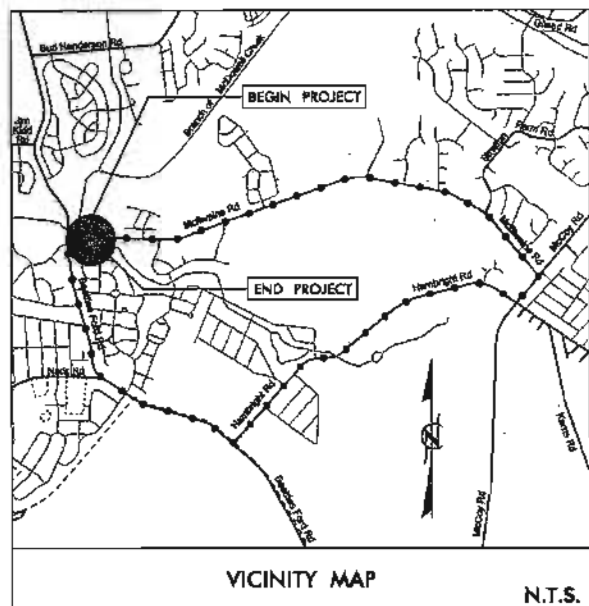


**TIP PROJECT: BD-5110P**

See Sheet 1-A For Index of Sheets  
See Sheet 1-B For Standard Symbology Sheet



**FINAL PLANS**

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**MECKLENBURG COUNTY**

**LOCATION: BRIDGE #130 OVER BRANCH OF McDOWELL CREEK  
ON SR 2130 (McILLWAIN ROAD)**

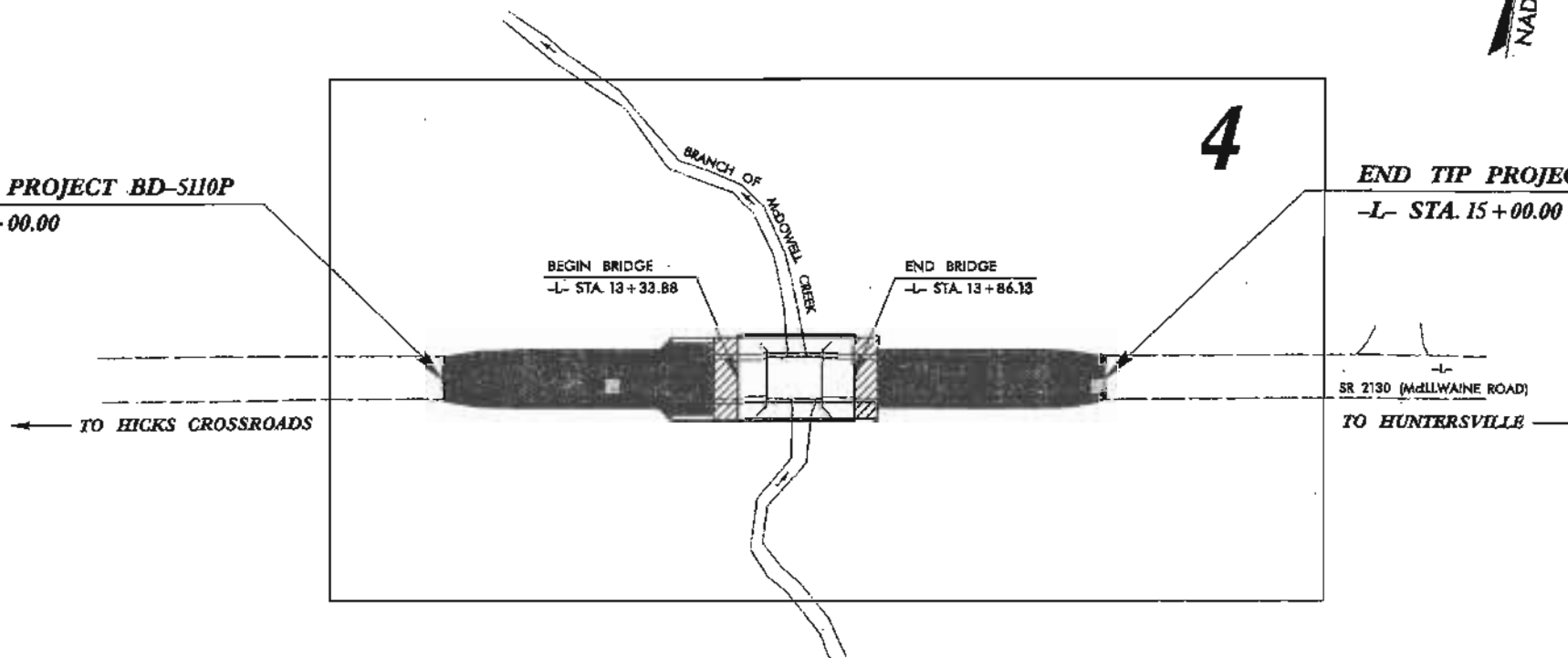
**TYPE OF WORK: GRADING, PAVING, DRAINAGE & STRUCTURE**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BD-5110P	1	
FEATH PROJ. NO.	S.A. PROJ. NO.	DISCIPLINE	
45356.1.16	BRSTP-2130(1)	P.E.	
45356.2.16	BRSTP-2130(1)	R/W & UTILITIES	
45356.3.16	BRSTP-2130(1)	CONSTRUCTION	

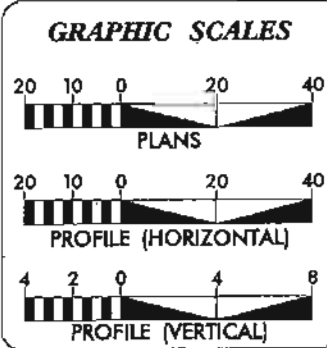


**BEGIN TIP PROJECT BD-5110P**  
-L- STA. 12+00.00

**END TIP PROJECT BD-5110P**  
-L- STA. 15+00.00



**CONTRACT:**



**DESIGN DATA**

ADT 2000 = 1,000
ADT 2025 = 2,000
DHV = N/A
D = N/A
T = 6%
V = 45 MPH
FUNC. CLASSIFICATION: MINOR COLLECTOR

**PROJECT LENGTH**

LENGTH OF ROADWAY TIP PROJECT BD-5110P = 0.047 MILES
LENGTH OF STRUCTURE TIP PROJECT BD-5110P = 0.010 MILES
TOTAL LENGTH OF TIP PROJECT BD-5110P = 0.057 MILES

NCDOT CONTACT: GREG JONES, PE  
Division Bridge Manager

PLANS PREPARED FOR THE NCDOT BY:  
**STV/RALPH WHITEHEAD ASSOCIATES, INC.**  
1000 West Morehead St., Ste. 200, Charlotte NC, 28208  
NC License Number F-0991

2011 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: NOVEMBER 22, 2011

LETTING DATE: JUNE 22, 2012

JOHN N. JOHNSON, PE  
PROJECT ENGINEER

MAAMOON K. ABDELAZIZ  
PROJECT DESIGN ENGINEER

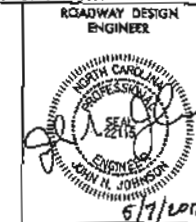
**HYDRAULICS ENGINEER**

EDWARD J. VANCE  
P.E.

**ROADWAY DESIGN ENGINEER**

JOHN N. JOHNSON  
P.E.





## INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
i-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
3	SUMMARIES AND TYPICALS
4	PLAN AND PROFILE SHEET
TCP-1 THRU TCP-2	TRAFFIC CONTROL PLANS
UC-1 THRU UC-4	UTILITY PLANS
UD-1 THRU UD-3	UTILITIES BY OTHERS
EC-1 THRU EC-4	EROSION CONTROL PLANS
X-1 THRU X-2	CROSS-SECTIONS

## GENERAL NOTES

GENERAL NOTES: 2012 SPECIFICATIONS  
EFFECTIVE: 01-01-2012

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 11.

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.

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.

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

## STANDARD DRAWINGS

2012 ROADWAY ENGLISH STANDARD DRAWINGS EFF. January, 2012

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 11
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Super-elevation - Two Lane Pavement
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Super-elevated Curve - Method 1
DIVISION 8 - INCIDENTALS	
840.20	Frames and Wide Slot Flat Grates
840.25	Anchorage for Frames - Brick / Concrete / Precast Concrete
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets
DIVISION 11 - WORK ZONE TRAFFIC CONTROL	
1110.01	Stationary Work Zone Signs - Mounting Height & Lateral Clearance
1145.01	Barriades - Type III
DIVISION 16 - EROSION CONTROL AND ROADSIDE DEVELOPMENT	
1605.01	Temporary Silt Fence
1606.01	Special Sediment Control Fence
1607.01	Gravel Construction Entrance
1622.01	Guide for Temporary Berms and Slope Drains
1630.01	Riser Basin
1630.03	Temporary Silt Ditch
1630.04	Stilling Basin for Pumped Effluent
1630.05	Temporary Diversion
1630.06	Special Stilling Basin
1632.01	Rock Inlet Sediment Trap Type A
1632.02	Rock Inlet Sediment Trap Type B
1632.03	Rock Inlet Sediment Trap Type C
1633.01	Temporary Rock Silt Check Type A
1633.02	Temporary Rock Silt Check Type B
1634.01	Temporary Rock Sediment Dam Type A
1634.02	Temporary Rock Sediment Dam Type B
1635.01	Rock Pipe Inlet Sediment Trap Type A
1635.02	Rock Pipe Inlet Sediment Trap Type B













**Note: Not to Scale**

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












STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# CONVENTIONAL PLAN SHEET SYMBOLS












**BOUNDARIES AND PROPERTY:**

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

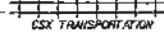
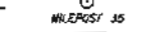



**BUILDINGS AND OTHER CULTURE:**

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






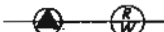

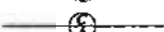
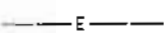
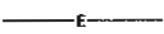


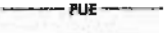


**HYDROLOGY:**

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

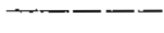

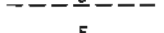


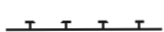
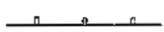
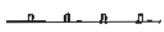



**RAILROADS:**

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





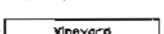

**RIGHT OF WAY:**

Baseline Control Point	_____ 
Existing Right of Way Marker	_____ 
Existing Right of Way Line	_____ 
Proposed Right of Way Line	_____ 
Proposed Right of Way Line with Iron Pin and Cap Marker	_____ 
Proposed Right of Way Line with Concrete or Granite Marker	_____ 
Existing Control of Access	_____ 
Proposed Control of Access	_____ 
Existing Easement Line	_____ 
Proposed Temporary Construction Easement	_____ 
Proposed Temporary Drainage Easement	_____ 
Proposed Permanent Drainage Easement	_____ 
Proposed Permanent Utility Easement	_____ 
Proposed Temporary Utility Easement	_____ 
Proposed Permanent Easement with Iron Pin and Cap Marker	_____ 

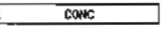
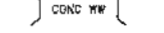
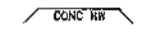


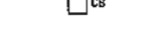



**ROADS AND RELATED FEATURES:**

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




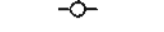


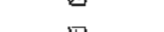


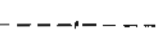

**VEGETATION:**

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


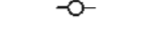




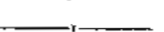
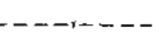
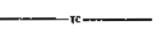
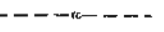
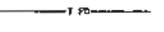
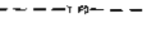

**EXISTING STRUCTURES:**

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








**UTILITIES:**

<b>POWER:</b>	
Existing Power Pole	_____ 
Proposed Power Pole	_____ 
Existing Joint Use Pole	_____ 
Proposed Joint Use Pole	_____ 
Power Manhole	_____ 
Power Line Tower	_____ 
Power Transformer	_____ 
UG Power Cable Hand Hole	_____ 
H-Frame Pole	_____ 
Recorded U/G Power Line	_____ 
Designated U/G Power Line (S.U.E.*)	_____ 


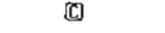




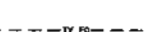

**TELEPHONE:**

Existing Telephone Pole	_____ 
Proposed Telephone Pole	_____ 
Telephone Manhole	_____ 
Telephone Booth	_____ 
Telephone Pedestal	_____ 
Telephone Cell Tower	_____ 
UG 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.*)	_____ 



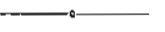
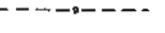
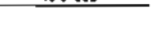
**WATER:**

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	_____ 



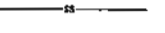
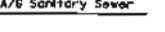


**TV:**

TV Satellite Dish	_____ 
TV Pedestal	_____ 
TV Tower	_____ 
UG 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.*)	_____ 





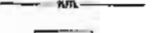

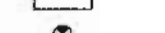



**GAS:**

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	_____ 
UG 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	_____ 
UG Tank; Water, Gas, Oil	_____ 
AG Tank; Water, Gas, Oil	_____ 
UG Test Hole (S.U.E.*)	_____ 
Abandoned According to Utility Records	_____ 
End of Information	_____ 

5/11/2012 r:\roadway\proj\BD510P\_rdy\_pst\01B.dgn

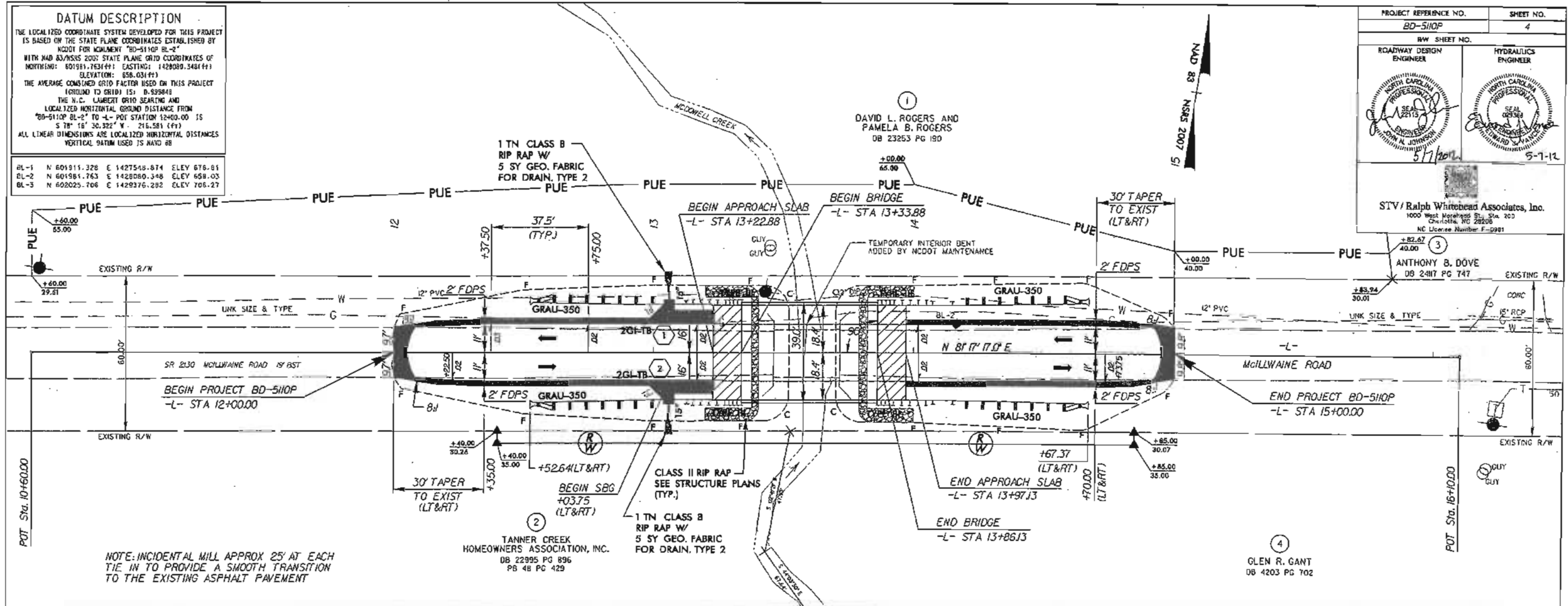


**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NC DOT FOR MONUMENT "BD-5110P BL-2" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 601981.763; EASTING: 1428080.348 (ELEVATION: 658.031 FT) THE AVERAGE COMPAKED GRID FACTOR USED ON THIS PROJECT (ROUND TO 6TH) IS: 0.999994 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BD-5110P BL-2" TO L- POT STATION 12+00.00 IS S 78° 16' 30.322" W - 216.581 (FT) ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 83

BL-1	N 601911.328	E 1427548.874	ELEV 676.81
BL-2	N 601981.763	E 1428080.348	ELEV 658.03
BL-3	N 602025.706	E 1429376.282	ELEV 705.27

PROJECT REFERENCE NO. BD-5110P	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 22113 DAVID L. ROGERS	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 02388 EDWARD J. VALENTI
STV / Ralph Whitehead Associates, Inc. 1000 West Morehead St., Sta. 203 Charlotte, NC 28208 NC License Number F-0981	
ANTHONY B. DOVE DB 2487 PG 747	

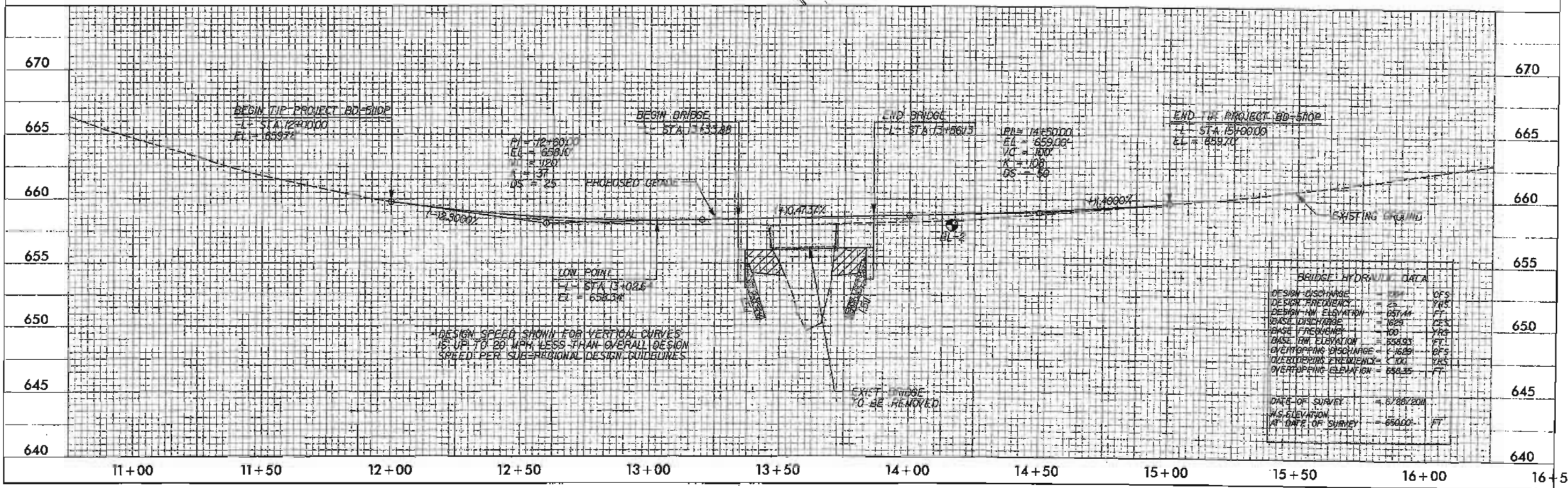


NOTE: INCIDENTAL MILL APPROX 25' AT EACH TIE IN TO PROVIDE A SMOOTH TRANSITION TO THE EXISTING ASPHALT PAVEMENT

TANNER CREEK HOMEOWNERS ASSOCIATION, INC.  
DB 22995 PG 896  
PB 48 PG 429

DAVID L. ROGERS AND PAMELA B. ROGERS  
DB 23253 PG 190

GLEN R. GANT  
DB 4203 PG 702



**BRIDGE HYDRAULIC DATA**

DESIGN DISCHARGE	100	CFS
DESIGN FREQUENCY	25	YRS
DESIGN HW ELEVATION	657.44	FT
BASE DISCHARGE	1629	CFS
BASE FREQUENCY	100	YRS
BASE HW ELEVATION	658.93	FT
OVERTOPPING DISCHARGE	11629	CFS
OVERTOPPING FREQUENCY	100	YRS
OVERTOPPING ELEVATION	658.35	FT


DATE OF SURVEY = 5/28/2008  
WS ELEVATION AT DATE OF SURVEY = 650.00 FT

\*DESIGN SPEED SHOWN FOR VERTICAL CURVES IS UP TO 20 MPH LESS THAN OVERALL DESIGN SPEED PER SUB-REGIONAL DESIGN GUIDELINES


EXIST. BRIDGE TO BE REMOVED

r:\roadway\nc\bd5110p\_04.dwg  
5/7/2012

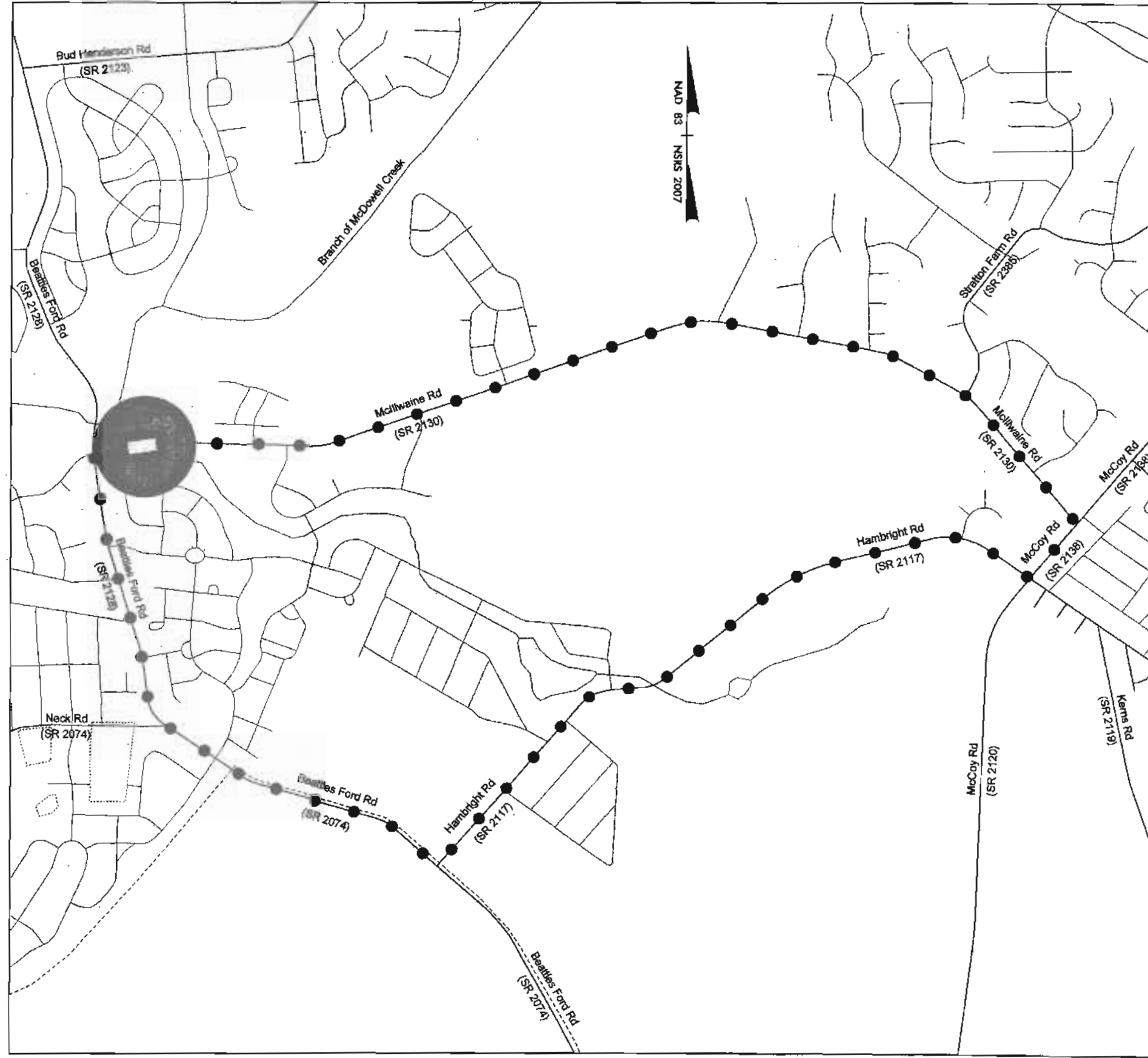
# DETOUR ROUTE

PROJECT REFERENCE NO. BD-510P	SHEET NO. TCP-1
RAW SHEET NO.	
 STV/Ralph Whitehead Associates, Inc. 1000 West Morehead St., Ste. 200 Charlotte, NC 28208 NC License Number F-0891	

ROADWAY DESIGN  
ENGINEER

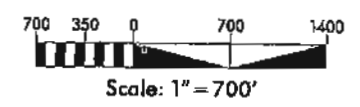


5/1/2012

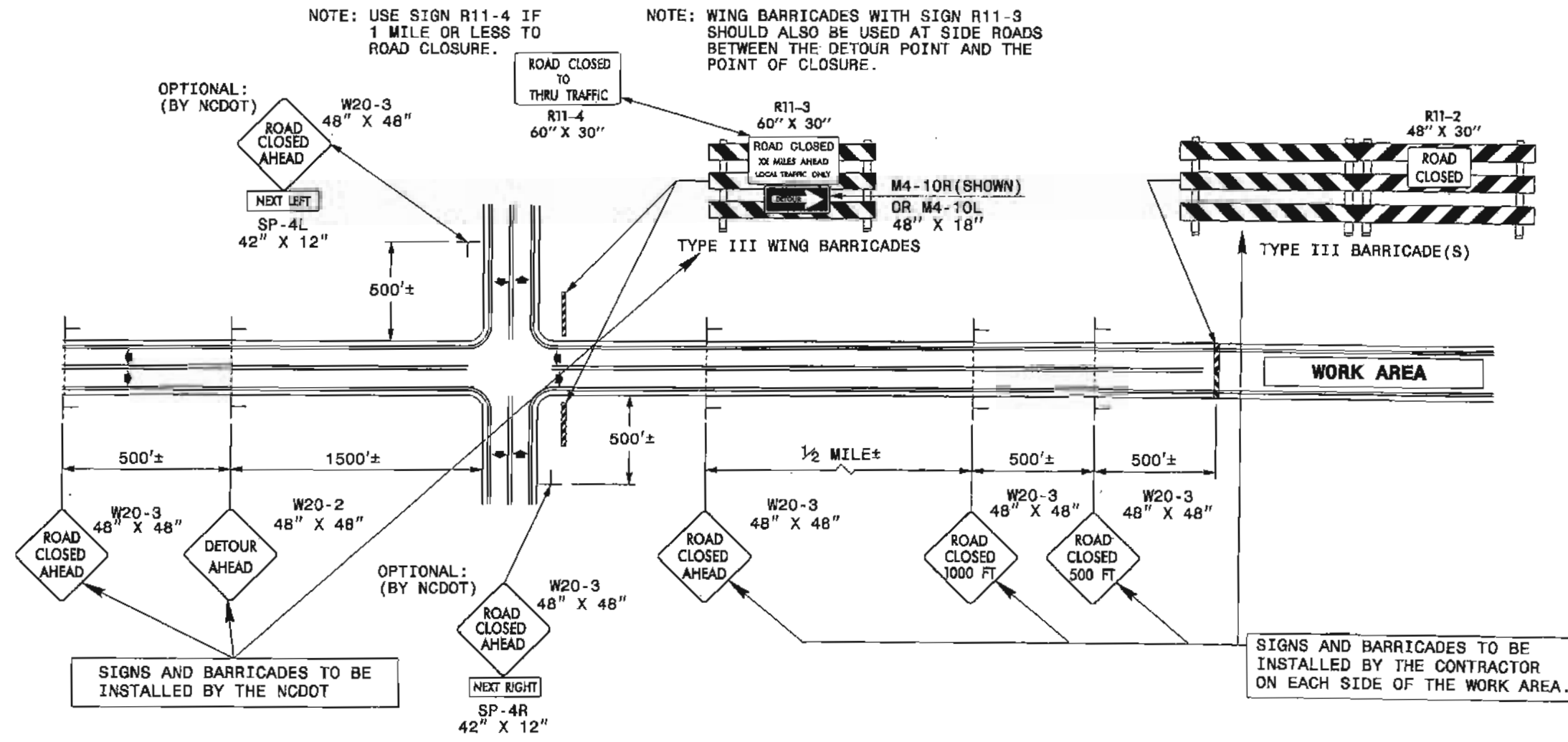


n:\Traffic\TrafficControl\CP\BD510P\_rdy\_jsp01.dgn

5/1/2012



# TEMPORARY ROAD CLOSURE CLOSURE BEYOND DETOUR POINT



### GENERAL NOTES

- 1-IF NECESSARY USE THIS STD. FOR TWO-LANE, TWO-WAY, AND MULTILANE DIVIDED AND UNDIVIDED ROADWAYS.
- 2-INSTALLATION OF DETOUR ROUTING PANELS, TEMPORARY ROUTE MARKERS, DESTINATION SIGNS, AND ANY NECESSARY MODIFICATIONS TO EXISTING OR PROPOSED REGULATORY OR WARNING SIGNS WILL BE MADE BY NCDOT FORCES UNLESS OTHERWISE DESIGNATED IN THE PLANS. PROVIDE A MINIMUM 21 CALENDAR DAY NOTICE TO STATE FORCES BEFORE A ROADWAY IS CLOSED TO TRAFFIC SUCH THAT THE NECESSARY PROVISIONS CAN BE MADE TO INSTALL DETOUR ROUTE SIGNS, INFORM LOCAL EMERGENCY AND LAW ENFORCEMENT PERSONNEL, SCHOOLS, OR ANY OTHER PARTIES AFFECTED BY THE ROAD CLOSURE.
- 3-INSTALL SIGNS BEFORE THE BARRICADES WHEN CLOSING THE ROADWAY TO TRAFFIC. REMOVE BARRICADES BEFORE SIGNS WHEN OPENING THE ROADWAY TO TRAFFIC. INSTALL/REMOVE SIGNS AND BARRICADES WITHIN THE SAME CALENDAR DAY.
- 4-USE ADDITIONAL TYPE III BARRICADES IN STAGGERED LOCATIONS SUPPLEMENTED WITH SIGN R11-4 "ROAD CLOSED TO THRU TRAFFIC" IN THE EVENT THAT TRAFFIC MUST BE MAINTAINED BEYOND THE DETOUR POINT.
- 5-DO NOT DISPLAY FRACTIONS OR DECIMALS ON SIGN R11-3 "ROAD CLOSED XX MILES AHEAD".
- 6-POSITION WING BARRICADES ON THE SHOULDERS AND SLOPE THE STRIPES DOWNWARD IN THE DIRECTION TOWARD WHICH TRAFFIC MUST TURN IN DETOURING.
- 7-USE PORTABLE SIGNS IF ROAD CLOSURE IS TO BE IMPLEMENTED FOR LESS THAN ONE DAY OR FOR EMERGENCIES.

### LEGEND

- STATIONARY SIGN
- ➔ DIRECTION OF TRAFFIC FLOW

5/1/2012 r:\Traffic\TrafficControl\CP\BD510P\_rev1.dwg





Note: Not to Scale

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


STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

**V&M**  
Vanham & Melton  
Consulting Engineers  
Charlotte, North Carolina  
919-251-5168













Asheville, North Carolina 828-253-2755  
Tri-Cities, Tennessee 423-487-8725  
Knoxville, Tennessee 615-588-5800  
Middlesboro, Kentucky 606-293-3600  
Spartanburg, South Carolina 803-527-4722















Copyright © 2004 Vanham & Melton, Inc.  
All Rights Reserved

PROJECT REFERENCE NO. BD-5110P	SHEET NO. UC-2
DESIGNED BY: RMS	
DRAWN BY: WSN	
CHECKED BY: RMS	
APPROVED BY:	
REVISED:	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 250-4128 FAX: (919) 250-4119
UTILITY CONSTRUCTION PLANS ONLY	







UTILITY CONSTRUCTION

Water





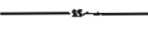
Proposed Back Flow Preventor	
Relocate Back Flow Preventor	
Existing Water Valve	
Proposed Valve	
Proposed Tapping Valve	
Existing Water Meter	
Proposed Water Meter	
Proposed Water Meter/Vault	
Relocate Water Meter	
Remove Water Meter	REM WM
Existing Hydrant	
Prop Hydrant	
Relocate Hydrant	
Remove Hydrant	REM FH







Proposed RPZ Back Flow Preventor	
Relocate RPZ Back Flow Preventor	
45° Bend w/Thrust Block	
Water Plug	
Water Cross	
Water Plug	
Water Reducer	
Water Tee	
Water Pump Station	
Water Thrust Block	
Blow Off Valve	
Air Release Valve	
Water Line Stop	
Water Line Stop w Bypass	

Utility By Other Symbols

Proposed Tel Pole	
Proposed Power Pole	
Proposed Joint Use Power, Tel Pole	
Proposed Joint Use Power, CATV Pole	
Proposed Joint Use Power, Tel, CATV Pole	
Proposed Joint Use Tel, CATV Pole	

Sewer

Existing Manhole	
Proposed UT Manhole	
Remove UT Manhole	REM UT MH
Abandon Utility Manhole	ABAND MH
Sewer Line Stop	
Sewer Line Stop w Bypass	
U/G Sanitary Sewer Line	

Sewer Cross	
Sewer Plug	
Sewer Reducer	
Sewer Tee	
Sewer Pump Station	
Sewer Thrust Block	

PUE Monument	
Concrete Pier	
Steel Pile Pier	
Test Hole (SUE)	
Prop Utility Vault	



5/14/99

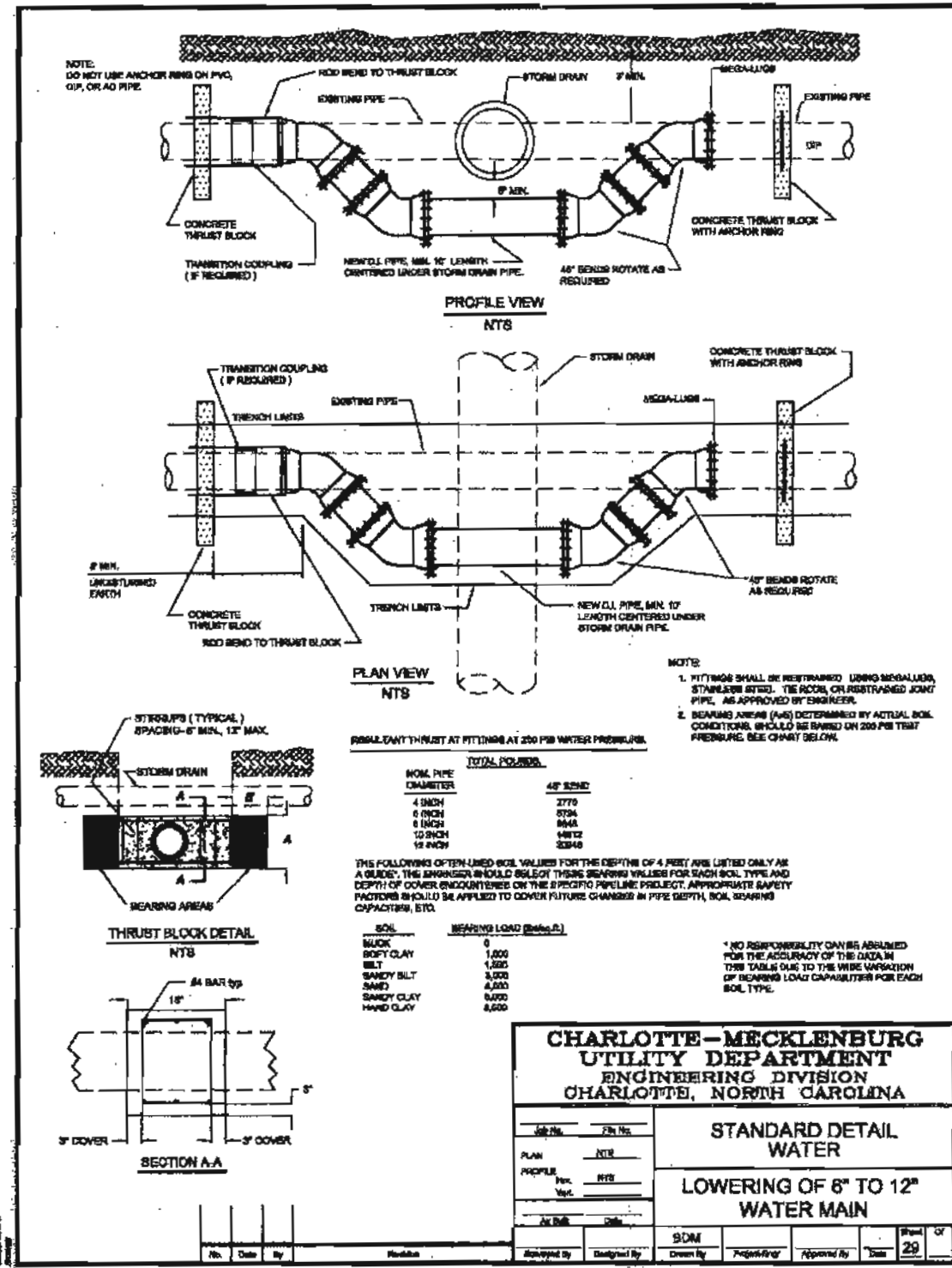
Note: Not to Scale

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

# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS UTILITIES PLAN SHEET DETAILS

Charlotte, North Carolina  
704-267-0468

PROJECT REFERENCE NO. BD-5110P	SHEET NO. UC-4
DESIGNED BY: RMS	
DRAWN BY: CBC	
CHECKED BY: RMS	
APPROVED BY: RMS	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 250-4128 FAX: (919) 250-4119	
UTILITY CONSTRUCTION PLANS ONLY	



**CHARLOTTE-MECKLENBURG  
UTILITY DEPARTMENT  
ENGINEERING DIVISION  
CHARLOTTE, NORTH CAROLINA**

DATE	REV. NO.	REV. BY	REV. DATE

**STANDARD DETAIL  
WATER**

**LOWERING OF 6" TO 12"  
WATER MAIN**

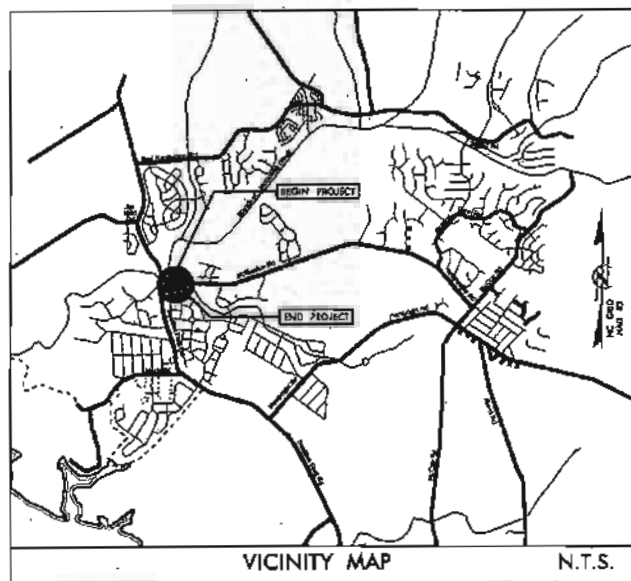
Drawn By	Checked By	Approved By	Date

\*\*\*\*\*SYTIME\*\*\*\*\*

See Sheet 1A For Index of Sheets  
See Sheet 1B For Standard Symbology Sheet

T.I.P. NO.	SHEET NO.
BD-5110P	UO-1

TIP PROJECT: BD-5110P



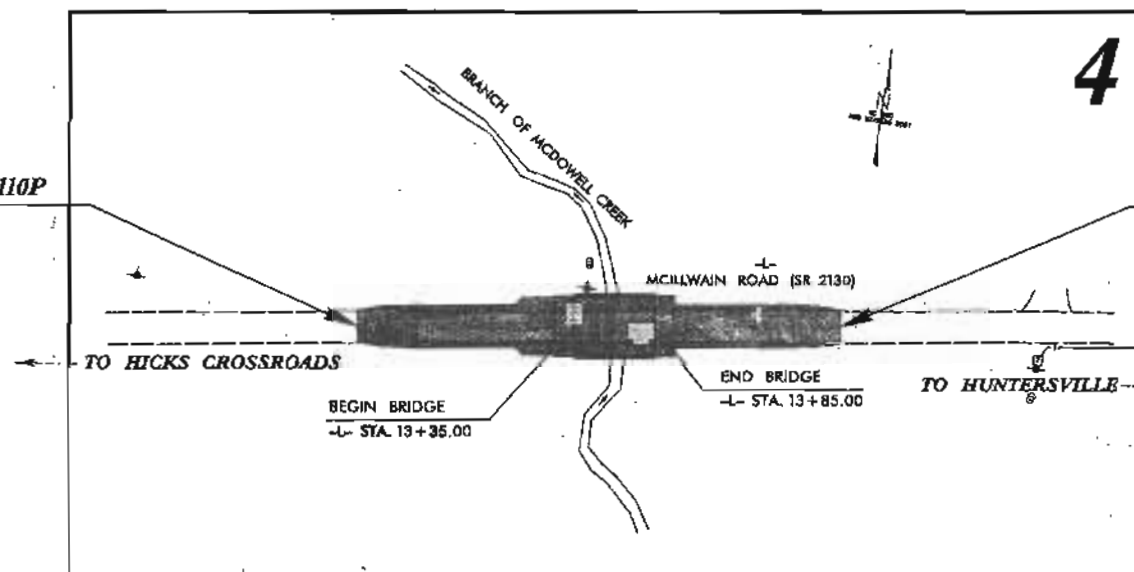
# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

## UTILITIES BY OTHERS PLANS MECKLENBURG COUNTY

**LOCATION: BRIDGE NO. 130 OVER BRANCH OF MCDOWELL CREEK  
ON SR 2130 (McILLWAIN ROAD)**

**TYPE OF WORK: AERIAL POWER, TELEPHONE, CABLE TELEVISION & NATURAL GAS**

**BEGIN TIP PROJECT BD-5110P**  
-L- STA. 12+00.00



**END TIP PROJECT BD-5110P**  
-L- STA. 15+00.00

**GRAPHIC SCALES**



INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
UO-1	TITLE SHEET
UO-2	UTILITY BY OTHERS PLAN SHEETS

UTILITY OWNERS ON PROJECT
(1) POWER DISTRIBUTION - DUKE ENERGY
(2) AERIAL TELEPHONE - AT&T
(3) CABLE TELEVISION - TIME WARNER CABLE
(4) NATURAL GAS - PIEDMONT NATURAL GAS





PREPARED IN THE OFFICE OF:  
**DIVISION OF HIGHWAYS**  
**UTILITIES ENGINEERING SECTION**

1501 MAIL SERVICES CENTER  
 RALEIGH, NC 27699-1591  
 PHONE (919) 259-4128  
 FAX (919) 259-4119

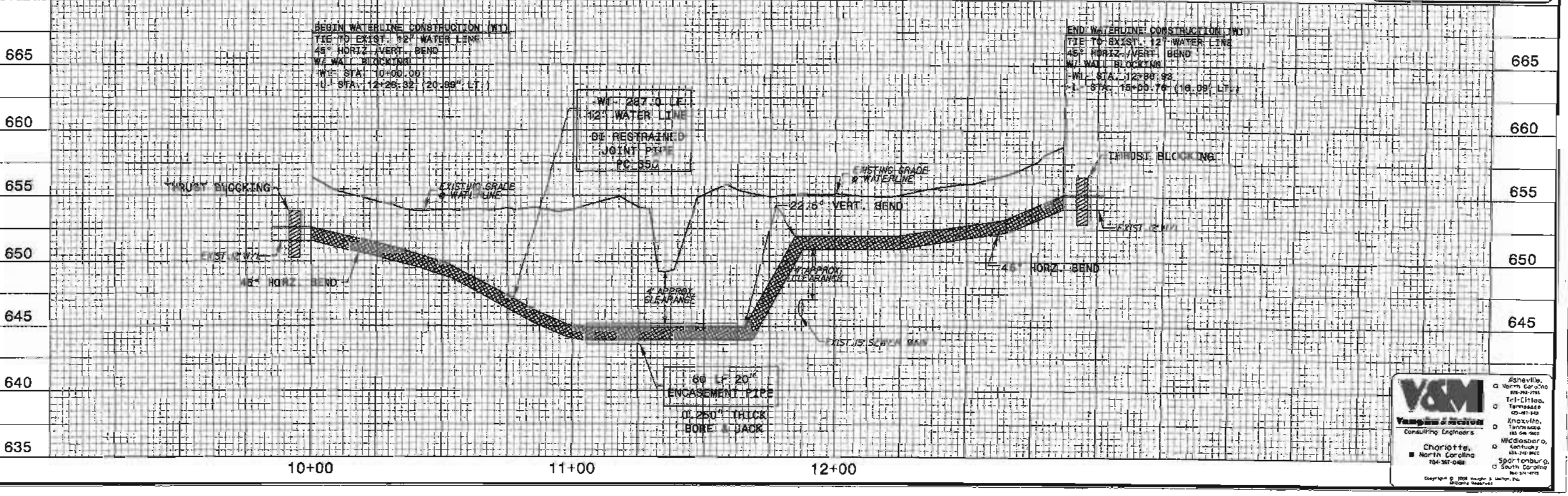
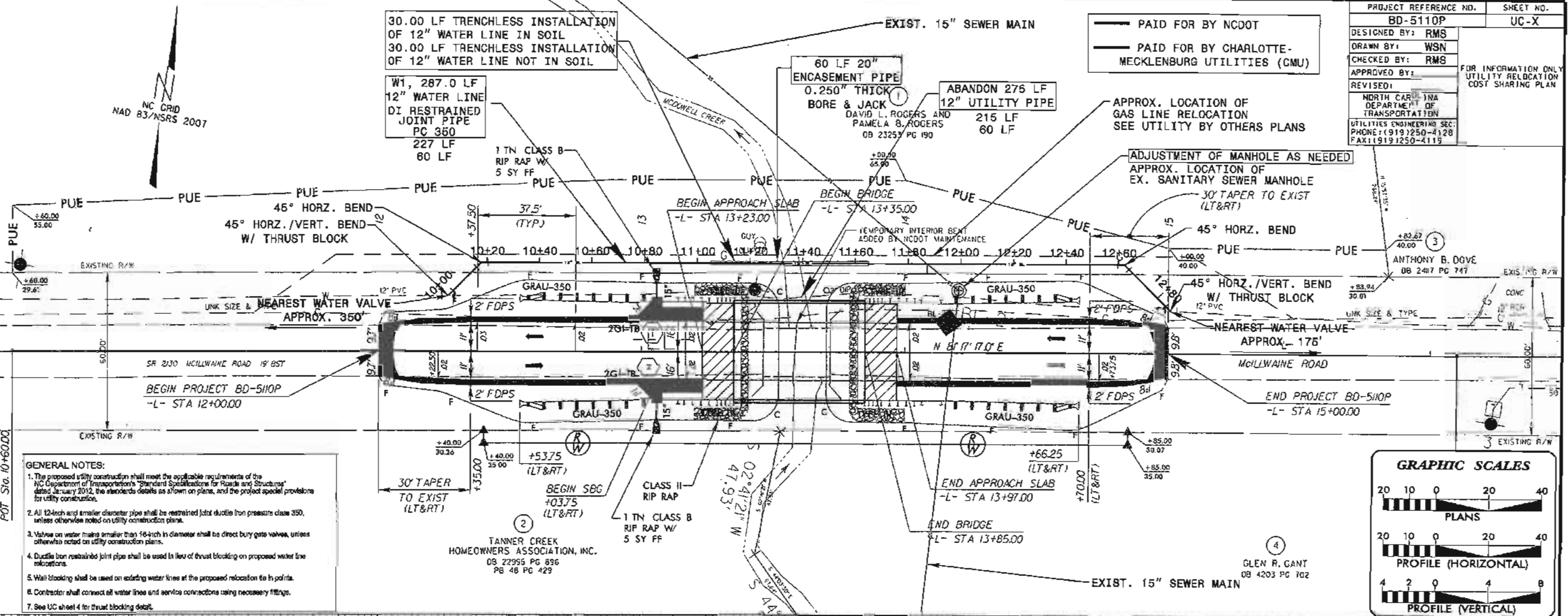
**Roger Worthington, P.E.** UTILITIES SECTION ENGINEER  
**Xxxxx Xxxxx, P.E.** UTILITIES SQUAD LEADER PROJECT ENGINEER  
**Raece Schuler, PE** UTILITIES PROJECT DESIGNER

\*\*\*\*\* M\*\*\*\*\*  
 \*\*\*\*\* D\*\*\*\*\*  
 \*\*\*\*\* S\*\*\*\*\*  
 \*\*\*\*\* U\*\*\*\*\*



FOR INFORMATION ONLY  
 UTILITY RELOCATION  
 COST SHARING PLAN

PAID FOR BY NCDOT  
 PAID FOR BY CHARLOTTE-MECKLENBURG UTILITIES (CMU)



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

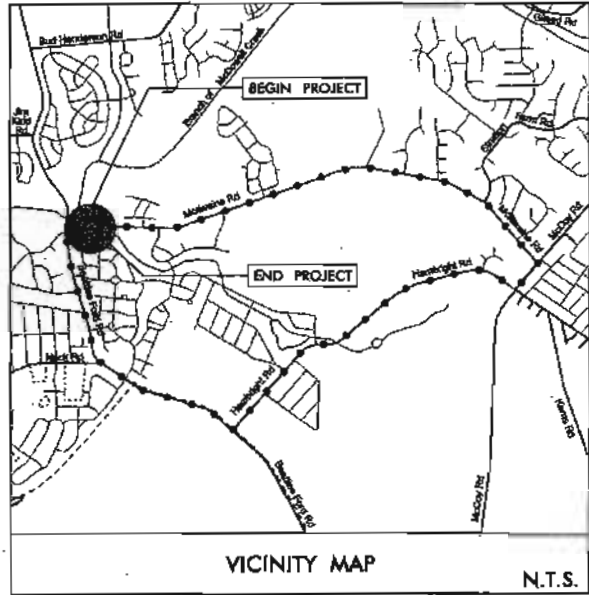
PLAN FOR PROPOSED  
HIGHWAY EROSION CONTROL

**MECKLENBURG COUNTY**

LOCATION: BRIDGE #130 OVER BRANCH OF McDOWELL CREEK  
ON SR 2130 (McILLWAIN ROAD)

TYPE OF WORK: GRADING, PAVING, DRAINAGE & STRUCTURE

STATE	STATE PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
N.C.	BD-5110P	1	4
STATE PROJECT NO.	N.A. NUMBER	DESCRIPTION	
45356.1.16	BRSTP-2130(1)	P.E.	
45356.2.16	BRSTP-2130(1)	R/W & UTILITIES	
45356.3.16	BRSTP-2130(1)	CONSTRUCTION	



EROSION CONTROL PLANS



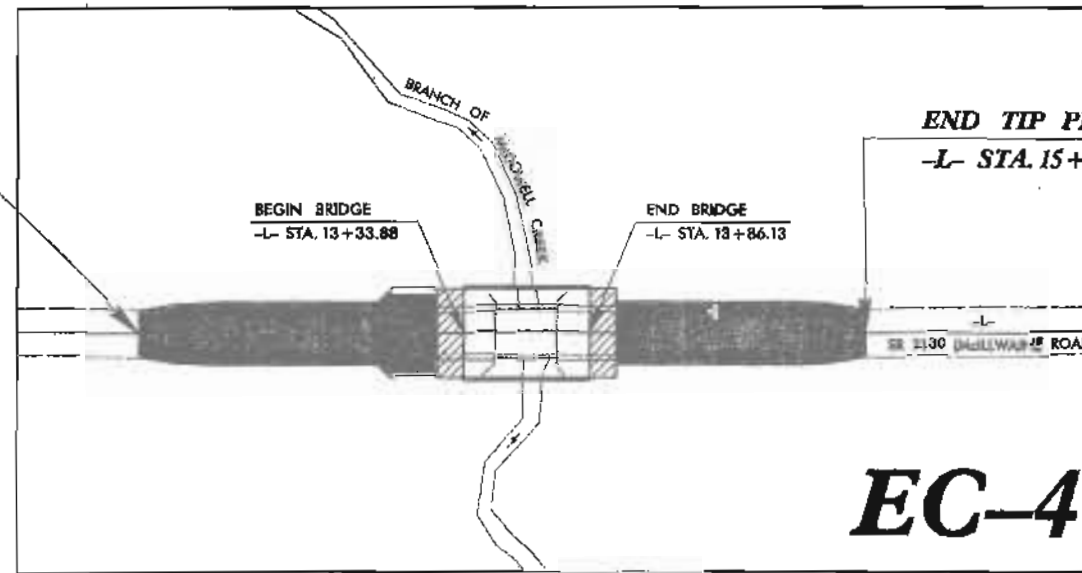
EROSION AND SEDIMENT CONTROL MEASURES

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 revisions thereto are applicable to this project and by reference hereby are considered a part of these plans.

Sta. #	Description	Symbol
1605.01	Temporary Silt Fence	[Symbol]
1606.01	Special Sediment Control Fence	[Symbol]
1607.01	Gravel Construction Entrance	[Symbol]
1622.01	Temporary Berms and Slope Drains	[Symbol]
1630.01	Riser Basin	[Symbol]
1630.03	Temporary Silt Ditch	[Symbol]
1630.04	Stilling Basin	[Symbol]
1630.05	Temporary Diversion	[Symbol]
1630.06	Special Stilling Basin	[Symbol]
1632.01	Rock Inlet Sediment Trap Type A	A [Symbol]
1632.02	Rock Inlet Sediment Trap Type B	B [Symbol]
1632.03	Rock Inlet Sediment Trap Type C	C [Symbol]
1633.01	Temporary Rock Silt Check Type-A	[Symbol]
1633.02	Temporary Rock Silt Check Type-B	[Symbol]
1634.01	Temporary Rock Sediment Dam Type-A	[Symbol]
1634.02	Temporary Rock Sediment Dam Type-B	[Symbol]
1635.01	Rock Pipe Inlet Sediment Trap Type-A	[Symbol]
1635.02	Rock Pipe Inlet Sediment Trap Type-B	[Symbol]
SP	Silt Basin Type B	[Symbol]
SP	Skimmer Basin	[Symbol]
SP	Tiered Skimmer Basin	[Symbol]
SP	Infiltration Basin	[Symbol]
SP	Wattle	[Symbol]
SP	Coir Fiber Matting	[Symbol]

BEGIN TIP PROJECT BD-5110P  
-L- STA. 12+00.00

END TIP PROJECT BD-5110P  
-L- STA. 15+00.00



These Erosion and Sediment Control Plans comply with the regulations set forth by the NCG010000 general construction permit effective August 3, 2011 issued by the North Carolina Department of Environment and Natural Resources Division of Water Quality.

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

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT  
Refer To E. C. Special Provisions for Special Considerations.

GRAPHIC SCALE



ROADSIDE ENVIRONMENTAL UNIT  
DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

Level III-A Designer  
Edward Vance, PE #167



Prepared in the Office of:  
**STV/RALPH WHITEHEAD ASSOCIATES, INC.**  
1000 West Morehead St., Ste. 200, Charlotte NC, 28208  
NC License Number P-0991  
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
**2012 STANDARD SPECIFICATIONS**


EROSION CONTROL PLANS  
5/10/12

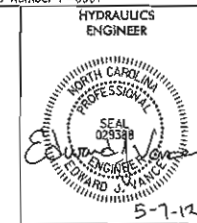
CONTRACT: TIP PROJECT: BD-5110P





DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO. BD-5110P	SHEET NO. EC-3
R/W SHEET NO.	
 STV/Ralph Whitehead Associates, Inc. 1007 West Morehead St., Ste. 200 Charlotte, NC 28208 NC License Number F-0981	



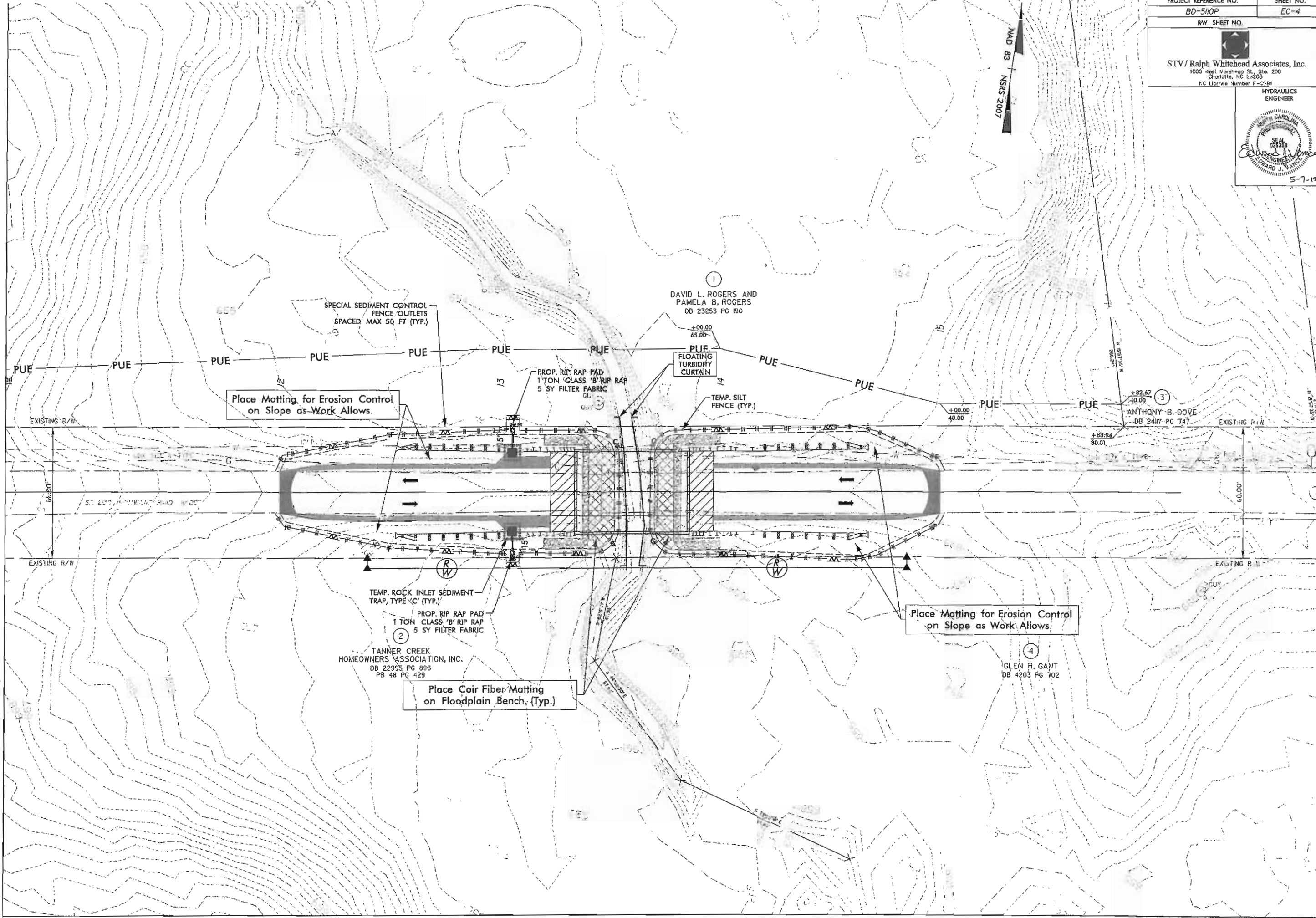
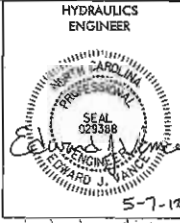
## SOIL STABILIZATION SUMMARY SHEET

### MATTING FOR EROSION CONTROL (FOR SLOPE STABILIZATION)

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
			SUBTOTAL		585
	MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER				60
				TOTAL	645
				SAY	645

### COIR FIBER MATTING (FOR FLOODPLAIN BENCH)

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
			SUBTOTAL		115
	MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER				15
				TOTAL	130
				SAY	130



1  
DAVID L. ROGERS AND  
PAMELA B. ROGERS  
DB 23253 PG 190

+00.00  
65.00  
PUE  
FLOATING  
TURBIDITY  
CURTAIN

TEMP. SILT  
FENCE (TYP.)

Place Matting for Erosion Control  
on Slope as Work Allows.

PROP. RIP RAP PAD  
1 TON CLASS 'B' RIP RAP  
5 SY FILTER FABRIC

+82.67  
40.00  
3  
ANTHONY B. DOVE  
DB 2417-PC 747

TEMP. ROCK INLET SEDIMENT  
TRAP, TYPE 'C' (TYP.)

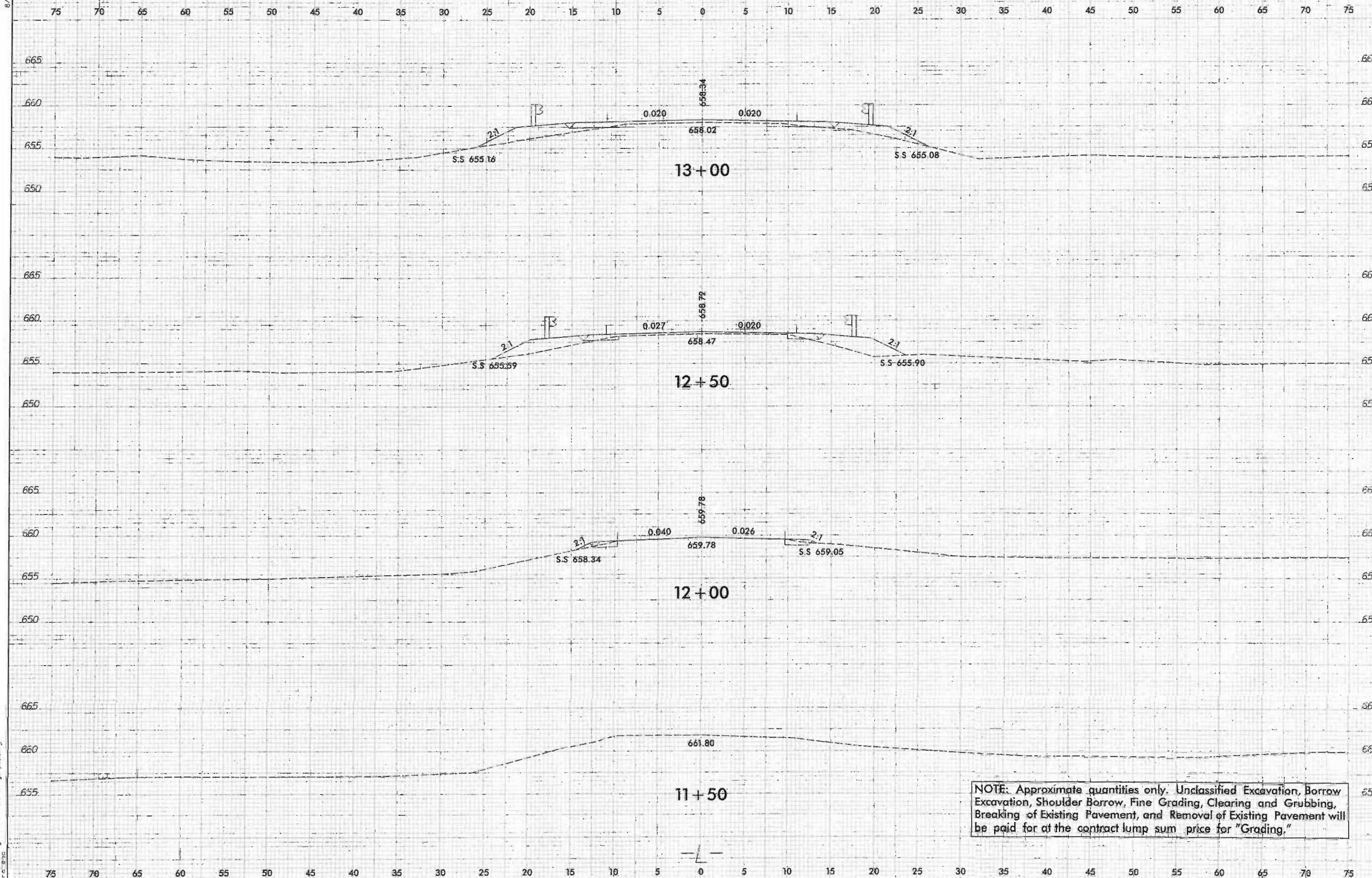
2  
PROP. RIP RAP PAD  
1 TON CLASS 'B' RIP RAP  
5 SY FILTER FABRIC

TANNER CREEK  
HOMEOWNERS ASSOCIATION, INC.  
DB 22995 PG 896  
PB 48 PG 429

Place Coir Fiber Matting  
on Floodplain Bench, (Typ.)

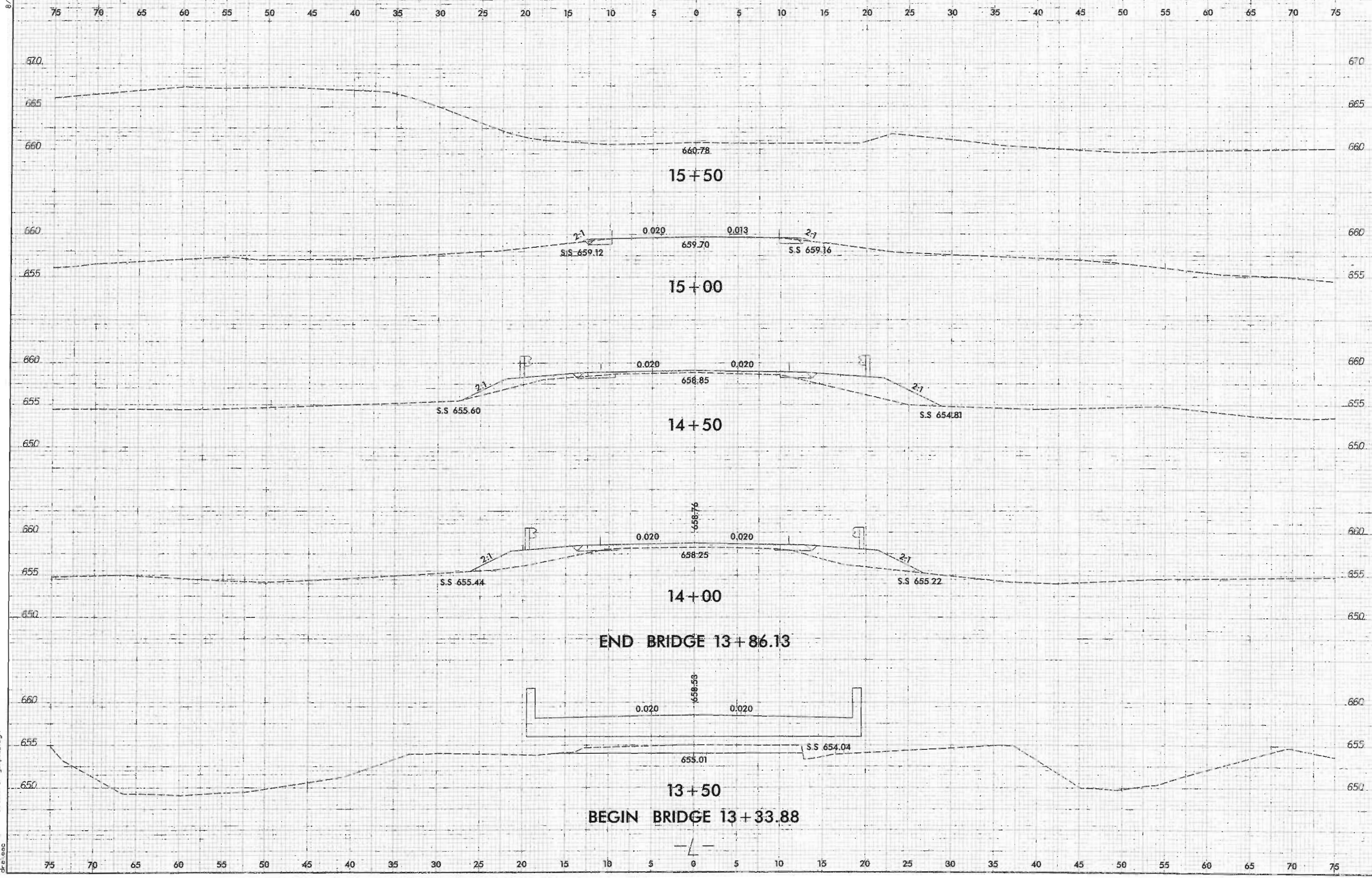
Place Matting for Erosion Control  
on Slope as Work Allows.

4  
GLEN R. GANT  
DB 4203 PG 702

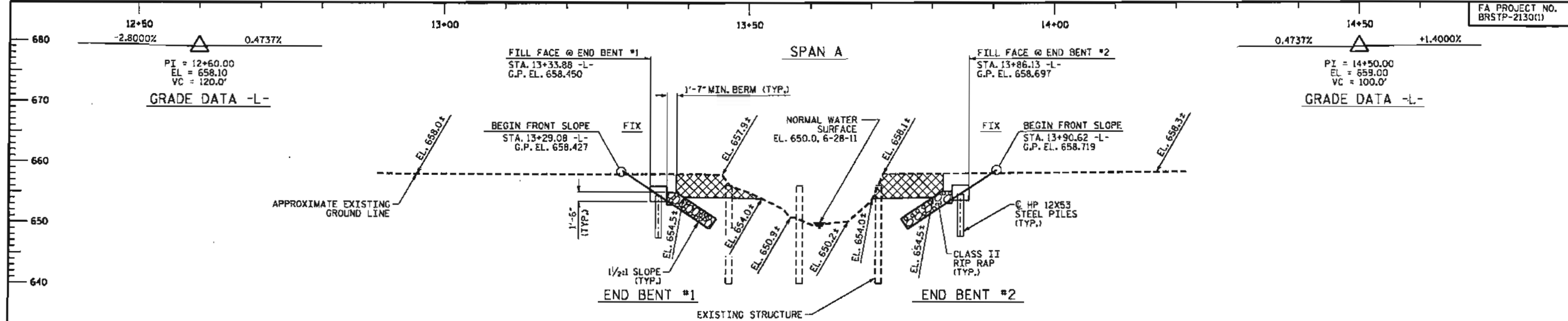


NOTE: Approximate quantities only. Unclassified Excavation, Borrow Excavation, Shoulder Borrow, Fine Grading, Clearing and Grubbing, Breaking of Existing Pavement, and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading."

8/2

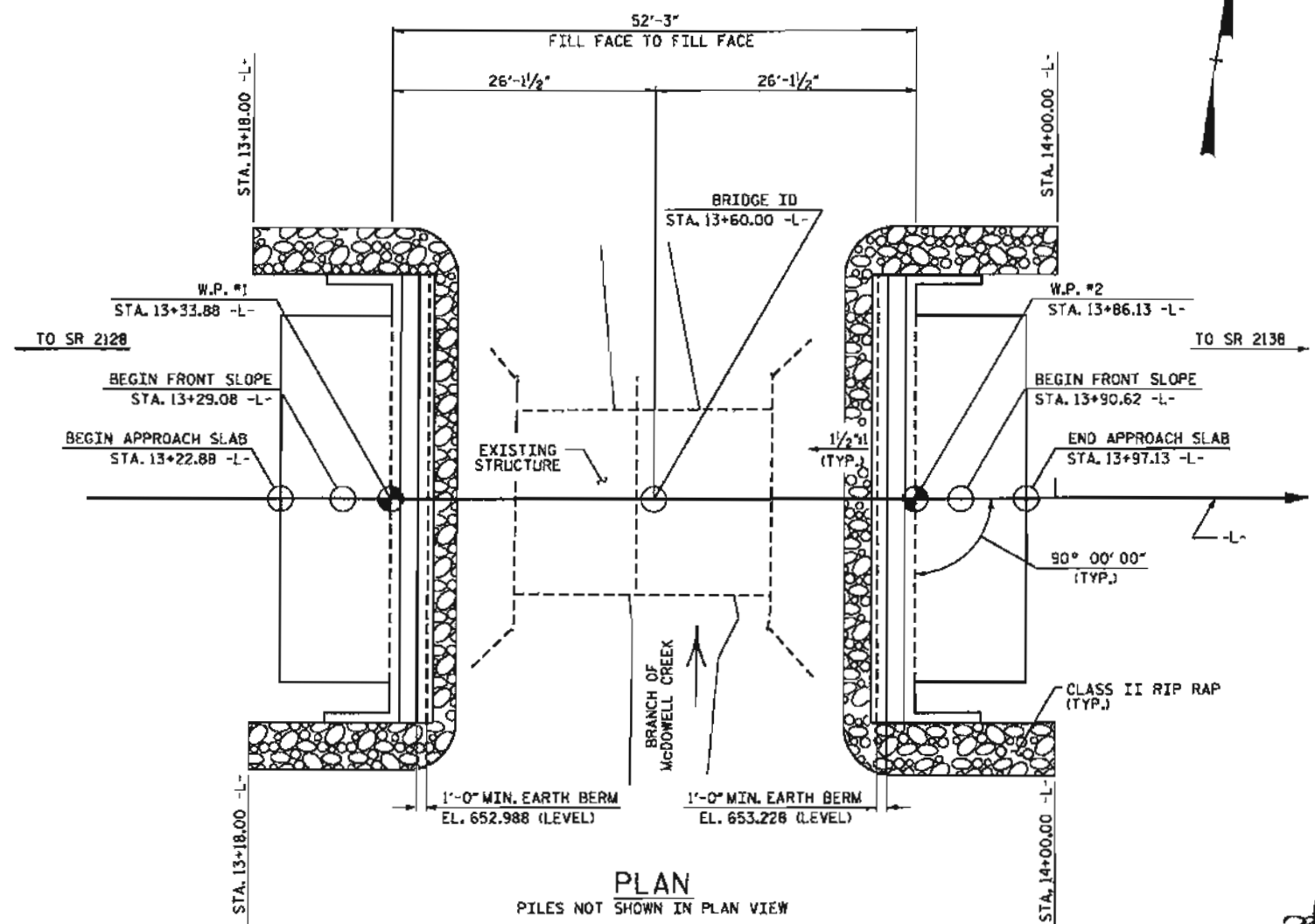


C:\11202  
p:\cadd\w\bd5110p\_rdy\_xpl.L.dgn  
dfe-ecb

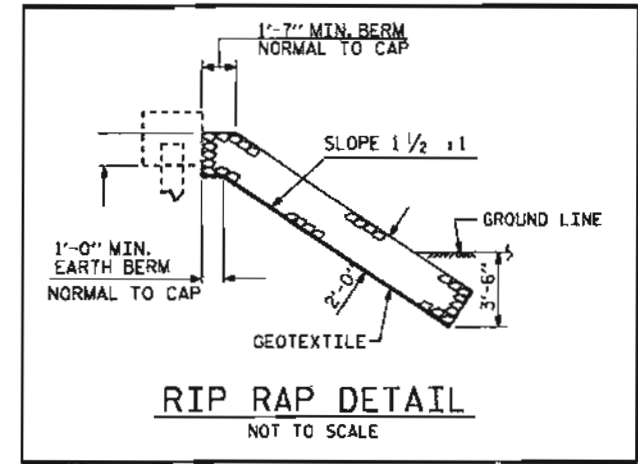


SECTION ALONG C SURVEY -L-

UNCLASSIFIED STRUCTURE EXCAVATION



PLAN  
PILES NOT SHOWN IN PLAN VIEW



RIP RAP DETAIL  
NOT TO SCALE

PROJECT NO. BD-5110P  
 MECKLENBURG COUNTY  
 STATION 13+60.00 -L-  
 REPLACES BRIDGE 130

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RA/ECON

**GENERAL DRAWING**  
 BRIDGE ON SR 2130  
 (McILWAINE ROAD) OVER  
 BRANCH OF McDOWELL CREEK  
 BETWEEN SR 2128 & SR 2138

REVISIONS						SHEET NO.	
NO.	BY	DATE	NO.	BY	DATE	S-1	
1			3			TOTAL SHEETS 16	
2			4				

DRAWN BY: B.C. HUNT DATE: 5/2012  
 CHECKED BY: V.A. PATEL DATE: 5/2012

14-MAY-2012 12:19  
 R:\Structures\130ne28-5110P\_50\_00.dgn  
 vpatel



BENCH MARK: NCDOT MONUMENT 590130 BL-2,  
 BASELINE POINT: -L- 14+16.28, 11.38' LT. ELEV. 658.03

NOTES

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 STATION 13+60.00 -L-."

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

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 75 TONS PER PILE.

DRIVE PILES AT END BENT NO. 1 TO A REQUIRED DRIVING RESISTANCE OF 125 TONS PER PILE.

PILES AT END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 75 TONS PER PILE.

DRIVE PILES AT END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 125 TONS PER PILE.

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

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

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

FOR UTILITY INFORMATION, SEE ROADWAY PLANS.

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.

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

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR SEISMIC PERFORMANCE ZONE 1.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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 25 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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

THE EXISTING STRUCTURE CONSISTING OF 2 SPANS (1 @ 11'-0", 1 @ 14'-6") WITH AN ASPHALT WEARING SURFACE ON A TIMBER DECK AND I-BEAMS AND A CLEAR ROADWAY OF 19.2 FT ON TIMBER CAPS, POSTS & SILLS, TIMBER BULKHEADS & TIMBER CRUTCH MIDSPAN LOCATED AT THE PROPOSED SITE SHALL BE REMOVED.

THE BRIDGE IS LOCATED IN SEISMIC ZONE 1.

HYDRAULIC DATA

DESIGN DISCHARGE = 1064 C.F.S.  
 FREQUENCY OF DESIGN FLOOD = 25 YR.  
 DESIGN HIGH WATER ELEVATION = 657.44  
 DRAINAGE AREA = 1.92 SQ.MI.  
 BASE DISCHARGE (1000) = 1629 C.F.S.  
 BASE HIGH WATER ELEVATION = 658.93

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = < 1629 C.F.S.  
 FREQUENCY OF OVERTOPPING FLOOD = < 100 YR.  
 OVERTOPPING FLOOD ELEVATION = 658.35

STRUCTURE TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP12X53 STEEL PILES		TWO BAR METAL RAIL	1'-2" X 3'-4 1/2" CONCRETE PARAPET	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS	
	LUMP SUM	LUMP SUM	CU.YDS.	LUMP SUM	LBS.	NO.	LIN.FT.	LIN.FT.	LIN.FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN.FT.
SUPERSTRUCTURE	LUMP SUM	LUMP SUM		LUMP SUM				85.00	100.00			LUMP SUM	13	650.00
END BENT #1			15.8		2375	7	180			40	45			
END BENT #2			15.8		2375	7	175			45	50			
TOTAL	LUMP SUM	LUMP SUM	31.6	LUMP SUM	4750	14	355	85.00	100.00	85	95	LUMP SUM	13	650.00

PROJECT NO. BD-5110P  
MECKLENBURG COUNTY  
 STATION: 13+60.00 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

STRUCTURE  
 TOTAL BILL OF  
 MATERIAL  
 AND STRUCTURE  
 NOTES



REVISIONS						SHEET NO. 5-2
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			16
2			4			

DRAWN BY: B.C. HUNT DATE: 5/2012  
 CHECKED BY: V.A. PATEL DATE: 5/2012

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

LOAD FACTORS:

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						LIVELOAD FACTORS	MOMENT					SHEAR					LIVELOAD FACTORS	MOMENT						
							DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	
DESIGN LOAD RATING	HL-93(Invt)	N/A	1	1.394	--	1.75	0.276	1.57	50'	EL	24.5	0.531	<b>1.39</b>	50'	EL	<b>2.45</b>	0.80	0.276	1.44	50'	EL	24.5		
	HL-93(Dpr)	N/A	--	1.807	--	1.35	0.276	2.03	50'	EL	24.5	0.531	1.81	50'	EL	2.45	N/A	--	--	--	--	--		
	HS-20(Invt)	36.000	2	1.667	60.007	1.75	0.276	1.95	50'	EL	24.5	0.531	<b>1.67</b>	50'	EL	<b>2.45</b>	0.80	0.276	1.79	50'	EL	24.5		
	HS-20(Dpr)	36.000	--	2.161	77.787	1.35	0.276	2.52	50'	EL	24.5	0.531	2.16	50'	EL	2.45	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.635	49.079	1.4	0.276	4.95	50'	EL	24.5	0.531	4.7	50'	EL	2.45	0.80	0.276	3.64	50'	EL	24.5	
		SNGRBS2	20.000	--	2.871	57.42	1.4	0.276	3.91	50'	EL	24.5	0.531	3.42	50'	EL	2.45	0.80	0.276	2.87	50'	EL	24.5	
		SNAGRS2	22.000	--	2.778	61.109	1.4	0.276	3.78	50'	EL	19.6	0.531	3.21	50'	EL	2.45	0.80	0.276	2.78	50'	EL	24.5	
		SNCOTTS3	27.250	--	1.814	49.418	1.4	0.276	2.47	50'	EL	24.5	0.531	2.36	50'	EL	2.45	0.80	0.276	1.81	50'	EL	24.5	
		SNAGRS4	34.925	--	1.577	55.063	1.4	0.276	2.15	50'	EL	24.5	0.531	2.01	50'	EL	2.45	0.80	0.276	1.58	50'	EL	24.5	
		SNS5A	35.550	--	1.537	54.857	1.4	0.276	2.09	50'	EL	24.5	0.531	2.07	50'	EL	2.45	0.80	0.276	1.54	50'	EL	24.5	
		SNS6A	39.950	--	1.438	57.43	1.4	0.276	1.96	50'	EL	24.5	0.531	1.91	50'	EL	2.45	0.80	0.276	1.44	50'	EL	24.5	
		SNS7B	42.000	--	1.37	57.54	1.4	0.276	1.87	50'	EL	24.5	0.531	1.91	50'	EL	2.45	0.80	0.276	1.37	50'	EL	24.5	
	TTST	TNAGRIT3	33.000	--	1.761	58.118	1.4	0.276	2.4	50'	EL	24.5	0.531	2.25	50'	EL	2.45	0.80	0.276	1.76	50'	EL	24.5	
		TNT4A	33.075	--	1.777	58.759	1.4	0.276	2.42	50'	EL	24.5	0.531	2.17	50'	EL	2.45	0.80	0.276	1.78	50'	EL	24.5	
		TNT6A	41.600	--	1.48	61.558	1.4	0.276	2.01	50'	EL	24.5	0.531	2.08	50'	EL	2.45	0.80	0.276	1.48	50'	EL	24.5	
		TNT7A	42.000	--	1.502	63.087	1.4	0.276	2.05	50'	EL	24.5	0.531	1.94	50'	EL	2.45	0.80	0.276	1.50	50'	EL	24.5	
		TNT7B	42.000	--	1.566	65.773	1.4	0.276	2.13	50'	EL	24.5	0.531	1.84	50'	EL	2.45	0.80	0.276	1.57	50'	EL	24.5	
		TNAGRIT4	43.000	--	1.486	63.902	1.4	0.276	2.02	50'	EL	24.5	0.531	1.77	50'	EL	2.45	0.80	0.276	1.49	50'	EL	24.5	
		TNAG75A	45.000	--	1.388	62.47	1.4	0.276	1.89	50'	EL	24.5	0.531	1.8	50'	EL	2.45	0.80	0.276	1.39	50'	EL	24.5	
		TNACT5B	45.000	3	1.36	61.206	1.4	0.276	1.85	50'	EL	24.5	0.531	1.68	50'	EL	2.45	0.80	0.276	<b>1.36</b>	50'	EL	<b>24.5</b>	

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:

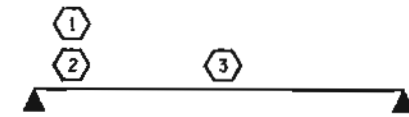
- 1.
- 2.
- 3.
- 4.

**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-5110P  
MECKLENBURG COUNTY  
STATION: 13+60.00 -L-

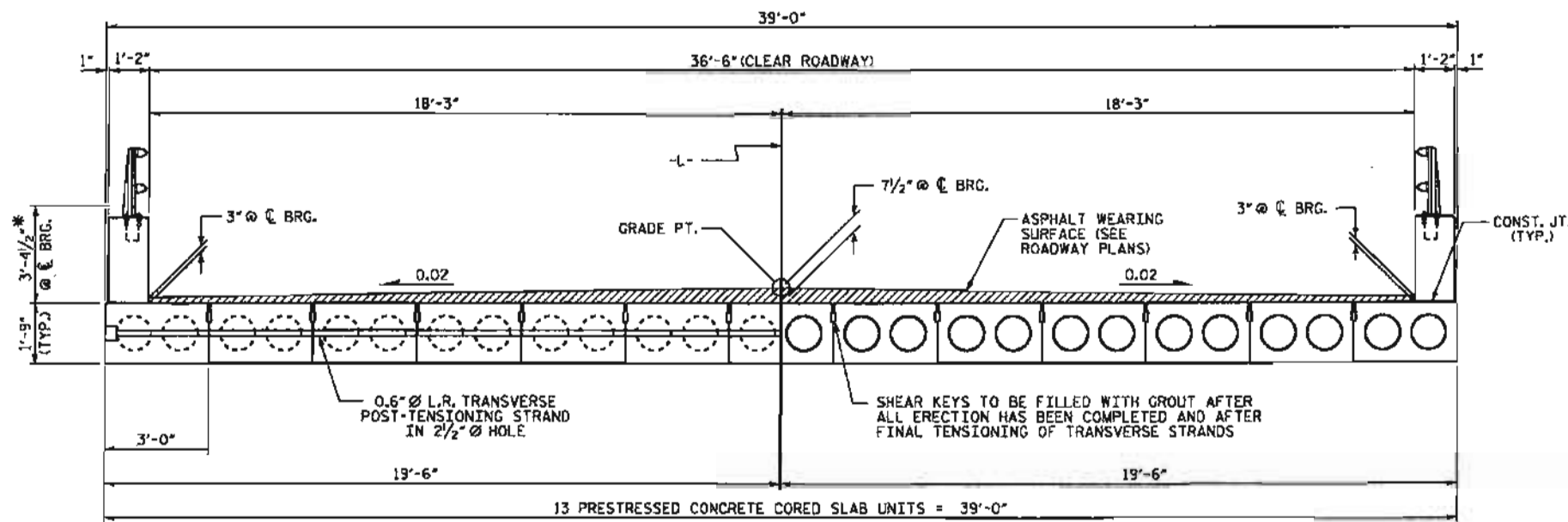
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

STANDARD  
LRFR SUMMARY FOR  
50' CORED SLAB UNIT  
90° SKEW  
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	5-3
1			3			16A
2			4			16

*Bill [Signature]*  
5/14/12

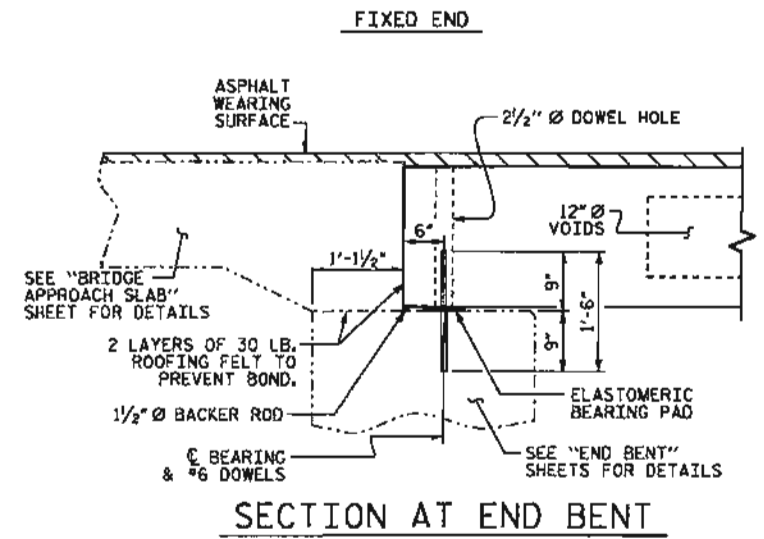
ASSEMBLED BY: B.C. HUNT DATE: 5/2012  
CHECKED BY: V.A. PATEL DATE: 5/2012  
DRAWN BY: CVC 6/10  
CHECKED BY: DNS 6/10



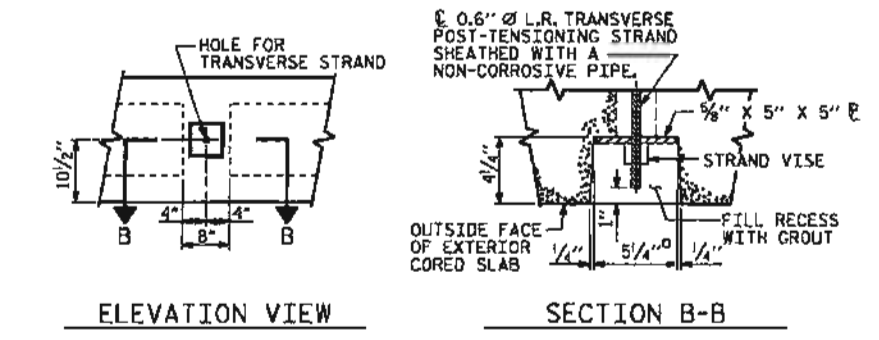
HALF SECTION AT INTERMEDIATE DIAPHRAGMS  
**TYPICAL SECTION**  
 HALF SECTION THROUGH VOIDS

\* - THE MAXIMUM PARAPET HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE PARAPET AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE PARAPET FOLLOWS THE PROFILE OF THE GUTTERLINE.

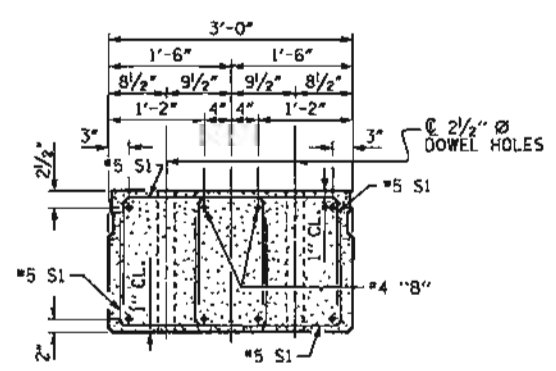
NOTE: THE PARAPET HEIGHT HAS BEEN ADJUSTED FOR THE ADDITION OF FUTURE SIDEWALKS



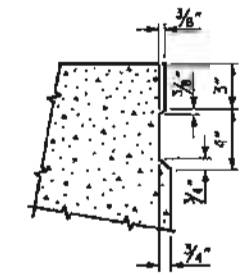
**SECTION AT END BENT**



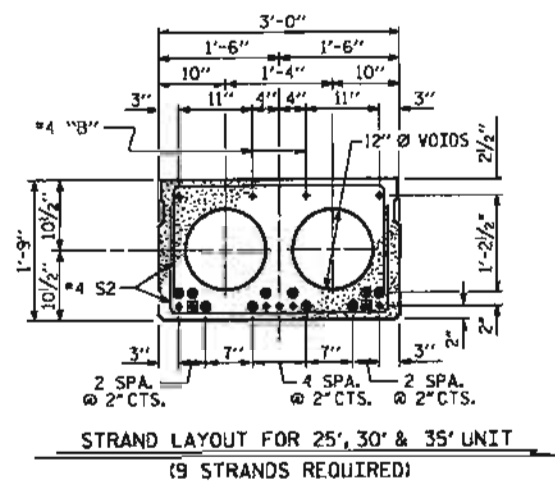
**GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS**



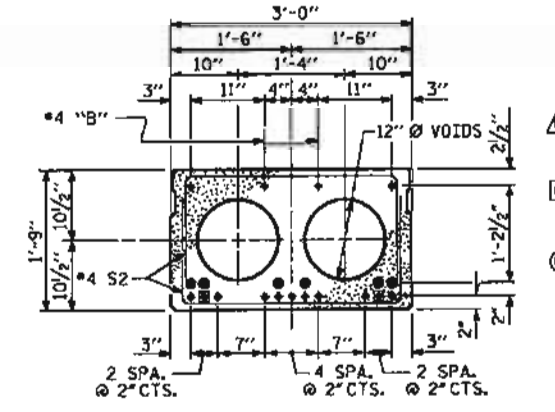
**END ELEVATION**  
 SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.)  
 INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.



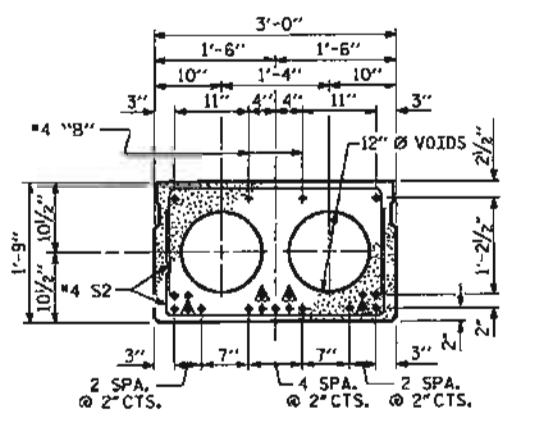
**SHEAR KEY DETAIL**  
 NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



**STRAND LAYOUT FOR 25', 30' & 35' UNIT (9 STRANDS REQUIRED)**

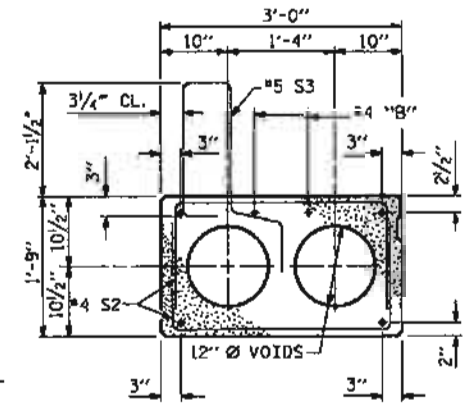


**STRAND LAYOUT FOR 40' & 45' UNIT (13 STRANDS REQUIRED)**



**STRAND LAYOUT FOR 50' & 55' UNIT (19 STRANDS REQUIRED)**

**INTERIOR SLAB SECTION**  
 0.6" Ø LOW RELAXATION



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

- ▲ 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-5110P  
 MECKLENBURG COUNTY  
 STATION: 13+60.00 -L-

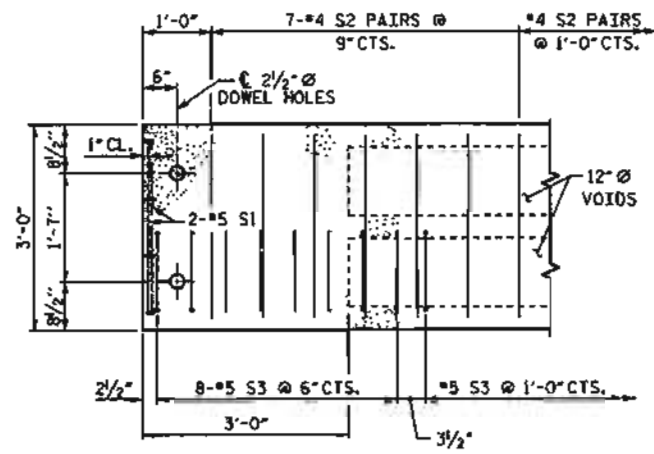
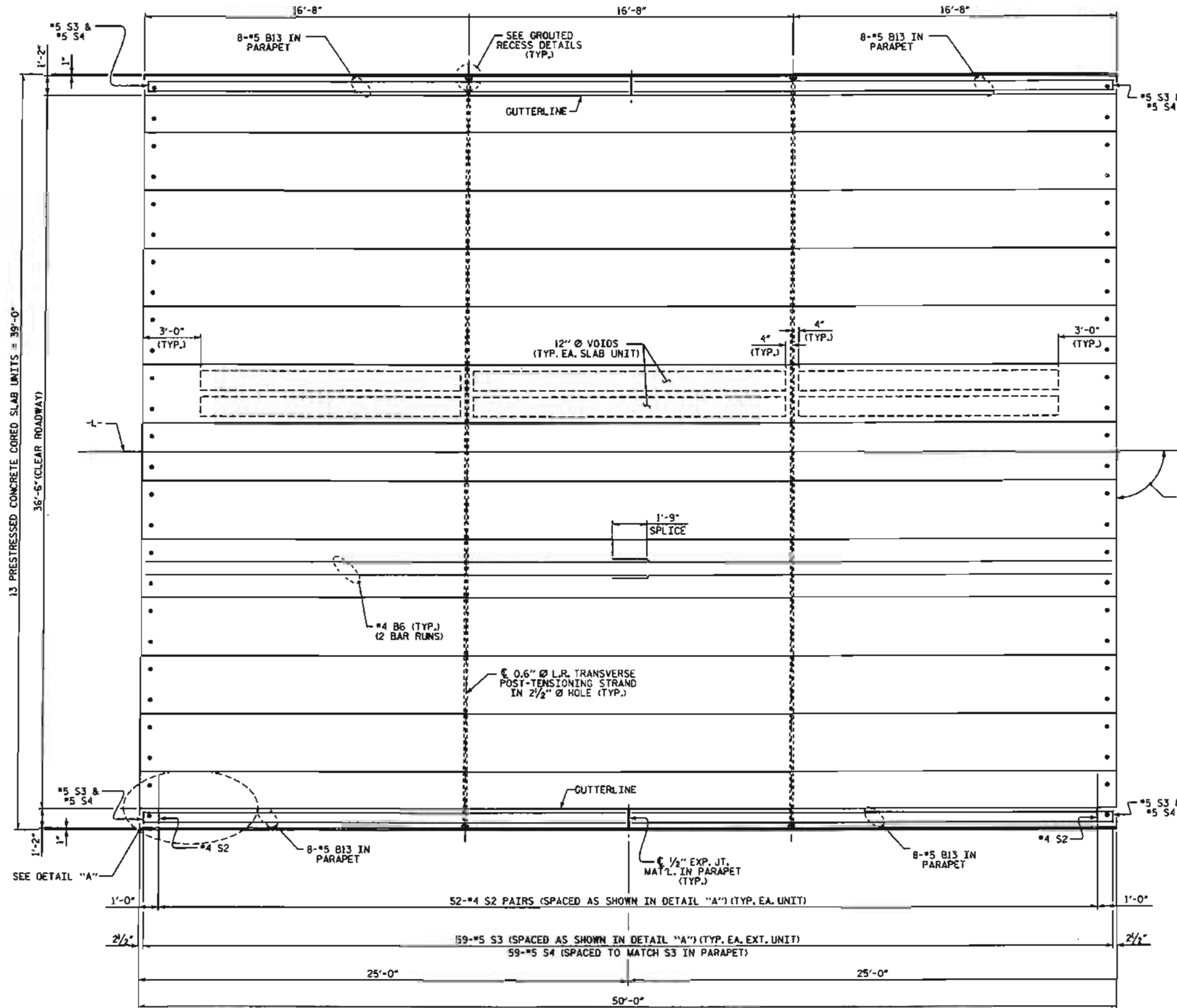
SHEET 1 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					SHEET NO.
STANDARD 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT 90° SKEW					S-4
REVISIONS					TOTAL SHEETS
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		



ASSEMBLED BY:	B.C. HUNT	DATE:	5/2012
CHECKED BY:	V.A. PATEL	DATE:	5/2012
DRAWN BY:	DGE	6/09	
CHECKED BY:	BCH	6/09	





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

PROJECT NO. BD-5110P  
MECKLENBURG COUNTY  
 STATION: 13+60.00 -L-  
 SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 Raleigh

PLAN OF 50' UNIT  
 36'-10" CLEAR ROADWAY  
 90° SKEW

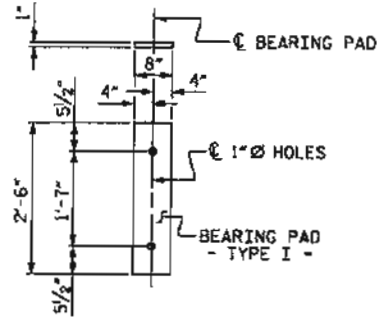


REVISIONS					SHEET NO.
NO.	BY	DATE	NO.	BY	S-5
1			1		16
2			2		

ASSEMBLED BY: B.C. HUNT DATE: 5/2012  
 CHECKED BY: V.A. PATEL DATE: 5/2012  
 DRAWN BY: DOE 6/09  
 CHECKED BY: SCH 6/09

**PLAN OF UNIT**

14-MAY-2012 12:17  
 P:\Structures\Plans\BD-5110P\_S0\_CS.dgn  
 vpotel



FIXED END  
(TYPE I - 26 REQ'D)

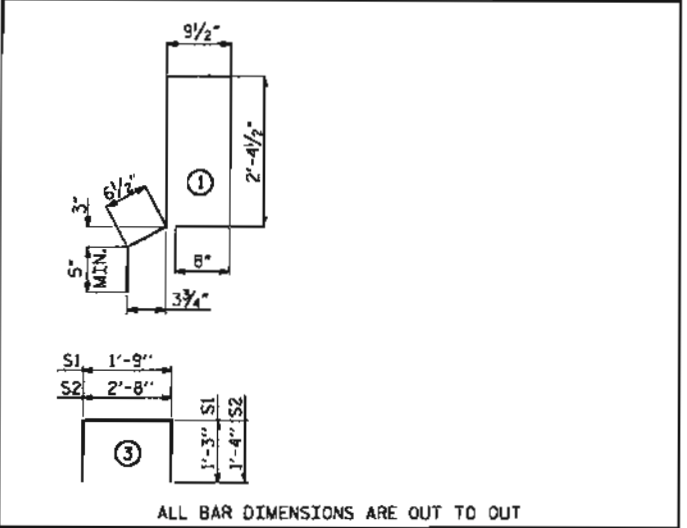
**ELASTOMERIC BEARING DETAILS**

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

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

CORED SLABS REQUIRED			
50' UNIT	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	50'-0"	100'-0"
INTERIOR C.S.	11	50'-0"	550'-0"
TOTAL	13		650'-0"

**BAR TYPES**



ALL BAR DIMENSIONS ARE OUT TO OUT

**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 2" Ø BACKER ROD 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.
- 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.

DEAD LOAD DEFLECTION AND CAMBER	
50' & 55' CORED SLAB UNIT	3'-0" X 1'-9"
	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" ↓

\*\* INCLUDES FUTURE WEARING SURFACE

CONCRETE RELEASE STRENGTH	
UNIT	PSI
25', 30' & 35' UNITS	4000
40' & 45' UNITS	4000
50' & 55' UNITS	4900

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'-3"	35	4'-3"	35
S2	104	#4	3	5'-4"	371	5'-4"	371
*S3	59	#5	1	7'-2"	441		
REINFORCING STEEL				LBS.	475		475
* EPOXY COATED REINFORCING STEEL				LBS.	441		
6500 P.S.I. CONCRETE				CU. YDS.	7.1		7.1
0.6" Ø L.R. STRANDS				No.	19		19

PROJECT NO. BD-5110P  
MECKLENBURG COUNTY  
 STATION: 13+60.00 -L-  
 SHEET 3 OF 3

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
36'-10" CLEAR ROADWAY	ASPHALT OVERLAY THICKNESS	RAIL HEIGHT
	@ MID-SPAN	@ MID-SPAN
	NORMAL CROWN SECTION	
50' & 55' UNITS	3/4"	3'-2 1/4"

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 STANDARD  
 3'-0" X 1'-9"  
 PRESTRESSED CONCRETE  
 CORED SLAB UNIT  
 90° SKEW

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO. 5-6  
 TOTAL SHEETS 16



ASSEMBLED BY: B.C. HUNT DATE: 5/2012  
 CHECKED BY: V.A. PATEL DATE: 5/2012  
 DRAWN BY: DGE 5/09  
 CHECKED BY: BCH 6/09



NOTES

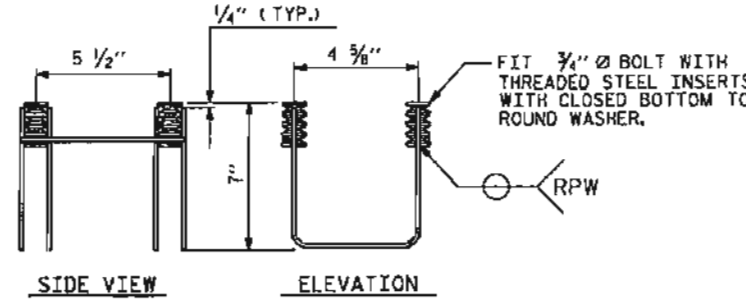
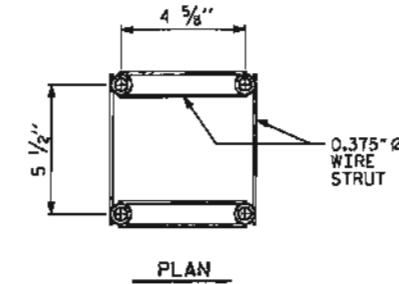
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS :

- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M163, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- B. 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 2 1/2" GALVANIZED BOLTS 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.
- C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/2" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
- D. THE METAL RAIL ANCHOR ASSEMBLY TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.
- E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.
- F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

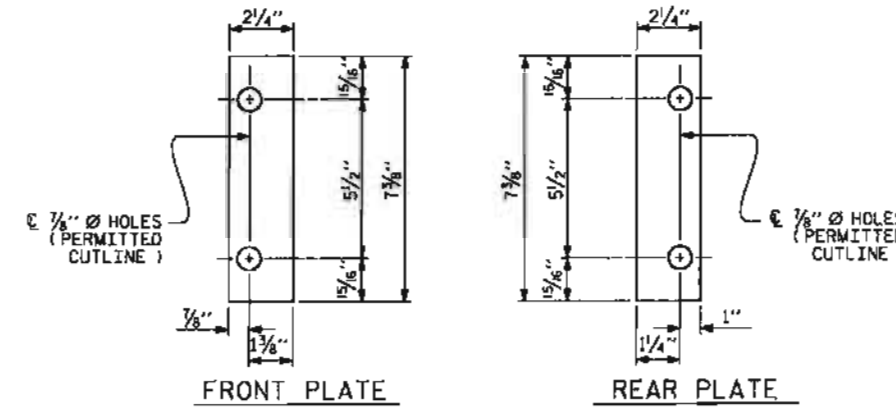
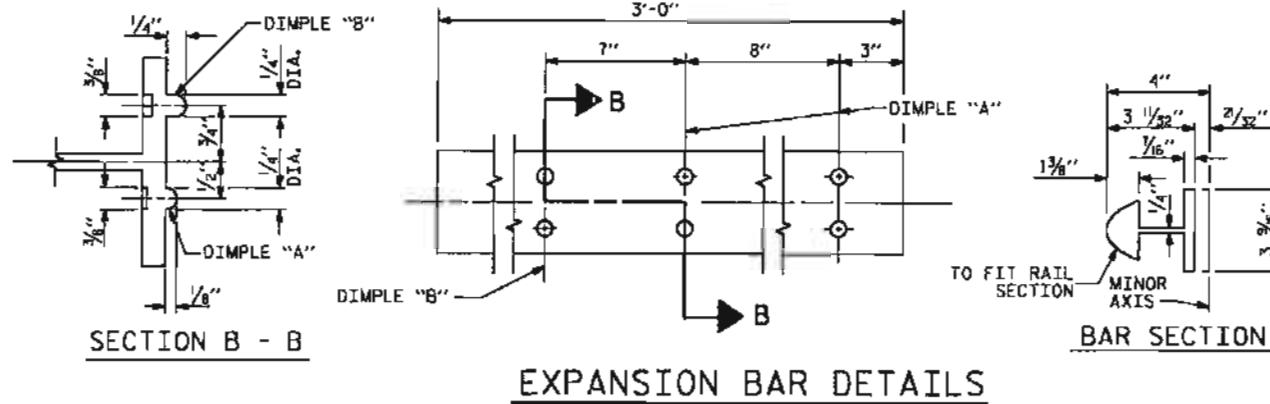
THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS, FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

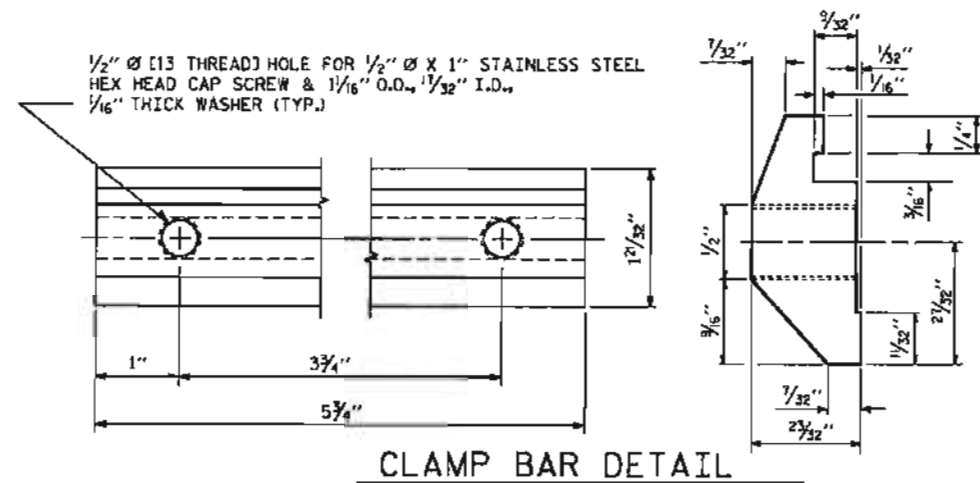
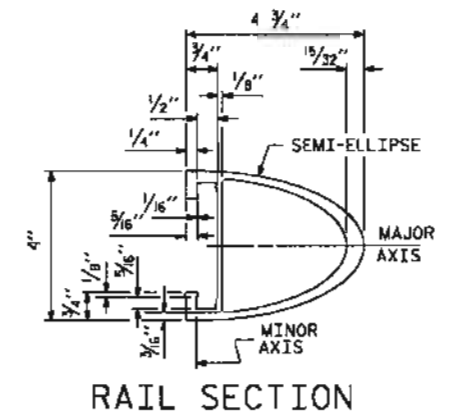


4-BOLT METAL RAIL ANCHOR ASSEMBLY

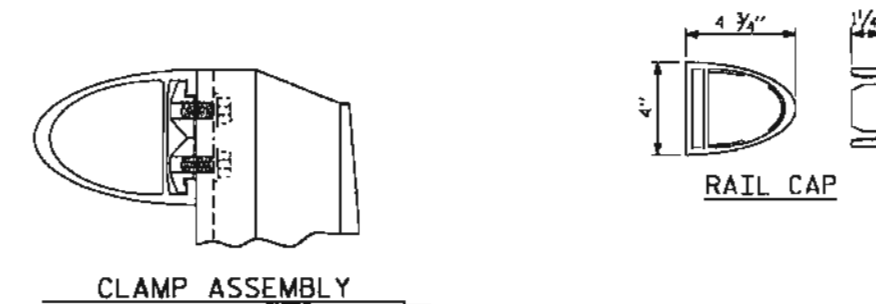
( 20 ASSEMBLIES REQUIRED )



NOTE : SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.



CLAMP BAR DETAIL  
( 4 REQUIRED PER POST )



PROJECT NO. BD-5110P  
MECKLENBURG COUNTY  
 STATION: 13+60.00 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 STANDARD  
 2 BAR METAL RAIL

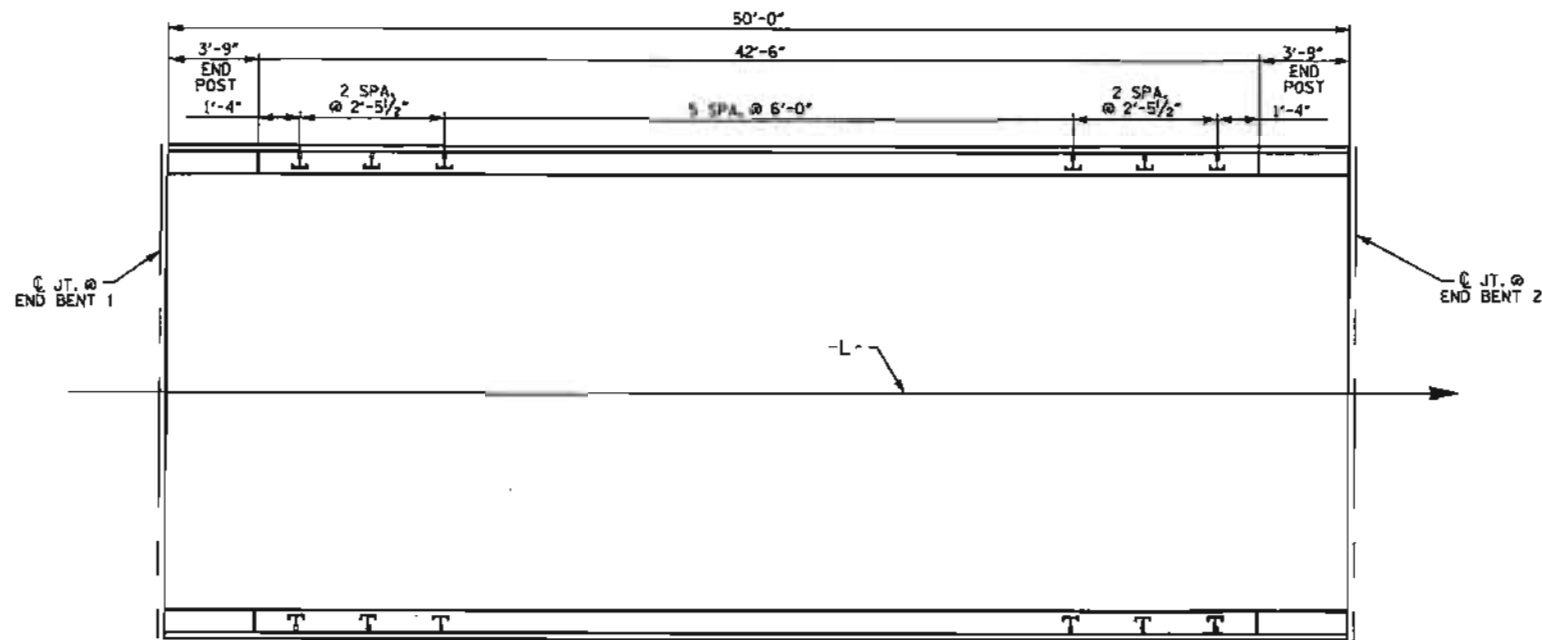


REVISIONS				SHEET NO.
NO.	BY	DATE	NO.	DATE
1			3	
2			4	

S-8  
 TOTAL  
 16

STD. NO. BMR4

ASSEMBLED BY : B.C. HUNT DATE 15/2011  
 CHECKED BY : V.A. PATEL DATE 15/2012  
 DRAWN BY : EEM 6/94 REV. 8/16/99 MAB/LES  
 CHECKED BY : ROW 6/94 REV. 5/1/08R KIM/GM  
 REV. 10/1/11 REV. MAA/GM



**PLAN OF RAIL POST SPACINGS**

(POST SPACING SIMILAR EACH SIDE)

**NOTES**

**STRUCTURAL CONCRETE INSERT**

THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 1/2".
- B. 1 - 3/4" Ø X 1 1/8" BOLT WITH WASHER, BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 1 1/8" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
- C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/8" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

**NOTES**

**METAL RAIL TO END POST CONNECTION**

THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

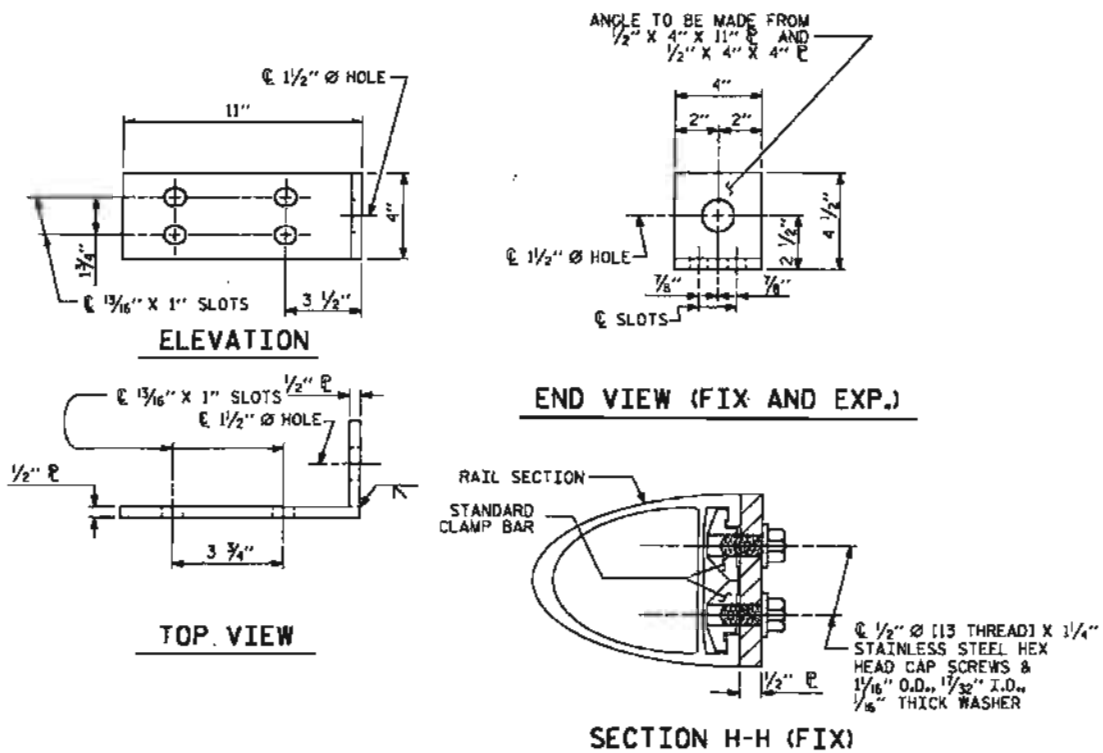
- A. 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
- B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 1/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 1/8" BOLT SHALL HAVE N.C. THREADS.
- C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60° F.
- D. STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
- E. 1/2" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.

THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

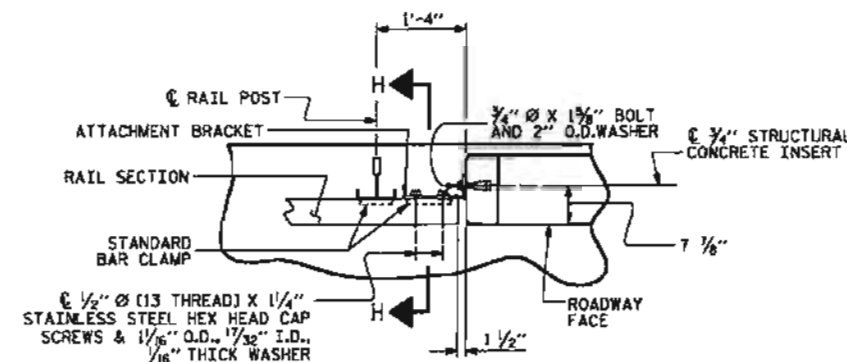
THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 1/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 1/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

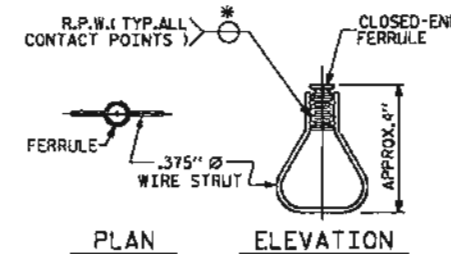


**FIXED**

**DETAILS FOR ATTACHING METAL RAIL TO END POST**



**PLAN - RAIL AND END POST**



**STRUCTURAL CONCRETE INSERT**

\* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

PROJECT NO. BD-5110P  
MECKLENBURG COUNTY  
 STATION: 13+60.00 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 STANDARD  
**RAIL POST SPACINGS**  
 AND  
**END OF RAIL DETAILS**  
 FOR ONE OR TWO BAR METAL RAILS

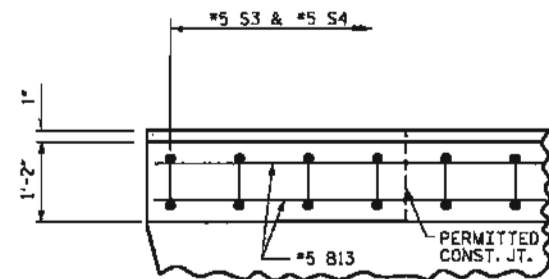


REVISIONS					SHEET NO.
NO.	BY	DATE	NO.	DATE	S-9
1			3		TOTAL SHEETS
2			4		16

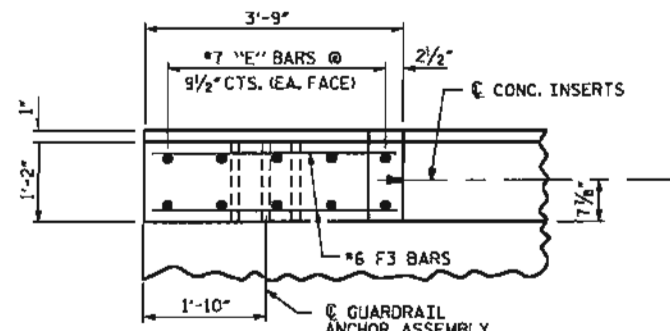
STD. NO. BMR2

ASSEMBLED BY: B.C. HUNT	DATE: 5/2012
CHECKED BY: V.A. PATEL	DATE: 5/2012
DRAWN BY: FCJ 1/88	REV. 5/7/03 RWW/JTE
CHECKED BY: CRK 3/89	REV. 5/1/06 TLA/GM
	REV. 10/1/11 MAA/GM

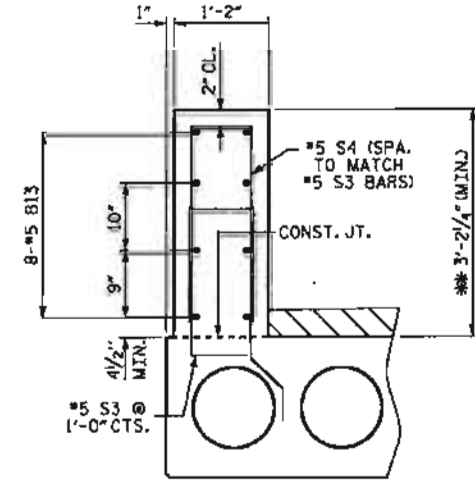
\*\* THE MINIMUM HEIGHT OF THE PARAPET IS SHOWN. THE HEIGHT OF THE PARAPET VARIES WHILE THE TOP OF THE PARAPET FOLLOWS THE PROFILE OF THE GUTTERLINE.



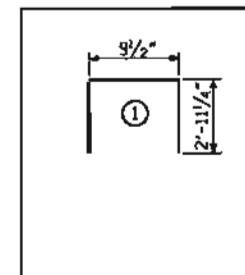
PLAN OF PARAPET



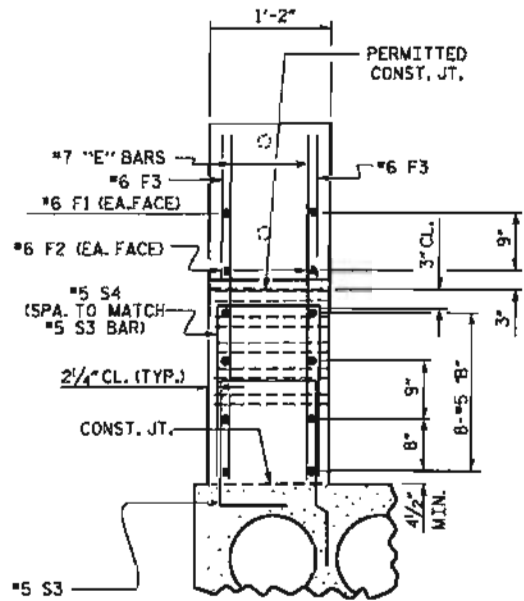
PLAN OF END POST



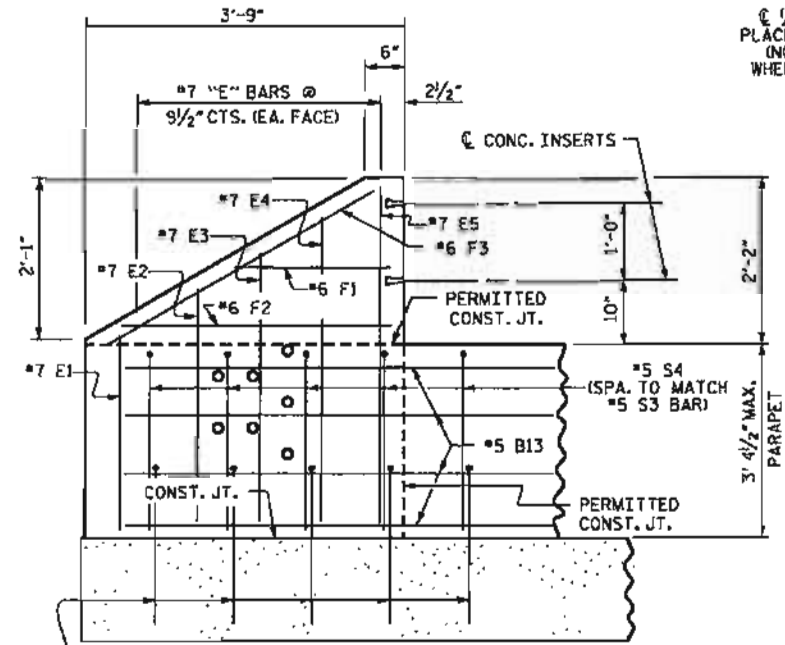
SECTION THRU PARAPET



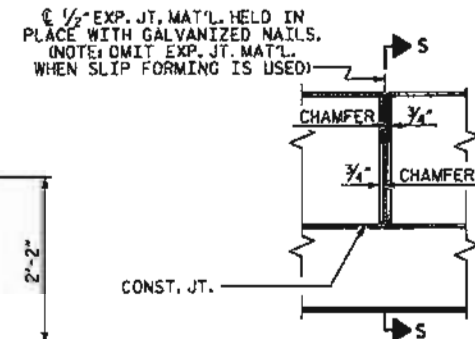
BILL OF MATERIAL FOR 2 PARAPETS & 4 END POSTS					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B13	32	#5	STR	24'-7"	820
*E1	8	#7	STR	3'-4"	55
*E2	8	#7	STR	3'-10"	63
*E3	8	#7	STR	4'-4"	71
*E4	8	#7	STR	4'-10"	79
*E5	8	#7	STR	5'-2"	84
*F1	8	#6	STR	2'-1"	25
*F2	8	#6	STR	3'-4"	40
*F3	8	#6	STR	3'-10"	46
*S4	118	#5	1	6'-8"	820
*EPOXY COATED REINFORCING STEEL				LBS.	2103
CLASS AA CONCRETE				CU.YDS.	14.9
1'-2" X 3'-4 1/2" CONCRETE PARAPET				100.0 LIN. FT.	



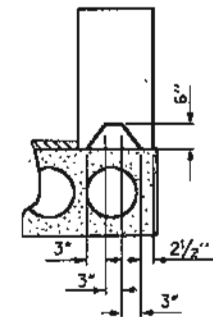
END VIEW



ELEVATION



ELEVATION AT EXPANSION JOINTS



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

PARAPET DETAILS

PROJECT NO. BD-5110P  
MECKLENBURG COUNTY  
 STATION: 13+60.00 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

END POSTS  
 AND  
 PARAPET DETAILS

FOR TWO BAR METAL RAIL

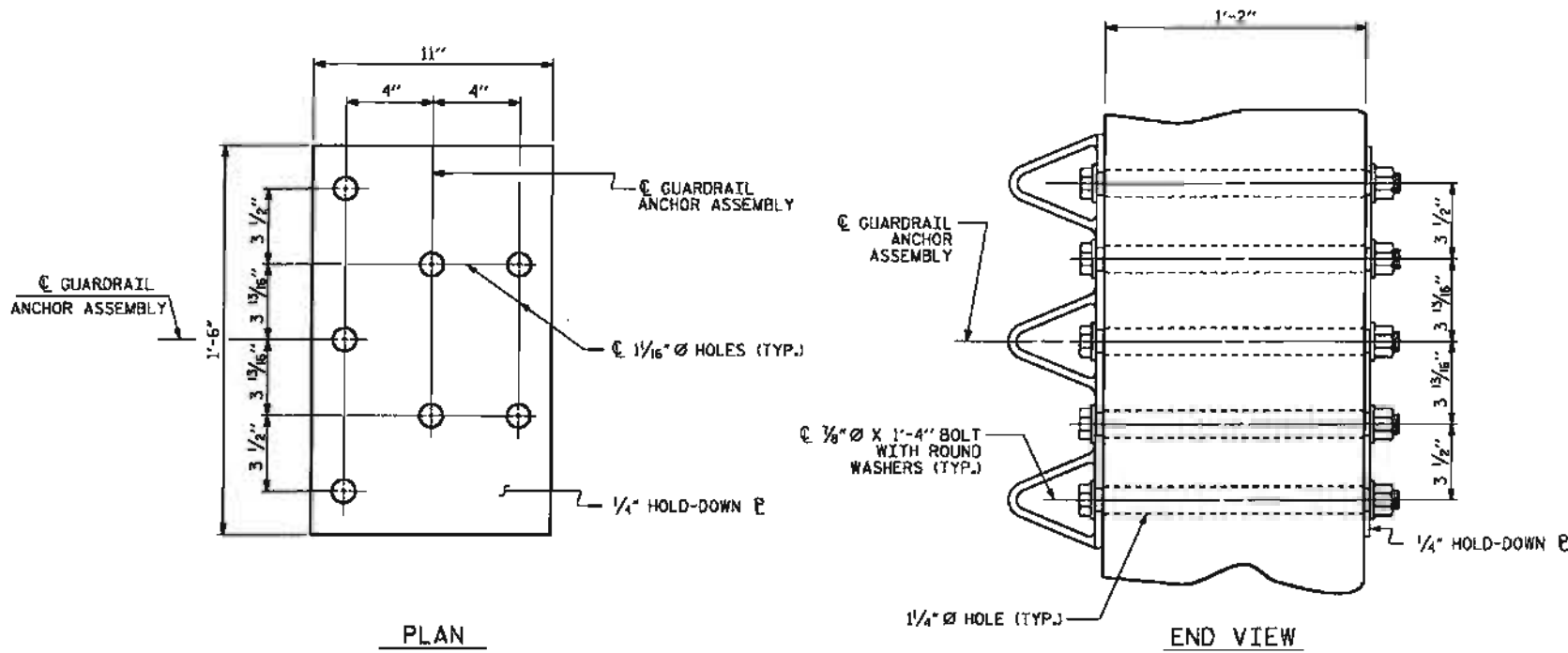
REVISIONS				SHEET NO.
NO.	BY	DATE	NO.	DATE
1			3	
2			4	

S-10  
 TOTAL SHEETS  
 15

DRAWN BY: B. C. HUNT DATE: 5/2012  
 CHECKED BY: V.A. PATEL DATE: 5/2012

14-MAY-2012 12:16  
 R:\Structure\44\Phone\30-5110P\_SD\_CS.dgn  
 vba





**GUARDRAIL ANCHOR ASSEMBLY DETAILS**

**NOTES**

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

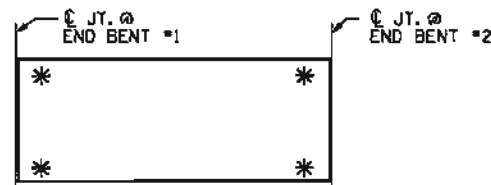
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

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

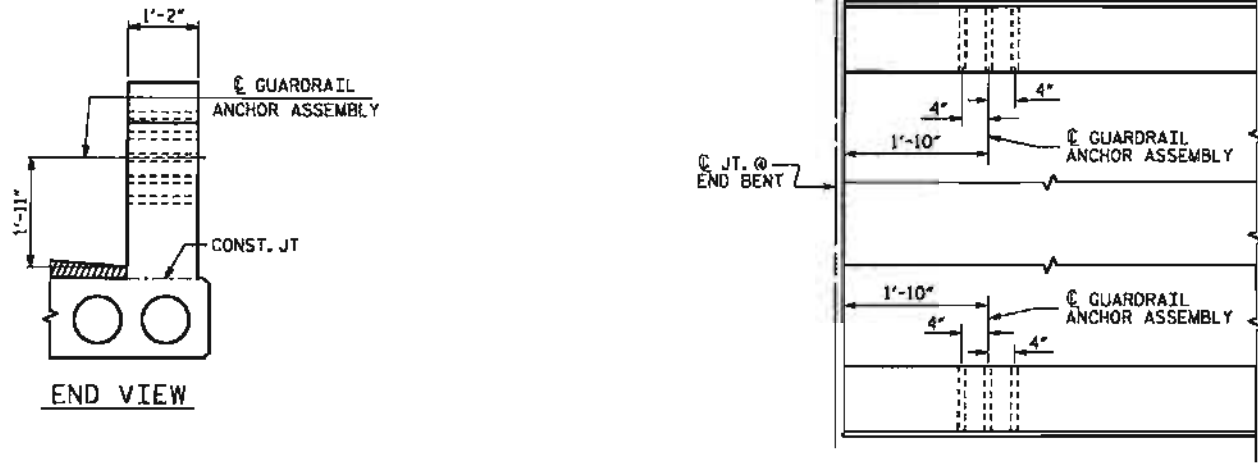
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST 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.



**SKETCH SHOWING POINTS OF ATTACHMENT**  
\* LOCATION OF GUARDRAIL ATTACHMENT



**LOCATION OF GUARDRAIL ANCHOR AT END POST**

PROJECT NO. BD-5110P  
MECKLENBURG COUNTY  
 STATION: 13+60.00 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 STANDARD  
 GUARDRAIL ANCHORAGE  
 DETAILS  
 FOR METAL RAILS



ASSEMBLED BY: S. C. HUNT	DATE: 5/2
CHECKED BY: V.A. PATEL	DATE: 5/2
DRAWN BY: EEM 6/94	REV. 10/7/00 RWW/LES
CHECKED BY: RWW 6/94	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-11
1			3			TOTAL SHEETS 16
2			4			

14-MAY-2012 12:16  
 R:\Structures\Plans\RD-5110P\_5D\_CS.dgn  
 vpc14





NOTES

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

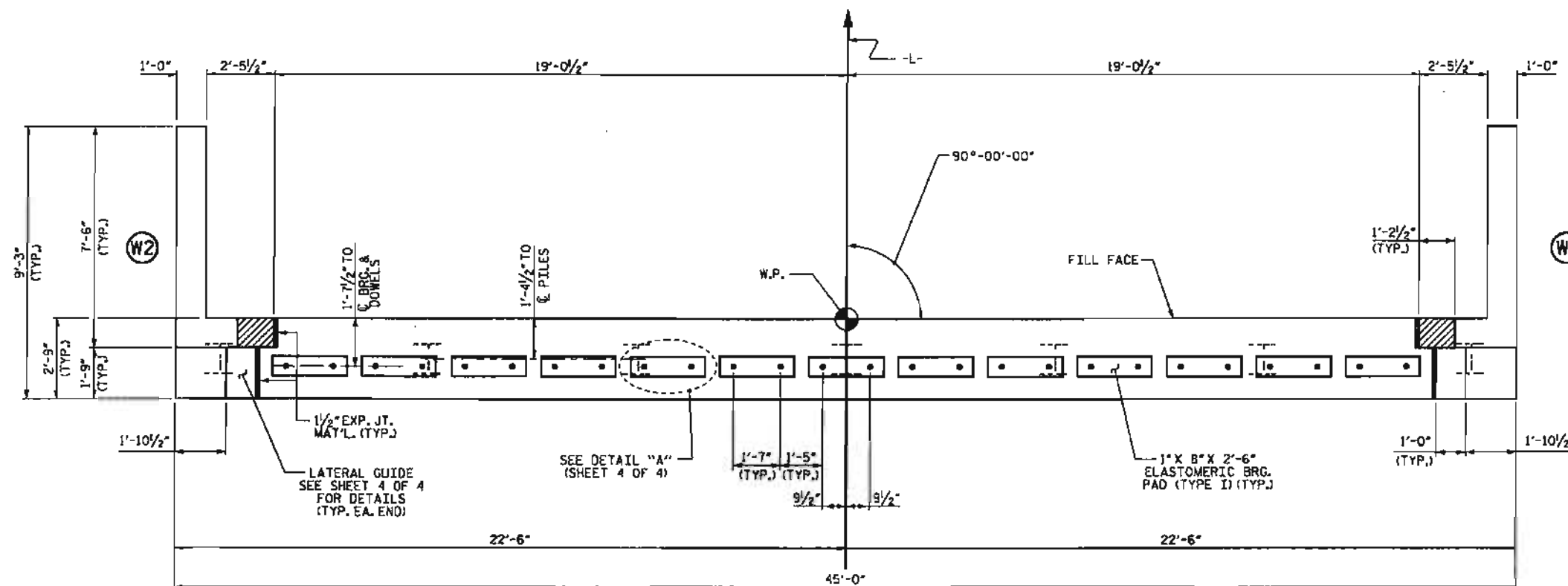
THE LATERAL GUIDES ARE NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

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

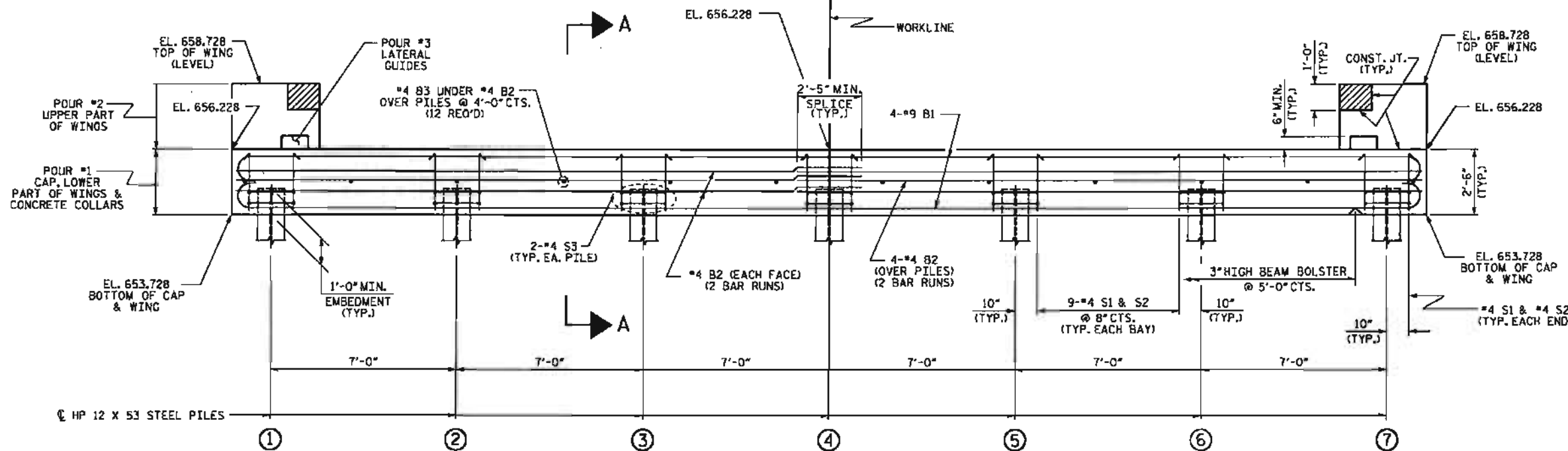
FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

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



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-5110P  
MECKLENBURG COUNTY  
STATION: 13+60.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RAILROAD

SUBSTRUCTURE  
END BENT No. 2



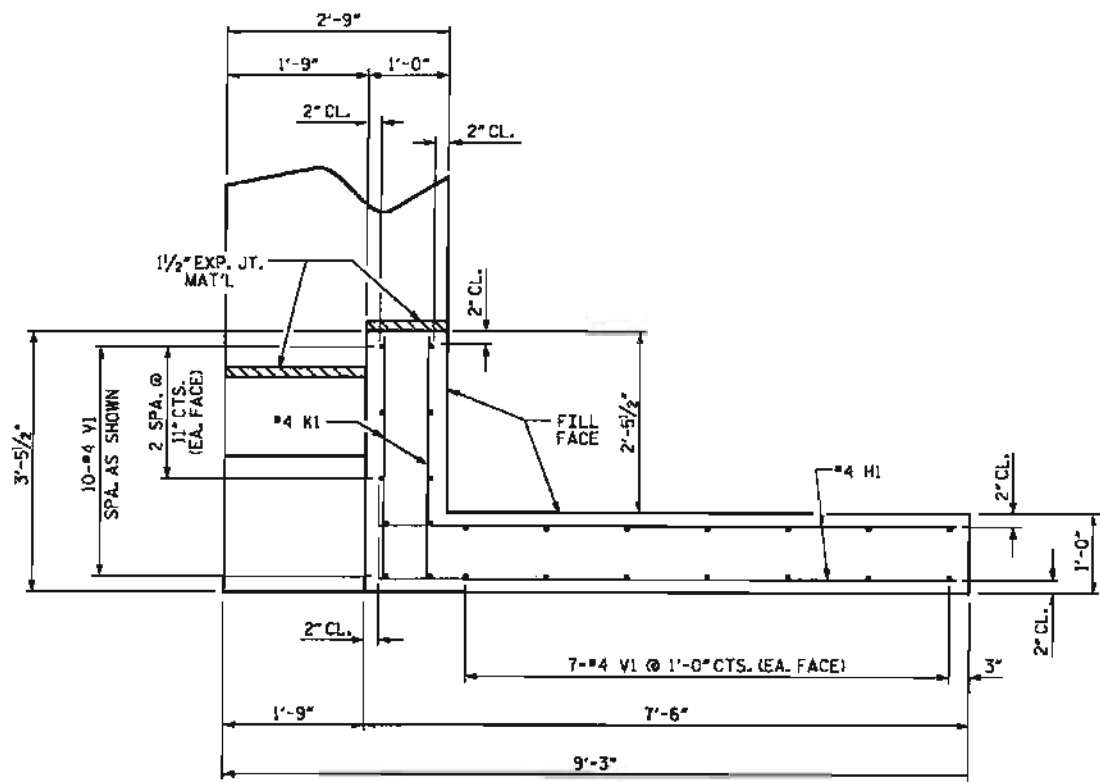
ASSEMBLED BY: B.C. HUNT DATE: 5/2012  
CHECKED BY: V.A. PATEL DATE: 5/2012  
DRAWN BY: DGE 02/10  
CHECKED BY: HKT 02/10

14-MAY-2012 12:18  
N:\Structures\Phone\BD-5110P\_S0\_L1.dgn  
vpatel

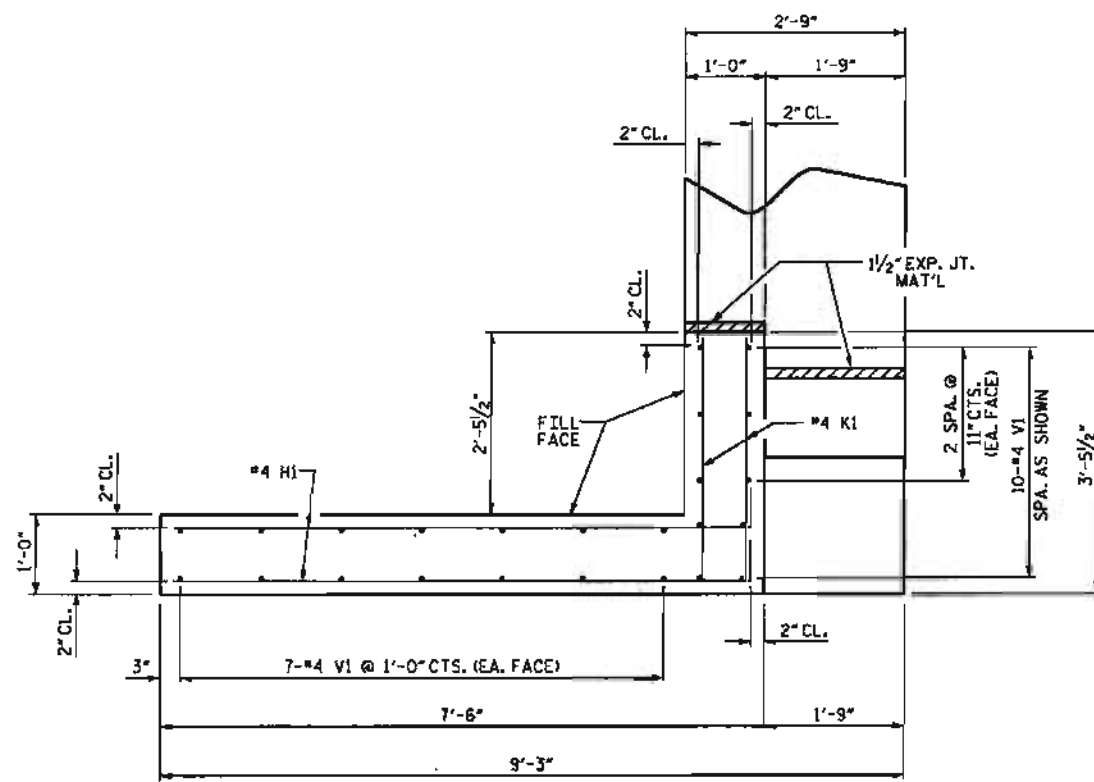
REVISIONS				SHEET NO.	
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

TOTAL SHEETS: 16

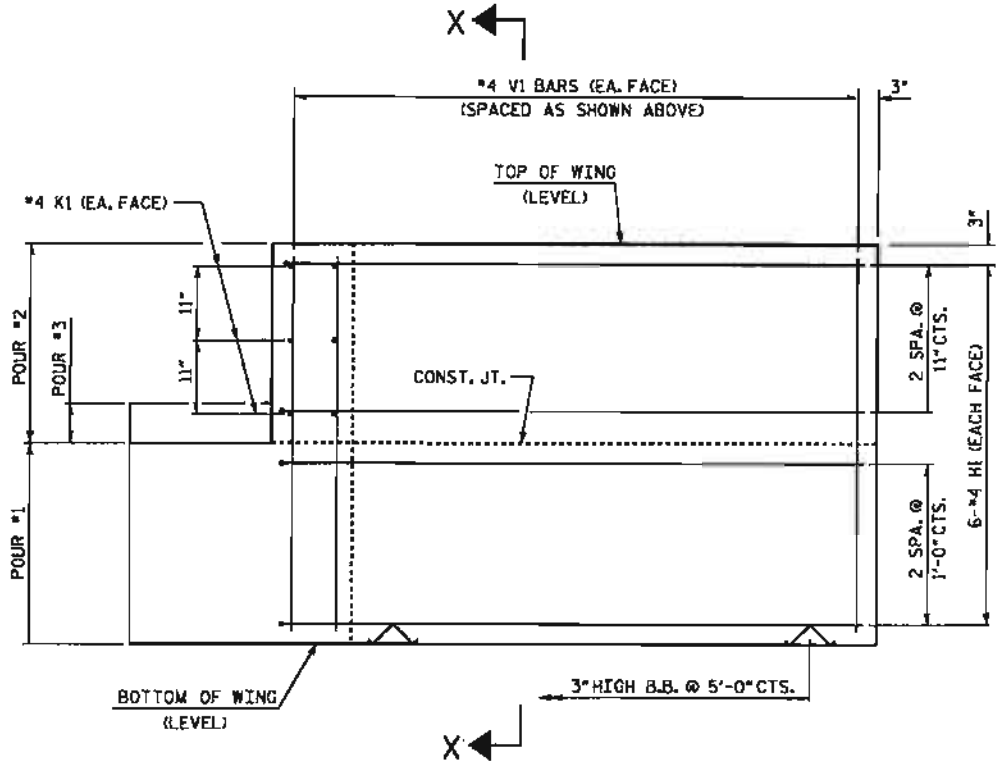
STD. NO. EB.39.90S



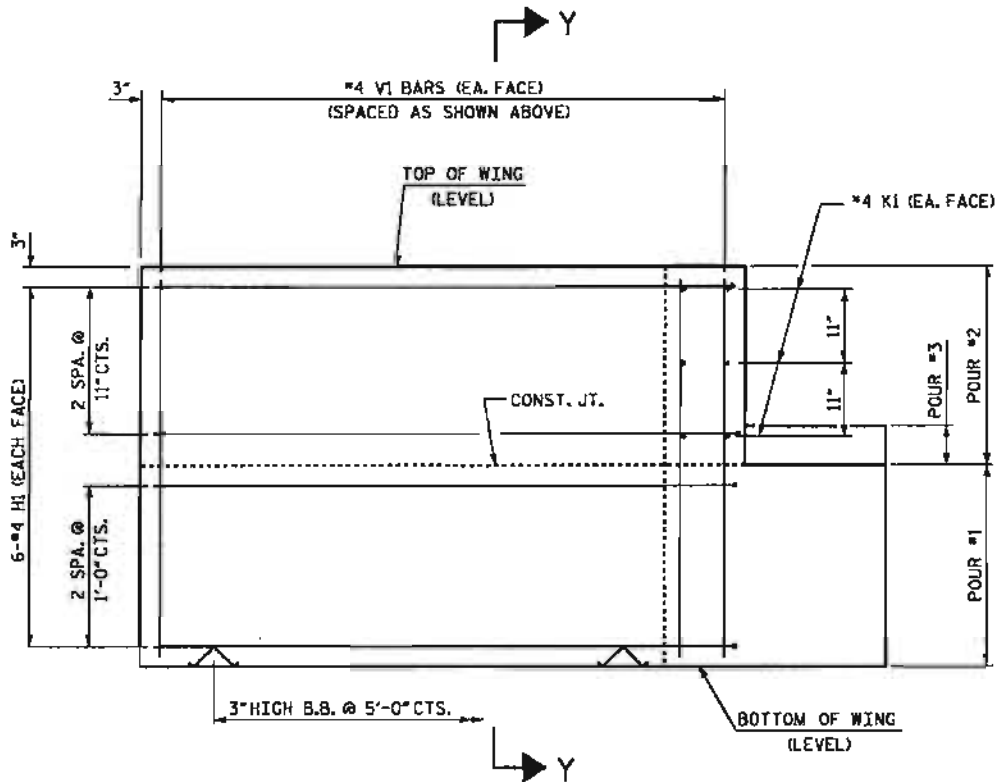
PLAN OF WING (W1)



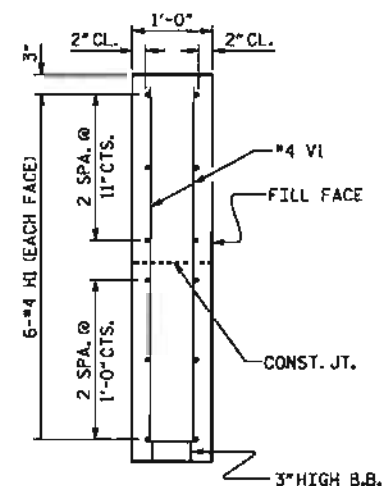
PLAN OF WING (W2)



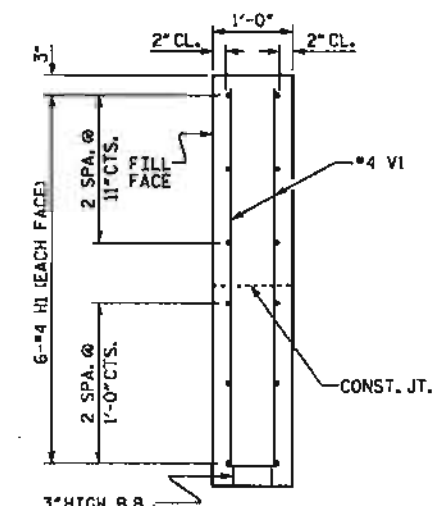
ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION X-X



SECTION Y-Y

WING DETAILS

ASSEMBLED BY: B.C. HUNT DATE: 5/2012  
 CHECKED BY: V.A. PATEL DATE: 5/2012  
 DRAWN BY: DCE 02/10  
 CHECKED BY: MKT 02/10

14-MAY-2012 12:15  
 R:\Structure\VP\ons\BD-5110P.S0.E4.dgn  
 vpk

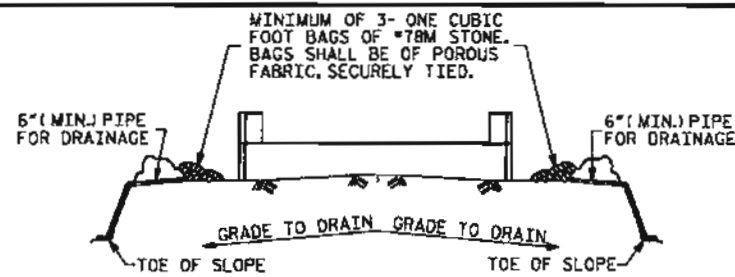


PROJECT NO. BD-5110P  
MECKLENBURG COUNTY  
 STATION: 13+60.00 -L-  
 SHEET 3 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT WING DETAILS					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO. S-14  
16

STD. NO. EB\_39\_90S

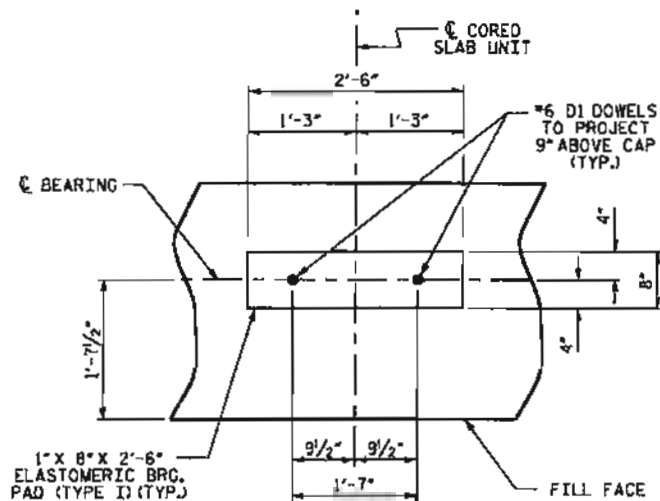


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

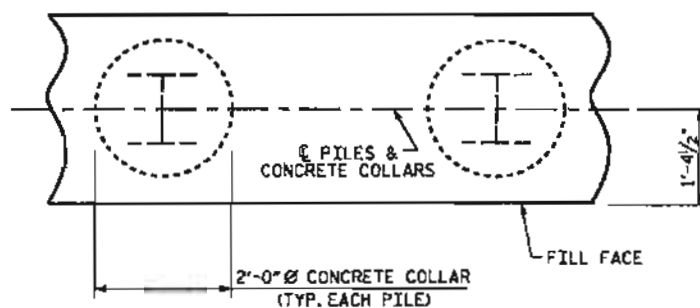
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

### TEMPORARY DRAINAGE AT END BENT



### DETAIL "A"

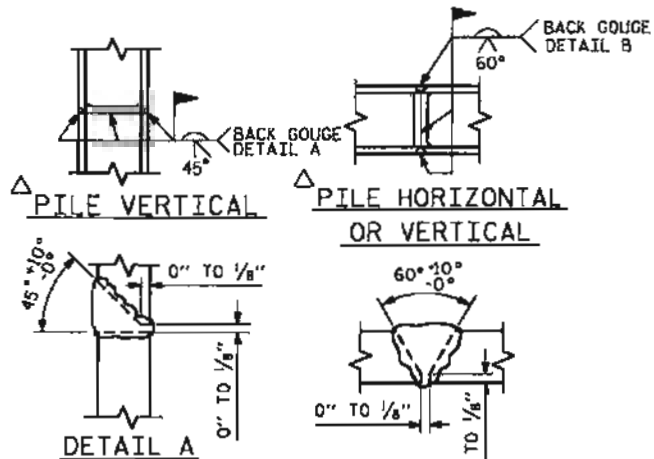
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



### PLAN

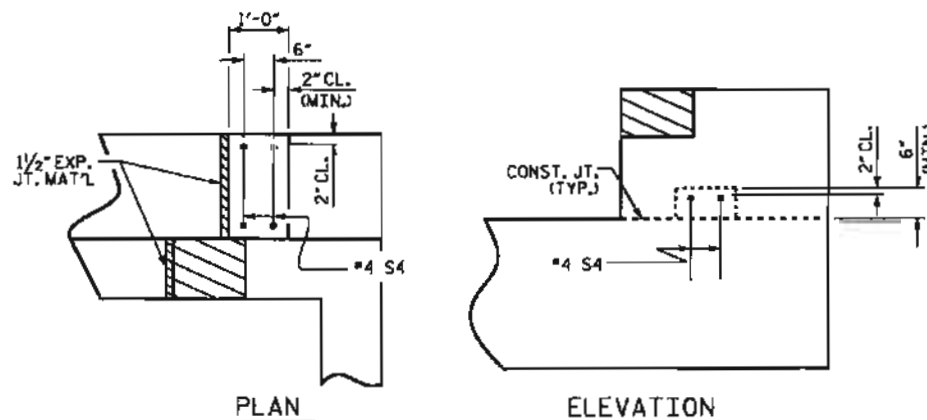
### CORROSION PROTECTION FOR STEEL PILES DETAIL

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



POSITION OF PILE DURING WELDING.

### PILE SPLICE DETAILS

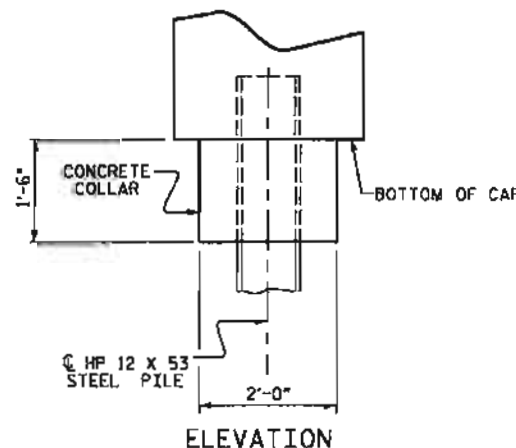


### PLAN

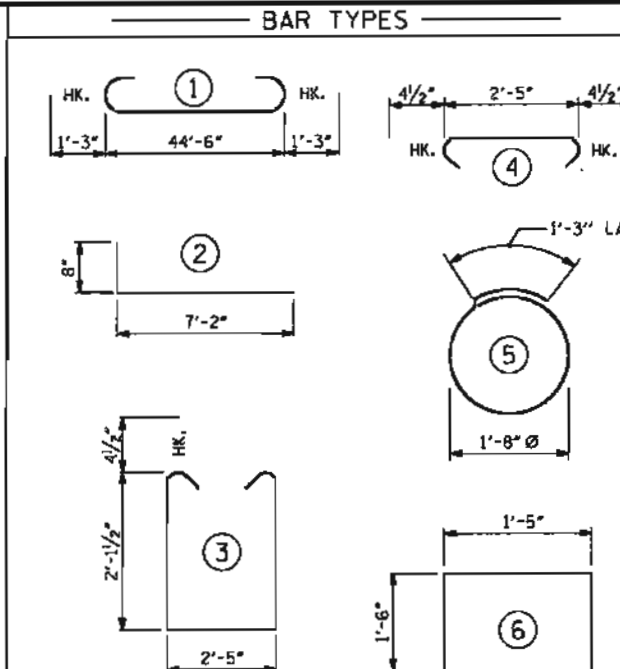
### ELEVATION

### LATERAL GUIDE DETAILS

(RIGHT LATERAL GUIDE SHOWN, LEFT END SIMILAR)



### ELEVATION



ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT No. 1	END BENT No. 2
HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES
NO: 7	NO: 7
LIN. FT. = 180	LIN. FT. = 175

### BILL OF MATERIAL

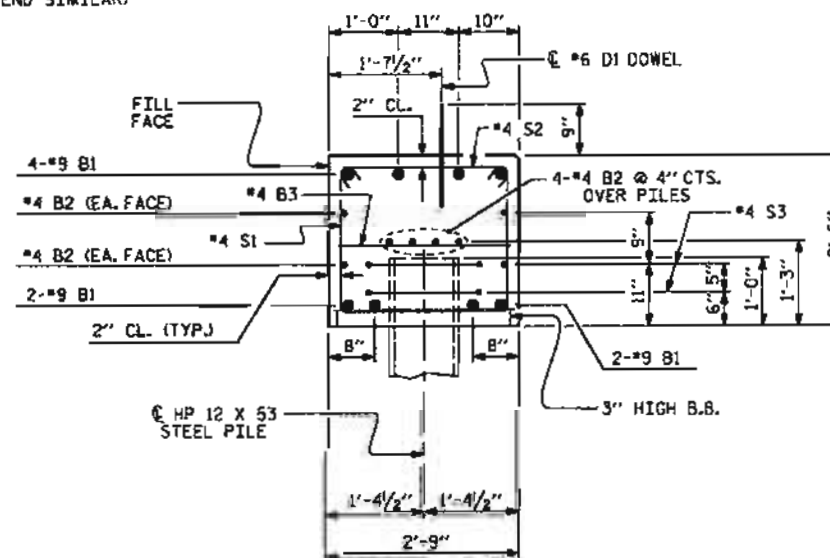
#### FOR ONE END BENT

BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	#9	I	47'-0"	1278
B2	#4	STR	23'-7"	252
B3	#4	STR	2'-5"	19
D1	#6	STR	1'-6"	59
H1	#4	2	7'-10"	126
K1	#4	STR	2'-11"	23
S1	#4	3	7'-5"	277
S2	#4	4	3'-2"	118
S3	#4	5	6'-6"	61
S4	#4	6	4'-5"	12
V1	#4	STR	4'-8"	150

REINFORCING STEEL (FOR ONE END BENT) 2375 LBS.

#### CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1	CAP, LOWER PART OF WINGS & COLLARS	13.9 C.Y.
POUR #2	UPPER PART OF WINGS	1.8 C.Y.
POUR #3	LATERAL GUIDES	0.1 C.Y.
TOTAL CLASS A CONCRETE		15.8 C.Y.



### SECTION A-A

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

PROJECT NO. BD-5110P  
MECKLENBURG COUNTY  
 STATION: 13+60.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE

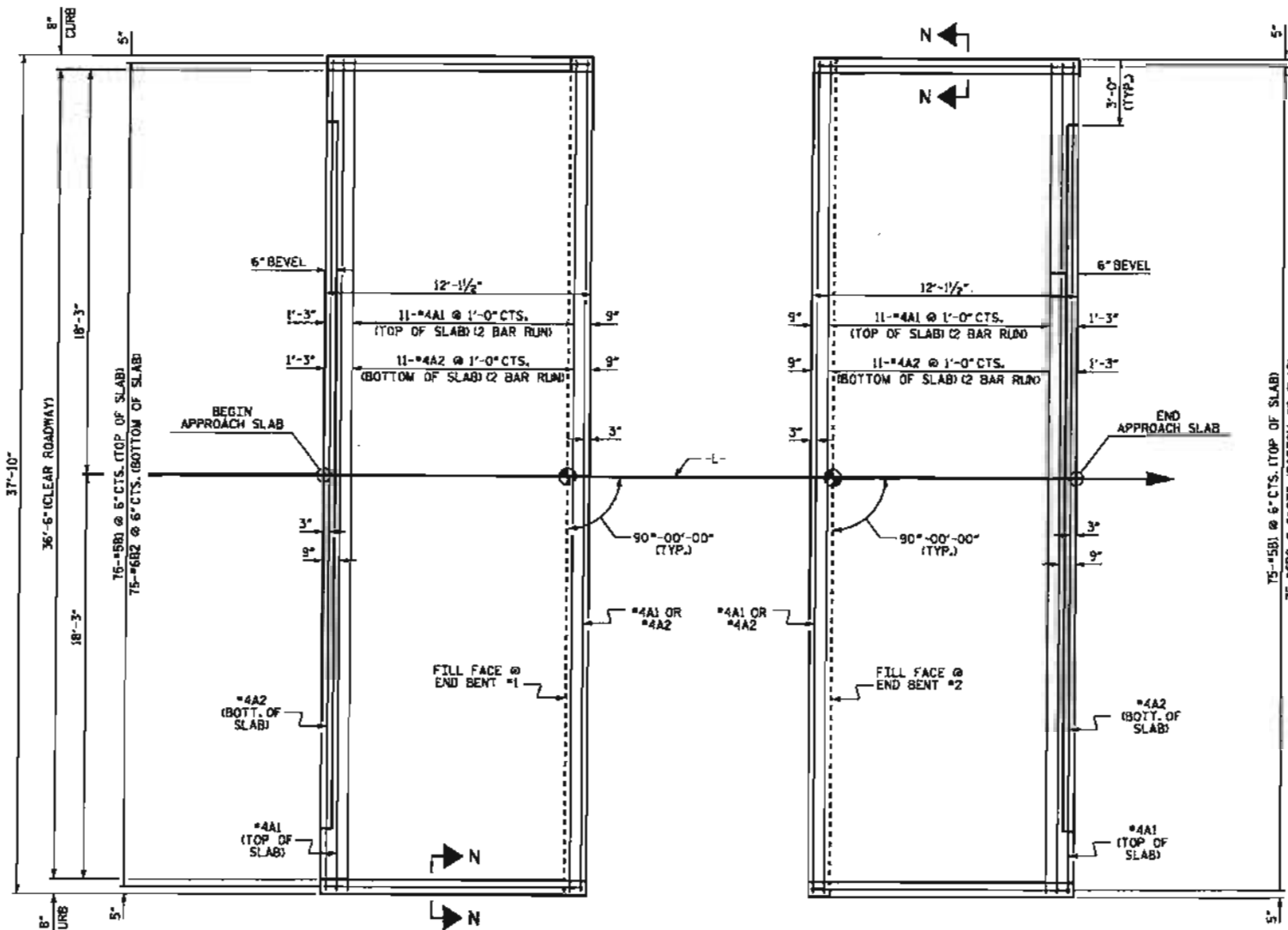
END BENT No. 1 & 2  
 DETAILS

ASSEMBLED BY: B.C. HUNT	DATE: 5/2012
CHECKED BY: V.A. PATEL	DATE: 5/2012
DRAWN BY: DGE 02/10	
CHECKED BY: MKT 02/10	

14-MAY-2012 12:04  
 I:\Structure\Bona\BD-5110P.SD.dgn  
 vpatel



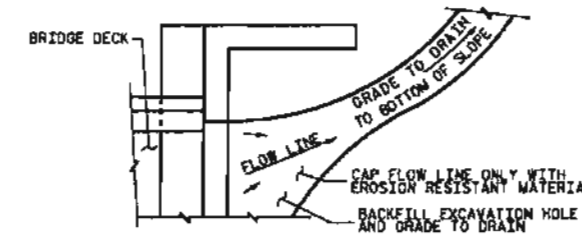
STD. NO. EB-39.90S



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

NOTES

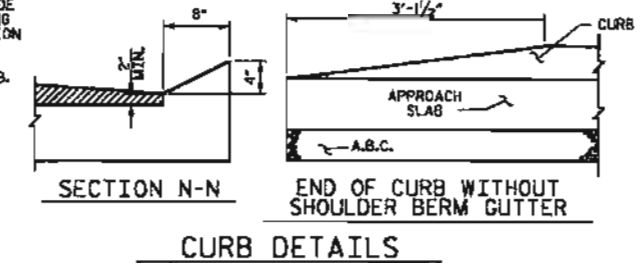
FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.  
 GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.  
 #78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.  
 #78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.  
 FOR THE 4" Ø DRAINAGE PIPE OUTLETS, SEE ROADWAY STANDARD DRAWINGS.  
 AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.  
 APPROACH SLAB GROOVING IS NOT REQUIRED.



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

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



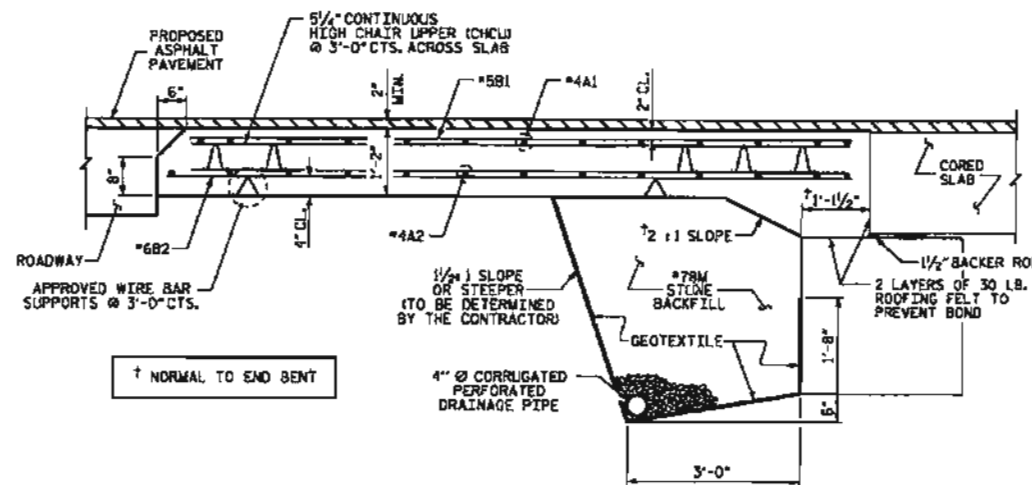
CURB DETAILS

PROJECT NO. BD-5110P  
 MECKLENBURG COUNTY  
 STATION: 13+60.00 -L-

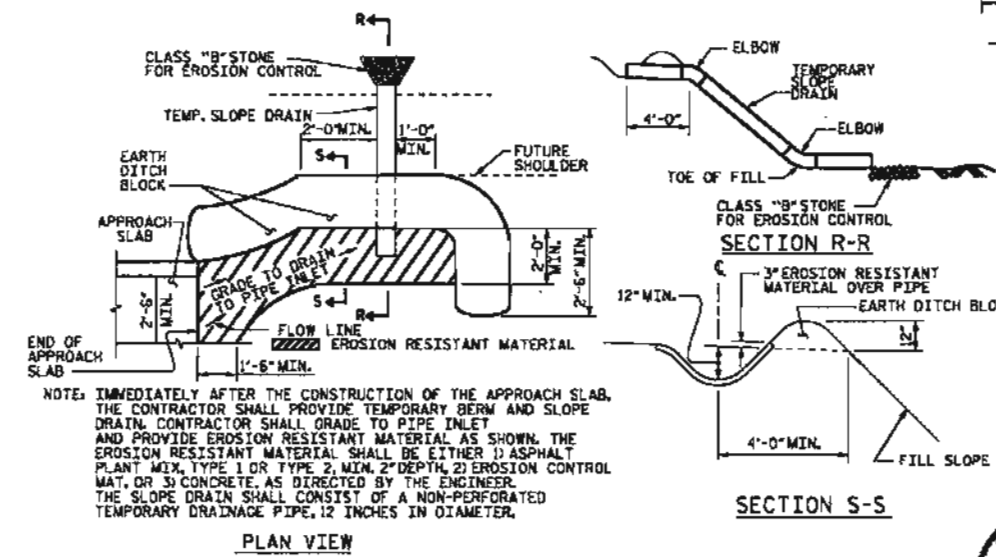
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 STANDARD  
 BRIDGE APPROACH SLAB  
 FOR PRESTRESSED CONCRETE  
 CORED SLAB UNIT  
 (SUB-REGIONAL TIER)  
 90° SKEW

REVISIONS				SHEET NO.
NO.	BY	DATE	DESCRIPTION	S-16
1				TOTAL SHEETS
2				16

STD. NO. BAS-39.90S



SECTION THRU SLAB



TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

ASSEMBLED BY: B.C. HUNT DATE: 5/2012  
 CHECKED BY: V.A. PATEL DATE: 5/2012  
 DRAWN BY: SHS/MAA 5-09  
 CHECKED BY: BOM 5-09

14-MAY-2012 12:14  
 R:\Structures\Phone\BD-5110P\_S0\_15.dgn  
 vpo76



## STANDARD NOTES

### DESIGN DATA:

SPECIFICATIONS	-----	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	-----	SEE PLANS
IMPACT ALLOWANCE	-----	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF		
STRUCTURAL STEEL - AASHTO M270 GRADE 36	-	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	-	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	-	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION		
GRADE 60	--	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	-----	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	-----	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR		
UNTREATED - EXTREME FIBER STRESS	-----	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	-----	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	-----	30 LBS. PER CU. FT. (MINIMUM)

### MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2012 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

### CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

### CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

### DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

### ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE. ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

### REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

### STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16" INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

### HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

### SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

# ENGLISH

JANUARY, 1990

STD. NO. SN