

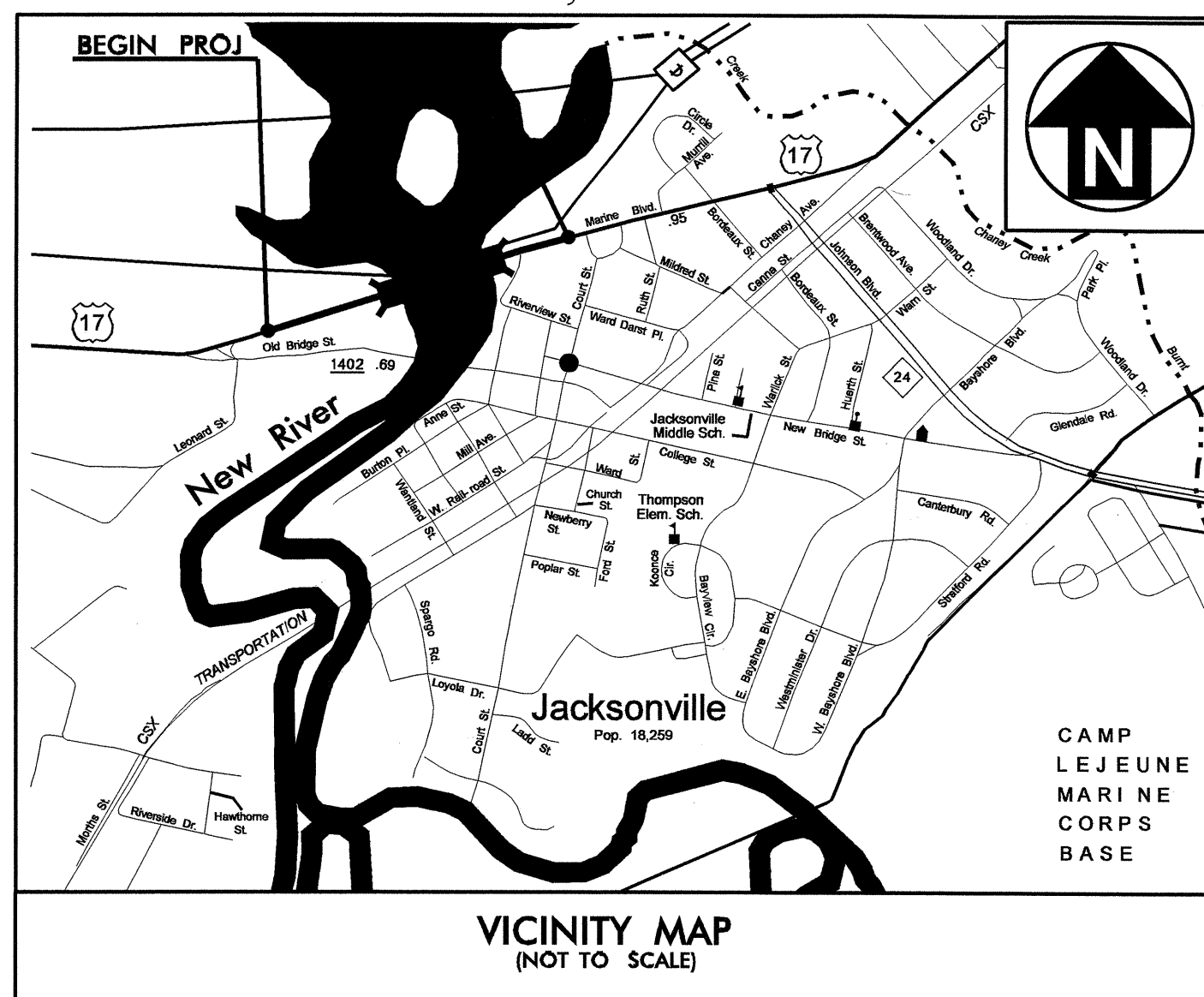
09/08/99

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols

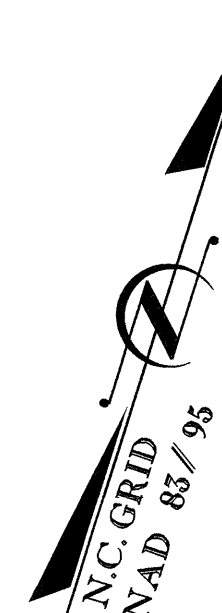
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ONSLOW COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4214	1	
W.B.S. NO.	F.A. PROJ. NO.	DESCRIPTION	
33560.1.1	BRSTP-0017(34)	PE	
33560.2.1	BRSTP-0017(34)	RW, UTL.	
33560.3.1	BRSTP-17(44)	CONST.	

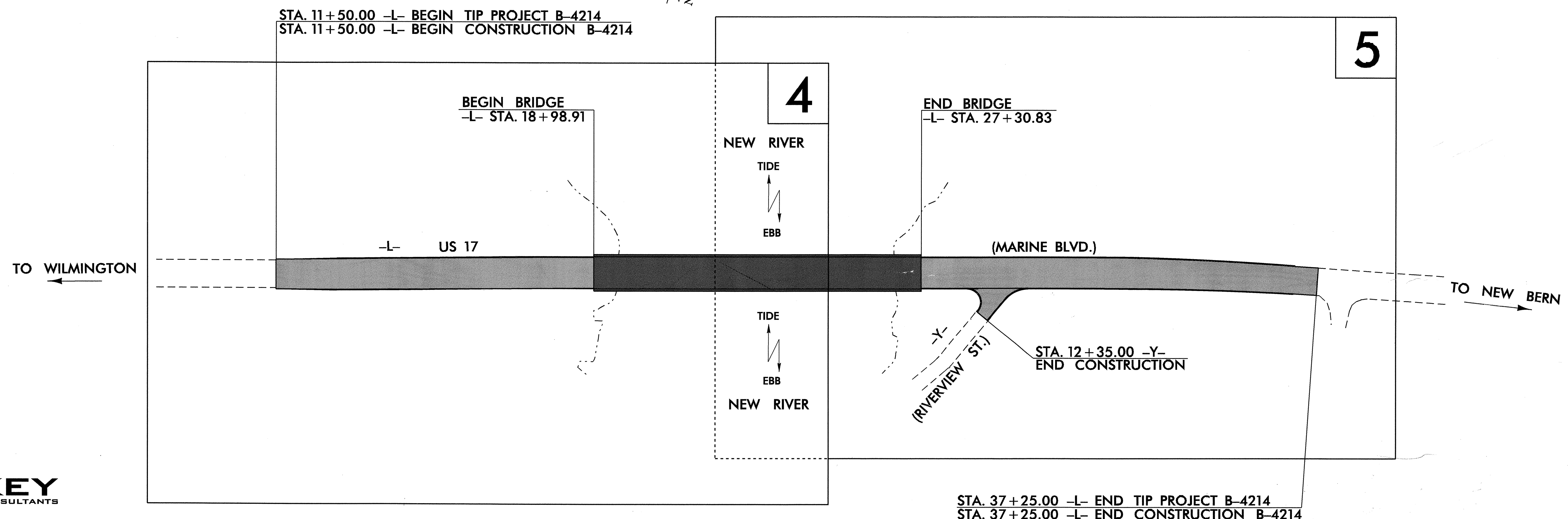


LOCATION: BRIDGE NO. 24 OVER NEW RIVER ON US 17 (MARINE BLVD.) IN JACKSONVILLE
TYPE OF WORK: PAVING, GRADING, DRAINAGE, SIGNALS AND STRUCTURES

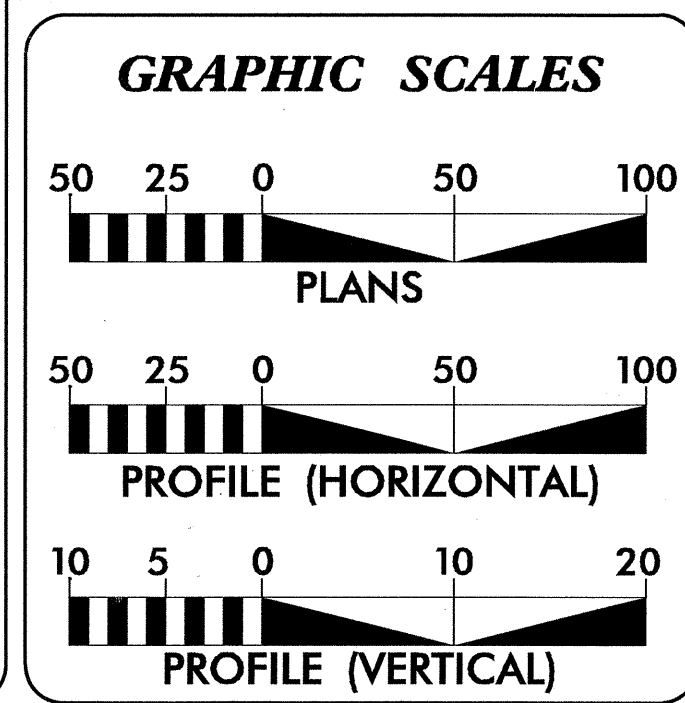


TIP PROJECT: B-4214

CONTRACT: C202593



MULKEY
ENGINEERS & CONSULTANTS
PO BOX 33127
RALEIGH, N.C. 27636
(919) 851-1912
(919) 851-1918 (FAX)
WWW.MULKEYINC.COM



DESIGN DATA

ADT 2009 =	56,700
ADT 2029 =	70,300
DHV =	12 %
D =	55 %
T =	11 % *
V =	45 MPH
* TTST 5 %	DUAL 6 %
FUNC CLASS =	URBAN ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4214	=	0.330 MILES
LENGTH STRUCTURE TIP PROJECT B-4214	=	0.158 MILES
TOTAL LENGTH STATE TIP PROJECT B-4214	=	0.488 MILES

Prepared in the Office of:

MULKEY
ENGINEERS & CONSULTANTS
FOR THE NORTH CAROLINA DEPT. OF TRANSPORTATION

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 17, 2006

LETTING DATE:
JUNE 15, 2010

NCDOT CONTACT: B. DOUG TAYLOR, PE

TIM JORDAN, PE
MULKEY E & C
PROJECT MANAGER

KEVIN ALFORD, PE
MULKEY E & C
HYDRAULICS ENGINEER

HYDRAULICS ENGINEER

1-26-10
P.E.

ROADWAY DESIGN ENGINEER

1/26/10
P.E.

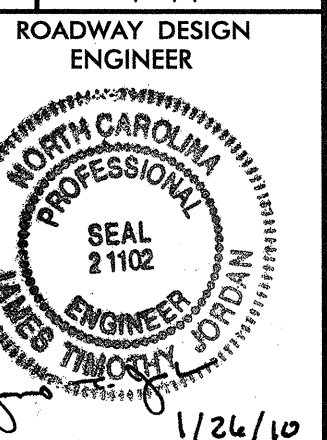
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

cut in millen
STATE HIGHWAY DESIGN ENGINEER

07-JAN-2010 08:54
R:\ROADWAY\PROJECTS\B-4214_rdy_tsh.dgn
P:\USER\NAME\ESB

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARDS



Index of Sheets

Sheet Number	Sheet
1	Title Sheet
1-A	Index of Sheets, General Notes, & List of Standards
1-B	Conventional Symbols
1-C	Survey Control Sheet
2	Pavement Schedule, Wedging Detail & Typical Sections
2-A	Typical Sections
2-B	Typical Sections, Milling Detail for Profile Connections
2-C	Detail of Catch Basin with Weir
2-D	Temporary Shoring Detail
2-E	Embankment Monitoring Detail
2-F	Detail of Special Catch Basin
2-G	Detail of Anchorage for Frames
2-H	Bio-Retention Detail
2-I	Detail of Outlet Control Structure for Bio-Retention Basin
2-J	Fabric, Clay Core Zone, End Cleanout and Midway Cleanout Details
2-K thru 2-L	Method of Pipe Installation
2-M	Dry Detention Basin Detail
2-N	Dry Detention Basin Outlet Control Structure
2-O	Dry Detention Basin Trash Racks
2-P	Dry Detention Basin Underdrain System
2-Q	Dry Detention Basin Notes
3	Summary of Quantities
3-A	Guardrail Summary, Summary of Earthwork, & Summary of Pavement Removal
3-B thru 3-C	List of Pipes, Endwalls, Etc (For Pipes 48" & Under)
3-D	Parcel Index Sheet
4	Plan
5	Plan
6	Profile
7	Profile
TCP-1 thru TCP-11	Traffic Control Plans
PM-1 thru PM-2	Pavement Marking Plans
EC-1 thru EC-6	Erosion Control Plans
L-1 thru L-2	Planting for Basin
SIGN-1 thru SIGN-5	Signing Plans
SIG-1 thru SIG-10	Signals Plans
UC-1 thru UC-5	Utility Construction Plans
UO-1 thru UO-4	Utilities by Others Plans
X-1	Cross Section Summary Sheet
X-2 thru X-9	Cross-Sections
S-1 thru S-70	Structure Plans
W-1 thru W-5	Retaining Wall Plans

GENERAL NOTES:

2006 SPECIFICATIONS
EFFECTIVE: 07-18-06
REVISED: 07-18-06

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. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED 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.

SIDE ROADS:

THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

UNDERDRAINS:

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

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3' RADIUS OR RADIUS AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

STREET TURNOUT:

STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADIUS NOTED ON PLANS.

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 NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

END BENTS:

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE PROGRESS ENERGY, CENTURYLINK CITY OF JACKSONVILLE PUBLIC WORKS (WATER & SEWER), TIME WARNER CABLE.

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

RIGHT-OF-WAY MARKERS:

ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS.

WHEELCHAIR RAMPS:

WHEELCHAIR RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. THE CONSTRUCTION OF ALL WHEELCHAIR RAMPS SHALL BE IN ACCORDANCE WITH DETAILS IN PLANS.

2006 ROADWAY ENGLISH STANDARD DRAWINGS

EFF. 07-18-06
REV. 01-02-07

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch -N. C. Department of Transportation - Raleigh, N. C., Dated July 18, 2006 are applicable to this project and by reference hereby are considered a part of these plans:

STD. NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Super-elevation - Two Lane Pavement
DIVISION 4 - MAJOR STRUCTURES	
422.10	Reinforced Bridge Approach Fills
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
815.03	Pipe Underdrain and Blind Drain
840.00	Concrete Base Pad for Drainage Structures
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
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
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
848.05	Wheelchair Ramp - Curb Cut
852.01	Concrete Islands
852.06	Method for Placement of Drop Inlets in Concrete Islands
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
866.01	Chain Link Fence - 4', 5' and 6' High Fence
876.02	Guide for Rip Rap at Pipe Outlets

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	○ EIP
Property Corner	→
Property Monument	□ ECM
Parcel/Sequence Number	⑫③
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

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○
Well	⊙
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	○
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	_____
Proposed Right of Way Line with Iron Pin and Cap Marker	_____
Proposed Right of Way Line with Concrete or Granite Marker	_____
Existing Control of Access	○
Proposed Control of Access	○
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 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 Wheel Chair Ramp	WCR
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	_____

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	⊕
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	-U/L-
U/G Tank; Water, Gas, Oil	□
A/G Tank; Water, Gas, Oil	□
U/G Test Hole (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

6/2/09

SURVEY CONTROL SHEET B-4214

PROJECT REFERENCE NO.	SHEET NO.
B-4214	1-C
Location and Surveys	

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "NEW RIVER 2" WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 368,961.956(ft) EASTING: 2,470,670.170(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999914000 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "NEW RIVER 2" TO L-L STATION 10+00.00 IS S 71°22'23.9" W 1,731.1825 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

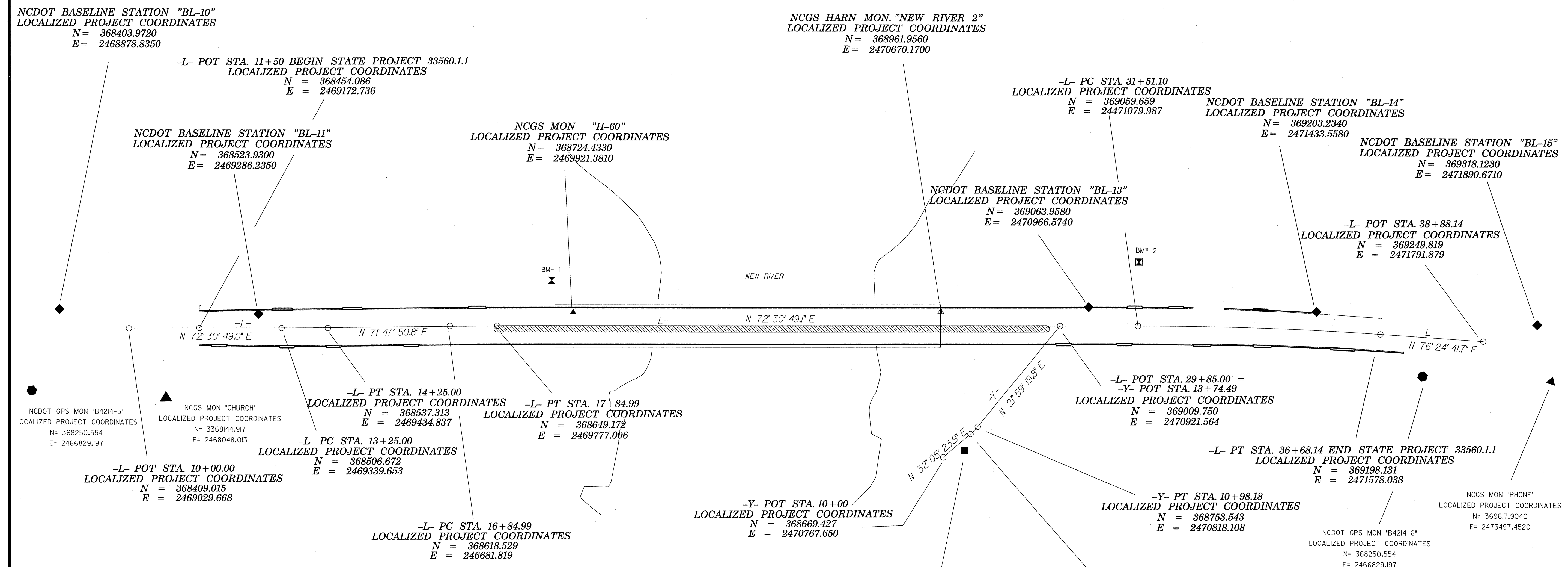
CONTROL DATA

BL-	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
10		BL-10	368403.9720	2468878.8350	10.29	OUTSIDE PROJECT LIMITS	
11		BL-11	368523.9300	2469286.2350	12.11	12+79.24	32.51 LT
12		NCGS 'H 60'	368724.4330	2469921.3810	16.99	19+45.31	28.40 LT
2	HARM MON.	"NEW RIVER 2"	368961.9560	2470670.1700	16.17	27+30.87	29.95 LT
13		BL-13	369063.9580	2470966.5740	13.36	30+44.22	38.18 LT
14		BL-14	369203.2340	2471433.5580	15.48	35+29.63	40.17 LT
15		BL-15	369318.1230	2471890.6710	16.02	OUTSIDE PROJECT LIMITS	

BY-	POINT	DESC.	NORTH	EAST	ELEVATION	Y STATION	OFFSET
13		BY-13	369063.9580	2470966.5740	13.36	OUTSIDE PROJECT LIMITS	
16		BY-16	368698.3560	2470811.7580	2.24	10+47.94	22.00 RT

BENCHMARK DATA

BM1	ELEVATION - 9.67	BM2	ELEVATION - 13.31
N 368775	E 2469862	N 369191	E 2471041
L STATION 19+04.95 LEFT		L STATION 31+54.137 LEFT	
SQ. CUT IN CONC		X CUT IN CONC SIDE WALK	



NOTES:

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[HTTP://WWW.NCDOT.ORG/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT](http://www.ncdot.org/preconstruct/highway/location/project)
 FILE NAME: b4214_ls_control_041206.txt

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT.
 IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
 PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
 NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTS NAD 8395
 BY THE NCDOT LOCATION AND SURVEYS UNIT.

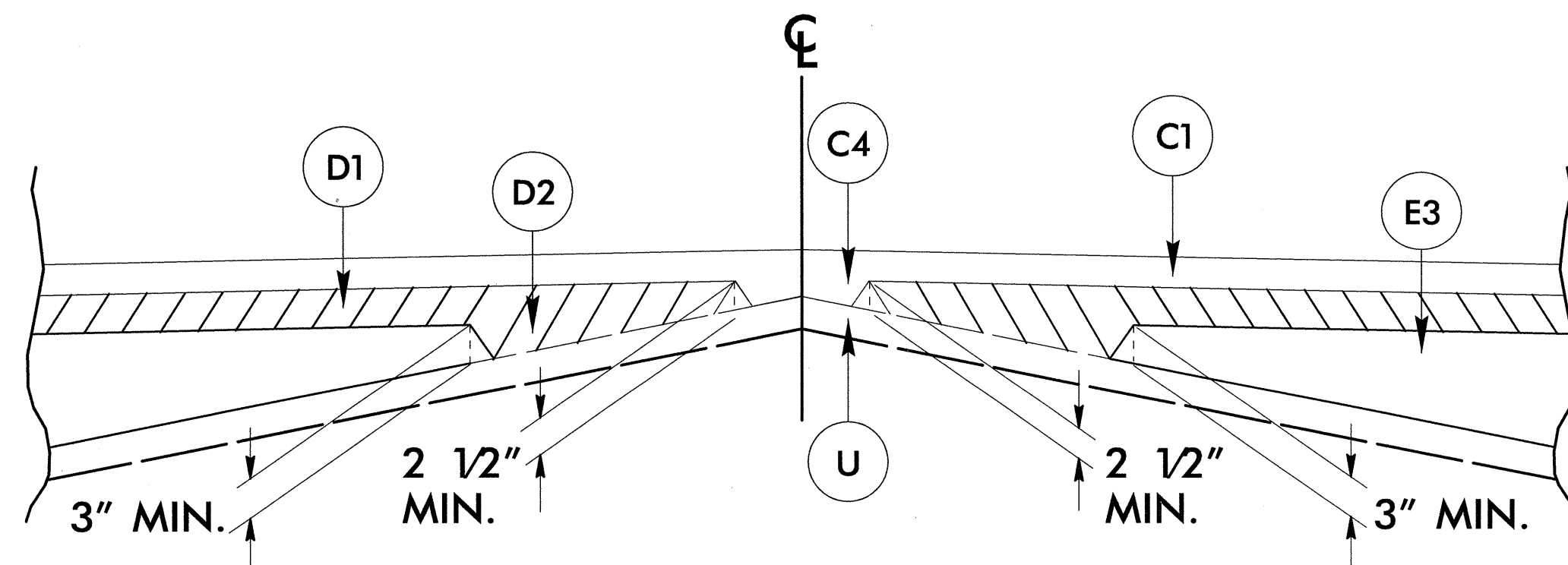
NOTE: DRAWING NOT TO SCALE

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PAVEMENT SCHEDULE
(FINAL PAVEMENT DESIGN)

C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C4	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
C5	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1½" IN DEPTH OR GREATER THAN 2" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 6½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 370.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E2	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, 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 5½" IN DEPTH.
R1	2'-6" CONCRETE CURB AND GUTTER.
R2	8" x 18" CONCRETE CURB.
S	4" CONCRETE SIDEWALK.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING (SEE WEDGING DETAIL)

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

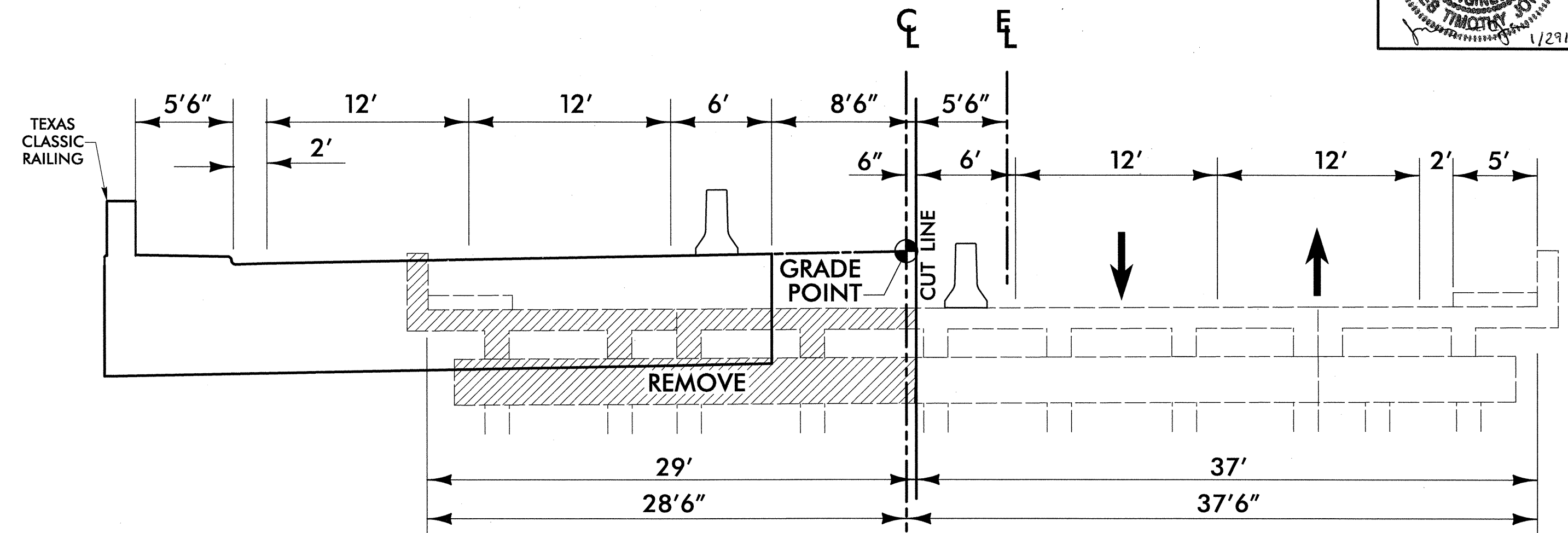


DETAIL SHOWING METHOD OF WEDGING

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 1

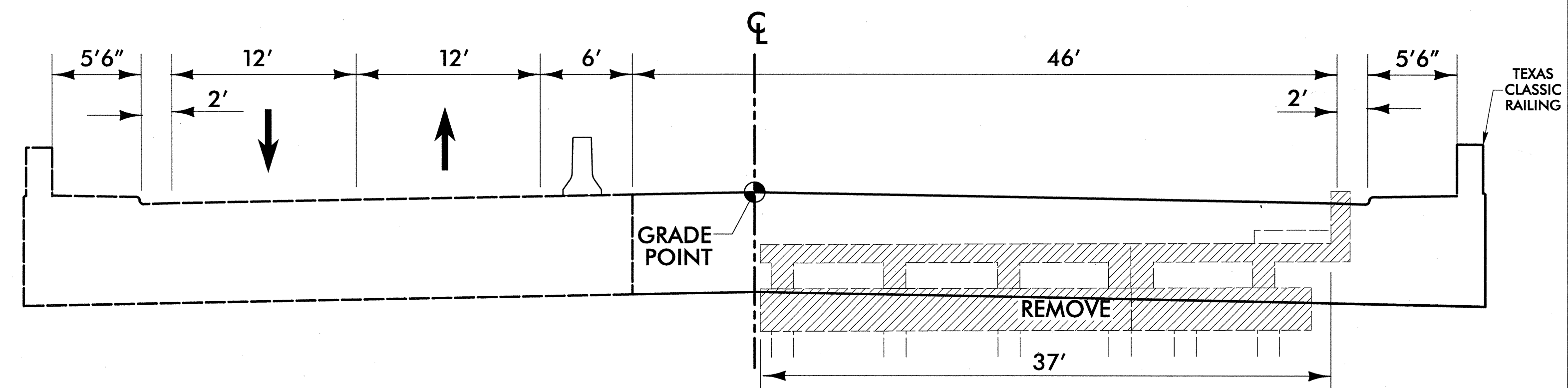


PROJECT REFERENCE NO. B-4214	SHEET NO. 2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER



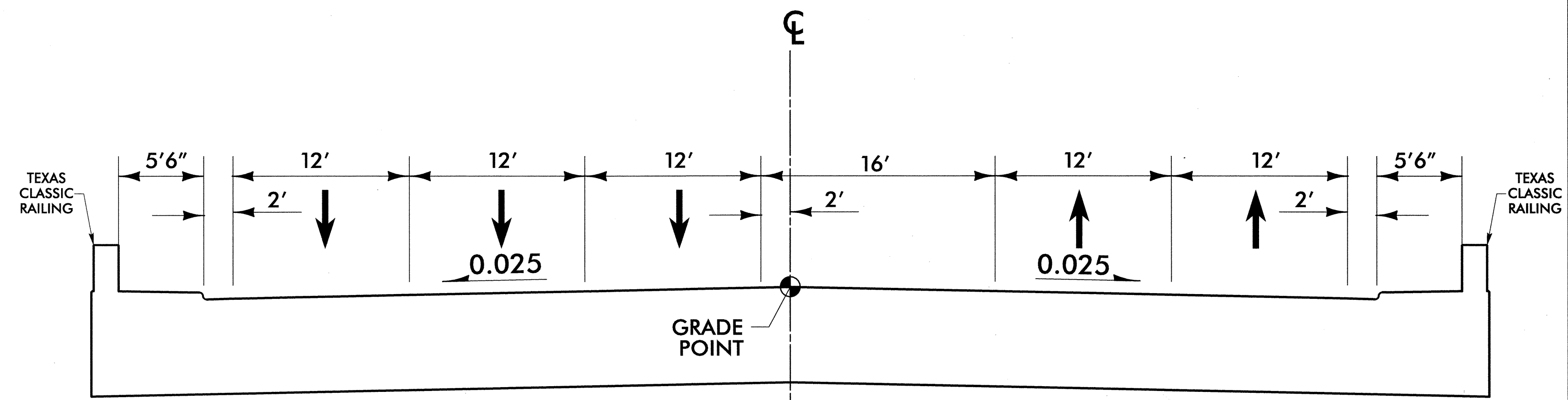
DETAIL FOR STAGE 1 CONSTRUCTION OF BRIDGE

-L- STA 18+98.91 TO STA 27+30.83



DETAIL FOR STAGE 2 CONSTRUCTION OF BRIDGE

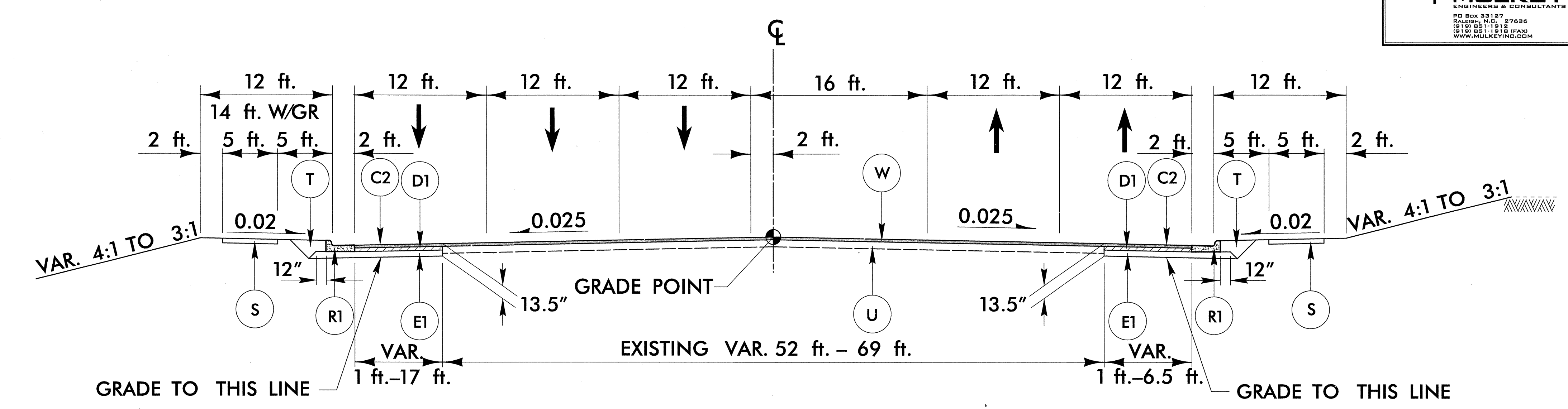
-L- STA 18+98.91 TO STA 27+30.83



DETAIL OF BRIDGE

-L- STA 18+98.91 TO STA 27+30.83

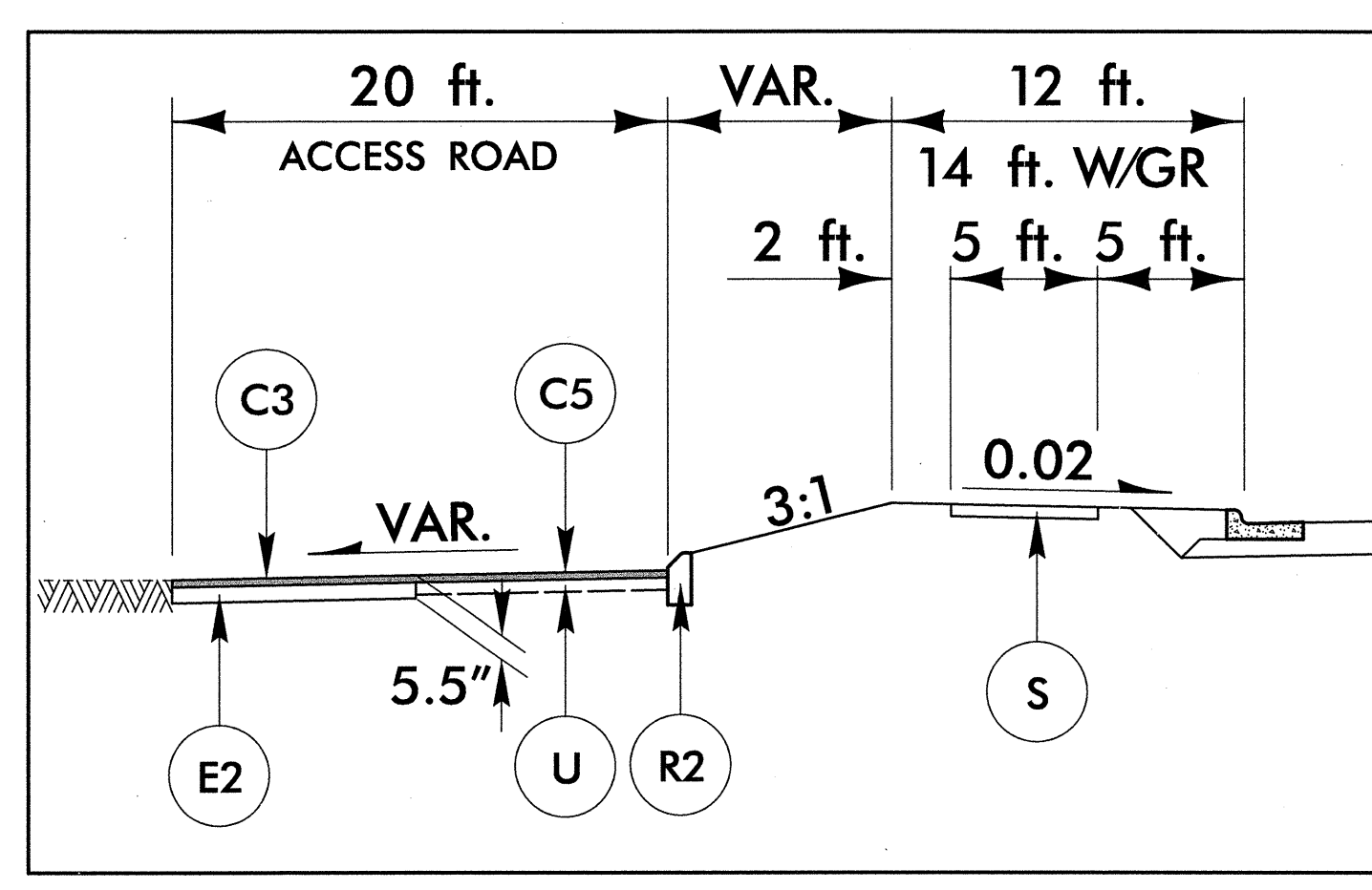
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TYPICAL SECTION NO. 1

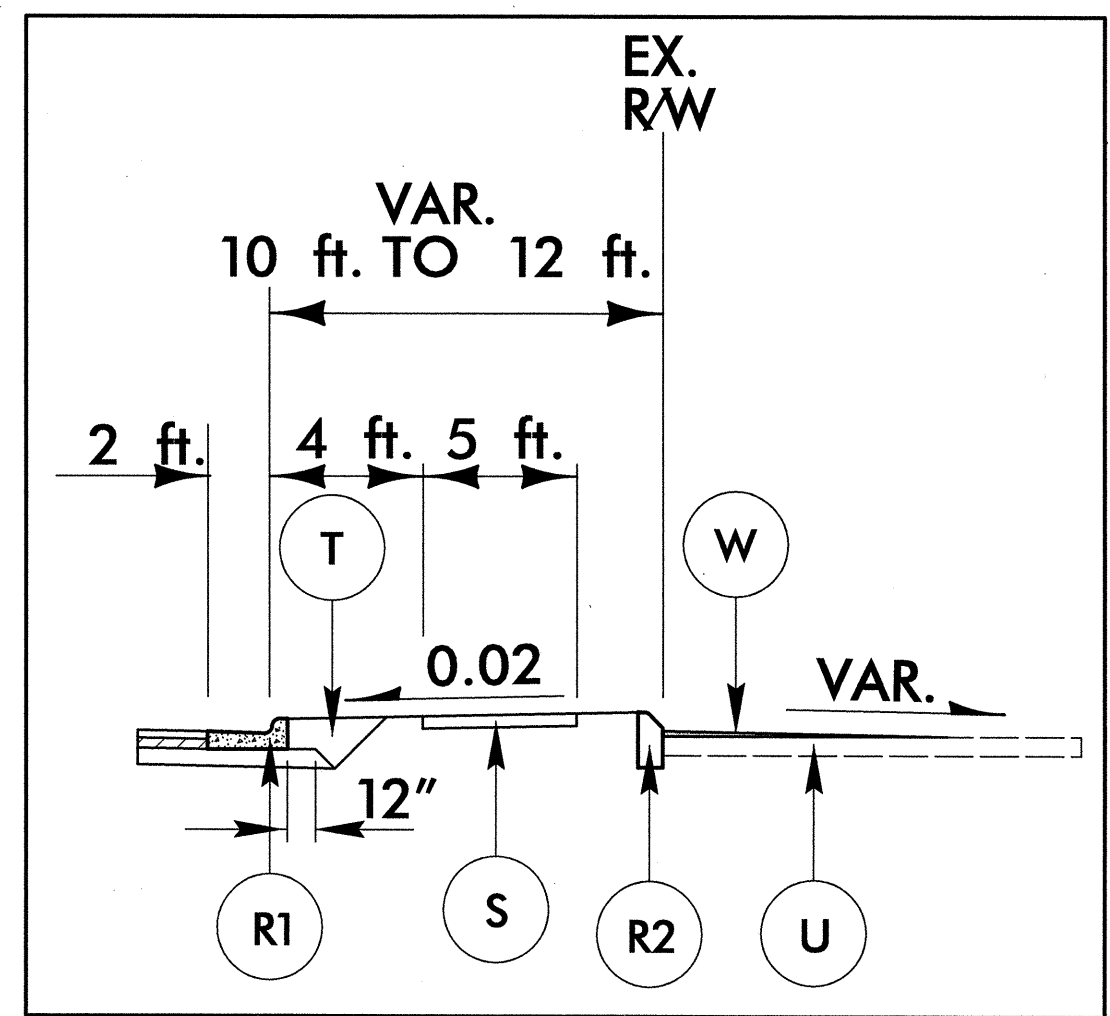
USE TYPICAL SECTION NO. 1
AT THE FOLLOWING LOCATIONS
-L- STA. 13+00.00 TO STA. 18+25.00
-L- STA. 28+25.00 TO STA. 32+68.14

TRANSITION FROM EXISTING TO TYPICAL NO. 1 FROM
-L- STA. 11+50.00 TO STA. 13+00.00
TRANSITION FROM TYPICAL NO. 1 TO EXISTING FROM
-L- STA. 32+68.14 TO STA. 37+25.00



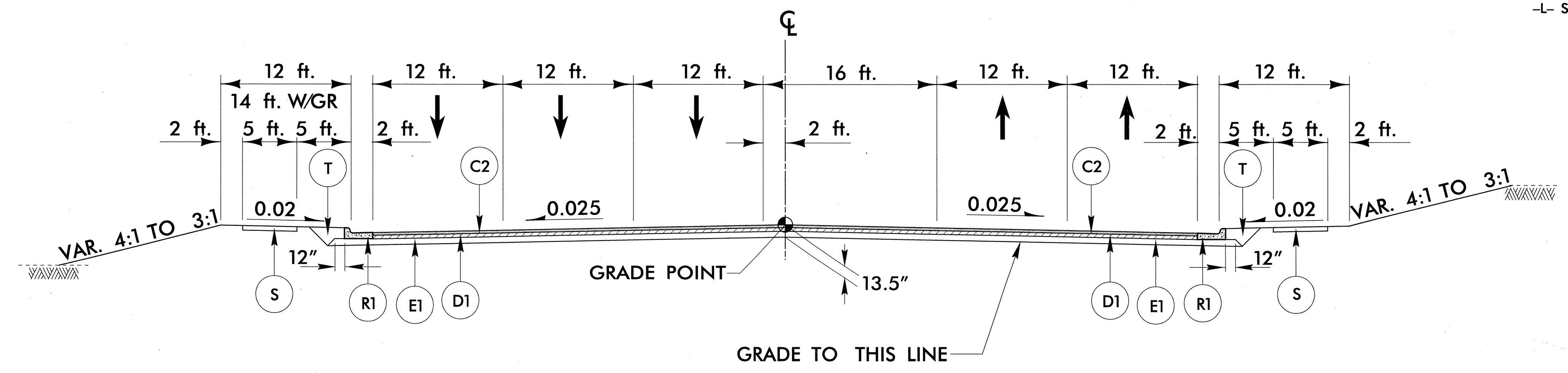
INSERT B

USE WITH TYPICAL SECTION NO. 1 FROM:
-L- STA. 14+64 TO STA. 16+85 LT



INSERT A

USE WITH TYPICAL SECTION NO. 1 FROM:
-L- STA. 11+50.00 TO STA. 15+60.00 RT

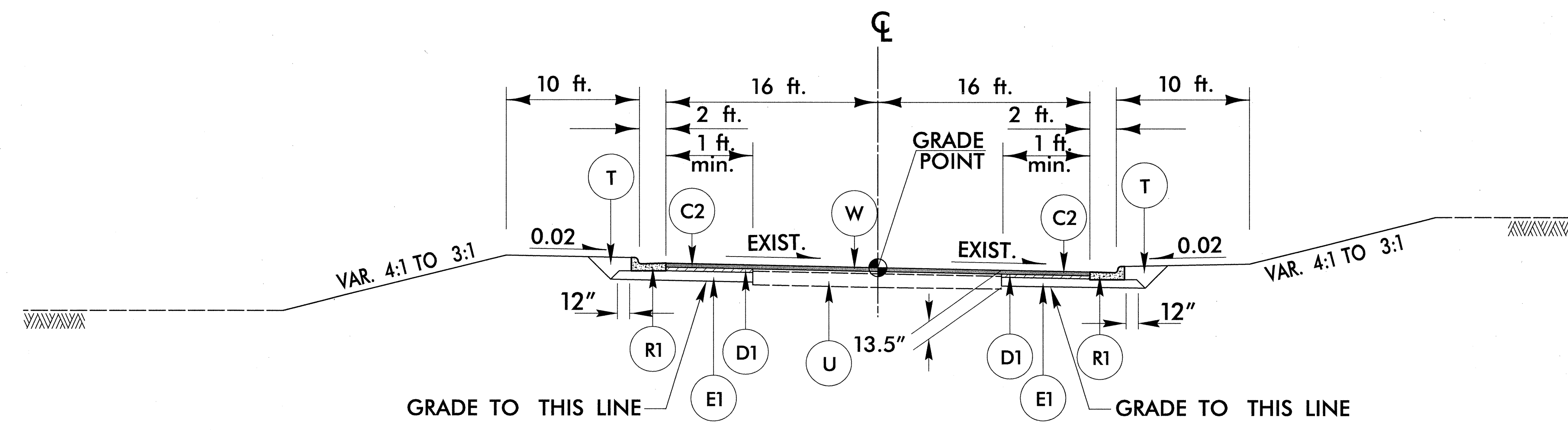


TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
AT THE FOLLOWING LOCATIONS

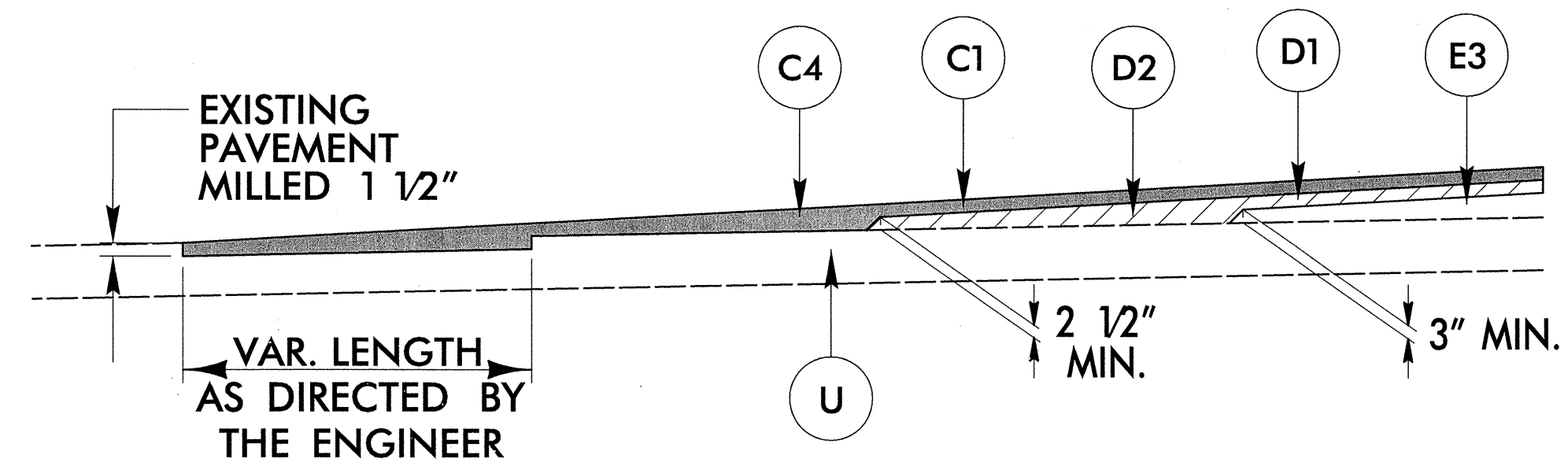
-L- STA. 18+25.00 TO STA. 18+98.91 (BEGIN BRIDGE)
-L- STA. 27+30.83 (END BRIDGE) TO STA. 28+25.00

PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C2	3" S9.5C
C3	1.5" SF9.5A
C5	VAR. SF9.5A
D1	4" I19.0C
E1	6 1/2" B25.0C
E2	4" B25.0B
R1	2' - 6" CONCRETE CURB & GUTTER
R2	8"x18" CONCRETE CURB
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING (SEE WEDGING DETAIL)



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3
AT THE FOLLOWING LOCATIONS
-Y- STA. 12+35.00 TO STA. 13+25.26

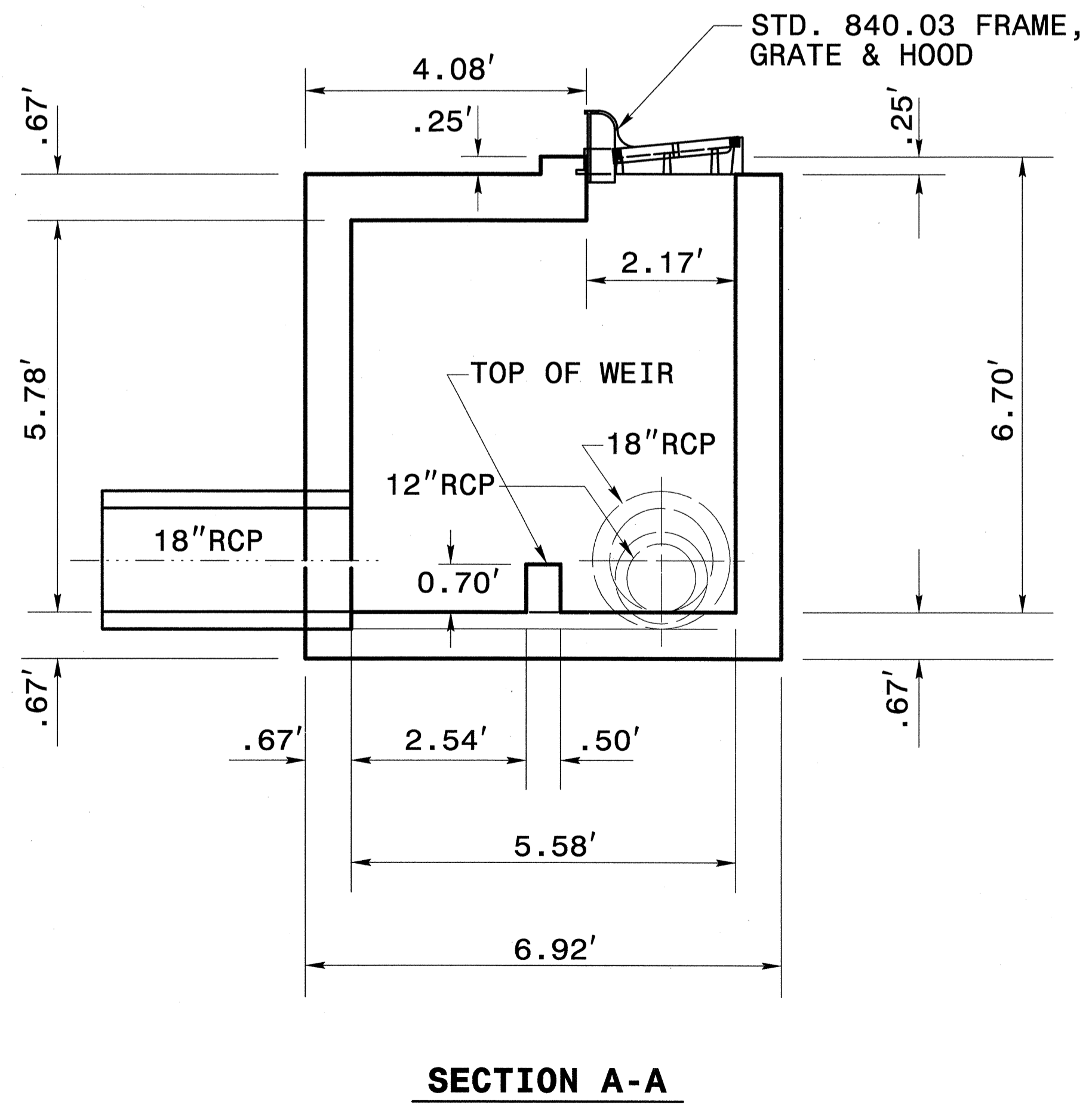
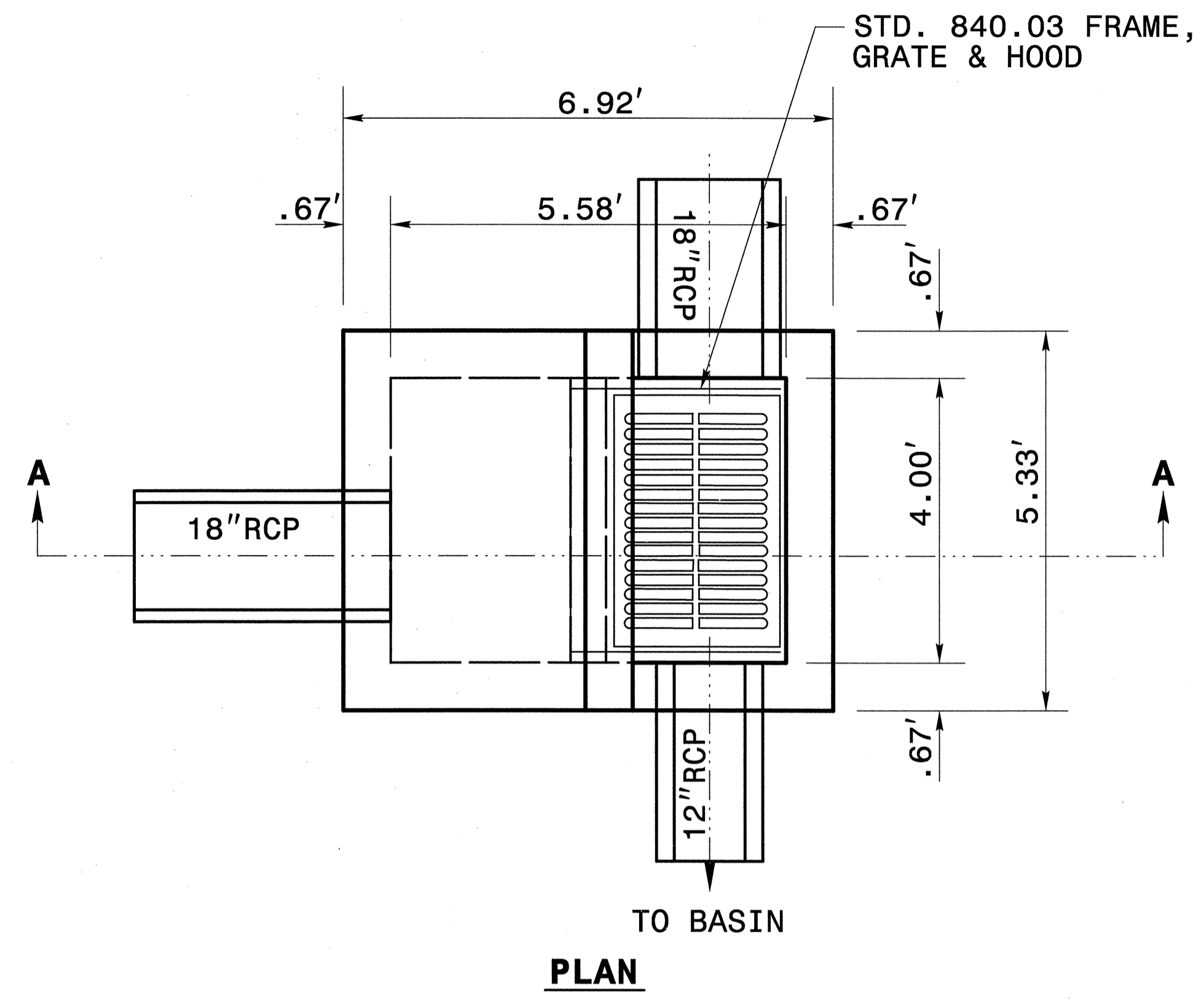


MILLING DETAIL FOR PROFILE CONNECTIONS

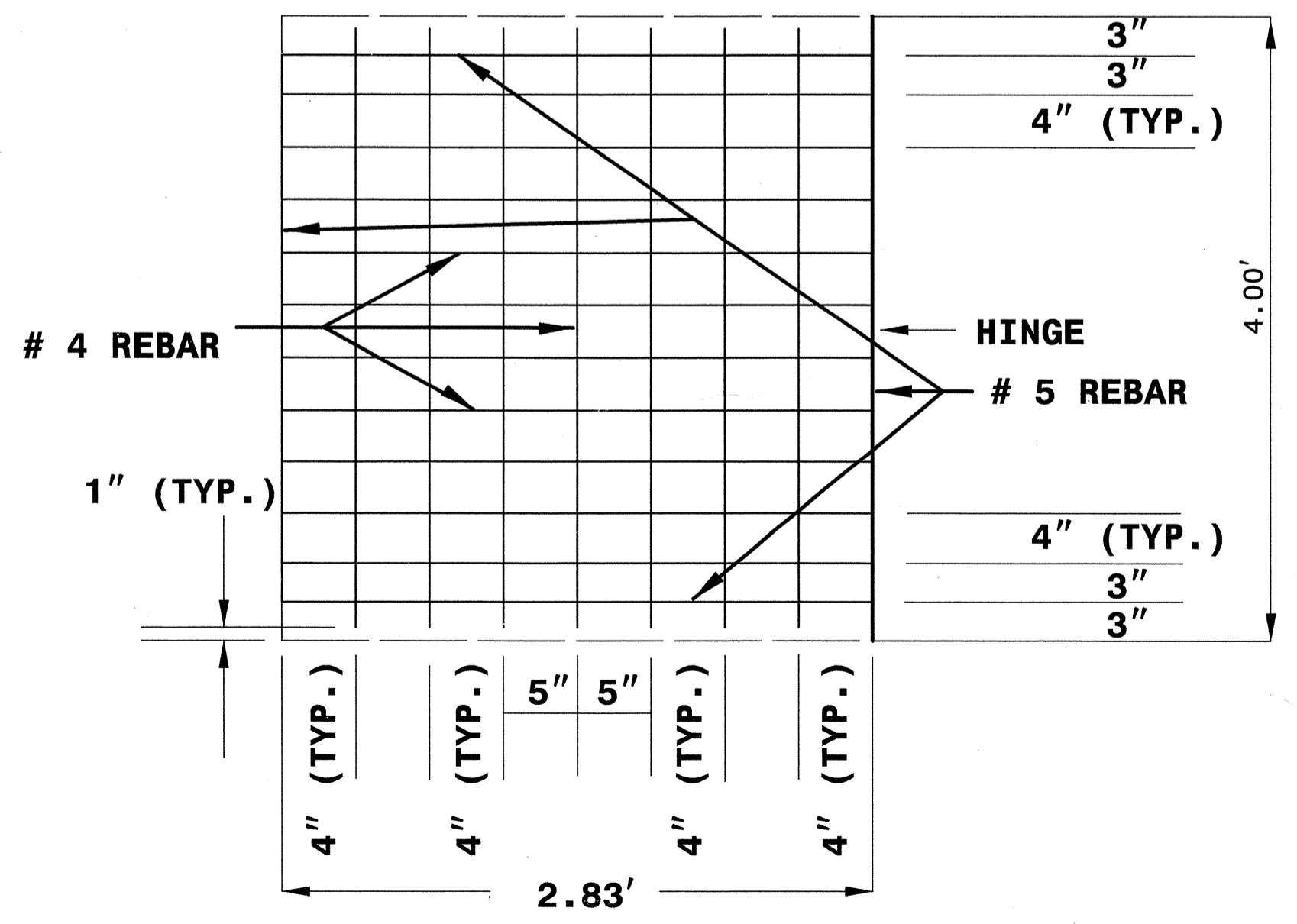
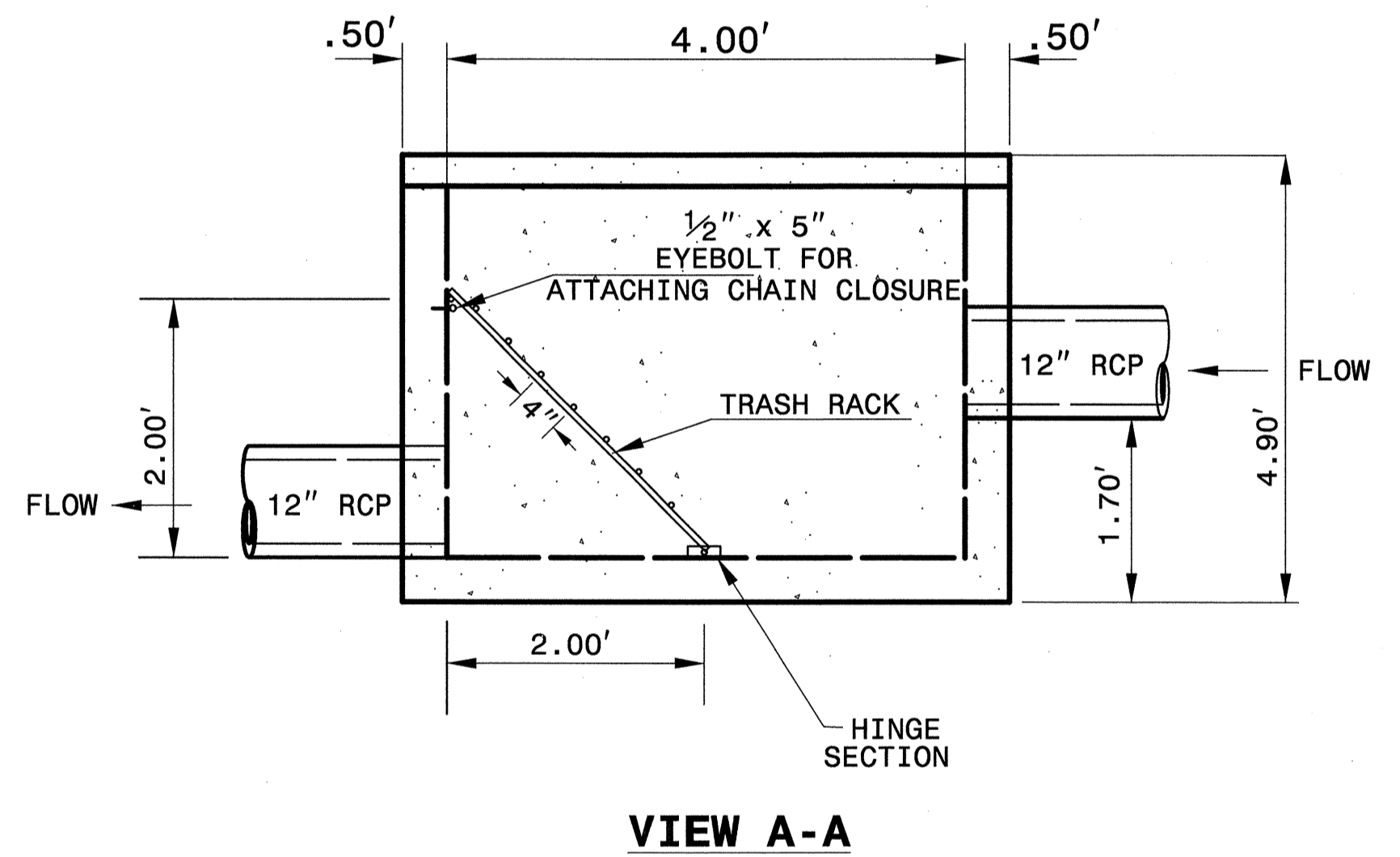
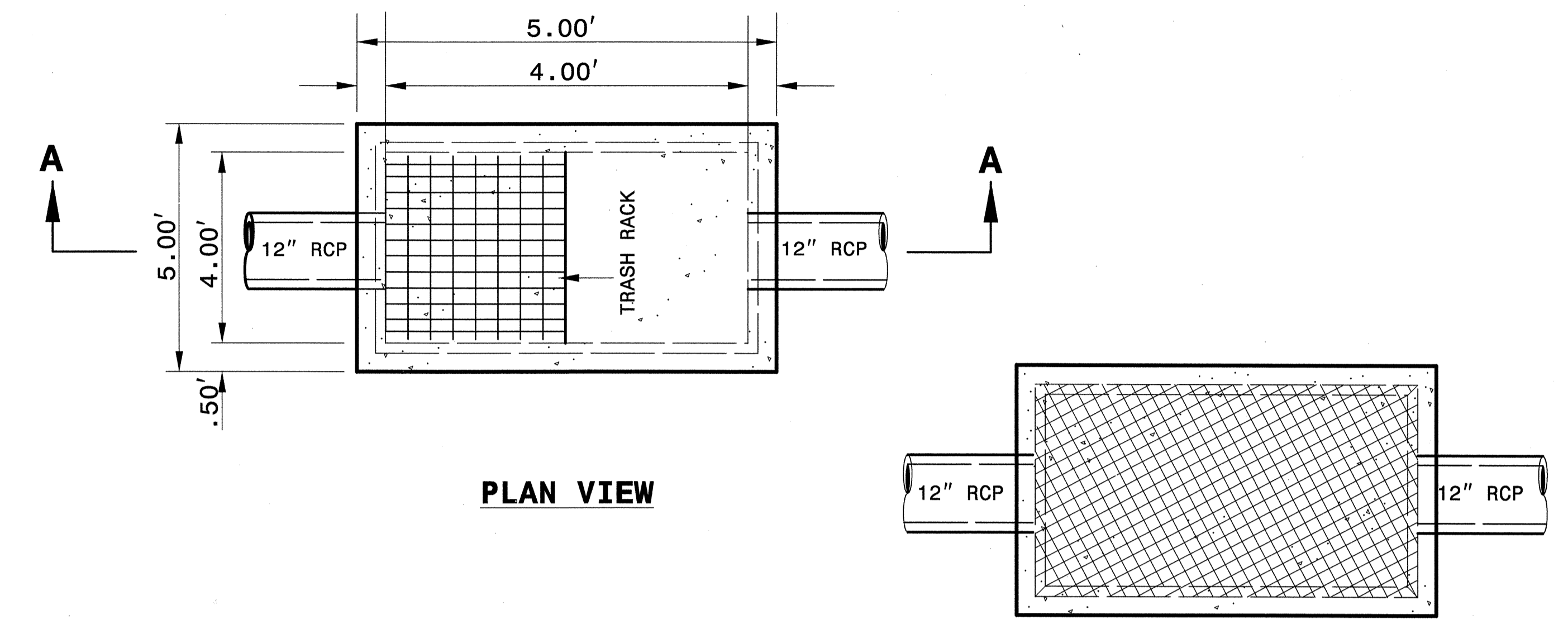
TYING PROPOSED PAVEMENTS TO EXISTING PAVEMENTS

PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	1 1/2" S9.5C
C2	3" S9.5C
C4	VAR. S9.5C
D1	4" I19.0C
D2	VAR. I19.0C
E1	6 1/2" B25.0C
E3	VAR. B25.0C
R1	2' - 6" CONCRETE CURB & GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING (SEE WEDGING DETAIL)

CATCH BASIN SPLITTER BOX

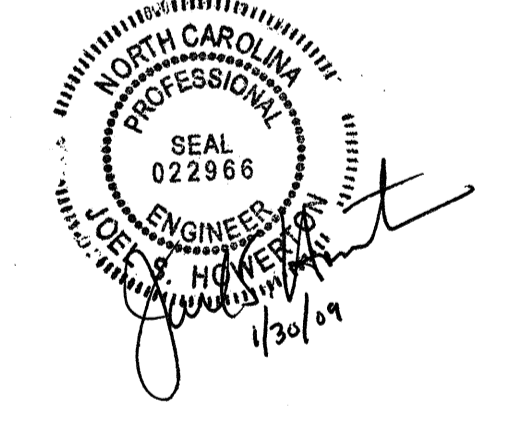


DI W/ INTERNAL TRASH RACK STRUCTURE



TRASH RACK DETAIL

TOP VIEW OF RETICULINE FRAME AND GRATE



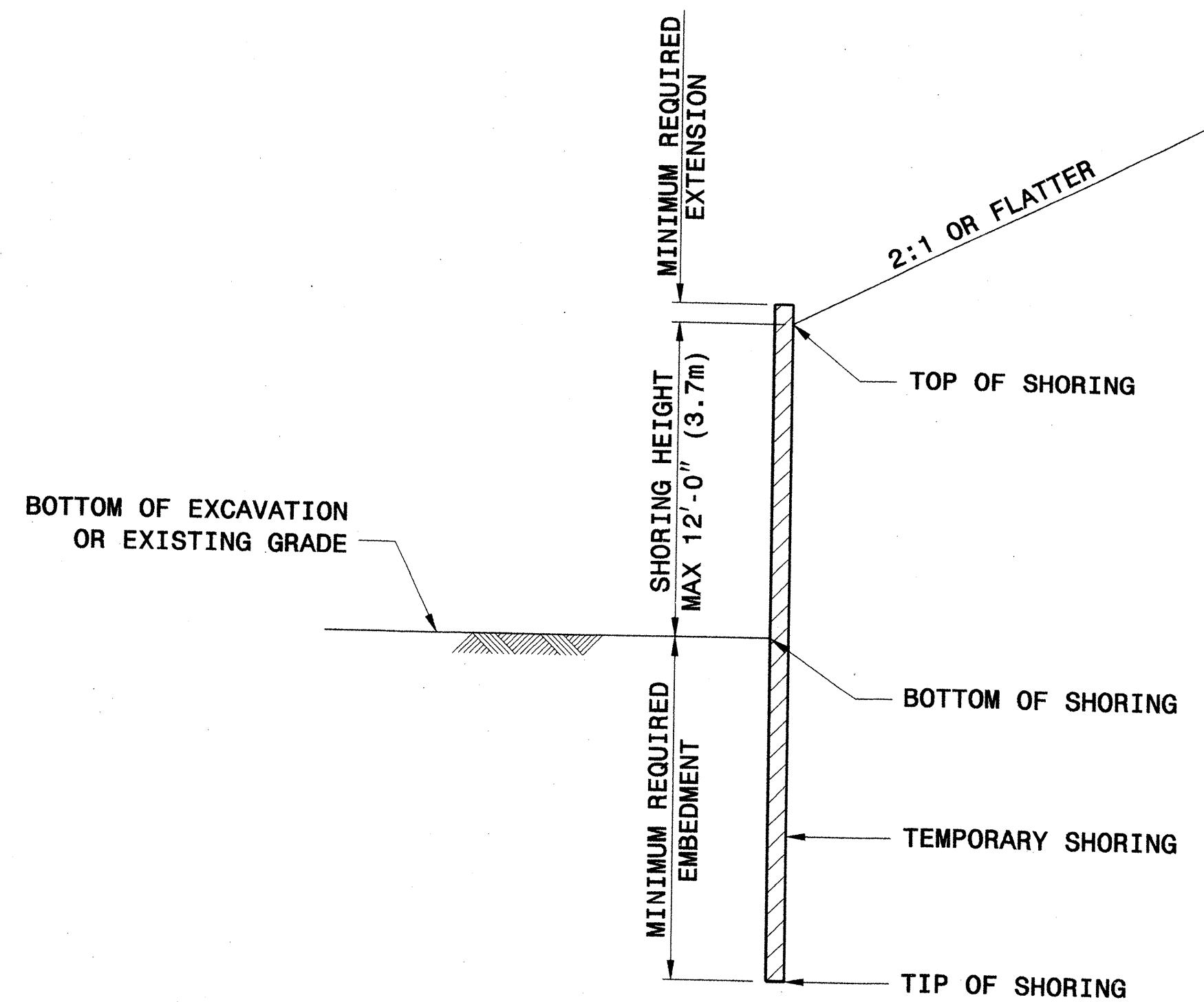
- TRASH RACK NOTES:**
1. ALL JOINTS SHALL BE FULLY WELDED AROUND JOINT WITH A MINIMUM OF 1/4" BEAD.
 2. IF BOLTS ARE CHEMICALLY ANCHORED, FOLLOW STD. DWG. 862.04 FOR ANCHORING PROCEDURE.
 3. TRASH RACK SHALL BE ATTACHED TO CONCRETE BOX BY HINGE SYSTEM TO BE APPROVED BY THE ENGINEER.
 4. RACK AND HARDWARE SHALL BE ALUMINUM OR GALVANIZED IN ACCORDANCE WITH ASTM 153.

**PROJECT SERVICES UNIT
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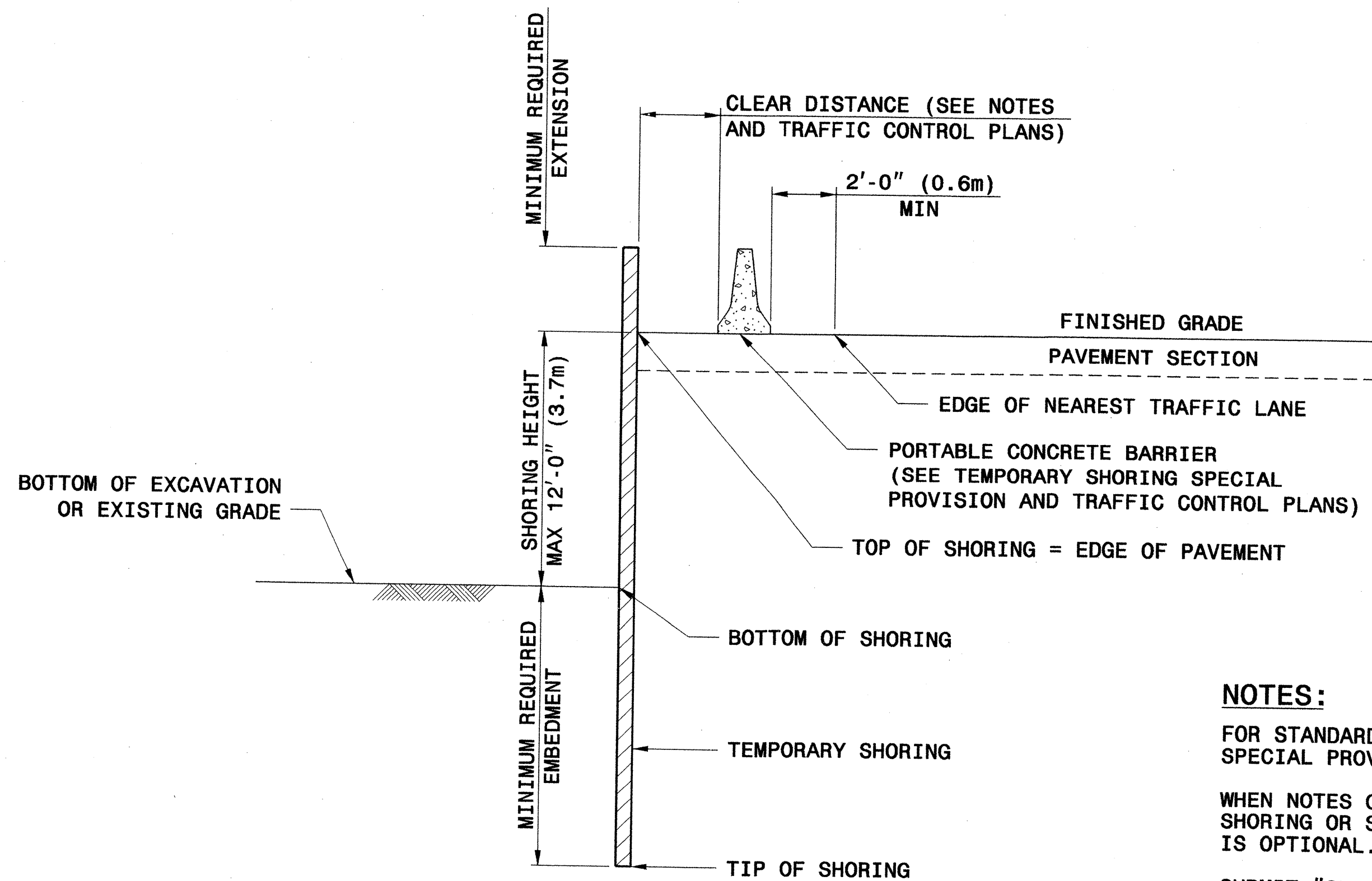
CATCH BASIN WITH WEIR

ORIGINAL BY: _____ DATE: _____
 MODIFIED BY: nbritt DATE: 09-11-08
 CHECKED BY: _____ DATE: _____
 FILE SPEC.: details\nbritt\english\hydro\splitterbox.dgn

5/14/99
12/11/2008
R:\Drainage\splitter2_box.dgn
1:22:41 PM



SLOPE CASE



SURCHARGE CASE

NOTES:

FOR STANDARD TEMPORARY SHORING, SEE TEMPORARY SHORING SPECIAL PROVISION.

WHEN NOTES ON PLANS DO NOT PROHIBIT STANDARD TEMPORARY SHORING OR STANDARD SHORING, STANDARD TEMPORARY SHORING IS OPTIONAL.

SUBMIT "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 14 DAYS BEFORE BEGINNING SHORING CONSTRUCTION. UP TO THREE LOCATIONS MAY BE INCLUDED ON EACH SELECTION FORM.

STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING CONDITIONS:

- 1) MAXIMUM SHORING HEIGHT IS 12'-0" (3.7m).
- 2) TRAFFIC SURCHARGE IS 240 PSF (11.5 KPA) MAXIMUM OR BACKSLOPE IS 2:1 (H:V) OR FLATTER.
- 3) BOTTOM OF EXCAVATION OR EXISTING GRADE IN FRONT OF SHORING IS 6:1 (H:V) SLOPE OR FLATTER.
- 4) H PILE SPACING IS 6'-0" (1.8m).
- 5) H PILE EMBEDMENT DEPTHS ARE FOR DRIVEN PILES.
- 6) TIMBER LAGGING IS A MINIMUM OF 3" (75mm) THICK.

STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
 TOTAL UNIT WEIGHT = 120 PCF (18.8 KN/M³)
 FRICTION ANGLE = 30 DEGREES
 COHESION = 0 PSF (0 KPA)
 GROUNDWATER IS ASSUMED TO BE BELOW BOTTOM OF SHORING.

DO NOT USE STANDARD TEMPORARY SHORING WHEN THE ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE OR GROUNDWATER IS ABOVE THE BOTTOM OF SHORING.

DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS PRESENT WITHIN THE EMBEDMENT DEPTH.

VERIFY GROUNDWATER ELEVATION BEFORE BEGINNING SHORING CONSTRUCTION.

IF THE CLEAR DISTANCE AVAILABLE IS LESS THAN THE MINIMUM REQUIRED IN ACCORDANCE WITH THE TRAFFIC CONTROL PLANS, SET THE BARRIER AGAINST THE TRAFFIC SIDE OF THE SHORING AND USE THE "SURCHARGE CASE WITH TRAFFIC IMPACT".

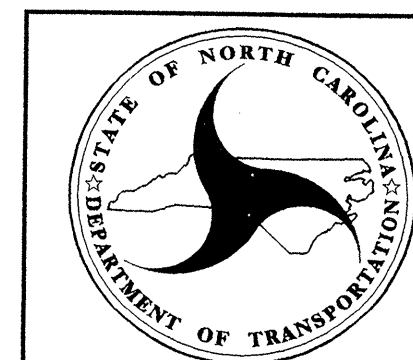
AT THE CONTRACTOR'S OPTION, H PILE EMBEDMENT DEPTHS FOR PILES SET IN DRILLED HOLES MAY BE REDUCED BY 25%. FOR PILE EXCAVATION, SEE TEMPORARY SHORING SPECIAL PROVISION.

CONTROL DRAINAGE DURING CONSTRUCTION IN THE VICINITY OF THE SHORING. COLLECT AND DIRECT RUNOFF AWAY FROM SHORING.

CONTACT THE ENGINEER IF MINIMUM REQUIRED EMBEDMENT IS NOT ACHIEVED.

GROUNDWATER CONDITION	SHORING HEIGHT FT (m)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT						SURCHARGE CASE WITH TRAFFIC IMPACT					
		SHEET PILES			H PILES WITH TIMBER LAGGING			SHEET PILES			H PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT FT (m)	MINIMUM REQUIRED SECTION MODULUS IN ³ /FT (cm ³ /m)	MINIMUM REQUIRED EMBEDMENT FT (m)	HP 10x42 (HP 250x62)	HP 12x53 (HP 310x79)	HP 14x73 (HP 360x108)	MINIMUM REQUIRED EMBEDMENT FT (m)	MINIMUM REQUIRED SECTION MODULUS IN ³ /FT (cm ³ /m)	MINIMUM REQUIRED EMBEDMENT FT (m)	HP 10x42 (HP 250x62)	HP 12x53 (HP 310x79)	HP 14x73 (HP 360x108)
GROUNDWATER ELEVATION BELOW TIP OF SHORING	< 6 (1.8)	7.5 (2.3)	3.0 (161)	8.0 (2.4)	8.0 (2.4)	8.0 (2.4)	11.0 (3.4)	10.0 (538)	9.5 (2.9)	9.5 (2.9)	9.5 (2.9)		
	7 (2.1)	8.5 (2.6)	4.5 (242)	9.5 (2.9)	9.5 (2.9)	9.5 (2.9)	12.0 (3.7)	12.0 (645)	10.5 (3.2)	10.5 (3.2)	10.5 (3.2)		
	8 (2.4)	10.0 (3.0)	6.5 (349)	10.5 (3.2)	10.5 (3.2)	10.5 (3.2)	12.5 (3.8)	14.0 (753)	11.5 (3.5)	11.5 (3.5)	11.5 (3.5)		
	9 (2.7)	11.0 (3.4)	9.5 (511)	--	12.0 (3.7)	12.0 (3.7)	13.5 (4.1)	16.5 (887)	--	12.5 (3.8)	12.5 (3.8)		
	10 (3.0)	12.5 (3.8)	13.0 (699)	--	--	13.5 (4.1)	14.0 (4.3)	19.5 (1048)	--	13.5 (4.1)	13.5 (4.1)		
	11 (3.4)	13.5 (4.1)	17.0 (914)	--	--	14.5 (4.4)	15.0 (4.6)	22.5 (1210)	--	--	14.5 (4.4)		
	12 (3.7)	15.0 (4.6)	21.5 (1156)	--	--	16.0 (4.9)	16.0 (4.9)	25.5 (1371)	--	--	15.5 (4.7)		
GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND TIP OF SHORING	< 6 (1.8)	11.5 (3.5)	4.5 (242)	11.5 (3.5)	11.5 (3.5)	11.5 (3.5)	16.0 (4.9)	12.0 (645)	13.0 (4.0)	13.0 (4.0)	13.0 (4.0)		
	7 (2.1)	13.0 (4.0)	7.0 (376)	13.0 (4.0)	13.0 (4.0)	13.0 (4.0)	17.0 (5.2)	14.5 (780)	14.5 (4.4)	14.5 (4.4)	14.5 (4.4)		
	8 (2.4)	15.0 (4.6)	10.0 (538)	--	15.0 (4.6)	15.0 (4.6)	18.0 (5.5)	17.0 (914)	--	15.5 (4.7)	15.5 (4.7)		
	9 (2.7)	17.0 (5.2)	14.0 (753)	--	17.0 (5.2)	17.0 (5.2)	19.0 (5.8)	20.0 (1075)	--	17.0 (5.2)	17.0 (5.2)		
	10 (3.0)	18.5 (5.6)	19.5 (1048)	--	--	18.5 (5.6)	20.0 (6.1)	23.5 (1263)	--	--	18.5 (5.6)		
	11 (3.4)	20.5 (6.3)	26.0 (1398)	--	--	--	21.0 (6.4)	28.0 (1505)	--	--	20.0 (6.1)		
	12 (3.7)	22.5 (6.9)	33.0 (1774)	--	--	--	22.0 (6.7)	33.0 (1774)	--	--	21.5 (6.6)		

NOTE: MINIMUM REQUIRED EXTENSION IS 6" (150mm) FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" (800 mm) FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".

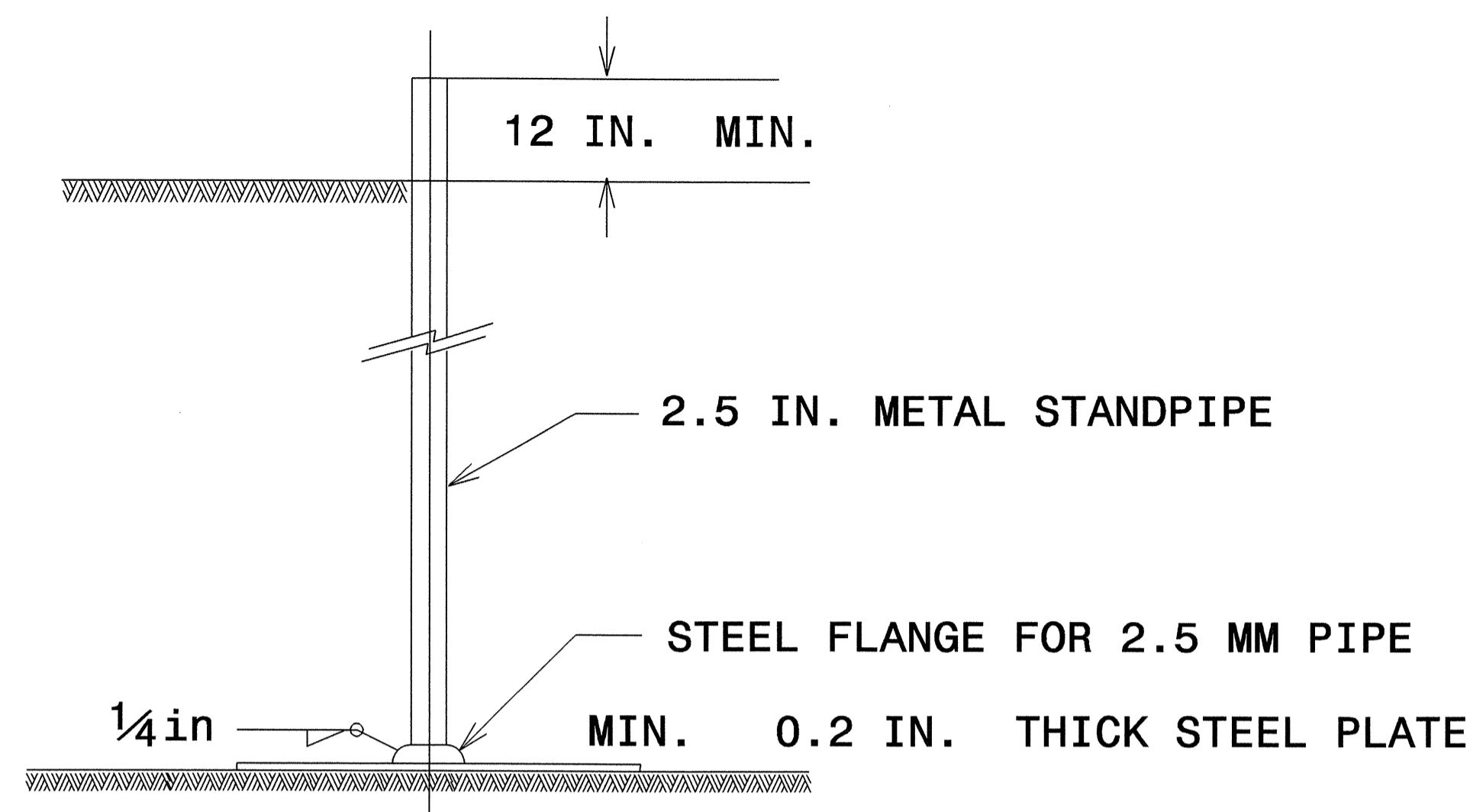


GEOTECHNICAL ENGINEERING UNIT
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

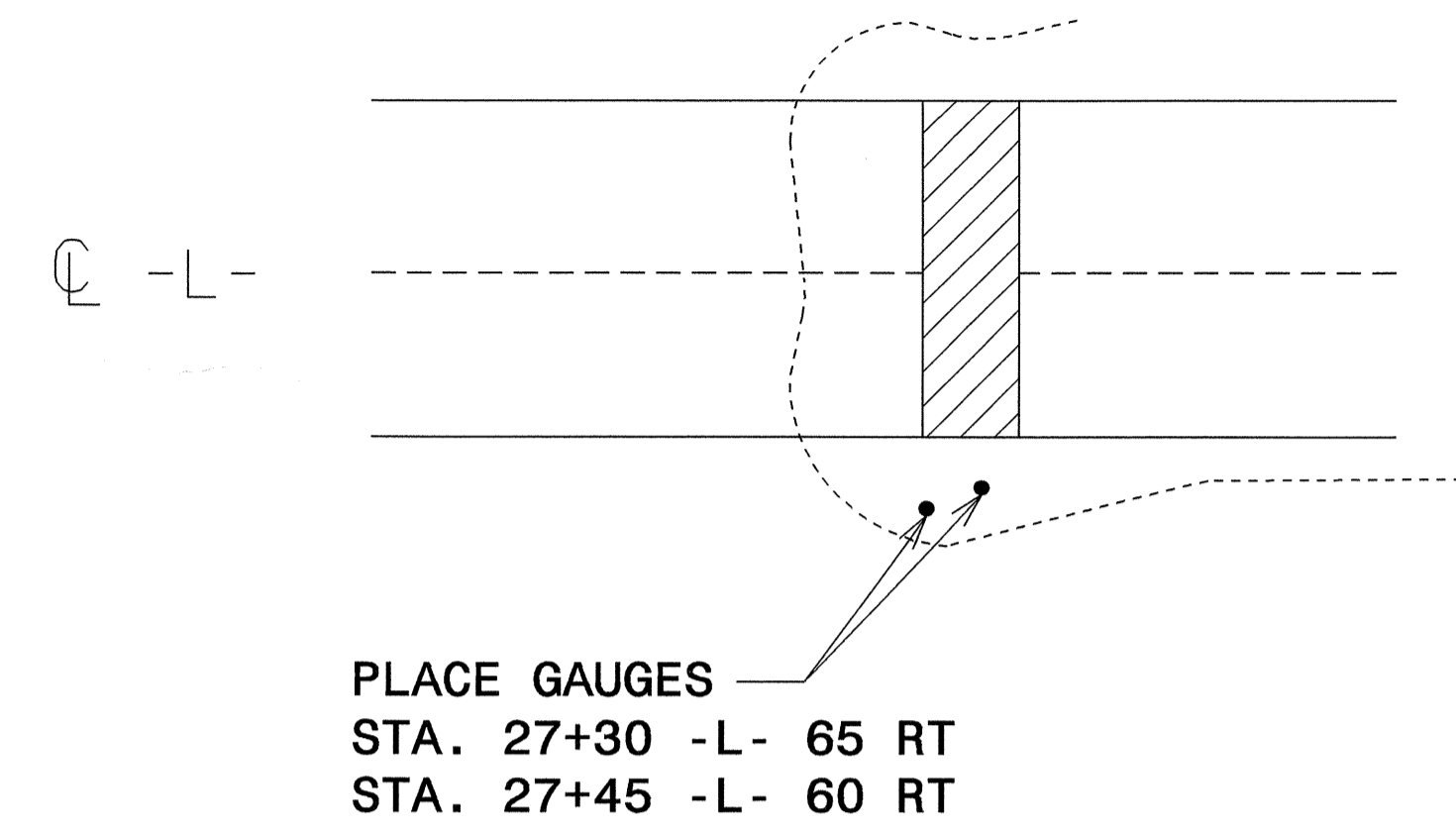
STANDARD DRAWING NO.1801.01

STANDARD TEMPORARY SHORING

PROJ. REFERENCE NO.	B-4214	SHEET NO.	2-E
STATE PROJ. NO.	33560.1.1	F.A. PROJ. NO.	
		DESCRIPTION	



SETTLEMENT GAUGE DETAIL

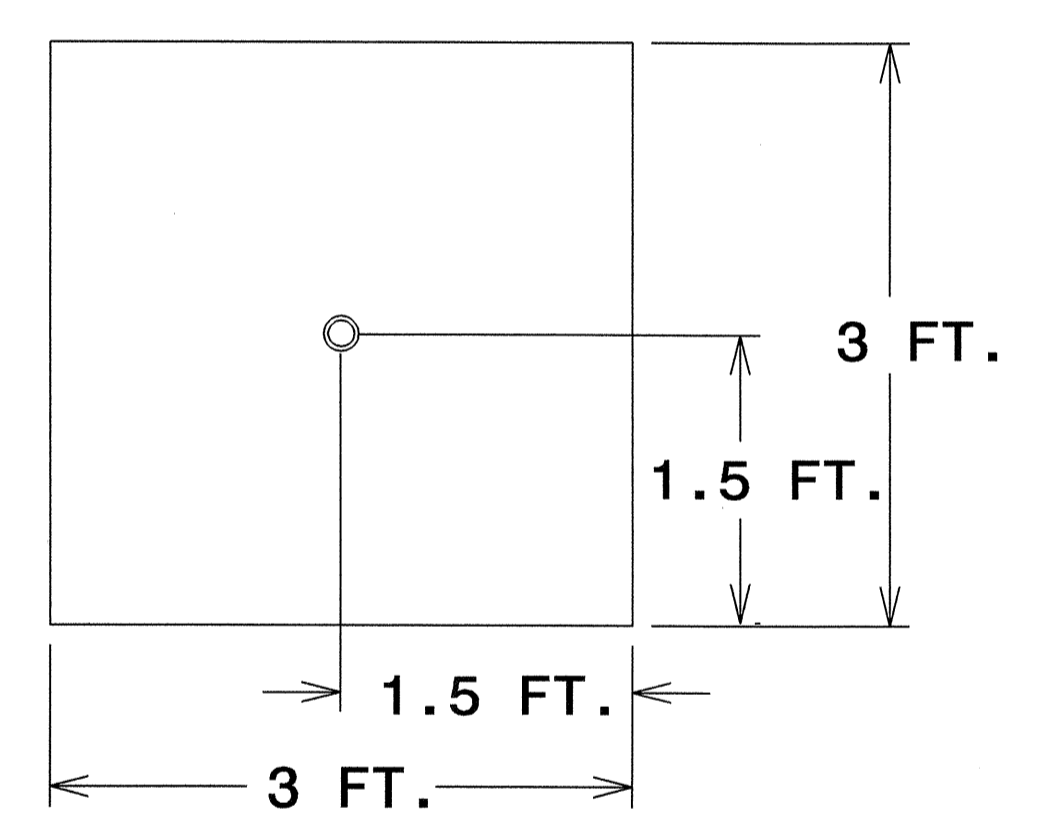


PLAN VIEW

N.T.S.

NOTES

- DO NOT PLACE FILL IN THE VICINITY OF THE SETTLEMENT GAUGE UNTIL THE GAUGE IS INSTALLED.
- AT THE TIME OF GAUGE INSTALLATION, DETERMINE THE EMBANKMENT ELEVATION AND THE INITIAL ELEVATION OF THE SETTLEMENT GAUGE PLATE (AT TOP OF PLATE). ALLOW THE RESIDENT ENGINEER TO DETERMINE AND RECORD SETTLEMENT GAUGE ELEVATIONS WEEKLY. WHEN ADDING NEW SECTIONS OF PIPE, RECORD ELEVATIONS AT BOTH THE TOP OF EXISTING PIPE AND THE TOP OF THE NEW PIPE. FORWARD RESULTS OF SETTLEMENT GAUGE READINGS TO THE EASTERN REGIONAL OPERATIONS ENGINEER (CURRENTLY CHRIS KREIDER), WITHIN THREE DAYS.



STEEL BASE DETAIL

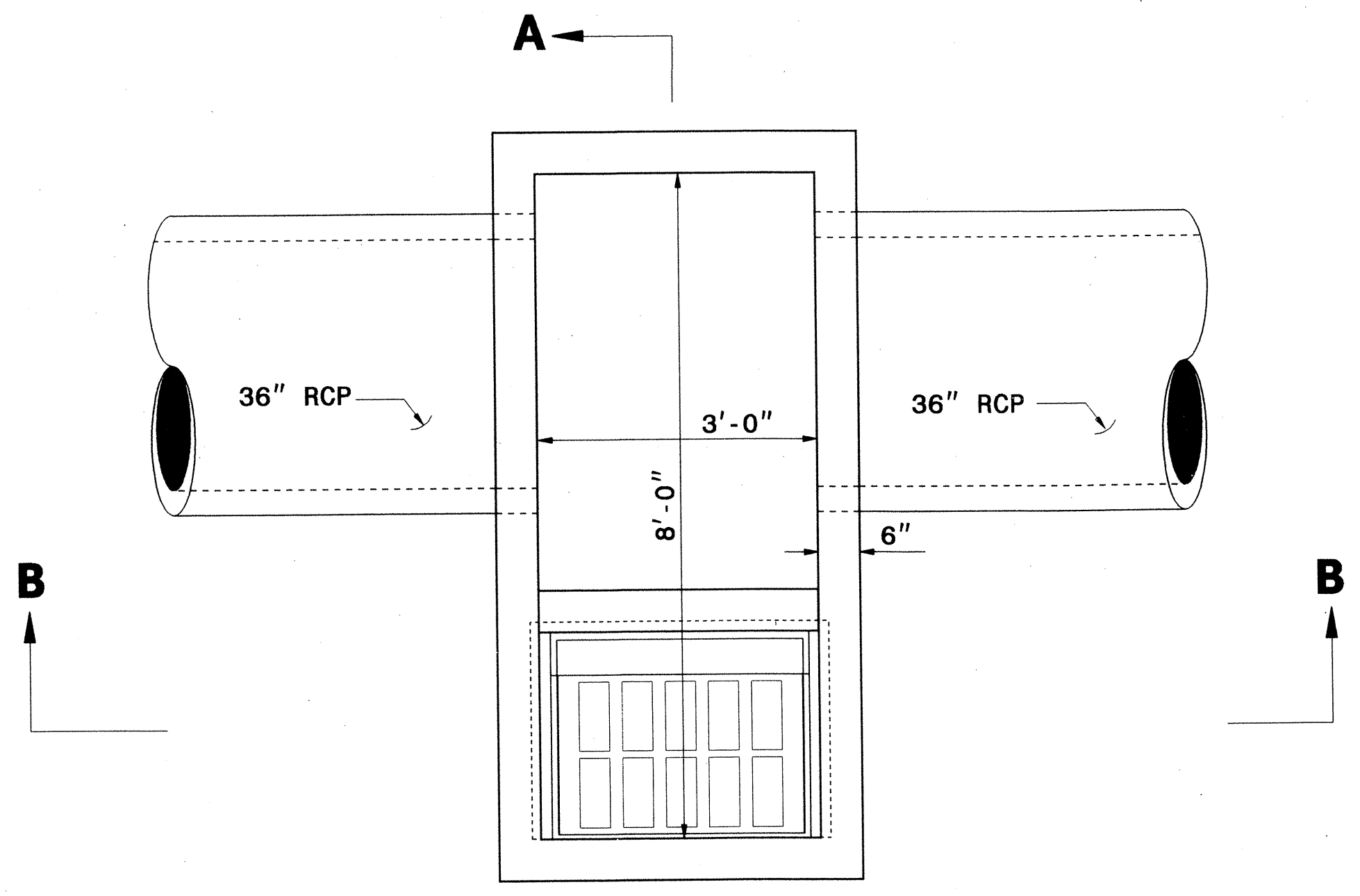
QUANTITIES	
EMBANKMENT SETTLEMENT GAUGES...	2 EACH

PROJECT 33560.1.1 (B-4214)
 ONSLOW COUNTY
 STATION AS SHOWN

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

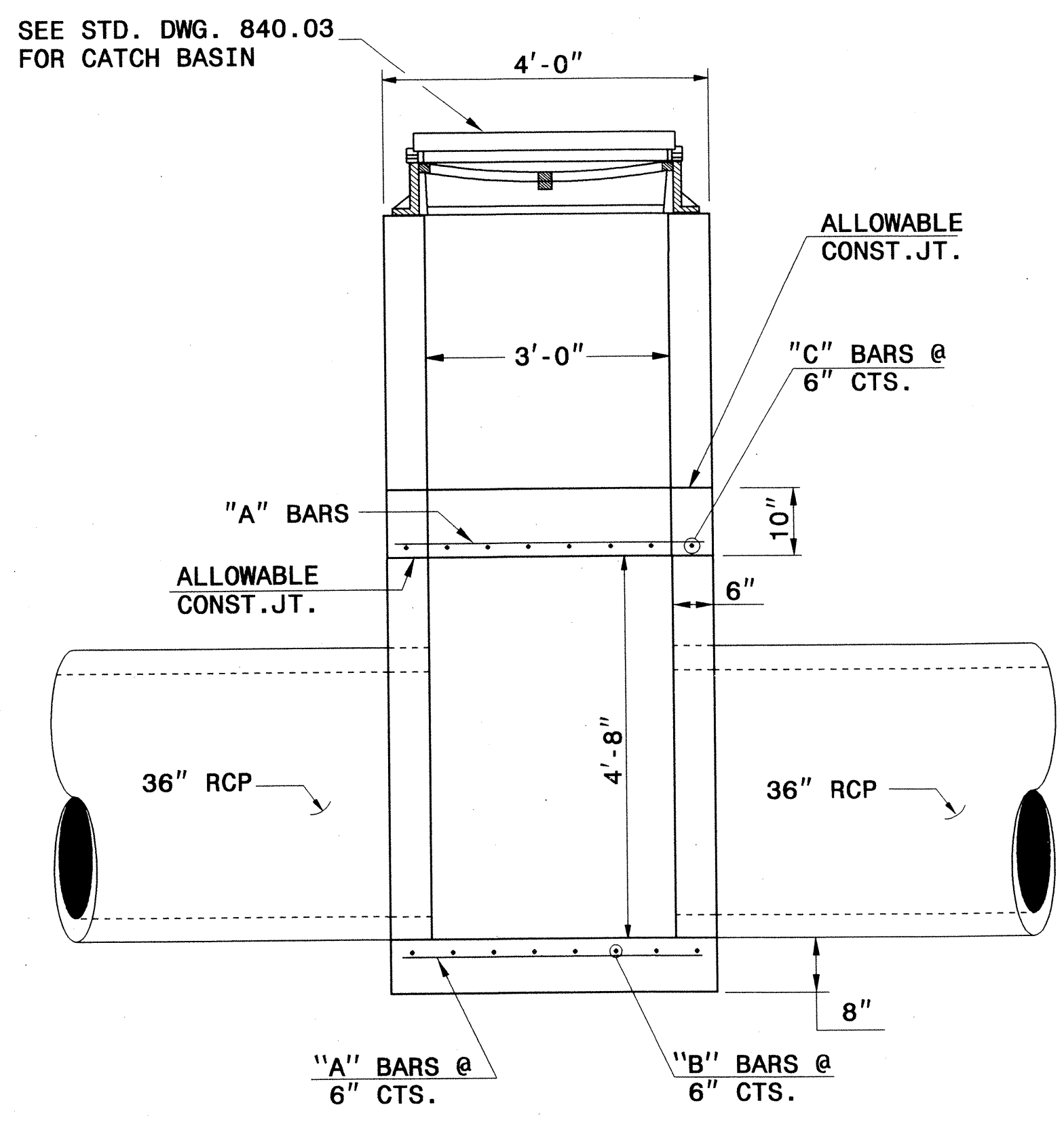
**EMBANKMENT
 MONITORING**

DRAWN BY RSW DATE 1 / 09
 CHECKED BY CSC DATE 1 / 09

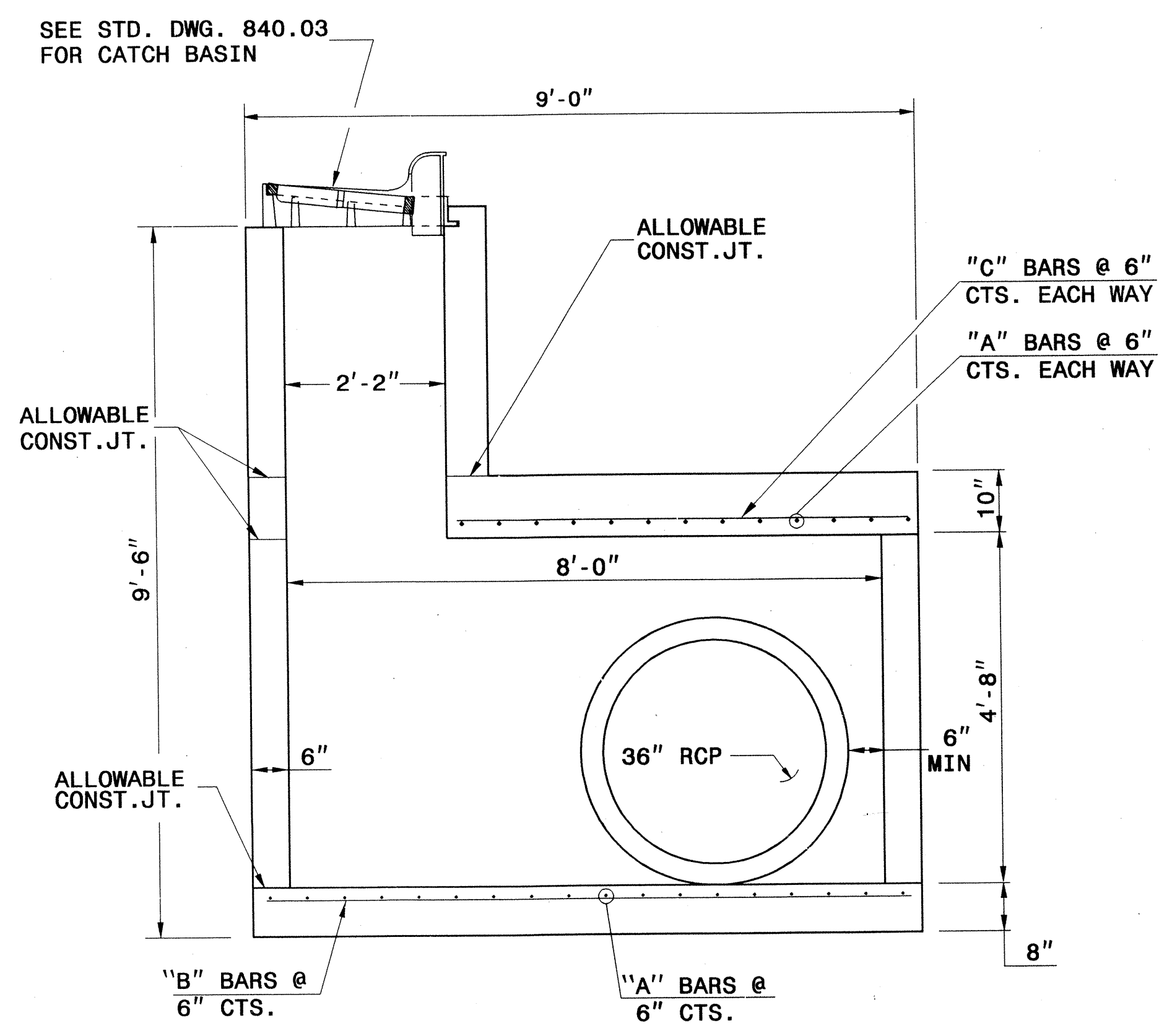


PLAN

- GENERAL NOTES:
1. USE CLASS "B" CONCRETE THROUGHOUT.
 2. CONSTRUCT CONCRETE BOX IN ACCORDANCE WITH SECTION 825 OF THE STANDARD SPECIFICATIONS.
 3. USE FORMS FOR CONSTRUCT THE BOTTOM SLAB.
 4. ADJUST LENGTH OF STEEL BARS AS NEEDED TO COMPENSATE FOR PIPES AND FRAME AND GRATE OPENINGS.
 5. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 400.
 6. CUT OR BEND STEEL BARS AS NEEDED TO PROVIDE 2" CLEARANCE.
 7. LOCATE FRAME AND GRATE AS FIELD CONDITIONS DICTATE AND AS DIRECTED BY THE ENGINEER.



SECTION B-B

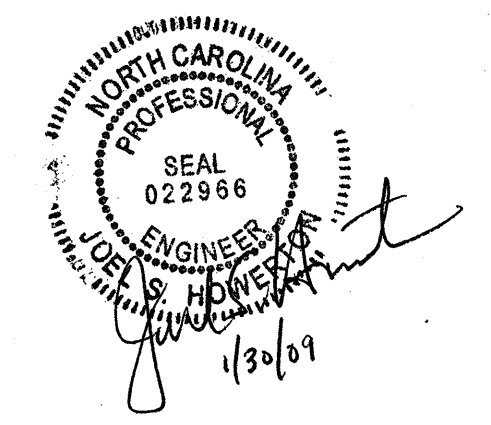


SECTION A-A

BILL OF MATERIALS

BAR	QTY	SIZE	LENGTH	WEIGHT
A	29	#5	3'-8"	111
B	8	#5	8'-8"	72
C	8	#5	5'-6"	46
TOTAL REINF. STEEL (lbs.)				230
TOTAL CONC. CU. YDS.				4.6
DEDUCTIONS FOR ONE PIPE				
36" RC PIPE				0.28

NO DEDUCTIONS HAVE BEEN MADE TO ACCOMMODATE PIPES OR CATCH BASIN OPENING.



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DETAIL OF SPECIAL CATCH BASIN

ORIGINAL BY: T.S. SPELL DATE: MAY 22, 2008
MODIFIED BY: W.A. KEMPf DATE: AUG 08, 2008
CHECKED BY: J. S. Kempf DATE: 1/19/09
FILE SPEC.: s:\details\k Kempf/english\cb36rcpoffset.dgn

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

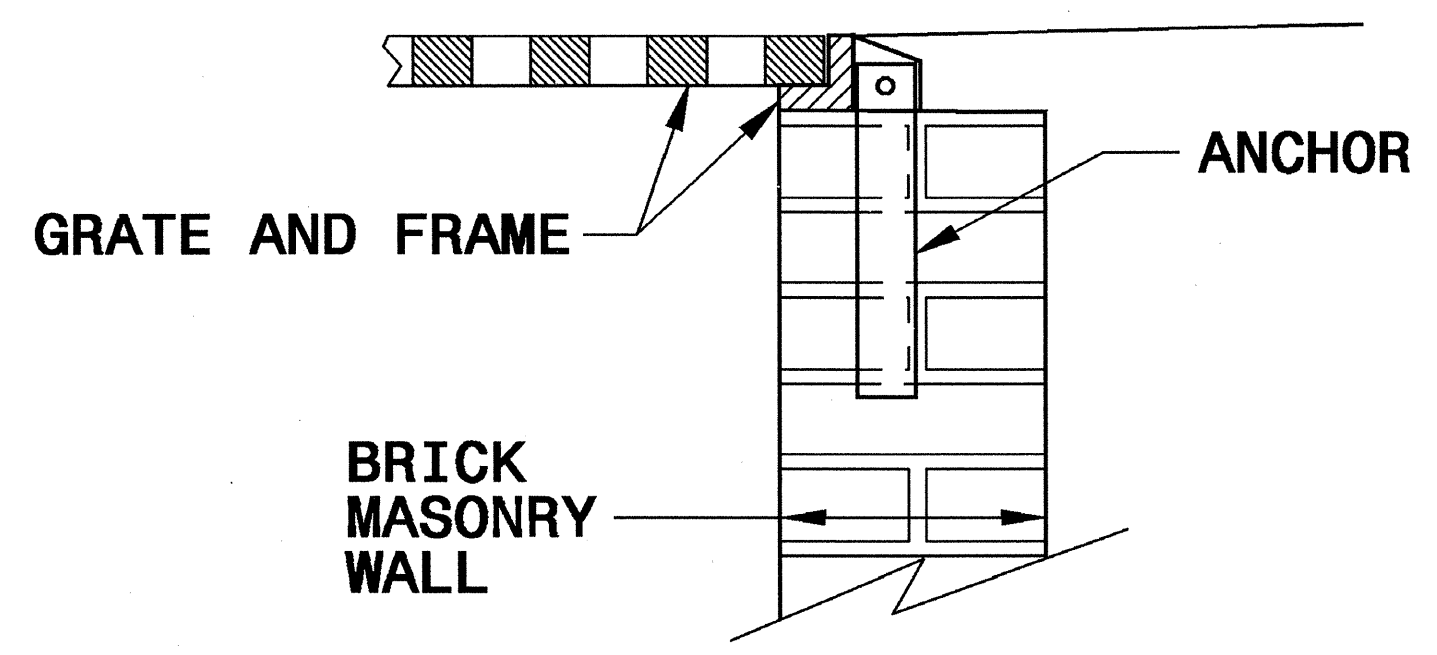
ENGLISH DETAIL DRAWING FOR
ANCHORAGE FOR FRAMES
BRICK/CONCRETE/PRECAST CONCRETE

SHEET 1 OF 1
840D25

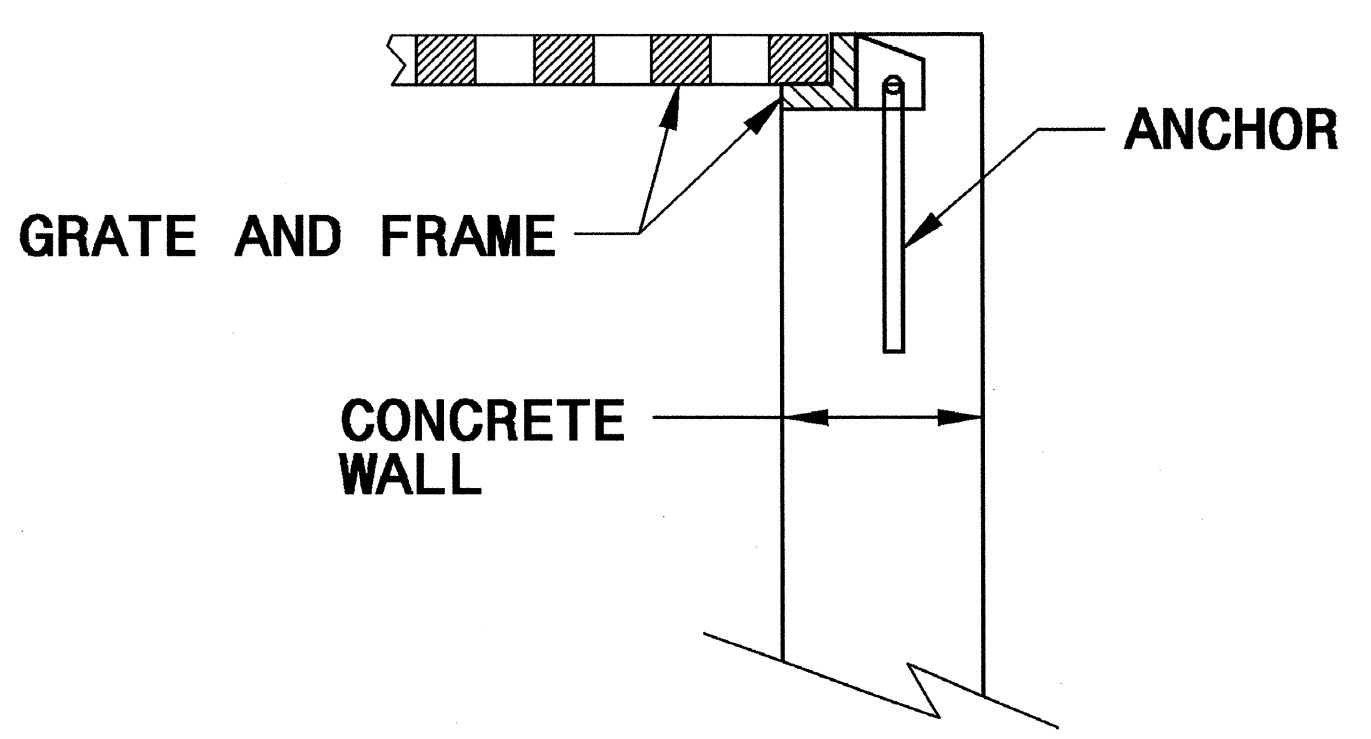
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
ANCHORAGE FOR FRAMES
BRICK/CONCRETE/PRECAST CONCRETE

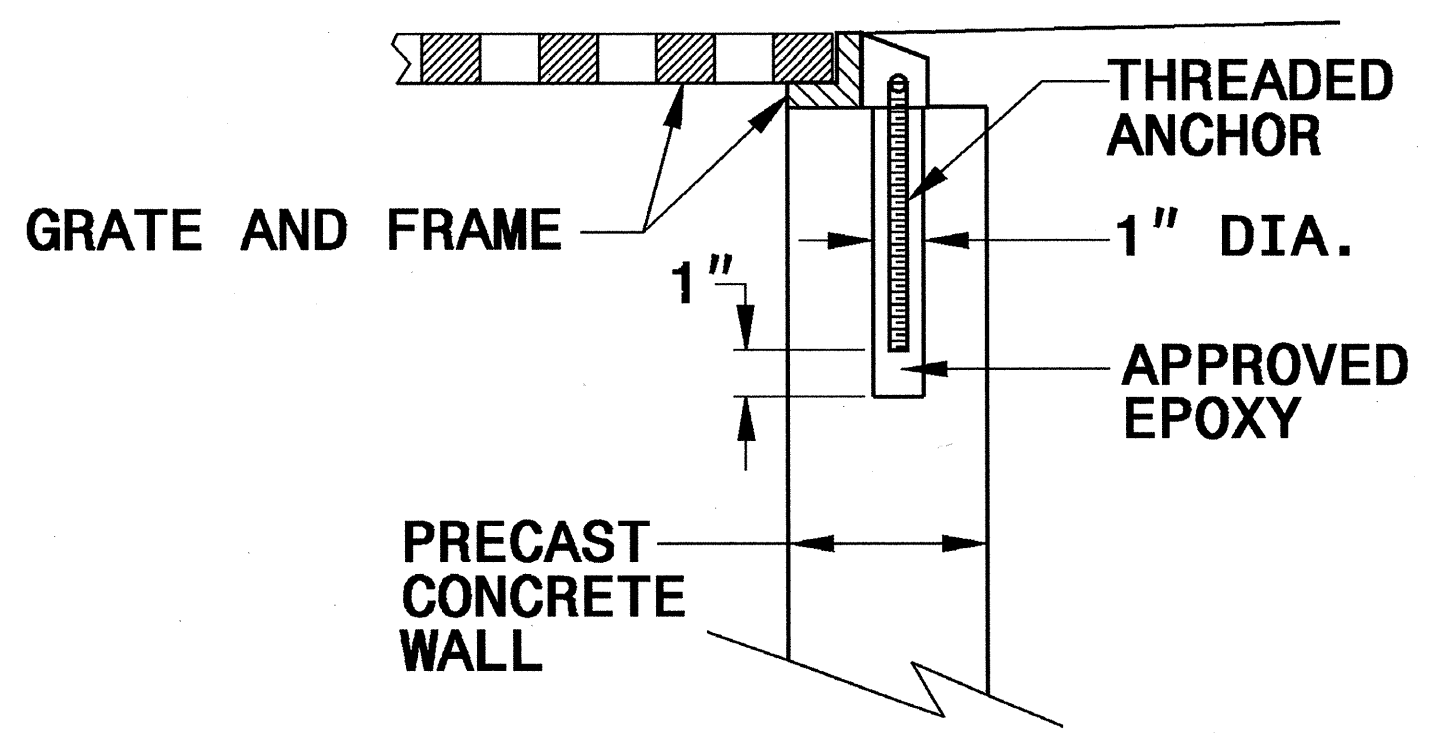
SHEET 1 OF 1
840D25



BRICK MASONRY CONSTRUCTION



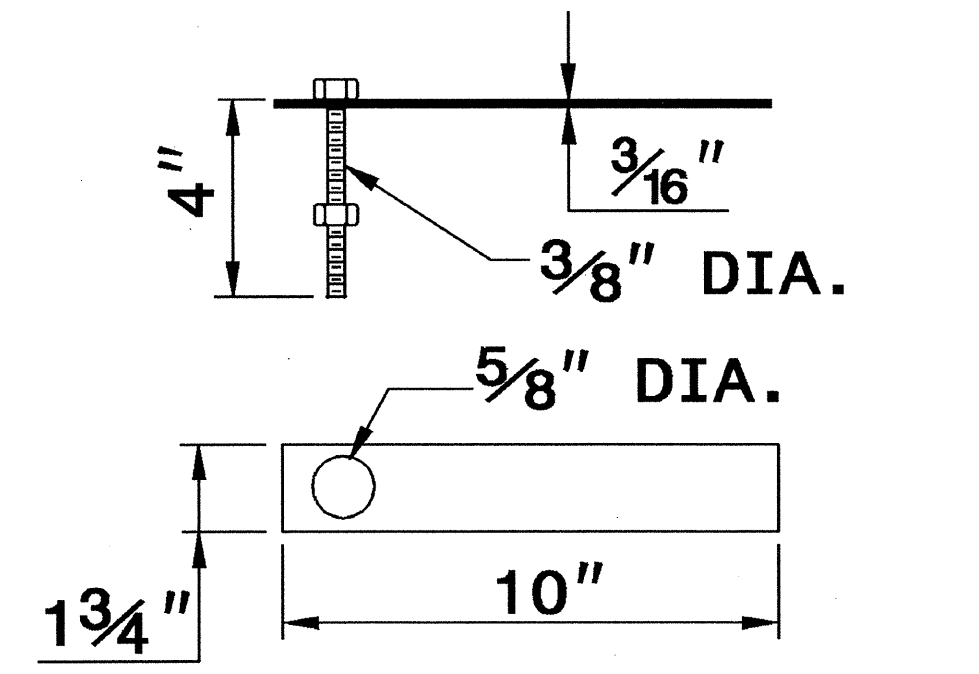
CONCRETE CONSTRUCTION



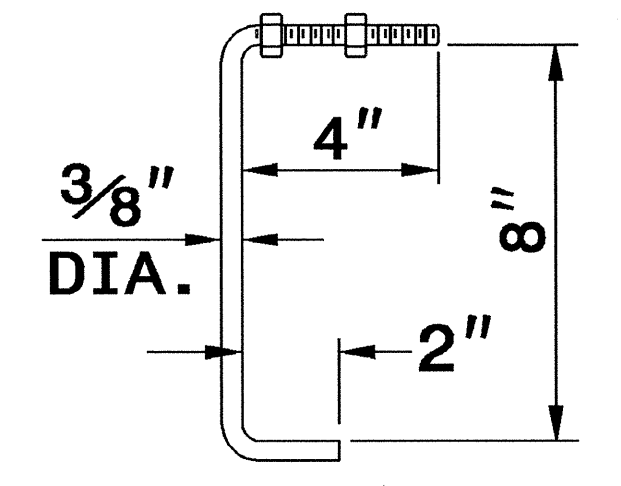
PRECAST CONCRETE CONSTRUCTION

DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

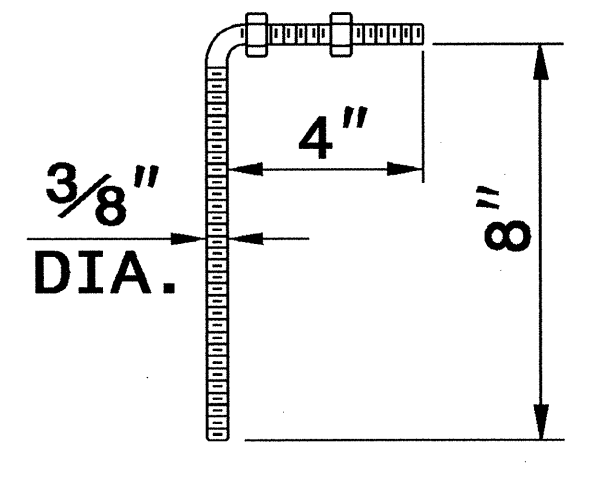
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



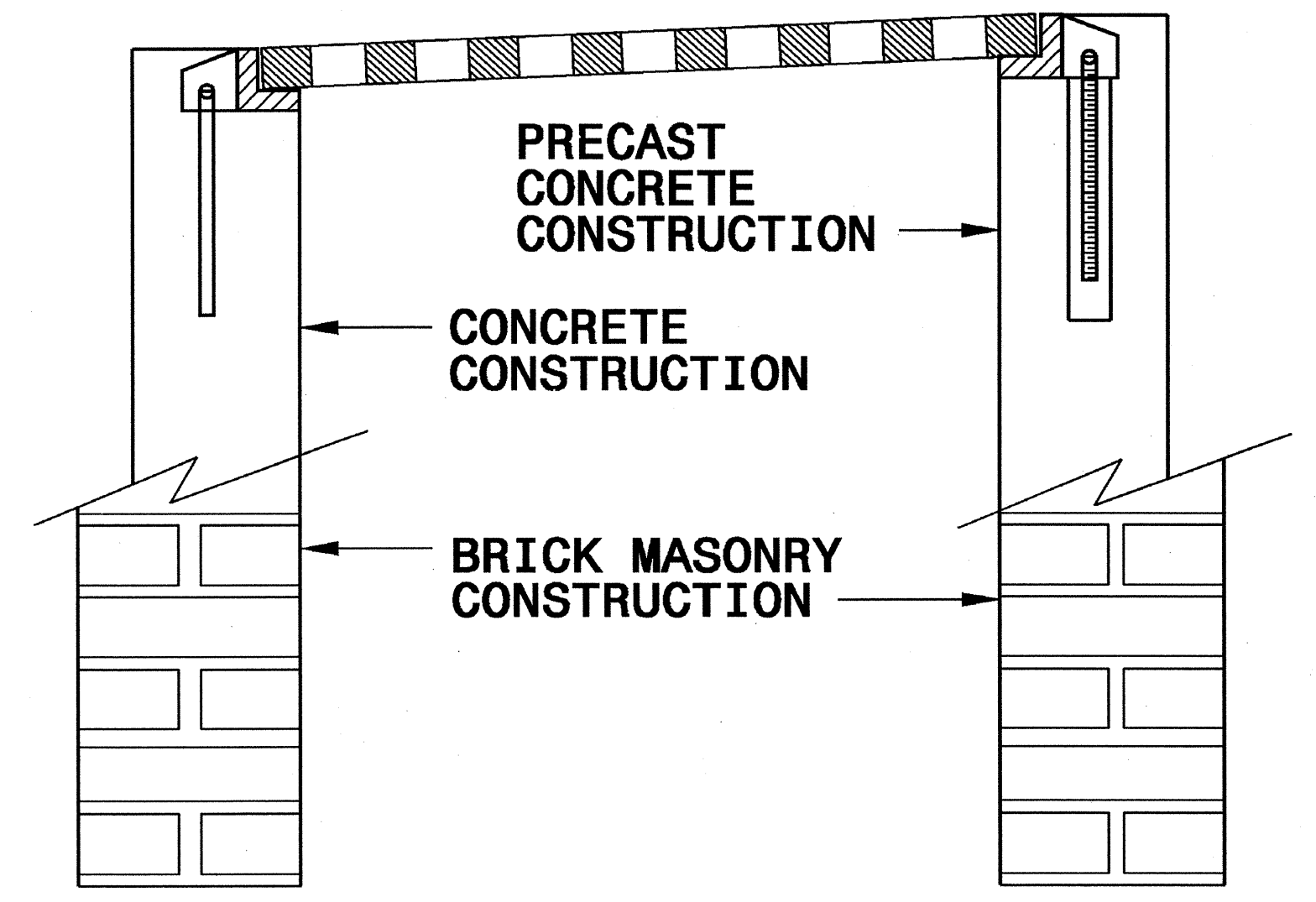
MASONRY ANCHOR
3/8" DIA. BOLT WITH PLATE



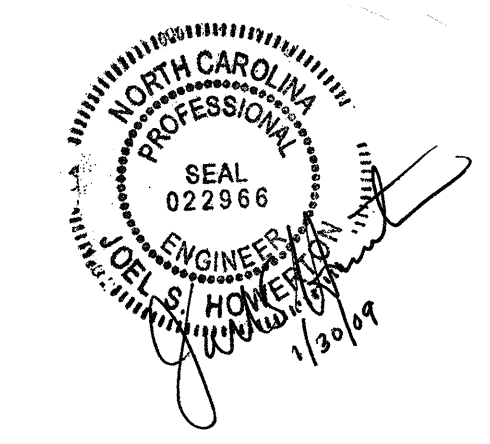
CONCRETE ANCHOR
3/8" DIA. BENT BAR



PRECAST CONCRETE ANCHOR
3/8" DIA. BENT BAR



FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS



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Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: 2006 STD 840.25 DATE: 07/18/06
MODIFIED BY: E.E. WARD DATE: 9/25/06
CHECKED BY: DATE:
FILE SPEC.:

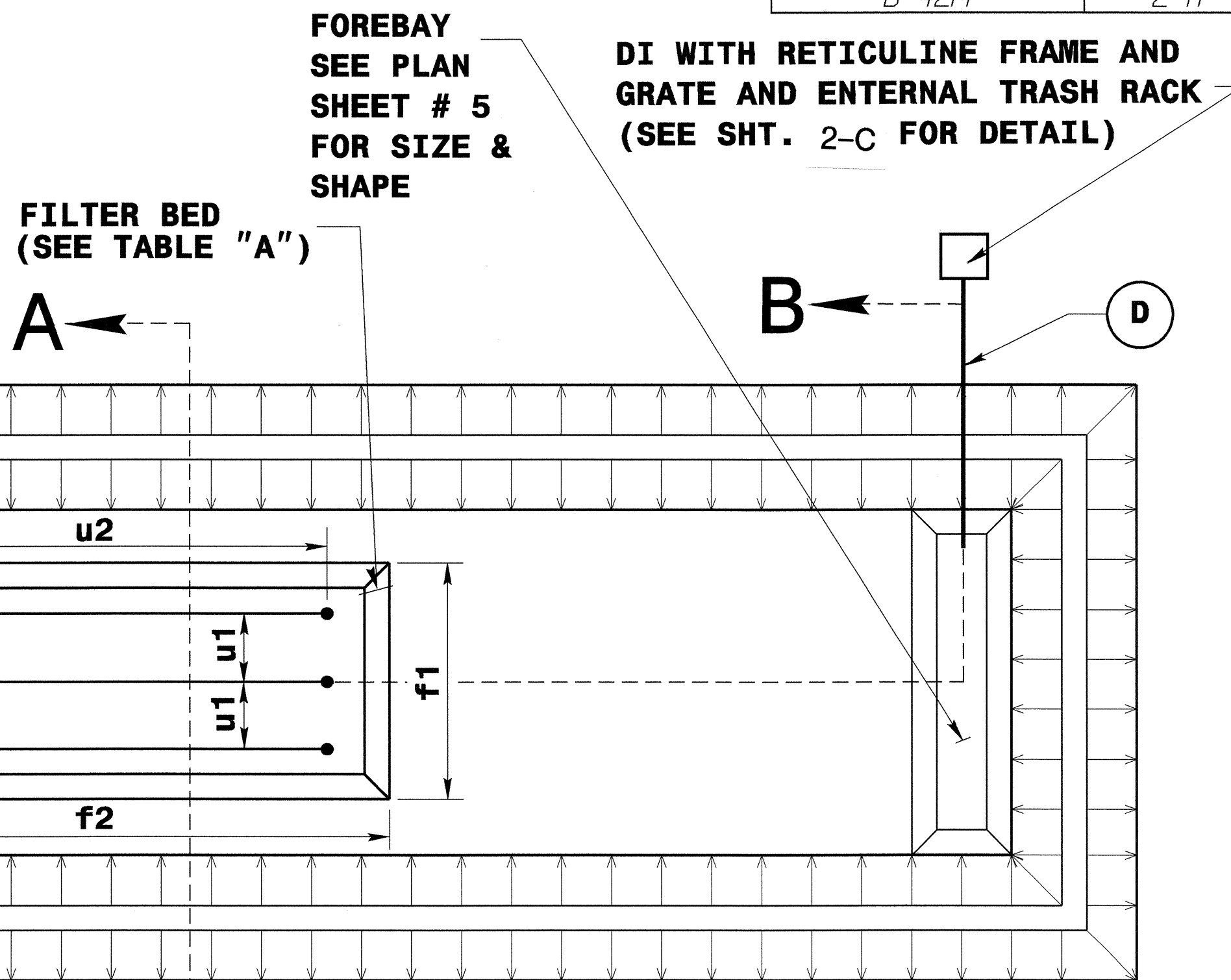
27-SEP-2006 08:59 S:\Contracts\840D25\Special Details\ward\stds\06\stds to Special Details\0840D25.dgn erward AI P022223

MATERIALS	
A	GEOTEXTILE FABRIC
B	POLYPROPYLENE WOVEN MONOFILAMENT GEOTEXTILE FABRIC
C	CLAY CORE ZONE
D	12" RCP INLET PIPE
E	15" RCP OUTFALL PIPE
F	6" PERFORATED HDPE D/W
G	6" HDPE D/W SOLID CLEANOUT PIPE
H	DI BOX (SEE SHT. 2-I)
I	ENGINEERED SOIL (80%-85% SAND, 8%-12% FINES (SILT & CLAY), 3%-5% ORGANICS) TO BE APPROVED BY ENGINEER
J	12 MONTH AGED DOUBLE SHREDDED HARDWOOD MULCH
K	CLASS "B" RIP RAP
L	WASH STONE NO. 57 AS PER NCDOT SPEC.

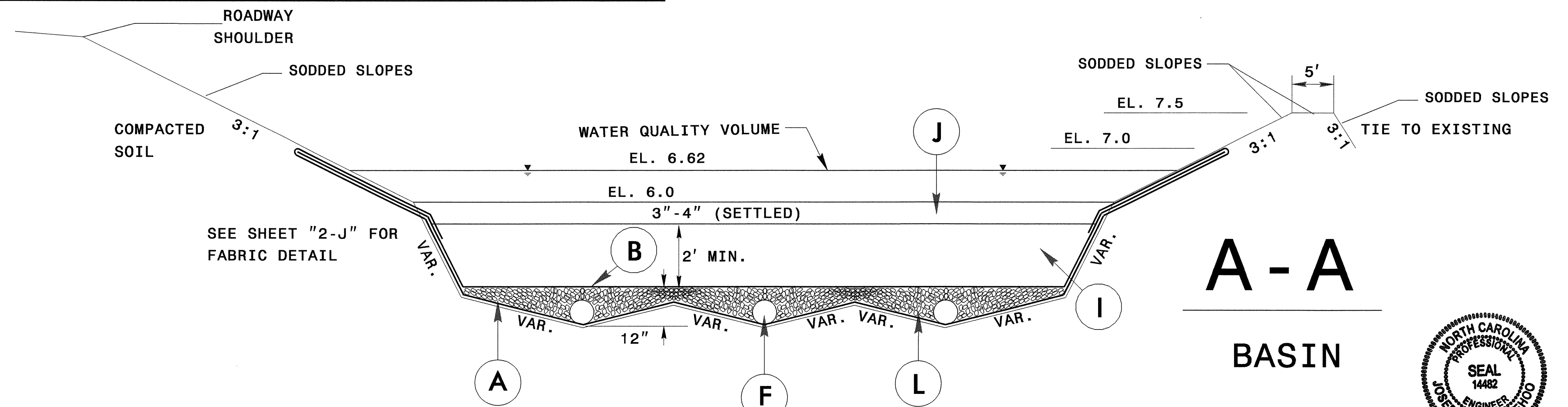
BASIN	UNDERDRAIN DIMENSIONS		FILTER BED DIMENSIONS	
	SPACING(u1)	LENGTH(u2)	WIDTH(f1)	LENGTH(f2)
WESTBOUND	20 FT.	Var. 30-50 FT.	VAR.	VAR.

TABLE "A"

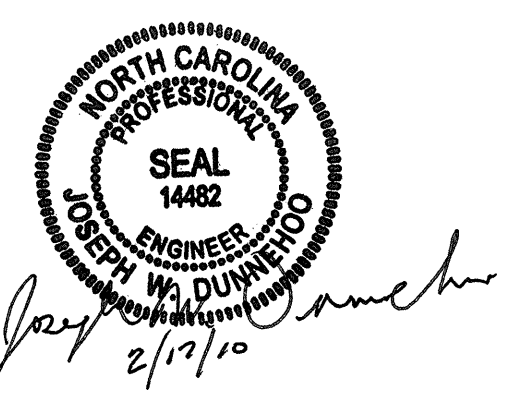
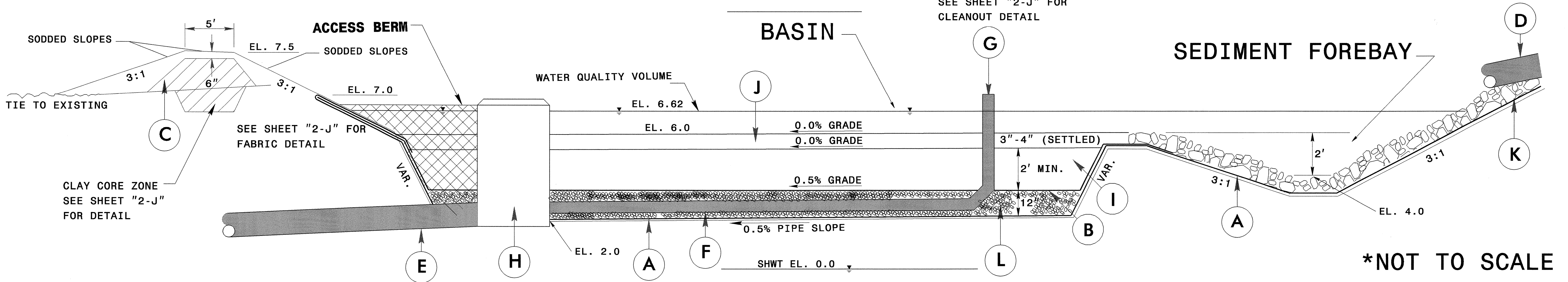
NOTE:
 SEE PLAN SHEET #5 FOR SHAPE AND SIZE OF BASIN AND LENGTH OF UNDERDRAIN PIPES.
 ENGINEERED SOIL SURFACE AREA AT ELEV. 6.0 = 4520 SF.
 BOTTOM OF BASIN SURFACE AREA AT ELEV. 6.0 = 6308 SF.



BIO-RETENTION DETAIL

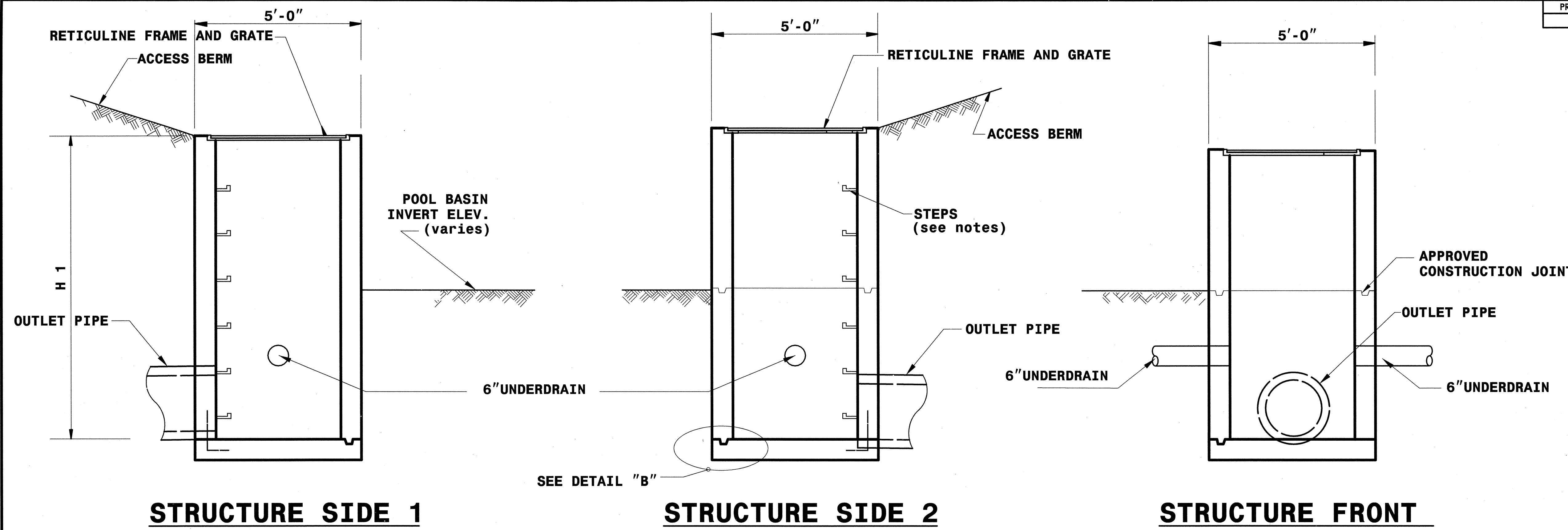


- NOTES**
- ENTIRE BASIN AND SEDIMENT FOREBAY WILL BE LINED WITH FILTER FABRIC.
 - BASIN AND FOREBAY DIMENSIONS WILL VARY (AS DIRECTED BY THE ENGINEER).
 - PRECAST BOX DIMENSIONS WILL BE DETERMINED BY THE ENGINEER.



***NOT TO SCALE**

5/28/99
 I:\FEB-2010_0334\BIORETENTION.txdgn
 R:\Drawings\BIORETENTION.dwg
 jvd/mao



STRUCTURE SIDE 1

STRUCTURE SIDE 2

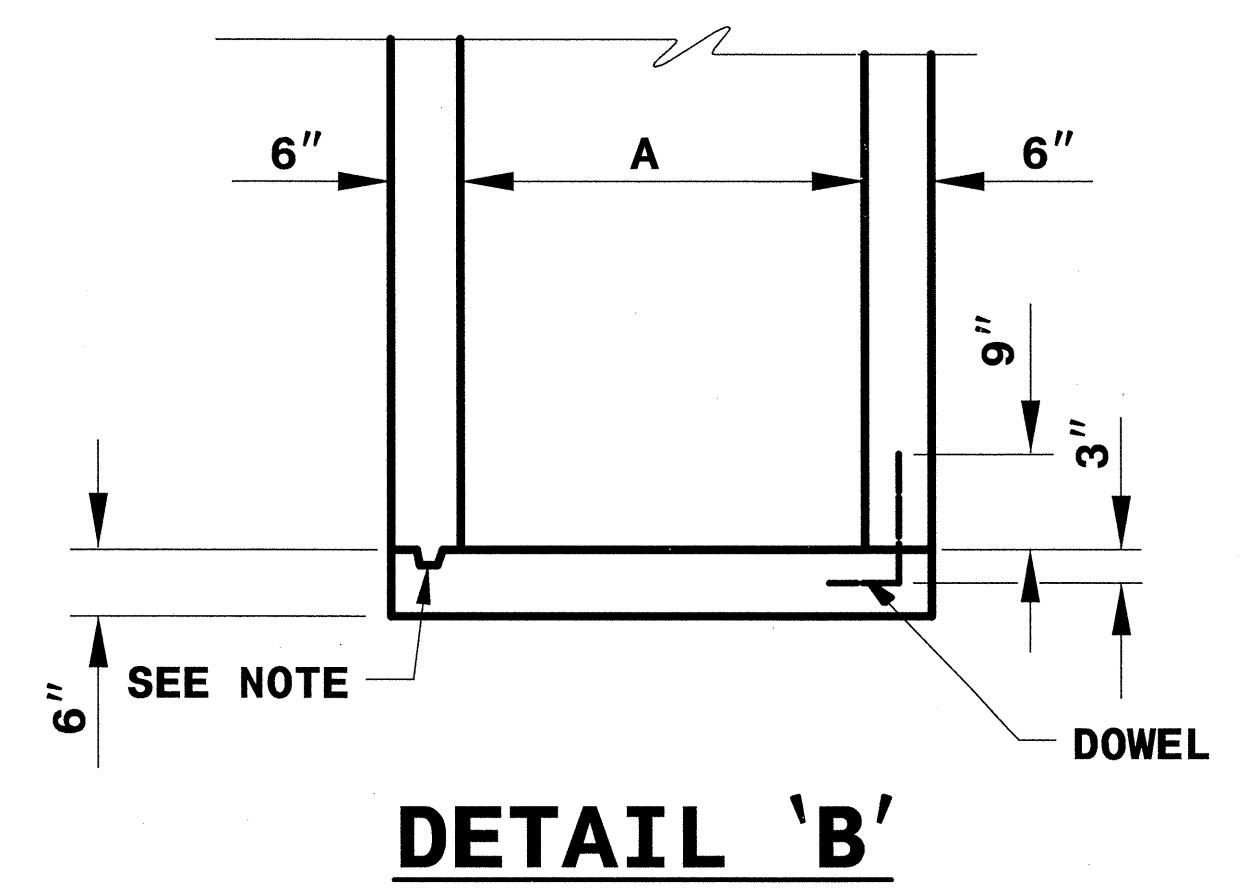
STRUCTURE FRONT

TABLE "A"

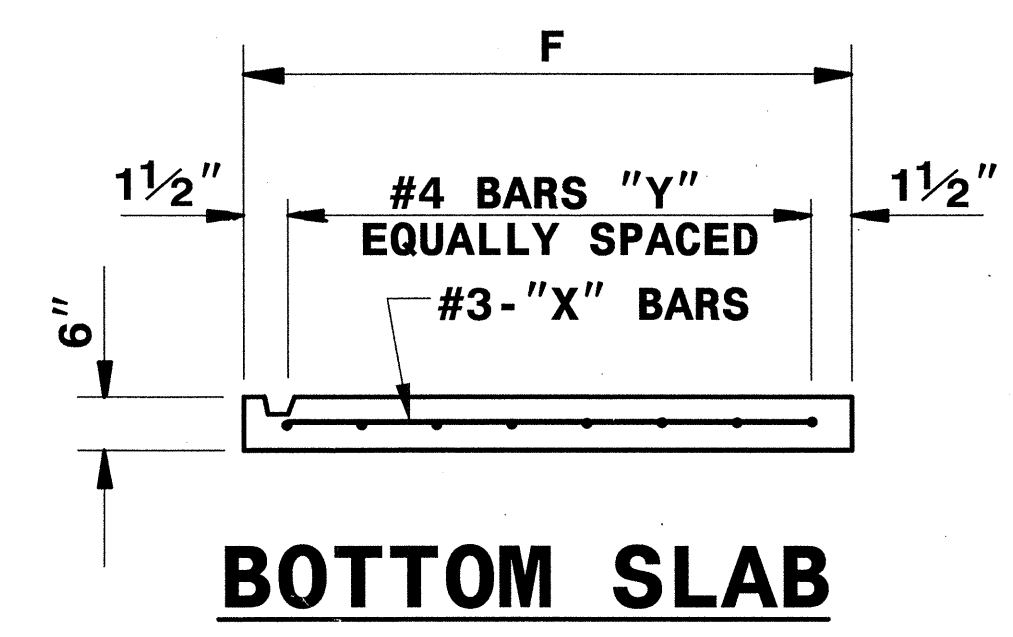
MINIMUM DIMENSIONS FOR OUTLET CONTROL STRUCTURE													
BASIN	PIPE DIA.	OUTLET PIPE INVERT	BOX HEIGHT H1	TOP OF GRATE ELEV.	UNDER DRAIN INVERT	ORFICE PLATE OPENING INVERT	POOL BASIN ELEV. @ PAD ELEV.	WEIR DIMENSIONS					
								W1	W2	W3	W4	W1 EL	W2 EL
Sta. 27+61.31-L- (165 Lt)	15"	0.7'	6.00'	6.7'	2.17'		6.0'						

GENERAL NOTES:

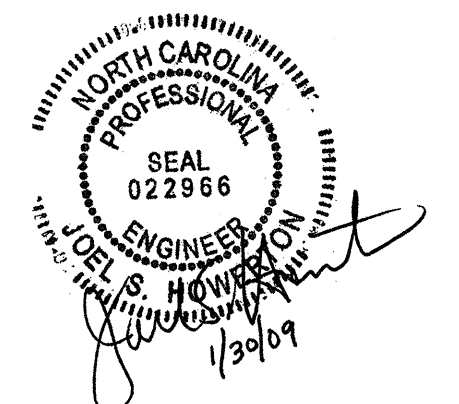
- * CHANGES IN ELEVATIONS MUST BE APPROVED BY THE ENGINEER.
- * CLASS 'B' CONCRETE TO BE USED THROUGHOUT. PRECAST CONCRETE STRUCTURES TO BE SUBMITTED FOR APPROVAL.
- * OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2 INCH KEYWAY, OR #4 BAR DOWELS AT 12 INCH CENTERS, AS DIRECTED BY THE ENGINEER.
- * FORMS ARE 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.
- * WALL THICKNESS SHALL BE IN ACCORDANCE TO STD. # 840 .31 AND # 840.32
- * RETICULINE FRAME AND GRATE TO BE APPROVED BY THE ENGINEER..



DETAIL 'B'



BOTTOM SLAB



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**DETAIL OF OUTLET CONTROL
STRUCTURE FOR
BIO-RETENTION BASIN**

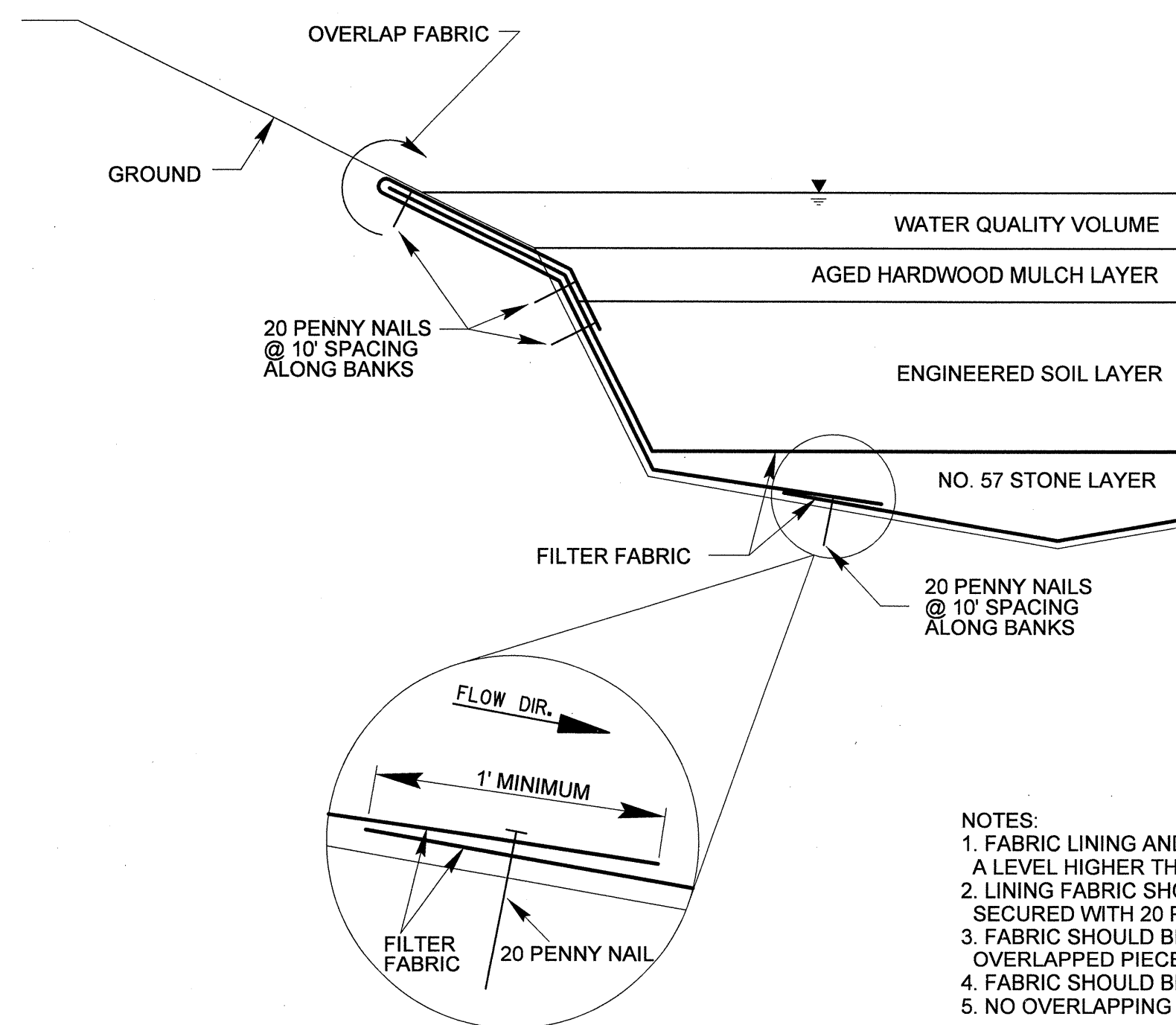
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DETAILS

FABRIC

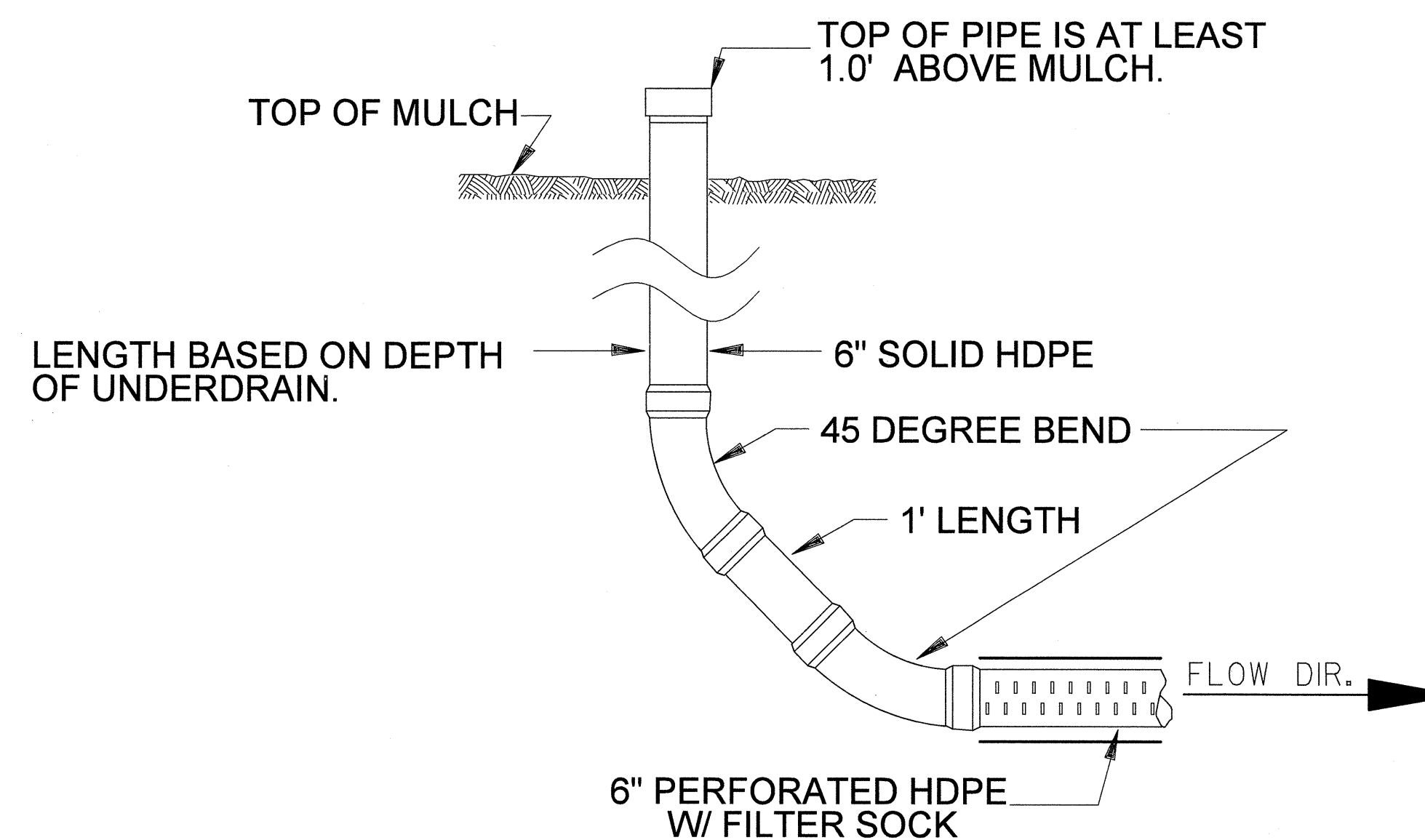
*NOT TO SCALE



- 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 ENSURE 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

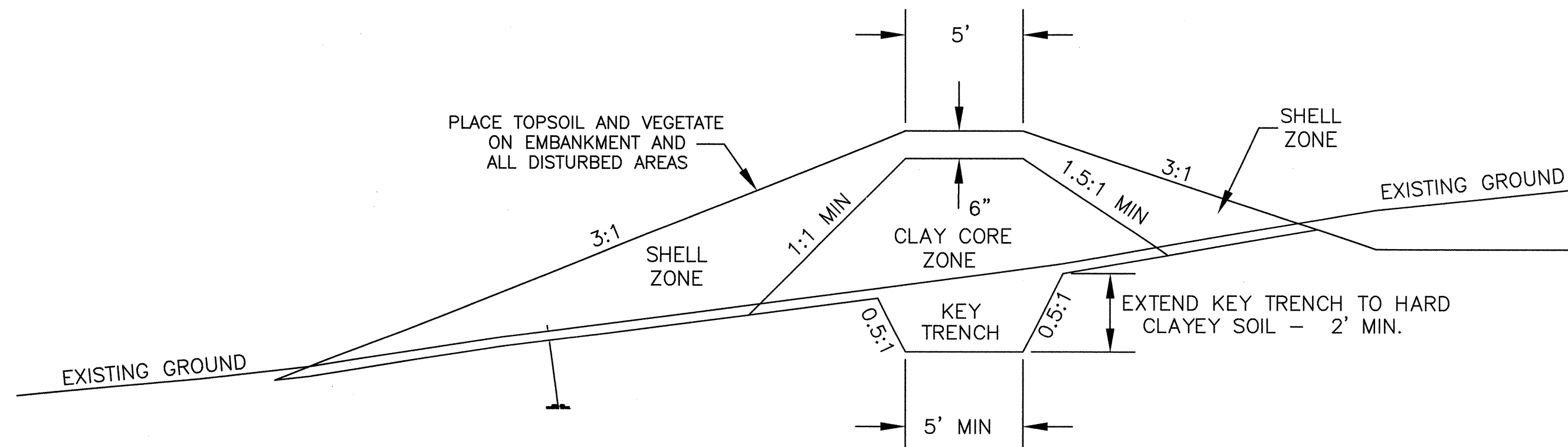
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NOTE: ONLY UNDERDRAIN PIPE SHOULD BE PERFORATED

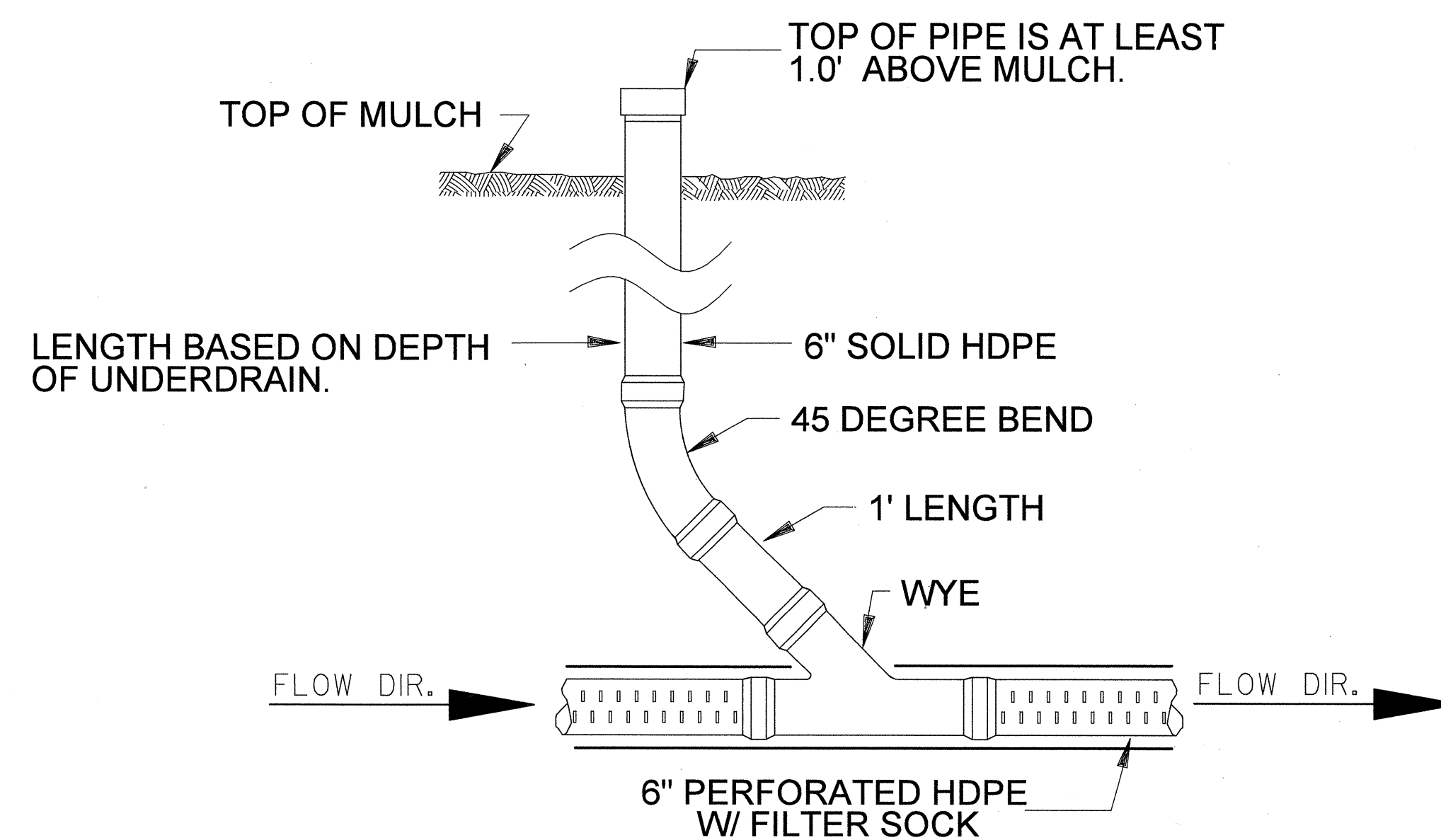
CLAY CORE ZONE

*NOT TO SCALE



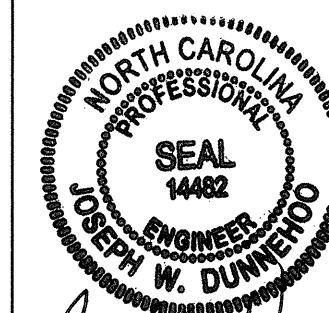
MIDWAY CLEANOUT

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



NOTE: ONLY UNDERDRAIN PIPE SHOULD BE PERFORATED

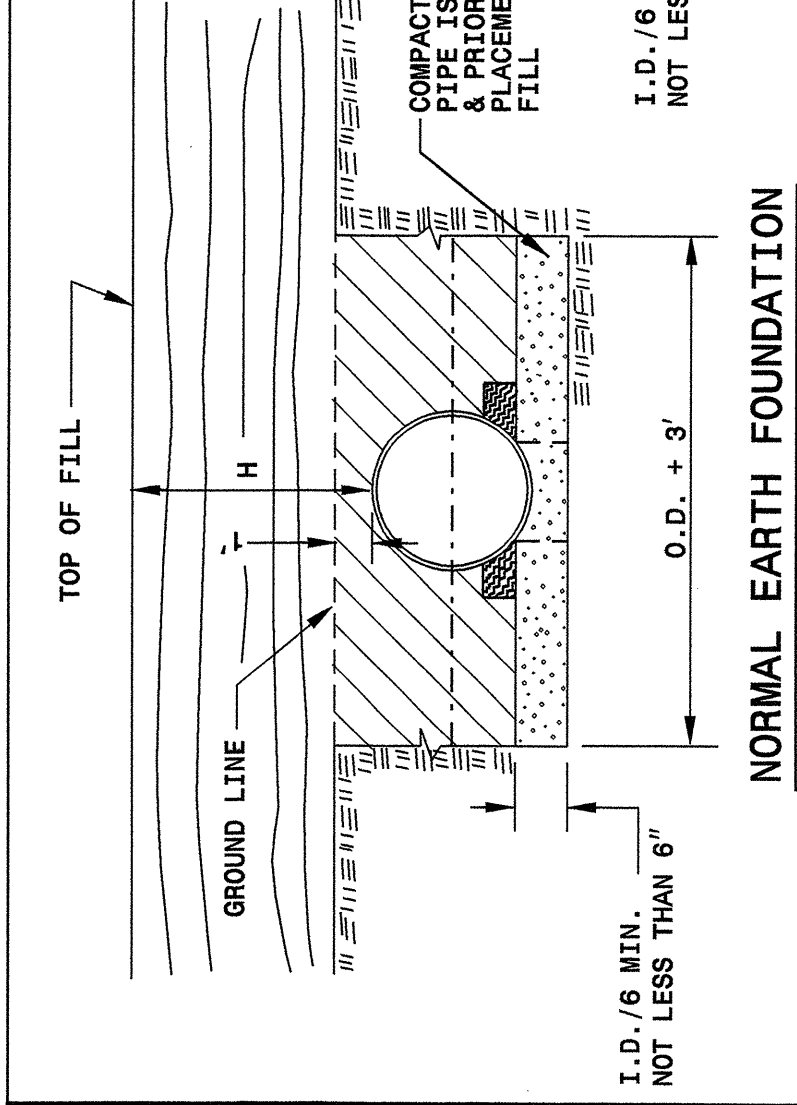
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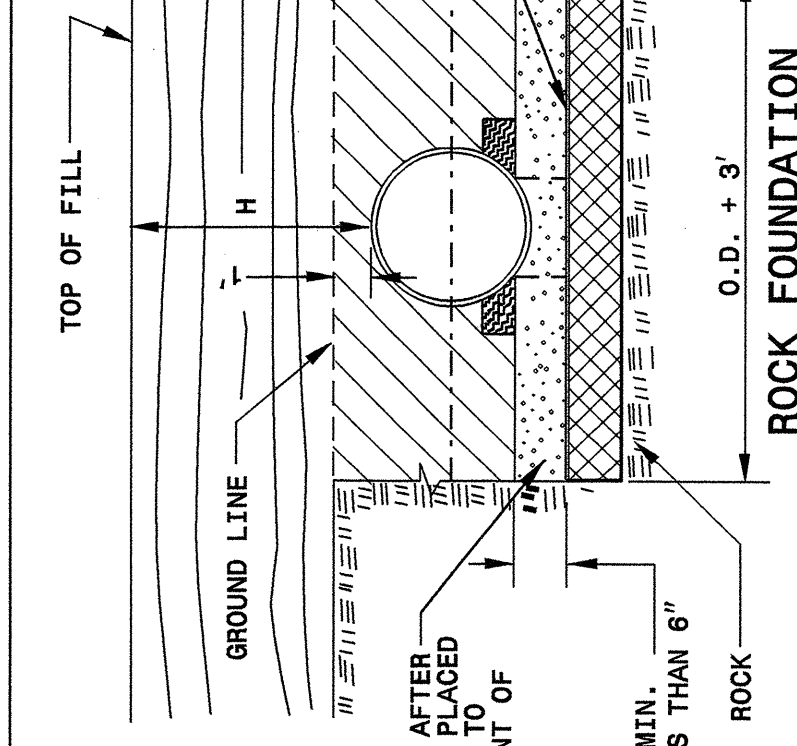
Joseph W. Dunne
2/3/09

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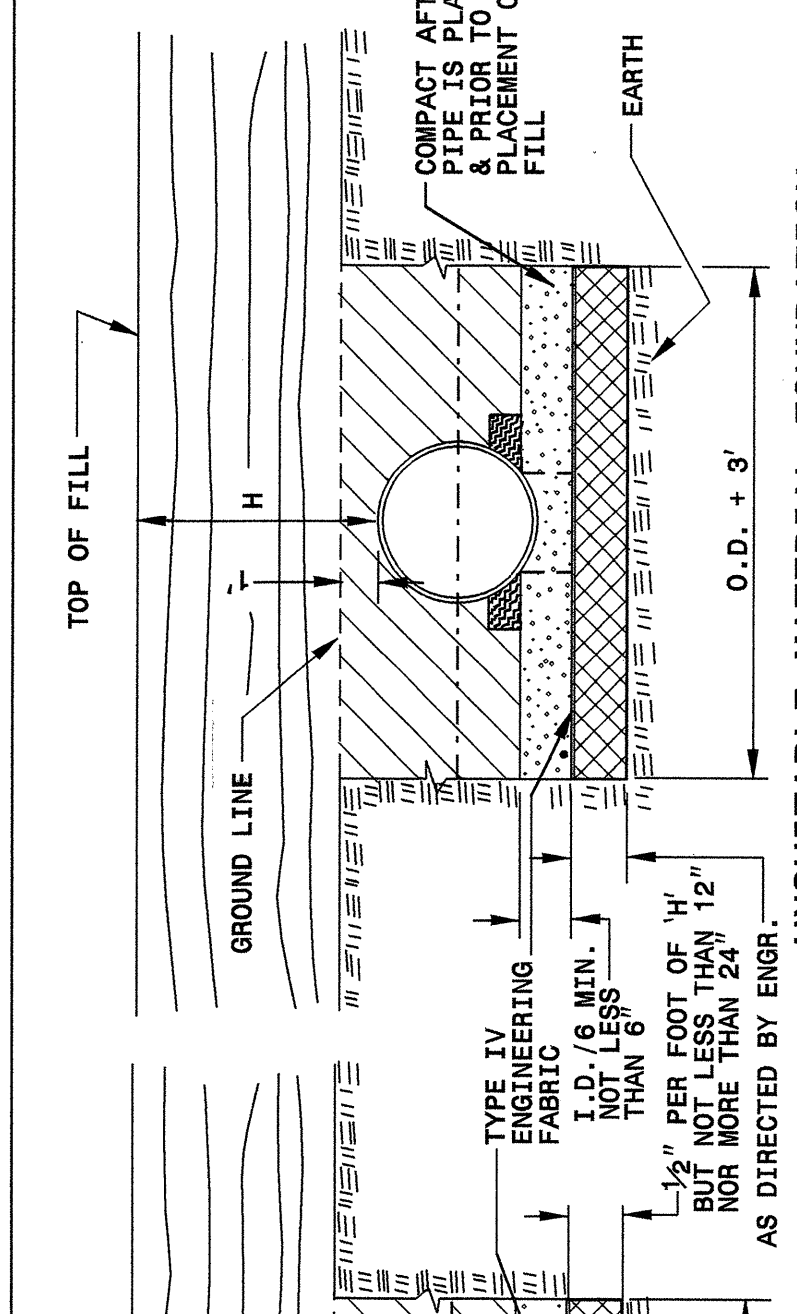
7-06



NORMAL EARTH FOUNDATION



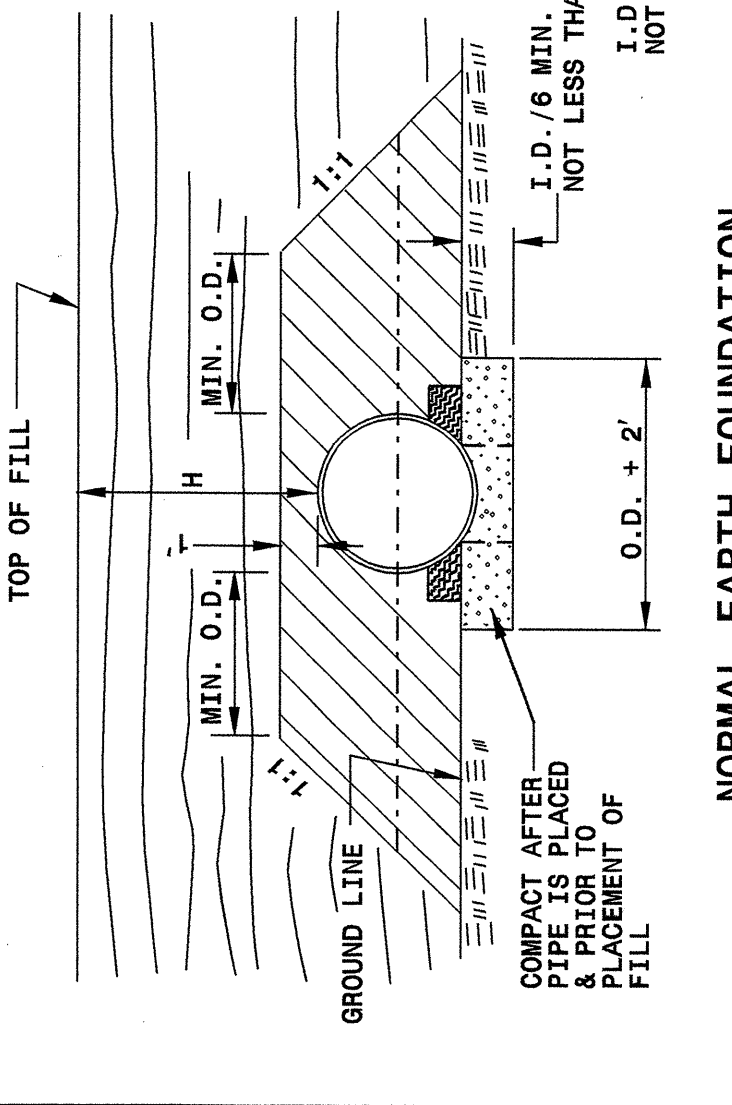
ROCK FOUNDATION
 PIPE IN TRENCH



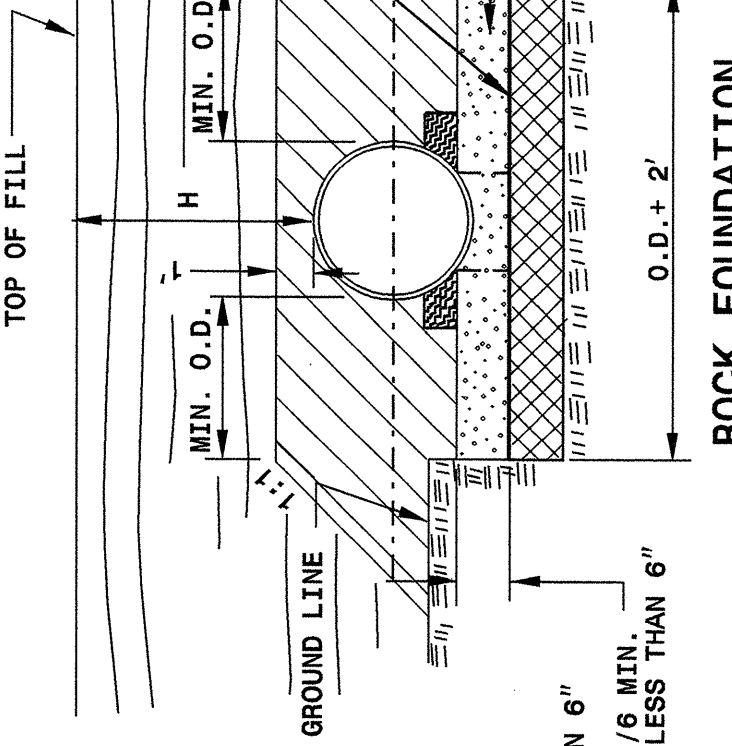
UNSUITABLE MATERIAL FOUNDATION

ENGLISH DETAIL DRAWING FOR
 METHOD OF PIPE INSTALLATION
 FLEXIBLE PIPE

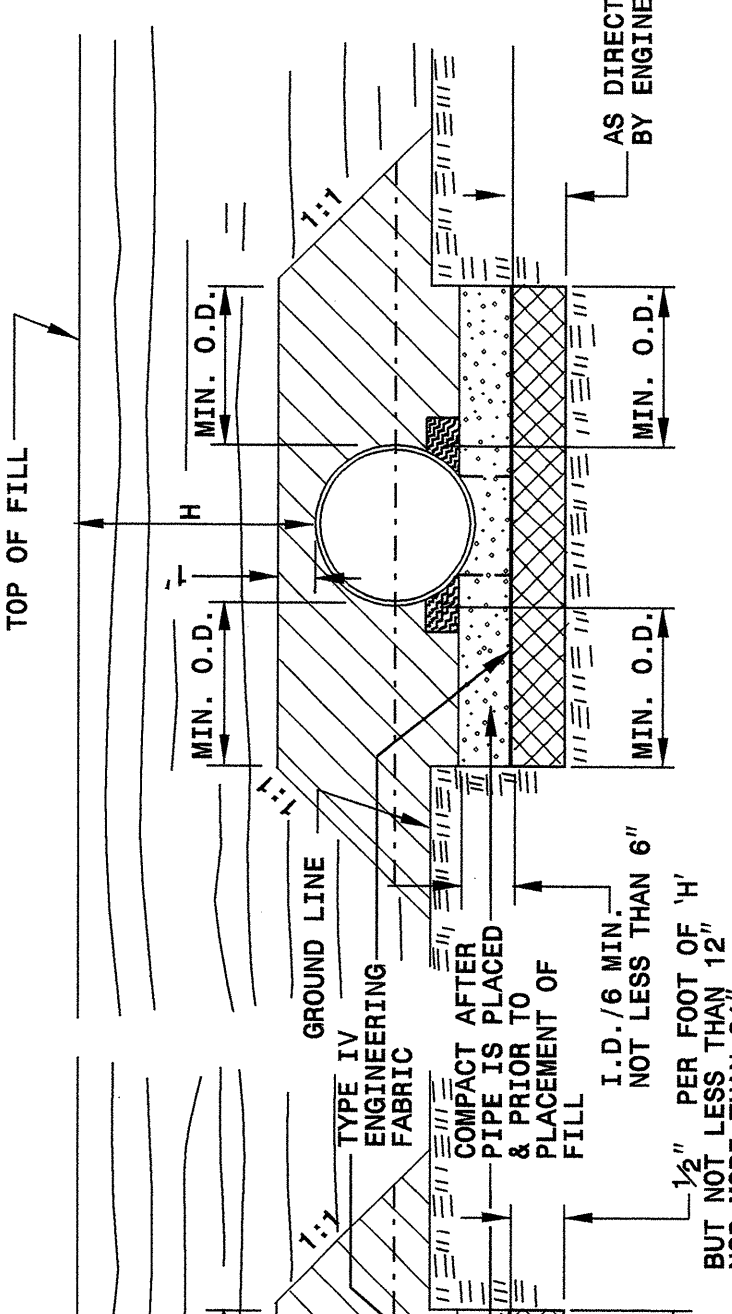
SHEET 1 OF 3
 300D01



NORMAL EARTH FOUNDATION



ROCK FOUNDATION
 PIPE ABOVE GROUND



UNSUITABLE MATERIAL FOUNDATION

GENERAL NOTES:

- I. D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.
- O. D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.
- H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

- TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.
- LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

- SPRINGLINE OF PIPE
- SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.

- APPROVED SUITABLE LOCAL MATERIAL.
- UNDISTURBED EARTH MATERIAL
- SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

ENGLISH DETAIL DRAWING FOR
 METHOD OF PIPE INSTALLATION
 FLEXIBLE PIPE

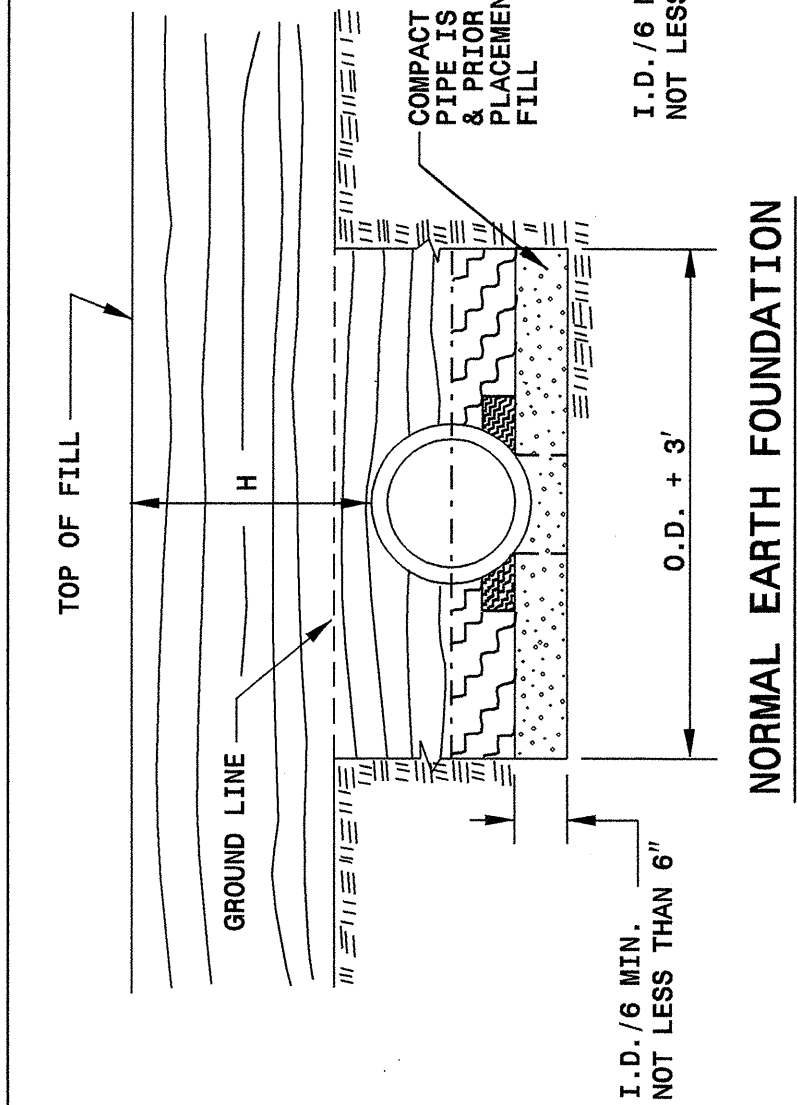
SHEET 1 OF 3
 300D01

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 RALEIGH, N.C.

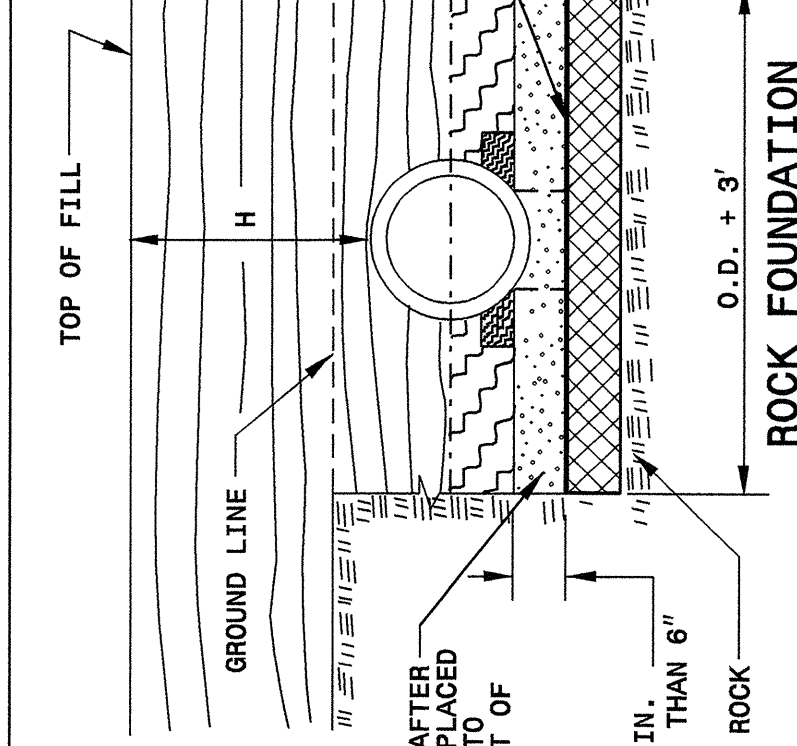
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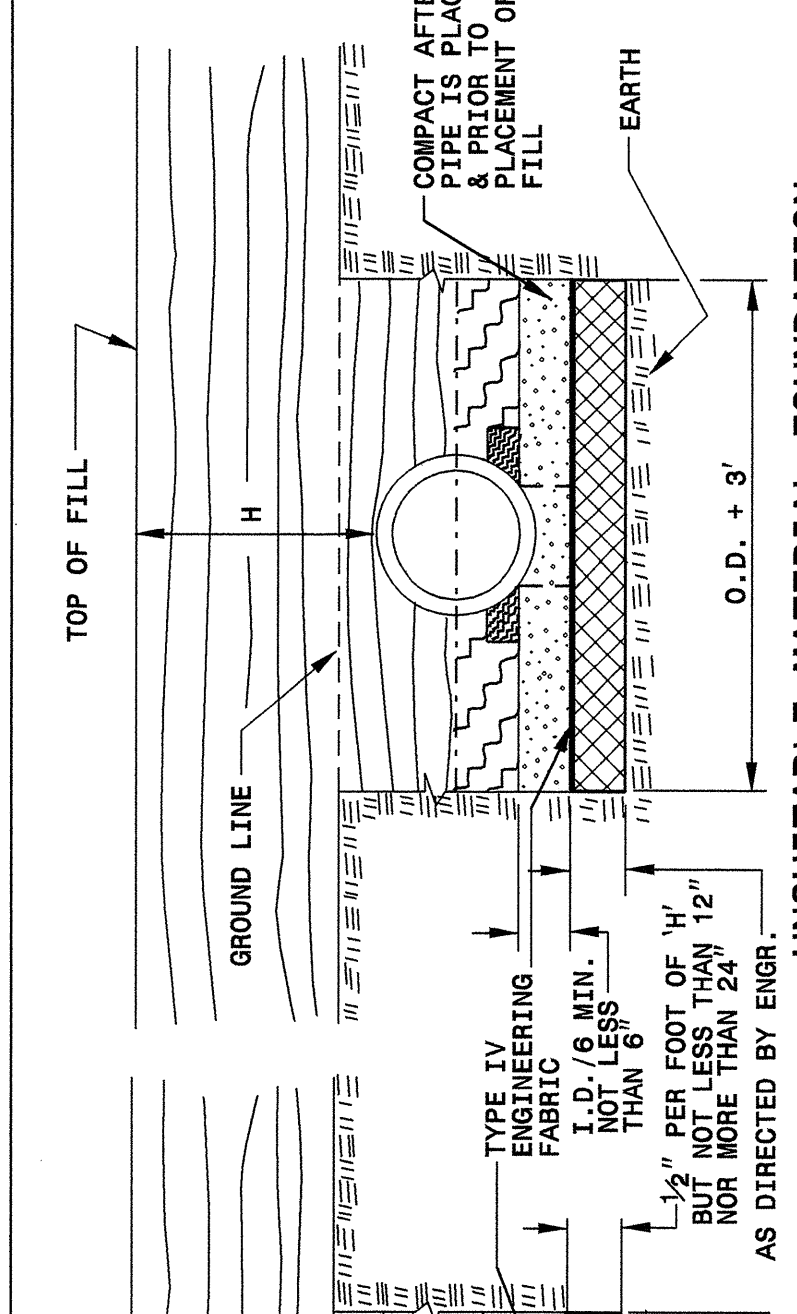
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NORMAL EARTH FOUNDATION



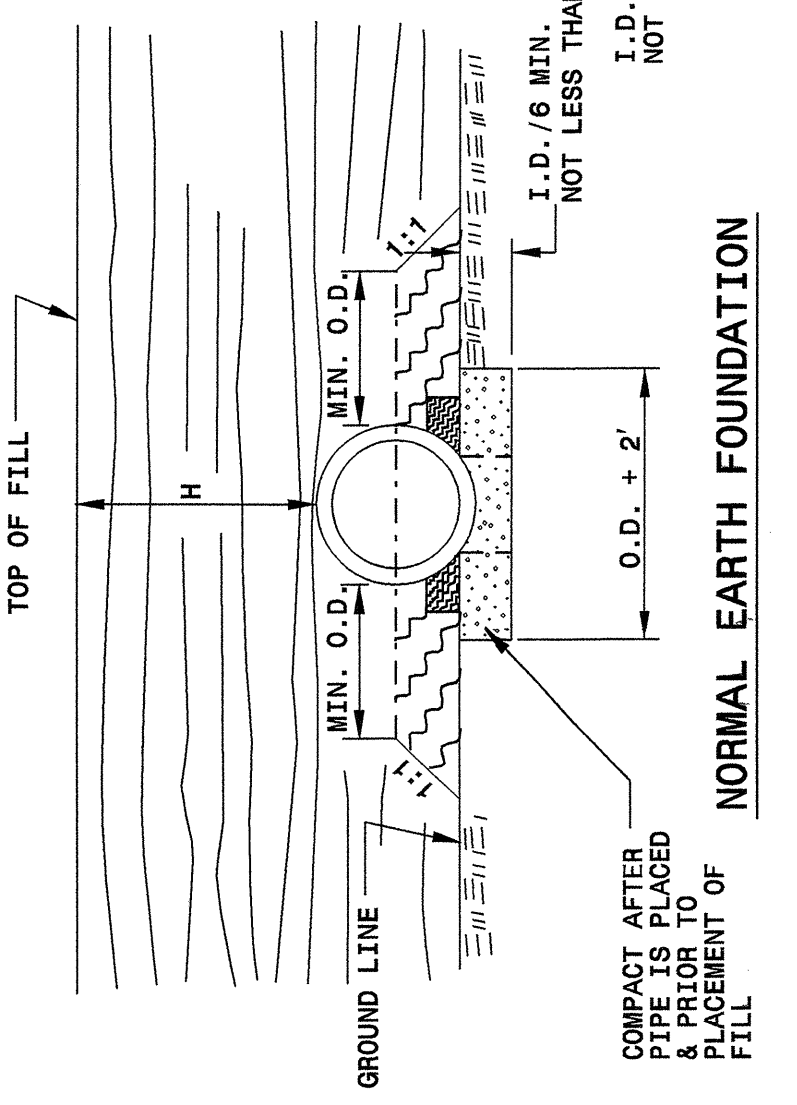
ROCK FOUNDATION
 PIPE IN TRENCH



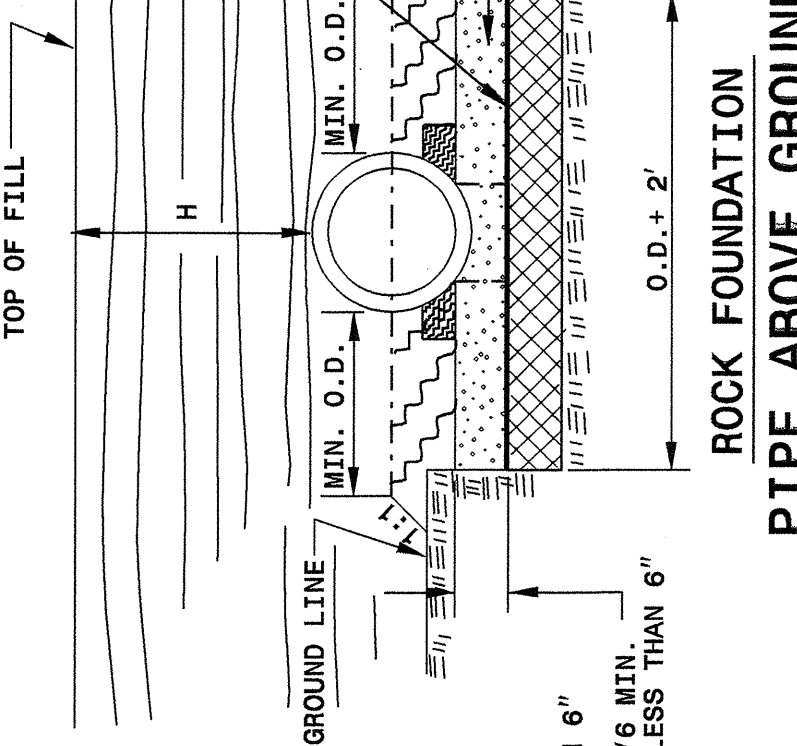
UNSUITABLE MATERIAL FOUNDATION

ENGLISH DETAIL DRAWING FOR
 METHOD OF PIPE INSTALLATION
 RIGID PIPE

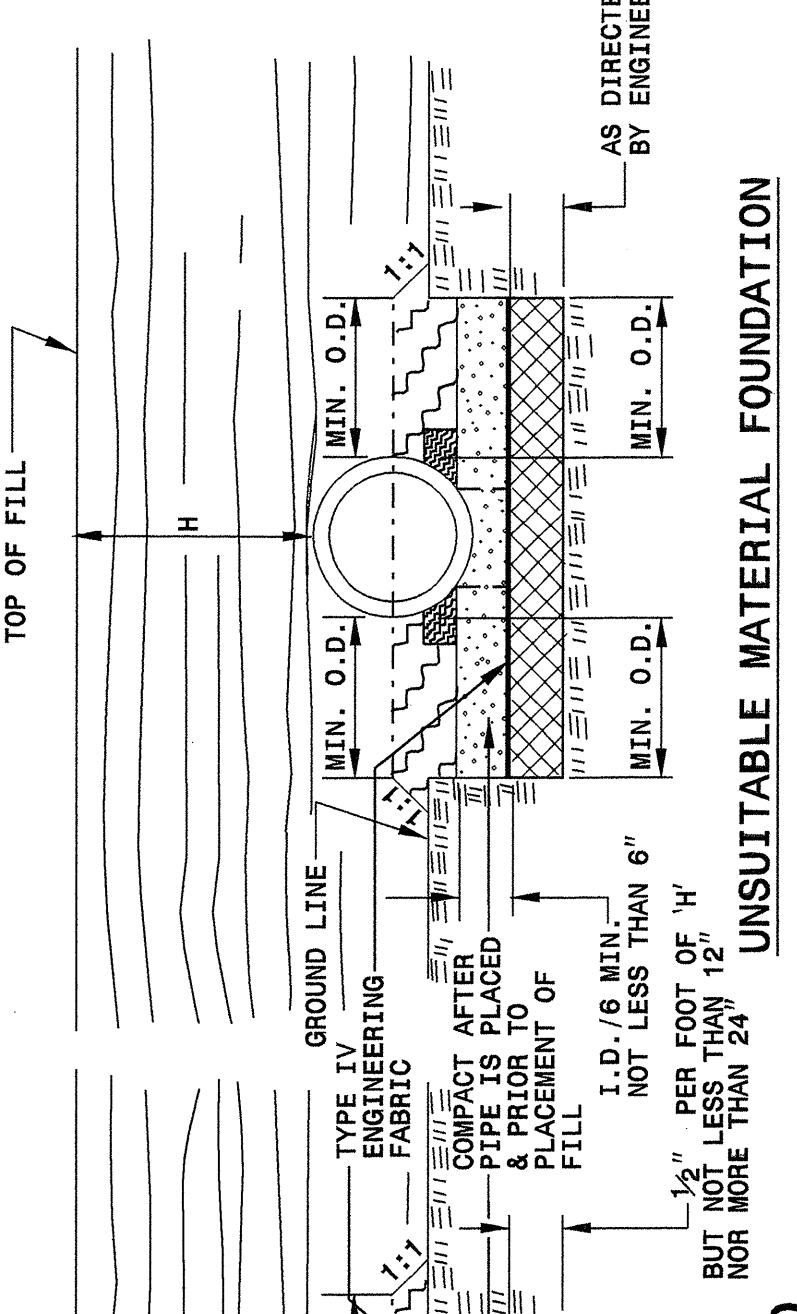
SHEET 2 OF 3
 300D01



NORMAL EARTH FOUNDATION



ROCK FOUNDATION
 PIPE ABOVE GROUND



UNSUITABLE MATERIAL FOUNDATION

GENERAL NOTES:

- I. D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.
- O. D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.
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ENGLISH DETAIL DRAWING FOR
 METHOD OF PIPE INSTALLATION
 RIGID PIPE

SHEET 2 OF 3
 300D01

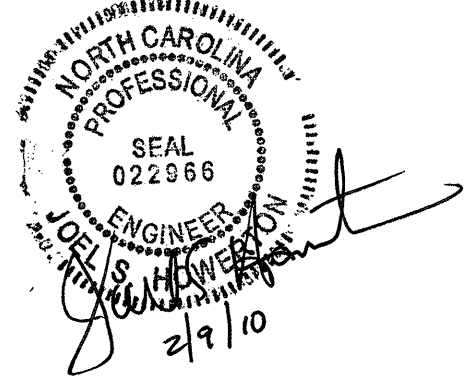
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 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

7-06

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 STANDARDS AND SPECIAL DESIGN
 Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

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 MODIFIED BY: DATE:
 CHECKED BY: DATE: 7/20/09
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 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
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ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
 FILL HEIGHT TABLES

FLEXIBLE PIPE

Round Corrugated Steel Pipe
 2 2/3 x 1/2 corrugation **

Diameter (Inches)	Minimum cover (Inches)	Maximum Height of Cover (feet)			
		16 (Ga)	14	12	10
12	12	204	256		9
15	12	162	204		
18	12	135	169	239	
21	12	115	145	204	
24	12	100	126	178	
30	12	79	100	142	
36	12	65	83	117	152
42	12	55	70	100	130
48	12	48	61	87	113
54	12		54	77	100
60	12			69	90
66	12				81
72	12				74
78	12				81
84	12				69

Round Corrugated Aluminum Pipe
 2 2/3 x 1/2 corrugation **

Diameter (Inches)	Minimum cover (Inches)	Maximum Height of Cover (feet)			
		16 (Ga)	14	12	10
12	12	123	155	218	281
15	12	98	123	174	224
18	12	81	102	144	187
21	12	69	87	123	160
24	12	60	76	108	139
27	12		67	95	123
30	12		60	85	111
36	12		50	71	92
42	12			60	78
48	12			52	68
54	12			46	50
60	12				62
66	12				51
72	12				41

HDPE * (Minimum fill) 2' for pipe diameters ≥ 12" and ≤ 60"
 * (Maximum fill) 20' for pipe diameters ≤ 24"
 17' for pipe diameters ≥ 30" and ≤ 60"

PVC * (Minimum fill) 2' for pipe diameters ≥ 12" and ≤ 36"
 * (Maximum fill) 30' for pipe diameters ≥ 12" and ≤ 36"

* FILL HEIGHT IS MEASURED FROM THE TOP OF THE PIPE TO THE BOTTOM OF THE PAVEMENT STRUCTURE

RCP * (Minimum fill) 1' for Class IV & Class V
 2' for Class III & Class II

* (Maximum fill) 10' - Class II pipe
 20' - Class III pipe
 30' - Class IV pipe
 40' - Class V pipe

(For fills > 40' & < 80' use LRFD Direct Design Method)

* FILL HEIGHT IS MEASURED FROM THE TOP OF THE PIPE TO THE BOTTOM OF THE PAVEMENT STRUCTURE

RIGID PIPE

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS
 RCP - AASHTO M170

NOTES: FILL HEIGHTS SHOWN WERE CALCULATED USING AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS
 1' MINIMUM COVER FOR ALL SIDE DRAIN PIPE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS

STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
 FILL HEIGHT TABLES

SHEET 3 OF 3
300D01

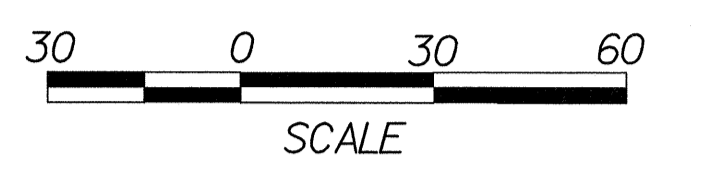
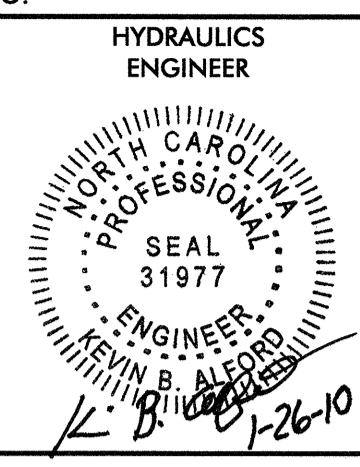
SHEET 3 OF 3
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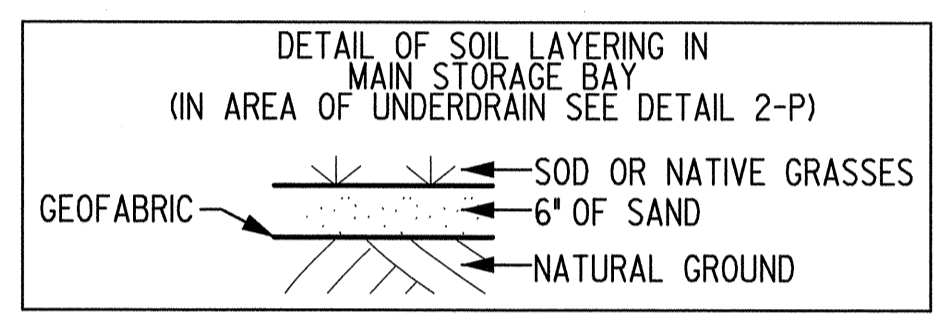
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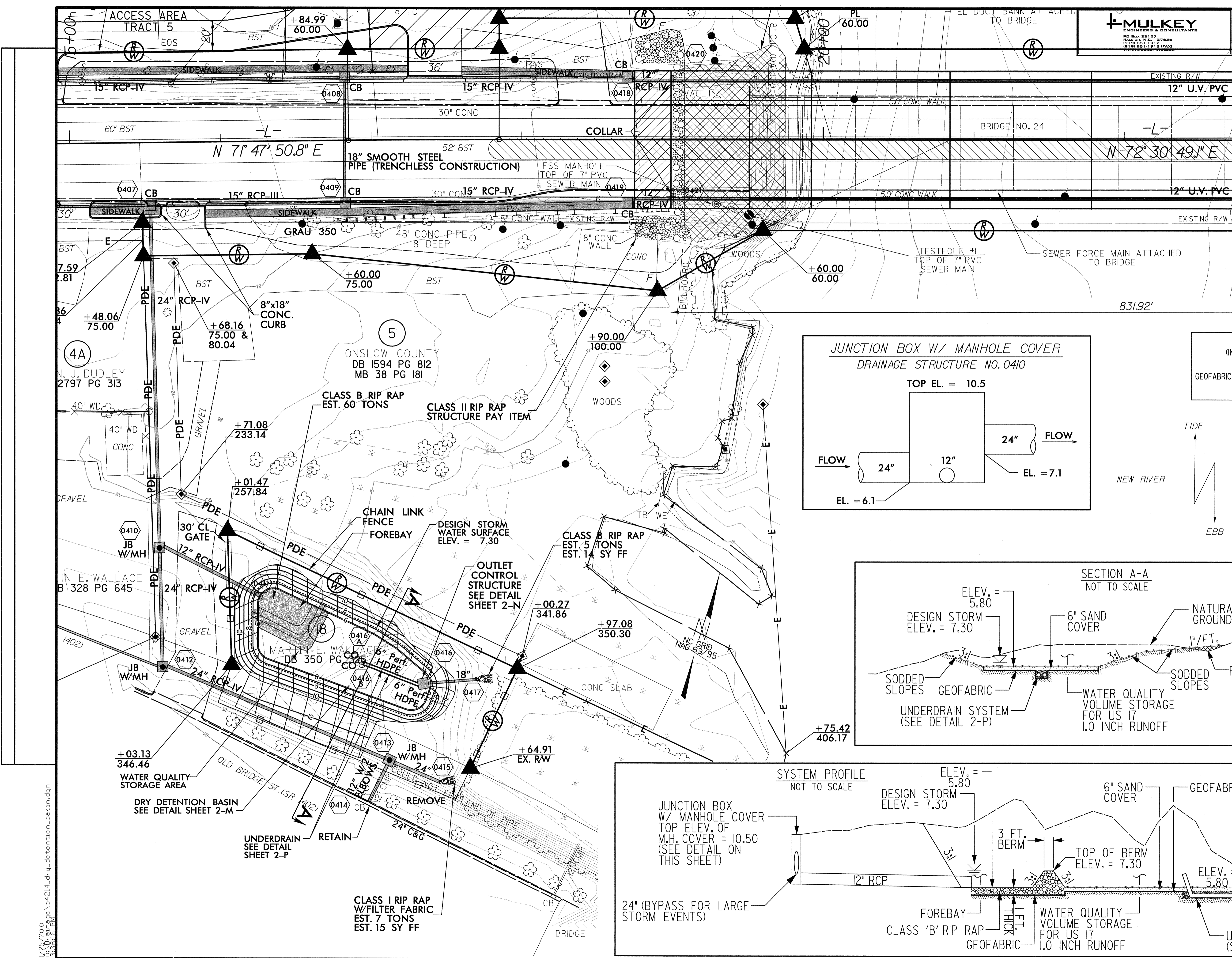
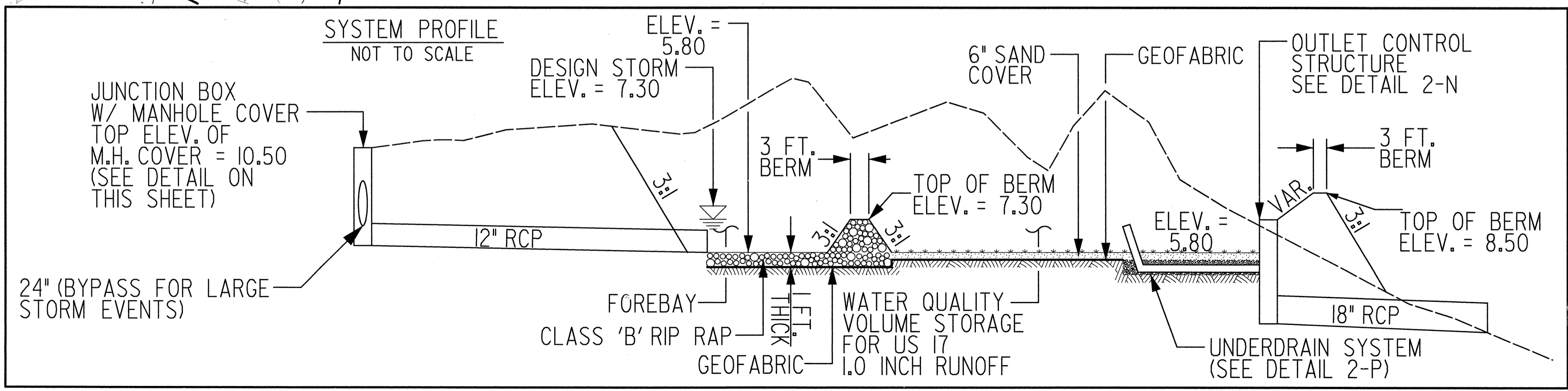
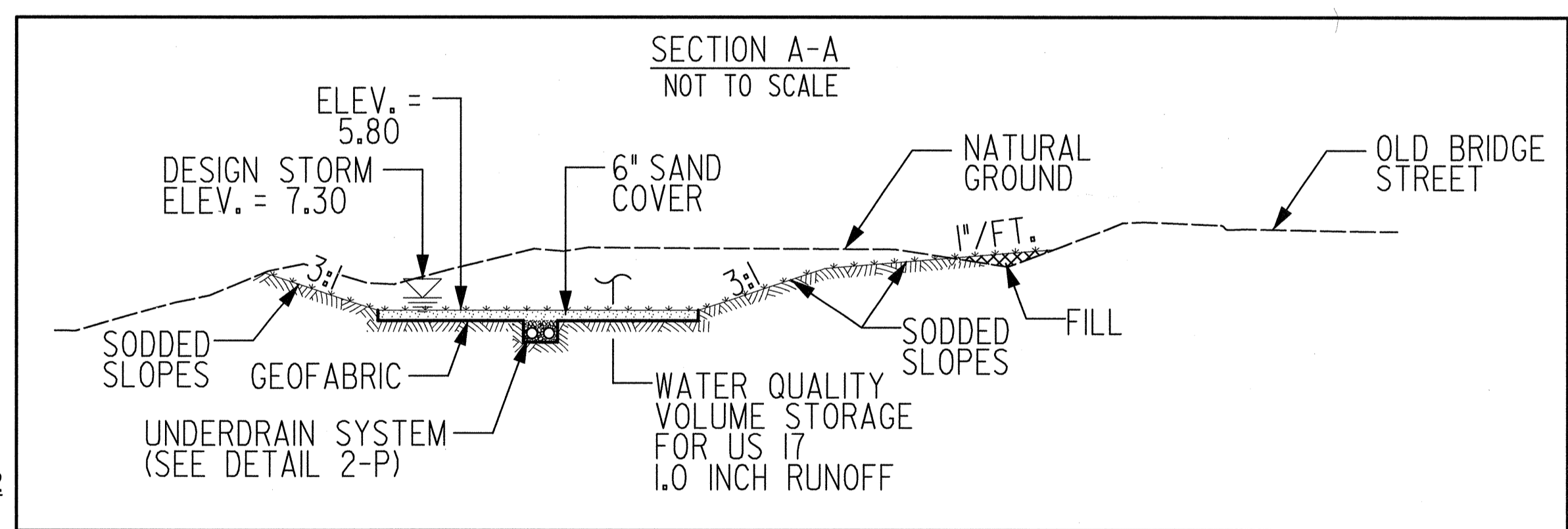
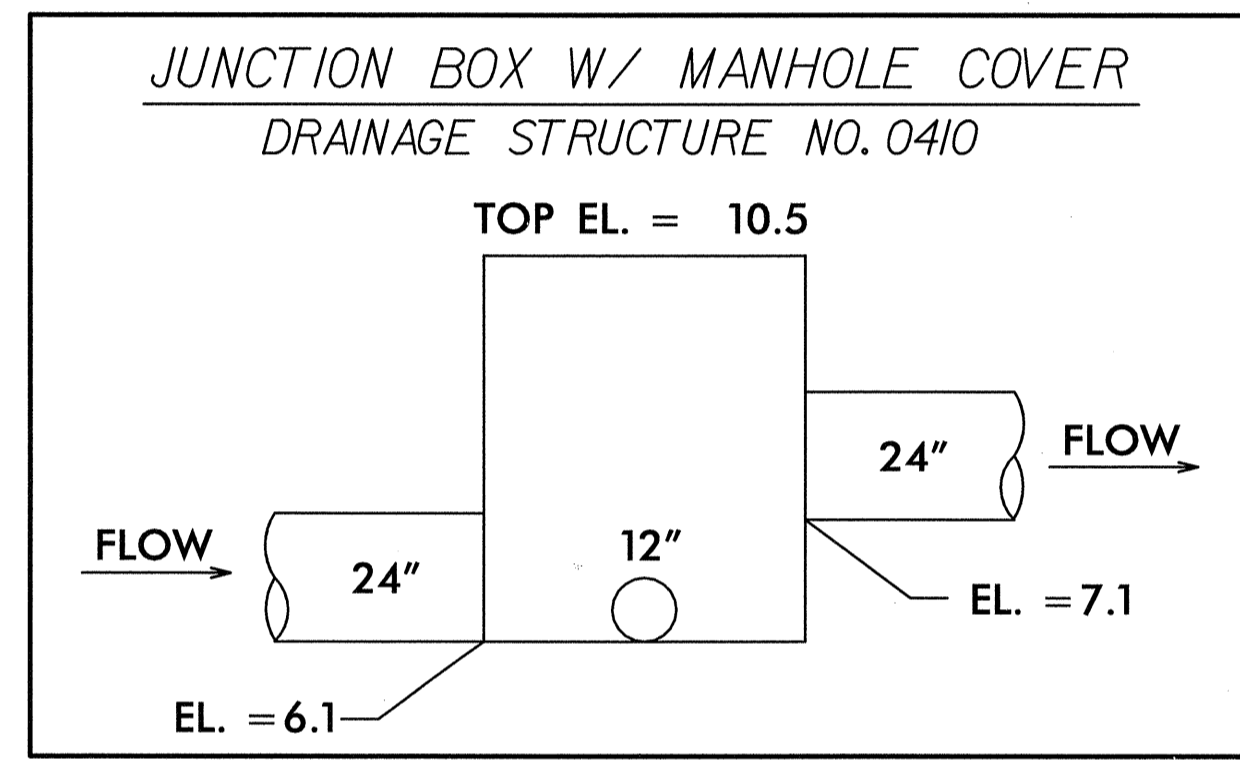




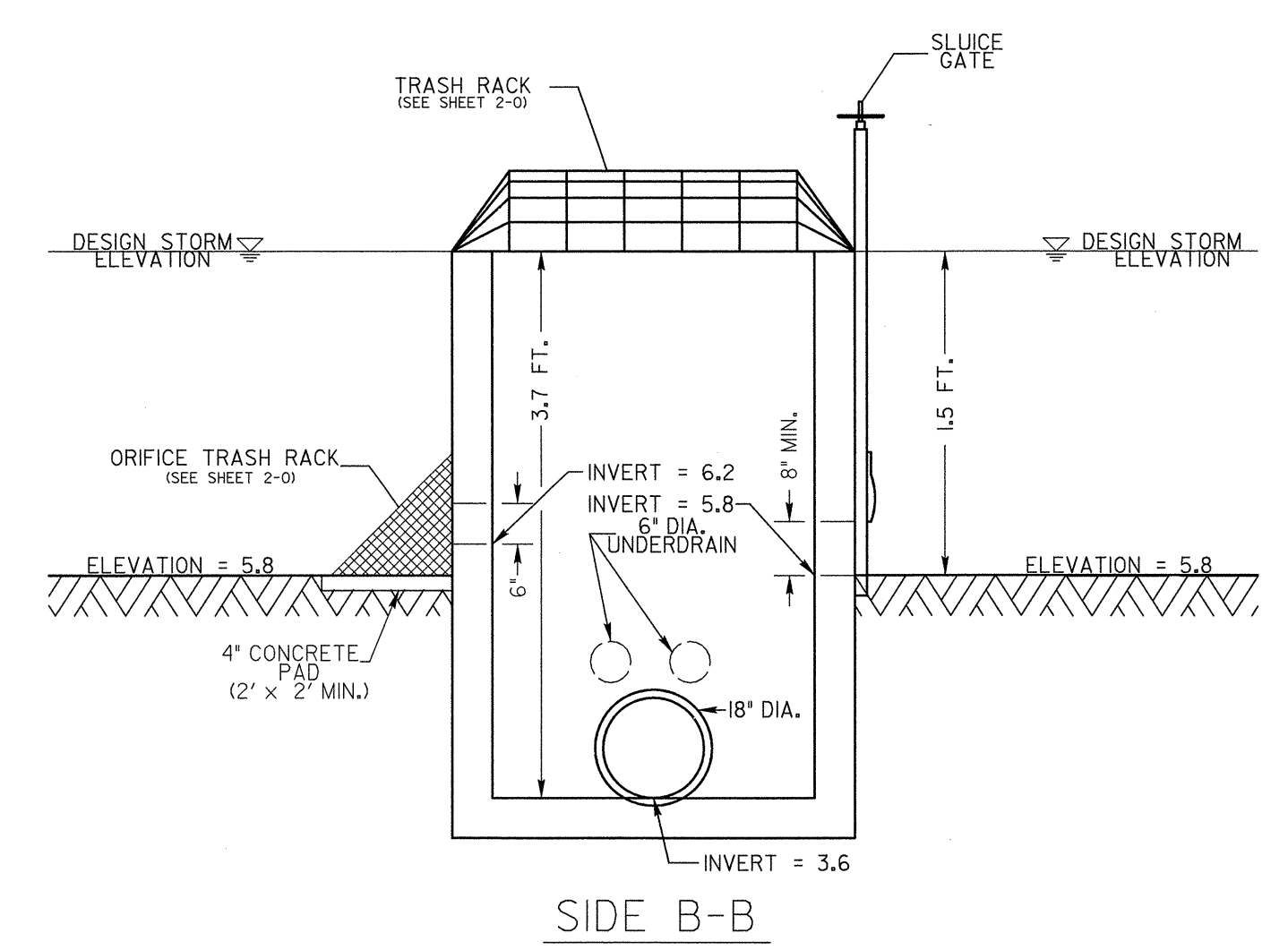
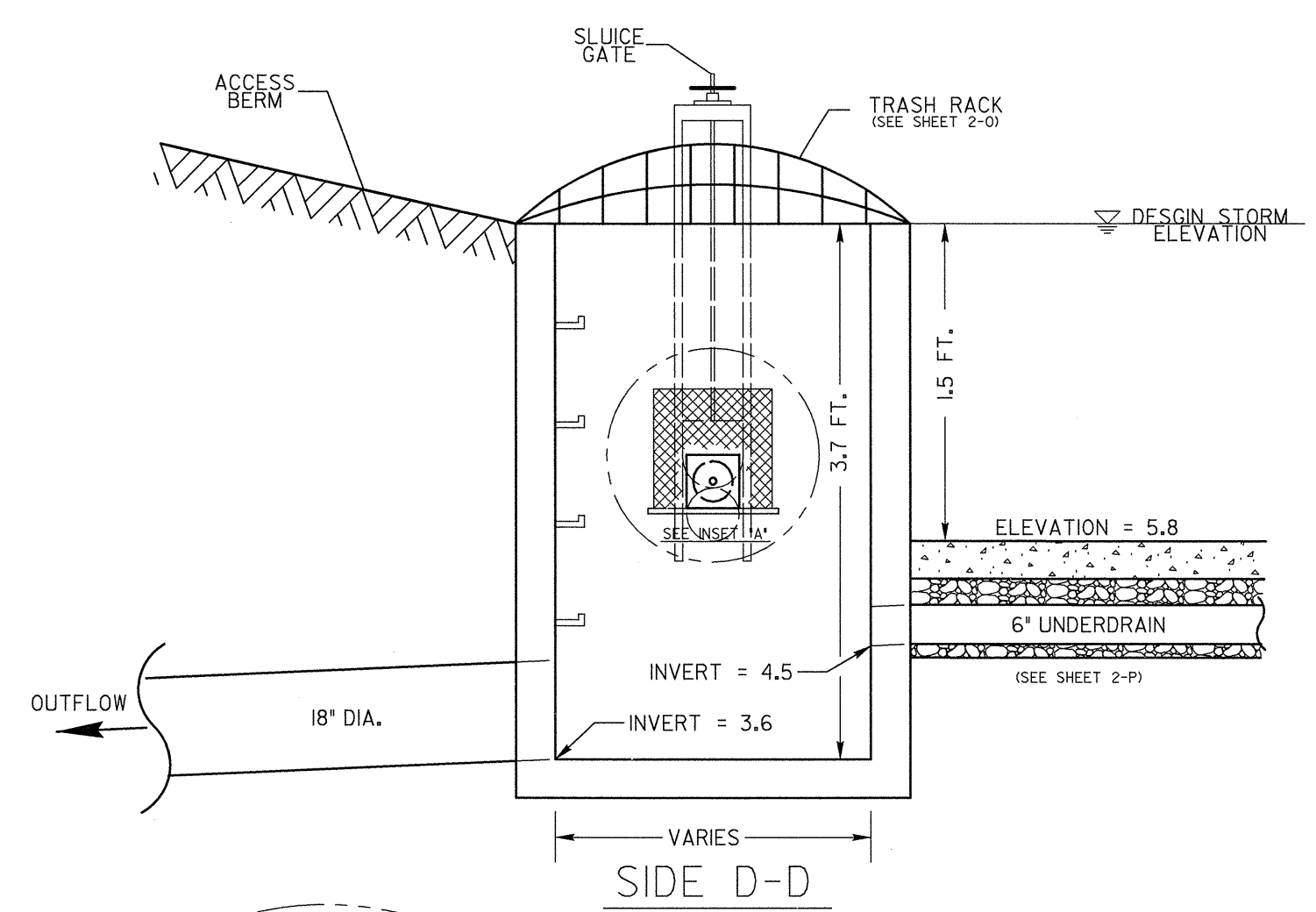
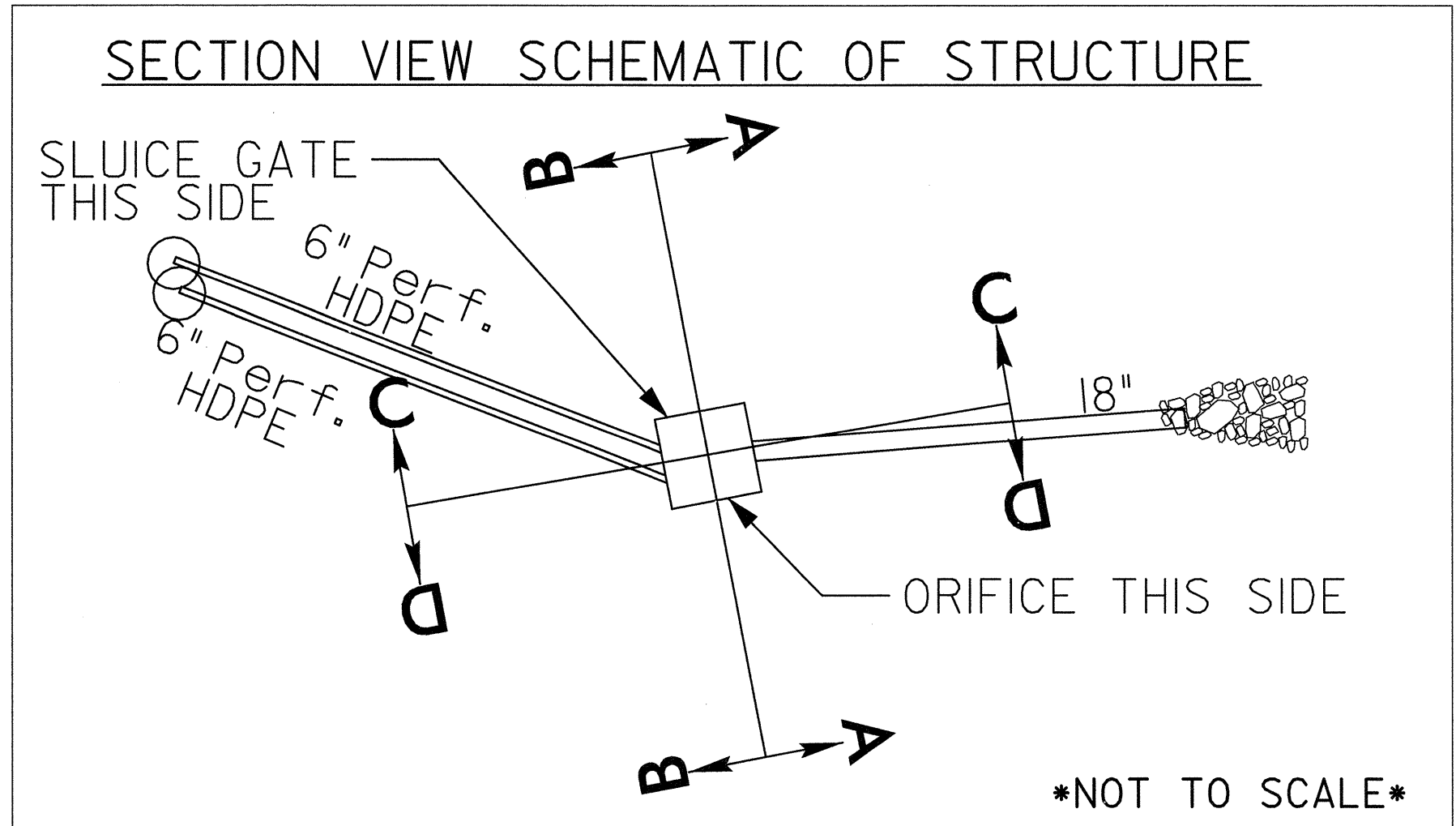
- REFERENCED SPECIAL DETAILS**
- SHEET 2-N: OUTLET CONTROL STRUCTURE
 - SHEET 2-O: TRASH RACKS
 - SHEET 2-P: UNDERDRAIN SYSTEM
 - SHEET 2-Q: DRY DETENTION BASIN NOTES



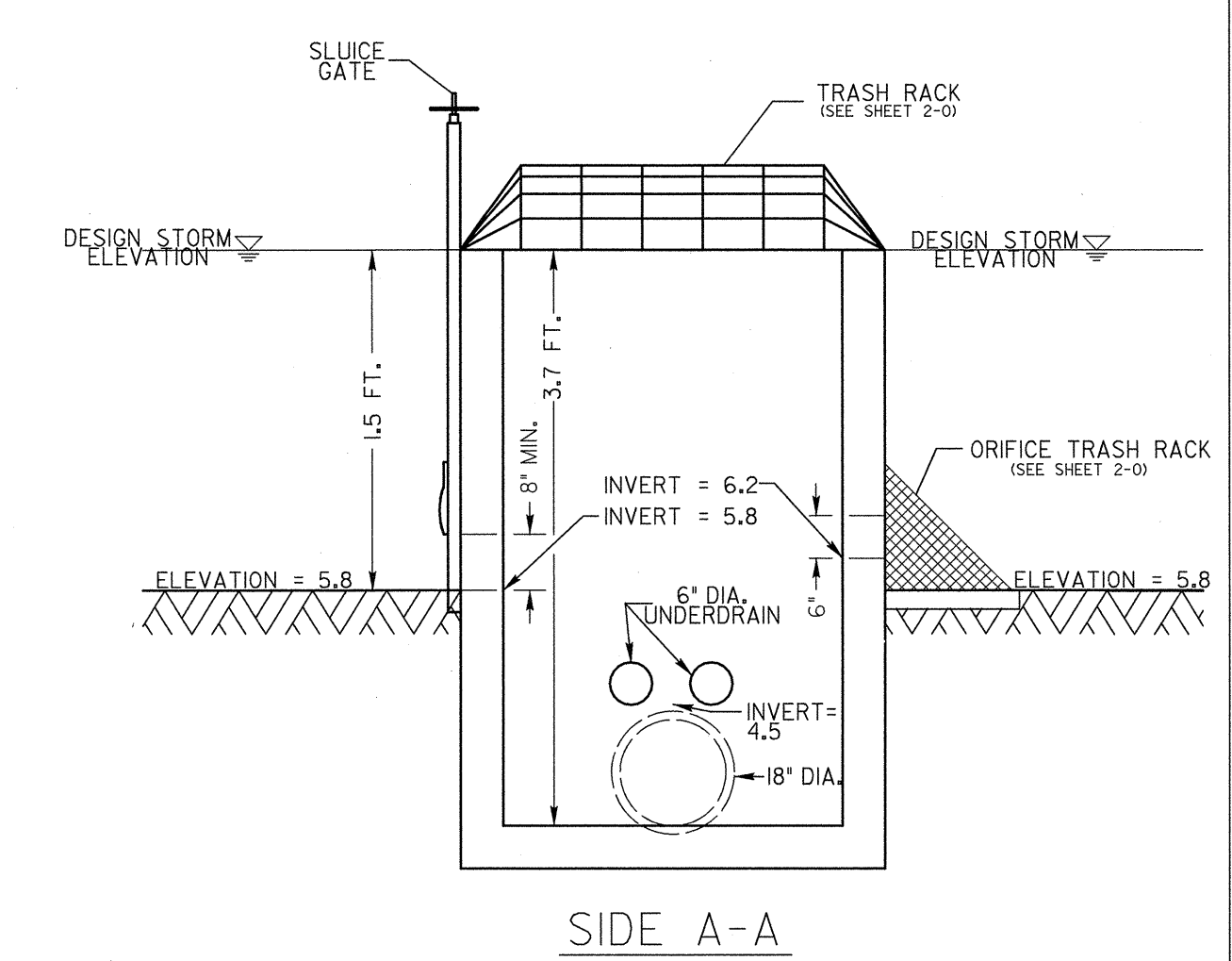
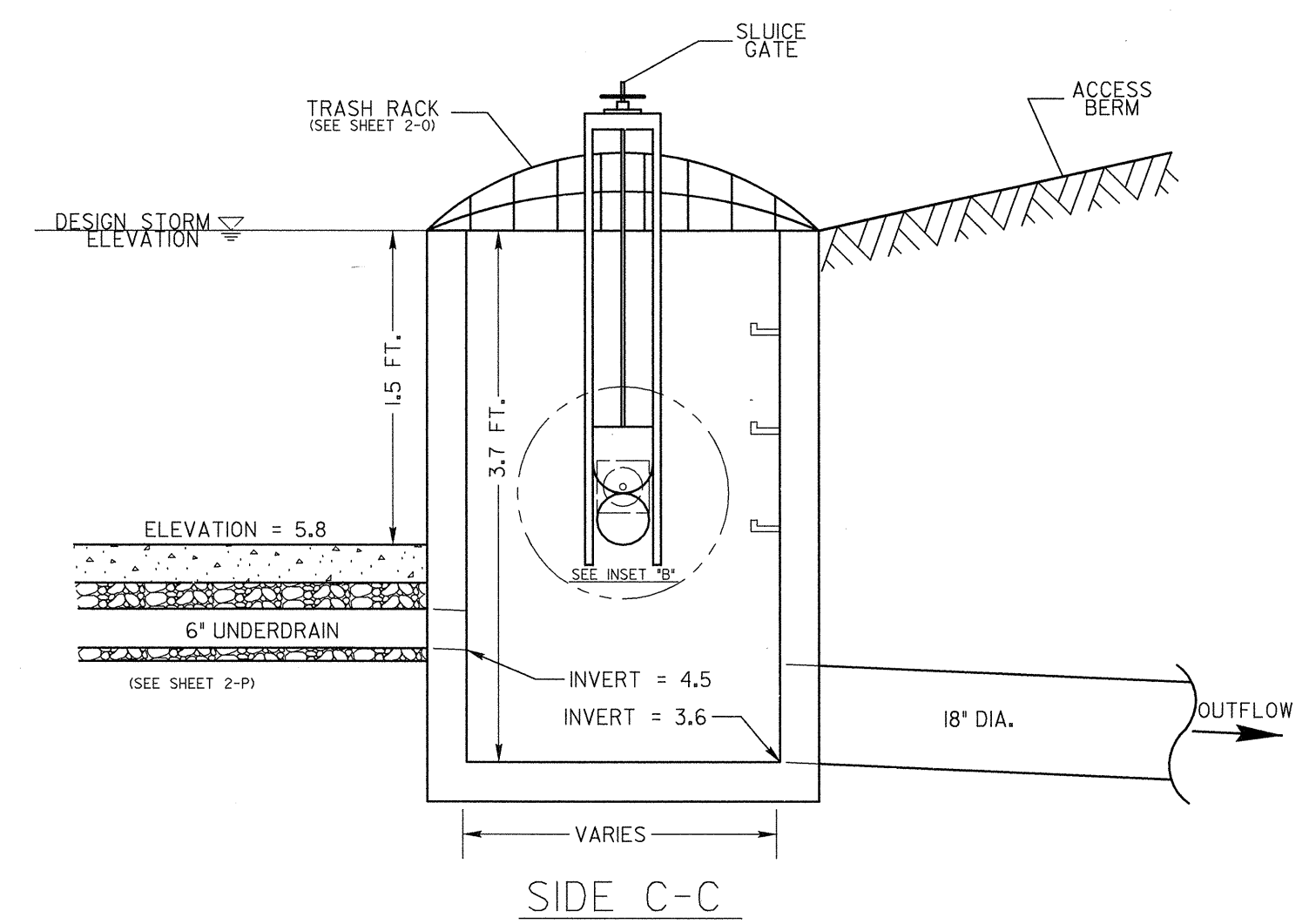
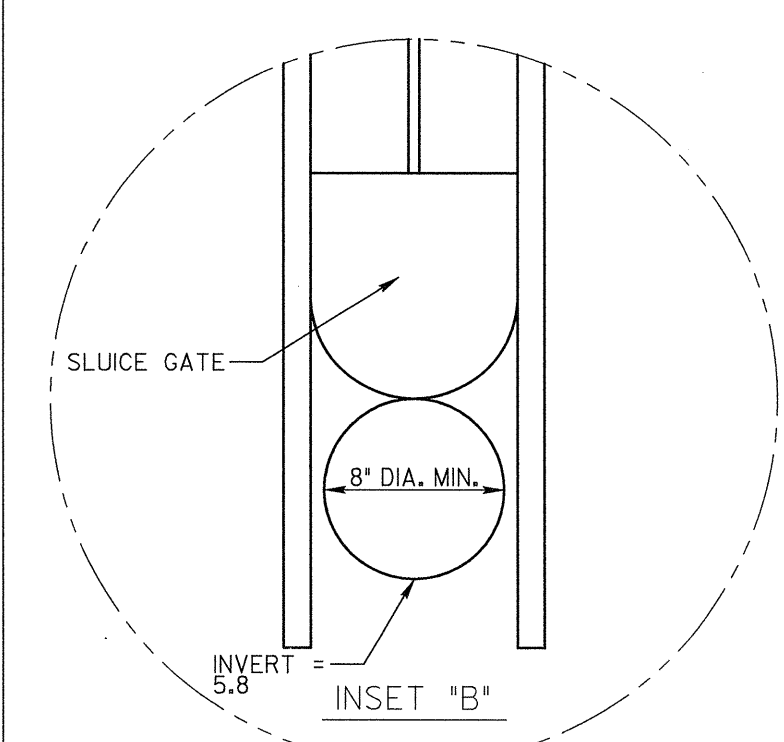
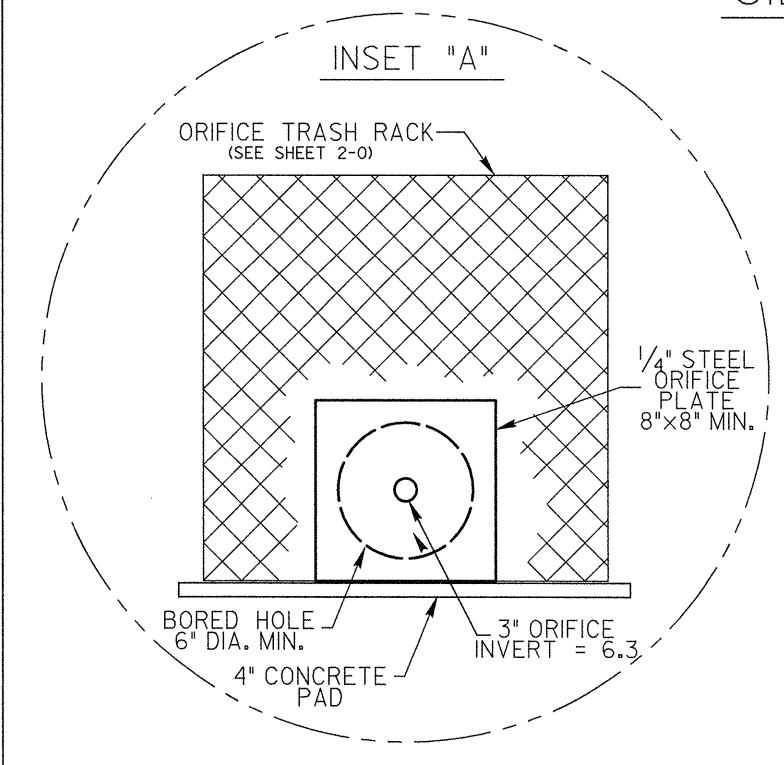
- DRY DETENTION BASIN**
- BOTTOM ELEV. = 5.80
 - BERM ELEV. = 8.50
 - DESIGN STORM = FIRST 1.0" RAINFALL
 - DESIGN VOLUME = 7625 FT³
 - VOLUME PROVIDED = 8009 FT³
- GENERAL NOTES:**
- ALL SIDE SLOPES ARE TO BE 3:1 OR FLATTER AND STABILIZED WITH VEGETATED COVER
 - BOTTOM OF POND IS TO BE COVERED WITH A LAYER OF CLEAN SAND TO AN AVERAGE DEPTH OF 6 INCHES
 - FOREBAY MUST RECEIVE REGULAR MAINTENANCE TO REMAIN EFFECTIVE



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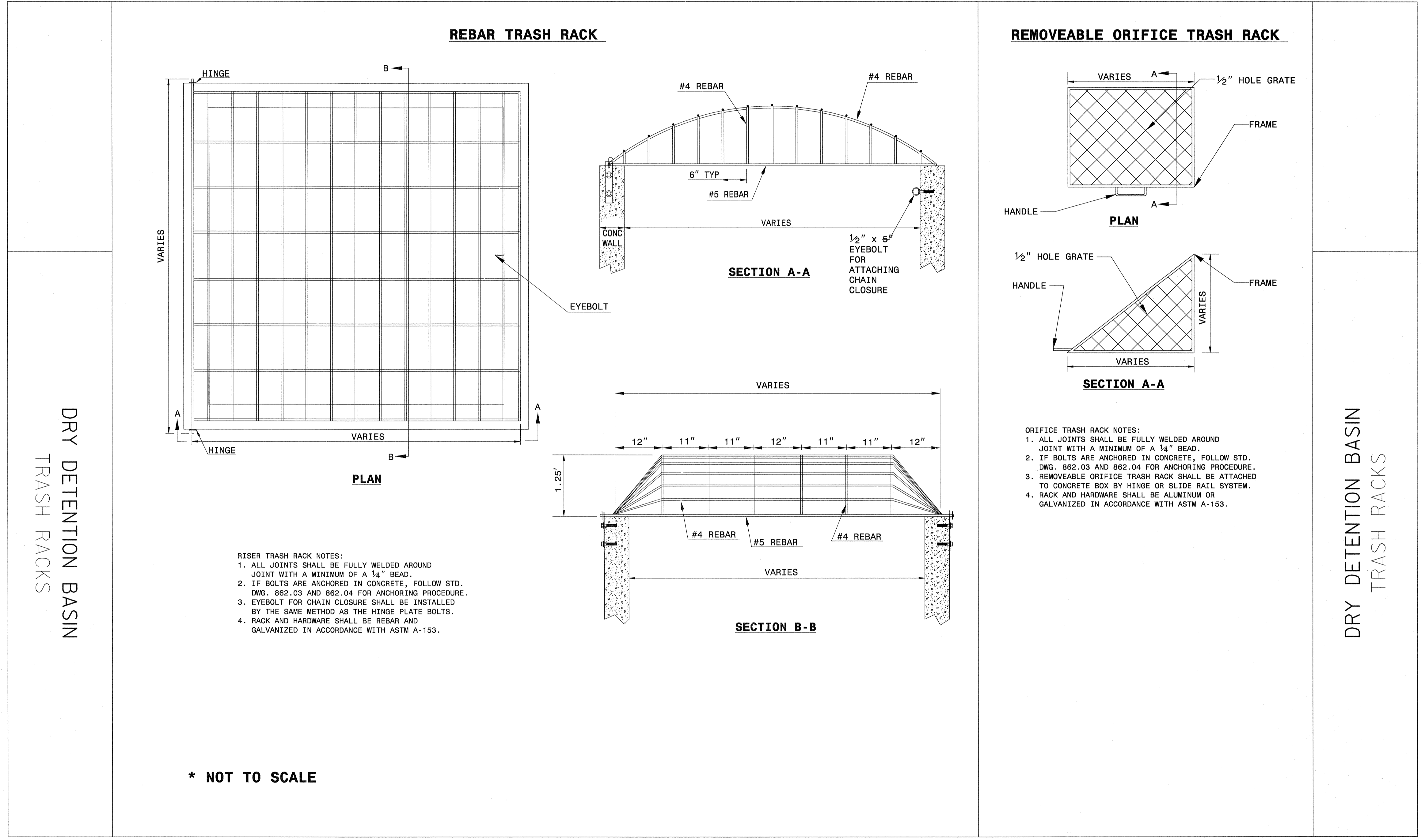
DRY DETENTION BASIN
OUTLET CONTROL STRUCTURE



DRY DETENTION BASIN
OUTLET CONTROL STRUCTURE

- NOTES**
1. 6" OPTIONAL UNDERDRAIN IS A SECONDARY DRAWDOWN DEVICE AND IS NOT INTENDED TO BE PRIMARY DRAWDOWN DEVICE.
 2. 8" MIN. SLUICE GATE IS FOR MAINTENANCE AND SHOULD REMAIN CLOSED DURING NORMAL OPERATION.

NOT TO SCALE

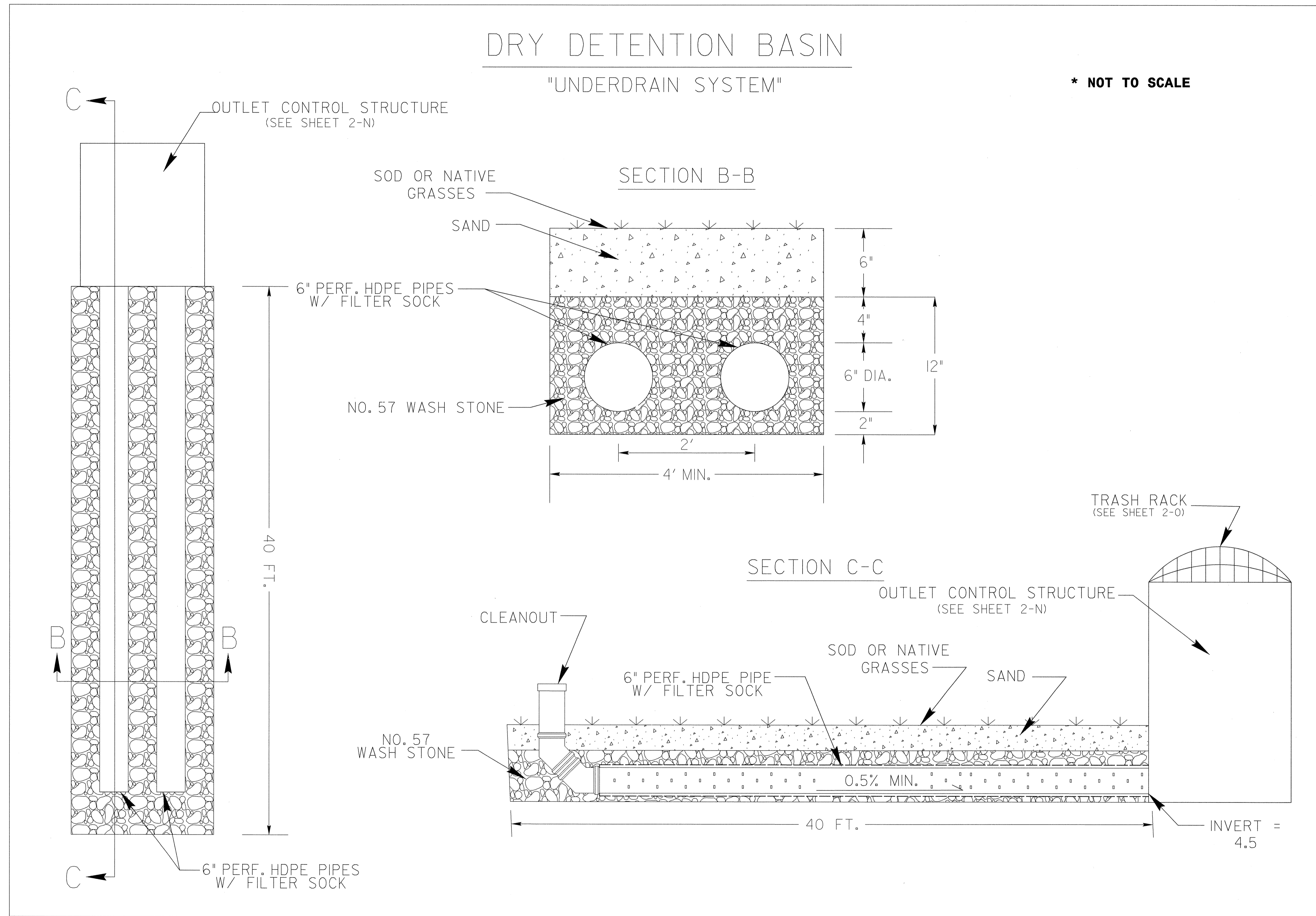


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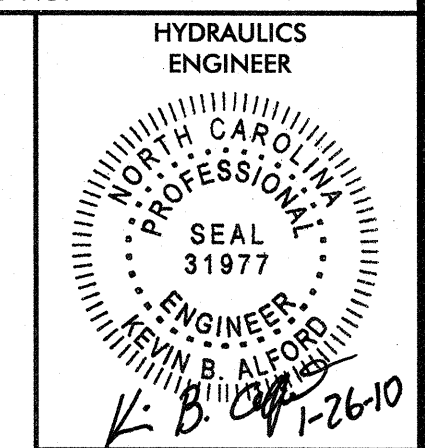
DRY DETENTION BASIN

"UNDERDRAIN SYSTEM"

* NOT TO SCALE



1/26/2010
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DRY DETENTION BASIN NOTES

SEQUENCE OF CONSTRUCTION FOR DRY DETENTION BASIN

1. PUT IN ALL EROSION CONTROL MEASURES (AS NEEDED THROUGH CONSTRUCTION STAGES).
2. EXCAVATE FOR THE BASIN AND FOREBAY. PREPARE THE BASIN FLOOR AT THE GIVEN GRADE.
3. CONSTRUCT BERM AROUND BASIN.
4. CONSTRUCT FOREBAY.
5. CONSTRUCT UNDERDRAIN SYSTEM (SEE DETAIL SHEET 2-P)
5. SEE SHEET 2-M FOR DETAILS OF SOIL LAYERING SEQUENCE SHOW BELOW FOR MAIN STORAGE BAY
 - LAY GEOFABRIC
 - PLACE AND GRADE 6" OF SAND.
 - PLACE SOD OR NATIVE GRASSES IN BASIN
6. CONSTRUCT AND INSTALL BOXES. CREATE OPENINGS IN BOXES AND CONNECT PIPES WITH BOXES.
7. ADD GRATES/TRASH RACK ON ALL BOXES.

MAINTENANCE RECOMMENDATIONS

1. REMOVE DEBRIS, TRASH AND SEDIMENT BUILDUP FROM THE BASIN AS NECESSARY TO MINIMIZE OUTLET CLOGGING AND IMPROVE AESTHETICS.
2. REPAIR AND REVEGETATE ERODED AREAS AS NEEDED.
3. CHECK INLETS AND OUTLETS FOR STRUCTURAL REPAIR TO CONFIRM THAT THEY ARE OPERATIONAL.
4. MOW AS NECESSARY TO LIMIT UNWANTED VEGETATION AND REMOVE CLIPPINGS AS PRACTICAL.

GENERAL NOTES FOR DRY DETENTION BASIN

1. APPLY SEEDING OVER THE SIDE SLOPES OF BERM AND ANY EXPOSED SURFACE THAT NEEDS TO BE PROTECTED AGAINST IMMEDIATE POTENTIAL STORM EVENT.
2. THE SURVEYOR SHALL VERIFY THE INVERTS AND ELEVATIONS AT THE FOLLOWING POINTS AT THE END OF EACH PHASE OF CONSTRUCTION:
 - INVERTS IN THE PIPE AND THE BOXES
 - INVERTS AT THE HIGH AND LOW POINTS OF THE ENGINEERED SOILS
3. THE BERM SHALL BE CONSTRUCTED WITH SUITABLE FILL MATERIAL PER THE ENGINEER.
4. ANY FILL MATERIAL SHALL BE COMPACTED.

SAND SPECIFICATIONS

WASHED ASTM C33 OR AASHTO M-6 FINE AGGREGATE CONCRETE SAND. IN ADDITION TO THESE SPECIFICATIONS, SAND MUST MEET ALL THE FOLLOWING CONDITIONS:

1. SAND MUST BE SILICA BASED ... NO LIMESTONE BASED PRODUCTS MAY BE USED. IF THE MATERIAL IS WHITE OR GRAY IN COLOR, IT IS PROBABLY NOT ACCEPTABLE.
2. SAND MUST BE CLEAN. NATURAL UNWASHED SAND DEPOSITS MAY NOT BE USED. LIKEWISE, SAND THAT HAS BECOME CONTAMINATED BY IMPROPER STORAGE OR INSTALLATION PRACTICES SHALL BE REJECTED.
3. MANUFACTURED SAND OR STONE DUST IS NOT ACCEPTABLE UNDER ANY CIRCUMSTANCES.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C201370



SUMMARY OF QUANTITIES

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ***** (23+15)
0036000000-E	225	6,700	CY	UNDERCUT EXCAVATION
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUB-BING
0063000000-N	SP	Lump Sum		GRADING
0106000000-E	230	8,500	CY	BORROW EXCAVATION
0127000000-N	SP	2	EA	EMBANKMENT SETTLEMENT GAUGES
0196000000-E	270	1,100	SY	FABRIC FOR SOIL STABILIZATION
0199000000-E	SP	1,110	SF	TEMPORARY SHORING
0234000000-E	SP	380	CY	GENERIC GRADING ITEM ENGINEERED SOIL MIX
0234000000-E	SP	4,100	CY	GENERIC GRADING ITEM SELECT GRANULAR MATERIAL
0255000000-E	SP	1,000	TON	GENERIC GRADING ITEM EXCAVATION AND STOCKPILING CONTAMINATED SOIL
0262000000-N	SP	15	EA	GENERIC GRADING ITEM CONTAMINATED WATER STORAGE VESSEL DAILY RENTAL
0320000000-E	SP	920	SY	FOUNDATION CONDITIONING FABRIC
0330000000-E	SP	400	TON	GENERIC DRAINAGE ITEM FOUNDATION CONDITIONING MATERIAL, MINOR STRS
0331000000-E	SP	420	CY	GENERIC DRAINAGE ITEM CLAY CORE
0331000000-E	SP	65	CY	GENERIC DRAINAGE ITEM SAND
0331000000-E	SP	250	CY	GENERIC DRAINAGE ITEM SHELL MATERIALS
0335100000-E	SP	92	LF	12" DRAINAGE PIPE
0335200000-E	SP	204	LF	15" DRAINAGE PIPE
0335300000-E	SP	56	LF	18" DRAINAGE PIPE
0335400000-E	SP	32	LF	24" DRAINAGE PIPE
0335850000-E	SP	2	EA	*** DRAINAGE PIPE ELBOWS (12")
0354000000-E	SP	12	LF	**** RC PIPE CULVERTS, CLASS ***** (12", III)
0354000000-E	SP	188	LF	**** RC PIPE CULVERTS, CLASS ***** (12", IV)
0354000000-E	SP	124	LF	**** RC PIPE CULVERTS, CLASS ***** (15", III)
0354000000-E	SP	76	LF	**** RC PIPE CULVERTS, CLASS ***** (18", III)
0448200000-E	SP	1,496	LF	15" RC PIPE CULVERTS, CLASS IV
0448400000-E	SP	456	LF	24" RC PIPE CULVERTS, CLASS IV
0536000000-E	SP	100	LF	*** HDPE PIPE CULVERTS (6")
0973100000-E	SP	160	LF	*** WELDED STEEL PIPE, ***** THICK, GRADE ** IN SOIL (18", 0.500", B)
0986000000-E	SP	259	LF	GENERIC PIPE ITEM 6" HDPE PIPE CULVERTS, PERFORATED
0992000000-E	SP	8	EA	GENERIC PIPE ITEM 6" HDPE CAPS
0992000000-E	SP	24	EA	GENERIC PIPE ITEM 6" HDPE WYES, TEES & ELBOWS
0995000000-E	340	186	LF	PIPE REMOVAL
0996000000-N	350	1	EA	PIPE CLEAN-OUT
1077000000-E	SP	320	TON	#57 STONE
1220000000-E	545	500	TON	INCIDENTAL STONE BASE
1297000000-E	607	2,250	SY	MILLING ASPHALT PAVEMENT, **** DEPTH (1-1/2")
1489000000-E	610	220	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1491000000-E	610	2,700	TON	ASPHALT CONC BASE COURSE, TYPE B25.0C
1503000000-E	610	2,690	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE 119.0C

ItemNumber	Sec #	Quantity	Unit	Description
1523000000-E	610	2,420	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5C
1525000000-E	610	80	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
1560000000-E	620	260	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
1565000000-E	620	150	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 70-22
1693000000-E	654	53	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
2022000000-E	815	23	CY	SUBDRAIN EXCAVATION
2033000000-E	815	17	CY	SUBDRAIN FINE AGGREGATE
2044000000-E	815	100	LF	6" PERFORATED SUBDRAIN PIPE
2055000000-E	815	3	EA	6" SUBDRAIN PIPE WYES, TEES, & ELBOWS
2066000000-N	815	1	EA	CONCRETE PAD FOR SUBDRAIN PIPE OUTLET
2077000000-E	815	6	LF	6" OUTLET PIPE (SUBDRAINS)
2253000000-E	840	1.5	CY	PIPE COLLARS
2264000000-E	840	0.2	CY	PIPE PLUGS
2275000000-E	SP	3	CY	FLOWABLE FILL
2286000000-N	840	39	EA	MASONRY DRAINAGE STRUCTURES
2308000000-E	840	60	LF	MASONRY DRAINAGE STRUCTURES
2364000000-N	840	8	EA	FRAME WITH TWO GRATES, STD 840.16
2367000000-N	840	2	EA	FRAME WITH TWO GRATES, STD 840.29
2374000000-N	840	2	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)
2374000000-N	840	9	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)
2374000000-N	840	11	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)
2396000000-N	840	6	EA	FRAME WITH COVER, STD 840.54
2451000000-N	852	1	EA	CONCRETE TRANSITIONAL SECTION FOR DROP INLETS

ItemNumber	Sec #	Quantity	Unit	Description
2462000000-E	SP	1	EA	*** SLUICE GATE (8')
2473000000-N	SP	2	EA	GENERIC DRAINAGE ITEM RETICULINE FRAME AND GRATE
2535000000-E	846	1,050	LF	***X*** CONCRETE CURB (8" X 18")
2549000000-E	846	3,420	LF	2'-6" CONCRETE CURB & GUTTER
2591000000-E	848	1,470	SY	4" CONCRETE SIDEWALK
2605000000-N	848	6	EA	CONCRETE WHEELCHAIR RAMPS
2612000000-E	848	750	SY	6" CONCRETE DRIVEWAY
2655000000-E	852	100	SY	5" MONOLITHIC CONCRETE ISLANDS (KEYED IN)
2800000000-N	858	2	EA	ADJUSTMENT OF CATCH BASINS
2815000000-N	858	1	EA	ADJUSTMENT OF DROP INLETS
3030000000-E	862	462.5	LF	STEEL BM GUARDRAIL
3150000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
3215000000-N	862	2	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3270000000-N	SP	2	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3536000000-E	866	564	LF	CHAIN LINK FENCE, 48" FABRIC
3542000000-E	866	48	EA	METAL LINE POSTS FOR 48" CHAIN LINK FENCE
3548000000-E	866	7	EA	METAL TERMINAL POSTS FOR 48" CHAIN LINK FENCE
3554000000-E	866	2	EA	METAL GATE POSTS FOR *** CHAIN LINK FENCE, DOUBLE GATE (48")
3565000000-E	866	1	EA	DOUBLE GATES, *** HIGH, *** WIDE, ** OPENING (48", 15', 30')
3628000000-E	876	7	TON	RIP RAP, CLASS I
3649000000-E	876	86	TON	RIP RAP, CLASS B
3656000000-E	876	833	SY	FILTER FABRIC FOR DRAINAGE
4072000000-E	903	408	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
4096000000-N	904	2	EA	SIGN ERECTION, TYPE D
4102000000-N	904	13	EA	SIGN ERECTION, TYPE E
4116100000-N	904	4	EA	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (D)
4155000000-N	907	8	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
4192000000-N	907	4	EA	DISPOSAL OF SUPPORT, U-CHANNEL
4400000000-E	1110	312	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	96	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	26	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4415000000-N	1115	3	EA	FLASHING ARROW PANELS, TYPE C
4420000000-N	1120	12	EA	CHANGEABLE MESSAGE SIGN
4430000000-N	1130	100	EA	DRUMS
4435000000-N	1135	34	EA	CONES
4445000000-E	1145	24	LF	BARRICADES (TYPE III)
4450000000-N	1150	480	HR	FLAGGER
4465000000-N	1160	2	EA	TEMPORARY CRASH CUSHIONS
4470000000-N	1160	2	EA	RESET TEMPORARY CRASH CUSHIONS
4480000000-N	1165	2	EA	TMA
4490000000-E	1170	855	LF	PORTABLE CONCRETE BARRIER (ANCHORED)
4495000000-E	1170	521	LF	PORTABLE CONCRETE BARRIER (DRAINAGE)
4505000000-E	1170	765	LF	RESET PORTABLE CONCRETE BARRIER (ANCHORED)
4506000000-E	1170	375	LF	RESET PORTABLE CONCRETE BARRIER (DRAINAGE)
4510000000-N	SP	200	HR	LAW ENFORCEMENT
4650000000-N	1251	40	EA	TEMPORARY RAISED PAVEMENT MARKERS
4725000000-E	1205	27	EA	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)
4770000000-E	1205	3,920	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (IV)

STATE OF NORTH CAROLINA SUMMARY OF QUANTITIES

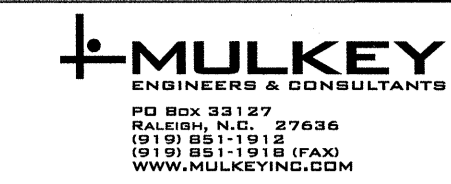
ItemNumber	Sec #	Quantity	Unit	Description
481000000-E	1205	27,600	LF	PAINT PAVEMENT MARKING LINES (4")
484700000-E	1205	10,175	LF	POLYUREA PAVEMENT MARKING LINES (4", *****) (STANDARD GLASS BEADS)
4847110000-E	1205	850	LF	POLYUREA PAVEMENT MARKING LINES (8", *****) (STANDARD GLASS BEADS)
4847140000-E	1205	20	LF	POLYUREA PAVEMENT MARKING LINES (24", *****) (STANDARD GLASS BEADS)
485000000-E	1205	1,500	LF	REMOVAL OF PAVEMENT MARKING LINES (4")
490000000-N	1251	100	EA	PERMANENT RAISED PAVEMENT MARKERS
490500000-N	1253	125	EA	SNOWPLOWABLE PAVEMENT MARKERS
532560000-E	1510	475	LF	6" WATER LINE
532580000-E	1510	415	LF	8" WATER LINE
532620000-E	1510	314	LF	12" WATER LINE
554000000-E	1515	1	EA	6" VALVE
554600000-E	1515	1	EA	8" VALVE
555800000-E	1515	1	EA	12" VALVE
564800000-N	1515	4	EA	RELOCATE WATER METER
564900000-N	1515	1	EA	RECONNECT WATER METER
567200000-N	1515	4	EA	RELOCATE FIRE HYDRANT
569130000-E	1520	630	LF	8" SANITARY GRAVITY SEWER
569140000-E	1520	354	LF	10" SANITARY GRAVITY SEWER
577500000-E	1525	6	EA	4' DIA UTILITY MANHOLE
578100000-E	1525	22	LF	UTILITY MANHOLE WALL, 4' DIA
580100000-E	1530	790	LF	ABANDON 8" UTILITY PIPE
581600000-N	1530	3	EA	ABANDON UTILITY MANHOLE
582800000-N	1530	3	EA	REMOVE UTILITY MANHOLE
583570000-E	1540	88	LF	16" ENCASEMENT PIPE
583600000-E	1540	78	LF	24" ENCASEMENT PIPE

ItemNumber	Sec #	Quantity	Unit	Description
587150000-E	1550	51	LF	TRENCHLESS INSTALLATION OF 8" IN SOIL
5871510000-E	1550	51	LF	TRENCHLESS INSTALLATION OF 8" NOT IN SOIL
587170000-E	1550	46	LF	TRENCHLESS INSTALLATION OF 12" IN SOIL
5871710000-E	1550	46	LF	TRENCHLESS INSTALLATION OF 12" NOT IN SOIL
600000000-E	1605	1,800	LF	TEMPORARY SILT FENCE
600600000-E	1610	340	TON	STONE FOR EROSION CONTROL, CLASS A
600900000-E	1610	155	TON	STONE FOR EROSION CONTROL, CLASS B
601200000-E	1610	420	TON	SEDIMENT CONTROL STONE
601500000-E	1615	4	ACR	TEMPORARY MULCHING
601800000-E	1620	100	LB	SEED FOR TEMPORARY SEEDING
602100000-E	1620	1.5	TON	FERTILIZER FOR TEMPORARY SEEDING
602400000-E	1622	200	LF	TEMPORARY SLOPE DRAINS
602700000-N	1622	4	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
602900000-E	SP	1,000	LF	SAFETY FENCE
603000000-E	1630	700	CY	SILT EXCAVATION
603600000-E	1631	2,000	SY	MATTING FOR EROSION CONTROL
603700000-E	SP	20	SY	COIR FIBER MAT
604200000-E	1632	1,800	LF	1/4" HARDWARE CLOTH
604800000-E	SP	6,000	SY	FLOATING TURBIDITY CURTAIN
6071030000-E	SP	550	LF	COIR FIBER BAFFLES
6071050000-E	SP	1	EA	*** SKIMMER (1-1/2")
6071050000-E	SP	1	EA	*** SKIMMER (2")
608400000-E	1660	6	ACR	SEEDING & MULCHING
608700000-E	1660	3	ACR	MOWING
609000000-E	1661	50	LB	SEED FOR REPAIR SEEDING

ItemNumber	Sec #	Quantity	Unit	Description
609300000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
609600000-E	1662	75	LB	SEED FOR SUPPLEMENTAL SEEDING
610200000-E	1664	2,545	SY	SODDING
610800000-E	1665	2.25	TON	FERTILIZER TOPDRESSING
611450000-N	SP	30	MHR	SPECIALIZED HAND MOWING
611700000-N	SP	12	EA	RESPONSE FOR EROSION CONTROL
613800000-E	SP	75	CY	GENERIC EROSION CONTROL ITEM 12 MONTH AGED HARDWOOD MULCH
621500000-N	1670	3	EA	ACER SACCHARUM, SUGAR MAPLE, 6'-8", MIN 3/4" CAL, B&B OR CONT
664000000-N	1670	86	EA	GENERIC PLANTING ITEM ANDROPOGON GLOMERATUS, BUSHY BLUESTEM, 2-1/4" SQ POT, TRAY OF 32
664000000-N	1670	107	EA	GENERIC PLANTING ITEM ASCLEPIAS TUBEROSA, BUTTERFLY WEED 4" POT OR QT CONT-DEEP
664000000-N	1670	70	EA	GENERIC PLANTING ITEM BOLTONIA ASTEROIDES, FALSE ASTER 4" POT OR QT CONT-DEEP
664000000-N	1670	185	EA	GENERIC PLANTING ITEM ECHINACEA PURPUREA, PURPLE CONEFLOWER, 4" POT OR QT CONT-DEEP
664000000-N	1670	51	EA	GENERIC PLANTING ITEM JUNCUS EFFUSUS, SOFT RUSH 2-1/4" SQ POT, TRAY OF 32
664000000-N	1670	107	EA	GENERIC PLANTING ITEM MONARDA DIDYMA, BEE-BALM 4" POT OR QT CONT-DEEP
664000000-N	1670	24	EA	GENERIC PLANTING ITEM PANICUM VIRGATUM 'CLOUD NINE', SWITCHGRASS, 3-1/2" - 4" POT, TRAY OF 18
664000000-N	1670	66	EA	GENERIC PLANTING ITEM SPARTINA BAKERI, CORD GRASS 2-1/4" SQ POT, TRAY OF 32
665000000-E	1670	770	CY	MULCH FOR PLANTING
665500000-E	1670	2	M/G	WATER FOR PLANTING
667000000-E	1670	770	SY	PREEMERGENT HERBICIDAL TREATMENT FOR PLANT BEDS
667500000-E	SP	1,610	SY	GENERIC PLANTING ITEM GEOTEXTILE FABRIC
667500000-E	SP	750	SY	GENERIC PLANTING ITEM POLYPROPYLENE WOVEN MONOFILAMENT GEOTEXTILE FABRIC
730000000-E	1715	485	LF	UNPAVED TRENCHING (*****) (1, 2")
730100000-E	1715	46	LF	DIRECTIONAL DRILL (*****) (1, 2")
732400000-N	1716	5	EA	JUNCTION BOX (STANDARD SIZE)
744400000-E	1725	410	LF	INDUCTIVE LOOP SAWCUT
745600000-E	1726	2,540	LF	LEAD-IN CABLE (*****) (14-2)

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

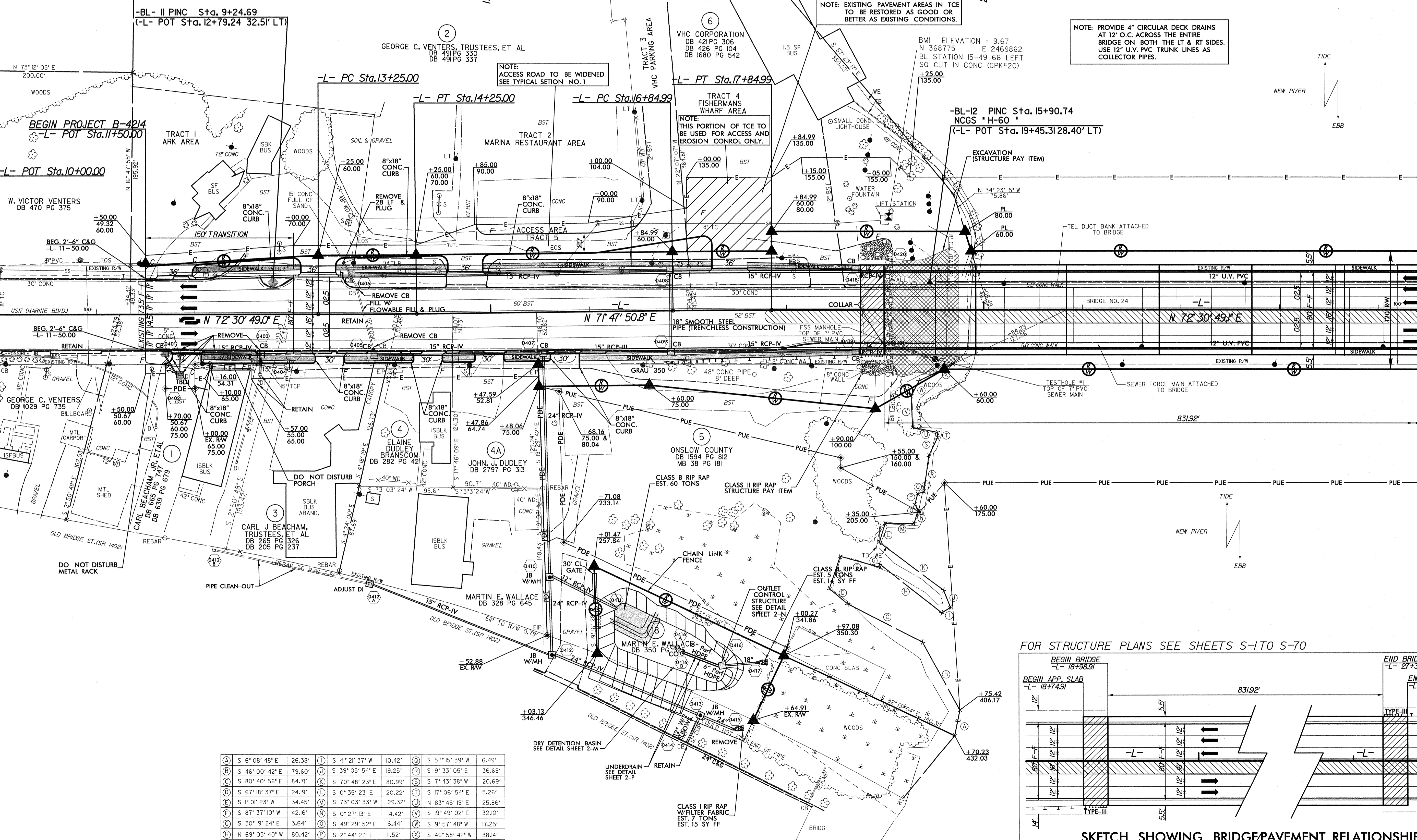
PARCEL INDEX SHEET



PARCEL NO.	SHEET NO.	PROPERTY OWNERS NAME
1	4	CARL BEACHAM, JR. ET AL
2	4	GEORGE C. VENTERS, TRUSTEES, ET AL
3	4	CARL J. BEACHAM, TRUSTEES, ET AL
4	4	ELAINE DUDLEY BRANSCOM
4A	4	JOHN J. DUDLEY
5	4	ONslow COUNTY
6	4	VHC CORPORATION
7	5	KEITH E. FOUNTAIN
8	5	POPKINS BROTHERS ENT. INC.
8Z	5	POPKINS BROTHERS ENT. INC.
9	5	TACO PROPERTIES, INC.
10	5	CITY OF JACKSONVILLE
11	5	HATTIE JOYCE POPKIN
12		(REMOVED FROM PLANS)
13	5	RONNIE L. HENDERSON
14	5	WILLIAM T. HUMPHREY
15	5	CAJUN PROPERTIES, INC.
16	5	HARVEY BONEY
17		(REMOVED FROM PLANS)
18	4	MARTIN E. WALLACE

PI Sta 13+75.00 PI Sta 17+34.99
 $\Delta = 0^\circ 42' 58.2" (LT)$ $\Delta = 0^\circ 42' 58.3" (RT)$
 $D = 0^\circ 42' 58.3"$ $D = 0^\circ 42' 58.3"$
 $L = 99.99'$ $L = 100.00'$
 $T = 50.00'$ $T = 50.00'$
 $R = 8,000.00'$ $R = 8,000.00'$
 $SE = 0.25$ $SE = 0.25$
 $V = 50 \text{ mph}$ $V = 50 \text{ mph}$

NC GRID NAD 83 795



NOTE: PROVIDE 4" CIRCULAR DECK DRAINS AT 12' O.C. ACROSS THE ENTIRE BRIDGE ON BOTH THE LT & RT SIDES. USE 12" U.V. PVC TRUNK LINES AS COLLECTOR PIPES.

NOTE: EXISTING PAVEMENT AREAS IN TCE TO BE RESTORED AS GOOD OR BETTER AS EXISTING CONDITIONS.

NOTE: ACCESS ROAD TO BE WIDENED SEE TYPICAL SECTION NO. 1

NOTE: THIS PORTION OF TCE TO BE USED FOR ACCESS AND EROSION CONTROL ONLY.

NOTE: EXCAVATION (STRUCTURE PAY ITEM)

BEGIN PROJECT B-4214
-L- POT Sta. 11+50.00

-L- POT Sta. 10+00.00

-L- PC Sta. 13+25.00

-L- PT Sta. 14+25.00

-L- PC Sta. 16+84.99

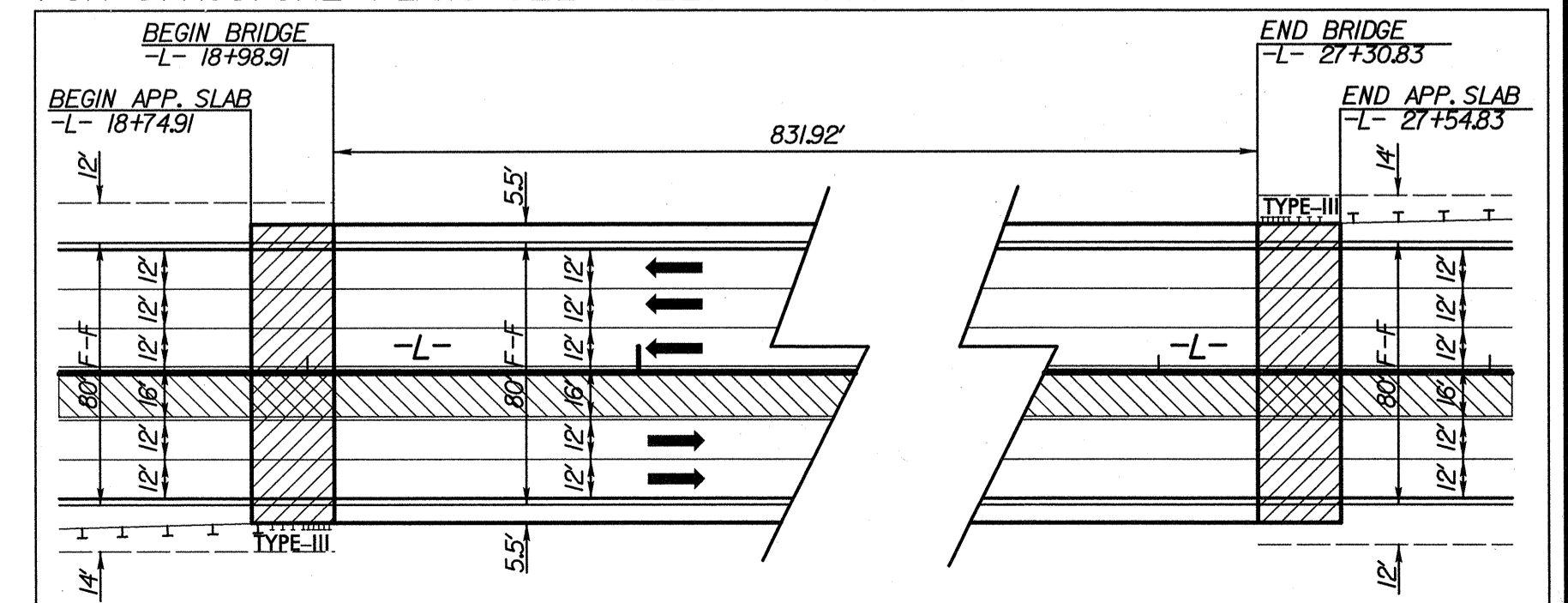
-L- PT Sta. 17+84.99

-BL-12 PINC Sta. 15+90.74
NCGS H-60
(-L- POT Sta. 19+45.31 28.40' LT)

BEG. 2'-6" C&G
-L- 11+50.00

BEG. 2'-6" C&G
-L- 11+50.00

FOR STRUCTURE PLANS SEE SHEETS S-1 TO S-10



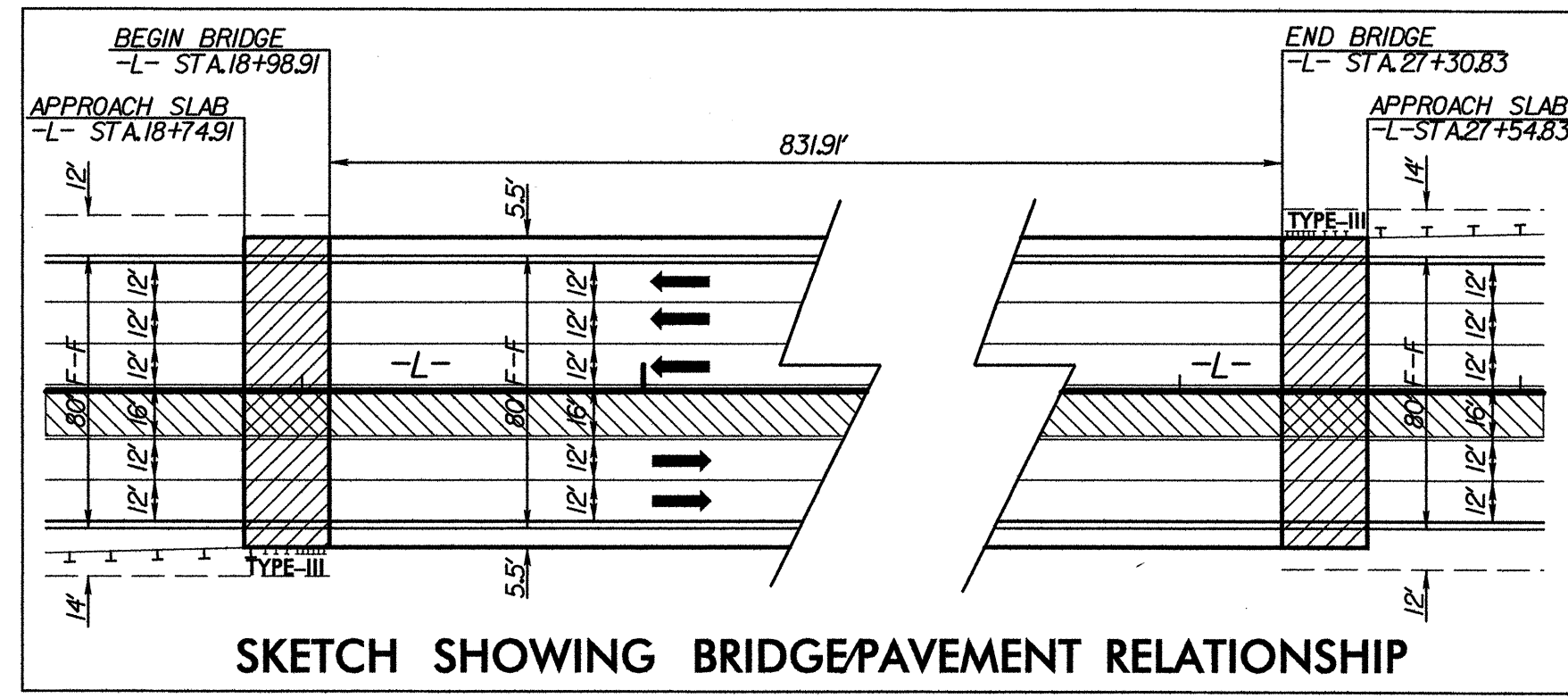
SKETCH SHOWING BRIDGE PAVEMENT RELATIONSHIP

(A)	S 6° 08' 48" E	26.38'	(J)	S 41° 21' 37" W	10.42'	(O)	S 57° 15' 39" W	6.49'
(B)	S 46° 00' 42" E	79.60'	(K)	S 39° 05' 54" E	19.25'	(P)	S 9° 33' 05" E	36.69'
(C)	S 80° 40' 56" E	84.71'	(L)	S 70° 48' 23" E	80.99'	(Q)	S 7° 43' 38" W	20.69'
(D)	S 67° 18' 37" E	24.19'	(M)	S 0° 35' 23" E	20.22'	(R)	S 17° 06' 54" E	5.26'
(E)	S 1° 01' 23" W	34.45'	(N)	S 73° 03' 33" W	29.32'	(S)	N 83° 46' 19" E	25.86'
(F)	S 87° 37' 10" W	42.16'	(U)	S 0° 27' 13" E	14.42'	(T)	S 19° 49' 02" E	32.10'
(G)	S 30° 19' 24" E	3.64'	(V)	S 49° 29' 52" E	6.44'	(W)	S 9° 57' 48" W	17.25'
(H)	N 69° 05' 40" W	80.42'	(X)	S 2° 44' 27" E	11.52'	(Y)	S 46° 58' 42" W	38.14'

REVISIONS

1/15/2008
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MATCH LINE -L- STA. 24+50.00



FOR STRUCTURE PLANS SEE SHEETS S-1 TO S-70

-L-
PI Sta. 34+09.72
 $\Delta = 3^{\circ}53'52.6"$ (RT)
 $D = 0^{\circ}45'14.0"$
 $L = 517.04'$
 $T = 258.62'$
 $R = 7600.00'$
 $SE = RC 025$
 $RO = 90^{\circ}$
 $V = 50$ mph

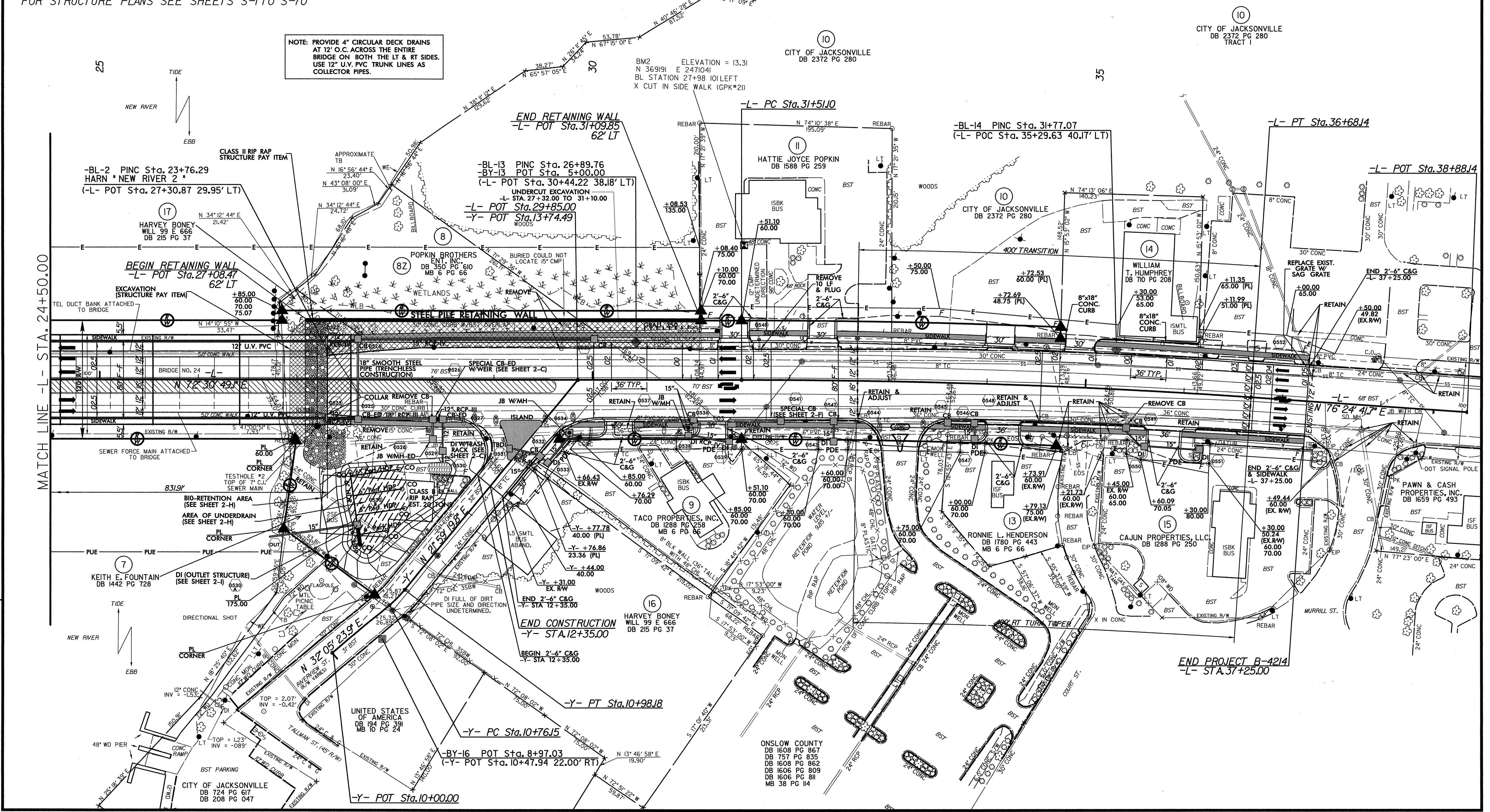
-Y-
PI Sta. 10+87.19
 $\Delta = 10^{\circ}06'04.1"$ (LT)
 $D = 45^{\circ}50'11.8"$
 $L = 22.04'$
 $T = 11.05'$
 $R = 125.00'$

MULKEY
ENGINEERS & CONSULTANTS
P.O. Box 38127
Raleigh, N.C. 27638
(919) 881-1911
(919) 881-9118 FAX
WWW.MULKEYINC.COM

PROJECT REFERENCE NO. B-4214	SHEET NO. 5
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	SEAL 21102
	SEAL 31977
	1/26/10

FOR -L- PROFILE SEE SHEET 6

NOTE: PROVIDE 4" CIRCULAR DECK DRAINS AT 12' O.C. ACROSS THE ENTIRE BRIDGE ON BOTH THE LT & RT SIDES. USE 12" U.V. PVC TRUNK LINES AS COLLECTOR PIPES.



1/11/2010
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-BL- 11
EL = 12.1'
18" REBAR WITH CAP

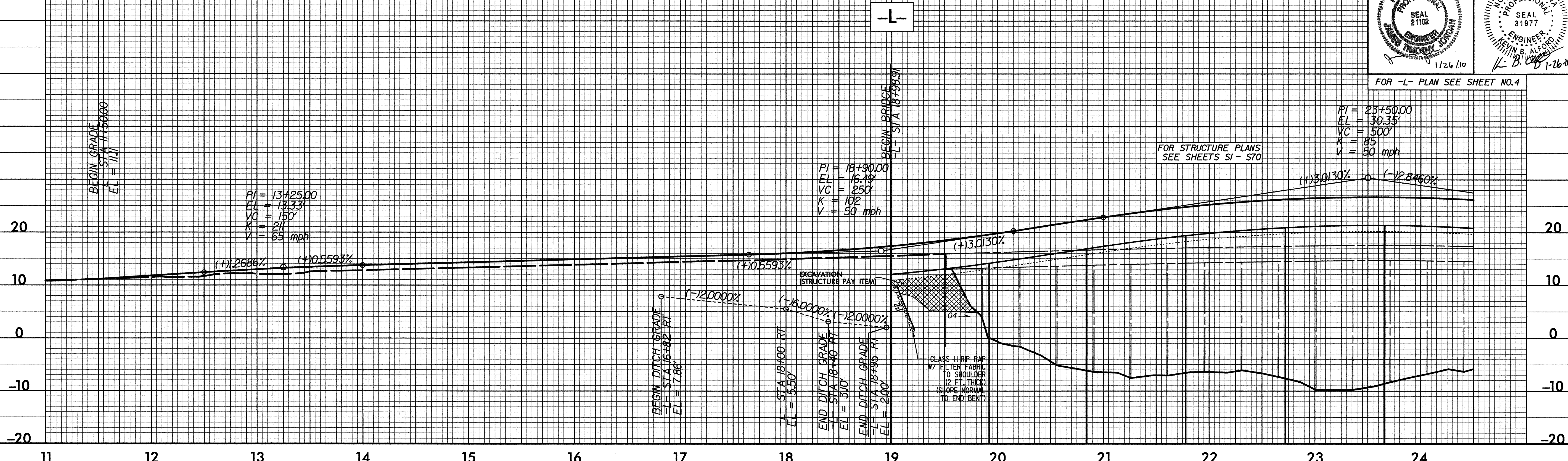
BM-1 EL = 9.67'
N=368775.2420 E=2469861.5780
-BL- STA 15+49.00 66.46' LT
-L- STA 19+03.54 94.83' LT
SQUARE CUT IN CONCRETE

-BL- 12
EL = 16.99'
NCGS "H 60"



PROJECT REFERENCE NO. B-4214 SHEET NO. 6

RW SHEET NO. ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 21102
NORTH CAROLINA PROFESSIONAL SEAL 31977
FOR -L- PLAN SEE SHEET NO.4



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 9120	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 47	FT
BASE DISCHARGE	= 11500	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 61	FT
OVERTOPPING DISCHARGE	= 18400+	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 15.0+	FT

DATE OF SURVEY = 7-08-04
W.S. ELEVATION AT DATE OF SURVEY = 0.34 FT

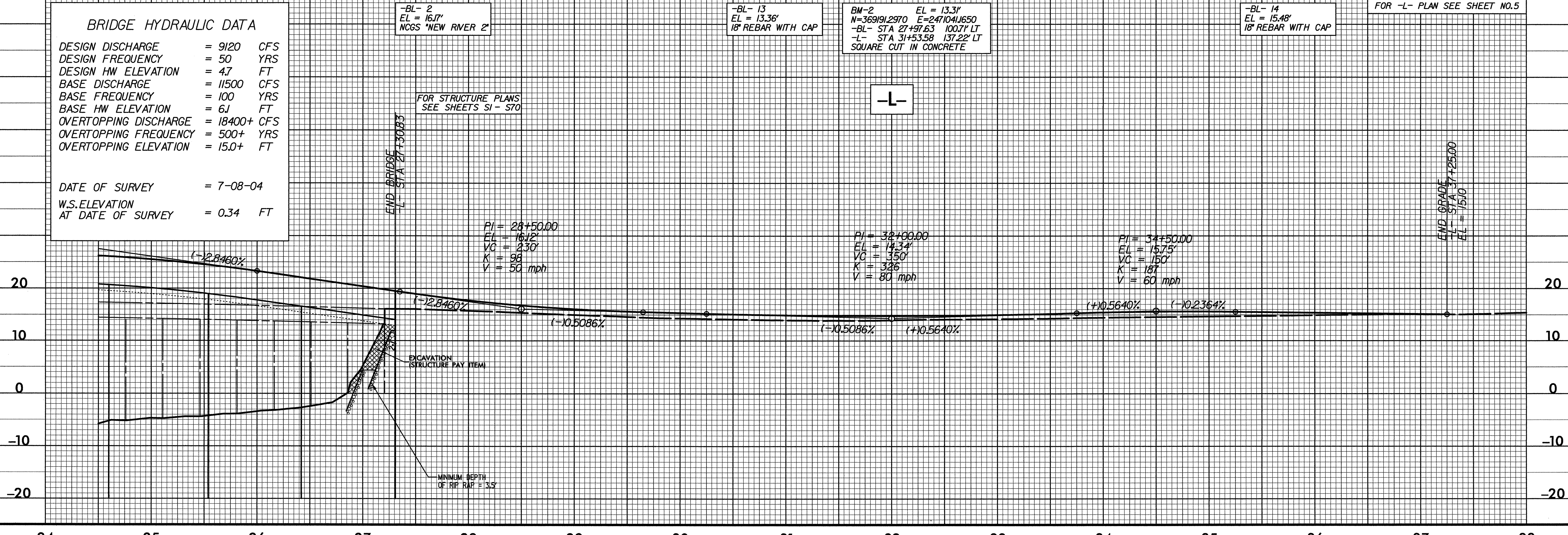
-BL- 2
EL = 16.17'
NCGS "NEW RIVER 2"

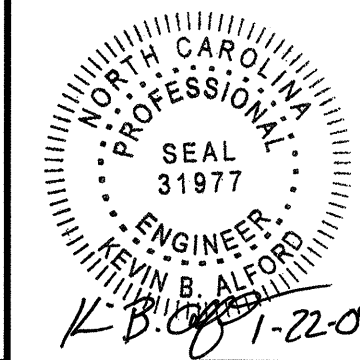
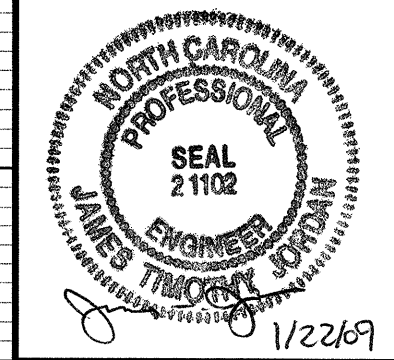
-BL- 13
EL = 13.36'
18" REBAR WITH CAP

BM-2 EL = 13.31'
N=369191.2970 E=2471041.650
-BL- STA 27+97.63 100.71' LT
-L- STA 31+53.58 137.22' LT
SQUARE CUT IN CONCRETE

-BL- 14
EL = 15.48'
18" REBAR WITH CAP

FOR -L- PLAN SEE SHEET NO.5





FOR -Y- PLAN SEE SHEET NO.5

-Y-

