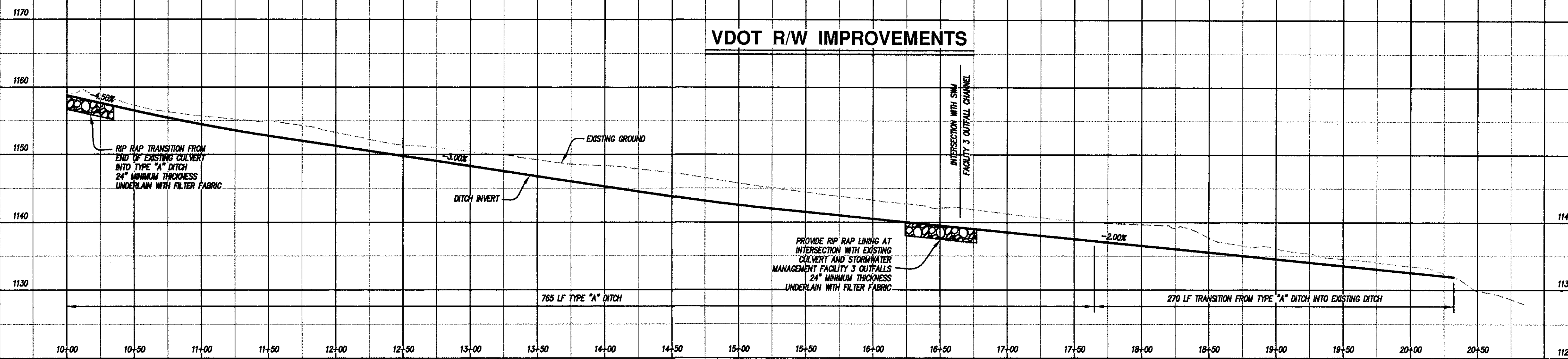
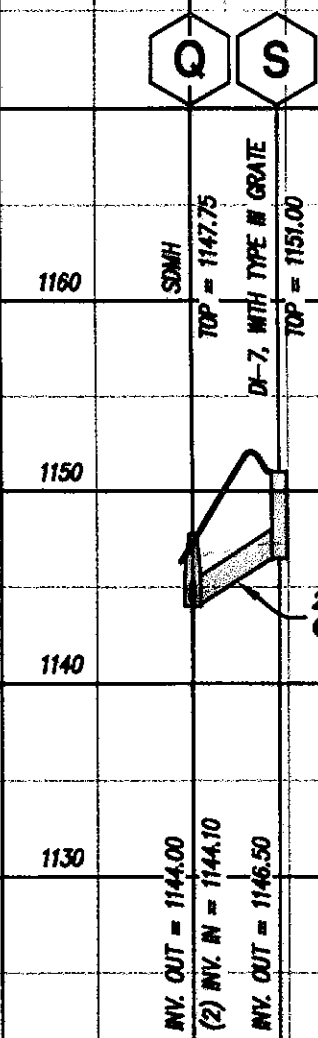


VDOT R/W IMPROVEMENTS



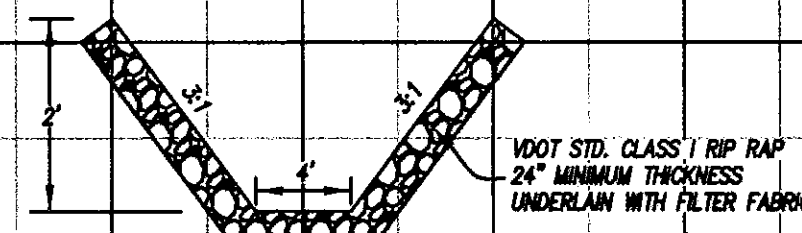
NOTES

1. ALL WATER AND SANITARY SEWER LINES SHALL HAVE A MINIMUM OF 3.0 FEET OF COVER.
2. MAINTAIN A MINIMUM OF 18" CLEARANCE FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE AT ALL WATER, SANITARY SEWER, AND STORM DRAIN CROSSINGS. WHERE THIS CLEARANCE CAN NOT BE ACHIEVED, CONCRETE PIERS SHALL BE UTILIZED IN ACCORDANCE WITH THE WESTERN VIRGINIA WATER AUTHORITY'S WATER AND SANITARY SEWER STANDARDS.
3. SANITARY SEWER MAIN PIPE MATERIAL SHALL BE PVC, SDR-35, EXCEPT AS NOTED, OR APPROVED EQUAL.
4. WATER LINE MAIN PIPE MATERIAL SHALL BE C900, DR-14, EXCEPT AS NOTED, OR APPROVED EQUAL.
5. ALL NEW DROP INLETS AND STORM DRAIN MANHOLES SHALL HAVE VDOT STD. IS-1, INLET SHAPING.
6. ALL DRAINAGE STRUCTURES DEEPER THAN 4.0 FEET SHALL HAVE STEPS (VDOT STD. ST-1) INSTALLED.
7. SAFETY SLABS (VDOT STD. SL-1) ARE REQUIRED IN ALL DRAINAGE STRUCTURES WITH A DEPTH OF 12.0 FEET OR GREATER. THE SPACING OF THE SLABS SHOULD BE 8 TO 12 FEET WITH NO SAFETY SLAB LOCATED WITHIN 6 FEET FROM THE TOP OR BOTTOM OF THE STRUCTURE.



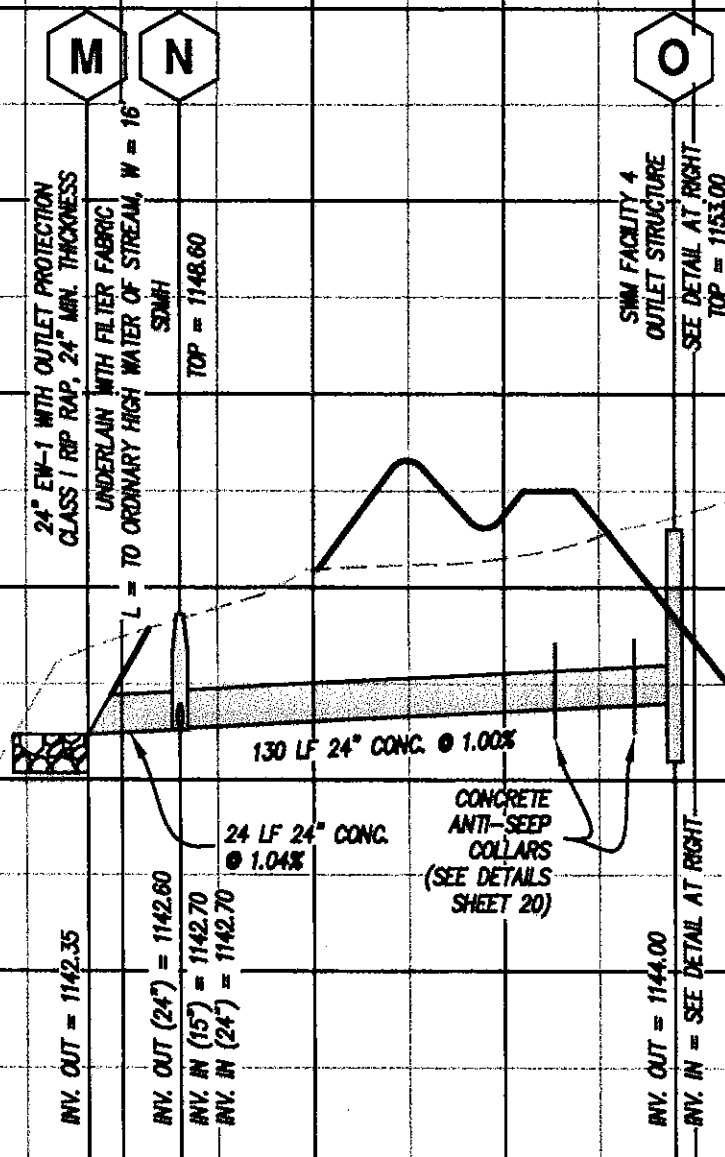
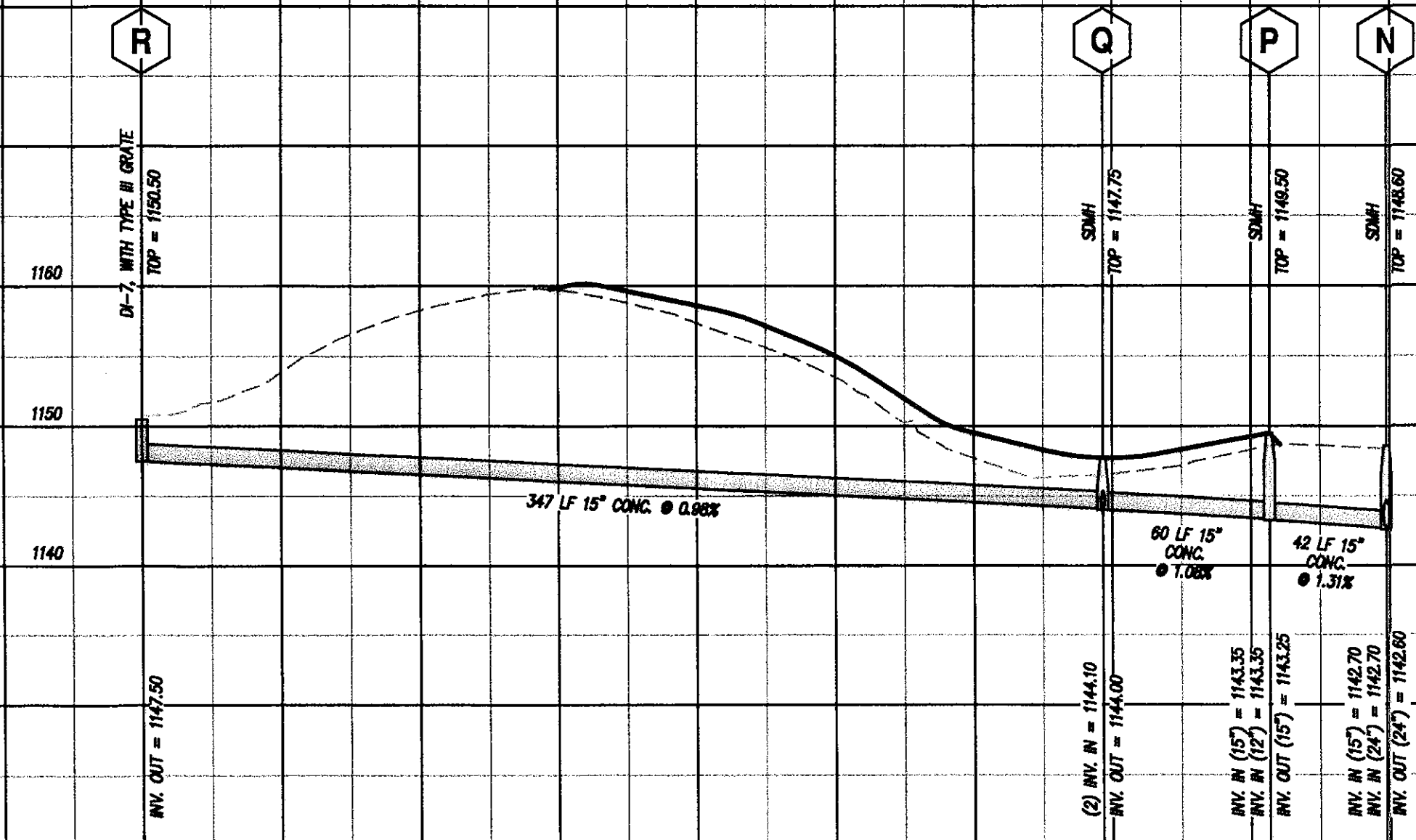
TYPE "A" DITCH

NO SCALE



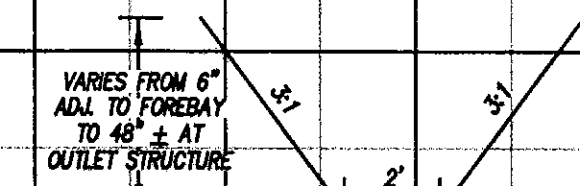
TYPE "D" DITCH

NO SCALE

SWM FACILITY 3
BERM CROSS SECTION

DETENTION POND CONSTRUCTION

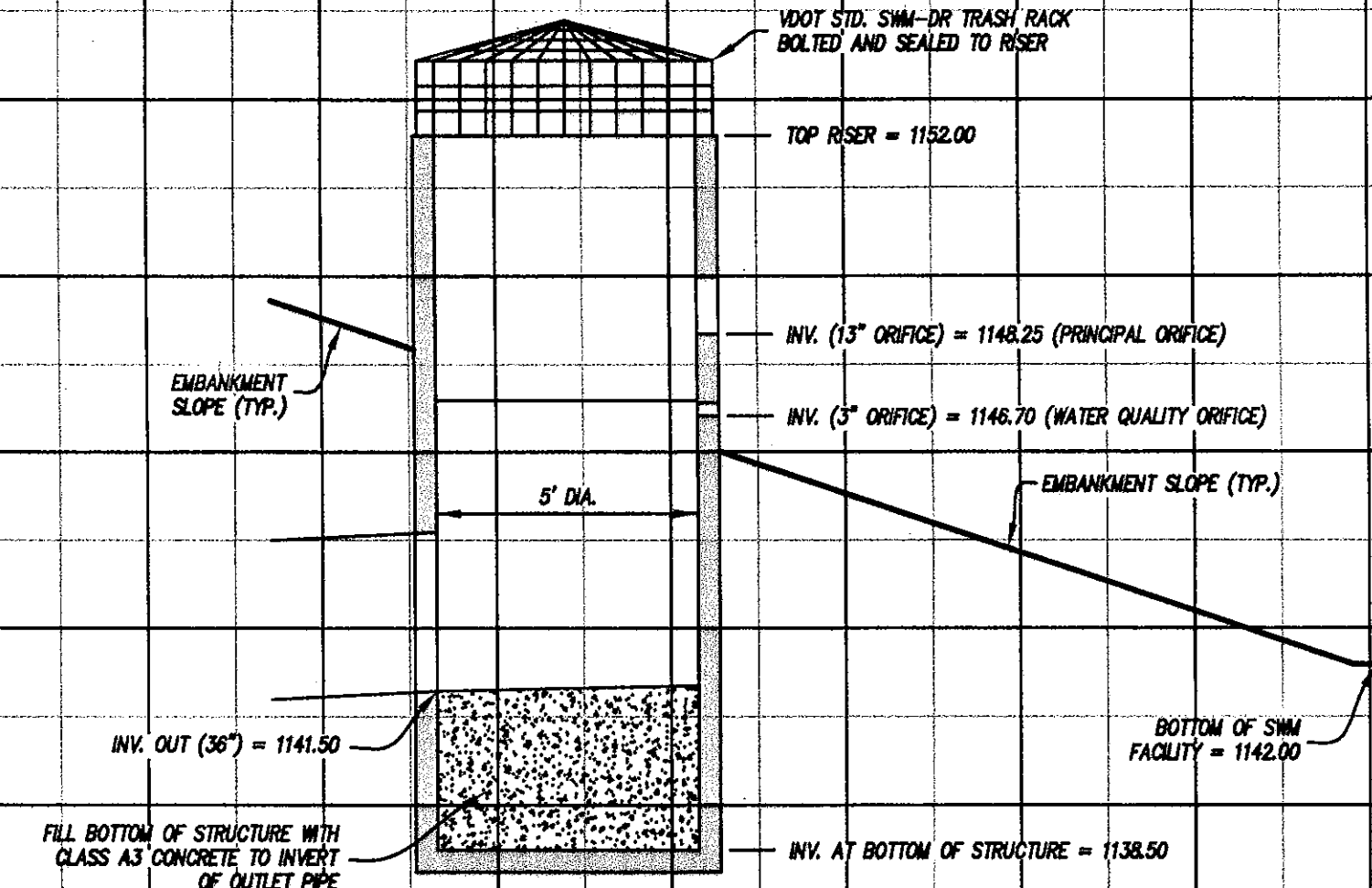
1. CONTRACTOR SHALL REVIEW THE GEOTECHNICAL REPORT FOR THIS SITE PERFORMED BY GEOTECHNICS, INC. DATED MARCH 8, 2007.
2. THE STORMWATER MANAGEMENT FACILITIES SHOULD BE LINED WITH AT LEAST SIXTEEN (16) INCHES (TWO LIFTS) OF CLAY SOIL COMPACTED TO AT LEAST 90% OF STANDARD PROCTOR.
3. SOILS CLASSIFIED AS "OH" OR "OL" SHALL BE USED TO CONSTRUCT THE EMBANKMENT FOR THE DETENTION POND. A CUTOFF TRENCH SHALL ALSO BE INCLUDED ALONG THE ENTIRE LENGTH OF THE EMBANKMENT. THE CUTOFF TRENCH SHALL BE EIGHT (8) FEET WIDE AND SHALL EXTEND A MINIMUM OF FOUR (4) FEET INTO NATURAL GROUND WITH 1:1 SIDE SLOPES. THE EMBANKMENT SHALL BE PLACED IN MAXIMUM EIGHT (8) INCH LOOSE LIFTS AND THEN COMPACTED USING HEAVY SHEEPSFOOT OR PADFOOT TYPE ROLLERS. THE EMBANKMENT MATERIAL SHALL BE COMPACTED TO AT LEAST 95 PERCENT OF MAXIMUM DRY DENSITY, STANDARD PROCTOR, AT A MOISTURE CONTENT OF TWO (2) TO FOUR (4) PERCENT ABOVE OPTIMUM. THE RESULTS OF THE COMPACTION AND MOISTURE TEST SHALL BE PROVIDED TO ROANOKE COUNTY AND/OR THE OWNER.

SWM FACILITY 4
BERM CROSS SECTION

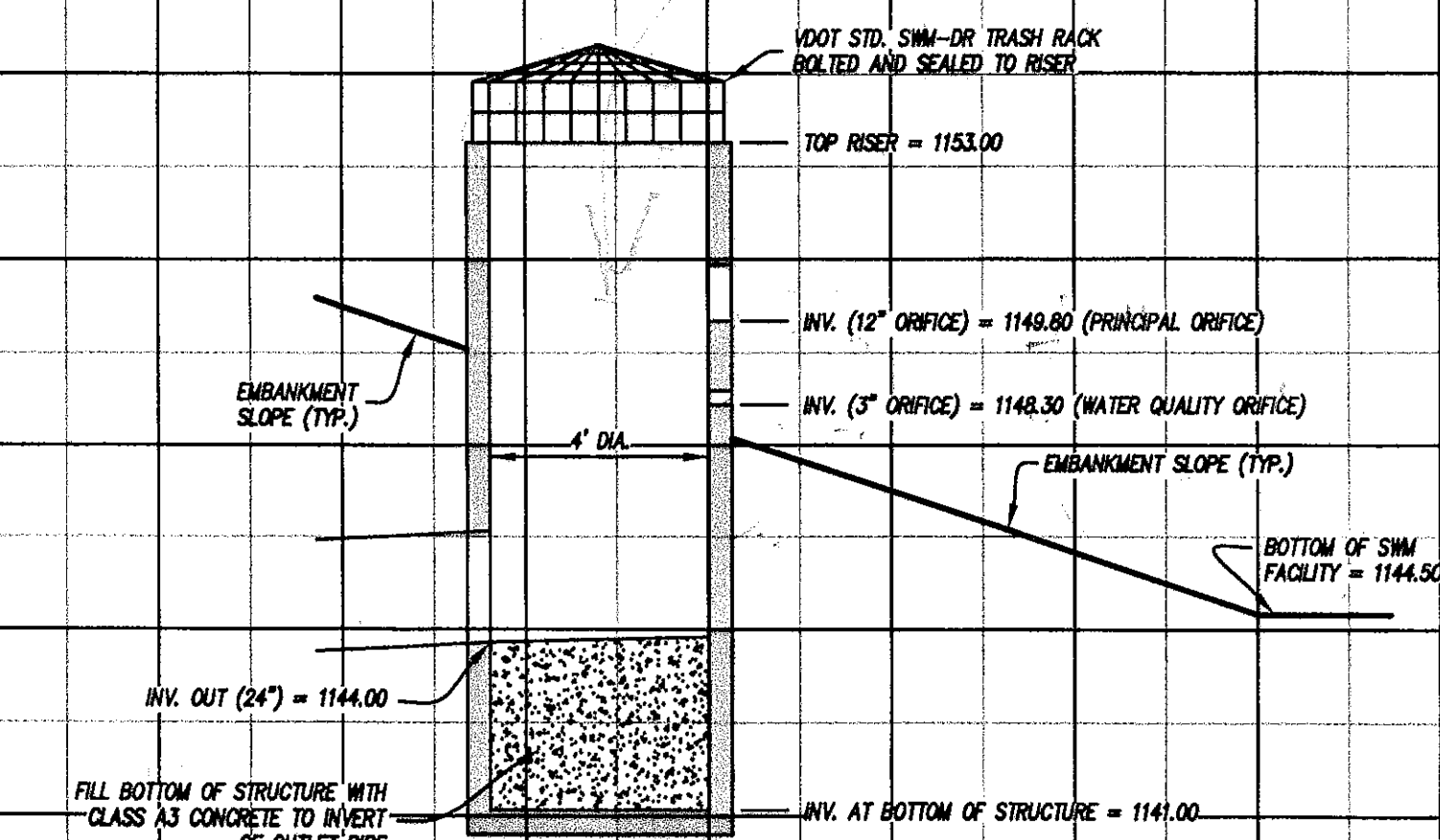
1. GRADE LOW FLOW AREA AT A MINIMUM OF 1% FROM SEDIMENT FOREBAY OUTLET TO SWM FACILITY OUTLET STRUCTURE.
2. LOW FLOW AREA TO BE SEED AS SHOWN ON THE LANDSCAPE PLAN.

LOW FLOW AREA
CROSS SECTION

NO SCALE

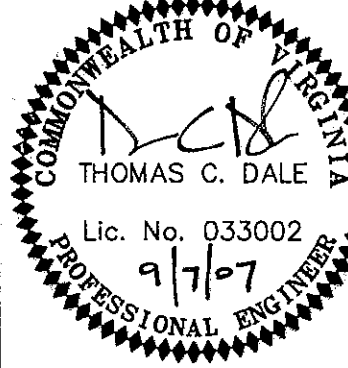
SWM FACILITY 3
OUTLET STRUCTURE ("L")

NO SCALE

SWM FACILITY 4
OUTLET STRUCTURE ("O")

NO SCALE

LUMSDEN ASSOCIATES, P.C.
ENGINEERS-SURVEYORS-PLANNERS
ROANOKE, VIRGINIA



OVERALL SITE INFRASTRUCTURE AND
MASS GRADING DEVELOPMENT PLANS FOR
THE OPIDAN RETAIL CENTER
PREPARED FOR
OPIDAN INVESTMENT COMPANY
HOLLINS MAGISTERIAL DISTRICT
ROANOKE COUNTY, VIRGINIA

OVERALL SITE INFRASTRUCTURE AND
MASS GRADING DEVELOPMENT PLANS FOR
THE OPIDAN RETAIL CENTER
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HOLLINS MAGISTERIAL DISTRICT
ROANOKE COUNTY, VIRGINIA

NO.	DATE	DESCRIPTION	DEVELOPER REVISIONS
1	9/7/07		
2			
3			
4			
5			

DATE: June 5, 2007

SCALE:
(H) 1"=50' (V) 1"=10'

COMMISSION NO. 2006-2240

SHEET 15 OF 23

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