ROANOKE COUNTY

Purchasing Division
5204 Bernard Drive, Suite 300-F, P.O. Box 29800
Roanoke, Virginia 24018-0798
TEL: (540) 772-2061 FAX: (540) 772-2074

October 16, 2024
ADDENDUM NO. 2 TO ALL BIDDERS/OFFERRORS:

Reference – IFB 2025-028
Description: Roanoke County Storm Drainage Improvements
Issue Date: September 17, 2024
Proposal Due: October 28, 2024

The above Project is hereby changed or clarified as addressed below:

General:

1. The due date and time is hereby extended to October 28, 2024 at 2:00 PM.
2. A Revised Bid Form (7 pages) is included as Exhibit 1 to this Addendum 2. *Bidders must complete and return this updated copy of the Bid Form with their bid submission in order to be considered.*
3. A copy of the pre-bid conference attendance log is provided as Exhibit 2 to this Addendum 2.
4. Updated plans for the Crown Road are provided as Exhibit 3 to this Addendum 2. The plan set is available for download as a separate document from the project posting site.

Tully Drive:

1. Milling will be paid for by the square yard. Design intent is to mill to match overlay to existing at limits of construction. Asphalt will be paid for by the ton. See Revised Bid Form included in this Addendum.
2. Previous information indicated 2" overlay. Private driveway work shall be as follows:

    A. saw cut trench and remove asphalt to 6" wider than trench on either side.
    B. Install pipe and backfill (suitable backfill compacted to 95% Min. Std. Proctor).
    C. Install 8" Stone base and 2" SM 9.5A per detail A-C07. 2" trench asphalt shall be 1"-1.5" below existing asphalt.
    D. Entire private driveway shall be milled 1.5" and then overlaid with 1.5" SM 9.5A.

Pebble Drive:

1. Existing structure at upstream end of project will be supplied by Roanoke County, installed by Contractor as part of this project. The structure is constructed with openings for existing roof leaders. A line item has been added to the Bid Form.

Crown Road:

1. A unit price has been added for flowable fill to fill existing pipes in lieu of removal, particularly where existing utilities pose a challenge. Application of this pay item will be as directed by Roanoke County.
2. Approved plans for Crown Road are available and posted with this Addendum.

Richards Blvd:

1. Pay Item added for chain link fence.
2. Pay item added for 24” concrete gutter.

Note: A signed acknowledgment of this addendum must be received at the location indicated on the original solicitation either prior to the proposal due date or attached to your proposal. Signature on this addendum does not substitute for your signature on the original proposal/bid document. The original proposal/bid document must be signed.

Thank you,

Kate Hoyt
Phone: (540) 283-8149
KHoyt@roanokecountyva.gov

Sign Name:	Print Name:
Name of Firm:	Date:

INVITATION FOR BID 2025-028
REVISED BID FORM

NOTE: All pages of the Bid Form are to be included in the completed bid. Also, bids containing any conditions, omissions, unexplained erasures, alterations, or items not called for in the bid, or irregularities of any kind, may be rejected by the County as being non-responsive. No changes are to be made to the Bid Form. Any changes to a bid amount must be initialed by the authorized person signing the Bid Form.

The undersigned hereby proposes and agrees, if this bid is accepted by the County of Roanoke, to enter into a Contract with the County of Roanoke, Virginia, (hereafter – County or Owner) to furnish all equipment, materials, labor, and services necessary to provide improvements to the existing stormwater conveyance and associated work, Bid No. 2025-028, 2024 Roanoke County Storm Drainage Improvements, in accordance with the Contract Documents as prepared by or for the County of Roanoke.

The undersigned agrees that the following Unit Prices will become a part of the Contract and in accordance with the Contract Documents shall be used for the purpose of adjusting the Contract Sum up or down for changes made by the County for increased or decreased quantities of work from estimated quantities as indicated on the Drawings and/or in the Specifications. The Unit Prices shall include all labor, materials, equipment, services, overhead, profit, insurance, bonds, taxes, etc., to cover the finished work of the several kinds called for in place. There is no guaranteed maximum or minimum amount of the quantities for materials listed below.

Continued on following page.

BASE BID

Pebble Drive Storm Drainage Improvements

ITEM NO.	ITEM DESCRIPTION	UNIT	QTY.	UNIT PRICE	TOTAL AMOUNT
1	MOBILIZATION	LS	1		
2	FIELD ENGINEERING	LS	1		
3	CONSTRUCTION ENTRANCE	LS	1		
4	WIRE/FABRIC & GRAVEL INLET PROTECTION	EA	1		
5	SEED AND MULCH, INSTALLED	SY	845		
6	TOP SOIL	CY	94		
7	REMOVE EX. 24" CMP	LF	307		
8	INSTALL 24" RCP **FURNISHED BY RO. CO.**	LF	307		
9	INSTALL STRUCTURE D-1 SHOWN ON PLANS **FURNISHED BY RO. CO.**	EA	1		
10	REMOVE & REINSTALL CH. LNK. FENCE	LF	164		
11	REMOVE AND RESET EX. SHED	EA	2		
	TOTAL PEBBLE DRIVE BID				

Tully/Neil Drive Storm Drainage Improvements

ITEM NO.	ITEM DESCRIPTION	UNIT	QTY.	UNIT PRICE	TOTAL AMOUNT
1	MOBILIZATION	LS	1		
2	FIELD ENGINEERING	LS	1		
3	SILT FENCE	LF	229		
4	WIRE/FABRIC & GRAVEL INLET PROTECTION	EA	8		
5	CLASS I RIP RAP W/ FABRIC	SY	46		
6	SEED AND MULCH, INSTALLED	SY	436		
7	SAW CUT EX. ASPHALT	LF	750		

8	FURNISH & INSTALL 15” CL. III RCP	LF	192		
9	FURNISH & INSTALL 18” CL. III RCP	LF	82		
10	FURNISH & INSTALL 24” CL. III RCP	LF	82		
11	FURNISH & INSTALL 30” CL. III RCP	LF	176		
12	T-DI-3 CURB INLET L=18'	EA	1		
13	DI-3B-L=14'	EA	4		
14	DI-3B-L=10'	EA	1		
15	MH-1	EA	1		
16	CG-6 CURB INSTALLED	LF	515		
17	CG-9B CONCRETE ENTRANCE	EA	3		
18	30” EW-1	EA	1		
19	VDOT R/W MILL EX. ASPHALT 1.5”	SY	892		
20	VDOT R/W 1.5” SM9.5A OVERLAY	TONS	82.51		
21	PRIVATE DRIVEWAY ASPHALT MILL & SURFACE COURSE OVERLAY, 1.5” SM 9.5A	SY	201		
22	REMOVE & REPLACE WOOD PRIVACY FENCE	LF	40		
23	MAINTENANCE OF TRAFFIC PER TTC-23.2	LS	1		
	TOTAL TULLY DRIVE/NEIL DRIVE BID				

TOTAL PEBBLE DRIVE BID $_____

TOTAL TULLY DRIVE/NEIL DRIVE BID $_____

TOTAL BASE BID PRICE $_____

(BASE BID PRICE - IN *WRITTEN FORM*

_____**DOLLARS AND**

_____ **CENTS)**

Add Alternate #1-Crown Road Storm Drainage Improvements

ITEM NO.	ITEM DESCRIPTION	UNIT	QTY.	UNIT PRICE	TOTAL AMOUNT
1	MOBILIZATION	LS	1		
2	FIELD ENGINEERING	LS	1		
3	CONSTRUCTION ENTRANCE	EA	1		
4	SILT FENCE	LF	45		
5	WIRE/FABRIC & GRAVEL INLET PROTECTION	EA	2		
6	CULVERT INLET PROTECTION	EA	1		
7	EC-3 BLANKET MATTING	SF	180		
8	DIVERSION DIKE	LF	75		
9	CLASS AI RIP RAP OUTLET PROTECTION	SY	15		
10	TOP SOIL	CY	54		
11	SEED AND MULCH, INSTALLED	SY	484		
12	REMOVE EX. STORM DRAIN INLET	EA	2		
13	REMOVE EX. 15” CMP	LF	35		
14	REMOVE EX. 18” CMP	LF	55		
15	REMOVE EX. 24” CMP	LF	142		
16	FLOWABLE FILL IN LIEU OF PIPE REMOVAL (INCLUDES REQUIRED CAPS/PLUGS)	CY	5		
17	REMOVE EX. CG-6	LF	54		
18	REMOVE EX. STONE WALL	LF	7		
19	SAW CUT ASPHALT	LF	60		
20	REMOVE VDOT ROADWAY PAVEMENT	SY	79		
21	REMOVE DRIVEWAY PAVEMENT	SY	61		
22	FURNISH & INSTALL 30” CLASS III RCP	LF	155		
23	DI-3C CURB INLET L=6’	EA	1		
24	DI-3C CURB INLET L=16’	EA	1		
25	CG-6 CURB INSTALLED	LF	54		
26	30” ES-1	EA	1		
27	30” EW-1	EA	1		
28	PIPE ANCHOR BLOCKS	EA	7		
29	CLASS A1 RIP RAP WITH FABRIC	SY	15		

30	VDOT ROADWAY PAVEMENT INSTALLED	SY	79		
31	DRIVEWAY PAVEMENT INSTALLED	SY	61		
32	MAINTENANCE OF TRAFFIC PER TTC-23.2	LS	1		
	Total Bid Add Alternate #1				

Total Bid Add Alternate # 1 written:

_____

Add Alternate #2-Richards Boulevard Storm Drainage Improvements

ITEM NO.	ITEM DESCRIPTION	UNIT	QTY.	UNIT PRICE	TOTAL AMOUNT
1	MOBILIZATION	LS	1		
2	FIELD ENGINEERING	LS	1		
3	CONSTRUCTION ENTRANCE	EA	1		
4	SILT FENCE	LF	45		
5	SILT FENCE CULVERT INLET PROTECTTION	EA	1		
6	SILT SOCK	LF	50		
7	EC-3 BLANKET MATTING	SF	90		
8	EC-1 RIP RAP	SY	3		
9	SILT SACK INLET PROTECTION	EA	1		
10	SEED AND MULCH, INSTALLED	SY	611		
11	REMOVE EX. STORM DRAIN INLET	EA	1		
12	REMOVE EX. 15” CMP	LF	211		
13	SAW CUT ASPHALT	LF	44		
14	REMOVE & REPLACE VDOT PAVEMENT	SY	11		
15	INSTALL 15" CLASS III RCP **FURNISHED BY RO. CO.**	LF	207		
16	INSTALL DI-7, **FURNISHED BY RO. CO.**	EA	1		
17	INSTALL MH-1, **FURNISHED BY RO. CO.**	EA	1		
18	INSTALL 15" ES-1, **FURNISHED BY RO. CO.**	EA	1		
19	15" PIPE COLLAR AT CONNECTION TO EX.	EA	1		
20	REMOVE & REPLACE CHAIN LINK FENCE	LF	125		
21	24” CONCRETE GUTTER	LF	128		
22	MAINTENANCE OF TRAFFIC PER TTC-23.2 & TTC-4.2	LS	1		
	Total Bid Add Alternate #2				

Total Bid Add Alternate # 2 written:

_____

Base Bid Total **$**_____

Add Alternate #1 Total **$**_____

Add Alternate #2 Total **$**_____

Total Bid **$**_____

Award of Contract will be based on TOTAL BASE BID plus the Additive Alternate #1 and/or Additive Alternate #2 amount if an Additive Alternate is selected by Roanoke County. If no Additive Alternate is selected, the award will be based on the TOTAL BASE BID amount as shown above. The County reserves the right to accept alternatives in any order or combination.

1. Bidder agrees that all unit prices include installation complete.

2. Bidder further agrees that if awarded the Contract, Bidder will commence work, upon receipt of NOTICE TO PROCEED and will reach substantial completion and final completion within the time defined in the Contract. Bidder agrees that contract time shall commence on the date of receipt of Notice to Proceed stipulated in the Contract Documents.

3. The Bidder fully understands that if this bid is accepted, failure or refusal to execute the Contract with and furnish to the County of Roanoke the required bonds, within ten (10) consecutive calendar days from receipt of the Contract Documents may result in a payment of the Bid Security to the County as liquidated damages.

4. The undersigned agrees, if this bid is accepted, to pay as liquidated damages the sum of two hundred dollars ($200.00) per day to the County of Roanoke for each consecutive calendar day in excess of the stated time required for substantial completion of the work and one hundred dollars ($100.00) per day to the County of Roanoke for each consecutive calendar day in excess of the stated time required for final completion of the work..

Addenda: Receipt of the following addenda to the Contract Documents is hereby acknowledged:

Addendum No. _____Dated _____

Addendum No. _____Dated _____

Addendum No. _____ Dated _____

Bidder _____ does have _____does not have a Virginia Contractor's License. (Check appropriate blank).

If bidder has a Virginia Contractor's License, circle the class bidder has and list the number .
Licensed "Class A", "Class B", or "Class C" Virginia Contractor Number _____
Identify Specialty

If bidder has another type of Virginia License, please list the type and number:
Type of license: _____

Number: _____

The attention of each Bidder is directed to Virginia Code Section 2.2-4311.2 (effective July 1, 2010) which requires a bidder or offeror organized or authorized to transact business in the Commonwealth of Virginia pursuant to Title 13.1 or Title 50 of the Code of Virginia, as amended, or as otherwise required by law, shall include in its bid or proposal the Identification Number issued to such bidder or offeror by the Virginia State Corporation Commission (SCC). Furthermore, any bidder or offeror that is not required to be authorized to transact business in the Commonwealth of Virginia as a domestic or foreign business entity under Title 13.1 or Title 50 or as otherwise required by law shall include in its bid or proposal a statement describing why the bidder or offeror is not required to be so authorized. Please complete the following by checking the appropriate line that applies and providing the requested information:

A._____ Bidder/Offeror is a Virginia business entity organized and authorized to transact business in Virginia by the SCC and such bidder's Identification Number issued to it by the SCC is _____.

B._____ Bidder/Offeror is an out-of-state (foreign) business entity that is authorized to transact business in Virginia by the SCC and such bidder's Identification Number issued to it by the SCC is _____.

C._____ Bidder/Offeror is an out-of-state (foreign) business entity that is authorized to transact business in Virginia by the SCC and such bidder's Identification Number issued to it by the SCC is _____.

LEGAL NAME_____

BY_____ TITLE_____
(TYPED NAME:)

SIGNED NAME_____

DELIVERY ADDRESS_____

MAILING ADDRESS_____

CITY_____ STATE _____ ZIP CODE _____

TELEPHONE_____ FAX_____

CONTACT EMAIL ADDRESS _____

ESCROW ACCOUNT REQUESTED (if applicable): YES _____ NO _____

IFB #2025-028 Storm Drainage Improvements
PRE-BID MEETING SIGN-IN LOG

October 4, 2024, 1:30 PM

(PLEASE PRINT)

Name/Title Larry Conner JR President
Organization Aaron J Conner Gen. Contr. Inc
Email & Phone larryconner jr@ajconner.com 5405205815 c

Name/Title Coty Holt
Organization Holt inc
Email & Phone Holtinc@Verizon.net 540-520-0676

Name/Title Jeremy Simpson
Organization CFI
Email & Phone Concrete Foundations@Yahoo 434-656-6592

Name/Title Jason Pooley
Organization Pooleys Excavating & Demolition
Email & Phone APooley@ntelos.Net (540)-598-7533

Name/Title MATT JANAS
Organization Allegheny Construction Co.
Email & Phone matt@alleghenyconstruction.net 908-420-5512

Name/Title
Organization
Email & Phone

Name/Title
Organization
Email & Phone

Name/Title
Organization
Email & Phone

COUNTY OF ROANOKE, VA

GENERAL NOTES

PRE-CONSTRUCTION MEETING AND CONSTRUCTION COMMENCEMENT:

1. All construction methods and materials shall conform to the Construction Standards and Specifications of Roanoke County, the Western Virginia Water Authority, and the Virginia Department of Transportation.
2. Stormwater Management Agreements with an attached 8 1/2" x 11" or 8 1/2" x 14" plat must be approved and recorded prior to the pre-construction meeting.
3. Once all required items are submitted to Roanoke County, the developer must contact the Development Review Coordinator to indicate that a pre-construction meeting needs to be scheduled. The pre-construction meeting will be scheduled with the owner/developer two (2) working days later.
4. All land disturbing projects that require approval of an erosion and sediment control plan, grading or clearing permit shall require that the applicant provide the name of an individual who will be responsible for land disturbing activities and that this individual hold a Responsible Land Disturber (RLD) Certificate from the Department of Environmental Quality. The Responsible Land Disturber can be anyone from the Project team that is certified by the Commonwealth of Virginia to be in charge of carrying out the land disturbing activity for the project.
5. It is the responsibility of the owner/developer to notify the certified Responsible Land Disturber and the Utility Contractor to attend the pre-construction meeting.
6. The Development Review Coordinator will schedule the pre-construction meeting with the County Review Engineer, the County Inspector, and the Western Virginia Water Authority and the Town of Vinton Public Works Department if applicable.
7. An approved set of plans, Storm Water Pollution Prevention Plan (SWPPP), VSMP coverage letter, and all permits must be available at the construction site at all times.
8. The developer and/or contractor shall supply all utility companies with copies of approved plans, advising them that all grading and installation shall conform to approved plans.
9. The project engineer will inform the owner/developer verbally and in writing of the County's obligation to perform inspections on site. Everyone in the meeting will be required to sign a pre-construction checklist indicating their knowledge of Roanoke County's obligation to perform inspections on site.
10. The Erosion Control Permit or Combined Erosion Control & VSMP Permit is given to the developer at this pre-construction meeting.
11. Notify Roanoke County prior to beginning installation of ESC measures. The County will inspect initial installations to ensure compliance with approved plan prior to start of grading. The developer SHALL contact the project inspector 24 hours before beginning any grading or construction on the property.
12. County inspectors must inspect storm drain / stormwater management / BMP installations during the process of installation. Please contact the site inspector 24 hours in advance.
13. All work shall be subject to inspection by Roanoke County, the Western Virginia Water Authority and the Virginia Department of Transportation Inspectors.
14. Contractors shall notify utilities of proposed construction at least two (2), but not more than ten (10) working days in advance. Area public utilities may be notified thru "Miss Utility": 1-800-552-7001 or VA 811.
15. The 100 year Floodway shall be staked prior to any construction.
16. Grade stakes shall be set for all curb and gutter, culvert, sanitary sewer and storm sewer at all times of construction.
17. Roanoke County shall be notified when a spring is encountered during construction.
18. Construction debris shall be containerized in accordance with the Virginia Litter Control Act. No less than one litter receptacle shall be provided on site.
19. The contractor shall provide adequate means of cleaning mud from trucks and/or other equipment prior to entering public streets or rights of ways. It is the contractors responsibility to insure that the streets are in a clean, mud and dust free condition at all times.
20. Plan approval in no way relieves the developer or contractors of the responsibilities contained within the erosion and sediment control or stormwater management policies.
21. Field construction shall honor proposed drainage divides as shown on plans.
22. Field corrections shall be approved by the Roanoke County and/or the Western Virginia Water Authority and the Professional of Record, prior to such construction.
23. The developer or contractor shall supply the County and the Western Virginia Water Authority with correct As-Built plans before final acceptance.

VIRGINIA DEPARTMENT OF TRANSPORTATION:

1. Plan approval by Roanoke County does not guarantee issuance of any permits by the Virginia Department of Transportation.
2. A permit must be obtained from the Virginia Department of Transportation, Salem Residency Office prior to construction in the highway right-of-way.
3. The preliminary pavement designs should be based on a predicted sub-grade CBR value of 7.0 and with a Resiliency Factor (RF) of 2.0 as shown in the current edition of the Virginia Department of Transportation Pavement Design Guide for Subdivision and Secondary Roads. The sub-grade soil is to be tested by an independent laboratory and the results submitted to the Virginia Department of Transportation prior to base construction. Should the sub-grade CBR value and/or the RF value be less than the predicted values, additional base material will be required in accordance with Departmental specifications. Refer to the same manual as the number and locations of the required soil samples to be tested. All pavement designs shall be submitted to the Department for review and approval. The sub-grade shall be approved by the Virginia Department of Transportation prior to placement of the base. Base shall be approved by the Virginia Department of Transportation for depth, template, and compaction before the surface is applied.
4. Standard guardrail with safety end sections may be required on fills or in areas where hazards exist as deemed necessary. After completion of rough grading operations, the County Engineer and Virginia Department of Transportation shall be contacted to schedule a field review. Where guard rail is warranted, the standard shoulder width shall be provided and the guard rail shall be installed in accordance with the current edition of the VDOT Road and Bridge Standards as part of this development.
5. Standard street and traffic control signs shall be erected at each intersection by the developer prior to final street acceptance.
6. All traffic devices shall be in accordance with current edition of the "Manual on Uniform Traffic Control Devices" (MUTCD).
7. All unsuitable material shall be removed from the construction limits of the roadway before placing embankment.

See Sheet N/A for Stormwater Site Statistics Table.
See Sheet N/A for New BMP Information Table.

The Project Engineer shall provide electronic copies of the approved plans to the Development Review Coordinator within 5 working days of the pre-construction meeting.
The notes on this sheet shall not be modified.

NAME OF DEVELOPMENT	CROWN ROAD DRAINAGE IMPROVEMENTS
MAGISTERIAL DISTRICT(S)	WINDSOR HILLS MAGISTERIAL DISTRICT
OWNER (name, address, telephone)	
DEVELOPER (name, address, telephone)	ROANOKE COUNTY ENGINEERING DEPARTMENT (540) 772 - 2080 P.O. BOX 29800 ROANOKE, VA 24018
ENGINEER, ARCHITECT OR SURVEYOR (name, address, telephone)	LUMSDEN ASSOCIATES, P.C. (540) 774-4411 4664 BRAMBLETON AVENUE ROANOKE, VA 24018
TAX MAP NO(S)	095.01-01-23.00, 095.01-01-11.00, & 095.01-01-12.00

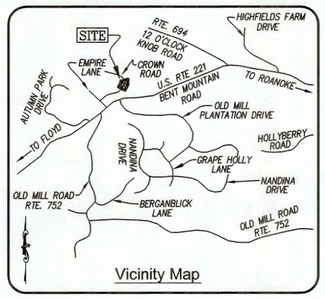
_____ OWNER/DEVELOPER, HAS AWARE OF THE SITE DESIGN REQUIREMENTS IMPOSED BY THIS SITE DEVELOPMENT PLAN, ALL REVISIONS THEREOF, AND OTHER APPLICABLE ROANOKE COUNTY CODES AND ORDINANCES.

I HEREBY CERTIFY THAT I AGREE TO COMPLY WITH THESE REQUIREMENTS SHOWN ON THIS COVER SHEET UNLESS MODIFIED IN ACCORDANCE WITH LOCAL LAW.

WATER AND SEWER NOTES

1. All construction methods and materials shall conform to the latest edition of the Design and Construction Standards and Specifications of the Western Virginia Water Authority (WVWA) available at www.westernvawater.org or by contacting the authority at 540-853-5700. The project shall also comply with the governing jurisdiction's standards and other agency standards (e.g. VDOT, DEQ, DCR, VDH, etc.) where applicable.
2. A minimum cover of three (3) feet is required on all WVWA water and sewer lines.
3. All existing utilities may not be shown in their exact locations. The contractor shall notify Miss Utility and shall verify location and elevation of all underground utilities in the areas of construction prior to starting work.
4. Please show all WVWA water and sewer utilities on any development plan.
5. The location of existing utilities across or along the line of proposed work are not necessarily shown on the plans and where shown are only approximately correct. The contractor shall on his own initiative and at no extra cost, locate all underground lines and structures and pothole as necessary. The contractor shall be responsible for any damage to underground structures. All damage incurred to existing utilities during construction shall be repaired at the contractor's expense.
6. Plan approval by the WVWA does not remove the contractor's responsibility to remove or relocate any existing conflicts found during construction.
7. The contractor shall maintain a minimum of 18" clearance vertically and two (2) feet minimum horizontally from the outside of pipe to outside of pipe with all other underground utilities. Where this cannot be achieved, additional measures in accordance with the WVWA standards shall be enforced.
8. All utility grade adjustments shall be in accordance with WVWA standards and are the responsibility of the contractor.
9. Field changes shall be submitted by the engineer of record to the locality and approved by the WVWA.

Western Virginia Water Authority
Availability letter number: N/A



Vicinity Map

LEGEND

Property Line — P —
Right-of-way — R/W —
Centerline — CL —
Minimum Building Line — MBL — MBL
Existing Storm Sewer — SD — SD
Existing Sanitary Sewer — SS — SS
Existing Water Main — W — W
Existing Contour — 1045 —
Proposed Contour — 1045 —
Proposed Drainage Divide
Proposed Limits of Clearing
Proposed Storm Sewer — 24" S.D. —
Proposed Sanitary Sewer — 8" M.H. —
Proposed Water Main — HYDRANT — VALVE — BLOWOFF

PRIVATE UTILITIES

Underground utilities installed on private property or in private utility easements and building related storm drains shall be designed and installed per the current edition of the Virginia Uniform Statewide Building Code (including amendments). Design and installation requirements issued by the Western Virginia Water Authority that meet or exceed the USBC requirements are acceptable for private utilities. All private utilities are to be permitted through and inspected by the Roanoke County Inspections Office. Vaults, valves and other devices installed by or under the control of the Western Virginia Water Authority may not substituted for the code required devices.

PR #:	NOTES:

Revision Table

SHEET No.	DESCRIPTION
1....	COVER SHEET
2....	NOTES & DETAILS
3....	DEMOLITION PLAN, STORM DRAINAGE PLAN & PROFILE
4....	EROSION & SEDIMENT CONTROL PLAN
5....	EROSION & SEDIMENT CONTROL NOTES AND DETAILS
6....	MAINTENANCE OF TRAFFIC PLAN

Sheet Index

SURVEY INFORMATION

Horizontal and vertical control surveys were performed in year: 2020
by: Lumsden Associates, P.C.

All vertical elevations must be referenced to the National Geodetic Vertical Datum of 1929 or 1988. All horizontal elevations must be referenced to the North American Datum of 1927 or 1983.

Source of topographic mapping is dated: 2020

Boundary was performed by: Lumsden Associates, P.C., dated: 2020

Benchmark Information: See Sheet 3

The professional seal and signature certifies the boundary survey and topographic mapping to be accurate and correct.

QUANTITY & COST ESTIMATE

ITEM	QUANTITY	UNIT	UNIT PRICE	COST	BONDABLE
CLEARING AND GRUBBING		AC			
EXCAVATION		C.Y.			
EMBANKMENT		C.Y.			
CURB INLET DI-		EA			
CURB INLET DI-		EA			
MANHOLE MH-		EA			
MANHOLE MH-		EA			
-IN. CONCRETE PIPE, CLASS III		LF			
-IN. CONCRETE PIPE, CLASS IV		LF			
-IN. C.M. CULVERT		LF			
-IN. C.M. CULVERT		LF			
BOX CULVERT		LS			
PAVED SWALE		LF			
RIPRAP - CLASS		SF			
PERMANENT GRASS SWALE		LF			
-IN. CONCRETE ENDWALL EW-		EA			
-IN. END SECTION ES-		EA			
HEADER CURB & GUTTER CG-		LF			
CURB & GUTTER CG-		LF			
VALLEY GUTTER		EA			
GRAVEL BASE		SY			
GRAVEL SHOULDER		SY			
SURFACE TREATMENT		SY			
-IN. BIT. CONC.: TYPE B-		SY			
-IN. BIT. CONC.: TYPE S-		SY			
-IN. BASE MATERIAL		C.Y.			
-IN. SUBBASE MATERIAL		C.Y.			
TRAFFIC BARRICADE		EA			
8" WATER LINE		LF			
6" WATER LINE		LF			
FIRE HYDRANT ASSEMBLIES		EA			
BLOW OFFS W/ VAULT, FRAME & COVER		EA			
-IN. GATE VALVES, W/ VAULT, FRAME & COVER		EA			
-IN. GATE VALVES, W/ VAULT, FRAME & COVER		EA			
8" SANITARY SEWER		LF			
STANDARD MANHOLE W/FRAME & COVER		EA			
SAMPLING MANHOLE/PORT		EA			
LANDSCAPING		LS			
AMENITIES (INCLUDING BUT NOT LIMITED TO TRAILS, ETC...)		LS			
STORMWATER MANAGEMENT		LS			
AS-BUILT PLANS (STORM SEWER SYSTEMS)		LS			
AS-BUILT PLANS (STORMWATER MANAGEMENT)		LS			
10% CONTINGENCY					
ESTIMATED TOTAL					

BY SEALING THE PLANS, THE DESIGN PROFESSIONAL HEREBY CERTIFIES THAT THE FOREGOING ESTIMATE REFLECTS THE CURRENT IMPROVEMENT COSTS OF THIS PROJECT.

Lumsden Associates, P.C.
ENGINEERS | SURVEYORS | PLANNERS
4664 BRAMBLETON AVENUE, SW
P.O. BOX 20669
ROANOKE, VIRGINIA 24018
PHONE: (540) 774-4411
FAX: (540) 772-9445
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LUMSDEN ASSOCIATES, P.C.
COMMISSION NUMBER:
2020-312

COMMONWEALTH OF VIRGINIA
ANDREW P. LUMSDEN
Lic. No. 052216
10/2/24
PROFESSIONAL ENGINEER

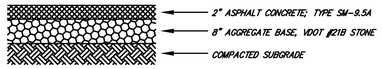
Approved

PLAN DATE:
OCTOBER 2, 2024

PLAN APPROVED
Denise Sowder
REVIEW COORDINATOR, 10/3/2024

CROWN ROAD
DRAINAGE IMPROVEMENTS
PREPARED FOR
ROANOKE COUNTY
ENGINEERING DEPARTMENT
WINDSOR HILLS MAGISTERIAL DISTRICT
ROANOKE COUNTY, VIRGINIA

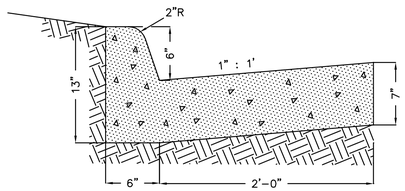
SHEET
1
OF
6



* NOTE: 1. MATCH EXIST. PAVEMENT SECTION IF GREATER THAN SHOWN ABOVE.

DRIVEWAY REPLACEMENT DETAIL

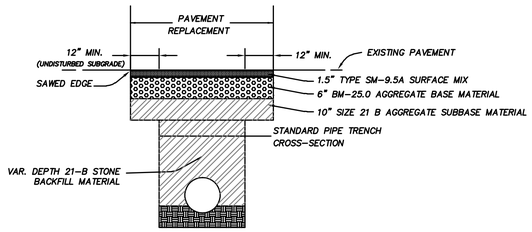
SEE VDOT ROAD & BRIDGE STANDARDS (MOST CURRENT EDITION) FOR ADDITIONAL CURB AND GUTTER NOTES AND DETAILS.



CONCRETE TO BE CLASS A3

CONCRETE CURB (CG-6)

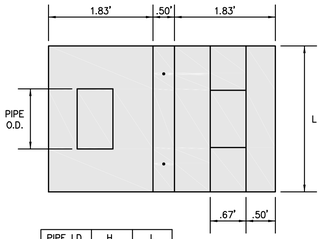
NO SCALE



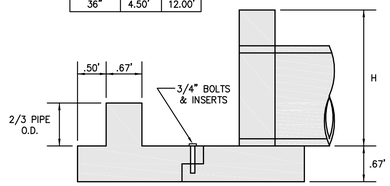
PAVEMENT REPLACEMENT DETAIL

NOTES:

1. SURFACE AND BASE REPLACEMENT WILL GENERALLY BE REQUIRED TO MATCH EXISTING ASPHALT LAYERS AND SHALL BE COMPACTED IN LIFTS ACCORDING TO VIRGINIA DEPARTMENT OF TRANSPORTATION SPECIFICATION 320.
2. AGGREGATE BASE MATERIAL SHALL BE REPLACED TO A DEPTH GREATER THAN EXISTING STONE BASE TO ENSURE LOAD BEARING CAPACITY OF CUT RELATED TO UNDISTURBED EARTH AREAS. AGGREGATE BASE SHALL BE COMPACTED ACCORDING TO VIRGINIA DEPARTMENT SPECIFICATION 208.
3. BEDDING MATERIAL SHALL BE ACCORDING TO REQUIREMENT OF EACH UTILITY (GENERALLY FROM BOTTOM OF TRENCH DITCH TO SIX INCHES ABOVE PIPE WITH A MINIMUM OF FOUR INCHES BELOW THE PIPE.
4. SAW CUT TO BE MADE WITH A MECHANICAL SAW AND SIDES TO BE TACKED WITH BITUMINOUS MATERIAL TYPE CRS-2 OR EQUAL.
5. ALL CONSTRUCTION WITHIN THE PUBLIC RIGHT-OF-WAY SHALL BE AS SPECIFIED BY VDOT OR APPLICABLE LOCALITY.
6. PRIOR TO CONSTRUCTION, CONTRACTOR IS RESPONSIBLE FOR SECURING ALL REQUIRED PERMITS FROM VDOT AND/OR APPLICABLE LOCALITY.



PIPE I.D.	H	L
12"	2.00'	4.00'
15"	2.25'	5.00'
18"	2.50'	6.00'
24"	3.17'	8.00'
30"	3.83'	10.00'
36"	4.50'	12.00'



NOTES:

1. CONCRETE 4,000 P.S.I.
2. REINFORCING #4 @ 6" C.C. E.W. DOUBLE ROW THROUGHOUT.

EW-1 MODIFIED WITH ENERGY DISSIPATOR

NO SCALE

GENERAL NOTES

1. PROPERTY OWNERS:

7062 CROWN ROAD, S.W. TM# 095.01-01-23.00 LESLIE K. GLASSMAN & STANELY S. GLASSMAN INST. No. 200214719	7049 CROWN ROAD, S.W. TM# 095.01-01-12.00 JOSHA A. CUNDIFF & KARA B. CUNDIFF INST. No. 200910914	7041 CROWN ROAD, S.W. TM# 095.01-01-11.00 JOHN A. LEONARD & COLLEEN R. LEONARD D.B. 1266, Pg. 1641

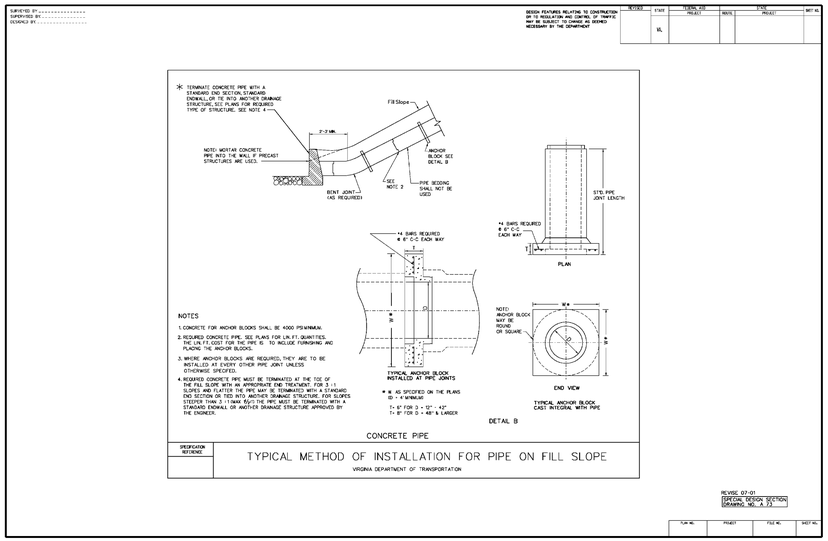
2. THIS PROPERTY IS NOT LOCATED WITHIN A SPECIAL FLOOD HAZARD AREA AS DESIGNATED BY FEMA. THIS OPINION IS BASED ON AN INSPECTION OF THE FLOOD INSURANCE RATE MAP AND HAS BEEN FIELD VERIFIED. SEE COMMUNITY PANEL MAP # 510190 0251 G, DATED SEPTEMBER 28, 2007.
3. SOURCE OF TOPOGRAPHY IS BY FIELD SURVEY BY LUMSDEN ASSOCIATES, P.C. IN NOVEMBER 2020.
4. NO TITLE REPORT WAS FURNISHED FOR THIS PROPERTY.

CONSTRUCTION NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT COUNTY OF ROANOKE AND VDOT STANDARDS AND SPECIFICATIONS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE OWNER AND THE ENGINEER OF ANY CHANGES OR CONDITIONS ATTACHED TO PERMITS OBTAINED FROM ANY AUTHORITY ISSUING PERMITS.
3. NO SUBSURFACE INVESTIGATIONS HAVE BEEN FURNISHED TO THE DESIGNING ENGINEER.
4. THE CONTRACTOR SHALL VISIT THE SITE AND VERIFY EXISTING CONDITIONS PRIOR TO STARTING CONSTRUCTION.
5. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL EXISTING UTILITIES PRIOR TO STARTING CONSTRUCTION.
6. SEE VDOT ROAD AND BRIDGE STANDARDS FOR CONCRETE CURB AND STORM DRAINAGE DETAILS.
7. THE CONTRACTOR AND OR OWNER SHALL PROVIDE A STORAGE CONTAINER FOR TEMPORARY STORAGE AND DISPOSAL OF LAND CLEARANCE DEBRIS AND BUILDING MATERIALS. ON-SITE BURIAL OF MATERIAL SHALL NOT BE PERMITTED.
8. DRAINAGE WAY TO BE KEPT FUNCTIONAL DURING CONSTRUCTION.
9. ROANOKE COUNTY ENGINEERING DEPARTMENT SHALL COORDINATE REMOVAL AND RELOCATION OF SMALL LANDSCAPING PLANTS CONFLICTING WITH CONSTRUCTION WITH INDIVIDUAL PROPERTY OWNERS.
10. ROANOKE COUNTY ENGINEERING DEPARTMENT SHALL COORINATE WITH SURVEYOR TO RESET PROPERTY CORNER MONUMENTATION LOST IN THE COURSE OF CONSTRUCTION.
11. TOPSOIL & MATERIAL STOCKPILE LOCATIONS TO BE DETERMINED BY ROANOKE COUNTY ENGINEERING AND CONTRACTOR.
12. ALL MAINTENANCE OF TRAFFIC SHALL BE IN ACCORDANCE WITH THE VIRGINIA WORK AREA PROTECTION MANUAL 2015 EDITION "REVISION 1 – APRIL 1, 2015.
13. CONTRACTOR TO CONTACT VDOT A MINIMUM OF TWO (2) WEEKS PRIOR TO STARTING CONSTRUCTION WITHIN RIGHT-OF-WAY TO COORDINATE SEQUENCE OF CONSTRUCTION AND THE NEED OF ANY LANE CLOSURES, SIGNAGE, MESSAGE BOARDS, ADVERTISMENTS, ETC.
14. ALL INLETS SHALL HAVE INVERT SHAPING AND ALL DI-3 CURB INLETS SHALL HAVE GUTTER WARPING AND A LOCAL DEPRESSION PER VDOT ROAD AND BRIDGE STANDARDS.
15. THE CONTRACTOR SHALL CONTACT THE T.O.C. PRIOR TO INSTALLING OR REMOVING TEMPORARY TRAFFIC CONTROL. TEL. 540-375-0170.

GRADING NOTES

1. AREAS TO BE GRADED SHALL BE CLEARED OF ALL VEGETATION, STRUCTURES, AND OTHER PHYSICAL FEATURES IN PREPARATION OF GRADING.
2. TOPSOIL SHALL BE REMOVED FROM THE CLEARED AREA AND STOCKPILED FOR FUTURE USE.
3. A QUALIFIED GEOTECHNICAL ENGINEER LICENSED IN THE STATE OF VIRGINIA, SHALL BE HIRED FOR THE CONSULTATION OF SOIL STABILITY, SLOPE STABILIZATION, SOIL COMPACTION, TESTING, AND OTHER SOIL CHARACTERISTICS. LUMSDEN ASSOCIATES ASSUMES NO RESPONSIBILITY OR LIABILITY RELATING TO FAILURES RESULTING FROM SAME.
4. NO CONSTRUCTION/FIELD REVISIONS OR CHANGES TO THE LIMITS OF CLEARING AND GRADING ARE ALLOWED WITHOUT THE APPROVAL OF THE CONSULTING ENGINEER AND VDOT.



STORM DRAIN ANCHOR BLOCK

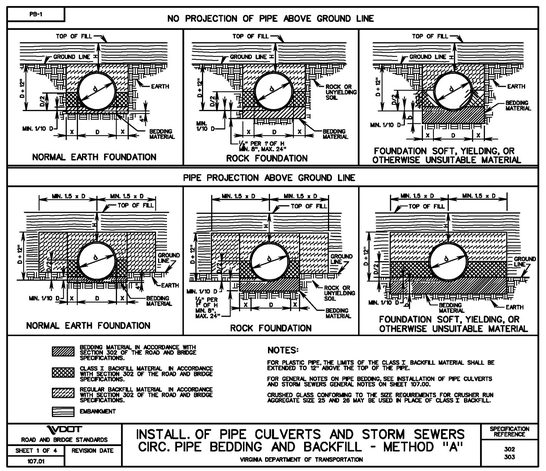
NO SCALE

SUMMARY OF QUANTITIES (IN RIGHT-OF-WAY)

DESCRIPTION	UNIT	QUANITITY
MOBILIZATION	L.S.	LUMP SUM
DEMOLITION	L.S.	LUMP SUM
EXCAVATION, UNCLASSIFIED	L.S.	LUMP SUM
30" CLASS III RCP	L.F.	64
DI-3C CURB INLET L = 6'	EACH	1
DI-3C CURB INLET L = 16'	EACH	1
ROADWAY PAVEMENT REPLACEMENT	S.Y.	79
CG-6 CURB REPLACEMENT	L.F.	54
EROSION CONTROL INLET PROTECTION	EACH	2

SUMMARY OF QUANTITIES (OUT OF RIGHT-OF-WAY)

DESCRIPTION	UNIT	QUANITITY
MOBILIZATION	L.S.	LUMP SUM
DEMOLITION	L.S.	LUMP SUM
EXCAVATION, UNCLASSIFIED	L.S.	LUMP SUM
30" CLASS III RCP	L.F.	91
30" ES-1	EACH	1
30" EW-1 W/ ENERGY DISSIPATOR	EACH	1
CLASS A1 RIP-RAP	C.Y.	21
DRIVEWAY PAVEMENT REPLACEMENT	S.Y.	61
UNDERGROUND UTILITY REPLACEMENT	L.S.	LUMP SUM
EROSION CONTROL SILT FENCE	L.F.	45
EROSION CONTROL DIVERSION DIKE	L.F.	75
EROSION CONTROL CULVERT INLET PROTECTION	EACH	1
EROSION CONTROL OUTLET PROTECTION	EACH	1
EROSION CONTROL TEMPORARY & PERMANENT SEEDING	ACRE	0.1



*NOTE:
1. No. 57 STONE IS NOT ACCEPTABLE FOR USE AS BEDDING AND/OR BACKFILL MATERIAL FOR STORM DRAIN PIPES CONSTRUCTED IN ROANOKE COUNTY.
2. PIPE TRENCHES SHALL BE COMPACTED WITH 21-B AGGREGATE.

Lumsden Associates, P.C.
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COMMONWEALTH OF VIRGINIA
ANDREW P. LUMSDEN
Lic. No. 052216
10/2/24
PROFESSIONAL ENGINEER

NOTES & DETAILS

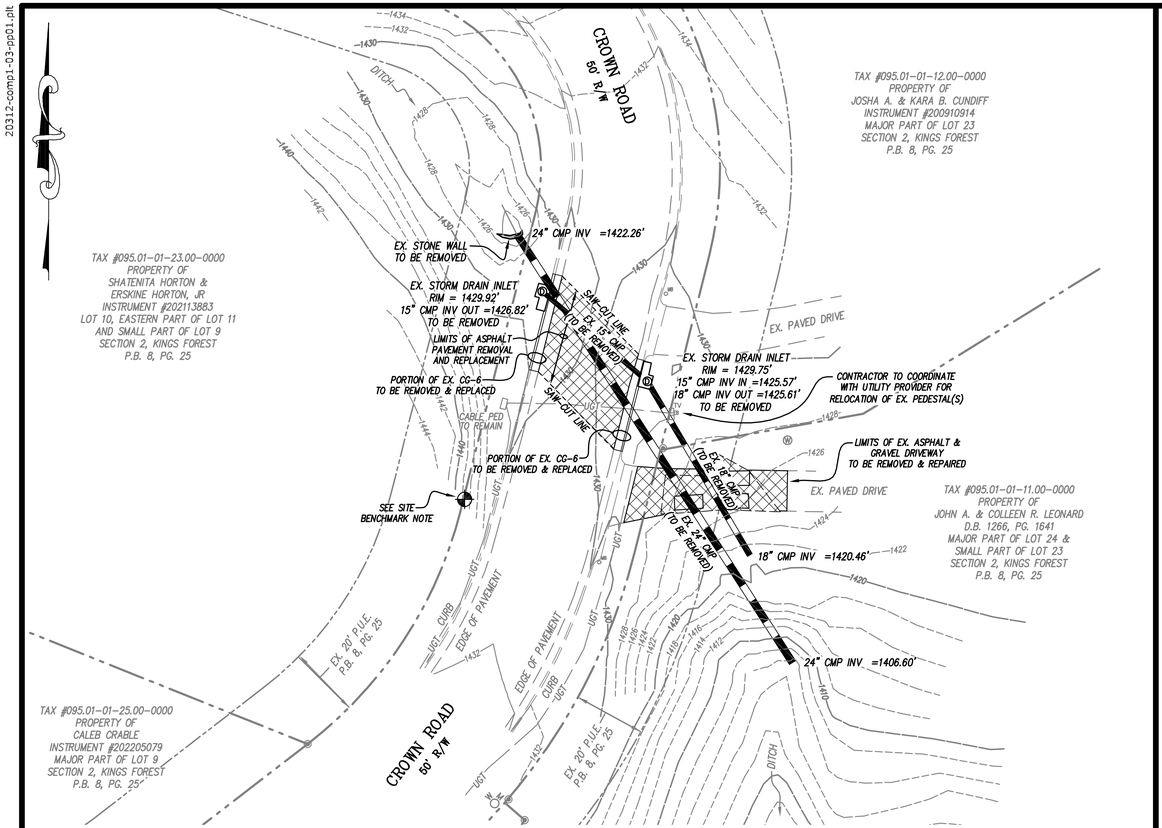
REVISIONS

NO.	DATE	DESCRIPTION
1		
2		
3		
4		
5		

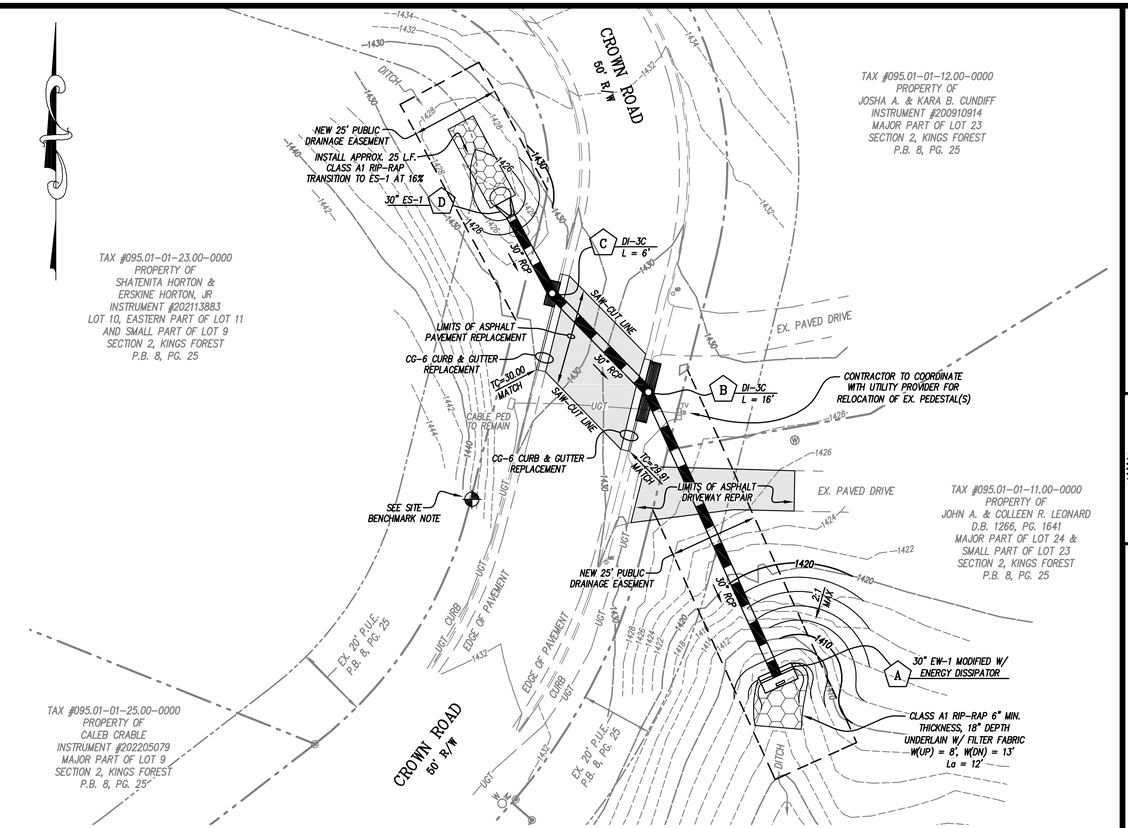
CROWN ROAD DRAINAGE IMPROVEMENTS

PREPARED FOR
ROANOKE COUNTY
ENGINEERING DEPARTMENT
WINDSOR HILLS MAGISTERIAL DISTRICT
ROANOKE COUNTY, VIRGINIA

DATE: October 2, 2024
SCALE: NONE
COMMISSION NO: 20-312
SHEET 2 OF 6



EXISTING CONDITIONS & DEMOLITION PLAN



STORM DRAINAGE IMPROVEMENTS PLAN

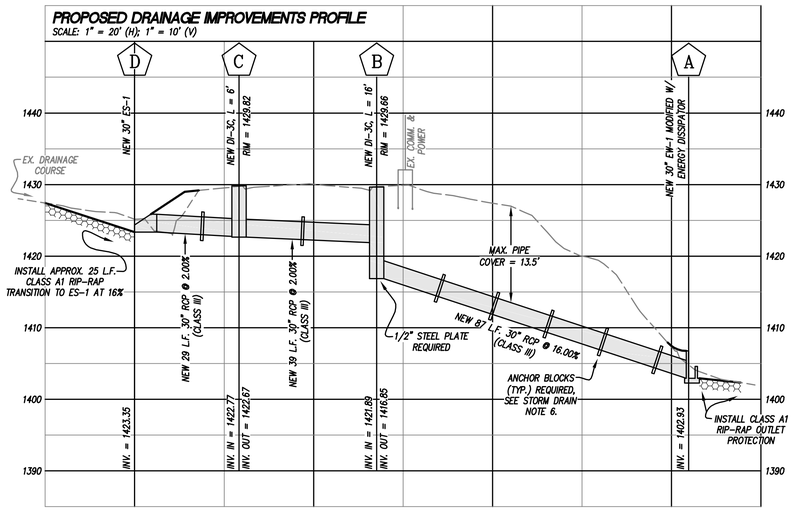
SITE BENCHMARK

BENCHMARK: EXISTING IRON PIN, ELEVATION = 1436.54'

NOTE: FIELD VERIFY BEFORE USE.

PROPOSED DRAINAGE IMPROVEMENTS PROFILE

SCALE: 1" = 20' (H); 1" = 10' (V)



STORM DRAIN NOTES:

1. ALL NEW STORM DRAIN PIPE SHOWN ON THIS PLAN IS 30" CLASS III RCP OR APPROVED EQUAL, EXCEPT WHERE OTHER DIAMETERS AND/OR MATERIALS ARE INDICATED.
2. ALL VDOT STANDARD STORM DRAIN INLET AND MANHOLE STRUCTURES SHALL INCLUDE IS-1 INLET SHAPING UNLESS INDICATED OTHERWISE.
3. WHERE STORM DRAIN MANHOLES ARE INDICATED AS STEP-DOWN STRUCTURES, CONTRACTOR SHALL INSTALL 1/2" STEEL PLATE ARMORING TO BASE OF MANHOLE, PER VDOT DDM1.
4. ALL DRAINAGE STRUCTURES DEEPER THAN 4.0 FEET SHALL HAVE STEPS (VDOT STD. ST-1) INSTALLED.
5. SAFETY SLABS (VDOT STD. SL-1) ARE REQUIRED IN ALL DRAINAGE STRUCTURES WITH A DEPTH OF 12.0 FEET OR GREATER. SPACING OF THE SAFETY SLABS SHOULD BE 8 TO 12 FEET WITH NO SLAB LOCATED WITHIN 6.0 FEET OF THE TOP OR BOTTOM OF THE STRUCTURE.
6. ANCHOR BLOCKS SHALL BE REQUIRED ON EACH PROPOSED PIPE SECTION. REFER TO VDOT DETAIL A-73 ON SHEET 2 FOR DETAILS REGARDING SPACING, SIZING, AND MATERIAL REQUIREMENTS.

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COMMONWEALTH OF VIRGINIA
ANDREW P. LUMSDEN
Lic. No. 052216
10/2/24
PROFESSIONAL ENGINEER

DEMOLITION PLAN, STORM DRAINAGE PLAN & PROFILE

CROWN ROAD DRAINAGE IMPROVEMENTS

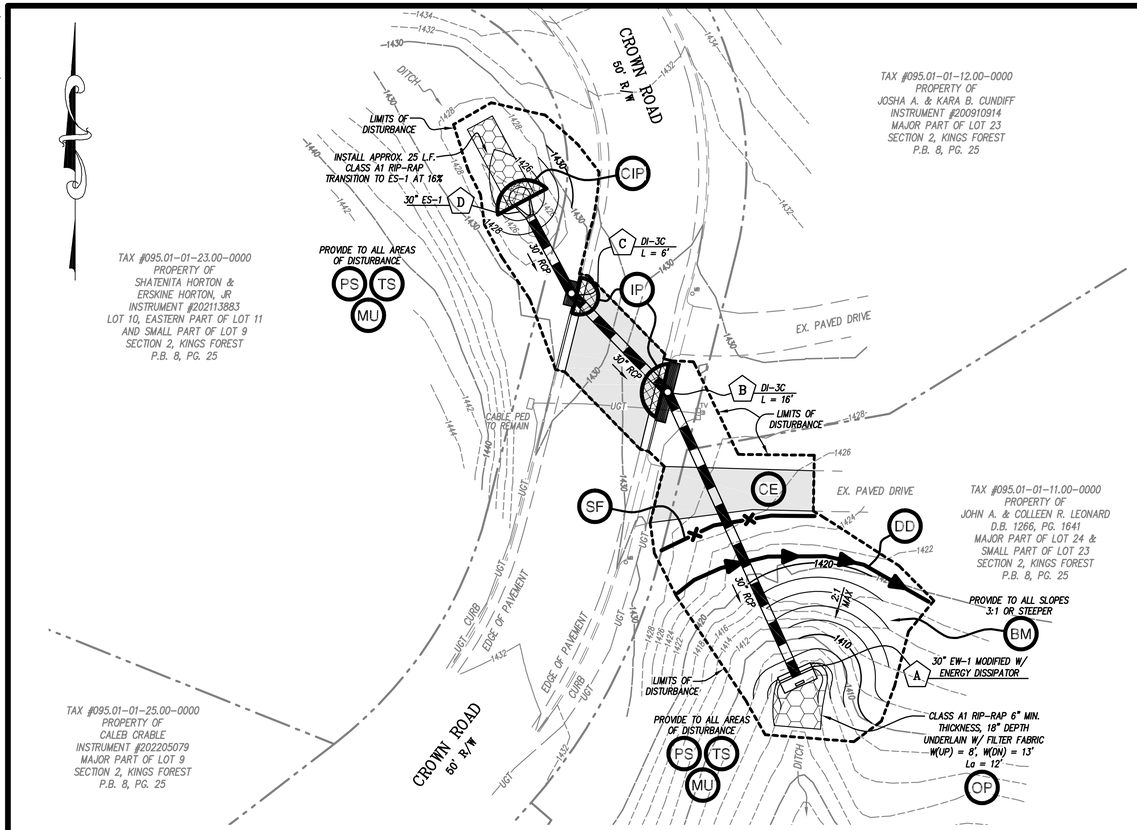
PREPARED FOR
ROANOKE COUNTY
ENGINEERING DEPARTMENT
WINDSOR HILLS MAGISTERIAL DISTRICT
ROANOKE COUNTY, VIRGINIA

REVISIONS

NO.	DATE	DESCRIPTION
1		
2		
3		
4		
5		

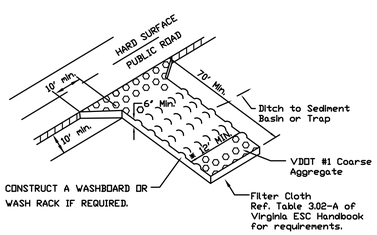
DATE: October 2, 2024
SCALE: 1" = 20'
COMMISSION NO: 20-312
SHEET 3 OF 6

APPROVED, 10/3/2024

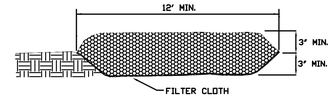


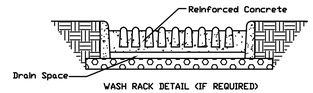
20' 0 20'
1" = 20'

STORM DRAINAGE IMPROVEMENTS PLAN



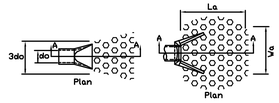
* MUST EXTEND FULL WIDTH OF INGRESS & EGRESS OPERATION.





CE TEMPORARY GRAVEL CONSTRUCTION ENTRANCE

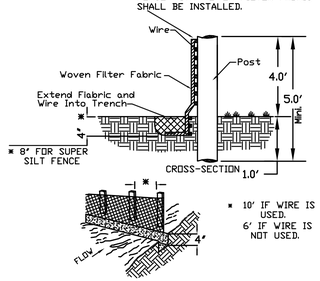
NO.	TITLE	KEY	SYMBOL
3.05	SILT FENCE	SF	
3.07	STORM DRAIN INLET PROTECTION	IP	
3.08	CULVERT INLET PROTECTION	CIP	
3.09	DIVERSION DIKE	DD	
3.18	OUTLET PROTECTION	OP	
3.31	TEMPORARY SEEDING	TS	
3.32	PERMANENT SEEDING	PS	
3.35	MULCHING	MU	
3.36	SOIL STABILIZATION BLANKETS AND MATTING	BM	TREAT. 1 TREAT. 2



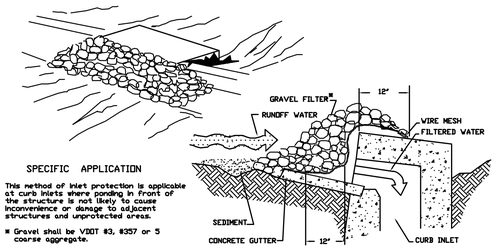
NOTES
1. Apron lining may be rip-rap, grouted rip-rap, or concrete.
2. La is the length of the rip-rap apron as calculated using plates 1.36d and 1.36e.
3. d = 1.5 times the maximum stone diameter, but not less than 6".

OP OUTLET PROTECTION

WHERE SUPER SILT FENCE IS SPECIFIED A GALVANIZED CHAIN LINK FENCE WITH WOVEN FILTER FABRIC SHALL BE INSTALLED.



SF CONSTRUCTION OF A SILT FENCE



SPECIFIC APPLICATION

This method of inlet protection is applicable at curb inlets where ponding in front of the structure is not likely to cause inconvenience or damage to adjacent structures and unprotected areas.

* Gravel shall be VDOT #3, #357 or 5 coarse aggregate.

IP GRAVEL CURB INLET SEDIMENT FILTER

TEMPORARY STABILIZATION

TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT (UNDISTURBED) FOR LONGER THAN 14 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.

TS TEMPORARY SEEDING MIXTURE

PLANTING DATES	SPECIES	RATE (LBS./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

LIME: 90 LB / 1000 SF PULVERIZED AGRICULTURAL LIMESTONE

FERTILIZER: 10–10–10 @ 10 LB / 1000 SF

PERMANENT STABILIZATION

ALL AREAS DISTURBED BY CONSTRUCTION WILL BE STABILIZED WITH PERMANENT SEEDING WITHIN 7 DAYS OR IMMEDIATELY FOLLOWING FINISH GRADING. SEEDING WILL BE DONE ACCORDING TO STANDARD AND SPECIFICATION 3.32 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK. PERMANENTLY SEEDED AREAS SHALL BE PROTECTED DURING ESTABLISHMENT WITH STRAW MULCH.

PS PERMANENT SEEDING MIXTURE

THIS PERMANENT SEEDING MIXTURE IS ONLY REQUIRED FOR ESC PURPOSES FOR SITES LEFT DORMANT > 1 YEAR.

SEEDING AREA:		SEEDING RATE:
GENERAL TURF		
	K–31 FESCUE	200 lbs/Ac
	(Optional) PERENNIAL RYEGRASS	20 lbs/Ac
GENERAL SLOPE (3:1 or less)		
	K–31 FESCUE	128 lbs/Ac
	RED TOP GRASS	2 lbs/Ac
	SEASONAL NURSE CROP	20 lbs/Ac
STEEP SLOPE (Greater than 3:1)		
	K–31 FESCUE	108 lbs/Ac
	RED TOP GRASS	2 lbs/Ac
	SEASONAL NURSE CROP	20 lbs/Ac
	CROWNVETCH	20 lbs/Ac

SEASONAL NURSE CROP SCHEDULE:

March, April – May 15th	ANNUAL RYE
May 16th – August 15th	FOXTAIL MILLET
August 16th – September, October	ANNUAL RYE
November – February	WINTER RYE

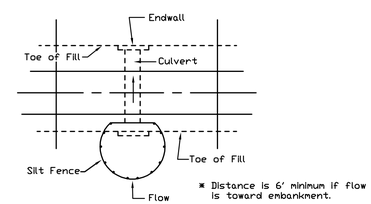
LIME: 90 LB / 1000 SF PULVERIZED AGRICULTURAL LIMESTONE

FERTILIZER: 10–20–10 @ 12 LB / 1000 SF

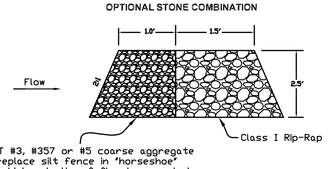
MULCH: IF REQUIRED, SHALL BE USED OVER ALL SEEDED AREAS AND SHALL BE APPLIED IN ACCORDANCE WITH SECTION 1.75 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.

SOIL CONDITIONING: INCORPORATION OF LIME AND FERTILIZER, SELECTION OF CERTIFIED SEED, MULCHING, MAINTENANCE OF NEW SEEDLINGS, AND RESEEDING SHALL BE IN ACCORDANCE WITH SPECIFICATIONS CONTAINED WITHIN THE VIRGINIA SOIL EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION. ADDITIONAL SEEDING TO BE PERFORMED AS REQUIRED BY THE INSPECTOR.

SEED APPLICATION: APPLY SEED UNIFORMLY WITH A CYCLONE SEEDER, DRILL, CULTIPACKER SEEDER, OR HYDROSEEDER ON A FIRM, FRIABLE, SEEDBED. MAXIMUM SEEDING DEPTH SHALL BE 1/4 INCH.

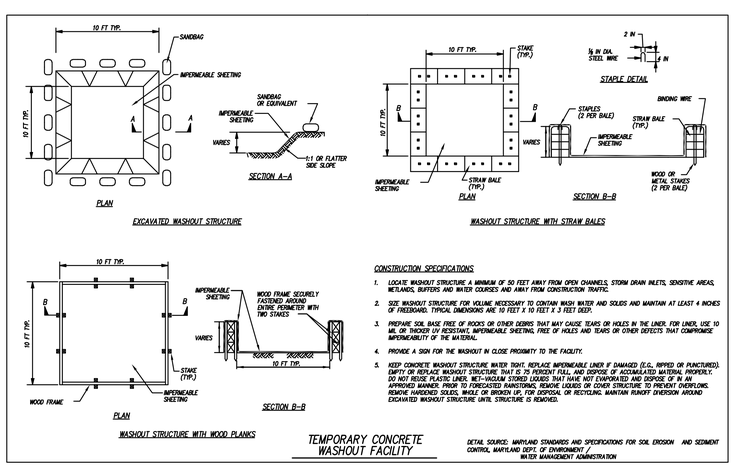


OPTIONAL STONE COMBINATION



VDOT #3, #357 or #5 coarse aggregate to replace silt fence in 'horseshoe' when high velocity of flow is expected

CIP SILT FENCE CULVERT INLET PROTECTION



CONSTRUCTION SPECIFICATIONS

1. LOCATE WASHOUT STRUCTURE A MINIMUM OF 50 FEET AWAY FROM OPEN CHANNELS, STORM DRAIN INLETS, SENSITIVE AREAS, WETLANDS, BUFFERS AND WATER COURSES AND AWAY FROM CONSTRUCTION TRAFFIC.
2. SIZE WASHOUT STRUCTURE FOR VOLUME NECESSARY TO CONTAIN WASH WATER AND SOLIDS AND MAINTAIN AT LEAST 4 INCHES OF FREEBOARD. TYPICAL DIMENSIONS ARE 10 FEET X 10 FEET X 2 FEET DEEP.
3. PREPARE SOIL BASE FREE OF ROCKS OR OTHER DEBRIS THAT MAY CAUSE TEARS OR HOLES IN THE LINER. FOR LINER, USE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING, FREE OF HOLES AND TEARS OR OTHER DEFECTS THAT COMPROMISE IMPERMEABILITY OF THE MATERIAL.
4. PROVIDE A SIGN FOR THE WASHOUT IN CLOSE PROXIMITY TO THE FACILITY.
5. KEEP CONCRETE WASHOUT STRUCTURE WATER TIGHT, REPLACE IMPERMEABLE LINER IF DAMAGED (E.G., RIPPED OR PUNCTURED). EMPTY OR REPLACE WASHOUT STRUCTURE THAT IS 75 PERCENT FULL AND DISPOSE OF ACCUMULATED MATERIAL PROPERLY. DO NOT REUSE PLASTIC LINER. WET–VACUUM STORED LIQUIDS THAT HAVE NOT EVAPORATED AND DISPOSE OF IN AN APPROVED MANNER. PRIOR TO FORESEEABLE HARDENING, REMOVE LIQUIDS OR COVER STRUCTURE TO PREVENT OVERFLOWS. REMOVE HARDENED SOLIDS, WHOLE OR BROKEN UP, FOR DISPOSAL OR RECYCLING. MAINTAIN RUNOFF DIVERSION AROUND EXCAVATED WASHOUT STRUCTURE UNTIL STRUCTURE IS REMOVED.

DETAIL SOURCE: MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, MARYLAND DEPT. OF ENVIRONMENT / WATER MANAGEMENT ADMINISTRATION

TEMPORARY CONCRETE WASHOUT FACILITY

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COMMONWEALTH OF VIRGINIA
ANDREW P. LUMSDEN
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10/2/24
PROFESSIONAL ENGINEER

EROSION & SEDIMENT CONTROL PLAN

CROWN ROAD DRAINAGE IMPROVEMENTS

PREPARED FOR
ROANOKE COUNTY
ENGINEERING DEPARTMENT
WINDSOR HILLS MAGISTERIAL DISTRICT
ROANOKE COUNTY, VIRGINIA

REVISIONS

NO.	DATE	DESCRIPTION
1		
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DATE: October 2, 2024
SCALE: 1" = 20'
COMMISSION NO: 20-312
SHEET 4 OF 6

APPROVED, 10/3/2024

2312-comp1-05-en01.plt

EROSION CONTROL NARRATIVE

PROJECT DESCRIPTION
THE PROJECT AREA IS LOCATED ALONG CROWN ROAD IN ROANOKE COUNTY WITH THE MAJORITY OF THE CONSTRUCTION WITHIN TAX MAP No.(s) 095.01-01-23.00 AND 095.01-01-11.00. THE PROPOSED CONSTRUCTION FOR THIS PROJECT CONSISTS OF DRAINAGE IMPROVEMENTS TO HELP ALLEVIATE RUNOFF CONCERNS WITH EXISTING INADEQUATE AND FAILING STORM DRAINAGE SYSTEM. THE TOTAL DISTURBED AREA IS APPROXIMATELY 6,950 S.F. (0.16 ACRES)

EXISTING SITE CONDITIONS
THE MAJORITY OF THE PROJECT CONSTRUCTION WILL BE PERFORMED WITHIN THE EXISTING DRAINAGE WAY. THIS DRAINAGE WAY COLLECTS AND CONVEYS RUNOFF FROM THE NORTHWEST AND ALONG CROWN ROAD, THEN DISCHARGES THE RUNOFF TO THE SOUTH OF CROWN ROAD. THE IMPROVEMENTS ARE PROPOSED TO MAKE THE EXISTING SYSTEM MORE EFFICIENT WHILE MAKING REPAIRS AS NEEDED.

ADJACENT AREAS
THE PROJECT LIMITS ARE LOCATED WITHIN THE RIGHT-OF-WAY OF CROWN ROAD AND ON BOTH THE NORTHWEST AND SOUTH EAST OF CROWN ROAD (BEING RESIDENTIAL PROPERTY). THE MAJORITY OF THE UPGRADIENT DRAINAGE SHED IS UNDEVELOPED WOODLANDS WITH A FEW SINGLE FAMILY RESIDENTIAL LOTS.

OFFSITE AREAS
NO OFFSITE AREAS ARE CURRENTLY ASSOCIATED WITH THIS PLAN. ALL MATERIAL THAT IS REMOVED FROM OR DELIVERED TO THIS SITE IN ASSOCIATION WITH THIS PROJECT SHALL BE FROM A PERMITTED SITE. THE LOCATION OF ALL OFF-SITE FILL OR BORROW AREAS ASSOCIATED WITH THE CONSTRUCTION PROJECT WILL BE PROVIDED TO ROANOKE COUNTY DEPARTMENT OF COMMUNITY DEVELOPMENT. AN EROSION CONTROL PLAN OR MEASURES MAY BE REQUIRED FOR THIS AREA.

SOILS
SOILS INFORMATION IS BASED ON AN INSPECTION OF THE USDA WEB SOIL SURVEY AND HAS NOT BEEN FIELD VERIFIED. THE ONSITE SOILS ARE INDICATED TO BE AS FOLLOWS:

EDNEYVILLE FINE SANDY LOAM, 25 TO 55% SLOPES (MAP UNIT 16E)

EDNEYVILLE SOIL:
HYDROLOGIC SOIL GROUP: A
DEPTH THE RESTRICTIVE FEATURE: MORE THAN 80 INCHES
DEPTH TO WATER TABLE: MORE THAN 80 INCHES
DRAINAGE CLASS: WELL DRAINED
AVAILABLE WATER CAPACITY: MODERATE
SOIL PROFILE: 0 TO 4 INCHES: FINE SANDY LOAM, 4 TO 31 INCHES: SANDY LOAM, 31 TO 62 INCHES: SANDY LOAM.

CRITICAL AREAS
THE CONTRACTOR SHALL TAKE SPECIAL CARE TO ENSURE THAT SEDIMENT IS NOT ALLOWED TO FLOW INTO EITHER THE NEW STORM DRAIN OR THE EXISTING DOWNSTREAM RECEIVING CHANNEL. ENSURE THAT ALL ESC MEASURES ARE STABILIZED AND FUNCTIONING TO MINIMIZE THE POTENTIAL FOR ANY SEDIMENT LEAVING THE SITE.

MINIMUM STANDARDS
REFER TO DEQ MINIMUM STANDARDS.

EROSION AND SEDIMENT CONTROL MEASURES

CONSTRUCTION ENTRANCE (3.02) – A STONE CONSTRUCTION ENTRANCE WILL BE INSTALLED TO MINIMIZE THE AMOUNT OF MUD TRANSPORTED INTO EXISTING ROADS.

SILT FENCE (3.05) – SILT FENCE WILL BE INSTALLED AT THE LOWER ENDS OF THE PROJECT SITE TO INTERCEPT SEDIMENT LADEN RUN-OFF PRIOR TO EXITING THE SITE.

INLET PROTECTION (3.07) – INLET PROTECTION WILL BE INSTALLED AT EACH STORM DRAIN INLET TO MINIMIZE THE AMOUNT OF SEDIMENT LADEN RUNOFF FROM ENTERING THE STORM DRAIN SYSTEM.

TEMPORARY DIVERSION DIKE (3.09) – A TEMPORARY RIDGE OF COMPACTED SOIL WILL BE CONSTRUCTED TO DIVERT UPSLOPE RUNOFF AWAY FROM A DISTURBED AREA, AND/OR TO DIVERT SEDIMENT LADEN RUNOFF FROM A DISTURBED AREA TO A SEDIMENT TRAPPING MEASURE.

OUTLET PROTECTION (3.18) – THE INSTALLATION OF RIP RAP CHANNEL SECTIONS BELOW STORM DRAIN OUTLETS.

TEMPORARY SEEDING (3.31) – TEMPORARY SEEDING SHALL BE APPLIED TO TEMPORARY DIVERSION DIKES, TOPSOIL STOCKPILES, AND ALL AREAS TO BE ROUGH GRADED, BUT NOT FINISHED GRADED DURING THE INITIAL PHASE OF CONSTRUCTION. TEMPORARY SEEDING SHALL BE FAST GERMINATING, TEMPORARY VEGETATION AND INSTALLED IMMEDIATELY FOLLOWING GRADING, OR INSTALLATION IF A TEMPORARY MEASURE. SEE ALSO MINIMUM STANDARDS.

PERMANENT SEEDING (3.32) – PERMANENT SEEDING SHALL BE INSTALLED ON ALL DISTURBED AREAS OF THE SITE NOT OTHERWISE STABILIZED.

MULCHING (3.35) – ALL DISTURBED AREAS SHALL BE MULCHED AFTER SEEDING. STRAW MULCH SHALL BE APPLIED AT A RATE OF TWO TONS PER ACRE AND ANCHORED WITH 750 LBS PER ACRE OF FIBER MULCH OVER THE SEEDED AREA.

SOIL STABILIZATION BLANKETS & MATTING (3.36) –THE INSTALLATION OF PROTECTIVE BLANKETS (TYPE 1) ON A PREPARED PLANTING OF A STEEP SLOPE.

PERMANENT STABILIZATION
AREAS NOT COVERED BY LANDSCAPING OR OTHER PERMANENT HARD SURFACE SHALL BE STABILIZED WITH PERMANENT SEEDING. THE CONTRACTOR SHALL ENSURE THAT A STRONG STAND OF GRASS IS ESTABLISHED BEFORE THE REMOVAL OF EROSION CONTROL MEASURES.

MAINTENANCE:
ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED BI-WEEKLY AND AFTER EVERY RUNOFF PRODUCING RAINFALL. A LOG OF DATES AND INSPECTIONS SHALL BE KEPT. ANY DEFICIENCIES THAT ARE FOUND SHALL BE CORRECTED IMMEDIATELY. ACCUMULATED SEDIMENT AT TRAPPING MEASURES SHALL BE ROUTINELY REMOVED.

EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED UNTIL AFTER ALL DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED AND THEN TEMPORARY MEASURES PROPERLY REMOVED. REMOVAL OF ESC MEASURES MUST BE APPROVED BY ROANOKE COUNTY BEFORE REMOVED.

STORMWATER MANAGEMENT CONSIDERATION:
THE TOTAL PROJECT DISTURBANCE IS LESS THAN 1 ACRE AND THEREFORE DOES NOT REQUIRE STORMWATER MANAGEMENT COMPLIANCE. ALTHOUGH, THE DRAINAGE IMPROVEMENTS SHOWN WITH THESE PLANS ARE DESIGNED TO RETURN THE PROPERTY TO ITS ORIGINAL HYDROLOGIC STATE. THEREFORE, THE PROPOSED IMPROVEMENTS OF THIS SITE DO NOT ALTER EXISTING DRAINAGE PATTERNS AND DOES NOT INCREASE THE RUNOFF VOLUME, VELOCITY, OR PEAK FLOW RATES.

CONTRACTOR SHALL PAY PARTICULAR ATTENTION TO THE FOLLOWING 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. APPLY SEEDING MIXTURES IN ACCORDANCE WITH SPECIFICATIONS 3.31 AND 3.32 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH) TO ALL AREAS THAT DO NOT HAVE A NON-ERODABLE SURFACE AS SHOWN ON THE PLAN.
2. During construction of the project, soil stock piles 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. NO ONSITE STOCKPILE IS CURRENTLY PLANNED FOR THIS PROJECT.
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, mature enough to survive and will inhibit erosion. SEE MINIMUM STANDARD 1.
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. INSTALL EROSION CONTROL MEASURES AS OUTLINED IN THE CONSTRUCTION SEQUENCE.
5. Stabilization measures shall be applied to earthen structures such as dams, dikes and diversions immediately after installation. INSTALL DIVERSION DIKES AS PROPOSED WITH THIS PLAN.
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.

   NOT APPLICABLE. NO SEDIMENT TRAPS OR SEDIMENT BASINS ARE PROPOSED WITH THIS PLAN.
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. NOT APPLICABLE. NO CUT OR FILL SLOPES ARE PROPOSED WITH ON THIS PLAN.
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. NOT APPLICABLE. NO CUT OR FILL SLOPES ARE PROPOSED WITH ON THIS PLAN.
9. Whenever water seeps from a slope face, adequate drainage or other protection shall be provided. THE CONTRACTOR SHALL CONTACT THE ENGINEER IMMEDIATELY UPON THE DISCOVERY OF ANY WATER SEEPS.
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. INLET PROTECTION SHALL BE INSTALLED AS SHOWN ON THIS PLAN.
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. OUTLET PROTECTION IS PROPOSED AT THE OUTLET OF STORM DRAINAGE PIPES AS SHOWN ON THIS PLAN.
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. NOT APPLICABLE. NO WORK WITHIN LIVE WATERCOURSES IS PROPOSED FOR THIS PROJECT.
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. NOT APPLICABLE. NO WORK WITHIN LIVE WATERCOURSES IS PROPOSED FOR THIS PROJECT.
14. All applicable federal, state and local regulations pertaining to working in or crossing live watercourses shall be met. NOT APPLICABLE. NO WORK WITHIN LIVE WATERCOURSES IS PROPOSED FOR THIS PROJECT.
15. The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed. NOT APPLICABLE. NO WORK WITHIN LIVE WATERCOURSES IS PROPOSED FOR THIS PROJECT.
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 these regulations.
   f. Applicable safety regulations shall be complied with.

   INSTALL STORM DRAINS PER THE ABOVE REQUIREMENTS.
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. ADEQUATE MEANS SHALL BE PROVIDED FOR THE CLEANING OF MUD AND SEDIMENT FROM CONSTRUCTION VEHICLES PRIOR TO ENTERING PUBLIC STREETS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ANY MUD AND SEDIMENT TRANSPORTED FROM THIS SITE ONTO THE PUBLIC STREETS.
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 local program 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. EROSION & SEDIMENT CONTROL MEASURES SHALL NOT BE REMOVED WITHOUT ROANOKE COUNTY PERMISSION AND SHALL BE IN ACCORDANCE WITH ABOVE REQUIREMENTS.

MINIMUM STANDARDS CONTINUED:

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 man-made channels and shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels:
   a. Concentrated stormwater runoff leaving a development site shall be discharged directly into an adequate natural or man-made 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 one hundred 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 man-made channels shall be analyzed by the use of a ten-year storm to verify that stormwater will not overtop its 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 ten-year storm to verify that stormwater will be contained within the pipe or system.
   c. If existing natural receiving channels or previously constructed man-made channels or pipes are not adequate, the applicant shall:
      (1) Improve the channels to a condition where a ten-year storm will not overtop the banks and a two-year storm will not cause erosion to channel bed or banks; or
      (2) Improve the pipe or pipe system to a condition where the ten-year storm is contained within the appurtenances;
      (3) Develop a site design that will not cause the pre-development peak runoff rate from a two-year storm to increase when runoff outfalls into a natural channel or will not cause the pre-development peak runoff rate from a ten-year storm to increase when runoff outfalls into a man-made channel; or
      (4) Provide a combination of channel improvement, stormwater detention or other measures which is satisfactory to the VESCP 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 of the subject project.
   f. If the applicant chooses an option that includes stormwater detention, he shall obtain approval from the VESCP of 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 dissipator 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 on-site 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 runoff 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 which 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 man-made channels shall satisfy the flow rate capacity and velocity requirements for natural and man-made channels if the practices are designed to
      (i) detain the water quality volumes and release it over 48 hours;
      (ii) detain and release over 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, 2, and 10-year, 24-hour storms to a level that is less than or equal to the peak flow rate from the site assuming it was in 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 it was in a good forested condition divided by the runoff volume from the site in its proposed condition, and shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels as defined in any regulations promulgated pursuant to 62.1-44.15:54 or 62.1-44.15:65 of the Act.
   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 Act and this subsection shall be satisfied by compliance with water quantity requirements in the Stormwater Management Act (62.1-44.15:24 et seq. of the Code of Virginia) and attendant regulations, unless such land-disturbing activities are in accordance with 9VAC25-870-48 of the Virginia Stormwater Management Program (VSMP) Permit Regulations.
   n. Compliance with the water quantity minimum standards set out in 9VAC25-870-66 of the Virginia Stormwater Management Program (VSMP) Permit Regulations shall be deemed to satisfy the requirements of Minimum Standard 19.

THE DRAINAGE IMPROVEMENTS SHOWN WITH THESE PLANS ARE DESIGNED TO RETURN THE PROPERTY TO ITS ORIGINAL HYDROLOGIC STATE. THEREFORE, THE PROPOSED IMPROVEMENTS OF THIS SITE DO NOT ALTER EXISTING DRAINAGE PATTERNS AND DOES NOT INCREASE THE RUNOFF VOLUME, VELOCITY, OR PEAK FLOW RATES.

COMPLIANCE WITH MS-19 IS BY SUBSECTION c(2) OF THE ABOVE REQUIREMENTS. THE DRAINAGE IMPROVEMENTS PROPOSED WITH THIS PROJECT DO NOT PROPOSE ANY INCREASE IN PEAK RUNOFF RATES. THEREFORE, THE DOWNSTREAM NATURAL WATERCOURSES WILL NOT SEE AN INCREASE IN POST-DEVELOPMENT FLOW FOR THE 2-YEAR STORM EVENT.

GENERAL EROSION AND SEDIMENT CONTROL NOTES,
ROANOKE COUNTY, VIRGINIA

ES-1 UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS VR 625-02-00 EROSION AND SEDIMENT CONTROL REGULATIONS.

ES-2 THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE ONSITE PRECONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO THE FINAL INSPECTION.

ES-3 ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.

ES-4 A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN AND NARRATIVE, AS WELL AS A COPY OF THE LAND DISTURBING PERMIT, SHALL BE MAINTAINED ON THE SITE AT ALL TIMES. THE EROSION AND SEDIMENT CONTROL ADMINISTRATOR WILL DELIVER THESE MATERIALS AT THE PRECONSTRUCTION CONFERENCE.

ES-5 PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO, OFF-SITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.

ES-6 THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.

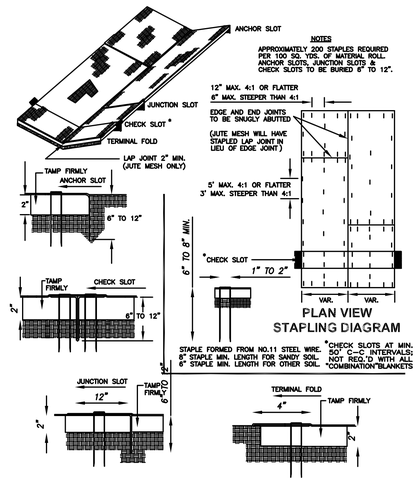
ES-7 ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING THE LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.

ES-8 DURING DEWATERING OPERATION, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.

ES-9 THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY. AN INSPECTION REPORT MUST BE COMPLETED ONCE EVERY FIVE WORKING DAYS, BEGINNING WITH COMMENCEMENT OF THE LAND DISTURBING ACTIVITY; AND WITHIN 48 HOURS OF ANY RUNOFF-PRODUCING RAINFALL EVENT. REPORTS MUST BE FILED IN THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP), WHICH MUST BE KEPT ONSITE. FAILURE TO COMPLETE A REPORT WILL BE GROUNDS FOR IMMEDIATE REVOCATION OF THE LAND DISTURBING PERMIT. A STANDARD INSPECTION REPORT FORM WILL BE SUPPLIED, WHICH SHOULD BE COPIED AS NECESSARY. THIS PROVISION IN NO WAY WAIVES THE RIGHT OF ROANOKE COUNTY PERSONNEL TO CONDUCT SITE INSPECTIONS, NOR DOES IT DENY THE RIGHT OF THE PERMITTEE (S) TO ACCOMPANY THE INSPECTOR (S).

CONSTRUCTION SEQUENCE

1. Contractor's Certified Responsible Land Disturber shall be named and provide a copy of his RLD Certificate to Roanoke County Department of Community Development at least two days prior to the pre-construction meeting. RLD shall also attend pre-con meeting.
2. A DEQ General Construction Permit is not required for this project since the total proposed disturbed area is less than 1 acre.
3. Begin construction by installing diversions and silt fence as shown.
4. Existing paved driveway shall serve as construction entrance for the project. Additional stone construction entrance may be utilized as needed.
5. Contractor shall attempt to perform construction operations during DRY CONDITIONS ONLY to minimize downstream sediment transport. Cofferdam method of pipe installation is allowable if dry working conditions cannot be met.
6. Sawcut existing roadway and driveway and begin removal of existing pipe system and associated storm drain structures.
7. Begin installation of new 30" pipe system as shown per plan.
8. As pipe installation is completed, install culvert inlet protection and curb inlet protection until site stabilization is complete.
9. Install culvert outlet protection rip-rap as shown per plan.
10. Install temporary and permanent seeding as needed to achieve site stabilization.
11. Install roadway pavement and curb/gutter replacement along with driveway pavement replacement.
12. Temporary erosion and sediment control measures shall be removed after those affected areas have been served by other measures or brought to final grade and permanently stabilized with improvements or established vegetation and approved by Roanoke County.



B/M **SOIL STABILIZATION BLANKET AND MATTING**

TYPICAL TREATMENT – 1
(SOIL STABILIZATION BLANKET)
INSTALLATION CRITERIA

Install on all slopes 3:1 or steeper.

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Lic. No. 052216
10/2/24
PROFESSIONAL ENGINEER

EROSION & SEDIMENT CONTROL NOTES AND DETAILS

CROWN ROAD DRAINAGE IMPROVEMENTS

PREPARED FOR
ROANOKE COUNTY
ENGINEERING DEPARTMENT
WINDSOR HILLS MAGISTERIAL DISTRICT
ROANOKE COUNTY, VIRGINIA

REVISIONS

NO.	DATE	DESCRIPTION
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DATE: October 2, 2024
SCALE: AS SHOWN
COMMISSION NO: 20-312
SHEET 5 OF 6

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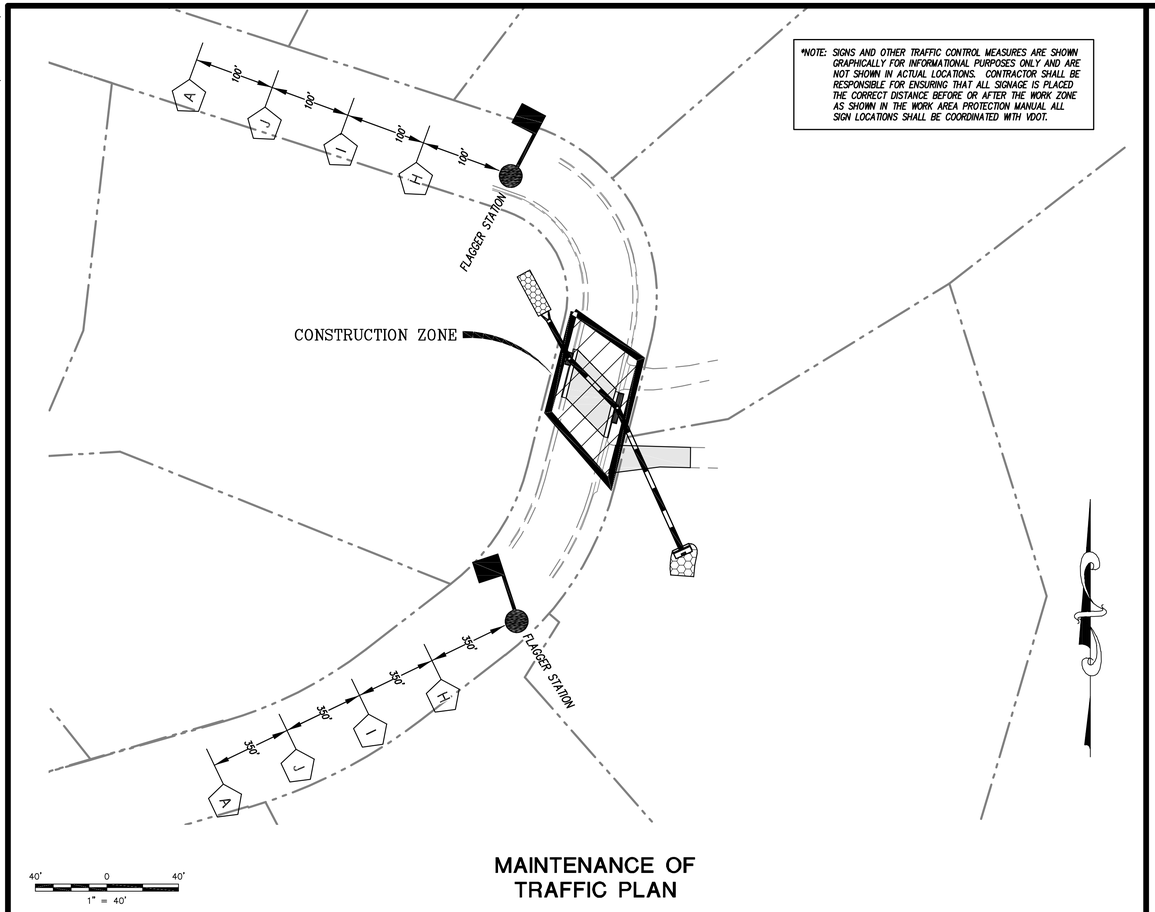
APPROVED, 10/3/2024



MAINTENANCE OF TRAFFIC PLAN

TRANSPORTATION MANAGEMENT PLAN

TEMPORARY TRAFFIC CONTROL PLAN

1. PROJECT CATEGORY (MINIMUM TMP REQUIREMENTS)

A. THIS WILL BE A TYPE A CATEGORY 1 PROJECT (MODERATE LEVEL OF CONSTRUCTION)
   i. THIS WILL BE PERMITTED WORK.
   ii. THIS PROJECT WILL INVOLVE TRAFFIC CONTROL TO ENSURE SAFE TRAVEL AROUND THE WORK ZONES.

2. TEMPORARY TRAFFIC CONTROL (TTC) PLAN

A. MAJOR COMPONENTS WILL CONSIST OF GENERAL NOTES, TYPICAL SECTIONS AND SPECIAL DETAILS AS NECESSARY.
B. ALL SIGNS, STRIPING, AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH VIRGINIA WORK AREA PROTECTION MANUAL AND MUTCD STANDARDS.

PUBLIC COMMUNICATION PLAN

CRISIS COMMUNICATION PLAN:

AS WITH ANY CRISIS, EMERGENCY RESPONDERS (911) SHOULD BE NOTIFIED IMMEDIATELY IF NECESSARY.

THE SALEM RESIDENT ENGINEER OR HIS DESIGNEE SHOULD BE NOTIFIED IMMEDIATELY.

IF THE EMERGENCY IS TRAFFIC RELATED, THE SALEM RESIDENT ENGINEER OR HIS DESIGNEE SHOULD IMMEDIATELY NOTIFY THE TRAFFIC OPERATIONS CENTER AT 540-375-0170.

THE SALEM RESIDENT ENGINEER, DISTRICT COMMUNICATION OFFICE AND TRAFFIC OPERATIONS CENTER 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 BELOW, AND OTHER RESOURCES IF NECESSARY.

CONTACTS:
A. ROANOKE COUNTY:
   1. ROANOKE COUNTY FIRE & EMS: 540-562-3625 (NON EMERGENCY)
   2. ROANOKE COUNTY POLICE DISPATCH: 540-562-3625 (NON EMERGENCY)
   3. ROANOKE COUNTY SCHOOLS: 540-562-3900
   4. ROANOKE COUNTY BOARD OF SUPERVISORS: 540-772-2003

B. VIRGINIA STATE POLICE (SALEM HEADQUARTERS): 540-777-8701

MAINTENANCE OF TRAFFIC NOTES:

1. IT IS NOT THE INTENT OF THIS PLAN TO ENUMERATE EVERY DETAIL WHICH MUST BE CONSIDERED IN THE CONSTRUCTION OF EACH WORK ZONE, BUT ONLY TO SHOW THE GENERAL FEATURES NECESSARY TO PROVIDE FOR PROPER HANDLING OF TRAFFIC. THE CONSTRUCTION TECHNIQUES ULTIMATELY EMPLOYED BY THE CONTRACTOR ARE TO BE APPROVED BY VDOT. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE FOR SAFE TRAVEL AROUND THE WORK ZONES.
2. ONE PHASES OF WORK EXISTS WITH THIS PLAN:

   CONSTRUCTION OF PROPOSED STORM DRAIN IMPROVEMENTS ALONG CROWN ROAD. WORK WITHIN THIS PHASE SHALL BE IN ACCORDANCE WITH TTC-23.0 FOR THE APPROPRIATE LANE CLOSURES USING FLAGGERS.

3. CONTRACTOR SHALL CONTACT THE VDOT REPRESENTATIVE IN WRITING WITH A WORK SCHEDULE 2-WEEKS BEFORE STARTING WORK. THE VDOT REPRESENTATIVE WILL DETERMINE IF POLICE PATROL IS NECESSARY FOR TRAFFIC CONTROL.
4. THE CONTRACTOR SHALL COORDINATE THE SEQUENCE OF CONSTRUCTION WITH VDOT.
5. SIGN SPACING MAY BE ADJUSTED TO FIT FIELD CONDITIONS WITH VDOT APPROVAL.
6. ALL PAVEMENT MARKINGS CONFLICTING WITH TRAFFIC PATTERNS SHALL BE ERADICATED AND RE-STRIPED AS NECESSARY.
7. WHEN WORK IS NOT BEING PERFORMED, THE CLEAR ZONE OF THE ROADWAY SHALL BE FREE OF STORED MATERIALS AND PARKED EQUIPMENT.
8. ALL WORK IS TO BE PERFORMED IN ACCORDANCE WITH THE MUTCD (LATEST EDITION), THE VIRGINIA WORK AREA PROTECTION MANUAL (LATEST EDITION), AND AS DIRECTED BY VDOT AND SHALL COMPLY WITH ALL REGULATIONS PROVIDED IN THE ENTRANCE PERMIT.
9. THE POSTED SPEED LIMIT ALONG CROWN ROAD IS 25 MPH. ALL TAPER LENGTHS, BUFFER LENGTHS, AND CHANNELIZING SHALL BE BASED ON THIS SPEED.
10. SAFE ACCESS TO ALL EXISTING PUBLIC ROADWAYS SHALL BE MAINTAINED AT ALL TIMES.
11. CONSTRUCTION AFTER DARK SHALL OCCUR WITH FLOODLIGHTS BEING UTILIZED WHERE EXISTING LIGHT IS NOT ADEQUATE. THE FLOODLIGHTS SHALL NOT CREATE A DISTRACTING GLARE TO ADJACENT DRIVERS.
12. ALL FLAGGERS SHALL BE STATE CERTIFIED AND HAVE THEIR CERTIFICATION CARD IN THEIR POSSESSION WHEN PERFORMING FLAGGING DUTIES.
13. A TRUCK WITH EITHER AN ARROW BOARD OPERATING IN THE CAUTION MODE SHALL BE PARKED 50' TO 100' IN ADVANCE OF THE WORK CREW.
14. CHANNELIZING DEVICES SUCH AS CONES OR BARRELS SHALL BE UTILIZED WHERE REQUIRED AND FOLLOW THE WORK AREA PROTECTION MANUAL.
15. CONTRACTOR SHALL MAINTAIN ALL EXISTING ROADWAY SIGNAGE DURING ALL PHASES OF THIS PROJECT.

MOT SEQUENCE OF CONSTRUCTION:

1. WORK TO BE PERFORMED SHALL BE SEQUENCED TO AVOID MULTIPLE ACTIVE WORK ZONE AREAS AT THE SAME TIME.
2. INSTALL CONSTRUCTION SIGNS PER VIRGINIA WORK AREA PROTECTION MANUAL (VWAPM).
3. TEMPORARY SINGLE LANE CLOSURE (TTC-23.0) SHALL BE UTILIZED TO PERFORM WORK WITHIN THE AREA OF CONNECTION FOR PROPOSED CROWN ROAD.
4. TRAFFIC MAY BE SHIFTED FOR SINGLE LANE CLOSURE DURING DAYLIGHT HOURS ONLY. AT END OF WORK DAY, TRAFFIC SHALL BE RESTORED TO ORIGINAL TRAVEL WAYS. ADJUST CONE SPACING AND LAYOUT AS CONSTRUCTION ACTIVITY DICTATES.

Typical Traffic Control
Lane Closure on a Two-Lane Roadway Using Flaggers
(Figure TTC-23.2)

NOTES

Guidance:

1. *Sign spacing distance should be 350'-500' where the posted speed limit is 45 mph or less, and 500'-800' where the posted speed limit is greater than 45 mph.*
2. *Care should be exercised when establishing the limits of the work zone to insure maximum possible sight distance in advance of the flagger station and transition, based on the posted speed limit and at least equal to or greater than the values in Table 6H-3. Generally speaking, motorists should have a clear line of sight from the graphic flagger symbol sign to the flagger.*
3. *To maintain efficient traffic flow in a flagging operation on a two-lane roadway, the maximum time motorists should be stopped at a flagger station is 8 minutes for high volume roadways (average daily traffic of 500 or more vehicles per day) to a maximum of 12 minutes for low volume roadways (less than 500 vehicles per day). For additional information see Section 6E.07.*[1]

Standard:

4. **Portable Temporary Rumble Strips (PTRS) shall be used as noted in Section 6F.99.**[2]
5. **Flagging stations shall be located far enough in advance of the work space to permit approaching traffic to reduce speed and/or stop before passing the work space and allow sufficient distance for departing traffic in the left lane to return to the right lane before reaching opposing traffic (see Table 6H-3 on Page 6H-5).**
6. **All flaggers shall be state certified and have their certification card in their possession when performing flagging duties (see Section 6E.01, Qualifications for Flaggers).**
7. **Cone spacing shall be based on the posted speed and the values in Table 6H-4 on Page 6H-6.**[1]
8. **A shadow vehicle with at least one high intensity amber rotating, flashing, or**[1] **oscillating light shall be parked 80'-120' in advance of the first work crew.**

Option:

8. A SLOW (W21-V10) sign[2] may be required in this area to give advance warning of the operation ahead by slowing approaching traffic prior to reaching the flagger station or queued traffic.

Guidance:

9. *If the queue of traffic reaches the BE PREPARED TO STOP (W3-4) sign then the signs, and if used the* PTRS[1] *should be readjusted at greater distances.*
10. *When a highway-rail crossing exists within or upstream of the transition area and it is anticipated that queues resulting from the lane closure might extend through the highway-rail grade crossing, the temporary traffic control zone should be extended so that the transition area precedes the highway-rail crossing (see Figure TTC-56 for additional information on highway-rail crossings).*

Standard:

11. **At night, flagger stations shall be illuminated, except in emergencies (see Section 6E.08).**

Option:

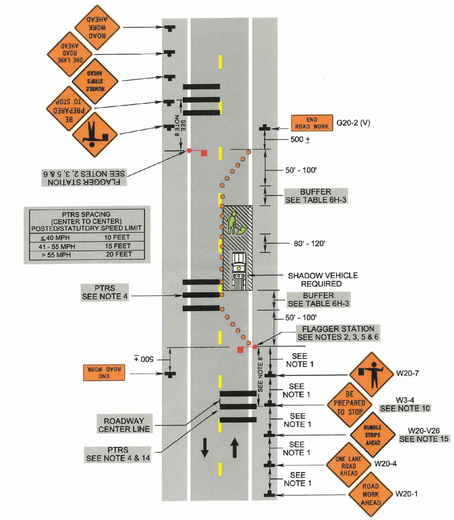
12. Cones may be eliminated when using a pilot vehicle operation or when the total roadway width is 20 feet or less.
13. For low-volume situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger, positioned to be visible to road users approaching from both directions, may be used (see Chapter 6E).

Standard:[1]

14. **When used**[2]**, three portable temporary rumble (PTRS) strips shall be installed across the entire travel lane adjacent to the BE PREPARED TO STOP (W3-4) sign. The portable temporary rumble strips shall be monitored and adjusted as necessary during the work shift to ensure proper placement on the roadway. When the PTRS are installed, the RUMBLE STRIPS AHEAD (W20-V26) sign shall also be utilized.**

1: Revision 1 – 4/1/2015
2: Revision 2 – 9/1/2019

Lane Closure on a Two-Lane Roadway Using Flaggers
(Figure TTC-23.2)



1: Revision 1 – 4/1/2015
2: Revision 2 – 9/1/2019

SIGN LEGEND

LABEL	SIGN DEPICTION	STANDARD	SIZE
A	ROAD WORK AHEAD	W20-1	48" x 48"
B	END ROAD WORK	G20-2(V)	48" x 48"
E		SHADOW VEHICLE	

** SIGNS SHOWN SHALL BE ADJUSTED FOR THE PROPER TTC IN ACCORDANCE WITH THE VWAPM.*

SIGN LEGEND

LABEL	SIGN DEPICTION	STANDARD	SIZE
H		W20-7	48" x 48"
I	BE PREPARED TO STOP	W3-4	48" x 48"
J	ONE LANE ROAD AHEAD	W20-4	48" x 48"
K		FLAGGER STATION	

** SIGNS SHOWN SHALL BE ADJUSTED FOR THE PROPER TTC IN ACCORDANCE WITH THE VWAPM.*

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10/2/24
PROFESSIONAL ENGINEER

MAINTENANCE OF TRAFFIC PLAN

CROWN ROAD DRAINAGE IMPROVEMENTS

PREPARED FOR
ROANOKE COUNTY
ENGINEERING DEPARTMENT
WINDSOR HILLS MAGISTERIAL DISTRICT
ROANOKE COUNTY, VIRGINIA

REVISIONS

NO.	DATE	DESCRIPTION
1		
2		
3		
4		
5		

DATE: October 2, 2024
SCALE: AS SHOWN
COMMISSION NO: 20-312
SHEET 6 OF 6

APPROVED, 10/3/2024