

# APPOMATTOX RIVER CROSSING WATER MAIN

PRINCE GEORGE COUNTY, VIRGINIA  
DEPARTMENT OF PUBLIC UTILITIES  
BLAND MAGISTERIAL DISTRICT

BID SET



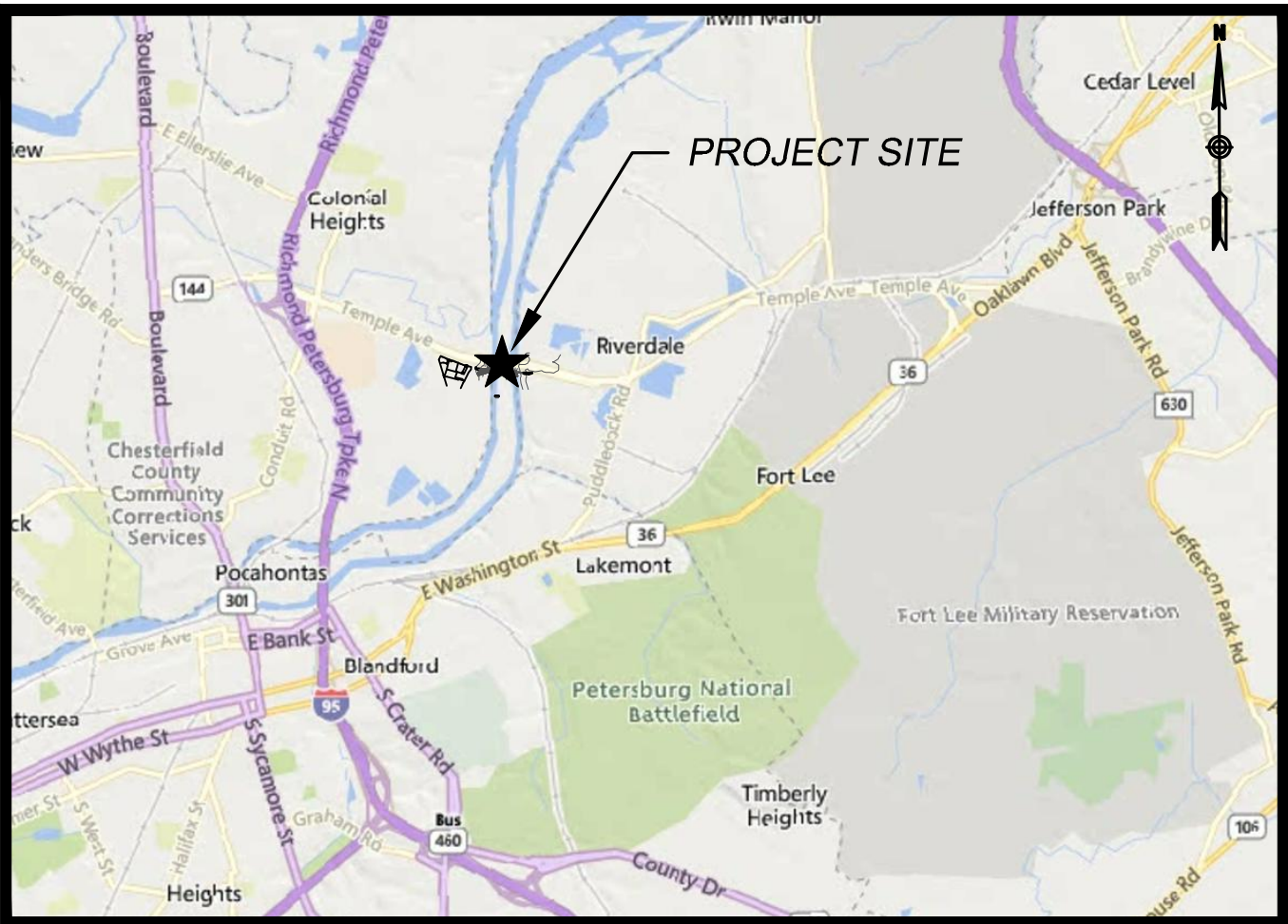
JANUARY 2024

PRINCE GEORGE COUNTY DEPARTMENT OF PUBLIC UTILITIES NOTES:

- ALL MATERIALS FOR SEWER AND WATER SYSTEMS SHOWN SHALL BE SUPPLIED AND INSTALLED IN ACCORDANCE WITH THE LATEST SPECIFICATIONS OF PRINCE GEORGE COUNTY APPLICABLE AT THE TIME OF NOTICE TO PROCEED.
- FOR SEWER AND WATER INSTALLATION WITHIN EXISTING VDOT RW; UTILITY CONTRACTORS MUST NOTIFY VDOT WHEN INSTALLATION BEGINS SO THAT DENSITY CAN BE TESTED ON TRENCH BACKFILL (95% ASTM D-698 @ OPTIMUM MOISTURE ±2%).
- THE INSTALLATION OF A SEWER BACKFLOW DEVICE IS REQUIRED FOR ALL SERVICE CONNECTIONS WHERE THE FINISHED FLOOR ELEVATION IS LOWER THAN THE NEAREST DOWNGRADE AND/OR UPGRADE MANHOLE TOP ELEVATIONS. THIS DEVICE WILL BE INSPECTED BY THE BUILDING INSPECTION DEPARTMENT.
- ALL WATER SERVICE CONNECTIONS BELOW THE ELEVATION CONTOUR OR WHERE THE PRESSURE IS GREATER THAN 80 P.S.I. WILL REQUIRE INDIVIDUAL PRESSURE REGULATORS AS REQUIRED BY BOCA CODE.
- VERTICAL DATUM IS BASED ON MEAN SEA LEVEL (USC & GS DATUM). HORIZONTAL CONTROLS ARE BASED ON VIRGINIA STATE PLANE COORDINATE GRID, SOUTH ZONE, NORTH AMERICAN DATUM OF 1983 (NAD 83).
- CONTRACTOR SHALL PROPERLY NOTIFY ALL PROPERTY OWNERS TWO (2) WEEKS PRIOR TO THE START OF ANY CONSTRUCTION (INCLUDING LAND CLEARING). NOTIFICATION SHALL BE IN THE FORM OF A LETTER SIMILAR TO THE "SAMPLE" REFLECTED IN THE COUNTY'S LATEST WATER AND SEWER SPECIFICATIONS (NOT-1).

GENERAL NOTES:

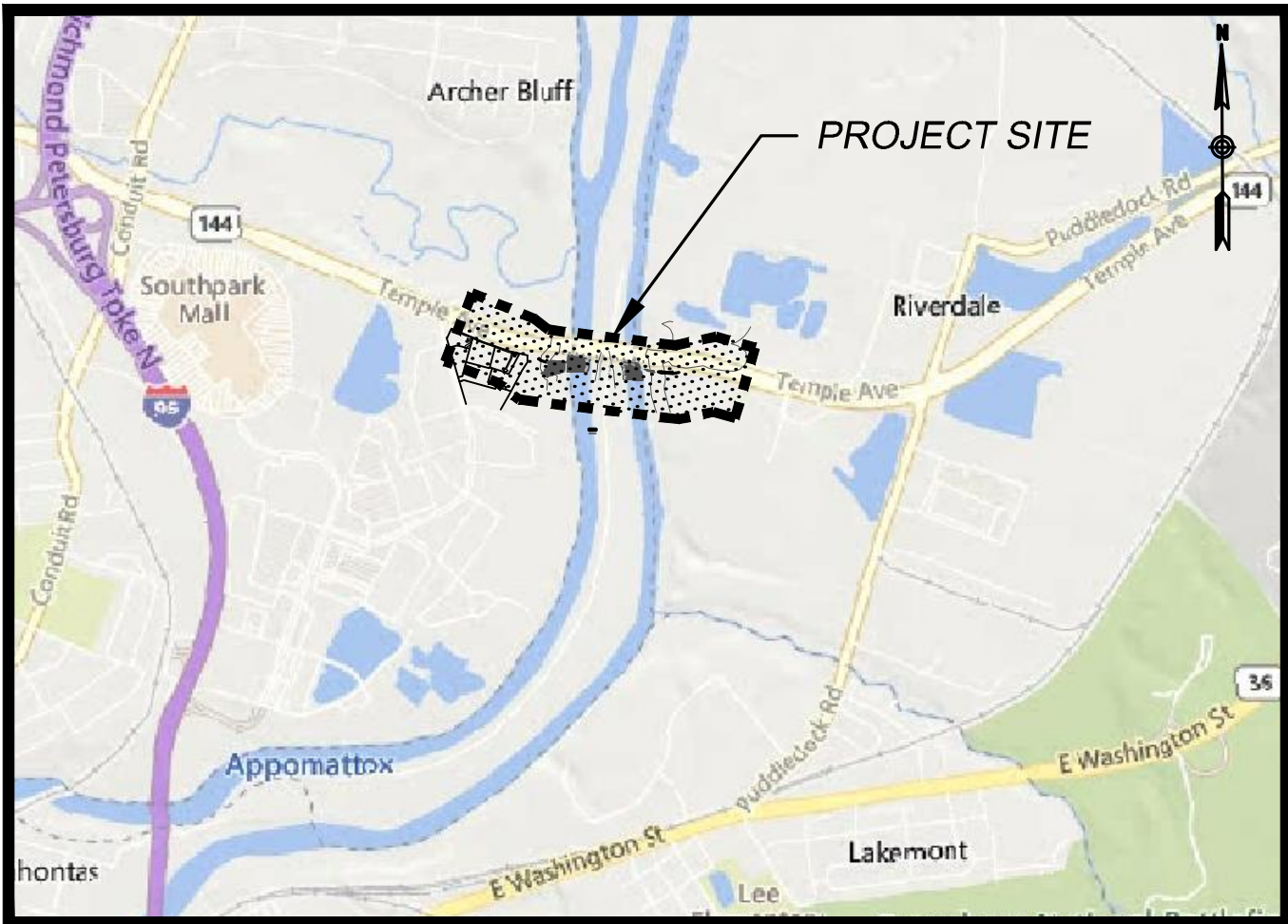
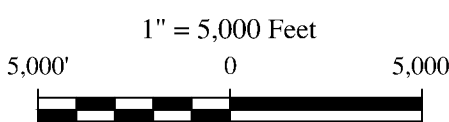
- THIS PROJECT IS LOCATED WITHIN THE PRINCE GEORGE COUNTY PLANNING AREA.
- FEMA FIRM MAP(S):
  - 5100390019E (EFF. 1/11/2024)
  - 51041C0345D (EFF. 12/18/2012)
  - 51149C0024C (EFF. 2/9/2023)
  - 51149C0040D (EFF. 2/9/2023)
- STREAMS AND WETLANDS WITHIN THE PROJECT AREA WERE DELINEATED BY RK&K ON 1/12/2022. THE JOINT PERMIT APPLICATION WAS APPROVED BY USACE ON 5/18/2023 (PERMIT #NAO-2023-0095).
- THIS PROJECT IS REGULATED UNDER THE EXEMPTIONS SECTION OF 90-671 OF THE PRINCE GEORGE COUNTY ZONING ORDINANCE.



VICINITY MAP

SCALE: 1" = 5,000'

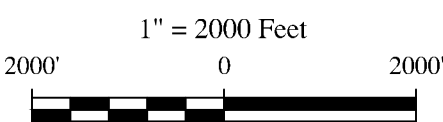
GRAPHIC SCALE



LOCATION MAP

SCALE: 1" = 2,000'

GRAPHIC SCALE



Sheet List Table

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5	C-2	24" WATER MAIN PLAN & PROFILE - STA. 16+00 TO STA. 23+00
6	C-3	24" WATER MAIN PLAN & PROFILE - STA. 23+00 TO STA. 29+50
7	C-4	16" AND 24" WATER MAIN PLAN & PROFILE - STA. 29+50 TO STA. 31+86
8	D-1	EROSION AND SEDIMENT CONTROL NOTES AND DETAILS
9	D-2	COUNTY DETAILS
10	D-3	TRAFFIC CONTROL NOTES AND DETAILS

OWNER INFORMATION:

COUNTY OF PRINCE GEORGE BOARD OF SUPERVISORS  
MR. FRANK HALTOM  
DIRECTOR OF ENGINEERING AND UTILITIES  
6602 COURTS DRIVE  
PRINCE GEORGE COUNTY, VA 23875

PRINCE GEORGE COUNTY APPROVAL

PLANNING/ZONING: \_\_\_\_\_  
ENVIRONMENTAL: \_\_\_\_\_  
BUILDING OFFICIAL: \_\_\_\_\_  
UTILITIES: \_\_\_\_\_  
POLICE: \_\_\_\_\_  
FIRE: \_\_\_\_\_  
VDOT: \_\_\_\_\_

BEFORE YOU DIG CALL  
"MISS UTILITY"  
OF VIRGINIA  
811

PLAN REVISIONS -

5/5/2023 - REVISED PER VDOT AND VDH COMMENTS
11/29/2023 - REVISED PER VDOT COMMENTS
1/23/2024 - REVISED PER PLANNING COMMENTS

SHEET

T-1

1 OF 10

SCALE

AS NOTED

APPOMATTOX RIVER CROSSING

WATER MAIN

PRINCE GEORGE COUNTY, VIRGINIA

COVER SHEET

DATE: JANUARY 2024

ENGINEER: KLM

CHECKED: JPK

DRAWN: PCP

JOB#: 20041.01

COMMONWEALTH OF VIRGINIA

JEFFREY E. KAPINOS

LIC. No. 021876

1/26/2024

PROFESSIONAL ENGINEER

2100 EAST CARY STREET, SUITE 309

RICHMOND, VIRGINIA 23223

(P) 804 782-1903 (F) 804 782-2142

RK&K

Engineers | Construction Managers | Planners | Scientists

RUMMEL, KLEPPER & KAHL, LLP



\\ad.rkk.com\is\Cloud\Projects\2020\20041\_PrincGgeVA\TO 1 - Appomattox River Crossing WM\6- Drawings\01\20041\_01 - T-1-3-cover-index.dwg/ 1/24/2024 11:08:43 AM by -----

SURVEY NOTES:

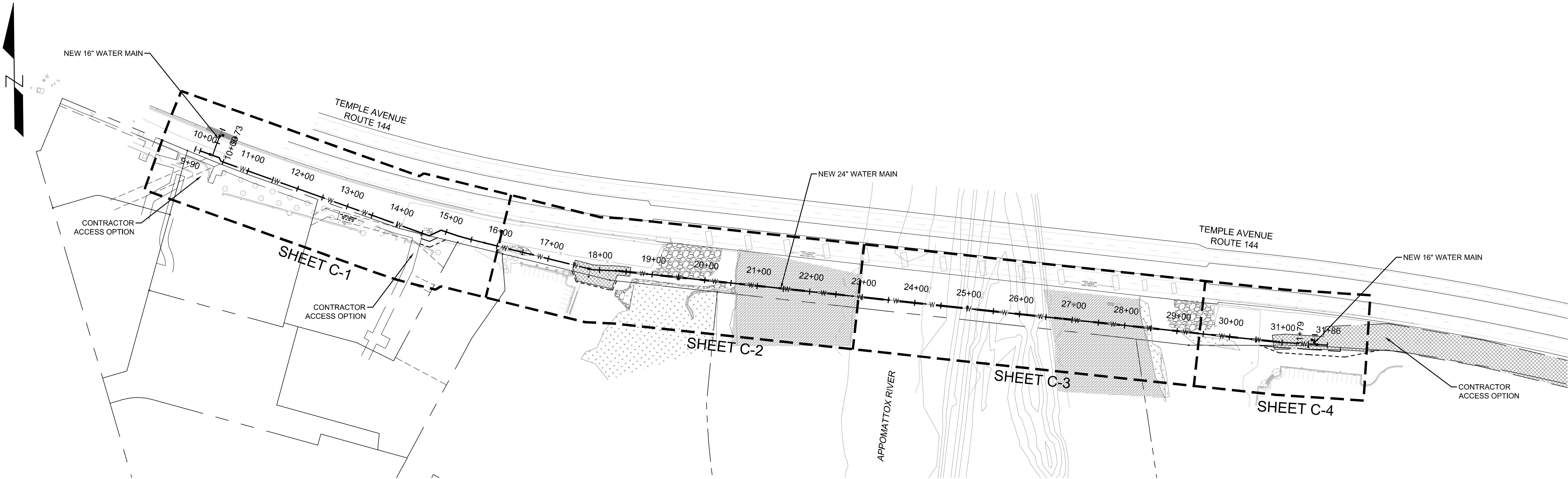
- INVERTS FOR PIPES AND STRUCTURES SHOWN HEREON ARE BASED ON FIELD MEASUREMENTS, HOWEVER THEY SHOULD BE VERIFIED PRIOR TO CONSTRUCTION.
- PIPE SIZES, MATERIAL TYPE AND INVERT ELEVATIONS AS INDICATED ARE BASED UPON OBSERVATIONS MADE ABOVE GROUND. NO MEASUREMENTS HAVE BEEN PERFORMED BY PERSONNEL IN A CONFINED SPACE SITUATION.
- EXISTING GROUND SURFACE LOCATION PERFORMED BY CONVENTIONAL INSTRUMENT SURVEY.
- HORIZONTAL (NAD'83) AND VERTICAL (NAVD'88) DATUM ESTABLISHED THROUGH REAL TIME KINEMATIC (RTK) GPS OBSERVATIONS ON 01-19-2022. DIFFERENTIAL CORRECTIONS WERE DERIVED FROM NATIONAL GEODETIC SURVEY (NGS) CONTINUALLY OPERATING REFERENCE STATION (CORS) "VAAD". COORDINATE VALUES, IF SHOWN HEREON, ARE BASED ON VIRGINIA STATE GRID, SOUTH ZONE.
- UNDERGROUND UTILITIES WERE DESIGNATED (PAINTED) BY ACCUMARK ON 01-25-2022 & 05-20-2022. H & B SURVEYING AND MAPPING, LLC HAS FIELD LOCATED THE DESIGNATED LINES AS PAINTED AND IS NOT RESPONSIBLE FOR THE ACCURACY OF THE PAINT DESIGNATION WITH RESPECT TO THE EXISTING UTILITY. UTILITY INFORMATION ON THIS DRAWING WILL NEED TO BE FIELD VERIFIED PRIOR TO CONSTRUCTION. INDIVIDUALS ARE REQUIRED BY VIRGINIA LAW TO CONTACT MISS UTILITY OF VIRGINIA AT 1-800-552-7001 (OR 811) 2 BUSINESS DAYS (48 HOURS) PRIOR TO CONSTRUCTION OR EXCAVATION ACTIVITIES.
- THE PROPERTY SHOWN HEREON FALLS IN THE FOLLOWING FLOOD HAZARD ZONES: "X"(UNSHADED)-AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOOD PLAIN, "X"(SHADED)-AREAS IN THE 0.2% ANNUAL CHANCE FLOOD PLAIN, AND "AE ELEVATION"-BASE FLOOD ELEVATIONS DETERMINED (NAVD'88). THE APPROXIMATE BOUNDARY LIMITS OF THESE AREAS ARE SHOWN GRAPHICALLY, IF THEY FALL WITHIN THE LIMITS OF THIS SURVEY, AS SCALED FROM FEMA FLOOD INSURANCE RATE MAP, MAP NUMBERS 5100390019D EFF. 08-02-2012, 51041C345D EFF. 12-18-2012, AND 51149C0024B EFF. 05-16-2012.
- PROPERTY LINES SHOWN HEREON ARE TAKEN FROM COURT HOUSE RECORDS, EVIDENCE OF MONUMENTATION AND OCCUPATION FOUND IN THE FIELD. THIS SURVEY DOES NOT CONSTITUTE A BOUNDARY SURVEY AND WAS PREPARED WITHOUT THE BENEFIT OF A TITLE COMMITMENT, THEREFORE ALL EASEMENTS MAY NOT BE SHOWN ON THIS SURVEY.
- THIS SURVEY WAS COMPLETED UNDER THE DIRECT AND RESPONSIBLE CHARGE OF ALISON HANSON, LS FROM AN ACTUAL GROUND SURVEY MADE UNDER HER SUPERVISION. THE IMAGERY AND/OR ORIGINAL DATA WAS OBTAINED ON 06-03-2022. THIS PLAT, MAP, OR DIGITAL GEOSPATIAL DATA INCLUDING METADATA MEETS MINIMUM ACCURACY STANDARDS UNLESS OTHERWISE NOTED.
- THE EXISTENCE OF ANY WETLANDS, SHOULD THERE BE ANY WERE NOT DELINEATED AND THEREFORE NOT SHOWN ON THE PORTION OF THIS SURVEY COMPLETED ON 6-03-2022.

ESTIMATED QUANTITIES		
ITEM	QUANTITY (LF)	QUANTITY (EA)
16" CLASS 52 DUCTILE IRON (DI) PIPE	51	
24" CLASS 52 DUCTILE IRON (DI) PIPE	915	
24" DIPS HDPE DR-11	1,270	
16" x 16" TAPPING SLEEVE & VALVE		2
16" - 45° DI MJ BEND		2
24" x 16" DI MJ TEE		2
24" - 11.25° DI MJ BEND		1
24" - 45° DI MJ BEND		6

LEGEND

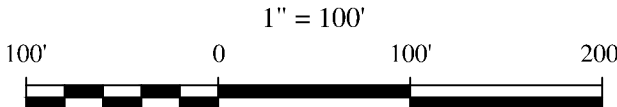
THESE STANDARD SYMBOLS WILL BE FOUND IN THE DRAWING.

Symbol	Description	Symbol	Description
	RIP RAP		BOLLARD
	CONCRETE		ELECTRICAL BOX
	ASPHALT		ELECTRICAL METER
	MINOR CONTOUR		ELECTRICAL HAND HOLE
	MAJOR CONTOUR		ELECTRICAL TRANSFORMER
	PROPERTY ADJOINER LINE		END OF UNDERGROUND INFORMATION
	ROW PROPERTY LINE		GUY ANCHOR
	EDGE OF ASPHALT		GAS LINE MARKER
	BACK OF CURB		IRON ROD FOUND
	EDGE OF WOODS		LIGHT POLE
	FENCE		MONUMENT FOUND
	GUARD RAIL		FENCE POST
	STORM PIPE		UTILITY POLE
	LANDSCAPED AREA		SHRUB
	OVERHEAD UTILITIES		SIGN
	UNDERGROUND ELECTRIC PAINT		WETLAND FLAG
	UNDERGROUND GAS PAINT		SURVEY CONTROL POINT
	UNDERGROUND WATER PAINT		STORM DRAIN MANHOLE
	UNDERGROUND FIBER PAINT		TREE (GENERIC)
	UNDERGROUND CABLE TV PAINT		CABLE TV PED
	UNDERGROUND TELEPHONE PAINT		FIRE HYDRANT
	EDGE OF WATER		FIBER OPTIC HAND HOLE
	PROPOSED DI WATER MAIN		GRATE INLET
	PROPOSED HDPE WATER MAIN (HDD)		IRON ROD FOUND
	PROPOSED VALVE		WATER MANHOLE
	PROPOSED TRANSITION COUPLING		RISER BARRELL
	PROPOSED TEMPORARY WORKSPACE		WATER VENT
	PERMANENT EASEMENT		WATER VALVE
	TEMPORARY EASEMENT		WATER WITNESS POST
	LIMITS OF CLEARING		IRRIGATION VALVE
	SILT FENCE		POWER POLE
	RPA LINE		Overhead Traffic Signal
	RMA LINE		TRAFFIC CABINET

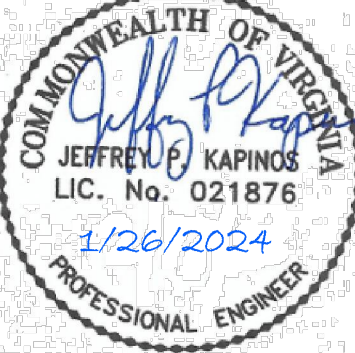


SHEET INDEX  
SCALE: 1"= 100'

GRAPHIC SCALE



DATE: JANUARY 2024  
ENGINEER: KLM  
CHECKED: JPK  
DRAWN: PCP  
JOB#: 20041.01



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**RK&K**  
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APPOMATTOX RIVER CROSSING  
WATER MAIN  
PRINCE GEORGE COUNTY, VIRGINIA  
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SHEET T-2 OF 10  
SCALE 1" = 100'



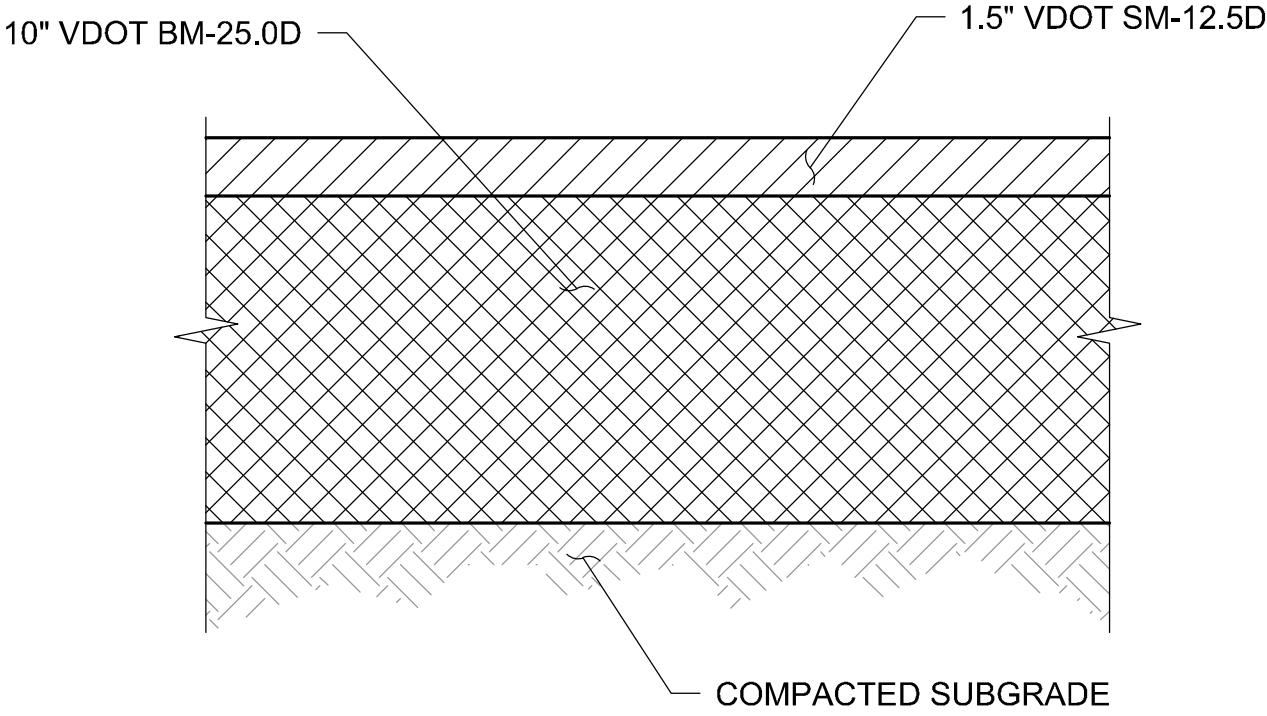
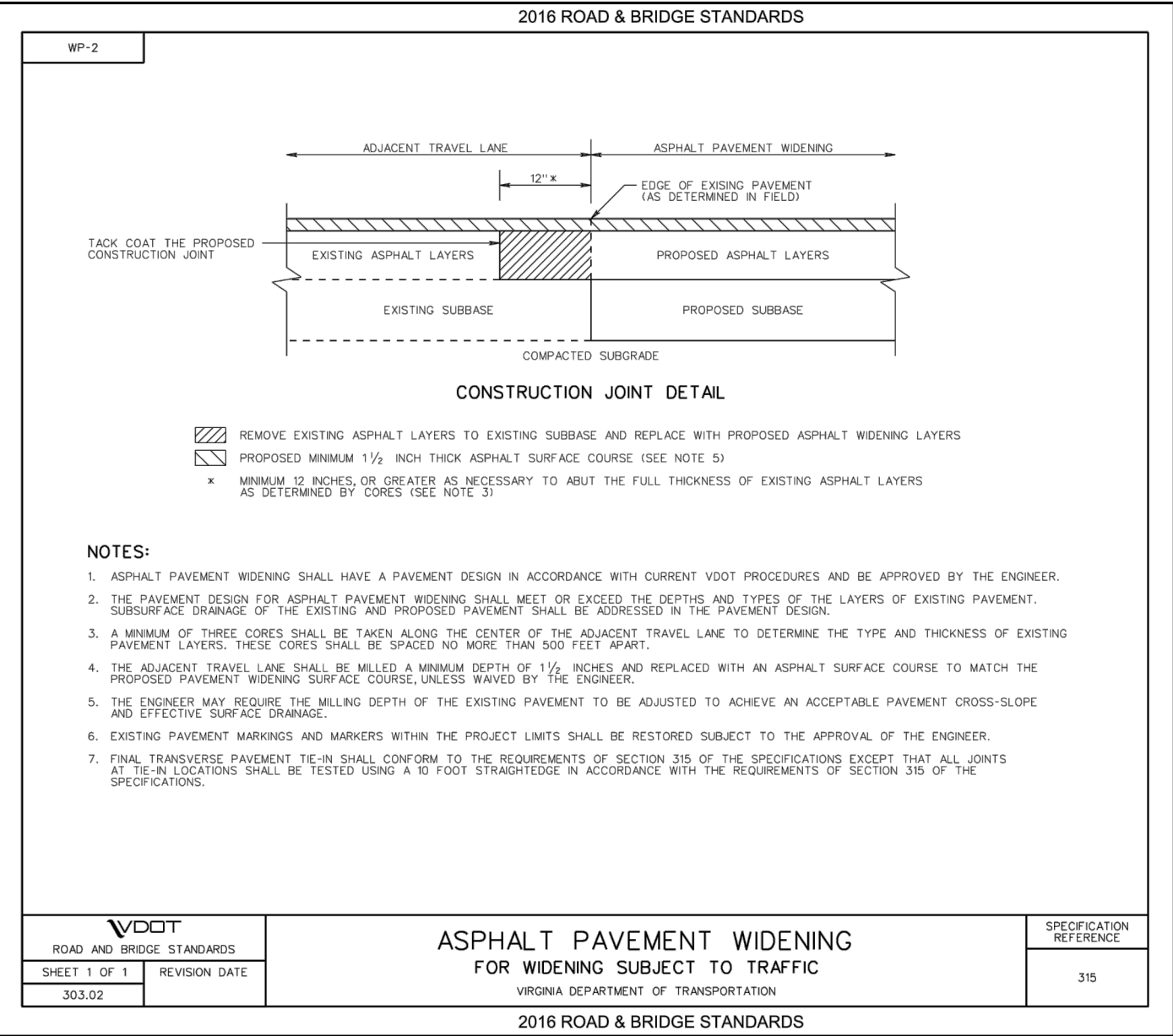
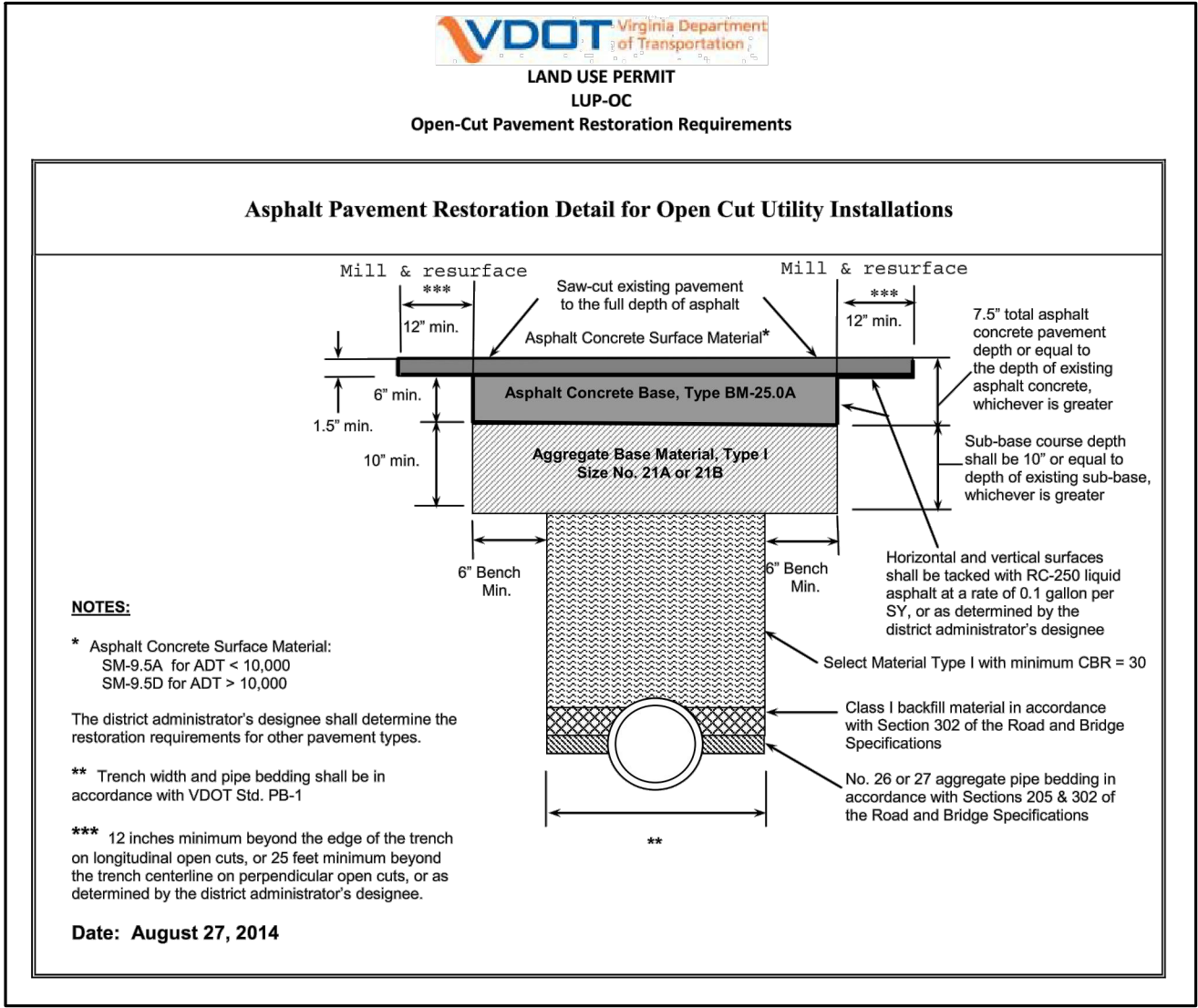
\\ad.rkk.com\is\Cloud\Projects\2020\20041\_PrincGgeVA\1 - Appomattox River Crossing\WM\6-Drawings\01\20041\_01 - T-1-3-cover-index.dwg/ 1/24/2024 11:08:47 AM by ---

RICHMOND DISTRICT LAND USE SUBDIVISION AND SITE CONSTRUCTION PLAN GENERAL NOTES (EFFECTIVE DATE JANUARY 2021)

1. ALL MATERIALS AND CONSTRUCTION WITHIN THE PUBLIC RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION'S ROAD AND BRIDGE SPECIFICATIONS, ROAD AND BRIDGE STANDARDS AND VIRGINIA WORK AREA PROTECTION MANUAL.
2. LAND USE PERMITS (LUP) SHALL BE OBTAINED FROM THE VIRGINIA DEPARTMENT OF TRANSPORTATION PRIOR TO BEGINNING ANY CONSTRUCTION WITHIN THE EXISTING STATE MAINTAINED RIGHT -OF-WAY (INCLUDING ACCESS).
3. VDOT REQUIRES NOTIFICATION 48 HOURS PRIOR TO COMMENCING WITH INITIAL CONSTRUCTION ACTIVITIES. PLEASE CONTACT THE APPROPRIATE PERMIT OFFICE IN WHICH YOUR PROPOSED ACTIVITIES ARE TO OCCUR.
4. APPROVAL OF A DETAILED CONSTRUCTION SEQUENCING AND MAINTENANCE OF TRAFFIC PLAN FOR THE WORK ZONE IS A PREREQUISITE FOR ISSUANCE OF LAND USE PERMIT. THE PLAN SHALL ACCOMMODATE ACCESS TO AND CONSTRUCTION WITHIN VDOT MAINTAINED RIGHT-OF-WAY.
5. WORK ZONES - REQUESTS FOR THE IMPLEMENTATION OF TEMPORARY LANE AND SHOULDER CLOSURES ON INTERSTATE, LIMITED ACCESS PRIMARY ROUTES, AND ROUTES 58 AND 460, MUST BE ENTERED INTO THE VDOT LANE CLOSURE ADVISORY MANAGEMENT SYSTEM (LCAMS) BY 12:00 PM ON THURSDAY THE WEEK BEFORE THE WORK IS TO TAKE PLACE FOR APPROVAL. CONTACT THE WORK ZONE COORDINATOR AT 804-609-5338 FOR QUESTIONS AND ASSISTANCE. ALL LANE/SHOULDER CLOSURES REQUIRING LCAMS APPROVAL SHALL BE ENTERED INTO VA TRAFFIC. LANE/SHOULDER CLOSURES ON PRIMARY AND MAJOR SECONDARY ROUTES MUST BE ENTERED IN VA TRAFFIC. MAJOR SECONDARY ROUTES ARE DEFINED AS THOSE LISTED IN THE RICHMOND DISTRICT RECOMMENDED WORK HOURS DOCUMENT. JUST PRIOR TO THE FIRST CONE GOING DOWN, USERS MUST CONTACT THE TOC AT 804-796-4520 TO ACTIVATE THE WORK ZONE AND WHEN THE LAST CONE HAS BEEN PICKED UP TO DEACTIVATE THE WORK ZONE.
6. PERMITTEE MUST NOTIFY VIRGINIA DEPARTMENT OF TRANSPORTATION TOC WHEN THERE IS A CRASH IN A WORK ZONE AT 804-796-4520.
7. PRIOR TO ANY CONSTRUCTION, THE CONTRACTOR SHALL CONSULT THE DEVELOPER'S ENGINEERING CONSULTANT AND VERIFY THE APPROVAL OF THE PLANS BY ALL APPLICABLE FEDERAL, STATE AND LOCAL AGENCIES.
8. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF ALL UNDERGROUND UTILITIES SHOWN ON PLANS IN THE AREAS OF CONSTRUCTION PRIOR TO STARTING WORK. CONTACT THE DEVELOPER'S ENGINEERING CONSULTANT IMMEDIATELY IF LOCATION OR ELEVATION IS DIFFERENT FROM THAT SHOWN ON PLAN. IF THERE APPEARS TO BE A CONFLICT, OR UPON DISCOVERY OF ANY UTILITY NOT SHOWN ON THIS PLAN, CALL "MISS UTILITY" AT 811. THE DEVELOPER SHALL BE RESPONSIBLE FOR THE RELOCATION OF ANY UTILITY WITHIN EXISTING AND PROPOSED RIGHT OF WAY REQUIRED BY THE DEVELOPMENT.
9. THE PERMITTEE OR THEIR AGENT MUST CONTACT THE VDOT CUSTOMER SERVICE CENTER AT 1-800-367-7623 A MINIMUM OF 48 HOURS PRIOR TO INITIATING ANY PLANNED EXCAVATION WITHIN 1,000 FEET OF A SIGNALIZED INTERSECTION AND/OR NEAR VDOT ITS INFRASTRUCTURE. EXCAVATION MAY PROCEED ONLY AFTER THE VDOT REGIONAL UTILITY LOCATION AGENT HAS NOTIFIED THE PERMITTEE THAT THE UTILITY MARKING HAS BEEN COMPLETED. ADDITIONAL INFORMATION CAN BE FOUND AT:  
[http://www.virginiadot.org/business/resources/IM/ITE-383\\_Request\\_For\\_Marking\\_VDOT\\_Utility\\_Location.pdf](http://www.virginiadot.org/business/resources/IM/ITE-383_Request_For_Marking_VDOT_Utility_Location.pdf) "MISS UTILITY" DOES NOT LOCATE VDOT UTILITIES.
10. THE CONTRACTOR SHALL VERIFY THE ELEVATIONS OF ALL POINTS OF CONNECTION OF PROPOSED WORK TO EXISTING CURBS, SANITARY LINES, WATER LINES, ETC., PRIOR TO CONSTRUCTION.
11. DESIGN CHANGES, SPECIFIED MATERIALS CHANGES AND FIELD CHANGES FROM THE APPROVED PLANS SHALL BE RE-SUBMITTED TO VDOT FOR APPROVAL PRIOR TO PROCEEDING WITH THE WORK. A LETTER OF EXPLANATION SHALL ACCOMPANY THE PROPOSED REVISION ALONG WITH THE DRAINAGE CALCULATIONS WHEN APPROPRIATE.
12. VDOT APPROVAL OF CONSTRUCTION PLANS DOES NOT PRECLUDE THE RIGHT TO REQUIRE ADDITIONAL FACILITIES AS DEEMED NECESSARY FOR ACCEPTANCE OF THE ROADS INTO THE VDOT SECONDARY ROAD SYSTEM BASED ON FIELD CONDITIONS OR UNAPPROVED PLAN CHANGES.
13. VDOT APPROVAL OF THESE PLANS WILL EXPIRE FIVE (5) YEARS FROM THE DATE OF APPROVAL FOR SITE PLANS AND SUBDIVISION PLANS IF CONSTRUCTION HAS NOT STARTED.
14. PRELIMINARY DESIGN OF THE PAVEMENT STRUCTURE FOR ALL SUBDIVISION STREETS SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE PAVEMENT DESIGN FOR SUBDIVISION AND SECONDARY ROADS IN VIRGINIA. THE COMPLETED DESIGN WORKSHEET APPENDIX IV SHALL BE INCLUDED IN THE INITIAL PLAN SUBMITTAL FOR EACH PROPOSED PAVEMENT SECTION UTILIZING THE PREDICTED SOIL SUPPORT VALUE SHOWN IN APPENDIX I OF THE PAVEMENT DESIGN GUIDE OR AS REPORTED IN A GEOTECHNICAL ANALYSIS OF THE ON-SITE SOILS.
15. A COPY OF THE COMPLETE CBT REPORT SHALL BE SUBMITTED TO VDOT IN CONJUNCTION WITH FINAL PAVEMENT DESIGNS. ALL PAVEMENT DESIGN RECOMMENDATIONS SHALL BE PERFORMED IN ACCORDANCE WITH THE CURRENT EDITION OF PAVEMENT DESIGN GUIDE FOR SUBDIVISION AND SECONDARY ROADS IN VIRGINIA.
16. ALL VEGETATION AND ORGANIC MATERIAL SHALL BE REMOVED FROM THE RIGHT OF WAY LIMITS PRIOR TO CONDITIONING OF THE SUBGRADE.
17. UPON DISCOVERY OF SOILS THAT ARE UNSUITABLE FOR FOUNDATIONS, SUBGRADES, OR OTHER ROADWAY CONSTRUCTION PURPOSES, THE DEVELOPER OR HIS DESIGNEE, WHICH MAY BE THE CONTRACTOR, SHALL IMMEDIATELY ENGAGE A GEOTECHNICAL ENGINEER AND NOTIFY VDOT. THESE AREAS SHALL BE EXCAVATED BELOW PLAN GRADE AS DIRECTED BY THE GEOTECHNICAL ENGINEER, BACKFILLED WITH SUITABLE MATERIAL AND COMPACTED IN ACCORDANCE WITH CURRENT VDOT SPCIFICATIONS.

18. THE NECESSITY AND LOCATIONS FOR ADDITIONAL VDOT STANDARD UNDERDRAINS SHALL BE DETERMINED AT TIME OF SUBGRADE INSPECTION. VIDEO INSPECTION OF ACCESSIBLE OUTLET LOCATIONS, MAINLINE LONGITUDINAL CONNECTIONS, AND LONGITUDINAL PIPE FOR ALL PAVEMENT UNDERDRAINS, CROSS DRAINS, EDGEDRAINS AND PREFABRICATED GEOCOMPOSITE PANEL DRAINS SHALL BE CONDUCTED IN ACCORDANCE WITH SECTION 501 OF THE ROAD AND BRIDGE SPECIFICATIONS AND VIRGINIA TEST METHOD 108 - POST INSTALLATION INSPECTION OF UNDERDRAINS, CROSSDRAINS, AN EDGEDRAINS.
19. VDOT SHALL HAVE PERFORMED THE REQUIRED FIELD INSPECTION (PROOF ROLL) PRIOR TO PLACEMENT OF THE AGGREGATE BASE COURSE(S). CONTACT VDOT FOR SUBGRADE INSPECTION 48 HOURS PRIOR TO SCHEDULING PLACEMENT OF AGGREGATE BASE COURSE(S).
20. THE SCHEDULING OF AGGREGATE BASE INSTALLATION AND SUBSEQUENT PAVING ACTIVITIES SHALL ACCOMMODATE FORECASTED WEATHER CONDITIONS PER SECTION 315 OF THE ROAD AND BRIDGE SPECIFICATIONS.
21. VDOT SHALL HAVE APPROVED THE AGGREGATE BASE COURSE(S) FOR DEPTH, TEMPLATE AND PERFORMED THE REQUIRED FIELD INSPECTION (PROOF ROLL) PRIOR TO PLACEMENT OF ANY ASPHALT CONCRETE SURFACE COURSE(S). CONTACT VDOT FOR INSPECTION OF THE AGGREGATE BASE COURSE(S) 48 HOURS PRIOR TO APPLICATION OF THE SURFACE COURSE(S).
22. A LICENSED GEOTECHNICAL ENGINEER OR HIS DESIGNEE SHALL ASCERTAIN CAUSE AND CERTIFY RECOMMENDED METHOD OF REPAIR FOR ALL PAVEMENT STRUCTURAL FAILURES PRIOR TO STATE ACCEPTANCE.
23. VDOT SHALL BE PROVIDED DOCUMENTATION BY A LICENSED GEOTECHNICAL ENGINEER, CERTIFYING THAT ALL IN-PLACE PAVEMENTS MEET OR EXCEED THE APPROVED PAVEMENT DESIGN THICKNESS PRIOR TO STATE ACCEPTANCE OF THE STREET. CORES ARE TO BE OBTAINED VERIFYING PAVEMENT THICKNESS UNLESS DIRECTED BY VDOT. THE PERMIT INSPECTOR SHALL BE CONTACTED 24 HOURS PRIOR TO THE CORE SAMPLES BEING TAKEN.
24. ALL STORM SEWER DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH LATEST VDOT DRAINAGE MANUAL, ROAD AND BRIDGE STANDARDS, AND IIMS.
25. ALL PRE-CAST UNITS SHALL BE VDOT APPROVED. CERTIFICATION AND VDOT STAMP IS REQUIRED ON ALL UNITS.
26. ALL CONCRETE SHALL BE CLASS A3-AE (AIR ENTRAINED 3,000 PSI) UNLESS OTHERWISE SPECIFIED.
27. ALL ROADSIDE DITCHES SHOWN AS PAVED ON PLANS ARE TO BE PAVED IN ACCORDANCE WITHE THE STANDARD TYPICAL SECTION AS SHOWN ON THE PLANS. ANY ADDITIONAL PAVING OF THE DITCHES, OTHER THAN THOSE SHOWN ON THE ROAD PLANS WILL BE DETERMINED PRIOR TO ACCEPTANCE OF THE ROADS INTO TH VDOT SECONDARY ROAD SYSTEM.
28. ROAD & BRIDGE SPECIFICATIONS SECTION 302, DRAINAGE STRUCTURES ADDRESSES POST INSTALLATION VISUAL/VIDEO CAMERA INSPECTION OF STORM SEWER PIPES AND PIPE CULVERTS. INSPECTION FREQUENCY SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS AND/OR AS NECESSITATED BY THE ENGINEER. VIDEO INSPECTION SHALL BE CONDUCTED IN ACCORDANCE WITH VIRGINIA TEST METHOD (VTM) 123, POST INSTALLATION INSPECTION OF BURIED STORM SEWER PIPE AND PIPE CULVERTS.
29. A CONSTRUCTION ENTRANCE SHALL BE INSTALLED ON EACH INDIVIDUAL LOT PRIOR TO ANY LOT GRADING OR HOME CONSTRUCTION ACTIVITIES AND SHALL BE ADEQUATELY MAINTAINED UNTIL ALL CONSTRUCTION TRAFFIC AREAS WITHIN THE LOT HAVE BEEN STABILIZED.
30. ALL ENTRANCES SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH CURRENT VDOT STANDARDS. RESIDENTIAL LOT ACCESS SHALL BE PROVIDED PER THE FOLLOWING CRITERIA:
  - ALL DRIVEWAY ENTRANCE AND ENTRANCE CULVERTS SHALL CONFORM TO PE-1 PRIVATE ENTRANCE STANDARDS UNLESS OTHERWISE APPROVED BY VDOT. NO ENTRANCE CULVERTS ARE TO BE INSTALLED WITHIN FIVE (5) FEET OF A PROPERTY CORNER.
  - VDOT STANDARD CG-9D ENTRANCES SHALL BE USED WHEN AN ENTRANCE IS REQUIRED IN CURB AND GUTTER NEIGHBORHOODS UNLESS OTHERWISE APPROVED BY VDOT.
31. DRY GUTTER IS NOT ALLOWED IN VDOT RIGHT OF WAY EXCEPT AS SHOWN ON VDOT'S ENTRANCE STANDARD DETAILS.
32. THE DEVELOPER SHALL FURNISH AND INSTALL STOP SIGNS AND STOP BARS AT STREET INTERSECTIONS AND ALL REGULATORY SIGNAGE PER THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. ALL SIGNS MUST BE INSTALLED ON VDOT STANDARD STP-1 SIGN POSTS.
33. INSTALLATION, MAINTENANCE AND OPERATION OF STREET LIGHTING SHALL BE PROVIDED BY AND AT THE SOLE EXPENSE OF OTHERS. VDOT WILL NOT ALLOW LIGHTING WITHIN THE RIGHT OF WAY BY LAND USE PERMIT (LUP) ONLY. LIGHTING ON CURB SECTIONS SHALL BE PLACED BEHIND THE CURB AND PREFERABLY BEHIND THE SIDEWALK. FOR SHOULDER SECTIONS, THE POLE SHALL BE PLACED A MINIMUM OF ' FROM THE EDGE OF PAVEMENT AND BEHIND THE DITCH LINE. ALL LIGHTING PROPOSED WITHIN THE RIGHT OF WAY MUST BE DESIGNED IN ACCORDANCE WITH THE AASHTO GUIDE FOR ROADWAY LIGHTING AND SHALL MEET THE CURRENT ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA (IESNA) STANDARDS.
34. TRAFFIC SIGNALS REQUIRE AN INDIVIDUAL LAND USE PERMIT. THE APPLICANT SHALL BE RESPONSIBLE FOR THE DESIGN COSTS OF ANY TRAFFIC SIGNAL INSTALLATION OR MODIFICATION OF EXISTING SIGNALS. DESIGN PLANS MUST BE PREPARED AND SUBMITTED TO VDOT BY A LICENSED PROFESSIONAL ENGINEER FOR REVIEW AND APPROVAL. THIS INCLUDES THE FOUNDATION DESIGN AND ANY EQUIPMENT ASSOCIATED WITH THE COMPLETED TRAFFIC SIGNAL. ALL EQUIPMENT MUST BE APPROVED BY VDOT. SHOP DRAWINGS MUST BE SUBMITTED FOR REVIEW AND APPROVAL PRIOR TO FABRICATING ANY SIGNAL STRUCTURAL COMPONENTS.
35. SOIL STABILIZATION IS REQUIRED WITHIN 7 DAYS FOR ALL AREAS WHERE CLEARING, GRADING, EXCAVATION OR OTHER LAND DISTURBING ACTIVITIES HAVE PERMANENTLY CEASED OR WHERE LAND DISTURBANCE ACTIVITIES HAVE BEEN TEMPORARILY SUSPENDED FOR AN ANTICIPATED DURATION OF GREATER THAN 7 DAYS, OR UPON COMPLETION OF GRADING OPERATIONS FOR A SPECIFIED AREA. SOIL STABILIZATION SHALL BEGIN AS SOON AS PRACTICABLE, BUT NOT LATER THAN THE SEVEN DAYS FOLLOWING THE DAY WHEN LAND DISTURBING ACTIVITIES TEMPORARILY OR PERMANENTLY CEASED.

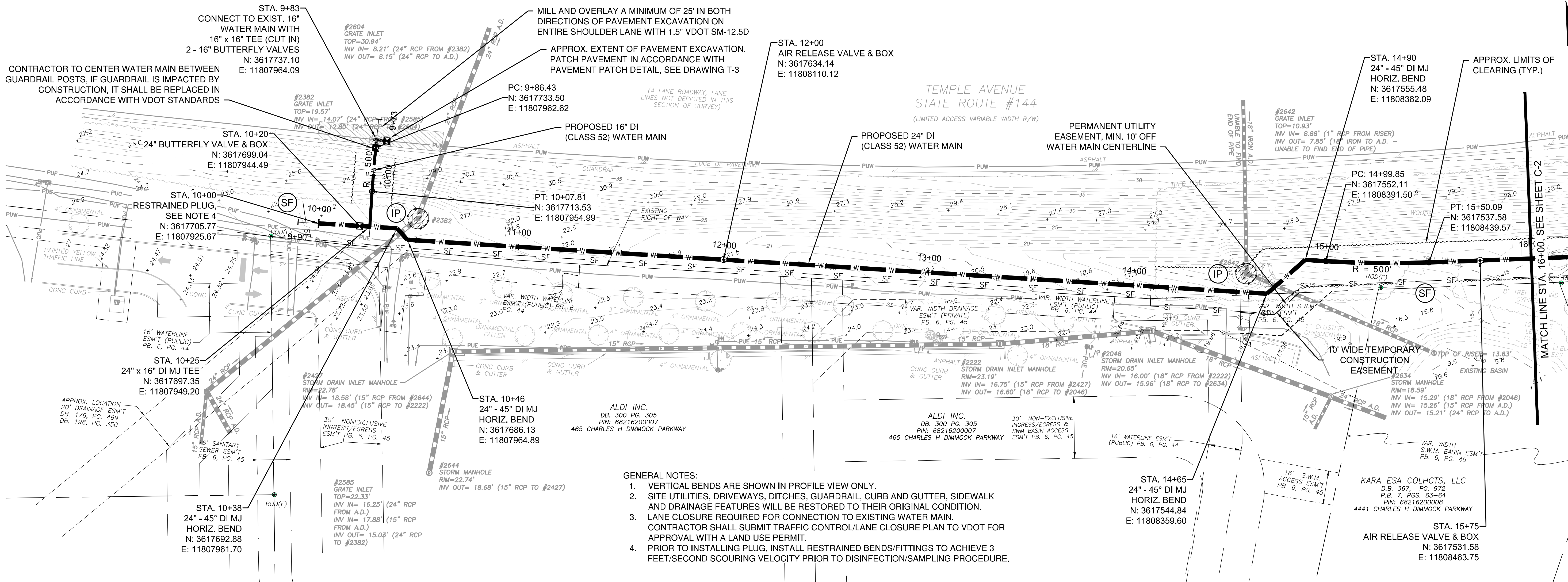
36. NO STRUCTURE SHALL BE CONSTRUCTED ON STATE MAINTAINED RIGHT OF WAYS, OR ON RIGHT OF WAYS INTENDED TO BE MAINTAINED BY VDOT UNLESS SAID STRUCTURES ARE SHOWN ON CONSTRUCTION PLANS APPROVED BY VDOT OR SUCH STRUCTURES ARE COVERED BY A VDOT LUP (OR BY A LETTER OF INTENT FROM THE RESIDENT ADMINISTRATOR/RESIDENT ENGINEER TO ISSUE SAID PERMIT AT THE TIME OF STATE ACCEPTANCE)



PAVEMENT SECTION N.T.S.

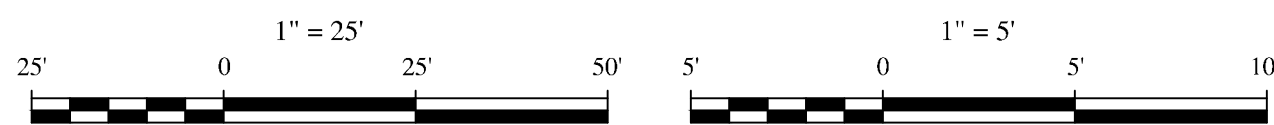
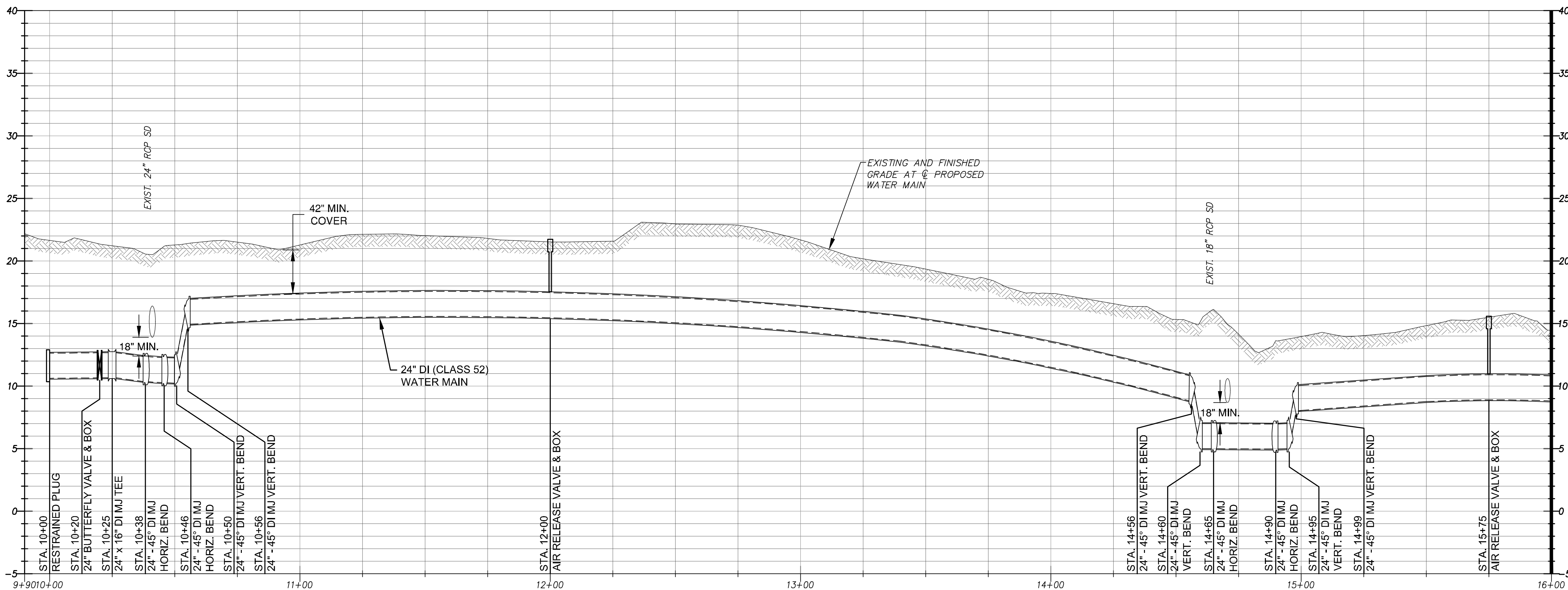
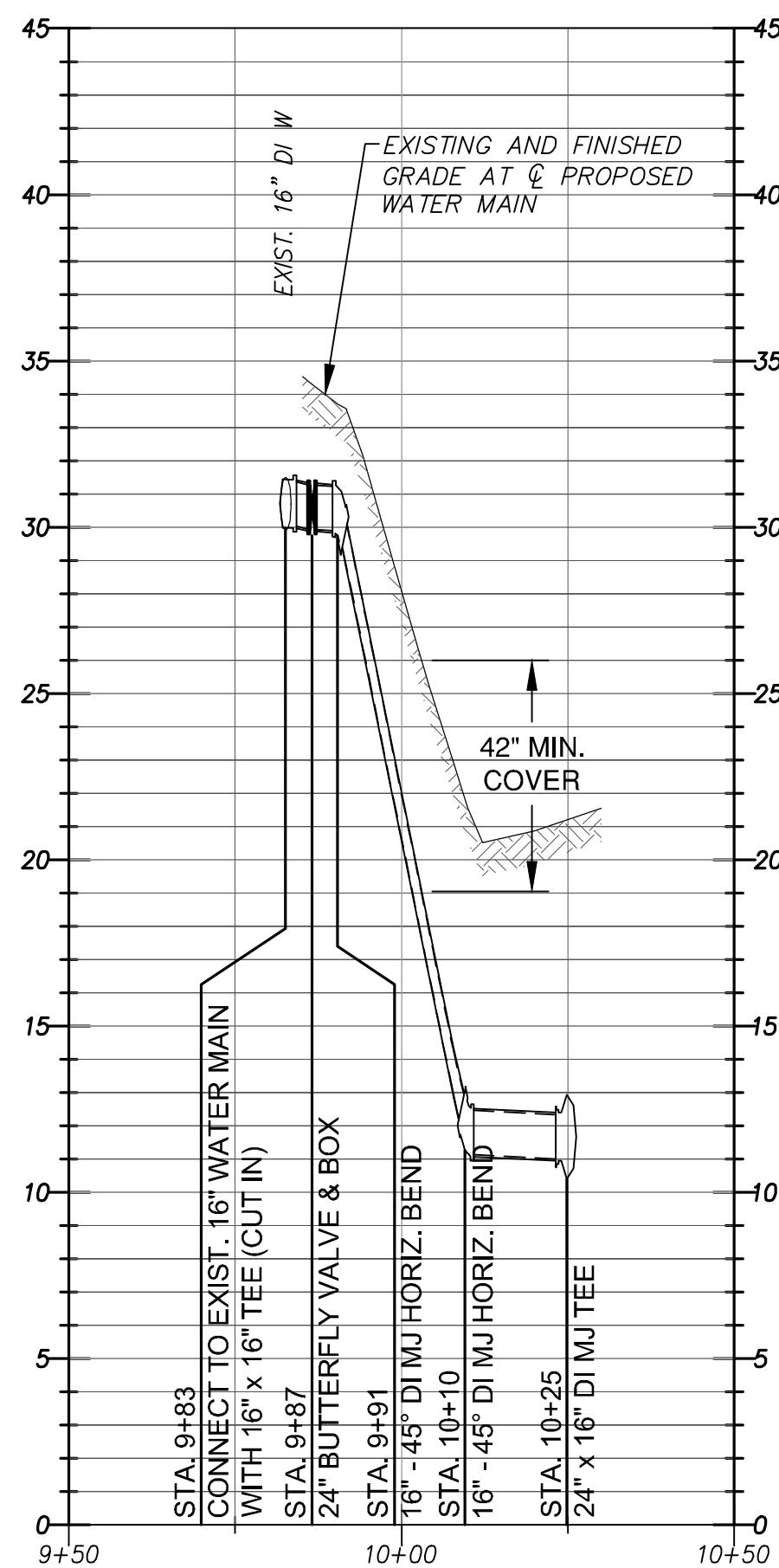
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SHEET		T-3		3		OF 10	
SCALE		N/A		VDOT CONSTRUCTION NOTES AND DETAILS			
DATE: JANUARY 2024		ENGINEER: KLM		CHECKED: JPK		DRAWN: PCP	
JOB#:		20041.01					
2100 EAST CARY STREET, SUITE 309 RICHMOND, VIRGINIA 23223 (P) 804 782-1903 (F) 804 782-2142		RUMMEL, KLEPPER & KAHL, LLP		COMMONWEALTH OF VIRGINIA JEFFREY E. KAPINOS LIC. No. 021876 1/26/2024 PROFESSIONAL ENGINEER			

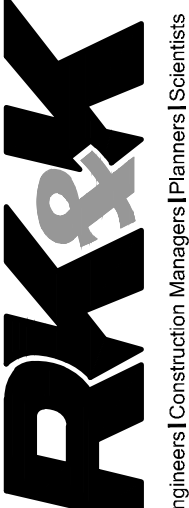




PLAN & PROFILE - 16" AND 24" DI WATER MAIN

SCALES: HORIZ. 1" = 25'  
VERT. 1" = 5'

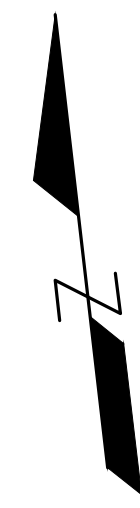


 <b>RUMMEL, KLEPPER &amp; KAHL, LLP</b> <small>Engineers/Construction Managers/Planners/Scientists</small>	2100 EAST CARY STREET, SUITE 309 RICHMOND, VIRGINIA 23223 (P) 804 782-1903 (F) 804 782-2142	DATE: JANUARY 2024		ENGINEER: KLM	CHECKED: JPK	DRAWN: PCP	JOB#: 20041.01	
		COMMONWEALTH OF VIRGINIA JEFFREY E. KAPINOS LIC. No. 021876 1/26/2024 PROFESSIONAL ENGINEER						
		APPOMATTOX RIVER CROSSING WATER MAIN PRINCE GEORGE COUNTY, VIRGINIA						
		16" AND 24" WATER MAIN PLAN & PROFILE - STA. 10+00 TO STA. 16+00						
PLAN REVISIONS -		SHEET	C-1		SCALE			
5/5/2023 - REVISED PER VDOT AND VDH COMMENTS		4	OF 10		1" = 25'			
11/29/2023 - REVISED PER VDOT COMMENTS					1" = 5'			
1/23/2024 - REVISED PER PLANNING COMMENTS								





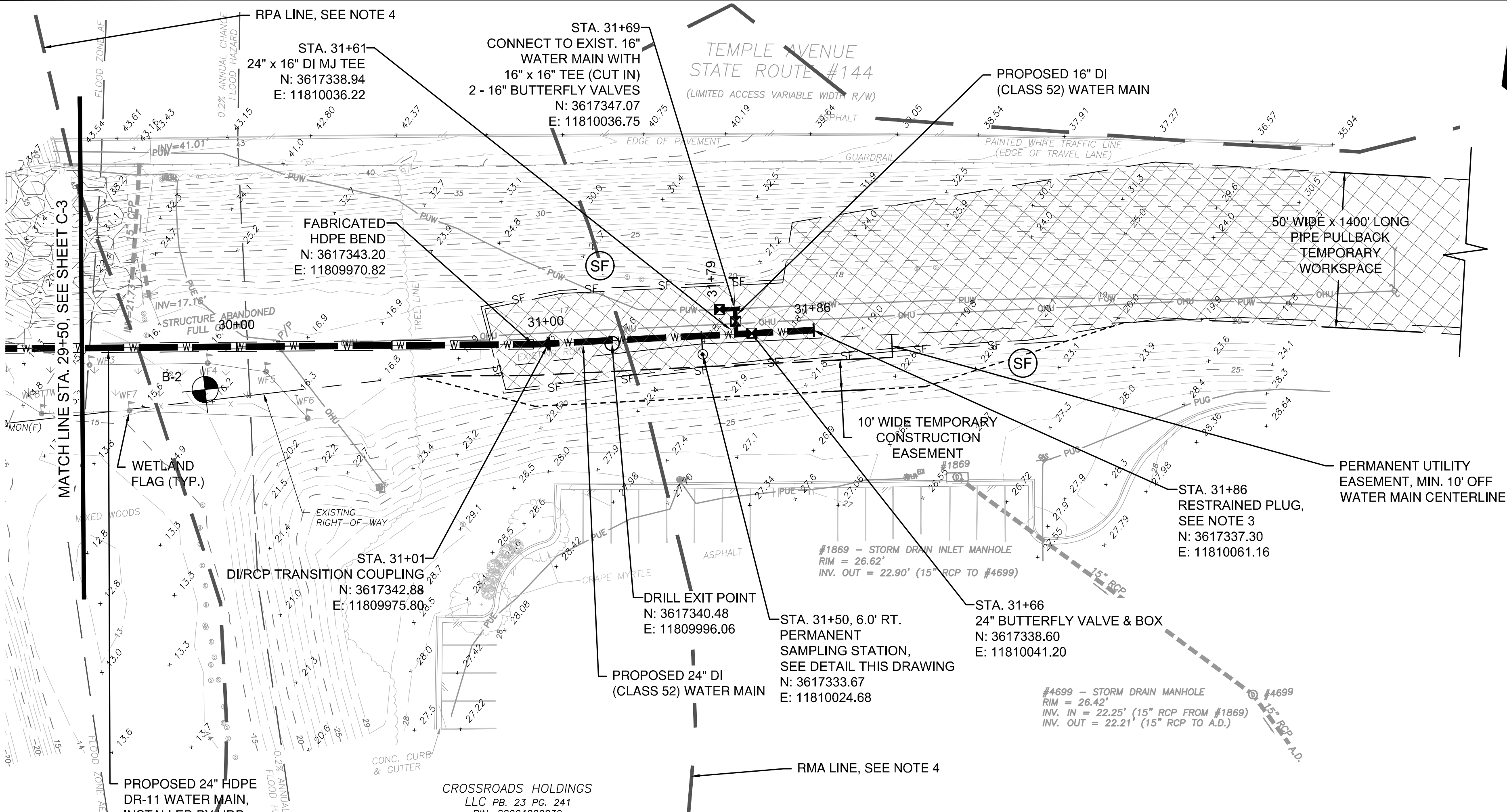




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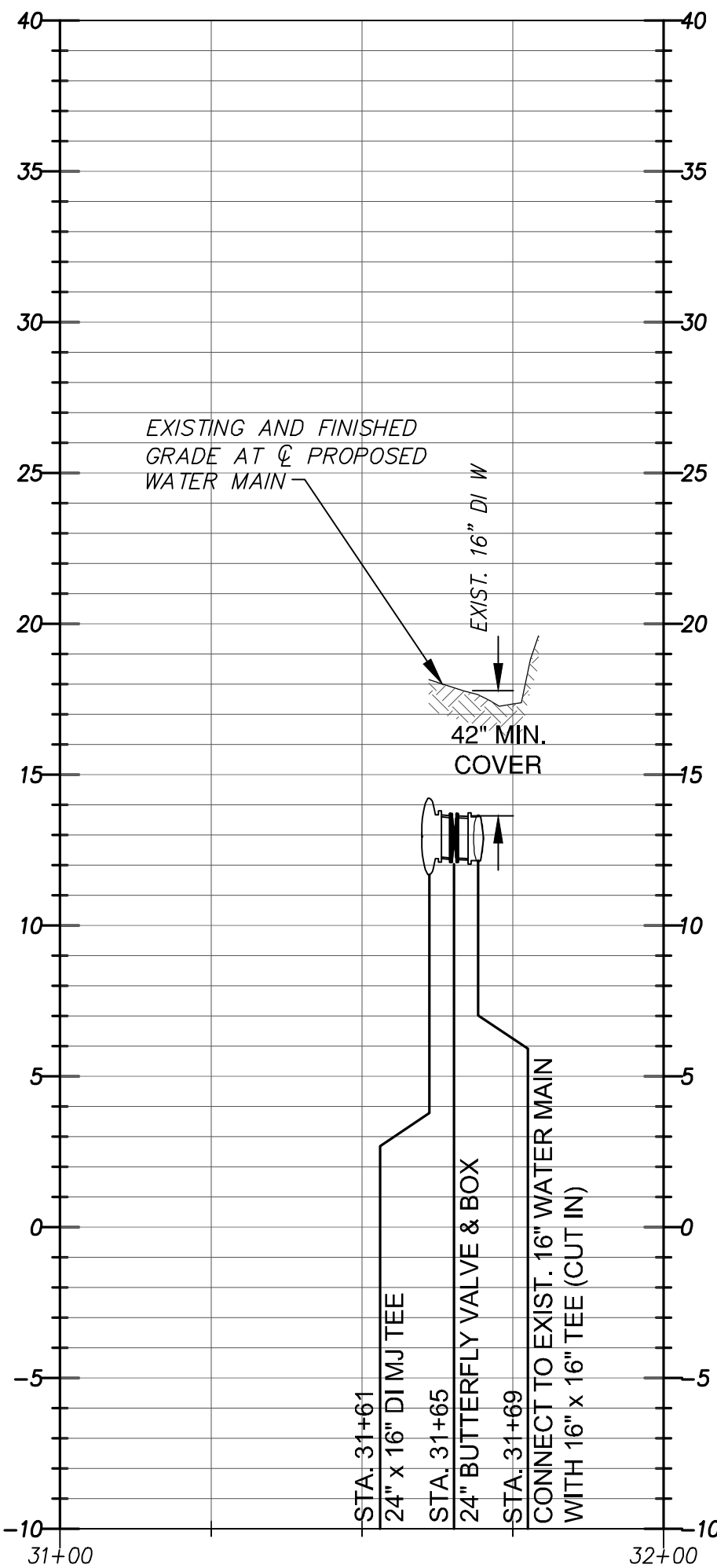
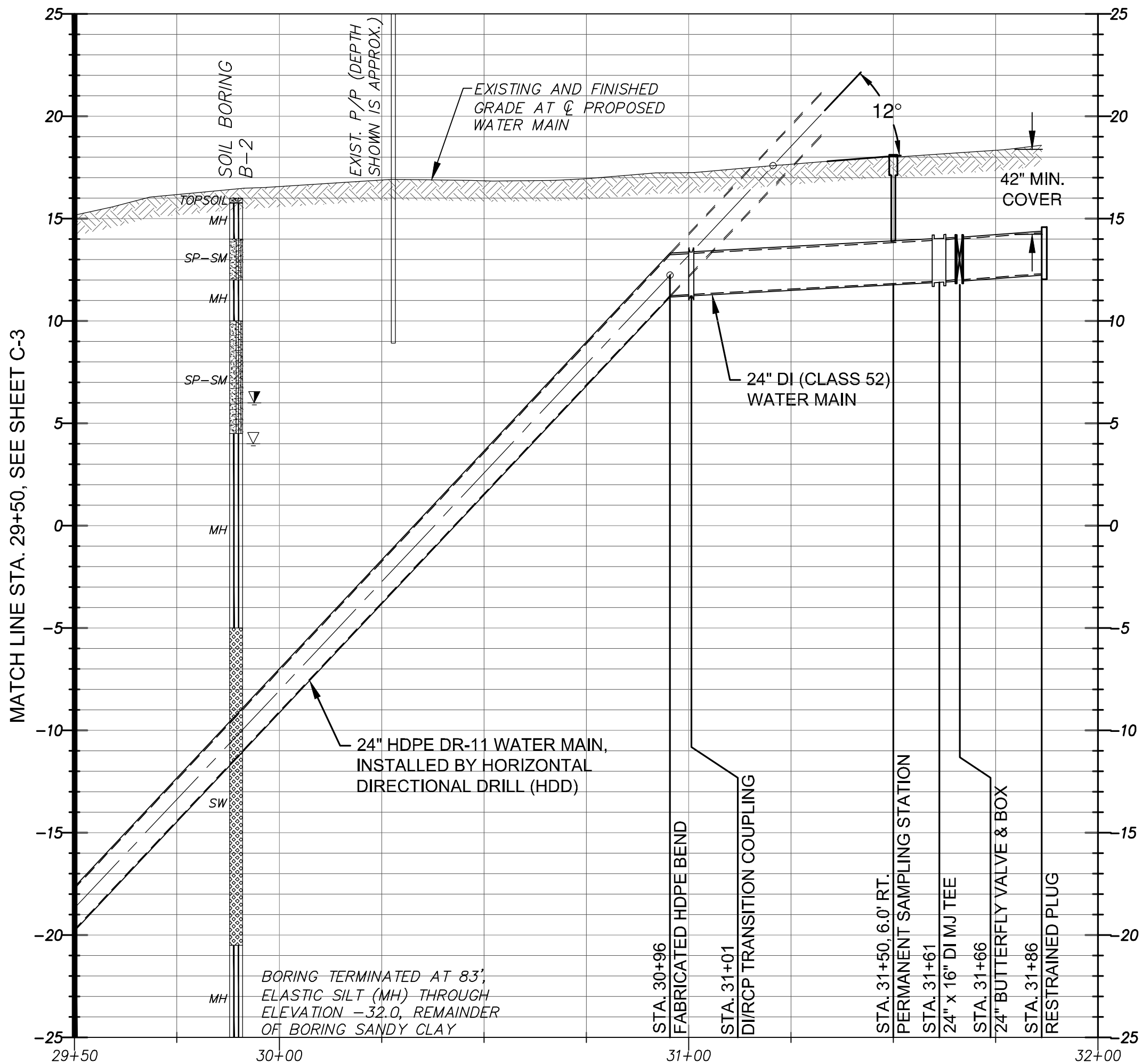


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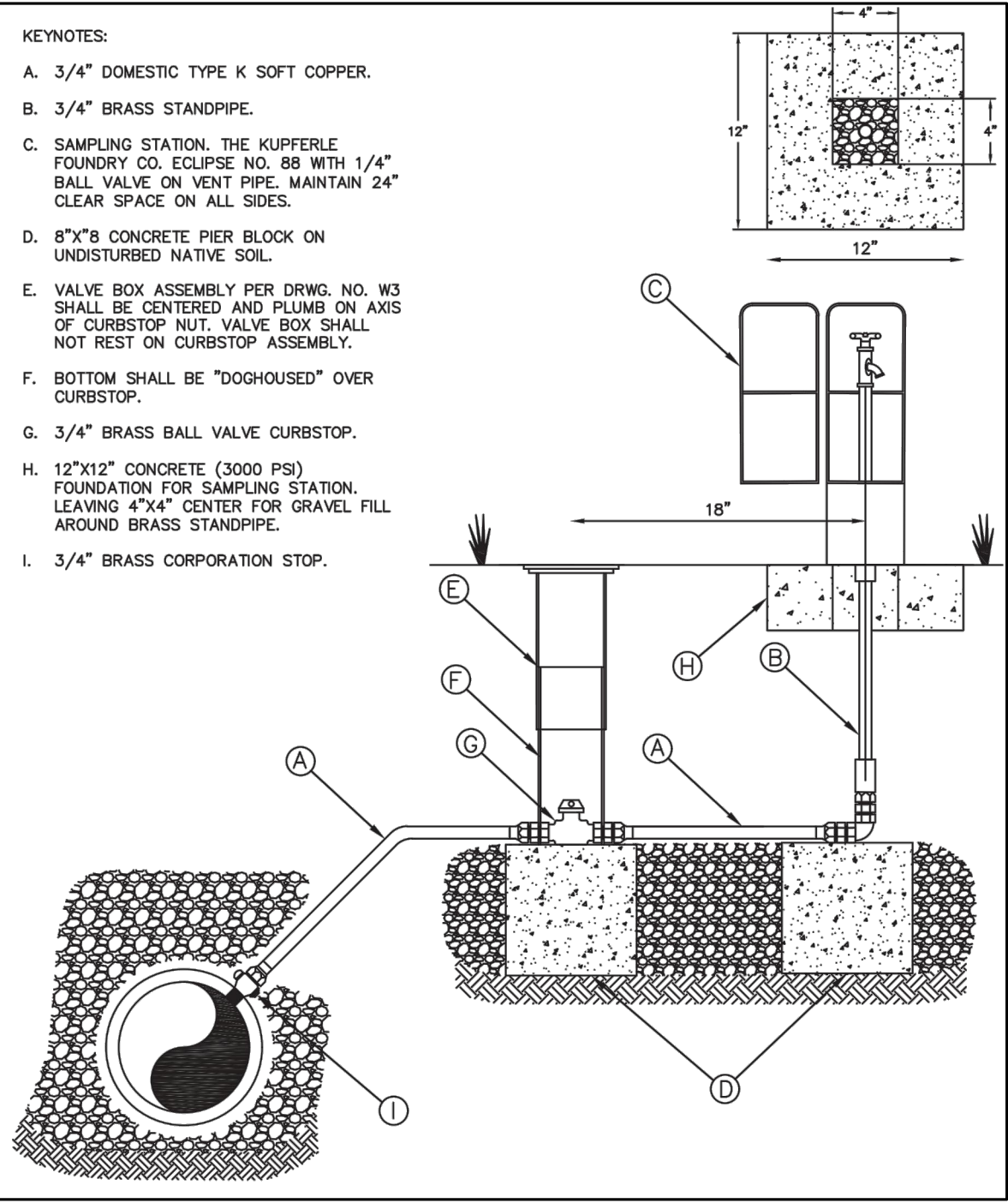


PLAN & PROFILE - 16" AND 24" DI WATER MAIN

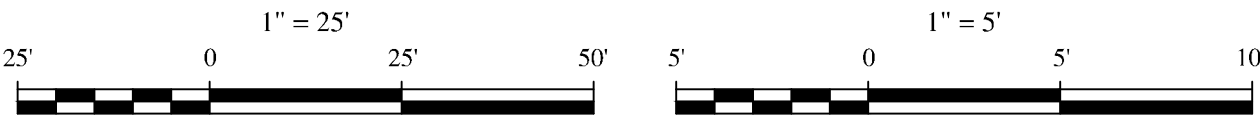
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VERT. 1" = 5'

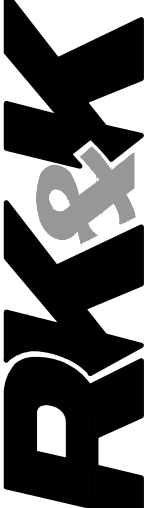



- GENERAL NOTES:
1. VERTICAL BENDS ARE SHOWN IN PROFILE VIEW ONLY.
  2. SITE UTILITIES, DRIVEWAYS, DITCHES, GUARDRAIL, CURB AND GUTTER, SIDEWALK AND DRAINAGE FEATURES WILL BE RESTORED TO THEIR ORIGINAL CONDITION.
  3. PRIOR TO INSTALLING PLUG, INSTALL RESTRAINED BENDS/FITTINGS TO ACHIEVE 3 FEET/SECOND SCOURING VELOCITY PRIOR TO DISINFECTION/SAMPLING PROCEDURE.
  4. RPA AND RMA LINES ON THIS DRAWING ARE APPROXIMATED USING PRINCE GEORGE COUNTY'S GIS DATA.



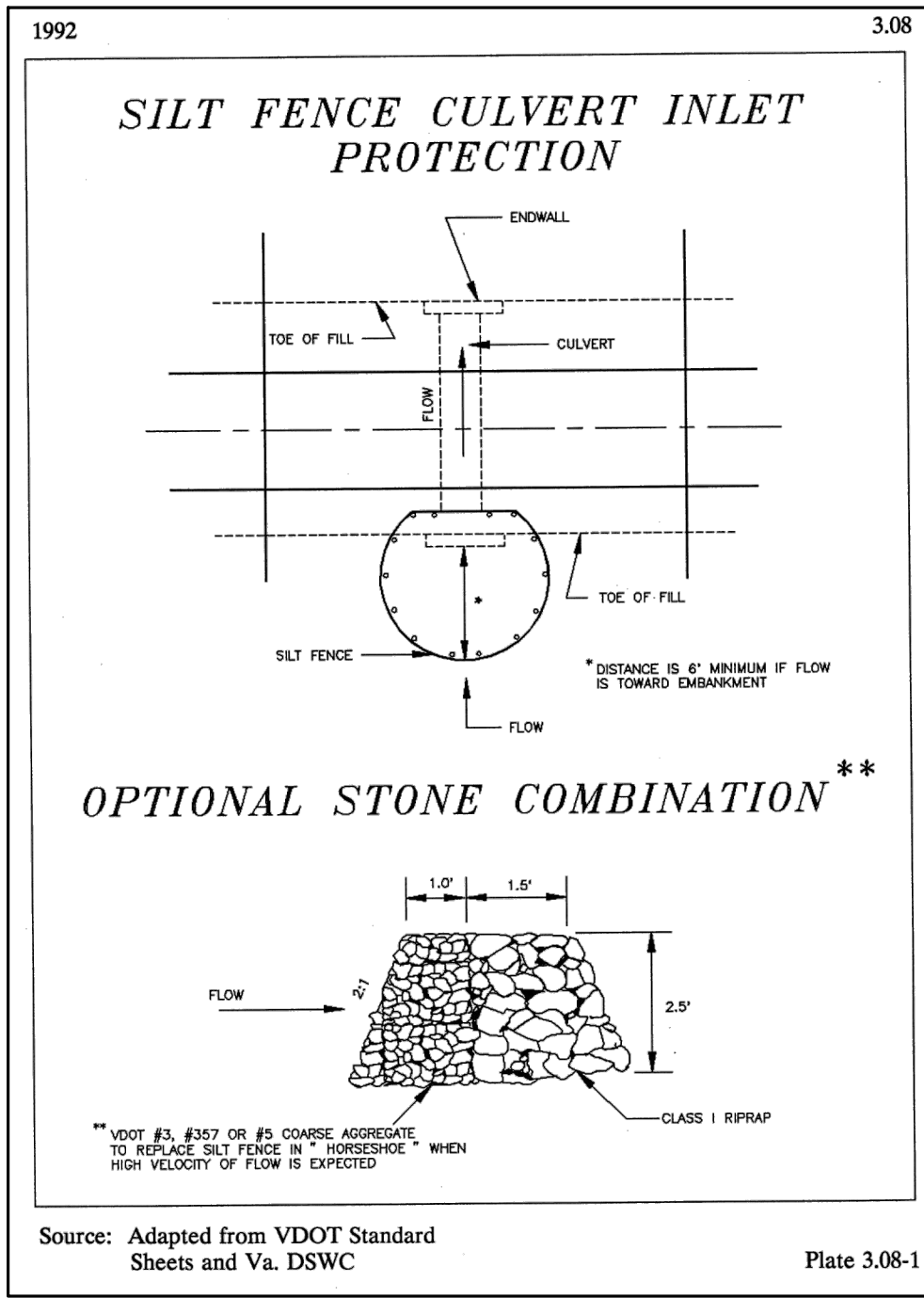
SAMPLING STATION DETAIL  
NOT TO SCALE



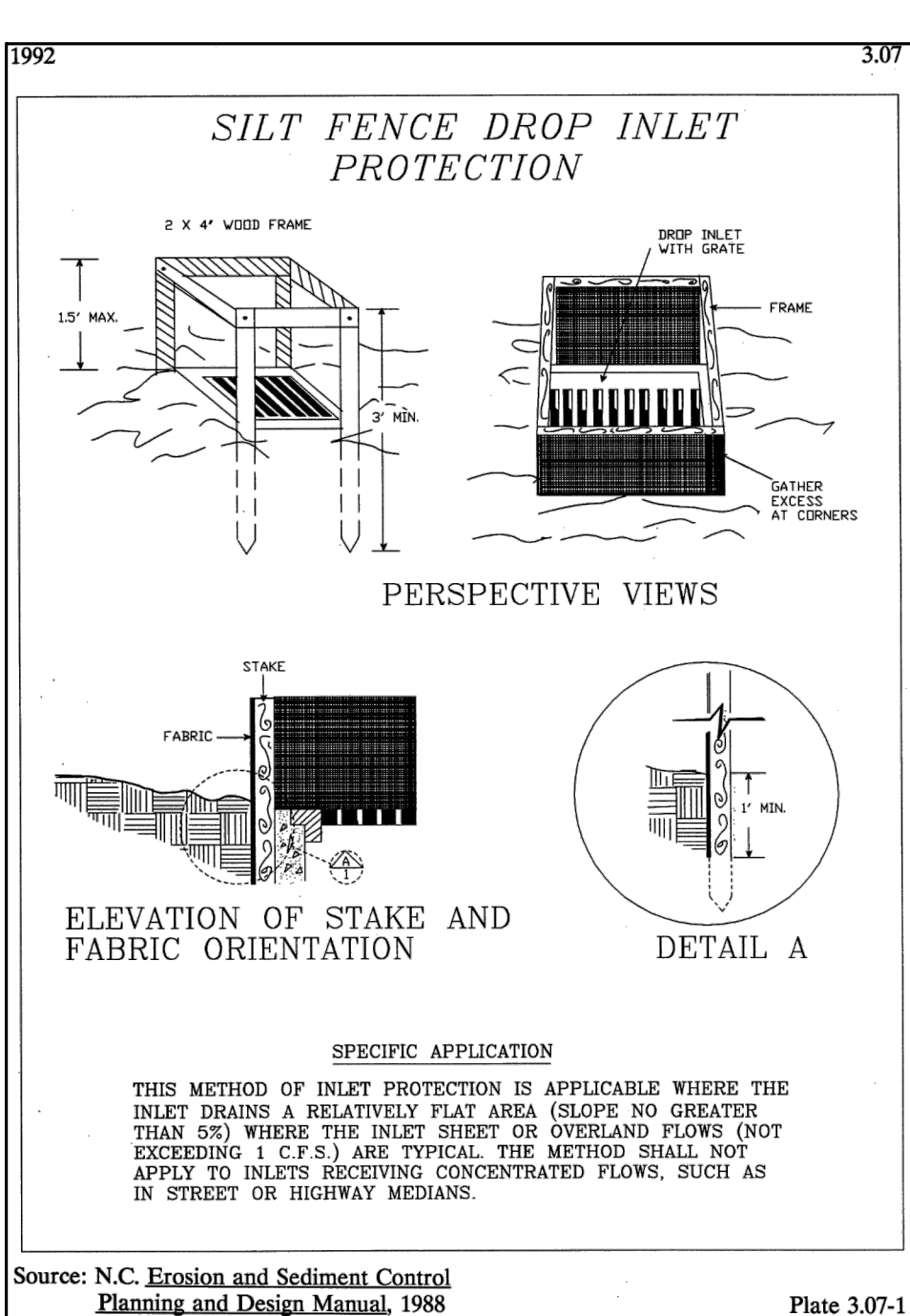
 Engineers/Construction Managers/Planners/Scientists	2100 EAST CARY STREET, SUITE 309 RICHMOND, VIRGINIA 23223 (P) 804 782-1903 (F) 804 782-2142	RUMMEL, KLEPPER & KAHL, LLP	DATE: JANUARY 2024	ENGINEER: KLM	CHECKED: JPK	DRAWN: PCP	JOB#: 20041.01	
								
			APPOMATTOX RIVER CROSSING WATER MAIN PRINCE GEORGE COUNTY, VIRGINIA					
			SHEET <b>C-4</b> OF 10 SCALE 1" = 25' 1" = 5'					

PLAN REVISIONS -	5/5/2023 - REVISED PER VDOT AND VDH COMMENTS
	11/29/2023 - REVISED PER VDOT COMMENTS
	1/23/2024 - REVISED PER PLANNING COMMENTS

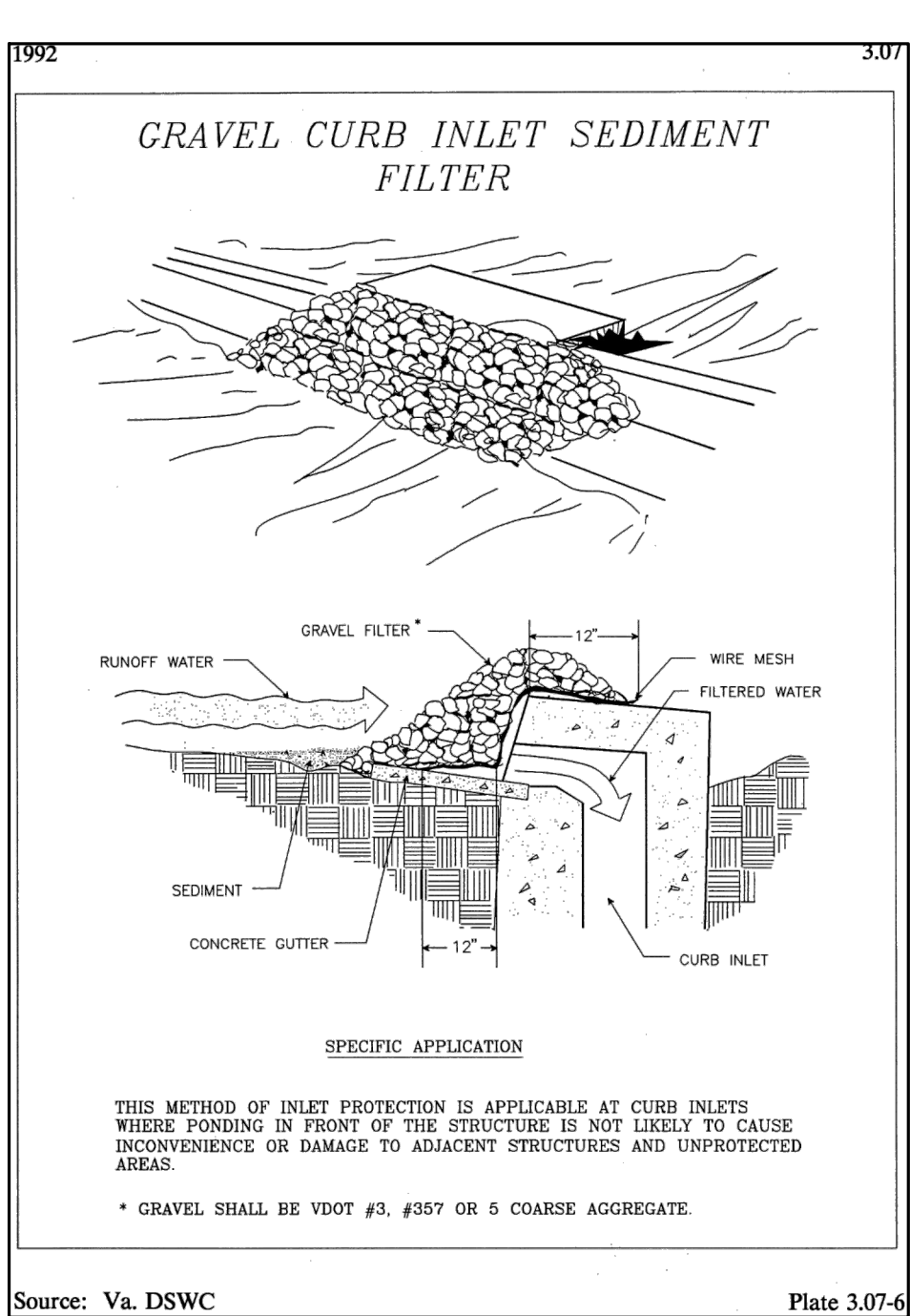




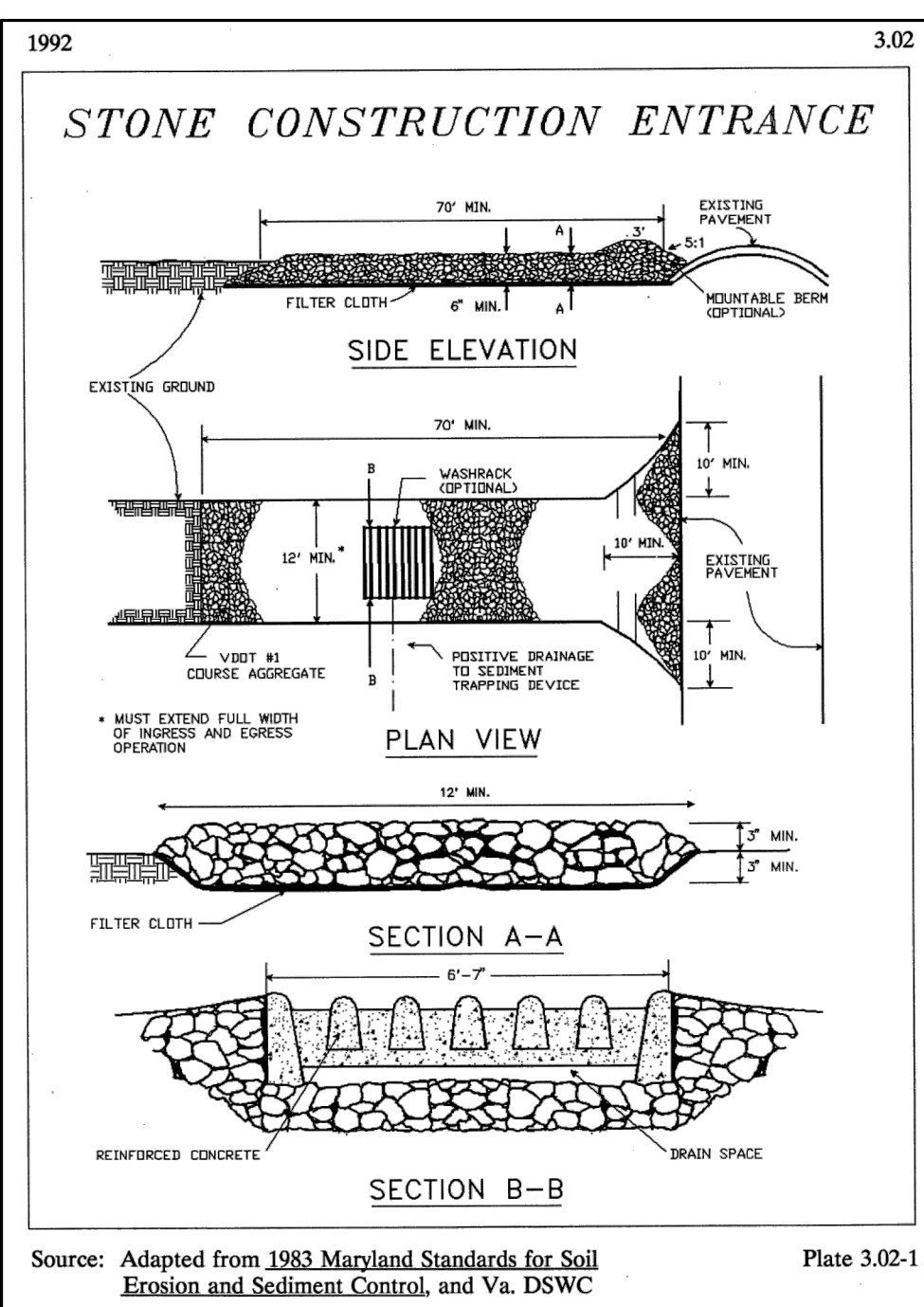
CIP CULVERT INLET PROTECTION N.T.S.



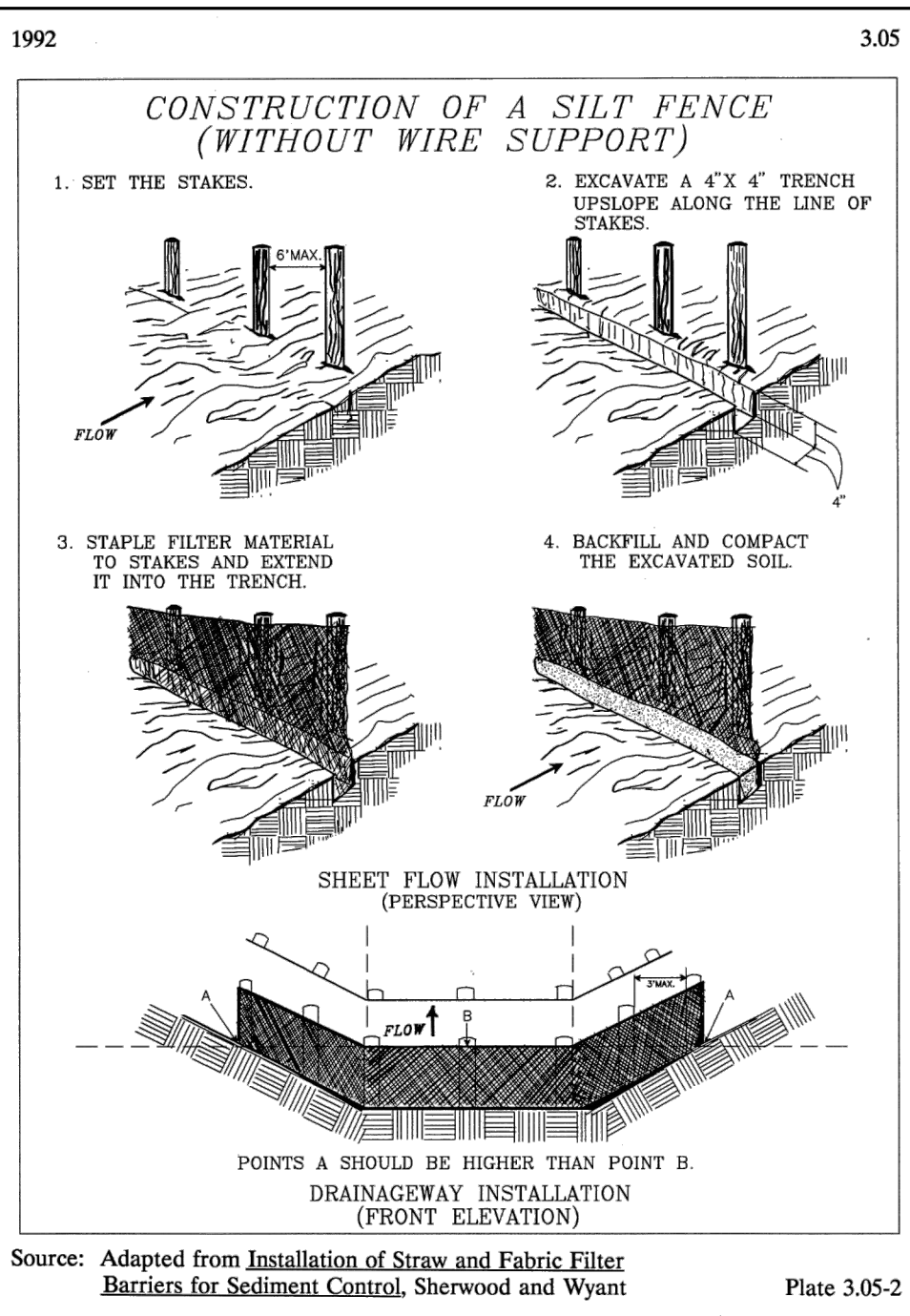
IP INLET PROTECTION N.T.S.



IP INLET PROTECTION N.T.S.



CE CONSTRUCTION ENTRANCE N.T.S.



SF SILT FENCE N.T.S.

TABLE 3.32-D  
(Revised June 2003)  
PERMANENT SEEDING SPECIFICATIONS FOR PIEDMONT AREA

LAND USE	SPECIES	APPLICATION PER ACRE
Minimum Care Lawn (Commercial or Residential)	Tall Fescue <sup>1</sup> Perennial Ryegrass Kentucky Bluegrass <sup>1</sup>	95-100% 0-5% 0-5%
High-Maintenance Lawn	Tall Fescue <sup>1</sup>	TOTAL: 200-250 lbs.
General Slope (3:1 or less)	Tall Fescue <sup>1</sup> Red Top Grass or Creeping Red Fescue Seasonal Nurse Crop <sup>2</sup>	128 lbs. 2 lbs. 20 lbs.
Low-Maintenance Slope (Steeper than 3:1)	Tall Fescue <sup>1</sup> Red Top Grass or Creeping Red Fescue Seasonal Nurse Crop <sup>2</sup> Crownvetch <sup>3</sup>	108 lbs. 2 lbs. 20 lbs. 20 lbs.
		TOTAL: 150 lbs.

1 - When selecting varieties of turfgrass, use the Virginia Crop Improvement Association (VCIA) recommended turfgrass variety list. Quality seed will bear a label indicating that they are approved by VCIA. A current turfgrass variety list is available at the local County Extension office or through VCIA at 804-746-4884 or at <http://www.vcia.org/extension/turfgrass/turfgrasspublications2.html>

2 - Use seasonal nurse crop in accordance with seeding dates as stated below:

Seeding Date	Annual Ryegrass	Perennial Ryegrass
February 16 <sup>th</sup> - April	Annual Ryegrass	Perennial Ryegrass
May 1 <sup>st</sup> - August 15 <sup>th</sup>	Perennial Ryegrass	Annual Ryegrass
August 16 <sup>th</sup> - October	Annual Ryegrass	Perennial Ryegrass
November - February 15 <sup>th</sup>	Perennial Ryegrass	Annual Ryegrass

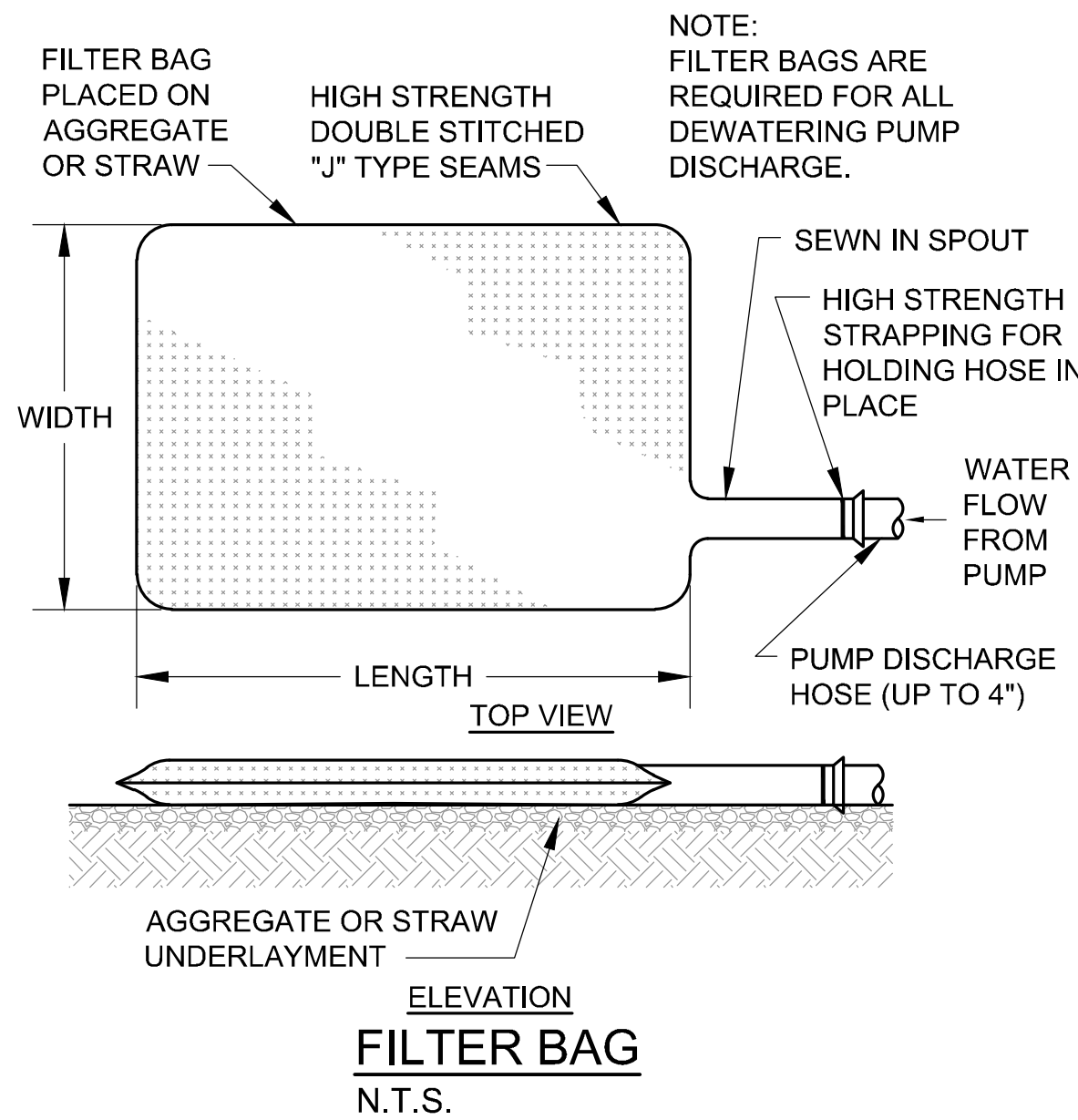
3 - Substitute *Setaria papposa* for Crownvetch east of Farmville, VA (May through September use hull seed, all other periods, use unhulled *Setaria*). If *Phalaris* is used, increase rate to 30 lbs./acre. If Weeping Lovegrass is used, include in any slope or low maintenance mixture during warmer seeding periods, increase to 30 -40

**FERTILIZER & LIME**

- Apply 10-20-10 fertilizer at a rate of 500 lbs./acre (or 12 lbs./1,000 sq. ft.)
- Apply Pulverized Agricultural Limestone at a rate of 2 tons/acre (or 90 lbs./1,000 sq. ft.)

**NOTE:**

- A soil test is necessary to determine the actual amount of lime required to adjust the soil pH of site.
- Incorporate the lime and fertilizer into the top 4 - 6 inches of the soil by disking or by other means.
- When applying Slowly Available Nitrogen, use rates available in *Erosion & Sediment Control Technical Bulletin* #4, 2003 Nutrient Management for Development Sites at <http://www.dor.state.va.us/ew/eds.htm#troubleshooting>



**SUGGESTED SEQUENCE OF CONSTRUCTION:**

1. MOBILIZE TO SITE WHEN ALL PERMITS HAVE BEEN OBTAINED.
2. INSTALL TEMPORARY EROSION AND SEDIMENT CONTROL ITEMS PRIOR TO ANY CONSTRUCTION ACTIVITIES.
3. CLEAR AND GRUB TEMPORARY AND PERMANENT EASEMENTS.
4. EXCAVATE AND INSTALL PROPOSED WATER MAIN AND APPURTENANCES. STOCKPILE EXCAVATED MATERIALS WITH LIMITS OF DISTURBANCE. USE TEMPORARY SEEDING TO STABILIZE STOCKPILE AS NEEDED.
5. BACKFILL AS REQUIRED AND RESTORE TO EXISTING GRADE.
  - a. PLACE PERMANENT SEEDING OR OTHER STABILIZATION IMMEDIATELY AFTER GRADING.
6. TEMPORARY EROSION AND SEDIMENT CONTROL CAN BE REMOVED WHEN ADEQUATE STABILIZATION HAS BEEN ACHIEVED.

**LINEAR PROJECT NOTES:**

THIS PROJECT CALLS UNDER DEQ GUIDANCE MEMO # 15-2003 FOR LINEAR PROJECTS AND THE FOLLOWING CRITERIA WILL BE MET:

1. THE PROJECT DOES NOT SIGNIFICANTLY ALTER THE PREDEVELOPMENT RUNOFF CHARACTERISTICS OF THE LAND SURFACE AFTER THE COMPLETION OF CONSTRUCTION AND FINAL STABILIZATION. THE PROJECT IS MANAGED SO THAT LESS THAN ONE (1) ACRE OF LAND DISTURBANCE OCCURS ON A DAILY BASIS.
2. THE DISTURBED LAND WHERE WORK HAS BEEN COMPLETED IS ADEQUATELY STABILIZED ON A DAILY BASIS.
3. THE ENVIRONMENT IS PROTECTED FROM EROSION AND SEDIMENTATION DAMAGE ASSOCIATED WITH THE LAND-DISTURBING ACTIVITY.

TABLE 3.31-B  
(Revised June 2003)  
TEMPORARY SEEDING SPECIFICATIONS  
QUICK REFERENCE FOR ALL REGIONS

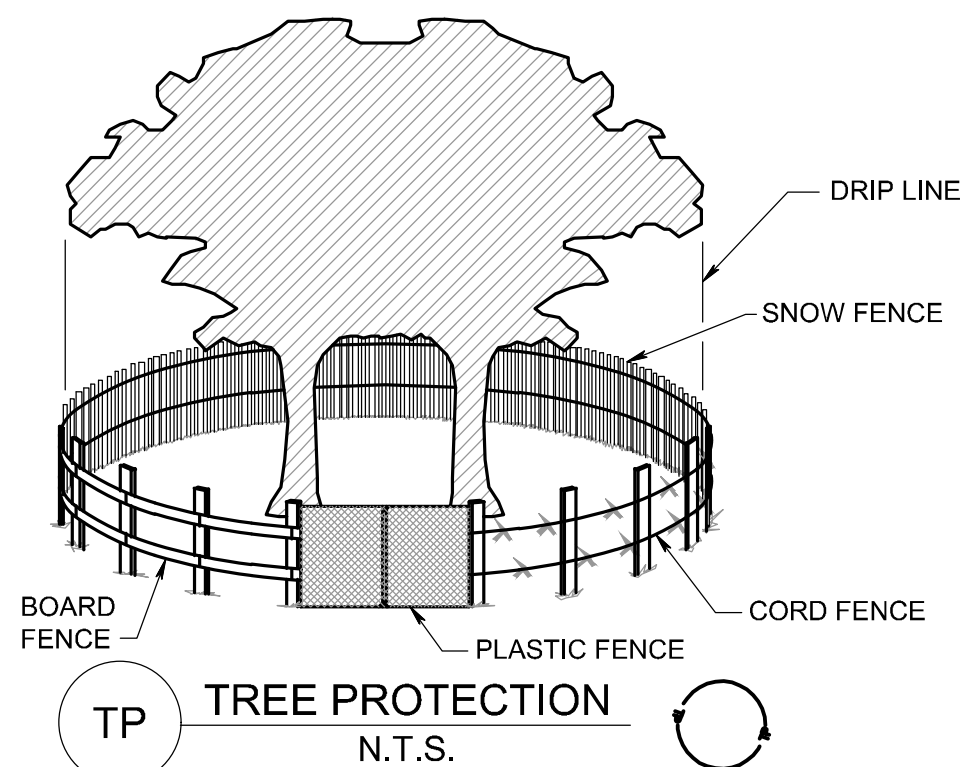
APPLICATION DATES	SPECIES	APPLICATION RATES
Sept. 1 - Feb. 15	50/50 Mix of Annual Ryegrass (Bollum multi- Borum) and Cereal (Winter) Rye (Secale cereale)	50 - 100 (lbs/acre)
Feb. 16 - Apr. 30	Annual Ryegrass (Bollum multi-Borum)	60 - 100 (lbs/acre)
May 1 - Aug. 31	German Millet	50 (lbs/acre)

**FERTILIZER & LIME**

- Apply 10-10-10 fertilizer at a rate of 450 lbs./acre (or 10 lbs./1,000 sq. ft.)
- Apply Pulverized Agricultural Limestone at a rate of 2 tons/acre (or 90 lbs./1,000 sq. ft.)

**NOTE:**

- A soil test is necessary to determine the actual amount of lime required to adjust the soil pH of site.
- Incorporate the lime and fertilizer into the top 4 - 6 inches of the soil by disking or by other means.
- When applying Slowly Available Nitrogen, use rates available in *Erosion & Sediment Control Technical Bulletin* #4, 2003 Nutrient Management for Development Sites at <http://www.dor.state.va.us/ew/eds.htm#troubleshooting>



**APPOMATTOX RIVER CROSSING**

**WATER MAIN**

**PRINCE GEORGE COUNTY, VIRGINIA**

**EROSION AND SEDIMENT CONTROL**

**NOTES AND DETAILS**

DATE: JANUARY 2024

ENGINEER: KLM

CHECKED: JPK

DRAWN: PCP

JOB#: 20041.01

**COMMONWEALTH OF VIRGINIA**

**JEFFREY E. KAPINOS**

**LIC. No. 021876**

**1/26/2024**

**PROFESSIONAL ENGINEER**

**2100 EAST CARY STREET, SUITE 309**

**RICHMOND, VIRGINIA 23223**

**(P) 804 782-1903 (F) 804 782-2142**

**RUMMEL, KLEPPER & KAHL, LLP**

Engineers/Construction Managers/Planners/Scientists



# PRINCE GEORGE COUNTY DEPARTMENT OF PUBLIC UTILITIES

## MINIMUM TEST TIME TWO HOURS

### WATER LINE TEST BASED ON 150 PSI

SIZE	MAX. ALLOWABLE LEAKAGE
3/4"	.0138 (GAL/2 HRS)/100 L.F.
1"	.0184 (GAL/2 HRS)/100 L.F.
1 1/2"	.0276 (GAL/2 HRS)/100 L.F.
2"	.0368 (GAL/2 HRS)/100 L.F.
3"	.0552 (GAL/2 HRS)/100 L.F.
4"	.0736 (GAL/2 HRS)/100 L.F.
6"	.1103 (GAL/2 HRS)/100 L.F.
8"	.1471 (GAL/2 HRS)/100 L.F.
12"	.2207 (GAL/2 HRS)/100 L.F.

### WATER LINE TEST BASED ON 150 PSI

SIZE	MAX. ALLOWABLE LEAKAGE
16"	.2942 (GAL/2 HRS)/100 L.F.
20"	.3678 (GAL/2 HRS)/100 L.F.
24"	.4413 (GAL/2 HRS)/100 L.F.
30"	.5517 (GAL/2 HRS)/100 L.F.
36"	.6620 (GAL/2 HRS)/100 L.F.
42"	.7724 (GAL/2 HRS)/100 L.F.
48"	.8827 (GAL/2 HRS)/100 L.F.
54"	.9930 (GAL/2 HRS)/100 L.F.

MAXIMUM ALLOWABLE LEAKAGE FOR THE WATER MAIN WILL BE CALCULATED USING THE FOLLOWING FORMULA:

$$L = \frac{SD\sqrt{P}}{148000}$$

WHERE:

- L = MAXIMUM ALLOWABLE LEAKAGE, GALLONS/HOUR
- S = LENGTH OF PIPE IN TEST SECTION, IN FEET
- D = NOMINAL DIAMETER OF TESTED PIPE, IN INCHES
- P = TEST PRESSURE, POUNDS PER SQUARE INCH 150 PSI OR 1 1/2 THE WORKING PRESSURE WHICHEVER IS GREATER MEASURED AT THE HIGH POINT OF THE TEST SYSTEM.

DATE  
Jan. 2008  
REVISIONS  
Sep. 2011

**ALLOWABLE LEAKAGE TABLE – WATER LINES**  
BASED ON FORMULAS FROM AWWA SPECIFICATIONS

DRWG. NO.  
**TST-3**

# PRINCE GEORGE COUNTY DEPARTMENT OF PUBLIC UTILITIES

**PLAN**

**SECTION**

PIPE SIZE	11 1/4" BEND				22 1/2" BEND				45° BEND				90° BEND			
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
4"	6"	1'-0"	4"	6"	8"	1'-0"	6"	7"	1'-1"	1'-0"	6"	6"	1'-10"	1'-0"	6"	1'-0"
6"	8"	1'-2"	6"	7"	10"	1'-2"	6"	8"	1'-4"	1'-2"	6"	8"	2'-3"	1'-2"	6"	1'-6"
8"	8"	1'-4"	8"	7"	1'-4"	1'-4"	8"	8"	2'-0"	1'-4"	8"	9"	3'-3"	1'-4"	8"	1'-6"
10"	1'-1"	1'-6"	8"	8"	1'-7"	1'-6"	8"	10"	2'-6"	1'-6"	8"	10"	3'-9"	2'-0"	10"	1'-6"
12"	1'-4"	1'-8"	1'-0"	9"	2'-0"	1'-8"	1'-0"	1'-0"	3'-3"	1'-8"	1'-0"	1'-0"	5'-0"	2'-0"	10"	1'-6"
16"	1'-9"	2'-0"	1'-0"	9"	2'-6"	2'-0"	1'-0"	1'-0"	3'-4"	3'-2"	6"	1'-0"	1'-3'	6"	2'-6"	1'-4"
18"	1'-9"	2'-6"	1'-0"	10"	3'-3"	2'-6"	1'-0"	1'-6"	6'-0"	2'-6"	1'-0"	1'-4"	8'-0"	3'-4"	1'-8"	1'-9"
20"	1'-9"	2'-6"	1'-0"	10"	3'-3"	2'-6"	1'-0"	1'-6"	6'-0"	2'-6"	1'-0"	1'-4"	8'-0"	3'-4"	1'-8"	1'-9"
24"	2'-0"	3'-0"	1'-0"	1'-0"	3'-9"	3'-0"	1'-0"	1'-6"	7'-0"	3'-0"	1'-0"	1'-0"	9'-4"	4'-0"	2'-0"	2'-0"

**NOTE:**

- 1.) BLOCKING DIMENSIONS ARE SHOWN AT A MINIMUM.
- 2.) BLOCKING DIMENSIONS ARE BASED ON A STATIC PRESSURE OF 150 PSI AND AN ALLOWABLE SOIL BEARING CAPACITY OF 2000 PSF.
- 3.) WHERE SOIL BEARING CAPACITY IS LESS THAN OR GREATER THAN 2000 PSF, BLOCKING DESIGN CALCULATION ARE TO BE SHOWN ON THE PLANS.
- 4.) FITTINGS TO BE WRAP IN 4 MIL POLYETHYLENE TO PROTECT NUTS, BOLTS, OR OTHER.
- 5.) MEGA LUGS TO BE USED FOR ALL FITTINGS

DATE  
JAN 2008

REVISIONS

**BLOCKING DETAIL**  
HORIZONTAL BENDS

DRWG. NO.  
BLK-1

# PRINCE GEORGE COUNTY DEPARTMENT OF PUBLIC UTILITIES

PLAN

SECTION

CARRY CONCRETE TO  
UNDISTURBED EARTH  
OR FIRM SUBGRADE

NOTE:  
SEE APPLICABLE  
NOTES AS SHOWN  
ON BLK-1.

BRANCH SIZE	E	F	G	H
4"	1'-0"	8"	1'-4"	6"
6"	1'-4"	1'-0"	1'-8"	8"
8"	1'-6"	1'-0"	2'-6"	9"
10"	2'-2"	1'-0"	2'-8"	10"
12"	2'-6"	1'-0"	3'-6"	1'-0"
16"	3'-4"	1'-4"	4'-8"	1'-2"
18"	4'-0"	2'-0"	6'-0"	1'-6"
20"	4'-0"	2'-0"	6'-0"	1'-6"
24"	5'-0"	2'-0"	6'-8"	1'-8"

DATE  
JAN 2008

REVISIONS

BLOCKING DETAIL  
TEES

DRWG. NO.  
BLK-2

# PRINCE GEORGE COUNTY DEPARTMENT OF PUBLIC UTILITIES

NOTE:  
SEE APPLICABLE  
NOTES AS SHOWN  
ON BLK-1.

CARRY CONCRETE TO  
UNDISTURBED EARTH  
OR FIRM SUBGRADE.

ELEVATION

PIPE SIZE	11-1/4" BEND			22-1/2" BEND			45° BEND		
	L	M	N	L	M	N	L	M	N
6"	6"	1'-2"	8"	10"	1'-2"	8"	1'-2"	1'-2"	8"
8"	8"	1'-4"	8"	11"	1'-4"	8"	1'-9"	1'-4"	8"
10"	8"	1'-6"	8"	1'-3"	1'-6"	9"	2'-5"	1'-6"	1'-0"
12"	8"	2'-0"	8"	1'-4"	2'-0"	9"	2'-8"	2'-0"	1'-2"
16"	1'-1"	2'-4"	9"	2'-1"	2'-4"	1'-0"	4'-0"	2'-4"	1'-6"
18"	1'-5"	2'-8"	10"	2'-9"	2'-8"	1'-2"	5'-6"	2'-8"	2'-0"
20"	1'-5"	2'-8"	10"	2'-9"	2'-8"	1'-2"	5'-6"	2'-8"	2'-0"
24"	1'-10"	3'-0"	1'-0"	3'-7"	3'-0"	1'-4"	6'-0"	3'-6"	2'-6"

NOTE: BLOCKING BASED ON PRESSURE OF 150 PSI AND ALLOWABLE SOIL BEARING CAPACITY OF 2000 PSF. CONCRETE TO BE 3000 PSI.

DATE  
JAN 2008  
REVISIONS

**BLOCKING DETAIL  
LOWER VERTICAL BENDS**

DRWG. NO.  
BLK-4

# PRINCE GEORGE COUNTY DEPARTMENT OF PUBLIC UTILITIES

## NOTES:

SEE APPLICABLE NOTES  
AS SHOWN ON BLK-1.

REINFORCING  
BARS

DOUBLE ACTING STEEL WEDGES

PIPE DIA.  
8" MIN.

CARRY CONCRETE TO  
UNDISTURBED EARTH  
OR FIRM SUBGRADE

ELEVATION

EMBED REINFORCING BARS MIN.  
36 DIAMETERS INCLUDING HOOK  
PAINT EXPOSED REINF. BARS  
WITH 2 COATS OF BITUMINOUS  
PAINT.

WHERE 4 REINFORCING  
BARS USED, PLACE 2  
SYMMETRICALLY PLACED  
REINFORCING BARS AT  
BENDS AND OTHER 2 BARS  
AS SHOWN IN DETAIL.

PLAN

PIPE SIZE	11" $\frac{1}{4}$ " BEND					22" $\frac{1}{2}$ " BEND					45" BEND				
	L	W	D	REINF. BAR # & SIZE		L	W	D	REINF. BAR # & SIZE		L	W	D	REINF. BAR # & SIZE	
6"	2'-0"	2'-0"	1'-6"	3 # 7	2'-6"	2'-0"	2'-0"	2'-0"	3 # 7	3'-0"	3'-0"	2'-0"	2'-0"	3 # 7	
8"	2'-0"	2'-0"	2'-0"	3 # 8	2'-9"	2'-3"	3 # 8	3'-6"	3'-6"	3'-6"	3'-6"	2'-6"	2'-6"	3 # 8	
10"	2'-3"	2'-3"	2'-0"	3 # 8	3'-6"	3'-6"	2'-3"	3 # 8	4'-0"	4'-0"	2'-9"	2'-9"	4 # 8	4 # 8	
12"	2'-6"	2'-6"	2'-3"	3 # 8	4'-0"	4'-0"	2'-6"	4 # 8	4'-6"	4'-6"	3'-0"	3'-0"	4 # 8	4 # 8	
16"	3'-3"	3'-3"	2'-6"	3 # 8	4'-6"	4'-6"	3'-0"	4 # 8	6'-0"	6'-0"	3'-6"	3'-6"	4 # 10	4 # 10	
18"	4'-0"	4'-0"	2'-6"	3 # 10	5'-6"	5'-6"	3'-6"	3 # 10	7'-6"	7'-6"	4'-0"	4'-0"	4 # 10	4 # 10	
20"	4'-0"	4'-0"	2'-6"	3 # 10	5'-6"	5'-6"	3'-6"	3 # 10	7'-6"	7'-6"	4'-0"	4'-0"	4 # 10	4 # 10	
24"	4'-6"	4'-6"	3'-0"	3 # 10	6'-0"	6'-0"	4'-0"	4 # 10	8'-6"	8'-6"	4'-6"	4'-6"	4 # 10	4 # 10	

NOTE: BLOCKING BASED ON PRESSURE OF 150 PSI AND ALLOWABLE SOIL BEARING  
CAPACITY OF 2000 PSF. CONCRETE TO BE 3000 PSI.

DATE  
JAN 2008

REVISIONS

BLOCKING DETAIL  
UPPER VERTICAL BENDS

DRWG. NO.  
BLK-5

# PRINCE GEORGE COUNTY DEPARTMENT OF PUBLIC UTILITIES

AS REQUIRED                      AS REQUIRED

FINISHED ROAD GRADE

CULVERT

EXISTING MAIN

18" MIN CLEAR

3'-6" MIN

LOWERING/NEW INSTALLATION  
BY DEFLECTION METHOD.

MAX. DEFLECTION PER JOINT  
= 1/2 MFRS. RECOMMENDED  
AMOUNT, AS PER WAT-9.

OR

PVC DR D.I.

L D.I. M.J.

10'

10'

L D.I. M.J.

PVC DR D.I.

EXISTING MAIN

18" MIN.

MEGA-LUG FOR PVC DR D.I.

MEGA-LUG FOR PVC DR D.I.

10' MIN.

LOWERED SECTION TO BE OF DUCTILE IRON MECHANICAL JOINT PIPE  
WITH RESTRAINED JOINTS AT ANY INCLUDED JOINTS. THE ENGINEER  
SHALL CALCULATE LENGTH OF RESTRAINED SECTION.

THRUST BLOCKS FOR VERTICAL BENDS MUST BE USED WITH  
RESTRAINED JOINTS.

DATE  
JAN. 2008

REVISIONS

LOWERING WATER MAIN  
OR  
NEW INSTALLATION

DRWG. NO.  
WAT-8

PRINCE GEORGE COUNTY DEPARTMENT OF PUBLIC UTILITIES			
PIPE MATERIAL TYPE AND SIZE	MAXIMUM DEFLECTION AT EACH JOINT	DEFLECTIONS (INCHES EACH JOINT) 19' LAYING LENGTH	RADIUS (MINIMUM)
DUCTILE IRON (PUSH-ON JOINT)			
6" TO 12"	2" 30'	9.5"	413'
14" TO 16"	2" 00'	7.5"	316'
18" +	1" 30'	5.5"	688'
DUCTILE IRON (MECHANICAL JOINT)			
6"	3" 30'	13.5"	291'
8" TO 12"	3" 00'	11.5"	344'
16"	2" 00'	7.5"	316'
24"	1" 30'	5.5"	688'

Note: Any deflection not listed for iron pipe may be derived by:

$$R = \frac{90^\circ}{1/2 \text{ Manufacturer's } X 18^\circ \times X 2} \quad \text{Deflection} = \tan \text{ joint deflection } X 18^\circ \times X 12$$

Max. Jt. Deflection                       $\pi$

PVC PIPE (C-900, C-905)			
PIPE NOM. DIA.	PIPE O.D.	RADIUS (MIN.)	PRESSURE RATING - DIMENSION RATIO
6"	6.9"	272.5'	150 psi DR 18
8"	9.05"	326.3'	150 psi DR 18
10"	11.10"	377.5'	150 psi DR 18
12"	13.20"	430.0'	150 psi DR 18
14"	15.30"	482.5'	165 psi DR 26
16"	17.40"	535.0'	165 psi DR 26
18"	19.50"	587.5'	165 psi DR 26
20"	21.60"	640.0'	165 psi DR 26
24"	25.80"	745.0'	165 psi DR 26

Notes: 1. Any radius not listed for PVC pipe may be derived by:  $Do \ 300 + 100$  ( $Do$  = outside diameter in feet)

2. Due to the difficulty of measuring deflections on curved pipe, no deflections are given. It is expected that curved water lines will be properly shown on the plans and staked in the field.

# PRINCE GEORGE COUNTY DEPARTMENT OF PUBLIC UTILITIES

**PLAN**

**ELEVATION**



**Labels and Dimensions:**

- ST'D. SMALL PIPE HANGER AS BRACING. FASTEN TO MH. WITH 1 1/4" WEU-IT DRILLED-IN ANCHOR
- PIPE TO BE DUCTILE IRON
- DOUBLE BANDE STAINLESS STEEL EPOXY COATED SADDLE TO BE USED
- M.H. FRAME & COVER
- M.H. STEPS
- SMALL DRIFCE AIR VALVE (3/16") KINETIC TYPE
- 4'-90° BEND
- SCREENING BOLTED TO FLANGE
- 4" D.I. PIPE CLASS 51
- 1'-0"
- 2"x6" BRASS NIPPLE
- 2"x2"x1" BRASS TEE
- 2"x2" BRASS NIPPLE
- 2" BALL VALVE W/HANDLE
- ALL PIPING SHOULD BE BRASS.
- PIPE BEDDING
- AIR RELEASE VALVE TO BE PLACED WHERE NOT SUBJECT TO FLOODING.
- 6" MIN.
- AIR RELEASE VALVE
- 4'-0" DIA. MH.
- PIPE HANGER SUPPORTS
- 1' x 12" BRASS NIPPLE
- 1" BRASS BALL OR GATE VALVE WITH HANDLE
- 2" MUELLER H-10046 CORP. STOP (2" MIP X FIP)
- #57 STONE AGGREGATE EXTENDED 4'-0" BOTH SIDES OF CENTERLINE OF M.H. ALONG WATER MAIN
- 20" & LARGER WATER MAIN WITH 4'-6" (MIN.) COVER
- \* PLACE SUFFICIENT BLOCKING OR COLLAR TO SUPPORT BEND.
- FINISHED GRADE

DATE  
JAN. 2008  
REVISIONS

2" AIR RELEASE VALVE ASSEMBLY

DRWG. NO.  
WAT-2

 <b>RUMMEL, KLEPPER &amp; KAHL, LLP</b> <small>Engineers/Construction Managers   Planners   Scientists</small>	<p>2100 EAST CARY STREET, SUITE 309  RICHMOND, VIRGINIA 23223  (P) 804 782-1903 (F) 804 782-2142</p>		DATE: JANUARY 2024	<p><b>APPOMATTOX RIVER CROSSING</b>  <b>WATER MAIN</b>  PRINCE GEORGE COUNTY, VIRGINIA</p> <p><b>COUNTY DETAILS</b></p>	SHEET <b>D-2</b>	PLAN REVISIONS -
			ENGINEER: KLM		5/5/2023 - REVISED PER VDOT AND VDH COMMENTS	
			CHECKED: JPK		11/29/2023 - REVISED PER VDOT COMMENTS	
			DRAWN: PCP		1/23/2024 - REVISED PER PLANNING COMMENTS	
			JOB#: 20041.01		SCALE N/A	



\\ad.rkk.com\is\Cloud\Projects\2020\20041\_PrincGgeVA\TO 1 - Appomattox River Crossing WM\6-- Drawings\03\20041\_01 - D-1-x--details.dwg / 1/24/2024 11:10:07 AM by ---

TEMPORARY TRAFFIC CONTROL GENERAL NOTES:

1. ALL TRAFFIC CONTROL DEVICES AND PROCEDURES SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (2011 EDITION MUTCD), THE CURRENT VIRGINIA DEPARTMENT OF TRANSPORTATION WORK AREA PROTECTION MANUAL (2011 REVISION 2), AND AS DIRECTED BY THE ENGINEER.
2. THE ERECTION OF ALL TRAFFIC CONTROL DEVICES SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE STANDARDS. THE VIRGINIA DEPARTMENT OF TRANSPORTATION WORK AREA PROTECTION MANUAL, AND THE MUTCD.
3. ALL TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE INSTALLED PRIOR TO THE START OF CONSTRUCTION AND SHALL BE REMOVED OR RELOCATED AS THE WORK IS COMPLETED OR WORK CONDITIONS CHANGE. THE OPERATOR SHALL INSURE THAT ALL TEMPORARY TRAFFIC CONTROL DEVICES ARE IN PLACE AND OPERATING AT ALL TIMES.
4. ALL LANE AND SHOULDER CLOSURES SHALL BE ENTERED INTO LCAMS NO LATER THAN 8:00 AM ON THE THURSDAY THE WEEK PRIOR TO THE PLANNED CLOSURE. THE COUNTY SHALL NOTIFY VDOT RESIDENCY AT LEAST ONE WEEK IN ADVANCE OF BEGINNING CONSTRUCTION. THE COUNTY SHALL NOTIFY VDOT RICHMOND DISTRICT REGIONAL TRAFFIC OPERATIONS CENTER (TOC), 15 MINUTES PRIOR TO INSTALLING THE FIRST PIECE OF TRAFFIC CONTROL EQUIPMENT AND IMMEDIATELY AFTER THE LANE OR SHOULDER CLOSURE IS COMPLETELY REMOVED.
5. PLANS FOR THE SIGNING, BARRICADING AND OTHER TRAFFIC CONTROLS AND/OR DETOURS SHALL BE FURNISHED BY THE OPERATOR FOR APPROVAL BY THE COUNTY AND VDOT. SUCH PLANS SHALL BE SUBMITTED 3 WEEKS IN ADVANCE OF THE TIME NEEDED. PLANS SHALL BE SUBMITTED DIRECTLY TO THE COUNTY FOR APPROVAL.
6. WHERE PRIMARY HIGHWAYS OR MAJOR ROADWAYS ARE PAVED, PAVEMENT MARKINGS SHALL BE INSTALLED PROMPTLY AFTER THE PAVING. IF THE CONSTRUCTION WORK REQUIRES CHANGES BE MADE IN THE TRAFFIC PATTERN, THE FINAL ASPHALT PAVEMENT SURFACE SHALL NOT BE APPLIED UNTIL SUCH WORK IS DONE, SO TEMPORARY PAVEMENT MARKINGS MIGHT BE APPLIED TO THE BASE COAT.
7. THE OPERATOR SHALL CHECK ALL SIGNS, DRUMS AND BARRICADES CONNECTED WITH THIS PROJECT AT THE BEGINNING OF EACH SHIFT BEFORE WORK AND AT THE END OF EACH SHIFT WHEN WORK IS STOPPED FOR THE DAY TO ENSURE THAT THEY ARE IN PROPER ORDER. ON WEEKENDS, HOLIDAYS AND WHEN THE PROJECT IS SHUTDOWN, THE OPERATOR SHALL HAVE THESE TRAFFIC CONTROL DEVICES CHECKED DAILY TO SEE THAT THEY ARE PROPERLY LOCATED AND OPERATING.
8. THE OPERATOR SHALL MAINTAIN ACCESS TO ALL PROPERTIES, ESPECIALLY FOR EMERGENCY VEHICLES, AT ALL TIMES.
9. WORK SHALL BE CONDUCTED IN SUCH A MANNER AS TO CAUSE A MINIMUM DELAY TO SCHOOL BUS TRAFFIC. WHEN TRAFFIC IS BEING FLAGGED, THE FLAG PERSON(S) SHALL EXPEDITE THE MOVEMENT OF THESE BUSES, PARTICULARLY IN THE MORNING.
10. IF AT ANYTIME THE PROJECT IS NOT PROPERLY SIGNED, BARRICADED OR OTHERWISE FOUND UNSAFE SO AS TO CREATE A DANGER TO THE SAFETY OF THE GENERAL PUBLIC, THE COUNTY AND/OR VDOT WORK ZONE COORDINATOR MAY HAVE WORK STOPPED UNTIL SUCH CONDITIONS ARE CORRECTED.
11. THE SIGNING, BARRICADING, PAVEMENT MARKING AND OTHER TRAFFIC CONTROLS AND/OR DETOURS MAY BE CHANGED AT ANY TIME DURING THE PROJECT WHEN DEEMED NECESSARY IN THE OPINION OF THE COUNTY, AND TO HAVE SUCH CHANGES MADE SHALL BE THE RESPONSIBILITY OF THE OPERATOR.
12. WHEN FLAGGERS OR OTHER MEANS OF TRAFFIC CONTROL ARE USED FOR ONE LANE TRAFFIC, STRICT ADHERENCE TO MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES SECTION 6.F CONTROL OF TRAFFIC THROUGH WORK AREAS, SHALL BE REQUIRED.
13. THE OPERATOR IS RESPONSIBLE FOR REPLACEMENT OF ANY PAVEMENT MARKINGS OR TRAFFIC CONTROL DEVICES DAMAGED BY CONSTRUCTION ACTIVITIES.
14. THE OPERATOR SHALL INSTALL PROJECT LIMITS TEMPORARY TRAFFIC CONTROL SIGNS PER THE VAWAPM TTC-53.0 AND SHALL REMOVE SUCH SIGNS AND POSTS AFTER COMPLETION OF ALL CONSTRUCTION ACTIVITIES. LANE AND SHOULDER CLOSURE TEMPORARY TRAFFIC CONTROL SIGNS ARE TO REMAIN IN PLACE UNTIL THE CLOSURE IS LIFTED OR MODIFIED IN SUCH A WAY THAT DIFFERENT SIGNS OR SIGN LOCATIONS ARE NEEDED. ALL TEMPORARY TRAFFIC CONTROL SIGNS ARE TO BE INSTALLED ON FIXED POSTS CONFORMING TO VDOT STANDARD WSP-1.
15. ALL WORK IS TO BE PERFORMED IN ACCORDANCE WITH THE CURRENT VIRGINIA WORK AREA PROTECTION MANUAL (VAWAPM). THE FOLLOWING TTCS ARE ANTICIPATED TO APPLY TO THIS PROJECT:
- TTC-1.1 WORK BEYOND THE SHOULDER OPERATION
  - TTC-6.2 SHOULDER CLOSURE WITH BARRIER OPERATION
  - TTC-16.2 OUTSIDE LANE CLOSURE OPERATION ON A FOUR LANE ROADWAY (TEMPORARY LANE CLOSURE ONLY)
16. SIGN DISTANCE SPACING SHALL BE 1300' TO 1500' FOR LIMITED ACCESS HIGHWAYS UNLESS OTHERWISE APPROVED BY THE ENGINEER.
17. NORMAL CONSTRUCTION ACTIVITIES BEHIND FIXED BARRIERS AND BEYOND THE SHOULDER SHALL HAVE NO WORK HOUR RESTRICTIONS. ALLOWABLE WORK HOURS REQUIRING A LANE CLOSURE OR WORK WITHIN THE TRAVEL WAYS ARE PERMITTED BETWEEN THE HOURS OF 9:00 AM AND 3:30 PM MONDAY THROUGH FRIDAY.

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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 limit 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, all signs and channelizing devices may be eliminated if a vehicle with activated high-intensity amber rotating, flashing, or 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 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.

1: Revision 1 - 4/1/2015

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Typical Traffic Control

Shoulder Operation with Minor Encroachment

(Figure TTC-5.2)

NOTES

Standard

1. For required sign assemblies for multi-lane roadways see Note 1, TTC-4.1

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.

3. When work takes up part of a lane on a high volume roadway: vehicular traffic volumes, vehicle mix, speed and capacity should be analyzed to determine whether the affected lane should be closed. Unless the lane encroachment analysis permits a remaining lane width of 10 feet, the lane should be closed. If the closure operation is on a Limited Access highway, the minimum lane width is 11 feet.

Option:

4. The ROAD WORK AHEAD (W20-1) 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.

Standard:

5. A shadow vehicle with either an arrow board operating in the caution mode, or at least one high-intensity amber rotating, flashing, or oscillating light shall be parked 80' - 120' in advance of the first work crew.

6. Vehicle hazard warning signals shall not be used instead of the vehicle's high-intensity amber rotating, flashing, or oscillating lights. Vehicle hazard warning signals can be used to supplement high-intensity amber rotating, flashing, or oscillating lights.

7. Taper length (L) and channelizing device spacing shall be at the following:

Taper Length L					Shoulder Taper = 1/4 L Minimum				
Speed Limit (mph)	9	10	11	12	Speed Limit (mph)	9	10	11	12
25	95	105	115	125	50	450	500	550	600
30	135	150	165	180	55	495	550	605	660
35	185	205	225	245	60	540	600	660	720
40	240	270	295	320	65	585	650	715	780
45	405	450	495	540	70	630	700	770	840

Limited Access highways shall use a 1000' merging taper regardless of the posted speed, a 750' shifting taper for posted speeds < 65 mph and a 1000' shifting taper for posted speeds ≥ 65 mph.<sup>2</sup>

8. Channelizing device spacing shall be at the following:

Channelizing Device Spacing				Shoulder Taper = 1/4 L Minimum			
Location Spacing	Speed Limit (mph)	Location Spacing	Speed Limit (mph)	Location Spacing	Speed Limit (mph)	Location Spacing	Speed Limit (mph)
Transition	0-35 36+	Travelway	40-60 60	Transition	0-35 36+	Travelway	40-60 60
*Construction access spacing may be increased to this distance, but shall not exceed one access per 1/4 mile.				*Construction access spacing may be increased to this distance, but shall not exceed one access per 1/4 mile.			

1: Revision 1 - 4/1/2015

2: Revision 2 - 9/1/2019

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Typical Traffic Control

Outside Lane Closure Operation on a Four-Lane Roadway

(Figure TTC-16.2)

NOTES

Standard:

1. On divided highways having a median wider than 8', right and left sign assemblies shall be required.

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.

3. When closing a lane, a PCMS should be used in advance of the first warning sign if all of the left side signs cannot be installed.<sup>2</sup>

4. Care should be exercised when establishing the limits of the work zone to insure maximum possible sight distance in advance of the transition, based on the posted speed limit and at least equal to or greater than the values in Table 6H-3. For Limited Access highways a minimum of 1000' is desired.

5. All vehicles, equipment, workers, and their activities should be restricted to one side of the pavement.

Standard:

6. Taper length (L) and channelizing device spacing shall be at the following:

Taper Length L					Shoulder Taper = 1/4 L Minimum				
Speed Limit (mph)	9	10	11	12	Speed Limit (mph)	9	10	11	12
25	95	105	115	125	50	450	500	550	600
30	135	150	165	180	55	495	550	605	660
35	185	205	225	245	60	540	600	660	720
40	240	270	295	320	65	585	650	715	780
45	405	450	495	540	70	630	700	770	840

Limited Access highways shall use a 1000' merging taper regardless of the posted speed.

Shifting Tapers see Table 6H-2.2

7. Channelizing device spacing shall be at the following:

Channelizing Device Spacing				Shoulder Taper = 1/4 L Minimum			
Location Spacing	Speed Limit (mph)	Location Spacing	Speed Limit (mph)	Location Spacing	Speed Limit (mph)	Location Spacing	Speed Limit (mph)
Transition	0-35 36+	Travelway	40-60 60	Transition	0-35 36+	Travelway	40-60 60
*Construction access spacing may be increased to this distance, but shall not exceed one access per 1/4 mile.				*Construction access spacing may be increased to this distance, but shall not exceed one access per 1/4 mile.			

8. An arrow board shall be used when a lane is closed. When more than one lane is closed, a separate arrow board shall be used for each closed lane (see Figure TTC-18).

9. The buffer space length shall be shown in Table 6H-3 on Page 6H-5 for the posted speed limit.

10. A shadow vehicle with either a Type B or C arrow board operating in the caution mode, or at least one high intensity amber rotating, flashing, or oscillating light shall be parked 80'-120' in advance of the first work crew. When the posted speed limit is 45 mph or greater, a truck-mounted attenuator shall be used.

11. Vehicle hazard warning signals shall not be used instead of the vehicle's high-intensity amber rotating, flashing, or oscillating lights but can be used to supplement the amber rotating, flashing, or oscillating lights.

12. When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed as needed.

Option:

13. PTRS and their supporting signs may be used, see Sections 6F.99 and 6G.75. Long-term transverse rumble strips may be used in long-term situations, see Section 6F.99 and TTC-20.2

14. The supplemental PTRS may be eliminated.<sup>2</sup>

1: Revision 1 - 4/1/2015

2: Revision 2 - 9/1/2019

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Shoulder Operation with Minor Encroachment

(Figure TTC-5.2)

1: Revision 1 - 4/1/2015

2: Revision 2 - 9/1/2019

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Outside Lane Closure Operation on a Four-Lane Roadway

(Figure TTC-16.2)

2: Revision 2 - 9/1/2019

3: Revision 2.1 - 11/1/2020

PLAN REVISIONS -

5/5/2023 - REVISED PER VDOT AND VDH COMMENTS

11/29/2023 - REVISED PER VDOT COMMENTS

1/23/2024 - REVISED PER PLANNING COMMENTS

SHEET

D-3

OF

10

SCALE

AS NOTED

APPOMATTOX RIVER CROSSING

WATER MAIN

PRINCE GEORGE COUNTY, VIRGINIA

TRAFFIC CONTROL NOTES AND DETAILS

DATE: JANUARY 2024

ENGINEER: KLM

CHECKED: JPK

DRAWN: PCP

JOB#: 20041.01

COMMONWEALTH OF VIRGINIA

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1/26/2024

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