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

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	RICHARD BLVD./ PILOT BLVD. DRAINAGE IMPROVEMENTS
MAGISTERIAL DISTRICT(S)	CAVE SPRING
OWNER (name, address, telephone)	COUNTY OF ROANOKE
DEVELOPER (name, address, telephone)	COUNTY OF ROANOKE
ENGINEER, ARCHITECT OR SURVEYOR (name, address, telephone)	DEPARTMENT OF DEVELOPMENT SERVICES
TAX MAP NO(S)	Tax# 77.14-06-26.00 Tax# 77.14-06-27.00

I, _____ OWNER/DEVELOPER, AM 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

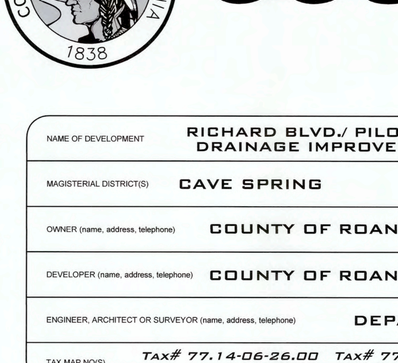
PRIVATE UTILITIES

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 ameWVWAents). 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 be substituted for the code required devices.

PR#:	NOTES:

Revision Table

VICINITY MAP



LEGEND

Property Line	℄
Right-of-way	R/W
Centerline	CL
Minimum Building Line	MBL MBL
Existing Storm Sewer	
Existing Sanitary Sewer	8"SS 8"SS
Existing Water Main	4"W 4"W
Existing Overhead Wire	OHW OHW OHW
Existing Gas	G G G G G
Existing Telephone	T T T T T
Existing Contour	1045
Proposed Contour	1045
Proposed Drainage Divide	
Proposed Limits of Clearing	LOD LOD LOD
Proposed Storm Sewer	24" S.D.

Sheet Index

SURVEY INFORMATION

Horizontal and vertical control surveys were performed in year: 2022
By: NICKIE D. MILLS, P.E., L.S.

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

Horizontal Datum: NAD83 (2011) Vertical Datum: NAVD88

Source of topographic mapping is dated GIS TOPO SHOWN OUTSIDE OF LIMITS OF FIELD SURVEY.

Boundary was performed by RECORDS & LIMITED SURVEY dated: JANUARY 26, 1954 (P.B. 3 PG. 115)

Benchmark Information: BENCHMARK SET IN FIELD AND SHOWN ON PLANS.

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.

NOT APPLICABLE

ROANOKE COUNTY VA
ENGINEERING
ROANOKECOUNTYVA.GOV

5204 Bernard Drive
P.O. Box 29800
Roanoke, Virginia 24018
Office: (540) 772-2083
Fax: (540) 776-7155
E-MAIL: NMILLS@roanokecountyva.gov

COMMONWEALTH OF VIRGINIA
NICKIE D. MILLS
LICENSE NO.
0402031205
6/13/24
PROFESSIONAL ENGINEER

Approved

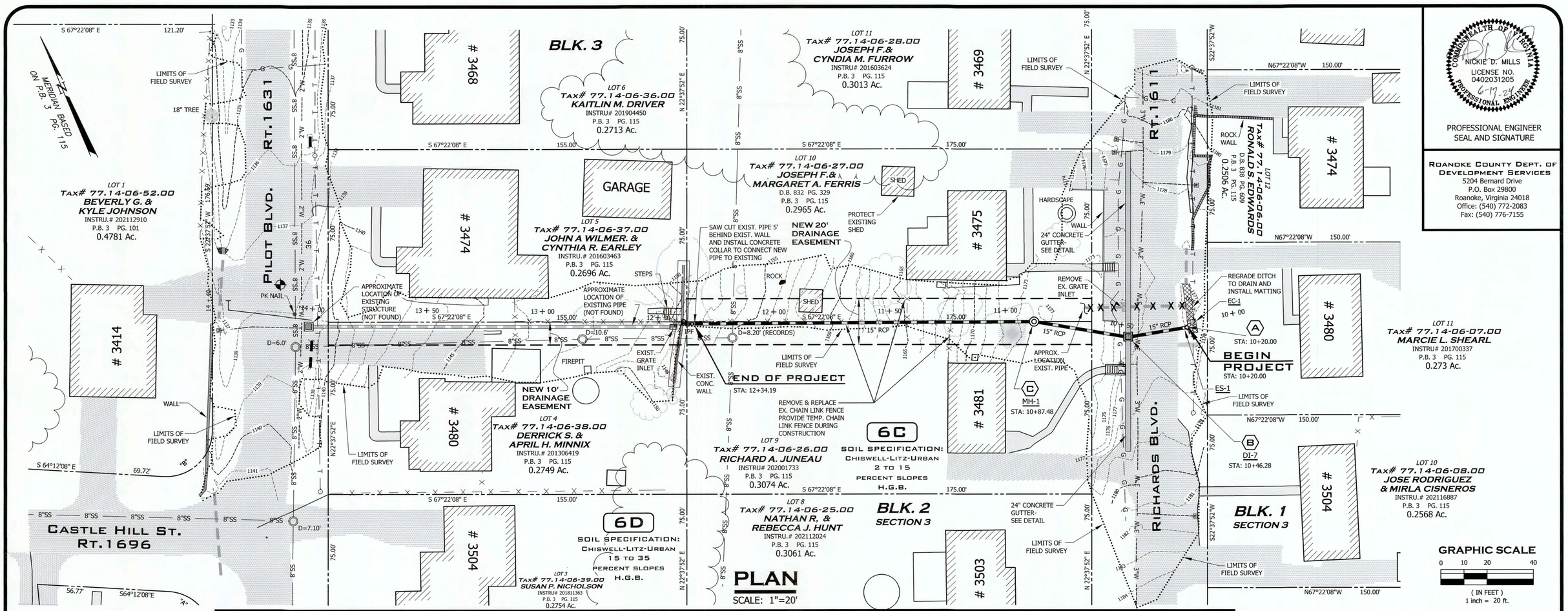
PREPARED BY
ROANOKE COUNTY
DEPARTMENT OF
DEVELOPMENT SERVICES

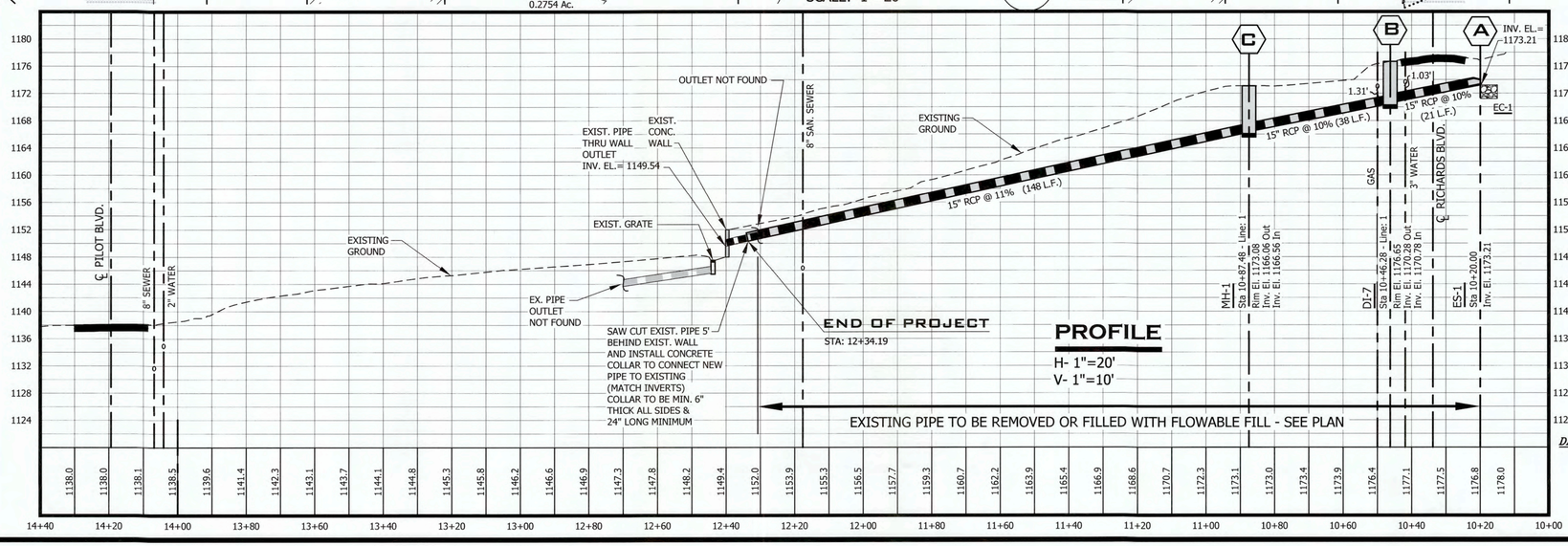
DATE: 6/11/2024

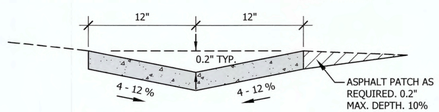
PLAN APPROVED
REVIEW COORDINATOR, 6/26/2024

Richard Blvd./ Pilot Blvd.
Drainage Improvements
3481 RICHARDS BLVD., Rte, 1611
County of Roanoke, Virginia

SHEET
1
OF
6







CONCRETE GUTTER

NOT TO SCALE

LEGEND

- EXISTING ROAD SURFACE
- RIP RAP
- EXISTING REINFORCED CONCRETE PIPE
- PROPOSED REINFORCED CONCRETE PIPE
- EXISTING STORM DRAIN DEMOLISHED/ABANDONED
- WATER METER
- IRON PIN FOUND
- NATURAL WATER COURSE
- FENCE
- LIMITS OF FIELD SURVEY
- PRIVACY FENCE

NOTE:

ANY PAVEMENT REPLACEMENT SHALL MATCH THE EXISTING PAVEMENT SECTION.

BENCHMARK

ELEVATION = 1138.01'
TEMPORARY BENCHMARK
TRAVERSE NAIL
N 3612597.0503
E 11047496.5290

NICKIE D. MILLS
LICENSE NO.
0402031205
6-17-24
COMMONWEALTH OF VIRGINIA
PROFESSIONAL ENGINEER

PROFESSIONAL ENGINEER SEAL AND SIGNATURE

ROANOKE COUNTY DEPT. OF DEVELOPMENT SERVICES
5204 Bernard Drive
P.O. Box 29800
Roanoke, Virginia 24018
Office: (540) 772-2083
Fax: (540) 776-7155

DEPARTMENT OF DEVELOPMENT SERVICES

NO.	REVISIONS	DATE
1		
2		
3		
4		
5		
6		

RICHARD BLVD./ PILOT BLVD. DRAINAGE IMPROVEMENTS

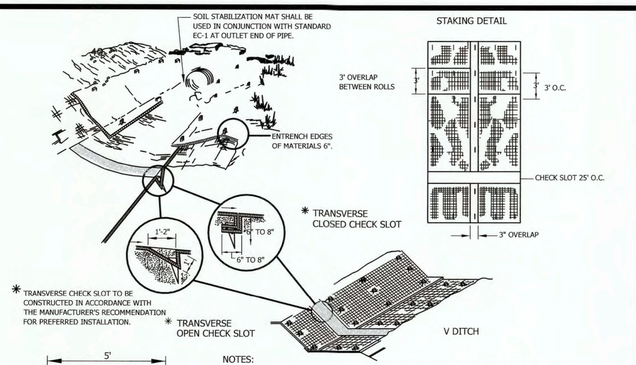
DATE:	6/11/2024
SCALE:	1"=20'
DRAWING BY:	BWE
DESIGNED BY:	NDM
APPROVED BY:	DMH

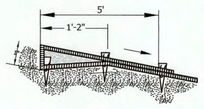
PLAN & PROFILE

SHEET 2 OF 6

Drawing name: C:\Brian Drawings\Drainage Projects\Richard Blvd Pilot Blvd\Richards Pilot Storm Drain 3.dwg

APPROVED 6/26/2024



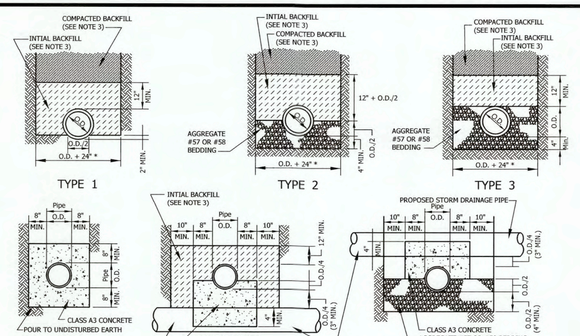


UPSTREAM AND DOWNSTREAM TERMINAL

NOTES:

1. STAKES SHALL BE WOOD OR METAL AS RECOMMENDED BY THE MANUFACTURER AND SHALL BE A MINIMUM OF 12" IN LENGTH. IN SANDY SOILS METAL STAKES A MINIMUM OF 18" IN LENGTH SHALL BE USED.
2. SOIL STABILIZATION MAT TYPE A AND B ARE TO BE IN ACCORDANCE WITH THE APPROVED PRODUCTS LIST.
3. SOIL STABILIZATION MAT SHOULD BE INSTALLED TO THE SHOULDER BREAK POINT OR EXISTING GROUND THEN EMBEDDED 6". MATERIAL ON BOTH SIDES OF THE DITCH SHALL BE INSTALLED TO THE SAME ELEVATIONS.
4. IF MORE THAN 3 LINES OF MATERIAL ARE REQUIRED PARALLEL TO THE OF THE DITCH, MATERIAL SHALL BE INSTALLED PERPENDICULAR TO THE CENTER LINE OF THE DITCH, STARTING AT THE LOWEST ELEVATION OF THE DITCH.
5. FOR SOURCES OF APPROVED MATERIALS SEE VDOT'S APPROVED PRODUCTS LIST FOR STD. EC-3, TYPE A OR B.

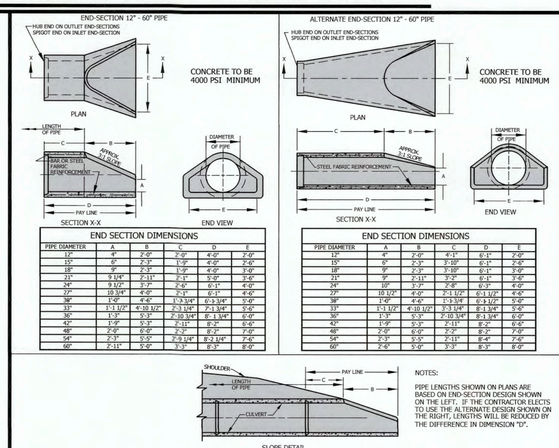
(B/M) (EC-3) SOIL STABILIZATION MAT DITCH INSTALLATION TYPE A OR B



NOTES:

1. WHERE THE TRENCH BOTTOM IS IN ROCK, IT SHALL BE EXCAVATED TO A MINIMUM OF 8" BELOW THE BOOTOM OF THE PIPE BACKFILLED WITH BEDDING MATERIAL
2. WHERE PIPE FOUNDATIONS ARE TIELDIN, PIPE SHALL BE BEDDING ON A MINIMUM OF 9", BEDDING MATERIAL
3. INITIAL AND COMPACTED BACKFILL SHALL MEET THE REQUIREMENTS OF SECTION 520 OF THE VDOT SPECIFICATION. CRUSHED GLASS CONFORMING TO THE SIZE REQUIREMENTS FOR CRUSHER RUN AGGREGATE SIZE 25 OR 26 AND MEETING THE REQUIREMENTS OF SECTION 520 OF THE VDOT SPECIFICATION MAY BE USED AS BACKFILL MATERIAL.
* FOR PIPE LESS THAN 12" THE TRENCH WITH MAY BE 36" MAXIMUM.

(UB-1) UTILITY PROTECTION & BEDDING

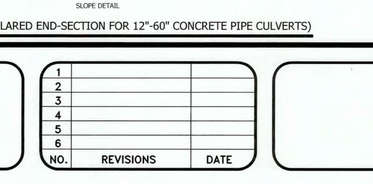


END SECTION DIMENSIONS

PIPE DIAMETER	A	B	C	D	E
12"	4"	2'-0"	2'-0"	6'-1"	2'-0"
15"	6"	2'-3"	1'-9"	6'-1"	2'-6"
18"	9"	2'-3"	1'-9"	6'-1"	3'-0"
21"	9 1/4"	2'-11"	2'-1"	6'-1"	3'-6"
24"	9 1/2"	3'-7"	2'-6"	6'-1"	4'-0"
27"	10 3/4"	4'-0"	2'-1"	6'-1"	4'-6"
30"	1'-0"	4'-6"	1'-3 3/4"	6'-3 3/4"	5'-0"
33"	1'-1 1/2"	4'-10 1/2"	2'-1 1/4"	7'-1 3/4"	5'-6"
36"	1'-3"	5'-3"	2'-10 3/4"	8'-1 3/4"	6'-0"
42"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"
48"	2'-0"	6'-6"	2'-2"	8'-2"	7'-6"
54"	2'-3"	5'-3"	2'-9 1/4"	8'-2 1/4"	7'-6"
60"	2'-11"	5'-6"	3'-3"	8'-3"	8'-6"

END SECTION DIMENSIONS

PIPE DIAMETER	A	B	C	D	E
12"	4"	2'-0"	1'-6"	6'-1"	2'-0"
15"	6"	2'-3"	1'-10"	6'-1"	2'-6"
18"	9"	2'-3"	1'-10"	6'-1"	3'-0"
21"	9"	2'-11"	2'-2"	6'-1"	3'-6"
24"	10"	3'-7"	2'-8"	6'-3"	4'-0"
27"	10 1/2"	4'-0"	2'-1 1/2"	6'-1 1/2"	4'-6"
30"	1'-0"	4'-6"	1'-3 3/4"	6'-3 1/2"	5'-0"
33"	1'-1 1/2"	4'-10 1/2"	2'-1 1/4"	8'-1 3/4"	5'-6"
36"	1'-3"	5'-3"	2'-10 3/4"	8'-1 3/4"	6'-0"
42"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"
48"	2'-0"	6'-6"	2'-2"	8'-2"	7'-6"
54"	2'-3"	5'-3"	2'-11"	8'-4"	7'-6"
60"	2'-6"	5'-6"	3'-3"	8'-3"	8'-6"

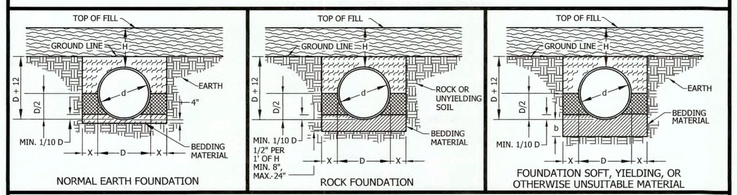


NOTES:

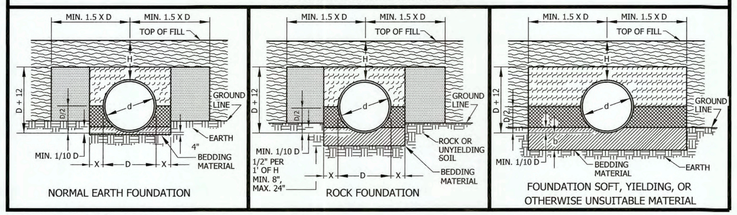
PIPE LENGTHS SHOWN ON PLANS ARE BASED ON END-SECTION DESIGN SHOWN ON THE LEFT. IF THE CONTRACTOR ELECTS TO USE THE ALTERNATE DESIGN SHOWN ON THE RIGHT, LENGTHS WILL BE REDUCED BY THE DIFFERENCE IN DIMENSION "D".

ES-1 (FLARED END-SECTION FOR 12"-60" CONCRETE PIPE CULVERTS)

NO PROJECTION OF PIPE ABOVE GROUND LINE



PIPE PROJECTION ABOVE GROUND LINE



BEDDING MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS.

CLASS 1 BACKFILL MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS.

FOR PLASTIC PIPE CLASS 1 BACKFILL MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS.

FOR ALL OTHER PIPE REGULAR BACKFILL MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS.

EMBANKMENT

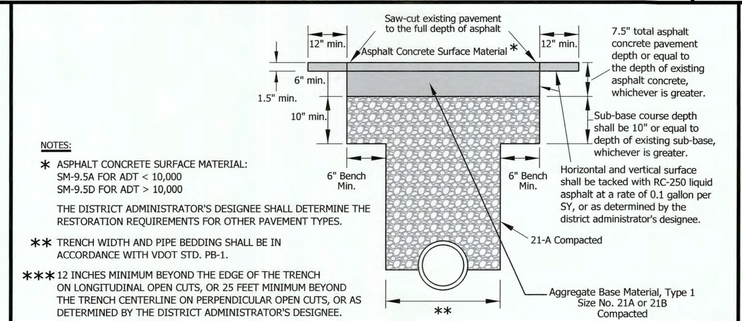
REGULAR BACKFILL MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS.

H = HEIGHT OF COVER MEASURED FROM TOP OF DRAINAGE STRUCTURE TO FINISHED GRADE.
D = OUTSIDE DIAMETER OF PIPE.
d = INSIDE DIAMETER OF PIPE.
b = DEPTH AS SHOWN ON PLANS OR TO FIRM BEARING SOIL.

NOTES:

1. FOR GENERAL NOTES ON PIPE BEDDING, SEE INSTALLATION OF PIPE CULVERTS AND STORM SEWERS GENERAL NOTES ON SHEET 107.00.
2. CRUSHED GLASS CONFORMING TO THE SIZE REQUIREMENTS FOR CRUSHER RUN AGGREGATE SIZE 25 AND 26 MAY BE USED IN PLACE OF CLASS I BACKFILL.
3. #57 WILL NOT BE USED AS BACKFILL OR BEDDING.

PB-1(INSTALL. OF PIPE CULVERTS AND STORM SEWERS CIRC. PIPE BEDDING AND BACKFILL - METHOD "A")



NOTES:

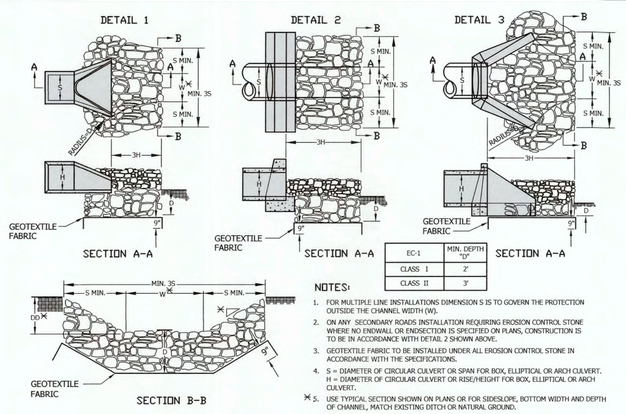
* ASPHALT CONCRETE SURFACE MATERIAL:
SM-9.5A FOR ADT < 10,000
SM-9.5D FOR ADT > 10,000

THE DISTRICT ADMINISTRATOR'S DESIGNEE SHALL DETERMINE THE RESTORATION REQUIREMENTS FOR OTHER PAVEMENT TYPES.

** TRENCH WIDTH AND PIPE BEDDING SHALL BE IN ACCORDANCE WITH VDOT STD. PB-1.

*** 12 INCHES MINIMUM BEYOND THE EDGE OF THE TRENCH ON LONGITUDINAL OPEN CUTS, OR 25 FEET MINIMUM BEYOND THE TRENCH CENTERLINE ON PERPENDICULAR OPEN CUTS, OR AS DETERMINED BY THE DISTRICT ADMINISTRATOR'S DESIGNEE.

ASPHALT PAVEMENT RESTORATION DETAIL FOR OPEN CUT UTILITY INSTALLATIONS



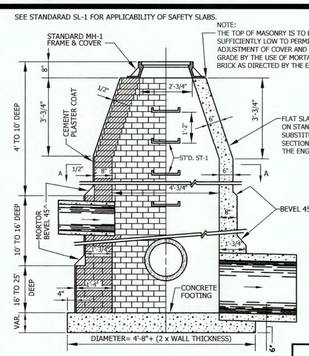
EC-1	MIN. DEPTH "D"
CLASS I	2'
CLASS II	3'

NOTES:

1. FOR MULTIPLE LINE INSTALLATIONS DIMENSION S IS TO GOVERN THE PROTECTION OUTSIDE THE CHANNEL WIDTH (W).
2. ON ANY SECONDARY ROADS INSTALLATION REQUIRING EROSION CONTROL STONE WHERE NO ENDWALL OR ENDSECTION IS SPECIFIED ON PLANS, CONSTRUCTION IS TO BE IN ACCORDANCE WITH DETAIL 2 SHOWN ABOVE.
3. GEOTEXTILE FABRIC TO BE INSTALLED UNDER ALL EROSION CONTROL STONE IN ACCORDANCE WITH THE SPECIFICATIONS.
4. S = DIAMETER OF CIRCULAR CULVERT OR SPAN FOR BOX, ELLIPTICAL OR ARCH CULVERT. H = DIAMETER OF CIRCULAR CULVERT OR RISE/HEIGHT FOR BOX, ELLIPTICAL OR ARCH CULVERT.
5. USE TYPICAL SECTION SHOWN ON PLANS OR FOR SIDESLOPE, BOTTOM WIDTH AND DEPTH OF CHANNEL, MATCH EXISTING DITCH OR NATURAL GROUND.

EC-1 (STONE FOR EROSION CONTROL)

SEE STANDARD SL-1 FOR APPLICABILITY OF SAFETY SLABS.



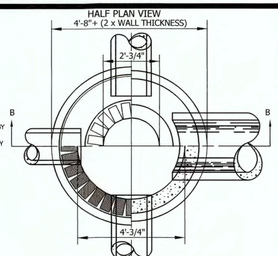


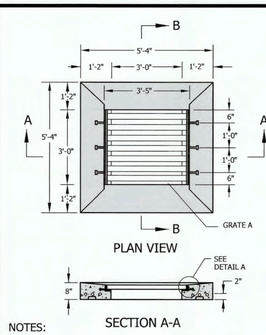
TABLE OF QUANTITIES

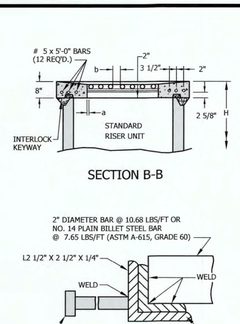
DEPTH	BRICK MANHOLE		CONCRETE MANHOLE
	BRICK	CONCRETE	CONCRETE
FEET	THOUSANDS	CU. YARDS	CU. YARDS
4	0.5	0.785	1.437
5	0.7	0.785	1.699
6	0.9	0.785	1.961
7	1.0	0.785	2.223
8	1.2	0.785	2.485
9	1.4	0.785	2.747
10	1.6	0.785	3.009
11	1.9	0.970	3.455
12	2.2	0.970	3.817
13	2.5	0.970	4.179
14	2.8	0.970	4.541
15	3.1	0.970	4.903
16	3.4	0.970	5.265
17	4.0	1.173	6.032
INCREMENT	0.45	-	0.582

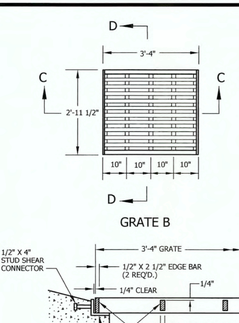
NOTES:

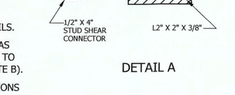
1. QUANTITIES SHOWN ARE FOR MANHOLE WITHOUT PIPES. THE AMOUNT DISPLACED BY PIPES MUST BE DEDUCTED TO OBTAIN TRUE QUANTITIES.
2. A BASE THICKNESS OF 9" WAS USED IN COMPUTING CONCRETE QUANTITIES.
3. INCREMENTS TO BE ADDED FOR EACH ADDITIONAL FOOT OF DEPTH.
4. MATERIALS MAY BE BRICK, CONCRETE OR APPROVED CONCRETE MANHOLE BLOCK.
5. IF BLOCKS ARE USED THE MINIMUM THICKNESS OF SAME IS TO BE 5". OTHER THICKNESSES ARE TO CONFORM
6. ALL CONCRETE TO BE CLASS A3.
7. STRUCTURE INLETS SHALL BE SHAPED IN ACCORDANCE WITH STANDARD IS-1.

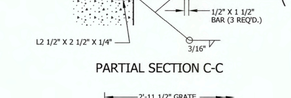
MH-1 (MANHOLE) 12" TO 48" PIPE CULVERTS

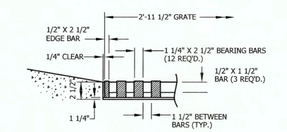












NOTES:

1. GRATE B IS TO BE USED WHEN INLET IS LOCATED ON SHOULDERS OR OTHER AREAS SUBJECT TO TRAFFIC.

DETAILS OF LOAD CARRYING GRATE B

NOTES:

1. SEE GENERAL NOTES-PRECAST FOR ADDITIONAL DETAILS.
2. CONCRETE COVER AND GRATE ARE TO BE FURNISHED AS A SINGLE UNIT. OUTSIDE DIMENSIONS OF GRATE ARE TO BE 3'-4" X 2'-11 3/4" (GRATE A) OR 3'-4" X 2'-11" (GRATE B).
3. DIMENSIONS SHOWN ARE MINIMUM. ACTUAL DIMENSIONS MAY VARY WITH MANUFACTURER.
4. GRATE A IS TO BE USED WHEN INLET IS LOCATED IN MEDIAN OR OTHER AREAS NOT NORMALLY SUBJECT TO TRAFFIC. GRATE B IS TO BE USED WHEN INLET IS LOCATED ON SHOULDERS OR OTHER AREAS SUBJECT TO TRAFFIC.
5. ALTERNATE METHODS OF ANCHORING ANGLE IRON WILL BE ACCEPTABLE IF APPROVED BY THE ENGINEER.
6. GRATE AND COLLAR ARE TO BE GALVANIZED AFTER FABRICATION.
7. JOINTS BETWEEN CONCRETE COVER AND GUTTERS (WHEN REQUIRED) ARE TO BE DOWELED, KEYED, OR OTHER VDOT APPROVED METHODS.
8. CONCRETE SHALL BE 4000 PSI MINIMUM.
9. REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ASTM A-615.
10. GRATE BARS ARE TO BE INSTALLED SO THEY WILL BE ALIGNED PARALLEL TO THE DITCH FLOW.
11. SEE STANDARD DI-7, 7A, 7B FOR DETAILS OF GUTTER, METHOD OF PLACEMENT, ALTERNATE METHODS OF CONSTRUCTION.

GRATE A BAR SPACING CHART		
GRATE TYPE	MAXIMUM DIMENSION	
	a	b
A I	1 1/2"	3"
A III	1"	1"

DETAILS OF CONCRETE COVER AND GRATE A

DI-7 (STANDARD PRECAST TOP UNITS)

COMMONWEALTH OF VIRGINIA
NICKIE D. MILLS
LICENSE NO. 0402031205
6-13-24
PROFESSIONAL ENGINEER

PROFESSIONAL ENGINEER SEAL AND SIGNATURE

ROANOKE COUNTY DEPT. OF DEVELOPMENT SERVICES
5204 Bernard Drive
P.O. Box 29800
Roanoke, Virginia 24018
Office: (540) 772-2083
Fax: (540) 776-7155

DEPARTMENT OF DEVELOPMENT SERVICES

NO.	REVISIONS	DATE
1		
2		
3		
4		
5		
6		

RICHARD BLVD./ PILOT BLVD. DRAINAGE IMPROVEMENTS

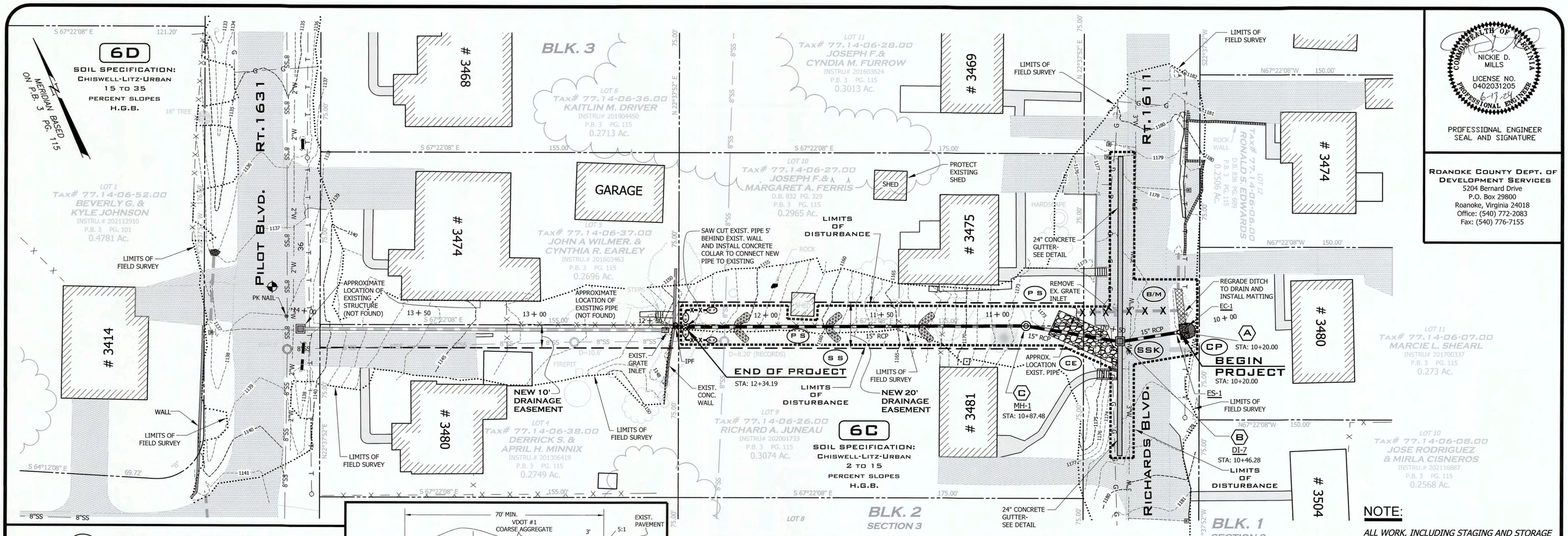
DATE:	6/11/2024
SCALE:	1"=20'
DRAWING BY:	BWE
DESIGNED BY:	NDM
APPROVED BY:	DMH

DETAILS

SHEET 3 OF 6

Drawing name: C:\Brian Drawings\Drainage Projects\Richard Blvd Pilot Blvd\Richards Pilot Storm Drain 3.dwg

APPROVED 6/26/2024



COMMONWEALTH OF VIRGINIA
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PROFESSIONAL ENGINEER
6-17-24

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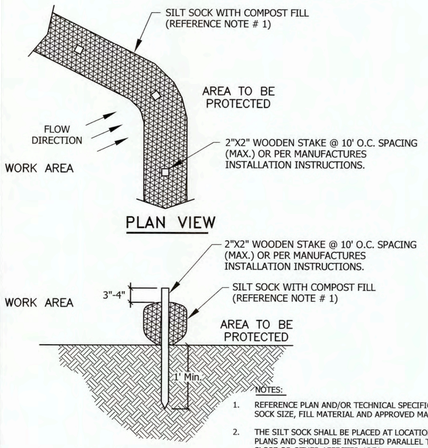
NOTE:

ALL WORK, INCLUDING STAGING AND STORAGE AREAS SHALL REMAIN WITHIN INDICATED LIMITS OF DISTURBANCE.

EROSION SEDIMENT CONTROL PLAN

SCALE: 1" = 20'

(SS) SILT SOCK DETAIL

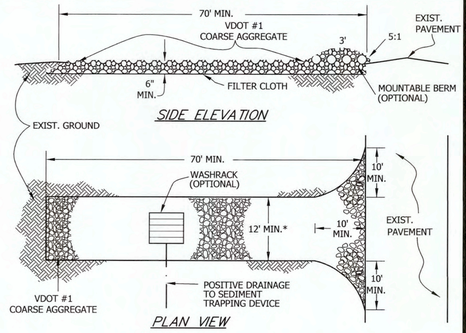


NOTES:

1. REFERENCE PLAN AND/OR TECHNICAL SPECIFICATIONS FOR SILT SOCK SIZE, FILL MATERIAL AND APPROVED MANUFACTURES.
2. THE SILT SOCK SHALL BE PLACED AT LOCATIONS INDICATED ON PLANS AND SHOULD BE INSTALLED PARALLEL TO THE BASE OF THE SLOPE OR OTHER AFFECTED AREA.
3. CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING A WORKING EROSION CONTROL SYSTEM AND MAY, WITH APPROVAL OF THE OWNERS REPRESENTATIVE, WORK OUTSIDE THE MINIMUM CONSTRUCTION REQUIREMENTS AS NEEDED.
4. THE CONTRACTOR SHALL MAINTAIN THE SILT SOCK IN A FUNCTIONAL CONDITION AT ALL TIMES AND IT SHALL BE ROUTINELY INSPECTED. REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. THE CONTRACTOR SHALL REMOVE SEDIMENTS COLLECTED AT THE BASE OF THE SILT SOCK WHEN THEY REACH 1/3 OF THE EXPOSED HEIGHT OF THE DEVICE OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE. SEDIMENT TRAPPED BY THIS PRACTICE SHALL BE DISPOSED OF IN AN APPROVED SITE IN A MANNER THAT WILL NOT CONTRIBUTE TO ADDITIONAL SILTATION.
6. THE COMPOST FILL WILL BE DISPERSED ON SITE WHEN NO LONGER REQUIRED, AS DETERMINED BY THE OWNER'S REPRESENTATIVE.

(CE) STONE CONSTRUCTION ENTRANCE

NOT TO SCALE



EROSION SEDIMENT CONTROL SYMBOLS

(B/M)	SOIL STABILIZATION MAT (EC-3 TYPE B)	
(T S)	TEMPORARY SEEDING	(T S)
(P S)	PERMANENT SEEDING	(P S)
(S F)	SILT FENCE	-X-(S F)-X-
(C E)	CONSTRUCTION ENTRANCE	
(C P)	CULVERT INLET PROTECTION	
(O P)	OUTLET PROTECTION	
(C D)	ROCK CHECK DAM	
(S S)	SILT SOCK	

LIMITS OF DISTURBANCE = 5,497 S.F. (0.126 Ac.) (UNPAVED = 3,655 S.F.) (PAVED = 1,842 S.F.)

GRAPHIC SCALE

0 10 20 40

(IN FEET)
1 inch = 20 ft.

(PS) PERMANENT SEEDING MIXTURE

TYPE A

15 OCTOBER TO 1 FEBRUARY
K-31 FESCUE @ 5 LB / 1000 SF
BOKZY WINTER RYE @ 1/2 LB / 1000 SF

1 FEBRUARY TO 1 JUNE
K-31 FESCUE @ 5 LB / 1000 SF
ANNUAL RYE @ 1/2 LB / 1000 SF

1 JUNE TO 1 SEPTEMBER
K-31 FESCUE @ 5 LB / 1000 SF
GERMAN MILLET @ 1/2 LB / 1000 SF

1 SEPTEMBER TO 15 OCTOBER
K-31 FESCUE @ 5 LB / 1000 SF
ANNUAL RYE @ 1/2 LB / 1000 SF

TYPE B (SLOPES 3:1 OR STEEPER)

15 MARCH TO 1 MAY
CROWN VETCH @ 1/2 LB / 1000 SF
PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF
RED TOP @ 1/8 LB / 1000 SF

15 AUGUST TO 1 OCTOBER
CROWN VETCH @ 1/2 LB / 1000 SF
PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF
RED TOP @ 1/8 LB / 1000 SF

LIME: 140 LB / 1000 SF PULVERIZED AGRICULTURAL LIMESTONE

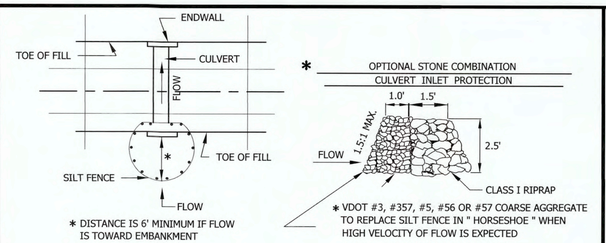
FERTILIZER: 5-20-10 @ 25 LB / 1000 SF
38-0-0 @ 7 LB / 1000 SF

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.

TOTAL DISTURBED AREA = 0.126 AC. = 5,497 SQ. FT.



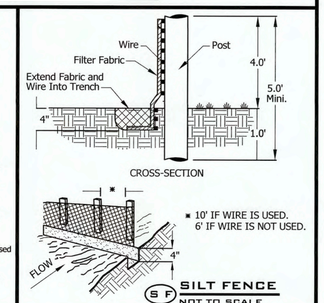
(CP) SILT FENCE CULVERT INLET PROTECTION

SITEWORK

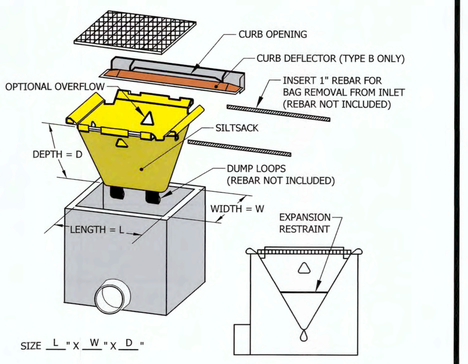
- Subgrade shall be formed ensuring positive drainage and be free of large boulders and other large construction debris.
- Topsoil will be installed and uniformly graded to a consistent four-inch depth over the entire planting area.
- Soil to be friable loam with adequate organic content.
- Soil to be free of rock, roots, clods, and foreign material, including construction debris and gravel.

SEEDING SPECIFICATIONS

- Seed blend shall consist of a three-way turf-type fescue.
- Seed shall be blue tag certified category one.
- Seed shall be clearly labeled.
- New seeding to be applied at a rate of eight pounds per 1000 square feet.
- Newly seeded areas to be fertilized using a formula with a 1-3-1 npk at a rate of 1/4 pound nitrogen per 1000 square feet.
- Soils to be tested to determine if additional amendments are needed.
- Prepared seedbed will have quality topsoil a minimum of six inches depth, free of rocks, roots, or debris.
- Seed shall be applied in two different directions.
- Seed shall be mechanically incorporated into the top 1/2 inch of the proposed surface.
- Seeded surface shall be mulched with blown straw at a rate of two bales per 1000 square feet then tacked using a hydro-mulcher and paper mulch product. adjacent hard surface will be cleaned from the seeding and mulching operations.



(SF) SILT FENCE
NOT TO SCALE



(SSK) SILTSACK INLET PROTECTION W/ OR WITHOUT CURB DEFLECTOR

DEPARTMENT OF DEVELOPMENT SERVICES

NO.	REVISIONS	DATE
1		
2		
3		
4		
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6		

RICHARD BLVD./ PILOT BLVD. DRAINAGE IMPROVEMENTS

DATE:	6/11/2024
SCALE:	1"=20'
DRAWING BY:	BWE
DESIGNED BY:	NDM
APPROVED BY:	DMH

EROSION & SEDIMENT CONTROL PLAN

SHEET 4 OF 6

Drawing name: C:\Brian Drawings\Drainage Projects\Richard Blvd Pilot Blvd\Richards Pilot Storm Drain 3.dwg

APPROVED, 6/26/2024

GENERAL EROSION AND SEDIMENT CONTROL NOTES

1. ALL SOIL EROSION & SEDIMENT CONTROL MEASURES SHALL BE ACCOMPLISHED IN STRICT ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS CONTAINED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.
2. THE APPROVING AUTHORITY MAY ADD TO, DELETE, RELOCATE, CHANGE, OR OTHERWISE MODIFY CERTAIN EROSION AND SEDIMENT CONTROL MEASURES WHERE FIELD CONDITIONS ARE ENCOUNTERED THAT WARRANT SUCH MODIFICATIONS.
3. ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN ON THE PLAN SHALL BE PLACED IN ADVANCE OF THE WORK BEING PERFORMED, AS FAR AS PRACTICAL.
4. IN NO CASE DURING CONSTRUCTION SHALL WATER RUNOFF BE DIVERTED OR ALLOWED TO FLOW TO LOCATIONS WHERE ADEQUATE PROTECTION HAS NOT BEEN PROVIDED.
5. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LEAVE THE SITE ADEQUATELY PROTECTED AGAINST EROSION, SEDIMENTATION, OR ANY DAMAGE TO ANY ADJACENT PROPERTY AT THE END OF EACH DAY'S WORK.
6. FOR THE EROSION CONTROL KEY SYMBOLS SHOWN ON THE PLANS, REFER TO THE VIRGINIA UNIFORM CODING SYSTEM FOR EROSION AND SEDIMENT CONTROL PRACTICES CONTAINED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION. THESE SYMBOLS AND KEYS ARE TO BE UTILIZED ON ALL EROSION CONTROL PLANS SUBMITTED TO ROANOKE COUNTY.
7. THE LOCATION OF ALL OFF-SITE FILL OR BORROW AREAS ASSOCIATED WITH THE CONSTRUCTION PROJECT WILL BE PROVIDED TO ROANOKE COUNTY DEPARTMENT OF DEVELOPMENT SERVICES. AN EROSION CONTROL PLAN OR MEASURES MAY BE REQUIRED FOR THIS AREA.
8. THIS SHEET MAY NOT BE MODIFIED EXCEPT FOR TABLES.

TOTAL DISTURBED AREA = **0.126** AC. = **5,497** SQ. FT.

BMP INFORMATION TABLE

NOT APPLICABLE

	BMP #1
BMP TYPE	–
NAME OF AUTHORIZED NUTRIENT BANK	–
REQUIRED PHOSPHORUS TO BE REMOVED (LB/YR)	LBS
AMOUNT OF PHOSPHORUS CREDIT PURCHASED (LB/YR)	LBS
TECHNICAL REQUIREMENT MET (PART 11B OR 11C)	–
TOTAL AREA TREATED (AC)	–
IMPERVIOUS AREA TREATED BY BMP (AC)	–
MANAGED TURF AREA TREATED BY BMP (AC)	–
OPEN SPACE/FORESTED AREA TREATED BY BMP (AC)	–
SURFACE AREA OF BMP (AC)	–
STORAGE VOLUME OF BMP (AC)	–
QUALITY, QUANTITY, OR BOTH?	–
TMDL ADDRESSED? (PHOSPHORUS, BACTERIA, SEDIMENT, ETC)	–
NAME OF RECEIVING WATER (PROJECT SITE)	–
HYDROLOGIC UNIT CODE FOR PROJECT SITE (ALPHANUMERIC CODE RU14, ECT)	–
MAXIMUM AVERAGE DEPTH (FT)	–
LATITUDE (DECIMAL DEGREES XX.XXXX)	–
LONGITUDE (DECIMAL DEGREES XX.XXXX)	–

STORMWATER SITE STATISTICS

NOT APPLICABLE

	EXISTING	PROPOSED
TOTAL DISTURBED AREA (AC)	--	–
TOTAL SITE (AC)	–	--
IMPERVIOUS AREA (AC)	--	–
MANAGED TURF AREA (AC)	--	–
OPEN SPACE/FOREST (AC)	--	--
PUBLIC RIGHT OF WAY DISTURBANCE (SF)	--	--
KARST PRESENT (Y/N)	--	--

MODIFIED VIRGINIA CODING SYSTEM FOR EROSION & SEDIMENT CONTROL PRACTICES

REFER TO SHEET 8 FOR DETAILS OF IMPLEMENTED MEASURES

NO.	TITLE	KEY	SYMBOL	NO.	TITLE	KEY	SYMBOL
3.01	SAFETY FENCE	SAF		3.21	LEVEL SPREADER	LS	
3.02	TEMPORARY GRAVEL CONSTRUCTION ENTRANCE	CE		3.22	VEGETATIVE STREAMBANK STABILIZATION	VSS	
3.03	CONSTRUCTION ROAD STABILIZATION	CRS		3.23	STRUCTURAL STREAMBANK STABILIZATION	SSS	
3.04	STRAW BALE BARRIER	STB		3.24	TEMPORARY VEHICULAR STREAM CROSSING	VSC	
3.05	SILT FENCE	SF		3.25	UTILITY STREAM CROSSING	USC	
3.06	BRUSH BARRIER	BB		3.26	DEWATERING STRUCTURE	DS	
3.07	STORM DRAIN INLET PROTECTION	IP		3.27	TURBIDITY CURTAIN	TC	
3.08	CULVERT INLET PROTECTION	CIP		3.28	SUBSURFACE DRAIN	SD	
3.09	TEMPORARY DIVERSION DIKE	DD		3.29	SURFACE ROUGHENING	SR	
3.10	TEMPORARY FILL DIVERSION	FD		3.30	TOPSOILING	TO	
3.11	TEMPORARY RIGHT-OF-WAY DIVERSION	RWD		3.31	TEMPORARY SEEDING	TS	
3.12	DIVERSION	DV		3.32	PERMANENT SEEDING	PS	
3.13	TEMPORARY SEDIMENT TRAP	ST		3.33	SODDING	SO	
3.14	TEMPORARY SEDIMENT BASIN	SB		3.34	BERMUDA GRASS AND ZOYSIAURASS ESTABLISHMENT	B/M	
3.15	TEMPORARY SLOPE DRAIN	TSD		3.35	MULCHING	MU	
3.16	PAVED FLUME	PF		3.36	SOIL STABILIZATION BLANKETS AND MATTING	BE/ZE	TREAT. 1 TREAT. 2
3.17	STORMWATER CONVEYANCE CHANNEL	SCC		3.37	TREES, SHRUBS, VINES AND GROUND COVERS	VEG	
3.18	OUTLET PROTECTION	OP		3.38	TREE PRESERVATION AND PROTECTION	TP	
3.19	RIPRAP	RR		3.39	DUST CONTROL	DC	
3.20	ROCK CHECK DAMS	CD					

EROSION AND SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION: THE PURPOSE OF THIS PROJECT IS THE CONSTRUCTION OF A STORM DRAIN FOR ADJACENT DEVELOPMENT RUNOFF. THE PROJECT IS LOCATED ON RICHARD BLVD./ PILOT BLVD. IN ROANOKE COUNTY, VIRGINIA. THE DISTURBED AREA FOR THIS PROJECT IS APPROXIMATELY 0.126 AC.

EXISTING SITE CONDITIONS: THE LIMITS OF DISTURBANCE IS LOCATED WITHIN THE SUBJECT PROPERTIES, IDENTIFIED AS ROANOKE COUNTY TAX PARCEL #77.14-06-26.00, #77.14-06-27.00. THE SITE IS CURRENTLY A MIX OF WOODED AND GRASSED AREA. THE ENTIRE SITE DRAINS TO EXISTING WOODED AREA WITH NATURAL AND ROADSIDE DITCHES WHICH DISCHARGES INTO MURRY RUN LOCATED DOWNSTREAM. THERE ARE CURRENTLY NO KNOWN CHANNEL EROSION PROBLEMS RELATED TO THE PROJECT AREA.

ADJACENT PROPERTY: THE PROJECT AREA IS BOUNDED BY RESIDENTIAL PROPERTY TO THE NORTH, RICHARDS BLVD. TO THE EAST, RESIDENTIAL PROPERTY TO THE SOUTH, PILOT BLVD. TO THE WEST.

OFFSITE AREAS: THE CONTRACTOR WILL BE REQUIRED TO PROVIDE, TO THE COUNTY OF ROANOKE:
A. THE LOCATION OF ANY OFFSITE BORROW AREAS.
B. THE LOCATION OF ANY OFFSITE AREAS WHERE EXCESS EXCAVATED MATERIAL AND/OR RIP RAP WILL BE DISPOSED.

SOILS: THE "WEB SOIL SURVEY" AS PREPARED BY THE UNITED STATES DEPARTMENT OF AGRICULTURE IDENTIFIES THE SOILS ON SITE AS 6C CHISWELL-LITZ-URBAN LAND, 2 TO 15 PERCENT SLOPE, WHICH IS HYDRAULIC SOIL GROUP B.

CRITICAL AREAS: CRITICAL AREAS FOR THIS PROJECT INCLUDE ALL AREAS WITH SLOPES GREATER THAN 3H TO 1V AND EXISTING CHANNELS IN PROJECT WORK AREA SPECIAL CARE SHALL BE TAKEN TO ENSURE THAT THESE AREAS HAVE ADEQUATE EROSION CONTROL AND THAT SEDIMENT TRANSPORT FROM THE PROPERTY IS MINIMIZED.

EROSION AND SEDIMENT CONTROL MEASURES: UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO THE MINIMUM STANDARDS AND SPECIFICATIONS OF THE "VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK", LATEST EDITION (VESCH). THE MINIMUM STANDARDS OF THE VESCH SHALL BE ADHERED TO UNLESS DIRECTED BY THE LOCAL PROGRAM ADMINISTRATOR.

STRUCTURAL-

SILT SOCK-Std. 3.06-1 ...... temporary sediment barrier constructed at the perimeter of a disturbed area from the residue materials availible from clearing and grubbing the site. To intercept and retain sediment from disturbed areas of limited extent, preventing sediment from leaving the site.

SILT FENCE. 3.05 ...... a temporary sediment barrier consisting of a synthetic filter fabric stretched across and attached to supporting posts and entranced to intercept and detain small amounts of sediment from disturbed areas.

RIP RAP. 3.19 ...... a permanent, erosion resistant ground cover of large, loose, angular stone with filter fabric or granular underlining, used to protect the soil from erosive forces of concentrated runoff, slow the velocity of concentrated runoff while enhancing the potential for infiltration; also utilized to stabilize slopes with seepage problems and/or non-cohesive soils.

VEGETATIVE-

TEMPORARY SEEDING. 3.31 ...... establishment of temporary vegetative cover on disturbed areas by seeding with appropriate rapidly growing annual plants to reduce erosion by stabilizing disturbed areas that will not be brought to final grade for a period of more than 14 days.

PERMANENT SEEDING. 3.32 ...... establishment of perennial vegetative cover on disturbed areas by planting seed to reduce erosion and decrease sediment yield from disturbed areas.

MULCHING. 3.35 ...... application of plant residues or other suitable materials to the soil surface. Mulching will prevent erosion by protecting the soils surface from raindrop impact and reducing the velocity of overland flow. After seeding, mulching will foster the growth of vegetation by increasing available moisture and providing insulation against extreme heat and cold.

SOIL STABILIZATION BLANKETS & MATTING. 3.36 ..... the installation of a protective covering or a soil stabilization mat on a prepared planting area of a steep slope or channel. In particular, the use of soil mats in channeled areas will raise the maximum permissible velocity of turf grass, by reinforcing, to resist the forces of erosion during storm events.

DUST CONTROL. 3.39 ...... the application of measures to prevent surface and air movement of dust from exposed soil surfaces and reduce the presence of airborne substances which may present health hazards, traffic safety problems or harm animal or plant life.

SEDIMENT RETENTION ROLL ...... the installation of an intermittent barrier on step slopes to interrupt and back up water flowing down a steep slope,

MANAGEMENT STRATEGIES:

A.) CONSTRUCTION WILL BE SEQUENCED SO THAT GRADING OPERATIONS CAN BEGIN AND END AS QUICKLY AS POSSIBLE.

B.) SEDIMENT TRAPPING MEASURES WILL BE INSTALLED AS A FIRST STEP IN GRADING.

C.) THE LOCAL PROGRAM ADMINISTRATOR RESERVES THE RIGHT TO ADD TO, DELETE OR OTHERWISE CHANGE THE EROSION CONTROL MEASURES AS DEEMED NECESSARY DUE TO ACTUAL FIELD CONDITIONS BY WRITTEN NOTIFICATION TO THE CONTRACTOR.

D.) ALL FILL AND CUT SLOPES SHALL BE SEEDED WITHIN SEVEN (7) DAYS OF ACHIEVING FINAL GRADE.

E.) ONLY AFTER INSPECTION AND APPROVAL FROM THE LOCAL PROGRAM ADMINISTRATOR, EROSION AND SEDIMENT CONTROL DEVICES MAY BE REMOVED FOLLOWING THE STABILIZATION OF THE CONTRIBUTING AREAS.

THE GENERAL CONTRACTOR SHALL INSPECT DISTURBED AREAS OF THE SITE THAT HAVE NOT BEEN FINALLY STABILIZED, AND AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION, STRUCTURAL CONTROL MEASURES, AND THE AREA OF CONSTRUCTION VEHICLE ACCESS AT LEAST EVERY FOURTEEN (14) CALENDAR DAYS, AND WITHIN 48 HOURS OF THE END OF A STORM EVENT PRODUCING 1/2" OR GREATER OF PRECIPITATION. WHERE AREAS HAVE BEEN FINALLY OR TEMPORARY STABILIZED OR RUNOFF IS UNLIKELY DUE TO WINTER CONDITIONS (SITE IS COVERED WITH, ICE, OR FROZEN GROUND EXISTS) SUCH INSPECTIONS SHALL BE CONDUCTED AT LEAST ONCE EVERY MONTH.

A.) INSPECT DISTURBED AREAS AND AREAS OF MATERIALS STORAGE THAT ARE EXPOSED TO PRECIPITATION FOR EVIDENCE OF, OR THE POTENTIAL FOR SEDIMENT ENTERING THE STORM DRAIN SYSTEM. INSPECT E&S CONTROLS IN ACCORDANCE WITH REQUIREMENTS STATED HEREIN, AND INSPECT POINTS OF STORM DRAIN DISCHARGE FOR EXCESSIVE SEDIMENTATION. CORRECT SITE CONTROLS AS AS REQUIRED TO REDUCE SEDIMENTATION OF STORM DRAINED, CULVERTS, AND RECEIVING CHANNELS.

B.) IF CONTROLS OR SEDIMENT PREVENTION AREAS ARE FOUND TO BE IN NEED OF REPAIR OR MODIFICATION, THE GENERAL CONTRACTOR SHALL PROVIDE ADDITIONAL MEASURES OR MODIFICATION TO EXISTING MEASURES AS REQUIRED. ANY ADDITIONAL MEASURES OR MODIFICATIONS TO EXISTING MEASURES SHALL BE RECORDED AS FIELD REVISIONS TO THESE PLANS. IN THE EVENT THAT ADDITIONAL CONTROLS ARE FOUND TO BE REQUIRED, THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING THESE CONTROLS BEFORE THE NEXT ANTICIPATED STORM EVENT IS IMPRACTICAL, THEY SHALL BE IMPLEMENTED AS SOON AS PRACTICAL.

C.) A REPORT SUMMARIZING THE SCOPE OF INSPECTIONS, NAME OF INSPECTOR, INSPECTOR'S QUALIFICATIONS, DATES OF INSPECTIONS, MAJOR OBSERVATIONS PERTAINING TO THE IMPLEMENTATION OF THESE EROSION CONTROL PLANS, AND ACTIONS TAKEN SHALL BE MADE AND RETAINED AS A PART OF THESE PLANS, MAJOR OBSERVATIONS OF THESE REPORTS SHALL INCLUDE: THE LOCATIONS OF EXCESSIVE SEDIMENTATION FROM THE SITE; LOCATIONS OF CONTROLS IN NEED OF REPAIR; LOCATION OF FAILED OR INADEQUATE CONTROLS; AND LOCATIONS WHERE ADDITIONAL CONTROLS ARE NEEDED.

STORMWATER MANAGEMENT:

STORMWATER QUANTITY REQUIREMENTS WILL BE MET BY N/A

STORMWATER QUALITY REQUIREMENTS WILL BE MET THROUGH N/A

ROANOKE COUNTY DEPT. OF DEVELOPMENT SERVICES
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COMMONWEALTH OF VIRGINIA
NICKIE D. MILLS
LICENSE NO. 0402031205
6-12-24
PROFESSIONAL ENGINEER

MINIMUM STANDARDS

THE FOLLOWING STANDARDS ARE TO BE PROVIDED OR ADDRESSED ON EVERY DEVELOPMENT PROJECT EXCEEDING 10,000 S.F. IN AREA OF DISTURBANCE. THESE STANDARDS ARE CONSIDERED A MINIMUM AND MAY REQUIRE ADDITIONAL MEASURES AS DEEMED NECESSARY BY THE LOCAL PROGRAM AUTHORITY OR THE CONSULTING ENGINEER.

NO.	CRITERIA, TECHNIQUE OR METHOD	PRACTICES PROVIDED
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.	PS
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.	SF TS
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.	PS
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 UPSWEEP LAND DISTURBANCE TAKES PLACE.	SF
5	STABILIZATION METHODS SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.	NOT APPLICABLE
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.	NOT APPLICABLE
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 STABILIZATION MEASURES UNTIL THE PROBLEM IS CORRECTED.	NOT APPLICABLE
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
9	WHENEVER WATER SEEPS FROM A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED.	NOT APPLICABLE
10	ALL STORM SEWER INLETS THAT ARE MADE OPERABLE DURING CONSTRUCTION SHALL BE PROTECTED SO THAT SEDIMENT WATER CANNOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR OTHERWISE TREATED TO REMOVE SEDIMENT.	NOT APPLICABLE
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.	OP
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. NON-ERODIBLE MATERIAL SHALL BE USED FOR THE CONSTRUCTION OF CAUSEWAYS AND COFFERDAMS. EARTHEN FILL MAY BE USED FOR THESE STRUCTURES IF ARMORED BY NON-ERODIBLE COVER MATERIALS.	NOT APPLICABLE
13	WHEN A LIVE WATERCOURSE MUST BE CROSSED BY CONSTRUCTION VEHICLES MORE THAN TWICE IN ANY (6) SIX-MONTH PERIOD, A TEMPORARY VEHICULAR STREAM CROSSING CONSTRUCTED OF NON-ERODIBLE MATERIAL SHALL BE PROVIDED.	NOT APPLICABLE
14	ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS PERTAINING TO WORKING IN OR CROSSING LIVE WATERCOURSES SHALL BE MET.	NOT APPLICABLE
15	THE BEDS AND BANKS OF A WATERCOURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK IN THE WATERCOURSE IS COMPLETED.	NOT APPLICABLE
16	UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA: 1.) NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME. 2.) EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES. 3.) EFFLUENT FROM DE-WATERING 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 OFFSET PROPERTY. 4.) MATERIAL USED FOR BACKFIRING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION. 5.) RE-STABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THIS CHAPTER. 6.) APPLICABLE SAFETY REQUIREMENTS SHALL BE COMPLIED WITH.	
17	WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED OR PUBLIC ROADS, PROVISIONS SHALL BE MADE TO MINIMIZE THE TRANSPORT OF SEDIMENT BY VEHICULAR TRACKING ONTO THE PAVED SURFACE. WHERE SEDIMENT IS TRANSPORTED ONTO A PAVED OR PUBLIC ROAD SURFACE, THE ROAD SURFACE SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER. THIS PROVISION SHALL APPLY TO INDIVIDUAL DEVELOPMENT LOTS AS WELL AS TO LARGER LAND-DISTURBING ACTIVITIES.	CE
18	ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE VESCP AUTHORITY. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.	
19	PROPERTIES AND WATERWAYS DOWNSTREAM FROM DEVELOPMENT SITES SHALL BE PROTECTED FROM SEDIMENT DEPOSITION, EROSION AND DAMAGE DUE TO INCREASES IN VOLUME, VELOCITY AND PEAK FLOW RATE OF STORMWATER RUNOFF FOR THE STATED FREQUENCY STORM OF 24-HOUR DURATION IN ACCORDANCE WITH THE FOLLOWING STANDARDS AND CRITERIA. STREAM RESTORATION AND RELOCATION PROJECTS THAT INCORPORATE NATURAL CHANNEL DESIGN CONCEPTS ARE NOT 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 THE 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; OR (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 CONDITION 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 DISSIPATERS 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 MANAGEMENT CRITERIA, INDIVIDUAL LOTS OR PARCELS IN A RESIDENTIAL, COMMERCIAL OR INDUSTRIAL DEVELOPMENT SHALL NOT BE CONSIDERED TO BE SEPARATE DEVELOPMENT PROJECTS. INSTEAD, THE DEVELOPMENT, AS A WHOLE, SHALL BE CONSIDERED TO BE A SINGLE DEVELOPMENT PROJECT. HYDROLOGIC PARAMETERS THAT REFLECT THE ULTIMATE DEVELOPMENT CONDITION SHALL BE USED IN ALL ENGINEERING CALCULATIONS. K.) ALL MEASURES USED TO PROTECT PROPERTIES AND WATERWAYS SHALL BE EMPLOYED IN A MANNER 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 OR MAN-MADE CHANNELS IF THE PRACTICES ARE DESIGNED TO (1) DETAIN THE WATER QUALITY VOLUME AND TO RELEASE IT OVER 48 HOURS; (2) DETAIN AND RELEASE OVER A 24-HOUR PERIOD THE EXPECTED RAINFALL RESULTING FROM THE ONE YEAR, 24-HOUR STORM; AND (3) 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 A GOOD FORESTED CONDITION, ACHIEVED THROUGH MULTIPLICATION OF THE FORESTED PEAK FLOW RATE BY A REDUCTION FACTOR THAT IS EQUAL TO THE RUNOFF VOLUME FROM THE SITE WHEN 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 10.1-562 OR 10.1-570 OF THE ACT. M.) FOR PLANS APPROVED ON AND AFTER JULY 1, 2014, THE FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS OF 10.1-561 A OF THE ACT AND THIS SUBSECTION SHALL BE SATISFIED BY COMPLIANCE WITH WATER QUALITY REQUIREMENTS IN THE STORMWATER MANAGEMENT ACT (10.1-603.2 ET SEQ. OF THE CODE OF VIRGINIA) AND ATTENDANT REGULATIONS, UNLESS SUCH LAND-DISTURBING ACTIVITIES ARE IN ACCORDANCE WITH 4VAC50-60-48 OF THE VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSMP) PERMIT REGULATIONS. N.) COMPLIANCE WITH THE WATER QUANTITY MINIMUM STANDARDS SET OUT IN 4VAC50-60-66 OF THE VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSMP) PERMIT REGULATIONS SHALL BE DEEMED TO SATISFY THE REQUIREMENTS OF SUBDIVISION 19 OF THIS SUBSECTION.	NOT APPLICABLE

APPROVED 6/26/2024

UTILITY CONTACTS FOR IN PLACE PERMITS

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PROJECT DESCRIPTION:

THE PROJECT CONSISTS OF:

1. ROANOKE COUNTY DEVELOPEMENT SERVICES WILL BE OBTAINING THE LAND USE PERMIT FROM VDOT AND THE EROSION SEDIMENT CONTROL PERMIT.
2. CONTRACTOR SHALL PROVIDE A RESPONSIBLE LAND DISTURBER, ATTEND A PRECONSTRUCTION MEETING TO RECEIVE PERMITS, AND COMPLY WITH ALL PERMIT REQUIREMENTS MEETING TO RECEIVE PERMITS, AND COMPLY WITH ALL PERMIT REQUIREMENTS.
3. EROSION AND SEDIMENT CONTROL TO BE CONTRACTORS RESPONSIBILITY.
4. REMOVE OR FILL WITH FLOWABLE FILL EXISTING STORM DRAIN PIPES AS SHOWN ON PLANS.
5. INSTALL (207 LF) 15" RCP CL. III, (1) MH-1, (1) DI-7, (1) ES-1 AND INSTALL EC-1 (CLASS I RIP RAP) AT INVERT.
6. INSTALL CONCRETE COLLAR TO CONNECT NEW PIPE TO EXISTING PIPE 5' FEET BEHIND EXISTING WALL.
7. SAW CUT EXISTING PAVEMENT AND GRADE AND PAVE SWALE TO PROPOSED DI-7.
8. INSTALL EC-3 SOIL STABILIZATION MAT IN ALL DISTURBED DITCH LINES.
9. FERTILIZE, SEEDING, MULCHING AS REQUIRED TO OBTAIN FINAL VEGETATIVE STABILIZATION.

CONSTRUCTION NOTES :

1. THE CONTRACTOR IS REQUIRED TO NOTIFY THE COUNTY OF ROANOKE ENGINEERING DIVISION IN WRITING AT LEAST THREE (3) DAYS PRIOR TO ANY CONSTRUCTION, INCLUDING, BUT NOT LIMITED TO THE FOLLOWING:
   a. installation of approved erosion control devices
   b. clearing and grubbing
   c. subgrade excavation
   d. installing storm sewers or culverts
   e. setting curb and gutter forms
   f. placing curb and gutter
   g. placing other concrete
   h. placing gravel base
   i. placing any roadway surface
   j. installing water lines (western virginia water authority)
   k. installing sanitary sewer lines (western virginia water authority)
2. PLAN APPROVAL DOES NOT GUARANTEE ISSUANCE OF ANY PERMITS BY V.D.O.T.
3. AN APPROVED SET OF PLANS AND ALL PERMITS MUST BE AVAILABLE AT THE CONSTRUCTION SITE.
4. ALL WORK SHALL BE SUBJECT TO INSPECTION BY COUNTY OF ROANOKE AND /OR V.D.O.T. INSPECTORS.
5. ALL UNSUITABLE MATERIAL SHALL BE REMOVED FROM THE CONSTRUCTION LIMITS OF THE PROJECT.
6. ALL SPRINGS SHALL BE CAPPED AND PIPED TO THE NEAREST STORM SEWER OR NATURAL WATERCOURES. THE PIPE SHALL BE 6 INCH MINIMUM DIAMETER AND CONFORM TO V.D.O.T. STANDARD SB-1.
7. CONSTRUCTION DEBRIS SHALL BE CONTAINERIZED IN ACCORDANCE WITH THE VIRGINIA LITTER CONTROL ACT. NO LESS THAN ONE LITTER RECEPTACLE SHALL BE PROVIDED ON SITE.
8. THE CONTRACTOR SHALL SUPPLY ALL UTILITY COMPANIES WITH COPIES OF APPROVED PLANS, ADVISING THEM THAT ALL GRADING AND INSTALLATION SHALL CONFORM TO APPROVED PLANS.
9. FILL MATERIALS CONTAINING ROCKS LARGER THAN SIX (6) INCHES (15.2 CM) SHALL NOT BE USED. THE UPPERMOST TWO (2) FEET (61 CM) SHALL NOT HAVE ANY ROCK LARGER THAN TWO (2) INCHES (5.1 CM) IN DIAMETER.
10. NO SLOPES SHALL BE STEEPER THAN 2 TO 1 (HORIZONTAL TO VERTICAL) .
11. ON-SITE FILL MATERIAL OR BORROW FILL MATERIAL MAY BE UTILIZED. FILL MATERIAL SOILS, IN GENERAL:
    A. SHALL BE COMPACTED
    B. SHALL BE WITHIN AN ACCEPTABLE RANGE OF MOISTURE CONTENT WHICH IS READILY CONTROLLED
    C. SHALL NOT BE HIGHLY SUSCEPTIBLE TO VOLUME CHANGE (SHRINKAGE OR SWELL) OR SETTLEMENT
12. ALL DISTURBED AREAS SHALL BE COVERED WITH FOUR (4) INCHES OF TOPSOIL AND SEEDED.
13. DEPOSIT DRY FILL AS INDICATED IN LAYERS NOT OVER 6" DEEP, THOROUGHLY COMPACTING EACH LAYER TO WITHIN 95% OF STANDARD PROCTOR AS INDICATED BY ASTM 698. DO NOT USE MECHANICAL COMPACTORS WITHIN 2'-0" OF FOUNDATION WALLS.
14. THE LOCATION OF ALL OFF SITE FILL AREAS OR BORROW AREAS ASSOCIATED WITH THE CONSTRUCTION PROJECT WILL BE PROVIDED TO ROANOKE COUNTY DEPARTMENT OF DEVELOPMENT SERVICES. AN EROSION SEDIMENT CONTROL PLAN OR MEASURES MAY BE REQUIRED FOR THESE AREAS.
15. PROPERTY BOUNDARY INFORMATION SHOWN PER PLAT OF P.B. 3 PG. 115 & OTHER RECORDS. A COMPLETE BOUNDARY SURVEY OF ALL LOTS WAS NOT PERFORMED.
16. UNDERGROUND UTILITIES SHOWN PER LOCATE TICKET B240002492-00B.
17. EXISTING TREES IN WORK AREA CURRENTLY MARKED TO BE REMOVED BY SELECT CLEARING. EXISTING VEGETATION OUTSIDE EASEMENT AREA TO BE PROTECTED FROM DAMAGE.
18. EXISTING PIPE DESIGNATED FOR DEMOLITION TO BE REMOVED, COMPLETELY CRUSHED, OR FILLED WITH FLOWABLE FILL AS REQUIRED. CONTRACTOR TO COORDINATE WITH ROANOKE CO. AND OWNERS OF 4615 VEST DRIVE TO ENSURE DOWNSPOUTS, SUMP DRAINS, ETC. ARE NOT PLUGGED AS A RESULT OF THIS DEMOLITION.
19. TEMPORARY BENCHMARK IS EX. IRON PIN @ NORTH CORNER OF 2050 RICHARD BLVD./ PILOT BLVD.
20. CONTRACTOR SHALL PROTECT EXISTING TREES TO REMAIN.
21. CONTRACTOR TO PROTECT EXISTING DRAIN FIELD AT 2044 RICHARD BLVD./ PILOT BLVD. (FRONT YARD) FROM CONSTRUCTION ACTIVITIES.

SURVEY NOTES:

1. SURVEY FOR THIS PROJECT WAS CONDUCTED USING TOTAL STATION AND RTK GPS EQUIPMENT. THE VERTICAL DATUM USED FOR THE SURVEY IS ASSUMED. THE HORIZONTAL COORDINATE SYSTEM IS ASSUMED.
2. ALL SURVEY DATA'S GENERAL ACCURACY IS AS FOLLOWS:
   - HORIZONTAL ACCURACY: WITHIN 0.5' WITH EXCEPTIONS.
   - VERTICAL ACCURACY: WITHIN 0.2' WHERE INFORMATION IS PROVIDED ON PLAN.
3. CONTOUR DATA ON THIS PLAN IS GENERALLY ACCURATE TO WITHIN +/- 0.5' WERE CONTOUR DATA IS PROVIDED. LEAF MULCH IS VERY HEAVY ON PORTIONS OF THIS PROJECT AREA.
4. THIS PLAN WAS PREPARED WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT AND THEREFORE, THERE MAY EXIST ENCUMBRANCES NOT SHOWN HEREON.
5. WITH OCCASIONAL EXCEPTION, EDGE OF PAVEMENT, GRAVEL, CONCRETE, & BRICK ARE SHOWN BASED ON GEOREFERENCED AERIAL IMAGERY AND ARE TYPICALLY ACCURATE WITHIN 1.0'.
6. WITH OCCASIONAL EXCEPTIONS, EXISTING BUILDINGS SHOWN ARE BASED ON MUNICIPAL GIS DATA AND GEOREFERENCED AERIAL IMAGERY AND ARE TYPICALLY ACCURATE TO WITHIN 3.0'.
7. THIS PLAN DOES NOT GUARANTEE THE EXISTENCE, LOCATION, SIZE, MATERIAL OR TYPE OF ANY UNDERGROUND UTILITIES. ALL UNDERGROUND UTILITIES & STRUCTURES SHOWN ON THIS PLAN ARE SHOWN BASED ON SURVEYED ABOVE GROUND STRUCTURES, AVAILABLE PUBLIC RECORDS AND BY UTILITY LOCATION MARKINGS.
8. ALL UNDERGROUND UTILITY & STRUCTURE LOCATIONS SHOULD BE FIELD VERIFIED PRIOR TO THE START OF ANY CONSTRUCTION.

TRAFFIC CONTROL:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL TRAFFIC CONTROL IN ACCORDANCE WITH THE LATEST EDITION OF THE VIRGINIA WORK AREA PROTECTION MANUAL AND/OR AS REQUIRED BY V.D.O.T. PERMIT. ALL MATERIAL AND CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE SPECIFICATIONS, UNLESS OTHERWISE APPROVED. THE PERMIT CAN BE REVOKED AT ANY TIME FOR UNSATISFACTORY WORK OR FAILURE TO COMPLY WITH THE REQUIREMENTS OF THE PERMIT.

VDOT NOTES:

1. SIGN AND SPACING SHALL BE ADJUSTED TO FIT FIELD CONDITIONS.
2. SAFE ACCESS TO ALL PUBLIC ROADWAYS SHALL BE MAINTAINED AT ALL TIMES.
3. ALL FLAGGERS SHALL BE CERTIFIED.
4. CHANNELIZING DEVICES, SUCH AS CONES OR BARRELS, SHALL BE UTILIZED WHERE REQUIRED AND FOLLOW THE WAPM.
5. WORK ZONE HOURS SHALL BE FROM 9:00 AM TO 3:00 PM.

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 RESPONSIBILTY OF OF THE CONTRACTOR TO PROVIDE FOR SAFE TRAVEL AROUND THE WORK ZONE.
2. THE CONTRACTOR SHALL CORDINATE THE SEQUENCE OF CONSTRUCTION WITH VDOT.
3. WHEN WORK IS NOT BEING PERFORMED, THE CLEAR ZONE OF THE ROADWAY SHALL BE FREE OF OF STORED MATERIALS AND/OR PARKED EQUIPMENT.
4. ALL WORK IS TO BE PERFORMED IN ACCORDANCE WITH 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 LAND USE PERMIT.
5. NO WORK ZONE SHALL OCCUR ON-SITE UNTIL A LAND USE PERMIT HAS BEEN ISSUED FOR THE SUBJECT PROPERTY.
6. G.C. SHALL MAINTAIN ALL EXISTING ROADWAY SIGNAGE DURING ALL PHASES OF THIS PROJECT.
7. WORK WILL NEED TO BE COORDINATED WITH PROPERTY OWNERS ON THESE STREETS TO ENSURE ACCESS.
8. TWO (2) MAIN WORK ZONES ARE SHOWN ON THIS PLAN. THEY CONSIST OF WORK ZONE #1: SHOUDER CLOSURE ON A TWO-LANE ROADWAY ON VEST DRIVE TO BE PERFORMED IN ACCORDANCE WITH TTC-4.1 OF THE VIGINIA WORK AREA PROTECTION MANUAL (WAPM) AND WORK ZONE #2: LANE CLOSURE OF VEST DRIVE TO BE PERFORMED IN ACCORDANCE WITH TTC-28.1 OF WAPM. SIGN SPACING SHALL BE ADJUSTED TO FIT FIELD CONDITIONS.
9. THE POSTED SPEED LIMIT OF VEST DRIVE IS 25 MPH. ALL TAPER LENGTHS, BUFFER LENGTHS AND CHANNELIZING SHALL BE BASED ON THIS SPEED.
10. SAFE ACCESS TO ALL PUBLIC ROADWAYS SHALL BE MAINTAINED AT ALL TIMES.
11. ALL FLAGGERS SHALL BE STATE CERTIFIED.
12. CHANNELIZING DEVICES SUCH AS CONES OR BARRELS SHALL BE UTILIZED WHERE REQUIRED AND FOLLOW THE WAPM.
13. THE RIGHT OF WAY IS TO BE KEPT FREE OF STORED MATERIALS AND CONSTRUCTION EQUIPMENT DURING HOURS THAT WORK IS NOT BEING PERFORMED.

GENERAL NOTES:

1. TEMPORARY TRAFFIC PLAN:
   A. THE MAJOR COMPONENTS WILL CONSIST OF GENERAL NOTES, TYPICAL SECTIONS AND SPECIAL DETAILS AS NECESSARY.
   B. TRAFFIC CONTROL DEVICES SHALL BE USED AS SHOWN ON PLAN.
   C. ALL SIGNS, STRIPING AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH VIRGINIA WORK AREA PROTECTION MANUAL AND MUTCD STANDAEDS.
2. PUBLIC COMMUNICATION PLAN:
   VDOT SALEM TRAFFIC OPERATIONS CENTER (TOC) (540) 375-0170*
   *THE TOC SHOULD BE NOTIFIED OF PROPOSED LANE CLOSURES AT THE BEGINNING AND END OF EACH WORKDAY.
   ROANOKE COUNTY POLICE: (540) 777-8601 OR 911
   ROANOKE COUNTY FIRE AND RESCUE: (540) 777-8701 OR 911
   ROANOKE COUNTY COMMUNICATION CENTER (540) 562-3265
   ROANOKE COUNTY SCHOOLS- DR. LORRAINE LANGE (540) 562-3900
   ROANOKE COUNTY BOARD OF SUPERVISORS: (540) 772-2003
   VIRGINIA STATE POLICE: (540) 375-9500

Typical Traffic Control
Stationary Operation on a Shoulder
(Figure TTC-4.2)
NOTES

Standard

1. **For long-term stationary work (more than 3 days) on divided highways having a median wider than 8', sign assemblies on both sides of the roadway shall be required as shown (ROAD WORK AHEAD (W20-1), RIGHT SHOULDER CLOSED AHEAD (W21-5aR), RIGHT SHOULDER CLOSED (W21-5aR)[1]), even though only one shoulder is being closed. For operations less than 3 days in duration, sign assemblies will only be required on the side where the shoulder is being closed.**

Guidance

2. *Sign spacing should be 1300'-1500' for Limited Access highways. For all other roadways, the sign spacing should be 500'-800' where the posted speed limit is greater than 45 mph, and 350'-500' where the posted speed limit is 45 mph or less.*

Option:

3. The SHOULDER WORK (W21-5) sign on an intersecting roadway may be omitted where drivers emerging from that roadway will encounter another advance warning sign prior to this activity area.
4. For short duration operations of 60 minutes or less, all signs and channelizing devices may be eliminated if a vehicle with activated high-intensity amber rotating, flashing, or[1] oscillating lights is used.

Standard:

5. **Vehicle hazard warning signals shall not be used instead of the vehicle's high-intensity amber rotating, flashing, or[1] oscillating lights. Vehicle hazard warning signals can be used to supplement high-intensity amber rotating, flashing, or[1] oscillating, lights.**
6. **Taper length (L) shall be at the following:**

Taper Length L

Speed Limit (mph)	Lane Width (Feet) 9	10	11	12	Remarks
25	95	105	115	125	L=S*W/60
30	135	150	165	180	L=S*W/60
35	185	205	225	245	L=S*W/60
40	240	270	295	320	L=S*W/60
45	405	450	495	540	L=SW

Speed Limit (mph)	Lane Width (Feet) 9	10	11	12	Remarks
50	450	500	550	600	L=SW
55	495	550	605	660	L= SW
60	540	600	660	720	L=SW
65	585	650	715	780	L=SW
70	630	700	770	840	L=SW

Limited Access highways shall use a 1000' merging taper regardless of the posted speed, for shifting taper see Table 6H.2[2]
Shoulder Taper = ½ L Minimum

7. **Channelizing device spacing shall be at the following:**

Channelizing Device Spacing

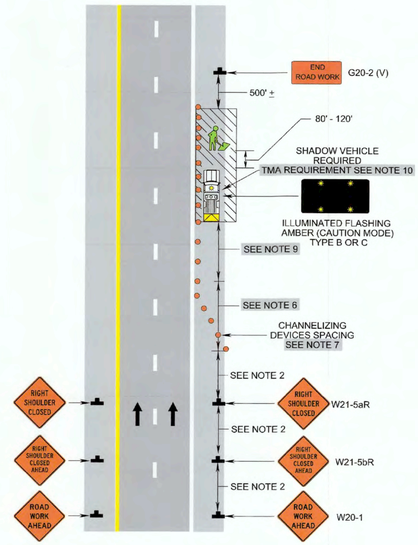
Location Spacing	Speed Limit (mph) 0 -35	36 +	Location Spacing	Speed Limit (mph) 0 -35	36 +	Location Spacing	Speed Limit (mph) 0 -35	36 +
Transition	20'	40'	Travelway	40'	60'	*Construction Access	80'	120'

*Construction access spacing may be increased to this distance, but shall not exceed one access per ¼ mile.

8. **On roadways with paved shoulders having a width of 8 feet or more, channelizing devices shall be used to close the shoulder in advance of the merging taper to direct vehicular traffic to remain within the traveled way.**
9. **The buffer space length shall be as shown in Table 6H-3 on Page 6H-5 for the posted speed limit.**
10. **A truck-mounted attenuator (TMA) shall be used on the shadow vehicle on Limited Access highways and multi-lane roadways with posted speed limit equal to or greater than 45 mph for operations with a duration greater than 60 minutes.**
11. **When a side road intersects the highway within the temporary traffic control zone, additional traffic control devices shall be placed as needed.**

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

Stationary Operation on a Shoulder
(Figure TTC-4.2)



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

Typical Traffic Control
Work Beyond the Shoulder Operation
(Figure TTC-1.1)
NOTES

Guidance:

1. *The minimum distance between the sign and work vehicle should be 1300-1500' on Limited Access highways, and on all other roadways 500'-800' where the posted speed limit is greater than 45 mph, and 350'-500' where the posted speed limited is 45 mph or less.*

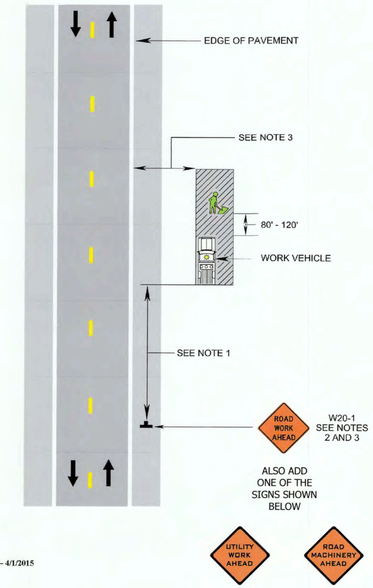
Option:

2. The ROAD WORK AHEAD (W20-1) sign may be replaced with other appropriate signs such as the SHOULDER WORK (W21-5) sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder.
3. The ROAD WORK AHEAD sign may be omitted where the work space is behind a barrier, more than 4 feet behind vertical curb (Standard CG-2 and CG-6) on urban roadways, or outside of the clear zone for all other roadways. For clear zone values see Page A-4 of Appendix A.
4. For short-term, short duration or mobile operations[1], all signs and channelizing devices may be eliminated if a vehicle with activated high-intensity amber rotating, flashing, or[1] oscillating lights is used.

Standard:

5. **Vehicle hazard warning signals shall not be used instead of the vehicle's high-intensity amber rotating, flashing, or[1] oscillating lights. Vehicle hazard warning signals can be used to supplement high-intensity amber rotating, flashing, or oscillating lights.**
6. **If the work space is in the median of a divided highway, an advance warning sign shall also be placed on the left side of the directional roadway.**

Work Beyond the Shoulder Operation
(Figure TTC-1.1)



1: Revision 1 – 4/1/2015

COMMONWEALTH OF VIRGINIA
NICKIE D. MILLS
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PROFESSIONAL ENGINEER
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Roanoke, Virginia 24018
Office: (540) 772-2083
Fax: (540) 776-7155

DEPARTMENT OF DEVELOPMENT SERVICES

NO.	REVISIONS	DATE
1		
2		
3		
4		
5		
6		

RICHARD BLVD./ PILOT BLVD. DRAINAGE IMPROVEMENTS

DATE:	6/11/2024
SCALE:	1" = 20'
DRAWING BY:	BWE
DESIGNED BY:	NDM
APPROVED BY:	DMH

GENERAL NOTES & MAINTENANCE OF TRAFFIC PLAN

SHEET 6 OF 6

Drawing name: C:\Brian Drawings\Drainage Projects\Richard Blvd_Pilot Blvd\Richards_Pilot_Storm Drain 3.dwg

APPROVED, 6/26/2024