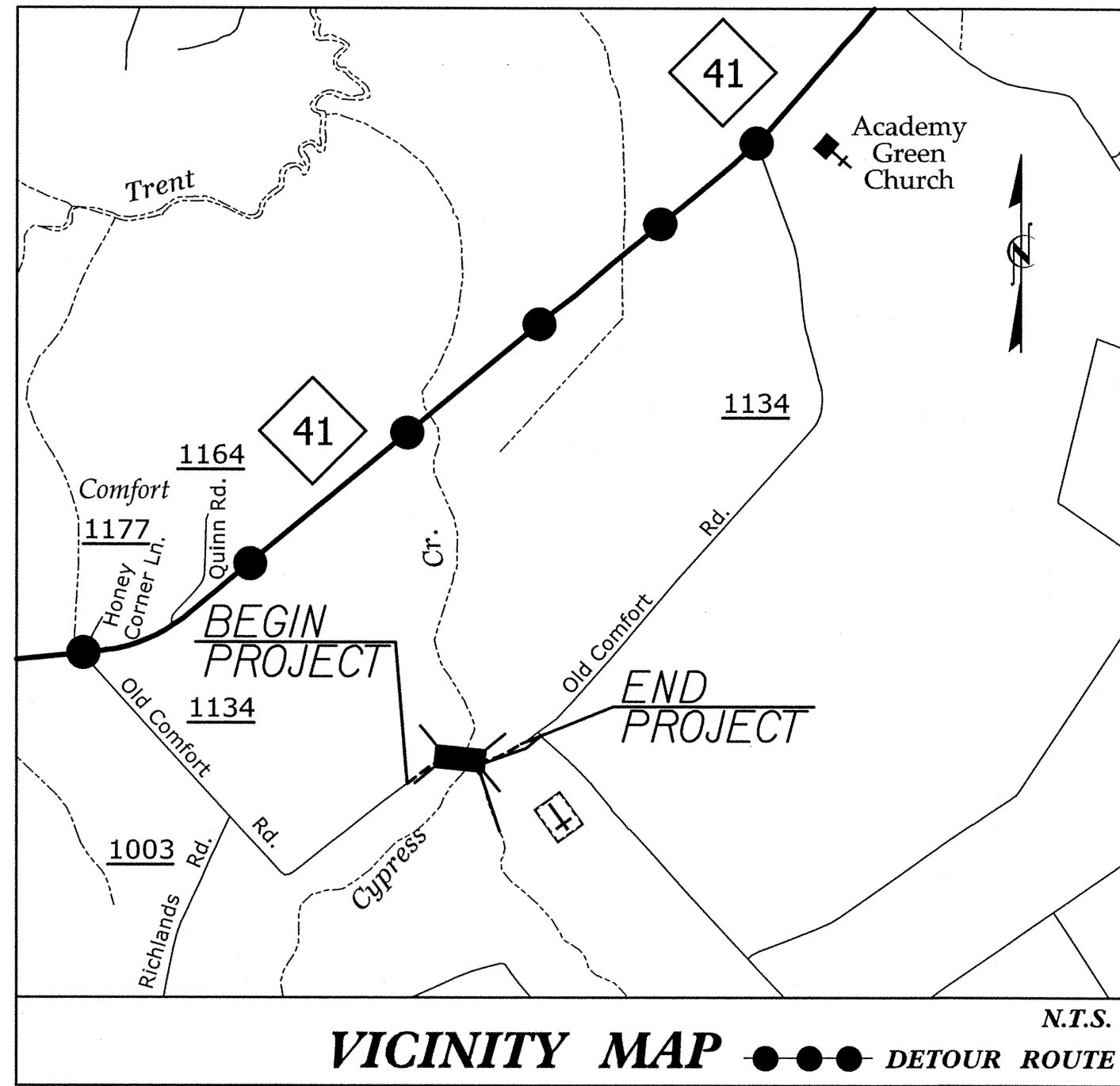


TIP PROJECT: BD-5102L

CONTRACT:

See Sheet 1-A For Index of Sheets



VICINITY MAP ●●●● DETOUR ROUTE N.T.S.

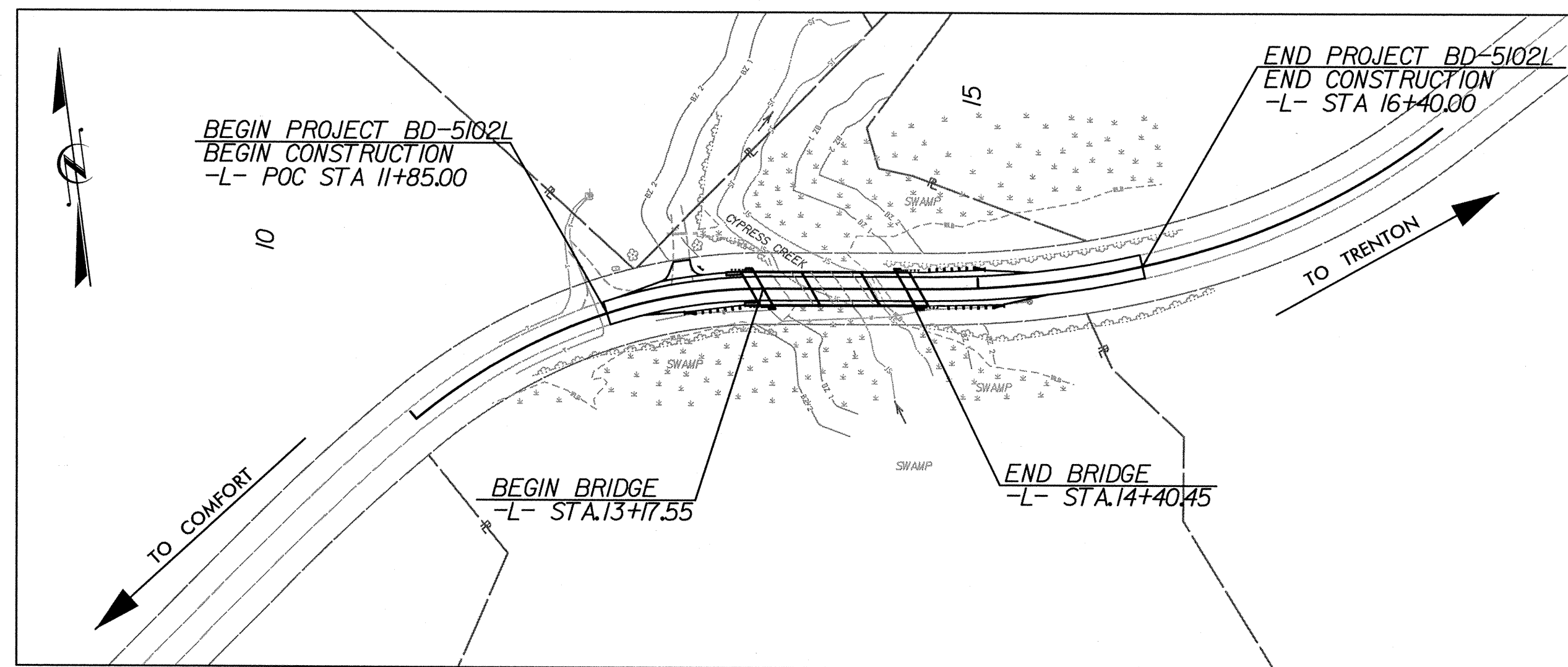
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

JONES COUNTY

**LOCATION: BRIDGE NO. 064 OVER CYPRESS CREEK
ON SR 1134 (OLD COMFORT ROAD)**

TYPE OF WORK: LOW IMPACT BRIDGE REPLACEMENT

STATE	PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
NC	BD-5102L	1	X
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
45348.1.12	BRZ-1134(6)	LIB REPLACEMENT	



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

<p>GRAPHIC SCALES</p> <p>50 25 0 50 100 PLANS</p> <p>50 25 0 50 100 PROFILE (HORIZONTAL)</p> <p>10 5 0 10 20 PROFILE (VERTICAL)</p>	<p>DESIGN DATA</p> <p>ADT 2007 = 170 ADT 2035 = 340 DHV = 10% D = 60% T = 6% *</p> <p>V = 55 MPH STATUTORY V = 35 MPH ADVISORY * TTST 2% DUAL 4%</p>	<p>PROJECT LENGTH</p> <p>LENGTH OF ROADWAY TIP PROJECT BD-5102L = 0.07 MI.</p> <p>LENGTH OF STRUCTURE TIP PROJECT BD-5102L = 0.02 MI.</p> <p>TOTAL LENGTH OF TIP PROJECT BD-5102L = 0.09 MI.</p>	<p>Prepared In the Office of:</p> <p>HNTB HNTB NORTH CAROLINA, P.C. 343 E. Six Forks Road, Suite 200 Raleigh, North Carolina 27609 NC License No: C-1554</p> <p>2012 STANDARD SPECIFICATIONS</p> <p>RIGHT OF WAY DATE: APRIL 10, 2012</p> <p>LETTING DATE: OCTOBER 10, 2012</p> <p>ENRICO A. ROQUE, P.E. PROJECT ENGINEER</p> <p>ANTHONY THOMPSON, P.E. PROJECT DESIGNER</p> <p>MARIA ROGERSON, P.E. NCDOT CONTACT</p>	<p>HYDRAULICS ENGINEER</p> <p>James W. Byrd, P.E. SIGNATURE: 1/27/12</p> <p>ROADWAY DESIGN ENGINEER</p> <p>Enrico A. Roque, P.E. SIGNATURE: 1/27/12</p>	<p>DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA</p> <p>STATE HIGHWAY DESIGN ENGINEER P.E.</p>
--	---	---	---	---	---

7/25/2012 2:40:49 PM \\Proj\BD5102L_rdy_1.sh.dgn













Note: Not to Scale

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












STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

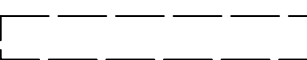









BOUNDARIES AND PROPERTY:

State Line	_____
County Line	_____
Township Line	_____
City Line	_____
Reservation Line	_____
Property Line	_____
Existing Iron Pin	_____ 
Property Corner	_____ 
Property Monument	_____ 
Parcel/Sequence Number	_____ 
Existing Fence Line	_____ 
Proposed Woven Wire Fence	_____ 
Proposed Chain Link Fence	_____ 
Proposed Barbed Wire Fence	_____ 
Existing Wetland Boundary	_____ 
Proposed Wetland Boundary	_____ 
Existing Endangered Animal Boundary	_____ 
Existing Endangered Plant Boundary	_____ 

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	_____ 
Sign	_____ 
Well	_____ 
Small Mine	_____ 
Foundation	_____ 
Area Outline	_____ 
Cemetery	_____ 
Building	_____ 
School	_____ 
Church	_____ 
Dam	_____ 





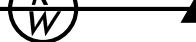








HYDROLOGY:

Stream or Body of Water	_____
Hydro, Pool or Reservoir	_____ 
Jurisdictional Stream	_____ 
Buffer Zone 1	_____ 
Buffer Zone 2	_____ 
Flow Arrow	_____ 
Disappearing Stream	_____ 
Spring	_____ 
Wetland	_____ 
Proposed Lateral, Tail, Head Ditch	_____ 
False Sump	_____ 

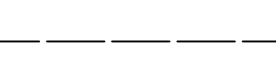
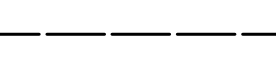





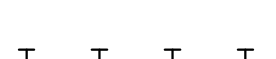





RAILROADS:

Standard Gauge	_____ 
RR Signal Milepost	_____ 
Switch	_____ 
RR Abandoned	_____ 
RR Dismantled	_____ 



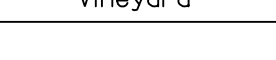
RIGHT OF WAY:

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	_____ 
Proposed Temporary Construction Easement	_____ 
Proposed Temporary Drainage Easement	_____ 
Proposed Permanent Drainage Easement	_____ 
Proposed Permanent Utility Easement	_____ 

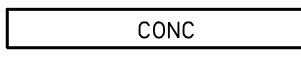
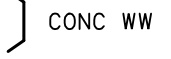
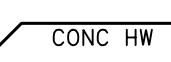
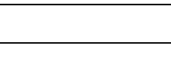
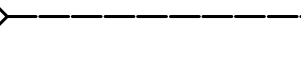
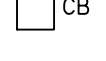



ROADS AND RELATED FEATURES:

Existing Edge of Pavement	_____ 
Existing Curb	_____ 
Proposed Slope Stakes Cut	_____ 
Proposed Slope Stakes Fill	_____ 
Proposed Wheel Chair Ramp	_____ 
Proposed Wheel Chair Ramp Curb Cut	_____ 
Curb Cut for Future Wheel Chair Ramp	_____ 
Existing Metal Guardrail	_____ 
Proposed Guardrail	_____ 
Existing Cable Guiderail	_____ 
Proposed Cable Guiderail	_____ 
Equality Symbol	_____ 
Pavement Removal	_____ 




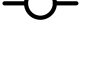

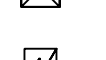
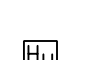
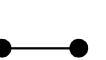
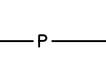
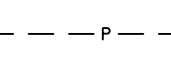

VEGETATION:

Single Tree	_____ 
Single Shrub	_____ 
Hedge	_____ 
Woods Line	_____ 
Orchard	_____ 
Vineyard	_____ 


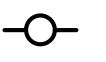

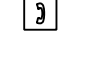



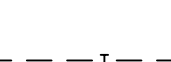
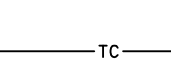
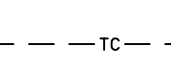
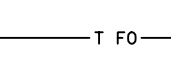
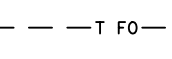

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	_____ 
Bridge Wing Wall, Head Wall and End Wall	_____ 
MINOR:	
Head and End Wall	_____ 
Pipe Culvert	_____ 
Footbridge	_____ 
Drainage Box: Catch Basin, DI or JB	_____ 
Paved Ditch Gutter	_____ 
Storm Sewer Manhole	_____ 
Storm Sewer	_____ 








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	_____ 
Designated U/G Power Line (S.U.E.*)	_____ 









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	_____ 
Designated U/G Telephone Cable (S.U.E.*)	_____ 
Recorded U/G Telephone Conduit	_____ 
Designated U/G Telephone Conduit (S.U.E.*)	_____ 
Recorded U/G Fiber Optics Cable	_____ 
Designated U/G Fiber Optics Cable (S.U.E.*)	_____ 






WATER:

Water Manhole	_____ 
Water Meter	_____ 
Water Valve	_____ 
Water Hydrant	_____ 
Recorded U/G Water Line	_____ 
Designated U/G Water Line (S.U.E.*)	_____ 
Above Ground Water Line	_____ 







TV:

TV Satellite Dish	_____ 
TV Pedestal	_____ 
TV Tower	_____ 
U/G TV Cable Hand Hole	_____ 
Recorded U/G TV Cable	_____ 
Designated U/G TV Cable (S.U.E.*)	_____ 
Recorded U/G Fiber Optic Cable	_____ 
Designated U/G Fiber Optic Cable (S.U.E.*)	_____ 











GAS:

Gas Valve	_____ 
Gas Meter	_____ 
Recorded U/G Gas Line	_____ 
Designated U/G Gas Line (S.U.E.*)	_____ 
Above Ground Gas Line	_____ 

SANITARY SEWER:

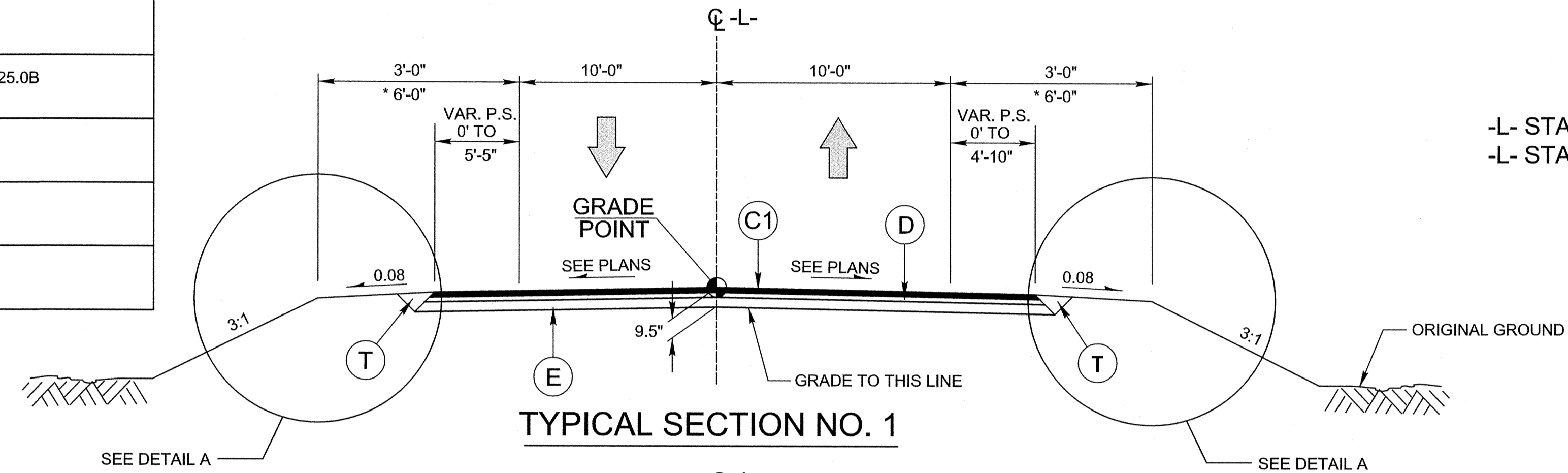
Sanitary Sewer Manhole	_____ 
Sanitary Sewer Cleanout	_____ 
U/G Sanitary Sewer Line	_____ 
Above Ground Sanitary Sewer	_____ 
Recorded SS Forced Main Line	_____ 
Designated SS Forced Main Line (S.U.E.*)	_____ 

MISCELLANEOUS:

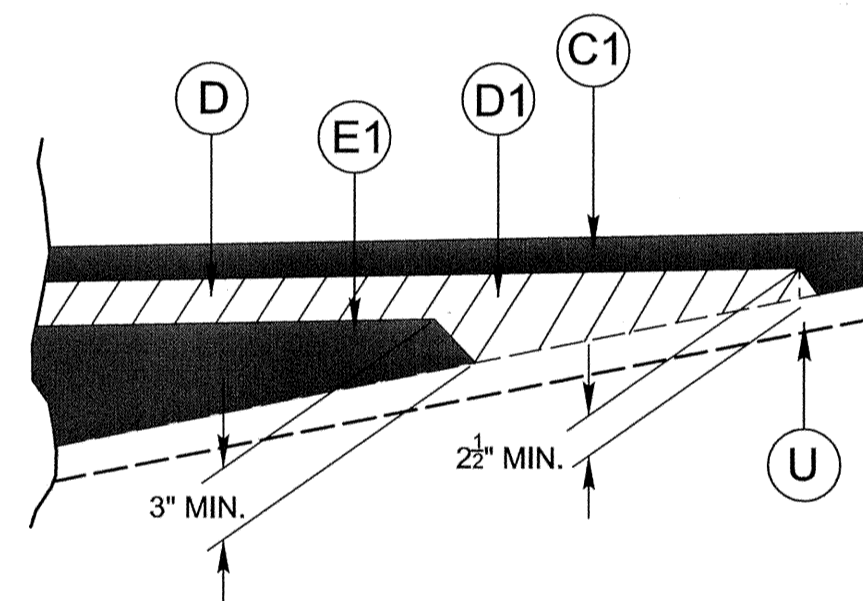
Utility Pole	_____ 
Utility Pole with Base	_____ 
Utility Located Object	_____ 
Utility Traffic Signal Box	_____ 
Utility Unknown U/G Line	_____ 
U/G Tank; Water, Gas, Oil	_____ 
A/G Tank; Water, Gas, Oil	_____ 
U/G Test Hole (S.U.E.*)	_____ 
Abandoned According to Utility Records	_____ 
End of Information	_____ 

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YARD IN EACH OF TWO LAYERS.
D	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D1	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YARD.
E1	PROP. VARIABLE DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B AT AN AVERAGE RATE OF 114 LBS. PER SQ. YARD PER INCH.
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING (SEE DETAIL)

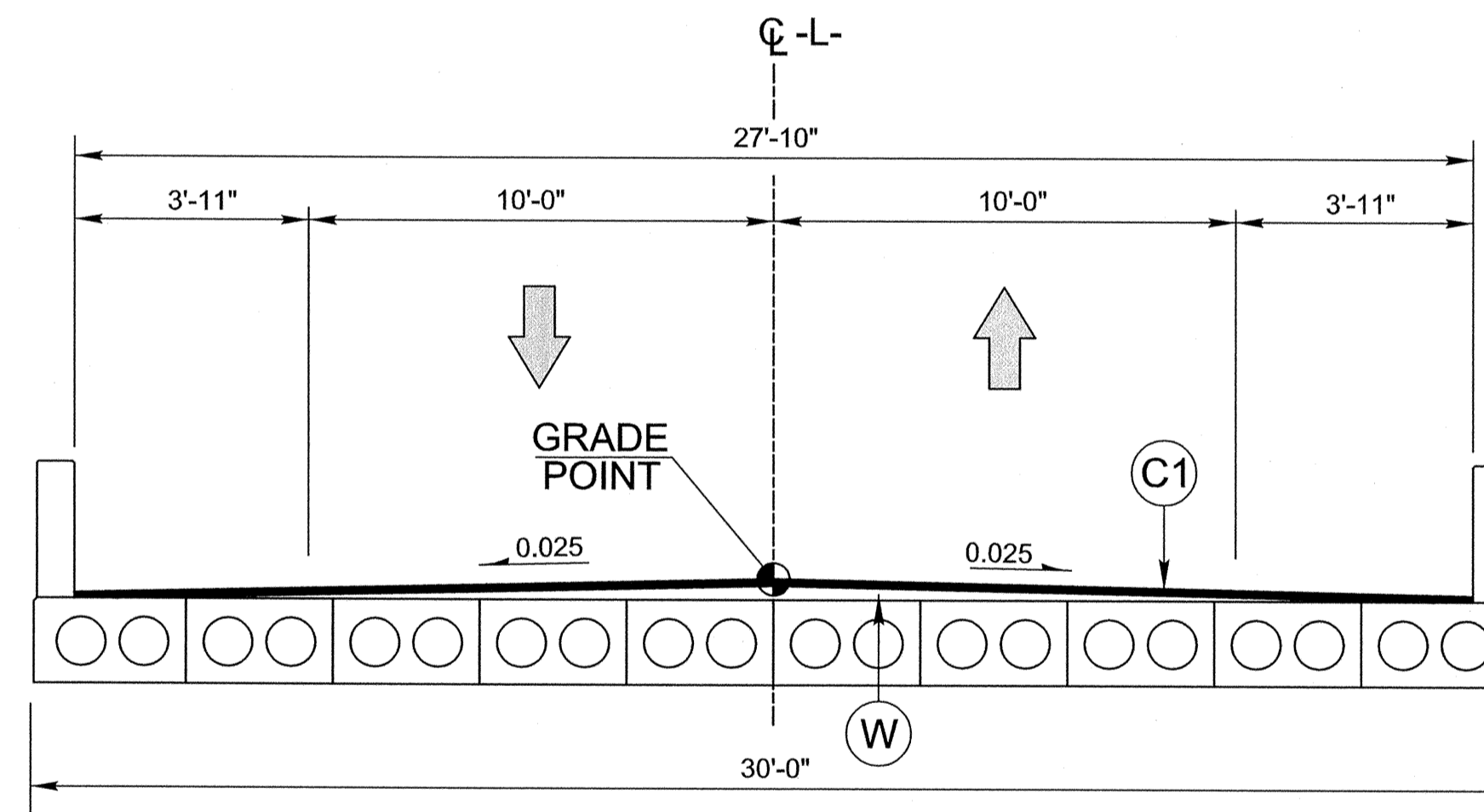
ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE



USE TYPICAL SECTION NO. 1 FROM:
 -L- STA. 11+85.00 TO -L- STA. 13+17.55 (BEGIN BRIDGE)
 -L- STA. 14+40.45 (END BRIDGE) TO -L- STA. 16+40.00

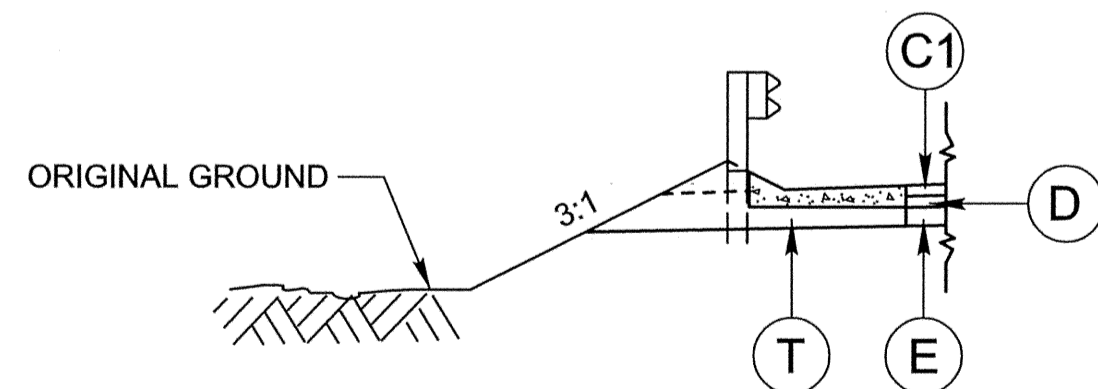


DETAIL SHOWING METHOD OF WEDGING
 SEE TYPICAL SECTIONS



TYPICAL SECTION NO. 2
 CORED SLAB BRIDGE OVERLAY

USE TYPICAL SECTION NO. 2 FROM:
 -L- STA. 13+17.55 TO -L- STA. 14+40.45



DETAIL A
 SHOULDER BERM GUTTER LOCATIONS
 -L- STA. 12+87.0 TO -L- STA. 12+99.1 (LT)
 -L- STA. 13+01.5 TO -L- STA. 13+14.3 (RT)

* SHOULDER WIDTH INCREASED 3' WITH THE USE OF GUARDRAIL

REVISIONS

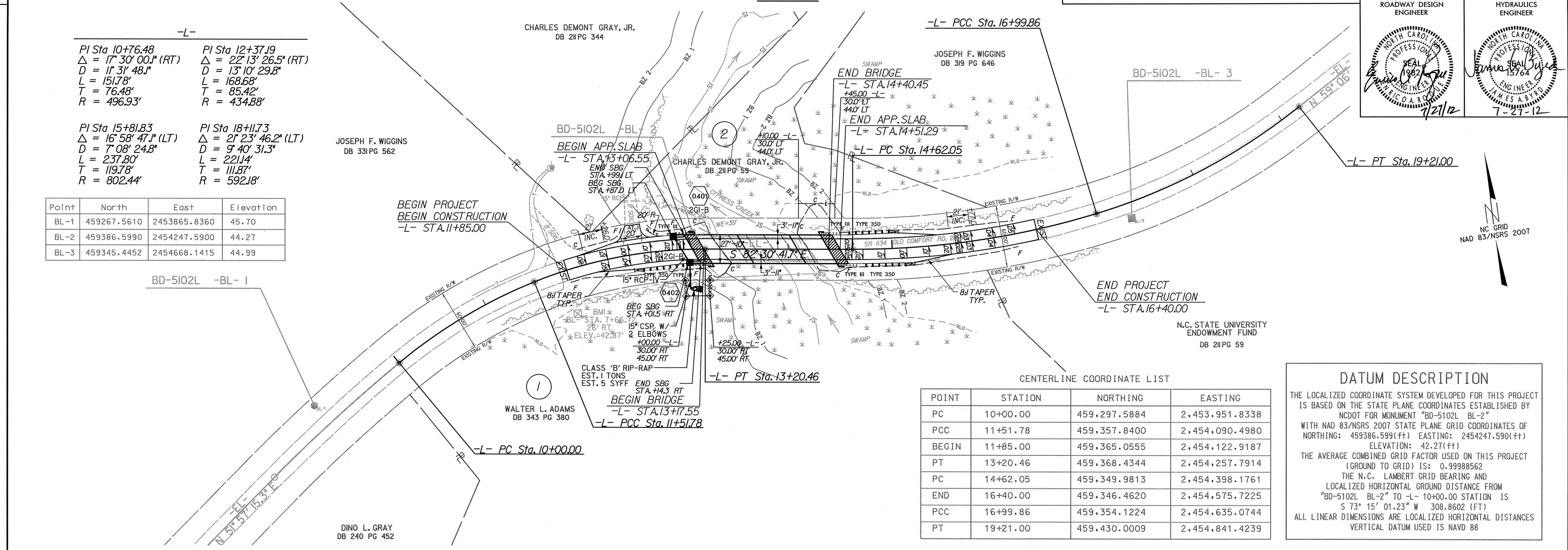
\$\$\$DATE\$\$\$
 \$\$\$SYSTEM\$\$\$
 \$\$\$CDGN\$\$\$

PLAN

-L-

PI Sta 10+76.48 Δ = 17° 30' 00.1" (RT) D = 11' 31' 48.1" L = 151.78' T = 76.48' R = 496.93'	PI Sta 12+37.19 Δ = 22° 13' 26.5" (RT) D = 13' 10' 29.8" L = 168.68' T = 85.42' R = 434.88'
PI Sta 15+81.83 Δ = 16° 58' 47.1" (LT) D = 7' 08' 24.8" L = 237.80' T = 119.78' R = 802.44'	PI Sta 18+11.73 Δ = 21° 23' 46.2" (LT) D = 9' 40' 31.3" L = 221.14' T = 111.87' R = 592.18'

Point	North	East	Elevation
BL-1	459267.5610	2453865.8360	45.70
BL-2	459386.5990	2454247.5900	44.27
BL-3	459345.4452	2454668.1415	44.99



CENTERLINE COORDINATE LIST

POINT	STATION	NORTHING	EASTING
PC	10+00.00	459,297.5884	2,453,951.8338
PCC	11+51.78	459,357.8400	2,454,090.4980
BEGIN	11+85.00	459,365.0555	2,454,122.9187
PT	13+20.46	459,368.4344	2,454,257.7914
PC	14+62.05	459,349.9813	2,454,398.1761
END	16+40.00	459,346.4620	2,454,575.7225
PCC	16+99.86	459,354.1224	2,454,635.0744
PT	19+21.00	459,430.0009	2,454,841.4239

DATUM DESCRIPTION

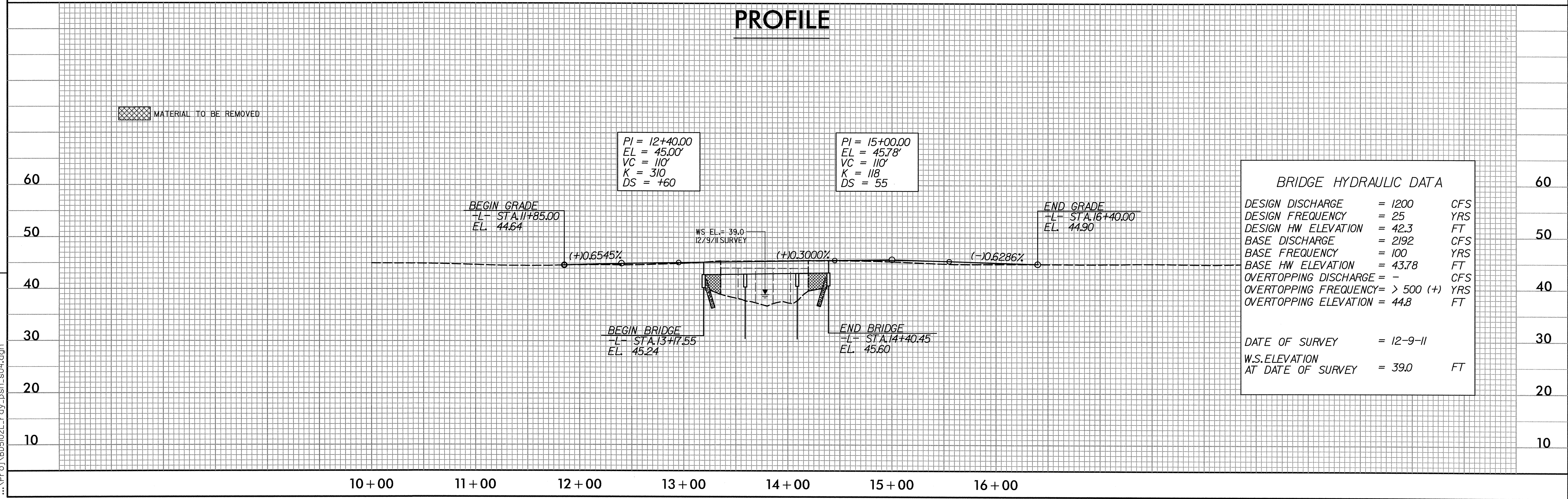
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "BD-5102L BL-2" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 459386.599 (ft) EASTING: 2454247.590 (ft) ELEVATION: 42.27 (ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988562

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GRID DISTANCE FROM "BD-5102L BL-2" TO -L- 10+00.00 STATION IS S 73° 15' 01.23" W 308.8602 (FT)

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

PROFILE



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 1200	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 42.3	FT
BASE DISCHARGE	= 2192	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 43.78	FT
OVERTOPPING DISCHARGE	= -	CFS
OVERTOPPING FREQUENCY	= > 500 (+)	YRS
OVERTOPPING ELEVATION	= 44.8	FT
DATE OF SURVEY	= 12-9-11	
W.S. ELEVATION AT DATE OF SURVEY	= 39.0	FT

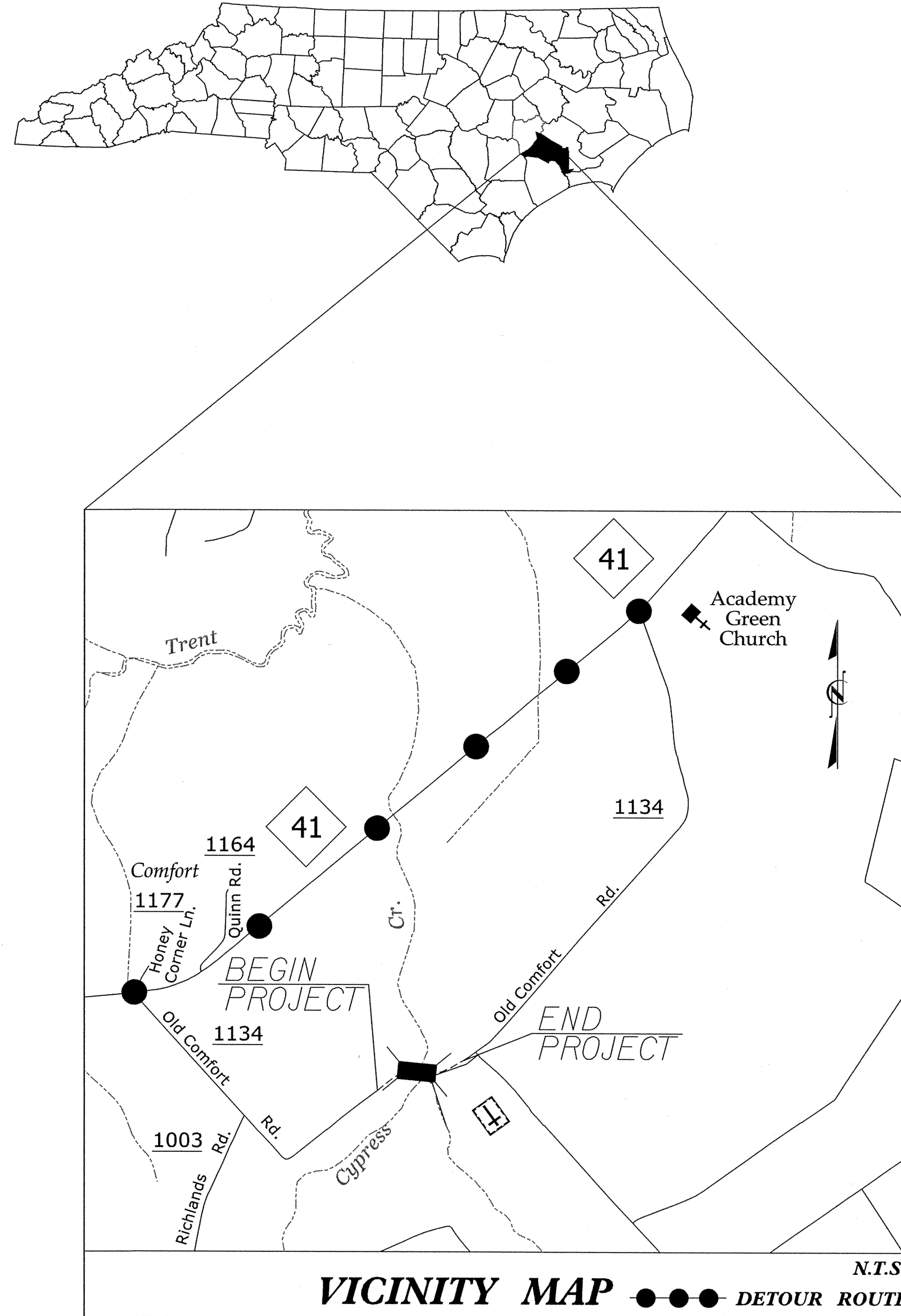
REVISIONS

7/25/2012 2:35:30 PM ...\\Pr-01\BD5102L_rdy_psh_s04.dgn

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

JONES COUNTY



SHEET NO.
TMP-1

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET WITH VICINITY MAP & INDEX OF SHEETS, LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND LEGEND
TMP-2	PROJECT NOTES, DETOUR AND PLANS.

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C. DATED JAN 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.11	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES

LEGEND

GENERAL

- ← DIRECTION OF TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- WORK AREA

TRAFFIC CONTROL DEVICES

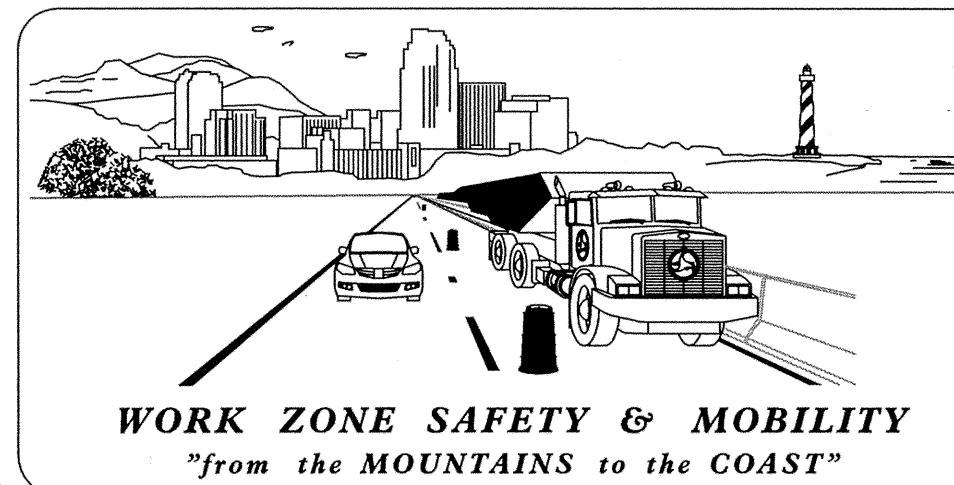
- ▨ BARRICADE (TYPE III)

HNTB HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

R. B. EARLY, PE TRAFFIC CONTROL PROJECT ENGINEER
J. A. PHILLIPS TRAFFIC CONTROL DESIGN ENGINEER

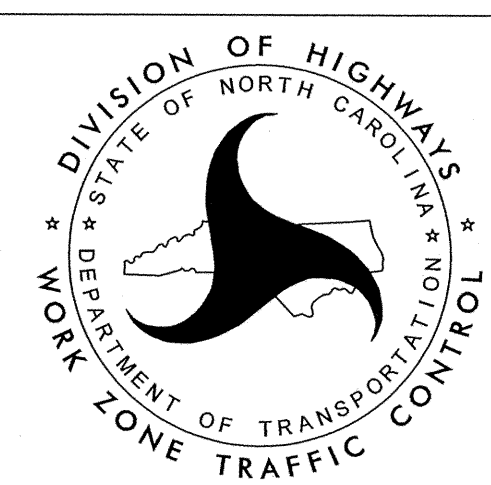
APPROVED:
DATE: 7.27.12

SEAL



N.C.D.O.T. WORK ZONE TRAFFIC CONTROL
1561 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699-1561
750 N. GREENFIELD PARKWAY, GARNER, NC 27529 (DELIVERY)
PHONE: (919) 773-2800 FAX: (919) 771-2745

STEVEN HAMILTON, PE DIVISION TRAFFIC ENGINEER



BD-5102L

TIP PROJECT:

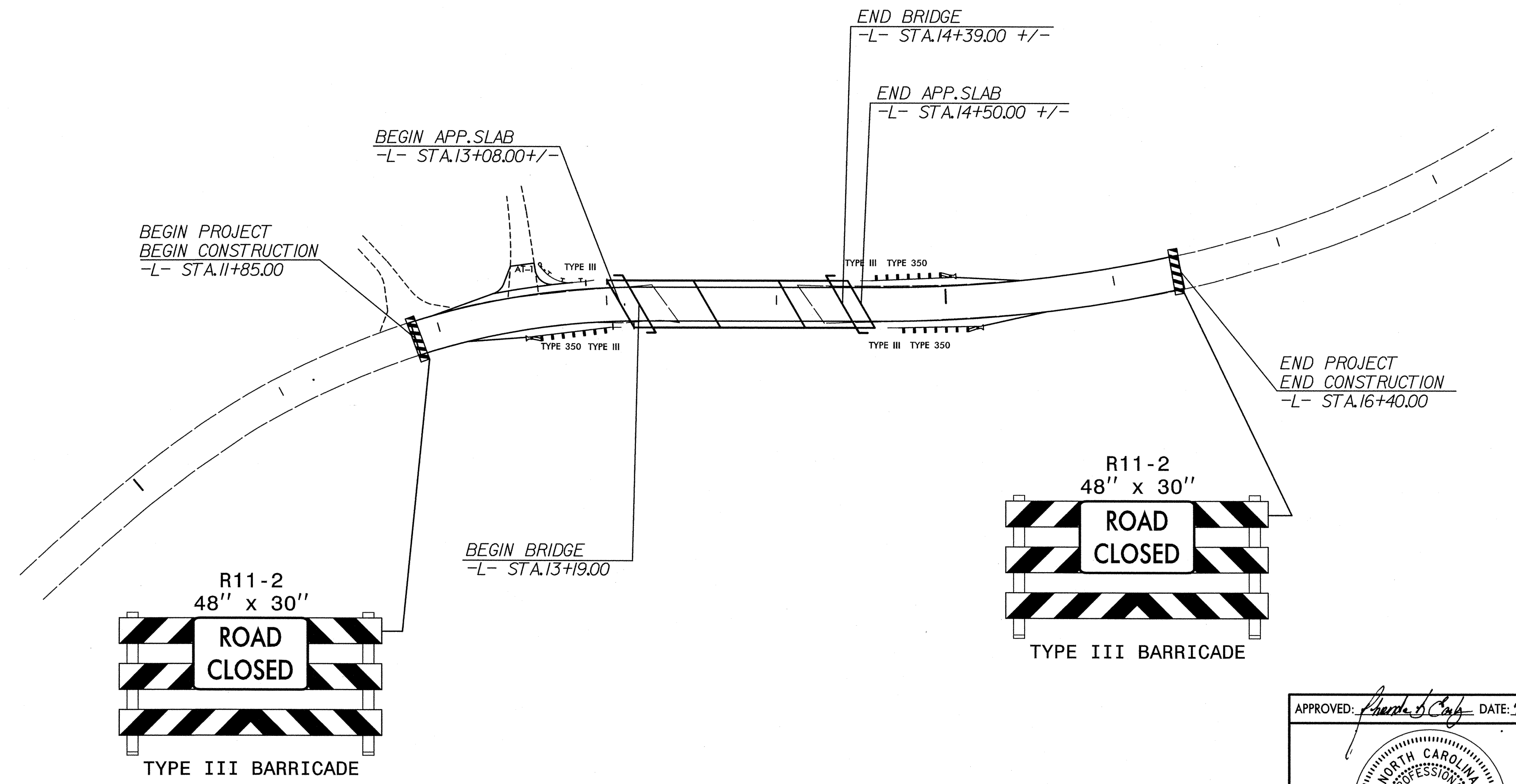
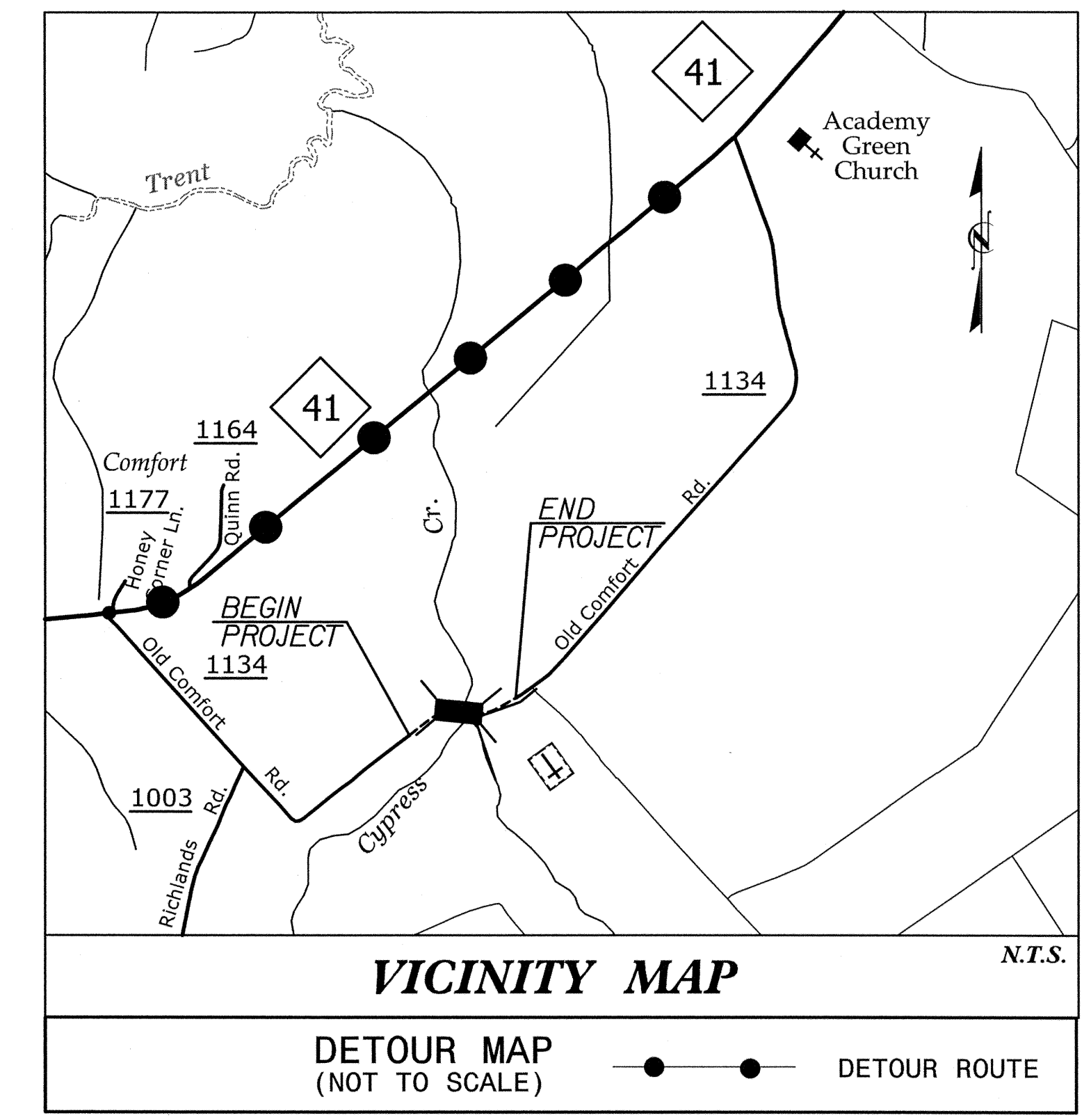
\$\$\$ SYSTEME \$\$\$
\$\$\$ DESIGNER \$\$\$
\$\$\$ USERNAME \$\$\$

GENERAL NOTES

IMPLEMENT TRAFFIC CONTROL IN ACCORDANCE WITH THE ROADWAY STANDARD DRAWINGS LISTED ON TMP-1.

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS, OR RESULT IN DUPLICATE, OR UNDESIRE OVERLAPPING, OF DEVICES. MODIFICATIONS MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING OR REMOVAL OF DEVICES, AS DIRECTED BY THE ENGINEER.

STATE FORCES WILL INSTALL AND MAINTAIN THE PROJECT DETOUR AND THE TYPE III BARRICADES AT THE PROJECT LIMITS.
 STATE FORCES WILL INSTALL PAINT AND MARKERS ON THE FINISHED PROJECT.
 CALL JIM EVANS AT 252-830-3493 FOR COORDINATION.



APPROVED: <i>[Signature]</i> DATE: 7-27-12	PROJECT NOTES	
	SCALE: NONE	
	DATE: 5/25/12	
	DWG. BY: JAP	
	DESIGN BY: JAP	
REVIEWED BY: RBE	REVISIONS	

SYSTEM: \$\$\$\$\$\$
 USER: \$\$\$\$\$\$
 FILE: \$\$\$\$\$\$

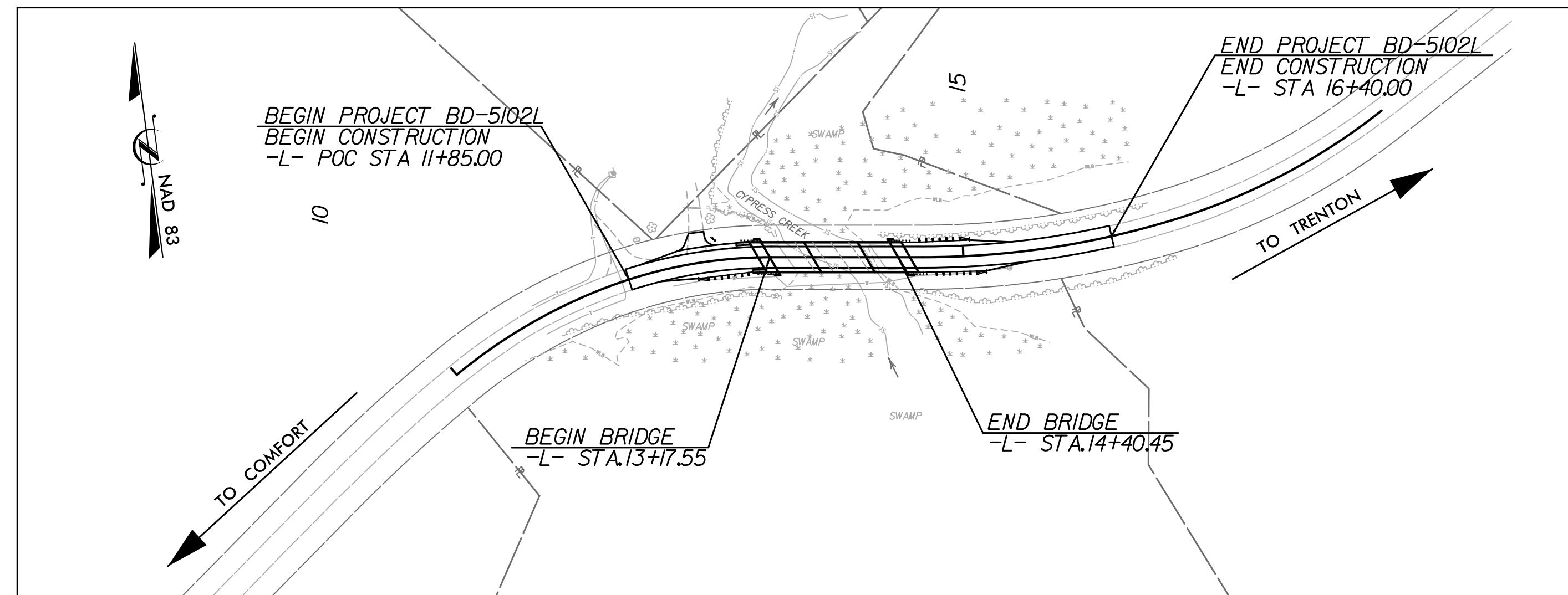
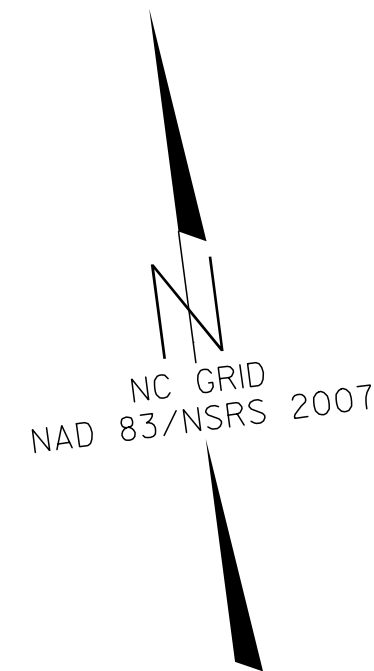
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BD-5102L	EC-1	5
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

TIP PROJECT: BD-5102L

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
**PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL**

**LOCATION: JONES COUNTY BRIDGE NO. 064 OVER CYPRESS
CREEK ON SR 1134 (OLD COMFORT ROAD)**

TYPE OF WORK: LOW IMPACT BRIDGE REPLACEMENT



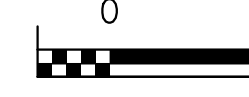
EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	III III III
1606.01	Special Sediment Control Fence	X X X X X
1622.01	Temporary Berms and Slope Drains	Diagram of berm and drain
	Silt Basin Type B	Diagram of silt basin
1633.01	Temporary Rock Silt Check Type-A	Diagram of rock silt check
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	Diagram of rock silt check with matting
	Temporary Rock Silt Check Type-B	Diagram of rock silt check type B
	Wattle/Coir Fiber Wattle	Diagram of wattle
	Wattle/Coir Fiber Wattle with Polyacrylamide (PAM)	Diagram of wattle with PAM
1634.01	Temporary Rock Sediment Dam Type-A	Diagram of rock sediment dam type A
1634.02	Temporary Rock Sediment Dam Type-B	Diagram of rock sediment dam type B
1635.01	Rock Pipe Inlet Sediment Trap Type-A	Diagram of rock pipe inlet sediment trap type A
1635.02	Rock Pipe Inlet Sediment Trap Type-B	Diagram of rock pipe inlet sediment trap type B
1630.04	Stilling Basin	Diagram of stilling basin
1630.06	Special Stilling Basin	Diagram of special stilling basin
	Rock Inlet Sediment Trap:	
1632.01	Type A	Diagram of rock inlet sediment trap type A
1632.02	Type B	Diagram of rock inlet sediment trap type B
1632.03	Type C	Diagram of rock inlet sediment trap type C
	Skimmer Basin	Diagram of skimmer basin
	Tiered Skimmer Basin	Diagram of tiered skimmer basin
	Infiltration Basin	Diagram of infiltration basin

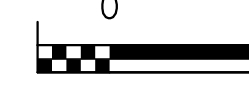
GRAPHIC SCALE



PLANS



PROFILE (HORIZONTAL)



PROFILE (VERTICAL)

ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER QUALITY.

Prepared in the Office of:

HNTB HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

2012 STANDARD SPECIFICATIONS

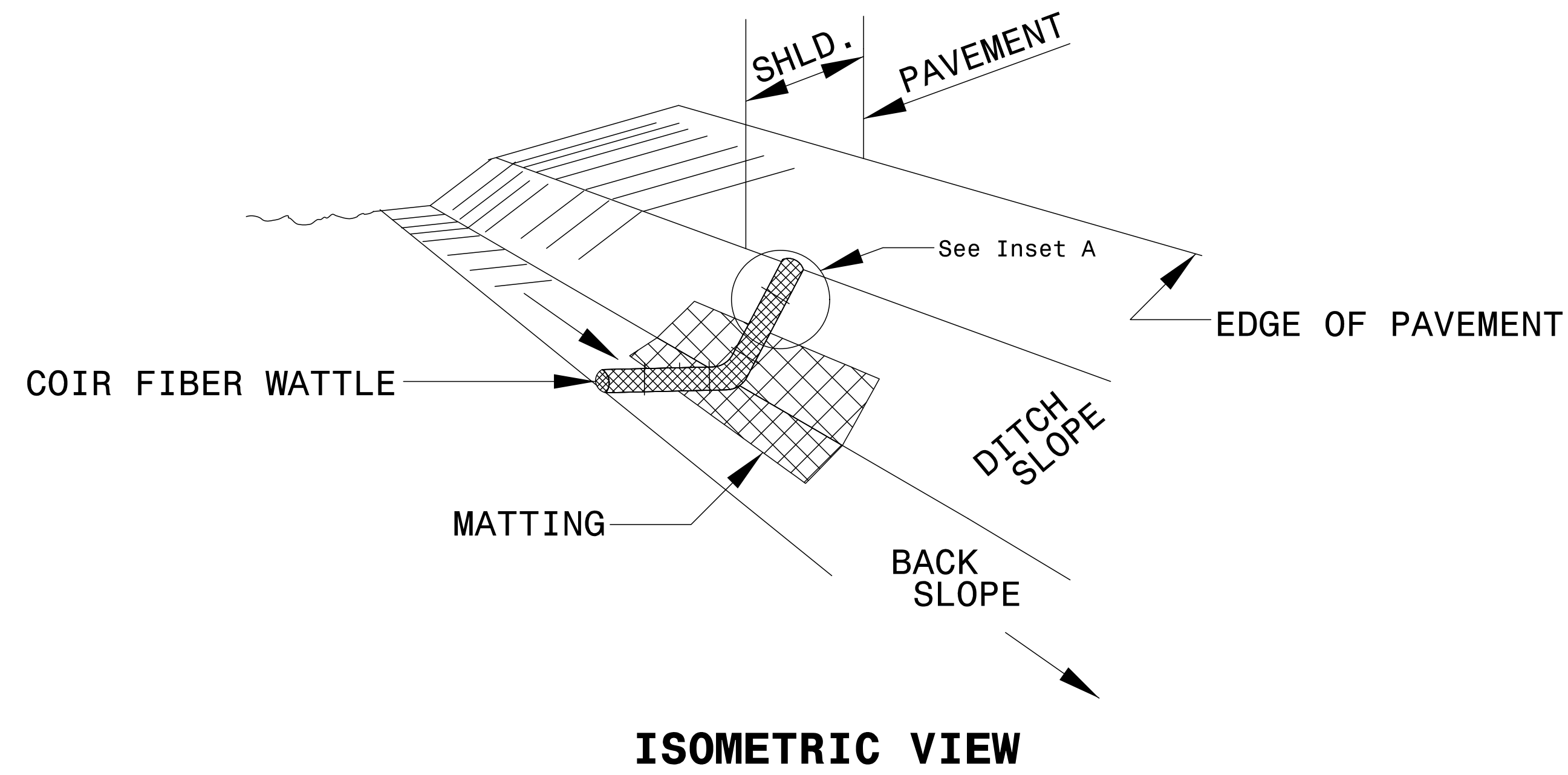
PHILLIP E. ROGERS, P.E.
EROSION CONTROL
LEVEL III-A
CERTIFICATION #330

Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2012 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

1604.01 Railroad Erosion Control Detail	1632.01 Rock Inlet Sediment Trap Type A
1605.01 Temporary Silt Fence	1632.02 Rock Inlet Sediment Trap Type B
1606.01 Special Sediment Control Fence	1632.03 Rock Inlet Sediment Trap Type C
1607.01 Gravel Construction Entrance	1633.01 Temporary Rock Silt Check Type A
1622.01 Temporary Berms and Slope Drains	1633.02 Temporary Rock Silt Check Type B
1630.01 Riser Basin	1634.01 Temporary Rock Sediment Dam Type A
1630.02 Silt Basin Type B	1634.02 Temporary Rock Sediment Dam Type B
1630.03 Temporary Silt Ditch	1635.01 Rock Pipe Inlet Sediment Trap Type A
1630.04 Stilling Basin	1635.02 Rock Pipe Inlet Sediment Trap Type B
1630.05 Temporary Diversion	1640.01 Coir Fiber Baffle
1630.06 Special Stilling Basin	1645.01 Temporary Stream Crossing
1631.01 Matting Installation	

COIR FIBER WATTLE DETAIL



NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

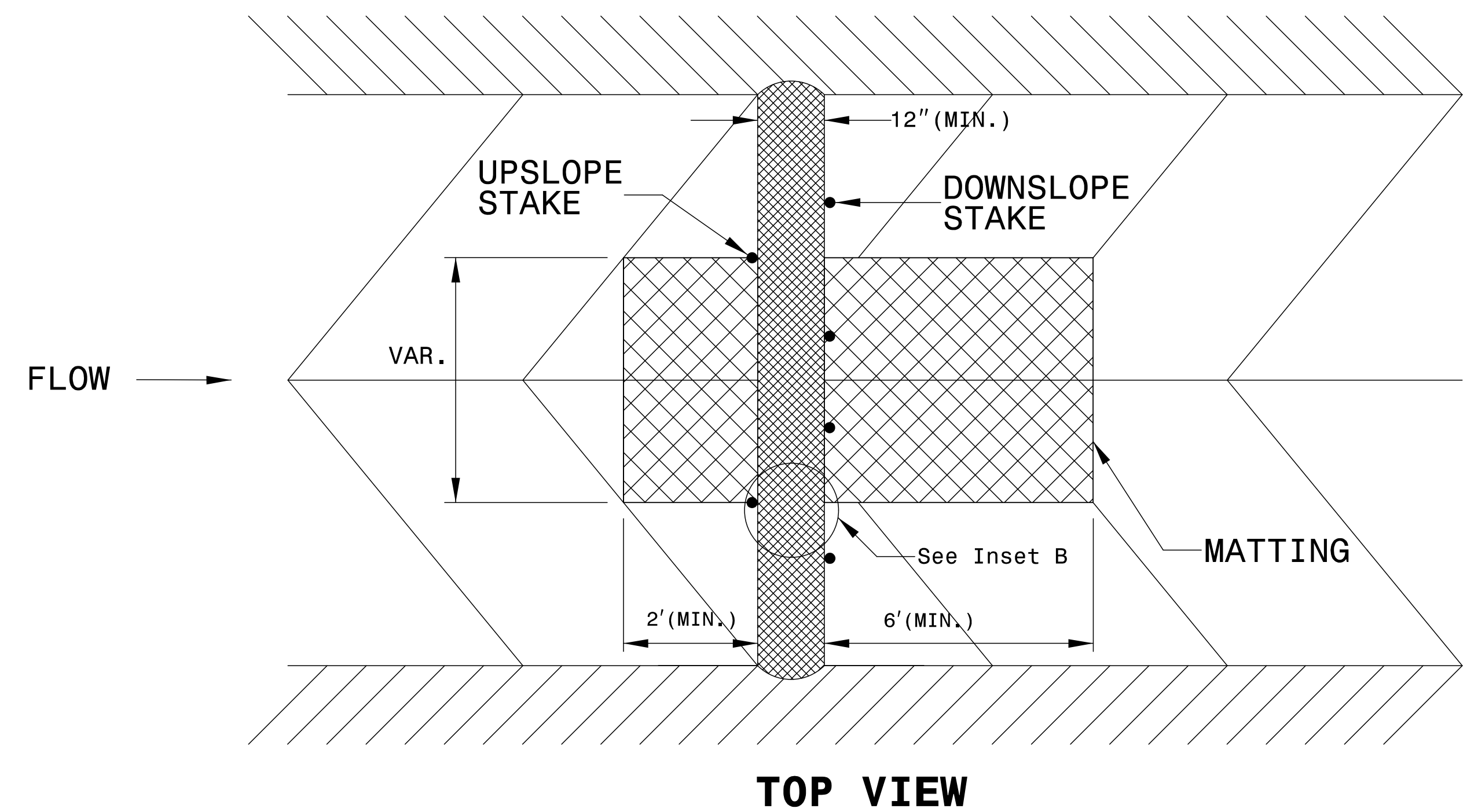
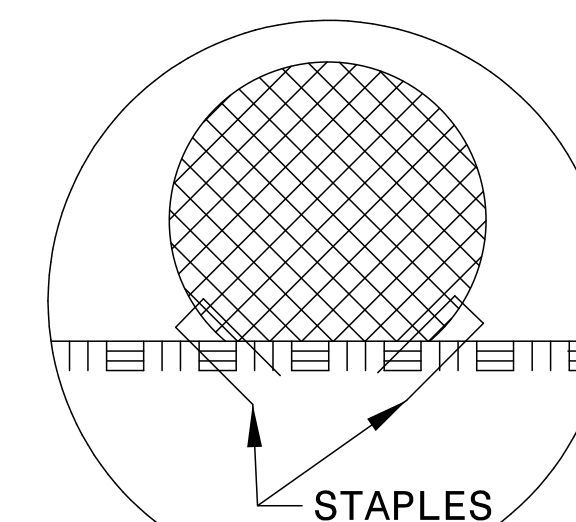
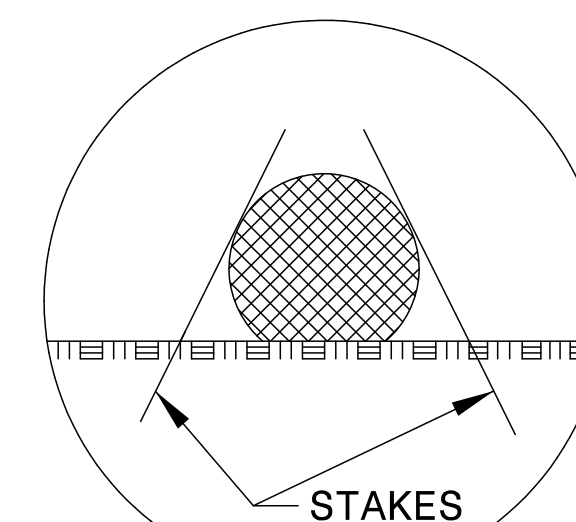
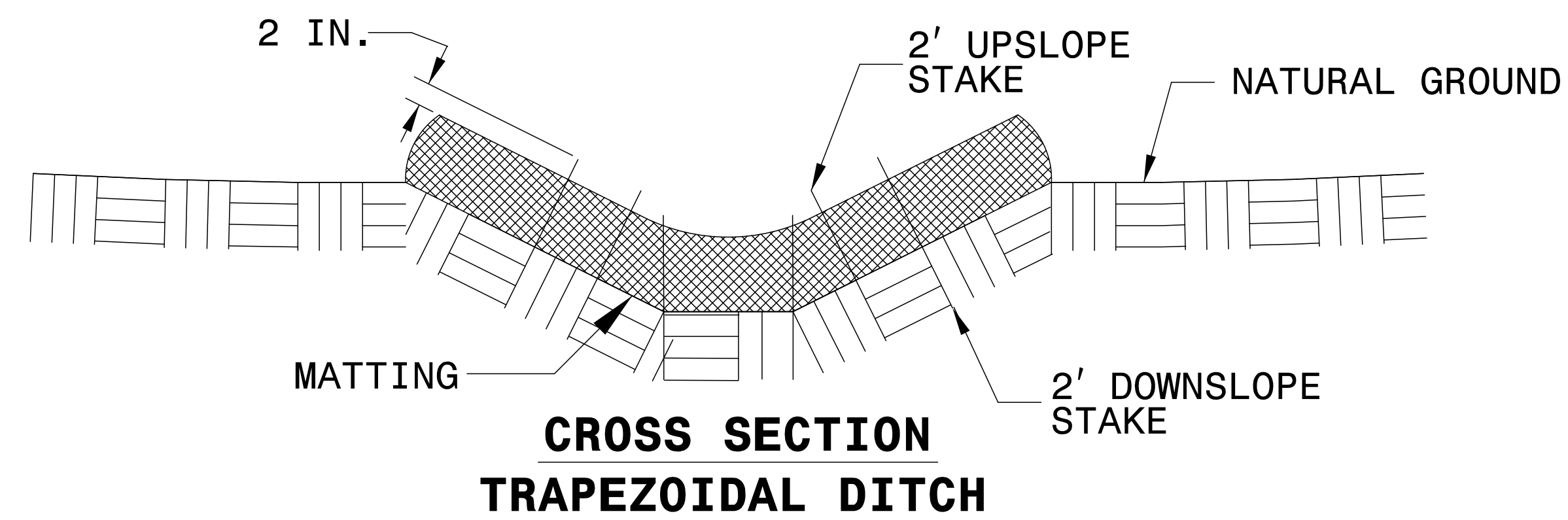
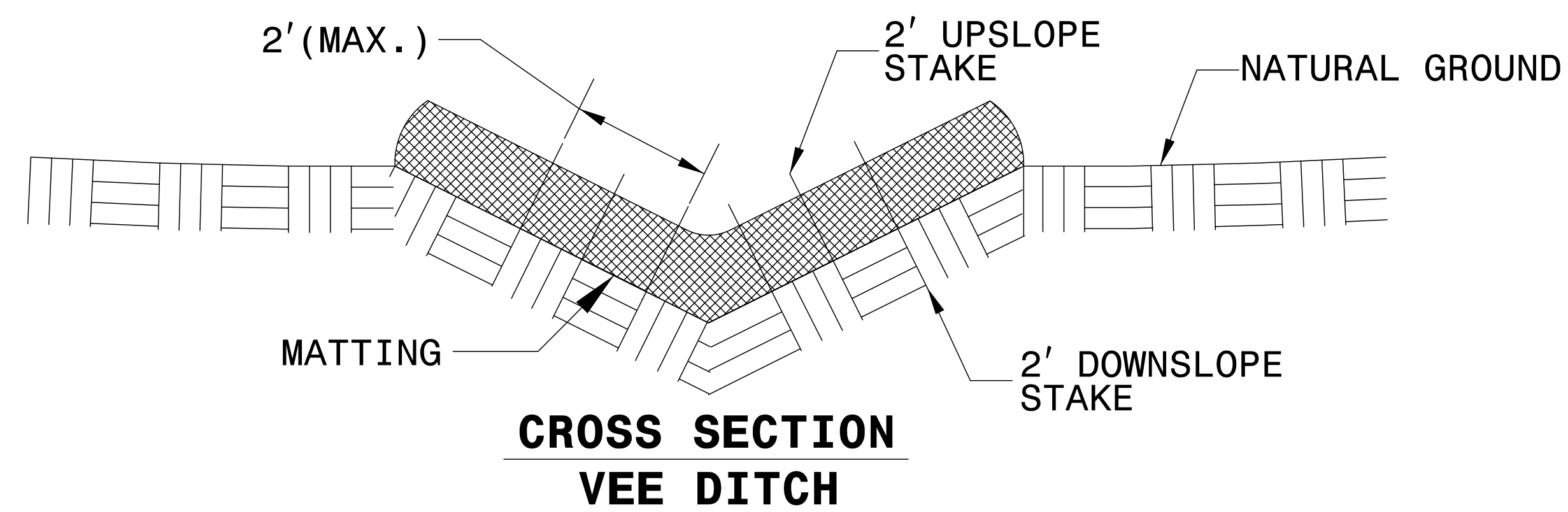
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

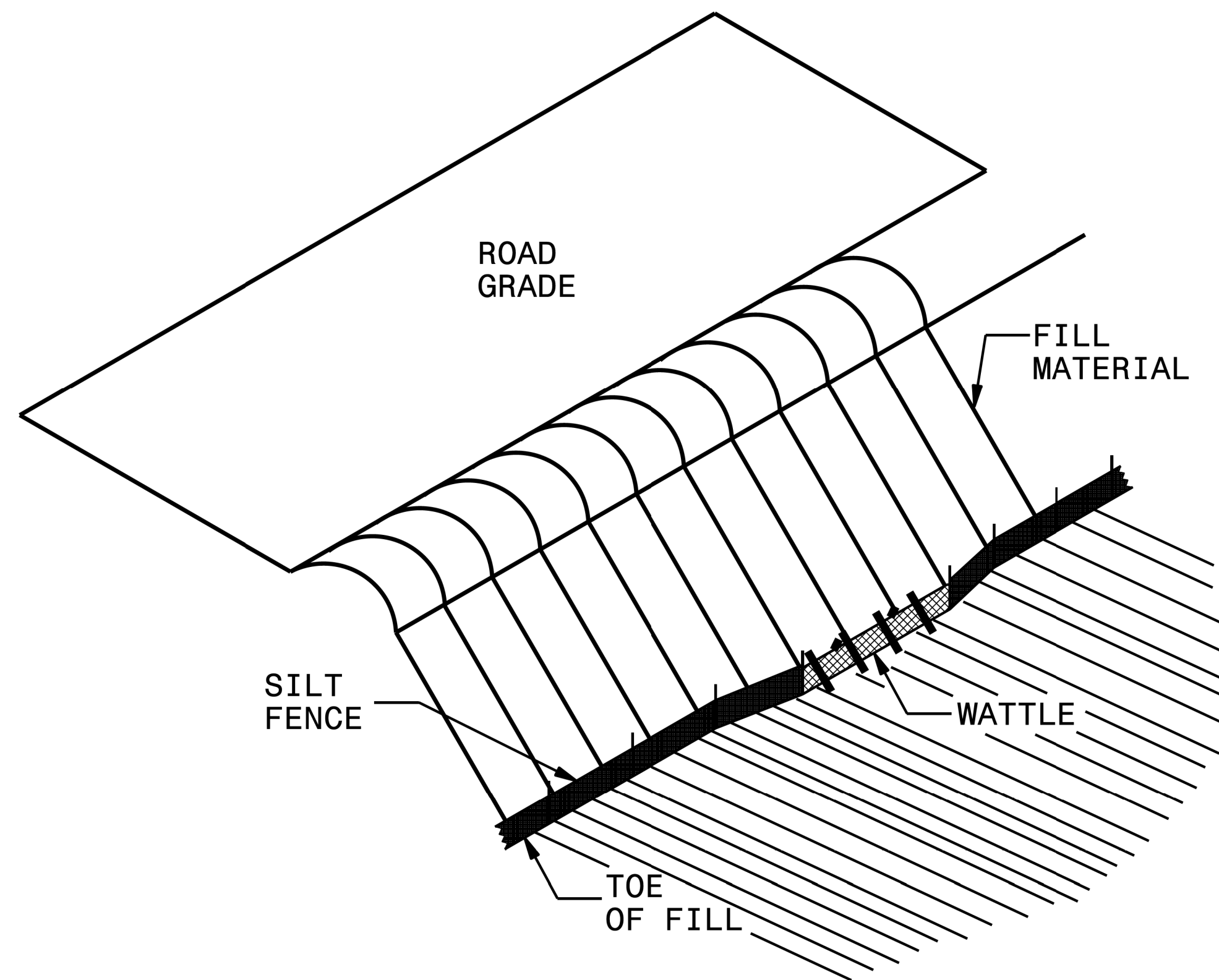
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

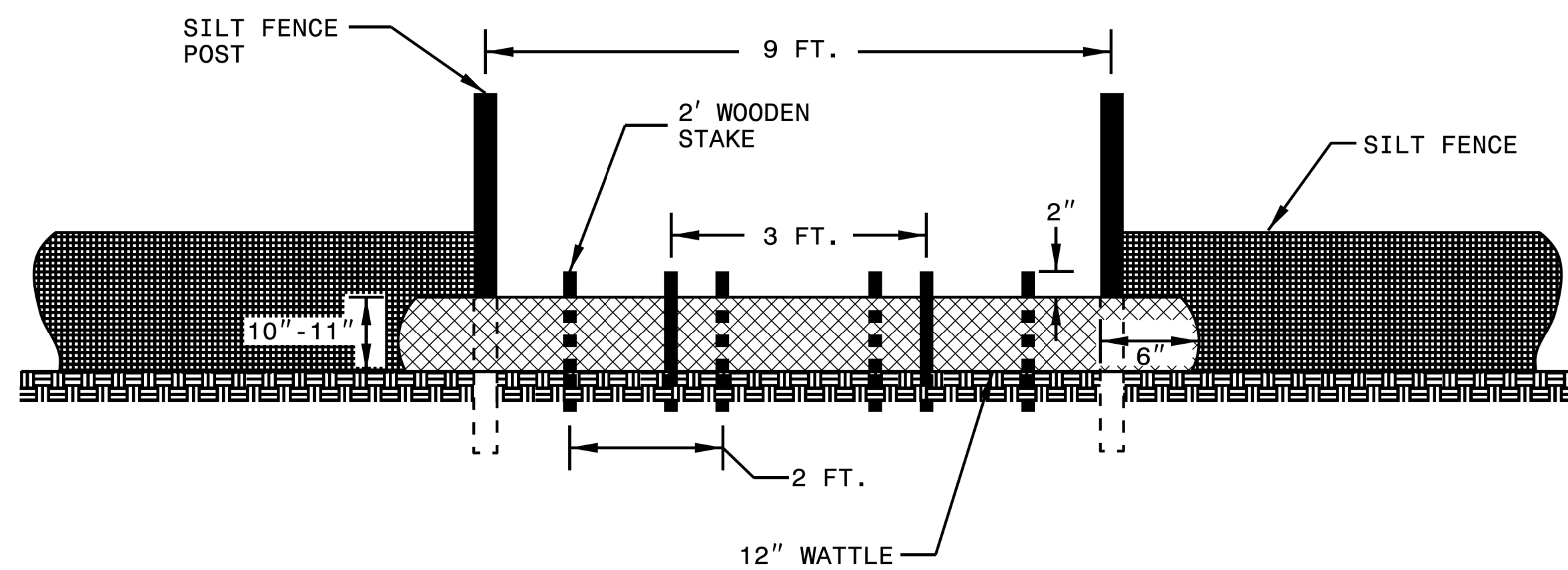
INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.



SILT FENCE COIR FIBER WATTLE BREAK DETAIL



ISOMETRIC VIEW

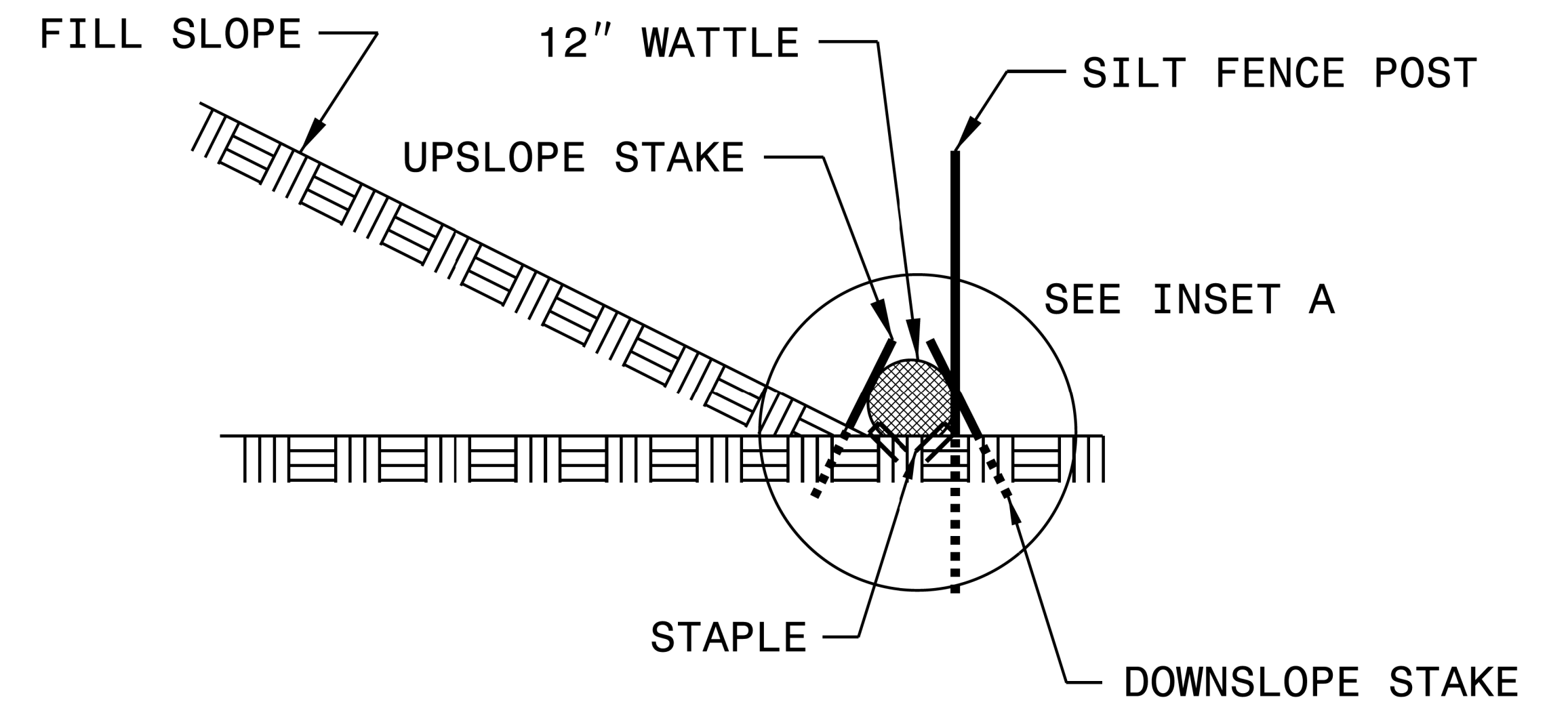
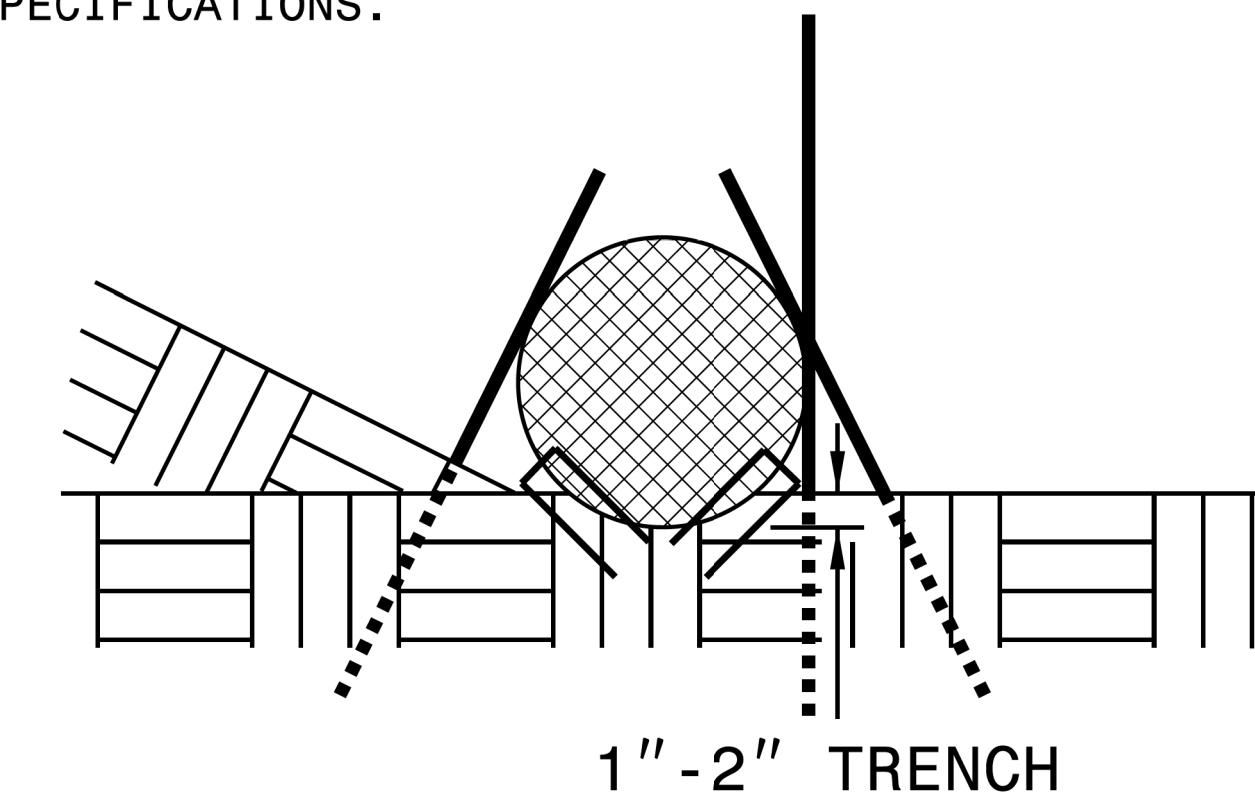


VIEW FROM SLOPE

NOTES:

- USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE AND LENGTH OF 10 FT.
- EXCAVATE A 1 TO 2 INCH TRENCH FOR WATTLE TO BE PLACED.
- DO NOT PLACE WATTLE ON TOE OF SLOPE.
- USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.
- INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.
- PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.
- INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.
- WATTLE INSTALLATION CAN BE ON OUTSIDE OF THE SILT FENCE AS DIRECTED.
- INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

INSET A



SIDE VIEW

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

-L-

PI Sta 10+76.48	PI Sta 12+37.19
$\Delta = 17^{\circ} 30' 00.1''$ (RT)	$\Delta = 22^{\circ} 13' 26.5''$ (RT)
D = 11' 31' 48.1"	D = 13' 10' 29.8"
L = 151.78'	L = 168.68'
T = 76.48'	T = 85.42'
R = 496.93'	R = 434.88'

PI Sta 15+81.83	PI Sta 18+11.73
$\Delta = 16^{\circ} 58' 47.1''$ (LT)	$\Delta = 21^{\circ} 23' 46.2''$ (LT)
D = 7' 08' 24.8"	D = 9' 40' 31.3"
L = 237.80'	L = 221.14'
T = 119.78'	T = 111.87'
R = 802.44'	R = 592.18'

QUADRANT 1

PERMANENT WETLAND IMPACTS = 0 Ac / 0 SF
 TEMPORARY WETLAND IMPACTS = 0 Ac / 0 SF
 PERMANENT STREAM IMPACTS = 0 LF
 TEMPORARY STREAM IMPACTS = 0 LT
 BUFFER ZONE 1 IMPACTS = 0 SF
 BUFFER ZONE 2 IMPACTS = 0 SF

QUADRANT 2

PERMANENT WETLAND IMPACTS = 0 Ac / 0 SF
 TEMPORARY WETLAND IMPACTS = 0 Ac / 0 SF
 PERMANENT STREAM IMPACTS = 0 LF
 TEMPORARY STREAM IMPACTS = 0 LT
 BUFFER ZONE 1 IMPACTS = 182 SF
 BUFFER ZONE 2 IMPACTS = 306 SF

QUADRANT 3

PERMANENT WETLAND IMPACTS = 0.01 Ac / 361 SF
 TEMPORARY WETLAND IMPACTS = 0 Ac / 0 SF
 PERMANENT STREAM IMPACTS = 0 LF
 TEMPORARY STREAM IMPACTS = 0 LT
 BUFFER ZONE 1 IMPACTS = 0 SF
 BUFFER ZONE 2 IMPACTS = 73 SF


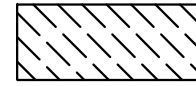
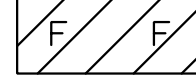
QUADRANT 4

PERMANENT WETLAND IMPACTS = 0 Ac / 0 SF
 TEMPORARY WETLAND IMPACTS = 0 Ac / 0 SF
 PERMANENT STREAM IMPACTS = 0 LF
 TEMPORARY STREAM IMPACTS = 0 LT
 BUFFER ZONE 1 IMPACTS = 0 SF
 BUFFER ZONE 2 IMPACTS = 0 SF

IMPACT SUMMARY:

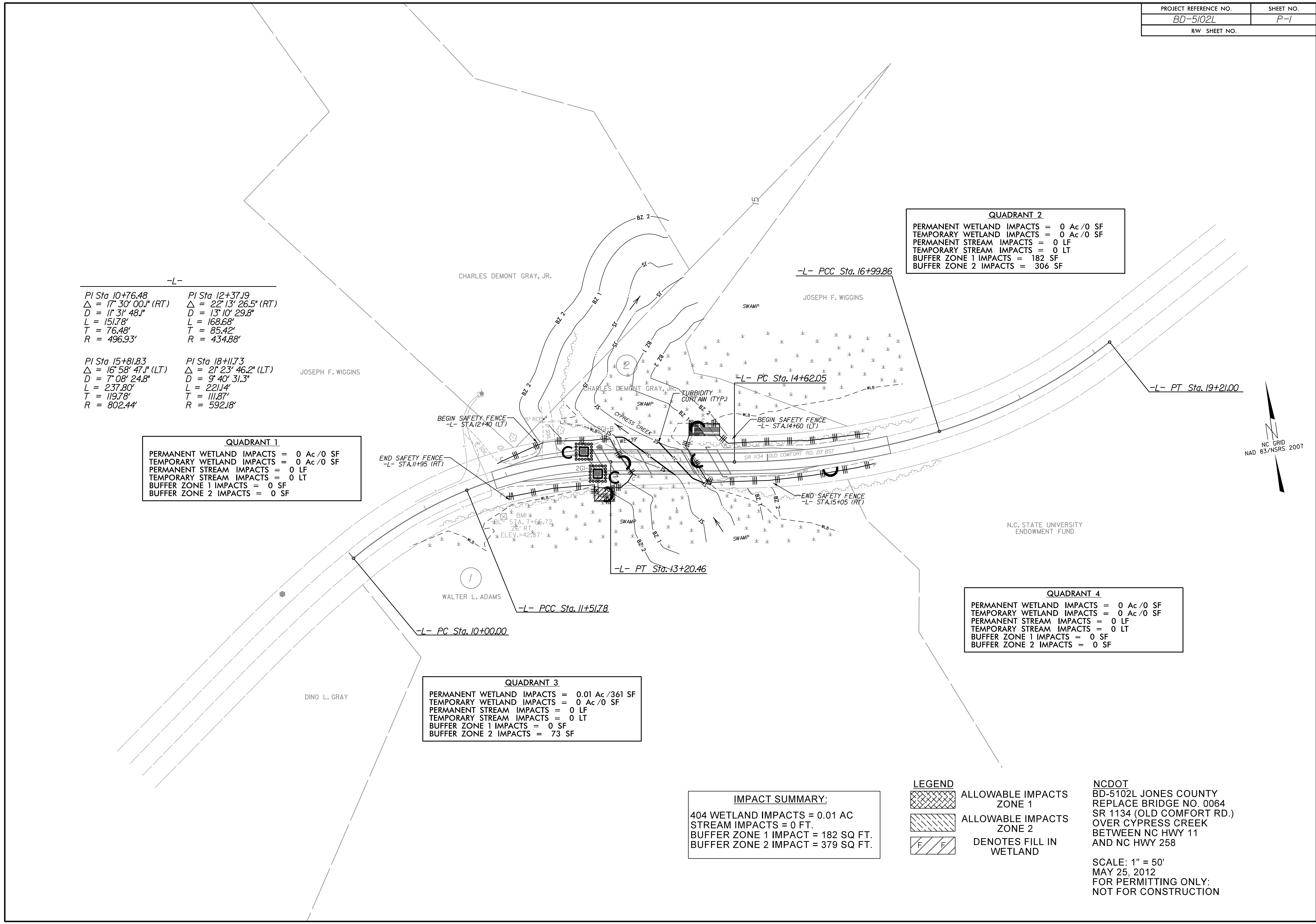
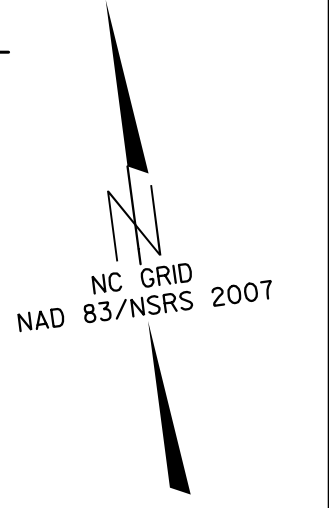
404 WETLAND IMPACTS = 0.01 AC
 STREAM IMPACTS = 0 FT.
 BUFFER ZONE 1 IMPACT = 182 SQ FT.
 BUFFER ZONE 2 IMPACT = 379 SQ FT.

LEGEND

 ALLOWABLE IMPACTS ZONE 1
 ALLOWABLE IMPACTS ZONE 2
 DENOTES FILL IN WETLAND

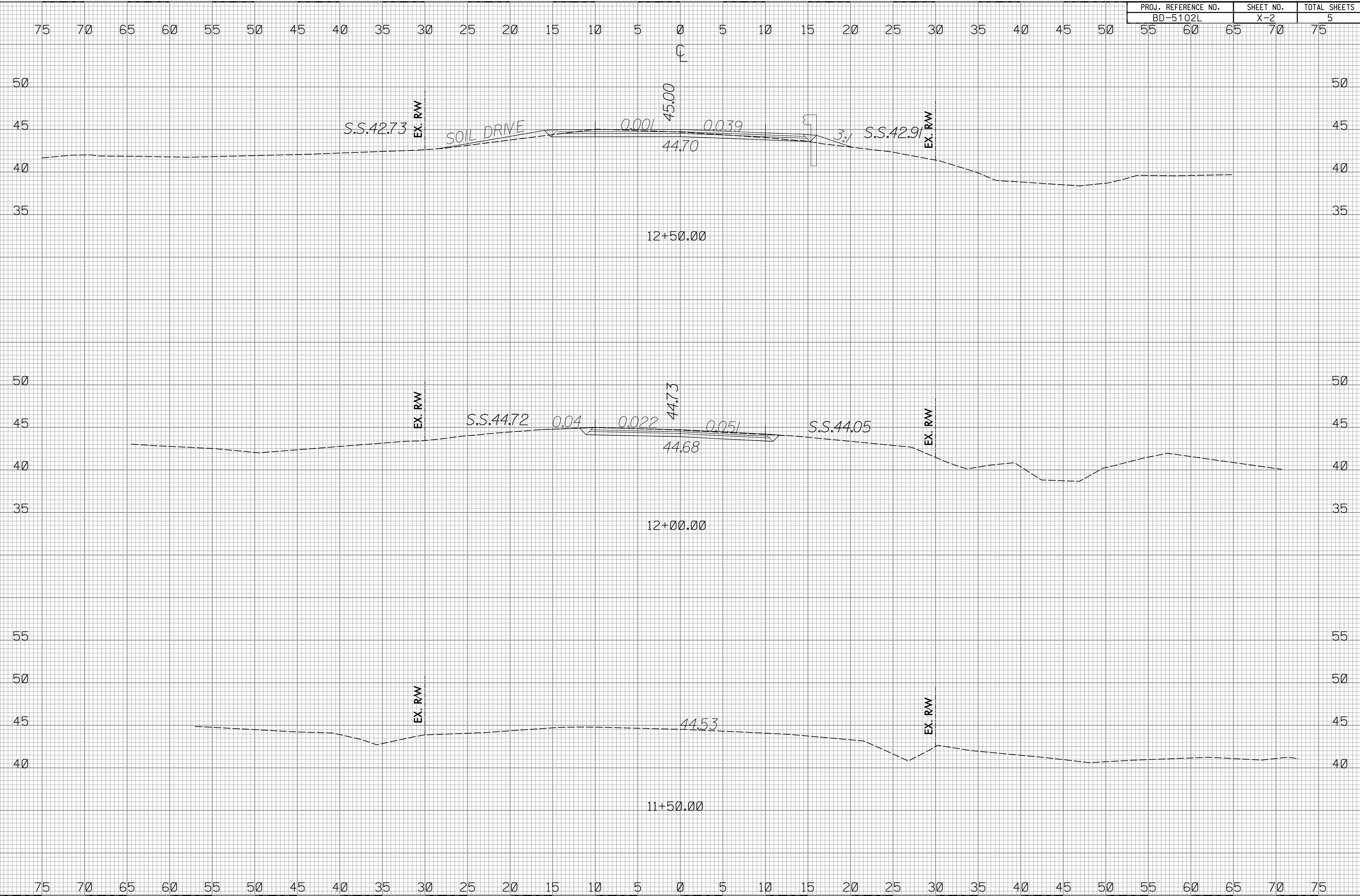
NCDOT
 BD-5102L JONES COUNTY
 REPLACE BRIDGE NO. 0064
 SR 1134 (OLD COMFORT RD.)
 OVER CYPRESS CREEK
 BETWEEN NC HWY 11
 AND NC HWY 258

SCALE: 1" = 50'
 MAY 25, 2012
 FOR PERMITTING ONLY:
 NOT FOR CONSTRUCTION



02/03/98

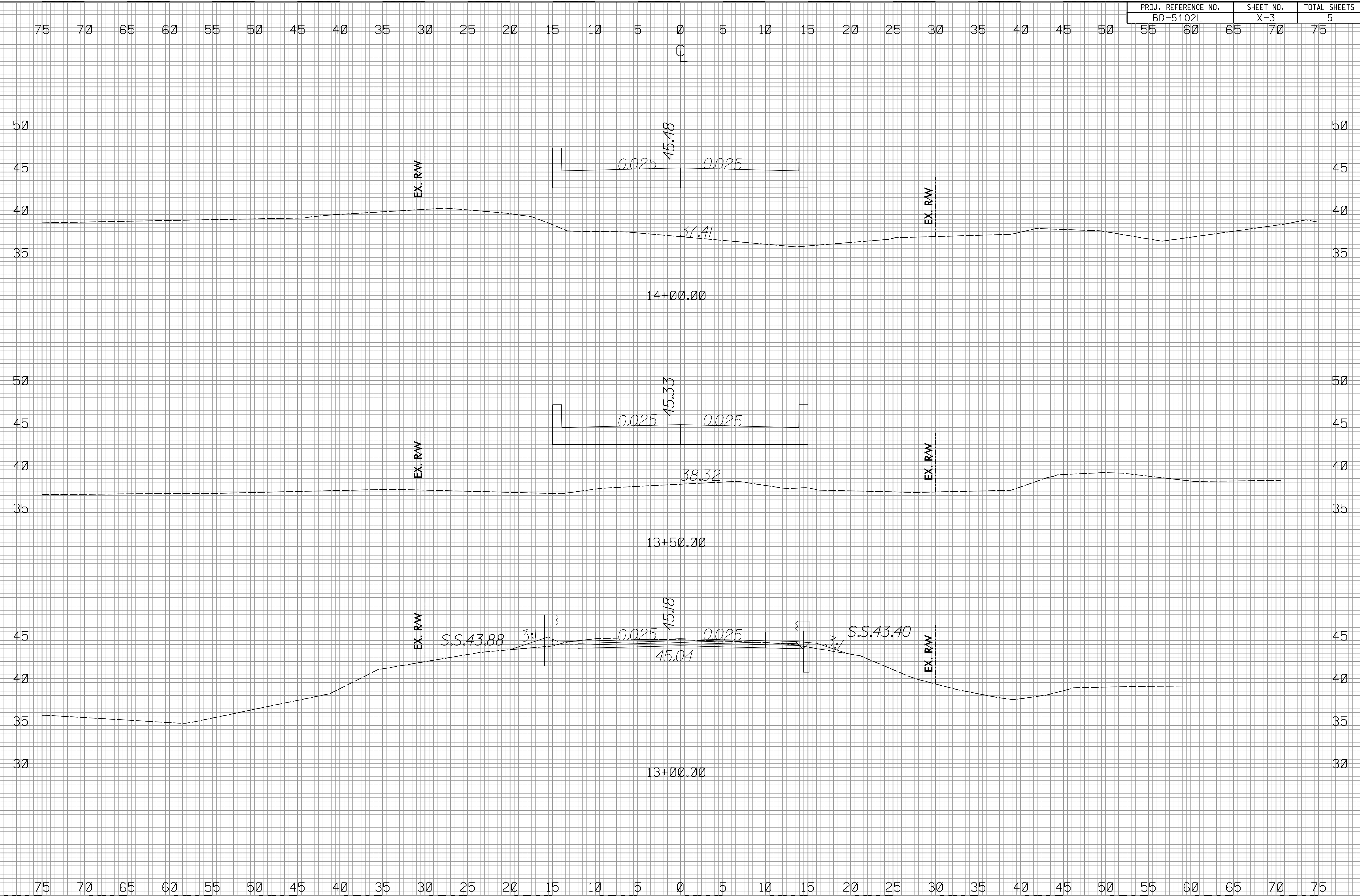
PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
BD-5102L	X-2	5



DATE: 02/03/98
DRAWN BY: [illegible]
CHECKED BY: [illegible]
SCALE: [illegible]

02/03/98

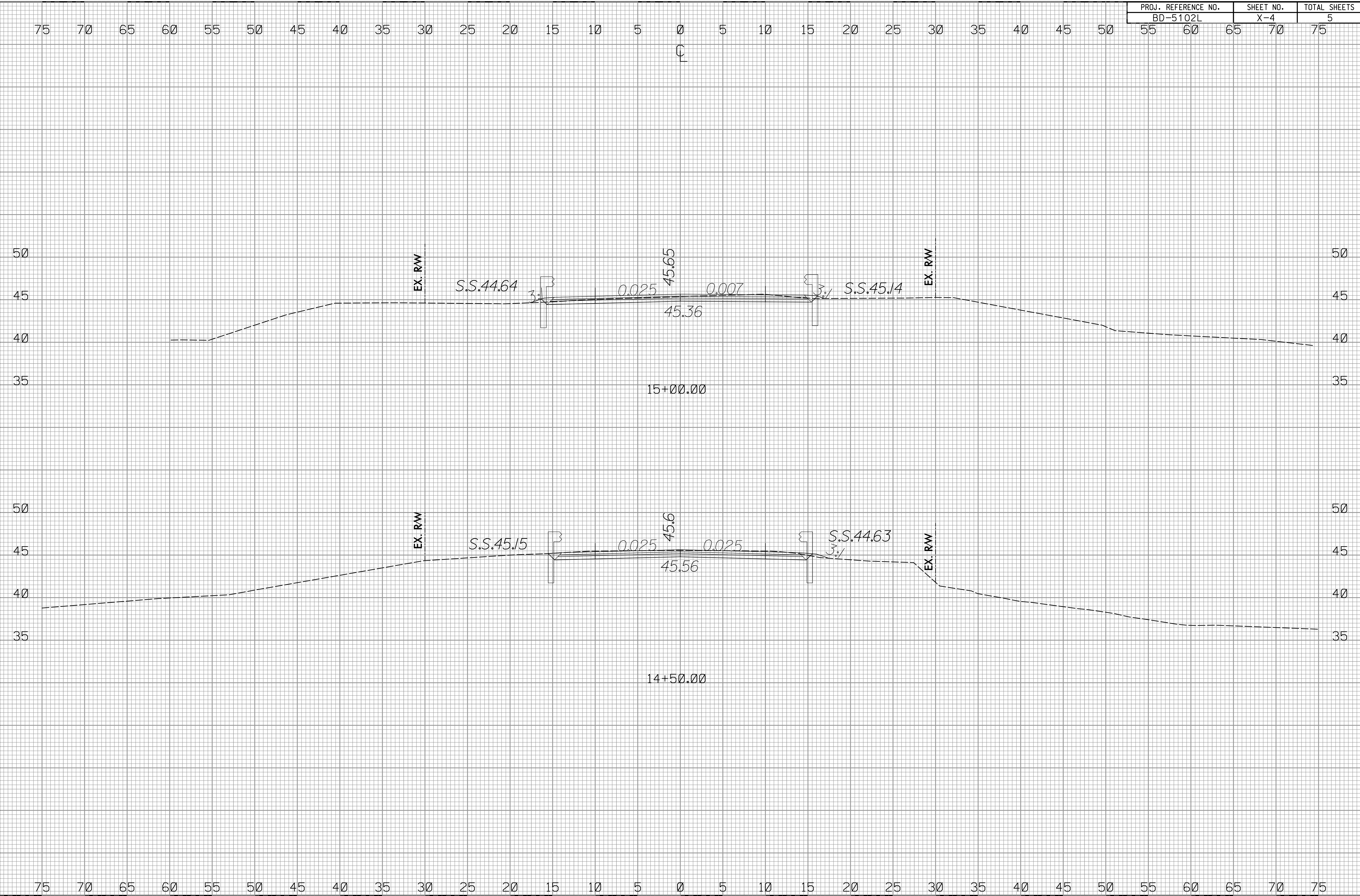
PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
BD-5102L	X-3	5



DATE: 02/03/98
DRAWN BY: [illegible]
CHECKED BY: [illegible]
SCALE: [illegible]

02/03/98

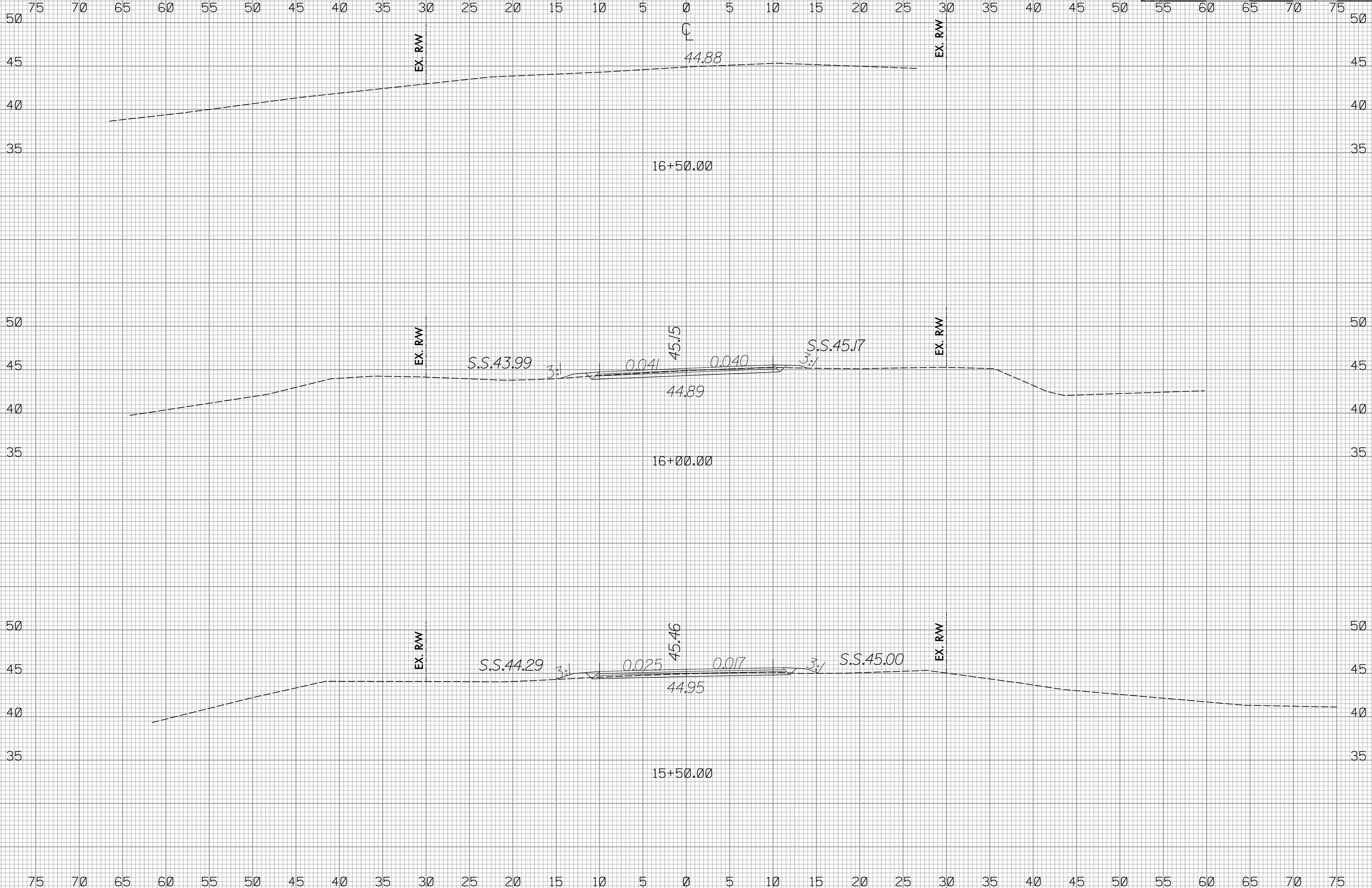
PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
BD-5102L	X-4	5



DATE: 02/03/98
DRAWN BY: [illegible]
CHECKED BY: [illegible]
SCALE: [illegible]

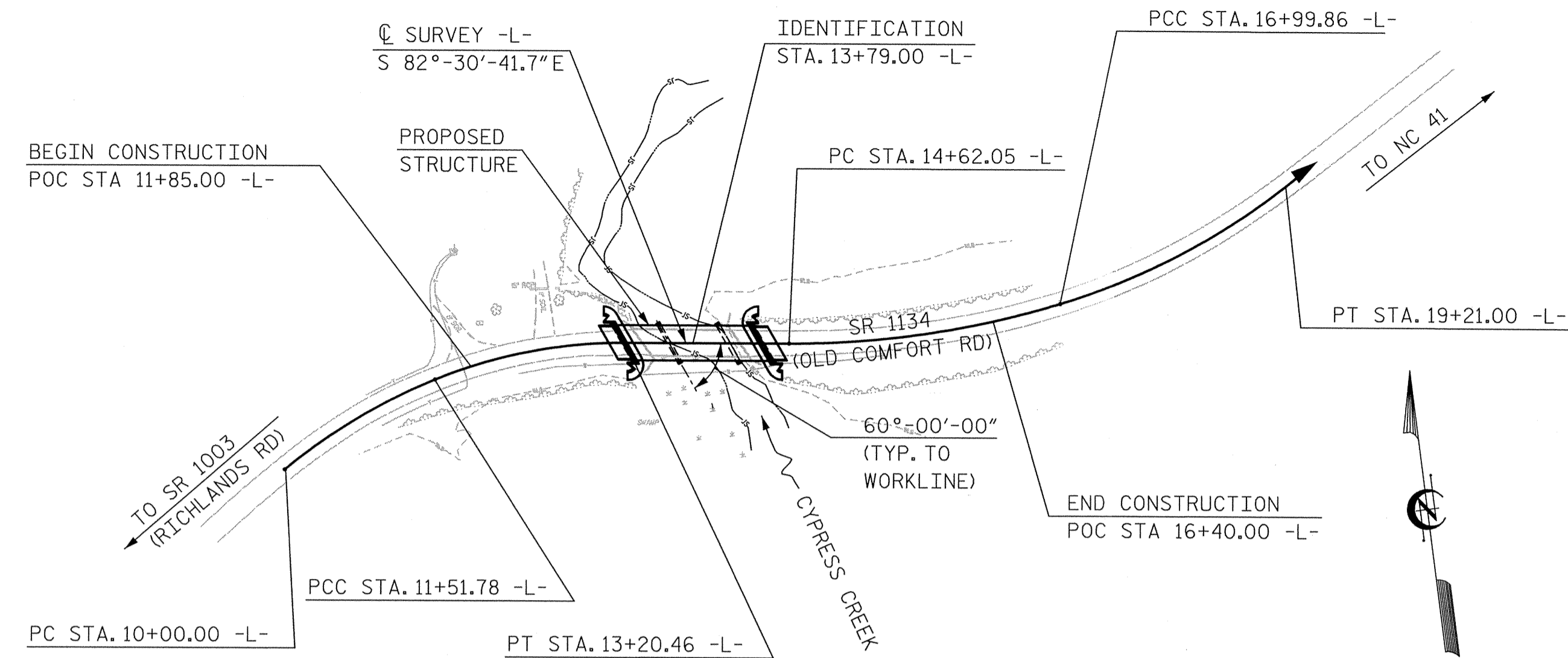
02/03/98

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
BD-5102L	X-5	5



DATE: 02/03/98
DRAWN BY: [illegible]
CHECKED BY: [illegible]
SCALE: [illegible]
PROJECT: [illegible]

BM - BASELINE CAP "BL-3", STA. 13+22.44 -BL-, ELEV 44.99



LOCATION SKETCH
FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

FOUNDATION NOTES:

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO.1 AND END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 70 TONS PER PILE.

DRIVE PILES AT END BENT NO.1 AND END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 120 TONS PER PILE.

PILES AT BENT NO.1 AND BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 100 TONS PER PILE.

DRIVE PILES AT BENT NO.1 AND BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 170 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAG OR SCOUR.

INSTALL PILES AT BENT NO.1 AND BENT NO.2 TO A TIP ELEVATION NO HIGHER THAN 27.5 FT.

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT BOTH END BENT NO.1 AND END BENT NO.2 AND BENT NO.1 AND BENT NO.2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.1 IS ELEVATION 31.5 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.2 IS ELEVATION 32.0 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 30 TO 45 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BOTH END BENT NO.1 AND END BENT NO.2 AND BENT NO.1 AND BENT NO.2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

PILE EXCAVATION IS REQUIRED TO INSTALL PILES AT BENT NO.1 AND BENT NO.2. EXCAVATE HOLES AT PILE LOCATIONS NO HIGHER THAN 27.5 FT. AND OBTAIN A MINIMUM 5.0 FT OF ROCK SOCKET. FOR PILE EXCAVATION SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

CONCRETE OR GROUT IS REQUIRED TO FILL HOLES FOR PILE EXCAVATION AT BENT NO.1 AND BENT NO.2.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE AT STATION 13+79.00 -L-	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	UNCLASSIFIED STRUCTURE EXCAVATION AT STATION 13+79.00 -L-	CLASS A CONCRETE	BRIDGE APPROACH SLABS AT STATION 13+79.00 -L-	REINFORCING STEEL	HP 12x53 STEEL PILES	HP 14x73 GALVANIZED STEEL PILES	STEEL PILE POINTS	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0"x1'-9" PRESTRESSED CONCRETE CORED SLABS				
	LUMP SUM	LIN. FT.	LIN. FT.	LUMP SUM	CJ. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	NO.	LIN. FT.	EACH	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.	
SUPERSTRUCTURE	LUMP SUM																		
END BENT NO. 1				LUMP SUM	14.7		2,218	5	50					60	70		LUMP SUM	30	1,200
BENT NO. 1		29	36		12.0		2,350		7	105	7								
BENT NO. 2		25	39		12.0		2,350		7	105	7								
END BENT NO. 2				LUMP SUM	14.7		2,218	5	50					65	75				
TOTAL	LUMP SUM	54	75	LUMP SUM	53.4	LUMP SUM	9,136	10	100	14	210	24	240.87	125	145	LUMP SUM	30	1,200	

GENERAL NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THE EXISTING 5 SPAN STRUCTURE WITH SPAN LENGTHS OF 17'-0", 16'-10", 16'-11", 16'-10", AND 17'-4" WITH 22 LINES OF TIMBER JOISTS SUPPORTING TIMBER DECKING AND BITUMINOUS WEARING SURFACE WITH A 22'-11" CLEAR ROADWAY WIDTH ON TIMBER CAP AND TIMBER PILES SHALL BE REMOVED. IN ADDITION, ANY PILES REMAINING FROM PREVIOUS BRIDGE CONSTRUCTION OR MAINTENANCE OPERATIONS SHALL BE REMOVED AND INCLUDED IN THE LUMP SUM PAY ITEM FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 13+79.00 -L-".

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 18.0 FT EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES" MAY, 2001

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

THIS BRIDGE SHALL BE CONSTRUCTED USING TOP-DOWN CONSTRUCTION METHODS. THE USE OF A TEMPORARY CAUSEWAY OR WORK BRIDGE IS NOT PERMITTED.

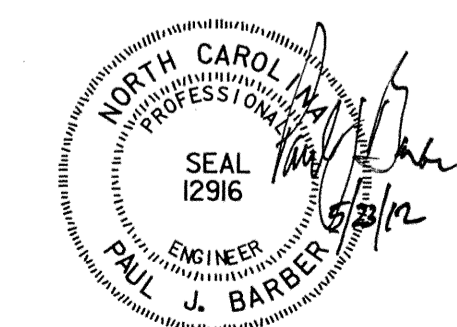
FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

PROJECT NO. BD-5102L
JONES COUNTY
STATION: 13+79.00 -L-

SHEET 2 OF 2



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING
FOR BRIDGE ON SR 1134
OVER CYPRESS CREEK
BETWEEN SR 1003
AND NC 41

HNTB HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY: J. BAYNE DATE: 3/12
CHECKED BY: F. BARBER DATE: 3/12
DWG. NO. 2

REVISIONS						SHEET NO. S-2
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 21
2			4			

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.352	--	1.75	0.252	1.95	40'	EL	19.423	0.653	1.35	40'	EL	7.769	0.80	0.252	1.72	40'	EL	19.423		
	HL-93(0pr)	N/A	--	1.753	--	1.35	0.252	2.52	40'	EL	19.423	0.653	1.75	40'	EL	7.769	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.544	55.583	1.75	0.252	2.45	40'	EL	19.423	0.653	1.54	40'	EL	7.769	0.80	0.252	2.14	40'	EL	19.423		
	HS-20(0pr)	36.000	--	2.001	72.053	1.35	0.252	3.17	40'	EL	19.423	0.653	2	40'	EL	7.769	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.929	53.037	1.4	0.252	5.64	40'	EL	19.423	0.653	3.93	40'	EL	7.769	0.80	0.252	3.99	40'	EL	19.423	
		SNGARBS2	20.000	--	2.985	59.708	1.4	0.252	4.63	40'	EL	15.538	0.653	2.99	40'	EL	7.769	0.80	0.252	3.28	40'	EL	19.423	
		SNAGRIS2	22.000	--	2.852	62.746	1.4	0.252	4.53	40'	EL	15.538	0.653	2.85	40'	EL	7.769	0.80	0.252	3.23	40'	EL	15.538	
		SNCOTTS3	27.250	--	1.98	53.947	1.4	0.252	2.82	40'	EL	19.423	0.653	1.98	40'	EL	7.769	0.80	0.252	1.99	40'	EL	19.423	
		SNAGGRS4	34.925	--	1.782	62.222	1.4	0.252	2.54	40'	EL	19.423	0.653	1.78	40'	EL	7.769	0.80	0.252	1.79	40'	EL	19.423	
		SNS5A	35.550	--	1.746	62.059	1.4	0.252	2.47	40'	EL	19.423	0.653	1.89	40'	EL	7.769	0.80	0.252	1.75	40'	EL	19.423	
		SNS6A	39.950	--	1.662	66.381	1.4	0.252	2.35	40'	EL	19.423	0.653	1.79	40'	EL	7.769	0.80	0.252	1.66	40'	EL	19.423	
	SNS7B	42.000	--	1.585	66.556	1.4	0.252	2.24	40'	EL	19.423	0.653	1.86	40'	EL	7.769	0.80	0.252	1.58	40'	EL	19.423		
	TTST	TNAGRIT3	33.000	--	2.045	67.476	1.4	0.252	2.89	40'	EL	19.423	0.653	2.07	40'	EL	7.769	0.80	0.252	1.58	40'	EL	19.423	
		TNT4A	33.075	--	1.951	64.52	1.4	0.252	2.93	40'	EL	19.423	0.653	1.95	40'	EL	7.769	0.80	0.252	2.04	40'	EL	19.423	
		TNT6A	41.600	--	1.757	73.106	1.4	0.252	2.49	40'	EL	19.423	0.653	1.91	40'	EL	7.769	0.80	0.252	2.07	40'	EL	19.423	
		TNT7A	42.000	--	1.795	75.386	1.4	0.252	2.55	40'	EL	19.423	0.653	1.79	40'	EL	7.769	0.80	0.252	1.76	40'	EL	19.423	
		TNT7B	42.000	--	1.729	72.638	1.4	0.252	2.61	40'	EL	19.423	0.653	1.73	40'	EL	7.769	0.80	0.252	1.80	40'	EL	19.423	
		TNAGRIT4	43.000	--	1.661	71.441	1.4	0.252	2.53	40'	EL	15.538	0.653	1.66	40'	EL	7.769	0.80	0.252	1.84	40'	EL	19.423	
TNAGT5A		45.000	--	1.659	74.644	1.4	0.252	2.35	40'	EL	19.423	0.653	1.77	40'	EL	7.769	0.80	0.252	1.79	40'	EL	19.423		
TNAGT5B	45.000	3	1.568	70.561	1.4	0.252	2.28	40'	EL	19.423	0.653	1.57	40'	EL	7.769	0.80	0.252	1.66	40'	EL	19.423			

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ _{DC}	γ _{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:
 MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.
 ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:
 1.
 2.
 3.
 4.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

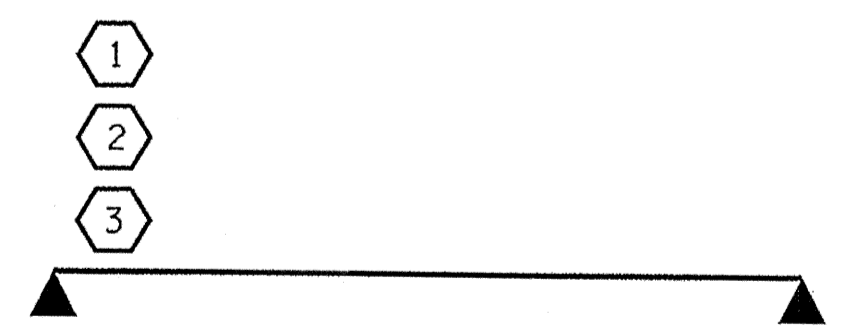
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

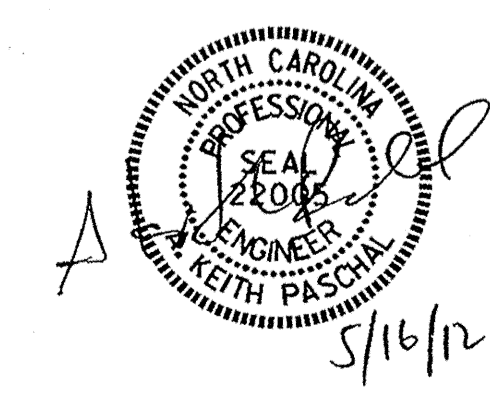
I - INTERIOR GIRDER
 EL - EXTERIOR LEFT GIRDER
 ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY
 FOR SPAN 'A'

PROJECT NO. BD-5102L
JONES COUNTY
 STATION: 13+79.00 -L-

ASSEMBLED BY: B. L. GREEN DATE: 3/2/12
 CHECKED BY: E. K. POPE DATE: 3/26/12
 DRAWN BY: CVC 6/10
 CHECKED BY: DNS 6/10



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 LRFR SUMMARY FOR
 40' CORED SLAB UNIT
 60° SKEW & 120° SKEW
 (NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-3
1			3			TOTAL SHEETS
2			4			21

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER		
						LIVELOAD FACTORS	MOMENT					SHEAR					LIVELOAD FACTORS	MOMENT						
							DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.35	--	1.75	0.25	1.74	50'	EL	24.423	0.656	1.35	50'	EL	9.769	0.80	0.25	1.59	50'	EL	24.423		
	HL-93(Opr)	N/A	--	1.75	--	1.35	0.25	2.25	50'	EL	24.423	0.656	1.75	50'	EL	9.769	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.586	57.108	1.75	0.25	2.15	50'	EL	24.423	0.656	1.59	50'	EL	9.769	0.80	0.25	1.97	50'	EL	24.423		
	HS-20(Opr)	36.000	--	2.056	74.028	1.35	0.25	2.79	50'	EL	24.423	0.656	2.06	50'	EL	9.769	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	4.009	54.117	1.4	0.25	5.47	50'	EL	24.423	0.656	4.31	50'	EL	9.769	0.80	0.25	4.01	50'	EL	24.423	
		SNGARBS2	20.000	--	3.168	63.352	1.4	0.25	4.32	50'	EL	24.423	0.656	3.19	50'	EL	9.769	0.80	0.25	3.17	50'	EL	24.423	
		SNAGRIS2	22.000	--	3.009	66.192	1.4	0.25	4.18	50'	EL	19.538	0.656	3.01	50'	EL	9.769	0.80	0.25	3.07	50'	EL	24.423	
		SNCOTTS3	27.250	--	2	54.493	1.4	0.25	2.73	50'	EL	24.423	0.656	2.16	50'	EL	9.769	0.80	0.25	2.00	50'	EL	24.423	
		SNAGGRS4	34.925	--	1.739	60.742	1.4	0.25	2.37	50'	EL	24.423	0.656	1.88	50'	EL	9.769	0.80	0.25	1.74	50'	EL	24.423	
		SNS5A	35.550	--	1.696	60.292	1.4	0.25	2.31	50'	EL	24.423	0.656	1.96	50'	EL	9.769	0.80	0.25	1.70	50'	EL	24.423	
		SNS6A	39.950	--	1.586	63.364	1.4	0.25	2.16	50'	EL	24.423	0.656	1.82	50'	EL	9.769	0.80	0.25	1.59	50'	EL	24.423	
	SNS7B	42.000	--	1.512	63.487	1.4	0.25	2.06	50'	EL	24.423	0.656	1.85	50'	EL	9.769	0.80	0.25	1.51	50'	EL	24.423		
	TTST	TNAGRIT3	33.000	--	1.943	64.127	1.4	0.25	2.65	50'	EL	24.423	0.656	2.14	50'	EL	9.769	0.80	0.25	1.94	50'	EL	24.423	
		TNT4A	33.075	--	1.96	64.837	1.4	0.25	2.67	50'	EL	24.423	0.656	2.04	50'	EL	9.769	0.80	0.25	1.96	50'	EL	24.423	
		TNT6A	41.600	--	1.633	67.938	1.4	0.25	2.23	50'	EL	24.423	0.656	2	50'	EL	9.769	0.80	0.25	1.63	50'	EL	24.423	
		TNT7A	42.000	--	1.658	69.634	1.4	0.25	2.26	50'	EL	24.423	0.656	1.86	50'	EL	9.769	0.80	0.25	1.66	50'	EL	24.423	
		TNT7B	42.000	--	1.728	72.595	1.4	0.25	2.36	50'	EL	24.423	0.656	1.76	50'	EL	9.769	0.80	0.25	1.73	50'	EL	24.423	
		TNAGRIT4	43.000	--	1.64	70.537	1.4	0.25	2.24	50'	EL	24.423	0.656	1.69	50'	EL	9.769	0.80	0.25	1.64	50'	EL	24.423	
TNAGT5A		45.000	--	1.532	68.95	1.4	0.25	2.09	50'	EL	24.423	0.656	1.75	50'	EL	9.769	0.80	0.25	1.53	50'	EL	24.423		
TNAGT5B	45.000	3	1.501	67.548	1.4	0.25	2.05	50'	EL	24.423	0.656	1.6	50'	EL	9.769	0.80	0.25	1.50	50'	EL	24.423			

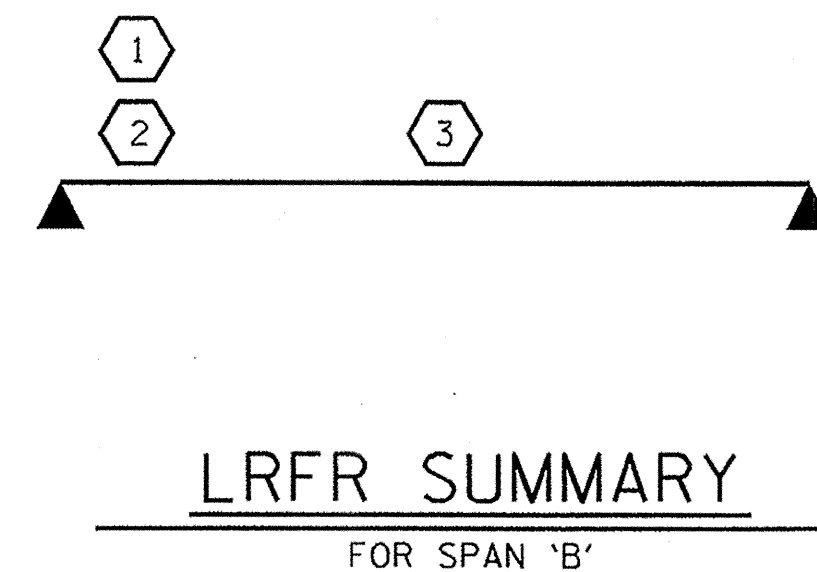
NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.
ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

- 1.
- 2.
- 3.
- 4.

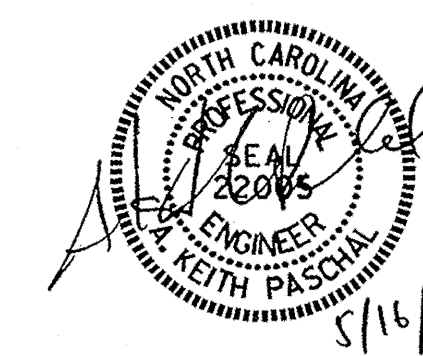
#	CONTROLLING LOAD RATING
1	DESIGN LOAD RATING (HL-93)
2	DESIGN LOAD RATING (HS-20)
3	LEGAL LOAD RATING **
** SEE CHART FOR VEHICLE TYPE	
GIRDER LOCATION	
I - INTERIOR GIRDER EL - EXTERIOR LEFT GIRDER ER - EXTERIOR RIGHT GIRDER	



PROJECT NO. BD-5102L
JONES COUNTY
STATION: 13+79.00 -L-

ASSEMBLED BY : B. L. GREEN DATE : 3/2/12
CHECKED BY : E. K. POPE DATE : 3/26/12
DRAWN BY : CVC 6/10
CHECKED BY : DNS 6/10

16-MAY-2012 09:07
S:\DPG\k\k\h\BD-5102L\bgreen\BD-5102L.SD.CS.dgn
kpaschal



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD LRFR SUMMARY FOR 50' CORED SLAB UNIT 60° SKEW & 120° SKEW (NON-INTERSTATE TRAFFIC)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. <u>5-4</u>					TOTAL SHEETS <u>21</u>

STD. NO. 21LRFR1_60&120S_50L

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.202	--	1.75	0.256	2.04	30'	EL	14.423	0.655	1.2	30'	EL	1.442	0.80	0.256	1.75	30'	EL	14.423		
	HL-93(Opr)	N/A	--	1.558	--	1.35	0.256	2.64	30'	EL	14.423	0.655	1.56	30'	EL	1.442	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.365	49.124	1.75	0.256	2.82	30'	EL	11.538	0.655	1.36	30'	EL	1.442	0.80	0.256	2.45	30'	EL	11.538		
	HS-20(Opr)	36.000	--	1.769	63.679	1.35	0.256	3.65	30'	EL	11.538	0.655	1.77	30'	EL	1.442	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.333	45.002	1.4	0.256	5.76	30'	EL	14.423	0.655	3.33	30'	EL	1.442	0.80	0.256	3.95	30'	EL	14.423	
		SNGARBS2	20.000	--	2.581	51.624	1.4	0.256	5.04	30'	EL	11.538	0.655	2.58	30'	EL	1.442	0.80	0.256	3.50	30'	EL	11.538	
		SNAGRIS2	22.000	--	2.487	54.723	1.4	0.256	5.13	30'	EL	11.538	0.655	2.49	30'	EL	1.442	0.80	0.256	3.56	30'	EL	11.538	
		SNCOTTS3	27.250	--	1.684	45.891	1.4	0.256	2.89	30'	EL	14.423	0.655	1.68	30'	EL	1.442	0.80	0.256	1.99	30'	EL	14.423	
		SNAGGRS4	34.925	--	1.551	54.185	1.4	0.256	2.79	30'	EL	14.423	0.655	1.55	30'	EL	1.442	0.80	0.256	1.91	30'	EL	14.423	
		SNS5A	35.550	--	1.645	58.469	1.4	0.256	2.7	30'	EL	14.423	0.655	1.64	30'	EL	1.442	0.80	0.256	1.85	30'	EL	14.423	
		SNS6A	39.950	--	1.547	61.791	1.4	0.256	2.55	30'	EL	14.423	0.655	1.55	30'	EL	1.442	0.80	0.256	1.75	30'	EL	14.423	
		SNS7B	42.000	--	1.578	66.285	1.4	0.256	2.48	30'	EL	14.423	0.655	1.58	30'	EL	1.442	0.80	0.256	1.70	30'	EL	14.423	
	TTST	TNAGRIT3	33.000	--	1.838	60.67	1.4	0.256	3.31	30'	EL	14.423	0.655	1.84	30'	EL	1.442	0.80	0.256	2.27	30'	EL	14.423	
		TNT4A	33.075	--	1.71	56.559	1.4	0.256	3.13	30'	EL	14.423	0.655	1.71	30'	EL	1.442	0.80	0.256	2.15	30'	EL	14.423	
		TNT6A	41.600	--	1.652	68.714	1.4	0.256	2.85	30'	EL	14.423	0.655	1.65	30'	EL	1.442	0.80	0.256	1.96	30'	EL	14.423	
		TNT7A	42.000	--	1.573	66.067	1.4	0.256	2.94	30'	EL	14.423	0.655	1.57	30'	EL	1.442	0.80	0.256	2.02	30'	EL	14.423	
		TNT7B	42.000	--	1.536	64.525	1.4	0.256	2.77	30'	EL	14.423	0.655	1.54	30'	EL	1.442	0.80	0.256	1.90	30'	EL	14.423	
		TNAGRIT4	43.000	--	1.486	63.9	1.4	0.256	2.87	30'	EL	14.423	0.655	1.49	30'	EL	1.442	0.80	0.256	1.97	30'	EL	14.423	
		TNAGT5A	45.000	--	1.594	71.736	1.4	0.256	2.79	30'	EL	14.423	0.655	1.59	30'	EL	1.442	0.80	0.256	1.92	30'	EL	14.423	
		TNAGT5B	45.000	3	1.399	62.946	1.4	0.256	2.68	30'	EL	11.538	0.655	1.4	30'	EL	1.442	0.80	0.256	1.85	30'	EL	11.538	

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ _{DC}	γ _{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

- 1.
- 2.
- 3.
- 4.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

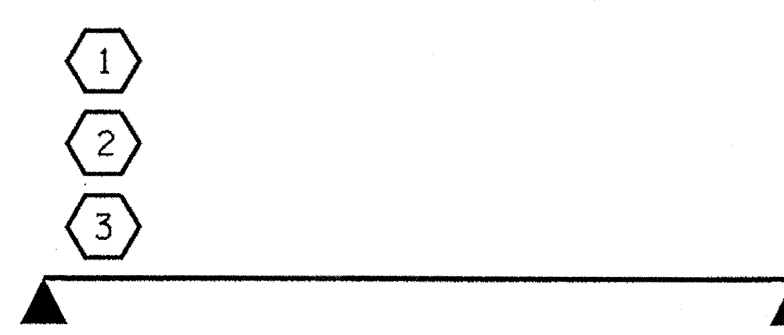
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

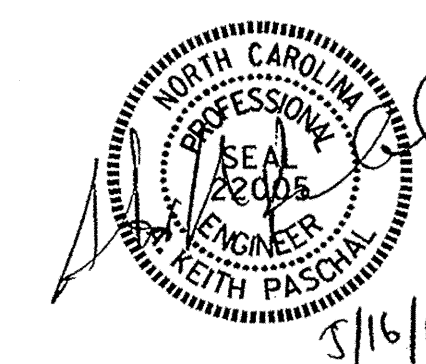
I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY
FOR SPAN 'C'

PROJECT NO. BD-5102L
JONES COUNTY
 STATION: 13+79.00 -L-

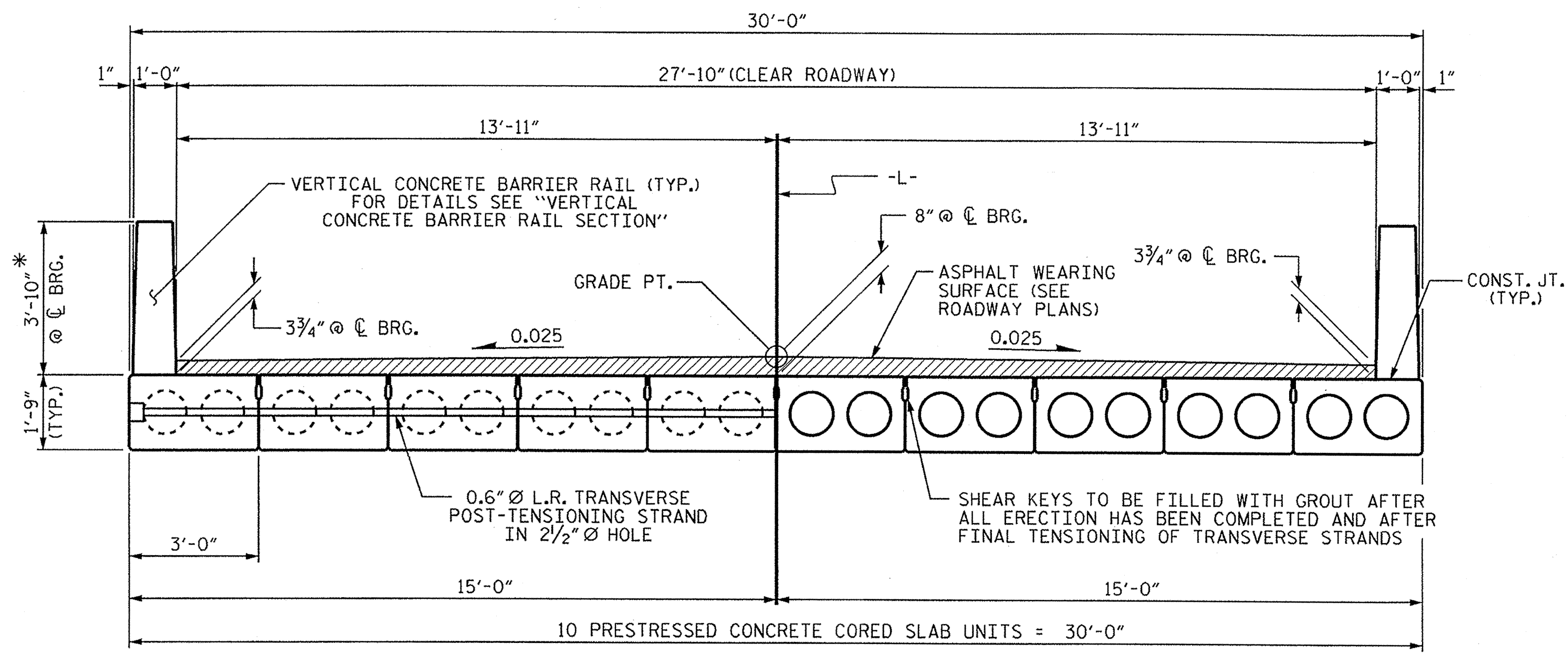
ASSEMBLED BY : B. L. GREEN DATE : 3/2/12
 CHECKED BY : E. K. POPE DATE : 3/26/12
 DRAWN BY : CVC 6/10
 CHECKED BY : DNS 6/10



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 LRFR SUMMARY FOR
 30' CORED SLAB UNIT
 60° SKEW & 120° SKEW
 (NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO. 5-5
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 21
2			4			



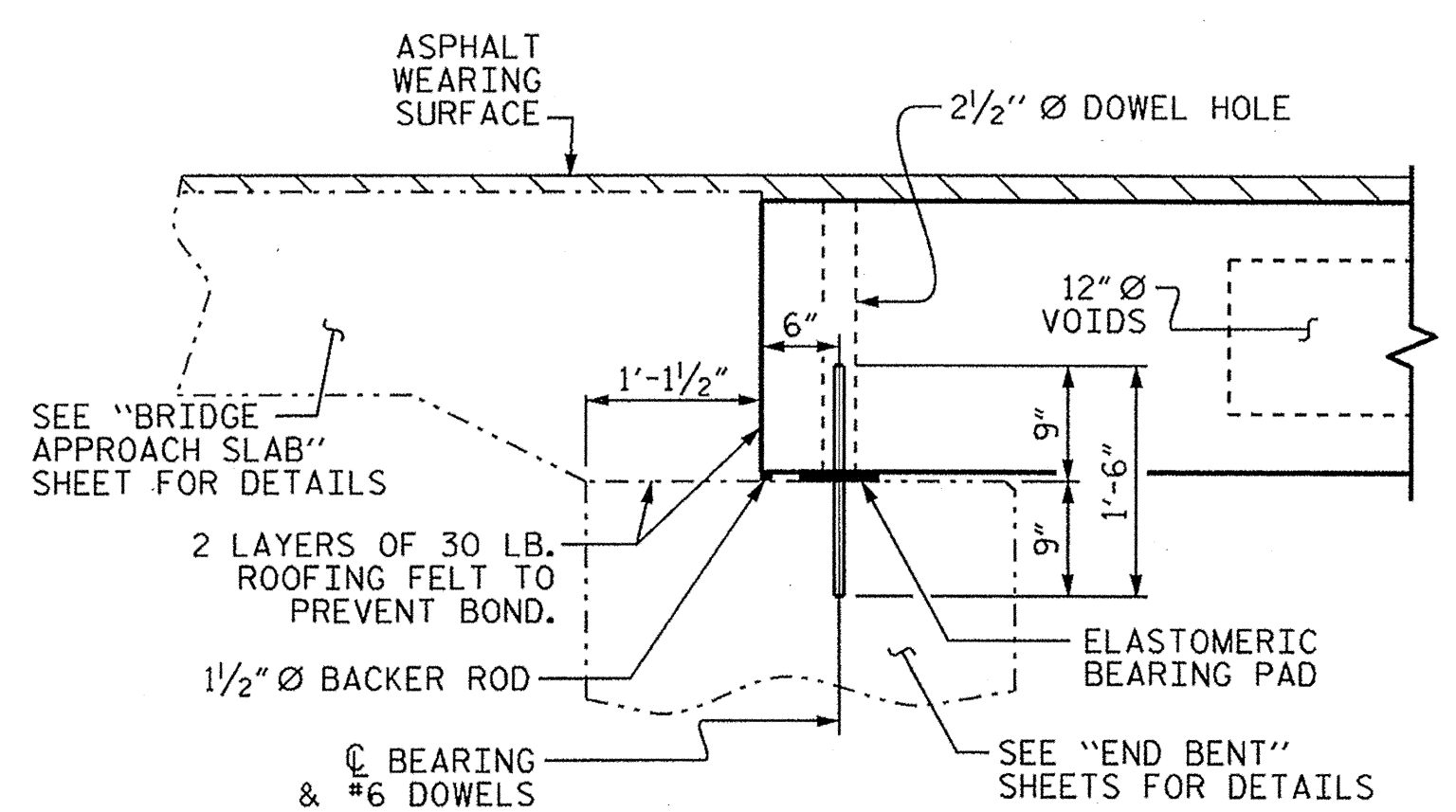
HALF SECTION AT INTERMEDIATE DIAPHRAGMS HALF SECTION THROUGH VOIDS

TYPICAL SECTION

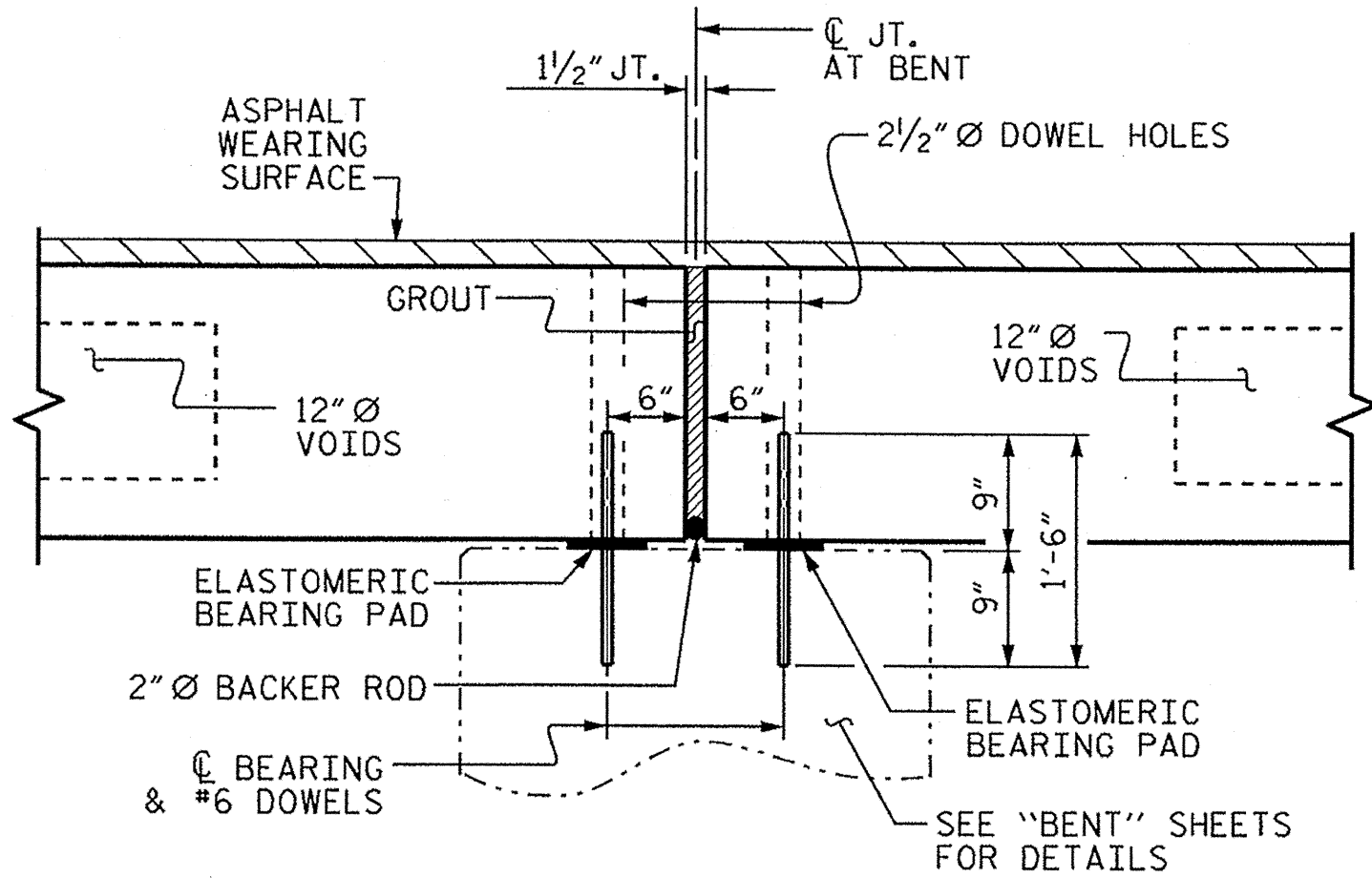
* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.

FIXED END

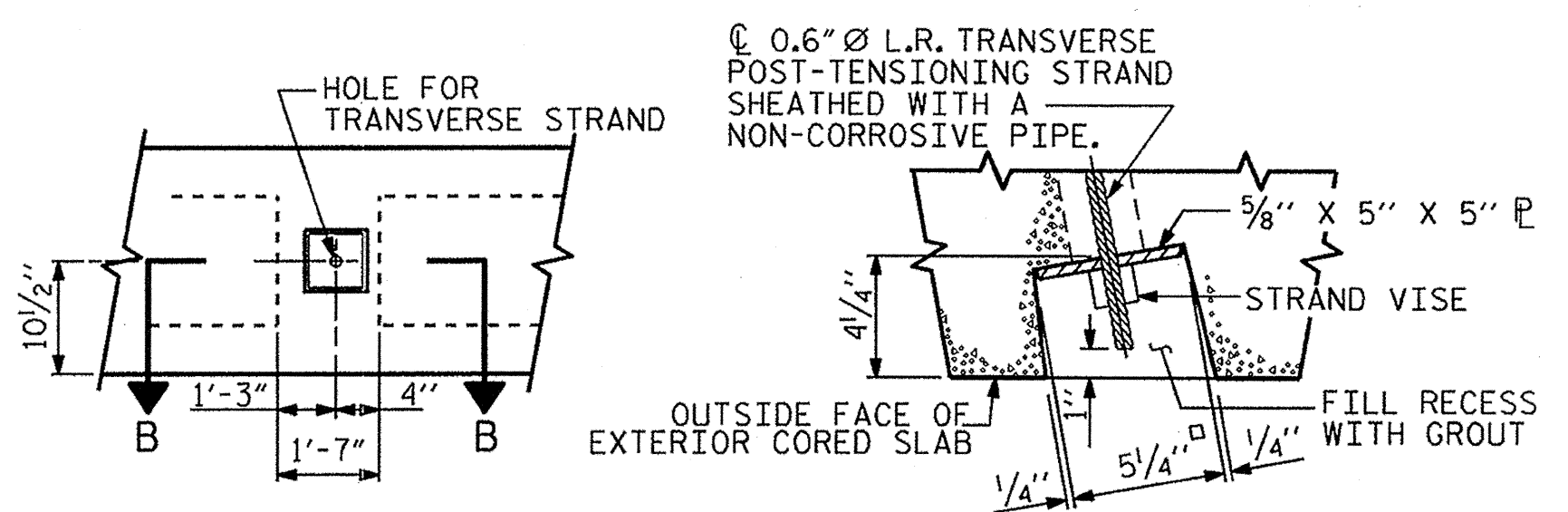
FIXED END FIXED END



SECTION AT END BENT



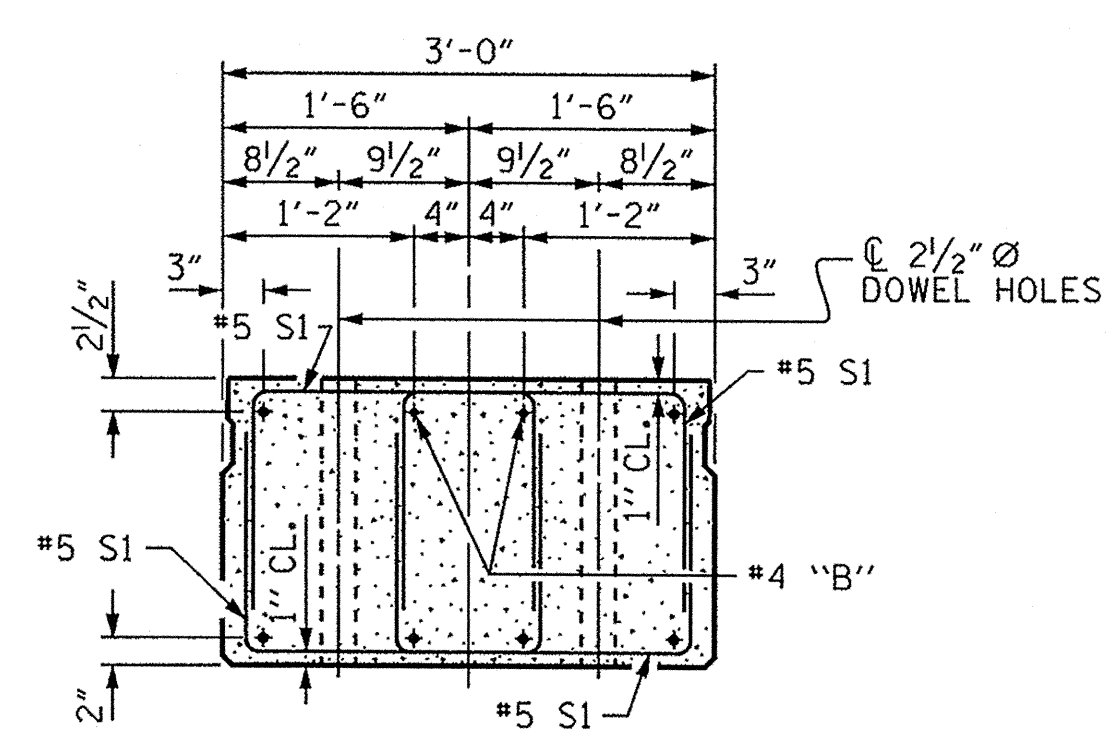
SECTION AT BENT



ELEVATION VIEW

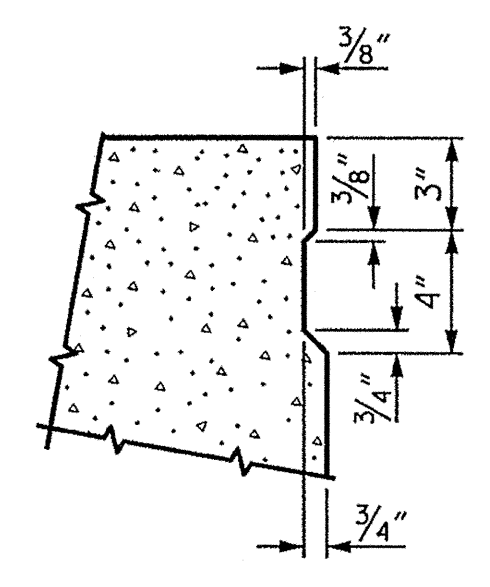
SECTION B-B

GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS



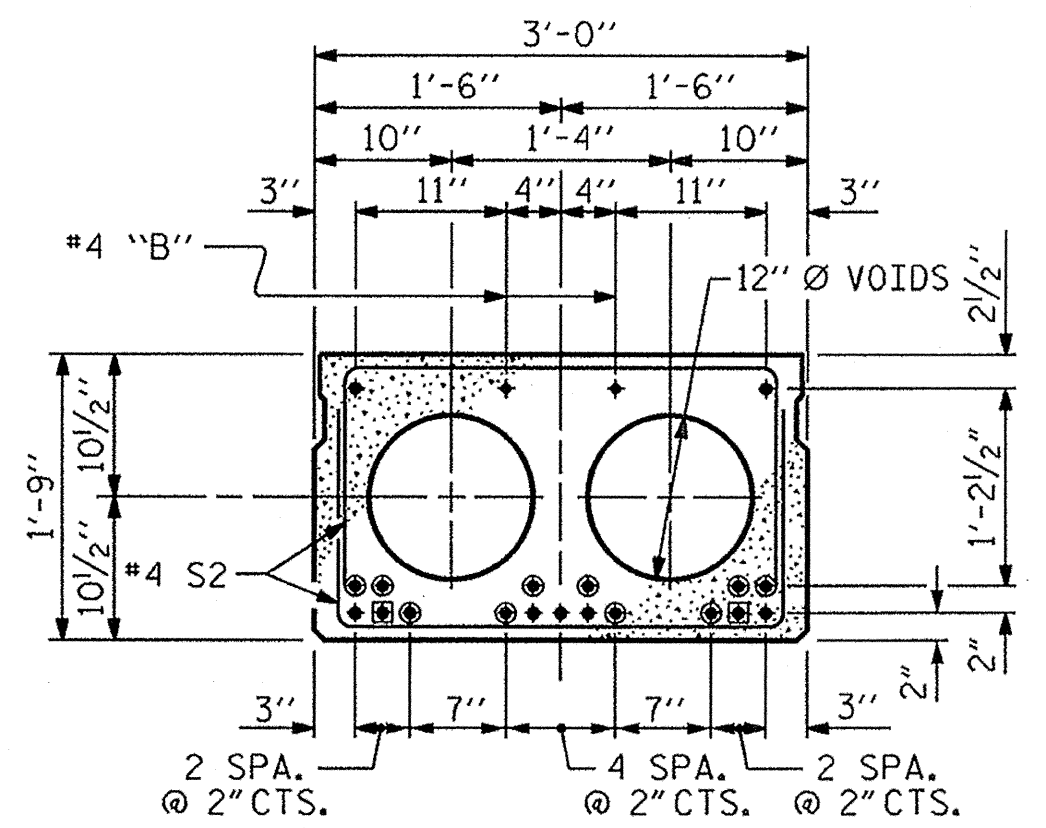
END ELEVATION

SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.

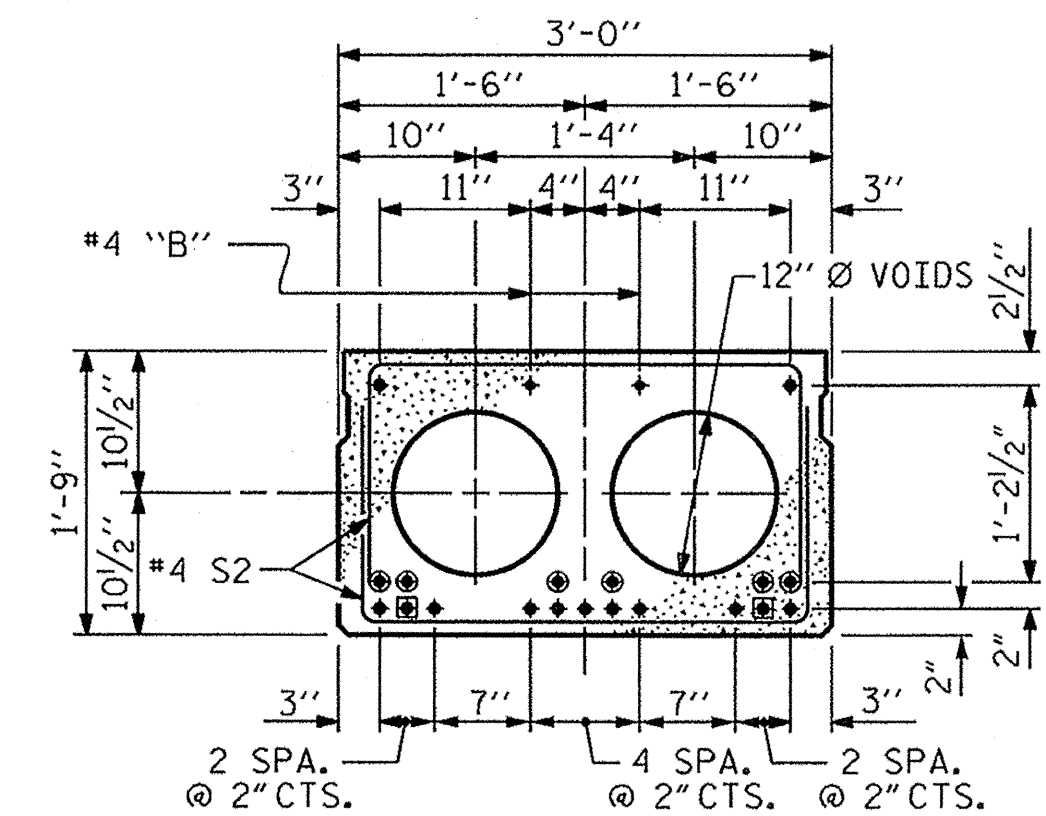


SHEAR KEY DETAIL

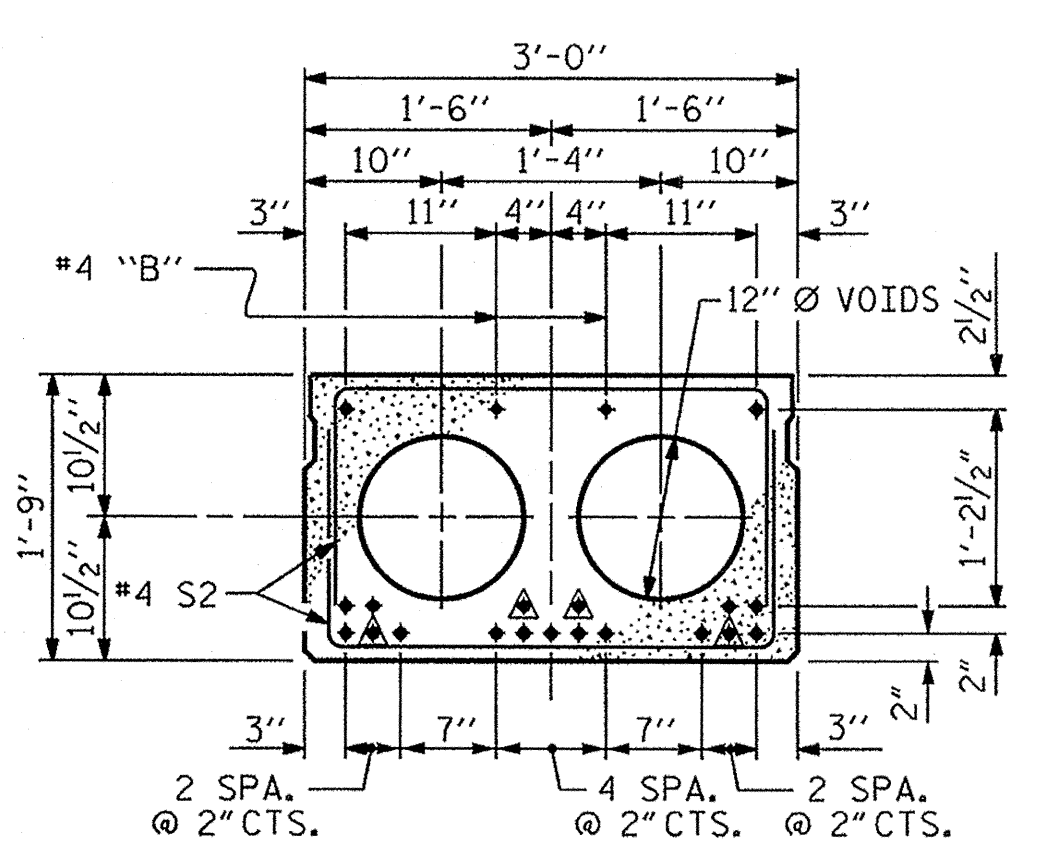
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



INTERIOR SLAB SECTION (30' UNIT)
(9 STRANDS REQUIRED)

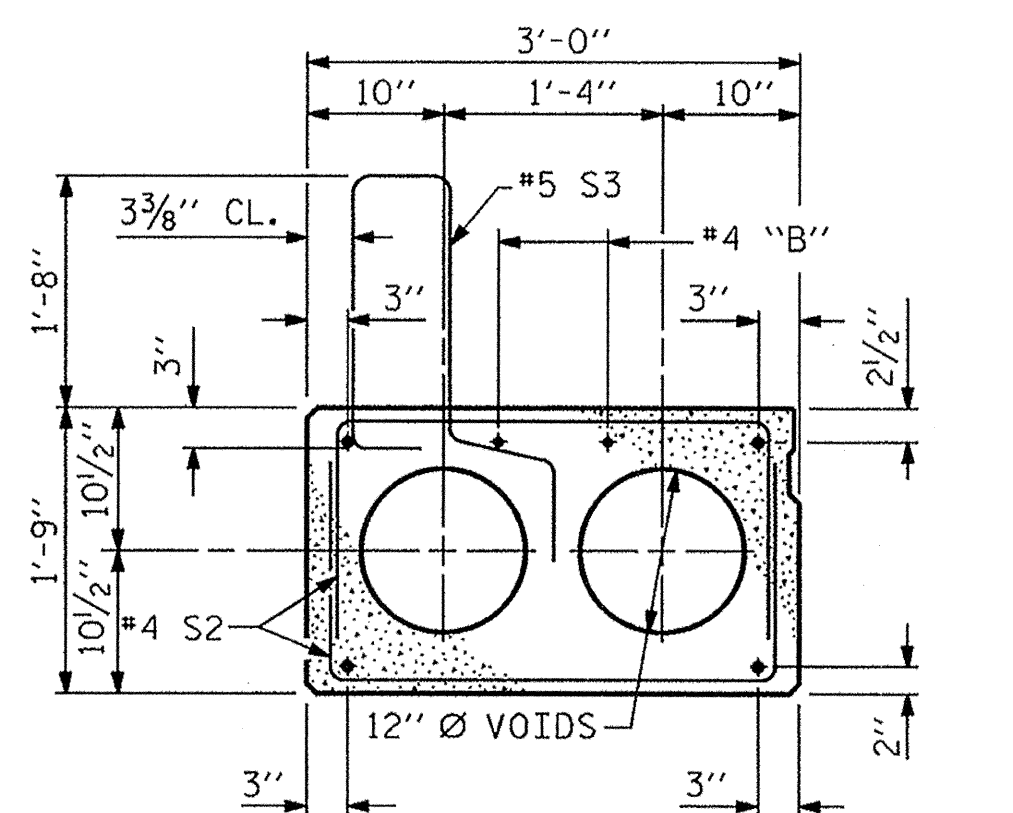


INTERIOR SLAB SECTION (40' UNIT)
(13 STRANDS REQUIRED)



INTERIOR SLAB SECTION (50' UNIT)
(19 STRANDS REQUIRED)

0.6" Ø LOW RELAXATION STRAND LAYOUT



EXT. SLAB SECTION

(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)

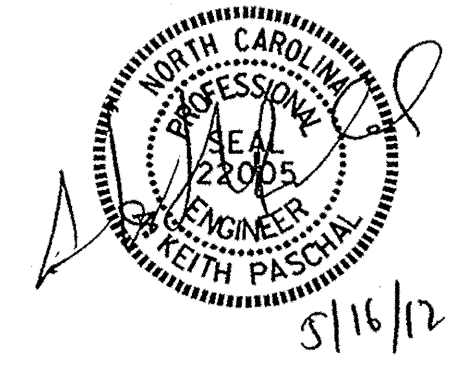
- DEBONDING LEGEND**
- ▲ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
 - BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 2'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
 - OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

PROJECT NO. BD-5102L
JONES COUNTY
 STATION: 13+79.00 -L-

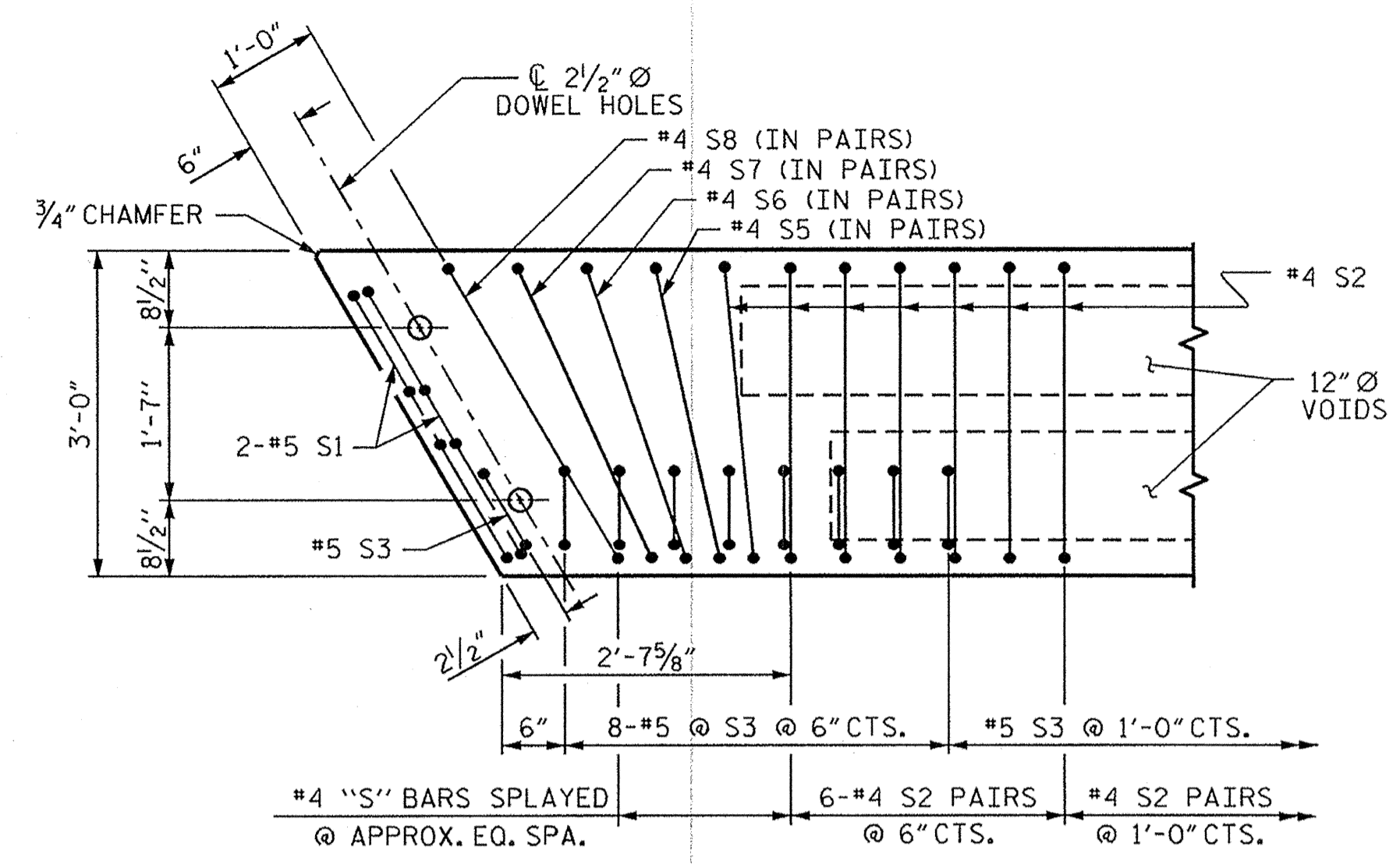
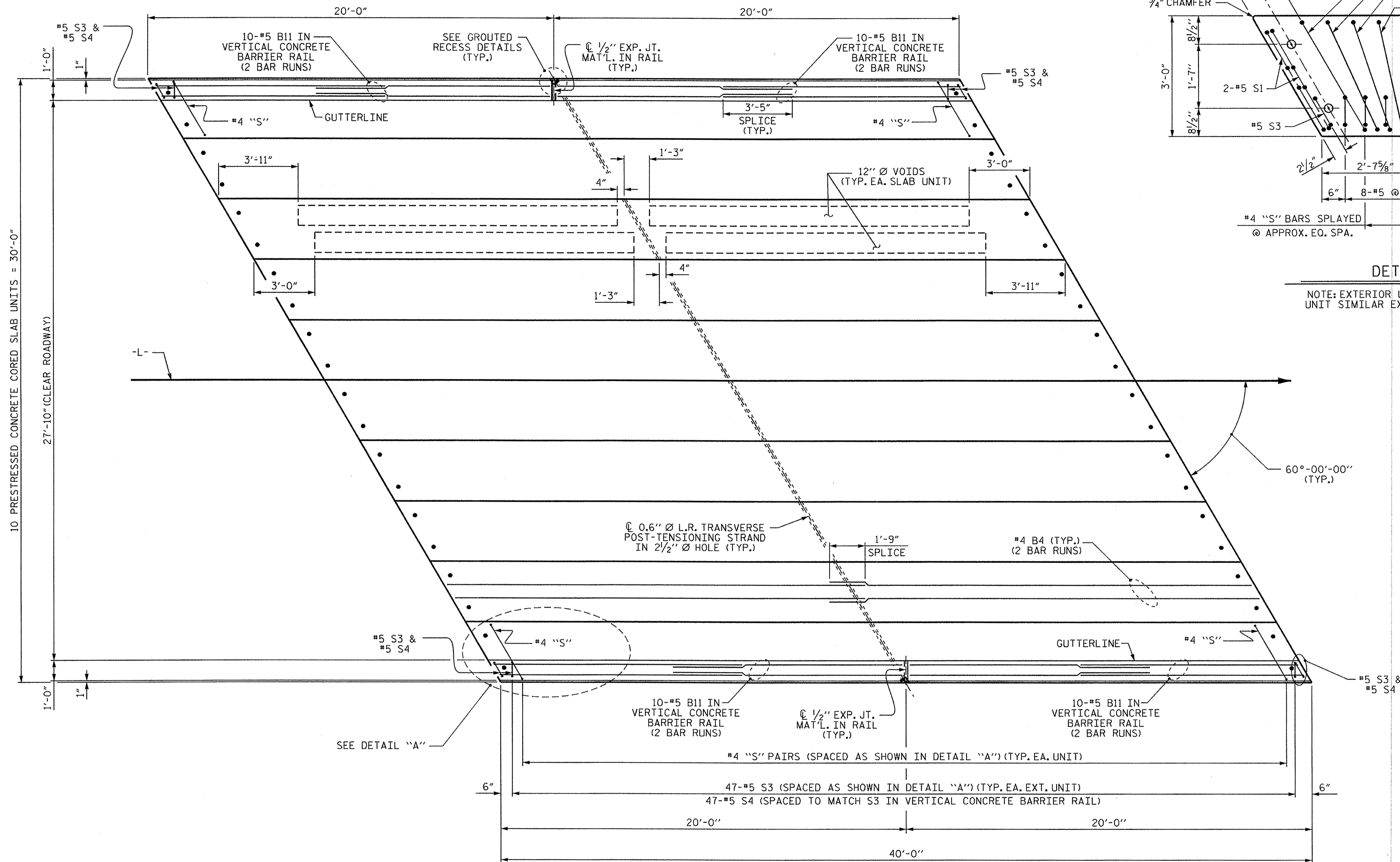
SHEET 1 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 1'-9"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT
 60° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-6
1			3			TOTAL SHEETS
2			4			21



ASSEMBLED BY: B. L. GREEN	DATE: 3/2/12
CHECKED BY: E. K. POPE	DATE: 3/26/12
DRAWN BY: DGE 5/09	REV. 12/11
CHECKED BY: BCH 6/09	MAA/AAC



DETAIL "A"
 NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

PLAN OF UNIT

PROJECT NO. BD-5102L
JONES COUNTY
 STATION: 13+79.00 -L-
 SHEET 2 OF 5

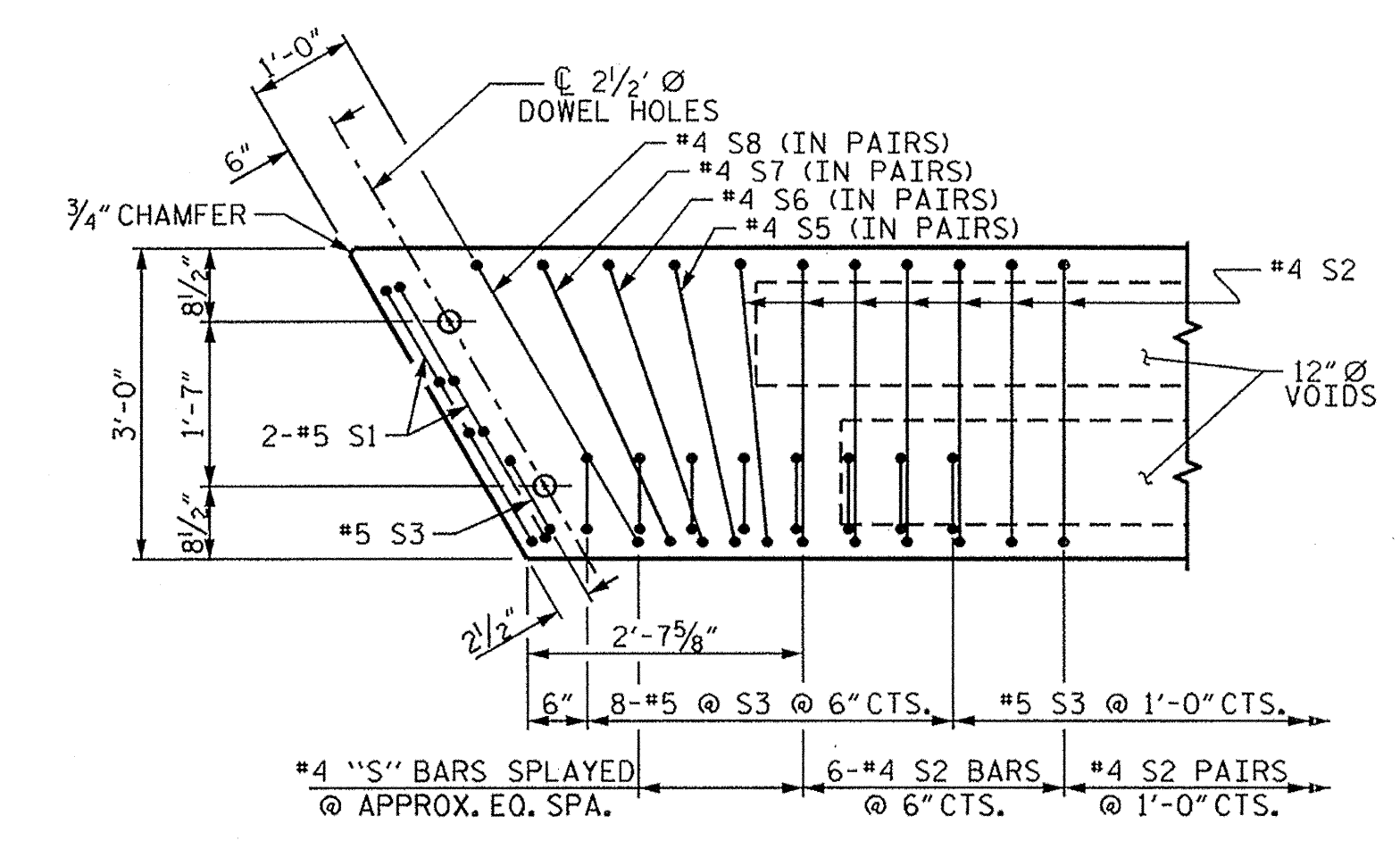
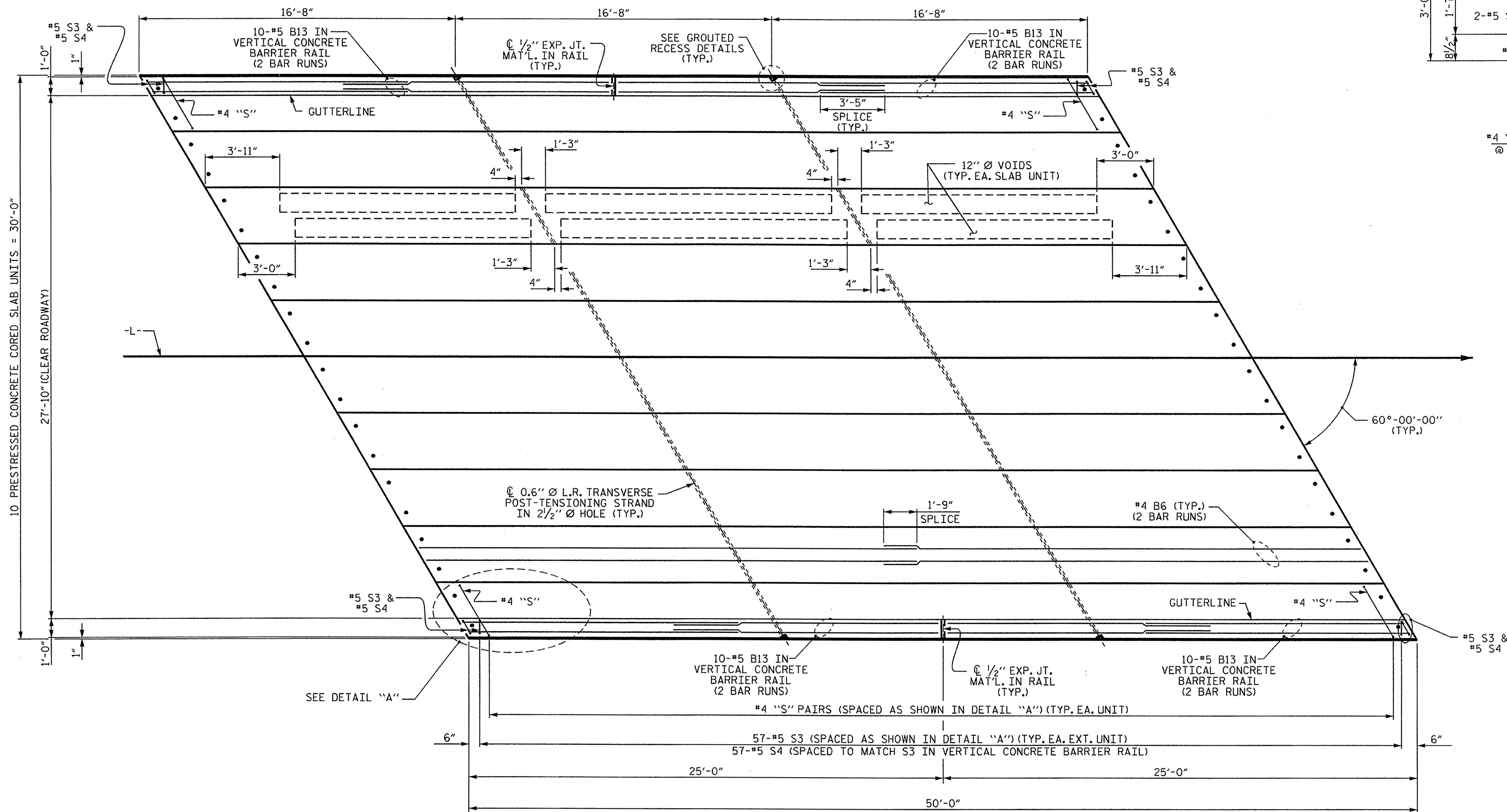
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**PLAN OF 40' UNIT
 27'-10" CLEAR ROADWAY
 60° SKEW**

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1			3			5-7
2			4			21

ASSEMBLED BY : B. L. GREEN DATE : 3/2/12
 CHECKED BY : E. K. POPE DATE : 3/26/12
 DRAWN BY : DGE 3/09 REV. 12/5/11 MAA/AAC
 CHECKED BY : BCH 3/09

16-MAY-2012 09:07
 S:\DPG1\Kefth\BD-5102L\bgreen\BD-5102L_SD_CS.dgn
 kposchal



DETAIL "A"
 NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

PLAN OF UNIT

PROJECT NO. BD-5102L
JONES COUNTY
 STATION: 13+79.00 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

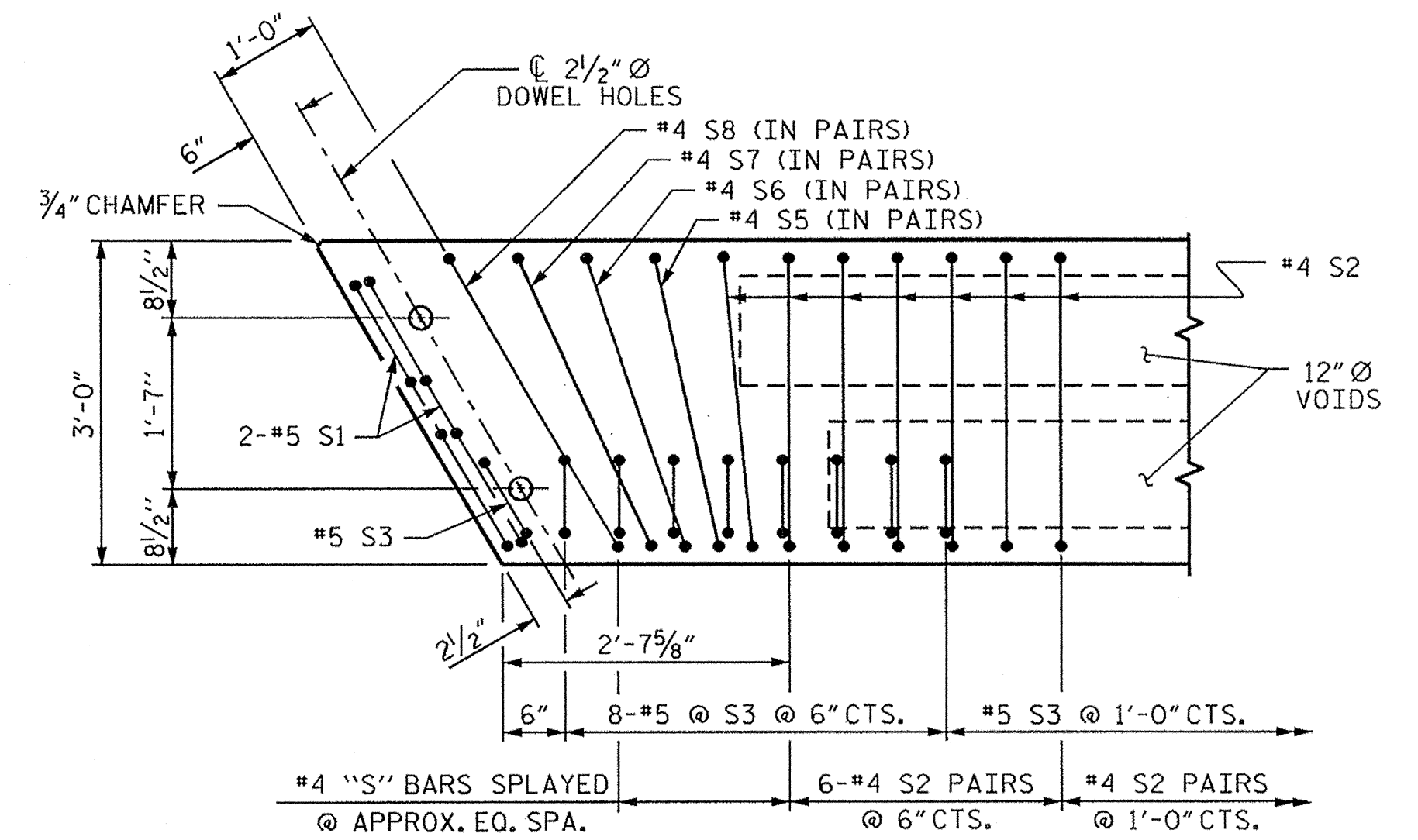
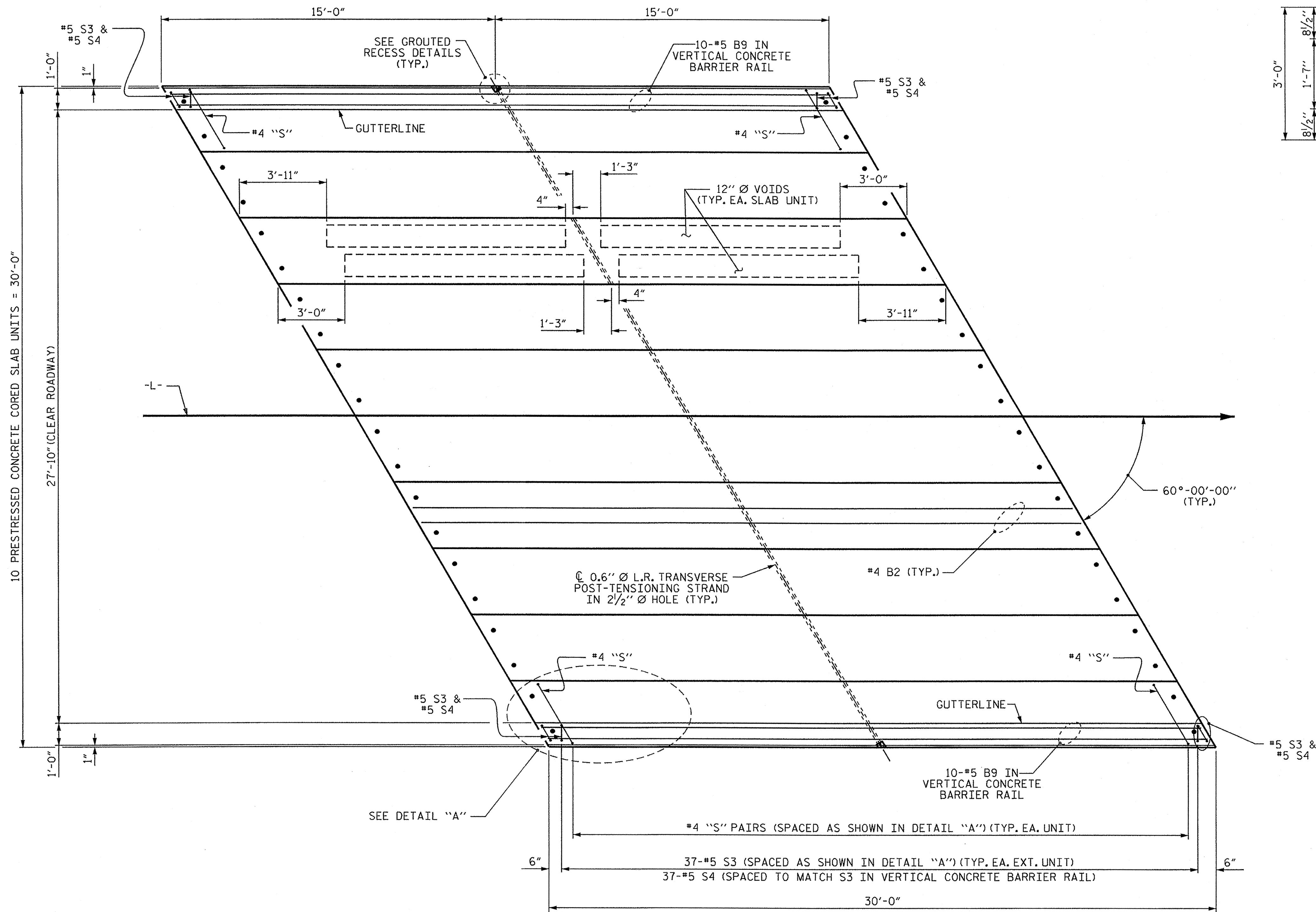
PLAN OF 50' UNIT
 27'-10" CLEAR ROADWAY
 60° SKEW

REVISIONS						SHEET NO. 5-8
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 21
2			4			



ASSEMBLED BY :	B. L. GREEN	DATE :	3/2/12
CHECKED BY :	E. K. POPE	DATE :	3/26/12
DRAWN BY :	DGE 3/09	REV.	12/5/11 MAA/AAC
CHECKED BY :	BCH 3/09		

15-MAY-2012 14:04
 S:\DRG1\KaitH\BD-5102L\bgreen\BD-5102L_SD.CS.dgn
 Kpaschal



DETAIL "A"

NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

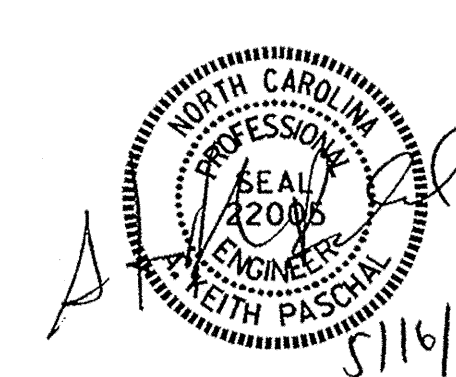
PLAN OF UNIT

PROJECT NO. BD-5102L
JONES COUNTY
 STATION: 13+79.00 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN OF 30' UNIT
 27'-10" CLEAR ROADWAY
 60° SKEW



ASSEMBLED BY : B. L. GREEN	DATE : 3/2/12
CHECKED BY : E. K. POPE	DATE : 3/26/12
DRAWN BY : DGE 3/09	REV. 12/5/11 MAA/AAC
CHECKED BY : BCH 3/09	

16-MAY-2012 09:07
 S:\DPG1\KofH\BD-5102L\bgreen\BD-5102L_SD_CS.dgn
 kpaschal

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-9
2			4			21

STD.NO. 21" PCS_30_60S_30L

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
40' UNIT						
*B11	80	80	#5	STR	11'-9"	980
*S4	98	98	#5	2	7'-2"	733
* EPOXY COATED REINFORCING STEEL						LBS. 1713
CLASS AA CONCRETE						CU.YDS. 10.5
TOTAL VERTICAL CONCRETE BARRIER RAIL						LN. FT. 80.29

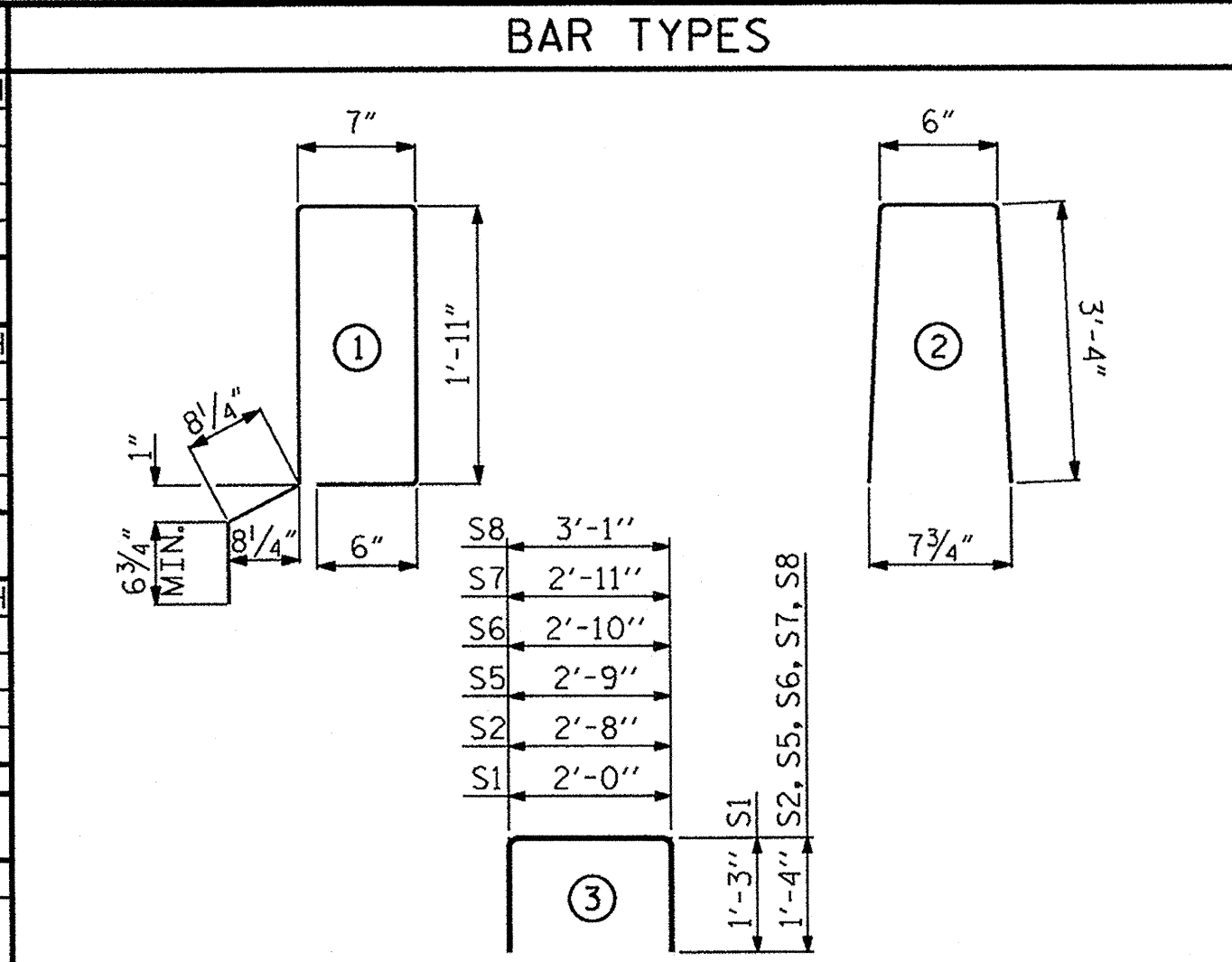
BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
50' UNIT						
*B13	64	64	#5	STR	14'-3"	1189
*S4	118	118	#5	2	7'-2"	882
* EPOXY COATED REINFORCING STEEL						LBS. 2071
CLASS AA CONCRETE						CU.YDS. 13.1
TOTAL VERTICAL CONCRETE BARRIER RAIL						LN. FT. 100.29

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
30' UNIT						
*B9	20	20	#5	STR	29'-6"	615
*S4	78	78	#5	2	7'-2"	583
* EPOXY COATED REINFORCING STEEL						LBS. 1198
CLASS AA CONCRETE						CU.YDS. 7.9
TOTAL VERTICAL CONCRETE BARRIER RAIL						LN. FT. 60.29

CORED SLABS REQUIRED			
NUMBER	LENGTH	TOTAL LENGTH	
40' UNIT			
EXTERIOR C.S.	2	40'-0"	80'-0"
INTERIOR C.S.	8	40'-0"	320'-0"
TOTAL	10		400'-0"

CORED SLABS REQUIRED			
NUMBER	LENGTH	TOTAL LENGTH	
50' UNIT			
EXTERIOR C.S.	2	50'-0"	100'-0"
INTERIOR C.S.	8	50'-0"	400'-0"
TOTAL	10		500'-0"

CORED SLABS REQUIRED			
NUMBER	LENGTH	TOTAL LENGTH	
30' UNIT			
EXTERIOR C.S.	2	30'-0"	60'-0"
INTERIOR C.S.	8	30'-0"	240'-0"
TOTAL	10		300'-0"



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE 40' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
B4	4	#4	STR	20'-8"	55	20'-8"	55
S1	8	#5	3	4'-6"	38	4'-6"	38
S2	82	#4	3	5'-4"	292	5'-4"	292
*S3	49	#5	1	6'-2"	315		
S5	4	#4	3	5'-5"	14	5'-5"	14
S6	4	#4	3	5'-6"	15	5'-6"	15
S7	4	#4	3	5'-7"	15	5'-7"	15
S8	4	#4	3	5'-9"	15	5'-9"	15
REINFORCING STEEL				LBS.	444		444
* EPOXY COATED REINFORCING STEEL				LBS.	315		
6500 P.S.I. CONCRETE				CU. YDS.	5.9		5.9
0.6" Ø L.R. STRANDS				No.	13		13

BILL OF MATERIAL FOR ONE 50' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
B6	4	#4	STR	25'-8"	69	25'-8"	69
S1	8	#5	3	4'-6"	38	4'-6"	38
S2	102	#4	3	5'-4"	363	5'-4"	363
*S3	59	#5	1	6'-2"	379		
S5	4	#4	3	5'-5"	14	5'-5"	14
S6	4	#4	3	5'-6"	15	5'-6"	15
S7	4	#4	3	5'-7"	15	5'-7"	15
S8	4	#4	3	5'-9"	15	5'-9"	15
REINFORCING STEEL				LBS.	529		529
* EPOXY COATED REINFORCING STEEL				LBS.	379		
6500 P.S.I. CONCRETE				CU. YDS.	7.3		7.3
0.6" Ø L.R. STRANDS				No.	19		19

BILL OF MATERIAL FOR ONE 30' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
B2	2	#4	STR	29'-7"	40	29'-7"	40
S1	8	#5	3	4'-6"	38	4'-6"	38
S2	62	#4	3	5'-4"	221	5'-4"	221
*S3	39	#5	1	6'-2"	251		
S5	4	#4	3	5'-5"	14	5'-5"	14
S6	4	#4	3	5'-6"	15	5'-6"	15
S7	4	#4	3	5'-7"	15	5'-7"	15
S8	4	#4	3	5'-9"	15	5'-9"	15
REINFORCING STEEL				LBS.	358		358
* EPOXY COATED REINFORCING STEEL				LBS.	251		
5000 P.S.I. CONCRETE				CU. YDS.	4.5		4.5
0.6" Ø L.R. STRANDS				No.	9		9

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

ALL REINFORCING STEEL IN THE VERTICAL CONCRETE BARRIER RAIL SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

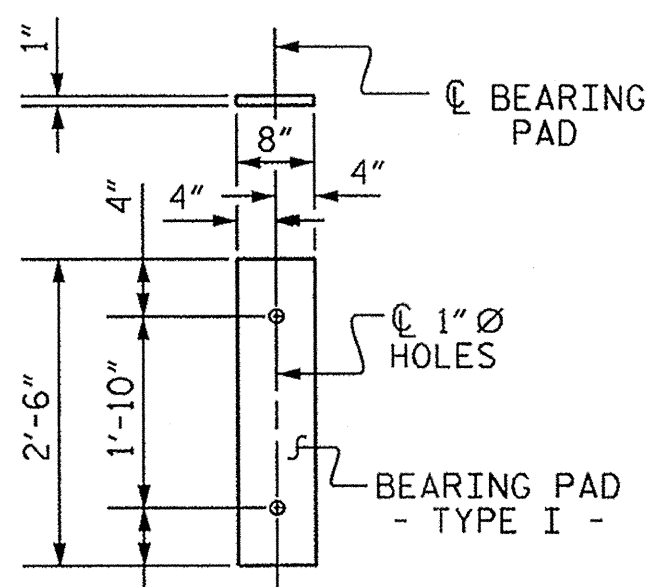
TRANSVERSE POST TENSIONING OF THE CORED SLAB UNITS SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

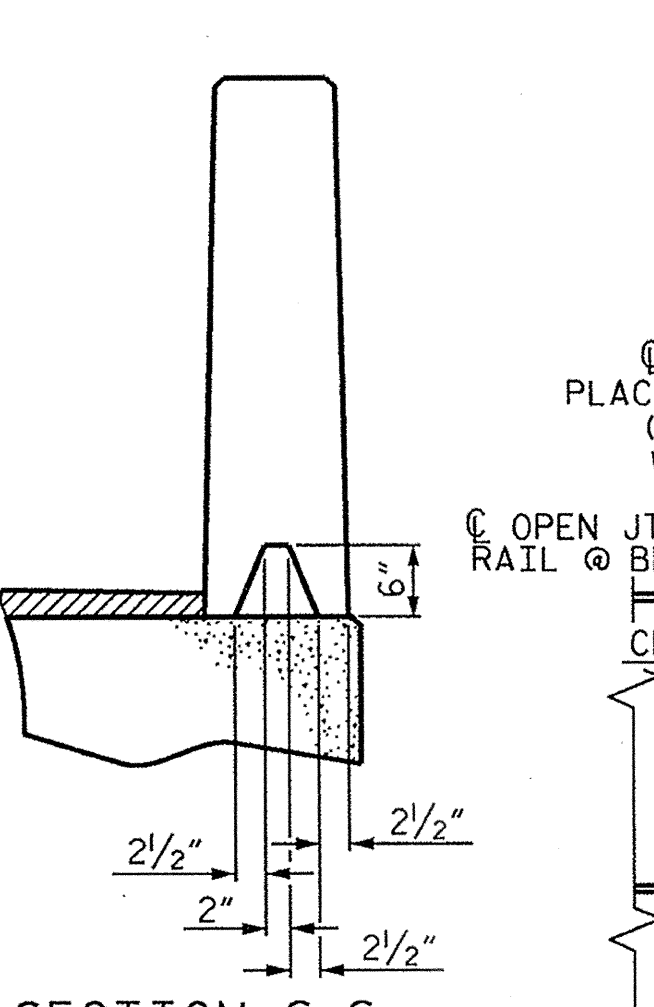
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
27'-10" CLEAR ROADWAY	ASPHALT OVERLAY THICKNESS	RAIL HEIGHT
	@ MID-SPAN	@ MID-SPAN
	NORMAL CROWN SECTION	
40' UNITS	2 5/8"	3'-8 7/8"
50' UNITS	1 1/2"	3'-7 3/4"
30' UNITS	3 3/8"	3'-9 5/8"

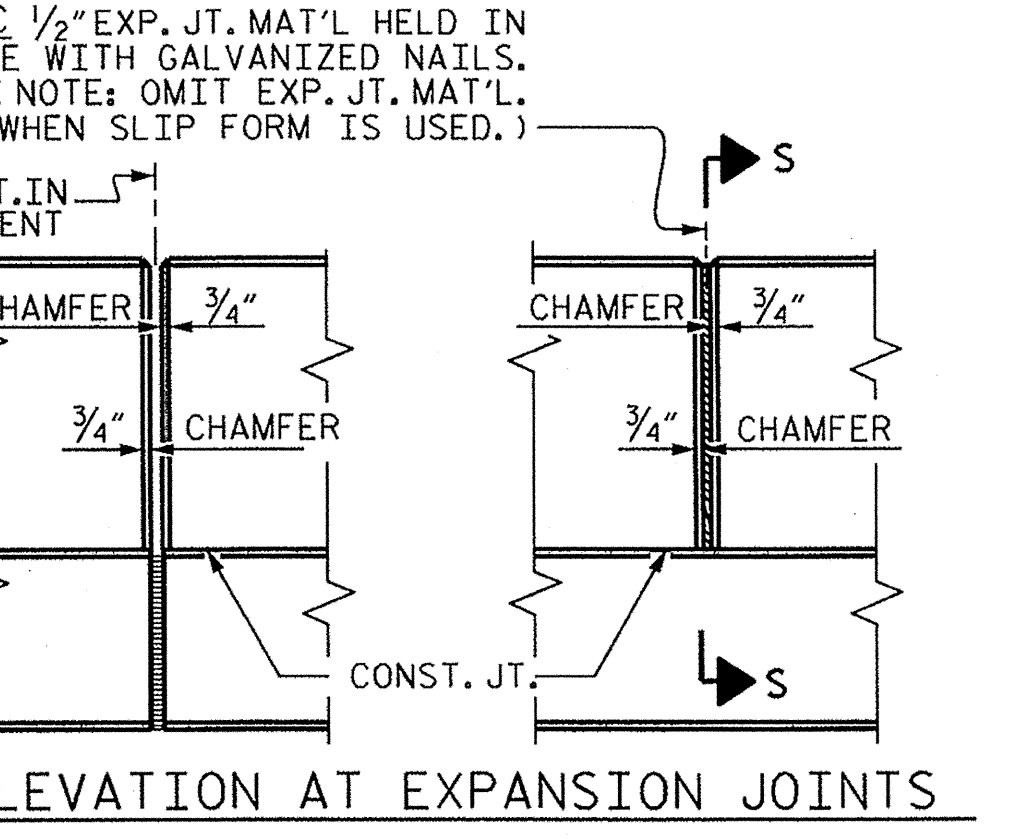
CONCRETE RELEASE STRENGTH	
UNIT	PSI
40' UNITS	4000
50' UNITS	4900
30' UNITS	4000



FIXED END
(TYPE I - 60 REQ'D)
ELASTOMERIC BEARING DETAILS
ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

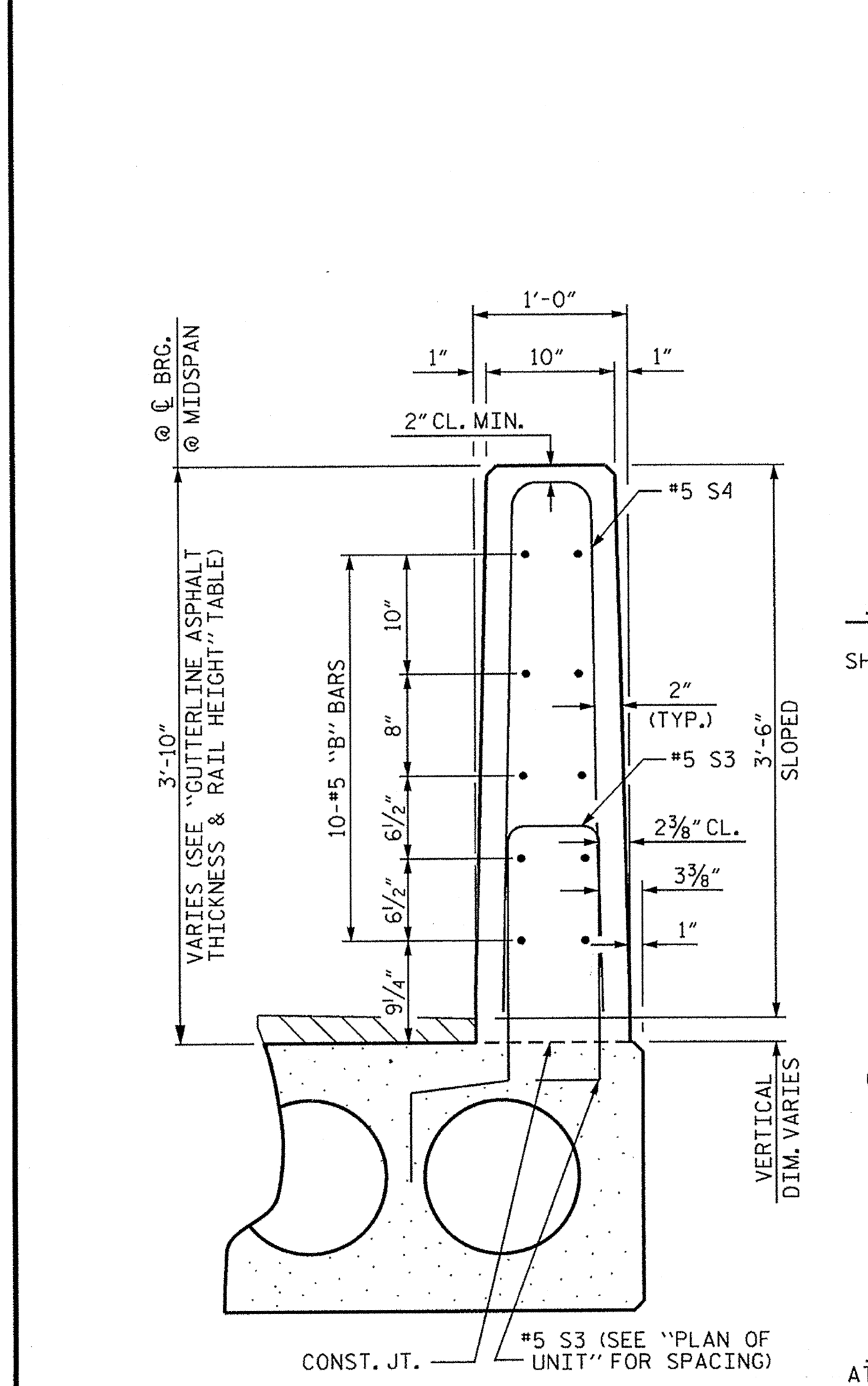


SECTION S-S
AT DAM IN OPEN JOINT (THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



ELEVATION AT EXPANSION JOINTS

GRADE 270 STRANDS	
AREA (SQUARE INCHES)	0.6" Ø L.R.
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950



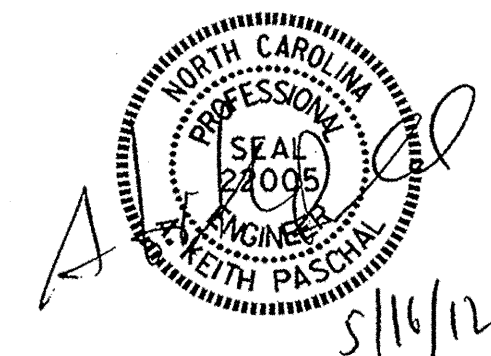
ASSEMBLED BY: B. L. GREEN DATE: 3/2/12
CHECKED BY: E. K. POPE DATE: 3/26/12
DRAWN BY: DGE 5/09 REV. 12/11 MAA/AAC
CHECKED BY: BCH 6/09

VERTICAL CONCRETE BARRIER RAIL SECTION

PROJECT NO. BD-5102L
JONES COUNTY
STATION: 13+79.00 -L-
SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 1'-9"
PRESTRESSED CONCRETE
CORED SLAB UNIT
60° SKEW

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
1			3			5-10	
2			4			21	



NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" Ø BOLTS WITH NUTS AND WASHERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

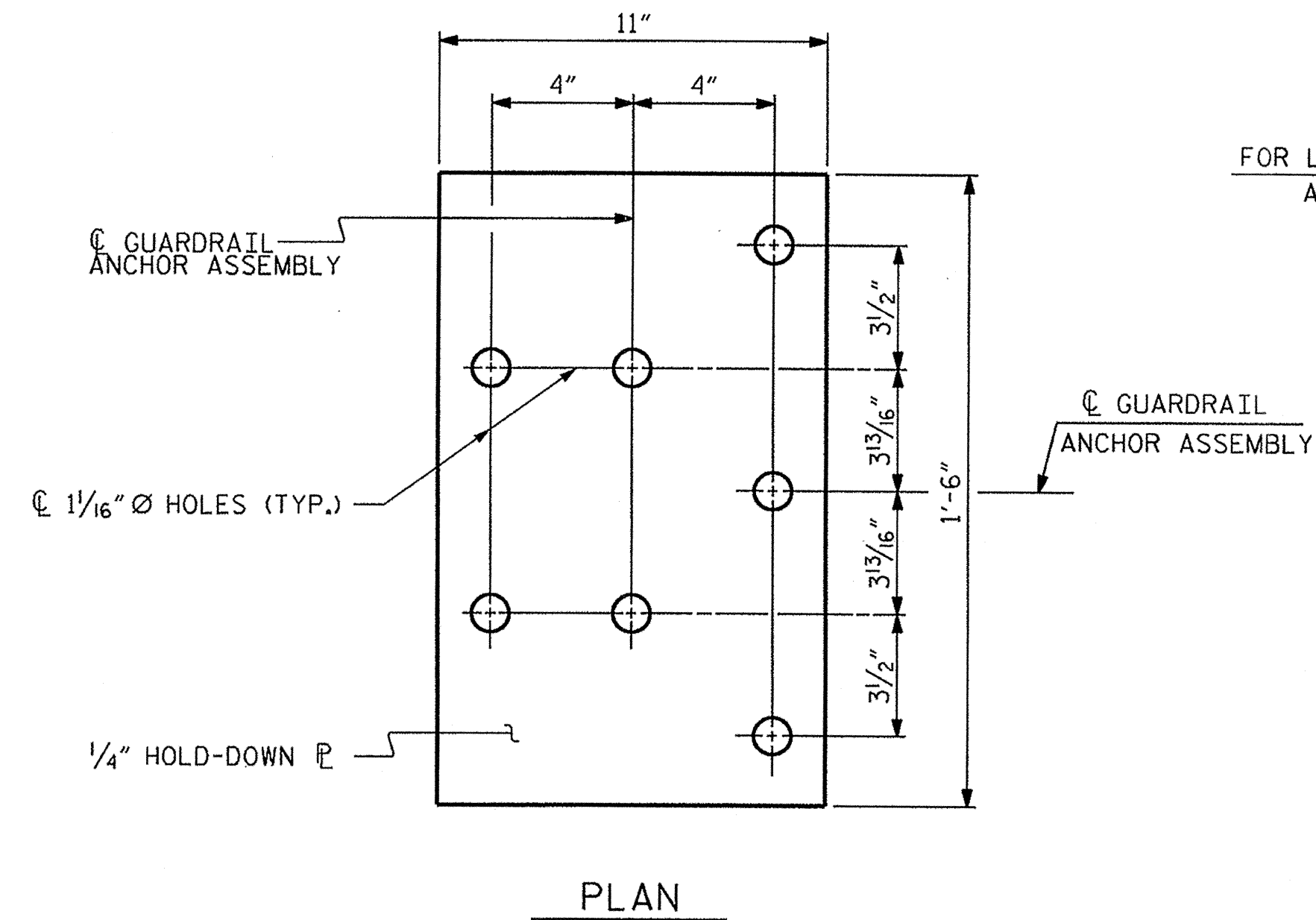
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

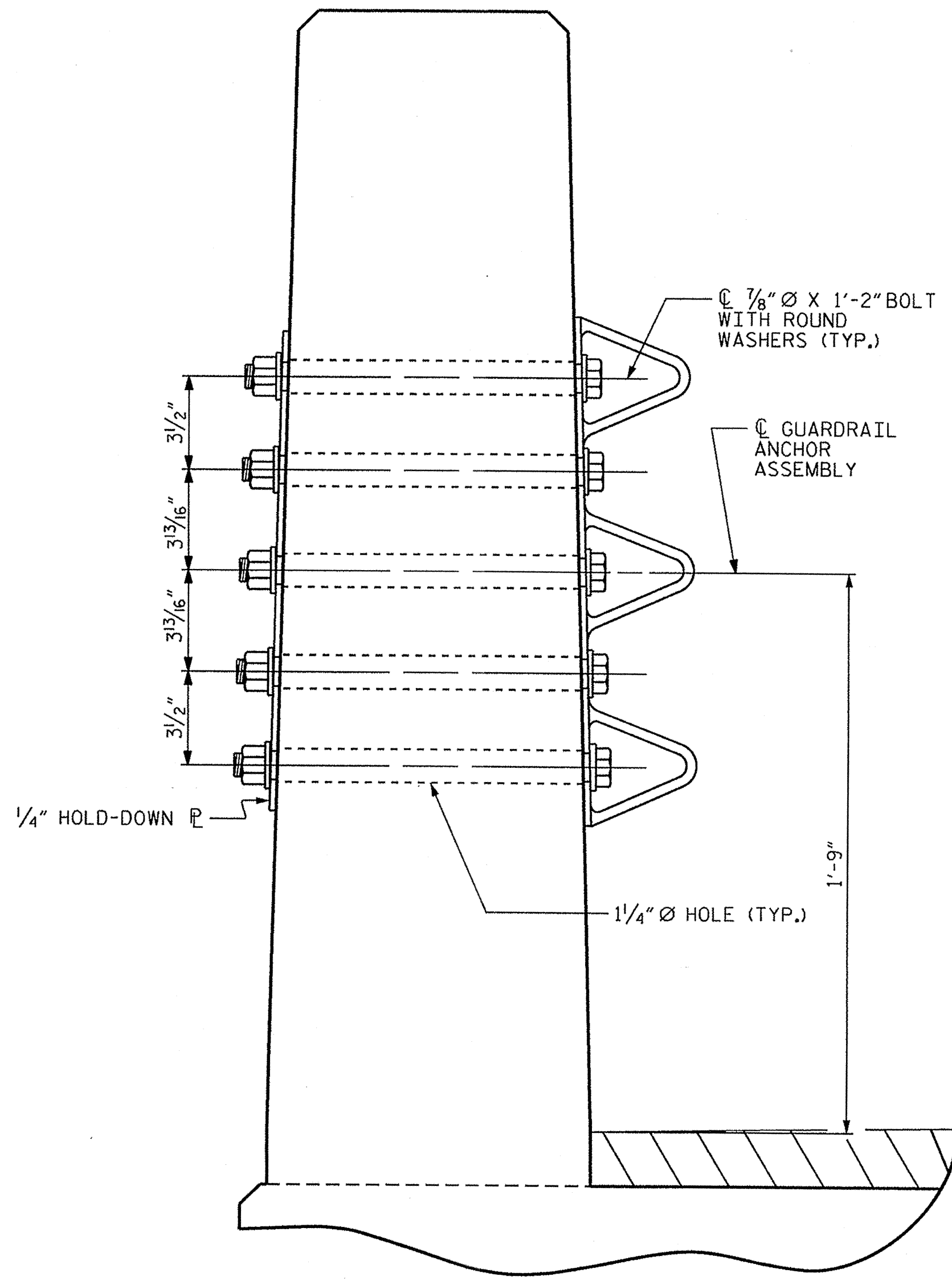
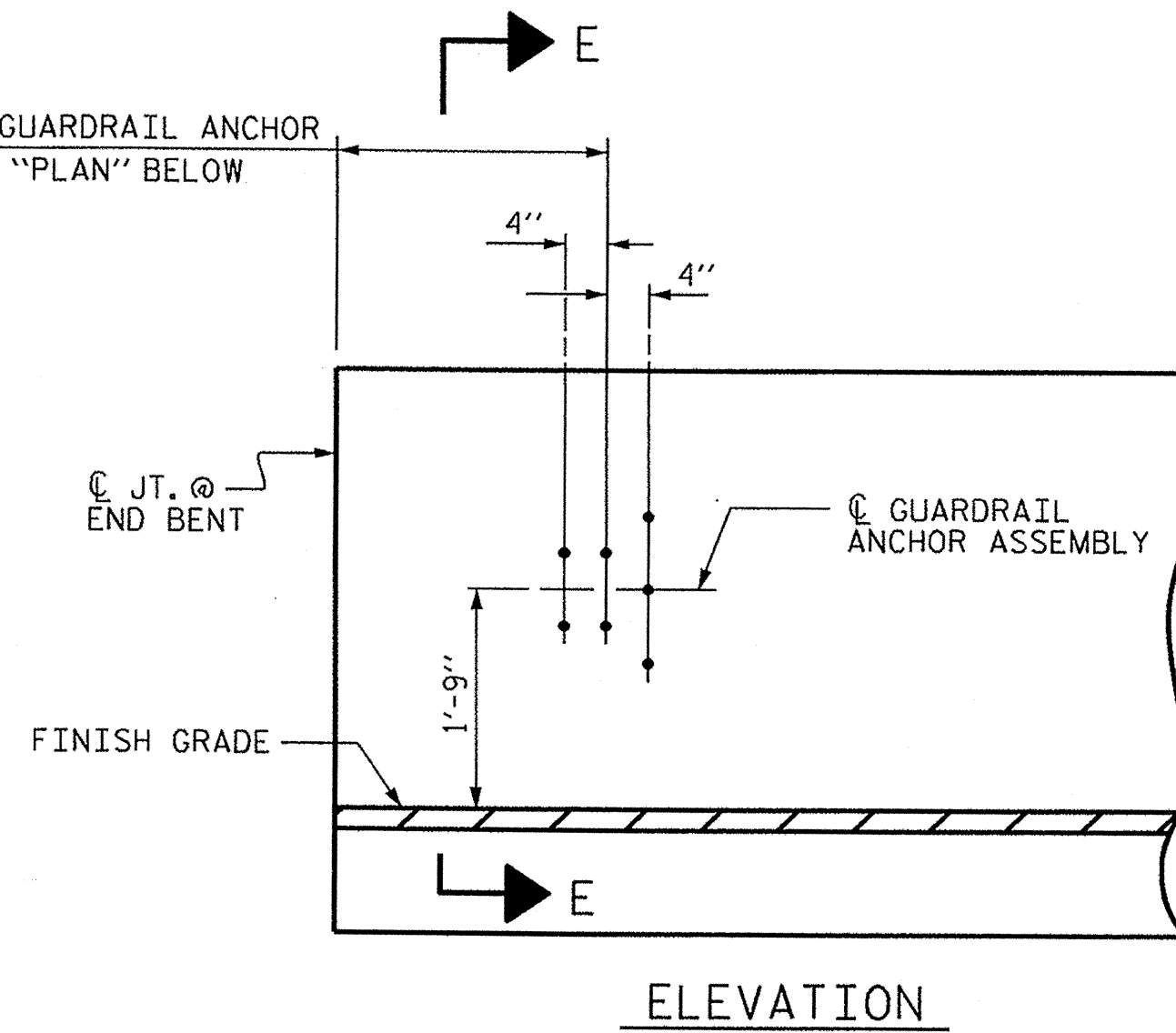
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

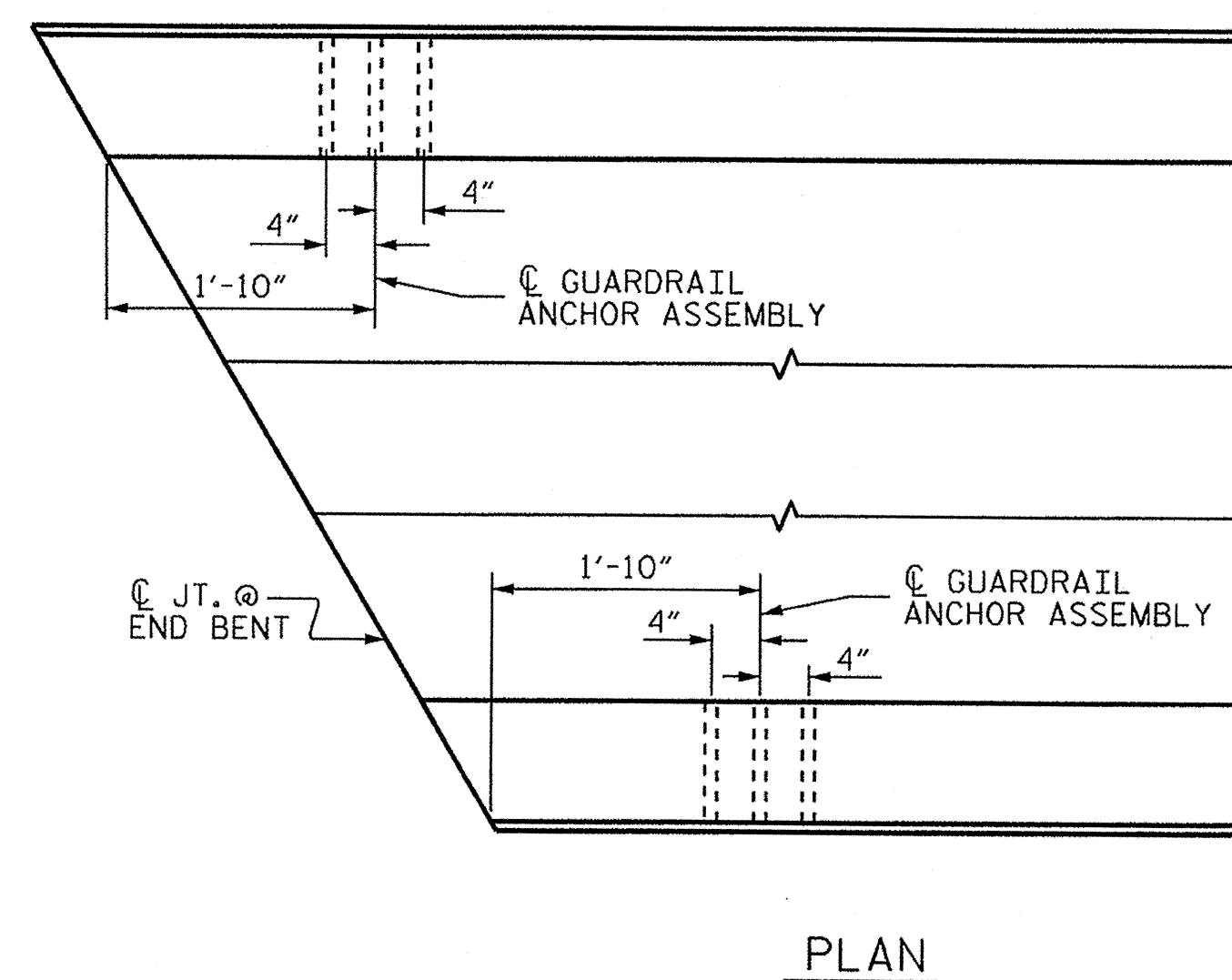
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW

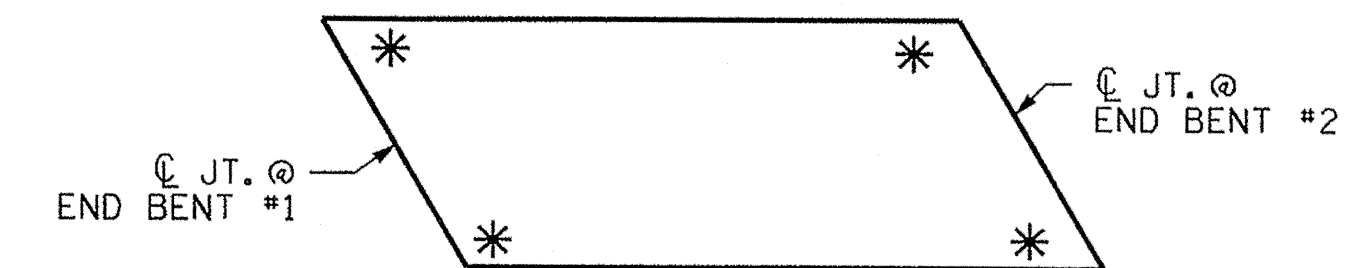


SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. BD-5102L
JONES COUNTY
 STATION: 13+79.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 FOR VERTICAL CONCRETE
 BARRIER RAIL



ASSEMBLED BY : B. L. GREEN	DATE : 3/2/12
CHECKED BY : E. K. POPE	DATE : 3/26/12
DRAWN BY : MAA 5/10	ADDED 5/6/10
CHECKED BY : GM 5/10	REV. 10/1/11 MAA/GM
	REV. 12/5/11 MAA/GM

16-MAY-2012 09:07
 S:\DPT\kai\h\BD-5102L\bgreen\BD-5102L.SD.CS.dgn
 kpaschal

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	5-11	
1			3			TOTAL SHEETS	
2			4			21	

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE LATERAL GUIDES ARE NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

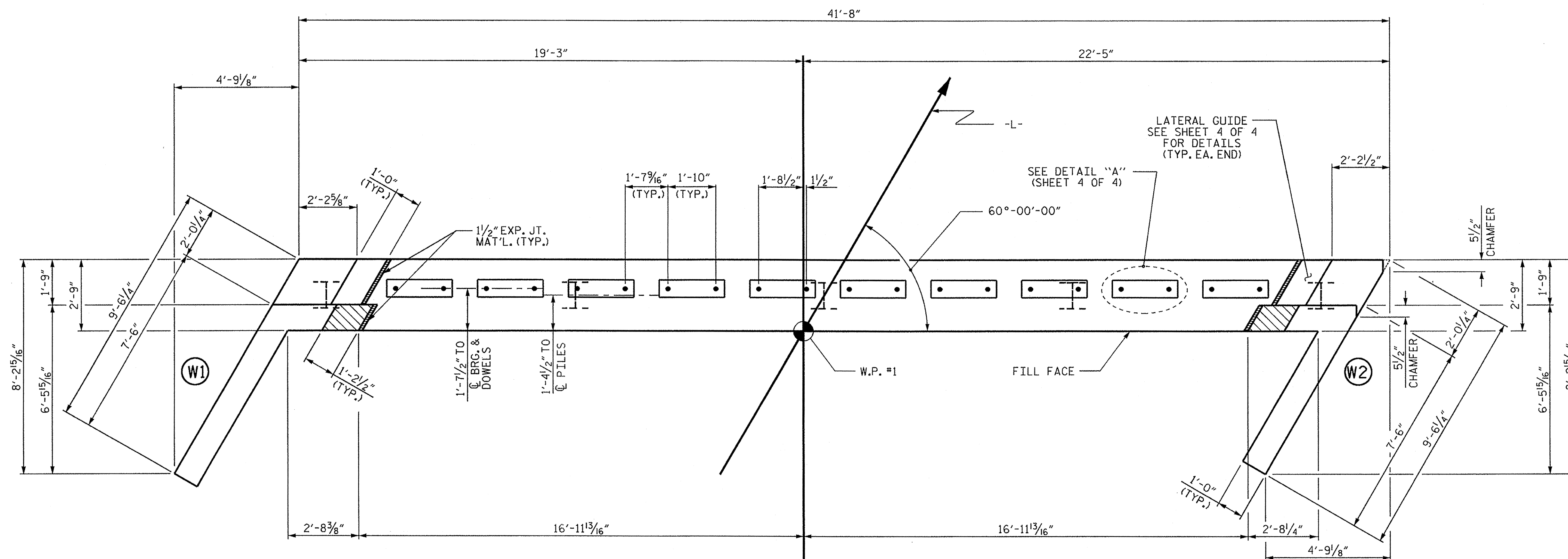
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

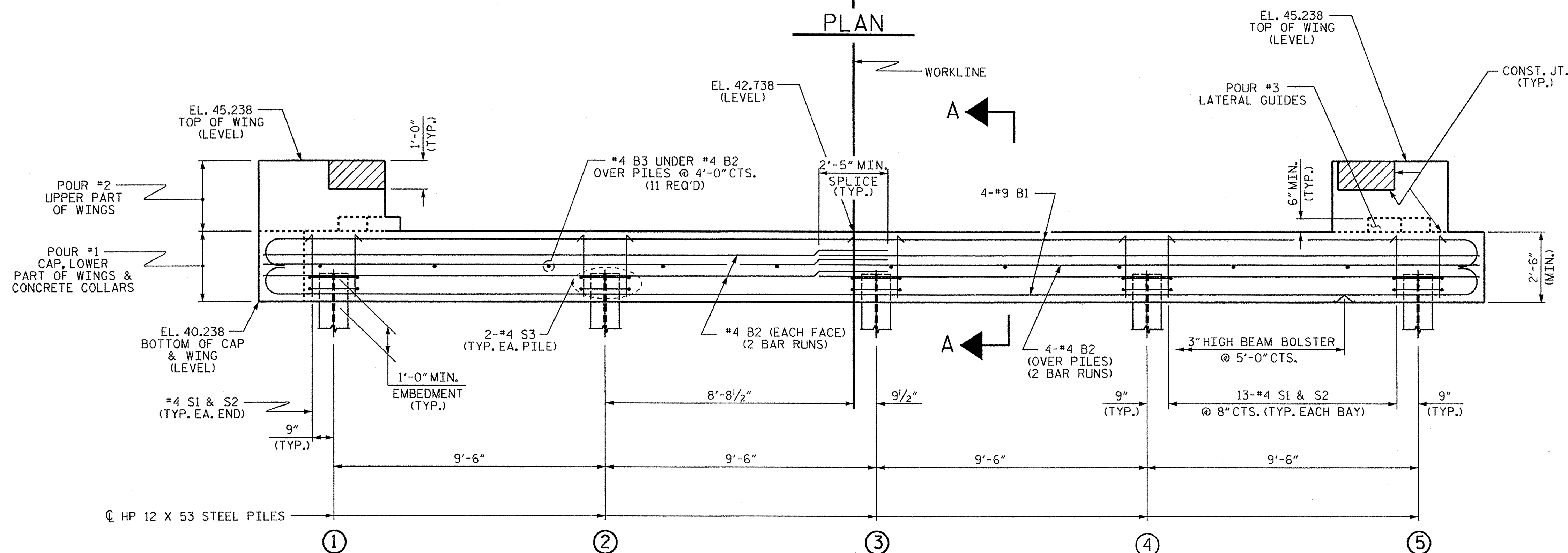
FOR WING DETAILS, SEE SHEET 3 OF 4.

THE CONTRACTOR HAS THE OPTION TO OMIT THE LATERAL GUIDE IF APPROVED BY THE ENGINEER.

INSTALL THE 4" Ø DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

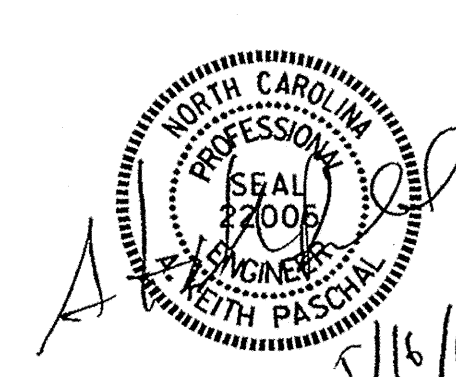
PROJECT NO. BD-5102L
JONES COUNTY
STATION: 13+79.00 -L-

SHEET 1 OF 4

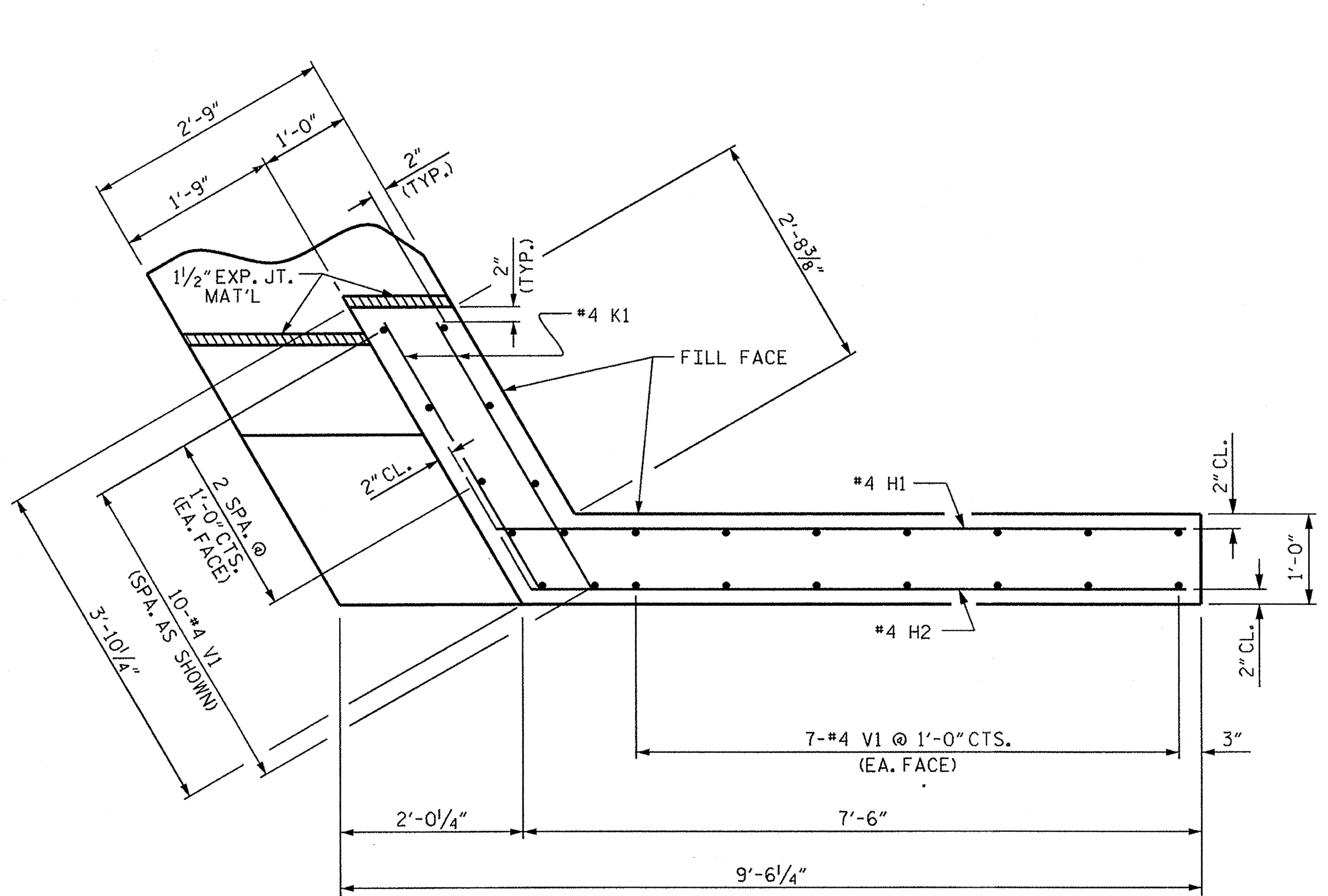
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 1

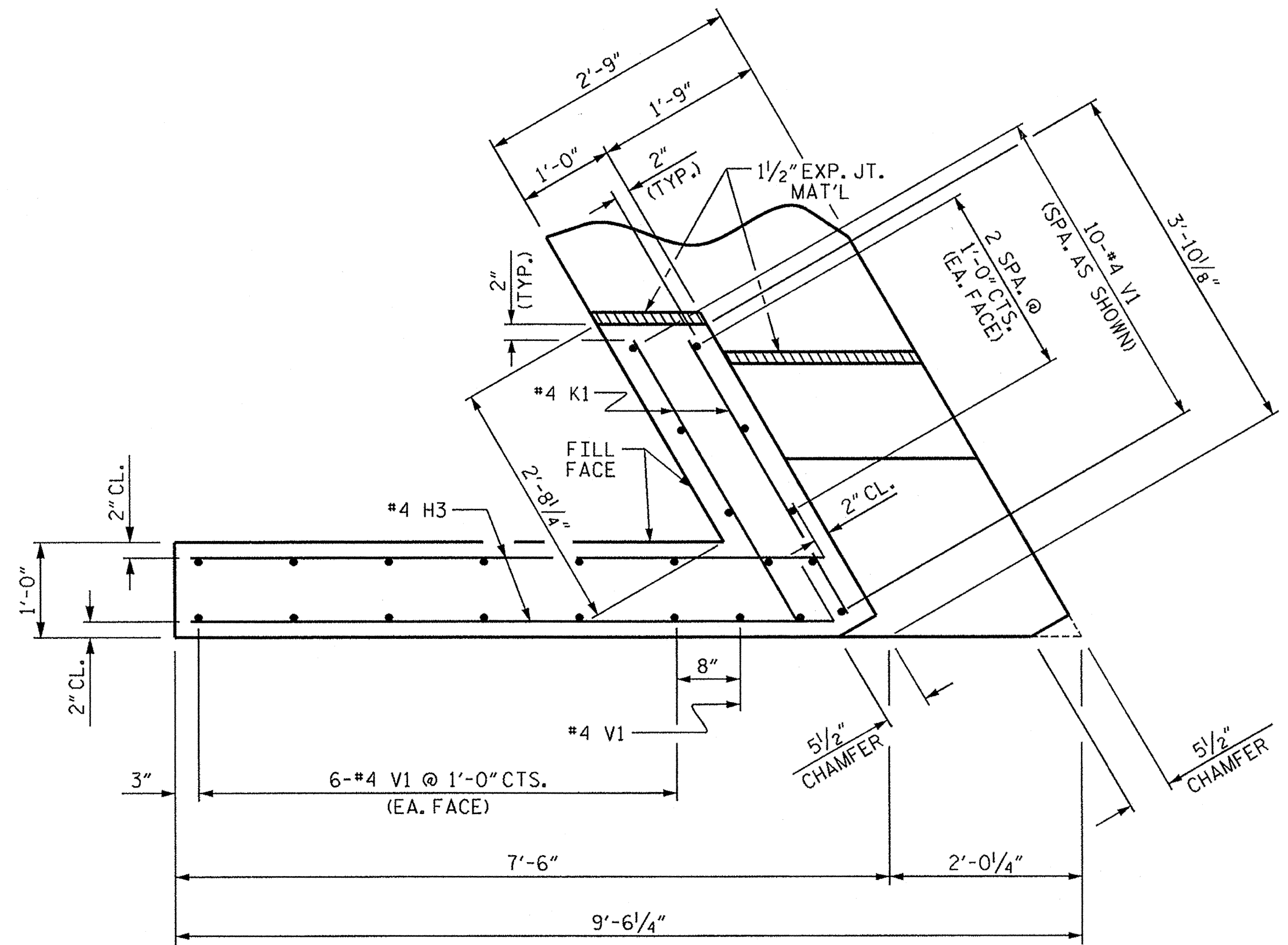
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			5-12
2			4			TOTAL SHEETS 21



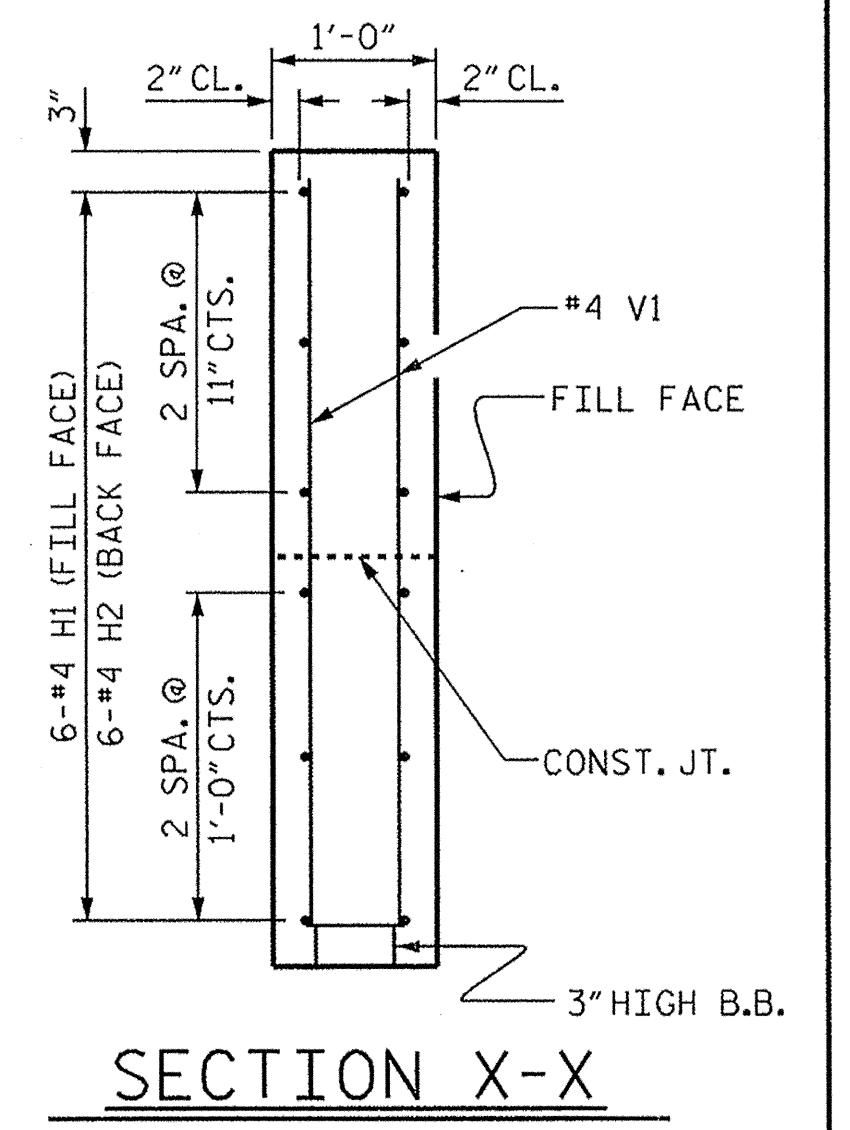
ASSEMBLED BY : B. L. GREEN	DATE : 3/2/12
CHECKED BY : E. K. POPE	DATE : 3/26/12
DRAWN BY : DGE 02/10	
CHECKED BY : MKT 02/10	



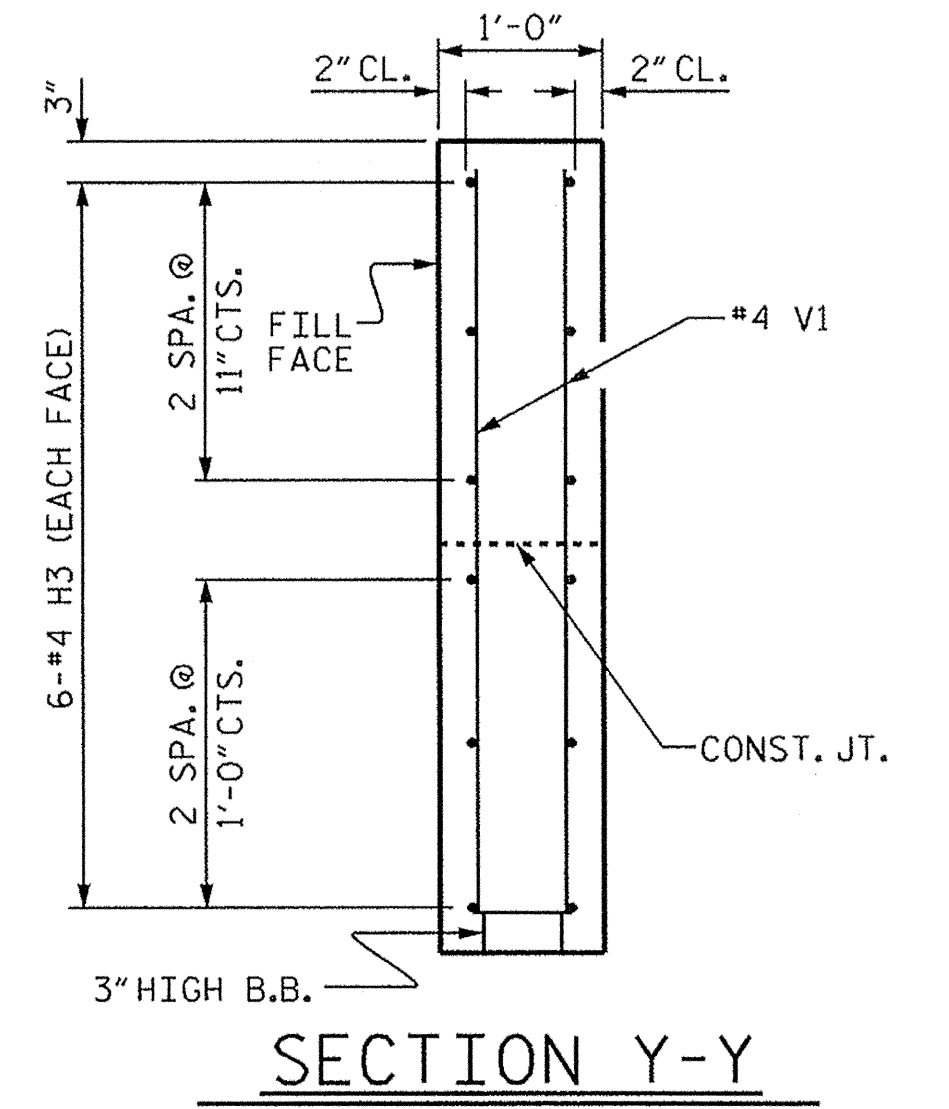
PLAN OF WING (W1)



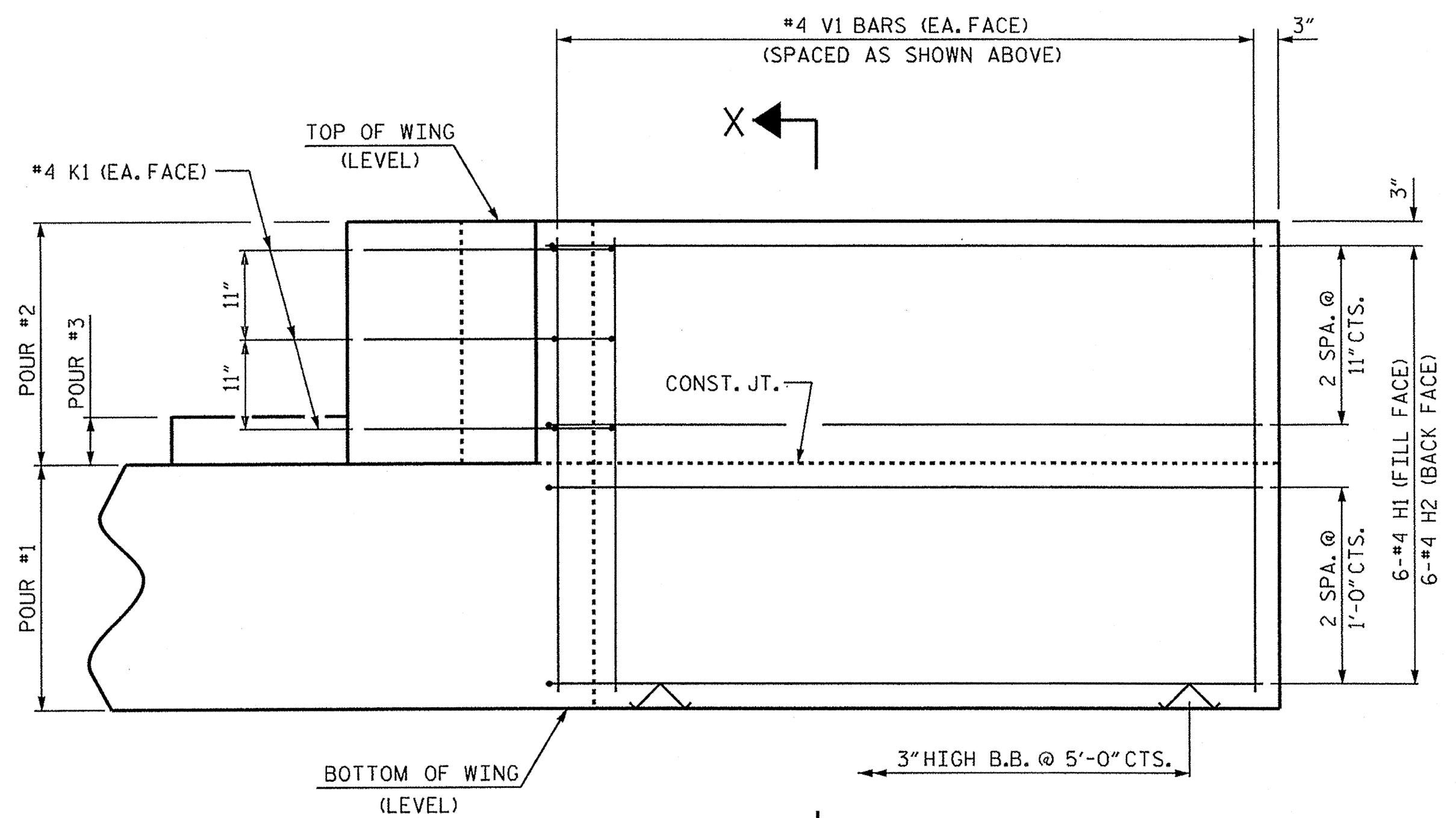
PLAN OF WING (W2)



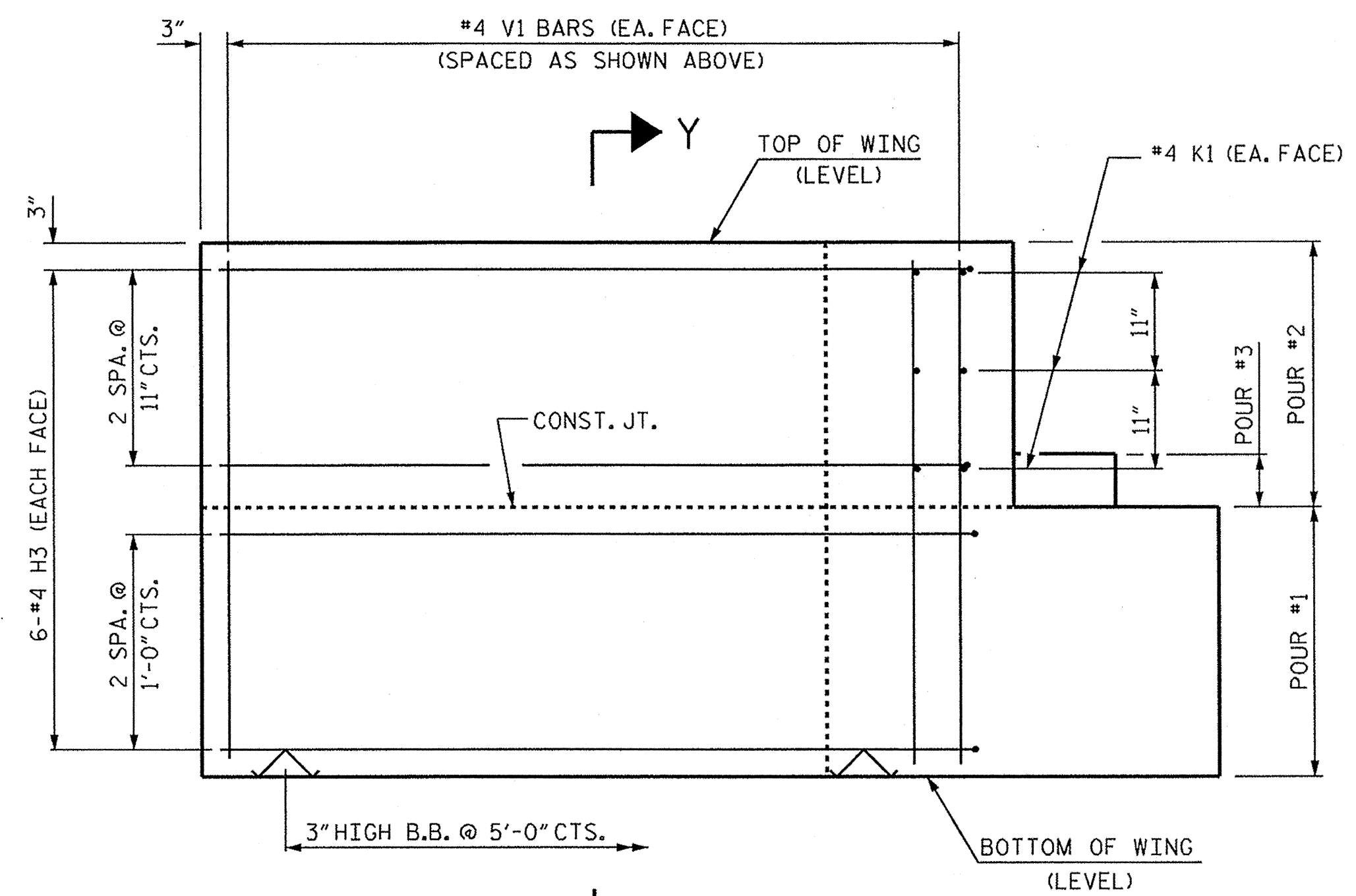
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)

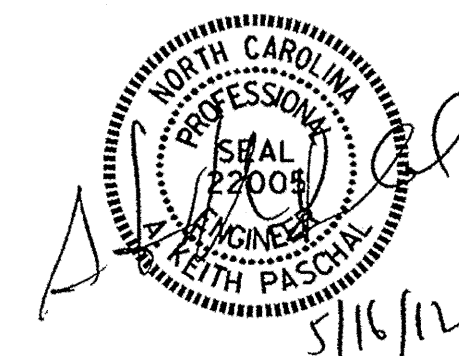


ELEVATION OF WING (W2)

WING DETAILS

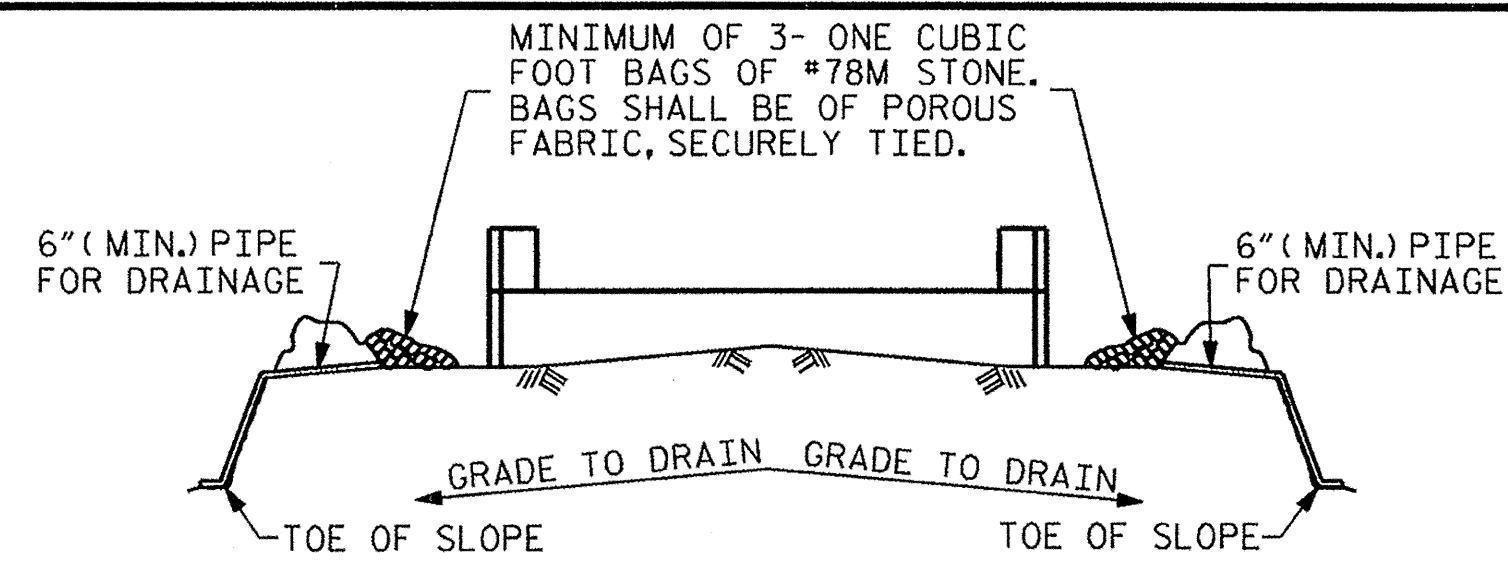
ASSEMBLED BY : B. L. GREEN DATE : 3/2/12
 CHECKED BY : E. K. POPE DATE : 3/26/12
 DRAWN BY : DGE 02/10
 CHECKED BY : MKT 02/10

15-MAY-2012 09:07
 S:\DPG\kph\BD-5102L\bgreen\BD-5102L.SD.CS.dgn
 kpaschal



PROJECT NO. BD-5102L
JONES COUNTY
 STATION: 13+79.00 -L-
 SHEET 3 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. 5-14
SUBSTRUCTURE END BENT WING DETAILS						
REVISIONS						TOTAL SHEETS 21
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

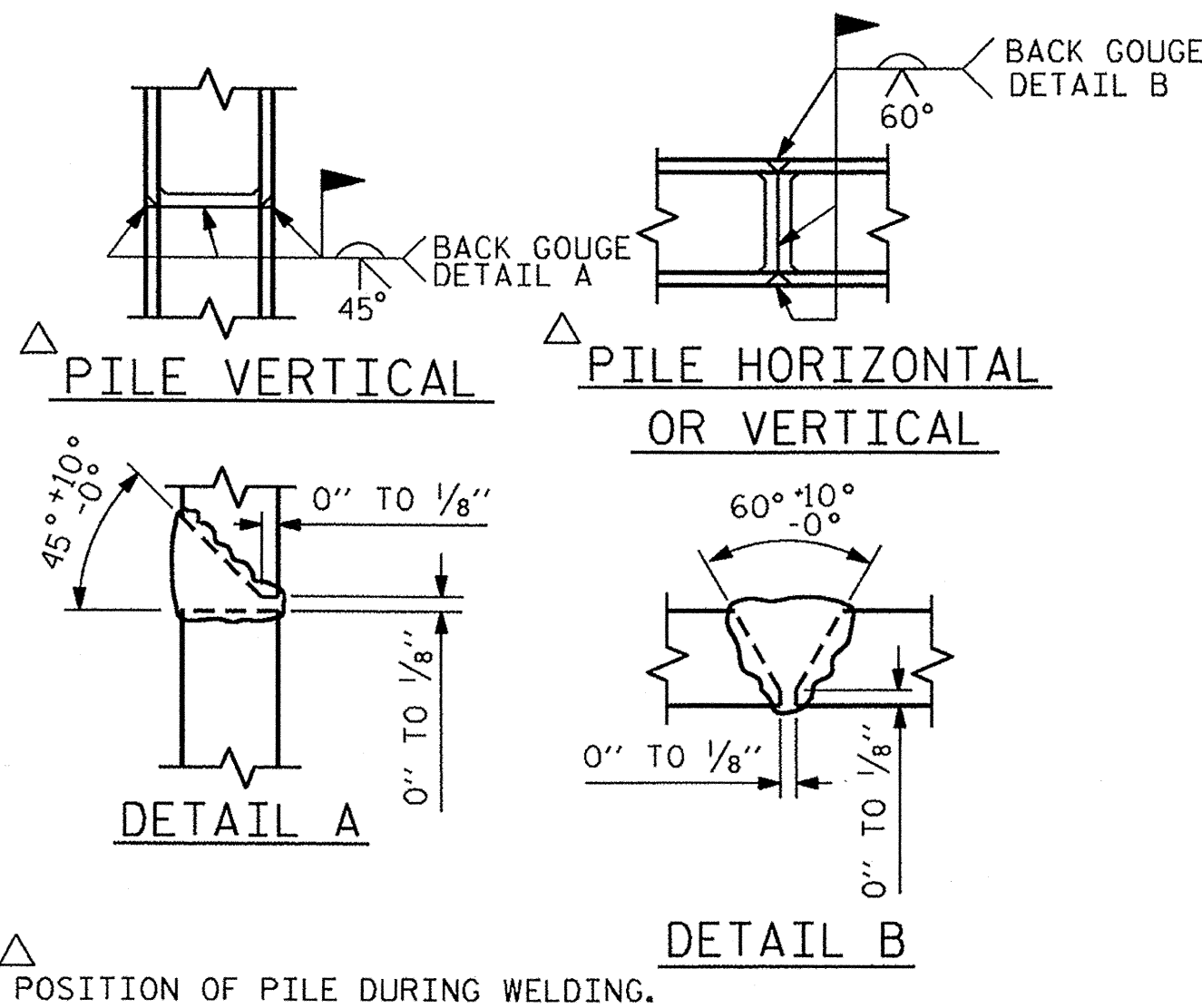


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

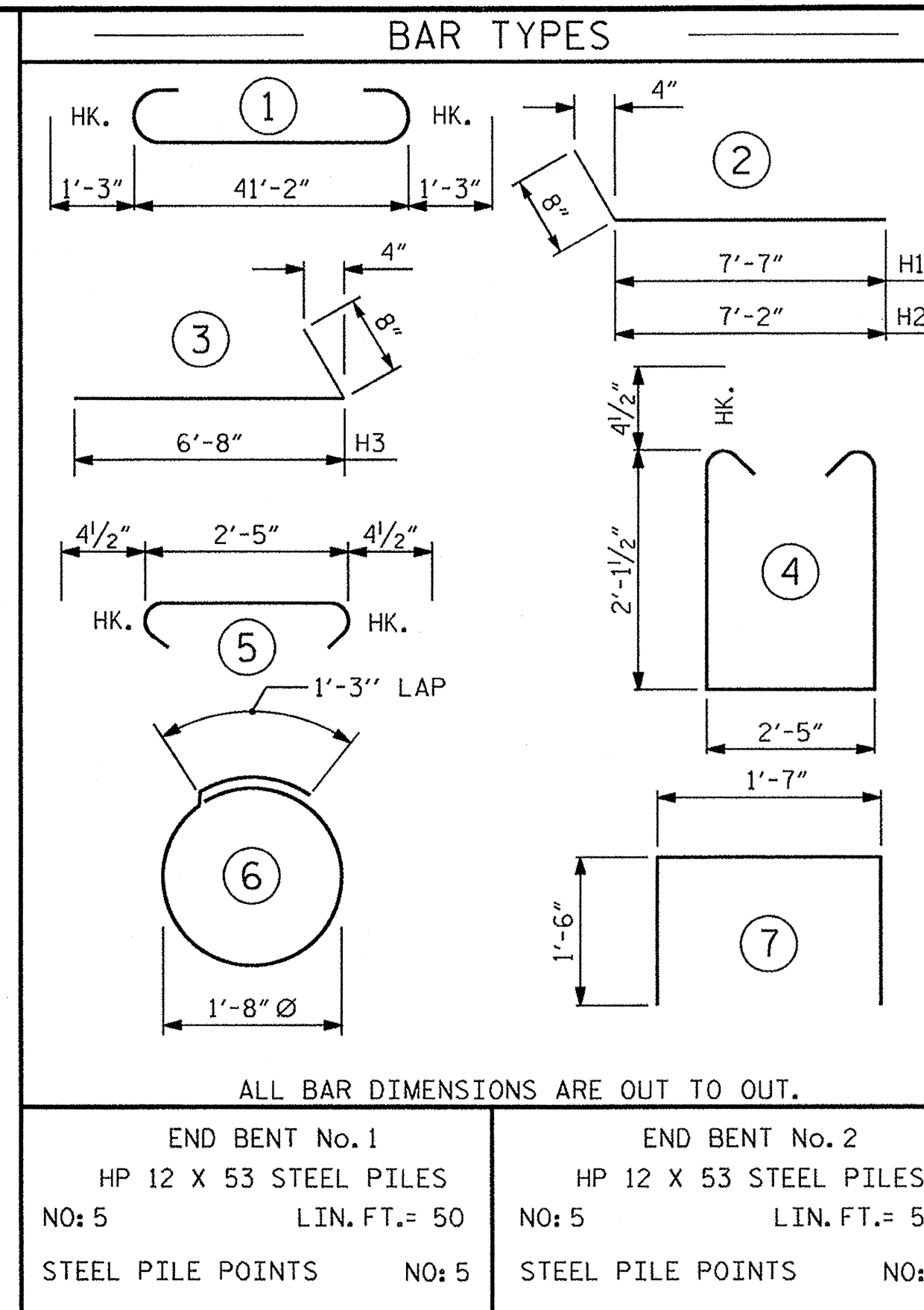
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETEIORATED AND LOST THEIR EFFECTIVENESS.

NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

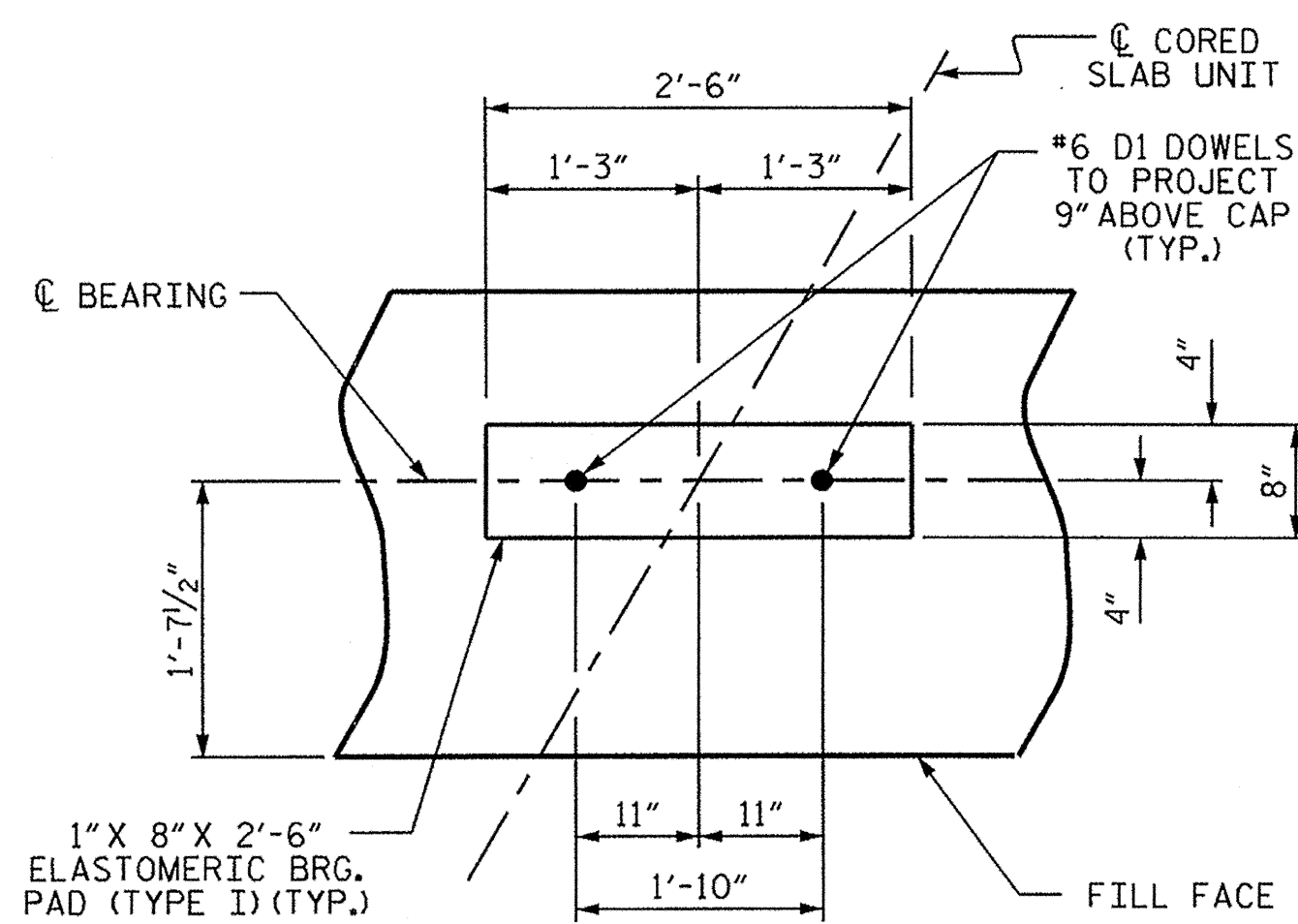
TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

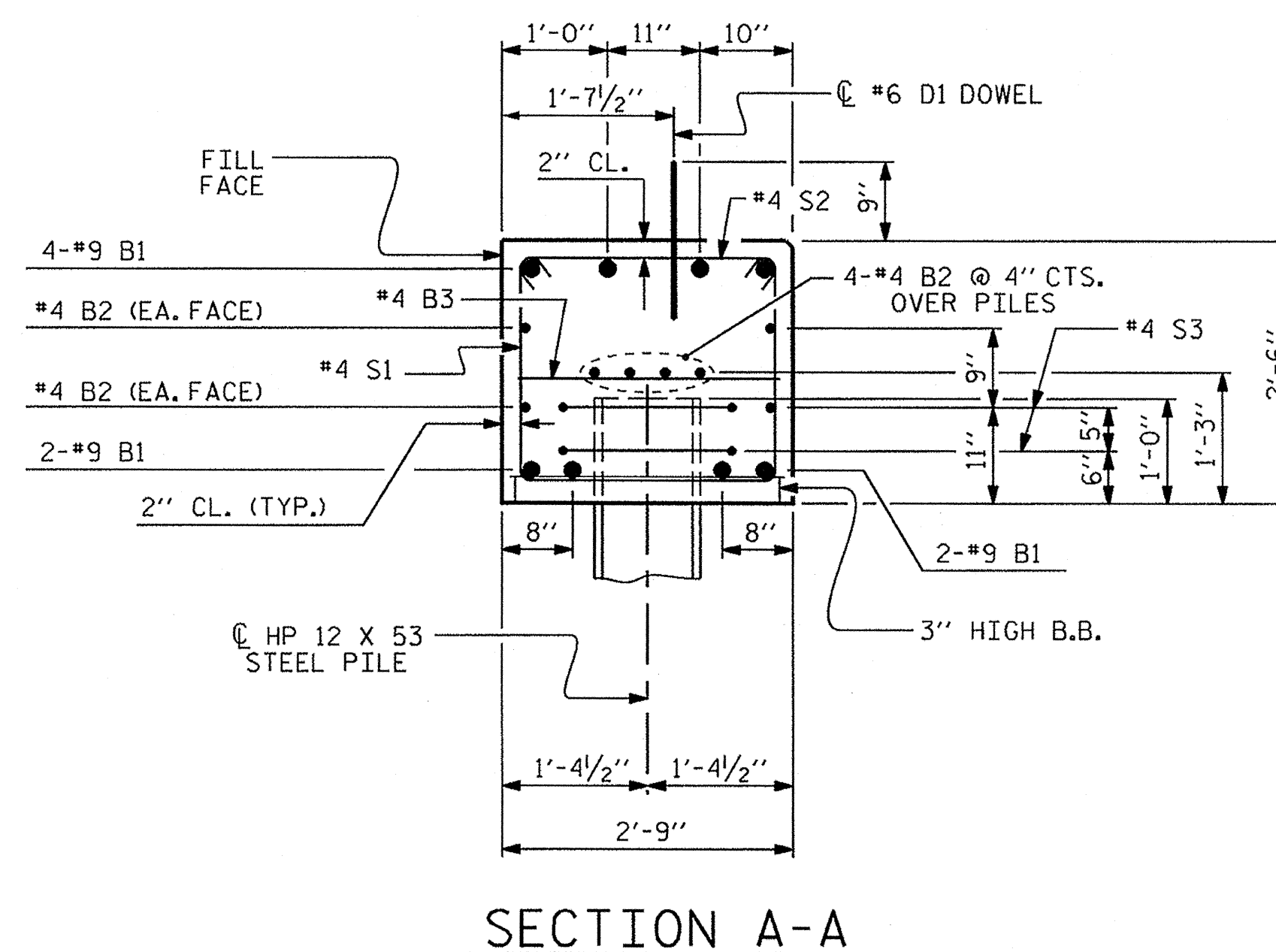
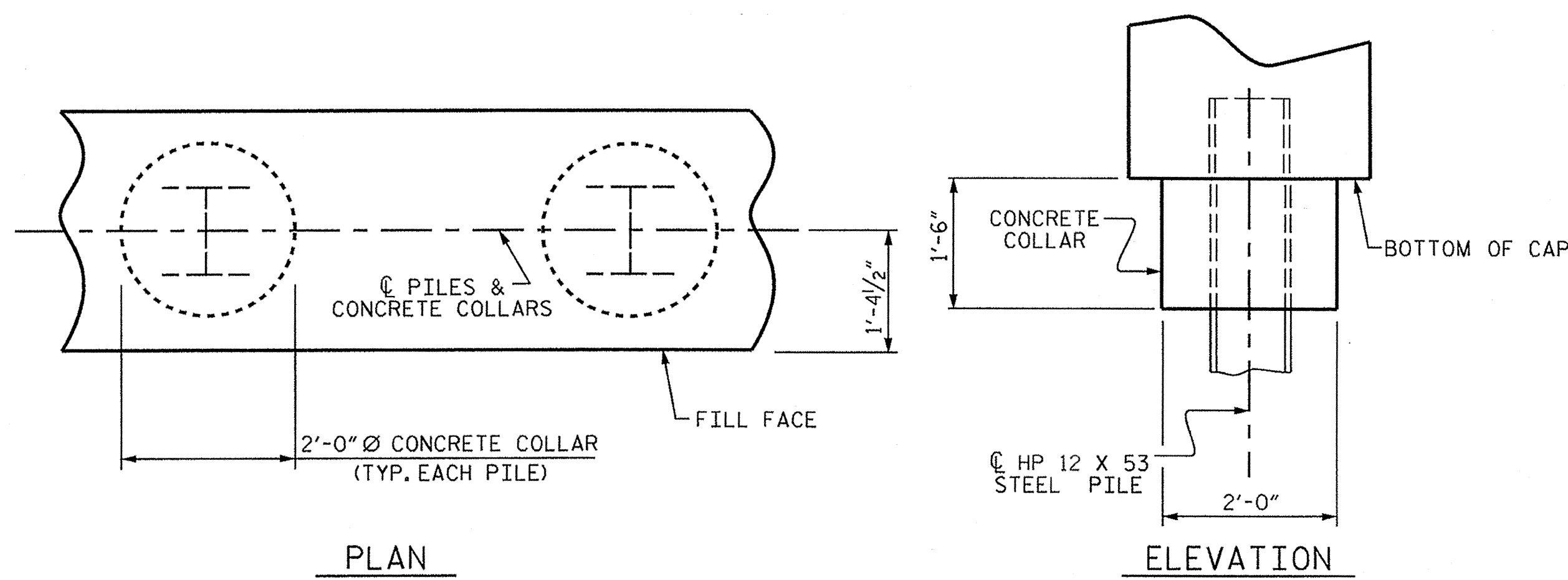
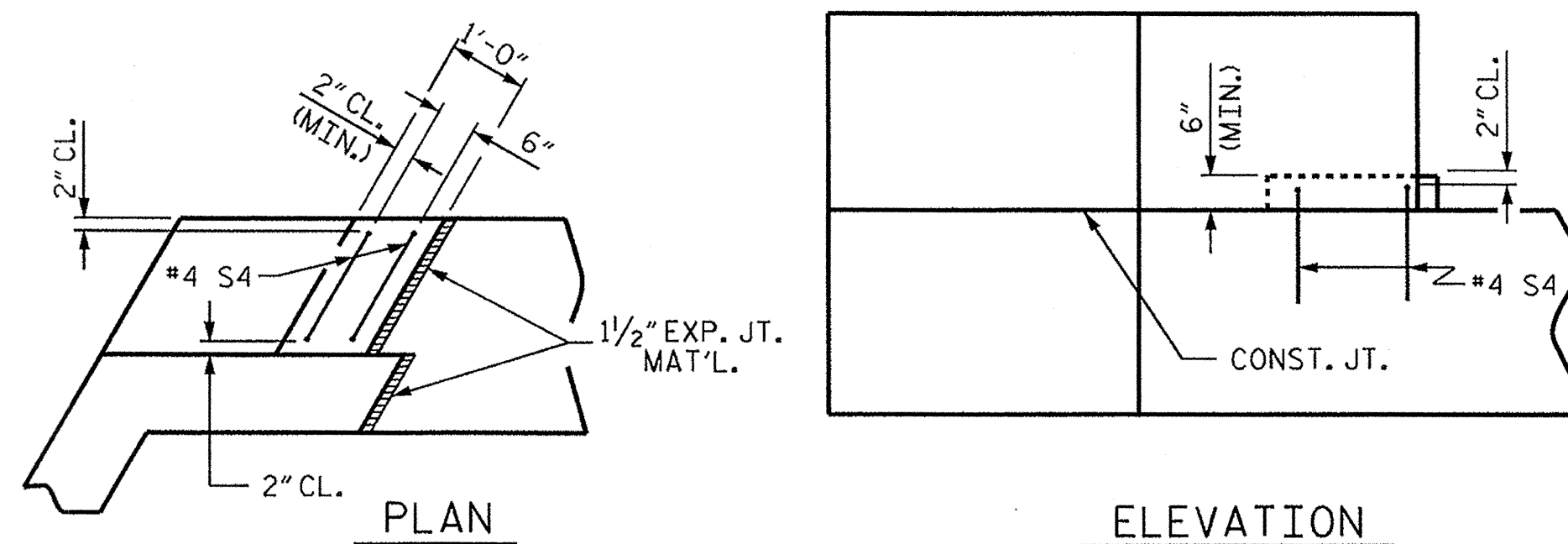


BILL OF MATERIAL					
FOR ONE END BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		43'-8"	1188
B2	16	#4	STR	21'-11"	234
B3	11	#4	STR	2'-5"	18
D1	20	#6	STR	1'-6"	45
H1	6	#4	2	8'-3"	33
H2	6	#4	2	7'-10"	31
H3	12	#4	3	7'-4"	59
K1	12	#4	STR	3'-3"	26
S1	54	#4	4	7'-5"	268
S2	54	#4	5	3'-2"	114
S3	10	#4	6	6'-6"	43
S4	4	#4	7	4'-7"	12
V1	47	#4	STR	4'-8"	147
REINFORCING STEEL (FOR ONE END BENT)					2218 LBS.
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)					
POUR #1	CAP, LOWER PART OF WINGS & COLLARS				12.7 C.Y.
POUR #2	UPPER PART OF WINGS				1.9 C.Y.
POUR #3	LATERAL GUIDES				0.1 C.Y.
TOTAL CLASS A CONCRETE					14.7 C.Y.



DETAIL "A"

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



PROJECT NO. BD-5102L

JONES COUNTY

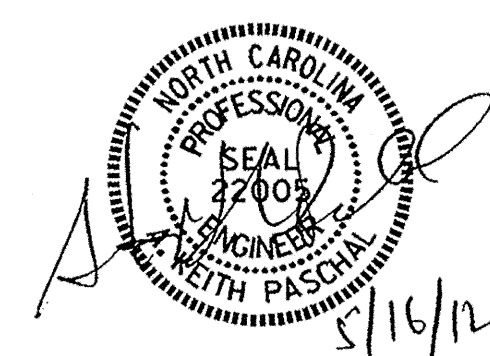
STATION: 13+79.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1 & 2
DETAILS



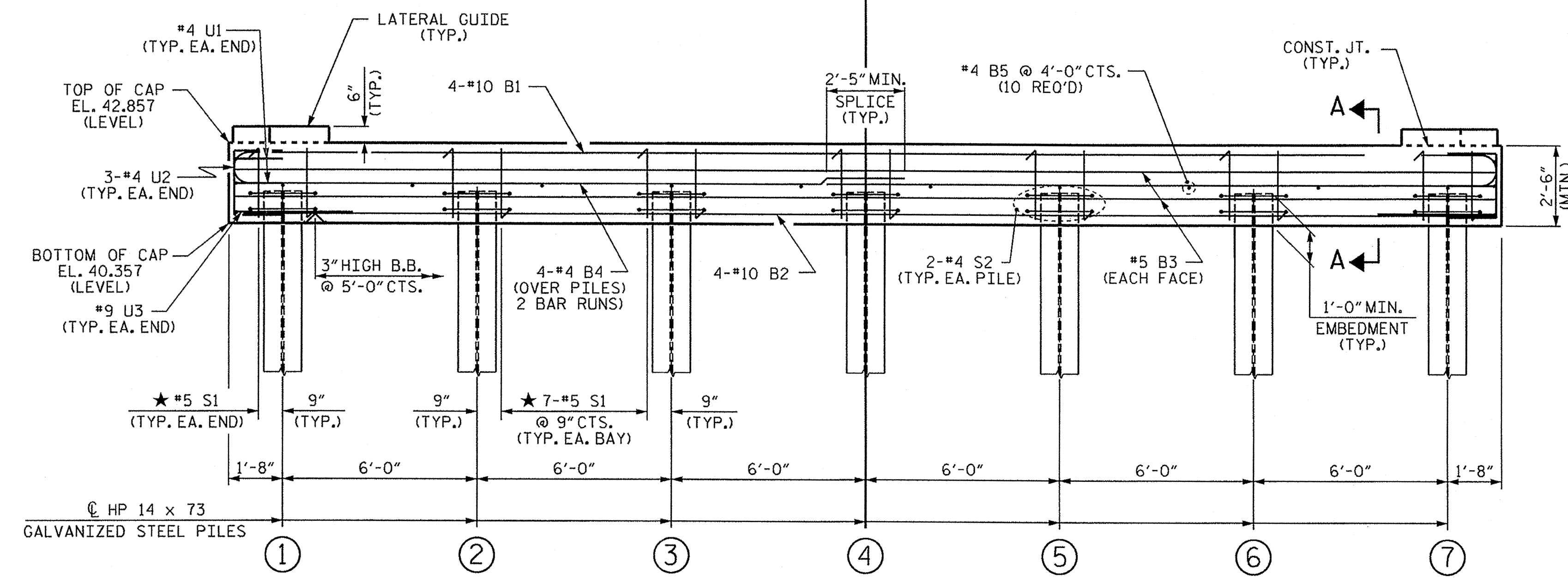
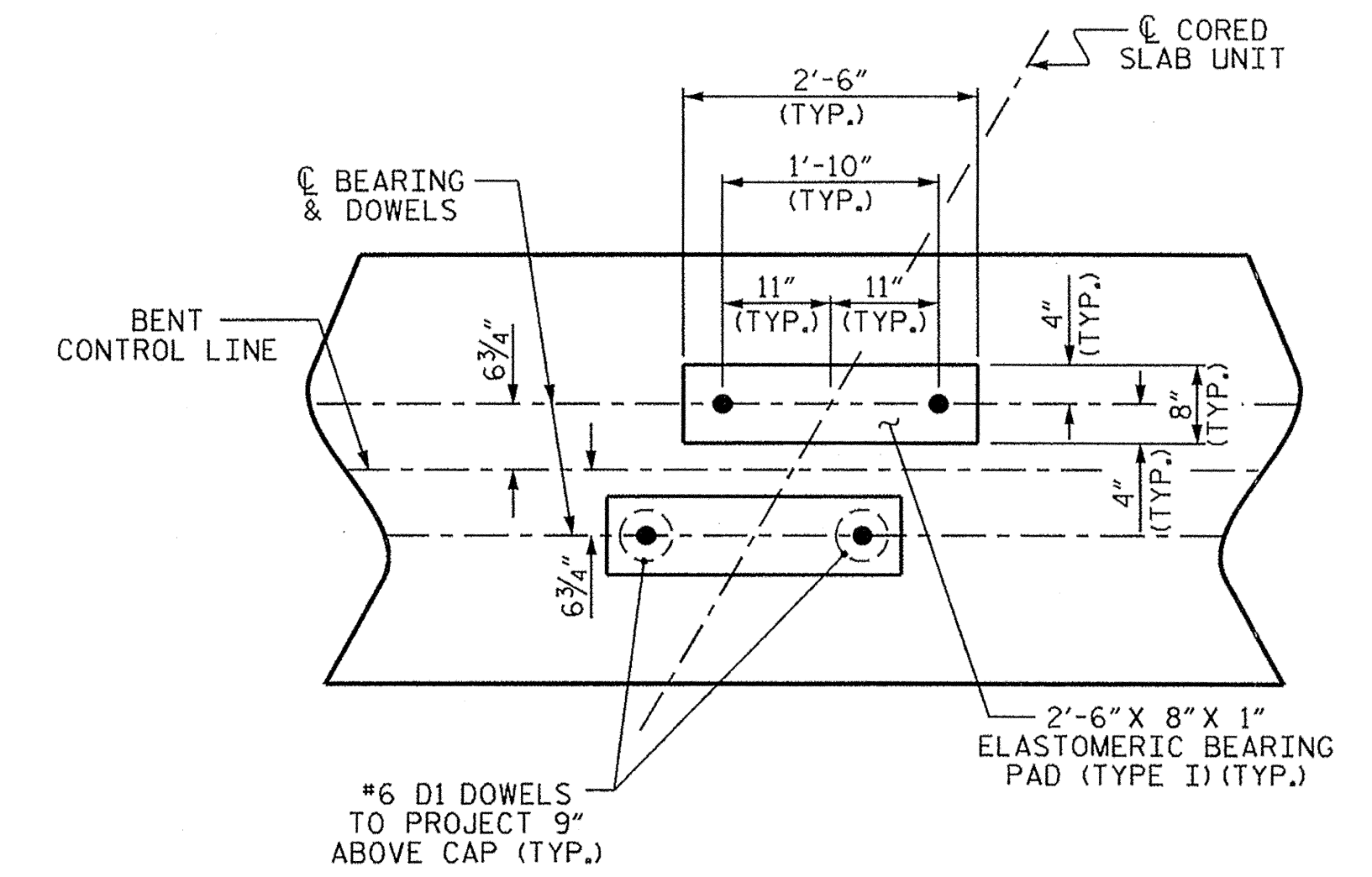
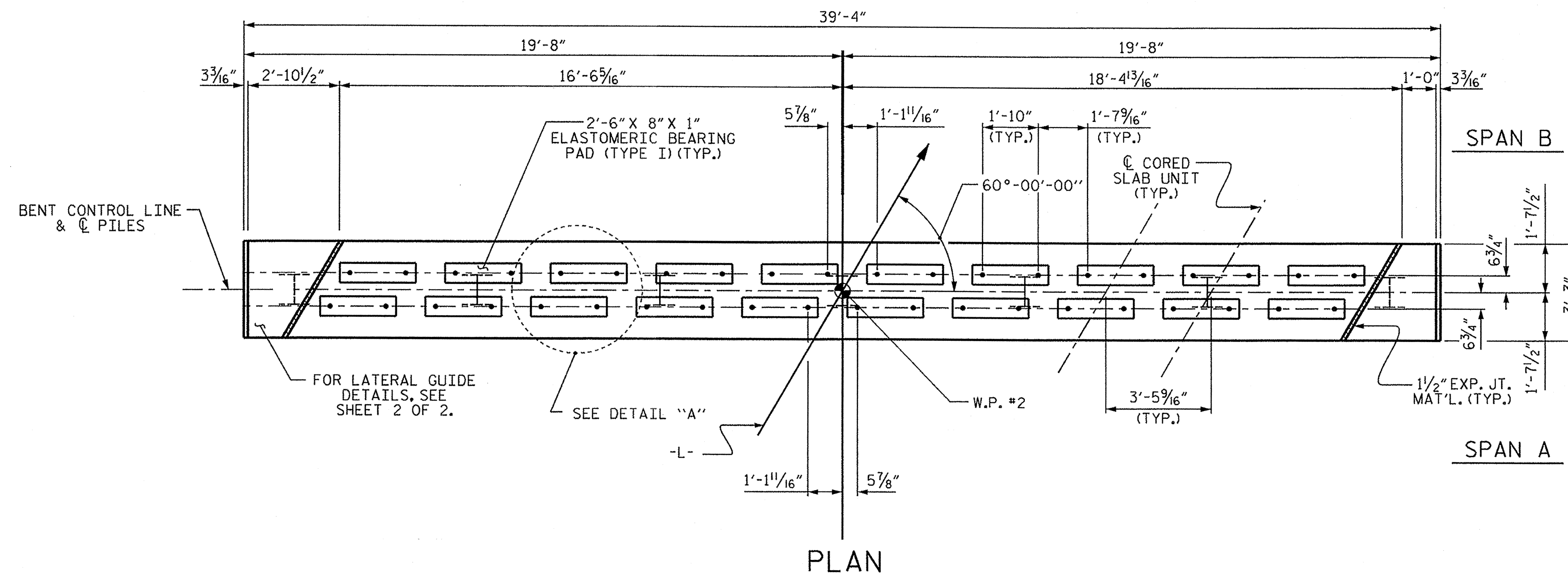
ASSEMBLED BY : B. L. GREEN	DATE : 3/2/12
CHECKED BY : E. K. POPE	DATE : 3/26/12
DRAWN BY : DGE 02/10	
CHECKED BY : MKT 02/10	

REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	

TOTAL SHEETS: 21

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
- THE LATERAL GUIDES ARE NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.
- ★ INVERT ALTERNATE STIRRUPS.
- GALVANIZE THE FULL LENGTH OF EACH INTERIOR BENT PILE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.
- THE CONTRACTOR HAS THE OPTION TO OMIT THE LATERAL GUIDE IF APPROVED BY THE ENGINEER.



PROJECT NO. BD-5102L
JONES COUNTY
 STATION: 13+79.00 -L-

SHEET 1 OF 2

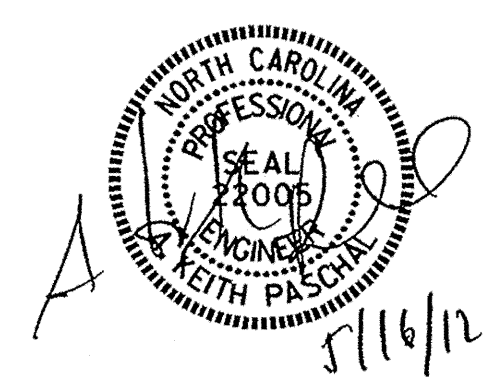
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

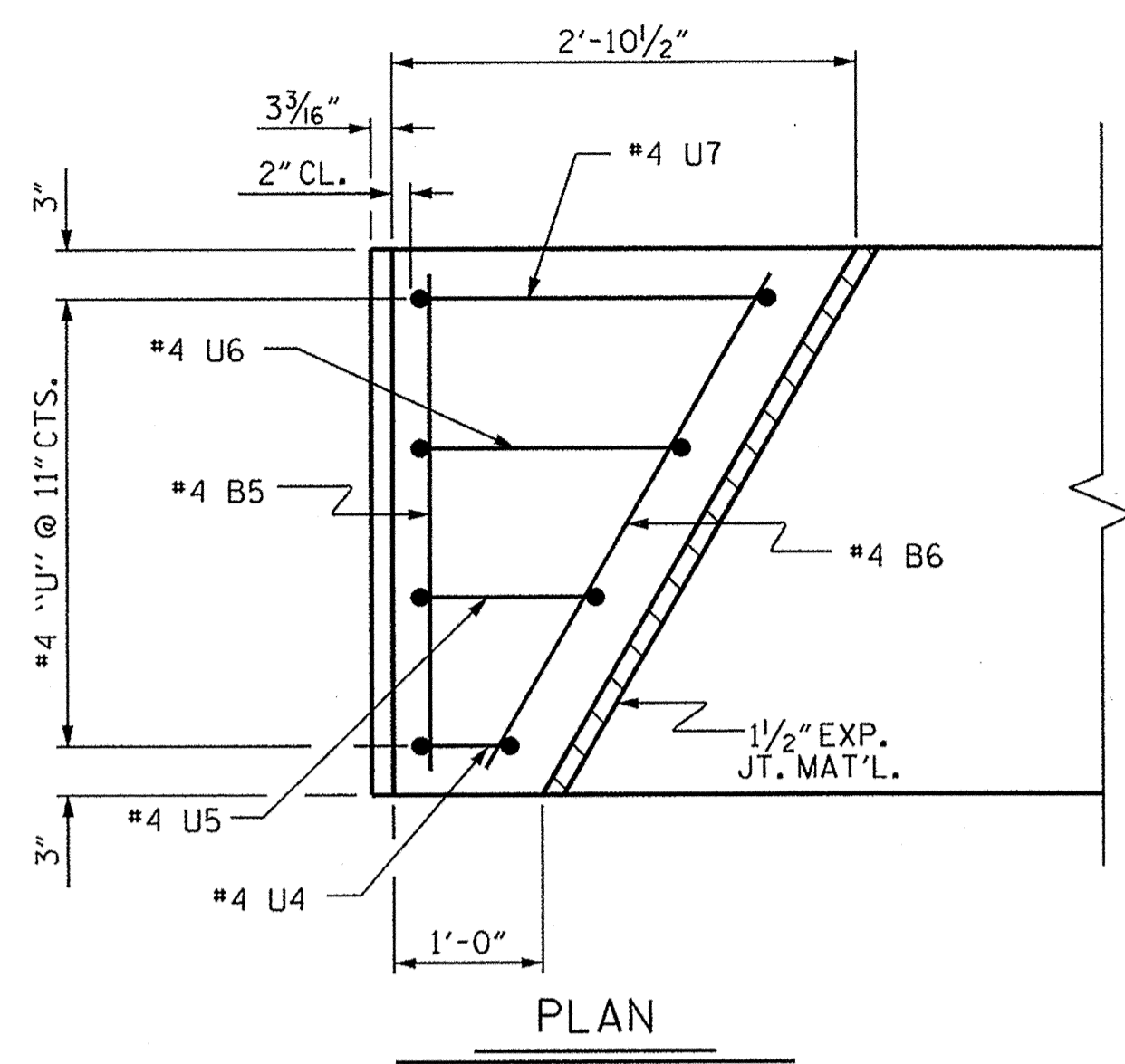
SUBSTRUCTURE
 BENT No. 1

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

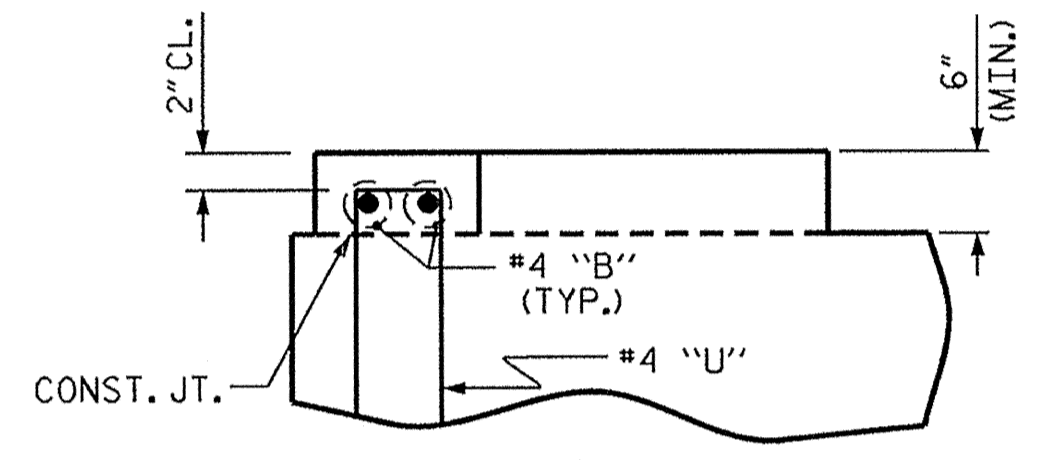
TOTAL SHEETS: 21

ASSEMBLED BY: B. L. GREEN DATE: 3/2/12
 CHECKED BY: E. K. POPE DATE: 3/26/12
 DRAWN BY: DGE 05/10
 CHECKED BY: MKT 05/10



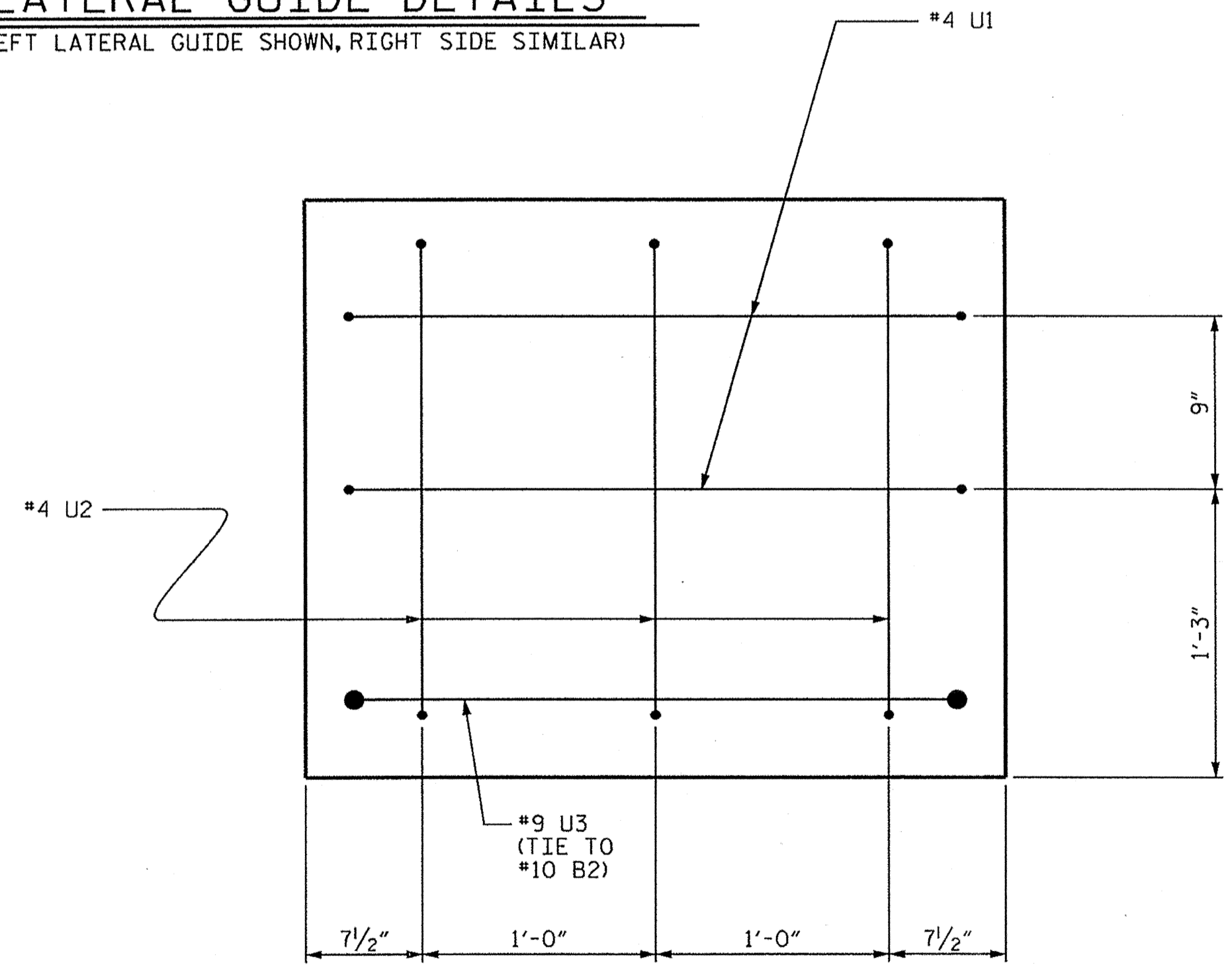


PLAN

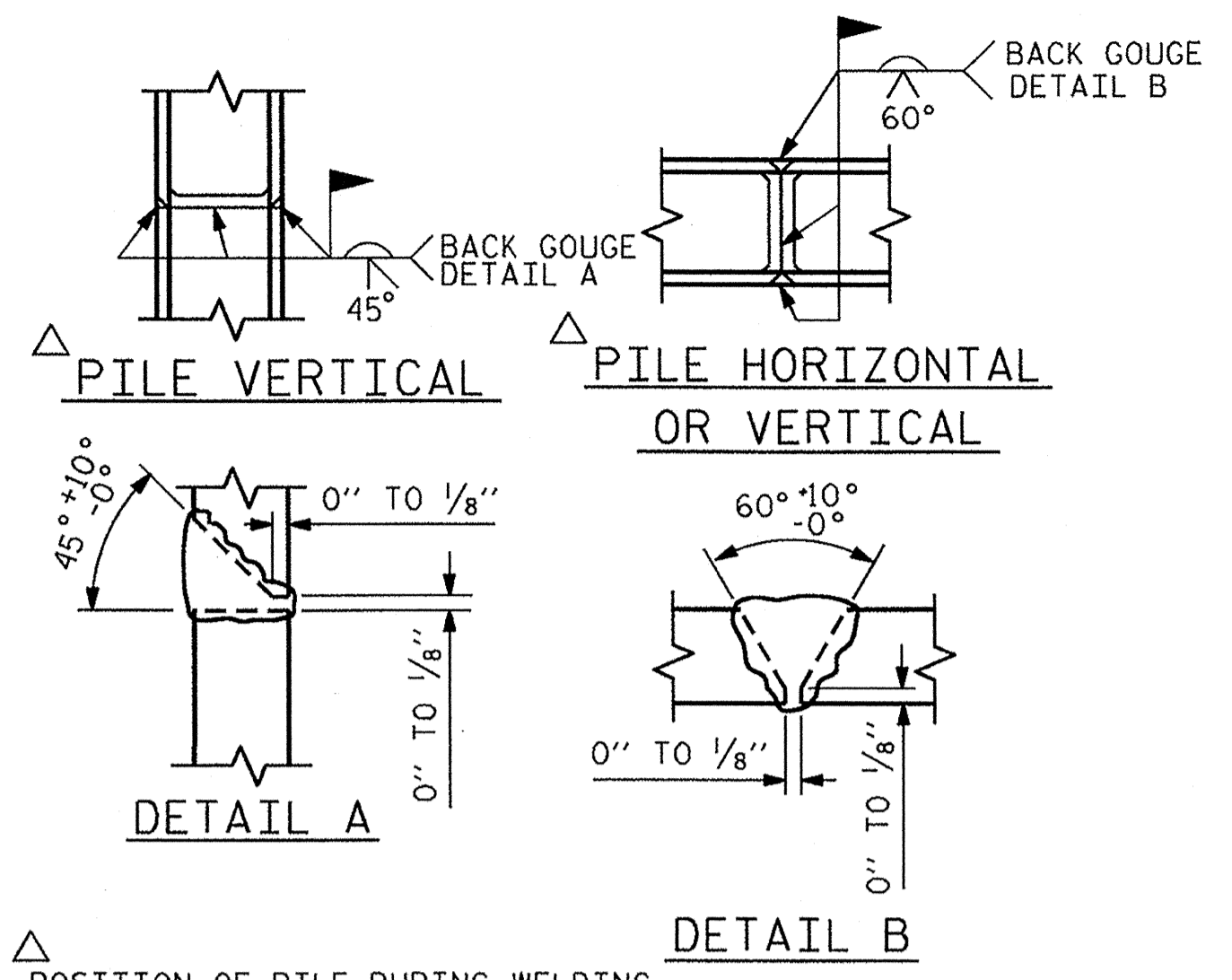


ELEVATION

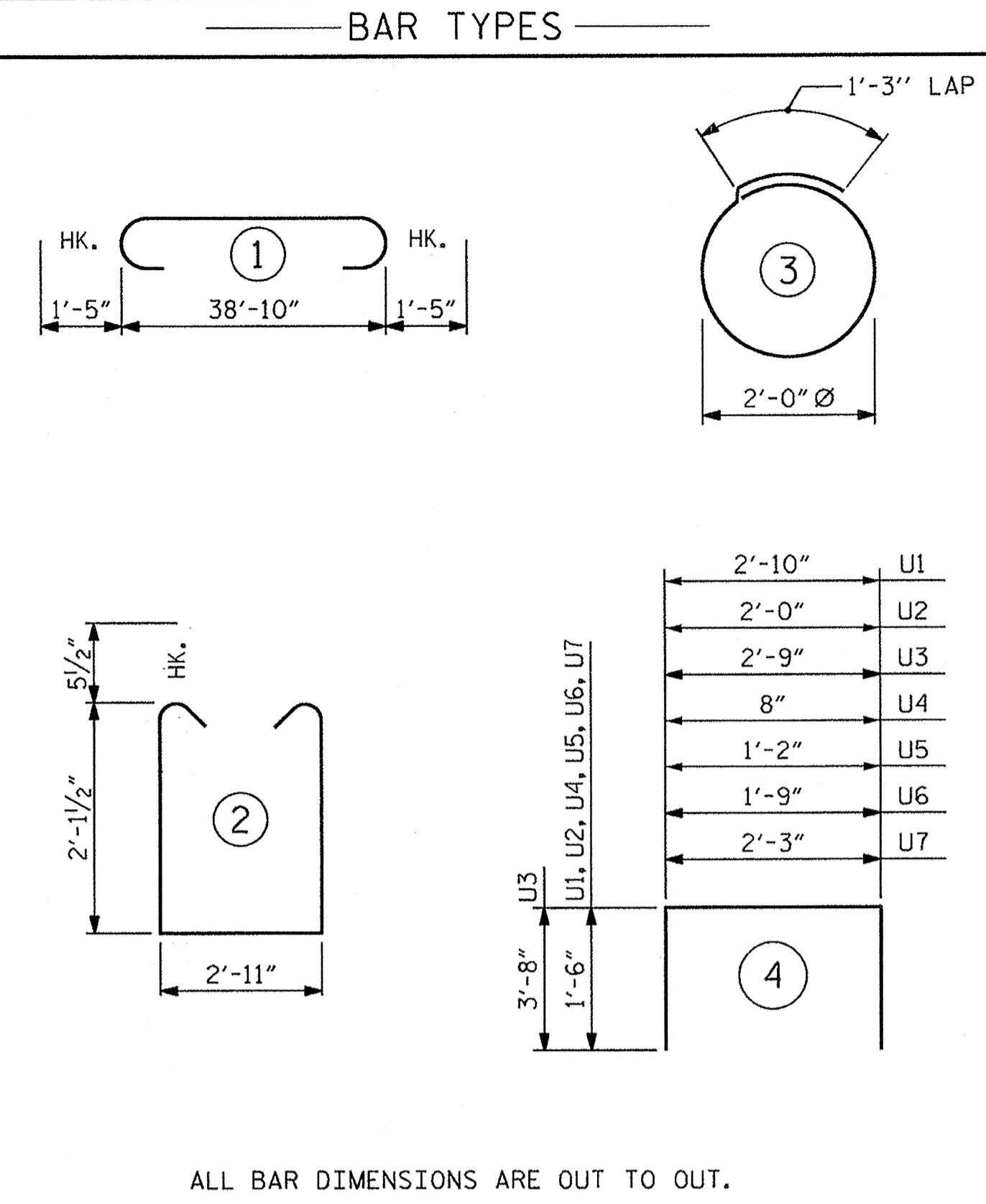
LATERAL GUIDE DETAILS
(LEFT LATERAL GUIDE SHOWN, RIGHT SIDE SIMILAR)



END OF CAP VIEW
(TYPICAL BOTH ENDS)

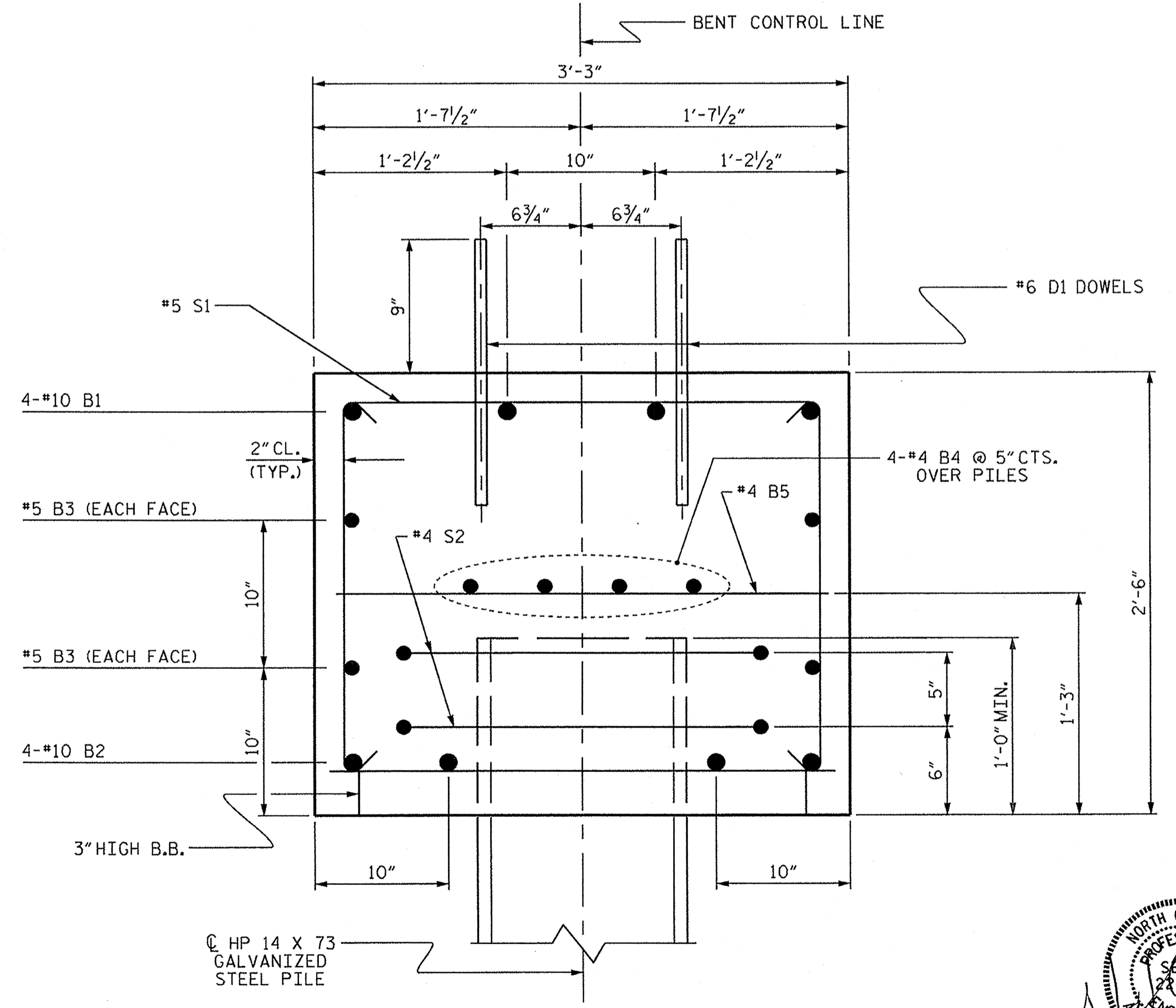


PILE SPLICE DETAILS



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL FOR ONE BENT					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	41'-8"	717
B2	4	#10	STR	39'-0"	671
B3	4	#5	STR	39'-0"	163
B4	8	#4	STR	20'-9"	111
B5	12	#4	STR	2'-11"	23
B6	2	#4	STR	3'-4"	4
D1	40	#6	STR	1'-6"	90
S1	44	#5	2	8'-1"	371
S2	14	#4	3	7'-7"	71
U1	4	#4	4	5'-10"	16
U2	6	#4	4	5'-0"	20
U3	2	#9	4	10'-1"	69
U4	2	#4	4	3'-8"	5
U5	2	#4	4	4'-2"	6
U6	2	#4	4	4'-9"	6
U7	2	#4	4	5'-3"	7
REINFORCING STEEL (FOR ONE BENT)					2350 LBS
CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)					
POUR #1 (CAP)					11.8 C.Y.
POUR #2 (LATERAL GUIDES)					0.2 C.Y.
TOTAL CLASS A CONCRETE					12.0 C.Y.
HP 14 X 73 GALVANIZED STEEL PILES (FOR ONE BENT)					
No. 7					LIN. FT. 105
STEEL PILE POINTS No. 7					
PILE EXCAVATION (IN SOIL)					LIN. FT. 29
PILE EXCAVATION (NOT IN SOIL)					LIN. FT. 36

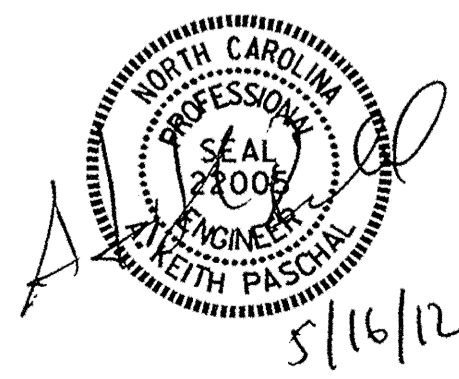


SECTION A-A

PROJECT NO. BD-5102L
JONES COUNTY
 STATION: 13+79.00 -L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT No. 1

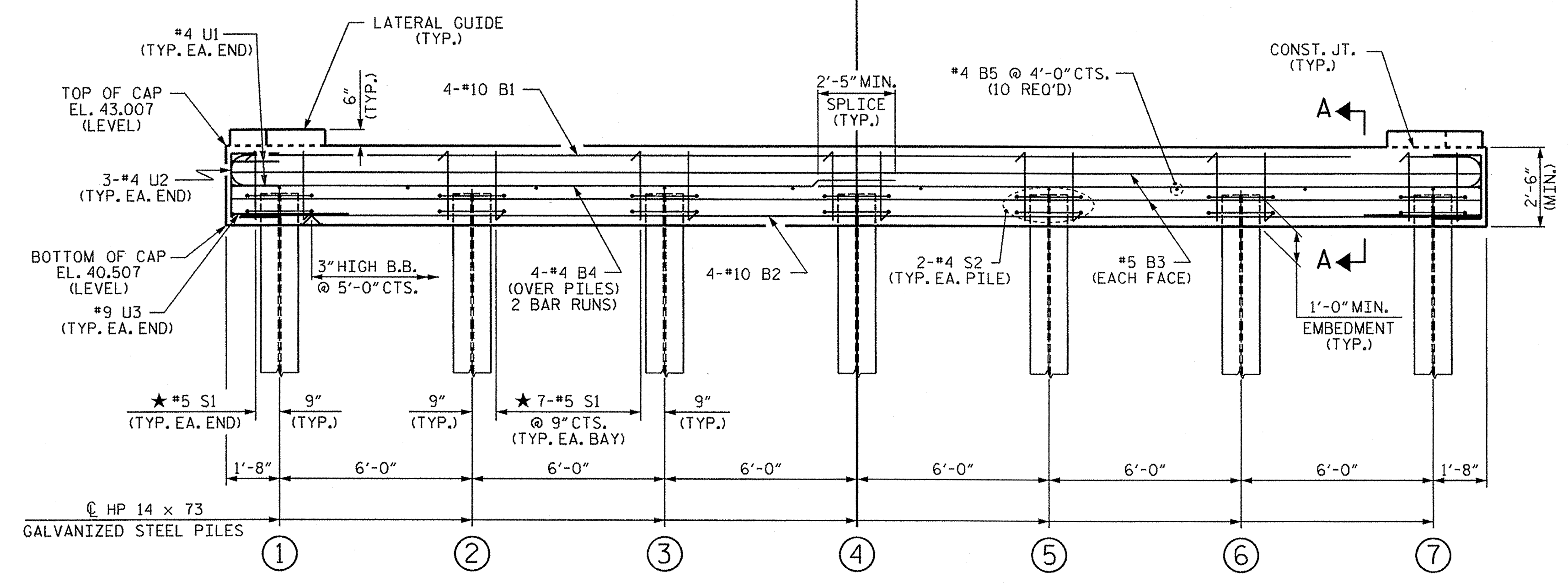
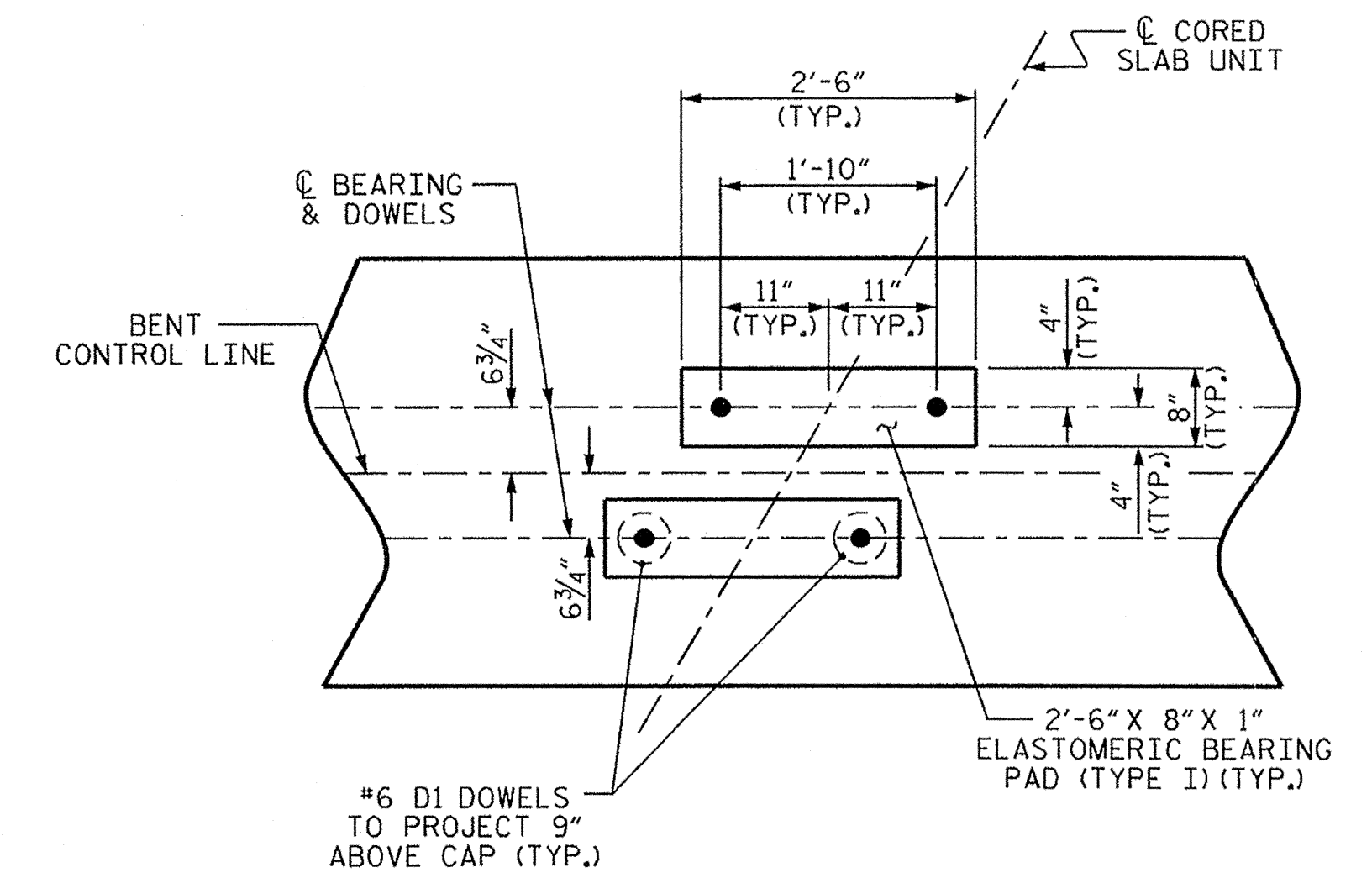
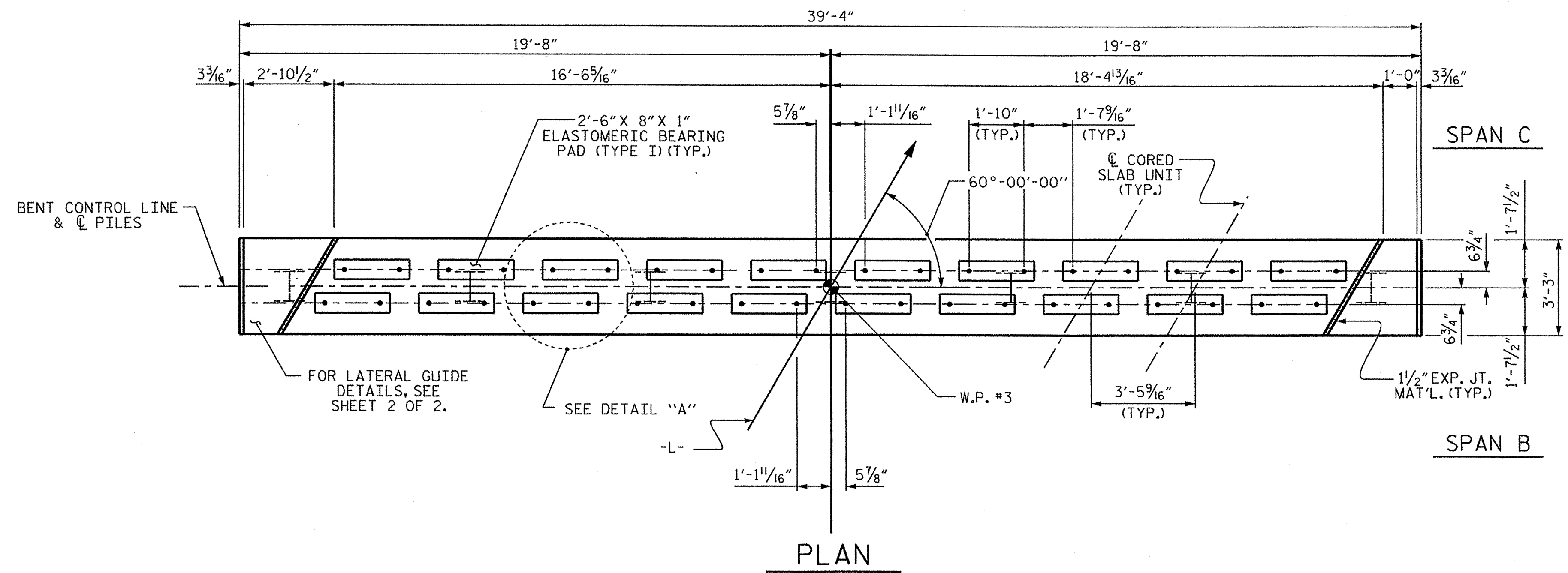


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			21
2			4			

DRAWN BY : B. L. GREEN DATE : 3/2/12
 CHECKED BY : E. K. POPE DATE : 3/26/12
 DRAWN BY : DGE 05/10
 CHECKED BY : MKT 05/10

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
- THE LATERAL GUIDES ARE NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.
- ★ INVERT ALTERNATE STIRRUPS.
- GALVANIZE THE FULL LENGTH OF EACH INTERIOR BENT PILE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.
- THE CONTRACTOR HAS THE OPTION TO OMIT THE LATERAL GUIDE IF APPROVED BY THE ENGINEER.

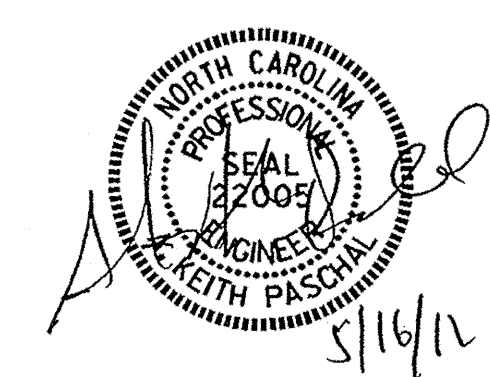


PROJECT NO. BD-5102L
JONES COUNTY
 STATION: 13+79.00 -L-

SHEET 1 OF 2

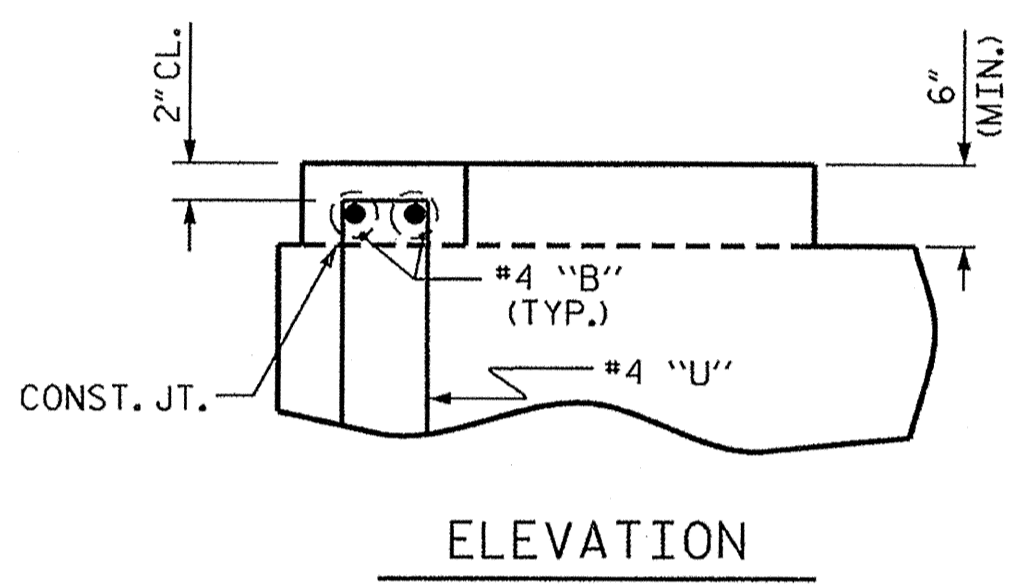
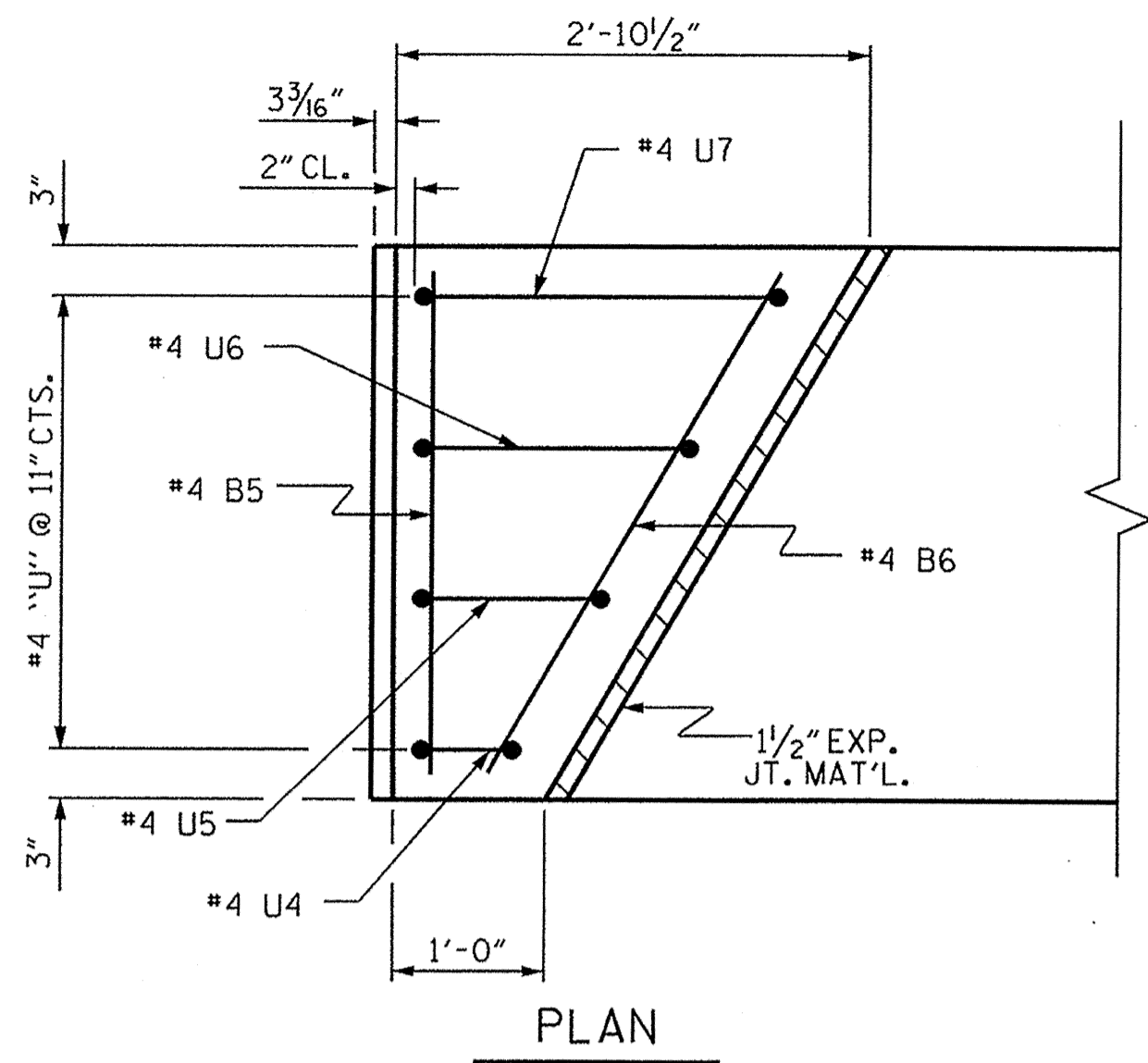
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT No. 2

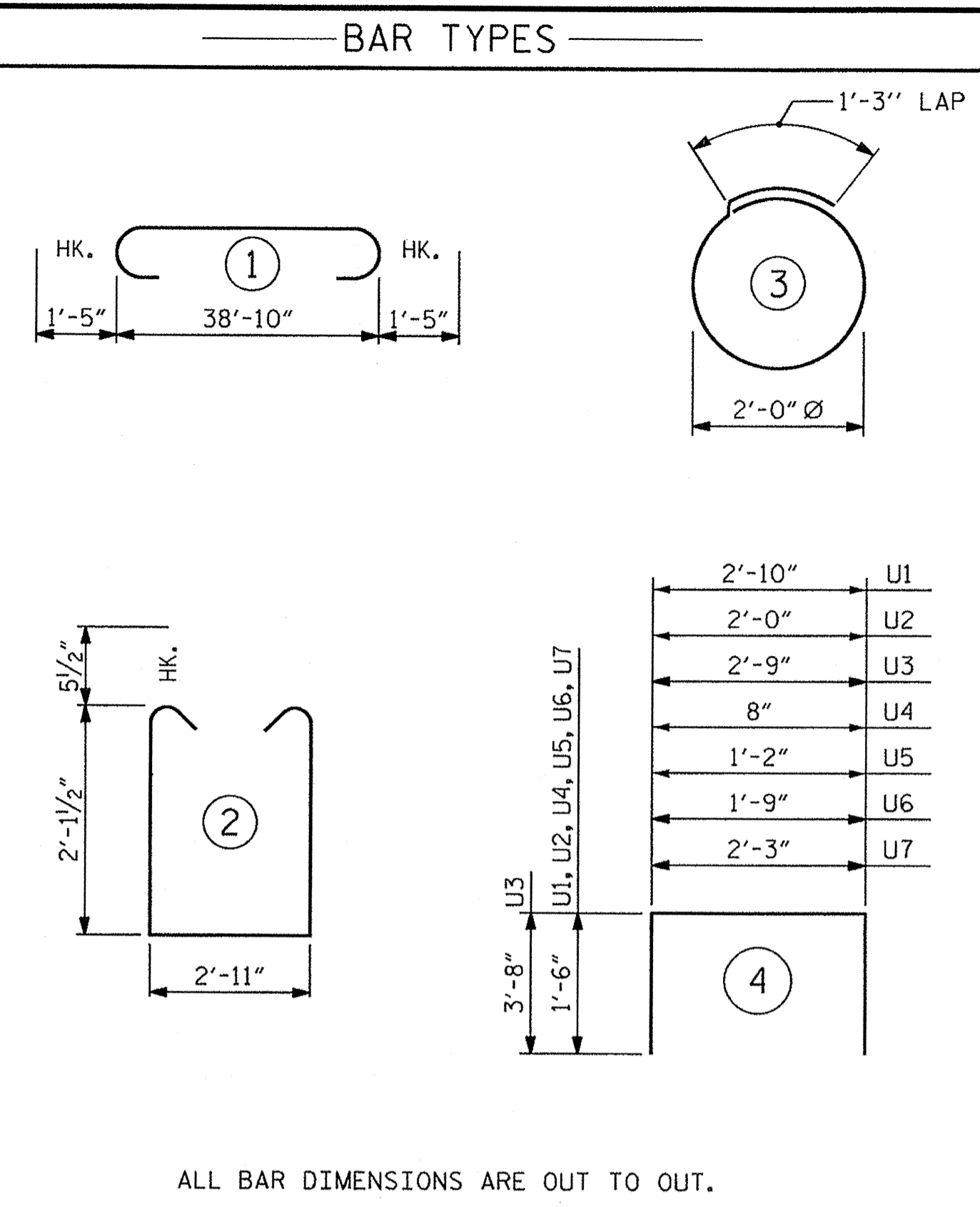
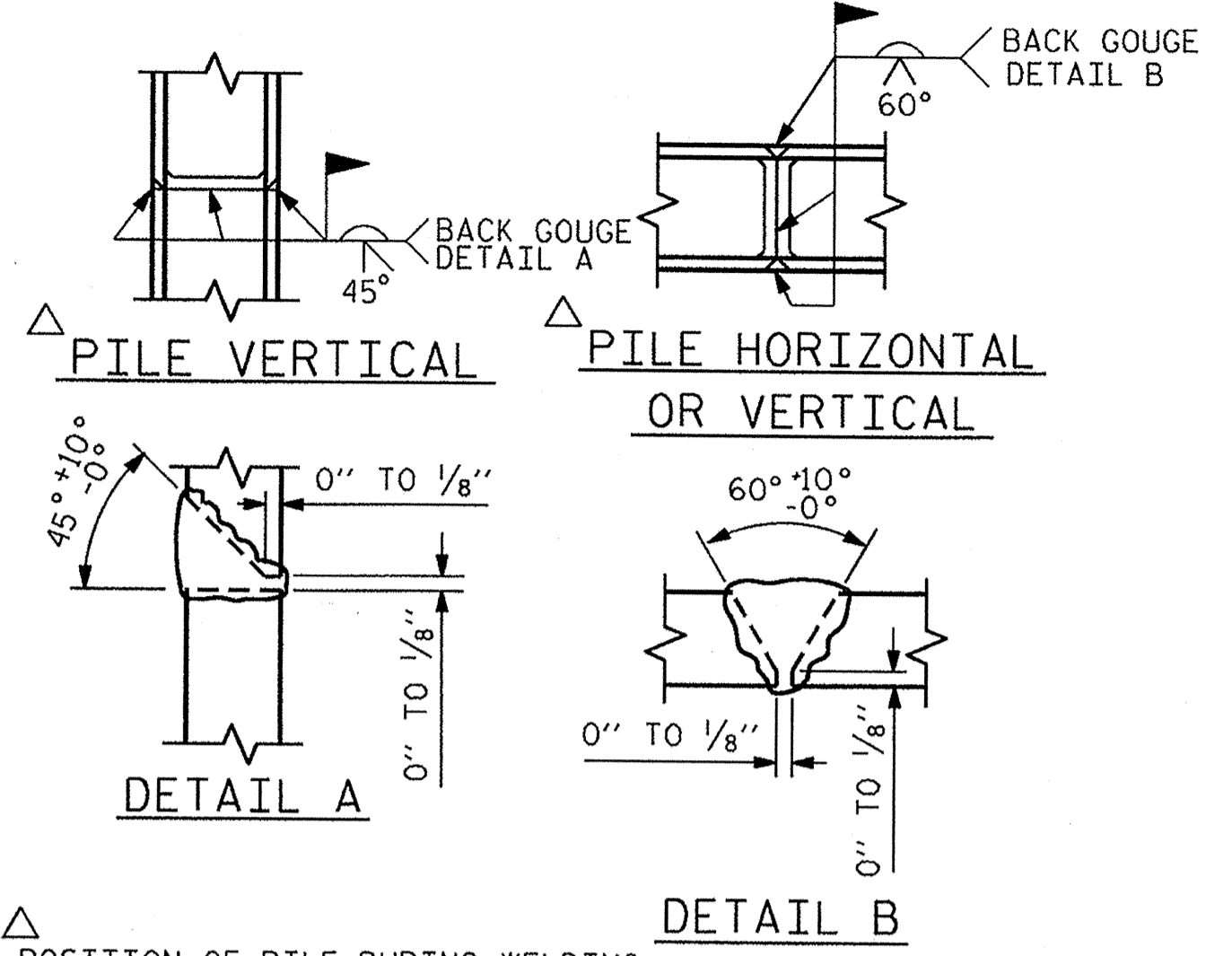
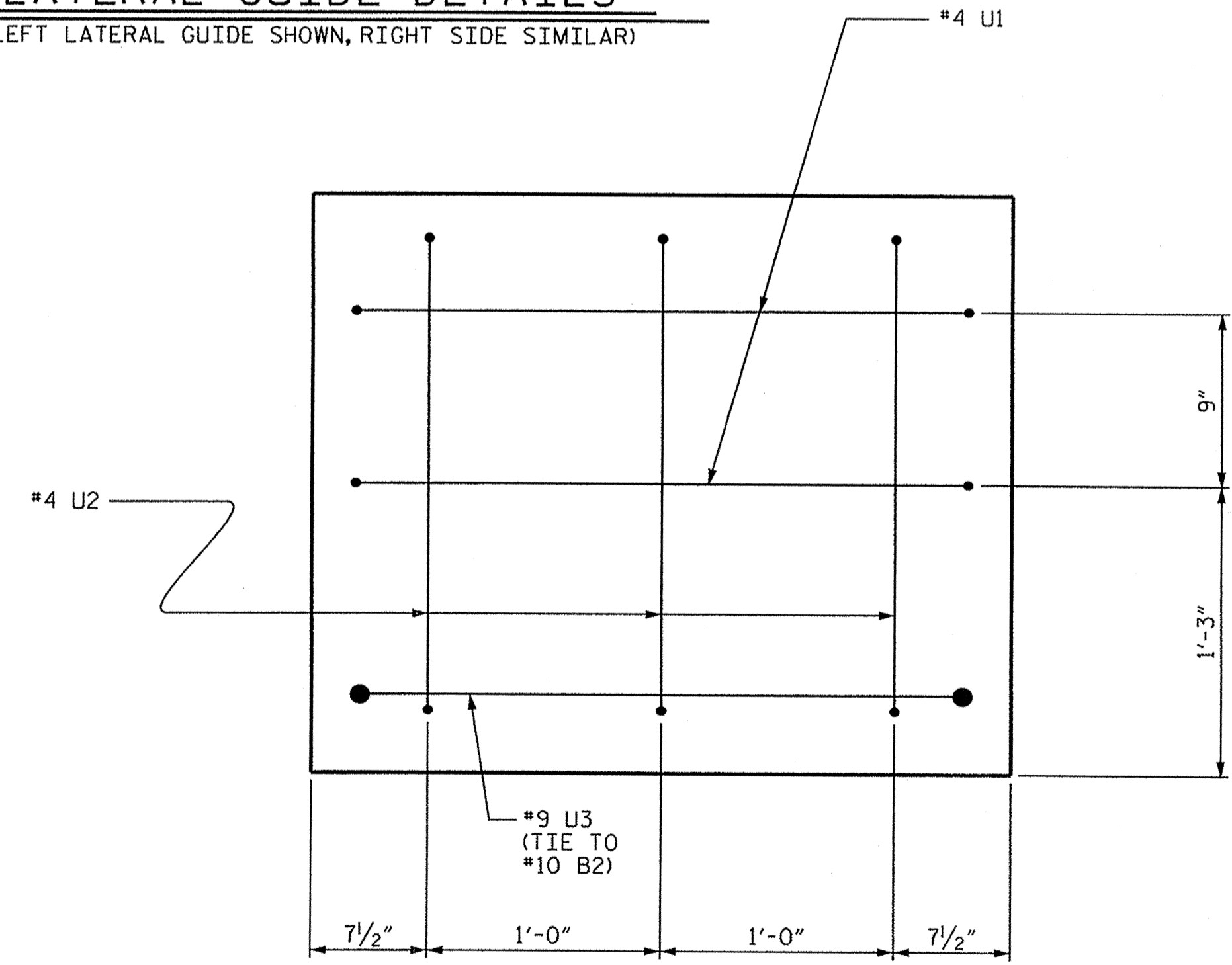


ASSEMBLED BY : B. L. GREEN DATE : 3/2/12
 CHECKED BY : E. K. POPE DATE : 3/26/12
 DRAWN BY : DGE 05/10
 CHECKED BY : MKT 05/10

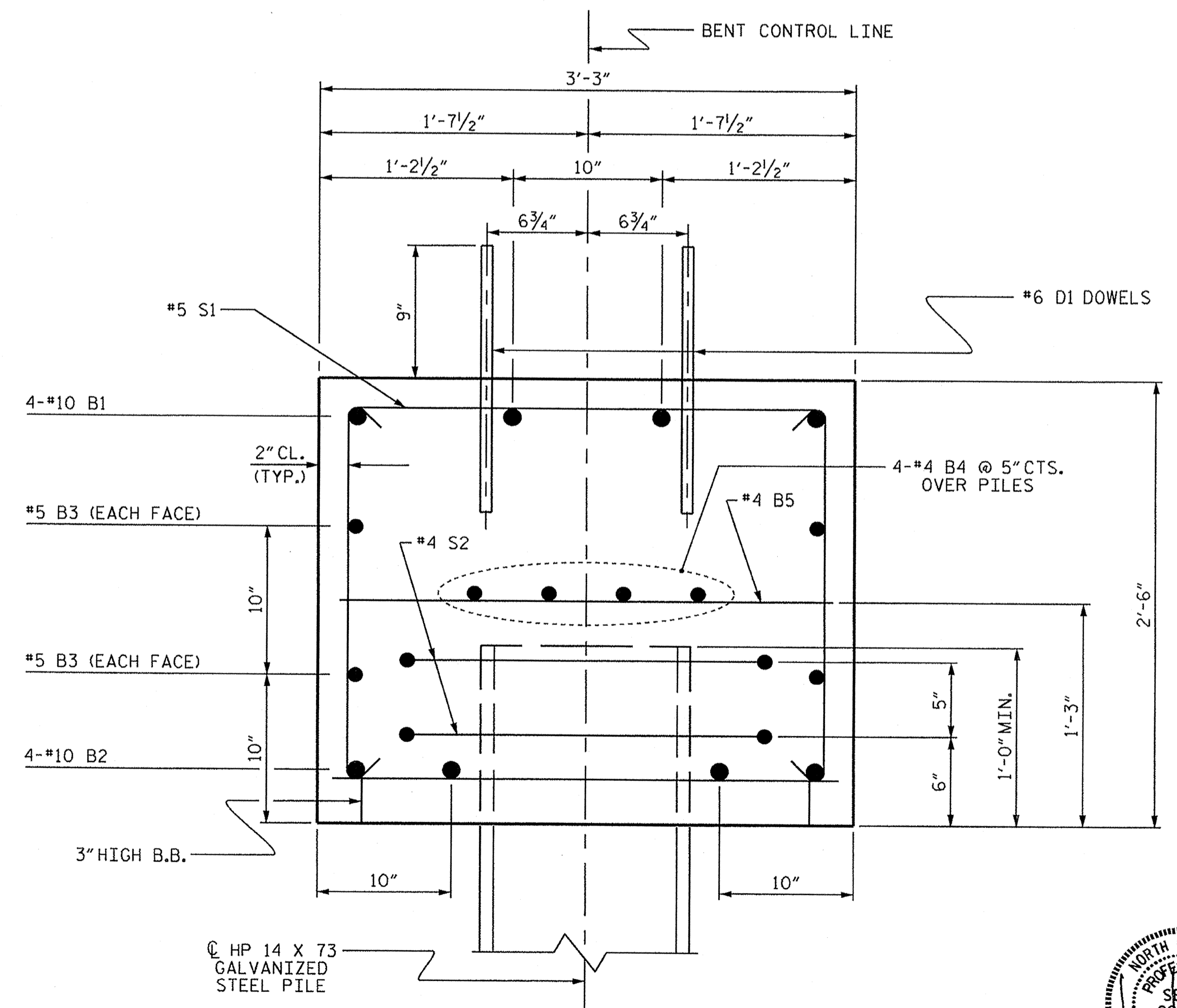
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			5-18
2			4			TOTAL SHEETS 21



LATERAL GUIDE DETAILS
(LEFT LATERAL GUIDE SHOWN, RIGHT SIDE SIMILAR)



BILL OF MATERIAL FOR ONE BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	41'-8"	717
B2	4	#10	STR	39'-0"	671
B3	4	#5	STR	39'-0"	163
B4	8	#4	STR	20'-9"	111
B5	12	#4	STR	2'-11"	23
B6	2	#4	STR	3'-4"	4
D1	40	#6	STR	1'-6"	90
S1	44	#5	2	8'-1"	371
S2	14	#4	3	7'-7"	71
U1	4	#4	4	5'-10"	16
U2	6	#4	4	5'-0"	20
U3	2	#9	4	10'-1"	69
U4	2	#4	4	3'-8"	5
U5	2	#4	4	4'-2"	6
U6	2	#4	4	4'-9"	6
U7	2	#4	4	5'-3"	7
REINFORCING STEEL (FOR ONE BENT)					2350 LBS
CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)					
POUR #1 (CAP)					11.8 C.Y.
POUR #2 (LATERAL GUIDES)					0.2 C.Y.
TOTAL CLASS A CONCRETE					12.0 C.Y.
HP 14 X 73 GALVANIZED STEEL PILES (FOR ONE BENT)					
No. 7	LIN. FT.				105
STEEL PILE POINTS					No. 7
PILE EXCAVATION (IN SOIL)					LIN. FT. 25
PILE EXCAVATION (NOT IN SOIL)					LIN. FT. 39



PROJECT NO. BD-5102L
JONES COUNTY
 STATION: 13+79.00 -L-

SHEET 2 OF 2

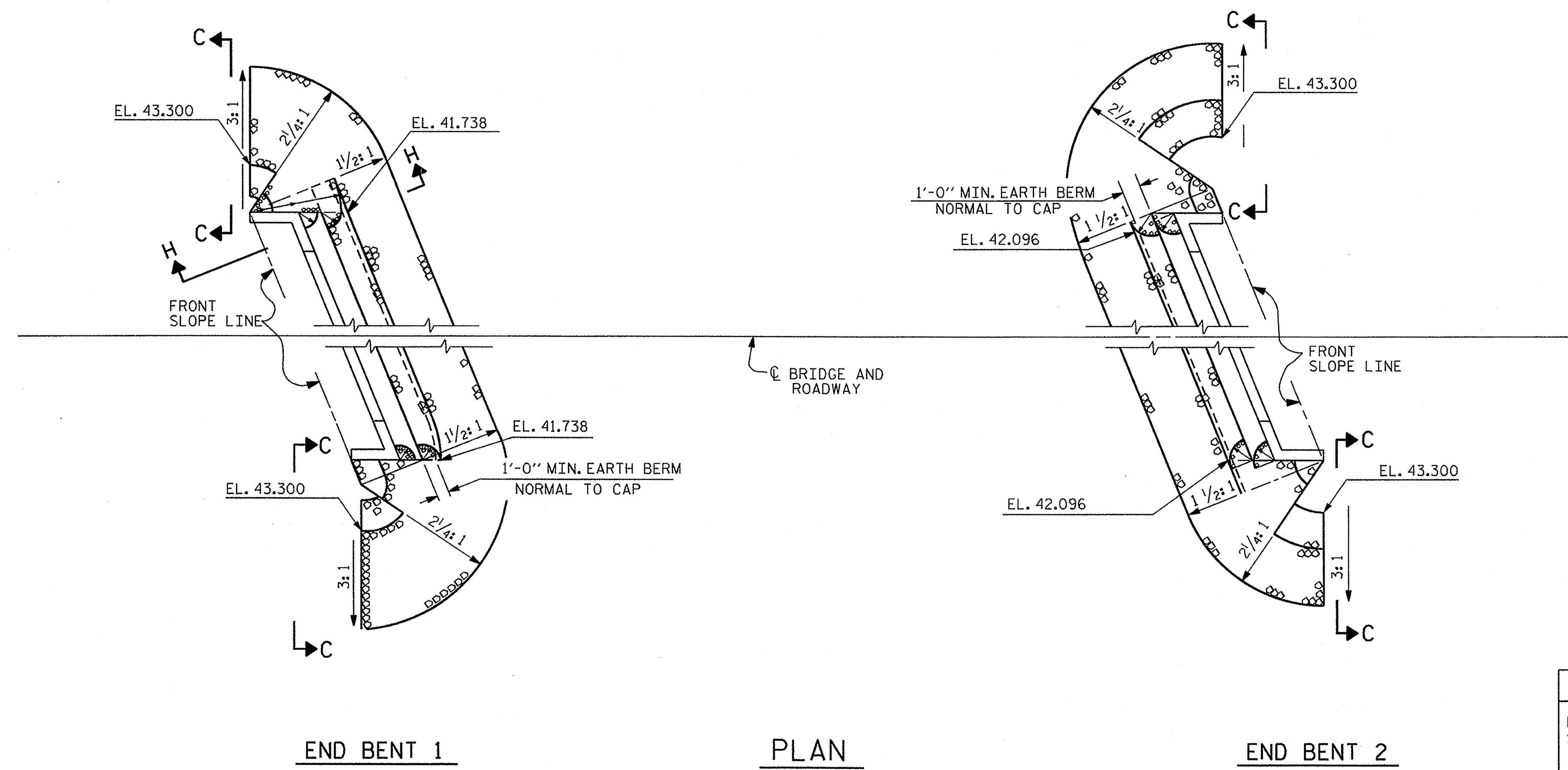
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT No. 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. 5-19
 TOTAL SHEETS 21

DRAWN BY : B. L. GREEN DATE : 3/2/12
 CHECKED BY : E. K. POPE DATE : 3/26/12
 DRAWN BY : DGE 05/10
 CHECKED BY : MKT 05/10

16-MAY-2012 09:06
 S:\DPG1\Keith\BD-5102L\bgreen\BD-5102L.SD.CS.dgn
 kpschul

NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

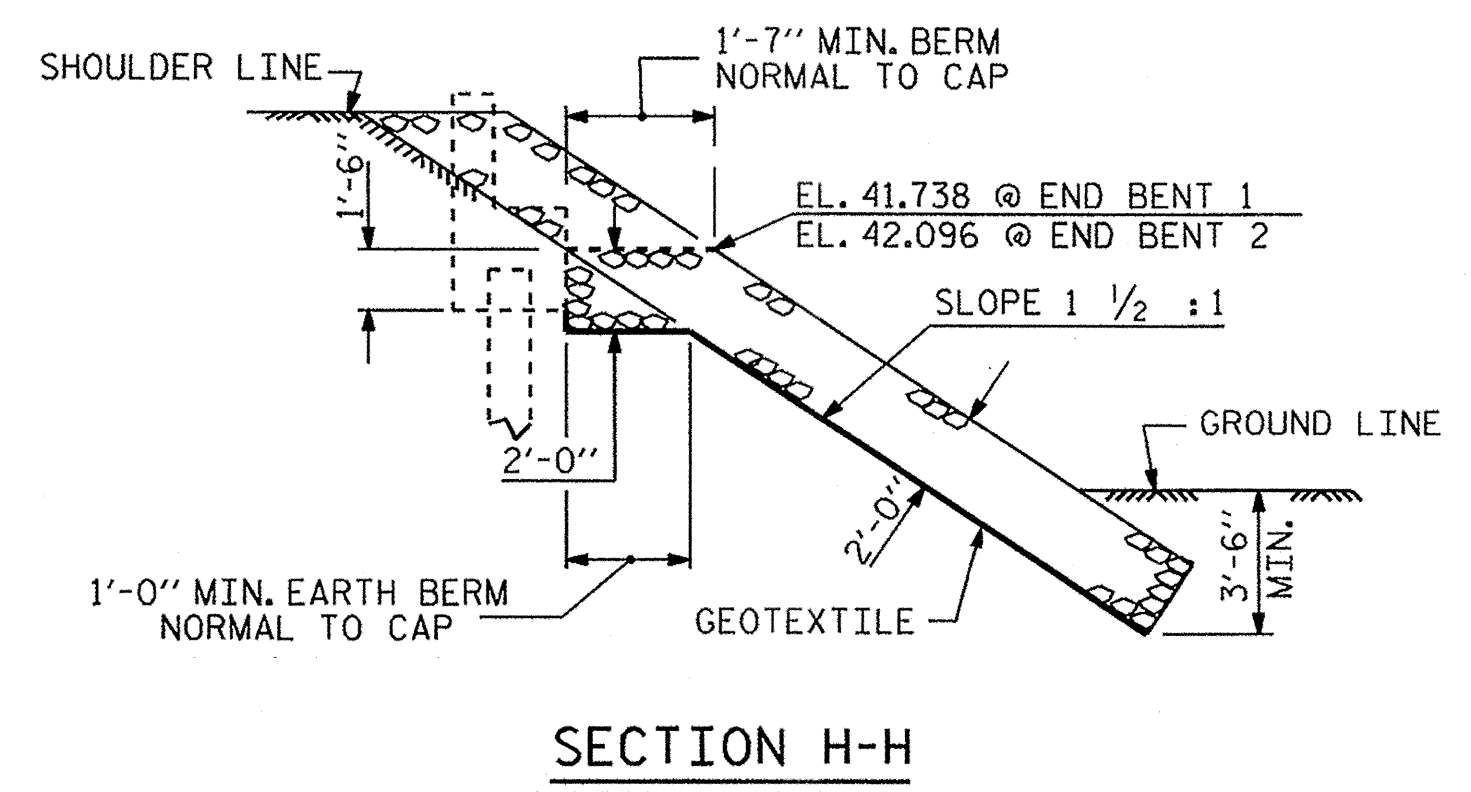


END BENT 1

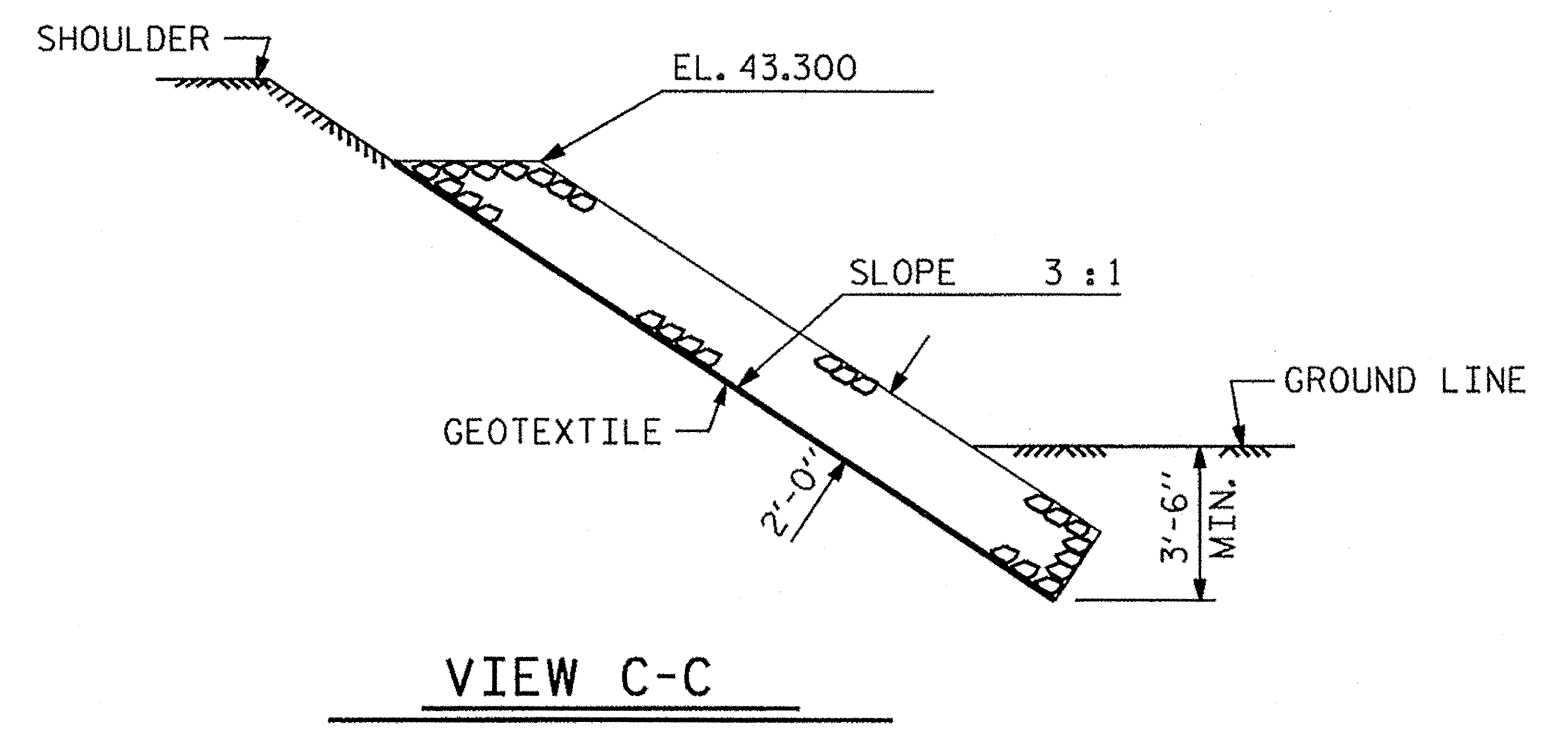
PLAN

END BENT 2

ESTIMATED QUANTITIES		
BRIDGE @ STA. 13+79.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	60	70
END BENT 2	65	75



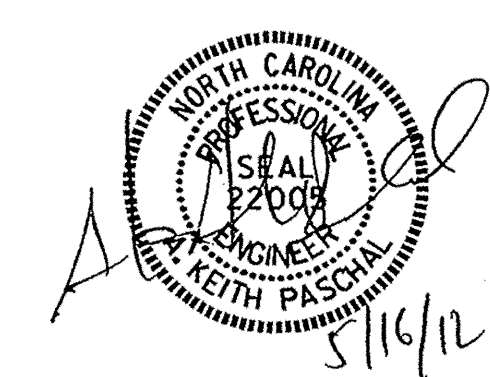
SECTION H-H



VIEW C-C

PROJECT NO. BD-5102L
JONES COUNTY
STATION: 13+79.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
= RIP RAP DETAILS =



ASSEMBLED BY : B. L. GREEN DATE : 3/2/12
CHECKED BY : E. K. POPE DATE : 3/26/12
DRAWN BY : REK 1/84 REV. 5/1/06R TLA/GM
CHECKED BY : RDU 1/84 REV. 10/1/11 MAA/GM
REV. 12/21/11 MAA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			5-20
2			4			TOTAL SHEETS 21

NOTES

FOR REINFORCED BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78M STONE, AND SELECT MATERIAL, SEE ROADWAY PLANS.

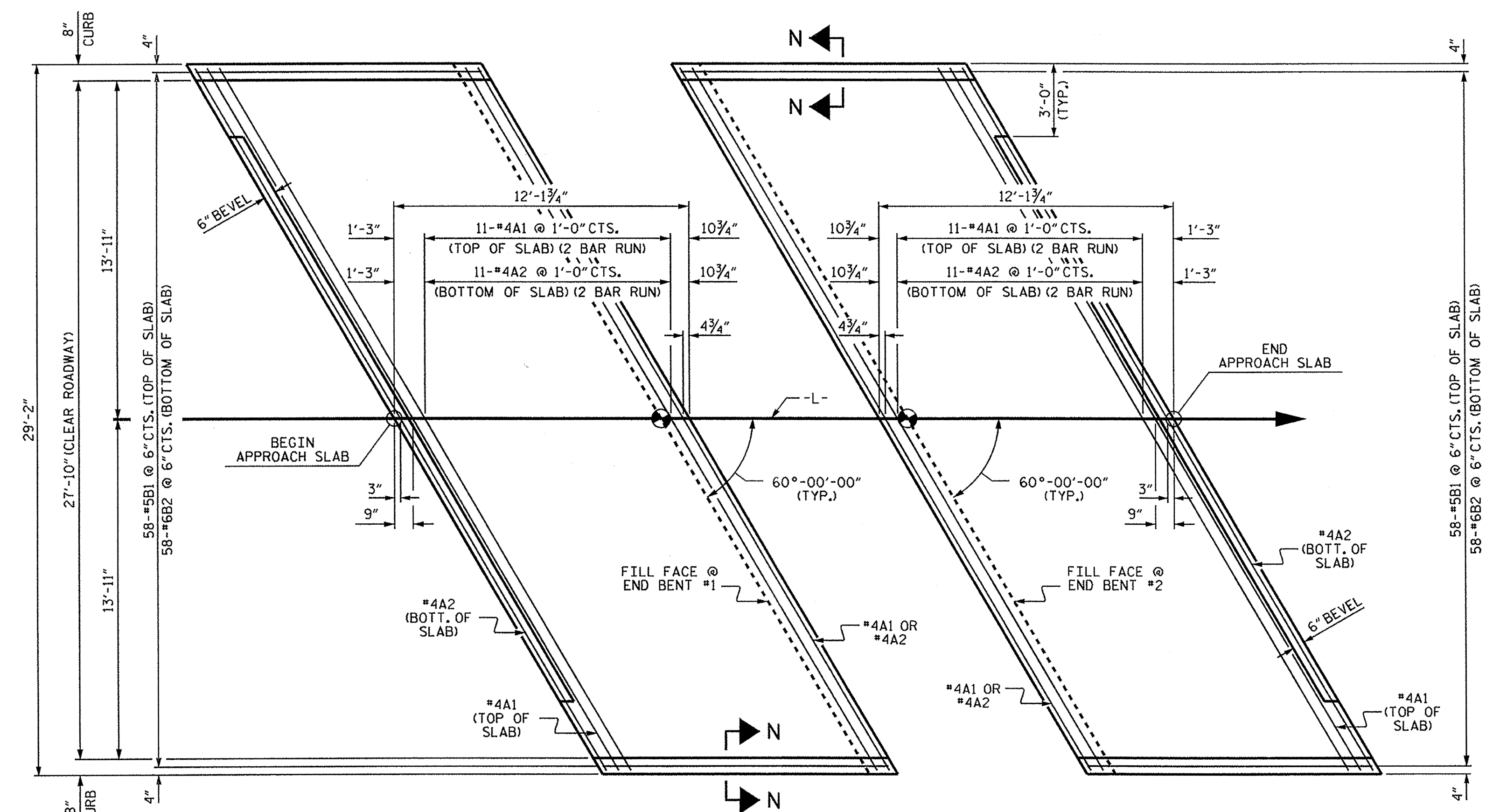
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

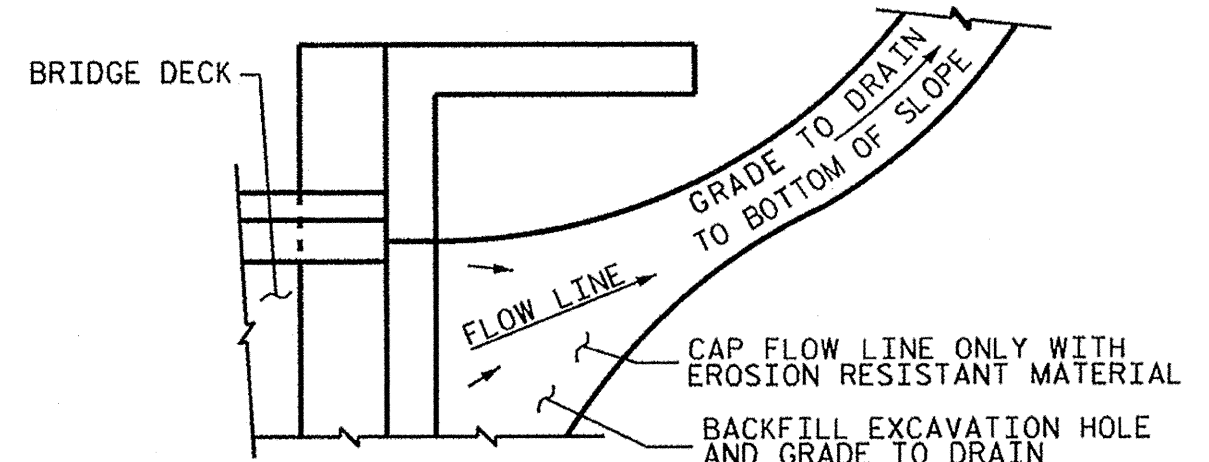
BILL OF MATERIAL

APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	17'-8"	307
A2	26	#4	STR	17'-7"	305
*B1	58	#5	STR	11'-1"	670
B2	58	#6	STR	11'-7"	1009
REINFORCING STEEL					LBS. 1314
*EPOXY COATED REINFORCING STEEL					LBS. 977
CLASS AA CONCRETE					C. Y. 17.1

APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	17'-8"	307
A2	26	#4	STR	17'-7"	305
*B1	58	#5	STR	11'-1"	670
B2	58	#6	STR	11'-7"	1009
REINFORCING STEEL					LBS. 1314
*EPOXY COATED REINFORCING STEEL					LBS. 977
CLASS AA CONCRETE					C. Y. 17.1

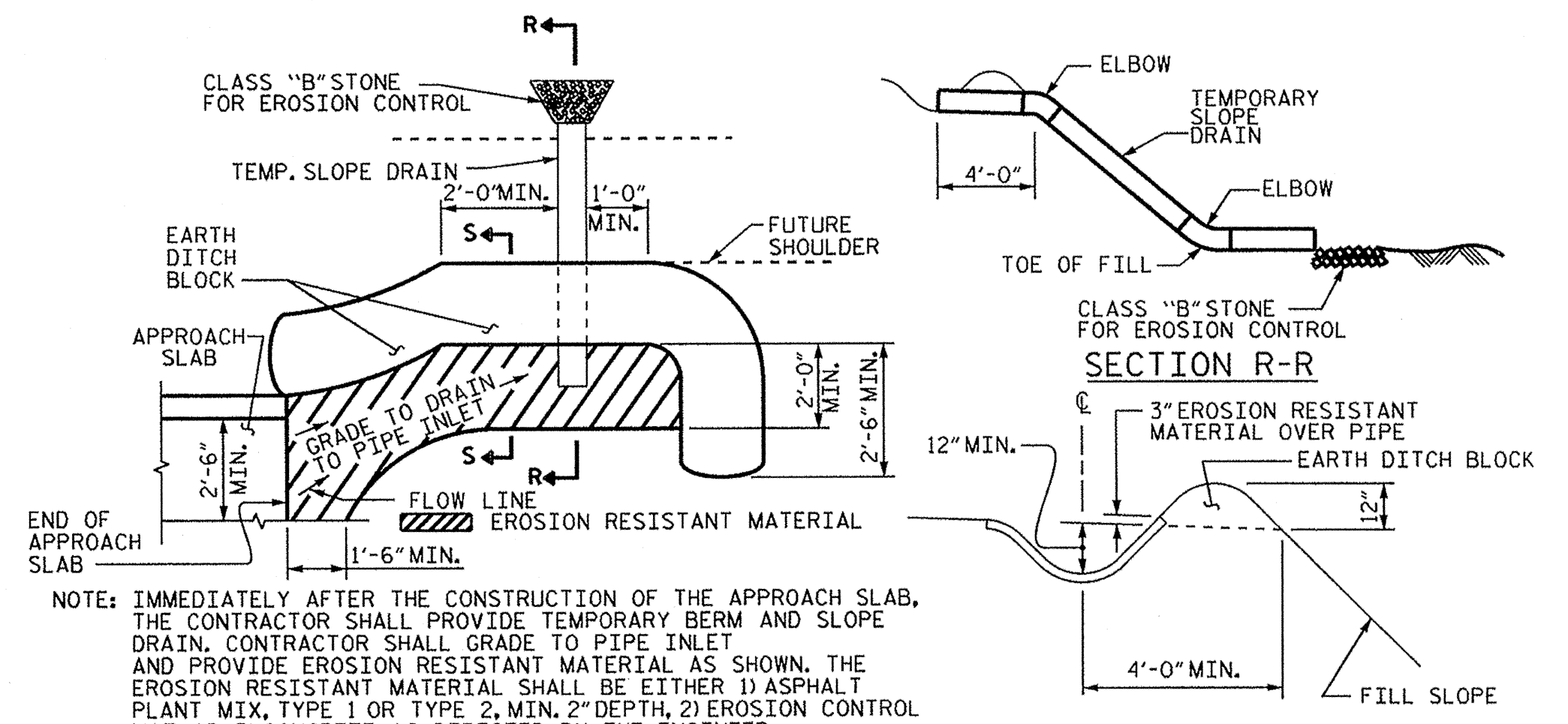


PLAN @ END BENT #1 **PLAN @ END BENT #2**
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



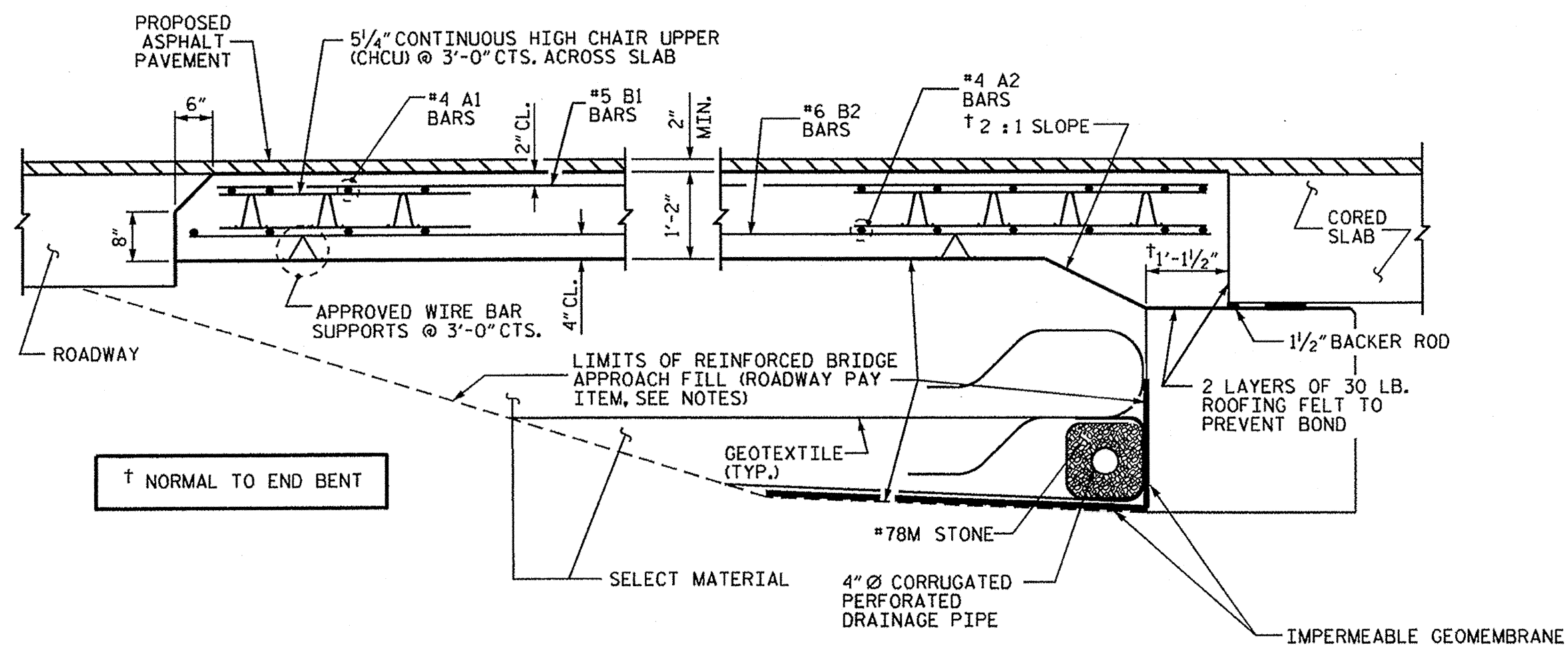
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAIL

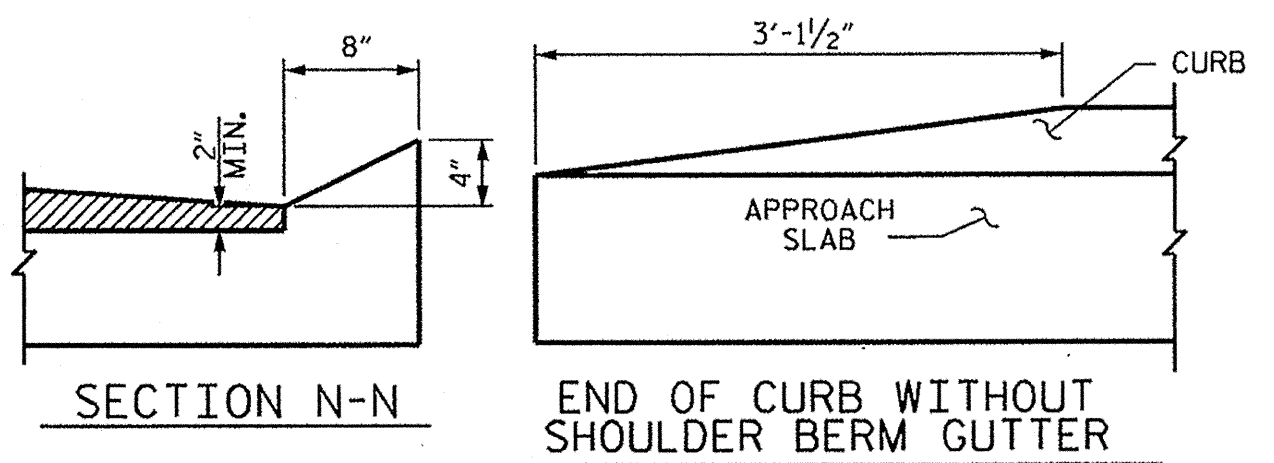


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

TEMPORARY BERM AND SLOPE DRAIN DETAILS
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

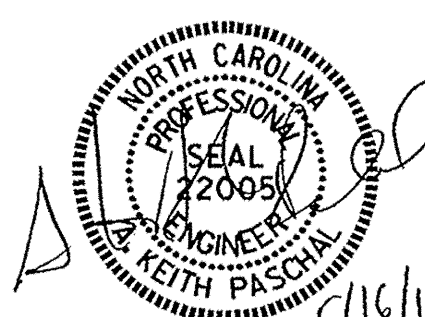


SECTION THRU SLAB



CURB DETAILS

SPlice LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"



PROJECT NO. BD-5102L
JONES COUNTY
STATION: 13+79.00 -L-

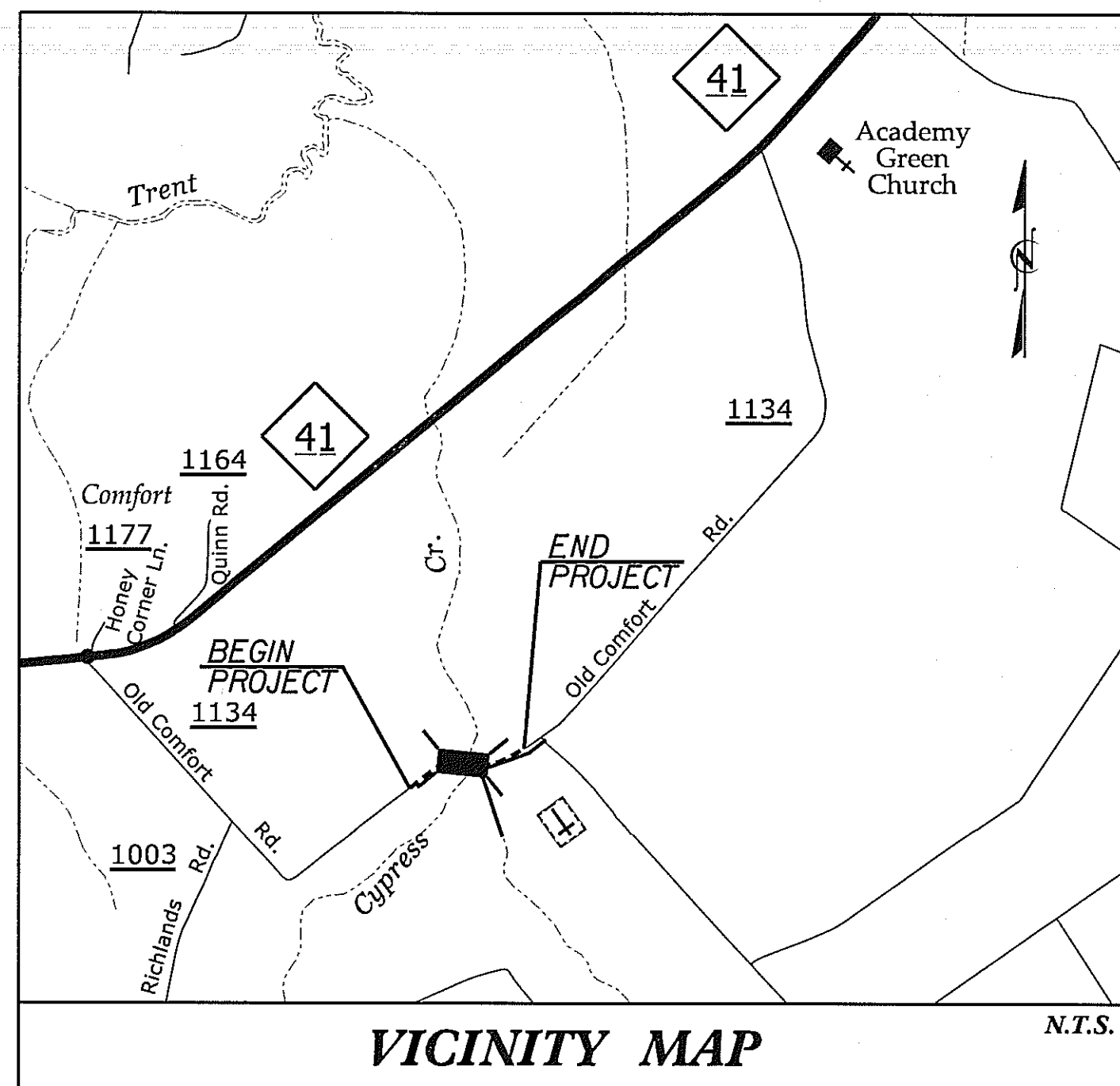
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
BRIDGE APPROACH SLAB
FOR PRESTRESSED CONCRETE
CORED SLAB UNIT
(SUB-REGIONAL TIER)
60° SKEW

REVISIONS						SHEET NO. 5-21
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 21
2			4			

ASSEMBLED BY: B. L. GREEN DATE: 3/2/12
CHECKED BY: E. K. POPE DATE: 3/26/12
DRAWN BY: SHS/MAA 5-09 REV. 12-11 MAA/AAC
CHECKED BY: BCH 5-09

TIP PROJECT: BD-5102L

CONTRACT:



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

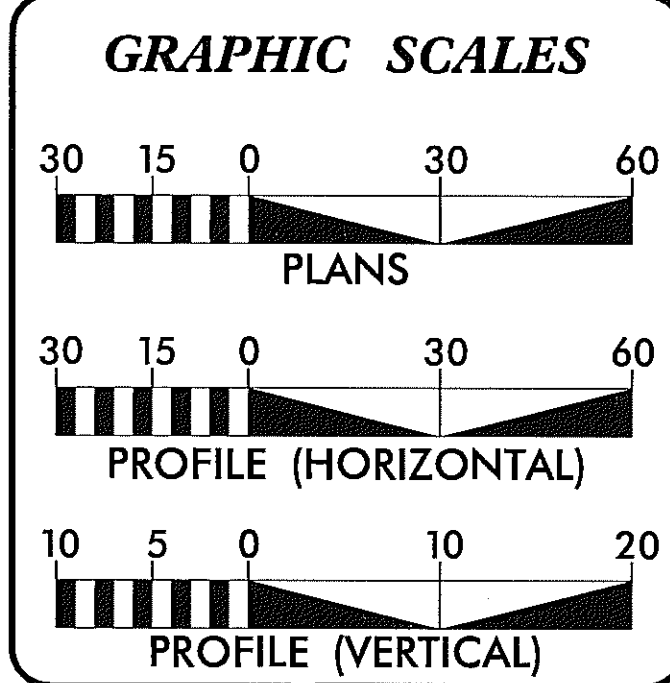
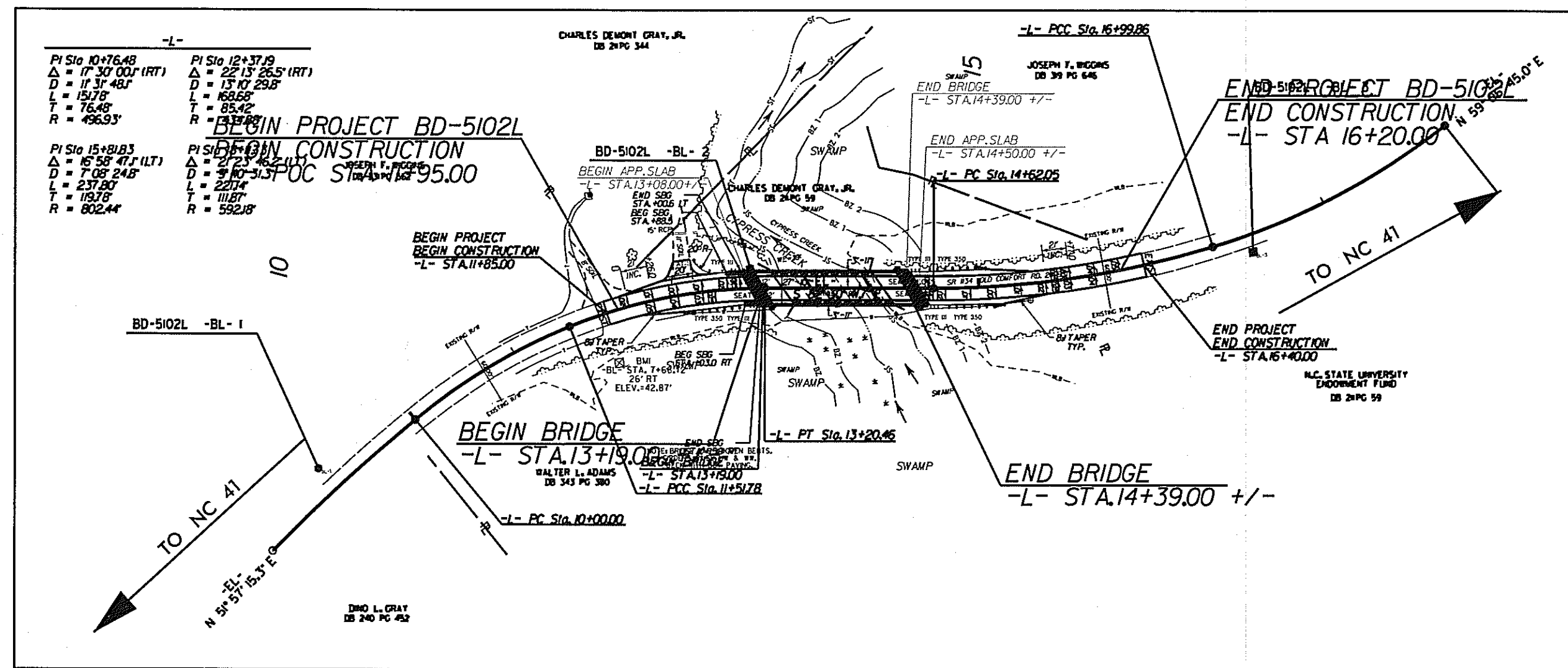
JONES COUNTY

**LOCATION: BRIDGE NO. 64 OVER CYPRESS CREEK
ON SR 1134 (OLD COMFORT ROAD)**

TYPE OF WORK: UTILITIES CONSTRUCTION

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BD-5102L	UC-01	6
UTILITY DESIGN ENGINEER			
2012-07-03			

HNTB	HNTB NORTH CAROLINA, P.C. 949 E. Six Forks Road, Suite 200 Raleigh, North Carolina 27609 NC License No: C-1554
DATE: JUNE 18, 2012	



PROJECT LENGTH	
LENGTH ROADWAY TIP PROJECT BD-5102L =	0.06 MI.
LENGTH STRUCTURE TIP PROJECT BD-5102L =	0.02 MI.
TOTAL LENGTH TIP PROJECT BD-5102L =	0.08 MI.

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
UC-01	TITLE SHEET
UC-02	SYMBOLOLOGY SHEET
UC-03	GENERAL NOTES SHEET
UC-04	PLAN SHEETS
UC-05 TO UC-06	DETAIL SHEETS

UTILITY OWNERS ON PROJECT

WATER - JONES COUNTY

UTILITY DESIGN BY:

MA Engineering
CONSULTANTS, INC.
598 East Chatham Street, Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

NCDOT PROJECT ENGINEER:
 MARIA ROGERSON
PREPARED FOR:
 NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 DIVISION 2 BRIDGE PROGRAM
 GREENVILLE, NC

\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$DGN\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$

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	○
Property Corner	⊕
Property Monument	□
Parcel/Sequence Number	123
Existing Fence Line	× × ×
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	---WLB---
Proposed Lateral, Tail, Head Ditch	---FDW---
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	-----
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	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	---TFO---
Designated U/G Fiber Optics Cable (S.U.E.*)	---TFO---

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	---TFO---
Designated U/G Fiber Optic Cable (S.U.E.*)	---TFO---

GAS:

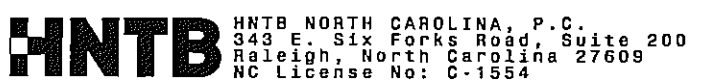
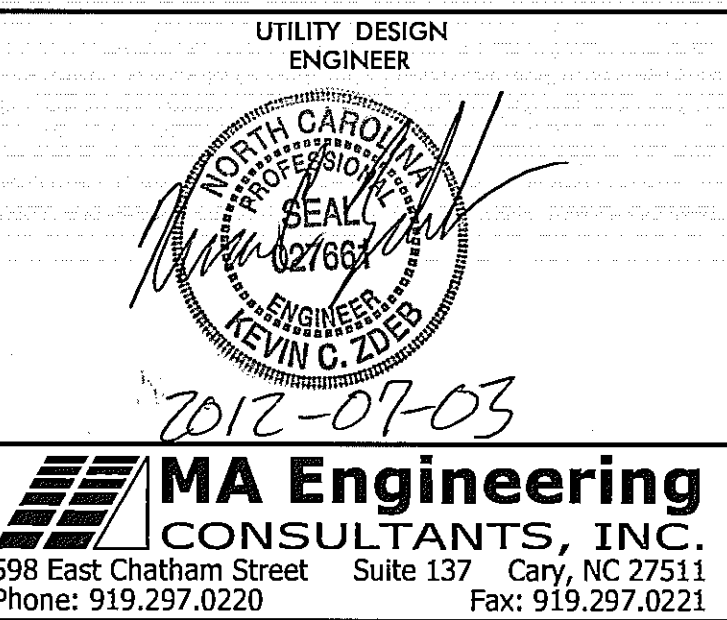
Gas Valve	⊕
Gas Meter	⊕
Recorded U/G Gas Line	---G---
Designated U/G Gas Line (S.U.E.*)	---G---
Above Ground Gas Line	A/G Gas

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	---TUL---
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.



DATE: JUNE 18, 2012

GENERAL NOTES:

1. THE LOCATION, SIZE, AND MATERIAL TYPE OF THE EXISTING UTILITIES SHOWN ON THE PLANS HAVE BEEN OBTAINED FROM THE BEST AVAILABLE DATA AT THE TIME. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE EXACT LOCATION, ELEVATION, SIZE, DIRECTION, AND MATERIAL TYPE OF ALL EXISTING UTILITIES PRIOR TO ORDERING HIS MATERIALS.
2. CONTRACTOR SHALL NOTIFY NC ONE-CALL AT 1-800-632-4949 PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION ACTIVITY SUCH THAT ALL EXISTING UTILITIES CAN BE MARKED. FURTHERMORE, THE CONTRACTOR SHALL MAKE EVERY EFFORT TO CONTACT ANY UTILITY OWNERS THAT ARE NOT MEMBERS OF NC ONE-CALL AND HAVE FACILITIES RESIDING WITHIN THE PROJECT LIMITS.
3. THE EXISTING WATER FACILITIES ARE TO REMAIN IN PLACE AND FUNCTIONING UNTIL NEW FACILITIES ARE CERTIFIED AS COMPLETE BY THE NCDOT RESIDENT ENGINEER.
4. ALL WATER IMPROVEMENTS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND STANDARD DRAWINGS OF THE NCDOT, DATED JANUARY 2012.
5. WATER AND IMPROVEMENTS SHALL BE CONSTRUCTED BY A NC LICENSED UTILITY CONTRACTOR.
6. CONTRACTOR SHALL NOTIFY THE UTILITY OWNER 7 BUSINESS DAYS IN ADVANCE OF PERFORMING ANY TIE-IN WORK. CONTRACTOR SHALL NOTIFY ALL AFFECTED CUSTOMERS 24 HOURS IN ADVANCE OF SERVICE INTERRUPTIONS. CONTRACTOR SHALL NOTIFY ALL AFFECTED CRITICAL FACILITIES (I.E., CORRECTIONAL FACILITY, HOSPITAL, SCHOOLS, MEDICAL FACILITIES, DAY CARE CENTERS, ETC.) 72 HOURS IN ADVANCE OF SERVICE INTERRUPTION.
7. CONTRACTOR SHALL NOT OPERATE ANY VALVES ON THE EXISTING WATER SYSTEM. CONTRACTOR SHALL CONTACT JONES COUNTY TO CONDUCT STRATEGIC OPERATION OF WATER VALVES FOR SERVICE INTERRUPTION IN ORDER TO PERFORM SPECIFIC TIE-IN OPERATIONS.

WATER LINE NOTES:

1. ALL WATER LINE PIPE FOR OPEN TRENCH CONSTRUCTION SHALL BE PVC SDR-21 AND INSTALLED WITH JOINT RESTRAINTS.
2. ALL WATER LINE PIPE FOR TRENCHLESS CONSTRUCTION SHALL BE FUSIBLE PVC C900 SDR-18.
3. ALL WATER LINE FITTINGS, 4-INCHES THROUGH 12-INCHES IN DIAMETER, SHALL BE DUCTILE IRON PIPE (CLASS 350).
4. ANY BENDS OF PVC WATER PIPE NOT SPECIFICALLY CALLED OUT WITH A 90, 45, 22.5, OR 11.25 DEGREE BEND FITTING, SHALL BE CONSTRUCTED BY A RADIAL BEND OF THE PIPE AS NOTED ON THE PLANS OR IN ACCORDANCE WITH THE PIPE MANUFACTURER'S SPECIFICATIONS (WHICHEVER IS MORE STRINGENT) - OR A COMBINATION OF BEND FITTINGS AND A RADIAL BEND OF THE PIPE. DEFLECTION OF PIPE JOINTS ON PVC PIPE MATERIAL IS NOT AN ACCEPTABLE METHOD OF PIPE BENDING.
5. ALL FITTINGS (BENDS, TEES, CROSSES, REDUCERS, PLUGS, ETC.) SHALL BE ADEQUATELY RESTRAINED BY THE USE OF RESTRAINED JOINT CONSTRUCTION AND /OR CAST IN PLACE CONCRETE THRUST RESTRAINTS AS DETAILED ON THESE DRAWINGS, OR AS DIRECTED BY THE RESIDENT ENGINEER.
6. THE EXISTING 6" LINE SHALL BE RESTRAINED ON THE PORTION TO REMAIN AFTER VALVE INSTALLATION. THE CONTRACTOR SHALL EXCAVATE THE EXISTING PVC LINE AND INSTALL THE BELL RESTRAINT CLAMPS AT EVERY BELL JOINT FOR THE DISTANCE NOTED IN THE TABLE ON SHEET UC-6.
7. ALL ELEVATIONS MEASURED FROM CENTER OF PIPE.
8. THE DRILL PATH SHALL BE BACKREAMED WITH A 8" BOREHOLE WHEN PIPE IS PULLED THROUGH.


UTILITY OWNERS ON THIS PROJECT:

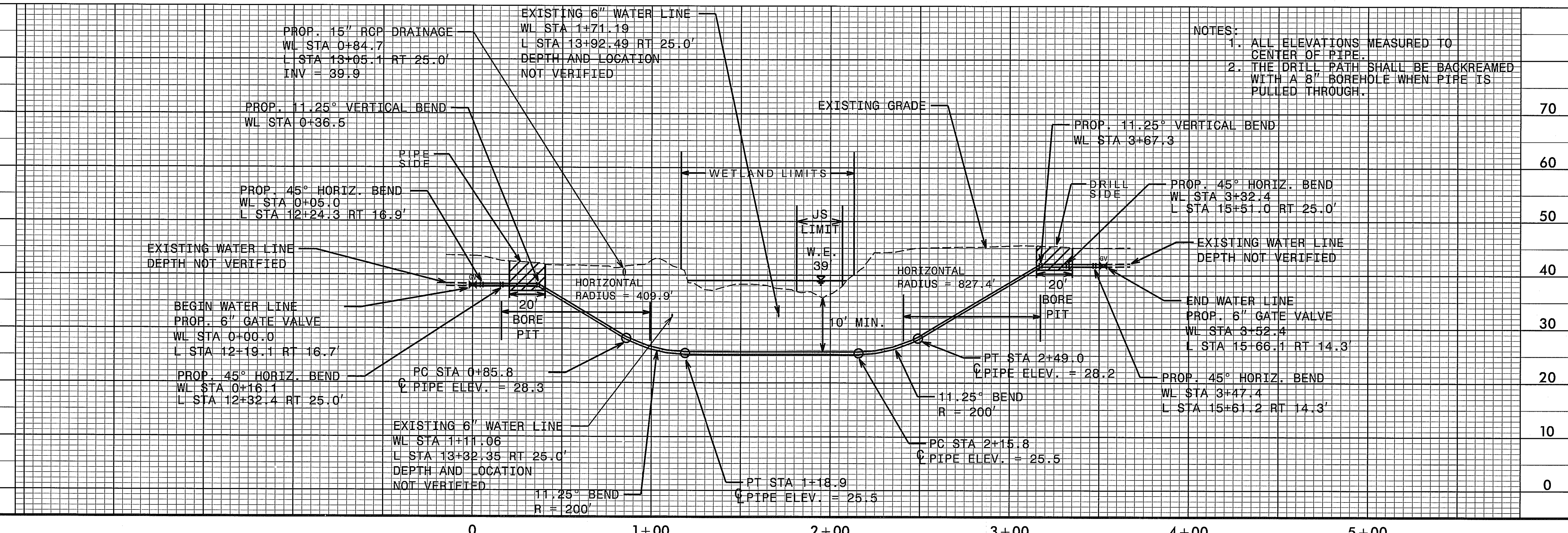
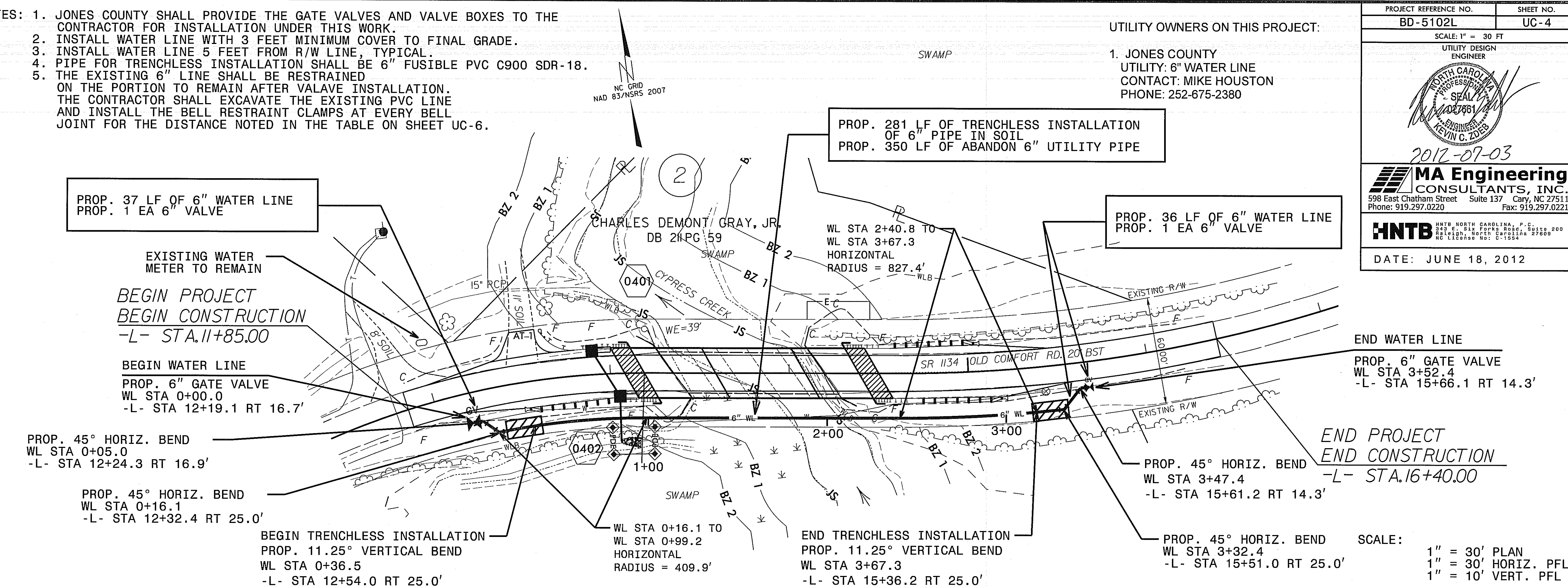
1. JONES COUNTY
UTILITY: 6" WATER LINE
CONTACT: MIKE HOUSTON
PHONE: 252-675-2380

- NOTES: 1. JONES COUNTY SHALL PROVIDE THE GATE VALVES AND VALVE BOXES TO THE CONTRACTOR FOR INSTALLATION UNDER THIS WORK.
 2. INSTALL WATER LINE WITH 3 FEET MINIMUM COVER TO FINAL GRADE.
 3. INSTALL WATER LINE 5 FEET FROM R/W LINE, TYPICAL.
 4. PIPE FOR TRENCHLESS INSTALLATION SHALL BE 6" FUSIBLE PVC C900 SDR-18.
 5. THE EXISTING 6" LINE SHALL BE RESTRAINED ON THE PORTION TO REMAIN AFTER VALAVE INSTALLATION. THE CONTRACTOR SHALL EXCAVATE THE EXISTING PVC LINE AND INSTALL THE BELL RESTRAINT CLAMPS AT EVERY BELL JOINT FOR THE DISTANCE NOTED IN THE TABLE ON SHEET UC-6.

UTILITY OWNERS ON THIS PROJECT:

1. JONES COUNTY
 UTILITY: 6" WATER LINE
 CONTACT: MIKE HOUSTON
 PHONE: 252-675-2380

PROJECT REFERENCE NO. BD-5102L SHEET NO. UC-4
 SCALE: 1" = 30 FT
 UTILITY DESIGN ENGINEER

 2012-07-03
MA Engineering CONSULTANTS, INC.
 598 East Chatham Street Suite 137 Cary, NC 27511
 Phone: 919.297.0220 Fax: 919.297.0221
HNTB HNTB NORTH CAROLINA, P.C.
 343 E. 34th Street, Suite 200 Raleigh, North Carolina 27609
 NC License No. C-1054
 DATE: JUNE 18, 2012



- NOTES:
 1. ALL ELEVATIONS MEASURED TO CENTER OF PIPE.
 2. THE DRILL PATH SHALL BE BACKREAMED WITH A 8" BOREHOLE WHEN PIPE IS PULLED THROUGH.

SCALE:
 1" = 30' PLAN
 1" = 30' HORIZ. PFL
 1" = 10' VERT. PFL

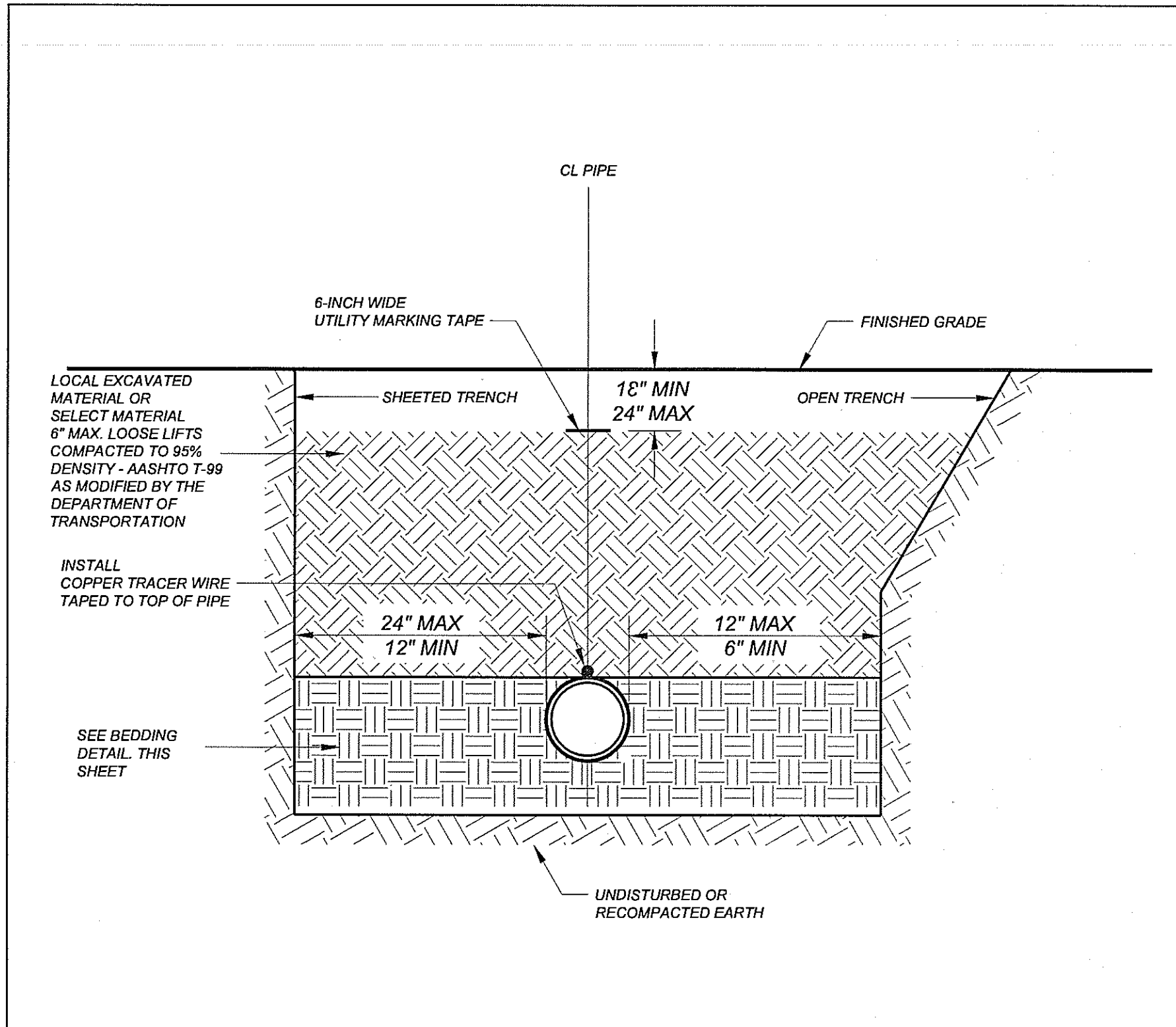


2012-07-03

MA Engineering CONSULTANTS, INC.
 598 East Chatham Street Suite 137 Cary, NC 27511
 Phone: 919.297.0220 Fax: 919.297.0221

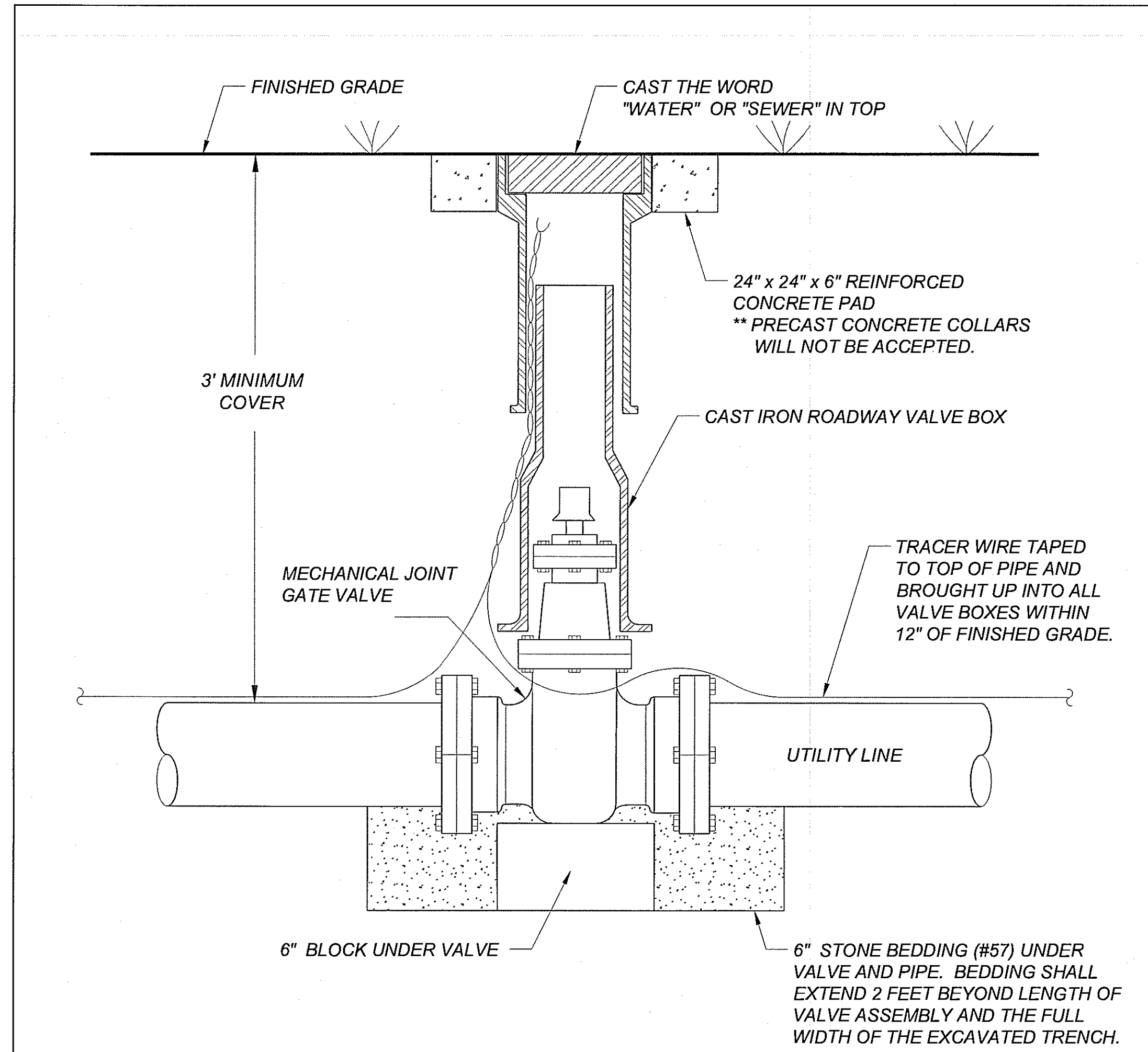
HNTB HNTB NORTH CAROLINA, P.C.
 343 E. Six Forks Road, Suite 200
 Raleigh, North Carolina 27609
 NC License No. C-1554

DATE: JUNE 18, 2012

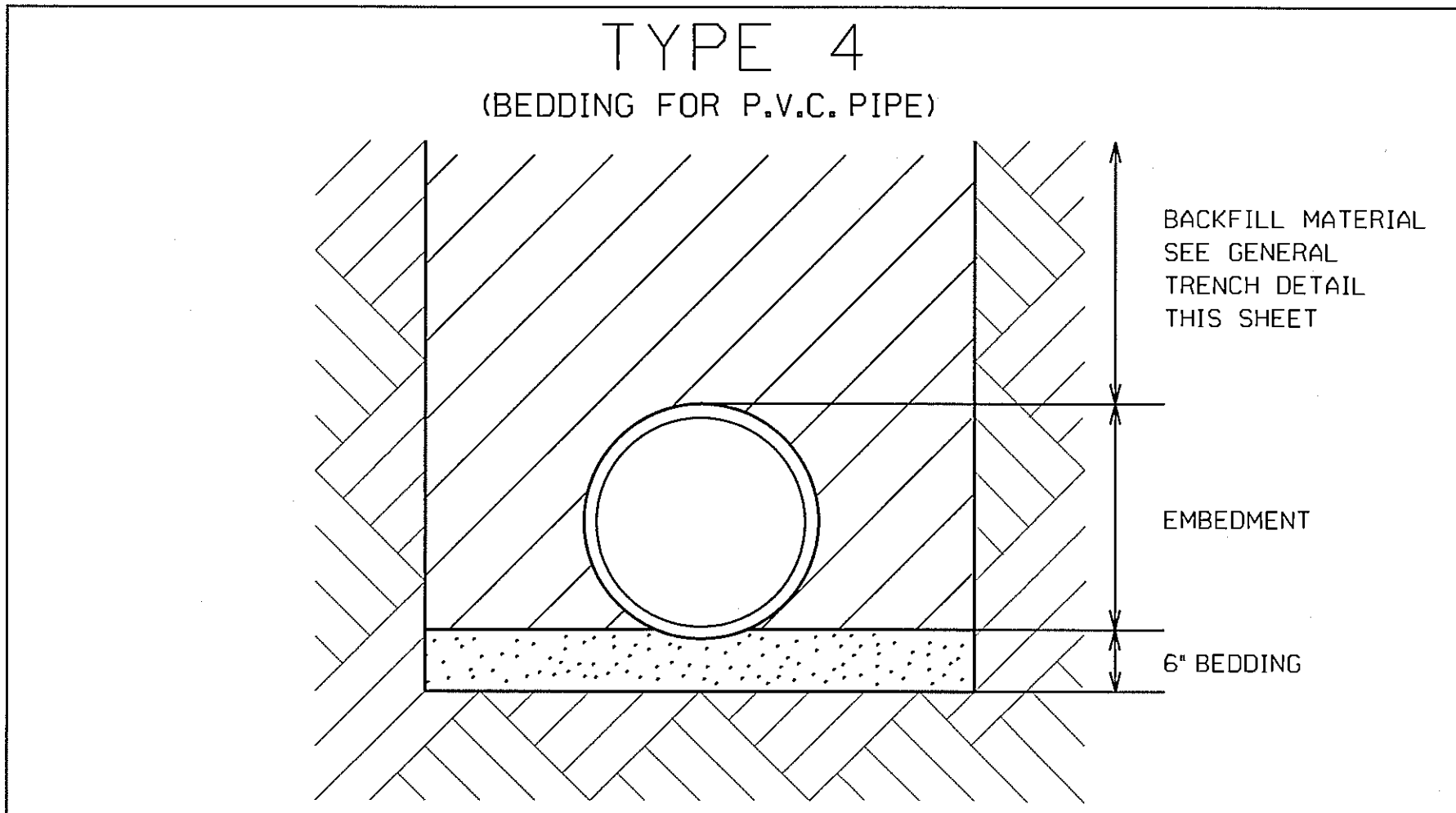


- NOTES:
1. ALL SHORING & TRENCHING SHALL COMPLY WITH OSHA SAFETY STANDARDS FOR THE CONSTRUCTION INDUSTRY.
 2. BELL HOLES NOT SHOWN.
 3. ALL BACKFILL MATERIAL SHALL BE FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH.

GENERAL TRENCH DETAIL
NTS



GATE VALVE DETAIL
NTS



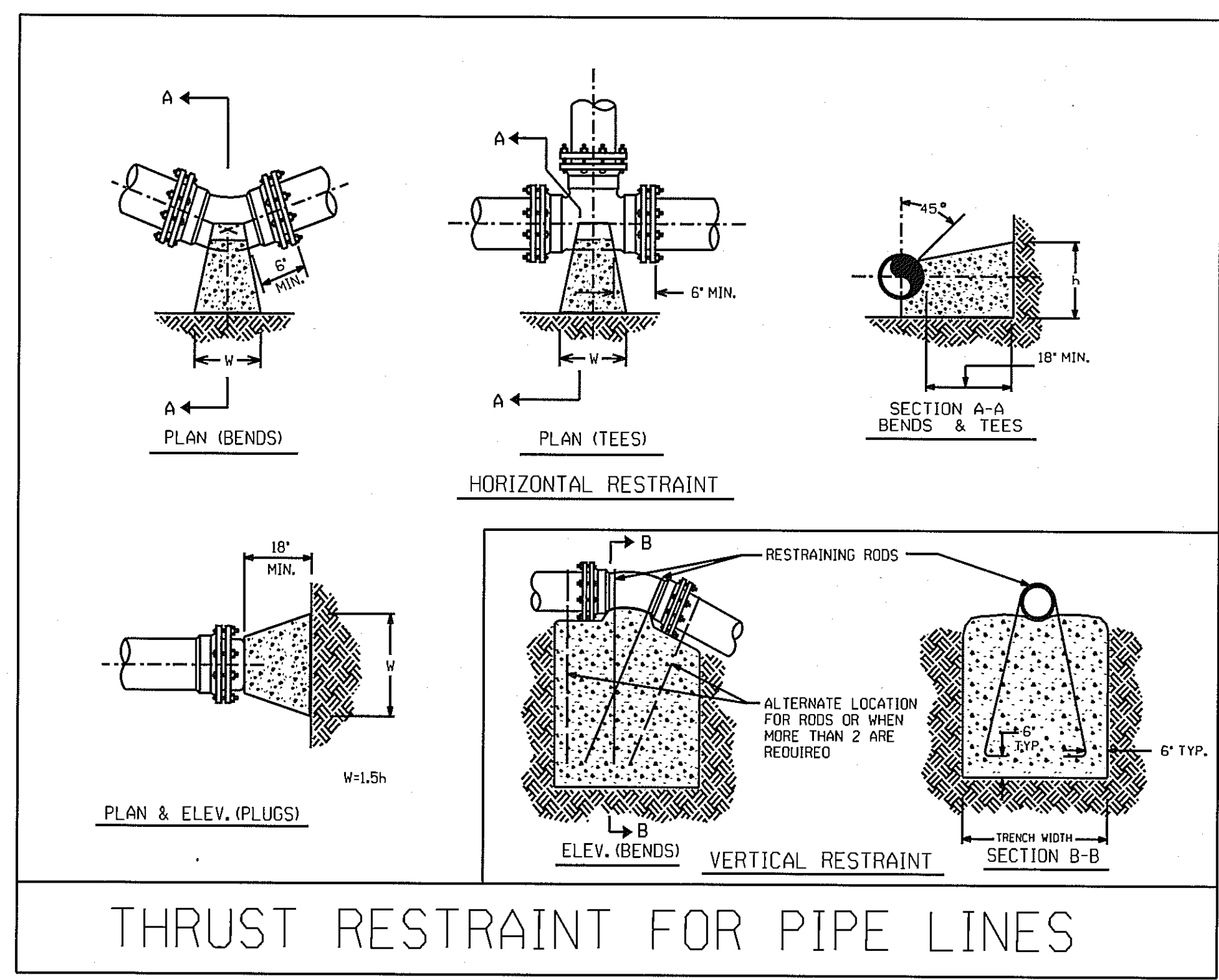
PIPE BEDDED ON SAND, GRAVEL, OR CRUSHED STONE TO A MINIMUM DEPTH OF 6 INCHES UNDER PIPE AND LIGHTLY TAMPED IN PLACE. EMBEDMENT BACKFILLED IN LOOSE 6 INCHES LAYERS COMPACTED TO TOP OF PIPE USING LOCAL EXCAVATED MATERIAL, IF APPROVED BY THE ENGINEER, OR SELECT MATERIAL. ALL MATERIAL SHALL BE FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH. COMPACTION SHALL BE TO APPROX. 95% DENSITY IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY THE DEPARTMENT OF TRANSPORTATION.

MAXIMUM TRENCH WIDTH AT TOP OF PIPE			
NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)	NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)
4	28	20	44
6	30	24	48
8	32	30	54
10	34	36	60
12	36	42	66
14	38	48	72
16	40	54	78
18	42		

8/17/99

REVISIONS

7/3/2012 P:\005\0696\014\10700\JONES_BRG4\Utilities\BD-5102L\ut_uc6_detailed.dgn



THRUST RESTRAINT FOR PIPE LINES

RESTRAINED JOINT TABLE FOR 6" PVC PIPE

FITTING	REQUIRED RESTRAINED LENGTH (FT) OF PVC PIPE BY DEPTH OF COVER							
	3 FT	4 FT	5 FT	6 FT	7 FT	8 FT	9 FT	10 FT
HORIZONTAL BENDS								
6 INCH DIA - 11.25 DEG	3	3	2	2	2	2	1	1
6 INCH DIA - 22.5 DEG	6	5	4	3	3	3	2	2
6 INCH DIA - 45 DEG	12	9	8	7	6	5	5	4
6 INCH DIA - 90 DEG	29	22	18	15	13	12	10	9
VERTICAL BENDS - DOWN								
6 INCH DIA - 11.25 DEG	8	6	5	4	4	3	3	3
6 INCH DIA - 22.5 DEG	16	12	10	8	7	6	6	5
6 INCH DIA - 45 DEG	32	25	20	17	15	13	12	10
VERTICAL BENDS - UP								
6 INCH DIA - 11.25 DEG	3	3	2	2	2	2	1	1
6 INCH DIA - 22.5 DEG	6	5	4	3	3	3	2	2
6 INCH DIA - 45 DEG	12	9	8	7	6	5	5	4
DEAD ENDS / VALVES								
6 INCH DIA	78	59	48	40	34	30	27	24
TEES								
6x6x6, RL = 1 FT (VALVE ON RUN)	72	54	43	35	29	25	22	19
6x6x6, RL = 5 FT	52	33	22	14	9	5	2	1
6x6x6, RL = 10 FT	25	7	1	1	1	1	1	1
6x6x6, RL = 15 FT	1	1	1	1	1	1	1	1

ASSUMPTIONS
 LAYING PIPE CONDITION = TYPE 4
 SOIL DESIGNATION = ML WITH GRANULAR BACKFILL
 DESIGN PRESSURE = 200 PSI (TEST PRESSURE)
 SAFETY FACTOR = 1.5

- NOTES:**
1. RL = RUN LENGTH BETWEEN FIRST JOINTS OF PIPE ALONG THE RUN OF TEE.
 2. RESTRAINED LENGTH IS MEASURED AS FOLLOWS:
 - A. HORIZONTAL/VERTICAL BENDS: ALONG EACH SIDE OF BEND
 - B. HORIZONTAL/VERTICAL BENDS - OFFSETS: ALONG THE OTHER SIDE OF EACH BEND. ALL PIPE BETWEEN THE TWO BENDS SHALL BE RESTRAINED JOINT.
 - C. DEAD ENDS: ALONG PIPE FROM THE PLUG.
 - D. VALVES: ALONG THE PIPE IN EACH DIRECTION FROM THE VALVE.
 - E. TEES: ALONG THE BRANCH PIPE FROM THE TEE.
 3. WHEN IT IS NOT POSSIBLE TO INSTALL RESTRAINED LENGTHS AS NOTED BY THIS TABLE, THE CONTRACTOR SHALL INSTALL THE APPROPRIATE CONCRETE THRUST RESTRAINTS AS PER THE DETAILS HEREIN.
 4. MINIMUM COVER OVER PVC PIPE IS 3 FEET.
 5. FITTINGS SHALL BE DUCTILE IRON.
 6. JOINT RESTRAINT SHALL BE BELL RESTRAINT CLAMPS, SUCH AS MEGALUG OR APPROVED EQUAL.

BASED ON TEST PRESSURE OF 200 P.S.I.

HORIZONTAL RESTRAINT (ALL AREAS GIVEN ARE IN SQUARE FEET)				VERTICAL RESTRAINT (ALL VOLUMES GIVEN ARE IN CUBIC YARDS)**								
PIPE SIZE	DEGREE OF BEND	LBS. STATIC THRUST *	ALLOWABLE SOIL BEARING (PSF)									
			1000	2000	3000	4000	5000	6000	7000	8000		
4"	11/2°	616	1	1	1	1	1	1	1	1	1	1
	22 1/2°	1,225	1	1	1	1	1	1	1	1	1	1
	45°	2,405	2	2	2	2	2	2	2	2	2	2
6"	11/2°	1,435	3	3	3	3	3	3	3	3	3	3
	22 1/2°	2,758	3	3	3	3	3	3	3	3	3	3
	45°	5,409	6	6	6	6	6	6	6	6	6	6
8"	11/2°	2,424	5	5	5	5	5	5	5	5	5	5
	22 1/2°	4,904	5	5	5	5	5	5	5	5	5	5
	45°	9,619	10	10	10	10	10	10	10	10	10	10
10"	11/2°	3,636	7	7	7	7	7	7	7	7	7	7
	22 1/2°	7,255	7	7	7	7	7	7	7	7	7	7
	45°	14,468	14	14	14	14	14	14	14	14	14	14
12"	11/2°	5,042	9	9	9	9	9	9	9	9	9	9
	22 1/2°	10,081	9	9	9	9	9	9	9	9	9	9
	45°	20,161	18	18	18	18	18	18	18	18	18	18
14"	11/2°	6,723	11	11	11	11	11	11	11	11	11	11
	22 1/2°	13,445	11	11	11	11	11	11	11	11	11	11
	45°	26,885	22	22	22	22	22	22	22	22	22	22
16"	11/2°	8,824	13	13	13	13	13	13	13	13	13	13
	22 1/2°	17,647	13	13	13	13	13	13	13	13	13	13
	45°	35,291	26	26	26	26	26	26	26	26	26	26

* INCLUDES 1.25 SAFETY FACTOR
 ** INCLUDES 1.50 SAFETY FACTOR

GENERAL NOTES:
 1. CONCRETE SHALL BE CLASS "B".
 2. CONCRETE SHALL NOT CONTACT BOLTS ENDS OF MECHANICAL JOINT FITTINGS.
 3. CONSULT WITH ENGINEER FOR CONCRETE REQUIREMENTS ON MAINS LARGER THAN 16 INCHES. (FOR VERTICAL & HORIZONTAL BENDS)
 4. ALLOWABLE SOIL BEARING SHALL BE DETERMINED BY THE ENGINEER.

REVISIONS
 NO. DATE DESCRIPTION

SHEET 2 OF 2

THRUST RESTRAINT FOR WATER MAINS

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

PROJECT REFERENCE NO. BD-5102L SHEET NO. UC-06

2012-07-03

MA Engineering CONSULTANTS, INC.
 598 East Chatham Street Suite 137 Cary, NC 27511
 Phone: 919.297.0220 Fax: 919.297.0221

HNTB HNTB NORTH CAROLINA, P.C.
 342 E. 514 FOPPS ROAD, SUITE 200
 RALEIGH, NORTH CAROLINA 27609
 NC LICENSE NO. C-1584

DATE: JUNE 18, 2012