAY ONLY. CONTRACTOR TO FIELD LOCATE EACH FOR EXACT LOCATION.
5. CONTRACTOR SHALL BE RESPONSIBLE TO SEE THAT ALL EROSION AND SEDIMENT CONTROL STANDARDS ARE MET.
6. CONTRACTOR TO SEED AND MULCH ALL DISTURBED AREAS.
7. CONTRACTOR TO VERIFY ALL DIMENSIONS AND ELEVATIONS IN FIELD BEFORE STARTING CONSTRUCTION AND NOTIFY THE ENGINEER OF ANY DISCREPANCY.
8. ALL EXISTING UNDERGROUND UTILITIES SHALL BE PHYSICALLY LOCATED BY THE CONTRACTOR OR HIS AGENT PRIOR TO THE BEGINNING OF CONSTRUCTION IN THE VICINITY OF THESE UTILITIES. THIS PLAN DOES NOT REPRESENT THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THOSE SHOWN ARE CORRECTLY LOCATED. IT IS THE CONTRACTORS RESPONSIBILITY TO CONTACT EACH UTILITY COMPANY, CALL MISS UTILITY (1-800-257-7777), DIG TEST PITS, AND TAKE WHATEVER STEPS ARE NECESSARY TO ACCURATELY LOCATE AND PROTECT ALL EXISTING UTILITIES. NO CONSTRUCTION SHALL PROCEED UNTIL THE ACCURATE LOCATIONS OF UTILITIES HAVE BEEN MADE AND IT HAS BEEN DETERMINED BY THE CONTRACTOR THAT CONSTRUCTION CAN BE ACCOMPLISHED IN ACCORDANCE WITH THESE PLANS WITHOUT UTILITY CONFLICTS. IN THE EVENT THAT CONFLICTS EXISTS THE OWNER AND ENGINEER SHALL BE NOTIFIED IMMEDIATELY.
9. EXISTING EDGE OF PAVEMENT IS TO BE SAWCUT AT VDOT DIRECTION PRIOR TO EXCAVATION TAKING PLACE.
10. THE VDOT APPROVAL OF THESE PLANS WILL EXPIRE THREE (3) YEARS FROM DATE OF APPROVAL.
11. ALL UTILITIES SHALL BE IN PLACE PRIOR TO PLACEMENT OF BASE MATERIAL.
12. A COPY OF THE C.B.R. REPORT SHALL BE SUBMITTED PRIOR TO THE PLACEMENT OF THE BASE MATERIAL. IF THE C.B.R. VALUES ARE LESS THAN 10, THE DEVELOPER WILL BE REQUIRED TO SUBMIT HIS REVISED PAVEMENT DESIGN FOR VDOT APPROVAL.
13. BASE MUST BE APPROVED BY VDOT FOR DEPTH, TEMPLATE, AND COMPACTION BEFORE SURFACE TREATMENT IS APPLIED.
14. PRIME COAT MUST BE APPLIED TO ROAD BASE AGGREGATE PRIOR TO APPLICATION OF ASPHALT SURFACE (PRIME COAT RC-250, 0.3 GALLONS PER SQUARE YARD).
15. CONTRACTOR SHALL DO SUCH OVERLOT GRADING AS NECESSARY TO PRECLUDE PONDING OF WATER ADJACENT TO ROADWAY.
16. A TESTING FIRM WILL BE EMPLOYED BY THE DEVELOPER TO PROVIDE COMPACTION REPORTS IN ACCORDANCE WITH DIVISION III OF THE CURRENT ROAD & BRIDGE SPECIFICATIONS.
17. ALL UTILITY CONSTRUCTION SHALL CONFORM TO THE MOST CURRENT EDITION OF THE LCWA AND TOWN OF LOUISA FACILITIES CONSTRUCTION STANDARDS.
18. FINAL PAVEMENT SECTIONS SHALL BE BASED ON ACTUAL CBR VALUES FOUND AND THE APPROPRIATE PAVEMENT SECTION DERIVED THEREFROM. CURBS ARE NOT TO BE SET UNTIL THE FINAL PAVEMENT SECTION IS ESTABLISHED BASED ON "IN SITU" CBR DETERMINATIONS."
19. THE APPLICANT SHALL RETAIN THE SERVICES OF A LICENSED GEOTECHNICAL ENGINEER TO PERFORM THE REQUIRED INSPECTION AND TESTING.
20. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL TRAFFIC CONTROL DEVICES, SIGNAGE, EQUIPMENT, PERSONNEL, INCLUDING CERTIFIED TRAFFIC CONTROL; PERSONNEL, ETC. TO CONTROL TRAFFIC DURING CONSTRUCTION WITHIN VDOT RIGHT OF WAY. ALL TRAFFIC CONTROL SHALL BE IN STRICT ACCORDANCE WITH THE STANDARDS, GUIDELINES, POLICIES AND OBJECTIVES OF THE LATEST EDITION OF THE VIRGINIA WORK AREA PROTECTION MANUAL, MANUAL FOR UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND ALL VDOT PERMITS.
21. ANYONE SUBMITTING A MAINTENANCE OF TRAFFIC PLAN WHICH IS PART OF A TRAFFIC MAINTENANCE PLAN SHALL ALSO SUBMIT THE ACCREDITATION NUMBER FOR TAKING THE VDOT ADVANCED TRAFFIC CONTROL TRAINING.
22. ALL WATER AND SEWER INFRASTRUCTURE INSTALLATIONS MUST BE INSPECTED BEFORE BACKFILLING BY A TOWN OF LOUISA REPRESENTATIVE.
23. ALL WATER AND SEWER COMPACTION REQUIREMENTS AROUND UTILITIES SHALL BE IN ACCORDANCE WITH CURRENT VDOT STANDARDS AND LCWA AND TOWN OF LOUISA FACILITIES CONSTRUCTION STANDARDS.
24. CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AWAY FROM ROAD.
25. ALL PAVED ROADWAYS SHALL BE PRIMED IN ACCORDANCE WITH CURRENT VDOT STANDARDS.

ITE TRIP GENERATION 11th EDITION

TYPE	ITE SECT.	REQUIREMENT	CALCULATION
SINGLE-FAMILY ATTACHED HOUSING	215	AVG TRIPS PER DAY 7.20 VPD PER DWELLING UNIT (DU)	159 DU * 7.20 VPD / DU = 1,144.8 VPD TOTAL VEHICLES PER DAY = 1,144.8 VPD
		AM PEAK HOUR 0.55 VPH PER DWELLING UNIT (DU)	159 DU * 0.55 VPH / DU = 87.5 VPH AM PEAK HOUR = 87.5 VPH
		PM PEAK HOUR 0.61 VPH PER DWELLING UNIT (DU)	159 DU * 0.61 VPH / DU = 97.0 VPH PM PEAK HOUR = 97.0 VPH

MISS UTILITY

ALL EXISTING UNDERGROUND UTILITIES SHALL BE PHYSICALLY LOCATED BY THE CONTRACTOR OR HIS AGENT PRIOR TO THE BEGINNING OF CONSTRUCTION IN THE VICINITY OF THESE UTILITIES. THIS PLAN DOES NOT REPRESENT THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THOSE SHOWN ARE CORRECTLY LOCATED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT EACH UTILITY COMPANY, CALL MISS UTILITY (1-800-552-7001), DIG TEST PITS, AND TAKE WHATEVER STEPS ARE NECESSARY TO ACCURATELY LOCATE AND PROTECT ALL EXISTING UTILITIES NO CONSTRUCTION SHALL PROCEED UNTIL THE ACCURATE LOCATIONS OF UTILITIES HAVE BEEN MADE AND IT HAS BEEN DETERMINED BY THE CONTRACTOR THAT CONSTRUCTION CAN BE ACCOMPLISHED IN ACCORDANCE WITH THESE PLANS WITHOUT UTILITY CONFLICTS. IN THE EVENT THAT CONFLICTS EXIST, THE OWNER AND ENGINEER SHALL BE NOTIFIED IMMEDIATELY.



TYPICAL PAVEMENT SECTION

N.T.S.

REVISION BLOCK

DATE	DESCRIPTION	BY
2/13/26	PER TOWN COMMENTS	DCW
4/17/26	PER DEQ COMMENTS	SLB
4/29/26	PER TOWN AND VDOT COMMENTS	DCW
5/28/26	PER VDOT COMMENTS	DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO. 036528
5-28-26
PROFESSIONAL ENGINEER

W.W. WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

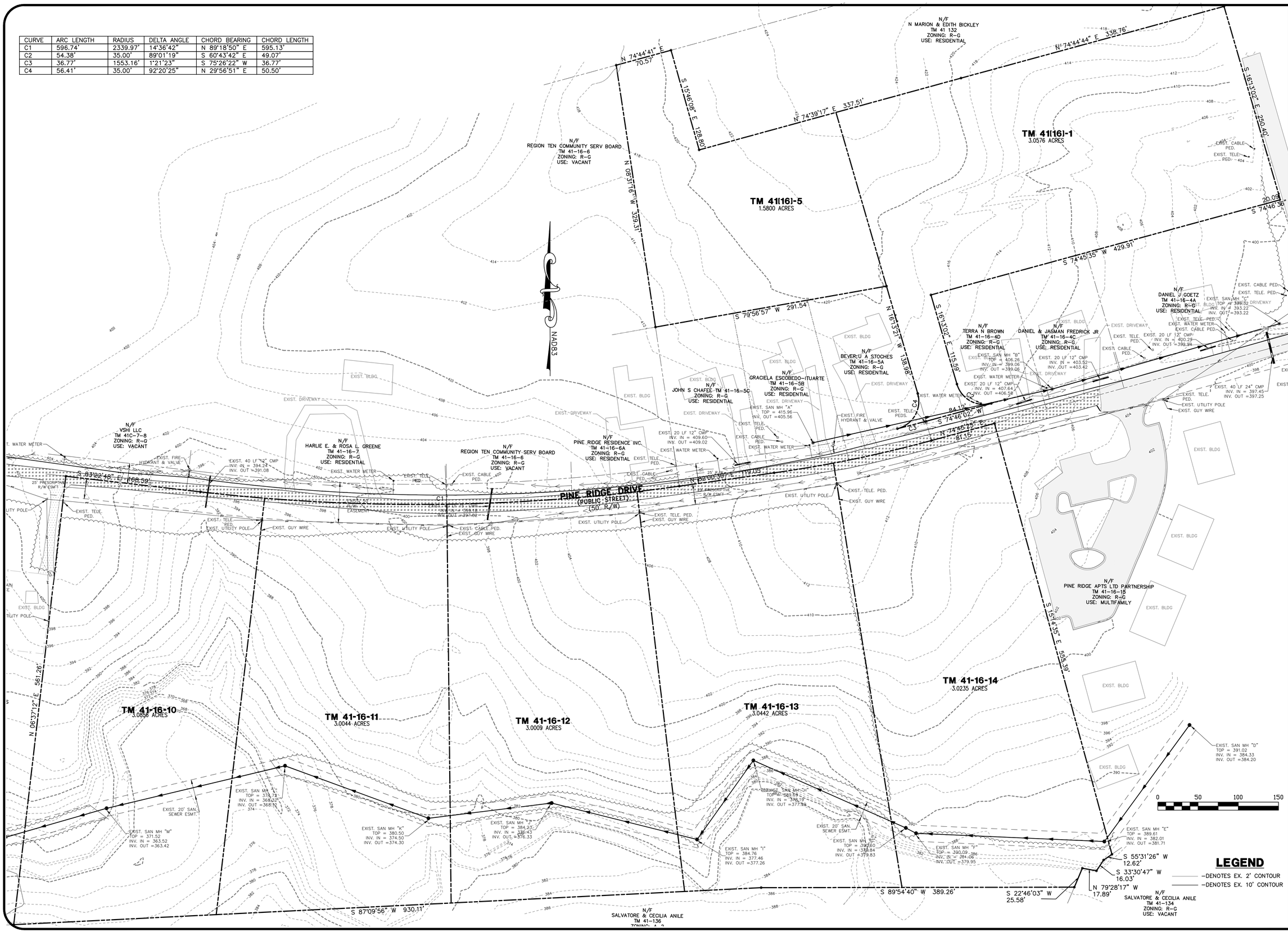
STANDARD NOTES & DETAILS

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	SHOWN
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D003BCP
DRAWING NO:	25-D-003

SHEET NO. 2
OF 50 SHEETS

CURVE	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	596.74'	2339.97'	14°36'42"	N 89°18'50" E	595.13'
C2	54.38'	35.00'	89°01'19"	S 60°43'42" E	49.07'
C3	36.77'	1553.16'	1°21'23"	S 75°26'22" W	36.77'
C4	56.41'	35.00'	92°20'25"	N 29°56'51" E	50.50'



LEGEND

—DENOTES EX. 2' CONTOUR
—DENOTES EX. 10' CONTOUR

REVISION BLOCK			
DATE	DESCRIPTION		BY
2/13/26	PER TOWN COMMENTS		DCW
4/17/26	PER DEQ COMMENTS		SLB
4/29/26	PER TOWN AND VDOT COMMENTS		DCW
5/28/26	PER VDOT COMMENTS		DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO. 036528
5-28-26
PROFESSIONAL ENGINEER

WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

EXISTING CONDITIONS

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	1"=50'
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D003CCP
DRAWING NO:	25-D-003
SHEET NO.	3
OF	50 SHEETS

CURVE	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	596.74'	2339.97'	14°36'42"	N 89°18'50" E	595.13'
C2	54.38'	35.00'	89°01'19"	S 60°43'42" E	49.07'
C3	36.77'	1553.16'	1°21'23"	S 75°26'22" W	36.77'
C4	56.41'	35.00'	92°20'25"	N 29°56'51" E	50.50'

N/F
N MARION & EDITH BICKLEY
TM 41 132
ZONING: R-G
USE: RESIDENTIAL

N/F
REGION TEN COMMUNITY SERV BOARD
TM 41-16-6
ZONING: R-G
USE: VACANT

N/F
VSHI LLC
TM 41C-7-8
ZONING: R-G
USE: VACANT

N/F
HARLIE E. & ROSA L. GREENE
TM 41-16-7
ZONING: R-G
USE: RESIDENTIAL

N/F
REGION TEN COMMUNITY SERV BOARD
TM 41-16-6
ZONING: R-G
USE: VACANT

N/F
PINE RIDGE RESIDENCE INC.
TM 41-16-6A
ZONING: R-G
USE: RESIDENTIAL

N/F
JOHN S CHAFEE TM 41-16-5C
ZONING: R-G
USE: RESIDENTIAL

N/F
GRACIELA ESCOBEDO-ITUARTE
TM 41-16-5B
ZONING: R-G
USE: RESIDENTIAL

N/F
BEVERLY A STOCHES
TM 41-16-5A
ZONING: R-G
USE: RESIDENTIAL

N/F
TERRA N BROWN
TM 41-16-4D
ZONING: R-G
USE: RESIDENTIAL

N/F
DANIEL & JASMAN FREDRICK JR
TM 41-16-4C
ZONING: R-G
USE: RESIDENTIAL

N/F
DANIEL J GOETZ
TM 41-16-4A
ZONING: R-G
USE: RESIDENTIAL

N/F
PINE RIDGE APTS LTD PARTNERSHIP
TM 41-16-15
ZONING: R-G
USE: MULTIFAMILY

N/F
SALVATORE & CECILIA ANILE
TM 41-136
ZONING: A-2

N/F
SALVATORE & CECILIA ANILE
TM 41-134
ZONING: R-G
USE: VACANT

BEAVER CREEK PLACE (PRIVATE STREET)
PINE VIEW DRIVE (PRIVATE STREET)
PINE CREST WAY (PRIVATE STREET)
PINE GROVE LANE (PRIVATE STREET)
STATION VIEW DRIVE (PRIVATE STREET)
TOWNLINE TRAIL (PRIVATE STREET)
PINE RIDGE DRIVE (PUBLIC STREET) (50' R/W)

PROPOSED STORMWATER MANAGEMENT FACILITY

N 74°44'41" E 70.57'
S 15°46'06" E 128.80'
N 74°44'44" E 338.76'
N 74°39'17" E 337.51'
S 15°13'02" E 250.40'
S 74°46'36" E 20.09'
S 74°45'35" W 429.91'
S 79°56'57" W 291.54'
N 08°31'16" W 329.31'
N 16°13'21" W 358.98'
S 16°13'02" E 115.56'
S 74°46'52" W 61.12'
N 74°45'25" E 61.15'
S 83°22'48" E 168.59'
N 82°00'30" E 119.05'
S 55°31'26" W 12.62'
S 33°30'47" W 16.03'
N 79°28'17" W 17.89'
S 22°46'03" W 25.58'
S 89°54'40" W 389.26'
S 87°09'56" W 930.11'
N 06°37'12" E 561.26'
S 55°41'35" E 595.39'

SIGHT DISTANCE 280'

EXIST. 20' SAN. SEWER ESMT.
EXIST. 25' PRESCRIPTIVE R/W ESMT.
EXIST. UTILITY POLE
EXIST. GUY WIRE
EXIST. TELE. PED.
EXIST. CABLE PED.
EXIST. WATER METER
EXIST. FIRE HYDRANT & VALVE
EXIST. BLDG
EXIST. DRIVEWAY

EXIST. SAN MH "A" TOP = 415.96 INV. OUT =405.56
EXIST. SAN MH "B" TOP = 406.26 INV. IN = 399.06 INV. OUT =399.06
EXIST. SAN MH "C" TOP = 393.32 INV. IN = 393.22 INV. OUT =393.22
EXIST. SAN MH "D" TOP = 391.02 INV. IN = 384.33 INV. OUT =384.20
EXIST. SAN MH "E" TOP = 389.61 INV. IN = 382.01 INV. OUT =381.71
EXIST. SAN MH "F" TOP = 390.09 INV. IN = 384.06 INV. OUT =379.95
EXIST. SAN MH "G" TOP = 392.60 INV. IN = 379.84 INV. OUT =379.83
EXIST. SAN MH "H" TOP = 380.69 INV. IN = 378.19 INV. OUT =377.99
EXIST. SAN MH "I" TOP = 384.76 INV. IN = 377.46 INV. OUT =377.26
EXIST. SAN MH "J" TOP = 384.23 INV. IN = 376.43 INV. OUT = 376.33
EXIST. SAN MH "K" TOP = 380.50 INV. IN = 374.50 INV. OUT =374.30
EXIST. SAN MH "L" TOP = 374.73 INV. IN = 368.02 INV. OUT =368.12
EXIST. SAN MH "M" TOP = 371.52 INV. IN = 363.52 INV. OUT =363.42

EXIST. 40 LF 12" CMP INV. IN = 394.24 INV. OUT =391.08
EXIST. 20 LF 12" CMP INV. IN = 409.60 INV. OUT =409.02
EXIST. 40 LF 12" CMP INV. IN = 399.18 INV. OUT =397.82
EXIST. 20 LF 12" CMP INV. IN = 407.64 INV. OUT =406.58
EXIST. 20 LF 12" CMP INV. IN = 403.52 INV. OUT =403.42
EXIST. 20 LF 12" CMP INV. IN = 400.29 INV. OUT =399.94
EXIST. 40 LF 24" CMP INV. IN = 397.45 INV. OUT =397.25

0 50 100 150

LEGEND

——— –DENOTES EX. 2' CONTOUR
——— –DENOTES EX. 10' CONTOUR

REVISION BLOCK			
DATE	DESCRIPTION		BY
2/13/26	PER TOWN COMMENTS		DCW
4/17/26	PER DEQ COMMENTS		SLB
4/29/26	PER TOWN AND VDOT COMMENTS		DCW
5/28/26	PER VDOT COMMENTS		DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO. 036528
5-28-26
PROFESSIONAL ENGINEER

W.W. WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

OVERALL PLAN

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	1"=50'
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D003DCP
DRAWING NO:	25-D-003

SHEET NO. 4 OF 50 SHEETS

N/F
N MARION & EDITH BICKLEY
TM 41 132
ZONING: R-G
USE: RESIDENTIAL

N/F
REGION TEN COMMUNITY SERV BOARD
TM 41-16-6
ZONING: R-G
USE: VACANT

N 74°44'41" E 70.57'

S 15°46'08" E 128.80'

N 08°31'16" W 329.31'

N 74°44'44" E 338.76'

N 74°39'17" E 337.51'

N74°46'26"E 542.01'

S74°46'26"W 542.01'

PROPOSED 5' SIDEWALK

PINE VIEW DRIVE (PRIVATE STREET)

CG-6 DRY

N74°46'26"E 50.00'

S74°46'26"W 50.00'

S15°13'34"E 100.68'

S15°20'03"E 50.00'

N15°13'34"W 50.00'

S 16°13'02" E 259.40'

S 74°46'36" W 20.09'

S 74°45'35" W 429.91'

BEAVER CREEK PLACE (PRIVATE STREET)

PROPOSED 5' SIDEWALK

S74°39'57"E 180.68

S74°39'57"W 361.35

N15°20'03"W 50.00'

CLUSTER MAILBOX

PINE CREST WAY (PRIVATE STREET)

S 79°56'57" W 291.54'

N 16°13'21" W 138.98'

S 16°13'02" E 115.59'

N/F
DANIEL J GOETZ
TM 41-16-4A
ZONING: R-G
USE: RESIDENTIAL

EXIST. SAN MH "C"
TOP = 399.32
INV. IN = 393.22
INV. OUT =393.22

EXIST. WATER METER

N/F
TERRA N BROWN
TM 41-16-4D
ZONING: R-G
USE: RESIDENTIAL

N/F
DANIEL & JASMAN FREDRICK JR
TM 41-16-4C
ZONING: R-G
USE: RESIDENTIAL

EXIST. SAN MH "B"
TOP = 406.26
INV. IN = 399.06
INV. OUT =399.06

MONUMENT

EXIST. WATER METER

N/F
BEVERLY A STOCHES
TM 41-16-5A
ZONING: R-G
USE: RESIDENTIAL

N/F
GRACIELA ESCOBEDO-ITUARTE
TM 41-16-5B
ZONING: R-G
USE: RESIDENTIAL

N/F
JOHN S CHAFEE TM 41-16-5C
ZONING: R-G
USE: RESIDENTIAL

EXIST. SAN MH "A"
TOP = 415.96
INV. OUT =405.56

EXIST. FIRE HYDRANT & VALVE

EXIST. WATER METER

N/F
PINE RIDGE RESIDENCE INC.
TM 41-16-6A
ZONING: R-G
USE: RESIDENTIAL

S 74°46'02" W 84.12'

C1 C2 C3 C4

25'R

73.86' 76.55' 81.15'

MONUMENT

25' R/W

N 82°00'30" E 319.05'

25' PRESCRIPTIVE R/W ESM'T

PINE RIDGE DRIVE (PUBLIC STREET) (50' R/W)

25.0'

CLUSTER MAILBOX

N82°06'37"E 336.57'

S07°53'23"E 50.00'

N74°58'06"E 50.00'

S74°58'06"W 50.00'

NAD83

LEGEND

—DENOTES EX. 2' CONTOUR
—DENOTES EX. 10' CONTOUR

0 30 60 90

REVISION BLOCK		
DATE	DESCRIPTION	BY
2/13/26	PER TOWN COMMENTS	DCW
4/17/26	PER DEQ COMMENTS	SLB
4/29/26	PER TOWN AND VDOT COMMENTS	DCW
5/28/26	PER VDOT COMMENTS	DCW

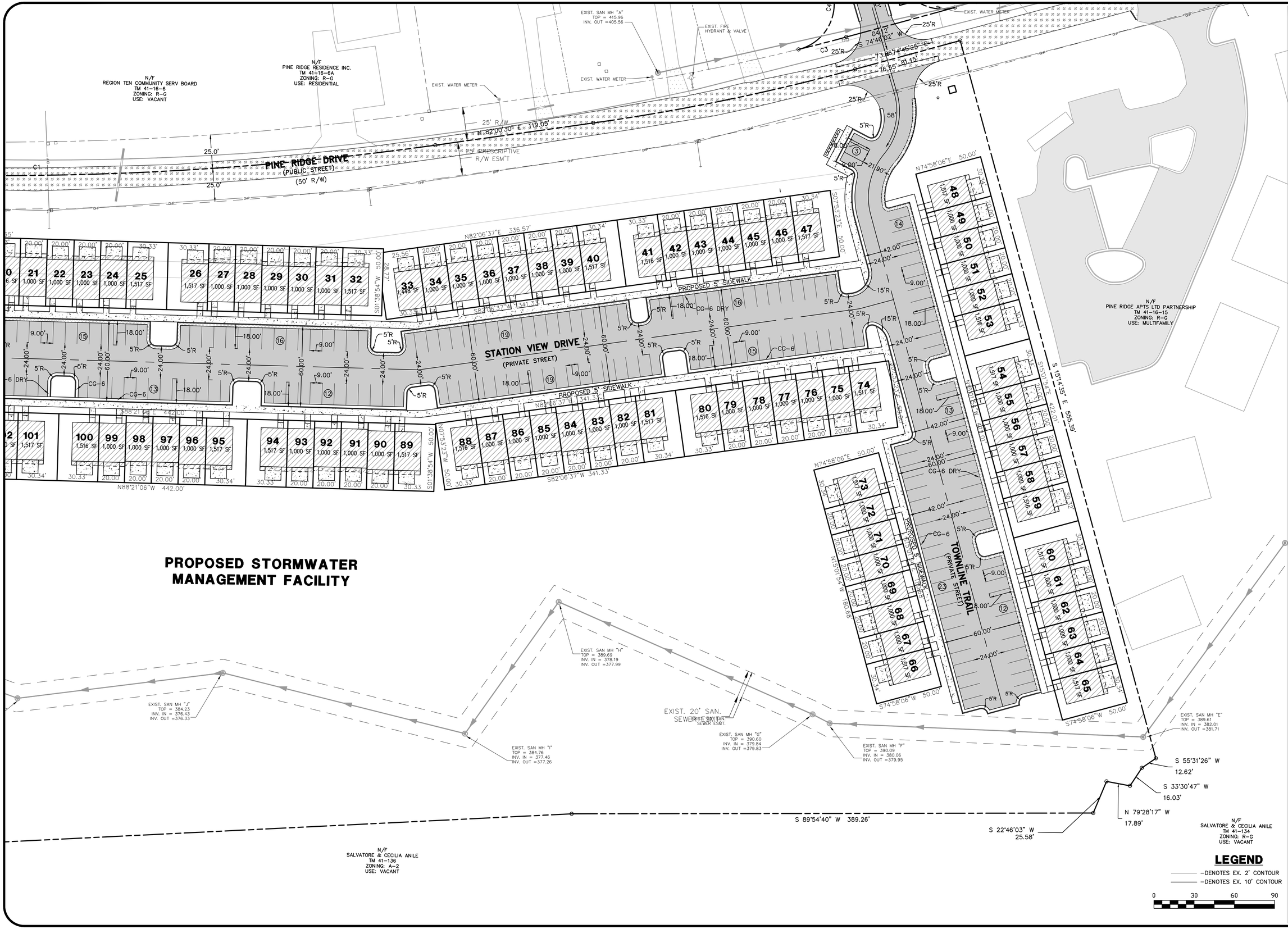
COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO.
036528
5-28-26
PROFESSIONAL ENGINEER

WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

GEOMETRIC PLAN

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	1"=30'
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D003ECP
DRAWING NO:	25-D-003
SHEET NO.	5
OF	50 SHEETS



REVISION BLOCK		
DATE	DESCRIPTION	BY
2/13/26	PER TOWN COMMENTS	DCW
4/17/26	PER DEQ COMMENTS	SLB
4/29/26	PER TOWN AND VDOT COMMENTS	DCW
5/28/26	PER VDOT COMMENTS	DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO. 036528
5-28-26
PROFESSIONAL ENGINEER

WWW. WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

GEOMETRIC PLAN

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	1"=30'
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D003FCP
DRAWING NO:	25-D-003

SHEET NO. 6 OF 50 SHEETS

N/F
VSHI LLC
TM 41C-7-8
ZONING: R-G
USE: VACANT

N/F
HARLIE E. & ROSA L. GREENE
TM 41-16-7
ZONING: R-G
USE: RESIDENTIAL

N/F
REGION TEN COMMUNITY SERV BOARD
TM 41-16-6
ZONING: R-G
USE: VACANT

N/F
PINE RIDGE RESIDENCE INC.
TM 41-16-6A
ZONING: R-G
USE: RESIDENTIAL

N/F
TOWN OF LOUISA
TM 41-16-9
ZONING: GC
USE: PUBLIC UTILITIES

EXIST. WATER METER
EXIST. FIRE HYDRANT & VALVE
EXIST. DITCH
EXIST. 40 LF 12" CMP
INV. IN = 394.24
INV. OUT =391.08
EXIST. TELE. PED.
EXIST. CABLE PED.
EXIST. 20 LF 12" CMP
INV. IN = 409.60
INV. OUT =409.02
EXIST. UTILITY POLE
EXIST. GUY WIRE
EXIST. CHAIN LINK FENCE
MONUMENT
25' PRESCRIPTIVE R/W ESM'T
25' R/W
S 83°22'48" E 163.59'
74.67'
N 82°00'30" E
C1 R=1,382.39' L=97.08' CH=S 85°02'06" E 97.06' (INV. IN = 394.15 INV. OUT =387.92)
25.0'
PINE RIDGE DRIVE
(PUBLIC STREET)
(50' R/W)
PINE GROVE LANE
(PRIVATE STREET)
STATION VIEW DRIVE
18.00' (PRIVATE STREET)
PROPOSED 5' SIDEWALK
CG-6 DRY
CG-6
5'R
9.00'
18.00'
24.00'
60.00'
42.00'
120'
GAZEBO WITH FIRE PIT
PROPOSED STORMWATER MANAGEMENT FACILITY
EXIST. SAN MH "L"
TOP = 374.72
INV. IN = 368.32
INV. OUT =368.12
EXIST. 20' SAN. SEWER ESMT.
EXIST. SAN MH "M"
TOP = 371.52
INV. IN = 363.52
INV. OUT =363.42
EXIST. SAN MH "K"
TOP = 380.50
INV. IN = 374.50
INV. OUT =374.30
EXIST. SAN MH "J"
TOP = 384.23
INV. IN = 376.43
INV. OUT =376.33
APPROX. LOCATION 100-YR FEMA FLOOD ZONE
N 06°37'12" E 561.26'
S 87°09'56" W 930.11'
N83°22'48"W 50.00'
S83°22'48"E 50.00'
N01°38'54"E 602.65'
S88°21'06"E 602.65'
N88°21'06"W 602.65'
N88°21'06"W 442.00'
S01°38'54"W 50.00'
N82°06'37"E 336
S84°06'37"W

LEGEND

N/F
SALVATORE & CECILIA ANILE
TM 41-136
ZONING: A-2
USE: VACANT

—DENOTES EX. 2' CONTOUR
—DENOTES EX. 10' CONTOUR

0 30 60 90

REVISION BLOCK		
DESCRIPTION	DATE	BY
PER TOWN COMMENTS	2/13/26	DCW
PER DEQ COMMENTS	4/17/26	SLB
PER TOWN AND VDOT COMMENTS	4/29/26	DCW
PER VDOT COMMENTS	5/28/26	DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO. 036528
5-28-26
PROFESSIONAL ENGINEER

WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

GEOMETRIC PLAN

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	1"=30'
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D003GCP
DRAWING NO:	25-D-003

SHEET NO. 7
OF 50 SHEETS

REVISION BLOCK		
DATE	DESCRIPTION	BY
2/13/26	PER TOWN COMMENTS	DCW
4/17/26	PER DEQ COMMENTS	SLB
4/29/26	PER TOWN AND VDOT COMMENTS	DCW
5/28/26	PER VDOT COMMENTS	DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO.
036528
5-28-26
PROFESSIONAL ENGINEER

W.W. WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

GRADING PLAN

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	1"=30'
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D003HCP
DRAWING NO:	25-D-003
SHEET NO.	8
OF	50 SHEETS

LEGEND
—DENOTES EX. 2' CONTOUR
—DENOTES EX. 10' CONTOUR
0 30 60 90

NAD83

N/F
REGION TEN COMMUNITY SERV BOARD
TM 41-16-6
ZONING: R-G
USE: VACANT

N/F
N MARION & EDITH BICKLEY
TM 41 132
ZONING: R-G
USE: RESIDENTIAL

N/F
DANIEL J GOETZ
TM 41-16-4A
ZONING: R-G
USE: RESIDENTIAL

N/F
TERRA N BROWN
TM 41-16-4D
ZONING: R-G
USE: RESIDENTIAL

N/F
DANIEL & JASMAN FREDRICK JR
TM 41-16-4C
ZONING: R-G
USE: RESIDENTIAL

N/F
BEVERLY A STOCHES
TM 41-16-5A
ZONING: R-G
USE: RESIDENTIAL

N/F
GRACIELA ESCOBEDO-ITUARTE
TM 41-16-5B
ZONING: R-G
USE: RESIDENTIAL

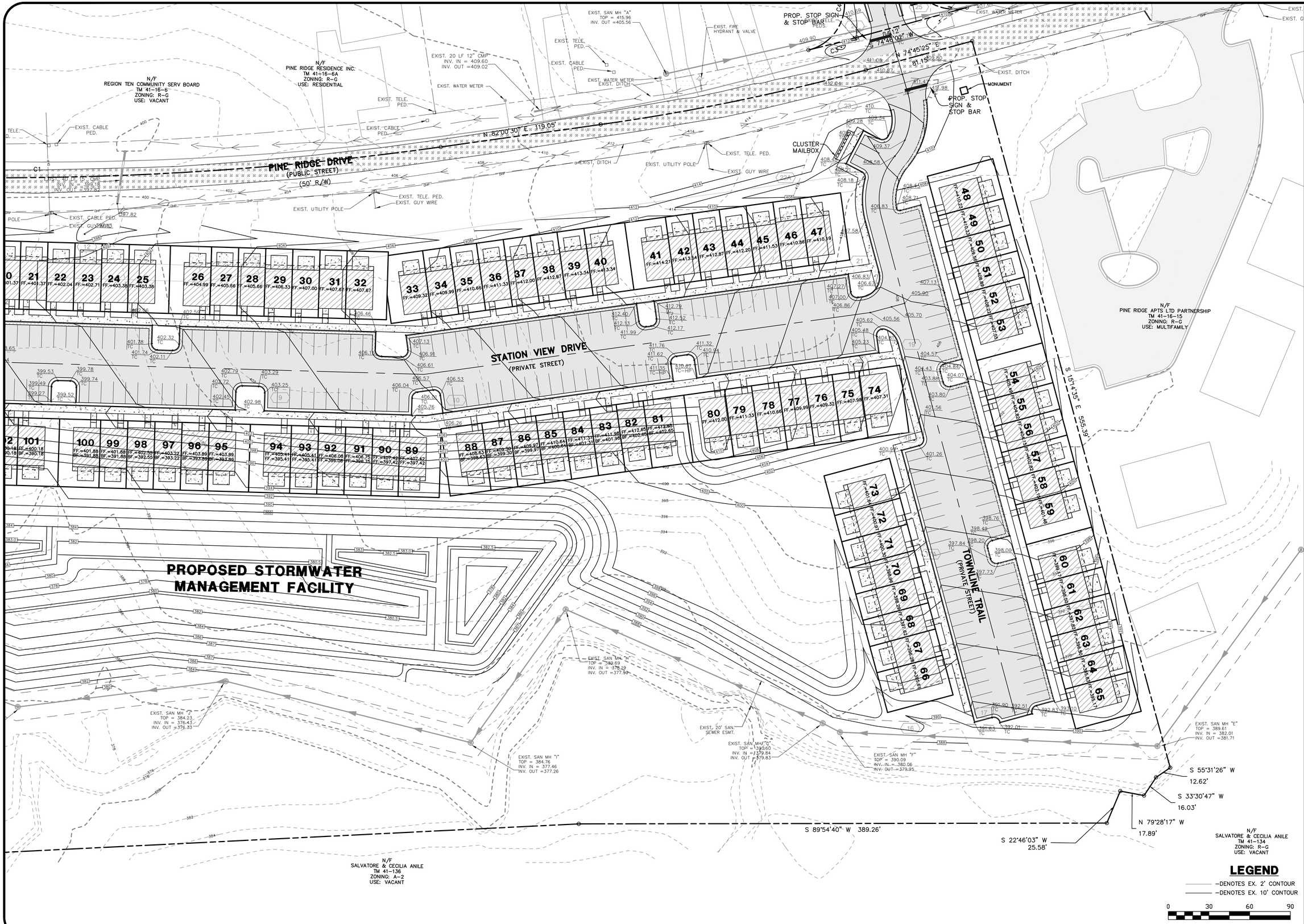
N/F
JOHN S CHAFEE TM 41-16-5C
ZONING: R-G
USE: RESIDENTIAL

N/F
PINE RIDGE RESIDENCE INC.
TM 41-16-6A
ZONING: R-G
USE: RESIDENTIAL

N 74°44'41" E 70.57'
S 15°46'08" E 126.80'
N 08°31'16" W 329.31'
N 74°44'44" E 338.76'
N 74°39'17" E 337.51'
S 16°13'02" E 259.40'
S 74°46'36" W 20.09'
S 74°45'35" W 429.91'
S 79°56'57" W 291.54'
N 16°13'21" W 139.98'
S 16°13'02" E 115.59'
S 74°48'02" W 84.12'
N 74°45'25" E 81.15'
N 82°00'30" E 319.05'

PINE VIEW DRIVE (PRIVATE STREET)
BEAVER CREEK PLACE (PRIVATE STREET)
PINE CREST WAY (PRIVATE STREET)
PINE RIDGE DRIVE (PUBLIC STREET) (50' R/W)
25' PRESCRIPTIVE R/W ESM'T
25' R/W

CLUSTER MAILBOX
MONUMENT
PROP. STOP SIGN & STOP BAR
EXIST. FIRE HYDRANT & VALVE
EXIST. WATER METER
EXIST. DITCH
EXIST. UTILITY POLE
EXIST. GUY WIRE
EXIST. TELE. PED.
EXIST. CABLE PED.
EXIST. SAN MH "A" TOP = 415.96 INV. OUT =405.56
EXIST. SAN MH "B" TOP = 406.26 INV. IN = 399.06 INV. OUT =399.06
EXIST. SAN MH "C" TOP = 399.32 INV. IN = 393.22 INV. OUT =393.22
EXIST. 20 LF 12" CMP INV. IN = 409.60 INV. OUT =409.02
EXIST. 20 LF 12" CMP INV. IN = 407.64 INV. OUT =406.58
EXIST. 20 LF 12" CMP INV. IN = 403.52 INV. OUT =403.42
EXIST. 20 LF 12" CMP INV. IN = 400.29 INV. OUT =399.94
EXIST. 40 LF 24" CMP INV. IN = 397.45 INV. OUT =397.25



REVISION BLOCK			
DATE	DESCRIPTION		BY
2/13/26	PER TOWN COMMENTS		DCW
4/17/26	PER DEQ COMMENTS		SLB
4/29/26	PER TOWN AND VDOT COMMENTS		DCW
5/28/26	PER VDOT COMMENTS		DCW

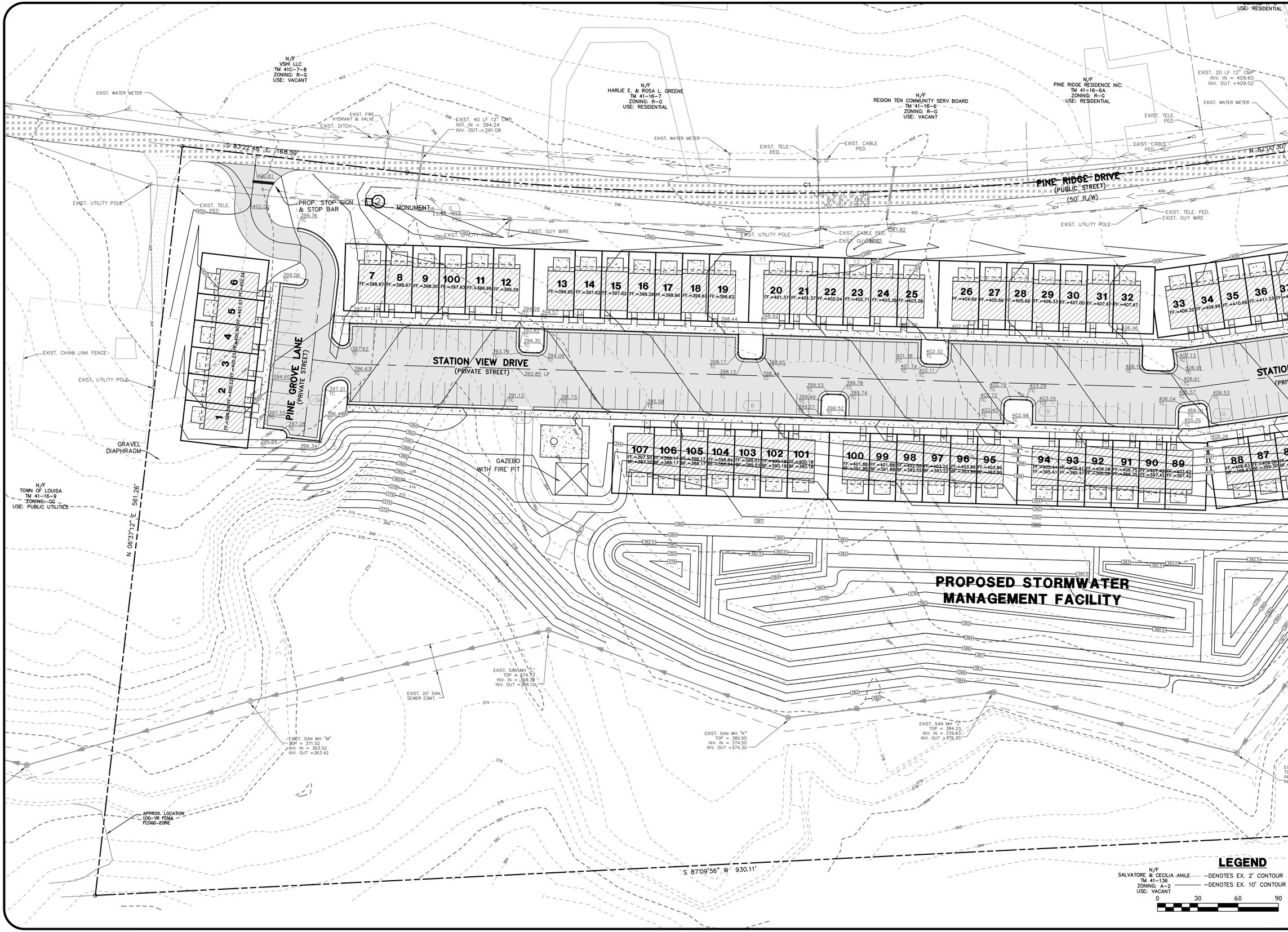
COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO. 036528
5-28-26
PROFESSIONAL ENGINEER

WWW. WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

GRADING PLAN

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	1"=30'
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D0031CP
DRAWING NO:	25-D-003
SHEET NO.	9
OF	50 SHEETS



REVISION BLOCK		
DATE	DESCRIPTION	BY
2/13/26	PER TOWN COMMENTS	DCW
4/17/26	PER DEQ COMMENTS	SLB
4/29/26	PER TOWN AND VDOT COMMENTS	DCW
5/28/26	PER VDOT COMMENTS	DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO.
036528
5-28-26
PROFESSIONAL ENGINEER

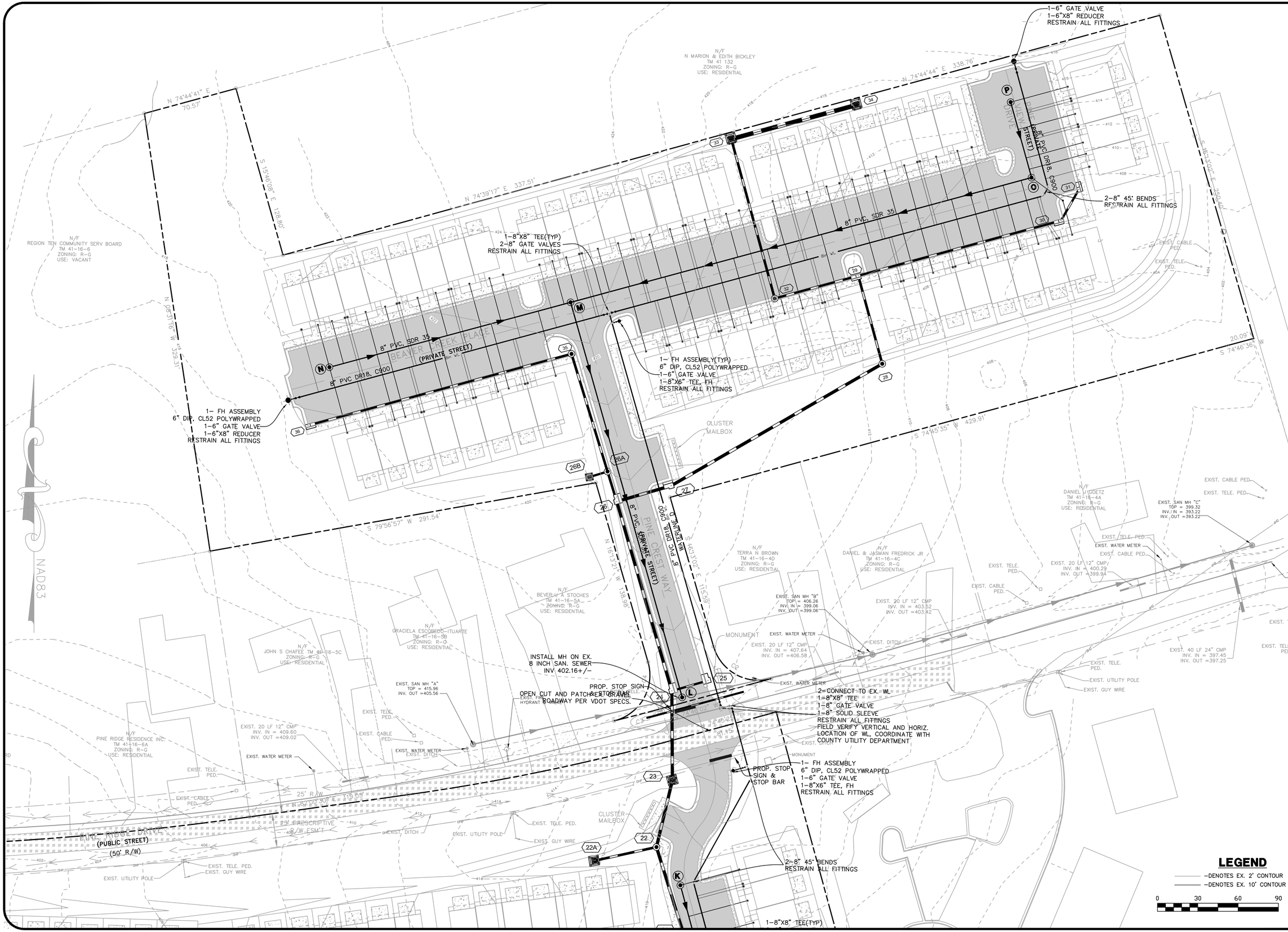
WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

GRADING PLAN

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	1"=30'
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D003JCP
DRAWING NO:	25-D-003

SHEET NO. 10
OF 50 SHEETS



REVISION BLOCK			
DATE	DESCRIPTION		BY
2/13/26	PER TOWN COMMENTS		DCW
4/17/26	PER DEQ COMMENTS		SLB
4/29/26	PER TOWN AND VDOT COMMENTS		DCW
5/28/26	PER VDOT COMMENTS		DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO.
036528
5-28-26
PROFESSIONAL ENGINEER

W.W. WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

UTILITY PLAN

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	1"=30'
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D003KCP
DRAWING NO:	25-D-003
SHEET NO.	11
OF	50 SHEETS

PROP. STOP SIGN
& STOP BAR

OPEN CUT AND PATCH STORAGE ROADWAY PER VDOT SPECS.

SIGHT DISTANCE 280'

SIGHT DISTANCE 280'

2-CONNECT TO EX. WL
1-8"X8" TEE
1-8" GATE VALVE
1-8" SOLID SLEEVE
RESTRAIN ALL FITTINGS
FIELD VERIFY VERTICAL AND HORIZ. LOCATION OF WL, COORDINATE WITH COUNTY UTILITY DEPARTMENT

1- FH ASSEMBLY
6" DIP, CL52 POLYWRAPPED
1-6" GATE VALVE
1-8"X6" TEE, FH
RESTRAIN ALL FITTINGS

PROP. STOP SIGN & STOP BAR

2-8" 45° BENDS
RESTRAIN ALL FITTINGS

1-8"X8" TEE(TYP)
2-8" GATE VALVES
RESTRAIN ALL FITTINGS

1- FH ASSEMBLY(TYP)
6" DIP, CL52 POLYWRAPPED
1-6" GATE VALVE
1-8"X6" TEE, FH
RESTRAIN ALL FITTINGS

1- FH ASSEMBLY(TYP)
6" DIP, CL52 POLYWRAPPED
1-6" GATE VALVE
1-8"X6" TEE, FH
RESTRAIN ALL FITTINGS

1-8" GATE VALVE
RESTRAIN ALL FITTINGS

8" PVC, SDR 35

8" PVC, DR18, C900
WATERLINE B

8" PVC, SDR 35

1- FH ASSEMBLY
6" DIP, CL52 POLYWRAPPED
1-6" GATE VALVE
1-6"X8" REDUCER
RESTRAIN ALL FITTINGS

8" PVC, SDR 35
WATERLINE C

8" PVC, DR18, C900

PROPOSED STORMWATER MANAGEMENT FACILITY

S 89°54'40" W 389.26'

S 55°31'26" W
12.62'

S 33°30'47" W
16.03'

N 79°28'17" W
17.89'

S 22°46'03" W
25.58'

S 45°14'35" E 555.39'

EXIST. 20' SAN. SEWER
EXIST SAN SEWER ESMT.

EXIST. 25' PRESCRIPTIVE R/W ESM'T

EXIST. 20 LF 12" CMP
INV. IN = 409.60
INV. OUT =409.02

EXIST. SAN MH "A"
TOP = 415.96
INV. OUT =405.56

EXIST. SAN MH "J"
TOP = 384.23
INV. IN = 376.43
INV. OUT =376.33

EXIST. SAN MH "I"
TOP = 384.76
INV. IN = 377.46
INV. OUT =377.26

EXIST. SAN MH "H"
TOP = 389.69
INV. IN = 378.19
INV. OUT =377.90

EXIST. SAN MH "G"
TOP = 390.60
INV. IN =379.84
INV. OUT =379.83

EXIST. SAN MH "F"
TOP = 390.09
INV. IN = 380.06
INV. OUT =379.95

EXIST. SAN MH "E"
TOP = 389.61
INV. IN = 382.01
INV. OUT =381.71

EXIST. 25' R/W

EUCLID RIDGE DRIVE
(PUBLIC STREET)
(50' R/W)

STATION VIEW
(PRIVATE STREET)

WATERLINE B

(PRIVATE STREET)

N/F
REGION TEN COMMUNITY SERV BOARD
TM 41-16-5
ZONING: R-G
USE: VACANT

N/F
PINE RIDGE RESIDENCE INC.
TM 41-16-6A
ZONING: R-G
USE: RESIDENTIAL

N/F
PINE RIDGE APTS LTD PARTNERSHIP
TM 41-16-15
ZONING: R-G
USE: MULTIFAMILY

N/F
SALVATORE & CECILIA ANILE
TM 41-136
ZONING: A-2
USE: VACANT

N/F
SALVATORE & CECILIA ANILE
TM 41-134
ZONING: R-G
USE: VACANT

CLUSTER MAILBOX

LEGEND

—DENOTES EX. 2' CONTOUR
—DENOTES EX. 10' CONTOUR

0 30 60 90

REVISION BLOCK

DESCRIPTION	DATE	BY
PER TOWN COMMENTS	2/13/26	DCW
PER DEQ COMMENTS	4/17/26	SLB
PER TOWN AND VDOT COMMENTS	4/29/26	DCW
PER VDOT COMMENTS	5/28/26	DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO.
036528
5-28-26
PROFESSIONAL ENGINEER

WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

UTILITY PLAN

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	1"=30'
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D003LCP
DRAWING NO:	25-D-003

SHEET NO. 12
OF 50 SHEETS

CONNECT TO EX. WL
1-8"X8" TEE
1-8" GATE VALVE
1-8" SOLID SLEEVE
RESTRAIN ALL FITTINGS
FIELD VERIFY VERTICAL AND HORIZ. LOCATION OF WL, COORDINATE WITH COUNTY UTILITY DEPARTMENT

OPEN CUT AND PATCH EX. GRAVEL ROADWAY PER VDOT SPECS.

N/F
VSHI LLC
TM 41C-7-8
ZONING: R-G
USE: VACANT

N/F
HARLIE E. & ROSA L. GREENE
TM 41-16-7
ZONING: R-G
USE: RESIDENTIAL

N/F
REGION TEN COMMUNITY SERV BOARD
TM 41-16-6
ZONING: R-G
USE: VACANT

N/F
PINE RIDGE RESIDENCE INC.
TM 41-16-6A
ZONING: R-G
USE: RESIDENTIAL

N/F
TOWN OF LOUISA
TM 41-16-9
ZONING: GC
USE: PUBLIC UTILITIES

EXIST. WATER METER
EXIST. FIRE HYDRANT & VALVE
EXIST. DITCH
EXIST. 40 LF 12" CMP
INV. IN = 394.24
INV. OUT =391.08
EXIST. 20 LF 12" CMP
INV. IN = 409.60
INV. OUT =409.02
EXIST. TELE. PED.
EXIST. CABLE PED.
EXIST. GUY WIRE
EXIST. UTILITY POLE
EXIST. CHAIN LINK FENCE

25' R/W
25' PRESCRIPTIVE R/W ESM'T

S 83°22'48" E 163.59'
N 82°00'30" E

PROP. STOP SIGN & STOP BAR

MONUMENT

1- FH ASSEMBLY
6" DIP, CL52 POLYWRAPPED
1-6" GATE VALVE
1-6"X8" REDUCER
RESTRAIN ALL FITTINGS

PINE RIDGE DRIVE
(PUBLIC STREET)
(50' R/W)

PINE GROVE LANE
(PRIVATE STREET)

WATERLINE A
8" PVC, DR18, C900

STATION VIEW DRIVE
(PRIVATE STREET)

WATERLINE B
8" PVC, DR18, C900

1-8"X8" TEE(TYP.)
3-8" GATE VALVES
RESTRAIN ALL FITTINGS

1- FH ASSEMBLY(TYP.)
6" DIP, CL52 POLYWRAPPED**
1-6" GATE VALVE
1-8"X6" TEE, FH
RESTRAIN ALL FITTINGS

1- FH ASSEMBLY(TYP.)
6" DIP, CL52 POLYWRAPPED
1-6" GATE VALVE
1-8"X6" TEE, FH
RESTRAIN ALL FITTINGS

8" PVC, SDR 35

1-8" GATE VALVE
RESTRAIN ALL FITTINGS

GRAVEL DIAPHRAGM

1- FH ASSEMBLY
6" DIP, CL52 POLYWRAPPED
1-6" GATE VALVE
1-6"X8" REDUCER
RESTRAIN ALL FITTINGS

GAZEBO WITH FIRE PIT

PROPOSED STORMWATER MANAGEMENT FACILITY

N 06°37'12" E 561.26'

8" PVC, SDR 35

EXIST. SAN MH "M"
TOP = 371.52
INV. IN = 363.52
INV. OUT =363.42

EXIST. SAN MH "L"
TOP = 374.72
INV. IN = 368.32
INV. OUT =368.12

EXIST. 20' SAN. SEWER ESMT.

EXIST. SAN MH "K"
TOP = 380.50
INV. IN = 374.50
INV. OUT =374.30

EXIST. SAN MH "J"
TOP = 384.23
INV. IN = 376.43
INV. OUT =376.33

APPROX. LOCATION 100-YR FEMA FLOOD-ZONE

S 87°09'56" W 930.11'

LEGEND

N/F
SALVATORE & CECILIA ANILE
TM 41-136
ZONING: A-2
USE: VACANT

—DENOTES EX. 2' CONTOUR
—DENOTES EX. 10' CONTOUR

0 30 60 90

REVISION BLOCK

DESCRIPTION	DATE	BY
PER TOWN COMMENTS	2/13/26	DCW
PER DEQ COMMENTS	4/17/26	SLB
PER TOWN AND VDOT COMMENTS	4/29/26	DCW
PER VDOT COMMENTS	5/28/26	DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO.
036528
5-28-26
PROFESSIONAL ENGINEER

WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

UTILITY PLAN

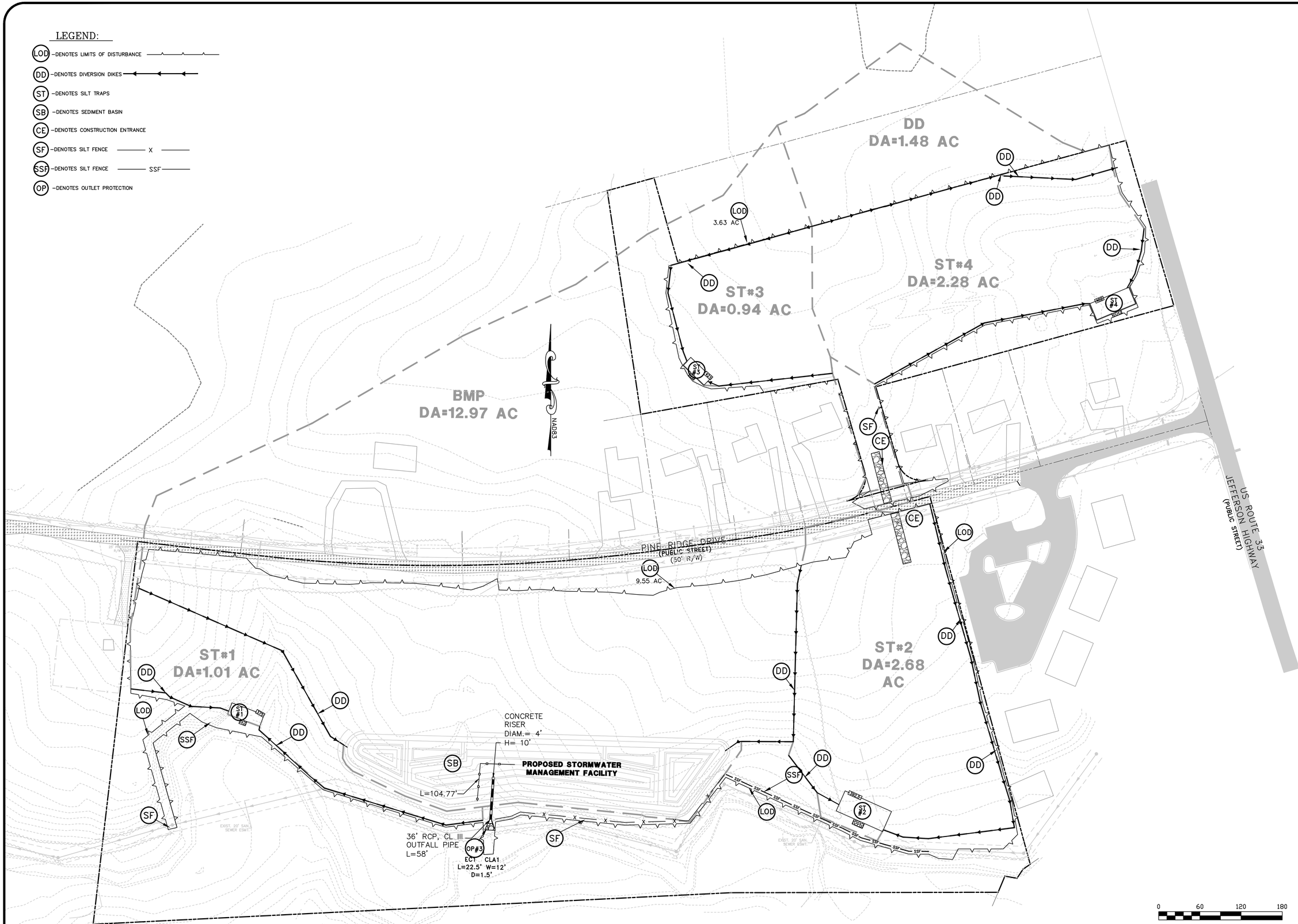
LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	1"=30'
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D003MCP
DRAWING NO:	25-D-003

SHEET NO. 13
OF 50 SHEETS

LEGEND:

- LOD –DENOTES LIMITS OF DISTURBANCE
- DD –DENOTES DIVERSION DIKES
- ST –DENOTES SILT TRAPS
- SB –DENOTES SEDIMENT BASIN
- CE –DENOTES CONSTRUCTION ENTRANCE
- SF –DENOTES SILT FENCE — X —
- SSF –DENOTES SILT FENCE — SSF —
- OP –DENOTES OUTLET PROTECTION



REVISION BLOCK

DATE	DESCRIPTION	BY
2/13/26	PER TOWN COMMENTS	DCW
4/17/26	PER DEQ COMMENTS	SLB
4/29/26	PER TOWN AND VDOT COMMENTS	DCW
5/28/26	PER VDOT COMMENTS	DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO.
036528
5-28-26
PROFESSIONAL ENGINEER

WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

EROSION CONTROL PHASE 1

LOUISA STATION

TAX MAPS 41-16-10,11,12,13,14

CONSTRUCTION PLAN

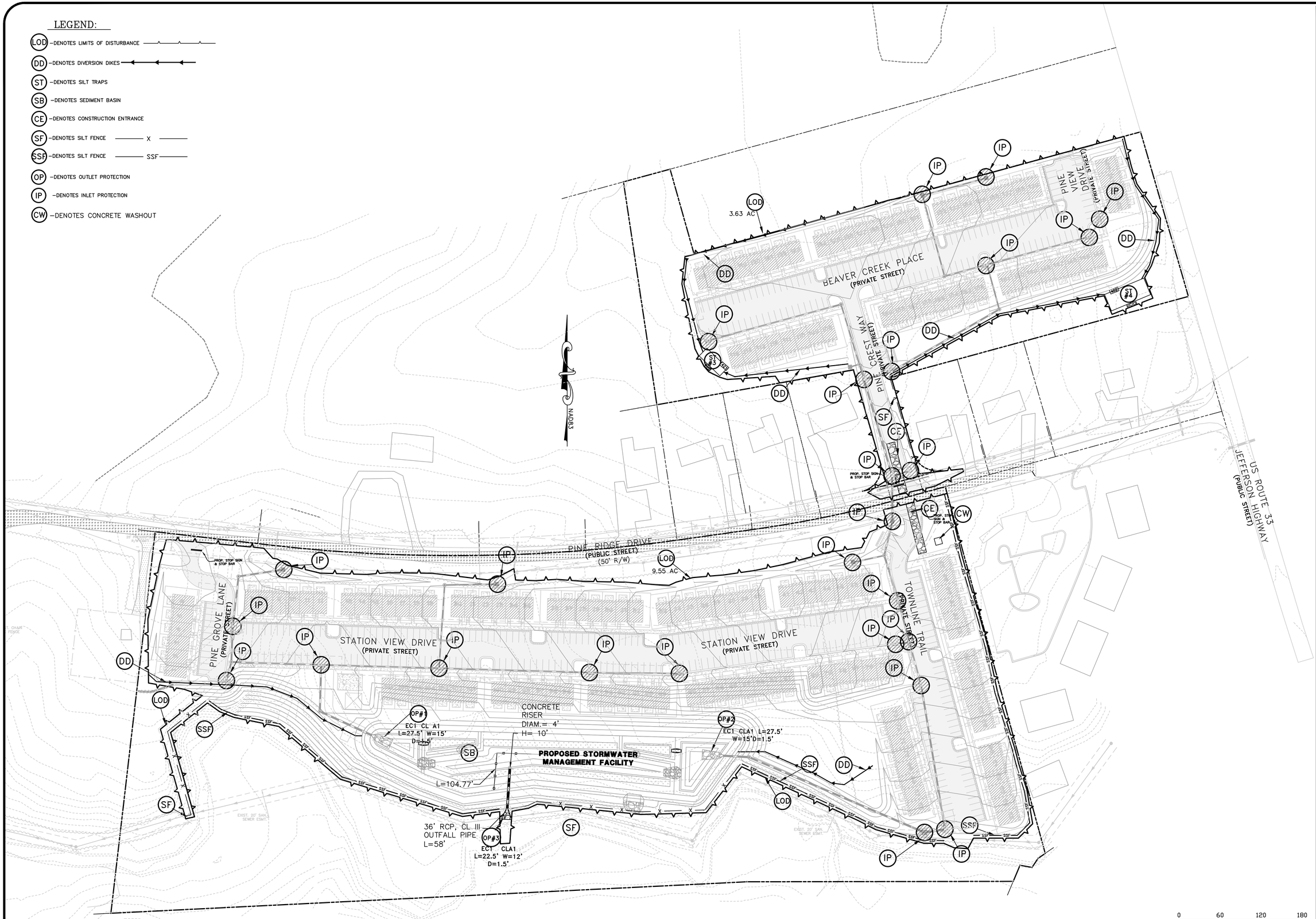
TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	1"=60'
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D003NCP
DRAWING NO:	25-D-003

SHEET NO. 14 OF 50 SHEETS

LEGEND:

- (LOD) –DENOTES LIMITS OF DISTURBANCE
- (DD) –DENOTES DIVERSION DIKES
- (ST) –DENOTES SILT TRAPS
- (SB) –DENOTES SEDIMENT BASIN
- (CE) –DENOTES CONSTRUCTION ENTRANCE
- (SF) –DENOTES SILT FENCE ——— X ———
- (SSF) –DENOTES SILT FENCE ——— SSF ———
- (OP) –DENOTES OUTLET PROTECTION
- (IP) –DENOTES INLET PROTECTION
- (CW) –DENOTES CONCRETE WASHOUT



REVISION BLOCK			
DATE	DESCRIPTION		BY
2/13/26	PER TOWN COMMENTS		DCW
4/17/26	PER DEQ COMMENTS		SLB
4/29/26	PER TOWN AND VDOT COMMENTS		DCW
5/28/26	PER VDOT COMMENTS		DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO.
036528
5-28-26
PROFESSIONAL ENGINEER

W.W. WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

EROSION CONTROL PHASE II

LOUISA STATION

TAX MAPS 41-16-10,11,12,13,14

CONSTRUCTION PLAN

TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	1"=60'
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D0030CP
DRAWING NO:	25-D-003

SHEET NO. 15 OF 50 SHEETS

MINIMUM STANDARDS

1. Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within seven days to denuded areas that may not be at final grade but will remain dormant for longer than 14 days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year.

2. During construction of the project, soil stockpiles and borrow areas shall be stabilized or protected with sediment trapping measures. The applicant is responsible for the temporary protection and permanent stabilization of all soil stockpiles on site as well as borrow areas and soil intentionally transported from the project site.

3. A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that is uniform, is mature enough to survive, and will inhibit erosion.

4. Sediment basins and traps, perimeter dikes, sediment barriers, and other measures intended to trap sediment shall be constructed as a first step in any land-disturbing activity and shall be made functional before upslope land disturbance takes place.

5. Stabilization measures shall be applied to earthen structures such as dams, dikes, and diversions immediately after installation.

6. Sediment traps and sediment basins shall be designed and constructed based upon the total drainage area to be served by the trap or basin.

a. The minimum storage capacity of a sediment trap shall be 134 cubic yards per acre of drainage area and the trap shall only control drainage areas less than three acres.

b. Surface runoff from disturbed areas that is comprised of flow from drainage areas greater than or equal to three acres shall be controlled by a sediment basin. The minimum storage capacity of a sediment basin shall be 134 cubic yards per acre of drainage area. The outfall system shall, at a minimum, maintain the structural integrity of the basin during a 25-year storm of 24-hour duration. Runoff coefficients used in runoff calculations shall correspond to a bare earth condition or those conditions expected to exist while the sediment basin is utilized.

7. Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion. Slopes that are found to be eroding excessively within one year of permanent stabilization shall be provided with additional slope stabilizing measures until the problem is corrected.

8. Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume, or slope drain structure.

9. Whenever water seeps from a slope face, adequate drainage or other protection shall be provided.

10. All storm sewer inlets that are made operable during construction shall be protected so that sediment-laden water cannot enter the conveyance system without first being filtered or otherwise treated to remove sediment.

11. Before newly constructed stormwater conveyance channels or pipes are made operational, adequate outlet protection and any required temporary or permanent channel lining shall be installed in both the conveyance channel and receiving channel.

12. When work in a live watercourse is performed, precautions shall be taken to minimize encroachment, control sediment transport, and stabilize the work area to the greatest extent possible during construction. Nonerodible material shall be used for the construction of causeways and cofferdams. Earthen fill may be used for these structures if armored by nonerodible cover materials.

13. When a live watercourse must be crossed by construction vehicles more than twice in any six-month period, a temporary vehicular stream crossing constructed of nonerodible material shall be provided.

14. All applicable federal, state, and local requirements pertaining to working in or crossing live watercourses shall be met.

15. The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed.

16. Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria:

a. No more than 500 linear feet of trench may be opened at one time.

b. Excavated material shall be placed on the uphill side of trenches.

c. Effluent from dewatering operations shall be filtered or passed through an approved sediment trapping device, or both and discharged in a manner that does not adversely affect flowing streams or off-site property.

d. Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization.

e. Restabilization shall be accomplished in accordance with this chapter.

f. Applicable safety requirements shall be complied with.

17. Where construction vehicle access routes intersect paved or public roads, provisions shall be made to minimize the transport of sediment by vehicular tracking onto the paved surface. Where sediment is transported onto a paved or public road surface, the road surface shall be cleaned thoroughly at the end of each day. Sediment shall be removed from the roads by shoveling or sweeping and transported to a sediment control disposal area. Street washing shall be allowed only after sediment is removed in this manner. This provision shall apply to individual development lots as well as to larger land-disturbing activities.

18. All temporary erosion and sediment control measures shall be removed within 30 days after final site stabilization or after the temporary measures are no longer needed, unless otherwise authorized by the VESCP or VESMP authority. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.

19. Properties and waterways downstream from development sites shall be protected from sediment deposition, erosion, and damage due to increases in volume, velocity, and peak flow rate of stormwater runoff for the stated frequency storm of 24-hour duration in accordance with the following standards and criteria. Stream restoration and relocation projects that incorporate natural channel design concepts are not manmade channels and shall be exempt from any flow rate capacity and velocity requirements for natural or manmade channels:

a. Concentrated stormwater runoff leaving a development site shall be discharged directly into an adequate natural or manmade receiving channel, pipe, or storm sewer system. For those sites where runoff is discharged into a pipe or pipe system, downstream stability analyses at the outfall of the pipe or pipe system shall be performed.

b. Adequacy of all channels and pipes shall be verified in the following manner:

(1) The applicant shall demonstrate that the total drainage area to the point of analysis within the channel is 100 times greater than the contributing drainage area of the project in question; or

(2) (a) Natural channels shall be analyzed by the use of a two-year storm to verify that stormwater will not overtop channel banks nor cause erosion of channel bed or banks;

(b) All previously constructed manmade channels shall be analyzed by the use of a 10-year storm to verify that stormwater will not overtop the stormwater's banks and by the use of a two-year storm to demonstrate that stormwater will not cause erosion of channel bed or banks; and

(c) Pipes and storm sewer systems shall be analyzed by the use of a 10-year storm to verify that stormwater will be contained within the pipe or system.

c. If existing natural receiving channels or previously constructed manmade channels or pipes are not adequate, the applicant shall:

(1) Improve the channels to a condition where a 10-year storm will not overtop the banks and a two-year storm will not cause erosion to the channel, the bed, or the banks;

(2) Improve the pipe or pipe system to a condition where the 10-year storm is contained within the appurtenances;

(3) Develop a site design that will not cause the predevelopment peak runoff rate from a two-year storm to increase when runoff outfalls into a natural channel or will not cause the predevelopment peak runoff rate from a 10-year storm to increase when runoff outfalls into a manmade channel; or

(4) Provide a combination of channel improvement, stormwater detention, or other measures that is satisfactory to the VESCP or VESMP authority to prevent downstream erosion.

d. The applicant shall provide evidence of permission to make the improvements.

e. All hydrologic analyses shall be based on the existing watershed characteristics and the ultimate development condition of the subject project.

f. If the applicant chooses an option that includes stormwater detention, the applicant shall obtain approval from the VESCP or VESMP authority for a plan for maintenance of the detention facilities. The plan shall set forth the maintenance requirements of the facility and the person responsible for performing the maintenance.

g. Outfall from a detention facility shall be discharged to a receiving channel, and energy dissipators shall be placed at the outfall of all detention facilities as necessary to provide a stabilized transition from the facility to the receiving channel.

h. All onsite channels must be verified to be adequate.

i. Increased volumes of sheet flows that may cause erosion or sedimentation on adjacent property shall be diverted to a stable outlet, adequate channel, pipe, or pipe system or to a detention facility.

j. In applying these stormwater management criteria, individual lots or parcels in a residential, commercial, or industrial development shall not be considered to be separate development projects. Instead, the development as a whole shall be considered to be a single development project. Hydrologic parameters that reflect the ultimate development condition shall be used in all engineering calculations.

k. All measures used to protect properties and waterways shall be employed in a manner that minimizes impacts on the physical, chemical, and biological integrity of rivers, streams, and other waters of the state.

l. Any plan approved prior to July 1, 2014, that provides for stormwater management that addresses any flow rate capacity and velocity requirements for natural or manmade channels shall satisfy the flow rate capacity and velocity requirements for natural or manmade channels if the practices are designed to (i) detain the water quality volume and to release it over 48 hours; (ii) detain and release over a 24-hour period the expected rainfall resulting from the one year, 24-hour storm; and (iii) reduce the allowable peak flow rate resulting from the 1.5-year, two-year, and 10-year 24-hour storms to a level that is less than or equal to the peak flow rate from the site assuming the site was in a good forested condition, achieved through multiplication of the forested peak flow rate by a reduction factor that is equal to the runoff volume from the site when the site was in a good forested condition divided by the runoff volume from the site in the site's proposed condition, and shall be exempt from any flow rate capacity and velocity requirements for natural or manmade channels as defined in any regulations promulgated pursuant to § 62.1-44.15:28 of the Code of Virginia (VESMA) or § 62.1-44.15:54 or 62.1-44.15:65 of the Code of Virginia (ESCL).

m. For plans approved on and after July 1, 2014, the flow rate capacity and velocity requirements of § 62.1-44.15:52 A of the Code of Virginia (ESCL) and this subdivision 19 shall be satisfied by compliance with water quantity requirements in the VESMA and attendant regulations, unless such land-disturbing activities (i) are in accordance with provisions for time limits on applicability of approved design criteria in 9VAC25-875-480 or grandfathering in 9VAC25-875-490, in which case the flow rate capacity and velocity requirements of § 62.1-44.15:52 A of the Code of Virginia (ESCL) shall apply; or (ii) are exempt pursuant to § 62.1-44.15:34 G 2 of the Code of Virginia (VESMA).

n. Compliance with the water quantity minimum standards set out in 9VAC25-875-600 shall be deemed to satisfy the requirements of this subdivision 19.

E & S CONTROL NARRATIVE

PROJECT DESCRIPTION

TTHIS PROJECT INCLUDES THE CONSTRUCTION OF TOWNHOMES WITH ROAD IMPROVEMENTS, PARKING AND UTILITIES. RUNOFF FROM THE IMPERVIOUS AREA WILL BE COLLECTED THROUGH A STORMSEWER SYSTEM AND WILL DISCHARGE TO ONE BMPS. THE TOTAL DISTURBANCE FOR THE PROJECT IS +/- 13.18 ACRES.

EXISTING SITE CONDITIONS

THE SITE IS CURRENTLY UNDEVELOPED. THE SITE GENERALLY FLOWS TO THE SOUTH. SLOPES ARE PRIMARILY GENTLE TO MODERATE. WETLANDS ARE NOT PRESENT ON SITE, THERE IS NO RPA ON THE PROPERTY.

ADJACENT AREAS

THE SITE IS BOUNDED BY RESIDENTIAL PROPERTY, AND BY PINE RIDGE ROAD ON THE SOUTH.

TOPSOIL

PER MS-2, ANY STOCKPILES, IF LOCATED ON-SITE, SHOULD BE LOCATED UPSTREAM OF THE SEDIMENT CONTROLS AND STABILIZED WITH TEMPORARY VEGETATION TO PREVENT SOIL LOSS UNTIL NEEDED. TOPSOIL SHALL BE REAPPLIED TO THE UNPAVED AREAS OF THE SITE TO A DEPTH OF 6", AND ANY EXCESS SOIL SHALL BE DISPOSED OF AT A CURRENTLY PERMITTED SITE IN ACCORDANCE WITH THE VIRGINIA STORMWATER MANAGEMENT HANDBOOK.

OFFSITE AREAS

THIS PLAN DOES NOT ANTICIPATE THE NEED FOR OFFSITE ACTIVITIES. IF NEEDED, HOWEVER, PRIOR TO LAND-DISTURBING ACTIVITIES, THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING A SUPPLEMENTARY E&S PLAN FOR ANY OFF-SITE DISTURBANCE THAT WILL BE REQUIRED FOR THIS PROJECT. THIS PLAN MUST BE APPROVED BY THE GOVERNING AUTHORITY PRIOR TO ANY OFF-SITE ACTIVITY. IF OFFSITE ACTIVITIES ARE REQUIRED, THE CONTRACTOR SHALL MODIFY THE SWPPP ACCORDINGLY.

SOILS MAP

SEE SOILS MAP FOR SOILS INFORMATION, LOCATED ON THIS SHEET.

CRITICAL EROSION AREAS

CRITICAL EROSION AREAS ON THIS SITE ARE SLOPES GREATER THAN 3:1. BLANKET MATTING SHALL BE USED TO STABILIZE THE SOIL FOR SLOPES GREATER THAN 3:1..

PERMANENT STABILIZATION

ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE STABILIZED WITH PERMANENT SEEDING IMMEDIATELY FOLLOWING FINISH GRADING. SEEDING SHALL BE DONE WITH KENTUCKY 31 TALL FESCUE ACCORDING TO C-SSM-10, PERMANENT SEEDING, OF THE HANDBOOK. EROSION CONTROL BLANKETS WILL BE INSTALLED OVER FILL SLOPES WHICH HAVE BEEN BROUGHT TO FINAL GRADE AND HAVE BEEN SEEDED TO PROTECT THE SLOPES (AS INDICATED ON THE PLANS) FROM FILL AND GULLY EROSION AND TO ALLOW SEED TO GERMINATE PROPERLY. MULCH (STRAW OR FIBER) WILL BE USED ON RELATIVELY FLAT AREAS. IN ALL SEEDING OPERATIONS, SEED, FERTILIZER AND LIME WILL BE APPLIED PRIOR TO MULCHING

EROSION CONTROL PROGRAM

CUT SLOPES ARE NOT SHOWN TO BE STEEPER THAN 3:1 WITH THIS PLAN. ALL PERIMETER CONTROLS SHALL BE STABILIZED IMMEDIATELY. AREAS AT FINAL GRADE SHALL BE SEEDED WITHIN 7 DAYS. AREA WHICH ARE NOT AT FINAL GRADE, BUT WILL BE WORKED ON WITHIN 14 DAYS, SHALL BE STABILIZED WITH TEMPORARY SEEDING.

SILTATION CONTROL PROGRAM

CONTROL WILL BE EXERCISED THROUGH THE INSTALLATION OF ALL MEASURES AS SHOWN ON THE EROSION AND SEDIMENT CONTROL PLANS OF THIS PLAN SET.

PHASING OF LAND-DISTURBING ACTIVITIES

PHASE I
1. INSTALL TEMPORARY CONSTRUCTION ENTRANCE.
2. CLEAR ENOUGH OF THE SITE TO INSTALL PHASE I CONTROL MEASURES.
3. INSTALL TEMPORARY SLOPE DRAIN WITH DIVERSIONS TO DIVERT OFFSITE CLEAN WATER. THE TSD SHALL BE BURIED AS NECESSARY TO ALLOW THE DIVERSION DIKES TO CROSS OVER THE TSD TO THE SEDIMENT TRAPS. FIELD ADJUST THE TSD AS NECESSARY TO MAINTAIN A POSITIVE SLOPE ALONG THE ENTIRE RUN TO THE OUTLET.
4. INSTALL SEDIMENT BASIN AND TEMPORARY SEDIMENT TRAPS.
5. INSTALL DIVERSIONS, SILT FENCE, AND SUPER SILT FENCE AS SHOWN ON THE PLAN.

PHASE II
1. ONCE THE PERIMETER CONTROLS ARE IN PLACE THE SITE CAN BE CLEARED AND GRADING MAY COMMENCE. TOPSOIL SHALL BE STRIPED AND STOCKPILED WITHIN THE LIMITS OF CLEARING AND GRADING.
2. GRADING CAN BEGIN AND UNDERGROUND UTILITIES CAN BE INSTALLED.
3. EXCAVATE AND INSTALL SEDIMENT BASIN. INSTALL OUTLET CONTROL STRUCTURE, EMERGENCY SPILLWAY AND CONTROL WEIRS. IMMEDIATELY STABILIZE ALL SLOPES WITH PERMANENT SEEDING AND MULCH.
4. INSTALL STORM SEWER WITH INLET AND OUTLET PROTECTION MEASURES.
5. COMPLETE REMAINDER OF SITE GRADING.
6. BUILDING CONSTRUCTION CAN BEGIN.
7. AFTER THE UNDERGROUND UTILITIES AND STORM SEWER ARE IN PLACE, INSTALL ROADWAY AND PARKING AREA. THE CONSTRUCTION ENTRANCE SHALL BE REMOVED TO ALLOW FOR COMPLETION OF THE ROADWAY CONSTRUCTION.
8. WITH PERMISSION OF INSPECTOR ONCE THE SITE IS FULLY STABILIZED, DREDGE PONDS TO REMOVE ANY ACCUMULATED SEDIMENT. DISPOSE OF SEDIMENT WITHIN LIMITS OF CLEARING AND GRADING. EXCAVATE AND STABILIZE BASIN. INSTALL SEDIMENT FOREBAYS. ONCE THE AREA OF SEDIMENT DISPOSAL IS STABILIZED, REMOVE REMAINDER OF PERIMETER CONTROLS.
9. AFTER ALL UPSTREAM AREAS HAVE BEEN FULLY STABILIZED THE SEDIMENT TRAPS MAY BE REMOVED. ANY COLLECTED SEDIMENT SHALL BE REMOVED AND DISPOSED OF WITHIN THE LIMITS OF CLEARANCE OR IN AN APPROVED LOCATION. THE AREAS SHALL BE BACKFILLED, GRADED AND STABILIZED WITH PERMANENT SEEDING AND MULCH.
10. ALL DISTURBED AREAS NOT OTHERWISE PROTECTED SHALL HAVE TOPSOIL PLACED AND BE SEEDED AND MULCHED.
11. THE SURFACE ASPHALT CAN BE INSTALLED.
12. ONCE THE PAVEMENT IS CONSTRUCTED AND FUNCTIONAL AND THE SITE IS STABILIZED AND WITH THE PERMISSION OF THE INSPECTOR, ALL REMAINING E&S CONTROLS CAN BE REMOVED.

EROSION AND SEDIMENT CONTROL MEASURES

UNLESS OTHERWISE NOTED, ALL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO THE MINIMUM STANDARDS SET IN THE VIRGINIA STORMWATER MANAGEMENT HANDBOOK.

DUST CONTROL

1992 3.39

The following table list various adhesives and provides corresponding information on mixing and application:

TABLE 3.39-A

ADHESIVES USED FOR DUST CONTROL

Adhesive	Water Dilution (Adhesive: Water)	Type of Nozzle	Application Rate Gallons/Acre
Anionic Asphalt Emulsion	7:1	Coarse Spray	1,200
Latex Emulsion	12.5:1	Fine Spray	235
Resin in Water	4:1	Fine Spray	300
Acrylic Emulsion (Non-Traffic)	7:1	Coarse Spray	450
Acrylic Emulsion (Traffic)	3.5:1	Coarse Spray	350

Source: Va. DSWC

SEEDING RECOMMENDATIONS

Table C-SSM-10-7 Site-Specific Seeding Mixtures for Piedmont Area

Site Condition	Seed Mix		Application Rate (pounds per acre)
Minimum-Care Lawn Commercial or Residential	Turf-Type Tall Fescue	95-100%	
	Improved Perennial Ryegrass	0-5%	150 – 200
	Kentucky Bluegrass	0-5%	
High-Maintenance Lawn	Improved (VCIA) Turf-Type Tall Fescue	100%	150 – 200
General Slope (3H:1V or less)	Tall Fescue***		50 – 75
	Red Top or Red/Hard Fescue		10 – 20
	White Clover and/or Birdsfoot Trefoil**		10 – 20
	Seasonal Nurse Crop*		30 – 40
Low-Maintenance Slope (> 3:1) or Inaccessible Area***	Tall Fescue		50 – 75
	Red Top and/or Hard Fescue		5 – 10
	White Clover and/or Birdsfoot Trefoil**		15 – 20
	Annual Lespedeza**		10 – 15
	Seasonal Nurse/Cover Crop		20-30

* Use seasonal nurse crop in accordance with seeding dates as stated below: February 16 through April annual rye
February 16 through April – annual/cereal rye
May 1 through August 15 – foxtail/German millet
August 16 through February 15 – annual/cereal rye

** Use legume seed that is properly inoculated with specified Rhizobia. Legumes recommended unless periodic N fertilization is intended. Weeping lovegrass may be added to any slope or low-maintenance mix during warmer seeding periods; add 10 to 20 lbs/acre in mixes.

*** Increase seeding rate if KY-31 is used rather than VCIA/VDOT improved varieties.

Bermudagrass can be added to substitute for Tall or Hard Fescue in the Low Maintenance mixes for the Southern Piedmont, particularly on sandy soils or hot (S and W) facing slopes. May through October, use hulled seed. All other seeding periods, use un-hulled seed.

Table C-SSM-09-3 Plant Material for Temporary Seeding

Acceptable Temporary Seeding Plant Materials "Quick Reference for all Regions"

Planting Dates	Species	Rate (pounds per acre)
Sept. 1 – Feb. 15	50/50 Mix of annual ryegrass (*Lolium multi-florum*) & cereal (winter) rye (*Secale cereale*)	50 – 100
Feb. 16 – Apr. 30*	Annual ryegrass (*Lolium multi-florum*)	60 – 100
May 1* – Aug. 31	German millet (*Setaria italica*)	50

* The shift date for annual rye to German millet should be April 15 for the Piedmont and Coastal Plain, rather than May 1.

MULCHING

Table C-SSM-11-5 Organic Mulch Materials and Application Rates

Mulches	Rates: Per Acre	Rates: Per 1,000 ft²	Notes
Straw or Hay	1.5 to 2 tons	70 to 90 lbs.	Free from weeds and coarse matter. Must be anchored. Spread with mulch blower or by hand. Use a minimum of 2 tons per acre for winter cover.
Fiber Mulch	1,500 lbs.	35 lbs.	Do not use as mulch for winter cover or during hot, dry periods. Apply as slurry. When fiber mulch is the only available mulch during periods when straw should be used, apply at a minimum rate of 2000 lbs./acre or 45 lbs./1,000 ft².
Corn Stalks	4 to 6 tons	185 to 275 lbs.	Cut or shredded in 4- to 6-inch lengths. Air-dried. Do not use in fine turf areas. Apply with mulch blower or by hand.
Wood Chips	4 to 6 tons	185 to 275 lbs.	Free of coarse matter. Air-dried. Treat with 12 lbs. nitrogen per ton. Do not use in fine turf areas. Apply with mulch blower, chip handler, or by hand.
Bark Chips or Shredded Bark	50 to 70 cy	1 to 2 cy	Free of coarse matter. Air-dried. Do not use in fine turf areas. Apply with mulch blower, chip handler, or by hand.

Source: Va. DSWC

TABLE 3.31-A

LIMING REQUIREMENTS FOR TEMPORARY SITES

pH Test	Recommended Application of Agricultural Limestone
below 4.2	3 tons per acre
4.2 to 5.2	2 tons per acre
5.2 to 6	1 ton per acre

NOTE: SOILS TEST ARE REQUIRED TO DETERMINE THE SPECIFIC LIME AND FERTILIZER REQUIREMENTS, TO INSURE THE pH AND NUTRIENT LEVELS ARE ACCEPTABLE.

NOTE: ES&C SHALL BE PROVIDED FOR THE STORM SEWER INSTALLATION IN ACCORDANCE WITH MINIMUM STANDARD 16.

EROSION & SEDIMENT CONTROL NOTES

1.) ALL MECHANICAL EROSION AND SEDIMENT CONTROLS ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING AND GRADING.

2.) ALL TEMPORARY EARTH BERMS, DIVERSIONS AND SEDIMENT CONTROLS DAMS ARE TO BE MULCHED AND SEEDED IMMEDIATELY AFTER GRADING. HAY OR STRAW OR COMPARABLE MULCH IS REQUIRED.

3.) ALL LAND, ON OR OFF SITE, WHICH IS DISTURBED BY CONSTRUCTION AND WHICH IS NOT BUILT UPON OR SURFACED SHALL BE ADEQUATELY STABILIZED TO CONTROL EROSION AND SEDIMENTATION.

4.) ALL EROSION AND SEDIMENT CONTROL, INCLUDING SEEDING AND MULCHING SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS CONTAINED IN THE LOUISA COUNTY EROSION AND SEDIMENT CONTROL ORDINANCE.

5.) ADDITIONAL SEDIMENT CONTROLS WILL BE INSTALLED IF ONSITE INSPECTIONS REVEAL PROBLEMS.

6.) STOCKPILED TOPSOIL WILL BE SURROUNDED BY EARTH BERMS AND/OR SILT FENCE SEDIMENT BARRIERS.

7.) ALL MEASURES ARE TO BE INSPECTED DAILY BY THE SITE SUPERINTENDENT ANY DAMAGED STRUCTURAL MEASURES WILL BE REPAIRED BY THE CLOSE OF THE FOLLOWING DAY. SEDIMENT CONTROLS WILL BE REMOVED AFTER AREAS ABOVE THEM HAVE BEEN STABILIZED.

8.) THIS PROJECT WILL START AFTER ALL APPROVALS AND PERMITS HAVE BEEN OBTAINED.

9.) THE AREAS USED FOR BURNING DEBRIS SHALL BE SEEDED AFTER DEBRIS REMOVAL IS COMPLETED, USING APPROPRIATE SEEDING MIXTURE RECOMMENDED IN PLAN.

10.) PERMANENT OR TEMPORARY SEEDING SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SEEDING SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE A FINAL GRADE BUT WILL REMAIN DORMANT (UNDISTURBED) FOR LONGER THAN 14 DAYS. PERMANENT SEEDING SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.

11.) SEDIMENT BASINS AND TRAPS, PERIMETER DIKES, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND-DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE.

12.) STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION

13.) BEFORE NEWLY CONSTRUCTED STORMWATER CONVEYANCE CHANNELS ARE MADE OPERATIONAL, ADEQUATE OUTLET PROTECTION AND ANY TEMPORARY OR PERMANENT CHANNEL LINING SHALL BE INSTALLED IN BOTH THE CONVEYANCE CHANNEL AND THE RECEIVING CHANNEL.

14.) ALL DRAINAGE CALCULATIONS ARE BASED ON THE METHODS SET FORTH IN THE VIRGINIA DEPARTMENT OF HIGHWAYS DRAINAGE MANUAL. ALL DRAINAGE CULVERTS AND OUTLET DITCHES ARE DESIGNED FOR A TEN YEAR FREQUENCY STORM.

15.) ALL E&S MEASURES WILL BE REMOVED WITHIN 30 DAYS OF FINAL SITE INSPECTION AND APPROVAL BY LOUISA COUNTY E&S INSPECTORS.

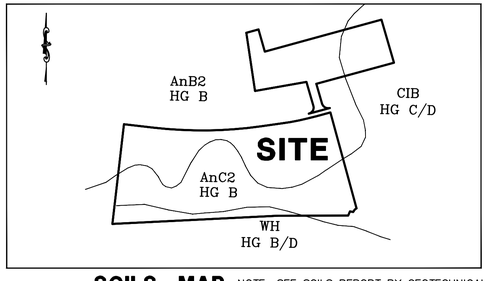
16.) DUST SHALL BE CONTROLLED IN ACCORDANCE WITH C-SCM-01 OF THE VIRGINIA STORMWATER MANAGEMENT HANDBOOK.

17.) CUT AND FILL SLOPES SHALL BE CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION. ADDITIONAL SLOPE STABILIZATION MEASURES SHOULD BE PROVIDED TO PREVENT EXCESSIVE ERIOSION ON SLOPES.

18.) CONCENTRATED RUNOFF SHALL NOT FLOW DOWN CUT OR FILL SLOPES UNLESS CONTAINED WITHIN AN ADEQUATE TEMPORARY OR PERMANENT CHANNEL, FLUME OR SLPE DRAIN STRUCTURE.

19.) ADEQUATE DRAINAGE PROTECTION SHALL BE MADE WHENEVER WATER SEEPS FROM A SLOPE FACE.

20.) IF THE ENTIRE SITE WILL NOT BE PERMANENTLY STABILIZED BEFORE DECEMBER 1, THE RESPONSILE LAND DISTURBER SHALL CONTACT THE COUNTY EROSION AND SEDIMENT CONTROL STAFF TO SCHEDULE A PRE-WINTER MEETING TO OCCUR BEFORE OCTOBER 1.



SOILS MAP

SCALE: 1" = 400'

NOTE: SEE SOILS REPORT BY GEOTECHNICAL ENGINEER FOR ADDITIONAL INFORMATION.

SOIL TYPE TABLE

MAP SYMBOL	MAPPING UNIT
AnB2	APPLING SANDY LOAM, 2 TO 7 PERCENT SLOPES
AnC2	APPLING SANDY LOAM, 7 TO 15 PERCENT SLOPES
CIB	COLFAX FINE SANDY LOAM, 2 TO 7 PERCENT SLOPES
WH	WEHADKEE-DHEWACAL COMPLEX

MAP SYMBOL	HYDRIC	K FACTOR TOPSOIL	K FACTOR SUBSOIL	HYDROLOGIC SOIL GROUP	DEPTH, FT. TO ROCK	DEPTH, FT. TO WATER	SUBSOIL PERME-ABILITY (IN/HR)	SOIL NAME	SHRINK SWELL	FLOOD PLAIN	P=PIEDMONT CP=COASTAL PLAIN
AnB2	NO	–	–	B	6+	6+	0.57-1.98	APPLING SANDY LOAM	–	–	P
AnC2	NO	–	–	B	6+	6+	0.0-6	APPLING SANDY LOAM	–	–	P
CIB	NO	–	–	C/D	6+	1-1.5	0.06-.2	COLFAX FINE SANDY LOAM	–	–	P
WH	NO	–	–	B/D	6+	0-1	0.06-1.95	WEHADKEE-CHEWACLA COMP.	–	–	P

SOILS MAP, MAPPING UNITS AND SOILS INFORMATION TAKEN FROM "SOIL SURVEY,LOUISA COUNTY, VIRGINIA" BY THE UNITED STATES DEPARTMENT OF AGRICULTURE AND "VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK" BY THE VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION.

REVISION BLOCK

DESCRIPTION	DATE	BY
PER TOWN COMMENTS	2/13/26	DCW
PER DEQ COMMENTS	4/17/26	SLB
PER TOWN AND VDOT COMMENTS	4/29/26	DCW
PER VDOT COMMENTS	5/28/26	DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO.
036528
5-28-26
PROFESSIONAL ENGINEER

WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

EROSION & SEDIMENT CONTROL NOTES & NARRATIVE

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE: AUGUST 14, 2025
SCALE: SHOWN
DESIGNED BY: DCW
DRAWN BY: SLB
CHECKED BY: DCW

ACAD FILE: 25D003PCP
DRAWING NO: 25-D-003

SHEET NO. 16 OF 50 SHEETS

STRUCTURAL/VEGETATIVE PRACTICES & MAINTENACE

TEMPORARY CONSTRUCTION ENTRANCE (C-SCM-03) - A STONE PAD, LOCATED AT POINTS OF VEHICULAR INGRESS AND EGRESS ON A CONSTRUCTION SITE, TO REDUCE THE SOIL TRANSPORTED ONTO PUBLIC ROADS AND OTHER PAVED AREAS. MAINTENANCE INCLUDES: 1) MAINTAIN ENTRANCE IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHT OF WAYS; 2) PROVIDE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR WASHING AND REWORKING STONE; 3) WHERE APPLICABLE, CLEAN OUT ANY STRUCTURES USED TO TRAP SEDIMENT; AND 4) REMOVE MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS.

SILT FENCE (C-PCM-04) - A TEMPORARY SEDIMENT BARRIER CONSTRUCTED OF POSTS, FILTER FABRIC AND, IN SOME CASES, A WIRE SUPPORT FENCE, PLACED ACROSS OR AT THE TOE OF A SLOPE OR IN A MINOR DRAINAGE WAY TO INTERCEPT AND DETAIN SEDIMENT AND DECREASE FLOW VELOCITIES FROM DRAINAGE AREAS OF LIMITED SIZE; APPLICABLE WHERE SHEET AND RILL EROSION OR SMALL CONCENTRATED FLOWS MAY BE A PROBLEM. MAXIMUM EFFECTIVE LIFE OF 6 MONTHS. MAINTENANCE INCLUDES: 1) INSPECTION AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. IMMEDIATELY REPAIR AS NECESSARY; 2) REPAIR DAMAGED SILT FENCE RESULTING FROM END RUNS AND UNDERCUTTING; 3) REPLACE FABRIC THAT IS DECOMPOSING OR BECOMING INEFFECTIVE PRIOR TO END OF USABLE LIFE; 4) REMOVE SEDIMENT DEPOSITS AFTER EACH STORM EVENT AND WHEN DEPOSITS REACH ONE HALF OF THE BARRIER HEIGHT; 5) DRESS SEDIMENT DEPOSITS TO CONFORM TO EXISTING GRADE, PREPARE AND SEED ONCE SILT FENCE IS NO LONGER NEEDED.

TEMPORARY SEDIMENT TRAP (C-SCM-11) - A SMALL PONDING AREA, FORMED BY CONSTRUCTING AN EARTHEN EMBANKMENT WITH A STONE OUTLET ACROSS A DRAINAGE SWALE, TO DETAIN SEDIMENT-LADEN RUNOFF FROM SMALL DISTURBED AREAS FOR ENOUGH TIME TO ALLOW MOST OF THE SUSPENDED SOILDS TO SETTLE OUT. MAXIMUM EFFECTIVELIFE IS 18 MONTHS. MAINTENANCE INCLUDES 1) REMOVE SEDIMENT AND RESTORE ORIGINIAL DIMENSIONS ONCE ONE HALF OF WET STORAGE VOLUME IS REACHED. PLACE SEDIMENT IN AN AREA TO AVOID EROSION AND STABILIZED; 2) CHECK FILTER STONE AND REPLACE STONE THAT IS CHOCKED WITH SEDIMENT.

TEMPORARY SEDIMENT BASIN (C-SCM-12) - A TEMPORARY BARRIER OR DAM WITH A CONTROLLED STORMWATER RELEASE STRUCTURE WHICH IS FORMED BY CONSTRUCTING AN EMBANKMENT OF COMPACTED SOIL ACROSS A DRAINAGE WAY. IT IS USED TO DETAIN SEDIMENT-LADEN RUNOFF FROM DRAINAGE AREAS 3 ARCES 3 ACRES OR GREATER FOR ENOUGH TIME TO ALLOW MOST OF THE SUSPENDED SOILDS TO SETTLE OUT. IT CAN BE CONSTRUCTED ONLY WHERE THERE IS SUFFICIENT SPACE AND APPROPRIATE TOPOGRAPHY. MAXIMUM EFFECTIVE LIFEIS 18 MONTHS UNLESS DESIGNED AS A PERMANENT POND BY A QUALIFIED PROFESSIONAL. MAINTENANCE INCLUDES: 1) INSPECT BASIN EMBANKMENT REGULARLY FOR STRUCTURAL SOUNDNESS AND REPAIR ANY DAMANGE BY EROSION OR CONSTRUCTION EQUIPMENT; 2) INSPECT THE EMERGENCY SPILLWAY REGULARLY TO INSURE LINING IS ESTABLISHED AND EROSION RESISTANT; 3) INSPECT BASINAFTER EACH RUNOFF-PRODUCING RAINFALL FOR SEDIMENT CLEANOUT ONCE SEDIMENT REACHES THE CLEANOUT LEVEL. PLACE SEDIMENT TO AVOID EROSION OR TRANSPORT OF SEDIMENT.

INLET PROTECTION (C-SCM-04) - THE PURPOSE OF INLET PROTECTION IS TO PREVENT SEDIMENT FROM ENTERING STORM DRAINAGE SYSTEMS BEFORE PERMANENT STABILIZATION OF THE DISTURBED AREA. EVERY STORM DRAIN INLET, CATCH BASIN, CURB INLET, OR SIMLAR DRAINAGE STRUCTURE RECEIVING SEDIMENT-LADEN RUNOFF SHOULD BE PROTECTED BY A COMBINATION OF UPSTREAM EROSION CONTROL AND TEMPORARY INLET PROTECTION. THIS PRACTICE WILL SIGNIFICANTLY REDUCE SEDIMENT LOADS AND WILL HELP PREVENT FLOATABLE WASTE MATERIALS AND OTHER CONSTRUCTION WASTES FROM ENTERING STORMWATER SYSTEMS. MAINTENANCE INCLUDES: 1) INSPECTING ALL INLET PROTECTION DEVICES AT LEAST TWICE WEEKLY (72 hours or more between each inspection) AND AFTER EVERY SIGNIFICANT RAINFALL EVENT (0.25 inch or more). DURING EXTENDED RAINFALL EVENTS, INSPECT INLET PROTECTION DEVICES AT LEAST ONCE EVERY 24 HOURS. 2) REPLACE CLOGGED AGGREEGATE OR FILTER FABRIC IMMEDIATELY. 3) LOOK FOR DAMAGE OR TEARS TO FRABIC CAUSED BY LARGE FLOWS. 4) INSPECT DOWNSTREAM INLETS, PIPES, AND OTHER INFRASTRUCTURE AFTER SEVERE STORMS TO CHECK FOR BYPASSED MATERIAL. 5) REMOVE SEDIMENT FROM TEMPORARY INLET PROTECTION METHODS WHEN SEDIMENT REACHES DEPTHS OF 2 OR 3 INCHES. 6) MORE FREQUENT SEDIMENT REMOVAL IS REQUIRED FROM PAVED AREAS SUCH AS STREETS AND PARKING LOTS. 7) REMOVE ALL INLET PROTECTION DEVICES WITHIN 30 DAYS AFTER THE SITE IS STAIBILIZED, ORWHENTHE INLET PROTECTION IS NO LONGER NEEDED. 8) BRING THE DISTURBED AREA TO FINAL GRADE AND APPROPRIATLEY STABILIZE ALL BARE AREAS AROUND THE INLET WITH VEGETATION. 9) CLEAN STORM DRAINAGE SYSTEM OF SEDIMENT AND DEBRIS BEFORE FINAL INSPECTION.

OUTLET PROTECTION (C-ECM-15) - THE INSTALLATION OF RIPRAP CHANNEL SECTIONS AND OR STILLING BASINS BELOW STORM DRAIN OUTLETS TO REDUCE EROSION AND UNDER-CUTTING FROM SCOURING AT OUTLETS AND TO REDUCE FLOW VLOCITIES BEFORE STORMWATER ENTERS RECEIVING CHANNELS BELOW THESE OUTLETS. MAINTENANCE ITEMS ARE INCIDENTAL AND NOT USUALLY DURING CONSTRUCTION PERIOD.

PERMANENT SEEDING (C-SSM-10) - ESTABLISHMENT OF PERENNIAL VEGETATIVE COVER BY PLANTING SEED ON ROUGH-GRADED AREAS THAT WILL NOT BE BROUGHT TO FINAL GRADE FOR A YEAR OR MORE OR WHERE PERMANENT, LONG-LIVED VEGETATIVE COVER IS NEEDED ON FINE-GRADED AREAS. MAINTENANCE INCLUDES RESEEDING UNTIL ADEQUATE, HEALTHY VEGETATIVE COVER IS ESTABLISHED.

MULCHING (C-SSM-11) - APPLICATION OF PLANT RESIDUES OR OTHER SUITABLE MATERIALS TO DISTURBED SURFACES TO PREVENT EROSION AND REDUCE OVERLAND FLOW VELOCITIES. FOSTERS PLAN GROWTH BY INCREASING AVAILABLE MOISTURE AND PROVIDING INSULATION AGAINST EXTREME HEAT OR COLD. SHOULD BE APPLIED TO ALL SEEDING OPERATIONS, THEMSELVES, AND BARE AREAS WHICH CANNOT BE SEEDED DUE TO THE SEASON BUT WHICH STILL NEED PROTECTION TO PREVENT SOIL LOSS. MAINTENANCE INCLUDES: 1) INSPECT PERIODICALLY (ESPECIALLY AFTER RAIN EVENTS) AND CHECK FOR EROSION; 2) ADD MULCH WHERE NECESSARY; 3) INSPECT NETS AND MATS FOR DISLOCATION OR FAILURE; 4) INSPECT UNTIL GRASSES ARE FIRMLY ESTABLISHED; 5) REPAIR AS NECESSARY.

DUST CONTROL (C-SCM-01) - REDUCING SURFACE AND AIR MOVEMENT OF DUST DURING LAND DISTURBANCE, DEMOLITION OR CONSTRUCTION ACTIVITIES IN AREAS SUBJECT TO DUST PROBLEMS IN ORDER TO PREVENT SOIL LOSS AND REDUCE THE PRESENCE OF POTENTIALLY HARMFUL AIRBORNE SUBSTANCE.

C-SCM-13 Concrete Washout Pit

1.0 Definition

A concrete washout pit is a temporary excavated or above-ground lined constructed pit or a prefabricated or fabricated container in which concrete truck mixers and equipment can be washed after their loads have been discharged to prevent highly alkaline runoff from entering storm drainage systems or leaching into soil.

2.0 Purpose and Applicability of Best Management Practice

A concrete washout pit is used for containing wash water from rinsing out concrete trucks, drums, pumps, chutes, equipment, and concrete truck exteriors. Provide washout facilities for every project for which concrete will be poured or otherwise formed on the site.

A concrete washout pit promotes proper disposal of waste concrete and wash water by containing it on site, thereby preventing contamination of waterways, groundwater, and storm drains.

Concrete washout structures are used when concrete equipment is cleaned on-site.

Erosion Control Efficiency: N/A

Sediment Removal Efficiency: N/A

5.0 Design Criteria

Table C-SCM-13-1 Concrete Washout Pit Design Criteria

Parameter	Details
Capacity	Size the washout facility to contain solids, wash water, and rainfall and to allow for the evaporation of the wash water and rainfall. Estimate wash water at 7 gallons per chute and 50 gallons per hopper of the concrete pump truck and/or discharging drum.
Dimensions	The minimum size of the structure is 10 feet by 10 feet at the bottom.
Freeboard	Provide a minimum of 12 inches of freeboard above the liquid and solid waste anticipated between cleanout intervals.
Side Slopes	If excavated, the side slopes are a maximum of 1H:1V.
Location	Locate the facility a minimum of 100 feet from drainage swales, storm drain inlets, wetlands, streams, and other surface waters. Prevent surface water from entering the structure. Design and location of Concrete Washout Pit to adhere to the standards and setbacks of the local municipalities, if special consideration/location must be used, receive prior approval before the installation of the measure. Sinkhole, cave entrances, or other similar natural earthen cavities should be searched for during initial inspection of site, if found, Concrete Washout Pit should not be within 150- feet of said natural landscape feature. Coordinate location of Concrete Washout Pit with local municipality before installation. Provide appropriate access with a gravel access road sloped down to the structure. Place signs to direct drivers to the facility after their load is discharged. Wherever possible, locate washout facilities on slopes not exceeding a 2% grade
Liner	Line all washout facilities to prevent leaching of liquids into the ground. Use plastic sheeting with a minimum thickness of 10 mils with no holes or tears and anchored beyond the top of the pit with an earthen berm, sandbags, stone, or other structural appurtenance. Ensure that pre-fabricated washouts can capture and contain the concrete wash and are sized based on the expected frequency of concrete pours.
Removal	After the pit is used to wash down the chutes of multiple ready-mixed trucks, and the wash water has evaporated or has been vacuumed off, the remaining hardened solids can be broken up and removed from the pit. This process may damage the plastic lining and support structure (hay bales, sandbags, or wood planks). If damage occurs, repair and reline the pit with new plastic. When the hardened solids are removed, bind the solids with the plastic lining and send to a landfill or recycling center. If the pit is going to be emptied and repaired frequently, the plastic lining, hay bales, sandbags, and wood planks will generate additional solid waste.

6.0 Construction Specifications

Table C-SCM-13-2 Construction Specifications

Component	Details
Compost Sock Washout	Where compost sock washouts are used, place a suitable impervious geomembrane at the location of the washout before installing the socks. Stake 24-inch-diameter compost socks with 2-inch by 2-inch by 36-inch-long wood stakes placed 5 feet on center around perimeter of the geomembrane to form a ring with the ends of the sock located at the upslope corner. Overlap the ends of the compost sock by a minimum of 4 feet on the upslope side of the filter ring. Ensure continuous contact of the sock with the geomembrane at all locations. Where necessary, a double row of 24-inch-diameter socks may be stacked and then an 18-inch- diameter sock staked on top to form a triangular cross-section.
Hay Bale and Plastic Washout Pit	A washout pit made with hay bales and a plastic lining can be dug into the ground or built above grade. Construct the hay bale washout pit using hay bales placed to a minimum height of 3 feet to form a 10-foot by 10-foot inside area. Stake the bales using two wood or metal stakes per bale. Place the plastic lining over the inside area and the top and sides of the hay bales. Staple the lining to the top of the hay bales using 2-inch-wide by 4-inch-long by 0.125- inch-diameter steel wire staples. Use two staples per hay bale. The washout pit can be constructed using two stacked bales or can be partially excavated to reach the 3-foot depth.
Excavated Washout Pit	Excavate the washout area to a minimum depth of 3 feet with a 1H:1V (maximum) side slope to form a 10-foot by 10-foot bottom area. Place the liner over the bottom and side slopes of the excavated area and extend the liner a minimum of 3 feet at the top of the side slopes. Place sandbags around the perimeter of the washout pit at the tops of the side slopes to secure the liner in place. Staple the lining to the top of the wood frame using 2-inch-wide by 4-inch-long by 0.125-inch-diameter steel wire staples.
Wood Plank and Plastic Washout Pit	Construct the 10-foot by 10-foot washout pit using three 2-inch by 12-inch wood frames stacked to form a 3-foot-high wooden frame above the ground surface. Install two stakes on either side of the wooden frame and fasten to the wooden frame. Install four stakes on each 10-foot side of the wooden frame (16 stakes total). Place the plastic liner over the inside area and top sides of the wood plank frame. Staple the lining to the top of the wood frame using 2- inch wide by 4-inch long by ⅛-inch diameter steel wire staples.

Table C-SCM-13-2 Construction Specifications

Component	Details
Vinyl Washout Container	The vinyl washout container is portable, reusable, and easier to install than a hay bale washout pit. The biodegradable filter bag assists in extracting the concrete solids and prolongs the life of the vinyl container. When the bag is lifted, the water is filtered out, and the remaining concrete solids and the bag can be disposed of together in a landfill, or the hardened concrete can be delivered to a recycler. After the solids have been removed several times and the container is full of wash water, the wash water can be allowed to evaporate so that the container can be reused. The wash water can be removed more quickly by placing another filter bag in the container and spreading water gelling granules evenly across the water. In about 5 minutes, the water in the filter bag will turn into a gel that can be removed with the bag. The gel and filter bag can then be disposed of together.
Metal Washout Container	The metal roll-off bin is designed to securely contain concrete wash water and solids and is portable and reusable. It also has a ramp that allows concrete pump trucks to wash out their hoppers. Roll-off providers offer recycling services such as picking up the roll-off bins after the wash water has evaporated and the solids have hardened, replacing them with empty washout bins, and delivering the hardened concrete to a recycler rather than a landfill. Some providers will vacuum off the wash water, treat it to remove metals and reduce the pH, and deliver it to a wastewater treatment plant for additional treatment and subsequent discharge to a surface water. Everything is recycled or treated sufficiently to be returned to a natural surface water.

7.0 Operations and Maintenance Considerations

Inspect all concrete washout facilities daily. Deactivate and repair or replace damaged or leaking facilities immediately. Pump excess rainwater that has accumulated over hardened concrete to a stabilized area such as a grass filter strip. Remove accumulated hardened material when 75% of the storage capacity of the structure is filled. Pump any excess wash water into a containment vessel and properly disposed of off-site.

Dispose of the hardened material off site in a construction/demolition landfill. The hardened concrete may be recycled by crushing and reusing the crushed concrete as construction material. The crushed concrete material makes an excellent aggregate for road base and can be used as fill at the construction site in accordance with state and local regulations or delivered to a recycler. Concrete recyclers can be found at municipal solid waste disposal facilities, private recycling plants, or large construction sites.

Replace the plastic liner with each cleaning of the washout facility. Inspect the project site frequently to ensure that concrete is not being discharged in non-designated areas. Before forecasted rainstorms, remove liquids or cover the structure to prevent overflows.

WET POND CONSTRUCTION

6.0 Construction Specifications

6.1 Construction Sequence

The following is a typical construction sequence to properly install a wet pond. The steps may be modified to reflect different wet pond designs; site conditions; and the size, complexity, and configuration of the proposed facility.

Step 1: Use of Wet Pond as an Erosion and Sediment (E&S) Control: A wet pond may serve as a sediment basin during project construction. If so, the volume should be based on the more stringent sizing rule (E&S control requirement vs. water quality treatment requirement). Installation of the permanent riser should be initiated during the construction phase, and design elevations should be set with final cleanout of the sediment basin and conversion to the post-construction wet pond in mind. Appropriate procedures should be implemented to prevent discharge of turbid waters when the basin is being converted into a wet pond.

Step 2: Stabilize the Drainage Area: Wet ponds should only be constructed after the contributing drainage area to the pond is completely stabilized. If the proposed pond site will be used as a sediment trap or basin during the construction phase, the construction notes should clearly indicate that the facility will be dewatered, dredged, and re-graded to design dimensions after the original site construction is complete.

Step 3: Assemble Construction Materials onsite, ensure they meet design specifications, and prepare any staging areas.

Step 4: Install E&S Controls prior to construction including temporary dewatering devices and stormwater diversion practices. All areas surrounding the pond that are graded or denuded during construction must be planted with turf grass, native plantings, or other approved methods of soil stabilization. See Appendix G for guidance on plant selection.

Step 5: Clear and Strip the project area to the desired sub-grade.

Step 6: Excavate the core trench and install the spillway pipe as applicable.

Step 7: Install the Riser or Outflow Structure and ensure the top invert of the overflow weir is constructed level at the design elevation.

Step 8: Construct the Embankment and Any Internal Berms in 8- to 12-inch lifts, or as directed by geotechnical recommendations, and compact as required with appropriate equipment.

Step 9: Excavate/Grade until the appropriate elevation and desired contours are achieved for the bottom and side slopes of the pond.

Step 10: Construct the Emergency Spillway in cut or structurally stabilized soils.

Step 11: Install Outlet Protection including inflow points, emergency, and primary outlet apron protection in accordance with approved plans.

Step 12: Stabilize Exposed Soils with temporary seed mixtures appropriate for the pond buffer. All areas above the normal pool elevation should be permanently stabilized by hydroseeding or seeding over straw.

Step 13: Plant the Pond Buffer Area following the pondscaping plan.

6.2 Construction Inspection

Multiple inspections are critical to ensuring that stormwater ponds are properly constructed. Inspections are recommended during the following stages of construction:

- Pre-construction meeting;
- Initial site preparation (including installation of E&S controls);
- Excavation/Grading (interim and final elevations);
- Installation of the embankment, the riser/primary spillway, and the outlet structure;
- Implementation of the pondscaping plan and vegetative stabilization; and
- Final Inspection (develop a punch list for facility acceptance).

Upon final inspection and acceptance, the global positioning system (GPS) coordinates for all wet ponds should be logged for entry into the VSMP Authority's BMP maintenance tracking database.

A construction phase inspection checklist for wet ponds is included in 9.0 Appendix A Sample Construction Inspection Checklist for Wet Ponds.

To facilitate maintenance, contractors should measure the actual constructed pond depth at three areas within the permanent pool (forebay, mid-pond, and at the riser), and they should mark and geo-reference them on an as-built drawing. This simple dataset will enable maintenance Inspectors to determine pond sediment deposition rates to schedule sediment cleanouts. Alternatively, a full topographic map of the pond bottom can also ensure the pond volume as-built meets the design volume.

(CW) –DENOTES CONCRETE WASHOUT

REVISION BLOCK

BY	DESCRIPTION	DATE
DCW	PER TOWN COMMENTS	2/13/26
SLB	PER DEQ COMMENTS	4/17/26
DCW	PER TOWN AND VDOT COMMENTS	4/29/26
DCW	PER VDOT COMMENTS	5/28/26

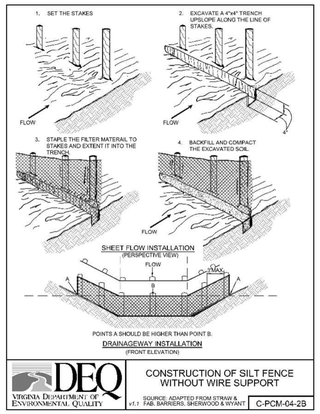
COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO. 036528
5-28-26
PROFESSIONAL ENGINEER

WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

EROSION & SEDIMENT CONTROL NOTES & NARRATIVE CONTINUED

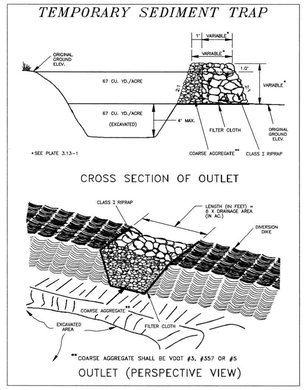
LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	SHOWN
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D003QCP
DRAWING NO:	25-D-003
SHEET NO.	17
OF	50 SHEETS



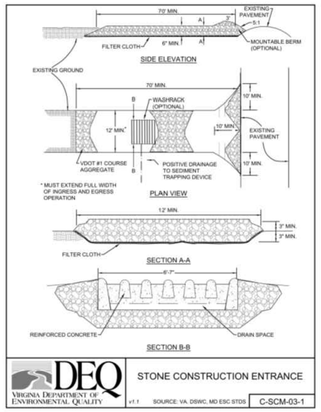
SF – SILT FENCE

1992 3.13

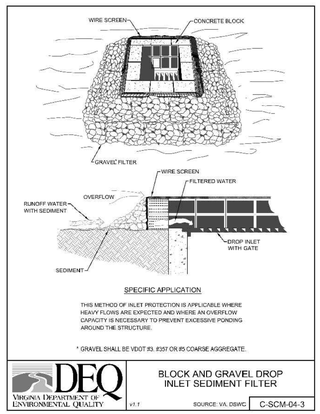


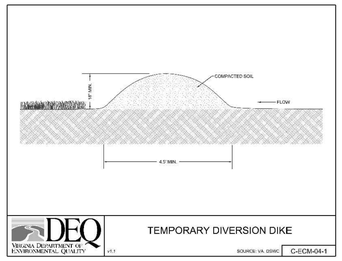
Source: Va. DSWC Plate 3.13-2

ST –DENOTES TEMPORARY SEDIMENT TRAP



CE –DENOTES CONSTRUCTION ENTRANCE





DD –DENOTES DIVERSION DIKE

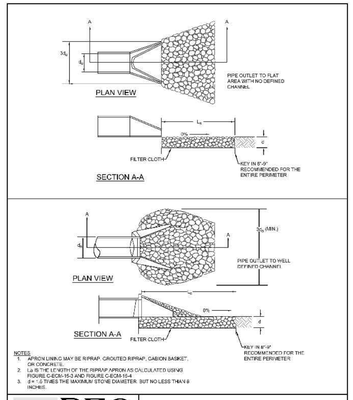
NOTE: PROVIDE EC–2 LINING IN DD DITCH.

COST ESTIMATE OF E&S CONTROL MEASURES

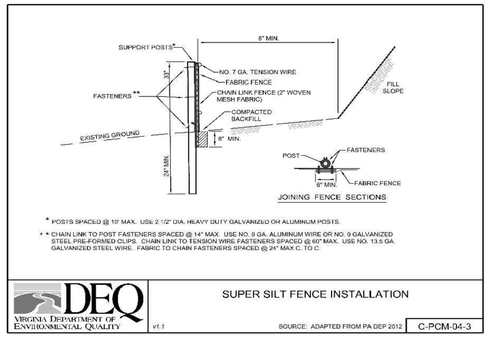
DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
CONSTRUCTION ENTRANCE	EA	2	$ 2,000	$ 4,000
SILT FENCE	LF	729	$ 4	$ 2,916
DIVERSION DIKE	LF	4,489	$ 2	$ 8,978
PERMANENT SEEDING AND MULCH	AC	13.18	$ 1,500	$ 19,770
TEMPORARY SEEDING	AC	13.18	$ 1,200	$ 15,816
SEDIMENT BASIN	EA	1	$ 2,500	$ 2,500
SEDIMENT TRAPS	EA	4	$ 1,500	$ 6,000
TEMPORARY SLOPE DRAIN	LF	0	$ 10	$ -
CULVERT OUTLET PROTECTION	SY	0	$ 25	$ -
CULVERT INLET PROTECTION	EA	0	$ 175	$ -
INLET PROTECTION	EA	26	$ 175	$ 4,550
			SUB-TOTAL PROJECT COST:	$ 64,530
			25% MAINTENANCE FEE:	$ 16,133
			TOTAL PROJECT COST:	$ 80,663

OUTLET PROTECTION CALCULATION TABLE

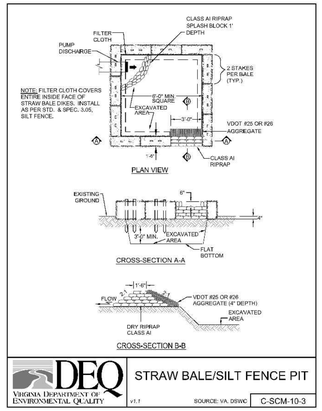
SHEET #	OP#	Pipe Size (in)	Discharge of Pipe 10 yr Storm(cfs)	Velocity down (fps)	Min. d_{50} Stone Size (in)	VDOT Riprap Class	Min. Stone Depth, d (in)	Tailwater Type (Min or Max)	Min. Length, La (ft)	Min. Upstream Width (ft)	Min. Downstream Width (ft)
15	1	30	16.4	4.4	9	A1	1.5	Min	25	7.5	27.5
15	2	30	20.6	4.3	9	A1	1.5	Min	25	7.5	27.5
14,15	3	36	6.9	6.9	9	A1	1.5	Min	20	9	22.5

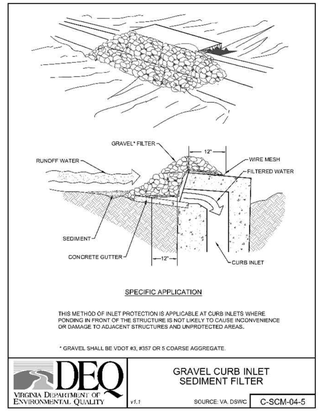


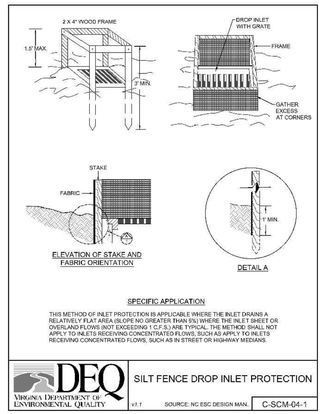
OP –DENOTES OUTLET PROTECTON

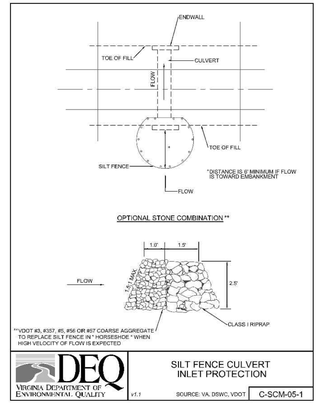


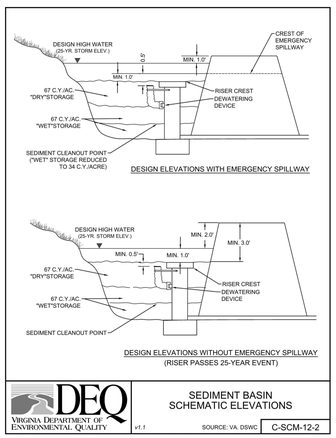
SSF – SUPER SILT FENCE

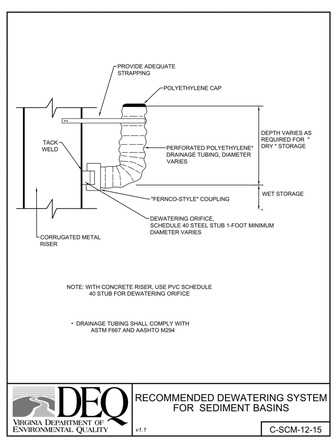


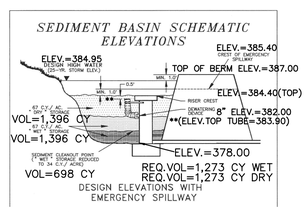












SB –DENOTES TEMP. SEDIMENT BASIN

LOUISA STATION 03/04/26

DEWATERING ORIFICE DESIGN

Drainage Area to Basin	=	19.00 ac		
Basin Wet Storage	=	67 cy/ac	x	19.00 ac
Required Storage	=	1,273	CY	
	=	34,371	CF	
	=	37,700	CF Storage Provided	
Elevation Corresponding	=	382.00	(invert of dewatering tube)	
S (dry storage)	=	67 cy/ac	x	19.00 ac
Required Storage	=	1,273	CY	
	=	34,371	CF	
	=	45,456	CF Storage Provided	
Q (6 hour drawdown) (Based on Req'd Storage)	=	S / 21600 sec		
	=	1.59	cfs	
crest of principle spillway	=	384.40	(12.5 ft weir)	
h (average driving head)	=	384.40 - 382 / 2.0		
	=	1.20	ft	
A (dewatering orifice)	=	Q / (64.32xh)^1/2(0.60)		
A	=	0.30 sf		
d (dewatering orifice)	=	2 (A/3.14)^.5		
	=	0.62 ft		
	=	7.44 in		

USE 8" DEWATERING ORIFICE AND 12" FLEXIBLE TUBING

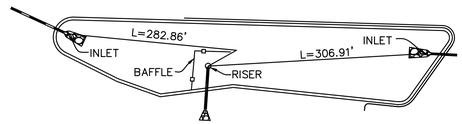
We=A/L
A=36,243
L=282.86
We=36,243/282.86
We=128.13

RATIO=L/We
RATIO=282.86/128.13
RATIO=2.21

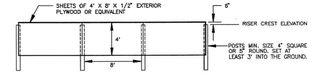
REQ RATIO: 2/1

We=A/L
A=36,243
L=306.91
We=36,243/306.91
We=118.09

RATIO=L/We
RATIO=306.91/118.09
RATIO=2.60



BASIN SCHEMATIC
NTS



SB BAFFLE DETAIL

SEDIMENT TRAP NO.	DRAINAGE AREA (AC.)	WEIR LENGTH (FT.)	**WET STORAGE REQ. (CY.)**	**WET STORAGE PROV. (CY.)**	**DRY STORAGE REQ. (CY.)**	**DRY STORAGE PROV. (CY.)**	TOP DRY LENGTH (FT.)	TOP DRY WIDTH (FT)	TOP WET LENGTH (FT.)	TOP WET WIDTH (FT.)	BOTTOM LENGTH (FT.)	BOTTOM WIDTH (FT.)	TOP DRY ELEV.	TOP WET ELEV.	BOTTOM ELEV.	Dry storage depth(Ft)	Wet storage depth(Ft)
1	1.01	6.1	**68**	**82**	**68**	**146**	50	32	36	18	28	10	375	371.5	367.5	3.5	4
2	2.68	16.1	**180**	**193**	**180**	**239**	74	42	64	32	58	26	392.5	390	387	2.5	3
3	0.94	5.6	**63**	**64**	**63**	**74**	42	26	32	16	24	8	420.5	418	414	2.5	4
4	2.28	13.7	**153**	**170**	**153**	**166**	62	36	52	26	44	18	402	399.5	395.5	2.5	4

REVISION BLOCK

DATE	DESCRIPTION	BY
2/13/26	PER TOWN COMMENTS	DCW
4/17/26	PER DEQ COMMENTS	SLB
4/29/26	PER TOWN AND VDOT COMMENTS	DCW
5/28/26	PER VDOT COMMENTS	DCW

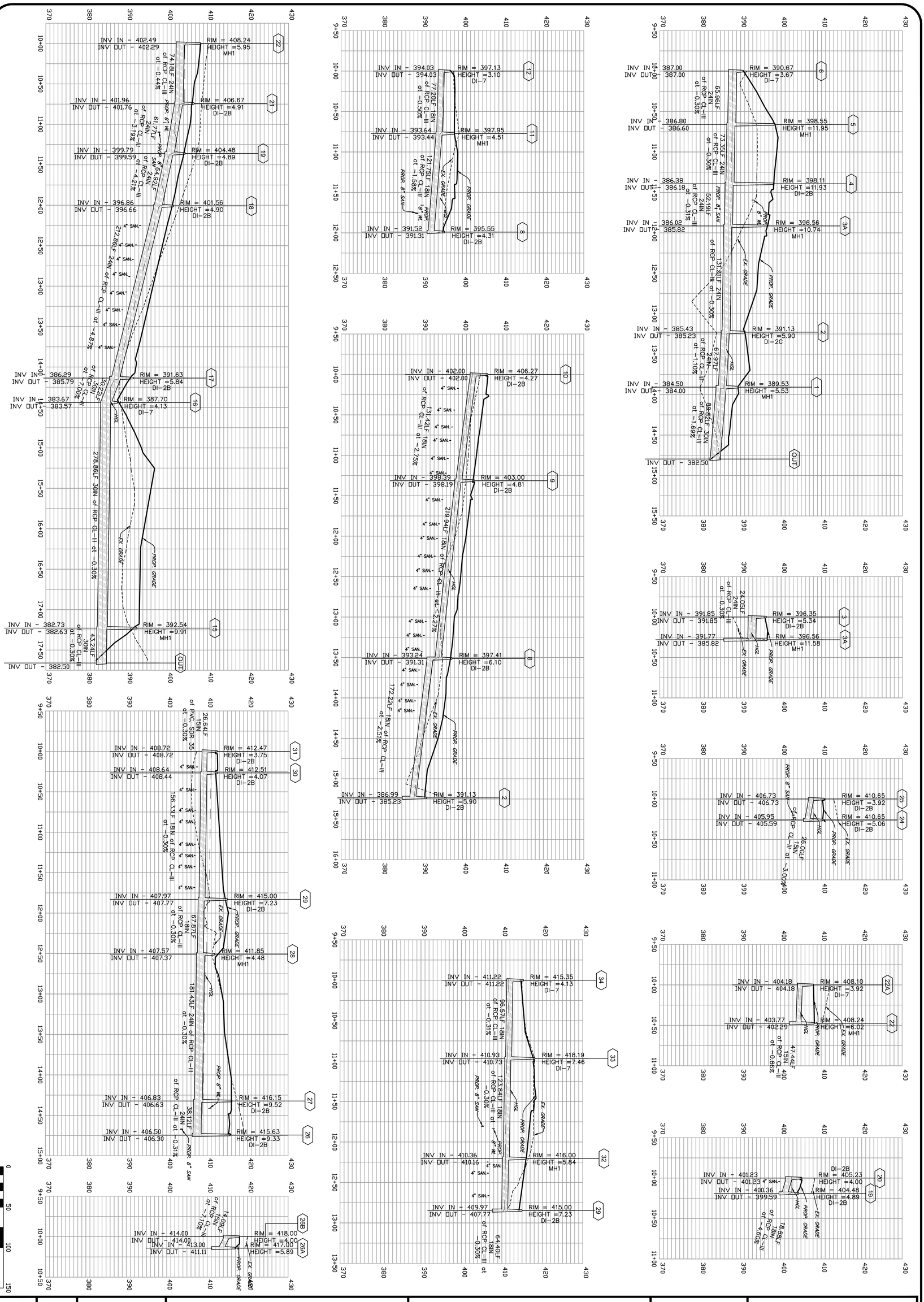
COMMONWEALTH OF VIRGINIA — DANIEL C. WEBB — LICENSE NO. 036528 — 5-28-26 — PROFESSIONAL ENGINEER

W.W. WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

EROSION CONTROL DETAILS

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	NONE
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D003QCP
DRAWING NO:	25-D-003
SHEET NO.	18
OF	50 SHEETS



STORM SEWER PROFILES

LOUISA STATION

TAX MAPS 41-16-10,11,12,13,14

CONSTRUCTION PLAN

TOWN OF LOUISA, VIRGINIA

W.W.W. | WEBB

ENGINEERING SURVEYING LAND PLANNING

11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408

PHONE: (540)371-1209

COMMONWEALTH OF VIRGINIA

DANIEL C. WEBB

LICENSE NO. 036528

5-28-26

PROFESSIONAL ENGINEER

REVISION BLOCK		
2/13/26	PER TOWN COMMENTS	DCW
4/17/26	PER DEQ COMMENTS	SLB
4/29/26	PER TOWN AND VDOT COMMENTS	DCW
5/28/26	PER VDOT COMMENTS	DCW
DATE	DESCRIPTION	BY

SHEET NO.	19
OF	50 SHEETS
DRAWING NO:	25-D-003
ACAD FILE:	25D003SCP
CHECKED BY:	DCW
DRAWN BY:	SLB
DESIGNED BY:	DCW
SCALE: H-1"=50', V-1"=10'	
DATE:	AUGUST 14, 2025

STORM SEWER COMPUTATIONS

Line	ToLine	LineLength	Incr.Area	TotalArea	RunoffCoeff.	IncrC x A	TotalC x A	InletTime	TimeConc	RnfallInt	TotalRunoff	AdnlFlow	TotalFlow	CapacFull	Veloc	PipeSize	PipeSlope	Inv ElevDn	Inv ElevUp	HGLDn	HGLUp	Grnd/RimDn	Grnd/RimUp	Line ID
		(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	Outfall	88.82	0	10.79	0	0	4.11	0	25.2	3.60	14.63	0	14.63	53.30	4.39	30	1.69	382.50	384.00	384.88	385.29	382.50	389.53	OUT TO 1
2	1	67.97	0.71	10.79	0.82	0.58	4.11	5	25.0	3.60	14.7	0	14.70	23.44	6.14	24	1.07	384.50	385.23	385.98	386.61	389.53	391.13	1 TO 2
3	2	131.31	0	3.14	0	0	0.93	0	23.1	3.70	3.45	0	3.45	12.33	1.14	24	0.30	385.43	385.82	387.55	387.58	391.13	396.56	2 TO 3A
4	3	52.19	0.07	2.92	0.84	0.06	0.74	5	22.2	3.80	2.83	0	2.83	12.52	1.12	24	0.31	386.02	386.18	387.60	387.60	396.56	398.11	3A TO 4
5	4	73.35	0	2.85	0	0	0.68	0	20.8	3.90	2.69	0	2.69	12.39	1.49	24	0.30	386.38	386.60	387.62	387.63	398.11	398.55	4 TO 5
6	5	64.62	2.85	2.85	0.24	0.68	0.68	19.6	19.6	4.10	2.78	0	2.78	12.58	2.41	24	0.31	386.80	387.00	387.67	387.72	398.55	390.67	5 TO 6
7	2	145.00	0.66	6.94	0.77	0.51	2.6	5	13.9	4.70	12.34	0	12.34	18.13	9.24	18	2.98	386.99	391.31	387.90	392.64	391.13	397.41	2 TO 8
8	7	138.95	0.39	0.78	0.77	0.3	0.6	5	8.1	5.80	3.51	0	3.51	19.82	3.54	18	3.56	393.24	398.19	394.22	398.90	397.41	403.00	8 TO 9
9	8	212.41	0.39	0.39	0.78	0.3	0.3	5	5.0	6.60	2.01	0	2.01	13.69	2.72	18	1.70	398.39	402.00	399.27	402.53	403.00	406.27	9 TO 10
10	7	121.75	0	5.5	0	0	1.49	0	13.4	4.80	7.16	0	7.16	13.19	4.26	18	1.58	391.52	393.44	394.22	394.72	397.41	397.95	8 TO 11
11	10	77.20	5.5	5.5	0.27	1.49	1.49	13.1	13.1	4.90	7.23	0	7.23	7.46	4.69	18	0.51	393.64	394.03	394.88	395.23	397.95	397.13	11 TO 12
12	3	28.05	0.22	0.22	0.83	0.18	0.18	5	5.0	6.60	1.21	0	1.21	3.45	2.56	15	0.29	391.77	391.85	392.28	392.36	396.56	396.35	3A TO 3
13	Outfall	43.24	0	5.95	0	0	3.47	0	21.9	3.80	13.34	0	20.57	22.49	4.29	30	0.30	382.50	382.63	384.88	384.97	382.50	392.54	OUT TO 15
14	13	278.86	0.24	5.95	0.59	0.14	3.47	5	20.8	3.90	13.68	0	20.91	22.51	4.54	30	0.30	382.73	383.57	385.08	385.69	392.54	387.50	15 TO 16
15	14	30.22	0.71	5.71	0.78	0.55	3.33	5.4	20.7	4.00	13.16	0	20.39	108.62	5.38	30	7.02	383.67	385.79	385.99	387.32	387.50	391.63	16 TO 17
16	15	212.86	0.13	5	0.76	0.1	2.77	5	20.1	4.00	11.13	0	18.36	49.92	6.47	24	4.87	386.29	396.66	388.25	398.20	391.63	401.56	17 TO 18
17	16	64.92	0.13	4.87	0.68	0.09	2.68	5	19.9	4.00	10.79	0	18.02	46.38	6.37	24	4.21	396.86	399.59	399.45	401.12	401.56	404.48	18 TO 19
18	17	18.88	0.37	0.37	0.83	0.31	0.31	5	5.0	6.60	2.03	0	2.03	22.15	1.31	18	4.45	400.39	401.23	402.33	402.33	404.48	405.23	19 TO 20
19	17	61.77	0.19	4.37	0.65	0.12	2.28	5	19.7	4.10	9.24	0	16.47	40.39	5.97	24	3.19	399.79	401.76	402.33	403.22	404.48	406.67	19 TO 21
20	19	74.18	0	4.18	0	0	2.16	0	19.5	4.10	8.79	0	16.02	15.09	5.10	24	0.44	401.96	402.29	404.30	404.68	406.67	408.24	21 TO 22
21	20	51.21	0.06	3.96	0.3	0.02	2.1	5	19.3	4.10	8.6	0	15.83	28.45	5.04	24	1.58	402.49	403.30	405.08	405.30	408.24	410.56	22 TO 23
22	21	66.33	0.08	3.9	0.59	0.05	2.08	5	19.1	4.10	8.57	0	15.80	40.15	5.91	24	3.15	403.50	405.59	405.33	407.02	410.56	410.65	23 TO 24
23	22	26.00	0.05	0.05	0.9	0.05	0.05	5	5.0	6.60	0.3	0	0.30	11.18	0.24	15	3.00	405.95	406.73	408.05	408.05	410.65	410.65	24 TO 25
24	22	146.80	0.09	3.77	0.67	0.06	1.99	5	18.6	4.20	8.29	0	15.52	13.33	4.94	24	0.35	405.79	406.30	408.05	408.74	410.65	415.63	24 TO 26
25	24	42.12	0.1	2.94	0.77	0.08	1.39	5	18.4	4.20	5.82	0	13.05	12.57	4.15	24	0.31	406.50	406.63	409.31	409.45	415.63	416.15	26 TO 27
26	25	181.43	0	2.84	0	0	1.31	0	17.7	4.30	5.6	7.23	12.83	12.34	4.08	24	0.30	406.83	407.37	409.58	410.17	416.15	411.85	27 TO 28
27	24	23.39	0	0.74	0	0	0.54	0	7.9	5.90	3.16	0	3.16	11.69	4.85	18	1.24	410.96	411.25	411.49	411.93	415.63	417.00	26 TO 26A
28	27	92.00	0	0.59	0	0	0.47	0	6.9	6.10	2.83	0	2.83	12.63	3.23	18	1.45	411.35	412.68	412.26	413.32	417.00	420.03	26A TO 35
29	28	203.24	0.59	0.59	0.79	0.47	0.47	5	5.0	6.60	3.08	0	3.08	7.44	3.77	18	0.50	412.88	413.90	413.63	414.57	420.03	418.07	35 TO 36
30	26	67.87	0.47	2.84	0.8	0.38	1.31	5	17.4	4.30	5.65	0	5.65	5.70	3.20	18	0.29	407.57	407.77	410.42	410.62	411.85	415.00	28 TO 29
31	30	64.40	0	1.65	0	0	0.43	0	16.5	4.40	1.88	0	1.88	5.70	1.67	18	0.30	409.97	410.16	410.97	411.00	415.00	416.00	29 TO 32
32	31	122.18	0.39	1.65	0.32	0.12	0.43	13.4	14.7	4.60	1.98	0	1.98	5.78	2.76	18	0.30	410.36	410.73	411.06	411.32	416.00	418.19	32 TO 33
33	32	96.57	1.26	1.26	0.24	0.3	0.3	12.8	12.8	4.90	1.49	0	1.49	5.75	2.73	18	0.30	410.93	411.22	411.45	411.74	418.19	415.35	33 TO 34
34	30	156.33	0.47	0.72	0.71	0.33	0.51	5	8.2	5.80	2.95	0	2.95	5.76	1.67	18	0.30	407.97	408.44	410.97	411.10	415.00	412.51	29 TO 30
35	34	26.64	0.25	0.25	0.71	0.18	0.18	7.7	7.7	5.90	1.05	0	1.05	3.54	0.85	15	0.30	408.64	408.72	411.15	411.16	412.51	412.57	30 TO 31
36	20	47.44	0.22	0.22	0.25	0.06	0.06	5	5.0	6.60	0.36	0	0.36	6.00	0.34	15	0.86	403.77	404.18	405.08	405.08	408.24	408.10	22 TO 22A
37	27	14.09	0.15	0.15	0.49	0.07	0.07	5	5.0	6.60	0.49	0	0.49	17.20	4.32	15	7.10	413.00	414.00	413.14	414.27	417.00	418.00	26A TO 26B

HYDRAULIC GRADELINE COMPUTATIONS

Line	PipeSize	Q	Inv ElevDn	HGLDn	DepthDn	AreaDn	VelocDn	Vel HdDn	EGLDn	SfDn	LineLength	Inv ElevUp	HGLUp	DepthUp	AreaUp	VelocUp	Vel HdUp	EGLUp	SfUp	SfAve	EnergyLoss	JLCCoeff	MinorLoss	Line ID
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)	
1	30	14.63	382.50	384.88	2.38	2.55	3.03	0.51	385.39	n/a	88.82	384	385.29 j	1.29**	2.55	5.74	0.51	385.98	n/a	n/a	-0.104	0.94	n/a	OUT TO 1
2	24	14.70	384.50	385.98	1.48	2.31	5.92	0.63	386.60	n/a	67.97	385.23	386.61 j	1.38**	2.31	6.36	0.63	387.55	n/a	n/a	0.007	2.25	n/a	1 TO 2
3	24	3.45	385.43	387.55	2.00	3.14	1.10	0.02	387.57	0.023	131.31	385.82	387.58	1.76	2.93	1.18	0.02	387.6	0.021	0.022	0.029	1	0.02	2 TO 3A
4	24	2.83	386.02	387.60	1.58	2.66	1.06	0.02	387.62	0.017	52.19	386.18	387.6	1.42	2.39	1.18	0.02	387.63	0.021	0.019	0.01	0.5	0.01	3A TO 4
5	24	2.69	386.38	387.62	1.24	2.04	1.32	0.03	387.64	0.029	73.35	386.6	387.63	1.03	1.64	1.65	0.04	387.67	0.051	0.04	0.029	1	0.04	4 TO 5
6	24	2.78	386.80	387.67	0.87	1.32	2.10	0.07	387.74	0.096	64.62	387	387.72	0.72	1.02	2.72	0.12	387.84	0.195	0.146	0.094	1	0.12	5 TO 6
7	18	12.34	386.99	387.90	0.91*	1.12	11.03	0.87	388.76	n/a	145	391.31	392.64	1.33**	1.65	7.46	0.87	394.22	n/a	n/a	3.873	1.5	n/a	2 TO 8
8	18	3.51	393.24	394.22	0.98	0.83	2.85	0.28	394.50	n/a	138.95	398.19	396.90 j	0.71**	0.83	4.23	0.28	399.27	n/a	n/a	4.401	0.5	n/a	8 TO 9
9	18	2.01	398.39	399.27	0.88	0.56	1.87	0.20	399.47	n/a	212.41	402	402.53 j	0.53**	0.56	3.56	0.2	402.78	n/a	n/a	3.068	1	n/a	9 TO 10
10	18	7.16	391.52	394.22	1.50	1.77	4.05	0.26	394.48	n/a	121.75	393.44	394.72	1.28	1.61	4.46	0.31	394.88	n/a	n/a	0.24	1	n/a	8 TO 11
11	18	7.23	393.64	394.88	1.24	1.57	4.62	0.33	395.22	n/a	77.2	394.03	395.23	1.2	1.52	4.76	0.35	395.55	n/a	n/a	0.017	1	n/a	11 TO 12
12	15	1.21	391.77	392.28	0.51*	0.47	2.56	0.10	392.38	n/a	28.05	391.85	392.36	0.51	0.47	2.56	0.1	392.37	n/a	n/a	-0.021	1	n/a	3A TO 3
13	30	20.57	382.50	384.88	2.38	4.82	4.26	0.28	385.16	0.218	43.24	382.63	384.97	2.34	4.78	4.31	0.29	385.26	0.217	0.218	0.094	0.4	0.12	OUT TO 15
14	30	20.91	382.73	385.08	2.35	4.79	4.36	0.30	385.38	0.225	278.86	383.57	385.69	2.12	4.44	4.71	0.35	386.03	0.246	0.235	0.656	0.88	0.3	15 TO 16
15	30	20.39	383.67	385.99	2.32	3.15	4.29	0.65	386.64	n/a	30.22	385.79	387.32 j	1.53**	3.15	6.47	0.65	388.25	n/a	n/a	0.679	1.5	n/a	16 TO 17
16	24	18.36	386.29	388.25	1.96	2.60	5.88	0.78	389.02	n/a	212.86	396.66	398.20 j	1.54**	2.6	7.07	0.78	399.45	n/a	n/a	9.178	0.5	n/a	17 TO 18
17	24	18.02	396.86	399.45	2.00	2.57	5.74	0.51	399.96	n/a	64.92	399.59	401.12 j	1.53**	2.57	7	0.76	402.33	n/a	n/a	1.156	2.17	n/a	18 TO 19
18	18	2.03	400.39	402.33	1.50	1.77	1.15	0.02	402.35	0.037	18.88	401.23	402.33	1.1	1.39	1.47	0.03	402.36	0.048	0.043	0.008	1	0.03	19 TO 20
19	24	16.47	399.79	402.33	2.00	2.46	5.24	0.43	402.76	n/a	61.77	401.76	403.22 j	1.46**	2.46	6.69	0.7	404.3	n/a	n/a	0.46	0.5	n/a	19 TO 21
20	24	16.02	401.96	404.30	2.00	3.14	5.10	0.40	404.71	0.502	74.18	402.29	404.68	2	3.14	5.1	0.4	405.08	0.502	0.502	0.372	0.99	0.4	21 TO 22
21	24	15.83	402.49	405.08	2.00	3.14	5.04	0.39	405.47	n/a	51.21	403.3	405.3	2	3.14	5.04	0.39	405.33	n/a	n/a	-0.172	0.5	n/a	22 TO 23
22	24	15.80	403.50	405.33	1.83	2.41	5.25	0.67	406.00	n/a	66.33	405.59	407.02 j	1.43**	2.41	6.56	0.67	408.05	n/a	n/a	1.026	1.64	n/a	23 TO 24
23	15	0.30	405.95	408.05	1.25	1.23	0.24	0.00	408.05	0.002	26	406.73	408.05	1.25	1.23	0.24	0	408.05	0.002	0.002	0.001	1	0	24 TO 25
24	24	15.52	405.79	408.05	2.00	3.14	4.94	0.38	408.43	0.471	146.8	406.3	408.74	2	3.14	4.94	0.38	409.12	0.471	0.471	0.692	1.5	0.57	24 TO 26
25	24	13.05	406.50	409.31	2.00	3.14	4.15	0.27	409.58	0.333	42.12	406.63	409.45	2	3.14	4.15	0.27	409.72	0.333	0.333	0.14	0.5	0.13	26 TO 27
26	24	12.83	406.83	409.58	2.00	3.14	4.09	0.26	409.84	0.322	181.43	407.37	410.17	2	3.14	4.08	0.26	410.43	0.322	0.322	0.584	0.97	0.25	27 TO 28
27	18	3.16	410.96	411.49	0.53*	0.56	5.62	0.26	411.75	n/a	23.39	411.25	411.93	0.68**	0.77	4.09	0.26	412.26	n/a	n/a	0.173	1	n/a	26 TO 26A
28	18	2.83	411.35	412.26	0.91	0.72	2.51	0.24	412.51	n/a	92	412.68	413.32 j	0.64**	0.72	3.95	0.24	413.63	n/a	n/a	0.812	1	n/a	26A TO 35
29	18	3.08	412.88	413.63	0.75	0.76	3.49	0.19	413.82	n/a	203.24	413.9	414.57	0.67**	0.76	4.06	0.26	414.9	n/a	n/a	0.748	1	n/a	35 TO 36
30	18	5.65	407.57	410.42	1.50	1.77	3.20	0.16	410.58	0.29	67.87	407.77	410.62	1.5	1.77	3.2	0.16	410.78	0.289	0.29	0.197	2.25	0.36	28 TO 29
31	18	1.88	409.97	410.97	1.00	1.26	1.50	0.03	411.01	0.052	64.4	410.16	411	0.84	1.02	1.84	0.05	411.06	0.088	0.07	0.045	1	0.05	29 TO 32
32	18	1.98	410.36	411.06	0.70	0.80	2.47	0.09	411.15	n/a	122.18	410.73	411.32	0.59	0.65	3.06	0.15	411.4	n/a	n/a	0.172	1.5	n/a	32 TO 33
33	18	1.49	410.93	411.45	0.52*	0.54	2.73	0.12	411.57	n/a	96.57	411.22	411.74	0.52	0.54	2.73	0.12	411.78	n/a	n/a	0.174	1	n/a	33 TO 34
34	18	2.95	407.97	410.97	1.50	1.77	1.67	0.04	411.02	0.079	156.33	408.44	411.1	1.5	1.77	1.67	0.04	411.14	0.079	0.079	0.124	1.19	0.05	29 TO 30
35	15	1.05	408.64	411.15	1.25	1.23	0.85	0.01	411.16	0.026	26.64	408.72	411.16	1.25	1.23	0.85	0.01	411.17	0.026	0.026	0.007	1	0.01	30 TO 31
36	15	0.36	403.77	405.08	1.25	1.23	0.30	0.00	405.08	0.003	47.44	404.18	405.08	0.9	0.94	0.39	0	405.08	0.004	0.004	0.002	1	0	22 TO 22A
37	15	0.49	413.00	413.14	0.14*	0.08	6.15	0.10	413.24	n/a	14.09	414	414.27	0.27**	0.2	2.48	0.1	414.38	n/a	n/a	1.031	1	n/a	26A TO 26B

Notes: * Normal depth assumed ** Critical depth.; j-Line contains hyd. jump

STORM SEWER INLET COMPUTATIONS

LineNo.	Inlet ID	Area	InletTime	Int.	RunoffCoeff.	Q = CIA	Q Carry-over	QCaptured	QBypassed	JunctType	CurbHeight	CurbLength	GrateArea	GrateLength	GrateWidth	GutterSlope	GutterWidth	CrossSlope, Sw	CrossSlope, Sx	LocalDepr.	InletDepth	BypassDepth	BypassSpread	GutterDepth	GutterSpread	BypassLine No.
		(ac)	(min)	(in/hr)	(C)	(cfs)	(cfs)	(cfs)	(cfs)		(in)	(ft)	(sqft)	(ft)	(ft)	(ft/ft)	(ft)	(ft/ft)	(ft/ft)	(in)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	STR 1 MH1	0.00	0.00	0.00	0.00	0.00	....	....	....	MH	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
2	STR 2 DI2C	0.71	5.00	6.62	0.82	3.85	0.00	3.85	0.00	Curb	6	6	....	....	....	Sag	2	0.08	0.02	2	0.6	n/a	n/a	0.43	15.6	Sag
3	STR 3A MH1	0.00	0.00	0.00	0.00	0.00	....	....	....	MH	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
4	STR 4 DI2B	0.07	5.00	6.62	0.84	0.39	0.00	0.39	0.00	Curb	6	6	....	....	....	0.025	2	0.08	0.02	2	0.3	0	0	0.13	1.66	3
5	STR 5 MH1	0.00	0.00	0.00	0.00	0.00	....	....	....	MH	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
6	STR 6 DI7	2.85	19.60	4.06	0.24	2.78	0.00	2.78	0.00	Dp-Grate	....	....	5.33	3.5	3.5	Sag	2	0.045	0.045	....	0.16	n/a	n/a	0.16	10.76	Sag
7	STR 8 DI2B	0.66	5.00	6.62	0.77	3.36	0.00	3.36	0.00	Curb	6	8	....	....	....	Sag	2	0.08	0.02	2	0.54	n/a	n/a	0.37	12.56	Sag
8	STR 9 DI2B	0.39	5.00	6.62	0.77	1.99	0.00	1.99	0.00	Curb	6	8	....	....	....	Sag	2	0.08	0.02	2	0.46	n/a	n/a	0.3	8.84	Sag
9	STR 10 DI2B	0.39	5.00	6.62	0.78	2.01	0.00	2.01	0.00	Curb	6	8	....	....	....	Sag	2	0.08	0.02	2	0.47	n/a	n/a	0.3	8.92	Sag
10	STR 11 MH1	0.00	0.00	0.00	0.00	0.00	....	....	....	MH	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
11	STR 12 DI7	5.50	13.10	4.87	0.27	7.23	0.00	7.23	0.00	Dp-Grate	....	....	5.33	3.5	3.5	Sag	2	0.045	0.045	....	0.31	n/a	n/a	0.31	17.25	Sag
12	STR 3 DI2C	0.22	5.00	6.62	0.83	1.21	0.00	1.21	0.00	Curb	4	4	....	....	....	Sag	2	0.08	0.02	0	0.29	n/a	n/a	0.29	8.41	Sag
13	STR 15 MH1	0.00	0.00	0.00	0.00	0.00	....	....	....	MH	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
14	STR 16 DI7	0.24	5.00	6.62	0.59	0.94	0.00	0.94	0.00	Dp-Grate	....	....	5.33	3.5	3.5	Sag	2	0.045	0.045	....	0.08	n/a	n/a	0.08	7.02	Sag
15	STR 17 DI2B	0.71	5.40	6.50	0.78	3.60	0.00	3.60	0.00	Curb	6	10	....	....	....	Sag	2	0.08	0.02	2	0.52	n/a	n/a	0.36	11.82	Sag
16	STR 18 DI2B	0.13	5.00	6.62	0.76	0.65	0.06	0.65	0.07	Curb	6	6	....	....	....	0.045	2	0.08	0.02	2	0.32	0.06	0.78	0.15	1.87	Offsite
17	STR 19 DI2B	0.13	5.00	6.62	0.68	0.58	0.10	0.62	0.06	Curb	6	6	....	....	....	0.045	2	0.08	0.02	2	0.31	0.06	0.74	0.15	1.84	16
18	STR 20 DI2B	0.37	5.00	6.62	0.83	2.03	0.00	2.03	0.00	Curb	6	6	....	....	....	Sag	2	0.08	0.02	2	0.49	n/a	n/a	0.32	10.18	Sag
19	STR 21 DI2B	0.19	5.00	6.62	0.65	0.82	0.00	0.72	0.10	Curb	6	6	....	....	....	0.045	2	0.08	0.02	2	0.32	0.07	0.9	0.16	1.96	17
20	STR 22 MH1	0.00	0.00	0.00	0.00	0.00	....	....	....	MH	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
21	STR 23 DI7	0.06	5.00	6.62	0.30	0.12	0.00	0.12	0.00	Dp-Grate	....	....	5.33	3.5	3.5	Sag	2	0.02	0.02	....	0.02	n/a	n/a	0.02	5.5	Sag
22	STR 24 DI2B	0.08	5.00	6.62	0.59	0.31	0.01	0.32	0.00	Curb	6	6	....	....	....	0.048	2	0.08	0.02	2	0.28	0	0	0.11	1.36	Offsite
23	STR 25 DI2B	0.05	5.00	6.62	0.90	0.30	0.00	0.30	0.00	Curb	6	6	....	....	....	0.048	2	0.08	0.02	2	0.27	0	0	0.11	1.33	Offsite
24	STR 26 DI2B	0.09	5.00	6.62	0.67	0.40	0.00	0.39	0.01	Curb	6	6	....	....	....	0.048	2	0.08	0.02	2	0.29	0.02	0.29	0.12	1.48	22
25	STR 27 DI2B	0.10	5.00	6.62	0.77	0.51	0.00	0.51	0.00	Curb	6	6	....	....	....	Sag	2	0.08	0.02	2	0.37	n/a	n/a	0.2	4.05	Sag
26	STR 28 MH1	0.00	0.00	0.00	0.00	7.23	....	....	....	MH	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
27	STR 26A MH1	0.00	0.00	0.00	0.00	0.00	....	....	....	MH	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
28	STR 35 MH1	0.00	0.00	0.00	0.00	0.00	....	....	....	MH	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
29	STR 36 DI2B	0.59	5.00	6.62	0.79	3.08	0.00	3.08	0.00	Curb	6	8	....	....	....	Sag	2	0.08	0.02	2	0.52	n/a	n/a	0.36	11.86	Sag
30	STR 29 DI2B	0.47	5.00	6.62	0.80	2.49	0.00	2.00	0.49	Curb	6	8	....	....	....	0.027	2	0.08	0.02	2	0.41	0.14	1.78	0.25	6.31	34
31	STR 32 MH1	0.00	0.00	0.00	0.00	0.00	....	....	....	MH	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
32	STR 33 DI7	0.39	13.40	4.82	0.32	0.60	0.00	0.60	0.00	Dp-Grate	....	....	5.33	3.5	3.5	Sag	2	0.045	0.045	....

NAD83

STR 34
DA= 1.26 AC

STR 33
DA= 0.39 AC

STR 29
DA= 0.23 AC

STR 30
DA= 0.47 AC

STR 31
DA= 0.47 AC

STR 36
DA= 0.59 AC

STR 26B
DA= 0.15 AC

STR 26
DA= 0.09 AC

STR 27
DA= 0.10 AC

STR 24
DA= 0.08 AC

STR 25
DA= 0.05 AC

CULVERT 1
DA= 0.60 AC

PROP. STOP SIGN & STOP BAR

STR 23
DA= 0.06 AC

PROP. STOP SIGN & STOP BAR

STR 21
DA= 0.19 AC

US ROUTE 33
JEFFERSON HIGHWAY
(PUBLIC STREET)

PINE RIDGE DRIVE
(PUBLIC STREET)
(50' R/W)

PROP. STOP SIGN & STOP BAR

STR 6
DA= 2.85 AC

STR 4
DA= 0.07 AC

STR 3
DA= 0.18 AC

STR 2
DA= 0.71 AC

STR 12
DA= 0.50 AC

STR 8
DA= 0.66 AC

STR 9
DA= 0.39 AC

STR 10
DA= 0.39 AC

STR 22A
DA= 0.22 AC

STR 19
DA= 0.13 AC

STR 18
DA= 0.18 AC

STR 20
DA= 0.37 AC

STR 17
DA= 0.71 AC

STR 16
DA= 0.24 AC

CHAIN LINK FENCE

GRAVEL DIAPHRAGM

PROPOSED STORMWATER MANAGEMENT FACILITY

0 60 120 180

—— › — › —— –DENOTES TIME OF CONCENTRATION FLOW PATH

REVISION BLOCK

DATE	DESCRIPTION	BY
2/13/26	PER TOWN COMMENTS	DCW
4/17/26	PER DEQ COMMENTS	SLB
4/29/26	PER TOWN AND VDOT COMMENTS	DCW
5/28/26	PER VDOT COMMENTS	DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO.
036528
5-28-26
PROFESSIONAL ENGINEER

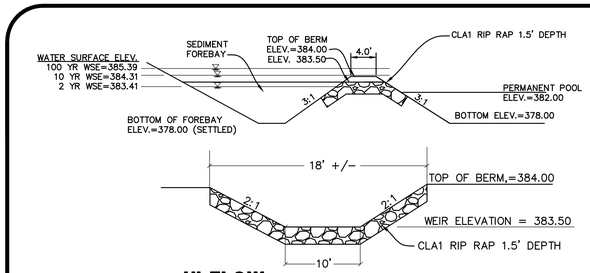
W.W. WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

STORM SEWER DRAINAGE AREA MAP

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

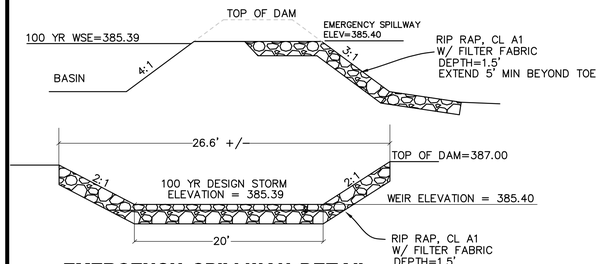
DATE:	AUGUST 14, 2025
SCALE:	1" = 60'
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D003UCP
DRAWING NO:	25-D-003

SHEET NO. 21 OF 50 SHEETS



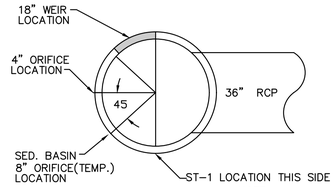
HI-FLOW FOREBAY CONTROL WEIR C DETAIL

NOT TO SCALE



EMERGENCY SPILLWAY DETAIL

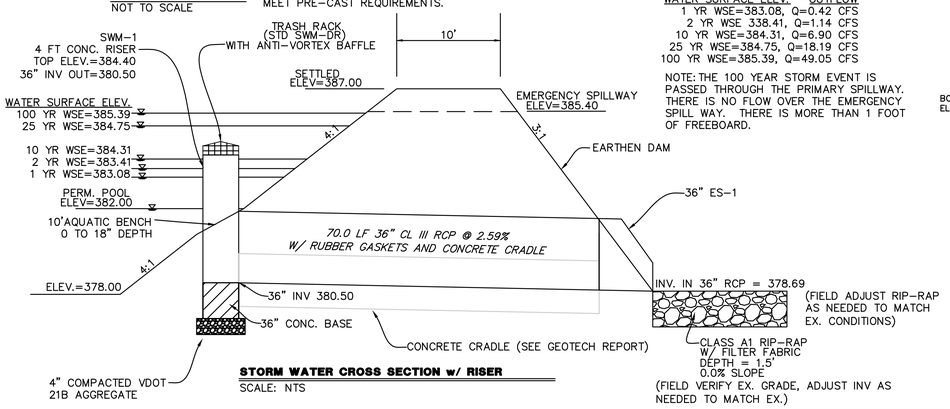
NOT TO SCALE



PLAN VIEW RISER DETAIL

NOT TO SCALE

NOTE:
PRE-CAST MANUFACTURER TO VERIFY OPENING ORIENTATIONS MEET PRE-CAST REQUIREMENTS.



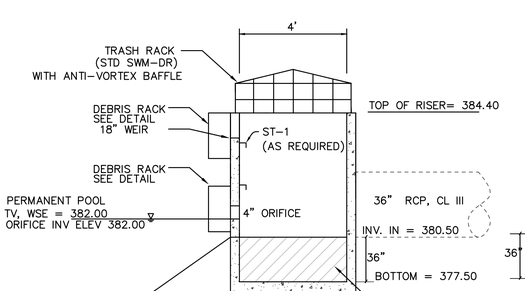
STORM WATER CROSS SECTION w/ RISER

SCALE: NTS

WATER SURFACE ELEV.	OUTFLOW
1 YR WSE=383.08,	Q=0.42 CFS
2 YR WSE 338.41,	Q=1.14 CFS
10 YR WSE=384.31,	Q=6.90 CFS
25 YR WSE=384.75,	Q=18.19 CFS
100 YR WSE=385.39,	Q=49.05 CFS

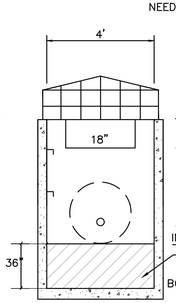
NOTE: THE 100 YEAR STORM EVENT IS PASSED THROUGH THE PRIMARY SPILLWAY. THERE IS NO FLOW OVER THE EMERGENCY SPILL WAY. THERE IS MORE THAN 1 FOOT OF FREEBOARD.

NOTE: PROVIDE TEMP. 8 INCH ORIFICE AT INV=382.00. FOR USE AS TEMP. SEDIMENT BASIN. SEE E&S DETAIL.



SIDE VIEW RISER DETAIL

NOT TO SCALE

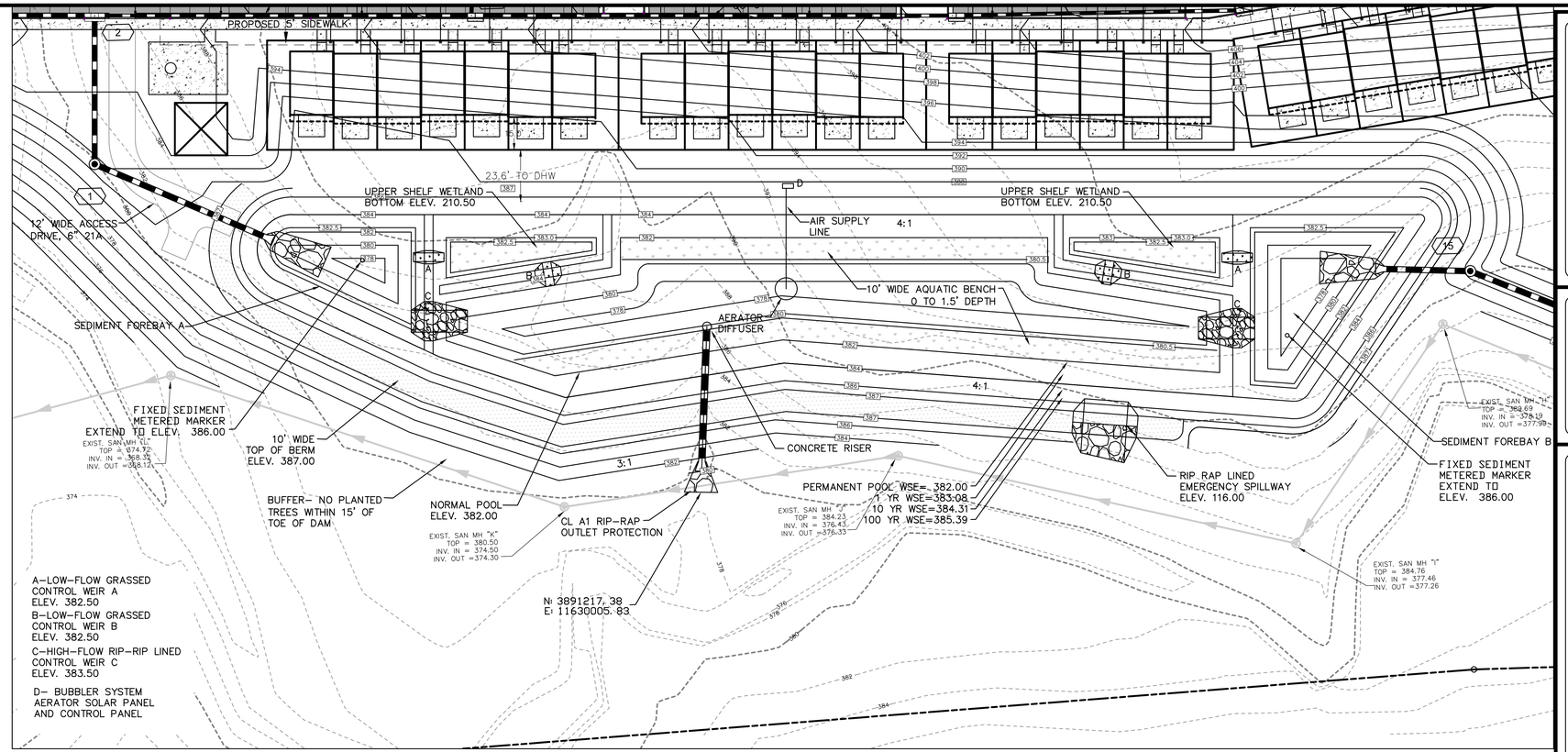


NOTE: PROVIDE TEMP. SEAL OFF ON 18" WEIR FOR USE AS TEMP. SEDIMENT BASIN.

FRONT VIEW RISER DETAIL

NOT TO SCALE

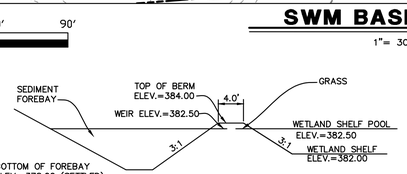
NOTE:
PRE-CAST MANUFACTURER TO VERIFY ANTI-FLOTATION CALCULATIONS AND MODIFY STRUCTURE AS NECESSARY.



SWM BASIN PLAN VIEW

1"= 30' (HORIZONTAL)

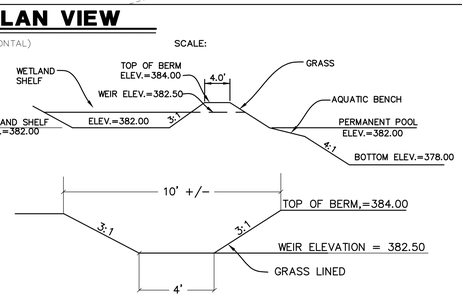
0' 30' 60' 90'



LOW-FLOW A FOREBAY CONTROL WEIR DETAIL

NOT TO SCALE

SCALE:



LOW-FLOW B WETLAND SHELF CONTROL WEIR DETAIL

NOT TO SCALE

DAM SPECIFICATIONS

1. DAM TO BE CONSTRUCTED OF COHESIVE MATERIALS. DAM MATERIAL TO BE APPROVED BY A SOILS ENGINEER PRIOR TO PLACEMENT.
2. EMBANKMENT MATERIAL SHALL BE COMPACTED TO 95% OF STANDARD PROCTOR AT OPTIMUM UP TO 3% ABOVE OPTIMUM MOISTURE CONTENT IN 8" LIFTS. THE FILL WILL BE FREE OF TOP SOIL, ORGANIC MATTER, & STONES LARGER THAN 6".
3. ALL AREAS BENEATH THE DAM SHALL BE CLEARED OF ALL ROOTS, STUMPS AND TOP SOIL BEFORE PLACING FILL.
4. SUFFICIENT TOP SOIL TO BE STOCK PILED TO PROVIDE A MIN. OF 6" COVER OVER THE EMBANKMENT.
5. THE DAM SHALL BE SEEDED, LIMED, AND FERTILIZED IMMEDIATELY AFTER FINAL GRADE IS ESTABLISHED AND BEFORE THE TEMPORARY BASIN IS MADE OPERATIONAL.
6. ONCE SITE IS STABILIZED REMOVE E&S CONTROLS.
7. A CUTOFF TRENCH SHALL BE INSTALLED BELOW THE DAM, IN ACCORDANCE WITH THE VIRGINIA STORMWATER MANAGMENT HANBOOK, STANDARD P-SUP-01. THE CUTOFF TRENCH GEOMETRY, MATERIALS AND INSTALLATION SHALL BE INSPECTED AND APPROVED BY A GEOTECHNICAL ENGINEER.
8. SEE GEOTECHNICAL RECOMMENDATIONS.

NOTE:
A CUT OFF TRENCH, ANTI-SEEP COLLAR, CONCRETE CRADLE AND CLAY LINER ARE REQUIRED PER GEOTECHNICAL ENGINEERING REPORT BY ECS MID-ATLANTIC, LLC. SEE NOTES SHEET 17.

NOTE: BUBBLER SYSTEM-POND AERATOR PACKAGE
CONTRACTOR SHALL SUPPLY AND INSTALL 1-COMPLETE AERATION SYSTEM PACKAGE, CONTROL PANEL, COMPRESSOR, DIFFUSERS, SELF WEIGHTED AIRLINE, BACKUP BATTERY, MOUNTING POLES AND HARDWARE AND ALL NECESSARY APPURTENANCES.
AERATOR SHALL BE AIRMAX SERIES, MODEL SW40, WITH 2 DIFFUSERS, (2)100 FT ROLLS OF 5/8 INCH AIRLINE, PROAIR 2 (X2) WEIGHTED DIFFUSERS.
AS SUPPLIED BY "THE POND GUY". ALL EQUIPMENT SHALL BE WEATHER PROOF. SEE DETAILS SHEET 15A.

STORMWATER NOTES

THE CONTRACTOR SHALL UTILIZE LASER TECHNOLOGY TO INSTALL THE PROPOSED STORM SEWER TO ENSURE CORRECT SLOPES.

A MINIMUM OF ONE FOOT VERTICAL & 5 FEET HORIZONTAL CLEARANCE SHALL BE PROVIDED BETWEEN STORM SEWERS AND OTHER UNDERGROUND UTILITIES.

THERE ARE TO BE NO LIFT HOLES IN THE PIPE BARREL OR RISER.

NOTE:
PIPE BARREL SHALL BE INSTALLED WITH RUBBER GASKETS AND CONCRETE CRADLE.

NOTE:
RISER STRUCTURE SHALL COMPLY WITH VDOT STANDARD SWM-1 AND SWM-DR.

NOTE: BASIN TO BE USED AS TEMPORARY SEDIMENT BASIN. PROVIDE TEMP. SEAL OFF FOR 6" ORIFICE PIPE. PROVIDE AN 8 INCH ORIFICE FOR SED. BASIN DEWATERING DEVISE. FOR USE AS TEMPORARY SEDIMENT BASIN. SEE E&S DETAIL.

CONVERSION OF BASIN FOR USE AS TEMP. SED. BASIN
All SWM Basins designated for use as temporary sediment basins shall be constructed during the initial phase of earth moving activities or as specified by the plans or directed by the Engineer. During project construction, the SWM-1 Drainage Structure (or other control structure) shall be modified in accordance with the Standard Drawings or plan details in order to provide a temporary sediment basin with both a "wet" storage volume (permanent pool) and a "dry" storage volume. Sediment accumulated in the basin shall be removed when the volume of the "wet" storage (permanent pool) has been reduced by 50%. Sediment shall be disposed of in accordance with Section 106.04 of the applicable VDOT Road and Bridge Specifications. When project construction is complete to a stage where no additional sediment from the project is expected to enter the basin, as determined by the Engineer, the basin shall be cleaned out and restored to the original design elevations, the area stabilized and all temporary modifications to the SWM-1 Drainage Structure (or other control structure) removed.

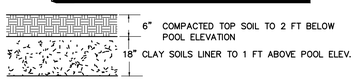
PONDSCAPING

THE AQUATIC BENCH AND WETLAND SHELF SHALL BE PLANTED WITH VEGETATION AS SHOWN. THE CONTRACTOR SHALL CHOOSE THE VEGETATION FROM THE LISTS BELOW IN ACCORDANCE WITH WHAT SPECIES ARE AVAILABLE.

COMMON NAME	SIZE	SPACING
PICKEREL WEED	INDIVIDUAL CELL-PACK	3' O.C.
LIZARDS TAIL	INDIVIDUAL CELL-PACK	3' O.C.
ARROW-ARUM	INDIVIDUAL CELL-PACK	3' O.C.
WOOLGRASS BULLRUSH	INDIVIDUAL CELL-PACK	3' O.C.
CANADA RUSH	INDIVIDUAL CELL-PACK	4' O.C.

1. THE EMERGENT WETLANDS PLANTS ARE TO SELECTED FROM THE LIST ABOVE
2. A MINIMUM OF 3 DIFFERENT PLANT SPECIES SHALL BE PLANTED
3. THE LANDSCAPE CONTRACTOR SHALL VERIFY THE SUITABILITY OF EACH PLANT SPECIES FOR THE LOCATION AND DEPTH PLANTED
4. EMERGENT PLANTS MAY BE TRANSPLANTED FROM EARLY APRIL TO MID-JUNE
5. THE WETLANDS SHALL BE FLOODED IMMEDIATELY FOLLOWING PLANTING. DORMANT RIZOMES MAY BE PLANTED IN FALL OR WINTER

NOTE:
THE MINIMUM SETTLING ALLOWANCE OF THE POND DAM IS 5% WHEN COMPACTION EQUALS OR EXCEEDS 95%.



POND BOTTOM DETAIL

NOT TO SCALE

NOTE:
SEE GEOTECHNICAL REPORT FOR POND LINER AND DAM SPECIFICATIONS.

REVISION BLOCK

DATE	DESCRIPTION	BY
2/13/26	PER TOWN COMMENTS	DCW
4/17/26	PER DEQ COMMENTS	SLB
4/29/26	PER TOWN AND VDOT COMMENTS	DCW
5/28/26	PER VDOT COMMENTS	DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO. 036528
5-28-26
PROFESSIONAL ENGINEER

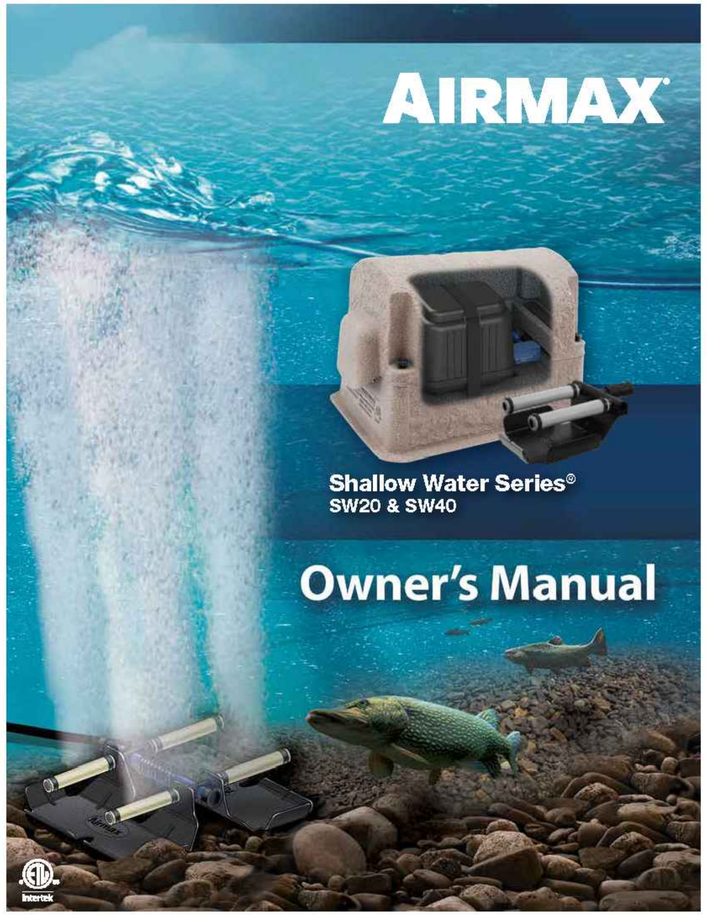
W.W. WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1808

SWM BMP PLAN & DETAILS

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	1"=30'
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D003VCP
DRAWING NO:	25-D-003

SHEET NO. 22
OF 50 SHEETS



Airmax Composite Cabinet



1. Enhanced Cooling System tunnels air flow evenly through the cabinet with a high flow cooling fan
2. Composite cabinet with removable top protects components while providing easy access
3. Elevated base protects against damaging flood water
4. Pre-wired electrical box simplifies electrical connections for easy setup
5. Dual Air Filters – High density cabinet intake pre-filter and compressor air filter maximize the life of the system
6. Cabinet Security Bolt Kit protects your investment from unwanted guests (sold separately)

Cabinet Size: 23"L x 17"W x 15"H

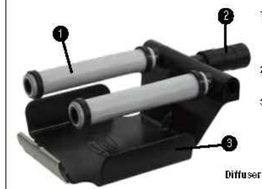
SilentAir™ LR Series Linear Diaphragm Compressor



1. High efficiency, linear diaphragm compressor
2. Air Filter maximizes the life of the compressor
3. Rubber compressor mounts reduce noise and vibration for silent operation
4. Airflow manifold simplifies airflow management to individual diffusers
5. Heat-resistant 36" flex tube protects against high temperatures of the compressor
6. Airline quick disconnects for easy system removal and storage

Note: These systems are designed for ponds up to 6' deep. Operating a shallow water system at depths greater than 6' will void warranty and cause premature failures.

ProAir® 2 Weighted Diffuser



1. PTFE non-stick 6" membrane diffuser sticks provides the synergy of air stones while being virtually maintenance-free
2. Check valve prevents back pressure to compressor
3. Weighted design keeps diffuser submerged while maintaining an upright position during installation

Diffuser Size: 14.75"L x 8"W x 3.75"H

EasySet™ Airline



- Self-Weighted Airline: 3/8" 100' Roll (#510118), 5/8" 100' Roll (#510119): Lead-free weighted airline is made of durable PVC composite. Fish hook resistant and kink-free. Use from pond's edge to diffuser.
- Direct Burial Airline: 5/8" 100' Roll (#510120) Flexible, yet kink-free. Bury from cabinet and compressor to pond's edge when placing the cabinet and compressor away from the pond.

*Depending on the type of installation, additional connectorids may be required. See section 6 for connectorids.

BUBBLER SYSTEM DETAILS

WET POND LEVEL 2

7.0 Operations and Maintenance Considerations

7.1 Maintenance Agreements

The Virginia Erosion and Stormwater Management Regulation (9VAC25-875-535) includes requirements for long-term maintenance of stormwater management facilities. To ensure successful implementation of wet ponds, long-term maintenance and operation should consider the following, to include inspection requirements, compliance procedures if maintenance is neglected, notification of the local program upon transfer of ownership, and right-of-entry for local program personnel.

- Restrictive covenants or other mechanisms enforceable by the VESMP Authority should be in place to help ensure that wet ponds are maintained as well as to pass the knowledge along to any subsequent property owners.
- Access to wet ponds should be covered by a drainage easement to allow access by the VESMP Authority to conduct inspections and perform maintenance when necessary.
- All wet ponds should include a long-term Maintenance Agreement consistent with the provisions of the Virginia Erosion and Stormwater Management Regulation and should include the recommended maintenance tasks and a copy of an annual inspection checklist.
- The Maintenance Agreement should also include contact information for owners to obtain local or state assistance to solve common nuisance problems such as mosquito control, geese, invasive plants, vegetative management, and beaver removal.

7.2 First Year Maintenance Operations

Successful establishment of wet ponds requires that the following tasks be undertaken during the first year following construction.

Initial inspections: For the first 6 months following construction, the site should be inspected after large storm events.

Planting of Aquatic Benches: The aquatic benches should be planted with emergent wetland species, following the planting recommendations contained in Support Component: P-SUP-05 Landscaping and Stormwater BMP P-BAS-01 Constructed Wetlands. Native plant species are always preferred.

Spot Reseeding: Inspectors should look for bare or eroding areas in the contributing drainage area or around the pond buffer and make sure they are immediately stabilized with grass cover.

Watering: Trees planted in the pond buffer may need to be watered during the first growing season. In general, consider watering every 3 days for the first month, and then weekly during the remainder of the first growing season (April through October) depending on rainfall. Lack of maintenance during the initial growing season may lead to costly tree replacement projects.

7.3 Maintenance Inspections

Maintenance of a wet pond is driven by annual inspections that evaluate the condition and performance of the pond including the following:

- Measure sediment accumulation levels in the forebay.
- Monitor the growth of wetland plants, trees, and shrubs planted. Record the species and their approximate coverage and note the presence of any invasive plant species.
- Inspect the condition of stormwater inlets to the pond for material damage, erosion, or undercutting.
- Inspect the banks of upstream and downstream channels for evidence of sloughing, animal burrows, boggy areas, woody growth, or gully erosion that may undermine embankment integrity.
- Check for the presence of trees or woody growth, on the face, top, downstream slope or within 25 feet of the toe of the embankment, or that blocks inflow and orifices that compromises the integrity of the embankment.
- Inspect the pond outfall channel for erosion, undercutting, rip-rap displacement, woody growth, and other issues.
- Inspect the condition of the principal spillway and riser for evidence of spalling, joint failure, leakage, corrosion, and other issues.
- Inspect the condition of all trash racks, reverse-sloped pipes, or flashboard risers for evidence of clogging, leakage, debris accumulation, and other issues.
- Inspect maintenance access to ensure it is free of woody vegetation, and check to see whether valves, manholes, and locks can be opened and operated.
- Inspect internal and external side slopes of the pond for evidence of sparse vegetative cover, erosion, or slumping, and make needed repairs immediately.
- Inspection results will trigger specific maintenance tasks. Example maintenance inspection checklists for wet ponds are included in Chapter 10 of the Virginia Stormwater Management Handbook

7.4 Common Ongoing Maintenance Tasks

Maintenance is needed to operate stormwater ponds as designed in the long term. Wet ponds normally carry fewer routine maintenance requirements than other stormwater control measures. Stormwater pond maintenance activities vary regarding the level of effort and expertise required to perform them. Routine stormwater pond maintenance, such as mowing and removing debris and trash, is needed several times each year (See Table P-BAS-02-12). Mowing should include removal of woody growth on or below the dam to prevent impacts to the integrity of the dam from their root systems. More significant maintenance (e.g., removing accumulated sediment) is needed less frequently but requires more skilled labor and special equipment. Critical structural features (e.g., embankments and risers) need to be inspected and repaired by a qualified professional (e.g., a geotechnical or structural engineer) who has experience in the construction, inspection, and repair of these features.

The maintenance plan should clearly outline how vegetation in the pond and its buffer will be managed or harvested in the future. Periodic mowing of the stormwater buffer is only required along maintenance rights-of-way and the embankment. The remaining upland buffer can be managed as a meadow (mowing every other year) or forest. An invasive vegetation management plan should be included within the maintenance plan. The maintenance plan should schedule a shoreline cleanup at least once a year to remove trash and floatables.

Table P-BAS-02-12 Typical Wet Pond Maintenance Tasks and Frequency

Maintenance Items	Frequency
• Mowing – twice a year • Remove debris and blockages • Repair undercut, eroded, and bare soil areas	Quarterly or after major storms (>1 inch of rainfall)
• Mowing, including removal of woody growth	Twice a year
• Shoreline cleanup to remove trash, debris and floatables • A full maintenance inspection • Open up the riser to access and test the valves • Repair broken mechanical components if needed	Annually
• Pond buffer and aquatic bench reinforcement plantings	One time (during the second year following construction)
• Forebay sediment removal	Every 5 to 7 years
• Repair pipes, the riser and spillway as needed	From 5 to 25 years

7.5 Sediment Removal

Frequent sediment removal from the forebay is essential to maintaining the function and performance of a wet pond. For planning purposes, maintenance plans should anticipate cleanouts approximately every 5 to 7 years or when inspections indicate that 50 percent of forebay sediment storage capacity has been filled. (Absent an upstream eroding channel or other source of sediment, the frequency of sediment removal should decrease as the drainage area stabilizes.) The designer should also check to see whether removed sediments can be spoiled onsite or must be hauled away. Sediments excavated from wet ponds are not usually considered toxic or hazardous. They can be safely disposed of by either land application or landfilling. Sediment testing may be needed prior to sediment disposal if the wet pond serves a hot spot land use.

REVISION BLOCK			
DATE	DESCRIPTION	BY	
2/13/26	PER TOWN COMMENTS	DCW	
4/17/26	PER DEQ COMMENTS	SLB	
4/29/26	PER TOWN AND VDOT COMMENTS	DCW	
5/26/26	PER VDOT COMMENTS	DCW	

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO. 036528
5-28-26
PROFESSIONAL ENGINEER

W.W. WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1208

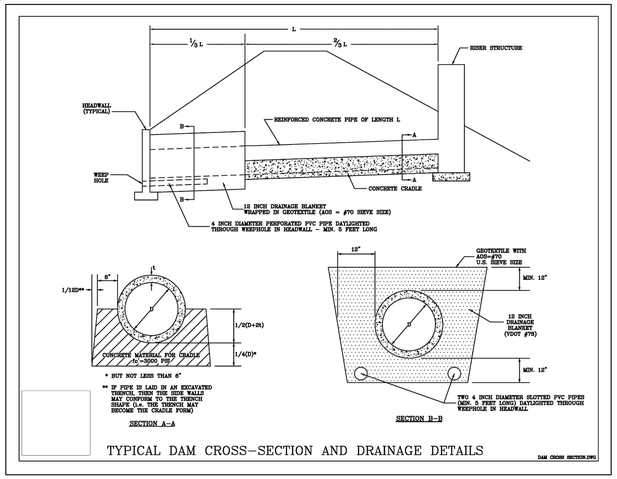
SWM BMP BUBBLER SYSTEM DETAILS & NOTES

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE: AUGUST 14, 2025
SCALE: N.T.S.
DESIGNED BY: DCW
DRAWN BY: SLB
CHECKED BY: DCW

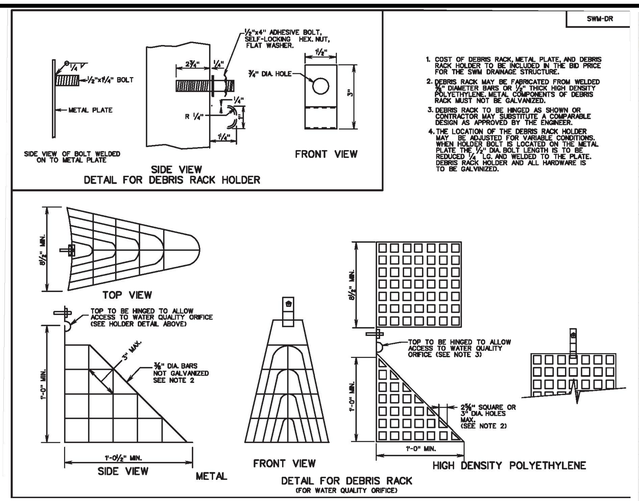
ACAD FILE: 25D003WCP
DRAWING NO: 25-D-003

SHEET NO. 23
OF 50 SHEETS



ANTI-SEEP CONCRETE CRADLE

NOT TO SCALE



ORIFICE TRASH RACK DETAIL

NOT TO SCALE

ACD						SLB 7/30/2025	
Pond Riser - Uplift Calculations							
Assume flooded condition with riser empty.							
	MIN DIMENSIONS						
Riser Inside Width	6 ft						
Riser Inside Length	6 ft						
Riser Area	36 sf						
Wall Thickness	6 in						
Inside Depth	5 ft						
Base overhang	12 in						
	1.00 ft						
Base thickness	42.00 in						
	3.50 ft						
Riser Outside Width	84 in						
Riser Outside Length	84 in						
Base Outside Width	108 in						
Base Outside Length	108 in						
Wt of Water	62.4 lbs/cf						
Wt. Concrete	150 lbs/cf						
Riser Inside Volume	= INSIDE (L X W) X Depth					180.0	cf
Riser Outside Volume	= OUTSIDE (L X W) X Depth					245.0	cf
Base Volume	= (L X W) x Thickness					283.5	cf
Riser Wall Volume	= Outside Volume - Inside Volume					65.0	cf
UPWARD FORCE =	(Riser Vol. X Wt Water) + (Base Vol.X Wt Water)						
	=(245 cf) X (62.4) + (171.5 cf) X (62.4) =					**32,978**	lbs
DOWNWARD FORCE = (The sum of)							
Riser Wt.= (Riser Wall Vol. X 150 #/cf)						9,750	
Base Wt = (Base Vol. X 150 #/cf).						42,525	
Total						**52,275**	lbs
NET DOWNWARD FORCE =		52,275	-	32,978	=	19,297	lbs
Safety Factor =	52,275	/	32,978	=	**1.6**	**OK**	

- Liners: When a stormwater pond is located over highly permeable soils or fractured bedrock, a liner may be needed to sustain a permanent pool of water. If geotechnical tests confirm the need for a liner, acceptable options include the following: (1) a clay liner following the specifications outlined in Table P-BAS-02-11; (2) a 30 mil poly-liner; (3) bentonite; (4) use of chemical additives; or (5) an engineering design as approved on a case-by-case basis by the local review authority. A clay liner should have a minimum thickness of 12 inches, with a minimum 12 inches for each foot the groundwater table to above the normal pool elevation of the pond and have an additional 12-inch layer of compacted soil above it. Clay liners must meet the specifications outlined in Table P-BAS-02-11. Other synthetic liners can be used if the designer can supply supporting documentation that the material will achieve the required performance.

Table P-BAS-02-11 Clay Liner Specifications

Property	Test Method	Unit	Specification
Permeability	ASTM D-2434	Cm/sec	1 x 10-6
Plasticity Index of Clay	ASTM D-423/424	%	Not less than 15
Liquid Limit of Clay	ASTM D-2216	%	Not less than 30
Clay Particles Passing	ASTM D-422	%	Not less than 30
Clay Compaction	ASTM D-2216	%	95% of standard proctor density

Source: DCR 1999

SWM CONST. NOTES: ECS GEOTECH REPORT NO. 05:8273

The facility contains Clayey SAND (SC) and Fat CLAY (CH) material at the invert elevations. It is understood that the pond is to be designed as a wet pond. To reduce seepage losses, we recommend use of a clay liner to limit infiltration into the underlying soil to maintain the permanent pool water elevation. If utilized, the soil liner should consist of at least 18 inches of Clay soil classified as CL or CH with a permeability of 10^{-5} cm/sec or lower. The liner should be installed up to 1 foot above the maximum storage elevation. Soils suitable for use as Soil Liner Fill are available on site but would require selective mining.

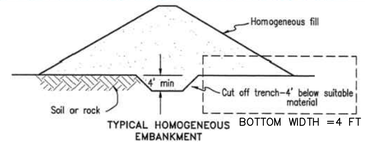
The embankment section, including the backfill of the conduits through the embankment, should be constructed as a homogenous section. The embankment materials should consist of ML, CL, SM, or SC having at least 35% fines and plasticity index of at least 8. There is onsite Clayey SAND (SC), Silty SAND (SM), and Lean CLAY (CL) materials that meet this criterion. The principal spillway should consist of a reinforced concrete pipe (RCP). The RCP principal spillway pipe should be installed during the construction of the embankment, not cutting down and installing after the embankment has been constructed.

The SWM dams should be provided with a key trench (cutoff) which is backfilled with Dam Embankment Fill. For design purposes, the key trench can be taken as 2 feet deep (below the bottom of the embankment) and 6 feet wide. The key trench should extend the full length of those portions of the dam embankment where existing grade in the center of the dam cross section is at or below the planned normal pool.

In order to control seepage along the discharge conduit, a concrete cradle along the upstream two-thirds of the pipe length should be provided. The concrete cradle should extend at least ¼ of the pipe diameter below the pipe and should extend up to the midpoint of the pipe diameter. The remaining one-third downstream section of the pipe should be completely surrounded with a seepage control blanket consisting of open coarse graded aggregate (VDOT No. 78). The VDOT No. 78 aggregate should extend to at least 1 foot above the pipe and below the pipe. The VDOT No. 78 stone should be completely wrapped with a suitable nonwoven geotextile such as Mirafi 140N or equivalent. The geotextile should also extend at least 3 feet laterally underneath the concrete cradle to provide a positive transition between the cradle and the seepage control blanket. If the outlet remains underground to connect to an existing structure, the entire length of the pipe should have concrete cradle and the drainage blanket eliminated.

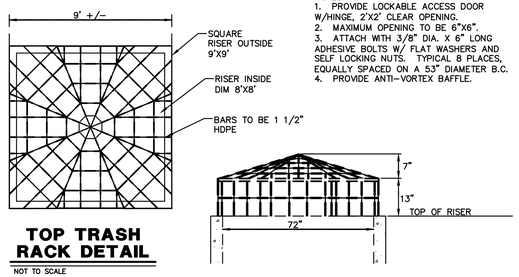
Materials placed within the embankment should be placed in 8-inch loose lifts and compacted to 95% of the maximum dry density as determined by the Standard Proctor (ASTM D 698 or VTM-1). For stormwater facilities, it is preferable that the materials be placed on the wet side of optimum.

Figure P-SUP-01-1 Homogenous Embankments w/Seepage Controls



NOTE: CONTRACTOR MAY SUBSTITUTE AN APPROVED EQUAL. APPROVED BY OWNER AND ENGINEER.

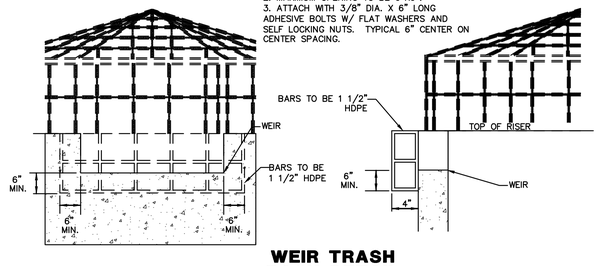
NOTES:
1. PROVIDE LOCKABLE ACCESS DOOR W/HINGE, 2'X2' CLEAR OPENING.
2. MAXIMUM OPENING TO BE 6"X6".
3. ATTACH WITH 3/8" DIA. X 6" LONG ADHESIVE BOLTS W/ FLAT WASHERS AND SELF LOCKING NUTS. TYPICAL 8 PLACES, EQUALLY SPACED ON A 53" DIAMETER B.C.
4. PROVIDE ANTI-VORTEX BAFFLE.



TOP TRASH RACK DETAIL

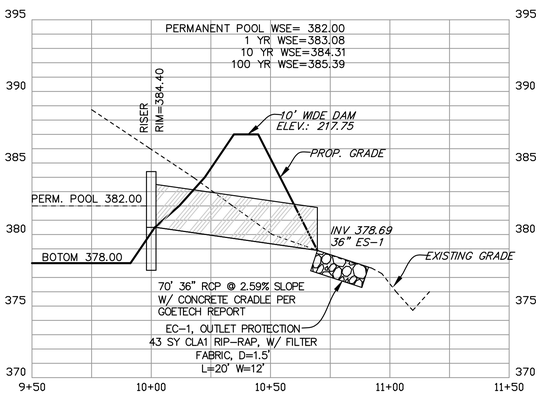
NOT TO SCALE

NOTES:
1. RACK TO BE DESIGNED TO FIT RISER.
2. MAXIMUM OPENING TO BE 6"X6".
3. ATTACH WITH 3/8" DIA. X 6" LONG ADHESIVE BOLTS W/ FLAT WASHERS AND SELF LOCKING NUTS. TYPICAL 6" CENTER ON CENTER SPACING.



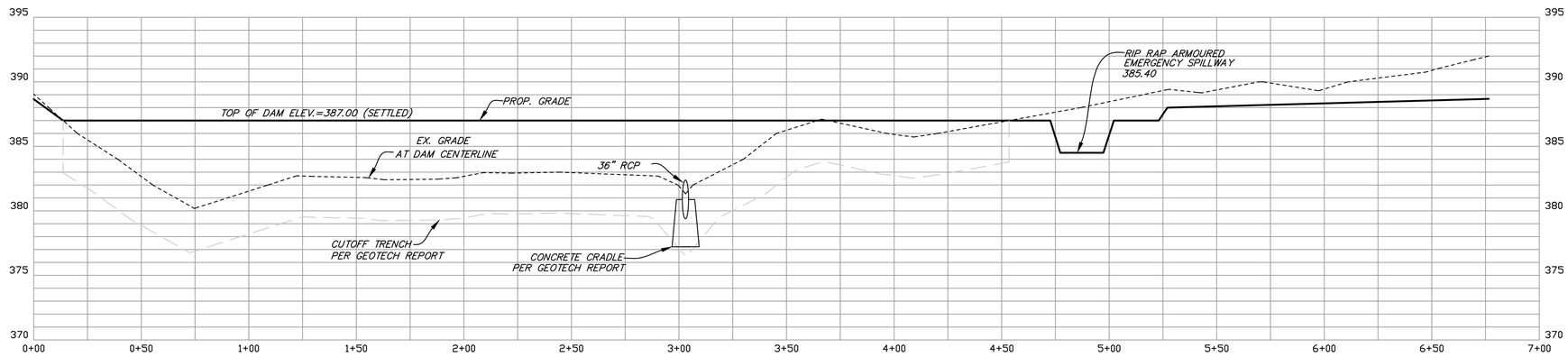
WEIR TRASH RACK DETAIL

NOT TO SCALE



BMP OUTFALL PROFILE

1"= 30' (HORIZONTAL)
1"= 5' (VERTICAL)



DAM CENTERLINE PROFILE

1"= 30' (HORIZONTAL)
1"= 5' (VERTICAL)

REVISION BLOCK			
DESCRIPTION	DATE	BY	
PER TOWN COMMENTS	2/13/26	DCW	
PER DEQ COMMENTS	4/17/26	SLB	
PER TOWN AND VDOT COMMENTS	4/29/26	DCW	
PER VDOT COMMENTS	5/26/26	DCW	

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO. 036528
5-28-26
PROFESSIONAL ENGINEER

C.W. WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106 FREDERICKSBURG, VA. 22408
PHONE: (540)371-1208

SWM BMP DETAILS AND PROFILES

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	1"=30'
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D003XSP
DRAWING NO:	25-D-003
SHEET NO.	24
OF	50 SHEETS

WETLANDS SPECIFICATIONS

6.2.1 STAGE 1 CONSTRUCTION SEQUENCE: WETLAND FACILITY CONSTRUCTION
STEP 1: STABILIZE DRAINAGE AREA.
STORMWATER WETLANDS SHOULD ONLY BE CONSTRUCTED AFTER THECONTRIBUTING DRAINAGE AREA TO THE WETLAND IS COMPLETELY STABILIZED. IF THE PROPOSED WETLAND SITE WILL BE USED AS ASEDIMENT TRAP OR BASIN DURING THE CONSTRUCTION PHASE, THE CONSTRUCTION NOTES SHOULD CLEARLY INDICATE THAT THEFACILITY WILL BE DEWATERED, DREDGED, AND RE-GRADED TO DESIGN DIMENSIONS AFTER THE ORIGINAL SITE CONSTRUCTION ISCOMPLETE.
STEP 2: ASSEMBLE CONSTRUCTION MATERIALS
ONSITE, MAKE SURE THEY MEET DESIGN SPECIFICATIONS, ANDPREPARE ANY STAGING AREAS.
STEP 3: INSTALL EROSION AND SEDIMENT (E&S) CONTROLS
PRIOR TO CONSTRUCTION INCLUDING TEMPORARYDEWATERING DEVICES, SEDIMENT BASINS, AND STORMWATER DIVERSION PRACTICES. ALL AREAS SURROUNDING THE WETLANDTHAT ARE GRADED OR DENUDED DURING CONSTRUCTION ARE TO BE PLANTED WITH TURF GRASS, NATIVE PLANT MATERIALS, OROTHER APPROVED METHODS OF SOIL STABILIZATION. GRASS SOD IS PREFERRED OVER SEED TO REDUCE SEED COLONIZATION OFTHE WETLAND. DURING CONSTRUCTION, THE WETLAND MUST BE SEPARATED FROM THE CONTRIBUTING DRAINAGE AREA SO THATNO SEDIMENT FLOWS INTO THE WETLAND AREAS. IN SOME CASES, A PHASED OR STAGED E&S CONTROL PLAN MAYBE NECESSARY TO DIVERT FLOW AROUND THE STORMWATER WETLAND AREA UNTIL INSTALLATION AND STABILIZATION ARE COMPLETE.
STEP 4: CLEAR AND STRIP
THE PROJECT AREA TO THE DESIRED SUB-GRADE.
STEP 5: EXCAVATE THE CORE TRENCH FOR THE EMBANKMENT AND INSTALL THE OUTLET WORKS. ENSURE THAT THE TOP INVERT OF THE OVERFLOW WEIR IS CONSTRUCTED LEVEL AND AT THE PROPER DESIGN ELEVATION (FLASHBOARD RISERS ARESTRONGLY RECOMMENDED BY HUNT ET AL. 2007).
STEP 6: CONSTRUCT THE EMBANKMENT AND ANY INTERNAL BERMS
IN 8- TO 12-INCH LIFTS OR AS DIRECTEDBY GEOTECHNICAL RECOMMENDATIONS, AND COMPACT AS REQUIRED WITH APPROPRIATE EQUIPMENT.
STEP 7: CONSTRUCT THE EMERGENCY SPILLWAY
IN CUT OR STRUCTURALLY STABILIZED SOILS.
STEP 8: EXCAVATE/GRADE
UNTIL THE APPROPRIATE ELEVATION AND DESIRED CONTOURS ARE ACHIEVED FOR THE BOTTOMAND SIDE SLOPES OF THE WETLAND. THIS IS NORMALLY ACCOMPLISHED BY "ROUGHING UP" THE INTERIM ELEVATIONS WITH ASKID LOADER OR OTHER SIMILAR EQUIPMENT TO ACHIEVE THE DESIRED TOPOGRAPHY ACROSS THE WETLAND. SPOT SURVEYS SHOULD BE UNDERTAKEN TO ENSURE THAT THE INTERIM ELEVATIONS ARE 3 TO 6 INCHES BELOW THE FINAL ELEVATIONS FOR THEWETLAND.
STEP 9: INSTALL MICRO-TOPOGRAPHIC FEATURES AND SOIL AMENDMENTS
WITHIN WETLAND AREA. BECAUSEMOST STORMWATER WETLANDS ARE EXCAVATED TO DEEP SUB-SOILS, THEY OFTEN LACK THE NUTRIENTS AND ORGANIC MATTERNEEDED TO SUPPORT VIGOROUS GROWTH OF WETLAND PLANTS. IT IS THEREFORE ESSENTIAL TO ADD SAND, COMPOST, TOPSOIL, OR
WETLAND MULCH TO ALL DEPTH ZONES IN THE WETLAND. THE IMPORTANCE OF SOIL AMENDMENTS IN EXCAVATED WETLANDSCANNOT BE OVER-EMPHASIZED; POOR SURVIVAL AND FUTURE WETLAND COVERAGE ARE LIKELY IF SOIL AMENDMENTS ARE NOTADDED (BOWERS 1992). THE PLANTING SOIL SHOULD BE A HIGH ORGANIC CONTENT LOAM OR SANDY LOAM, PLACED BYMECHANICAL METHODS, AND SPREAD BY HAND. PLANTING SOIL DEPTH SHOULD BE AT LEAST 4 INCHES FOR SHALLOW WETLANDS.NO MACHINERY SHOULD BE ALLOWED TO TRAVERSE OVER THE PLANTING SOIL DURING OR AFTER CONSTRUCTION. PLANTING SOILSHOULD BE TAMPED AS DIRECTED IN THE DESIGN SPECIFICATIONS, BUT IT SHOULD NOT BE OVERLY COMPACTED. AFTER THEPLANTING SOIL IS PLACED, IT SHOULD BE SATURATED AND ALLOWED TO SETTLE FOR SEVERAL WEEKS PRIOR TO INSTALLATION OFPLANT MATERIALS.
STEP 10: STABILIZE EXPOSED SOILS
WITH TEMPORARY OR PERMANENT SEED MIXTURES APPROPRIATE FOR AWETLAND ENVIRONMENT. ALL WETLAND FEATURES ABOVE THE NORMAL POOL ELEVATION SHOULD BE TEMPORARILY STABILIZED BYHYDRO-SEEDING OR SEEDING OVER STRAW. SOD MAY BE USED TO PREVENT SEEDING FROM WASHING INTO THE WETLAND.
6.2.2 STAGE 2 CONSTRUCTION SEQUENCE: ESTABLISHING THE WETLAND VEGETATION
STEP 11: FINALIZE THE WETLAND LANDSCAPING PLAN.
AT THIS STAGE, THE ENGINEER, LANDSCAPE ARCHITECT,AND WETLAND EXPERT WORK JOINTLY TO REFINE THE INITIAL WETLAND LANDSCAPING PLAN AFTER THE STORMWATER WETLAND HASBEEN CONSTRUCTED. SEVERAL WEEKS OF STANDING TIME IS NEEDED SO THAT THE DESIGNER CAN MORE PRECISELY PREDICTTHE FOLLOWING:
WHERE THE INUNDATION ZONES ARE IN AND AROUND THE WETLAND; AND
WHETHER THE FINAL GRADE AND WETLAND MICRO-TOPOGRAPHY WILL PERSIST OVER TIME.
THIS ALLOWS THE DESIGNER TO SELECT APPROPRIATE PLANT SPECIES AND ADDITIONAL SOIL AMENDMENTS BASED ONFIELD CONFIRMATION OF SOILS PROPERTIES AND THE ACTUAL DEPTHS AND INUNDATION FREQUENCIES OCCURRING WITHIN THEWETLAND.
STEP 12: OPEN UP THE WETLAND CONNECTION.
ONCE THE FINAL GRADES ARE ATTAINED, THE POND AND/ORCONTRIBUTING DRAINAGE AREA CONNECTION SHOULD BE OPENED TO ALLOW THE WETLAND CELL TO FILL UP TO THE NORMAL POOLELEVATION.
GRADUALLY INUNDATE THE WETLAND TO AVOID EROSION OF UNPLANTED FEATURES. INUNDATION MUST OCCUR IN STAGES SOTHAT DEEP POOL AND HIGH MARSH PLANT MATERIALS CAN BE PLACED EFFECTIVELY AND SAFELY. WETLAND PLANTING AREASSHOULD BE AT LEAST PARTIALLY INUNDATED DURING PLANTING TO PROMOTE PLANT SURVIVABILITY.
STEP 13: MEASURE AND STAKE PLANTING DEPTHS
AT THE ONSET OF THE PLANTING SEASON. DEPTHS IN THEWETLAND SHOULD BE MEASURED TO THE NEAREST INCH TO CONFIRM THE ORIGINAL PLANTING DEPTHS OF THE PLANTING ZONE. ATTHIS TIME, IT MAY BE NECESSARY TO MODIFY THE PLAN TO REFLECT ALTERED DEPTHS OR A CHANGE IN THE AVAILABILITY OFWETLAND PLANT STOCK. SURVEYED PLANTING ZONES SHOULD BE MARKED ON THE AS-BUILT OR DESIGN PLAN, AND THEIRLOCATIONS SHOULD ALSO BE IDENTIFIED IN THE FIELD USING STAKES OR FLAGS.
STEP 14: PROPAGATE THE STORMWATER WETLAND.
THREE TECHNIQUES ARE USED IN COMBINATION TO PROPAGATETHE EMERGENT COMMUNITY OVER THE WETLAND BED:
1. INITIAL PLANTING OF CONTAINER-GROWN WETLAND PLANT STOCK. THE TRANSPLANTING WINDOW EXTENDS FROM EARLY APRILTO MID-JUNE. PLANTING AFTER THESE DATES IS UNRELIABLE BECAUSE EMERGENT WETLAND PLANTS NEED A FULL GROWINGSEASON TO BUILD THE ROOT RESERVES NEEDED TO SURVIVE THE WINTER. IF AT ALL POSSIBLE, THE PLANTS SHOULD BEORDERED AT LEAST 6 MONTHS IN ADVANCE TO ENSURE THE AVAILABILITY AND ON-TIME DELIVERY OF DESIRED SPECIES.
2. BROADCASTING WETLAND SEED MIXES. THE HIGHER WETLAND ELEVATIONS SHOULD BE ESTABLISHED BYBROADCASTING WETLAND SEED MIXES TO ESTABLISH DIVERSE EMERGENT WETLANDS. SEEDING OF SWITCHGRASS ORWETLAND SEED MIXES AS A GROUND COVER IS RECOMMENDED FOR ALL ZONES ABOVE 3 INCHES BELOW THE NORMALPOOL ELEVATION. SEED CAN BE SPREAD BY HAND-BROADCASTING OR HYDROSEEDING DEPENDING ON THE SIZE OF THEWETLAND CELL.
3. ALLOWING "VOLUNTEER" WETLAND PLANTS TO ESTABLISH ON THEIR OWN.THE REMAINING AREAS OF THESTORMWATER WETLAND WILL EVENTUALLY (WITHIN 3 TO 5 YEARS) BE COLONIZED BY VOLUNTEER SPECIES FROM UPSTREAM ORTHE FOREST BUFFER.

STEP 15: INSTALL GOOSE PROTECTION TO PROTECT NEWLY PLANTED OR NEWLY GROWING VEGETATION.
THISIS PARTICULARLY CRITICAL FOR NEWLY ESTABLISHED EMERGENT AND HERBACEOUS PLANTS, AS PREDATION BY CANADA GEESECAN QUICKLY DECIMATE WETLAND VEGETATION. GOOSE PROTECTION CAN CONSIST OF NETTING, WEBBING, OR STRING INSTALLED INA CRISSCROSS PATTERN OVER THE SURFACE AREA OF THE WETLAND AND ABOVE THE LEVEL OF THE EMERGENT PLANTS.
STEP 16: PLANT THE WETLAND FRINGE AND BUFFER AREA.
THIS ZONE GENERALLY EXTENDS FROM 1 TO 3 FEET ABOVETHE NORMAL POOL ELEVATION (FROM THE SHORELINE FRINGE TO ABOUT HALF OF THE MAXIMUM WATER SURFACE ELEVATION FORTHE 2- YEAR STORM). CONSEQUENTLY, PLANTS IN THIS ZONE ARE INFREQUENTLY INUNDATED (5 TO 10 TIMES PER YEAR) ANDMUST BE ABLE TO TOLERATE BOTH WET AND DRY PERIODS.
6.3 CONSTRUCTION INSPECTION
CONSTRUCTION INSPECTIONS ARE CRITICAL TO ENSURE THAT STORMWATER WETLANDS ARE PROPERLY CONSTRUCTEDAND ESTABLISHED. MULTIPLE SITE VISITS AND INSPECTIONS ARE RECOMMENDED DURING THE FOLLOWING STAGES OF THEWETLAND CONSTRUCTION PROCESS:
- PRE-CONSTRUCTION MEETING;
- INITIAL SITE PREPARATION (INCLUDING INSTALLATION OF PROJECT E&S CONTROLS);
- EXCAVATION/GRADING (E.G., INTERIM/FINAL ELEVATIONS);
- WETLAND INSTALLATION (E.G., MICRO-TOPOGRAPHY, SOIL AMENDMENTS, AND STAKING OF PLANTING ZONES);
- PLANTING PHASE (WITH AN EXPERIENCED LANDSCAPE ARCHITECT OR WETLAND EXPERT); AND
- FINAL INSPECTION (DEVELOP A PUNCH LIST FOR FACILITY ACCEPTANCE).

UPON FINAL INSPECTION AND ACCEPTANCE, THE GLOBAL POSITIONING SYSTEM (GPS) COORDINATES SHOULD BE LOGGED FOR ALLCONSTRUCTED WETLANDS AND SUBMITTED FOR ENTRY INTO THE LOCAL BMP MAINTENANCE TRACKING DATABASE.
A CONSTRUCTION-PHASE INSPECTION CHECKLIST FOR CONSTRUCTED WETLANDS IS INCLUDED AT THE END OF THIS SPECIFICATION.
7.0 OPERATIONS AND MAINTENANCE CONSIDERATIONS
7.1 MAINTENANCE AGREEMENTS
THE VIRGINIA EROSION AND STORMWATER MANAGEMENT REGULATIONS
(9VAC25-875-535) INCLUDES REQUIREMENTS FORLONG-TERM MAINTENANCE OF STORMWATER MANAGEMENT FACILITIES. TO ENSURE SUCCESSFUL IMPLEMENTATION OF THE RSCBMP, LONG-TERM MAINTENANCE AND OPERATION SHOULD CONSIDER THE FOLLOWING, TO INCLUDE INSPECTION REQUIREMENTS,COMPLIANCE PROCEDURES IF MAINTENANCE IS NEGLECTED, NOTIFICATION OF THE LOCAL PROGRAM UPON TRANSFER OFOWNERSHIP, AND RIGHT-OF-ENTRY FOR LOCAL PROGRAM PERSONNEL.
- RESTRICTIVE COVENANTS OR OTHER MECHANISMS ENFORCEABLE BY THE VESMP AUTHORITY SHOULD BE IN PLACE TO HELP ENSURE THAT STORMWATER WETLANDS ARE MAINTAINED AS WELL AS TO PASS THE KNOWLEDGE ALONG TO ANY SUBSEQUENT PROPERTY OWNERS.
- ACCESS TO STORMWATER WETLANDS SHOULD BE COVERED BY A DRAINAGE EASEMENT TO ALLOW ACCESS BY THEVESMP AUTHORITY TO CONDUCT INSPECTIONS AND PERFORM MAINTENANCE WHEN NECESSARY.
- ALL STORMWATER WETLANDS SHOULD INCLUDE A LONG-TERM MAINTENANCE AGREEMENT CONSISTENT WITH THE PROVISIONSOF THE VIRGINIA EROSION AND STORMWATER MANAGEMENT REGULATION AND SHOULD INCLUDE THE RECOMMENDEDMAINTENANCE TASKS AND A COPY OF AN ANNUAL INSPECTION CHECKLIST.
- THE MAINTENANCE AGREEMENT SHOULD ALSO INCLUDE CONTACT INFORMATION FOR OWNERS TO OBTAIN LOCAL ORSTATE ASSISTANCE TO SOLVE COMMON NUISANCE PROBLEMS SUCH AS MOSQUITO CONTROL, GEESE, INVASIVEPLANTS, VEGETATIVE MANAGEMENT, AND BEAVER REMOVAL.

7.2 FIRST YEAR MAINTENANCE OPERATIONS
SUCCESSFUL ESTABLISHMENT OF CONSTRUCTED WETLAND AREAS REQUIRES THAT THE FOLLOWING TASKS BE UNDERTAKEN INTHE FIRST 2 YEARS:
TABLE P-BAS- 01-9 FIRST TWO-YEAR MAINTENANCE TASKS

TASK	DISCUSSION
INITIAL INSPECTIONS	DURING THE FIRST 6 MONTHS FOLLOWING CONSTRUCTION, THE SITE SHOULD BE INSPECTEDAT LEAST TWICE AFTER STORM EVENTS THAT EXCEED 0.5 INCH OF RAINFALL.
SPOT RESEEDING	INSPECTORS SHOULD LOOK FOR BARE OR ERODING AREAS IN THE ONTRIBUTING DRAINAGE AREA OR AROUND THE WETLAND BUFFER AND MAKE SURE THEY ARE IMMEDIATELY STABILIZED WITH GRASS COVER.
WATERING	TREES PLANTED IN THE BUFFER AND ON WETLAND ISLANDS AND PENINSULAS NEEDWATERING DURING THE FIRST GROWING SEASON. IN GENERAL, CONSIDER WATERING EVERY3 DAYS FOR THE FIRST MONTH AND THEN WEEKLY DURING THE FIRST GROWING SEASON(APRILTHROUGH OCTOBER), DEPENDING ON RAINFALL.
REINFORCEMENT PLANTINGS	REGARDLESS OF THE CARE TAKEN DURING THE INITIAL PLANTING OF THE WETLAND ANDBUFFER, IT IS PROBABLE THAT SOME AREAS WILL REMAIN UNVEGETATED AND SOMESPECIES WILL NOT SURVIVE. POOR SURVIVAL CAN RESULT FROM MANY UNFORESEENFACTORS SUCH AS PREDATION, POOR QUALITY PLANT STOCK, WATER LEVEL CHANGES, ANDDROUGHT. THUS, IT IS ADVISABLE TO BUDGET FOR AN ADDITIONAL ROUND OFREINFORCEMENT PLANTING AFTER ONE OR TWO GROWING SEASONS. CONSTRUCTIONCONTRACTS SHOULD INCLUDE A CARE AND REPLACEMENT WARRANTY, EXTENDING AT LEASTTWO GROWING SEASONS AFTER INITIAL PLANTING, TO SELECTIVELY REPLANT PORTIONS OFTHE WETLAND THAT FAIL TO FILL IN OR SURVIVE.

7.3 MAINTENANCE INSPECTIONS
MAINTENANCE OF CONSTRUCTED WETLANDS SHOULD BE DRIVEN BY ANNUAL INSPECTIONS THAT EVALUATE THE CONDITIONAND PERFORMANCE OF THE WETLAND INCLUDING THE FOLLOWING:
- MEASURE SEDIMENT ACCUMULATION LEVELS IN FOREBAYS AND MICROPOOLS.
- MONITOR THE GROWTH AND SURVIVAL OF EMERGENT WETLANDS AND TREE/SHRUB SPECIES. RECORD THE SPECIESAND APPROXIMATE COVERAGE AND NOTE THE PRESENCE OF ANY INVASIVE PLANT SPECIES.
- INSPECT THE CONDITION OF STORMWATER INLETS TO THE WETLAND FOR MATERIAL DAMAGE, EROSION, OR UNDERCUTTING.
- INSPECT UPSTREAM AND DOWNSTREAM BANKS FOR EVIDENCE OF SLOUGHING, ANIMAL BURROWS, BOGGY AREAS,WOODY GROWTH, OR GULLY EROSION THAT MAY UNDERMINE EMBANKMENT INTEGRITY.
- INSPECT THE WETLAND OUTFALL CHANNEL FOR EROSION, UNDERCUTTING, RIP-RAP DISPLACEMENT, WOODY GROWTH, AND OTHERISSUES.
- INSPECT THE CONDITION OF THE PRINCIPAL SPILLWAY AND RISER FOR EVIDENCE OF SPALLING, JOINT FAILURE,LEAKAGE, CORROSION, AND OTHER ISSUES.
- INSPECT THE CONDITION OF ALL TRASH RACKS, REVERSE-SLOPED PIPES, AND FLASHBOARD RISERS FOR EVIDENCE OF CLOGGING,LEAKAGE, DEBRIS ACCUMULATION, AND OTHER ISSUES.
- INSPECT MAINTENANCE ACCESS TO ENSURE IT IS FREE OF WOODY VEGETATION AND CHECK TO SEE WHETHERVALVES, MANHOLES, AND LOCKS CAN BE OPENED OR OPERATED.
- INSPECT INTERNAL AND EXTERNAL SIDE SLOPES OF THE WETLAND FOR EVIDENCE OF SPARSE VEGETATIVE COVER, EROSION, ORSLUMPING AND MAKE NEEDED REPAIRS IMMEDIATELY.
- SCHEDULE CLEANUPS AT LEAST ONCE A YEAR TO REMOVE TRASH, DEBRIS, AND FLOATABLES.

INSPECTION RESULTS WILL TRIGGER SPECIFIC MAINTENANCE TASKS. EXAMPLE MAINTENANCE INSPECTION CHECKLISTSFOR CONSTRUCTED WETLANDS ARE INCLUDED IN
CHAPTER 10
OF THE VIRGINIA STORMWATER MANAGEMENT HANDBOOK.
7.4 NON-ROUTINE MAINTENANCE
MANAGING VEGETATION IS AN IMPORTANT ONGOING MAINTENANCE TASK AT EVERY CONSTRUCTED WETLAND AND FOREACH INUNDATION ZONE. FOLLOWING THE DESIGN CRITERIA DISCUSSED PREVIOUSLY SHOULD RESULT IN A REDUCED NEED FORREGULAR MOWING OF THE EMBANKMENT AND ACCESS ROADS. VEGETATION WITHIN THE WETLAND, HOWEVER, WILL REQUIRESOME ANNUAL MAINTENANCE.
TABLE P-BAS- 01-10 ANNUAL MAINTENANCE ITEMS

TASK	DISCUSSION
CONTROL INVASIVE SPECIES	DESIGNERS SHOULD EXPECT SIGNIFICANT CHANGES IN WETLAND SPECIES COMPOSITIONOVER TIME. INSPECTIONS SHOULD CAREFULLY TIME. INVASIVE PLANTS SHOULD BE DEALT WITHAS SOON AS THEY BEGIN TO COLONIZE THE WETLAND. AS A GENERAL RULE, CONTROL OFUNDESIRABLE INVASIVE SPECIES (E.G., CATTAILS AND PHRAGMITES) SHOULDCOMMENCE WHEN THEIR COVERAGE EXCEEDS MORE THAN 15 PERCENT OF A WETLANDCELL AREA. ALTHOUGH THE APPLICATION OF HERBICIDES IS NOT RECOMMENDED, SOMETYPES (E.G., GLYPHOSATE) HAVE BEEN USED TO CONTROL CATTAILS WITH SOMESUCCESS. EXTENDED PERIODS OF DEWATERING MAY ALSO WORK, AS EARLY MANUALREMOVAL PROVIDES ONLY SHORT-TERM RELIEF FROM INVASIVE SPECIES. WHILE IT ISDIFFICULT TO EXCLUDE INVASIVE SPECIES COMPLETELY FROM STORMWATER WETLANDS,THEIR ABILITY TO TAKE OVER THE ENTIRE WETLAND CAN BE REDUCED IF THE DESIGNERCREATES A WIDE RANGE OF DEPTH ZONES AND A COMPLEX INTERNAL STRUCTURE WITHINTHE WETLAND.
THINNING AND HARVESTING OF WOODY GROWTH	THINNING OR HARVESTING OF EXCESS FOREST GROWTH MAY BE PERIODICALLY NEEDED TO GUIDE THE FORESTED WETLAND INTO A MORE MATURE STATE. VEGETATION MAY NEED TOBE HARVESTED PERIODICALLY IF THE CONSTRUCTED WETLAND BECOMES OVERGROWN.THINNING OR HARVESTING OPERATIONS SHOULD BE SCHEDULED TO OCCUR APPROXIMATELY 5 AND 10 YEARS AFTER THE INITIAL WETLAND CONSTRUCTION. WOODY SPECIES ON OR NEAR THE EMBANKMENT AND MAINTENANCE ACCESS AREAS SHOULD BE REMOVED EVERY 2 YEARS.
SEDIMENT REMOVAL	FREQUENT SEDIMENT REMOVAL FROM THE FOREBAY IS ESSENTIAL TO MAINTAINING THE FUNCTION AND PERFORMANCE OF A CONSTRUCTED WETLAND. FOR PLANNING PURPOSES,MAINTENANCE PLANS SHOULD ANTICIPATE CLEANOUTS APPROXIMATELY EVERY 5 TO 7 YEARS OR WHEN INSPECTIONS INDICATE THAT 50 PERCENT OF THE FOREBAY SEDIMENT STORAGE CAPACITY HAS BEEN FILLED. (ABSENT AN UPSTREAM ERODING CHANNEL OR OTHER SOURCE OF SEDIMENT, THE FREQUENCY OF SEDIMENT REMOVAL SHOULD DECREASE AS THE DRAINAGE AREA STABILIZES.) THE DESIGNER SHOULD ALSO CHECK TO SEE WHETHER REMOVED SEDIMENTS CAN BE SPOILED ONSITE OR MUST BE HAULED AWAY. SEDIMENTS EXCAVATED FROM CONSTRUCTED WETLANDS ARE NOT USUALLY CONSIDERED TOXIC OR HAZARDOUS. THEY CAN BE SAFELY DISPOSED OF BY EITHER LAND APPLICATION OR LAND FILLING.

WETLANDS PONDSCAPING

THE AQUATIC BENCH AND WETLAND SHELF SHALL BE PLANTED WITH VEGETATION AS SHOWN. THE CONTRACTOR SHALL CHOOSE THE VEGETATION FROM THE LISTS BELOW IN ACCORDANCE WITH WHAT SPECIES ARE AVAILABLE.

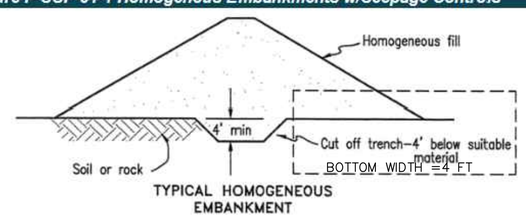
COMMON NAME	SIZE	SPACING
PICKERELL WEED	INDIVIDUAL CELL-PACK	3' O.C.
LIZARDS TAIL	INDIVIDUAL CELL-PACK	3' O.C.
ARROW-ARUM	INDIVIDUAL CELL-PACK	3' O.C.
WOOLGRASS BULLRUSH	INDIVIDUAL CELL-PACK	3' O.C.
CANADA RUSH	INDIVIDUAL CELL-PACK	4' O.C.

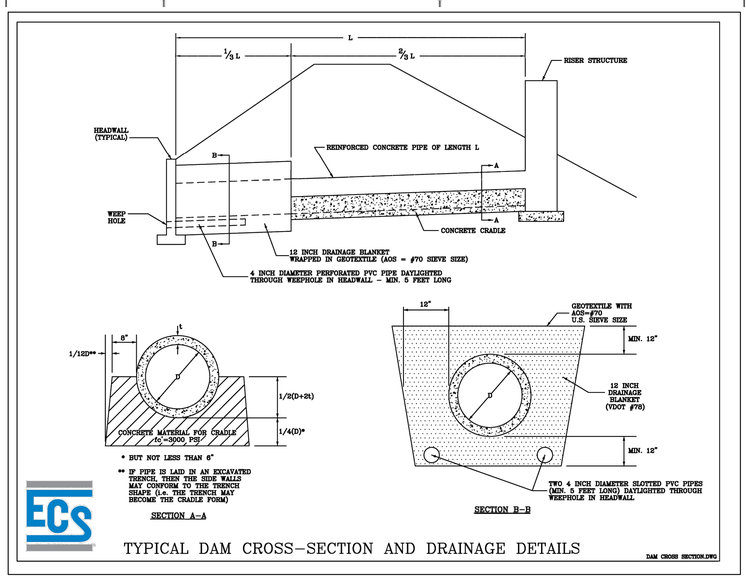
1. THE EMERGENT WETLANDS PLANTS ARE TO SELECTED FROM THE LIST ABOVE
2. A MINIMUM OF 3 DIFFERENT PLANT SPECIES SHALL BE PLANTED
3. THE LANDSCAPE CONTRACTOR SHALL VERIFY THE SUITABILITY OF EACH PLANT SPECIES FOR THE LOCATION AND DEPTH PLANTED
4. EMERGENT PLANTS MAY BE TRANSPLANTED FROM EARLY APRIL TO MID-JUNE
5. THE WETLANDS SHALL BE FLOODED IMMEDIATELY FOLLOWING PLANTING, DORMANT RIZOMES MAY BE PLANTED IN FALL OR WINTER

Table C-SCM-12-3 Construction Specifications and Criteria

Component	Details
Site Preparation	Clear, grub, and strip the areas under the embankment or any structural works related to the basin of topsoil to remove trees, vegetation, roots, or other objectionable material. To facilitate cleanout and restoration, clear the area of most frequent inundation (measured from the top of the principal spillway) of all brush and trees.
Cutoff Trench	For earth-fill embankments, excavate a cutoff trench along the centerline of the dam. Extend the trench at least 1 foot into a stable, impervious layer of soil and establish a minimum depth of 2 feet. Extend the cutoff trench up both abutments to the riser crest elevation. Construct the cutoff trench with a minimum bottom width of 4 feet, but wide enough to permit operation of compaction equipment. Construct the trench with side slopes no steeper than 1H:1V. Use the same compaction requirements as those for the embankment. Drain the trench during the backfilling/compacting operations.
Embankment	Take the fill material from approved borrow areas. Ensure the material is clean mineral soil, free of roots, woody vegetation, stumps, sod, oversized stones, rocks, or other perishable or objectionable material. Ensure the material selected has enough strength for the dam to remain stable and be tight enough, when properly compacted, to prevent excessive percolation of water through the dam. Fill containing particles ranging from small gravel or coarse sand to fine sand and clay in desired proportions is appropriate. Ensure any embankment material contains approximately 20% clay particles by weight. Using the Unified Soil Classification System, SC (clayey sand), GC (clayey gravel), and CL (low liquid limit clay) are among the preferred types of embankment soils. Scarify areas on which fill is to be placed before placement of fill. Ensure the fill material contains the proper amount of moisture to ensure achievement of 95% compaction. Place fill material in 6-inch continuous layers over the entire length of the fill. Achieve compaction by routing the hauling equipment over the fill so that the entire surface of the fill is traversed by at least one wheel or tread track of the equipment, or by using a compactor. Take special care when compacting around the anti-seep collars (compact by hand, if necessary) to avoid damage and achieve desired compaction. Construct the embankment to an elevation 10% higher than the design height to allow for settlement if compaction is accomplished with hauling equipment. If compactors are used for compaction, reduce the overbuild to not less than 5%.
Principal Spillway	Securely attach the riser of the principal spillway to the barrel by a watertight connection. Place the barrel and riser on a firmly compacted soil foundation. Firmly anchor the base of the riser according to design criteria to prevent its floating. Do not use pervious materials (such as sand, gravel, or crushed stone) as backfill around the barrel or anti-seep collars. Take special care when compacting around the anti-seep collars (compact by hand, if necessary). Place fill material around the pipe in 4-inch layers and compact until 95% compaction is achieved. Hand-compact a minimum of 2 feet of fill over the barrel before crossing it with construction equipment.

Figure P-SUP-01-1 Homogenous Embankments w/Seepage Controls





SEE GEOTECHNICAL REPORT FOR ADDITIONAL SPECIFICATIONS.

REVISION BLOCK			
DATE	DESCRIPTION	BY
2/13/26	PER TOWN COMMENTS	DCW
4/17/26	PER DEQ COMMENTS	SLB
4/29/26	PER TOWN AND VDOT COMMENTS	DCW
5/28/26	PER VDOT COMMENTS	DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO. 036528
5-28-26
PROFESSIONAL ENGINEER

WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106 FREDERICKSBURG, VA. 22408
PHONE: (540)371-1208

SWM BMP WETLANDS PLAN

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	N.T.S.
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D003YCP
DRAWING NO:	25-D-003
SHEET NO.	25
OF	50 SHEETS

Project Name:	LOUISA STATION
Date:	2/3/2026

BMP Design Specifications List: 2024 Stds & Specs

CLEAR ALL (Ctrl+Shift+R)

data input cells
constant values
calculation cells
final results

Site Information

Post-Development Project (Treatment Volume and Loads)

Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest (acres) -- undisturbed, protected forest or reforested land		2.92		1.36	4.28 *
Mixed Open (acres) -- undisturbed/infrequently maintained grass or shrub land					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed		9.58	0.15		9.73
Impervious Cover (acres)		5.24	0.55		5.79
					19.80

** Forest and Mixed Open areas must be protected in accordance with the Virginia Runoff Reduction Method*

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr)	6.74

DEQ Virginia Runoff Reduction Method New Development Compliance Spreadsheet - Version 4.1

BMP Design Specifications List: **2024 Stds & Specs**

Site Summary
Project Title: LOUISA STATION
Date: 02/03/2026

Site Land Cover Summary

	A soils	B Soils	C Soils	D Soils	Totals	% of Total
Forest (acres)	0.00	2.92	0.00	1.36	4.28	22
Mixed Open (acres)	0.00	0.00	0.00	0.00	0.00	0
Managed Turf (acres)	0.00	9.58	0.15	0.00	9.73	49
Impervious Cover (acres)	0.00	5.24	0.55	0.00	5.79	29
					19.80	100

Site Tv and Land Cover Nutrient Loads

Site Rv	0.38
Treatment Volume (ft³)	1
TP Load (lb/yr)	11.89
TN Load (lb/yr)	147.11
Total TP Load Reduction Required (lb/yr)	0.00

Site Compliance Summary

Total Runoff Volume Reduction (ft³)	0
Total TP Load Reduction Achieved (lb/yr)	6.24
Total TN Load Reduction Achieved (lb/yr)	42.86
Remaining Post Development TP Load (lb/yr)	5.64
Remaining TP Load Reduction (lb/yr) Required	0.50

Drainage Area Summary

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	Total
Forest (acres)	4.28	0.00	0.00	0.00	0.00	4.28
Mixed Open (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres)	9.73	0.00	0.00	0.00	0.00	9.73
Impervious Cover (acres)	5.79	0.00	0.00	0.00	0.00	5.79
Total Area (acres)	19.80	0.00	0.00	0.00	0.00	19.80

Drainage Area Compliance Summary

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	Total
TP Load Reduced (lb/yr)	6.24	0.00	0.00	0.00	0.00	6.24
TN Load Reduced (lb/yr)	42.86	0.00	0.00	0.00	0.00	42.86

Drainage Area A Summary

Land Cover Summary

	A Soils	B Soils	C Soils	D Soils	Total	% of Total
Forest (acres)	0.00	2.92	0.00	1.36	4.28	22
Mixed Open (acres)	0.00	0.00	0.00	0.00	0.00	0
Managed Turf (acres)	0.00	9.58	0.15	0.00	9.73	49
Impervious Cover (acres)	0.00	5.24	0.55	0.00	5.79	29
					19.80	

BMP Selections

Practice	Mixed Open Credit Area (acres)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	BMP Treatment Volume (ft³)	TP Load from Upstream Practices (lbs)	Untreated TP Load to Practice (lbs)	TP Removed (lb/yr)	TP Remaining (lb/yr)	Downstream Treatment to be Employed
15.c. Wet Pond #2 (P-BAS-02)		4.95	5.79	23,566.06	0.00	8.32	6.24	2.08	

Total Impervious Cover Treated (acres)	5.79
Total Mixed Open Treated (acres)	0.00
Total Turf Area Treated (acres)	4.95
Total TP Load Reduction Achieved in D.A. (lb/yr)	6.24
Total TN Load Reduction Achieved in D.A. (lb/yr)	42.86

Runoff Volume and CN Calculations

	1-year storm	2-year storm	10-year storm
Target Rainfall Event (in)	2.73	3.31	5.01

Drainage Areas	RV & CN	Drainage Area A	Drainage Area B	Drainage Area C	Drainage Area D	Drainage Area E
CN		72	0	0	0	0
RR (ft³)		0	0	0	0	0
1-year return period	RV wo RR (we-in)	0.65	0.00	0.00	0.00	0.00
	RV w RR (we-in)	0.65	0.00	0.00	0.00	0.00
	CN adjusted	72	0	0	0	0
2-year return period	RV wo RR (we-in)	1.00	0.00	0.00	0.00	0.00
	RV w RR (we-in)	1.00	0.00	0.00	0.00	0.00
	CN adjusted	72	0	0	0	0
10-year return period	RV wo RR (we-in)	2.21	0.00	0.00	0.00	0.00
	RV w RR (we-in)	2.21	0.00	0.00	0.00	0.00
	CN adjusted	72	0	0	0	0

LOUISA STATION BMP						SLB
						2/3/2026
Pond Riser - Uplift Calculations						
Assume flooded condition with riser empty.						
	MIN DIMENSIONS					
Riser Inside Diam.	4 ft					
Wall Thickness	5 in					
Inside Depth	7 ft					
Base overhang	12 in					
	1.00 ft					
Base thickness	36.00 in					
	3.00 ft					
Riser Outside Diam.	58 in					
Base Outside Diam.	82 in					
Wt of Water	62.4 lbs/cf					
Wt. Concrete	150 lbs/cf					
Riser Volume	= 3.14 X (O. Rad^2) X Depth					128.4 cf
Base Volume	= 3.14 X (Rad^2) x Thichness					110.0 cf
Wall Volume	= 3.14 X (O. Rad^2) X Depth - 3.14 X (I. Rad^2) X Depth					40.4 cf
UPWARD FORCE =	(Riser Vol. X Wt Water) + (Base Vol.X Wt Water)					
	=(Vol. cf) X (62.4) + (Vol. cf) X (62.4) =					**14,872** lbs
DOWNWARD FORCE = (The sum of)						
Concrete Collar (ht x width) =	0 " x	0 " =				-
Riser Wt.= (Riser Wall Vol. X 150 #/cf)						6,067
Base Wt = (Base Vol. X 150 #/cf).						16,495
Total						**22,562** lbs
NET DOWNWARD FORCE =	22,562	-	14,872	=		7,690 lbs
Safety Factor =	22,562	/	14,872	=	**1.5**	**OK**

WET POND CALCULATIONS

LEVEL 2, DESIGN SPECIFICATION P-BAS-02 WET POND

TREATED AREA TO BMP	Area		Rv		A x Rv
IMPERVIOUS AREA TO BMP =	5.79	AC	0.95	=	19,967
TURF AREA TO BMP =	4.95	AC	0.2	=	3,594
TOTAL	10.74				23,561

TV = (1.5 in)(Rv)(A sf)/12 - Vol. Reduced by Upstream BMP

TREATMENT VOLUME = 1.5 X 23,566 cf - 0 = 35,349 cf

TV (min) = 35,349 CF

TV PROVIDED			% OF MIN	% OF PROV.
MAIN POOL VOLUME =	**33,165**	**CF**		
FOREBAY VOLUME (15% MIN) =	**12,291**	**CF =**	**35%**	**27%**
WETLAND SHELF VOLUME =	**892**	**CF =**		
TOTAL	**46,348**	**CF**		
MAIN POOL AREA =	**15,680**	**SF**		
WETLAND SHELF (10% MIN. OF AREA) =	**1,784**	**SF =**	**11.4%**	

WATER BALANCE

DP > ET + INF + RES - MB

DP=	48 IN >	39.2 IN
ET =	8 IN	
INF =	7.2 IN	
RES =	24 IN	
MB =	0 IN	
	39.2 IN	

DP = Average design depth of the permanent pool (inches)
ET = Summer evapo-transpiration rate (inches) (assume 8 inches)
INF = Monthly infiltration loss (assume 7.2 @ 0.01 inch/hour)
RES = Reservoir of water for a factor of safety (assume 24 inches)
MB = Measured baseflow rate to the pond, if any (convert to inches)

SWM Narrative

PROJECT DESCRIPTION

In accordance with the Town of Louisa and the Virginia Stormwater Management Handbook, the following is a narrative description of the stormwater management design plan for the development of the Louisa Station residential subdivision. This project will consist of the construction of 159 single family attached townhomes. The project also includes the installation of roadway, parking areas, water and wastewater facilities, storm sewer and a stormwater management facility.

PROJECT LOCATION

The project site is located on TM 41-16-1, -5,10,11,12,13,14 in the Town of Louisa, Virginia. The parcels have a total area of 19.7962 acres. The site is located on Pine Ridge Road. The site does not contain any waters listed on the 2012 Impaired Waters – 303(d) list.

EXISTING CONDITIONS

The site is undeveloped and wooded. The site is moderately sloped. Drainage from the proposed developed parcel generally flows to the southwest to an unnamed tributary of Beaver Creek which drains to the South Anna River.

ADJACENT PROPERTY

The property is bounded on all other sides by residential property.

SOILS

The USGS Web Soil Survey indicate that this site is expected to contain mostly hydrologic group B soils and C soils which consist of; 1) AnB2, Appling sandy loam, 2 to 7% slopes, HG B; and 2) AnC2, Appling sandy loam 7 to 15% slopes, HG B; 3) CfB, Colfax fine sandy loam, 2 to 7% slopes, HG C; and 4) WH, Wehadkee-Chewacla Complex, HG B/D.

DESCRIPTION OF WATER QUALITY

This proposed project involves the total addition of an estimated 5.79 acres of impervious area. The area used for the VRRM analysis includes the entire 19.80 acre site. The proposed impervious area includes buildings, sidewalk, roadways and the proposed wet pond. Quality control will be provided for all impervious and turf areas created by the proposed site, by use of a Level II Wet Pond and the conservation of forested open space. Calculations have been performed utilizing the runoff reduction method. The new development worksheets have been utilized to calculate a total required reduction of 6.74 lbs/yr of phosphorus for the site. The Level II Pond system will reduce the total phosphorus by 6.24 lbs/yr. This will result in a remaining required phosphorus removal of 0.50 lbs/yr. Areas of conserved open space will be covered by a conservation easement.

DESCRIPTION OF WATER QUANTITY

Concentrated runoff from the site will be collected in a storm sewer system and SWM BMP. The BMP discharges to an unnamed tributary of Beaver Creek. The unnamed creek enters a FEMA Zone A 100 year flood zone at the site property line. The 1% point of analysis is the point at which the unnamed creek enters Beaver Creek which has a total drainage area of 2,029 areas. The stream evaluation POA is at the 100 year flood plain. The off-site drainage areas were calculated using the USGS Stream Stats website software. The software output reports are included in this report.

Stream Protection
In accordance with the stormwater regulations, the site's concentrated runoff discharge from the BMP will be analyzed for stream protection using the 1 year 24 hour storm. The post-development 1 year 24 hour storm discharge rates will be reduced to below pre-development rates in accordance with the energy balance equation.

Flood Control
In accordance with the stormwater regulations, the runoff discharge from the site will be analyzed for flood control using the 10 year 24 hour storm. The 10 year storm will be reduced to below pre-developed rates. The existing stream channel is adequate for the 10 year storm.

Sheet Flow
Areas of overland sheet flow will be analyzed to ensure that the runoff will not cause any down-gradient erosion, sedimentation, or flooding. The 10 year 24 hour storm will be used for analysis of the depth of runoff and velocity. For areas with increased volumes of flow, the depth of flow must be less than or equal to 0.1 ft and the velocity non-erosive for the land cover. All land cover is wooded with underbrush. The maximum allowable velocity is 5.0 fps for average land slopes from 0 to 5%, 4.0 fps for average land slopes from 5 to 10%, and 3.0 fps for average land slopes greater than 10%.

The 11 sheet flow areas have been labeled as A1 thru A4 and B1thru B7. The runoff volumes and flow rates have been reduced as a result of a reduction in drainage areas. The sheet flow runoff volumes, depths and velocities are summarized in the table below.

HYDROLOGY AND HYDRAULICS

Topographic Data used for hydrology and pond hydraulics is from field survey performed by Webb and Associates. All computations for pre-development and post-development hydrology and hydraulics were calculated using the SCS Method and Hydraflow Hydrographs.

Pre-development was defined as the upslope drainage areas prior to the development of the site in a woods good condition. Post-development was defined as the improved conditions of the upslope drainages areas following the development of the site.

Precipitation Data
Precipitation data used for Louisa County was obtained from the NOAA Hydrometeorological Design website. Total precipitation data used for the SCS Method Type II rainfall distribution was as follows:

Design Storm Frequency	Rainfall, P (24 hours) in.
1 Year	2.73
2 Year	3.31
10 Year	5.01
100 Year	8.25

Pre-developed Hydrology

Pre-development conditions were evaluated to determine the maximum release rate at the point of analysis (POA). Runoff Curve Number and time of concentration were calculated and have been included in this report. The CN calculations are shown in the report for each area. The SCS method was utilized to determine the peak flow rates and volumes.

Post Development Hydrology

Post-development conditions were evaluated to determine the peak flow rates under developed conditions at the BMP discharge point in the receiving stream channel. The BMP discharges directly to the stream channel. Post-development hydrology was performed using the same methodology as for the pre-development. The information is summarized below:

Hydrograph Summary

Drainage Area	1 Year Flow	1 Yr.Volume	10 Year
Pre-Developed	(cfs)	(cf)	(cfs)
On-site to BMP	0.45	5,826	
Off-site to BMP	0.60		
Combined to BMP			19.00

Drainage Area	1 Year Flow	1 Yr.Volume	10 Year
Post-Developed	(cfs)	(cf)	(cfs)
On-site To BMP	18.73	38,078	
Combined to BMP	18.83		53.88
BMP Discharge	0.42		6.90

The 1 year peak flow rate has been reduced in accordance with the energy balance equation. The 10 year peak flow rate has been reduced to below pre-development rates.

Sheet Flow Hydrograph Summary

10 YEAR PEAK STORM- SHEET FLOW CALCULATIONS

DA NO.	PRE DEV VOL. CF	POST VOL. CF	POST. VOL. - PRE. VOL.	CHANGE	POST DEV. FLOW, CFS	SECTION LENGTH, FT	LAND SLOPE	GROUND ELEV	GROUND DEPTH, FT	VEL. CFS	GROUND COVER
A1	17,612	6,362	(11,250)	REDUCTION	2.700	285.000	3.0%	402.00	0.09	0.11	WOODED
A2	2,147	2,003	(144)	REDUCTION	0.697	298.000	4.3%	416.00	0.04	0.06	WOODED
A4	3,110	3,102	(8)	REDUCTION	0.895	305.000	5.4%	418.00	0.04	0.07	WOODED
B1	457	1,566	1,109	**INCREASE**	0.557	55.000	9.1%	394.00	0.05	0.17	WOODED
B1-100*					0.725	66.000	37.0%	372.00	0.05	0.22	WOODED
B2	1,337	983	(354)	REDUCTION	0.485	147.000	18.0%	370.00	0.03	0.11	WOODED
B3	23,058	2,542	(20,516)	REDUCTION	0.934	379.000	18.0%	380.00	0.03	0.08	WOODED
B4	500	492	(8)	REDUCTION	0.244	288.000	18.0%	384.00	0.02	0.04	WOODED
B5	4,683	4,218	(465)	REDUCTION	1.573	260.000	18.0%	387.00	0.04	0.15	WOODED
B6	4,730	374	(4,356)	REDUCTION	0.185	190.000	12.0%	388.00	0.02	0.05	WOODED
B7	3,457	3,421	(36)	REDUCTION	1.220	491.000	6.9%	390.00	0.03	0.08	WOODED

*THE 10 YEAR PEAK POST DEVELOPMENT VELOCITIES FOR SECTION B1 IS NON-EROSIVE TO THE 100 FT SECTION.

All drainage areas except B1 have a decreased post development 10 year volume. Drainage area B1 has increased runoff volumes and were further analyzed 100 feet downstream. The downstream velocities are non-erosive for any ground cover condition.

Facility Design Summary

A stormwater management system that provides water quantity reduction is necessary for the development of this site. The system will reduce the required peak storm events to below pre-development rates.

The stormwater management system consists of a wet pond with extended detention basin. The stormwater management system was also modeled using the storm routing software, HydroFlow Hydrographs Extension for AutoCAD Civil 3D 2013. The stormwater management system meets the requirements of MS-19. The routing results are attached.

The post developed areas that discharge from the site by overland sheet flow have been analyzed for depth and velocity during the 10 year 24 hour storm event and will not result in any downstream flooding, erosion or sedimentation.

WEBB AND ASSOCIATES
A SURVEYING AND DESIGN COMPANY
11903 BOWMAN DRIVE, SUITE 106 FREDERICKSBURG VA 22408
(540) 371-1209 (804) 633-9907 FAX (540) 371-4650

TM 41-16-10,11,12,13,14 2/3/2026

ENERGY BALANCE EQUATION

$$Q_{1post} \leq Q_{1pre}\left(\frac{Vol_{1pre}}{Vol_{1post}}\right)(IF) + Q_{off\text{-}site}$$

Where:

Q_{1pre} = 0.45 cfs
$Q_{off\text{-}site}$ = 0.60 cfs
Vol_{1pre} = 5826 cf
Vol_{1post} = 38078 cf
IF = 0.8 (for disturbed area > 1 acre)

Q_{1post} 0.42 ≤ (0.45(5826/38078)(0.8) +0.60
0.42 ≤ 0.45 cfs

ENERGY BALANCE EQUATION IS SATISFIED

res

Date: February 6, 2026

To: *Steve Ball, PE*
Webb & Associates

From: Amy Staley
Credit Sales Manager II
Resource Environmental Solutions

Subject: **York Watershed – Nutrient Credit Availability Pending Release**

Project Reference: Louisa Station, 1.25 Credits Requested; HUC 02080106

This letter confirms that 1.25 authorized nutrient credits ("Nutrient Credits") have been purchased, **pending the Q2 2026 credit release**, from one or more Resource Environmental Solutions' ("RES") York nutrient bank facilities. These Nutrient Credits are intended for use by permit applicants within the York watershed, including HUC 02080106, to offset nutrient loadings in excess of applicable state or local regulatory requirements, in accordance with Virginia Code §§ 62.1-44.15:35 and 62.1-44.19:14, and Virginia Administrative Code 9 VAC 25-820-10 et seq.

The Nutrient Credits are generated and managed pursuant to the applicable Banking Instruments, specifically the Mummichog Nutrient Reduction Implementation Plan ("NRIP").

Please feel free to contact me if you have any questions.

Sincerely,

Amy Staley

Amy Staley
Credit Sales Manager II
astaley@res.us | 919.209.1055

RES.118

REVISION BLOCK		
DESCRIPTION	DATE	BY
PER TOWN COMMENTS	2/13/26	DCW
PER DEQ COMMENTS	4/17/26	SLB
PER TOWN AND VDOT COMMENTS	4/29/26	DCW
PER VDOT COMMENTS	5/28/26	DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO.
036528
5-28-26
PROFESSIONAL ENGINEER

WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

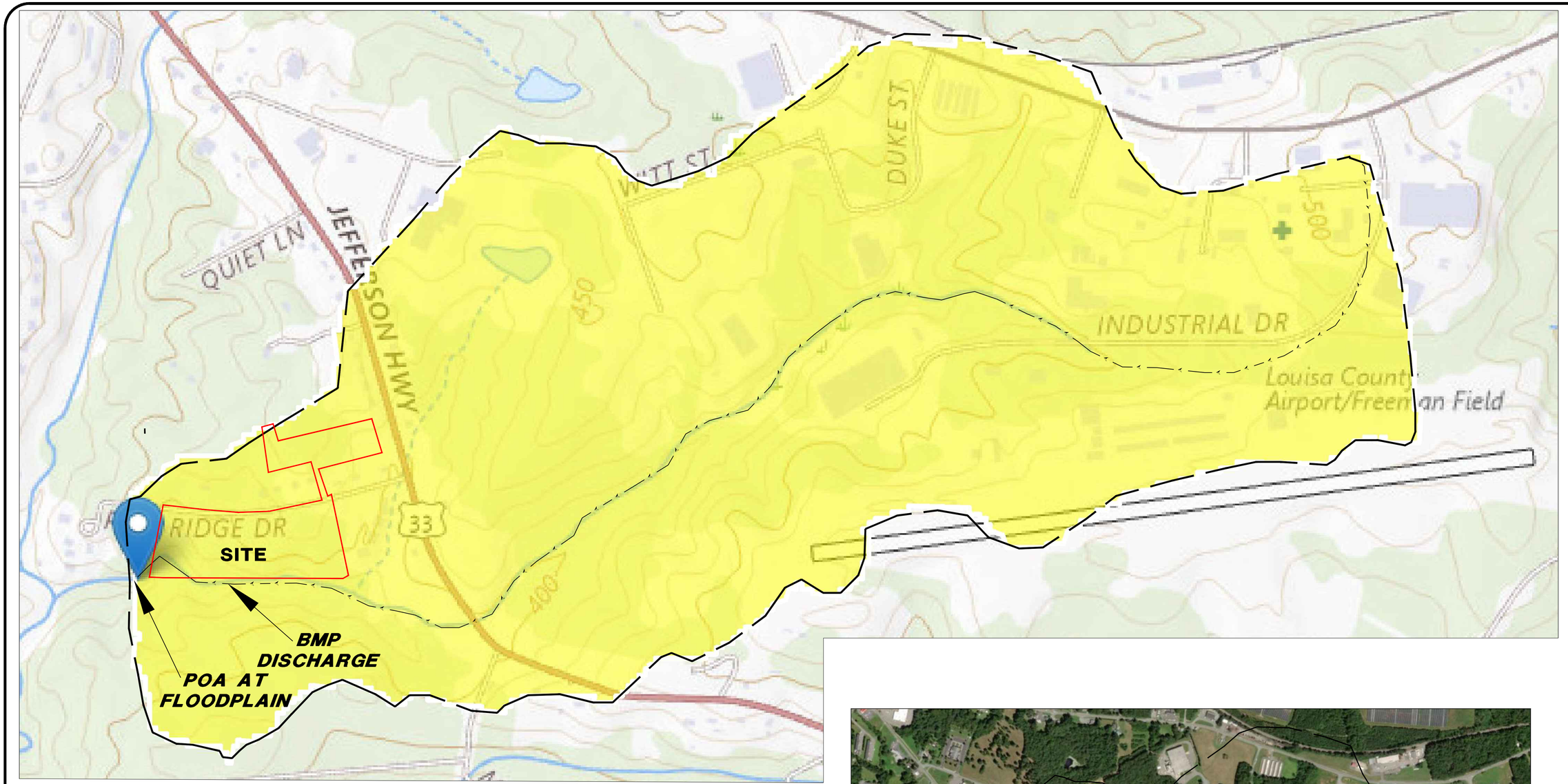
SWM NARRATIVE AND CALCS

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE: AUGUST 14, 2025
SCALE: AS SHOWN
DESIGNED BY: DCW
DRAWN BY: SLB
CHECKED BY: DCW

ACAD FILE: 25D003ZACP
DRAWING NO: 25-D-003

SHEET NO. 26
OF 50 SHEETS



0 300 600 900

POA DRAINAGE AREA MAP

1"= 300'(HORIZONTAL)

—— ➢ — ➢ —— –DENOTES TIME OF CONCENTRATION FLOW PATH



POA DRAINAGE AERIAL MAP

0 600 1200 1800

1"= 600'(HORIZONTAL)

REVISION BLOCK

DATE	DESCRIPTION	BY
2/13/26	PER TOWN COMMENTS	DCW
4/17/26	PER DEQ COMMENTS	SLB
4/29/26	PER TOWN AND VDOT COMMENTS	DCW
5/28/26	PER VDOT COMMENTS	DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO.
036528
5-28-26
PROFESSIONAL ENGINEER

WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

PRE-DEV POA DRAINAGE AERA MAP

LOUISA STATION

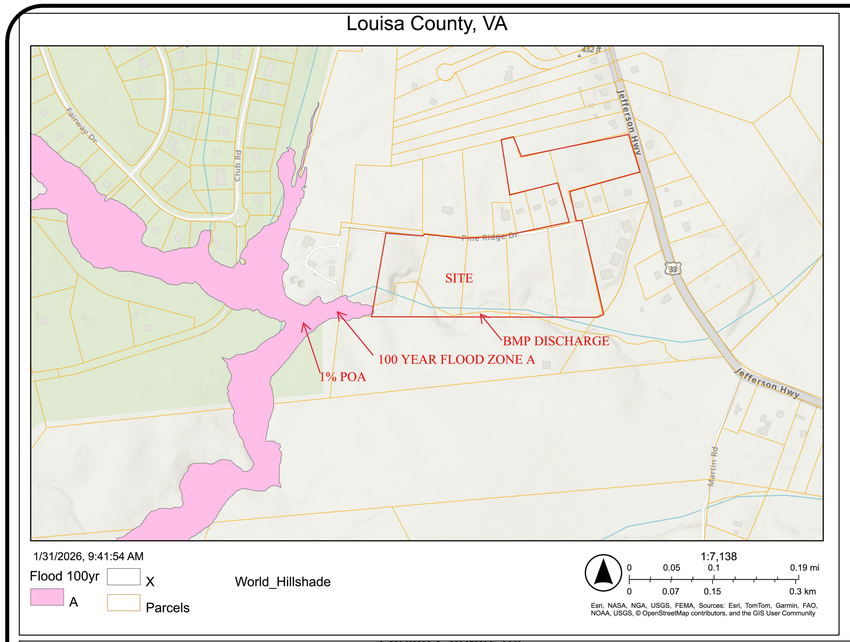
TAX MAPS 41-16-10,11,12,13,14

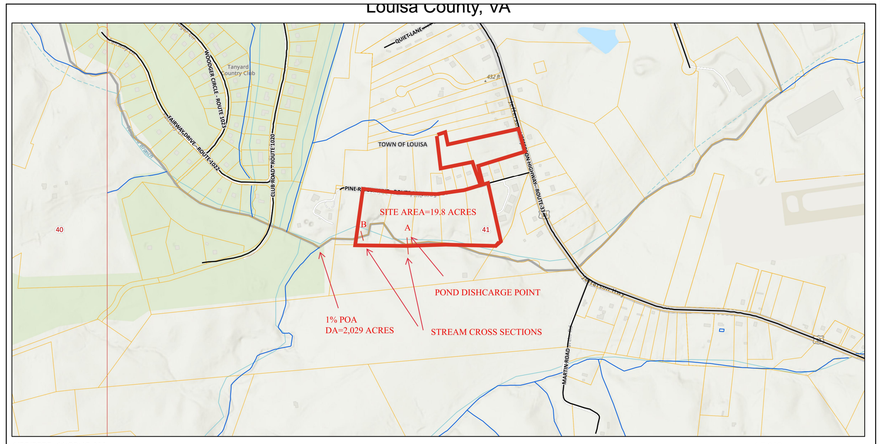
CONSTRUCTION PLAN

TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	AS SHOWN
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D003ZBCP
DRAWING NO:	25-D-003

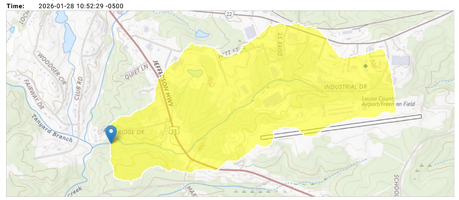
SHEET NO. 27 OF 50 SHEETS





StreamStats Report

Region ID: VA
Clicked Point (Latitude, Longitude): 38.00862, -77.99131
Time: 2026-01-28 10:52:29 -0500



StreamStats Update

Starting with version 4.30.0, the StreamStats application uses services that were redeveloped with open-source software components. Users may observe minor variations in computed results when compared to those from previous versions. These differences are expected and do not reflect errors in the underlying data or analytical methods. Users are advised to consider these potential variations when interpreting or comparing results generated across different versions of StreamStats. Please email streamstats@usgs.gov with any questions or concerns. A full list of changes can be found at **https://www.usgs.gov/streamstats/news/streamstats-data-updates-open-source-code-release (https://www.usgs.gov/streamstats/news/streamstats-data-updates-open-source-code-release)**

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.66	square miles

Statistic	Value	Unit	ASEp
50-percent AEP flood	123	ft^3/s	43
42.9-percent AEP flood	152	ft^3/s	42
20-percent AEP flood	276	ft^3/s	32
10-percent AEP flood	419	ft^3/s	31
4-percent AEP flood	666	ft^3/s	32
2-percent AEP flood	897	ft^3/s	34
1-percent AEP flood	1170	ft^3/s	36
0.5-percent AEP flood	1500	ft^3/s	38

Peak-Flow Statistics Citations

Austin, S.H., Krstolic, J.L., and Wiegand, Ute,2011, Peak-flow characteristics of Virginia streams: U.S. Geological Survey Scientific Investigations Report 2011–5144, 106 p. + 3 tables and 2 appendixes on CD. (http://pubs.usgs.gov/sir/2011/5144/)

USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related materials are considered to satisfy the quality standards relative to the purpose for which the data were collected. Although these data and associated metadata have been reviewed for accuracy and completeness and approved for release by the U.S. Geological Survey (USGS), no warranty expressed or implied is made regarding the display or utility of the data for other purposes, nor on all computer systems, nor shall the act of distribution constitute any such warranty.

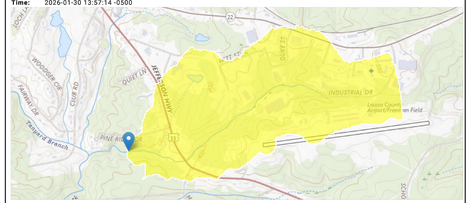
USGS Software Disclaimer: This software has been approved for release by the U.S. Geological Survey (USGS). Although the software has been subjected to rigorous review, the USGS reserves the right to update the software as needed pursuant to further analysis and review. No warranty, expressed or implied, is made by the USGS or the U.S. Government as to the functionality of the software and related material nor shall the fact of release constitute any such warranty. Furthermore, the software is released on condition that neither the USGS nor the U.S. Government shall be held liable for any damages resulting from its authorized or unauthorized use.

USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Application Version: 4.30.0
SSHydro Services Version: 1.0.0
SSDelineate Services Version: 1.0.0
NSS Services Version: 2.2.1
GageStats Services Version: 1.2.1
Pourpoint Services Version: 1.2.0
Batch Processor Version: 1.6.0

StreamStats Report

Region ID: VA
Clicked Point (Latitude, Longitude): 38.00857, -77.98952
Time: 2026-01-30 13:57:14 -0500



StreamStats Update

Starting with version 4.30.0, the StreamStats application uses services that were redeveloped with open-source software components. Users may observe minor variations in computed results when compared to those from previous versions. These differences are expected and do not reflect errors in the underlying data or analytical methods. Users are advised to consider these potential variations when interpreting or comparing results generated across different versions of StreamStats. Please email streamstats@usgs.gov with any questions or concerns. A full list of changes can be found at **https://www.usgs.gov/streamstats/news/streamstats-data-updates-open-source-code-release (https://www.usgs.gov/streamstats/news/streamstats-data-updates-open-source-code-release)**

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.61	square miles

Statistic	Value	Unit	ASEp
50-percent AEP flood	123	ft^3/s	43
42.9-percent AEP flood	152	ft^3/s	42
20-percent AEP flood	276	ft^3/s	32
10-percent AEP flood	419	ft^3/s	31
4-percent AEP flood	666	ft^3/s	32
2-percent AEP flood	897	ft^3/s	34
1-percent AEP flood	1170	ft^3/s	36
0.5-percent AEP flood	1500	ft^3/s	38

Peak-Flow Statistics Citations

Austin, S.H., Krstolic, J.L., and Wiegand, Ute,2011, Peak-flow characteristics of Virginia streams: U.S. Geological Survey Scientific Investigations Report 2011–5144, 106 p. + 3 tables and 2 appendixes on CD. (http://pubs.usgs.gov/sir/2011/5144/)

USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related materials are considered to satisfy the quality standards relative to the purpose for which the data were collected. Although these data and associated metadata have been reviewed for accuracy and completeness and approved for release by the U.S. Geological Survey (USGS), no warranty expressed or implied is made regarding the display or utility of the data for other purposes, nor on all computer systems, nor shall the act of distribution constitute any such warranty.

USGS Software Disclaimer: This software has been approved for release by the U.S. Geological Survey (USGS). Although the software has been subjected to rigorous review, the USGS reserves the right to update the software as needed pursuant to further analysis and review. No warranty, expressed or implied, is made by the USGS or the U.S. Government as to the functionality of the software and related material nor shall the fact of release constitute any such warranty. Furthermore, the software is released on condition that neither the USGS nor the U.S. Government shall be held liable for any damages resulting from its authorized or unauthorized use.

USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Application Version: 4.30.0
SSHydro Services Version: 1.0.0
SSDelineate Services Version: 1.0.0
NSS Services Version: 2.2.1
GageStats Services Version: 1.2.1
Pourpoint Services Version: 1.2.0
Batch Processor Version: 1.6.0

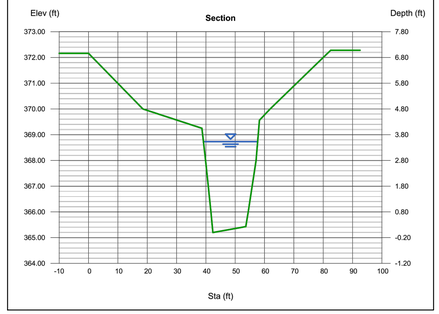
Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3DB by Autodesk, Inc. Tuesday, Feb 3 2026

CHANNEL SECT B-10 yr

User-defined		Highlighted	
Invert Elev (ft)	= 365.20	Depth (ft)	= 3.53
Slope (%)	= 0.85	Q (cfs)	= 419.00
N-Value	= 0.030	Area (sqft)	= 51.12
		Velocity (ft/s)	= 8.20
Calculations		Wetted Perim (ft)	= 21.27
Compute by:	Known Q	Crit Depth, Yc (ft)	= 3.26
Known Q (cfs)	= 419.00	Top Width (ft)	= 18.49
		EGL (ft)	= 4.57

(Sta, El, n)-(Sta, El, n)...
(0.00, 372.16)-(1.37, 372.00, 0.400)-(18.53, 370.00, 0.400)-(38.64, 369.25, 0.030)-(39.91, 368.00, 0.030)-(41.73, 366.00, 0.030)-(42.37, 365.20, 0.030) -(53.61, 365.43, 0.030)-(54.42, 366.00, 0.030)-(57.12, 368.00, 0.030)-(58.26, 369.56, 0.030)-(81.90, 370.00, 0.400)-(79.99, 372.00, 0.400)-(82.57, 372.28, 0.400)



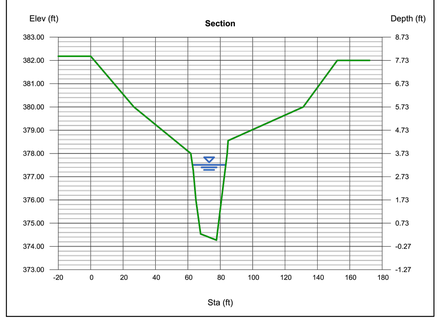
Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3DB by Autodesk, Inc. Tuesday, Feb 3 2026

CHANNEL SECT A-10 yr

User-defined		Highlighted	
Invert Elev (ft)	= 374.27	Depth (ft)	= 3.24
Slope (%)	= 1.05	Q (cfs)	= 402.00
N-Value	= 0.030	Area (sqft)	= 47.72
		Velocity (ft/s)	= 8.42
Calculations		Wetted Perim (ft)	= 22.30
Compute by:	Known Q	Crit Depth, Yc (ft)	= 3.20
Known Q (cfs)	= 402.00	Top Width (ft)	= 20.61
		EGL (ft)	= 4.34

(Sta, El, n)-(Sta, El, n)...
(0.00, 382.18)-(2.21, 382.00, 0.400)-(26.66, 380.00, 0.400)-(61.79, 378.00, 0.030)-(83.32, 377.28, 0.030)-(84.96, 376.00, 0.030)-(87.88, 374.54, 0.030) -(77.66, 374.27, 0.030)-(80.74, 376.00, 0.030)-(84.32, 378.00, 0.030)-(84.87, 378.55, 0.400)-(131.27, 380.00, 0.400)-(152.29, 382.00, 0.400)

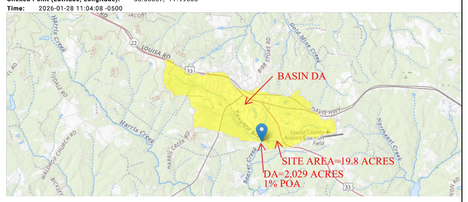


NOTE: THE RECEIVING CHANNEL ENTERS A FEMA 100 YEAR FLOOD ZONE PRIOR TO THE 1% POA. THEREFORE, POINT OF ANALYSIS IS AT THE 100 YEAR FLOOD PLAIN. THE CHANNEL CROSS SECTIONS SHOW THAT THE CHANNEL HAS CAPACITY TO HANDLE THE EXISTING 10 YEAR PEAK FLOW RATES AS ESTIMATED BY THE USGS STREAM STATISTIC WEBSITE SOFTWARE. THE 10 YEAR POST DEVELOPMENT DISCHARGE RATE HAS BEEN REDUCED TO BELOW PRE-DEVELOPMENT RATES. THEREFORE, THE CHANNEL IS ADEQUATE TO HANDLE THE 10 YEAR STORM EVENT.

NOTE: BASED ON AERIAL PHOTOS IT APPEARS THAT THE DRAINAGE AREA TO THE POA IS APPROXIMATELY 20% IMPERVIOUS, 40% TURF AND 40% WOODED. THE ESTIMATED 10 YEAR STORM PEAK DISCHARGE RATES ARE: SECTION A: 270 CFS; AND SECTION B: 380 CFS. THE FLOW ESTIMATES FROM THE USGS STREAM WEBSITE IS HIGHER AND IS USED FOR THE FLOOD EVALUATION. THE STREAM CHANNEL IS ADEQUATE TO HANDLE THE POST DEVELOPMENT 10 YEAR PEAK DISCHARGE. SEE DRAINAGE AREA MAP NEXT SHEET.

StreamStats Report

Region ID: VA
Clicked Point (Latitude, Longitude): 38.00837, -77.99308
Time: 2026-01-28 11:04:08 -0500



StreamStats Update

Starting with version 4.30.0, the StreamStats application uses services that were redeveloped with open-source software components. Users may observe minor variations in computed results when compared to those from previous versions. These differences are expected and do not reflect errors in the underlying data or analytical methods. Users are advised to consider these potential variations when interpreting or comparing results generated across different versions of StreamStats. Please email streamstats@usgs.gov with any questions or concerns. A full list of changes can be found at **https://www.usgs.gov/streamstats/news/streamstats-data-updates-open-source-code-release (https://www.usgs.gov/streamstats/news/streamstats-data-updates-open-source-code-release)**.

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	3.17	square miles

TIME OF CONCENTRATION CALCULATION

DRAINAGE AREA		CROSS SECTION A	CROSS SECTION B
Total L	(ft) =	8570	9470
Elevations			
Start	(ft) =	500	500
Elev. at 100 ft.	(ft) =	499	499
End	(ft) =	375	365
100 ft Fall	(ft) =	1.00	1.00
Channel Flow Fall	(ft) =	124.00	134.00
Avg Slope	ft/ft =	0.015	0.014
L - 100	(ft) =	8470	9370
Overland flow			
L	(ft) =	100	100
S	(ft/100 ft) =	1.000	1.000
C	=	0.29	0.37
Tc	(min) =	12.9	10.1
Channel flow			
H	(ft) =	124.0	134.0
L	(ft) =	8470.0	9370.0
Tc	(min) =	41.67	45.35
Total	(min) =	**54.5**	**55.4**

Time of Conc (Overland flow) = 0.225 x (L ^ 0.42) x(S ^ -0.19) x (C ^ -1.0)

Time of Conc (Channel flow) = 0.00948 x (H^ -0.38) x (L^1.13)

C FACTOR	C	POA 1 %	SECT. 1
IMPERVIOUS AREA	0.9	39	84
GRASSED	0.3	78	127
WOODED	0.2	273	211
TOTAL AREA, ACRES		390	422
Total C X A		113	156
Avg C		0.29	0.37
	area	390	422

ASSUME: 20% IMPERVIOS, 30% GRASS, 50% WOODED

A, ACRES =	390.00	422.00
I 2 YR, IN/HR =	1.60	1.58
I 10 YR, IN/HR =	2.38	2.36
I 100 YR, IN/HR =	3.37	3.34
Q 2 YR, CFS =	181.3	247.4
Q 10 YR , CFS=	269.5	368.3

REVISION BLOCK

DATE	DESCRIPTION	BY
2/13/26	PER TOWN COMMENTS	DCW
4/17/26	PER DEQ COMMENTS	SLB
4/29/26	PER TOWN AND VDOT COMMENTS	DCW
5/26/26	PER VDOT COMMENTS	DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO. 036528
5-28-26
PROFESSIONAL ENGINEER

W.W. WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1808

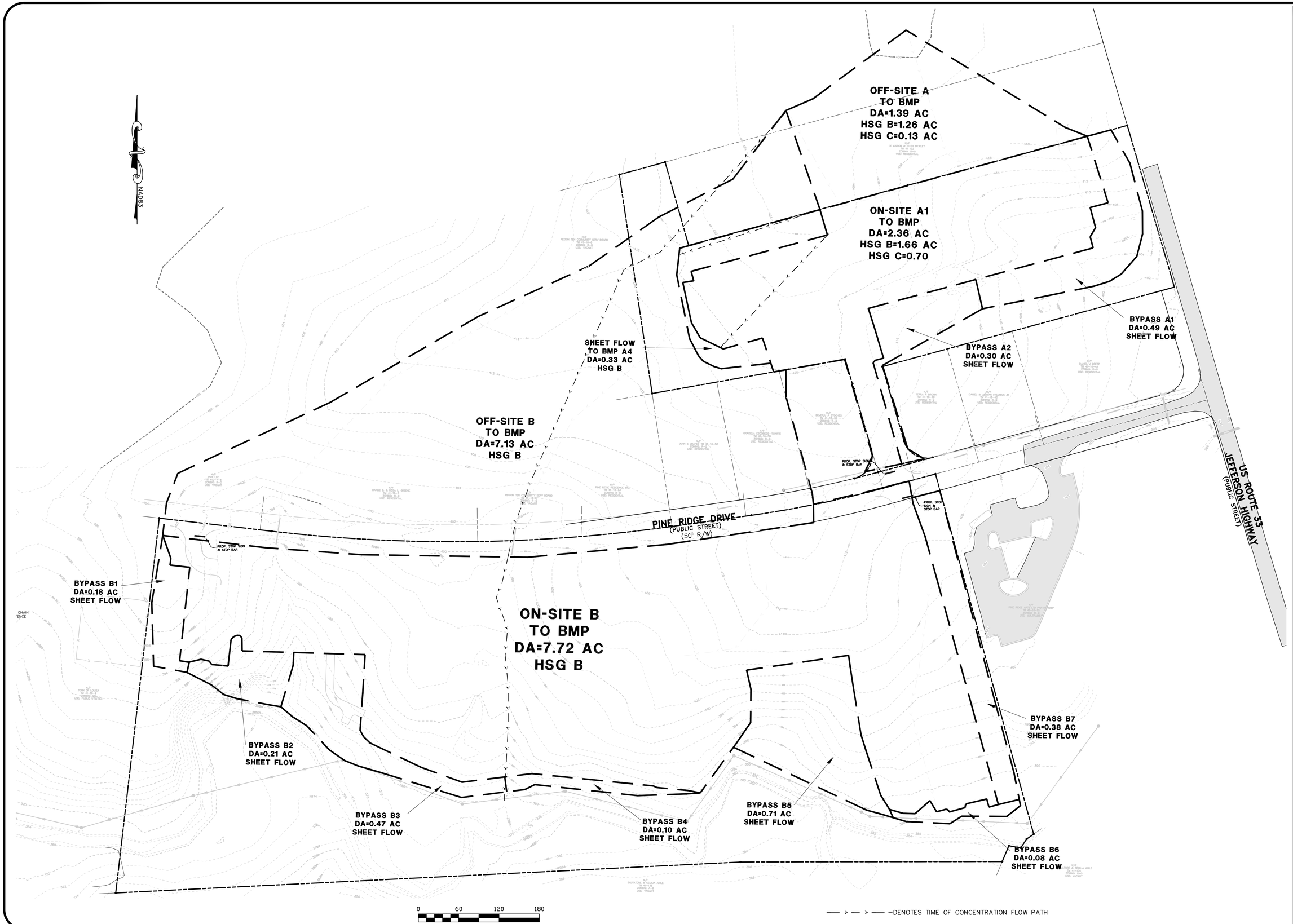
POA CHANNEL CALCULATIONS

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE: AUGUST 14, 2025
SCALE: AS SHOWN
DESIGNED BY: DCW
DRAWN BY: SLB
CHECKED BY: DCW

ACAD FILE: 25D003ZCCP
DRAWING NO: 25-D-003

SHEET NO. 28 **OF** 50 **SHEETS**



REVISION BLOCK		
DATE	DESCRIPTION	BY
2/13/26	PER TOWN COMMENTS	DCW
4/17/26	PER DEQ COMMENTS	SLB
4/29/26	PER TOWN AND VDOT COMMENTS	DCW
5/28/26	PER VDOT COMMENTS	DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO.
036528
5-28-26
PROFESSIONAL ENGINEER

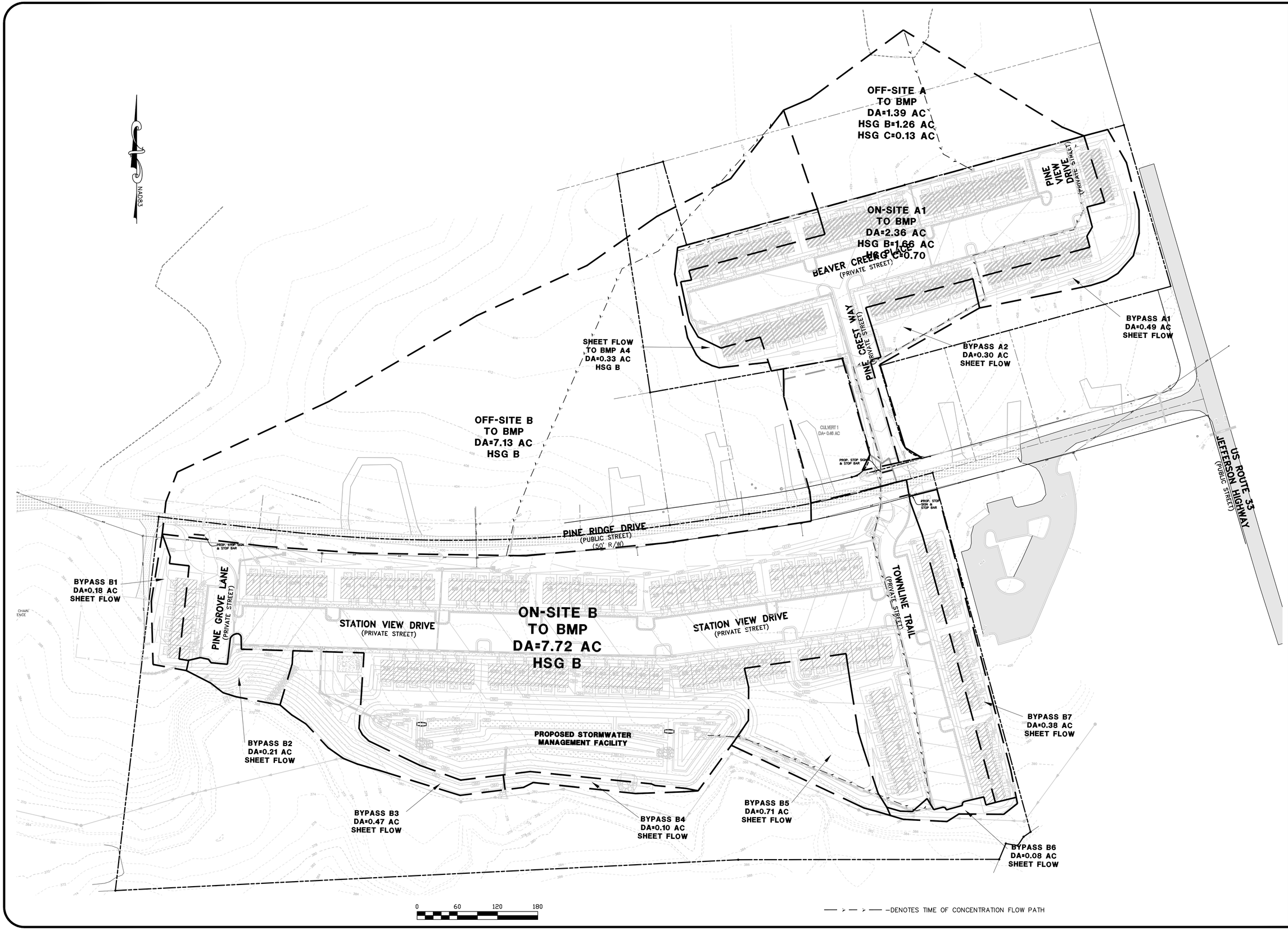
WEBB
W.W.W.
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

PRE-DEV SWM DRAINAGE AERA MAP

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	1" = 60'
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D003ZDCP
DRAWING NO:	25-D-003

SHEET NO. 29 OF 50 SHEETS



REVISION BLOCK		
DATE	DESCRIPTION	BY
2/13/26	PER TOWN COMMENTS	DCW
4/17/26	PER DEQ COMMENTS	SLB
4/29/26	PER TOWN AND VDOT COMMENTS	DCW
5/28/26	PER VDOT COMMENTS	DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO.
036528
5-28-26
PROFESSIONAL ENGINEER

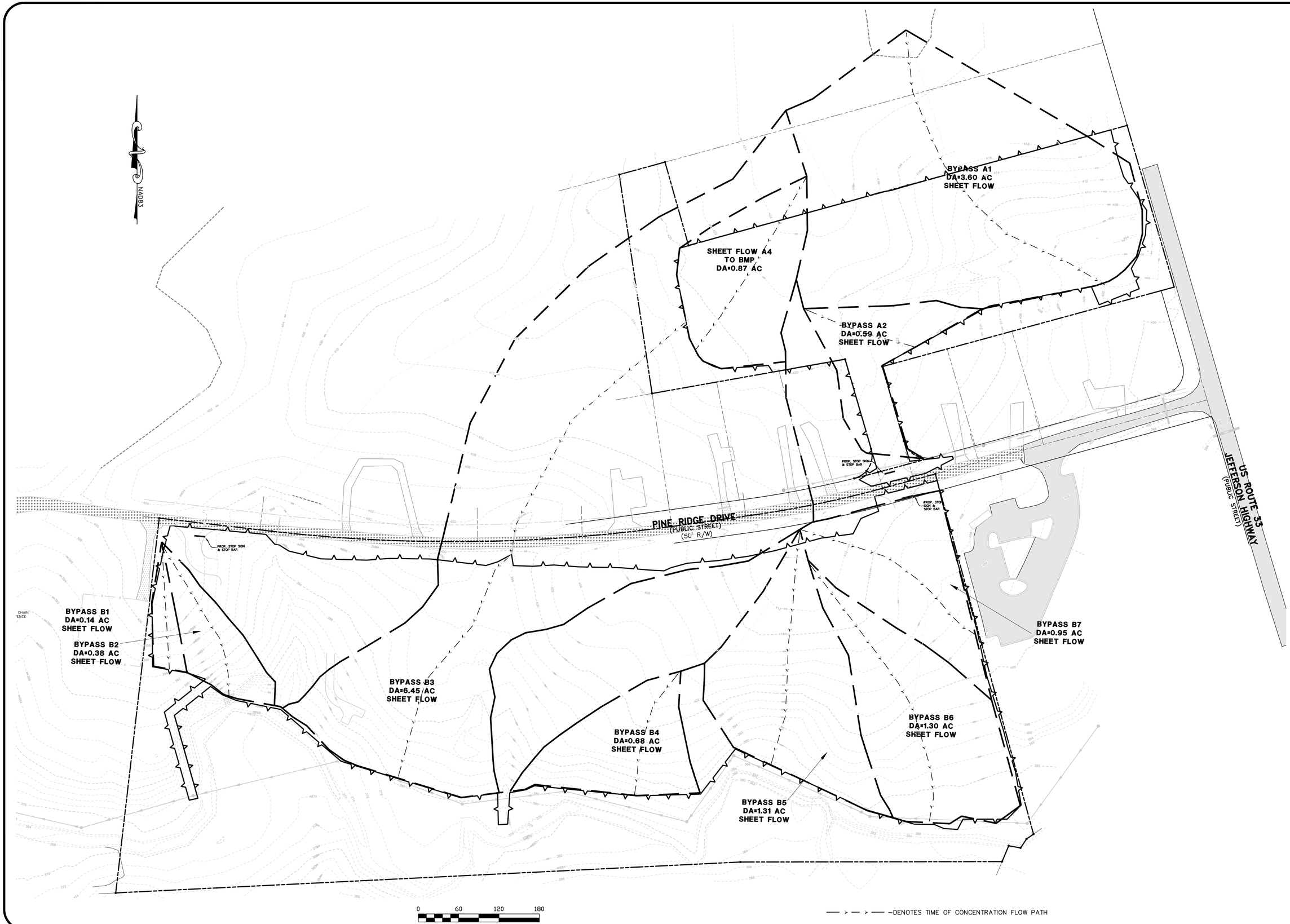
WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

POST-DEV SWM DRAINAGE AERA MAP

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	1" = 60'
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D003ZECP
DRAWING NO:	25-D-003

SHEET NO. 30
OF 50 SHEETS



REVISION BLOCK		
DATE	DESCRIPTION	BY
2/13/26	PER TOWN COMMENTS	DCW
4/17/26	PER DEQ COMMENTS	SLB
4/29/26	PER TOWN AND VDOT COMMENTS	DCW
5/28/26	PER VDOT COMMENTS	DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO.
036528
5-28-26
PROFESSIONAL ENGINEER

WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

PRE-DEV SHEET FLOW DRAINAGE AERA MAP

LOUISA STATION

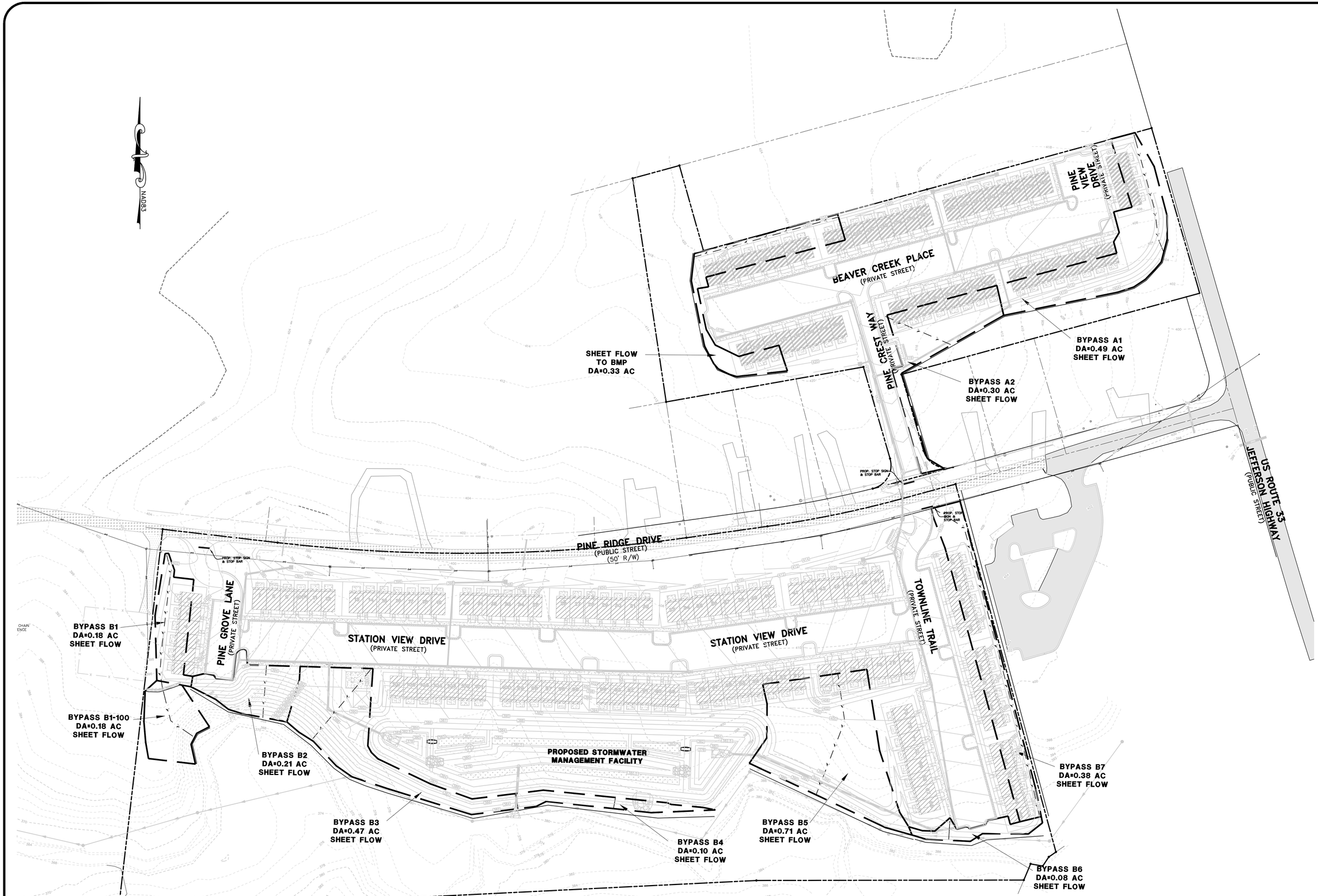
TAX MAPS 41-16-10,11,12,13,14

CONSTRUCTION PLAN

TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	1" = 60'
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D003ZFCP
DRAWING NO:	25-D-003

SHEET NO. 31 OF 50 SHEETS



REVISION BLOCK			
DATE	DESCRIPTION		BY
2/13/26	PER TOWN COMMENTS		DCW
4/17/26	PER DEQ COMMENTS		SLB
4/29/26	PER TOWN AND VDOT COMMENTS		DCW
5/28/26	PER VDOT COMMENTS		DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO.
036528
5-28-26
PROFESSIONAL ENGINEER

W.W. WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

POST-DEV SHEET FLOW DRAINAGE AERA MAP

LOUISA STATION

TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	1" = 100'
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D003ZGCP
DRAWING NO:	25-D-003

SHEET NO. 32
OF 50 SHEETS

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 — Sunday, 02 / 8 / 2026

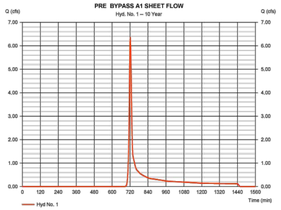
Hyd. No. 1

PRE BYPASS A1 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 6.249 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 17,612 cuft
Drainage area	= 3.600 ac	Curve number	= 60*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.70 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.200 x 61) + (1.310 x 78)] / 3.600

PRE BYPASS A1 SHEET FLOW
Hyd. No. 1 -- 10 Year



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No. 1

PRE BYPASS A1 SHEET FLOW

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.400	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.31	0.00	0.00	
Land slope (%)	= 10.00	0.00	0.00	
Travel Time (min)	= 11.09	+ 0.00	+ 0.00	= 11.09
Shallow Concentrated Flow				
Flow length (ft)	= 410.00	0.00	0.00	
Watercourse slope (%)	= 6.80	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=4.21	0.00	0.00	
Travel Time (min)	= 1.62	+ 0.00	+ 0.00	= 1.62
Channel Flow				
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	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				12.70 min

Hydrograph Report

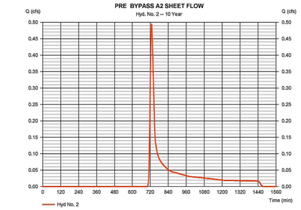
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 — Sunday, 02 / 8 / 2026

Hyd. No. 2

PRE BYPASS A2 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 0.494 cfs
Storm frequency	= 10 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 2,147 cuft
Drainage area	= 0.550 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 20.30 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

PRE BYPASS A2 SHEET FLOW
Hyd. No. 2 -- 10 Year



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No. 2

PRE BYPASS A2 SHEET FLOW

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.400	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.31	0.00	0.00	
Land slope (%)	= 2.30	0.00	0.00	
Travel Time (min)	= 19.97	+ 0.00	+ 0.00	= 19.97
Shallow Concentrated Flow				
Flow length (ft)	= 70.00	0.00	0.00	
Watercourse slope (%)	= 4.10	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=3.27	0.00	0.00	
Travel Time (min)	= 0.36	+ 0.00	+ 0.00	= 0.36
Channel Flow				
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	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				20.30 min

Hydrograph Report

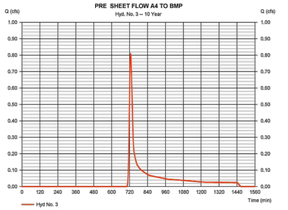
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 — Sunday, 02 / 8 / 2026

Hyd. No. 3

PRE SHEET FLOW A4 TO BMP

Hydrograph type	= SCS Runoff	Peak discharge	= 0.909 cfs
Storm frequency	= 10 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 3,110 cuft
Drainage area	= 0.870 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 19.72 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

PRE SHEET FLOW A4 TO BMP
Hyd. No. 3 -- 10 Year



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No. 3

PRE SHEET FLOW A4 TO BMP

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.400	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.31	0.00	0.00	
Land slope (%)	= 1.40	0.00	0.00	
Travel Time (min)	= 18.46	+ 0.00	+ 0.00	= 18.46
Shallow Concentrated Flow				
Flow length (ft)	= 205.00	0.00	0.00	
Watercourse slope (%)	= 2.80	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=2.70	0.00	0.00	
Travel Time (min)	= 1.27	+ 0.00	+ 0.00	= 1.27
Channel Flow				
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	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				19.72 min

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 — Sunday, 02 / 8 / 2026

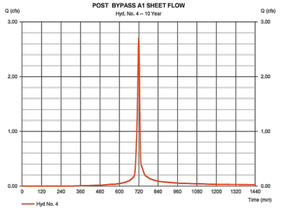
Hyd. No. 4

POST BYPASS A1 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 2.700 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 6,362 cuft
Drainage area	= 0.490 ac	Curve number	= 67*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 9.50 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.080 x 74) + (0.110 x 98)] / 0.490

POST BYPASS A1 SHEET FLOW
Hyd. No. 4 -- 10 Year



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No. 4

POST BYPASS A1 SHEET FLOW

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.31	0.00	0.00	
Land slope (%)	= 5.80	0.00	0.00	
Travel Time (min)	= 9.17	+ 0.00	+ 0.00	= 9.17
Shallow Concentrated Flow				
Flow length (ft)	= 78.00	0.00	0.00	
Watercourse slope (%)	= 6.30	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=4.05	0.00	0.00	
Travel Time (min)	= 0.32	+ 0.00	+ 0.00	= 0.32
Channel Flow				
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	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				9.50 min

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 — Sunday, 02 / 8 / 2026

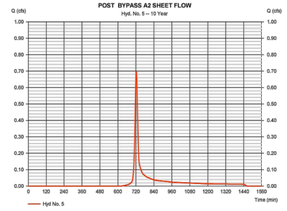
Hyd. No. 5

POST BYPASS A2 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 0.697 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 2,003 cuft
Drainage area	= 0.300 ac	Curve number	= 68*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 15.80 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.240 x 61) + (0.060 x 98)] / 0.300

POST BYPASS A2 SHEET FLOW
Hyd. No. 5 -- 10 Year



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No. 5

POST BYPASS A2 SHEET FLOW

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.400	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.31	0.00	0.00	
Land slope (%)	= 4.30	0.00	0.00	
Travel Time (min)	= 15.55	+ 0.00	+ 0.00	= 15.55
Shallow Concentrated Flow				
Flow length (ft)	= 5.00	0.00	0.00	
Watercourse slope (%)	= 4.30	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=3.35	0.00	0.00	
Travel Time (min)	= 0.02	+ 0.00	+ 0.00	= 0.02
Channel Flow				
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	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				15.60 min

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 — Sunday, 02 / 8 / 2026

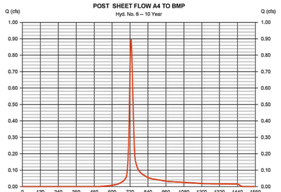
Hyd. No. 6

POST SHEET FLOW A4 TO BMP

Hydrograph type	= SCS Runoff	Peak discharge	= 0.895 cfs
Storm frequency	= 10 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 3,102 cuft
Drainage area	= 0.330 ac	Curve number	= 79*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 20.40 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.200 x 61) + (0.130 x 98)] / 0.330

POST SHEET FLOW A4 TO BMP
Hyd. No. 6 -- 10 Year



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No. 6

POST SHEET FLOW A4 TO BMP

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.400	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.31	0.00	0.00	
Land slope (%)	= 2.40	0.00	0.00	
Travel Time (min)	= 19.63	+ 0.00	+ 0.00	= 19.63
Shallow Concentrated Flow				
Flow length (ft)	= 118.00	0.00	0.00	
Watercourse slope (%)	= 2.40	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=2.50	0.00	0.00	
Travel Time (min)	= 0.79	+ 0.00	+ 0.00	= 0.79
Channel Flow				
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	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				20.40 min

Hydrograph Report

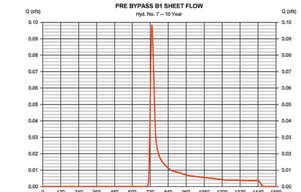
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 — Sunday, 02 / 8 / 2026

Hyd. No. 7

PRE BYPASS B1 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 0.098 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 457 cuft
Drainage area	= 0.130 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 24.70 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

PRE BYPASS B1 SHEET FLOW
Hyd. No. 7 -- 10 Year



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No. 7

PRE BYPASS B1 SHEET FLOW

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.400	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.31	0.00	0.00	
Land slope (%)	= 1.40	0.00	0.00	
Travel Time (min)	= 24.35	+ 0.00	+ 0.00	= 24.35
Shallow Concentrated Flow				
Flow length (ft)	= 87.00	0.00	0.00	
Watercourse slope (%)	= 8.40	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=4.68	0.00	0.00	
Travel Time (min)	= 0.31	+ 0.00	+ 0.00	= 0.31
Channel Flow				
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	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				24.70 min

Hydrograph Report

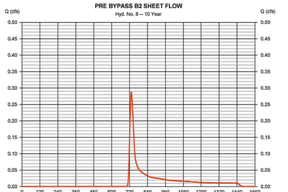
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 — Sunday, 02 / 8 / 2026

Hyd. No. 8

PRE BYPASS B2 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 0.287 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 1,337 cuft
Drainage area	= 0.380 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 24.90 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

PRE BYPASS B2 SHEET FLOW
Hyd. No. 8 -- 10 Year



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No. 8

PRE BYPASS B2 SHEET FLOW

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.400	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.31	0.00	0.00	
Land slope (%)	= 1.40	0.00	0.00	
Travel Time (min)	= 24.90	+ 0.00	+ 0.00	= 24.90
Shallow Concentrated Flow				
Flow length (ft)	= 147.00	0.00	0.00	
Watercourse slope (%)	= 8.40	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=4.68	0.00	0.00	
Travel Time (min)	= 0.52	+ 0.00	+ 0.00	= 0.52
Channel Flow				
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	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				24.90 min

Hydrograph Report

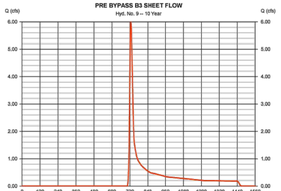
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 — Sunday, 02 / 8 / 2026

Hyd. No. 9

PRE BYPASS B3 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 5.997 cfs
Storm frequency	= 10 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 23,058 cuft
Drainage area	= 0.450 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 16.80 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

PRE BYPASS B3 SHEET FLOW
Hyd. No. 9 -- 10 Year



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No. 9

PRE BYPASS B3 SHEET FLOW

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.400	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.31	0.00	0.00	
Land slope (%)	= 6.10	0.00	0.00	
Travel Time (min)	= 13.52	+ 0.00	+ 0.00	= 13.52
Shallow Concentrated Flow				
Flow length (ft)	= 729.00	0.00	0.00	
Watercourse slope (%)	= 8.40	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=3.75	0.00	0.00	
Travel Time (min)	= 3.24	+ 0.00	+ 0.00	= 3.24
Channel Flow				
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	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				16.80 min

Hydrograph Report

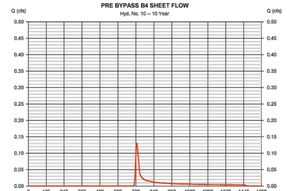
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 — Sunday, 02 / 8 / 2026

Hyd. No. 10

PRE BYPASS B4 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 0.130 cfs
Storm frequency	= 10 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 550 cuft
Drainage area	= 0.140 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 17.30 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

PRE BYPASS B4 SHEET FLOW
Hyd. No. 10 -- 10 Year



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No. 10

PRE BYPASS B4 SHEET FLOW

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.400	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.31	0.00	0.00	
Land slope (%)	= 3.40	0.00	0.00	
Travel Time (min)	= 17.08	+ 0.00	+ 0.00	= 17.08
Shallow Concentrated Flow				
Flow length (ft)	= 98.00	0.00	0.00	
Watercourse slope (%)	= 14.50	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=6.23	0.00	0.00	
Travel Time (min)	= 0.26	+ 0.00	+ 0.00	= 0.26
Channel Flow				
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	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				17.30 min

REVISION BLOCK

BY	DESCRIPTION	DATE
DCW	PER TOWN COMMENTS	2/13/26
SLB	PER DEQ COMMENTS	4/17/26
DCW	PER TOWN AND VDOT COMMENTS	4/29/26
DCW	PER VDOT COMMENTS	5/28/26

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO. 036528
5-28-26
PROFESSIONAL ENGINEER

W.W. WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

SHEET FLOW CALCULATIONS

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE: AUGUST 14, 2025
SCALE: N.T.S.
DESIGNED BY: DCW
DRAWN BY: SLB
CHECKED BY: DCW

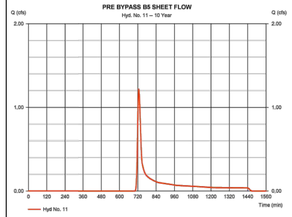
ACAD FILE: 25D003ZHCP
DRAWING NO: 25-D-003

SHEET NO. 33
OF 50 SHEETS

Hydrograph Report

Hyd. No. 11
PRE BYPASS B5 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 1.218 cfs
Storm frequency	= 10 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 4.683 cuft
Drainage area	= 1.310 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 20.10 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



TR55 Tc Worksheet

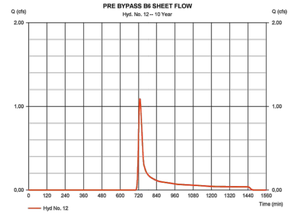
Hyd. No. 11
PRE BYPASS B5 SHEET FLOW

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.400	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.31	0.00	0.00	
Land slope (%)	= 2.50	0.00	0.00	
Travel Time (min)	= 19.31	+ 0.00	+ 0.00	= 19.31
Shallow Concentrated Flow				
Flow length (ft)	= 249.00	0.00	0.00	
Watercourse slope (%)	= 10.80	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=5.30	0.00	0.00	
Travel Time (min)	= 0.78	+ 0.00	+ 0.00	= 0.78
Channel Flow				
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	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				20.10 min

Hydrograph Report

Hyd. No. 12
PRE BYPASS B6 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 1.089 cfs
Storm frequency	= 10 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 4.730 cuft
Drainage area	= 1.300 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 20.70 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



TR55 Tc Worksheet

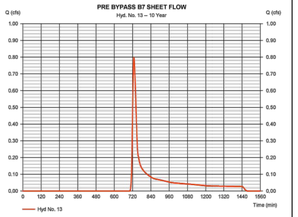
Hyd. No. 12
PRE BYPASS B6 SHEET FLOW

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.400	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.31	0.00	0.00	
Land slope (%)	= 2.50	0.00	0.00	
Travel Time (min)	= 19.31	+ 0.00	+ 0.00	= 19.31
Shallow Concentrated Flow				
Flow length (ft)	= 335.00	0.00	0.00	
Watercourse slope (%)	= 6.50	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=4.11	0.00	0.00	
Travel Time (min)	= 1.36	+ 0.00	+ 0.00	= 1.36
Channel Flow				
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	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				20.70 min

Hydrograph Report

Hyd. No. 13
PRE BYPASS B7 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 0.796 cfs
Storm frequency	= 10 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 3.457 cuft
Drainage area	= 0.950 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 20.40 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



TR55 Tc Worksheet

Hyd. No. 13
PRE BYPASS B7 SHEET FLOW

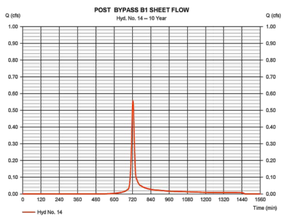
Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.400	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.31	0.00	0.00	
Land slope (%)	= 2.50	0.00	0.00	
Travel Time (min)	= 19.31	+ 0.00	+ 0.00	= 19.31
Shallow Concentrated Flow				
Flow length (ft)	= 209.00	0.00	0.00	
Watercourse slope (%)	= 4.20	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=3.31	0.00	0.00	
Travel Time (min)	= 1.05	+ 0.00	+ 0.00	= 1.05
Channel Flow				
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	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				20.40 min

Hydrograph Report

Hyd. No. 14
POST BYPASS B1 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 0.557 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 1.566 cuft
Drainage area	= 0.180 ac	Curve number	= 75*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 16.49 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.110 x 91) + (0.070 x 98)] / 0.180



TR55 Tc Worksheet

Hyd. No. 14
POST BYPASS B1 SHEET FLOW

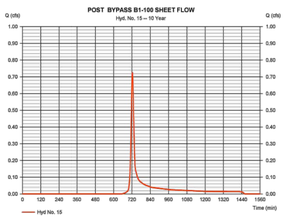
Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.31	0.00	0.00	
Land slope (%)	= 1.40	0.00	0.00	
Travel Time (min)	= 16.18	+ 0.00	+ 0.00	= 16.18
Shallow Concentrated Flow				
Flow length (ft)	= 85.00	0.00	0.00	
Watercourse slope (%)	= 8.40	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=4.68	0.00	0.00	
Travel Time (min)	= 0.30	+ 0.00	+ 0.00	= 0.30
Channel Flow				
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	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				16.49 min

Hydrograph Report

Hyd. No. 15
POST BYPASS B1-100 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 0.725 cfs
Storm frequency	= 10 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 2.115 cuft
Drainage area	= 0.360 ac	Curve number	= 65*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 16.50 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.110 x 81) + (0.070 x 98) + (0.180 x 55)] / 0.360



TR55 Tc Worksheet

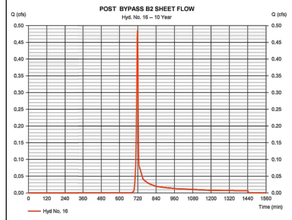
Hyd. No. 15
POST BYPASS B1-100 SHEET FLOW

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.31	0.00	0.00	
Land slope (%)	= 1.40	0.00	0.00	
Travel Time (min)	= 16.18	+ 0.00	+ 0.00	= 16.18
Shallow Concentrated Flow				
Flow length (ft)	= 170.00	0.00	0.00	
Watercourse slope (%)	= 37.00	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=9.81	0.00	0.00	
Travel Time (min)	= 0.29	+ 0.00	+ 0.00	= 0.29
Channel Flow				
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	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				16.50 min

Hydrograph Report

Hyd. No. 16
POST BYPASS B2 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 0.485 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 983 cuft
Drainage area	= 0.210 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 3.60 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



TR55 Tc Worksheet

Hyd. No. 16
POST BYPASS B2 SHEET FLOW

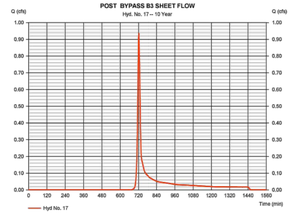
Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 76.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.31	0.00	0.00	
Land slope (%)	= 33.00	0.00	0.00	
Travel Time (min)	= 3.63	+ 0.00	+ 0.00	= 3.63
Shallow Concentrated Flow				
Flow length (ft)	= 0.00	0.00	0.00	
Watercourse slope (%)	= 0.00	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=0.00	0.00	0.00	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Channel Flow				
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	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				3.60 min

Hydrograph Report

Hyd. No. 17
POST BYPASS B3 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 0.934 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 2.542 cuft
Drainage area	= 0.470 ac	Curve number	= 62*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.00 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.460 x 61) + (0.010 x 98)] / 0.470



TR55 Tc Worksheet

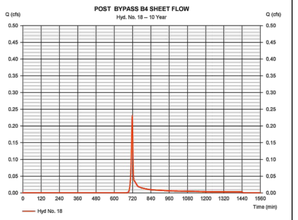
Hyd. No. 17
POST BYPASS B3 SHEET FLOW

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.31	0.00	0.00	
Land slope (%)	= 3.00	0.00	0.00	
Travel Time (min)	= 11.93	+ 0.00	+ 0.00	= 11.93
Shallow Concentrated Flow				
Flow length (ft)	= 30.00	0.00	0.00	
Watercourse slope (%)	= 33.00	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=9.27	0.00	0.00	
Travel Time (min)	= 0.05	+ 0.00	+ 0.00	= 0.05
Channel Flow				
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	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				12.00 min

Hydrograph Report

Hyd. No. 18
POST BYPASS B4 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 0.231 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 466 cuft
Drainage area	= 0.100 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



TR55 Tc Worksheet

Hyd. No. 18
POST BYPASS B4 SHEET FLOW

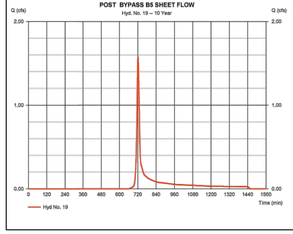
Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.31	0.00	0.00	
Land slope (%)	= 2.00	0.00	0.00	
Travel Time (min)	= 16.18	+ 0.00	+ 0.00	= 16.18
Shallow Concentrated Flow				
Flow length (ft)	= 0.00	0.00	0.00	
Watercourse slope (%)	= 0.00	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=0.00	0.00	0.00	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Channel Flow				
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	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				16.18 min

Hydrograph Report

Hyd. No. 19
POST BYPASS B5 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 1.573 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 4.218 cuft
Drainage area	= 0.710 ac	Curve number	= 64*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 13.30 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.650 x 61) + (0.060 x 98)] / 0.710



TR55 Tc Worksheet

Hyd. No. 19
POST BYPASS B5 SHEET FLOW

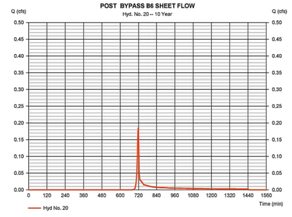
Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.31	0.00	0.00	
Land slope (%)	= 2.40	0.00	0.00	
Travel Time (min)	= 13.04	+ 0.00	+ 0.00	= 13.04
Shallow Concentrated Flow				
Flow length (ft)	= 86.00	0.00	0.00	
Watercourse slope (%)	= 16.00	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=6.45	0.00	0.00	
Travel Time (min)	= 0.22	+ 0.00	+ 0.00	= 0.22
Channel Flow				
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	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				13.30 min

Hydrograph Report

Hyd. No. 20
POST BYPASS B6 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 0.185 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 374 cuft
Drainage area	= 0.080 ac	Curve number	= 61*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.080 x 61)] / 0.080

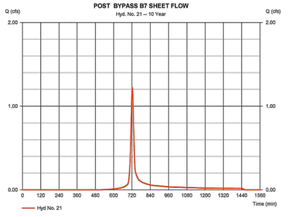


Hydrograph Report

Hyd. No. 21
POST BYPASS B7 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 1.220 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 3.421 cuft
Drainage area	= 0.360 ac	Curve number	= 76*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 15.80 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.200 x 91) + (0.160 x 98)] / 0.360



TR55 Tc Worksheet

Hyd. No. 21
POST BYPASS B7 SHEET FLOW

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.31	0.00	0.00	
Land slope (%)	= 1.40	0.00	0.00	
Travel Time (min)	= 14.03	+ 0.00	+ 0.00	= 14.03
Shallow Concentrated Flow				
Flow length (ft)	= 383.00	0.00	0.00	
Watercourse slope (%)	= 5.00	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=3.61	0.00	0.00	
Travel Time (min)	= 1.77	+ 0.00	+ 0.00	= 1.77
Channel Flow				
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	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				15.80 min

REVISION BLOCK

DESCRIPTION	DATE	BY
PER TOWN COMMENTS	2/13/26	DCW
PER DEQ COMMENTS	4/17/26	SLB
PER TOWN AND VDOT COMMENTS	4/29/26	DCW
PER VDOT COMMENTS	5/28/26	DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO. 036528
5-28-26
PROFESSIONAL ENGINEER

WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

SHEET FLOW CALCULATIONS

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE: AUGUST 14, 2025
SCALE: N.T.S.
DESIGNED BY: DCW
DRAWN BY: SLB
CHECKED BY: DCW

ACAD FILE: 25D003ZICP
DRAWING NO: 25-D-003

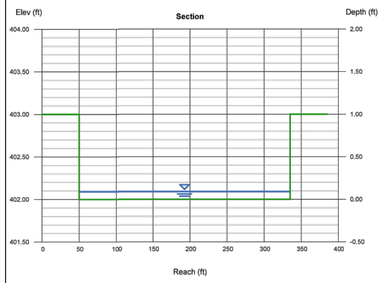
SHEET NO. 34
OF 50 SHEETS

Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. — Thursday, Jan 29 2026

SHEET FLOW A1

Rectangular		**Highlighted**	
Bottom Width (ft)	= 285.00	Depth (ft)	= 0.09
Total Depth (ft)	= 1.00	Q (cfs)	= 2.700
		Area (sqft)	= 25.65
Invert Elev (ft)	= 402.00	Velocity (ft/s)	= 0.11
Slope (%)	= 2.00	Wetted Perim (ft)	= 285.18
N-Value	= 0.400	Crit Depth, Yc (ft)	= 0.02
		Top Width (ft)	= 285.00
Calculations		EGL (ft)	= 0.09
Compute by:	Known Q		
Known Q (cfs)	= 2.70		

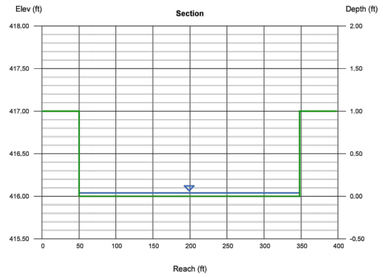


Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. — Thursday, Jan 29 2026

SHEET FLOW A2

Rectangular		**Highlighted**	
Bottom Width (ft)	= 298.00	Depth (ft)	= 0.04
Total Depth (ft)	= 1.00	Q (cfs)	= 0.697
		Area (sqft)	= 11.92
Invert Elev (ft)	= 416.00	Velocity (ft/s)	= 0.06
Slope (%)	= 4.30	Wetted Perim (ft)	= 298.08
N-Value	= 0.400	Crit Depth, Yc (ft)	= 0.01
		Top Width (ft)	= 298.00
Calculations		EGL (ft)	= 0.04
Compute by:	Known Q		
Known Q (cfs)	= 0.70		

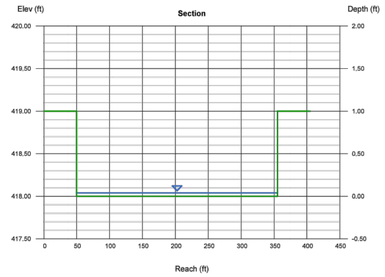


Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. — Saturday, Jan 31 2026

SHEET FLOW A4

Rectangular		**Highlighted**	
Bottom Width (ft)	= 305.00	Depth (ft)	= 0.04
Total Depth (ft)	= 1.00	Q (cfs)	= 0.895
		Area (sqft)	= 12.20
Invert Elev (ft)	= 418.00	Velocity (ft/s)	= 0.07
Slope (%)	= 5.40	Wetted Perim (ft)	= 305.08
N-Value	= 0.400	Crit Depth, Yc (ft)	= 0.01
		Top Width (ft)	= 305.00
Calculations		EGL (ft)	= 0.04
Compute by:	Known Q		
Known Q (cfs)	= 0.90		

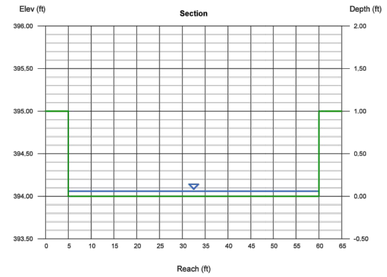


Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. — Thursday, Jan 29 2026

SHEET FLOW B1

Rectangular		**Highlighted**	
Bottom Width (ft)	= 55.00	Depth (ft)	= 0.06
Total Depth (ft)	= 1.00	Q (cfs)	= 0.557
		Area (sqft)	= 3.30
Invert Elev (ft)	= 394.00	Velocity (ft/s)	= 0.17
Slope (%)	= 9.10	Wetted Perim (ft)	= 55.12
N-Value	= 0.400	Crit Depth, Yc (ft)	= 0.02
		Top Width (ft)	= 55.00
Calculations		EGL (ft)	= 0.06
Compute by:	Known Q		
Known Q (cfs)	= 0.56		

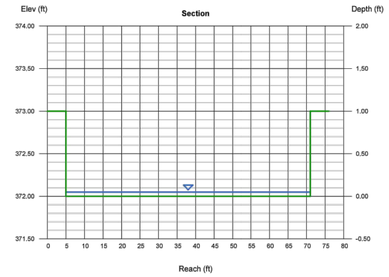


Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. — Friday, Jan 30 2026

SHEET FLOW B1-100

Rectangular		**Highlighted**	
Bottom Width (ft)	= 66.00	Depth (ft)	= 0.05
Total Depth (ft)	= 1.00	Q (cfs)	= 0.725
		Area (sqft)	= 3.30
Invert Elev (ft)	= 372.00	Velocity (ft/s)	= 0.22
Slope (%)	= 37.00	Wetted Perim (ft)	= 66.10
N-Value	= 0.400	Crit Depth, Yc (ft)	= 0.02
		Top Width (ft)	= 66.00
Calculations		EGL (ft)	= 0.05
Compute by:	Known Q		
Known Q (cfs)	= 0.73		

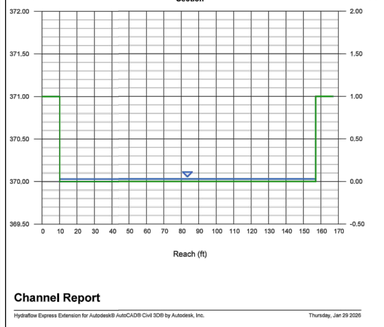


Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. — Thursday, Jan 29 2026

SHEET FLOW B2

Rectangular		**Highlighted**	
Bottom Width (ft)	= 147.00	Depth (ft)	= 0.03
Total Depth (ft)	= 1.00	Q (cfs)	= 0.490
		Area (sqft)	= 4.41
Invert Elev (ft)	= 370.00	Velocity (ft/s)	= 0.11
Slope (%)	= 18.00	Wetted Perim (ft)	= 147.06
N-Value	= 0.400	Crit Depth, Yc (ft)	= 0.01
		Top Width (ft)	= 147.00
Calculations		EGL (ft)	= 0.03
Compute by:	Known Q		
Known Q (cfs)	= 0.49		

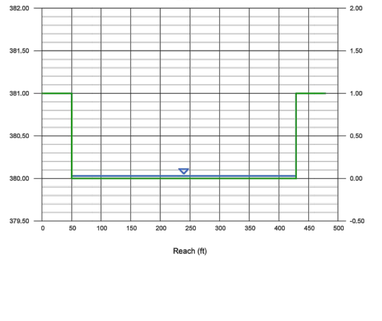


Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. — Thursday, Jan 29 2026

SHEET FLOW B3

Rectangular		**Highlighted**	
Bottom Width (ft)	= 379.00	Depth (ft)	= 0.03
Total Depth (ft)	= 1.00	Q (cfs)	= 0.934
		Area (sqft)	= 11.37
Invert Elev (ft)	= 380.00	Velocity (ft/s)	= 0.08
Slope (%)	= 18.00	Wetted Perim (ft)	= 379.06
N-Value	= 0.400	Crit Depth, Yc (ft)	= 0.01
		Top Width (ft)	= 379.00
Calculations		EGL (ft)	= 0.03
Compute by:	Known Q		
Known Q (cfs)	= 0.93		

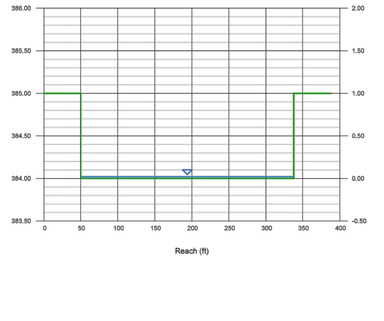


Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. — Thursday, Jan 29 2026

SHEET FLOW B4

Rectangular		**Highlighted**	
Bottom Width (ft)	= 288.00	Depth (ft)	= 0.02
Total Depth (ft)	= 1.00	Q (cfs)	= 0.244
		Area (sqft)	= 5.76
Invert Elev (ft)	= 384.00	Velocity (ft/s)	= 0.04
Slope (%)	= 18.00	Wetted Perim (ft)	= 288.04
N-Value	= 0.400	Crit Depth, Yc (ft)	= 0.01
		Top Width (ft)	= 288.00
Calculations		EGL (ft)	= 0.02
Compute by:	Known Q		
Known Q (cfs)	= 0.24		

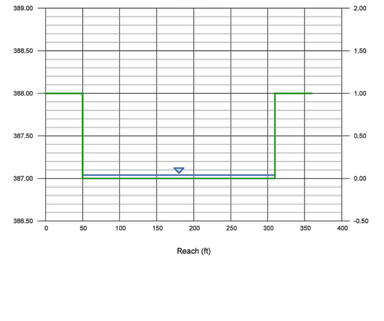


Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. — Thursday, Jan 29 2026

SHEET FLOW B5

Rectangular		**Highlighted**	
Bottom Width (ft)	= 260.00	Depth (ft)	= 0.04
Total Depth (ft)	= 1.00	Q (cfs)	= 1.573
		Area (sqft)	= 10.40
Invert Elev (ft)	= 387.00	Velocity (ft/s)	= 0.15
Slope (%)	= 18.00	Wetted Perim (ft)	= 260.08
N-Value	= 0.400	Crit Depth, Yc (ft)	= 0.02
		Top Width (ft)	= 260.00
Calculations		EGL (ft)	= 0.04
Compute by:	Known Q		
Known Q (cfs)	= 1.57		

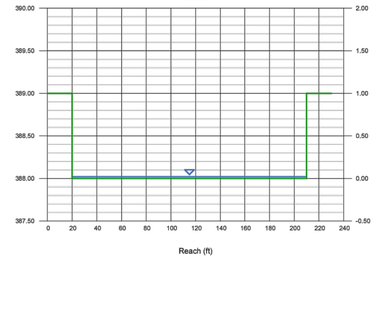


Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. — Thursday, Jan 29 2026

SHEET FLOW B6

Rectangular		**Highlighted**	
Bottom Width (ft)	= 190.00	Depth (ft)	= 0.02
Total Depth (ft)	= 1.00	Q (cfs)	= 0.190
		Area (sqft)	= 3.80
Invert Elev (ft)	= 388.00	Velocity (ft/s)	= 0.05
Slope (%)	= 12.00	Wetted Perim (ft)	= 190.04
N-Value	= 0.400	Crit Depth, Yc (ft)	= 0.01
		Top Width (ft)	= 190.00
Calculations		EGL (ft)	= 0.02
Compute by:	Known Q		
Known Q (cfs)	= 0.19		



Channel Report

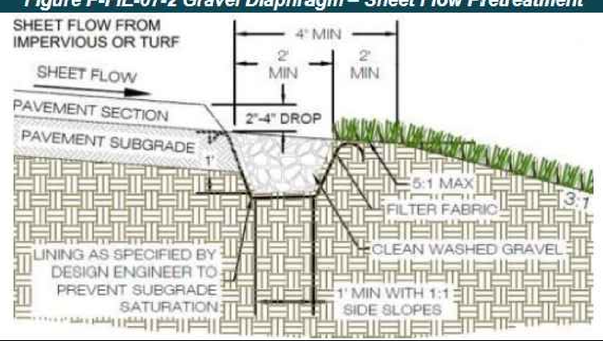
Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. — Thursday, Jan 29 2026

SHEET FLOW B7

Rectangular		**Highlighted**	
Bottom Width (ft)	= 491.00	Depth (ft)	= 0.03
Total Depth (ft)	= 1.00	Q (cfs)	= 1.220
		Area (sqft)	= 14.73
Invert Elev (ft)	= 390.00	Velocity (ft/s)	= 0.08
Slope (%)	= 6.90	Wetted Perim (ft)	= 491.06
N-Value	= 0.400	Crit Depth, Yc (ft)	= 0.01
		Top Width (ft)	= 491.00
Calculations		EGL (ft)	= 0.03
Compute by:	Known Q		
Known Q (cfs)	= 1.22		



Figure P-FIL-07-2 Gravel Diaphragm – Sheet Flow Pretreatment



NOTE: FOR AREA B1 INSTALL GRAVEL DIAPHRAGM AS SHOWN ON PLAN PER DETAIL ABOVE.

10 YEAR PEAK STORM- SHEET FLOW CALCULATIONS

DA NO.	PRE DEV VOL, CF	POST VOL. CF	POST. VOL. - PRE. VOL.	CHANGE	POST DEV. FLOW, CFS	SECTION LENGTH, FT	LAND SLOPE	GROUND ELEV	DEPTH, FT	VEL. CFS	GROUND COVER
A1	17,612	6,362	(11,250)	REDUCTION	2.700	285.000	2.0%	402.00	0.09	0.11	WOODED
A2	2,147	2,003	(144)	REDUCTION	0.697	298.000	4.3%	416.00	0.04	0.06	WOODED
A4	3,110	3,102	(8)	REDUCTION	0.895	305.000	5.4%	418.00	0.04	0.07	WOODED
B1	457	1,566	1,109	**INCREASE**	0.557	55.000	9.1%	394.00	0.06	0.17	WOODED
B1-100*					0.725	66.000	37.0%	372.00	0.05	0.22	WOODED
B2	1,337	983	(354)	REDUCTION	0.485	147.000	18.0%	370.00	0.03	0.11	WOODED
B3	23,058	2,542	(20,516)	REDUCTION	0.934	379.000	18.0%	380.00	0.03	0.08	WOODED
B4	500	492	(8)	REDUCTION	0.244	288.000	18.0%	384.00	0.02	0.04	WOODED
B5	4,683	4,218	(465)	REDUCTION	1.573	260.000	18.0%	387.00	0.04	0.15	WOODED
B6	4,730	374	(4,356)	REDUCTION	0.185	190.000	12.0%	388.00	0.02	0.05	WOODED
B7	3,457	3,421	(36)	REDUCTION	1.220	491.000	6.9%	390.00	0.03	0.08	WOODED

*THE 10 YEAR PEAK POST DEVELOPMENT VELOCITIES FOR SECTION B1 IS NON-EROSIVE TO THE 100 FT SECTION.

REVISION BLOCK			
DATE	DESCRIPTION	BY	
2/13/26	PER TOWN COMMENTS	DCW	
4/17/26	PER DEQ COMMENTS	SLB	
4/29/26	PER TOWN AND VDOT COMMENTS	DCW	
5/28/26	PER VDOT COMMENTS	DCW	

COMMONWEALTH OF VIRGINIA — DANIEL C. WEBB — LICENSE NO. 036528 — 5-28-26 — PROFESSIONAL ENGINEER

WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

SHEET FLOW CALCULATIONS

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE: AUGUST 14, 2025
SCALE: N.T.S.
DESIGNED BY: DCW
DRAWN BY: SLB
CHECKED BY: DCW

ACAD FILE: 25D003ZJCP
DRAWING NO: 25-D-003

SHEET NO. 35 OF 50 SHEETS



NOTE: THE EXISTING LAND COVER GIS IMAGERY IS NOT TO SCALE. THE SCALE SHOWN IS APPROXIMATELY EQUAL TO THE INDICATED SCALE. THE AERIAL IS SHOWN TO INDICATE THE GENERAL CONDITION OF THE SITE, SHOWING WOODED AND GRASSED AREAS, BUILDINGS, ROADWAYS AND DRIVEWAYS.

0 60 120 180

REVISION BLOCK			
DATE	DESCRIPTION		BY
2/13/26	PER TOWN COMMENTS		DCW
4/17/26	PER DEQ COMMENTS		SLB
4/29/26	PER TOWN AND VDOT COMMENTS		DCW
5/28/26	PER VDOT COMMENTS		DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO.
036528
5-28-26
PROFESSIONAL ENGINEER

WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

EXISTING GROUND COVER GIS MAP

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	AS SHOWN
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D003ZKCP
DRAWING NO:	25-D-003

Virginia Runoff Reduction Method Compliance Spreadsheet *July 2024*

Table 1. Land Cover Guidance for VRRM Compliance Spreadsheets

FOREST

Land that will remain undisturbed[1]:

- Portions of the site that will NOT be disturbed during construction.
- Portions of residential lots that will NOT be disturbed during construction, as approved by the VESMP authority.
- Surface area of stormwater BMPs that are NOT wet ponds, have some type of vegetative cover, and that do not replace an otherwise impervious surface[2].
  - BMPs in this category include bioretention, dry swale, grass channel, stormwater wetland, soil amended areas that are vegetated, and infiltration practices that have a vegetated cover.
- Other areas of existing forest, including wetlands, that will be protected during construction and that will remain undisturbed.
- Non-disturbed portions of the site that will be afforested (minimum of 400 woody stems per acre).

Operational & management conditions for land cover in the Forest category:

- Areas that will be considered as forest must be shown outside the limits of disturbance (LOD) on an approved erosion and sediment control plan AND clearly demarcated in the field (e.g., fencing and/or posted signage) prior to commencement of construction.
- All areas that will be considered forest for stormwater purposes must have documentation which prescribes that the area will remain in a natural, vegetated state in perpetuity via the use of one of the following:
  - Appropriate documentation includes subdivision covenants and restrictions; deeded operation and maintenance agreements and plans; parcel of common ownership with maintenance plan; third-party protective easement; or other documentation approved by the VESMP authority.
- Although the goal is to have forest areas remain undisturbed, some activities may be prescribed in the appropriate documentation, as approved by the VESMP authority:
  - Forest management (harvesting of trees through the Virginia Department of Forestry with the intent of regenerating another crop of trees, either naturally or artificially in the future), control of invasive species, replanting and revegetating, passive recreation (e.g., trails), etc.

MIXED OPEN

[Table 1…continued]

Land that will remain undisturbed OR will be left in a natural vegetated state (bush hogged no more than four times per year):

- Portions of a development (residential lots, roadway rights-of-way, community open spaces areas, etc.) that were disturbed during construction and will not be mowed routinely but left in a natural vegetated state (can include areas bush hogged no more than four times per year or rotationally grazed) as approved by the VESMP authority.
- Community open space areas that will not be mowed routinely but left in a natural vegetated state (can include areas bush hogged no more than four times per year or rotationally grazed).
- Utility rights-of-way that will be left in a natural vegetated state (can include areas bush hogged no more than four times per year or rotationally grazed).
- Surface area of extended detention (ED) pond that is not mowed routinely.
- Other areas of existing mixed open that will be protected during construction and that will remain undisturbed.

Operational & management conditions for land cover in the Mixed Open category:

- Portions of mixed open space areas that will be disturbed during construction must follow the most recent design specifications for soil restoration or placement of engineered soil mix as per design specifications, as well as other relevant specifications if the area will be used as a filter strip, grass channel, bioretention, or other BMP.
- Portions of roadway rights-of-way that will count as mixed open are assumed to be disturbed during construction, and must follow the most recent design specifications for soil restoration or placement of engineered soil mix as per design specifications, as well as other relevant specifications if the area will be used as a filter strip, grass channel, bioretention, or other BMP.
- All areas that will be considered mixed open for stormwater purposes must have documentation that prescribes that the area will remain in a natural, vegetated state via the use of one of the following:
  - Appropriate documentation includes subdivision covenants and restrictions; operation and maintenance plans; parcel of common ownership with maintenance plan; third-party protective easement; within public right-of-way or easement with maintenance plan; or other documentation approved by the local VESMP.
  - For utility rights-of-way that will be left in a natural vegetated state, a decompaction plan or narrative in the stormwater management plan detailing how pre-development soil hydrologic characteristics will be protected during construction (i.e., no grading proposed, no vehicular traffic to occur, etc.). In addition, a planting plan should be provided indicating no areas will be bush hogged more than four times per year.
- Although the goal is to have mixed open areas remain undisturbed, some activities may be prescribed in the appropriate documentation, as approved by the local program authority:
  - Control of invasive species, replanting and revegetating, passive recreation (e.g., trails), limited bush hogging to maintain desired vegetative community, etc.

MANAGED TURF

Land disturbed and/or graded for eventual use as managed turf:

Virginia Runoff Reduction Method Compliance Spreadsheet *July 2024*

- Portions of residential yards that are graded or disturbed, including yard areas, septic fields, residential utility connections, etc.
- Roadway rights-of-way that will be mowed and maintained as turf.
- Turf areas intended to be mowed and maintained as turf within residential, commercial, industrial, and institutional settings.

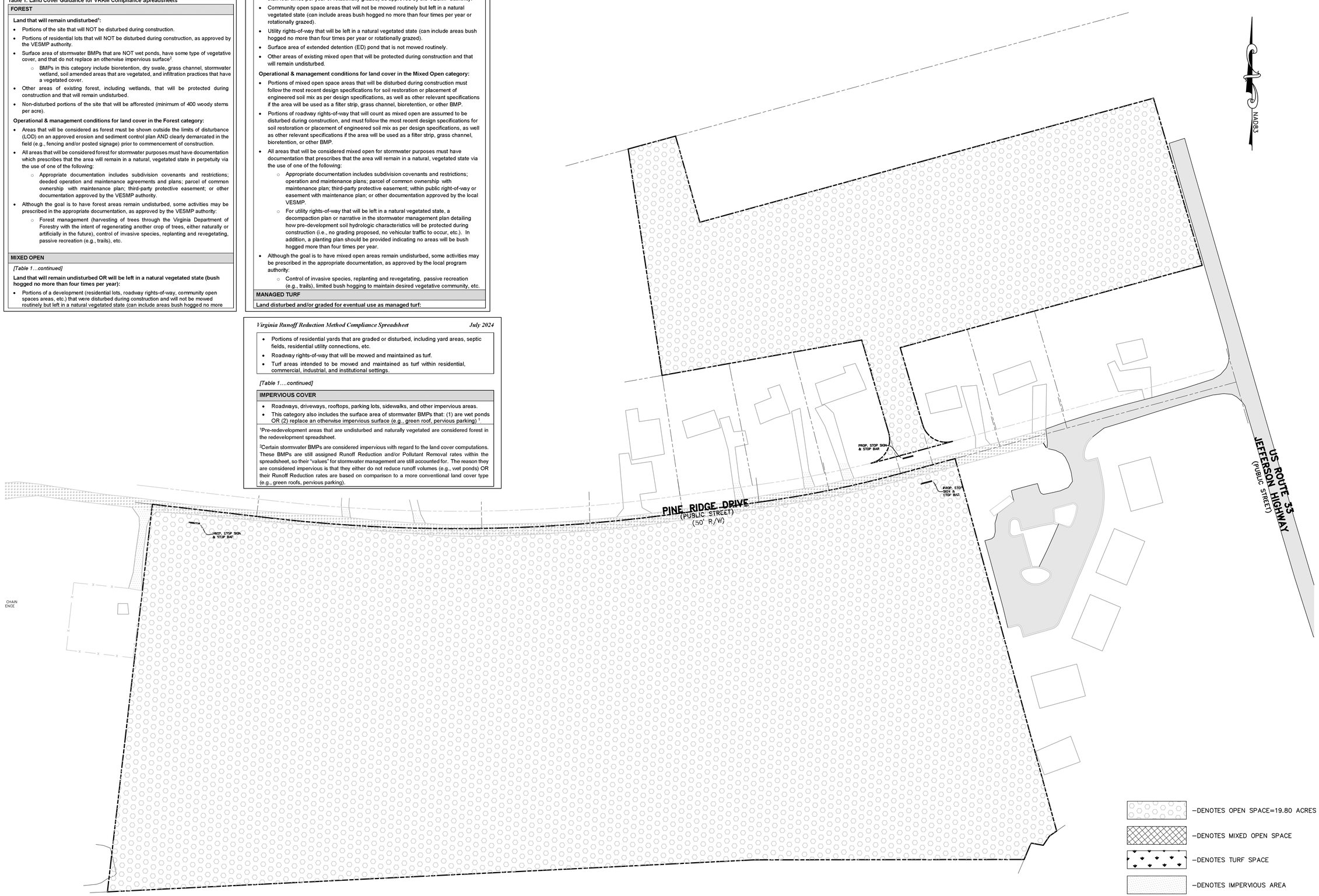
[Table 1….continued]

IMPERVIOUS COVER

- Roadways, driveways, rooftops, parking lots, sidewalks, and other impervious areas.
- This category also includes the surface area of stormwater BMPs that: (1) are wet ponds OR (2) replace an otherwise impervious surface (e.g., green roof, pervious parking) [1].

[1]Pre-redevelopment areas that are undisturbed and naturally vegetated are considered forest in the redevelopment spreadsheet.

[2]Certain stormwater BMPs are considered impervious with regard to the land cover computations. These BMPs are still assigned Runoff Reduction and/or Pollutant Removal rates within the spreadsheet, so their "values" for stormwater management are still accounted for. The reason they are considered impervious is that they either do not reduce runoff volumes (e.g., wet ponds) OR their Runoff Reduction rates are based on comparison to a more conventional land cover type (e.g., green roofs, pervious parking).



REVISION BLOCK			
DATE	DESCRIPTION	BY
2/13/26	PER TOWN COMMENTS	DCW
4/17/26	PER DEQ COMMENTS	SLB
4/29/26	PER TOWN AND VDOT COMMENTS	DCW
5/28/26	PER VDOT COMMENTS	DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO. 036528
5-28-26
PROFESSIONAL ENGINEER

WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

PRE-DEV VRRM LAND COVER MAP

LOUISA STATION

TAX MAPS 41-16-10,11,12,13,14

CONSTRUCTION PLAN

TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	1" = 60'
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D003ZLCP
DRAWING NO:	25-D-003
SHEET NO.	37
OF	50 SHEETS

Virginia Runoff Reduction Method Compliance Spreadsheet *July 2024*

Table 1. Land Cover Guidance for VRRM Compliance Spreadsheets

FOREST

Land that will remain undisturbed[1]:

- Portions of the site that will NOT be disturbed during construction.
- Portions of residential lots that will NOT be disturbed during construction, as approved by the VESMP authority.
- Surface area of stormwater BMPs that are NOT wet ponds, have some type of vegetative cover, and that do not replace an otherwise impervious surface[2].
  - BMPs in this category include bioretention, dry swale, grass channel, stormwater wetland, soil amended areas that are vegetated, and infiltration practices that have a vegetated cover.
- Other areas of existing forest, including wetlands, that will be protected during construction and that will remain undisturbed.
- Non-disturbed portions of the site that will be afforested (minimum of 400 woody stems per acre).

Operational & management conditions for land cover in the Forest category:

- Areas that will be considered as forest must be shown outside the limits of disturbance (LOD) on an approved erosion and sediment control plan AND clearly demarcated in the field (e.g., fencing and/or posted signage) prior to commencement of construction.
- All areas that will be considered forest for stormwater purposes must have documentation which prescribes that the area will remain in a natural, vegetated state in perpetuity via the use of one of the following:
  - Appropriate documentation includes subdivision covenants and restrictions; deeded operation and maintenance agreements and plans; parcel of common ownership with maintenance plan; third-party protective easement; or other documentation approved by the VESMP authority.
- Although the goal is to have forest areas remain undisturbed, some activities may be prescribed in the appropriate documentation, as approved by the VESMP authority:
  - Forest management (harvesting of trees through the Virginia Department of Forestry with the intent of regenerating another crop of trees, either naturally or artificially in the future), control of invasive species, replanting and revegetating, passive recreation (e.g., trails), etc.

MIXED OPEN

[Table 1…continued]

Land that will remain undisturbed OR will be left in a natural vegetated state (bush hogged no more than four times per year):

- Portions of a development (residential lots, roadway rights-of-way, community open spaces areas, etc.) that were disturbed during construction and will not be mowed routinely but left in a natural vegetated state (can include areas bush hogged no more than four times per year or rotationally grazed) as approved by the VESMP authority.
- Community open space areas that will not be mowed routinely but left in a natural vegetated state (can include areas bush hogged no more than four times per year or rotationally grazed).
- Utility rights-of-way that will be left in a natural vegetated state (can include areas bush hogged no more than four times per year or rotationally grazed).
- Surface area of extended detention (ED) pond that is not mowed routinely.
- Other areas of existing mixed open that will be protected during construction and that will remain undisturbed.

Operational & management conditions for land cover in the Mixed Open category:

- Portions of mixed open space areas that will be disturbed during construction must follow the most recent design specifications for soil restoration or placement of engineered soil mix as per design specifications, as well as other relevant specifications if the area will be used as a filter strip, grass channel, bioretention, or other BMP.
- Portions of roadway rights-of-way that will count as mixed open are assumed to be disturbed during construction, and must follow the most recent design specifications for soil restoration or placement of engineered soil mix as per design specifications, as well as other relevant specifications if the area will be used as a filter strip, grass channel, bioretention, or other BMP.
- All areas that will be considered mixed open for stormwater purposes must have documentation that prescribes that the area will remain in a natural, vegetated state via the use of one of the following:
  - Appropriate documentation includes subdivision covenants and restrictions; operation and maintenance plans; parcel of common ownership with maintenance plan; third-party protective easement; within public right-of-way or easement with maintenance plan; or other documentation approved by the local VESMP.
  - For utility rights-of-way that will be left in a natural vegetated state, a decompaction plan or narrative in the stormwater management plan detailing how pre-development soil hydrologic characteristics will be protected during construction (i.e., no grading proposed, no vehicular traffic to occur, etc.). In addition, a planting plan should be provided indicating no areas will be bush hogged more than four times per year.
- Although the goal is to have mixed open areas remain undisturbed, some activities may be prescribed in the appropriate documentation, as approved by the local program authority:
  - Control of invasive species, replanting and revegetating, passive recreation (e.g., trails), limited bush hogging to maintain desired vegetative community, etc.

MANAGED TURF

Land disturbed and/or graded for eventual use as managed turf:

Virginia Runoff Reduction Method Compliance Spreadsheet *July 2024*

- Portions of residential yards that are graded or disturbed, including yard areas, septic fields, residential utility connections, etc.
- Roadway rights-of-way that will be mowed and maintained as turf.
- Turf areas intended to be mowed and maintained as turf within residential, commercial, industrial, and institutional settings.

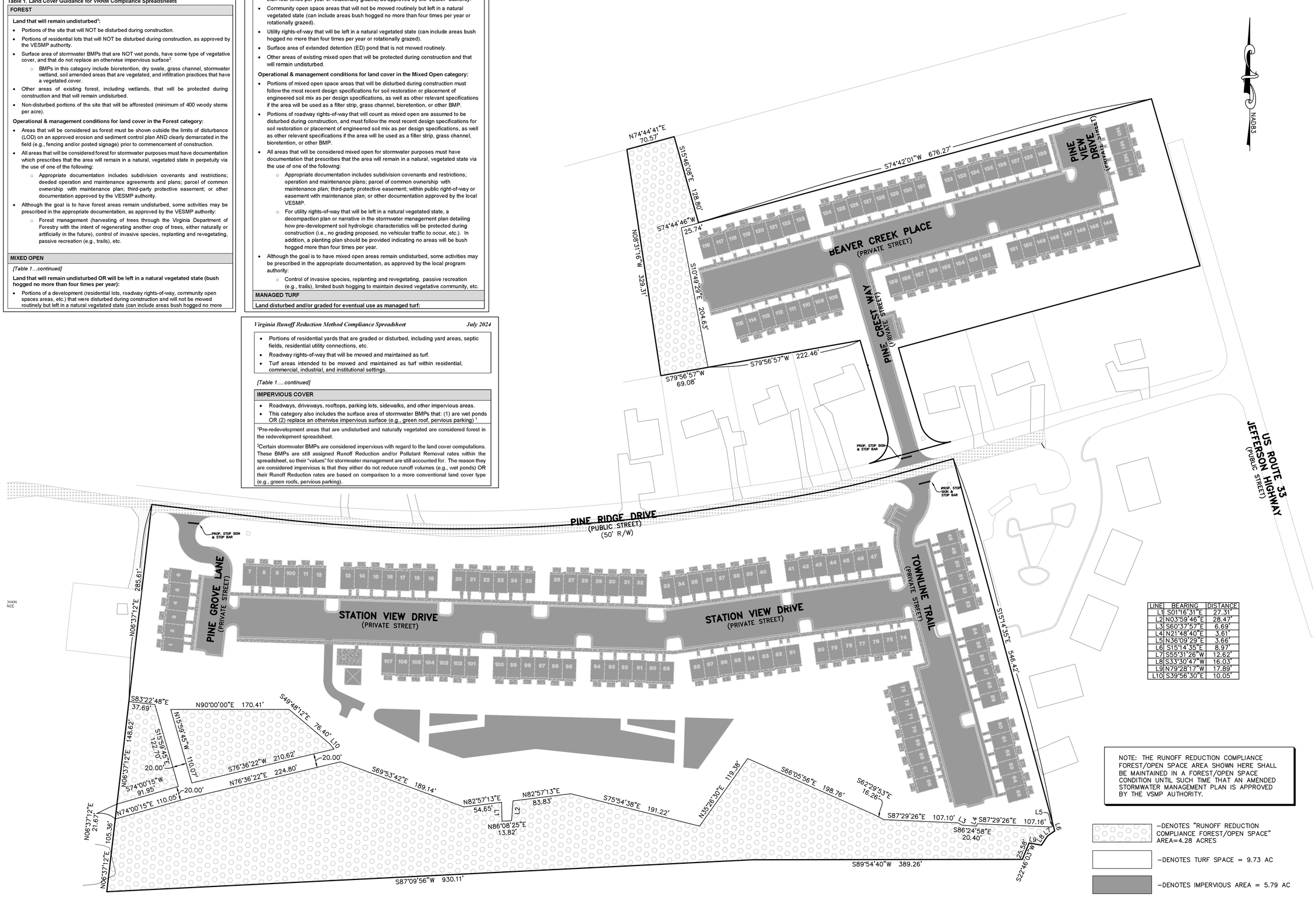
[Table 1….continued]

IMPERVIOUS COVER

- Roadways, driveways, rooftops, parking lots, sidewalks, and other impervious areas.
- This category also includes the surface area of stormwater BMPs that: (1) are wet ponds OR (2) replace an otherwise impervious surface (e.g., green roof, pervious parking) [1]

[1]Pre-redevelopment areas that are undisturbed and naturally vegetated are considered forest in the redevelopment spreadsheet.

[2]Certain stormwater BMPs are considered impervious with regard to the land cover computations. These BMPs are still assigned Runoff Reduction and/or Pollutant Removal rates within the spreadsheet, so their "values" for stormwater management are still accounted for. The reason they are considered impervious is that they either do not reduce runoff volumes (e.g., wet ponds) OR their Runoff Reduction rates are based on comparison to a more conventional land cover type (e.g., green roofs, pervious parking).



LINE	BEARING	DISTANCE
L1	S01°16'31"E	27.31'
L2	N03°59'46"E	28.47'
L3	S60°37'57"E	6.69'
L4	N21°48'40"E	3.61'
L5	N36°09'29"E	3.66'
L6	S15°14'35"E	8.97'
L7	S55°31'26"W	12.62'
L8	S33°30'47"W	16.03'
L9	N79°28'17"W	17.89'
L10	S39°56'30"E	10.05'

NOTE: THE RUNOFF REDUCTION COMPLIANCE FOREST/OPEN SPACE AREA SHOWN HERE SHALL BE MAINTAINED IN A FOREST/OPEN SPACE CONDITION UNTIL SUCH TIME THAT AN AMENDED STORMWATER MANAGEMENT PLAN IS APPROVED BY THE VSMP AUTHORITY.

–DENOTES "RUNOFF REDUCTION COMPLIANCE FOREST/OPEN SPACE" AREA=4.28 ACRES

–DENOTES TURF SPACE = 9.73 AC

–DENOTES IMPERVIOUS AREA = 5.79 AC

NAD83

REVISION BLOCK		
DATE	DESCRIPTION	BY
2/13/26	PER TOWN COMMENTS	DCW
4/17/26	PER DEQ COMMENTS	SLB
4/29/26	PER TOWN AND VDOT COMMENTS	DCW
5/28/26	PER VDOT COMMENTS	DCW

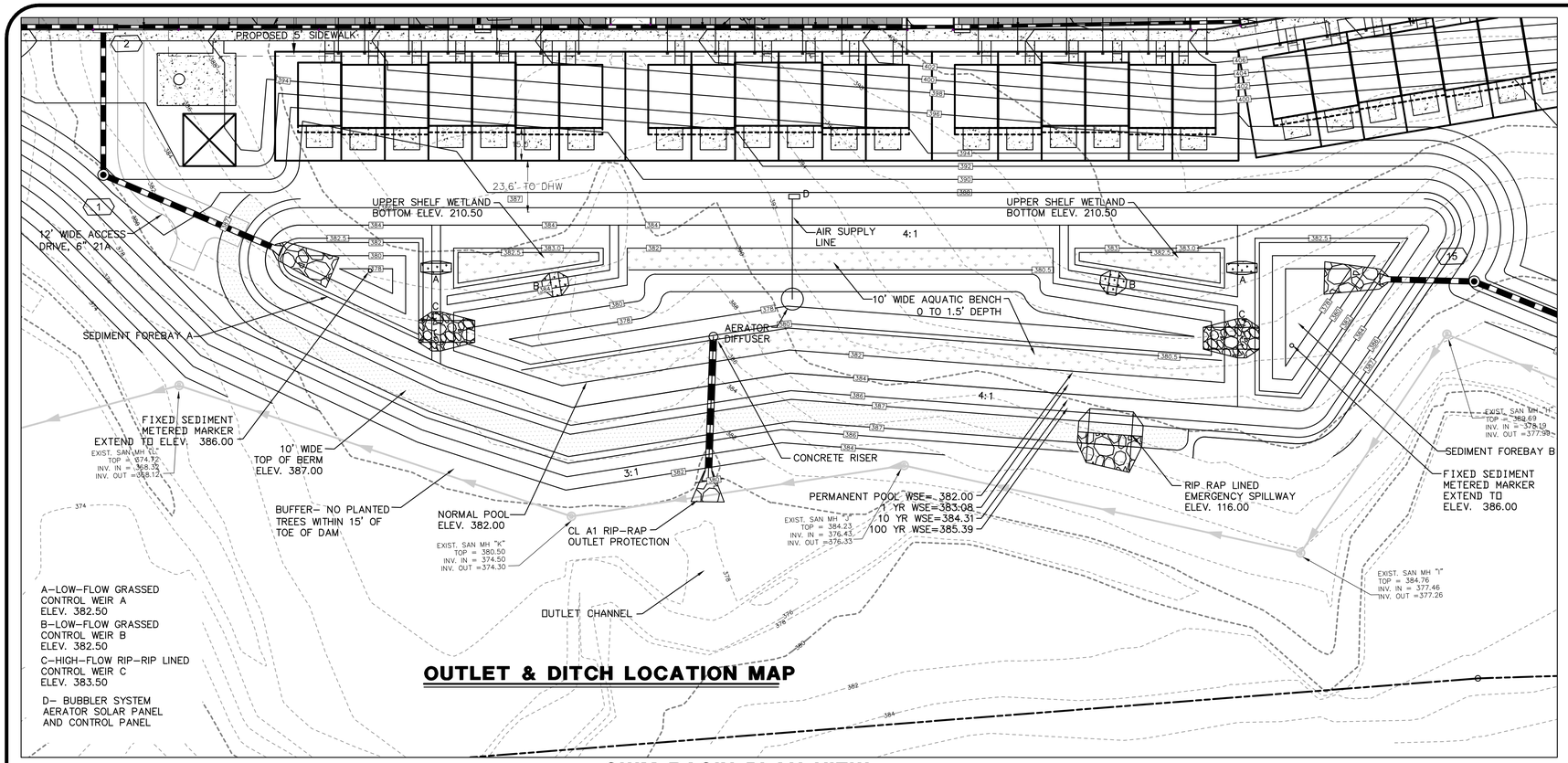
COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO. 036528
5-28-26
PROFESSIONAL ENGINEER

WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

POST-DEV VRRM LAND COVER MAP

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	1" = 60'
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D003ZMCP
DRAWING NO:	25-D-003
SHEET NO.	38
OF	50 SHEETS



OUTLET & DITCH LOCATION MAP

0′ 30′ 60′ 90′

SWM BASIN PLAN VIEW

1"= 30' (HORIZONTAL)

WATER SURFACE ELEV. OUTFLOW
1 YR WSE=383.08, Q=0.42 CFS
2 YR WSE 338.41, Q=1.14 CFS
10 YR WSE=384.31, Q=6.90 CFS
25 YR WSE=384.75, Q=18.19 CFS
100 YR WSE=385.39, Q=49.05 CFS

NOTE: THE 100 YEAR STORM EVENT IS PASSED THROUGH THE PRIMARY SPILLWAY. THERE IS NO FLOW OVER THE EMERGENCY SPILL WAY. THERE IS MORE THAN 1 FOOT OF FREEBOARD. THE ARMORED SPILLWAY IS PROVIDED FOR ADDITIONAL PROTECTION.

Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Monday, Feb 9 2026

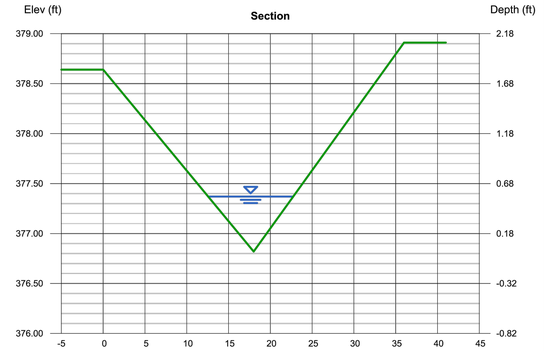
BMP OUTFALL CHANNEL-PRE DEV 10 yr

User-defined
Invert Elev (ft) = 376.82
Slope (%) = 2.50
N-Value = 0.040

Calculations
Compute by: Known Q
Known Q (cfs) = 6.90

Highlighted
Depth (ft) = 0.55
Q (cfs) = 6.900
Area (sqft) = 2.80
Velocity (ft/s) = 2.47
Wetted Perim (ft) = 10.24
Crit Depth, Yc (ft) = 0.52
Top Width (ft) = 10.18
EGL (ft) = 0.64

(Sta, El, n)-(Sta, El, n)...
(0.00, 376.64)-(18.00, 376.82, 0.040)-(36.00, 378.91, 0.040)



Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Monday, Feb 9 2026

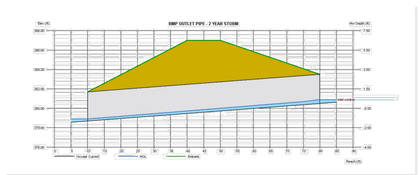
BMP OUTLET PIPE - 2 YEAR STORM

Invert Elev Dn (ft) = 378.69
Pipe Length (ft) = 70.00
Slope (%) = 2.59
Invert Elev Up (ft) = 380.50
Rise (in) = 36.0
Shape = Circular
Span (in) = 36.0
No. Barrels = 1
n-Value = 0.012
Culvert Type = Circular Concrete
Culvert Entrance = Square edge w/headwall (C)
Coeff. K,M,c,Y,k = 0.0098, 2, 0.0398, 0.67, 0.5

Embankment
Top Elevation (ft) = 387.00
Top Width (ft) = 10.00
Crest Width (ft) = 50.00

Calculations
Qmin (cfs) = 1.14
Qmax (cfs) = 1.14
Tailwater Elev (ft) = 0.00

Highlighted
Qtotal (cfs) = 1.14
Qpipe (cfs) = 1.14
Qovertop (cfs) = 0.00
Veloc Dn (ft/s) = 5.12
Veloc Up (ft/s) = 2.70
HGL Dn (ft) = 378.90
HGL Up (ft) = 380.83
Hw Elev (ft) = 380.90
Hw/D (ft) = 0.13
Flow Regime = Inlet Control



Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Monday, Feb 9 2026

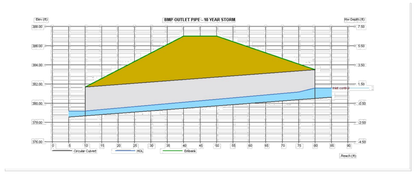
BMP OUTLET PIPE - 10 YEAR STORM

Invert Elev Dn (ft) = 378.69
Pipe Length (ft) = 70.00
Slope (%) = 2.59
Invert Elev Up (ft) = 380.50
Rise (in) = 36.0
Shape = Circular
Span (in) = 36.0
No. Barrels = 1
n-Value = 0.012
Culvert Type = Circular Concrete
Culvert Entrance = Square edge w/headwall (C)
Coeff. K,M,c,Y,k = 0.0098, 2, 0.0398, 0.67, 0.5

Embankment
Top Elevation (ft) = 387.00
Top Width (ft) = 10.00
Crest Width (ft) = 50.00

Calculations
Qmin (cfs) = 6.90
Qmax (cfs) = 6.90
Tailwater Elev (ft) = 0.00

Highlighted
Qtotal (cfs) = 6.90
Qpipe (cfs) = 6.90
Qovertop (cfs) = 0.00
Veloc Dn (ft/s) = 8.80
Veloc Up (ft/s) = 4.36
HGL Dn (ft) = 379.19
HGL Up (ft) = 381.33
Hw Elev (ft) = 381.59
Hw/D (ft) = 0.36
Flow Regime = Inlet Control



Channel Report

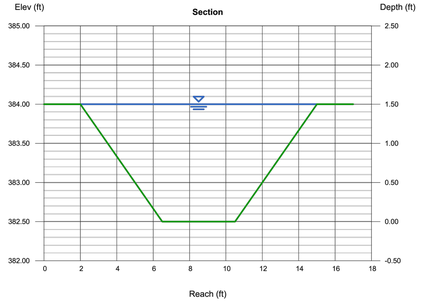
Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Monday, Feb 9 2026

LOW FLOW WEIR A

Trapezoidal
Bottom Width (ft) = 4.00
Side Slopes (z:1) = 3.00, 3.00
Total Depth (ft) = 1.50
Invert Elev (ft) = 382.50
Slope (%) = 1.00
N-Value = 0.240

Calculations
Compute by: Known Q
Known Q (cfs) = 7.50

Highlighted
Depth (ft) = 1.50
Q (cfs) = 7.500
Area (sqft) = 12.75
Velocity (ft/s) = 0.59
Wetted Perim (ft) = 13.49
Crit Depth, Yc (ft) = 0.43
Top Width (ft) = 13.00
EGL (ft) = 1.51



Channel Report

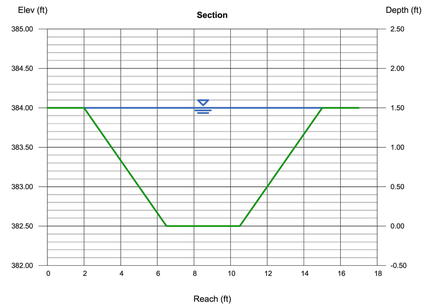
Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Monday, Feb 9 2026

LOW FLOW WEIR B

Trapezoidal
Bottom Width (ft) = 4.00
Side Slopes (z:1) = 3.00, 3.00
Total Depth (ft) = 1.50
Invert Elev (ft) = 382.50
Slope (%) = 1.00
N-Value = 0.240

Calculations
Compute by: Known Q
Known Q (cfs) = 7.50

Highlighted
Depth (ft) = 1.50
Q (cfs) = 7.500
Area (sqft) = 12.75
Velocity (ft/s) = 0.59
Wetted Perim (ft) = 13.49
Crit Depth, Yc (ft) = 0.43
Top Width (ft) = 13.00
EGL (ft) = 1.51



Channel Report

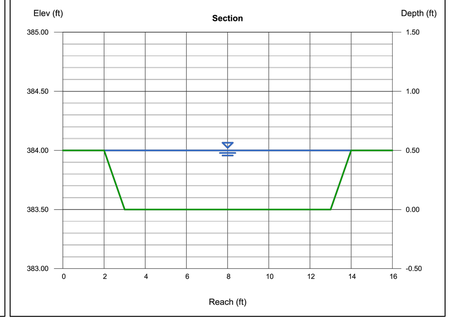
Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Monday, Feb 9 2026

HIGH FLOW WEIR C

Trapezoidal
Bottom Width (ft) = 10.00
Side Slopes (z:1) = 2.00, 2.00
Total Depth (ft) = 0.50
Invert Elev (ft) = 383.50
Slope (%) = 1.00
N-Value = 0.040

Calculations
Compute by: Known Q
Known Q (cfs) = 11.75

Highlighted
Depth (ft) = 0.50
Q (cfs) = 11.75
Area (sqft) = 5.50
Velocity (ft/s) = 2.14
Wetted Perim (ft) = 12.24
Crit Depth, Yc (ft) = 0.35
Top Width (ft) = 12.00
EGL (ft) = 0.57



REVISION BLOCK			
DATE	DESCRIPTION	BY	
2/13/26	PER TOWN COMMENTS	DCW	
4/17/26	PER DEQ COMMENTS	SLB	
4/29/26	PER TOWN AND VDOT COMMENTS	DCW	
5/26/26	PER VDOT COMMENTS	DCW	

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO. 036528
5-28-26
PROFESSIONAL ENGINEER

W.W. WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1208

OUTLET & CHANNEL CALCS

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE: AUGUST 14, 2025
SCALE: 1"=30'
DESIGNED BY: DCW
DRAWN BY: SLB
CHECKED BY: DCW

ACAD FILE: 25D003ZNCP
DRAWING NO: 25-D-003

SHEET NO. 39
OF 50 SHEETS

PRE DEV ON-SITE TO BMP

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55	1.990	109
B	Managed Turf	61		0
B	Impervious Cover	98		0
C	Forest/Open Space	70	0.700	49
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	2.69	
		WEIGHTED CN	59	

POST DEV ON-SITE A TO BMP

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55		0
B	Managed Turf	61	0.720	44
B	Impervious Cover	98	0.940	92
C	Forest/Open Space	70		0
C	Managed Turf	74	0.150	11
C	Impervious Cover	98	0.550	54
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	2.36	
		WEIGHTED CN	85	

PRE/POST OFF-SITE A TO BMP

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55	1.260	69
B	Managed Turf	61		0
B	Impervious Cover	98		0
C	Forest/Open Space	70	0.130	9
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	1.39	
		WEIGHTED CN	56	

POST DEV A4 TO BMP

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55		0
B	Managed Turf	61	0.200	12
B	Impervious Cover	98	0.130	13
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	0.33	
		WEIGHTED CN	76	

PRE DEV A4 TO BMP

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55	0.330	18
B	Managed Turf	61		0
B	Impervious Cover	98		0
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	0.33	
		WEIGHTED CN	55	

PRE DEV ON-SITE B TO BMP 1

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55	7.720	425
B	Managed Turf	61		0
B	Impervious Cover	98		0
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	7.72	
		WEIGHTED CN	55	

POST DEV ON-SITE B TO BMP

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55		0
B	Managed Turf	61	3.88	237
B	Impervious Cover	98	3.84	376
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	7.72	
		WEIGHTED CN	79	

PRE/POST DEV OFF-SITE B TO BMP

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55	5.510	303
B	Managed Turf	61	1.200	73
B	Impervious Cover	98	0.420	41
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	7.13	
		WEIGHTED CN	59	

PRE DEV BYPASS A1 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55	2.290	126
B	Managed Turf	61		0
B	Impervious Cover	98		0
C	Forest/Open Space	70	1.310	92
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	3.60	
		WEIGHTED CN	60	

PRE DEV BYPASS A2 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55	0.590	32
B	Managed Turf	61		0
B	Impervious Cover	98		0
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	0.59	
		WEIGHTED CN	55	

PRE DEV BYPASS A4 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55	0.870	48
B	Managed Turf	61		0
B	Impervious Cover	98		0
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	0.87	
		WEIGHTED CN	55	

PRE DEV BYPASS B1 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55	0.130	7
B	Managed Turf	61		0
B	Impervious Cover	98		0
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	0.13	
		WEIGHTED CN	55	

PRE DEV BYPASS B2 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55	0.380	21
B	Managed Turf	61		0
B	Impervious Cover	98		0
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	0.38	
		WEIGHTED CN	55	

PRE DEV BYPASS B3 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55	6.450	355
B	Managed Turf	61		0
B	Impervious Cover	98		0
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	6.45	
		WEIGHTED CN	55	

PRE DEV BYPASS B4 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55	0.140	8
B	Managed Turf	61		0
B	Impervious Cover	98		0
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	0.14	
		WEIGHTED CN	55	

PRE DEV BYPASS B5 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55	1.310	72
B	Managed Turf	61		0
B	Impervious Cover	98		0
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	1.31	
		WEIGHTED CN	55	

PRE DEV BYPASS B6 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55	1.300	72
B	Managed Turf	61		0
B	Impervious Cover	98		0
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	1.30	
		WEIGHTED CN	55	

PRE DEV BYPASS B7 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55	0.950	52
B	Managed Turf	61		0
B	Impervious Cover	98		0
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	0.95	
		WEIGHTED CN	55	

POST DEV BYPASS A1 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55		0
B	Managed Turf	61		0
B	Impervious Cover	98		0
C	Forest/Open Space	70	0.110	8
C	Managed Turf	74	0.380	28
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	0.49	
		WEIGHTED CN	73	

POST DEV BYPASS A2 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55		0
B	Managed Turf	61	0.240	15
B	Impervious Cover	98	0.060	6
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	0.30	
		WEIGHTED CN	68	

POST DEV BYPASS A4 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55		0
B	Managed Turf	61	0.070	4
B	Impervious Cover	98	0.030	3
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	0.10	
		WEIGHTED CN	72	

POST DEV BYPASS B1 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55		0
B	Managed Turf	61	0.110	7
B	Impervious Cover	98	0.070	7
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	0.18	
		WEIGHTED CN	75	

POST DEV BYPASS B2 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55		0
B	Managed Turf	61	0.210	13
B	Impervious Cover	98		0
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	0.21	
		WEIGHTED CN	61	

POST DEV BYPASS B3 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55		0
B	Managed Turf	61	0.470	29
B	Impervious Cover	98		0
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	0.47	
		WEIGHTED CN	61	

POST DEV BYPASS B4 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55		0
B	Managed Turf	61	0.100	6
B	Impervious Cover	98		0
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	0.10	
		WEIGHTED CN	61	

POST DEV BYPASS B5 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55		0
B	Managed Turf	61	0.650	40
B	Impervious Cover	98	0.060	6
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	0.71	
		WEIGHTED CN	64	

POST DEV BYPASS B6 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55		0
B	Managed Turf	61	0.080	5
B	Impervious Cover	98		0
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	0.08	
		WEIGHTED CN	61	

POST DEV BYPASS B7 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55		0
B	Managed Turf	61	0.230	14
B	Impervious Cover	98	0.150	15
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	0.38	
		WEIGHTED CN	76	

REVISION BLOCK

DESCRIPTION	DATE	BY
DCW	5/28/26	
PER VDOT COMMENTS		
SLB	4/29/26	
PER TOWN AND VDOT COMMENTS		
DCW	4/17/26	
PER DEQ COMMENTS		
DCW	2/13/26	
PER TOWN COMMENTS		

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO.
036528
5-28-26
PROFESSIONAL ENGINEER

WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

SOILS GROUP CN CALCS

LOUISA STATION

TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE: AUGUST 14, 2025
SCALE: AS SHOWN
DESIGNED BY: DCW
DRAWN BY: SLB
CHECKED BY: DCW

ACAD FILE: 25D003ZOCP
DRAWING NO: 25-D-003

SHEET NO. 40
OF 50 SHEETS

CURVE	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	596.74'	2339.97'	14°36'42"	N 89°18'50" E	595.13'
C2	54.38'	35.00'	89°01'19"	S 60°43'42" E	49.07'
C3	36.77'	1553.16'	1°21'23"	S 75°26'22" W	36.77'
C4	56.41'	35.00'	92°20'25"	N 29°56'51" E	50.50'

N/F
N MARION & EDITH BICKLEY
TM 41 132
ZONING: R-G
USE: RESIDENTIAL

N/F
REGION TEN COMMUNITY SERV BOARD
TM 41-16-6
ZONING: R-G
USE: VACANT

N/F
VSHI LLC
TM 41C-7-8
ZONING: R-G
USE: VACANT

N/F
HARLIE E. & ROSA L. GREENE
TM 41-16-7
ZONING: R-G
USE: RESIDENTIAL

N/F
REGION TEN COMMUNITY SERV BOARD
TM 41-16-6
ZONING: R-G
USE: VACANT

N/F
PINE RIDGE RESIDENCE INC.
TM 41-16-6A
ZONING: R-G
USE: RESIDENTIAL

N/F
JOHN S CHAFFE TM 41-16-5C
ZONING: R-G
USE: RESIDENTIAL

N/F
GRACIELA ESCOBEDO-ITUARTE
TM 41-16-5B
ZONING: R-G
USE: RESIDENTIAL

N/F
BEVER;U A STOCHES
TM 41-16-5A
ZONING: R-G
USE: RESIDENTIAL

N/F
TERRA N BROWN
TM 41-16-4D
ZONING: R-G
USE: RESIDENTIAL

N/F
DANIEL & JASMAN FREDRICK JR
TM 41-16-4C
ZONING: R-G
USE: RESIDENTIAL

N/F
DANIEL J GOETZ
TM 41-16-4A
ZONING: R-G
USE: RESIDENTIAL

N/F
PINE RIDGE APTS LTD PARTNERSHIP
TM 41-16-15
ZONING: R-G
USE: MULTIFAMILY

N/F
SALVATORE & CECILIA ANILE
TM 41-136
ZONING: R-G
USE: VACANT

N/F
SALVATORE & CECILIA ANILE
TM 41-134
ZONING: R-G
USE: VACANT

N 74°44'41" E 70.57'
S 15°46'09" E 128.80'
N 74°44'44" E 338.76'
N 74°39'17" E 337.51'
S 16°13'02" E 250.40'
S 74°46'36" E 20.09'
S 74°45'35" W 429.91'
S 79°56'57" W 291.54'
N 08°31'16" W 329.31'
N 16°13'21" W 138.96'
S 16°13'02" E 115.59'
S 74°46'02" W 84.12'
N 74°45'25" E 81.15'
N 82°00'30" E 119.05'
S 83°22'48" E 168.59'
N 06°37'12" E 561.26'
S 15°14'35" E 555.39'
S 55°31'26" W 12.62'
S 33°30'47" W 16.03'
N 79°28'17" W 17.89'
S 22°46'03" W 25.58'
S 89°54'40" W 389.26'
S 87°09'56" W 930.11'

PROP. UTILITY ESM'T
PROP. STOP SIGN & STOP BAR
PROPOSED STORMWATER MANAGEMENT FACILITY
EXIST. WATER METER
EXIST. FIRE HYDRANT & VALVE
EXIST. 20' SAN. SEWER ESMT.
EXIST. SAN MH "A" TOP = 415.86 INV. OUT =405.56
EXIST. SAN MH "B" TOP = 406.26 INV. IN = 399.06 INV. OUT =398.06
EXIST. SAN MH "C" TOP = 399.32 INV. IN = 393.22 INV. OUT =393.22
EXIST. SAN MH "D" TOP = 391.02 INV. IN = 384.33 INV. OUT =384.20
EXIST. SAN MH "E" TOP = 374.73 INV. IN = 368.32 INV. OUT =368.14
EXIST. SAN MH "F" TOP = 384.76 INV. IN = 377.46 INV. OUT =377.26
EXIST. SAN MH "G" TOP = 390.80 INV. IN =379.64 INV. OUT =379.83
EXIST. SAN MH "H" TOP = 389.09 INV. IN = 384.09 INV. OUT =379.95
EXIST. SAN MH "I" TOP = 389.61 INV. IN = 382.0 INV. OUT =381.7
EXIST. SAN MH "J" TOP = 380.50 INV. IN = 374.50 INV. OUT =374.30
EXIST. SAN MH "K" TOP = 376.33 INV. IN = 380.43 INV. OUT = 376.33
EXIST. SAN MH "L" TOP = 384.25 INV. IN = 380.53 INV. OUT =380.53
EXIST. SAN MH "M" TOP = 371.52 INV. IN = 363.52 INV. OUT =363.42
EXIST. SAN MH "N" TOP = 382.53 INV. IN = 382.53 INV. OUT =382.53
NAD83

0 50 100 150

LEGEND
—DENOTES EX. 2' CONTOUR
—DENOTES EX. 10' CONTOUR

REVISION BLOCK			
DATE	DESCRIPTION		BY
2/13/26	PER TOWN COMMENTS		DCW
4/17/26	PER DEQ COMMENTS		SLB
4/29/26	PER TOWN AND VDOT COMMENTS		DCW
5/28/26	PER VDOT COMMENTS		DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO.
036528
5-28-26
PROFESSIONAL ENGINEER

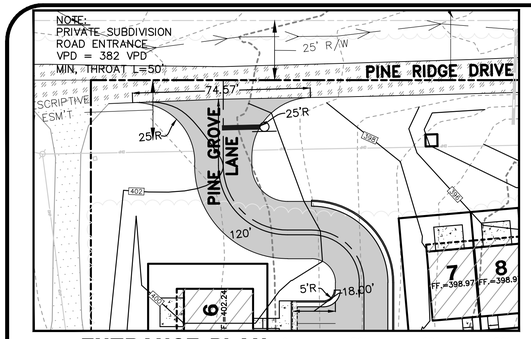
WEBB

ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

EASEMENT PLAN

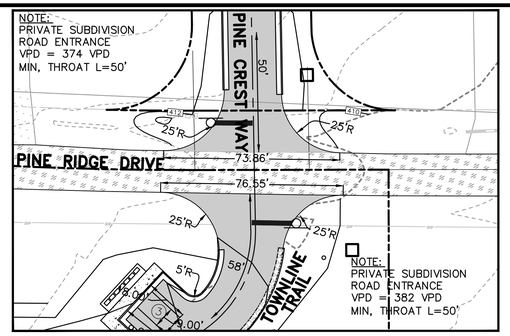
LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	1"=50'
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D003ZPCP
DRAWING NO:	25-D-003
SHEET NO.	41
OF	50 SHEETS



ENTRANCE PLAN
PINE GROVE LANE
SCALE: 1"=30'

0' 30' 60' 90'



ENTRANCE PLAN
PINE CREST WAY &
TOWNLINE TRAIL
SCALE: 1"=30'

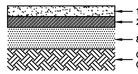
0' 30' 60' 90'

VDOT NOTES: ALL CONSTRUCTION METHODS AND MATERIAL SHALL CONFORM TO THESE DRAWINGS, PROJECT SPECIFICATIONS, STANDARDS WITH ALL CURRENT APPLICABLE CODES, AND, UNLESS OTHERWISE SPECIFIED, WITH THE CURRENT EDITIONS AND LATEST REVISIONS OF THE FOLLOWING REFERENCE DOCUMENTS:

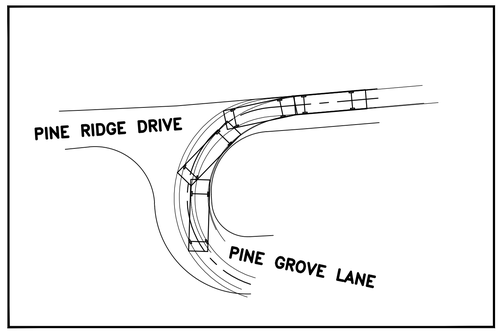
1. VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT) ROAD & BRIDGE SPECIFICATIONS
2. VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT) ROAD & BRIDGE STANDARDS
3. MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)
4. VIRGINIA SUPPLEMENT TO THE MUTCD
5. INSTRUCTIONAL AND INFORMATIONAL MEMORANDA (IIM)
6. VIRGINIA WORK AREA PROTECTION MANUAL

VDOT NOTES: VDOT ACCEPTANCE/VDOT APPROVAL OF THIS PLAN, AS INDICATED BY THE VDOT SIGNATURE, DOES NOT RELIEVE THE APPLICANT/ENGINEER/SURVEYOR FROM THE RESPONSIBILITY FOR COMPLYING WITH ALL VDOT REGULATIONS. VDOT'S REVIEW IS NOT INTENDED TO BE EITHER COMPLETE OR COMPREHENSIVE AS IT IS THE RESPONSIBILITY OF THE SUBMITTING ENGINEER/SURVEYOR THAT SIGNS AND SEALS THESE PLANS TO ENSURE COMPLETENESS AND ACCURACY OF THEIR PLANS IN ACCORDANCE WITH THE GOVERNING LAWS, REGULATIONS, SPECIFICATIONS AND STANDARDS. PLAN ERRORS AND OR OMISSIONS THAT ARE DISCOVERED DURING CONSTRUCTION REMAIN THE RESPONSIBILITY OF THE SUBMITTING ENGINEER/SURVEYOR.

ALL STANDARD DETAILS SHOWN ARE FOR INFORMATIONAL PURPOSES. AT THE TIME OF CONSTRUCTION THE DEVELOPMENT SHALL BE CONSTRUCTED TO MEET THE LATEST CURRENT VDOT STANDARD DETAIL IN AFFECT.



TYPICAL PAVEMENT SECTION
N.T.S. DRIVE AISLES AND ENTRANCES



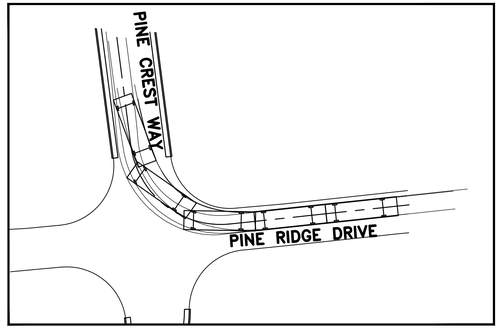
SU-30 VEHICLE PATH
PINE GROVE LANE
SCALE: 1"=30'

NOTE:
ENTRANCES SHALL MEET VDOT COMMERCIAL ENTRANCE STANDARDS.

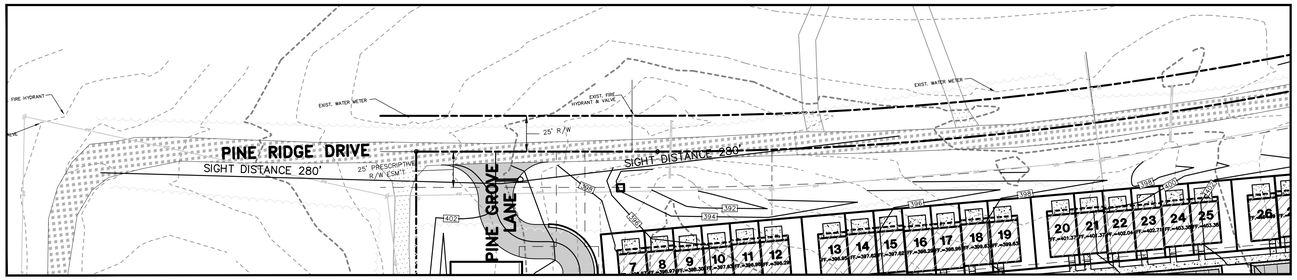
NOTE:
ALL PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH VDOT STD. PM-3.

NOTE:
NO SITE DISTANCE EASEMENTS ARE REQUIRED.

NOTE:
1. SOLID AND MINI-SKIP LINES SHALL BE 4" WIDE.
2. MINI-SKIP LINES SEGMENTS SHALL BE 2' IN LENGTH WITH A 4' SPACING.
3. STOP BAR SHALL BE 24" IN WIDTH.
4. ALL PAVEMENT MARKINGS WITHIN VDOT RIGHT-OF-WAY SHALL BE TYPE B CLASS I THERMOPLASTIC.



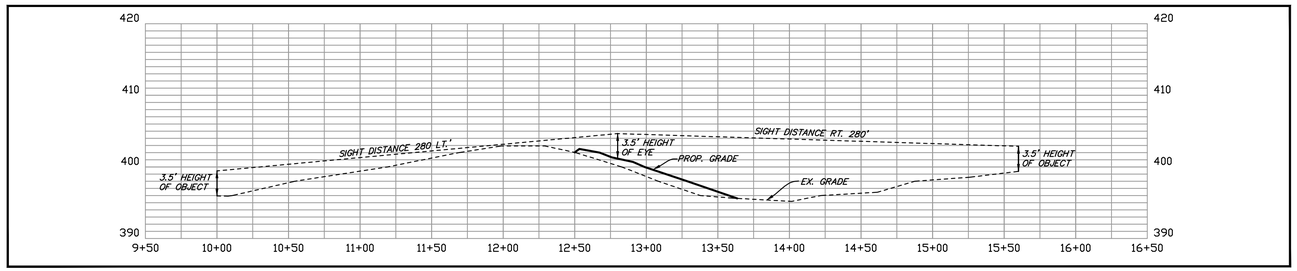
SU-30 VEHICLE PATH
PINE CREST WAY
SCALE: 1"=30'



SIGHT DISTANCE PLAN
SCALE: 1"=50'

0' 50' 100' 150'

PINE GROVE LANE

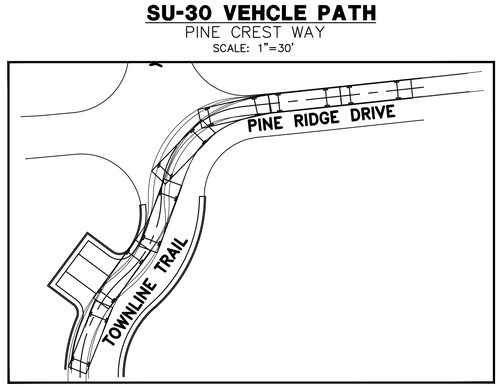


SIGHT DISTANCE PROFILE
SCALE: 1"=50' HORIZONTAL
1"=5' VERTICAL

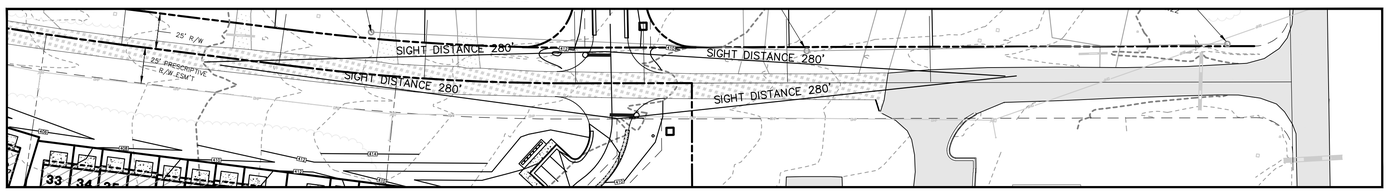
0' 50' 100' 150'

PINE GROVE LANE

LEGEND
—DENOTES EXISTING TREELINE
—DENOTES EXISTING 2' CONTOURS
—DENOTES EXISTING 10' CONTOURS
DENOTES PROP. ASPHALT
DENOTES EXISTING ASHPALT
DENOTES EXISTING TAR & CHIP AREA



SU-30 VEHICLE PATH
TOWNLINE TRAIL
SCALE: 1"=30'



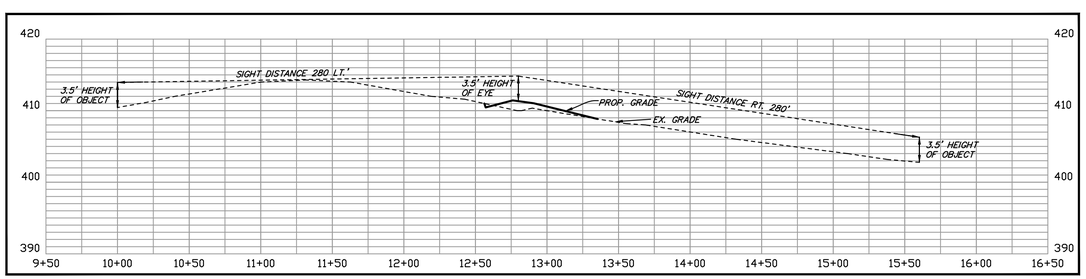
SIGHT DISTANCE PLAN
SCALE: 1"=50'

0' 50' 100' 150'

PINE CREST WAY & TOWNLINE TRAIL

SPEED LIMIT 25

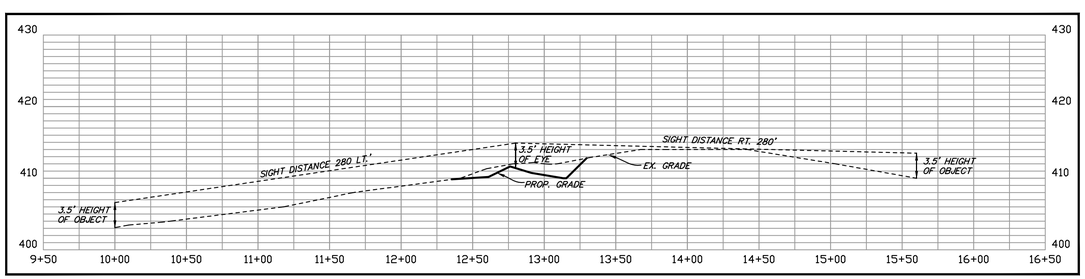
PINE RIDGE DRIVE



SIGHT DISTANCE PROFILE
SCALE: 1"=50' HORIZONTAL
1"=5' VERTICAL

0' 50' 100' 150'

TOWNLINE TRAIL



SIGHT DISTANCE PROFILE
SCALE: 1"=50' HORIZONTAL
1"=5' VERTICAL

0' 50' 100' 150'

PINE CREST WAY

REVISION BLOCK		
DATE	DESCRIPTION	BY
2/13/26	PER TOWN COMMENTS	DCW
4/17/26	PER DEQ COMMENTS	SLB
4/29/26	PER TOWN AND VDOT COMMENTS	DCW
5/28/26	PER VDOT COMMENTS	DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO.
036528
5-28-26
PROFESSIONAL ENGINEER

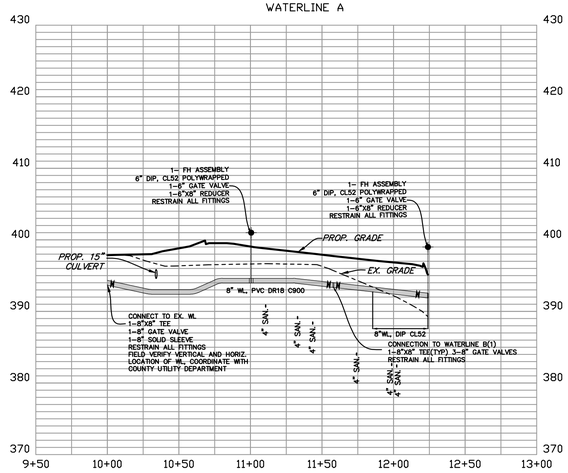
WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

ENTRANCE PLAN - SIGHT DISTANCE

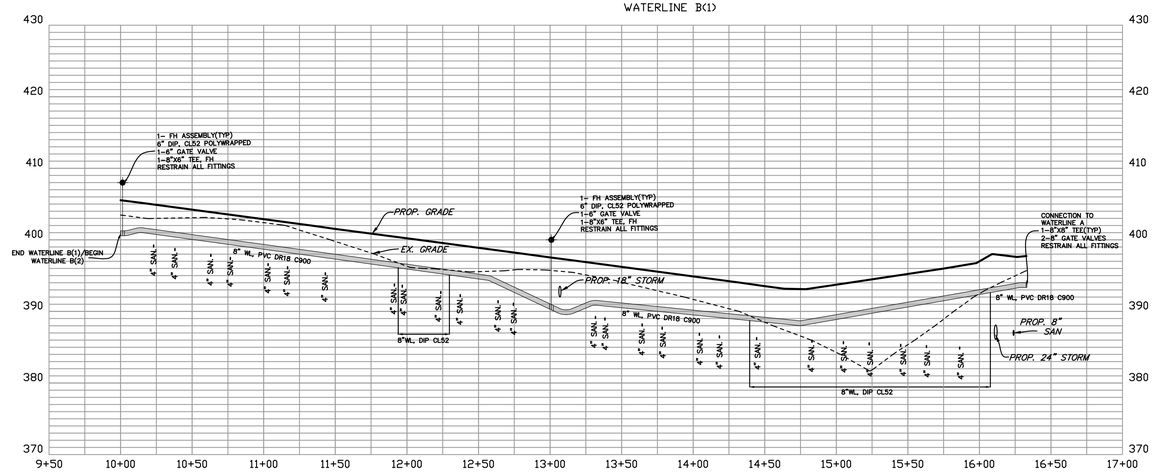
LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	AS SHOWN
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	<25D003ZQCP>
DRAWING NO:	25-D-003
SHEET NO.	42
OF	50 SHEETS

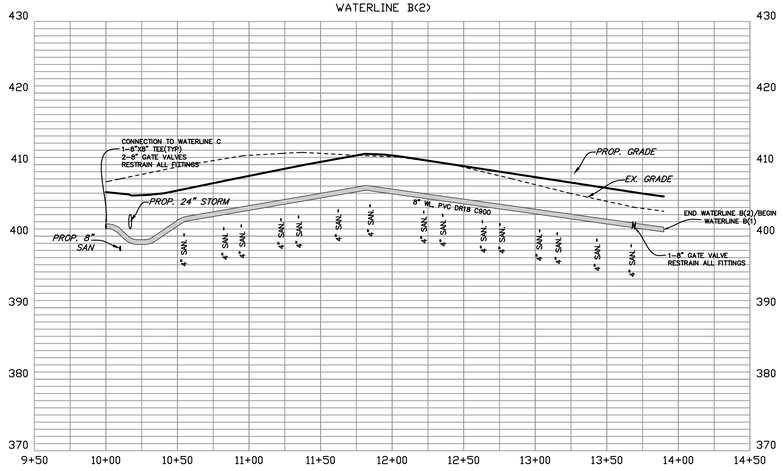
WATERLINE A



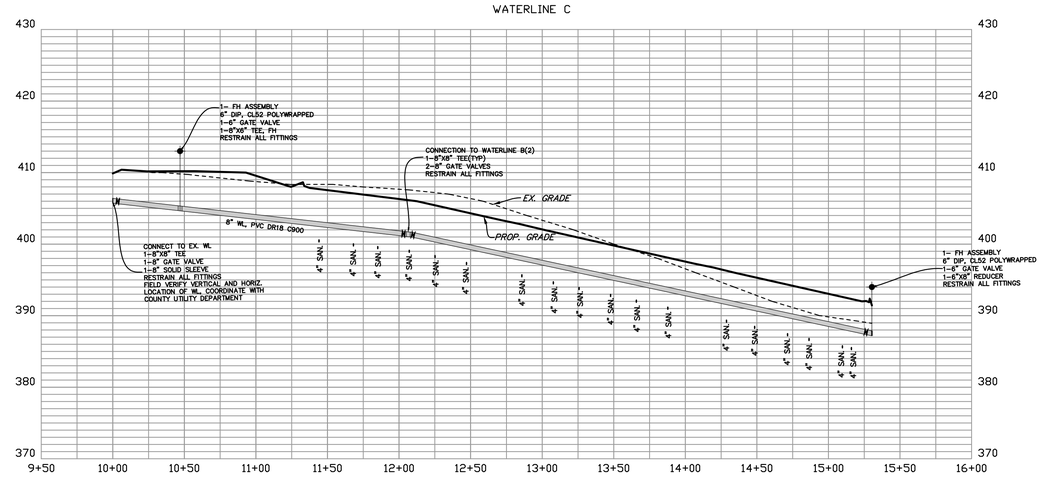
WATERLINE B(1)



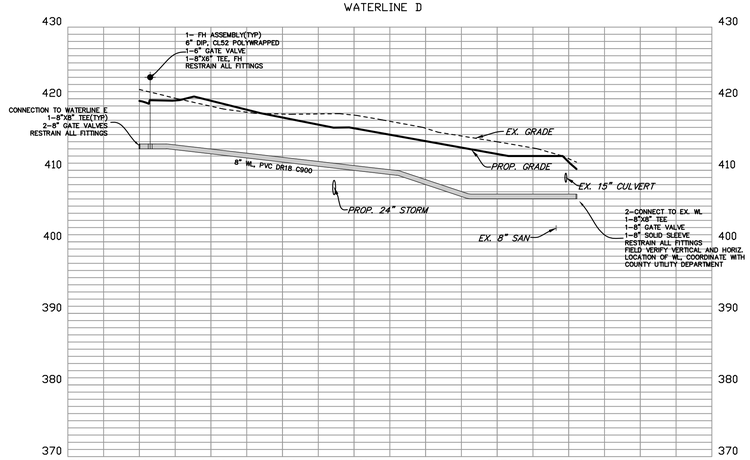
WATERLINE B(2)



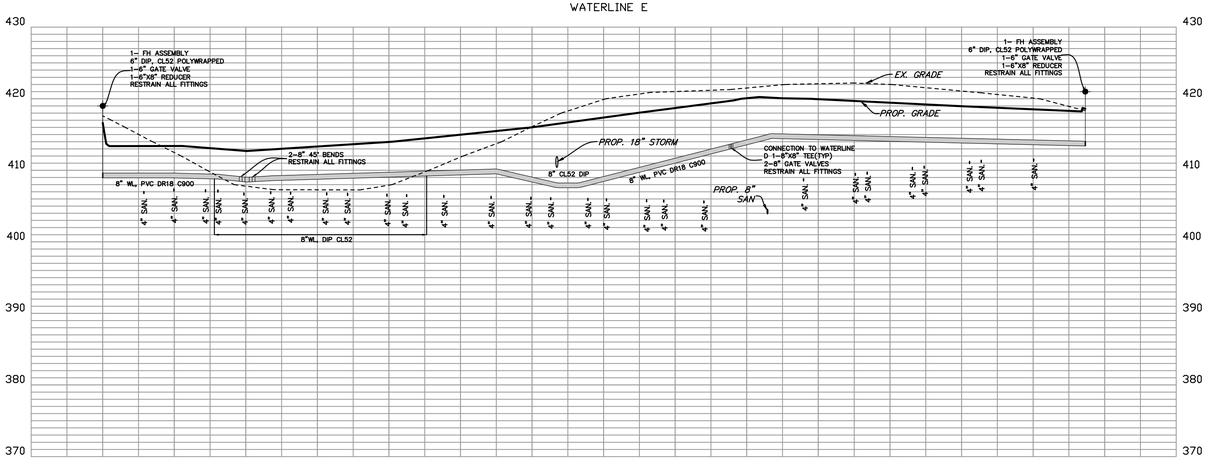
WATERLINE C



WATERLINE D



WATERLINE E



0 50 100 150

REVISION BLOCK

DATE	DESCRIPTION	BY
2/13/26	PER TOWN COMMENTS	DCW
4/17/26	PER DEQ COMMENTS	SLB
4/29/26	PER TOWN AND VDOT COMMENTS	DCW
5/28/26	PER VDOT COMMENTS	DCW

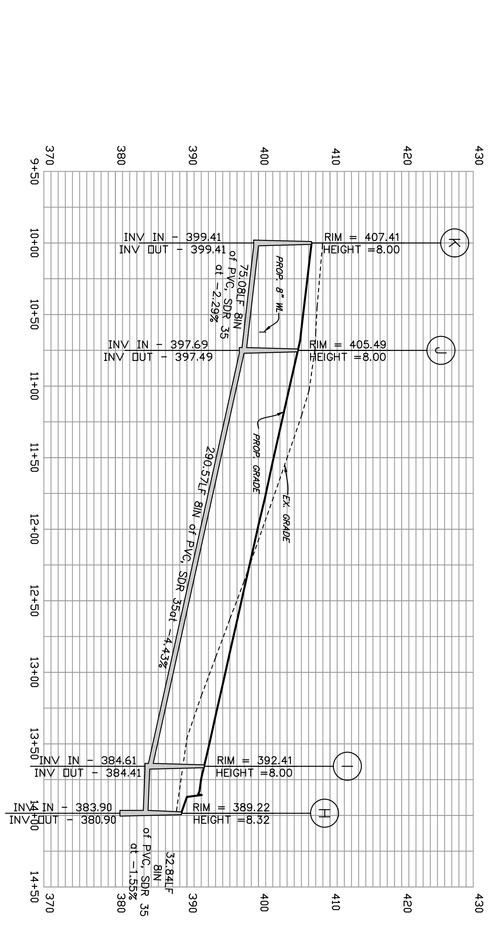
COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO.
036528
5-28-26
PROFESSIONAL ENGINEER

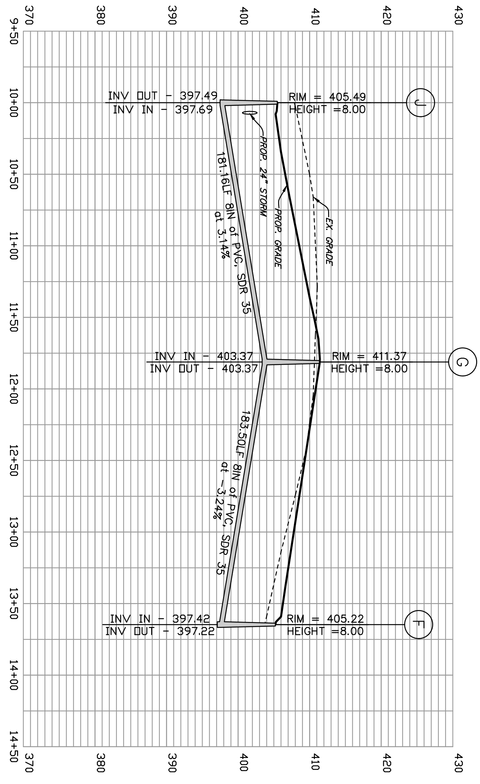
WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

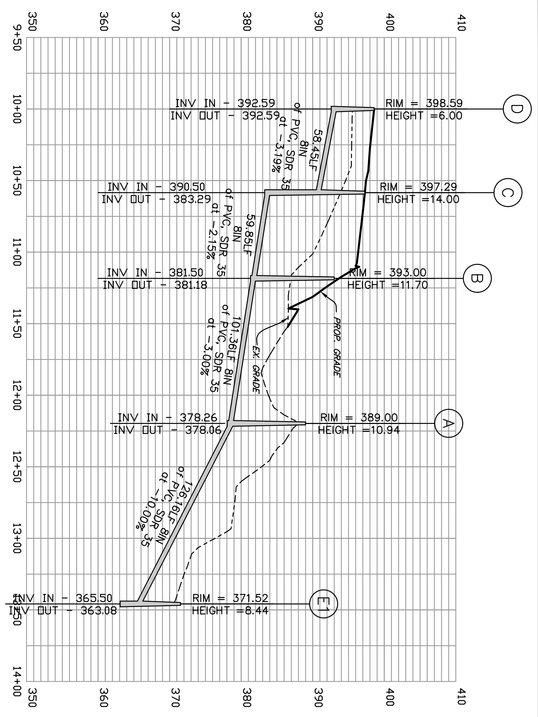
WATERLINE PROFILES

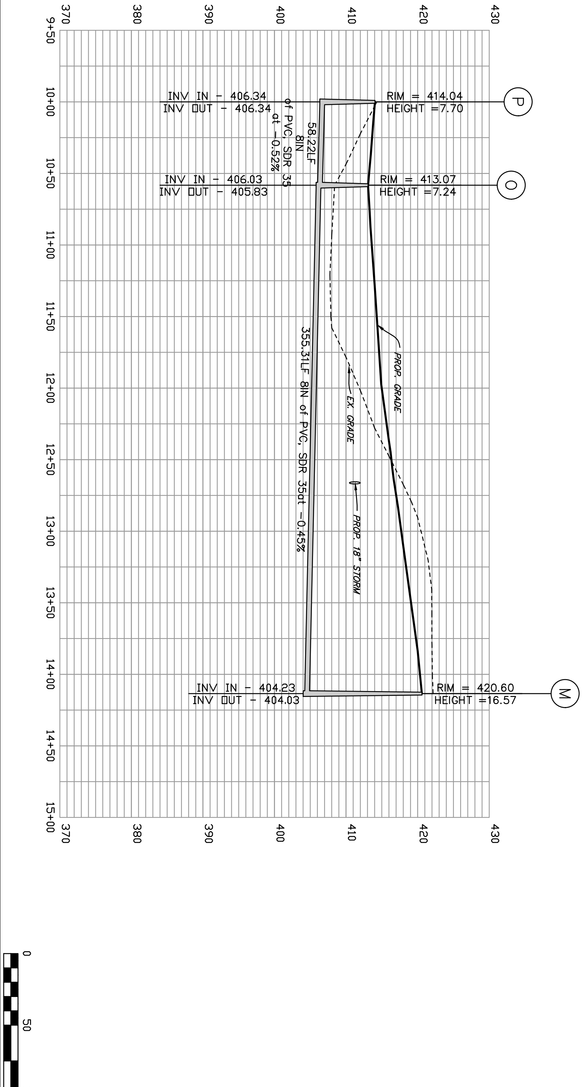
LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

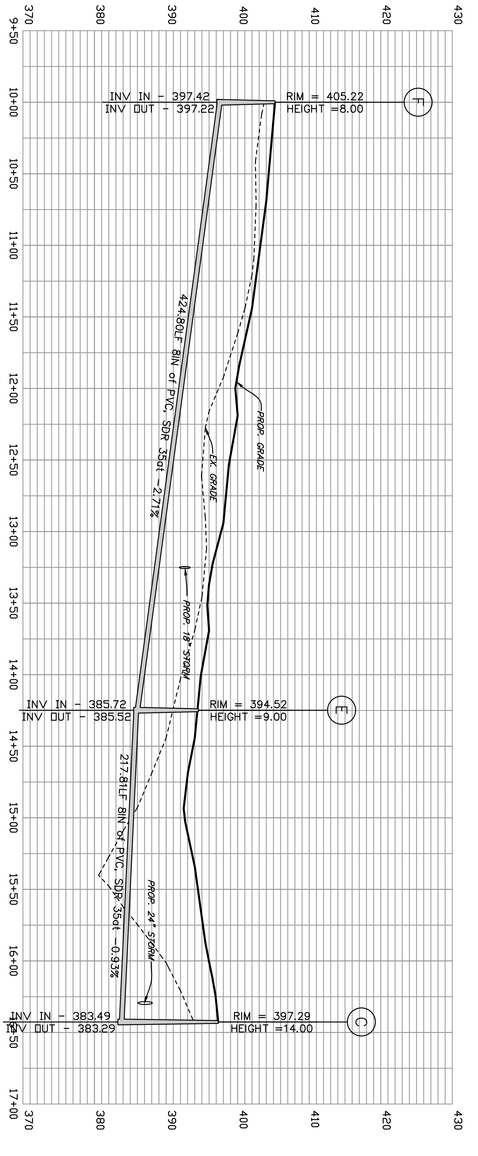
DATE:	AUGUST 14, 2025
SCALE:	H-1"=50', V-1"=10'
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D003ZRCP
DRAWING NO:	25-D-003
SHEET NO.	43
OF	50 SHEETS

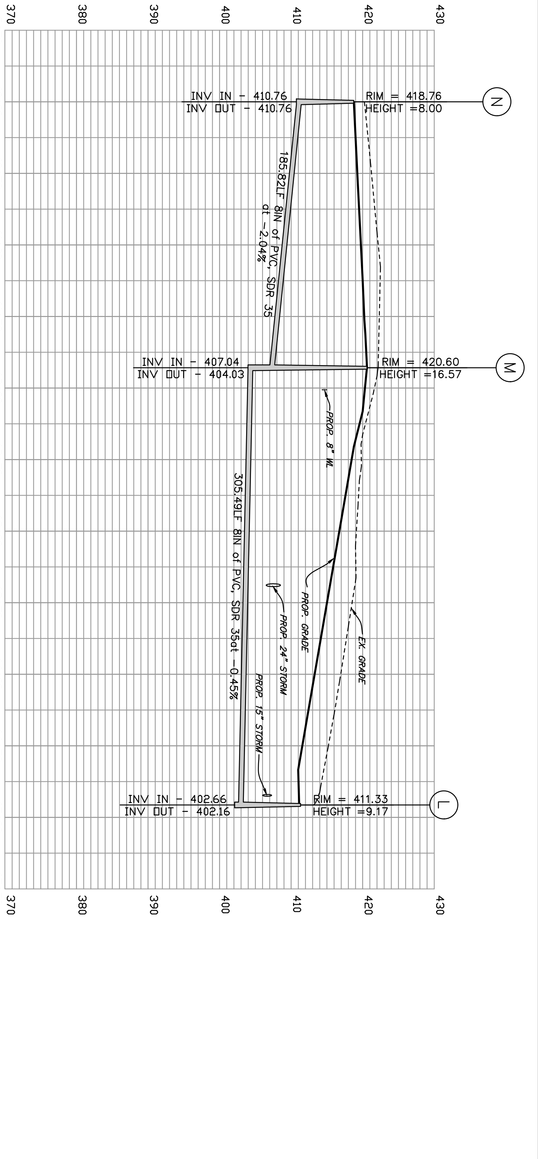












0 50 100 150

SANITARY SEWER PROFILES

LOUISA STATION

TAX MAPS 41-16-10,11,12,13,14

CONSTRUCTION PLAN

TOWN OF LOUISA, VIRGINIA

W.W.W. | WEBB

ENGINEERING SURVEYING LAND PLANNING

11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408

PHONE: (540)371-1209

COMMONWEALTH OF VIRGINIA

DANIEL C. WEBB

LICENSE NO. 036528

5-28-26

PROFESSIONAL ENGINEER

REVISION BLOCK		
2/13/26	PER TOWN COMMENTS	DCW
4/17/26	PER DEQ COMMENTS	SLB
4/29/26	PER TOWN AND VDOT COMMENTS	DCW
5/28/26	PER VDOT COMMENTS	DCW
DATE	DESCRIPTION	BY

DATE: AUGUST 14, 2025

SCALE: H-1"=50', V-1"=10'

DESIGNED BY: DCW

DRAWN BY: SLB

CHECKED BY: DCW

ACAD FILE: 25000325CSP

DRAWING NO: 25-D-003

SHEET NO. 44 OF 50 SHEETS

SANITARY SEWER LATERAL SCHEDULE

CONNECTION AT MAIN						LATERAL FROM MAIN TO CO AT PL OR ESMT						LATERAL FROM CO AT PL TO PAD				
LOT NO.	FROM-TO MH #		MAIN STATION	INV @ MAIN	INV @ LATERAL	LATERAL LENGTH, FT	PIPE DIAM. INCHES	PVC SDR26 SLOPE, %	CLEAN-OUT INV ELEV.	GRD ELEV. @CLEAN-OUT	C0 DEPTH	BACKWATER VALVE	LENGTH FT	INV @ PAD	FF ELEV	DEPTH BELOW FF
1	B	C	0+27.07	382.31	382.98	45.3	4	20.00%	392.04	398.04	6.00		6.00	392.16	399.56	7.40
2	B	C	0+30.60	382.42	383.09	45.2	4	20.00%	392.12	398.12	6.00		6.00	392.24	400.23	7.99
3	B	C	0+56.03	383.18	383.85	44.3	4	20.03%	392.72	398.72	6.00		6.00	392.84	400.23	7.39
4	C	D	0+16.28	391.08	391.75	44.2	4	3.39%	393.25	399.25	6.00		6.00	393.37	400.90	7.53
5	C	D	0+36.39	391.80	392.47	44.2	4	2.56%	393.60	399.60	6.00		6.00	393.72	401.57	7.85
6	D	D	0+00.00	392.59	392.79	44.2	4	2.94%	394.09	400.09	6.00		6.00	394.21	402.24	8.03
7	C	E	0+38.05	390.85	391.52	46.2	4	2.08%	392.48	397.66	5.18		6.00	392.61	398.97	6.36
7	C	E	0+38.05	390.85	391.52	46.2	4	2.08%	392.48	397.66	5.18		6.00	392.61	398.97	6.36
8	C	E	0+61.30	391.07	391.74	46.2	4	2.08%	392.70	396.97	4.27		6.00	392.82	398.97	6.15
9	C	E	0+79.30	391.24	391.91	46.2	4	2.08%	392.87	396.43	3.56		6.00	392.99	398.30	5.31
10	C	E	1+01.30	391.44	392.11	46.2	4	2.08%	393.07	395.77	2.70		6.00	393.20	397.63	4.43
11	C	E	1+19.30	391.61	392.28	46.2	4	2.08%	393.24	395.23	1.99	YES	6.00	393.36	396.96	3.60
12	C	E	1+41.30	391.81	392.48	46.2	4	2.08%	393.44	394.57	1.13	YES	6.00	393.57	396.29	2.72
13	C	E	1+79.90	392.17	392.84	46.2	4	2.08%	393.80	395.05	1.25	YES	6.00	393.93	396.95	3.02
14	C	E	2+05.90	392.41	393.08	46.2	4	2.08%	394.04	395.75	1.71		6.00	394.17	397.62	3.45
15	E	F	0+02.09	385.78	386.45	46.2	4	7.96%	390.12	396.12	6.00		6.00	390.24	397.62	7.38
16	E	F	0+28.09	386.48	387.15	46.2	4	7.93%	390.81	396.81	6.00		6.00	390.93	398.29	7.36
17	E	F	0+42.09	386.86	387.53	46.2	4	7.93%	391.19	397.19	6.00		6.00	391.31	398.96	7.65
18	E	F	0+68.09	387.56	388.23	46.2	4	7.90%	391.88	397.88	6.00		6.00	392.00	399.63	7.63
19	E	F	0+74.70	387.74	388.41	46.2	4	7.90%	392.06	398.06	6.00		6.00	392.18	399.63	7.45
20	E	F	1+32.01	389.29	389.96	46.2	4	7.84%	393.58	399.58	6.00		6.00	393.70	401.37	7.67
21	E	F	1+42.75	389.58	390.25	46.2	4	7.83%	393.87	399.87	6.00		6.00	393.99	401.37	7.38
22	E	F	1+69.16	390.30	390.97	46.2	4	7.80%	394.57	400.57	6.00		6.00	394.69	402.04	7.35
23	E	F	1+82.75	390.67	391.34	46.2	4	7.81%	394.94	400.94	6.00		6.00	395.06	402.71	7.65
24	E	F	2+09.70	391.40	392.07	46.2	4	7.76%	395.65	401.65	6.00		6.00	395.77	403.38	7.61
25	E	F	2+15.20	391.55	392.22	46.2	4	7.77%	395.80	401.80	6.00		6.00	395.92	403.38	7.46
26	E	F	2+63.41	405.96	406.63	46.2	4	2.08%	407.59	403.09	-4.50	YES	6.00	407.72	404.99	-2.73
27	E	F	2+89.84	406.82	407.49	46.2	4	2.08%	408.45	403.78	-4.67		6.00	408.57	405.66	-2.91
28	E	F	3+03.75	407.27	407.94	46.2	4	2.08%	408.90	404.15	-4.75		6.00	409.02	405.66	-3.36
29	E	F	3+29.84	408.12	408.79	46.2	4	2.08%	409.75	404.86	-4.89		6.00	409.87	406.33	-3.54
30	E	F	3+43.43	408.56	409.23	46.2	4	2.08%	410.19	405.22	-4.97		6.00	410.31	407.00	-3.31
31	E	F	1+14.44	401.13	401.80	46.2	4	2.08%	402.76	405.89	3.13		6.00	402.89	407.67	4.78
32	E	F	1+34.44	401.78	402.45	46.2	4	2.08%	403.41	406.28	2.87		6.00	403.53	407.67	4.14
33	F	G	0+06.16	397.62	398.29	45.6	4	7.06%	401.51	407.51	6.00		6.00	401.63	409.32	7.69
34	F	G	0+30.16	398.40	399.07	45.6	4	6.98%	402.25	408.25	6.00		6.00	402.37	409.99	7.62
35	F	G	0+57.89	399.30	399.97	45.6	4	6.87%	403.10	409.10	6.00		6.00	403.22	410.66	7.44
36	F	G	0+70.16	399.69	400.36	45.6	4	6.83%	403.48	409.48	6.00		6.00	403.60	411.33	7.73
37	F	G	0+97.89	400.59	401.26	45.6	4	6.70%	404.32	410.32	6.00		6.00	404.44	412.00	7.56
38	F	G	1+10.16	400.99	401.66	45.6	4	6.66%	404.70	410.70	6.00		6.00	404.82	412.67	7.85
39	F	G	1+37.89	401.89	402.56	45.6	4	6.55%	405.55	411.55	6.00		6.00	405.67	413.34	7.67
40	F	G	1+51.10	402.32	402.99	45.6	4	6.49%	405.95	411.95	6.00		6.00	406.07	413.34	7.27
41	J	G	1+75.99	403.21	403.88	45.6	4	7.09%	407.11	413.11	6.00		6.00	407.23	414.21	6.98
42	J	G	1+53.82	402.51	403.18	45.6	4	6.68%	406.23	412.23	6.00		6.00	406.35	413.54	7.19
43	J	G	1+26.09	401.64	402.31	45.6	4	6.15%	405.12	411.12	6.00		6.00	405.24	412.87	7.63
44	J	G	1+13.82	401.26	401.93	45.6	4	5.92%	404.63	410.63	6.00		6.00	404.75	412.20	7.45
45	J	G	0+86.09	400.39	401.06	45.6	4	5.40%	403.52	409.52	6.00		6.00	403.64	411.53	7.89
46	J	G	0+73.82	400.00	400.67	45.6	4	5.16%	403.03	409.03	6.00		6.00	403.15	410.86	7.71
47	J	G	0+46.09	399.14	399.81	45.6	4	4.64%	401.92	407.92	6.00		6.00	402.04	410.19	8.15
48	K	K	0+00.00	399.41	400.08	45.2	4	2.90%	401.39	407.39	6.00		6.00	401.51	410.23	8.72
49	J	K	0+51.08	398.86	399.53	45.2	4	8.57%	403.40	409.40	6.00		6.00	403.52	410.23	6.71
50	J	K	0+34.08	398.47	399.14	45.2	4	7.66%	402.60	408.60	6.00		6.00	402.72	409.56	6.84
51	J	K	0+12.08	397.97	398.64	45.2	4	6.49%	401.57	407.57	6.00		6.00	401.69	408.89	7.20
52	I	J	2+84.65	397.23	397.90	45.2	4	6.29%	400.74	406.74	6.00		6.00	400.86	408.22	7.36
53	I	J	2+62.65	396.25	396.92	45.2	4	6.26%	399.75	405.75	6.00		6.00	399.87	407.55	7.68
54	I	J	2+23.98	394.54	395.21	45.2	4	6.40%	398.10	404.10	6.00		6.00	398.22	405.49	7.27
55	I	J	2+01.98	393.56	394.23	45.2	4	6.17%	397.02	403.02	6.00		6.00	397.14	404.82	7.68
56	I	J	1+83.98	392.77	393.44	45.2	4	6.14%	396.21	402.21	6.00		6.00	396.33	404.15	7.82
57	I	J	1+61.98	391.79	392.46	45.2	4	6.11%	395.22	401.22	6.00		6.00	395.34	402.82	7.48
58	I	J	1+43.98	390.99	391.66	45.2	4	6.08%	394.41	400.41	6.00		6.00	394.53	402.15	7.62
59	I	J	1+21.98	390.02	390.69	45.2	4	6.05%	393.42	399.42	6.00		6.00	393.54	401.48	7.94
60	I	J	0+80.98	388.20	388.87	45.2	4	5.98%	391.57	397.57	6.00		6.00	391.69	399.17	7.48
61	I	J	0+61.32	387.33	388.00	45.2	4	5.96%	390.69	396.69	6.00		6.00	390.81	398.50	7.69
62	I	J	0+38.32	386.31	386.98	45.2	4	5.93%	389.66	395.66	6.00		6.00	389.78	397.83	8.05
63	I	J	0+23.32	385.64	386.31	45.2	4	5.90%	388.98	394.98	6.00		6.00	389.10	396.50	7.40
64	I	I	0+00.00	384.61	385.28	45.2	4	5.87%	387.93	393.93	6.00		6.00	388.05	395.83	7.78
65	H	I	0+28.01	381.33	382.00	47.0	4	11.70%	387.50	393.50	6.00		6.00	387.62	395.17	7.55
66	I	J	0+23.12	385.63	386.30	37.0	4	3.29%	387.52	393.52	6.00		6.00	387.64	395.61	7.97
67	I	J	0+51.00	386.87	387.54	37.0	4	3.32%	388.77	394.77	6.00		6.00	388.89	396.28	7.39
68	I	J	0+69.00	387.67	388.34	37.0	4	2.41%	389.23	395.23	6.00		6.00	389.35	397.62	8.27
69	I	J	0+91.00	388.64	389.31	37.0	4	3.40%	390.57	396.57	6.00		6.00	390.69	398.29	7.60
70	I	J	1+10.00	389.49	390.16	37.0	4	3.42%	391.42	397.42	6.00		6.00	391.54	398.96	7.42
71	I	J	1+31.00	390.42	391.09	37.0	4	3.44%	392.36	398.36	6.00		6.00	392.48	400.30	7.82
72	I	J	1+49.00	391.21	391.88	37.0	4	3.48%	393.17	399.17	6.00		6.00	393.29	400.97	7.68
73	I	J	1+72.80	392.27	392.94	37.0	4	3.52%	394.24	400.24	6.00		6.00	394.36	401.64	7.28
74	J	G	0+18.53	398.27	398.94	37.7	4	2.08%	399.73	405.36	5.63		6.00	399.85	407.31	7.46
75	J	G	0+46.09	399.14	399.81	37.7	4	2.08%	400.59	406.46	5.87		6.00	400.71	407.98	7.27
76	J	G	0+68.09	399.82	400.49	37.7	4	2.24%	401.34	407.34	6.00		6.00	401.46	409.32	7.86
77	J	G	0+86.09	400.39	401.06	37.7	4	2.65%	402.06	408.06	6.00		6.00	402.18	409.99	7.81
78	J	G	1+08.09	401.08	401.75	37.7	4	3.16%	402.94	408.94	6.00		6.00	403.06	410.66	7.60
79	J	G	1+26.09	401.64	402.31	37.7	4	3.57%	403.66	409.66	6.00		6.00	403.78	411.33	7.55
80	J	G	1+48.09	402.33	403.00	37.7	4	4.07%	404.54	410.54	6.00		6.00	404.66	412.00	7.34
81	F	G	1+77.89	403.19	403.86	37.7	4	3.88%	405.32	411.32	6.00		6.00	405.44	412.65	7.21
82	F	G	1+55.89	402.47	403.14	37.7	4	3.96%	404.64	410.64	6.00		6.00	404.76	412.65	7.89
83	F	G	1+37.89	401.89	402.56	37.7	4	4.05%	404.09	410.09	6.00		6.00	404.21	411.98	7.77
84	F	G	1+15.89	401.18	401.85	37.7	4	4.17%	403.42	409.42	6.00		6.00	403.54	411.31	7.77
85	F	G	0+97.89	400.59	401.26	37.7	4	4.23%	402.86	408.86	6.00		6.00	402.98	410.64	7.66
86	F	G	0+75.89	399.88	400.55	37.7	4	4.35%	402.19	408.19	6.00		6.00	402.31	409.97	7.66
87	F	G	0+57.89	399.30	399.97	37.7	4	4.44%	401.64	407.64	6.00		6.00	401.76	409.30	7.54
88	F	G	0+35.89	398.58	399.25	37.7	4	4.55%	400.97	406.97	6.00		6.00	401.09	408.63	7.54
89	F	G	0+06.16	397.62	398.29	#REF!	4	#REF!	400.14	406.14	6.00		6.00	400.26	407.42	7.16
90	E	F	4+06.07	396.71	397.38	35.1	4	5.92%	399.46	405.46	6.00		6.00	399.58	407.42	7.84
91	E	F	3+85.10	396.15	396.82	35.1	4	6.03%	398.93	404.93	6.00		6.00	399.05	406.75	7.70
92	E	F	3+68.53	395.70	396.37	35.1	4	6.11%	398.51	404.51	6.00		6.00	398.63	406.08	7.45
93	E	F	3+46.07	395.09	395.76	35.1	4	6.22%	397.94	403.94	6.00		6.00	398.06	405.41	7.35
94	E	F	3+28.04	394.60	395.27	35.1	4	6.30%	397.48	403.48	6.00		6.00	397.60	405.41	7.81
95	E	F	2+95.20	393.71	394.38	36.4	4	6.24%	396.65	402.65	6.00		6.00	396.77	403.89	7.12
96	E	F	2+65.41	392.91	393.58	35.1	4	6.60%	395.89	401.89	6.00		6.00	396.01	403.89	7.88
97	E	F	2+47.41	392.42	393.09	35.1	4	6.67%	395.43	401.43	6.00		6.00	395.55	403.22	7.67
98	E	F	2+25.41	391.82	392.49	35.1	4	6.78%	394.87	400.87	6.00		6.00	394.99	402.55	7.56
99	E	F	2+07.41	391.33	392.00	35.1	4	6.85%	394.41	400.41	6.00		6.00	394.53	401.88	7.35
100	E	F	1+85.41	390.74	391.41	35.1	4	6.96%	393.85	399.85	6.00		6.00	393.97	401.88	7.91
101	E	F	1+44.75	389.64	390.31	35.1	4	7.16%	392.82	398.82	6.00		6.00	392.94	400.18	7.24
102	E	F	1+27.28	389.17	389.84	35.1	4	7.22%	392.37	398.37	6.00		6.00	392.49	400.18	7.69
103	E	F	1+07.16	388.62	389.29	35.1	4	7.32%	391.86	397.86	6.00		6.00	391.98	399.51	7.53
104	E	F	0+84.70	388.01	388.68	35.1	4	7.43%	391.29	397.29	6.00		6.00	391.41	398.84	7.43
105	E	F	0+66.74	387.53	388.20	35.1	4	7.53%	390.84	396.84	6.00		6.00	390.96	398.17	7.21
106	E	F	0+46.49	386.98	387.65	35.1	4	7.61%	390.32	396.32	6.00		6.00	390.44	398.17	7.73
108	M	N	0+25.03	407.54	408.21	50.0	4	11.89%	414.16	420.16	6.00		6.00	414.28	421.20	6.92
109	M	N	0+61.24	408.27	408.94	50.1	4	9.71%	413.80	419.80	6.00		6.00	413.92	421.20	7.28
110	M	N	0+69.50	408.43	409.10	50.2	4	9.21%	413.72	419.72	6.00		6.00	413.84	421.20	7.36
111	M	N	1+01.11	409.07	409.74	50.2	4	7.30%	413.40	419.40	6.00		6.00	413.52	421.20	7.68
112	M	N	1+09.32	409.23	409.90	50.3	4	6.80%	413.32	419.32	6.00	YES	6.00	413.44	420.53	7.09
113	M	N	1+41.04	409.86	410.53	50.3	4	4.90%	413.00	419.00	6.00	YES	6.00	413.12	420.53	7.41
114	M	N	1+49.20	410.03	410.70	50.4	4	4.41%	412.92	418.92	6.00	YES	6.00	413.04	420.53	7.49
115	N	N	0+00.00	407.04	407.71	50.5	4	9.61%	412.56	418.56	6.00		6.00	412.68	419.86	7.18
116	N	N	0+00.00	407.04	407.71	32.6	4	19.37%	414.02	420.02	6.00		6.00	414.14	421.18	7.04
117	M	N	1+75.04	410.54	411.21	32.6	4	8.92%	414.12	420.12	6.00		6.00	414.24	421.85	7.61
118	M	N	1+49.20	410.03	410.70	32.7	4	15.92%	415.90	421.90	6.00		6.00	416.02	421.85	5.83
119	M	N	1+34.04	409.72	410.39	32.7	4	12.67%	414.53	420.53	6.00		6.00	414.65	421.85	7.20
120	M	N	1+09.04	409.22	409.89	32.7	4	14.95%	414.78	420.78	6.00		6.00	414.90	422.52	7.62

SANITARY SEWER LATERAL SCHEDULE

CONNECTION AT MAIN						LATERAL FROM MAIN TO CO AT PL OR ESMT						LATERAL FROM CO AT PL TO PAD				
LOT NO.	FROM-TO MH #		MAIN STATION	INV @ MAIN	INV @ LATERAL	LATERAL LENGTH, FT	PIPE DIAM. INCHES	PVC SDR26 SLOPE, %	CLEAN-OUT INV ELEV.	GRD ELEV. @CLEAN-OUT	C0 DEPTH	BACKWATER VALVE	LENGTH FT	INV @ PAD	FF ELEV	DEPTH BELOW FF
121	M	N	0+95.04	408.94	409.61	32.7	4	16.22%	414.92	420.92	6.00		6.00	415.04	422.52	7.48
122	M	N	0+69.04	408.42	409.09	32.7	4	18.62%	415.18	421.18	6.00		6.00	415.30	422.52	7.22
123	M	N	0+53.60	408.12	408.79	32.8	4	20.01%	415.34	421.34	6.00		6.00	415.46	422.52	7.06
124	M	N	0+05.04	407.14	407.81	32.8	4	24.45%	415.84	421.84	6.00		6.00	415.96	422.41	6.45
125	M	O	3+49.69	405.81	406.48	33.1	4	28.55%	415.93	421.93	6.00		6.00	416.05	422.41	6.36
126	M	O	3+25.29	405.70	406.37	33.1	4	26.87%	415.27	421.27	6.00		6.00	415.39	422.41	7.02
127	M	O	3+09.69	405.63	406.30	33.3	4	25.67%	414.84	420.84	6.00		6.00	414.96	421.74	6.78
128	M	O	2+85.42	405.52	406.19	33.3	4	24.02%	414.18	420.18	6.00		6.00	414.30	421.74	7.44
129	M	O	2+69.69	405.45	406.12	33.3	4	22.94%	413.75	419.75	6.00		6.00	413.87	421.07	7.20
130	M	O	2+42.80	405.33	406.00	33.3	4	21.11%	413.02	419.02	6.00	YES	6.00	413.14	420.40	7.26
131	M	O	2+26.43	405.25	405.92	33.3	4	20.07%	412.60	418.60	6.00	YES	6.00	412.72	420.40	7.68
132	M	O	1+90.48	405.09	405.76	33.5	4	17.38%	411.59	417.59	6.00	YES	6.00	411.71	418.87	7.16
133	M	O	1+64.09	404.97	405.64	33.5	4	15.59%	410.87	416.87	6.00	YES	6.00	410.99	418.87	7.88
134	M	O	1+49.02	404.91	405.58	33.5	4	14.57%	410.46	416.46	6.00	YES	6.00	410.58	418.20	7.62
135	M	O	1+29.22	404.82	405.49	33.5	4	13.64%	410.06	416.06	6.00	YES	6.00	410.18	417.53	7.35
136	M	O	1+04.14	404.70	405.37	33.5	4	16.04%	410.75	416.75	6.00	YES	6.00	410.87	417.53	6.66
137	M	O	0+89.02	404.64	405.31	33.5	4	15.02%	410.34	416.34	6.00	YES	6.00	410.46	416.86	6.40
138	M	O	0+64.46	404.52	405.19	33.5	4	11.98%	409.21	415.21	6.00	YES	6.00	409.33	416.86	7.53
139	M	O	0+48.02	404.45	405.12	33.5	4	11.54%	408.99	414.99	6.00	YES	6.00	409.11	416.86	7.75
140	P	P	0+00.00	406.34	406.54	43.9	4	3.22%	407.95	413.95	6.00		6.00	408.07	414.66	6.59
141	O	P	0+37.22	406.23	406.90	43.9	4	2.08%	407.81	413.61	5.80		6.00	407.94	414.66	6.72
142	O	P	0+15.15	406.11	406.78	43.7	4	2.08%	407.69	413.24	5.55		6.00	407.82	414.66	6.84
143	O	P	0+06.48	406.07	406.74	43.7	4	2.08%	407.65	413.10	5.45		6.00	407.77	414.66	6.89
144	O	O	0+00.00	406.03	406.23	55.1	4	2.08%	407.38	412.67	5.29		6.00	407.50	414.39	6.89
145	M	O	3+47.29	405.80	406.47	48.6	4	2.08%	407.48	413.01	5.53	YES	6.00	407.60	414.39	6.79
146	M	O	3+33.40	405.74	406.41	49.0	4	2.08%	407.42	413.19	5.77	YES	6.00	407.55	415.06	7.51
147	M	O	3+08.14	405.62	406.29	49.0	4	2.51%	407.52	413.52	6.00	YES	6.00	407.64	415.06	7.42
148	M	O	2+93.54	405.56	406.23	49.1	4	3.90%	408.14	414.14	6.00	YES	6.00	408.26	415.06	6.80
149	M	O	2+66.04	405.43	406.10	49.1	4	4.01%	408.07	414.07	6.00	YES	6.00	408.19	415.73	7.54
150	M	O	2+52.28	405.37	406.04	49.2	4	6.54%	409.26	415.26	6.00	YES	6.00	409.38	415.73	6.35
151	M	O	2+26.32	405.25	405.92	49.3	4	5.43%	408.60	414.60	6.00	YES	6.00	408.72	415.73	7.01
152	M	O	1+93.27	405.10	405.77	49.4	4	7.25%	409.36	415.36	6.00	YES	6.00	409.48	417.24	7.76
153	M	O	1+65.46	404.98	405.65	49.5	4	9.02%	410.11	416.11	6.00	YES	6.00	410.23	417.91	7.68
154	M	O	1+51.61	404.92	405.59	49.6	4	9.89%	410.49	416.49	6.00	YES	6.00	410.61	417.91	7.30
155	M	O	1+25.63	404.80	405.47	49.6	4	11.55%	411.20	417.20	6.00	YES	6.00	411.32	418.58	7.26
156	M	O	1+12.69	404.74	405.41	49.7	4	12.35%	411.55	417.55	6.00	YES	6.00	411.67	419.25	7.58
157	M	O	0+84.63	404.62	405.29	49.7	4	14.14%	412.32	418.32	6.00	YES	6.00	412.44	419.92	7.48
158	M	O	0+72.61	404.56	405.23	49.8	4	14.86%	412.64	418.64	6.00	YES	6.00	412.76	420.59	7.83
159	M	O	0+44.59	404.44	405.11	49.9	4	16.65%	413.41	419.41	6.00	YES	6.00	413.53	420.59	7.06

REVISION BLOCK

DATE	DESCRIPTION	BY
2/13/26	PER TOWN COMMENTS	DCW
4/17/26	PER DEQ COMMENTS	SLB
4/29/26	PER TOWN AND VDOT COMMENTS	DCW
5/28/26	PER VDOT COMMENTS	DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO.
036528
5-28-26
PROFESSIONAL ENGINEER

WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

SANITARY LATERAL TABLE

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE: AUGUST 14, 2025
SCALE: AS_SHOWN
DESIGNED BY: DCW
DRAWN BY: SLB
CHECKED BY: DCW

ACAD FILE: 25D003ZTCP
DRAWING NO: 25-D-003

SHEET NO. 45
OF 50 SHEETS

NOTES:
1. ALL BACKFILL IN TRENCHES WHICH ARE LOCATED WITHIN PAVED VDOT STREETS & ROADS SHALL BE VDOT NO. 21-A STONE FOR THE FULL DEPTH OF TRENCH, 95% COMPACTION.
2. WALLS SHALL BE SLOPED AND OR SHEETING PROVIDED PER OSHA REQUIREMENTS.
3. ENGINEER TO VERIFY PIPE LAYING CONDITIONS.
4. INSTALL UTILITY MARKER PER LOUISA COUNTY WATER AUTHORITY AND THE TOWN OF LOUISA WATER AND SEWER UTILITY STANDARDS.

DATE: JUNE 2008	PIPE LAYING CONDITION DUCTILE IRON PIPE	DRWG. NO.
LCWA/TOL		PIP-1

NOTES:
1. ALL BACKFILL IN TRENCHES WHICH ARE LOCATED WITHIN PAVED VDOT STREETS & ROADS SHALL BE VDOT NO. 21-A STONE FOR THE FULL DEPTH OF TRENCH.
2. WALLS SHALL BE SLOPED AND OR SHEETING PROVIDED PER OSHA REQUIREMENTS.
3. INSTALL UTILITY MARKER PER LOUISA COUNTY WATER AUTHORITY AND THE TOWN OF LOUISA WATER AND SEWER UTILITY STANDARDS.

DATE: JUNE 2008	PIPE LAYING CONDITION PVC	DRWG. NO.
LCWA/TOL		PIP-2

NOTES:
1. MEGA-LUG CONNECTIONS SHALL NOT BE USED ON HDPE PIPE. CONTRACTOR SHALL FOLLOW HDPE PIPE MANUFACTURER'S RECOMMENDATIONS FOR CONNECTION.
2. ENGINEER TO PROVIDE RESTRAINT DISTANCE BASED ON SITE CONDITIONS.
3. CONTRACTOR MAY UTILIZE HDPE FLANGE ADAPTER.

DATE: JUNE 2008	HDPE TO DUCTILE IRON PIPE TRANSITION	DRWG. NO.
LCWA/TOL		PIP-3

NOTES:
1. MEGA-LUG CONNECTIONS SHALL NOT BE USED ON HDPE PIPE. CONTRACTOR SHALL FOLLOW HDPE PIPE MANUFACTURER'S RECOMMENDATIONS FOR CONNECTION.
2. ENGINEER TO PROVIDE RESTRAINT DISTANCE BASED ON SITE CONDITIONS.
3. CONTRACTOR MAY UTILIZE HDPE FLANGE ADAPTER.

DATE: JUNE 2008	HDPE TO PVC PIPE TRANSITION	DRWG. NO.
LCWA/TOL		PIP-4

NOTE:
LOWERED SECTION TO BE OF DUCTILE IRON MECHANICAL JOINT PIPE WITH RESTRAINED JOINTS AT ANY INCLUDED JOINTS. THE ENGINEER SHALL CALCULATE LENGTH OF RESTRAINED SECTION.

DATE: JUNE 2008	LOWERING WATER MAIN OR NEW INSTALLATION	DRWG. NO.
LCWA/TOL		PIP-5

NOTES:
1. THERE ARE NO VERTICAL SEPARATION REQUIREMENTS WHEN HORIZONTAL SEPARATION IS 10' OR GREATER.

INSTALLATION WHERE HORIZONTAL SEPARATION IS LESS THAN 10'
(USED ONLY WHEN LOCAL CONDITIONS PREVENT TYPICAL INSTALLATION)

NOTES:
1. THE SEWER MUST BE LAID IN A SEPARATE TRENCH FROM THE WATER.
2. THE TOP OF THE SEWER MAIN MUST BE A MINIMUM OF 18" BELOW THE BOTTOM OF THE WATER MAIN.
3. WHERE THE MINIMUM 18" SEPARATION CANNOT BE OBTAINED, THE SEWER SHALL BE CONSTRUCTED OF PRESSURE TYPE PIPE AND SHALL BE PRESSURE TESTED IN PLACE TO 50 PSI PRIOR TO BACKFILLING.
4. SANITARY MANHOLES SHALL HAVE 10 FEET HORIZONTAL SEPARATION FROM THE WATER.

DATE: JUNE 2008	WATER AND SEWER SEPARATION	DRWG. NO.
LCWA/TOL		PIP-6

NOTES:
1. CONTRACTOR SHALL PROTECT PIPE JOINTS AS NECESSARY FOR PORTIONS ENCASED.
2. CONTRACTOR SHALL USE VIBRATORY METHOD TO ENSURE COMPLETE ENCASEMENT.
3. FLOTATION OF THE PIPE DURING CONCRETE PLACEMENT SHALL BE PREVENTED.
4. ALL PIPE LINES INSTALLED UNDER STREAMS SHALL TEST ZERO INFILTRATION.

DATE: JUNE 2008	CONCRETE ENCASEMENT OF PIPE	DRWG. NO.
LCWA/TOL		PIP-7

NOTE:
ALL VALVES AND FITTINGS SHALL HAVE STAINLESS STEEL TIE RODS.

DATE: JUNE 2008	TYPICAL VALVE SETTING DETAIL	DRWG. NO.
LCWA/TOL		WAT-1

NOTES:
1. ALL JOINTS SHALL BE MECHANICALLY RESTRAINED (eg. MEGALUG)
2. ALL SUPPORTING CONCRETE SHALL BE 3000 PSI.
3. CONTRACTOR SHALL PROVIDE FLUSHING/SAMPLING HYDRANT THAT IS MODEL 2000-B AS MANUFACTURED BY KUPFERLE FOUNDRY, OR APPROVED EQUAL.
4. IF HIGH WATER TABLE IS ENCOUNTERED DURING INSTALLATION, CONTRACTOR SHALL NOTIFY ENGINEER AND OWNER IMMEDIATELY TO COORDINATE POSSIBLE RELOCATION OF BLOW-OFF HYDRANT (PER VDH WATERWORKS REGULATIONS 12 VAC 5-590-1160)

DATE: JUNE 2008	FLUSHING HYDRANT (BLOW-OFF)	DRWG. NO.
LCWA/TOL		WAT-2

NOTES:
1. ALL SUPPORTING CONCRETE SHALL BE 3000 PSI.
2. ALL JOINTS MECHANICALLY RESTRAINED (eg. MEGALUG).
3. FIRE HYDRANT SHALL BE KENNEDY OR MUELLER FOR LCWA AND KENNEDY FOR TOL.
4. IF HIGH WATER TABLE IS ENCOUNTERED DURING INSTALLATION, CONTRACTOR SHALL NOTIFY ENGINEER AND OWNER IMMEDIATELY TO COORDINATE POSSIBLE RELOCATION OF FIRE HYDRANT (PER VDH WATERWORKS REGULATIONS 12 VAC 5-590-1160)

DATE: JUNE 2008	TYPICAL FIRE HYDRANT ASSEMBLY	DRWG. NO.
LCWA/TOL		WAT-3

NOTES:
1. METER SHALL BE MOUNTED SUCH THAT IT CAN BE EASILY READ FROM GRADE LEVEL.
2. FOR METER ON EXISTING SERVICE CONTRACTOR, SHALL PROVIDE ALL FITTINGS AND PIPE REQUIRED TO MAKE CONNECTION.
3. INSTALL DIELECTRIC COUPLING EQUAL TO WATTS SERIES 3000 WHEN CONNECTING TO EXISTING SERVICE.

NOTE:
A CHECK VALVE BACKFLOW PREVENTER IS REQUIRED PER THE TOWN OF LOUISA STANDARDS.

DATE: JUNE 2008	WATER METER SETTING	DRWG. NO.
LCWA/TOL		WAT-4

NOTE:
PER VDH WATERWORKS REGULATIONS 12 VAC 5-590-1160, METER VAULTS SHALL BE DRAINED TO THE GROUND SURFACE WHERE THEY ARE NOT SUBJECT TO FLOODING BY SURFACE WATER, OR DRAINED TO ABSORPTION PITS LOCATED ABOVE THE SEASONAL GROUNDWATER TABLE ELEVATION, OR SUMP PUMPS MAY BE USED WHERE OTHER MEANS ARE NOT PRACTICABLE. METER VAULTS SHALL NOT BE CONNECTED DIRECTLY TO ANY STORM OR SANITARY SEWER DRAIN.

DATE: JUNE 2008	TYPICAL MASTER METER VAULT	DRWG. NO.
LCWA/TOL		WAT-5

NOTE:
ALL WATER SERVICES IN VDOT ROADWAY SHALL BE PLACED IN CASINGS.

NOTE:
ALL WATER SERVICES SHALL BE SINGLE WATER TAPS.

DATE: JUNE 2008	LCWA - TYPICAL ¾" WATER METER SERVICE CONNECTION	DRWG. NO.
LCWA		WAT-6

NOTE:
ALL WATER SERVICES IN VDOT ROADWAY SHALL BE PLACED IN CASINGS.

NOTE:
ALL WATER SERVICES SHALL BE SINGLE WATER TAPS.

DATE: JUNE 2008	TOL - TYPICAL ¾" WATER METER SERVICE CONNECTION	DRWG. NO.
TOL		WAT-7

PLACE CONCRETE BLOCK ASTM C-139, OR POUR 12"X8" CONCRETE RING FOOTING TO SUPPORT CHAMBER, BUT LEAVE OPENING BELOW PIPE. - FILL SPACE INSIDE RING WITH CLEAN GRAVEL FOR DRAINAGE. ELIMINATE CONCRETE FOOTING IF SOLID ROCK IS ENCOUNTERED.
N.T.S.

DATE: JUNE 2008	AIR RELEASE VALVE	DRWG. NO.
LCWA/TOL		WAT-8

REVISION BLOCK		
DATE	DESCRIPTION	BY
2/13/26	PER TOWN COMMENTS	DCW
4/17/26	PER DEQ COMMENTS	SLB
4/29/26	PER TOWN AND VDOT COMMENTS	DCW
5/28/26	PER VDOT COMMENTS	DCW

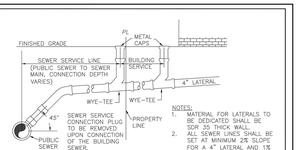
COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO. 036528
5-28-26
PROFESSIONAL ENGINEER

WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

WATER AND SEWER DETAILS

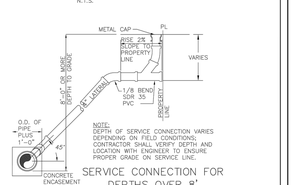
LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	NONE
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	25D003ZUCP
DRAWING NO:	25-D-003
SHEET NO.	46
OF	50 SHEETS



TYP. SERVICE CONNECTION

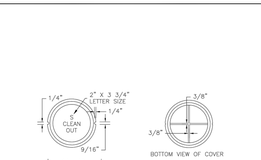
N.T.S.



SERVICE CONNECTION FOR DEPTHS OVER 8'

N.T.S.

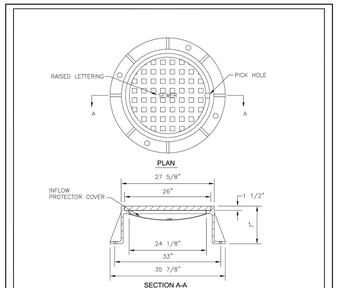
DATE: JUNE 2008	SANITARY SEWER SERVICE CONNECTION	DRWG. NO. SEW-1
LCWA/TOL		



N.T.S.

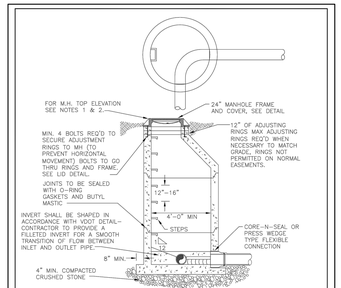
NOTE:
CLEAN-OUT COVER ASSEMBLY SHALL BE TRAFFIC RATED.

DATE: JUNE 2008	CLEAN-OUT COVER ASSEMBLY	DRWG. NO. SEW-2
LCWA/TOL		



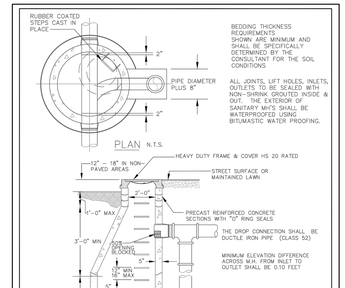
NOTES:
1. ALL GRAY IRON CASTINGS SHALL CONFORM TO ASTM A-48, CLASS 30 AND SHALL BE OF UNIFORM QUALITY. CASTING SHALL BE HEAVY DUTY.
2. ALL CASTING DIMENSIONS SHALL HAVE A TOLERANCE OF 1/8"±.
3. ALL CASTINGS SHALL BE CLEANED BY SHOT BLASTING AND HAND CHIPPING USING STANDARD INDUSTRY PRACTICES PRIOR TO SHOP APPLICATION OF ASPHALTIC COATING, BY DIPPING.
4. ALL MANHOLES SHALL INCLUDE A CORROSION PROOF, SHOCK-RESISTANT INFLOW PROTECTOR COVER.

DATE: JUNE 2008	STANDARD MANHOLE FRAME & COVER	DRWG. NO. MAN-1
LCWA/TOL		

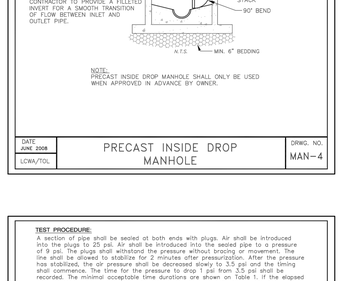


NOTES:
1. THE TOP ELEVATION OF THE FRAME & COVER SHALL BE SET BY THE FOLLOWING CONDITIONS UNLESS NOTED ON PLANS:
   a) FLUSH WITH GRADE IN UNPAVED SHOULDER OF ROAD.
   b) FLUSH WITH GRADE IN PAVED AREAS.
   c) 12"-18" ABOVE GRADE IN EASEMENTS.
2. USE ECCENTRIC TAPER TOP. USE OF A FLAT SLAB TOP MUST BE APPROVED BY OWNER AND ENGINEER.
3. MINIMUM THICKNESS REQUIREMENTS SHOWN ARE MINIMUM AND SHALL BE SPECIFICALLY DETERMINED BY THE CONSULTANT FOR THE SOIL CONDITIONS.
4. ALL JOINTS, LIFT HOLES, INLETS, OUTLETS TO BE SEALED WITH NON-SHRINK GROUTED INSIDE & OUT. THE EXTERIOR OF SANITARY MH'S SHALL BE WATERPROOFED USING BITUMASTIC WATER PROOFING.

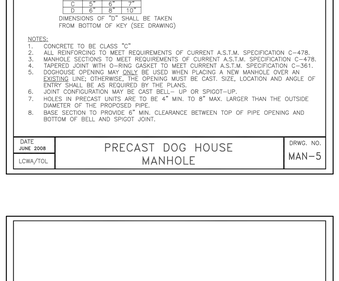
DATE: JUNE 2008	PRECAST MANHOLE	DRWG. NO. MAN-2
LCWA/TOL		



DATE: JUNE 2008	PRECAST DROP MANHOLE	DRWG. NO. MAN-3
LCWA/TOL		



DATE: JUNE 2008	PRECAST INSIDE DROP MANHOLE	DRWG. NO. MAN-4
LCWA/TOL		



PRECAST CONCRETE MANHOLE DOGHOUSE BASE

N.T.S.

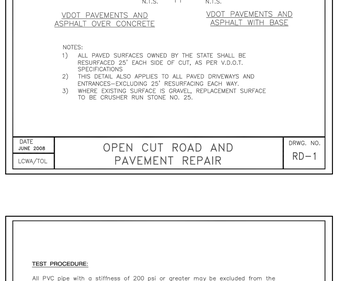
CHART "A"

MINIMUM DIMENSIONS			
MH	A	B	C
4	48"	60"	12"
5	54"	72"	60"
6	6'-0"	8'-0"	10"

DIMENSIONS OF "D" SHALL BE TAKEN FROM BOTTOM OF KEY (SEE DRAWING)

NOTES:
1. CONCRETE TO BE CLASS "C"
2. ALL REINFORCING TO MEET REQUIREMENTS OF CURRENT A.S.T.M. SPECIFICATION C-478.
3. MANHOLE STEPS TO MEET REQUIREMENTS OF CURRENT A.S.T.M. SPECIFICATION C-478.
4. TAPERED JOINT WITH O-RING GASKET TO MEET CURRENT A.S.T.M. SPECIFICATION C-361.
5. DOGHOUSE OPENING MAY ONLY BE USED WHEN PLACING A NEW MANHOLE OVER AN EXISTING LINE; OTHERWISE, THE OPENING MUST BE CAST. SIZE, LOCATION AND ANGLE OF ENTRY SHALL BE AS REQUIRED BY THE PLANS.
6. JOINT CONFIGURATION MAY BE CAST BELL- UP OR SPIGOT-UP.
7. HOLES IN PRECAST UNITS ARE TO BE 4" MIN. TO 8" MAX. LARGER THAN THE OUTSIDE DIAMETER OF THE PROPOSED PIPE.
8. BASE SECTION TO PROVIDE 6" MIN. CLEARANCE BETWEEN TOP OF PIPE OPENING AND BOTTOM OF BELL AND SPIGOT JOINT.

DATE: JUNE 2008	PRECAST DOG HOUSE MANHOLE	DRWG. NO. MAN-5
LCWA/TOL		



NOTES:
1) ALL PAVED SURFACES OWNED BY THE STATE SHALL BE RESURFACED 25' EACH SIDE OF CUT, AS PER V.D.O.T. SPECIFICATIONS
2) THIS DETAIL ALSO APPLIES TO ALL PAVED DRIVEWAYS AND ENTRANCES-EXCLUDING 25' RESURFACING EACH WAY.
3) WHERE EXISTING SURFACE IS GRAVEL, REPLACEMENT SURFACE TO BE CRUSHER RUN STONE NO. 25.

DATE: JUNE 2008	OPEN CUT ROAD AND PAVEMENT REPAIR	DRWG. NO. RD-1
LCWA/TOL		

GENERAL:

All waterlines shall be disinfected prior to being placed in operation. Prior to disinfection all waterlines shall be flushed unless the tablet method of disinfection is used. All valves and hydrants shall be operated during this operation. Flushing velocities shall not be less than 2.5 ft./sec. if ductile iron pipe is being used, the water used to disinfect the waterline should not remain in contact with the waterline for more than 24 hours.

Metods of Chlorine Application

Continuous Feed Method – Potable water shall be introduced into the pipe line at a constant flow rate. Chlorine shall be added at a constant rate to this flow so that the chlorine concentration in the water in the pipe is at least 50 mg/l. The chlorinated water shall remain in the pipe line at least 24 hours, after which, the chlorine concentration in the water shall be at least 10mg/l. All valves and appurtenances shall be operated while the chlorinated water remains in the pipe line.

Slug Method – Potable water shall be introduced into the pipe line at a constant flow rate. This water shall receive a chlorine dosage which will result in a chlorine concentration of 100 mg/l in a "slug" of the water. The chlorine shall be added long enough to insure that all portions of the pipe are exposed to the 100 mg/l chlorine solution for at least 3 hours. The chlorine residual shall be checked at regular intervals not to exceed 2,000 feet to insure that adequate disinfection is occuring. As the chlorinated water passes valves and appurtenances, they shall be operated to insure disinfection of these appurtenances.

Tablet Method – This method shall not be used if non-potable water or foreign material have entered the lines or if the water temperature is below 5°C (41°). The tablets shall be placed in each pipe section and in all appurtenances. Enough tablets shall be used to insure that a chlorine concentration of 25mg/l is provided in the water. They shall be attached by an adhesive to the top of the pipe sections and crushed or rubbed in all appurtenances. The adhesive shall be approved by the Engineer. The velocity of the potable water in the pipe line shall be less than 1 ft./sec. The water shall remain in contact with the pipe for 24 hours. All valves and appurtenances shall be operated while the chlorinated water is in the pipe.

Final Flushing – After the required retention period, the heavily chlorinated water shall be flushed from the pipe lines using potable water.

Testing – After the lines have been flushed, the waterlines shall be tested in the following methods:

All chlorine residual determinations shall be made using only these methods approved by the Virginia Department of Health. One approved method is the DPD Kit method.

Two water samples for bacteriological analysis must be collected at least 24 hours apart and analyzed by a certified laboratory. The results of these samples must indicate no contamination before the pipe, tanks or equipment can be utilized as part of the waterworks. If contamination is indicated, then the disinfection procedure must be repeated. Samples shall be collected at regular intervals, not exceeding 2,000 feet throughout the length of pipe line.

DATE: JUNE 2008	WATERLINE DISINFECTION	DRWG. NO. TEST-1
LCWA/TOL		

TEST PROCEDURE:

A section of pipe shall be valved off. Each valved section of pipe shall be slowly filled with water, and the specified test pressure (150 psi or 1.5 time the working pressure at the point of testing, whichever is greater) shall be applied by means of a pump connected to the pipe. Before applying the specified test pressure, air shall be completely expelled from the pipe section being tested. The pipe section should be allowed to stabilize at the test pressure before conducting the leakage test. The test pressure shall not vary by more than ±5 psi for the duration of the test. Test duration shall be no less than 2 hours.

All exposed pipe, fittings, valves, hydrants, and joints shall be examined carefully during the test. Any damage or defective pipe, fittings, valves, hydrants, or joints that are discovered following the pressure test shall be repaired or replaced with sound material, and the test shall be repeated until satisfactory results are obtained. All visible leaks are to be repaired regardless of the amount of leakage.

Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe or any valved section thereof to maintain pressure within 5 psi of the specified test pressure after the pipe has been filled with water and the air has been expelled. Leakage shall be measured with a calibrated water meter or by the drop in pressure of time. Acceptance shall be determined on the basis of allowable leakage. The allowable leakage for various pipe sizes at various test pressures is shown in Table 1. No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

$$L = \frac{SD\sqrt{P}}{133{,}200}$$

Where:

L = allowable leakage, in gallons per hour
S = length of pipe tested, in feet
D = nominal diameter of the pipe, in inches
P = average test pressure during the leakage test, in pounds per square inch (gauge)

TABLE 1
ALLOWABLE LEAKAGE PER 1,000 FEET OF PIPE
(GAL / HOUR)

Avg. Test Pressure	Nominal Pipe Diameter (inches) 3	4	6	8	10	12	14	15	18	20	24	30	36
150	0.28	0.37	0.55	0.74	0.92	1.10	1.29	1.38	1.66	1.84	2.21	2.76	3.31
175	0.30	0.40	0.60	0.79	0.99	1.19	1.39	1.49	1.79	1.99	2.38	2.98	3.58
200	0.32	0.42	0.64	0.85	1.06	1.27	1.48	1.59	1.91	2.12	2.55	3.19	3.82
225	0.34	0.45	0.68	0.90	1.13	1.35	1.58	1.69	2.03	2.25	2.70	3.38	4.05
250	0.36	0.47	0.71	0.95	1.19	1.42	1.66	1.78	2.14	2.37	2.85	3.56	4.27
275	0.37	0.50	0.75	1.00	1.25	1.49	1.74	1.87	2.24	2.49	2.99	3.73	4.48
300	0.39	0.52	0.78	1.04	1.30	1.56	1.82	1.95	2.34	2.60	3.12	3.90	4.68
350	0.42	0.56	0.84	1.12	1.40	1.69	1.97	2.11	2.53	2.81	3.37	4.21	5.06
400	0.45	0.60	0.90	1.20	1.50	1.80	2.10	2.25	2.70	3.00	3.60	4.50	5.41
450	0.48	0.64	0.96	1.27	1.59	1.91	2.23	2.39	2.87	3.19	3.82	4.78	5.73

Note: If the pipeline under test contains sections of various diameters, the allowable leakage will be the sum of the computed leakage for each size.

DATE: JUNE 2008	PRESSURE LINE – ALLOWABLE LEAKAGE	DRWG. NO. TEST-2
LCWA/TOL		

TEST PROCEDURE:

A section of pipe shall be sealed at both ends with plugs. Air shall be introduced into the plugs to 25 psi. Air shall be introduced into the sealed pipe to a pressure of 9 psi. The plugs shall withstand the pressure without bracing or movement. The line shall be allowed to stabilize for 2 minutes after pressurization. After the pressure has stabilized, the air pressure shall be decreased slowly to 3.5 psi and the timing shall commence. The time for the pressure to drop 1 psi from 3.5 psi shall be recorded. The minimal acceptable time durations are shown on Table 1. If the elapsed time to drop 1 psi is less than that shown on Table 1, then the air loss shall be considered excessive and the section of pipe has failed the test.

TABLE 1
SPECIFICATION TIME REQUIRED FOR A 1.0 PSIG PRESSURE DROP FOR SIZE AND LENGTH OF PIPE INDICATED FOR Q = 0.0015

PART 1A

Pipe Diameter (in.)	Minimum Time (min: sec)	Length for Minimum Time (ft.)	Time for Longer Length (sec.)	Specification Time for 100'	150'	200'	250'
4	3:46	597	.380 L	3:46	3:46	3:46	3:46
6	5:40	398	.854 L	5:40	5:40	5:40	5:40
8	7:34	298	1.520 L	7:34	7:34	7:34	7:34
10	9:26	239	2.374 L	9:26	9:26	9:26	9:53
12	11:20	199	3.418 L	11:20	11:20	11:24	14:15
15	14:10	159	5.342 L	14:10	14:10	17:48	22:15
18	17:00	133	7.692 L	17:00	19:13	25:38	32:03
21	19:50	114	10.470 L	19:50	26:10	34:54	43:37
24	22:40	99	13.674 L	22:47	34:11	45:34	56:58
27	25:30	88	17.306 L	28:51	43:16	57:41	72:07
30	28:20	80	21.366 L	35:37	53:25	71:13	89:02
33	31:10	72	25.852 L	43:05	64:38	86:10	107:43
36	34:00	66	30.768 L	51:17	76:55	102:34	128:12

PART 1B

Pipe Diameter (in.)	Minimum Time (min: sec)	Length for Minimum Time (ft.)	Time for Longer Length (sec.)	Specification Time for 300'	350'	400'	450'
4	3:46	597	.380 L	3:46	3:46	3:46	3:46
6	5:40	398	.854 L	5:40	5:40	5:42	6:24
8	7:34	298	1.520 L	7:36	8:52	10:08	11:24
10	9:26	239	2.374 L	11:52	13:51	15:49	17:48
12	11:20	199	3.418 L	17:05	19:56	22:47	25:38
15	14:10	159	5.342 L	26:42	31:09	35:36	40:04
18	17:00	133	7.692 L	38:27	44:52	51:16	57:41
21	19:50	114	10.470 L	52:21	61:00	69:46	78:31
24	22:40	99	13.674 L	68:22	79:46	91:10	102:33
27	25:30	88	17.306 L	86:32	100:57	115:22	129:48
30	28:20	80	21.366 L	106:57	124:38	142:26	160:15
33	31:10	72	25.852 L	129:16	150:43	172:21	193:53
36	34:00	66	30.768 L	153:50	179:29	205:07	230:46

DATE: JUNE 2008	SEWER LINE AIR TEST	DRWG. NO. TEST-3
LCWA/TOL		

TEST PROCEDURE:

A vacuum test shall be performed by drawing a vacuum in the manhole to 10 inches Mercury vacuum. A manhole will pass the test if the time to drop to 9 inches of Mercury meets or exceeds the following values:

MH HEIGHT	DIAMETER	TIME ALLOWED
0' to 10'	4'	1 MIN 0 SEC
10' to 15'	4'	1 MIN 15 SEC
15' to 25'	4'	1 MIN 30 SEC

All waterproof frames and covers shall be tested in place. Manholes with standard frames and covers may be tested without the frame and cover. All pipes entering the manhole shall be plugged and braced. No person may be allowed inside the manhole during the test.

A plate with an inflatable rubber ring the size of the top of the manhole shall be installed by inflating the ring with air pressure adequate to prevent leakage of air between the rubber ring and manhole wall. Air shall then be pumped out of the manhole through an opening in the plate until vacuum is created inside the manhole equal to 10 inches of Mercury on an approved vacumm gauge. All equipment shall be recommended and used as recommended by their manhole supplier.

DATE: JUNE 2008	MANHOLE VACUUM TEST	DRWG. NO. TEST-4
LCWA/TOL		

TEST PROCEDURE:

All PVC pipe with a stiffness of 200 psi or greater may be excluded from the deflection test (Manufacturer shall certify stiffness in excess of 200 psi). Deflection tests shall be a test on installation and be performed no sooner than 30 days after final full backfill has been placed. The CONTRACTOR shall test the pipe for deflection by means of a GO-NO-GO mandrel to assure that a deflection of 5 percent has not been exceeded. The mandrel, one for each size pipe, shall be a nine arm mandrel, with proving ring, sized at 5 percent less than the ASTM dimension for the pipe in accordance with TABLE II.

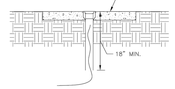
The mandrel shall be pulled through the sewer line manually. Ten percent of all sewer line shall be tested at locations specified by the ENGINEER. Should any of the 10% fail the test, it shall be corrected until it does pass the test, at the CONTRACTOR'S expense. Additional sewer shall be tested at the discretion of the ENGINEER, and any sewer not passing the test shall be corrected until it does pass the test.

TABLE II

Nominal Diameter (inches)	L (inches)	PVC-SDR 35 ASTM D3034 O (inches)
8	8	7.50
10	10	9.33
12	12	11.16
15	15	13.60
18	18	16.60

The test shall be made only under the supervision of the ENGINEER. The CONTRACTOR shall provide all equipment and perform all work required for the purposes.

DATE: JUNE 2008	DEFLECTION TEST FOR PVC GRAVITY PIPE	DRWG. NO. TEST-5
LCWA/TOL		



NOTES:
1. TEST BOX TO BE BINGHAM TAYLOR FIG. NO. 375, 2-1/2" SIZE OR EQUAL.
2. CONCRETE FOR PAD TO BE 3000 PSI CONCRETE.

N.T.S.

DATE: JUNE 2008	TEST STATION BOX	DRWG. NO. TEST-6
LCWA/TOL		

WATER LINE PIPE RESTRAINED LENGTHS FOR POLYWRAPPED DIP AND PVC PIPE

PIPE DIAMETER / FITTING	6" L, FT	8" L, FT	12" L, FT
11.25 DEG HORIZ. BEND	4	5	7
22.5 DEG HORIZ. BEND	7	10	14
45 DEG HORIZ. BEND	15	20	28
90 DEG HORIZ. BEND	37	48	69
VALVE AND DEAD END	75	120	141
ALL RESTRAINED LENGTHS ARE FOR EACH SIDE OF THE FITTING			
UPPER VERTICAL BEND			
11.25 DEG VERT. BEND	4	5	7
22.5 DEG VERT. BEND	7	10	14
45 DEG VERT. BEND	15	20	28
ALL RESTRAINED LENGTHS ARE FOR EACH SIDE OF THE FITTING			
LOWER VERTICAL BEND			
11.25 DEG VERT. BEND	11	14	20
22.5 DEG VERT. BEND	22	28	40
45 DEG VERT. BEND	45	58	84
ALL RESTRAINED LENGTHS ARE FOR EACH SIDE OF THE FITTING			
TEES	**RUN**	**BRANCH**	
8" X 6" TEE	20	4	
8" X 8" TEE	20	44	
12" X 8" TEE	20	18	
12" X 12" TEE	20	87	
ALL RESTRAINED LENGTHS ARE FOR EACH SIDE OF THE FITTING			
REDUCERS			
8" X 6" REDUCER	41		
12" X 6" REDUCER	102		
12" X 8" REDUCER	75		
RESTRAINED LENGTHS ARE FROM THE LARGE SIZE OF THE FITTING			

REVISION BLOCK

DATE	DESCRIPTION	BY
2/13/26	PER TOWN COMMENTS	DCW
4/17/26	PER DEQ COMMENTS	SLB
4/29/26	PER TOWN AND VDOT COMMENTS	DCW
5/28/26	PER VDOT COMMENTS	DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO. 036528
5-28-26
PROFESSIONAL ENGINEER

W.W. WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

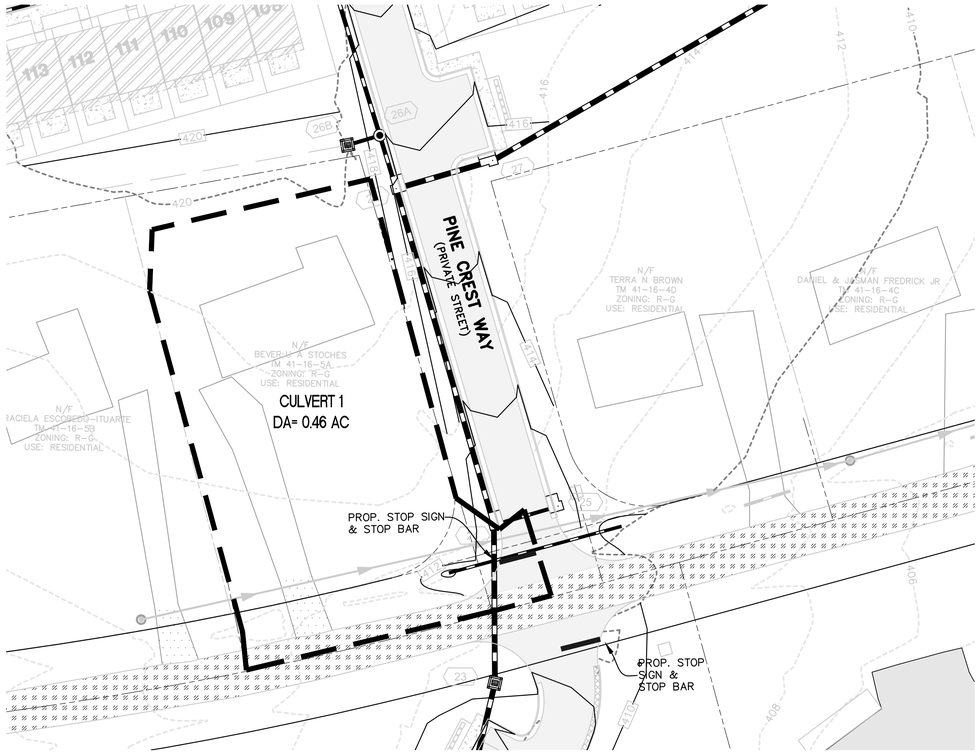
WATER AND SEWER DETAILS

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE: AUGUST 14, 2025
SCALE: NONE
DESIGNED BY: DCW
DRAWN BY: SLB
CHECKED BY: DCW

ACAD FILE: 25D003ZVCP
DRAWING NO: 25-D-003

SHEET NO. 47
OF 50 SHEETS



CULVERT

SCALE: 1" = 30'

0′ 30′ 60′ 90′

CULVERT

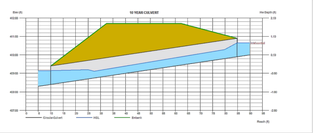
A=0.46 AC.,C=0.46
Tc=5.00 MIN
I_{10} = 6.62
Q_2 =1.06 CFS
Q_{10} =1.40 CFS
HW/D = 0.75
V_2 =1.76 FPS

Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Thursday, Feb 12 2026

10 YEAR CULVERT

Invert Elev Dn (ft)	= 408.40	**Calculations**	
Pipe Length (ft)	= 74.76	Qmin (cfs)	= 1.40
Slope (%)	= 2.01	Qmax (cfs)	= 1.40
Invert Elev Up (ft)	= 409.90	Tailwater Elev (ft)	= (dc+D)/2
Rise (in)	= 12.0		
Shape	= Circular	**Highlighted**	
Span (in)	= 12.0	Qtotal (cfs)	= 1.40
No. Barrels	= 1	Qpipe (cfs)	= 1.40
n-Value	= 0.012	Qovertop (cfs)	= 0.00
Culvert Type	= Circular Culvert	Veloc Dn (ft/s)	= 2.22
Culvert Entrance	= Rough tapered inlet throat	Veloc Up (ft/s)	= 3.56
Coeff. K,M,c,Y,k	= 0.519, 0.64, 0.021, 0.9, 0.5	HGL Dn (ft)	= 409.15
		HGL Up (ft)	= 410.40
Embankment		Hw Elev (ft)	= 410.65
Top Elevation (ft)	= 411.70	HwD (ft)	= 0.75
Top Width (ft)	= 30.00	Flow Regime	= Inlet Control
Crest Width (ft)	= 0.00		



REVISION BLOCK

DATE	DESCRIPTION	BY
2/13/26	PER TOWN COMMENTS	DCW
4/17/26	PER DEQ COMMENTS	SLB
4/29/26	PER TOWN AND VDOT COMMENTS	DCW
5/28/26	PER VDOT COMMENTS	DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO.
036528
5-28-26
PROFESSIONAL ENGINEER

WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

CULVERT CALCULATIONS

LOUISA STATION

TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE: AUGUST 14, 2025
SCALE: AS SHOWN
DESIGNED BY: DCW
DRAWN BY: SLB
CHECKED BY: DCW

ACAD FILE: 25D003ZWCP
DRAWING NO: 25-D-003

SHEET NO. 48
OF 50 SHEETS

TRANSPORTATION MANAGEMENT PLAN

1). Project Category

A). This will be a site project (Type of Project Site or Subdivision)

1). Construction will consist of (The construction of a waterline and storm sewer crossing Pine Ridge Drive by open cut)

B). The project is located approximately 486 ft West of the intersection of Rt 33 and Rt 1046, Pine Ridge Drive.

C). The traffic using the facility includes a mixture of commuters, travelers, and local residents.

D). The Work Week shall begin Monday Morning at 8:00 AM and end Friday Evening at 3:30 PM. The time frames outside of these parameters shall be defined as Weekends unless otherwise directed by the engineer. Any adjustments to the dates and times mentioned, shall be submitted and approved by the Permits Manager.

E). There are no identified areas within the right of way for the contractor to store equipment & materials. No ROW usage will be permitted.

2). Temporary Traffic Control (TTC) Plan

A). Major components will consist of General Notes and special details.

B). Specific traffic control figures and notes from the current and or revised version of the 2026 Virginia Work Area Protection Manual include, but are not limited to:
Figures: TTC-1.0, TTC 5.0, TTC 23.0, TTC 25.0B.

C). Traffic shall not be blocked or re-routed (detoured) without written permission from the District Administrator's designee. A Lane Closure Request Form shall be submitted to the District Administrators designee 48 hrs prior to closure for all primary and high volume secondaries. Contractor to contact Traffic Operations Center at 540-332-9500 to advise of lane closure set up and removal.

D). Allowable Lane Closure Hours
The Contractor is hereby advised that construction activities requiring lane closures or other types of limitations will be allowed as follows:

Route	Category	Time of Day
		MONDAY - FRIDAY
Pine Ridge Drive RT 1046	Single lane closures & turn lane closures allowed.	9AM-3:30PM* *2:15PM when within 1 mile of a school

3). Public Communication Strategies: (Component 2)

Public Communications Plan:
VDOT Culpepper District
Route Number: Pine Ridge Drive, Rt 1046 Louisa County
Traffic Impacts:
Traffic control shall consist of single lane closures. Motorists should be alerted to the possibility of daytime lane and shoulder closures when work begins

Goals:
* To inform the public about the project

* To minimize disruption through proactive information dissemination efforts

* To establish a crisis communications plan
Messages:
* Purpose of the project
* Contacts for more information

4). Transportation Operations (TO) Plan

A). This plan is not required on this project, however, a contact list of local Emergency response agencies must be kept and maintained throughout the project lifecycle.

Target Audience	Contact Method	Phone Number, E-mail or Address	Resposible Charge
Motorists	News Release, weekly traffic information (Roadwatch) and the TOC	See Public Affairs news release distribution list (e-mail and fax)	Culpepper District Louisa Residency 540-967-3710
Police	Phone	Virginia State Police (804) 556-4115	
Sheriff	Phone	County Sheriff (540) 967-1234	
Fire & Rescue	Phone	County Fire & Rescue (540) 967-3491	

B). The Traffic Operations Center (540) 332-9500 shall be notified of major traffic backups. The TOC will make all entries into systems that feed this information into 511. The TOC will also make notifications to department staff. The staff notifications shall include but not be limited to the VDOT Inspector, VDOT Permits Manager and TCC of any incidents and expected traffic delays.

A review of all major incidents, as determined by the VDOT Inspector or the Permits Manager, shall be accomplished with 72 hours of clearance of the incident. VDOT Inspector, Permits Manager and the Contractor Staff shall be represented at these meetings. The purpose of this review is to implement lessons learned from incidents.

Periodic reviews with VDOT Inspectors and the Contractor Staff shall be conducted throughout the life of the project to identify potential problems.

C) Procedures to respond to traffic incidents that may occur in the work zone:
* Contractor to notify Virginia State Police and VDOT Inspector in charge and TOC.
* Depending upon severity of incident, contractor may have to shut down work.
* Upon arrival on scene, Virginia State Police to determine response necessary to allow traveling public around incident.
* Inspector to notify Permits Manager of incident and take pictures as necessary, especially pictures of contractor's work zone to verify the proper setup.

D) Process of notification of incident to be followed is:
* Contractor to call:
* VDOT Inspector: Ronnie Clatterbaugh (540) 717-0215
* Permit Manager : 540-967-3710
* Compliance/Safety Officer: Trevor Payne (540) 618-5912

* District Public Affairs Manager: Sharon Ketcham (540) 829-7370

E) The Virginia State Police will take control of the incident and direct its clearing and restoration to normal traffic conditions.

F) The Virginia State Police report of the incident will be reviewed by the Permit Manager and the Compliance/Safety Officer to determine if any modification of the Temporary Traffic Control Plan is necessary. If it is determined that it is necessary to alter the plan, then a meeting will be called with the contractor, VDOT project personnel, VDOT traffic safety representatives and the Virginia State Police (if necessary) to discuss modification and implementation of an improved traffic control plan.

5). Crisis Communications Plan:

* As with any crisis, emergency responders (911) should be notified immediately if necessary.

* If the emergency is traffic related, the VDOT Inspector or his designee should immediately notify the Permits Manager at (540) 321-8459, Traffic Operations Center at (540) 332-9500, and the Public Affairs Office: Sharon Ketcham at (540) 829-7370

* The Inspector, Permit Manager, public affairs, and the TOC will work together to inform the traveling public, emergency responders and the media about delays and unexpected changes in traffic patterns using the contact list on this sheet, and other resources if necessary.

REVISION BLOCK

DATE	DESCRIPTION	BY
2/13/26	PER TOWN COMMENTS	DCW
4/17/26	PER DEQ COMMENTS	SLB
4/29/26	PER TOWN AND VDOT COMMENTS	DCW
5/28/26	PER VDOT COMMENTS	DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO. 036528
5-28-26
PROFESSIONAL ENGINEER

WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

TRANSPORTATION MANAGEMENT PLAN

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE: AUGUST 14, 2025
SCALE: NONE
DESIGNED BY: DCW
DRAWN BY: SLB
CHECKED BY: DCW

ACAD FILE: <25D03ZXCP>
DRAWING NO: 25-D-003

W W WEBB & ASSOCIATES, PLLC

ENGINEERING-SURVEYING-LAND PLANNING

11903 Bowman Drive, Suite 106, FREDERICKSBURG, VA. 22408
540-371-1209

April 29, 2026

LOUISA STATION
TOWN OF LOUISA, VA
ENTRANCE ON RT 1046, PINE RIDGE ROAD
Turn Lane Analysis

Louisa Station is a townhome project with a total of 159 units located on Pine Ridge Road which connects to Pine Ridge Road.
Pine Ridge Road is a dead end street which serves 8 single family homes and a city owned wastewater treatment plant.
Pine Ridge Apartments connects to Pine Ridge Road between Louisa Station and Rt. 33 and will not be affected by this project.
This analysis will look at the impacts of the proposed units along with the existing uses on the connection to Pine Ridge Road.
Data taken from ITE 11th Addition, Trip Generation.
Louisa Station has three entrances with a third of the units using each entrance. Below is a summary of each entrnace.
All traffic enters from Route 33 east of the site with the following assumptions.
1. Pine Grove entrance will only have left turn turn movements entering the site.
2. Townline Trail entrance will only have left turn turn movements entering the site.
3. Pine Crest Way entrance will only have right turn turn movements entering the site.

Rt. 1046-Pine Ridge Road Traffic Data
Section 170 - Utility
Existing City Waste Water Treatment Plant
Existing Office
Total estimated office area = 1,800 SF
Total Occupied Gross Leasable Area (OGLA)= 1.80 (1,000 SF)
Average VPD, Weekday = 13.24 VPD/1000 SF

							Entering	Exiting
VPD, Average =	1.80	X	13.24	=	24	VPD		
Peak Hour VPH, AM =			1.8	VPH/1000 SF			Entering	Exiting
VPH, AM Peak =	1.80	X	2.39	=	4	VPH	3.53	0.77
82% Entering 18% Exiting								
Peak Hour VPH, PM =			1.74	VPH/1000 SF			Entering	Exiting
VPH, PM Peak =	1.80	X	2.4	=	4	VPH	0.86	3.46
20% Entering 80% Exiting								

Section 210 - Single Family Detached Housing
Existing Homes
Total Units= 8 Dwelling Units
Average VPD, Weekday= 9.44 VPD/Unit

							Entering	Exiting
VPD, Average =	8.00	X	9.44	=	76	VPD		
Peak Hour VPH, AM =			1.21	VPH/1000 SF			Entering	Exiting
VPH, AM Peak =	8.00	X	0.76	=	6	VPH	1.58	4.50
26% Entering 74% Exiting								
Peak Hour VPH, PM =			1.93	VPH/1000 SF			Entering	Exiting
VPH, PM Peak =	8.00	X	1.00	=	8	VPH	5.12	2.88
64% Entering 36% Exiting								

TOTAL EXISTING TRIP GENERATION

			Entering	Exiting	Total
Average VPD, Weekday	=	99 VPD			
Peak Hour VPH, AM Peak Hour	=	10 VPH	5.11 VPH	5.27 VPH	10.38 VPH
Peak Hour VPH, PM Peak Hour	=	12 VPH	5.98 VPH	6.34 VPH	12.32 VPH

Pine Ridge Dr - Traffic Data
Projected VPD = 1,244 AADT
Assume PM Peak Direction is Advancing Traffic, Westbound
Peak Hour = 109 VPH
Opposing traffic(Eastbound) = 109 X 50% = 55 VPH
Advancing traffic(Westbound) = 109 - 55 = 55 VPH
% of Left Turns = 19 ÷ 55 = 34.9%
Posted Speed Limit=25 mph, Use 40 mph, L=40%
Enter data in Figure 3-8:(See attached) **Left Turn Lane is NOT REQUIRED**

RIGHT TURN LANE ANALYSIS
PINE CREST WAY
Pine Ridge Dr - Traffic Data
Projected VPD = 1,244 AADT
Assume AM Peak Direction is Opposing Traffic, Eastbound
AssumePM Peak Direction is Approaching Traffic, Westbound
A.M. PEAK HOUR

Using data from above and Figure 3-27, VDOT Design Manual.

PHV (Peak Hour Volume, Approaching,Westbound) = 49 VPH
Right Turn Volume into Site = 8 VPH

Posted Speed = 25 mph, PHV < 300, PHV right turns NOT> 40: No Adjustment Required.

Enter Data in Figure 3-27:(See Attached) **NO TURN LAND OR Taper Required**

P.M. PEAK HOUR

Using data from above and Figure 3-27, VDOT Design Manual.

PHV (Peak Hour Volume, Approaching, Westbound) = 55 VPH
Right Turn Volume into Site = 19 VPH

Posted Speed =25 mph, PHV < 300, PHV right turns NOT> 40: No Adjustment Required.

Enter Data in Figure 3-27:(See Attached) **NO TURN LAND OR Taper Required**

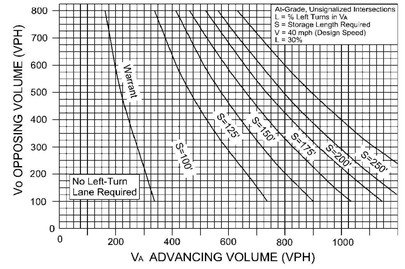


FIGURE 3-8 WARRANT FOR LEFT TURN STORAGE LANES ON TWO LANE HIGHWAY

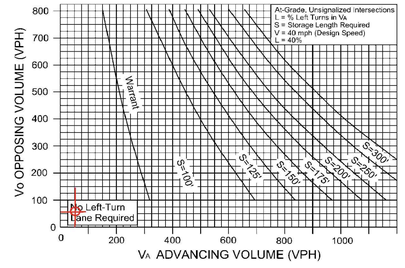


FIGURE 3-9 WARRANT FOR LEFT TURN STORAGE LANES ON TWO LANE HIGHWAY

PROPOSED SITE- TRIP GENERATION DATA
Section 215 - Single Family Attached Housing
TM 41-16-10 to 14
Proposed Town Homes
Total Units= 159 Dwelling Units
Average VPD, Weekday = 7.2 VPD/Unit

							Entering	Exiting
VPD, Average =	159.00	X	7.2	=	1145	VPD		
Peak Hour VPH, AM =			1.21	VPH/1000 SF			Entering	Exiting
VPH, AM Peak =	159.00	X	0.55	=	87	VPH	24	63
28% Entering 72% Exiting								
Peak Hour VPH, PM =			1.93	VPH/1000 SF			Entering	Exiting
VPH, PM Peak =	159.00	X	0.61	=	97	VPH	57	40
59% Entering 41% Exiting								

				AM Peak Hr		PM Peak Hr	
Entrances SITE TRAFFIC	Units	% Traffic	VPD	ENTER	EXIT	ENTER	EXIT
Pine Grove Lane	53	33%	382	8	21	19	13
Townline Trail	54	34%	389	8	21	19	14
Pine Crest Way	52	33%	374	8	21	19	13
TOTAL	159		1145	24	63	57	40

			AM Peak Hr			PM Peak Hr	
TOTAL PROPOSED TRIPS PER ENTRANCE							
Entrances	VPD	TOTAL	ENTER	EXIT	TOTAL	ENTER	EXIT
Pine Grove Lane	481		13	26		25	20
Townline Trail	1244		30	68		63	46
Pine Crest Way	1244		30	68		63	46

LEFT TURN LANE ANALYSIS
PINE GROVE LANE AND TOWNLINE TRAIL
A.M. PEAK HOUR
Project - Traffic Data
Peak Hour, A.M. Weekday
Vehicles Per Hour
Peak Hour = 98 VPH
Vehicles Entering Site = 8 VPH
Assume % making a left turn = 100% X 8 = 8 VPH
Assume % making a right turn = 0% X 8 = 0 VPH

Pine Ridge Dr - Traffic Data
Projected VPD = 1,244 AADT,
Assume AM Peak Direction is Opposing Traffic, Eastbound
Using Projected AAWDT
Peak Hour = 98 VPH
Advancing traffic(Westbound) = 98 X 50% = 49 VPH
Opposing traffic(Eastbound) = 98 - 49 = 49 VPH
% of Left Turns = 8 ÷ 49 = 16.7%
Posted Speed Limit= 25 mph, Use 40 mph, L=20%
Enter data in Figure 3-6:(See attached) **Left Turn Lane is NOT REQUIRED**

P.M. Peak Hour
Peak Hour, P.M. Weekday
Vehicles Per Hour
Peak Hour = 109 VPH
Vehicles Entering Site = 19 VPH
Assume % making a left turn = 100% X 19 = 19.1 VPH
Assume % making a right turn = 0% X 19 = 0 VPH

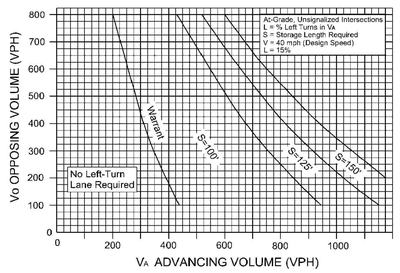


FIGURE 3-6 WARRANT FOR LEFT TURN STORAGE LANES ON TWO LANE HIGHWAY

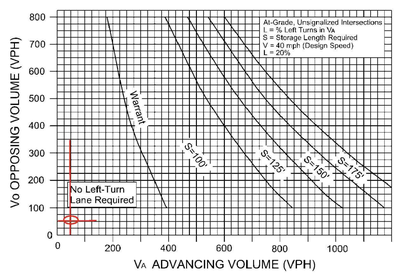


FIGURE 3-7 WARRANT FOR LEFT TURN STORAGE LANES ON TWO LANE HIGHWAY

PINE CREST WAY
ONTO
PINE RIDGE ROAD

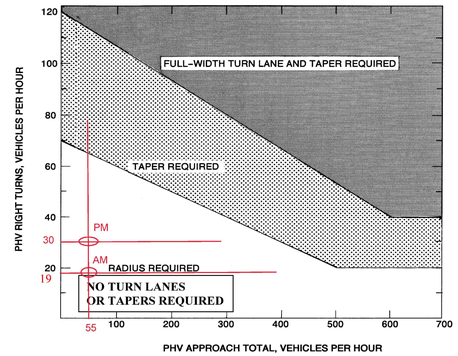


FIGURE 3-26 WARRANTS FOR RIGHT TURN TREATMENT (2-LANE HIGHWAY)

Appropriate Radius required at all Intersections and Entrances (Commercial or Private).

LEGEND

PHV - Peak Hour Volume (also Design Hourly Volume equivalent)

Adjustment for Right Turns

For posted speeds at or under 45 mph, PHV right turns > 40, and
PHV total < 300.
Adjusted right turns = PHV Right Turns - 20
If PHV is not known use formula: PHV = ADT x K x D

K = the percent of AADT occurring in the peak hour
D = the percent of traffic in the peak direction of flow

Note: An average of 11% for K x D will suffice.

When right turn facilities are warranted, see Figure 3-1 for design criteria.*

* Rev. 1/15

REVISION BLOCK

DESCRIPTION	DATE	BY
PER TOWN COMMENTS	2/13/26	DCW
PER DEQ COMMENTS	4/17/26	SLB
PER TOWN AND VDOT COMMENTS	4/29/26	DCW
PER VDOT COMMENTS	5/28/26	DCW

COMMONWEALTH OF VIRGINIA
DANIEL C. WEBB
LICENSE NO.
036528
5-28-26
PROFESSIONAL ENGINEER

W W WEBB
ENGINEERING SURVEYING LAND PLANNING
11903 BOWMAN DRIVE, SUITE 106, FREDERICKSBURG, VA. 22408
PHONE: (540)371-1209

TURN LANE WARRANT ANALYSIS

LOUISA STATION
TAX MAPS 41-16-10,11,12,13,14
CONSTRUCTION PLAN
TOWN OF LOUISA, VIRGINIA

DATE:	AUGUST 14, 2025
SCALE:	NONE
DESIGNED BY:	DCW
DRAWN BY:	SLB
CHECKED BY:	DCW
ACAD FILE:	<25D03ZYCP>
DRAWING NO:	25-0-003
SHEET NO.	50
OF	50 SHEETS

ARTICLE 1 - PURPOSE AND BASIC PRINCIPLES

SEC.1-1. PURPOSE OF BY-LAWS AND RULES OF PROCEDURE

These By-laws and Rules of Procedure are adopted pursuant to Section 3.11 of the Town Charter to serve the following purposes:

A. To enable Town government to transact business expeditiously, transparently and efficiently affording every opportunity for the citizens to witness and participate in the operation of government;
B. To protect the rights of each individual Planning Commission Member;
C. To preserve the spirit of cooperation among Planning Commission members; and
D. To determine the will of the Planning Commission on all matters.
E. To clarify that the Planning Commission's role is advisory in nature to the Town Council.

SEC. 1-2 FIVE BASIC PRINCIPLES UNDERLYING BY-LAWS AND RULES OF PROCEDURE

A. Only one subject may claim the attention of the Planning Commission at one time;
B. Each item presented for consideration is entitled to full and free discussion;
C. Every member has rights equal to every other member;
D. The will of the majority must be carried out, and the rights and opinions of the minority must be preserved and respected; and
E. Each member shall remain respectful of fellow Planning Commission members, staff, and members of the public, even in times of disagreement, in speech and in behavior.

ARTICLE 2 MEETINGS

SEC. 2-1. WHEN AND WHERE REGULAR AND WORK SESSION MEETINGS HELD

A. The time and place of regular meetings and the Town Manager's Annual Goal Setting Work Session of the Planning Commission of the Town of Louisa (hereinafter referred to as "the Commission") shall be established at each annual organizational meeting. Such regular meetings shall be held in the Chambers in the Louisa Town Hall on the last Monday of each month unless otherwise set by the Commission. Such meetings shall begin at 5:00 p.m. If Commission subsequently prescribes any public place other than the initial public meeting place, or any day or time other than

that initially established, as a meeting day, place or time, the Commission shall pass a resolution as to such future meeting day, place or time, and shall cause a copy of such resolution to be posted at Town Hall and inserted in a newspaper having general circulation in the town at least seven days prior to the first such meeting at such other day, place or time. Should the day established by the governing body as the regular meeting day fall on any legal holiday, the meeting shall be held on the Monday of the following month, without action of any kind by the governing body. The Town Manager's Annual Goal Setting Work Session shall be scheduled at a time and date that allows the majority of the members and required staff to attend. For those unable to attend, they shall be provided with the information requested by the Town Manager in sufficient time to allow submittal of requested items for inclusion on the Planning Worksheet prior to the scheduled Work Session. This process ensures everyone has a voice in annual planning. No voting can occur during a work session.

B. If needed, the Commission may schedule work sessions, which are subject to FOIA open meeting requirements, at a time and place as set by the Council. The purpose of such work sessions shall be to allow the Commission an opportunity to further review items either held over by the Commission from a regular meeting or such other items as may come before the Comission at a regular meeting in the future. Sufficient time and additional information shall be provided to those members unable to attend the work session to allow submittal of their input for consideration during the work session. The Commision shall not take any action to approve or deny any item before it during a work session.

C. If needed, the Commission may hold emergency or special meetings, which may be called by the Chair or by two members of the Planning Commission. The call or request shall be made to the clerk, and shall specify the matters to be considered at the meeting. Upon receipt of such call or request, the clerk, after consultation with the Chair, shall immediately notify each Commission member in writing delivered in person or to his place of residence or business or, if so requested or by electronic mail to attend such meeting at the time and place stated in the notice. Such notice shall specify the matters to be considered at the meeting. No matter not specified in the notice shall be considered at such meeting, unless all Commission members are present. The notice may be waived if all Commission members of the governing body attend the special meeting or sign a waiver. Notice, reasonable under the circumstance, of special, emergency, or continued meetings shall be given contemporaneously with the notice provided to the members of the public body conducting the meeting.

D. Sufficient notice shall be given to the Commission members and required staff to ensure attendance of a quorum can be satisfied. For those unable to attend, the Town Manager should attempt to obtain their input regarding the purpose of the Special Call meeting for consideration prior to the meeting.

SEC. 2-2. POSTPONED MEETINGS IN CERTAIN CIRCUMSTANCES

A regular meeting shall be continued to the immediately following business day at the same place and time as the regular meeting being continued if the Chair or Vice Chair, is unable to act, finds and declares that weather or other conditions are such that it is hazardous for members and staff to attend the published scheduled meeting. Such findings shall be communicated to the members and the press as promptly as possible. All hearings and other matters previously advertised shall be conducted at the postponed meeting, and no further advertisement is required. In the event the immediately following business day is still unsuitable for a continued meeting as set out in this paragraph, then the continued meeting shall be held a the day the Chair or Vice Chair if the Chair is unable to act, determines that the conditions that caused the original schedule meeting too hazardous to attend are no longer present.

SEC. 2-3. MEETING ADJOURNMENT

Meetings of the Commission shall adjourn when all business, or the agenda, before the body is complete, however it is not the Commission's intent to begin a new agenda item after 10:00 p.m. unless and until a motion to extend the time has been offered and passed by a majority vote of the members present and voting. Any agenda item not conducted may be carried over to the next scheduled meeting date or the continued meeting if Sec. 2.2 applies, or at such other time as determined by Council. Any public hearing advertised for a regular meeting but not conducted may be rescheduled to the next scheduled or continued meeting, without further advertising when the date and time of the reconvened meeting is publicly announced at the preceding meeting and is otherwise in compliance with state law.

SEC. 2-4. RESERVED

SEC. 2-5. RESERVED

SEC. 2-6. ANNUAL ORGANIZATIONAL MEETING

A. The Commission shall meet on the last Monday of January of each year, which shall be known as the annual organizational meeting.

B. The Vice Chair shall be elected at the annual meeting for a term of 2 (two) years or until Commission wishes to select another Vice Chair.

C. The Commission shall:

1. Establish dates, times and places for its regular meetings and Annual Work Session while ensuring legal holidays are addressed;

2. Adopt its By-Laws and Rules of Procedure (a copy shall be provided to each member no later than the preceding December meeting);
3. Adopt a Financial Policy if sufficient information to adopt a policy is provided, and
4. Conduct any other necessary business as determined by a majority vote of the Commission.

SEC. 2-7. PROCEDURE FOR ELECTION OF VICE MAYOR

The following procedures shall be followed to elect the Vice Chair when such election is conducted:

1. A member of commission must move that the Commission elect a new Vice-Chair.

2. Any member, after being recognized by the Chair, may place one or more names in nomination and discuss his or her opinions on the qualifications of the nominee(s).

3. When all nominations have been made, the Chair shall close the nominating process and call for the vote on the nominee. In the event of multiple nominees, Commission members may cast a vote only for one such nominee. The nominee receiving a majority of Commission votes is elected Vice Chair.

SEC. 2-8. RESERVED.

SEC. 2-9. QUORUM AND METHOD OF VOTING

A. At any meeting, a majority of the Commission shall constitute a quorum.

B. All actions authorized by the Commission shall be pursuant to a roll call vote which shall be taken by the Clerk or Deputy Clerk of the Council. The Clerk or Deputy Clerk shall call the name of each member and receive in reply the vote of such member as either "Yes" or "No" on the measure being considered. At the beginning of any meeting, the Clerk shall conduct a silent roll call of members present and absent.

C. The order of voting shall be as called by the Clerk of the Council, with the Chair voting last in the event of a tie.

D. If there is an abstention, it shall be the responsibility of the Chair to note the abstention for the record and to request that the member abstaining state his or her reason for abstaining for the record.

SEC. 2-10. CLOSED MEETINGS or SESSIONS

A. Closed meetings/sessions shall only be used when the matter to be discussed is exempt from open meeting requirements pursuant to the Virginia Freedom of Information Act.

B. No meeting shall become a closed meeting, and Commission shall not otherwise convene in closed session, until the Commission takes an affirmative recorded vote in open session. Any member dissenting in such vote shall state the reason for the dissent.

The motion to move to closed session shall state specifically the purpose or purposes which are the subject of the closed meeting and reasonably identify the substance of the matters to be discussed. The motion shall make specific reference to the applicable exemption(s) under the Freedom of Information Act, which authorizes the closed meeting.

The Town Attorney may assist the members in formulating the proper motion to move to closed session in accordance with the requirements of the Freedom of Information Act.

C. No resolution(s), ordinance(s), rule(s), contract(s), regulation(s) or motion(s) considered in a closed meeting shall become effective until the Commission reconvenes in an open meeting and takes a vote of the membership on such resolution(s), ordinance(s), rule(s), contract(s), regulation(s) or motion(s) which shall have its substance reasonably identified in the open portion of the meeting.

D. At the conclusion of a closed meeting or session, the Commission shall reconvene in open session immediately thereafter and shall cast a vote certifying that to the best of each member's knowledge:

1. Only public business matters lawfully exempted from open meeting requirements were discussed; and
2. Only public business matters identified in the motion convening the closed meeting were heard, discussed or considered.

Any member who believes that there was a departure from the above requirements shall so state prior to the Chair's call for the vote, indicating the substance of the departure that, in his or her judgment, has taken place.

E. The failure of the certification to receive the affirmative vote of the majority of the members present during the closed meeting shall not affect the validity or confidentiality of the closed meeting with respect to matters considered therein in compliance with the Freedom of Information Act.

F. The Commission may permit non-members to attend a closed meeting if their presence will reasonably aid the Commission in its consideration of an issue. A motion to include a non-member (public) must be approved by the majority of commission members.

G. Commission members shall keep in mind that closed meeting discussions are to remain confidential, and that such matters as discussed in closed meeting or session should not be discussed in public by any participant unless and until a formal action is taken by the Commission in accordance with Section 2-1 0(C) above, and in some cases, such discussions are to remain confidential as permitted or required by applicable law. Failure of a Commission member to maintain such confidentiality may result in such member being censured by Commission.

SEC. 2-11. ELECTRONIC MEETINGS and REMOTE MEETING PARTICIPATION

The Commission shall not conduct any meeting wherein the public business is discussed or transacted through telephonic, video, electronic or other communication means where the members are not physically assembled, except as authorized by the Virginia Freedom of Information Act and pursuant to the Commission's annually adopted **Policy Governing Remote (Electronic) Meeting Participation and Meetings Held Solely Through Electronic Means,** which shall be attached

hereto and incorporated herein. As required by state law, Commission shall review, update as necessary with the guidance of the Town Attorney, and (re)adopt such policy every year at its organizational meeting.

ARTICLE 3 - OFFICERS

SEC. 3-1. CHAIR AND VICE CHAIR

As provided by the Town Charter and Town Code, the Chair shall preside over all meetings of the Commission. The Vice Chair serves in the absence of the Chair. In the absence from any meeting of both the Chair and Vice Chair, the members present shall choose one of their members to preside over the meeting.

SEC. 3-2. CLERK

As provided by the Town Charter and Town Code, the Clerk of the Commission is appointed by the Town Council and does not have to be re-appointed each year at the annual organizational meeting. The duties and responsibilities of the Clerk shall be as set out in the Town Charter and Town Code and Sections 15.2-1538 and 15.2-1539 of the Code of Virginia (1950, as amended). The Council may also designate a Deputy Clerk, and at the discretion of the Council, any Town employee can be designated as Temporary Clerk.

SEC. 3-4 RESERVED.

SEC. 3-4 PARLIAMENTARIAN

The Town Attorney, or his or her designee, shall serve as the Parliamentarian for the purpose of interpreting these By-Laws and Rules of Procedure, *Robert's Rules of Order* and the Code of Virginia, as may be directed by the Mayor, or as required as a result of a point of order raised by any one or more Commission members. If the Town Attorney, or his or her designee, is unavailable, the Town Manager shall serve as the Parliamentarian.

SEC. 3-5. PRESERVATION OF ORDER

A. At meetings of the Commission, the Chair shall preserve order and decorum.

B. Commission members should refrain from speaking on matters until recognized by the Chair. Commission members shall address the Chair or address other members through the Chair. After being recognized by the Chair, a Commission member shall not be interrupted, except when a point of order is called or when requested to yield the floor by another member.

ARTICLE 4 - CONDUCT OF BUSINESS

SEC. 4-1. ORDER OF BUSINESS

1. At regular meetings the order of business shall generally be as follows:
   a. Call to Order- Silent Roll Call of Members (commencing at 5 p.m.)
      i. Invocation
      ii. Pledge of Allegiance
      iii. Adoption of the Agenda
      iv. Consent Agenda
      v. Public Comment
      vi. Presentations
      vii. Commission Discussion/Comments
      viii. New Business
      ix. Old Business
      x. Appointments
      xi. Standing Committees Report
      xii. Staff Reports
      xiii. Closed Meeting
      xiv. Adjournment

2. The above order of business may be modified by the Town Manager when preparing the meeting agenda, after the Chair has been notified, to facilitate the business of the Commission. Further, Commission may amend the organization of the agenda items at the meeting.

3. Citizens' Comments shall be subject to the following rules:

4. Citizens' Comments shall be for the limited purpose of allowing members of the public to present any matter, which, in their opinion, deserves the attention of the Commission. They shall not serve as a forum for debate with the Commission or individual members of the Commission.

5. The Chair and Commission members shall refrain from discussing issues raised or questions raised by the public, within the same meeting, except by motion and consent of a majority of the Commission members present.

6. Citizens wishing to speak during the Citizens' Comments portion of the agenda shall sign the registration form, identifying, with reasonable certainty, the subject matter of his or her comments prior to the commencement of the Citizens' Comments portion of the agenda. Citizens who do not sign the registration form prior to the commencement of Citizens' Comments may address the Commission after all others who have signed the registration form have had an opportunity to speak.
7. Remarks shall be addressed directly to the Commission and not to staff, the audience or the media.
8. The Chair shall open Citizens' Comments.
9. The Chair will explain the Citizens' Comments policy prior to the commencement of the first citizen's comment(s) being received by the Commission.
10. The Chair will call on each speaker who has signed the registration form in the order upon which their name shall appear on the registration form.
11. Each speaker shall clearly state their name and place of residence (locality), but are not required to provide their home address, and shall be subject to a three (3) minute time limitation. If the speaker represents a public group there shall be a time limit of five (5) minutes. Members of a group in attendance shall forfeit their right to speak on the same topic. Residents of the same neighborhood or subdivision are not considered a group for the purposes of public comments at zoning hearings. For purposes of this section, a "group" shall constitute ten (10) or more individuals. No speaker shall address the Commission more than once during Citizens' Comments at any single Commission meeting and citizens cannot donate their unused speaking time to another speaker.
    Notwithstanding the time limitations stated herein, the Chair may, at his or her discretion, allow any citizen to speak beyond the designated time limitation for a reasonable period of time in order to conclude his or her remarks.

12. There shall be no comment during Citizens' Comments on a matter for which a public hearing is scheduled during the same meeting.

13. Any issue raised by the public which the Commission wishes to consider may be put on the agenda for a future Commission meeting by a majority vote.

14. The above rules notwithstanding, members of the public may present written comments to the Commission or to individual Commission members at any time during the meeting. Such written comments shall be submitted through the Clerk and shall become a part of the record.

SEC. 4-2. CONSENT AGENDA

The Consent Agenda shall be introduced by a motion "to approve" and shall be considered by the Commission as a single item.

A. Upon the request of any Commission member, an item may be removed from the Consent Agenda for consideration after approval of the remaining items on the consent agenda.

B. The Town Manager shall provide a brief summary of the individual items on the Consent Agenda, if the Manager or Commission deems it necessary.

SEC. 4-3. SPECIAL PRESENTATIONS

Special presentations shall be for the purpose of informing the Commission of matters of public interest, as well as to provide the Commission an opportunity to properly recognize individuals and organizations, either public or private, for the outstanding service or work they perform for or in the Town. Any governmental agencies or entity, organization or individual wishing to present an item to the Council shall contact the Town Manager fourteen (14) days prior to the Commission's regularly scheduled meeting to seek inclusion in the Commission's agenda.

SEC. 4-4. CONDUCT OF MEETINGS

When two or more members of the Commission wish to speak at the same time, the Chair shall name the one to speak first. The Chair may call a brief recess at any time. The Chair may order the expulsion of a disorderly member of the public, subject to appeal to the full Commission. Other Commission members may request the Chair for consideration of the expulsion of a disorderly member of the public. If necessary to preserve proper decorum, the Chair may automatically adjourn, without benefit of any motion or debate, any meeting of the Commission. All Commission members shall maintain proper decorum when addressing any citizens and applicants that appear before the Commission.

SEC. 4-5. RESERVED.

SEC. 4-6. MOTIONS

A. Members are required to obtain the floor before offering motions or speaking, which they can do while seated.

B. Motions need to be seconded in order to be voted on by Commission, unless otherwise provided by Roberts Rules of Order.
C. Informal discussion of a subject is permitted while no motion is pending.
D. An amended or substitute motion shall be allowed to any motion properly on the floor; it shall have precedence over an existing motion and may be discussed prior to being voted on. If the amended or substitute motion fails, the former motion can then be voted upon. If the amended or substitute motion passes, the amended or substitute motion shall be deemed the main motion and shall stand as having been passed by such vote. If an amended or substitute motion fails, a second amended or substitute motion may be made. No more than two (2) amended or substitute motions may be made for the same issue. To ensure understanding prior to a vote, the motion to be considered must be repeated upon request by the Chair or any Commission member to ensure members understand what is before them.
E. When a motion is under debate, no motion shall be received unless it be one to amend, substitute, commit or refer for study, postpone, call for the previous question, lay on the table, or to adjourn.

F. The Chair may speak in all discussions, and shall have the the same right to vote as other Commission members on a matter if Commission is equally divided.

G. A motion to call for the question is in order and the right of every Commission member to call when they feel discussion has been exhausted and or repeated, thus belaboring the business before the governing body A motion to call for the question requires a two-thirds majority vote of those present. The Chair shall not recognize a motion to call for the question until every Commission member desiring to speak on the main motion has had such an opportunity.

H. When a vote upon any motion has been announced, it may be reconsidered on the motion of any member who voted with the prevailing side provided that such motion shall be made at the session of the Commission at which it was decided. Such motion for reconsideration shall be decided by a majority of the votes of the members present. A member present at the meeting but temporarily absent during a vote may move for reconsideration.

I. Subject to applicable law, the Commission may consider a motion to rescind at any time to address a matter or issue upon which a vote has been taken, following such notice as may be required.

J. Should a decision be made to reconsider or rescind a land use decision, subject to notice and public hearings, as may be required by law, the Town Council may choose to act on such request without referring the matter to the Commission for its recommendation.

K. A motion to adjourn shall always be in order and supersedes all business before the Commission.

SEC. 4-7. DECISIONS ON POINTS OF ORDER

The Chair, or Vice Chair when presiding at a meeting of the Commission, shall refer any point of order to the Parliamentarian. A point of order is a formal demand made by a member to address a violation of rules. The Parliamentarian shall advise the Chair who shall then make a ruling on the point of order. A Commission member may appeal the ruling of the Chair to the full Commission which shall decide the matter by majority decision.

SEC. 4-8. SUSPENDING RULES

One or more of these By-Laws and Rules of Procedure may be temporarily suspended by majority vote of the members present, or by unanimous consent.

SEC. 4-9. ROBERT'S RULES OF ORDER

The proceedings of the Commission, except as otherwise provided in these By-Laws and Rules of Procedure and by applicable state law, shall be governed by *Robert's Rules of Order.*

ARTICLE V - PUBLIC HEARINGS

SEC. 5-1. PUBLIC HEARING AUTHORIZATION

The Town Manager, or his/her designee, shall be authorized to set public hearings for such regular meetings as are appropriate in order to effectuate the timely consideration of matters requiring Commission's consideration.

SEC. 5-2. FORMAT FOR PUBLIC HEARINGS

1. The following format shall be followed for all Public Hearings.
2. The Chair will make a brief statement identifying the matter to be heard and verify that all legal notification requirements have been met.
3. The Chair will call upon the appropriate Town staff member to present the item to be heard. Staff presentations should be concise.

4. If the purpose of the public hearing is to consider a land use application (or other application requiring a public hearing) the applicant may appear on his own behalf, or be represented by counsel or an agent. The applicant, or his counsel or agents, shall have a combined total of ten (10) minutes to speak to the application.

5. The Chair will open the floor to public comment, if any, after the applicant, or his counsel or agent, has spoken. Any private citizen may speak on the matter being considered. The Clerk shall prepare a registration form for citizens to sign their name and provide their address. The Chair shall call each speaker in the order that their name appears on the registration form. Each speaker shall clearly state his or her name and address for the record. Citizen comments are limited to three (3) minutes per citizen speaker. If the speaker represents a group of individuals in attendance at a particular meeting, there shall be a time limit of five (5) minutes. Members of a group shall forfeit their right to speak on the same topic. For purposes of this section, a "group" shall constitute ten (10) or more individuals. . Residents of the same neighborhood or subdivision are not considered a group. The applicant, or his counsel or agent, shall be given the opportunity for closing remarks, which shall last for no more than five (5) minutes. Notwithstanding the time limitations stated herein, the Chair may, at his or her discretion, allow any citizen to speak beyond the designated time limitation for a reasonable period of time in order to conclude his or her remarks.

6. The Parliamentarian or Clerk shall be responsible for noting the expiration of time limits, and the Chair shall be responsible for enforcing it.
7. Upon the conclusion of public comments or the applicant's closing remarks (if any), the Chair shall close the public hearing.
    a. When a public hearing has been closed by order of the Chair, no further public comments shall be received by the Commission. However, any Commission member may ask a question of any person who spoke during the public hearing after being recognized by the Chair to do so.

    b. Following the close of the public hearing, the Chair may entertain a motion to vote on the matter and the Commission may discuss the merits of the issue prior to voting.

ARTICLE 6 -AGENDA PREPARATION

SEC. 6-1. PREPARATION

A. The Town Manager shall develop the meeting agenda in consultation with the Chair and Clerk for the regularly scheduled meetings conforming to the order of business specified in Section 4-1 entitled "Order of Business".

B. All items which are requested to be placed on the agenda which have not been submitted within the prescribed deadline, as set by the Town Manager, may be placed on the next regular agenda for consideration as determined by the Manager in consultation with the Chair.

C. Nothing herein shall prohibit the Commission from adding or removing items to the agenda, provided that such a request is in the form of a motion, voted upon by a majority of the Commission. Members must use discretion in requesting the addition of items to the agenda since to promote public awareness and transparency; Commission considers it desirable to have items listed on the published agenda.

SEC. 6-2. DELIVERY OF AGENDA

The Commission's agenda and related materials shall be received by each member of the Commission, Town Manager and the Town Attorney on the Friday before the scheduled regular meeting. The Clerk may request an adjustment to the delivery schedule due to special circumstances.

SEC. 6-3. COPIES

The Clerk shall prepare or cause to be prepared extra copies of the agenda and shall make the same available to the public and the press in the Office of the Town Manager and on the Town website. The Clerk shall also have at least one hard copy available at each regular meeting.

SEC. 6-4. COMMENTS, QUERIES OF COUNCIL MEMBERS

Commission members are to observe the following rules during the discussion of agenda items:

1. The Chair and Commission members shall at all times refrain from personal attacks of staff, members of the public or other Commission members.

2. Commission members shall limit their remarks and the Chair shall limit the discussion to topics germane to the subject on the agenda being considered. Points of clarification shall be limited to questions only. The Chair may rule other, non germane comments out of order.

3. Commission members may address questions to the Town Manager or staff member presenting at the meeting.

ARTICLE 7 - COUNCIL, AUTHORITIES, COMMISSIONS, WORKGROUPS AND COMMITTEES

SEC. 7-1. APPOINTMENTS

Members of all boards, authorities and commissions shall be appointed by a majority of the Town Council. Proposed appointments shall be voted upon under the Appointments section of the Agenda. Members of all work groups, standing and special committees of Council shall be appointed by the Mayor. Appointees' terms shall run in accordance with the applicable by-laws of such boards, authorities, commission or committees to which the appointee is appointed, unless a shorter term is specified by the Council, or except as provided by applicable state law or Town Code provision. Except as otherwise provided by state law, (i) all appointees to boards, authorities and commissions may be removed, with or without cause, at the pleasure of the Council, and (ii) members of workgroups, standing and special committees may be removed, with or without cause, at the pleasure of the Mayor.

SEC. 7-2. ATTENDANCE

Members of any standing or ad hoc board, authority, committee or commission of the Council, or of any committee to which the Council or the Mayor appoints a member, shall be expected to attend every scheduled meeting of the body to which they have been appointed.

Any member of an appointed body who fails to attend a minimum of seventy-five percent (75%) of the scheduled meetings of that particular body in any given calendar year may, at the discretion of the Council, be deemed to have forfeited his or her membership on that body, subject to any state laws to the contrary.

In the event that the Council, or the Mayor as applicable, determines that an appointee has forfeited his or her appointment pursuant to this section, the Clerk of the Council shall notify, in writing, the appointee of his or her removal from that body based upon his or her failure to attend there required percentage of scheduled meetings and shall thank the appointee for his or her service to the community. Upon the appointment of any appointee, the Clerk of the Council shall forward to the member a copy of this section.

SEC. 7-3. PLANNING COMMISSION MEMBERS ATTENDANCE

Notwithstanding the foregoing provisions, a member of the Planning Commission may be removed from office by the Council without limitation in the event that the commission member is absent from any three (3) consecutive meetings of the commission, or is absent from any four (4) meetings of the commission within any twelve (12) month period. In either such event, a successor shall be appointed by the Council for the unexpired portion of the term of the member who has been removed.

SEC. 7-4. RESERVED.

SEC. 7-5. ROLE OF STANDING OR AD Hoc COUNCIL COMMITTEES; DESIGNATED STANDING COMMITTEES; MEETING REQUIREMENTS

A. Committees of the Council, whether standing or ad hoc, are established as advisory bodies whose purpose is to support the Council's policymaking responsibilities through structured review and informed analysis. The role of any such committee, as it may be created from time to time, shall be to review and consider all matters properly placed before it by vote of the Council, including matters relating to the development, evaluation, or refinement of public policy. Upon completing its review, each committee shall provide the Council with its recommendations through such report as the Town Manager deems appropriate for inclusion in the Council's regular meeting agenda. The Mayor and Committees have no spending authority and cannot move money from other accounts without Council discussion and approval. In a declared State of Emergency, the acting Director of Emergency Management (Town Manager) has the authority to obtain emergency supplies without Council permission.

B. The following standing committees are hereby created by the Council for the general subject matters stated herein and shall meet, in accordance with applicable open meeting laws, to consider only such specific matters as may directed by the Council:

   a. **Public Works and Facilities Committee (Refuse Collection, Recycling and Litter Control/Streets and Sidewalks)** - responsible for the review and recommendation of matters related to public infrastructure, public utilities, trash/refuse, public buildings, fleet issues, and the maintenance and development of Town facilities;

   b. **Public Safety Committee (Police Matters)** - responsible for the review and recommendation of matters related to law enforcement, fire and rescue, emergency management, and all support services related thereto;

c. **Personnel Committee** - responsible for the review and recommendation of matters related to personnel policies and procedures, wages and benefits for public employees, oversight of the timely coordination of the Town Manager's performance reviews, participation in periodic review of recommendations related to the organizational structure of Town departments, and participation in the review of recommendations regarding contracted services for the Town;

d. **Finance Committee** - responsible for the review and recommendation of matters related to the Town's budget, financial policies, audits, revenue streams, expenditures, and financial planning to ensure fiscal responsibility and transparency;

e. **Community Development and Events Committee** - responsible for the review and recommendation of matters related to economic development, planning and zoning, inspections, and the development and coordination of community events to promote engagement and cultural enrichment;

f. **Cemeteries Committee** - responsible for the review and recommendation of matters related to the maintenance, preservation, and development of Town cemeteries, including policies regarding burial plots and cemetery operations;

g. **Intergovernmental Relations Committee (Legal Matters)** - responsible for the review and recommendation of matters related to intergovernmental operations and partnerships between Louisa County and the Town, including collaboration on shared services, joint initiatives, and regional planning efforts.

ARTICLE 8- GENERAL OPERATING POLICY

SEC. 8-1. ACTIONS BY INDIVIDUAL MEMBERS OF THE COUNCIL

It shall be the policy of the Commission that no official(s) shall exert individual action or direct any Town employee or initiate any action or assert their individual preference(s) in a manner that would require a Town employee to perform any action contrary to the laws, ordinances or policies of the Town or which would require the expenditure of public funds in any amount without the approval of the Council. Further, no member of the Commission shall seek nor accept more favorable treatment from Town officers or employees than would be given to other members of the Commission, nor attempt to influence the decisions or recommendations of Town appointees, officers or employees. Notwithstanding the foregoing, each Commission member may, and is encouraged, to share information with Town appointees, officers and employees and to

promote a positive working environment for all employees. Additionally, no Commission member shall assert or speak on behalf of the Commission, Council or the Town without direct approval from the Town Council. Communications made on behalf of the Town shall be limited to the Town Manager and Mayor, ensuring that all official statements or representations are consistent with the policies and direction established by the Council. Individual Commission members may speak on behalf of the town on matters as specifically authorized by Commission and Town Council.

SEC. 8-2. NUMBERING AND INDEXING OF RESOLUTIONS, ORDINANCES AND PROCLAMATIONS

It shall be the responsibility of the Clerk to number and index all resolutions, ordinances and proclamations of the Council. Resolutions and proclamations shall be numbered consecutively and use the last two digits of the calendar year. For example, for the first resolution in January, 2027, the resolution number would be shown as: Resolution No. 27-01.

SEC. 8-3. MINUTES OF THE Commission

The minutes of the Commission meeting shall reflect the official acts of the Commission and names of the public commenting during public hearings and citizen comments, as well as a summary of Commission's proceedings at each meeting, in addition to the date, time and location of the meeting. They shall reflect the issues discussed and Commission comments in summary form.

SEC. 8-4. AMENDING BY-LAWS

These by-laws may be amended by vote of Commission at any meeting subsequent to the introduction of a suggested by-laws amendment.

SEC. 8-6. ENACTMENT OF BY-LAWS AND RULES OF PROCEDURE

No later than December 1st of each year, the Town Manager or Clerk shall deliver a copy of the current By-Laws and Rules of Procedure to each member and member-elect of the Council, soliciting any proposed changes to the same. Any proposed changes shall be referred to the Town Attorney to prepare proposed amendments for Council's consideration at the annual Organizational Meeting.

Adopted by the Louisa Town Planning Commission and Town Council on this — day of _____, 2026.

Ashley Michael, Mayor

Stephanie Dorman, Clerk

Town of Louisa Comprehensive Plan 2023

Adopted by Town Council
December 19, 2023



Table of Contents

Introduction. 4

Town of Louisa Yesterday 6

Town of Louisa Today 10

- Background. 10
- Government 10
- Services 11
- Population. 13
- Finances 14
- Capital Improvements 15
- Housing and Growth Management 17
- Economy 19
- Transportation 21
- Infrastructure 23

Town of Louisa Tomorrow 25

- Existing Land Use 25
- Future Land Use 26
- Growth Policy Statement 32
- Long Term Goals, Objectives, Policies & Actions 33
- Town Council Vision 42

Appendix I Town of Louisa Zoning Map

Louisa Town Council Vision Statement

"The Town of Louisa is the center of government, commerce, culture, and arts for the County. As the heart of the County, we take responsibility for our destiny and commit to leadership that will ensure our economic and collective success. We are a community that preserves and builds on our history while retaining our social fabric and small-town appeal. Our Main Street defines us, providing a sense of place and identity, and drawing citizens together to create a progressive, vibrant, and caring community."

Louisa Town Council

Mayor R. Garland Nuckols
Vice Mayor Jessie J. Lassiter

A. Daniel Carter
John J. Purcell, IV
Sylvia L. Rigsby
Vicky A. Harte

Town of Louisa Planning Commission

Chairman A. Carter Cooke
Vice Chair Maxine Butcher

John J. Purcell, IV ***Cochran Garnett*** ***Veronica Saxton***

INTRODUCTION

The Planning Commission initiates a five-year review of the Comprehensive Plan. The plan is examined for content, updated census data, and the commissions review of the overall goals of the town's growth, economic development, zoning and land use ordinances,

WHAT IS A COMPREHENSIVE PLAN?

A comprehensive plan, in general, is an outline of the kind of community the residents of an area wish to have in the future. The Town of Louisa's Comprehensive Plan includes information about the past and present. It references the people who live here and describes the town's physical characteristics. The planning process includes an examination of the town's strengths, weaknesses, and development goals. The plan suggests ways to achieve these goals, however they are intended to be examples of the possibilities, and not limits to the imagination. The plan also recognizes that resources, both human and physical, are finite and by planning ahead, the town staff and council can often achieve more than one purpose with a single action.

WHY DO WE NEED A COMPREHENSIVE PLAN?

This plan is needed for the efficient use of resources, and there are two additional reasons for adopting a Comprehensive Plan. The most compelling is that Virginia State law requires it: "Every governing body in this State shall adopt a comprehensive plan for the territory under its jurisdiction … with the purpose of guiding and accomplishing a coordinated… and harmonious development of the territory which will…best promote the…general welfare of the inhabitants." The second reason is that a comprehensive plan provides a reasoned justification for the local zoning ordinance. A zoning ordinance, not based on a comprehensive plan, can often be successfully overturned in court, simply because the local government cannot provide reasons which justify the zoning decisions. Many changes have taken place within the town since the 2018 revision. The following is the 2023 five-year review. This Plan is intended as a guide for the future, will be re-examined regularly, and will be changed as conditions, views and the needs of town's residents change.

- Achieve a balanced and sustainable land use pattern that will retain Louisa's historic, small town character in a rural setting.
- Uphold a high standard of environmental stewardship.
- Provide safe and orderly flow of traffic in Louisa.
- Encourage a range of quality residential development, and redevelopment, sensitive to the town's interest in maintaining its character, being pedestrian friendly and providing parks and open spaces.
- Create and sustain commercial development within the commercially zoned core area in the center of town.
- Preserve and protect the town's historic and cultural resources to maintain a unique sense of place and provide for increased social interaction.
- Control type and rate of growth of residential and commercial development to ensure infrastructure can support it without overwhelming the system.

The Comprehensive Plan provides a series of strategies to ensure that the town and surrounding area continue to be positioned prominently among jurisdictions as an exceptional place to live, work and visit.

The Town of Louisa's Comprehensive Plan is a policy and strategic guide for public decision-making. The Plan describes: the community's historic, physical and social character; examines and responds to local and regional issues; and provides a blueprint for the future. The Plan also describes a desired future and provides recommended paths for attaining that future state.

Key Action Items

1. Monitor the number of sewer and water taps granted for new development in the town and surrounding area to protect the groundwater resources for the town. Connections should be approved only when capacity is available and the existing infrastructure can support the new customers without decreasing the quality of service for others.
2. Evaluate existing town and county zoning district regulations, as well as the Zoning Map, for their compatibility with the goals and policies of this Plan, and identify necessary or desirable amendments.
3. Review town ordinances and regulations accordingly to ensure that growth is managed to avoid overtaxing public services.
4. Expand and refine the town's capital improvements plan and establish a funding plan for long term capital needs for all public facilities and utilities.
5. Assist local landowners/developers in maintaining open space by identifying and designating specific natural features and locations in and around the town for public use. Suggested means include: bike paths; community gardens; wildlife refuges; old railroad right-of-ways; and historically significant places.

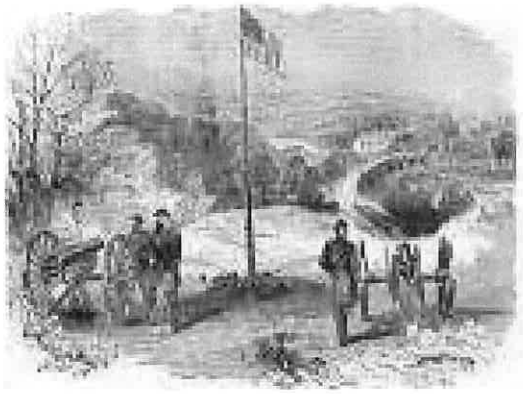
Town of Louisa Yesterday...

The ordinary or tavern, located at the site of the courthouse, served as a place of refreshment and lodging for the justices and visitors to the monthly courts and also to such travelers who might go through the county on the roads from Richmond to Charlottesville. This, however, was not the only function of the establishment. It served as a gathering place for persons on scores of duties or pleasure bent. Legal notices and newspapers were on file, mail was distributed and the taproom was a clearinghouse for news and gossip. The tavern carried a small stock of necessities, which could be purchased by the surrounding populace. No record exists as to the growth of this plantation settlement, which on Court Days became a scene of commercial activity.

An Act of Congress, approved April 23, 1800, established a "post road from Fredericksburg, by Spotsylvania Courthouse and Louisa Courthouse to Columbia." This road was to connect the Rappahannock River and the James River and is roughly Route 208 of today, which reaches from Interstate 95 to Interstate 64 at Ferncliff.

A post office was established at Louisa Courthouse on September 19, 1800, and the first postmaster was Ludlow Branham. The mail at this time, was carried by post riders and stagecoaches. Apparently, this assumed some degree of regularity in delivery.

No actual records of the village exist as to its content in the manner of occupants or business until the publication of a "Gazetteer of Virginia" by John Martin in 1835. In this work, Louisa Court House is described as a Post Village, located 110 miles southwest of Washington; 54 miles northwest of Richmond and 30 miles from Charlottesville. In addition to the Courthouse and jail, it contained a large house of worship, and the following merchandise stores: a silversmith, blacksmith, 2 carriage makers, a shoe maker, cabinet maker, saddler, 2 taverns, a milliner, 2 lawyers' offices and a physician's office. There were a total of nineteen places of business, but there was no mention of the population of the Village as there were, at that time, no boundary lines.



On December 1, 1838, the Louisa Railroad, which had been started in 1836, reached Louisa Courthouse. Thus began a contact with the outside world for what had been a landlocked settlement, served only by post roads and wagon trails and which had grown to the status of a village with streets, stores, and professional men. The coming of the railroad proved to be a boon to the village in later years and was a contributing factor to its growth.

Louisa played a part in the Civil War, not only furnishing a Company of men, the Louisa Blues, as a part of the 23rd Virginia Infantry of the Confederate forces, but also because of the Battle of Trevilian Station, which occurred on the 11th and 12th of June, 1864. This battle occurred when Sheridan attempted a raid on the Virginia Central Railroad in an attempt to break General Lee's vital supply line from the Shenandoah Valley. Some 13,000 cavalrymen were involved in the battle of which 1,619 from both sides were either killed or injured. Field hospitals were set up at the Trevilians Depot, the Tavern, the Louisa Methodist Church, the Courthouse, and many private homes. Oakland

Cemetery on West Street in Louisa provided the last resting place for 94 marked, but unknown soldiers, of this fierce battle.

At the time of Louisa Courthouse's incorporation as a town, Chataigne and Ellis, in their Virginia Business Directory and Gazetteer, show that the town contained about 250 inhabitants. Included were: four churches; a hotel; seven lawyers; one druggist; one saddler; one milliner; one confectioner; a lumber firm; a music store; seven general stores; one general merchandise merchant; and one liquor dealer (exclusively); one grocer; one flour mill; one distiller; and a tinner, in all there were twenty-seven places of business.

The Town of Louisa was incorporated under Chapter 125 of the Acts of the General Assembly 1872-1873 and approved on March 8, 1873.

The boundaries of the Town were stated in the Act, but the designation of the various corners and markers were so vague that it is almost impossible to determine from the descriptions exactly where they lay, as it called for lines to trees, fence corners, posts, etc. A plat of the boundaries does exist and from it can be determined the approximate boundaries.

The officers were to consist of seven trustees, who would compose the town council, and the following persons were named in the Act: George J. Sumner; Hyman Levy; F.W. Jones; Jesse W. Melton; Henry W. Murray; Dr. Gulielmus Smith; and Samuel H. Parsons. They were given the power to pass all by-laws and ordinances for the governing of the town, provide for keeping the streets, grading, paving, and making such other necessary improvements. To accomplish these ends, they were empowered to levy such tax as they might deem proper on all property in town not exceeding fifty cents on one hundred dollars and on all avocations, professions, and business as were subject to taxation by the revenue laws of the state.

The Board of Trustees were to elect a president from its own body who would preside at all meetings, and when the trustees were equally divided should, in addition to his own vote, give the deciding vote.

Annual elections were to be held on the first Monday in November; seven trustees and one town sergeant were to be elected by the qualified voters. The Trustees were empowered to elect a secretary to the council who would be ex-officio treasurer of the town and who was to give bond for all funds that would come into his hands. The collection of taxes, however, was one of the duties of the town sergeant.

It might be well to recall here that 1873 was the beginning of the financial panic under President Grant which was to last for six years, but this apparently did not have a tremendous effect upon Louisa, inasmuch as the area had never recovered from the Reconstruction after the Civil War.

The first meeting of the Town Council was held on March 8, 1873, with the gentlemen named in the Charter in attendance. From this group, George J. Sumner, a merchant of the town, was elected President or Mayor of the Council and served for two terms. At this meeting, a set of bylaws or ordinances by which the town would be governed were adopted. These were mostly police regulations and penalties, which would be assessed for failure to observe them.

According to the records, the next few years were concerned with such mundane matters as the repairs of streets and sidewalks and the general administration of the town government. In 1878, the first streetlights, twelve in number, were installed and were large oil lamps on posts placed at strategic locations in the Town. These were attended to by Mr.

W.H. Vaden, who came around each morning with a small ladder, a pair of scissors for trimming the wicks, a can of oil, and tissue paper for cleaning the globes. He would then return about dusk and light the lamps for the night. It was not until 1925 that adequate electric lights for both municipal and private homes were secured from the Louisa Light & Power Company in Mineral, an operation conducted by the Fisher brothers. Prior to this, there had been several attempts to operate a small light plant using direct current furnished by a gasoline engine and a generator, but this was never successful. Several of the stores had their own private Delco plants and some even used gas for lighting.

The sidewalks in 1873 were mostly plank walks laid in the Main Street business area with walks made of tanbark for the outlying sections. By the early 1900's these had gradually been replaced by cement sidewalks in the business area, with the merchants paying a proportionate part of the cost. It was not until 1906 that, by the aid of a $6,000 bond issue, cement walks were completed to the corporate limits of the town.

A disastrous fire in January 1888 almost completely wiped out the entire eastside of Main Street and paralyzed the business district. This was the block directly across the street from the courthouse. It was several years before the town recovered from this loss and the slow task of rebuilding is shown on insurance maps owned by the Louisa County Historical Society.

The water supply for the town in 1873 consisted of individual wells and a public well located at the corner of the courthouse property, which was jointly owned by the county and the town. The county relinquished its entire interest in the well in 1916 and the town began furnishing water in limited quantities to the outlying properties throughout the year. The next water system was installed in 1926 at a cost of $35,000, which was obtained by a bond issue. This system consisted primarily of a well-house, spring, and pumps to provide water. Fireplugs were installed and a volunteer fire department was organized. Their first building was constructed in 1929. The company has rendered invaluable service to the town and surrounding community over the years.

In 1935, the town purchased ten acres of land about one and one-half miles west of the town to be used as a municipally owned cemetery with perpetual care. This has been enlarged by the purchase of adjacent land and has proven to be a beautifully kept project.

The streets of the town from 1873 until around 1921 were dirt roads supplemented by an occasional fifty-ton car of gravel, which was placed in the most strategic and well-needed places. In 1921, the State Highway Department ran its first hard surfaced road through the town of what was then State Route 39. This road was an eighteen-foot wide cement ribbon, which left a considerable amount of unpaved street on each side. This condition was remedied in 1928 by an extension of a cement roadway from the highway to the curbs on both sides by the town through the business section, thus eliminating the existing expanse of dirt and muddy problems of the portions of the street.

A small sewer disposal system had been installed back in the 1920's, which only took care of portions of the landowners. A majority of them had septic tanks and in 1958, the town secured a bond issue in the amount of $240,000 and constructed the present system. All of these improvements meant the passing of the outhouse which had been a feature of the town at its beginning and which was a subject of some of the first ordinances.

Of the eleven churches now in the town, four of them were in existence when the town was incorporated. The Louisa High School (current site of the Town Hall and Arts

Center) on Fredericksburg Avenue succeeded the old Haley High School on Elm Street in 1907. This was completely gutted by fire in February 1924 and was rebuilt and continued as a high school until around 1940 after which it became an elementary school until 1987. In the late 1890's and on through until the 1920's, Louisa was known as a summer resort. This was before the arrival of good roads and the automobile. There were several ladies, two of which were Mrs. Douglas Chaney and Mrs. Charles Donnally, who had large homes and took in what we called "summer boarders" along with the Louisa Hotel (now the Cooke Building) which was always filled. The people would come from Richmond and the peninsula to get away from the hot, humid city air and to enjoy good country food.

Mr. S.S. Griffith operated the hotel and he had a large hardwood platform built just outside the dining room windows, with Japanese lanterns, little tables and chairs placed about the lawn. A Victrola played music from the dining room window for dancing.

One of the features of the town was the attendance of large crowds from all over the county on Court Days held in March and December of each year until the arrival of the automobile, good roads and the telephone. People would come to Louisa in March to see who had lived through the winter, and in December to get their Christmas spirits. They also brought every conceivable object which they thought they could sell or swap.

It's been estimated that thousands of people would gather here on those days, some traveling all night to arrive for the big day. John Bibb attended a Presidential Inauguration in Washington and made comment on the size of the crowd saying, "... you have never seen a crowd until you have been to Louisa Courthouse on a March Court Day". The only comparable occasion was August 17, 1905, when the present courthouse and the Confederate Monument were dedicated. A Confederate reunion was held in connection with this event and a number of outstanding speakers were present. It was estimated that an attendance of around ten thousand persons participated, which, if correct, would be the largest public gathering of any kind to assemble here.

The Town of Louisa owes its origins to the location of the county courthouse within the limits of the present town. The first session of the court was held on December 13, 1742. The original courthouse was demolished when the new courthouse was built in 1905.

Further development of Louisa was encouraged by the construction of a rail link with Richmond in 1838, and an extension of this line to Gordonsville in 1850. The Town's location as the administrative center and its transportation links increased settlement around the courthouse. The first census, after incorporation, showed the town had a population of 315.

Louisa residents have been served by a newspaper since 1879. Name and ownership of the paper changed several times until November 7, 1912 when it appeared under its present name as "The Central Virginian".

Since 1873, the incorporated area of Louisa has grown several times through annexation of land from the County. The most recent expansion, effective January 1, 1977, more than tripled the town's acreage and increased the population by 50 percent. It also captured new commercial development along routes 22 and 33 and improved the tax base of the town.

Town of Louisa Today...

The town is the county seat of Louisa, and serves as the governmental center, hub of commerce, and a residential area. The Downtown area has retained its rural nature and rustic feel. The primary transportation route to the Downtown area is Main Street, which incorporates small retail shops, restaurants, the historic courthouse and jail, several churches, the post office, and legal/financial services.

The town operates a water distribution system, a wastewater collection system, and a sewage treatment plant in conjunction with Louisa County. Other public services provided by the town are independent police department, solid waste removal, recycling, brush removal, the operation of two cemeteries (Hillcrest and Oakland Cemeteries), and other general services.

The Town of Louisa is in an ideal geographical position for growth and development. Situated in the Virginia Piedmont region on a ridgeline separating the North and South Anna river drainage basins, the town is a crossroads for Central Virginia. State Routes 208, 22, 33, 628, 669 and the railroad tracks all converge within the downtown vicinity. The transportation corridors, coupled with the recreational tourism of Lake Anna and the commercial development at Zion Crossroads, support a vibrant and popular residential community.

Growth in the residential sector is being spurred by the skyrocketing land and construction prices in the Charlottesville/Albemarle region as well as the west and northwest expansion of the Richmond metropolitan area. The development of the North Anna Nuclear Power Plant provided a stable residential population when the plant opened in the early 1970's.

Government

Offices

In 2006, the Town Office relocated to 212 Fredericksburg Avenue. In an adaptive reuse project, the former Louisa Elementary School was renovated to house the Town Council chambers as well as the mayor, town manager, treasurer, clerk and administrative staff offices. The police department gained use of the vacated building at 219 East Main Street. The public works building on Main Street houses the town's maintenance crew and equipment.

Elected Officials

The governing body of the Town of Louisa consists of a mayor and five council members who meet on the third Tuesday of each month at Town Hall. The mayor and five council members are directly elected at large every four years with staggered terms for council members. Once elected, the council chooses a vice-mayor.

Appointed Officials

The mayor appoints council members to standing committees, each being responsible for the general supervision of all matters related to that committee. The mayor and town manager are ex-officio members of these committees. At present, there are eight standing committees: Cemetery, Personnel, Police Matters, Water & Sewer, Finance, Streets & Sidewalks, Refuse & Recycling, and Legal Matters.

The Town Council appoints a five-member Planning Commission, which makes recommendations to council on zoning requests and final site plan review. The Commission is responsible for revising and recommending to council the town's Comprehensive Plan.

A Board of Zoning Appeals is appointed by the Circuit Court based on recommendations from the Town Council. One member of this board is always an active member of the Planning Commission. The Board of Zoning Appeals makes decisions on requests for variances and hears appeals of decisions made by the zoning administrator.

A five to seven-member Economic Development Authority is appointed by the Town Council. The EDA is tasked with attracting business enterprises toward the town and is authorized to provide incentives to encourage business development. One incentive that the EDA has, is the ability to issue bonds on a tax-exempt basis allowing a business to relocate within the town at minimal costs. While originally designed to entice industrial operations to locate within the town, the EDA serves more as an economic development agency, contributing to tourism and community development projects such as a Farmers Market.

Council also appoints a Town Manager, Treasurer, Clerk, Chief of Police, and Zoning Administrator. The Town Attorney is retained on a contractual basis.

Services

General

The administrative department of the Town handles utility billing, taxes, audit and finance, payroll, zoning, planning and other general governmental duties. The public works department maintains public grounds and cemeteries, operates the public utilities, and responds to general emergencies.

Fire and Emergency Medical Services Protection

The Louisa Fire & Emergency Medical Services consists of a combination of career and volunteer providers from Louisa Volunteer and career staff serving the citizens and visitors of Louisa. Services provide basic life support, advanced life support , and fire response to all types of emergencies that impact our County. The Town of Louisa has ample hydrant capacity and the fire departments completes an annual analysis and testing to insure quality and service.

Police Protection

An important service that the Town provides is police protection. The police department provides services in cooperation with the Louisa County Sherriff's Office, operating under a mutual aid agreement, for public safety. The Town has upgraded all vehicles and equipment to enable our officers to serve the community.

Municipal Solid Waste Removal

Curbside garbage collection is a free service provided to residential sites within the corporate limits and a nominal tipping fee is charged for commercial sites. Commercial refuse pick-up and residential pick-up occur once a week. The commercial fee includes canister rental, as well as collection and disposal. The trash is carried to the Louisa County Sanitary Landfill located just east of the Town of Mineral.

This service is outsourced on a contractual basis that is reviewed regularly to ensure adequate service.

Brush Removal

The Town operates a free residential brush removal service for all non-commercial properties. The service is offered twice monthly and simply requires the brush be cut into manageable lengths and left curbside. The town instituted this service to help recycle waste and prolong the life of the Louisa County Landfill. All brush collected is ground into mulch.

Recycling

The town offers a recycling program, servicing residential and commercial properties twice monthly. This service is outsourced on a contractual basis that is reviewed regularly to ensure adequate service.

Recreation

In June 2007 a park facility was opened as part of the twelve-acre Town Hall campus on Fredericksburg Avenue. In August 2008, the Louisa Arts Center was opened which began providing entertainment, education, and community services in the Arts. The Cooke-Haley Theater is a 200 seat Performing Arts Center and the Purcell Gallery is an 800 square feet gallery for the exhibition of two- and three-dimensional works of art. The campus hosts the Louisa Historical Society with a museum, demonstrations, restored buildings, artifacts and special events to preserve Louisa's rich history. The Town is a proud supporter of Louisa Little League Athletics as it leases and assist with the maintenance Alberts Field also located on the campus.

In cooperation with the county, an additional park is located in the residential neighborhoods bordered Meadow Avenue, South Street, and McDonald Street. The County of Louisa has a Parks Recreation and Tourism Department, multiple historic trails/tours and a newly developed beer and wine trail.

Town residents and merchants participate in various activities which contribute to Louisa's community life. Organizations such as the Louisa County Chamber of Commerce promote the town as a commercial center and encourage cooperation among local businesses. Service clubs such as: the KS Club, Rotary Club, and Lions Club work to expand services available to residents and to improve the appearance of the town. Special events are often held within the Town as these organizations collaborate.

Other Services

Louisa County and several public service agencies, which operate throughout the county, have offices in the Town. These organizations provide many public services and include the Department of Human Services, the Louisa Volunteer Fire Department, and the county's circuit and general district courts. Although the rescue squad is located outside the town limits in the county's Industrial Air Park it provides services to the town. Town residents benefit from these agencies in a variety of ways, such as increased retail trade and sales tax receipts, low-cost accessibility to services, and a greater number of jobs available close to the town. The public library moved from the town in 2003 and is now located on the high school/middle school campus, approximately five miles east

of the Town of Louisa. The Health Department relocated to the Betty Queen Intergenerational Center grounds during the fall of 2012, approximately three miles east of the Town.

Population

Trends

Louisa County's population has shown significant growth in the last fifty years, which has a direct impact on the Town's population. The 2020 census showed a population increase to 1987 residents in the Town of Louisa. This increase is the result of the town's role as the administrative center for the county and the commercial center for the surrounding areas, especially Zion Crossroads and Lake Anna. Future growth of the population will depend on growth of the county, at large, by attracting industry to the area with jobs, and the associated service industry growth that naturally follows. The population demographics reported from the 2020 United States Census are outlined in the following chart.

United States Census Bureau Data	Town of Louisa 2015	Town of Louisa 2020
Total Population	1555	1987
Population by Age		
Under 18	323	445
18-64	895	1062
65 and Older	337	480
Population by Race and Ethnicity		
White	1009	1216
Black or African American	425	492
Hispanic or Latino	74	137
Asian	23	24
American Indian or Alaska Native	2	6
Native Hawaiian and Pacific Islander	0	0
Other	22	112

Table 1, Population Data
Source: United States Census Bureau 2020 Data

There are a number of difficulties in attempting to project the future population of the Town. Most importantly, jobs created in an area directly correlates with population growth, and this availability of new jobs is unknown. Even with an expectation of new employment opportunities it's hard to predict whether people will choose to live within the corporate limits of Louisa or in the agricultural areas surrounding the town.

That being considered, a number of parcels within the corporate limits have the potential and some have the approval to accommodate new housing. It is reasonable to expect that some of the additional population will choose the amenities of living in town verses living outside corporate limits as the Town offers: police and fire protection, public water and sewer, garbage and recycling collection, and closer proximity to commercial and retail business.

Finances

Audit

The town operates on an accrual basis with four separate operating funds; General; Water; Sewer; and Cemetery. The Town holds adequate funds that are liquid in the event of an emergency but use the services of the Local Government Investment Pool (LGIP) to get a higher rate of return. The Town contracts with a third-party audit firm to hold an annually audit to ensure compliance with set standards. The Town has received no material comments on audits dating from 2016-2023.

Tax Base

Typically, in a town, residents are taxed twice, by both the town and county in which they reside. The Town of Louisa operates on this model. Town taxes cover expenses for essential government service provided to those within Town limits. These services are not offered to County residents.

Real estate taxes are, according to the Weldon Cooper Center for Public Service, by far the most important source of tax revenue for localities. Real estate taxes are a large portion of the Town's total revenue. The Code of Virginia authorizes localities to levy taxes on real property. There are no restrictions on the tax rate that may be imposed, although politically, the lower the rate the better. In fiscal year 2024, it's budgeted for 16% of the tax revenues for the Town.

The personal property tax is the second most important source of tax revenue for localities. In fiscal year 2024, it's budgeted for 4.5% (with a 50% PPTRA discount) of the tax revenues for the Town.

Virginia code allows that "cities, counties, and towns may levy a tax on the tangible personal property of businesses and individuals pursuant to the *Code of Virginia*, §§ 58.1-3500 through 58.1-3521". Included in this category are such items as motor vehicles, business furniture and fixtures, farming equipment, and a variety of motorized vehicles, including boats, recreational vehicles, campers, and trailers.

The meals tax is a trust tax, collected by those selling prepared meal within town limits. The authority to levy this tax varies greatly among jurisdictions, therefore the tax varies significantly between individual cities, counties, and towns. In fiscal year 2024, it's budgeted for 41% of the tax revenues for the Town.

The transient occupancy tax (lodging tax) is also a trust tax charged for the occupancy of any room or space in hotels, motels, boarding houses, travel campgrounds, and other facilities providing lodging for less than thirty days.

Capital Improvements

Wastewater Treatment Plant

The Town of Louisa's Sewage Treatment Plant was replaced in the summer of 2001 by a pumping station located within the corporate limits in the northeast section of town near Ellisville Drive. The pump station was designed to pump wastewater from the northern collection basin to the Regional Sewage Treatment Plant located in the Southeast quadrant of the town, at the end of Pine Ridge Drive.



The Regional Sewage Treatment Plant is jointly owned by the Town of Louisa and Louisa County, and is operated by the Louisa County Water Authority. The plant was expanded in 2012 to a permitted capacity of 800,000 gallons per day. The expansion also added processes and components to treat the waste water to a higher degree, and provides safeguards to prevent overflows. The cost of the expansion was paid for by the Town of Louisa, Louisa County and the Virginia Department of Water Quality - Water Quality Improvement Fund. The capacity is split 50/50 between the town and county. The waste water treatment plant was further expanded in 2016 to include a septage receiving station and a bulk chemical storage facility. The septage receiving allows the plant to accept pumped septic tank deliveries and provide some treatment prior to it entering the plant in slug batches. The bulk chemical storage facility provides a programed feed rate for chemicals instead of staff manually adding chemicals. It provides a constant and steady treatment rate. These improvements help the sustainability and increases efficiency of the plant. The existing sewerage collection and treatment system serves the majority of town, with only a small area in the eastern section of town not presently on the sewer system. These areas may be considered for sewer service in the future. These areas are located on Hollyhurst Lane and along the northern side of Highway 33 heading east from the Sage Building and the Quiet Lane/Acorn Acres mobile development. The town has minimal sewer connections outside the town corporate limits.

Water Distribution System



The town has continued to be proactive in the repairs and maintenance of the water distribution system. Utilizing grants from the Virginia Department of Health (VDH), the town commissioned a study to ensure compliance with the 2014 Environmental Protection Agency (EPA) disinfection by products (DBP) regulations. That study noted significant deficiencies in the water flow patterns within the town. The information prompted VDH to fund a 3,000-foot-long water line loop to help with water flow and lower water age within the system and provide better fire flows to the western side of town.



The town also has begun replacing aged water meters with new technology that not only allows more accurate reading, but also reduces the manpower requirements to read water meters monthly. Commercial water meters are also slated to be replaced over the next few years.

Additionally, the Town of Louisa implemented tank mixing systems, tank telemetry, northern and southern loop water extensions, two flushing hydrants, and obtained multiple engineering designs for potential upgrades as needed. One hundred percent of the town water is provided by the Louisa County Water Authority (LCWA). The LCWA has installed a nano-filtration system which will remove organic carbons (OC) from the water. When organic carbons are removed they cannot combine with chlorine to produce DBP. The Town of Louisa entered a Consent Order with VDH to resolve DBP and complied by late 2018. This created a cost savings to town citizens of $1.5 million dollars in additional project costs. Water conditions are monitored regularly, and improvements included as needed. The Town plans to complete a water infrastructure project in 2023/2024 that will replace four aging and problematic lines (West Street, Ellisville Drive, Cammack Street and Fredericksburg Avenue) to reduce the number of water main breaks and disruption in service.

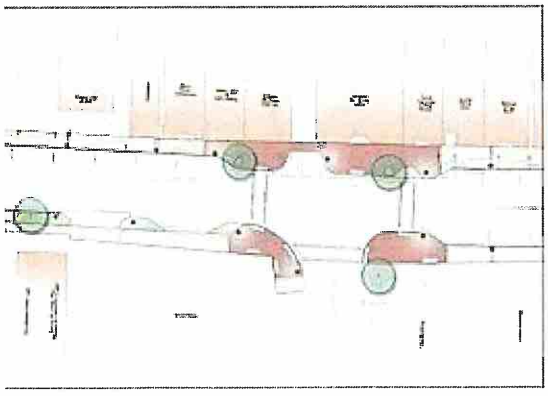
Louisa Town Hall and Arts Center



In the late fall of 2002, the town purchased the abandoned school, originally serving as the Louisa County High School, along with twelve acres of land to develop a community arts center and town hall complex that would spur downtown revitalization and façade improvements. The purchase of the property, along with the renovations of the 100 year old building, cost over $4.5 million. Of the expenditures, $2 million was financed through the United States Department of Agriculture – Rural Development (USDA-RD), $1,400,000 was donated through the fund-raising efforts of the Louisa Downtown Development Corporation (LDDC), and the LDDC borrowed $1.5 million from the USDA RD to finish the project. This loan was later assumed by the Town and is budgeted annually.

Downtown Revitalization

A major redevelopment project was proposed for the downtown commercial area to be funded by several TEA 21 grants with typical 80/20 match requirements. Construction started in the winter of 2013 and was completed during the summer of 2015. The revitalization was performed and designed primarily to increase pedestrian safety by enhancing cross walks, providing better street lighting and traffic calming measures.



The downtown improvement project included new sidewalks, light fixtures, benches, trash receptacles, crosswalk improvements, and beautification plantings.

Private landowners also participated in the renovation of the downtown corridor. Noteworthy efforts were made by: the W.A. Cooke Real Estate Company who rehabilitated the former Patrick Henry Hotel; John J. Purcell et al for the façade renewal on two Main Street properties; Breese Boxley's renovation of the Boxley Building; and Graven Craig's rehabilitation of the Dobbins Building.

Cemeteries



The town owns and operates two cemeteries. Oakland Cemetery is a historic, Civil War era burial ground which was donated to the town, along with a small endowment in the 1980's. The cemetery is located on West Street in a historic section of the town. Oakland has no burial sites for sale, and income is limited to the returns on investment of the endowment. The costs of maintaining Oakland far exceed the income generated. Historically, the cemetery is subsidized by the town's general fund annually.



Hillcrest Cemetery, located one mile west of town on Route 22/33, is an active cemetery that provides over 15 acres of land in a pastural setting with burial lots and a Columbarium constructed in 2015 (with the opportunity for expansion) for interment of cremains interments. Hillcrest generates revenue through the sale of burial spaces, columbarium sales, and burial/stone permits, but the cemetery is not financially self-sustaining. The town's general fund subsidizes Hillcrest annually.

Housing and Growth Management

General

Louisa, like most small towns, is a place in which single-family, owner-occupied housing is the most common form of housing. Majority of the housing units are single family homes, although there are rental units available in approximately 10 multifamily complexes. Of the total housing units, 26.6% were built in the 1980's and 20.5% were constructed prior to 1940; the newest homes are in the Countryside Subdivision in which approximately 165 new homes have been built since 2005. Over 95% of the homes within the town are on public water and sewer systems.

Due to the large portion of the county's population in the over 50 age bracket, and the attraction of Lake Anna as a popular retirement community, the need for condominiums, apartments, town-homes and assisted living establishments will likely increase.

The Town of Louisa must be equipped to accommodate a growing number of citizens with diverse incomes and backgrounds by making available a variety of affordable, healthy and safe dwellings. The generally accepted definition of affordability is for a household to pay no more than 30 percent of its annual income on housing. Housing is the dominant land use in the town, and the overall housing stock can be described as being in good to fair condition. Substantial growth may create the need for water and sewer system upgrades.

Directing Growth

It is difficult to predict where growth is likely to occur. Advance construction of public water/sewer facilities in potential development areas increases the probability that new development will locate in those areas, but does not absolutely guarantee it. In addition, if development does not follow immediately, the return on the public investment is delayed, and money is tied up that may have been needed elsewhere. A flexible method of achieving the public facilities objective for attracting new residential growth to Louisa is to establish a Capital Improvements Program (CIP) and a Capital Reserve Fund. The CIP could include a commitment to build a certain number of feet of water and sewer lines without specifying where or when they would be constructed. Money could then be placed in the capital reserve fund based on up-to-date estimates of construction costs. This type of system would enable the town to build new facilities on an "as-needed" basis and allow developers more choices in production location.

Strategies for Smart Growth

In previous Comprehensive Plans a strategy was developed to increase the attractiveness of Louisa for residential development. It suggested revising the zoning ordinance to include more "residential limited" land. People who live in single-family homes often prefer not to have apartment buildings next door and are reluctant to build houses on land zoned for multiple/mixed uses. The current zoning allocates most of the residential land to the "residential general" category. Any multifamily development in this zoning district will be allowed only by Special Use Permit approval.

Tables 2 identifies multi-family units (established and approved/pending construction) in the Town of Louisa.

Name	Street	Date	Units	Rental	SUP/ PUD
Club Hill Apartments	Jefferson Highway	1969	29	Yes	No
Locust Street Development	Locust Street	1970s	11	Yes	No
Loch Lane Apartments	Loch Lane Drive	1975	8	Yes	No
Pine Ridge Apartments	Pine Ridge Drive	1980s	28	Yes	No
McDonald Street Apartments	McDonald Street	1980s	24	Yes	No
Canterbury Apartments	Patrick Henry Drive	1980s	4	Yes	No
Epworth Manor I	Cammack Street	1989	56	Yes	No
Elm Avenue Apartments	Elm Avenue	1990s	6	Yes	No
Thomasson's Apartments	West Street	1990s	7	Yes	No
Jouett Square Apartments	Lyde Avenue	1994	108	Yes	Yes - SUP
Duke/Barnstormer Project	Barnstormer Circle	2002	8	Mixed	Yes - SUP
Spring Oak Senior Living	West Main Street	2006	30	Yes	Yes - SUP
Spring Fields	Off of Lyde Avenue (Denton)	2006	16	Yes	Yes - SUP
Epworth Manor II	Cammack Street	2009	24	Yes	Yes - SUP
Waverly Place	East Main Street	2014	78	Yes	Yes - PUD
GW1 Properties, LLC/ Mil Investments, LLC	Loch Lane Drive	2022	5	Yes	Yes - SUP
GW1 Properties, LLC/ Mil Investments, LLC	Carter Street	2022	6	Yes	Yes - SUP
GW1 Properties, LLC/ Mil Investments, LLC	Pine Ridge Drive	2022	135	Mixed	Yes - SUP
Timber Oaks Phase 2	Pine Ridge Drive/Jefferson Highway	2022	44	Mixed	Yes - PUD
Laurel Ridge	Jefferson Highway	2023	156	Mixed	Yes - PUD

Table 2. Multifamily development

The town continues to encourage the construction of attractive single-family housing developments to meet the growing needs, but also realizes the success of multifamily units as shown in table 2. There are a few duplexes throughout Town, not as part of a development, where the owner typically occupies one unit. Three commercial locations on Main Street offer apartment style living over the Main Street storefronts.

Multi-family developments should be located in areas of the town that have existing roads and utility infrastructure, are compatible with increased compacity, and where potential light commercial growth is suitable.

The overall inventory of homes is low as well as land available for residential development. The need for starter homes, apartments and townhomes that are affordable to middle-income brackets have been consistently cited by realtors, residents and those involved in economic development.

Economy

General

The commercial activity in the town continues to be healthy overall. The extensive commercial development in Zion Crossroads and Lake Anna has hindered development in areas of incorporated towns within the county and the Industrial Air Park. Zion Crossroads and Lake Anna are thriving as a result of significant county investment in

infrastructure, attraction to retirement communities and their proximity larger cities and interstates.

The Louisa Arts Center has a positive impact on the Town's economy. Performing and visual arts have proven to generate more tourism, day visits and general economic growth as patrons shop the local stores before and after events. This theory is illustrated in the growth of meals tax income as more people frequent the town and eat in restaurants. A significant obstacle to developing a tourism-based economy is the lack of overnight accommodations. Currently, within the town limits, there is limited availability for tourist lodging. Development of other lodging facilities and boarding houses will invite more tourism.

A minor contributor to economic development in Louisa has been the efforts of the Trevilians Station Battlefield and Civil War Trails Association which promote tourism. Signage on Interstate 64 leads tourism to Louisa to start on a Civil War Trail and visit downtown Louisa and the Oakland Cemetery. Once a successful tourism attraction, the Louisa Walking Trail has failed to maintain the interest of the community or visitors. Capitalizing on the history of the Town will attract visitors with emphasis on Courthouse Square, historic churches, historic homes, and the Oakland Cemetery.

Employment

An analysis of the area's economy includes a look at the kinds of employment, the numbers of people employed locally, the dollar amounts of trade, and anything else which may be significant to that particular area. In order to analyze the existing economy more easily, jobs are classified into two major categories, non-service and service employment. Non-service jobs are those, which create other jobs, such as manufacturing, logging or agriculture. Service employment provides goods and services for the consumer, and examples are retail stores, restaurants and government.

Non-service

The largest source of non-service employment is the Piedmont Metal Fabricators plant. The second, Kingsley Bates, a furniture distributor relocated to Louisa in the building across from Town Hall. The trading area served by the Town of Louisa is not well defined, however the town draws business from Fluvanna and Spotsylvania Counties and especially from Zion Crossroads and Lake Anna area. In understanding the trading area of the town, it is important to acknowledge the close proximity of the county's Industrial Air Park and the library tract of the park that lies within the town's corporate limits.

Service Employment

Local government employees are the main contributor as most offices are located within the town.

Retail Opportunities

The Louisa Marketplace is home to Food Lion, currently the Town's only grocer, and is the anchor store with service and restaurant businesses adjoining. In 2023, the grocery store operating in Triangle Plaza closed and while there are potential occupants, there's no estimate of how long the space will remain vacant.

Walgreens, a national retail chain has a 14,000 square foot retail store and pharmacy. The site includes three acres of prime real estate at the intersection of Rt. 33 and 208/22, located across the street from the CVS store, also retail and pharmacy. The competition will help reduce prices for town shoppers.

The national fast food industry remains a major factor in the retail life of the town with Pizza Hut, Hardees, McDonald's and Subway franchises located in the eastern business district. Along with the national brands, several independent restaurants have been established over the years and support the Town by offering a variety of food service options. The Town currently has a good restaurant base to attract patrons.

Fresenius, a kidney dialysis center, has brought multiple patients and care givers to the area. Tractor Supply and Sheetz came to the Town in 2015 and provides additional services. This growth in combination with established businesses has attracted more consumers to the town.

Income levels

The Town continues to be below the median household income for the Commonwealth of Virginia, which is $85,873 per the United States Census Bureau data. The Town also shows a higher poverty rate, as the Commonwealth is at 10.6% while the Town is at 18%, a high disabled population at 17.7% (Commonwealth 12.7%) and 14.8% of the population does not have health care coverage (Commonwealth 6.5%). The Town has an older population base at 24.2% compared to the Commonwealth's average of 16.8% of individuals over 65.

Transportation

General

All of the streets in Louisa are maintained by the Virginia Department of Transportation, with the exception of a few that are too narrow to meet state specifications and Phase II of Countryside Subdivision. It is expected that the streets in Phase II of Countryside will be adopted once construction is complete.

There are three ways to fund construction of new streets in Louisa. One is to have the Virginia Department of Transportation build them, which requires inclusion in the six-year plan for Louisa County. Another is for the town to pay for new streets out of its budget. A third possibility is construction by a private developer who wishes to develop the adjacent land. This last option has been used successfully in the Tanyard and Countryside subdivisions.

In 2016, the Town completed the Downtown Street and Pedestrian Safety Project with focus on traffic calming measures to address traffic speed and pedestrian safety. This project consisted of: the widening and replacement of sidewalks and extension of the existing sidewalk system; pedestrian crosswalks and refuge platforms; landscaping; and improved street lighting. This was funded with the assistance of the Virginia Department of Transportation as an enhancement project, further Transportation Enhancement projects for consideration are sidewalks on side streets in Town and a large project to extend the sidewalk from the Ton to Countryside by was of West Main Street.

Any new road must be built to state standards before it will be accepted into the system for maintenance. In addition, the state is only required to accept a maximum of one-quarter of a mile per year of new street located within town limits for maintenance.

Due to the tremendous expense of road construction, and the ongoing cost of maintenance, careful planning for new streets will be necessary to provide the greatest possible benefit to residents.

Presently, several traffic problem areas exist in the Town of Louisa. Heavy traffic congestion occurs on Main Street during weekday afternoons and Saturday mornings. The need for improved traffic flow on Highways 33/22 and Route 208 through the Town of Louisa was recognized as early as 1984 in the State Highway Plan, again in the 1989 plan and also in the Critical Needs of the Governor's Commission on Transportation in 1986, and in numerous plans since. This congestion will only worsen as further industrial, commercial and residential growth occurs in the town and county. Currently, this is only an inconvenience, however, should an emergency occur, requiring fire and rescue vehicles to get through this backup, there is no alternative route. Additionally, an emergency, that would require closing Main Street, could also prevent fire and/or rescue vehicles from reaching their destination, for these reasons, alternates need to be considered for travel through town.

The lack of an alternate route continues to be the transportation issue that has not proceeded forward for a number of years. The 208 Connector has diverted some of the congestion since it's installation. The town council has consistently favored an alternative route through the town via a bypass or alternate parallel street. Clearly the need for an alternate route exists for several reasons: public safety, economic development and convenience.

Bicycle and Pedestrian Traffic Plan

The town continues to work with VDOT and the six-year plan process to build new sidewalks and rebuild deteriorated and non-compliant sidewalks. A pending Transportation Alternative project will connect West Main Street to the existing sidewalk infrastructure in Town.

In the fall of 2021, the Town of Louisa formally joined the Virginia Main Street (VMS) network and became an Exploring Main Street community. Administered by the Virginia Department of Housing and Community Development, the VMS Program is a preservation-based economic and community development program that follows the Main Street approach of the National Main Street Center. VMS is a Main Street America State Coordinating Program that offers a range of services and assistance to communities interested in revitalizing their historic commercial districts. Immediate action items include bicycle paths, way finding signage, façade improvements and other improvements that will attract tourism to the area.

The Louisa Forward Foundation, a 501(c)(3) nonprofit initiated by the Louisa County Chamber of Commerce, serves as the lead organization of the initiative. With support by resolution of the Town, and working with a volunteer steering committee, efforts will focus on creating improved economic opportunity downtown and enhancing quality of life through community-driven revitalization efforts.

The Town, in partnership with the Louisa Forward Foundation, Louisa County Chamber of Commerce, Rappahannock Electric Cooperative, Dominion Energy Virginia and Louisa County Public Schools, has been working to install electric vehicle charging stations. Two location sites, one at the Town Hall Campus and the second at the Town leased public parking lot on Main Street, will host charging stations. These efforts will promote tourism,

economic development and a new curriculum for students through the High School's CTE program, while enhancing transportation efforts for electric vehicles.

Public Transportation Systems

The town is currently served by JAUNT, a government funded regional public transportation system that relies on passenger vans dispatched on an as needed basis. This service offers residents in all areas of the county traveling to destinations in and around Louisa. Residents can schedule trips to places such as the Betty Queen Intergenerational Center, Charlottesville Shopping Centers, Medical Facilities and other destinations to take care of errands.



No other commercial or governmental transportation suppliers serve Louisa. Additionally, there are no bus, train stations, taxi cabs or any mass transit available to the local populace.

Private Vehicle Transportation

With the lack of transportation options for the citizens of the Town, and the surrounding county area, private vehicle transportation is the only viable option.

Infrastructure

Water Systems

There are currently over 800 connections to the Town's public water system. Countryside development has accounted for most of the new connections. Almost all connections are within the town limits. Approximately 165 commercial or industrial connections are included in this total.

Daily usage averages 160,000 gallons per day. In the late 1980's, the town became a customer of the Louisa County Water Authority and secured its well systems. The Town purchases between 4 and 5 million gallons of water per month depending on demand which fluctuates seasonally. To meet Virginia Department of Health requirements, a licensed operator needs to be on staff or contracted by the Town, with a minimum of a Class V license. Water needs are currently met and seem to be sufficient for many years to come. The costs of water delivered is mandated by a contract so that rate increases are more predictable and reasonable. Future needs lie primarily in upgrading and maintaining existing water lines, replacing old valves and meters, and maintaining the two water tanks (100,000 and 75,000 gallons). Major growth could be accommodated at this time.

During Construction of the Route 208 Connector the Town recognized the commercial potential for growth and ensured that adequate water and sewer mains were designed and installed. This 10-inch water main now serves as a vital artery for water services and subsequently growth. In addition to providing services, the 10-inch line also provides a "loop" function, which increases water quality and provides better firefighting flows.

The Southern Loop Project in 2012 provided improved water flows and pressures throughout the southern end of the town's water lines. The project connected the west side of town with the south side, allowing a better flow and circulation of water. In

2015, a second similar water loop, known as the Northern Loop Project, was constructed.

Wastewater Systems

As a co-owner of a Regional Wastewater Treatment Plant (RWTP), the town has the opportunity to thrive if growth doesn't exceed infrastructure capabilities. The RWTP was expanded to treat 800,000 gallons a day of waste water. The town owns half of the plant and is allocated 400,000 gallons per day of capacity. Unless there is a boundary line adjustment or properties are redeveloped at higher densities, the expanded WWTP should be able to meet the town's needs well into the future.

The town has completed a number of water distribution and sewer maintenance projects as part of the annual Capital Improvement Plan process associated with the Town budget.

Town of Louisa Tomorrow...

Existing Land Use

General

The most diverse collection of land uses in Louisa is found along Main Street, which runs east and west through town. Main Street is Louisa's major commercial area, and along it one can find retail stores, government offices, vehicle maintenance/repair shops, residences, and shopping centers. An analysis of Main Street reveals several distinct areas, each with a different type of commercial use predominating.

The westernmost section of Main Street includes an assisted living facility, vehicle maintenance/repair shops, a lumber company, a car wash and an automatic laundry. Only a few residences are located in this section, which is separated from the downtown business district by a curve in Main Street at the intersection of Ellisville Drive. Countryside subdivision has two entrances off West Main Street.

The next major area of Main Street is the downtown business district. This area starts with a bed and breakfast and the Louisa County General District Court. Eastward along Main Street is the Historic Louisa Courthouse and Courthouse Square. This area is the governmental and professional center of both the town and county, but one can also find the post office, banks, retail stores, professional offices, churches, as well as privately owned and operated restaurants. Located at the junction of Main Street and Fredericksburg Avenue is an automobile maintenance shop, which delineates the eastern edge of this area.

North on Fredericksburg Avenue, are business offices, a funeral home, the firemen's fairgrounds, and a large wholesale furniture distributor. The Louisa Town Hall campus is also located on Fredericksburg Avenue heading northeast toward the town limits. The campus host Town Hall, the Louisa Arts Center, the Louisa Community Park and the Louisa County Historical Society Museum.

Going south on Elm Avenue there is a nearby town park (maintained by the County of Louisa), a church, professional buildings and a large nursing home.

Continuing eastward on Main Street, land use changes to a mixture of single-family homes and small businesses. In addition, the Louisa Police Department and the Town Maintenance Shop are located on East Main Street, as well as churches, gas stations/convenience stores and the Louisa Volunteer Fire Department.

Three shopping centers make up the core of the eastern area of the town, they include grocers, variety stores, restaurants, and drug stores. In this area are also fast food restaurants, banks, professional services and retail stores. Growth has continued down Highway 33 east into the Sage Building, which has become a business incubator for small start-up businesses. One industrial building is in this area, Piedmont Metal Fabricators located in a large industrial zoning district east on Highway 33.

Almost all of the developed land to the north and south of Main Street is used for housing, with the exception of the county office building and Tanyard Golf Club. There are four apartment complexes, several duplexes, and a large number of single- family homes. Some of the undeveloped land within the corporate limits is still farmed, and the balance is wooded with 62.33 acres in AG-Forestal District. The industrial park area totals approximately forty acres, at least twenty-five of which are available for

development outside of the town limits.

It is anticipated that the 208 Connector will attract low impact retail and service business as a town gateway. While the current zoning is Residential General along most of the 208 Connector, one five acre parcel, home to Tractor Supply retail, has been rezoned commercial and it is anticipated that the remaining properties along the connector will follow suit and rezone to commercial use or a mixed use Planned Use Development (PUD). The town believes a mixed use, medium density residential and commercial district would be the best use of the land, and with the existing sign and site plan review ordinances in place, attractive and successful business enterprises will flourish.

Future Land Use

Infill

Carefully designed and buffered residential and commercial "infill" development or appropriately designed redevelopments will be permitted in accordance with current zoning designations. Such new development will be designed to protect the traditional visual character of the town, preserve the small scale and peaceful atmosphere of the neighborhoods and enhance the viability of small businesses that are compatible with the town's character. The incorporated town will remain the focal point of the community in terms of business, institutional, and residential activity and identity. The planning strategy for the Town is to maintain predominately residential development at a low to medium density.

Any new development will be primarily residential and will be compatible with the visual character and scale of the town, featuring traditional, compact, human-scale spaces along public streets. The focus of new commercial development will be in the center of town in order to strengthen the function of the town center as Louisa's traditional downtown area. Vacant commercially-zoned land outside of the town center will be encouraged to be developed in residential or other non-commercial use.
The town will encourage the establishment of small-scale home-based businesses that are compatible with the residential character of the neighborhoods.

The annexation, which took place in 1977, more than tripled the land area of the town. Most of the annexed area was wooded or being farmed and very little had any kind of structural development. Since 1977, large portions of that land have been developed primarily for the Tanyard Golf Club and the Tanyard subdivision, but several large tracts of open and wooded land still remain. These potential growth areas, and the way in which they are developed and managed, as well as the viability of Main Street and the downtown district, will have a major effect on the community life of Louisa.

Consideration should be given to the recommendations made in the original Comprehensive Plan that several areas zoned residential general should be rezoned residential limited to help preserve the single-family atmosphere and neighborhoods that have already been developed, and would be changed by multi-family development. These areas border the Tanyard Golf Club, the Donnally Dale subdivision and Ellisville Drive areas.

Acknowledging that some recreation will only come to the town when the surrounding population is large enough and the income level is high enough; there are other small efforts the town can make. Favorable recommendations from the Planning Commission for any private recreation (bowling, skating or miniature golf) will help make the development of other facilities more attractive.

Parking

In the Town, parking is an issue of great complexity and concern. Although many in Louisa walk and ride bikes, the automobile is still the primary transportation source. While promoting the use of transit alternatives are important, this plan recognizes that people are dependent on a vehicle and the need for parking is not likely to diminish in the future.

Mitigating parking conflicts, specifically the conflict between shop owners and customer use on the Main Street corridor, is a long-term, on-going process. Shop owners complain that there is inadequate parking for themselves and employees. When the shop owner uses the public parking, parking becomes difficult for customers which can cause a ripple effect economically. To alleviate the parking problem, a process that develops a set of strategic actions to efficiently accommodate various parking needs must be developed. Most policy alternatives will necessitate trade-offs. Some, such as constructing new off-street parking lots or structures, are expensive and involve the acquisition and conversion of already developed land. Others, such as restricted on-street parking zones, require a commitment of enforcement in order to be effective.
The town has proactively adopted parking development requirements in the subdivision and Site Plan ordinances but the core Main Street area, the heart of the town, unfortunately has the most inadequate parking.

For all of these stated reasons, it is strongly recommended that various alternatives be weighed carefully and the context of a comprehensive parking strategy focused on the downtown corridor. The system could be comprised of public and private parking facilities, an effective parking fee structure with consistent enforcement, and the strategic use of restricted parking zones. Ultimately, the effective implementation of such a system will benefit Louisa's quality of life and its economic success.

Louisa grew organically during an era when the automobile wasn't a dominant factor in daily life. Although the community benefits from the charm of a mature town, 150 years old, it loses convenience because parking options are limited. Older commercial buildings do not provide sufficient off-street parking for today's needs. Older single-family homes may not have driveways or garages, forcing on-street parking. Past practices of vacating alleyways have also severely impacted residential parking and circulation. Many businesses do not sit adjacent to expansive surface parking lots commonly found in newer suburban shopping centers or office parks. All of these factors lead to dilemmas and policy contentions that are not easily resolved. It is difficult to generalize about the total demand for parking in Louisa, but it is apparent that parking in the downtown corridor must be developed.

Areas where demand chronically exceeds supply are discussed further below. The parking supply is made up of a combination of on-street parking and public or private off-street facilities. One component of the public parking system includes approximately 44 parking spaces curbside in the town's downtown corridor and central business districts, with the ability to include metered parking. The town maintains two

off-street parking facilities with a total of 60 parking spaces. One of the off-street parking facilities that is owned by the town are along Church Street between Main Street and the Buckingham Branch Railroad track. The other facility, located at the corner of Cutler Avenue and Main Street was acquired through a long term (20 year) lease. This new parking lot provides free unlimited parking for passenger vehicles. The town actively discourages the lot from being used as a commuter lot.

These problems require multiple short-term actions. Opportunities to implement relatively minor physical improvements to streets and existing facilities may increase the number of parking spaces in some areas. For example, proposed street improvements undertaken in Downtown Louisa reorganize parking spaces and allow motorists to utilize parking areas to their maximum capacity. Although not possible on every street, similar improvements should be considered, particularly in areas close to congested business districts in order to augment the supply of short-term parking. Of course, Louisa's parking system includes not only the "hard" infrastructure mentioned above (i.e. surface lots) but also the policies regarding parking time limits, possible permits, and possibly a commercial zone restriction program. In order to be truly effective, a strong commitment to the enforcement of these policies should be maintained. As for commercial parking zone policies, various types of time restrictions, employee-only and employee-exempt districts could be put in place to give preference to targeted groups over other users.

Along with parking policies and their enforcement, it is important to guide non-residents to appropriate parking locations. The effectiveness of short-term, off-street parking is a function of the adequacy of supply, location, cost, time limits, ease of access, and security. While it is true that many drivers will seek free, on-street parking to avoid paying for off-street spaces, some drivers simply may not know where else to go. In these instances, improved way finding measures and signage programs that help drivers find parking locations are essential.

The perception of safety also has an important impact on a driver's willingness to use off-street parking. Users should not only be able to find off-street parking conveniently, but they should also be greeted by safe and attractive facilities once they get there. Therefore, steps to improve both safety and aesthetics of public and private parking facilities should be a priority.

Landscaping around parking lots should be done so as to improve appearance but not interfere with visibility and surveillance. Creating dark areas and blind spots diminishes security and therefore undermines the effectiveness of the facility.

This is a more ambitious, long-term objective. It involves acquiring land publicly or considering an increase in parking requirements of private developments through zoning. The town should evaluate opportunities for land acquisition in the border areas of the downtown corridor areas to establish new or expanded facilities. New facilities should be planned in consideration of the concept of "shared parking." Shared parking can be an effective tool in the commercial and fringe neighborhood districts where certain businesses (e.g., banks and offices) operate during daytime hours, while other establishments reach peak demand during evenings and weekends.



Agreements should be pursued whereby off-street facilities built to accommodate one user group such as office workers should be made available to those other groups whose demand peaks at different times.

Finally, one of the land use issues addressed earlier in this document regarding future development patterns is the potential for increased residential/mixed-use density in certain areas in Louisa which includes the downtown area. The benefit of such development in this area is that new households will be able to take advantage of commercial conveniences within walking distance of their residences. Nonetheless, adequate parking requirements for this type of development are critical.

Historic District Designation

Historic preservation has become a focus of the Town of Louisa both in the private and public sector. With a vital preservation community and a rich architectural heritage, Louisa could become a leader in the movement to preserve individual buildings and historic districts that show outstanding architectural, historical and cultural merit. Some historic designations: "Why seek emphasis upon preservation?"; "Of what value is it except to those who enjoy the study of architectural history?" Louisa should seek to preserve the structures and environments which have given the community much of its physical appeal and special visual character. An intangible, but equally important value is the sense of history given to those who live here. The shared history of landmark homes gives continuity to the entire community. The loss of such buildings would affect everyone, not just a few areas or individuals.

The architectural character of Louisa is as diverse as the community itself. Several Louisa buildings are listed or are eligible for listing on the National Register of Historic Places. Included are the Louisa County Courthouse as well as all of the service buildings in Courthouse Square, the Louisa Town Hall and Arts Center (Formerly the Louisa Elementary School), the Boxley House, the Louisa United Methodist Church, Louisa Baptist Church, Louisa Christian Church, the Cooke Building (formerly the Patrick Henry Hotel) and several residential units along Church Street, Elm Avenue, and West Street plus the Oakland Cemetery.

A draft historic district was developed by the Planning Commission in 2008 but was not adopted due to citizen reactions and perceptions of the impact and property controls an Architectural Review Committee can have. This is the second time in 12 years that a historic district was organized and both have failed. The boundaries of the proposed district would have included the core downtown areas of Main Street and Courthouse Square and extend down Elm Street to the McDonald Street intersection. This small area could capture and protect the majority of historic resources within the town. Eventual expansion of the district is envisioned to the north, east and west as the district and its administrative processes mature.

A very important part of the potential development of a Louisa Historic District and an Architectural Review Board would be the formal nomination of landmarks at the local and national levels. The wide range of potential preservation activity in Louisa may be further underscored by taking note of the potential inclusion of the downtown corridor as a National Register Historic District.

As with many communities that comprise a large number of buildings dating from the late nineteenth and early twentieth centuries, Louisa is rich with everything from Colonial Revival to Victorian-style homes. Unique to the community's architecture is the

very diversity of the styles within neighborhoods and districts. The town council could develop local preservation policy and a process to review plans for demolition of properties that would provide options for historic property owners.

No preservation program can succeed without strong community support. High maintenance costs, high energy costs and high property taxes are among the problems that will continue to make owning a landmark a labor of love, sometimes a severely tested love. Tours, slide programs, newsletters, booklets and educational programs in the schools have all contributed to a widespread community preservation ethic. Louisa should take care of its museum-quality landmarks through the efforts of its citizens and local organizations.

Non-Traditional Zoning Opportunities

A Planned Unit Development (PUD) is a means of land regulation, which promotes large scale, unified land development by means of mid-range, realistic programs free of the classic zoning restrictions. In most PUD ordinances, the design favors:

- A mixture of both land uses and dwelling types with at least one of the non-residential land uses being recreational in nature.
- The clustering of residential land uses providing public and common open space creating large expanses of open space. Clustered dwellings allow for reduced road and infrastructure costs to the developer while making the project "pedestrian friendly".
- Freedom of design allows non-traditional platting of land and strict setback and side yard restrictions. Typically, the design team of a PUD will consist of civil engineers as well as landscape and building architects. This blend of professionals allows the local government to trust the development meets professional and logical standards of development.
- The enhancement of the bargaining process between the developer and government municipalities strengthens the municipality's site plan review and control over development for potentially increased profits due to land efficiency, multiple land uses, and increased residential densities.

Frequently, PUDs take on a variety of forms ranging from small cluster of houses combined with open spaces to new and developing towns with thousands of residents and various land uses. Traditionally, the definition does not take into consideration these types of developments unless they fit into a category of size ranging from 100 acres to 2,500 acres. More recently, small towns and rural communities have adopted PUD regulations that allow development on tracts of land as small as three acres.

In these developments, the zoning district becomes very different from the Standard Zoning Enabling Act. Zoning becomes much more integrated with multiple land uses and districts being placed on adjacent land parcels. Traditional zoning can be superseded with a PUD, allowing an overlay in any part of the town.

Residential properties in PUDs are by far the most numerous and occupy the largest land areas. PUDs tend to incorporate single-family residential uses within close proximity to two-family units and multiple-family dwellings to form a larger diversified neighborhood concept. Schools, churches, retirement homes, hospitals, and recreation facilities begin to find their way into residential districts. Residential districts also tend to use the best land in the community and the most favorable sites are protected from commercial and industrial uses.

Grouping shopping districts by service area is a first step in returning to the neighborhood concept. Land is reserved for regional, community, and local shopping clusters with some specific restrictions based on market experience and on what types of business intend to locate at each development. Local shopping districts with sufficient provisions for off-street parking, height restrictions, and traffic control are not frequently found surrounded by residential areas.

Houses in PUDs often include access to a large shared open space surrounding the house as well as a smaller private yard. These large protected open spaces are created by the layout of the buildings and are intended for use by all residents of the developments. Different housing types (single-family, two-family, multiple-family) are often mixed rather than separated as is done in conventional development.

Street patterns are one of the most important elements in establishing the neighborhood character of a residential community. Most non-planned urban development's focus on obtaining maximum frontage for lot sizes and maximum flow of traffic on all streets. However, in order to dispel the monotony of the typical grid plan street pattern, PUDs often employ a hierarchy of street types based on usage. Local streets serve only residences and have a low traffic volume, while collector streets connect local streets to arterials, which are the major routes of travel throughout a PUD.

Sidewalks and pedestrian right of ways of PUDs supplement and complement street systems in establishing the character of the neighborhood. Sidewalks are located on at least one side of every street to enable the walkability of the developments. Circulation systems are provided to link residential groupings, open space areas, schools, and local shopping areas.

It is in the ability to design each of these components simultaneously that makes PUDs unique and effective: each of the elements work together to enhance the whole. This major advantage over traditional zoning practices forces lots to be planned in accordance with broad rules that may allow for some incompatibility.

Growth Policy Statement

The Town of Louisa intends to continue promoting economic growth in the area, which includes commercial and light industrial activity. In order to succeed in those areas, the town will provide adequate infrastructure, including water and sewer treatment capacity, adequate water distribution systems, adequate sewer conveyance systems, and well- maintained streets. Additionally, the town will strive to attract a diverse and qualified labor pool.

The Town also needs to enforce zoning, subdivision, site plan, and other controls on developers and builders in order to ensure that the safety and welfare of the general public is protected as the community develops.

Intergovernmental cooperation remains a key part of the Town's s growth policy, as the region comes together to do more infrastructure and economic development projects.

The efforts at redevelopment of the downtown area are recognized as a component of Louisa's growth policy. Economic and cultural activity in the downtown area is a central desire of the community. The prevention deterioration in the downtown and throughout the community is an urgent focus of the town. The town continues efforts towards beautification and appearance improvements.

The Town's growth policy also includes the need to maintain and improve the quality of family life. This includes support for education, housing, recreation, medical facilities, and all other facets of community life. The town also supports the development of affordable and medium-cost housing. The lack of affordable housing is a significant hardship for low-income households preventing them from meeting their other basic needs, such as nutrition and healthcare, or saving for their future and that of their families. The town recognizes that the quality of life of the citizens is a key factor in ensuring the future growth of the community.

Long Term Goals, Objectives, Policies and Action Items by Specific Classification

FINANCES

Goals and Objectives

1. Continue to leverage state and federal funds.
2. Endeavor to provide quality community facilities and services that are conveniently located.
3. Work with the Louisa County Industrial Development Authority and County Economic Development Office to locate desirable new industry in or near the town.
4. Attract new commercial development through promotion of the town's assets and provision of public facilities.
5. Utilize the Town of Louisa's Economic Development Authority to assist in recruiting commercial prospects for the town.
6. Promote tourism and encourage development of tourist related businesses.
7. Continue the aggressive recruitment of major retail department stores.
8. Improve the tax base of the town to enable maintenance and expansion of services provided to Louisa residents.
9. Commission a study on rates and operational needs for the cemeteries.

Policies

1. Continue to leverage state and federal funds to finance town infrastructure improvements through an aggressive grant applications program.
2. Develop and maintain a Capital Improvements Program for infrastructure development and equipment.
3. Save and maintain a six-month operational expense reserve account.
4. Ensure pricing of cemetery services are competitive with area cemeteries.

Action Items

1. Conduct water and sewer studies that reflect the policies in this Comprehensive Plan.

HOUSING, POPULATION AND GROWTH MANAGEMENT

Goals and Objectives

1. Encourage quality in residential development and sensitivity to maintain the character of the town.
2. Allow for growth at a level that can be sustained by the public services and infrastructure.
3. Provide a range of housing types for differing age groups and economic levels in a pleasing environment while also maintaining and protecting the historic and small-town charm of Louisa.

Policies

1. Evaluate residential development proposals with consideration for the housing goals of the town and the finite water resources and wastewater disposal locations for the town.
2. Ensure density of residential development is compatible with infrastructure and environmental conditions to maintain the overall high quality of life in the town.

Action Items

1. Amend the zoning ordinances and subdivision regulations to incorporate design and development standards that promote the traditional development pattern of Louisa.
2. Monitor the number of sewer and water taps granted for new development in the town.
3. Monitor connection fees to ensure development infrastructure costs are reasonable for payment by the developer.
4. Identify measures that the town might implement to promote and ensure the maintenance of residential homes and properties in order to protect existing property values and protect public health, safety and welfare.

ECONOMY

Goals and Objectives

1. Gain retail presence in the community to service the needs of the residents.
2. Promote Louisa and gain more visitors for both business and recreational activities.
3. Capitalize on the town's proximity to Lake Anna and the diverse needs of lake visitors.
4. Capitalize on the town's proximity to major traffic arteries of Interstate 64, Route 250, Route 15, and the diverse needs of Zion Crossroads residents.
5. Renew the Farmers Market concept in a single location sponsored by the town. Provide signage and market space.

Policies

1. Continue to provide infrastructure to promote responsible commercial growth.
2. Focus industrial development toward the Industrial Air Park.
3. Continue the Downtown Enhancement projects and pedestrian safety projects.
4. Pursue retail businesses and restaurants to locate in the Town.
5. Continue to maintain tax rates and manage increases as best as possible.

Action Items

1. Ensure zoning is in place to allow the development of overnight accommodations for tourism.
2. Continue to focus on the efforts of the Exploring Main Street community to improve economic opportunity downtown and enhance quality of life through community-driven revitalization efforts.

TRANSPORTATION

Goals and Objectives

1. Develop alternative emergency routes throughout the Town.

Policies

1. Continue policy of requiring new major developments (over six acres), both commercial and residential to conduct traffic studies prior to approval of sub-divisions and site plans.
2. Retain records of "paper streets," alleys and other thoroughfares for future reference.

Action Items

1. Develop Elm Avenue and West Main Street sidewalk projects and pedestrian safety enhancements.
2. Continue to review bike trails as part of the Comprehensive Plan. Develop and encourage bicycle parking stations along Courthouse Square and other pedestrian heavy sections within the Town.
3. Continue to support the installation of electric vehicle charging stations throughout the Town.

PUBLIC UTILITIES

Goals and Objectives

1. Provide adequate public water and sewer services to encourage commercial and residential development.
2. Maintain competitive water sewer hookup rates and fees.

Policies

1. Maintain ownership and leadership through an equal partnership in the Louisa County Wastewater Treatment Plant.
2. Develop and follow a Capital Improvements Plan.
3. Set connection fees to place the burden of development on the developer/end user.

Action Items

LAND USE

Goals and Objectives

1. Achieve a balanced and sustainable land use pattern that will retain Louisa's historic and small-town character in a rural setting.
2. Protect the natural resources of the town and surrounding areas.
3. Consider higher density development in selected areas of the town utilizing a Planned Unit Development process of zoning.

Policies

1. Ensure future development will be consistent within the existing zoning maps for the town and will also consider the adopted future land use maps.
2. Ensure that the pattern, scale, location, character, setback, and overall density of land use in and around the town are compatible and consistent with the existing character of the town and enhances the overall quality of life, character, well-being and sense of community of the town and surrounding areas.
3. Promote a safe pedestrian environment in and around the town.
4. Ensure that the pattern, form, and design of new development encourage the conservation of energy, water, and other natural resources.
5. Preserve the integrity of the historic buildings and streetscapes in the town.
6. Promote high-quality design and efficient land use patterns.
7. Focus low impact commercial activity toward the existing commercial area in the center of town in order to strengthen its function as the traditional downtown area. Allow and endorse larger retail centers on the perimeter of town, using the Site Plan Review process to ensure compatibility with existing design standards.
8. Non-residential public uses such as schools, public safety, recreational, parks or public offices are proximate to Louisa area populations.
9. Ensure the town's ability to provide required public services by managing growth at a sustainable rate.
10. Enhance the character of the entrances to the town to reflect the character of the town's history.
11. Encourage moderately scaled commercial development on commercially zoned tracts in the center of town in a traditional downtown design that complements the existing historic character of the town. The downtown area should include a mix of small, non-franchise commercial uses such as a coffee shop, antique stores, and live/work studio spaces for artisans.
12. Discourage new re-zonings to commercial classifications within the town except for the central core of the town.

13. Preclude further heavy industrial development; excluding the Industrial Air Park.
14. Encourage residential design that provides open space preservation and recreational amenities, as well as supports pedestrian and bicycle travel.
15. Ensure that sidewalks are included in new development or revitalization plans for all areas of the town.

Action Items

1. Evaluate existing town zoning district regulations and the zoning map for compatibility with the goals and policies of this Plan, and identify necessary or desirable amendments as shown of the future land use map.
2. Review the town ordinances and regulations to ensure that new development will blend with the existing fabric of the town in terms of setbacks, side and rear yards, and street design.
3. Review the town ordinances and regulations to ensure that adequate landscaping and sidewalks are included in new development, in conjunction with the preservation and enhancement of trees and other vegetation.
4. Amend the town subdivision ordinance as needed and work with Louisa County to ensure that new development in the surrounding area blends with the existing fabric of the town in terms of setbacks, street design, and adequate landscape buffers to protect existing dwellings.
5. Provide appropriate and positive visual images at points of entry to the town.
6. Review town ordinances and regulations accordingly to ensure that growth is managed to avoid overtaxing public services.
7. Review and revise, if necessary, town zoning and special exemption criteria to ensure the adequacy of the water supply and sewage treatment facilities for new development or new land uses.
8. Work with Louisa County to promote and support policies that preserve the agricultural, rural, and scenic areas surrounding Louisa.
9. Recognize that the town's historic and cultural resources are fragile and irreplaceable and must be protected and preserved. Encourage the preservation, rehabilitation and enhancement of historic structures by ensuring that the town's land development ordinances permit compatible home-based businesses, provide for reasonable expansions and improvements to historic structures, and permit new development to be compatible in character with historic structures.
10. Use the town's historic and cultural resources as part of the framework for the town's strategic land use planning policies. Preservation of the identified framework, which includes historic features and public facilities, will help preserve the town's property values, aesthetic appeal and quality of life.
11. Develop and implement holistic and integrated growth management strategies to ensure that land use planning and development decisions respect and preserve the historic character of the town.

FUTURE LAND USE

Goals and Objectives

1. Protect the essential functions and integrity of local environmental systems including: surface and groundwater; wetlands; air quality; wildlife habitats; and vegetation in an integrated approach as a "green infrastructure" establishing the boundaries of development. This green infrastructure must include protection of:
   - Stream corridors as ecosystems that encompass multiple environmental features.
   - Wetlands as important natural filters, recharge areas, and wildlife habitat.
   - Significant trees, tree stands and public open space areas that support the high quality of life in Louisa.
   - The promotion and continuance planting of street trees on public and private land.

Policies

1. Promote the preservation of the natural landscape and features and integrate these elements into the overall design of a development project.
2. Promote awareness and voluntary involvement of local citizens regarding environmental and natural resource issues, problems, needs and opportunities.
3. Control environmental impacts of proposed public and private development within the town, by reviewing all re-zonings, special exceptions, subdivision, and site plan applications to ensure protection of sensitive natural areas.
4. Promote preservation and increase open space within the town by providing guidance to landowners/developers.
5. Identify, designate, and document specific natural features and locations in and around the town for public open space.
6. Encourage the preservation of the existing fabric and character of the town, through landscaping, buffering, sidewalks and other improvements to existing and new development.
7. Maintain the level of quiet within the town.
8. Promote and encourage participation in community cleanup efforts.
9. Promote water conservation through innovative reuse systems and informed household use.
10. Encourage recycling by all local residents and businesses.
11. Encourage the protection of local wildlife.
12. Protect vistas through enhanced siting controls and reducing the height of buildings, structures and signs.

Action Items

1. Adapt zoning ordinance amendments to establish the design and performance standards necessary to support the conservation design requirements for implementation of the green infrastructure policy.
2. Draft zoning ordinance amendments to allow for flexibility in setbacks, lot sizes, and parking requirements to reduce impervious area.
3. Draft zoning ordinance amendments to allow clustering within a site to protect environmentally sensitive areas and consider alternative design options to promote passive drainage, environmentally sound storm-water management practices, and water quality treatment.
4. Promote better awareness and voluntary involvement by identifying activities that could be undertaken by local civic organizations and individual citizens to protect and improve the environmental quality within and around the town, such as:
   a. Adoption of open spaces by civic and neighborhood organizations; and
   b. Adoption of road segment by local businesses and civic groups, including litter pickup, landscaping, and fundraising for sidewalk repair.
5. Develop and implement community design guidelines for residential and commercial structures to address visual quality and to further preserve the historic character of the town.

Our Town in 2030
Town Council's Vision Statement

The Town of Louisa is the center of government, commerce, culture, arts, and recreation for the County. As the heart of the County, we take responsibility for our destiny and commit to leadership that will ensure our economic and collective success. We are a community that preserves and builds on our history while retaining our social fabric and small-town appeal. Our Main Street defines us, providing a sense of place and identity, and drawing citizens together to create a progressive, vibrant, and caring community. In particular, we take pride in our:

First Rate Public Services
The Town of Louisa delivers professional public services to its residents, business community, and visitors. These services include governance, law enforcement, and utilities. Our state-of-the-art Town Hall campus, which is also a national historic landmark, meets community needs in a variety of ways including a Louisa Arts Center, Louisa Historical Society, and surrounding park. The Town is a steward of the environment and strongly supports recycling and alternate modes of transportation that are pedestrian, bicycle, and environmentally friendly. Town services are delivered by caring professionals who are well trained and empowered to take ownership of programs, respond promptly to problems, and develop solutions to meet public needs.

Constructive Communications and Partnerships
The Town of Louisa enjoys positive, progressive partnerships with its constituents, local and state governmental agencies, and peers within the private and public sectors. The business of Town government is handled in an open and democratic manner that invites public participation.

Vibrant Economic Development
Louisa's vibrant economic development includes the downtown area with various shops and boutiques, the Route 208 commercial corridor, and a uniquely planned Town village with housing, shopping, restaurants, and medical facilities that are within walking distance of the financial district. The Town Economic Development Authority works hand-in-hand with the Chamber of Commerce and in partnership with businesses and Town government to provide a sound commercial base.

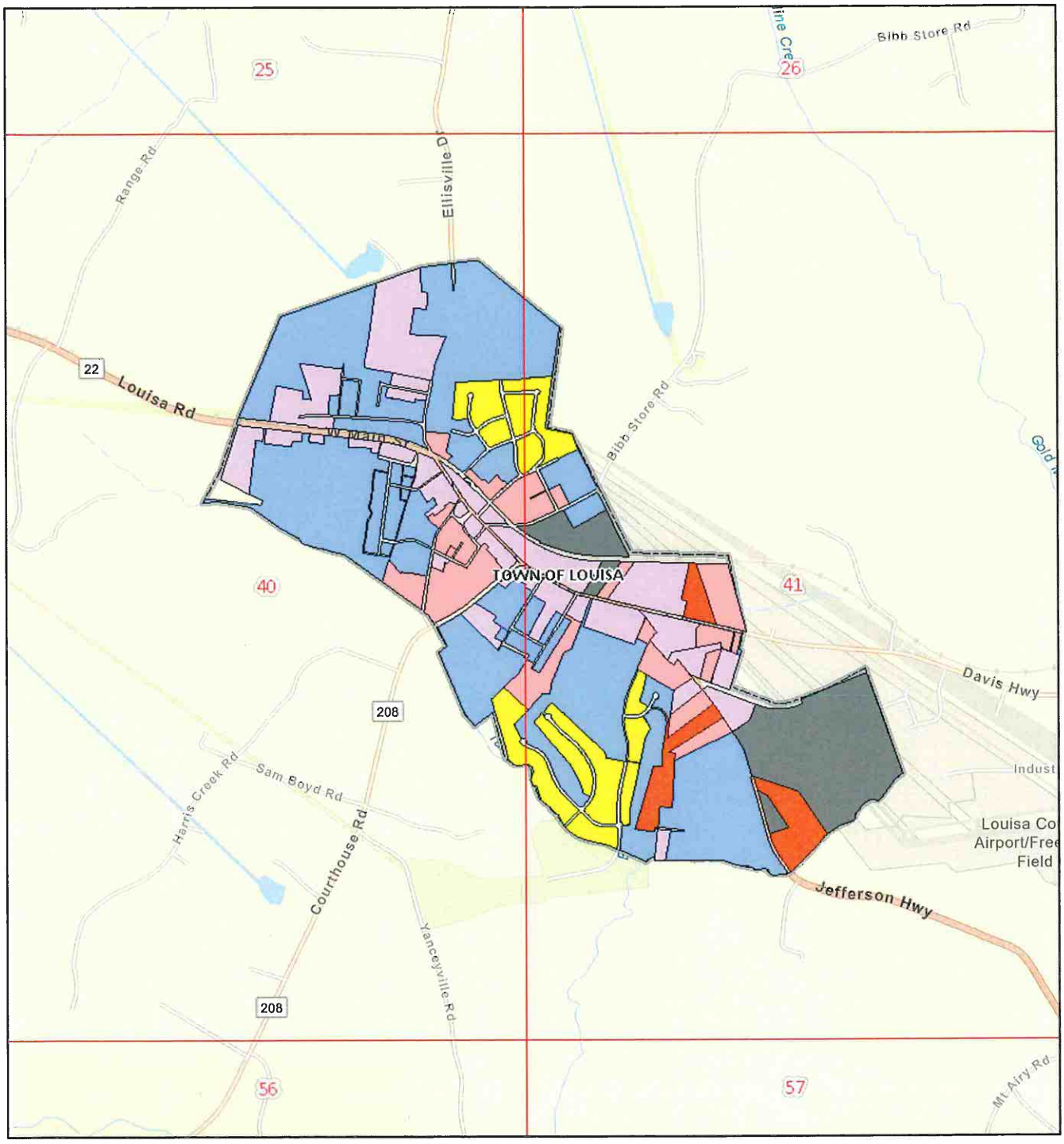
Cultural Enhancements
Quality of life in Louisa is enhanced by many diverse cultural activities. Visitors can avail themselves of comfortable lodging alternatives and interesting things to do and see. Live performances and art displays by local artists are held at the Louisa Arts Center. The Louisa Historical Society provides a walking tour of the Town including a portion of the Civil War Trail with a stop at the historic Oakland Cemetery. Other offerings from the LCHS include the Sargent Museum and 18th century village, the Old Courthouse, historic churches, and many quaint, historic homes. Recreational facilities include municipal parks, little league ball fields hosting state tournaments, and a golf course that is open to the public. Restaurants and retail shops abound in the downtown area.

Well Planned Development and Community Life
The Town is a pleasant mix of residential choices where home ownership and active community involvement are valued. We have high standards for development and insure that future growth in the Town adds to our aesthetic appeal, sense of identity, and neighborliness. The Town is continually focused on long and short-term issues related to connectivity. Within the Town, we are a connected community in which residents walk on safe sidewalks and use bikes to enjoy our appealing views and to experience recreation, dining, shopping, and cultural activities. The Town is an active voice in the discussion of long-range transportation plans with state and County stakeholders to ensure that we sustain our small-town charm and accessibility.

Appendix 1

Town of Louisa Zoning Map

Town of Louisa Zoning Map



(RG) - Residential General

(RL) - Residential Limited

(GC) - General Commercial

(LC) - Light Commercial

(IND) – Industrial

(PUD) - Planned Unit Development

1:36,112

0 0.23 0.45 0.9 mi

0 0.38 0.75 1.5 km

Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community