17111-comp-01-cv01.plt

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 the County of Roanoke, 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. Please note the 2001 General Assembly revisions to Va Erosion and Sediment Control Law. Effective July 1, 2001, 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 Conservation and Recreation. The Responsible Land Disturber can be anyone from the Project team that is certified by the State 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 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 is given to the developer at this pre-construction meeting.
11. The developer MUST contact the project inspector 24 hours before beginning any grading or construction on the property.
12. The project inspector will visit the site within 48 hours of the developer's call to ensure that all necessary erosion and sediment control measures are properly installed according to the approved plan.
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.
15. 100 year Floodway and Floodplain information shall be shown where applicable. FIRM Index Date shall be shown on the plans. 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. The Department of Community Development 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 policies.
21. Field construction shall honor proposed drainage divides as shown on plans.
22. Field corrections shall be approved by the Roanoke County Engineering Division 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:

24. Plan approval by Roanoke County does not guarantee issuance of any permits by the Virginia Department of Transportation.
25. A permit must be obtained from the Virginia Department of Transportation, Salem Residency Office prior to construction in the highway right-of-way.
26. 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 Appendix I of the 2014 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.
27. 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 2016 VDOT Road and Bridge Standards as part of this development.
28. Standard street and traffic control signs shall be erected at each intersection by the developer prior to final street acceptance.
29. All traffic devices shall be in accordance with current edition of the manual: "Uniform Traffic Control Devices (MUTCD)"
30. 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.

This sheet may not be modified.

NAME OF DEVELOPMENT:	KENWICK TRAIL - HARTLEY CIRCLE DRAINAGE IMPROVEMENTS
MAGISTERIAL DISTRICT(S):	CAVE SPRING 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):	----------

I, _____ **OWNER/DEVELOPER**, AM AWARE OF THE SITE DESIGN REQUIREMENTS IMPOSED BY THIS SITE DEVELOPMENT PLAN AND OTHER APPLICABLE ROANOKE COUNTY CODES. I HEREBY CERTIFY THAT I AGREE TO COMPLY WITH THESE REQUIREMENTS AND THE THIRTY (30) POINTS SHOWN ON THIS COVER SHEET UNLESS MODIFIED IN ACCORDANCE WITH LOCAL LAW.

WATER NOTES

All water facilities shall be installed according to the Western Virginia Regional Design and Construction Standards/ (Latest Edition).

A minimum cover of three (3) feet is required over proposed lines.

Contractor shall be responsible for locating and uncovering valve vaults after paving and adjustment to final grade if necessary.

All existing utilities may not be shown in their exact location. The contractor shall comply with the (State Water Works Regulations, Section 12VAAC5-590-1150, where lines cross.

All trenches in existing or future highway right-of-ways shall be compacted according to Virginia Department of Transportation standards.

Lines shall be staked prior to construction.

Water main shall be minimum Class 350 Ductile Iron in accordance to AWWA C151 or DR-14 PVC in accordance with AWWA C-900.

Ductile Iron Pipe in accordance with the Western Virginia Water Authority Design and Construction Standards shall be required for all pipe with a working pressure equal to or greater than 100 p.s.i.

Western Virginia Water Authority
Availability letter number: N/A

SEE VDOT COVER SHEET

Vicinity Map

LEGEND

Property Line	℄
Right-of-way	R/W
Centerline	CL
Minimum Building Line	MBL
Existing Storm Sewer	18"SD
Existing Sanitary Sewer	8"SS
Existing Water Main	4"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

SEWER NOTES

All sanitary sewer facilities shall be installed according to the Western Virginia Water Authority Design and Construction Standards. (Latest Edition).

A minimum cover of three (3) feet is required over proposed lines.

Contractor shall be responsible for locating and uncovering all manholes after paving. Manhole tops shall be adjusted to grade if necessary.

All existing utilities may not be shown in their exact location. The contractor shall comply with (State Water Works Regulations, Section 12VAAC5-590-1150, where lines cross.)

All tronches in existing or future rights-of-way shall be compacted according to Virginia Department of Transportation standards.

Lines shall be staked prior to construction.

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. 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.

SHEET No. DESCRIPTION

Index

SURVEY INFORMATION

Horizontal and vertical control surveys were performed in year: 2017 by Lumsden Associates, P.C.

All vertical elevations are referenced to the National Geodetic Vertical Datum of 1988.

Source of topographic mapping is dated: 2017

Boundary was performed by: Lumsden Associates, P.C. in 2017

Benchmark Information: Refer to sheet 4.

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	0	ACRES	$1,500.00	$0.00	$0.00
EARTHWORK	0	C.Y.	$2.00	$0.00	$0.00
CURB INLET DI-3	0	EACH	$2,000.00	$0.00	$0.00
GRATE INLET DI-1	0	EACH	$1,200.00	$0.00	$0.00
GRATE INLET DI-7	0	EACH	$1,500.00	$0.00	$0.00
STORM DRAIN MANHOLE	0	EACH	$1,200.00	$0.00	$0.00
15 IN. CONCRETE PIPE	0	L.F.	$25.00	$0.00	$0.00
18 IN. CONCRETE PIPE	0	L.F.	$35.00	$0.00	$0.00
24 IN. CONCRETE PIPE	0	L.F.	$50.00	$0.00	$0.00
30 IN. CONCRETE PIPE	0	L.F.	$65.00	$0.00	$0.00
36 IN. CONCRETE PIPE	0	L.F.	$85.00	$0.00	$0.00
42 IN. CONCRETE PIPE	0	L.F.	$110.00	$0.00	$0.00
48 IN. CONCRETE PIPE	0	L.F.	$130.00	$0.00	$0.00
54 IN. CONCRETE PIPE	0	L.F.	$150.00	$0.00	$0.00
60 IN. CONCRETE PIPE	0	L.F.	$180.00	$0.00	$0.00
PAVED DITCH	0	S.Y.	$60.00	$0.00	$0.00
EC-3 DITCH	0	S.Y.	$8.00	$0.00	$0.00
RIPRAP DITCH	0	C.Y.	$50.00	$0.00	$0.00
15 IN. ENDWALL EW-1	0	EACH	$800.00	$0.00	$0.00
18 IN. ENDWALL EW-1	0	EACH	$1,000.00	$0.00	$0.00
24 IN. ENDWALL EW-1	0	EACH	$1,300.00	$0.00	$0.00
30 IN. ENDWALL EW-1	0	EACH	$1,600.00	$0.00	$0.00
36 IN. ENDWALL EW-1	0	EACH	$2,000.00	$0.00	$0.00
42 IN. ENDWALL EW-2	0	EACH	$4,000.00	$0.00	$0.00
48 IN. ENDWALL EW-2	0	EACH	$4,600.00	$0.00	$0.00
54 IN. ENDWALL EW-2	0	EACH	$5,100.00	$0.00	$0.00
60 IN. ENDWALL EW-2	0	EACH	$6,000.00	$0.00	$0.00
15 IN. END SECTION ES-1	0	EACH	$500.00	$0.00	$0.00
18 IN. END SECTION ES-1	0	EACH	$700.00	$0.00	$0.00
24 IN. END SECTION ES-1	0	EACH	$900.00	$0.00	$0.00
30 IN. END SECTION ES-1	0	EACH	$1,000.00	$0.00	$0.00
36 IN. END SECTION ES-1	0	EACH	$1,600.00	$0.00	$0.00
CURB & GUTTER CG-2	0	L.F.	$18.00	$0.00	$0.00
CURB & GUTTER CG-6	0	L.F.	$20.00	$0.00	$0.00
6 IN. AGGREGATE BASE 21-B	0	S.Y.	$5.00	$0.00	$0.00
8 IN. AGGREGATE BASE 21-B	0	S.Y.	$6.00	$0.00	$0.00
10 IN. AGGREGATE BASE 21-B	0	S.Y.	$8.00	$0.00	$0.00
12 IN. AGGREGATE BASE 21-B	0	S.Y.	$10.00	$0.00	$0.00
3 IN. ASPHALT PAVEMENT BM-25.0	0	S.Y.	$6.00	$0.00	$0.00
4 IN. ASPHALT PAVEMENT BM-25.0	0	S.Y.	$8.00	$0.00	$0.00
5 IN. ASPHALT PAVEMENT BM-25.0	0	S.Y.	$10.00	$0.00	$0.00
1.5 IN. ASPHALT PAVEMENT SM-9.5A	0	S.Y.	$5.00	$0.00	$0.00
2 IN. ASPHALT PAVEMENT SM-9.5A	0	S.Y.	$6.00	$0.00	$0.00
6 IN. WATER LINE	0	L.F.	$30.00	$0.00	$0.00
8 IN. WATER LINE	0	L.F.	$40.00	$0.00	$0.00
10 IN. WATER LINE	0	L.F.	$45.00	$0.00	$0.00
12 IN. WATER LINE	0	L.F.	$55.00	$0.00	$0.00
FIRE HYDRANT ASSEMBLIES	0	EACH	$3,500.00	$0.00	$0.00
BLOW OFFS W/VAULT, FRAME & COVER	0	EACH	$1,400.00	$0.00	$0.00
6 IN. GATE VALVES W/VAULT, FRAME & COVER	0	EACH	$850.00	$0.00	$0.00
8 IN. GATE VALVES W/VAULT, FRAME & COVER	0	EACH	$1,200.00	$0.00	$0.00
10 IN. GATE VALVES W/VAULT, FRAME & COVER	0	EACH	$1,700.00	$0.00	$0.00
12 IN. GATE VALVES W/VAULT, FRAME & COVER	0	EACH	$2,200.00	$0.00	$0.00
8 IN. SANITARY SEWER	0	L.F.	$50.00	$0.00	$0.00
STANDARD MANHOLE W/FRAME & COVER	0	EACH	$3,000.00	$0.00	$0.00
SAMPLING MANHOLE/PORT	0	EACH	$3,000.00	$0.00	$0.00
LANDSCAPING	0	LUMP SUM	$10,000.00	$0.00	$0.00
AMENITIES (INCLUDING BUT NOT LIMITED TO TRAILS, ETC...)	0	LUMP SUM	$5,000.00	$0.00	$0.00
STORMWATER MANAGEMENT	0	EACH	$30,000.00	$0.00	$0.00
SWM BMP	0	EACH	$28,000.00	$0.00	$0.00
AS-BUILT PLANS (STORM SEWER SYSTEMS)	0	LUMP SUM	$1,000.00	$0.00	$0.00
AS-BUILT PLANS (STORMWATER MANAGEMENT)	0	LUMP SUM	$5,000.00	$0.00	$0.00
SUBTOTAL				$0.00	$0.00
10% CONTINGENCY				$0.00	$0.00
ESTIMATED TOTAL				$0.00	$0.00

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.
4664 BRAMBLETON AVENUE, SW
P.O. BOX 20669
ROANOKE, VIRGINIA 24018
PHONE: (540) 774-4411
FAX: (540) 772-9445
E-MAIL: MAIL@LUMSDENPC.COM

COMMONWEALTH OF VIRGINIA
ANDREW P. LUMSDEN
Lic. No. 052216
5/3/18
PROFESSIONAL ENGINEER

Approved
MAY 3, 2018

LUMSDEN ASSOCIATES, P.C.
COMMISSION NUMBER:
2017-111

LUMSDEN ASSOCIATES, P.C.
ENGINEERS-SURVEYORS-PLANNERS
ROANOKE, VIRGINIA

LA

KENWICK TRAIL - HARTLEY CIRCLE
DRAINAGE IMPROVEMENTS
PREPARED FOR
ROANOKE COUNTY
ENGINEERING DEPARTMENT
CAVE SPRING MAGISTERIAL DISTRICT
ROANOKE COUNTY, VIRGINIA

SHEET
1
OF
9

w:\drawings\2017\17111\eng\17111-comp.dwg

STATE	FEDERAL AID PROJECT	STATE ROUTE	STATE PROJECT	SHEET NO.
VA.		1530	1530-080-R78, P101, M501 SEE TABULATIONS BELOW FOR SECTION NUMBERS	1

FUNCTIONAL CLASSIFICATION AND TRAFFIC DATA	
LOCAL ROADWAY CLASSIFICATION-25 MPH POSTED SPEED	
	INTERSECTION OF VA RTE 1530 & VA RTE 1533 AND ALONG RTE 1530 600'± SOUTH OF THE INTERSECTION OF VA RTE 1530 & VA RTE 1533
ADT	RTE 1530 – 870 (2016 VDOT ESTIMATE)
ADT	RTE 1533 – 150 (2016 VDOT ESTIMATE)
DHV	
D (%)	
T (%)	
V (MPH)	

PLAN AND PROFILE OF PROPOSED STATE HIGHWAY

ROANOKE COUNTY

KENWICK TRAIL RTE. 1530 - HARTLEY CIRCLE RTE 1533 DRAINAGE IMPROVEMENTS

VDOT UPC NUMBER 107310

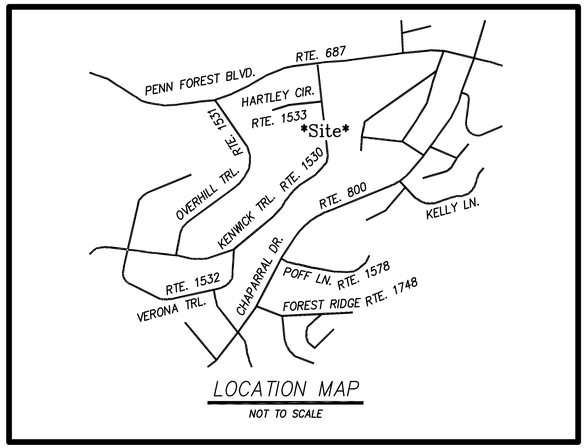
DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT.

THIS PROJECT IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT'S 2016 ROAD AND BRIDGE SPECIFICATIONS, 2016 ROAD AND BRIDGE STANDARDS, 2009 MUTCD, 2011 VIRGINIA SUPPLEMENT TO THE MUTCD, 2015 EDITION "REVISION 1 – APRIL 1, 2015" VIRGINIA WORK AREA PROTECTION MANUAL AND AS AMENDED BY CONTRACT PROVISIONS AND THE COMPLETE ELECTRONIC PDF VERSION OF THE PLAN ASSEMBLY.

ALL CURVES ARE TO BE SUPERELEVATED, TRANSITIONED AND WIDENED IN ACCORDANCE WITH STANDARD TC-5.01U, EXCEPT WHERE OTHERWISE NOTED.

THE ORIGINAL APPROVED TITLE SHEET(S), INCLUDING ORIGINAL SIGNATURES, IS FILED IN THE VDOT CENTRAL OFFICE PLAN LIBRARY. ANY MISUSE OF ELECTRONIC FILES, INCLUDING SCANNED SIGNATURES, IS ILLEGAL AND ENFORCED TO THE FULL EXTENT OF THE LAW.

PROJECT MANAGER _____
SURVEYED BY, DATE _____
DESIGN BY _____
SUBSURFACE UTILITY BY, DATE _____



LOCATION MAP
NOT TO SCALE

--INDEX OF DRAWINGS--

SHEET No.	DESCRIPTION
1	VDOT LOCALLY ADMINISTERED PROJECT COVER SHEET
2	ROANOKE COUNTY COVER SHEET
3	NOTES, DETAILS AND SUMMARY OF QUANTITIES
4	DEMOLITION PLAN
5	STORM DRAINAGE PLAN AND PROFILE
6	EROSION AND SEDIMENT CONTROL PLAN
7	EROSION AND SEDIMENT CONTROL NOTES & DETAILS
8	TRAFFIC MANAGEMENT PLAN NOTES & OVERVIEW
9	TRAFFIC MANAGEMENT PLAN – PHASE I & II

COMMONWEALTH OF VIRGINIA
ANDREW P. LUMSDEN
Lic. No. 052216
5/9/18
PROFESSIONAL ENGINEER

LEGEND

ITEM	EXISTING	PROPOSED
Pavement		
Curb and Gutter		
Curb		
Storm Drain Line	EX. 24" CONC	24" RCP
Sanitary Sewer Manhole	S	
Sanitary Sewer Line	EXIST. 8" SS	
Waterline	EXIST. 8" W	
Hydrant		
Underground Electric Line	UE	
Overhead Utility Line	OHU	
Underground Telephone Line	UGT	
Underground Gas Line	GAS	
Utility Pole		
Fence		
Contours	1216	1216
Treeline		

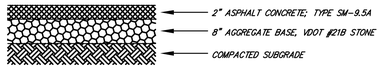
ABBREVIATIONS

INSTR.	INSTRUMENT
EXIST.	EXISTING
D.B.	DEED BOOK
P.B.	PLAT BOOK
PG.	PAGE
No.	NUMBER
TYP.	TYPICAL
STA	STATION
LT.	LEFT
RT.	RIGHT
RCP	REINFORCED CONCRETE PIPE
CMP	CORRUGATED METAL PIPE
SD	STORM DRAIN
SDMH	STORM DRAIN MANHOLE
SS	SANITARY SEWER
SSMH	SANITARY SEWER MANHOLE
W	WATER LINE
TC	TOP OF CURB
TP	TOP OF PAVEMENT
SE	SPOT ELEVATION
HP	HIGH POINT
LP	LOW POINT
OHU	OVERHEAD UTILITY

ROANOKE COUNTY POPULATION 94,409 (2015 CENSUS)

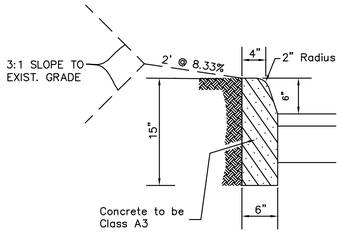
STATE PROJECT NO.	SECTION	FEDERAL AID PROJECT NO.	TYPE CODE	UPC NO.	LENGTH INCLUDING BRIDGE(S) FEET	LENGTH INCLUDING BRIDGE(S) MILES	LENGTH EXCLUDING BRIDGE(S) FEET	LENGTH EXCLUDING BRIDGE(S) MILES	TYPE PROJECT	DESCRIPTION
1530-080-R78, P101, M501				107310	0	0	0	0	CONSTRUCTION	INTERSECTION OF VA RTE 1530 & VA RTE 1533 AND ALONG RTE 1530 600'± SOUTH OF THE INTERSECTION OF VA RTE 1530 & VA RTE 1533

LOCALLY ADMINISTERED PROJECTS	
COUNTY OF ROANOKE	
DAVID HENDERSON	
RECOMMENDED FOR APPROVAL FOR CONSTRUCTION	
	COUNTY ENGINEER
DATE	TITLE OF POSITION



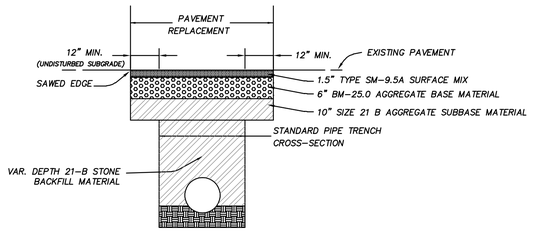
* NOTE: 1. MATCH EXIST. PAVEMENT SECTION IF GREATER THAN SHOWN ABOVE.

DRIVEWAY REPLACEMENT DETAIL



CONCRETE CURB (CG-2)

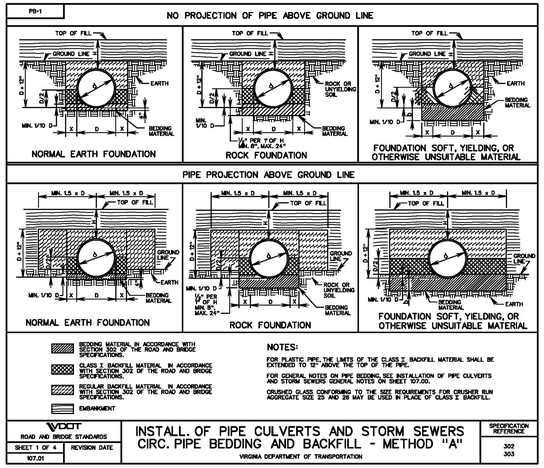
SEE VDOT ROAD & BRIDGE STANDARDS FOR ADDITIONAL DETAILS.



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.



*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.

GENERAL NOTES

1. PROPERTY OWNERS:

3326 KENWICK TRL. TM# 87.06-03-35.00 JOSEPH A STOWERS INST. No. 200512362	3328 KENWICK TRL. TM# 87.06-03-36.00 CHEN CHAN YUAN INST. No. 201204431	3315 KENWICK TRL. TM# 87.06-06-10.00 NAME NOT LISTED INST. No. 201410392	3204 HARTLEY CIR. TM# 87.06-06-22.00 CYNTHIA B. SICLAIR INST. No. 200700377 (WILL BOOK)
3360 KENWICK TRL. TM# 87.06-03-42.00 FOREST HILLS SWIM & RACQUET CLUB LLC DB. 1509 PG. 1899	3370 KENWICK TRL. TM# 87.06-03-43.00 WILLIAM F. & WENDY E. KROHN INST. No. 200501135	3374 KENWICK TRL. TM# 87.06-03-44.00 ROBERT T. & KATHLEEN M. SEYMOUR DB. 1573 PG. 1541	
3365 KENWICK TRL. TM# 87.06-06-27.00 MICHAEL A. II & MELISSA RUTHERFORD INST. No. 200317473			

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 2017.
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, ADVERTISEMENTS, 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

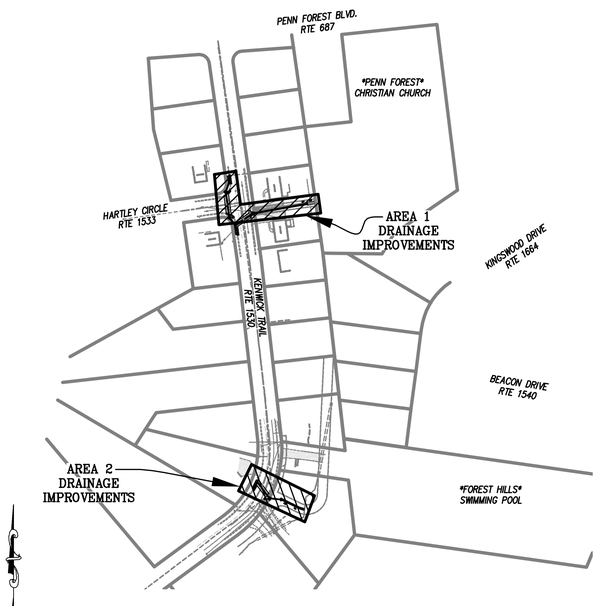
1. AREAS TO BE GRADED SHALL BE CLEARED OF ALL VEGETATION, STRUCTURES, AND OTHER PHYSICAL FEATURES IN PREPARATION OF GRADING.
2. TOPSOIL SHALL BE REMOVED FROM THE CLEARED AREA AND STOCKPILED FOR FUTURE USE.
3. A QUALIFIED GEOTECHNICAL ENGINEER LICENSED IN THE STATE OF VIRGINIA, SHALL BE HIRED FOR THE 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.

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
15" CLASS III RCP	L.F.	66
18" CLASS III RCP	L.F.	54
24" CLASS III RCP	L.F.	45
DI-3B CURB INLET	EACH	3
DI-7 DROP INLET	EACH	4
PAVEMENT REPLACEMENT	S.Y.	180
DRIVEWAY REPLACEMENT	S.Y.	16
CURB REPLACEMENT	L.F.	43
EROSION CONTROL INLET PROTECTION	EACH	7

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
15" CLASS III RCP	L.F.	25
24" CLASS III RCP	L.F.	116
TYPE "A" RIPRAP DITCH	S.Y.	24
FENCE REPLACEMENT	L.F.	145
DRIVEWAY REPLACEMENT	S.Y.	30
ELECTRIC GUY WIRE REPLACEMENT	L.S.	LUMP SUM
EROSION CONTROL SILT FENCE	L.F.	65
EROSION CONTROL CLASS II RIP-RAP OUTLET PROTECTION	L.S.	LUMP SUM
EROSION CONTROL TEMPORARY & PERMANENT SEEDING	ACRE	0.05
EROSION CONTROL OUTLET PROTECTION	EACH	1



SITE MAP OVERVIEW

SCALE: 1" = 150'

LUMSDEN ASSOCIATES, P.C.
ENGINEERS-SURVEYORS-PLANNERS
ROANOKE, VIRGINIA
4664 BRAMBLETON AVENUE
P.O. BOX 20669
ROANOKE, VIRGINIA 24018
PHONE: 540-774-4411
FAX: 540-772-9445
E-MAIL: MAIL@LUMSDENPC.COM

COMMONWEALTH OF VIRGINIA
ANDREW P. LUMSDEN
Lic. No. 052216
5/3/18
PROFESSIONAL ENGINEER

NOTES, DETAILS, AND SUMMARY OF QUANTITIES

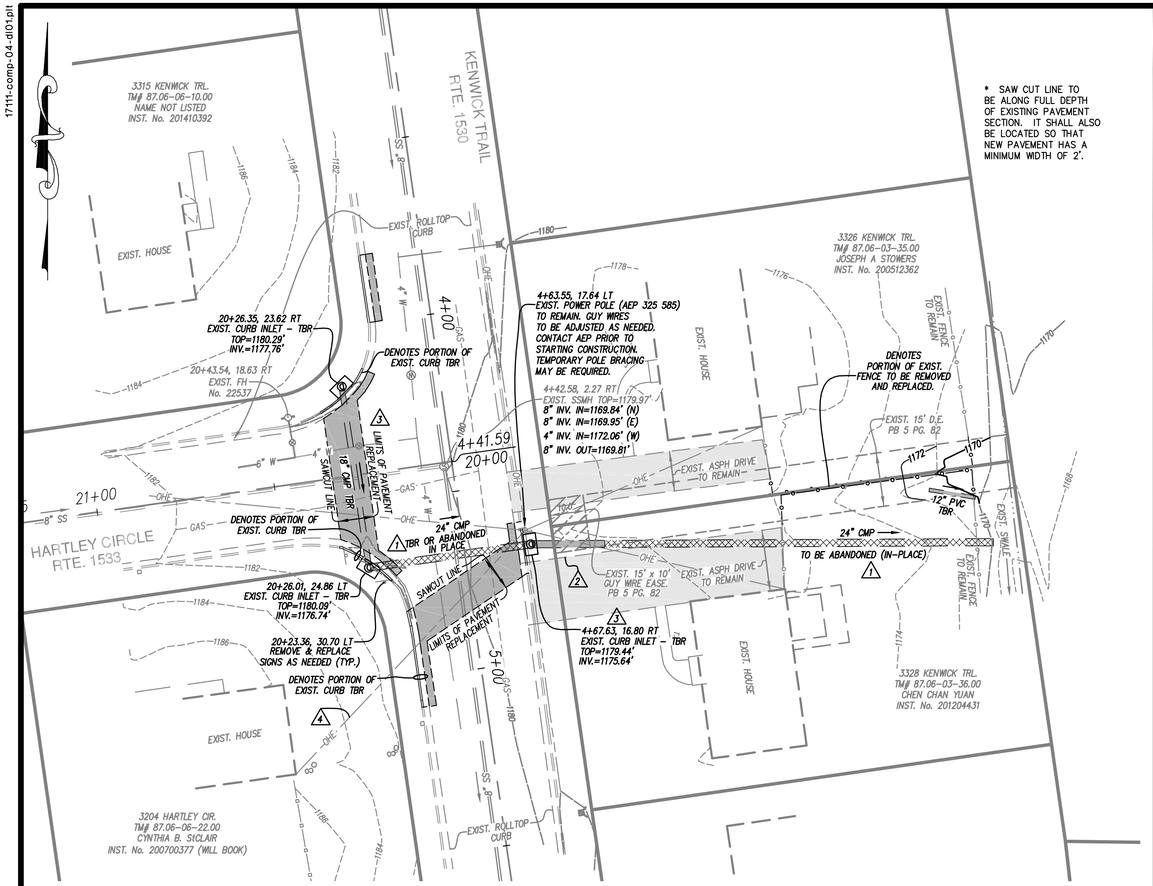
KENWICK TRAIL - HARTLEY CIRCLE DRAINAGE IMPROVEMENTS

PREPARED FOR
ROANOKE COUNTY
ENGINEERING DEPARTMENT
CAVE SPRING MAGISTERIAL DISTRICT
ROANOKE COUNTY, VIRGINIA

REVISIONS

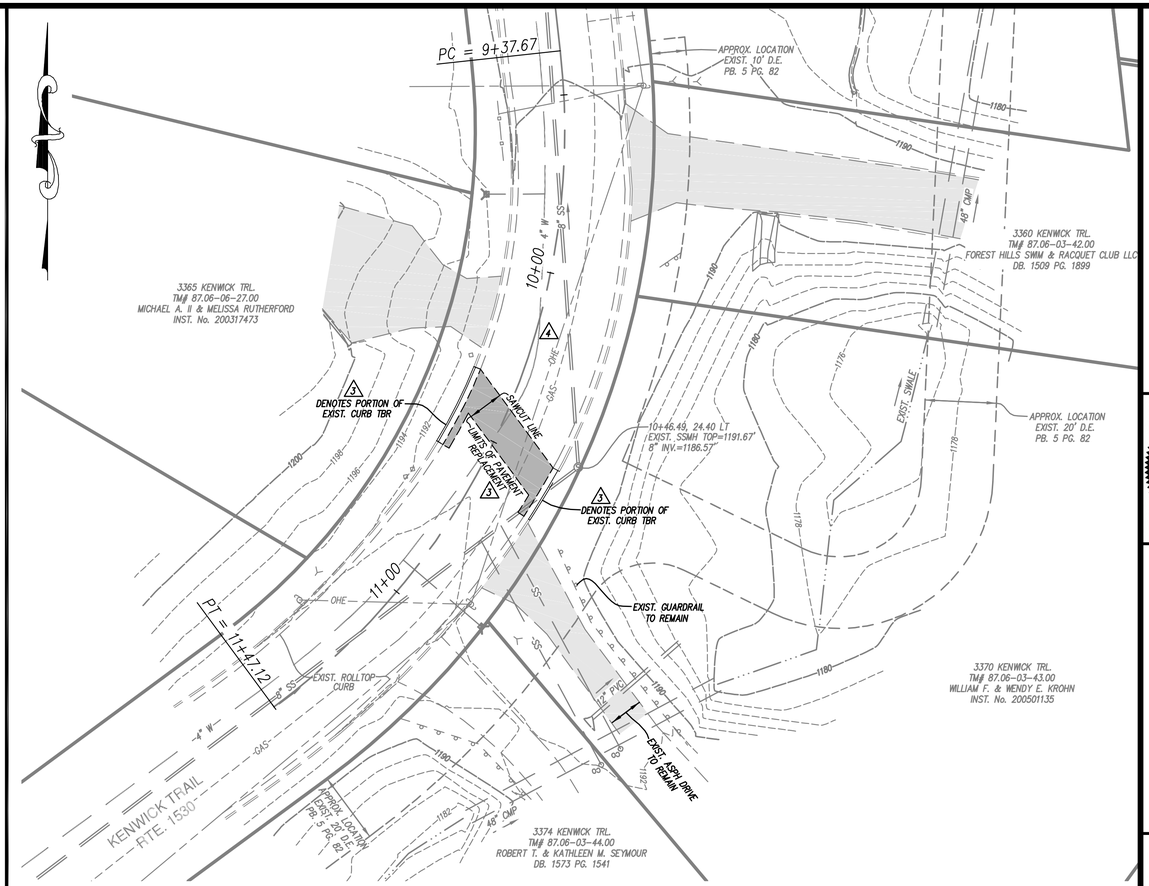
NO.	DATE	DESCRIPTION
1		
2		
3		
4		
5		

DATE: May 3, 2018
SCALE: AS SHOWN
COMMISSION NO: 17-111
SHEET 3 OF 9



AREA 1 DRAINAGE IMPROVEMENTS

20' 0 20'
1" = 20'



AREA 2 DRAINAGE IMPROVEMENTS

20' 0 20'
1" = 20'

DEMOLITION NOTES:

1. EXISTING STORM DRAIN PIPES SHOWN HEREON TO "BE ABANDONED IN PLACE" SHALL BE FILLED WITH FLOWABLE FILL IN ACCORDANCE WITH THE LATEST ADDITION OF THE VDOT ROAD & BRIDGE STANDARDS PP-1. THE STORM DRAIN SYSTEM SHALL BE FIELD INSPECTED PRIOR TO ABANDONMENT TO INSURE THE SYSTEM IS FREE FROM OBSTRUCTIONS AND THAT THERE ARE NOT ANY UNKNOWN PIPES ENTERING THE STORM DRAIN.
2. REMOVE AND REPLACE DRIVEWAY AS NEEDED BY SAW CUTTING ITS FULL DEPTH & WIDTH AND REPLACING WITH TYPICAL SECTION SHOWN ON SHEET No. 3. COORDINATE WORK WITH THE PROPERTY OWNER.
3. REMOVE AND REPLACE PAVEMENT AND CURB & GUTTER AS NEEDED BY SAW CUTTING ITS FULL DEPTH AND REPLACING PER DETAILS SHOWN ON SHEET No. 3. SAW CUT LINE SHALL BE LOCATED SO THAT NEW PAVEMENT HAS A MINIMUM WIDTH OF 2'.
4. CONTRACTOR SHALL TAKE SPECIAL CARE WHEN WORKING UNDER OVERHEAD UTILITY LINES. IF REQUIRED, COORDINATE WITH OVERHEAD UTILITY OWNERS FOR TEMPORARY LINE ADJUSTMENTS THAT MAY BE NEEDED DURING CONSTRUCTION.

LUMSDEN ASSOCIATES, P.C.
ENGINEERS-SURVEYORS-PLANNERS
ROANOKE, VIRGINIA
4664 BRAMBLETON AVENUE
P.O. BOX 20669
ROANOKE, VIRGINIA, 24018
PHONE: (540) 774-4411
FAX: (540) 772-9445
E-MAIL: MAIL@LUMSDENPC.COM

COMMONWEALTH OF VIRGINIA
ANDREW P. LUMSDEN
Lic. No. 052216
5/4/18
PROFESSIONAL ENGINEER

DEMOLITION PLAN

KENWICK TRAIL - HARTLEY CIRCLE DRAINAGE IMPROVEMENTS

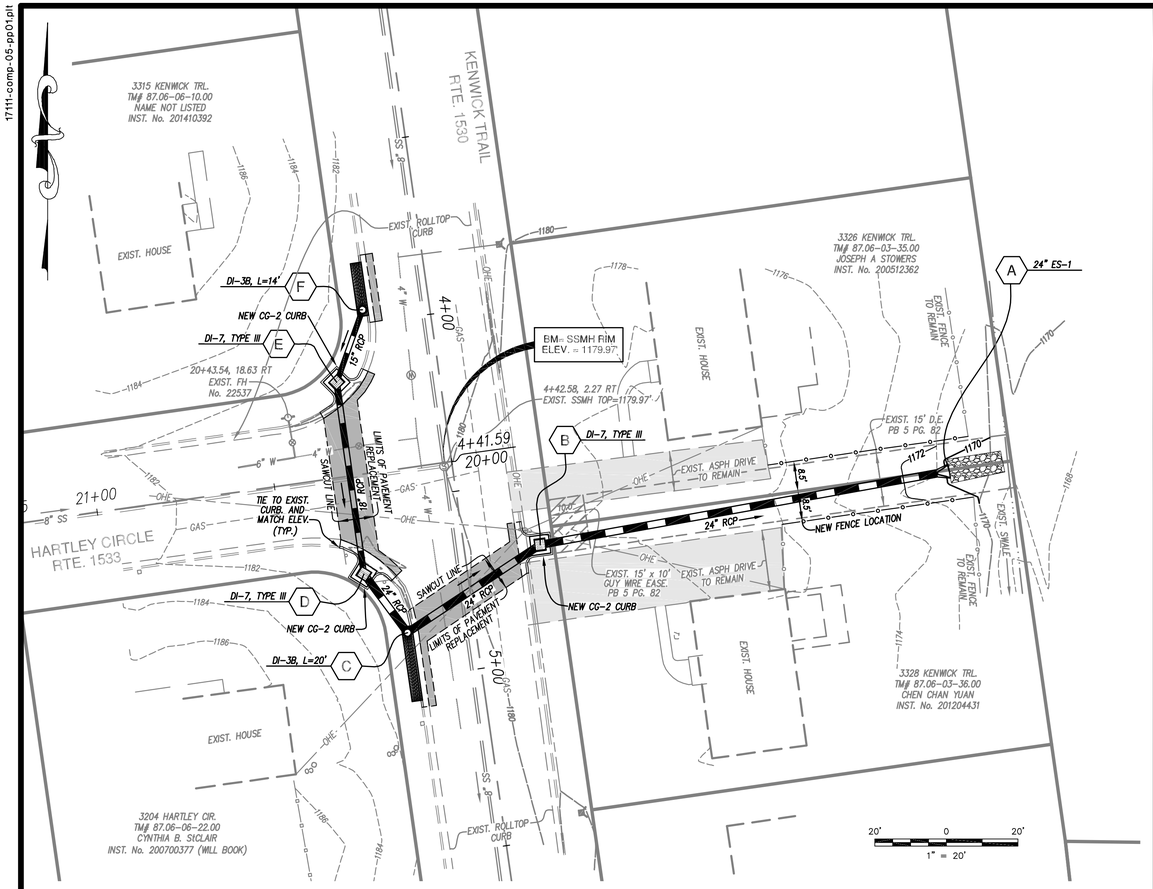
PREPARED FOR
ROANOKE COUNTY
ENGINEERING DEPARTMENT
CAVE SPRING MAGISTERIAL DISTRICT
ROANOKE COUNTY, VIRGINIA

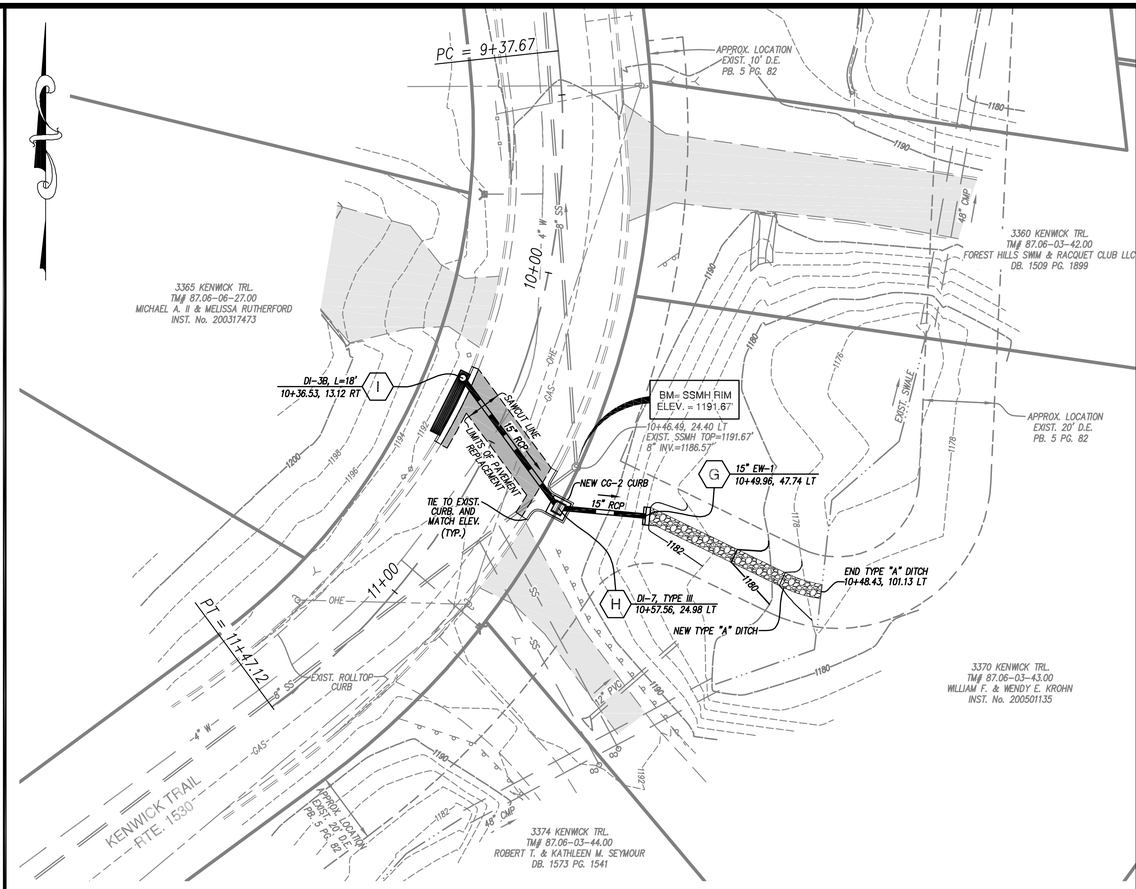
REVISIONS

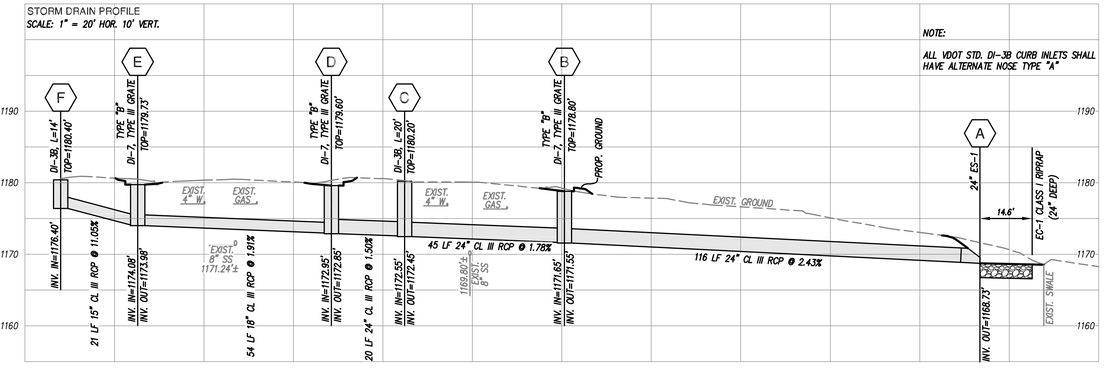
NO.	DATE	DESCRIPTION
1		
2		
3		
4		
5		

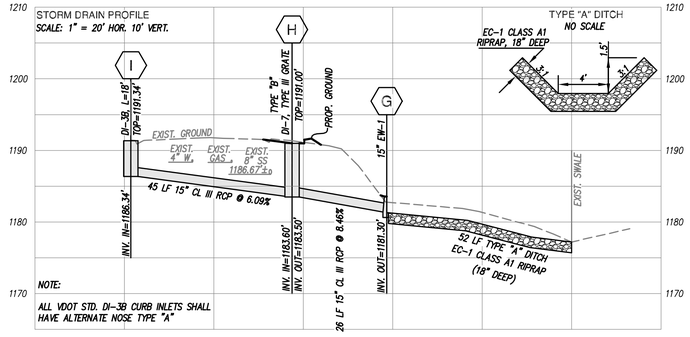
DATE: May 3, 2018
SCALE: 1" = 20'
COMMISSION NO: 17-111
SHEET 4 OF 9

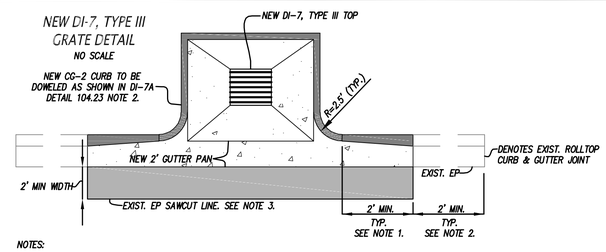
17111-comp-05-po01.plt











NOTES:

1. CONTRACTOR TO TRANSITION FROM NEW VDOT STD. CG-6 CURB & GUTTER PROFILE TO EXIST. ROLLTOP CURB & GUTTER PROFILE AS SHOWN ON DETAIL ABOVE. CONNECTION TO EXIST. ROLLTOP CURB & GUTTER AND NEW DI-7 TOP TO BE DOWELED AS SHOWN IN VDOT STD. DI-7A DETAIL 104.23 NOTE 2.
2. MINIMUM DISTANCE BETWEEN NEW CG-6 CURB & GUTTER AND EXIST. ROLLTOP CURB JOINT SHALL BE 2' MIN.
3. SAW CUT FULL DEPTH OF EXIST. PAVEMENT AND REPLACE PER DETAILS SHOWN ON SHEET No. 3. SAW CUT LINE SHALL BE LOCATED SO THAT NEW PAVEMENT HAS A MINIMUM WIDTH OF 2'.

WVWA NOTES:

1. ALL CONSTRUCTION METHODS AND MATERIALS SHALL CONFORM TO THE LATEST WVWA DESIGN AND CONSTRUCTION STANDARDS.
2. THE CONTRACTOR OR DEVELOPER IS REQUIRED TO NOTIFY THE WESTERN VIRGINIA WATER AUTHORITY IN WRITING AT LEAST THREE (3) DAYS PRIOR TO ANY CONSTRUCTION. PLEASE CONTACT MARK SINK AT 537- 3460.
3. ALL WORK SHALL BE SUBJECT TO INSPECTION BY THE WESTERN VIRGINIA WATER AUTHORITY.
4. FIELD CORRECTIONS SHALL BE APPROVED BY THE WESTERN VIRGINIA WATER AUTHORITY PRIOR TO SUCH CONSTRUCTION.
5. THE CONTRACTOR SHALL MAINTAIN A MINIMUM OF 18" CLEARANCE VERTICALLY AND 2' MINIMUM HORIZONTALLY FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE AT ALL WATER, SANITARY SEWER CROSSINGS OF ANY OTHER UTILITIES. WHERE THIS CANNOT BE ACHIEVED ADDITIONAL MEASURES IN ACCORDANCE WITH WVWA STANDARDS SHALL BE ENFORCED.
6. ANY EXISTING APPURTENANCES SHOULD BE ADJUSTED TO GRADE AND NEW FRAME AND COVERS INSTALLED WHERE REQUIRED.
7. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE ALL EXISTING UTILITIES LOCATED AND POTHOLED TO VERIFY LOCATIONS. THIS PLAN REVIEW DOES NOT REMOVE THE CONTRACTOR'S RESPONSIBILITY TO RELOCATE ANY EXISTING CONFLICTS FOUND DURING CONSTRUCTION.

LUMSDEN ASSOCIATES, P.C.
ENGINEERS-SURVEYORS-PLANNERS
ROANOKE, VIRGINIA
4664 BRAMBLETON AVENUE
P.O. BOX 20669
ROANOKE, VIRGINIA, 24018
PHONE: (540)774-4411
FAX: (540)772-9445
E-MAIL: MAIL@LUMSDENPC.COM

COMMONWEALTH OF VIRGINIA
ANDREW P. LUMSDEN
Lic. No. 052216
5/4/18
PROFESSIONAL ENGINEER

STORM DRAINAGE PLAN & PROFILE

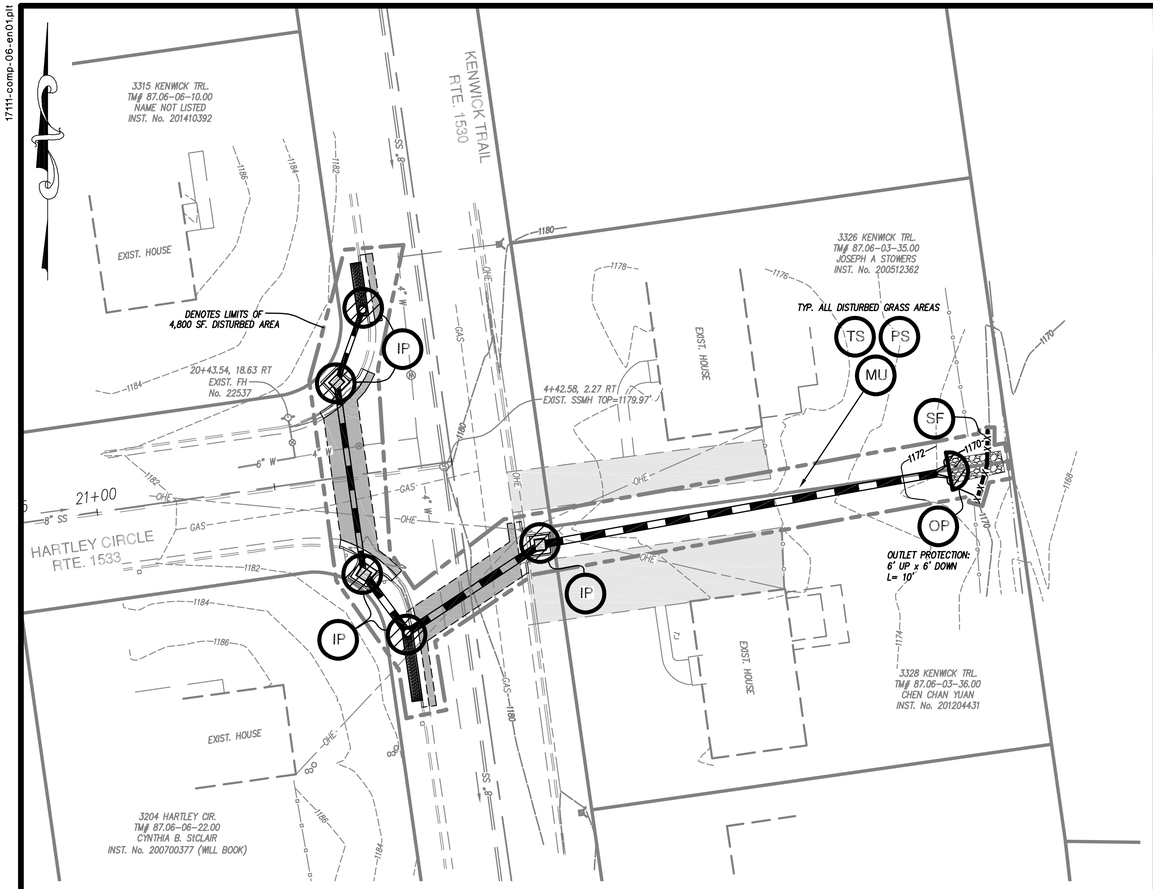
KENWICK TRAIL - HARTLEY CIRCLE DRAINAGE IMPROVEMENTS

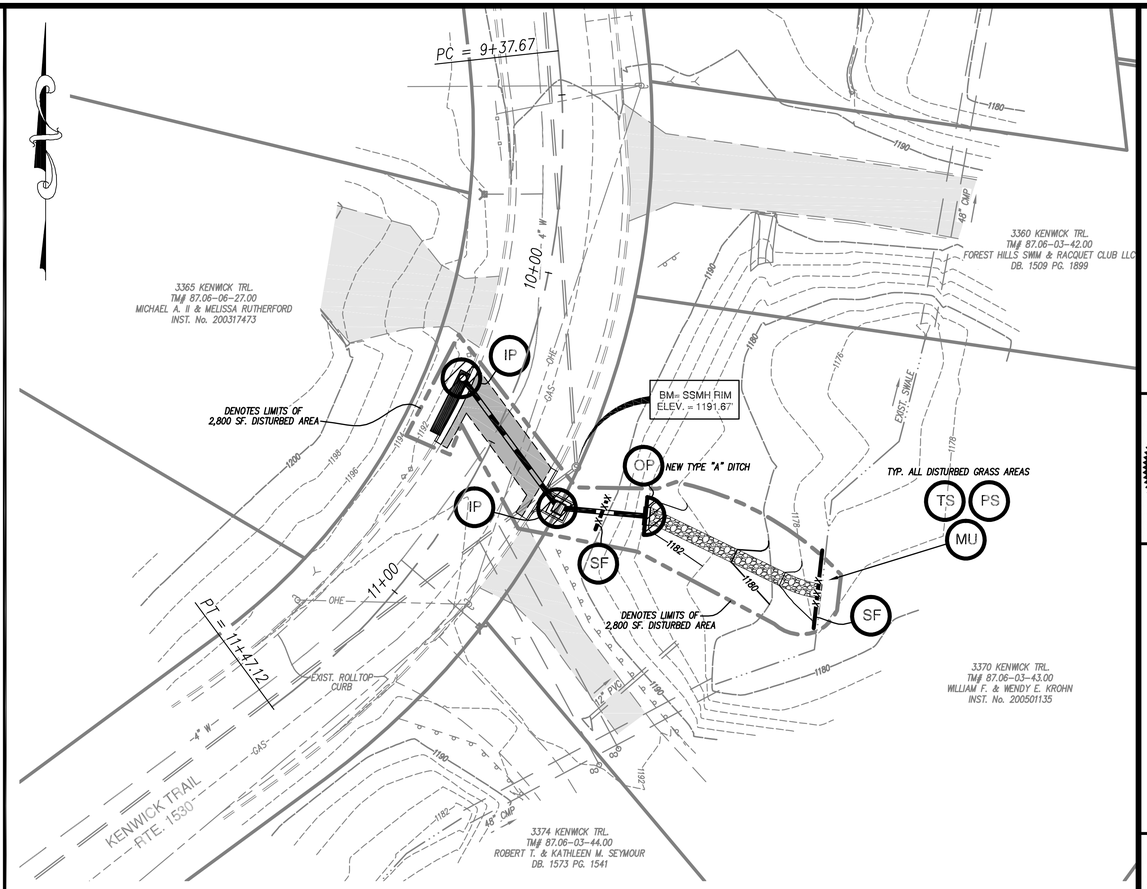
PREPARED FOR
ROANOKE COUNTY
ENGINEERING DEPARTMENT
CAVE SPRING MAGISTERIAL DISTRICT
ROANOKE COUNTY, VIRGINIA

REVISIONS		
NO.	DATE	DESCRIPTION
1		
2		
3		
4		
5		

DATE: May 3, 2018
SCALE: AS SHOWN
COMMISSION NO: 17-111
SHEET 5 OF 9

w:\drawings\2017\17111\eng\17111-comp.dwg





NO.	TITLE	KEY	SYMBOL
3.05	SILT FENCE	SF	
3.07	INLET PROTECTION	IP	
3.18	OUTLET PROTECTION	OP	
3.31	TEMPORARY SEEDING	TS	
3.32	PERMANENT SEEDING	PS	
3.35	MULCHING	MU	

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 DCR GENERAL CONSTRUCTION PERMIT IS NOT REQUIRED FOR THIS PROJECT SINCE THE DISTURBED AREA (AND TOTAL SITE AREA) IS LESS THAN 1 ACRE.*
3. *INSTALL SILT FENCE AS SHOWN ON THIS PLAN.*
4. *COORDINATE WITH OWNERS THE REPLACEMENT OF PAVEMENT, SHRUBS, FENCES, ETC A MINIMUM OF 48 HOURS IN ADVANCE.*
5. *REMOVE AND/OR ABANDON EXISTING STORM DRAINS AND INSTALL NEW STORM DRAINS WITH INLET AND OUTLET PROTECTION.*
6. *INSTALL PAVEMENT REPLACEMENT AS SOON AS POSSIBLE AND PROVIDE A MINIMUM OF ONE WAY ACCESS AT ALL TIMES.*
7. *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.*

LUMSDEN ASSOCIATES, P.C.
ENGINEERS-SURVEYORS-PLANNERS
ROANOKE, VIRGINIA
4664 BRAMBLETON AVENUE
P.O. BOX 20669
ROANOKE, VIRGINIA 24018
PHONE: (540) 774-4471
FAX: (540) 772-9445
E-MAIL: MAIL@LUMSDENPC.COM

COMMONWEALTH OF VIRGINIA
ANDREW P. LUMSDEN
Lic. No. 052216
5/3/18
PROFESSIONAL ENGINEER

KENWICK TRAIL - HARTLEY CIRCLE
DRAINAGE IMPROVEMENTS
EROSION AND SEDIMENT CONTROL PLAN

PREPARED FOR
ROANOKE COUNTY
ENGINEERING DEPARTMENT
CAVE SPRING MAGISTERIAL DISTRICT
ROANOKE COUNTY, VIRGINIA

REVISIONS

NO.	DATE	DESCRIPTION
1		
2		
3		
4		
5		

DATE: May 3, 2018
SCALE: AS SHOWN
COMMISSION NO: 17-111
SHEET 6 OF 9

EROSION CONTROL NARRATIVE

PROJECT DESCRIPTION
THE PROJECT AREA IS LOCATED ALONG KENWICK TRAIL AT THE INTERSECTION WITH HARTLEY CIRCLE IN ROANOKE COUNTY. CONSTRUCTION PROPOSED FOR THIS PROJECT CONSISTS OF DRAINAGE IMPROVEMENTS TO HELP ALLEVIATE RUNOFF CONCERNS WITH EXISTING INADEQUATE STORM DRAINAGE. THE TOTAL DISTURBED AREA IS APPROXIMATELY 7,600 SF. (0.18 ACRES)

EXISTING SITE CONDITIONS
THE MAJORITY OF THE PROJECT CONSTRUCTION WILL BE PERFORMED WITHIN THE EXISTING RIGHT-OF-WAY OF KENWICK TRAIL. KENWICK TRAIL CONTAINS AN EXISTING LOW SUMP AREA WHICH HAS EXISTING STORM DRAINAGE TO INTERCEPT RUNOFF ALTHOUGH THIS SYSTEM HAS BEEN DEEMED INADEQUATE. THE PROPOSED IMPROVEMENTS ARE DESIGNED TO HELP CAPTURE RUNOFF FROM THE SUMP LOCATION AT THE INTERSECTION OF KENWICK TRAIL / HARTLEY CIRCLE AND ADEQUATELY CONVEY THE RUNOFF TO THE EXISTING DRAINAGE CHANNEL LOCATED TO THE EAST OF THE PROJECT AREA.

ADJACENT AREAS
THE MAJORITY OF THE PROJECT IS LOCATED WITHIN THE RIGHT-OF-WAY OF KENWICK TRAIL. THE ADJOINING PROPERTIES ADJACENT TO THIS PROJECT ARE EXISTING RESIDENTIAL LOTS WITH SINGLE FAMILY HOMES.

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 CUT OR FILL 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:

CHISWELL-LITZ COMPLEX, 25 TO 50% SLOPES (MAP UNIT 5E)
CHISWELL-LITZ URBAN LAND COMPLEX, 2 TO 15% SLOPES (MAP UNIT 6C)

CHISWELL SOIL:
HYDROLOGIC SOIL GROUP: D
DEPTH THE RESTRICTIVE FEATURE: 10 TO 20 INCHES
DEPTH TO WATER TABLE: MORE THAN 80 INCHES
DRAINAGE CLASS: WELL DRAINED
AVAILABLE WATER CAPACITY: VERY LOW
SOIL PROFILE: 0 TO 2 INCHES: CHANNERY SILT LOAM, 2 TO 12 INCHES: VERY CHANNERY SILT LOAM, 12 TO 22 INCHES: BEDROCK.

LITZ SOIL:
HYDROLOGIC SOIL GROUP: C
DEPTH THE RESTRICTIVE FEATURE: 20 TO 40 INCHES
DEPTH TO WATER TABLE: MORE THAN 80 INCHES
DRAINAGE CLASS: WELL DRAINED
AVAILABLE WATER CAPACITY: LOW
SOIL PROFILE: 0 TO 5 INCHES: CHANNERY SILT LOAM, 5 TO 24 INCHES: VERY CHANNERY SILT LOAM, 24 TO 34 INCHES: BEDROCK.

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

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.

OUTLET PROTECTION (3.18) – THE INSTILLATION 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.

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 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. **NOT APPLICABLE. NO EARTHEN STRUCTURES ARE 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 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. EXISTING PAVED ROADS SHALL ACT AS THE CONSTRUCTION ENTRANCE.**
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 dissipater 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.

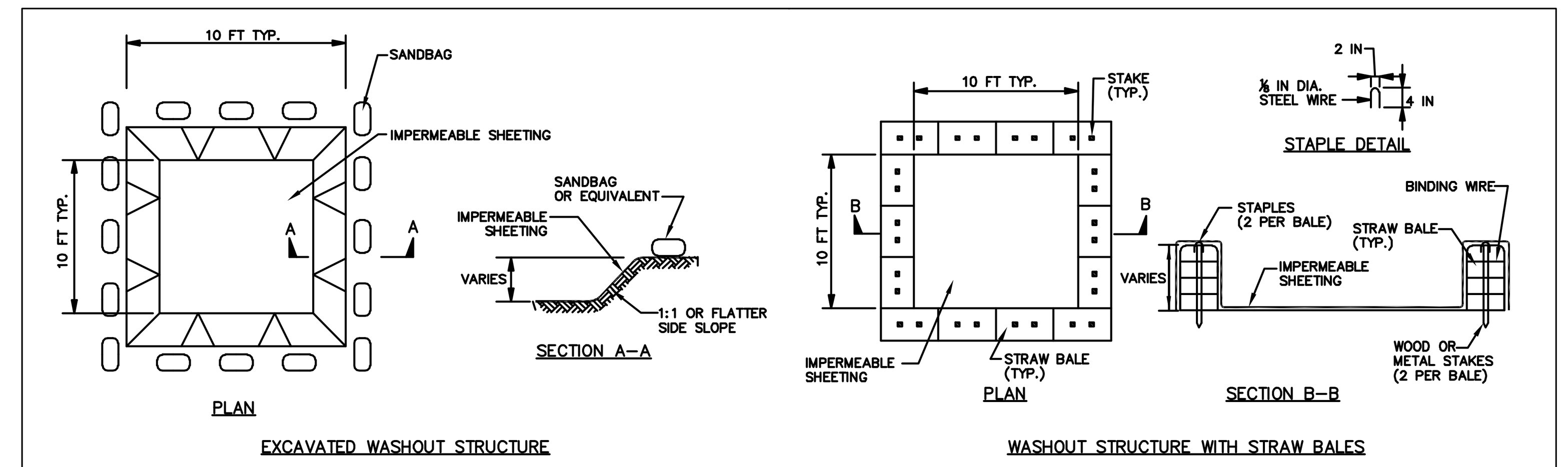
l. Any plan approved prior to July 1, 2014, that provides for stormwater management that addresses any flow rate capacity and velocity requirements for natural or man-made channels shall satisfy the flow rate capacity and velocity requirements for natural and man-made channels if the practices are designed 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.

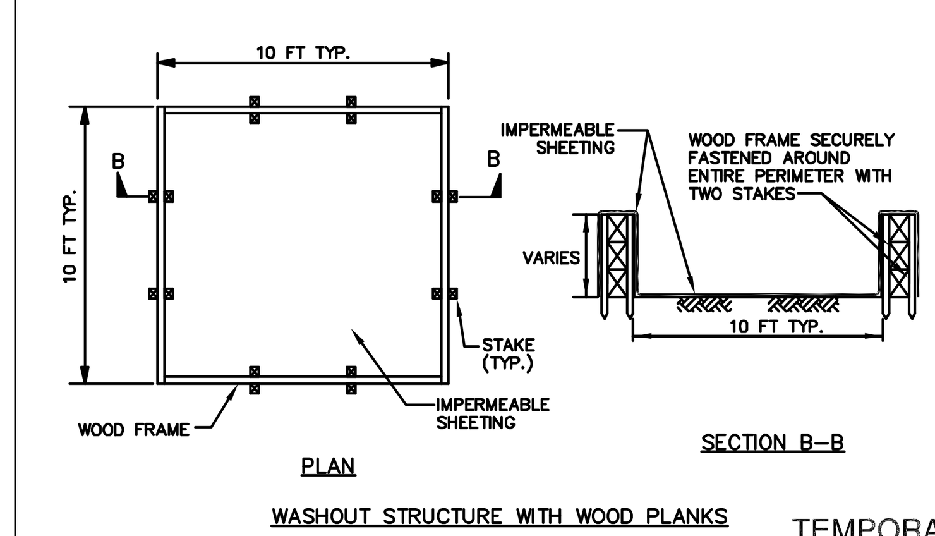
m. For plans approved on and after July 1, 2014, the flow rate capacity and velocity requirements of 62.1-44.15:52 A of the Act and this subsection shall be satisfied by compliance with water quantity requirements in the Stormwater Management Act (62.1-44.15:24 et seq. of the Code of Virginia) and attendant 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(3) 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.





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 3 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 FORECASTED RAINSTORMS, 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.

TEMPORARY CONCRETE WASHOUT FACILITY

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

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.

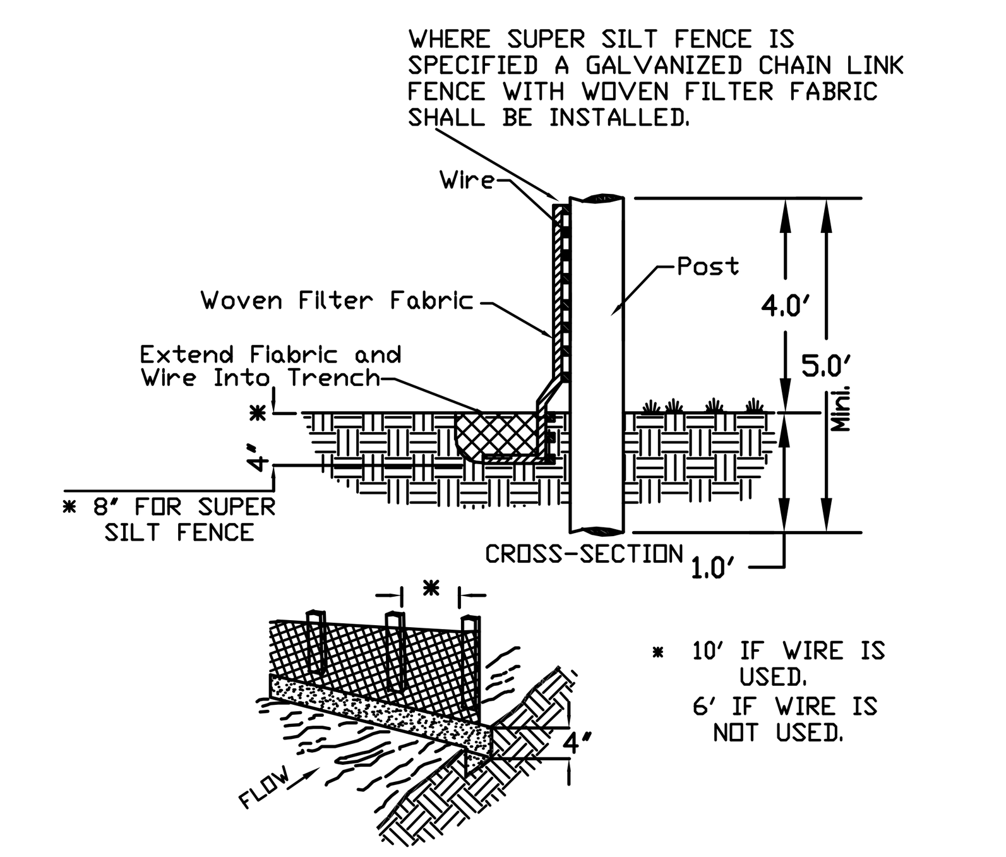
ES-5: PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO, OFF-SITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.

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).



(SF) CONSTRUCTION OF A SILT FENCE

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 PURPOSED 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

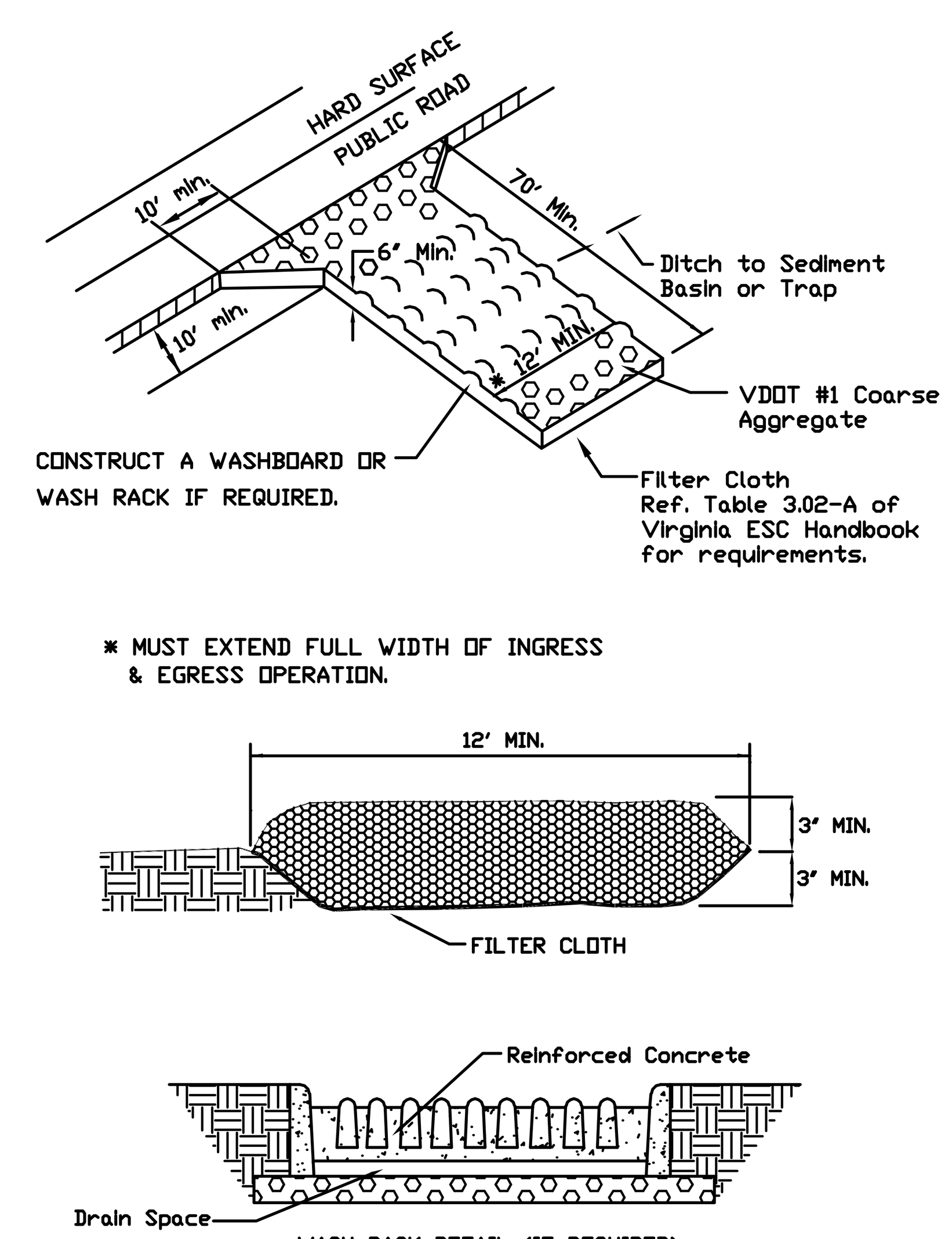
LIME: 90 LB / 1000 SF PULVERIZED AGRICULTURAL LIMESTONE

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

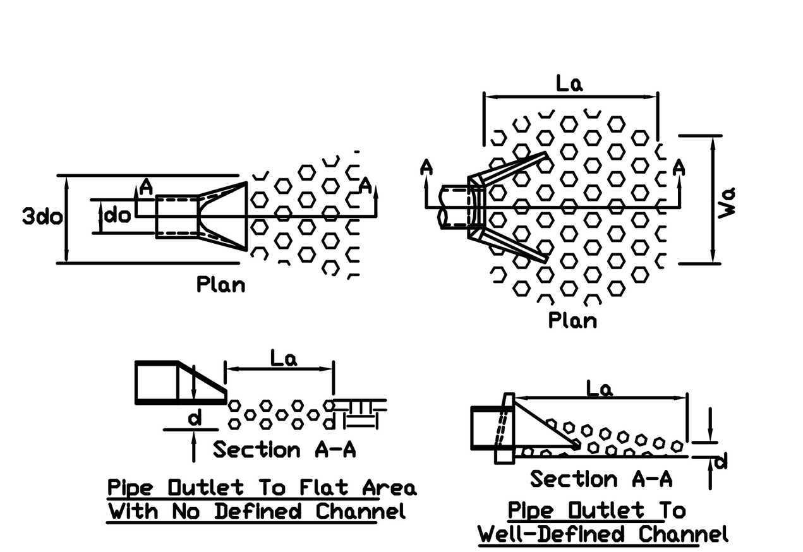
MULCH: IF REQUIRED, SHALL BE USED OVER ALL SEEDED AREAS AND SHALL BE APPLIED IN ACCORDANCE WITH SECTION 1.75 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.

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.

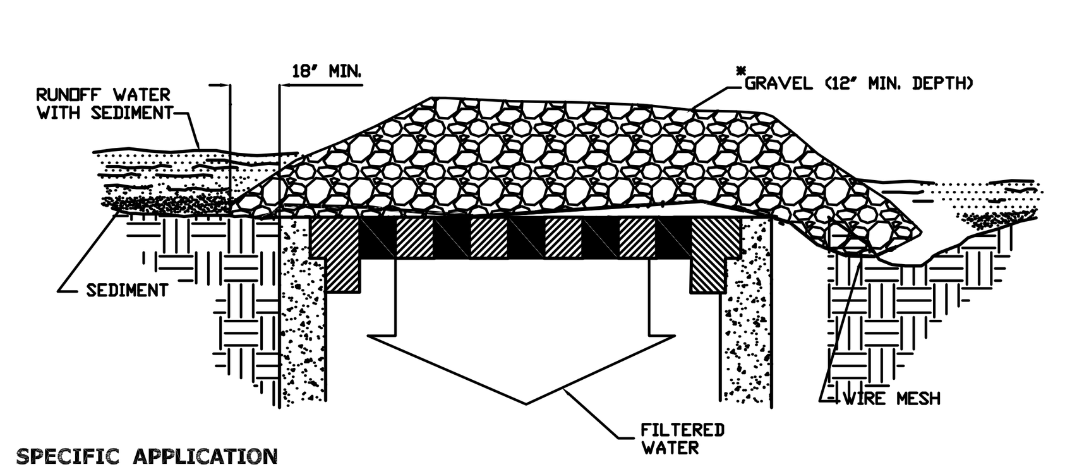


(CE) TEMPORARY GRAVEL CONSTRUCTION ENTRANCE



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".

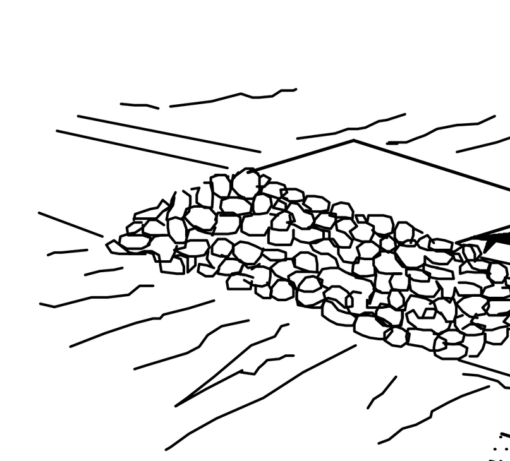
(OP) OUTLET PROTECTION

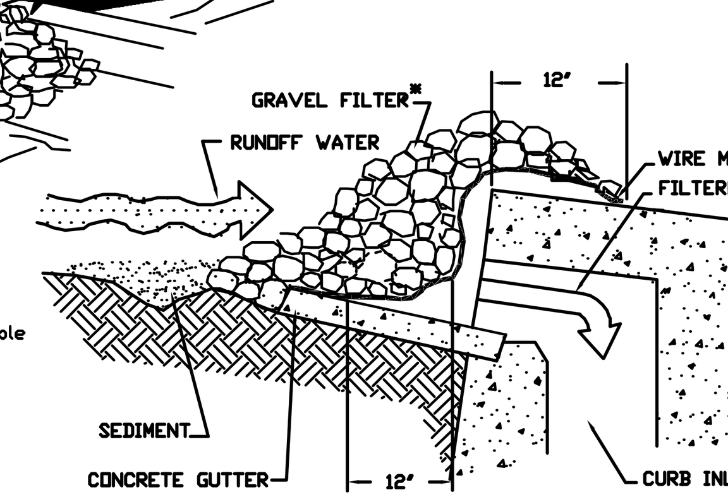


SPECIFIC APPLICATION
This method of inlet protection is applicable where heavy concentrated flows are expected, but not where ponding around the structure might cause excessive inconvenience or damage to adjacent structures and unprotected areas.

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

(IP) GRAVEL AND WIRE MESH DROP INLET SEDIMENT FILTER





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

LUMSDEN ASSOCIATES, P.C.
ENGINEERS-SURVEYORS-PLANNERS
ROANOKE, VIRGINIA
4664 BRAMBLETON AVENUE
P.O. BOX 20669
ROANOKE, VIRGINIA 24018
PHONE: (540) 774-4411
FAX: (540) 772-9445
E-MAIL: MAIL@LUMSDENPC.COM

COMMONWEALTH OF VIRGINIA
ANDREW P. LUMSDEN
Lic. No. 052216
5/3/18
PROFESSIONAL ENGINEER

EROSION AND SEDIMENT CONTROL NOTES & DETAILS

KENWICK TRAIL - HARTLEY CIRCLE DRAINAGE IMPROVEMENTS

PREPARED FOR
ROANOKE COUNTY
ENGINEERING DEPARTMENT
CAVE SPRING MAGISTERIAL DISTRICT
ROANOKE COUNTY, VIRGINIA

REVISIONS

NO.	DATE	DESCRIPTION
1		
2		
3		
4		
5		

DATE: May 3, 2018
SCALE: AS SHOWN
COMMISSION NO: 17-111

17111-comp-08-m101.plt

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 PERMITED 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:

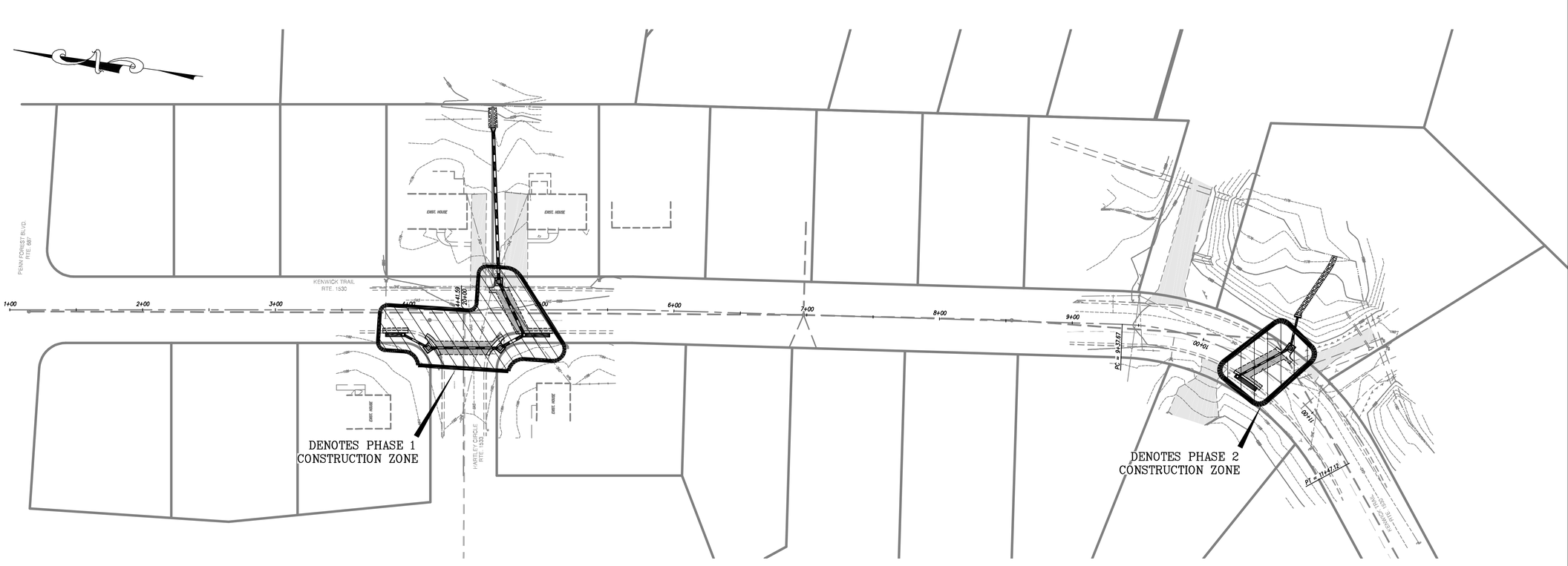
1. IT IS NOT THE INTENT OF THIS PLAN TO ENUMERATE EVERY DETAIL WHICH MUST BE CONSIDERED IN THE CONSTRUCTION OF EACH WORK ZONE, BUT ONLY TO SHOW THE GENERAL FEATURES NECESSARY TO PROVIDE FOR PROPER HANDLING OF TRAFFIC. THE CONSTRUCTION TECHNIQUES ULTIMATELY EMPLOYED BY THE CONTRACTOR ARE TO BE APPROVED BY VDOT. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE FOR SAFE TRAVEL AROUND THE WORK ZONES.
2. TWO PHASES OF WORK EXIST WITH THIS PLAN. THEY CONSIST OF:
   PHASE 1: CONSTRUCTION OF THE PORTION OF ROADWAY LOCATED AT THE INTERSECTION OF ROUTE 1530 AND 1533. WORK WITHIN THIS PHASE SHALL BE IN ACCORDANCE WITH TTC-23.0 FOR THE APPROPRIATE LANE CLOSURES USING FLAGGERS.
   PHASE 2: CONSTRUCTION OF PROPOSED STORM DRAIN IMPROVEMENTS ALONG ROUTE 1530. 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 ON US ROUTE 1530 AND 1533 IS 25 MPH. ALL TAPER LENGTHS, BUFFER LENGTHS, AND CHANNELIZING SHALL BE BASED ON THESE SPEEDS.
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.

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.



LUMSDEN ASSOCIATES, P.C.
ENGINEERS-SURVEYORS-PLANNERS
ROANOKE, VIRGINIA
4664 BRAMBLETON AVENUE
P.O. BOX 20669
ROANOKE, VIRGINIA 24018
PHONE: (540) 774-4411
FAX: (540) 772-9445
E-MAIL: MAIL@LUMSDENPC.COM

COMMONWEALTH OF VIRGINIA
ANDREW P. LUMSDEN
Lic. No. 052216
5/3/18
PROFESSIONAL ENGINEER

TRAFFIC MANAGEMENT PLAN NOTES & OVERVIEW

KENWICK TRAIL - HARTLEY CIRCLE
DRAINAGE IMPROVEMENTS
PREPARED FOR
ROANOKE COUNTY
ENGINEERING DEPARTMENT
CAVE SPRING MAGISTERIAL DISTRICT
ROANOKE COUNTY, VIRGINIA

REVISIONS			
NO.	DATE	DESCRIPTION
1		
2		
3		
4		
5		

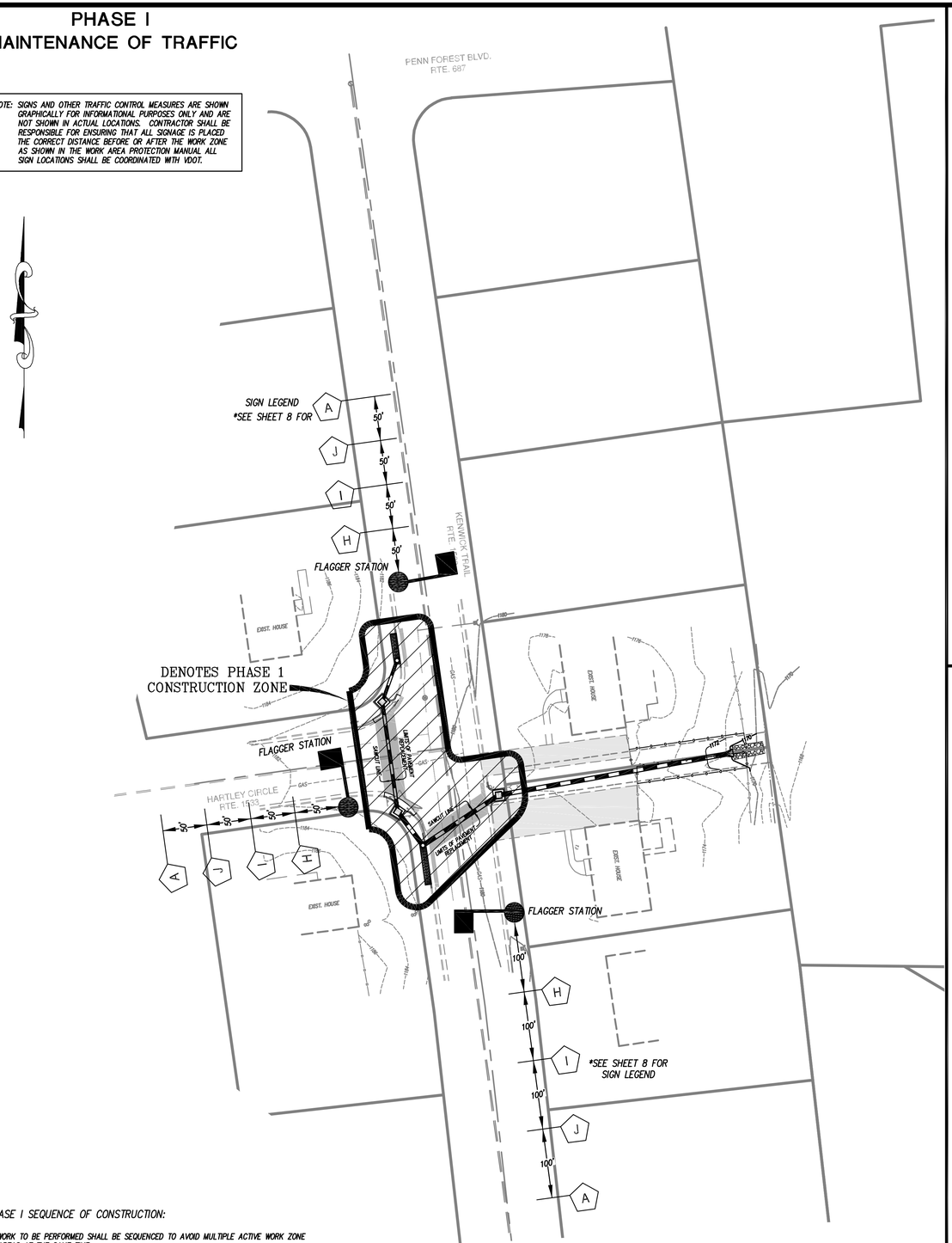
DATE: May 3, 2018
SCALE: 1"= 40'
COMMISSION NO: 17-111
SHEET 8 OF 9

w:\drawings\2017\17111\eng\17111-comp.dwg

17111-comp-09-m02.plt

PHASE I
MAINTENANCE OF TRAFFIC

*NOTE: SIGNS AND OTHER TRAFFIC CONTROL MEASURES ARE SHOWN GRAPHICALLY FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT SHOWN IN ACTUAL LOCATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT ALL SIGNAGE IS PLACED THE CORRECT DISTANCE BEFORE OR AFTER THE WORK ZONE AS SHOWN IN THE WORK AREA PROTECTION MANUAL ALL SIGN LOCATIONS SHALL BE COORDINATED WITH VDOT.



PHASE I 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). NOTE THAT THE SIGN SPACING REQUIREMENTS COULD NOT BE MEET DUE TO THE DISTANCE BETWEEN THE PENN FOREST BLVD. INTERSECTION AND THE AREA I CONSTRUCTION ZONE AND THE PHASE I AND PHASE II WORK ZONES. FLAGGER TO INSURE THAT VEHICLES DO NOT STACK UP TO THE PENN FOREST INTERSECTION.
3. TEMPORARY SINGLE LANE CLOSURE (TTC-23.0) SHALL BE UTILIZED TO PERFORM WORK WITHIN THE AREA OF CONNECTION FOR PROPOSED ROUTE 1530 AND 1533.
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.
5. CHANNELIZATION SHALL BE ADJUSTED AS NEEDED FOR SINGLE LANE ACCESS AT INTERSECTION OF ROUTE 1530 AND 1533 WHILE STORM DRAINS ARE BEING COMPLETED.

Typical Traffic Control

Lane Closure on a Two-Lane Roadway Using Flaggers

(Figure TTC-23.1)

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.*

Option:

3. Where Right-of-Way or geometric conditions prevent the use of 48" x 48" signs, 36" x 36" signs may be used.

Standard:

4. **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).**
5. **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).**
6. **Cone spacing shall be based on the posted speed and the values in Table 6H-4 on Page 6H-6.[1]**
7. **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 supplemental flagger 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 portable temporary rumble strips (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]

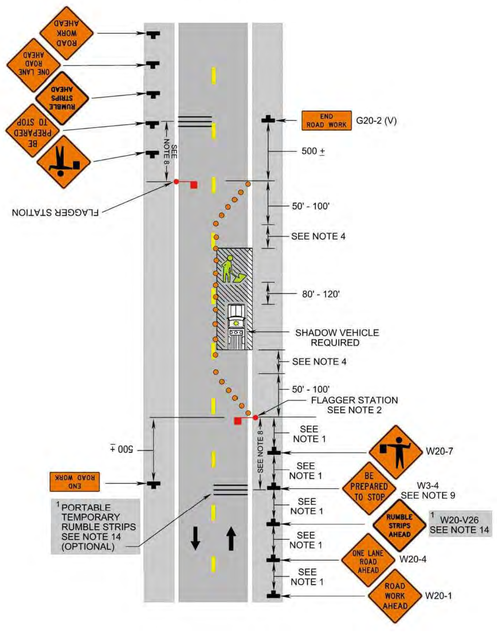
14. **When approved for use, three portable temporary rumble (PTRS) strips shall be installed across the entire travel lane adjacent to the BE PREPARED TO STOP (W3-4) sign. The portable temporary rumble strips shall be monitored and adjusted as necessary during the work shift to ensure proper placement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

Posted Speed	0 – 35 mph	36 – 55 mph
PTRS Spacing (Center to Center)	5 Feet	8 Feet

1: Revision 1 – 4/1/2015

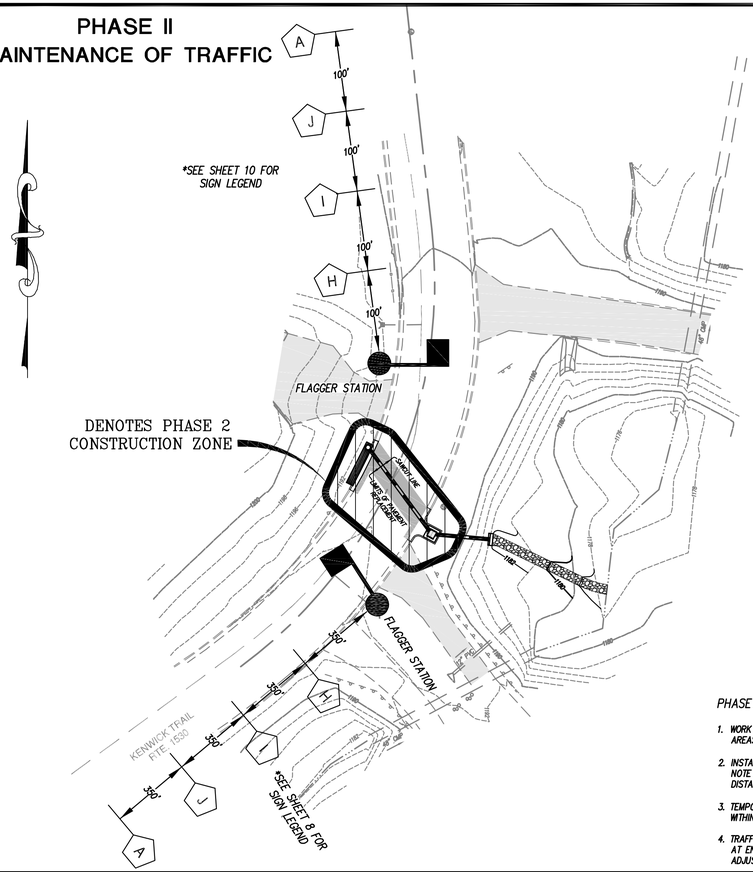
Lane Closure on a Two-Lane Roadway Using Flaggers

(Figure TTC-23.1)



PHASE II
MAINTENANCE OF TRAFFIC

*NOTE: SIGNS AND OTHER TRAFFIC CONTROL MEASURES ARE SHOWN GRAPHICALLY FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT SHOWN IN ACTUAL LOCATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT ALL SIGNAGE IS PLACED THE CORRECT DISTANCE BEFORE OR AFTER THE WORK ZONE AS SHOWN IN THE WORK AREA PROTECTION MANUAL ALL SIGN LOCATIONS SHALL BE COORDINATED WITH VDOT.



PHASE II 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). NOTE THAT THE SIGN SPACING REQUIREMENTS COULD NOT BE MEET DUE TO THE DISTANCE BETWEEN THE PHASE I AND PHASE II WORK ZONES.
3. TEMPORARY SINGLE LANE CLOSURE (TTC-23.0) SHALL BE UTILIZED TO PERFORM WORK WITHIN THE AREA OF CONNECTION FOR PROPOSED ROUTE 1530.
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.

LUMSDEN ASSOCIATES, P.C.
ENGINEERS-SURVEYORS-PLANNERS
ROANOKE, VIRGINIA
4664 BRAMBLETON AVENUE
P.O. BOX 20669
ROANOKE, VIRGINIA 24018
PHONE: (540) 774-4471
FAX: (540) 772-9445
E-MAIL: MAIL@LUMSDENPC.COM

COMMONWEALTH OF VIRGINIA
ANDREW P. LUMSDEN
Lic. No. 052216
5/4/18
PROFESSIONAL ENGINEER

TRAFFIC MANAGEMENT PLAN - PHASE I & II

KENWICK TRAIL - HARTLEY CIRCLE DRAINAGE IMPROVEMENTS

PREPARED FOR
ROANOKE COUNTY
ENGINEERING DEPARTMENT
CAVE SPRING MAGISTERIAL DISTRICT
ROANOKE COUNTY, VIRGINIA

REVISIONS		
NO.	DATE	DESCRIPTION
1		
2		
3		
4		
5		

DATE: May 3, 2018
SCALE: 1"= 20'
COMMISSION NO: 17-111
SHEET 9 OF 9

w:\drawings\2017\17111\eng\17111-comp.dwg