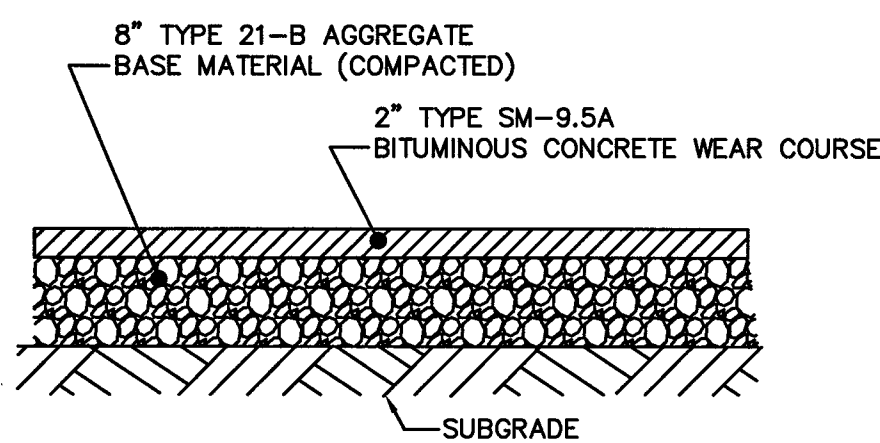


BMP INFORMATION		
	PROPOSED BMP #1	EXISTING BMP #2
BMP TYPE	NUTRIENT BANK CREDIT	EXTENDED DETENTION POND (2X WQV)
NAME OF AUTHORIZED NUTRIENT BANK	"HAWKINS FOREST" NUTRIENT BANK	N/A
REQUIRED PHOSPHORUS TO BE REMOVED (LB/YR)	3.82	N/A
AMOUNT OF PHOSPHORUS CREDIT PURCHASED (LB/YR)	3.82	N/A
TECHNICAL REQUIREMENTS MET (PART IIB OR IC)	PART IIB	PART IIB
TOTAL AREA TREATED (AC)	N/A	132.87
IMPERVIOUS AREA TREATED BY BMP (AC)	N/A	24.91
MANAGED TURF AREA TREATED BY BMP (AC)	N/A	107.96
OPEN SPACE / FOREST AREA TREATED BY BMP (AC)	N/A	N/A
SURFACE AREA OF BMP (AC)	N/A	1.11
STORAGE VOLUME OF BMP (AC-FT)	N/A	10.17
QUALITY, QUANTITY, OR BOTH?	QUALITY	QUANTITY
TMDL ADDRESSED? (PHOSPHORUS, BACTERIA, SEDIMENT, ETC)	PHOSPHORUS	N/A
NAME OF RECEIVING WATER (PROJECT SITE)	ROANOKE RIVER	ROANOKE RIVER
HYDROLOGIC UNIT CODE FOR PROJECT SITE (ALPHANUMERIC CODE RU14, ETC)	RU09	RU09
MAXIMUM AVERAGE DEPTH (FT)	N/A	18.07
LATITUDE (DECIMAL DEGREES XX.XXXX)	N/A	37.2768
LONGITUDE (DECIMAL DEGREES -XX.XXXX)	N/A	-80.0886

### TYPICAL PAVEMENT SECTION



NOTE:  
FOR AN EXCAVATED SUBGRADE, THE SUBGRADE AREA SHALL BE SCARIFIED TO A DEPTH OF 6 INCHES FOR A DISTANCE OF 2 FEET BEYOND THE PROPOSED EDGES OF THE PAVEMENT ON EACH SIDE. SUBGRADE MATERIAL SHALL BE COMPACTED AT OPTIMUM MOISTURE (±20%) TO THE REQUIREMENTS SET FORTH BY SEC. 305.03 OF THE VDOT ROAD AND BRIDGE SPECIFICATIONS.

FOR AN IMPORTED SUBGRADE, THE TOP 6 INCHES OF THE FINISHED SUBGRADE SHALL BE COMPACTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE PROVISIONS.

NOTE:  
THE PRELIMINARY PAVEMENT DESIGNS SHOWN ARE BASED ON A PREDICTED SUBGRADE CBR VALUE OF 7.0 AND A RESILIENCY FACTOR (RF) OF 2.0 AS SHOWN IN APPENDIX I OF THE "2000 VIRGINIA DEPARTMENT OF TRANSPORTATION PAVEMENT DESIGN GUIDE FOR SUBDIVISION AND SECONDARY ROADS". THE SUBGRADE SOIL IS TO BE TESTED BY AN INDEPENDENT LABORATORY AND THE RESULTS SUBMITTED TO THE VIRGINIA DEPARTMENT OF TRANSPORTATION PRIOR TO BASE CONSTRUCTION. SHOULD THE SUBGRADE CBR VALUE AND/OR THE RF VALUE BE LESS THAN THE PREDICTED VALUES, VDOT MAY REQUIRE AN INCREASE IN THE STRUCTURE BASED ON THE ACTUAL RESULTS. REFER TO THE SAME MANUAL FOR THE NUMBER AND LOCATIONS OF THE REQUIRED SOIL SAMPLES TO BE TESTED. ALL PAVEMENT DESIGNS SHALL BE SUBMITTED TO THE DEPARTMENT FOR REVIEW AND APPROVAL.

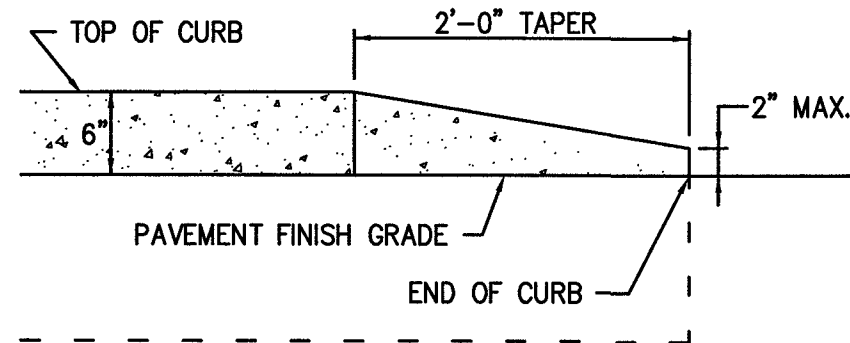
THE SUBGRADE SHALL BE APPROVED BY VDOT PRIOR TO PLACEMENT OF THE BASE. BASE SHALL BE APPROVED BY VDOT FOR DEPTH, TEMPLATE AND COMPACTOR BEFORE SURFACE IS APPLIED. THE SUBBASE WILL NOT BE INSPECTED BY VDOT PRIOR TO RECEIVING THE CBR TESTS AND SOIL CLASSIFICATIONS. CONTACT VDOT SEVEN (7) DAYS PRIOR TO SCHEDULING PLACEMENT OF AGGREGATE BASE COURSE(S) FOR AN INSPECTION.

#### VDOT BACKFILLING AND COMPACTION:

- 1.) BACKFILL MATERIAL SHALL BE VDOT NO. 21A AGGREGATE, PLACED IN LOOSE LIFTS NOT EXCEEDING 6", AND COMPACTED TO AT LEAST 95% MAXIMUM DRY DENSITY WITHIN 2 PERCENTAGE POINTS OF OPTIMUM MOISTURE (V<sub>WM</sub>-1) WITH THE USE OF MECHANICAL TAMPERS OR VIBRATORY ROLLERS. WATER COMPACTION IS NOT PERMITTED. LOCAL MATERIAL CLASSIFIED AS TYPE I SELECT MATERIAL MAY BE USED AS BACKFILL UPON PRIOR APPROVAL BY THE COUNTY ENGINEER. MATERIAL CLASSIFICATION SHALL BE PERFORMED ON THE ACTUAL SOIL TO VERIFY THAT SOIL MEETS VDOT SPECIFICATIONS FOR TYPE I SELECT MATERIAL BY A QUALIFIED TESTING LABORATORY AND TEST RESULTS SHALL BE CERTIFIED BY A VIRGINIA REGISTERED PROFESSIONAL ENGINEER. DENSITY REQUIREMENTS ARE THE SAME AS ABOVE, HOWEVER, MOISTURE CONTENT FOR SOILS MAY BE WITHIN 20% OF OPTIMUM.
- 2.) DENSITY AND MOISTURE TESTING IS REQUIRED ON BOTH THE AGGREGATE AND SOIL BACKFILL USED IN ANY TRENCHWORK. ALL TESTING SHALL BE PERFORMED AND CERTIFIED BY A GEOTECHNICAL ENGINEER OR A VDOT CERTIFIED TECHNICIAN. RESULTS SHALL BE PROVIDED TO THE INSPECTOR WITHIN 24-HOURS OF TESTING COMPLETION. THE COST OF ALL TESTING IS THE SOLE RESPONSIBILITY OF THE PERMITTEE. THE PERMITTEE SHALL SUBMIT WRITTEN TEST RESULTS TO THE INSPECTOR'S OFFICE.
- 3.) FIELD DENSITY TESTING METHODS SHALL BE APPROVED BY THE COUNTY ENGINEER PRIOR TO PERFORMING ANY TESTING. A PERMITTEE THAT PERFORMS MORE THAN TEN (10) EXCAVATIONS A MONTH UNDER THESE STANDARDS MAY SUBMIT A WRITTEN QUALITY CONTROL PLAN TO REDUCE THE NUMBER OF REQUIRED FIELD DENSITY TESTS. THE QUALITY CONTROL PLAN MUST INCLUDE THE EXCLUSIVE USE OF A VDOT-CERTIFIED AGGREGATE. THE QUALITY CONTROL PLAN SHALL BE SUBMITTED TO THE COUNTY ENGINEER FOR REVIEW AND APPROVAL.
- 4.) FLOWABLE FILL MAY BE USED AS AN ALTERNATE TO AGGREGATE OR SELECT MATERIAL. FLOWABLE FILL SHALL MEET THE REQUIREMENTS OF VDOT SPECIAL PROVISIONS FOR FLOWABLE BACKFILL. THE MATERIAL MUST BE PLANT-CERTIFIED TO PROVIDE A 28-DAY COMPRESSIVE STRENGTH BETWEEN 30 AND 200 PSI. A CERTIFICATE OF MIX DESIGN MUST BE SUBMITTED TO THE INSPECTOR PRIOR TO PLACING THE MATERIAL IN THE TRENCH. A MINIMUM OF FOUR 6 X 12 TEST CYLINDERS SHALL BE TAKEN EVERY 50 CY OF PLACEMENT. CYLINDERS SHALL BE TESTED BY A QUALIFIED TESTING LABORATORY FOR 28-DAY STRENGTH. RESULTS SHALL BE PROVIDED TO THE INSPECTOR'S OFFICE WITHIN 24 HOURS OF TESTING COMPLETION. THE COST OF ALL TESTING IS THE RESPONSIBILITY OF THE PERMITTEE. IF THE REPORT INDICATED THE COMPRESSIVE STRENGTHS ARE NOT BETWEEN 30 AND 200 PSI, THE PERMITTEE WILL BE RESPONSIBLE FOR REMOVING AND REPLACING THE BACKFILL WITH ACCEPTABLE BACKFILL AND COMPLETING THE RESTORATION OF THE STREET AT NO COST TO THE COUNTY.

### STORMWATER SITE STATISTICS

	EXISTING	PROPOSED
TOTAL DISTURBED AREA (AC)	---	5.30
TOTAL SITE AREA (AC)	5.30	5.30
IMPERVIOUS AREA (AC)	0.00	1.86
MANAGED TURF AREA (AC)	5.30	3.44
OPEN SPACE / FOREST AREA (AC)	0.00	0.00
RIGHT OF WAY DISTURBANCE (SF)	---	3,000
KARST PRESENT (Y/N)	UNDETERMINED	UNDETERMINED



### CURB TAPER DETAIL - SECTION

NO SCALE

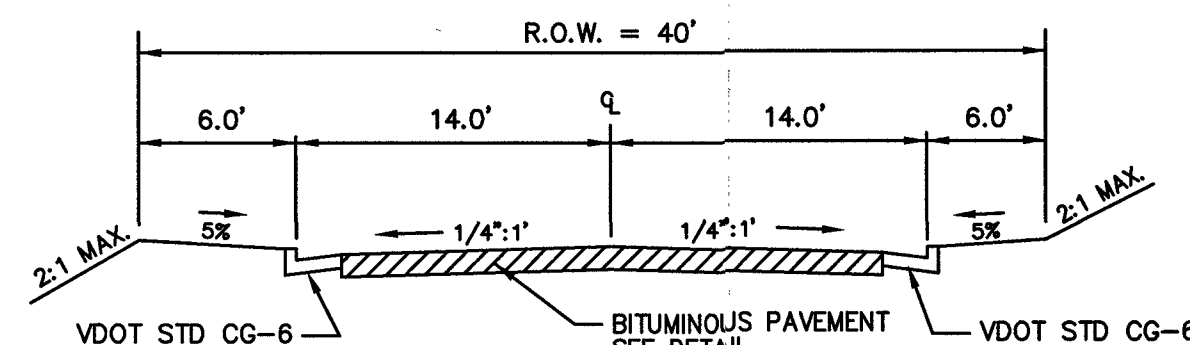
### W.V.W.A. SERVICE LATERAL INFORMATION

LOT	DOWNSTREAM MANHOLE	DIST.	TOP OF S.S. MAIN	MIN. SEWERABLE F.F. ELEVATION	APPROX. WATER PRESSURE
91	ex. a	88'	1175.2	1178.2	67 psi
92	ex. a	88'	1175.2	1178.2	66 psi
93	ex. a	209'	1178.4	1181.4	65 psi
94	ex. a	209'	1178.4	1181.4	65 psi
95	C	93'	1180.1	1183.1	65 psi
96	C	93'	1180.1	1183.1	64 psi
97	C	214'	1181.3	1184.3	64 psi
98	C	214'	1181.3	1184.3	63 psi
99	B	113'	1186.5	1189.5	63 psi
100	B	100'	1186.4	1189.4	62 psi
101	B	100'	1186.4	1189.4	62 psi
102	C	204'	1181.2	1184.2	63 psi
103	C	204'	1181.2	1184.2	63 psi
104	C	88'	1180.0	1183.0	64 psi
105	C	88'	1180.0	1183.0	64 psi
106	ex. a	207'	1178.3	1181.3	65 psi
107	ex. a	207'	1178.3	1181.3	65 psi
108	ex. a	91'	1175.3	1178.3	66 psi
109	ex. a	91'	1175.3	1178.3	67 psi
110	ex. a	11'	1173.1	1176.1	68 psi

#### NOTES:

1. THE MIN. FLOOR ELEVATION IS BASED ON SEC. 2.4(E) OF THE WESTERN VIRGINIA REGIONAL DESIGN AND CONSTRUCTION STANDARDS. LOT OWNERS REQUESTING A LOWER SERVICE ELEVATION WILL REQUIRE THE USE OF A PRIVATE SEWAGE PUMP FACILITY, INSTALLED AND MAINTAINED BY THE HOMEOWNER.

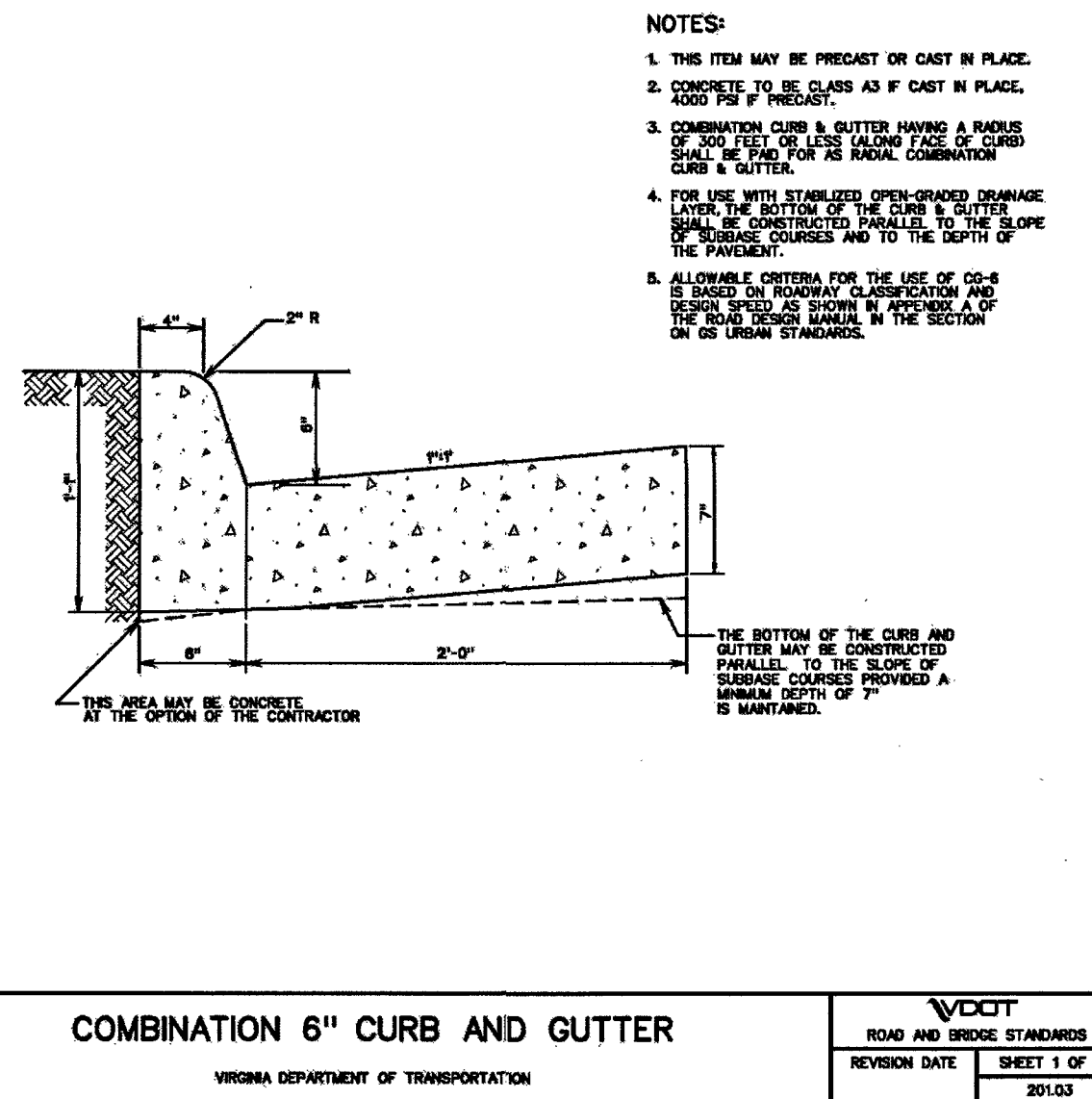
### PROPOSED ROAD SECTION



#### TYPICAL ROAD SECTION

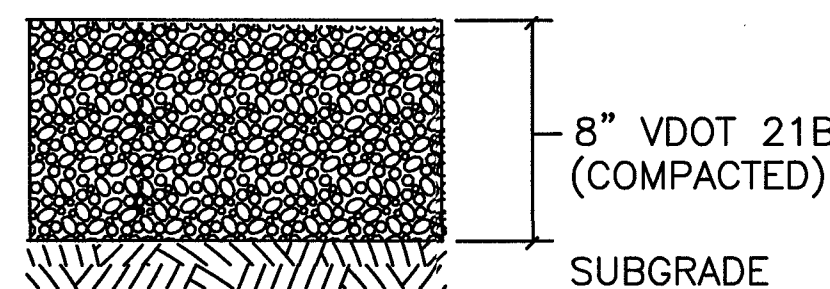
DESIGN SPEED = 25 MPH  
DESIGN ADT = 500

NOTE: G.C. SHALL ENSURE THAT A MINIMUM CLEAR ZONE OF 1' IS MAINTAINED BETWEEN THE BACK OF CURB AND ANY ABOVE-GROUND UTILITY STRUCTURES.



#### COMBINATION 6" CURB AND GUTTER

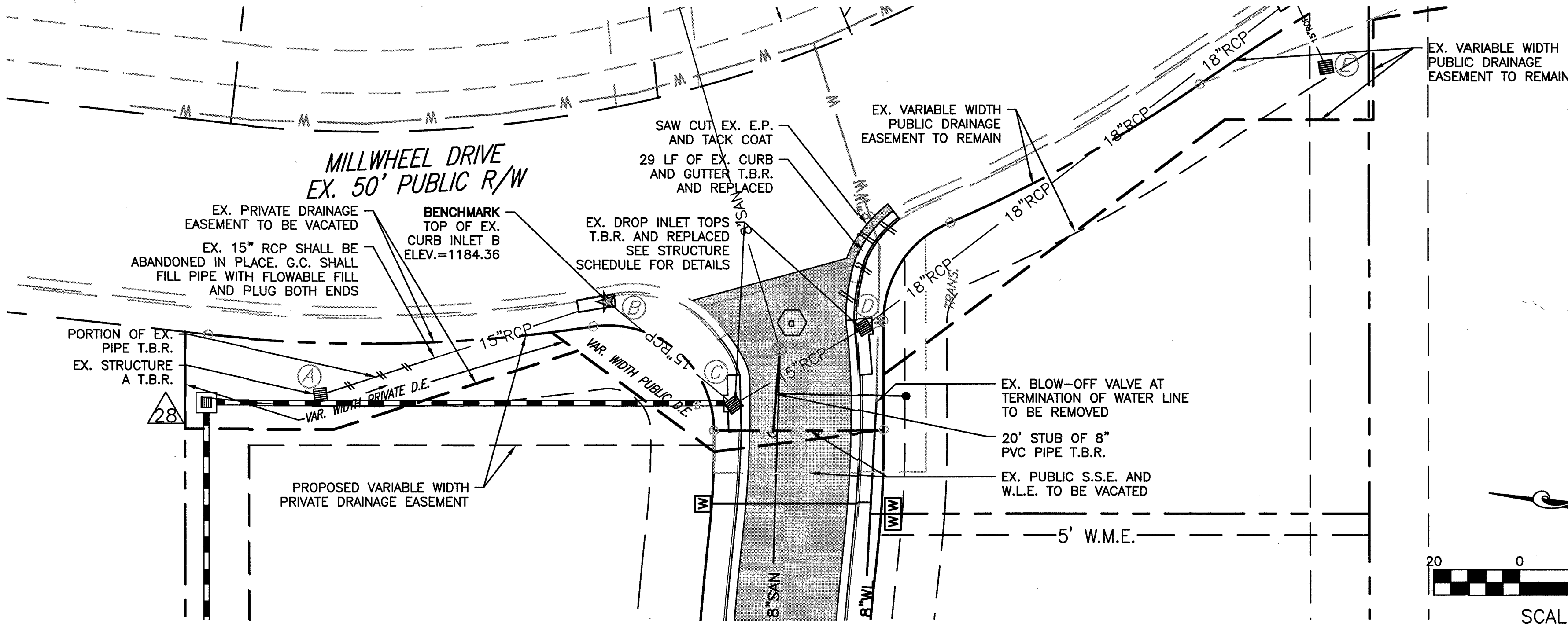
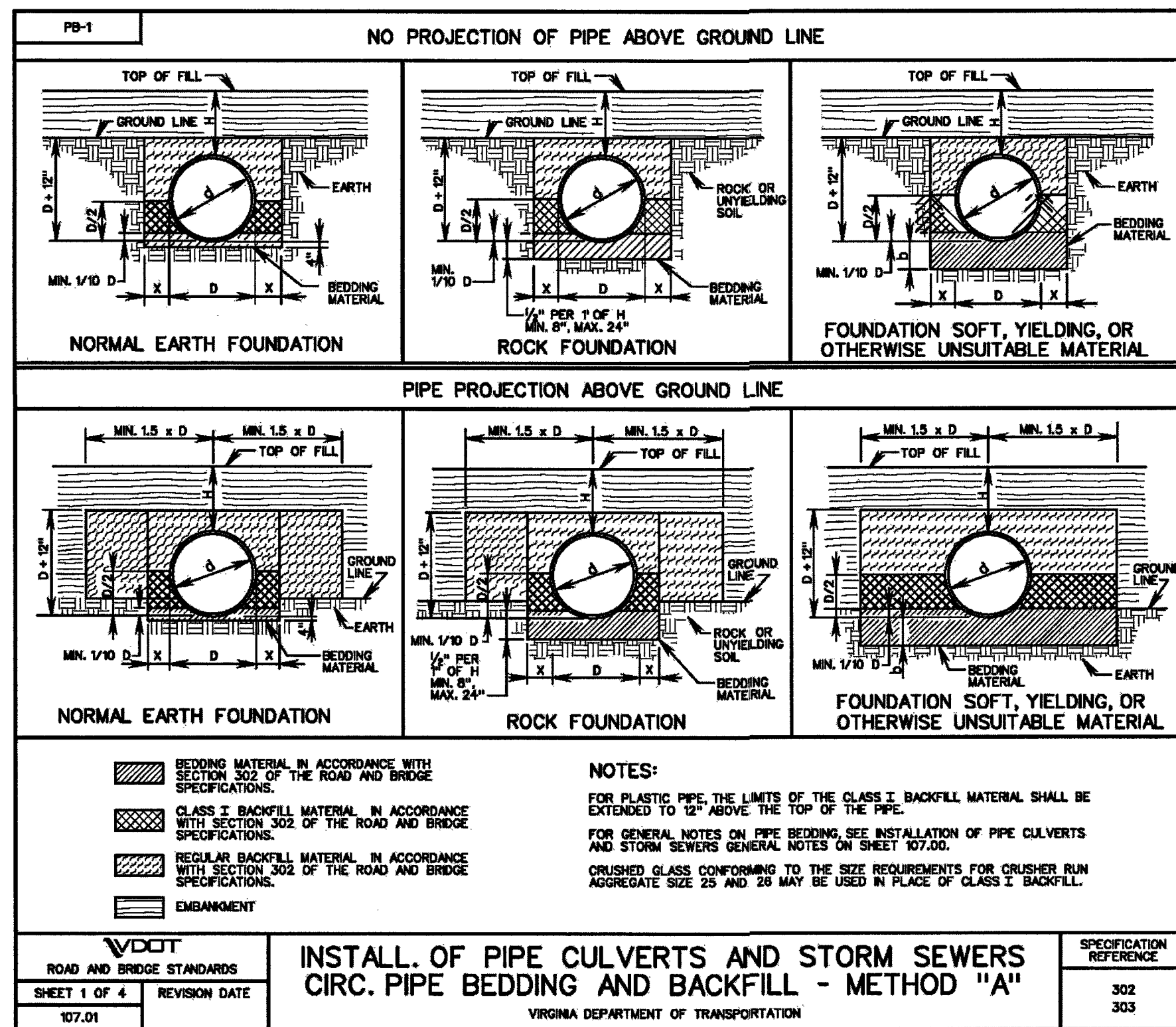
VIRGINIA DEPARTMENT OF TRANSPORTATION



### STANDARD GRAVEL PAVEMENT SECTION

NO SCALE

1. 8" STONE BASE MUST BE PLACED IN TWO LIFTS OF NO MORE THAN 4" EACH.
2. G.C. TO ENSURE A MINIMUM OF 95% COMPACTION OF THE SUBGRADE.



### SITE ENTRANCE DETAIL

SCALE: 1" = 20'



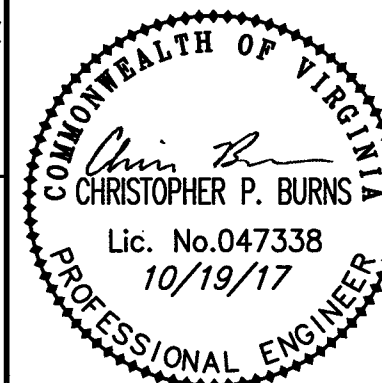
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Balzer and Associates, Inc.

1208 Corporate Circle  
Roanoke, VA 24018  
540-772-9580  
FAX 540-772-8050



FOXFIELD - SECTION 6  
CONSTRUCTION DETAILS  
CATAWBA DISTRICT  
ROANOKE COUNTY, VIRGINIA

DRAWN BY LAR  
DESIGNED BY LAR  
CHECKED BY CPB  
DATE 8/18/2016  
SCALE AS NOTED

REVISIONS:  
10/20/2016  
11/10/2016  
10/19/2017 - PR#1

SHEET NO.  
**C13**  
JOB NO. R1400109.00