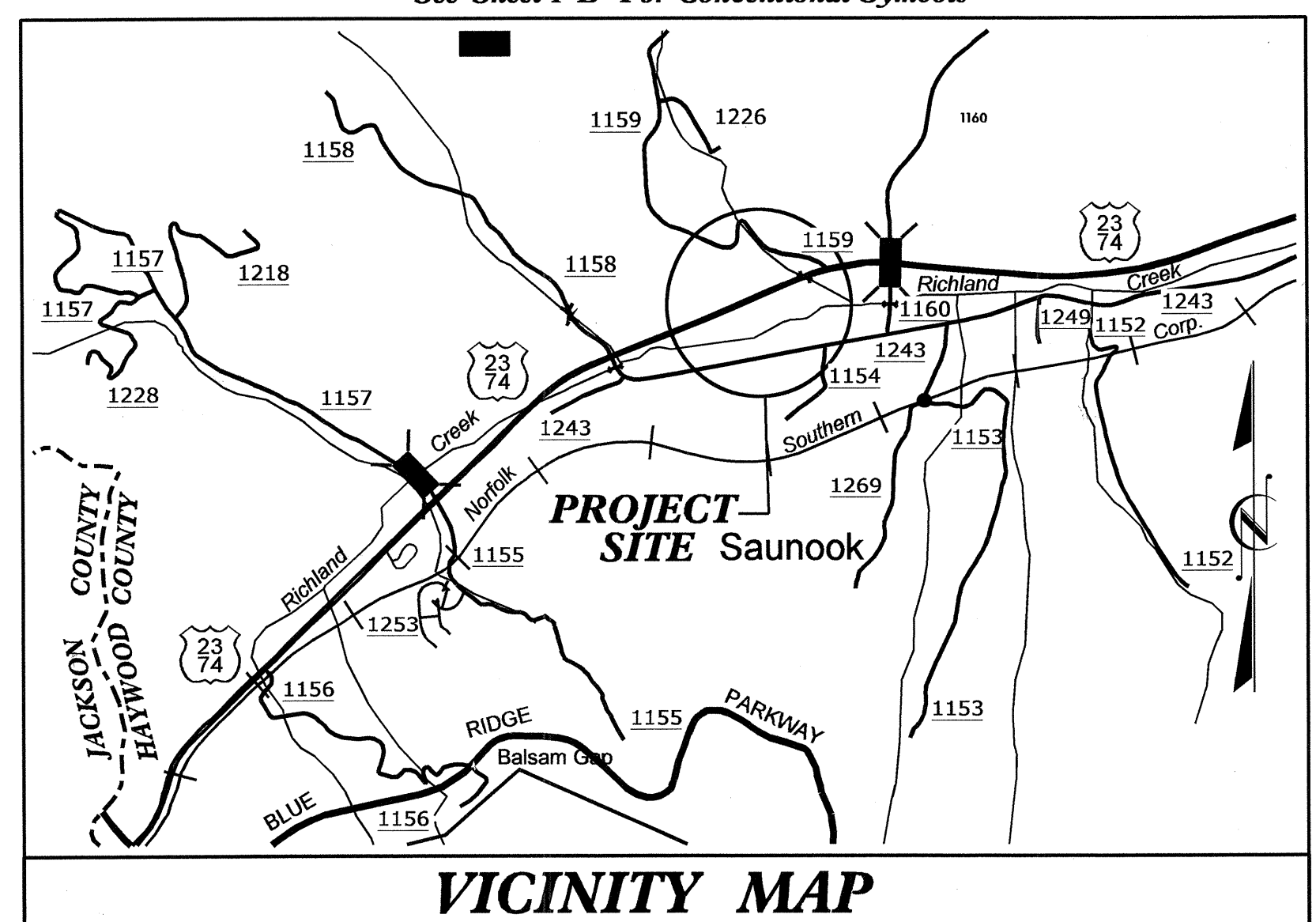


05/08/99

TIP PROJECT: K-5002

CONTRACT: C203202

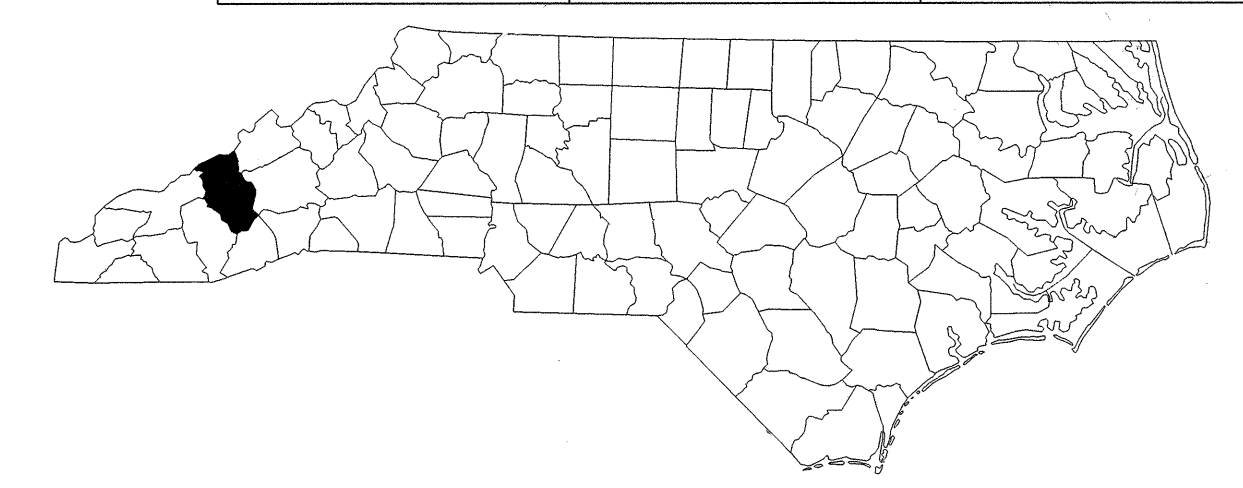
See Sheet I-A For Index of Sheets  
See Sheet I-B For Conventional Symbols



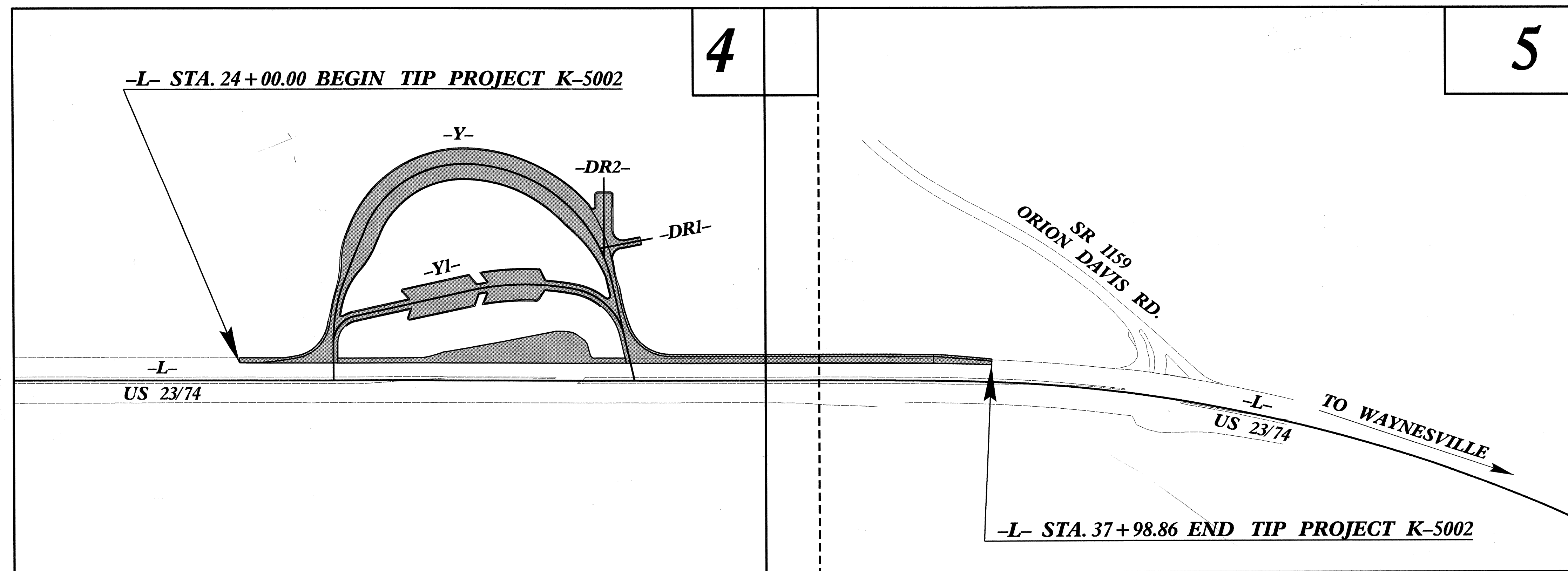
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
**HAYWOOD COUNTY**

**LOCATION: US 23/74 - SOUTHBOUND REST AREA ON NEW LOCATION AND RENOVATE THE EXISTING NORTHBOUND REST AREA**

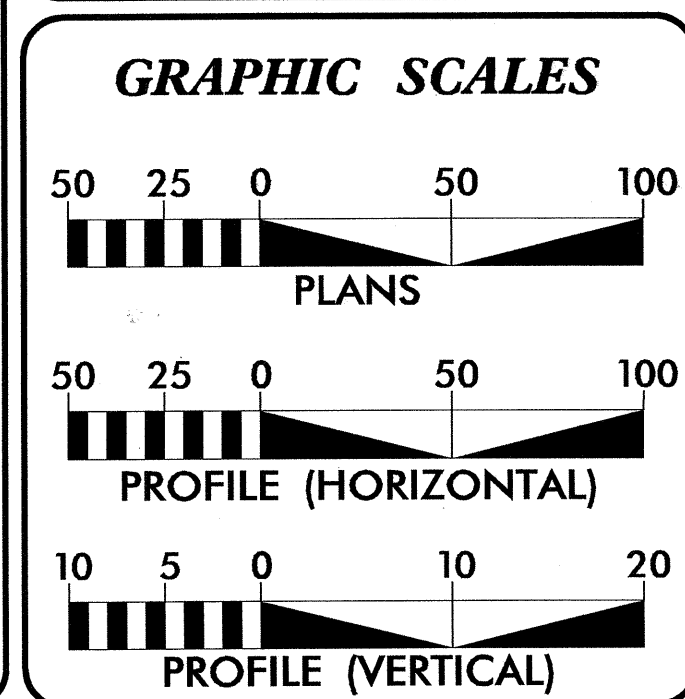
**TYPE OF WORK: GRADING, PAVING, DRAINAGE, TRAFFIC CONTROL AND SIGNING**



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	<b>K-5002</b>	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
41534.1.I	NHS-0023(18)	P.E.	
41534.2.I	NHS-0023(18)	RW	
41534.3.FS1	NHS-0023(18)	CONST.	



THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.



**DESIGN DATA**

ADT 2014 = 780  
ADT 2033 = 1,160  
DHV = 13%  
D = 55%  
T = N/A%  
V = 20 MPH

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT K-5002 = 0.265 MILES  
TOTAL LENGTH TIP PROJECT K-5002 = 0.265 MILES

Prepared in the Office of:  
**DIVISION OF HIGHWAYS**  
1000 Birch Ridge Dr., Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: **AUGUST 29, 2012**

LETTING DATE: **MARCH 18, 2014**

**KEVIN E. MOORE, P.E.**  
PROJECT ENGINEER

**MARK HUSSEY**  
PROJECT DESIGN ENGINEER

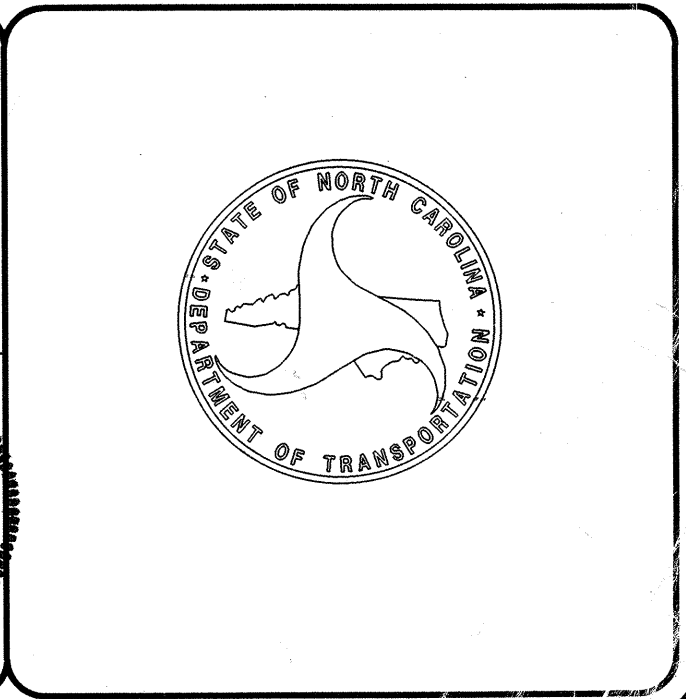
**HYDRAULICS ENGINEER**

*[Signature]*  
SIGNATURE:

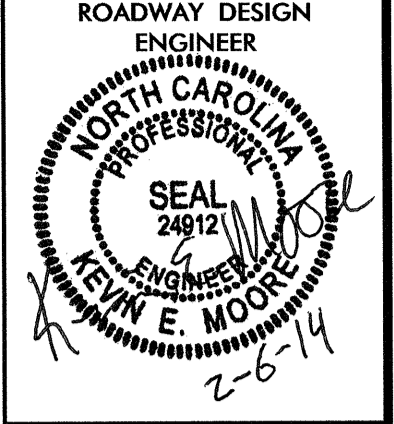
**ROADWAY DESIGN ENGINEER**

*[Signature]*  
SIGNATURE:

Professional Engineer seals for Kevin E. Moore and Mark Hussey.



25-NOV-2013 09:24  
D:\Roadway\Projects\K5002\_rdy\_tsh.dgn  
\$\$\$\$\$USERNAME\$\$\$\$\$



# INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES AND LIST OF STANDARDS (2012 SPECIFICATIONS)
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEETS
2 THRU 2-A	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAIL
2-B	BIO-RETENTION DETAIL
2-C	DETAIL OF OUTLET CONTROL STRUCTURE
2-D	DETAIL OF OUTLET HAZARDOUS SPILL BASIN
2-E	DETAIL OF OUTLET CONTROL STRUCTURE FOR HAZARDOUS SPILL BASIN
2-F	DETAIL OF FABRIC LINING AND UNDERDRAIN CLEANOUT
2-G	DETAIL OF SPLITTER BOX WITH RETICULINE GRATE
2-H	DETAIL OF EXTRA DEPTH GRATED DROP INLET
2-I	DETAIL OF RAMPS FOR HC PARKING
2-J	DETAIL OF DIRECTIONAL RAMPS
2-K	DETAIL OF PARALLEL RAMPS
3-A THRU 3-B	SUMMARY OF DRAINAGE 48" and UNDER
3-C	SUMMARY OF DRAINAGE 54" AND OVER, CONCRETE & ASPHALT PAVEMENT REMOVALS, SHOULDER BERM, GUTTER AND SUBSURFACE DRAINAGE
3-D	SUMMARY OF EARTHWORK
4 THRU 5	PLAN SHEETS
6 THRU 7	PROFILE SHEETS
TMP-1 THRU TMP-2	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-5	PAVEMENT MARKING PLANS
E-1 THRU E-4	ELECTRICAL PLANS
EC-1 THRU EC-7	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
SIGN-1 THRU SIGN-8	SIGNING PLANS
LI THRU LD15	DESIGN AND DEVELOPMENT PLANS
A0.1 THRU E3.1	ARCHITECTURAL PLANS /BUILDING, PLUMBING, HVAC & ELECTRICAL
G-001 THRU E-501	ARCHITECTURAL PLANS /WATER & SEWER
UO-1 THRU UO-3	UTILITIES BY OTHER PLANS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-19	CROSS-SECTIONS

**GENERAL NOTES:**

2012 SPECIFICATIONS  
EFFECTIVE: 01-17-2012  
REVISED: 07-30-2012

**GRADING AND SURFACING OR RESURFACING AND WIDENING:**

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

**CLEARING:**

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

**SUPERELEVATION:**

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

**SHOULDER CONSTRUCTION:**

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01

**UNDERDRAINS:**

UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER.

**GUARDRAIL:**

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

**TEMPORARY SHORING:**

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

**UTILITIES:**

UTILITY OWNERS ON THIS PROJECT ARE AT&T, DUKE ENERGY, MICROELECTRONICS CENTER OF NORTH CAROLINA

**CURB RAMPS:**

CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. CONSTRUCT ALL CURB RAMPS ACCORDANCE WITH STD. 848.05 AND DETAIL SHEET 2-1.

**ROCK:**

ROCK IS ANTICIPATED BETWEEN 15+50 - 18+50. BLASTING MAY BE REQUIRED FOR EXCAVATION ON THE PROJECT. SEE SECTION 220 OF THE STANDARD SPECIFICATIONS AND IF APPLICABLE, ROCK BLASTING PROVISION.

2012 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

STD. NO.	TITLE
<b>DIVISION 2 - EARTHWORK</b>	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
<b>DIVISION 3 - PIPE CULVERTS</b>	
300.01	Method of Pipe Installation
<b>DIVISION 5 - SUBGRADE, BASES AND SHOULDERS</b>	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
<b>DIVISION 6 - ASPHALT BASES AND PAVEMENTS</b>	
654.01	Pavement Repairs
665.01	Asphalt Shoulders - Milled Rumble Strips
<b>DIVISION 7 - CONCRETE PAVEMENT AND SHOULDERS</b>	
700.01	Concrete Pavement Joints - Construction and Contraction Joints
700.03	Dowel Assembly
710.01	Concrete Pavement - Stationing Marking
<b>DIVISION 8 - INCIDENTALS</b>	
815.03	Pipe Underdrain and Blind Drain
838.27	Reinforced Concrete Endwall - for Single 60" Pipe 90 Skew
838.45	Notes for Reinforced Concrete Endwall - Std. Dwg 838.21 thru 838.40
838.57	Reinforced Brick Endwall - for Single 60" Pipe 90 Skew
838.75	Notes for Reinforced Brick Endwall - Std. Dwg 838.51 thru 838.70
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frames, Grates and Hood - for Use on Standard Catch Basin
840.17	Concrete Grated Drop Inlet Type "A" - 12" thru 72" Pipe
840.18	Concrete Grated Drop Inlet Type "B" - 12" thru 36" Pipe
840.24	Frames and Narrow Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.26	Brick Grated Drop Inlet Type "A" - 12" thru 72" Pipe
840.27	Brick Grated Drop Inlet Type "B" - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.45	Precast Drainage Structure
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
848.01	Concrete Sidewalk
848.04	Street Turnout
848.05	Curb Ramp - Proposed Curb & Gutter
850.10	Guide for Berm Drainage Outlet - 15" thru 18" Pipe
852.01	Concrete Islands
862.01	Guardrail Placement
862.02	Guardrail Installation
866.01	Chain Link Fence - 4', 5' and 6' High Fence
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets

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K:\Users\KMOORE\My Documents\Projects\145002-rdy-pah01a.dgn

12/05/11

Note: Not to Scale

\*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# CONVENTIONAL PLAN SHEET SYMBOLS

### BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EP
Property Corner	-----
Property Monument	□ ECM
Parcel/Sequence Number	⑩ 23
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	-WLB-
Proposed Wetland Boundary	-WLB-
Existing Endangered Animal Boundary	-EAB-
Existing Endangered Plant Boundary	-EPB-
Known Soil Contamination: Area or Site	☠ ☠
Potential Soil Contamination: Area or Site	?? ??

### BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○
Well	○ W
Small Mine	✕
Foundation	▭
Area Outline	▭
Cemetery	⊕
Building	▭
School	▭
Church	▭
Dam	▭

### HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	▭
Jurisdictional Stream	-JS-
Buffer Zone 1	-BZ 1-
Buffer Zone 2	-BZ 2-
Flow Arrow	←
Disappearing Stream	→
Spring	○
Wetland	▭
Proposed Lateral, Tail, Head Ditch	▭
False Sump	▭

### RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○ CSX TRANSPORTATION MILEPOST 35
Switch	□ SWITCH
RR Abandoned	-----
RR Dismantled	-----

### RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	○ RW
Proposed Right of Way Line with Iron Pin and Cap Marker	○ RW ▲
Proposed Right of Way Line with Concrete or Granite RW Marker	○ RW ▲
Proposed Control of Access Line with Concrete CA Marker	○ CA
Existing Control of Access	○ CA
Proposed Control of Access	○ CA
Existing Easement Line	-E-
Proposed Temporary Construction Easement	-E-
Proposed Temporary Drainage Easement	-TDE-
Proposed Permanent Drainage Easement	-PDE-
Proposed Permanent Drainage / Utility Easement	-DUE-
Proposed Permanent Utility Easement	-PUE-
Proposed Temporary Utility Easement	-TUE-
Proposed Aerial Utility Easement	-AUE-
Proposed Permanent Easement with Iron Pin and Cap Marker	◆

### ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	-C-
Proposed Slope Stakes Fill	-F-
Proposed Curb Ramp	○ CR
Existing Metal Guardrail	▭
Proposed Guardrail	▭
Existing Cable Guiderail	▭
Proposed Cable Guiderail	▭
Equality Symbol	⊕
Pavement Removal	▭

### VEGETATION:

Single Tree	☼
Single Shrub	☼
Hedge	▭
Woods Line	▭

Orchard	☼ ☼ ☼ ☼
Vineyard	▭ Vineyard

### EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	▭ CONC
Bridge Wing Wall, Head Wall and End Wall	▭ CONC WW
MINOR:	
Head and End Wall	▭ CONC HW
Pipe Culvert	▭
Footbridge	▭
Drainage Box: Catch Basin, DI or JB	▭ CB
Paved Ditch Gutter	▭
Storm Sewer Manhole	○ S
Storm Sewer	-S-

### UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊕
Power Line Tower	⊗
Power Transformer	⊗
U/G Power Cable Hand Hole	▭
H-Frame Pole	●
Recorded U/G Power Line	-P-
Designated U/G Power Line (S.U.E.*)	-P-

### TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊕
Telephone Booth	▭
Telephone Pedestal	▭
Telephone Cell Tower	⊕
U/G Telephone Cable Hand Hole	▭
Recorded U/G Telephone Cable	-T-
Designated U/G Telephone Cable (S.U.E.*)	-T-
Recorded U/G Telephone Conduit	-TC-
Designated U/G Telephone Conduit (S.U.E.*)	-TC-
Recorded U/G Fiber Optics Cable	-T FO-
Designated U/G Fiber Optics Cable (S.U.E.*)	-T FO-

### WATER:

Water Manhole	⊕
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
Recorded U/G Water Line	-W-
Designated U/G Water Line (S.U.E.*)	-W-
Above Ground Water Line	-A/G Water-

### TV:

TV Satellite Dish	☼
TV Pedestal	▭
TV Tower	⊗
U/G TV Cable Hand Hole	▭
Recorded U/G TV Cable	-TV-
Designated U/G TV Cable (S.U.E.*)	-TV-
Recorded U/G Fiber Optic Cable	-TV FO-
Designated U/G Fiber Optic Cable (S.U.E.*)	-TV FO-

### GAS:

Gas Valve	◇
Gas Meter	⊕
Recorded U/G Gas Line	-G-
Designated U/G Gas Line (S.U.E.*)	-G-
Above Ground Gas Line	-A/G Gas-

### SANITARY SEWER:

Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	-SS-
Above Ground Sanitary Sewer	-A/G Sanitary Sewer-
Recorded SS Forced Main Line	-FSS-
Designated SS Forced Main Line (S.U.E.*)	-FSS-

### MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	▭
Utility Located Object	○
Utility Traffic Signal Box	▭
Utility Unknown U/G Line	-TU/L-
U/G Tank; Water, Gas, Oil	▭
Underground Storage Tank, Approx. Loc.	⊕
A/G Tank; Water, Gas, Oil	▭
Geoenvironmental Boring	⊕
U/G Test Hole (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

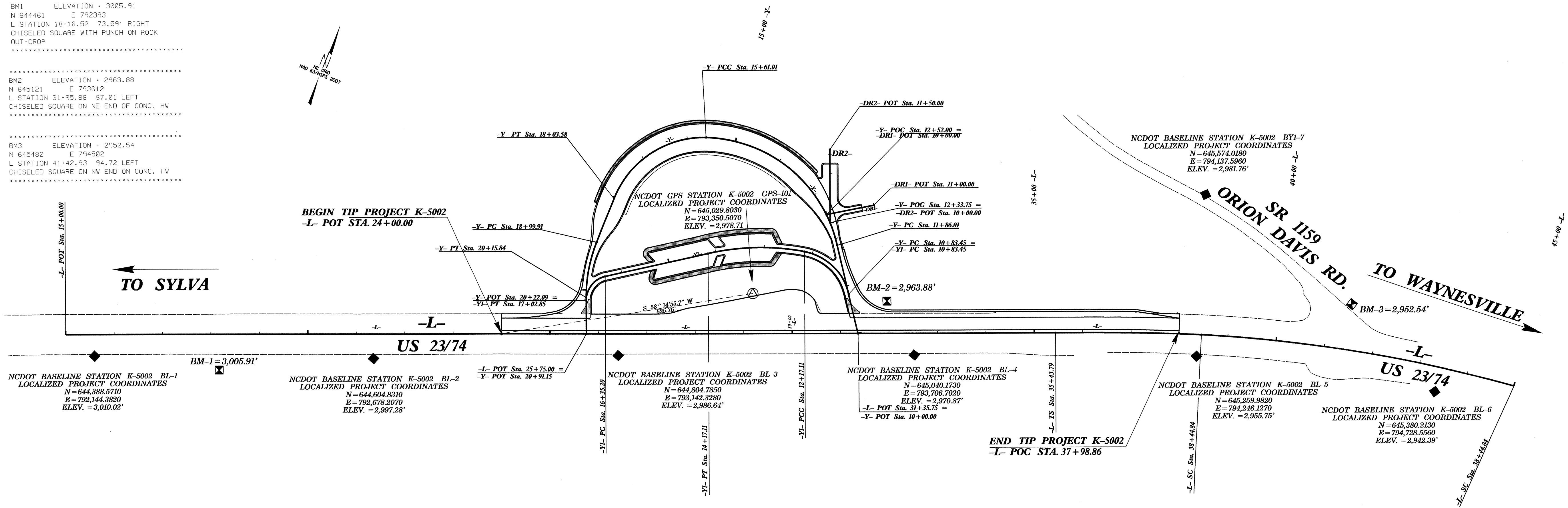
# SURVEY CONTROL SHEET K-5002

BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1		644388.5710	792144.3820	3010.02	15+59.10	44.15 RT
2	BL-2		644604.8310	792678.2070	2997.28	21+35.04	50.13 RT
3	BL-3		644804.7850	793142.3280	2986.64	26+40.36	44.32 RT
4	BL-4		645040.1730	793706.7020	2970.87	32+51.86	44.42 RT
5	BL-5		645259.9820	794246.1270	2955.75	38+36.60	44.52 RT
6	BL-6		645380.2130	794728.5560	2942.39	43+42.79	51.50 RT

.....  
 BM1 ELEVATION = 3005.91  
 N 644461 E 792393  
 L STATION 18+16.52 73.59' RIGHT  
 CHISELED SQUARE WITH PUNCH ON ROCK  
 OUT-CROP  
 .....

.....  
 BM2 ELEVATION = 2963.88  
 N 645121 E 793612  
 L STATION 31+96.89 67.81 LEFT  
 CHISELED SQUARE ON NE END OF CONC. HW  
 .....

.....  
 BM3 ELEVATION = 2952.54  
 N 645482 E 794502  
 L STATION 41+42.93 94.72 LEFT  
 CHISELED SQUARE ON NW END OF CONC. HW  
 .....



**NOTES:**

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:  
[HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCTHIGHWAY/LOCATION/PROJECT/K5002\\_LS\\_CONTROL.TXT](http://www.ncdot.org/DOH/PRECONSTRUCTHIGHWAY/LOCATION/PROJECT/K5002_LS_CONTROL.TXT)  
 THE FILES TO BE FOUND ARE AS FOLLOWS:  
 K5002\_LS\_CONTROL.TXT  
 SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
- ⊙ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.  
 PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "K5002 GPS-101" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 645029.8030(ft) EASTING: 793350.5070(ft) ELEVATION: 2978.71(ft)

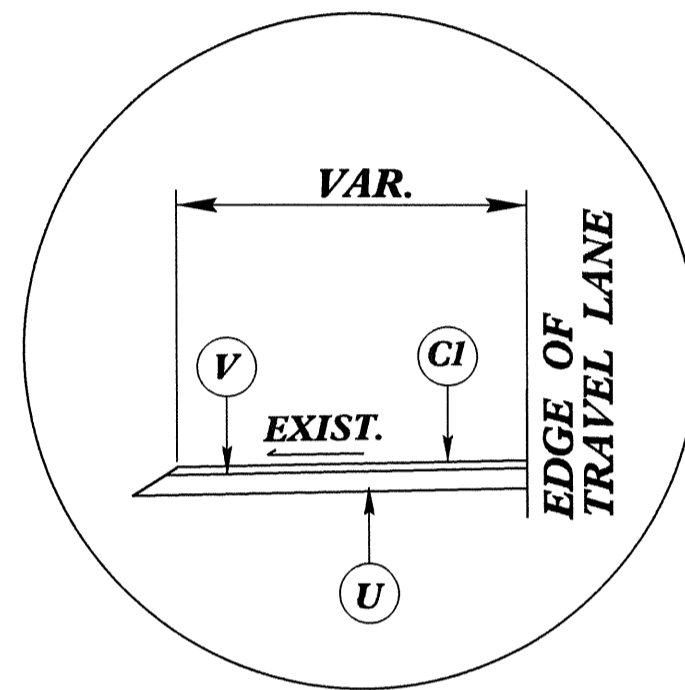
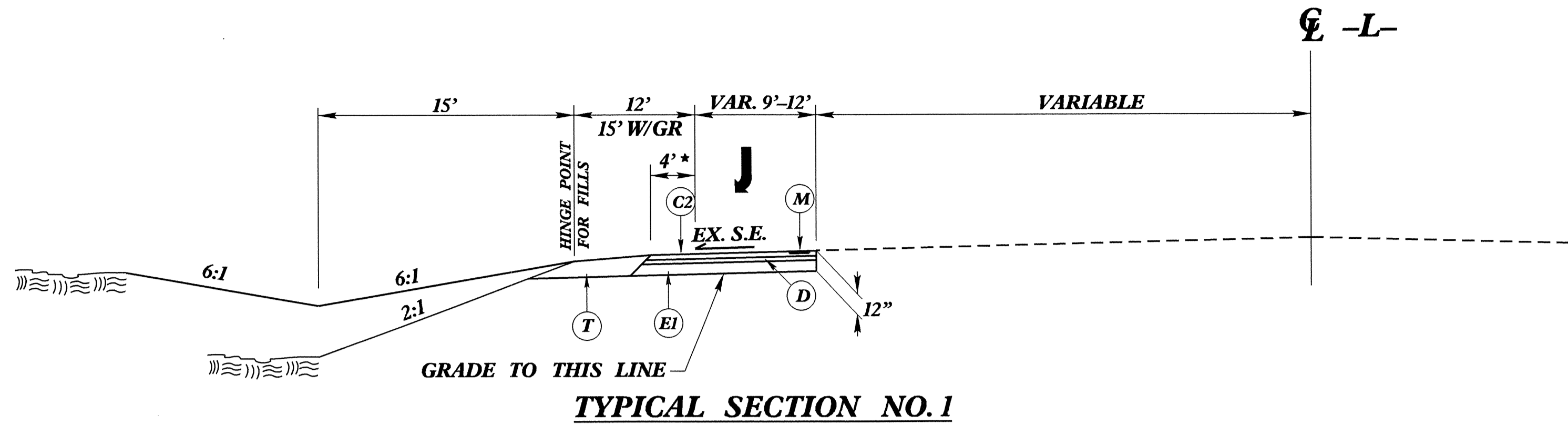
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999747224  
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "K5002 GPS-101" TO L- STATION 24+00.00 IS  
 S 58°14'55.7" W 525.80  
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
 VERTICAL DATUM USED IS NAVD 88

NOTE: GEOID03  
 NOTE: DRAWING NOT TO SCALE

6/2/99  
 06-NOV-2013 09:14:50 K-5002-1.s...  
 11:33:31

PAVEMENT SCHEDULE (Final)	
A	8.5" PORTLAND CEMENT CONCRETE PAVEMENT (WITH DOWELS).
C1	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
D	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5" IN DEPTH.
J	PROP. 6" AGGREGATE BASE COURSE.
J1	PROP. VARIABLE DEPTH AGGREGATE BASE COURSE.
M	MILLED RUMBLE STRIPS (SEE STANDARD 665.01 AND PLANS FOR LOCATIONS)
R	2'-6" CONCRETE CURB AND GUTTER.
RI	SHOULDER BERM GUTTER.
S	4" CONCRETE SIDEWALK.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	MILLING BITUMINOUS PAVEMENT. 1.5" DEPTH.

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



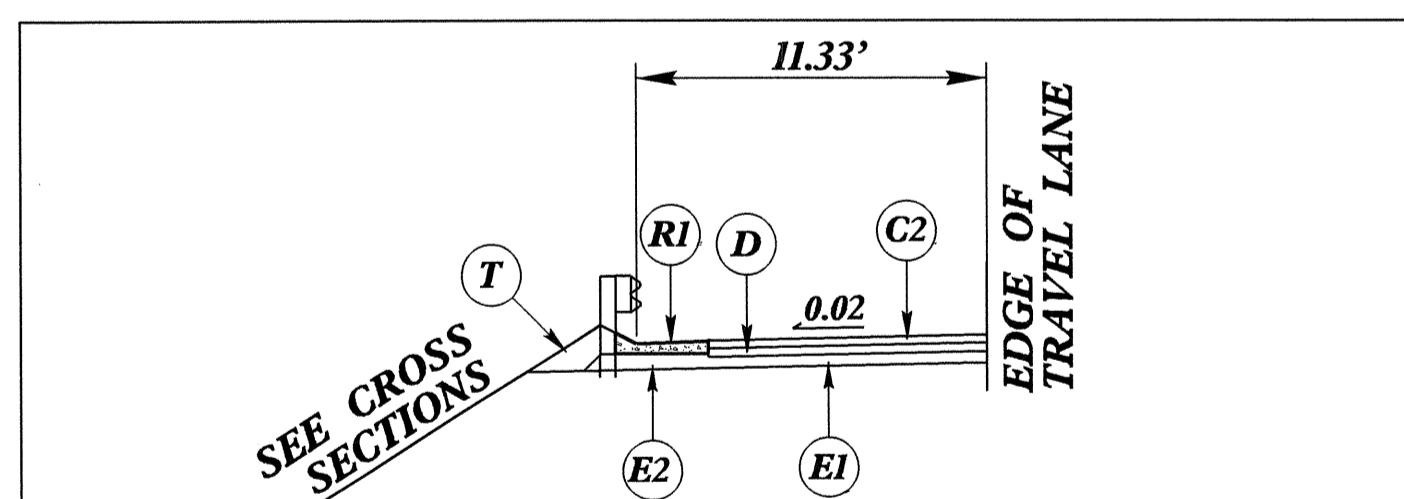
**MILLING INSET**  
 -L- STA. 24+00.00 TO STA. 25+07.00  
 -L- STA. 25+83.00 TO STA. 31+20.00

PROJECT REFERENCE NO. <b>K-5002</b>	SHEET NO. <b>2</b>
ROADWAY DESIGN ENGINEER <b>KAVIN E. MOORE</b> 12-18-13	PAVEMENT DESIGN ENGINEER <b>CLARK S. MORRISON</b> 12-18-13

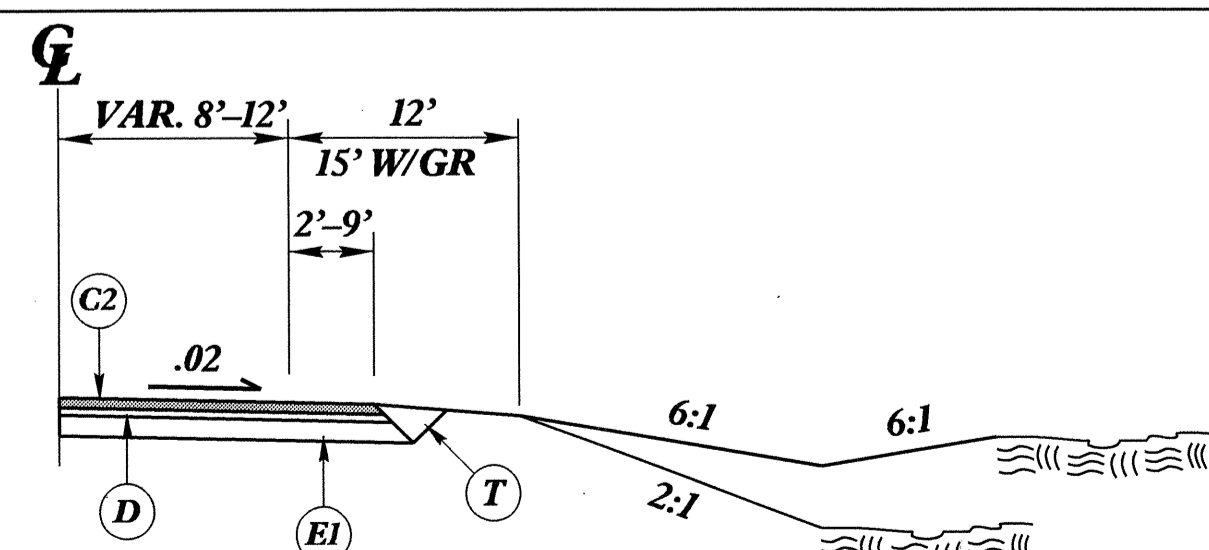
**USE TYPICAL SECTION NO. 1 AT THE FOLLOWING LOCATION:**

- L- STA. 24+00.00 TO STA. 25+85.00
- L- STA. 33+25.00 TO STA. 37+98.86

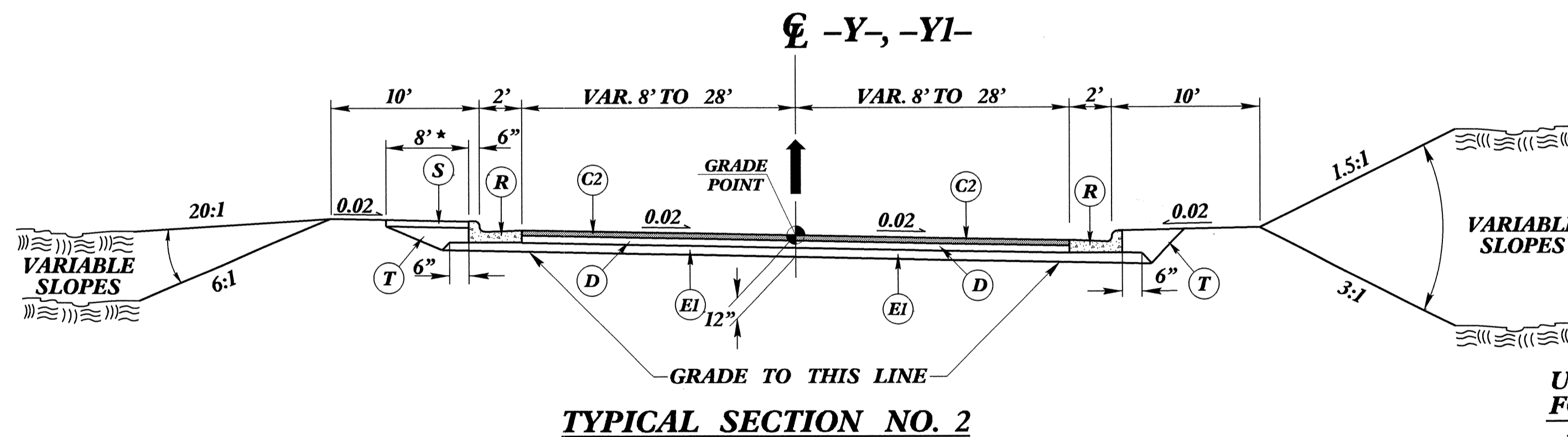
**NOTE:**  
 NO PROFILE PROVIDED FOR -L- WIDEN OFF THE EXISTING.



**USE IN CONJUNCTION WITH TYPICAL SECTION 1**  
 -L- LT STA. 32+09.55 TO 33+25.00  
 -Y- RT STA. 10+26.79 TO 10+99.00  
**DETAIL OF SHOULDER BERM GUTTER PLACEMENT**



**USE IN CONJUNCTION WITH TYPICALS SECTION 2 & 3**  
 -Y- RT STA. 10+41.81 TO 10+99.00  
 -Y- RT STA. 19+84.30 TO 20+49.53  
 -YI- LT STA. 10+83.45 TO 11+60.00  
 -YI- LT STA. 16+60.00 TO 17+02.85



**USE TYPICAL SECTION NO. 2 AT THE FOLLOWING LOCATION:**

- Y- STA. 10+33.35 TO STA. 20+58.65
- YI- STA. 11+26.60 TO STA. 16+72.66

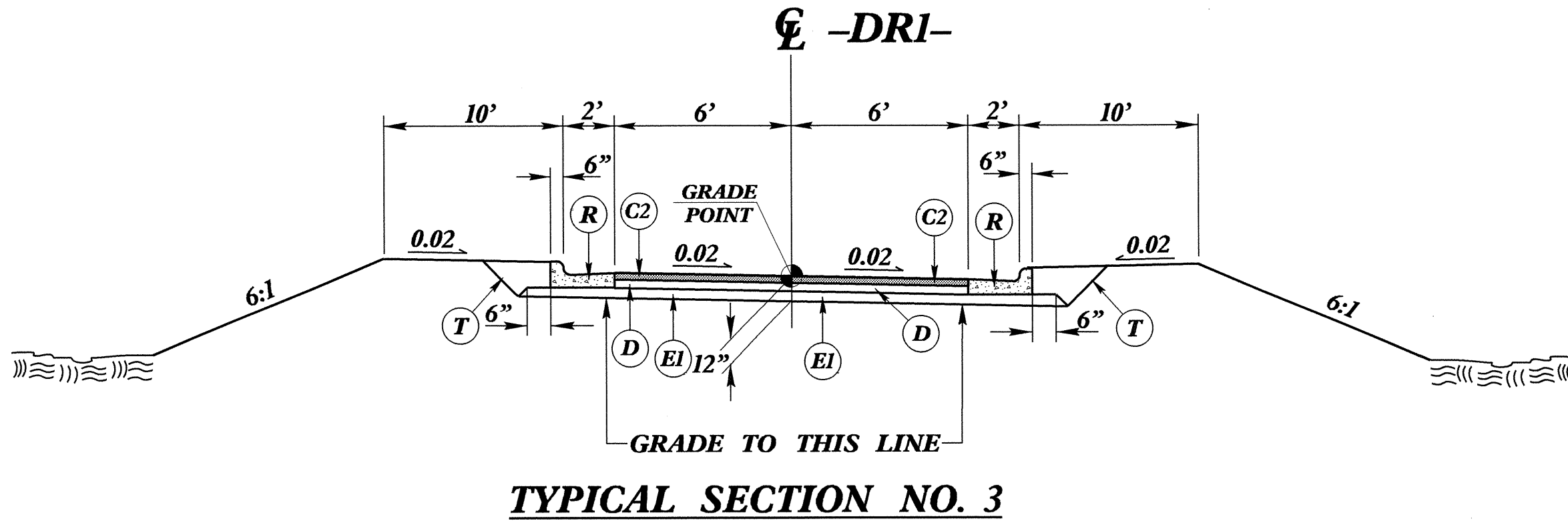
**NOTE:**  
 SEE PLANS FOR SIDEWALK LIMITS.  
 \* SIDEWALK 5' FOR -Y-

6/2/09

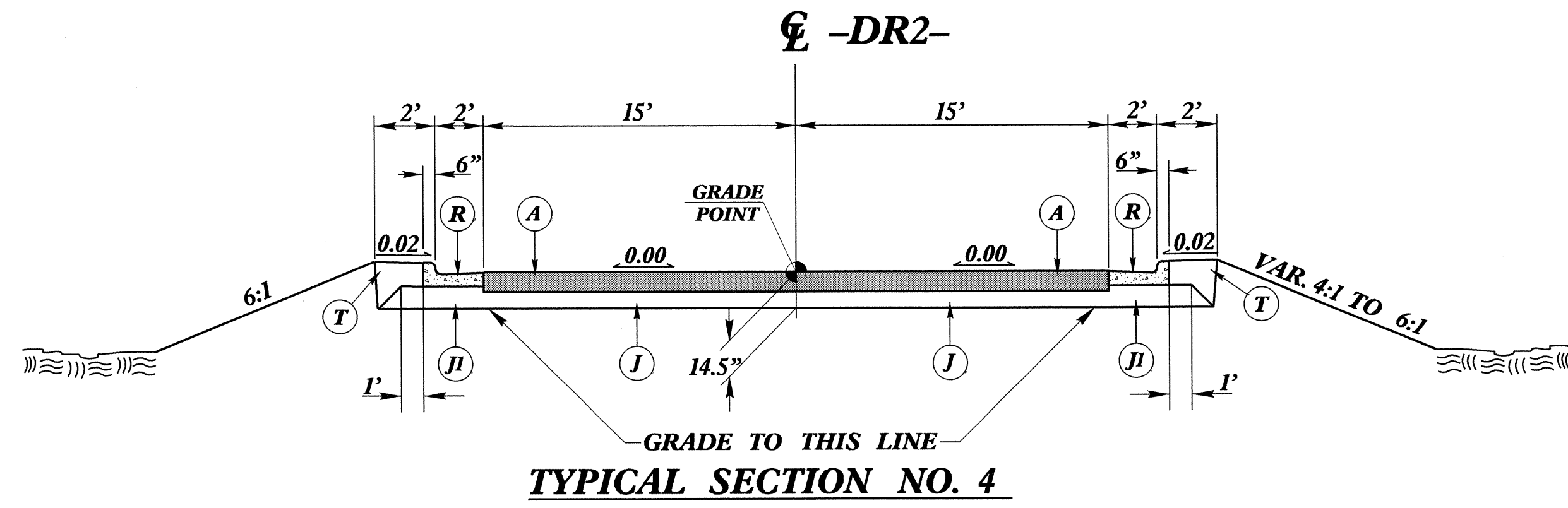
PROJECT REFERENCE NO. <b>K-5002</b>	SHEET NO. <b>2-A</b>
ROADWAY DESIGN ENGINEER <b>KEVIN E. MOORE</b> 12-18-13	PAVEMENT DESIGN ENGINEER <b>CLYDE S. MORRISON</b> 2/18/13

<b>PAVEMENT SCHEDULE</b> (Final)	
<b>A</b>	8.5" PCCP (W/DOWELS)
<b>CI</b>	1.5" S9.5B
<b>C2</b>	3" S9.5B
<b>D</b>	4" I19.0B
<b>E1</b>	5" B25.0B
<b>E2</b>	VAR. B25.0B
<b>J</b>	6" ABC
<b>JI</b>	VAR. ABC
<b>M</b>	MILLED RUMBLE STRIPS
<b>R</b>	2'-6" CONCRETE CURB AND GUTTER.
<b>RI</b>	SHOULDER BERM GUTTER
<b>S</b>	4" CONCRETE SIDEWALK.
<b>T</b>	EARTH MATERIAL.
<b>U</b>	EXISTING PAVEMENT.

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

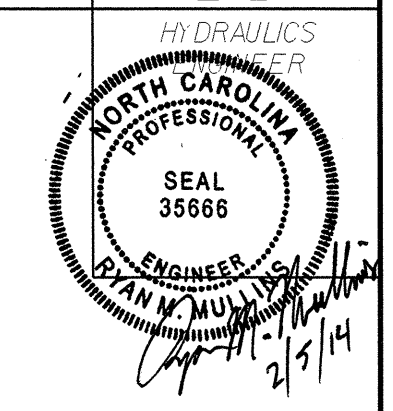


USE TYPICAL SECTION NO. 3 AT THE FOLLOWING LOCATION:  
-DR1- STA. 10+15.91 TO STA. 10+75.00



USE TYPICAL SECTION NO. 4 AT THE FOLLOWING LOCATION:  
-DR2- STA. 10+42.53 TO STA. 11+13.00

18-DEC-2013 15:09 N:\5002-r.dwg-tp.dgn

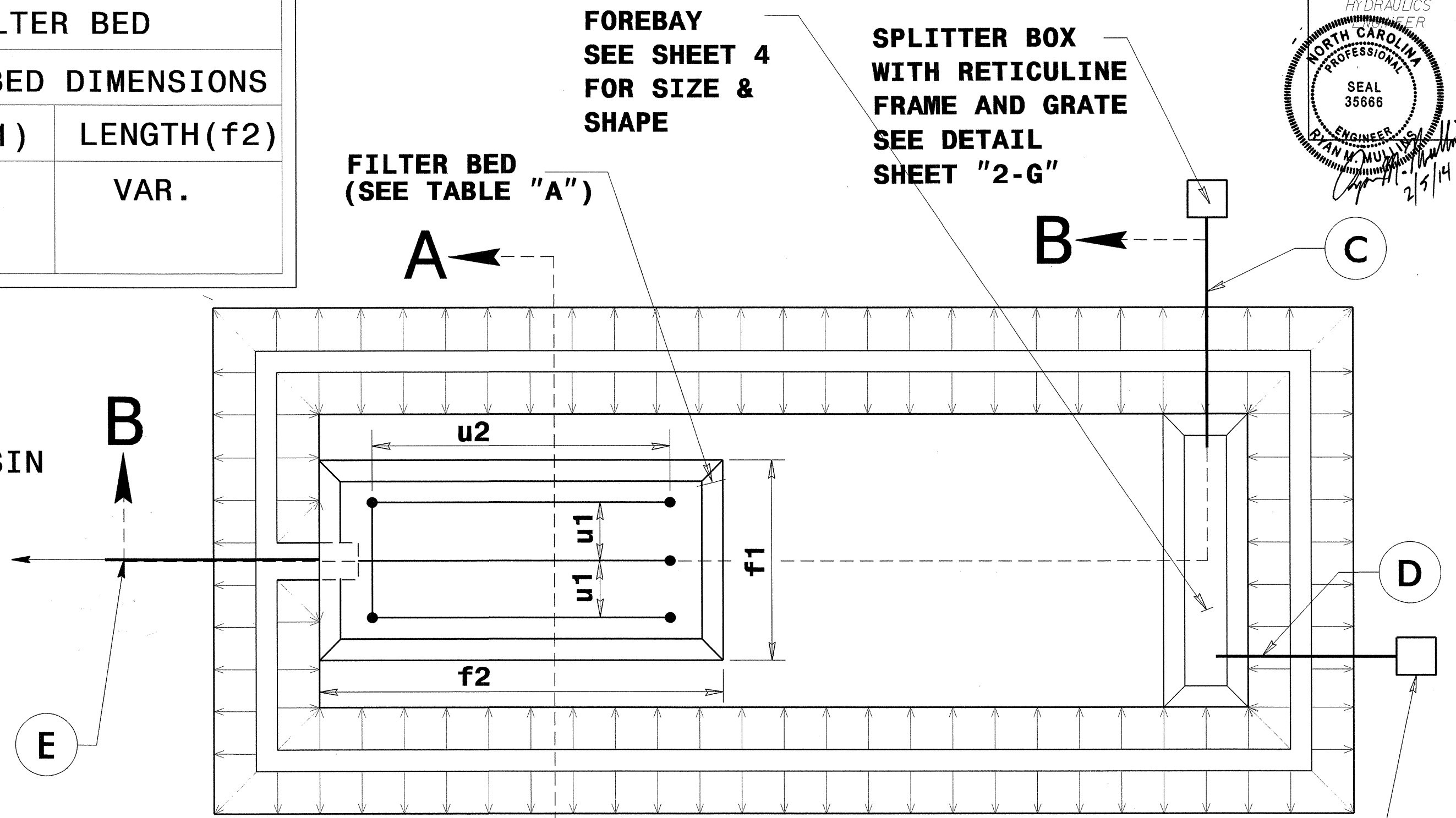


MATERIALS	
A	GEOTEXTILE FABRIC
B	POLYPROPYLENE WOVEN MONOFILAMENT GEOTEXTILE FABRIC
C	24" ALTERNATE INLET PIPE
D	18" ALTERNATE INLET PIPE
E	24" ALTERNATE OUTFALL PIPE
F	6" PERFORATED HDPE D/W W/ FILTER SOCK
G	6" HDPE D/W SOLID CLEANOUT PIPE
H	OUTLET CONTROL STRUCTURE (SEE SPECIAL DETAIL SHEET "2-C")
I	ENGINEERED SOIL (85%-88% SAND, 8%-12% FINES (SILT & CLAY), 3%-5% ORGANICS) TO BE APPROVED BY ENGINEER
J	12 MONTH AGED HARDWOOD MULCH
K	CREEK STONE (SEE PROJECT SPECIAL PROVISIONS)
L	WASHED STONE NO. 57 AS PER NCDOT SPEC.

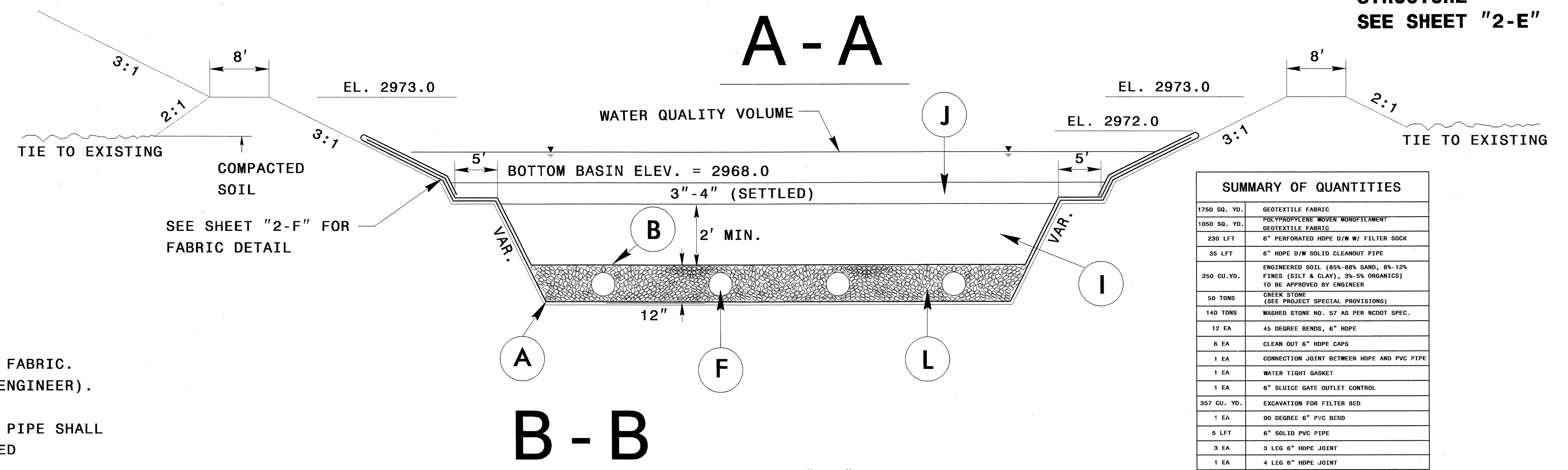
BASIN	UNDERDRAIN DIMENSIONS		FILTER BED DIMENSIONS	
	SPACING (u1)	LENGTH (u2)	WIDTH (f1)	LENGTH (f2)
STA. 31+90 -L- (Lt)	15 FT.	VAR. 20' TO 54'	VAR.	VAR.

TABLE "A"

**NOTE:**  
 SEE PLAN SHEET #4 FOR SHAPE AND SIZE OF BASIN AND LENGTH OF UNDERDRAIN PIPES.  
 ENGINEERED SOIL SURFACE AREA AT ELEV. 2968.0 = 2594 SF.  
 BOTTOM OF BASIN SURFACE AREA AT ELEV. 2968.0 = 4718 SF.

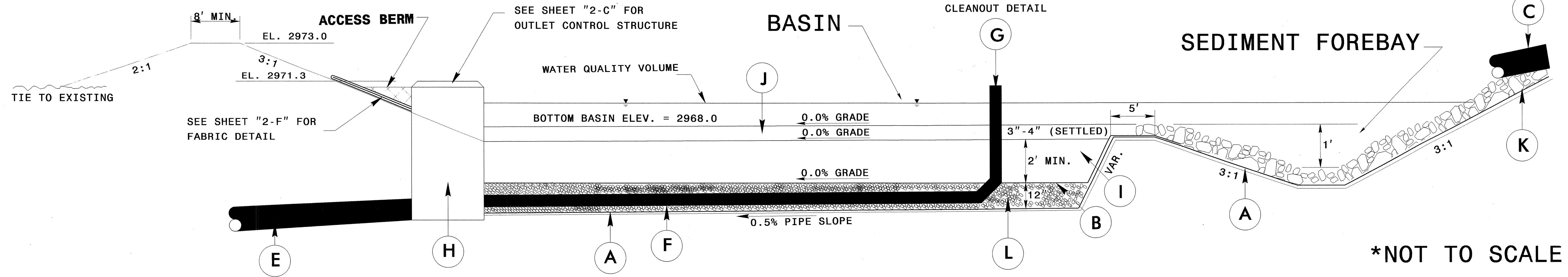


BIO-RETENTION DETAIL

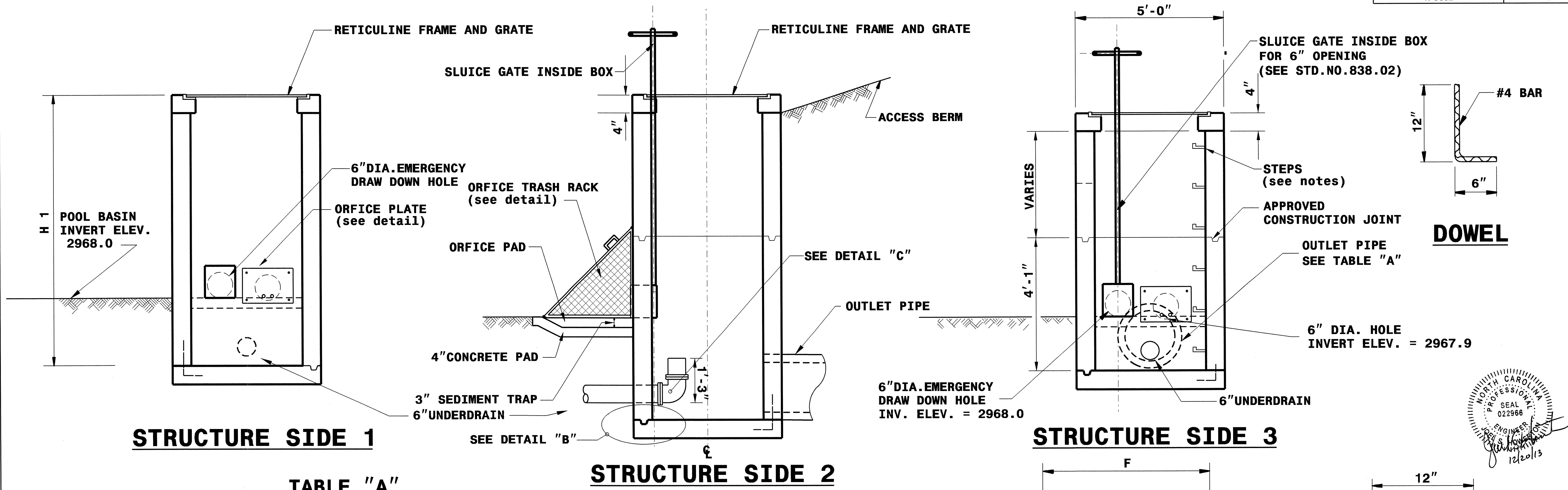


SUMMARY OF QUANTITIES	
1750 SQ. YD.	GEOTEXTILE FABRIC
1050 SQ. YD.	POLYPROPYLENE WOVEN MONOFILAMENT GEOTEXTILE FABRIC
230 LFT	6" PERFORATED HDPE D/W W/ FILTER SOCK
35 LFT	6" HDPE D/W SOLID CLEANOUT PIPE
250 CU. YD.	ENGINEERED SOIL (85%-88% SAND, 8%-12% FINES (SILT & CLAY), 3%-5% ORGANICS) TO BE APPROVED BY ENGINEER
50 TONS	CREEK STONE (SEE PROJECT SPECIAL PROVISIONS)
140 TONS	WASHED STONE NO. 57 AS PER NCDOT SPEC.
12 EA	45 DEGREE BENDS, 6" HDPE
6 EA	CLEAN OUT 6" HDPE CAPS
1 EA	CONNECTION JOINT BETWEEN HDPE AND PVC PIPE
1 EA	WATER TIGHT GASKET
1 EA	6" SLUICE GATE OUTLET CONTROL
357 CU. YD.	EXCAVATION FOR FILTER BED
1 EA	90 DEGREE 6" PVC BEND
5 LFT	6" SOLID PVC PIPE
3 EA	3 LEG 6" HDPE JOINT
1 EA	4 LEG 6" HDPE JOINT

- NOTES**
- ENTIRE BASIN AND SEDIMENT FOREBAY WILL BE LINED WITH FILTER FABRIC.
  - BASIN AND FOREBAY DIMENSIONS WILL VARY (AS DIRECTED BY THE ENGINEER).
  - PRECAST BOX DIMENSIONS WILL BE DETERMINED BY THE ENGINEER.
  - NO FABRIC, ENGINEERED SOILS, WASHED 57 STONE, OR UNDERDRAIN PIPE SHALL BE PLACED IN BASIN UNTIL TOTAL DISTURBED AREAS ARE STABILIZED (LAST ITEM TO BE CONSTRUCTED ON SITE).



\*NOT TO SCALE



**TABLE "A"**

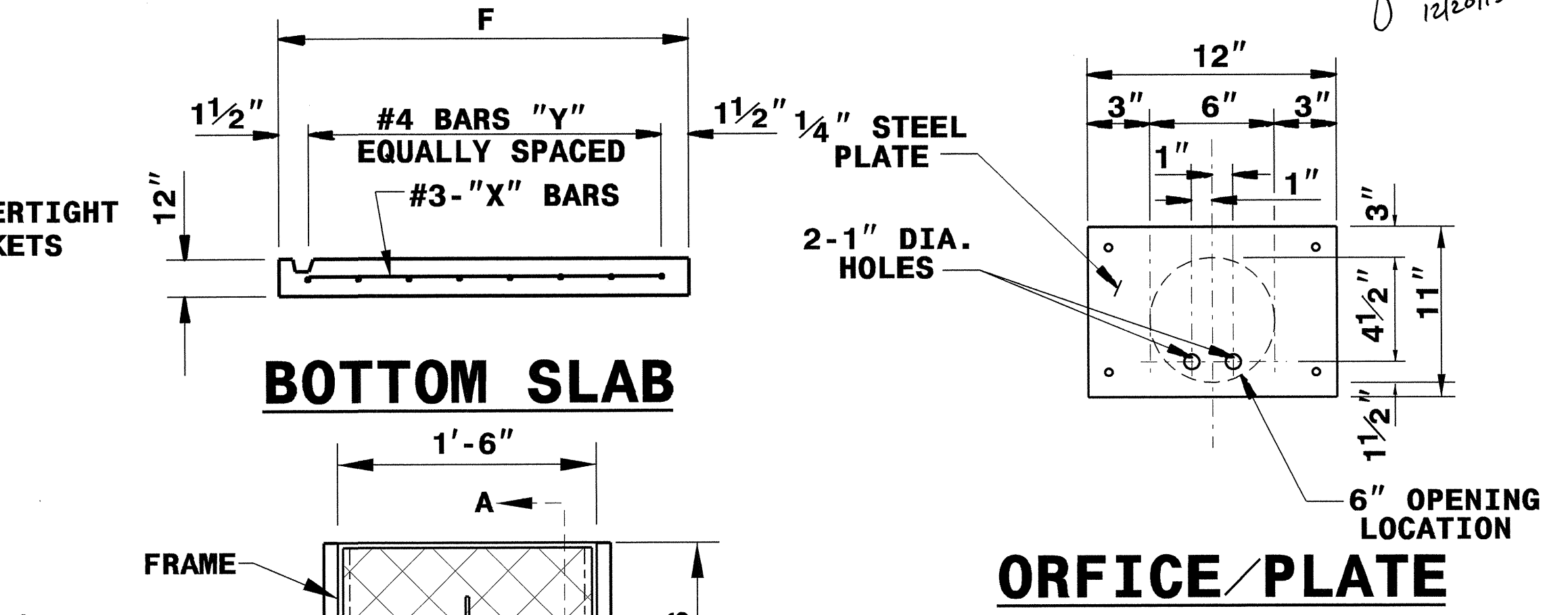
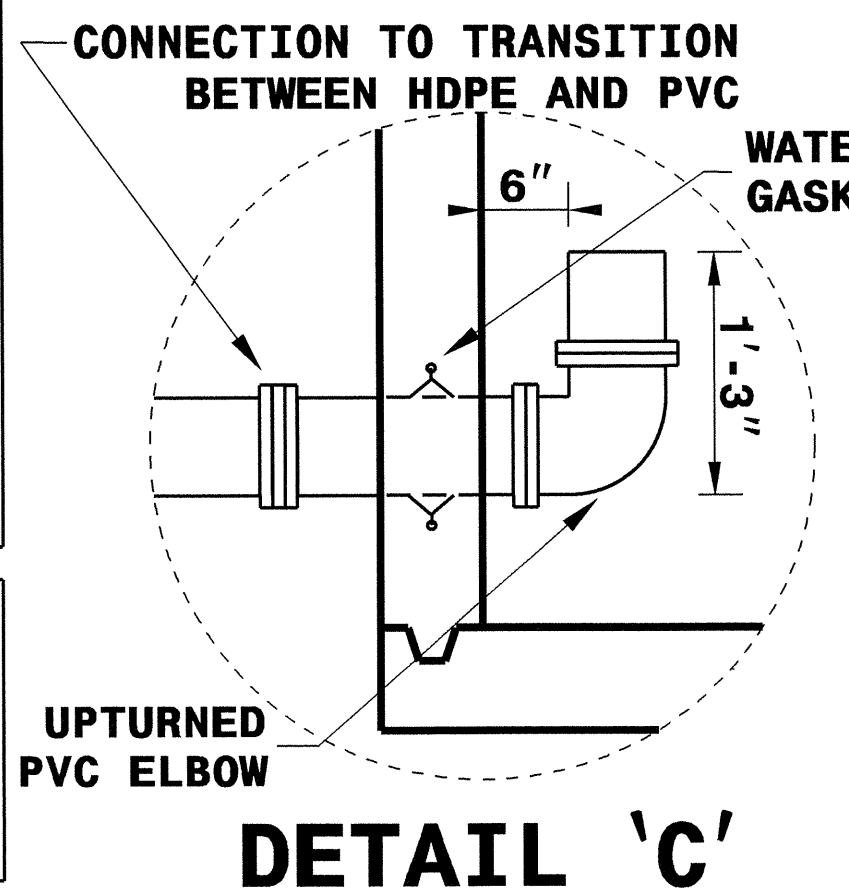
**MINIMUM DIMENSIONS FOR OUTLET CONTROL STRUCTURE**

BASIN	PIPE D	OUTLET PIPE INVERT	BOX PIPE HEIGHT H1	TOP OF GRATE ELEV.	UNDER DRAIN INVERT	ORFICE PLATE OPENING INVERT	4" CONCRETE ORFICE PAD ELEVATION
-Y- STA 11+15, 66.2' LT	24"	2963.2	8.10	2971.3	2964.3	2968.00	2967.3

PIPE D	"A"		BARS-X		BARS-Y		"F"	TOTAL CONCRETE QUANTITIES
	QTY.	LENGTH	QTY.	LENGTH				
24"	4'-0"	6	6'-5"	6	6'-5"	5'-0"	3.6 CU.YDS.	

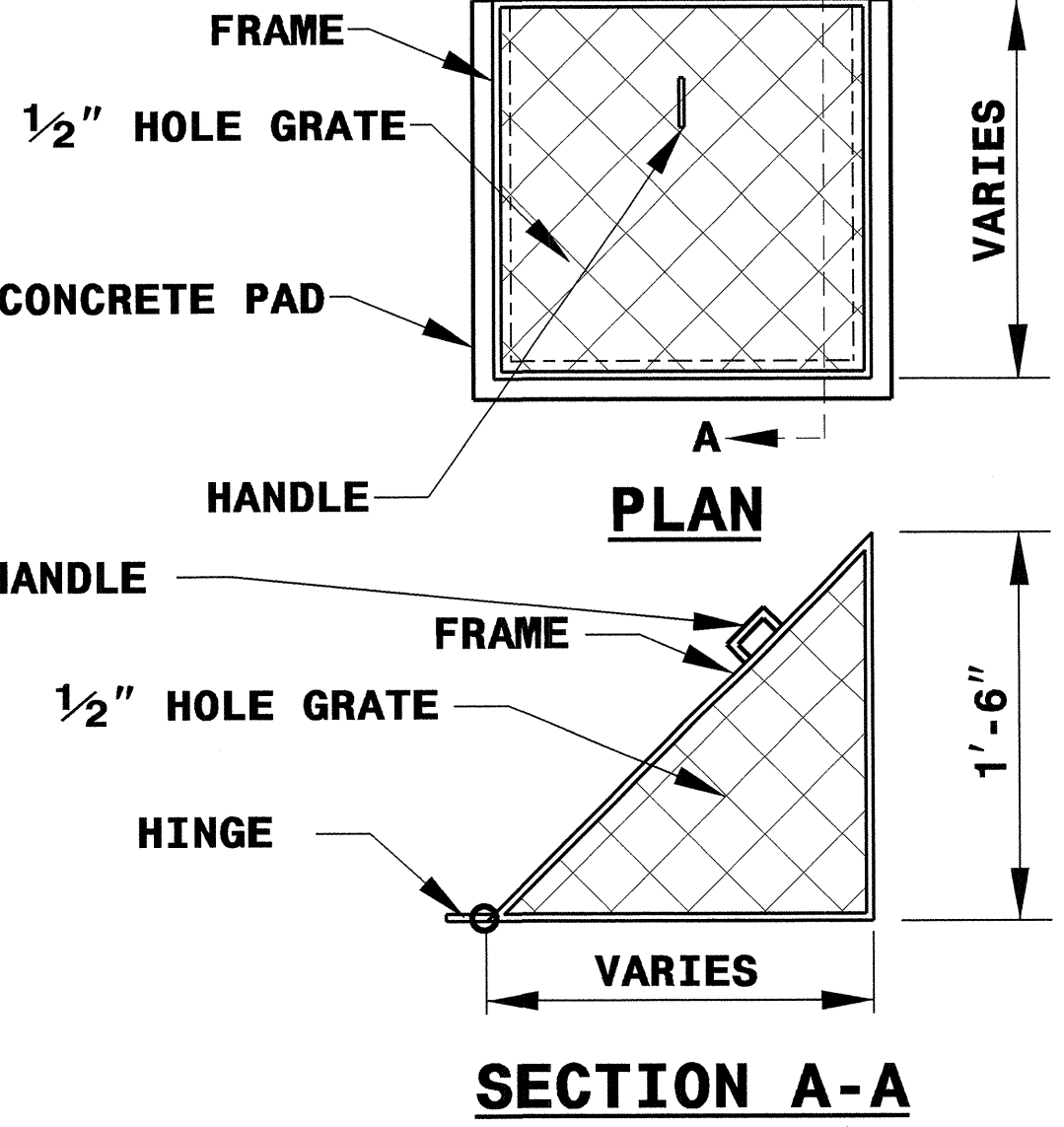
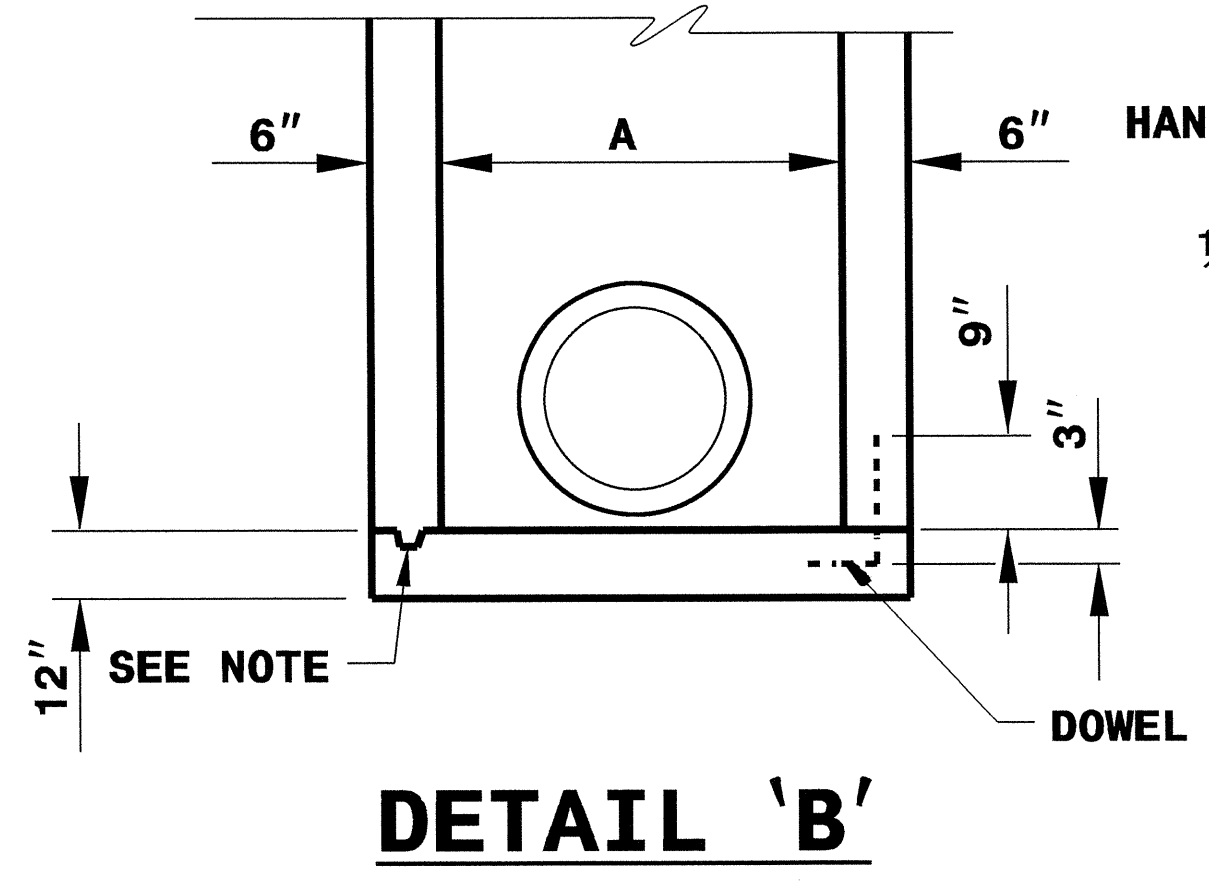
**GENERAL NOTES:**

- \* CHANGES IN ELEVATIONS MUST BE APPROVED BY THE ENGINEER.
- \* CLASS 'B' CONCRETE TO BE USED THROUGHOUT. PRECAST CONCRETE STRUCTURES TO BE SUBMITTED FOR APPROVAL. USE STD 840.45.
- \* OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2 INCH KEYWAY, OR #4 BAR DOWELS AT 12 INCH CENTERS, AS DIRECTED BY THE ENGINEER.
- \* FORMS ARE TO BE USED FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
- \* IF REINFORCED CONCRETE PIPE IS SET IN BASE SLAB OF BOX, ADD TO BASE AS SHOWN ON STANDARD 840.00.
- \* ALL DRAWDOWN STRUCTURES OVER 3 FEET IN DEPTH TO BE PROVIDED WITH STEPS 12 INCH ON CENTERS. STEPS SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD 840.66.
- \* FOR 8'-0" IN HEIGHT OR LESS USE 6 INCH WALLS AND BOTTOM SLAB. OVER 8'-0" IN HEIGHT USE 12" WALLS TO 6'-0" FROM TOP OF WALL AND USE 6 INCH THICK WALLS FOR THE REMAINING 6'-0". ADJUST QUANTITIES ACCORDINGLY
- \* RETICULINE FRAME AND GRATE TO BE APPROVED BY THE ENGINEER..



**ORFICE TRASH RACK NOTES:**

1. ALL JOINTS SHALL BE FULLY WELDED AROUND JOINT WITH A MINIMUM OF 1/4" BEAD.
2. IF BOLTS ARE CHEMICALLY ANCHORED, FOLLOW STD. DWG. 862.04 FOR ANCHORING PROCEDURE.
3. REMOVABLE ORFICE TRASH RACK SHALL BE ATTACHED TO CONCRETE PAD BY HINGE. THERE SHALL BE NO SEPARATION BETWEEN BOTTOM OF TRASH RACK AND CONCRETE PAD.
4. RACK AND HARDWARE SHALL BE ALUMINUM OR GALVANIZED IN ACCORDANCE WITH ASTM 153.



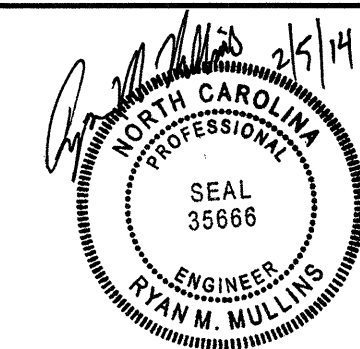
**PROJECT SERVICES UNIT  
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Office 919-707-6900 FAX 919-250-4119

**DETAIL OF OUTLET CONTROL STRUCTURE**

ORIGINAL BY:	DATE:
MODIFIED BY: rmmullins	DATE: 10-31-13
CHECKED BY:	DATE:
FILE SPEC.: k5002_Hyd_Bioretenition_Drawdown	

Q7-NOV-2013 15:27  
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 \$\$\$USERNAME\$\$\$





# HAZARDOUS SPILL BASIN DETAIL

Sta. 12+03-Y-(Rt)

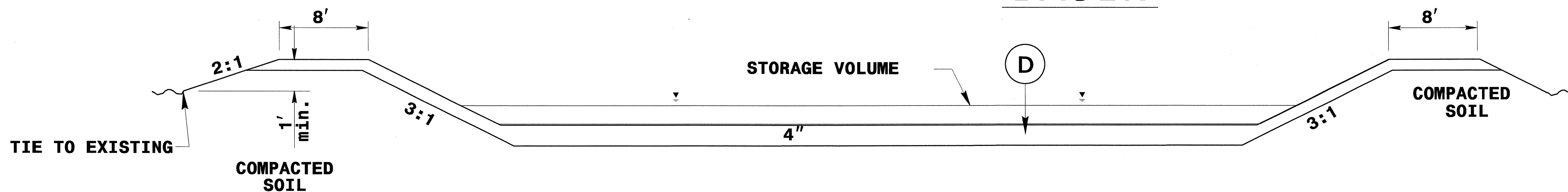
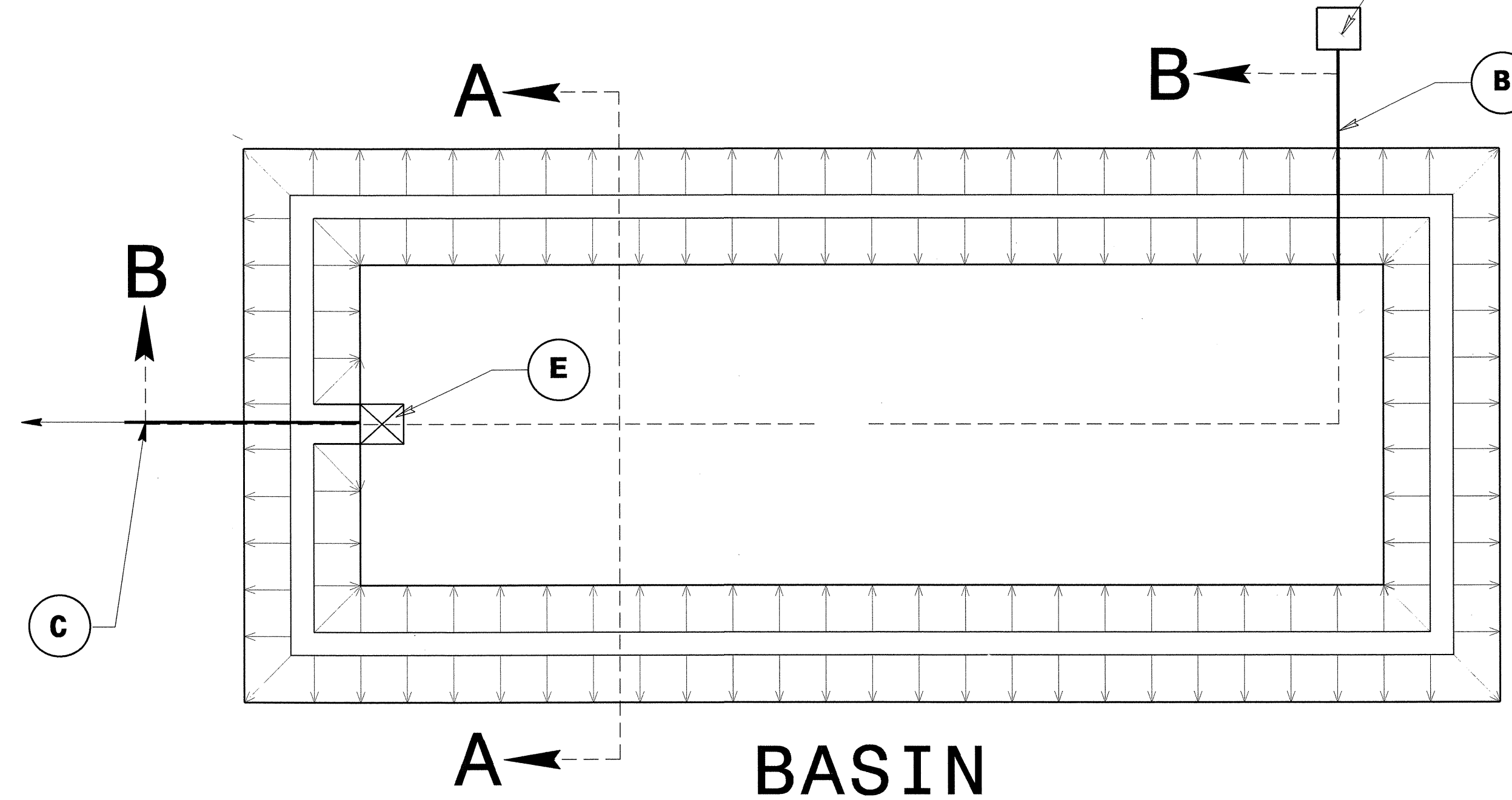
MATERIALS	
(A)	FILTER FABRIC
(B)	18" RCP INLET PIPE
(C)	18" RCP OUTFALL PIPE
(D)	TOP SOIL AND SOD
(E)	OUTLET CONTROL STRUCTURE (SEE SPECIAL DETAIL SHEET "2-E")
(F)	CREEK STONE (SEE PROJECT SPECIAL PROVISIONS)

SUMMARY OF QUANTITIES	
8 SQ. YD.	FILTER FABRIC
1 EA	18" SLUICE GATE OUTLET CONTROL
2 TONS	CREEK STONE

SPLITTER BOX (2GI) WITH WEIR  
SEE DETAIL SHEET "2-G"

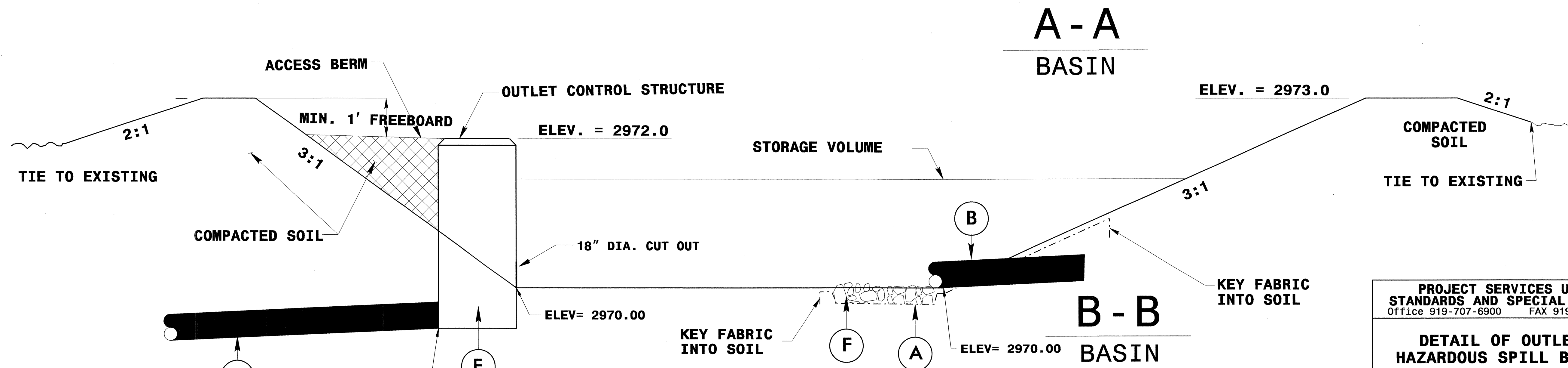
**NOTES:**

- SEE PLAN SHEET #4 FOR SHAPE AND SIZE OF BASIN.
- BOTTOM OF BASIN SURFACE AREA AT EL 2970.0 = 1,097 SF. SURFACE AREA AT ELEV. 2973.0 = 2,626 SF.
- ALL FILL MATERIAL SHALL BE COMPACTED AND TESTED IN ACCORDANCE WITH NCDOT STD SPEC 235.
- INSTALL SOD ON BERM AND BASIN BOTTOM AND ANY EXPOSED SURFACE THAT NEEDS TO BE PROTECTED AGAINST IMMEDIATE POTENTIAL STORM EVENT.
- THE BERM SHALL BE CONSTRUCTED WITH SUITABLE FILL MATERIAL PER THE ENGINEER.



**DRY-DETENTION HAZARDOUS SPILL BASIN**

- BASIN BOTTOM EL= 2970.0
- BASIN TOP OF BERM EL= 2973.0
- SPLITTER BOX WEIR EL= 2972.0
- DESIGN STORM = PEAK DISCHARGE FOR 2-YR STORM + 10,000 GALLONS
- DESIGN VOLUME = 2,676 CF
- VOLUME PROVIDED = 5,471 CF



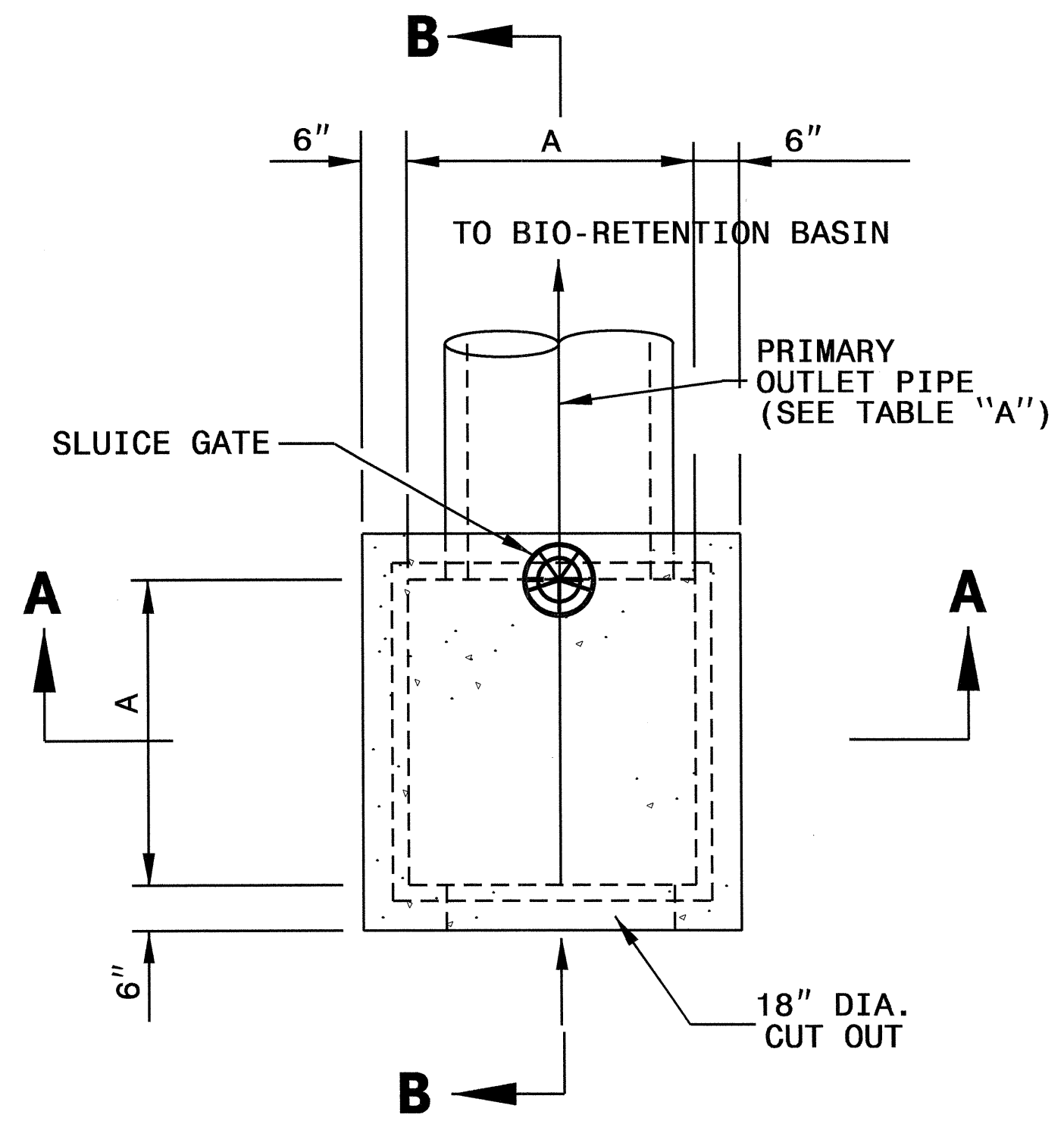
## TYPICAL SECTIONS

\*NOT TO SCALE

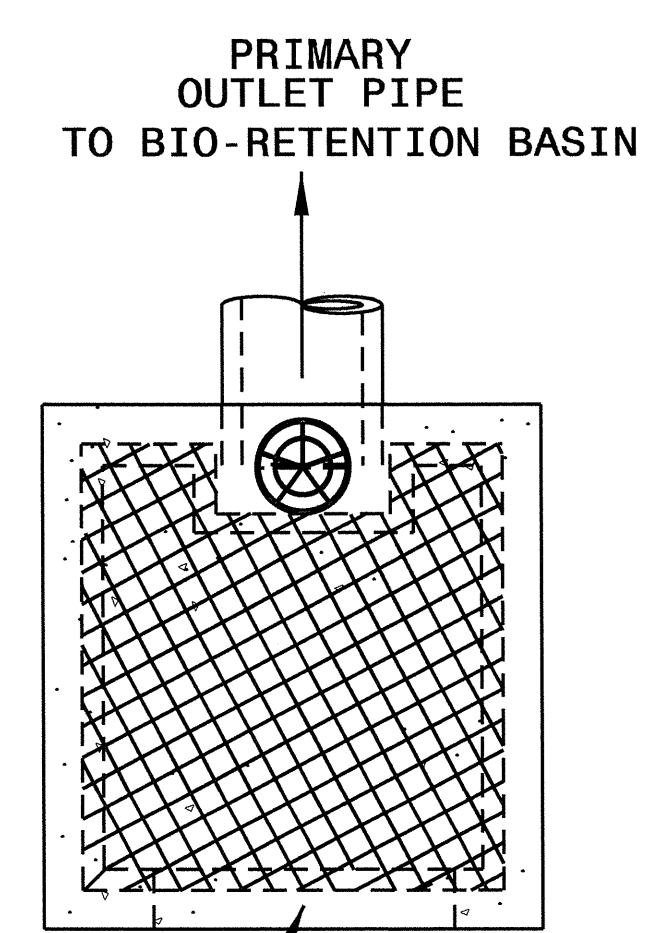
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**DETAIL OF OUTLET  
HAZARDOUS SPILL BASIN**

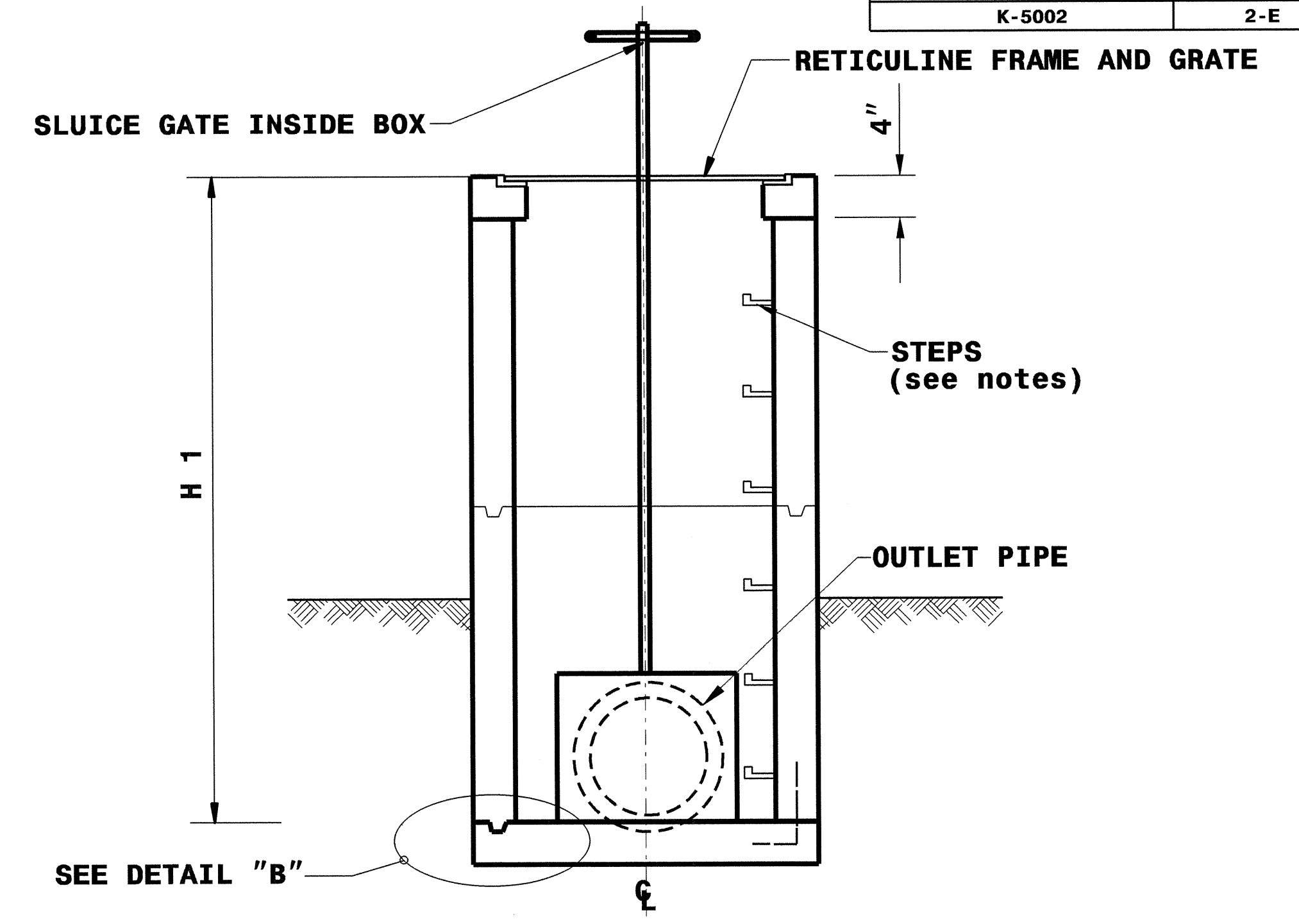
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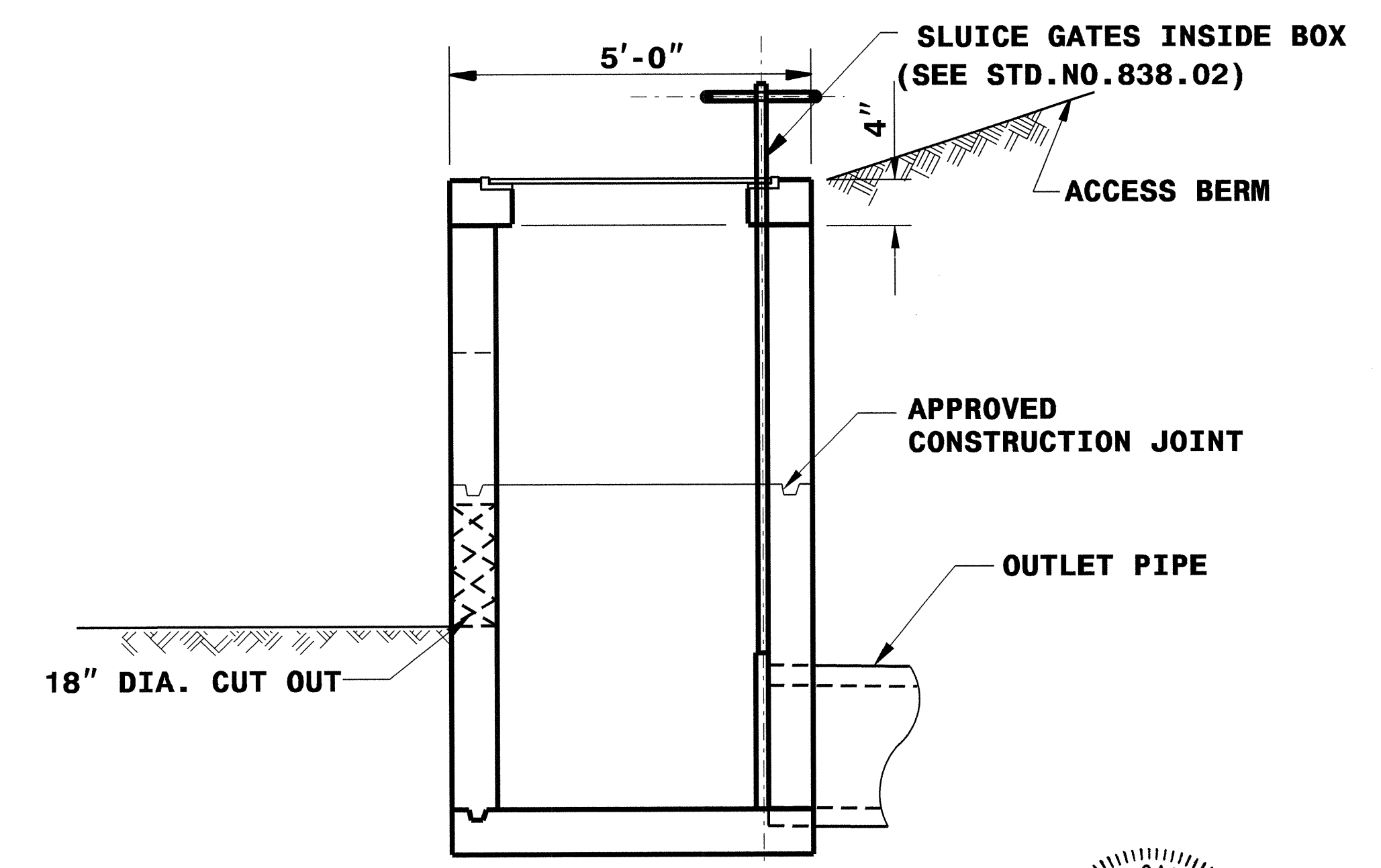
PLAN VIEW



TOP VIEW OF RETICULINE FRAME AND GRATE WITH SLUICE GATE



VIEW A-A



VIEW B-B

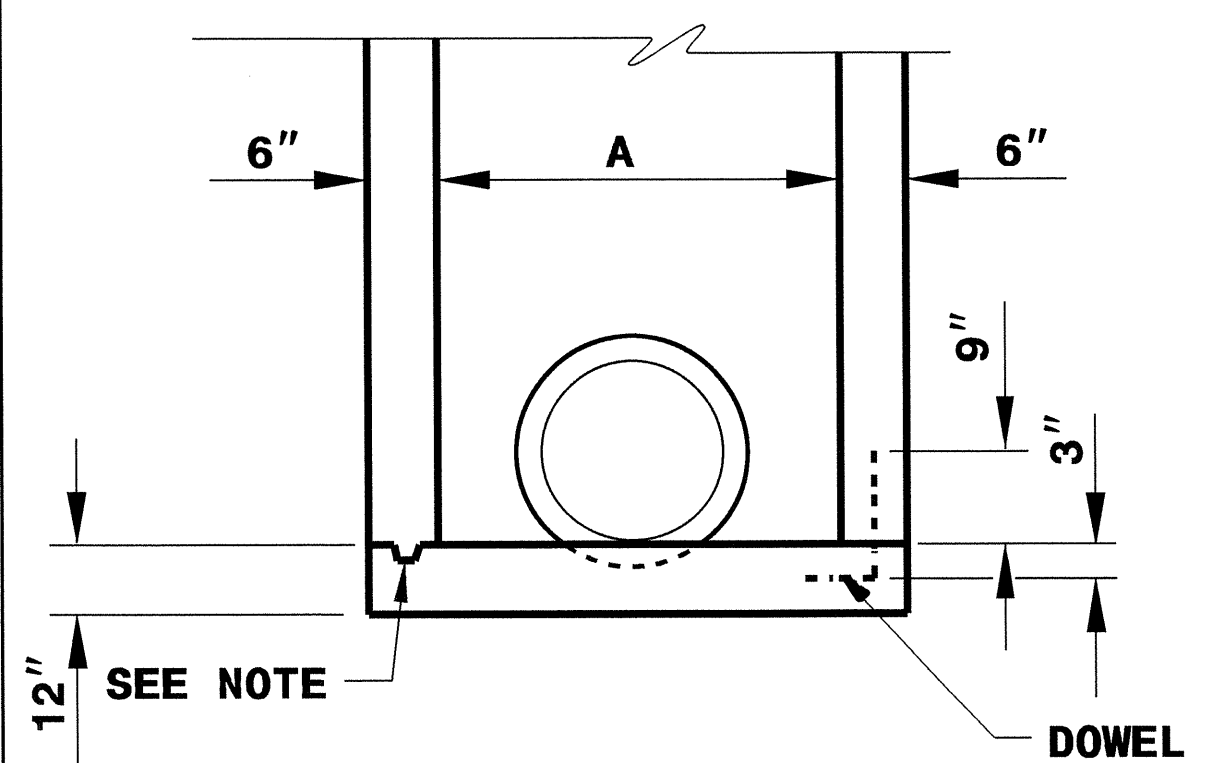
**TABLE "A"**

**MINIMUM DIMENSIONS FOR OUTLET CONTROL STRUCTURE**

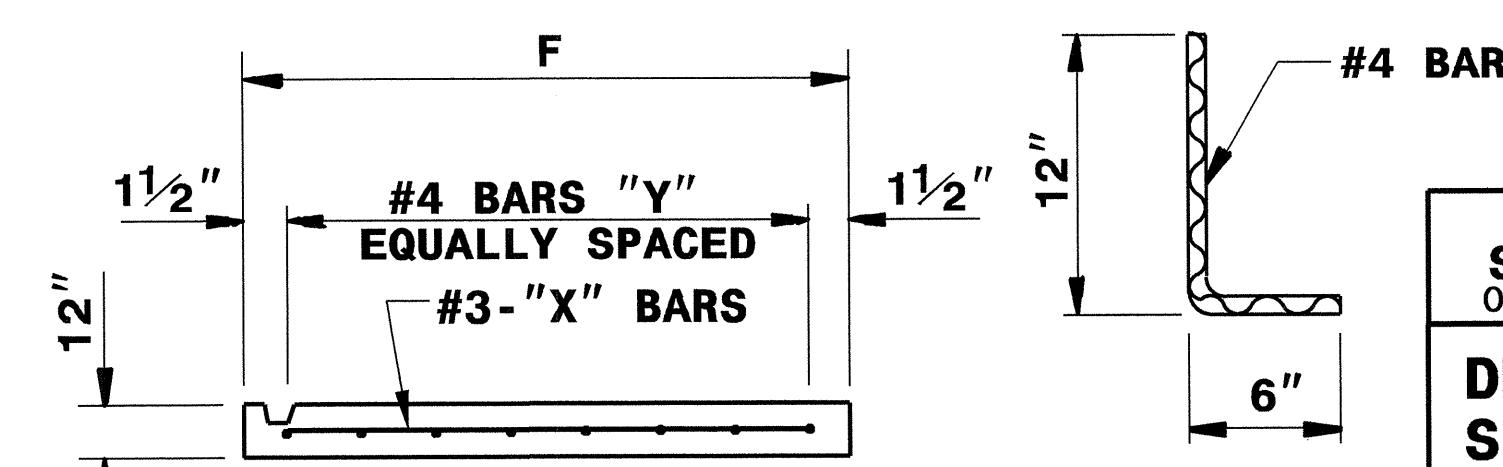
BASIN	OUTLET PIPE D	OUTLET PIPE INVERT	BOX PIPE HEIGHT H1	TOP OF GRATE ELEV.	18" CUT OUT INVERT	POOL BASIN ELEV.
Sta. 12+03-Y- (Rt)	18"	2968.20	4.10	2972.00	2970.00	2970.00

PIPE D	"A"	BARS-X QTY.	BARS-X LENGTH	BARS-Y QTY.	BARS-Y LENGTH	"F"	TOTAL CONCRETE QUANTITIES
18"	4'-0"	6	6'-5"	6	6'-5"	5'-0"	2.3 CU.YDS.

- GENERAL NOTES:**
- \* CHANGES IN ELEVATIONS MUST BE APPROVED BY THE ENGINEER.
  - \* CLASS 'B' CONCRETE TO BE USED THROUGHOUT. PRECAST CONCRETE STRUCTURES TO BE SUBMITTED FOR APPROVAL.
  - \* OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2 INCH KEYWAY, OR #4 BAR DOWELS AT 12 INCH CENTERS, AS DIRECTED BY THE ENGINEER.
  - \* FORMS ARE TO BE USED FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
  - \* IF REINFORCED CONCRETE PIPE IS SET IN BASE SLAB OF BOX, ADD TO BASE AS SHOWN ON STANDARD 840.00.
  - \* ALL DRAWDOWN STRUCTURES OVER 3 FEET IN DEPTH TO BE PROVIDED WITH STEPS 12 INCH ON CENTERS. STEPS SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD 840.66.
  - \* FOR 8'-0" IN HEIGHT OR LESS USE 8 INCH WALLS AND BOTTOM SLAB. OVER 8'-0" IN HEIGHT USE 12" WALLS TO 6'-0" FROM TOP OF WALL AND USE 8 INCH THICK WALLS FOR THE REMAINING 6'-0". ADJUST QUANTITIES ACCORDINGLY
  - \* RETICULINE FRAME AND GRATE TO BE APPROVED BY THE ENGINEER..

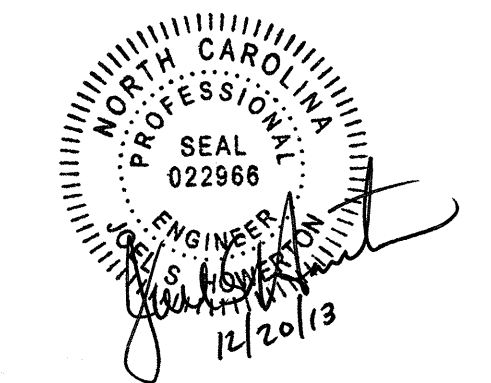


DETAIL 'B'



BOTTOM SLAB

DOWEL



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**DETAIL OF OUTLET CONTROL STRUCTURE FOR HAZARDOUS SPILL BASIN**

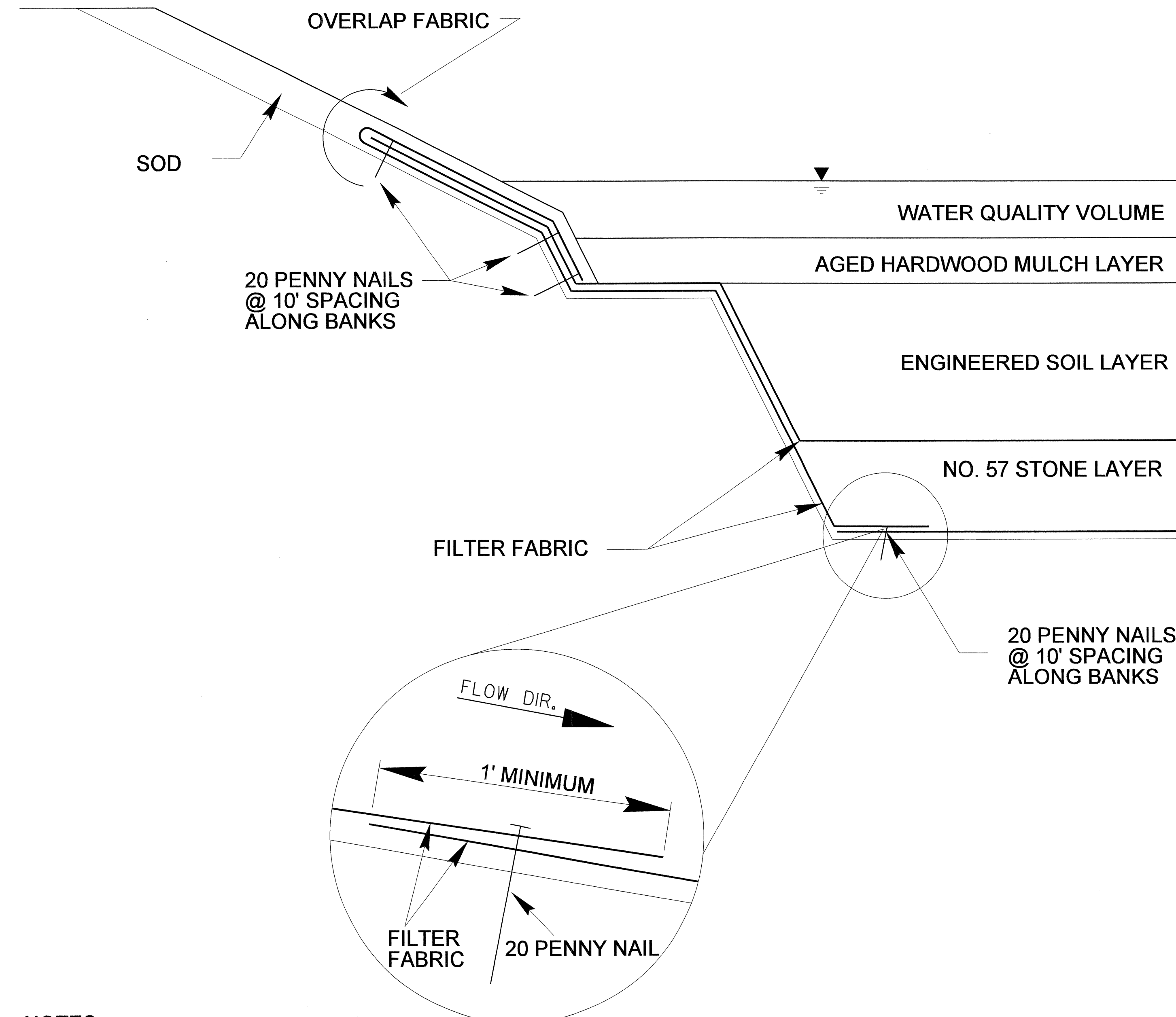
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# DETAILS

## FABRIC

\*NOT TO SCALE

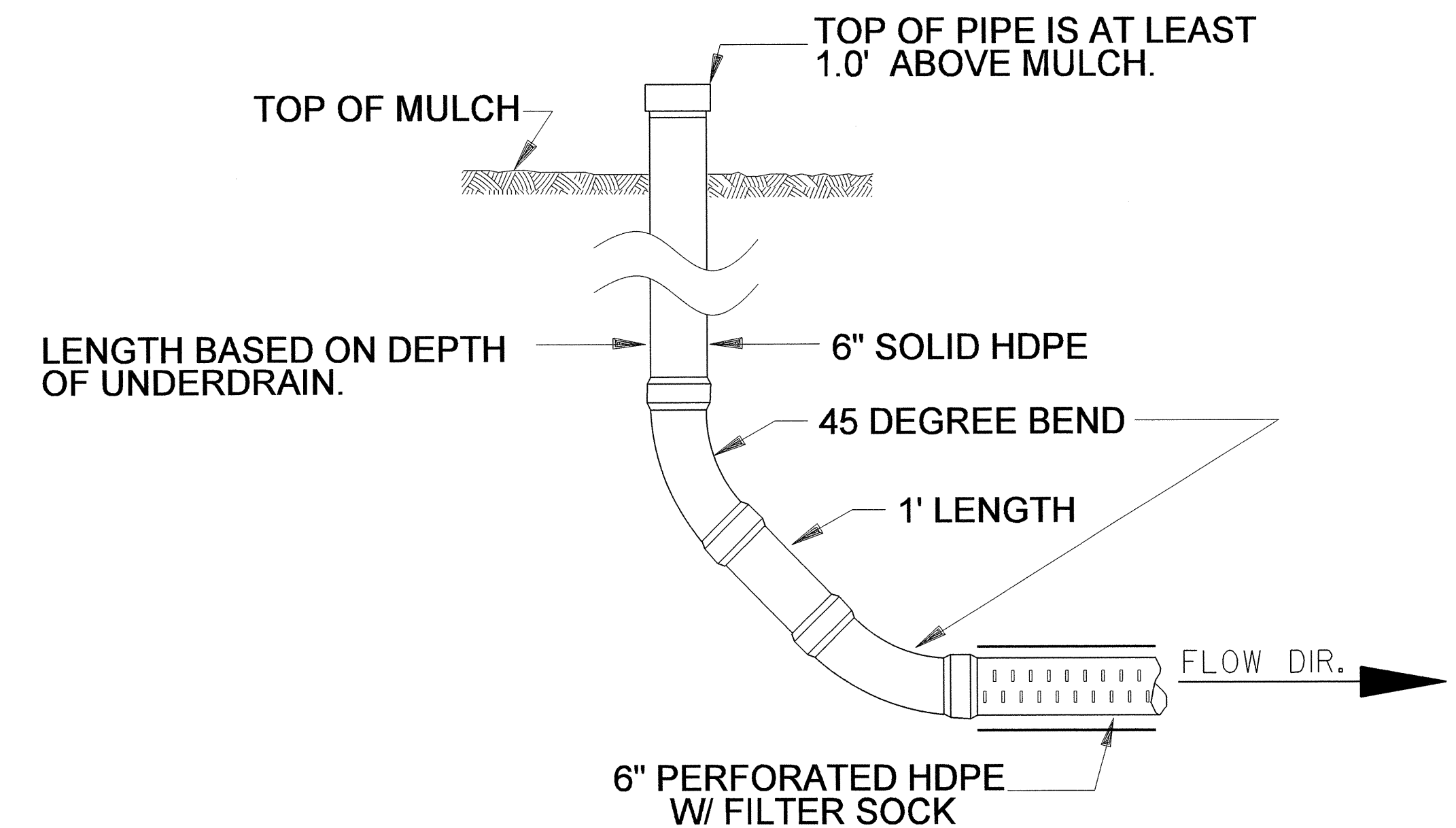


**NOTES:**

1. FABRIC LINING AND DIVIDING FABRIC SHOULD BOTH EXTEND UP THE BANK TO A LEVEL HIGHER THAN THE WATER QUALITY LEVEL.
2. LINING FABRIC SHOULD BE FOLDED BACK TO OVERLAP DIVIDING FABRIC AND SECURED WITH 20 PENNY NAILS TO ENURE SEALING THE STONE FROM SOIL.
3. FABRIC SHOULD BE LAYED IN A WAY TO PREVENT WATER FROM FLOWING BETWEEN OVERLAPPED PIECES. (SEE BLOWUP)
4. FABRIC SHOULD BE OVERLAPPED BY A MINIMUM OF 12 INCHES AND SECURED WITH NAILS.
5. NO OVERLAPPING SHOULD OCCUR UNDER DRAIN PIPES.

## END CLEANOUT

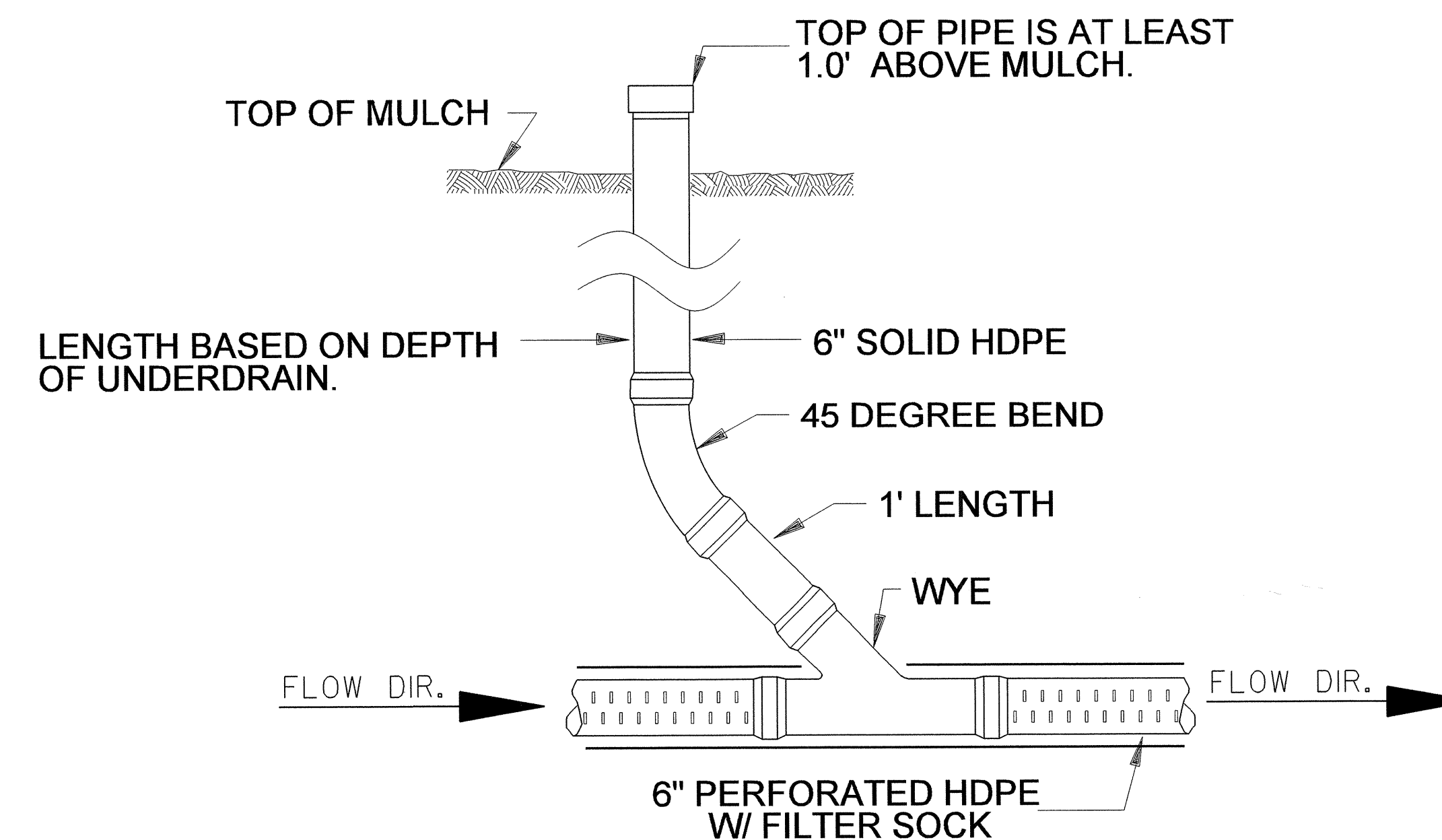
\*NOT TO SCALE



NOTE: ONLY UNDERDRAIN PIPE SHOULD BE PERFORATED

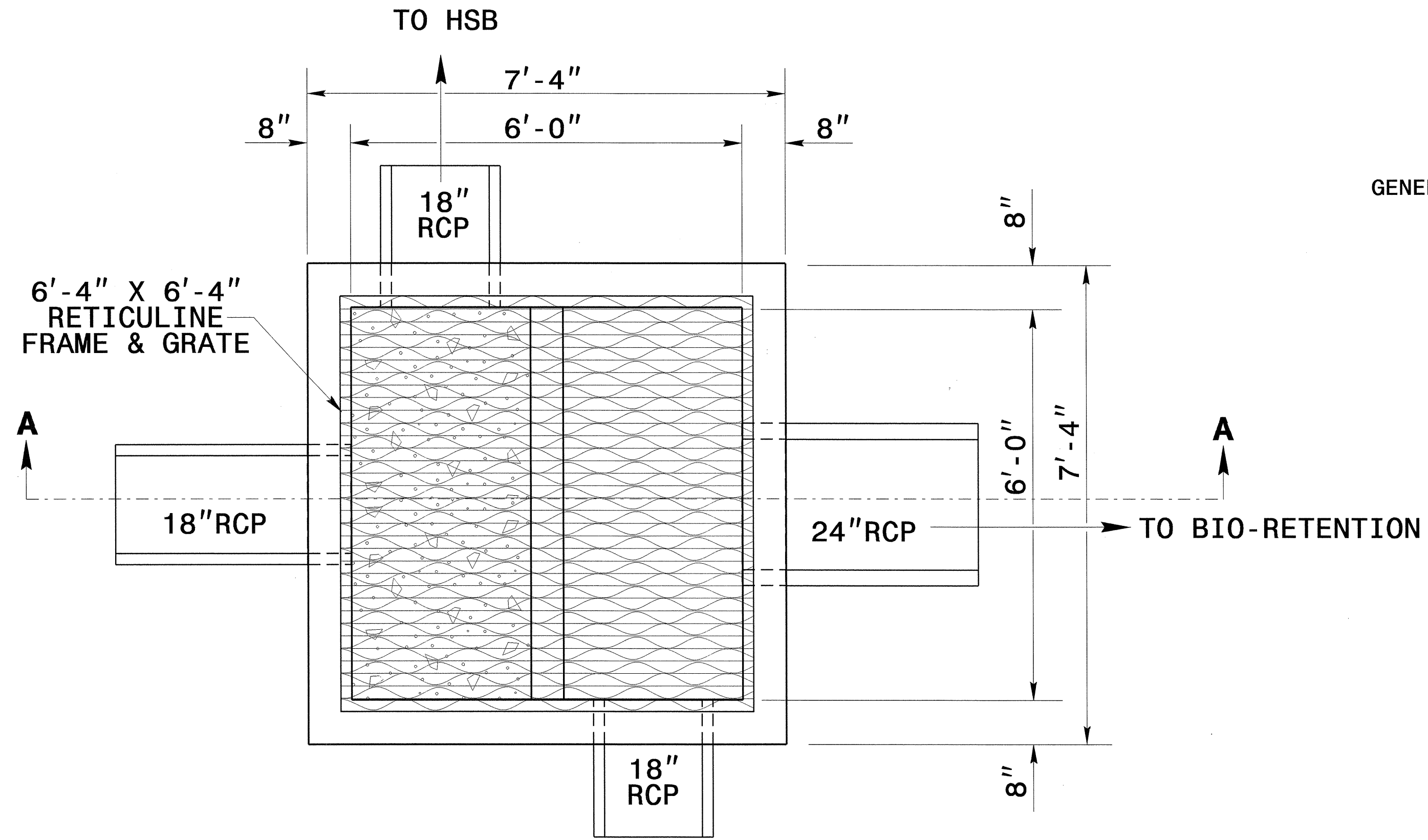
## MIDWAY CLEANOUT

(USED ON AS NEEDED BASIS, AS DIRECTED BY THE ENGINEER)

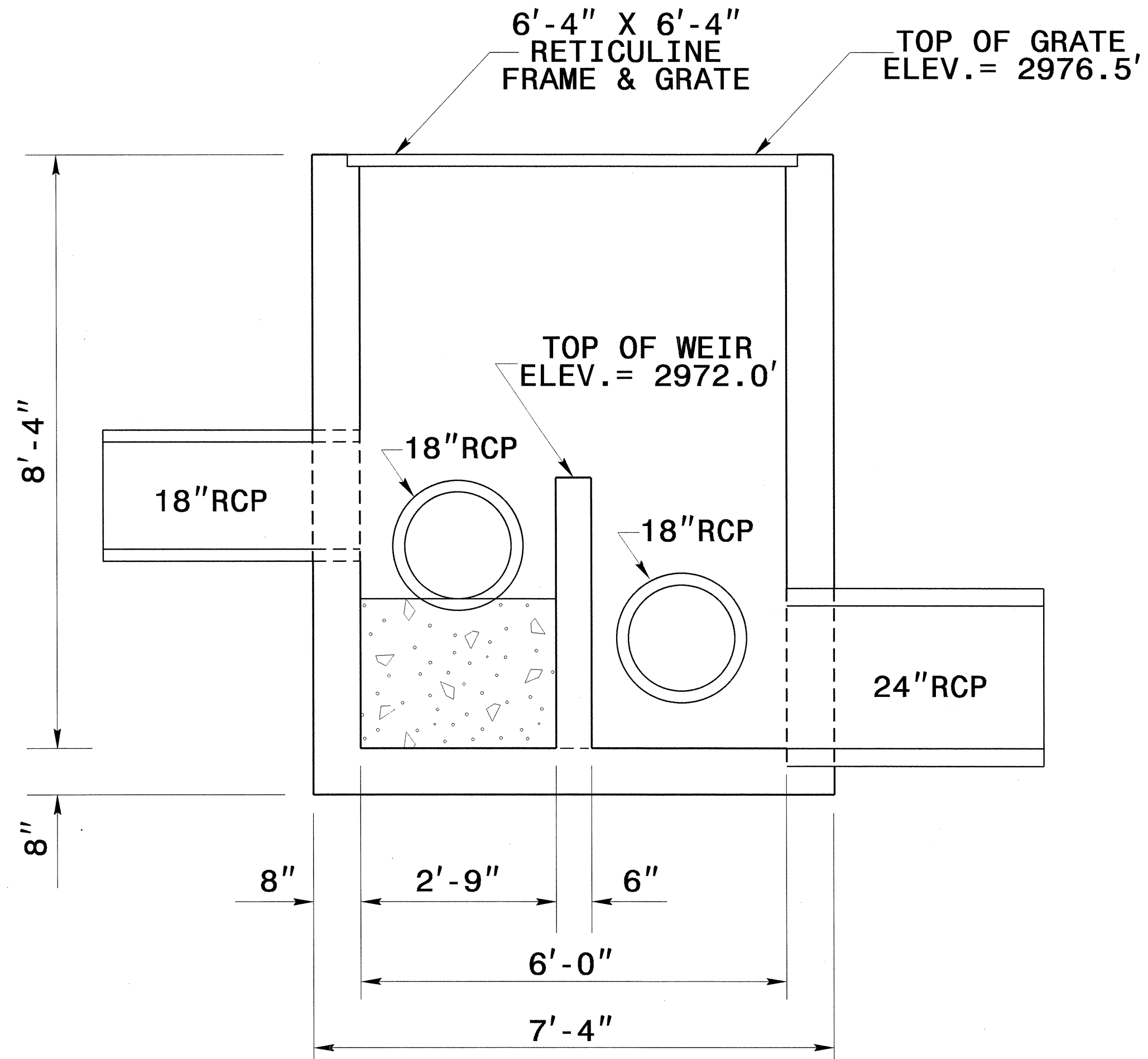


NOTE: ONLY UNDERDRAIN PIPE SHOULD BE PERFORATED

\*NOT TO SCALE



**PLAN**



**SECTION A-A**

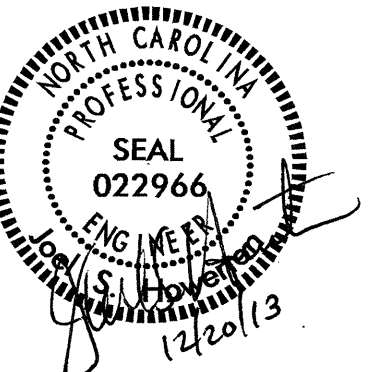
**GENERAL NOTES:**

1. USE CLASS "B" CONCRETE THROUGHOUT.
2. CONSTRUCT CONCRETE BOX IN ACCORDANCE WITH SECTION 825 OF THE STANDARD SPECIFICATIONS.
3. USE FORMS TO CONSTRUCT THE BOTTOM SLAB.
4. DIMENSIONS OF SPLITTER BOX MAY BE ADJUSTED AS DIRECTED BY THE ENGINEER.
5. INSTALL STEPS FOR ALL STRUCTURES OVER 3' IN HEIGHT. SEE STANDARD. 840.66
6. SEE DRAINAGE SUMMARY FOR PIPE ELEVATIONS.

**BILL OF MATERIALS**

BAR	QTY	SIZE	LENGTH	WEIGHT
TOTAL REINF. STEEL (lbs.)				
TOTAL CONC.		CU. YDS.		6.3

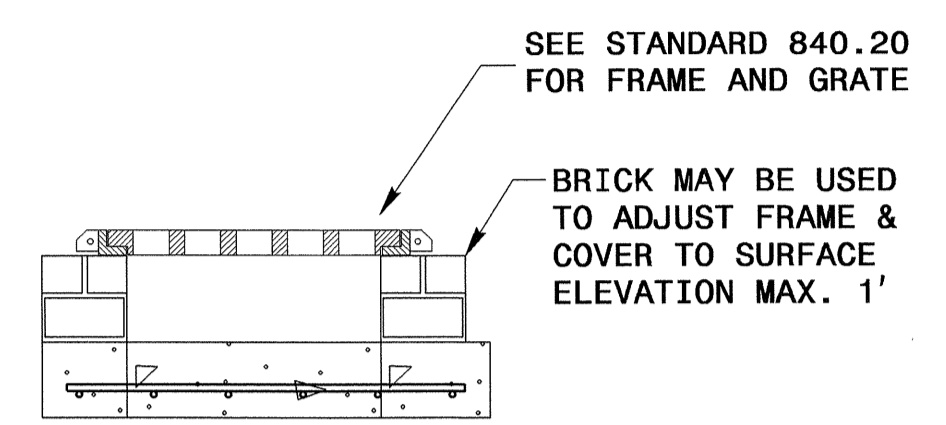
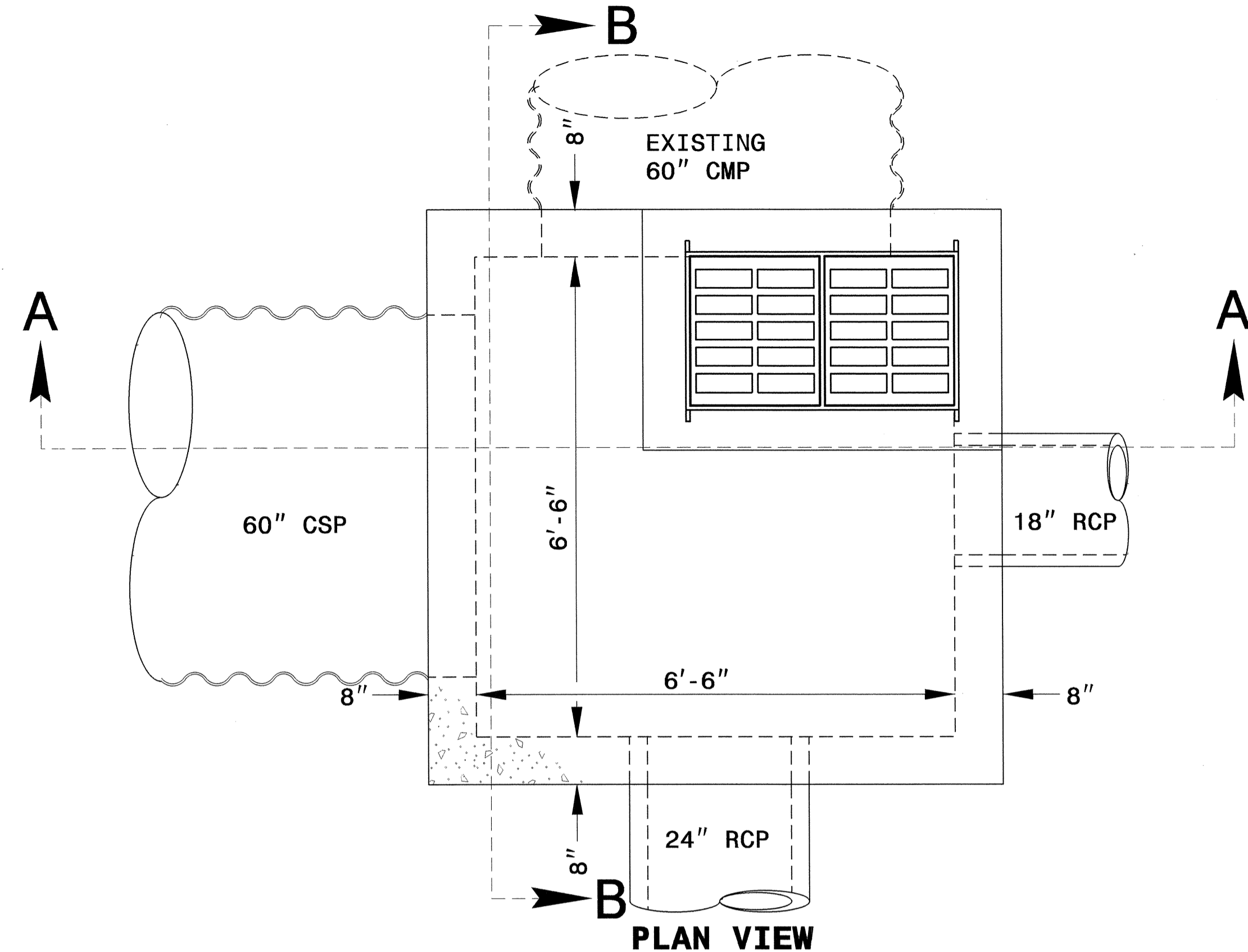
NO DEDUCTIONS HAVE BEEN MADE TO ACCOMMODATE PIPES.



**CONTRACTS STANDARDS AND DEVELOPMENT UNIT**  
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**SPLITTER BOX WITH RETICULINE GRATE**

ORIGINAL BY: K KEMPF DATE: 4/23/12  
 MODIFIED BY: DATE:   
 CHECKED BY: *Quilley* DATE: 11/7/13  
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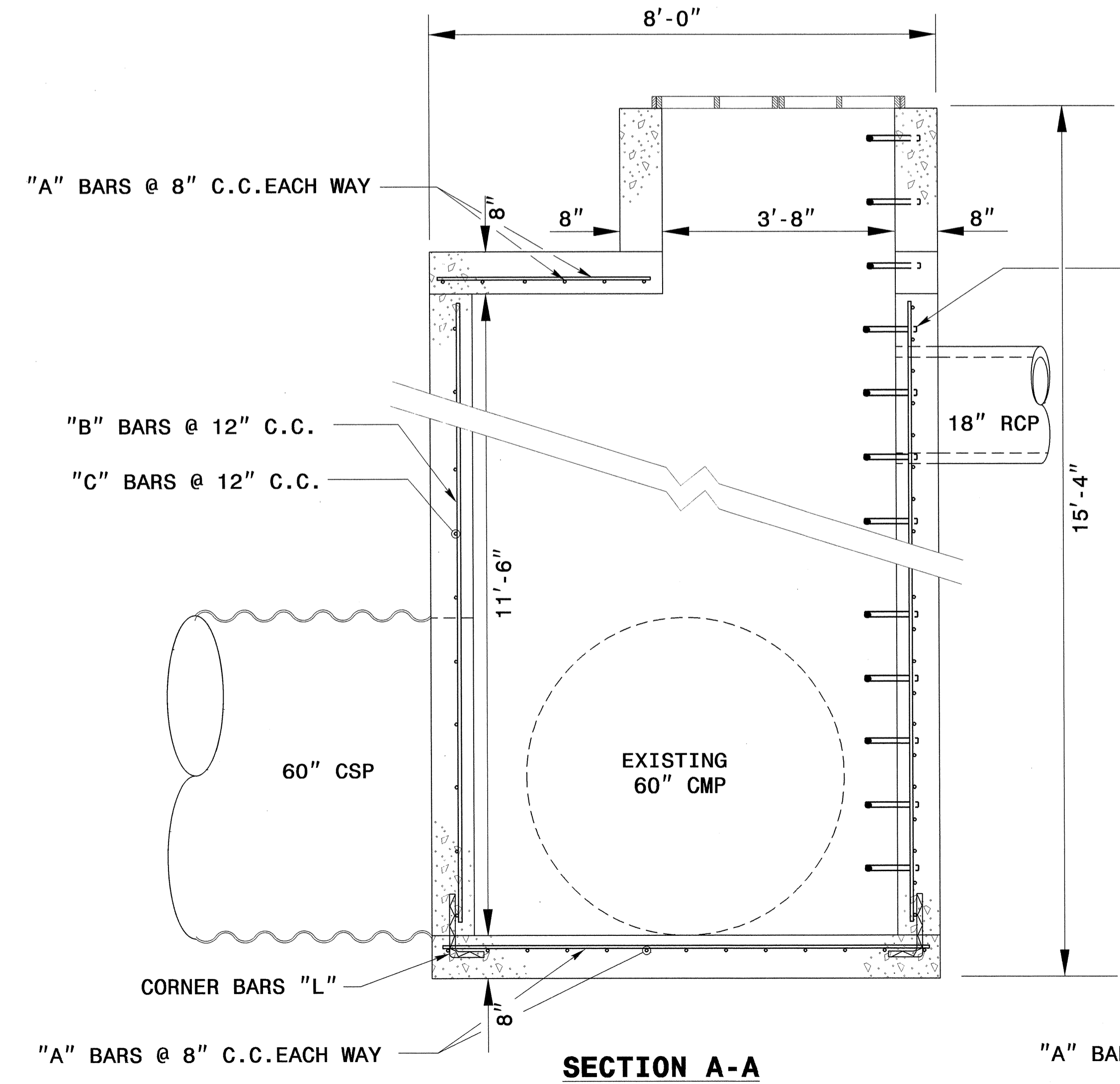


**BRICK RISER**

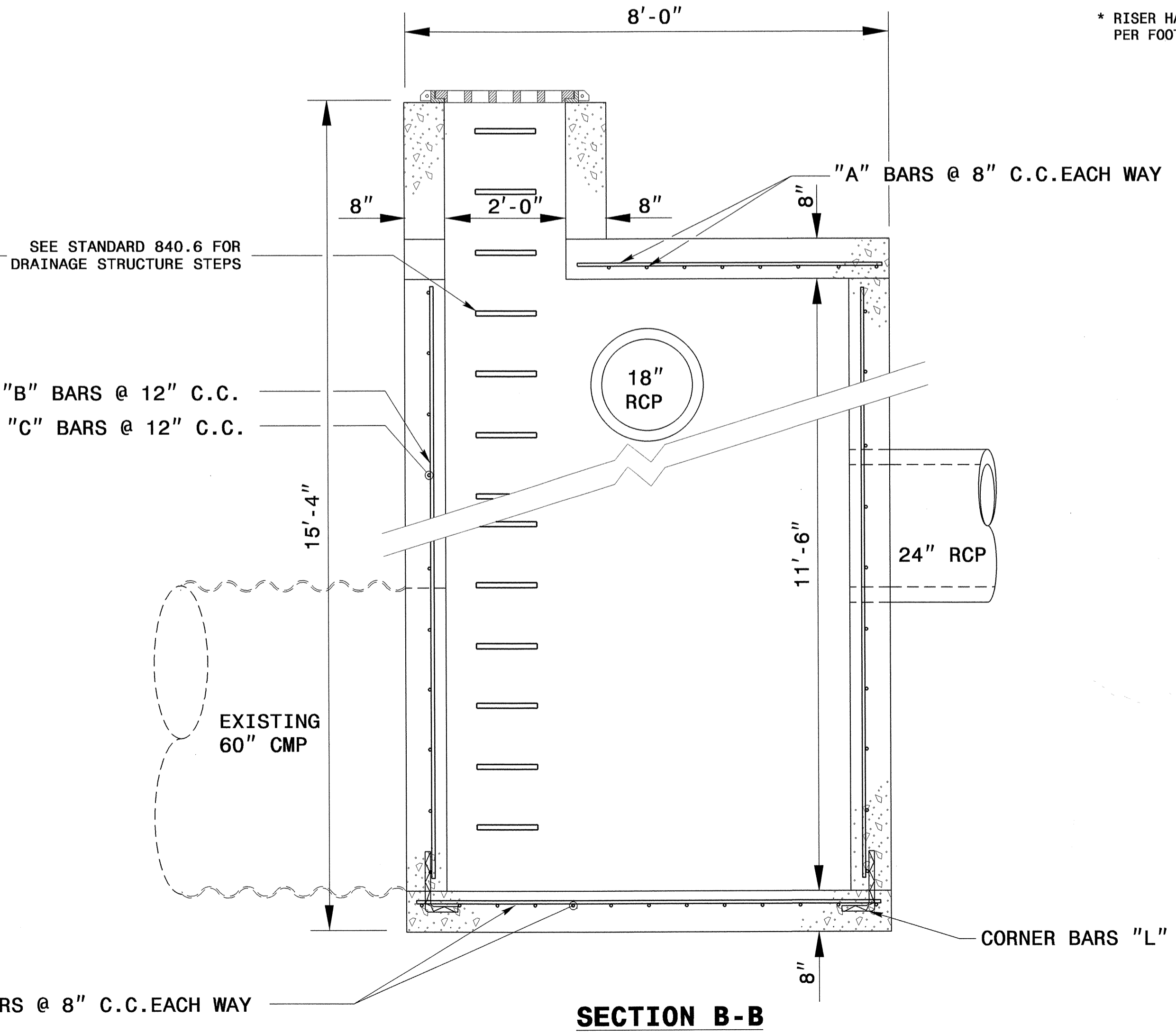
**GENERAL NOTES:**  
 USE CLASS "B" CONCRETE THROUGHOUT.  
 PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.  
 OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.  
 USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.  
 IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.  
 NO DEDUCTIONS HAVE BEEN MADE FOR PIPES.  
 CHAMFER ALL EXPOSED CORNERS 1".  
 DRAWING NOT TO SCALE.

BILL OF MATERIAL FOR CATCH BASIN				
REINF. STEEL		1 PIPE		
BAR SIZE	LENGTH	NO.	WEIGHT	
A	#5	7'-8"	24	192
B	#4	11'-2"	28	209
C	#4	6'-10"	46	210
REINF. STEEL LBS.			611	
CLASS "B" CONCRETE			CU. YDS.	12.4

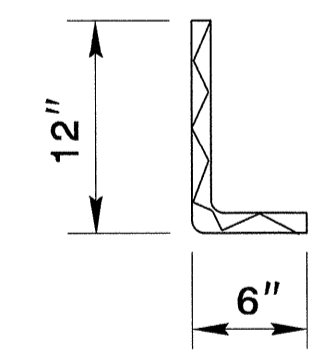
\* RISER HAS 0.321 CUBIC YARDS OF BRICK MASONRY PER FOOT HEIGHT



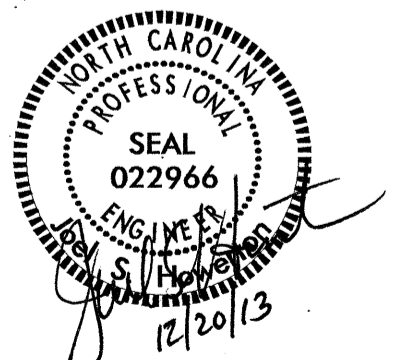
**SECTION A-A**



**SECTION B-B**



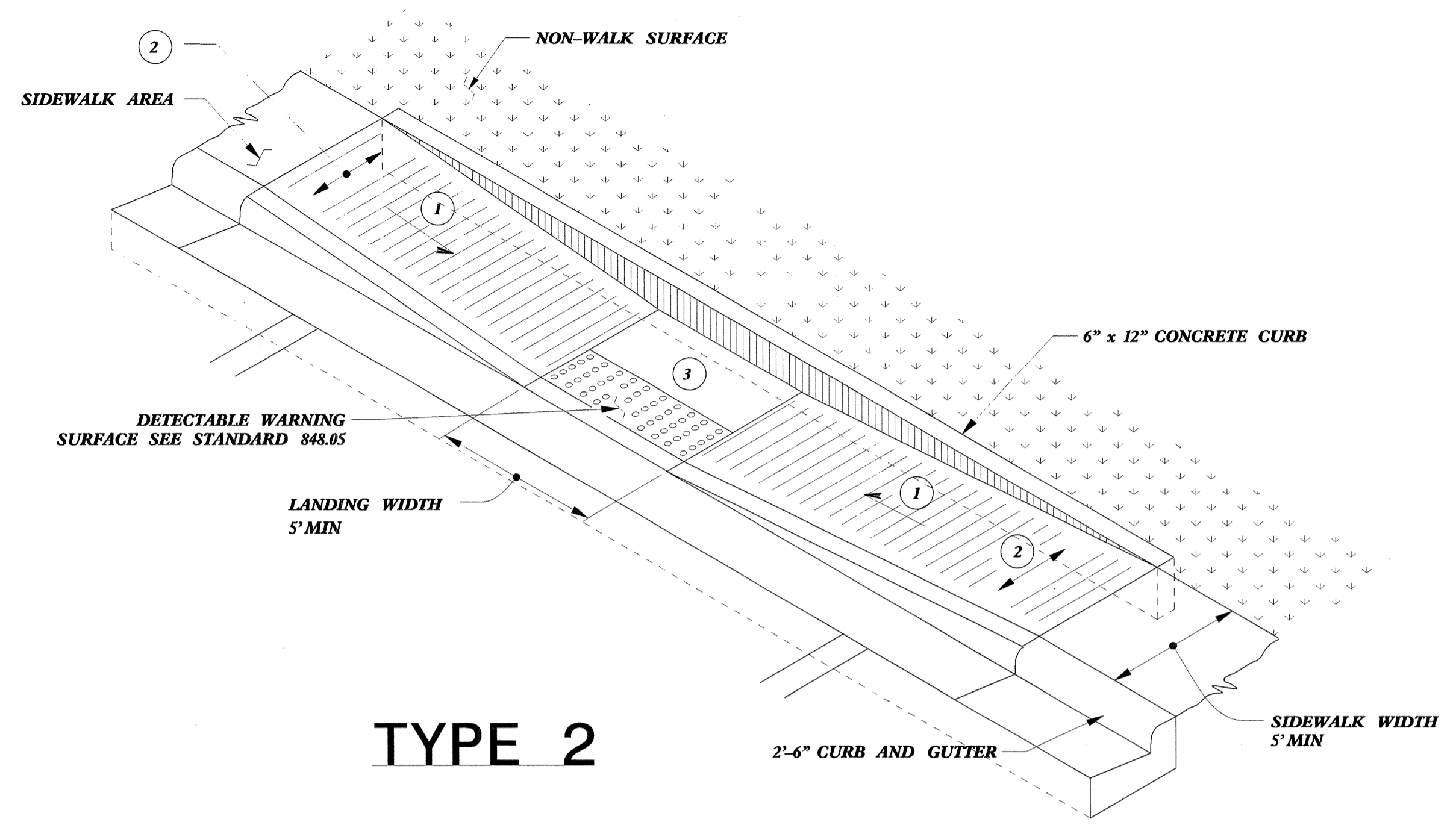
**DOWEL**



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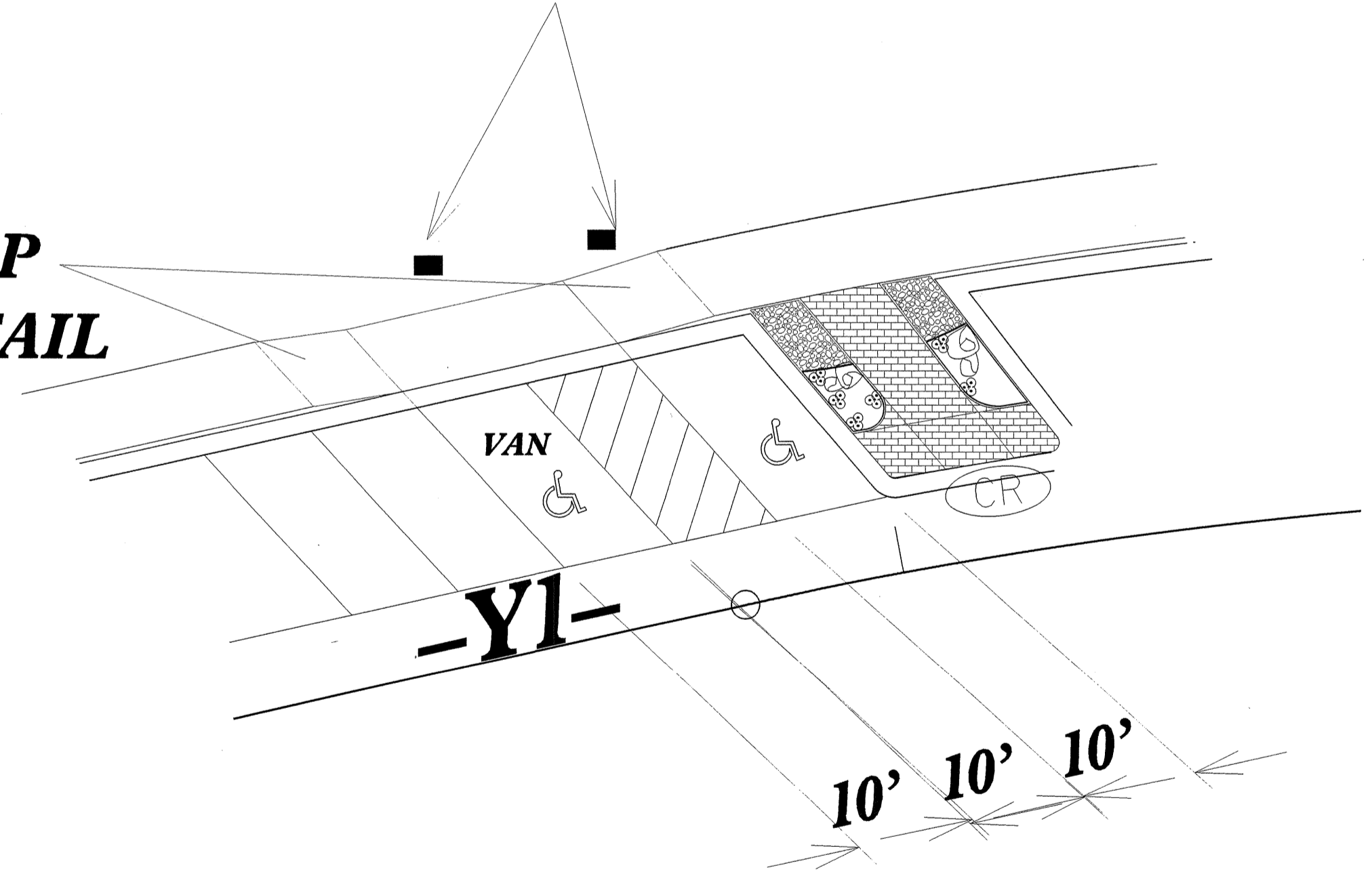
**EXTRA DEPTH GRATED DROP INLET**

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 CHECKED BY: [Signature] DATE: 11/7/13  
 FILE SPEC.: k Kempf\english\K5002 2GI 15'deep.dgn



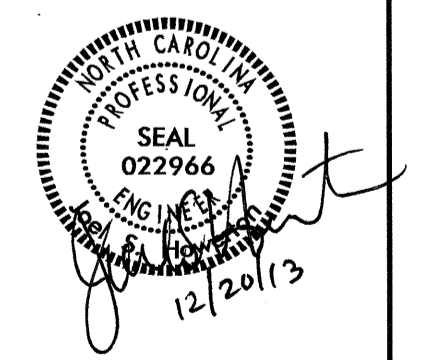
**H/C PARKING SIGNS**

**CONSTRUCT RAMP  
USING TYPE 2 DETAIL**

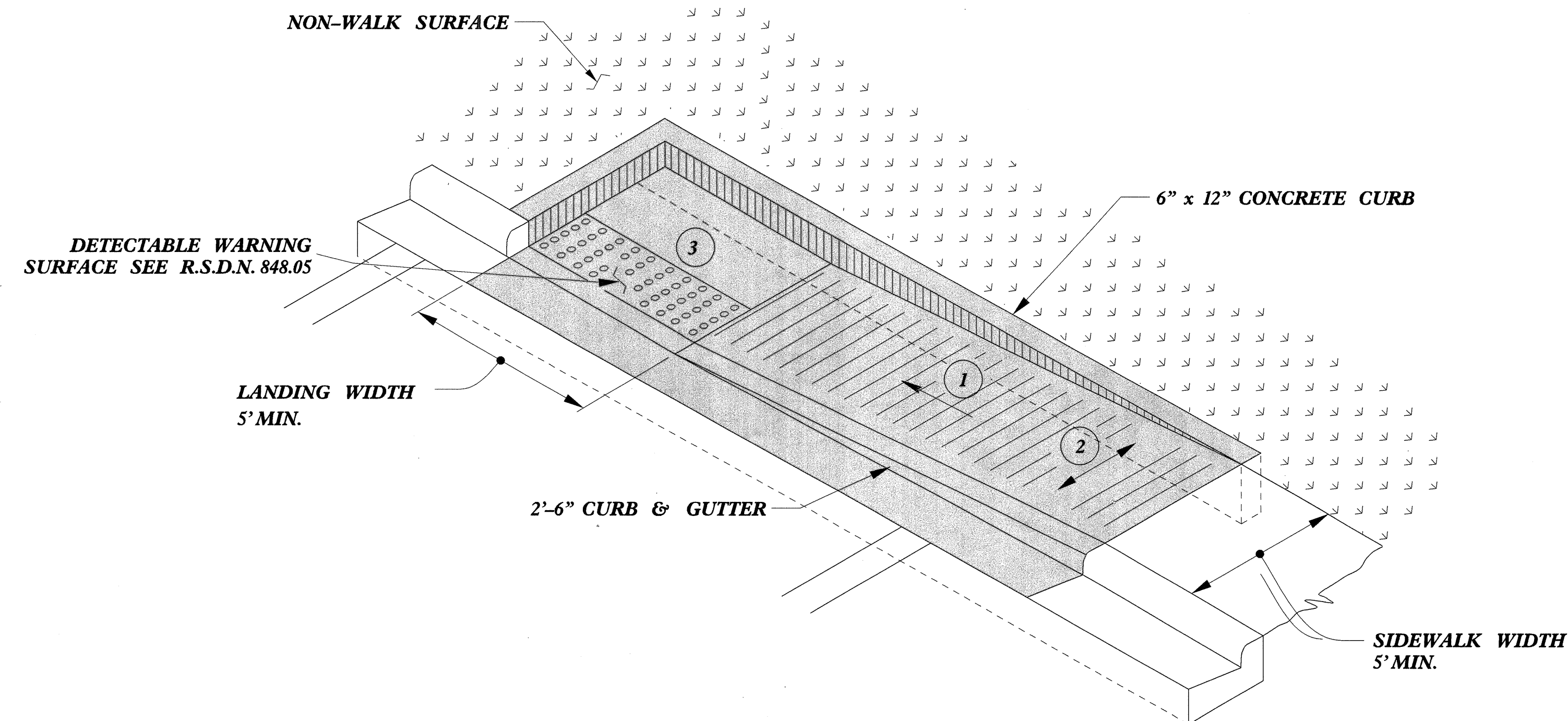


- 1 8.33% (12:1) MAX RAMP SLOPE
- 2 CROSS SLOPE: 2.00%
- 3 CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.

REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

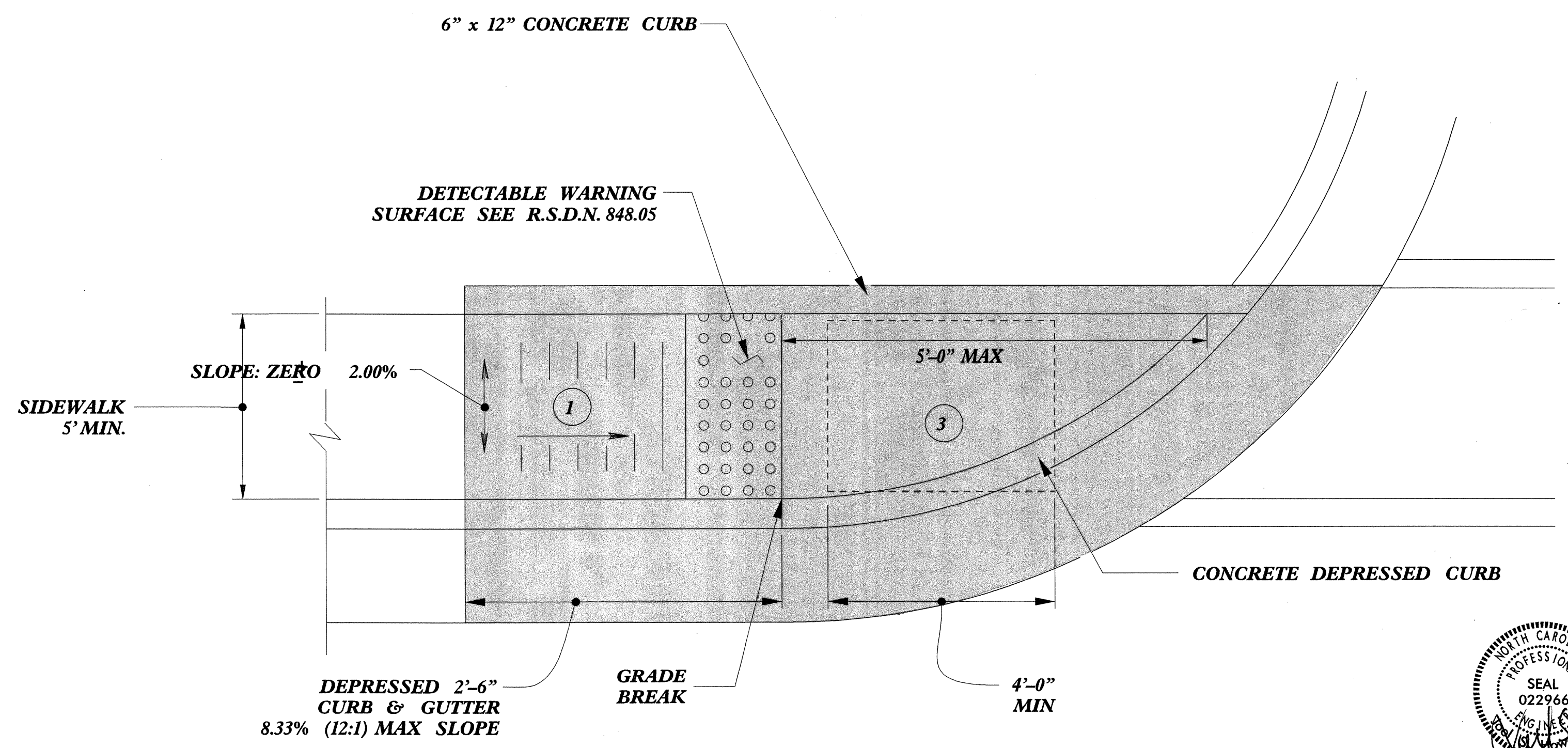


<b>CONTRACT STANDARDS AND DEVELOPMENT UNIT</b>	
Office 919-707-6950	FAX 919-250-4119
<b>RAMPS FOR HC PARKING</b>	
ORIGINAL BY: J.S. HOWERTON	DATE: 11/14/13
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC: jhowerton/K-5002 HC Parking ramp.dgn	



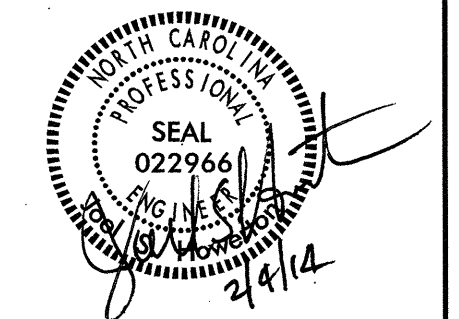
**TYPE 1A**

 PAY LIMITS FOR 1 CURB RAMP



**TYPE 1**

- 1 8.33% (12:1) MAX RAMP SLOPE
- 2 CROSS SLOPE: 2.00%
- 3 CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.



<b>CONTRACT STANDARDS AND DEVELOPMENT UNIT</b>	
Office 919-707-6950 FAX 919-250-4119	
<b>CURB RAMPS</b>	
Directional Ramps	
ORIGINAL BY: J.S. HOWERTON	DATE: 7/7/11
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC: stds/2012CurbRamp/CurbRampDetails.dgn	

REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

5/14/99  
T:\Projects\2012\848.05\Drawings\848.05-3.dwg  
J.S. HOWERTON  
PROFESSIONAL ENGINEER  
NO. 022966  
STATE OF MISSOURI  
7/7/11





STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
SUB-REGIONAL TIER GUIDELINES

NOTE: Invert Elevations are for Bid Purposes only and shall not be used for project construction stakeout.  
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

Table with columns for Station, Location, Structure No., Top Invert, Invert, Slope, Drainage Pipe, C.S. Pipe, R.C. Pipe (Class III), R.C. Pipe (Class IV), Endwalls, Frame/Grates, Concrete Transitional Section, and Abbreviations. Includes a summary row at the bottom.



STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS  
**SUB-REGIONAL TIER GUIDELINES**

**LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 54" & OVER)**

STATION	LOCATION (L/RT OR CL)	STRUCTURE NO.	TOP ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE)					BITUMINOUS COATED C.S. PIPE TYPE B					STRUCTURAL PLATE PIPE			REINFORCED ENDWALLS		MASONRY DRAINAGE STRUCTURES CUBIC YARDS	G.D.I. TYPE "A" SPECIAL DETAIL (SHEET 2-H)	G.D.I. (N.S.) FRAME WITH 2 GRATES STD. 840.29	REF. CONC. FLARED END SECTIONS NO. & SIZE	CORR. STEEL FLARED END SECTIONS NO. & SIZE	REINF. CONC. ELBOWS NO. & SIZE	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	PIPE REMOVAL L/FT.	REMARKS						
						54"	60"	66"	72"	78"	84"	54"	60"	66"	72"	60"	66"	72"	WITH R.C. - C.Y.	WITH C.S. - C.Y.																
31+90.35	L 0442		2971.9																																	
31+90.35	L 0441/0442		2957.9	2957.2																																
TOTAL																																				

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL  
 TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.

**GUARDRAIL SUMMARY**

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS				IMPACT ATTENUATOR TYPE 350			REMOVE EXISTING GUARDRAIL	REMARKS	
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	TYPE 350 TL-3	AT-1	PERMITTED NO.	G	NG					
-Y-	11+04.25		RT		87.50																			
-L-		34+08.50	LT	200.00					4.00	8.00		150.00		7.00										340.25
TOTALS				200.00	87.50																			
ANCHOR DEDUCTIONS:																								
1 AT-1 @ 6.25' ea. =					6.25																			
1 GRAU 350's @ 50' ea. =				50																				
SHOP CURVED =					81.25																			
GRAND TOTAL				150.00	81.25																			340.25
SAY				150.00	81.25																			350.00

TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.  
 FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.  
 W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.  
 G = GATING IMPACT ATTENUATOR TYPE 350  
 NG = NON-GATING IMPACT ATTENUATOR TYPE 350

**SUMMARY OF ASPHALT PAVEMENT REMOVAL IN SQUARE YARDS**

STATION TO STATION	PAVEMENT BREAKING			PAVEMENT REMOVAL		
	LENGTH	WIDTH	SQUARE YARDS	LENGTH	WIDTH	SQUARE YARDS
-L- STA 24+00 TO 27+41				341'	9.00'	341.00 SY
-L- STA 31+20 TO 37+99				738.86'	10.50'	862.00 SY
-L- STA 25+25 TO 27+37				15,393		1,710.00 SY
TOTAL						2,913.00 SY
SAY						2,920 SY

**SUMMARY OF CONCRETE PAVEMENT REMOVAL IN SQUARE YARDS**

STATION TO STATION	PAVEMENT BREAKING			PAVEMENT REMOVAL		
	LENGTH	WIDTH	SQUARE YARDS	LENGTH	WIDTH	SQUARE YARDS
-YI- STA 12+29 TO 15+05				276'	3.25'	99.67 SY
-YI- STA 15+13 TO 17+03						1,699.44 SY
TOTAL						1,799.11 SY
SAY						1,800 SY

**SHOULDER BERM GUTTER SUMMARY**

SURVEY LINE	STATION	STATION	LENGTH	SAY
-Y-	-Y- 10+99	-L- 33+25	210'	210'

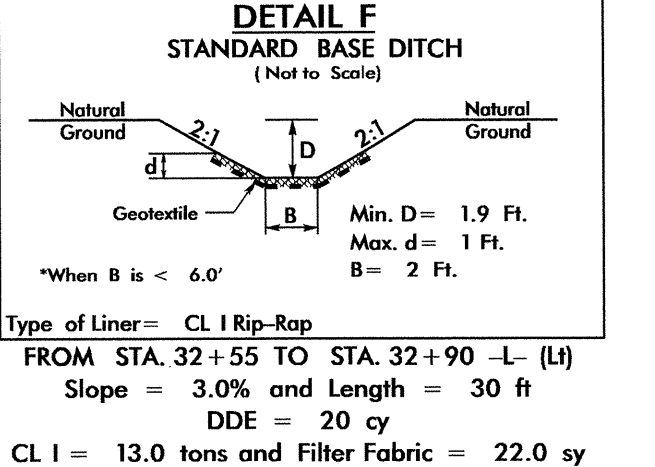
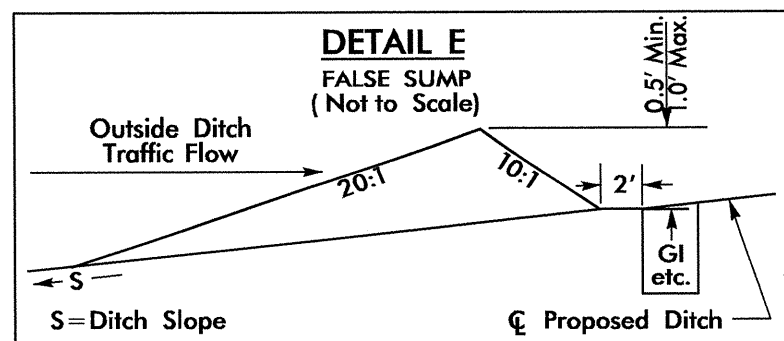
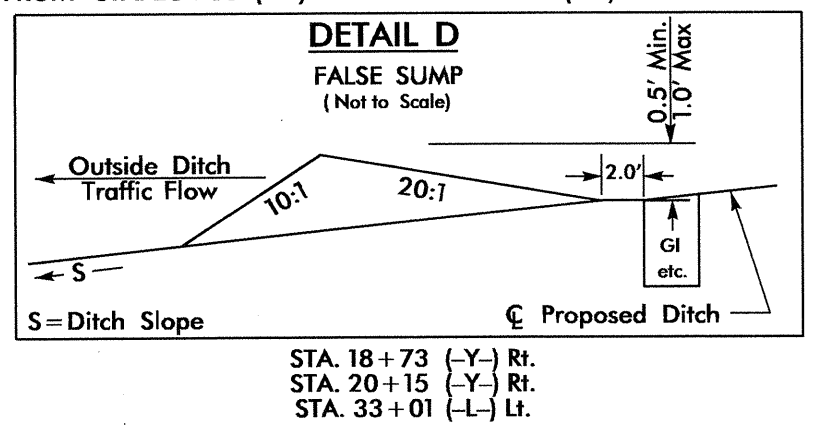
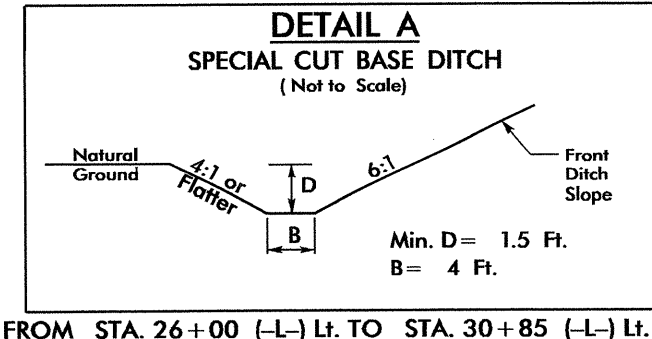
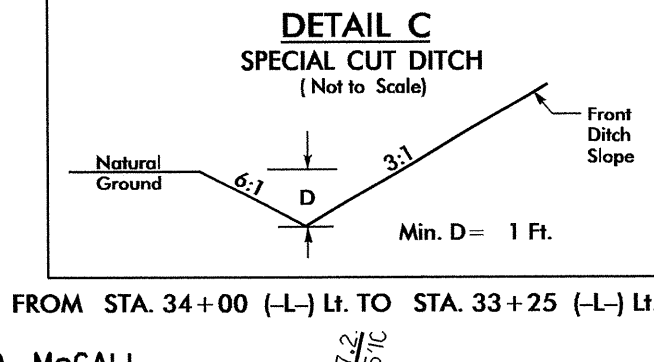
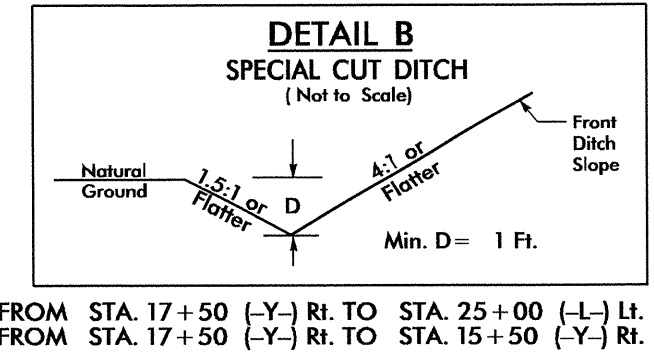
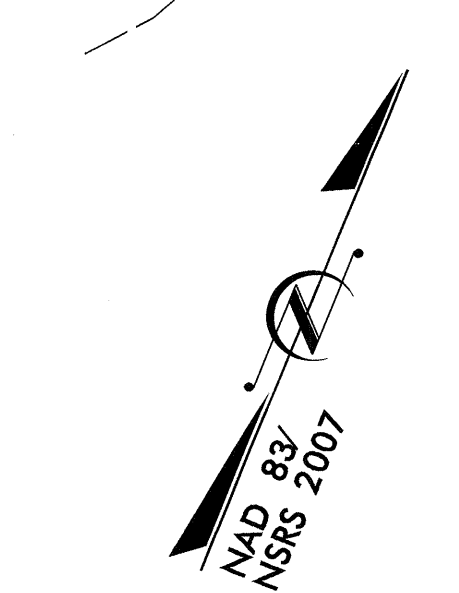
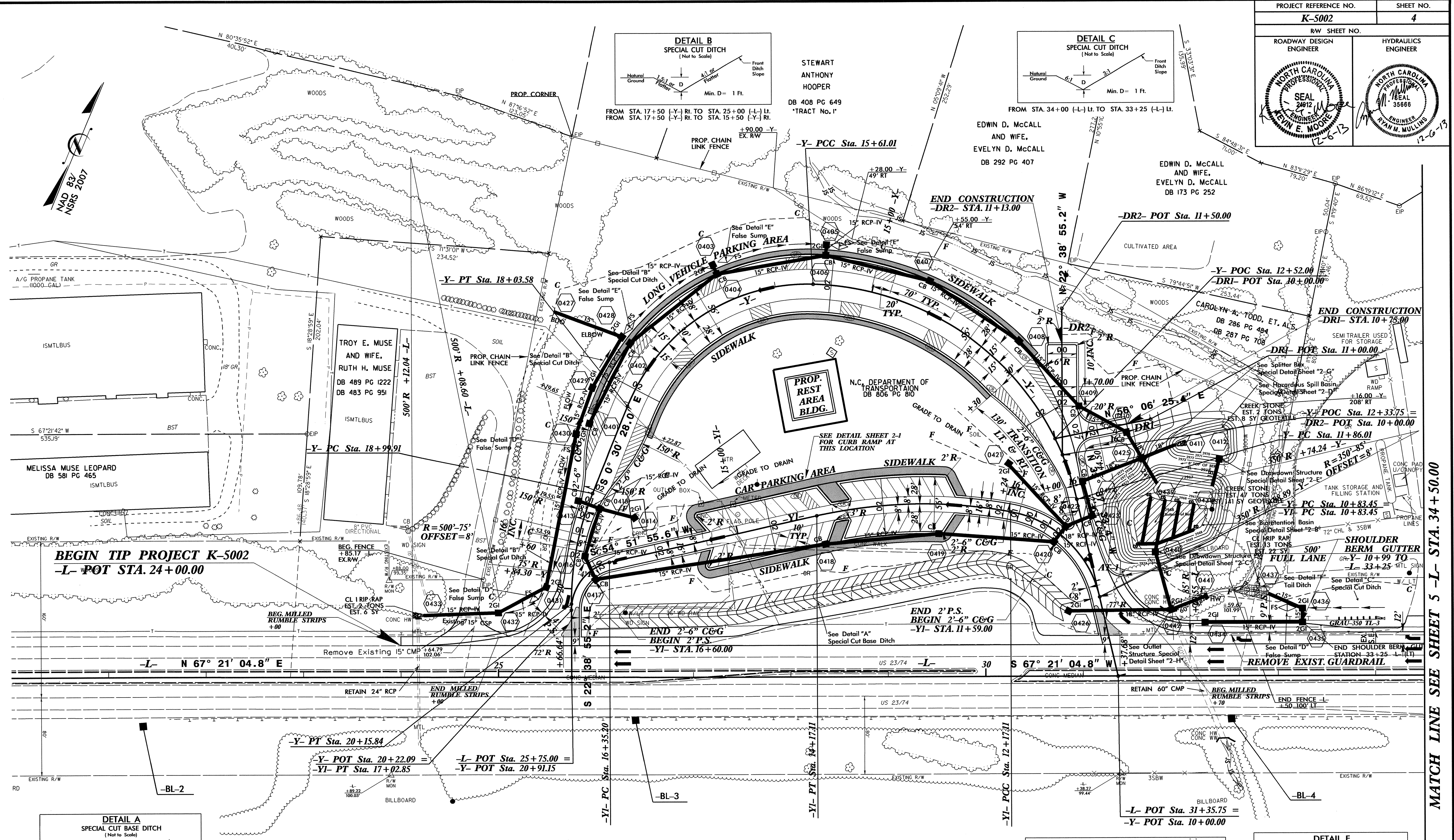
**SUMMARY OF SUBSURFACE DRAINAGE**

LINE	STATION	STATION	LOCATION	DRAIN TYPE UD&DSD	LF
CONTINGENCY				UD	300
TOTAL:					300
SAY:					300

**SUMMARY OF EARTHWORK  
 IN CUBIC YARDS**

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
-L- STA 24+00 TO STA 25+00	69				69
-L- STA 31+00 TO STA 37+98.86	528		795	267	
-Y- STA 10+42.50 TO STA 20+50	38,549		2,438		36,111
-YI- STA 11+50 TO STA 16+50	140		2,826	2,686	
-DRI- STA 10+25 TO STA 10+75			183	183	
-DR2- STA 10+50 TO STA 11+13			366	366	
SUMMARY TOTALS	39,286		6,608	3502	36,180
LOSS DUE TO CLEAR. & GRUBB.	-55				-55
ADJUST FOR ROCK WASTE			-200	-200	
ELIMINATE EARTH SHRINKAGE FACTOR			-150	-150	
EARTH WASTE IN LIEU OF BORROW				-2,353	-2,353
ROCK WASTE IN LIEU OF BORROW				-799	-799
PROJECT TOTAL:	39,231		6,258	0	32,973
SAY	39,300				

Geotextile for Soil Stabilization = 3,000 SY	EST. DDE = 420CY
Class IV Subgrade Stabilization = 3,780 Tons	
Shallow Undercut = 2,000 CY	
Subsurface Drainage - Underdrain = 300 LF	NOTE: APPROXIMATE QUANTITIES ONLY. FINE GRADING, CLEARING & GRUBBING, PAVEMENT REMOVAL AND CONCRETE PAVEMENT REMOVAL WILL BE PAID FOR AT THE LUMP SUM PRICE OF GRADING.
Undercut Excavation = 300 CY	
Select Granular Material, CL. II OR III = 100 CY	NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGN UNIT. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL UNIT.
Incidental Stone Base = 300 Tons	



-L-			-Y-			-YI-		
PI Sta 37+44.52	PI Sta 14+06.24	PI Sta 11+58.98	PI Sta 16+99.73	PI Sta 19+58.61	PI Sta 13+18.46	PI Sta 16+75.34	PI Sta 11+58.98	PI Sta 13+18.46
$\Delta = 2^\circ 59' 22.7''$	$\Delta = 75^\circ 23' 21.1''$ (LT)	$\Delta = 66^\circ 35' 25.1''$ (LT)	$\Delta = 69^\circ 29' 33.6''$ (LT)	$\Delta = 22^\circ 08' 27.2''$ (LT)	$\Delta = 22^\circ 55' 05.9''$ (LT)	$\Delta = 77^\circ 30' 50.9''$ (LT)	$\Delta = 66^\circ 35' 25.1''$ (LT)	$\Delta = 22^\circ 55' 05.9''$ (LT)
$L_s = 301.05'$	$D = 20^\circ 06' 13.6''$	$D = 49^\circ 49' 20.7''$	$D = 28^\circ 38' 52.4''$	$D = 19^\circ 05' 54.9''$	$D = 11^\circ 27' 33.0''$	$D = 114^\circ 35' 29.6''$	$D = 49^\circ 49' 20.7''$	$D = 11^\circ 27' 33.0''$
$L = 1,079.67'$	$L = 375.00'$	$L = 133.66'$	$L = 242.58'$	$L = 115.93'$	$L = 200.00'$	$L = 67.64'$	$L = 133.66'$	$L = 200.00'$
$T = 546.23'$	$T = 220.23'$	$T = 75.53'$	$T = 138.73'$	$T = 58.70'$	$T = 101.36'$	$T = 40.14'$	$T = 75.53'$	$T = 101.36'$
$R = 2,884.79'$	$R = 285.00'$	$R = 115.00'$	$R = 200.00'$	$R = 300.00'$	$R = 500.00'$	$R = 50.00'$	$R = 115.00'$	$R = 500.00'$
$S = 88^\circ 12' 55.2''$ E (AHEAD)	SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS

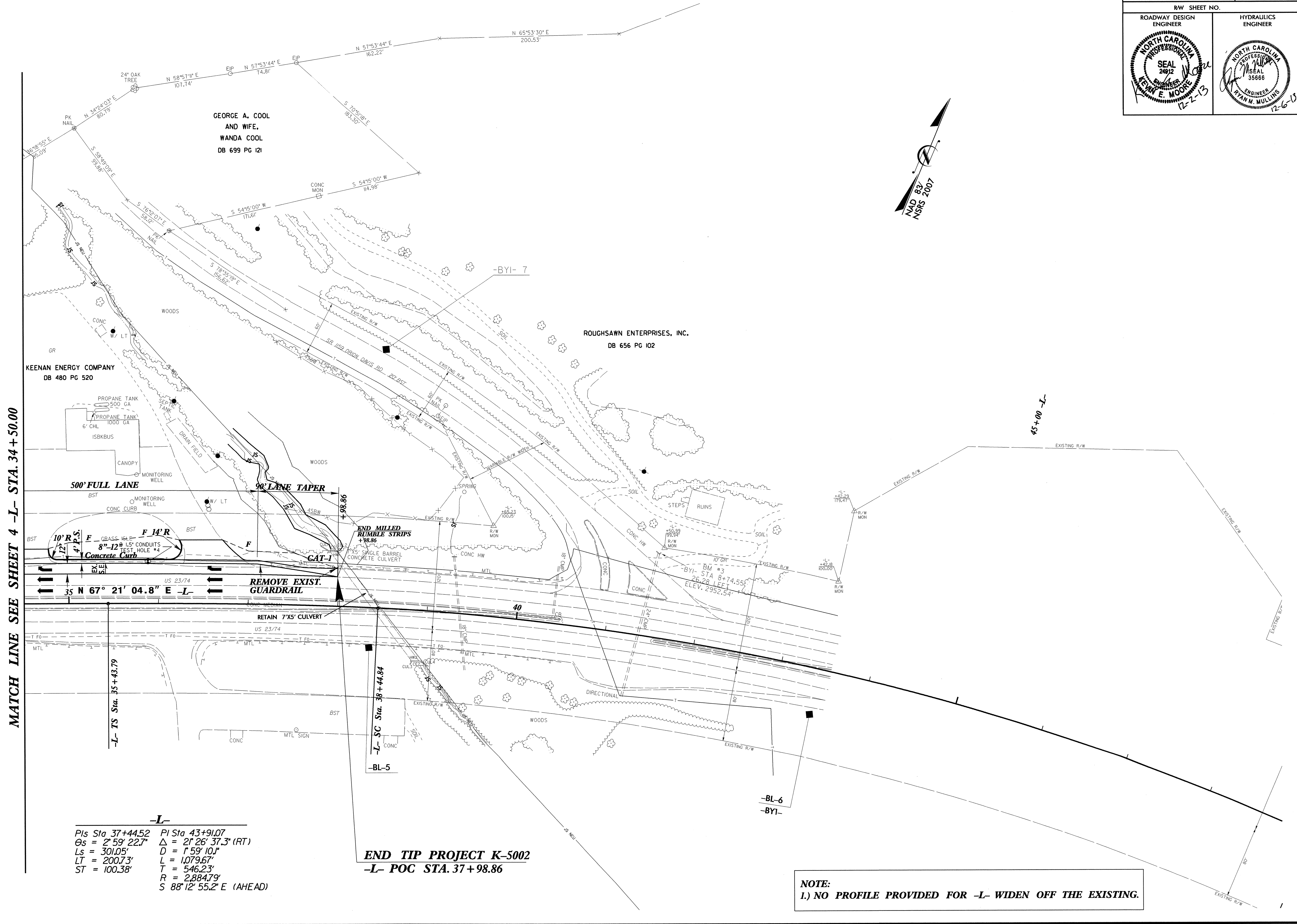
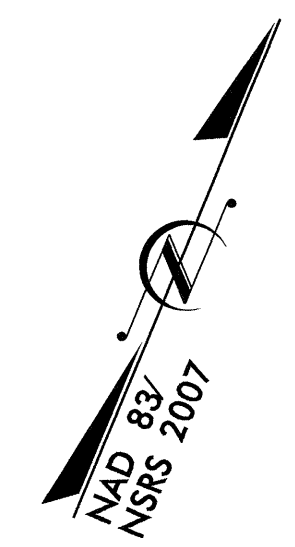
**NOTES:**  
 1.) FOR -Y-, -YI-, -DRI-, AND -DR2- PROFILES SEE SHEET 6.  
 2.) FOR -L- PROFILE SEE SHEET 7  
 3.) ALL CONC. ISLAND RADII ARE 2' UNLESS OTHERWISE NOTED.

REVISIONS

06-DEC-2013 JHO N:\K5002-rd-us-sh04.dgn

MATCH LINE SEE SHEET 5 -L- STA. 34+50.00

PROJECT REFERENCE NO. <b>K-5002</b>	SHEET NO. <b>5</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER <b>SEAL 24912</b> RYAN E. MOORE 12-2-13	HYDRAULICS ENGINEER <b>SEAL 35666</b> RYAN M. MULLINS 12-6-13



MATCH LINE SEE SHEET 4 -L- STA. 34+50.00

**-L-**  
 PIs Sta 37+44.52      PI Sta 43+91.07  
 Os = 2° 59' 22.7"    Δ = 21° 26' 37.3" (RT)  
 Ls = 301.05'          D = 1° 59' 10.1"  
 LT = 200.73'          L = 1,079.67'  
 ST = 100.38'          T = 546.23'  
                                  R = 2,884.79'  
                                  S 88° 12' 55.2" E (AHEAD)

**END TIP PROJECT K-5002**  
**-L- POC STA. 37+98.86**

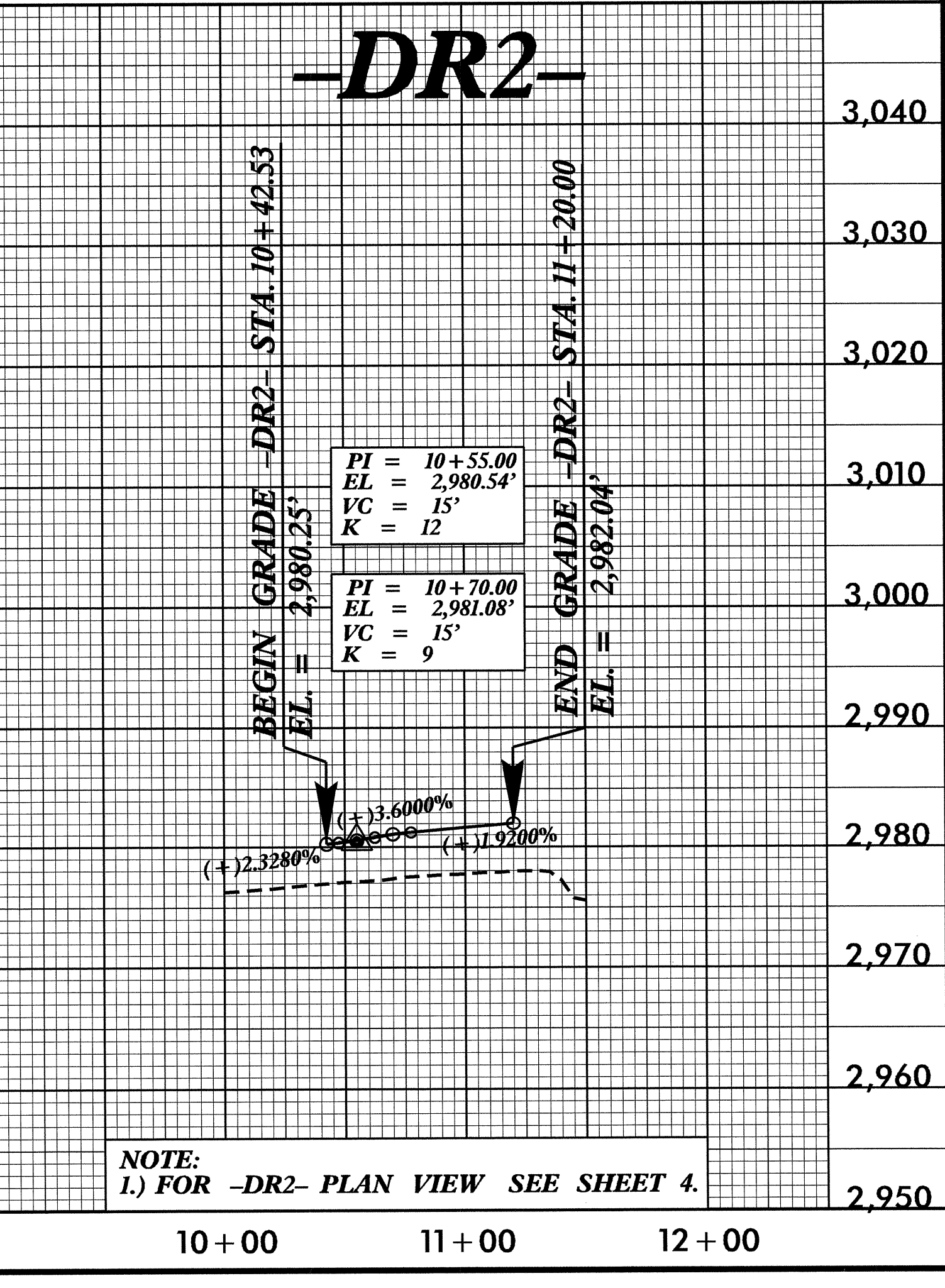
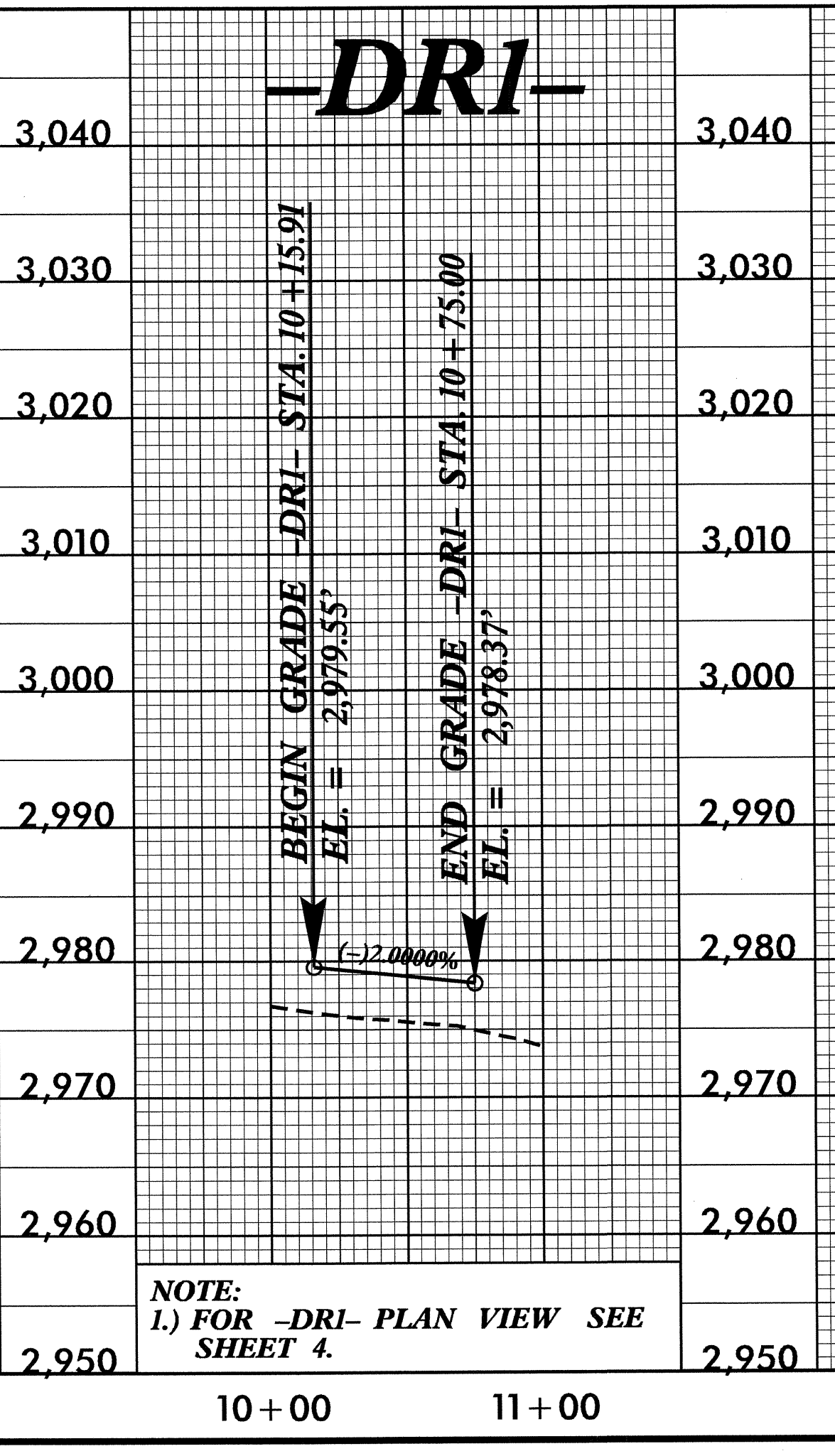
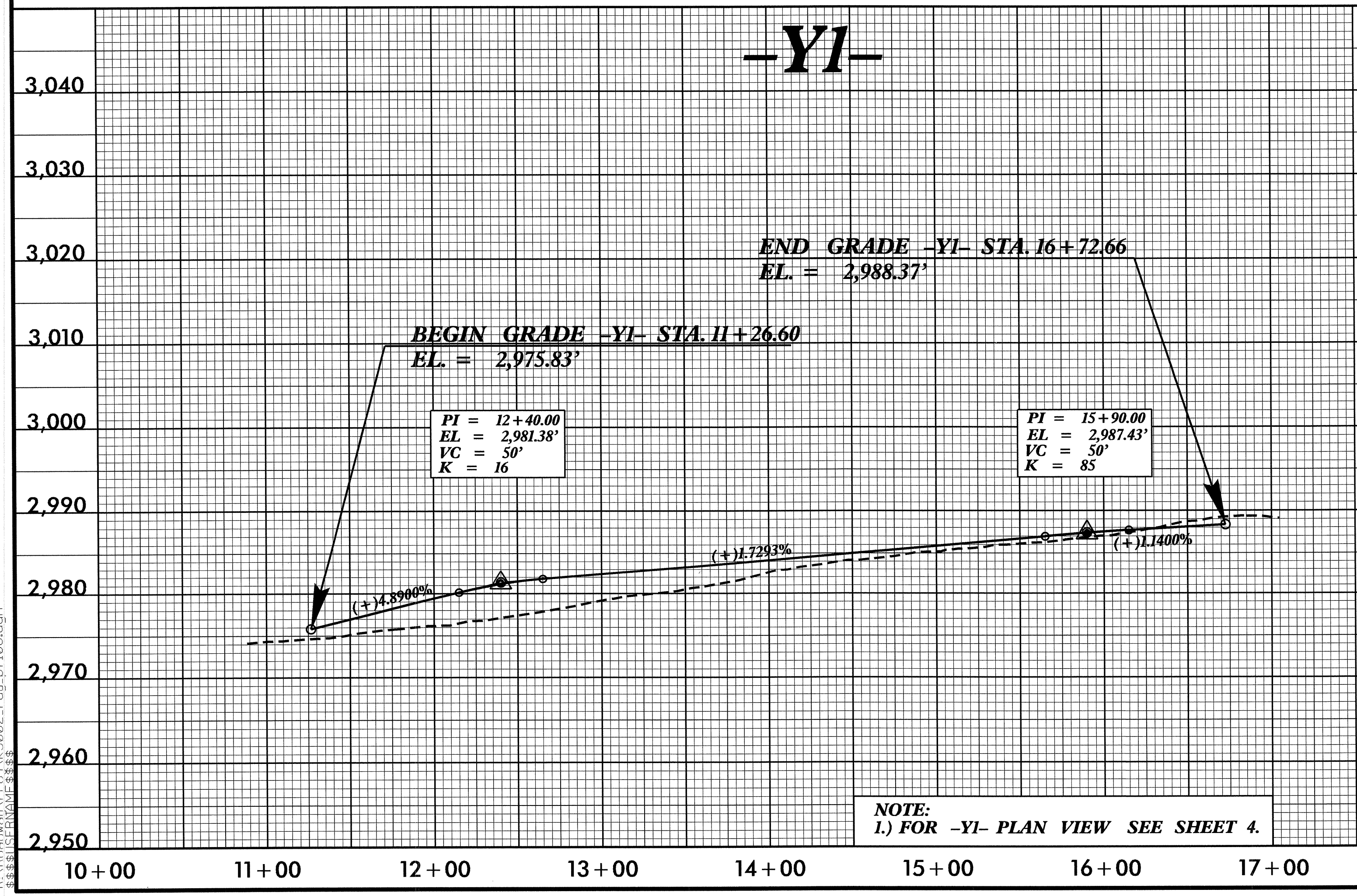
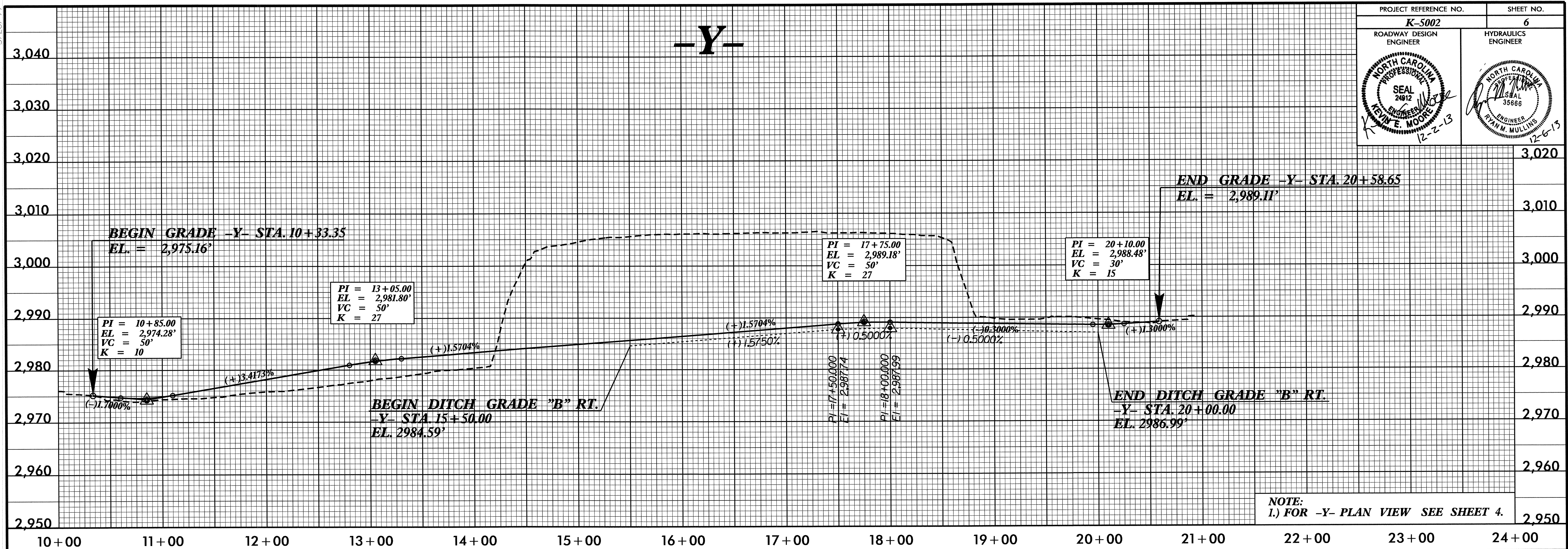
**NOTE:**  
 1.) NO PROFILE PROVIDED FOR -L- WIDEN OFF THE EXISTING.

REVISIONS

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5/28/99

PROJECT REFERENCE NO. <b>K-5002</b>	SHEET NO. <b>6</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

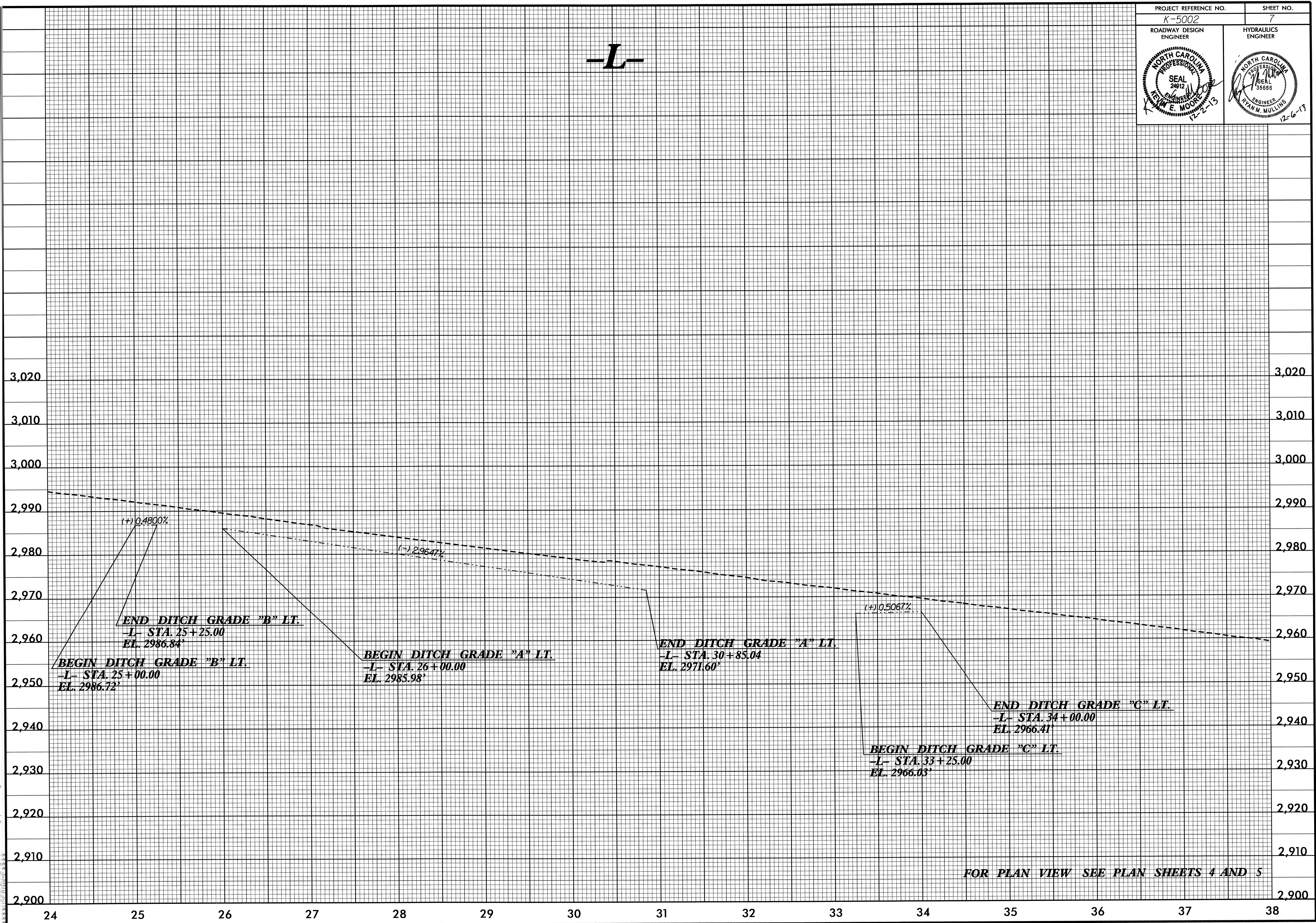


08-NOV-2013 08:37 P:\Projects\NVA\F&E\K5002.rdy.plt.dgn

5/14/99

PROJECT REFERENCE NO. K-5002	SHEET NO. 7
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

**-L-**



FOR PLAN VIEW SEE PLAN SHEETS 4 AND 5

20-DEC-2013 15:05 V:\5002.rdlj\_p1106.dgn