

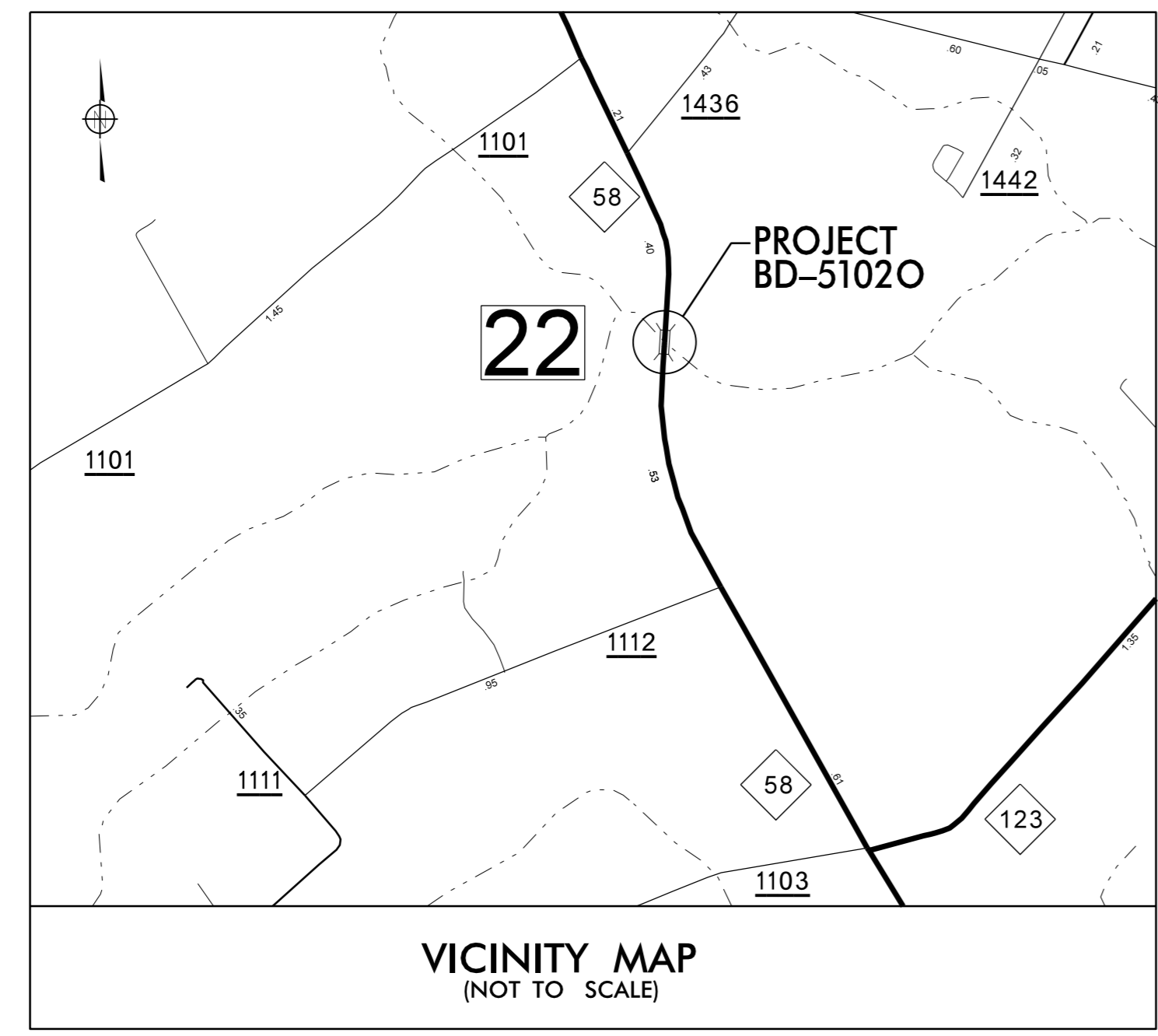
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**TIP PROJECT: BD-51020**

**CONTRACT:**

See Sheet 1-A For Index of Sheets



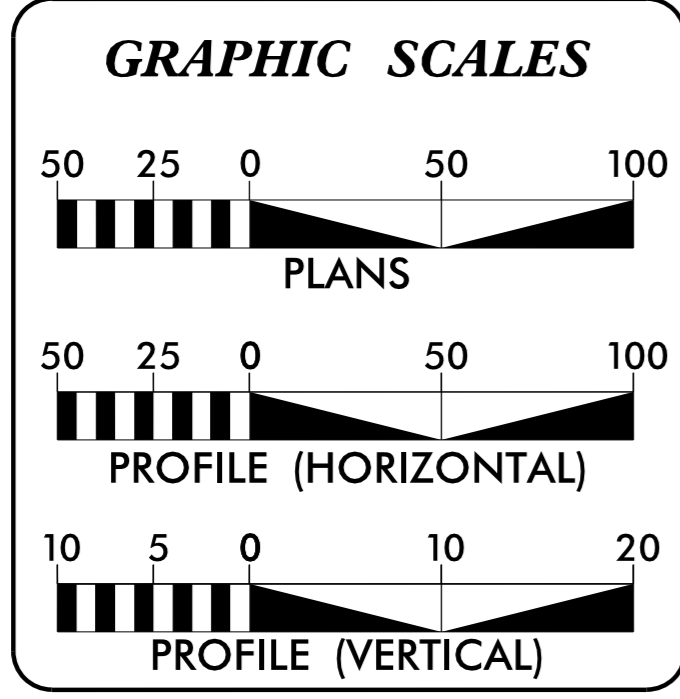
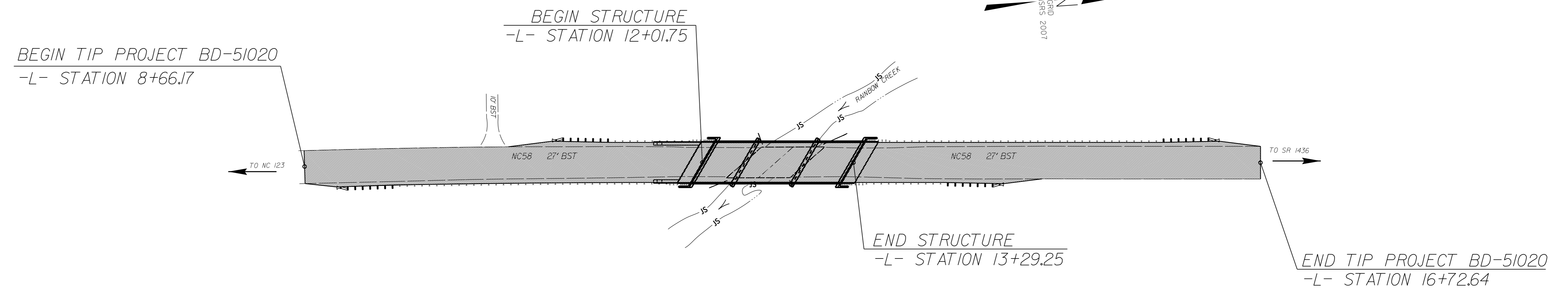
STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS

**GREENE COUNTY**

**LOCATION: BRIDGE #22 OVER RAINBOW CREEK  
 ON NC 58**

**TYPE OF WORK: BRIDGE REPLACEMENT, GUARDRAIL,  
 PAVING, GRADING AND DRAINAGE**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BD-51020	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
45348.1.15	BRSTP-0058(17)	PE	
45348.2.15	BRSTP-0058(17)	RW	
45348.3.15	BRSTP-0058(17)	CONST	



**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT BD-51020 = 0.129 MILE  
 LENGTH STRUCTURE TIP PROJECT BD-51020 = 0.024 MILE  
 TOTAL LENGTH TIP PROJECT BD-51020 = 0.153 MILE

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: \_\_\_\_\_

LETTING DATE: SEPTEMBER 2013

DWAYNE ALLIGOOD, P.E.  
 PROJECT ENGINEER

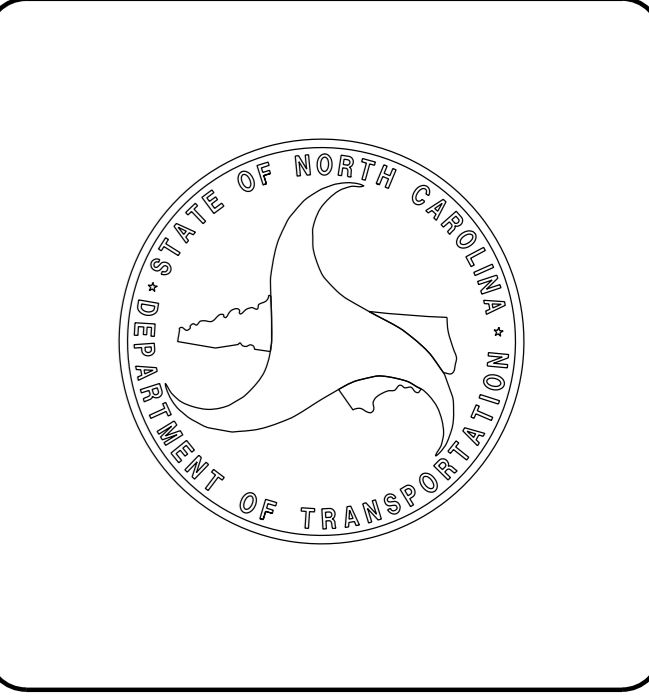
LANG JONES  
 PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

*Dwayne H. Alligood*  
 SIGNATURE: 08/19/2013

**ROADWAY DESIGN ENGINEER**

*Dwayne H. Alligood*  
 SIGNATURE: 08/19/2013





INDEX OF SHEETS

1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2	TYPICAL SECTIONS
3	SUMMARY OF QUANTITIES
3A	SUMMARY OF DRAINAGE, GUARDRAIL AND EARTHWORK QUANTITIES
4	PLAN AND PROFILE SHEET
TMP1-TMP2	TRAFFIC MANAGEMENT PLANS
EC1-EC3	EROSION CONTROL SHEETS
UC1-UC4	UTILITY CONSTRUCTION SHEETS
X1A	CROSS-SECTION SUMMARY
X1-X2	CROSS-SECTIONS
S1-S22	STRUCTURE PLANS (BRIDGE)

2012 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 4 - MAJOR STRUCTURES	
422.10	Reinforced Bridge Approach Fills
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
815.03	Pipe Underdrain and Blind Drain
840.00	Concrete Base Pad for Drainage Structures
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet
840.45	Precast Drainage Structure
840.66	Drainage Structure Steps
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets

GENERAL NOTES:

2012 SPECIFICATIONS  
EFFECTIVE: 01-17-12  
REVISED: 11/01/11

GRADE LINE:  
GRADING AND SURFACING:

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

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

UNDERDRAINS:

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

DRIVEWAYS:

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

GUARDRAIL:

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

END BENTS:

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

UTILITIES:

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

RIGHT-OF-WAY MARKERS:

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

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	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	-MLB-
Proposed Wetland Boundary	-MLB-
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	⊥
Wetland Boundary	-MLB-
Proposed Lateral, Tail, Head Ditch	→
False Sump	▽

### RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○
Switch	□
RR Abandoned	-----
RR Dismantled	-----

### RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	○
Proposed Right of Way Line with Iron Pin and Cap Marker	○
Proposed Right of Way Line with Concrete or Granite Marker	○
Existing Control of Access	○
Proposed Control of Access	○
Existing Easement Line	-E-
Proposed Temporary Construction Easement	-E-
Proposed Temporary Drainage Easement	-TDE-
Proposed Permanent Drainage Easement	-PDE-
Proposed Permanent 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 Curb 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.*)	-----

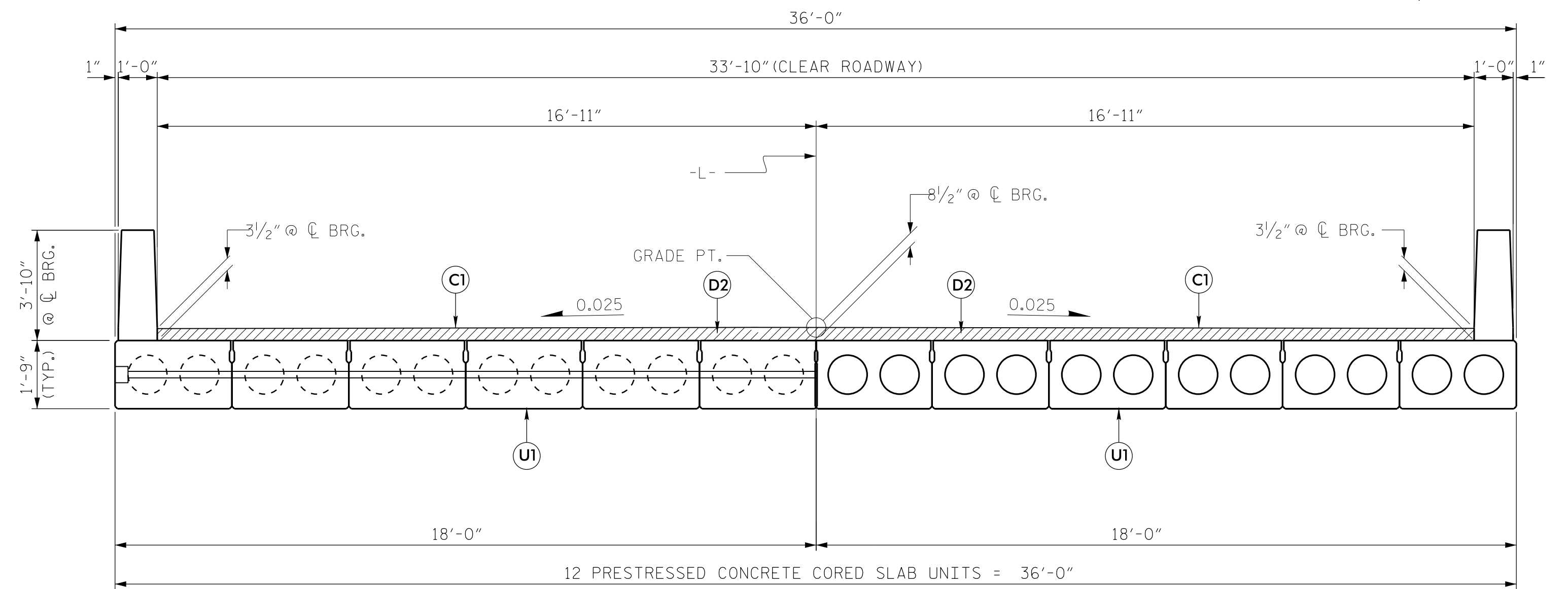
### MISCELLANEOUS:

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	AATUR
End of Information	E.O.I.

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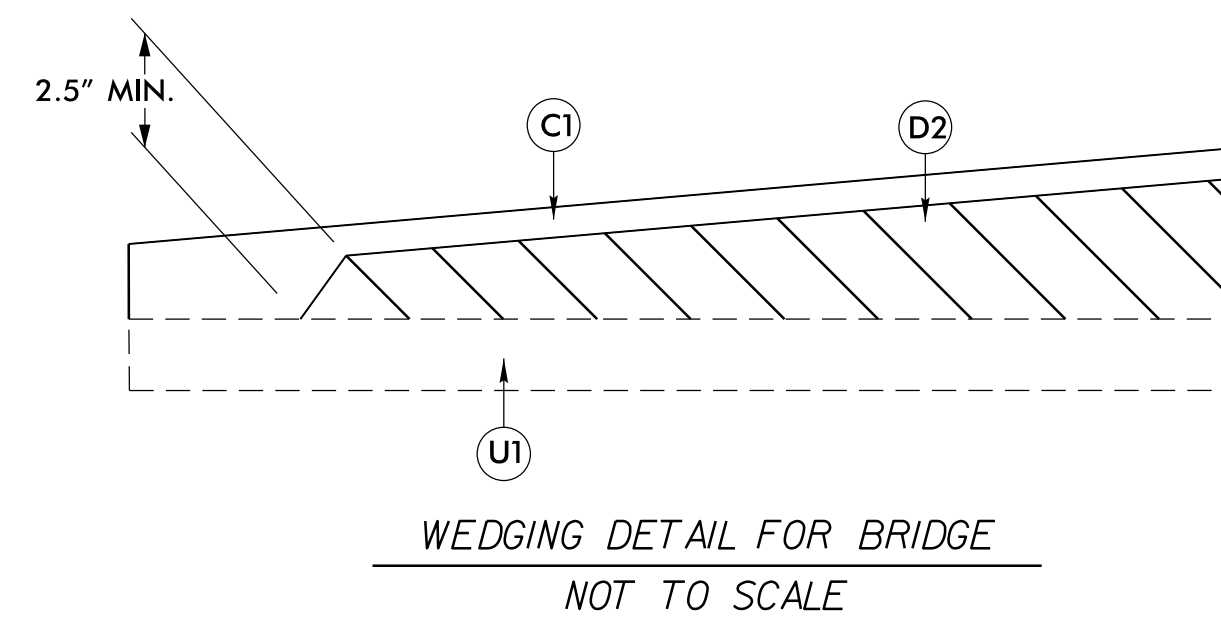
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 336 LBS. PER SQ.YD. IN EACH OF TWO LAYERS.
D1	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
D2	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, TO BE PLACED IN LAYERS NOT LESS THAN 2.5" OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
U1	CONCRETE CORED SLABS

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

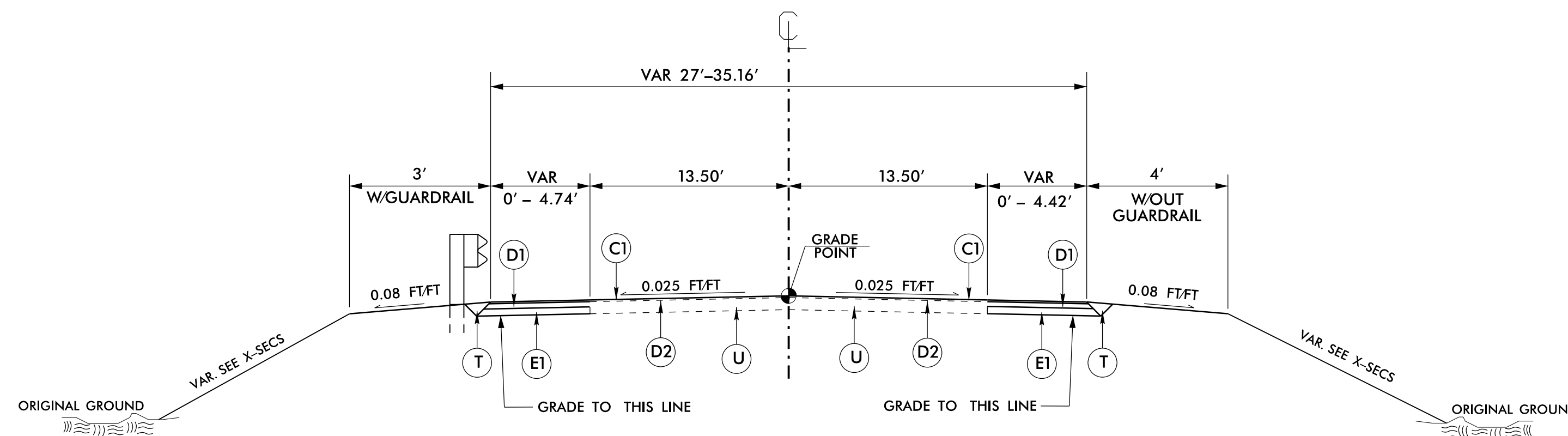


TYPICAL BRIDGE SECTION (NTS)

-L- 12+01.75 - 13+29.25

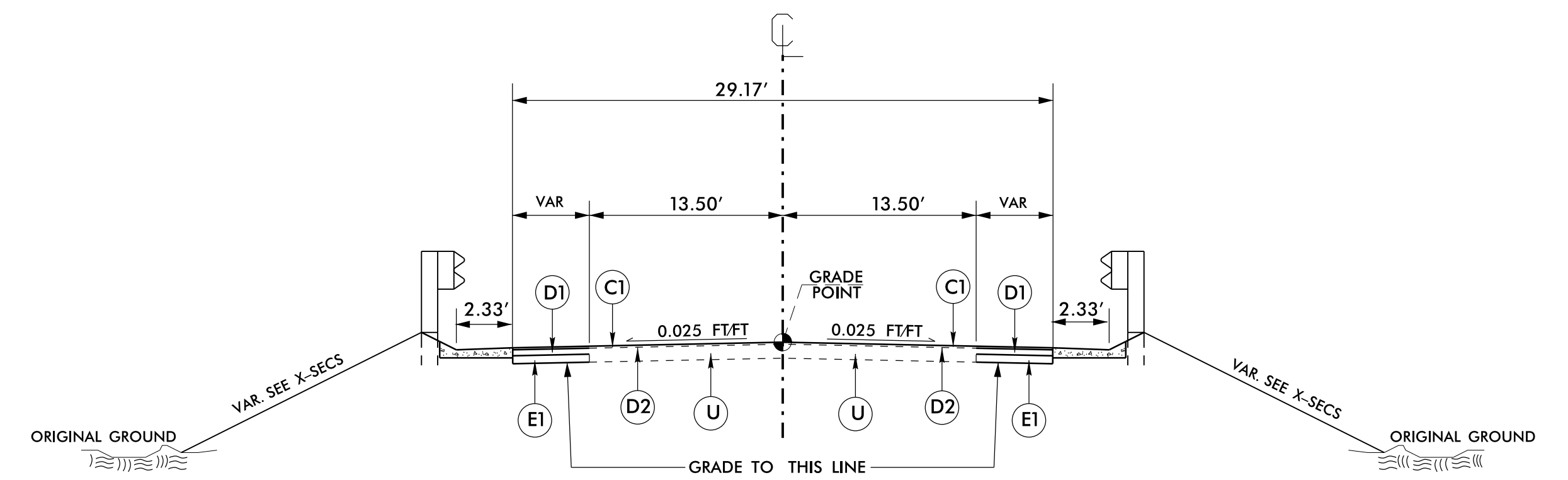


WEDGING DETAIL FOR BRIDGE  
NOT TO SCALE



USE TYPICAL SECTION #1 (NTS)

-L- 8+66.17 - 11+60.61  
-L- 13+29.25 - 16+72.64



USE TYPICAL SECTION #2 (NTS)

-L- 11+60.61 - 11+90.73

REVISIONS

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STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
SUMMARY OF QUANTITIES

ITEM	SECT	QUANTITY	UNIT	ITEM DESCRIPTION	ITEM	SECT	QUANTITY	UNIT	ITEM DESCRIPTION
1	800	1	LS	MOBILIZATION	31	SP	350	LF	SAFETY FENCE
2	801	1	LS	CONSTRUCTION SURVEYING	32	1630	5	CY	SILT EXCAVATION
3	SP	1	LS	REINFORCED BRIDGE APPROACH FILL, -L- STA 12+65.50	33	1631	1400	SY	MATTING FOR EROSION CONTROL
4	226	1	LS	GRADING	34	1632	70	LF	1/4" HARDWARE CLOTH
5	226	200	CY	UNDERCUT EXCAVATION	35	SP	80	SY	FLOATING TURBIDITY CURTAIN
6	300	10	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES	36	SP	300	LF	WATTLE
7	300	20	SY	FOUNDATION CONDITIONING GEOTEXTILE	37	1660	1	ACRE	SEEDING AND MULCHING
8	310	8	LF	15" R.C. PIPE CULVERTS, CLASS III	38	1661	50	LB	SEED FOR REPAIR SEEDING
9	310	32	LF	15" R.C. PIPE CULVERTS, CLASS IV	39	1661	0.2	TON	FERTILIZER FOR REPAIR SEEDING
10	610	90	TON	ASPHALT CONCRETE BASE COURSE, TYPE B25.0B	40	SP	1	LS	RELOCATE EXISTING 4" WATER MAIN
11	610	320	TON	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 119.0B					
12	610	540	TON	ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B					
13	620	55	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG64-22					
14	840	2	EA	MASONRY DRAINAGE STRUCTURES	41	402	1	LS	REMOVAL OF EXISTING STRUCTURE AT -L- STA 15+55.50
15	840	2	EA	FRAME WITH GRATE, STD 840.29	42	412	1	LS	UNCLASSIFIED STRUCTURE EXCAVATION
16	846	65	LF	SHOULDER BERM GUTTER	43	SP	1	EA	PDA TESTING
17	862	600	LF	STEEL BEAM GUARDRAIL	44	420	79.2	CY	CLASS A CONCRETE (BRIDGE)
18	862	10	EA	ADDITIONAL GUARDRAIL POSTS	45	422	1	LS	BRIDGE APPROACH SLABS
19	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE III	46	425	11690	LB	REINFORCING STEEL (BRIDGE)
20	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE 350	47	450	700	LF	HP 12 X 53 STEEL PILES
21	876	5	TON	RIP RAP, CLASS I	48	450	1040	LF	HP 14 X 73 GALVANIZED STEEL PILES
22	876	5	TON	RIP RAP, CLASS B	49	450	16	EA	PILE REDRIVES
23	876	7	SY	GEOTEXTILE FOR DRAINAGE	50	SP	250.87	LF	VERTICAL CONCRETE BARRIER RAIL
24	1605	1200	LF	TEMPORARY SILT FENCE	51	876	106	TON	RIP RAP, CLASS II (2'-0" THICK)
25	1610	5	TON	STONE FOR EROSION CONTROL, CLASS B	52	876	118	SY	GEOTEXTILE FOR DRAINAGE
26	1610	5	TON	SEDIMENT CONTROL STONE	53	430	1	LS	ELASTOMETRIC BEARINGS
27	1615	1	ACRE	TEMPORARY MULCHING	54	430	1500	LF	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS
28	1620	50	LB	SEED FOR TEMPORARY SEEDING					
29	1620	0.2	TON	FERTILIZER FOR TEMPORARY SEEDING					
30	1622	200	LF	TEMPORARY SLOPE DRAINS					

REVISIONS

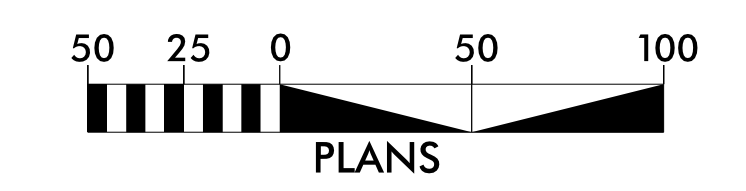
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# PLAN

PROJECT REFERENCE NO. BD-51020	SHEET NO. 4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



SHOULDER BERM GUTTER  
-L- STA. 11+60.61 - 11+90.73 LT/RT

WORK POINT #	WORK POINT DESCRIPTION
WORK POINT #1	-L- STATION 12+01.75 CL
WORK POINT #2	-L- STATION 12+37.94 CL
WORK POINT #3	-L- STATION 12+88.06 CL
WORK POINT #4	-L- STATION 13+29.25 CL

### DATUM DESCRIPTION

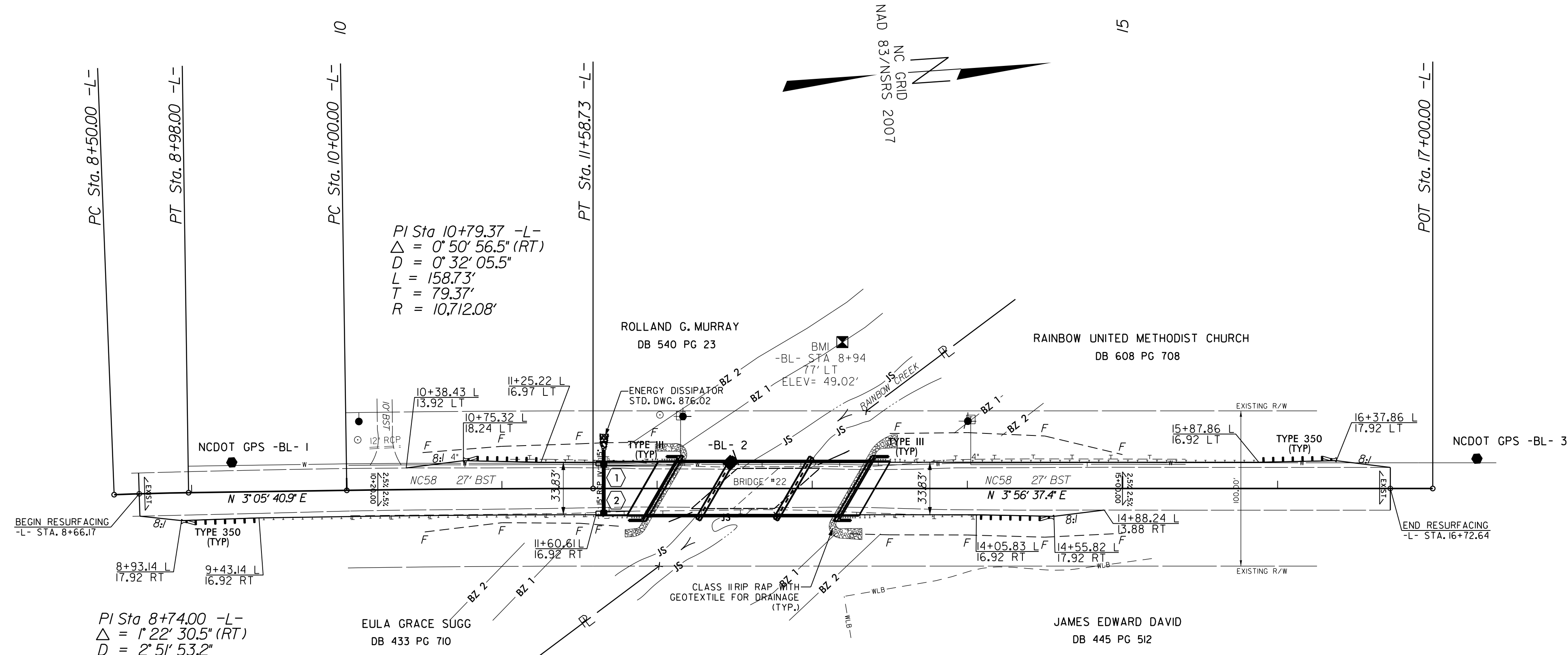
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "BL-1" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 605374.681(ft) EASTING: 2410136.935(ft) ELEVATION: 55.229(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999879130

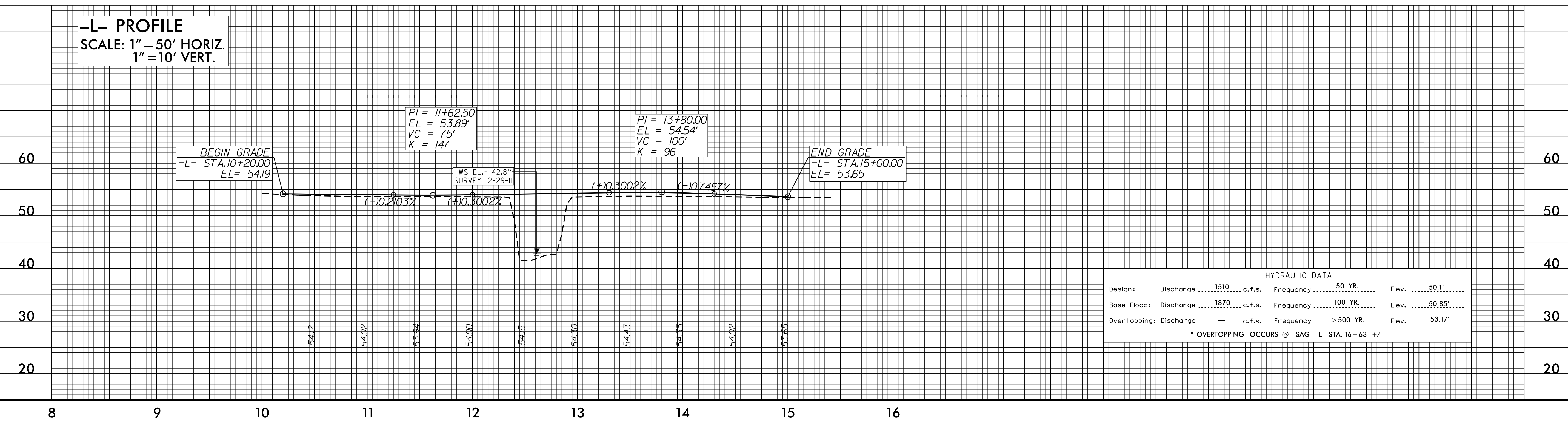
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-1" TO -L- STATION 10+00.00 IS N 17°33'30.5" E 76.26'

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

Point	North	East	Elevation	Description
BL1	605374.6810	2410136.9350	55.2290	NCDOT GPS BL-1
BL2	605695.1173	2410159.2372	52.7200	BL-2
BL3	606175.5500	2410189.7200	52.7600	NCDOT GPS BL-3
BM1	605772.6275	2410086.6316	49.0184	RR SPIKE IN 10' HOLLY TREE



**-L- PROFILE**  
SCALE: 1" = 50' HORIZ.  
1" = 10' VERT.



### HYDRAULIC DATA

Design:	Discharge	1510 c.f.s.	Frequency	50 YR.	Elev.	50.1'
Base Flood:	Discharge	1870 c.f.s.	Frequency	100 YR.	Elev.	50.85'
Overtopping:	Discharge	>500 c.f.s.	Frequency	>500 YR.	Elev.	53.17'

\* OVERTOPPING OCCURS @ SAG -L- STA. 16+63 +/-

REVISIONS

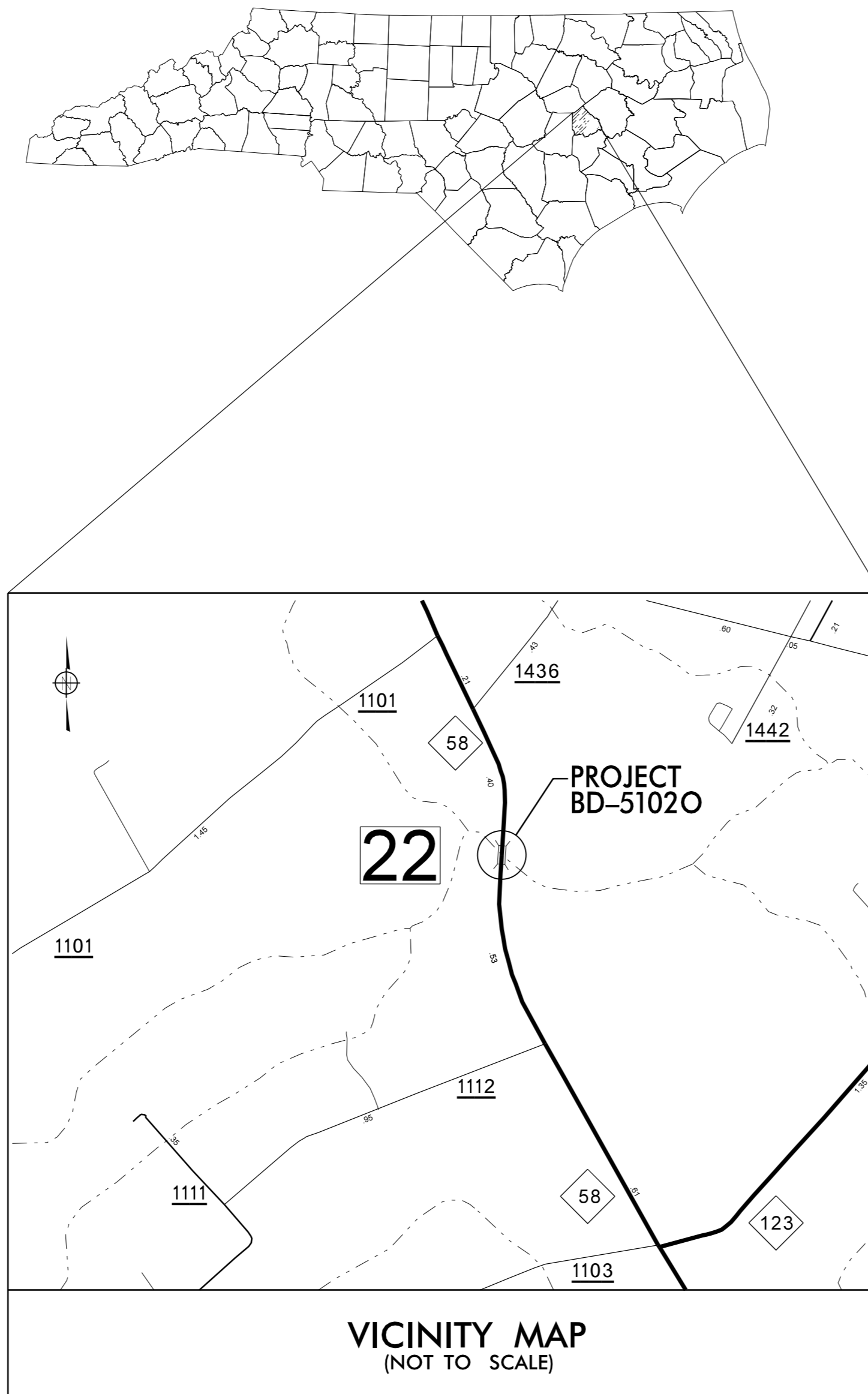
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STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**TRANSPORTATION MANAGEMENT PLAN**

**GREENE 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 APPEAR IN "ROADWAY STANDARD DRAWINGS"-HIGHWAY DESIGN BRANCH-N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C. DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.03 (SHT. 1 OF 9)	TEMPORARY ROAD CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES (TYPE III)

**LEGEND**

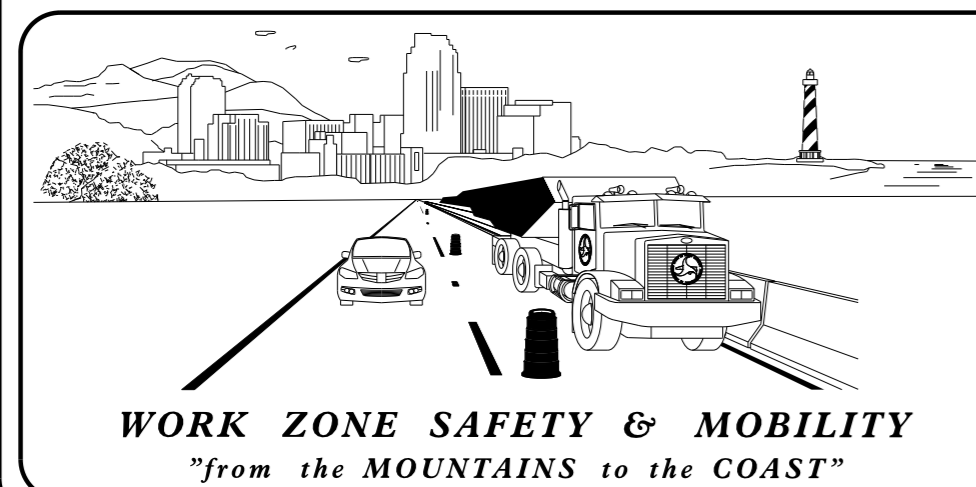
**GENERAL**

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

**TRAFFIC CONTROL DEVICES**

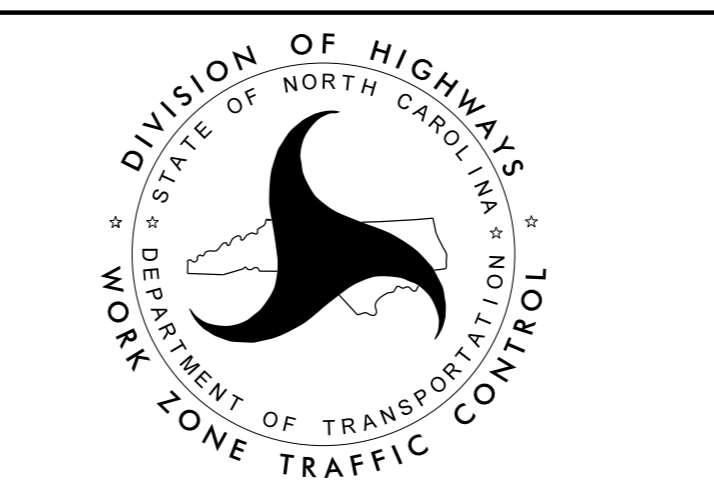
- BARRICADE (TYPE III)

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**N.C.D.O.T. WORK ZONE TRAFFIC CONTROL**  
P.O. BOX 1587, GREENVILLE, NC 27835  
105 PACTOLUS HWY. (NC 33), GREENVILLE, NC 27835  
PHONE: (252) 830-3490 FAX: (252) 830-3352

D. H. ALLIGOOD, PE	TRAFFIC ENGINEER
D. H. ALLIGOOD, PE	TRAFFIC CONTROL PROJECT ENGINEER
LANG JONES	TRAFFIC CONTROL PROJECT DESIGN ENGINEER
LANG JONES	TRAFFIC CONTROL DESIGN ENGINEER



APPROVED: *Dwayne H. Alligood*  
DATE: 08/19/2013

SEAL

**BD-51020**

**TIP PROJECT:**

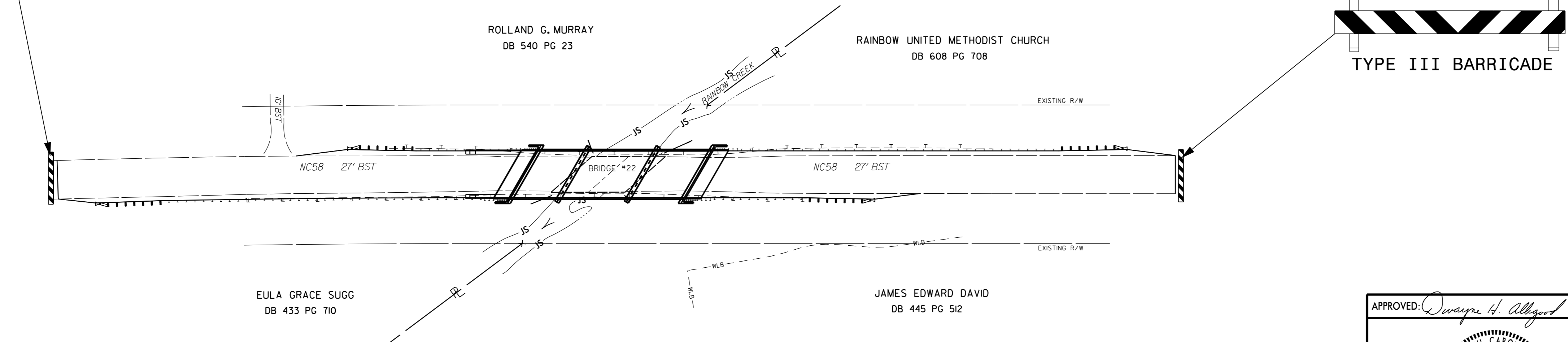
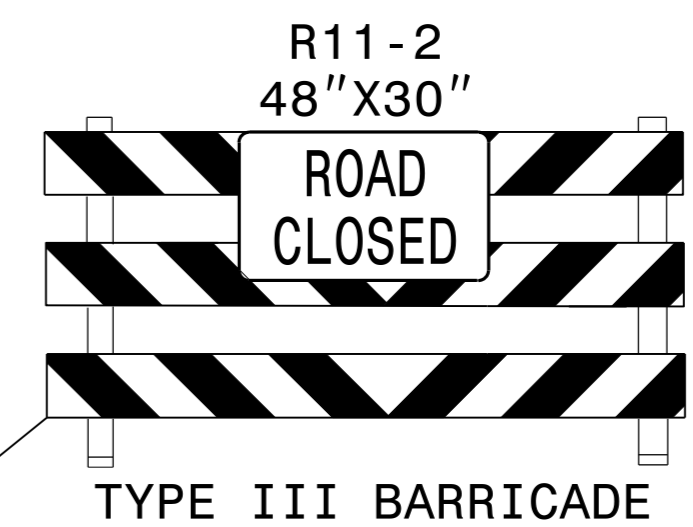
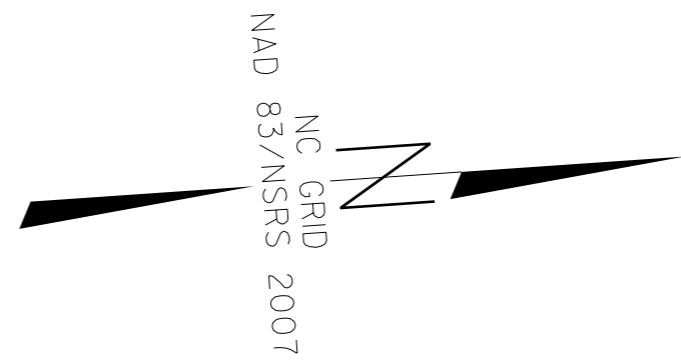
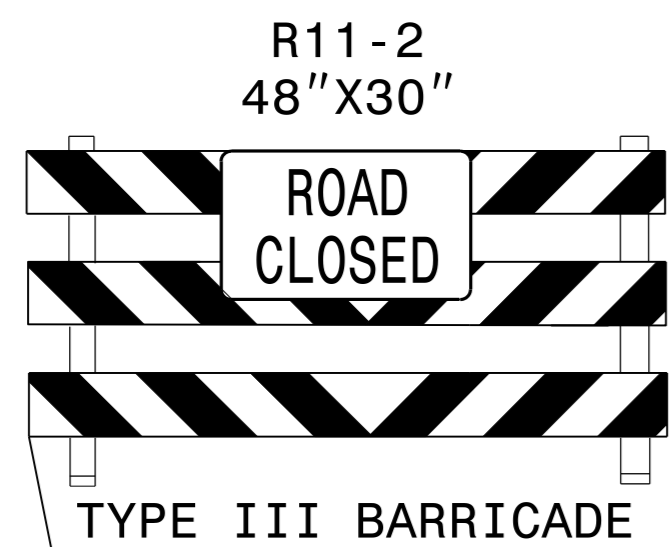
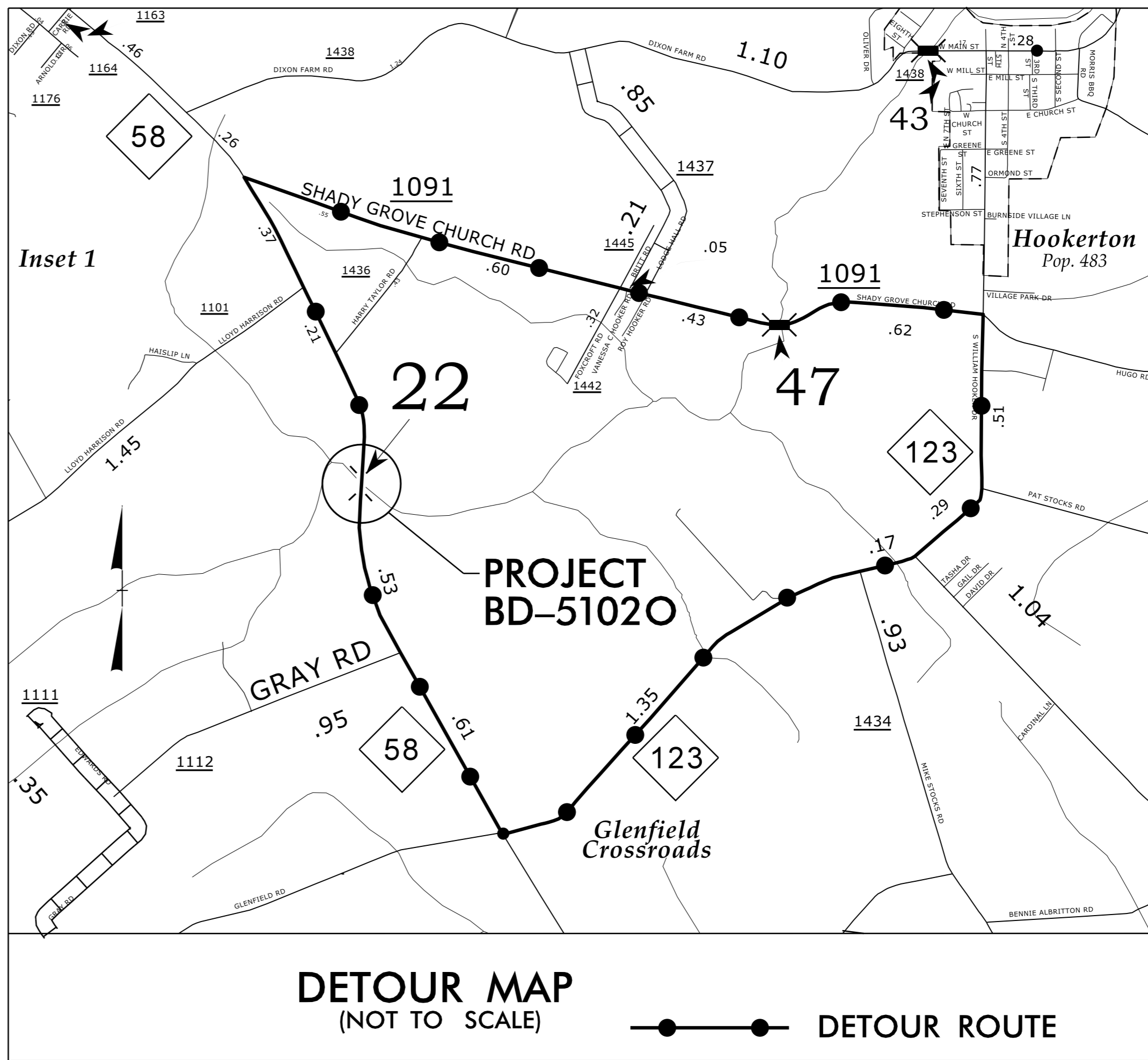


# GENERAL NOTES

IMPLEMENT TRAFFIC CONTROL IN ACCORDANCE WITH THE ROADWAY STANDARD DRAWINGS LISTED ON TCP-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 UNDESIRABLE OVERLAPPING OF DEVICES. MODIFICATION 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: *Wayne H. Allgood*

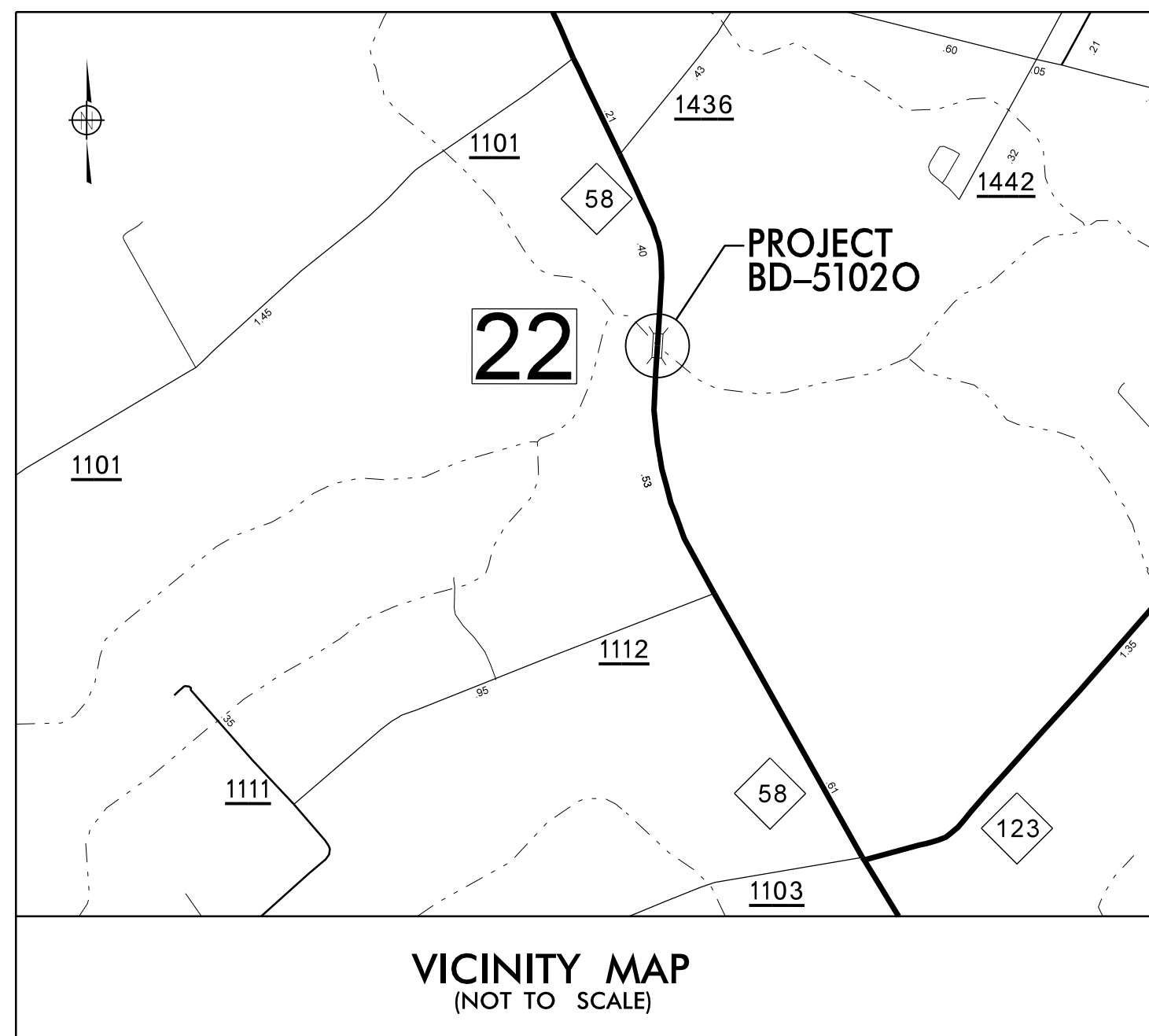
SEAL

PROJECT NOTES, DETOUR AND PLANS		REVISIONS
SCALE:	NONE	
DATE:	3/2/13	
DWG. BY:	VT	
DESIGN BY:	LJ	
REVIEWED BY:	BB	
CADD FILE:		

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09/08/99

**TIP PROJECT: BD-51020**



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**GREENE COUNTY**

PLAN FOR PROPOSED  
HIGHWAY EROSION CONTROL

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BD-51020	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
45348.1.15	BRSTP-0058(17)	PE	
45348.2.15	BRSTP-0058(17)	RW	
45348.3.15	BRSTP-0058(17)	CONST	

EROSION AND SEDIMENT CONTROL MEASURES

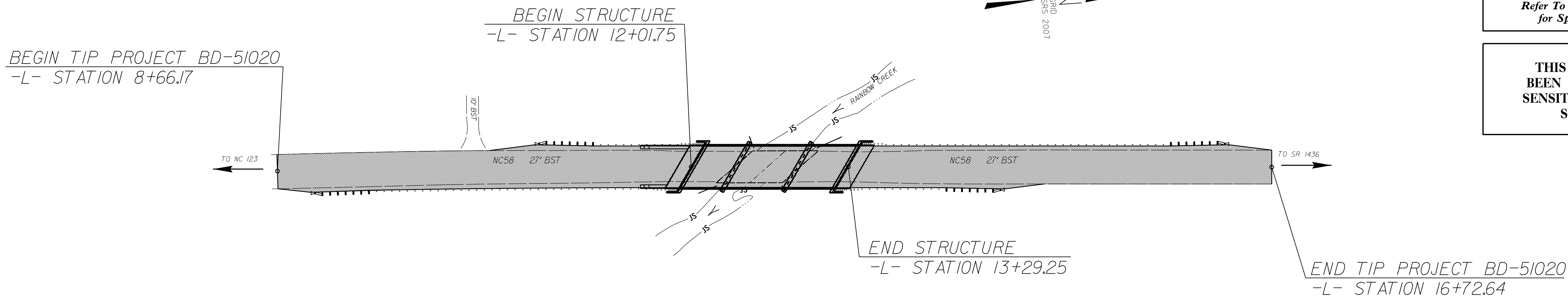
Std. #	Description	Symbol
1605.01	High Vis Temporary Silt Fence	—   —   —   —
1632.03	Rock Inlet Sediment Trap Type C	□
SP	Wattle	⊂

THIS PROJECT CONTAINS  
EROSION CONTROL PLANS  
FOR CLEARING AND  
GRUBBING PHASE OF  
CONSTRUCTION.

ENVIRONMENTALLY  
SENSITIVE AREA(S) EXIST  
ON THIS PROJECT

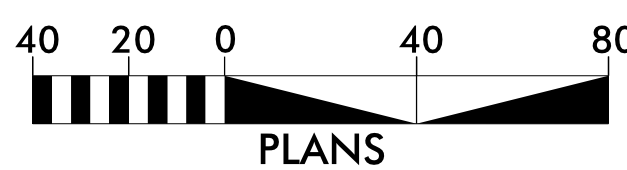
Refer To E. C. Special Provisions  
for Special Considerations.

THIS PROJECT HAS  
BEEN DESIGNED TO  
SENSITIVE WATERSHED  
STANDARDS.



**CONTRACT:**

GRAPHIC SCALES



PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT BD-51020 = 0.129 MILE  
LENGTH STRUCTURE TIP PROJECT BD-51020 = 0.024 MILE  
TOTAL LENGTH TIP PROJECT BD-51020 = 0.153 MILE

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:

**DIVISION OF HIGHWAYS**

1000 Birch Ridge Dr., Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: **DWAYNE ALLIGOOD, P.E.**  
PROJECT ENGINEER

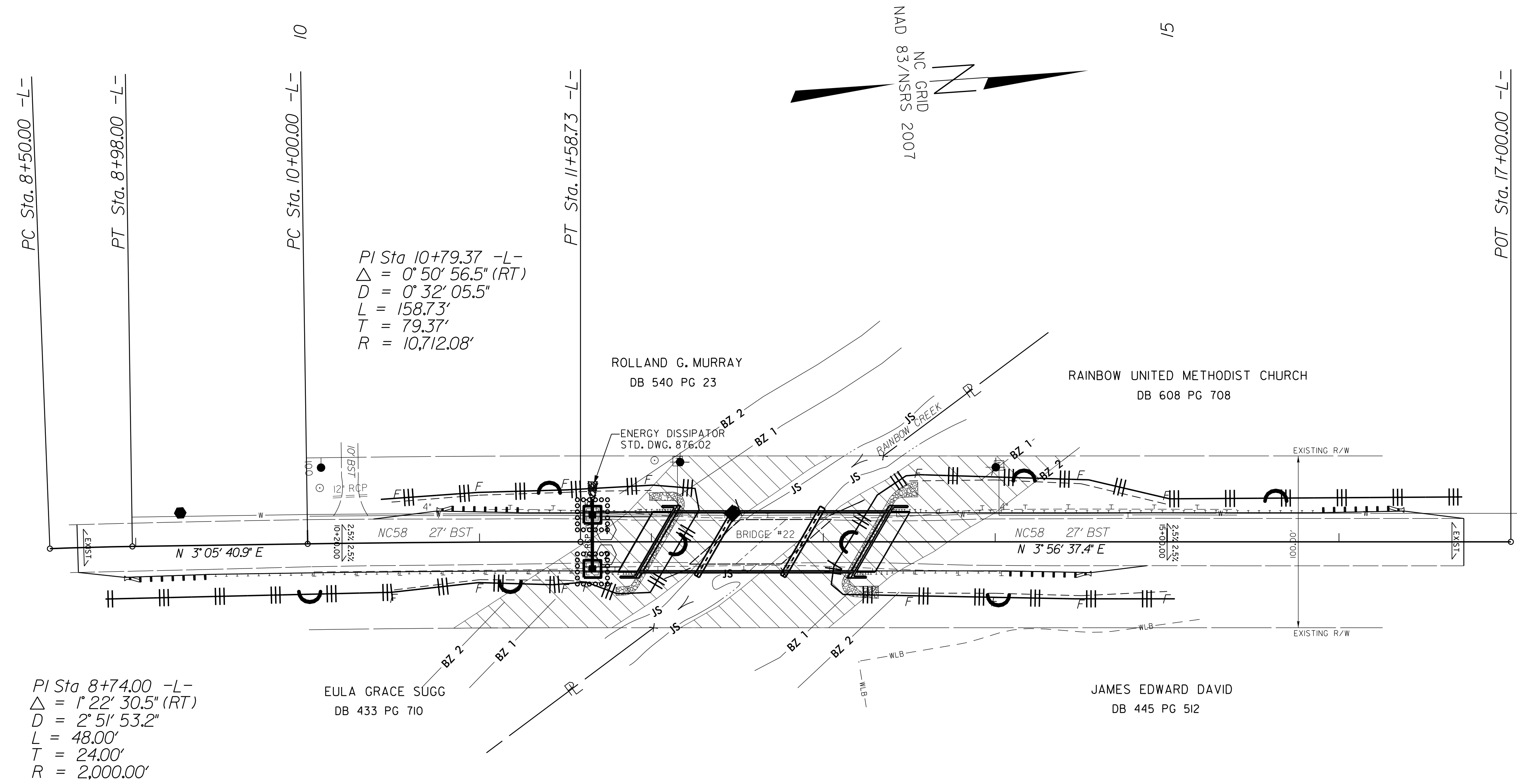
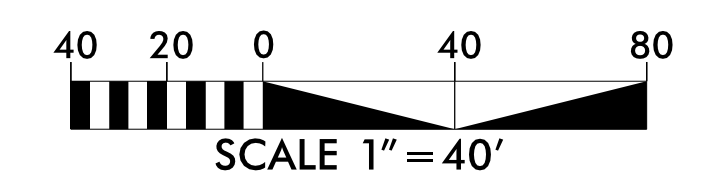
LETTING DATE: **SEPTEMBER 2013**  
**LANG JONES (#276)**  
PROJECT DESIGN ENGINEER

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	

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REVISIONS

8/17/99

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### SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HOW) 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 HOW ZONES.

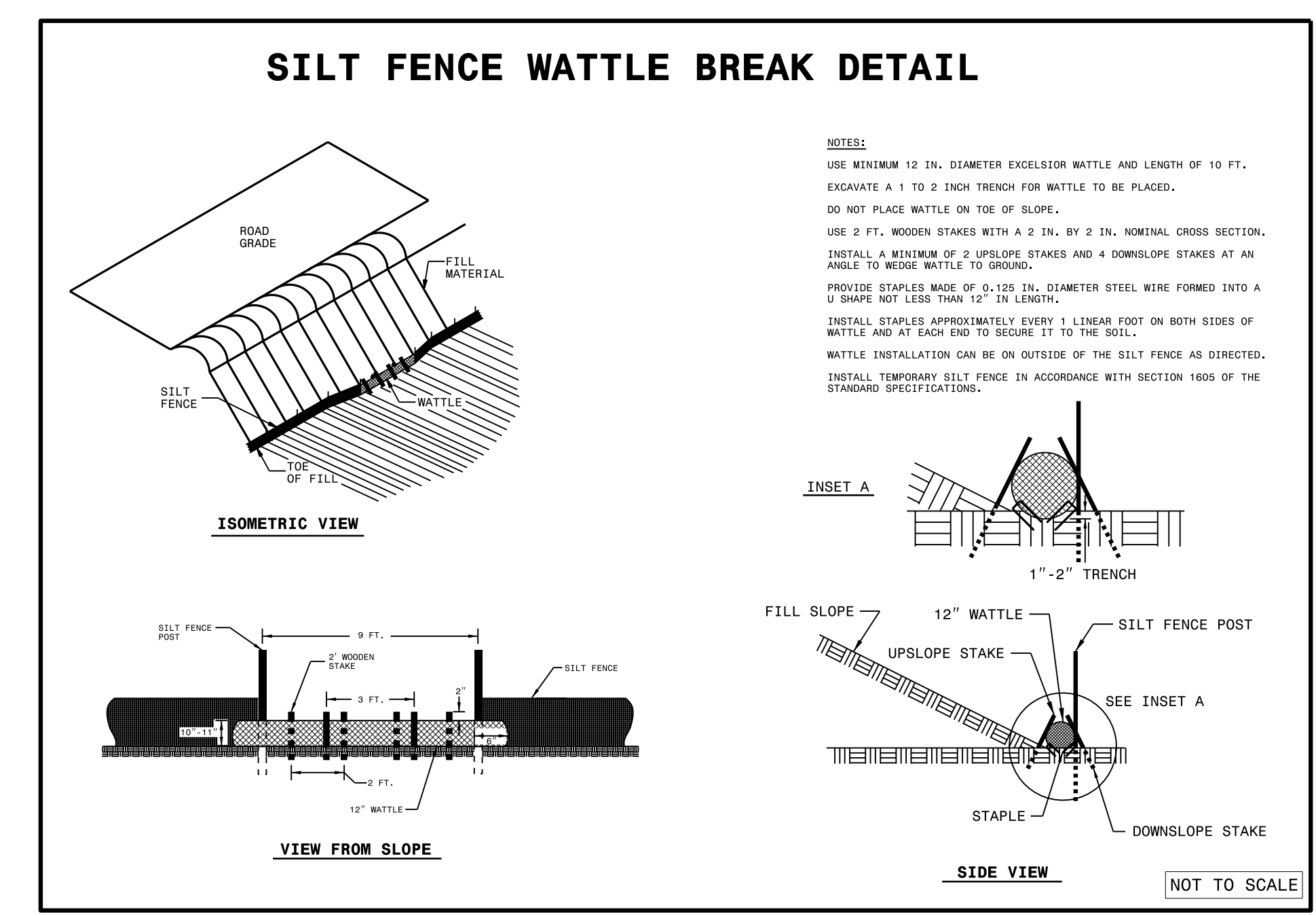
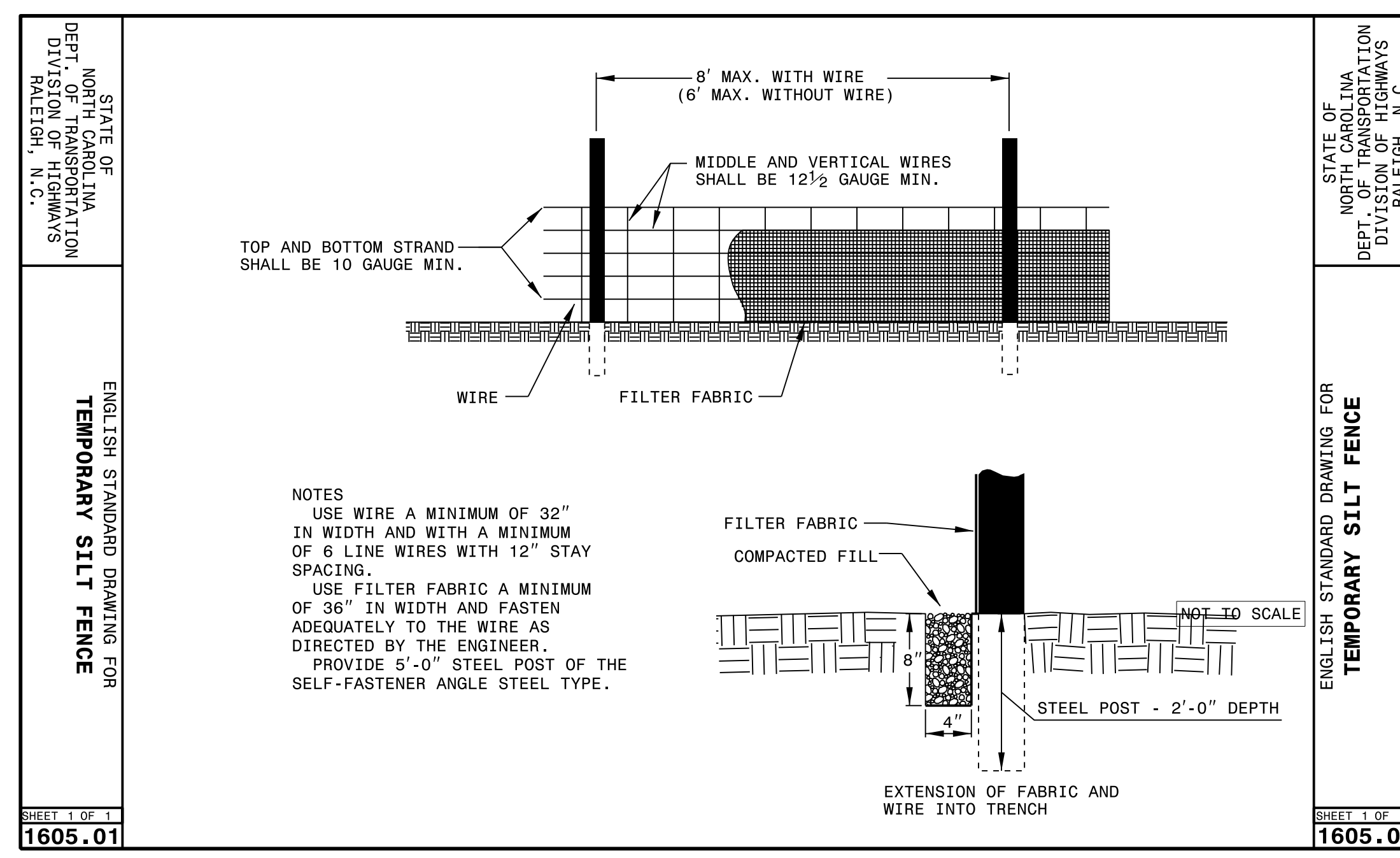
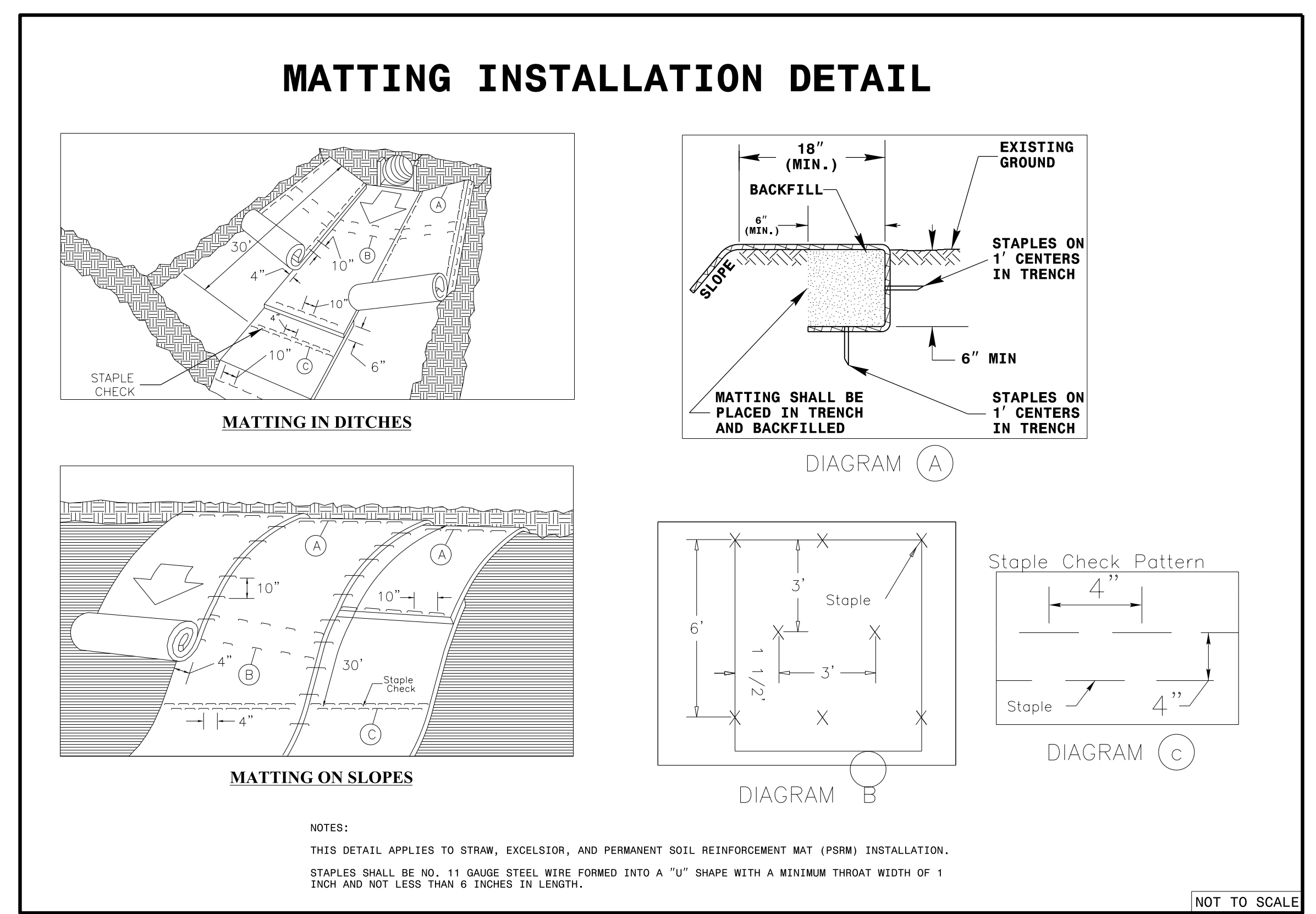
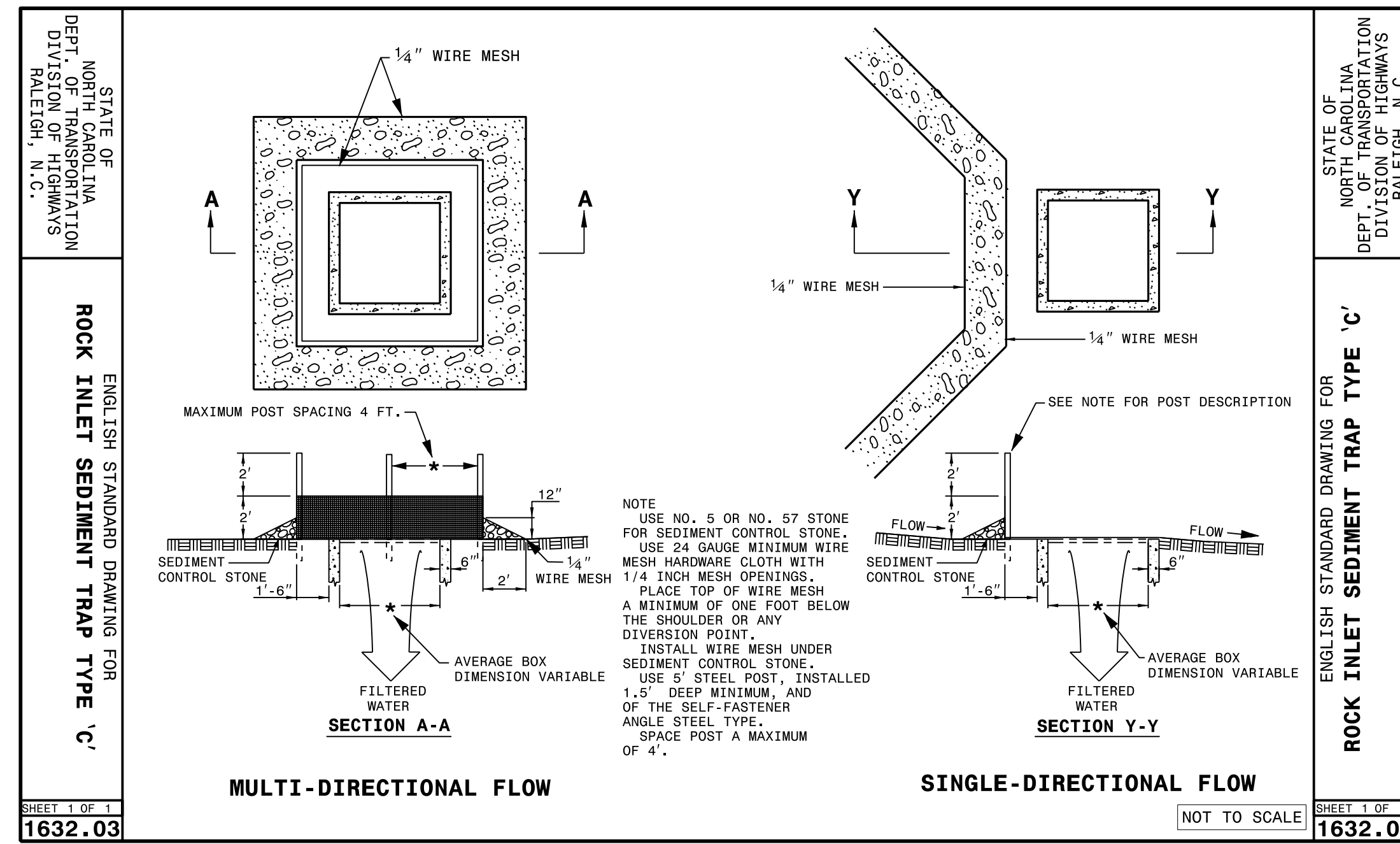
Std. #	Description	Symbol
1605.01	High Vis Temporary Silt Fence	
1652.05	Rock Inlet Sediment Trap Type C	
SP	Wattle	

ENVIRONMENTALLY SENSITIVE AREA  
SEE PROJECT SPECIAL PROVISIONS

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.  
ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.  
CONTRACTOR SHALL INSTALL SPECIAL SEDIMENT CONTROL FENCE OR WATTLES IN LOW AREAS OF SILT FENCE AS NEEDED OR DIRECTED BY THE ENGINEER.

8/17/99

REVISIONS

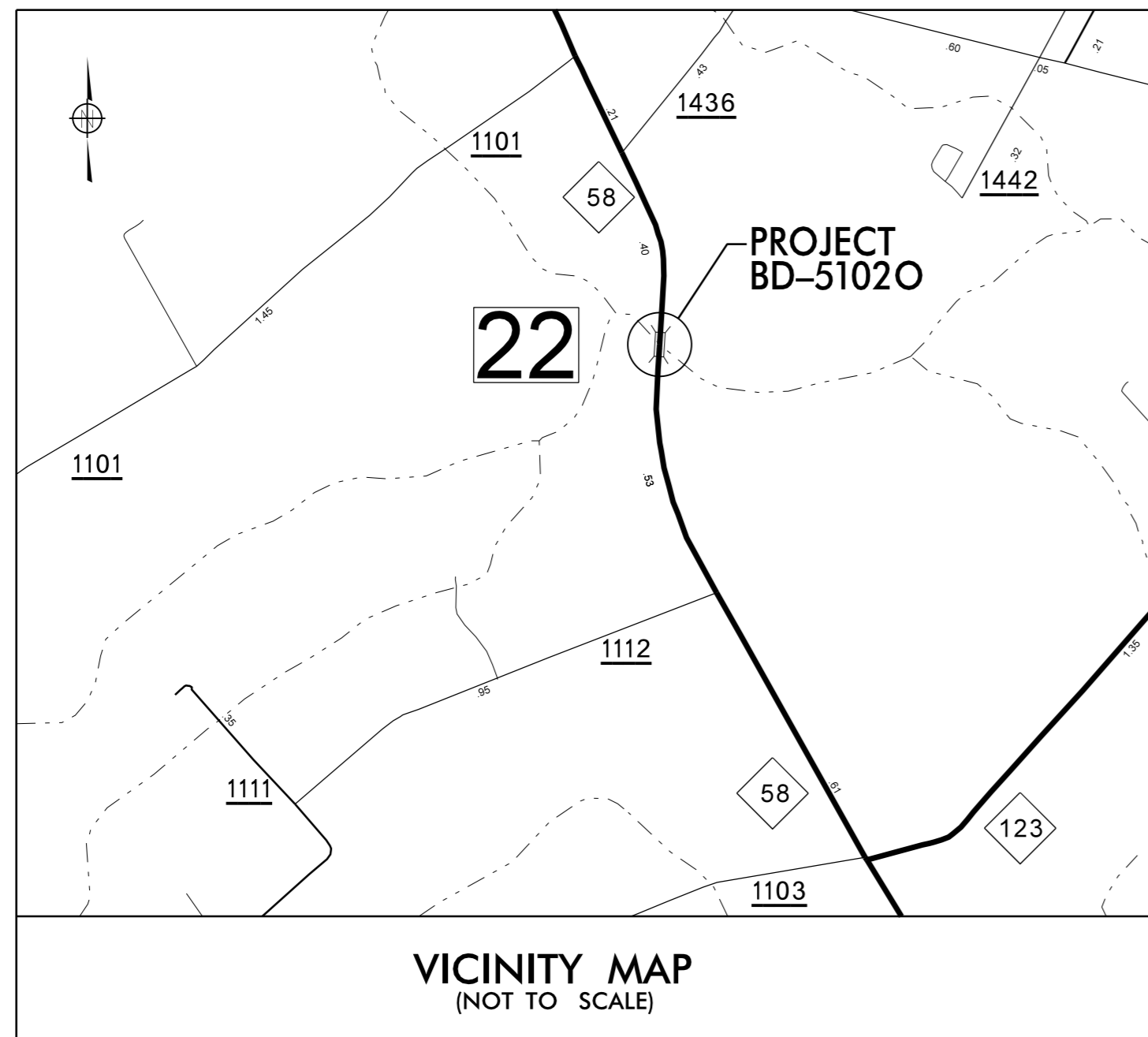


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09/08/99

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**TIP PROJECT: BD-51020**



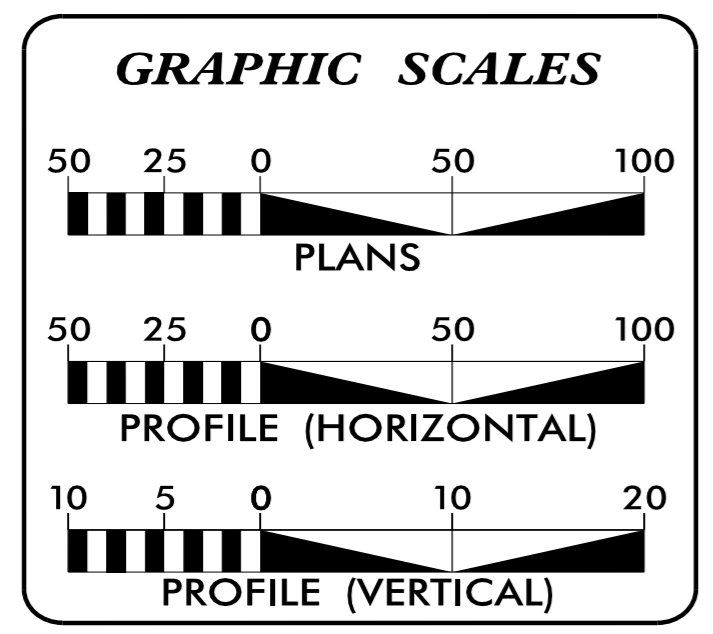
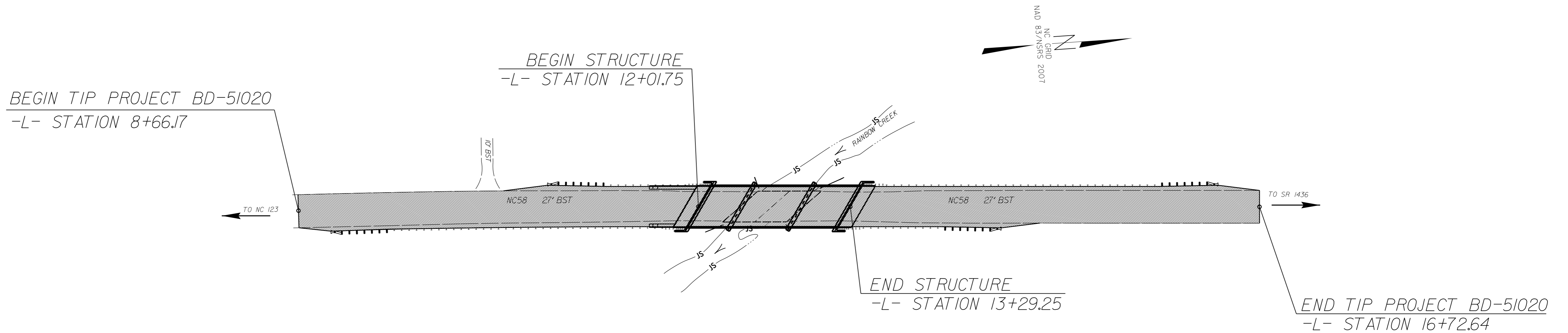
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**UTILITY CONSTRUCTION PLANS  
GREENE COUNTY**

**LOCATION: BRIDGE #22 OVER RAINBOW CREEK  
ON NC 58**

**TYPE OF WORK: WATER MAIN RELOCATION**

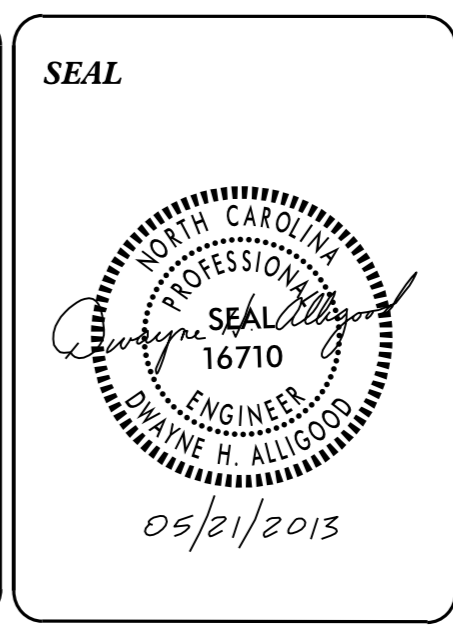
T.I.P. NO.	SHEET NO.
BD-51020	UC-1



**INDEX OF SHEETS**

SHEET NO.	DESCRIPTION
UC-1	TITLE SHEET
UC-2	SUMMARY OF QUANTITIES
UC-3	UTILITY CONSTRUCTION SHEET
UC-4	DETAILS SHEET

**WATER OWNER ON PROJECT**  
(1) SOUTH GREENE WATER CORPORATION

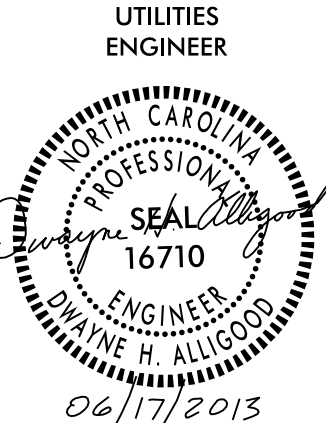


PREPARED IN THE OFFICE OF:  
**DIVISION OF HIGHWAYS**  
DIVISION 2 - DDC

P.O. BOX 1587  
GREENVILLE, NC 27835  
PHONE (252) 439-2800  
FAX (252) 830-3352

**DWAYNE H. ALLIGOOD, P.E.** UTILITIES ENGINEER  
**VAN TRAN, E.I.** UTILITIES PROJECT DESIGNER

\*REVISED 6-17-2013 TO INDICATE TYPE OF DIP.  
DOCUMENT ORIGINALLY SIGNED AND SEALED BY DWAYNE H. ALLIGOOD (16710) ON 5-21-2013



# UTILITY CONSTRUCTION

## STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS SUMMARY OF QUANTITIES

<i>WATER MAIN</i>	<i>QUANTITY</i>	<i>UNIT</i>	<i>ITEM DESCRIPTION</i>
	40	LF	4" DI PIPE - PC 350 (AWWA C600)
	744	LF	6" HDPE PIPE - DR9 (AWWA C906)
	2	EA	4" GATE VALVE AND VALVE BOX
	2	EA	DI PIPE TO HDPE TRANSITION
	2	EA	CONCRETE THRUST COLLAR
	140	LF	TEMPORARY SILT FENCE
	0.2	ACRES	SEEDING AND MULCHING

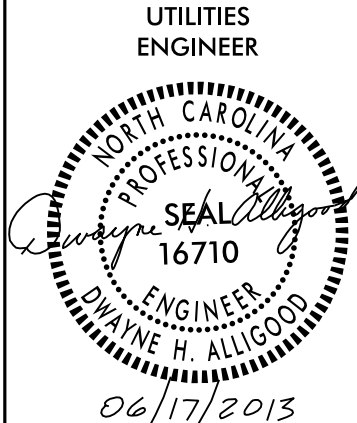
REVISIONS

REVISED 6-17-2013 TO INDICATE TYPE OF DIP.

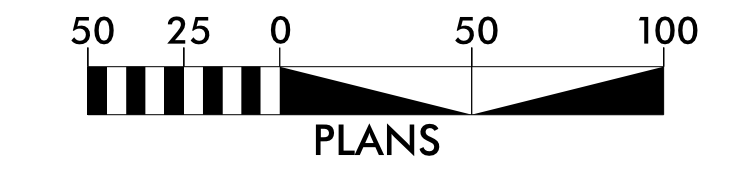
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# UTILITY CONSTRUCTION PLAN



- NOTES:**
- 6" HDPE WATER MAIN TO CONFORM TO THE FOLLOWING: AWWA C906, PRESSURE CLASS 200, DR9, DUCTILE IRON PIPE SIZE (DIPS) DIMENSIONS, AND MATERIAL DESIGNATION PE 3408 AND NSF APPROVED FOR POTABLE WATER.
  - THE PROPOSED WATER LINE RELOCATION DOES NOT IMPACT ANY ENVIRONMENTALLY SENSITIVE AREAS AND NO ENVIRONMENTAL PERMITS ARE REQUIRED.
  - LOCATION AND ELEVATION OF ALL UNDERGROUND UTILITIES SHALL BE FIELD VERIFIED BY CONTRACTOR AND MAINTAIN 18" MINIMUM VERTICAL SEPARATION.



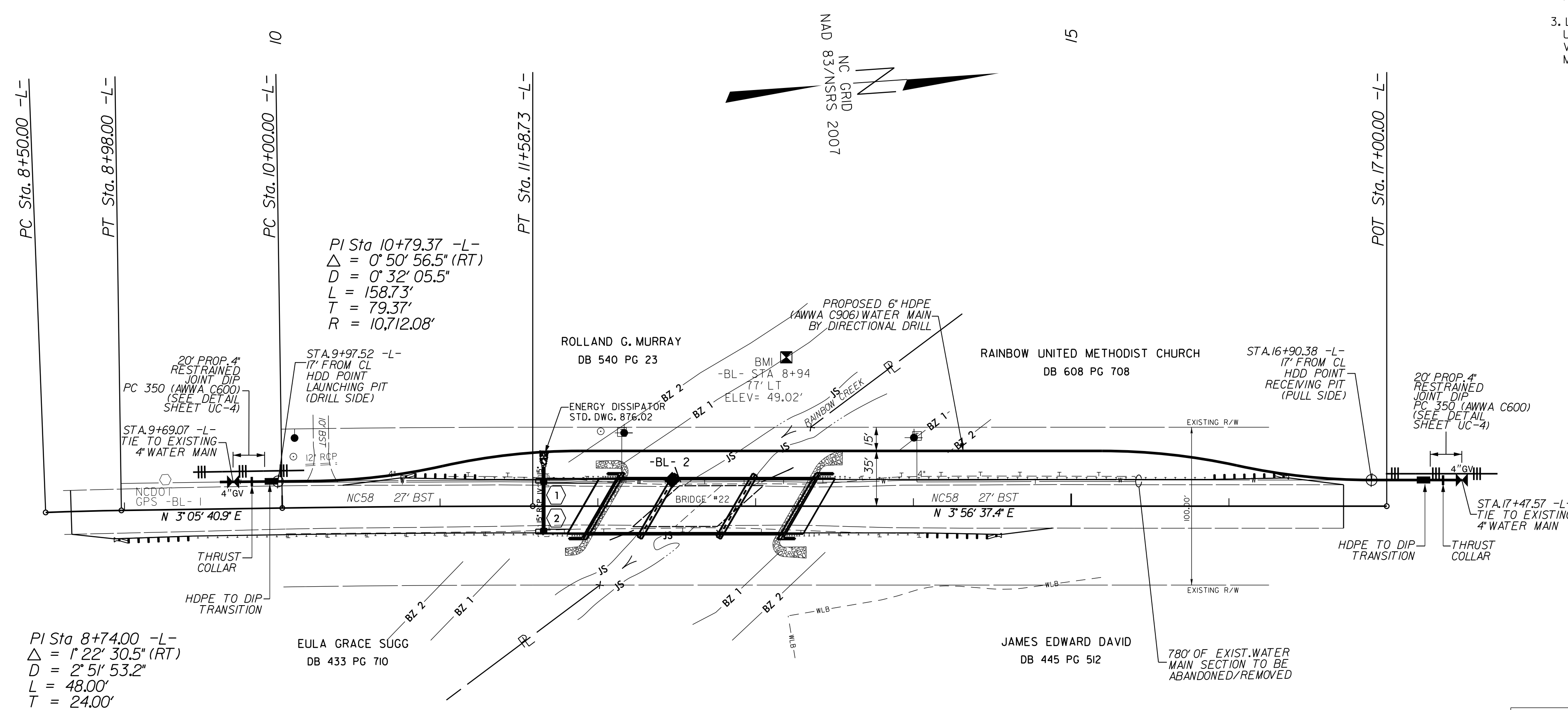
**LEGEND:**

- Temporary Silt Fence...
- Gate Valve...
- HDPE to DIP Transition...
- Thrust Collar...

**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "BL-1" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 605374.681(ft) EASTING: 2410136.935(ft) ELEVATION: 55.229(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999879130  
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-1" TO -L- STATION 10+00.00 IS  
N 17°33'30.5" E 76.26'  
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
VERTICAL DATUM USED IS NAVD 88

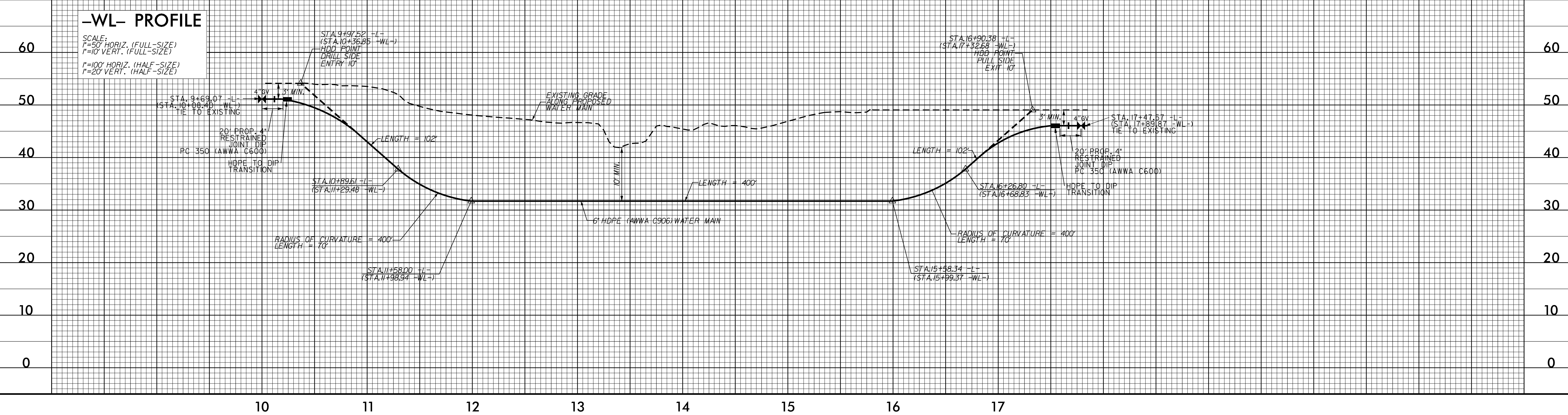


PI Sta 8+74.00 -L-  
 $\Delta = 1' 22' 30.5''$  (RT)  
 $D = 2' 51' 53.2''$   
 $L = 48.00'$   
 $T = 24.00'$   
 $R = 2,000.00'$

PI Sta 10+79.37 -L-  
 $\Delta = 0' 50' 56.5''$  (RT)  
 $D = 0' 32' 05.5''$   
 $L = 158.73'$   
 $T = 79.37'$   
 $R = 10,712.08'$

Point	North	East	Elevation	Description
BL1	605374.6810	2410136.9350	55.2290	NCDOT GPS BL-1
BL2	605695.1173	2410159.2372	52.7200	BL-2
BL3	606175.5500	2410189.7200	52.7600	NCDOT GPS BL-3
BM1	605772.6275	2410086.6316	49.0184	RR SPIKE IN 10' HOLLY TREE

PROFILE ALONG PROPOSED WATER LINE -WL-



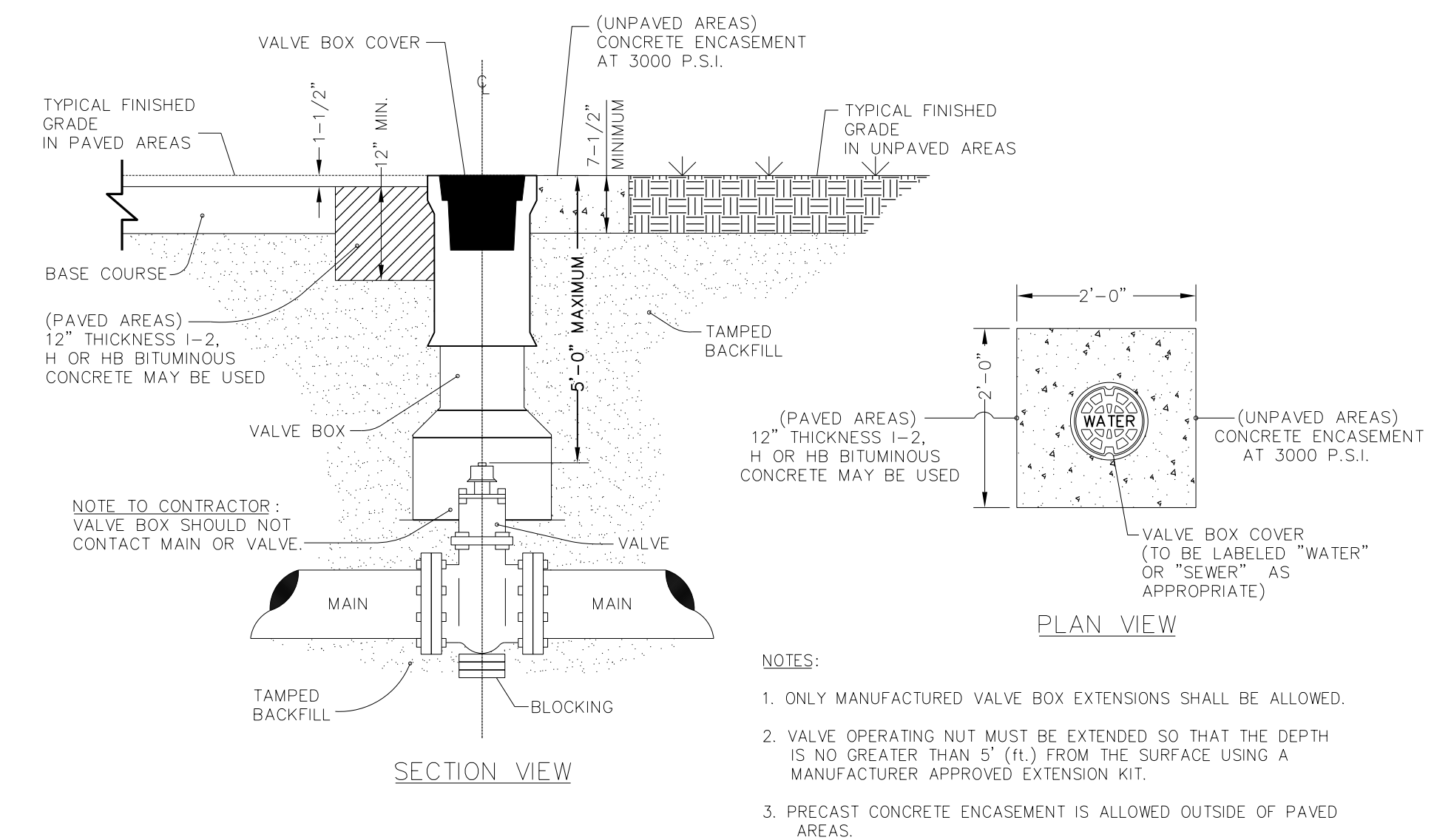
**-WL- PROFILE**

SCALE:  
 $1'' = 50'$  HORIZ. (FULL-SIZE)  
 $1'' = 10'$  VERT. (FULL-SIZE)  
 $1'' = 100'$  HORIZ. (HALF-SIZE)  
 $1'' = 20'$  VERT. (HALF-SIZE)

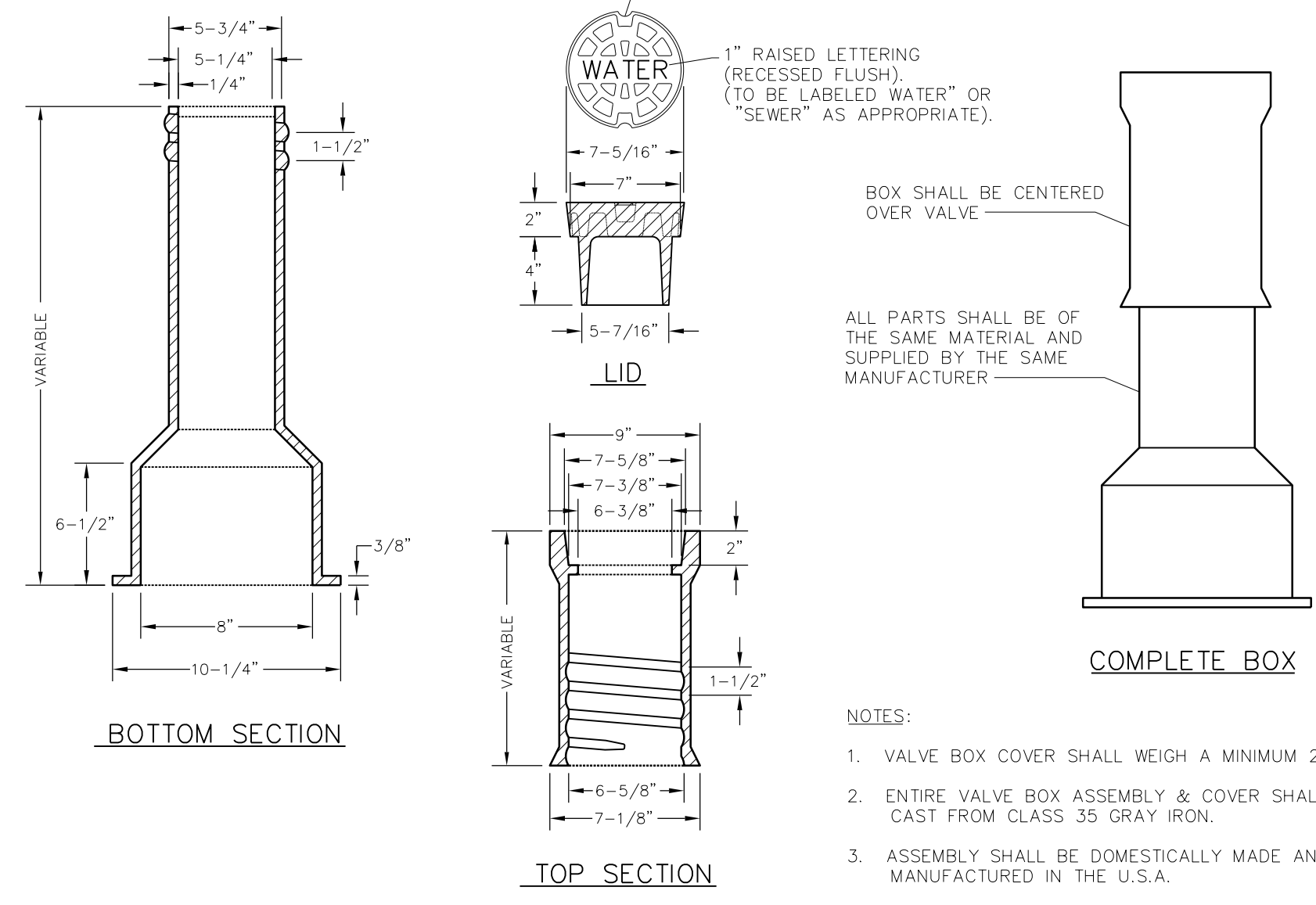
REVISED 6-17-2013 TO INDICATE TYPE OF DIP.

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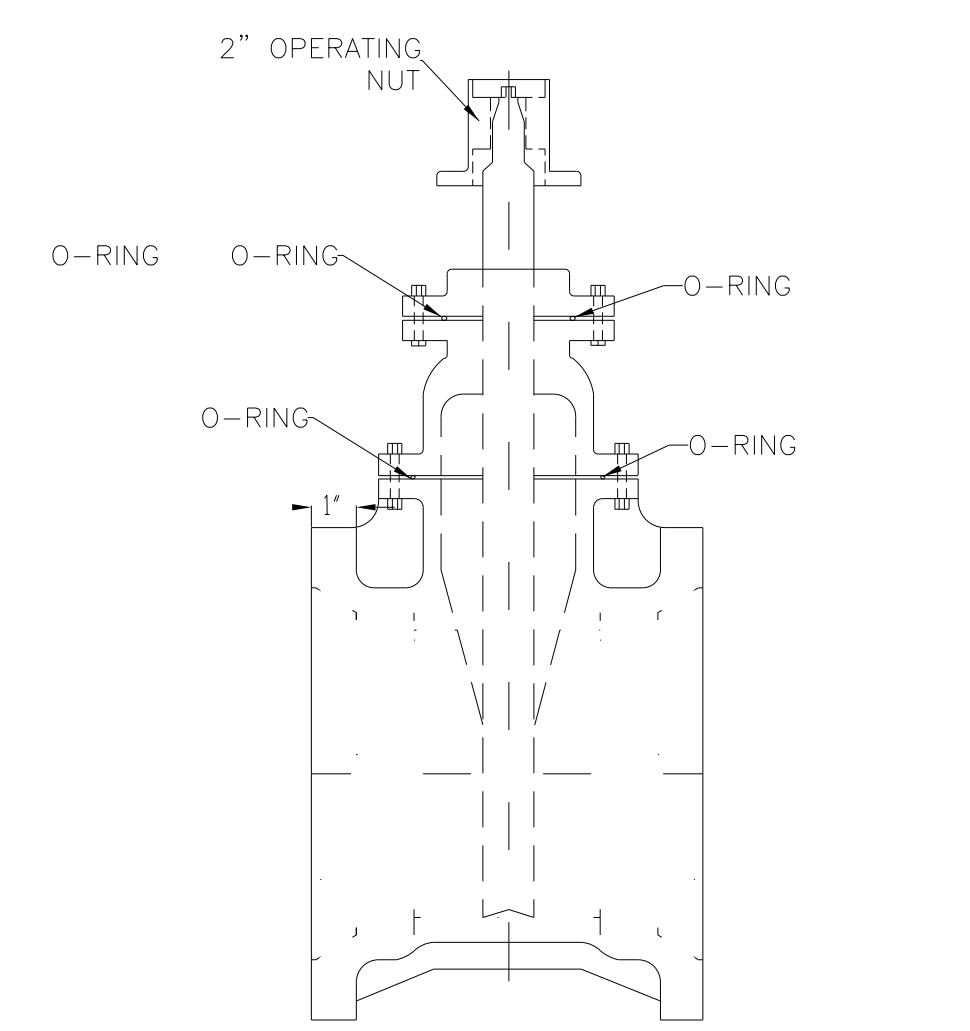
# UTILITY CONSTRUCTION DETAILS SHEET



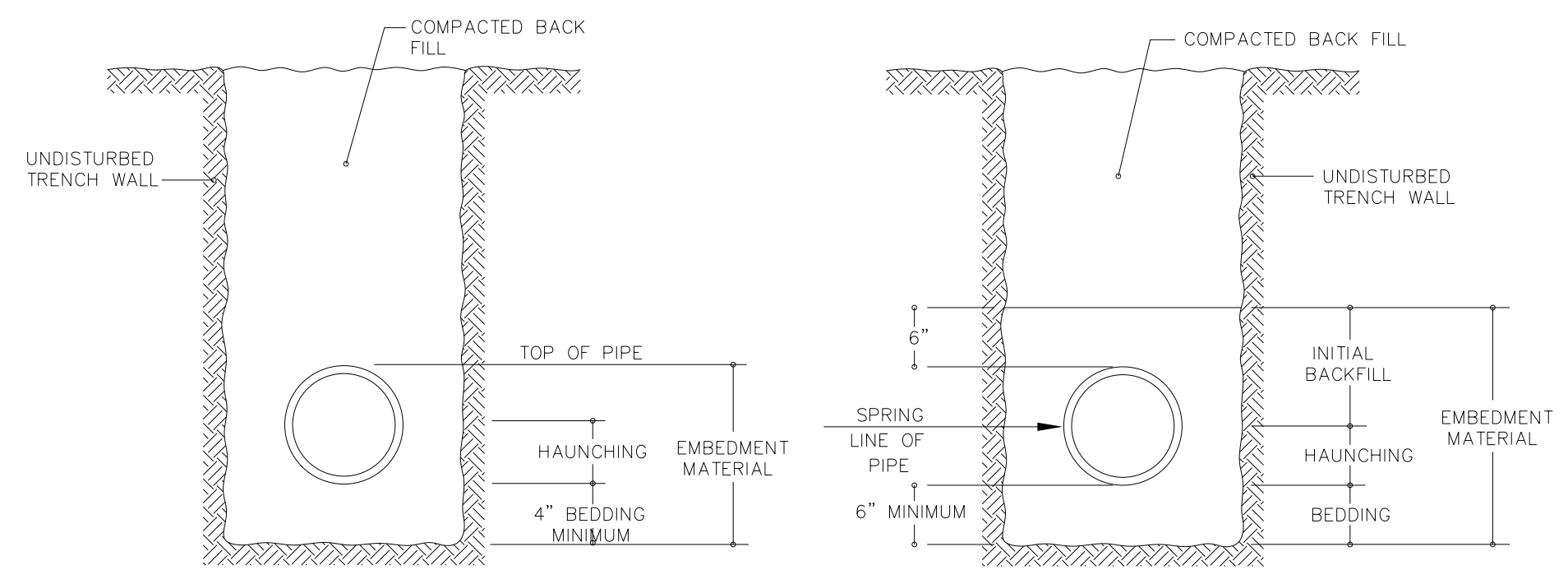
**TYPICAL VALVE BOX**  
 NTS



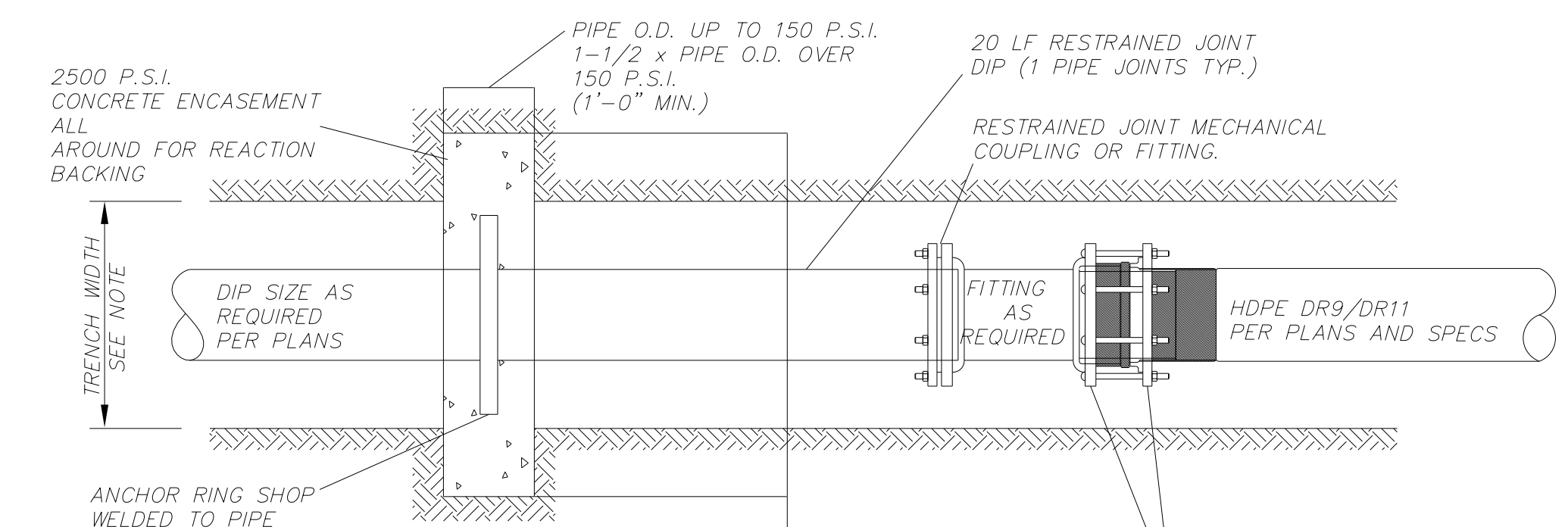
**TYPICAL VALVE BOX**  
 NTS



**TYPICAL RESILIENT MECHANICAL JOINT GATE VALVE DETAIL**  
 NTS



**TYPICAL BEDDING FOR FLEXIBLE & SEMI-RIGID PIPE**  
 NTS



ANCHOR RING DIMENSIONS		
NOMINAL PIPE SIZE	O.D. OF RINGS	THICKNESS
4" - 12"	PIPE O.D. + 6"	1/2"
16" - 24"	PIPE O.D. + 7"	3/4"
30" & 36"	PIPE O.D. + 8"	1"

**TYPICAL DIP TO HDPE TRANSITION DETAIL WITH THRUST COLLAR**  
 NTS

8/17/99

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DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

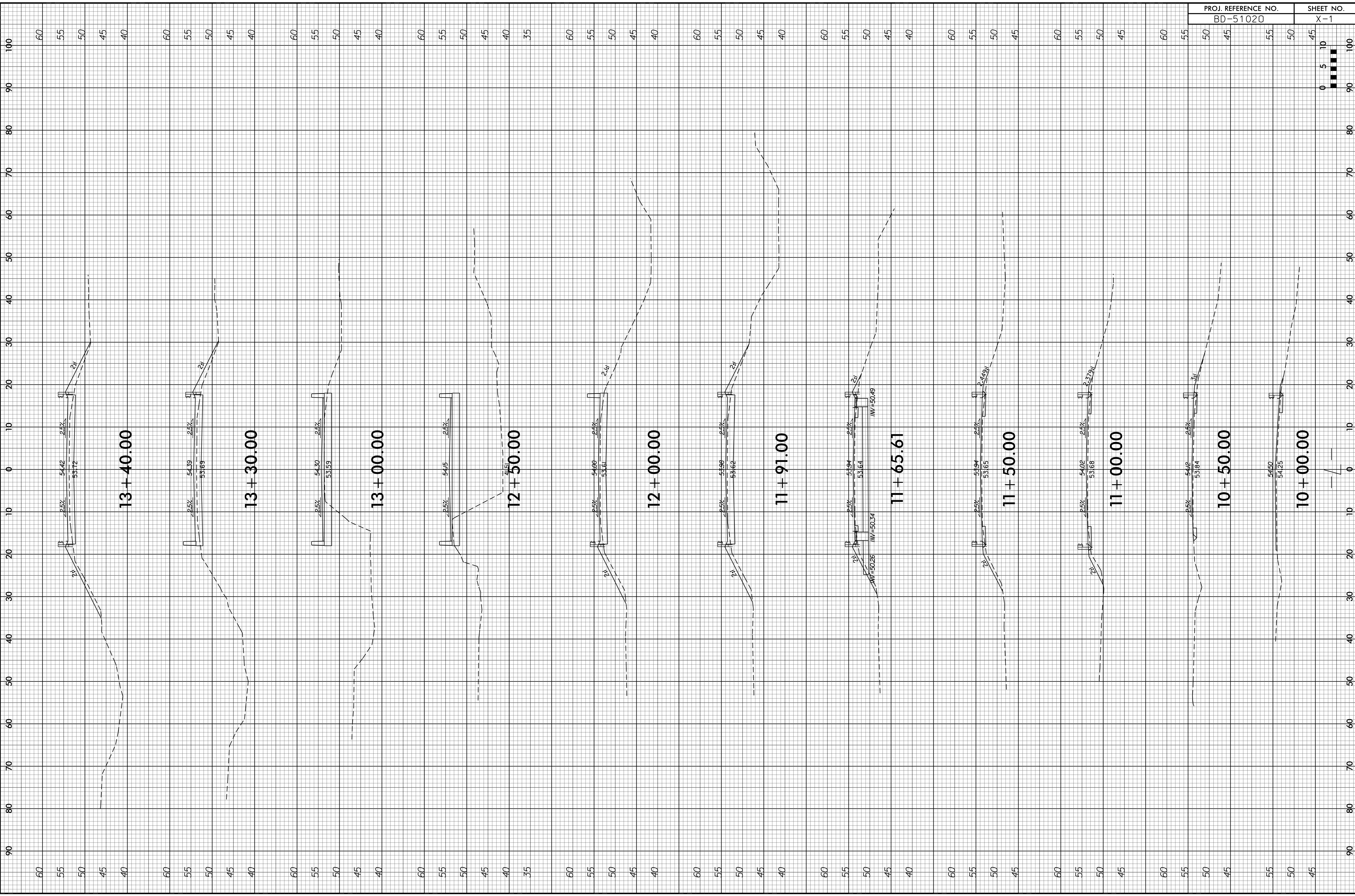
NOTE: Approximate quantities only. Unclassified Excavation, Borrow Excavation, Fine Grading, Clearing and Grubbing, and Removal of Existing Pavement will be paid for at the contract Lump Sum price for "Grading".

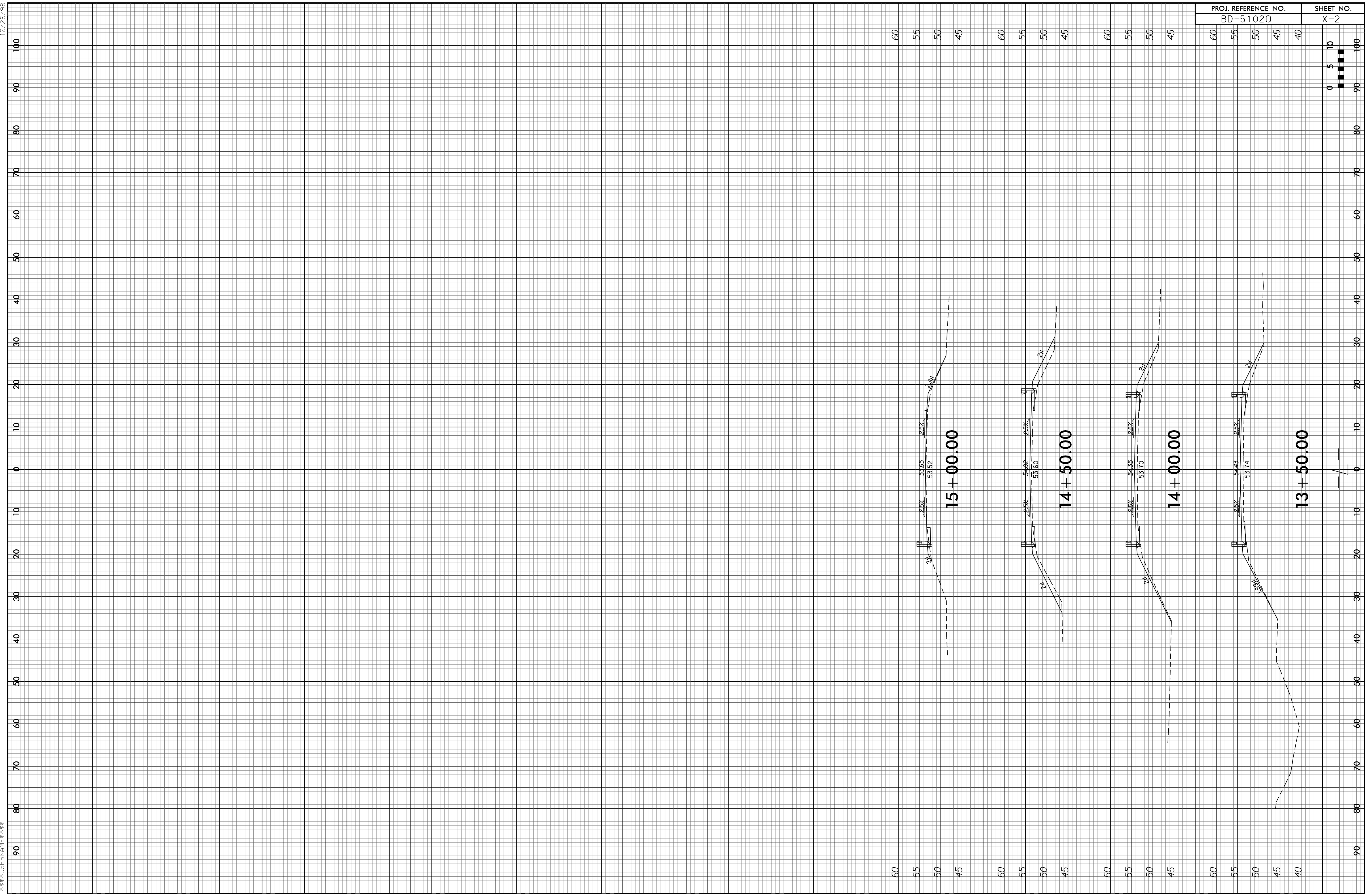
## CROSS-SECTION SUMMARY

IN CUBIC YARDS

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT.

LOCATION (-L-)	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBANKMENT
<i>10+00.00</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>10+50.00</i>	<i>6</i>	<i>0</i>	<i>4</i>
<i>11+00.00</i>	<i>7</i>	<i>0</i>	<i>10</i>
<i>11+50.00</i>	<i>8</i>	<i>0</i>	<i>16</i>
<i>11+65.61</i>	<i>2</i>	<i>0</i>	<i>6</i>
<i>11+91.00</i>	<i>24</i>	<i>0</i>	<i>16</i>
<i>12+00.00</i>	<i>16</i>	<i>0</i>	<i>6</i>
<b>BRIDGE</b>			
<i>13+30.00</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>13+40.00</i>	<i>14</i>	<i>0</i>	<i>7</i>
<i>13+50.00</i>	<i>7</i>	<i>0</i>	<i>11</i>
<i>14+00.00</i>	<i>1</i>	<i>0</i>	<i>48</i>
<i>14+50.00</i>	<i>2</i>	<i>0</i>	<i>49</i>
<i>15+00.00</i>	<i>4</i>	<i>0</i>	<i>40</i>





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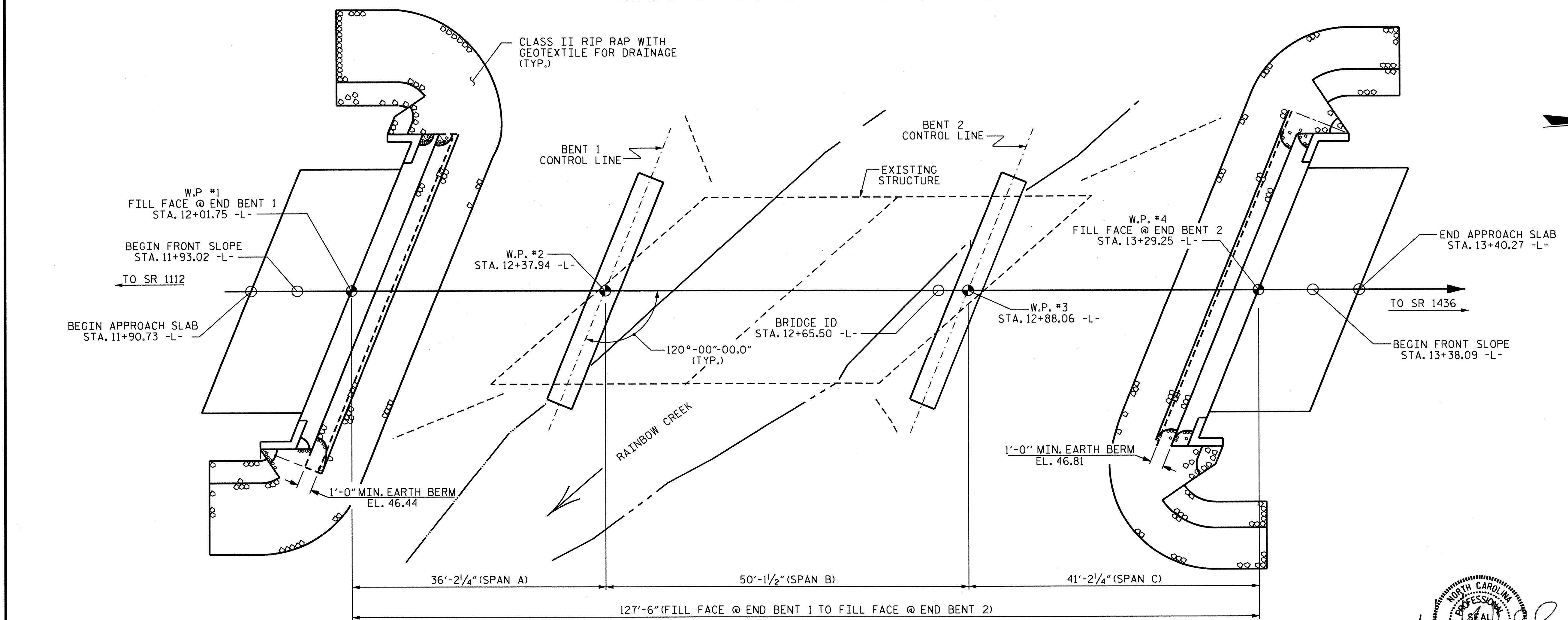
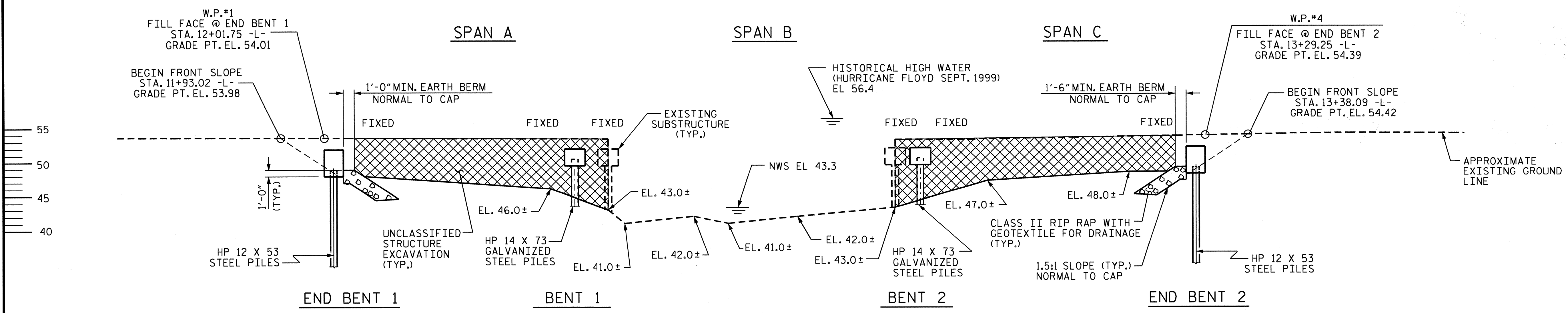
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11+75 12+00 12+25 12+50 12+75 13+00 13+25 13+50

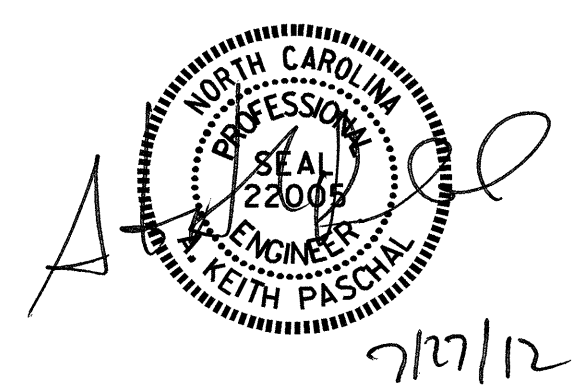
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 EL. = 53.89  
 VC = 75.00



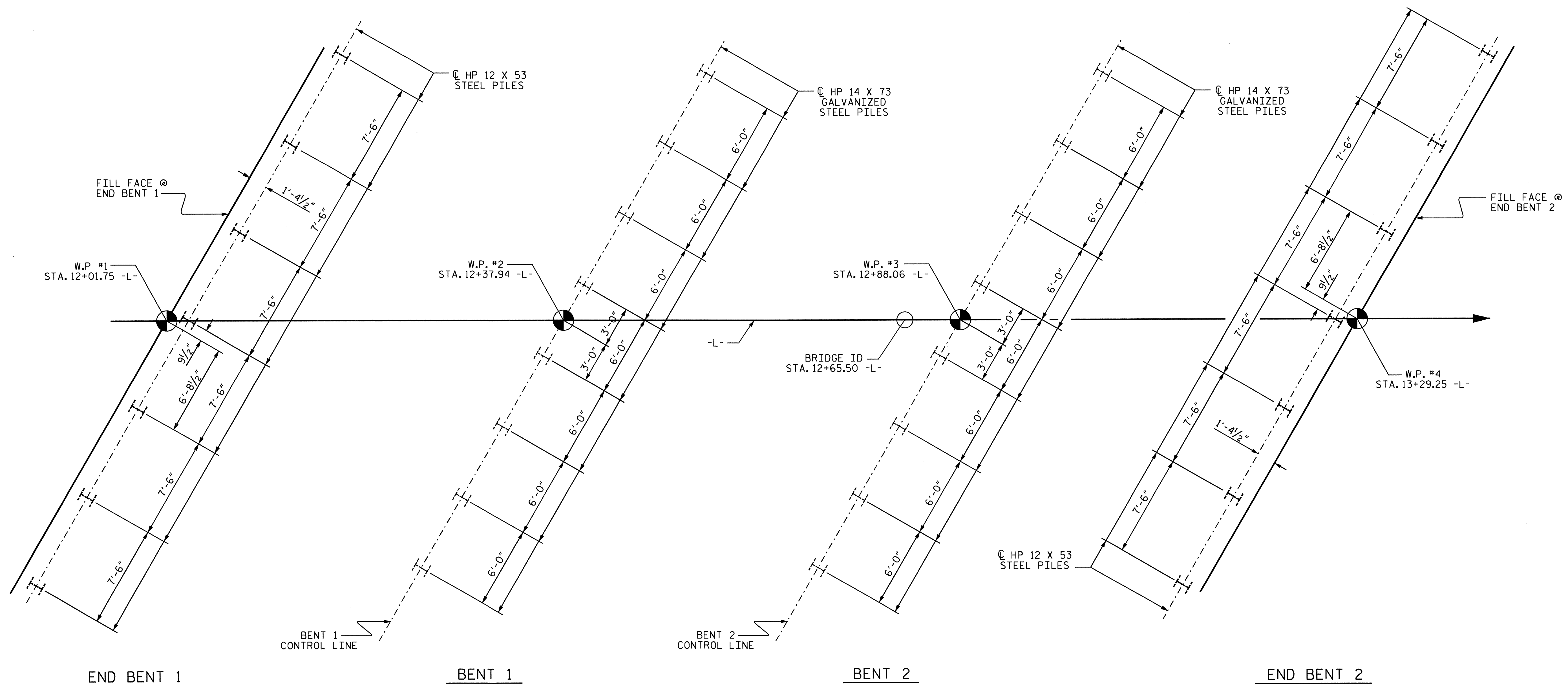
PROJECT NO. BD-51020  
GREENE COUNTY  
 STATION: 12+65.50 -L-  
 SHEET 1 OF 3 REPLACE BRIDGE NO. 22

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 BRIDGE ON NC 58 OVER  
 RAINBOW CREEK BETWEEN  
 SR 1112 AND SR 1436



DRAWN BY : B.N.BARODAWALA DATE : 7-17-12  
 CHECKED BY : J.E.LAZAROVICH DATE : 7-20-12

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

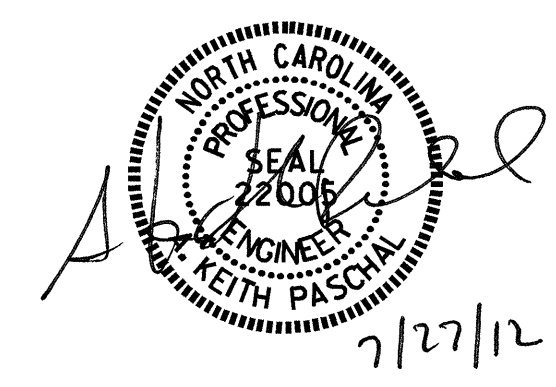


**FOUNDATION LAYOUT**

**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 65 TONS PER PILE.
- DRIVE PILES AT END BENT NO.1 AND END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 110 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 210 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAW OR SCOUR.
- INSTALL PILES AT BENT NO.1 AND BENT NO.2 TO A TIP ELEVATION NO HIGHER THAN 4.5 FEET.
- THE SCOUR CRITICAL ELEVATION FOR BENT NO.1 AND 2 IS ELEVATION 28.5 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITER 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.1 AND END 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.
- IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 40 TO 70 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BOTH BENT.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.
- TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

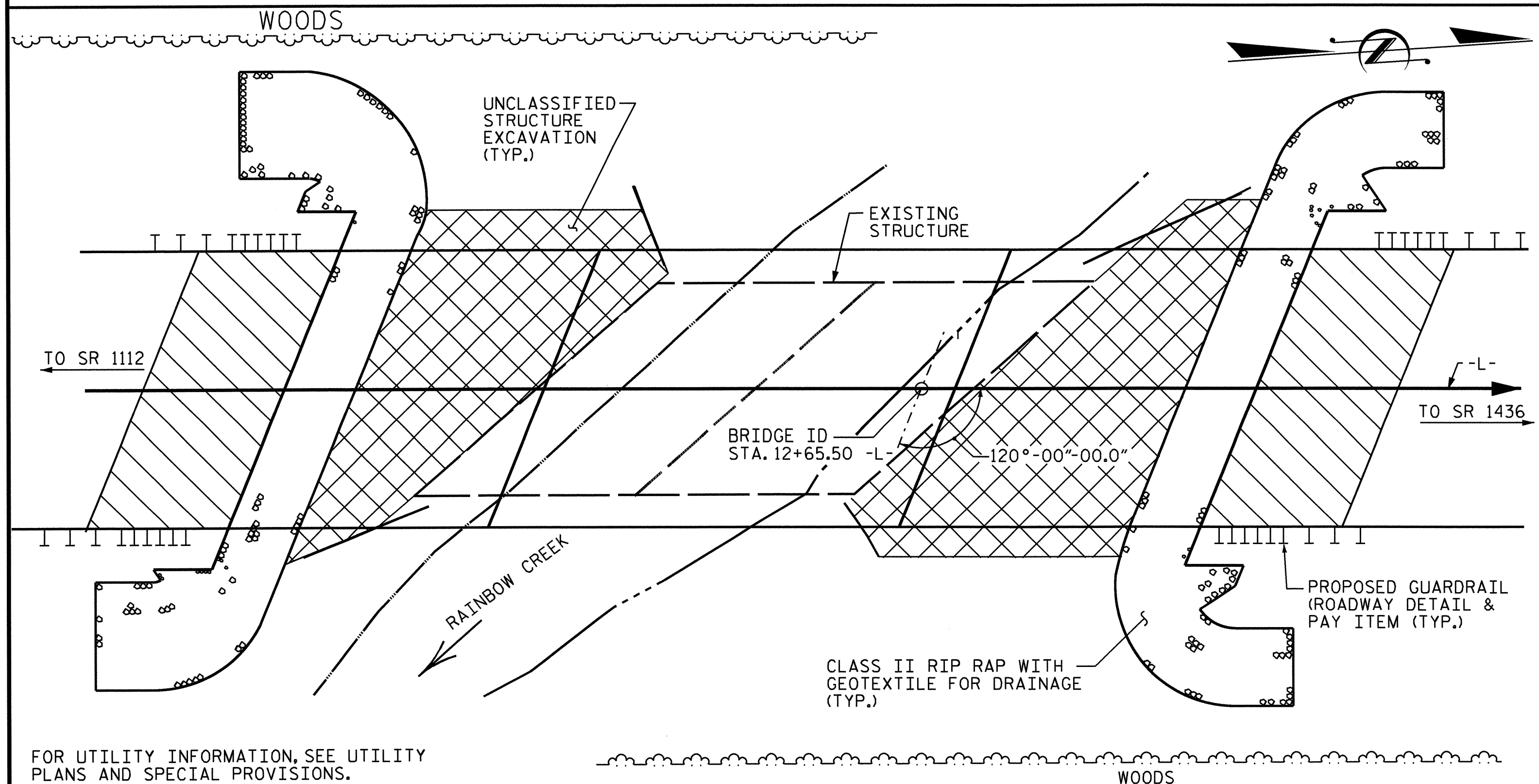
PROJECT NO. BD-51020  
GREENE COUNTY  
 STATION: 12+65.50 -L-  
 SHEET 2 OF 3



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
<b>GENERAL DRAWING</b>					
BRIDGE ON NC 58 OVER RAINBOW CREEK BETWEEN SR 1112 AND SR 1436					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS

DRAWN BY : B.N.BARODAWALA DATE : 7-18-12  
 CHECKED BY : J.E.LAZAROVICH DATE : 7-20-12

27-JUL-2012 12:58  
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 kpaschal



LOCATION SKETCH

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 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.  
 THE EXISTING STRUCTURE CONSISTING OF, 1 @ 41'-6" SPAN WITH A CLEAR ROADWAY WIDTH OF 26'-0" AND A CONCRETE DECK ON STEEL I-BEAMS SUPPORTED BY CONCRETE ABUTMENT AND PILES AT THE END BENTS LOCATED AT THE SITE OF THE PROPOSED STRUCTURE SHALL BE REMOVED.  
 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.  
 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 34 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE PER CUBIC YARD FOR UNCLASSIFIED STRUCTURE EXCAVATION.  
 THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES", MAY 2001.  
 THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR SEISMIC PERFORMANCE ZONE 1.  
 ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

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.  
 INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STA. 12+65.50 -L-"  
 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.  
 FOR CURING CONCRETE, SEE SPECIAL PROVISIONS.

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFIED STRUCTURE EXCAVATION	PDA TESTING	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP 12 X 53 STEEL PILES		HP 14 X 73 GALVANIZED STEEL PILES		PILE REDRIVES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS	
							NO.	LIN.FT.	NO.	LIN.FT.						NO.	LIN.FT.
	LUMP SUM	LUMP SUM	EACH	CU. YDS.	LUMP SUM	LBS.	NO.	LIN.FT.	NO.	LIN.FT.	EACH	LIN.FT.	TONS	SO.YDS.	LUMP SUM	NO.	LIN.FT.
SUPERSTRUCTURE					LUMP SUM							250.87			LUMP SUM	36	1500
END BENT NO. 1				25.5		3105	7	350			4		57	63			
BENT NO. 1				14.1		2740			8	520	4						
BENT NO. 1				14.1		2740			8	520	4						
END BENT NO. 2				25.5		3105	7	350			4		49	55			
TOTAL	LUMP SUM	LUMP SUM	1	79.2	LUMP SUM	11690	14	700	16	1040	16	250.87	106	118	LUMP SUM	36	1500

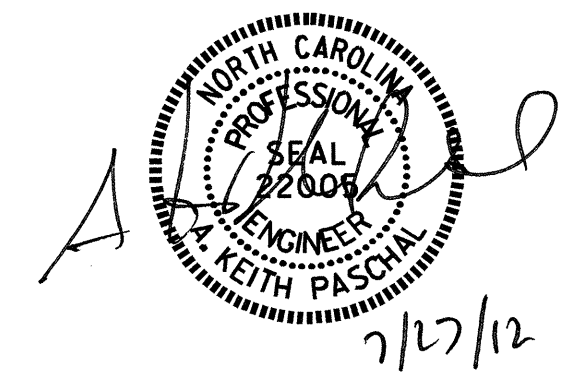
HYDRAULIC DATA	
DESIGN DISCHARGE	= 1510 C.F.S.
FREQUENCY OF DESIGN FLOOD	= 50 YRS.
DESIGN HIGH WATER ELEVATION	= 50.1'
DRAINAGE AREA	= 11.1 SQ. MI.
BASE DISCHARGE (0100)	= 1870 C.F.S.
BASE HIGH WATER ELEVATION	= 50.83'

OVERTOPPING DATA	
OVERTOPPING DISCHARGE	= - C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	= >500 YRS.
OVERTOPPING FLOOD ELEVATION	= 53.17'

PROJECT NO. BD-51020  
GREENE COUNTY  
 STATION: 12+65.50 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 BRIDGE ON NC 58 OVER  
 RAINBOW CREEK BETWEEN  
 SR 1112 AND SR 1436

DRAWN BY : B.N.BARODAWALA DATE : 7-17-12  
 CHECKED BY : J.E. LAZAROVICH DATE : 7-20-12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			
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	1.142	--	1.75	0.254	1.5	35'	EL	16.923	0.653	1.14	35'	EL	1.692	0.80	0.254	1.16	35'	EL	16.923		
	HL-93(0pr)	N/A	--	1.48	--	1.35	0.254	1.95	35'	EL	16.923	0.653	1.48	35'	EL	1.692	N/A	--	--	--	--	--		
	HS-20(Inv)	36,000	2	1.318	47.43	1.75	0.254	1.99	35'	EL	13.538	0.653	1.32	35'	EL	1.692	0.80	0.254	1.54	35'	EL	16.923		
	HS-20(0pr)	36,000	--	1.708	61.484	1.35	0.254	2.57	35'	EL	13.538	0.653	1.71	35'	EL	1.692	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13,500	--	2.649	35.758	1.4	0.254	4.3	35'	EL	16.923	0.653	3.39	35'	EL	1.692	0.80	0.254	2.65	35'	EL	16.923	
		SNGARBS2	20,000	--	2.276	45.521	1.4	0.254	3.64	35'	EL	13.538	0.653	2.56	35'	EL	1.692	0.80	0.254	2.28	35'	EL	13.538	
		SNAGRIS2	22,000	--	2.27	49.949	1.4	0.254	3.61	35'	EL	13.538	0.653	2.44	35'	EL	1.692	0.80	0.254	2.27	35'	EL	13.538	
		SNCOTTS3	27,250	--	1.326	36.138	1.4	0.254	2.15	35'	EL	16.923	0.653	1.71	35'	EL	1.692	0.80	0.254	1.33	35'	EL	16.923	
		SNAGGRS4	34,925	--	1.228	42.883	1.4	0.254	1.99	35'	EL	16.923	0.653	1.53	35'	EL	1.692	0.80	0.254	1.23	35'	EL	16.923	
		SNS5A	35,550	--	1.192	42.369	1.4	0.254	1.93	35'	EL	16.923	0.653	1.61	35'	EL	1.692	0.80	0.254	1.19	35'	EL	16.923	
		SNS6A	39,950	--	1.15	45.932	1.4	0.254	1.87	35'	EL	16.923	0.653	1.52	35'	EL	1.692	0.80	0.254	1.15	35'	EL	16.923	
	SNS7B	42,000	3	1.098	46.1	1.4	0.254	1.78	35'	EL	16.923	0.653	1.55	35'	EL	1.692	0.80	0.254	1.10	35'	EL	16.923		
	TTST	TNAGRIT3	33,000	--	1.422	46.913	1.4	0.254	2.31	35'	EL	16.923	0.653	1.77	35'	EL	1.692	0.80	0.254	1.42	35'	EL	16.923	
		TNT4A	33,075	--	1.419	46.934	1.4	0.254	2.3	35'	EL	16.923	0.653	1.67	35'	EL	1.692	0.80	0.254	1.42	35'	EL	16.923	
		TNT6A	41,600	--	1.244	51.758	1.4	0.254	2.02	35'	EL	16.923	0.653	1.64	35'	EL	1.692	0.80	0.254	1.24	35'	EL	16.923	
		TNT7A	42,000	--	1.286	54.015	1.4	0.254	2.09	35'	EL	16.923	0.653	1.52	35'	EL	1.692	0.80	0.254	1.29	35'	EL	16.923	
		TNT7B	42,000	--	1.263	53.051	1.4	0.254	2.05	35'	EL	16.923	0.653	1.48	35'	EL	1.692	0.80	0.254	1.26	35'	EL	16.923	
		TNAGRIT4	43,000	--	1.279	55.012	1.4	0.254	2.06	35'	EL	13.538	0.653	1.42	35'	EL	1.692	0.80	0.254	1.28	35'	EL	16.923	
TNAGT5A		45,000	--	1.182	53.19	1.4	0.254	1.92	35'	EL	16.923	0.653	1.5	35'	EL	1.692	0.80	0.254	1.18	35'	EL	16.923		
TNAGT5B	45,000	--	1.14	51.296	1.4	0.254	1.85	35'	EL	16.923	0.653	1.34	35'	EL	1.692	0.80	0.254	1.14	35'	EL	16.923			

LOAD FACTORS:

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

NOTES:

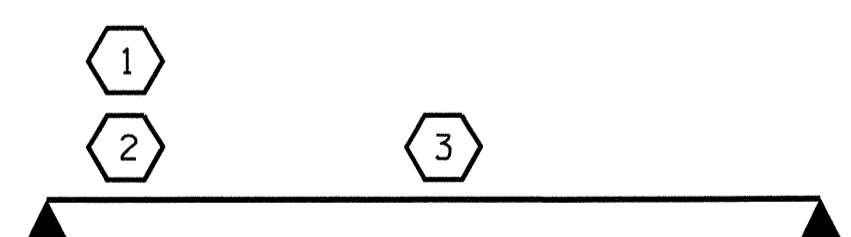
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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

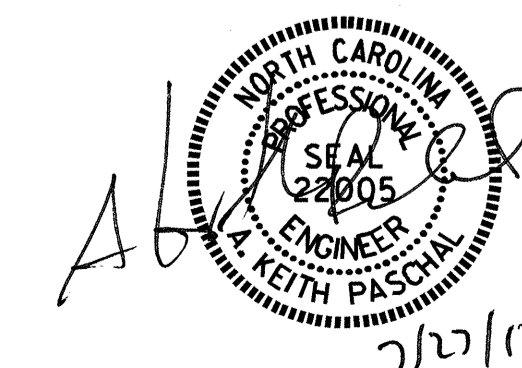


LRFR SUMMARY  
FOR SPAN 'A'

PROJECT NO. BD-51020  
GREENE COUNTY  
 STATION: 12+65.50 -L-

ASSEMBLED BY : J. LAZAROVICH DATE : 6/7/2012  
 CHECKED BY : E. K. POPE DATE : 6/22/2012  
 DRAWN BY : CVC 6/10  
 CHECKED BY : DNS 6/10

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 kpaschal



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

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

STD. NO. 21LRFR1\_60&120S\_35L

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	1.35	--	1.75	0.25	1.74	50'	EL	24.423	0.656	<b>1.35</b>	50'	EL	<b>9.769</b>	0.80	0.25	1.59	50'	EL	24.423		
	HL-93(0pr)	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	<b>1.59</b>	50'	EL	<b>9.769</b>	0.80	0.25	1.97	50'	EL	24.423		
	HS-20(0pr)	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	<b>1.50</b>	50'	EL	<b>24.423</b>			

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	$\gamma_{DC}$	$\gamma_{DW}$
	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)

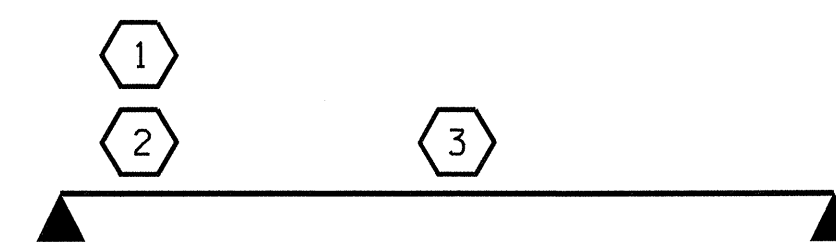
3 LEGAL LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

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GIRDER LOCATION

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

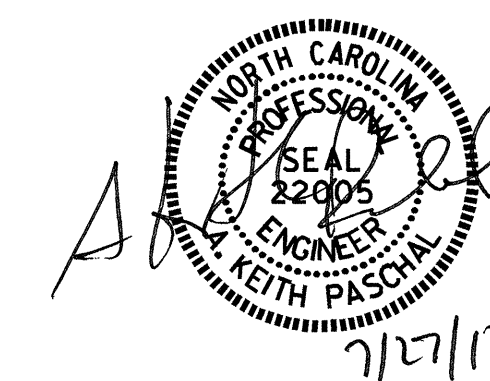


LRFR SUMMARY  
FOR SPAN 'B'

PROJECT NO. BD-51020  
GREENE COUNTY  
 STATION: 12+65.50 -L-

ASSEMBLED BY : J. LAZAROVICH	DATE : 6/7/2012
CHECKED BY : E. K. POPE	DATE : 6/22/2012
DRAWN BY : CVC 6/10	
CHECKED BY : DNS 6/10	

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

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	1.352	--	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	2.04	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	2.07	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	1.76	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	1.80	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	1.84	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	1.79	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	1.66	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	1.61	40'	EL	19.423			

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	$\gamma_{DC}$	$\gamma_{DW}$
	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)

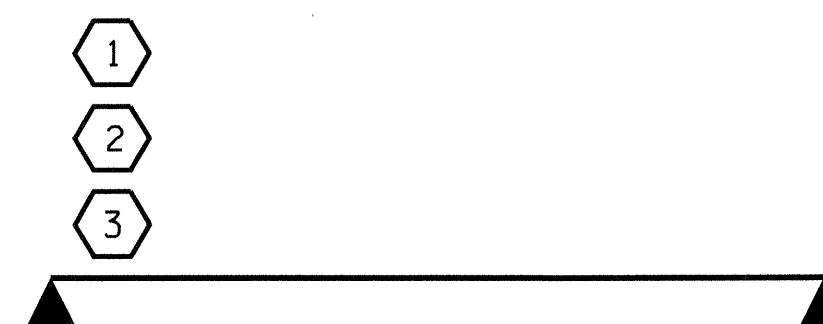
3 LEGAL LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

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GIRDER LOCATION

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

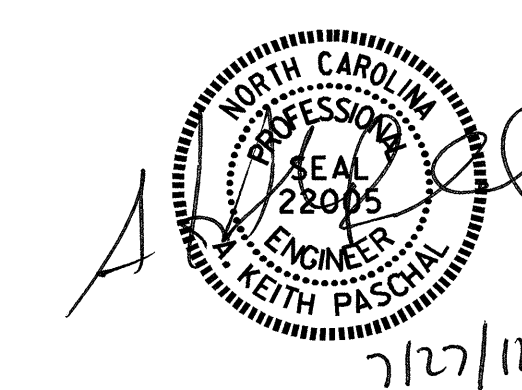


LRFR SUMMARY  
FOR SPAN 'C'

PROJECT NO. BD-51020  
GREENE COUNTY  
 STATION: 12+65.50 -L-

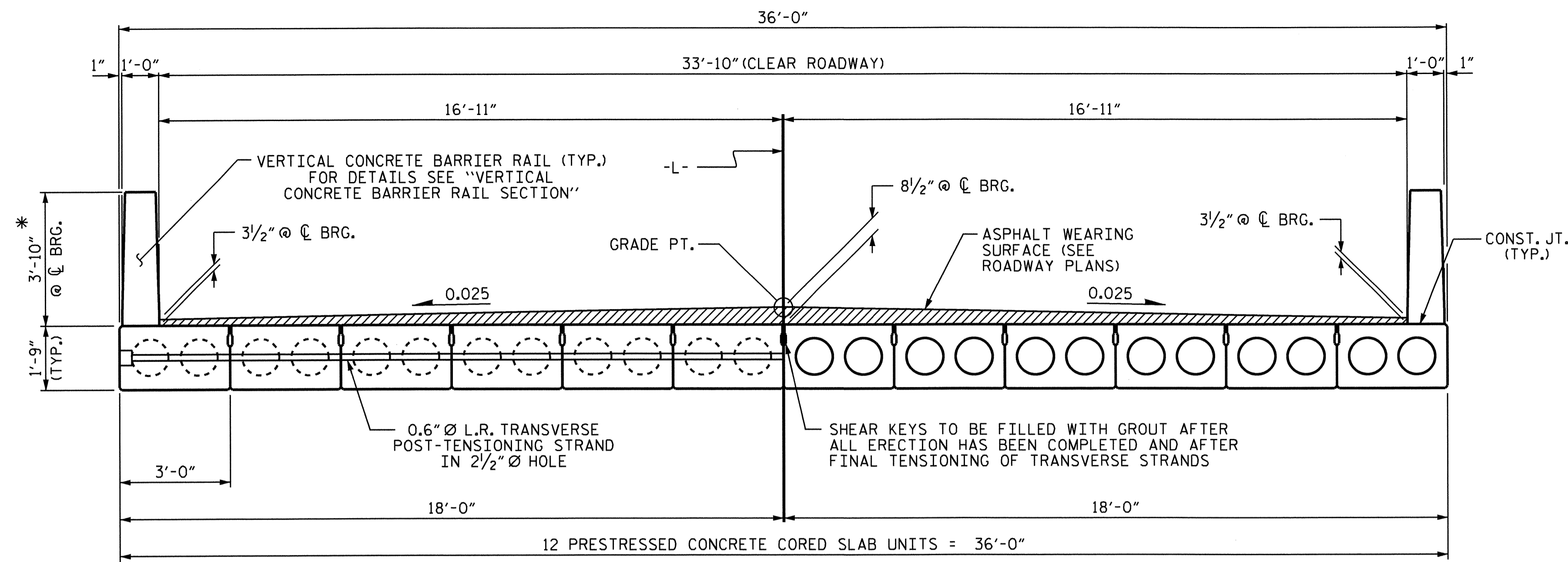
ASSEMBLED BY : J. LAZAROVICH DATE : 6/7/2012  
 CHECKED BY : E. K. POPE DATE : 6/22/2012  
 DRAWN BY : CVC 6/10  
 CHECKED BY : DNS 6/10

27-JUL-2012 13:04  
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 kpasch1



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						REVISIONS		SHEET NO.			
STANDARD LRFR SUMMARY FOR 40' CORED SLAB UNIT 120° SKEW (NON-INTERSTATE TRAFFIC)						NO.	BY:	DATE:	NO.	BY:	DATE:
						1			3		
						2			4		
						TOTAL SHEETS					

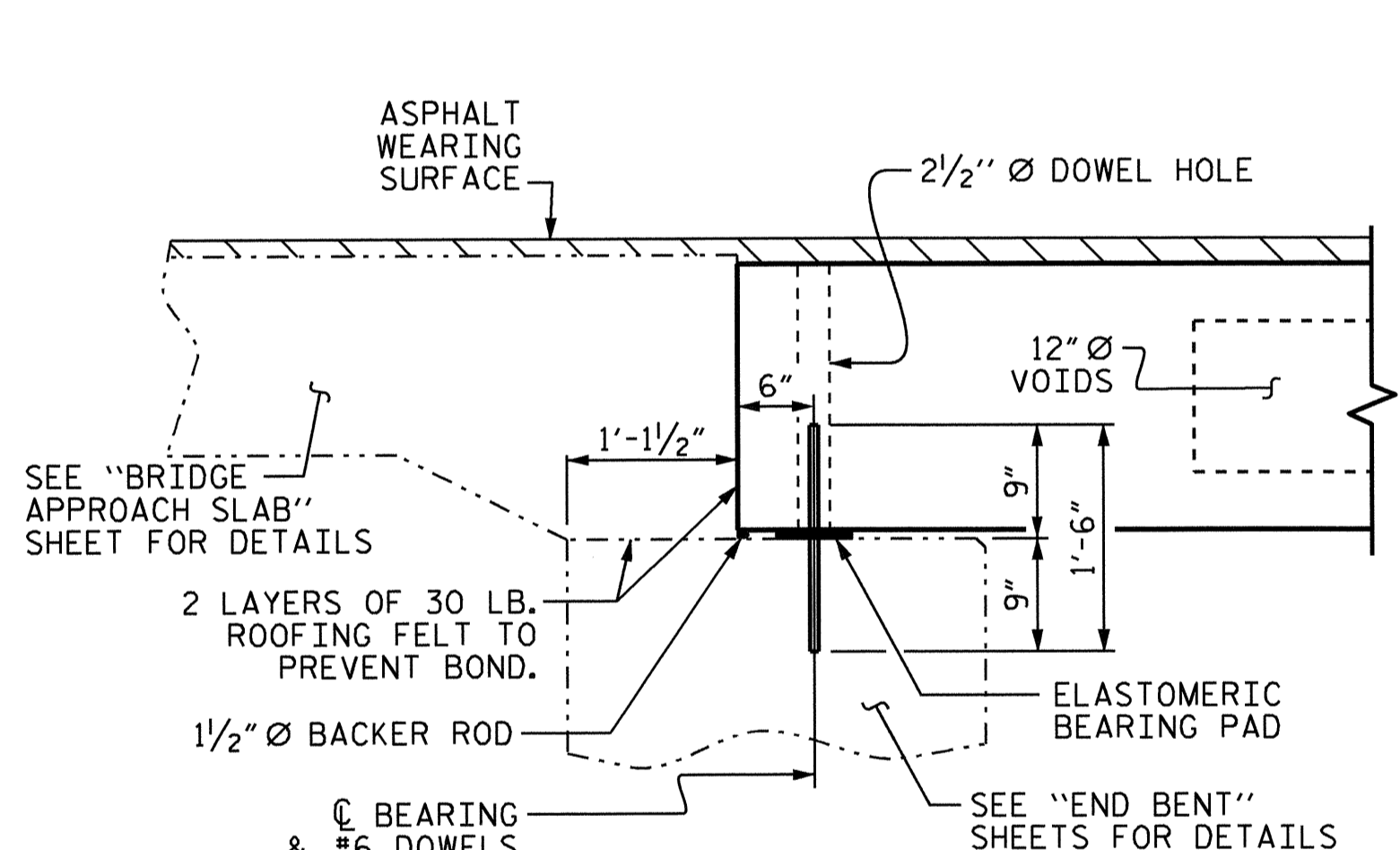
STD. NO. 21LRFR1.60&120S.40L



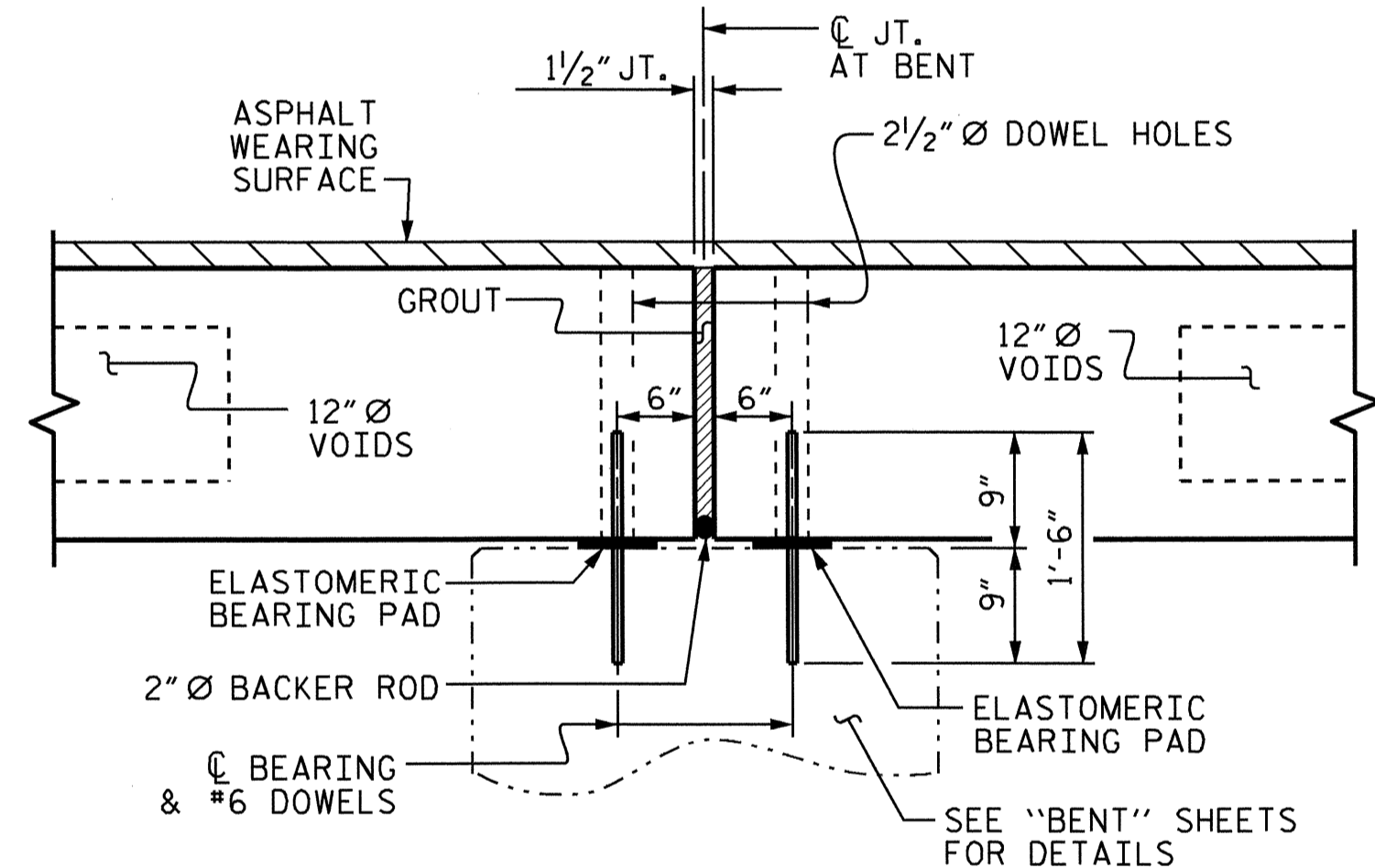
**TYPICAL SECTION**  
 HALF SECTION AT INTERMEDIATE DIAPHRAGMS      HALF SECTION THROUGH VOIDS

\* - 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.

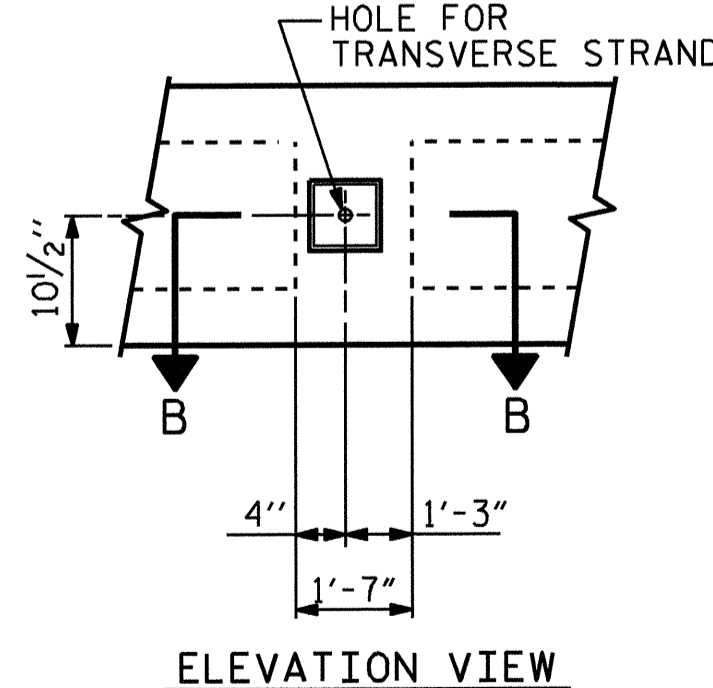
**FIXED END      FIXED END      FIXED END**



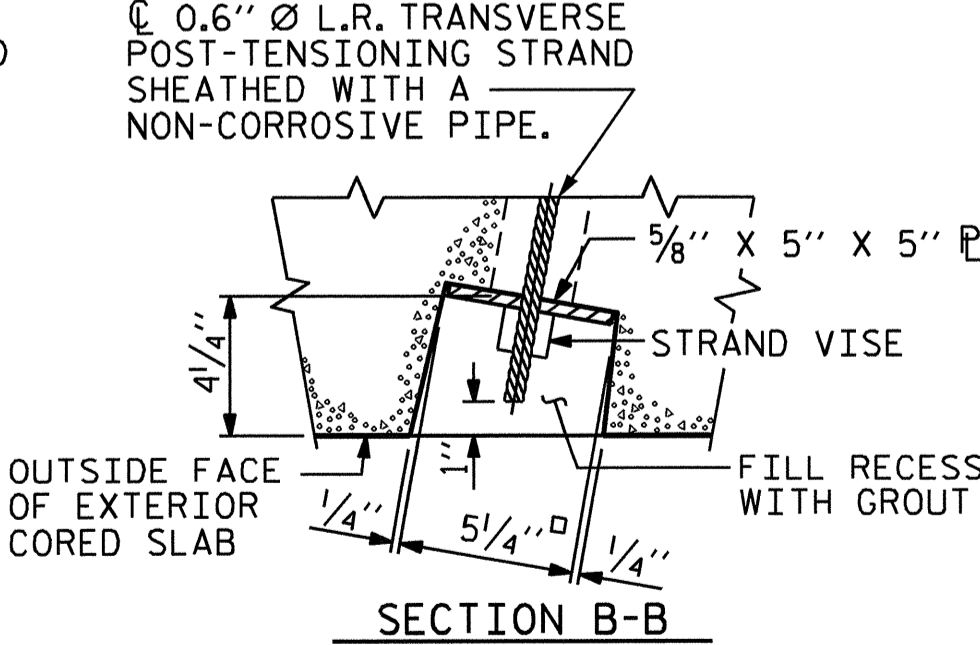
**SECTION AT END BENT**



**SECTION AT BENT**

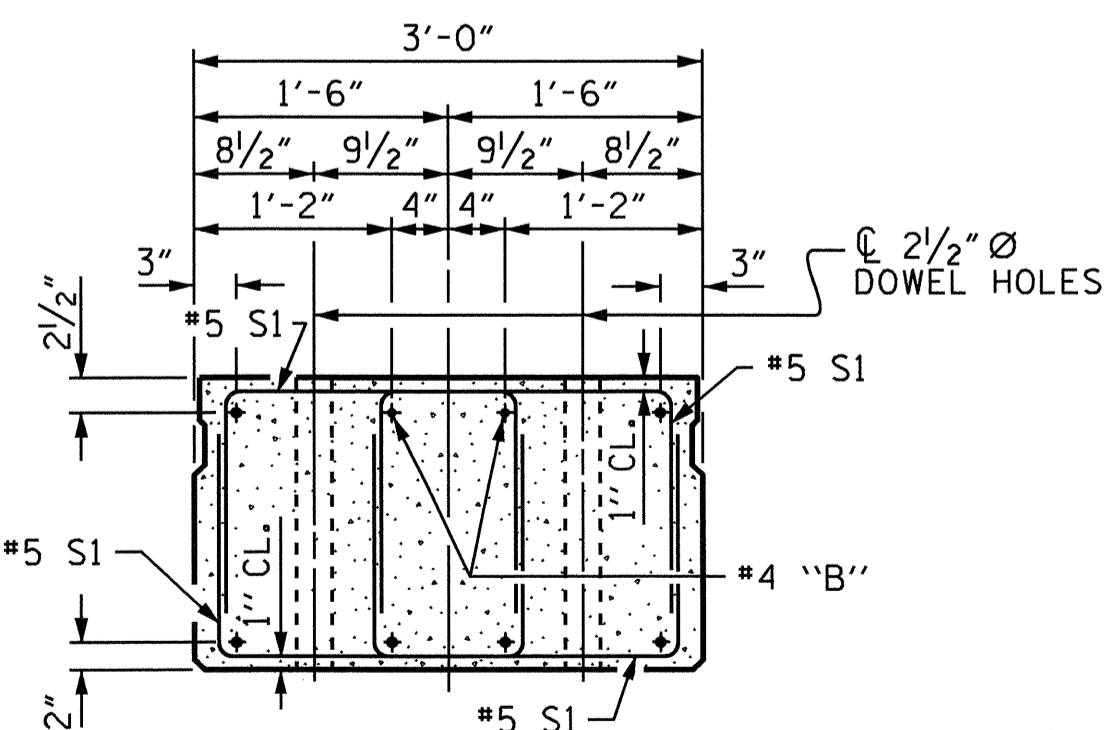


**ELEVATION VIEW**



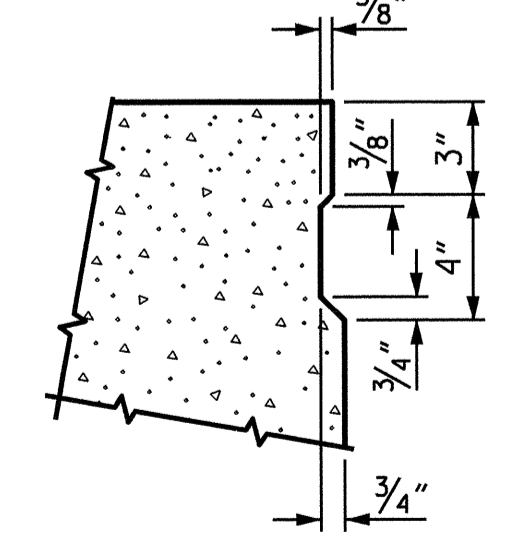
**SECTION B-B**

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



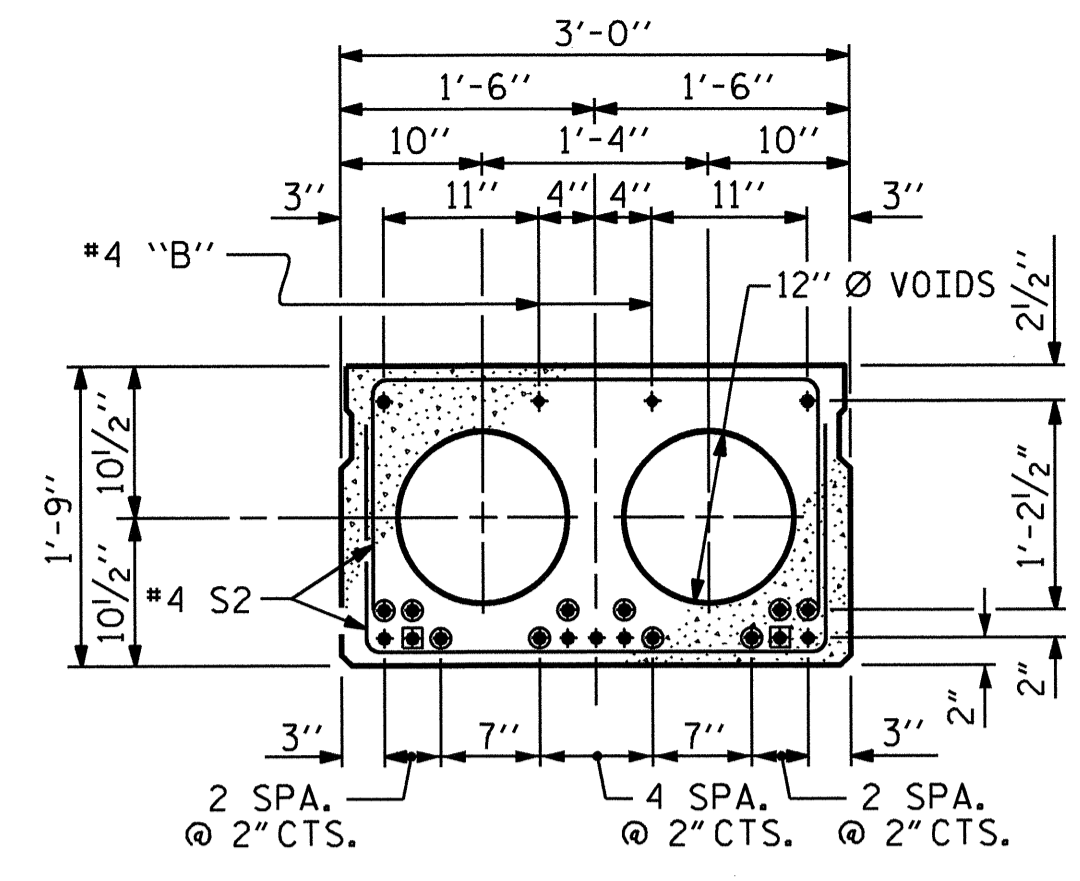
**END ELEVATION**

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.

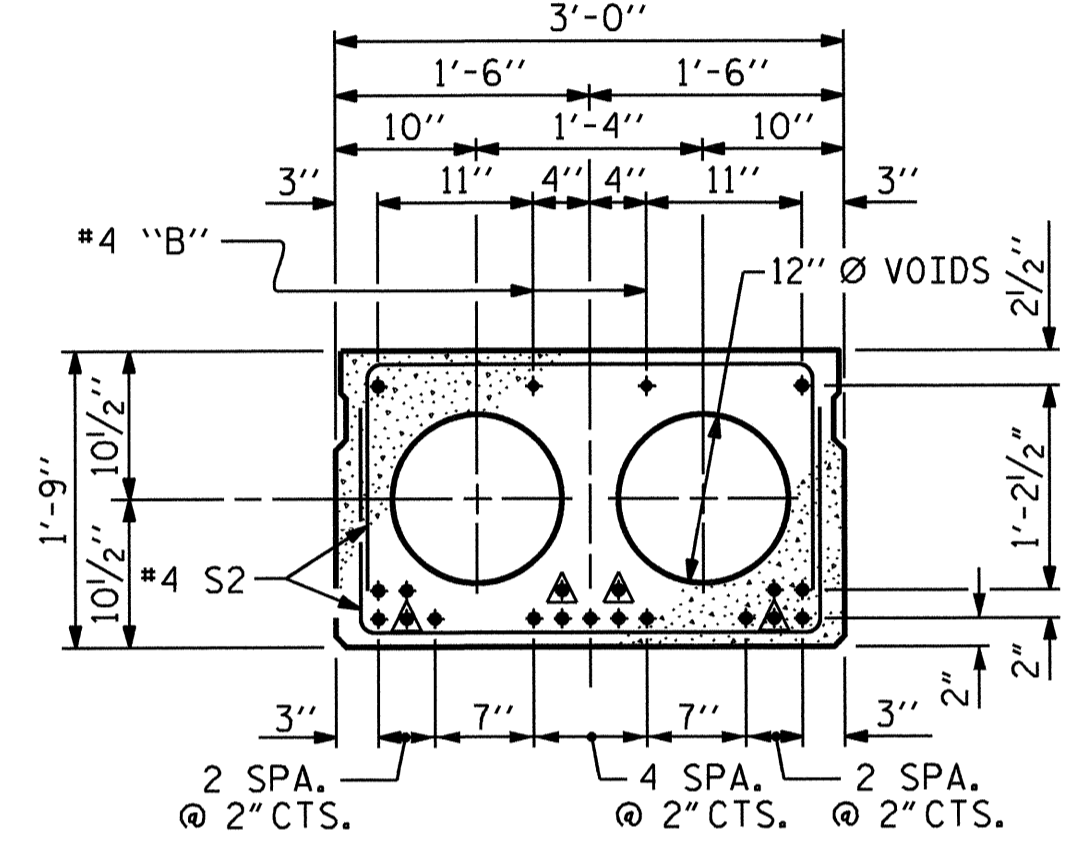


**SHEAR KEY DETAIL**

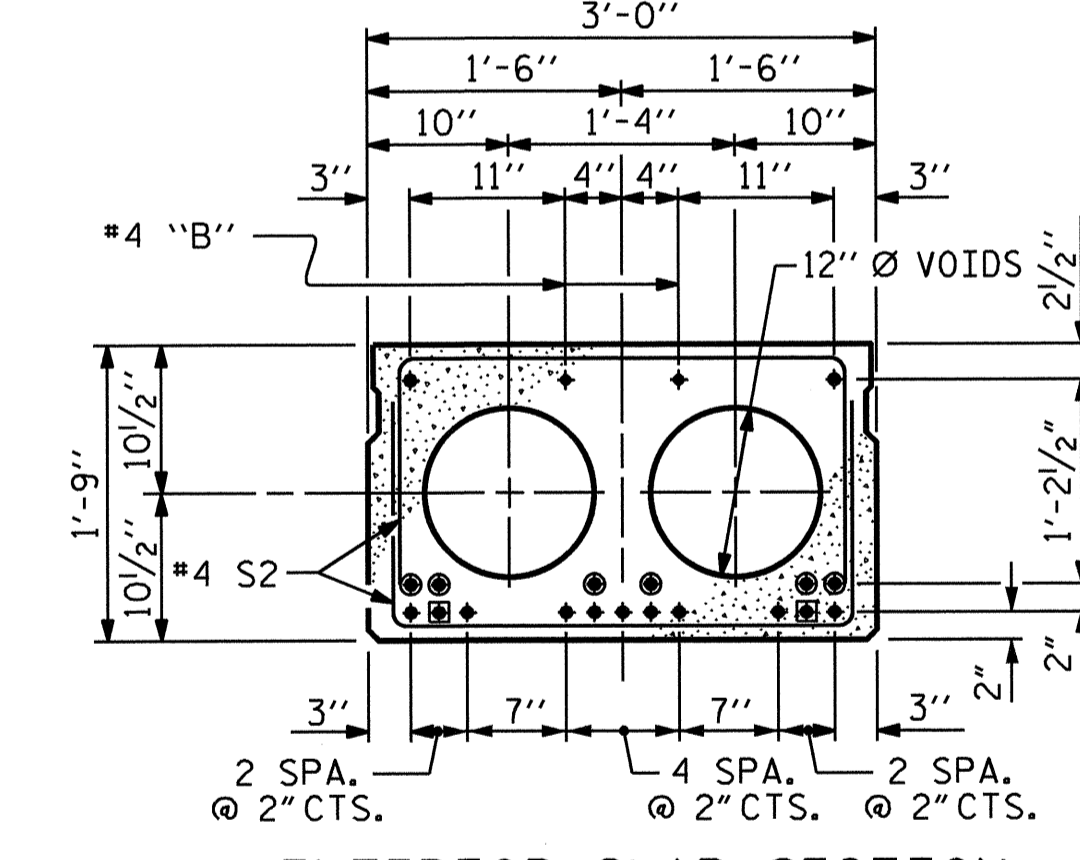
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



**INTERIOR SLAB SECTION (35' UNIT)**  
(9 STRANDS REQUIRED)

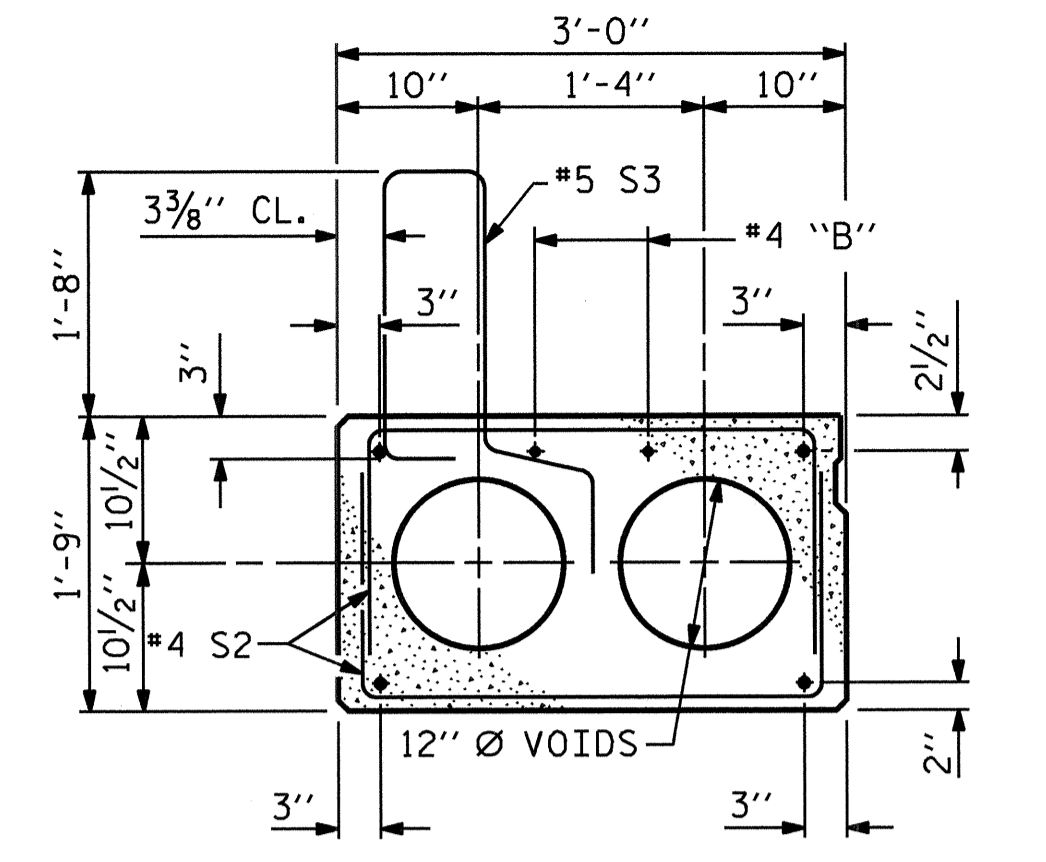


**INTERIOR SLAB SECTION (50' UNIT)**  
(19 STRANDS REQUIRED)



**INTERIOR SLAB SECTION (40' UNIT)**  
(13 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.

**DEBONDING LEGEND**

PROJECT NO. BD-51020  
GREENE COUNTY  
 STATION: 12+65.50 -L-

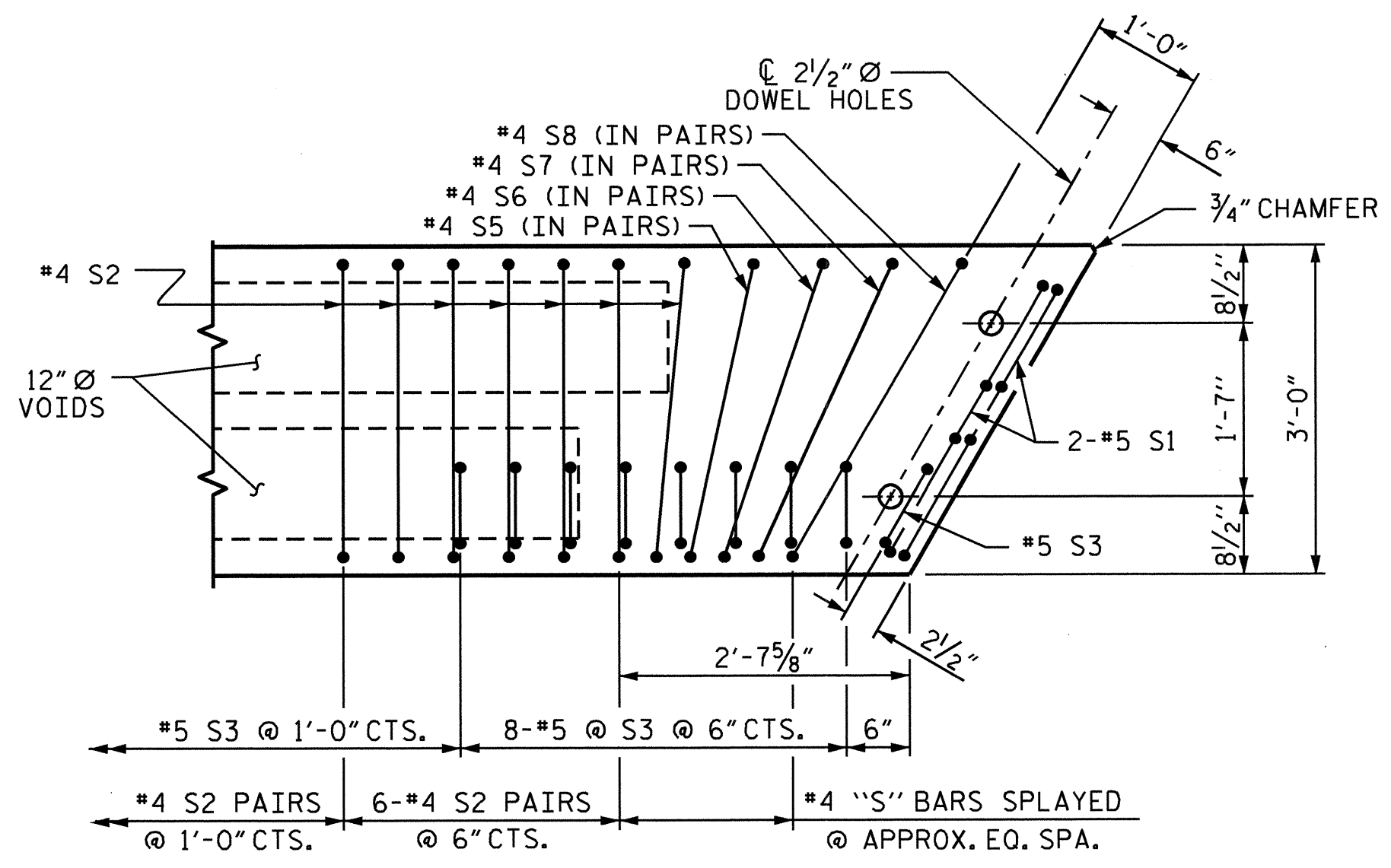
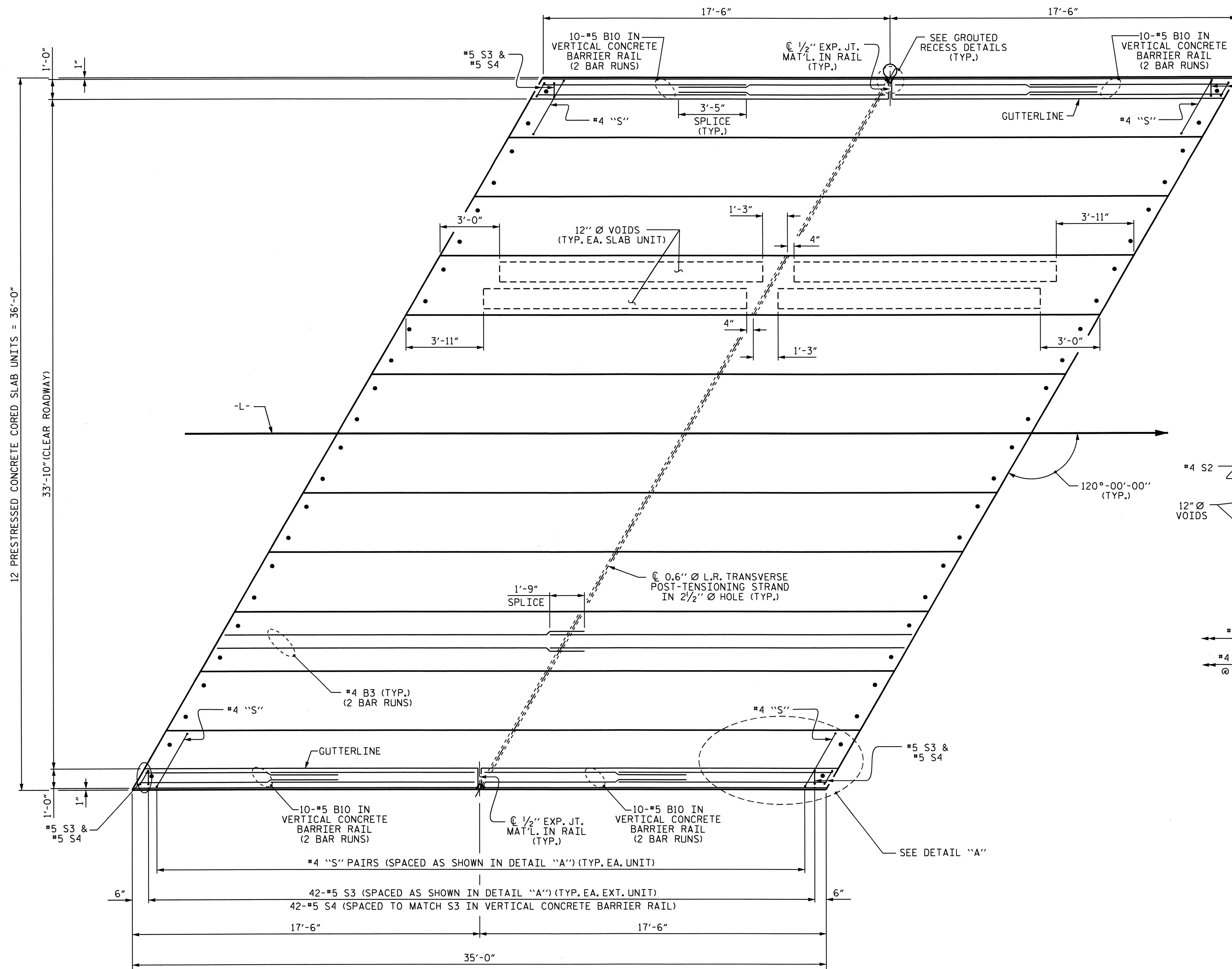
SHEET 1 OF 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 3'-0" X 1'-9"  
 PRESTRESSED CONCRETE  
 CORED SLAB UNIT  
 120° SKEW

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



ASSEMBLED BY : J. LAZAROVICH	DATE : 6/7/2012
CHECKED BY : E. K. POPE	DATE : 6/22/2012
DRAWN BY : DGE 5/09	REV. 12/11
CHECKED BY : BCH 6/09	MAA/AAC



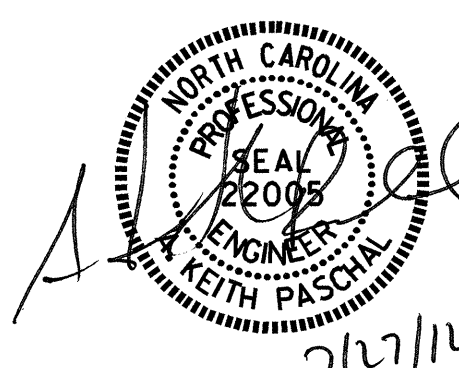
DETAIL "A"  
 NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

PROJECT NO. BD-51020  
GREENE COUNTY  
 STATION: 12+65.50 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

PLAN OF 35' UNIT  
 33'-10" CLEAR ROADWAY  
 120° SKEW

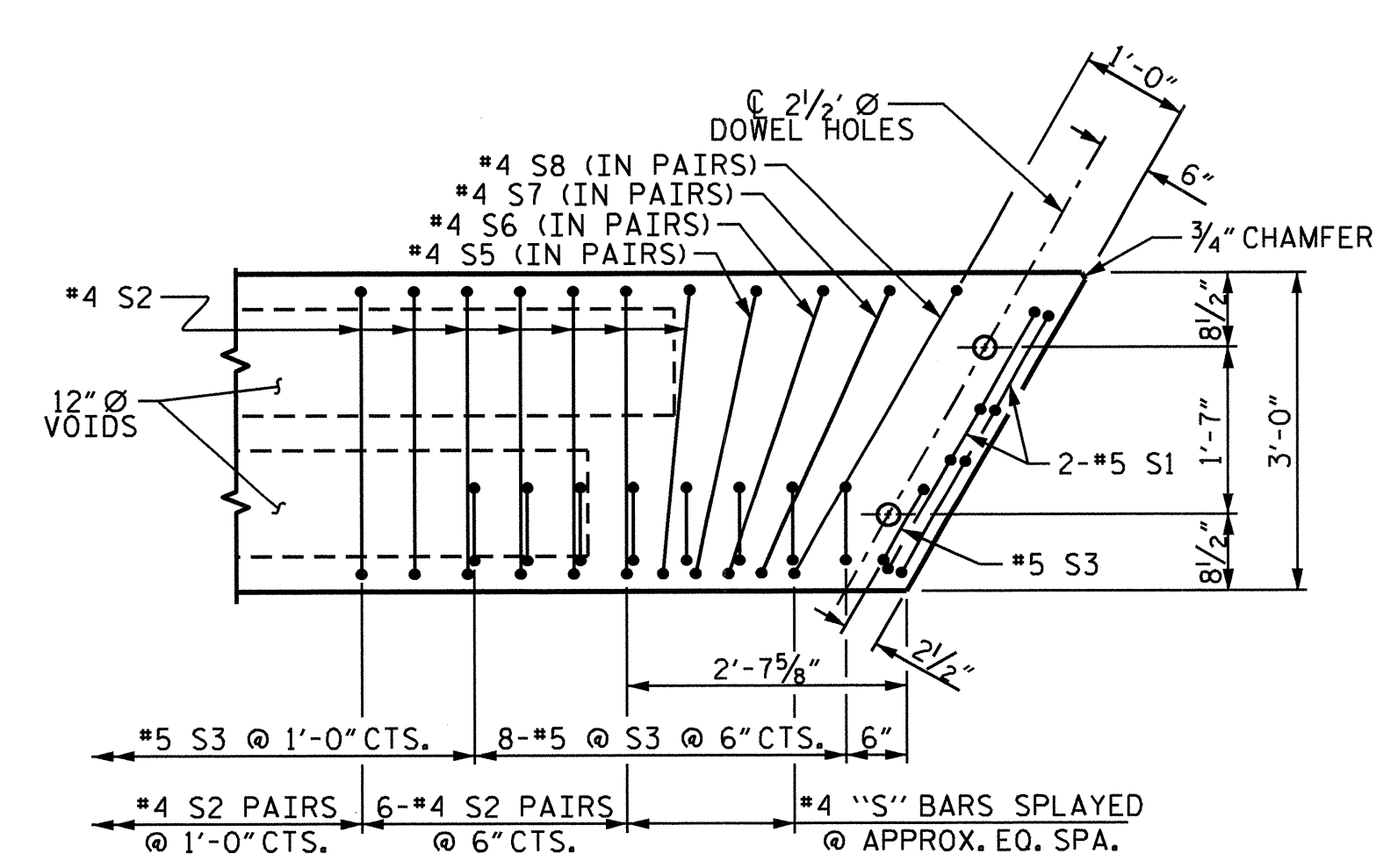
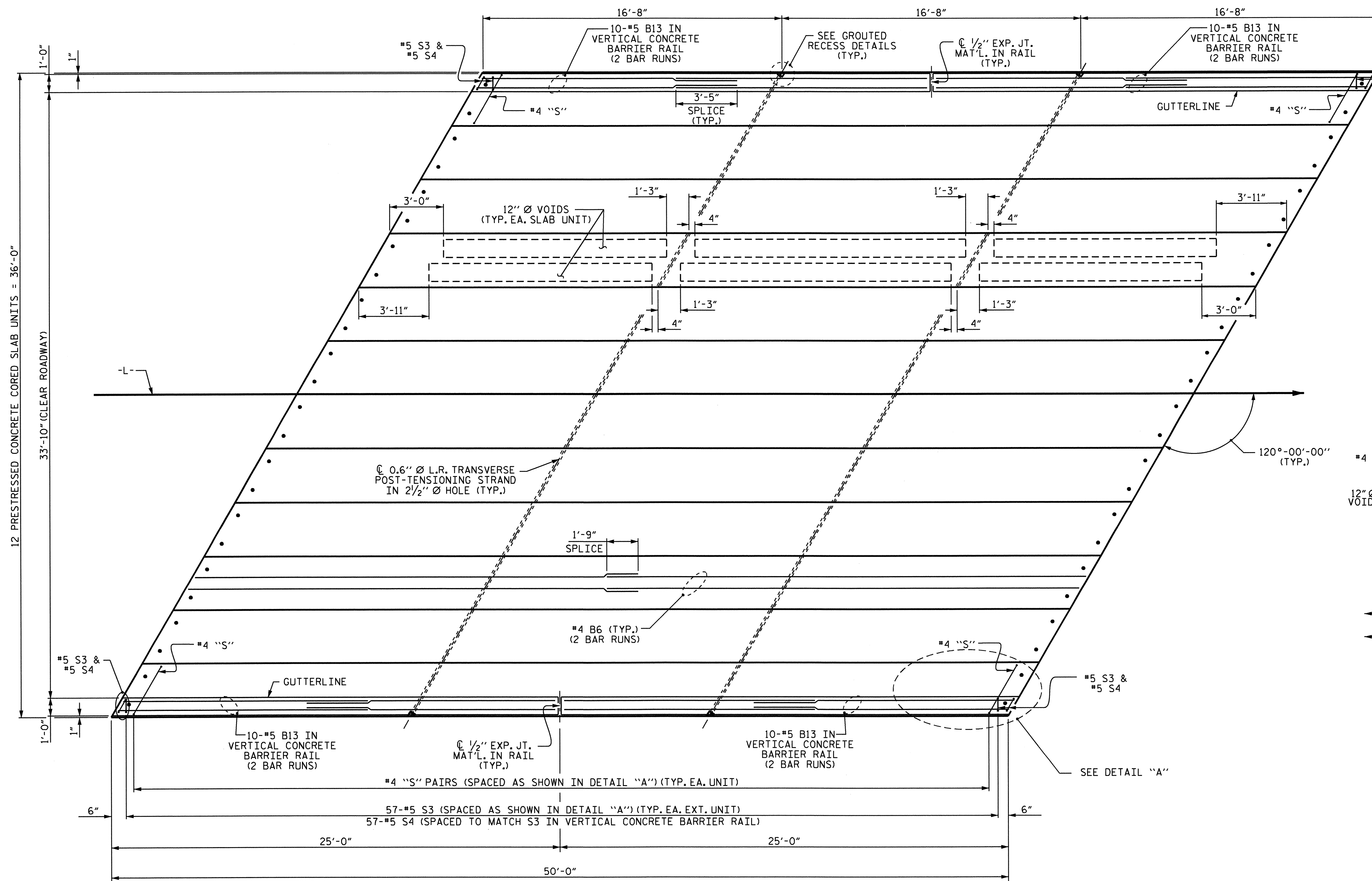


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			
2			4			

ASSEMBLED BY : J. LAZAROVICH DATE : 6/7/2012  
 CHECKED BY : E. K. POPE DATE : 6/22/2012  
 DRAWN BY : DGE 5/09 REV. 12/5/11 MAA/AAC  
 CHECKED BY: BCH 6/09

PLAN OF UNIT  
 SPAN A

27-JUL-2012 13:02  
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 Kpaschal



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

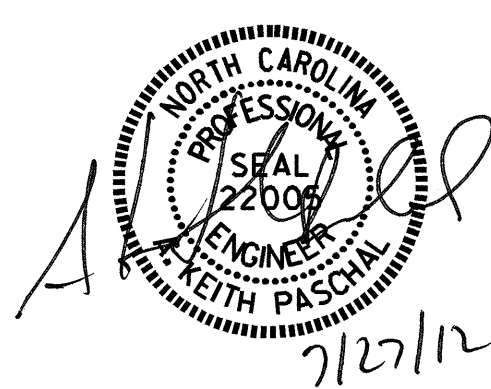
**PLAN OF UNIT  
 SPAN B**

PROJECT NO. BD-51020  
GREENE COUNTY  
 STATION: 12+65.50 -L-  
 SHEET 3 OF 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

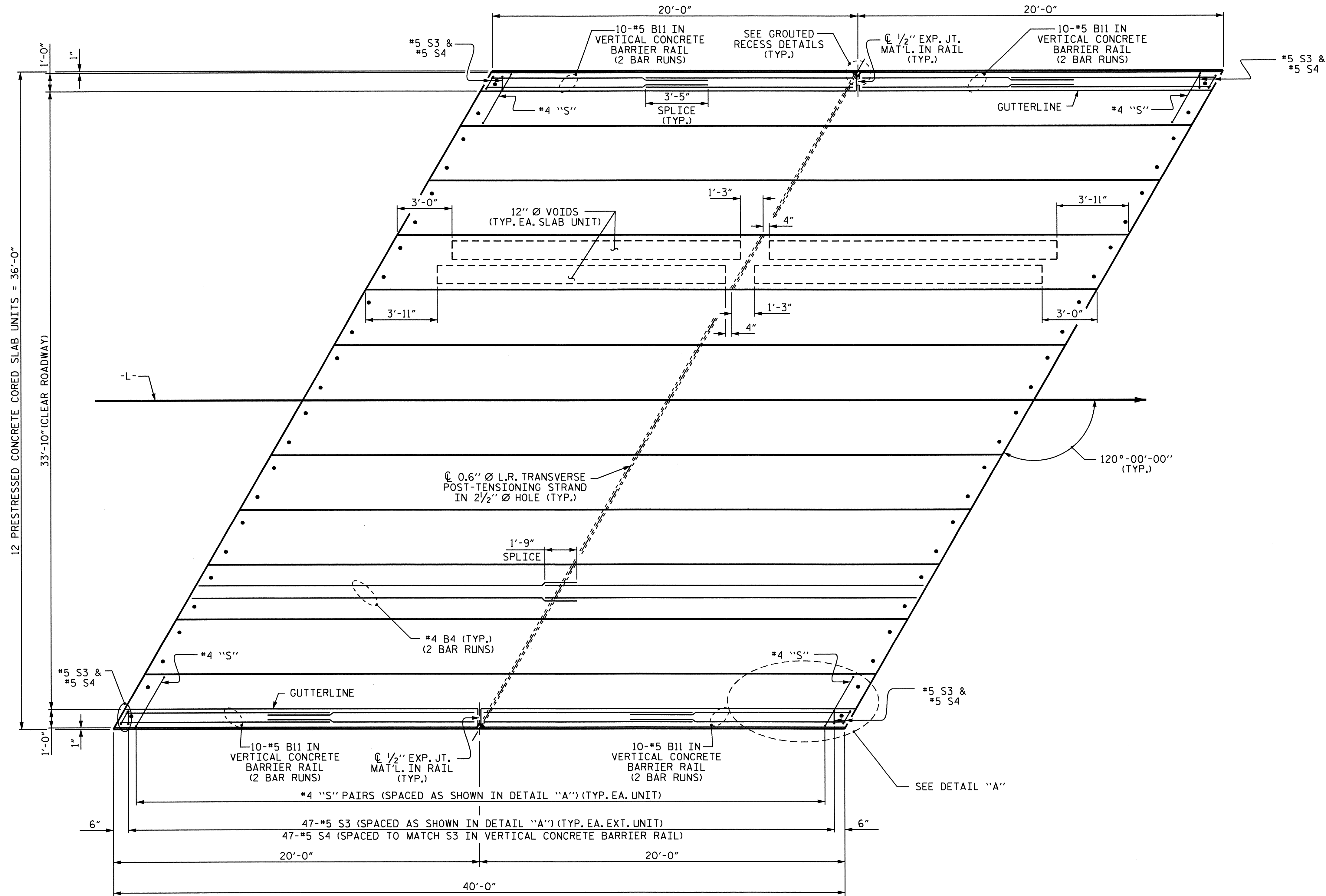
**PLAN OF 50' UNIT  
 33'-10" CLEAR ROADWAY  
 120° SKEW**

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

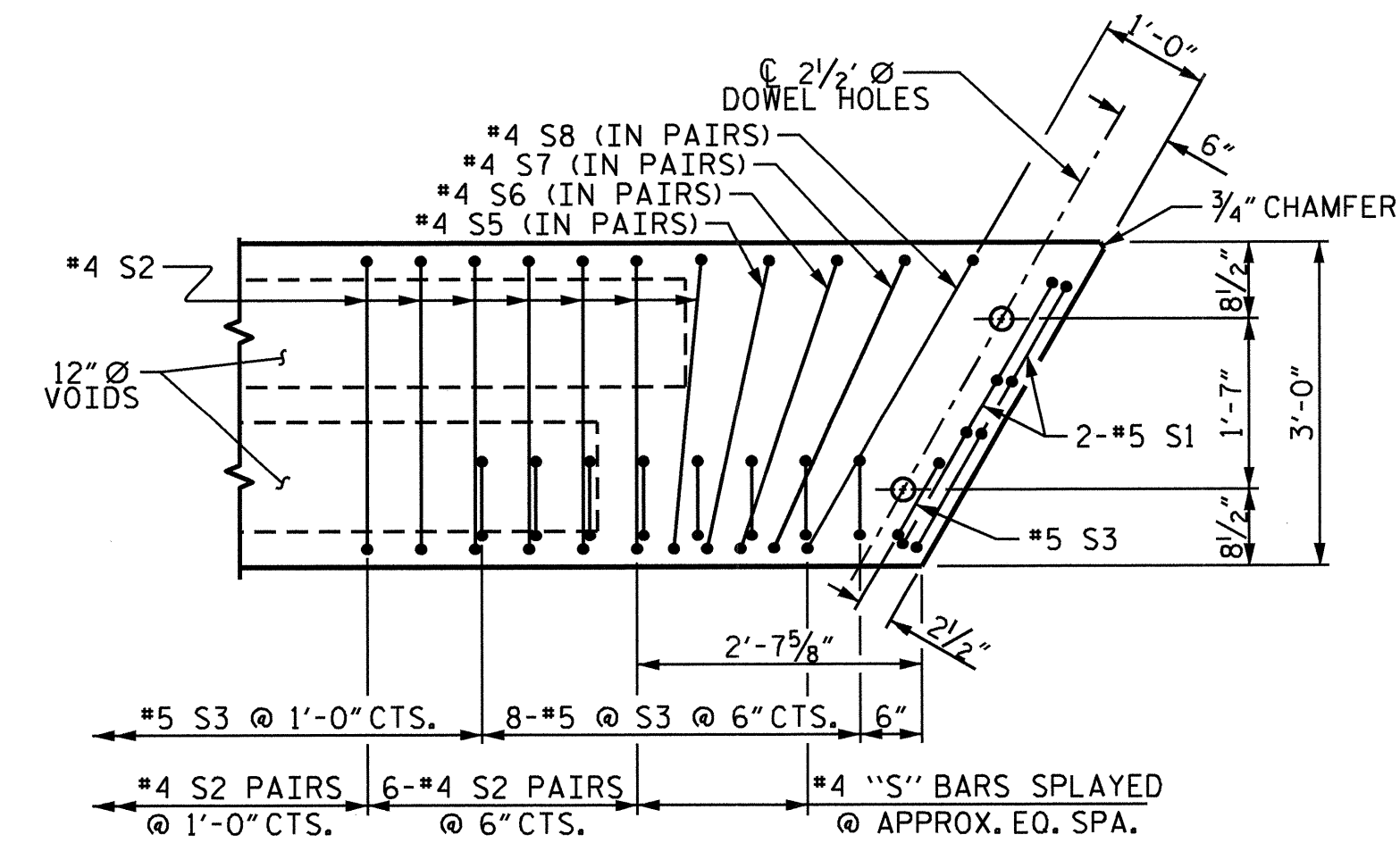


ASSEMBLED BY : J. LAZAROVICH	DATE : 6/7/2012
CHECKED BY : E. K. POPE	DATE : 6/22/2012
DRAWN BY : DGE 5/09	REV. 12/5/11 MAA/AAC
CHECKED BY : BCH 6/09	

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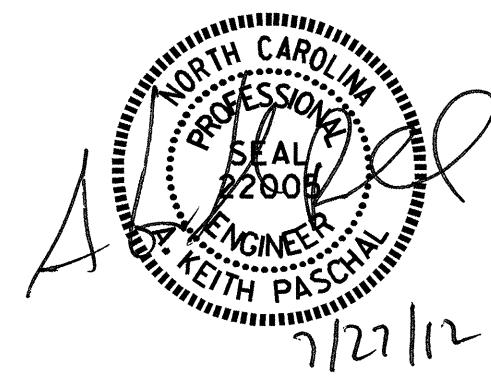
PLAN OF UNIT  
SPAN C



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

PROJECT NO. BD-51020  
GREENE COUNTY  
 STATION: 12+65.50 -L-  
 SHEET 4 OF 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 PLAN OF 40' UNIT  
 33'-10" CLEAR ROADWAY  
 120° SKEW



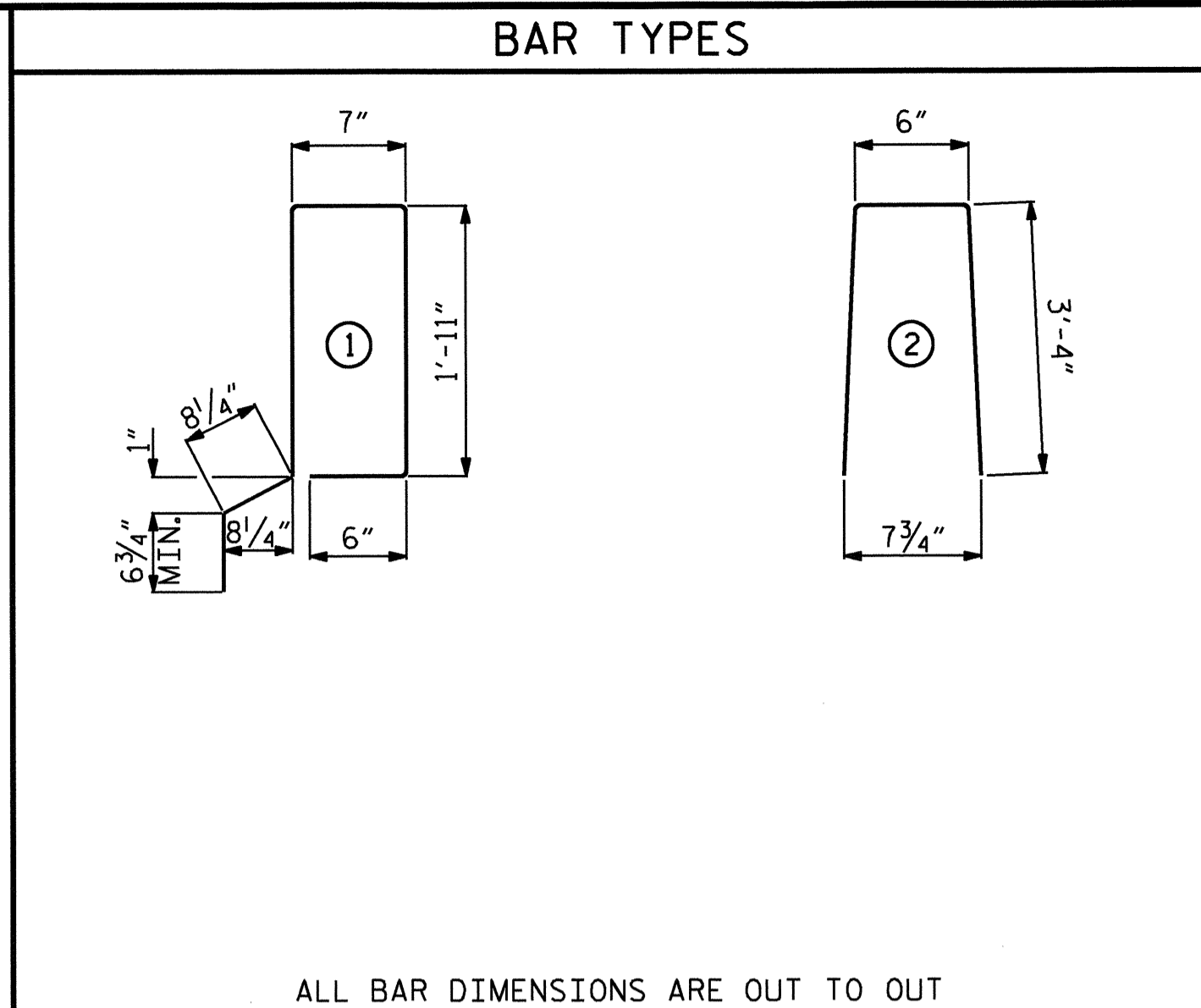
ASSEMBLED BY : J. LAZAROVICH	DATE : 6/7/2012
CHECKED BY : E. K. POPE	DATE : 6/22/2012
DRAWN BY : DGE 5/09	REV. 12/5/11 MAA/AAC
CHECKED BY: BCH 6/09	

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

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
35' UNIT						
*B10	80	80	#5	STR	10'-5"	869
*S4	88	88	#5	2	7'-2"	658
* EPOXY COATED REINFORCING STEEL				LBS.		1527
CLASS AA CONCRETE				CU.YDS.		9.2
TOTAL VERTICAL CONCRETE BARRIER RAIL						
50' UNIT						
*B13	80		#5	STR	14'-3"	1189
*S4	118		#5	2	7'-2"	882
* EPOXY COATED REINFORCING STEEL				LBS.		2071
CLASS AA CONCRETE				CU.YDS.		13.1
TOTAL VERTICAL CONCRETE BARRIER RAIL						
40' UNIT						
*B11	80		#5	STR	11'-9"	980
*S4	98		#5	2	7'-2"	733
* EPOXY COATED REINFORCING STEEL				LBS.		1713
CLASS AA CONCRETE				CU.YDS.		10.5
TOTAL VERTICAL CONCRETE BARRIER RAIL						

DEAD LOAD DEFLECTION AND CAMBER	
35' CORED SLAB UNIT	3'-0" x 1'-9"
CAMBER (SLAB ALONE IN PLACE)	0.6" Ø L.R. STRAND
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/2" ↑
FINAL CAMBER	1/8" ↓
50' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	2 1/2" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/4" ↓
FINAL CAMBER	2 1/4" ↑
40' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1 1/4" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/8" ↓
FINAL CAMBER	1 1/8" ↑

\*\* INCLUDES FUTURE WEARING SURFACE



CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
35' UNIT			
EXTERIOR C.S.	2	35'-0"	70'-0"
INTERIOR C.S.	10	35'-0"	350'-0"
TOTAL	12		420'-0"
50' UNIT			
EXTERIOR C.S.	2	50'-0"	100'-0"
INTERIOR C.S.	10	50'-0"	500'-0"
TOTAL	12		600'-0"
40' UNIT			
EXTERIOR C.S.	2	40'-0"	80'-0"
INTERIOR C.S.	10	40'-0"	400'-0"
TOTAL	12		480'-0"

BILL OF MATERIAL FOR ONE 35' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B3	4	#4	STR	18'-3"	49	18'-3"	49
S1	8	#5	3	4'-6"	38	4'-6"	38
S2	72	#4	3	5'-4"	257	5'-4"	257
*S3	44	#5	1	6'-2"	283		
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.	403		403
* EPOXY COATED REINFORCING STEEL				LBS.	283		
5000 P.S.I. CONCRETE				CU. YDS.	5.2		5.2
0.6" Ø L.R. STRANDS				No.	9		9

BILL OF MATERIAL FOR ONE 50' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B6	4	#4	STR	25'-9"	69	25'-9"	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 40' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B4	4	#4	STR	20'-9"	55	20'-9"	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

**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 SIDEWAYS. 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.

GRADE 270 STRANDS	
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

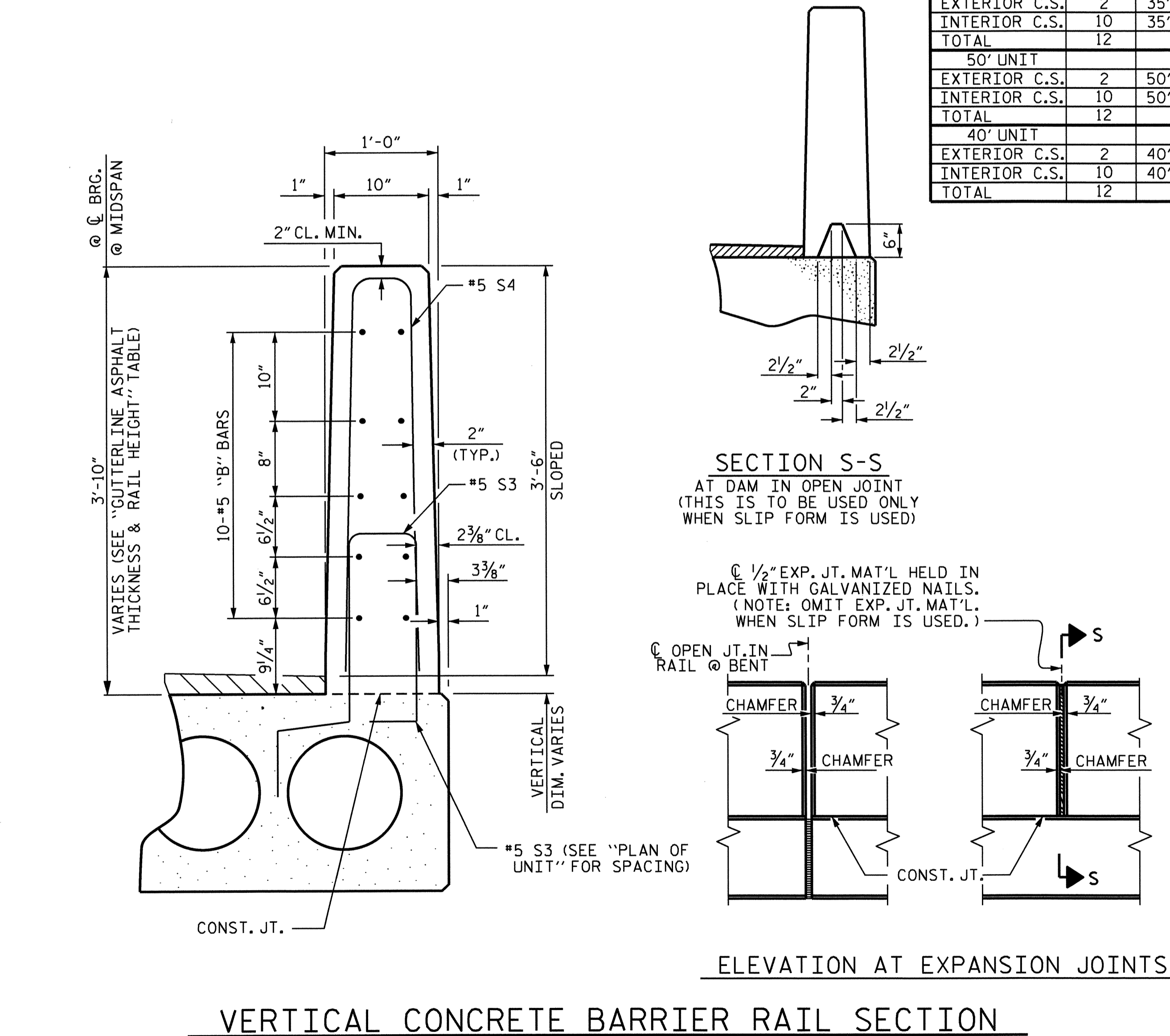
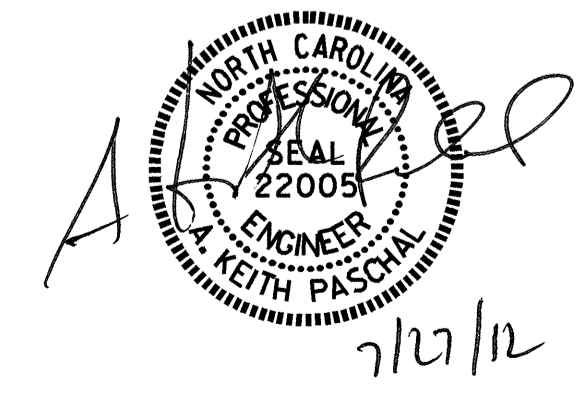
CONCRETE RELEASE STRENGTH	
UNIT	PSI
35' UNITS	4000
50' UNITS	4900
40' UNITS	4000

PROJECT NO. BD-51020  
GREENE COUNTY  
 STATION: 12+65.50 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 3'-0" X 1'-9"  
 PRESTRESSED CONCRETE  
 CORED SLAB UNIT  
 120° SKEW

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



ASSEMBLED BY: J. LAZAROVICH DATE: 6/7/2012  
 CHECKED BY: E. K. POPE DATE: 6/22/2012  
 DRAWN BY: DGE 5/09 REV. 12/11 MAA/AAC  
 CHECKED BY: BCH 6/09

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.)

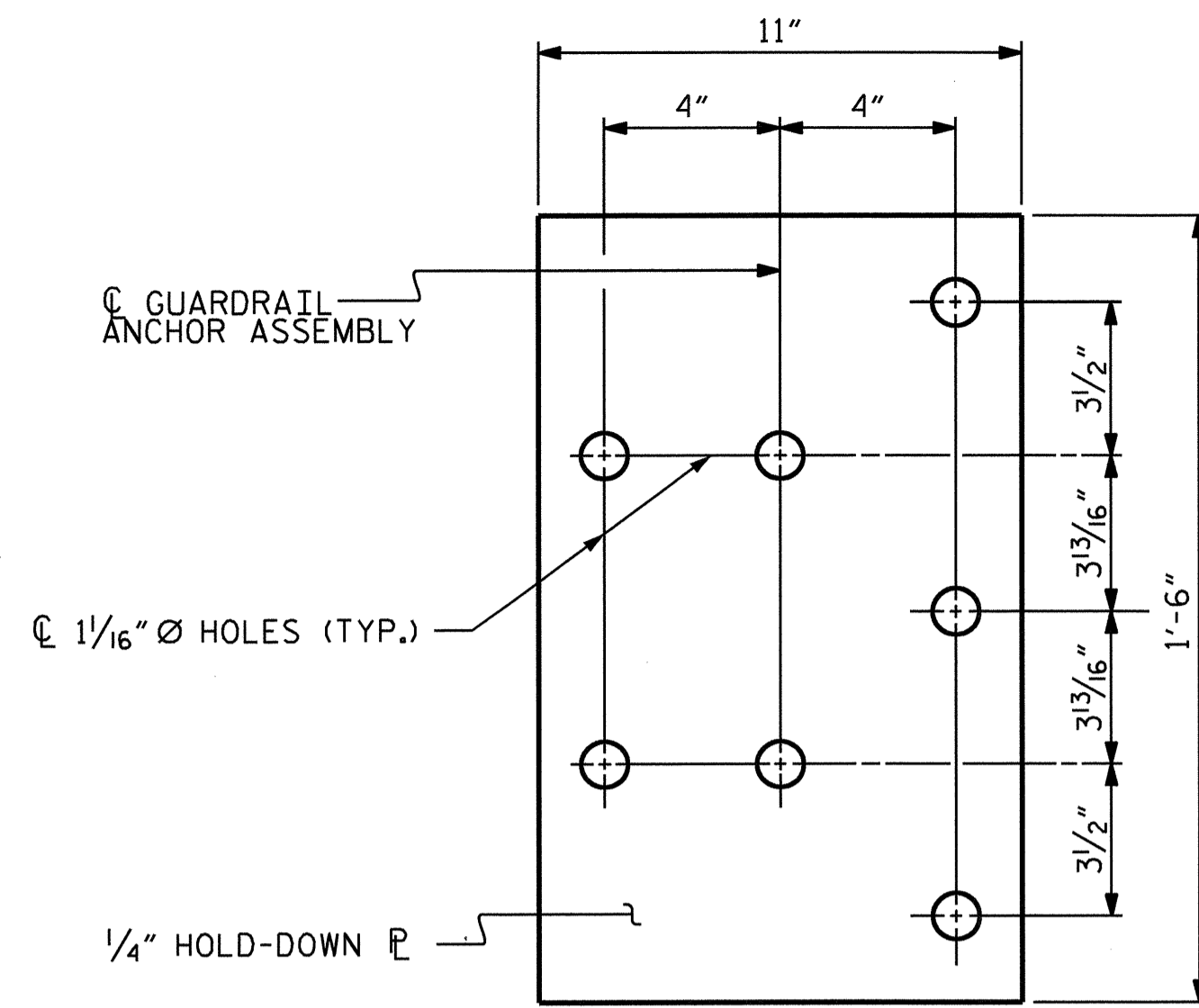
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.

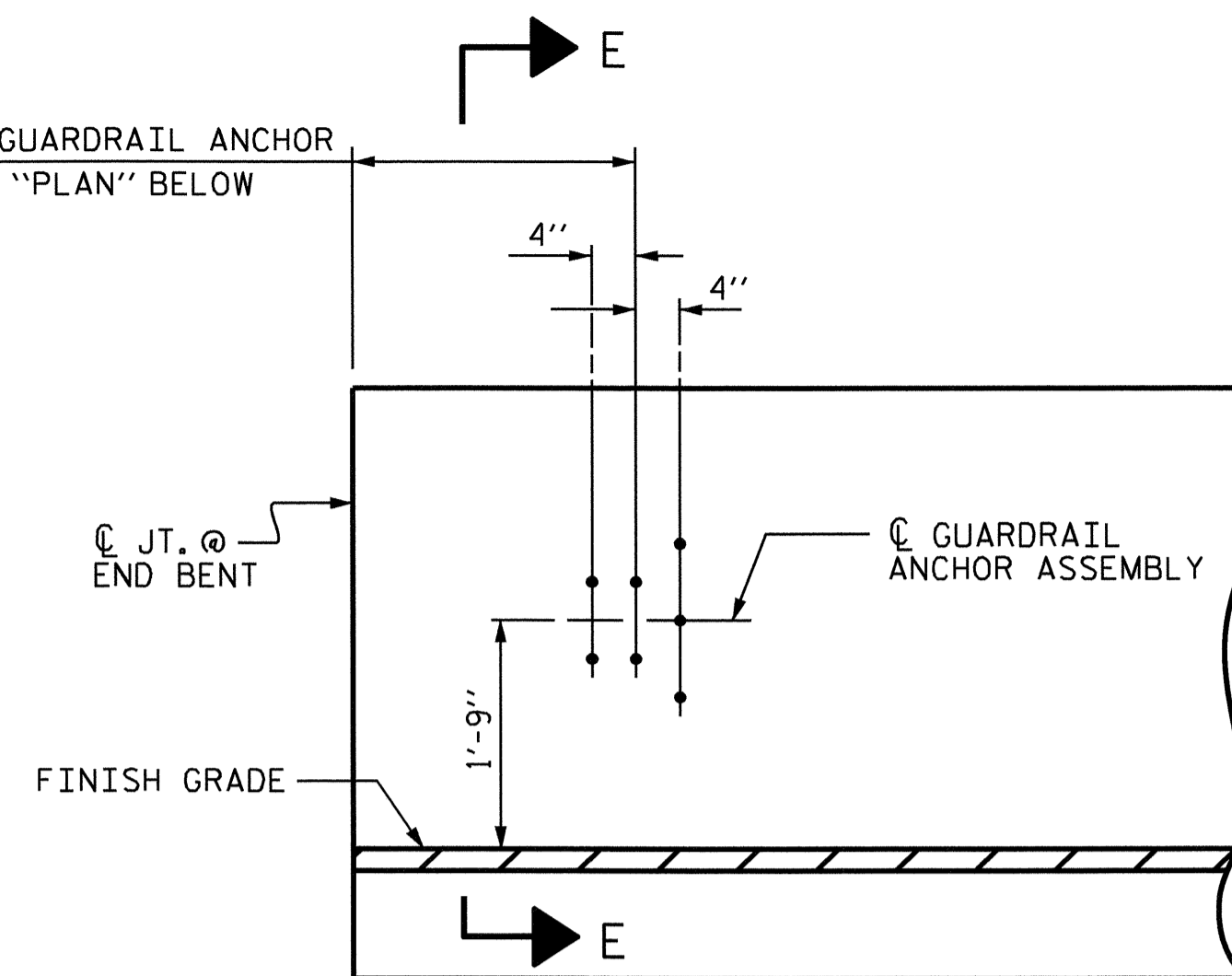
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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.

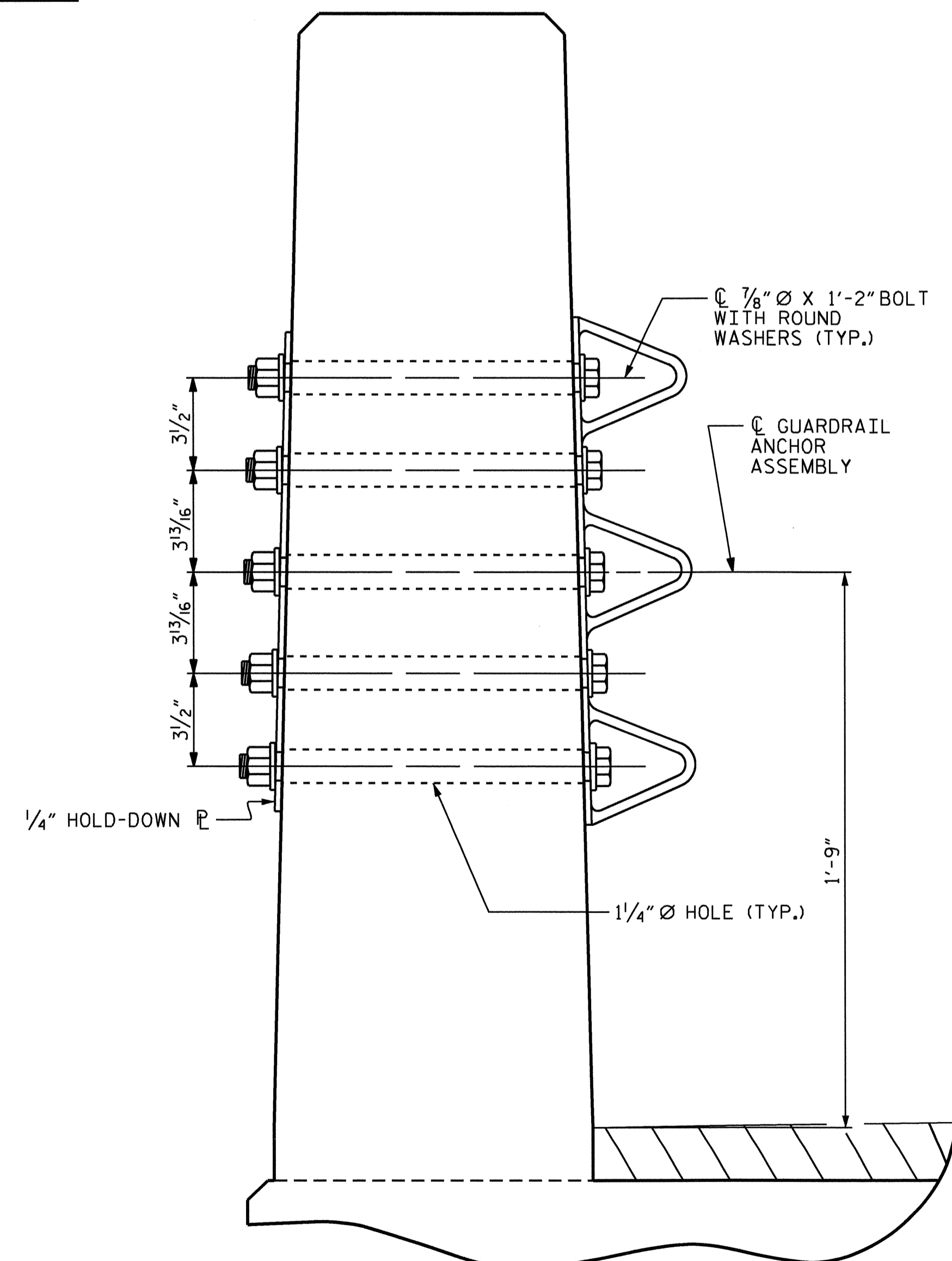


PLAN

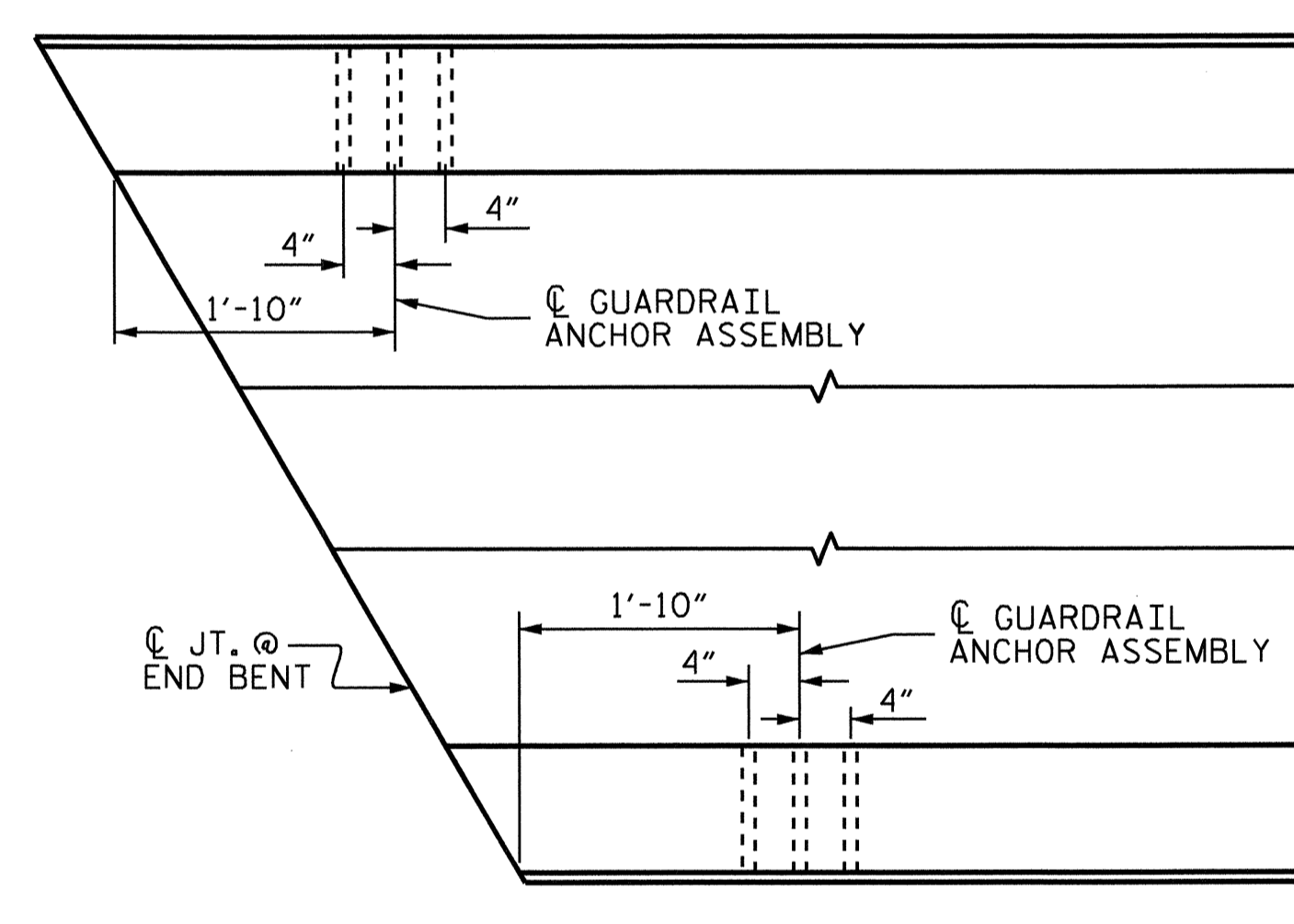
FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW



ELEVATION



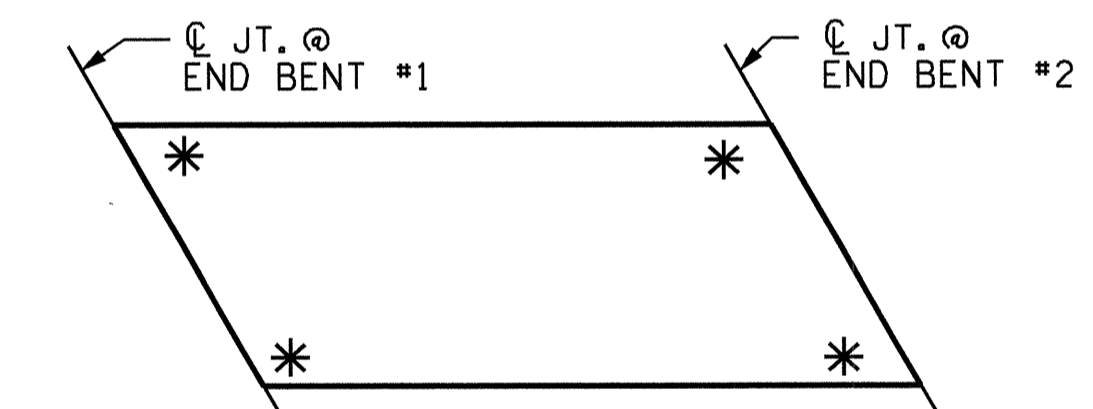
SECTION E-E  
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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

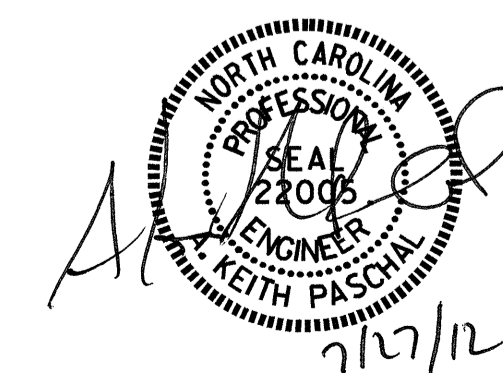


SKETCH SHOWING POINTS OF ATTACHMENT

\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. BD-51020  
GREENE COUNTY  
 STATION: 14+65.50 -L-

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



ASSEMBLED BY : J. LAZAROVICH	DATE : 6/7/2012
CHECKED BY : E. K. POPE	DATE : 6/22/2012
DRAWN BY : MAA 5/10	ADDED 5/6/10
CHECKED BY : GM 5/10	REV. 10/1/11
	REV. 12/5/11
	MAA/GM
	MAA/GM

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 Kpaschal

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

NOTES

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

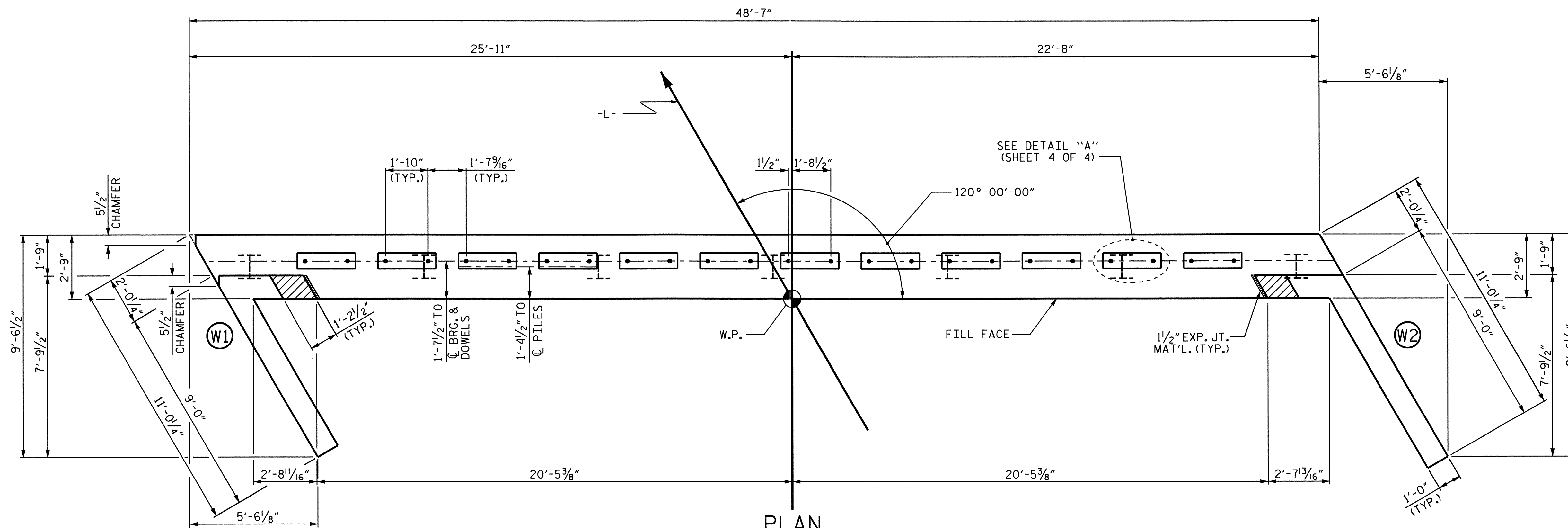
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPlice DETAILS, SEE SHEET 4 OF 4.

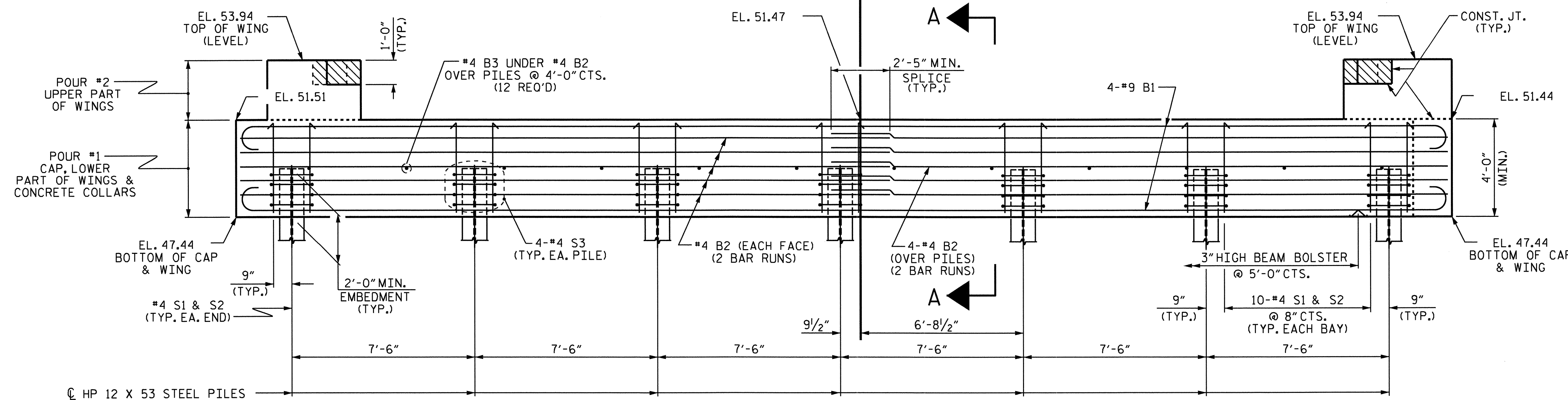
FOR WING DETAILS, SEE SHEET 3 OF 4.

INSTALL THE 4" Ø DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE ROADWAY PLANS.

REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.



PLAN



ELEVATION

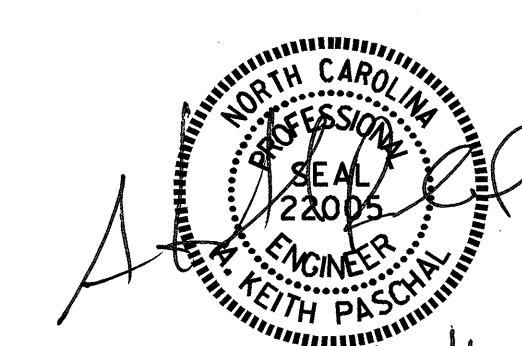
WINGS NOT SHOWN FOR CLARITY.  
FOR SECTION A-A, SEE SHEET 4 OF 4.  
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.  
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

PROJECT NO. BD-51020  
GREENE COUNTY  
STATION: 12+65.50 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
END BENT No. 1



ASSEMBLED BY : J. LAZAROVICH	DATE : 12/8/2012
CHECKED BY : E. K. POPE	DATE : 6/22/2012
DRAWN BY : WJH 12/11	
CHECKED BY : AAC 12/11	

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



**NOTES**

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

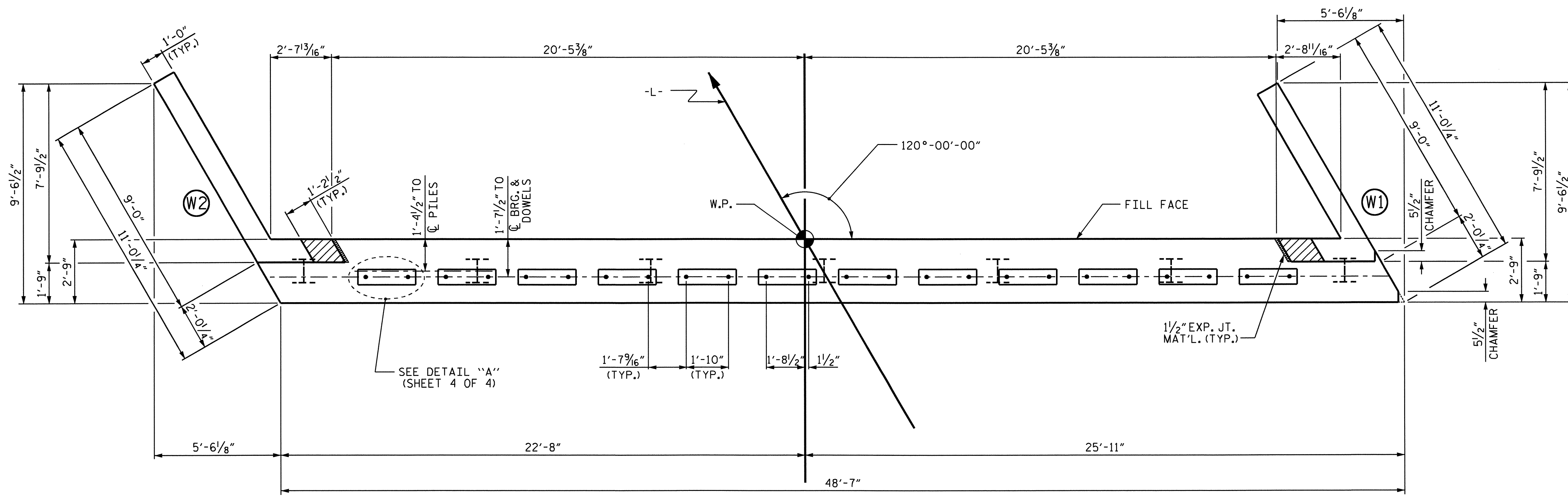
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

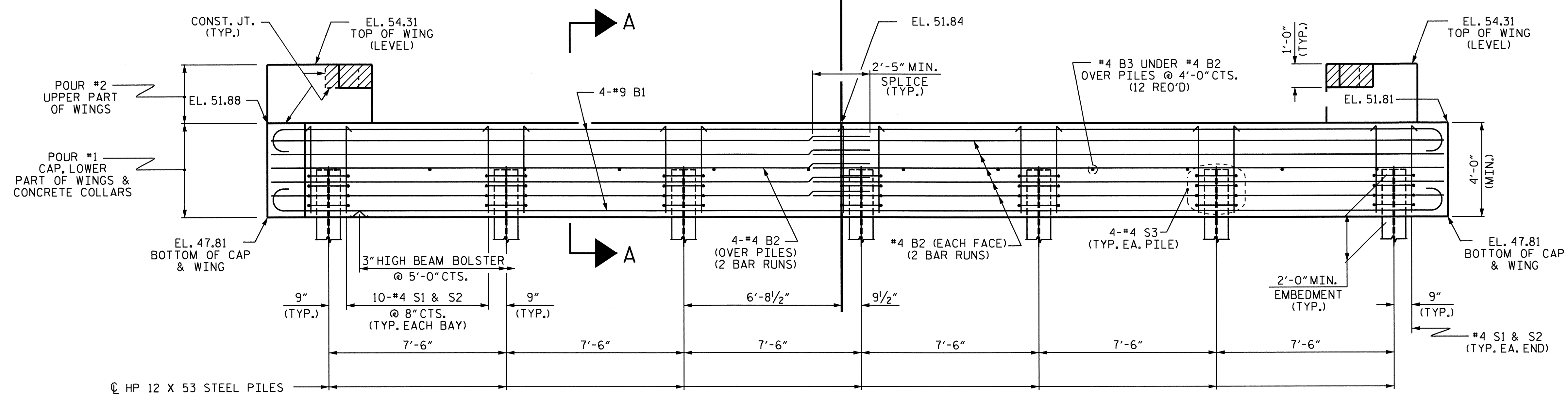
FOR WING DETAILS, SEE SHEET 3 OF 4.

INSTALL THE 4" Ø DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE 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.

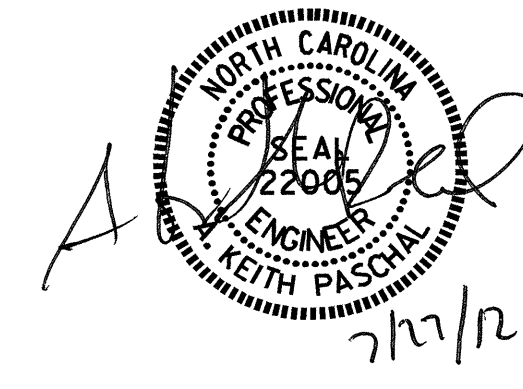
PROJECT NO. BD-51020  
GREENE COUNTY  
STATION: 12+65.50 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

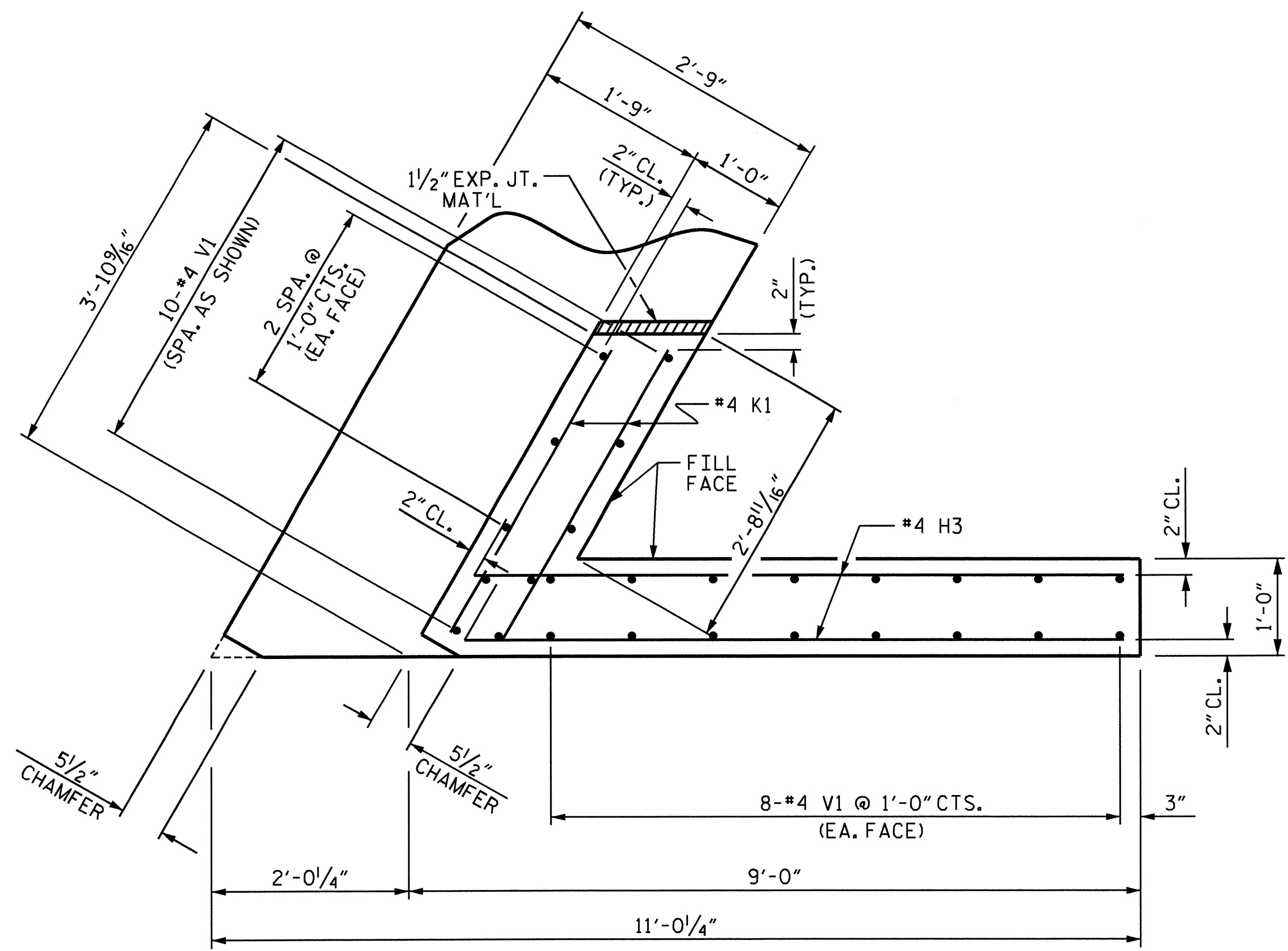
SUBSTRUCTURE  
END BENT No. 2

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

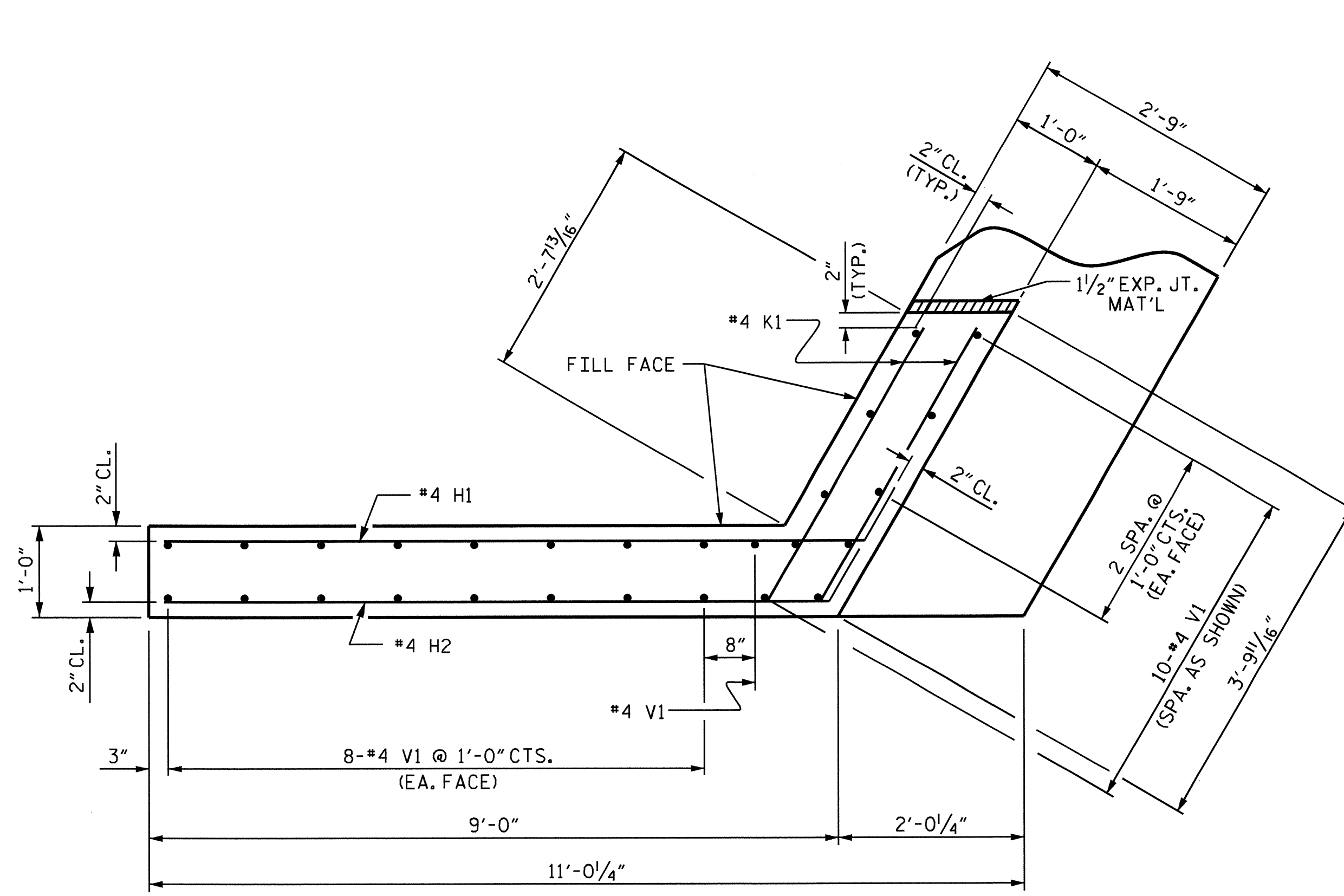


ASSEMBLED BY : J. LAZAROVICH DATE : 12/8/2012  
CHECKED BY : E. K. POPE DATE : 6/22/2012  
DRAWN BY : WJH 12/11  
CHECKED BY : AAC 12/11

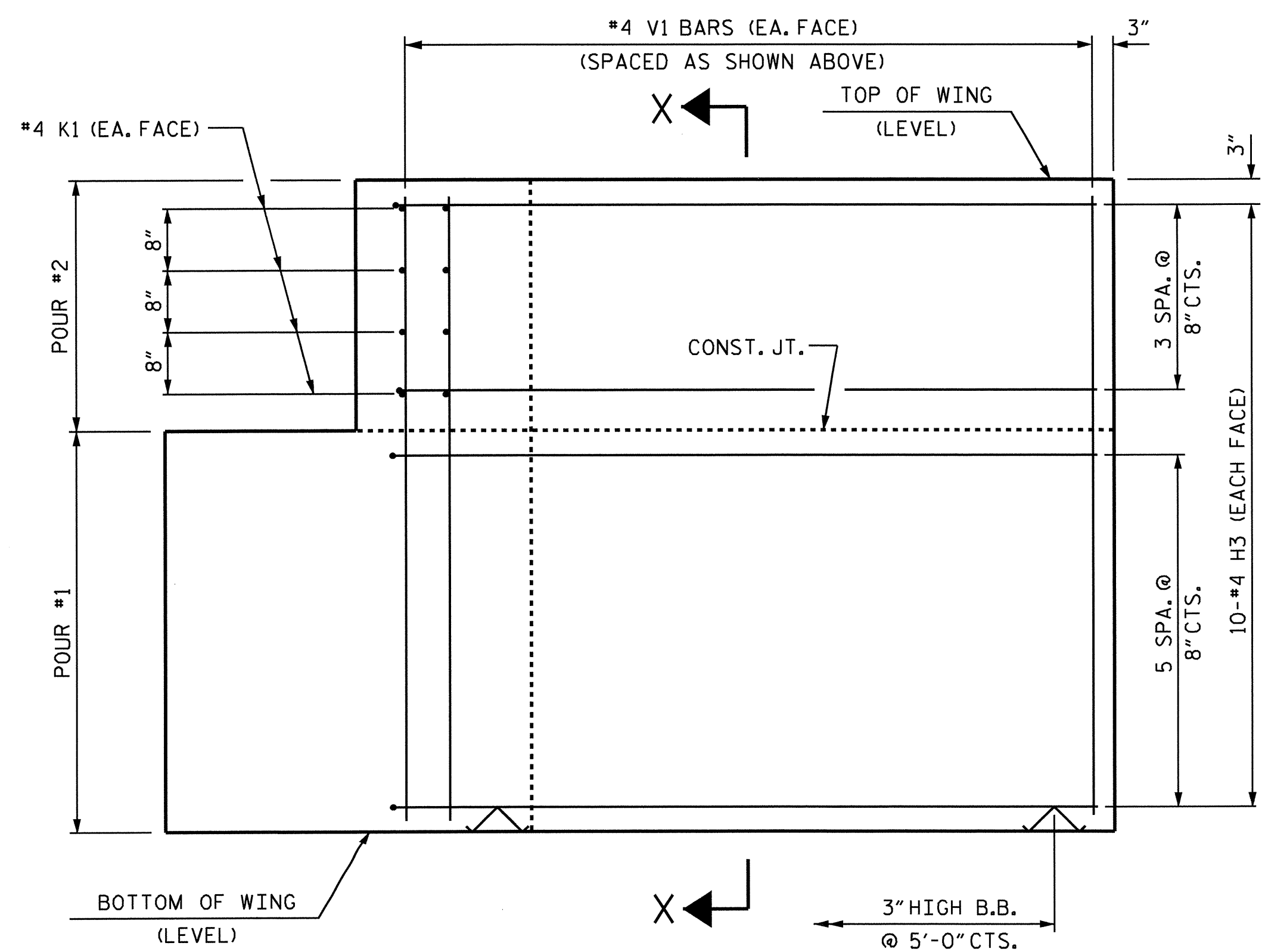
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kpaschall



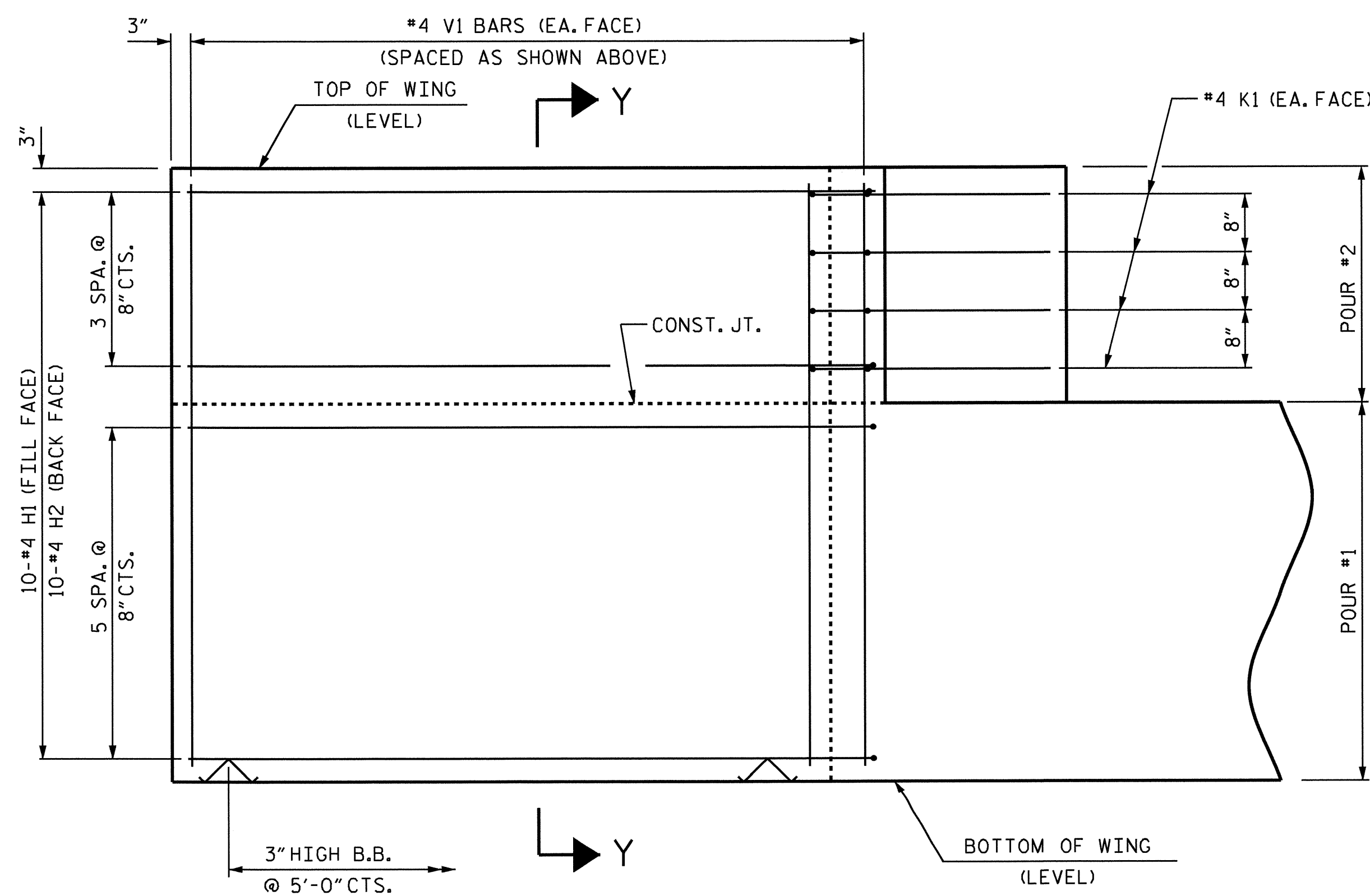
PLAN OF WING (W1)



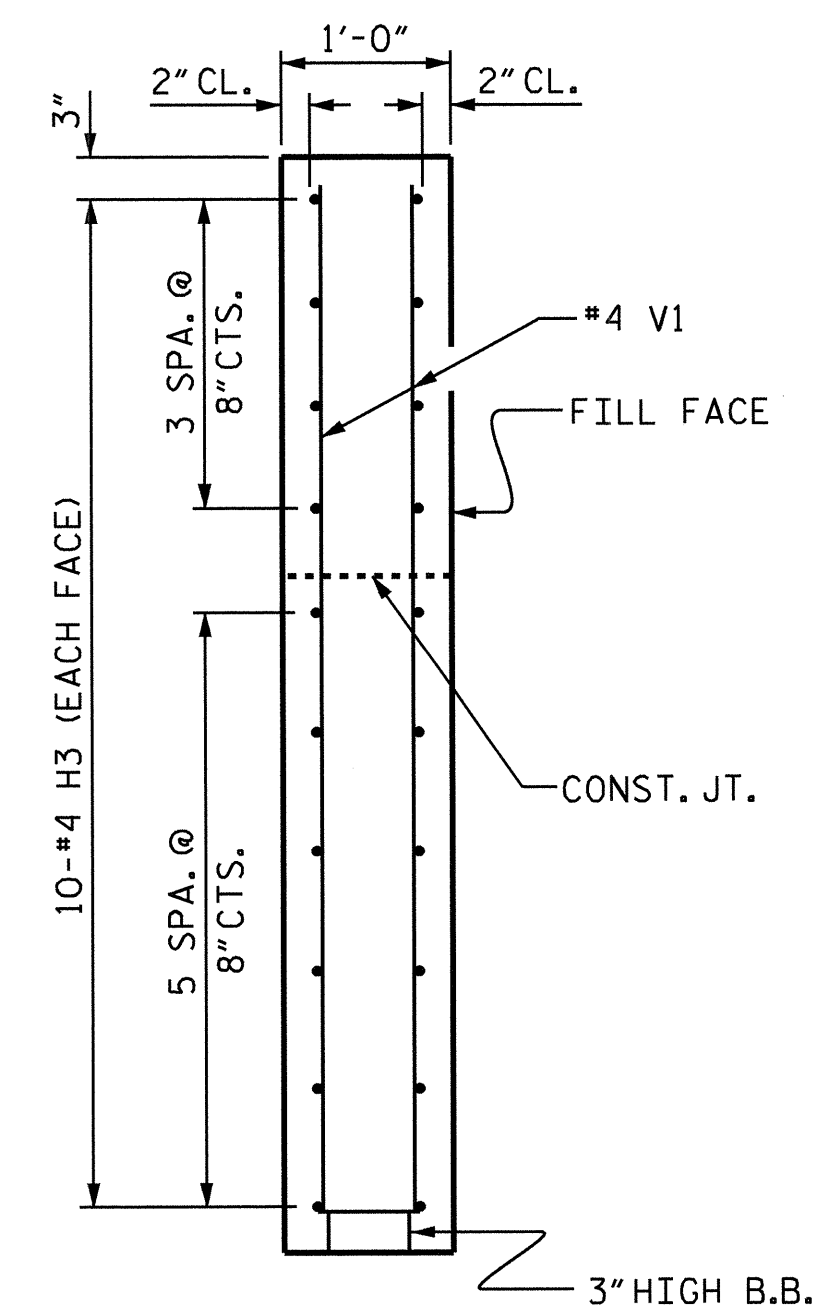
PLAN OF WING (W2)



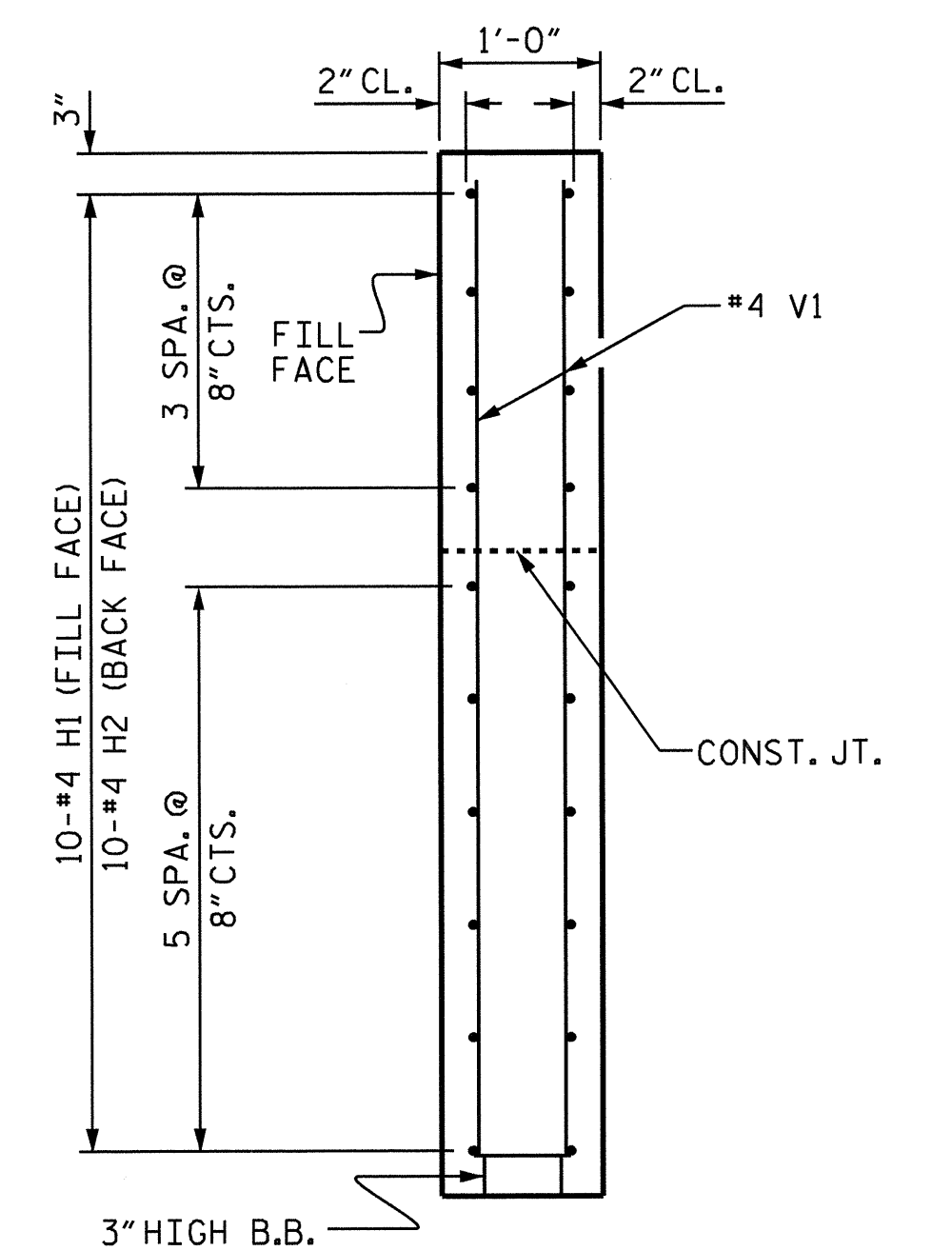
ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION X-X



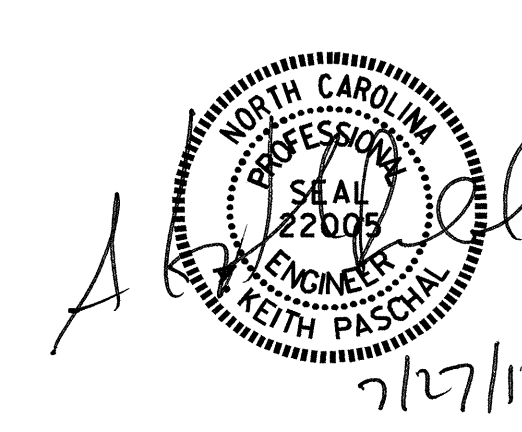
SECTION Y-Y

PROJECT NO. BD-51020  
 GREENE COUNTY  
 STATION: 12+65.50 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT  
 WING DETAILS



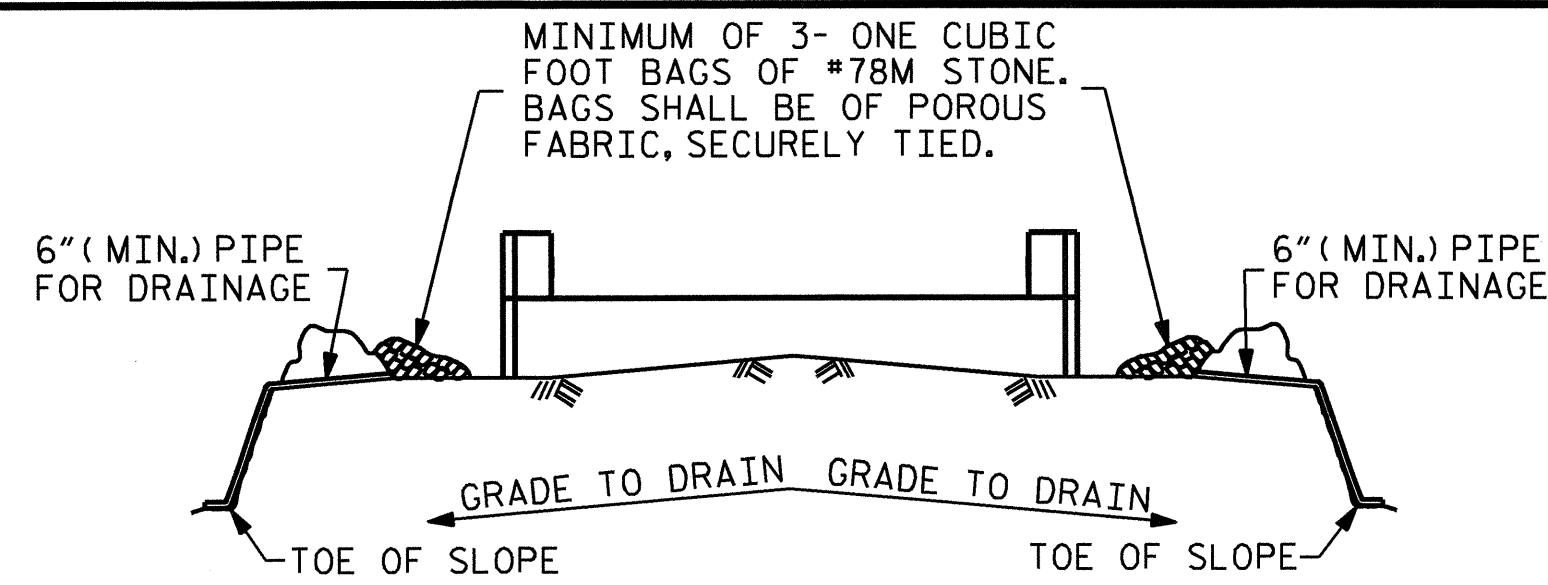
ASSEMBLED BY : J. LAZAROVICH DATE : 6/8/2012  
 CHECKED BY : E. K. POPE DATE : 6/22/2012  
 DRAWN BY : WJH 12/11  
 CHECKED BY : AAC 12/11

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 kpaschal

WING DETAILS

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

STD. NO. EB\_36\_120S4

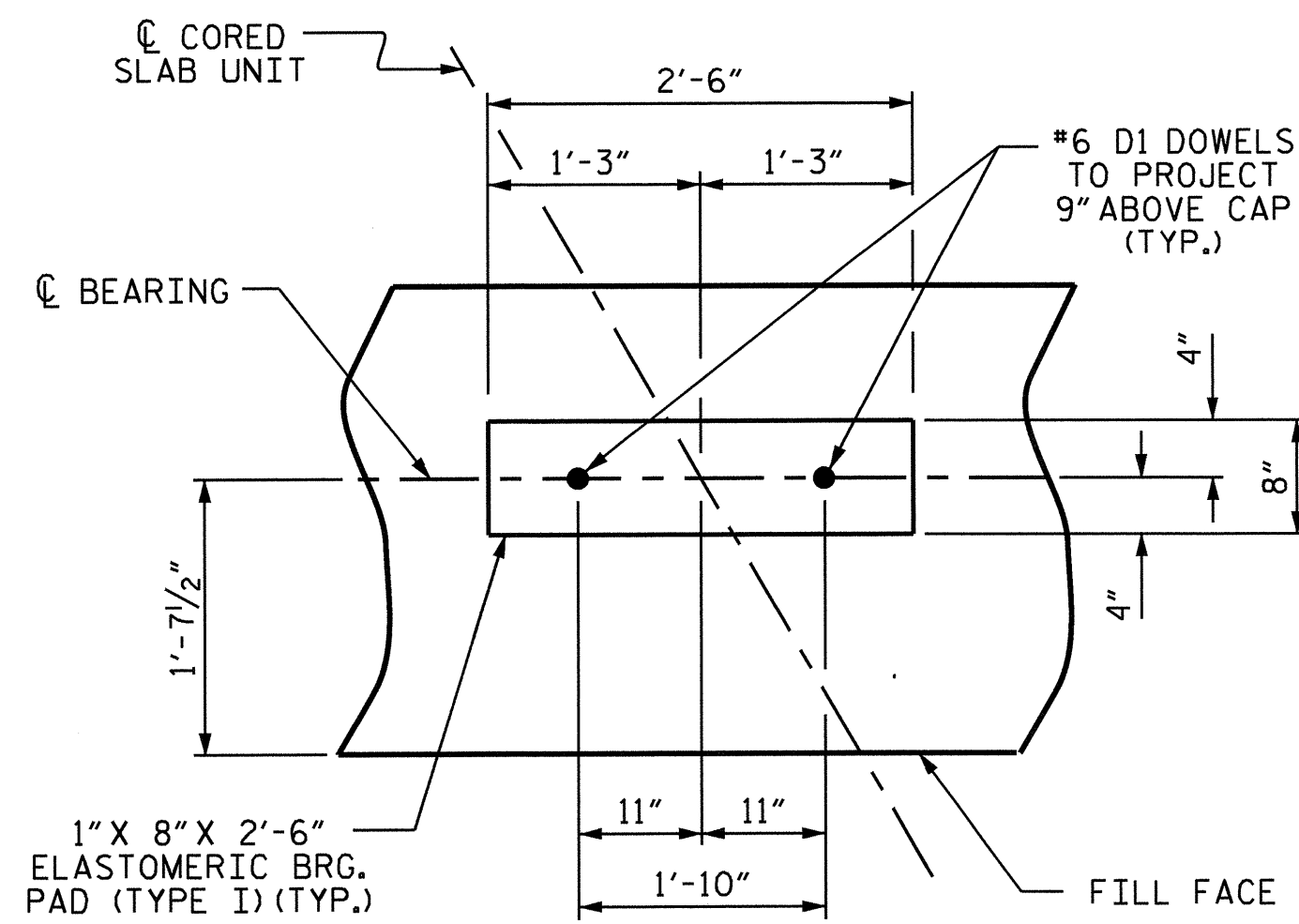


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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 DETERIORATED AND LOST THEIR EFFECTIVENESS.

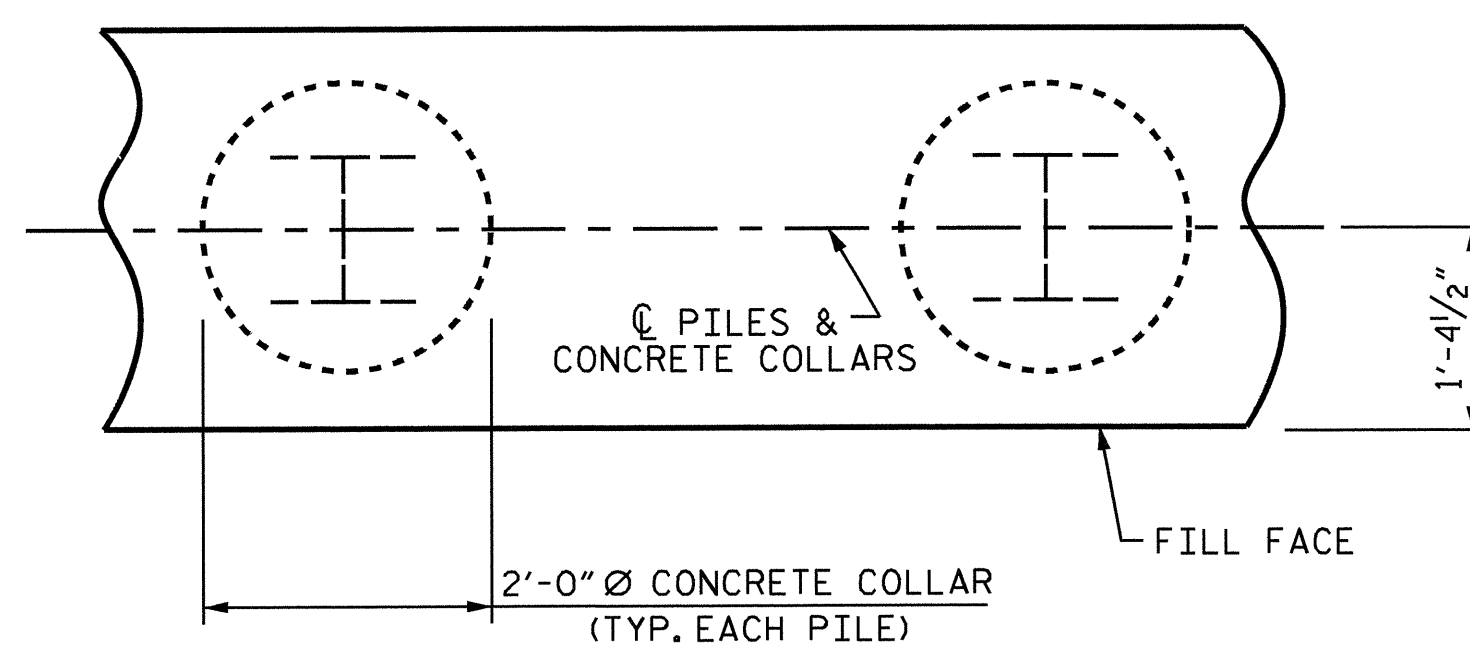
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

### TEMPORARY DRAINAGE AT END BENT

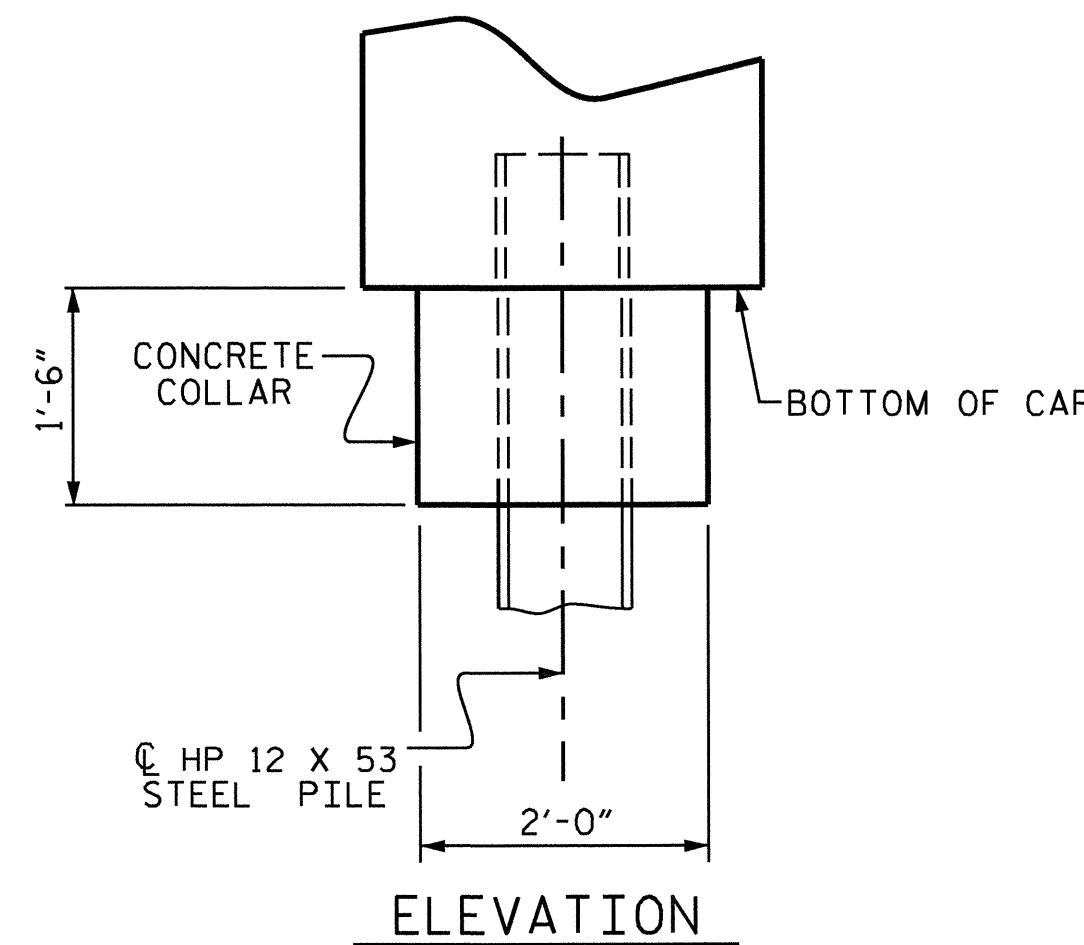


### DETAIL "A"

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



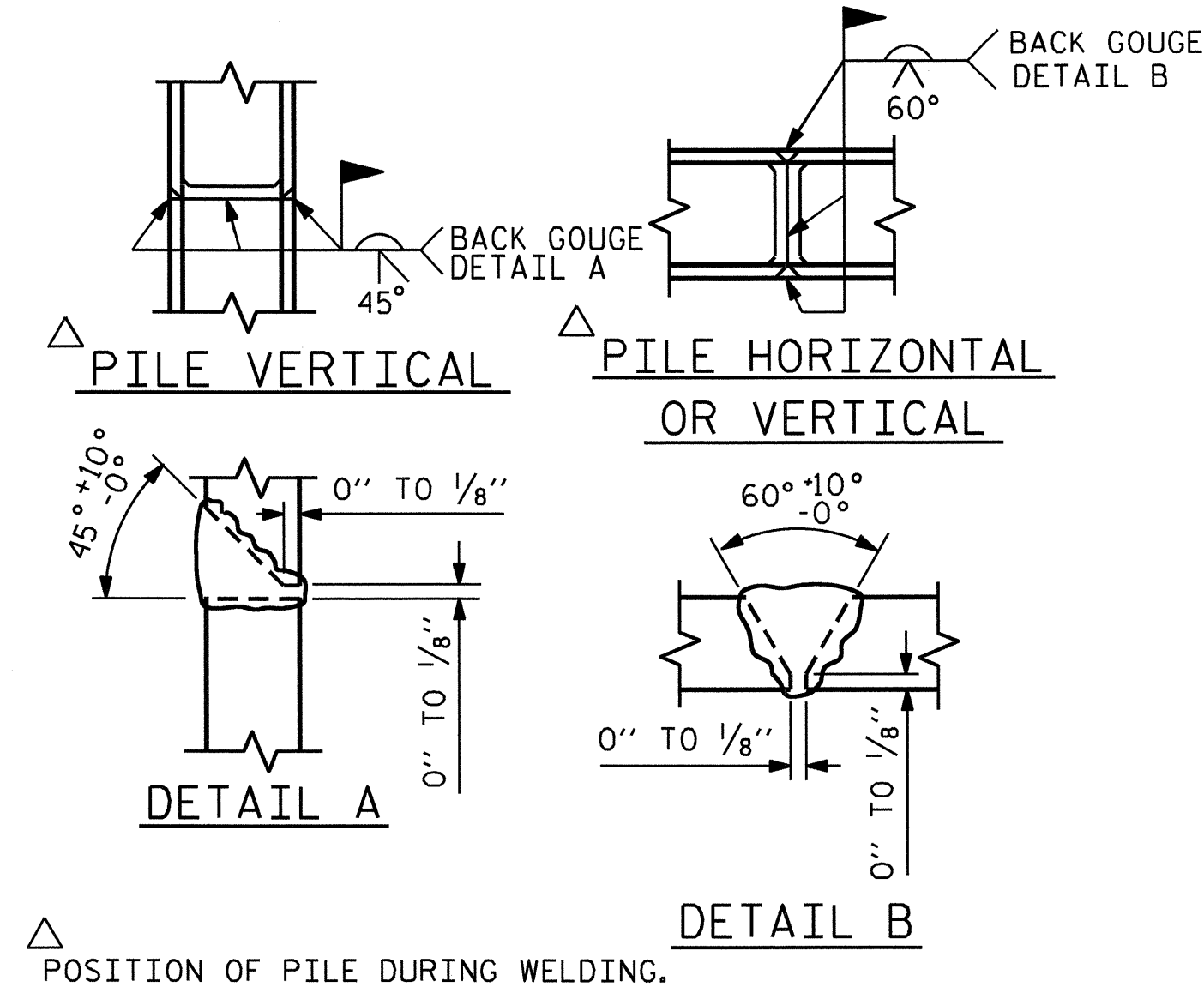
### PLAN



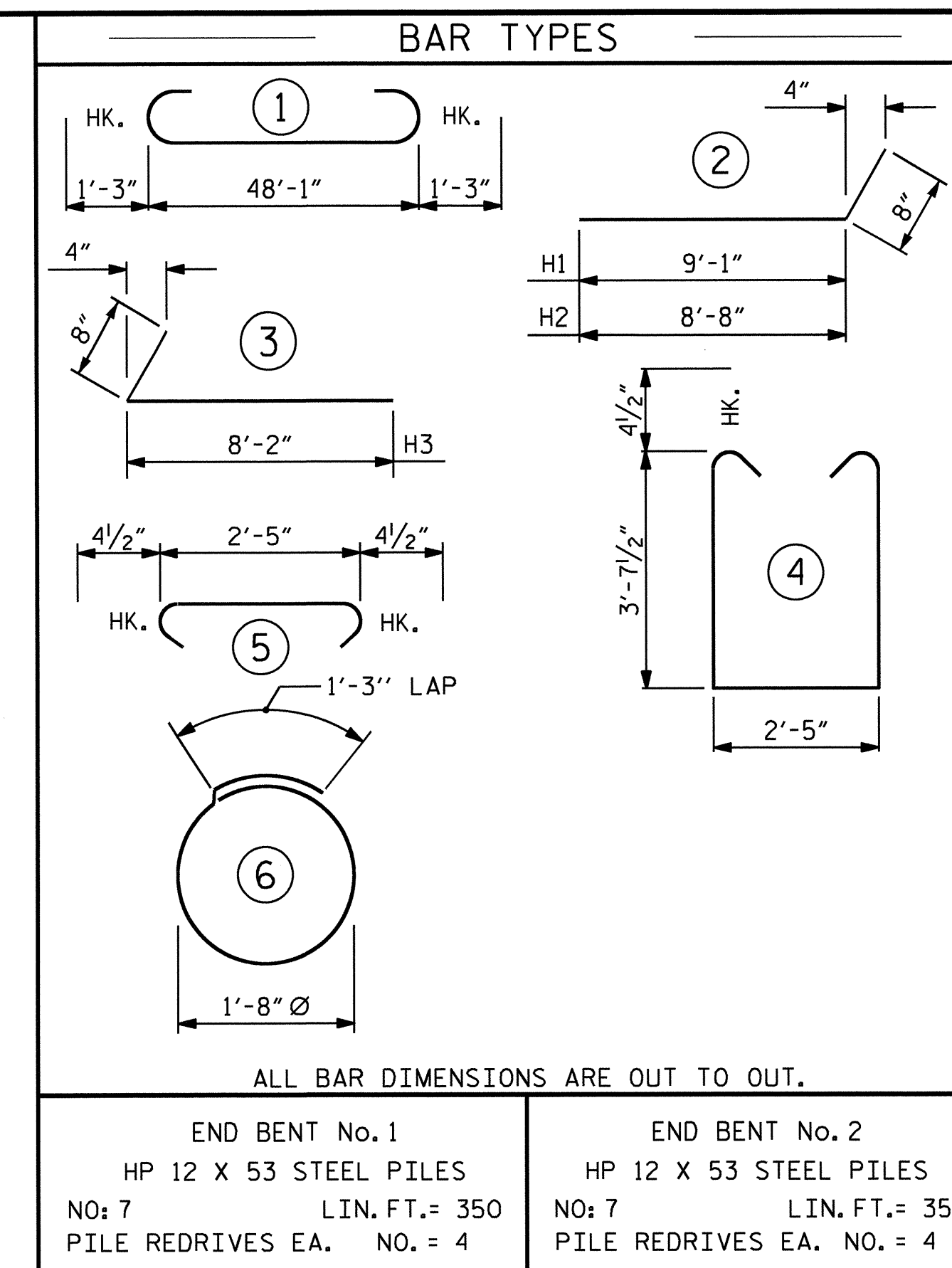
### ELEVATION

### CORROSION PROTECTION FOR STEEL PILES DETAIL

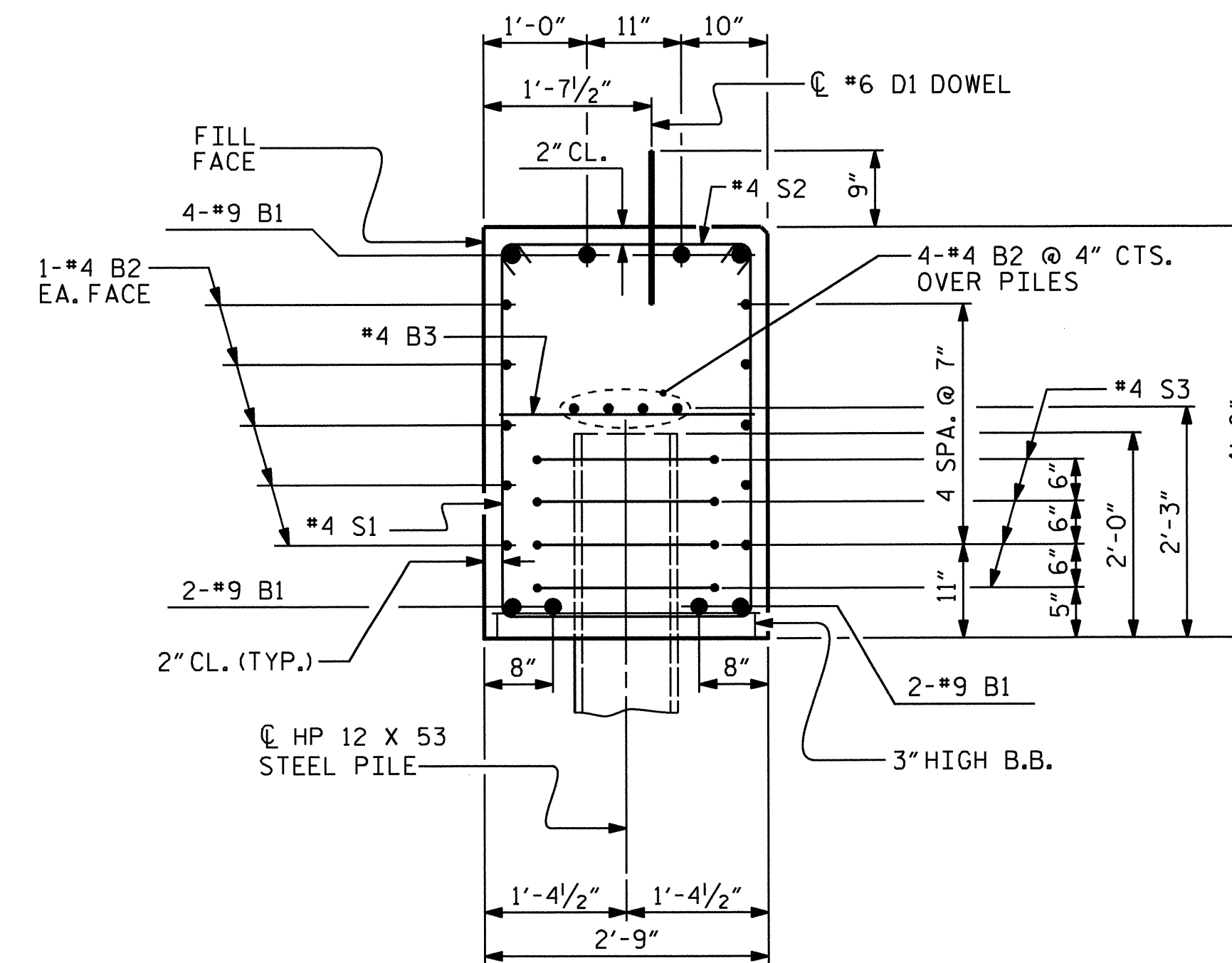
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



### PILE SPLICE DETAILS



BILL OF MATERIAL FOR ONE END BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	50'-7"	1376
B2	28	#4	STR	25'-4"	474
B3	12	#4	STR	2'-5"	19
D1	24	#6	STR	1'-6"	54
H1	10	#4	2	9'-9"	65
H2	10	#4	2	9'-4"	62
H3	20	#4	3	8'-10"	118
K1	16	#4	STR	3'-3"	35
S1	62	#4	4	10'-5"	431
S2	62	#4	5	3'-2"	131
S3	28	#4	6	6'-6"	122
V1	53	#4	STR	6'-2"	218
REINFORCING STEEL (FOR ONE END BENT)					3105 LBS.
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)					
POUR #1 CAP, LOWER PART OF WINGS & COLLARS					23.3 C.Y.
POUR #2 UPPER PART OF WINGS					2.2 C.Y.
TOTAL CLASS A CONCRETE					25.5 C.Y.



### SECTION A-A

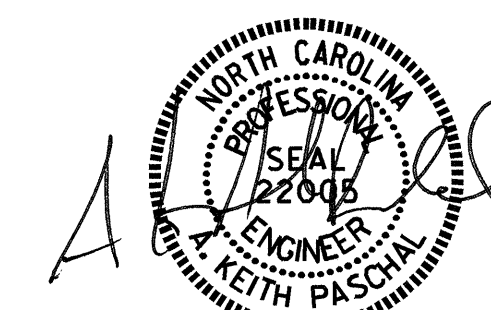
(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")

PROJECT NO. BD-51020  
GREENE COUNTY  
 STATION: 12+65.50 -L-  
 SHEET 4 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE

END BENT No. 1 & 2  
 DETAILS



ASSEMBLED BY : J. LAZAROVICH DATE : 6/8/2012  
 CHECKED BY : E. K. POPE DATE : 6/22/2012  
 DRAWN BY : WJH 12/11  
 CHECKED BY : AAC 12/11

27-JUL-2012 13:05  
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 kpaschal

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

STD. NO. EB\_36\_120S4

NOTES

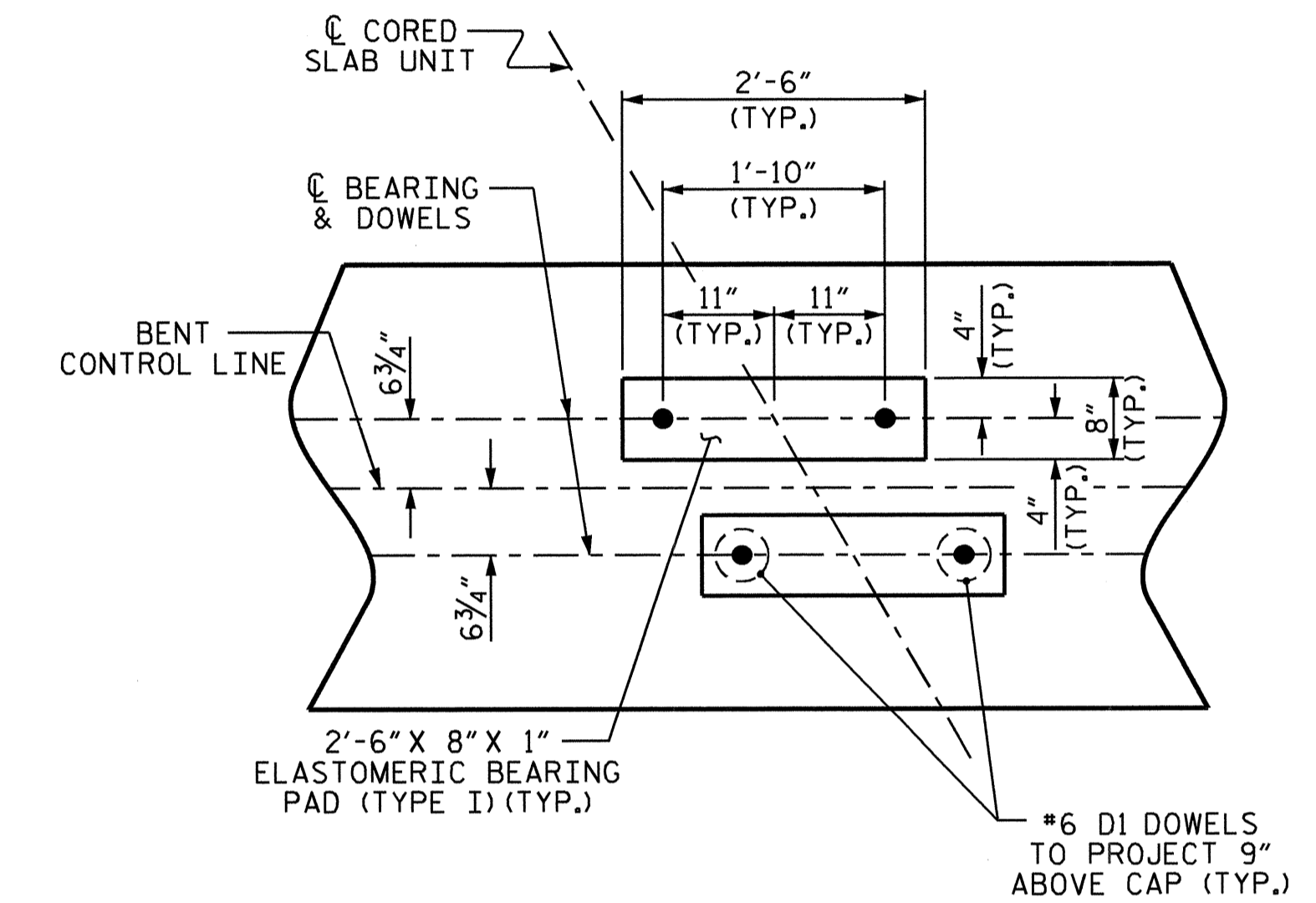
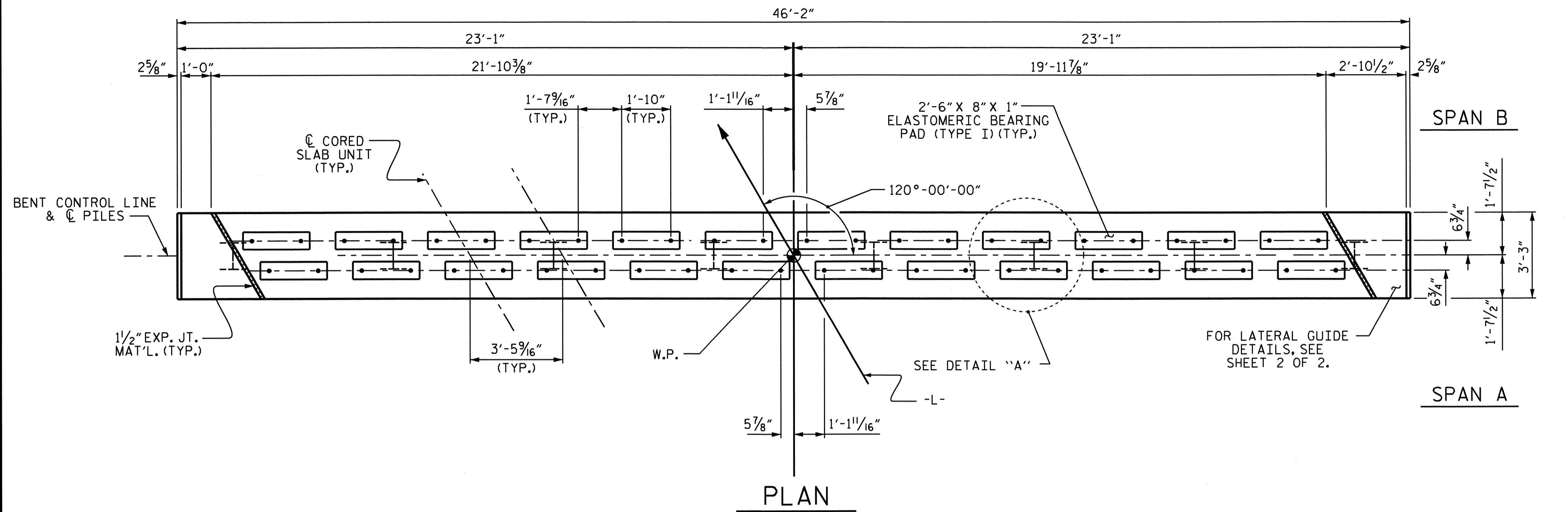
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

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

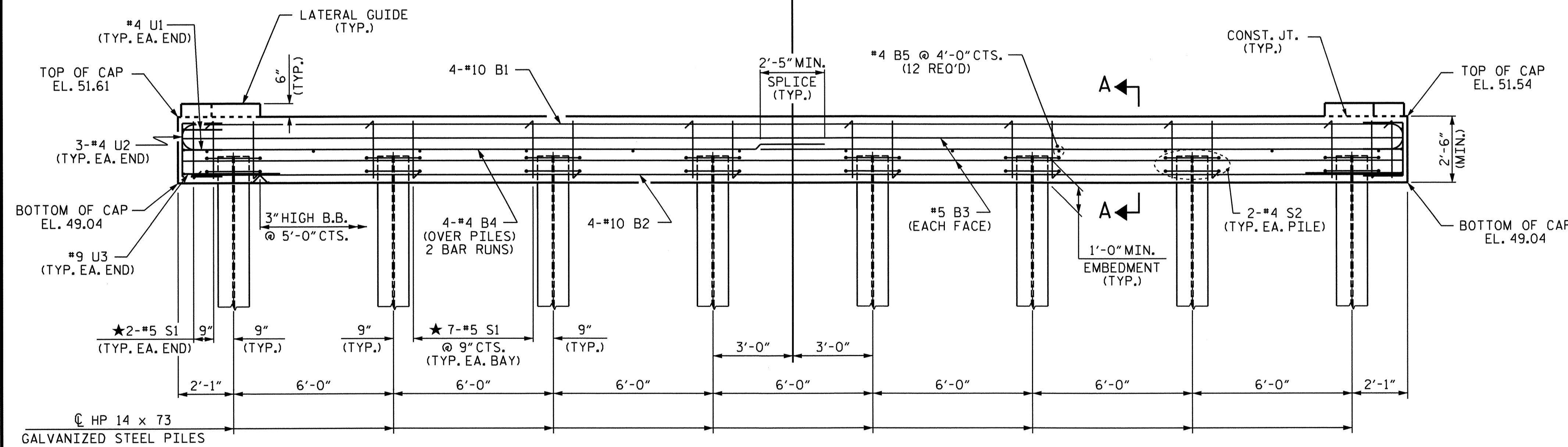
★ INVERT ALTERNATE STIRRUPS.

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.



DETAIL "A"  
(DIMENSIONS ARE TYPICAL EACH BEARING)



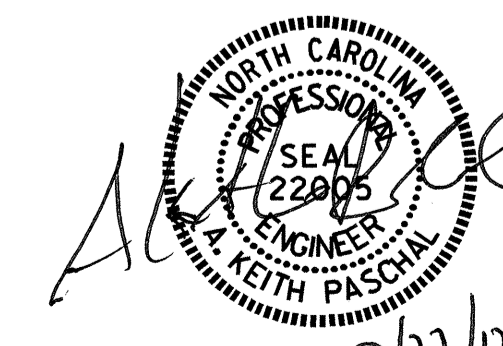
ELEVATION  
FOR SECTION A-A, SEE SHEET 2 OF 2

PROJECT NO. BD-51020  
GREENE COUNTY  
 STATION: 12+65.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT No. 1

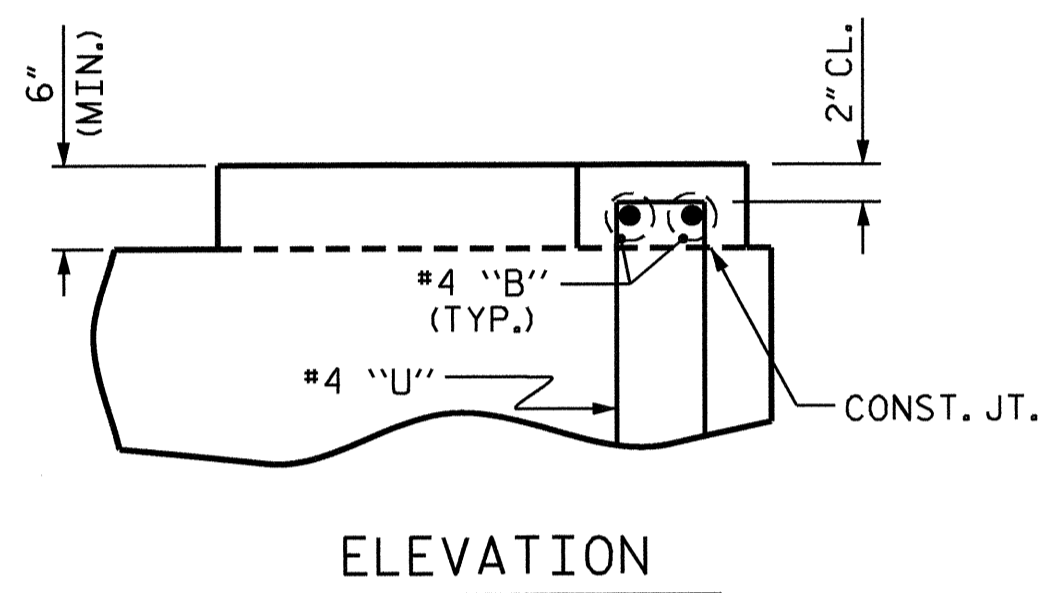
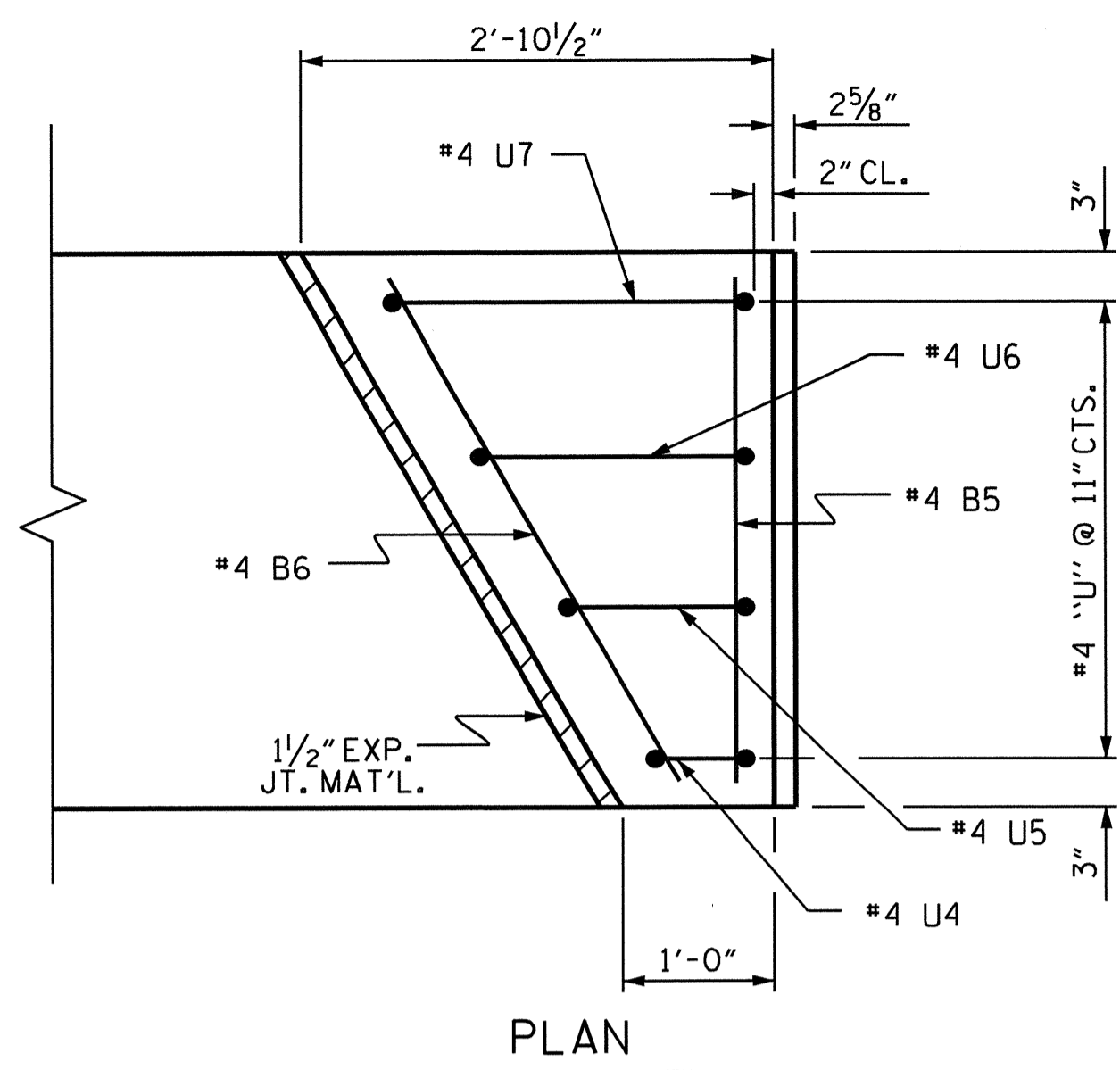


ASSEMBLED BY : J. LAZAROVICH DATE : 7/17/2012  
 CHECKED BY : E. K. POPE DATE : 7/19/2012  
 DRAWN BY : DGE 05/10  
 CHECKED BY : MKT 05/10

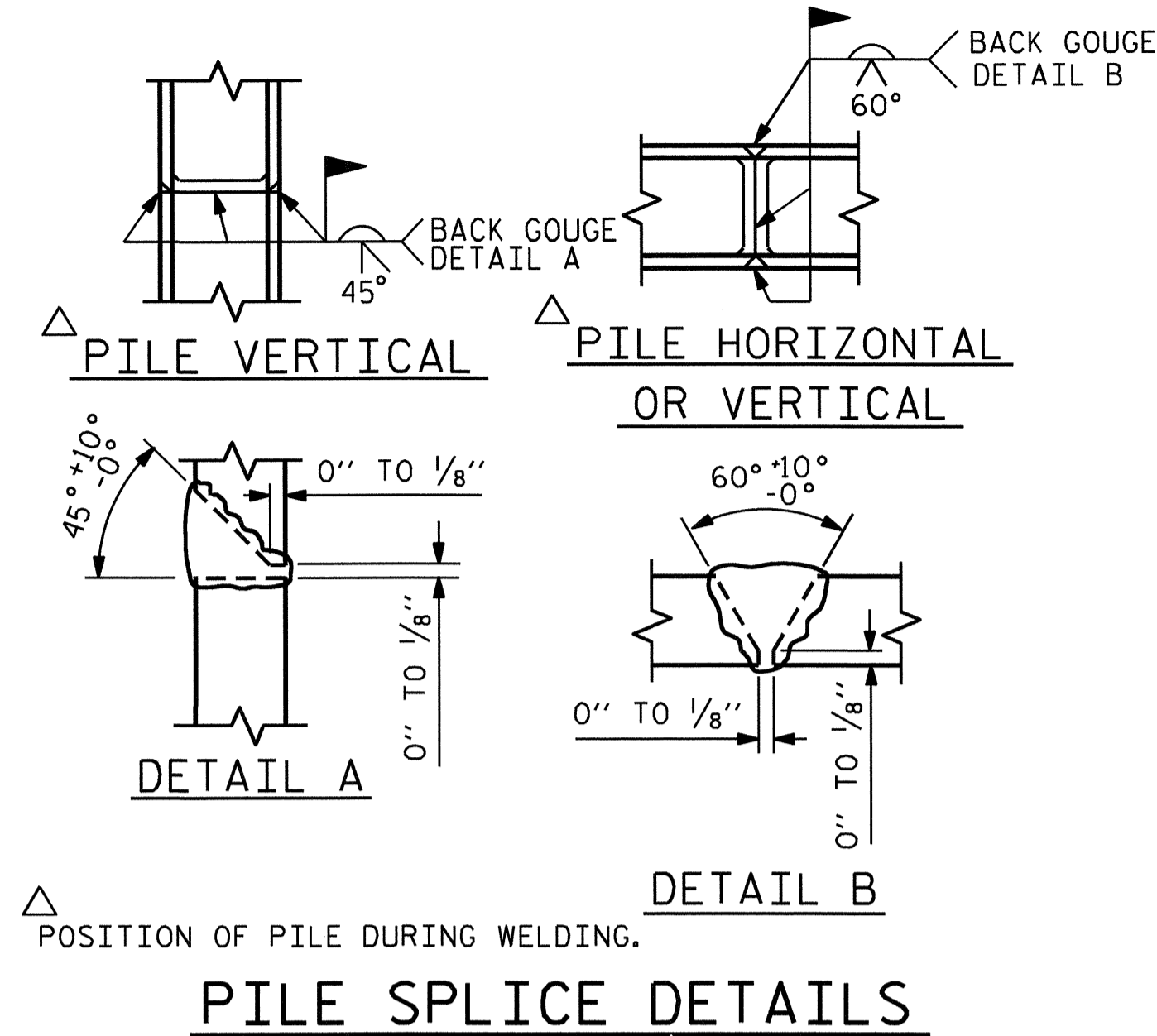
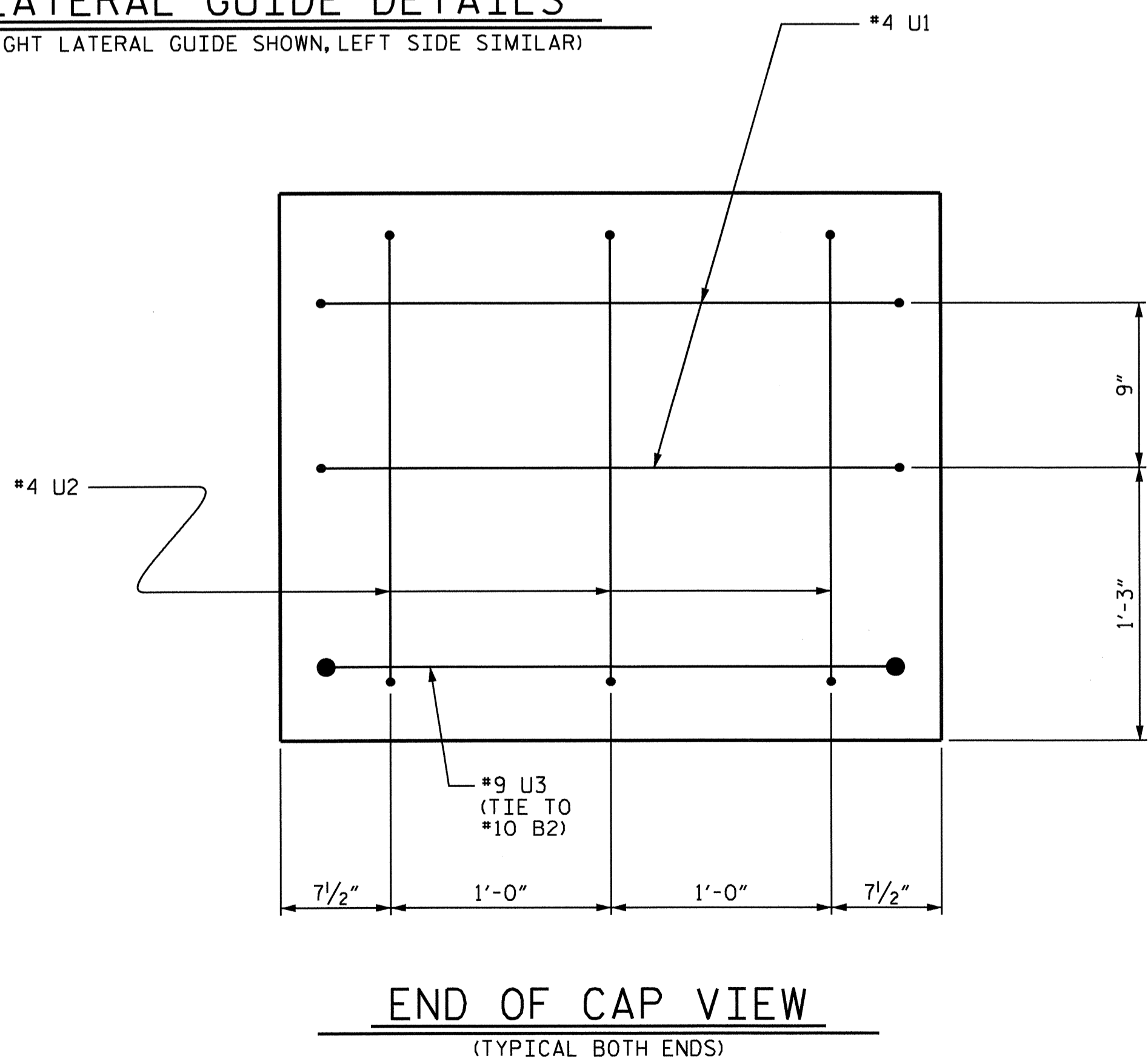
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			
2			4			

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 kpaschal

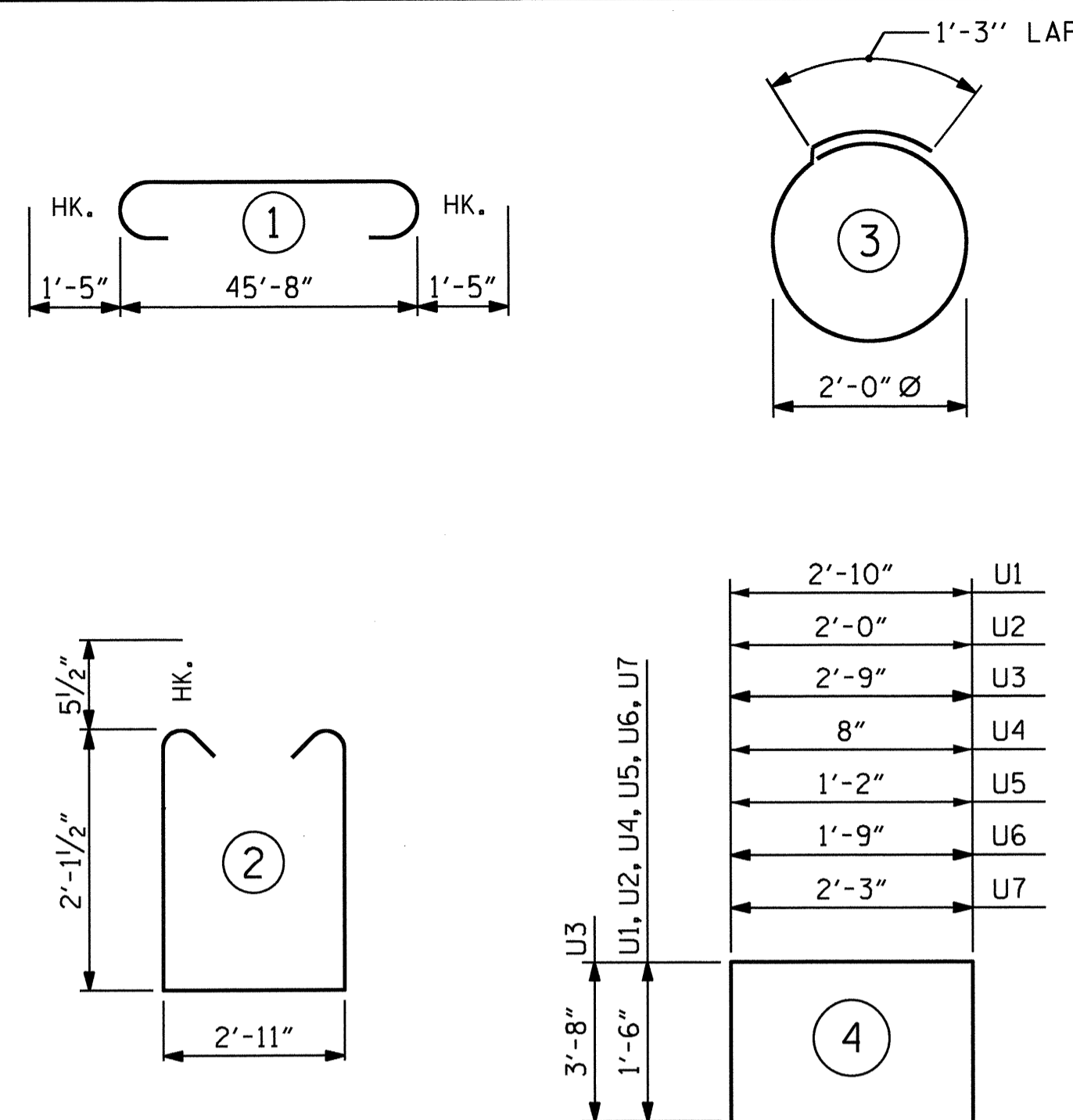
STD. NO. 14" HP\_BT\_36\_120S\_<60'



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



BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL FOR ONE BENT

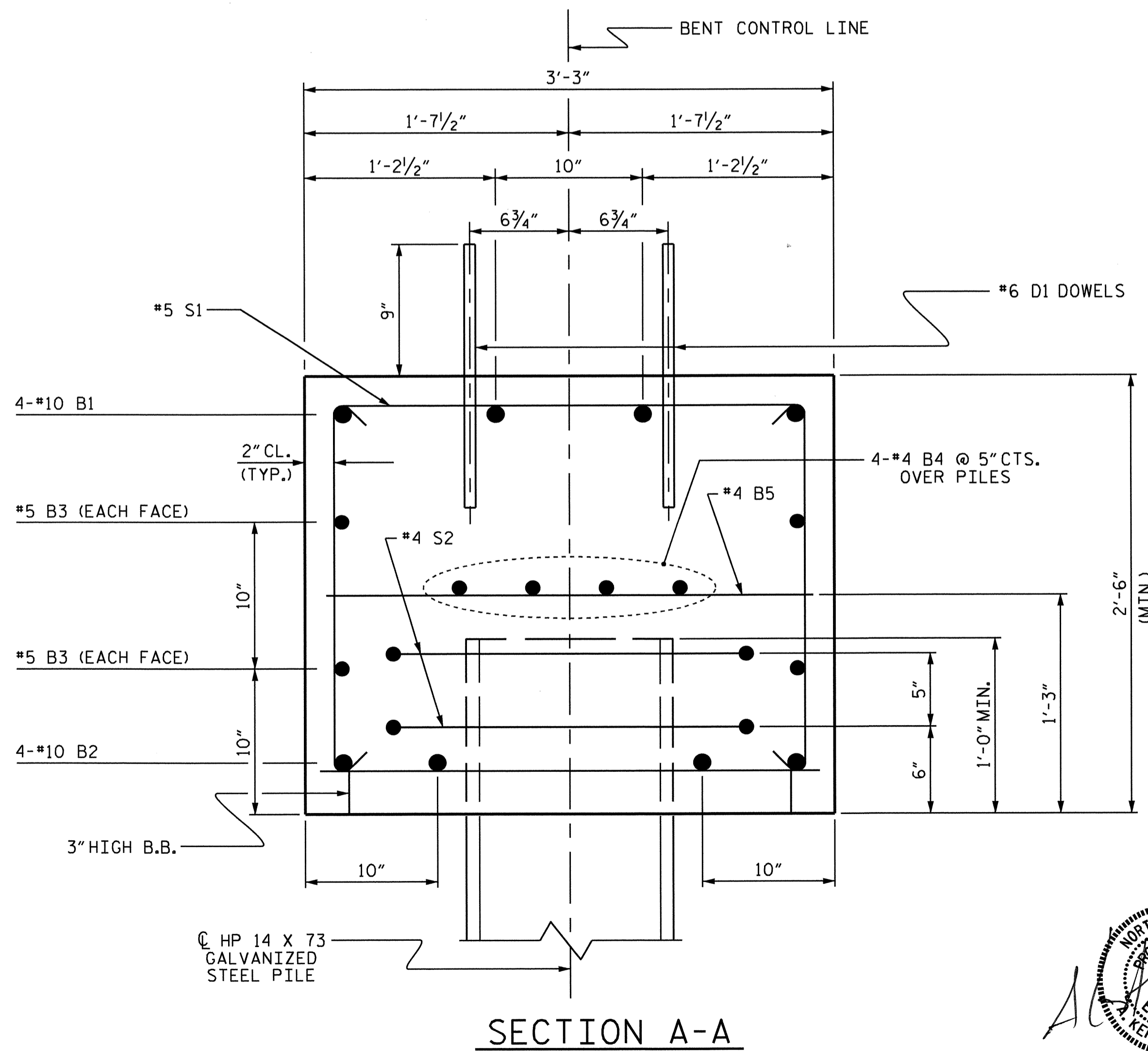
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	48'-5"	835
B2	4	#10	STR	45'-10"	789
B3	4	#5	STR	45'-10"	191
B4	8	#4	STR	24'-2"	129
B5	14	#4	STR	2'-11"	27
B6	2	#4	STR	3'-4"	4
D1	48	#6	STR	1'-6"	108
S1	53	#5	2	8'-1"	447
S2	16	#4	3	7'-7"	81
U1	4	#4	4	5'-10"	16
U2	6	#4	4	5'-0"	20
U3	2	#9	4	10'-1"	69
U4	2	#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) 2740 LBS

CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)

POUR #1 (CAP)	13.9 C.Y.
POUR #2 (LATERAL GUIDES)	0.2 C.Y.
TOTAL CLASS A CONCRETE	14.1 C.Y.

HP 14 X 73 GALVANIZED STEEL PILES (FOR ONE BENT)  
No: 8 LIN. FT. = 520  
PILE REDRIVES EA. No = 4



PROJECT NO. BD-51020  
GREENE COUNTY  
STATION: 12+65.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
BENT No. 1

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

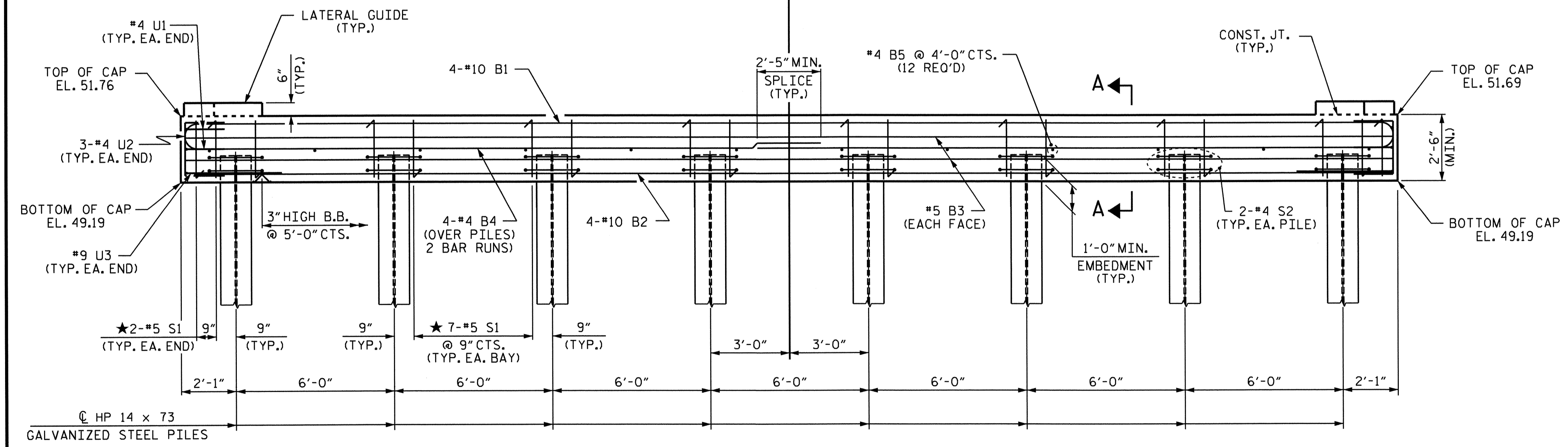
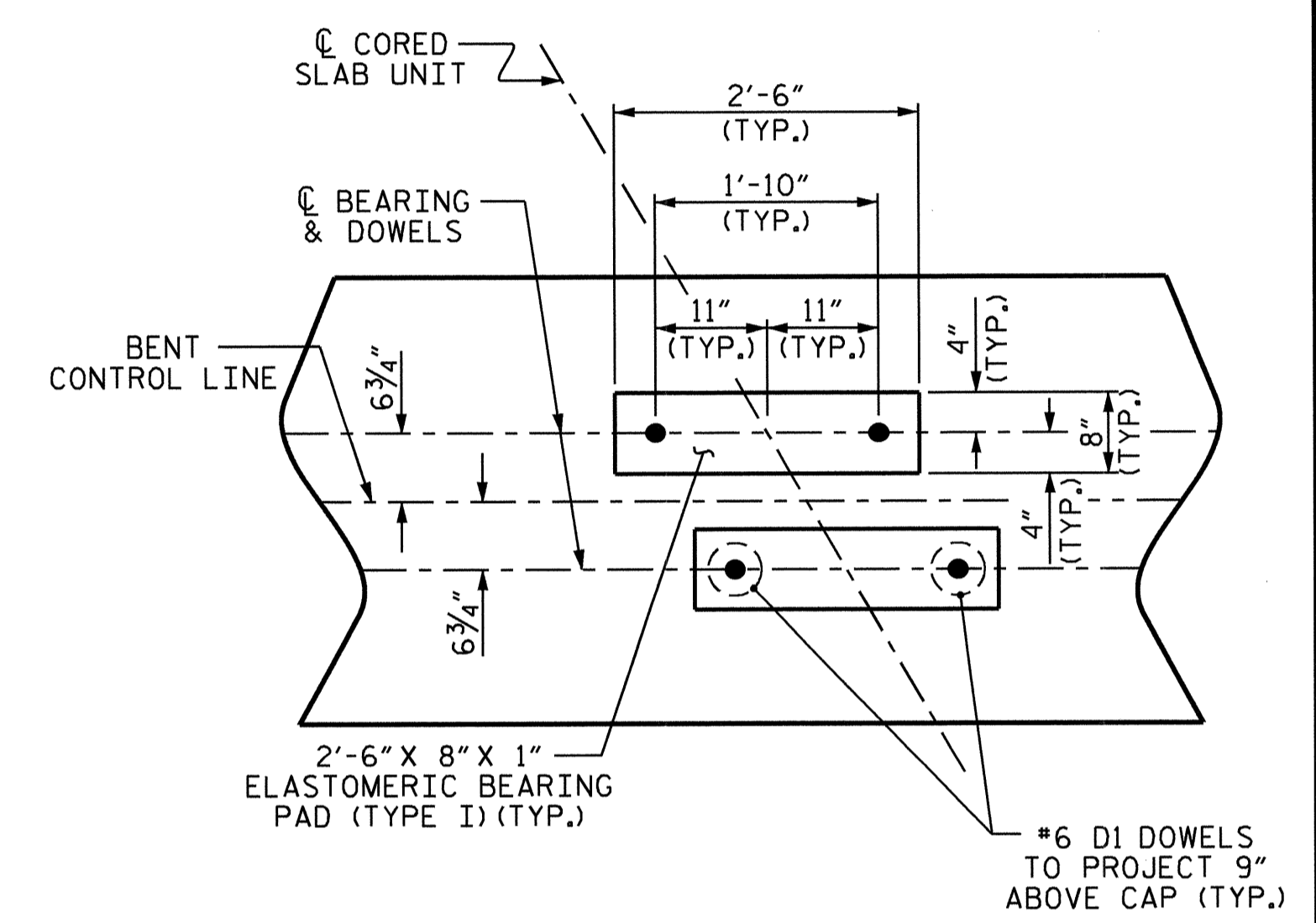
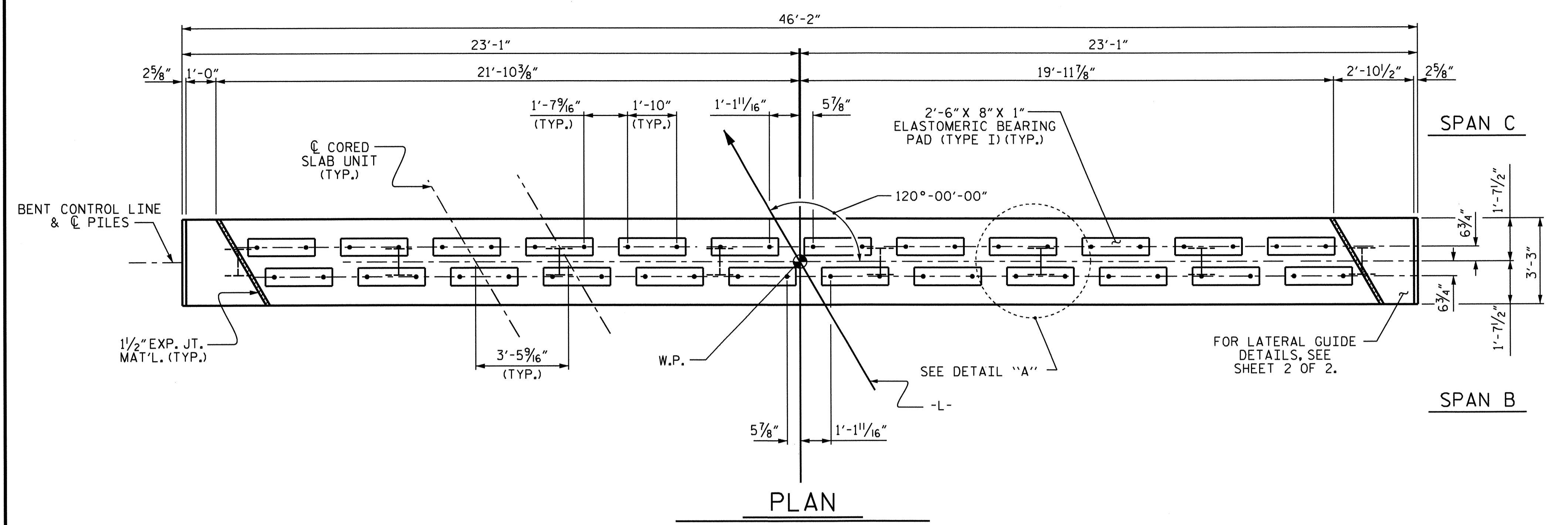
DRAWN BY : J. LAZAROVICH DATE : 7/17/2012  
CHECKED BY : E. K. POPE DATE : 7/19/2012  
DRAWN BY : DCE 05/10  
CHECKED BY : MKT 05/10

27-JUL-2012 13:05  
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kpaschal

STD. NO. 14" HP\_BT\_36\_120S\_<60'

**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.



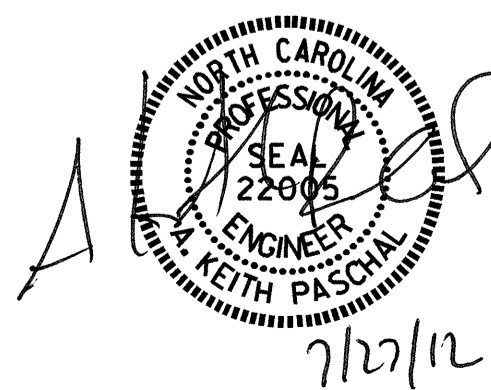
PROJECT NO. BD-51020  
GREENE COUNTY  
 STATION: 12+65.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

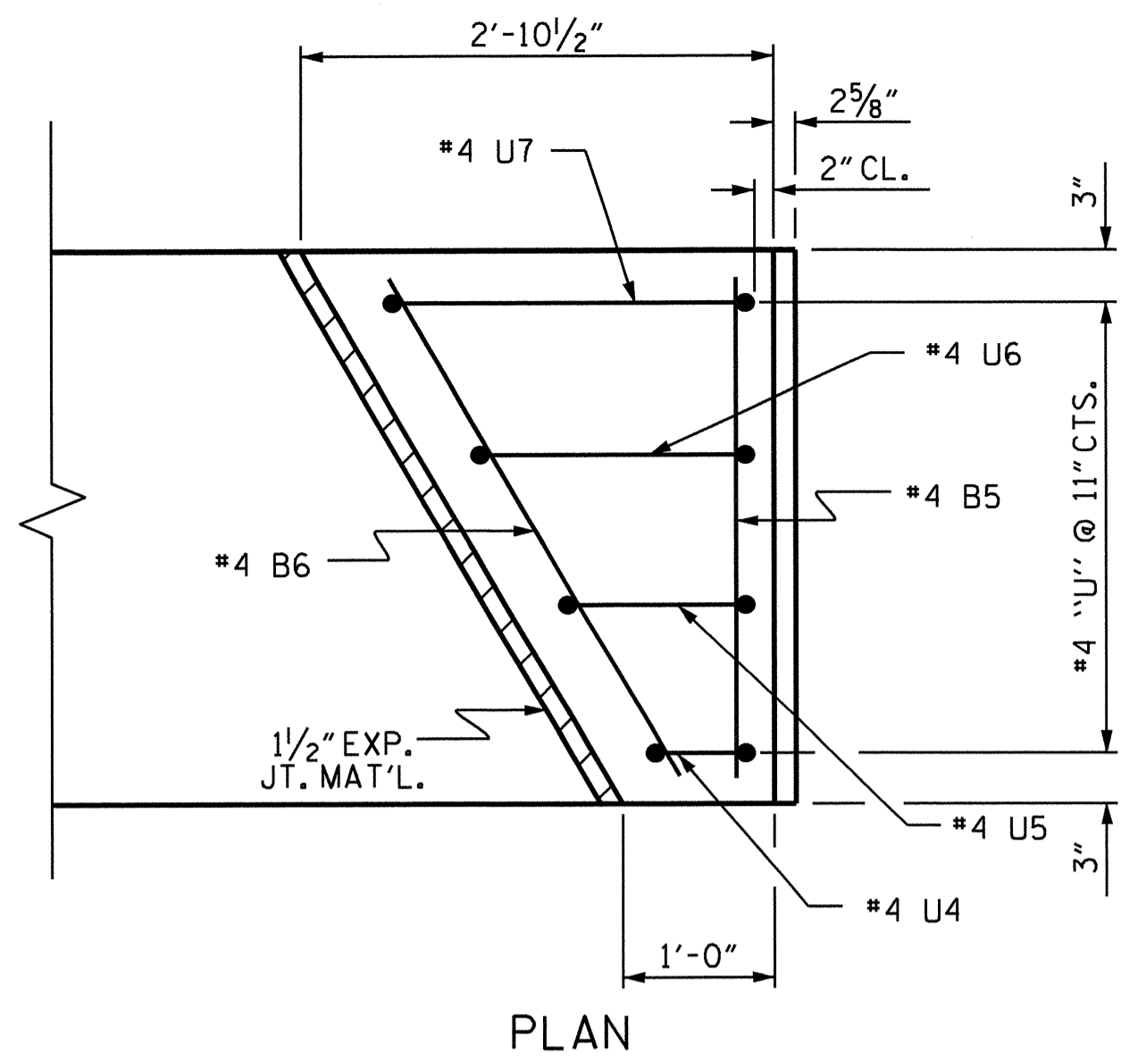
SUBSTRUCTURE  
 BENT No. 2

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

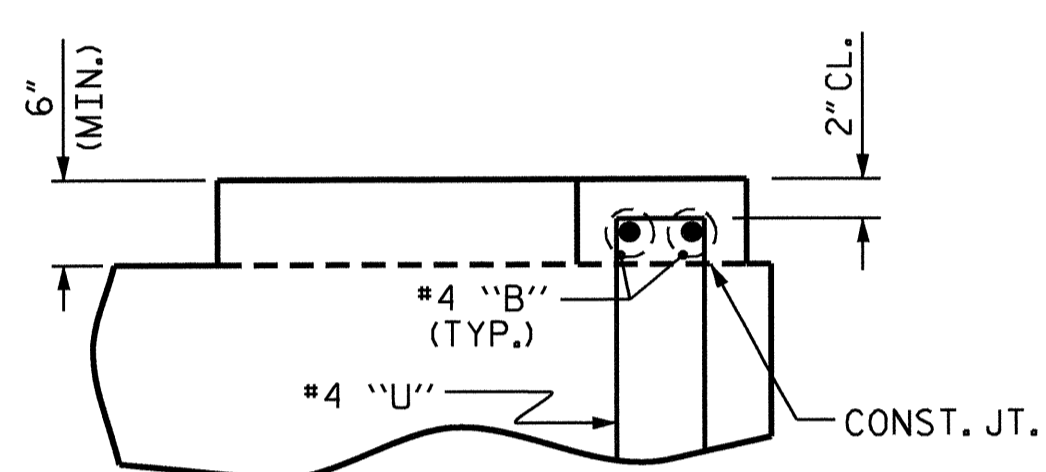


ASSEMBLED BY : J. LAZAROVICH DATE : 7/17/2012  
 CHECKED BY : E. K. POPE DATE : 7/19/2012  
 DRAWN BY : DGE 05/10  
 CHECKED BY : MKT 05/10

27-JUL-2012 13:05  
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 Kpaschal

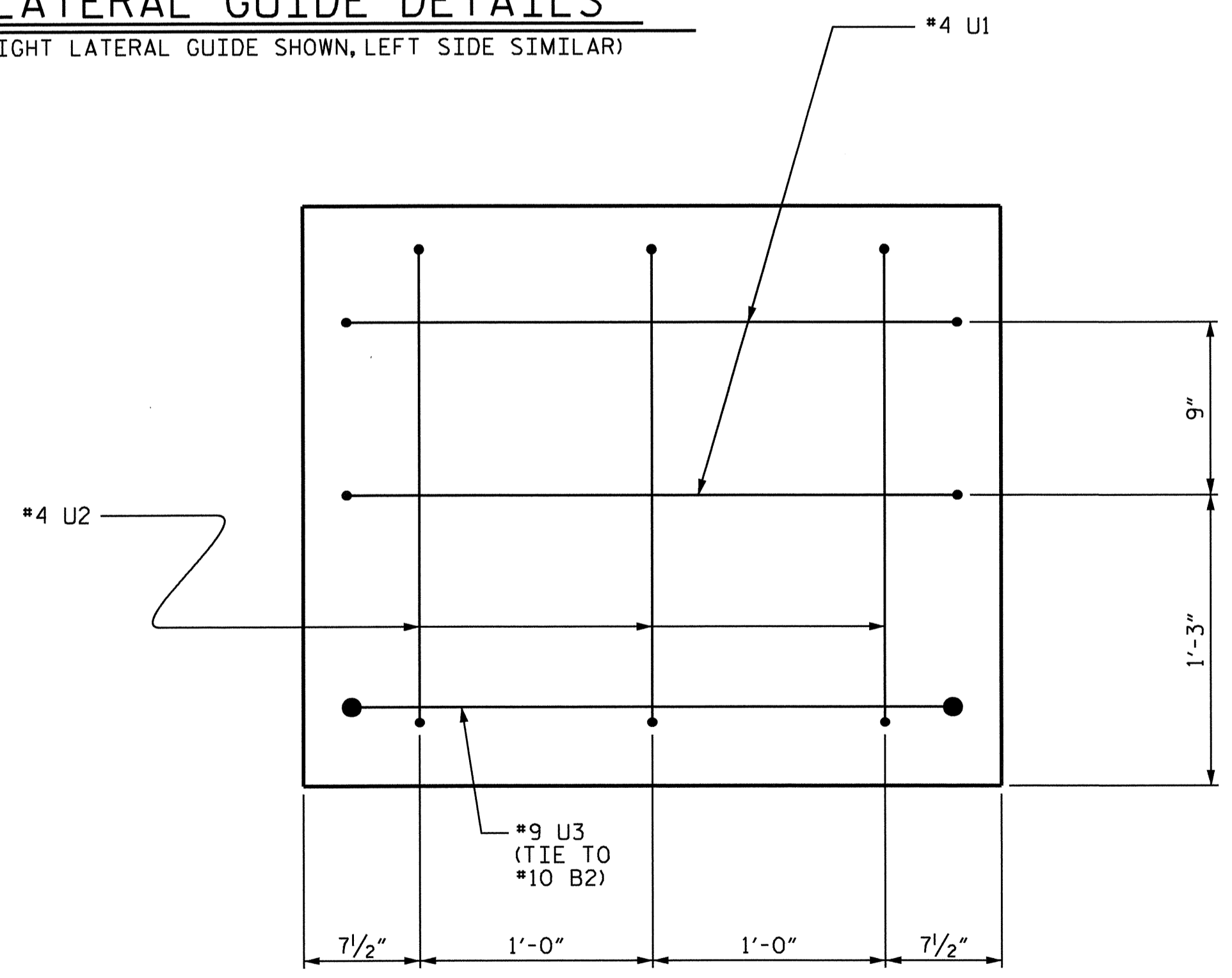


PLAN

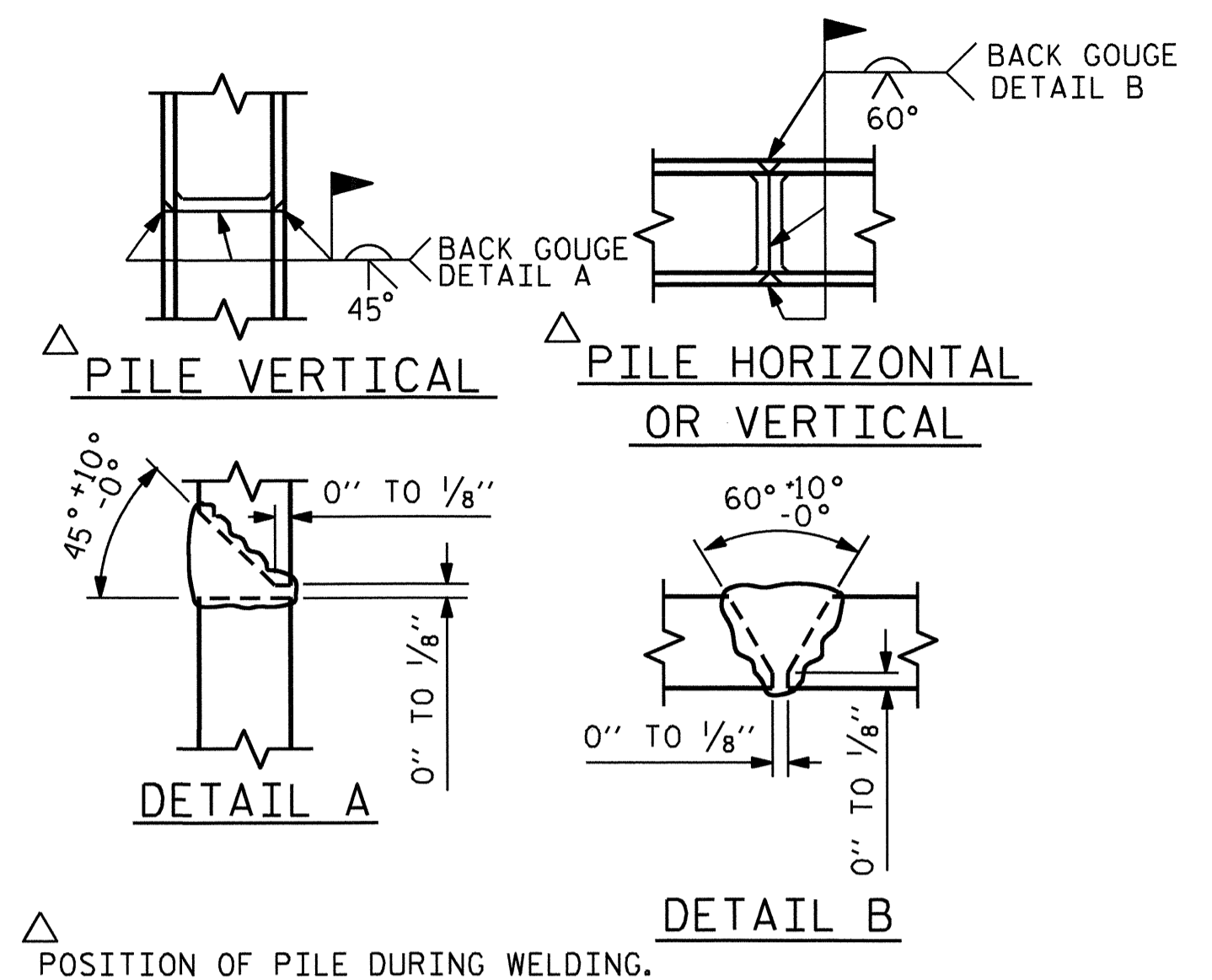


ELEVATION

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

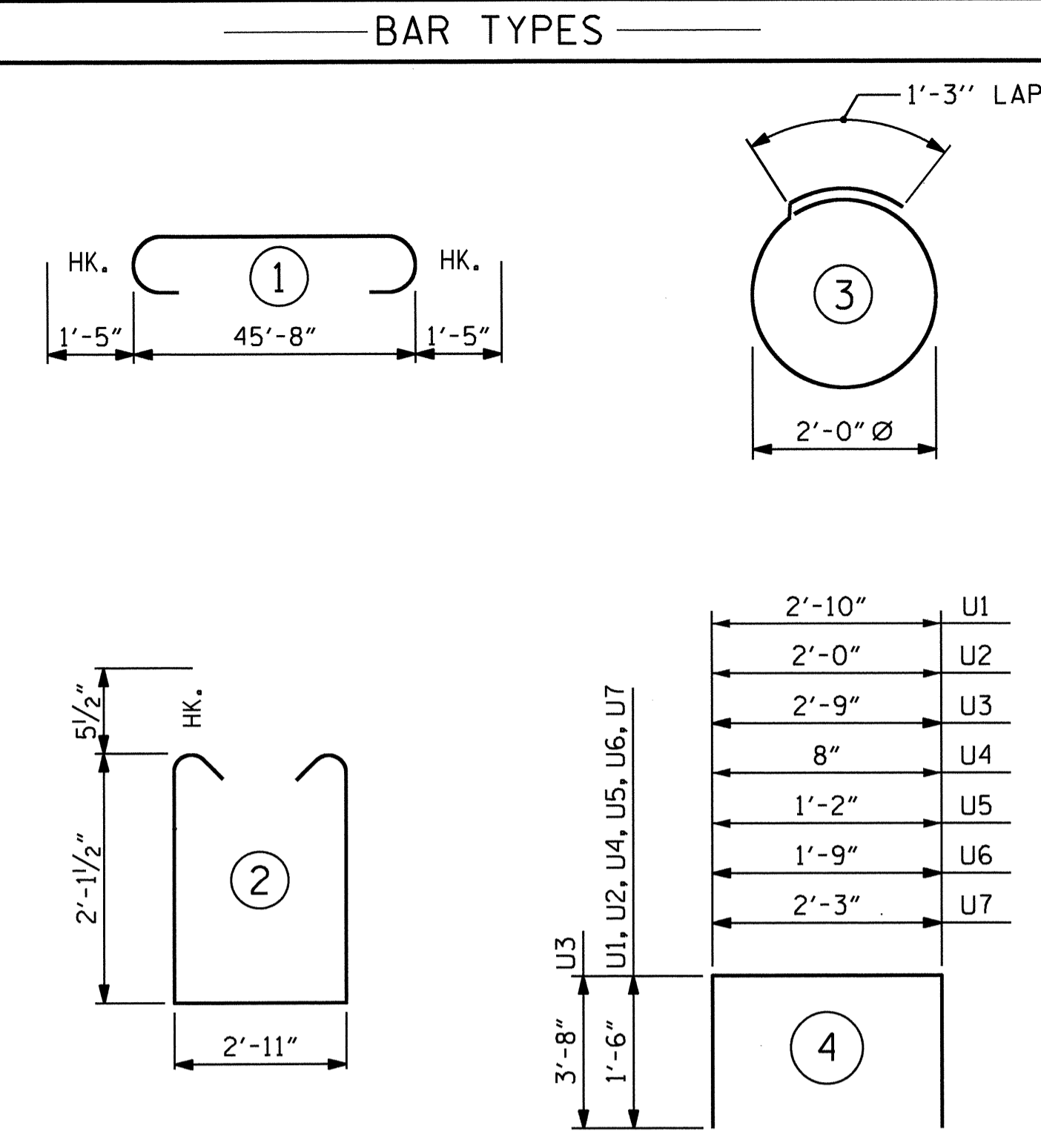


**END OF CAP VIEW**  
(TYPICAL BOTH ENDS)



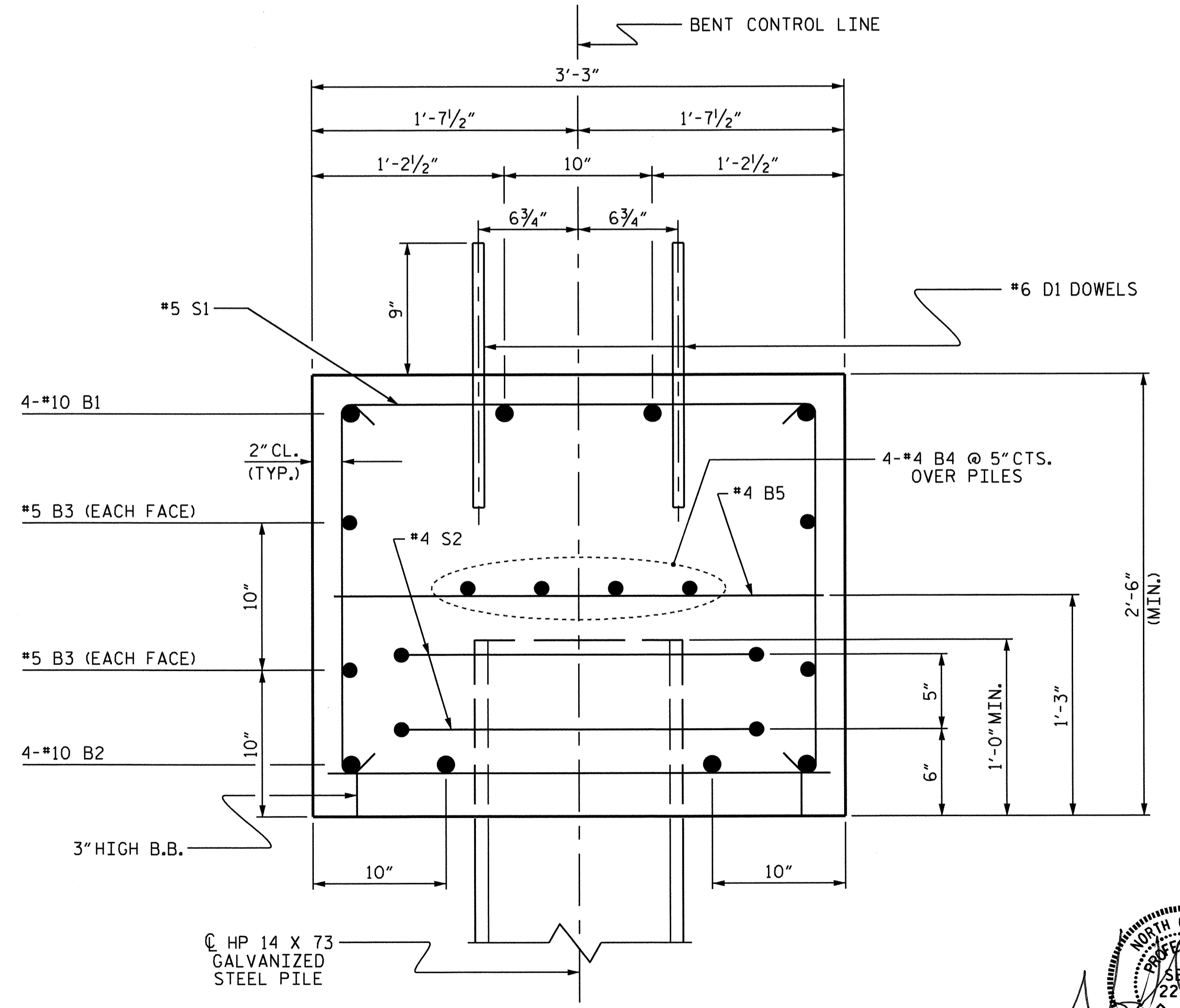
**PILE SPLICE DETAILS**

△ POSITION OF PILE DURING WELDING.



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
FOR ONE BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	48'-5"	835
B2	4	#10	STR	45'-10"	789
B3	4	#5	STR	45'-10"	191
B4	8	#4	STR	24'-2"	129
B5	14	#4	STR	2'-11"	27
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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)					2740 LBS
CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)					
POUR #1 (CAP)				13.9	C.Y.
POUR #2 (LATERAL GUIDES)				0.2	C.Y.
TOTAL CLASS A CONCRETE				14.1	C.Y.
HP 14 X 73 GALVANIZED STEEL PILES (FOR ONE BENT)					
No: 8				LIN. FT. = 520	
PILE REDRIVES EA.				No = 4	



**SECTION A-A**

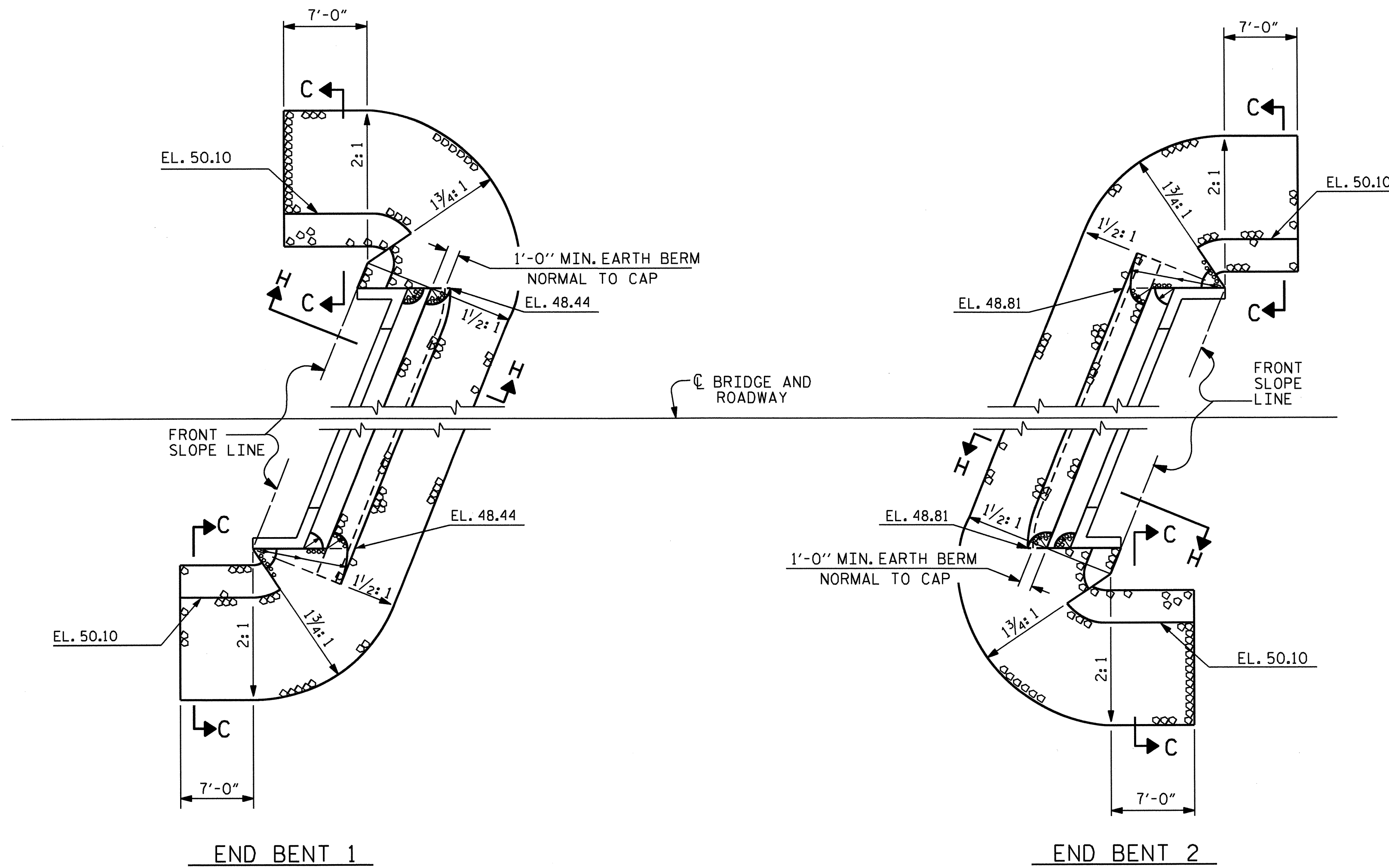
PROJECT NO. BD-51020  
GREENE COUNTY  
 STATION: 12+65.50 -L-  
 SHEET 2 OF 2

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

DRAWN BY : J. LAZAROVICH DATE : 7/17/2012  
 CHECKED BY : E. K. POPE DATE : 7/19/2012  
 DRAWN BY : DGE 05/10  
 CHECKED BY : MKT 05/10

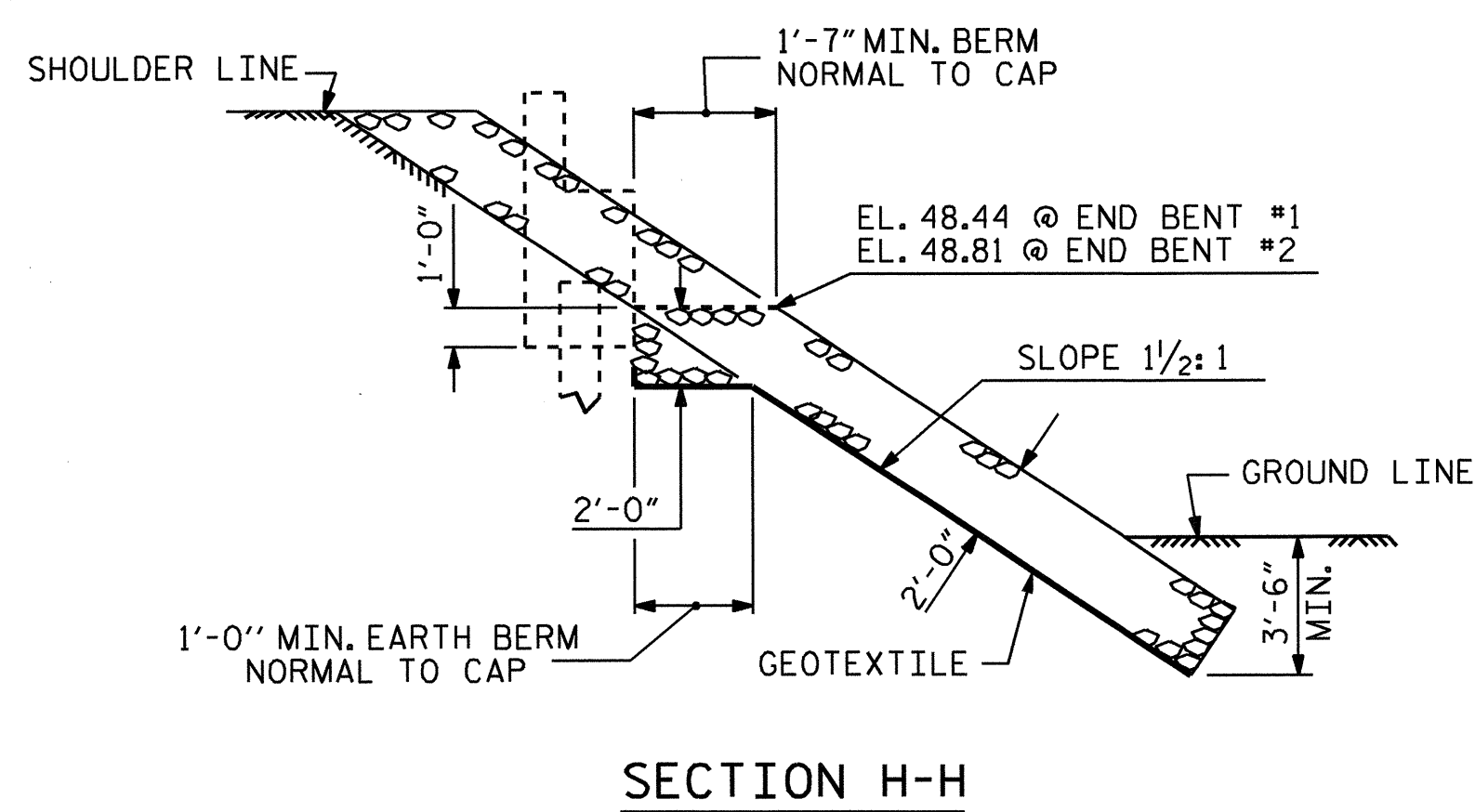
27-JUL-2012 13:05  
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 Kpaschal

NOTES :  
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

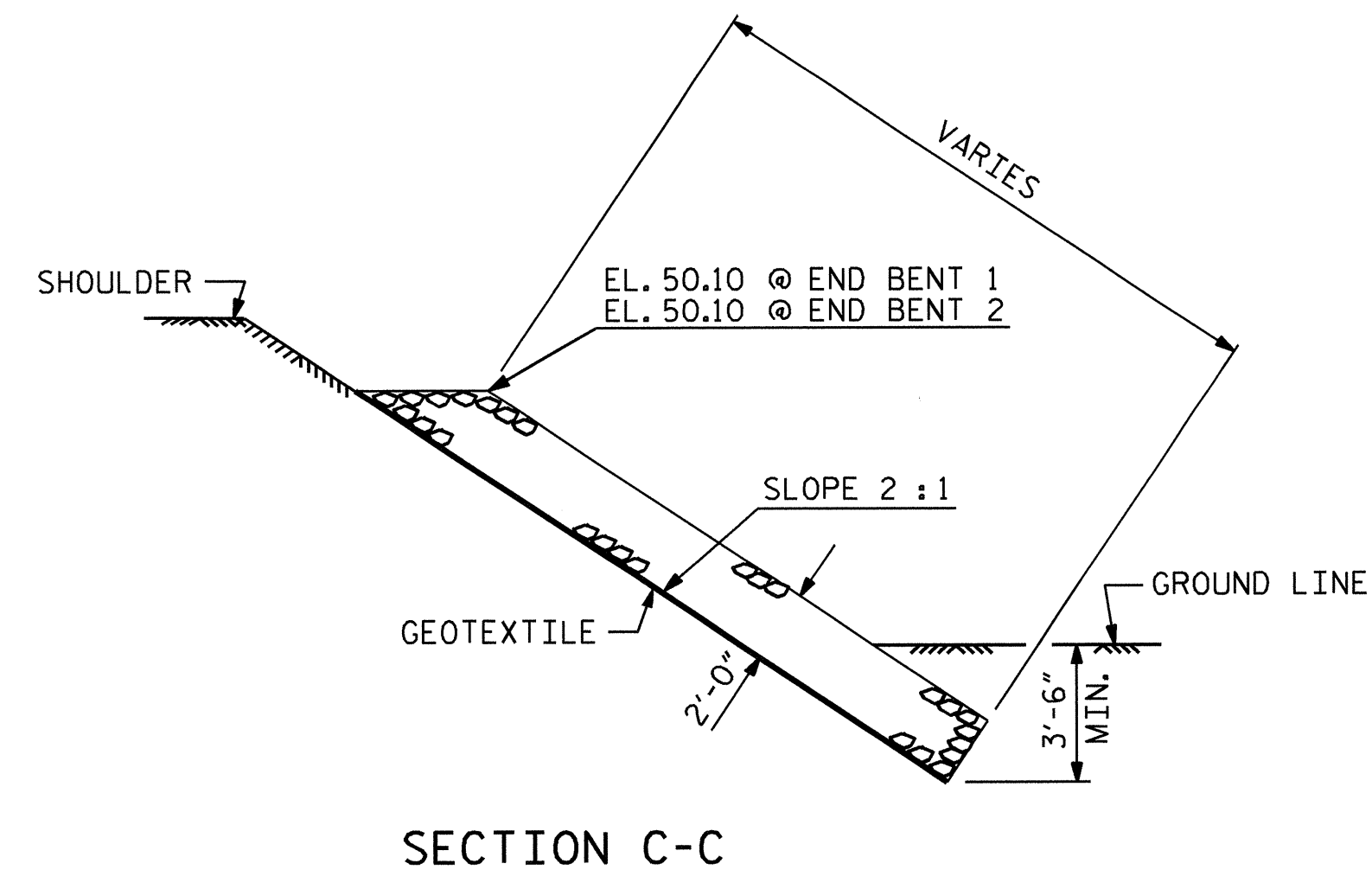


PLAN OF RIP RAP

ESTIMATED QUANTITIES		
BRIDGE @ STA. 12+65.50 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	57	63
END BENT 2	49	55



SECTION H-H



SECTION C-C

PROJECT NO. BD-51020  
GREENE COUNTY  
STATION: 12+65.50 -L-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD = RIP RAP DETAILS =					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS

ASSEMBLED BY : B.N.BARODAWALA DATE : 7-20-12  
CHECKED BY : B. L. GREEN DATE : 7-24-12  
DRAWN BY : REK 1/84  
CHECKED BY : RDU 1/84  
REV. 5/1/06R TLA/GM  
REV. 10/1/11 MAA/GM  
REV. 12/21/11 MAA/GM

27-JUL-2012 13:07  
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kpaschal



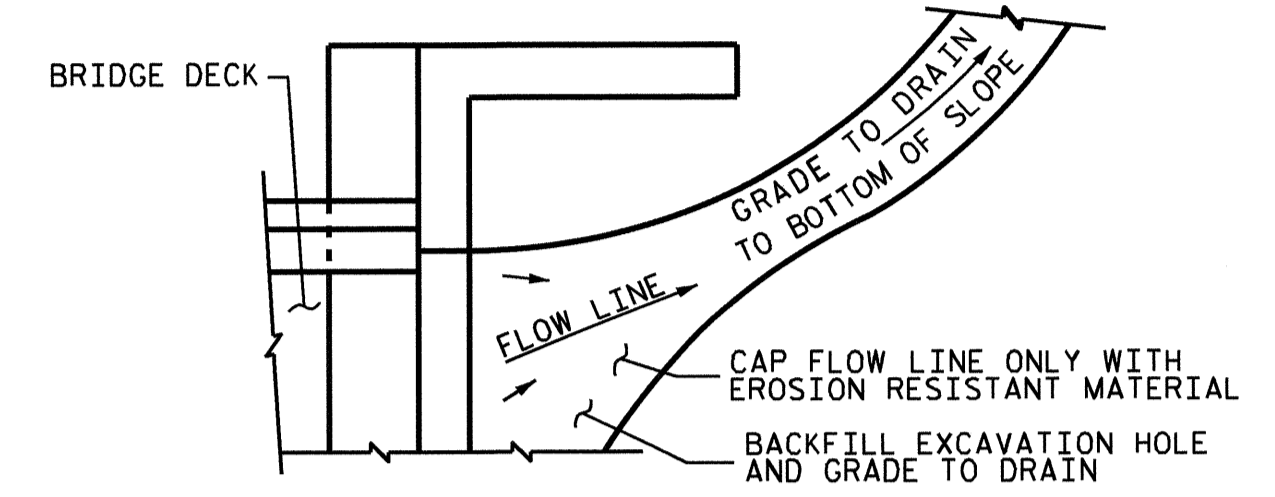
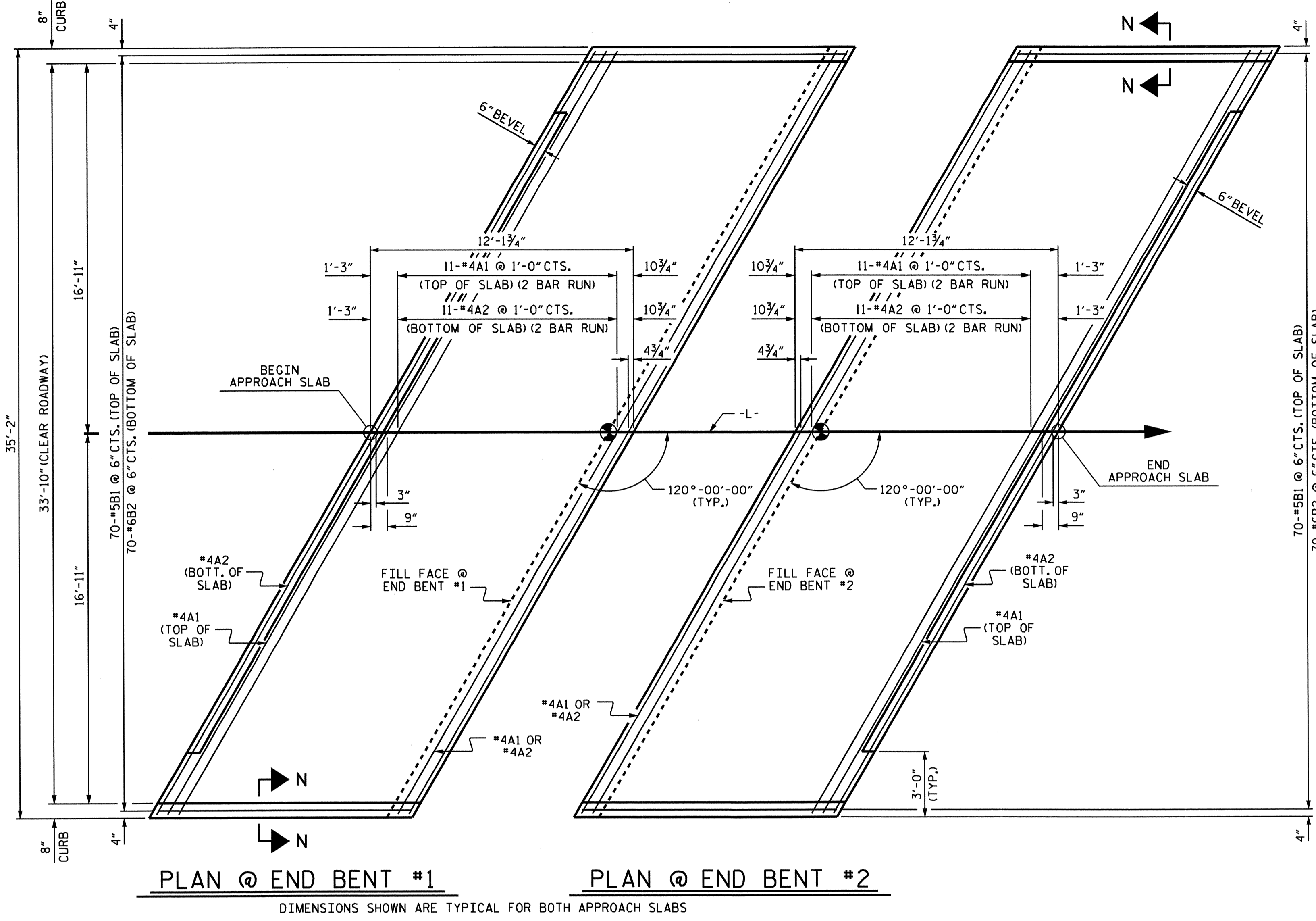
**NOTES**

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.

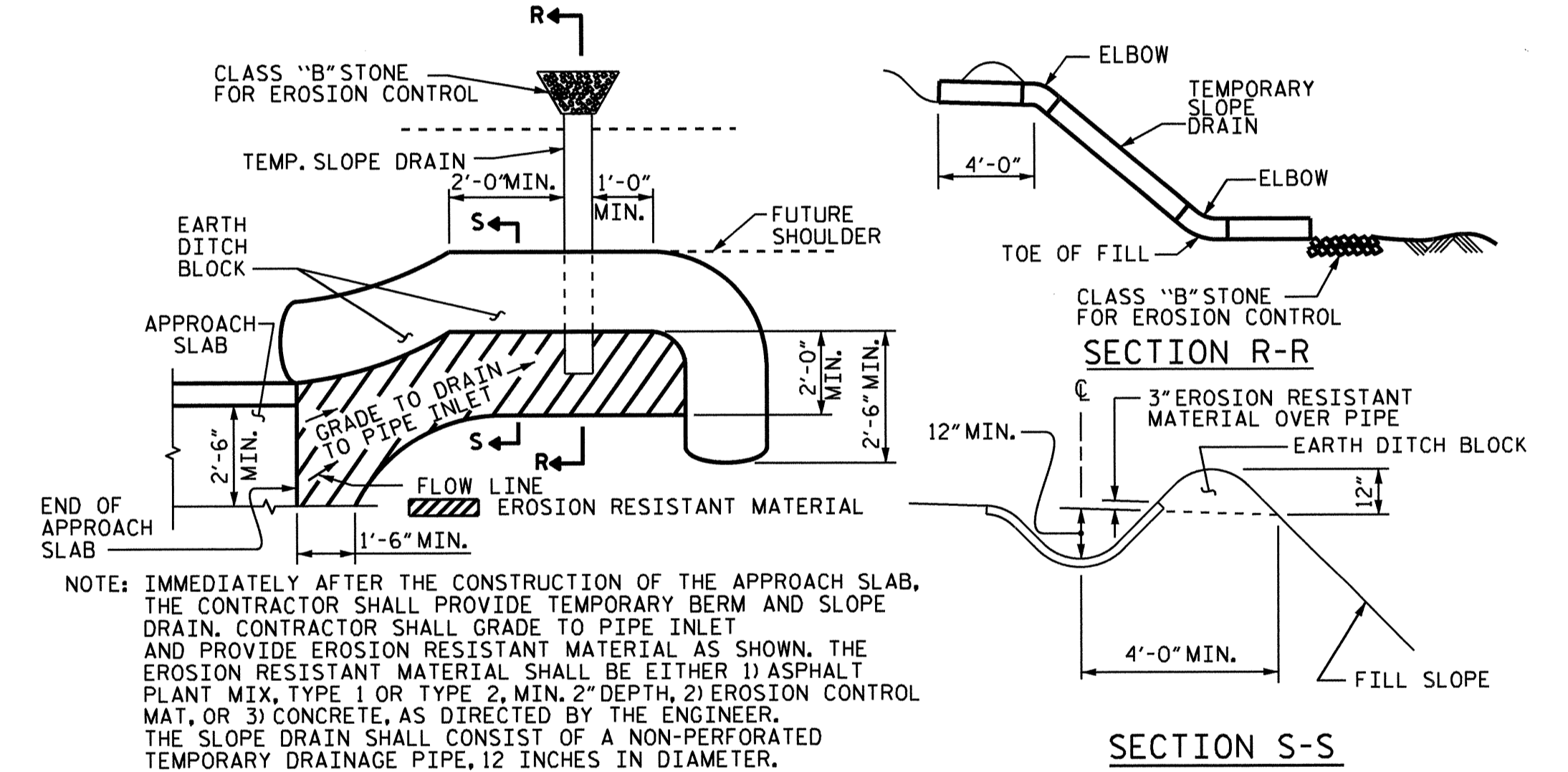
**BILL OF MATERIAL**

APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	21'-2"	368
A2	26	#4	STR	21'-0"	365
*B1	70	#5	STR	11'-1"	809
B2	70	#6	STR	11'-7"	1218
REINFORCING STEEL					LBS. 1583
*EPOXY COATED REINFORCING STEEL					LBS. 1177
CLASS AA CONCRETE					C. Y. 20.6
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	21'-2"	368
A2	26	#4	STR	21'-0"	365
*B1	70	#5	STR	11'-1"	809
B2	70	#6	STR	11'-7"	1218
REINFORCING STEEL					LBS. 1583
*EPOXY COATED REINFORCING STEEL					LBS. 1177
CLASS AA CONCRETE					C. Y. 20.6



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.

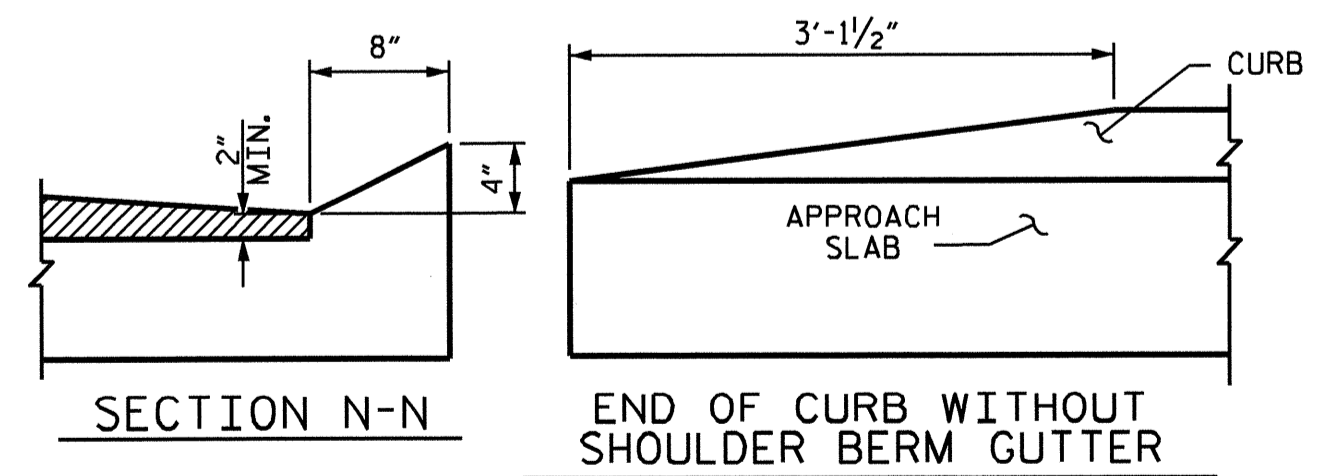
**TEMPORARY DRAINAGE DETAIL**



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.

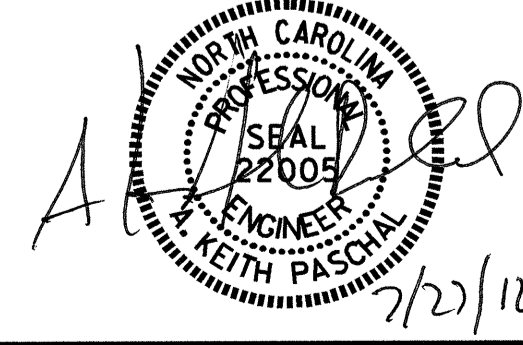
**TEMPORARY BERM AND SLOPE DRAIN DETAILS**

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



**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-51020  
 GREENE COUNTY  
 STATION: 12+65.50 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 BRIDGE APPROACH SLAB  
 FOR PRESTRESSED CONCRETE  
 CORED SLAB UNIT  
 (SUB-REGIONAL TIER)  
 120° SKEW

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

ASSEMBLED BY: J. LAZAROVICH DATE: 6/7/2012  
 CHECKED BY: E. K. POPE DATE: 6/22/2012  
 DRAWN BY: SHS/MAA 5-09 REV. 12-11 MAA/AAC  
 CHECKED BY: BCH 5-09

**SECTION THRU SLAB**

