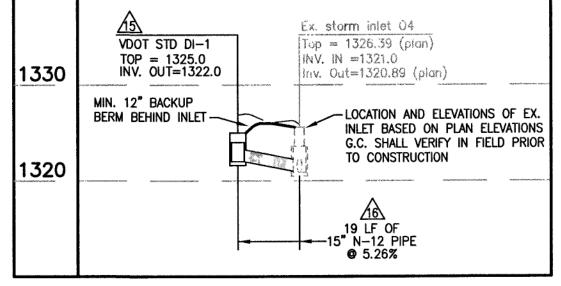
1*4*00 vdot std di-3b THROAT = 14' TOP = 1389.97 PROP. GRADE — VDOT STD DI-3B INV. IN =1382.6 INV. OUT=1382.5 THROAT = 14'TOP = 1389.51 VDOT STD ES-1 INV. OUT=1383.0 390 INV. OUT=1381.5 0 8"SS ─ VDOT STD. EC-1. 32 LF OF 15" N-12 PIPE CLASS I RIP RAP **@** 1.25% 98 LF OF 15" N-12 PIPE @ 1.02%

STORM SEWER PROFILE (10-14)

1"=30' HORIZONTAL 1"=10' VERTICAL

STORM SEWER NOTES:

1. ALL STORM PIPE SHALL BE N-12 SMOOTH INTERIOR PIPE UNLESS OTHERWISE SPECIFIED. 2. VDOT STD. IS-1 INLET SHAPING SHALL BE PROVIDED IN ALL INLETS.



STORM SEWER PROFILE (15-16)

1"=30' HORIZONTAL 1"=10' VERTICAL

SANITARY STRUCTURE SCHEDULE:

ex.23 existing sanitary manhole top= 1326.41 (plan) inv. in=1319.01 (plan) inv. out=1318.91 (plan)

(A) WVWA STD. S-04 5' DIA. INSIDE DROP MANHOLE TOP= 1331.02 INV. IN=1325.4 INV. OUT=1321.4

WVWA STD. S-01 TOP = 1342.11INV. IN=1331.6 INV. OUT=1331.5

WVWA STD. S-01 TOP = 1370.95INV. IN =1363.1INV. OUT=1363.0

WVWA STD, S-01 TOP=1387.42 INV. IN=1378.1 INV. OUT=1378.0

WVWA STD. S-01 TOP= 1395.12 INV. IN=1386.6 INV. OUT=1386.5

(F) WVWA STD. S-01 TOP = 1402.82INV. OUT=1395.0

*NOTE: VDOT STD. IS-1 SHALL BE PROVIDED IN ALL STRUCTURES.

STORM STRUCTURE SCHEDULE:

VDOT STD. DI-3B THROAT = 14'TOP = 1343.74INV. OUT=1337.0

34 LF OF 15" N-12 PIPE @ 1.18% VDOT STD. DI-3BB

THROAT = 14'TOP = 1344.94INV. IN =1336.6INV. OUT=1336.5

105 LF OF 15" N-12 PIPE @ 5.14% VDOT STD. DI-7

TYPE III GRATE TOP = 1335.0INV. IN = 1331. INV. OUT=1323.5

94 LF OF 15" N-12 PIPE @ 8.94%

VDOT STD. MH-2 TOP = 1319.0INV. IN =1315.1INV. OUT=1307.1

27 LF OF 18" RCP @ 9.63%

18" VDOT STD. ES-1 INV. OUT=1304.5

10 VDOT STD. DI-3B THROAT = 14'TOP = 1389.51INV. OUT=1383.0

11 32 LF OF 15" N-12 PIPE @ 1.25%

12 VDOT STD. DI-3B THROAT = 14'TOP = 1389.97INV. IN = 1382.6

INV. OUT=1382.5 13 98 LF OF 15" N−12 PIPE @ 1.02%

15" HDPE END SECTION

INV. = 1381.515 VDOT STD. DI-1 TOP = 1325.0

INV. OUT=1322.0

16 19 LF OF 15" N-12 PIPE @ 5.26% INV. OUT=1321.0

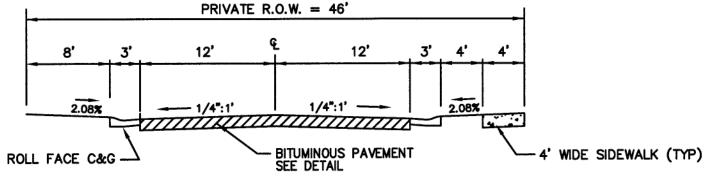
*NOTE: VDOT STD. IS-1 SHALL BE PROVIDED IN ALL STRUCTURES.

TYPICAL ROAD SECTION

STORM SEWER PROFILE (1-9)

1"=30' HORIZONTAL

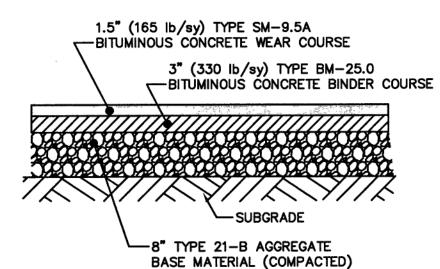
1"=10' VERTICAL



TYPICAL ROAD SECTION DESIGN SPEED = 25 MPH DESIGN ADT = 1400

SEE PAVEMENT DESIGN BELOW CBR TESTS AND FINAL PAVEMENT SPECIFICATIONS TO BE PROVIDED TO THE DESIGN ENGINEER FOR APPROVAL PRIOR TO INSTALLATION

TYPICAL PAVEMENT SECTION



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.

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 GUIDÉ 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 COMPACTION 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 (VTM-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 AMD 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.

ROAD CL DATA

CURVE DATA:

C1: R = 375.00' $DELTA = 63^{\circ}02'46"$ T = 230.01'L = 412.63'

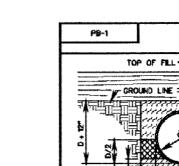
CH = S5915'55"Wd = 392.13'PC = 10+00.00PT = 14+12.64

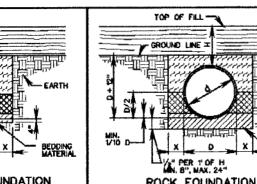
C2: R = 425.00'DELTA = 41'56'39"T = 162.90'L = 311.12'CH = S69'49'03''Wd = 304.23'PC = 14+12.64

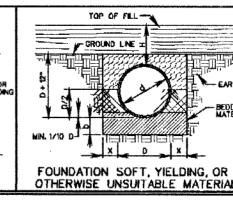
C3: R = 250.00' $DELTA = 75^{\circ}24^{\circ}25^{\circ}$ T = 193.25'L = 329.03'CH = S86'32'57''Wd = 220.53'PC = 17+23.86

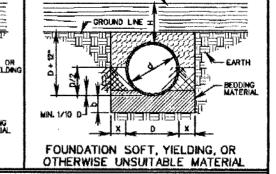
PT = 20+52.79

PT = 17+23.86

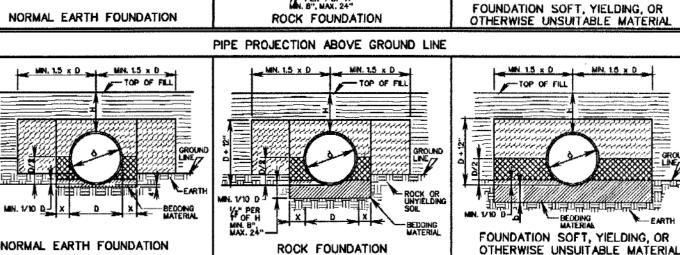








SPECIFICATION REFERENCE



NO PROJECTION OF PIPE ABOVE GROUND LINE

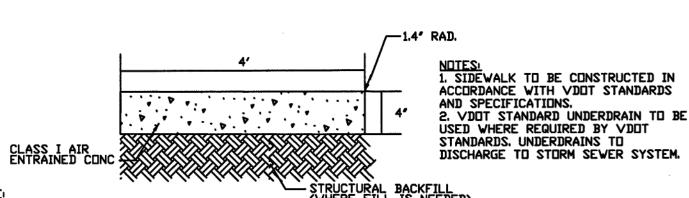
CLASS I BACKFILL MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS

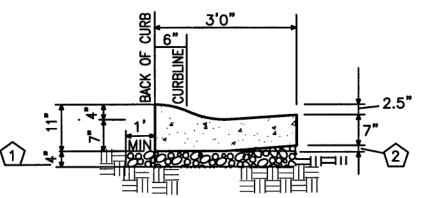
NORMAL EARTH FOUNDATION **ROCK FOUNDATION**

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

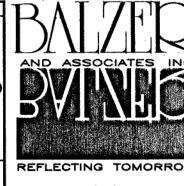
FOR PLASTIC PIPE, THE LIMITS OF THE CLASS I BACKFILL MATERIAL SHALL BE EXTENDED TO 12" ABOVE THE TOP OF THE PIPE. FOR GENERAL NOTES ON PIPE BEDDING, SEE INSTALLATION OF PIPE CULVERTS AND STORM SEWERS GENERAL NOTES ON SHEET 107.00. CRUSHED GLASS CONFORMING TO THE SIZE REQUIREMENTS FOR CRUSHER RUN AGGREGATE SIZE 25 AND 28 MAY BE USED IN PLACE OF CLASS I BACKFILL.

EMBANKMENT **W**DOT INSTALL. OF PIPE CULVERTS AND STORM SEWERS ROAD AND BRIDGE STANDARDS CIRC. PIPE BEDDING AND BACKFILL - METHOD "A" SHEET 1 OF 4 REVISION DATE VIRGINIA DEPARTMENT OF TRANSPORTATION 107.01





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www.balzer.cc

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STRUCTURAL ENGINEERING GEOTECHNICAL ENGINEERING TRANSPORTATION ENGINEERIN ENVIRONMENTAL & SOIL SCIENCE

NETLAND DELINEATIONS & STREAM EVALUATION Balzer and Associates, Inc

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



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DRAWN BY DESIGNED BY

CHECKED BY 06/25/2010

SCALE **REVISIONS:**

08/19/2010 09/27/2010 07/24/2012 ()) ==

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