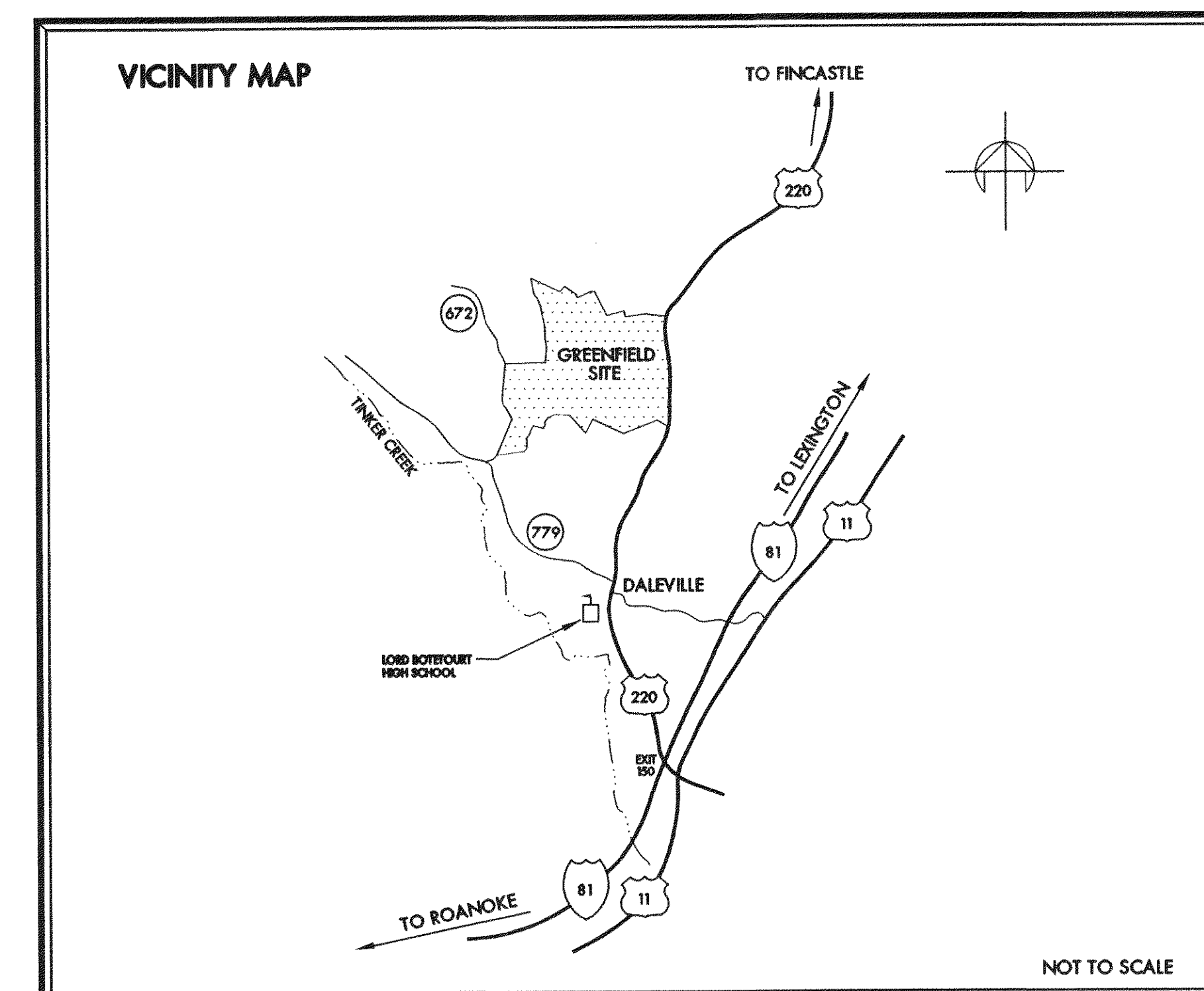
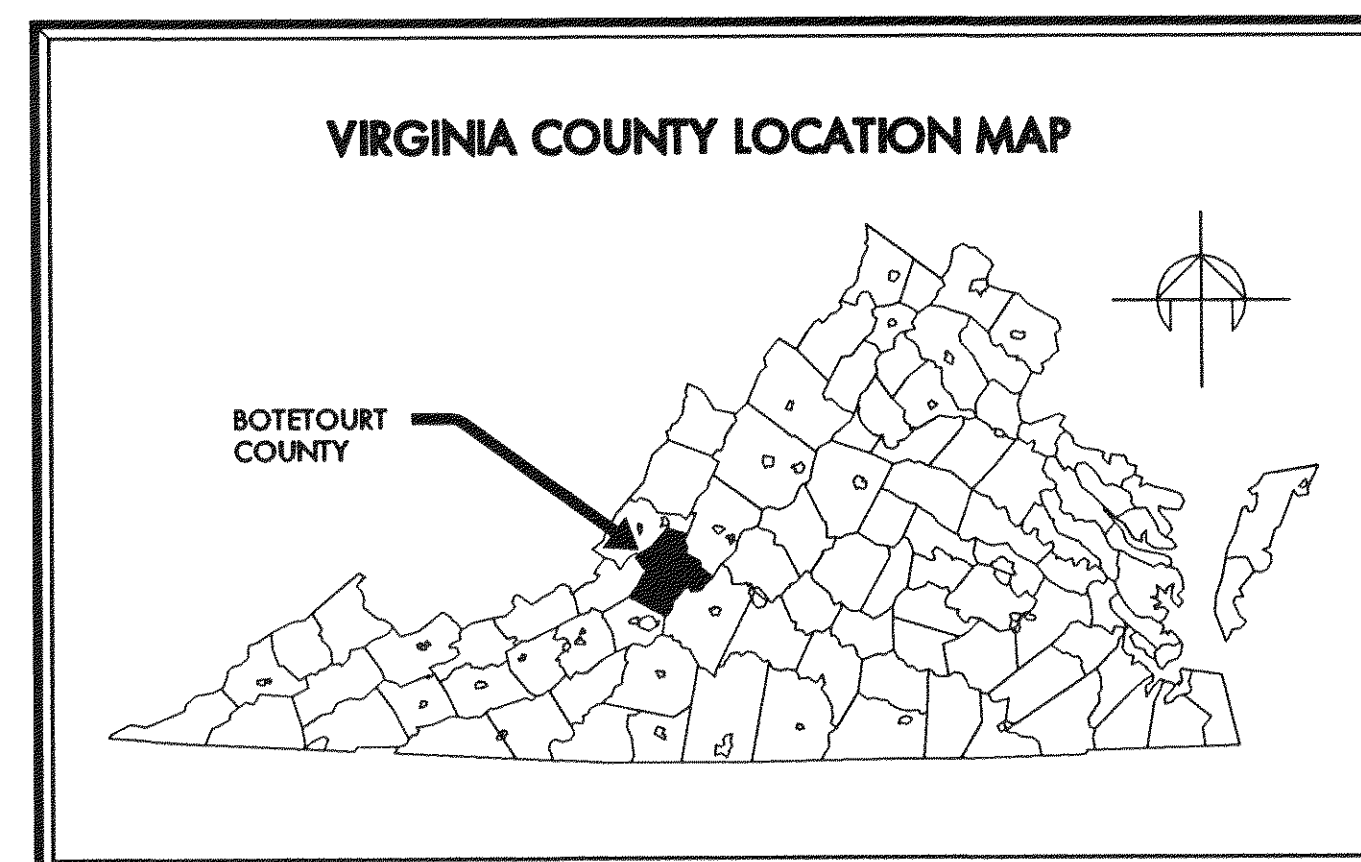


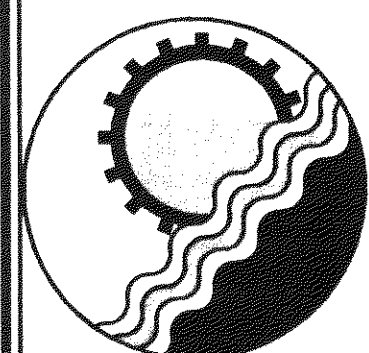
# SOUTH CENTER DRIVE & SANITARY SEWER EXTENSION

## BOTETOURT COUNTY DEPARTMENT OF PUBLIC FACILITIES AND PROGRAMS

BOTETOURT COUNTY, VIRGINIA  
FEBRUARY 2001

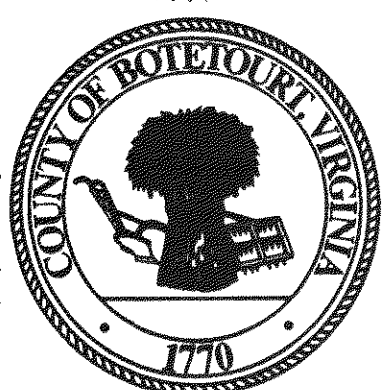
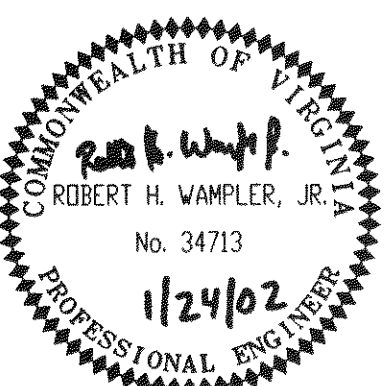


VDOT PROJECT 0843-011-249, M501  
BOTETOURT CENTER AT GREENFIELD INDUSTRIAL ACCESS  
DESIGN SPEED = 30MPH  
RURAL LOCAL ROAD



ENGINEERING CONCEPTS, INC.

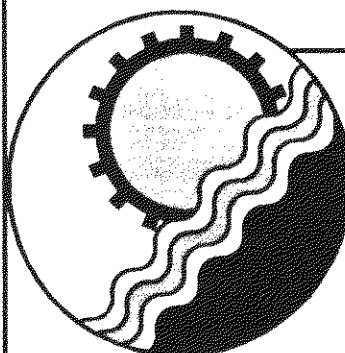
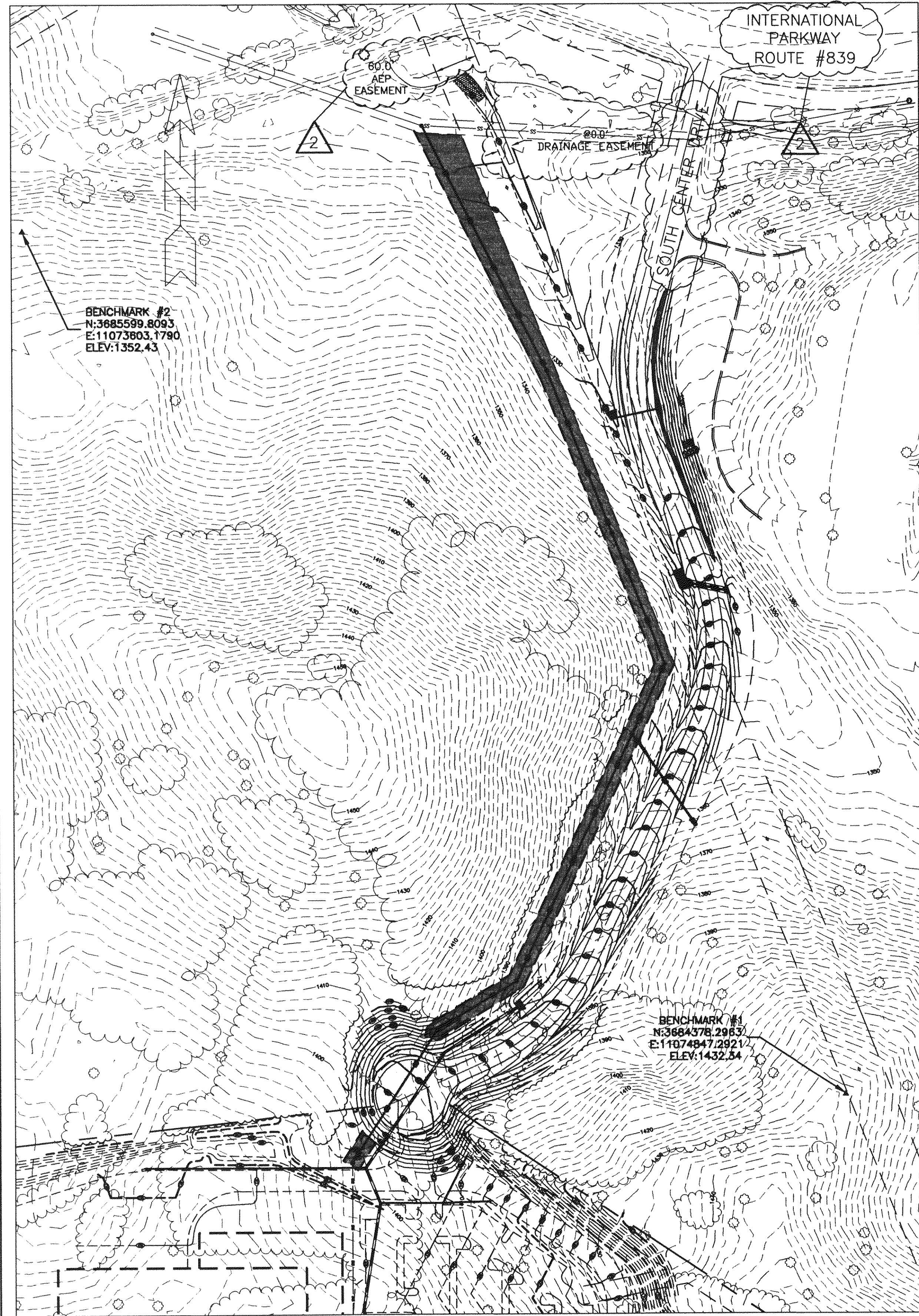
20 S. ROANOKE ST., PO BOX 619  
FINCASTLE, VIRGINIA 24090  
540.473.1253 FAX: 540.473.1254



OWNER: BOTETOURT COUNTY

DEPARTMENT OF PUBLIC WORKS  
1 WEST MAIN ST., BOX 4  
FINCASTLE, VIRGINIA 24090  
540.473.8316





## ENGINEERING CONCEPTS, INC.

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FINCASTLE, VIRGINIA 24090  
540.473.1253 FAX: 540.473.1254

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- C10. MISCELLANEOUS DETAILS

## KEY CONTACTS

1. BOTETOURT COUNTY DEPT. OF PUBLIC FACILITIES & PLANNING  
COUNTY ENGINEER: KEVIN SHEARER, P.E.  
540-473-8316
2. ENGINEERING CONCEPTS, INC.  
PROJECT ENGINEER: BOBBY WAMPLER, PE  
540-473-1253
3. AMERICAN ELECTRIC POWER  
RICK JOHNSON  
540-982-7438
4. VIRGINIA DEPARTMENT OF TRANSPORTATION  
ASSISTANT RESIDENT ENGINEER: RAY VARNEY  
540-387-5488

## MISCELLANEOUS NOTES:

1. HDPE PIPE SHALL BE ADVANCED DRAINAGE SYSTEMS N-12 OR APPROVED EQUAL.
2. ALL EXPOSED EDGES OF EXISTING BITUMINOUS SURFACE COURSE SHALL BE PRIMED WITH ASPHALTIC MIXTURE PRIOR TO NEW ASPHALT PLACEMENT.

## GRADING NOTES:

1. FILL SHALL BE PLACED ONLY ON FIRM SUBGRADES APPROVED BY THE SOILS ENGINEER. SUBGRADES SHALL BE SCARIFIED TO A DEPTH OF 4 INCHES PRIOR TO FILL PLACEMENT TO ASSURE BONDING BETWEEN THE TWO SOILS. ALL FILL AREAS SHALL BE COMPACTED TO A DRY DENSITY OF AT LEAST 95% OF DRY DENSITY (ASTM D698) WITH THE UPPER 2.0' UNDER PAVEMENT TO BE 100% OF DRY DENSITY (ASTM D698), UNLESS NOTED OTHERWISE. THE COMPACTION SHALL BE ACCOMPLISHED BY PLACING FILL IN 8 INCH LIFTS AND MECHANICALLY COMPACTING EACH LIFT TO THE REQUIRED DENSITY. THE SOILS ENGINEER SHALL PERFORM FIELD DENSITY TEST ON EACH LIFT OR AS NECESSARY TO ASCERTAIN THAT ADEQUATE COMPACTION HAS BEEN ACHIEVED. CALIFORNIA BEARING RATIO TESTS SHALL BE PERFORMED IN MATERIAL PROPOSED FOR USE BENEATH PAVEMENT WHETHER CUT OR FILL.
2. CLEAR SITE WITHIN LIMITS OF GRADING WORK. DO NOT DISTURB AREAS OUTSIDE OF GRADING LIMITS OR PROPERTY BOUNDARY.
3. REMOVE TREES, SHRUBS, GRASS AND OTHER VEGETATION, IMPROVEMENTS OR OBSTRUCTIONS AS REQUIRED TO PERMIT INSTALLATION OF NEW CONSTRUCTION. ALL UNSUITABLE MATERIAL SHALL BE DISPOSED OF IN A MANNER AND LOCATION ACCEPTABLE TO THE GOVERNING AUTHORITY. REMOVE TREES AND OTHER VEGETATION, INCLUDING STUMPS AND ROOTS, COMPLETELY IN AREAS REQUIRED FOR SUBSEQUENT SEEDING. CUT OFF TREES AND STUMPS IN AREAS TO RECEIVE FILL MORE THAN THREE FEET IN DEPTH TO WITHIN EIGHT INCHES OF THE ORIGINAL GROUND SURFACE.
4. BARRICADE OPEN EXCAVATIONS OCCURRING AS PART OF THIS WORK AND OPERATE WARNING LIGHTS AS RECOMMENDED BY AUTHORITIES HAVING JURISDICTION.
5. SURFACE UNDER PAVEMENTS TO COMPLY WITH CROSS SECTIONS, ELEVATIONS AND GRADES AS INDICATED.
6. EXCAVATE TRENCHES TO UNIFORM WIDTH CONFORMING TO VDOT STANDARD PB-1 FOR STORM DRAINAGE PIPING AND UB-1 FOR SANITARY SEWER AND WATER. BACK FILL TRENCHES WITH CONTROLLED FILL.
7. PREVENT SURFACE WATER AND SUBSURFACE OR GROUND WATER FROM FLOWING INTO EXCAVATIONS AND FROM FLOODING PROJECT SITE AND SURROUNDING AREA. DO NOT ALLOW WATER TO ACCUMULATE IN EXCAVATIONS. REMOVE WATER TO PREVENT SOFTENING OF FOUNDATION BOTTOMS, UNDERCUTTING FOOTINGS, AND SOIL CHANGES DETRIMENTAL TO STABILITY OF SUBGRADES AND FOUNDATIONS. CONVEY WATER REMOVED FROM EXCAVATIONS AND RAIN WATER TO COLLECTING OR RUNOFF AREAS. ESTABLISH AND MAINTAIN TEMPORARY DRAINAGE DITCHES AND OTHER DIVERSIONS OUTSIDE EXCAVATION LIMITS FOR EACH STRUCTURE. DO NOT USE TRENCH EXCAVATIONS AS TEMPORARY DITCHES.
8. PROTECT GRADED AREAS FROM TRAFFIC AND EROSION. REPAIR AREAS WHICH HAVE SETTLED, ERODED, OR BECOME DAMAGED DUE TO CONSTRUCTION ACTIVITIES AT NO ADDITIONAL COST TO OWNER.
9. ALL SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE CAPPED AND PIPED TO THE NEAREST STORM SEWER SYSTEM OR NATURAL WATERCOURSE. THE PIPE SHALL BE A MINIMUM OF 6" DIAMETER AND CONFORM TO V.D.O.T. STANDARD SB-1.
10. CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE IN ALL AREAS TO PREVENT PONDING OF WATER.

## GENERAL SITE NOTES:

1. THIS SITE DOES NOT LIE WITHIN A F.E.M.A. DESIGNATED FLOOD ZONE
2. TOPOGRAPHIC INFORMATION FROM AERIAL TOPOGRAPHY BY ANDERSON AND ASSOCIATES DATED JULY 1996.
3. THE CONTRACTOR SHALL MAINTAIN LIMITS OF CONSTRUCTION WITHIN THE PROPERTY BOUNDARIES OR EASEMENTS AS INDICATED.
4. AN APPROVED SET OF PLANS SHALL BE KEPT ON THE SITE AT ALL TIMES.
5. ALL CONSTRUCTION DEBRIS SHALL BE CONTAINERIZED IN CONFORMANCE WITH THE VIRGINIA LITTER CONTROL ACT AND DISPOSED OF IN A MANNER AND LOCATION ACCEPTABLE TO THE GOVERNING JURISDICTION. AT LEAST ONE TRASH RECEPTACLE SHALL BE ON-SITE DURING CONSTRUCTION.
6. TEMPORARY TOILETS SHALL BE PROVIDED ON-SITE AT A RATIO OF ONE TOILET PER 30 WORKERS DURING THE CONSTRUCTION PERIOD.
7. GRADE STAKES SHALL BE SET FOR CURB & GUTTER, SANITARY SEWERS, WATER LINES, AND STORM SEWER.
8. BURNING ON-SITE MUST BE APPROVED AND COORDINATED WITH THE BOTETOURT COUNTY SHERIFF'S OFFICE.
9. CONTRACTOR MUST VERIFY ADEQUATE CLEARANCE UNDER ANY OVERHEAD UTILITY LINES AND COORDINATE THE RAISING OF ANY LINES, IF NECESSARY, WITH THE AFFECTED UTILITY COMPANIES.

## COORDINATION NOTE

THE PROPOSED ROAD ALIGNMENT FOR THIS PROJECT IS CURRENTLY BEING USED AS THE CONSTRUCTION ACCESS ROUTE FOR THE NEW ALTEC INDUSTRIES BUILDING PROJECT. THE CONSTRUCTION ACCESS ROUTE WILL BE ABANDONED WITH ONE WEEK'S WRITTEN NOTICE. OVERLAP BETWEEN THE TWO PROJECTS OCCURS IN THE VICINITY OF THE CUL-DE-SAC AND INVOLVES GRADING, STORM DRAINAGE, SANITARY SEWER, AND PAVING, ALL OR NONE OF WHICH MAY BE CONSTRUCTED AT THE TIME OF THIS PROJECT. THE CONTRACTORS ARE ENCOURAGED TO START COMMUNICATION REGARDING COORDINATION OF THESE CONSTRUCTION ACTIVITIES AT THE EARLIEST OPPORTUNITY.

## GENERAL NOTES

1. INFORMATION ON THESE DRAWINGS CONCERNING THE LOCATION AND ELEVATION OF EXISTING UTILITIES, STRUCTURES, AND OBSTRUCTIONS HAS BEEN PREPARED FROM THE MOST RELIABLE INFORMATION AVAILABLE TO THE ENGINEER. THE ACCURACY AND COMPLETENESS OF THIS INFORMATION ARE NOT GUARANTEED, HOWEVER, NOR DOES THE ENGINEER ACCEPT ANY RESPONSIBILITY WHATSOEVER FOR DEVIATIONS OF THE EXISTING UTILITIES, STRUCTURES, OTHER FACILITIES, AND OBSTRUCTIONS FROM THE LOCATIONS AND ELEVATIONS INDICATED OR FOR THE EXISTENCE OF UTILITIES, STRUCTURES, OTHER FACILITIES, AND OBSTRUCTIONS NOT INDICATED ON THESE DRAWINGS.
2. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION TO ELIMINATE ANY POSSIBILITY OF ANY DISTURBANCE OF OR DAMAGE TO PUBLIC AND PRIVATELY-OWNED UTILITIES, STRUCTURES, OTHER FACILITIES, AND OBSTRUCTION RESULTING FROM HIS ACTIVITIES. TO THIS END, CONTRACTOR SHALL, AT NO ADDITIONAL COST TO THE OWNER, TAKE ALL MEASURES NECESSARY TO PROVIDE, AND SHALL BE SOLELY RESPONSIBLE FOR, TEMPORARY SUPPORT AND SHORING, ADEQUATE PROTECTION, AND MAINTENANCE OF CONTINUOUS OPERATION OF ALL UNDERGROUND AND ABOVEGROUND WATER, SEWER, AND GAS MAINS AND SERVICE LINES; PETROLEUM LINES; TELEPHONE, TELEVISION, AND ELECTRICAL LINES, CABLES, AND POLES; EQUIPMENT CABLES AND CONDUITS; STORM SEWERS; BUILDINGS; TANKS; FENCES; AND ALL OTHER UTILITIES, STRUCTURES, BRIDGES, FACILITIES, AND OBSTRUCTIONS, WHETHER OR NOT INDICATED ON THESE DRAWINGS. ALL DISTURBED OR DAMAGED UTILITIES, STRUCTURES, BRIDGES, OTHER FACILITIES, AND OBSTRUCTIONS SHALL BE IMMEDIATELY REPAIRED, REPLACED, OR COMPENSATED FOR BY THE CONTRACTOR TO OWNER'S SATISFACTION, AND AT NO ADDITIONAL COST TO THE OWNER.
3. THE CONTRACTOR SHALL BEAR SOLE RESPONSIBILITY FOR THE CHARACTER AND ACTUAL LOCATIONS AND ELEVATIONS OF ALL EXISTING UTILITIES, STRUCTURES, BRIDGES, OTHER FACILITIES, AND OBSTRUCTIONS WITHIN THE PROJECT AREA. THE CONTRACTOR SHALL, AT NO ADDITIONAL COST TO THE OWNER, CONTACT THE OWNERS/OPERATORS OF ALL UTILITIES AND ARRANGE FOR THE VERIFICATION AND MARKING OF UTILITY LOCATIONS BY SAID OWNERS/OPERATORS. THE CONTRACTOR SHALL ASSIST THE UTILITY OWNERS/OPERATORS BY EVERY MEANS POSSIBLE TO DETERMINE THE LOCATION OF UTILITIES. THE CONTRACTOR SHALL BEAR SOLE RESPONSIBILITY FOR ALL DISTURBANCE OF ANY DAMAGE TO UTILITIES RESULTING FROM THE CONTRACTOR'S FAILURE TO ARRANGE FOR THE LOCATION OF UTILITIES BY THE OWNERS/OPERATORS OF THE UTILITIES. CONTACT MISS UTILITY (800) 552-7001.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL NEW ABOVE AND BELOW GRADE PIPING, STRUCTURES, ELECTRICAL EQUIPMENT AND CONDUIT, AND OTHER FACILITIES AT THE PROJECT SITE, FROM ALL DISTURBANCE OR DAMAGE WHICH MAY RESULT FROM THE PERFORMANCE OF WORK ON THIS PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE REPAIR OR REPLACEMENT OF ALL NEW ABOVE AND BELOW GRADE PIPING STRUCTURES, ELECTRICAL EQUIPMENT AND CONDUIT, AND OTHER FACILITIES AT THE PROJECT SITE WHICH MAY BE DISTURBED OR DAMAGED AS A RESULT OF THE PERFORMANCE OF WORK ON THIS PROJECT.
5. SITE CONDITIONS MAY NECESSITATE SLIGHT DEVIATIONS IN ALIGNMENT, GRADE, AND/OR LOCATION OF NEW FACILITIES FROM THE ALIGNMENT, GRADE, AND/OR LOCATION INDICATED ON THESE DRAWINGS. THE CONTRACTOR SHALL CONSTRUCT THE NEW FACILITIES TO SUCH DEVIATIONS AS DIRECTED BY THE ENGINEER WITHOUT INCREASE IN THE CONTRACT PRICE OR FINE.
6. THE CONTRACTOR SHALL MAINTAIN A CLEAR FLOW PATH TO AND THROUGH ALL SURFACE WATER AND STORM WATER DRAINAGE FACILITIES AT ALL TIMES.
7. THE CONTRACTOR SHALL GRADE, SEED, AND/OR SOD, AND MULCH THE ENTIRE AREA(S) DISTURBED BY CONSTRUCTION ACTIVITIES.
8. CONSTRUCTION AND START-UP OF ALL WORK SHALL NOT INTERFERE WITH THE OPERATION OF WATER AND SEWERAGE FACILITIES. THE CONTRACTOR SHALL COORDINATE AND SCHEDULE ALL WORK WITH THE OWNERS AS REQUIRED.
9. MINIMUM COVER ON ALL PIPE SHALL BE 3 FEET, UNLESS OTHERWISE SPECIFICALLY INDICATED ON THESE DRAWINGS. ALL PIPE SHALL BE INSTALLED WITH WARNING/CAUTION DETECTOR TAPE 18" FROM FINISHED GRADE.
10. WHERE IT IS NECESSARY TO DEFLECT PIPE EITHER HORIZONTALLY OR VERTICALLY, PIPE JOINT DEFLECTION OR BARREL BEND RADIUS SHALL NOT EXCEED 75% OF THE MANUFACTURER'S RECOMMENDED DEFLECTION ANGLE OR BEND RADIUS.
11. ALL PIPING SHALL BE PROPERLY SUPPORTED. ALL PIPING WHICH WILL BE PRESSURIZED DURING OPERATION SHALL BE PROPERLY RESTRAINED.
12. ALL CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE CURRENT BOCA AND/OR STATE AND LOCAL BUILDING CODES.
13. CONTRACTOR SHALL MAINTAIN THE CONSTRUCTION AREA IN A SAFE AND ACCEPTABLE MANNER AND SHALL BE RESPONSIBLE FOR REMEDIATING ANY DAMAGES RESULTING FROM FAILURE TO DO SO.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND MAINTAINING COMPLIANCE WITH ALL NECESSARY PERMITS, INCLUDING BUT NOT LIMITED TO LAND DISTURBING PERMIT, VDOT ROAD ENTRANCE PERMITS, AND BUILDING PERMITS.

## 15. QUALITY CONTROL

STREETS TO BE GRADED, PAVED, AND ALL STRUCTURAL COMPONENTS ERECTED IN ACCORDANCE WITH THE VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE SPECIFICATIONS AND ROAD DESIGN STANDARDS DATED JANUARY 1994. ALL MATERIALS USED SHALL BE TESTED IN ACCORDANCE WITH STANDARD POLICIES. THE DEVELOPER MUST CONTACT THE OFFICE OF THE RESIDENT ENGINEER PRIOR TO BEGINNING ANY CONSTRUCTION AT WHICH TIME AN INSPECTION AND TESTING PROCEDURE POLICY WILL BE DRAWN. THE DEVELOPER WILL PRODUCE TEST REPORTS FROM APPROVED INDEPENDENT LABORATORIES AT THE DEVELOPER'S EXPENSE.

THE PAVEMENT DESIGNS SHOWN ARE BASED ON A SUBGRADE RATING OF CBR6 OR GREATER. THE SUBGRADE SOIL IS TO BE TESTED BY AN INDEPENDENT LABORATORY AND THE RESULTS SUBMITTED TO THE VIRGINIA DEPARTMENT OF TRANSPORTATION PRIOR TO PAVEMENT CONSTRUCTION. SHOULD THE CBR VALUES BE LESS THAN DESIGN CBR, THEN ADDITIONAL BASE MATERIAL WILL BE REQUIRED IN ACCORDANCE WITH DEPARTMENTAL SPECIFICATIONS.

THE SUBGRADE MUST BE APPROVED BY THE VIRGINIA DEPARTMENT OF TRANSPORTATION PRIOR TO PLACEMENT OF BASE MATERIAL. BASE MUST BE APPROVED BY THE VIRGINIA DEPARTMENT OF TRANSPORTATION FOR DEPTH, TEMPLATE, AND COMPACTION BEFORE SURFACE IS APPLIED.

## 16. UTILITIES

ALL UNDERGROUND UTILITIES WILL BE PLACED PRIOR TO PAVEMENT BASE AND CONDUIT PROVISIONS MADE FOR THE SAME (I.E. WATER, SEWER, GAS, TELEPHONE, ETC.).

PERMITS WILL BE REQUIRED FOR ALL UTILITIES WITHIN THE STREET RIGHT-OF-WAY PRIOR TO ACCEPTANCE INTO THE SECONDARY HIGHWAY SYSTEM.

ANY EASEMENT GRANTED TO A UTILITY FOR PLACEMENT OF POWER, TELEPHONE, WATER, SEWER, ETC., MUST BE RELEASED PRIOR TO ACCEPTANCE.

## 17. EROSION CONTROL AND LANDSCAPING

CARE MUST BE TAKEN DURING CONSTRUCTION TO PREVENT EROSION, DUST, AND MUD FROM DAMAGING ADJACENT PROPERTY, CLOGGING DITCHES, TRACKING PUBLIC STREETS, AND OTHERWISE CREATING A PUBLIC NUISANCE TO SURROUNDING AREAS.

THE ENTIRE CONSTRUCTION AREA BACK OF THE PAVEMENT SHALL BE BACKFILLED AND SEEDING TOGETHER WITH THE DITCHES AND CHANNELS, AT THE EARLIEST POSSIBLE TIME AFTER FINAL GRADING.

DRAINAGE EASEMENTS MUST BE DEFINED BY EXCAVATED DITCHES OR CHANNELS FOR THEIR FULL LENGTH TO WELL DEFINED EXISTING NATURAL WATERCOURSES.

ALL VEGETATION AND OVERBURDEN TO BE REMOVED FROM SHOULDER TO SHOULDER PRIOR TO CONDITIONING (CUTTING AND/OR PREPARATION) OF THE SUBGRADE.

WHILE THESE PLANS HAVE BEEN APPROVED, SUCH APPROVAL DOES NOT EXEMPT CONNECTIONS WITH EXISTING STATE MAINTAINED ROADS FROM CRITICAL REVIEW AT THE TIME PERMIT APPLICATIONS ARE MADE. THIS IS NECESSARY IN ORDER THAT THE PREVAILING CONDITIONS BE TAKEN INTO CONSIDERATION REGARDING SAFETY ACCOMPANIMENTS SUCH AS TURNING LANES.

STANDARD GUARDRAIL WITH SAFETY END SECTIONS MAY BE REQUIRED ON FILLS AS DEEMED NECESSARY BY THE VDOT ENGINEER. AFTER COMPLETION OF ROUGH GRADING OPERATIONS, THE VDOT ENGINEER SHALL BE NOTIFIED SO THAT A FIELD REVIEW MAY BE MADE OF THE PROPOSED LOCATIONS.

CONTRACTOR SHALL OBTAIN ENTRANCE PERMIT TO THE EXISTING VIRGINIA DEPARTMENT OF TRANSPORTATION RIGHT-OF-WAY FROM THE RESIDENT ENGINEER PRIOR TO ROAD CONSTRUCTION.

THE STREETS MUST BE PROPERLY MAINTAINED UNTIL ACCEPTANCE. AT SUCH TIME AS ALL REQUIREMENTS HAVE BEEN MET FOR ACCEPTANCE, ANOTHER INSPECTION WILL BE MADE TO DETERMINE THAT THE STREET HAS BEEN PROPERLY MAINTAINED.

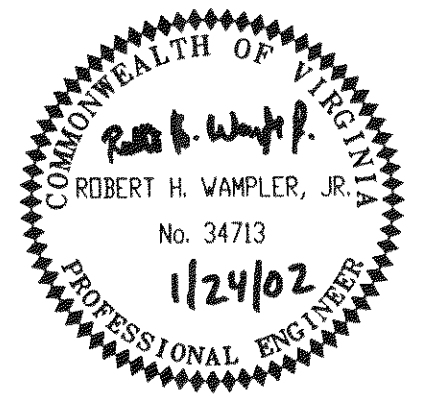
THE CONTRACTOR SHALL VERIFY THE LOCATION AND ELEVATION OF ALL UNDERGROUND UTILITIES SHOWN ON THE PLANS IN AREAS OF CONSTRUCTION PRIOR TO STARTING WORK. CONTACT THE ENGINEER IMMEDIATELY IF THE LOCATION OR ELEVATION IS DIFFERENT FROM THAT SHOWN ON THE PLAN. IF THERE APPEARS TO BE A CONFLICT, AND UPON DISCOVERY OF ANY UTILITY NOT SHOWN ON THIS PLAN, CONTACT "MISS UTILITY" OF CENTRAL VIRGINIA AT 1-800-552-7001.

## 18. TREE PROTECTION

ALL TREES LARGER THAN A 6" CALIPER ADJACENT TO CONSTRUCTION ACTIVITIES BUT NOT SHOWN TO BE REMOVED SHALL BE PROTECTED.

## 19. INSPECTION REPORT

AN INSPECTION REPORT MUST BE FILED WITH THE BOTETOURT COUNTY EROSION AND SEDIMENT CONTROL ADMINISTRATOR ONCE EVERY TWO WEEKS, AND WITHIN 48 HOURS OF ANY RUNOFF-PRODUCING RAINFALL EVENT. FAILURE TO SUBMIT A REPORT WILL BE GROUNDS FOR IMMEDIATE REVOCATION OF THE LAND DISTURBING PERMIT. THE REPORT SCHEDULE SHALL BEGIN FROM THE DATE OF THE ON-SITE PRE-CONSTRUCTION MEETING. REPORTS MUST BE POSTMARKED WITHIN 24-HOURS OF THE DEADLINE. A STANDARD INSPECTION REPORT FORM WILL BE SUPPLIED, WHICH SHOULD BE COPIED AS NECESSARY. THIS PROVISION IN NO WAY WAIVES THE RIGHT OF BOTETOURT COUNTY PERSONNEL TO CONDUCT SITE INSPECTIONS, NOR DOES IT DENY THE RIGHT OF THE PERMITEE(S) TO ACCOMPANY THE INSPECTOR(S).



## STORMWATER DETENTION

STORMWATER MANAGEMENT FOR THIS PROJECT WILL BE PROVIDED BY A REGIONAL STORMWATER MANAGEMENT FACILITY, THE GREENFIELD LAKE LOCATED APPROXIMATELY 4000' DOWNSTREAM FROM THE PROJECT HAS BEEN DESIGNED AND CONSTRUCTED TO HANDLE STORMWATER MANAGEMENT FOR THE BOTETOURT CENTER AT GREENFIELD.

No.	Revision	By	Appd.	Date	Drawn	WTR
2	VDOT REVIEW COMMENTS	WTR	RHW	06/06/01	Designed	RHW
					Checked	
					Approved	

## SOUTH CENTER DRIVE AND SANITARY SEWER EXTENSION

## GENERAL NOTES & KEY SHEET

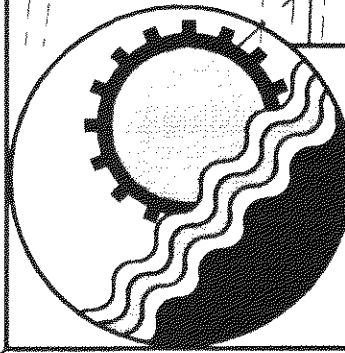
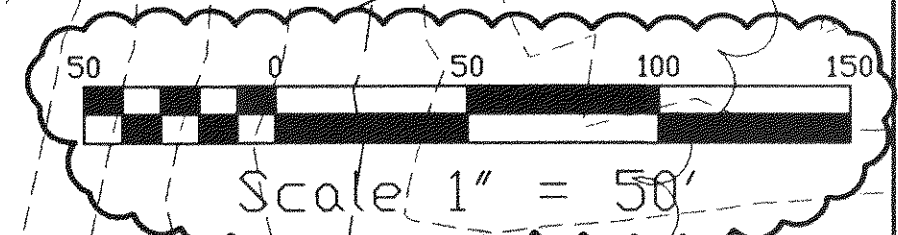
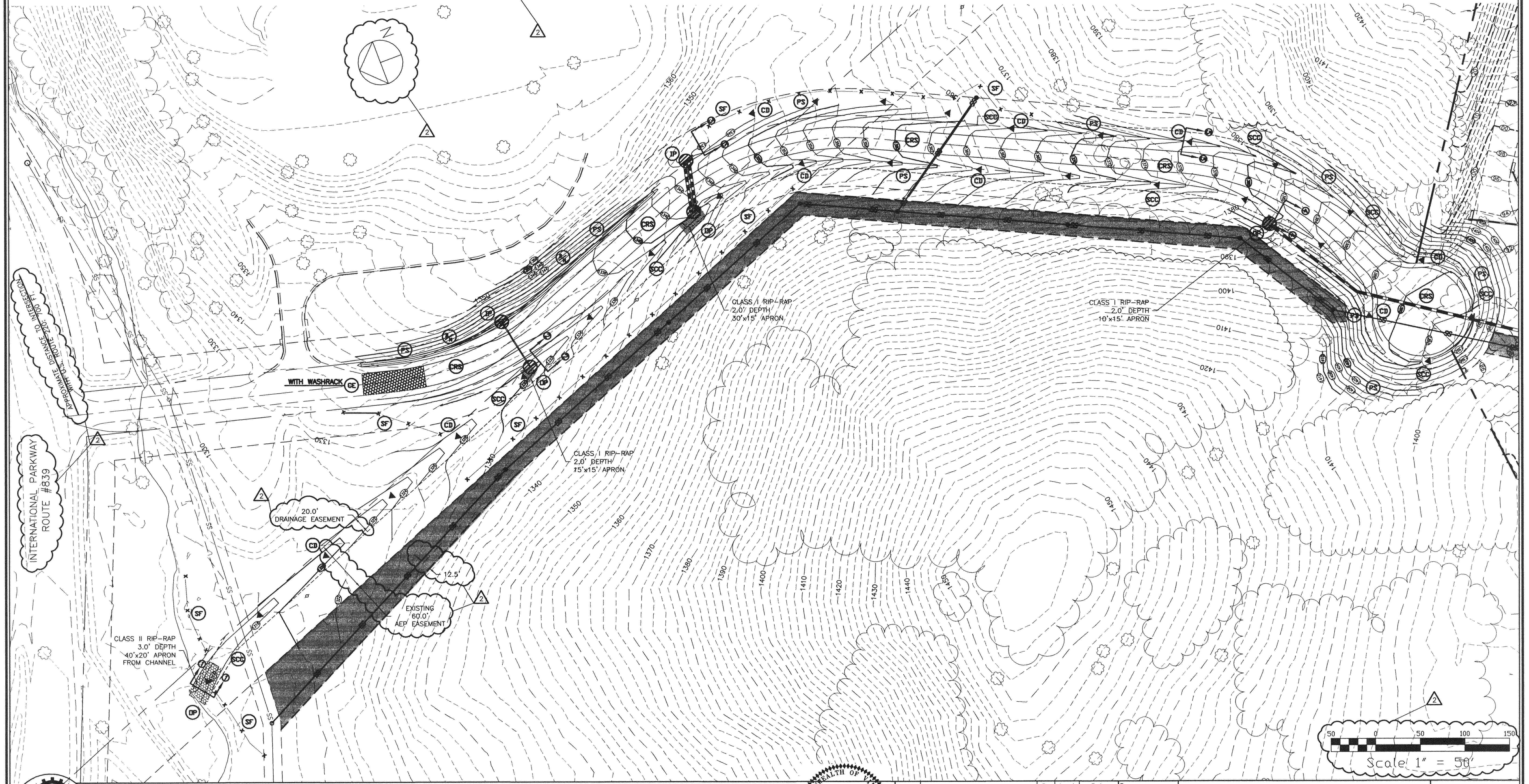
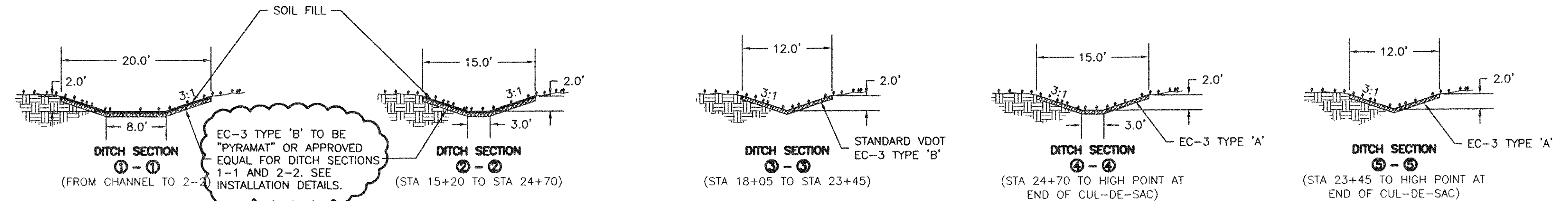
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FEBRUARY 2001

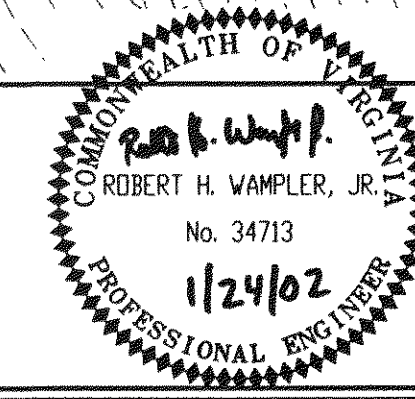
PROJECT: 00144

C2 of C10





**ENGINEERING CONCEPTS, INC.**  
 20 S. ROANOKE ST., PO BOX 619  
 FINCASTLE, VIRGINIA 24090  
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No.	Revision	By	Appd.	Date	Drawn	WTR
2	VDOT REVIEW COMMENTS	WTR	RHW	06/01/01	Designed	RHW
					Checked	
					Approved	

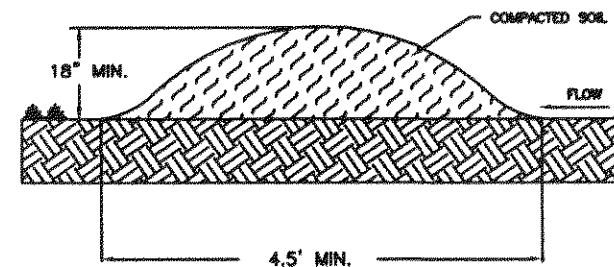
**SOUTH CENTER DRIVE  
 AND SANITARY SEWER EXTENSION**  
**EROSION & SEDIMENT  
 CONTROL PLAN**

SCALE: 1"=50'  
 FEBRUARY 2001  
 PROJECT: 00144  
 C3 of C10



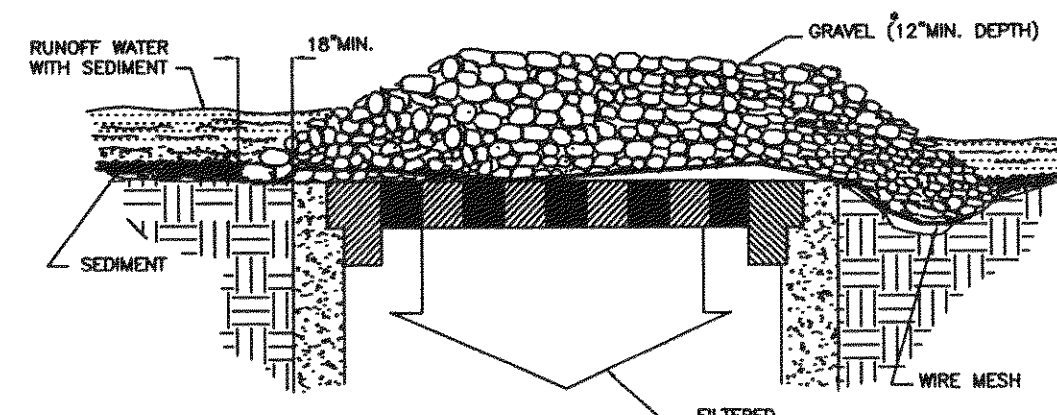
# GENERAL NOTES

- 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 VIRGINIA REGULATIONS VR 625-02-00 EROSION AND SEDIMENT CONTROL REGULATIONS.
- ES-2 THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRECONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO THE FINAL INSPECTION.
- 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.
- ES-8 DURING DEWATERING OPERATIONS, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.
- ES-9 THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.



- DD TEMPORARY DIVERSION DIKE
- FD TEMPORARY FILL DIVERSION
- RWD TEMPORARY RIGHT-OF-WAY DIVERSION
- DV DIVERSION

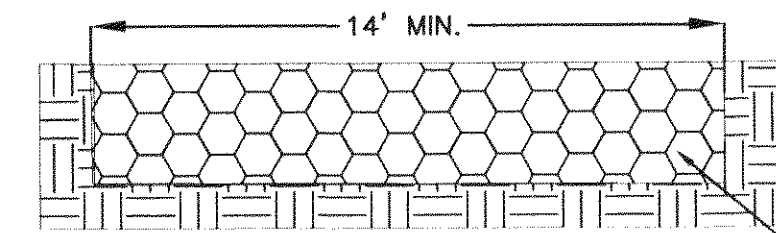
NOTE:  
TEMPORARY OR PERMANENT SEEDING AND MULCH SHALL BE APPLIED TO DISTURBED AREAS IMMEDIATELY FOLLOWING CONSTRUCTION OF DIVERSIONS.



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.

\* Gravel shall be VDOT #3, #357 or #5 coarse aggregate.

IP GRAVEL AND WIRE MESH DROP INLET SEDIMENT FILTER



- TEMPORARY ROADS SHALL FOLLOW THE CONTOUR OF THE NATURAL TERRAIN TO THE EXTENT POSSIBLE. SLOPES SHOULD NOT EXCEED 10 PERCENT.
- ROADBEDS SHALL BE AT LEAST 14 FEET WIDE FOR ONE-WAY TRAFFIC AND 20 FEET WIDE FOR TWO-WAY TRAFFIC.
- ALL CUTS AND FILLS SHALL BE 2:1 OR FLATTER TO THE EXTENT POSSIBLE.
- DRAINAGE DITCHES SHALL BE PROVIDED AS NEEDED AND SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH STORMWATER CONVEYANCE CHANNEL, STD. & SPEC. 3.17.
- THE ROADBED OR PARKING SURFACE SHALL BE CLEARED OF ALL VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL.
- AGGREGATE SHALL BE APPLIED IMMEDIATELY AFTER GRADING OR THE COMPLETION OF UTILITY INSTALLATION WITH THE TRAVEL WAY.

CRS CONSTRUCTION ROAD STABILIZATION

BM BLANKET MATTING SHALL BE VDOT EC-2 OR APPROVED EQUAL.

- TYPE A
15. OCTOBER TO 1 FEBRUARY  
K-31 FESCUE • 5 LB / 1000 SF  
BORZY WINTER RYE • 1/2 LB / 1000 SF
- FEBRUARY TO 1 JUNE  
K-31 FESCUE • 5 LB / 1000 SF  
ANNUAL RYE • 1/2 LB / 1000 SF
- 1 JUNE TO 1 SEPTEMBER  
K-31 FESCUE • 5 LB / 1000 SF  
GERMAN MILLET • 1/2 LB / 1000 SF
- 1 SEPTEMBER TO 15 OCTOBER  
K-31 FESCUE • 5 LB / 1000 SF  
ANNUAL RYE • 1/2 LB / 1000 SF
- TYPE B (SLOPES 3:1 OR STEEPER)
- 15 MARCH TO 1 MAY  
CROWN VETCH • 1/2 LB / 1000 SF  
PERENNIAL RYEGRASS • 1/2 LB / 1000 SF  
RED TOP • 1/8 LB / 1000 SF
- 15 AUGUST TO 1 OCTOBER  
CROWN VETCH • 1/2 LB / 1000 SF  
PERENNIAL RYEGRASS • 1/2 LB / 1000 SF  
RED TOP • 1/8 LB / 1000 SF

- LIME: 140 LB / 1000 SF PULVERIZED AGRICULTURAL LIMESTONE
- FERTILIZER: 5-20-10 • 25 LB / 1000 SF  
38-0-0 • 7 LB / 1000 SF
- MULCH: 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.

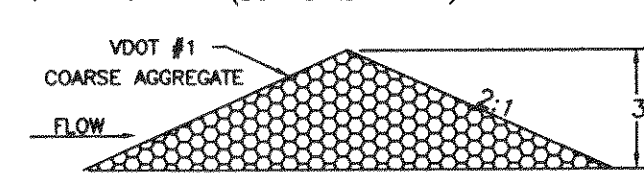
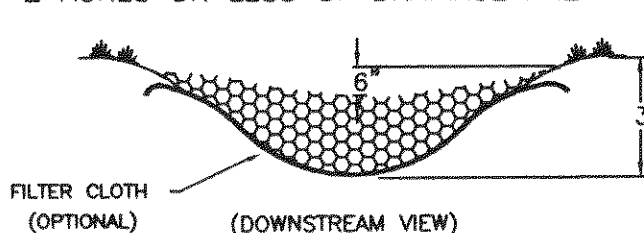
SOIL CONDITIONING:  
INCORPORATION OF LIME AND FERTILIZER, SELECTION OF CERTIFIED SEED, MULCHING, MAINTENANCE OF NEW SEEDINGS, AND RESEEDING SHALL BE IN ACCORDANCE WITH SPECIFICATIONS CONTAINED WITHIN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION. ADDITIONAL SEEDING TO BE PERFORMED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

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

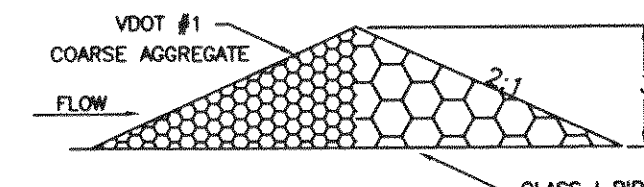
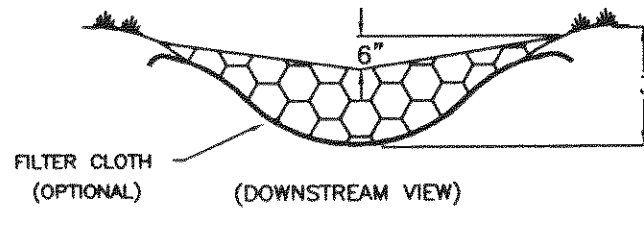
TOTAL DISTURBED AREA = APPROXIMATELY 6 AC.

PS PERMANENT SEEDING MIXTURE

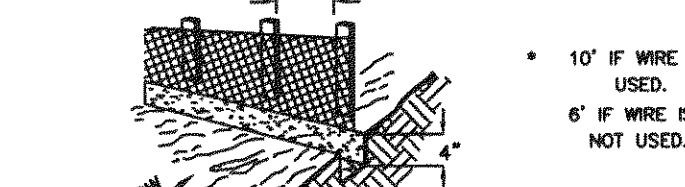
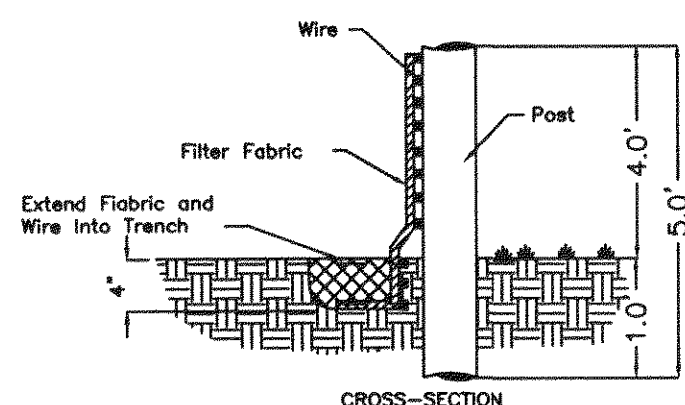
2 ACRES OR LESS OF DRAINAGE AREA:



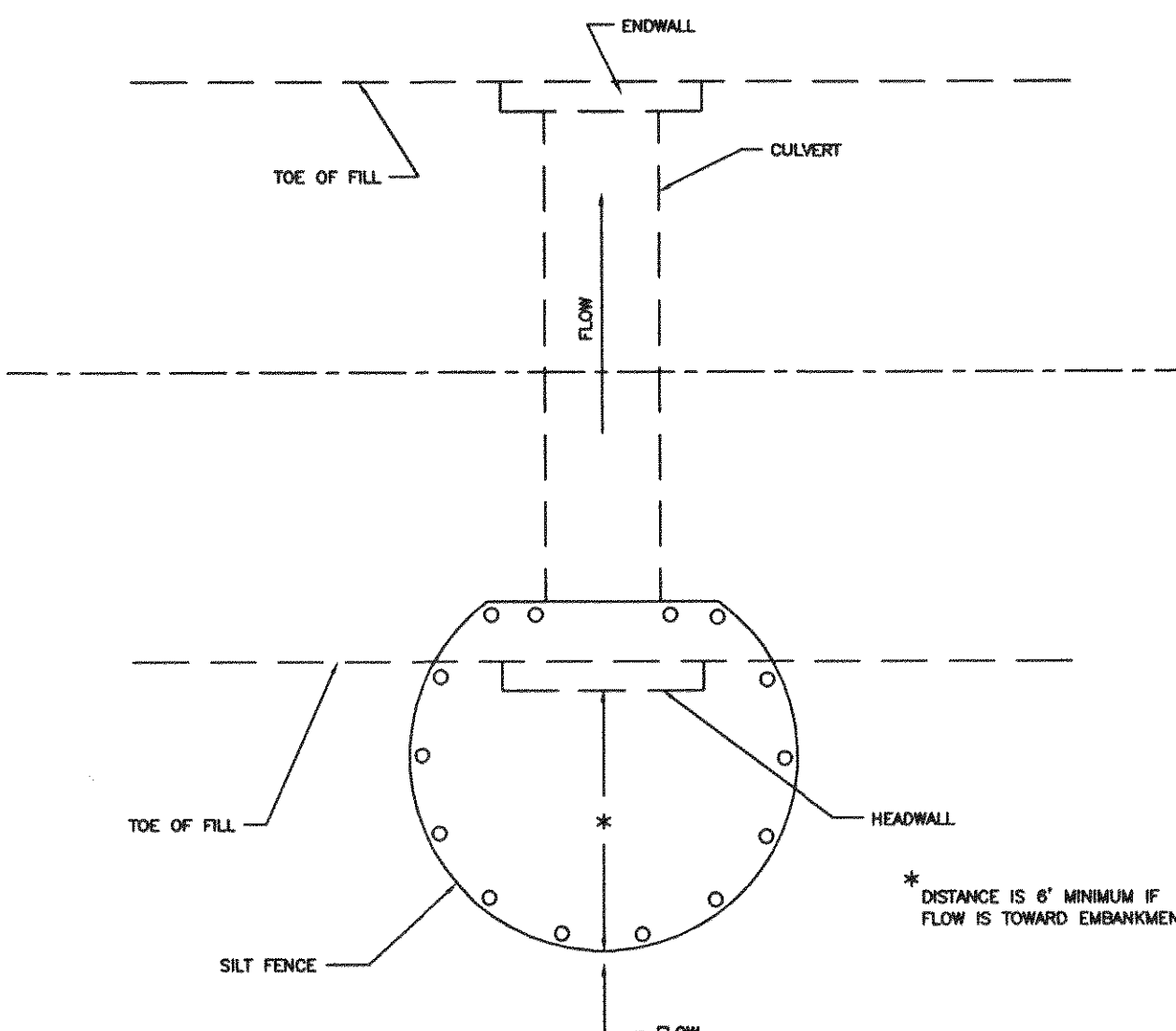
2-10 ACRES OF DRAINAGE AREA:



CD ROCK CHECK DAM



SF CONSTRUCTION OF A SILT FENCE



NOTES:  
If silt fence culvert inlet protection is not sufficient due to expected high velocity of flow, contractor shall install optional stone and inlet sediment trap protection per STD. & SPEC. 3.08.

CIP SILT FENCE CULVERT INLET PROTECTION

SOURCE: 1992 VA. EROSION AND SEDIMENT CONTROL HANDBOOK, STD. & SPEC. 3.08

## EROSION-SEDIMENTATION CONTROL COST ESTIMATE

ALL COSTS GIVEN ARE COMPLETE IN PLACE

DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
CONSTRUCTION ENTRANCE	EA	1	\$ 1,000	\$ 1,000
SILT FENCE	LF	1,200	3	3,600
INLET PROTECTION	EA	2	100	200
STORMWATER CONVEYANCE CHANNEL	LF	2,750	2	5,500
CHECK DAM	EA	29	100	2,900
PERMANENT SEEDING	1000 SF	253	35	8,855
OUTLET PROTECTION	EA	4	250	1,000
LINING UNDER RR	S.Y.	160	0.75	120
RIP RAP	TON	200	45	9,000
SUB-TOTAL				\$ 32,175
20% CONTINGENCY				\$ 6,435
TOTAL PROJECT COST				\$ 38,610

NO.	TITLE	KEY	SYMBOL	NO.	TITLE	KEY	SYMBOL
3.01	SAFETY FENCE	SAF		3.20	ROCK CHECK DAMS	CD	
3.02	TEMPORARY GRAVEL CONSTRUCTION ENTRANCE	CE		3.21	LEVEL SPREADER	LS	
3.03	CONSTRUCTION ROAD STABILIZATION	CRS		3.22	VEGETATIVE STREAMBANK STABILIZATION	VSS	
3.04	STRAW BALE BARRIER	STB		3.23	STRUCTURAL STREAMBANK STABILIZATION	SSS	
3.05	SILT FENCE	SF		3.24	TEMPORARY VEHICULAR STREAM CROSSING	VSC	
3.06	BRUSH BARRIER	BB		3.25	UTILITY STREAM CROSSING	USC	
3.07	STORM DRAIN INLET PROTECTION	IP		3.26	DEWATERING STRUCTURE	DS	
3.08	CULVERT INLET PROTECTION	CIP		3.27	TURBIDITY CURTAIN	TC	
3.09	TEMPORARY DIVERSION DIKE	DD		3.28	SUBSURFACE DRAIN	SD	
3.10	TEMPORARY FILL DIVERSION	FD		3.29	SURFACE ROUGHENING	SR	
3.11	TEMPORARY RIGHT-OF-WAY DIVERSION	RWD		3.30	TOPSOILING	TO	
3.12	DIVERSION	DV		3.31	TEMPORARY SEEDING	TS	
3.13	TEMPORARY SEDIMENT TRAP	ST		3.32	PERMANENT SEEDING	PS	
3.14	TEMPORARY SEDIMENT BASIN	SB		3.33	SODDING	SO	
3.15	TEMPORARY SLOPE DRAIN	TSD		3.34	BERMUDA GRASS AND ZOYSIA GRASS ESTABLISHMENT	BS/ZE	
3.16	PAVED FLUME	PF		3.35	MULCHING	MU	
3.17	STORMWATER CONVEYANCE CHANNEL	SCC		3.36	SOIL STABILIZATION BLANKETS AND MATTING	BSM	
3.18	OUTLET PROTECTION	OP		3.37	TREES, SHRUBS, VINES AND GROUND COVERS	VEG	
3.19	RIPRAP	RR		3.38	TREE PRESERVATION AND PROTECTION	TP	
				3.39	DUST CONTROL	DC	

CRITICAL EROSION AREAS

SOUTH CENTER DRIVE  
AND SANITARY SEWER EXTENSION

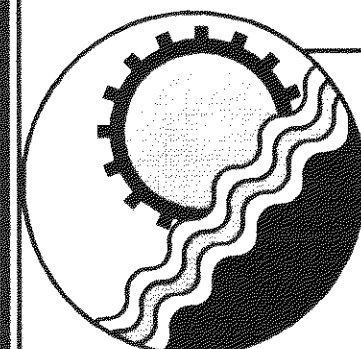
EROSION & SEDIMENT  
CONTROL DETAILS

SCALE : NONE

FEBRUARY 2001

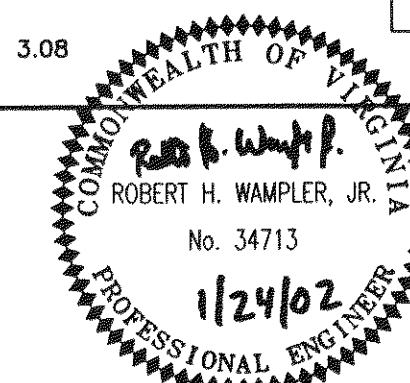
PROJECT: 00144

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# EDUCATION AND TRAINING CENTER

TRACT 7B

TRACT 7A

PI STA = 24+54.05  
E = 11074440.35  
N = 3684471.10  
I = 40°36'57"R

PI STA = 18+76.47  
E = 11074692.48  
N = 3688007.02  
I = 46°48'35"R

STA: 17+08.05 17+08.00  
START PG-2A TYPE E  
CL ELEV: 1342.3

CIRCULAR  
Ic = 36°08'26"  
Da = 19°00'00"  
Dc = 19°05'17"  
T = 98.29  
R = 301.56  
L = 190.04  
C = 186.91  
E = 15.62  
PC STA = 13+78.35

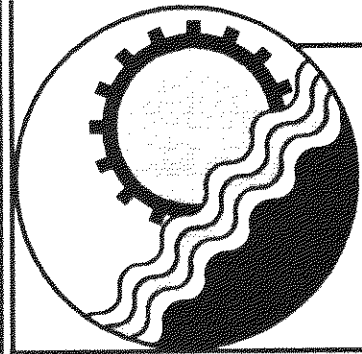
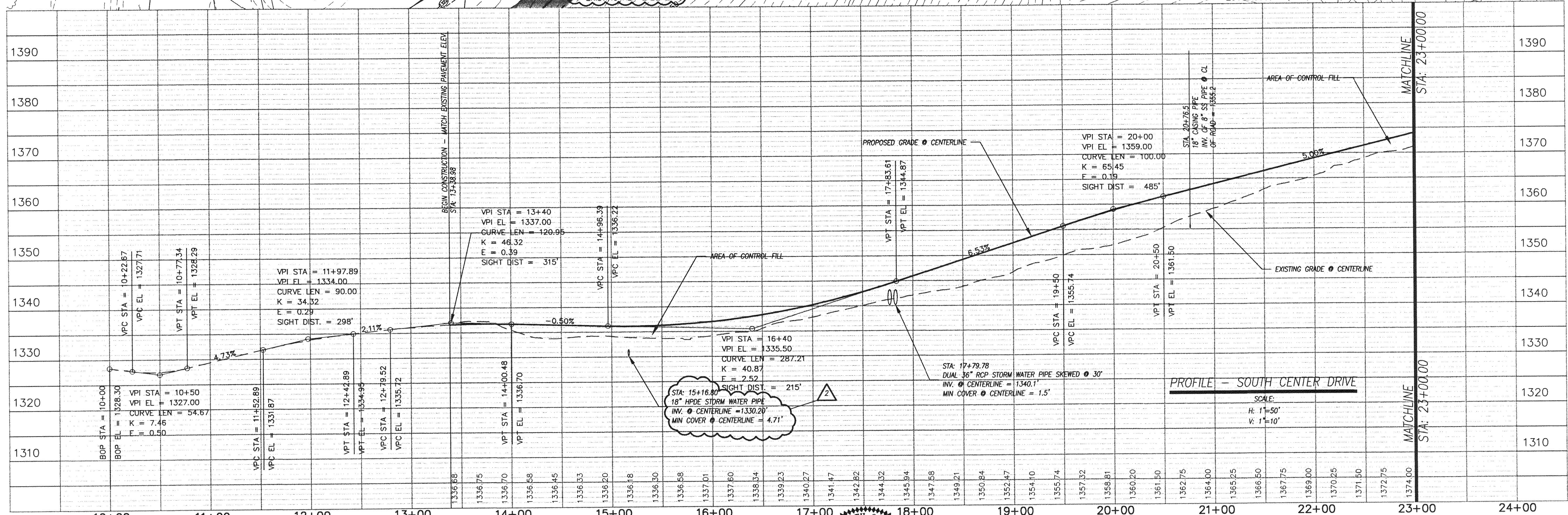
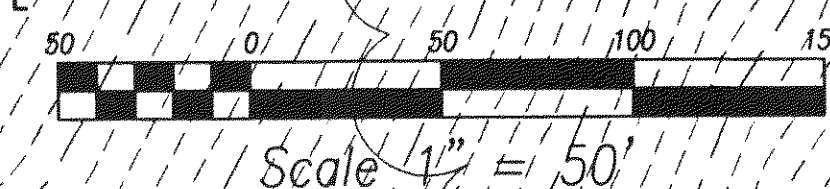
DESIGN SPEED = 30 MPH  
STA 15+16.8  
24.7' LEFT  
DI-7 GRATE  
ELEV: 1333.3

TRANSITION PG-2A TO  
DI-7 TYPE III GRATE

PI STA = 14+76.64  
E = 11074542.76  
N = 3685384.82  
I = 36°06'26"R

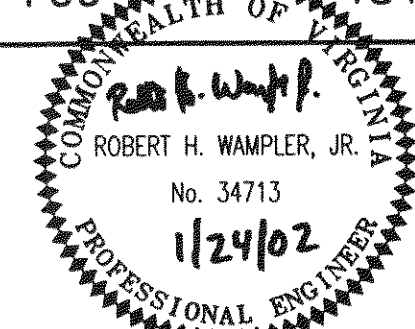
CIRCULAR  
Ic = 46°48'35"  
Da = 19°00'00"  
Dc = 19°05'17"  
T = 130.53  
R = 301.56  
L = 246.37  
C = 238.57  
E = 27.04  
M = 24.81  
DESIGN SPEED = 30 MPH  
BEGIN SUPER ELEV:  
16+12.612  
MAX SUPER ELEV:  
18+12.612 TO 19+25.646  
END SUPER ELEV:  
21+25.646

CIRCULAR  
Ic = 40°36'57"  
Da = 19°00'00"  
Dc = 19°05'17"  
T = 111.80  
R = 301.66  
L = 213.77  
C = 209.32  
E = 18.99  
M = 18.74  
DESIGN SPEED = 30 MPH  
BEGIN SUPER ELEV:  
22+09.116  
MAX SUPER ELEV:  
24+09.116 TO 24+89.550  
END SUPER ELEV:  
26+89.550



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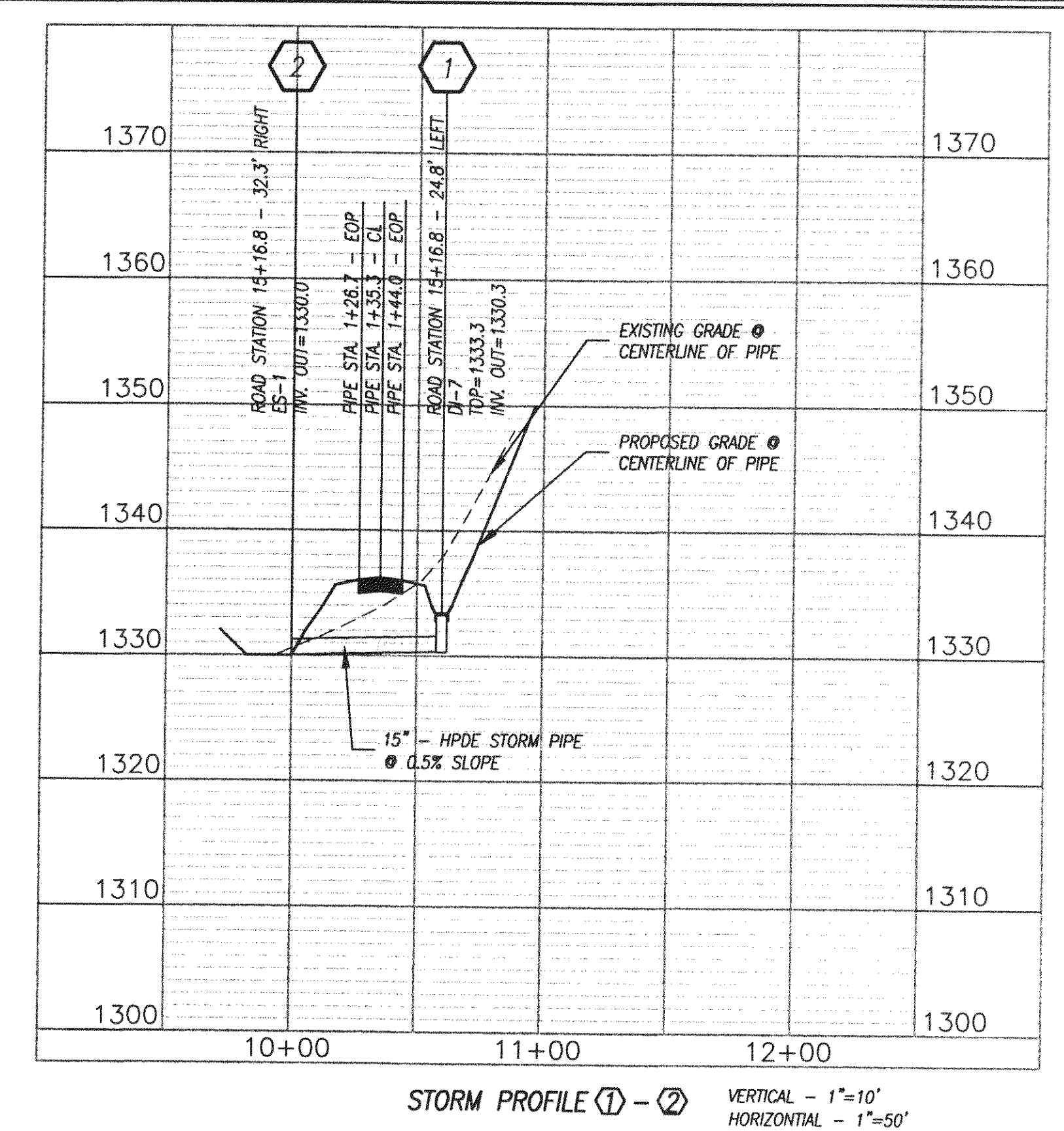
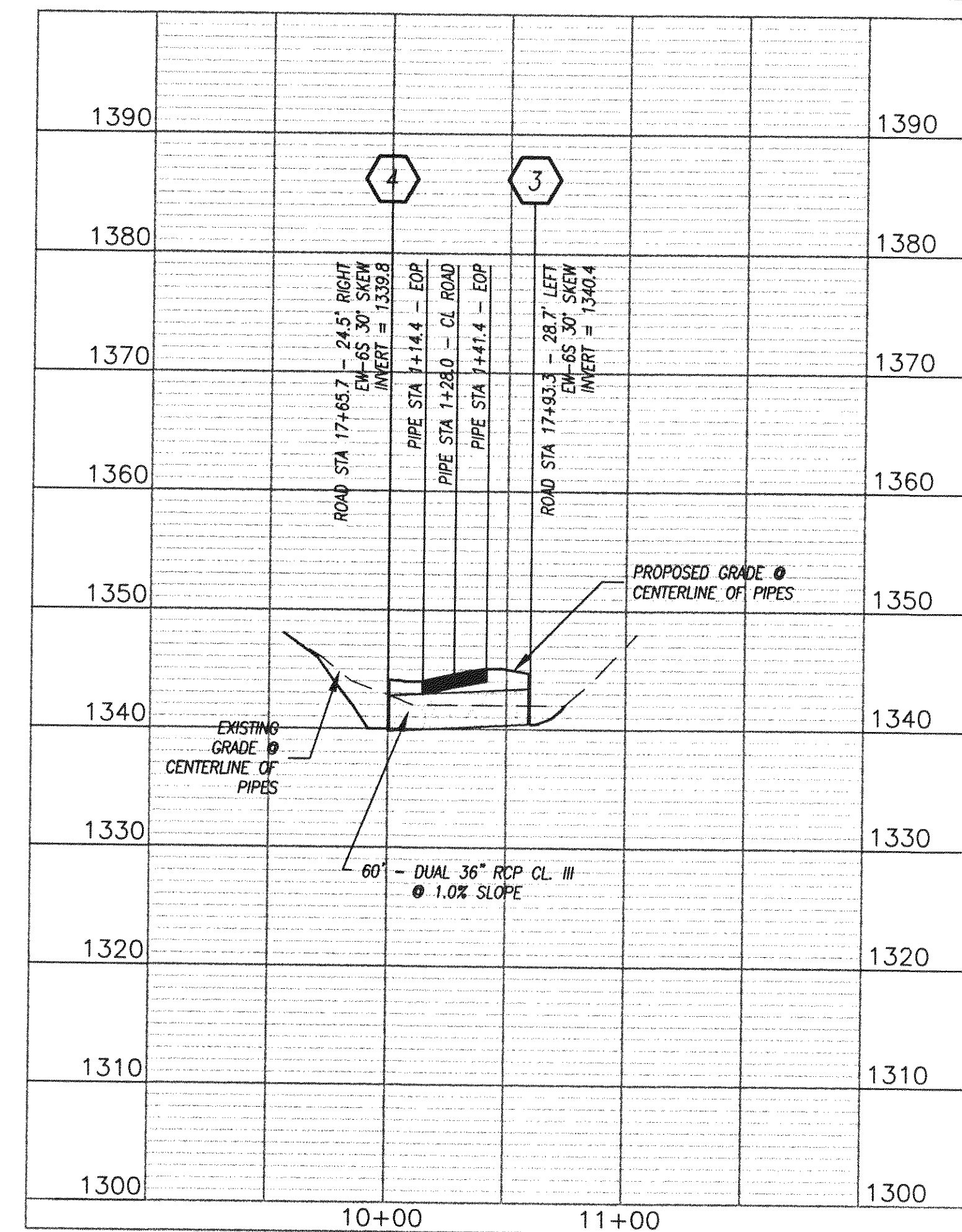
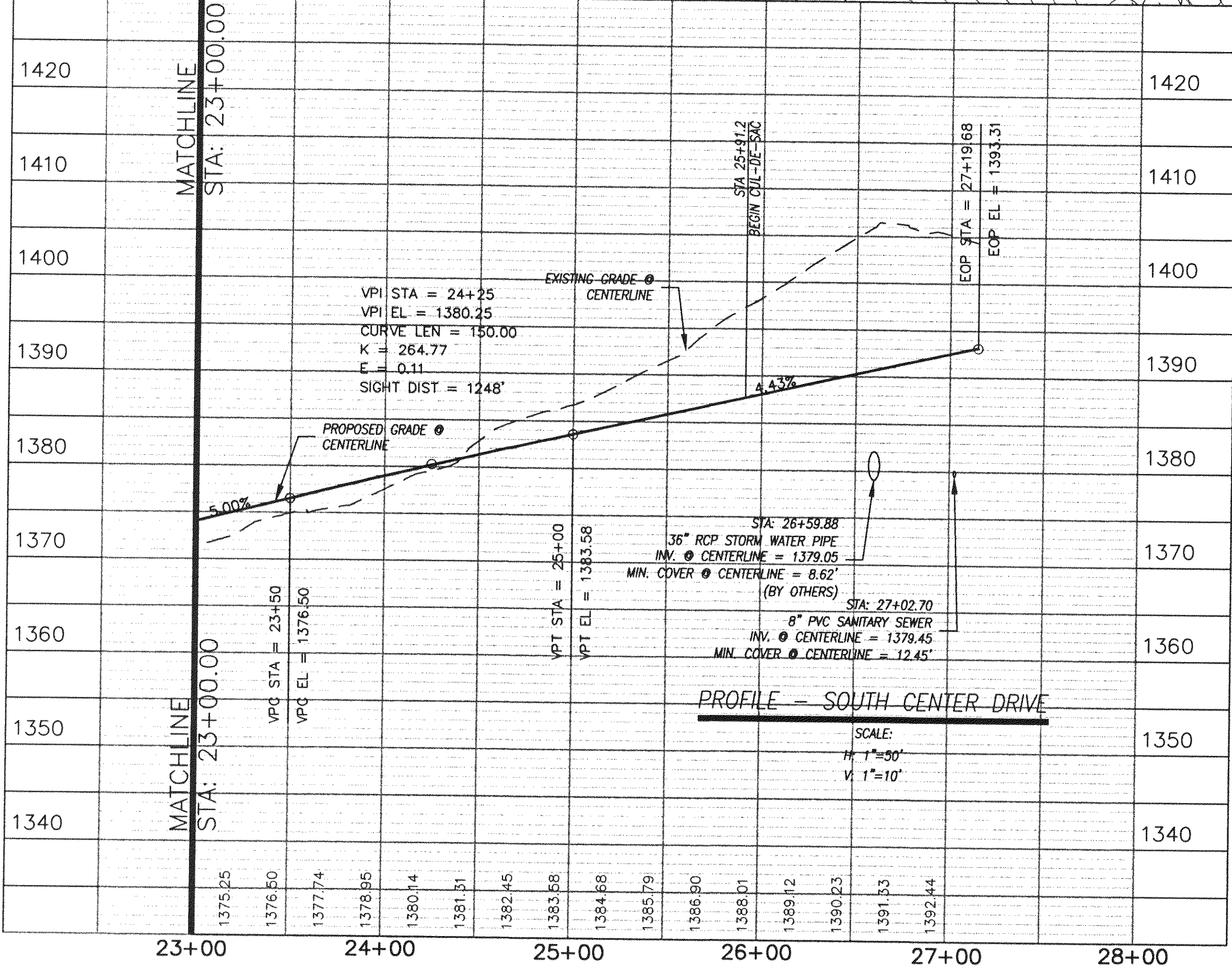
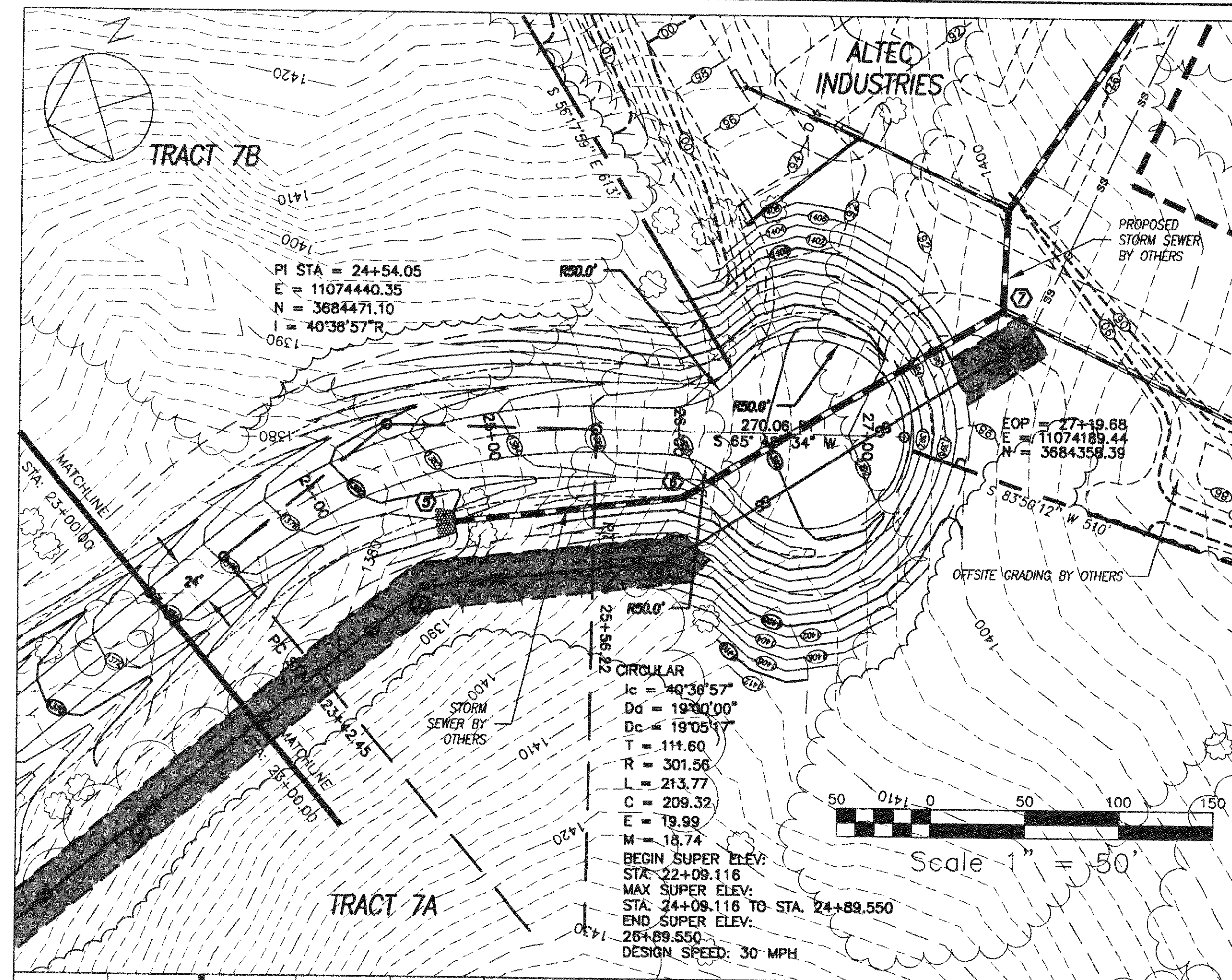


No.	Revision	By	Appd.	Date	Drawn	WTR
2	VDOT REVIEW COMMENTS	WTR	RHW	06/01/01	Designed	RHW
3	AS-BUILTS	WTR	RHW	10/22/01	Checked	
					Approved	

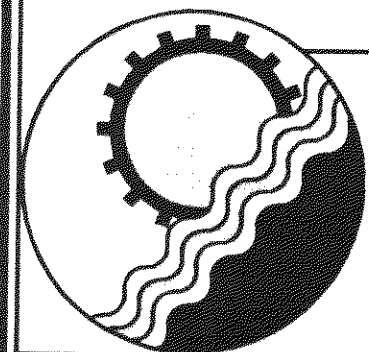
SOUTH CENTER DRIVE  
AND SANITARY SEWER EXTENSION  
ROAD PLAN AND PROFILE  
STA 10+00 - STA 23+00

H:1"=50' V:1"=10'  
FEBRUARY 2001  
PROJECT: 00144  
C5 of C10





- STRUCTURES BY OTHERS**
- 5 EW-1 ENDWALL (36") INV. = 1378.1
  - 6 5' DIA. MANHOLE RIM=1388.0 INV.=1378.7
  - 7 DI-48 RIM=1393.1 INV.=1379.7

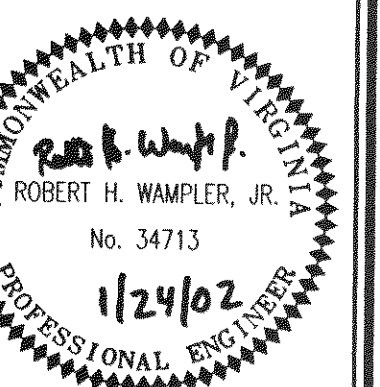


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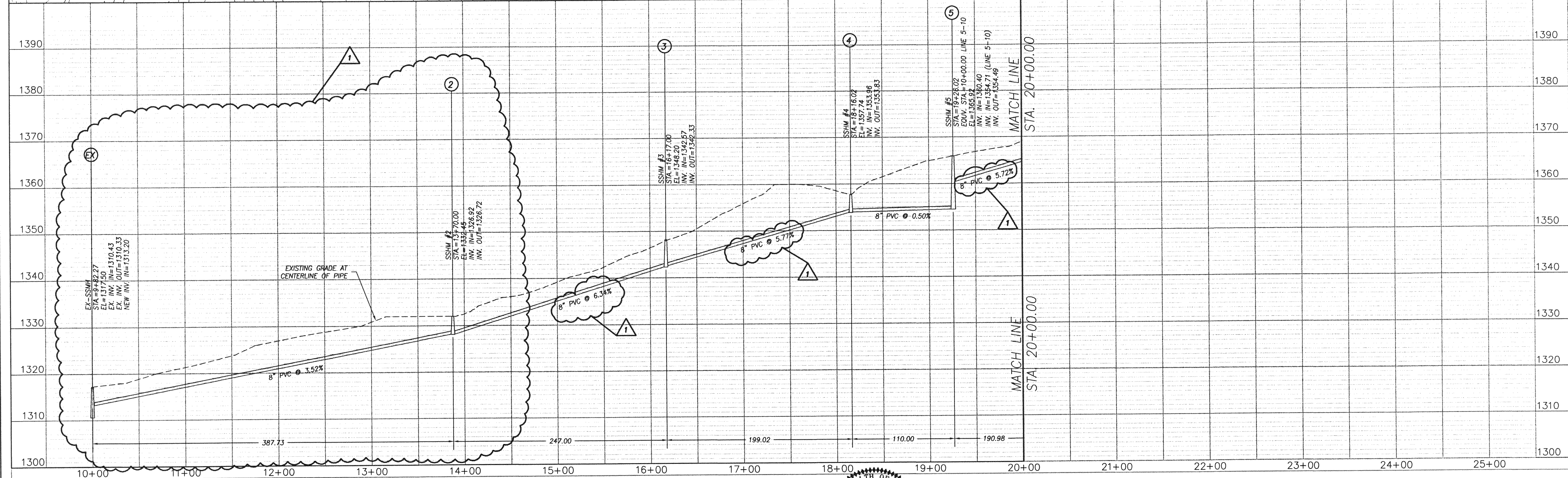
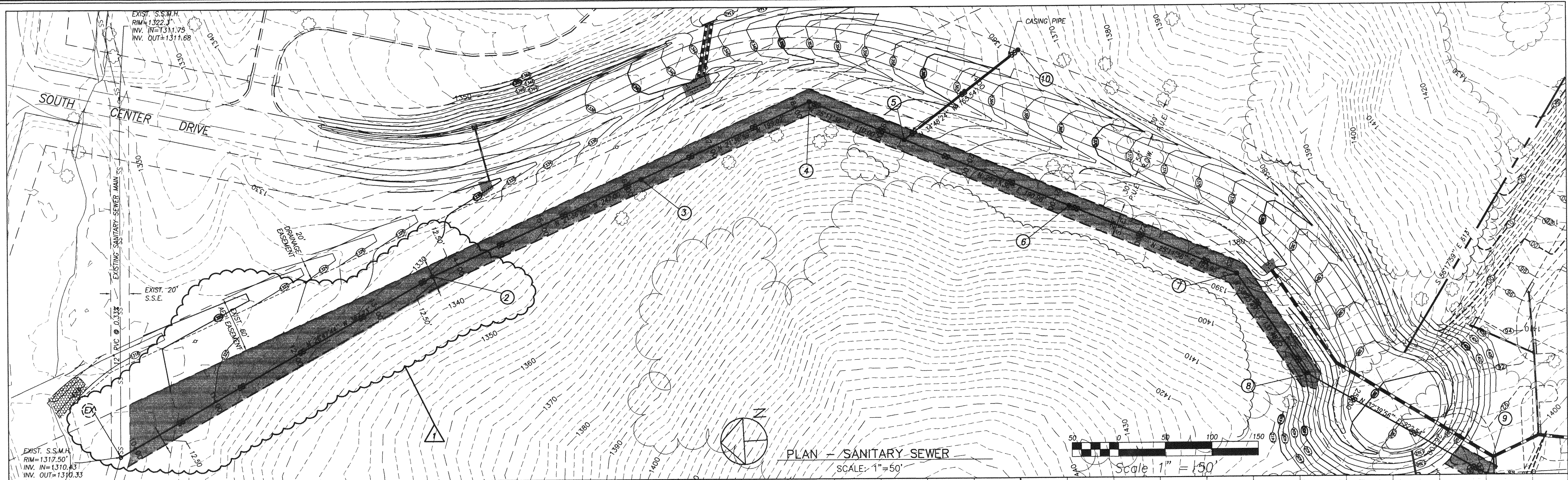
**SOUTH CENTER DRIVE  
AND SANITARY SEWER EXTENSION**

**ROAD PLAN AND PROFILE  
STA 20+00 - STA 27+15**



H: 1"=50' V: 1"=10'  
FEBRUARY 2001  
PROJECT: 00144  
**C6 of C10**





**ENGINEERING CONCEPTS, INC.**  
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No.	Revision	By	Appd.	Date	Drawn	WTR
1	SS LINE REALIGNMENT	WTR	RHW	04-20-01	Designed	RHW
					Checked	RHW/JDE
					Approved	RHW

**SOUTH CENTER DRIVE  
AND SANITARY SEWER EXTENSION**

**SANITARY SEWER PLAN & PROFILE**  
STA 10+00 - STA 20+00

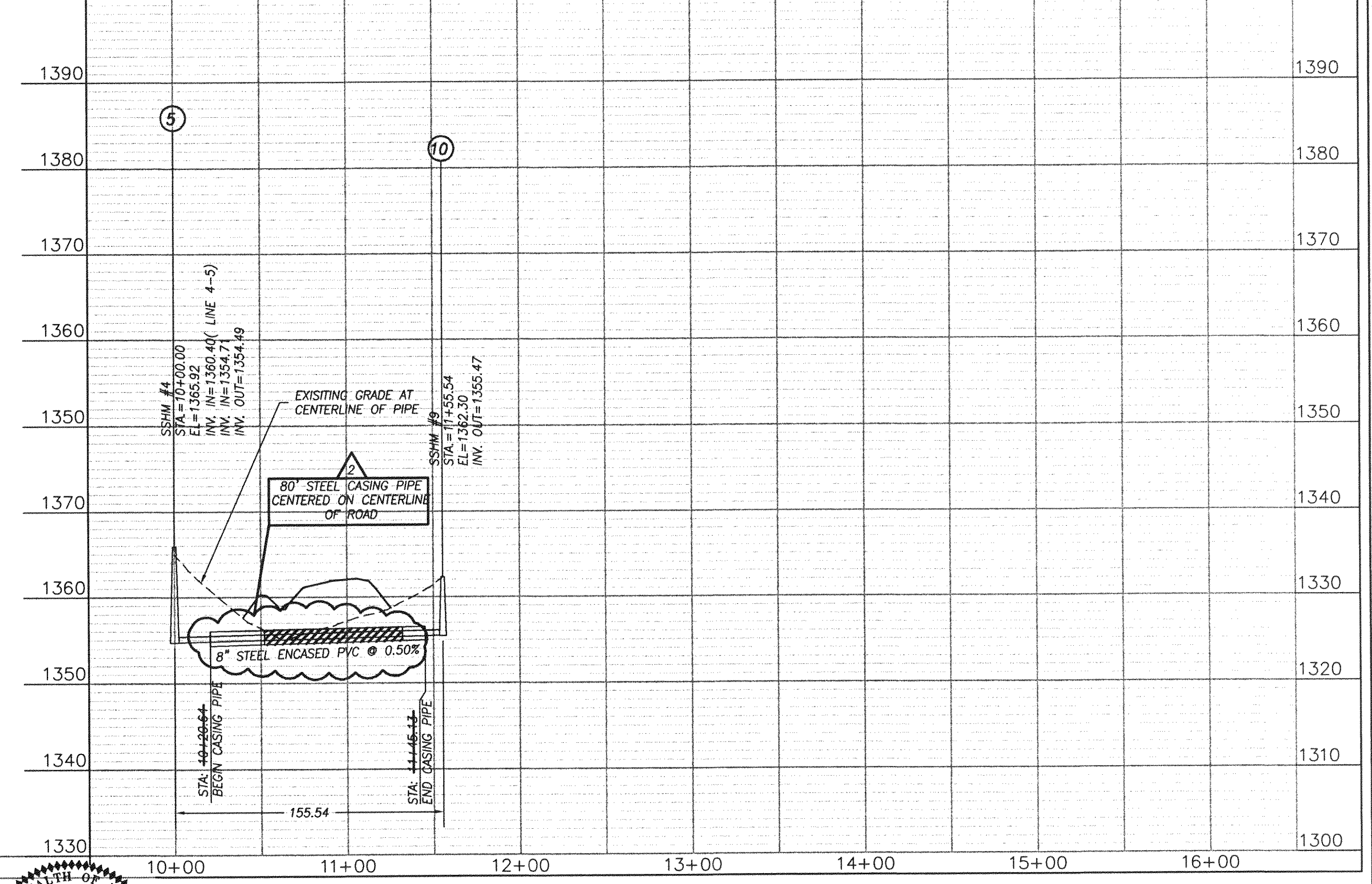
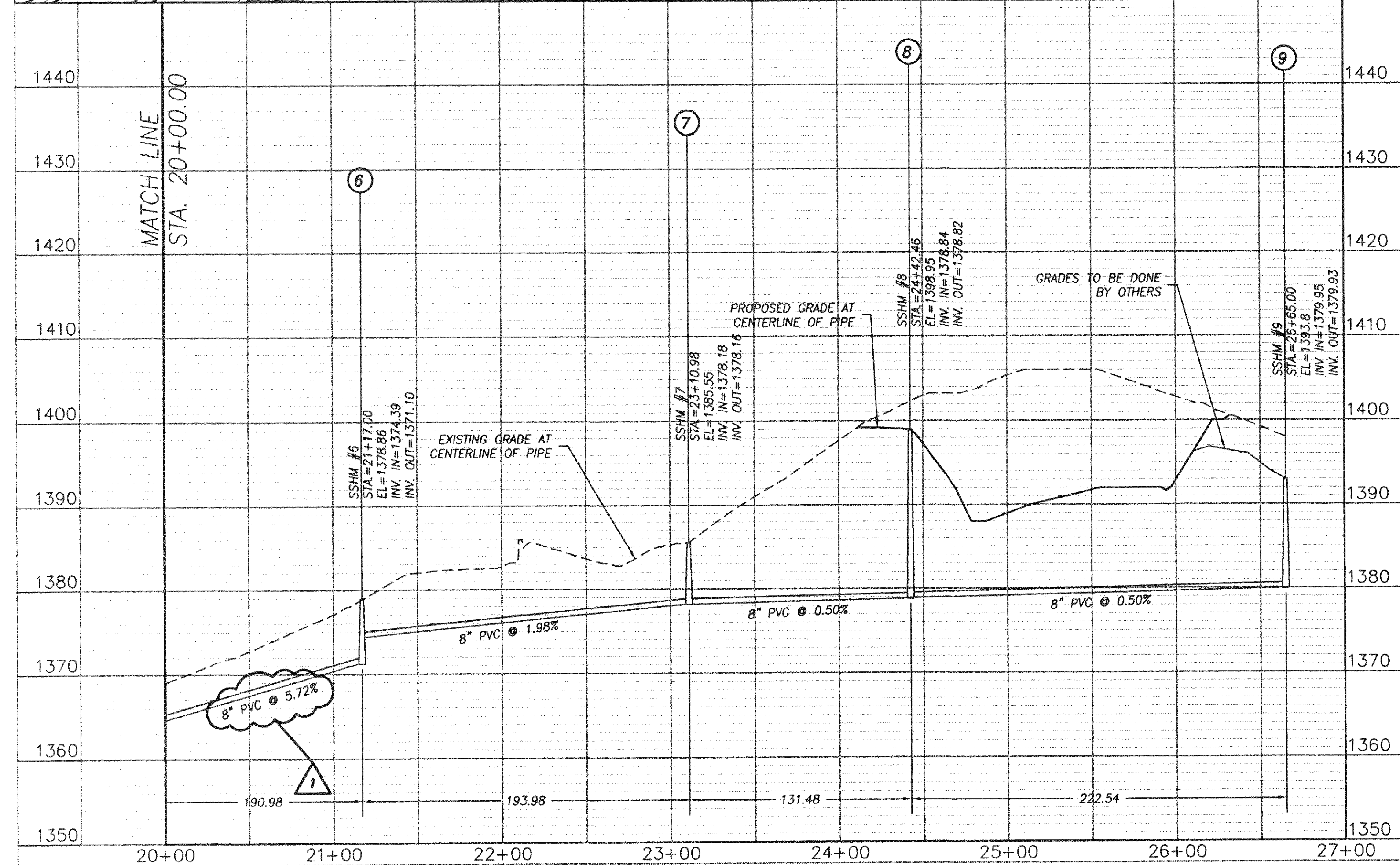
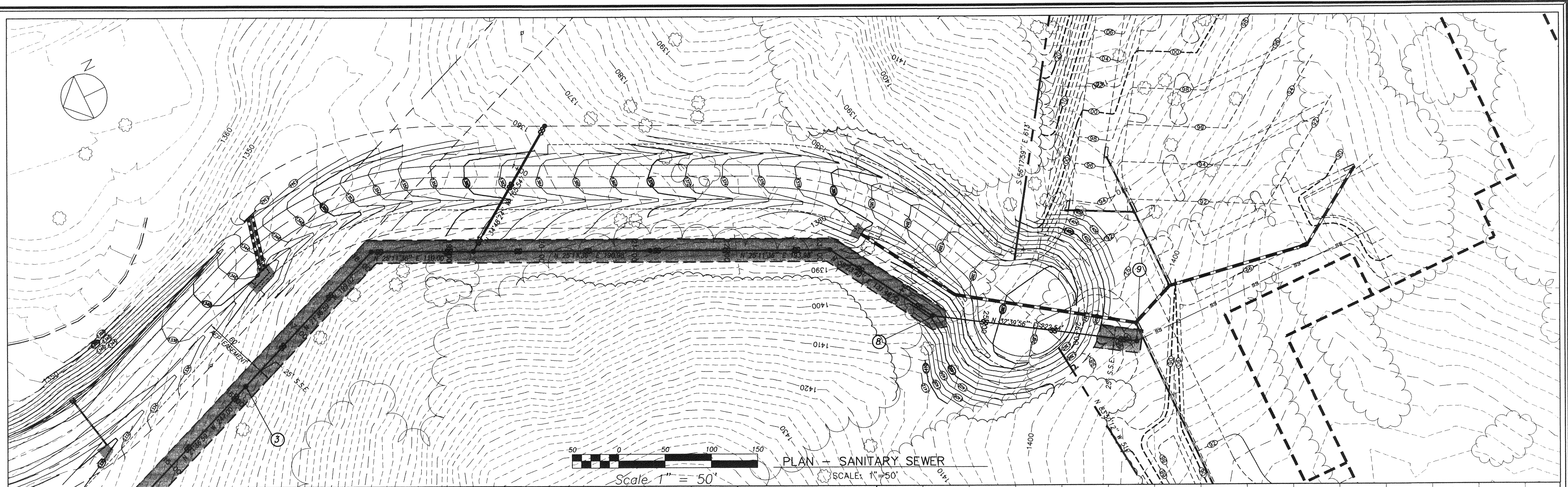
H:1"=50' V:1"=10'

FEBRUARY 2001

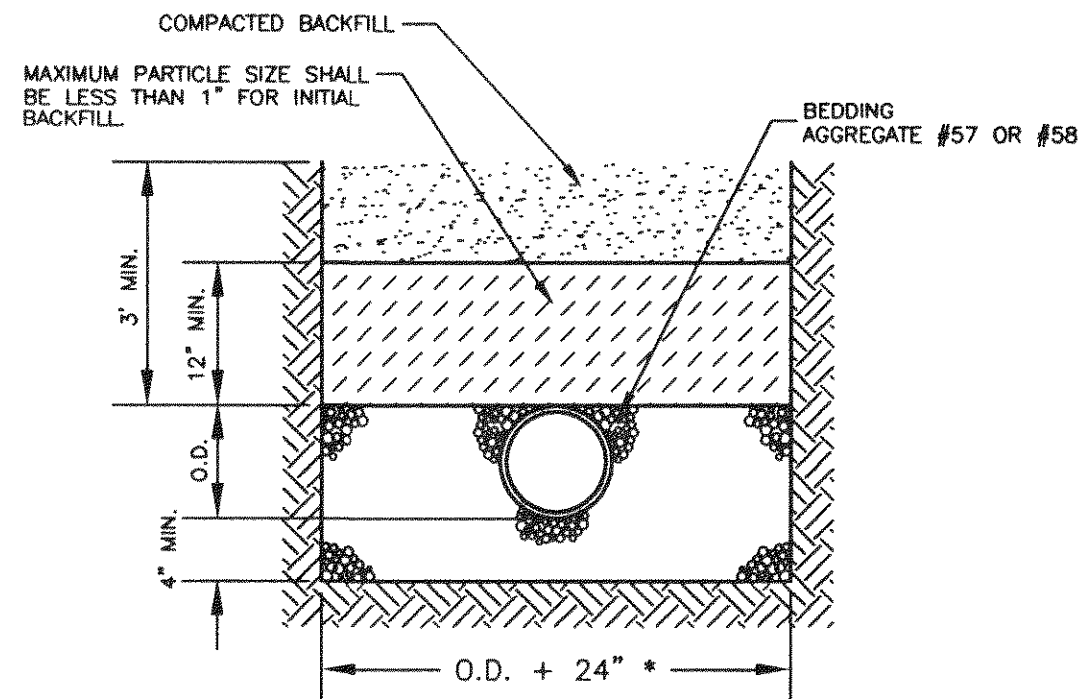
PROJECT: 00144

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- NOTES:
1. WHERE THE TRENCH BOTTOM IS IN ROCK, IT SHALL BE EXCAVATED TO A MINIMUM OF 8" BELOW THE BOTTOM OF THE PIPE AND BACKFILLED WITH BEDDING MATERIAL.
  2. WHERE PIPE FOUNDATIONS ARE YIELDING, PIPE SHALL BE BEDDED ON A MINIMUM OF 8" BEDDING MATERIAL.
  3. FOR PIPE LESS THAN 12" THE TRENCH WIDTH MAY BE 36" MAXIMUM.

**SEWER BEDDING DETAIL**  
NOT TO SCALE

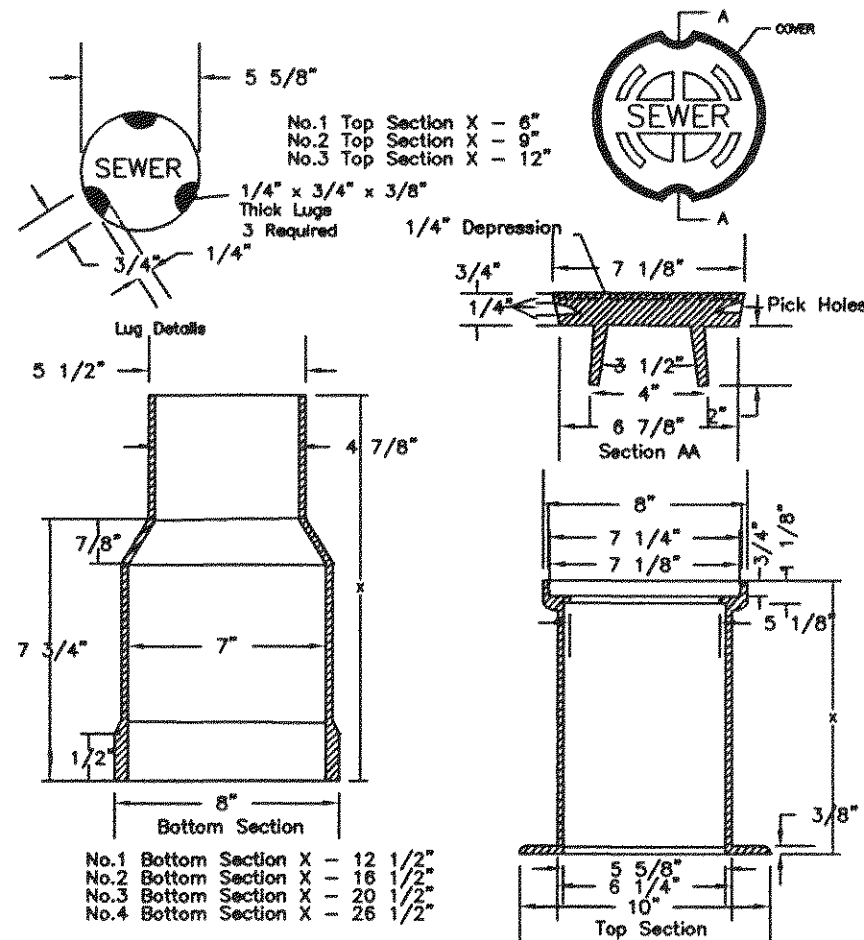
Pipe Diameter (in.)	Min. Time (min/sec)	Length for Min. Time (ft)	Time for Longer Length (sec)	Specified Time for Length (L) Shown (min/sec)								
				100 ft	150 ft	200 ft	250 ft	300 ft	350 ft	400 ft	450 ft	
4	3:46	597	.380 L	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:46	
6	5:40	398	.854 L	5:40	5:40	5:40	5:40	5:40	5:40	5:42	6:24	
8	7:34	298	1.520 L	7:34	7:34	7:34	7:34	7:36	8:52	10:08	11:24	
10	9:28	239	2.374 L	9:28	9:28	9:28	9:53	11:52	13:51	15:49	17:48	
12	11:20	199	3.418 L	11:20	11:20	11:24	14:15	17:05	19:56	22:47	25:38	
15	14:10	159	5.342 L	14:10	14:10	17:48	22:15	26:42	31:09	35:36	40:04	
18	17:00	133	7.692 L	17:00	19:13	25:38	32:03	38:27	44:52	51:16	57:41	
21	19:50	114	10.470 L	19:50	28:10	34:54	43:37	52:21	61:00	69:48	78:31	
24	22:40	99	13.674 L	22:47	34:11	45:34	56:58	68:22	79:46	91:10	102:33	
27	25:30	88	17.306 L	28:51	43:16	57:41	72:07	86:32	100:57	115:22	129:48	
30	28:20	80	21.368 L	35:37	53:25	71:13	89:02	106:50	124:38	142:26	160:15	
33	31:10	72	25.852 L	43:05	64:38	86:10	107:43	129:16	150:43	172:21	193:53	
36	34:00	66	30.768 L	51:17	76:55	102:34	128:12	153:50	179:29	205:07	230:46	

MINIMUM SPECIFIED TIME REQUIRED FOR A 1.0 PSIG PRESSURE DROP FOR SIZE AND LENGTH OF PIPE INDICATED FOR Q = 0.0015.

**SANITARY SEWER AIR PRESSURE TEST**  
NOT TO SCALE

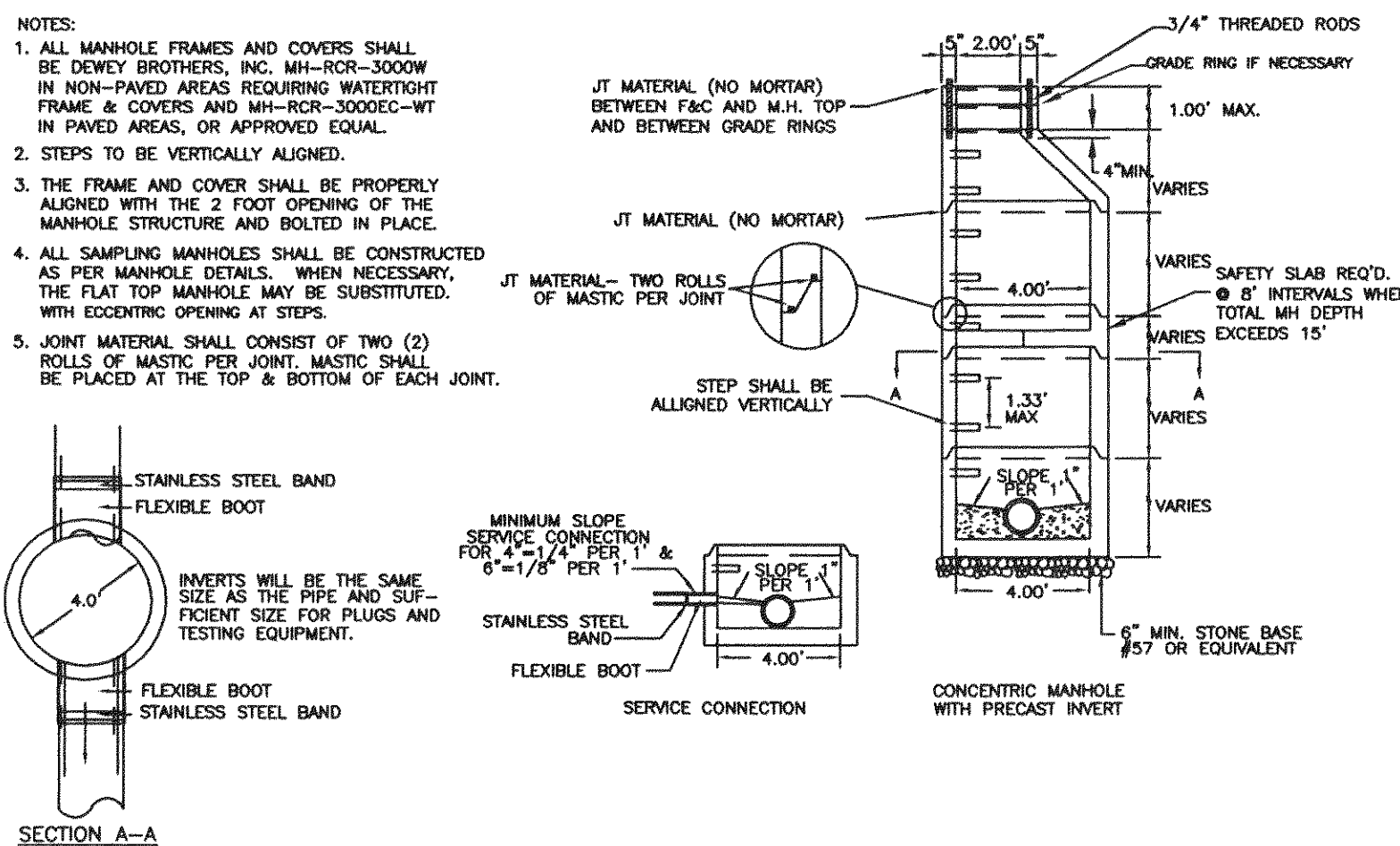
1. **PIPE & FITTINGS:** ALL SANITARY SEWER PIPE AND FITTINGS SHALL BE POLYVINYL CHLORIDE (PVC), SDR 35, AND SHALL CONFORM WITH ASTM D-3034.
2. **INSTALLATION:** THE SANITARY SEWER PIPE SHALL BE INSTALLED IN ACCORDANCE WITH THE PIPE MANUFACTURER'S RECOMMENDATIONS AND THESE SPECIFICATIONS. THE PIPE SHALL BE LAID IN TRUE STRAIGHT LINES WITH THE BALL ENDS UPSTREAM AND WITH THE INVERT OF THE PIPE BEING THE TRUE ELEVATION AND GRADE OF THE SYSTEM. THE PIPE SHALL BE VISUALLY INSPECTED FOR DEFECTS BEFORE LOWERING THE PIPE IN THE TRENCH. FIELD CUTTING OF THE PIPE SHALL BE DONE SO IN A NEAT AND WORKMANLIKE MANNER, SO AS TO LEAVE A SMOOTH END AT RIGHT ANGLES TO THE AXIS OF THE PIPE.
3. **TRENCH EXCAVATION:** TRENCHES SHALL BE EXCAVATED IN STRAIGHT LINES AND SHALL BE OF SUFFICIENT WIDTH TO PERMIT THE PROPER INSTALLATION OF BRACING, SHORING OR SHEETING. TRENCH WIDTH SHALL NOT EXCEED MANUFACTURER'S RECOMMENDATION. THE BOTTOM OF THE PIPE TRENCH SHALL BE EXCAVATED TO A MINIMUM OVER DEPTH OF FOUR (4) INCHES BELOW THE BOTTOM OF THE PIPE, TO PROVIDE FOR THE COMPACTED BEDDING MATERIAL.
4. **BEDDING:** BEDDING MATERIAL SHALL BE COARSE AGGREGATE SIZE NUMBER 57 AND SHALL CONFORM WITH VDOT SECTION 203 AND/OR ASTM C33. BEDDING MATERIAL SHALL BE PLACED AND COMPACTED IN FOUR (4) INCHES BELOW THE PIPE AND AS A MINIMUM UP TO THE SPRINGLINE OF THE PIPE. CARE SHALL BE TAKEN TO ENSURE THE BEDDING MATERIAL FULLY SUPPORTS THE SIDE AND BOTTOM OF THE PIPE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
5. **BACKFILL:** BACKFILL MATERIAL SHALL BE EITHER APPROVED EXCAVATED MATERIAL OR APPROVED SUITABLE MATERIAL FROM OTHER SOURCES THAT IS FREE OF ORGANIC MATERIAL, LOAM, DEBRIS, OR MINIMUM ONE (1) FOOT ABOVE THE TOP OF PIPE SHALL BE FREE OF STONES LARGER THAN TWO (2) INCHES AND SHALL BE PLACED IN SIX (6) INCH LAYERS AND COMPACTED WITH HAND TAMPERS. BACKFILL FROM THIS POINT TO TOP OF TRENCH SHALL BE FREE OF STONES LARGER THAN FOUR (4) INCHES AND SHALL BE PLACED IN LAYERS NOT TO EXCEED EIGHT (8) INCHES AND COMPACTED WITH MECHANICAL TAMPERS. BACKFILL BELOW UNPAVED AREAS SHALL BE COMPACTED TO 90%. BACKFILL BELOW PAVED AREAS SHALL BE COMPACTED TO 95%. BACKFILL COMPACTION TESTING SHALL BE IN ACCORDANCE WITH ASTM D-1557.
6. **TESTING OF SANITARY SEWER:** TESTING FOR WATER TIGHTNESS SHALL BE MADE UTILIZING A LOW PRESSURE AIR TEST. THE TESTING EQUIPMENT, PROCEDURE AND RESULTS WILL ALL BE SUBJECT TO THE APPROVAL OF THE COUNTY ENGINEER. THE AIR TEST SHALL BE IN ACCORDANCE WITH ASTM C-828. CURRENT REVISION.
7. **CONTRACTOR SHALL DEFLECTION TEST THE ENTIRE LENGTH OF PIPE BY MEANS OF A GO-NO-GO MANDREL TO ASSURE THAT A 5.0% DEFLECTION HAS NOT BEEN EXCEEDED. MANDREL SHALL BE SIZED AT 5% LESS THAN ASTM DIMENSION FOR THE SEWER.**
8. **A MINIMUM COVER OF THREE (3) FEET IS REQUIRED OVER PROPOSED LINES UNLESS OTHERWISE INDICATED.**
9. **CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND UNCOVERING ALL MANHOLES AFTER PAVING. MANHOLE TOPS SHALL BE ADJUSTED TO GRADE IF NECESSARY.**
10. **ALL EXISTING UTILITIES MAY NOT BE SHOWN OR MAY NOT BE SHOWN IN THE EXACT LOCATION. THE CONTRACTOR SHALL COMPLY WITH STATE WATER WORKS REGULATIONS, SECTION 12.05.03, WHERE LINES CROSS.**
11. **LINES SHALL BE STAKED PRIOR TO CONSTRUCTION.**

**SEWER NOTES**

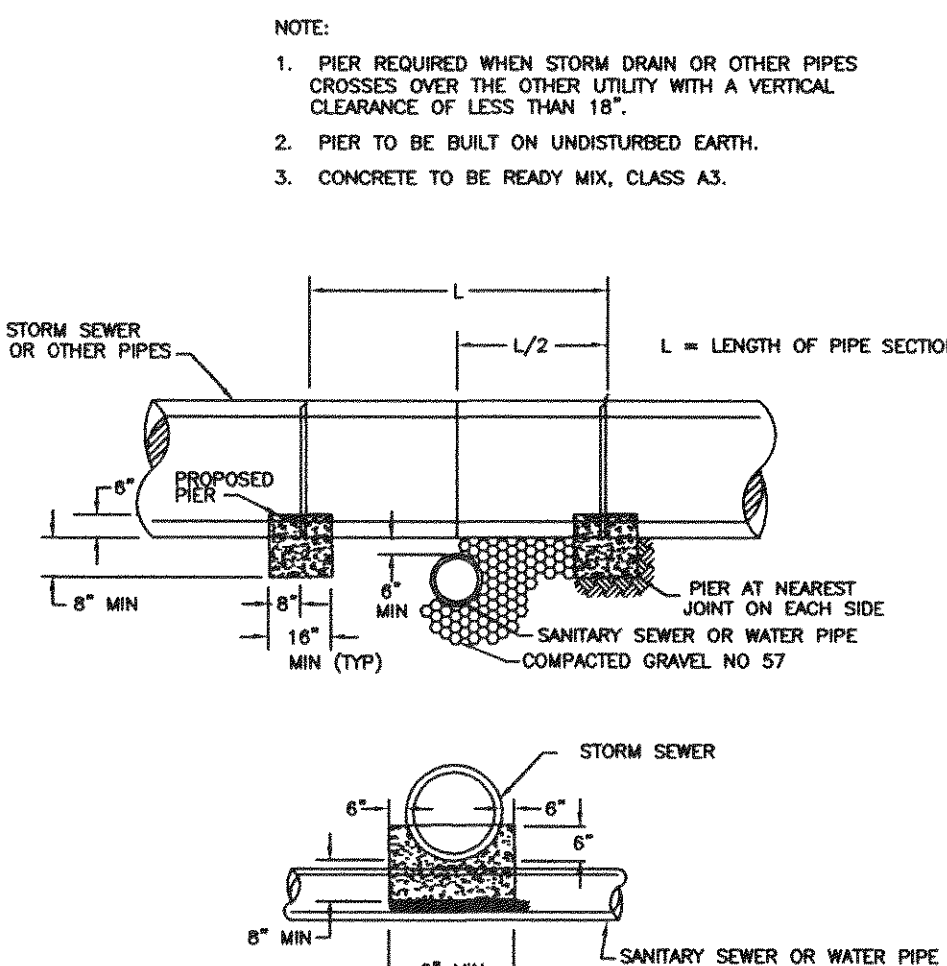


NOTE: A MINIMUM CLEARANCE OF 4 INCHES IS REQUIRED BETWEEN CLEANOUT CAP AND TOP OF COVER.

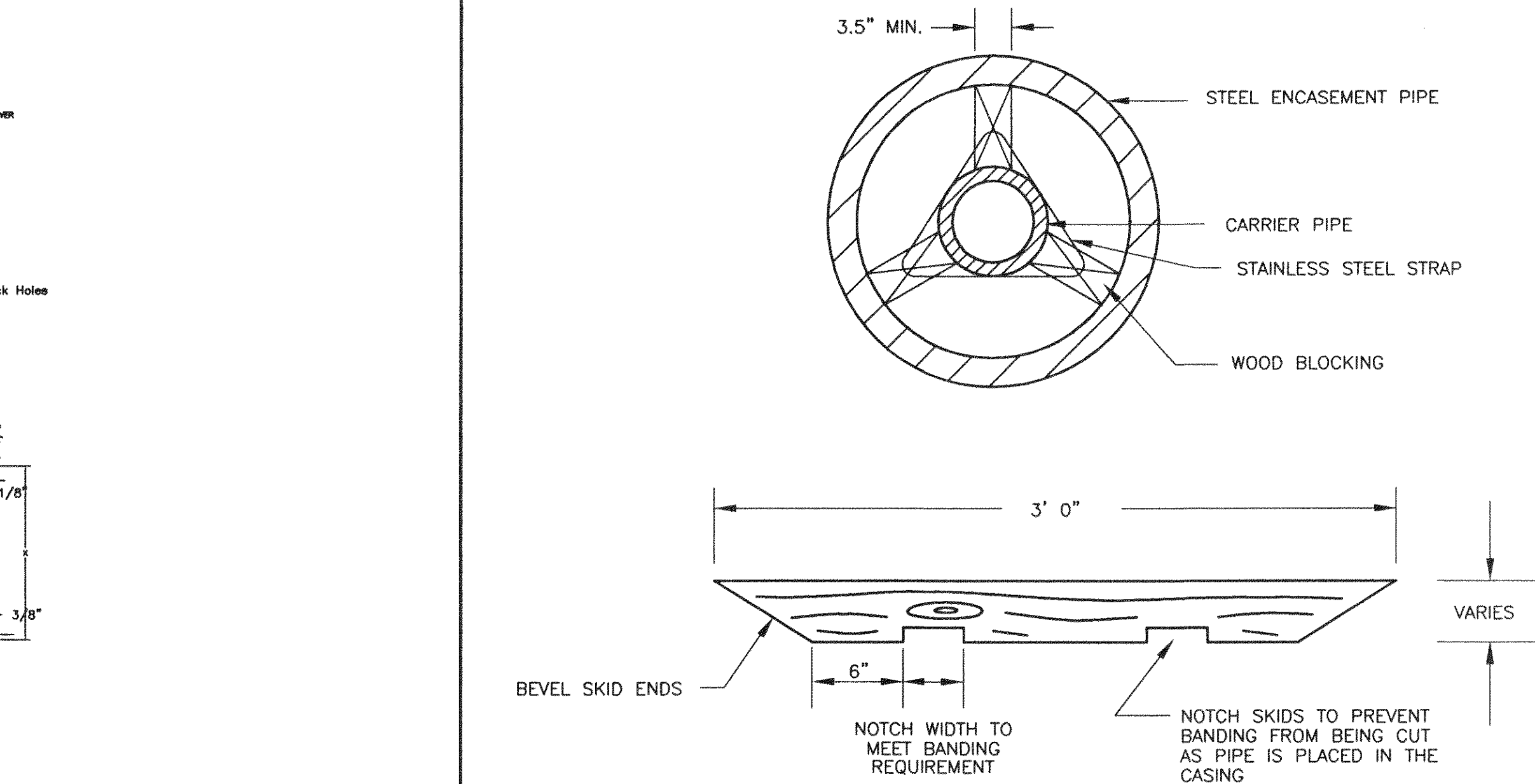
**TRAFFIC BEARING CLEANOUT BOX**  
NOT TO SCALE



**STANDARD MANHOLE DETAIL**  
NOT TO SCALE



**CONCRETE PIER**  
NOT TO SCALE



NOTES:

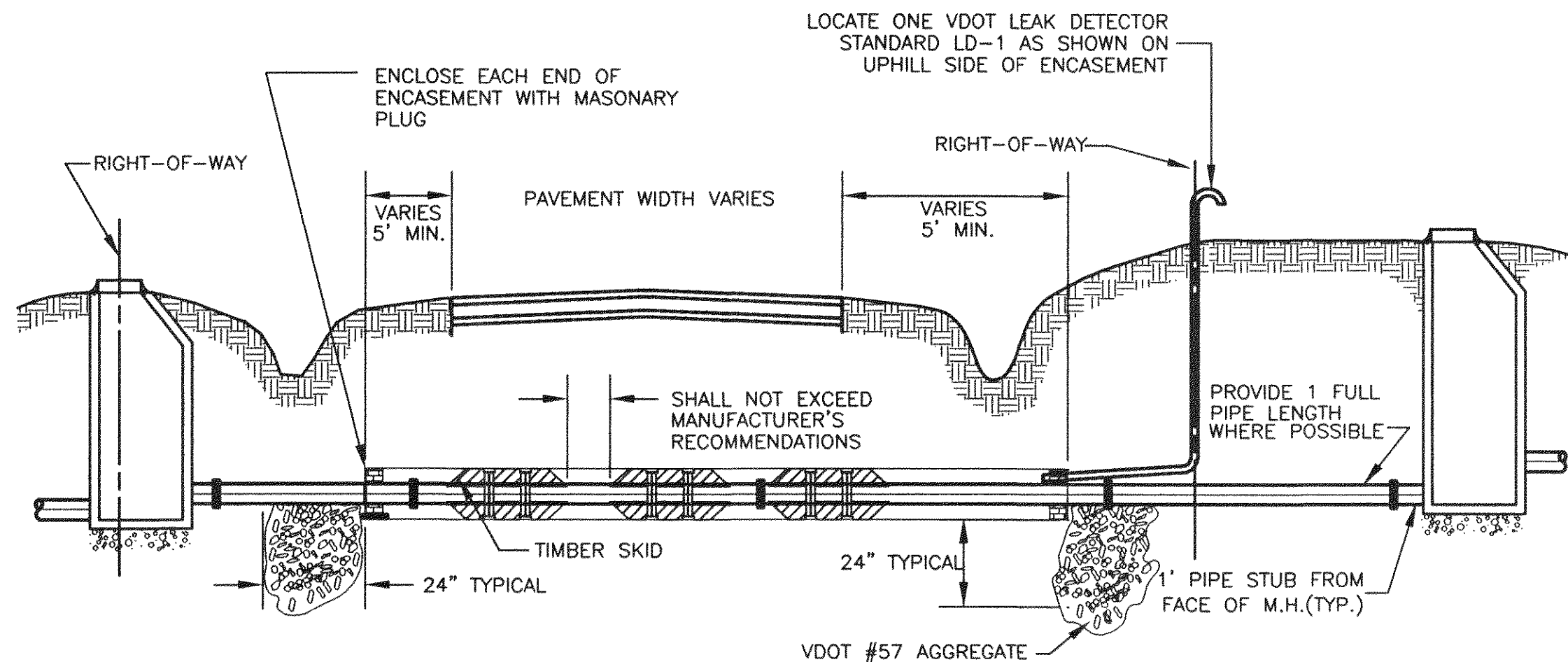
1. TIMBER SKIDS SHALL BE LOCUST, CYPRESS, PRESERVATIVE TREATED HARDWOOD, OR OTHER MATERIAL APPROVED BY THE ENGINEER.
2. TIMBER PRESERVATIVES SHALL BE USED ACCORDING TO THEIR SUITABILITY FOR THE CONDITION OF EXPOSURE TO WHICH THEY WILL BE SUBJECTED AND SHALL NOT BE USED INTERCHANGEABLY. TREATMENTS SHALL CONFORM TO THE FOLLOWING LIMITATIONS:
  - A. WATERBORNE PRESERVATIVES SHALL BE USED FOR TIMBER WHERE A CLEAN SURFACE IS DESIRABLE. THE MOISTURE CONTENT OF WOOD MATERIAL SHALL NOT BE MORE THAN 19 PERCENT AT THE TIME OF TREATMENT.
  - B. PRESERVATIVES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M133 EXCEPT THAT COAL TAR CREOSOTE SOLUTION WILL NOT BE PERMITTED.
  - C. PRESSURE TREATMENT SHALL CONFORM TO THE REQUIREMENTS OF AWPAC C2.
3. METAL STRAPS AND CLIPS HOLDING BLOCKING TO CARRIER PIPE SHALL BE STAINLESS STEEL WITH A MINIMUM CROSS SECTION OF 0.014 SQ. IN. STRAP SPACING SHALL BE A MINIMUM OF TWO (2) BANDS PER SKID LENGTH.

SOURCE: 1993 VDOT ROAD AND BRIDGE STANDARDS SEC. 1404.01

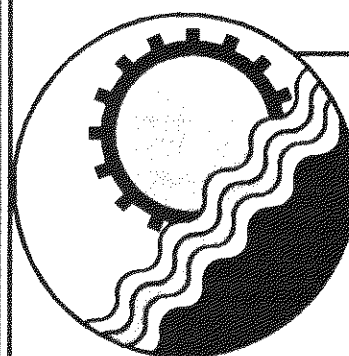
**TIMBER SKID**  
NOT TO SCALE

NOTES:

1. SLOPE ENCASEMENT TO MATCH SLOPE OF ENCASED SEWER AS SHOWN ON PLANS.
2. STEEL ENCASEMENT PIPE SHALL CONFORM TO THE REQUIREMENTS OF ASTM A139 FOR THE CLASS AND THICKNESS SPECIFIED AND SHALL HAVE BEVELED EDGES SUITABLE FOR FIELD WELDING. WALL THICKNESS OF PIPE SHALL BE 1/4" MINIMUM.
3. CARRIER PIPE SHALL BE FLANGED DUCTILE IRON.
4. CARRIER PIPE SHALL BE LINED WITH TAR PAPER AT MASONRY PLUG.
5. MASONRY PLUG SHALL BE OF WATERTIGHT CONNECTION WITH A WEEP HOLE FOR DRAINAGE.
6. FOR OPEN CUT INSTALLATIONS:
  - A. CONTRACTOR SHALL REPLACE CUT MATERIAL WITH APPROVED CRUSHED AGGREGATE AND SHALL ACHIEVE 95% COMPACTION PER VDOT REQUIREMENTS.
  - B. CONTRACTOR SHALL MATCH EXISTING PAVEMENT CROSS SECTION AND SHALL REPLACE PAVEMENT AND SURFACE TO ORIGINAL CONDITION OR BETTER.
  - C. CONTRACTOR SHALL FIELD VERIFY LOCATION OF BORE PIT AND CONFIRM WITH ENGINEER BEFORE PROCEEDING WITH ENCASEMENT INSTALLATION.

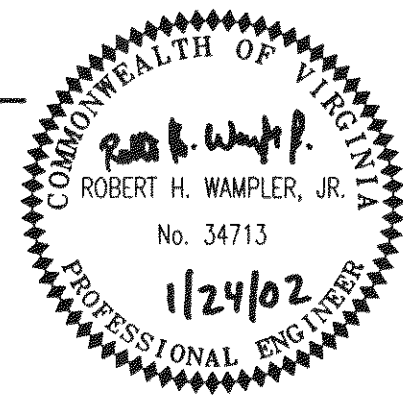


**ENCASED ROAD CROSSING**  
NOT TO SCALE



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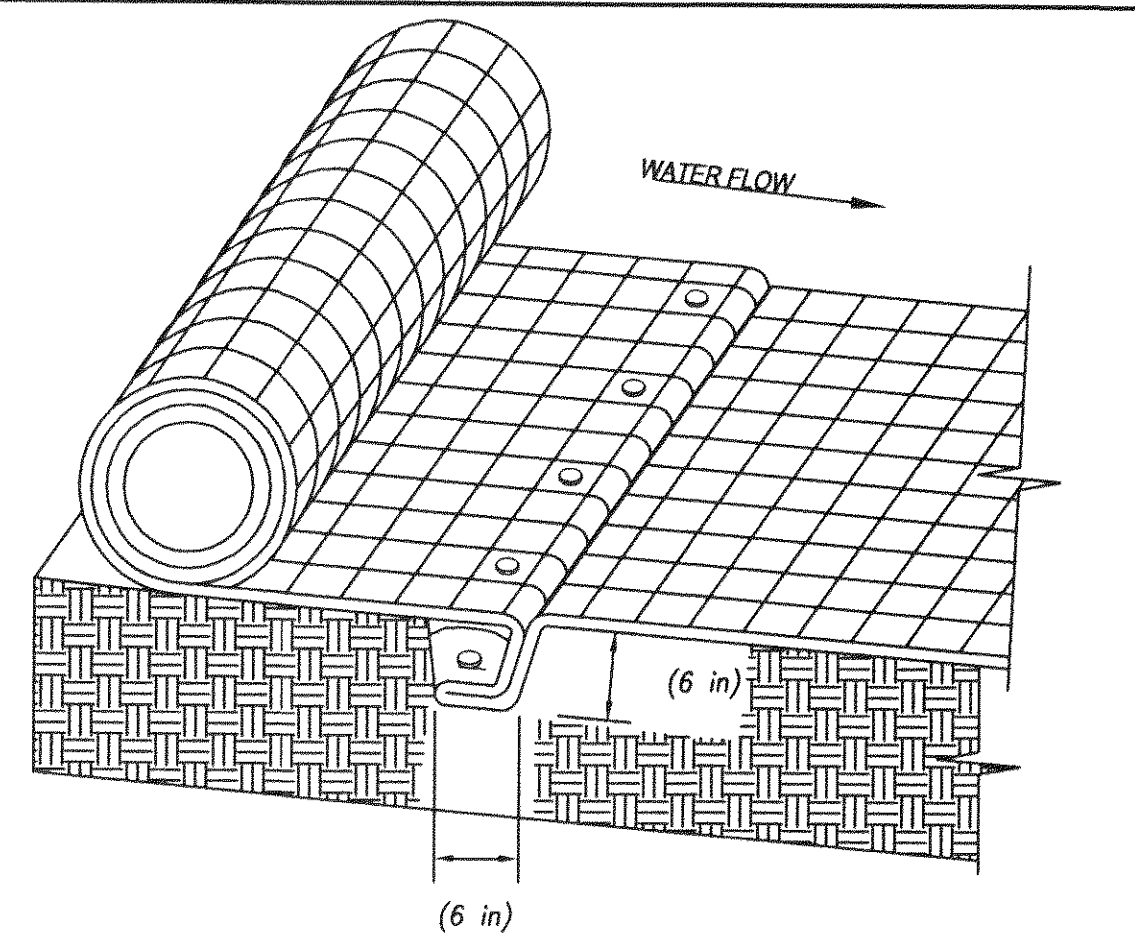


**SOUTH CENTER DRIVE  
AND SANITARY SEWER EXTENSION**

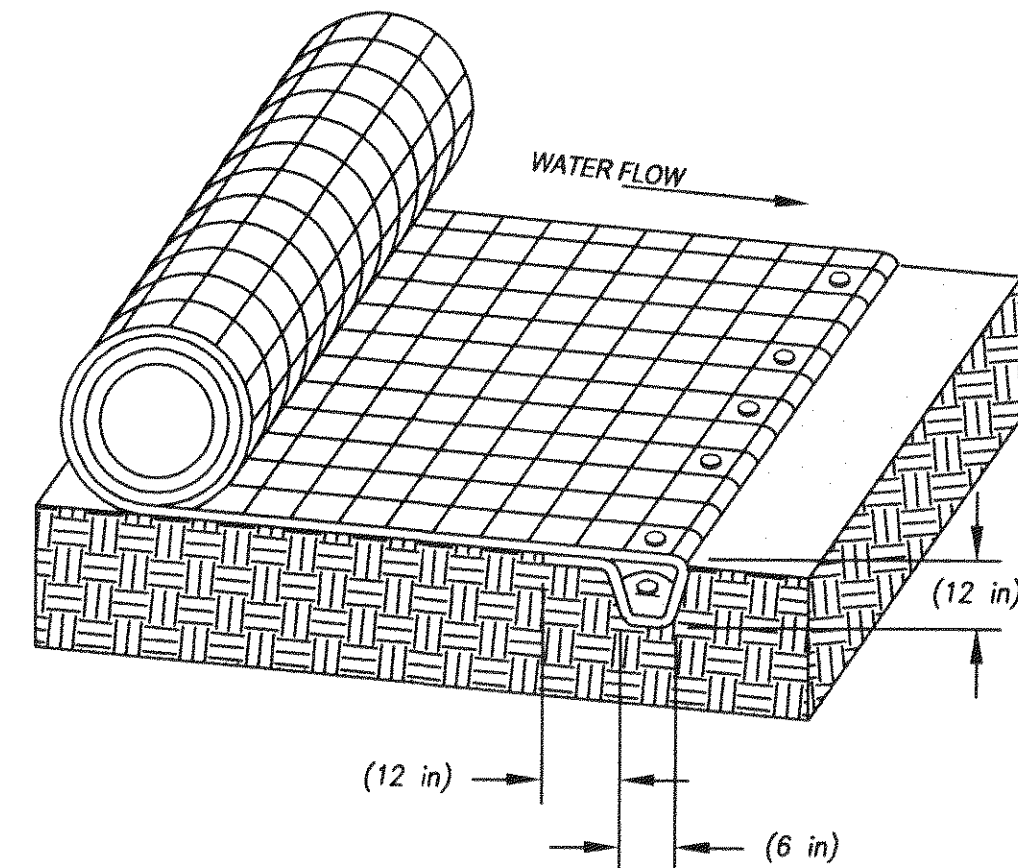
**SANITARY SEWER  
DETAILS**

SCALE: AS SHOWN  
FEBRUARY 2001  
PROJECT: 00144  
C9 of C10

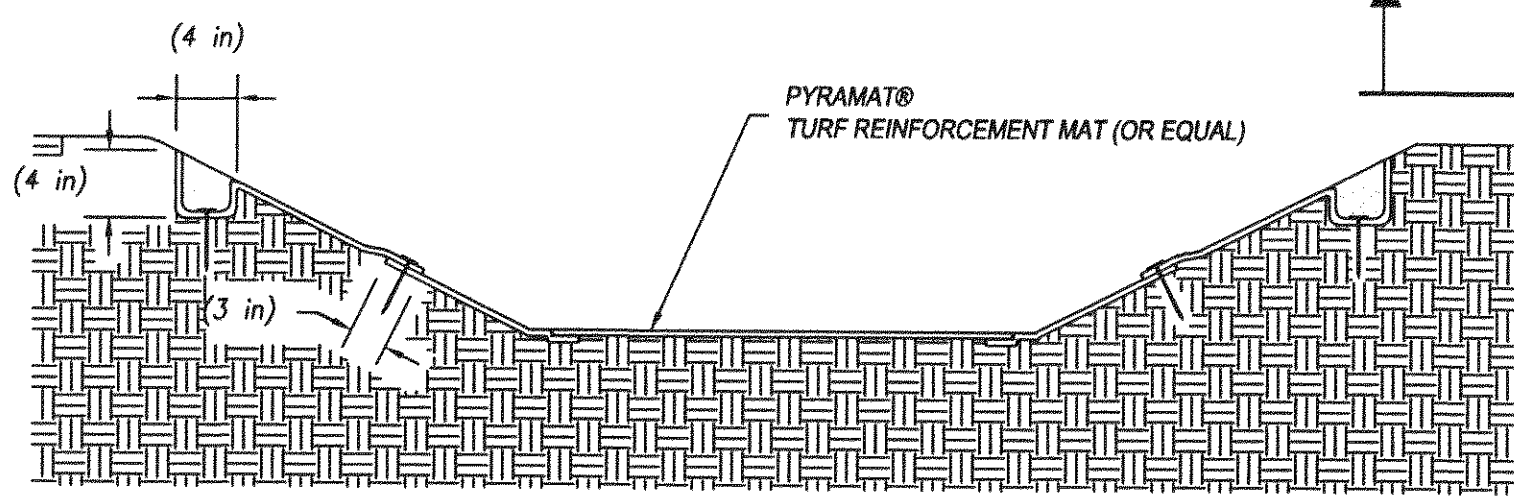
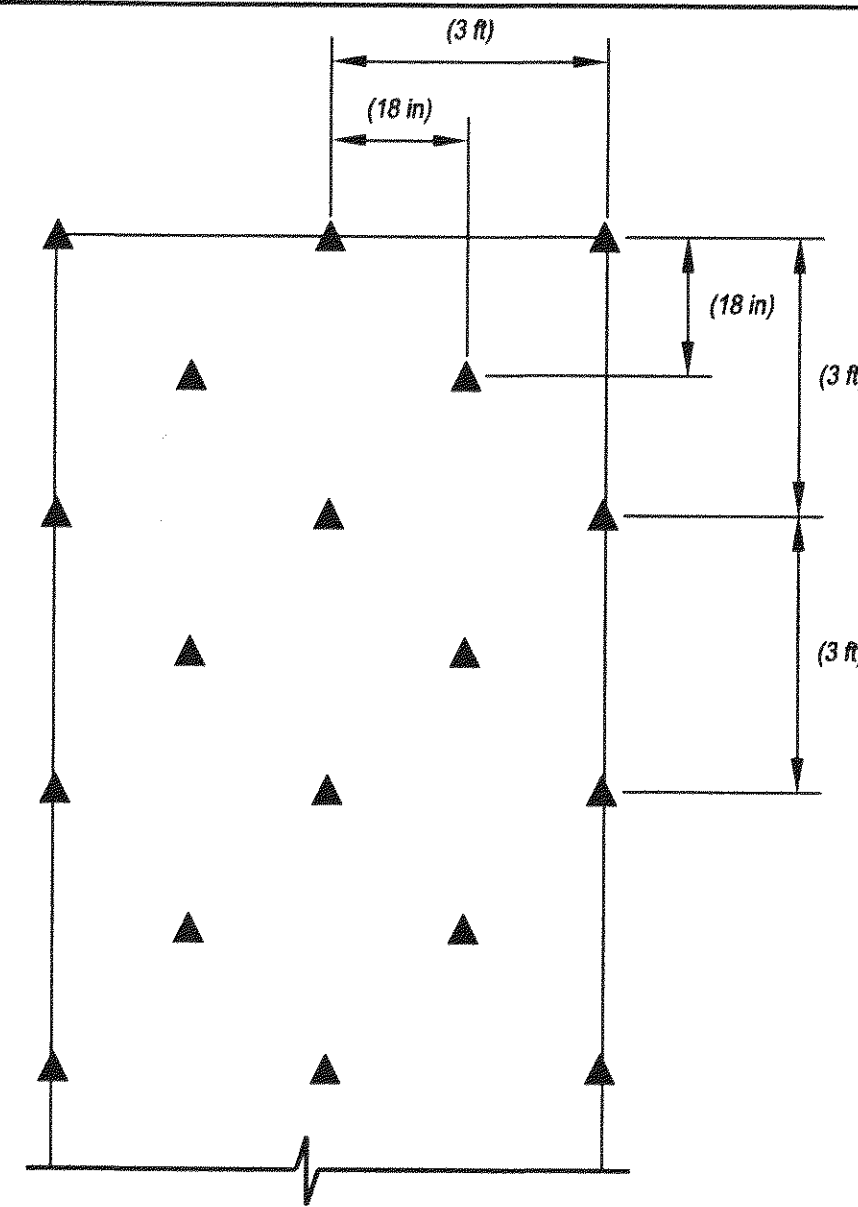




NOTES:  
1. SECURE AT (1 ft) INTERVALS, BACKFILL AND COMPACT SOIL

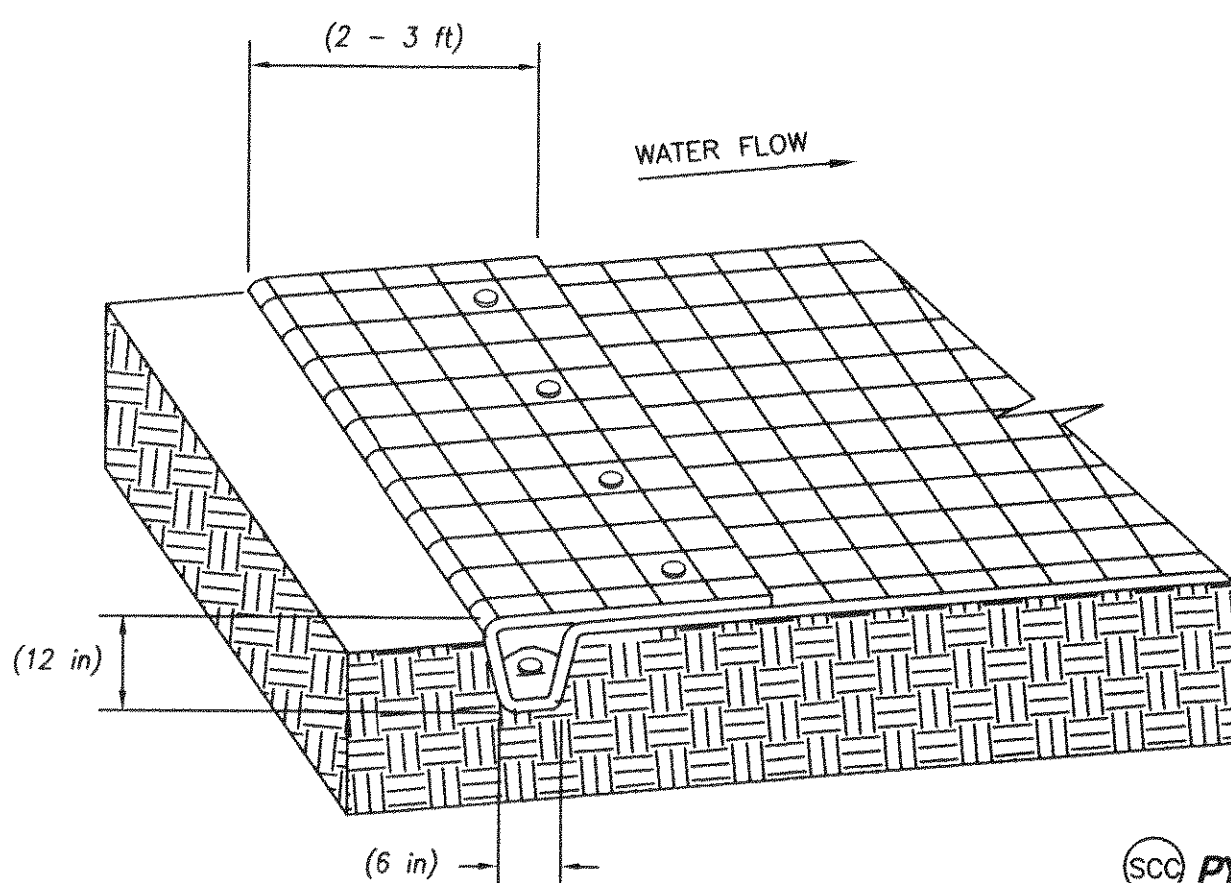


NOTES:  
1. SECURE AT (1 ft) INTERVALS, BACKFILL AND COMPACT SOIL



NOTES:  
1. PLACE (2 1/2) ANCHORS / SY FOR CHANNELS  
2. EXTEND PYRAMAT TURF REINFORCEMENT MAT (OR EQUAL) TO TOP OF DITCH

SCC PYRAMAT INSTALLATION DETAILS (EC-3 TYPE B)



NOTES:  
1. SECURE AT (1 ft) INTERVALS, BACKFILL AND COMPACT SOIL

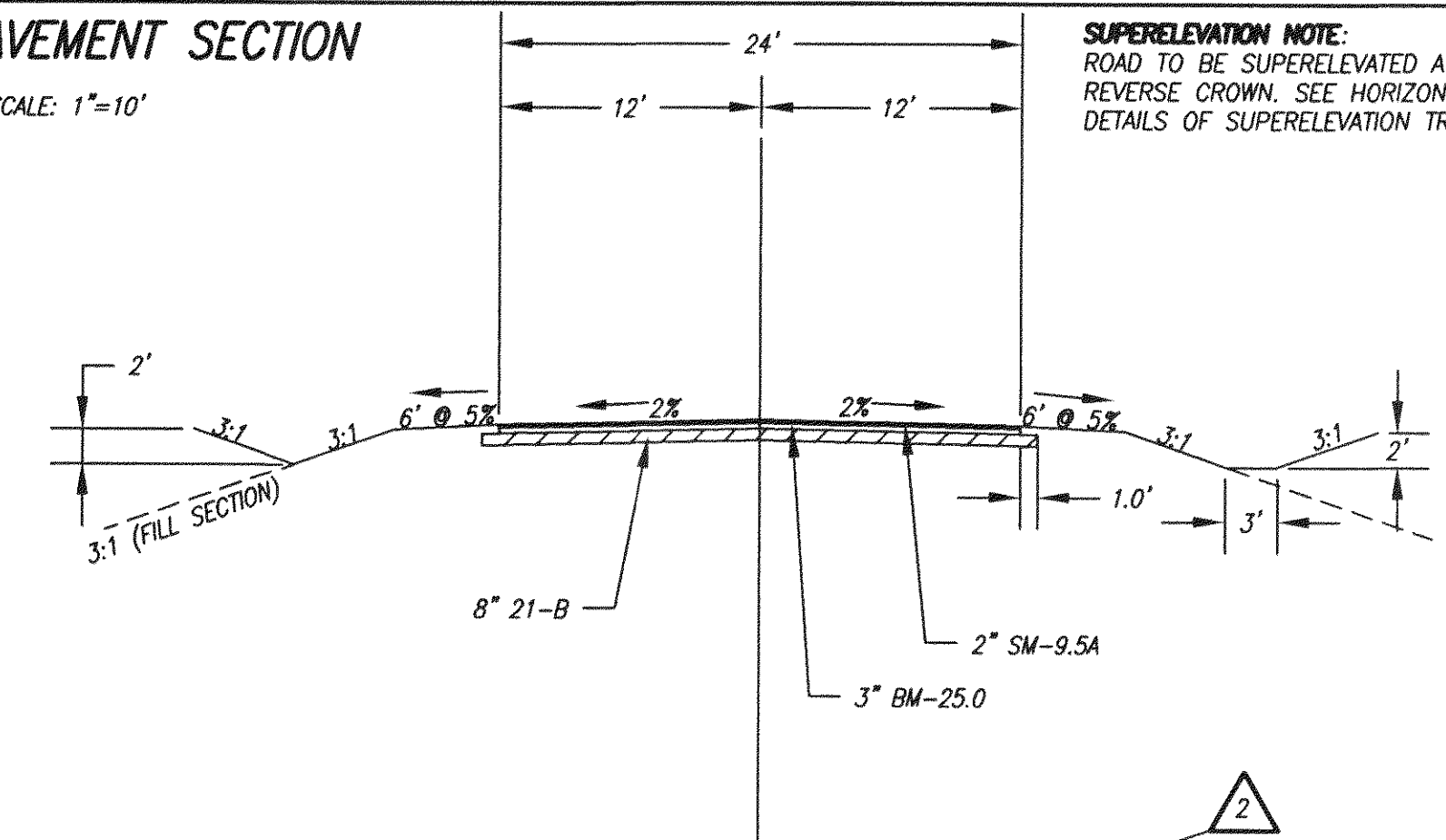
#### GENERAL INSTALLATION NOTES:

1. INSTALL PYRAMAT ENSURING CONTINUOUS CONTACT WITH SUBGRADE.
2. AFTER PYRAMAT IS INSTALLED, SEED AND PLACE 1/2" TO 1" OF SOIL FILL AND COMPACT INTO CELLS OF MAT.
3. FOR RIP-RAP, PLACE GEOTEXTILE FABRIC ON TOP OF PYRAMAT AND THEN PLACE RIP-RAP.

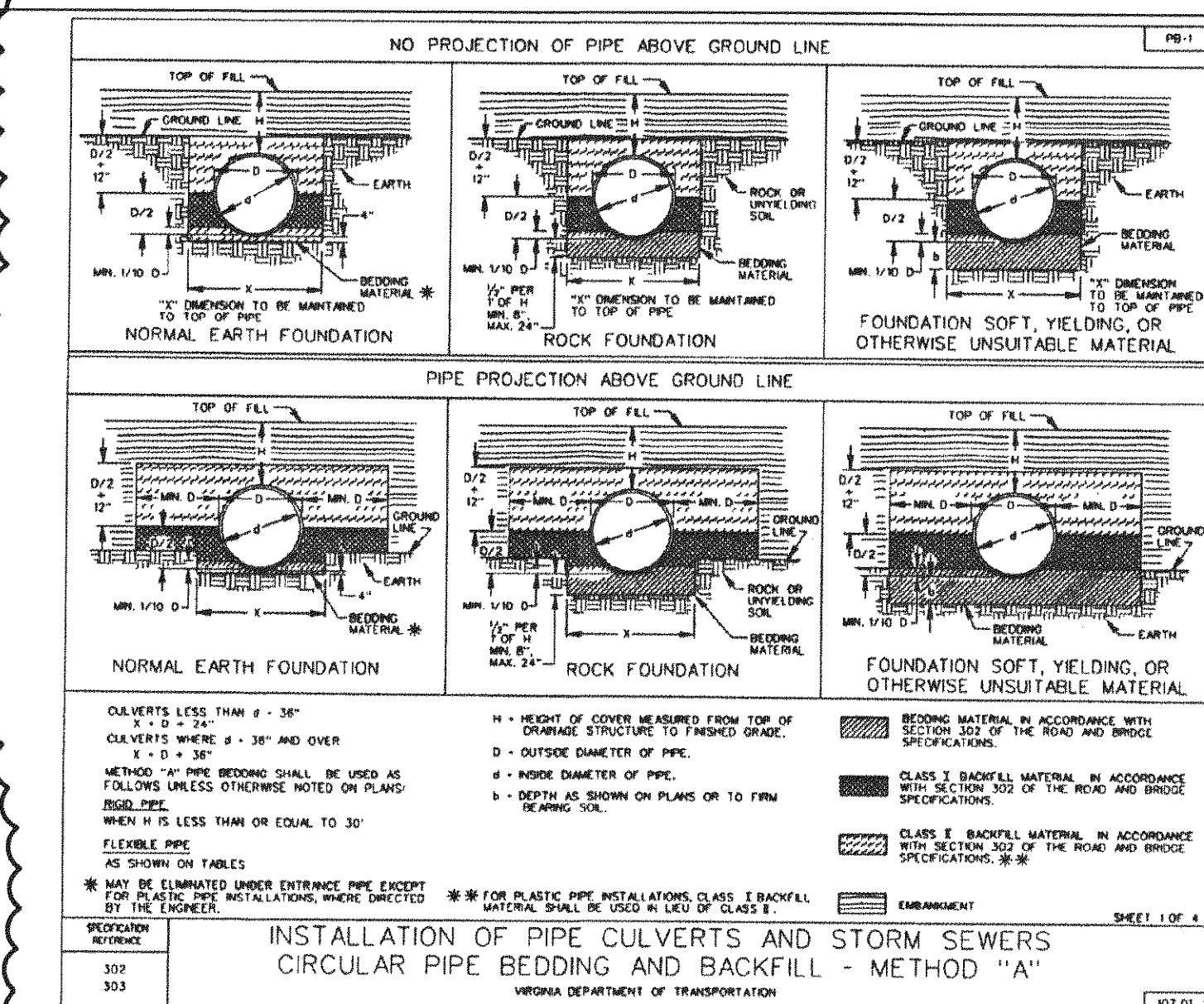
- NOTES:  
1. ANCHOR PATTERN (2 1/2 ANCHORS / SY)  
2. U - SHAPED WIRE STAPLES, METAL GEOTEXTILE PINS, TRIANGULAR WOODEN OR PLASTIC STAKES CAN BE USED TO ANCHOR TRIMS TO THE GROUND SURFACE

#### TYPICAL PAVEMENT SECTION

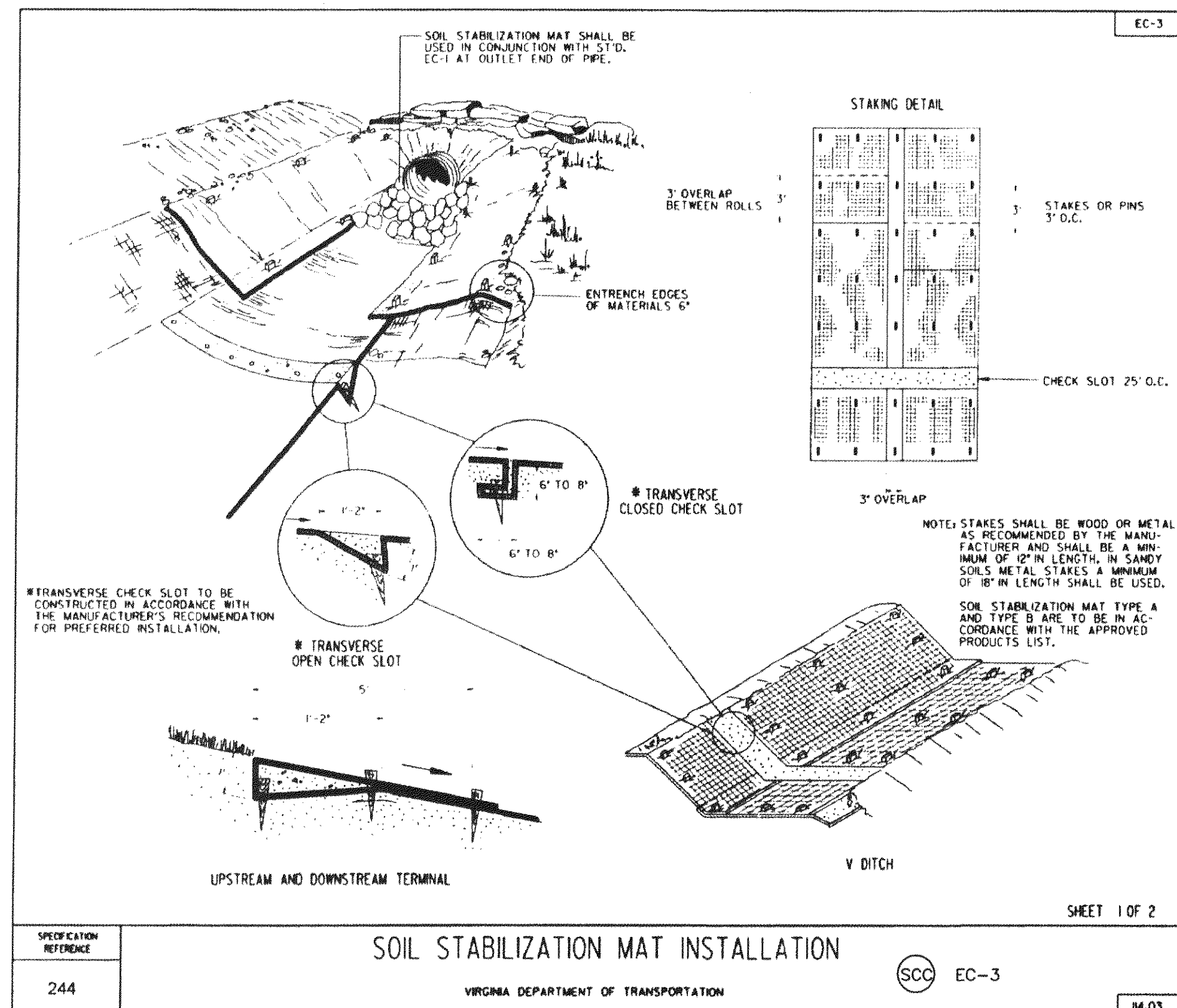
SCALE: 1"=10'



**SUPERELEVATION NOTE:**  
ROAD TO BE SUPERELEVATED A MAXIMUM OF 2% TO ACHIEVE REVERSE CROWN. SEE HORIZONTAL CURVE INFORMATION FOR DETAILS OF SUPERELEVATION TRANSITIONS.



NOTE: INSTALLATION OF PIPE CULVERTS AND STORM SEWER PIPE BEDDING SHALL CONFORM TO THE 2001 VDOT BRIDGE STANDARDS AND SPECIFICATIONS. HOPE PIPE SHALL BE INSTALLED ACCORDING TO VDOT STANDARDS PB-1 AND PC-1

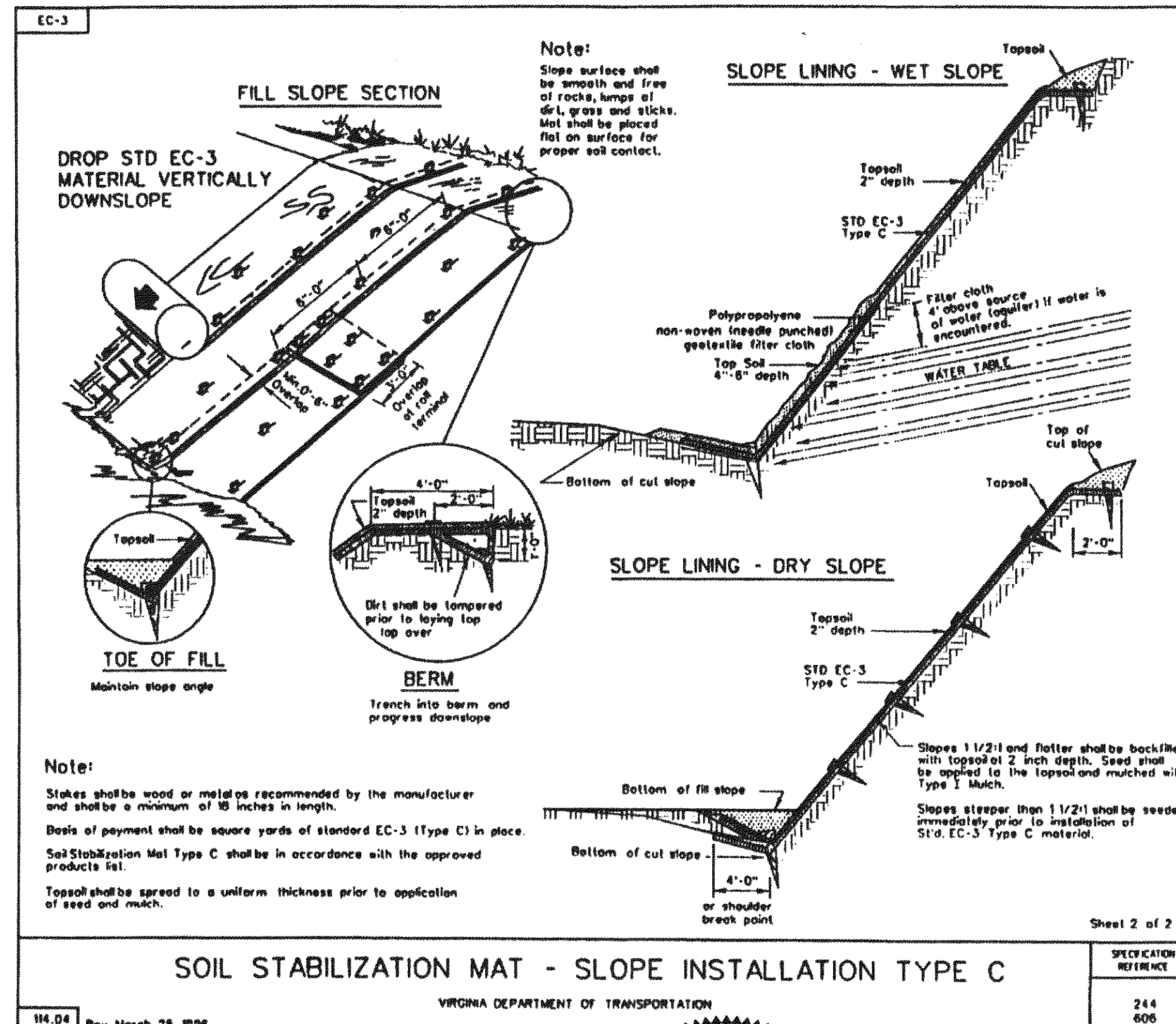


#### SOIL STABILIZATION MAT INSTALLATION

VIRGINIA DEPARTMENT OF TRANSPORTATION

SCC EC-3

SHEET 1 OF 2

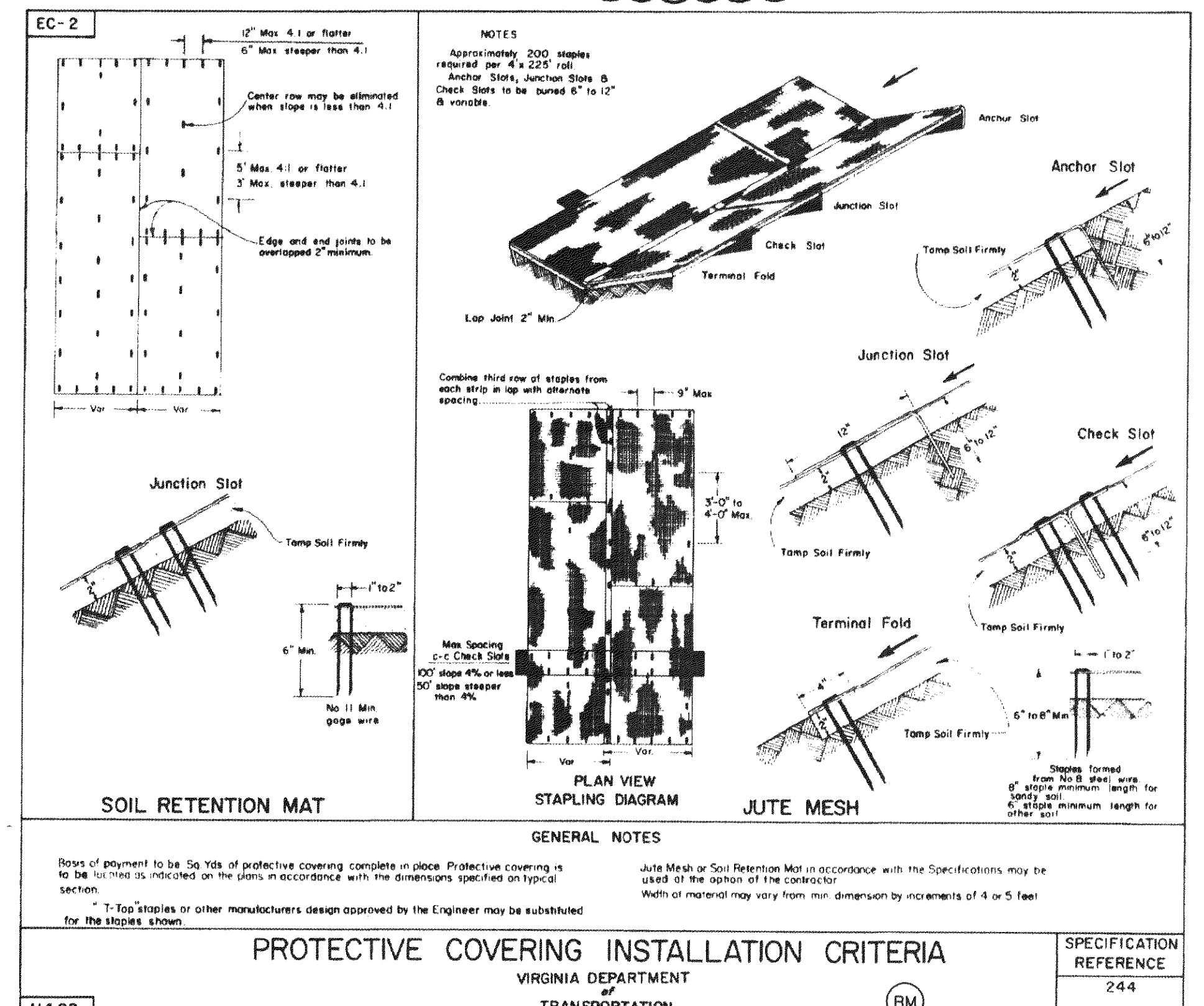


#### SOIL STABILIZATION MAT - SLOPE INSTALLATION TYPE C

VIRGINIA DEPARTMENT OF TRANSPORTATION

244 606

114.04 Rev. March 23, 1996



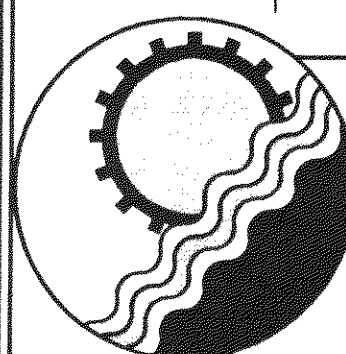
#### PROTECTIVE COVERING INSTALLATION CRITERIA

VIRGINIA DEPARTMENT OF TRANSPORTATION

BM

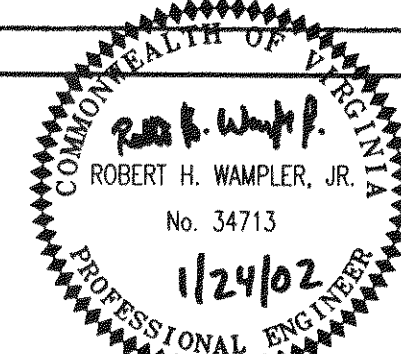
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No.	Revision	By	Appd.	Date	Drawn	WTR
2	VDOT REVIEW COMMENTS	WTR	RHW	06/01/01	Designed	RHW
					Checked	
					Approved	

**SOUTH CENTER DRIVE  
AND SANITARY SEWER EXTENSION**

**MISCELLANEOUS  
DETAILS**

SCALE NOTED  
FEBRUARY 2001  
PROJECT: 00144  
C10 of C10