09/08/99

TIP PROJECT: R-3622AA

CONTRACT: C201819

STRUCTURES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-3622AA		

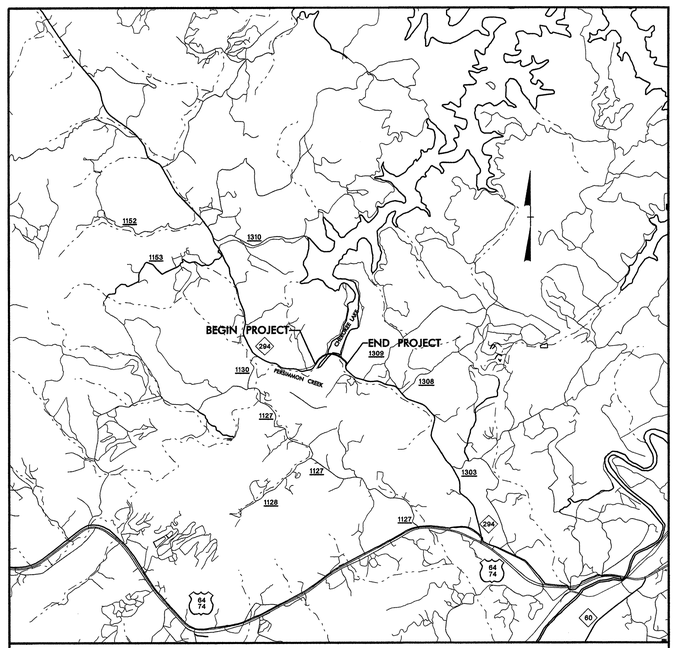
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
38068.1.1		PE
38068.2.1		ROW
38068.3.1		CONST.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

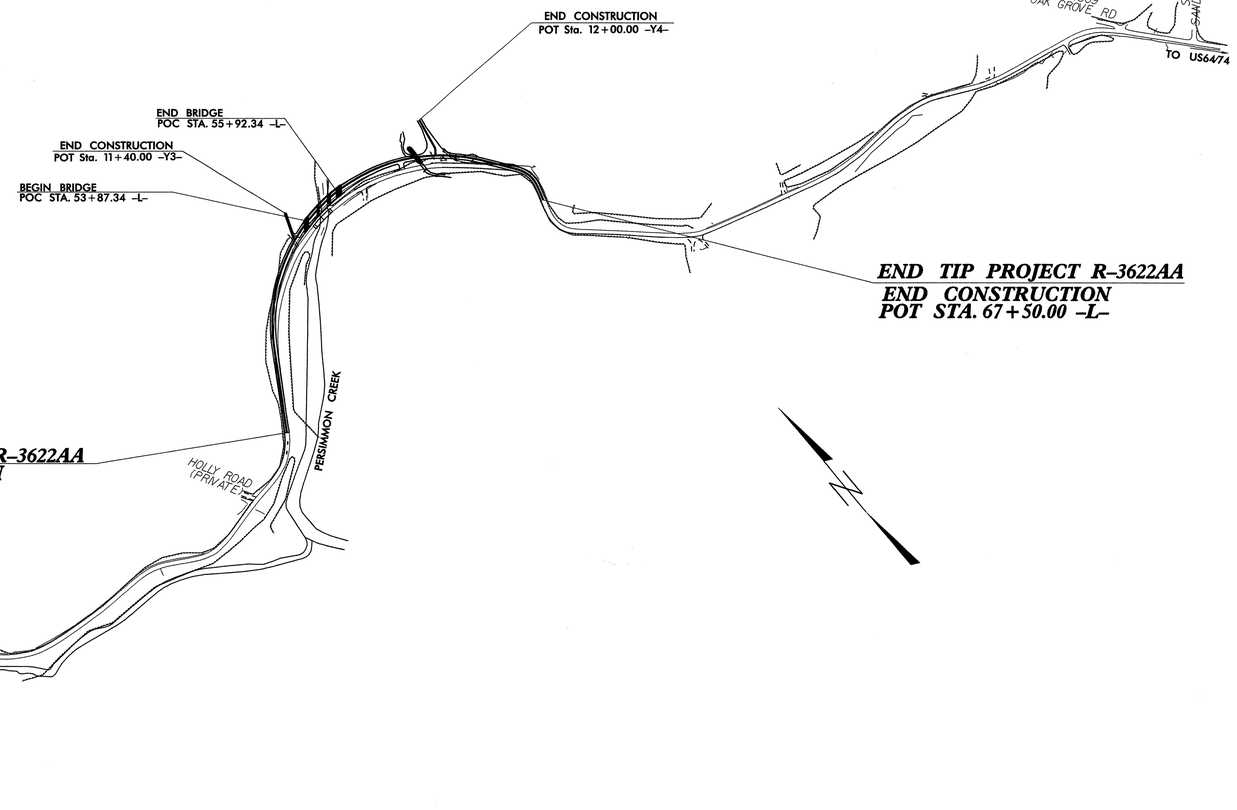
CHEROKEE COUNTY

LOCATION: *NC 294 ROADWAY IMPROVEMENTS AND BRIDGE REPLACEMENT: BRIDGE NO. 50 OVER PERSIMMON CREEK AND EXTENSION OF CULVERT FOR TRIBUTARY TO LAKE CHEROKEE*

TYPE OF WORK: *GRADING, PAVING, DRAINAGE, CULVERT EXTENSION, STRUCTURE, AND SIGNALS*



VICINITY MAP



NCDOT CONTACT: J. B. Setzer, P.E., Division 14

DESIGN DATA

ADT 2008	=	3,360
ADT 2025	=	6,000
DHV	=	— %
D	=	— %
T	=	3 % *
V	=	50 MPH
(* TTST 3% & DUAL 0%)		
FUNC. CLASS.	=	MAJOR COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-3622AA =	0.427 MILES
LENGTH STRUCTURE TIP PROJECT R-3622AA =	0.039 MILES
TOTAL LENGTH OF TIP PROJECT R-3622AA =	0.466 MILES

Prepared In the Office of:
WILBUR SMITH ASSOCIATES
421 Fayetteville St., Suite 1303 Raleigh, NC 27601 Phone (919) 755-0583

2006 STANDARD SPECIFICATIONS

LETTING DATE:
SEPTEMBER 16, 2008

TOM HARRIS, P.E.
PROJECT ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
7/16/08

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

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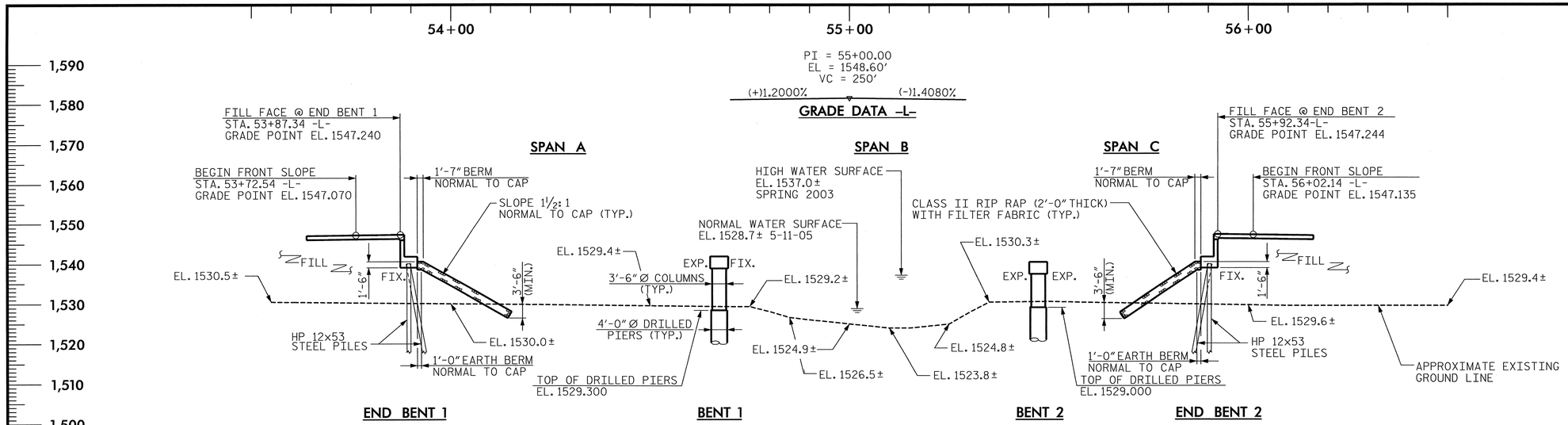
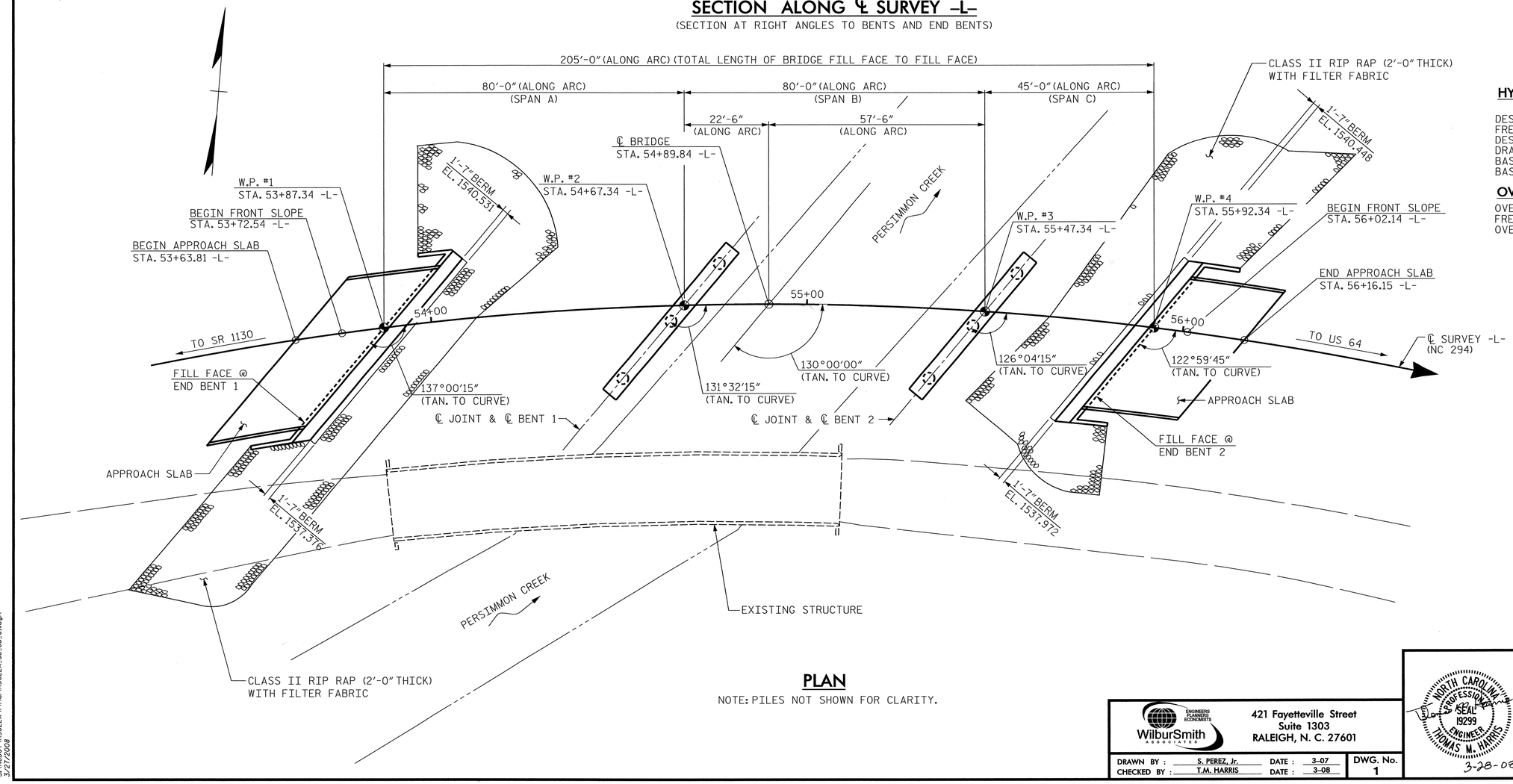


HORIZONTAL CURVE DATA –L–

PI STA. 59+76.41
△ = 112°53'09.8" (RT.)
D = 6°50'00.0"
T = 1264.06'
L = 1651.99'
R = 838.47'
SLOPE = 0.06 FT./FT.

SECTION ALONG ℄ SURVEY –L–

(SECTION AT RIGHT ANGLES TO BENTS AND END BENTS)



PLAN

NOTE: PILES NOT SHOWN FOR CLARITY.

HYDROGRAPHIC DATA

DESIGN DISCHARGE	= 3300 CFS
FREQUENCY OF DESIGN FLOOD	= 50 YR.
DESIGN HIGH WATER ELEVATION	= 1536.0 FT.
DRAINAGE AREA	= 14.5 SQ. MI.
BASIC DISCHARGE (Q100)	= 4000 CFS
BASIC HIGH WATER ELEVATION	= 1536.9 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 5900 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 500 YR. +
OVERTOPPING FLOOD ELEVATION	= 1541.7

PROJECT NO. R–3622AA

CHEROKEE COUNTY

STATION: 54+89.84 –L–

SHEET 1 OF 4 REPLACES BRIDGE No. 50

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING

BRIDGE OVER PERSIMMON CREEK ON NC 294 BETWEEN SR 1130 AND US 64

WilburSmith ASSOCIATES
ENGINEERS PLANNERS ECONOMISTS
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

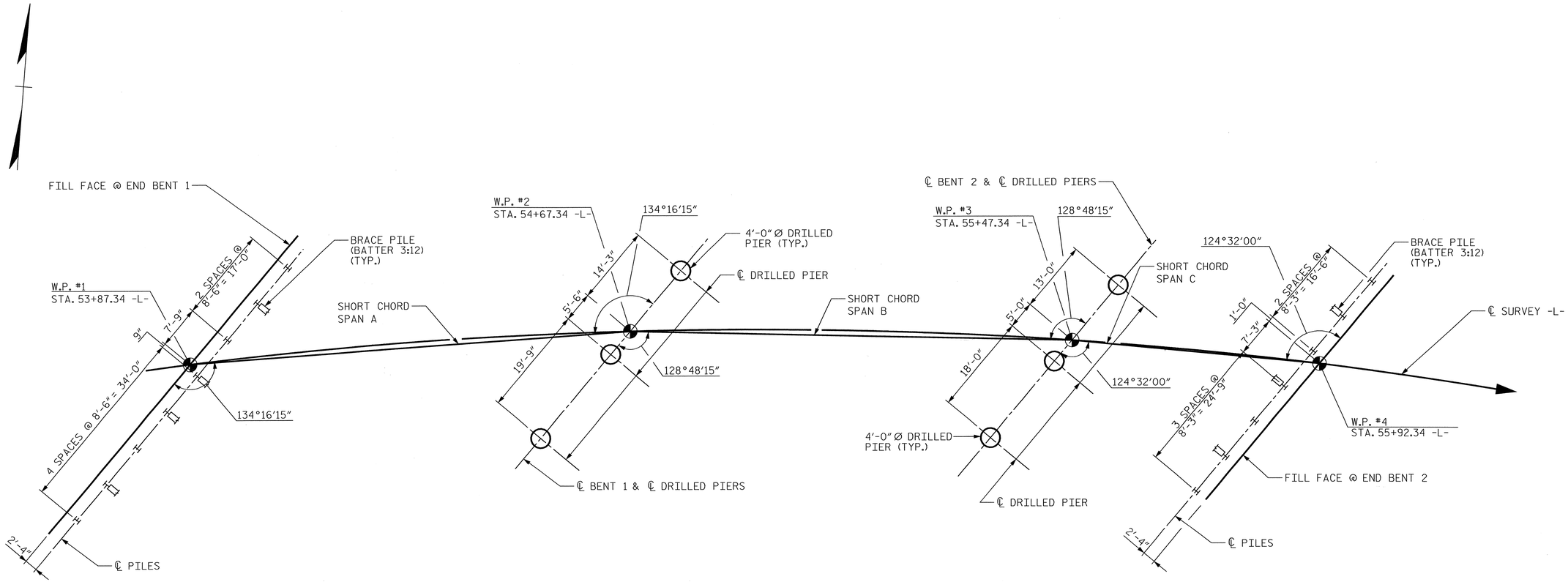
DRAWN BY : S. PEREZ, Jr. DATE : 3-07
CHECKED BY : T.M. HARRIS DATE : 3-08

DWG. No. 1

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
3-28-08

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			36

S:\NCDOT\R3622A\Final\R3622A_SD_GD_01.dgn
3/27/2008



END BENT 1 **BENT 1** **BENT 2** **END BENT 2**

FOUNDATION LAYOUT

(DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINES AT THE BOTTOM OF THE END BENT CAP)

NOTES

ALL PILES ARE HP 12x53 STEEL PILES.

DRIVE PILES AT END BENT 1 AND END BENT 2 TO A REQUIRED BEARING CAPACITY OF 120 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

STEEL PILE POINTS WITH TEETH ARE REQUIRED FOR STEEL PILES AT BOTH END BENTS.

THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENT 1 AND END BENT 2 IS 60 TONS PER PILE.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 22.6 FT.-KIP TO 40.6 FT.- KIP PER BLOW WILL BE REQUIRED TO DRIVE THE HP 12x53 PILES AT BOTH END BENTS. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM ARTICLE 450-5 OF THE STANDARD SPECIFICATIONS.

DRILLED PIERS AT BENT 1 AND BENT 2 ARE DESIGNED FOR BOTH SKIN FRICTION AND TIP BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 22.5 TSF.

DRILLED PIERS AT BENT 1 AND BENT 2 ARE DESIGNED FOR AN APPLIED LOAD OF 250 TONS EACH AT THE TOP OF THE COLUMN.

DRILLED PIERS AT BENT 1 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 1508.8 TO 1511.1 FEET. DRILLED PIERS AT BENT 2 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 1508.9 TO 1514.5 FEET. DRILLED PIER SHALL ALSO SATISFY THE REQUIRED END BEARING CAPACITY.

THE SCOUR CRITICAL ELEVATION FOR BENT 1 AND BENT 2 IS 1523.7 AND 1526.9 FEET, RESPECTIVELY. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

FOR DRILLED PIERS, SEE DRILLED PIERS SPECIAL PROVISION.

SPT TESTING IS NOT REQUIRED TO DETERMINE THE END BEARING CAPACITY OF THE DRILLED PIERS AT BOTH BENTS.

SID INSPECTIONS MAY BE REQUIRED TO INSPECT THE BOTTOM CLEANLINESS OF THE DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTION. SEE DRILLED PIERS SPECIAL PROVISION.

CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. SEE CROSSHOLE SONIC LOGGING SPECIAL PROVISION.

OBSERVE A 1 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FEET OF FINISHED GRADE BEFORE BEGINNING END BENT OR REINFORCED EARTH FILL CONSTRUCTION AT END BENTS 1 AND 2.

SLURRY COMSTRUCTION IS REQUIRED FOR DRILLED PIERS AT BENT 1 AND BENT 2.

PERMANENT STEEL CASING IS REQUIRED FOR DRILLED PIERS AT BENT 1 AND BENT 2. DO NOT EXTEND THE CASING BELOW ELEVATION 1513.4 FEET TO 1514.6 FEET (LEFT TO RIGHT) FOR BENT 1 AND 1512.6 FEET TO 1517.7 FEET (LEFT TO RIGHT) WITHOUT PROIR APPROVAL FROM THE ENGINEER. SEE DRILLED PIER SPECIAL PROVISIONS.

PROJECT NO. R-3622AA

CHEROKEE COUNTY

STATION: 54+89.84 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE OVER PERSIMMON CREEK ON NC 294 BETWEEN SR 1130 AND US 64

WilburSmith ASSOCIATES — ENGINEERS PLANNERS ECONOMISTS
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

DRAWN BY : S. PEREZ, Jr. DATE : 3-07
CHECKED BY : T.M. HARRIS DATE : 3-08

DWG. No. 2

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
3-28-08

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			36

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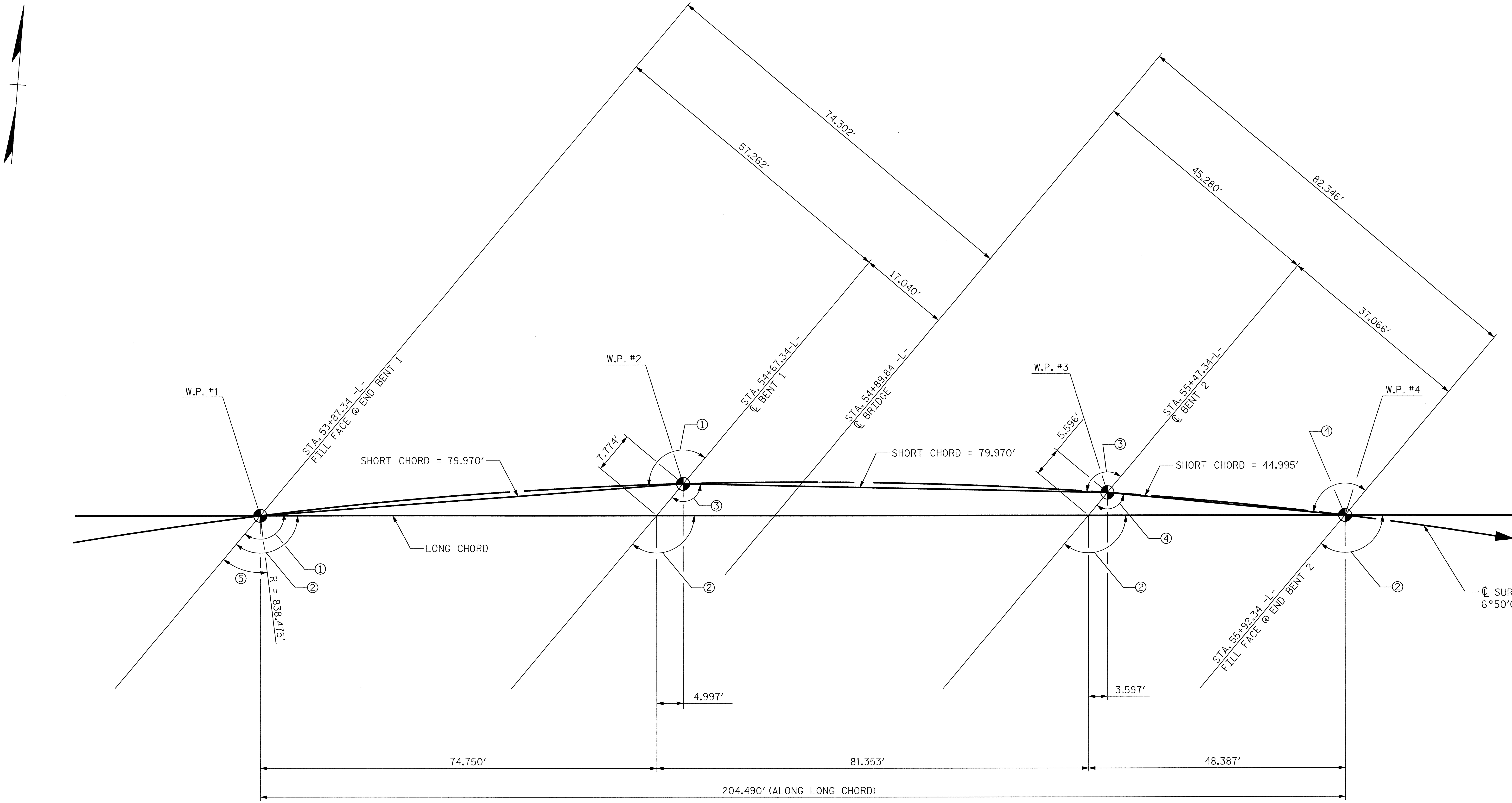
3/27/2008



ANGLES	
①	134°16′15″
②	130°00′00″
③	128°48′15″
④	124°32′00″
⑤	47°00′15″

LONG CHORD LAYOUT

NOTE: ALL BENTS ARE PARALLEL.

HORIZONTAL CURVE DATA -L-

PI STA. 59+76.41
△ = 112°53′09.8″ (RT.)
D = 6°50′00.0″
T = 1264.06′
L = 1651.99′
R = 838.47′

PROJECT NO. R-3622AA
CHEROKEE COUNTY
STATION: 54+89.84 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING

BRIDGE
OVER PERSIMMON CREEK
ON NC 294 BETWEEN
SR 1130 AND US 64

WilburSmith ASSOCIATES — ENGINEERS PLANNERS ECONOMISTS
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

DRAWN BY :	S. PEREZ, Jr.	DATE :	9-06	DWG. No.
CHECKED BY :	T.M. HARRIS	DATE :	3-08	3

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19299 THOMAS M. HARRIS
3-28-08

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			36

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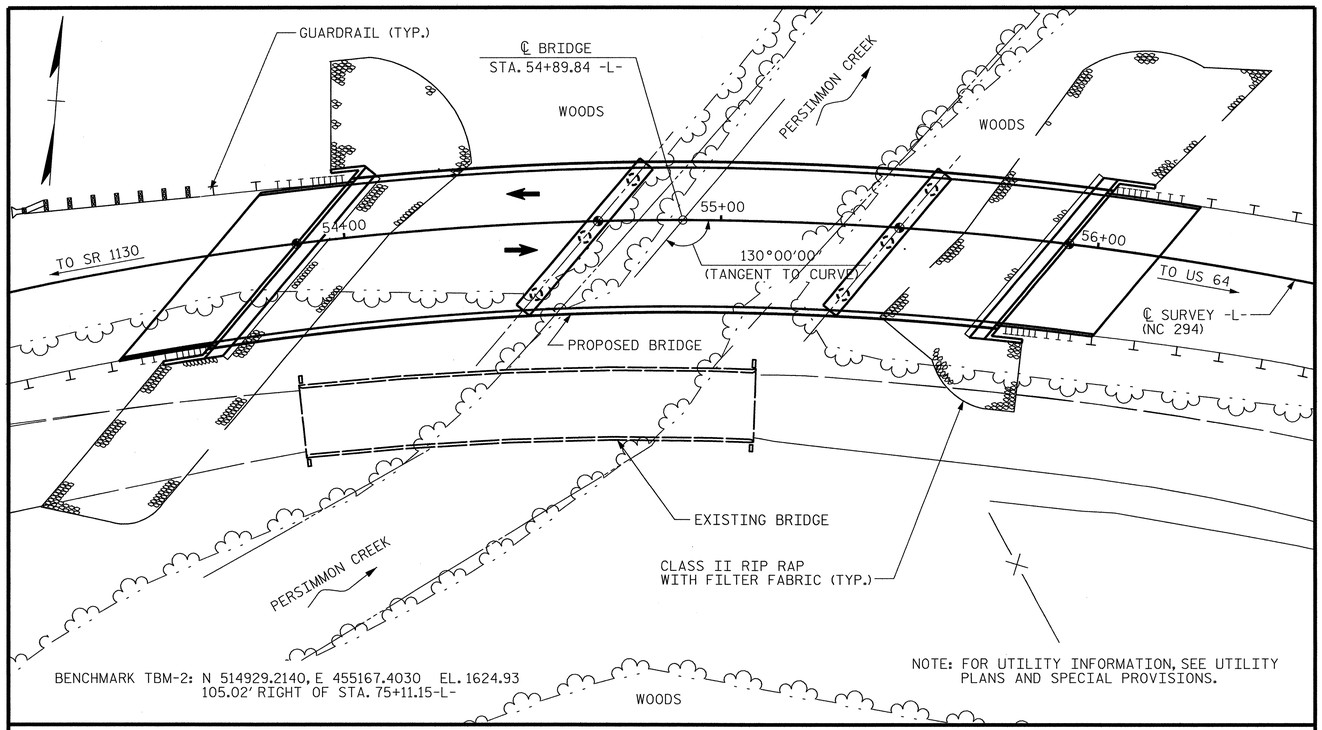
3/27/2008

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE @ STA. 54+89.84 -L-	SID INSPECTION	CROSSHOLE SONIC LOGGING	4'-0" Ø DRILLED PIERS IN SOIL	4'-0" Ø DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 4'-0" Ø DRILLED PIERS	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	54" PRESTRESSED CONCRETE GIRDER	HP 12 x 53 STEEL PILES		STEEL PILE POINTS	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	EVAZOTE JOINT SEALS
	LUMP SUM	EACH	EACH	LIN. FT.	LIN. FT.	LIN. FT.	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	LIN. FT.	No.	LIN. FT.	EACH	LIN. FT.	TON	SQ. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE							8,175	8,467		LUMP SUM			798.01				406.54			LUMP SUM	LUMP SUM
END BENT 1									57.4		8,691			8	240	8		288.0	320.0		
BENT 1				42.3	16.9	46.5			41.0		13,348	2,199									
BENT 2				39.6	15.1	44.1			38.7		12,696	2,109									
END BENT 2									46.2		6,772			8	240	8		383.9	426.4		
TOTAL	LUMP SUM	1	1	81.9	32.0	90.6	8,175	8,467	183.3	LUMP SUM	41,507	4,308	798.01	16	480	16	406.54	671.9	746.4	LUMP SUM	LUMP SUM



LOCATION SKETCH

GENERAL NOTES

ASSUMED LIVE LOAD = HS20 OR ALTERNATE LOADING EXCEPT THAT THE GIRDERS HAVE BEEN DESIGNED FOR HS25 TRUCK LOADING.

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

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

THIS BRIDGE HAS BEEN DESIGNED BY THE STRENGTH DESIGN METHOD AS SPECIFIED IN AASHTO STANDARD SPECIFICATIONS.

REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

THE EXISTING STRUCTURE CONSISTING OF 4 SPANS AT APPROXIMATELY 10'-50'-50'-10' OF CONTINUOUS CONCRETE T-BEAMS WITH 17'-9" CLEAR ROADWAY WIDTH ON CONCRETE CAPS WITH CONCRETE COLUMNS AND LOCATED IMMEDIATELY UPSTREAM FROM THE PROPOSED STRUCTURE SHALL REMAIN IN PLACE. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.

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 STANDARD SPECIFICATIONS FOR SEISMIC DESIGN OF HIGHWAY BRIDGES FOR SEISMIC PERFORMANCE CATEGORY B.

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.

NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

ALL REINFORCING STEEL SHALL BE GRADE 60.

FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

FOR REMOVAL OF EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

PROJECT NO. R-3622AA

CHEROKEE COUNTY

STATION: 54+89.84 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE OVER PERSIMMON CREEK ON NC 294 BETWEEN SR 1130 AND US 64

WilburSmith ASSOCIATES
ENGINEERS PLANNERS ECONOMISTS
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

DRAWN BY : S. PEREZ, Jr. DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08

DWG. No. 4

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
6-13-08

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			36

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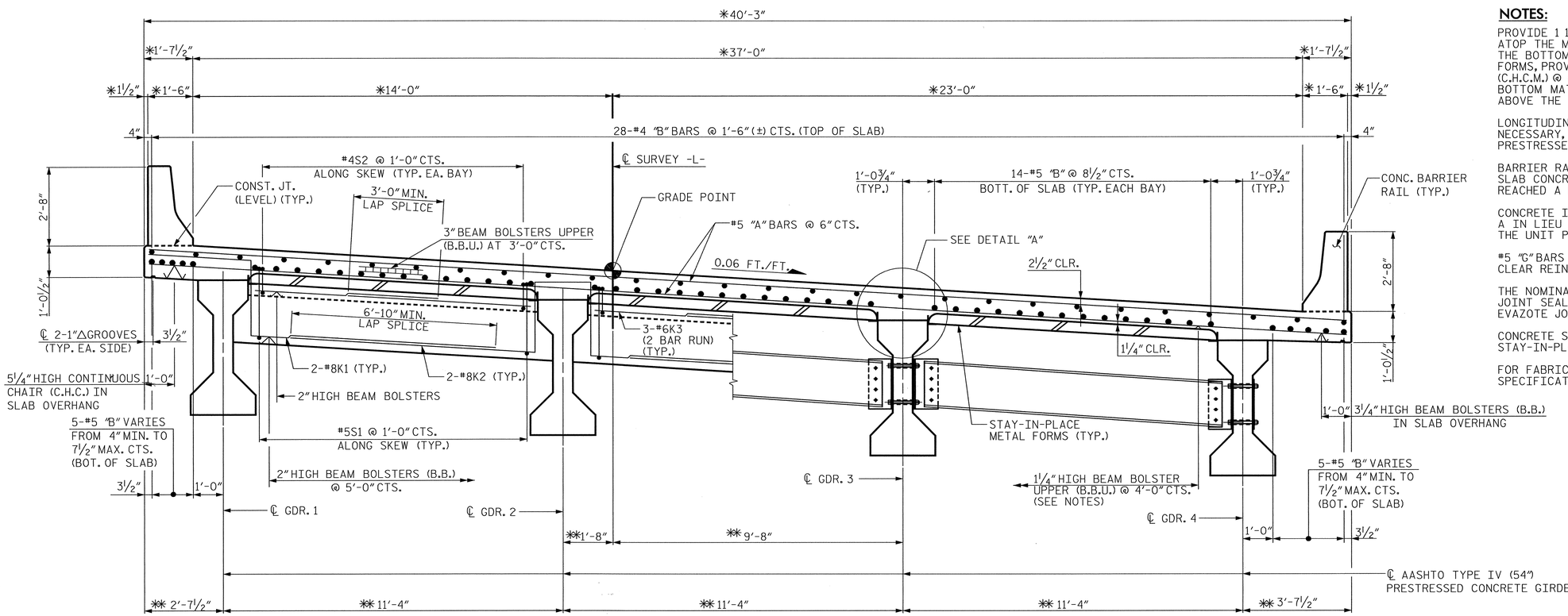
6/13/2008



NOTES:

PROVIDE 1 1/4 "HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2 1/2 " ABOVE THE TOP OF THE REMOVABLE FORM.

LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

BARRIER RAIL IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

CONCRETE IN BENT AND END BENT DIAPHRAGMS MAY BE CLASS A IN LIEU OF CLASS AA. PAYMENT SHALL BE MADE UNDER THE UNIT PRICE FOR REINFORCED CONCRETE DECK SLAB.

#5 "G" BARS MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 2 1/2 "AT BENT NO. 1 AND 2. FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

CONCRETE SHALL NOT BE PERMITTED IN THE VALLEYS OF THE STAY-IN-PLACE METAL FORMS.

FOR FABRICATED METAL STAY-IN-PLACE FORMS, SEE STANDARD SPECIFICATION.

HALF SECTION @ BENT DIAPHRAGMS

HALF SECTION @ INTERMEDIATE DIAPHRAGMS

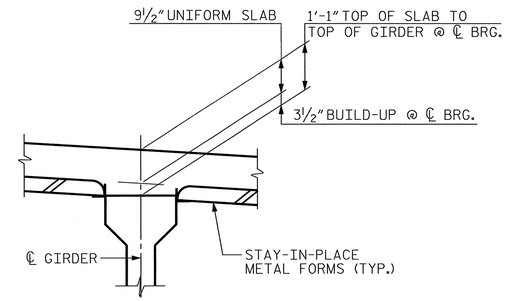
TYPICAL SECTION

* RADIAL DIMENSION

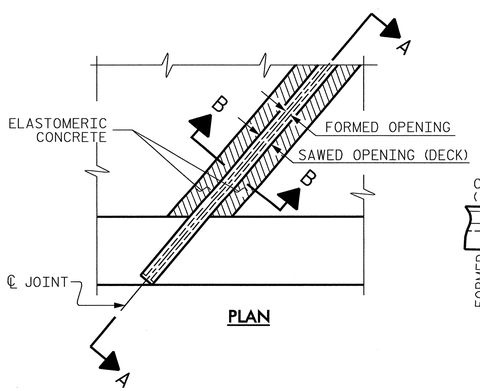
** RADIAL DIMENSION AT INTERSECTION OF SUBSTRUCTURE CONTROL LINE

ELASTOMERIC CONCRETE	
BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	8.5
2	7.9
TOTAL	16.4

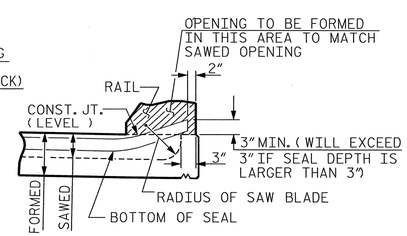
* BASED ON MINIMUM BLOCKOUT SHOWN.



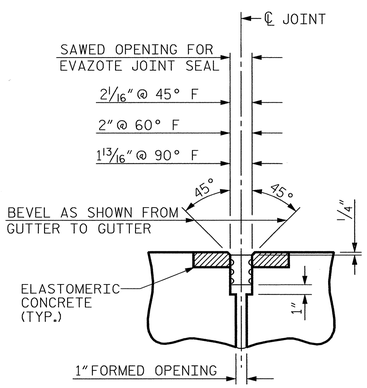
DETAIL "A"



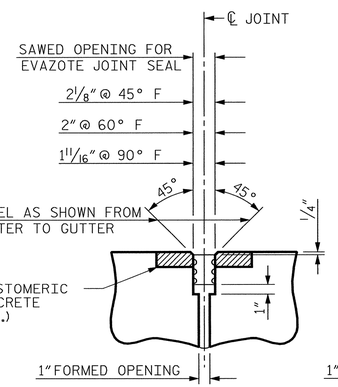
PLAN



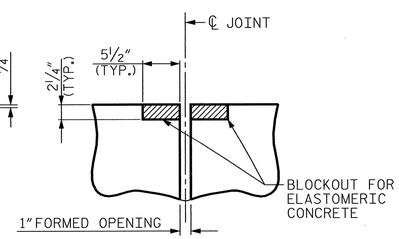
SECTION A–A



SECTION B–B
EVAZOTE JOINT SEAL
(BENT 1)



SECTION B–B
EVAZOTE JOINT SEAL
(BENT 2)



SECTION B–B
PRE-SAWED ELASTOMERIC
CONCRETE DIMENSIONS

EVAZOTE JOINT DETAILS

PROJECT NO. R-3622AA

CHEROKEE COUNTY

STATION: 54+89.84 –L–

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

WilburSmith ASSOCIATES — ENGINEERS PLANNERS ECONOMISTS
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

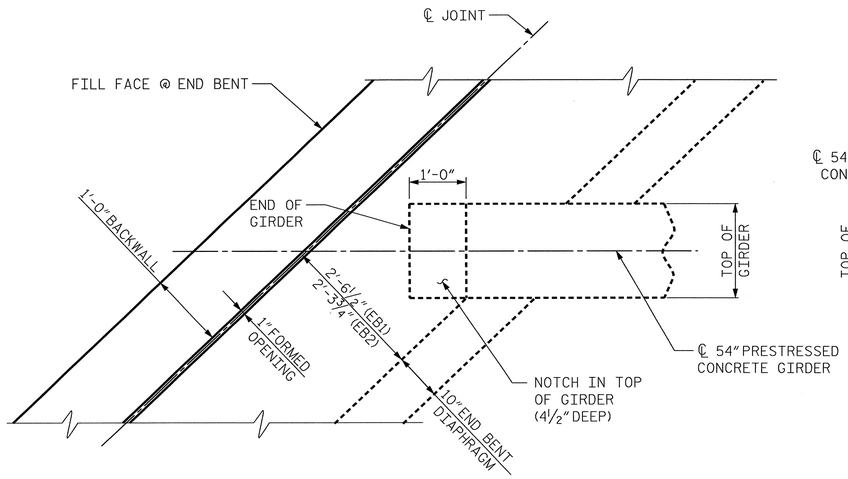
DRAWN BY : S. PEREZ, Jr. DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08

DWG. No. 5

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
3-28-08

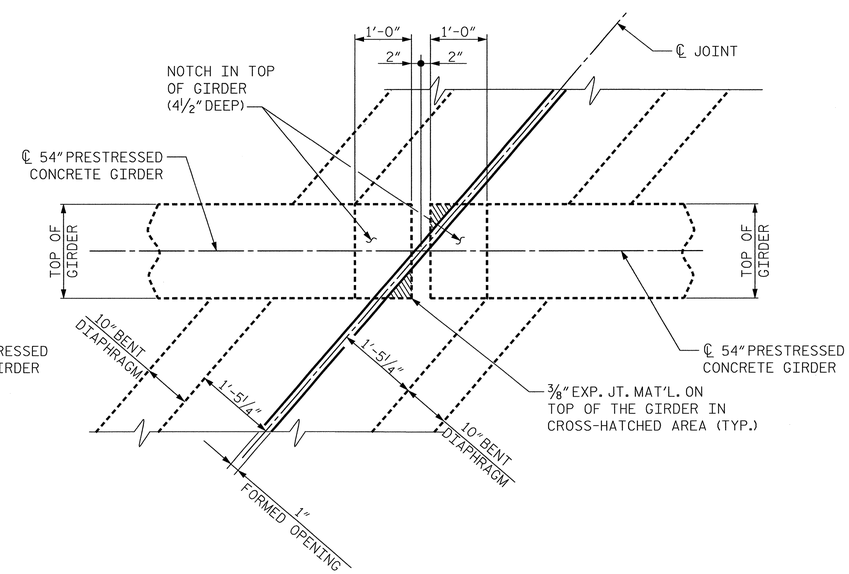
REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			36

S:\MCDOT\R3622A\Final\R3622A_SD_TSEC_01.dgn
3/27/2008



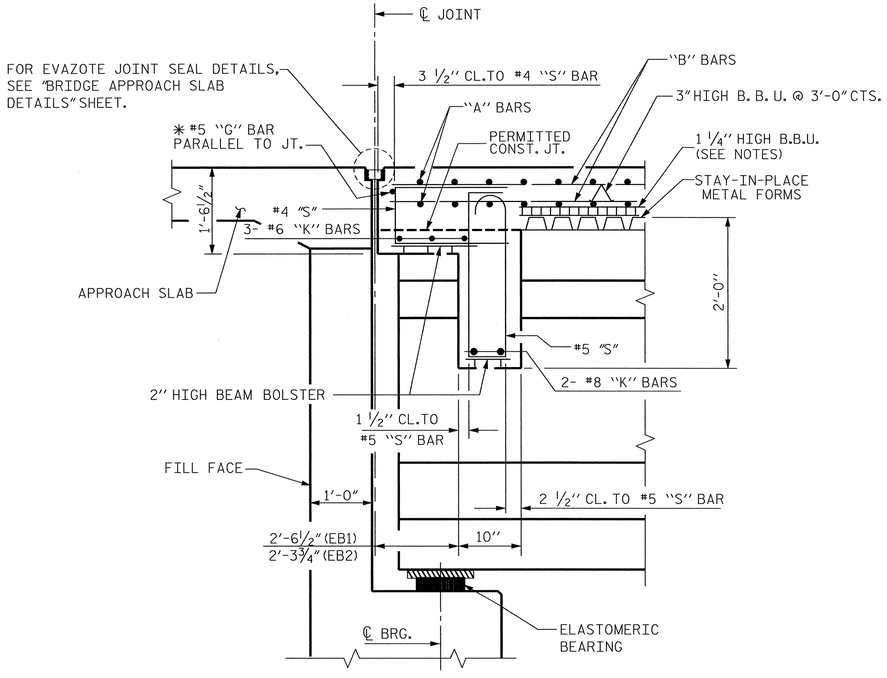
PLAN OF DIAPHRAGM AT END BENT

(END BENT 1 SHOWN, END BENT 2 SIMILAR)

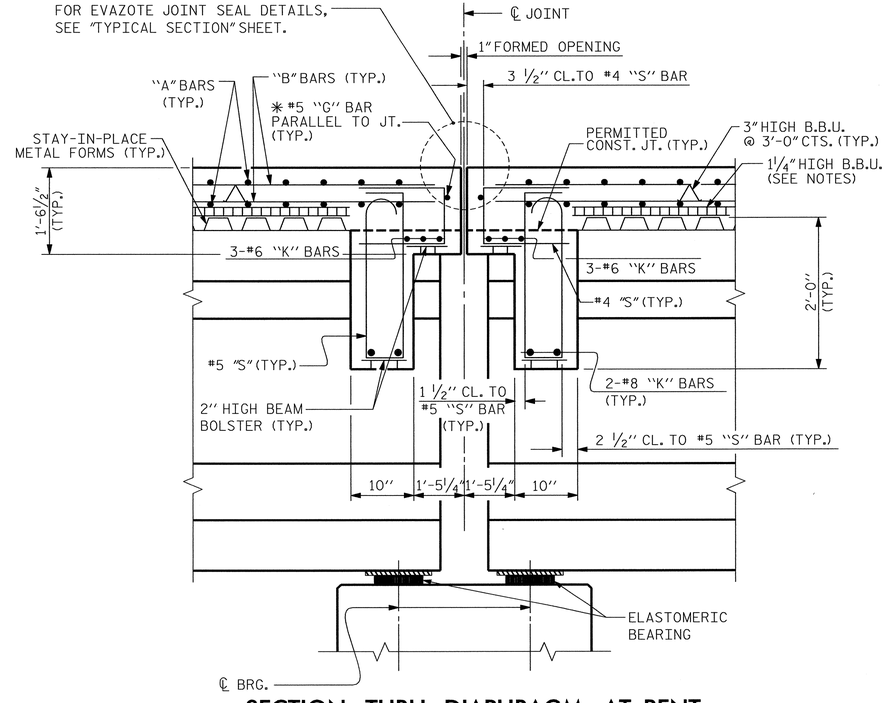


PLAN OF DIAPHRAGM AT BENT

(BENT 1 SHOWN, BENT 2 SIMILAR)



SECTION THRU DIAPHRAGM AT END BENT



SECTION THRU DIAPHRAGM AT BENT

✳ #5 "G" BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.

PROJECT NO. R-3622AA

CHEROKEE COUNTY

STATION: 54+89.84 –L–

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION DETAILS

WilburSmith ASSOCIATES — ENGINEERS PLANNERS ECONOMISTS
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

DRAWN BY : S. PEREZ, Jr. DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08

DWG. No. 6

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
3-28-08

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			36

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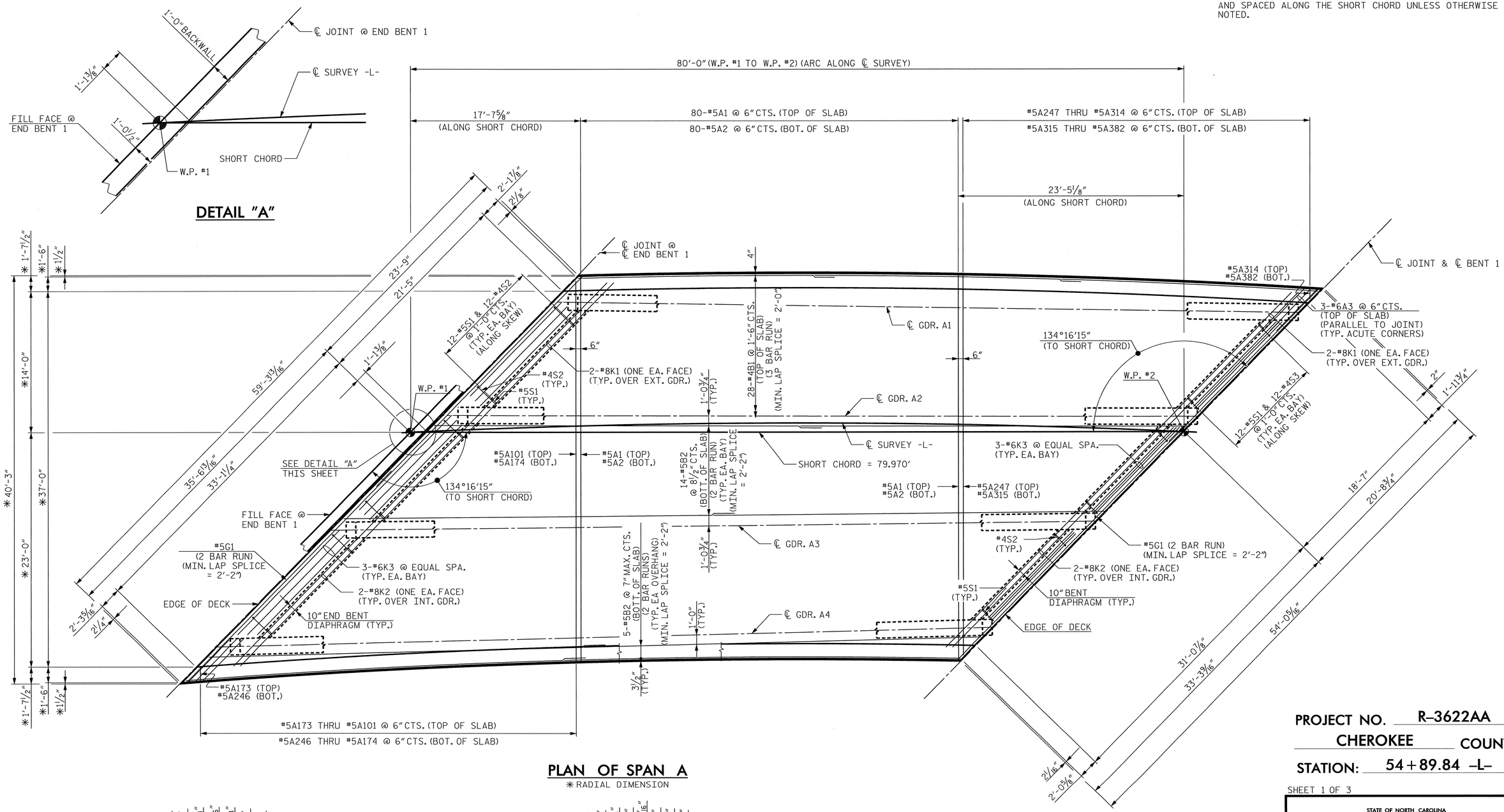
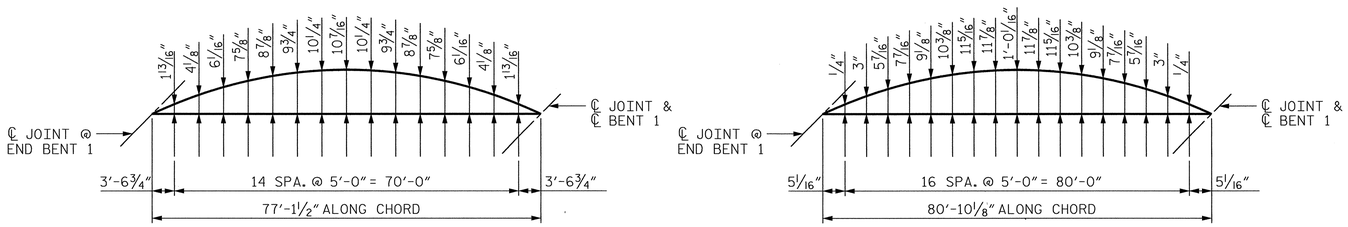
3/27/2008

NOTE
"A" BARS ARE TO PLACED PERPENDICULAR TO SHORT CHORD AND SPACED ALONG THE SHORT CHORD UNLESS OTHERWISE NOTED.



PLAN OF SPAN A

* RADIAL DIMENSION



ARC OFFSETS @ OUTSIDE EDGE

PROJECT NO. R-3622AA
CHEROKEE COUNTY
STATION: 54+89.84 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN A

WilburSmith ASSOCIATES — ENGINEERS PLANNERS ECONOMISTS
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

DRAWN BY : S. PEREZ, Jr. DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08
DWG. No. 7

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
3.28.08

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			36

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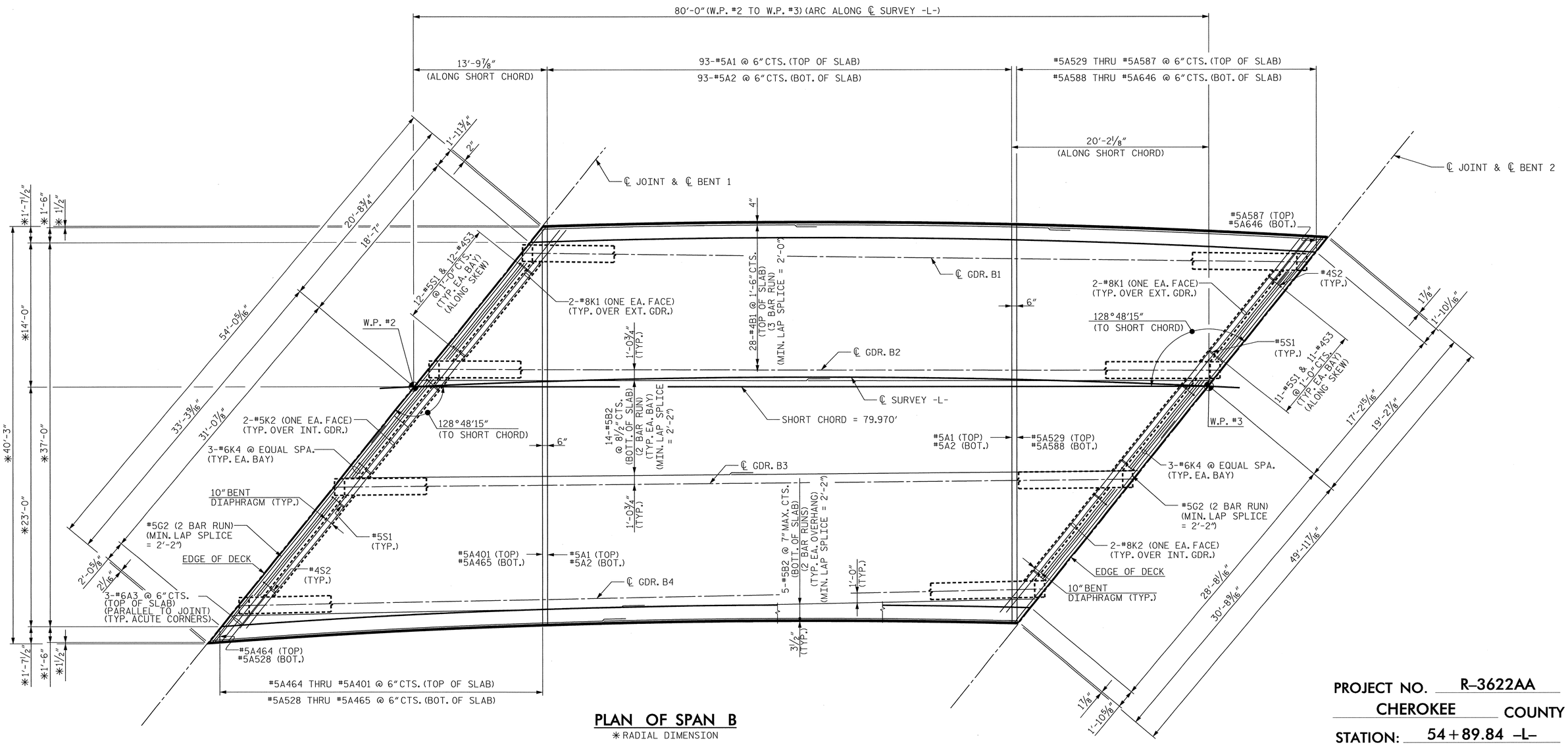
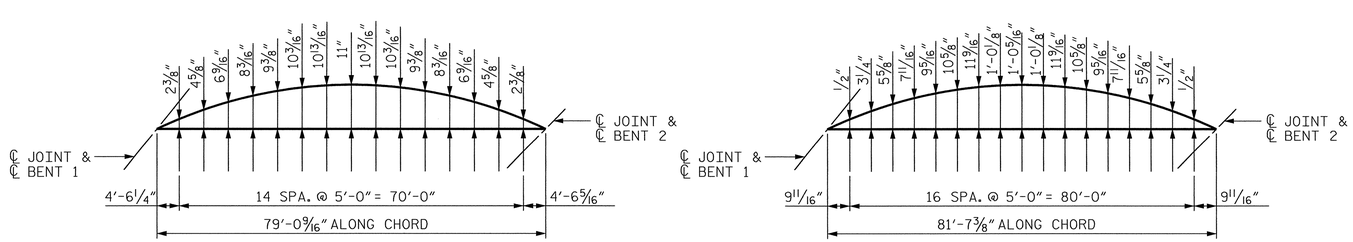
3/27/2008

NOTE
"A" BARS ARE TO PLACED PERPENDICULAR TO SHORT CHORD AND SPACED ALONG THE SHORT CHORD UNLESS OTHERWISE NOTED.



PLAN OF SPAN B

*RADIAL DIMENSION



ARC OFFSETS @ OUTSIDE EDGE

PROJECT NO. R-3622AA
CHEROKEE COUNTY
STATION: 54+89.84 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN B

WilburSmith ASSOCIATES
ENGINEERS PLANNERS ECONOMISTS
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

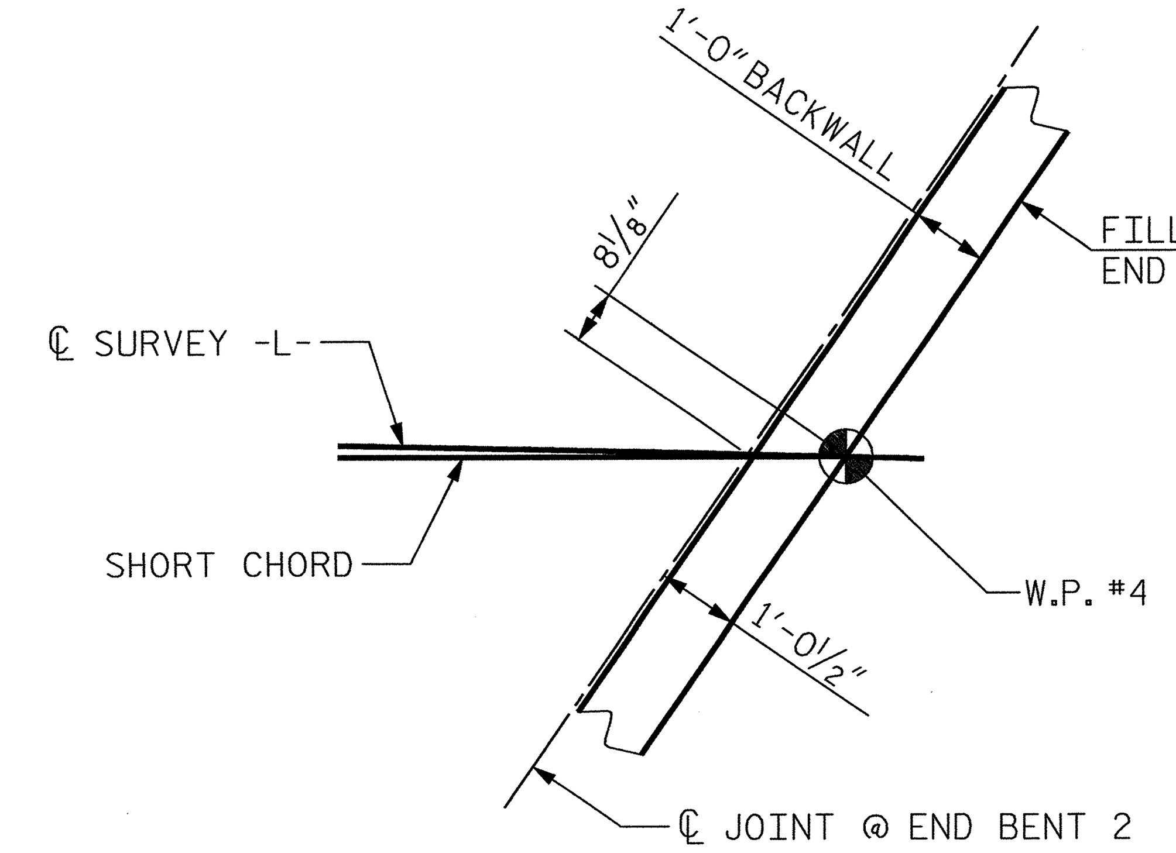
DRAWN BY : S. PEREZ, Jr. DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08
DWG. No. 8

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
3-28-08

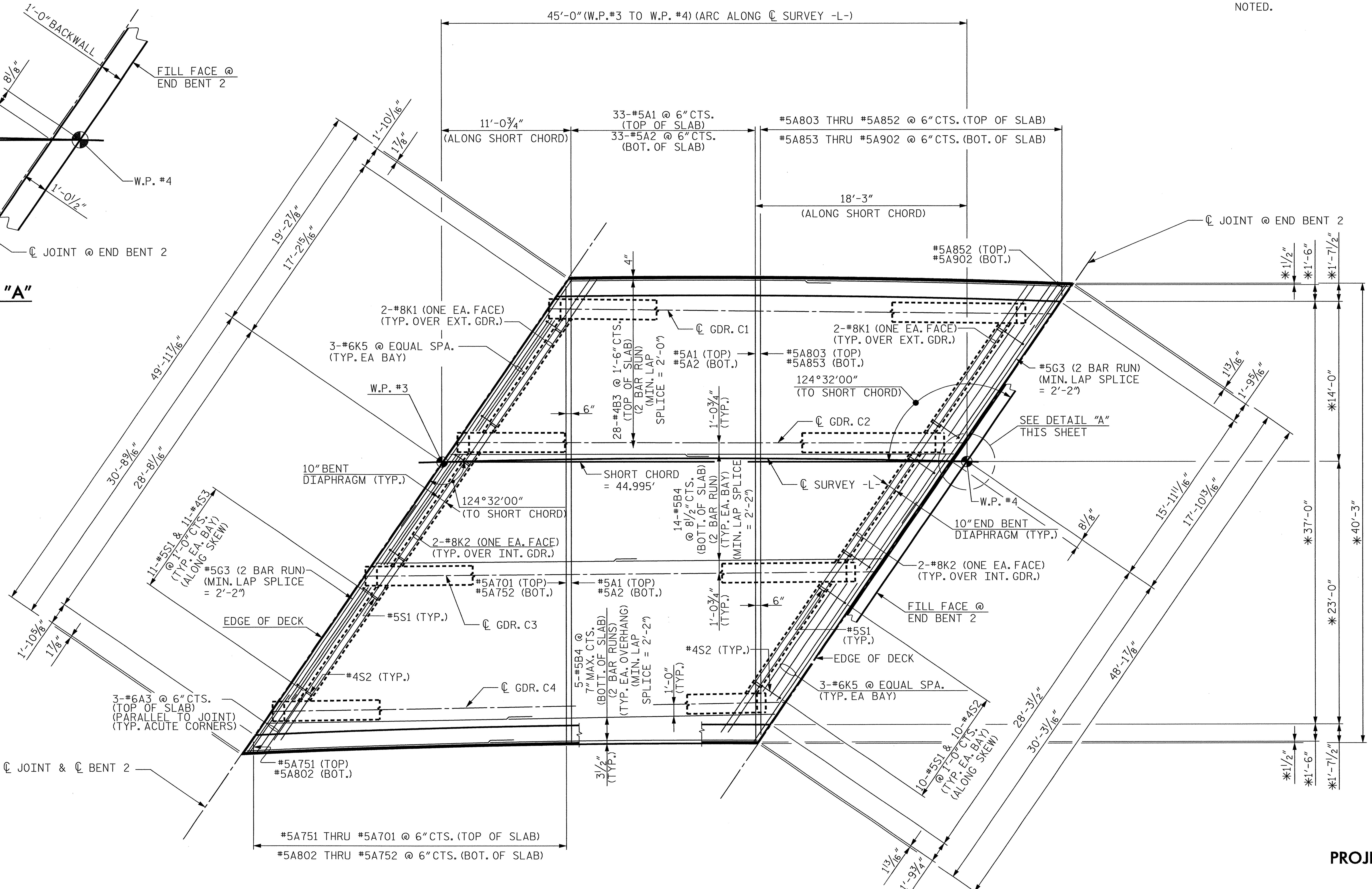
REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			36

S:\roadn\r-3622a\final\R3622A_SD_POS_02.dgn
3/27/2008

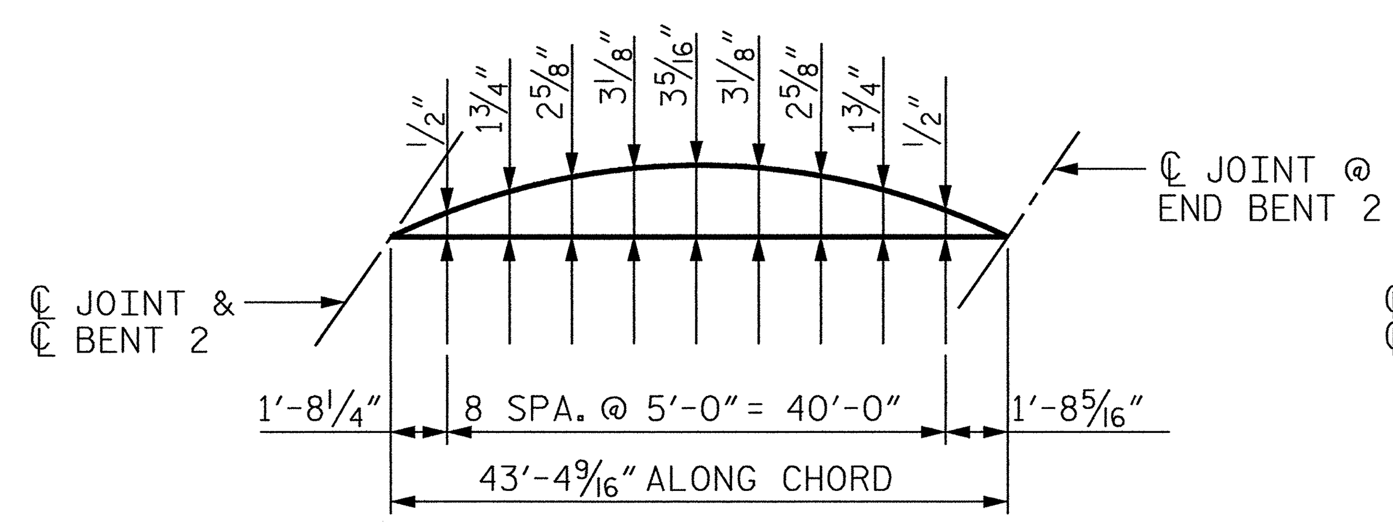
NOTE
"A" BARS ARE TO PLACED PERPENDICULAR TO SHORT CHORD AND SPACED ALONG THE SHORT CHORD UNLESS OTHERWISE NOTED.



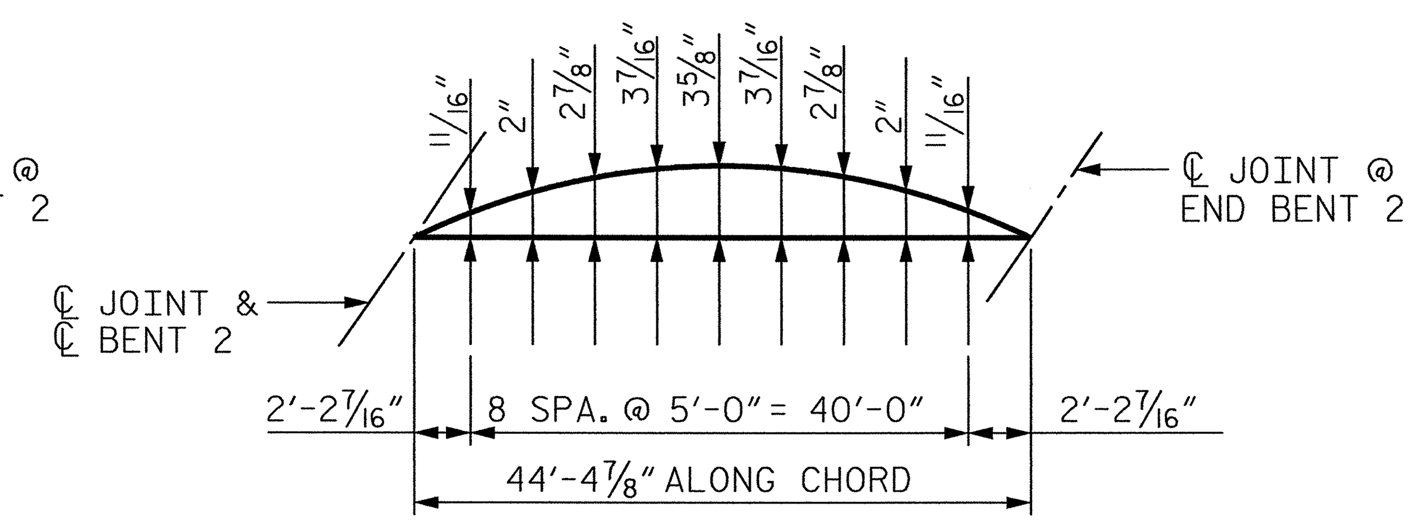
DETAIL "A"



PLAN OF SPAN C
* RADIAL DIMENSION



LEFT SIDE



RIGHT SIDE

ARC OFFSETS @ OUTSIDE EDGE

PROJECT NO. R-3622AA
CHEROKEE COUNTY
STATION: 54+89.84 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

PLAN OF SPAN C

WilburSmith ASSOCIATES — ENGINEERS PLANNERS ECONOMISTS
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

DRAWN BY: S. PEREZ, Jr. DATE: 9-06
CHECKED BY: T.M. HARRIS DATE: 3-08
DWG. No. 9

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS 3-28-08

REVISIONS						SHEET No. S-9
No.	BY:	DATE:	No.	BY:	DATE:	TOTAL SHEETS 36
1			3			
2			4			

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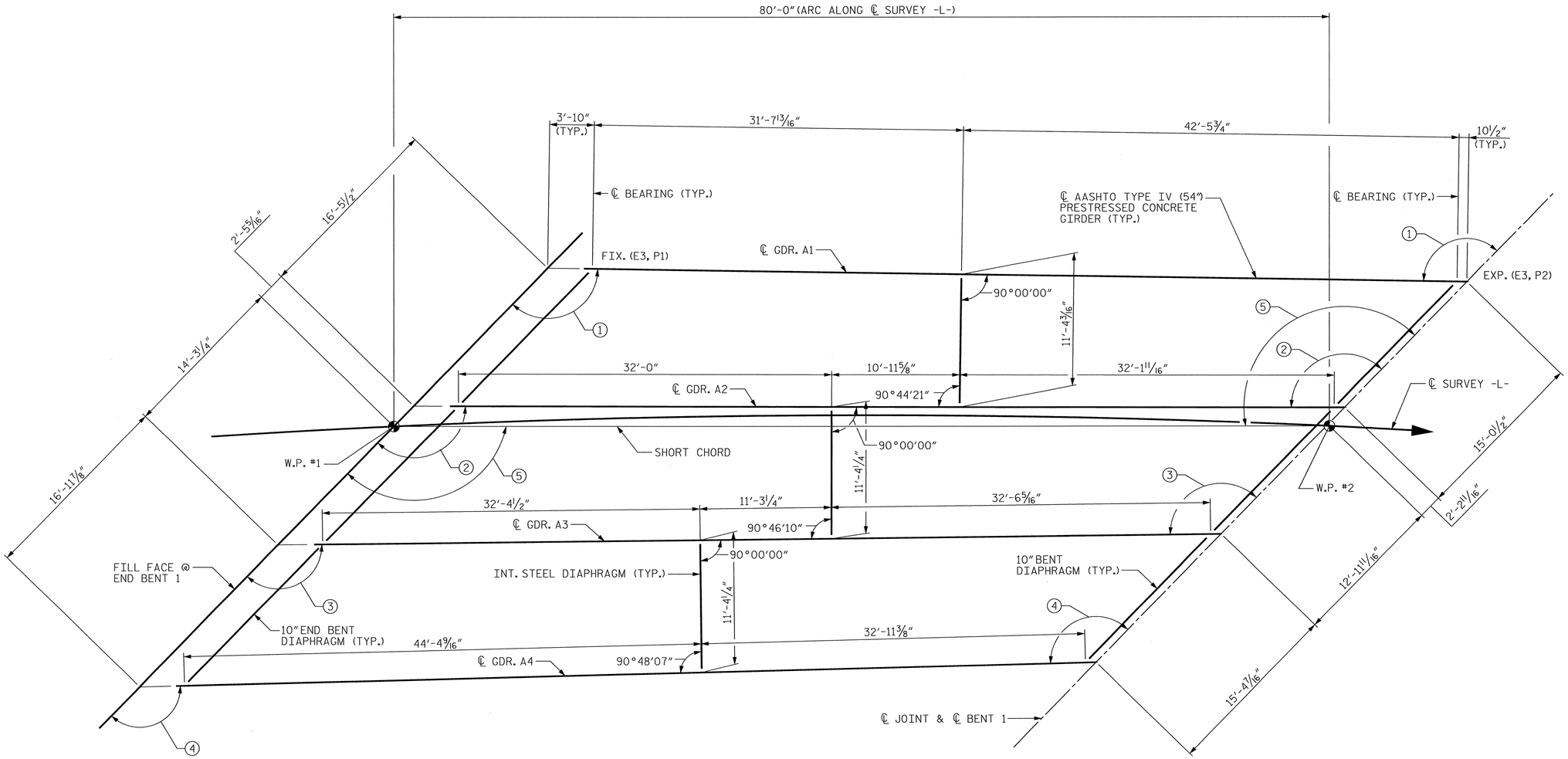
3/27/2008



ANGLES	
①	133°25'14"
②	134°09'35"
③	134°55'44"
④	135°43'52"
⑤	134°16'15"

FRAMING PLAN – SPAN A

PROJECT NO. R-3622AA

CHEROKEE COUNTY

STATION: 54+89.84 –L–

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

FRAMING PLAN
SPAN A

WilburSmith ASSOCIATES
ENGINEERS PLANNERS ECONOMISTS
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

DRAWN BY : S. PEREZ, Jr. DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08

DWG. No. 10

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
3-28-08

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			36

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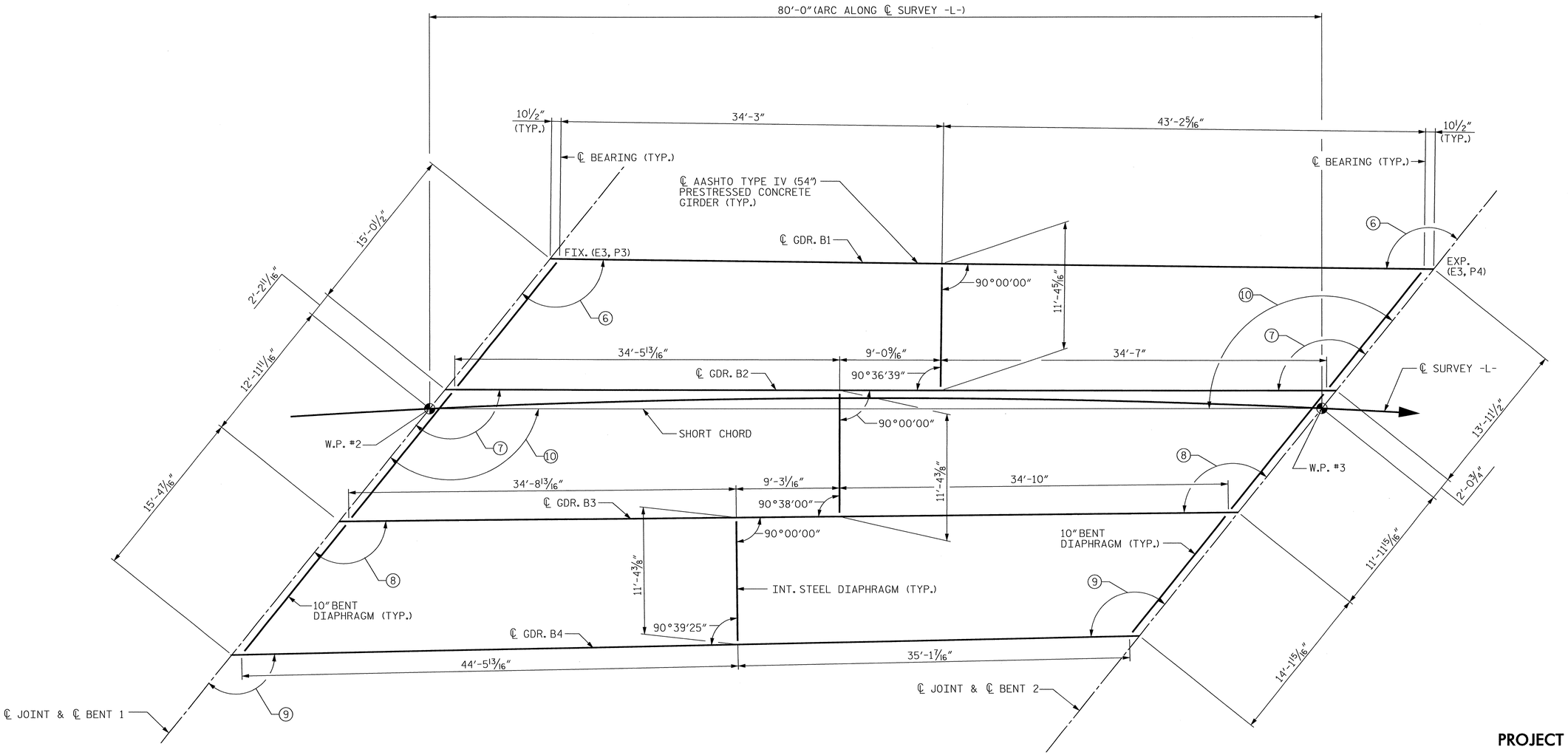
3/27/2008



FRAMING PLAN – SPAN B

ANGLES	
⑥	128°06'06"
⑦	128°42'45"
⑧	129°20'45"
⑨	130°00'10"
⑩	128°48'15"

PROJECT NO. R-3622AA

CHEROKEE COUNTY

STATION: 54+89.84 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

FRAMING PLAN
SPAN B

WilburSmith ASSOCIATES
ENGINEERS PLANNERS ECONOMISTS
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

DRAWN BY : S. PEREZ, Jr. DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08

DWG. No. 11

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
3-28-08

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			36

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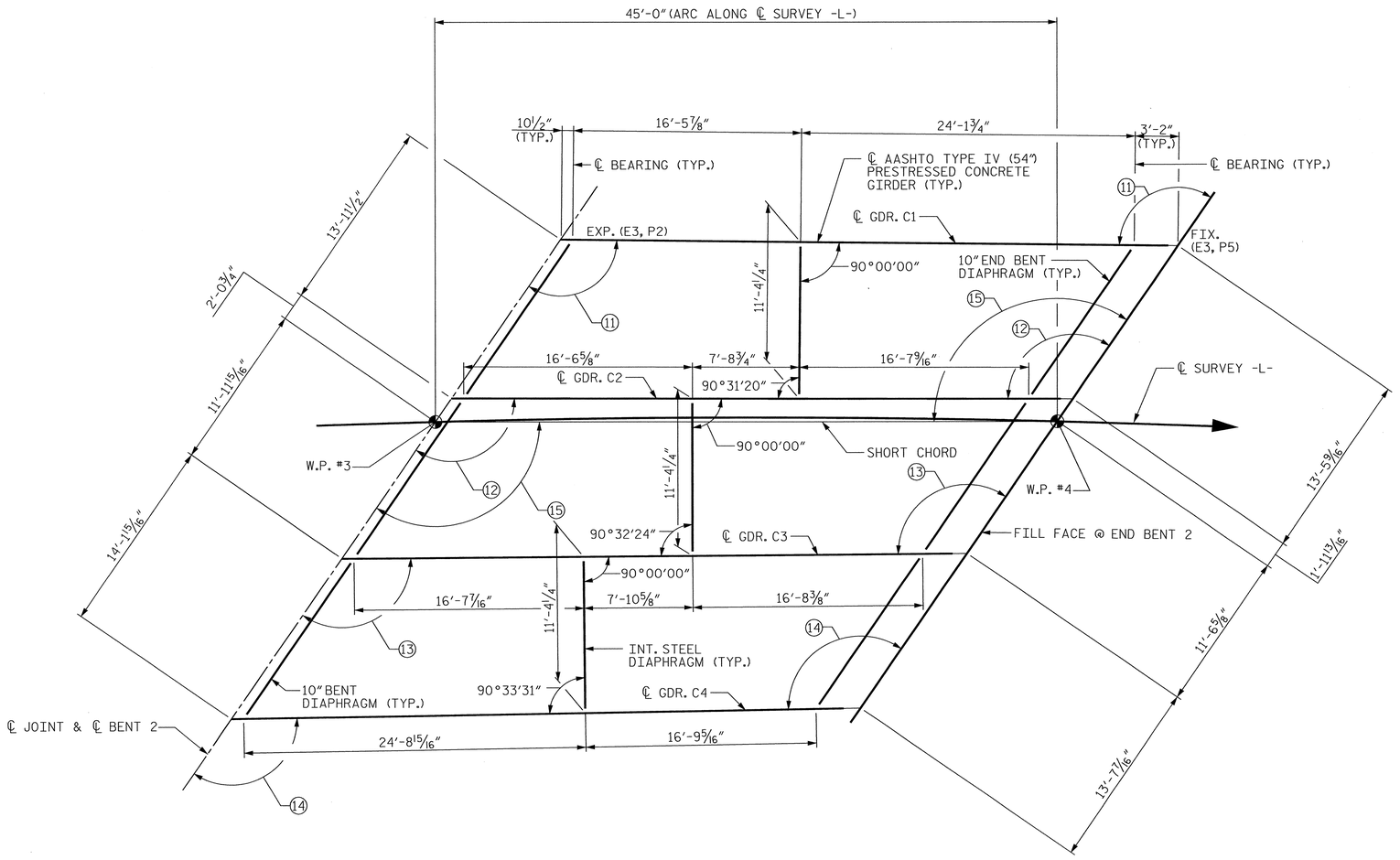
3/27/2008



FRAMING PLAN – SPAN C

ANGLES	
⑪	123°55'58"
⑫	124°27'18"
⑬	124°59'42"
⑭	125°33'13"
⑮	124°32'00"

PROJECT NO. R-3622AA

CHEROKEE COUNTY

STATION: 54+89.84 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

FRAMING PLAN
SPAN C

WilburSmith ASSOCIATES — ENGINEERS PLANNERS ECONOMISTS
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

DRAWN BY : S. PEREZ, Jr. DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08

DWG. No. 12

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
3-28-08

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			36

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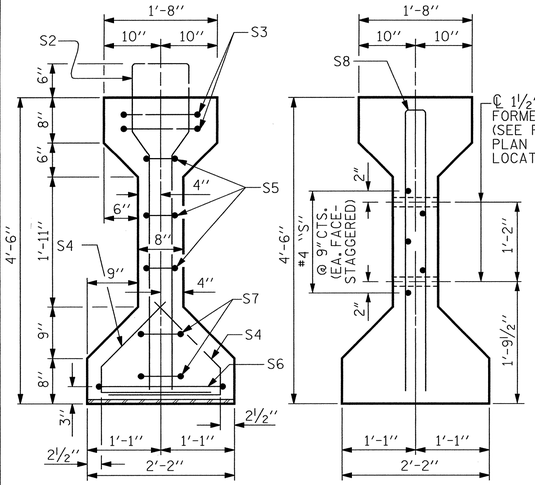
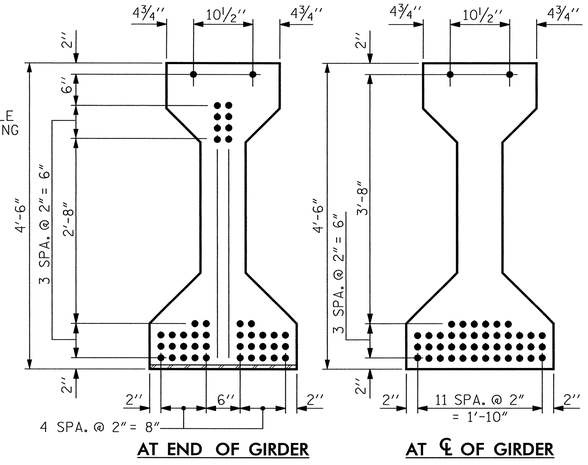
3/27/2008



SECTION A–A

SECTION C–C

(S1 BARS NOT SHOWN)



44 – ½"Ø LOW RELAXATION STRAND LAYOUT

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.

APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE SPECIFICATIONS.

BEVEL EDGES OF PLATE "B-1" TO GIVE CLOSE FIT BUT NOT TIGHT FIT TO STEEL CASTING FORM.

ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

ALL PRESTRESSED STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 5,000 PSI.

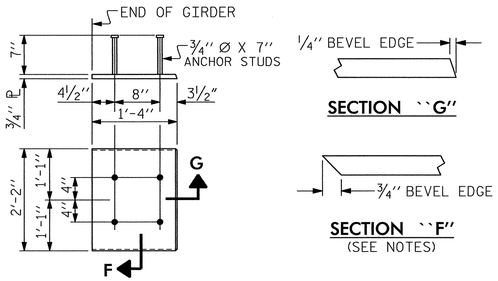
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER SHALL BE RAKED TO A DEPTH OF ¼" EXCEPT IN THE AREA BETWEEN THE STIRRUP AND THE EDGE OF THE GIRDER.

WHEN DRAPED STRANDS ARE DETAILED, THE LONGITUDINAL LOCATION OF THE HOLD DOWN DEVICES SHALL BE WITHIN 6" OF THE LOCATION SHOWN AND THE CENTER OF GRAVITY OF THE GROUP OF DRAPED STRANDS SHALL BE LOCATED WITHIN ½" OF THE THEORETICAL LOCATION SHOWN.

FOR CRACK REPAIR OF PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.

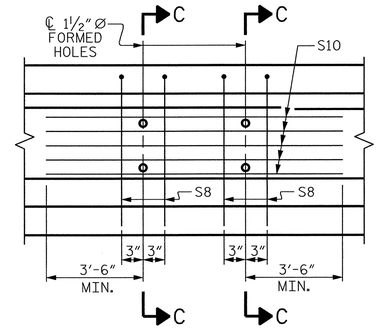
FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.



EMBEDDED PLATE "B–1" DETAILS

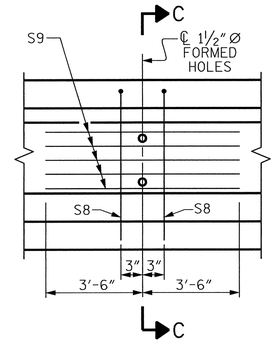
TWO EMBEDDED PLATES "B-1" ARE REQUIRED FOR EACH GIRDER.

GIRDER	A	B	C	D	E	REINFORCING STEEL (LBS)	6500 PSI CONCRETE (C.Y.)
A1	75'-6 9/16"	37'-9 1/4"	2 SPA. @ 1'-0"	1'-9 13/16"	27 SPA. @ 2'-0"	1096	15.3
A2	76'-6 5/16"	38'-3 3/16"	2 SPA. @ 1'-0"	1'-3 11/16"	28 SPA. @ 2'-0"	1164	15.5
A3	77'-7 1/16"	38'-9 9/16"	2 SPA. @ 1'-0"	1'-10 1/16"	28 SPA. @ 2'-0"	1164	15.8
A4	78'-8 15/16"	39'-4 7/16"	2 SPA. @ 1'-0"	1'-5"	29 SPA. @ 2'-0"	1118	16.0
B1	78'-10 5/16"	39'-5 3/16"	3 SPA. @ 1'-0"	1'-5 11/16"	28 SPA. @ 2'-0"	1129	16.0
B2	79'-6 3/8"	39'-9 3/16"	3 SPA. @ 1'-0"	1'-9 11/16"	28 SPA. @ 2'-0"	1186	16.1
B3	80'-3"	40'-1 1/2"	3 SPA. @ 1'-0"	1'-2"	29 SPA. @ 2'-0"	1197	16.3
B4	81'-0 1/4"	40'-6 1/8"	3 SPA. @ 1'-0"	1'-6 5/8"	29 SPA. @ 2'-0"	1140	16.4
TOTAL	628'-0 13/16"					9,194	127.4



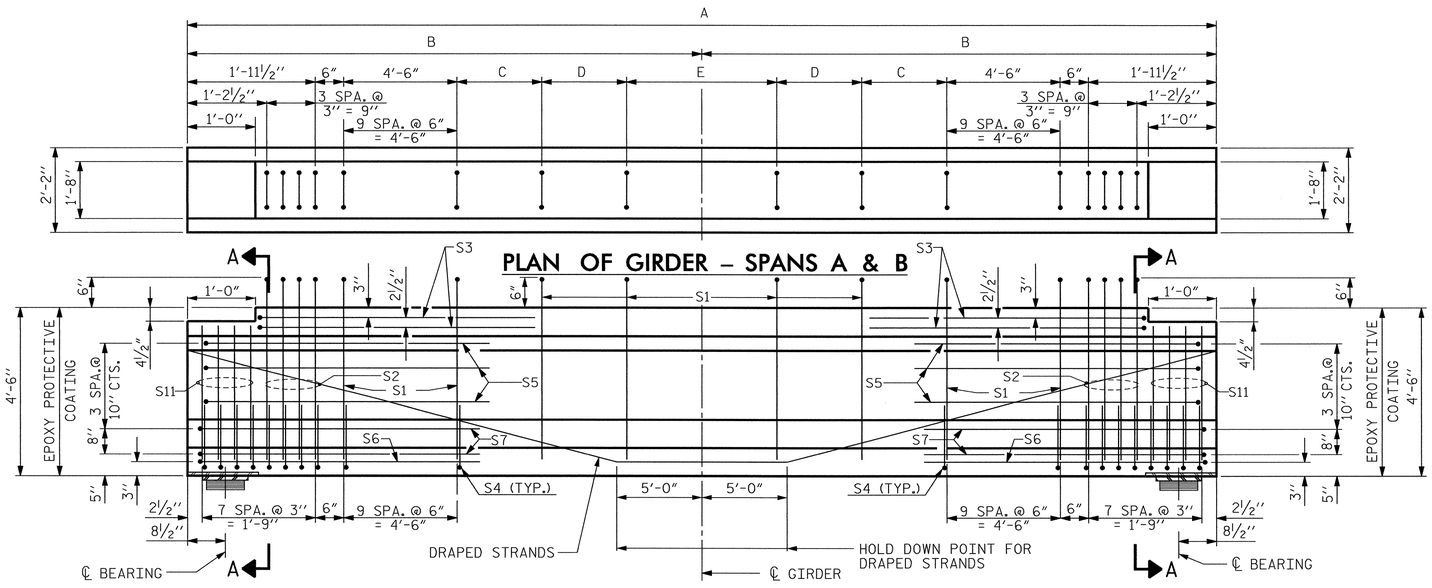
PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL FOR GIRDERS A2, A3, B2 & B3



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL FOR GIRDERS A1, A4, B1 & B4



PLAN OF GIRDER – SPANS A & B

ELEVATION OF GIRDER – SPANS A & B

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

NOTE: THE MAX. UPLIFT FORCE DUE TO DRAPED STRANDS IS 23.8 Kips.

½" Ø L. R. GRADE 270 STRANDS

AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.153	41,300	30,980

REINFORCING STEEL FOR ONE GIRDER

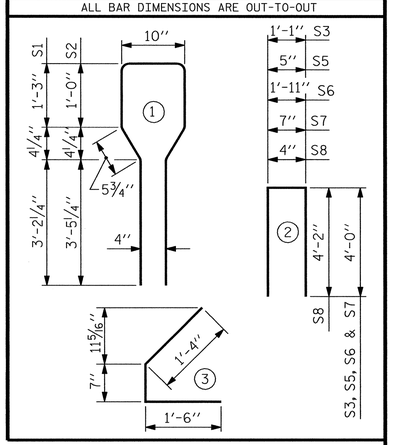
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	52	#5	1	10'-8"	579
S1	53	#5	1	10'-8"	590
S1	54	#5	1	10'-8"	601
S1	55	#5	1	10'-8"	612
S1	56	#5	1	10'-8"	623
S2	8	#6	1	10'-8"	128
S3	4	#4	2	9'-1"	24
S4	72	#4	3	3'-5"	164
S5	6	#4	2	8'-5"	34
S6	2	#4	2	9'-11"	13
S7	4	#4	2	8'-7"	23
S8	2	#5	2	8'-8"	18
S8	4	#5	2	8'-8"	36
S9	5	#4	STR.	7'-0"	23
S10	5	#4	STR.	18'-6"	62
S11	16	#6	STR.	3'-9"	90

GDR. A1
GDRS. A2 & A3
GDR. A4
GDRS. B1 & B2
GDRS. B3 & B4

GDRS. A1, A4, B1 & B4
GDRS. A2, A3, B2 & B3
GDRS. A1, A4, B1 & B4
GDRS. A2, A3, B2 & B3

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



PROJECT NO. R-3622AA

CHEROKEE COUNTY

STATION: 54+89.84 –L–

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

AASHTO TYPE IV PRESTRESSED CONCRETE GIRDER SPANS A & B

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			36

WilburSmith ASSOCIATES
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

DRAWN BY : S. PEREZ, Jr. DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08

DWG. No. 13

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
3-28-08

ASSEMBLED BY : S. PEREZ, Jr.	DATE : 9-06		
CHECKED BY : T.M. HARRIS	DATE : 3-08		
DRAWN BY : JMB 12/87	REV. 7/17/98	RWW/LES	
CHECKED BY : ARB 12/87	REV. 8/16/99RR	RWW/LES	
	REV. 5/1/06	TLA/GM	

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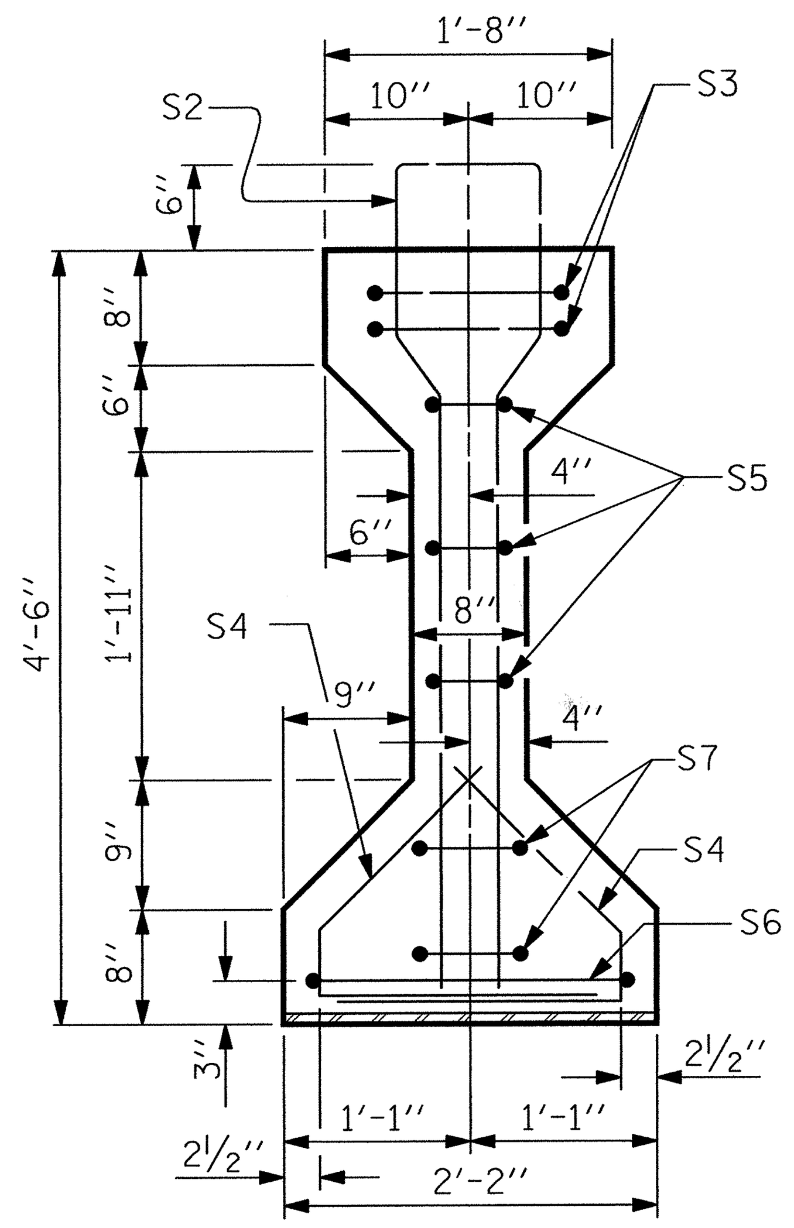
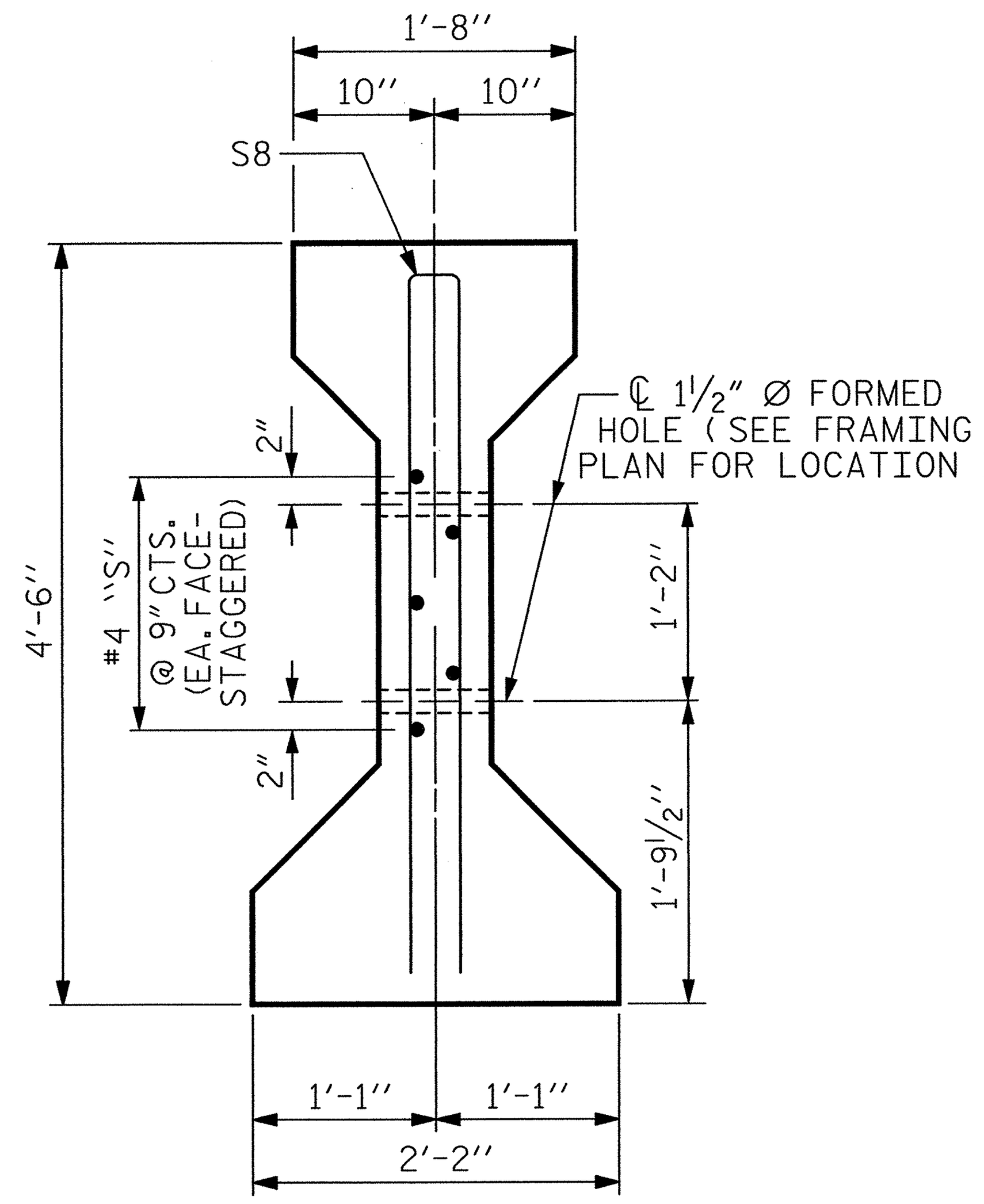
3/27/2008

STD.No.PCG3

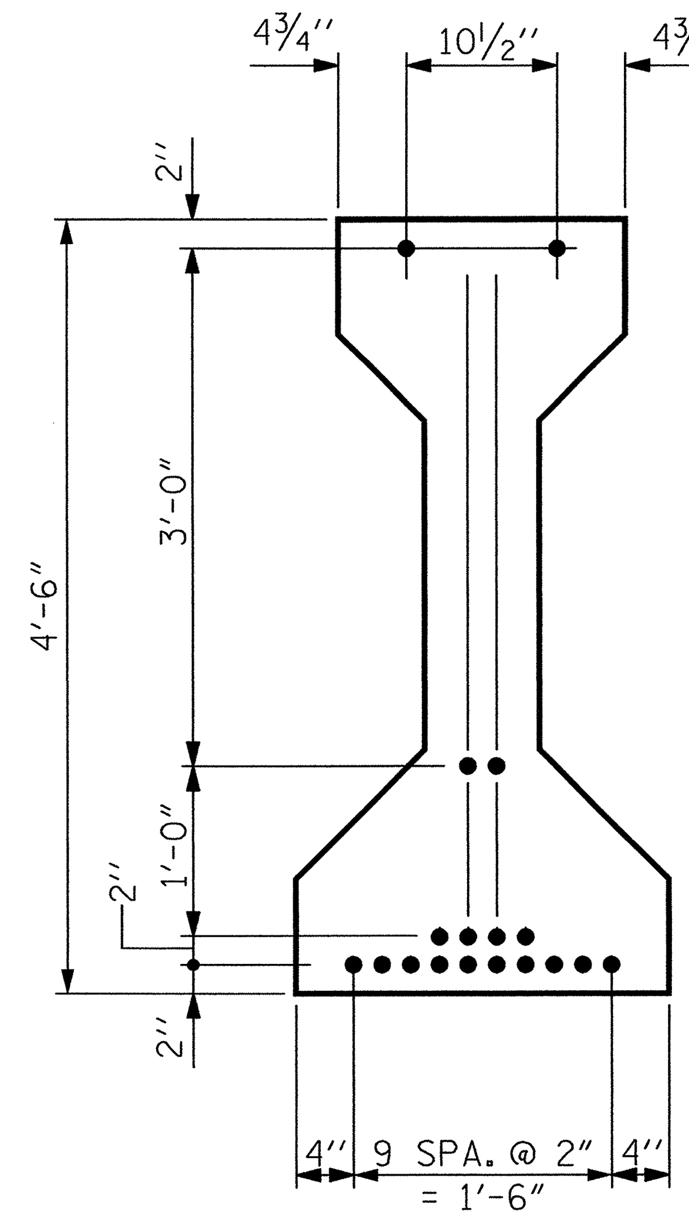


SECTION A–A



SECTION C–C

(S1 BARS NOT SHOWN)



18 – ½" Ø LOW RELAXATION STRAND LAYOUT

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.

APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE SPECIFICATIONS.

BEVEL EDGES OF PLATE "B-1" TO GIVE CLOSE FIT BUT NOT TIGHT FIT TO STEEL CASTING FORM.

ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

ALL PRESTRESSED STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4,000 PSI.

DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER SHALL BE RAKED TO A DEPTH OF ¼" EXCEPT IN THE AREA BETWEEN THE STIRRUP AND THE EDGE OF THE GIRDER.

FOR CRACK REPAIR OF PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

½" Ø L. R. GRADE 270 STRANDS

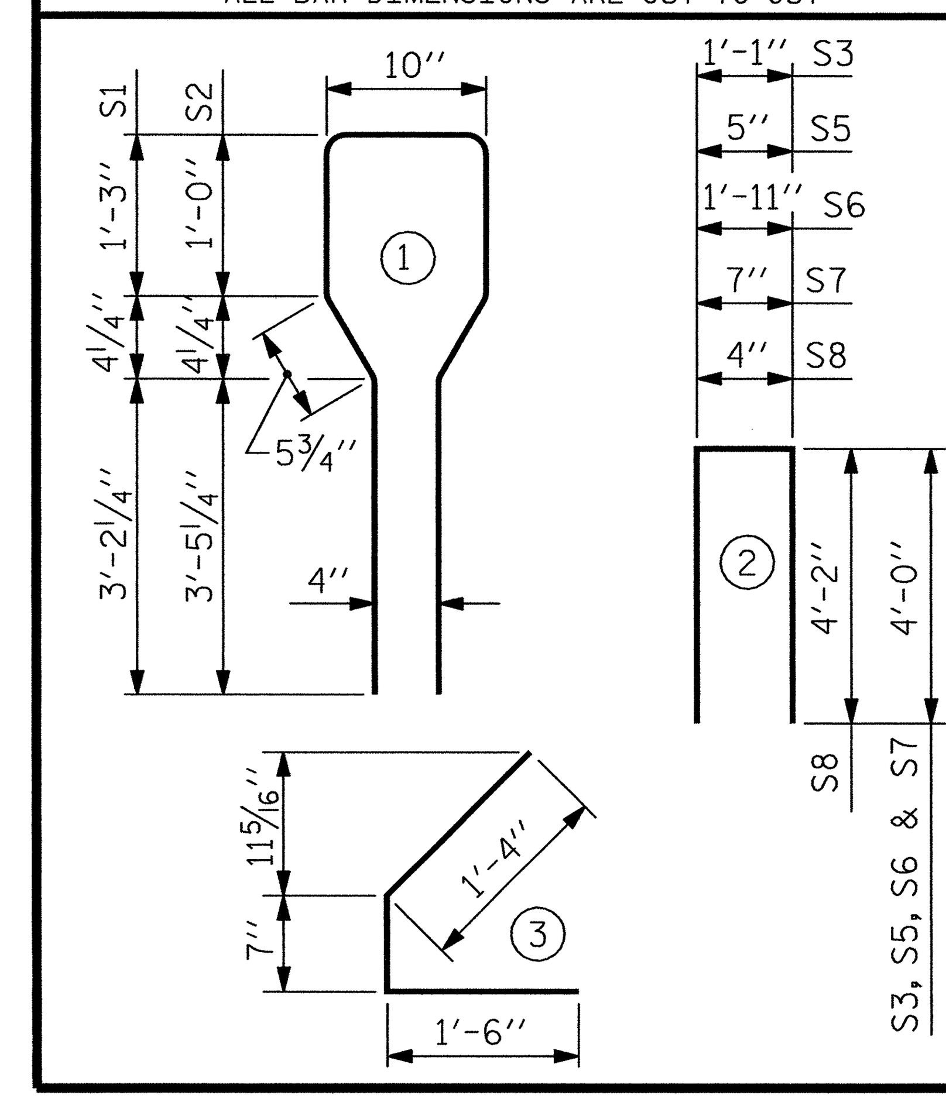
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.153	41,300	30,980

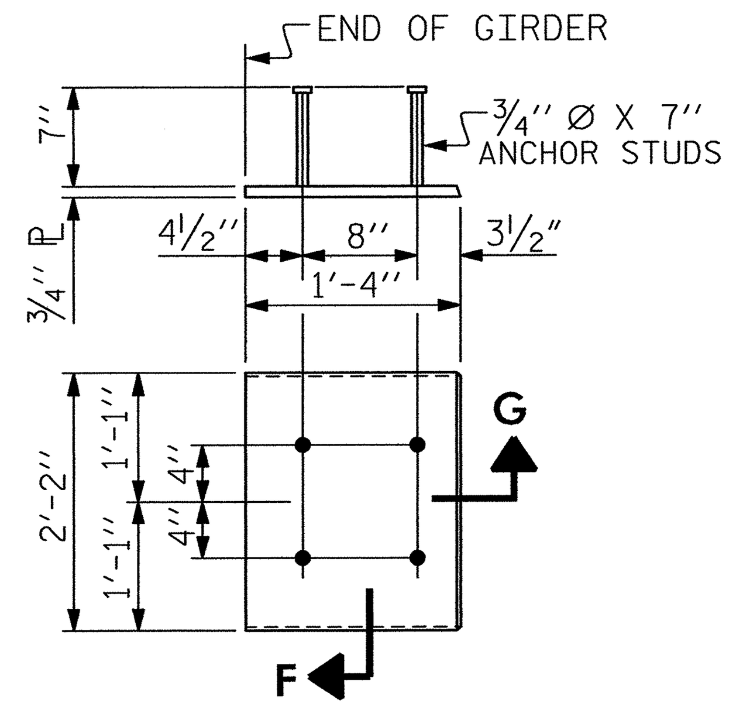
REINFORCING STEEL FOR ONE GIRDER

	BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
	S1	36	#4	1	10'-8"	257
	S2	6	#6	1	10'-8"	96
	S3	4	#4	2	9'-1"	24
	S4	64	#4	3	3'-5"	146
	S5	6	#4	2	8'-5"	34
	S6	2	#4	2	9'-11"	13
	S7	4	#4	2	8'-7"	23
GDRS. C1 & C4	S8	2	#5	2	8'-8"	18
GDRS. C2 & C3	S8	4	#5	2	8'-8"	36
GDRS. C1 & C4	S9	5	#4	STR.	7'-0"	23
GDRS. C2 & C3	S10	5	#4	STR.	18'-6"	62
	S11	12	#6	STR.	3'-9"	68

BAR TYPES

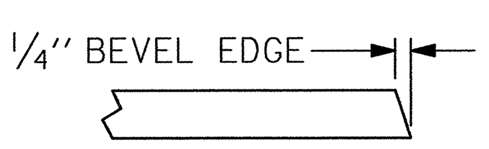
ALL BAR DIMENSIONS ARE OUT-TO-OUT



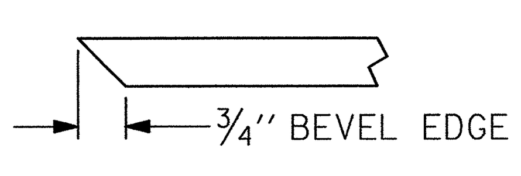


EMBEDDED PLATE "B-1" DETAILS

TWO EMBEDDED PLATES "B-1" ARE REQUIRED FOR EACH GIRDER.



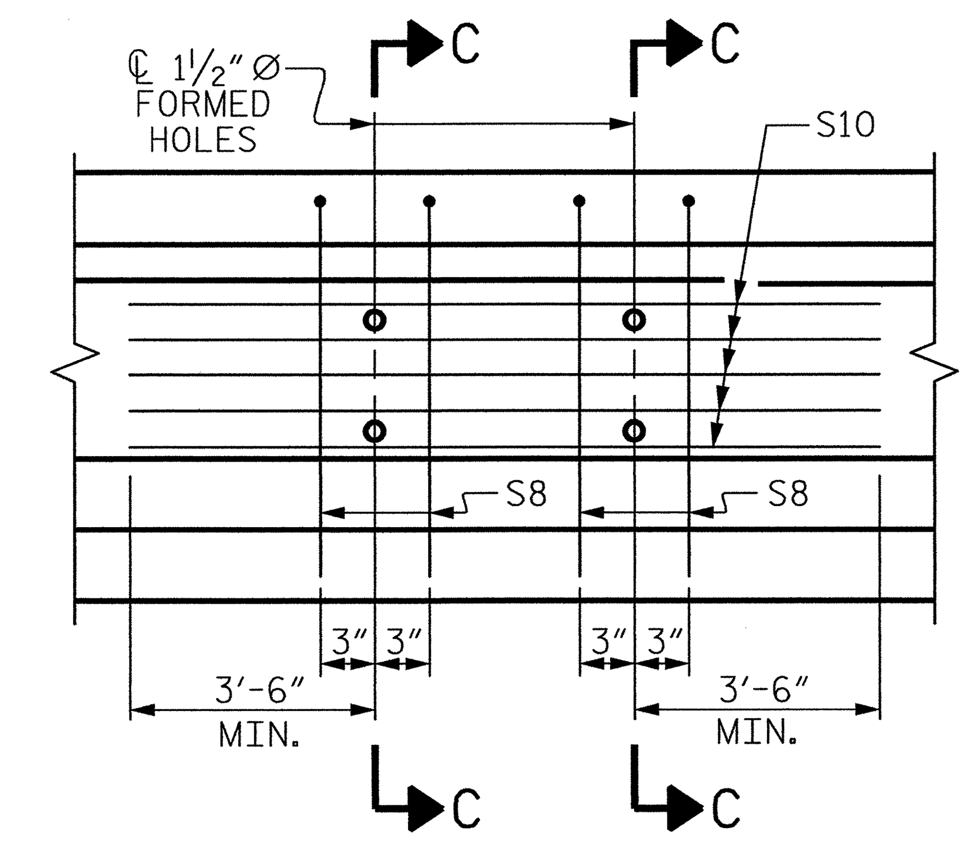
SECTION "G"



SECTION "F"

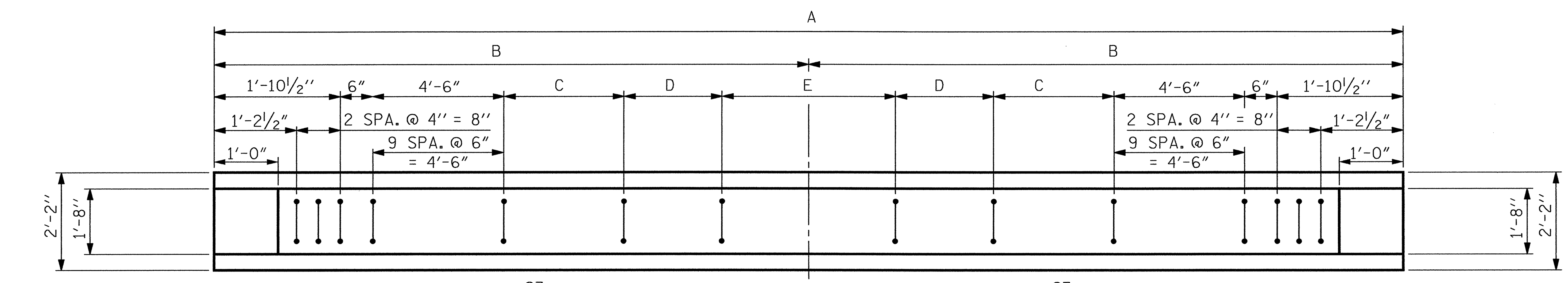
(SEE NOTES)

GIRDER	A	B	C	D	E	REINFORCING STEEL (LBS)	5000 PSI CONCRETE (C.Y.)
C1	42'-0⅝"	21'-0⁵⁄₁₆"	2 SPA. @ 1'-0"	1'-1¹³⁄₁₆"	11 SPA. @ 2'-0"	702	8.5
C2	42'-3¹⁵⁄₁₆"	21'-1¹⁵⁄₁₆"	2 SPA. @ 1'-0"	1'-3½"	11 SPA. @ 2'-0"	759	8.6
C3	42'-7⁷⁄₁₆"	21'-3¾"	2 SPA. @ 1'-0"	1'-5¼"	11 SPA. @ 2'-0"	759	8.7
C4	42'-11¼"	21'-5⅝"	2 SPA. @ 1'-0"	1'-7⅛"	11 SPA. @ 2'-0"	702	8.7
TOTAL	169'-11¼"					2,922	34.5

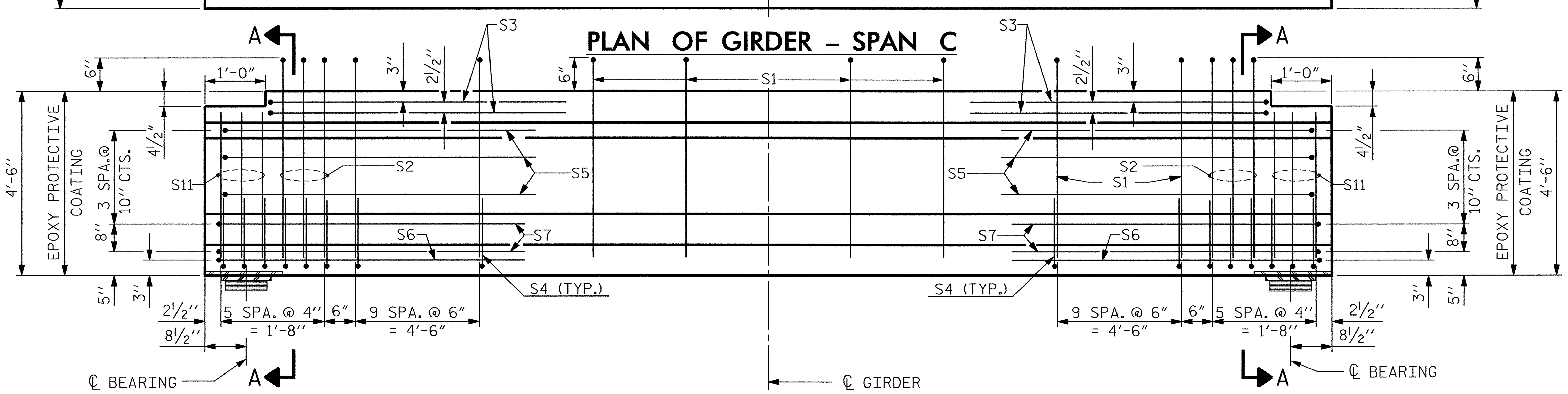


PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDERS C2 & C3

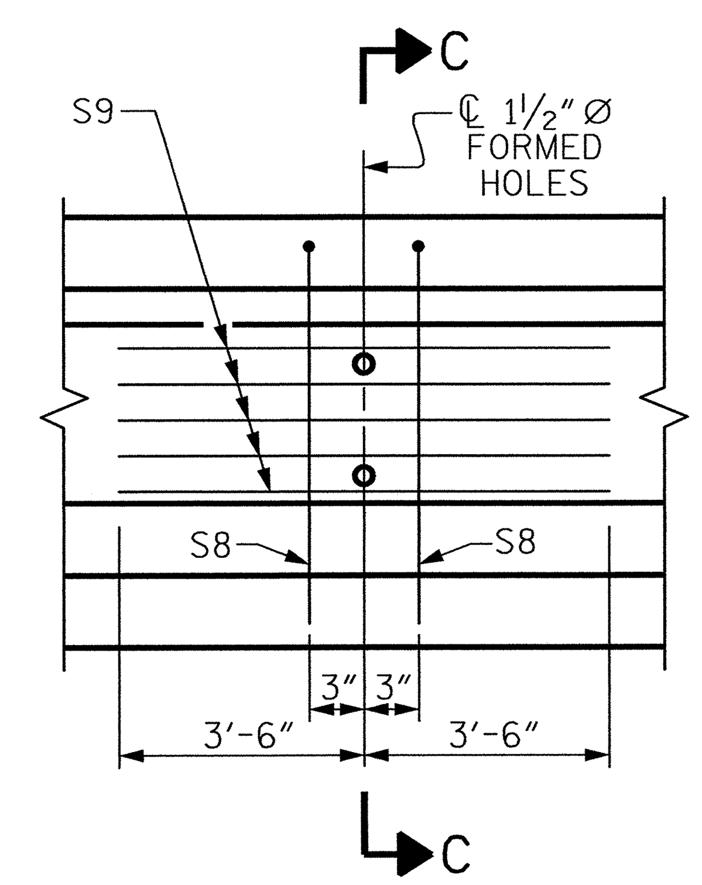


PLAN OF GIRDER – SPAN C



ELEVATION OF GIRDER – SPAN C

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDERS C1 & C4

PROJECT NO. R-3622AA

CHEROKEE COUNTY

STATION: 54+89.84 -L-

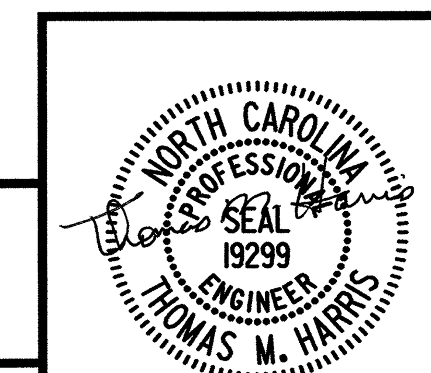
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

AASHTO TYPE IV PRESTRESSED CONCRETE GIRDER SPAN C

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			36



WilburSmith ASSOCIATES — ENGINEERS PLANNERS ECONOMISTS

421 Fayetteville Street
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DRAWN BY : S. PEREZ, Jr.	DATE : 9-06	DWG. No.
CHECKED BY : T.M. HARRIS	DATE : 3-08	14

ASSEMBLED BY : S. PEREZ, Jr.	DATE : 9-06
CHECKED BY : T.M. HARRIS	DATE : 3-08

DRAWN BY : JMB 12/87	REV. 7/17/98 RWW/LES
CHECKED BY : ARB 12/87	REV. 8/16/99RR RWW/LES
	REV. 5/1/06 TLA/GM

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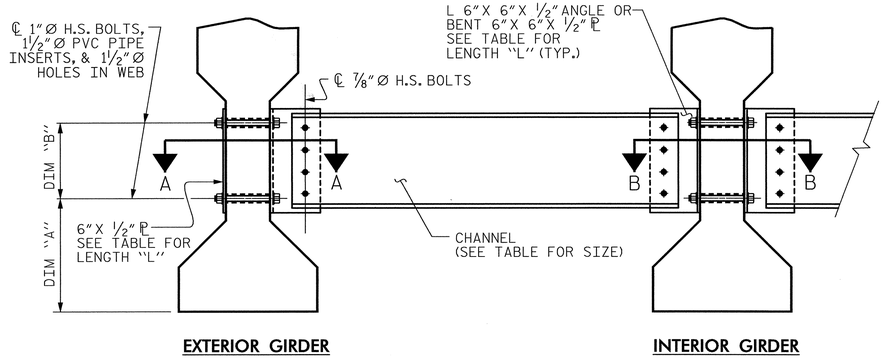
3/27/2008

STD.No.PCG3

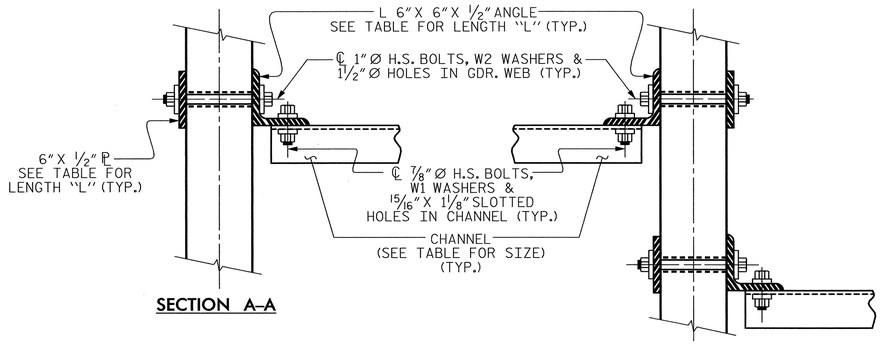


EXTERIOR GIRDER

INTERIOR GIRDER

PART SECTION AT INTERMEDIATE DIAPHRAGM

(TYPE III OR TYPE IV GIRDER SHOWN)

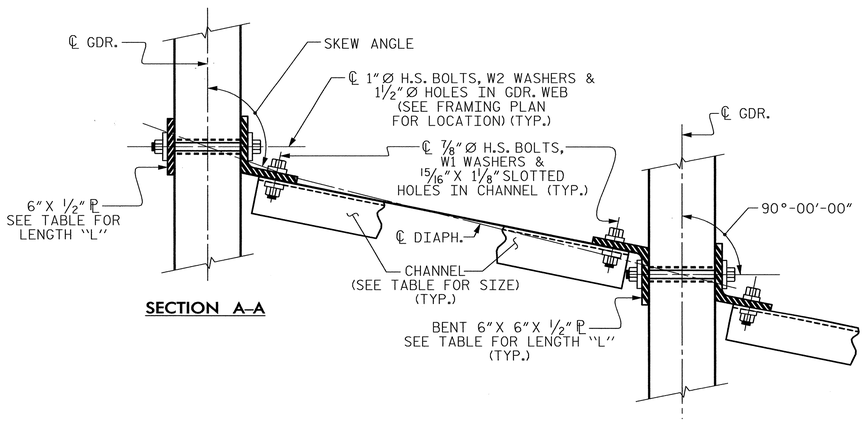


SECTION A–A

SECTION B–B

CONNECTION DETAILS

(FOR SKEW < 70° OR SKEW > 110°)



SECTION A–A

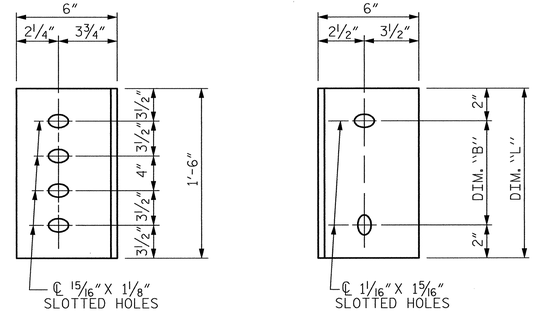
SECTION B–B

CONNECTION DETAILS

(FOR 70°≤ SKEW < 90° OR 90°< SKEW ≤ 110°)

TABLE

GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
IV	MC 18 x 42.7	1'-9½"	1'-2"	1'-6"



DIAPHRAGM FACE
(TYPE III OR TYPE IV GDR.)

WEB FACE

CONNECTION PLATE DETAILS

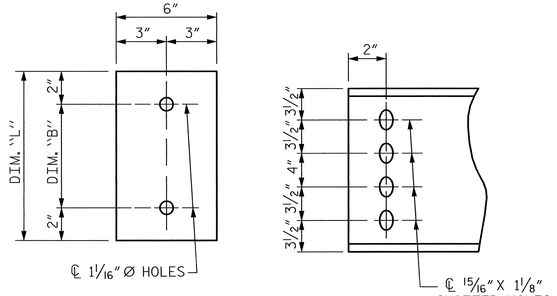
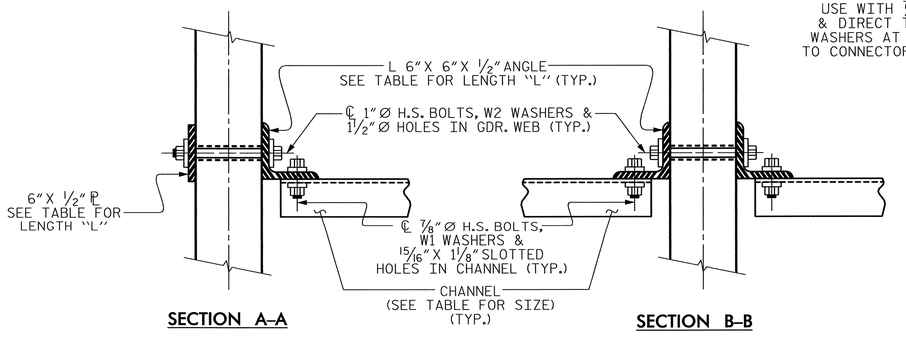


PLATE DETAILS

CHANNEL END
(TYPE III OR TYPE IV GDR.)



SECTION A–A

SECTION B–B

CONNECTION DETAILS

(FOR SKEW = 90°)

STRUCTURAL STEEL NOTES

ALL INTERMEDIATE DIAPHRAGM STEEL, CONNECTOR PLATES AND PLATE WASHERS SHALL BE AASHTO M270 GRADE 50 OR APPROVED EQUAL.

TENSION ON THE AASHTO M164 BOLTS THROUGH THE CHANNEL MEMBER SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-8 OF THE STANDARD SPECIFICATIONS.

TENSION ON THE AASHTO M164 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL ¼ TURN.

THE CHANNELS, ANGLES, WASHERS, PLATE WASHERS, AND DIRECT TENSION INDICATORS SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

FOR METALLIZATION, APPLY AN 8 MIL THICK 99.99 PERCENT ZINC (W-Zn-1) THERMAL SPRAYED COATING WITH A 0.5 MIL THICK SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE THERMAL SPRAYED COATINGS SPECIAL PROVISIONS AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

GALVANIZE THE HIGH STRENGTH BOLTS, NUTS, AND WASHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.

USE A MINIMUM 7/16" THICK PLATE WASHER WITH STANDARD HOLES UNDER EACH BOLT HEAD AND NUT. THE PLATE WASHERS SHALL HAVE SUFFICIENT SIZE TO COVER THE HOLES AFTER INSTALLATION. DIRECT TENSION INDICATORS ARE TO BE USED IN CONJUNCTION WITH THE PLATE WASHERS.

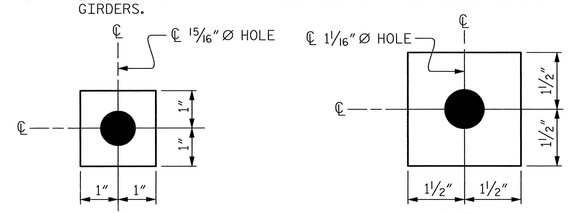
PROVIDE SUFFICIENT LENGTH OF ALL BOLTS TO ACCOMMODATE WASHERS, DIRECT TENSION INDICATORS, THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST ¼" PROJECTION BEYOND THE NUT.

INTERMEDIATE DIAPHRAGM ASSEMBLY SHALL COMPLY WITH SECTION 1072 OF THE STANDARD SPECIFICATIONS.

CONTRACTOR SHALL SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

IN THE EXTERIOR BAYS, TEMPORARY STRUTS SHALL BE PLACED BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED. ALL AASHTO M164 H.S. BOLTS SHALL BE FULLY TIGHTENED AFTER THE STRUTS HAVE BEEN REMOVED.

THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.



W1

℄ 7/16"X 2"X 2"

USE WITH ⅞"Ø HVY. HEX NUTS & DIRECT TENSION INDICATOR WASHERS AT DIAPHRAGM CHANNEL TO CONNECTOR PLATE CONNECTIONS

W2

℄ 7/16"X 3"X 3"

USE WITH 1"Ø HVY. HEX NUTS AT CONNECTOR PLATE TO GIRDER CONNECTIONS

WASHER DETAILS

PROJECT NO. R-3622AA

CHEROKEE COUNTY

STATION: 54+89.84 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE II, III, & IV PRESTRESSED CONCRETE GIRDERS

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			36

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DRAWN BY : S. PEREZ, Jr. DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08

DWG. No. 15

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
3-28-08

ASSEMBLED BY : S.PEREZ, Jr. DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08

DRAWN BY : TLA 6/05
CHECKED BY : VC 6/05

ADDED 10/21/05
REV. 5/1/06 TLA/GM

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3/27/2008

STD.No.PCG12

NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF ½ TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

THE 2″ Ø PIPE SLEEVE SHALL BE CUT FROM SCHEDULE 40 PVC PLASTIC PIPE. THE PVC PLASTIC PIPE SHALL MEET THE REQUIREMENTS OF ASTM D1785.

STEEL SOLE PLATES, ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

PRIOR TO WELDING, GRIND THE GALVANIZED SURFACE OF THE PORTION OF THE EMBEDDED PLATE AND SOLE PLATE THAT ARE TO BE WELDED. AFTER WELDING, DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

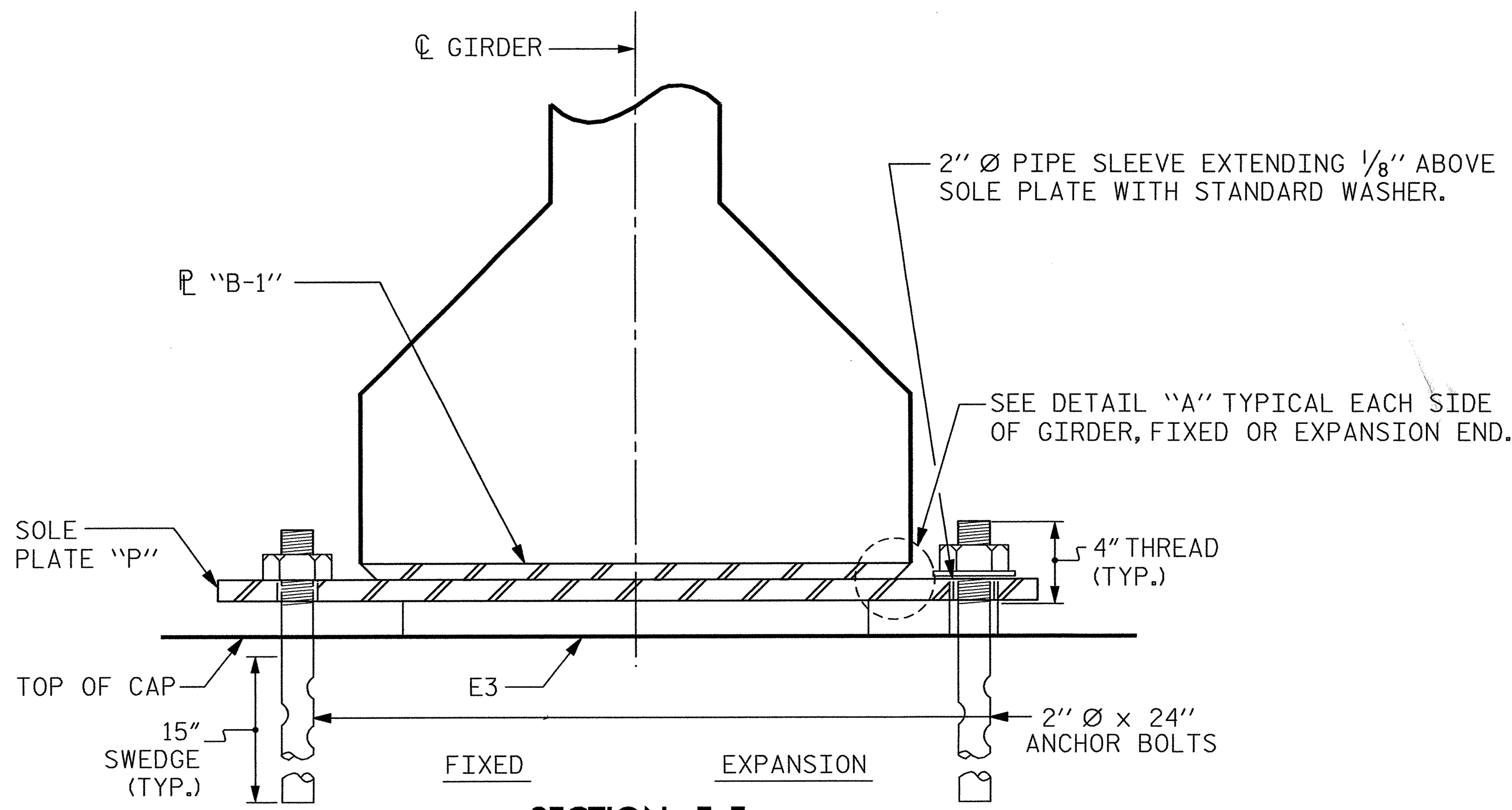
WHEN WELDING THE SOLE PLATE TO THE EMBEDDED PLATE IN THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

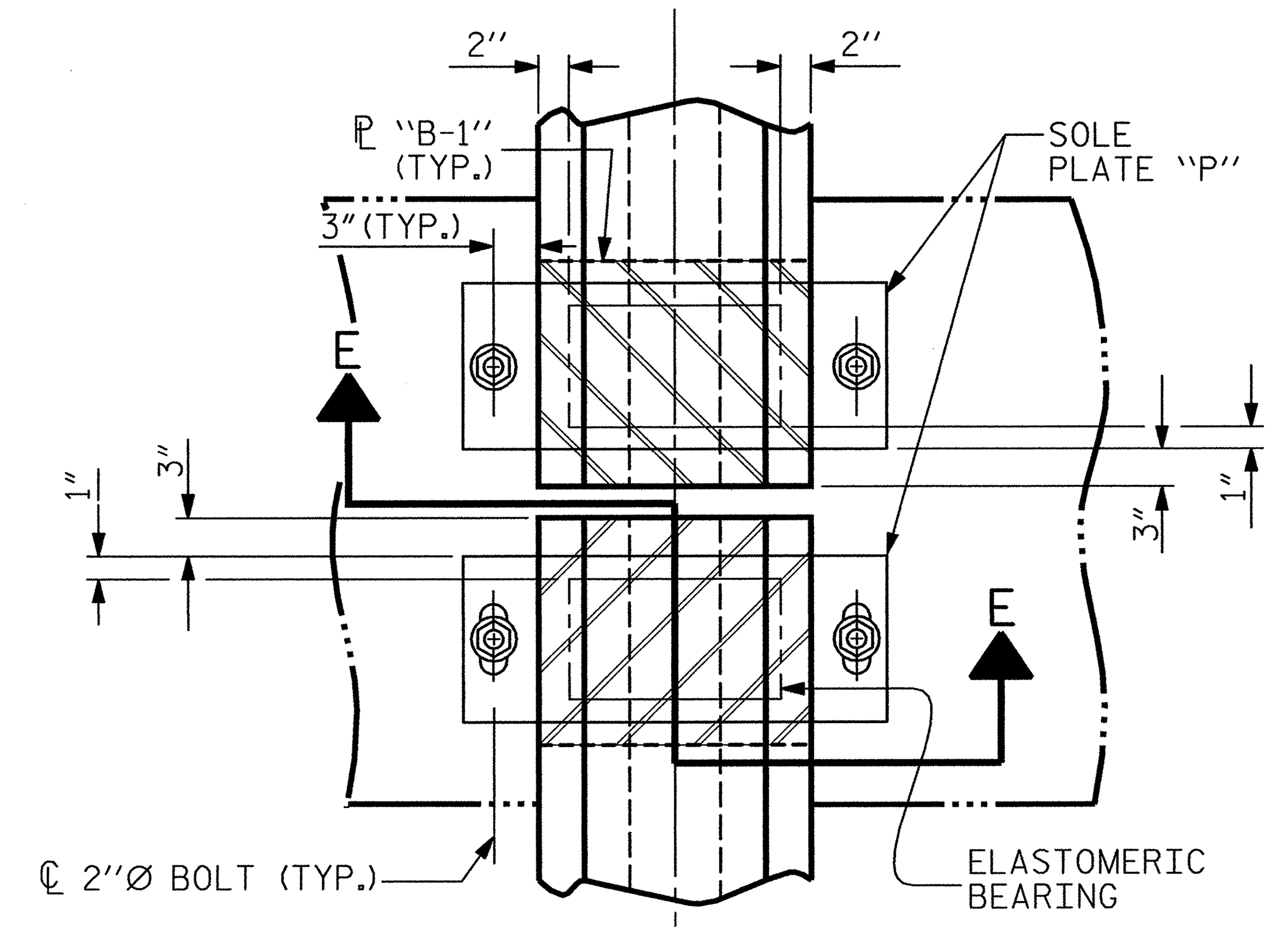
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

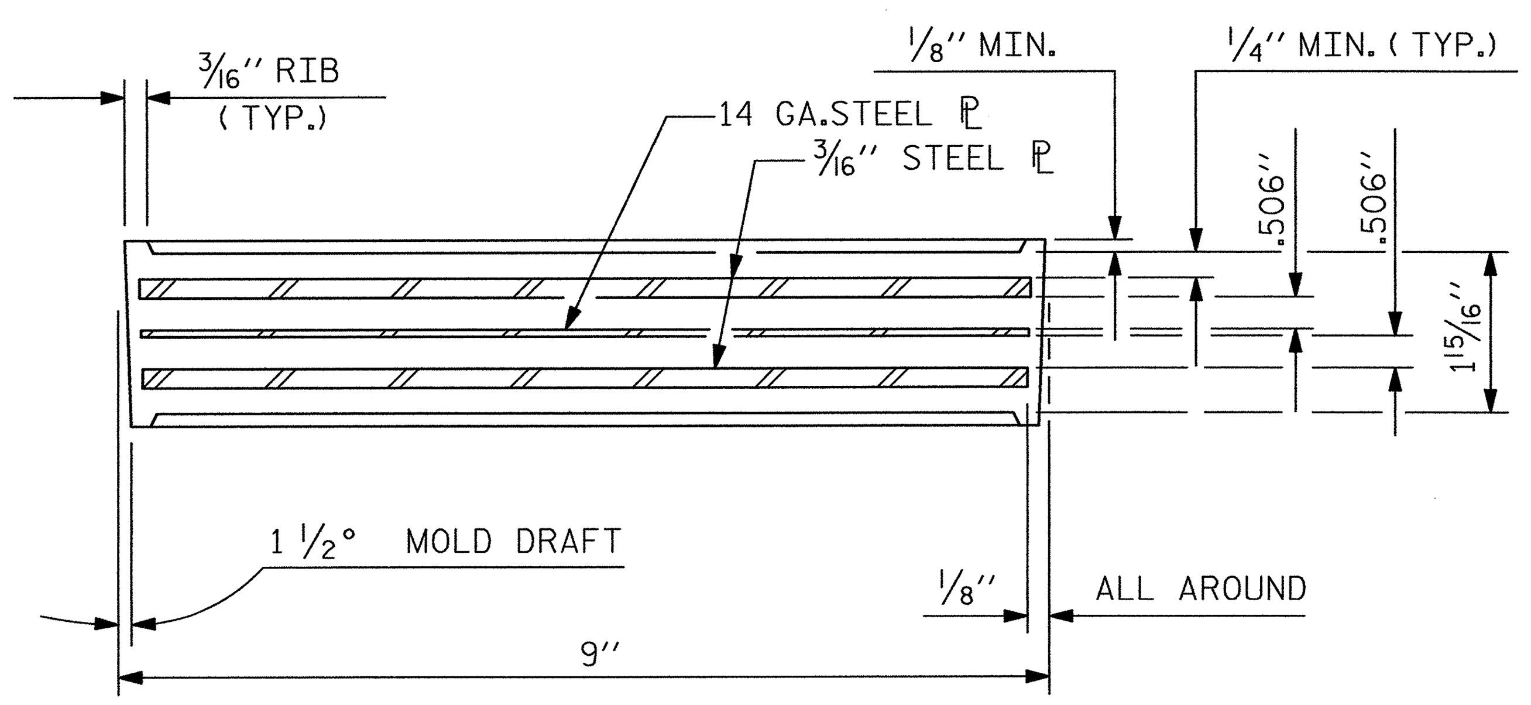
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.



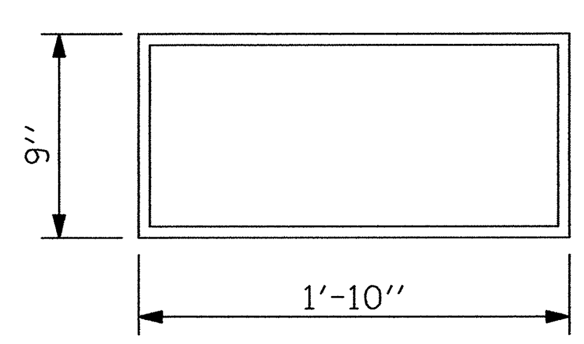
SECTION E–E



PLAN



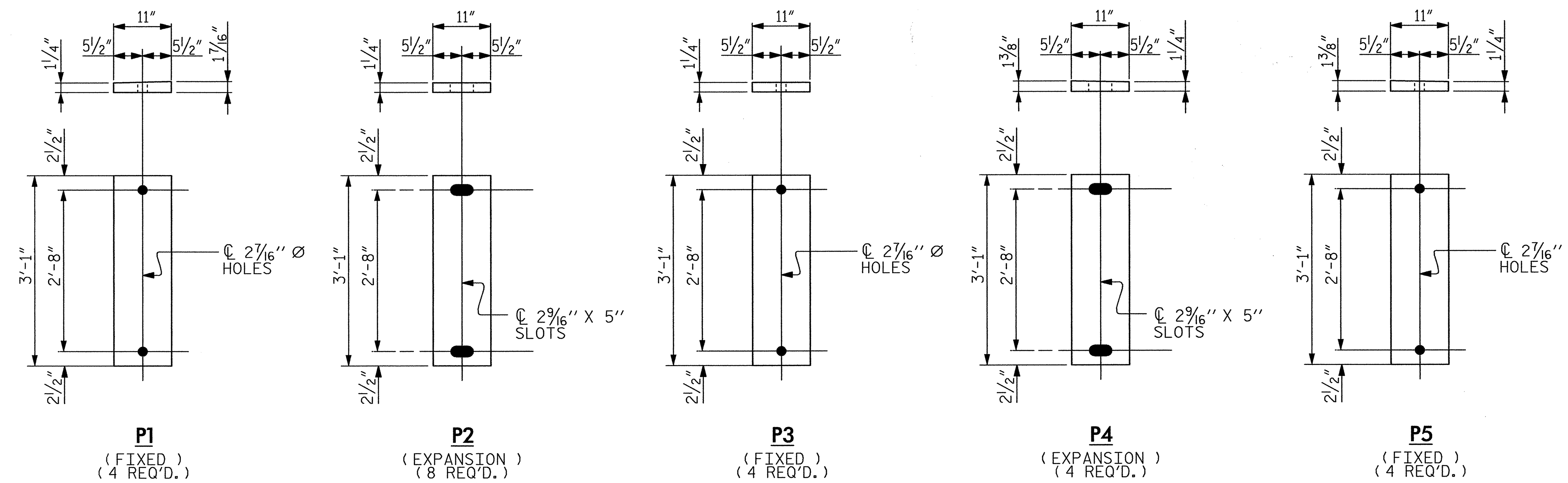
TYPICAL SECTION OF ELASTOMERIC BEARINGS



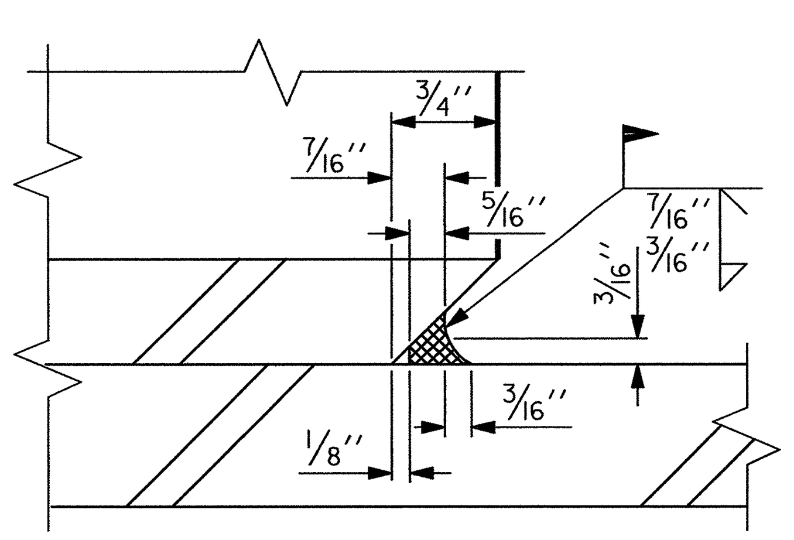
E3 (24 REQ'D.)

PLAN VIEW OF ELASTOMERIC BEARING

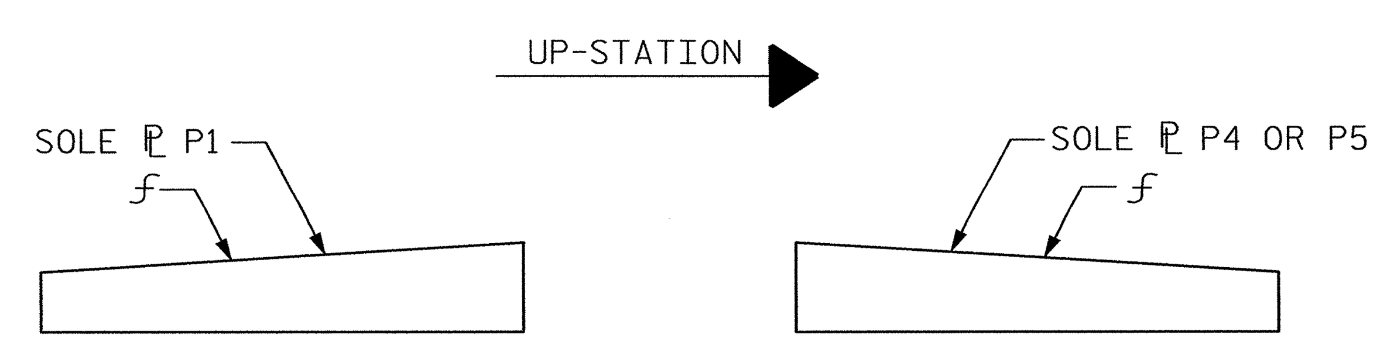
TYPE IV



SOLE PLATE DETAILS ("P")



DETAIL "A"



SOLE PLATE PLACEMENT DETAILS

— LOAD RATINGS —	
	MAX.D.L.+L.L.
54″PCG -TYPE IV	194 K

PROJECT NO. R–3622AA

CHEROKEE COUNTY

STATION: 54+89.84 –L–

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

ELASTOMERIC BEARING DETAILS

PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			36

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19299 THOMAS M. HARRIS 3-28-08

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CHECKED BY : T.M. HARRIS DATE : 3-08
DWG. No. 16

ASSEMBLED BY : S.PEREZ Jr. DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08

DRAWN BY : WJH 8/89 | REV. 10/17/00 RWW/LES
CHECKED BY : CRK 8/89 | REV. 7/10/01 RWW/LES
REV. 5/1/06 TLA/GM

STD.NO.EB3

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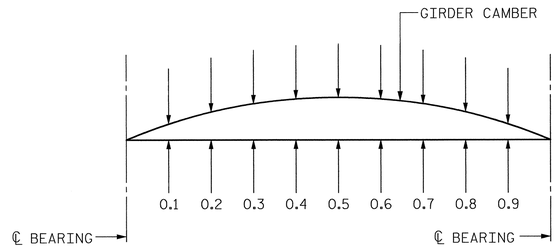
3/27/2008



GIRDER CAMBER AND DEFLECTIONS

CAMBER AND DEAD LOAD DEFLECTIONS

	SPAN A											SPAN B											SPAN C										
GIRDERS 1 & 4	℄ BRG.	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	℄ BRG.	℄ BRG.	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	℄ BRG.	℄ BRG.	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	℄ BRG.
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.086	0.154	0.203	0.233	0.244	0.233	0.203	0.154	0.086	0.000	0.000	0.086	0.154	0.203	0.233	0.244	0.233	0.203	0.154	0.086	0.000	0.000	0.014	0.025	0.032	0.036	0.038	0.036	0.032	0.025	0.014	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L.* ↓	0.000	-0.023	-0.046	-0.064	-0.075	-0.079	-0.075	-0.064	-0.046	-0.023	0.000	0.000	-0.023	-0.046	-0.064	-0.075	-0.079	-0.075	-0.064	-0.046	-0.023	0.000	0.000	-0.0002	-0.0004	-0.0005	-0.0006	-0.0007	-0.0006	-0.0005	-0.0004	-0.0002	0.000
FINAL CAMBER ↑	0	3/4"	1 5/16"	1 11/16"	1 7/8"	2"	1 7/8"	1 11/16"	1 5/16"	3/4"	0	0	3/4"	1 5/16"	1 11/16"	1 7/8"	2"	1 7/8"	1 11/16"	1 5/16"	3/4"	0	0	1/8"	1/4"	5/16"	3/8"	3/8"	3/8"	5/16"	1/4"	1/8"	0.000
GIRDERS 2 & 3	℄ BRG.	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	℄ BRG.	℄ BRG.	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	℄ BRG.	℄ BRG.	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	℄ BRG.
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.085	0.152	0.201	0.231	0.241	0.231	0.201	0.152	0.085	0.000	0.000	0.085	0.152	0.201	0.231	0.241	0.231	0.201	0.152	0.085	0.000	0.000	0.014	0.024	0.032	0.036	0.037	0.036	0.032	0.024	0.014	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L.* ↓	0.000	-0.026	-0.052	-0.073	-0.086	-0.090	-0.086	-0.073	-0.052	-0.026	0.000	0.000	-0.026	-0.052	-0.073	-0.086	-0.090	-0.086	-0.073	-0.052	-0.026	0.000	0.000	-0.0002	-0.0004	-0.0006	-0.0007	-0.0008	-0.0007	-0.0006	-0.0004	-0.0002	0.000
FINAL CAMBER ↑	0	11/16"	1 3/16"	1 1/2"	1 3/4"	1 13/16"	1 3/4"	1 1/2"	1 3/16"	11/16"	0	0	11/16"	1 3/16"	1 1/2"	1 3/4"	1 13/16"	1 3/4"	1 1/2"	1 3/16"	11/16"	0	0	1/8"	1/4"	5/16"	5/16"	3/8"	5/16"	5/16"	1/4"	1/8"	0

* INCLUDES FUTURE WEARING SURFACE

ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

PROJECT NO. R-3622AA

CHEROKEE COUNTY

STATION: 54+89.84 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CAMBER AND DEAD LOAD DEFLECTIONS

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DRAWN BY : S. PEREZ, Jr. DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08

DWG. No. 17

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
3-28-08

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			36

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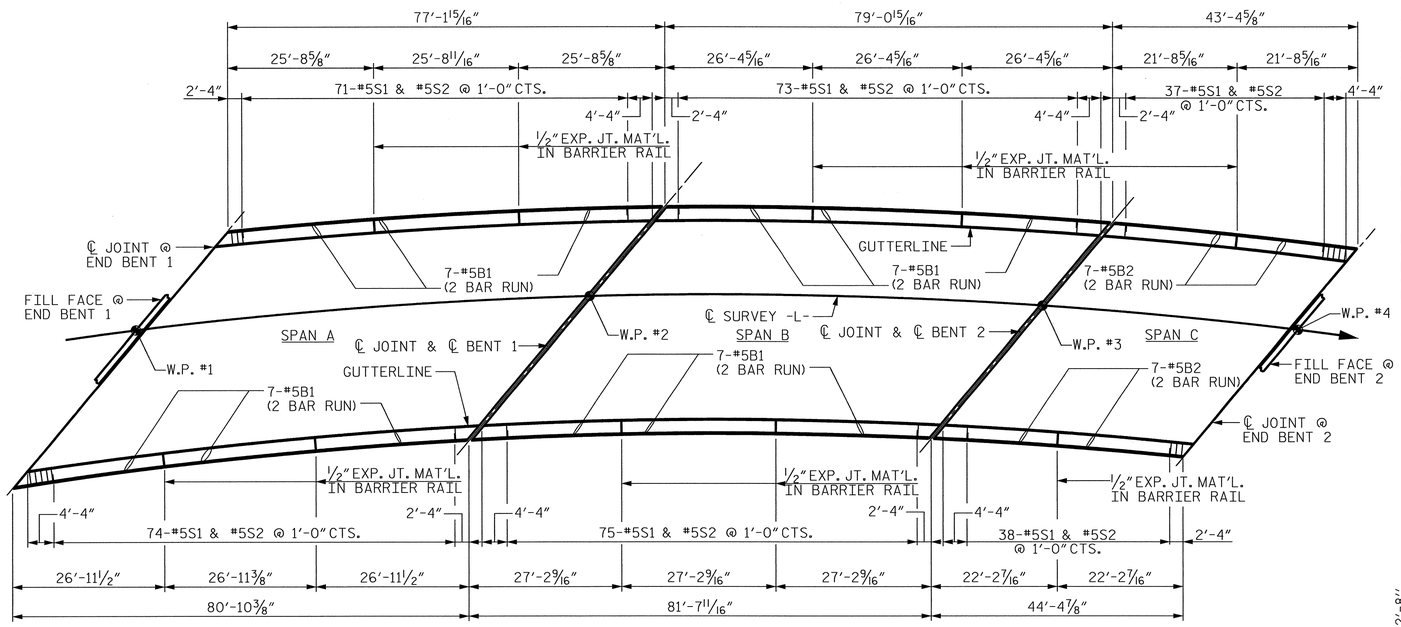
3/27/2008



PLAN

NOTE: DIMENSIONS ARE ARC DIMENSIONS ALONG OUTSIDE FACE OF RAIL.

NOTES

THE BARRIER RAIL IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

WHEN EVAZOTE JOINT SEAL IS REQUIRED, THE JOINT IN THE DECK SHALL BE SAWED PRIOR TO THE CASTING OF BARRIER RAIL.

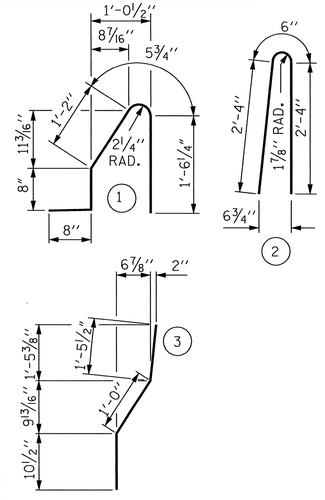
ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

THE #5 S3 AND #5 S4 BARS SHALL BE INSTALLED, USING AN ADHESIVE ANCHORING SYSTEM, AFTER SAWING THE JOINT. THE YIELD LOAD FOR THE #5 S3 AND #5 S4 BARS IS 18.6 KIPS. FIELD TESTING FOR THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

VERTICAL 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. THE 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.

#5S1 & #5S2 BARS MAY BE SHIFTED AS NECESSARY TO CLEAR EXPANSION JOINTS IN THE RAILS.

BAR TYPES

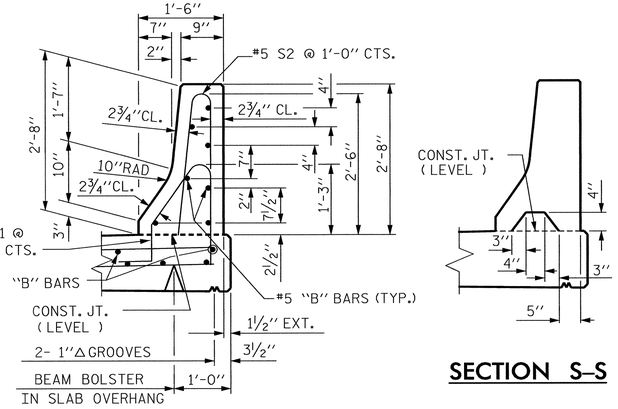


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

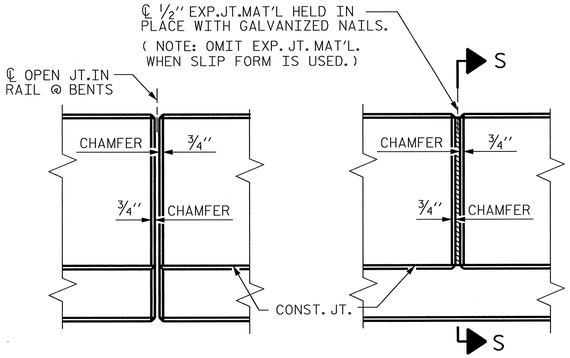
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	168	#5	STR.	16'-0"	2,804
* B2	56	#5	STR.	13'-6"	789
* S1	368	#5	1	4'-6"	1,727
* S2	368	#5	2	5'-2"	1,983
* S3	36	#5	3	3'-4"	125
* S4	36	#5	STR.	3'-2"	119
* EPOXY COATED REINFORCING STEEL					7,547 LBS.
CLASS AA CONCRETE					40.8 CU. YDS.
CONCRETE BARRIER RAIL					406.54 LIN. FT.



SECTION THRU RAIL

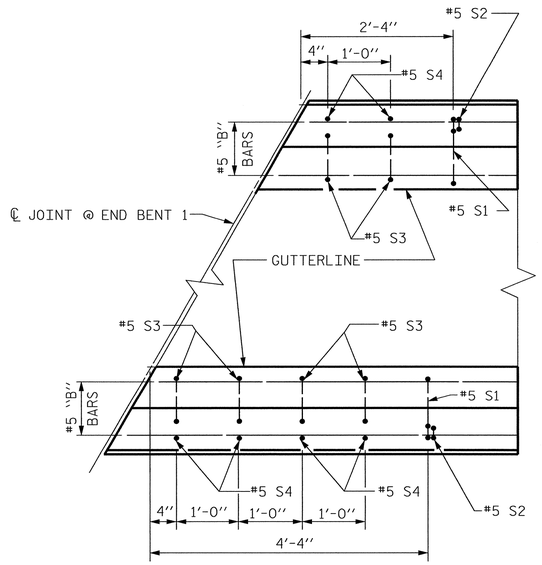
(RADIAL)

SECTION S–S



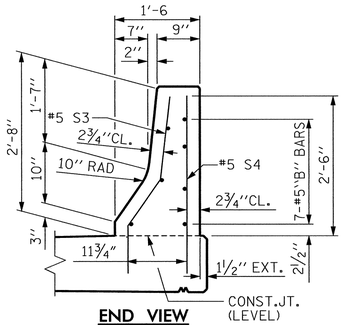
ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS



PLAN @ END BENT 1

(END BENT 2 SIMILAR)



END VIEW

END OF RAIL DETAILS

FOR ADHESIVE ANCHORING AT SAWED JOINTS

PROJECT NO. R-3622AA

CHEROKEE COUNTY

STATION: 54+89.84 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

CONCRETE BARRIER RAIL

ASSEMBLED BY : S. PEREZ, Jr.	DATE : 9-06
CHECKED BY : T.M. HARRIS	DATE : 3-08
DRAWN BY : ARB 5/87	REV. 10/17/00 RWW/LES
CHECKED BY : SJD 9/87	REV. 5/7/03R RWW/JTE
	REV. 5/1/06 TLA/GM

WilburSmith Associates — Engineers, Planners, Economists
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

DRAWN BY : S. PEREZ, Jr. DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08

DWG. No. 18

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
3-28-08

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			36

STD. NO. CBR1

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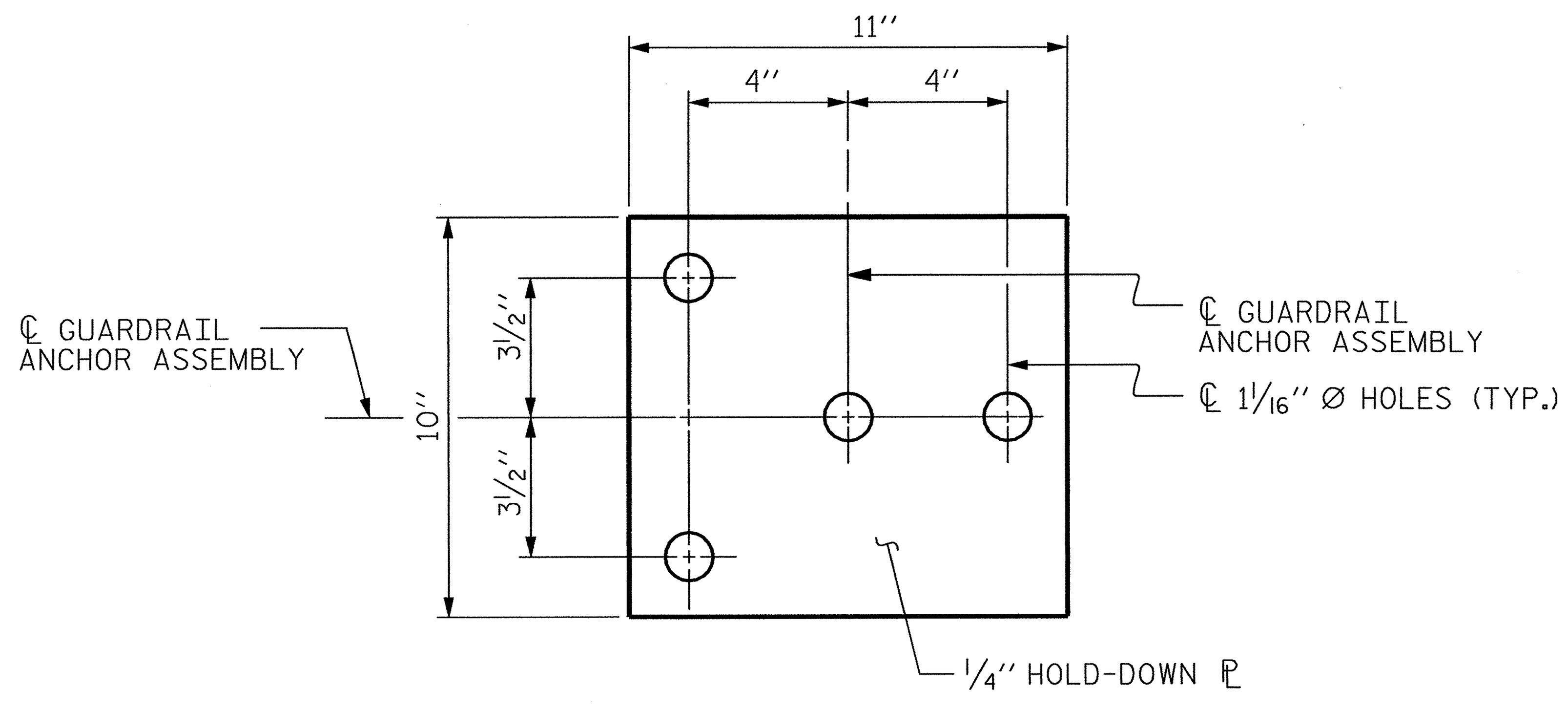
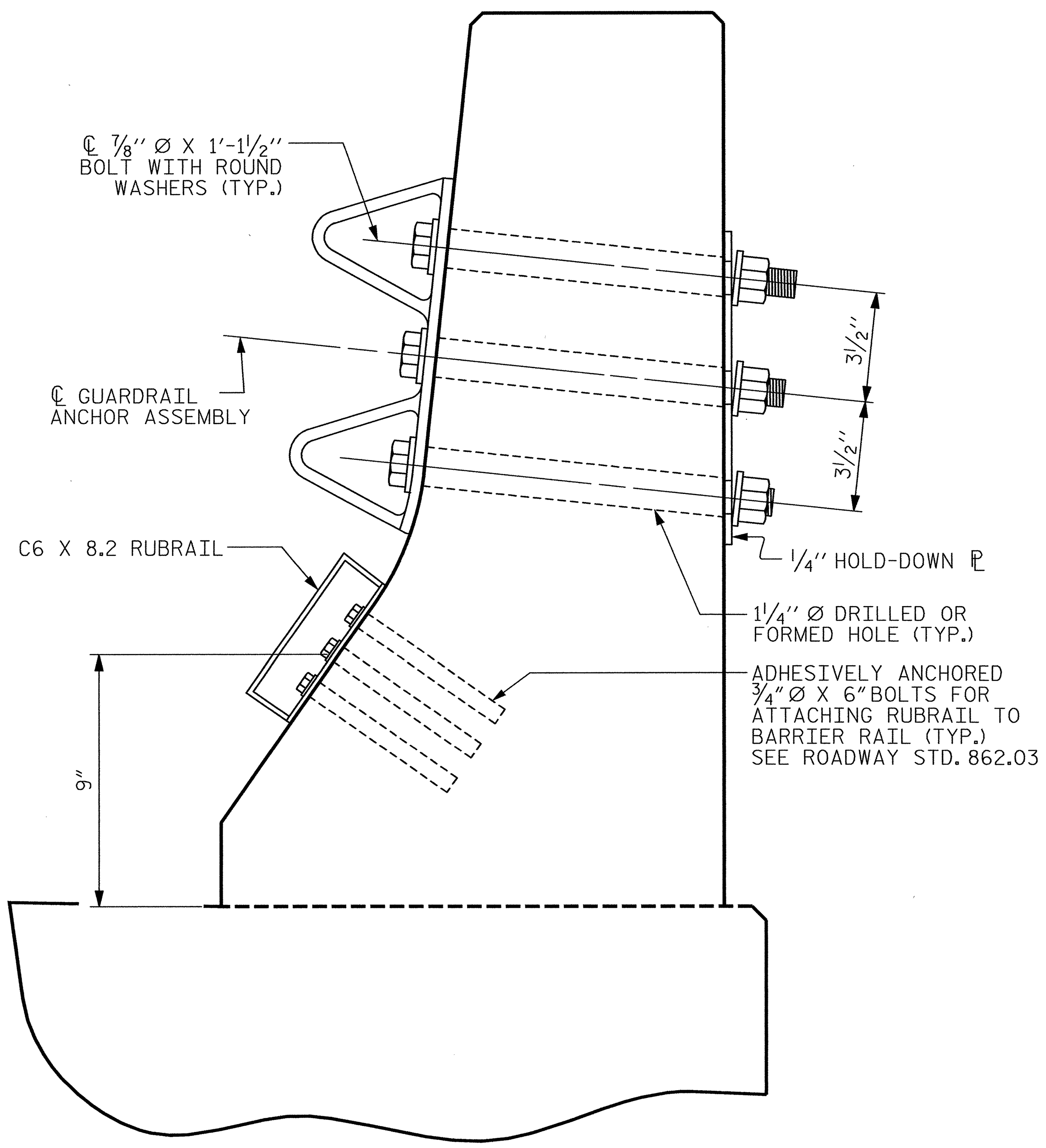
3/27/2008

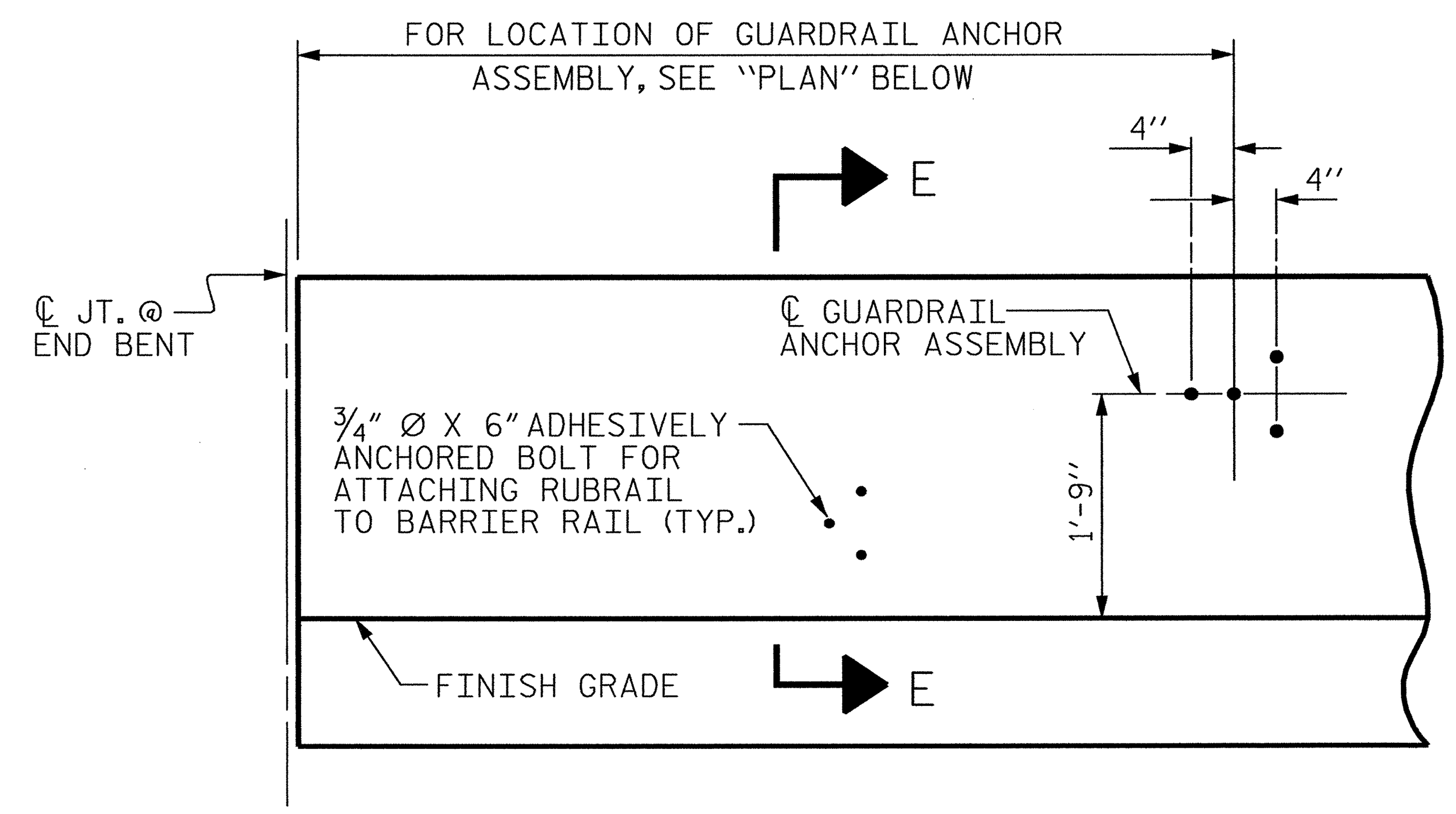


PLAN



SECTION E–E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



ELEVATION

FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03

NOTES

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

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.)

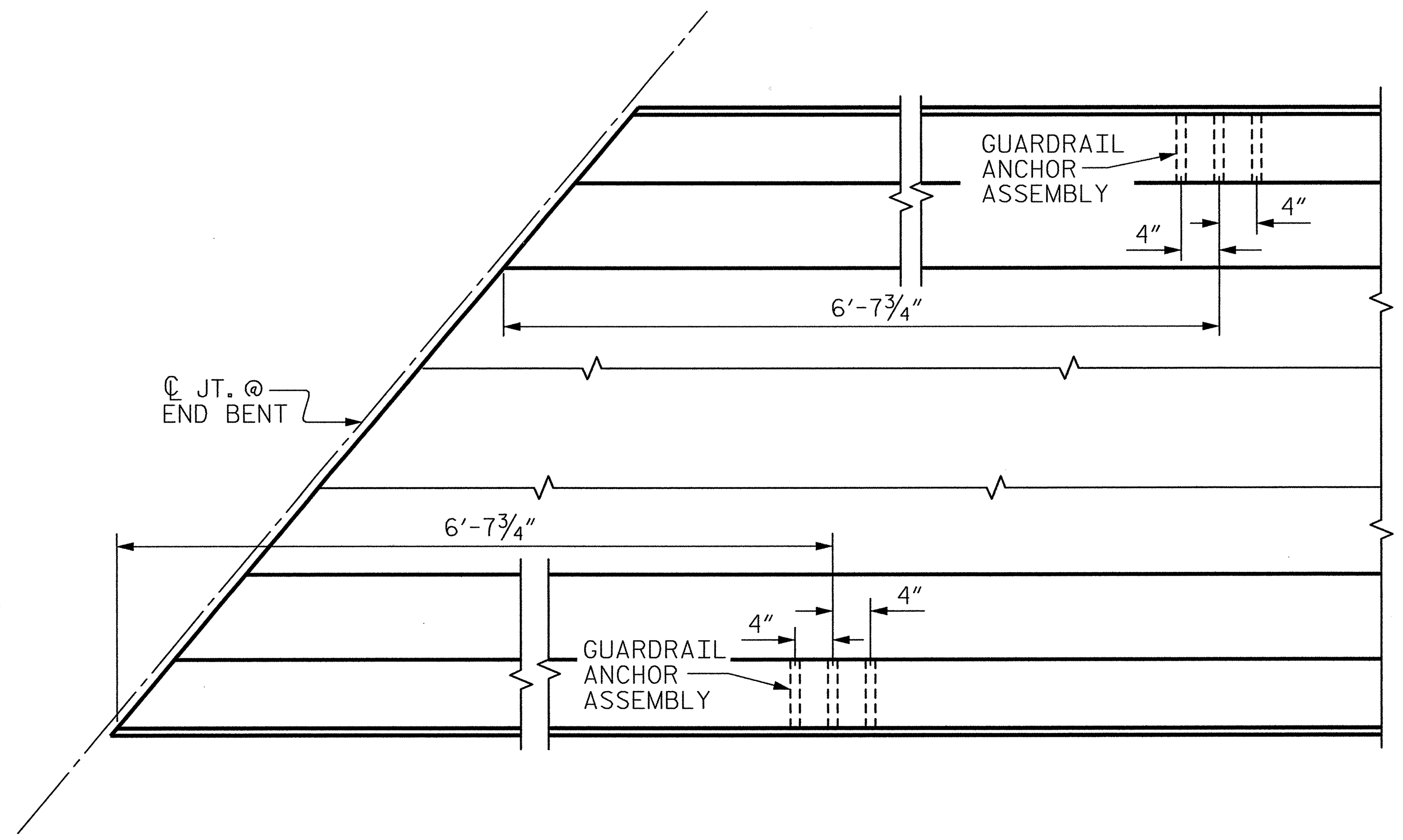
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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 CONCRETE BARRIER RAIL.

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.

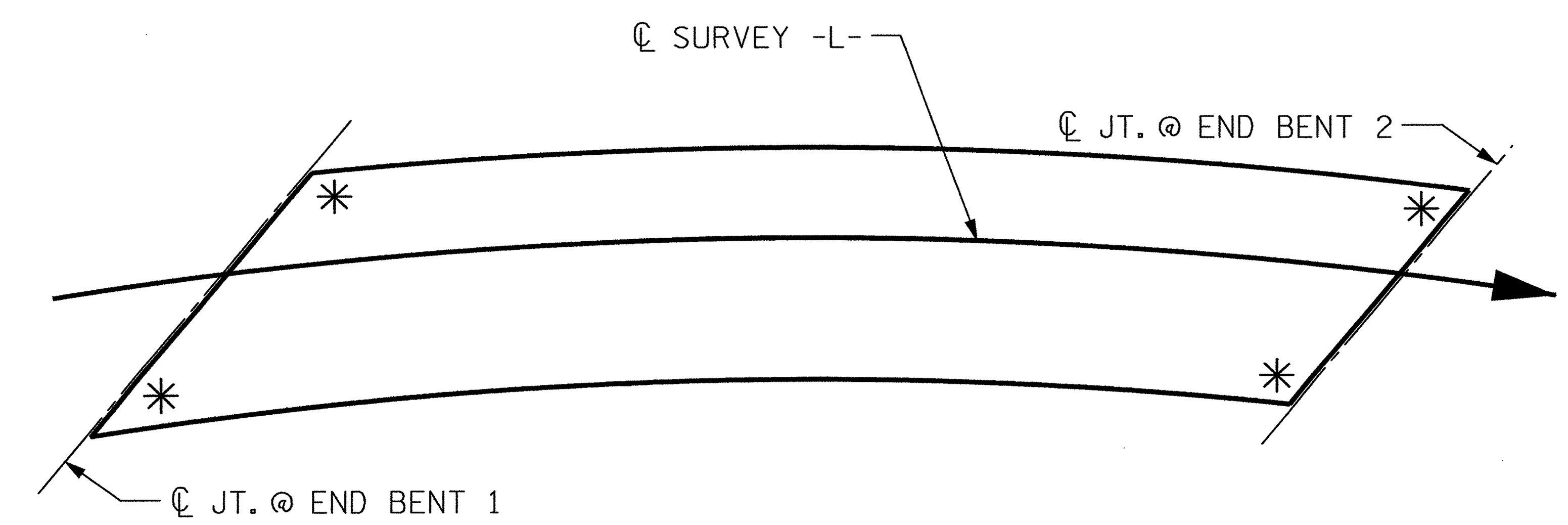
THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENTS

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. R–3622AA

CHEROKEE COUNTY

STATION: 54+89.84 –L–

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE FOR BARRIER RAIL

REVISIONS								SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:			S-19
1			3					TOTAL SHEETS
2			4					36

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
3-28-08

WilburSmith ASSOCIATES — ENGINEERS PLANNERS ECONOMISTS
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

DRAWN BY : S. PEREZ, Jr. DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08
DWG. No. 19

ASSEMBLED BY : S. PEREZ, Jr. DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08

DRAWN BY : TLA 5/06
CHECKED BY : GM 5/06
ADDED 5/1/06

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3/27/2008

STD. NO. GRA2

REINFORCING BAR SCHEDULE

SPAN A

EPOXY COATED

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	80	#5	STR.	39′-11″	3331
*A3	6	#6	STR.	6′-0″	54
*A101	1	#5	STR.	39′-6″	41
*A102	1	#5	STR.	39′-0″	41
*A103	1	#5	STR.	38′-6″	40
*A104	1	#5	STR.	38′-0″	40
*A105	1	#5	STR.	37′-6″	39
*A106	1	#5	STR.	37′-0″	39
*A107	1	#5	STR.	36′-6″	38
*A108	1	#5	STR.	36′-0″	38
*A109	1	#5	STR.	35′-6″	37
*A110	1	#5	STR.	35′-0″	37
*A111	1	#5	STR.	34′-6″	36
*A112	1	#5	STR.	34′-0″	35
*A113	1	#5	STR.	33′-6″	35
*A114	1	#5	STR.	33′-0″	34
*A115	1	#5	STR.	32′-6″	34
*A116	1	#5	STR.	32′-6″	33
*A117	1	#5	STR.	31′-6″	33
*A118	1	#5	STR.	31′-0″	32
*A119	1	#5	STR.	30′-6″	32
*A120	1	#5	STR.	30′-0″	31
*A121	1	#5	STR.	29′-7″	31
*A122	1	#5	STR.	29′-1″	30
*A123	1	#5	STR.	28′-7″	30
*A124	1	#5	STR.	28′-1″	29
*A125	1	#5	STR.	27′-7″	29
*A126	1	#5	STR.	27′-1″	28
*A127	1	#5	STR.	26′-7″	28
*A128	1	#5	STR.	26′-1″	27
*A129	1	#5	STR.	25′-7″	27
*A130	1	#5	STR.	24′-8″	26
*A131	1	#5	STR.	24′-2″	25
*A132	1	#5	STR.	23′-8″	25
*A133	1	#5	STR.	23′-2″	24
*A134	1	#5	STR.	22′-8″	24
*A135	1	#5	STR.	22′-2″	23
*A136	1	#5	STR.	21′-8″	23
*A137	1	#5	STR.	21′-2″	22
*A138	1	#5	STR.	20′-9″	22
*A139	1	#5	STR.	20′-3″	21
*A140	1	#5	STR.	19′-9″	21
*A141	1	#5	STR.	19′-3″	20
*A142	1	#5	STR.	18′-9″	20
*A143	1	#5	STR.	18′-3″	19
*A144	1	#5	STR.	17′-10″	19
*A145	1	#5	STR.	17′-4″	18
*A146	1	#5	STR.	16′-10″	18
*A147	1	#5	STR.	16′-4″	17
*A148	1	#5	STR.	15′-10″	17
*A149	1	#5	STR.	15′-4″	16

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A150	1	#5	STR.	14′-11″	16
*A151	1	#5	STR.	14′-5″	15
*A152	1	#5	STR.	13′-11″	15
*A153	1	#5	STR.	13′-5″	14
*A154	1	#5	STR.	12′-11″	13
*A155	1	#5	STR.	12′-6″	13
*A156	1	#5	STR.	12′-0″	13
*A157	1	#5	STR.	11′-6″	12
*A158	1	#5	STR.	11′-0″	11
*A159	1	#5	STR.	10′-7″	11
*A160	1	#5	STR.	10′-1″	11
*A161	1	#5	STR.	9′-7″	10
*A162	1	#5	STR.	9′-1″	9
*A163	1	#5	STR.	8′-8″	9
*A164	1	#5	STR.	8′-2″	9
*A165	1	#5	STR.	7′-8″	8
*A166	1	#5	STR.	7′-2″	7
*A167	1	#5	STR.	6′-9″	7
*A168	1	#5	STR.	6′-3″	7
*A169	1	#5	STR.	5′-9″	6
*A170	1	#5	STR.	5′-3″	5
*A171	1	#5	STR.	4′-10″	5
*A172	1	#5	STR.	4′-4″	5
*A173	1	#5	STR.	3′-10″	4
*A247	1	#5	STR.	39′-5″	41
*A248	1	#5	STR.	38′-11″	41
*A249	1	#5	STR.	38′-5″	40
*A250	1	#5	STR.	37′-11″	40
*A251	1	#5	STR.	37′-4″	39
*A252	1	#5	STR.	36′-10″	38
*A253	1	#5	STR.	36′-4″	38
*A254	1	#5	STR.	35′-9″	37
*A255	1	#5	STR.	35′-3″	37
*A256	1	#5	STR.	34′-9″	36
*A257	1	#5	STR.	34′-2″	36
*A258	1	#5	STR.	33′-8″	35
*A259	1	#5	STR.	33′-2″	35
*A260	1	#5	STR.	32′-7″	34
*A261	1	#5	STR.	32′-1″	33
*A262	1	#5	STR.	31′-7″	33
*A263	1	#5	STR.	31′-0″	32
*A264	1	#5	STR.	30′-6″	32
*A265	1	#5	STR.	30′-0″	31
*A266	1	#5	STR.	29′-5″	31
*A267	1	#5	STR.	28′-11″	30
*A268	1	#5	STR.	28′-5″	30
*A269	1	#5	STR.	27′-10″	29
*A270	1	#5	STR.	27′-4″	29
*A271	1	#5	STR.	26′-10″	28

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A272	1	#5	STR.	26′-3″	27
*A273	1	#5	STR.	25′-9″	27
*A274	1	#5	STR.	25′-2″	26
*A275	1	#5	STR.	24′-8″	26
*A276	1	#5	STR.	24′-2″	25
*A277	1	#5	STR.	23′-7″	25
*A278	1	#5	STR.	23′-1″	24
*A279	1	#5	STR.	22′-7″	24
*A280	1	#5	STR.	22′-0″	23
*A281	1	#5	STR.	21′-6″	22
*A282	1	#5	STR.	20′-11″	22
*A283	1	#5	STR.	20′-5″	21
*A284	1	#5	STR.	19′-11″	21
*A285	1	#5	STR.	19′-4″	20
*A286	1	#5	STR.	18′-10″	20
*A287	1	#5	STR.	18′-3″	19
*A288	1	#5	STR.	17′-9″	19
*A289	1	#5	STR.	17′-2″	18
*A290	1	#5	STR.	16′-8″	17
*A291	1	#5	STR.	16′-2″	17
*A292	1	#5	STR.	15′-7″	16
*A293	1	#5	STR.	15′-1″	16
*A294	1	#5	STR.	14′-6″	15
*A295	1	#5	STR.	14′-0″	15
*A296	1	#5	STR.	13′-5″	14
*A297	1	#5	STR.	12′-11″	13
*A298	1	#5	STR.	12′-4″	13
*A299	1	#5	STR.	11′-10″	12
*A300	1	#5	STR.	11′-3″	12
*A301	1	#5	STR.	10′-9″	11
*A302	1	#5	STR.	10′-2″	11
*A303	1	#5	STR.	9′-8″	10
*A304	1	#5	STR.	9′-2″	10
*A305	1	#5	STR.	8′-7″	9
*A306	1	#5	STR.	8′-1″	8
*A307	1	#5	STR.	7′-6″	8
*A308	1	#5	STR.	7′-0″	7
*A309	1	#5	STR.	6′-5″	7
*A310	1	#5	STR.	5′-11″	6
*A311	1	#5	STR.	5′-4″	6
*A312	1	#5	STR.	4′-10″	5
*A313	1	#5	STR.	4′-3″	4
*A314	1	#5	STR.	3′-8″	4
*B1	84	#4	STR.	27′-9″	1157
*G1	4	#5	STR.	30′-6″	127
*K1	8	#8	1	16′-8″	356
*K2	8	#8	2	27′-10″	595
*K3	18	#6	STR.	12′-0″	324
*S1	72	#5	4	5′-8″	426
*S2	36	#4	3	6′-0″	144
*S3	36	#4	3	4′-4″	104
EPOXY COATED REINFORCING STEEL				LBS.	10197

*DENOTES EPOXY COATED REINFORCING STEEL.

NON-EPOXY COATED

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A2	80	#5	STR.	39′-11″	3331
A174	1	#5	STR.	39′-6″	41
A175	1	#5	STR.	39′-0″	41
A176	1	#5	STR.	38′-6″	40
A177	1	#5	STR.	38′-0″	40
A178	1	#5	STR.	37′-6″	39
A179	1	#5	STR.	37′-0″	39
A180	1	#5	STR.	36′-6″	38
A181	1	#5	STR.	36′-0″	38
A182	1	#5	STR.	35′-6″	37
A183	1	#5	STR.	35′-0″	37
A184	1	#5	STR.	34′-6″	36
A185	1	#5	STR.	34′-0″	35
A186	1	#5	STR.	33′-6″	35
A187	1	#5	STR.	33′-0″	34
A188	1	#5	STR.	32′-6″	34
A189	1	#5	STR.	32′-0″	33
A190	1	#5	STR.	31′-6″	33
A191	1	#5	STR.	31′-0″	32
A192	1	#5	STR.	30′-6″	32
A193	1	#5	STR.	30′-0″	31
A194	1	#5	STR.	29′-7″	31
A195	1	#5	STR.	29′-1″	30
A196	1	#5	STR.	28′-7″	30
A197	1	#5	STR.	28′-1″	29
A198	1	#5	STR.	27′-7″	29
A199	1	#5	STR.	27′-1″	28
A200	1	#5	STR.	26′-7″	28
A201	1	#5	STR.	26′-1″	27
A202	1	#5	STR.	25′-7″	27
A203	1	#5	STR.	24′-8″	26
A204	1	#5	STR.	24′-2″	25
A205	1	#5	STR.	23′-8″	25
A206	1	#5	STR.	23′-2″	24
A207	1	#5	STR.	22′-8″	24
A208	1	#5	STR.	22′-2″	23
A209	1	#5	STR.	21′-8″	23
A210	1	#5	STR.	21′-2″	22
A211	1	#5	STR.	20′-9″	22
A212	1	#5	STR.	20′-3″	21
A213	1	#5	STR.	19′-9″	21
A214	1	#5	STR.	19′-3″	20
A215	1	#5	STR.	18′-9″	20
A216	1	#5	STR.	18′-3″	19
A217	1	#5	STR.	17′-10″	19
A218	1	#5	STR.	17′-4″	18
A219	1	#5	STR.	16′-10″	18
A220	1	#5	STR.	16′-4″	17
A221	1	#5	STR.	15′-10″	17
A222	1	#5	STR.	15′-4″	16

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A223	1	#5	STR.	14′-11″	16
A224	1	#5	STR.	14′-5″	15
A225	1	#5	STR.	13′-11″	15
A226	1	#5	STR.	13′-5″	14
A227	1	#5	STR.	12′-11″	13
A228	1	#5	STR.	12′-6″	13
A229	1	#5	STR.	12′-0″	13
A230	1	#5	STR.	11′-6″	12
A231	1	#5	STR.	11′-0″	11
A232	1	#5	STR.	10′-7″	11
A233	1	#5	STR.	10′-1″	11
A234	1	#5	STR.	9′-7″	10
A235	1	#5	STR.	9′-1″	9
A236	1	#5	STR.	8′-8″	9
A237	1	#5	STR.	8′-2″	9
A238	1	#5	STR.	7′-8″	8
A239	1	#5	STR.	7′-2″	7
A240	1	#5	STR.	6′-9″	7
A241	1	#5	STR.	6′-3″	7
A242	1	#5	STR.	5′-9″	6
A243	1	#5	STR.	5′-3″	5
A244	1	#5	STR.	4′-10″	5
A245	1	#5	STR.	4′-4″	5
A246	1	#5	STR.	3′-10″	5
A315	1	#5	STR.	39′-5″	41
A316	1	#5	STR.	38′-11″	41
A317	1	#5	STR.	38′-5″	40
A318	1	#5	STR.	37′-11″	40
A319	1	#5	STR.	37′-4″	39
A320	1	#5	STR.	36′-10″	38
A321	1	#5	STR.	36′-4″	38
A322	1	#5	STR.	35′-9″	37
A323	1	#5	STR.	35′-3″	37
A324	1	#5	STR.	34′-9″	36
A325	1	#5	STR.	34′-2″	36
A326	1	#5	STR.	33′-8″	35
A327	1	#5	STR.	33′-2″	35
A328	1	#5	STR.	32′-7″	34
A329	1	#5	STR.	32′-1″	33
A330	1	#5	STR.	31′-7″	33
A331	1	#5	STR.	31′-0″	32
A332	1	#5	STR.	30′-6″	32
A333	1	#5	STR.	30′-0″	31
A334	1	#5	STR.	29′-5″	31
A335	1	#5	STR.	28′-11″	30
A336	1	#5	STR.	28′-5″	30
A337	1	#5	STR.	27′-10″	29
A338	1	#5	STR.	27′-4″	29
A339	1	#5	STR.	26′-10″	28

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A340	1	#5	STR.	26′-3″	27
A341	1	#5	STR.	25′-9″	27
A342	1	#5	STR.	25′-2″	26
A343	1	#5	STR.	24′-8″	26
A344	1	#5	STR.	24′-2″	25
A345	1	#5	STR.	23′-7″	25
A346	1	#5	STR.	23′-1″	24
A347	1	#5	STR.	22′-7″	24
A348	1	#5	STR.	22′-0″	23
A349	1	#5	STR.	21′-6″	22
A350	1	#5	STR.	20′-11″	22
A351	1	#5	STR.	20′-5″	21
A352	1	#5	STR.	19′-11″	21
A353	1	#5	STR.	19′-4″	20
A354	1	#5	STR.	18′-10″	20
A355	1	#5	STR.	18′-3″	19
A356	1	#5	STR.	17′-9″	19
A357	1	#5	STR.	17′-2″	18
A358	1	#5	STR.	16′-8″	17
A359	1	#5	STR.	16′-2″	17
A360	1	#5	STR.	15′-7″	16
A361	1	#5	STR.	15′-1″	16
A362	1	#5	STR.	14′-6″	15
A363	1	#5	STR.	14′-0″	15
A364	1	#5	STR.	13′-5″	14
A365	1	#5	STR.	12′-11″	13
A366	1	#5	STR.	12′-4″	13
A367	1	#5	STR.	11′-10″	12
A368	1	#5	STR.	11′-3″	12
A369	1	#5	STR.	10′-9″	11
A370	1	#5	STR.	10′-2″	11
A371	1	#5	STR.	9′-8″	10
A372	1	#5	STR.	9′-2″	10
A373	1	#5	STR.	8′-7″	9
A374	1	#5	STR.	8′-1″	8
A375	1	#5	STR.	7′-6″	8
A376	1	#5	STR.	7′-0″	7
A377	1	#5	STR.	6′-5″	7
A378	1	#5	STR.	5′-11″	6
A379	1	#5	STR.	5′-4″	6
A380	1	#5	STR.	4′-10″	5
A381	1	#5	STR.	4′-3″	4
A382	1	#5	STR.	3′-8″	4
B2	104	#5	STR.	40′-9″	4420
REINFORCING STEEL				LBS.	10931

PROJECT NO. R-3622AA

CHEROKEE COUNTY

STATION: 54+89.84 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

SUPERSTRUCTURE
BILL OF MATERIAL
SPAN A

REVISIONS								SHEET No.
No.	BY:	DATE:		No.	BY:	DATE:		S-20
1				3				TOTAL SHEETS
2				4				36

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER 19299 THOMAS M. HARRIS 3-28-08

WilburSmith ASSOCIATES — ENGINEERS PLANNERS ECONOMISTS
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

DRAWN BY : S. PEREZ, Jr. DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08
DWG. No. 20

ASSEMBLED BY : S. PEREZ, Jr. DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08

DRAWN BY : JMB 5/87	REV. 6/1/94	EEM/GRP
CHECKED BY : SJD 9/87	REV. 8/16/99	RWW/LES
	REV. 5/1/06	TLA/GM

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3/27/2008

STD. NO. BOM1

REINFORCING BAR SCHEDULE

SPAN B

EPOXY COATED

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	93	#5	STR.	39'-11"	3872	* A450	1	#5	STR.	11'-2"	12	* A563	1	#5	STR.	18'-7"	19
* A3	6	#6	STR.	6'-0"	54	* A451	1	#5	STR.	10'-7"	11	* A564	1	#5	STR.	17'-11"	19
* A401	1	#5	STR.	39'-9"	41	* A452	1	#5	STR.	10'-0"	10	* A565	1	#5	STR.	17'-4"	18
* A402	1	#5	STR.	39'-2"	41	* A453	1	#5	STR.	9'-5"	10	* A566	1	#5	STR.	16'-8"	17
* A403	1	#5	STR.	38'-7"	40	* A454	1	#5	STR.	8'-10"	9	* A567	1	#5	STR.	16'-1"	17
* A404	1	#5	STR.	38'-0"	40	* A455	1	#5	STR.	8'-4"	9	* A568	1	#5	STR.	15'-5"	16
* A405	1	#5	STR.	37'-4"	39	* A456	1	#5	STR.	7'-9"	8	* A569	1	#5	STR.	14'-10"	15
* A406	1	#5	STR.	36'-9"	38	* A457	1	#5	STR.	7'-2"	7	* A570	1	#5	STR.	14'-2"	15
* A407	1	#5	STR.	36'-2"	38	* A458	1	#5	STR.	6'-7"	7	* A571	1	#5	STR.	13'-6"	14
* A408	1	#5	STR.	35'-7"	37	* A459	1	#5	STR.	6'-0"	6	* A572	1	#5	STR.	12'-11"	13
* A409	1	#5	STR.	35'-0"	37	* A460	1	#5	STR.	5'-5"	6	* A573	1	#5	STR.	12'-3"	13
* A410	1	#5	STR.	34'-5"	36	* A461	1	#5	STR.	4'-10"	5	* A574	1	#5	STR.	11'-8"	12
* A411	1	#5	STR.	33'-10"	35	* A462	1	#5	STR.	4'-4"	5	* A575	1	#5	STR.	11'-0"	11
* A412	1	#5	STR.	33'-3"	35	* A463	1	#5	STR.	3'-8"	4	* A576	1	#5	STR.	10'-5"	11
* A413	1	#5	STR.	32'-8"	34	* A464	1	#5	STR.	3'-2"	3	* A577	1	#5	STR.	9'-9"	10
* A414	1	#5	STR.	32'-1"	33							* A578	1	#5	STR.	9'-1"	9
* A415	1	#5	STR.	31'-6"	33	* A529	1	#5	STR.	39'-9"	41	* A579	1	#5	STR.	8'-6"	9
* A416	1	#5	STR.	30'-11"	32	* A530	1	#5	STR.	39'-2"	41	* A580	1	#5	STR.	7'-10"	8
* A417	1	#5	STR.	30'-4"	32	* A531	1	#5	STR.	38'-6"	40	* A581	1	#5	STR.	7'-3"	8
* A418	1	#5	STR.	29'-9"	31	* A532	1	#5	STR.	37'-11"	40	* A582	1	#5	STR.	6'-7"	7
* A419	1	#5	STR.	29'-2"	30	* A533	1	#5	STR.	37'-3"	39	* A583	1	#5	STR.	5'-11"	6
* A420	1	#5	STR.	28'-7"	30	* A534	1	#5	STR.	36'-8"	38	* A584	1	#5	STR.	5'-4"	6
* A421	1	#5	STR.	28'-0"	29	* A535	1	#5	STR.	36'-1"	38	* A585	1	#5	STR.	4'-8"	5
* A422	1	#5	STR.	27'-5"	29	* A536	1	#5	STR.	35'-5"	37	* A586	1	#5	STR.	4'-1"	4
* A423	1	#5	STR.	26'-10"	28	* A537	1	#5	STR.	34'-10"	36	* A587	1	#5	STR.	3'-5"	4
* A424	1	#5	STR.	26'-3"	27	* A538	1	#5	STR.	34'-2"	36						
* A425	1	#5	STR.	25'-8"	27	* A539	1	#5	STR.	33'-7"	35						
* A426	1	#5	STR.	25'-1"	26	* A540	1	#5	STR.	32'-11"	34	* B1	84	#4	STR.	27'-9"	1557
* A427	1	#5	STR.	24'-6"	26	* A541	1	#5	STR.	32'-4"	34						
* A428	1	#5	STR.	23'-11	25	* A542	1	#5	STR.	31'-8"	33	* G2	4	#5	STR.	28'-0"	117
* A429	1	#5	STR.	23'-4"	24	* A543	1	#5	STR.	31'-1"	32						
* A430	1	#5	STR.	22'-9"	24	* A544	1	#5	STR.	30'-5"	32	* K1	8	#8	1	16'-8"	356
* A431	1	#5	STR.	22'-2"	23	* A545	1	#5	STR.	29'-10"	31	* K2	8	#8	2	27'-10"	595
* A432	1	#5	STR.	21'-7"	23	* A546	1	#5	STR.	29'-3"	31	* K4	18	#6	STR.	11'-3"	304
* A433	1	#5	STR.	21'-0"	22	* A547	1	#5	STR.	28'-7"	30						
* A434	1	#5	STR.	20'-5"	21	* A548	1	#5	STR.	28'-0"	29	* S1	69	#5	4	5'-8"	408
* A435	1	#5	STR.	19'-10"	21	* A549	1	#5	STR.	27'-4"	29	* S3	69	#4	3	4'-4"	312
* A436	1	#5	STR.	19'-3"	20	* A550	1	#5	STR.	26'-9"	28	EPOXY COATED REINFORCING STEEL				LBS.	10333
* A437	1	#5	STR.	18'-8"	19	* A551	1	#5	STR.	26'-1"	27						
* A438	1	#5	STR.	18'-1"	19	* A552	1	#5	STR.	25'-6"	27						
* A439	1	#5	STR.	17'-6"	18	* A553	1	#5	STR.	24'-10"	26						
* A440	1	#5	STR.	16'-11"	18	* A554	1	#5	STR.	24'-3"	25						
* A441	1	#5	STR.	16'-4"	17	* A555	1	#5	STR.	23'-7"	25						
* A442	1	#5	STR.	15'-9"	16	* A556	1	#5	STR.	23'-0"	24						
* A443	1	#5	STR.	15'-2"	16	* A557	1	#5	STR.	22'-4"	23						
* A444	1	#5	STR.	14'-8"	15	* A558	1	#5	STR.	21'-9"	23						
* A445	1	#5	STR.	14'-1"	15	* A559	1	#5	STR.	21'-1"	22						
* A446	1	#5	STR.	13'-6"	14	* A560	1	#5	STR.	20'-5"	21						
* A447	1	#5	STR.	12'-11"	13	* A561	1	#5	STR.	19'-10"	21						
* A448	1	#5	STR.	12'-4"	13	* A562	1	#5	STR.	19'-2"	20						
* A449	1	#5	STR.	11'-9"	12												

NON-EPOXY COATED

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A2	93	#5	STR.	39'-11"	3872	A514	1	#5	STR.	11'-2"	12	A622	1	#5	STR.	18'-7"	19
A465	1	#5	STR.	39'-9"	41	A515	1	#5	STR.	10'-7"	11	A623	1	#5	STR.	17'-11"	19
A466	1	#5	STR.	39'-2"	41	A516	1	#5	STR.	10'-0"	10	A624	1	#5	STR.	17'-4"	18
A467	1	#5	STR.	38'-7"	40	A517	1	#5	STR.	9'-5"	10	A625	1	#5	STR.	16'-8"	17
A468	1	#5	STR.	38'-0"	40	A518	1	#5	STR.	8'-10"	9	A626	1	#5	STR.	16'-1"	17
A469	1	#5	STR.	37'-4"	39	A519	1	#5	STR.	8'-4"	9	A627	1	#5	STR.	15'-5"	16
A470	1	#5	STR.	36'-9"	38	A520	1	#5	STR.	7'-9"	8	A628	1	#5	STR.	14'-10"	15
A471	1	#5	STR.	36'-2"	38	A521	1	#5	STR.	7'-2"	7	A629	1	#5	STR.	14'-2"	15
A472	1	#5	STR.	35'-7"	37	A522	1	#5	STR.	6'-7"	7	A630	1	#5	STR.	13'-6"	14
A473	1	#5	STR.	35'-0"	37	A523	1	#5	STR.	6'-0"	6	A631	1	#5	STR.	12'-11"	13
A474	1	#5	STR.	34'-5"	36	A524	1	#5	STR.	5'-5"	6	A632	1	#5	STR.	12'-3"	13
A475	1	#5	STR.	33'-10"	35	A525	1	#5	STR.	4'-10"	5	A633	1	#5	STR.	11'-8"	12
A476	1	#5	STR.	33'-3"	35	A526	1	#5	STR.	4'-4"	5	A634	1	#5	STR.	11'-0"	11
A477	1	#5	STR.	32'-8"	34	A527	1	#5	STR.	3'-8"	4	A635	1	#5	STR.	10'-5"	11
A478	1	#5	STR.	32'-1"	33	A528	1	#5	STR.	3'-2"	3	A636	1	#5	STR.	9'-9"	10
A479	1	#5	STR.	31'-6"	33							A637	1	#5	STR.	9'-1"	9
A480	1	#5	STR.	30'-11"	32	A588	1	#5	STR.	39'-9"	41	A638	1	#5	STR.	8'-6"	9
A481	1	#5	STR.	30'-4"	32	A589	1	#5	STR.	39'-2"	41	A639	1	#5	STR.	7'-10"	8
A482	1	#5	STR.	29'-9"	31	A590	1	#5	STR.	38'-6"	40	A640	1	#5	STR.	7'-3"	8
A483	1	#5	STR.	29'-2"	30	A591	1	#5	STR.	37'-11"	40	A641	1	#5	STR.	6'-7"	7
A484	1	#5	STR.	28'-7"	30	A592	1	#5	STR.	37'-3"	39	A642	1	#5	STR.	5'-11"	6
A485	1	#5	STR.	28'-0"	29	A593	1	#5	STR.	36'-8"	38	A643	1	#5	STR.	5'-4"	6
A486	1	#5	STR.	27'-5"	29	A594	1	#5	STR.	36'-1"	38	A644	1	#5	STR.	4'-8"	5
A487	1	#5	STR.	26'-10"	28	A595	1	#5	STR.	35'-5"	37	A645	1	#5	STR.	4'-1"	4
A488	1	#5	STR.	26'-3"	27	A596	1	#5	STR.	34'-10"	36	A646	1	#5	STR.	3'-5"	4
A489	1	#5	STR.	25'-8"	27	A597	1	#5	STR.	34'-2"	36						
A490	1	#5	STR.	25'-1"	26	A598	1	#5	STR.	33'-7"	35						
A491	1	#5	STR.	24'-6"	26	A599	1	#5	STR.	32'-11"	34	B2	104	#5	STR.	40'-9"	4420
A492	1	#5	STR.	23'-11	25	A600	1	#5	STR.	32'-4"	34						
A493	1	#5	STR.	23'-4"	24	A601	1	#5	STR.	31'-8"	33						
A494	1	#5	STR.	22'-9"	24	A602	1	#5	STR.	31'-1"	32	REINFORCING STEEL				LBS.	11050
A495	1	#5	STR.	22'-2"	23	A603	1	#5	STR.	30'-5"	32						
A496	1	#5	STR.	21'-7"	23	A604	1	#5	STR.	29'-10"	31						
A497	1	#5	STR.	21'-0"	22	A605	1	#5	STR.	29'-3"	31						
A498	1	#5	STR.	20'-5"	21	A606	1	#5	STR.	28'-7"	30						
A499	1	#5	STR.	19'-10"	21	A607	1	#5	STR.	28'-0"	29						
A500	1	#5	STR.	19'-3"	20	A608	1	#5	STR.	27'-4"	29						
A501	1	#5	STR.	18'-8"	19	A609	1	#5	STR.	26'-9"	28						
A502	1	#5	STR.	18'-1"	19	A610	1	#5	STR.	26'-1"	27						
A503	1	#5	STR.	17'-6"	18	A611	1	#5	STR.	25'-6"	27						
A504	1	#5	STR.	16'-11"	18	A612	1	#5	STR.	24'-10"	26						
A505	1	#5	STR.	16'-4"	17	A613	1	#5	STR.	24'-3"	25						
A506	1	#5	STR.	15'-9"	16	A614	1	#5	STR.	23'-7"	25						
A507	1	#5	STR.	15'-2"	16	A615	1	#5	STR.	23'-0"	24						
A508	1	#5	STR.	14'-8"	15	A616	1	#5	STR.	22'-4"	23						
A509	1	#5	STR.	14'-1"	15	A617	1	#5	STR.	21'-9"	23						
A510	1	#5	STR.	13'-6"	14	A618	1	#5	STR.	21'-1"	22						
A511	1	#5	STR.	12'-11"	13	A619	1	#5	STR.	20'-5"	21						
A512	1	#5	STR.	12'-4"	13	A620	1	#5	STR.	19'-10"	21						
A513	1	#5	STR.	11'-9"	12	A621	1	#5	STR.	19'-2"	20						

* DENOTES EPOXY COATED REINFORCING STEEL.

PROJECT NO. R-3622AA

CHEROKEE COUNTY

STATION: 54+89.84 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

SUPERSTRUCTURE
BILL OF MATERIAL
SPAN B

ASSEMBLED BY : S. PEREZ, Jr. DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08

DRAWN BY : JMB 5/87 | REV. 6/1/94 EEM/GRP
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REV. 5/1/06 TLA/GM

WilburSmith ASSOCIATES — ENGINEERS PLANNERS ECONOMISTS
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

DRAWN BY : S. PEREZ, Jr. DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08
DWG. No. 21

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19299 THOMAS M. HARRIS
3-28-08

REVISIONS								SHEET No.
No.	BY:	DATE:		No.	BY:	DATE:		S-21
1				3				TOTAL SHEETS
2				4				36

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3/27/2008

STD. NO. BOM1

REINFORCING BAR SCHEDULE

SPAN C

EPOXY COATED

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳A1	33	#5	STR.	39′-11″	1374	✳A803	1	#5	STR.	39′-4″	41	✳B3	56	#4	STR.	23′-0″	860
✳A3	6	#6	STR.	6′-0″	54	✳A804	1	#5	STR.	38′-7″	40						
✳A701	1	#5	STR.	39′-4″	41	✳A805	1	#5	STR.	37′-10″	39	✳G3	4	#5	STR.	26′-0″	108
✳A702	1	#5	STR.	38′-7″	40	✳A806	1	#5	STR.	37′-2″	39						
✳A703	1	#5	STR.	37′-11″	40	✳A807	1	#5	STR.	36′-5″	38	✳K1	8	#8	1	16′-8″	356
✳A704	1	#5	STR.	37′-2″	39	✳A808	1	#5	STR.	35′-8″	37	✳K2	8	#8	2	27′-10″	595
✳A705	1	#5	STR.	36′-5″	38	✳A809	1	#5	STR.	34′-11″	36	✳K3	18	#6	STR.	10′-9″	291
✳A706	1	#5	STR.	35′-9″	37	✳A810	1	#5	STR.	34′-2″	36						
✳A707	1	#5	STR.	35′-0″	37	✳A811	1	#5	STR.	33′-6″	35	✳S1	63	#5	4	5′-8″	372
✳A708	1	#5	STR.	34′-3″	36	✳A812	1	#5	STR.	32′-9″	34	✳S2	30	#4	3	6′-0″	188
✳A709	1	#5	STR.	33′-7″	35	✳A813	1	#5	STR.	32′-0″	33	✳S3	33	#4	3	4′-4″	96
✳A710	1	#5	STR.	32′-10″	34	✳A814	1	#5	STR.	31′-3″	33						
✳A711	1	#5	STR.	32′-2″	34	✳A815	1	#5	STR.	30′-6″	32						
✳A712	1	#5	STR.	31′-5″	33	✳A816	1	#5	STR.	29′-10″	31						
✳A713	1	#5	STR.	30′-8″	32	✳A817	1	#5	STR.	29′-1″	30						
✳A714	1	#5	STR.	30′-0″	31	✳A818	1	#5	STR.	28′-4″	30						
✳A715	1	#5	STR.	29′-3″	31	✳A819	1	#5	STR.	27′-7″	29						
✳A716	1	#5	STR.	28′-7″	30	✳A820	1	#5	STR.	26′-10″	28						
✳A717	1	#5	STR.	27′-10″	29	✳A821	1	#5	STR.	26′-1″	27						
✳A718	1	#5	STR.	27′-1″	28	✳A822	1	#5	STR.	25′-5″	27						
✳A719	1	#5	STR.	26′-5″	28	✳A823	1	#5	STR.	24′-8″	26						
✳A720	1	#5	STR.	25′-8″	27	✳A824	1	#5	STR.	23′-11″	25						
✳A721	1	#5	STR.	25′-0″	26	✳A825	1	#5	STR.	23′-2″	24						
✳A722	1	#5	STR.	24′-3″	25	✳A826	1	#5	STR.	22′-5″	23						
✳A723	1	#5	STR.	23′-7″	25	✳A827	1	#5	STR.	21′-8″	23						
✳A724	1	#5	STR.	22′-10″	24	✳A828	1	#5	STR.	21′-0″	22						
✳A725	1	#5	STR.	22′-2″	23	✳A829	1	#5	STR.	20′-3″	21						
✳A726	1	#5	STR.	21′-5″	22	✳A830	1	#5	STR.	19′-6″	20						
✳A727	1	#5	STR.	20′-8″	20	✳A831	1	#5	STR.	18′-9″	20						
✳A728	1	#5	STR.	20′-0″	21	✳A832	1	#5	STR.	18′-0″	19						
✳A729	1	#5	STR.	19′-3″	20	✳A833	1	#5	STR.	17′-3″	18						
✳A730	1	#5	STR.	18′-7″	19	✳A834	1	#5	STR.	16′-6″	17						
✳A731	1	#5	STR.	17′-10″	19	✳A835	1	#5	STR.	15′-10″	17						
✳A732	1	#5	STR.	17′-2″	18	✳A836	1	#5	STR.	15′-1″	16						
✳A733	1	#5	STR.	16′-5″	17	✳A837	1	#5	STR.	14′-4″	15						
✳A734	1	#5	STR.	15′-9″	16	✳A838	1	#5	STR.	13′-7″	14						
✳A735	1	#5	STR.	15′-0″	16	✳A839	1	#5	STR.	12′-10″	13						
✳A736	1	#5	STR.	14′-4″	15	✳A840	1	#5	STR.	12′-1″	13						
✳A737	1	#5	STR.	13′-7″	14	✳A841	1	#5	STR.	11′-4″	12						
✳A738	1	#5	STR.	12′-11″	13	✳A842	1	#5	STR.	10′-7″	11						
✳A739	1	#5	STR.	12′-2″	13	✳A843	1	#5	STR.	9′-10″	10						
✳A740	1	#5	STR.	11′-6″	12	✳A844	1	#5	STR.	9′-1″	9						
✳A741	1	#5	STR.	10′-9″	11	✳A845	1	#5	STR.	8′-5″	9						
✳A742	1	#5	STR.	10′-1″	11	✳A846	1	#5	STR.	7′-8″	8						
✳A743	1	#5	STR.	9′-4″	10	✳A847	1	#5	STR.	6′-11″	7						
✳A744	1	#5	STR.	8′-8″	9	✳A848	1	#5	STR.	6′-2″	6						
✳A745	1	#5	STR.	7′-11″	8	✳A849	1	#5	STR.	5′-5″	6						
✳A746	1	#5	STR.	7′-3″	8	✳A850	1	#5	STR.	4′-8″	5						
✳A747	1	#5	STR.	6′-6″	7	✳A851	1	#5	STR.	3′-11″	4						
✳A748	1	#5	STR.	5′-10″	6	✳A852	1	#5	STR.	3′-2″	3						
✳A749	1	#5	STR.	5′-1″	5												
✳A750	1	#5	STR.	4′-1″	5												
✳A751	1	#5	STR.	3′-8″	4												

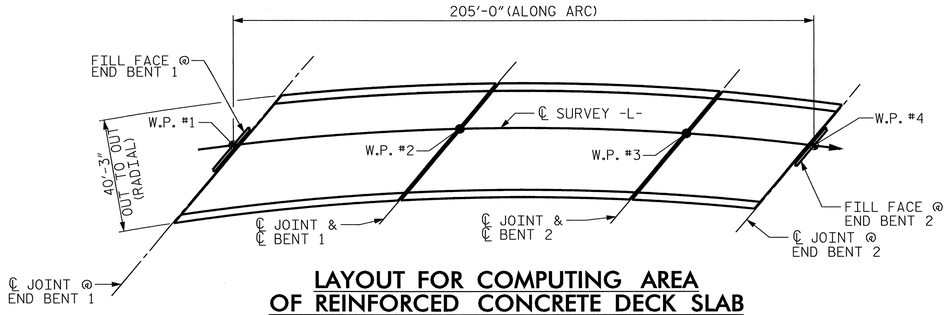
EPOXY COATED REINFORCING STEEL LBS. 6549

✳DENOTES EPOXY COATED REINFORCING STEEL.

NON-EPOXY COATED

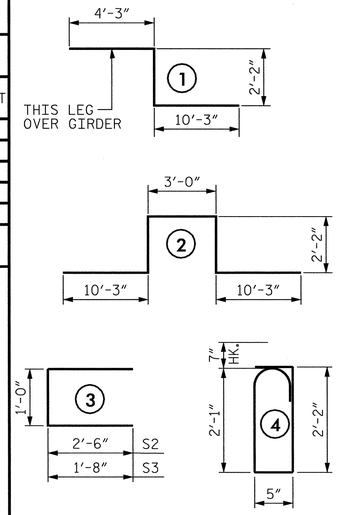
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A2	33	#5	STR.	39′-11″	1374	A801	1	#5	STR.	4′-5″	5	A900	1	#5	STR.	4′-8″	5
A752	1	#5	STR.	39′-4″	41	A802	1	#5	STR.	3′-8″	4	A901	1	#5	STR.	3′-11″	4
A753	1	#5	STR.	38′-7″	40							A902	1	#5	STR.	3′-2″	3
A754	1	#5	STR.	37′-11″	40	A853	1	#5	STR.	39′-4″	41						
A755	1	#5	STR.	37′-2″	39	A854	1	#5	STR.	38′-7″	40	B4	104	#5	STR.	23′-1″	2504
A756	1	#5	STR.	36′-5″	38	A855	1	#5	STR.	37′-10″	39						
A757	1	#5	STR.	35′-9″	37	A856	1	#5	STR.	37′-2″	39						
A758	1	#5	STR.	35′-0″	37	A857	1	#5	STR.	36′-5″	38						
A759	1	#5	STR.	34′-3″	36	A858	1	#5	STR.	35′-8″	37						
A760	1	#5	STR.	33′-7″	35	A859	1	#5	STR.	34′-11″	36						
A761	1	#5	STR.	32′-10″	34	A860	1	#5	STR.	34′-2″	36						
A762	1	#5	STR.	32′-2″	34	A861	1	#5	STR.	33′-6″	35						
A763	1	#5	STR.	31′-5″	33	A862	1	#5	STR.	32′-9″	34						
A764	1	#5	STR.	30′-8″	32	A863	1	#5	STR.	32′-0″	33						
A765	1	#5	STR.	30′-0″	31	A864	1	#5	STR.	31′-3″	33						
A766	1	#5	STR.	29′-3″	31	A865	1	#5	STR.	30′-6″	32						
A767	1	#5	STR.	28′-7″	30	A866	1	#5	STR.	29′-10″	31						
A768	1	#5	STR.	27′-10″	29	A867	1	#5	STR.	29′-1″	30						
A769	1	#5	STR.	27′-1″	28	A868	1	#5	STR.	28′-4″	30						
A770	1	#5	STR.	26′-5″	28	A869	1	#5	STR.	27′-7″	29						
A771	1	#5	STR.	25′-8″	27	A870	1	#5	STR.	26′-10″	28						
A772	1	#5	STR.	25′-0″	26	A871	1	#5	STR.	26′-1″	27						
A773	1	#5	STR.	24′-3″	25	A872	1	#5	STR.	25′-5″	27						
A774	1	#5	STR.	23′-7″	25	A873	1	#5	STR.	24′-8″	26						
A775	1	#5	STR.	22′-10″	24	A874	1	#5	STR.	23′-11″	25						
A776	1	#5	STR.	22′-2″	23	A875	1	#5	STR.	23′-2″	24						
A777	1	#5	STR.	21′-5″	22	A876	1	#5	STR.	22′-5″	23						
A778	1	#5	STR.	20′-8″	22	A877	1	#5	STR.	21′-8″	23						
A779	1	#5	STR.	20′-0″	21	A878	1	#5	STR.	21′-0″	22						
A780	1	#5	STR.	19′-3″	20	A879	1	#5	STR.	20′-3″	21						
A781	1	#5	STR.	18′-7″	19	A880	1	#5	STR.	19′-6″	20						
A782	1	#5	STR.	17′-10″	19	A881	1	#5	STR.	18′-9″	20						
A783	1	#5	STR.	17′-2″	18	A882	1	#5	STR.	18′-0″	19						
A784	1	#5	STR.	16′-5″	17	A883	1	#5	STR.	17′-3″	18						
A785	1	#5	STR.	15′-9″	16	A884	1	#5	STR.	16′-6″	17						
A786	1	#5	STR.	15′-0″	16	A885	1	#5	STR.	15′-10″	17						
A787	1	#5	STR.	14′-4″	15	A886	1	#5	STR.	15′-1″	16						
A788	1	#5	STR.	13′-7″	14	A887	1	#5	STR.	14′-4″	15						
A789	1	#5	STR.	12′-11″	13	A888	1	#5	STR.	13′-7″	14						
A790	1	#5	STR.	12′-2″	13	A889	1	#5	STR.	12′-10″	13						
A791	1	#5	STR.	11′-6″	12	A890	1	#5	STR.	12′-1″	13						
A792	1	#5	STR.	10′-9″	11	A891	1	#5	STR.	11′-4″	12						
A793	1	#5	STR.	10′-1″	11	A892	1	#5	STR.	10′-7″	11						
A794	1	#5	STR.	9′-4″	10	A893	1	#5	STR.	9′-10″	10						
A795	1	#5	STR.	8′-8″	9	A894	1	#5	STR.	9′-1″	9						
A796	1	#5	STR.	7′-11″	8	A895	1	#5	STR.	8′-5″	9						
A797	1	#5	STR.	7′-3″	8	A896	1	#5	STR.	7′-8″	8						
A798	1	#5	STR.	6′-6″	7	A897	1	#5	STR.	6′-11″	7						
A799	1	#5	STR.	5′-7″	6	A898	1	#5	STR.	6′-2″	6						
A800	1	#5	STR.	5′-1″	5	A899	1	#5	STR.	5′-5″	6						

NON-EPOXY COATED REINFORCING STEEL LBS. 6133



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB (SQ. FT. = 8175)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU.YDS.)	(LBS.)	(LBS.)
SPAN "A"	109.2	10931	10197
SPAN "B"	110.7	11050	10333
SPAN "C"	62.5	6549	6133
TOTALS✳✳	282.4	28530	26663

✳✳QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED.

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2′-0″	1′-9″	2′-0″	1′-9″	2′-9″
#5	2′-6″	2′-2″	2′-6″	2′-2″	3′-5″
#6	3′-0″	2′-7″	3′-10″	2′-7″	4′-4″
#7	5′-3″	3′-6″			
#8	6′-10″	4′-7″			

GROOVING BRIDGE FLOORS

APPROACH SLAB @ END BENT 1	811 SQ.FT.
SPAN A	2659 SQ.FT.
SPAN B	2708 SQ.FT.
SPAN C	1471 SQ.FT.
APPROACH SLAB @ END BENT 2	817 SQ.FT.
TOTAL	8466 SQ.FT.

PROJECT NO. R-3622AA

CHEROKEE COUNTY

STATION: 54+89.84 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

SUPERSTRUCTURE BILL OF MATERIAL SPAN C

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			36

ASSEMBLED BY : S. PEREZ, Jr. DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08

DRAWN BY : JMB 5/87
CHECKED BY : SJD 9/87

REV. 6/1/94 EEM/GRP
REV. 8/16/99 RWW/LES
REV. 5/1/06 TLA/GM

ENGINEERS PLANNERS ECONOMISTS
WilburSmith ASSOCIATES
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

DRAWN BY : S. PEREZ, Jr. DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08

DWG. No. 22

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
3-28-08

STD. NO. BOM1

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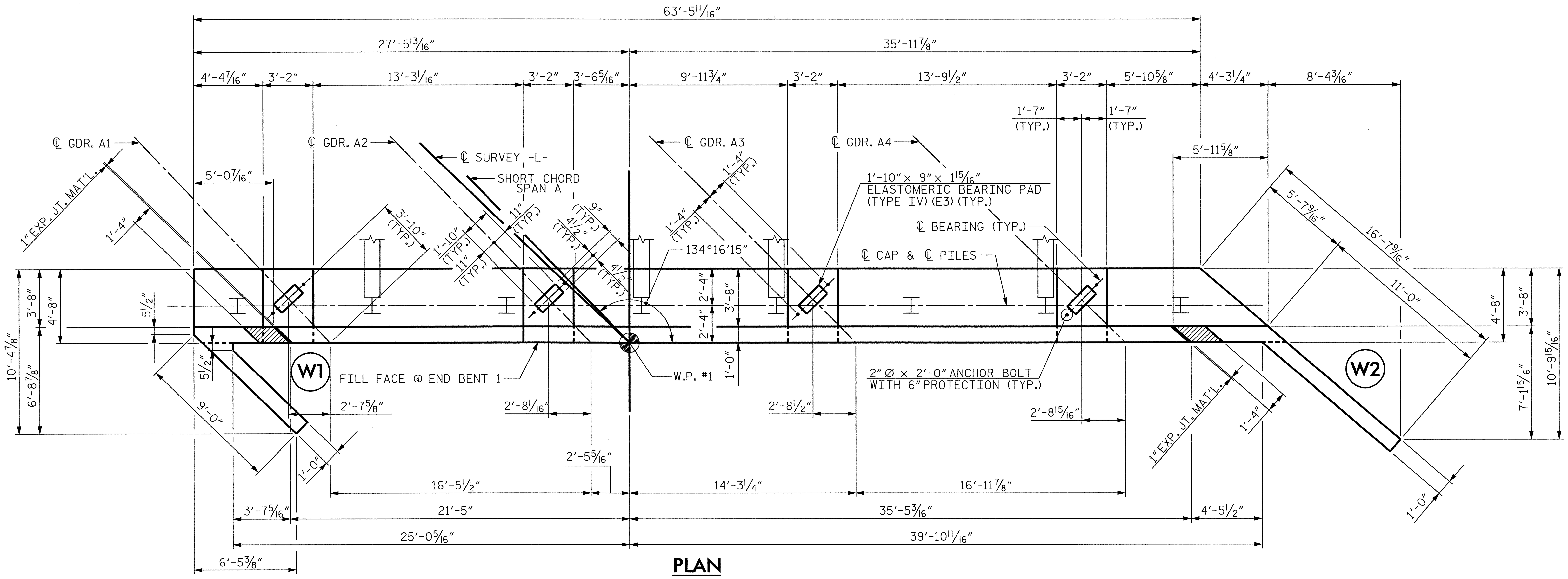
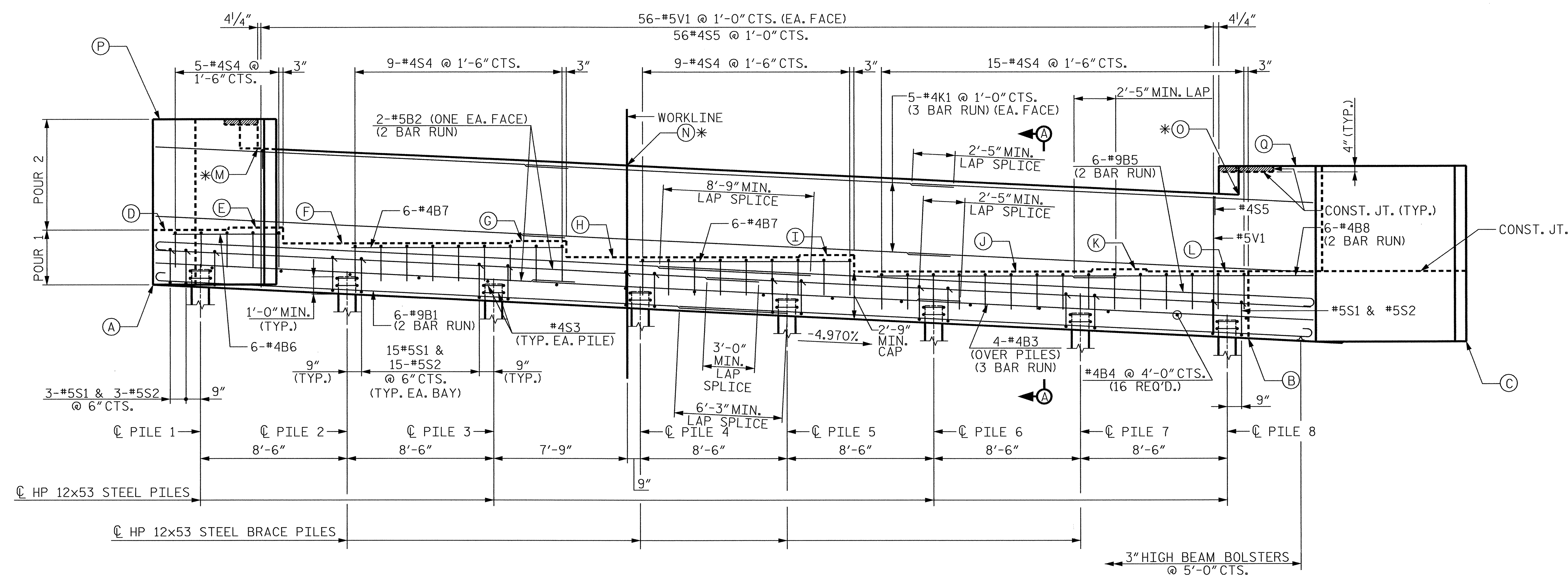
3/28/2008



PLAN



ELEVATION

NOTES:

THE TOP SURFACE AREAS OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

FOR PILE SPLICE DETAILS, SEE "END BENT 1 DETAILS AND BILL OF MATERIAL" SHEET.

THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEATS, SEE SECTION A-A, "END BENT 1 DETAILS AND BILL OF MATERIAL" SHEET.

FOR TEMPORARY DRAINAGE AT END BENTS, SEE "END BENT 2 DETAILS AND BILL OF MATERIAL" SHEET.

THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF 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 DRAIN PIPE.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND APPROACH SLAB HAS BEEN SAWED AND THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

ELEVATION TABLE	
A	1539.031
B	1535.876
C	1535.682
D	1542.199
E	1542.324
F	1541.406
G	1541.531
H	1540.594
I	1540.719
J	1539.761
K	1539.886
L	1539.761
M	1546.899
N	1545.907
O	1544.170
P	1548.589
Q	1545.840

* ELEVATION AT FILL FACE.

PILE TABLE

PILE NO.	CUT OFF ELEV.
1	1539.920
2	1539.497
3	1539.075
4	1538.653
5	1538.230
6	1537.808
7	1537.385
8	1536.963

PROJECT NO. R-3622AA

CHEROKEE COUNTY

STATION: 54+89.84 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1

WilburSmith ASSOCIATES — ENGINEERS PLANNERS ECONOMISTS
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

DRAWN BY : S. PEREZ, Jr. DATE : 3-07
CHECKED BY : T.M. HARRIS DATE : 3-08
DWG. No. 23

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19299 THOMAS M. HARRIS — 3-28-08

REVISIONS							
No.	BY:	DATE:	No.	BY:	DATE:	SHEET No.	S-23
1			3			TOTAL SHEETS	36
2			4				

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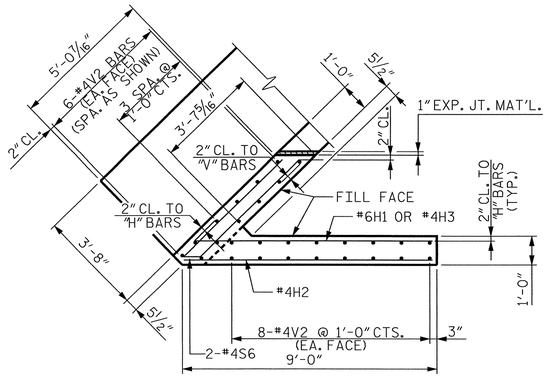
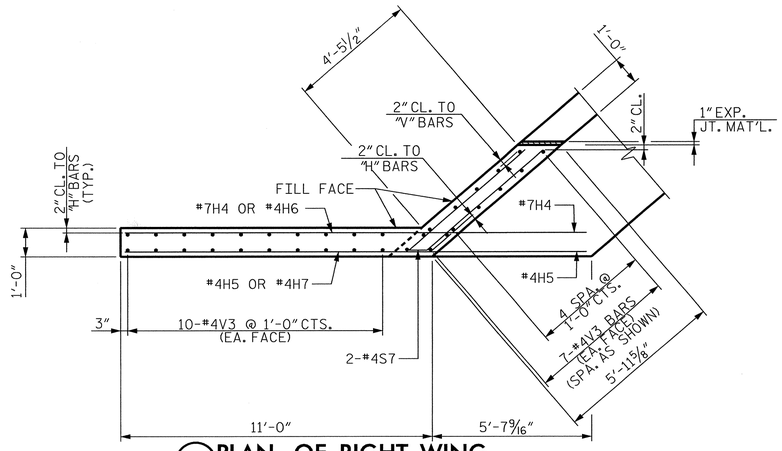
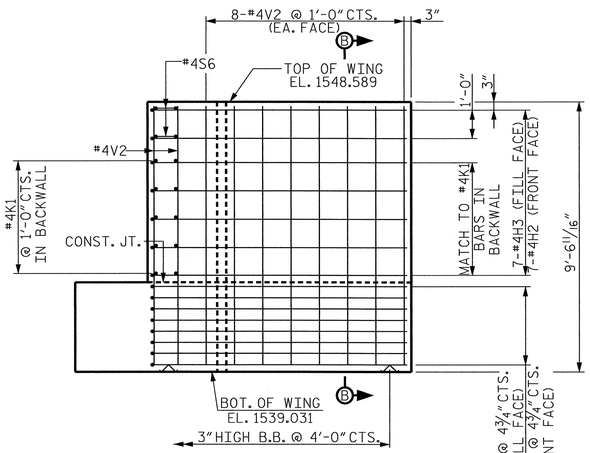
3/27/2008



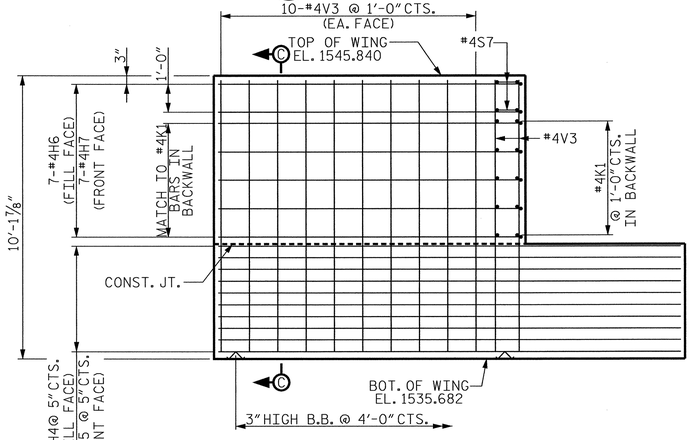
W1 PLAN OF LEFT WING



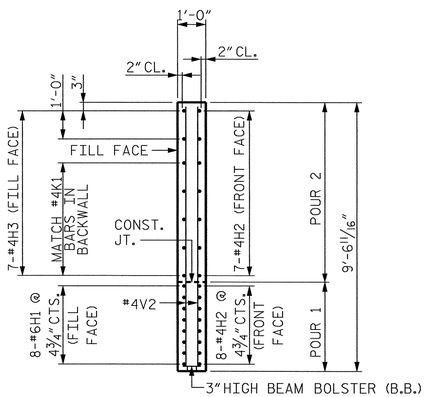
W2 PLAN OF RIGHT WING



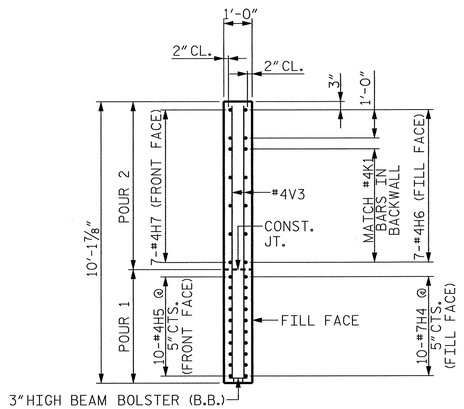
W1 ELEVATION OF LEFT WING



W2 ELEVATION OF RIGHT WING



SECTION B–B



SECTION C–C

PROJECT NO. R-3622AA

CHEROKEE COUNTY

STATION: 54+89.84 –L–

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1 DETAILS

WilburSmith ASSOCIATES
ENGINEERS PLANNERS ECONOMISTS
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

DRAWN BY : S. PEREZ, Jr. DATE : 3-07
CHECKED BY : T.M. HARRIS DATE : 3-08

DWG. No. 24

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
3-28-08

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			36

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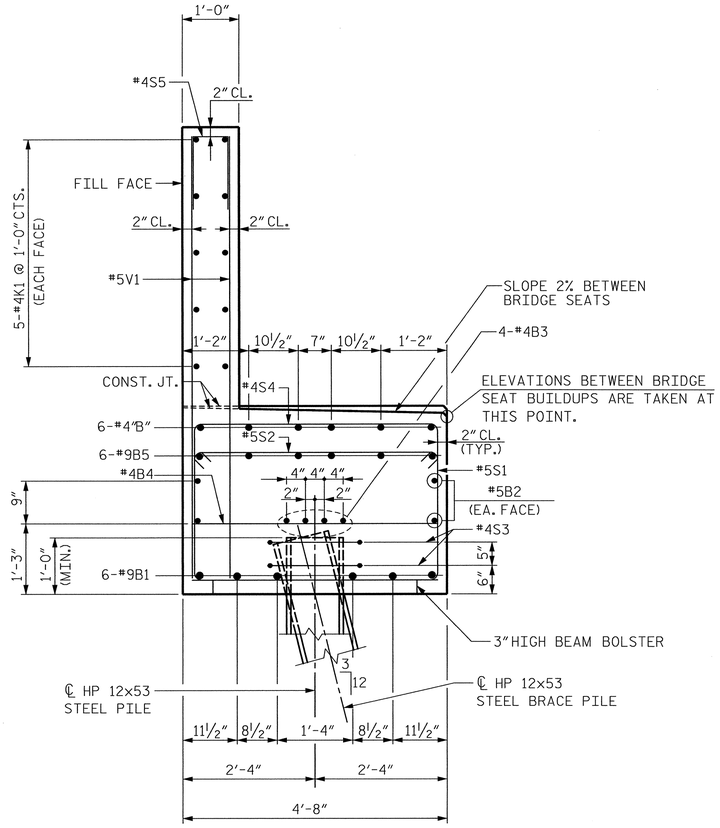
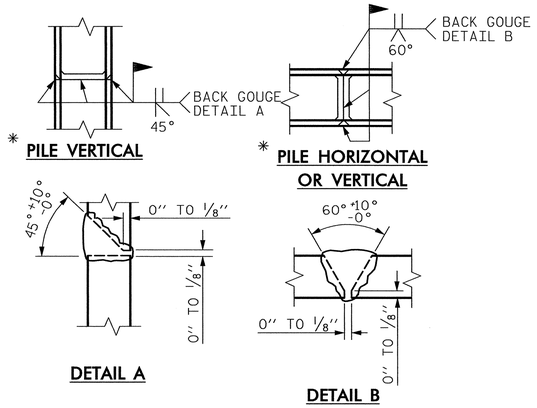
3/27/2008



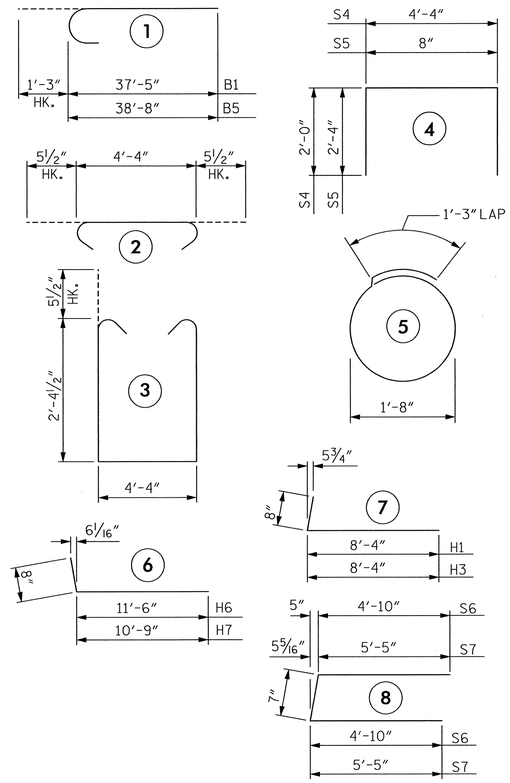
SECTION A–A



PILE SPLICE DETAILS

*POSITION OF PILE DURING WELDING.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	#9	1	38'-8"	1578
B2	8	#5	STR.	35'-9"	298
B3	12	#4	STR.	24'-6"	196
B4	16	#4	STR.	4'-4"	46
B5	12	#9	1	39'-11"	1629
B6	6	#4	STR.	6'-3"	25
B7	12	#4	STR.	12'-3"	98
B8	12	#4	STR.	14'-7"	117
H1	8	#6	7	9'-0"	108
H2	15	#4	STR.	8'-9"	88
H3	7	#4	7	9'-0"	42
H4	10	#7	STR.	16'-3"	332
H5	10	#4	STR.	16'-3"	109
H6	7	#4	6	12'-2"	57
H7	7	#4	6	11'-4"	53
K1	30	#4	STR.	24'-6"	491
S1	102	#5	3	10'-0"	1064
S2	102	#5	2	5'-3"	559
S3	16	#4	5	6'-6"	69
S4	38	#4	4	8'-4"	212
S5	56	#4	4	5'-4"	200
S6	2	#4	8	10'-3"	14
S7	2	#4	8	11'-5"	15
V1	112	#5	STR.	7'-9"	905
V2	28	#4	STR.	9'-1"	170
V3	34	#4	STR.	9'-6"	216

REINFORCING STEEL	Lbs. 8691
CLASS A CONCRETE BREAKDOWN	
POUR #1 (CAP & LOWER WINGS)	C.Y. 40.9
POUR #2 (UPPER WINGS & BACKWALL)	C.Y. 16.5
TOTAL	C.Y. 57.4
HP 12x53 STEEL PILES NO. 8	LIN. FT. 240.0
STEEL PILE POINTS WITH TEETH NO. REQ'D= 8	

PROJECT NO. R–3622AA

CHEROKEE COUNTY

STATION: 54+89.84 –L–

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1 DETAILS AND BILL OF MATERIAL

WilburSmith ASSOCIATES
ENGINEERS PLANNERS ECONOMISTS
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

DRAWN BY : S. PEREZ, Jr. DATE : 3-07
CHECKED BY : T.M. HARRIS DATE : 3-08

DWG. No. 25

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
3-28-08

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			36

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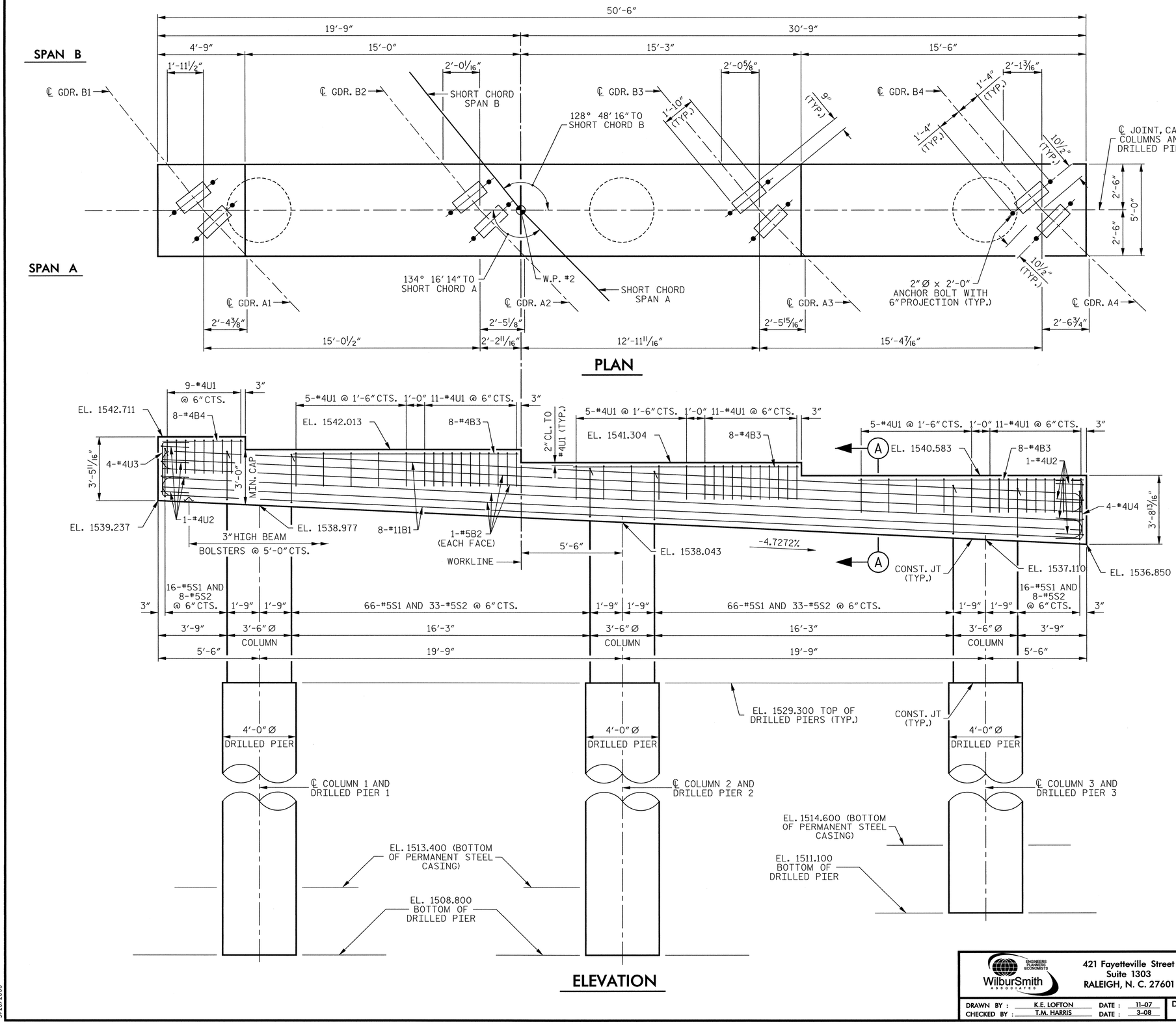
3/27/2008



NOTES

FOR SECTIONS A-A, B-B, AND C-C SEE "SHEET 2 OF 2."

STIRRUPS AND B1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL". ~~OR "EPOXY-COATED SPIRAL COLUMN REINFORCING STEEL".~~

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

PROJECT NO. R-3622AA

CHEROKEE COUNTY

STATION: 54+89.84 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1

WilburSmith ASSOCIATES
ENGINEERS PLANNERS ECONOMISTS
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

DRAWN BY : K.E. LOFTON DATE : 11-07
CHECKED BY : T.M. HARRIS DATE : 3-08

DWG. No. 26

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS 3-28-08

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			36

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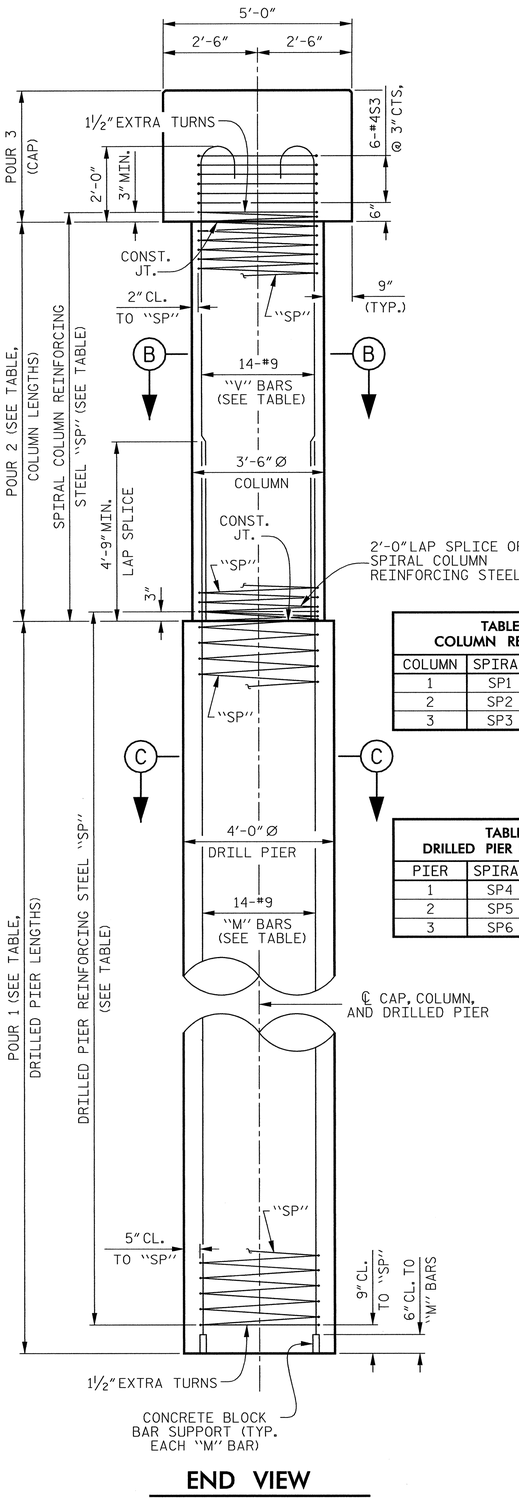
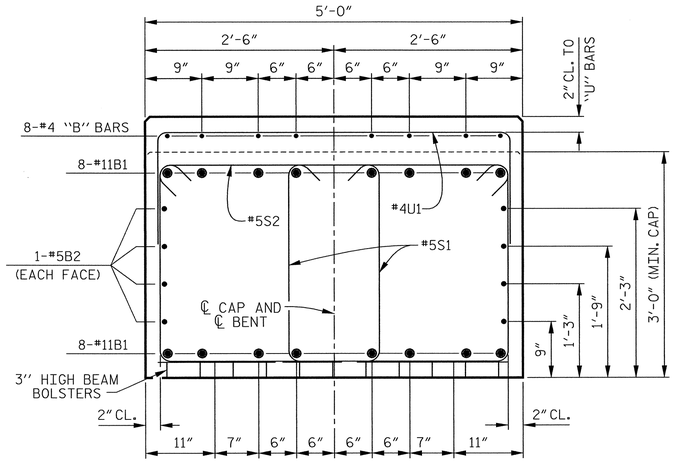
3/28/2008



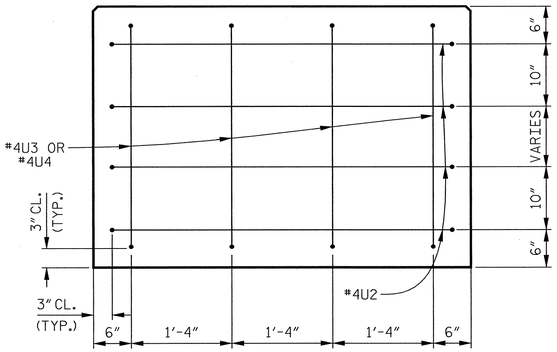
END VIEW

TABLE OF COLUMN REINFORCING			COLUMN LENGTHS
COLUMN	SPIRAL	"V" BAR	
1	SP1	V1	9'-8 1/8"
2	SP2	V2	8'-8 15/16"
3	SP3	V3	7'-9 3/4"

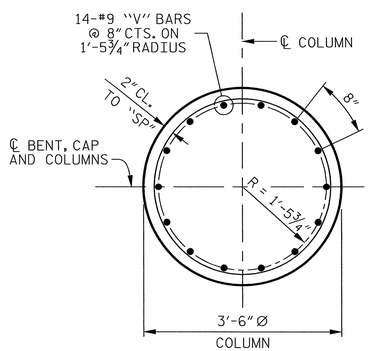
TABLE OF DRILLED PIER REINFORCING			DRILLED PIER LENGTHS
PIER	SPIRAL	"M" BAR	
1	SP4	M1	20'-6"
2	SP5	M2	20'-6"
3	SP6	M3	18'-2 3/8"



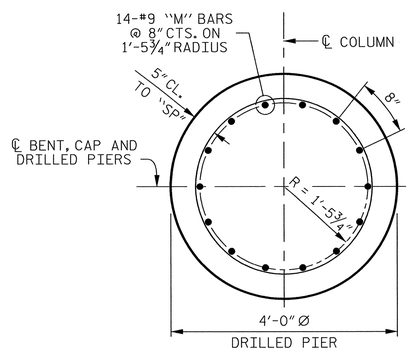
SECTION A–A



END OF CAP DETAIL

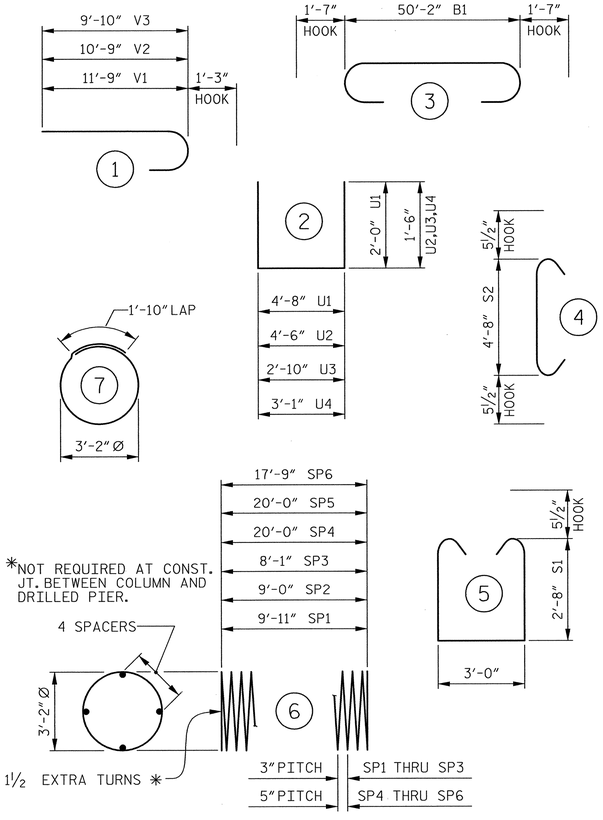


SECTION B–B
(TYP. ALL COLUMNS)



SECTION C–C
(TYP. ALL DRILLED PIERS)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT 1

BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
B1	16	11	3	53'- 4"	4534
B2	8	5	STR	50'- 2"	419
B3	24	4	STR	12'- 2"	195
B4	8	4	STR	4'- 5"	24
M1	14	9	STR	27'- 9"	1321
M2	14	9	STR	27'- 9"	1321
M3	14	9	STR	25'- 6"	1214
S1	164	5	5	9'- 3"	1582
S2	82	5	4	5'- 7"	478
S3	18	4	7	11'- 8"	140
U1	57	4	2	8'- 8"	330
U2	8	4	2	7'- 6"	40
U3	4	4	2	5'-10"	16
U4	4	4	2	6'- 1"	16
V1	14	9	1	13'- 0"	619
V2	14	9	1	12'- 0"	571
V3	14	9	1	11'- 1"	528

REINFORCING STEEL 13,348 LBS.

SP1	1	**	6	405'- 6"	271
SP2	1	**	6	368'- 0"	246
SP3	1	**	6	331'- 5"	221
SP4	1	***	6	484'-10"	506
SP5	1	***	6	484'-10"	506
SP6	1	***	6	430'- 9"	449

SPIRAL COLUMN REINFORCING STEEL 2,199 LBS.

CLASS "A" CONCRETE

POUR 3	CAP	31.6 CU. YDS.
POUR 2	COLUMNS	9.4 CU. YDS.
	TOTAL	41.0 CU. YDS.

4'-0" Ø DRILLED PIER CONCRETE
POUR 1 27.6 CU. YDS.

4'-0" Ø DRILLED PIER
NOT IN SOIL 16.9 FT.

4'-0" Ø DRILLED PIER
IN SOIL 42.3 FT.

PERMANENT STEEL CASING
FOR 4'-0" Ø DRILLED PIER 46.5 FT.

** THE SP1 THRU SP3 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

*** THE SP4 THRU SP6 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

AN ESTIMATED 1,776 FEET OF CSL TUBES ARE REQUIRED AND WILL BE PAID FOR WITH THE DRILLED PIERS, SEE DRILLED PIER SPECIAL PROVISION.

PROJECT NO. R-3622AA

CHEROKEE COUNTY

STATION: 54+89.84 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1 DETAILS AND BILL OF MATERIALS

WilburSmith ASSOCIATES
ENGINEERS PLANNERS ECONOMISTS
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

DRAWN BY : K.E. LOFTON DATE : 11-07
CHECKED BY : T.M. HARRIS DATE : 3-08

DWG. No. 27

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
3-28-08

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			36

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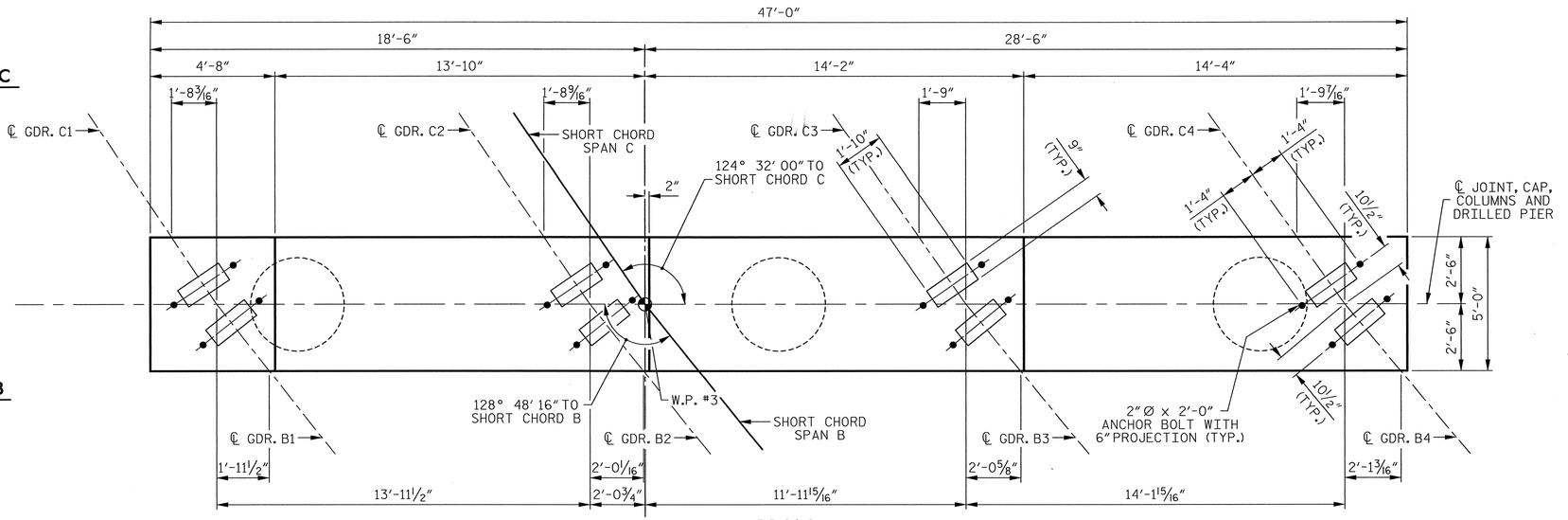
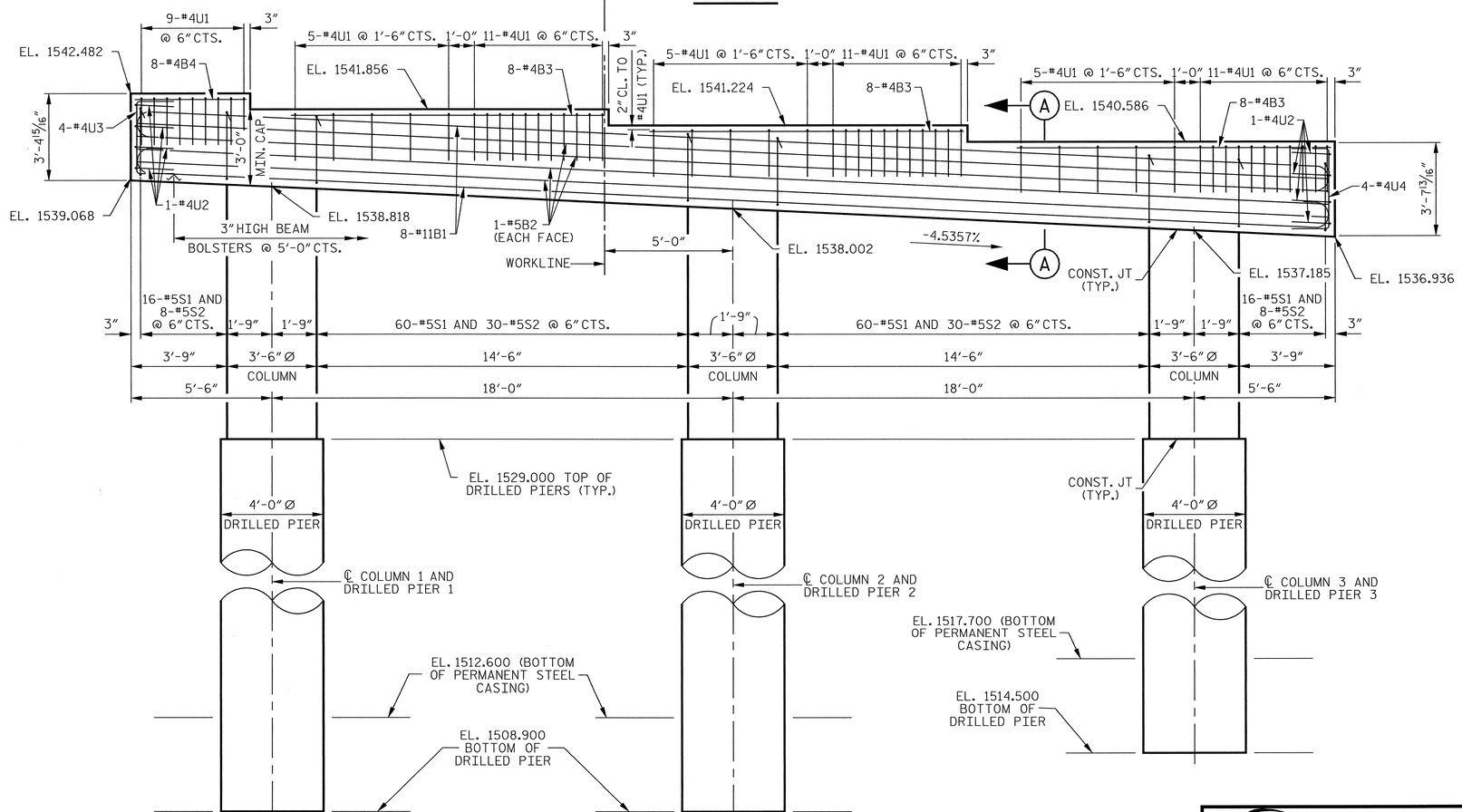
3/28/2008



PLAN



ELEVATION

NOTES

FOR SECTIONS A-A, B-B, AND C-C SEE "SHEET 2 OF 2."

STIRRUPS AND B1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL". ~~OR "EPOXY COATED SPIRAL COLUMN REINFORCING STEEL".~~

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

PROJECT NO. R-3622AA

CHEROKEE COUNTY

STATION: 54+89.84 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 2

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			36

WilburSmith Associates
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

DRAWN BY : K.E. LOFTON DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08

DWG. No. 28

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
3-28-08

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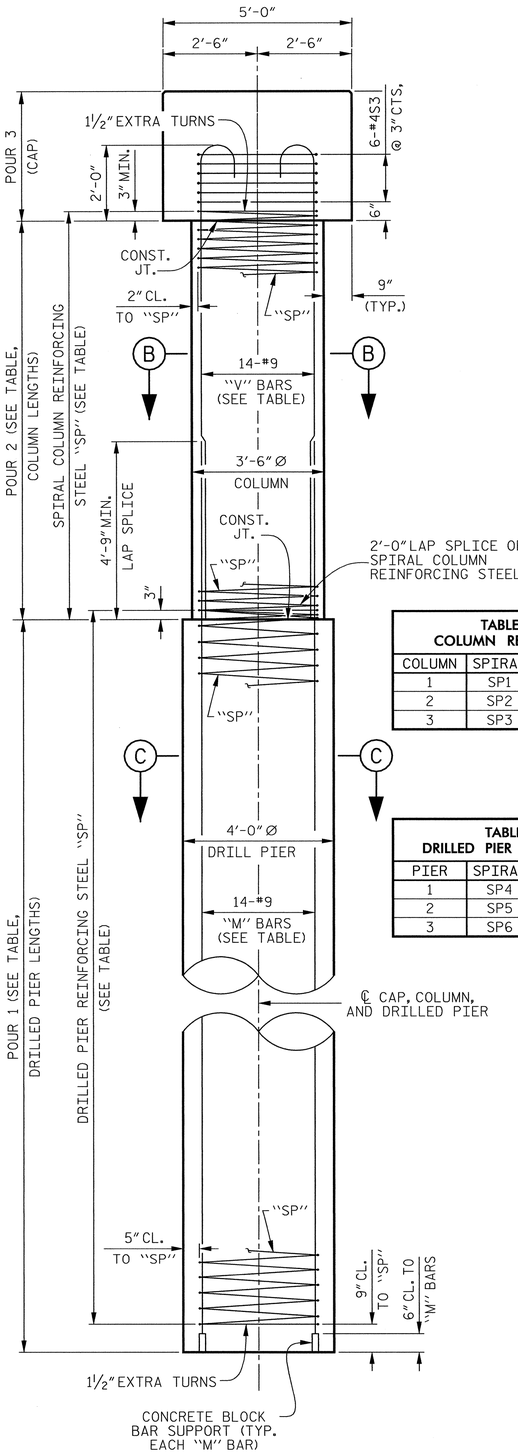
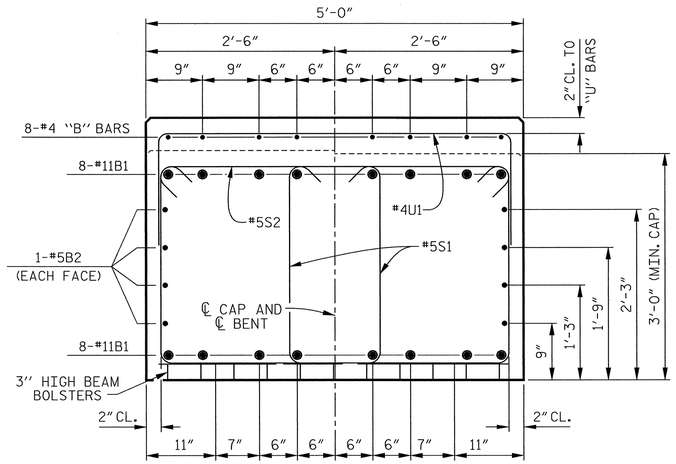
3/28/2008



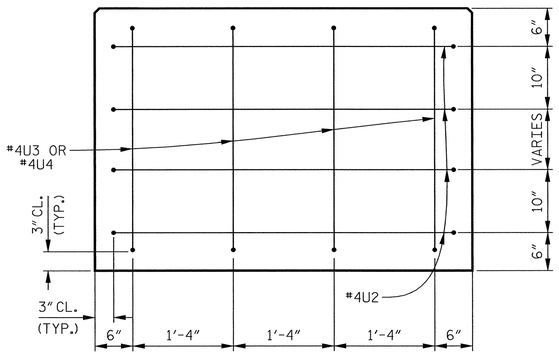
END VIEW

TABLE OF COLUMN REINFORCING			COLUMN LENGTHS
COLUMN	SPIRAL	"V" BAR	
1	SP1	V1	9'-9 13/16"
2	SP2	V2	9'-0"
3	SP3	V3	8'-2 1/4"

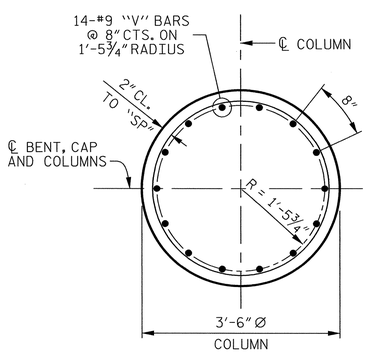
TABLE OF DRILLED PIER REINFORCING			DRILLED PIER LENGTHS
PIER	SPIRAL	"M" BAR	
1	SP4	M1	20'-1 3/16"
2	SP5	M2	20'-1 3/16"
3	SP6	M3	14'-6"



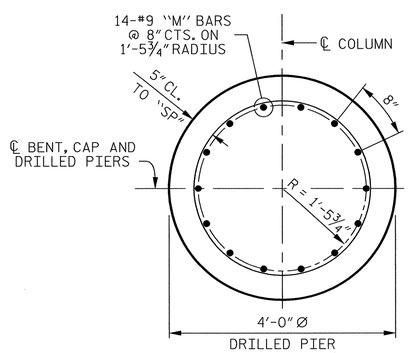
SECTION A–A



END OF CAP DETAIL

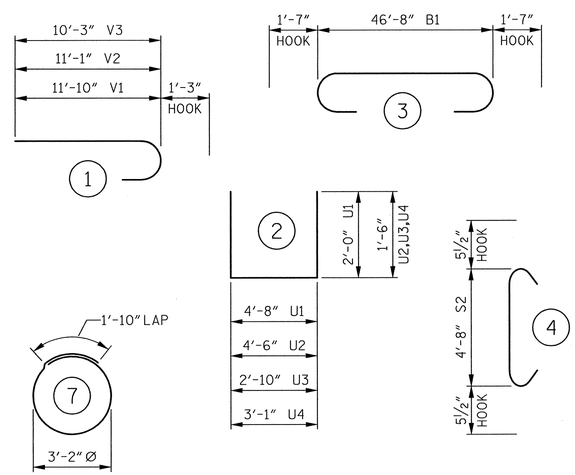


SECTION B–B
(TYP. ALL COLUMNS)



SECTION C–C
(TYP. ALL DRILLED PIERS)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT 2

BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
B1	16	11	3	49'-10"	4236
B2	8	5	STR	46'- 8"	389
B3	24	4	STR	12'- 2"	195
B4	8	4	STR	4'- 4"	23
M1	14	9	STR	27'- 5"	1305
M2	14	9	STR	27'- 5"	1305
M3	14	9	STR	21'- 9"	1035
S1	152	5	5	9'- 3"	1466
S2	76	5	4	5'- 7"	443
S3	18	4	7	11'- 8"	140
U1	57	4	2	8'- 8"	330
U2	8	4	2	7'- 6"	40
U3	4	4	2	5'-10"	16
U4	4	4	2	6'- 1"	16
V1	14	9	1	13'- 1"	623
V2	14	9	1	12'- 4"	587
V3	14	9	1	11'- 6"	547

REINFORCING STEEL 12,696 LBS.

SP1	1	**	6	410'- 3"	274
SP2	1	**	6	378'- 3"	253
SP3	1	**	6	346'- 1"	231
SP4	1	***	6	475'- 5"	496
SP5	1	***	6	475'- 5"	496
SP6	1	***	6	343'-10"	359

SPIRAL COLUMN REINFORCING STEEL 2,109 LBS.

CLASS "A" CONCRETE
POUR 3 CAP 29.1 CU. YDS.
POUR 2 COLUMNS 9.6 CU. YDS.
TOTAL 38.7 CU. YDS.

4'-0" Ø DRILLED PIER CONCRETE
POUR 1 25.5 CU. YDS.

4'-0" Ø DRILLED PIER NOT IN SOIL 15.1 FT.

4'-0" Ø DRILLED PIER IN SOIL 39.6 FT.

PERMANENT STEEL CASING FOR 4'-0" Ø DRILLED PIER 44.1 FT.

** THE SP1 THRU SP3 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

*** THE SP4 THRU SP6 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

AN ESTIMATED 1,641 FEET OF CSL TUBES ARE REQUIRED AND WILL BE PAID FOR WITH THE DRILLED PIERS, SEE DRILLED PIER SPECIAL PROVISION.

PROJECT NO. R-3622AA
CHEROKEE COUNTY
STATION: 54+89.84 -L-
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 2 DETAILS AND BILL OF MATERIALS

WilburSmith Associates
Engineers Planners Economists
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

DRAWN BY : K.E. LOFTON DATE : 11-07
CHECKED BY : T.M. HARRIS DATE : 3-08
DWG. No. 29

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS 3-28-08

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			36

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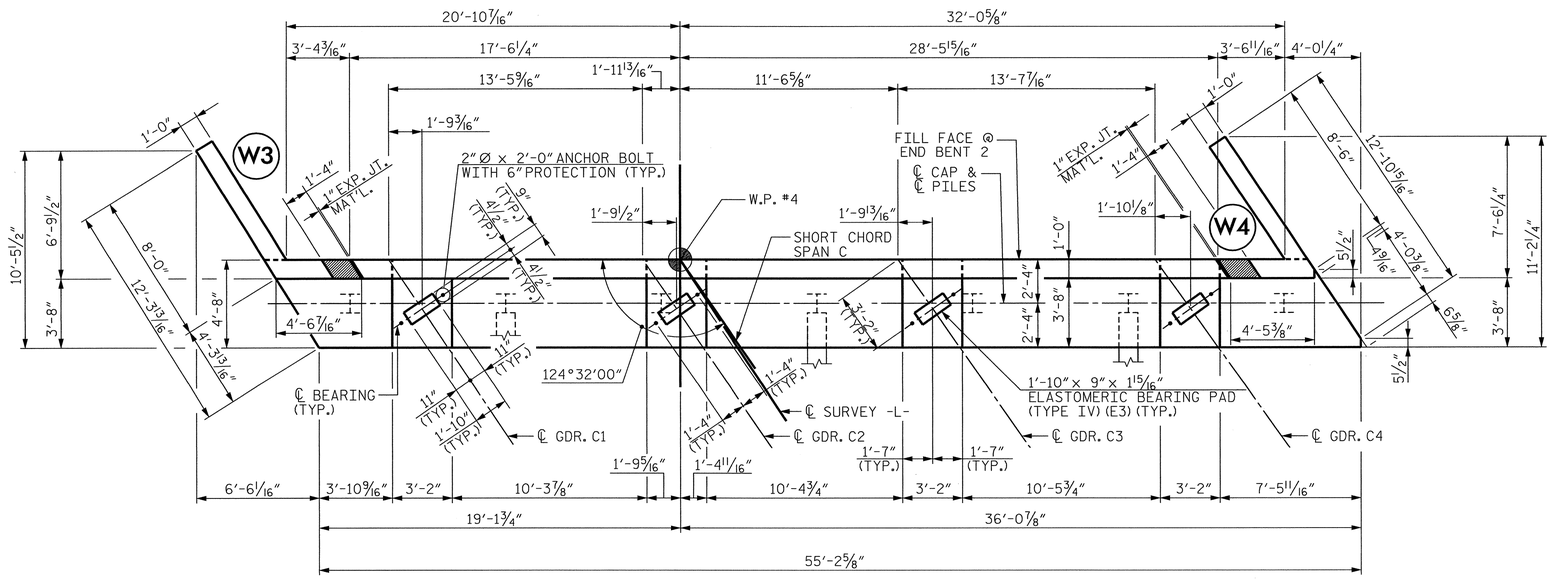
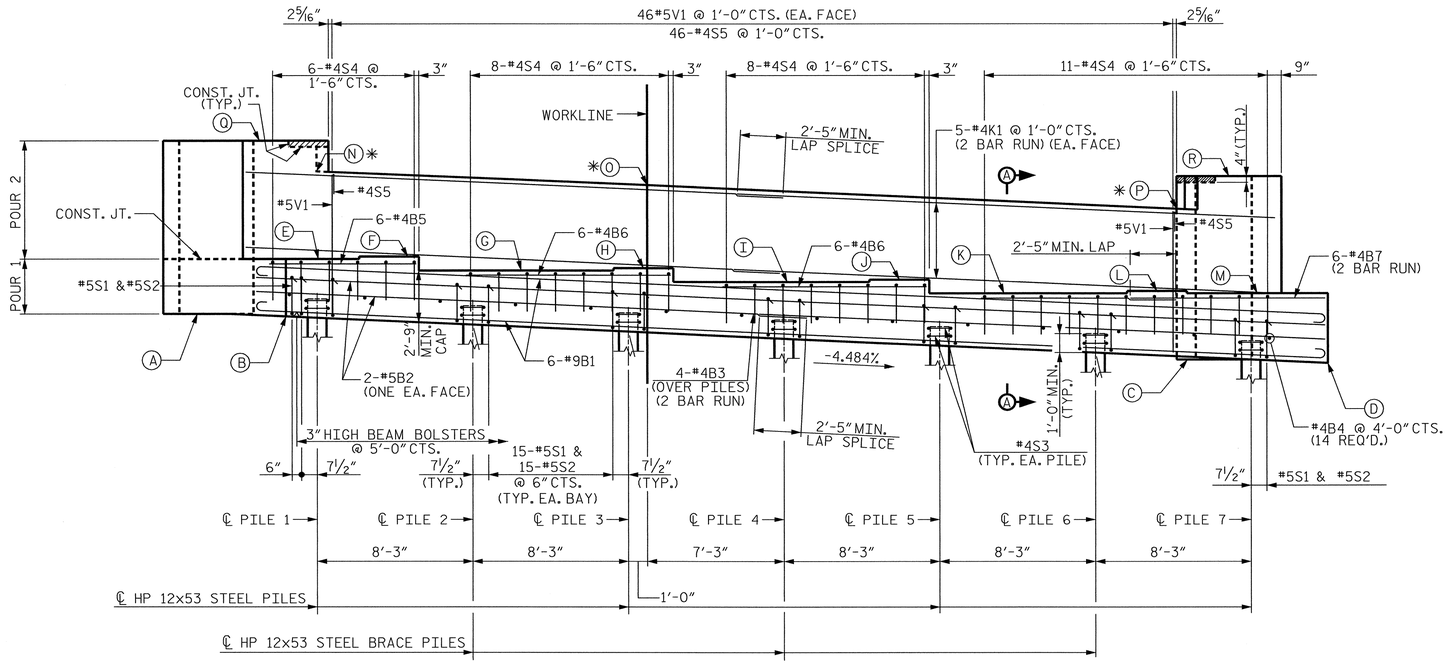
3/28/2008



PLAN



ELEVATION

NOTES:

THE TOP SURFACE AREAS OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

FOR PILE SPLICE DETAILS, SEE "END BENT 1 DETAILS AND BILL OF MATERIAL" SHEET.

THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEATS, SEE SECTION A-A, "END BENT 2 DETAILS AND BILL OF MATERIAL" SHEET.

FOR TEMPORARY DRAINAGE AT END BENTS, SEE "END BENT 2 DETAILS AND BILL OF MATERIAL" SHEET.

THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF 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 DRAIN PIPE.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND APPROACH SLAB HAS BEEN SAWED AND THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

ELEVATION TABLE	
A	1539.078
B	1538.948
C	1536.652
D	1536.472
E	1541.984
F	1542.109
G	1541.382
H	1541.507
I	1540.778
J	1540.903
K	1540.169
L	1540.294
M	1540.169
N	1546.646
O	1545.911
P	1544.643
Q	1548.292
R	1546.373

∗ ELEVATION AT FILL FACE.

PILE TABLE	
PILE NO.	CUT OFF ELEV.
1	1539.897
2	1539.527
3	1539.157
4	1538.787
5	1538.417
6	1538.047
7	1537.677

PROJECT NO. R-3622AA

CHEROKEE COUNTY

STATION: 54+89.84 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2

WilburSmith ASSOCIATES — ENGINEERS PLANNERS ECONOMISTS
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

DRAWN BY : S. PEREZ, Jr. DATE : 3-07
CHECKED BY : T.M. HARRIS DATE : 3-08

DWG. No. 30

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS 3-28-08

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S-30
1			3			TOTAL SHEETS
2			4			36

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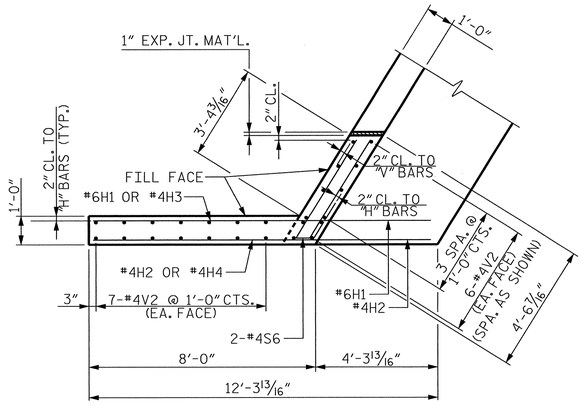
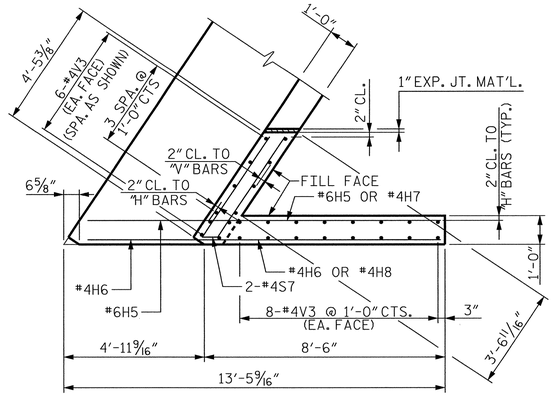
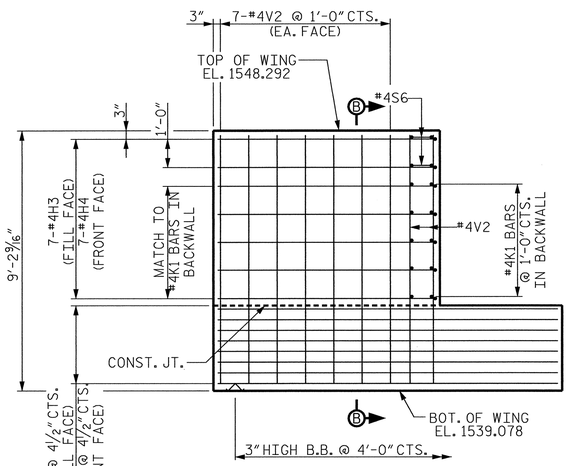
3/28/2008



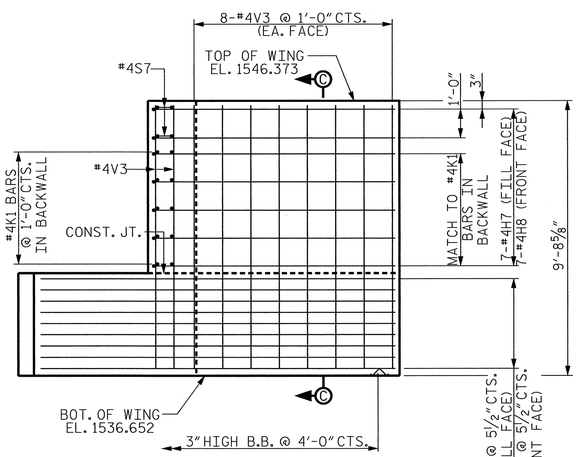
W3 PLAN OF LEFT WING



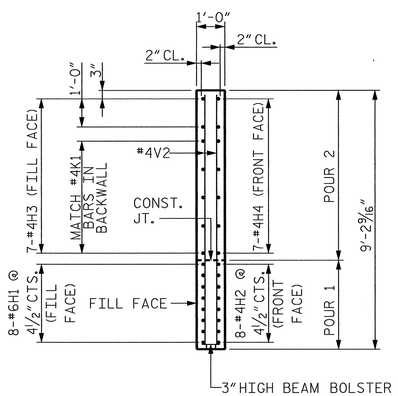
W4 PLAN OF RIGHT WING



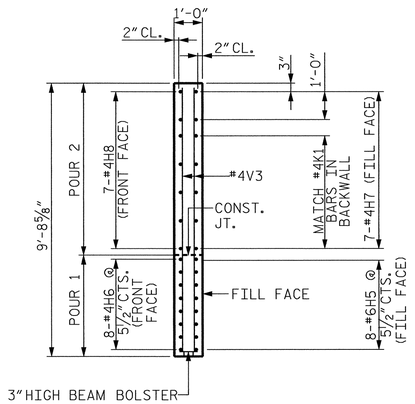
W3 ELEVATION OF LEFT WING



W4 ELEVATION OF RIGHT WING



SECTION B–B



SECTION C–C

PROJECT NO. R-3622AA

CHEROKEE COUNTY

STATION: 54+89.84 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2 DETAILS

WilburSmith ASSOCIATES (ENGINEERS PLANNERS ECONOMISTS)
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

DRAWN BY : S. PEREZ, Jr. DATE : 3-07
CHECKED BY : T.M. HARRIS DATE : 3-08

DWG. No. 31

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
3-28-08

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S-31
1			3			TOTAL SHEETS
2			4			36

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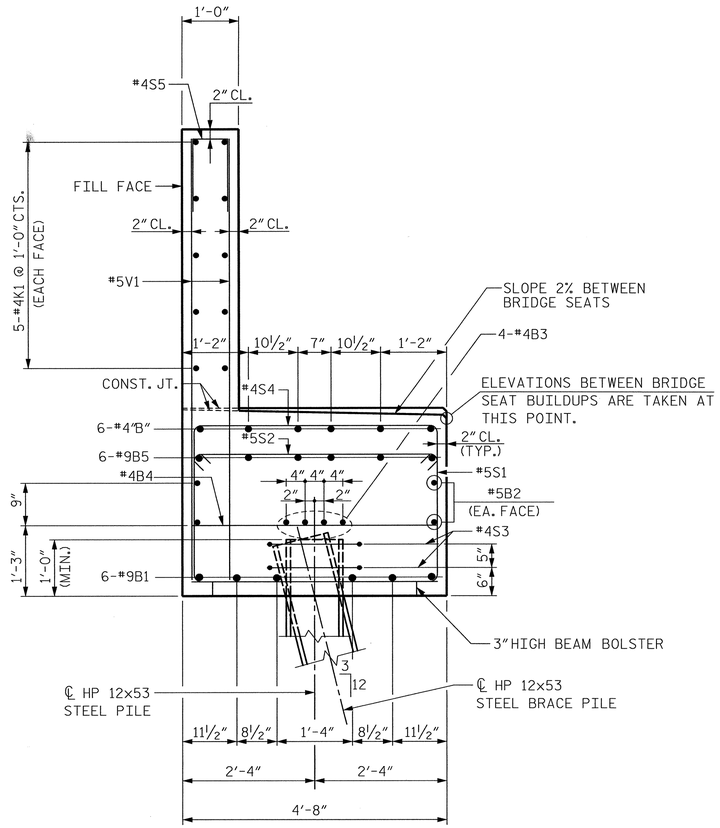
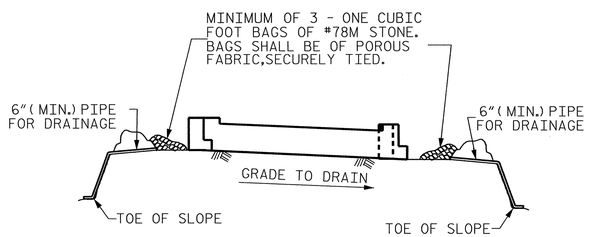
3/27/2008



SECTION A–A



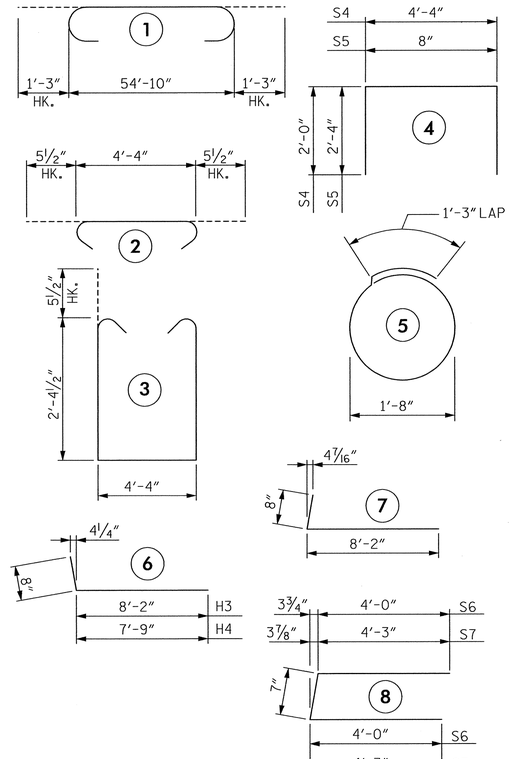
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	#9	1	57'-4"	2339
B2	4	#5	STR.	54'-10"	229
B3	8	#4	STR.	28'-10"	154
B4	14	#4	STR.	4'-4"	41
B5	6	#4	STR.	7'-8"	31
B6	12	#4	STR.	10'-8"	86
B7	12	#4	STR.	10'-3"	82
H1	8	#6	STR.	11'-10"	142
H2	8	#4	STR.	11'-10"	63
H3	7	#4	6	8'-10"	41
H4	7	#4	6	8'-5"	39
H5	8	#6	STR.	12'-5"	149
H6	8	#4	STR.	12'-5"	66
H7	7	#4	7	8'-10"	41
H8	7	#4	STR.	8'-6"	40
K1	20	#4	STR.	28'-10"	385
S1	87	#5	3	10'-0"	907
S2	87	#5	2	5'-3"	476
S3	14	#4	5	6'-6"	61
S4	33	#4	4	8'-4"	184
S5	46	#4	4	5'-4"	164
S6	2	#4	8	8'-7"	11
S7	2	#4	8	9'-1"	12
V1	92	#5	STR.	7'-4"	704
V2	26	#4	STR.	8'-9"	152
V3	28	#4	STR.	9'-3"	173

REINFORCING STEEL	Lbs. 6772
CLASS A CONCRETE BREAKDOWN	
POUR #1 (CAP & LOWER WINGS)	C.Y. 33.3
POUR #2 (UPPER WINGS & BACKWALL)	C.Y. 12.9
TOTAL	C.Y. 46.2
HP 12x53 STEEL PILES NO. 8	LIN. FT. 240.0
STEEL PILE POINTS WITH TEETH	NO. REQ'D= 8

PROJECT NO. R-3622AA

CHEROKEE COUNTY

STATION: 54+89.84 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2 DETAILS AND BILL OF MATERIAL

WilburSmith ASSOCIATES
ENGINEERS PLANNERS ECONOMISTS
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

DRAWN BY : S. PEREZ, Jr. DATE : 3-07
CHECKED BY : T.M. HARRIS DATE : 3-08

DWG. No. 32

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
3-28-08

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S-32
1			3			TOTAL SHEETS
2			4			36

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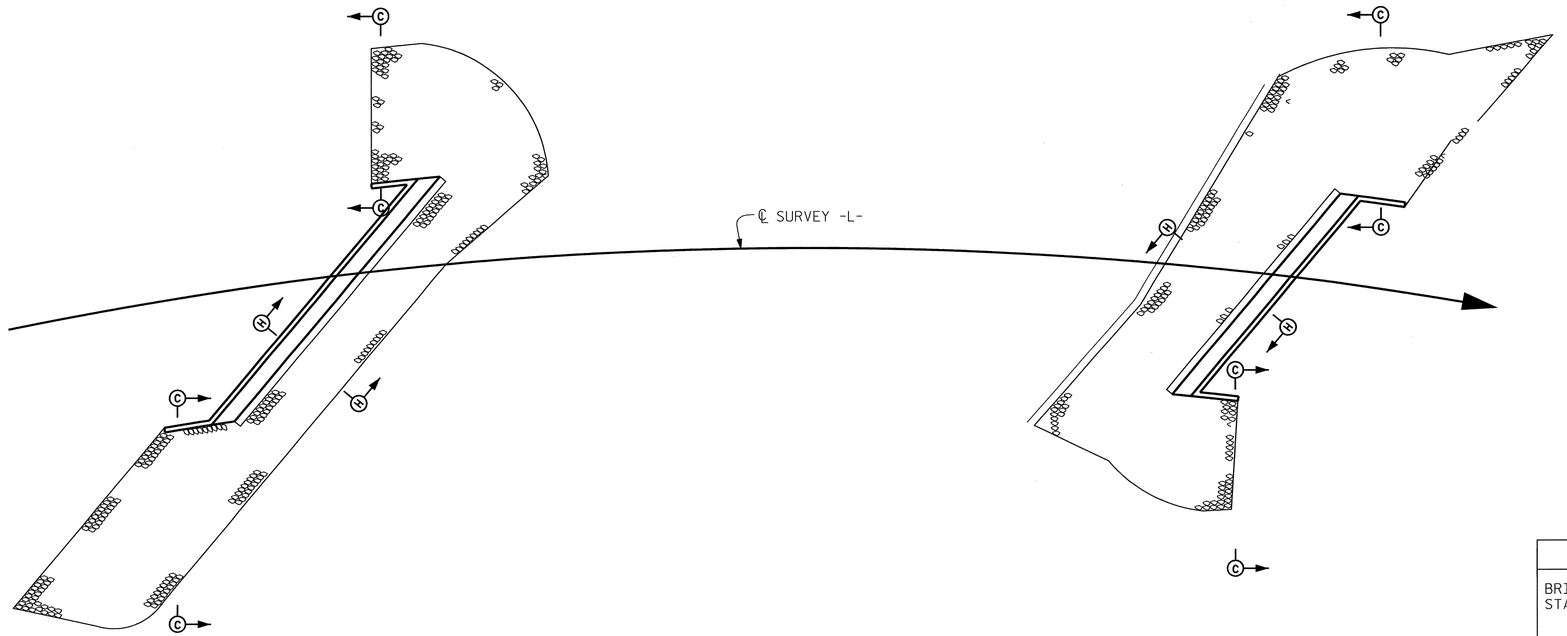
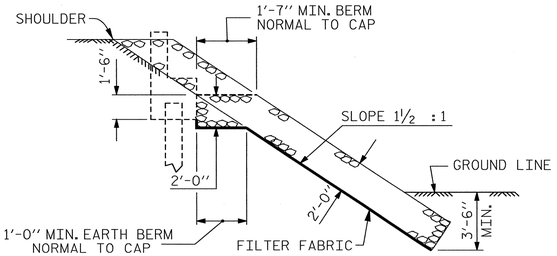
3/27/2008

NOTES :
FOR BERM WIDTH AND ELEVATIONS, SEE GENERAL DRAWING.

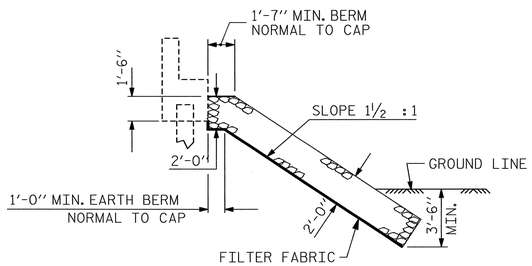


PLAN

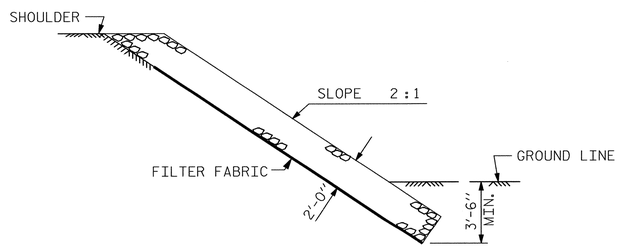
ESTIMATED QUANTITIES		
BRIDGE @ STA. 54+89.84 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	288.0	320.0
END BENT 2	383.9	426.4



SECTION H–H



℄ SECTION BERM RIP RAPPED



SECTION C–C

PROJECT NO. R–3622AA
CHEROKEE COUNTY
STATION: 54+89.84 –L–

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

RIP RAP DETAILS

ASSEMBLED BY : S. PEREZ, Jr.	DATE : 9-06
CHECKED BY : T.M. HARRIS	DATE : 3-08
DRAWN BY : REK 1/84	REV. 8/16/99 RWW/LES
CHECKED BY : RDU 1/84	REV. 10/17/00 RWW/LES
	REV. 5/1/06 TLA/GM

WilburSmith ASSOCIATES — ENGINEERS PLANNERS ECONOMISTS
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

DRAWN BY : S. PEREZ, Jr. DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08
DWG. No. 33

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS 3-28-08

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S-33
1			3			TOTAL SHEETS
2			4			36

STD. NO. RR3

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3/27/2008

NOTE:
FOR SPLICE LENGTH CHART, SEE SHEET 2 OF 3.
"B" BARS SHALL BE PLACED PARALLEL TO THE CHORD.

END BENT 1

END BENT 2

PLAN

* RADIAL DIMENSION

PROJECT NO. R-3622AA

CHEROKEE COUNTY

STATION: 54+89.84 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH SLAB

WilburSmith ASSOCIATES — ENGINEERS PLANNERS ECONOMISTS
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

DRAWN BY : S. PEREZ, Jr. DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08
DWG. No. 34

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19299 THOMAS M. HARRIS 3-28-08

REVISIONS							
No.	BY:	DATE:	No.	BY:	DATE:
1			3		
2			4		

SHEET No. S-34
TOTAL SHEETS 36

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3/21/2008

NOTES

APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

FOR REINFORCED BRIDGE APPROACH FILL INCLUDING FABRIC, 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.

THE 6″ COMP. A.B.C. SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB AND SHALL EXTEND 1′-0″ OUTSIDE EACH EDGE OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 4″ TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6″ COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 5″ CLASS "A" CONCRETE BASE IN LIEU OF 6″ COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 30 LB ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.

WITH EVAZOTE JOINT SEAL

FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 2½″.

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL

APPROACH SLAB AT END BENT 1

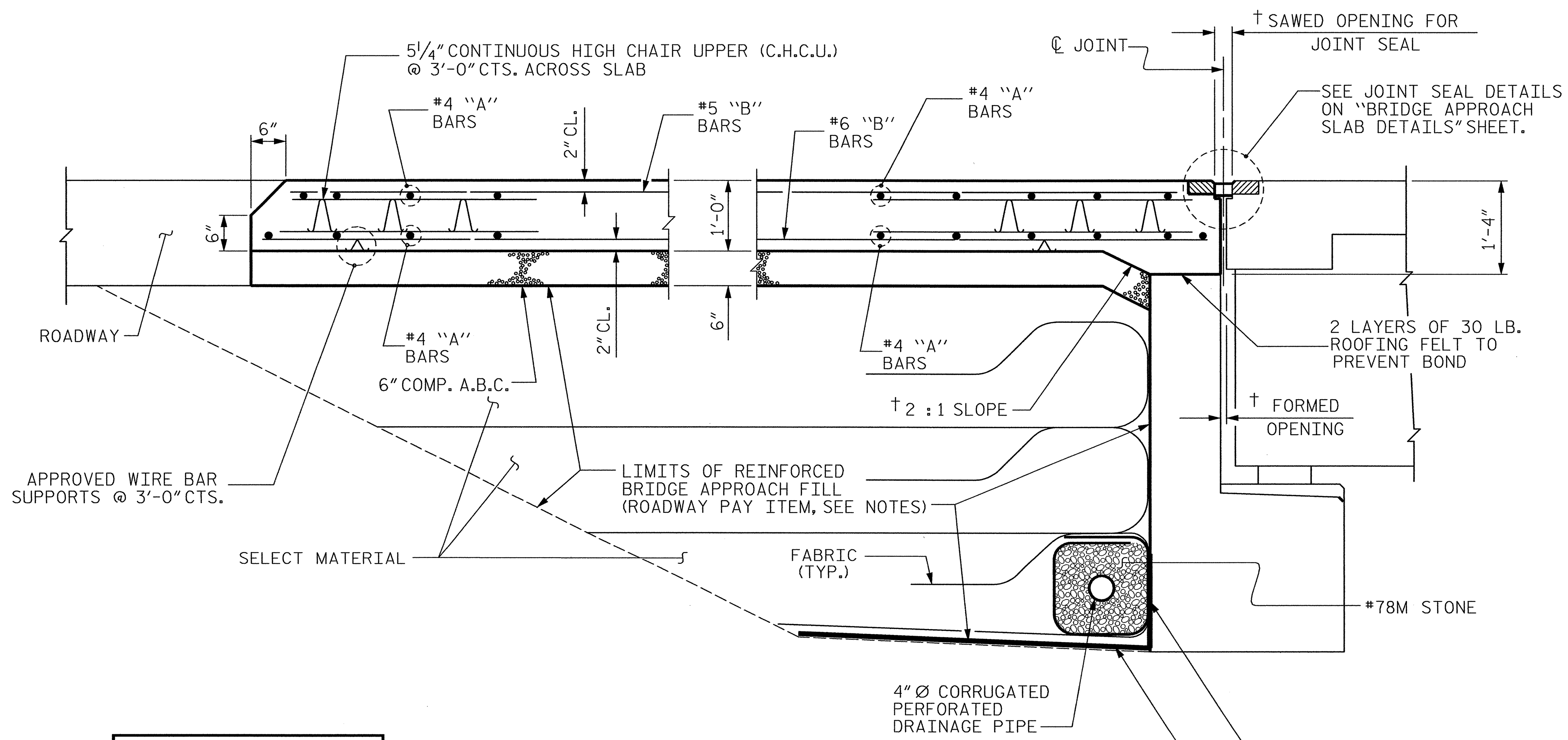
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	50	#4	STR.	30′-0″	1002
A2	50	#4	STR.	29′-11″	996
*B1	154	#5	STR.	14′-1″	2262
B2	154	#6	STR.	14′-2″	3277
REINFORCING STEEL				LBS.	4273
*EPOXY COATED REINFORCING STEEL				LBS.	3264
CLASS AA CONCRETE				C.Y.	36.6

APPROACH SLAB AT END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	50	#4	STR.	23′-9″	793
A2	50	#4	STR.	23′-8″	790
*B1	154	#5	STR.	14′-1″	2262
B2	154	#6	STR.	14′-2″	3277
REINFORCING STEEL				LBS.	4067
*EPOXY COATED REINFORCING STEEL				LBS.	3055
CLASS AA CONCRETE				C.Y.	36.3

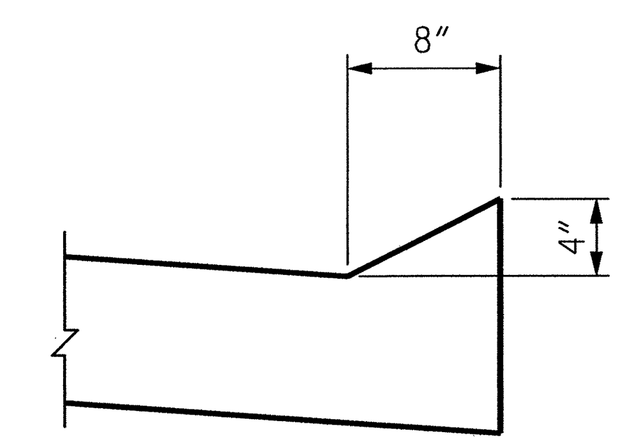
SPLICE LENGTH CHART

BAR	SIZE	MIN. LAP SPLICE
A1	#4	2′-0″
A2	#4	1′-9″
B1	#5	2′-6″
B2	#6	2′-7″

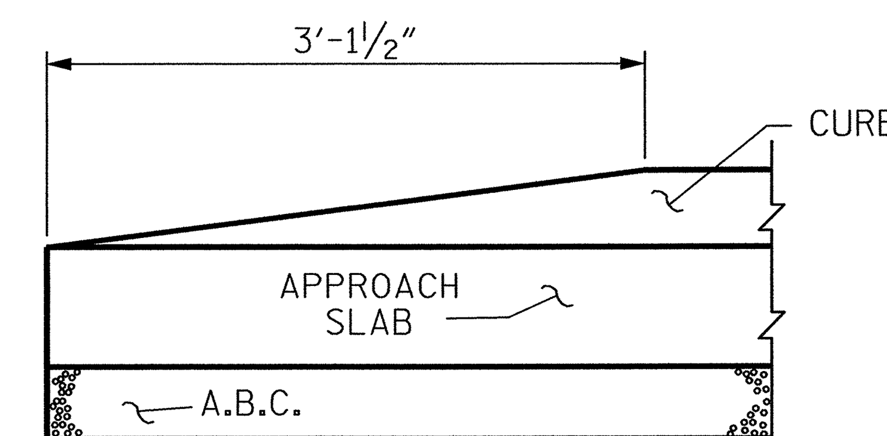


† NORMAL TO END BENT

SECTION THRU SLAB



SECTION N–N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

PROJECT NO. R-3622AA
CHEROKEE COUNTY
STATION: 54+89.84 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

REVISIONS								SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:			S-35
1			3					TOTAL SHEETS
2			4					36

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19299 THOMAS M. HARRIS 3-28-08

WilburSmith ASSOCIATES — ENGINEERS PLANNERS ECONOMISTS
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

DRAWN BY : S. PEREZ, Jr. DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08
DWG. No. 35

ASSEMBLED BY : S.PEREZ, Jr. DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08
DRAWN BY : EEM 3/95
CHECKED BY : VAP 3/95
REV. 7/10/01 LES/RDR
REV. 5/7/03R RWW/JTE
REV. 5/1/06 TLA/GM

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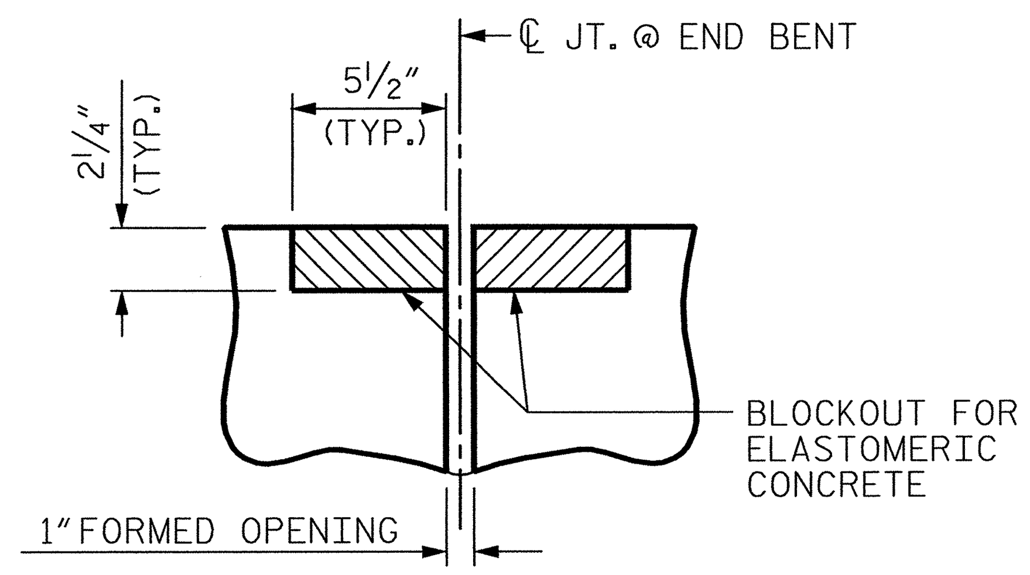
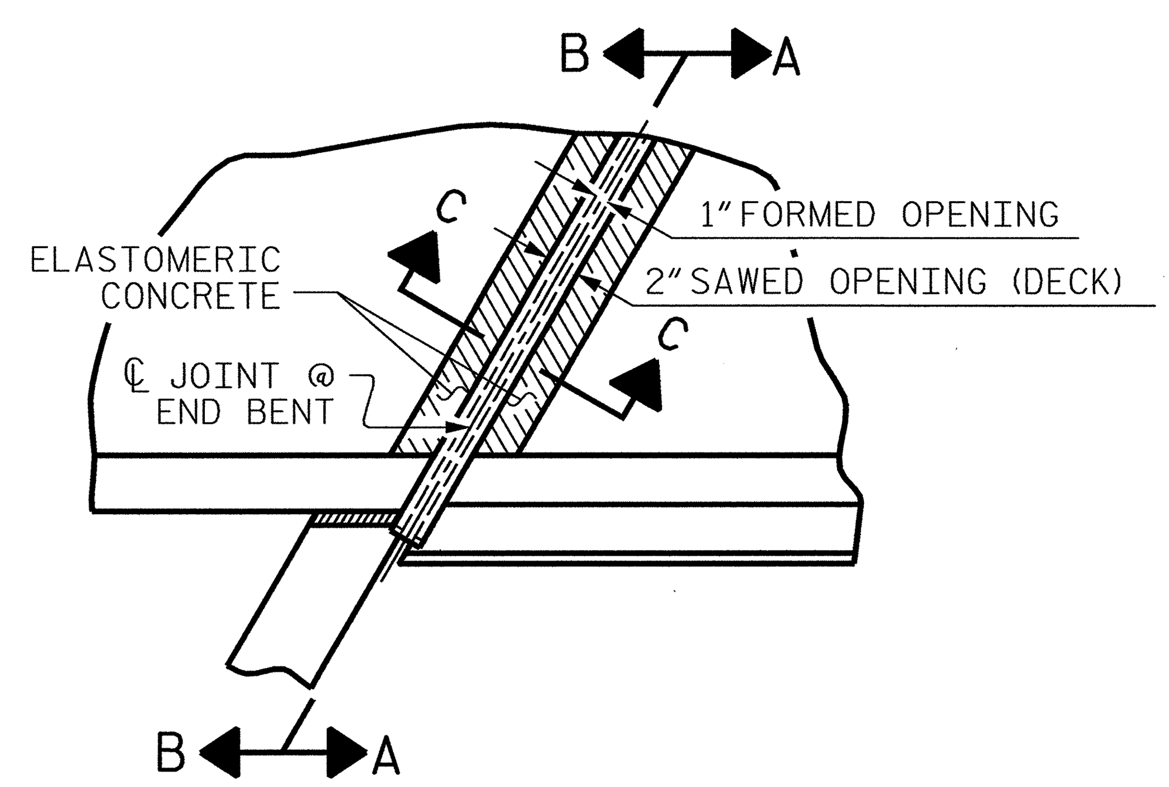
3/27/2008

STD. NO. BAS4

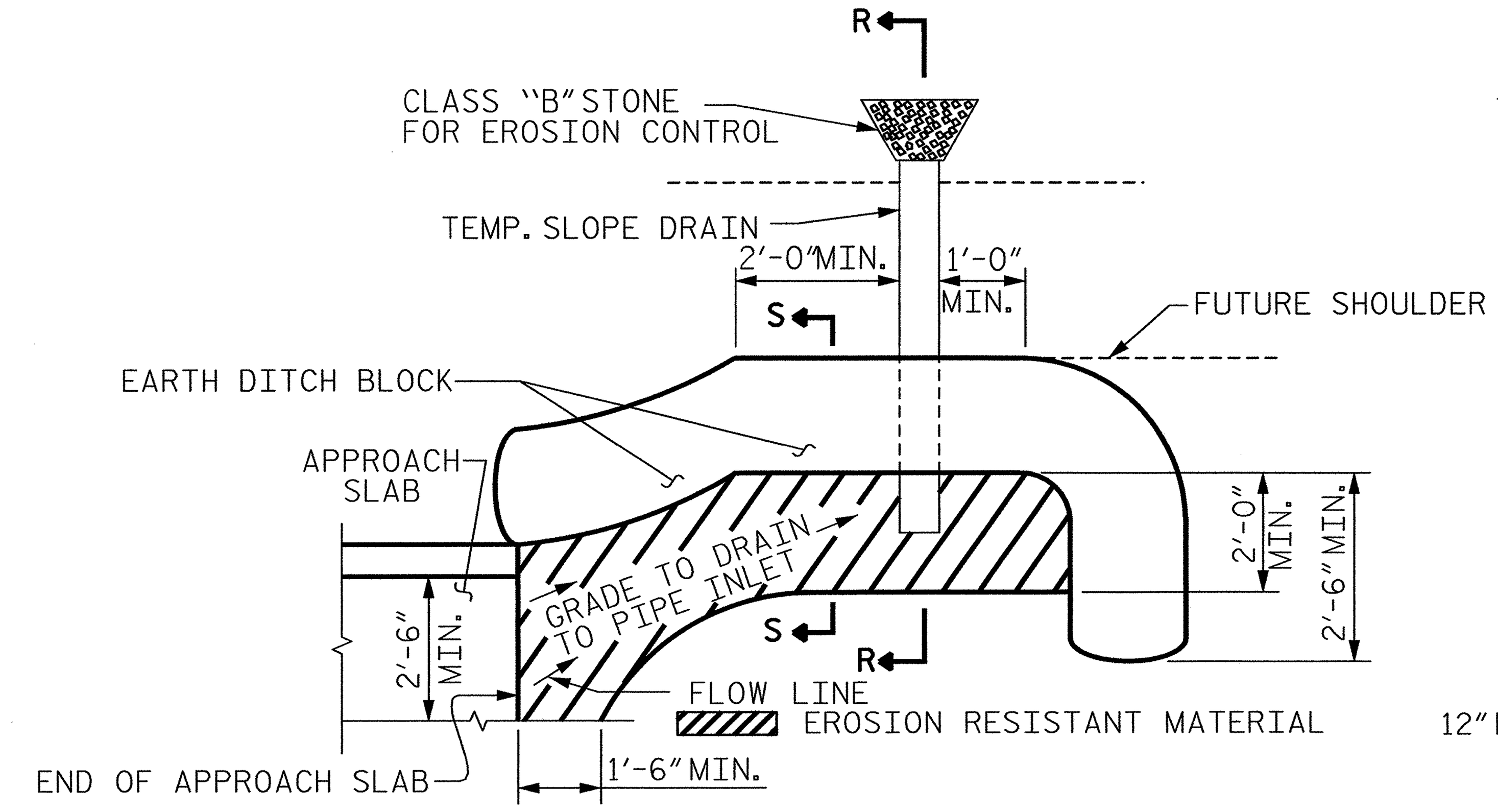


SECTION C–C

EVAZOTE JOINT SEAL
(PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS)

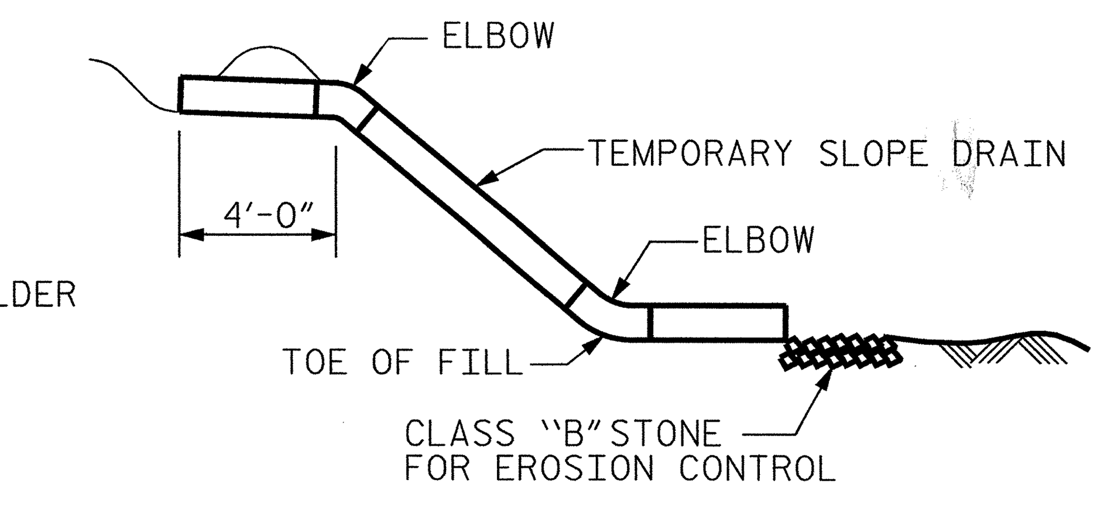


PLAN

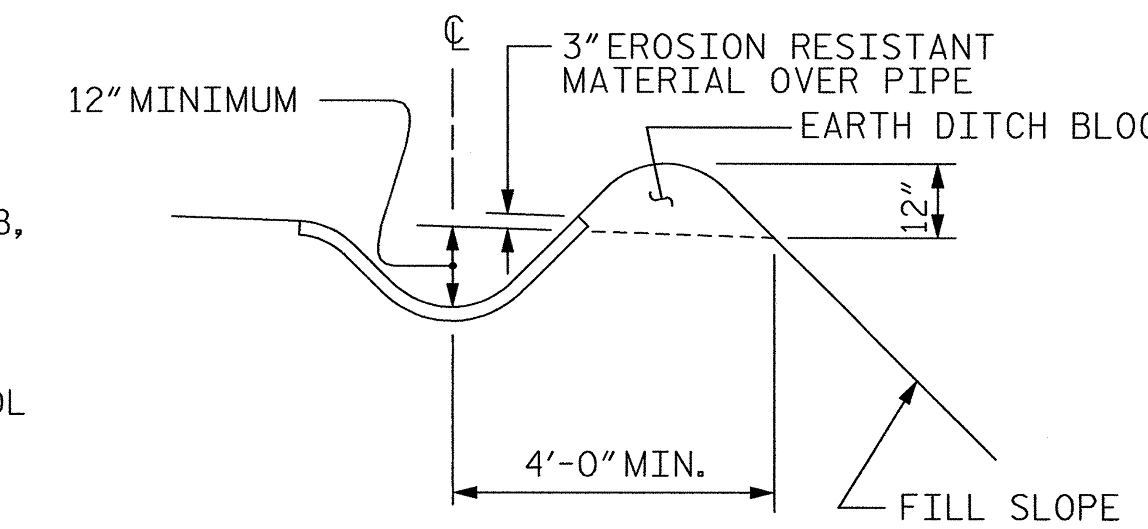


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 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.

PLAN VIEW



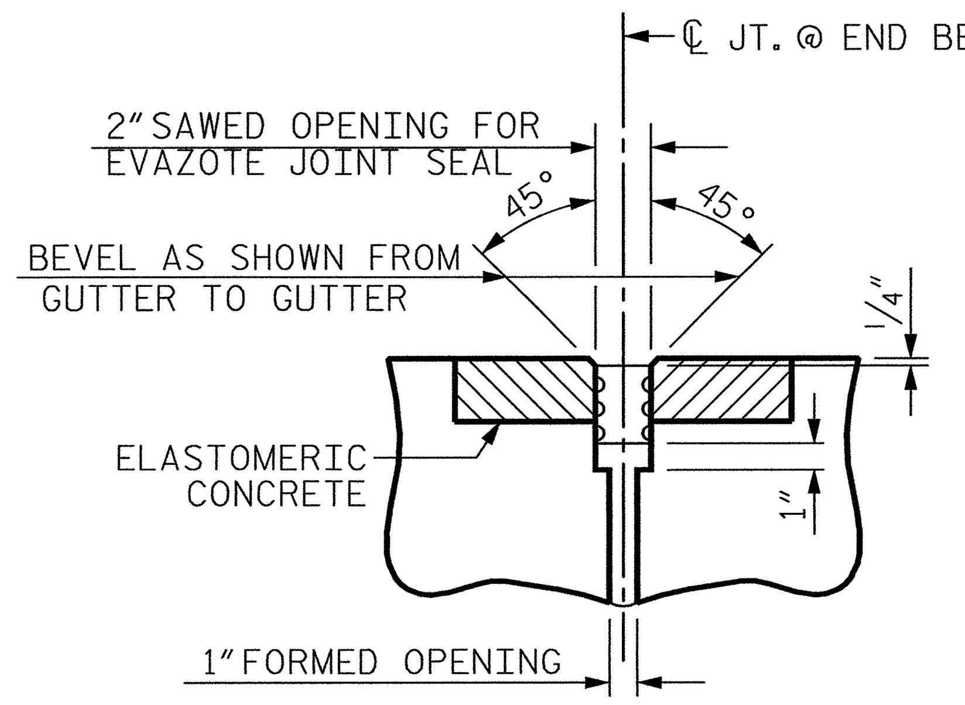
SECTION R–R



SECTION S–S

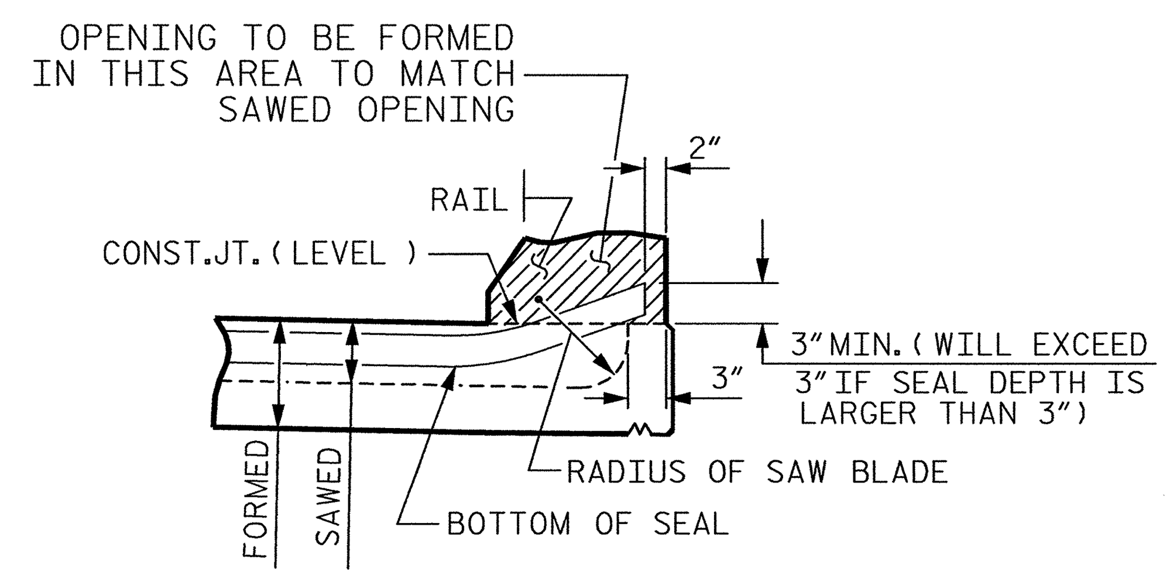
TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION C–C

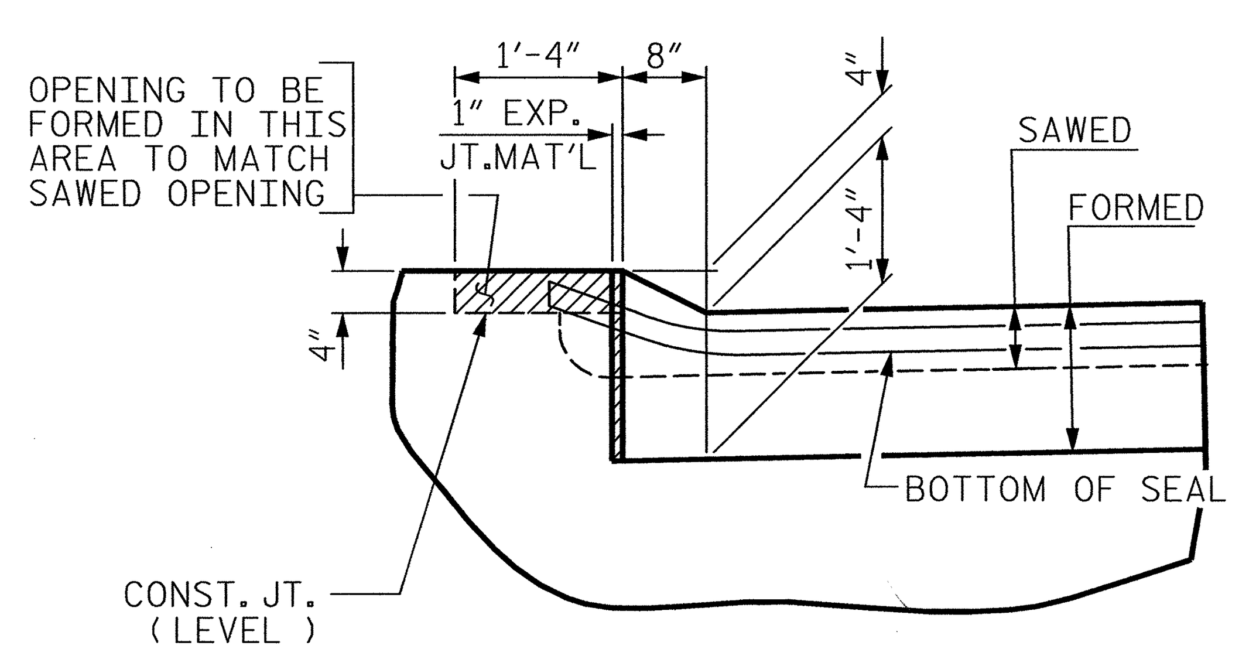
EVAZOTE JOINT SEAL



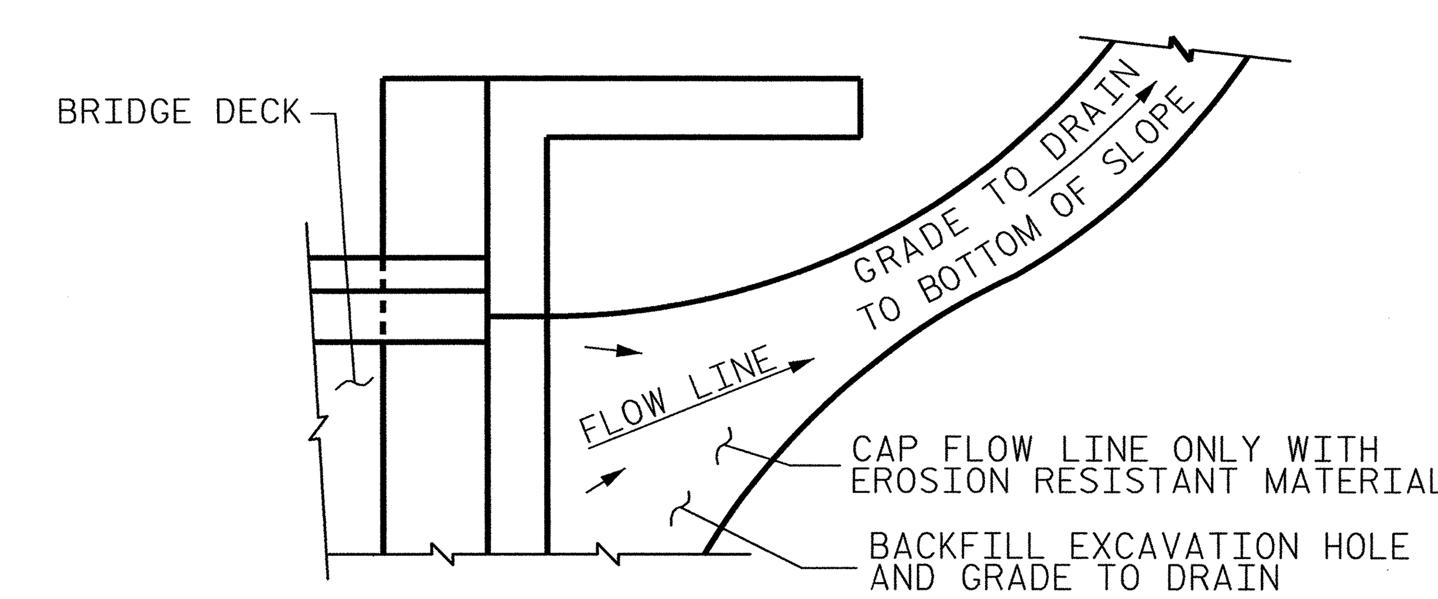
SECTION A–A

ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	9.4
2	7.6
TOTAL	17.0

* BASED ON THE MINIMUM BLOCKOUT SHOWN.



SECTION B–B



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

PROJECT NO. R-3622AA
CHEROKEE COUNTY
STATION: 54+89.84 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETAILS

REVISIONS								SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:			S-36
1			3					TOTAL SHEETS
2			4					36

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19299 THOMAS M. HARRIS
3-28-08

WilburSmith ASSOCIATES — ENGINEERS PLANNERS ECONOMISTS
421 Fayetteville Street
Suite 1303
RALEIGH, N. C. 27601

DRAWN BY : S. PEREZ, Jr. DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08
DWG. No. 36

ASSEMBLED BY : S. PEREZ, Jr. DATE : 9-06
CHECKED BY : T.M HARRIS DATE : 3-08

DRAWN BY : FCJ 11/88
CHECKED BY : ARB 11/88
REV. 10/17/00 RWW/LES
REV. 5/7/03 RWW/JTE
REV. 5/1/06 TLA/GM

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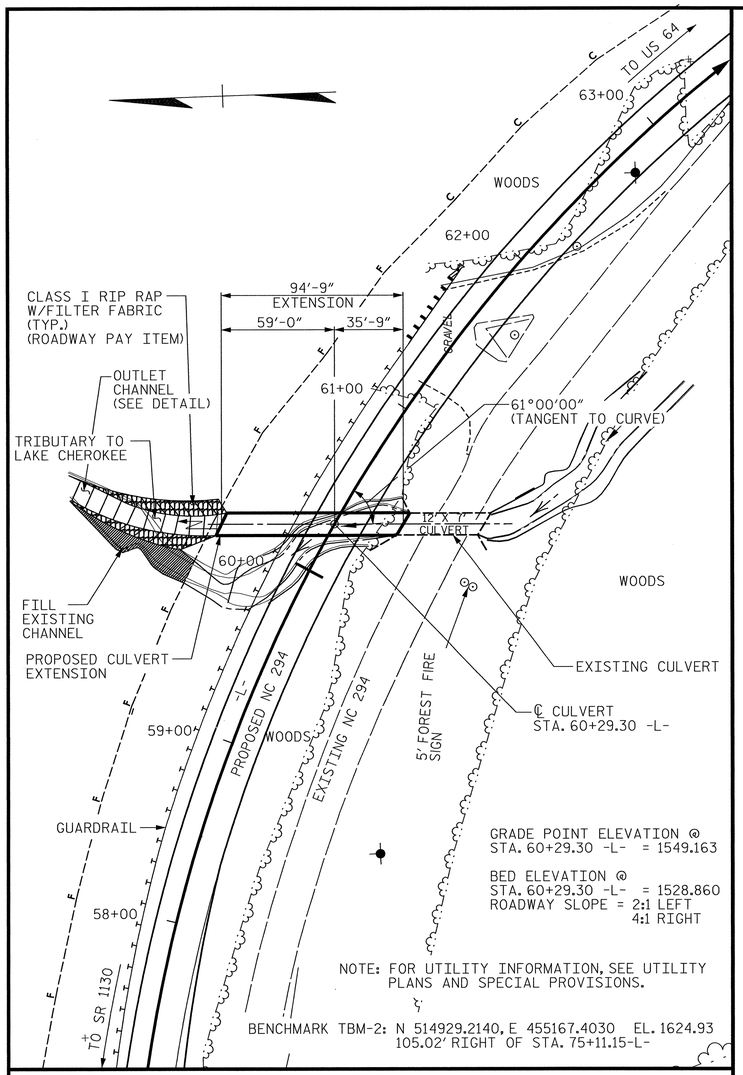
3/27/2008

STD. NO. BAS10



LOCATION SKETCH

PI = 61+25.00
EL = 1539.80'
VC = 1,000'

(-)1.4080% (+)8.4000%

GRADE DATA -L-

HORIZONTAL CURVE DATA -L-

PI STA. 59+76.41
△ = 112°53'09.8" (RT.)
D = 6°50'00.0"
T = 1264.06'
L = 1651.99'
R = 838.47'
SLOPE = 0.06 FT./FT.

HYDROGRAPHIC DATA

DESIGN DISCHARGE	= 700 CFS
FREQUENCY OF DESIGN FLOOD	= 50 YR.
DESIGN HIGH WATER ELEVATION	= 1539.3
DRAINAGE AREA	= 1.3 SQ. MI.
BASIC DISCHARGE (Q100)	= 900 CFS
BASIC HIGH WATER ELEVATION	= 1541.6

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 1400 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 500 YR. +
OVERTOPPING FLOOD ELEVATION	= 1545.8

TOTAL STRUCTURE QUANTITIES

CLASS A CONCRETE			
BARREL @	1.476 CY/FT	139.9	C.Y.
WINGS ETC.		12.5	C.Y.
TOTAL		152.4	C.Y.
REINFORCING STEEL			
BARREL		23705	LBS.
WINGS ETC.		660	LBS.
TOTAL		24365	LBS.
FOUNDATION CONDITIONING MATERIAL		90	TONS
CULVERT EXCAVATION		LUMP	SUM

NOTES

ASSUMED LIVE LOAD ---------- HS20-44 OR ALTERNATE LOADING.

DESIGN FILL---------- 15.0 FT.

FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.

3"Ø WEEP HOLES INDICATED TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.

CONCRETE IN CULVERTS TO BE POURED IN THE FOLLOWING ORDER:
1. WING FOOTINGS AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS.
2. THE REMAINING PORTIONS OF THE WALLS AND WINGS FULL HEIGHT FOLLOWED BY ROOF SLAB AND HEADWALLS.

THE RESIDENT ENGINEER SHALL CHECK THE LENGTH OF CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.

DIMENSIONS FOR WING LAYOUT AS WELL AS ADDITIONAL REINFORCING STEEL EMBEDDED IN BARREL ARE SHOWN ON WING SHEET.

TRANSVERSE CONSTRUCTION JOINTS SHALL BE USED IN THE BARREL, SPACED TO LIMIT THE POURS TO A MAXIMUM OF 70 FT. LOCATION OF JOINTS SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER.

AT THE CONTRACTOR'S OPTION, HE MAY SPLICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACE OF EXTERIOR WALL ABOVE LOWER WALL CONSTRUCTION JOINT. THE SPLICE LENGTH SHALL BE AS PROVIDED IN THE SPLICE LENGTH CHART SHOWN ON THE PLANS. EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY THE CONTRACTOR.

ALL REINFORCING STEEL SHALL BE GRADE 60.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

A 3 FOOT STRIP OF FILTER FABRIC SHALL BE ATTACHED TO THE FILL FACE OF THE WING WALL COVERING THE ENTIRE LENGTH OF THE EXPANSION JOINT.

FOR CULVERT DIVERSION DETAILS AND PAY ITEMS, SEE EROSION CONTROL PLANS.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE THIRTY 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 BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF SAMPLES OF THE SIZE AND LENGTH OF THE SAMPLES PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS.

FOR SUBMITTAL OF WORKING DRAWING, SEE SPECIAL PROVISIONS.

IF APPROVED BY THE ENGINEER, THE CONTRACTOR MAY USE THE EXISTING WINGS AS THE TEMPORARY SHORING FOR THE CONSTRUCTION OF THE CULVERT EXTENSIONS. IN THIS EASE, THE BOTTOM SLAB OF THE EXTENSION SHALL BE POURED AT LEAST 72 HOURS PRIOR TO CUTTING THE WINGS. THE WINGS MAY BE CUT EARLIER PROVIDED THE SLAB CONCRETE STRENGTH HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI.

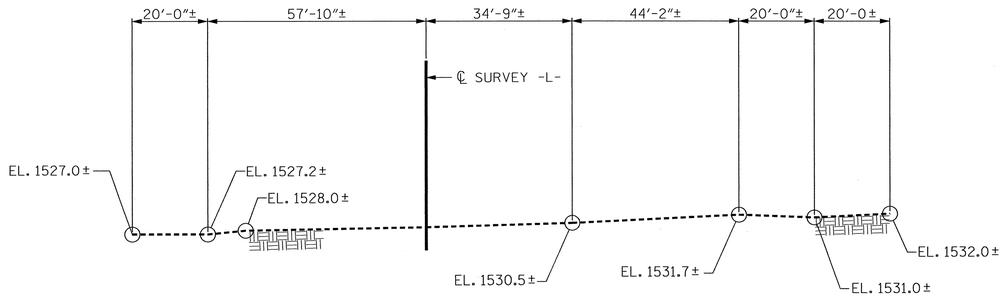
NO PRECAST REINFORCED BOX CULVERT OPTION WILL BE ALLOWED.

REMOVAL OF EXISTING CONCRETE AND BONDING OF NEW CONCRETE SHALL BE IN ACCORDANCE WITH ARTICLE 420-9 OF STANDARD SPECIFICATIONS.

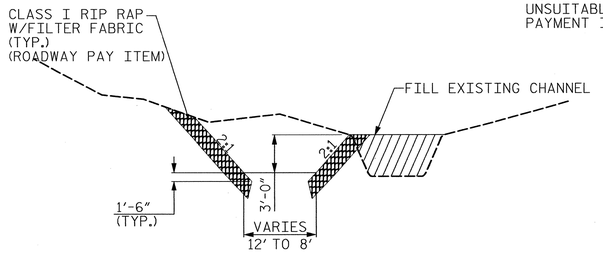
THE CONTRACTOR MAY USE ADHESIVELY ANCHORED DOWELS. NO FIELD TESTING IS REQUIRED FOR ADHESIVELY ANCHORED ANCHOR BOLTS AND DOWELS, SEE SPECIAL PROVISIONS.

BACKFILL WITH MATERIAL THAT MEETS THE REQUIREMENTS OF SELECT MATERIAL CLASS IV IN ACCORDANCE WITH SECTION 1016 OF THE STANDARD SPECIFICATIONS.

NO WORK SHALL BE DONE ON THE CULVERT AT STA. 60+29.30 -L- UNTIL THE AREA OF THE BOX CULVERT HAS BEEN UNDERCUT TO EL. 1527.9 FEET AND UNSUITABLE MATERIAL BE REPLACED WITH SUITABLE MATERIAL, PROPERLY COMPACTED TO THE ELEVATION OF THE BOTTOM OF THE PROPOSED FLOOR SLAB. THE LIMITS OF THE BOX CULVERT INCLUDING THE WINGS. NO SEPARATE PAYMENT WILL BE MADE FOR TEMPORARY SHEETING, UNDERCUT OR UNSUITABLE MATERIAL REPLACEMENT AS REQUIRED TO CONSTRUCT THE PROPOSED CULVERT. PAYMENT IS INCLUDED IN THE LUMP SUM PRICE FOR CULVERT EXCAVATION.



PROFILE ALONG ℄ CULVERT



OUTLET CHANNEL TYPICAL

PROJECT NO. R-3622AA
CHEROKEE COUNTY
STATION: 60+29.30 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING

SINGLE 12 FT. X 7 FT. CONCRETE BOX CULVERT EXTENSION 61° SKEW

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	C-1
1			3			TOTAL SHEETS
2			4			4

WilburSmith ASSOCIATES — ENGINEERS PLANNERS ECONOMISTS
421 Fayetteville Street
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DRAWN BY : S. PEREZ, Jr. DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08
DWG. No. 1

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
3-28-08

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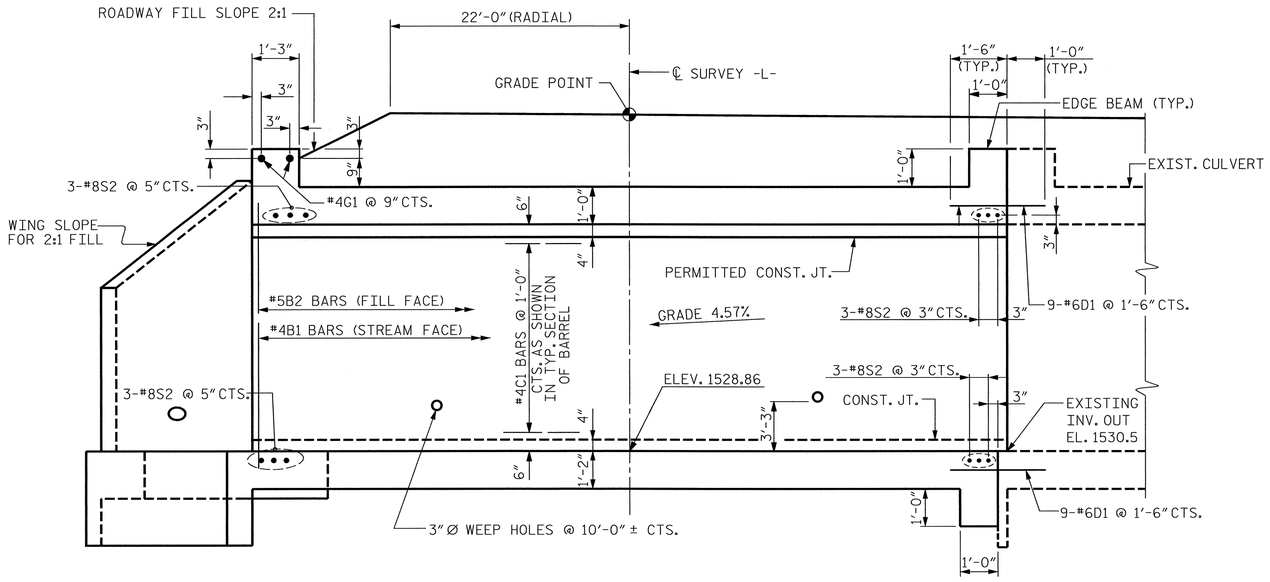
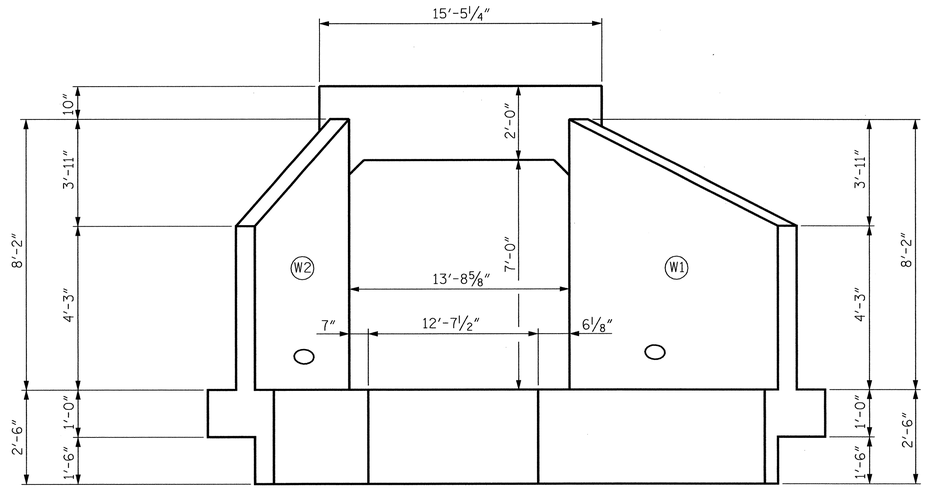
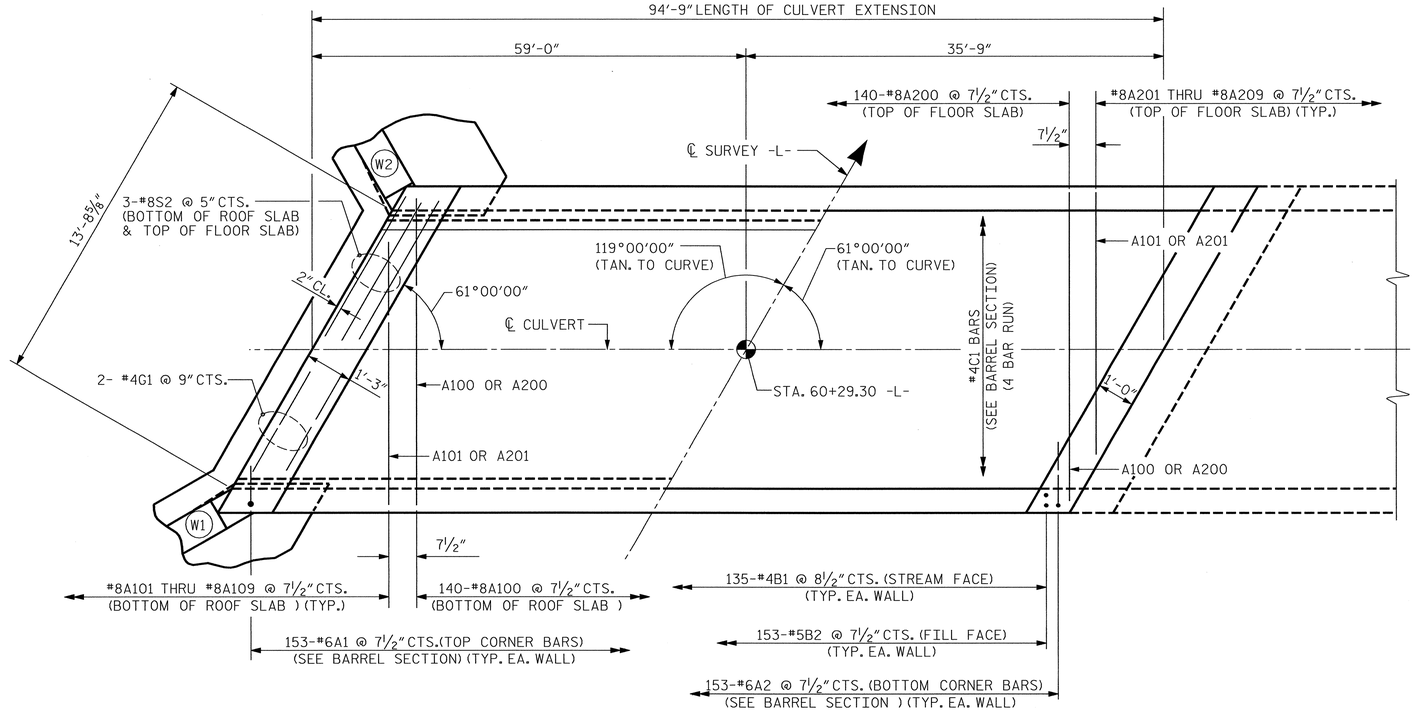
3/27/2008



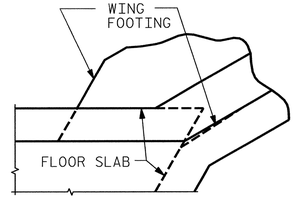
CULVERT SECTION NORMAL TO ROADWAY

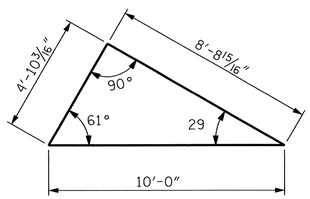


END ELEVATION NORMAL TO SKEW

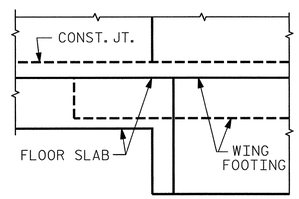


PLAN





SKEW TRIANGLE



DETAIL

CONNECTION OF WING FOOTING AND FLOOR SLAB WHEN SLAB IS THICKER THAN FOOTING

PROJECT NO. R-3622AA

CHEROKEE COUNTY

STATION: 60+29.30 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SINGLE 12 FT. X 7 FT. CONCRETE BOX CULVERT EXTENSION 61° SKEW

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	C-2
1			3			TOTAL SHEETS
2			4			4

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DRAWN BY : S. PEREZ, Jr. DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08

DWG. No. 2

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
3-28-08

ASSEMBLED BY : S.PEREZ, Jr.	DATE : 8-06	SPECIAL
CHECKED BY : T.M. HARRIS	DATE : 3-08	
DRAWN BY : B.M. MEYERS	DATE : AUG. 1989	STANDARD
CHECKED BY : A.R. BISSETTE	DATE : AUG. 1989	

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3/27/2008

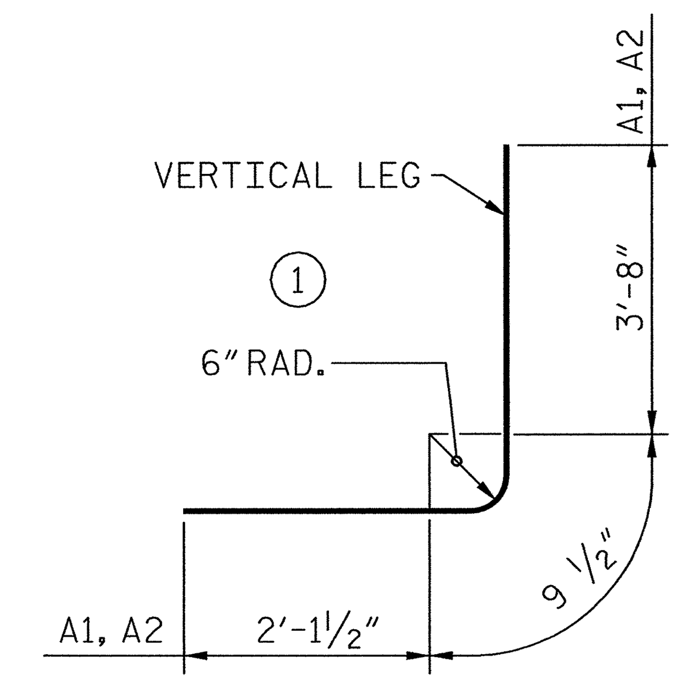
STD. NO. CB31

REINFORCING BAR SCHEDULE – CULVERT BARREL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A100	140	#8	STR.	13′-2″	4922	A200	140	#8	STR.	13′-2″	4922
A101	2	#8	STR.	12′-2″	65	A201	2	#8	STR.	12′-2″	65
A102	2	#8	STR.	11′-0″	59	A202	2	#8	STR.	11′-0″	59
A103	2	#8	STR.	9′-11″	53	A203	2	#8	STR.	9′-11″	53
A104	2	#8	STR.	8′-9″	47	A204	2	#8	STR.	8′-9″	47
A105	2	#8	STR.	7′-8″	41	A205	2	#8	STR.	7′-8″	41
A106	2	#8	STR.	6′-6″	35	A206	2	#8	STR.	6′-6″	35
A107	2	#8	STR.	5′-5″	29	A207	2	#8	STR.	5′-5″	29
A108	2	#8	STR.	4′-3″	23	A208	2	#8	STR.	4′-3″	23
A109	2	#8	STR.	3′-2″	17	A209	2	#8	STR.	3′-2″	17

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	306	#6	1	6′-7″	3026
A2	306	#6	1	6′-7″	3026
B1	270	#4	STR.	8′-7″	1548
B2	306	#5	STR.	6′-2″	1968
C1	176	#4	STR.	25′-1″	2949
D1	28	#6	STR.	2′-6″	105
G1	2	#4	STR.	15′-0″	20
S2	12	#8	STR.	15′-0″	481
REINFORCING STEEL				LBS.	23705

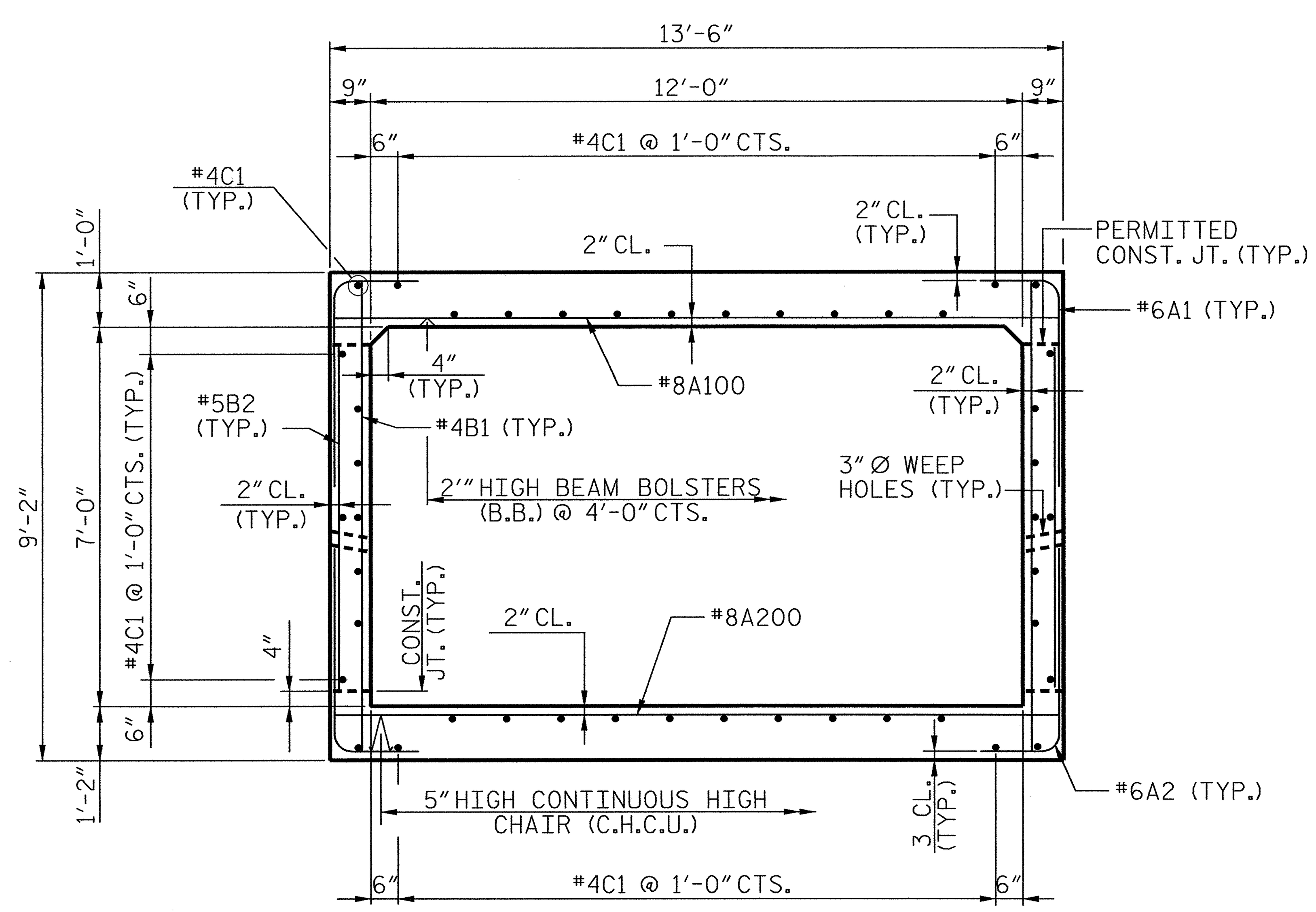
BAR TYPE



ALL BAR DIMENSIONS ARE OUT TO OUT.

SPLICE LENGTH CHART

BAR	SIZE	SPLICE LENGTH
B1	#4	1′-9″
B2	#5	2′-2″
C1	#4	1′-11″



RIGHT ANGLE SECTION OF BARREL

THERE ARE 44 "C" BARS IN SECTION OF BARREL

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3/27/2008

PROJECT NO. R-3622AA

CHEROKEE COUNTY

STATION: 60+29.30 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SINGLE 12 FT. X 7 FT. CONCRETE BOX CULVERT EXTENSION 61° SKEW

WilburSmith ASSOCIATES — ENGINEERS PLANNERS ECONOMISTS
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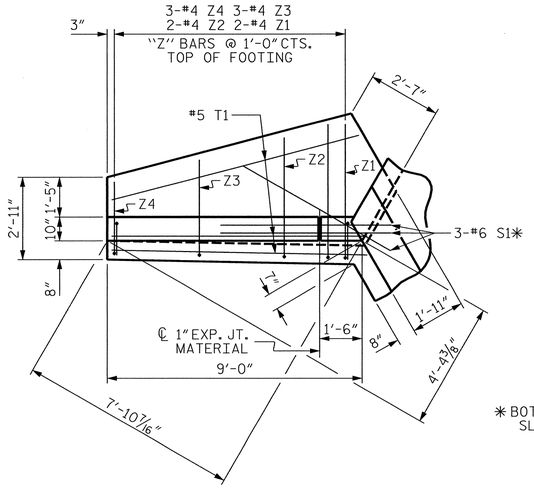
DRAWN BY : S. PEREZ, Jr. DATE : 9-06
CHECKED BY : T.M. HARRIS DATE : 3-08
DWG. No. 3

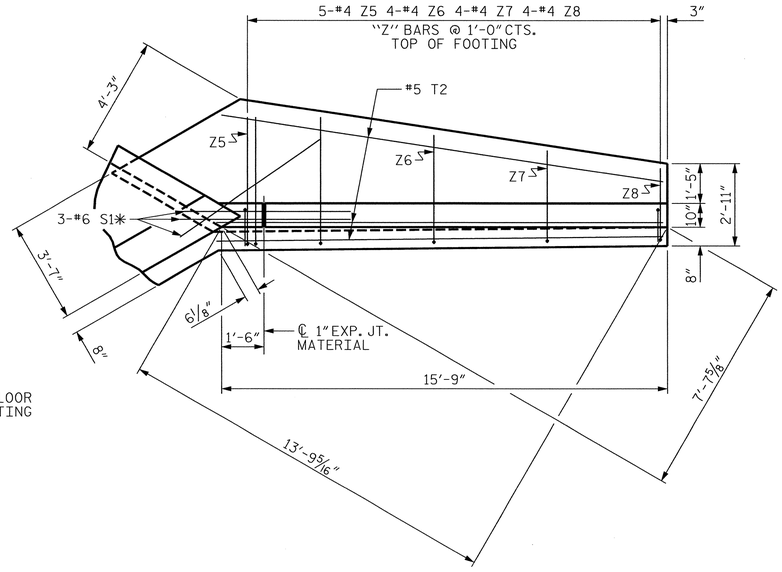
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19299 THOMAS M. HARRIS
3-28-08

REVISIONS								SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:			C-3
1			3					TOTAL SHEETS
2			4					4



PLAN W2

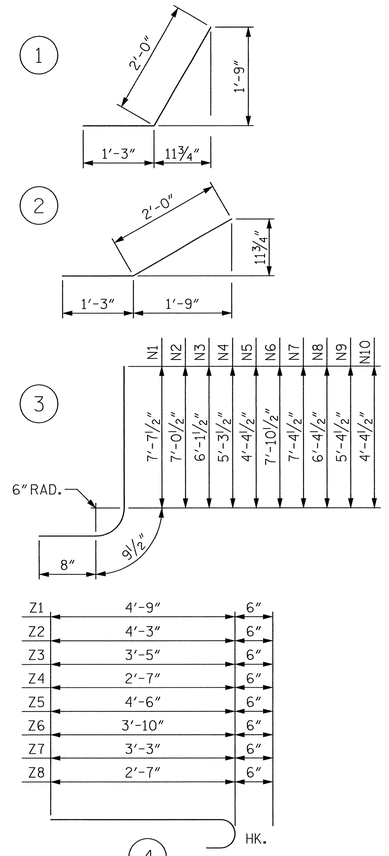
* BOTTOM OF FLOOR SLAB & FOOTING



PLAN W1

BAR TYPES

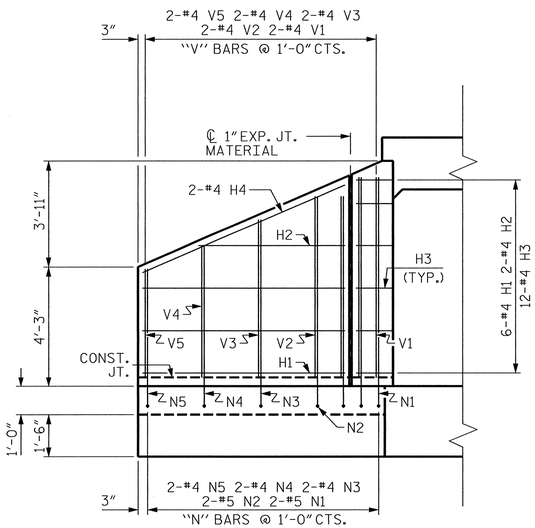
ALL BAR DIMENSIONS ARE OUT TO OUT.



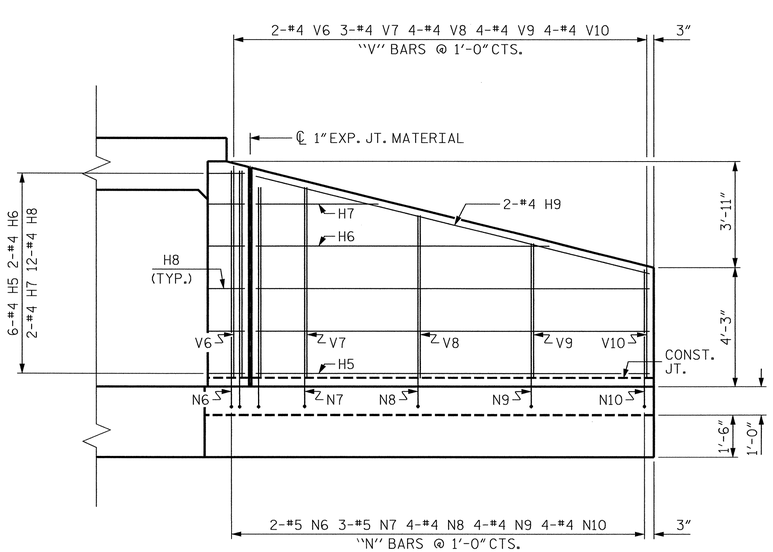
BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	6	#4	STR.	7'-1"	28
H2	2	#4	STR.	5'-2"	7
H3	12	#4	1	3'-3"	26
H4	2	#4	STR.	7'-9"	10
H5	6	#4	STR.	13'-10"	55
H6	2	#4	STR.	10'-4"	14
H7	2	#4	STR.	4'-3"	6
H8	12	#4	2	3'-3"	26
H9	2	#4	STR.	14'-3"	19
N1	2	#5	3	9'-1"	19
N2	2	#5	3	8'-6"	18
N3	2	#4	3	7'-7"	10
N4	2	#4	3	6'-9"	9
N5	2	#4	3	5'-10"	8
N6	2	#5	3	9'-4"	19
N7	3	#5	3	8'-10"	28
N8	4	#4	3	7'-10"	21
N9	4	#4	3	6'-10"	18
N10	4	#4	3	5'-10"	16
S1	6	#6	STR.	6'-0"	54
T1	3	#5	STR.	9'-0"	28
T2	3	#5	STR.	15'-9"	49
V1	2	#4	STR.	7'-1"	9
V2	2	#4	STR.	6'-5"	9
V3	2	#4	STR.	5'-7"	7
V4	2	#4	STR.	4'-8"	6
V5	2	#4	STR.	3'-10"	5
V6	2	#4	STR.	7'-4"	10
V7	3	#4	STR.	6'-9"	14
V8	4	#4	STR.	5'-9"	15
V9	4	#4	STR.	4'-9"	13
V10	4	#4	STR.	3'-10"	10
Z1	2	#4	4	5'-3"	7
Z2	2	#4	4	4'-9"	6
Z3	3	#4	4	3'-11"	8
Z4	3	#4	4	3'-1"	6
Z5	5	#4	4	5'-0"	17
Z6	4	#4	4	4'-4"	12
Z7	4	#4	4	3'-9"	10
Z8	4	#4	4	3'-1"	8

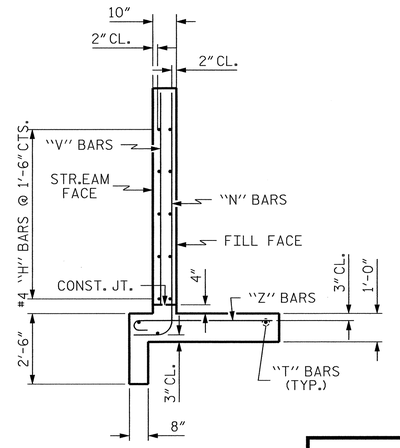
REINFORCING STEEL FOR 2 WINGS	660	LBS
CLASS A CONCRETE		
2 WINGS	9.9	CY
1 HEADWALL	0.7	CY
1 END CURTAIN WALL	0.8	CY
2 EDGE BEAMS	1.1	CY
TOTAL	12.5	CY



ELEVATION W2



ELEVATION W1



TYPICAL WING SECTION

PROJECT NO. R-3622AA

CHEROKEE COUNTY

STATION: 60+29.30 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

WINGS FOR CONCRETE BOX CULVERT H=7'-0" SLOPE=2:1 61° SKEW

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	C-4
1			3			TOTAL SHEETS
2			4			4

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CHECKED BY : T.M. HARRIS DATE : 3-08
DWG. No. 4

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
3-28-08

ASSEMBLED BY : S. PEREZ, Jr. DATE : 8-06
CHECKED BY : T.M. HARRIS DATE : 3-08

DRAWN BY : CCJ 11/99
CHECKED BY : RWW 03/00

STD. NO. CW6007

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3/27/2008

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 2006 "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. FINS 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.

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REV. 6-16-95 EEM ⟨W⟩ RGW REV. 5-7-03 RWW ⟨W⟩ JTE
REV. 8-16-99 RWW ⟨W⟩ LES REV. 5-1-06 TLA ⟨W⟩ GM

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