POORHOUSE ROAD (ROUTE 728) WATERLINE EXTENSION

MADISON MAGISTERIAL DISTRICT
COUNTY OF CUMBERLAND, VIRGINIA

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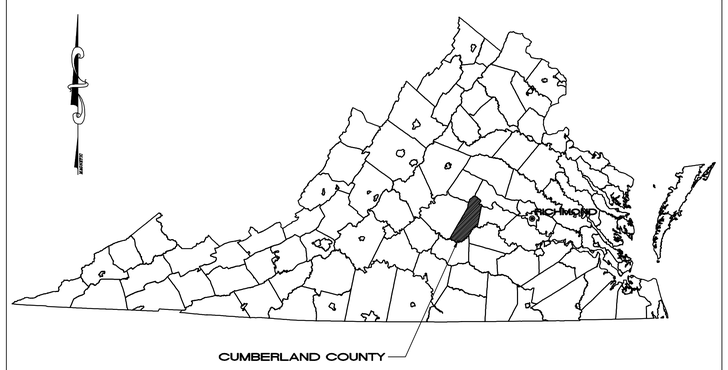
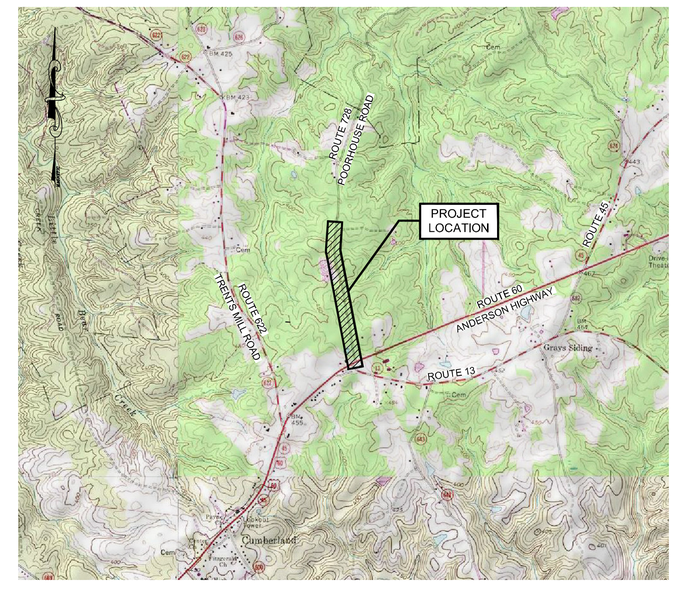


LOCATION MAP
NOT TO SCALE

THE DEWBERRY ENGINEERS INC. SEALING ENGINEER SHALL BE THE RESPONSIBLE LAND DISTURBER (RLD) FOR THIS PROJECT FOR APPROVAL PURPOSES ONLY. ONCE THE PROJECT HAS BEEN AWARDED, THE CONTRACTOR SHALL PROVIDE A RLD AS NOTED ON PLAN SHEET G2.



VICINITY MAP
SCALE : 1" = 2000'

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SUBMITTAL		SET NUMBER
☐ PRELIMINARY	☐ CONSTRUCTION	
▩ APPROVAL	☐ REVISION	
☐ BIDDING	☐ RECORD	

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POORHOUSE ROAD (ROUTE 728)
WATERLINE EXTENSION

COUNTY OF CUMBERLAND

CUMBERLAND, VIRGINIA

KEY PLAN

SEAL

95% DOCUMENTS
NOT FOR CONSTRUCTION

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY EAB
APPROVED BY HAC
CHECKED BY HAC
DATE MAY 2014

TITLE

COVER SHEET

PROJECT NO. 50062526

G1

SHEET NO. 1 OF 11

GENERAL NOTES

1. ALL CONSTRUCTION, MATERIALS, AND INSTALLATION SHALL COMPLY WITH CUMBERLAND COUNTY DEPARTMENT OF PUBLIC WORKS WATER AND SANITARY SEWER DESIGN AND CONSTRUCTION STANDARDS.
2. EXISTING CONDITIONS SHOWN ARE BASED ON FIELD SURVEY PERFORMED BY DEWBERRY IN JANUARY 2014. ELEVATIONS AS SHOWN HEREON ARE BASED ON NAVD 1988 DATUM. HORIZONTAL DATUM BASED ON NAD 1983.
3. EXISTING UTILITIES ACROSS OR ALONG THE LINE OF THE PROPOSED WORK ARE SHOWN BASED ON AVAILABLE INFORMATION AT THE TIME OF FIELD SURVEY AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL HAVE FULL RESPONSIBILITY FOR REVIEWING AND CHECKING ALL SUCH INFORMATION AND DATA, AND ON HIS OWN INITIATIVE SHALL LOCATE (AT NO ADDITIONAL COST TO THE OWNER) ALL UNDERGROUND LINES AND STRUCTURES AS NECESSARY. CONTRACTOR SHALL CALL "MISS UTILITY" 1-800-552-7001 72 HOURS PRIOR TO START OF CONSTRUCTION. CONTRACTOR WILL BE RESPONSIBLE FOR COSTS ASSOCIATED WITH ANY DAMAGE TO UNDERGROUND UTILITIES OR STRUCTURES.
4. THE CONTRACTOR SHALL NOTIFY AND COORDINATE ALL WORK INVOLVING EXISTING UTILITIES WITH UTILITY OWNERS AT LEAST 48 HOURS PRIOR TO START OF CONSTRUCTION AND PRIOR TO ANY INTERRUPTION IN SERVICES.
7. RELOCATION OF ANY UTILITIES IS TO BE AT THE CONTRACTOR'S EXPENSE AND COMPLETED WITH THE SITE WORK.
8. CONTRACTOR SHALL IMMEDIATELY REPORT ANY DISCREPANCIES BETWEEN EXISTING CONDITIONS AND CONTRACT DOCUMENTS TO THE ENGINEER.
6. WHEN WORKING ADJACENT TO EXISTING STRUCTURES, FENCES, POLES, ETC., CONTRACTOR SHALL USE WHATEVER METHODS THAT ARE NECESSARY TO PROTECT EXISTING INFRASTRUCTURE FROM DAMAGE. CONTRACTOR SHALL HAND EXCAVATE WITHIN 5' OF ALL BUILDINGS, WALLS AND STRUCTURES. REPLACEMENT OF DAMAGED STRUCTURES SHALL BE AT THE CONTRACTOR'S EXPENSE.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING WITH MATCHING MATERIALS ANY PAVEMENT, DRIVEWAYS, WALKS, CURBS, ETC., THAT MUST BE CUT OR THAT ARE DAMAGED DURING CONSTRUCTION (AT NO ADDITIONAL COST TO THE OWNER) UNLESS OTHERWISE NOTED.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING CUMBERLAND COUNTY AND SCHEDULING A PRECONSTRUCTION MEETING AT LEAST 72 HOURS PRIOR TO STARTING ANY WORK ON THIS PROJECT. ALL WORK SHALL BE SUBJECT TO INSPECTION. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS.
9. CONTRACTOR SHALL NOTIFY THE VIRGINIA DEPARTMENT OF TRANSPORTATION 72 OR MORE HOURS PRIOR TO START OF CONSTRUCTION.
10. CONTRACTOR SHALL NOT USE VIRGINIA DEPARTMENT OF TRANSPORTATION RIGHT-OF-WAY FOR MATERIAL LAY DOWN AREAS, EQUIPMENT STORAGE, PARKING, ETC.
11. CONTRACTOR SHALL AVOID ALL OVERHEAD LINES AND PROVIDE POWER POLE SUPPORTS WHENEVER NECESSARY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE POWER COMPANY TO ASCERTAIN AND COMPLY WITH POWER POLE BRACING REQUIREMENTS. AT A MINIMUM, CONTRACTOR SHALL ALLOW 5 FEET OF SEPARATION DISTANCE BETWEEN THE PROPOSED MAIN AND THE EXISTING POWER POLES AND GUY WIRE. CONTRACTOR SHALL COMPLY WITH THE PROVISIONS AND REQUIREMENTS OF THE OVERHEAD HIGH VOLTAGE LINES SAFETY ACT IN PERFORMING THIS PROJECT. CONTRACTOR SHALL BE THE RESPONSIBLE PARTY FOR COORDINATING AND ADVISING THE POWER COMPANY. CONTRACTOR'S COST FOR UNDERTAKING THE ABOVE MEASURES, AS WELL AS ANY ADDITIONAL MEASURES REQUIRED BY THE POWER COMPANY AND ASSOCIATED COSTS INVOICED BY THE POWER COMPANY, SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT AND SHALL NOT BE THE RESPONSIBILITY OF THE OWNER.
12. ALL BOUNDARY OR PROPERTY LINE MARKERS DISTURBED SHALL BE REPLACED AT THEIR ORIGINAL LOCATION AT NO ADDITIONAL COST TO OWNER, BY A VIRGINIA LICENSED SURVEYOR.
13. CONTRACTOR SHALL UTILIZE CONSTRUCTION SAFETY FENCING FOR PROTECTION OF WORK AREAS UNLESS OTHERWISE NOTED ON DRAWINGS.
14. CONTRACTOR SHALL MAINTAIN ONE LANE OF TRAFFIC AT ALL TIMES ALONG POORHOUSE ROAD. CONTRACTOR SHALL FOLLOW WORK AREA PROTECTION PLAN ON SHEET C7.
15. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVEWAY ENTRANCES THROUGHOUT CONSTRUCTION UNLESS OTHERWISE NOTED ON DRAWINGS.
16. CONTRACTOR TO PROVIDE ALL CONSTRUCTION SIGNS.
17. CONTRACTOR SHALL SECURE ALL OPEN EXCAVATIONS AT THE COMPLETION OF EACH WORK DAY WITH FENCING, BACKFILLING OR OTHER METHOD OF COVERING TO PREVENT VEHICULAR OR PEDESTRIAN ACCESS.

EROSION AND SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION
THIS PROJECT CONSISTS OF THE INSTALLATION OF APPROXIMATELY 3,890 LF OF 12" WATERLINE, FIRE HYDRANTS, WATER QUALITY MONITORING STATIONS, WATER SERVICES/METERS, AND ALL ASSOCIATED APPURTENANCES ALONG POORHOUSE ROAD (ROUTE 728) FROM ROUTE 60 TO THE INDUSTRIAL PARK ENTRANCE.

EXISTING SITE CONDITIONS
THE PROJECT SITE IS ALONG THE WEST SIDE OF ROUTE 728. ROUTE 728 IS PARTIALLY WOODED WITH STORM WATER GENERALLY CONVEYED OFF-SITE THROUGH DITCHES, CULVERTS, AND OVERLAND FLOW. TOTAL AREA FOR DISTURBANCE IS EQUAL TO 1.8 ACRES.

SOILS
ACCORDING TO USDA NCRS ONLINE SOIL SURVEY, THE FOLLOWING SOILS MAY BE FOUND WITHIN THE PROJECT LIMITS:
1B – APPLING SANDY LOAM, 2 TO 7 PERCENT SLOPES
8A – CHEWACLA AND MONACAN SOILS, 0 TO 2 PERCENT SLOPES
6B – CECIL SANDY LOAM, 2 TO 7 PERCENT SLOPES
21B – HELENA SANDY LOAM, 2 TO 7 PERCENT SLOPES

ADJACENT PROPERTY
ADJACENT PROPERTY CONSISTS OF RURAL, RESIDENTIAL AND COMMERCIAL LAND WITH BOTH DEVELOPED AND UNDEVELOPED AREAS.

OFFSITE ACTIVITIES
NO OFFSITE ACTIVITIES ARE PLANNED FOR THIS PROJECT.

CRITICAL AREAS
NO CRITICAL AREAS HAVE BEEN IDENTIFIED FOR THIS PROJECT. THE OVERALL PLAN HAS BEEN DEVELOPED TO MINIMIZE LAND DISTURBANCE. WHERE GRADING IS NECESSARY, ADEQUATE PRECAUTIONS SHALL BE TAKEN TO MINIMIZE EROSION AND TO CONTAIN SILT THROUGH PROPER EROSION AND SEDIMENT CONTROL PRACTICES. CONTRACTOR MUST ACQUIRE ALL NECESSARY PERMITS.

EROSION AND SEDIMENT CONTROL MEASURES
THE INTENT OF THIS EROSION AND SEDIMENT CONTROL PLAN IS TO GUIDE THE CONTRACTOR IN IMPLEMENTING ACCEPTABLE MEASURES, INFRASTRUCTURE, AND MAINTENANCE PROGRAMS THAT WILL MINIMIZE THE AMOUNT OF EROSION AND RESULTING SEDIMENT THAT WILL TAKE PLACE DURING THE CONSTRUCTION OF THIS PROJECT. UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO THE MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION & SEDIMENT CONTROL HANDBOOK VESCH). SILT FENCE AND TEMPORARY SEEDING IS REQUIRED AROUND ALL STOCKPILES. SEE SHEET C8 FOR EROSION AND SEDIMENT CONTROL DETAILS.

CONTRACTOR SHALL MAINTAIN STRICT COMPLIANCE WITH MS-19 STANDARDS. THE SUBJECT PROPERTIES, DOWNSTREAM PROPERTIES, AND RECEIVING BODIES OF WATER WILL BE PROTECTED FROM POSSIBLE SEDIMENT DEPOSITION, EROSION, ETC. DUE TO CONSTRUCTION ACTIVITIES THROUGH THE USE OF SILT FENCE, INLET PROTECTION, BLANKETS/MATTING, TEMPORARY SEEDING, PERMANENT SEEDING, ETC., AND THE CONTRACTOR SHALL ESTABLISH AND MAINTAIN THESE MEASURES IN ACCORDANCE WITH VESCH STANDARDS THROUGHOUT THE DURATION OF THE PROJECT.

A CONSTRUCTION ENTRANCE SHALL ONLY BE REQUIRED IN LOCATIONS WHERE CONSTRUCTION VEHICLES WILL BE REGULARLY ENTERING AND LEAVING THE SITE. IN LOCATIONS WHERE INGRESS/EGRESS OF CONSTRUCTION VEHICLES WILL NOT TAKE PLACE, A CONSTRUCTION ENTRANCE IS NOT REQUIRED.

STRUCTURAL PRACTICES
1. CONSTRUCTION ENTRANCE (VESCH STD. & SPEC. 3.02): A STABILIZED STONE PAD WITH A FILTER FABRIC UNDERLINER LOCATED AT POINTS OF VEHICULAR INGRESS AND EGRESS ON A CONSTRUCTION SITE TO REDUCE THE AMOUNT OF MUD TRANSPORTED ONTO PAVED PUBLIC ROADS BY MOTOR VEHICLES OR RUNOFF.
2. SILT FENCE (VESCH STD. & SPEC. 3.05): A TEMPORARY SEDIMENT BARRIER CONSISTING OF A FILTER FABRIC STRETCHED ACROSS AND ATTACHED TO SUPPORTING POSTS AND ENTRENCHED. SILT FENCE IS INSTALLED TO INTERCEPT AND DETAIN SMALL AMOUNTS OF SEDIMENT FROM DISTURBED AREAS DURING CONSTRUCTION IN ORDER TO PREVENT SEDIMENT FROM LEAVING THE SITE AND TO DECREASE THE VELOCITY OF SHEET FLOWS AND LOW-TO-MODERATE CHANNEL FLOWS.
3. CULVERT INLET PROTECTION (VESCH STD. & SPEC. 3.08): A SEDIMENT FILTER LOCATED AT THE INLET TO A STORM SEWER CULVERT. CULVERT INLET PROTECTION IS INSTALLED TO PREVENT SEDIMENT FROM ENTERING, ACCUMULATING IN AND BEING TRANSFERRED BY A CULVERT PRIOR TO PERMANENT STABILIZATION AND TO PROVIDE EROSION CONTROL AT CULVERT INLETS DURING THE PHASE OF A PROJECT WHERE ELEVATION AND DRAINAGE PATTERS CHANGE.
4. OUTLET PROTECTION (VESCH STD. & SPEC. 3.18): STRUCTURALLY LINED APRONS OR OTHER ACCEPTABLE ENERGY DISSIPATING DEVICES PLACED AT THE OUTLETS OF PIPES OR PAVED CHANNEL SECTIONS. OUTLET PROTECTION IS INSTALLED TO PREVENT SCOUR AT STORMWATER OUTLETS, TO PROTECT THE OUTLET STRUCTURE, AND TO MINIMIZE THE POTENTIAL FOR DOWNSTREAM EROSION BY REDUCING VELOCITY AND ENERGY OF STORMWATER FLOWS.
5. BLANKETS & MATTING (VESCH STD. & SPEC. 3.36): THE INSTALLATION OF A PROTECTIVE COVERING (BLANKET) OR A SOIL STABILIZATION MAT ON A PREPARED PLANTING AREA OF A STEEP SLOPE, CHANNEL, OR SHORELINE. AIDS IN CONTROLLING EROSION ON CRITICAL AREAS BY PROVIDING A MICROCLIMATE WHICH PROTECTS YOUNG VEGETATION AND PROMOTES ITS ESTABLISHMENT. RAISES THE MAXIMUM PERMISSIBLE VELOCITY OF TURF GRASS STANDS IN CHANNELIZED AREAS BY REINFORCING THE TURF TO RESIST THE FORCES OF EROSION DURING STORM EVENTS.

VEGETATIVE PRACTICES
1. TOPSOILING (STOCKPILE) – TOPSOIL SHALL BE STRIPPED FROM AREAS TO BE GRADED AND STOCKPILED ONSITE IF NECESSARY FOR LATER USE. STOCKPILE LOCATIONS SHALL BE APPROVED BY THE OWNER AND ARE TO BE STABILIZED WITH TEMPORARY VEGETATION OR FILTER FABRIC, AND PROTECTED BY SILT FENCE OR OTHER SEDIMENT TRAPPING MEASURES.
2. TEMPORARY SEEDING (VESCH STD. & SPEC. 3.31): THE ESTABLISHMENT OF A TEMPORARY VEGETATIVE COVER ON DISTURBED AREAS BY SEEDING WITH APPROPRIATE RAPIDLY GROWING ANNUAL PLANTS. TEMPORARY SEEDING REDUCES EROSION AND SEDIMENTATION BY STABILIZING DISTURBED AREAS THAT WILL NOT BE BROUGHT TO FINAL GRADE FOR A PERIOD OF MORE THAN 30 DAYS. TEMPORARY SEEDING REDUCES DAMAGE FROM SEDIMENT AND RUNOFF TO DOWNSTREAM OR OFF-SITE AREAS, AND TO PROVIDE PROTECTION TO BARE SOILS EXPOSED DURING CONSTRUCTION UNTIL PERMANENT VEGETATION OR OTHER EROSION CONTROL MEASURES CAN BE ESTABLISHED. FOR USE WHERE EXPOSED SOIL SURFACES ARE NOT TO BE FINE-GRADED FOR PERIODS OF LONGER THAN 30 DAYS. SUCH AREAS INCLUDED DENUDED AREAS, SOIL STOCKPILES, DIKES, DAMS, SIDES OF SEDIMENT BASINS, TEMPORARY ROADBANKS, ETC. (SEE MS#1 AND MS#2). A PERMANENT VEGETATIVE COVER SHALL BE APPLIED TO AREAS THAT WILL BE LEFT DORMANT FOR A PERIOD OF MORE THAN ONE (1) YEAR.
3. PERMANENT SEEDING (VESCH STD. & SPEC. 3.32): THE ESTABLISHMENT OF A PERENNIAL VEGETATIVE COVER ON DISTURBED AREAS BY PLANTING SEED. PERMANENT SEEDING REDUCES EROSION AND DECREASES SEDIMENT YIELD FROM DISTURBED AREAS. PERMANENT SEEDING STABILIZES DISTURBED AREAS IN A MANNER THAT IS ECONOMICAL, ADAPTABLE TO SITE CONDITIONS, AND ALLOWS SELECTION OF THE MOST APPROPRIATE PLANT MATERIAL. PERMANENT SEEDING ALSO IMPROVES WILDLIFE HABITAT AND ENHANCES NATURAL BEAUTY. FOR USE IN DISTURBED AREAS WHERE PERMANENT, LONG-LIVED VEGETATIVE COVER IS NEEDED TO STABILIZE THE SOIL. FOR USE WHERE ROUGH-GRADED AREAS WHICH WILL NOT BE BROUGHT TO FINAL GRADE FOR A YEAR OR MORE.
4. MULCHING (VESCH STD. & SPEC. 3.35): APPLICATION OF PLANT RESIDUES OR OTHER SUITABLE MATERIALS TO THE SOIL SURFACE. MULCHING PERVENTS EROSION BY PROTECTING THE SOIL SURFACE FROM RAINDROP IMPACT AND REDUCING THE VELOCITY OF OVERLAND FLOW. MULCHING FOSTERS THE GROWTH OF VEGETATION BY INCREASING AVAILABLE MOISTURE AND PROVIDING INSULATION AGAINST EXTREME HEAT AND COLD. FOR USE IN AREAS WHICH HAVE BEEN PERMANENTLY SEEDED. MULCHING SHOULD OCCUR IMMEDIATELY FOLLOWING SEEDING. AREAS THAT CANNOT BE SEEDED BECAUSE OF THE SEASON SHOULD BE MULCHED WITH AN ORGANIC MULCH.

E&S CONTROL NARRATIVE CONTINUED

MANAGEMENT STRATEGIES
1. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.
2. CONSTRUCTION SHOULD BE SEQUENCED SO THAT GRADING OPERATIONS CAN BEGIN AND END AS QUICKLY AS POSSIBLE.
3. SEDIMENT TRAPPING MEASURES SHALL BE INSTALLED AS A FIRST STEP IN GRADING AND SHALL BE SEEDED AND MULCHED IMMEDIATELY FOLLOWING INSTALLATION.
4. TEMPORARY SEEDING OR OTHER STABILIZATION WILL FOLLOW IMMEDIATELY AFTER GRADING.
5. THE CONTRACTOR'S RLD SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL E&S CONTROL PRACTICES.
6. AREAS WHICH ARE NOT TO BE DISTURBED SHALL BE CLEARLY MARKED BY FLAGS, SIGNS, ETC.
7. PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO OFF-SITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.
8. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.
9. ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBANCE ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.
10. AFTER ACHIEVING ADEQUATE STABILIZATION, THE TEMPORARY E&S CONTROLS WILL BE CLEANED UP AND REMOVED.

TEMPORARY AND PERMANENT STABILIZATION
TEMPORARY SEEDING SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE, BUT WILL REMAIN DORMANT FOR LONGER THAN 30 DAYS AND LESS THAN ONE YEAR. THIS INCLUDES, BUT IS NOT LIMITED TO, STOCKPILES AND BORROW AREAS.

PERMANENT SEEDING SHALL BE APPLIED AND A PERENNIAL VEGETATIVE COVERING SHALL BE ESTABLISHED ON DISTURBED AREAS WITHIN SEVEN DAYS OF BEING BROUGHT TO FINAL GRADE ON AREAS NOT OTHERWISE PROTECTED. SELECTION OF THE SEED MIXTURE SHALL DEPEND ON THE TIME OF YEAR IT IS TO BE APPLIED.

MULCHING SHALL BE APPLIED TO ALL PERMANENT SEEDING IMMEDIATELY UPON COMPLETION OF SEED APPLICATION. MULCH LIBERALLY DURING THE MID-SUMMER AND WINTER SEASONS.

SEE VIRGINIA EROSION AND SEDIMENT CONTROL TECHNICAL BULLETIN NO. 4, NUTRIENT MANAGEMENT FOR DEVELOPMENT SITES, FOR UPDATED SEED MIXTURES AND SCHEDULES AS WELL AS UPDATED LIMING, MULCHING, AND FERTILIZING REQUIREMENTS. SEE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK STD. AND SPEC. 3.35 FOR MULCHING SPECIFICATIONS.

STORMWATER RUNOFF CONSIDERATIONS
THIS PROJECT CONSISTS OF UTILITY UPGRADES AND WILL NOT INCREASE STORMWATER RUNOFF. NO CALCULATIONS ARE REQUIRED.

EROSION & SEDIMENT CONTROL MAINTENANCE

IN GENERAL, THE PROJECT AREA SHALL BE CHECKED AFTER EACH RAINFALL EVENT OR WEEKLY, WHICH EVER IS MORE FREQUENT TO ENSURE THAT ALL EROSION AND SEDIMENT CONTROL DEVICES ARE IN WORKING ORDER. EROSION CONTROL DEVICES SHALL BE MAINTAINED ACCORDING TO THE FOLLOWING SCHEDULE:

1. SAFETY FENCE:
   SAFETY FENCE SHALL BE CHECKED REGULARLY FOR WEATHER-RELATED OR OTHER DAMAGE. ANY NECESSARY REPAIRS MUST BE MADE IMMEDIATELY. CARE SHOULD BE TAKEN TO SECURE ALL ACCESS POINTS (GATES) AT THE END OF EACH WORKING DAY. ALL LOCKING DEVICES MUST BE REPAIRED OR REPLACED AS NECESSARY.
2. SILT FENCE:
   A. SEDIMENT DEPOSITS SHALL BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.
   B. FABRIC SHALL BE REPLACED IF IT HAS DECOMPOSED OR BECOME INEFFECTIVE.
3. CULVERT INLET/OUTLET PROTECTION:
   A. AGGREGATE SHALL BE REPLACED OR CLEANED WHEN CLOGGED VOIDS ARE CAUSING PONDING PROBLEMS.
   B. SEDIMENT DEPOSITS SHALL BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE-HALF THE DESIGN DEPTH OF THE TRAP.
4. SEEDING:
   THE SEEDED AREAS SHALL BE CHECKED REGULARLY TO ENSURE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE FERTILIZED AND RESEEDED AS NEEDED.
5. BLANKETS & MATTING:
   AREAS SHOULD BE INSPECTED REGULARLY FOLLOWING INSTALLATION, ESPECIALLY AFTER RAINSTORMS. ANY DISLOCATION OR FAILURE SHOULD BE REPLACED IMMEDIATELY. IF WASHOUTS OR BREAKAGE OCCURS, REINSTALL THE MATERIAL AFTER REPAIRING DAMAGE TO THE SLOPE OR DITCH. CONTINUE TO MONITOR THESE AREAS UNTIL THEY BECOME PERMANENTLY STABILIZED.
6. THE CONSTRUCTION ENTRANCE WILL BE CHECKED REGULARLY THAT IT IS MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR THE WASHING AND REWORKING OF EXISTING STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT ANY STRUCTURES USED TO TRAP SEDIMENT.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AN EMPLOYEE WHO WILL BE IN RESPONSIBLE CHARGE OF THE EROSION AND SEDIMENT CONTROL PLAN AND REQUIREMENTS FOR THE PROJECT THAT IS CERTIFIED BY THE VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION AS A RESPONSIBLE LAND DISTURBER (RLD). THE NAME OF THE CONTRACTOR'S RLD AND COPY OF HIS CURRENT CERTIFICATION SHALL BE PROVIDED TO THE OWNER, ENGINEER AND EROSION & SEDIMENT CONTROL PLAN APPROVING AUTHORITY PRIOR TO ISSUANCE TO THE NOTICE TO PROCEED FOR THE PROJECT.

NO EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHOUT APPROVAL OF THE E&S INSPECTOR FOR THE PROJECT.

GENERAL EROSION & SEDIMENT CONTROL NOTES

ES-1: UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND THE VIRGINIA EROSION AND SEDIMENT CONTROL REGULATIONS (4VAC50-30).

ES-2: THE PLAN-APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRE-CONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO THE FINAL INSPECTION. THE NAME OF THE RESPONSIBLE LAND DISTURBER MUST BE PROVIDED TO THE PLAN-APPROVING AUTHORITY PRIOR TO ACTUAL ENGAGEMENT IN THE LAND-DISTURBING ACTIVITY SHOWN ON THE APPROVED PLAN. IF THE NAME IS NOT PROVIDED PRIOR TO ENGAGING IN THE LAND-DISTURBING ACTIVITY, THE PLAN'S APPROVAL WILL BE REVOKED.

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

ES-4: A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.

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

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

ES- 7: ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED, AFTER WHICH, UPON APPROVAL OF THE PLAN-APPROVING AUTHORITY, THE CONTROLS SHALL BE REMOVED. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE REMOVAL OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.

ES-8: DURING DEWATERING OPERATIONS, WATER SHALL BE PUMPED INTO AN APPROVED FILTERING DEVICE.

ES-9: THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES AT LEAST EVERY 2 WEEKS AND IMMEDIATELY AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

ES-10: THE CONTRACTOR IS RESPONSIBLE FOR THE DAILY REMOVAL OF SEDIMENT THAT HAS BEEN TRANSPORTED ONTO A PAVED OR PUBLIC ROAD SURFACE.

ES-11: SEEDING OPERATIONS SHALL BE INITIATED WITHIN 7 DAYS AFTER REACHING FINAL GRADE OR UPON SUSPENSION OF GRADING OPERATIONS FOR ANTICIPATED DURATION OF GREATER THAN 30 DAYS OR UPON COMPLETION OF GRADING OPERATIONS FOR A SPECIFIC AREA.

ES-12: THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREVENTING SURFACE AND AIR MOVEMENT OF DUST FROM EXPOSED SOILS WHICH MAY PRESENT HEALTH HAZARDS, TRAFFIC SAFETY PROBLEMS, OR HARM ANIMAL OR PLANT LIFE.

ES-13: A VIRGINIA STORMWATER MANAGEMENT PROGRAM PERMIT (VSMPP) FOR THE DISCHARGE OF STORMWATER FROM CONSTRUCTION ACTIVITIES IS REQUIRED FOR PROJECTS DISTURBING 1 ACRE OR GREATER. A VSMPP IS ALSO REQUIRED FOR PROJECTS DISTURBING 2,500 SQUARE FEET OR GREATER IN A DESIGNATED CHESAPEAKE BAY PRESERVATION AREA. VISIT THE VIRGINIA STORMWATER MANAGEMENT PROGRAM PERMITTING WEB PAGE AT HTTP://WWW.DCR.STATE.VA.US/SW/VSMP.HTM FOR MORE INFORMATION.

EROSION AND SEDIMENT CONTROL SEQUENCE

1. CONTRACTOR TO COORDINATE NECESSARY PERMITS WITH OWNER FOR MODIFICATIONS TO LAND DISTURBANCE ACTIVITIES.
2. CONTRACTOR TO INSTALL EROSION AND SEDIMENT CONTROL MEASURES INCLUDING; CONSTRUCTION ENTRANCE (IF NEEDED), SAFETY FENCE, SILT FENCE, CULVERT INLET PROTECTION, AND OUTLET PROTECTION.
3. CONTRACTOR TO INSTALL PROPOSED UTILITIES.
4. CONTRACTOR TO COMPLETE TESTING OF PROPOSED UTILITIES.
5. CONTRACTOR TO RE-ESTABLISH FINISHED GRADE AND STABILIZE SITE WITH SEEDING, MULCHING, AND MATTING AS INDICATED ON THE PLANS.
6. CONTRACTOR TO REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROLS.

LEGEND

EXISTING TREELINE	EXISTING BUILDING
CREEK, STREAM OR DITCH	EXISTING TELEPHONE PEDESTAL
EXISTING SANITARY MANHOLE	EXISTING TELEPHONE MANHOLE
SS — EXISTING SANITARY SEWER	EXISTING MONITORING WELL
EXISTING WATER VALVE	EXISTING MAIL BOX
EXISTING WATER METER	W — PROPOSED WATERLINE
EXISTING FIRE HYDRANT	TEE, 90° BEND, 45° BEND, 22.5° BEND, 11.25° BEND — PROPOSED FITTINGS
EXISTING UTILITY POLE	PROPOSED FIRE HYDRANT
W — EXISTING UNDERGROUND WATER	PROPOSED WATER SERVICE/METER
UGE — EXISTING UNDERGROUND ELECTRIC	PROPOSED WATER GATE VALVE
SD — EXISTING STORM DRAIN	PROPOSED SURFACE RESTORATION
G — EXISTING GAS LINE	
FM — EXISTING SANITARY FORCE MAIN	
OHE — EXISTING OVERHEAD ELECTRIC/UTILITY	
FO — EXISTING FIBER OPTIC LINE	
UGT — EXISTING UNDERGROUND TELEPHONE	
EXISTING PROPERTY LINE	
EXISTING CHAINLINK FENCE	
EXISTING 1' CONTOURS	
EXISTING EDGE OF PAVEMENT	

VIRGINIA UNIFORM CODING SYSTEM
FOR EROSION AND SEDIMENT CONTROL PRACTICES

3.02	CONSTRUCTION ENTRANCE	CE
3.05	SILT FENCE	SF
3.08	CULVERT INLET PROTECTION	CIP
3.18	OUTLET PROTECTION	OP
3.31	TEMPORARY SEEDING	TS
3.32	PERMANENT SEEDING	PS
3.35	MULCHING	MU

EROSION & SEDIMENT CONTROL MINIMUM STANDARDS

1. PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN 30 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR. SPECIFIC FERTILIZER, NUTRIENT, & SEED APPLICATION MUST MEET EROSION AND SEDIMENT CONTROL (ESC) TECHNICAL BULLETIN NO. 4 NUTRIENT MANAGEMENT FOR DEVELOPMENT PROJECTS. DOWNLOAD AT http://www.dcr.virginia.gov/soil_&_water/e&s.shtml. MULCHING REQUIREMENTS MUST MEET VESC HANDBOOK MULCHING TABLE 3.35A.
2. DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES AND BORROW AREAS SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE APPLICANT IS RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELL AS BORROW AREAS AND SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE. ANY BORROW, FILL, OR WASTE SUCH AS DEMOLITION MATERIAL MUST BE PROVIDED FROM OR HAULED TO A PERMITTED, APPROVED, SUPPLY OR WASTE AREA. ALL OFFSITE ACTIVITY IS NOT PART OF THIS PERMIT/ PLAN SET AND IS ADDRESSED UNDER SEPARATE COVER. SOIL STOCKPILES ARE NOT ANTICIPATED ONSITE.
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.
4. SEDIMENT BASINS AND TRAPS, PERIMETER DIKES, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND-DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE.
5. STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.
6. SEDIMENT TRAPS AND SEDIMENT BASINS SHALL BE DESIGNED AND CONSTRUCTED BASED UPON THE TOTAL DRAINAGE AREA TO BE SERVED BY THE TRAP OR BASIN.
   A. THE MINIMUM STORAGE CAPACITY OF A SEDIMENT TRAP SHALL BE 134 CUBIC YARDS PER ACRE OF DRAINAGE AREA AND THE TRAP SHALL ONLY CONTROL DRAINAGE AREAS LESS THAN THREE ACRES.
   B. SURFACE RUNOFF FROM DISTURBED AREAS THAT IS COMPRISED OF FLOW FROM DRAINAGE AREAS GREATER THAN OR EQUAL TO THREE ACRES SHALL BE CONTROLLED BY A SEDIMENT BASIN. THE MINIMUM STORAGE CAPACITY OF A SEDIMENT BASIN SHALL BE 134 CUBIC YARDS PER ACRE OF DRAINAGE AREA. THE OUTFALL SYSTEM SHALL, AT A MINIMUM, MAINTAIN THE STRUCTURAL INTEGRITY OF THE BASIN DURING A 25-YEAR STORM OF 24-HOUR DURATION. RUNOFF COEFFICIENTS USED IN RUNOFF CALCULATIONS SHALL CORRESPOND TO A BARE EARTH CONDITION OR THOSE CONDITIONS EXPECTED TO EXIST WHILE THE SEDIMENT BASIN IS UTILIZED.
7. CUT AND FILL SLOPES SHALL BE DESIGNED AND CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION. SLOPES THAT ARE FOUND TO BE ERODING EXCESSIVELY WITHIN ONE YEAR OF PERMANENT STABILIZATION SHALL BE PROVIDED WITH ADDITIONAL SLOPE STABILIZING MEASURES UNTIL THE PROBLEM IS CORRECTED.
8. CONCENTRATED RUNOFF SHALL NOT FLOW DOWN CUT OR FILL SLOPES UNLESS CONTAINED WITHIN AN ADEQUATE TEMPORARY OR PERMANENT CHANNEL, FLUME OR SLOPE DRAIN STRUCTURE.
9. WHENEVER WATER SEEPS FROM A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED.
10. ALL STORM SEWER INLETS THAT ARE MADE OPERABLE DURING CONSTRUCTION SHALL BE PROTECTED SO THAT SEDIMENT-LADEN WATER CANNOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR OTHERWISE TREATED TO REMOVE SEDIMENT.
11. BEFORE NEWLY CONSTRUCTED STORMWATER CONVEYANCE CHANNELS OR PIPES ARE MADE OPERATIONAL, ADEQUATE OUTLET PROTECTION AND ANY REQUIRED TEMPORARY OR PERMANENT CHANNEL LINING SHALL BE INSTALLED IN BOTH THE CONVEYANCE CHANNEL AND RECEIVING CHANNEL.
12. WHEN WORK IN A LIVE WATERCOURSE IS PERFORMED, PRECAUTIONS SHALL BE TAKEN TO MINIMIZE ENCROACHMENT, CONTROL SEDIMENT TRANSPORT AND STABILIZE THE WORK AREA TO THE GREATEST EXTENT POSSIBLE DURING CONSTRUCTION. NONERODIBLE MATERIAL SHALL BE USED FOR THE CONSTRUCTION OF CAUSEWAYS AND COFFERDAMS. EARTHEN FILL MAY BE USED FOR THESE STRUCTURES IF ARMORED BY NONERODIBLE COVER MATERIALS.
13. WHEN A LIVE WATERCOURSE MUST BE CROSSED BY CONSTRUCTION VEHICLES MORE THAN TWICE IN ANY SIX-MONTH PERIOD, A TEMPORARY VEHICULAR STREAM CROSSING CONSTRUCTED OF NONERODIBLE MATERIAL SHALL BE PROVIDED.
14. ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS PERTAINING TO WORKING IN OR CROSSING LIVE WATERCOURSES SHALL BE MET.
15. THE BED AND BANKS OF A WATERCOURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK IN THE WATERCOURSE IS COMPLETED.
16. UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA:
   A. NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.
   B. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.
   C. EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY.
   D. MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION.
   E. RESTABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THESE REGULATIONS.
   F. APPLICABLE SAFETY REGULATIONS SHALL BE COMPLIED WITH.
17. WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED OR PUBLIC ROADS, PROVISIONS SHALL BE MADE TO MINIMIZE THE TRANSPORT OF SEDIMENT BY VEHICULAR TRACKING ONTO THE PAVED SURFACE. WHERE SEDIMENT IS TRANSPORTED ONTO A PAVED OR PUBLIC ROAD SURFACE, THE ROAD SURFACE SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER. THIS PROVISION SHALL APPLY TO INDIVIDUAL DEVELOPMENT LOTS AS WELL AS TO LARGER LAND-DISTURBING ACTIVITIES.
18. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE REGULATORY 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 STANDARDS AND CRITERIA FOUND IN VESC REGULATION 4VAC50-30-40 MS-19 PARTS A-K.

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POORHOUSE ROAD (ROUTE 728)
WATERLINE EXTENSION

COUNTY OF CUMBERLAND

CUMBERLAND, VIRGINIA

KEY PLAN

SEAL

95% DOCUMENTS
NOT FOR CONSTRUCTION

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY: EAB
APPROVED BY: HAC
CHECKED BY: HAC
DATE: MAY 2014

TITLE

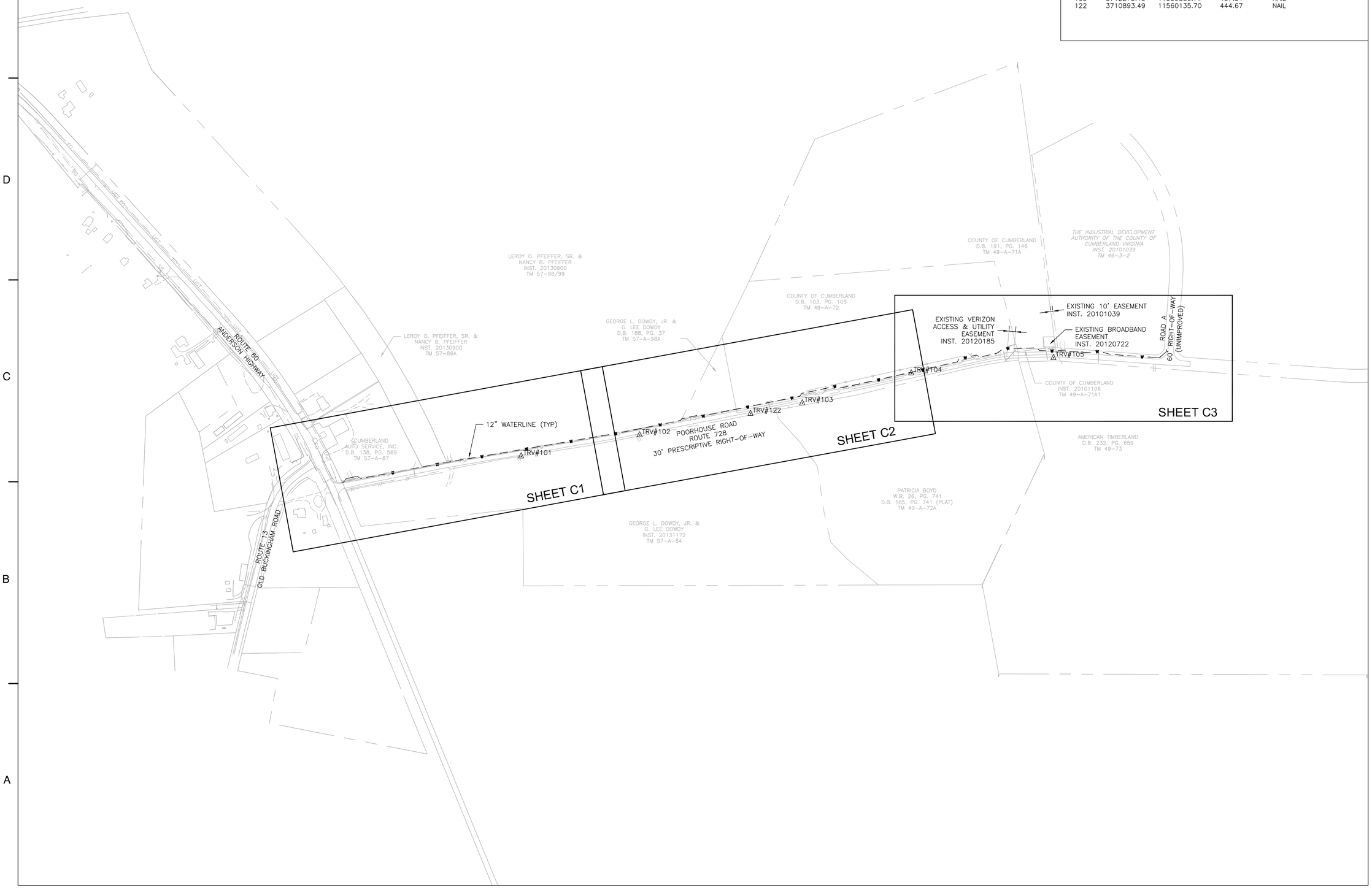
GENERAL NOTES AND LEGEND

PROJECT NO. 50062526

G2

SHEET NO. 2 OF 11

VIRGINIA STATE GRID
SOUTH ZONE 1983
NAVD 1988



LEGEND

TRV#1 △ SURVEY TRAVERSE CONTROL

SURVEY TRAVERSE

TRV#	NORTHING	EASTING	ELEVATION	DESCRIPTION
101	3709848.65	11560329.49	460.28	NAIL
102	3710388.25	11560233.11	460.72	NAIL
103	3711129.40	11560087.49	442.09	NAIL
104	3711625.52	11559950.82	446.31	NAIL
105	3712273.43	11559880.77	437.51	NAIL
122	3710893.49	11560135.70	444.67	NAIL

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WATERLINE EXTENSION

COUNTY OF CUMBERLAND

CUMBERLAND, VIRGINIA

KEY PLAN

SEAL

95% DOCUMENTS
NOT FOR CONSTRUCTION

SCALE

0' 200' 400'
GRAPHIC SCALE
1" = 200'

No.	DATE	BY	Description

REVISIONS

DRAWN BY	EAB
APPROVED BY	HAC
CHECKED BY	HAC
DATE	MAY 2014

TITLE

INDEX MAP,
PROPERTY INFO,
AND
SURVEY CONTROL

PROJECT NO. 50062526

G3

SHEET NO. 3 OF 11

GENERAL NOTES

1. CONTRACTOR SHALL UTILIZE BENDS AND DEFLECT PIPE AS NECESSARY TO MAINTAIN ALIGNMENT. SEE SPECIFICATIONS FOR ALLOWABLE DEFLECTIONS.
2. VERTICAL BENDS ARE SHOWN IN PROFILE VIEW ONLY.
3. ALL WORK IS TO BE PERFORMED WITHIN THE EXISTING RIGHT-OF-WAY OR EASEMENTS UNLESS SPECIFIC PROPERTY OWNER PERMISSION IS OBTAINED BY THE CONTRACTOR.
4. CONTRACTOR SHALL PROTECT EXISTING MAILBOXES WHEN INSTALLATION OF NEW UTILITY DOES NOT REQUIRE THEIR REMOVAL. WHERE REMOVAL OF MAILBOXES IS NECESSARY, CONTRACTOR SHALL REMOVE AND REPLACE MAILBOXES AS QUICKLY AS POSSIBLE TO LIMIT DISRUPTION TO THE RESIDENTS MAIL DELIVERY.
6. WHERE NEW WATER MAIN IS INSTALLED CLOSER THAN 4' OFF EDGE OF PAVEMENT OR UNDER PAVEMENT, CONTRACTOR SHALL BACKFILL TRENCH WITH 21B STONE PER TRENCH DETAILS ON SHEET C6. OTHERWISE, NATIVE SOIL CAN BE USED FOR TRENCH BACKFILL. REGARDLESS OF BACKFILL MATERIAL, COMPACTION SHALL BE 95% OF MAXIMUM DENSITY AT OPTIMAL MOISTURE CONTENT.
7. ALL PROPOSED UTILITIES ENCROACHING WITHIN THE LIMITS OF A STATE MAINTAINED DITCH SHALL MAINTAIN MINIMUM COVER OF 3' AS MEASURED FROM THE BOTTOM OF THE DITCH THROUGHOUT THE ENTIRE UTILITY ENCROACHMENT.
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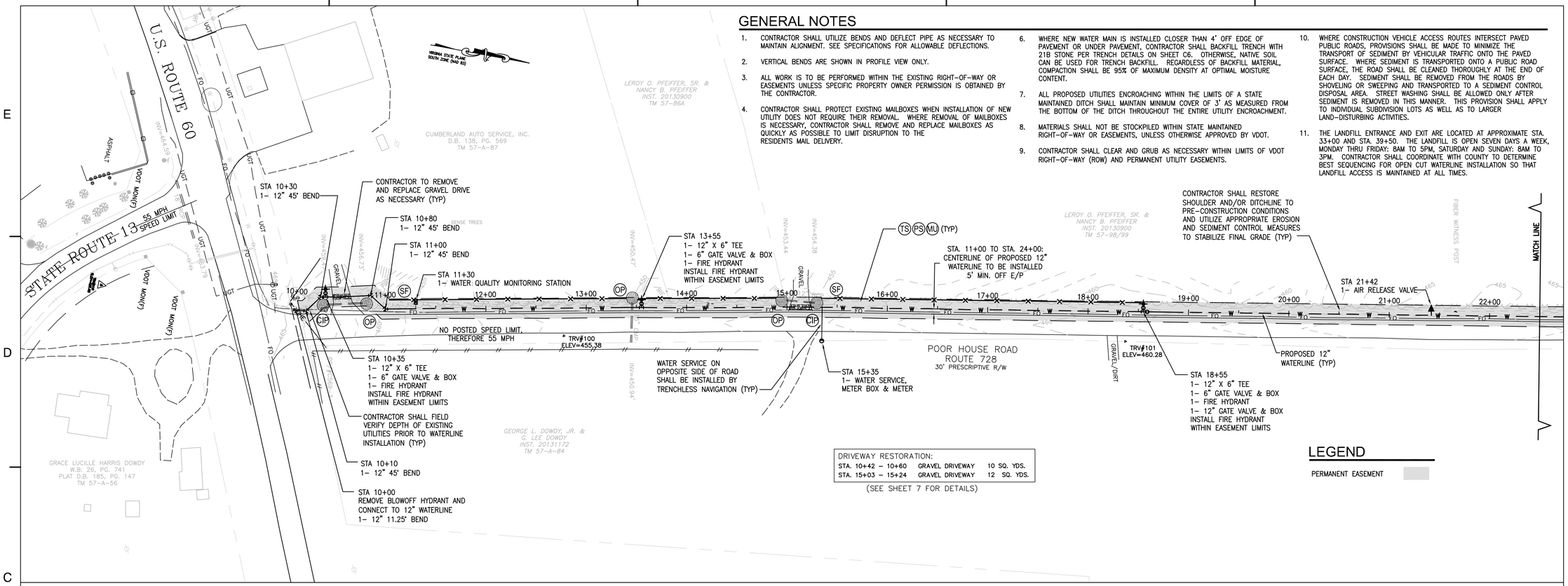


DRIVEWAY RESTORATION:

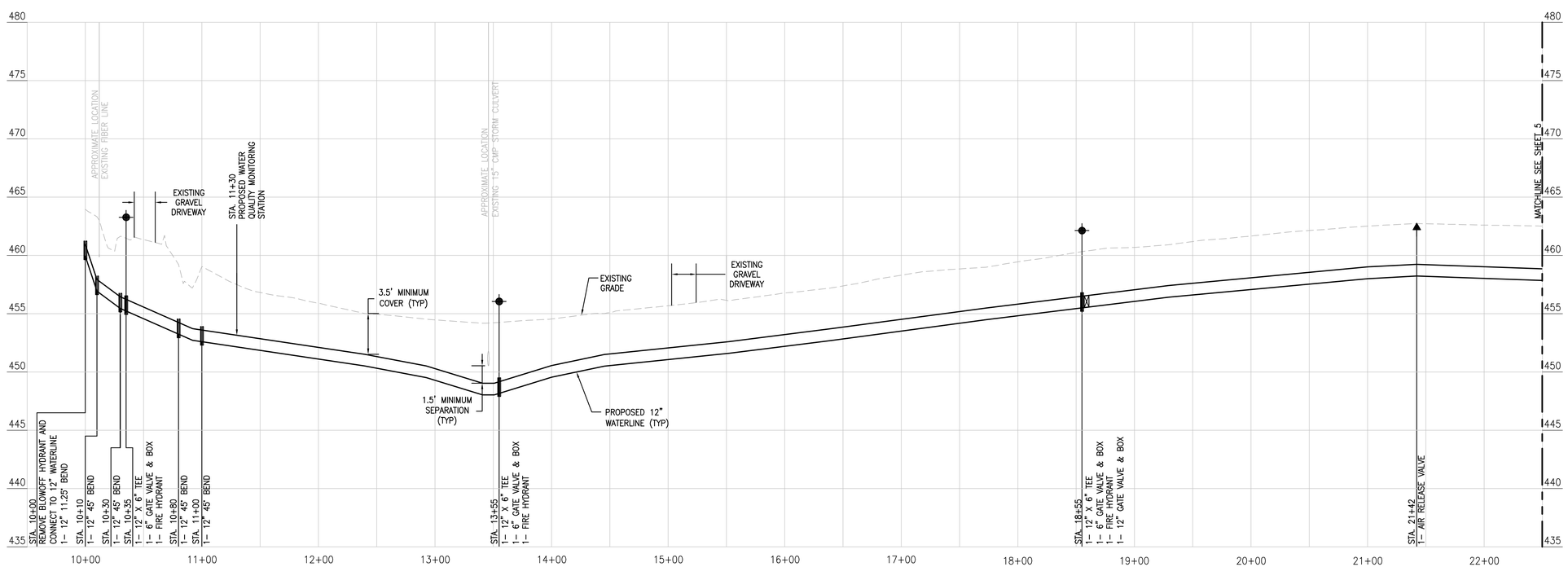
STA. 10+42 – 10+60	GRAVEL DRIVEWAY	10 SQ. YDS.
STA. 15+03 – 15+24	GRAVEL DRIVEWAY	12 SQ. YDS.

(SEE SHEET 7 FOR DETAILS)

LEGEND

PERMANENT EASEMENT

ROUTE 728 -12" WATERLINE



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POORHOUSE ROAD (ROUTE 728) WATERLINE EXTENSION

COUNTY OF CUMBERLAND

CUMBERLAND, VIRGINIA

KEY PLAN

SEAL

95% DOCUMENTS
NOT FOR CONSTRUCTION

SCALE
0' 50' 100'
HORIZONTAL SCALE 1"=50'
0' 5' 10'
VERTICAL SCALE 1" = 5'

No.	DATE	BY	Description

REVISIONS

DRAWN BY	EAB
APPROVED BY	HAC
CHECKED BY	HAC
DATE	MAY 2014

TITLE

ROUTE 728
12" WATERLINE
STA 10+00 TO
STA 22+50

PROJECT NO. 50062526

C1

SHEET NO. 4 OF 11

GENERAL NOTES

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7. ALL PROPOSED UTILITIES ENCROACHING WITHIN THE LIMITS OF A STATE MAINTAINED DITCH SHALL MAINTAIN MINIMUM COVER OF 3' AS MEASURED FROM THE BOTTOM OF THE DITCH THROUGHOUT THE ENTIRE UTILITY ENCROACHMENT.
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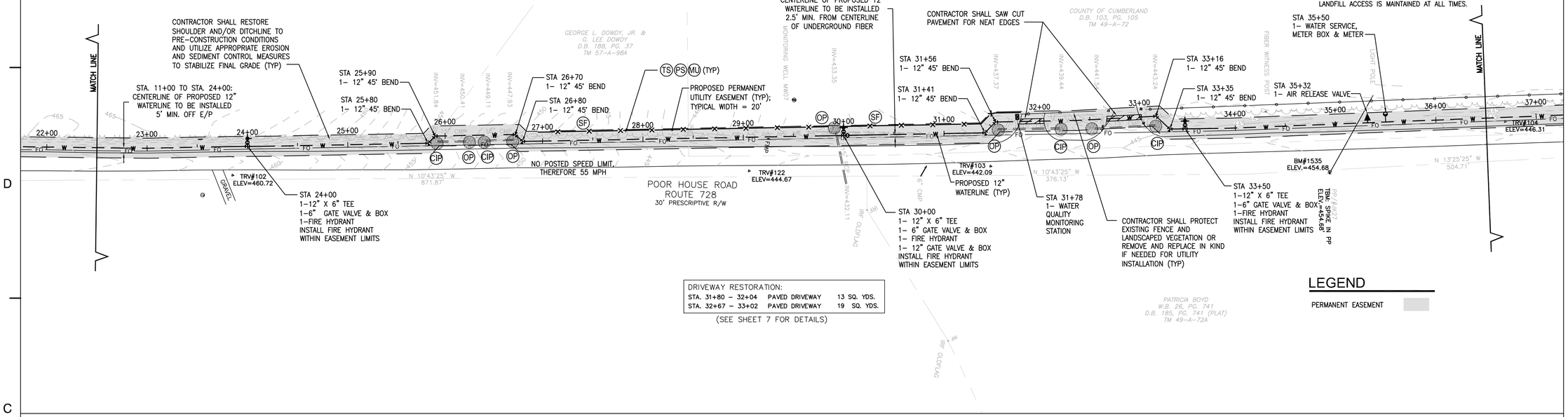


DRIVEWAY RESTORATION:

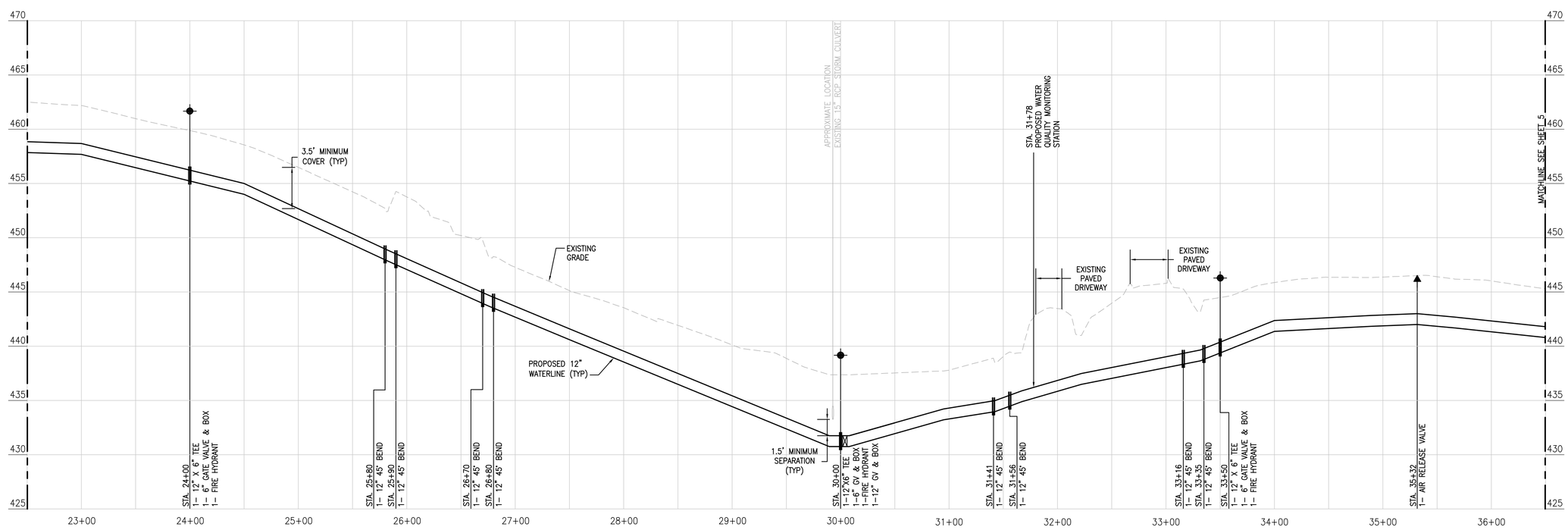
STA. 31+80 – 32+04	PAVED DRIVEWAY	13	SQ. YDS.
STA. 32+67 – 33+02	PAVED DRIVEWAY	19	SQ. YDS.

(SEE SHEET 7 FOR DETAILS)

LEGEND

PERMANENT EASEMENT

ROUTE 728 -12" WATERLINE



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POORHOUSE ROAD (ROUTE 728) WATERLINE EXTENSION

COUNTY OF CUMBERLAND

CUMBERLAND, VIRGINIA

KEY PLAN

SEAL

95% DOCUMENTS
NOT FOR CONSTRUCTION

SCALE
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HORIZONTAL SCALE 1"=50'
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VERTICAL SCALE 1" = 5'

No.	DATE	BY	Description

REVISIONS

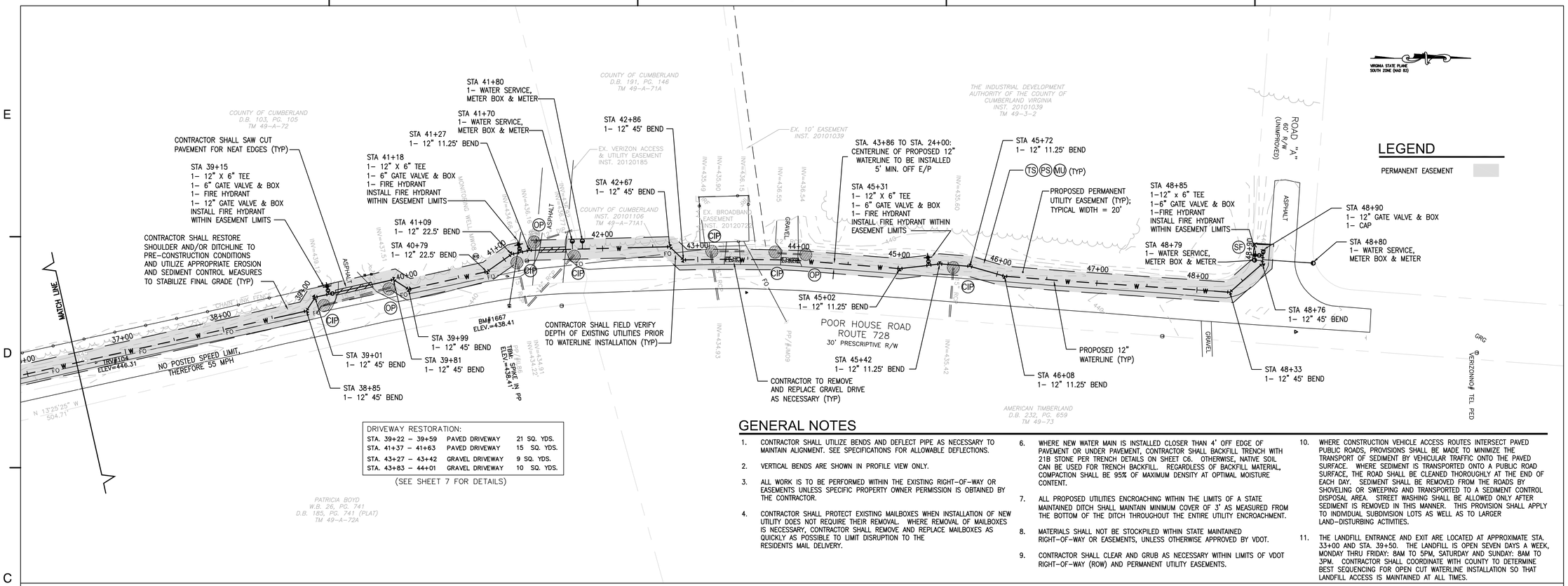
DRAWN BY	EAB
APPROVED BY	HAC
CHECKED BY	HAC
DATE	MAY 2014

TITLE
ROUTE 728
12" WATERLINE
STA 22+50 TO
STA 36+50

PROJECT NO. 50062526

C2

SHEET NO. 5 OF 11



LEGEND

PERMANENT EASEMENT

DRIVEWAY RESTORATION:		
STA. 39+22 – 39+59	PAVED DRIVEWAY	21 SQ. YDS.
STA. 41+37 – 41+63	PAVED DRIVEWAY	15 SQ. YDS.
STA. 43+27 – 43+42	GRAVEL DRIVEWAY	9 SQ. YDS.
STA. 43+83 – 44+01	GRAVEL DRIVEWAY	10 SQ. YDS.

(SEE SHEET 7 FOR DETAILS)

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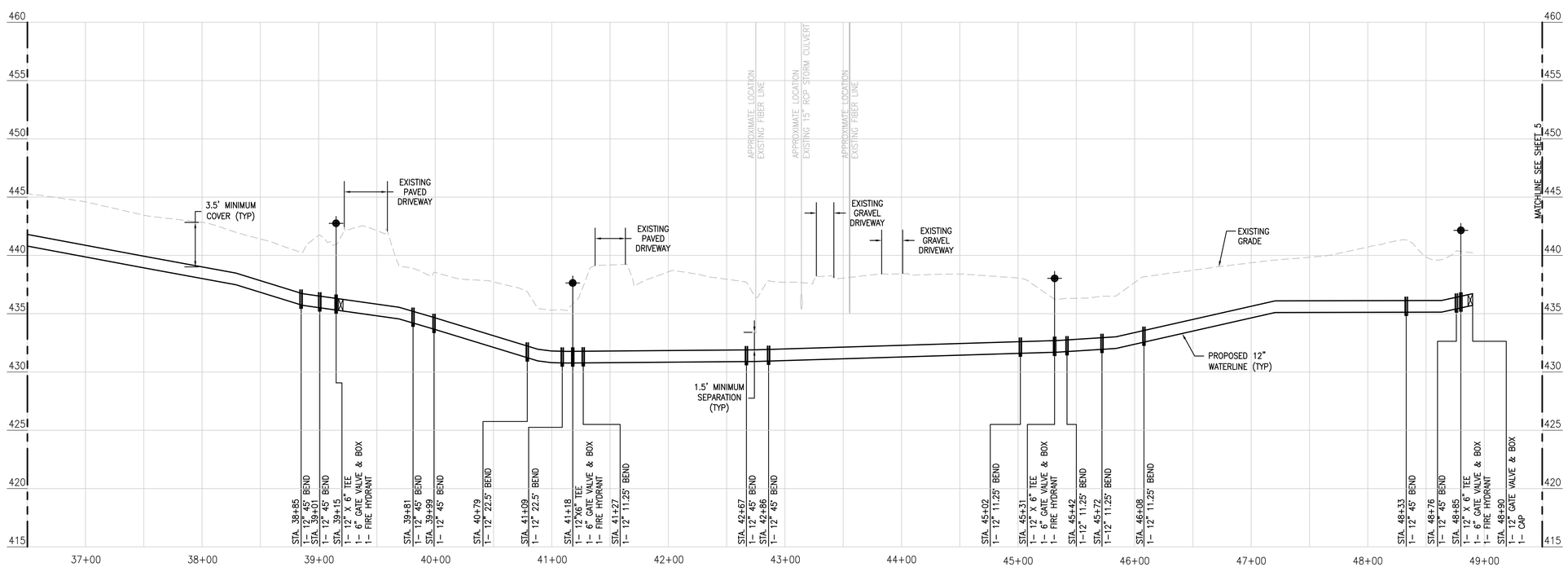
ROUTE 728 -12" WATERLINE



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POORHOUSE ROAD (ROUTE 728) WATERLINE EXTENSION

COUNTY OF CUMBERLAND

CUMBERLAND, VIRGINIA

KEY PLAN

SEAL

95% DOCUMENTS
NOT FOR CONSTRUCTION

SCALE
0' 50' 100'
HORIZONTAL SCALE 1"=50'
0' 5' 10'
VERTICAL SCALE 1" = 5'

No.	DATE	BY	Description

REVISIONS

DRAWN BY	EAB
APPROVED BY	HAC
CHECKED BY	HAC
DATE	MAY 2014

TITLE

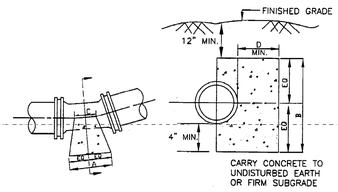
ROUTE 728
12" WATERLINE
STA 36+50 TO
STA 48+90

PROJECT NO. 50062526

C3

SHEET NO. 6 OF 11

CUMBERLAND COUNTY DEPARTMENT OF PUBLIC WORKS

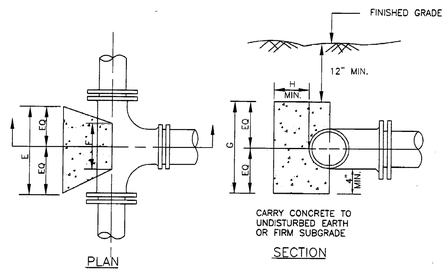


PIPE SIZE	11 1/4° BEND				22 1/2° BEND				45° BEND				90° BEND			
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
4"	6"	1'-0"	4"	6"	8"	1'-0"	6"	7"	1'-1"	1'-0"	6"	6"	1'-10	1'-0"	6"	1'-0"
6"	8"	1'-2"	6"	7"	10"	1'-2"	6"	8"	1'-4"	1'-2"	6"	8"	2'-3"	1'-2"	6"	1'-6"
8"	8"	1'-4"	8"	7"	1'-4"	1'-4"	8"	8"	2'-0"	1'-4"	8"	9"	3'-3"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

NOTES:
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.

DATE JUNE 1998 | REVISIONS | BLOCKING DETAIL HORIZONTAL BENDS | DRWG. NO. BLK-1

CUMBERLAND COUNTY DEPARTMENT OF PUBLIC WORKS

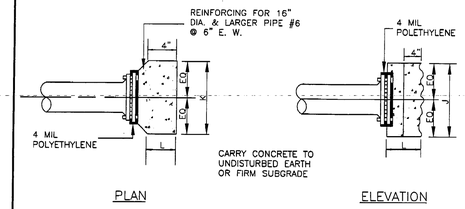


BRANCH SIZE	E	F	G	H
4"	1'-0"	8"	1'-4"	6"
6"	1'-4"	1'-0"	1'-8"	8"
8"	1'-6"	1'-0"	2'-6"	9"
10"	2'-2"	1'-0"	2'-8"	10"
12"	2'-5"	1'-0"	3'-6"	1'-0"
16"	3'-4"	1'-4"	4'-8"	1'-2"
18"	4'-0"	2'-0"	6'-0"	1'-6"
20"	4'-0"	2'-0"	6'-0"	1'-6"
24"	5'-0"	2'-0"	6'-8"	1'-8"

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

DATE JUNE 1998 | REVISIONS | BLOCKING DETAIL TEES | DRWG. NO. BLK-2

CUMBERLAND COUNTY DEPARTMENT OF PUBLIC WORKS



SIZE	J	K	L
4"	1'-0"	1'-0"	8"
6"	1'-6"	1'-6"	8"
8"	2'-6"	1'-6"	10"
10"	2'-8"	2'-2"	1'-0"
12"	3'-6"	2'-6"	1'-2"
16"	4'-8"	3'-4"	1'-4"
18"	6'-0"	4'-0"	1'-6"
20"	6'-0"	4'-0"	1'-6"
24"	6'-8"	5'-0"	1'-8"

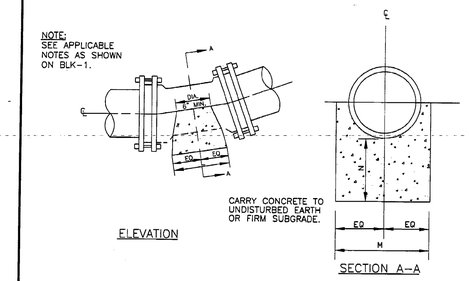
NOTE:
SEE APPLICABLE NOTES AS SHOWN ON BLK-1.

NOTE: BLOCKING BASED ON PRESSURE OF 150 P.S.I. AND ALLOWABLE SOIL BEARING CAPACITY OF 2000 P.S.F. CONCRETE TO BE 3000 P.S.I.

DATE JUNE 1998 | REVISIONS | BLOCKING DETAIL PLUGS AND CAPS | DRWG. NO. BLK-3

CUMBERLAND COUNTY DEPARTMENT OF PUBLIC WORKS

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



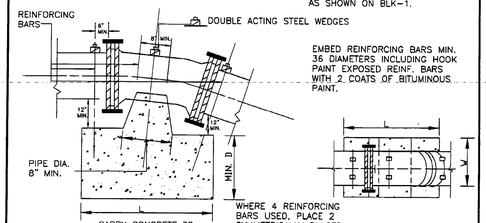
PIPE SIZE	11-1/4° BEND			22-1/2° BEND			45° BEND		
	L	M	N	L	M	N	L	M	N
6"	6"	1'-2"	8"	10"	1'-2"	8"	1'-2"	1'-2"	8"
8"	8"	1'-4"	8"	11"	1'-4"	8"	1'-9"	1'-4"	8"
10"	8"	1'-6"	8"	1'-3"	1'-6"	9"	2'-5"	1'-6"	1'-0"
12"	8"	2'-0"	8"	1'-4"	2'-0"	9"	2'-8"	2'-0"	1'-2"
16"	1'-1"	2'-4"	9"	2'-1"	2'-4"	1'-0"	4'-0"	2'-4"	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'-0"	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 JUNE 1998 | REVISIONS | BLOCKING DETAIL LOWER VERTICAL BENDS | DRWG. NO. BLK-4

CUMBERLAND COUNTY DEPARTMENT OF PUBLIC WORKS

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



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

PIPE SIZE	11-1/4° BEND				22-1/2° 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"	3 # 7	3'-0"	3'-0"	2'-0"	3 # 7
8"	2'-0"	2'-0"	2'-0"	3 # 8	2'-9"	2'-9"	2'-3"	3 # 8	3'-6"	3'-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"	4 # 8
12"	2'-6"	2'-6"	2'-3"	3 # 8	4'-0"	4'-0"	2'-6"	3 # 8	4'-6"	4'-6"	3'-0"	4 # 8
16"	3'-3"	3'-3"	2'-6"	3 # 8	4'-6"	4'-6"	3'-0"	3 # 8	6'-0"	6'-0"	3'-6"	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 # 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 # 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 # 10

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

DATE JUNE 1998 | REVISIONS | BLOCKING DETAIL UPPER VERTICAL BENDS | DRWG. NO. BLK-5

CUMBERLAND COUNTY DEPARTMENT OF PUBLIC WORKS

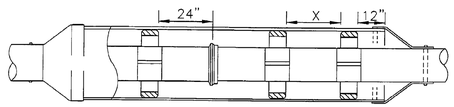
CARRIER PIPE DIA.	CASING PIPE DIAMETER	MINIMUM WALL THICKNESS: CRITERIA WITHIN RAILROAD RIGHT OF WAY: R.C.P. WITH PROTECTIVE COATING	CRITERIA WITHIN RAILROAD RIGHT OF WAY: STEEL WITH PROTECTIVE COATING	CRITERIA WITHIN VDOT RIGHT OF WAY: R.C.P.	CRITERIA WITHIN VDOT RIGHT OF WAY: STEEL
6"	16"	3.0"	0.281"	3.0"	0.250"
8"	20"	3.0"	0.375"	3.0"	0.250"
10"	20"	3.0"	0.375"	3.0"	0.250"
12"	24"	3.5"	0.375"	3.5"	0.250"
15"	24"	3.5"	0.375"	3.5"	0.250"
16"	24"	3.5"	0.375"	3.5"	0.250"
18"	30"	4.0"	0.500"	4.0"	0.375"
20"	30"	4.0"	0.500"	4.0"	0.375"
21"	30"	4.0"	0.500"	4.0"	0.375"
24"	36"	4.5"	0.563"	4.5"	0.375"
30"	42"	5.0"	0.625"	5.0"	0.500"
33"	42"	5.0"	0.625"	5.0"	0.500"
36"	48"	5.5"	0.688"	5.5"	0.500"
42"	54"	6.0"	0.781"	6.0"	0.500"

REINFORCED CONCRETE CASING PIPE SHALL BE ASTM C-76, CLASS III. STEEL CASING PIPE SHALL BE ASTM 1-139, GRADE B.

NOTES:
A. Slopes through bores shall not be based on minimum grade unless it is the only slope available.
B. Increasing thickness of casing must be considered where bore lengths exceed 125'.
C. When using steel casing, a minimum of .3125" thickness is required where ground cover over pipe exceed 15'.
D. Contractor shall make an effort to bore in the appropriate direction based on existing soil conditions. Engineer must show location and size of bore pit; and location and size of permanent and construction easement.
E. Where restraining devices are required for the carrier pipe, the casing pipe shall be increased as necessary.

DATE JUNE 1998 | REVISIONS | CASING PIPE REQUIREMENTS | DRWG. NO. CAS-1

CUMBERLAND COUNTY DEPARTMENT OF PUBLIC WORKS



CASING DETAIL NOTES:

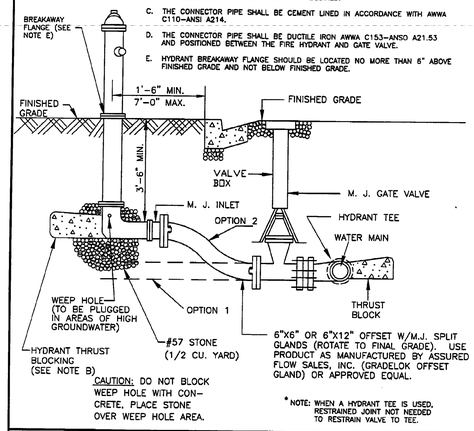
1. CARRIER PIPE SHALL BE CENTERED WITHIN CASING BY AN APPROVED STAINLESS STEEL CASING SPACER.
2. CASING PIPE SHALL BE SEALED BY USE OF WRAPAROUND END SEALS OR WRAP ENDS OF CARRIER PIPE WITH TAR PAPER AND INSTALL 4" THICK BRICK AND MORTAR PLUG IN THE ANNULAR SPACE A 1" WEEP HOLE.
3. THREE CASING SPACERS SHALL BE ATTACHED TO EACH JOINT OF CARRIER PIPE WITH ONE AT THE CENTER AND ONE NOT MORE THAN 24" FROM EACH END.
4. ONE CASING SPACER SHALL BE LOCATED NOT MORE THAN 12" FROM EACH END OF CASING PIPE.
5. VALVES OR OTHER CONTROL/MAINTENANCE EQUIPMENT ATTACHED TO SEWER FORCE MAINS SHALL BE LOCATED A MINIMUM FOUR PIPE LENGTHS FROM THE END OF THE CASING, OR AS APPROVED BY THE COUNTY.
6. STEEL CASING SHALL HAVE A MINIMUM YIELD STRENGTH OF 35,000 PSI AND SUFFICIENT CORROSION PROTECTION.
7. LINES TO BE ENCASED UNDER STATE ROADS/RAILROADS WILL COMPLY WITH COUNTY AND ANY APPLICABLE VDOT/AMERICAN RAILROAD ENDINEERING SPECIFICATIONS WHICHEVER IS MORE STRINGENT.
8. WHEN INSTALLING CARRIER PIPE, CONTRACTOR SHALL PUSH SO THAT PIPE JOINTS ARE ALWAYS BEING COMPRESSED.
9. REINFORCED CONCRETE CASING PIPE SHALL BE ASTM C-76, CLASS III STEEL CASING PIPE SHALL BE ASTM-139, GRADE B.

DATE JUNE 1998 | REVISIONS | CASING DETAIL FOR WATERLINES & SEWER FORCE MAINS | DRWG. NO. CAS-4

CUMBERLAND COUNTY DEPARTMENT OF PUBLIC WORKS

OPTION 1: IF GRADE ADJUSTMENT IS NOT REQUIRED:
A. CONNECTOR PIPE MAY BE APPROVED D.I. OR P.V.C. PIPE.
B. IF ALL JOINTS FROM HYDRANT TEE TO HYDRANT ARE RESTRAINED WITH APPROVED JOINT RESTRAINT DEVICE THRUST BLOCKING BEHIND HYDRANT NOT REQUIRED.

OPTION 2: IF GRADE ADJUSTMENT IS REQUIRED:
A. THE CONNECTOR PIPE SHALL BE OF THE OFFSET DESIGN SO THAT THE FIRE HYDRANT CAN BE ADJUSTED TO ENSURE PLACEMENT AT THE PROPER GRADE. WHEN THE CONNECTOR PIPE IS THE OFFSET DESIGN IT SHALL HAVE AN ANCHORING FEATURE AT BOTH ENDS SO THAT WHEN USED WITH M.J. SPLIT GLANDS A RESTRAINED JOINT IS PROVIDED.
B. IF ALL JOINTS FROM HYDRANT TEE TO HYDRANT ARE RESTRAINED WITH APPROVED JOINT RESTRAINT DEVICE, THRUST BLOCKING BEHIND HYDRANT NOT REQUIRED.
C. THE CONNECTOR PIPE SHALL BE CEMENT LINED IN ACCORDANCE WITH AWWA C110-ANSI A214.
D. THE CONNECTOR PIPE SHALL BE DUCTILE IRON AWWA C153-ANSO A21.53 AND POSITIONED BETWEEN THE FIRE HYDRANT AND GATE VALVE.
E. HYDRANT BREAKAWAY FLANGE SHOULD BE LOCATED NO MORE THAN 6" ABOVE FINISHED GRADE AND NOT BELOW FINISHED GRADE.



DATE JUNE 1998 | REVISIONS | TYPICAL FIRE HYDRANT DETAIL | DRWG. NO. FIR-4

Dewberry

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POORHOUSE ROAD (ROUTE 728) WATERLINE EXTENSION

COUNTY OF CUMBERLAND

CUMBERLAND, VIRGINIA

KEY PLAN

SEAL

95% DOCUMENTS
NOT FOR CONSTRUCTION

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY EAB
APPROVED BY HAC
CHECKED BY HAC
DATE MAY 2014

TITLE

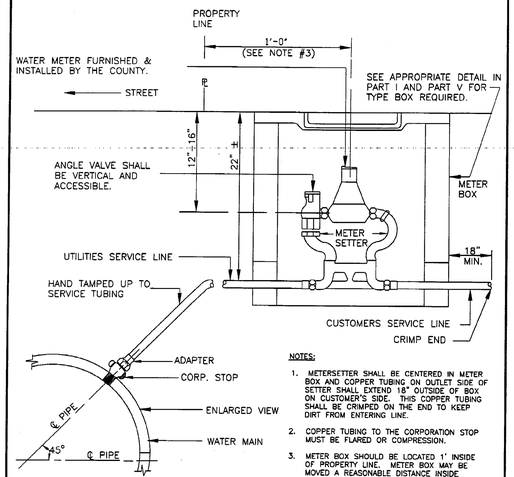
DETAILS

PROJECT NO. 50062526

C4

SHEET NO. 7 OF 11

CUMBERLAND COUNTY DEPARTMENT OF PUBLIC WORKS



NOTES:

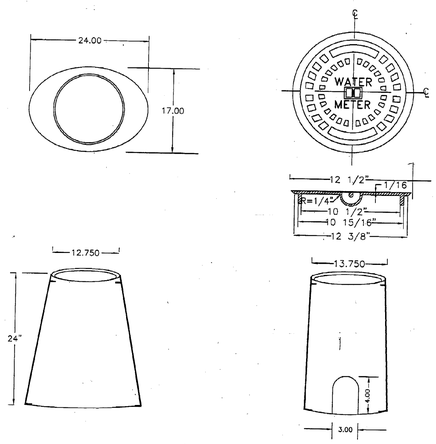
1. METERSETTER SHALL BE CENTERED IN METER BOX AND COPPER TUBING ON OUTLET SIDE OF SETTER SHALL EXTEND 18" OUTSIDE OF BOX ON CUSTOMER'S SIDE. THIS COPPER TUBING SHALL BE CRIMPED ON THE END TO KEEP DIRT FROM ENTERING LINE.
2. COPPER TUBING TO THE CORPORATION STOP MUST BE FLARED OR COMPRESSION.
3. METER BOX SHOULD BE LOCATED 1' INSIDE OF PROPERTY LINE. METER BOX MAY BE MOVED A REASONABLE DISTANCE INSIDE PROPERTY LINE IN ORDER TO INSTALL ON REASONABLY LEVEL GROUND.
4. SERVICES SHALL BE INSTALLED PRIOR TO TESTING.
5. BYPASS SHALL NOT BE ALLOWED FOR 1" RESIDENTIAL AND IRRIGATION METERS.

DATE JUNE 1998	TYPICAL WATER METER CONNECTION FOR 3/4" & 1" SERVICES (5/8" AND 1" METERS)	DRWG. NO.
REVISIONS		MET-1

CUMBERLAND COUNTY DEPARTMENT OF PUBLIC WORKS

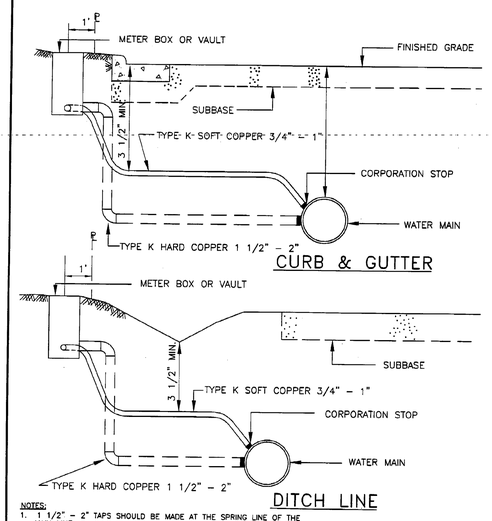
NOTE:

a.) COVER LID MUST BE CAST IRON.



DATE JUNE 1998	PLASTIC METER BOX (5/8" METERS)	DRWG. NO.
REVISIONS		MET-2

CUMBERLAND COUNTY DEPARTMENT OF PUBLIC WORKS

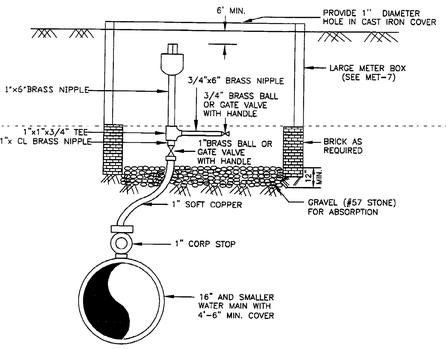


NOTES:

1. 1 1/2" - 2" TAPS SHOULD BE MADE AT THE SPRING LINE OF THE MAIN LINE.
2. SADDLE MUST BE USED IF TAP IS MADE IN PVC OR A/C PIPE.

DATE JUNE 1998	WATER SERVICE INSTALLATION DETAIL	DRWG. NO.
REVISIONS		MET-11

CUMBERLAND COUNTY DEPARTMENT OF PUBLIC WORKS

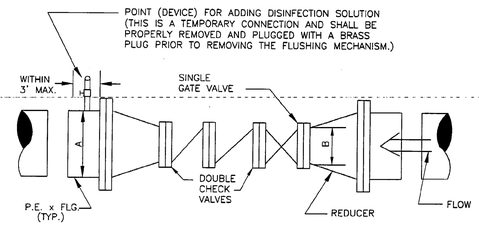


NOTES:

1. IT IS THE RESPONSIBILITY OF THE DESIGN ENGINEER TO DESIGN THE PUBLIC WATER SYSTEM TO MINIMIZE THE NUMBER OF AIR RELEASE VALVES BY ELIMINATING HIGH POINTS WHERE REASONABLY FEASIBLE AND TO PROPERLY SIZE THE AIR RELEASE VALVE TAKING INTO CONSIDERATION ALL THE DESIGN FACTORS, AND KEEPING IN MIND THAT A 1" AIR RELEASE VALVE FOR 16" WATER LINES IS DESIRABLE. ORIFICE SIZE SHALL BE NOTED ON PLANS.
2. ALL COPPER FITTINGS WILL BE FLARE OR COMPRESSION TYPE.
3. SADDLE MUST BE USED IF TAP IS MADE IN PVC.
4. WHERE THE AIR RELEASE VALVE IS REMOTE FROM THE WATER LINE THERE MUST BE CONTINUOUS RISE IN THE COPPER SUPPLY LINE TO THE AIR RELEASE VALVE AND NO TRAP SHALL BE PERMITTED.
5. AIR RELEASE VALVE TO BE PLACED WHERE NOT SUBJECT TO FLOODING.

DATE JUNE 1998	1" AIR RELEASE VALVE	DRWG. NO.
REVISIONS		WAT-1

CUMBERLAND COUNTY DEPARTMENT OF PUBLIC WORKS



A	B
6"	4"
8"	4"
12"	6"
16"	6"
20"	8"
24"	10"
30"	*
36"	*

* TO BE DESIGNED BY CONSULTANT.

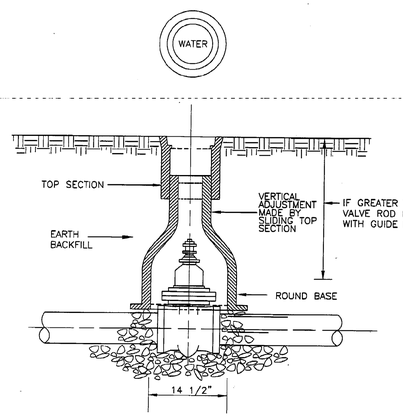
A = MAIN SIZE

B = CHECKVALVE AND GATE VALVE SIZE

NOTE: CONTRACTOR SHALL USE IN ACCORDANCE WITH FLUSHING SCHEDULE; SEE PART III & IV (SECTIONS ENTITLED "DISINFECTION SYSTEM" AND "SUPPLEMENTAL PROCEDURES FOR DISINFECTING, TESTING, AND FLUSHING) AND TABLE 1 ENTITLED "FLUSHING SCHEDULE."

DATE JUNE 1998	PREASSEMBLED FLUSHING MECHANISM	DRWG. NO.
REVISIONS		WAT-6

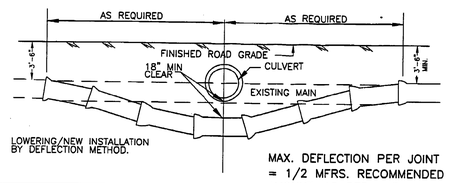
CUMBERLAND COUNTY DEPARTMENT OF PUBLIC WORKS



USE STANDARD DESIGNED VALVE BOX OF THE APPROPRIATE LENGTH (HEIGHT) UTILIZING APPROVED MANUFACTURERS OF VALVE BOX APPURTENANCES.

DATE JUNE 1998	SMALL VALVE BOX	DRWG. NO.
REVISIONS		WAT-7

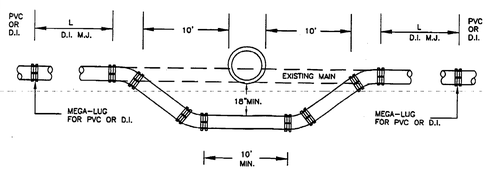
CUMBERLAND COUNTY DEPARTMENT OF PUBLIC WORKS



MAX. DEFLECTION PER JOINT = 1/2 MFRS. RECOMMENDED AMOUNT, AS PER WAT-11.

NOTE: WHERE WATERLINES CROSS UNDER SEWERS OR CULVERTS, THE WATERLINE JOINTS SHALL BE EQUAL DISTANCE (10 FEET) ON EITHER SIDE OF THE CROSSING.

OR



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 MAY BE DELETED WITH RESTRAINED JOINTS.

DATE JUNE 1998	LOWERING WATER MAIN OR NEW INSTALLATION	DRWG. NO.
REVISIONS		WAT-8

CUMBERLAND COUNTY DEPARTMENT OF PUBLIC WORKS

DISCHARGE TABLE FOR HYDRANTS.*+
OUTLET PRESSURE MEASURED BY PITOT GAGE.

FLOWING PRESSURE IN lb/in²	OUTLET DIAMETER IN INCHES											
	2 3/8	2 1/2	2 5/8	2 3/4	2 7/8	3	3 1/8	3 7/8	4	4 3/8	4 1/2	4 5/8
	U.S. GALLONS PER MINUTE											
1	150	170	180	200	220	240	260	400	430	510	540	580
2	210	240	260	290	310	340	370	570	610	720	770	810
3	260	290	320	350	380	420	450	700	740	890	940	990
4	300	340	370	410	440	480	530	810	860	1030	1090	1150
5	340	380	410	450	500	540	590	900	960	1150	1220	1290
6	370	410	450	500	540	590	640	990	1050	1260	1340	1410
7	400	440	490	540	590	640	690	1070	1140	1360	1440	1520
8	430	480	520	570	630	680	740	1140	1220	1450	1540	1620
9	450	500	550	610	670	730	790	1210	1290	1540	1640	1720
10	480	530	580	640	700	760	830	1280	1360	1630	1730	1820
11	500	560	610	670	730	800	870	1340	1430	1710	1810	1910
12	520	580	640	700	770	840	910	1400	1490	1780	1890	1990
13	550	610	670	730	800	870	950	1450	1550	1850	1960	2070
14	570	630	690	760	830	900	980	1510	1610	1920	2040	2150
15	590	650	720	790	860	940	1020	1560	1660	1990	2110	2220
16	610	670	740	810	890	970	1050	1620	1720	2060	2180	2300
17	620	690	760	840	910	1000	1080	1660	1770	2120	2240	2370
18	640	710	780	860	940	1030	1110	1710	1820	2180	2310	2440
19	660	730	810	890	960	1050	1140	1760	1870	2240	2370	2510
20	680	750	830	910	990	1080	1170	1800	1920	2290	2430	2570
22	710	790	870	950	1040	1130	1230	1890	2020	2400	2550	2700
24	740	820	910	1000	1090	1180	1290	1970	2110	2510	2660	2810
26	770	860	940	1040	1130	1230	1340	2050	2190	2620	2770	2930
28	800	890	980	1070	1170	1280	1390	2130	2280	2720	2880	3040
30	830	920	1010	1110	1210	1320	1430	2210	2350	2820	2980	3150
32	860	950	1050	1150	1260	1370	1480	2280	2430	2910	3080	3250
34	880	980	1080	1180	1290	1410	1530	2350	2510	3000	3170	3350
36	910	1010	1110	1220	1330	1450	1580	2420	2580	3080	3260	3440
38	930	1040	1140	1250	1370	1490	1620	2480	2650	3170	3350	3540
40	960	1060	1170	1290	1400	1530	1660	2550	2720	3250	3440	3630

*Computed with coefficient, C = 0.90, to nearest 10 gals. per min.
+From Natl. Bd. of Fire Underwriters.

EQUIPMENT FOR APPROXIMATING HYDRANT FLOWS (per R.C. Dennett, Engr. Natl. Bd. of Fire Underwriters):

The equipment necessary consists of either a standard pitot tube or a hydrant cap tapped to take a pressure gage. If the hydrants used as a discharge point for flushing has two or more outlets a pressure gage on one outlet while another outlet is flowing will give approximately the same results as the use of a pitot tube.

DATE JUNE 1998	DISCHARGE FLOW RATES FOR FLUSHING	DRWG. NO.
REVISIONS		WAT-9

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POORHOUSE ROAD (ROUTE 728)
WATERLINE EXTENSION

COUNTY OF CUMBERLAND

CUMBERLAND, VIRGINIA

KEY PLAN

SEAL

95% DOCUMENTS
NOT FOR CONSTRUCTION

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY	EAB
APPROVED BY	HAC
CHECKED BY	HAC
DATE	MAY 2014

TITLE

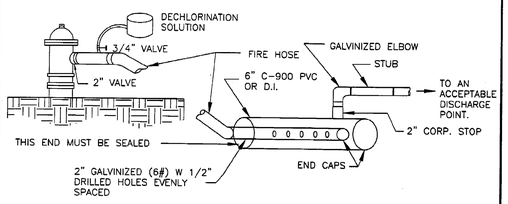
DETAILS

PROJECT NO. 50062526

C5

SHEET NO. 8 OF 11

CUMBERLAND COUNTY DEPARTMENT OF PUBLIC WORKS



NOTE:

THIS DETAIL IS A RECOMMENDED DESIGN CONCEPT. ALTERNATE METHOD(S) MAY BE SUBMITTED TO THE UTILITIES DEPARTMENT'S CONSTRUCTION SECTION FOR APPROVAL PRIOR TO SCHEDULED FLUSHING.

DATE JUNE 1998	NEUTRALIZATION STATION	DRWG. NO. WAT-10
REVISIONS		

CUMBERLAND COUNTY DEPARTMENT OF PUBLIC WORKS

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"	516'
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"	516'
24"	1° 30'	5.5"	688'

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

$$R = \frac{90'}{\frac{1}{2}\ \text{Max. Jt. Deflection}} \quad \text{Manufacturer's X} \quad \frac{18'' \times 2}{\pi}$$

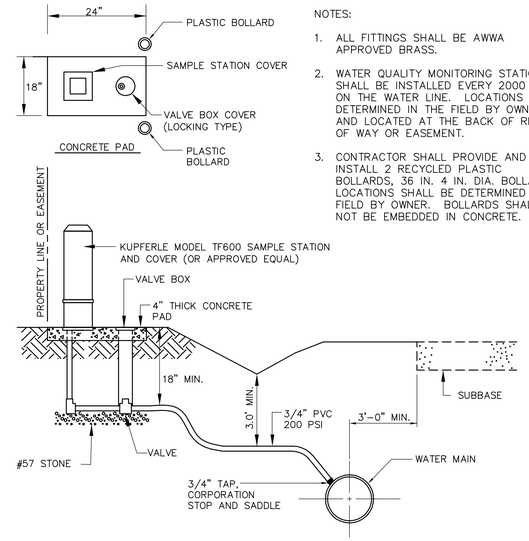
Deflection = tan joint deflection X 18' X 12

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.

DATE JUNE 1998	ALLOWABLE DEFLECTIONS FOR WATER PIPE	DRWG. NO. WAT-11
REVISIONS		

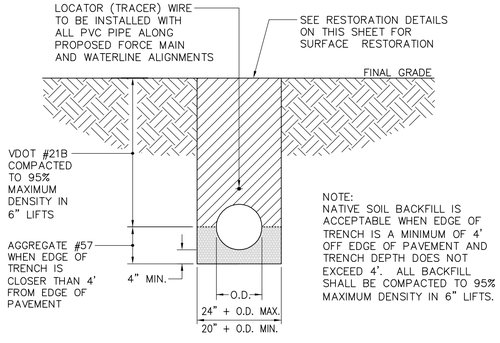


NOTES:

1. ALL FITTINGS SHALL BE AWWA APPROVED BRASS.
2. WATER QUALITY MONITORING STATIONS SHALL BE INSTALLED EVERY 2000 FEET ON THE WATER LINE. LOCATIONS TO BE DETERMINED IN THE FIELD BY OWNER AND LOCATED AT THE BACK OF RIGHT OF WAY OR EASEMENT.
3. CONTRACTOR SHALL PROVIDE AND INSTALL 2 RECYCLED PLASTIC BOLLARDS, 36 IN. 4 IN. DIA. BOLLARD LOCATIONS SHALL BE DETERMINED IN FIELD BY OWNER. BOLLARDS SHALL NOT BE EMBEDDED IN CONCRETE.

WATER QUALITY MONITORING STATION

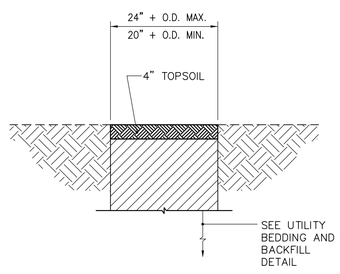
NOT TO SCALE



NOTE:
NATIVE SOIL BACKFILL IS ACCEPTABLE WHEN EDGE OF TRENCH IS A MINIMUM OF 4' OFF EDGE OF PAVEMENT AND TRENCH DEPTH DOES NOT EXCEED 4'. ALL BACKFILL SHALL BE COMPACTED TO 95% MAXIMUM DENSITY IN 6" LIFTS.

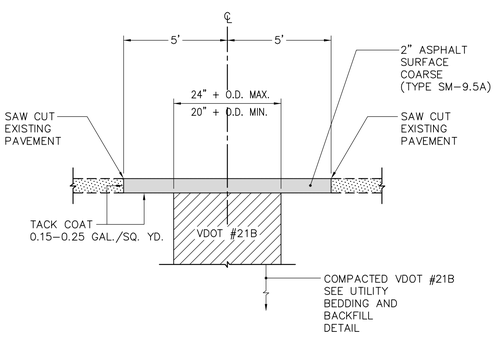
UTILITY BEDDING AND BACKFILL DETAIL

NOT TO SCALE



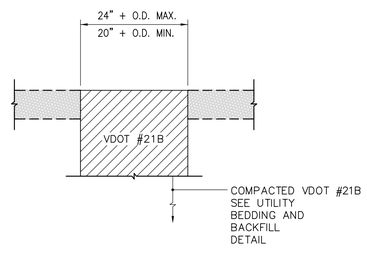
GRASS SHOULDER RESTORATION

NOT TO SCALE



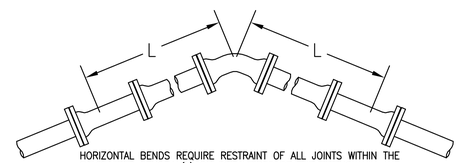
PAVED DRIVEWAY RESTORATION

NOT TO SCALE



GRAVEL DRIVEWAY/ SHOULDER RESTORATION

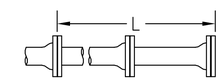
NOT TO SCALE



HORIZONTAL BENDS REQUIRE RESTRAINT OF ALL JOINTS WITHIN THE CALCULATED LENGTH (L) ON BOTH SIDES OF THE FITTING.

NOM. SIZE	BEND ANGLE	RESTRAINT LENGTH
12"	11 1/4°	10'
12"	22 1/2°	20'
12"	45°	42'
12"	90°	100'

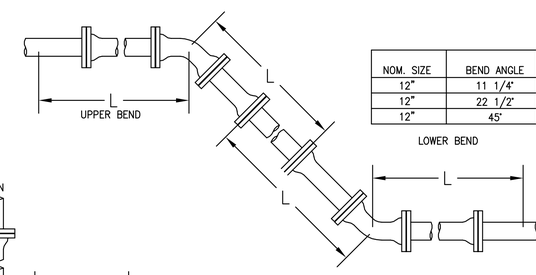
HORIZONTAL BENDS



DEAD ENDS REQUIRE RESTRAINT OF ALL JOINTS WITHIN THE CALCULATED LENGTH (L) EXTENDING FROM THE CAP.

NOM. SIZE	LENGTH TO BE RESTRAINED
12"	227'

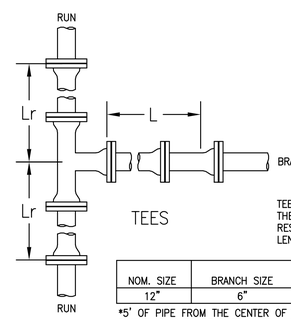
DEAD ENDS & INLINE GATE VALVES



NOM. SIZE	BEND ANGLE	UPPER BEND RESTRAINT LENGTH	LOWER BEND RESTRAINT LENGTH
12"	11 1/4°	23'	7'
12"	22 1/2°	45'	13'
12"	45°	94'	26'

VERTICAL OFFSETS REQUIRE RESTRAINT OF ALL JOINTS WITHIN THE CALCULATED LENGTHS (L) ON BOTH SIDES OF THE UPPER AND LOWER FITTINGS. WHEN RESTRAINED LENGTHS OVERLAP ON THE DIAGONAL PIPE, ALL JOINTS BETWEEN THE FITTINGS SHOULD BE RESTRAINED.

VERTICAL OFFSETS



TEES

TEE FITTINGS REQUIRE THE RESTRAINT OF ALL JOINTS WITHIN THE CALCULATED LENGTH (L) ALONG THE BRANCH PIPE. THE RESTRAINT DESIGN ALSO REQUIRES THAT A SECTION OF A LENGTH OF PIPE (Lr) ALONG THE RUN TO BE FREE OF JOINTS.

NOM. SIZE	BRANCH SIZE	LENGTH TO BE RESTRAINED
12"	6"	72'

*5' OF PIPE FROM THE CENTER OF THE TEE ALONG THE RUN THAT IS TO BE RESTRAINED MUST BE SOLID PIPE WITHOUT JOINTS, FITTINGS, ETC.

NOM. SIZE	BRANCH SIZE	LENGTH TO BE RESTRAINED
12"	6"	22'

*10' OF PIPE FROM THE CENTER OF THE TEE ALONG THE RUN THAT IS TO BE RESTRAINED MUST BE SOLID PIPE WITHOUT JOINTS, FITTINGS, ETC.

RESTRAINED JOINT TABLES

NOT TO SCALE

Dewberry

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POORHOUSE ROAD (ROUTE 728) WATERLINE EXTENSION

COUNTY OF CUMBERLAND

CUMBERLAND, VIRGINIA

KEY PLAN

SEAL

95% DOCUMENTS
NOT FOR CONSTRUCTION

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY	EAB
APPROVED BY	HAC
CHECKED BY	HAC
DATE	MAY 2014

TITLE

DETAILS

PROJECT NO. 50062526

C6

SHEET NO. 9 OF 11

GENERAL CONSTRUCTION NOTES FOR VDOT

1. ALL WORK SHOWN HEREON SHALL BE IN STRICT ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT) AND COUNTY ORDINANCES.
2. IT IS THE INTENT OF THESE DRAWINGS TO SHOW ALL NECESSARY WORK. ANY ITEM OF WORK NOT SPECIFICALLY SHOWN, BUT NECESSARY TO ELIGIBILITY FOR ACCEPTANCE IS HEREBY IMPLIED.
3. A VDOT PERMIT MUST BE OBTAINED PRIOR TO STARTING CONSTRUCTION WITHIN ANY RIGHT-OF-WAY OWNED AND/OR MAINTAINED BY VDOT.
4. THE CONTRACTOR/OWNER MUST SPECIFY IN WRITING TO VDOT PRIOR TO CONSTRUCTION, THE TYPE OF SUBBASE, BASE AND SURFACE PAVEMENT TO BE UTILIZED ON EACH STREET FOR EACH TRAFFIC GROUP.
5. ALL NECESSARY TESTING (BACKFILL, DENSITIES, ETC.) MUST BE PERFORMED BY A LICENSED TESTING FIRM AND RESULTS SHALL BE PROVIDED TO VDOT BEFORE THE RELEASE OF ANY/ALL BOND(S) OCCURS.
6. ALL CULVERT PIPES SHALL BE OF A TYPE APPROVED BY VDOT AND THE COUNTY.
7. ALL ENTRANCE PIPES FOR DRIVEWAYS SHALL BE A MINIMUM OF 12 INCHES IN DIAMETER, AND 30 FEET IN LENGTH (CONCRETE CULVERTS MAY BE 28 FEET IN LENGTH), UNLESS OTHERWISE APPROVED BY VDOT. SEE APPROVED PLANS FOR THE PROPER CULVERT SIZES.
8. CONTRACTOR MUST VERIFY ALL DIMENSIONS AND ELEVATIONS IN THE FIELD BEFORE STARTING CONSTRUCTION AND NOTIFY THE DESIGN ENGINEER OF ANY DISCREPANCIES.
9. THE CONTRACTOR SHALL ERECT STREET SIGNS AND TRAFFIC CONTROL SIGNS AS NEEDED FOR TRAFFIC CONTROL DURING CONSTRUCTION.
10. THE CONTRACTOR SHALL DO SUCH OVERLOT GRADING AS NECESSARY TO PRECLUDE THE PONDING OF WATER ADJACENT TO THE ROADWAY.
11. IF RUNNING WATER IS PRESENT IN ANY OUTLET CHANNEL DURING CONSTRUCTION WHERE DITCH PROTECTION IS REQUIRED, THE BOTTOM OF THE CHANNEL SHALL BE LINED WITH RIP-RAP STONE WITH EC-1 PLACEMENT. FURTHER, EC-2 OR EC-3 MUST HAVE A MINIMUM WIDTH OF 4 FEET IN FILL SECTIONS, AND 5 FEET IN CUT SECTIONS.
12. THE CONTRACTOR SHALL BE RESPONSIBLE TO SEE THAT ALL EROSION AND SEDIMENT CONTROL STANDARDS ARE MET, AND THE CONTRACTOR MUST SEED AND MULCH ALL DISTURBED AREAS ALONG WITH ALL GRADED AREAS WITHIN THE RIGHT-OF-WAY IN ACCORDANCE WITH VDOT STANDARDS AND SPECIFICATIONS.
13. FINAL LOCATION OF MANHOLES, VALVES, FIRE HYDRANTS, AND OTHER APPURTENANCES SHALL NOT CONFLICT WITH OR OBSTRUCT ROADWAY DRAINAGE. CONTRACTOR SHALL ADJUST MANHOLES AND/OR DITCH ALIGNMENT TO ENSURE PROPER ROADSIDE DRAINAGE, COMPATIBLE WITH EXISTING FIELD CONDITIONS.
14. ALL WATER, SANITARY SEWER, AND STORM SEWER TRENCHES SHALL BE COMPACTED TO 95% DENSITY IN 6 INCH LAYERS. VDOT REQUIRES COMPACTION TESTS BY A LICENSED TESTING FIRM.
15. VDOT WILL REQUIRE DENSITY TESTS FROM A CERTIFIED ENGINEERING FIRM FOR ALL CULVERT INSTALLATIONS AND/OR EXTENSIONS WITHIN THE RIGHT-OF-WAY.
16. VIDEO INSPECTION MAY BE REQUIRED ON ALL STORM SEWER SYSTEMS PRIOR TO FINAL CONSTRUCTION APPROVAL.
17. THE CONTRACTOR MUST CONTACT VDOT PERMIT AND SUBDIVISION SPECIALIST AT (434) 983-2218 AND THE LYNCHBURG TRAFFIC ENGINEERING SECTION AT (434) 947-6559 PRIOR TO ANY CONSTRUCTION WITHIN 1000 FEET OF A SIGNALIZED INTERSECTION.
18. WHENEVER TYING INTO AN EXISTING ROAD, A ONE-FOOT MILLED JOINT AND OVERLAY OF SURFACE MATERIAL IS REQUIRED.
19. A PAVEMENT LEVELING COURSE MAY BE REQUIRED TO MEET THE INTENDED CROSS-SLOPE AND TYPICAL SECTION.
20. CONTRACTOR SHALL PROVIDE A TRAFFIC CONTROL PLAN (TCP) FOR WORK ALONG THE EDGE OF PAVEMENT BEFORE COMMENCEMENT OF CONSTRUCTION ACTIVITIES. THE TCP SHALL BE IN ACCORDANCE WITH THE 2011 VIRGINIA WORK AREA PROTECTION MANUAL.
21. ALL OPEN CUT PAVEMENT RESTORATION MUST COMPLY WITH THE VDOT LAND USE PERMIT REGULATIONS GUIDANCE MANUAL, APPENDIX 17 FOR OPEN CUT PAVEMENT REPLACEMENT, UNLESS OTHERWISE NOTED IN PLAN DETAILS.
22. ALL SERVICE LATERALS SHALL BE PUSHED, BORED OR JACKED BENEATH STATE ROADWAYS.
23. ALL VALVE BOXES ARE TO BE LOCATED OUTSIDE OF THE PAVEMENT AND PREFERABLE BEHIND THE ROADSIDE DRAINAGE DITCHES.
24. FIRE HYDRANTS ARE TO BE LOCATED BEYOND THE CLEAR ZONE AND AT THE RIGHT OF WAY LINE WHERE PRACTICAL.
25. EXISTING LINES TO BE ABANDONED SHOULD EITHER BE REMOVED OR PLUGGED IN ACCORDANCE WITH VDOT STANDARDS AND REGULATIONS.
26. CHANGES IN THE PLANS IN A MANNER THAT EFFECTS THE LOCATION, INSTALLATION OR MATERIALS DURING CONSTRUCTION WITHIN STATE RIGHT OF WAY SHALL FIRST BE SUBMITTED IN WRITING TO VDOT'S REPRESENTATIVE FOR APPROVAL.
27. ALL WORK WITHIN THE STATE RIGHT OF WAY SHALL COMPLY WITH THE 2011 VDOT WORK AREA PROTECTION MANUAL.
28. VDOT SIGNS THAT ARE REMOVED OR TAKEN DOWN FOR CONSTRUCTION PURPOSES MUST BE REPLACED BY THE END OF EACH WORKDAY. THE SAME RULE SHALL APPLY TO MAILBOXES, PAPER BOXES AND BUSINESS SIGNS. ALL VDOT REGULATORY AND ADVISORY SIGNS MUST BE IN PLACE ANY TIME THAT TRAFFIC IS NOT BEING CONTROLLED BY THE CONTRACTOR'S WORK FORCE.
29. NO DAMAGED PIPE SHALL BE REINSTALLED. ANY DAMAGED PIPE SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
30. ALL DRIVEWAYS AND SHOULDERS ARE TO BE REPAIRED/ REPLACED ACCORDING TO THE TYPICAL SECTIONS SHOWN ON THE DETAIL SHEETS.
31. ALL MATERIALS AND WORK PERFORMED WITHIN EXISTING VDOT RIGHT-OF-WAY SHALL BE IN ACCORDANCE WITH THE VIRGINIA DEPARTMENT OF TRANSPORTATION REQUIREMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING PERMITS AND PERMISSIONS BEFORE WORK IS INITIATED, AND A COPY OF SUCH PERMITS OR PERMISSIONS SHALL BE FILED WITH THE COUNTY INSPECTOR BEFORE ANY WORK IN INITIATED. THE CONTRACTOR SHALL ALSO FURNISH A RELEASE FROM VDOT BEFORE FINAL ACCEPTANCE OF THE WORK BY CUMBERLAND COUNTY.
32. ALL WORK SHALL BE CONFINED WITHIN THE VDOT RIGHT-OF-WAY, COUNTY TEMPORARY OR PERMANENT EASEMENT, AND/OR LIMITS OF DISTURBANCE AS DEFINED ON THE DRAWINGS. LIMITS OF CLEARING SHALL BE LIMITED TO THE VDOT RIGHT-OF-WAY, COUNTY TEMPORARY OR PERMANENT EASEMENTS, AND/OR LIMITS OF DISTURBANCE AS DEFINED ON THE DRAWINGS.
33. ALL DAMAGED PAVEMENT MARKINGS, "PLOWABLE" MARKERS, AND DAMAGED VDOT SIGNS SHALL BE REPLACED IN A MANNER ACCEPTABLE TO VDOT.

WORK AREA PROTECTION PLAN

1. CONTRACTOR SHALL FOLLOW VDOT TYPICAL TRAFFIC CONTROL PLAN TTC-23.0 FOR LANE CLOSURE ON A TWO-LANE ROADWAY USING FLAGGERS FOR INSTALLATION OF WATERLINE ALONG THE SHOULDER AND/OR DITCHLINE OF ROUTE 728.
2. CONTRACTOR SHALL FOLLOW VDOT TYPICAL TRAFFIC CONTROL PLAN TTC-28.0 FOR LANE CLOSURE OPERATION IN AN INTERSECTION USING FLAGGERS FOR INSTALLATION OF WATERLINE ALONG THE SHOULDER AND/OR DITCHLINE AT THE INTERSECTION OF ROUTE 728 AND ROUTE 60.
3. NO SPEED LIMIT IS POSTED FOR ROUTE 728. CONTRACTOR SHALL ASSUME 55 MPH.
4. CONTRACTOR SHALL MAINTAIN ONE LANE OF TRAFFIC AT ALL TIMES.
5. CONTRACTOR SHALL COORDINATE ACCESS TO DRIVEWAYS FOR LOCAL TRAFFIC.
6. TWO-WAY TRAFFIC SHALL BE RESTORED AT THE END OF EACH DAY'S WORK.

Typical Traffic Control
Lane Closure on a Two-Lane Roadway Using Flaggers
(Figure TTC-23.0)
NOTES

Guidance:

1. *Sign spacing distance should be 350'-500' where the posted speed limit is 45 mph or less, and 500'-800' where the posted speed limit is greater than 45 mph.*
2. *Care should be exercised when establishing the limits of the work zone to insure maximum possible sight distance in advance of the flagger station and transition, based on the posted speed limit and at least equal to or greater than the values in Table 6H-3. Generally speaking, motorists should have a clear line of sight from the graphic flagger symbol sign to the flagger.*

Option:

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

Standard:

4. **Flagging stations shall be located far enough in advance of the work space to permit approaching traffic to reduce speed and/or stop before passing the work space and allow sufficient distance for departing traffic in the left lane to return to the right lane before reaching opposing traffic (see Table 6H-3 on Page 6H-5).**
5. **All flaggers shall be state certified and have their certification card in their possession when performing flagging duties (see Section 6E.01, Qualifications for Flaggers).**
6. **Cone spacing shall be at the following:**

Location	Posted Speed Limit (mph)	
	0 – 35	36 +
Transition Spacing	20'	40'
Traveiway Spacing	40'	80'

7. **A shadow vehicle with at least one high intensity amber rotating, oscillating, or strobe light shall be parked 80'-120' in advance of the first work crew.**

Option:

8. A supplemental flagger may be required in this area to give advance warning of the operation ahead by slowing approaching traffic prior to reaching the flagger station or queued traffic.

Guidance:

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

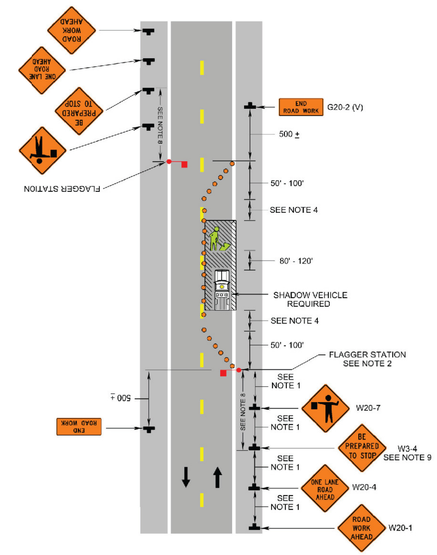
Standard:

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

Option:

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

Lane Closure on a Two-Lane Roadway Using Flaggers
(Figure TTC-23.0)



Typical Traffic Control
Lane Closure Operation in an Intersection
(Figure TTC-28.0)
NOTES

Guidance:

1. *The control of traffic through the intersection in order of preference should be:*
   a. *Obtain the services of law enforcement personnel.*
   b. *Detour the effective routes to other roads and streets as approved and directed by the Regional Traffic Engineer.*
   c. *Place a state certified flagger on each leg of the intersection controlling a single lane of traffic.*

   Appropriate signing as shown should be used for law enforcement and flagging operations. For detour signs see Figure TTC-34.
2. *Sign spacing distance should be 350'-500' where the posted speed limit is 45 mph or less, 500'-800' where the posted speed limit is greater than 45 mph.*

Standard:

3. **Channelizing device spacing shall be on 20' centers or less.**

Guidance:

4. *If room permits, a shadow vehicle with at least one rotating amber light or high intensity amber strobe light should be parked 80'-120' in advance of the first work crew.*

Standard:

5. **If the posted speed limit is 45 mph or greater, the shadow vehicle shall have a truck-mounted attenuator.**
6. **For emergency situations (any non-planned operation) of 30 minutes or less duration, two rotating amber lights or high intensity amber strobe lights mounted on the vehicle and visible for 360° shall be required in addition to the channelizing devices shown around the vehicle. Also, vehicle hazard warning signals or amber oscillating lights shall be used.**

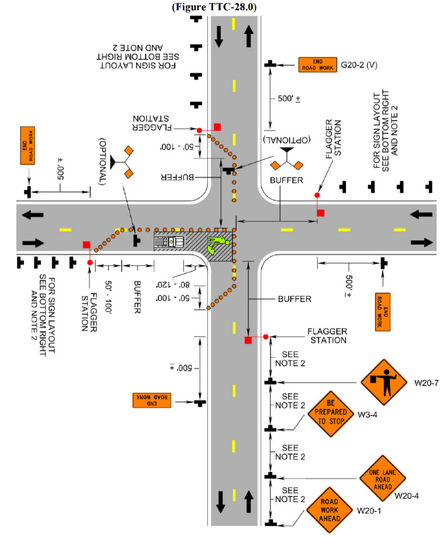
Guidance:

7. *If the work space extends across a crosswalk, the crosswalk should be closed using the information and devices shown in Figure TTC-36.*

Support:

8. Turns can be prohibited as required by vehicular traffic conditions. Unless the streets are wide, it might be physically impossible to make certain turns, especially for large vehicles.

Lane Closure Operation in an Intersection
(Figure TTC-28.0)



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POORHOUSE ROAD (ROUTE 728)
WATERLINE EXTENSION

COUNTY OF CUMBERLAND

CUMBERLAND, VIRGINIA

KEY PLAN

SEAL

95% DOCUMENTS
NOT FOR CONSTRUCTION

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY	EAB
APPROVED BY	HAC
CHECKED BY	HAC
DATE	MAY 2014

TITLE

VDOT NOTES AND DETAILS

PROJECT NO. 50062526

C7

SHEET NO. 10 OF 11

SEED		
APPLICATION DATES	SPECIES	APPLICATION RATES
SEPT. 1 – FEB. 15	50/50 MIX OF ANNUAL RYEGRASS (LOLIUM MULTI–FLORUM) & CEREAL (WINTER) RYE (SECALE CEREALE)	50–100 (lbs./acre)
FEB. 16 – APR. 30	ANNUAL RYEGRASS (LOLIUM MULTI–FLORUM)	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:
1.) A SOIL TEST IS NECESSARY TO DETERMINE THE ACTUAL AMOUNT OF LIME REQUIRED TO ADJUST THE SOIL pH OF SITE.
2.) INCORPORATE THE LIME AND FERTILIZER INTO THE TOP 4–6 INCHES OF THE SOIL BY DISKING OR BY OTHER MEANS.
3.) WHEN APPLYING SLOWLY AVAILABLE NITROGEN USE RATES AVAILABLE IN EROSION & SEDIMENT CONTROL TECHNICAL BULLETIN #4, 2003 NUTRIENT MANAGEMENT FOR DEVELOPMENT SITES AT:
http://ww.dcr.state.va.us/sw/e&s.htm#pubs

(TS) TEMPORARY SEEDING SPECIFICATIONS QUICK REFERENCE FOR ALL REGIONS

SOURCE: VA. DSWC — TABLE 3.31–B (REVISED JUNE 2003)

SEED[1]		
LAND USE	SPECIES	APPLICATION PER ACRE
MINIMUM CARE LAWN (COMMERCIAL OR RESIDENTIAL)	TALL FESCUE[1] PERENNIAL RYEGRASS KENTUCKY BLUEGRASS[1]	95–100% 0–5% 0–5% TOTAL: 175–200 LBS.
HIGH–MAINTENANCE LAWN	TALL FESCUE[1]	TOTAL: 200–250 LBS.
GENERAL SLOPE (3:1 OR LESS)	TALL FESCUE RED TOP GRASS OR CREEPING RED FESCUE[2] SEASONAL NURSE CROP	128 LBS. 2 LBS. 20 LBS. TOTAL: 150 LBS.
LOW MAINTENANCE SLOPE (STEEPER THAN 3:1)	TALL FESCUE RED TOP GRASS OR CREEPING RED FESCUE[2] SEASONAL NURSE CROP CROWNVETCH[3]	128 LBS. 2 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://sudan.cses.vt.edu/html/Turf/turf/publications/publications2.html
2–USE SEASONAL NURSE CROP IN ACCORDANCE WITH SEEDING DATES AS STATED BELOW:
FEBRUARY 16 – APRIL 30.....ANNUAL RYE
MAY 1 – AUGUST 15.....FOXTAIL MILLET
AUGUST 16 – OCTOBER 31.....ANNUAL RYE
NOVEMBER 1 – FEBRUARY 15.....WINTER RYE
3–SUBSTITUTE SERICEA LESPEDEZA FOR CROWNVETCH EAST OF FARMVILLE, VA (MAY THROUGH SEPTEMBER USE HULLED SEED, ALL OTHER PERIODS, USE UNHULLED SERICEA). IF FLATPEA 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 10–10–10 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:
1.) A SOIL TEST IS NECESSARY TO DETERMINE THE ACTUAL AMOUNT OF LIME REQUIRED TO ADJUST THE SOIL pH OF SITE.
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3.) WHEN APPLYING SLOWLY AVAILABLE NITROGEN USE RATES AVAILABLE IN EROSION & SEDIMENT CONTROL TECHNICAL BULLETIN #4, 2003 NUTRIENT MANAGEMENT FOR DEVELOPMENT SITES AT:
http://ww.dcr.state.va.us/sw/e&s.htm#pubs

(PS) PERMANENT SEEDING SPECIFICATIONS FOR PIEDMONT AREA

SOURCE: VA. DSWC — TABLE 3.32–D (REVISED JUNE 2003)

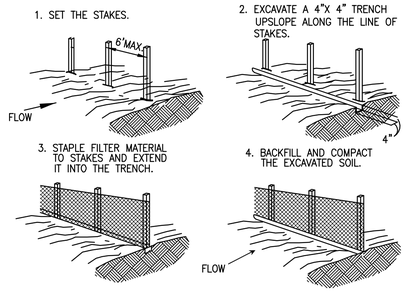
MULCHES	RATES		NOTES
	PER ACRE	PER 1,000 sq. ft.	
STRAW OR HAY	1½–2 TONS (MINIMUM 2 TONS FOR WINTER COVER)	70–90 lbs.	FREE FROM WEEDS AND COARSE MATTER. MUST BE ANCHORED. SPREAD WITH MULCH BLOWER OR BY HAND
FIBER MULCH	MINIMUM 1,500 lbs.	35 lbs.	DO NOT USE AS MULCH FOR WINTER COVER OR DURING HOT, DRY PERIODS.* APPLY AS SLURRY.
CORN STALKS	4–6 TONS	185–275 lbs.	CUT OR SHREDDED IN 4–6" LENGTHS. AIR DRIED. DO NOT USE IN FINE TURF AREAS. APPLY WITH MULCH BLOWER OR BY HAND.
WOOD CHIPS	4–6 TONS	185–275 lbs.	FREE OF COARSE MATTER. AIR–DRIED. TREAT WITH 12 lbs. NITROGEN PER TON. DO NOT USE IN FINE TURF AREAS. APPLY WITH MULCH BLOWER, CHIP HANDLER, OR BY HAND.
BARK CHIPS OR SHREDDED BARK	50–70 cu. yds.	1–2 cu. yds.	FREE OF COARSE MATTER. AIR–DRIED. TREAT WITH 12 lbs. NITROGEN PER TON. DO NOT USE IN FINE TURF AREAS. APPLY WITH MULCH BLOWER, CHIP HANDLER, OR BY HAND.

* WHEN FIBER MULCH IS THE ONLY AVAILABLE MULCH DURING PERIODS WHEN STRAW SHOULD BE USED, APPLY AT A MINIMUM RATE OF 2,000 lbs./ac. OR 45 lbs./1,000 sq. ft.

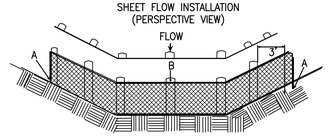
(MU) ORGANIC MULCH MATERIALS AND APPLICATION RATES

SOURCE: VA. DSWC — TABLE 3.35–A

CONSTRUCTION OF A SILT FENCE (WITHOUT WIRE SUPPORT)



SHEET FLOW INSTALLATION (PERSPECTIVE VIEW)

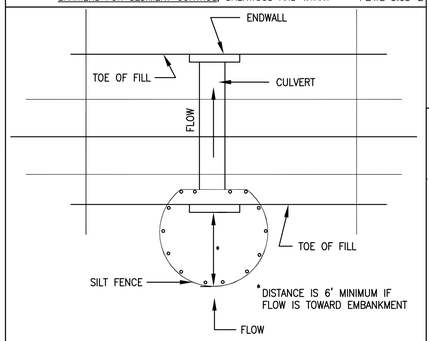


POINTS A SHOULD BE HIGHER THAN POINT B.
DRAINAGEWAY INSTALLATION (FRONT ELEVATION)

(SF) SILT FENCE

NTS

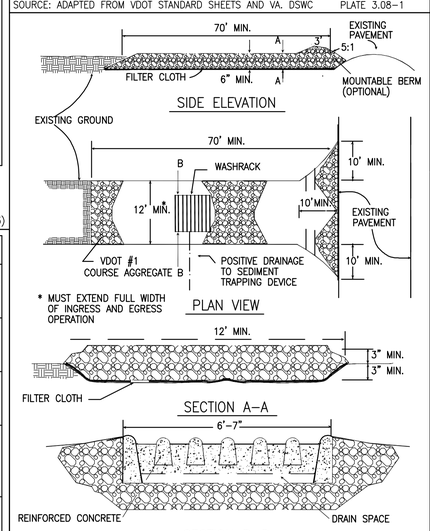
SOURCE: ADAPTED FROM INSTALLATION OF STRAW AND FABRIC FILTER BARRIERS FOR SEDIMENT CONTROL, SHERWOOD AND WYANT — PLATE 3.05–2



(CIP) SILT FENCE CULVERT INLET PROTECTION

NTS

SOURCE: ADAPTED FROM VDOT STANDARD SHEETS AND VA. DSWC — PLATE 3.08–1

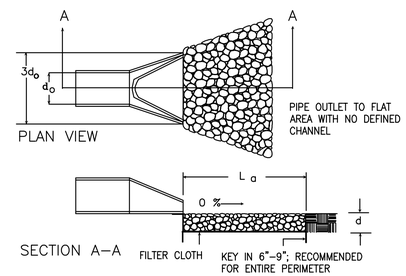


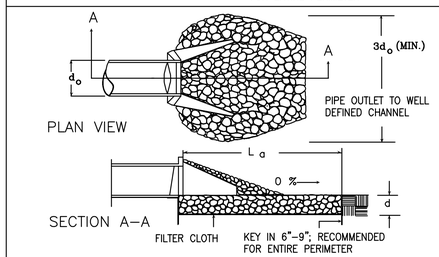
(CE) STONE CONSTRUCTION ENTRANCE

NTS

SOURCE: ADAPTED FROM 1983 MARYLAND STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL, AND VA. DSWC — PLATE 3.02–1

PIPE OUTLET CONDITIONS



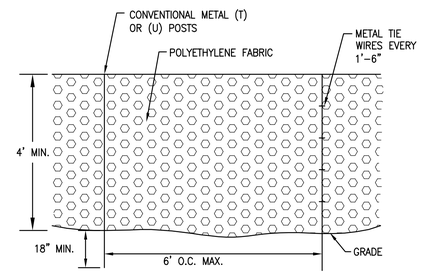


NOTES:
1. APRON LINING MAY BE RIPRAP, GROUTED RIPRAP, GABION BASKET, OR CONCRETE.
2. La IS THE LENGTH OF THE RIPRAP APRON AS CALCULATED USING PLATES 3.18–3 AND 3.18–4.
3. d = 1.5 TIMES THE MAXIMUM STONE DIAMETER, BUT NOT LESS THAN 6 INCHES.

(OP) OUTLET PROTECTION

NTS

SOURCE: VA. DSWC — PLATE 3.18–1



CONSTRUCTION SAFETY FENCE

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APPROVED BY	HAC
CHECKED BY	HAC
DATE	MAY 2014

TITLE

EROSION & SEDIMENT CONTROL DETAILS

PROJECT NO. 50062526

C8

SHEET NO. 11 OF 11