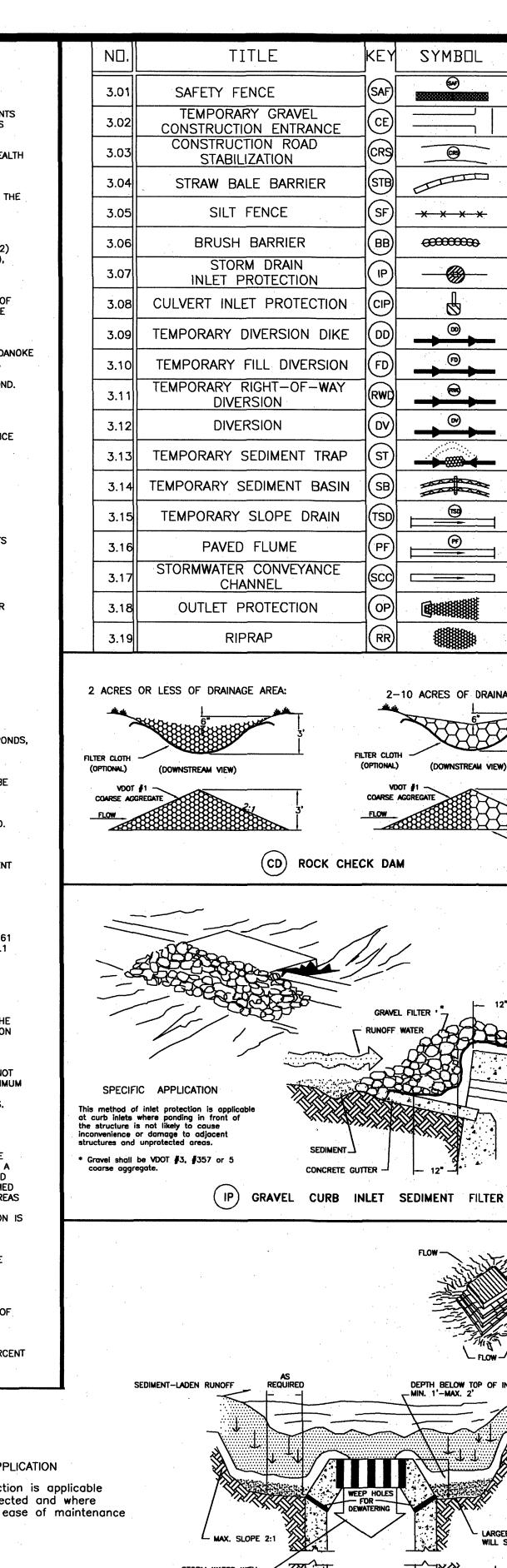
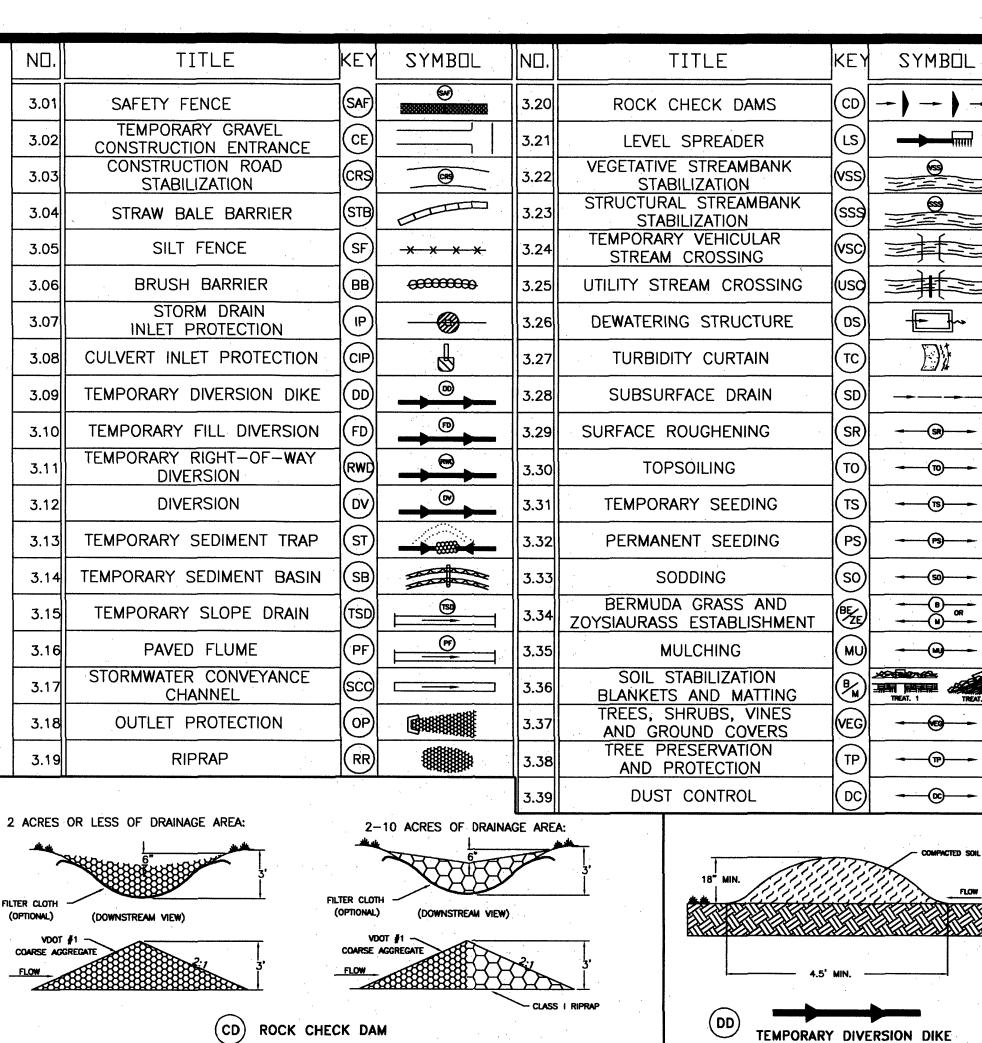
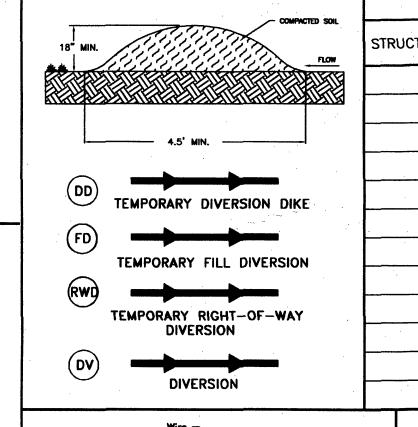
## STORMWATER MANAGEMENT **GENERAL NOTES** COST ESTIMATE I. DESIGN OF DETENTION BASINS SHALL CONFORM TO THE REQUIREMENTS ALL COSTS GIVEN ARE COMPLETE IN PLACE OF THE COUNTY OF ROANOKE DRAINAGE STANDARDS (REF. SECTIONS 503.02, 503.03, AND 505.02). THE DESIGN OF THE FACILITY AND PREPARATION OF AS-BUILT PLANS SHALL BE BY A CERTIFIED TOTAL COST DESCRIPTION QUANTITY UNIT COST UNIT PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE COMMONWEALTH OF VIRGINIA CLEARING & GRUBBING 2. ACCESS TO THE FACILITY MUST BE PROVIDED IN ACCORDANCE WITH THE COUNTY OF ROANOKE DESIGN AND CONSTRUCTION STANDARDS FOR EXCAVATION CY DETENTION PONDS, LATEST EDITION. **EMBANKMENT** CY 3. IF THE FACILITY IS OVER FOUR (4) FEET DEEP, TAKES OVER TWO (2) HOURS TO DRAIN, OR THE INTERIOR SLOPE EXCEEDS 3 (H): 1 (V), PERMANENT FENCING MAY BE REQUIRED, ADDITIONALLY, IF THE FENCING LF FACILITY IS IN A CONGESTED AREA OR WILL IN ANY WAY POSE A HAZARD TO THE GENERAL PUBLIC, FENCING MAY BE REQUIRED. FENCING SHALL BE A MINIMUM OF SIX (6) FEET HIGH, A MINIMUM OF STRUCTURES STANDARD NINE GAUGE LINK FENCE, AND MUST HAVE ONE OR MORE LOCKING DOUBLE GATES (MINIMUM TEN FEET WIDE) FOR ACCESS. ACCESS ROAD . DETENTION PONDS SHALL BE BONDED IN ACCORDANCE WITH THE ROANOKE COUNTY BONDING POLICY FOR SUBDIVISION AND SITE DEVELOPMENT. AS-BUILTS A SEPARATE BOND FOR THE DETENTION FACILITY WILL BE REQUIRED AND ADMINISTERED APART FROM THE SUBDIVISION DEVELOPMENT BOND. SUB-TOTAL REFERENCE ESTIMATE - THIS SHEET. 10% CONTINGENCY . REFERENCE THE COUNTY OF ROANOKE DESIGN AND CONSTRUCTION STANDARDS FOR DETENTION PONDS, LATEST EDITION, FOR ACCEPTANCE AND MAINTENANCE OF THE FACILITY. CERTIFIED AS-BUILTS ARE TOTAL PROJECT COST REQUIRED AND MUST INCLUDE: DIMENSIONS OF THE FACILITY B. VOLUME @ MAXIMUM DEPTH C. ELEVATIONS OF STRUCTURES, SPILLWAYS, AND TOP MATERIALS VERIFICATION INCLUDING RESULTS OF DENSITY TESTS CONDUCTED BY AN INDEPENDENT SOIL TESTING LABORATORY E. LOCATION AND ELEVATION OF BENCHMARK SEDIMENT BASIN SCHEMATIC **ELEVATIONS** 6. ONE FOOT MINIMUM FREEBOARD REQUIRED FOR THE 100 YR WATER CONSTRUCTION NOTES DESIGN HIGH WATER (25-YR. STORM ELEV.) - CREST OF EMERGENCY . SITE PREPARATION SHALL BE IN ACCORDANCE WITH THE COUNTY OF ROANOKE DESIGN AND CONSTRUCTION STANDARDS FOR DETENTION PONDS, 67 C.Y./AC. -2. SLOPES STEEPER THAN 3 TO 1 (HORIZONTAL TO VERTICAL) SHALL BE BENCHED OR STEPPED PRIOR TO PLACING FILL ON THEM. 67 C.Y./AC. -DEWATERING DEVICE 3. ON-SITE FILL MATERIAL OR BORROW FILL MATERIAL MAY BE UTILIZED. SEDIMENT CLEANOUT POINT ("WET" STORAGE REDUCED FILL MATERIAL SOILS, IN GENERAL: SHALL BE COMPACTABLE SHALL BE WITHIN AN ACCEPTABLE RANGE OF MOISTURE CONTENT WHICH IS READILY CONTROLLED DESIGN ELEVATIONS WITH SHALL NOT BE HIGHLY SUSCEPTIBLE TO VOLUME CHANGE EMERGENCY SPILLWAY (SHRINKAGE OR SWELL) OR SETTLEMENT 4. FILL MATERIALS CONTAINING ROCKS LARGER THAN SIX (6) INCHES (15.2 CM) SHALL NOT BE USED. THE UPPERMOST TWO (2) FEET (61 CM) SHALL NOT HAVE ANY ROCK LARGER THAN TWO (2) INCHES (5.1 CM) IN DIAMETER. 5. THE APPROVED FILL SHALL BE PLACED IN EIGHT (8) INCH (20 CM) OUSE LIFTS. EACH LIFT SMALL BE SPREAD IN UNIFORM LAYERS FILL SOIL SHALL BE UTILIZED ONLY WITHIN A MOISTURE RANGE OF +/- 5% OF THE OPTIMUM MOISTURE CONTENT. COMPACTION OF THE FILL SHALL BE PERFORMED WITH APPROVED EQUIPMENT. COMPACTION DESIGN HIGH WATER (25-YR. STORM ELEV.) | MIN. 2.0' OF THE LAYERS SHALL BE CONTINUOUS AND UNIFORM. MIN. 1.0' 6. EMBANKMENT MATERIAL IN FILL AREAS SHALL BE PLACED IN LIFTS NOT EXCEEDING EIGHT (8) INCHES AND SHALL BE COMPACTED TO A MINIMUM "DRY" STORAGE 95% DENSITY IN ACCORDANCE WITH SECTION 303 OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE SPECIFICATIONS. 67 C.Y./AC. "WET" STORAGE 7. FIELD DENSITY TESTS ARE TO BE CONDUCTED BY AN INDEPENDENT SEDIMENT CLEANOUT POINT SOILS TESTING LABORATORY UNDER THE DIRECTION OF A QUALIFIED GEOTECHNICAL ENGINEER. THE RESULTS OF THESE TESTS SHALL BE SUBMITTED TO THE COUNTY OF ROANOKE WITH AS-BUILT PLANS AS A CONDITION OF ACCEPTANCE OF THE FACILITY BY THE COUNTY. FIELD DENSITY TESTS, AS DIRECTED BY THE ENGINEER SHALL BE PERFORMED DESIGN ELEVATIONS WITHOUT PERIODICALLY TO DETERMINE THE DEGREE OF COMPACTION. ANY AREAS FAILING TO MEET THE ABOVE REQUIREMENTS SHALL BE REWORKED EMERGENCY SPILLWAY AND/OR RECOMPACTED UNTIL THE REQUIRED DEGREE OF COMPACTION IS (RISER PASSES 25-YR. EVENT) 8. ANTI-SEEP COLLARS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION. 9. ALL DISTURBED AREAS SHALL BE COVERED WITH FOUR (4) INCHES OF TOPSOIL AND SEEDED. 10. THE MINIMUM SLOPE OF THE BASIN "FLOOR SHALL BE ONE (1) PERCENT GRADED TO DRAIN TO THE PRINCIPAL SPILLWAY. GRAVEL (12"MIN. DEPTH)







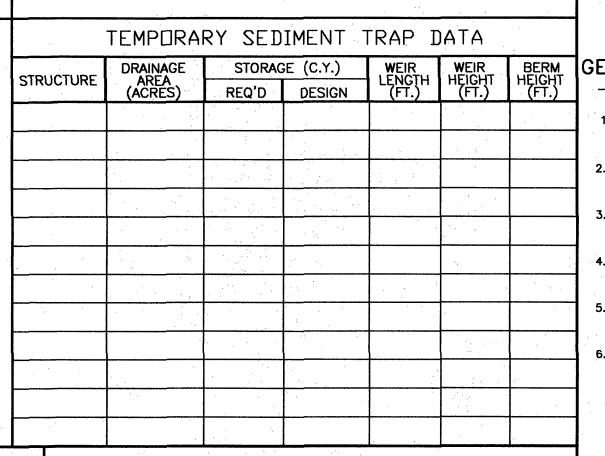
CROSS-SECTION

10' IF WIRE IS

6' IF WIRE IS

NOT USED.

USED.



(ST) SEDIMENT TRAP

FOR AREAS LESS THAN 3.0 ACRES. FOR AREAS LARGER THAN 3.0 ACRES A SEDIMENT BASIN

IS REQUIRED. SEE DETAIL THIS SHEET.

67 CU. YD./ACRE

67 CU. YD./ACRE (EXCAVATED)

\* SEE PLATE 3.13-1

CLASS I RIP-RAP

FILTER CLOTH

-EXCAVATED AREA

COARSE AGGREGATE \*\* -

CROSS-SECTION

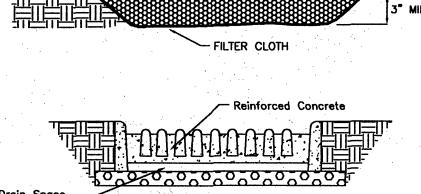
FILTER CLOTH - COARSE AGGREGATE \*\*

-Length(ft) = 6 x Drainage Area (ac.)

BE VDOT #3,#357 OF#5

CONSTRUCT A WASHBOARD OF WASH RACK IF REQUIRED. Ref. Table 3.02-A of

\* MUST EXTEND FULL WIDTH OF INGRESS



TEMPORARY GRAVEL

EROSION-SILTATION CONTROL COST ESTIMATE

ALL COSTS GIVEN ARE COMPLETE IN PLACE QUANTITY UNIT COST TOTAL COST **DESCRIPTION** UNIT SILT FENCE 2.00 2280.00 LF 1140 \$ SF 8400 0.03 252.00 ERMANENT SEEDING CULVERT INLET PROT 200.00 1200.00 300.00 300.00 EA INLET PROTECTION

SUB-TOTAL 4032.00 10% CONTINGENCY 403.20 TOTAL PROJECT COST 4435.20

GENERAL EROSION AND SEDIMENT CONTROL NOTES . ALL SOIL EROSION & SEDIMENT CONTROL MEASURES SHALL BE ACCOMPLISHED

IN STRICT ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS CONTAINED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION. THE APPROVING AUTHORITY MAY ADD TO, DELETE, RELOCATE, CHANGE, OR OTHERWISE MODIFY CERTAIN EROSION AND SEDIMENT CONTROL MEASURES WHERE

FIELD CONDITIONS ARE ENCOUNTERED THAT WARRANT SUCH MODIFICATIONS. . ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN ON THE PLAN SHALL BE PLACED IN ADVANCE OF THE WORK BEING PERFORMED, AS FAR AS

I. IN NO CASE DURING CONSTRUCTION SHALL WATER RUNOFF BE DIVERTED OR ALLOWED TO FLOW TO LOCATIONS WHERE ADEQUATE PROTECTION HAS NOT BEEN

5. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LEAVE THE SITE ADEQUATELY PROTECTED AGAINST EROSION, SEDIMENTATION, OR ANY DAMAGE TO ANY ADJACENT PROPERTY AT THE END OF EACH DAY'S WORK.

FOR THE EROSION CONTROL KEY SYMBOLS SHOWN ON THE PLANS, REFER TO THE VIRGINIA UNIFORM CODING SYSTEM FOR EROSION AND SEDIMENT CONTROL PRACTICES CONTAINED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION. THESE SYMBOLS AND KEYS ARE TO BE UTILIZED ON ALL EROSION CONTROL PLANS SUBMITTED TO ROANOKE COUNTY.

PERMANENT SEEDING MIXTURE

Casa I

TYPE B (SLOPES 3:1 OR STEEPER) 15 OCTOBER TO 1 FEBRUARY CROWN VETCH © 1/2 LB / 1000 SF
PERENNIAL RYEGRASS © 1/2 LB / 1000 SF
RED TOP © 1/8 LB / 1000 SF K-31 FESCUE @ 5 LB / 1000 SF BORZY WINTER RYE @ 1/2 LB / 1000 SF FEBRUARY TO 1 JUNE 15 AUGUST TO 1 OCTOBER CROWN VETCH © 1/2 LB / 1000 SF PERENNIAL RYEGRASS © 1/2 LB / 1000 SF

K-31 FESCUE @ 5 LB / 1000 SF ANNUAL RYE @ 1/2 LB / 1000 SF JUNE TO 1 SEPTEMBER RED TOP • 1/8 LB / 1000 SF K-31 FESCUE @ 5 LB / 1000 SF GERMAN MILLET @ 1/2 LB / 1000 SF SEPTEMBER TO 15 OCTOBER

ANNUAL RYE @ 1/2 LB / 1000 SF 140 LB / 1000 SF PULVERIZED AGRICULTURAL LIMESTONE

K-31 FESCUE @ 5 LB / 1000 SF

IF REQUIRED, SHALL BE USED OVER ALL SEEDED AREAS AND SHALL BE APPLIED IN ACCORDANCE WITH SECTION 1.75 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.

INCORPORATION OF LIME AND FERTILIZER, SELECTION OF CERTIFIED SEED, MULCHING, MAINTENANCE OF NEW SEEDLINGS, AND RESEEDING SHALL BE IN ACCORDANCE WITH SPECIFICATIONS CONTAINED WITHIN THE VIRGINIA SOIL EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION. ADDITIONAL SEEDING TO BE PERFORMED AS REQUIRED

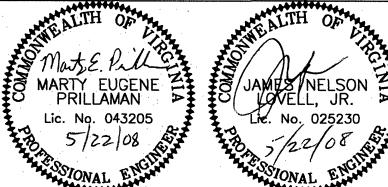
BY THE INSPECTOR. SEED APPLICATION: APPLY SEED UNIFORMLY WITH A CYCLONE SEEDER, DRILL, CULTIPACKER SEEDER, OR HYDROSEEDER ON A FIRM, FRIABLE, SEEDBED. MAXIMUM SEEDING DEPTH SHALL BE 1/4 INCH.

TOTAL DISTURBED AREA =

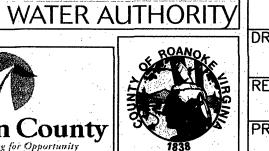
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Date:		EARTH
2/1/08		
/10/08	The said	ENVIRON
1/4/08		CONSULTA
/20/08		·

375 Franklin Street Rocky Mount, VA 24151 www.earthenv.com







Ty	BKS/MEP		
$\dashv$	DRAWN BY:		
St.	BKS		
	REVIEWED BY: JNL/MEP		
	PROECT NUMB FCPP1004		

WESTERN VIRGINIA DESIGN BY:

Virginia ESC Handbook

for requirements.

ROANOKE/FRANKLIN COUNTY WATERLINE EXTENSION PHASE 5/20/08 U.S. ROUTE 220 ROANOKE COUNTY, VA RAWING NUMBER: EROSION & SEDIMENT CONTROL DETAILS HEET NUMBER: BER: DRAWING NAME: SCALE: 17 of 18 DETAIL SHEET.dwg

SPECIFIC APPLICATION This method of inlet protection is applicable where heavy concentrated flows are expected, but not where ponding around the structure might cause excessive inconvenience or damage to adjacent structures and unprotected areas.

SPECIFIC APPLICATION This method of inlet protection is applicable where heavy flows are expected and where an overflow capability and ease of maintenance are desirable.

EXCAVATED DROP INLET SEDIMENT TRAP

OP OUTLET PROTECTION 1. Apron lining may be rip-rap, grouted rip-rap, or concrete.

2. La is the length of the riprap apron as calculated using

plates 1.36d and 1.36e. 3. d = 1.5 times the maximum stone diameter, but not less than 6".

Section A-A Pipe Outlet To Flat Area With No Defined Channe

Section A-A <u>Pipe Outlet To</u> Well—Defined Channe

(SF) CONSTRUCTION OF A SILT FENCE & EGRESS OPERATION.

> WASH RACK DETAIL (IF REQUIRED) CONSTRUCTION ENTRANCE

\* Gravel shall be VDOT #3, #357 or #5 coarse aggregate. (IP) GRAVEL AND WIRE MESH DROP INLET SEDIMENT FILTER

Revisions: ROANOKE, WVWA, VDOT COMMENTS ROANOKE COUNTY E&S, WVWA ADDENDUM NO. 1 VDOT/CONTRACTOR COMMENTS VDOT COMMENTS

MENTAL ANTS, INC.

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