

TIP PROJECT: B-3705

CONTRACT: C201472

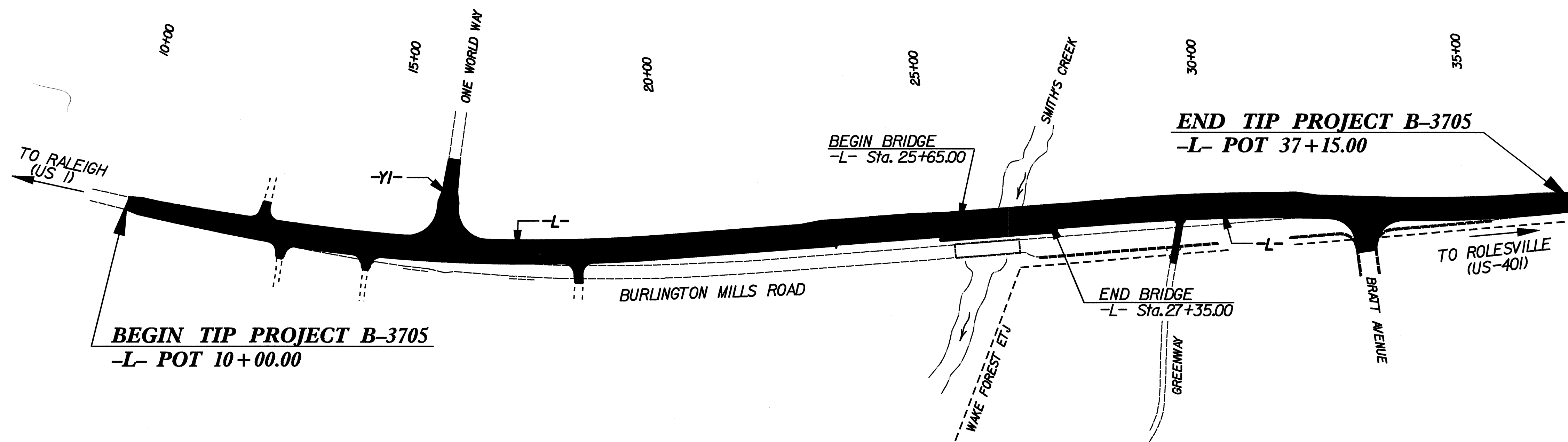
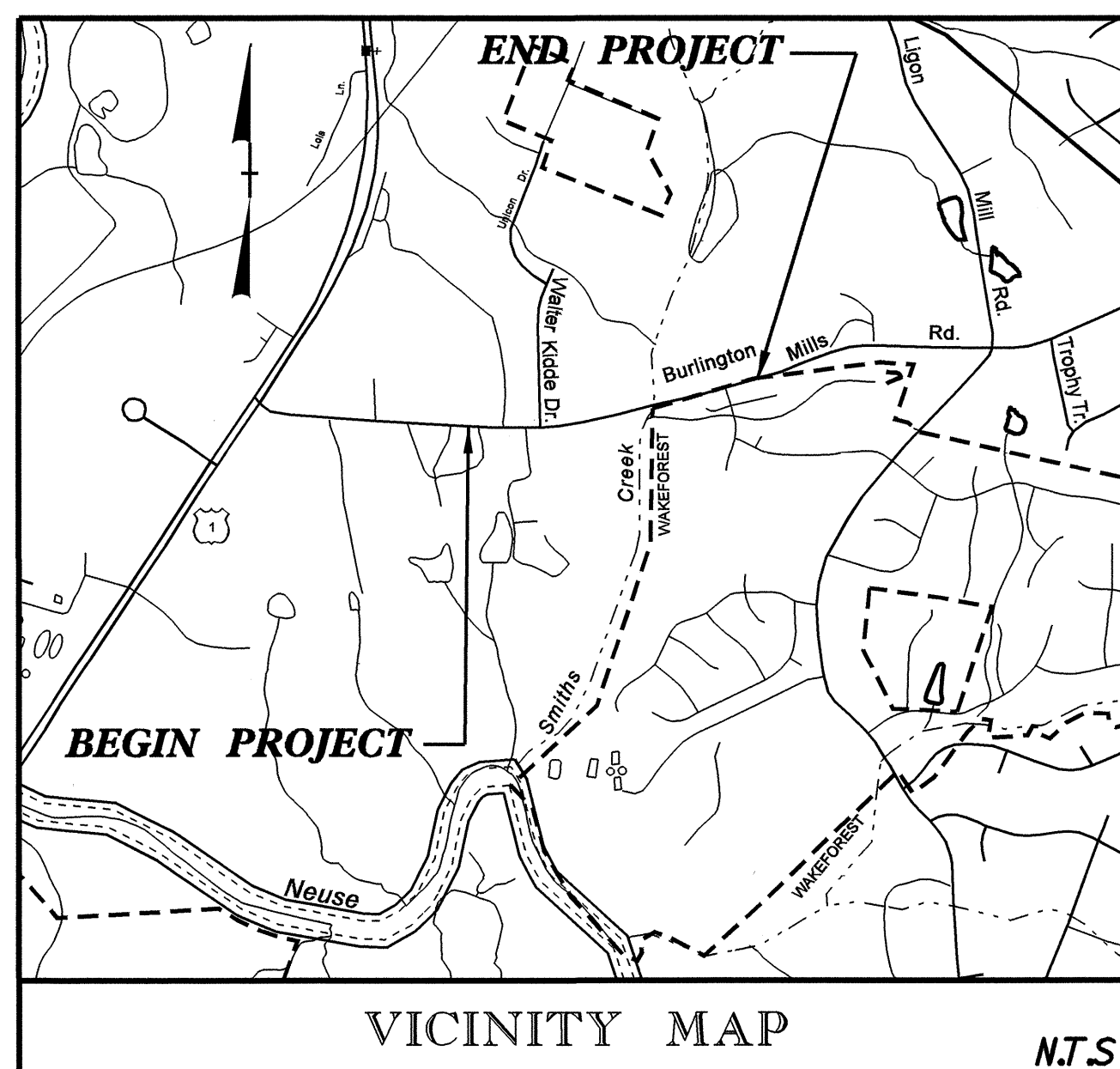
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

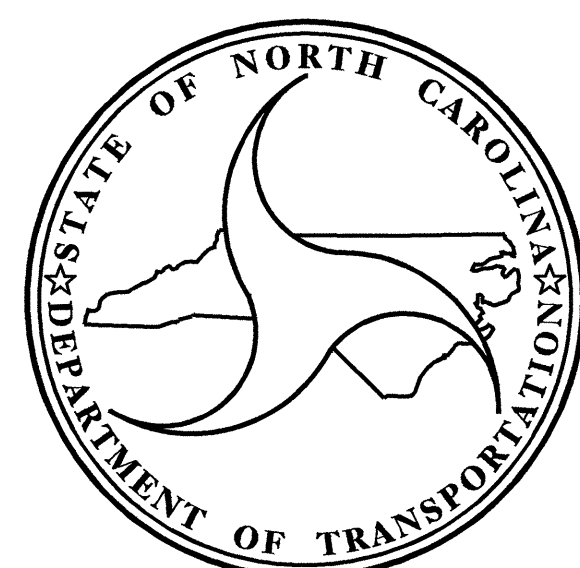
LOCATION: BRIDGE NO. 125 OVER SMITH'S CREEK ON SR 2045 (BURLINGTON MILLS RD)

TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3705		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33245.1.1	BRZ-2045(1)	P.E.	
33245.2.2	BRZ-2045(1)	ROW/UTILITIES	
33245.3.1	BRZ-2045(2)	CONST.	



STRUCTURE



DESIGN DATA

ADT 2007 = 10,280
 ADT 2027 = 20,340
 DHV = 10 %
 D = 60 %
 T = 3 % *
 V = 50 MPH
 * (TTST 1% + DUAL 2%)
 FUNCTIONAL CLASS = RURAL MINOR COLLECTOR

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-3705 = 0.482 MILES
 LENGTH OF STRUCTURE TIP PROJECT B-3705 = 0.032 MILES
 TOTAL LENGTH OF TIP PROJECT B-3705 = 0.514 MILES

Prepared In the Office of:

DIVISION OF HIGHWAYS

2006 STANDARD SPECIFICATIONS

LETTING DATE:
APRIL 15, 2008

R.M. GIROLAMI, PE
PROJECT ENGINEER

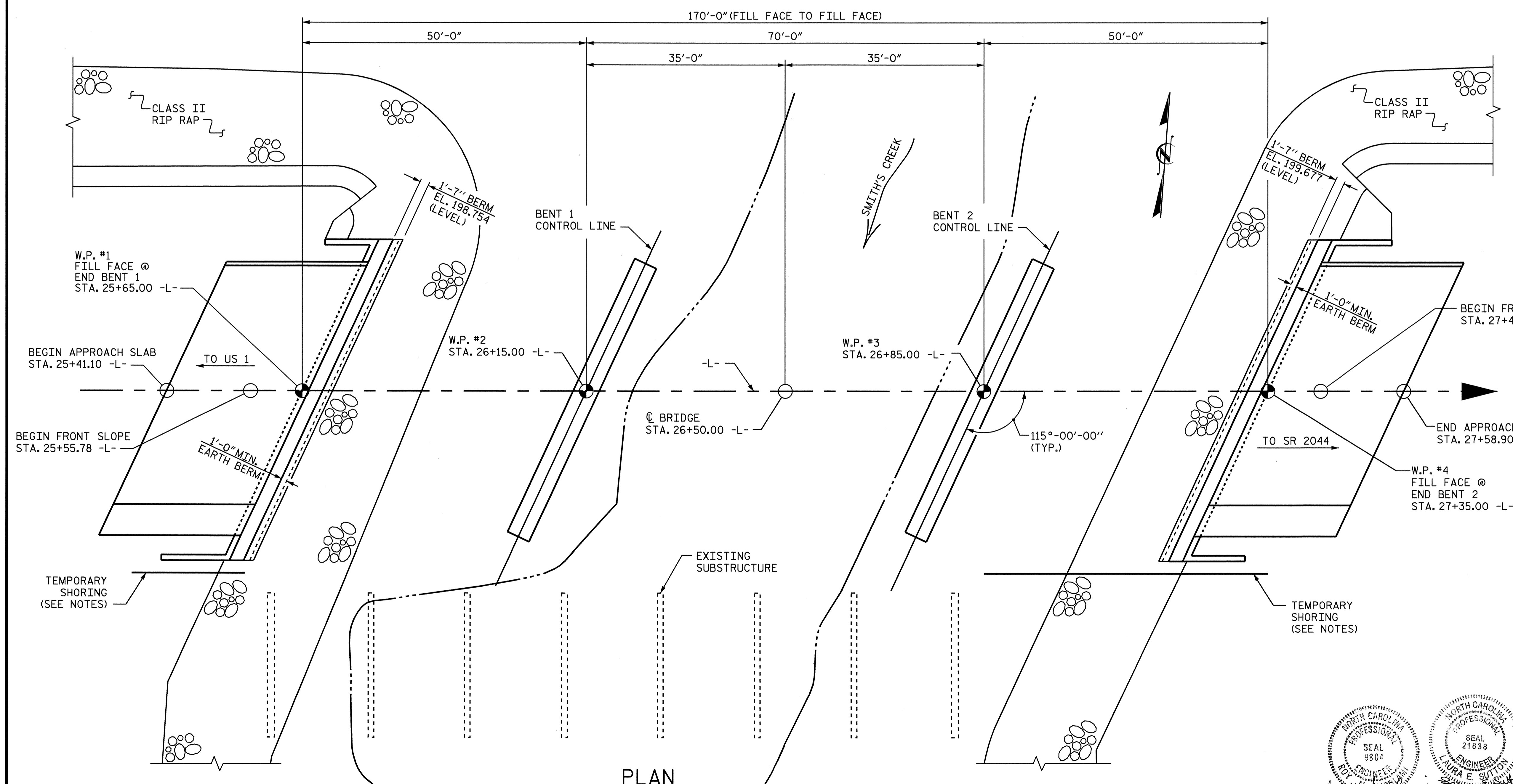
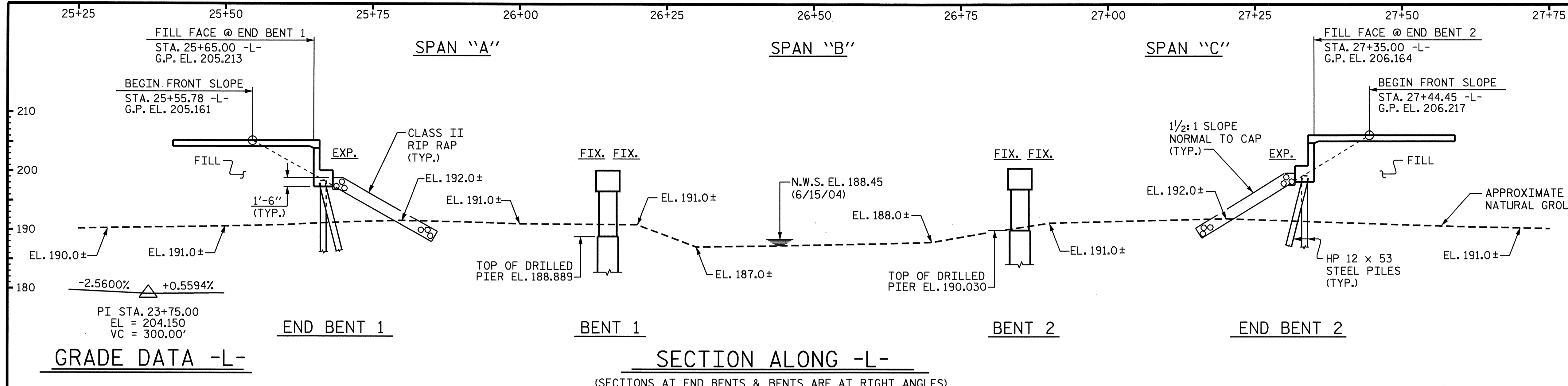
L.E. SUTTON, PE
PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT
1000 BIRCH RIDGE DR.
RALEIGH, NC 27610

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE DESIGN ENGINEER
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE



GRADE DATA -L-

PROJECT NO. B-3705
WAKE COUNTY
 STATION: 26+50.00 -L-
 SHEET 1 OF 3 REPLACES BRIDGE #125

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

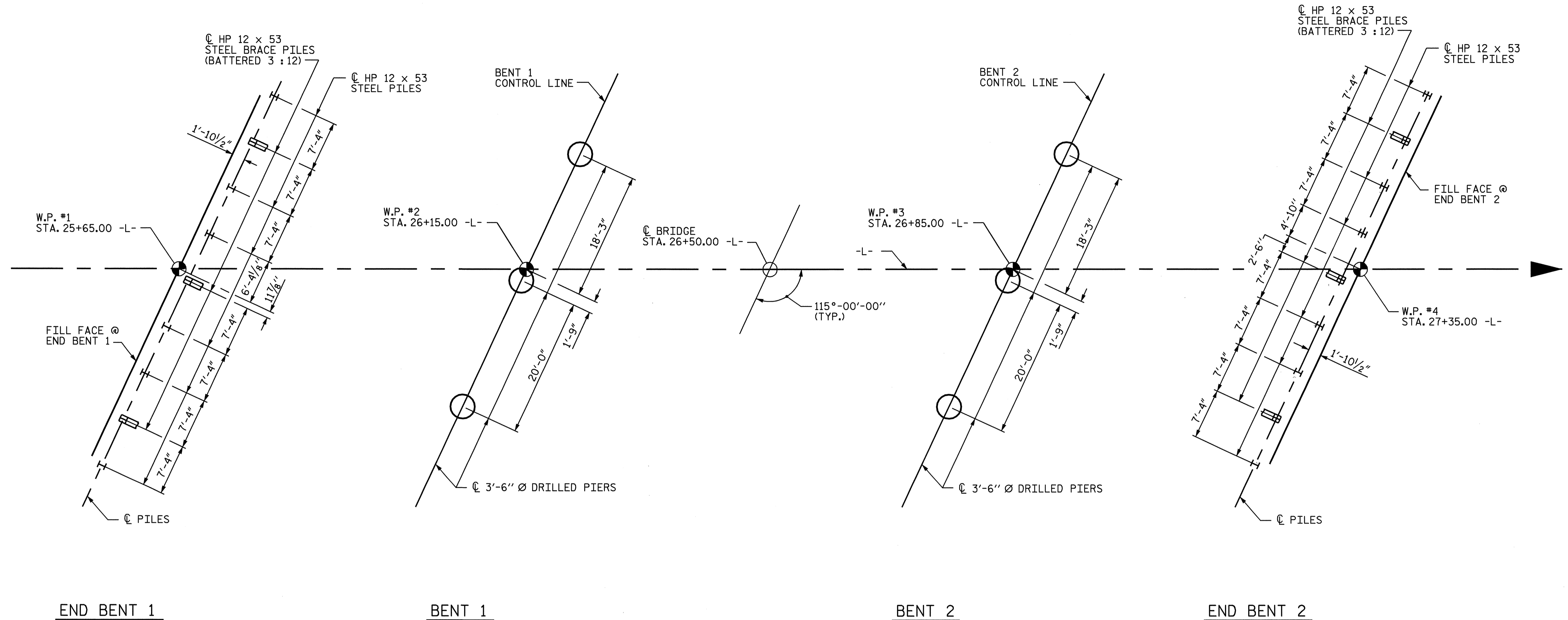
GENERAL DRAWING
 FOR BRIDGE OVER
 SMITH'S CREEK
 ON SR 2045 BETWEEN
 US 1 AND SR 2044

DRAWN BY: A.S. CALLAWAY DATE: 6/1/07
 CHECKED BY: P.C. BREWER DATE: 8/22/07

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PROFESSIONAL ENGINEER
 SEAL 21638
 AURA E. SUTTON
 2/29/08

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-1
					TOTAL SHEETS 42



FOUNDATION LAYOUT

(DIMENSIONS LOCATING PILES OR DRILLED PIERS ARE SHOWN TO THE PILE OR DRILLED PIER CENTERLINE AT THE BOTTOM OF THE CAP)

NOTES

DRIVE PILES AT END BENTS 1 & 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.

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

DRILLED PIERS AT BENTS 1 & 2 ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 45 TSF.

DRILLED PIERS AT BENTS 1 & 2 ARE DESIGNED FOR AN APPLIED LOAD OF 235 TONS EACH AT THE TOP OF THE COLUMN.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENTS 1 & 2. IF REQUIRED, DO NOT EXTEND THE CASING BELOW ELEVATION 180.0 FEET WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING. SEE DRILLED PIERS SPECIAL PROVISION.

DRILLED PIER 1 AT BENT 1 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 168.0 FEET AND SATISFY THE REQUIRED END BEARING CAPACITY.

DRILLED PIERS 2 & 3 AT BENT 1 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 163.0 FEET AND SATISFY THE REQUIRED END BEARING CAPACITY.

DRILLED PIER 1 AT BENT 2 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 166.0 FEET AND SATISFY THE REQUIRED END BEARING CAPACITY.

DRILLED PIERS 2 & 3 AT BENT 2 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 166.0 FEET AND SATISFY THE REQUIRED END BEARING CAPACITY.

THE SCOUR CRITICAL ELEVATION FOR DRILLED PIER 1 AT BENT 1 IS ELEVATION 177.0 FEET. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE SCOUR CRITICAL ELEVATION FOR DRILLED PIERS 2 & 3 AT BENT 1 IS ELEVATION 173.0 FEET. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE SCOUR CRITICAL ELEVATION FOR DRILLED PIER 1 AT BENT 2 IS ELEVATION 177.0 FEET. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE SCOUR CRITICAL ELEVATION FOR DRILLED PIERS 2 & 3 AT BENT 2 IS ELEVATION 175.0 FEET. 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 REQUIRED TO DETERMINE THE END BEARING CAPACITY OF THE DRILLED PIERS AT BENTS 1 & 2.

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

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

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PROJECT NO. B-3705
WAKE COUNTY
 STATION: 26+50.00 -L-

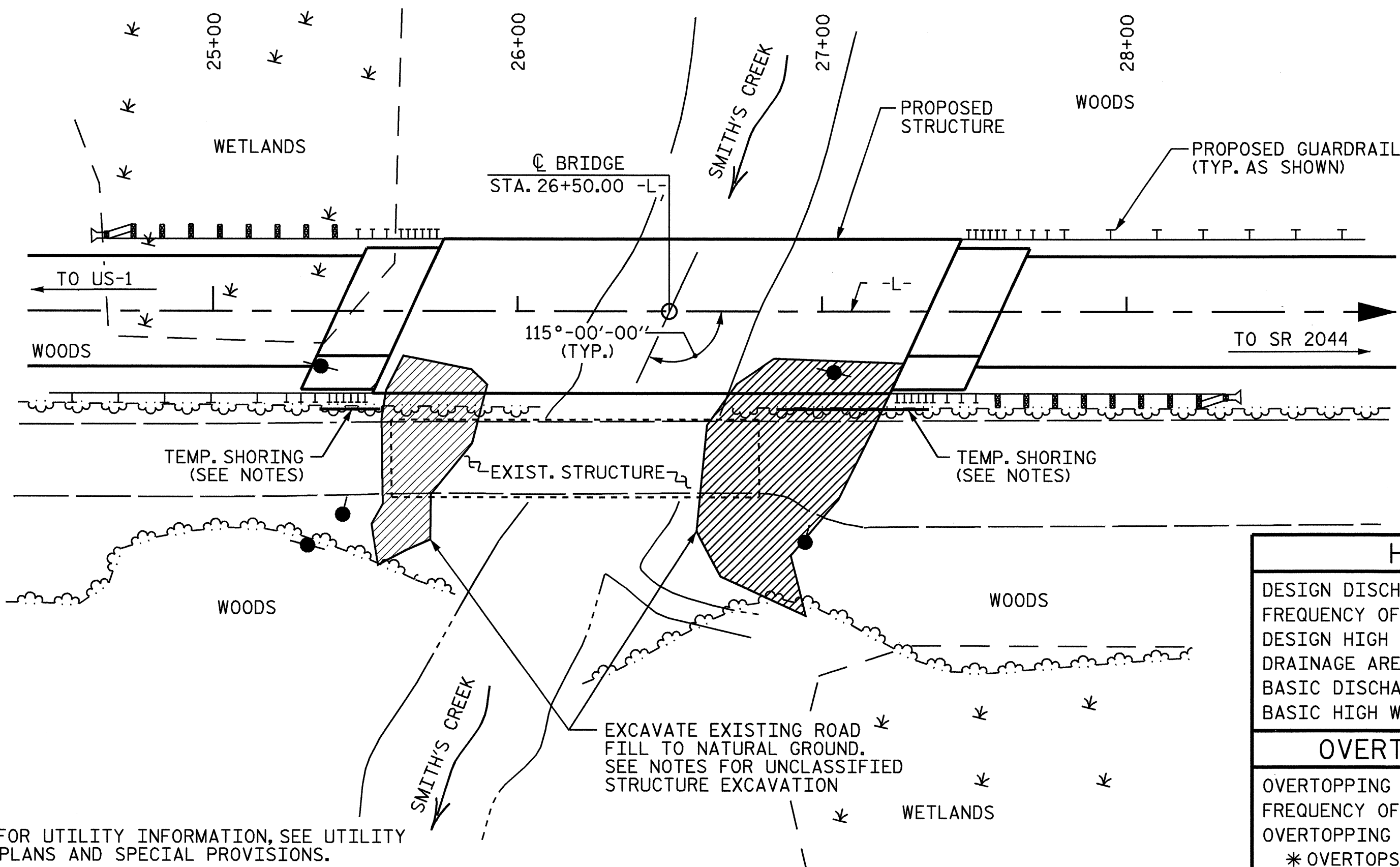
SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER
 SMITH'S CREEK
 ON SR 2045 BETWEEN
 US 1 AND SR 2044

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-2
					TOTAL SHEETS 42

BM #2: RR SPIKE IN BASE OF PP, 173.86' RT. OF STA. 29+55.95 -L-, EL. 198.800.



NOTE: FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

HYDRAULIC DATA	
DESIGN DISCHARGE	= 6000 CFS
FREQUENCY OF DESIGN FLOOD	= 50 YEARS
DESIGN HIGH WATER ELEVATION	= 199.0
DRAINAGE AREA	= 22.6 SQ. MI.
BASIC DISCHARGE (Q100)	= 7500 CFS
BASIC HIGH WATER ELEVATION	= 200.4
OVERTOPPING FLOOD DATA	
OVERTOPPING DISCHARGE	= 13,000+ CFS
FREQUENCY OF OVERTOPPING FLOOD	= 500+ YEARS
OVERTOPPING FLOOD ELEVATION	= 204.8 *
* OVERTOPS AT SAG	

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	3'-6" DIA. DRILLED PIERS IN SOIL	3'-6" DIA. DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-6" DIA. DRILLED PIER	SID INSPECTION	SPT TESTING	CROSSHOLE SONIC LOGGING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE
	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	EACH	CU. YDS.	SQ. FT.	SQ. FT.	CU. YDS.
SUPERSTRUCTURE									8,455	8,322	
END BENT 1								170			37.0
BENT 1		57.00	16.00	26.67		3					36.1
BENT 2		54.75	16.00	30.09		3					35.5
END BENT 2								905			37.0
TOTAL	LUMP SUM	111.75	32.00	56.76	2	6	2	1,075	8,455	8,322	145.6
	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	45" PRESTRESSED CONCRETE GIRDERS	HP 12 X 53 STEEL PILES	THREE BAR METAL RAIL	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	EVAZOTE JOINT SEALS
	LUMP SUM	LBS.	LBS.	NO. LIN. FT.	NO. LIN. FT.	LIN. FT.	LIN. FT.	TON	SQ. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE				18 988.25		159.49	167.70				
END BENT 1		5,608			9 225			584	648		
BENT 1		9,436	2,081								
BENT 2		9,222	1,988								
END BENT 2		5,601			9 225			524	582		
TOTAL	LUMP SUM	29,867	4,069	18 988.25	18 450	159.49	167.70	1,108	1,230	LUMP SUM	LUMP SUM

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NOTES:

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING, EXCEPT THAT THE GIRDERS HAVE BEEN DESIGNED FOR HS 25.

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.

PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE 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.

AFTER SERVING AS A TEMPORARY STRUCTURE THE EXISTING STRUCTURE CONSISTING OF 1 SPAN @ 17'-9", 5 SPANS @ 17'-0", 1 SPAN @ 17'-9", WITH A CLEAR ROADWAY WIDTH OF 24'-0", TIMBER DECK ON TIMBER JOISTS WITH TIMBER CAP ON TIMBER PILES AND STEEL CRUTCHES AT BENTS 3 AND 4 AND ABUTMENTS LOCATED 50'-0"± DOWNSTREAM FROM PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

THE MATERIAL SHOWN IN THE HATCHED AREA ON THE LOCATION SKETCH SHALL BE EXCAVATED A MAXIMUM DISTANCE OF 90 FT. RIGHT OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE PER CUBIC YARD FOR UNCLASSIFIED STRUCTURE EXCAVATION.

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

THE 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 A.

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

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

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.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

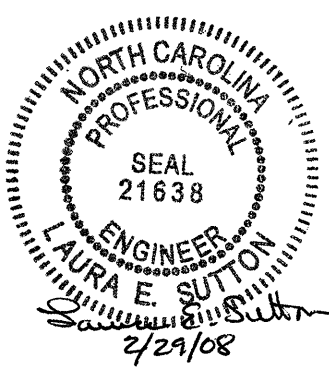
FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.

PROJECT NO. B-3705
 WAKE COUNTY
 STATION: 26+50.00 -L-

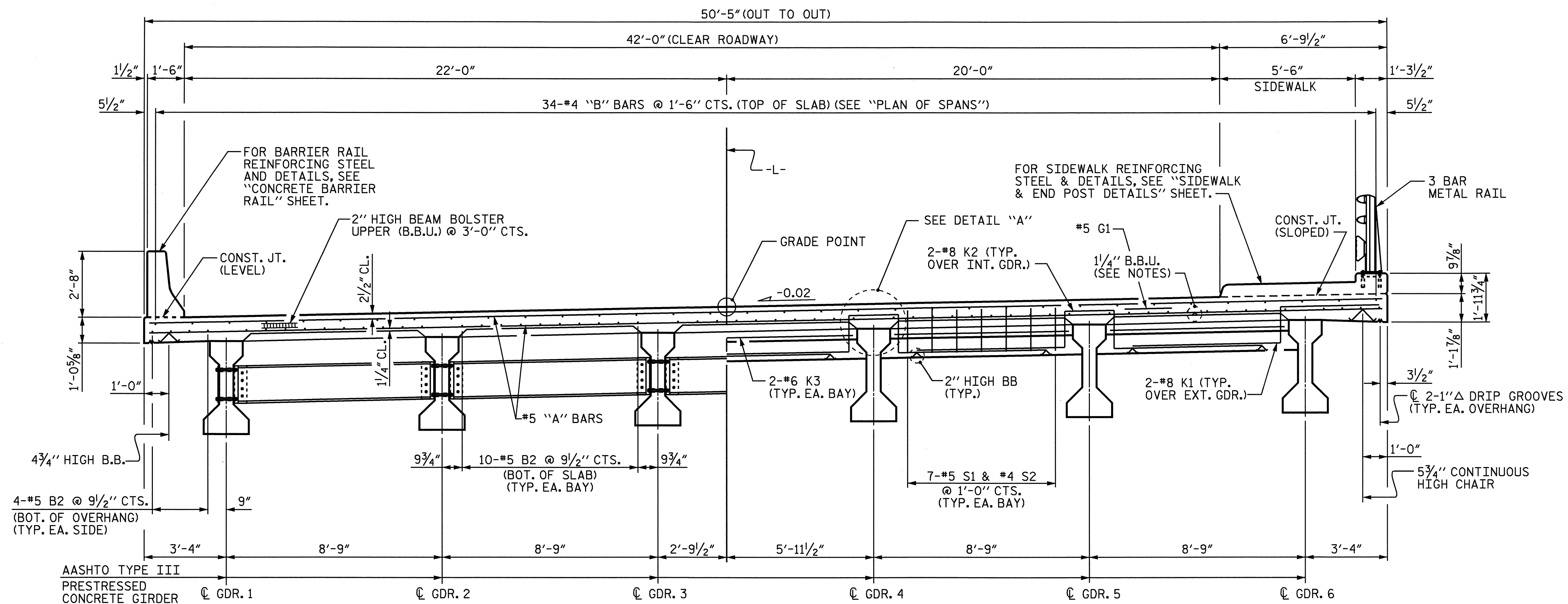
SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER
 SMITH'S CREEK
 ON SR 2045 BETWEEN
 US 1 AND SR 2044



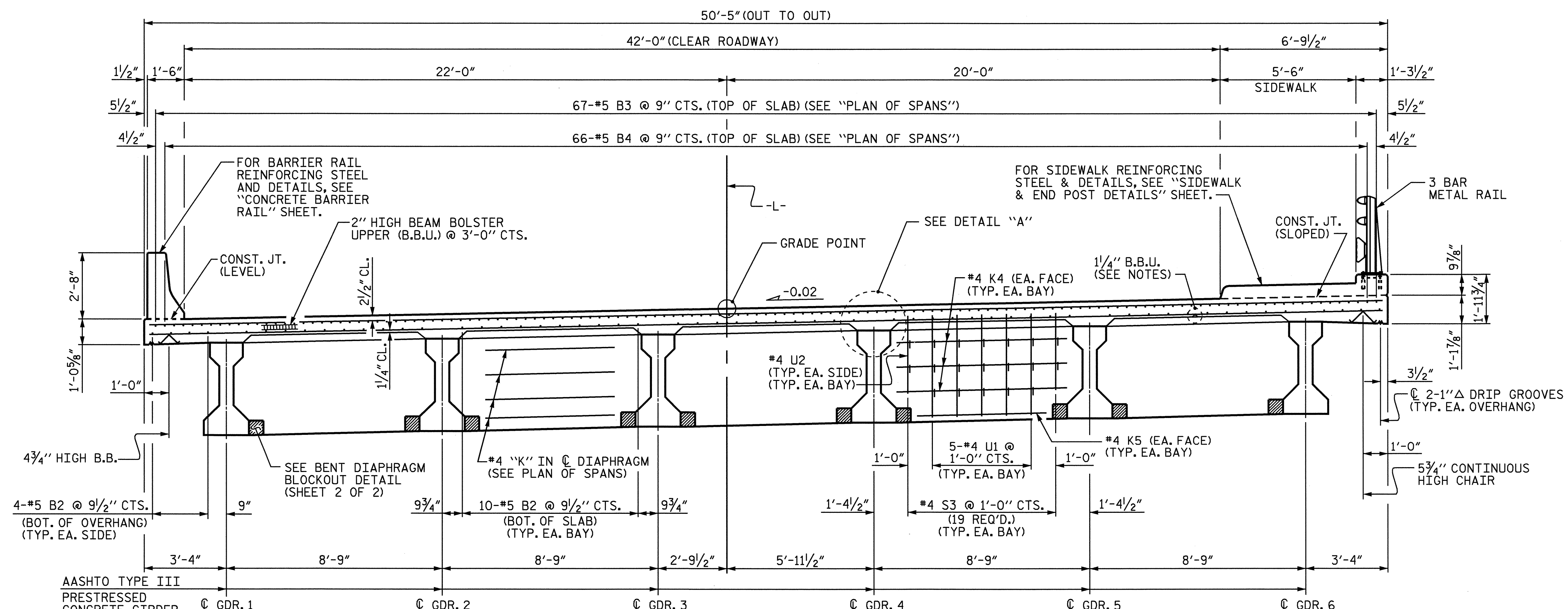
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NO.	BY:	DATE:	NO.	DATE:	
1			3		S-3
2			4		TOTAL SHEETS 42



AT INTERMEDIATE DIAPHRAGMS

TYPICAL SECTION

AT END BENT DIAPHRAGMS



AT CONTINUOUS BENT DIAPHRAGMS

TYPICAL SECTION

NOTES

PROVIDE 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.

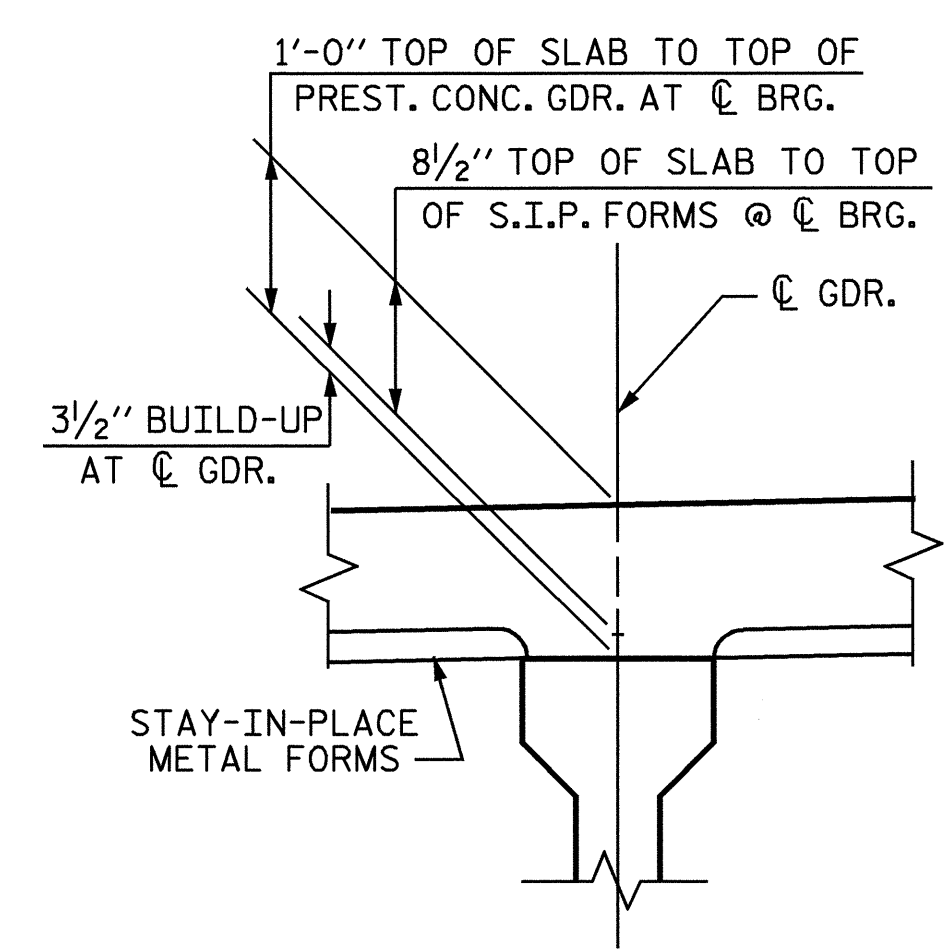
LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

THE JOINT IN THE DECK SHALL BE SAWS PRIOR TO THE CASTING OF THE SIDEWALK.

PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

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

FOR INTERMEDIATE DIAPHRAGM DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE III PRESTRESSED CONCRETE GIRDERS" SHEET.



DETAIL "A"

PROJECT NO. B-3705
 WAKE COUNTY
 STATION: 26+50.00 -L-

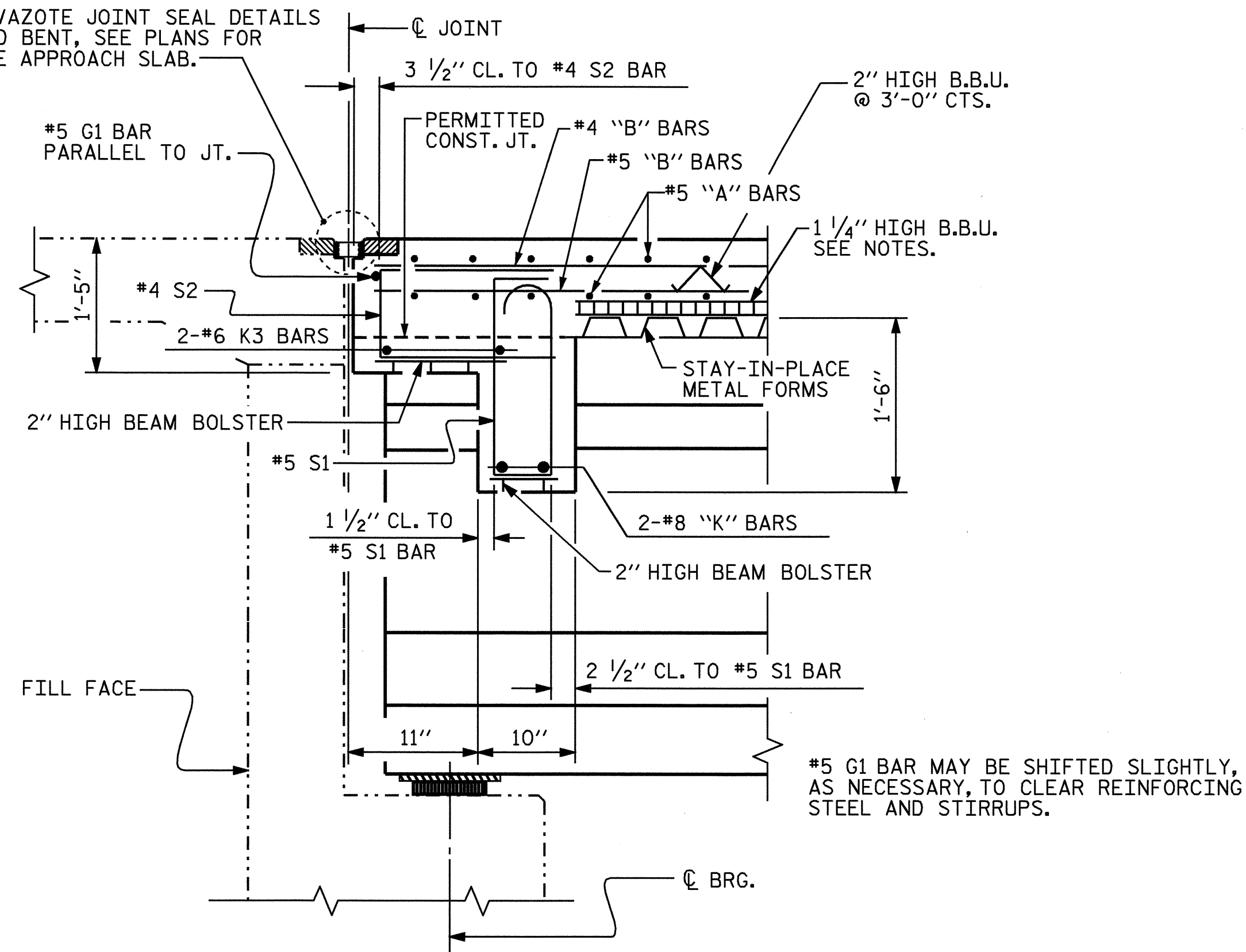
SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE TYPICAL SECTIONS					
REVISIONS					SHEET NO.
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1			3		
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					TOTAL SHEETS 42



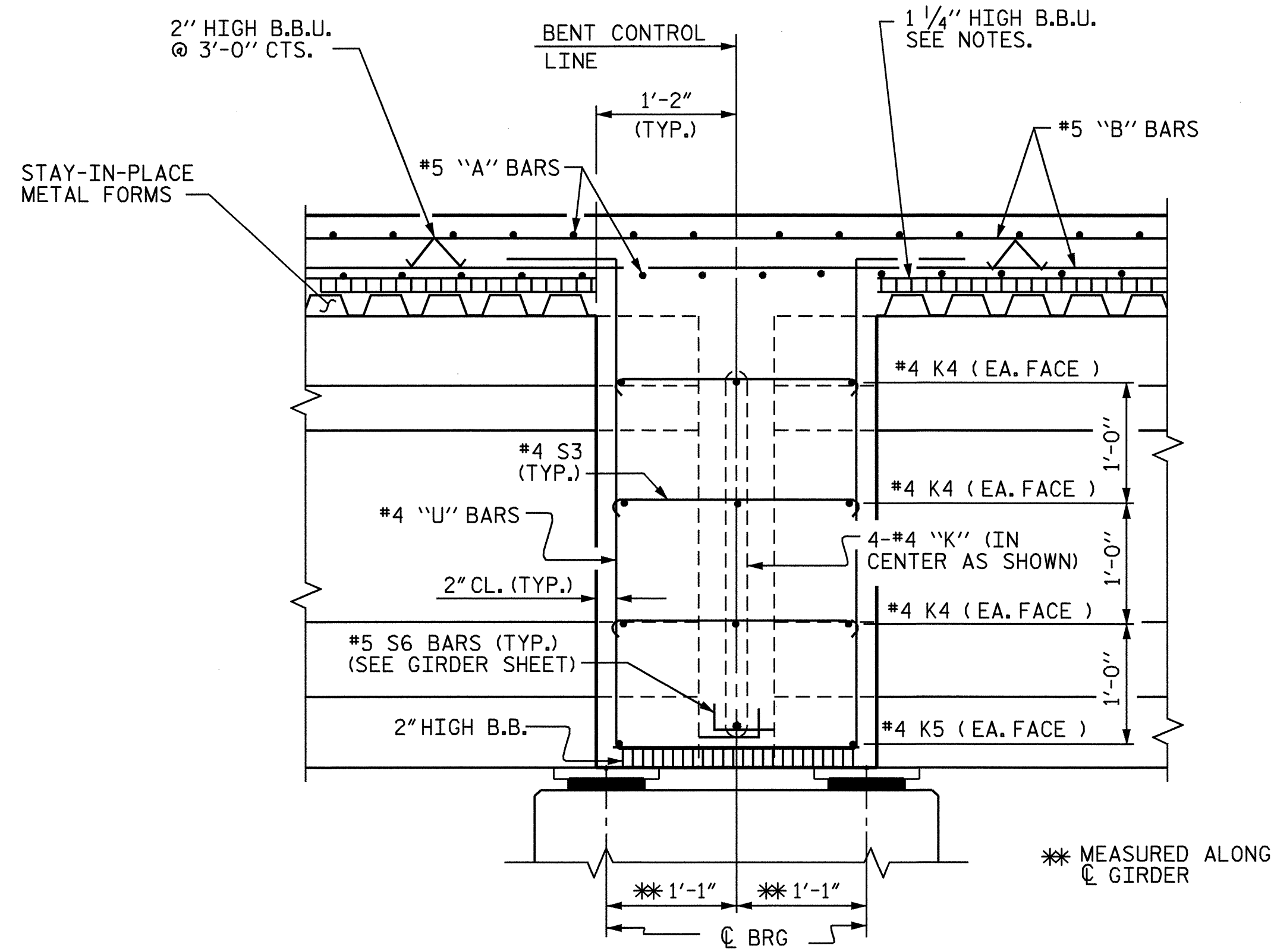
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FOR EVAZOTE JOINT SEAL DETAILS AT END BENT, SEE PLANS FOR BRIDGE APPROACH SLAB.

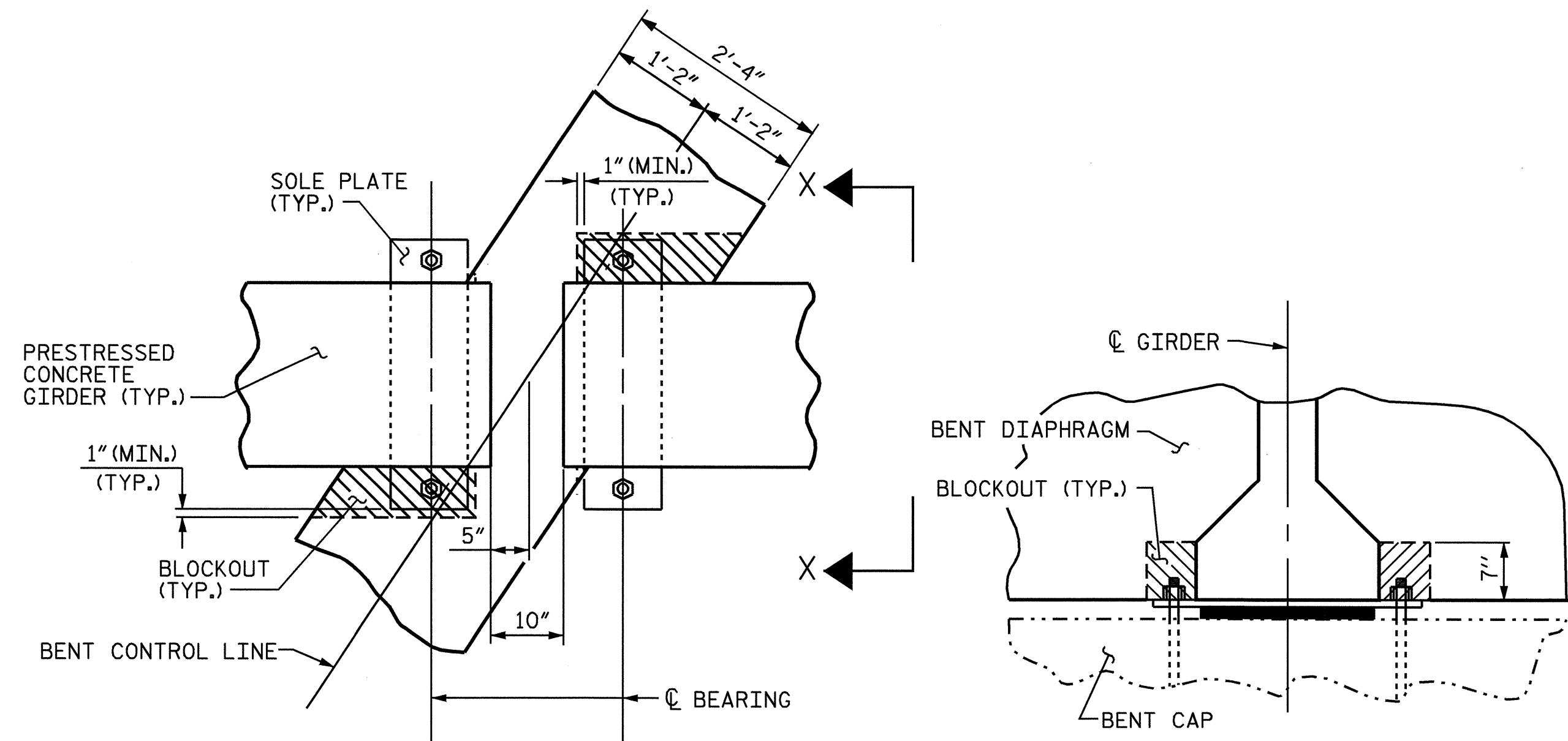


SECTION A-A

(END BENT 1 SHOWN, END BENT 2 SIMILAR)



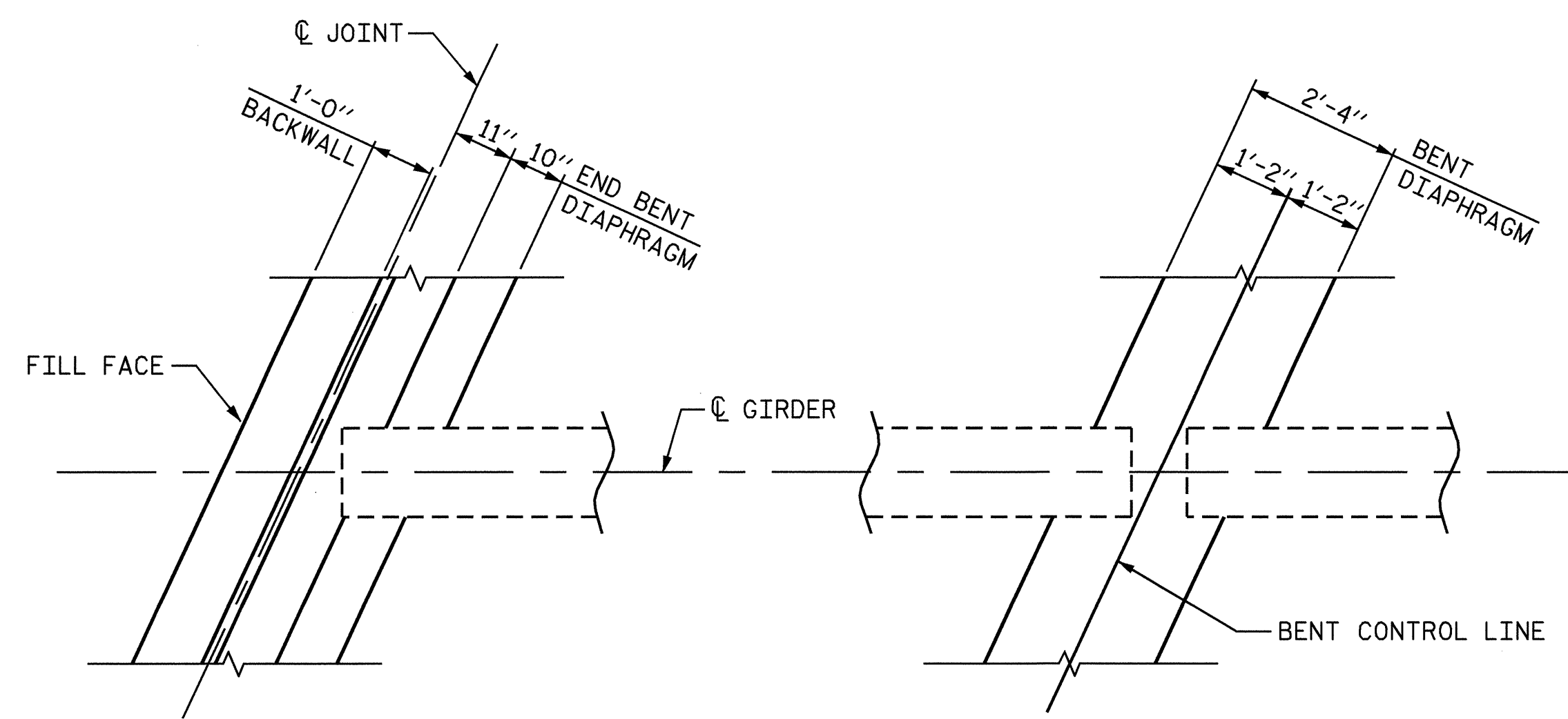
SECTION B-B



PLAN

SECTION X-X

BENT DIAPHRAGM BLOCKOUT DETAIL



END BENT DIAPHRAGM
(END BENT 1 SHOWN, END BENT 2 SIMILAR)

BENT DIAPHRAGM
(BENT 1 SHOWN, BENT 2 SIMILAR)

PLAN

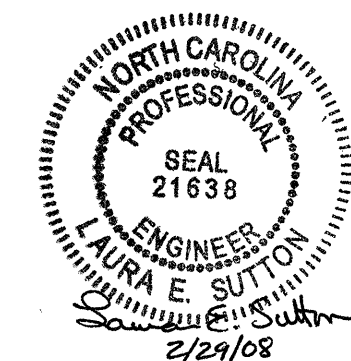
NOTE:
FOR LOCATION OF SECTIONS SEE "PLAN OF SPANS" SHEETS.

PROJECT NO. B-3705
WAKE COUNTY
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SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

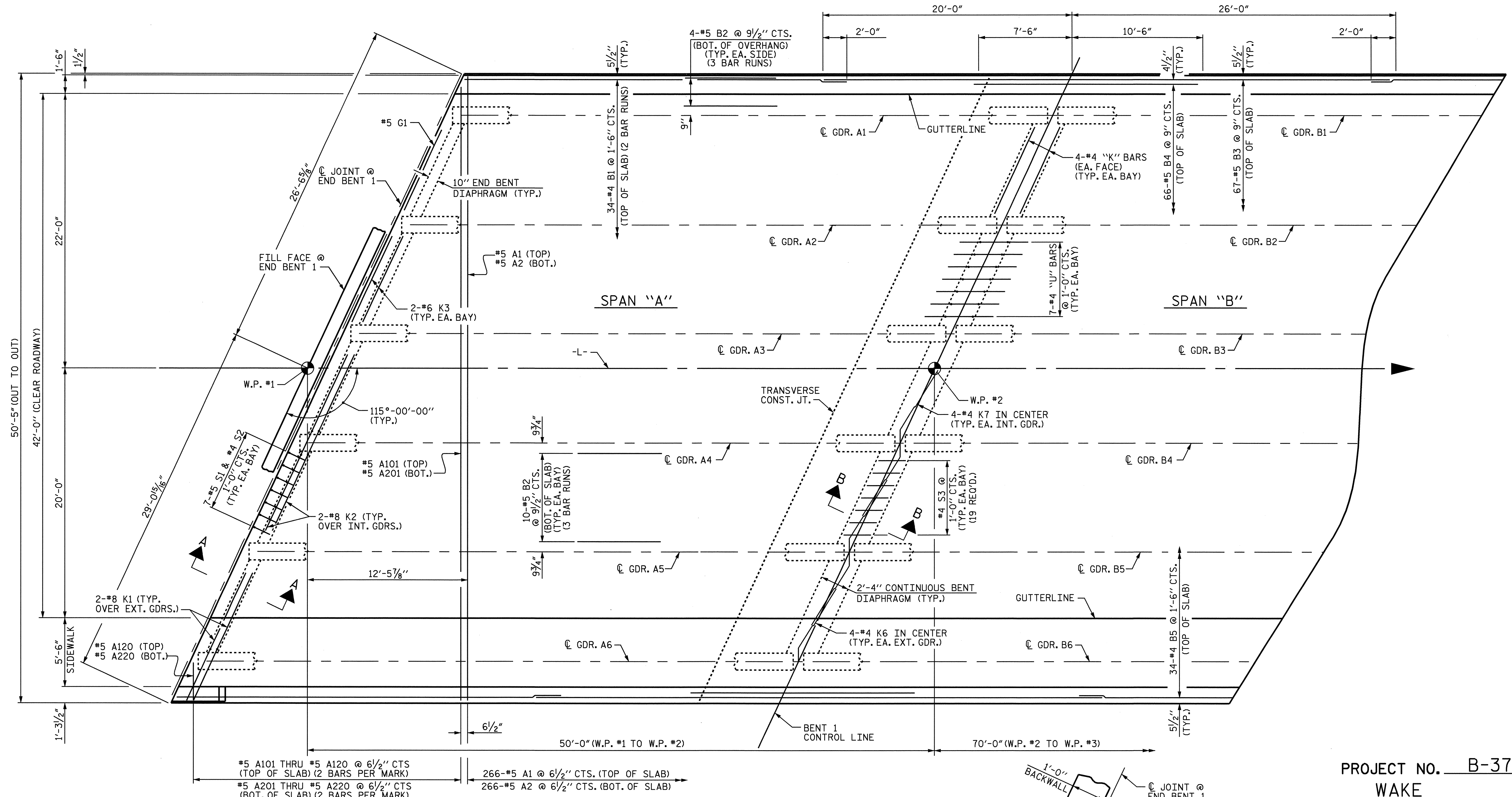
SUPERSTRUCTURE
TYPICAL SECTIONS



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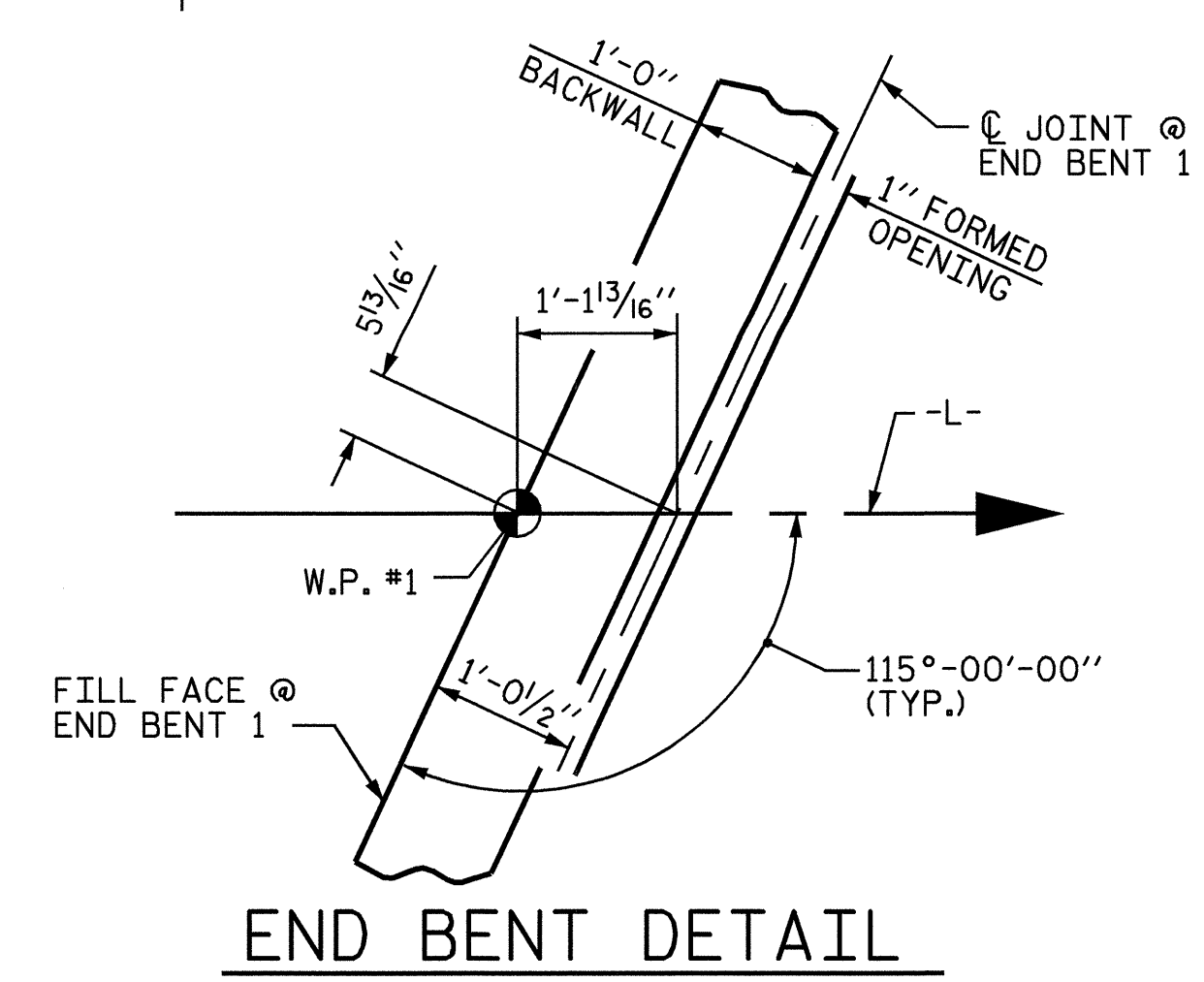
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REVISIONS				SHEET NO.	
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					TOTAL SHEETS
					42



PLAN SPAN "A" & PARTIAL PLAN SPAN "B"

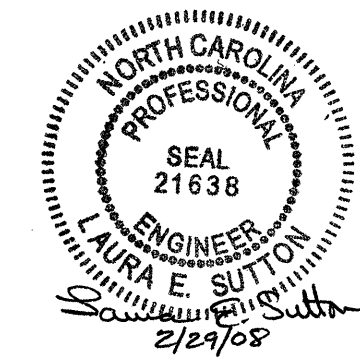
FOR REINFORCING STEEL IN SIDEWALK, SEE "SIDEWALK & END POST DETAILS" SHEET.
 FOR TRANSVERSE CONSTRUCTION JOINT DETAIL & LOCATIONS, SEE "POURING SEQUENCE" SHEET.
 FOR INTERMEDIATE DIAPHRAGM LOCATION, SEE "GIRDER LAYOUT" SHEET.



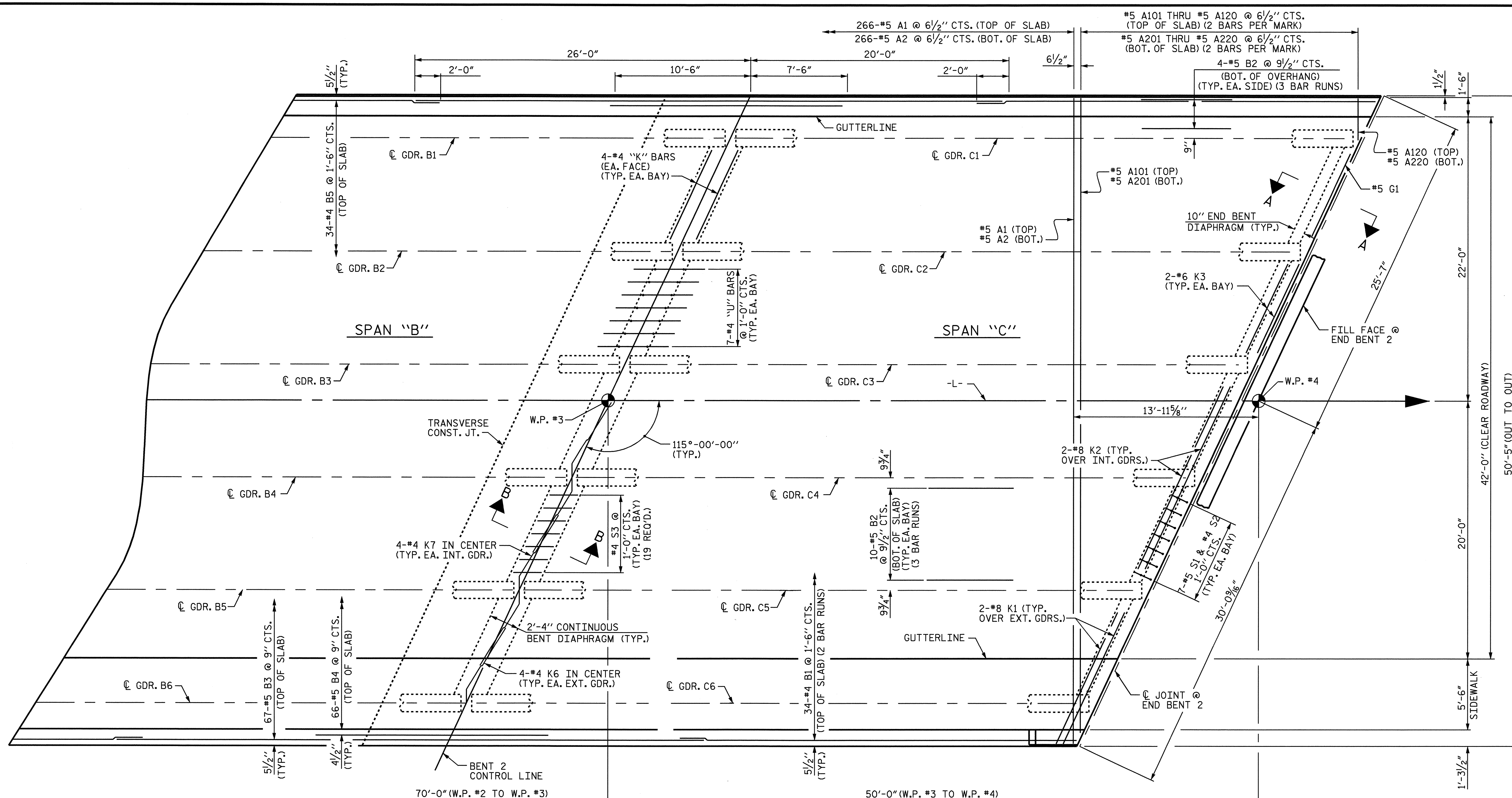
END BENT DETAIL

PROJECT NO. B-3705
WAKE COUNTY
 STATION: 26+50.00 -L-
 SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPANS					
REVISIONS					
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SHEET NO.					S-6
TOTAL SHEETS					42

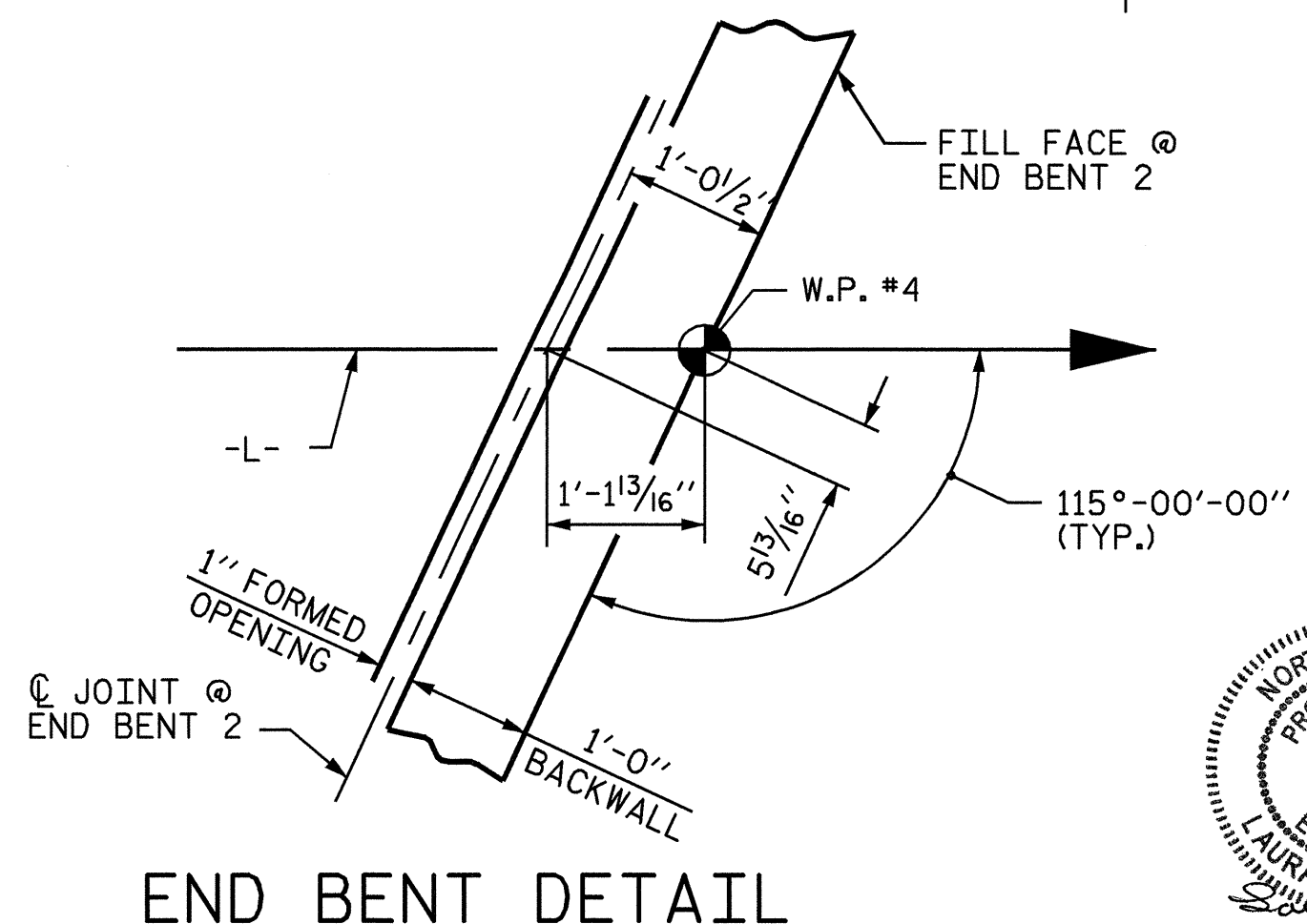


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 CHECKED BY: B.L. GREEN DATE: 8/18/06



**PARTIAL PLAN SPAN "B"
& PLAN SPAN "C"**

FOR REINFORCING STEEL IN SIDEWALK, SEE "SIDEWALK & END POST DETAILS" SHEET.
 FOR TRANSVERSE CONSTRUCTION JOINT DETAIL & LOCATIONS, SEE "POURING SEQUENCE" SHEET.
 FOR INTERMEDIATE DIAPHRAGM LOCATION, SEE "GIRDER LAYOUT" SHEET.



END BENT DETAIL

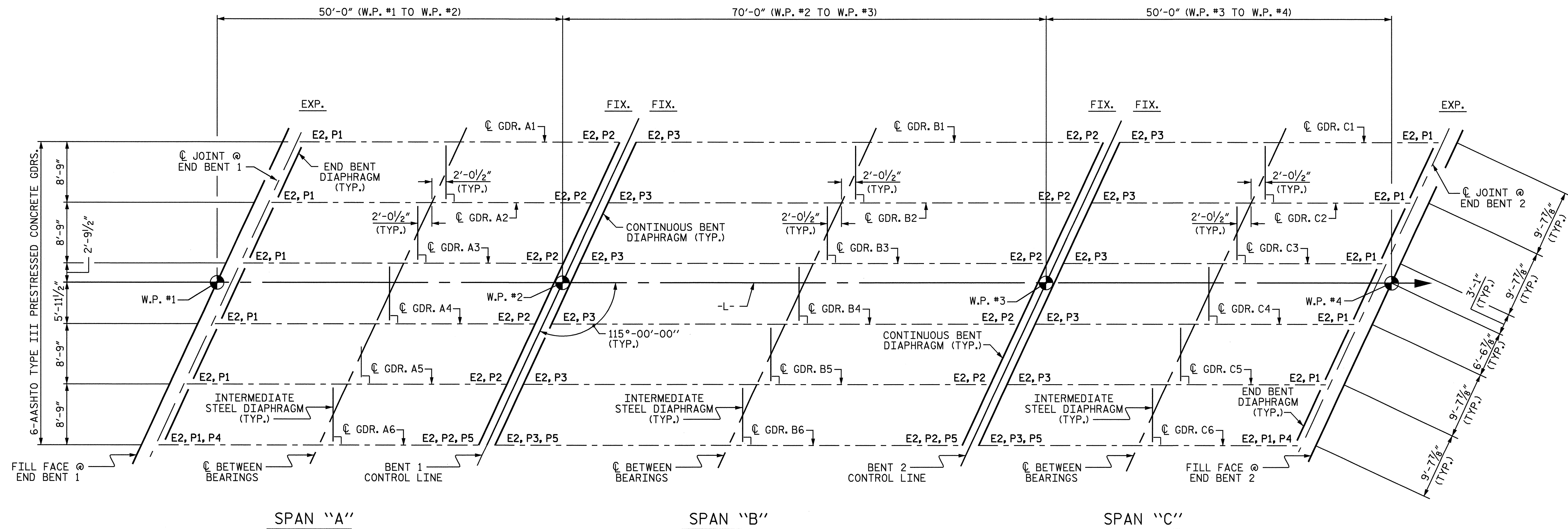
PROJECT NO. B-3705
WAKE COUNTY
 STATION: 26+50.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPANS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
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					TOTAL SHEETS 42

DRAWN BY: A.S. CALLAWAY DATE: 8/2/06
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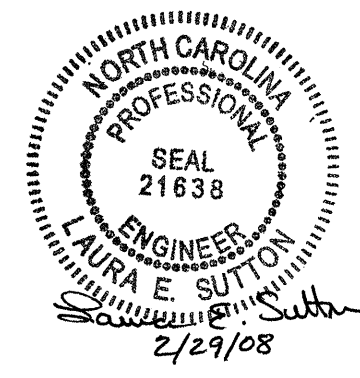




GIRDER LAYOUT

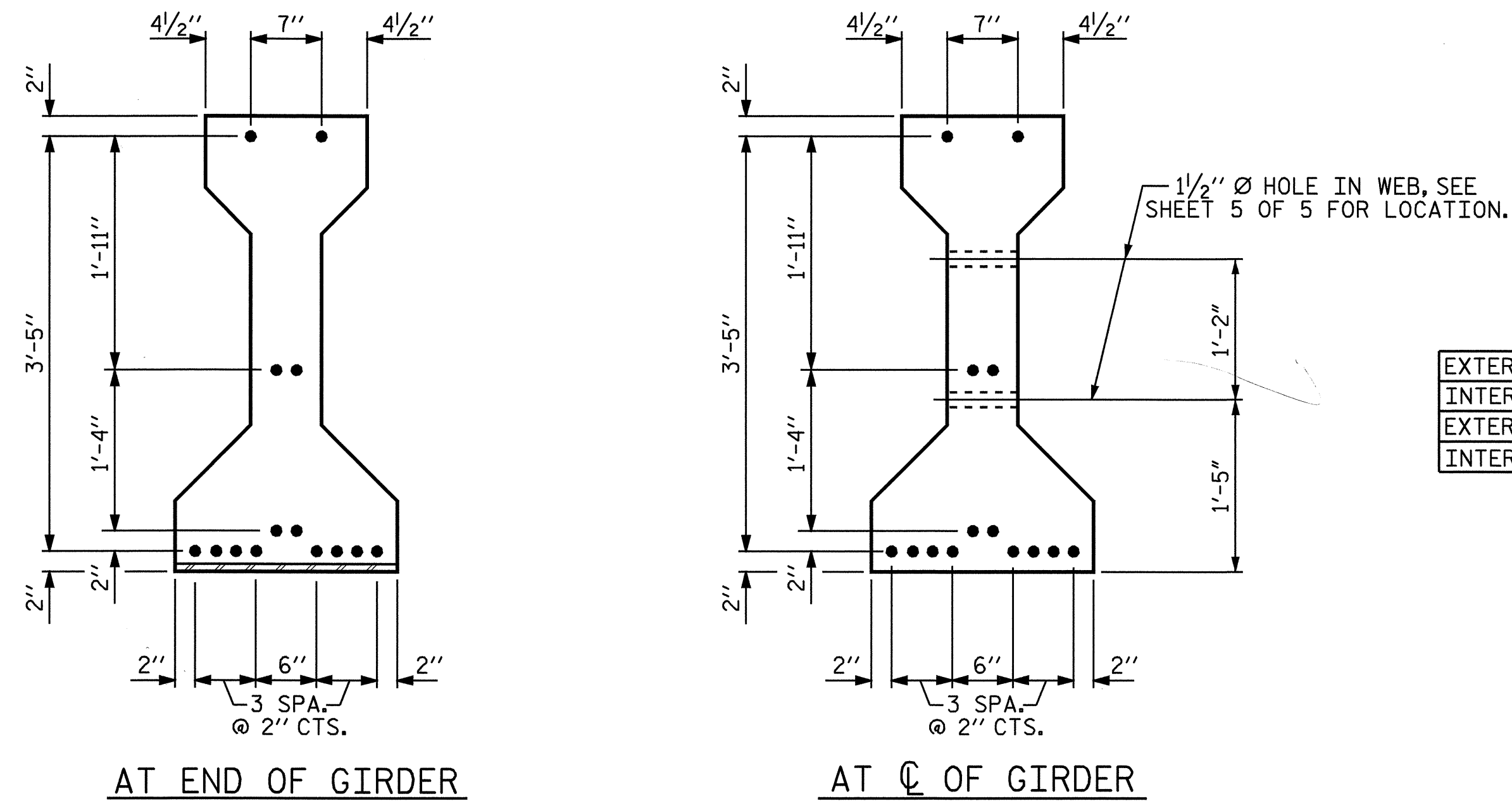
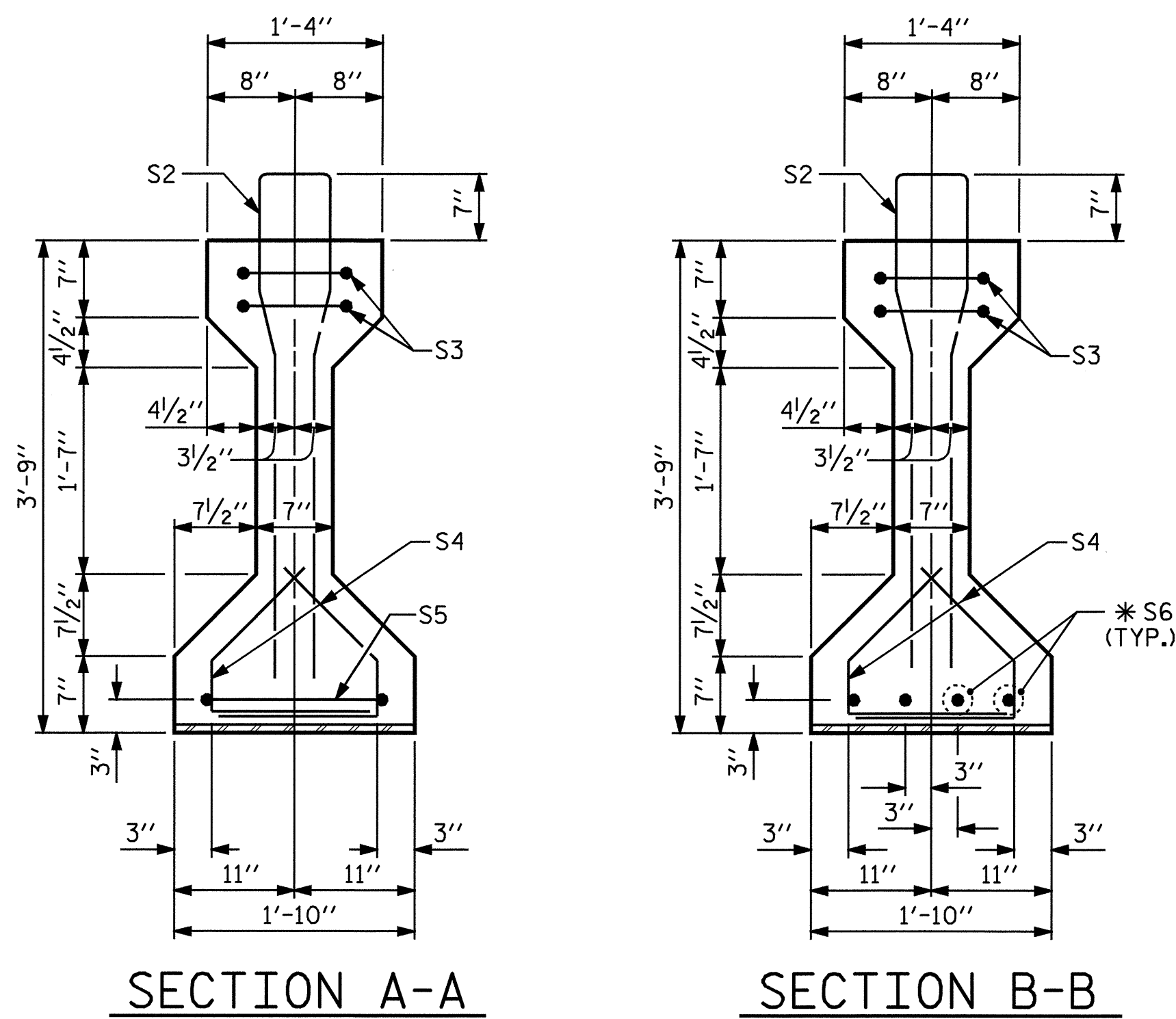
PROJECT NO. B-3705
WAKE COUNTY
 STATION: 26+50.00 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE GIRDER LAYOUT					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-8
TOTAL SHEETS					42



DRAWN BY: A.S. CALLAWAY DATE: 7/19/06
 CHECKED BY: B.L. GREEN DATE: 8/21/06

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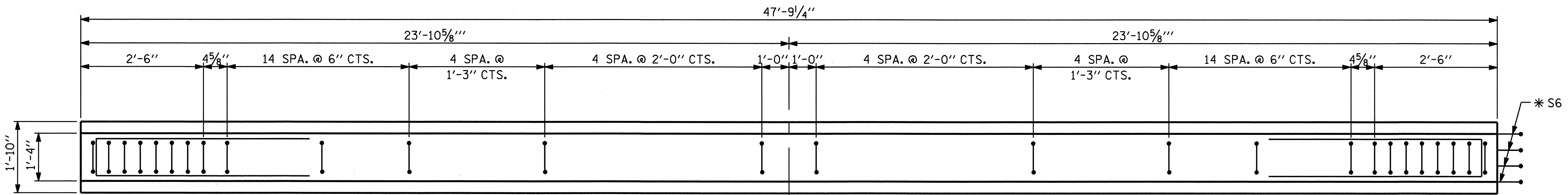
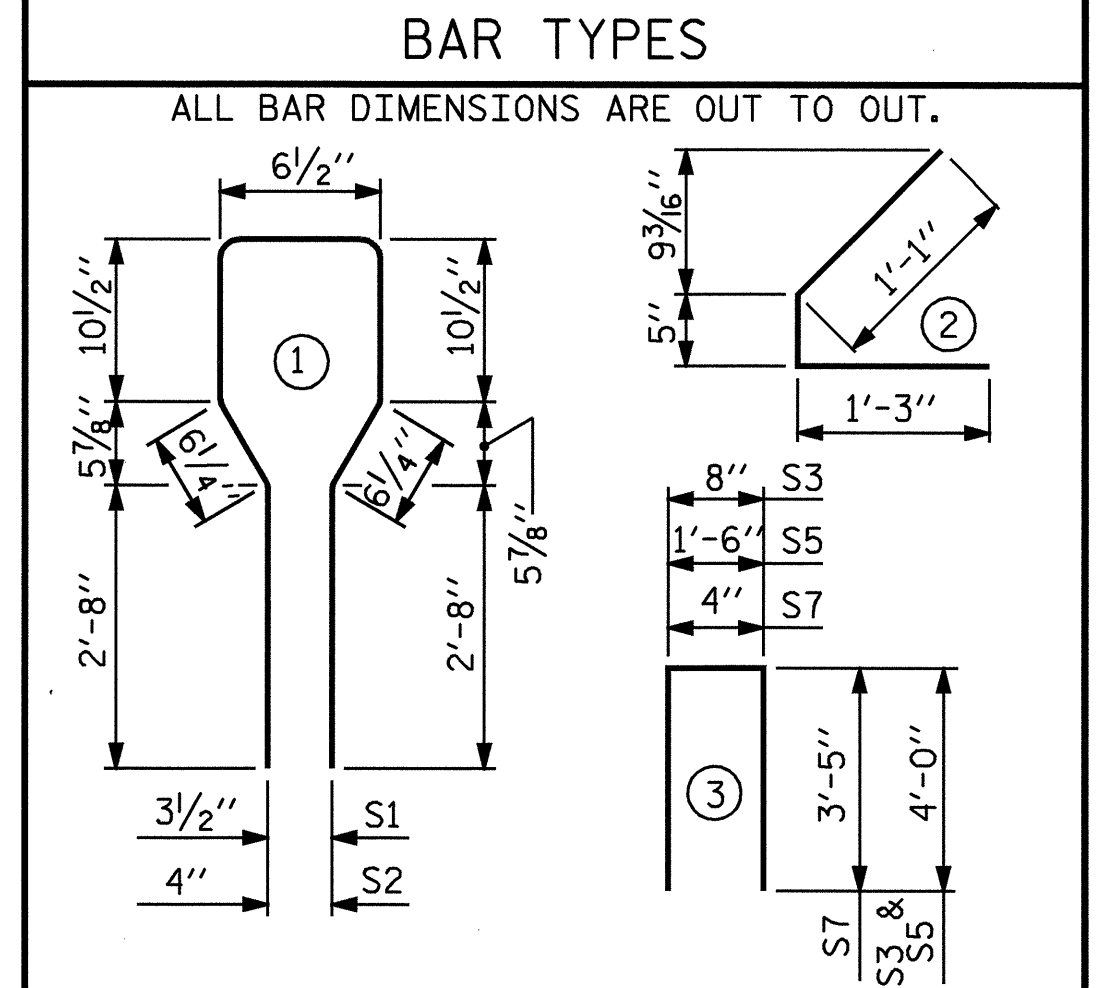
AT END OF GIRDER
AT C OF GIRDER
0.6" Ø LOW RELAXATION STRAND LAYOUT

EXTERIOR GIRDER
INTERIOR GIRDER
EXTERIOR GIRDER
INTERIOR GIRDER

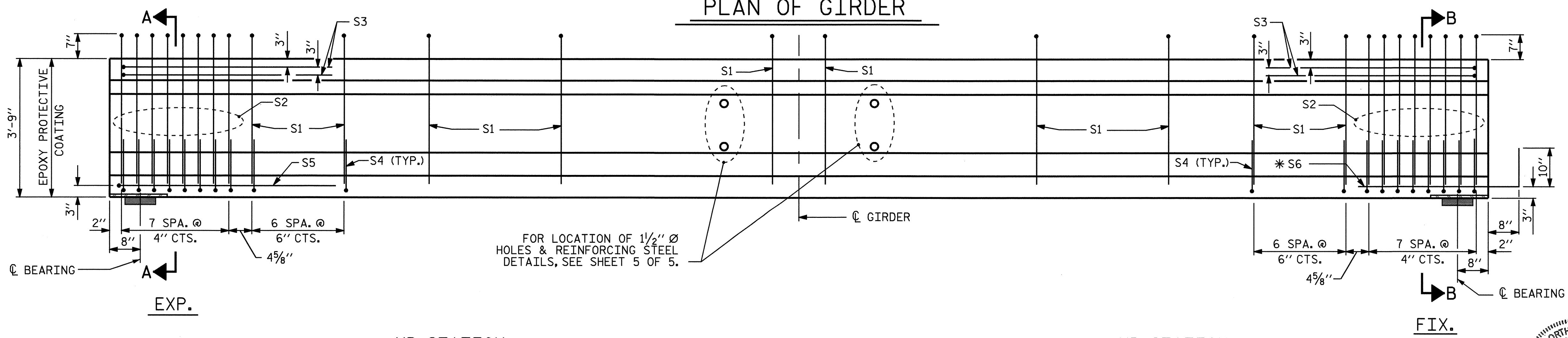
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINF. STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	46	#4	1	8'-8"	266
S2	16	#6	1	8'-8"	208
S3	4	#4	3	8'-8"	23
S4	60	#4	2	2'-9"	110
S5	1	#4	3	9'-6"	6
*S6	4	#5	STR	3'-8"	15
S7	2	#5	3	7'-2"	15
S7	4	#5	3	7'-2"	30
S8	5	#4	STR	7'-0"	23
S9	5	#4	STR	11'-1"	37

* NOTE: S6 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.



PLAN OF GIRDER



ELEVATION OF GIRDER

QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL LBS.	6000 PSI CONCRETE C.Y.	0.6" Ø L.R. STRANDS No.
EXTERIOR GIRDER	666	6.9	14
INTERIOR GIRDER	695	6.9	14

GIRDERS REQUIRED PER SPAN		
NUMBER	LENGTH	TOTAL LENGTH
6	47'-9 1/4"	286'-7 1/2"

PROJECT NO. B-3705
WAKE COUNTY
STATION: 26+50.00 -L-
SHEET 1 OF 5

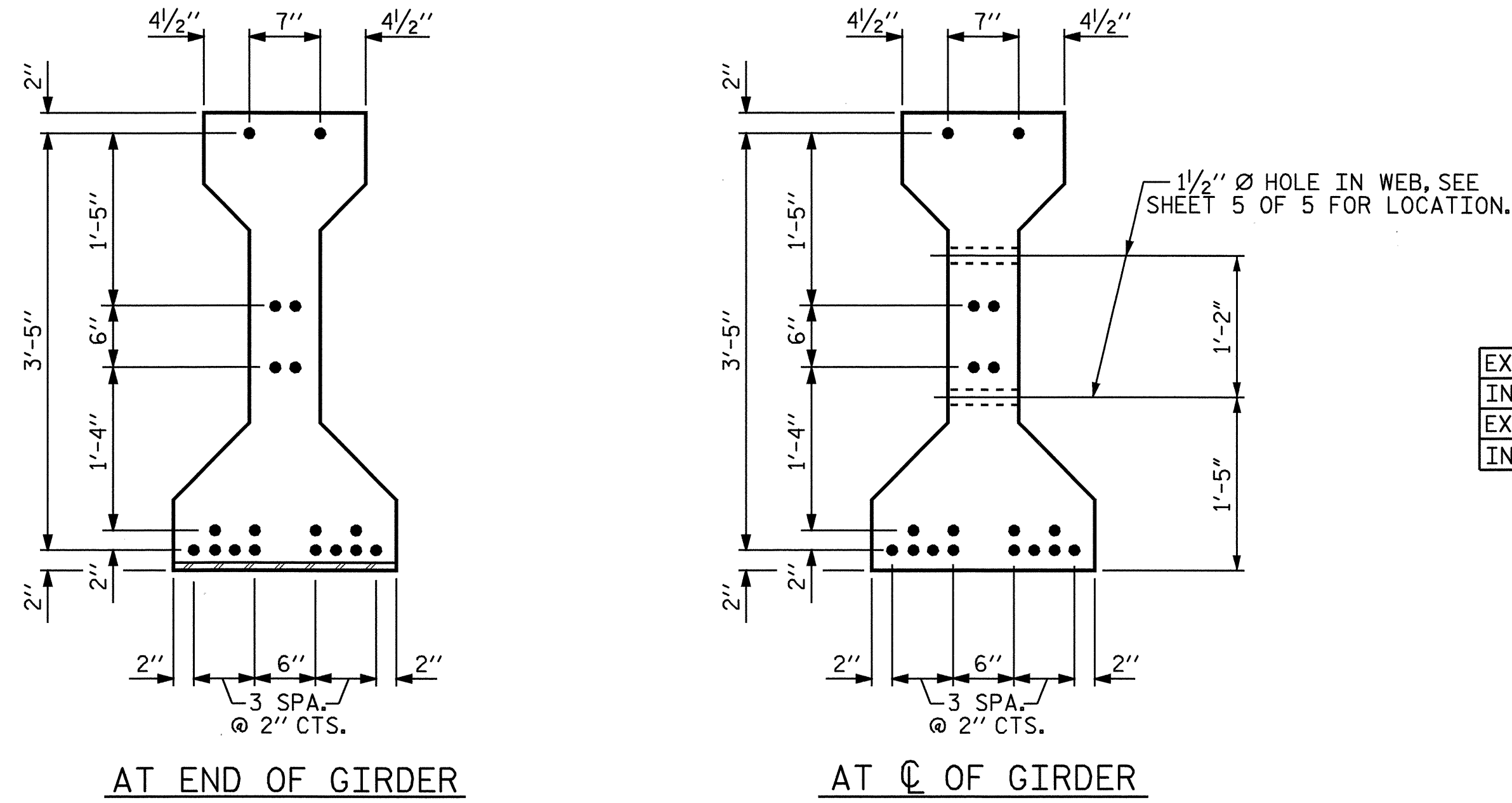
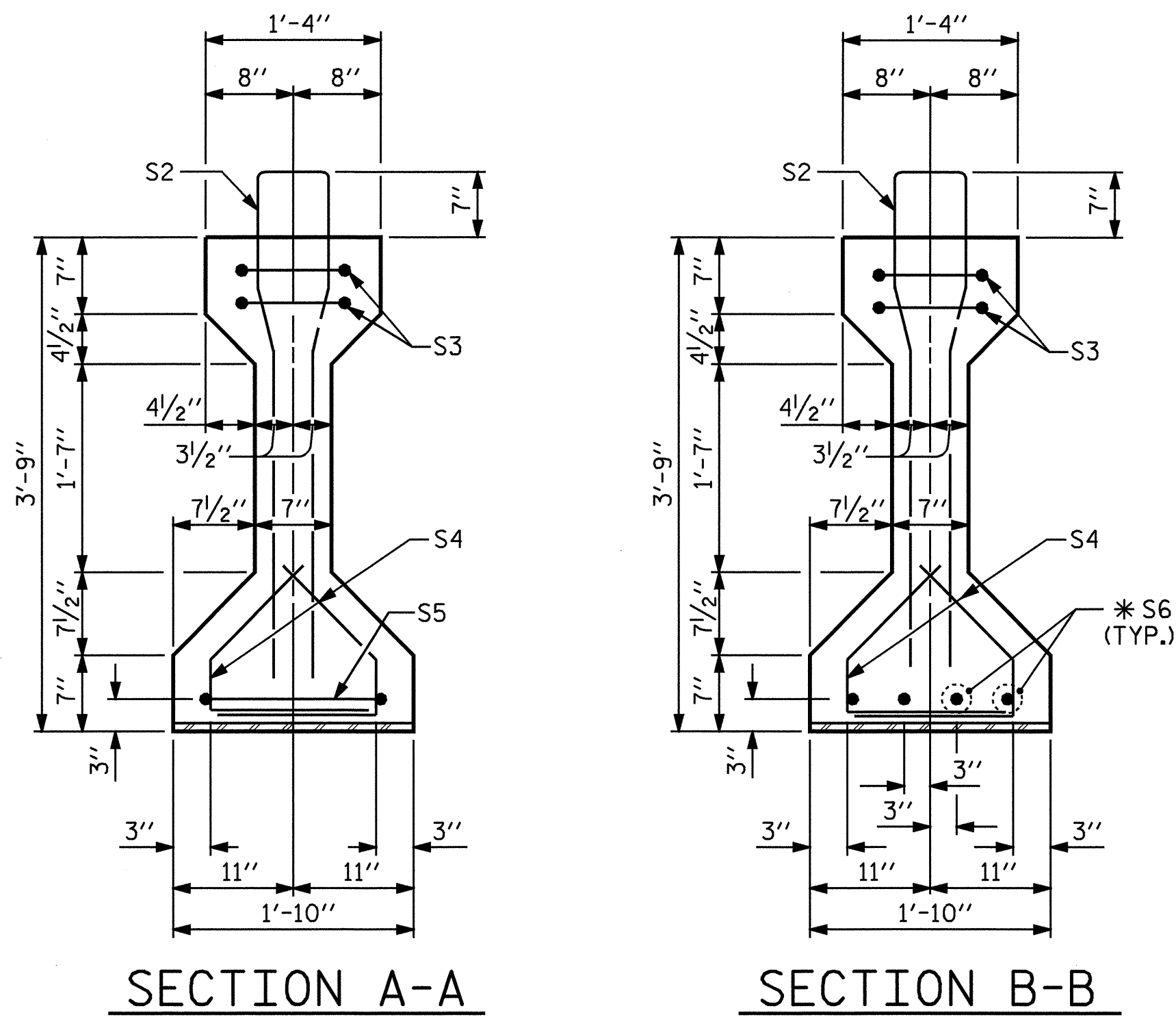
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
AASHTO TYPE III
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
SPANS "A" & "C"



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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			42



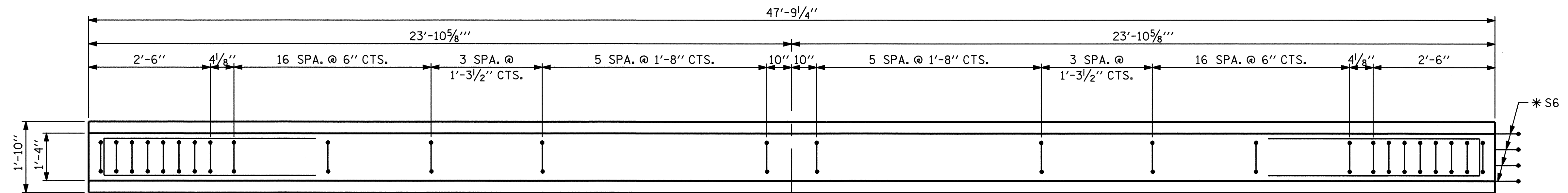
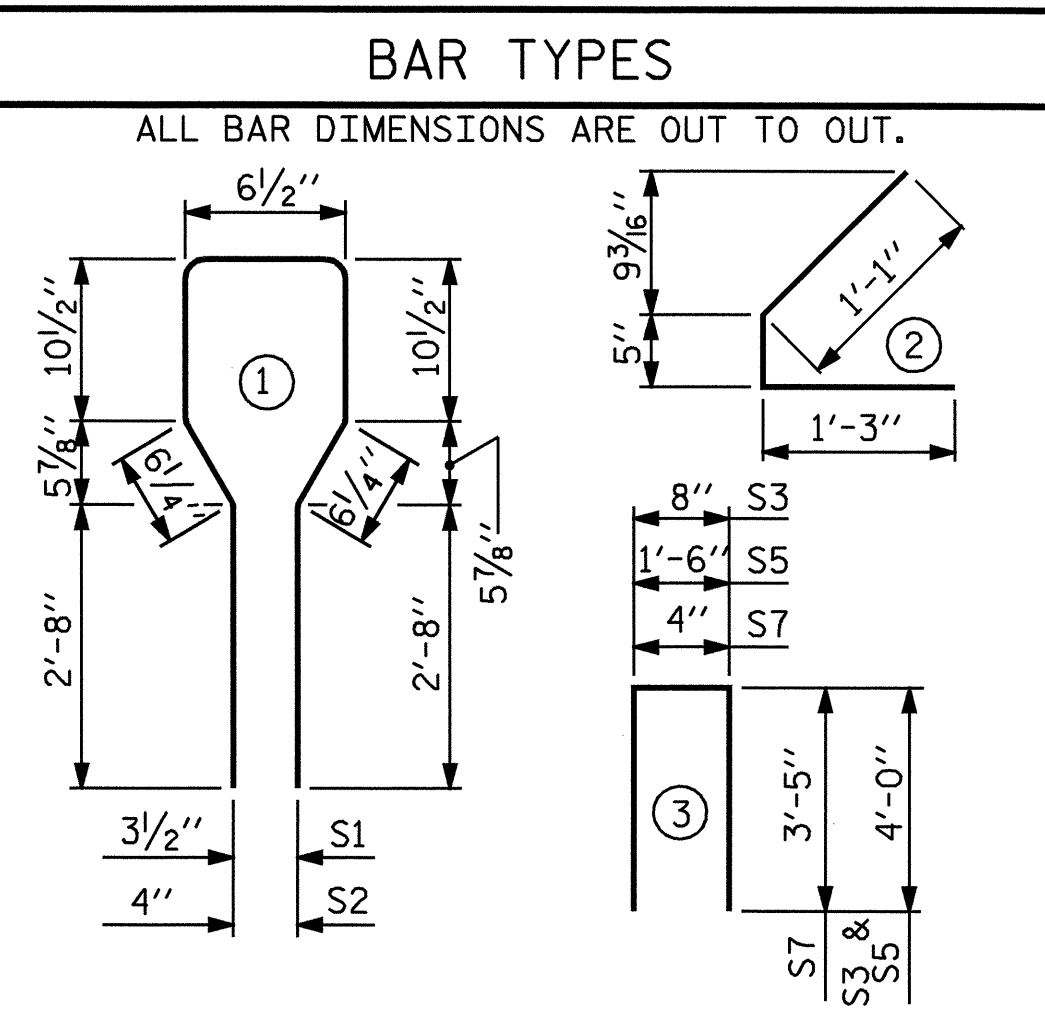
1/2" Ø LOW RELAXATION STRAND LAYOUT

EXTERIOR GIRDER	S7	2	#5	3	7'-2"	15
INTERIOR GIRDER	S7	4	#5	3	7'-2"	30
EXTERIOR GIRDER	S8	5	#4	STR	7'-0"	23
INTERIOR GIRDER	S9	5	#4	STR	11'-1"	37

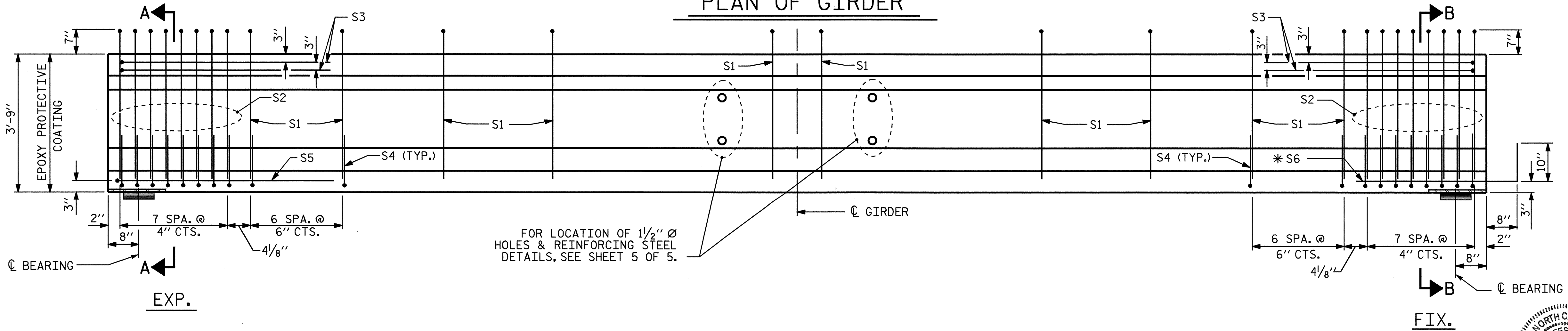
1/2" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.153	41,300	30,980

REINF. STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	50	#4	1	8'-8"	289
S2	16	#6	1	8'-8"	208
S3	4	#4	3	8'-8"	23
S4	60	#4	2	2'-9"	110
S5	1	#4	3	9'-6"	6
*S6	4	#5	STR	3'-8"	15

* NOTE: S6 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.



PLAN OF GIRDER



ELEVATION OF GIRDER

QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL LBS.	6000 PSI CONCRETE C.Y.	1/2" Ø L.R. STRANDS No.
EXTERIOR GIRDER	689	6.9	18
INTERIOR GIRDER	718	6.9	18

GIRDERS REQUIRED PER SPAN		
NUMBER	LENGTH	TOTAL LENGTH
6	47'-9 1/4"	286'-7 1/2"

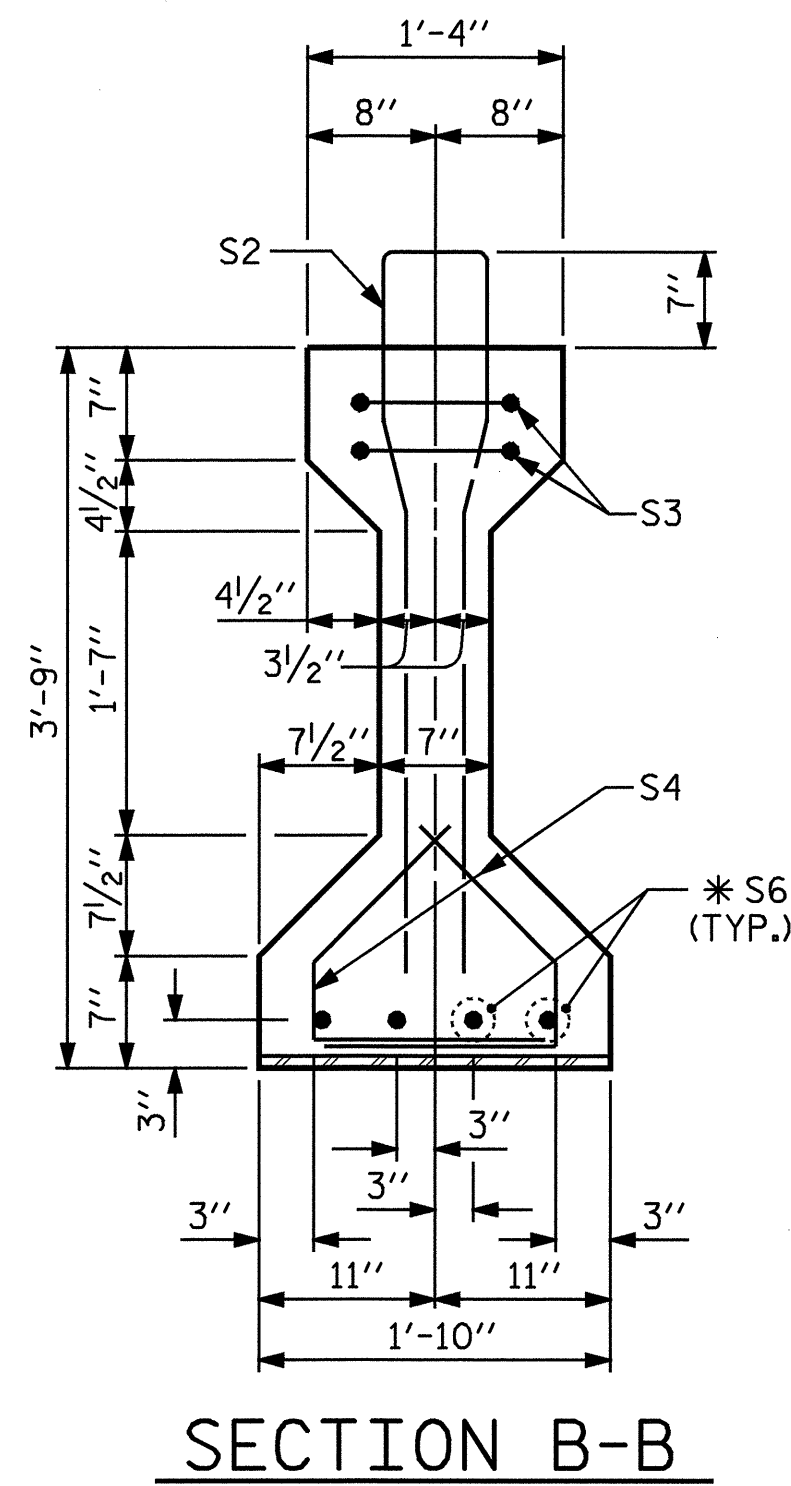
PROJECT NO. B-3705
 WAKE COUNTY
 STATION: 26+50.00 -L-

SHEET 2 OF 5
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 AASHTO TYPE III
 PRESTRESSED CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD
 SPANS "A" & "C"
 (1/2" Ø STRAND OPTION)

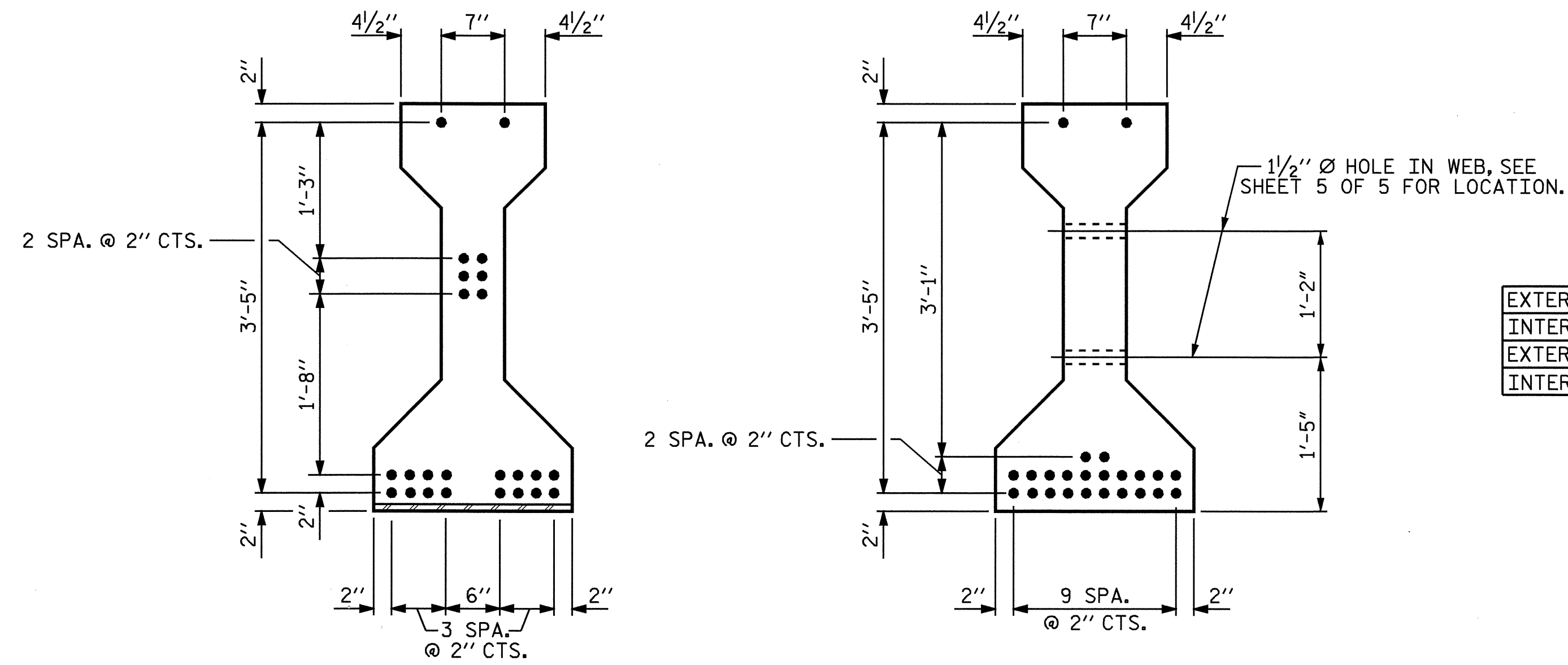


DRAWN BY: A.S. CALLAWAY DATE: 7/26/06
 CHECKED BY: B.L. GREEN DATE: 8/21/06

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					42



SECTION B-B



AT END OF GIRDER

AT \odot OF GIRDER

0.6" \odot LOW RELAXATION STRAND LAYOUT

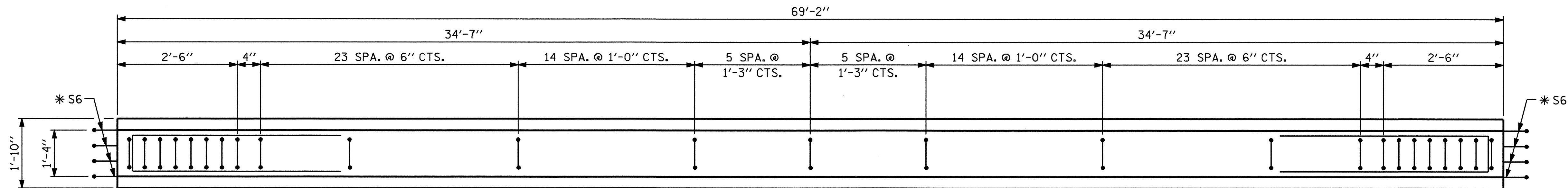
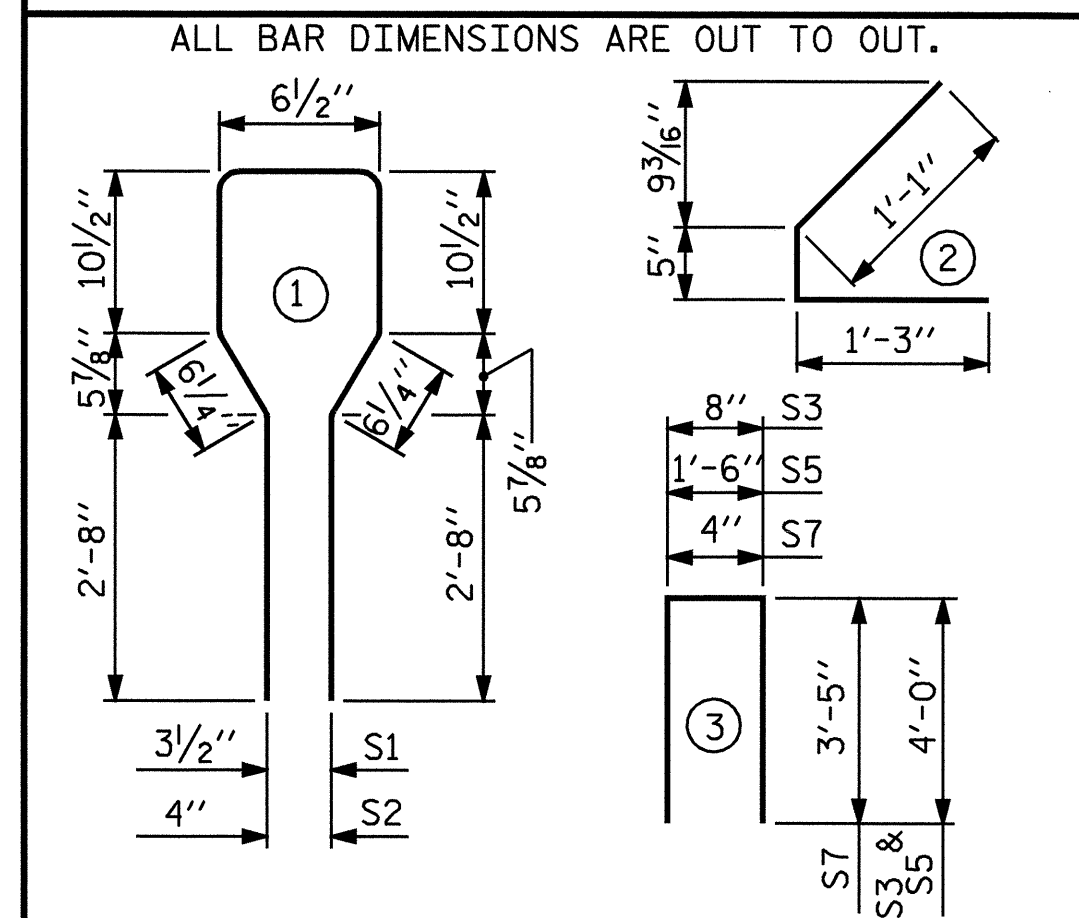
EXTERIOR GIRDER	S1	86	#4	1	8'-8"	498
INTERIOR GIRDER	S2	16	#6	1	8'-8"	208
EXTERIOR GIRDER	S3	4	#4	3	8'-8"	23
EXTERIOR GIRDER	S4	60	#4	2	2'-9"	110
EXTERIOR GIRDER	*S6	8	#5	STR	3'-8"	31
EXTERIOR GIRDER	S7	2	#5	3	7'-2"	15
EXTERIOR GIRDER	S8	4	#5	3	7'-2"	30
EXTERIOR GIRDER	S9	5	#4	STR	11'-1"	37

REINF. STEEL FOR ONE GIRDER

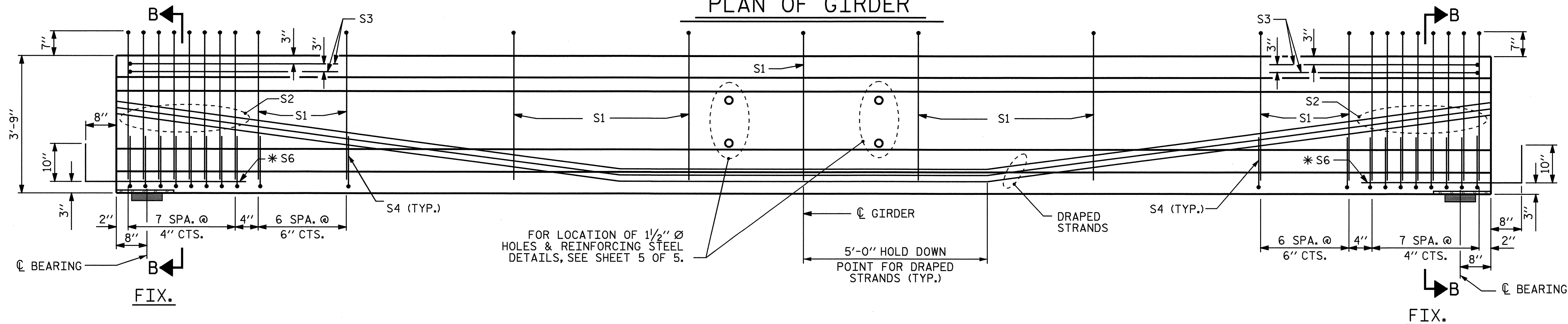
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	86	#4	1	8'-8"	498
S2	16	#6	1	8'-8"	208
S3	4	#4	3	8'-8"	23
S4	60	#4	2	2'-9"	110
*S6	8	#5	STR	3'-8"	31
S7	2	#5	3	7'-2"	15
S8	4	#5	3	7'-2"	30
S9	5	#4	STR	11'-1"	37

* NOTE: S6 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES



PLAN OF GIRDER



ELEVATION OF GIRDER

QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL LBS.	7000 PSI CONCRETE C.Y.	0.6" \odot L.R. STRANDS No.
EXTERIOR GIRDER	908	10.0	24
INTERIOR GIRDER	937	10.0	24

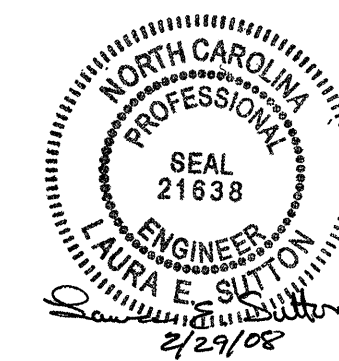
GIRDERS REQUIRED PER SPAN

NUMBER	LENGTH	TOTAL LENGTH
6	69'-2"	415'-0"

PROJECT NO. B-3705
 WAKE COUNTY
 STATION: 26+50.00 -L-

SHEET 3 OF 5

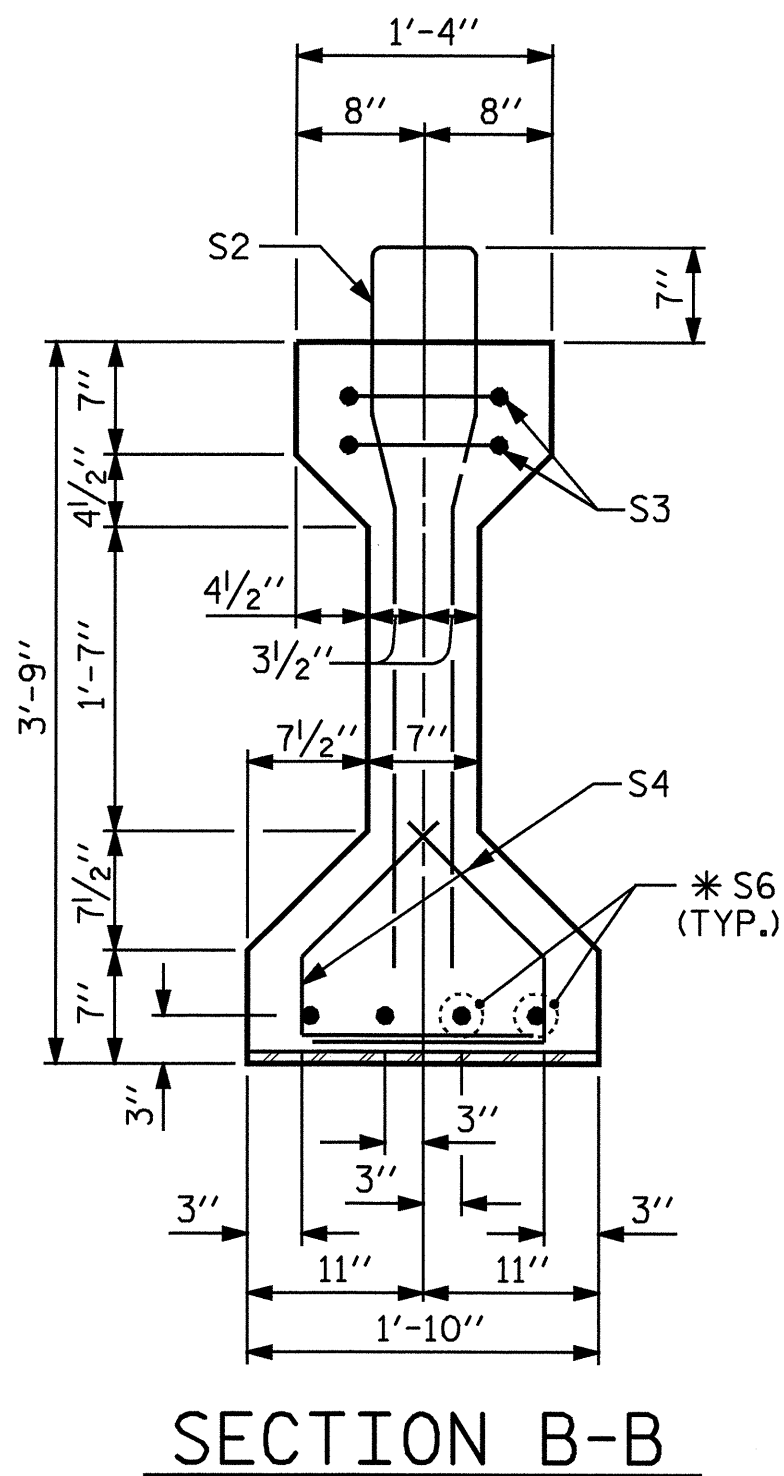
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 AASHTO TYPE III
 PRESTRESSED CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD
 SPAN "B"



DRAWN BY: A.S. CALLAWAY DATE: 7/26/06
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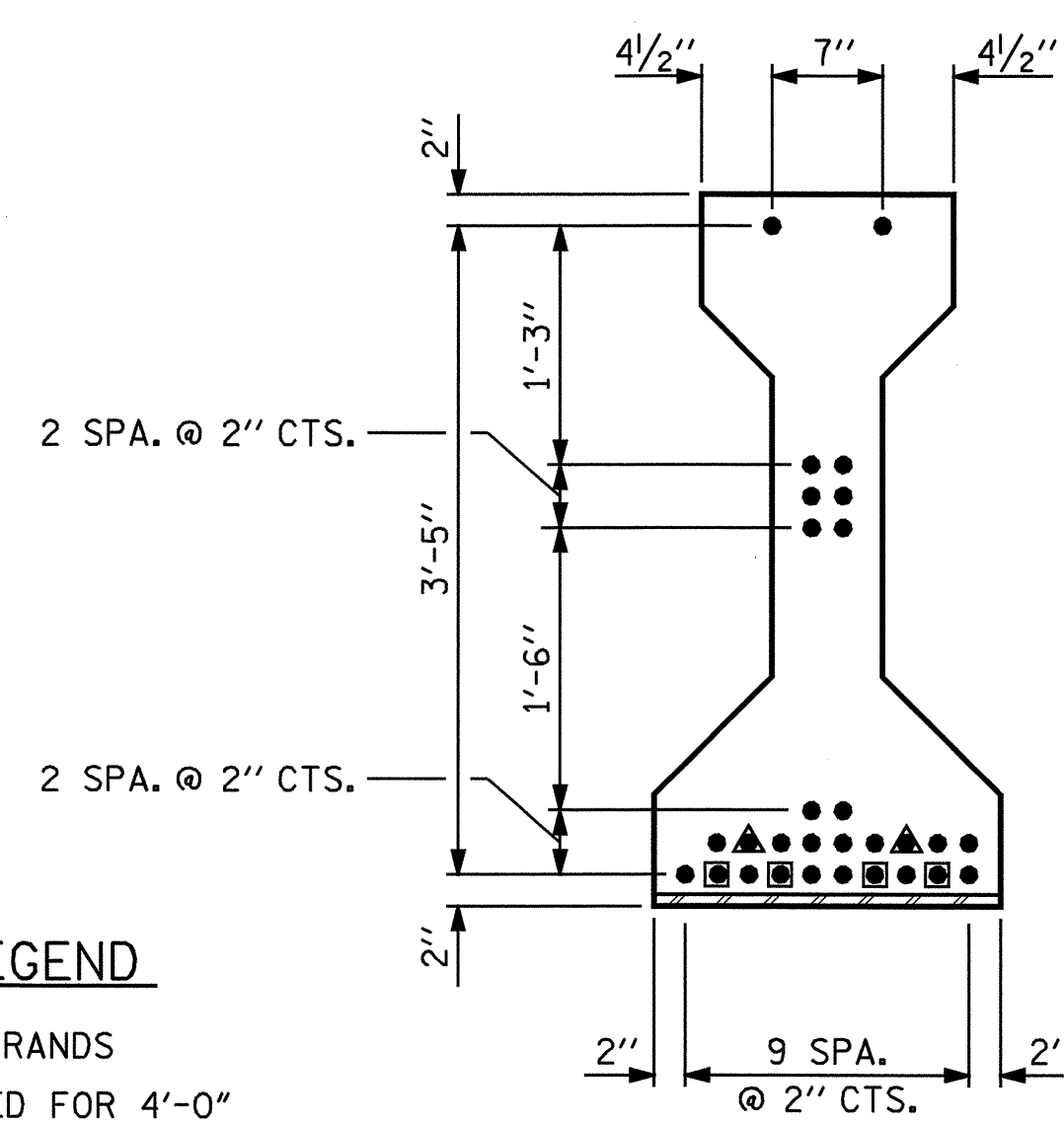
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			42



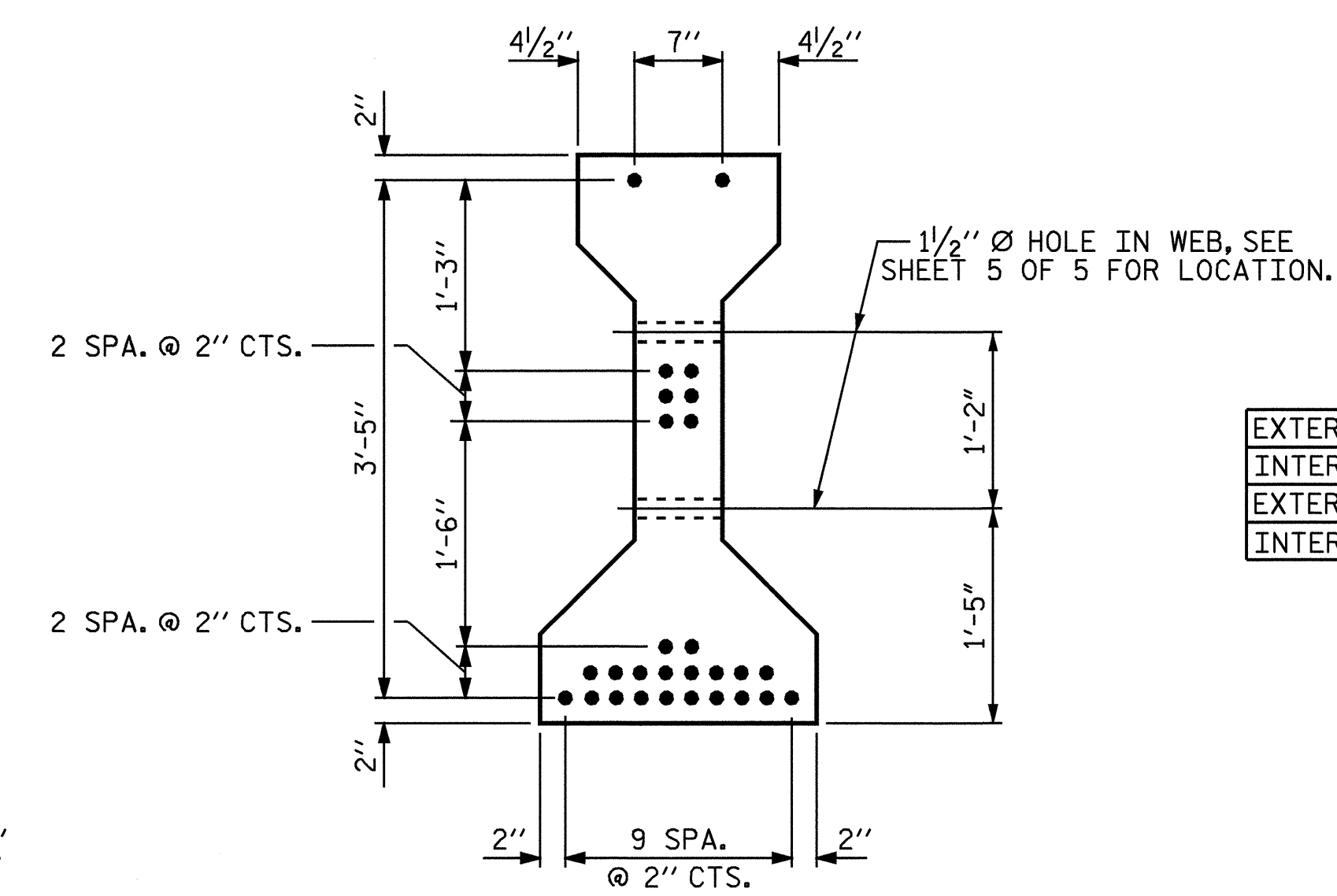
SECTION B-B

DEBONDING LEGEND

- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ▲ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER

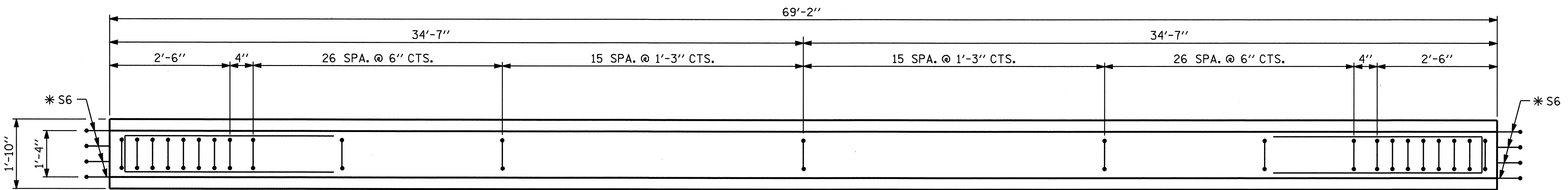


AT END OF GIRDER

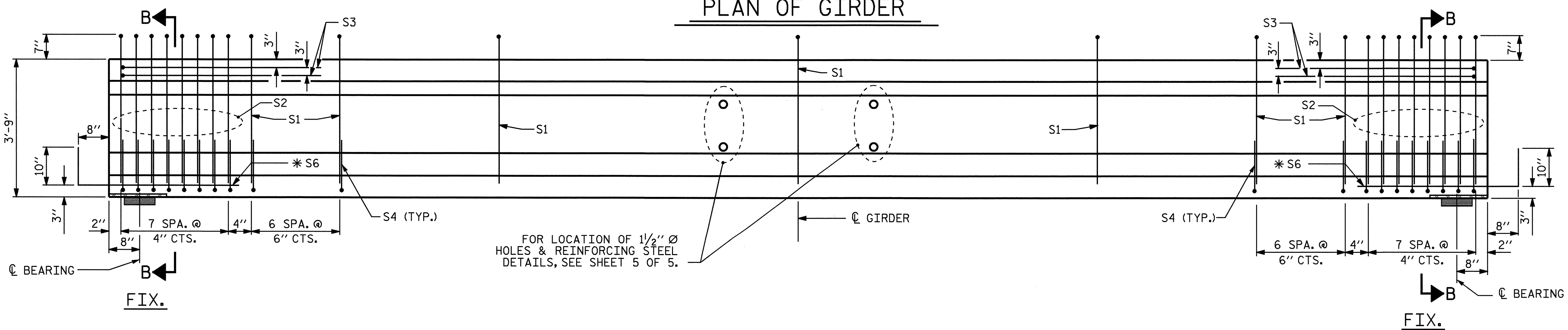


AT Q OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT



PLAN OF GIRDER



ELEVATION OF GIRDER

FOR LOCATION OF 1/2" Ø HOLES & REINFORCING STEEL DETAILS, SEE SHEET 5 OF 5.

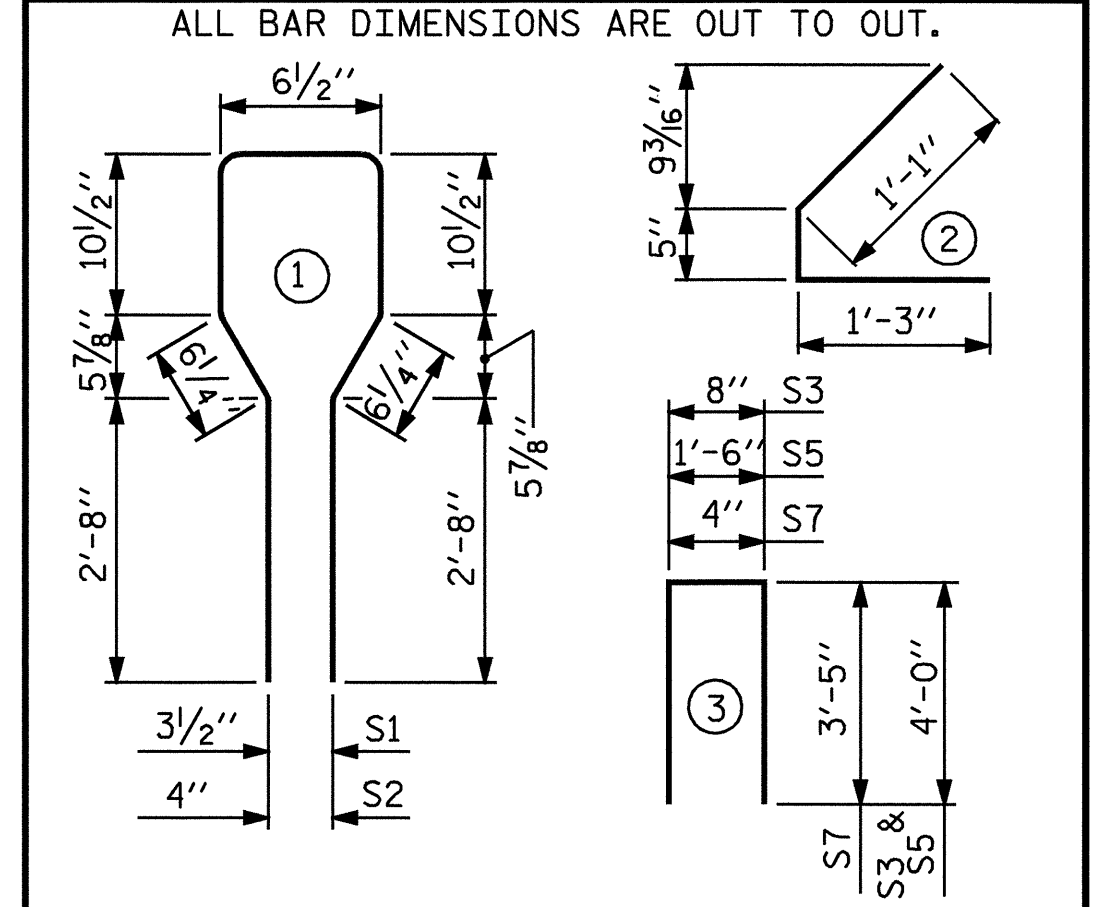
EXTERIOR GIRDER	S1	2	#5	3	7'-2"	15
INTERIOR GIRDER	S7	4	#5	3	7'-2"	30
EXTERIOR GIRDER	S8	5	#4	STR	7'-0"	23
INTERIOR GIRDER	S9	5	#4	STR	11'-1"	37

0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQ. INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINF. STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	83	#4	1	8'-8"	481
S2	16	#6	1	8'-8"	208
S3	4	#4	3	8'-8"	23
S4	60	#4	2	2'-9"	110
*S6	8	#5	STR	3'-8"	31

* NOTE: S6 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES



QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL LBS.	8300 PSI CONCRETE C.Y.	0.6" Ø L.R. STRANDS No.
EXTERIOR GIRDER	891	10.0	28
INTERIOR GIRDER	920	10.0	28

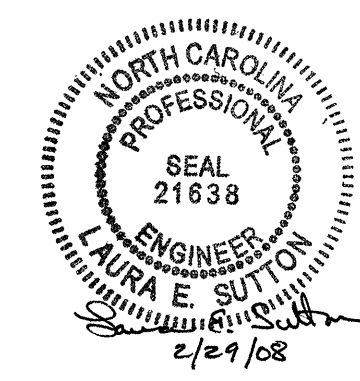
GIRDERS REQUIRED PER SPAN		
NUMBER	LENGTH	TOTAL LENGTH
6	69'-2"	415'-0"

PROJECT NO. B-3705
WAKE COUNTY
 STATION: 26+50.00 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

AASHTO TYPE III
 PRESTRESSED CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD
 SPAN "B"
 (STRAIGHT STRAND OPTION)



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTALS
2			4			42

DRAWN BY: A.S. CALLAWAY DATE: 7/26/06
 CHECKED BY: B.L. GREEN DATE: 8/21/06

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES INDICATED IN ELEVATION VIEW.

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

AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING 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:

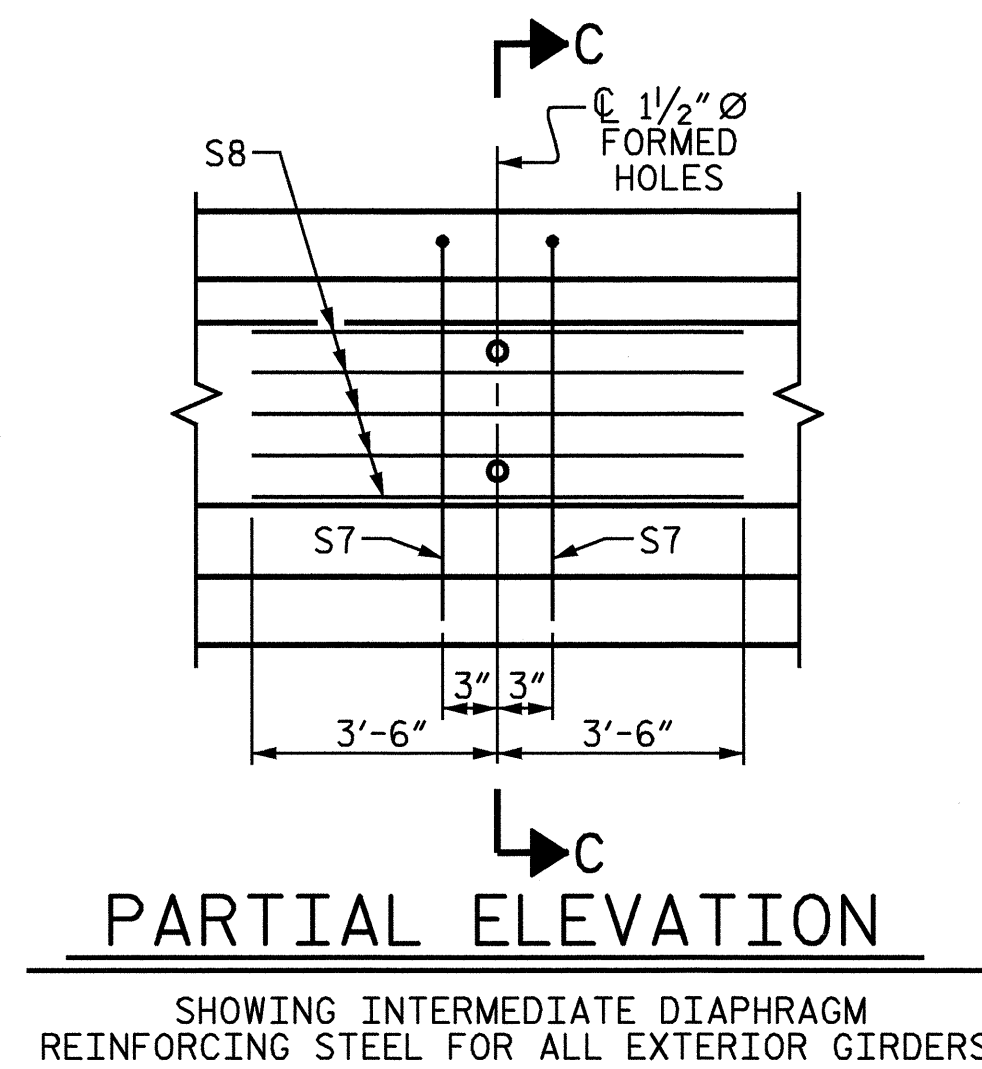
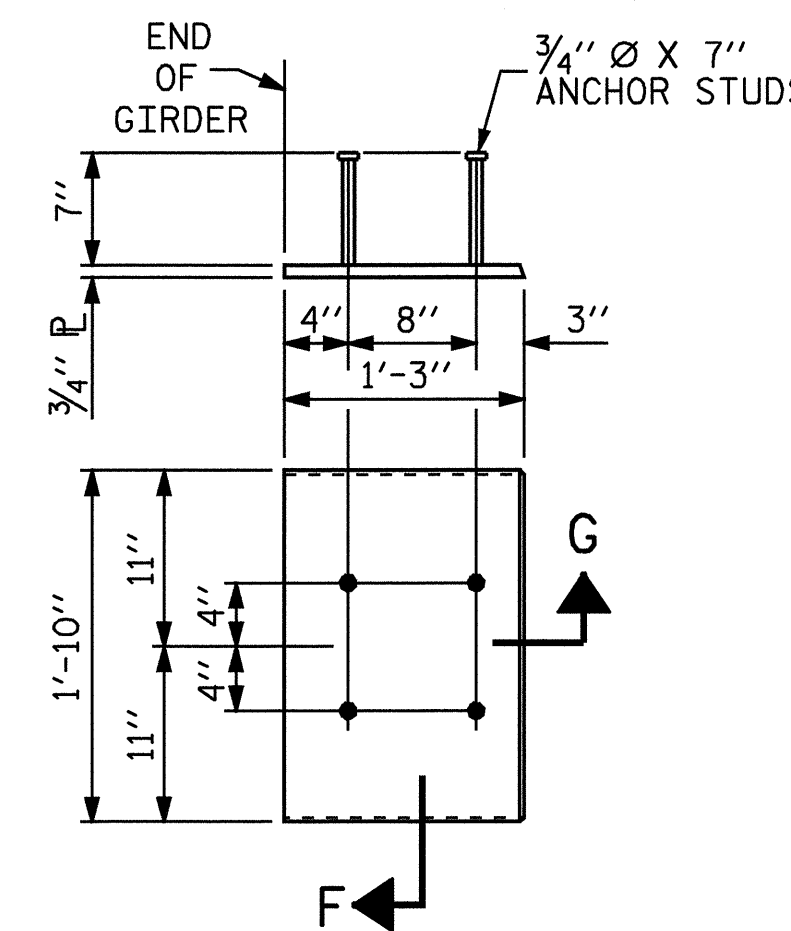
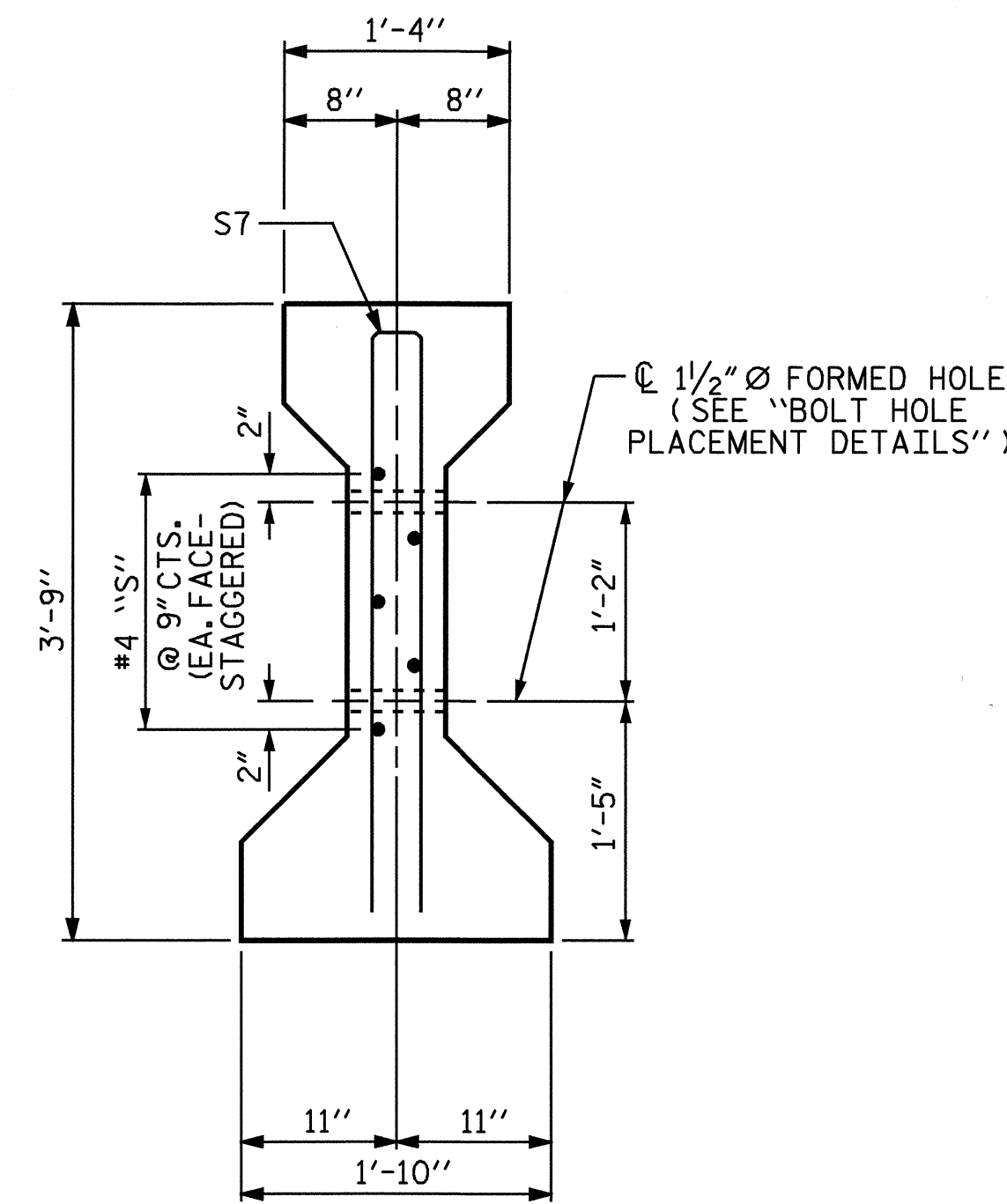
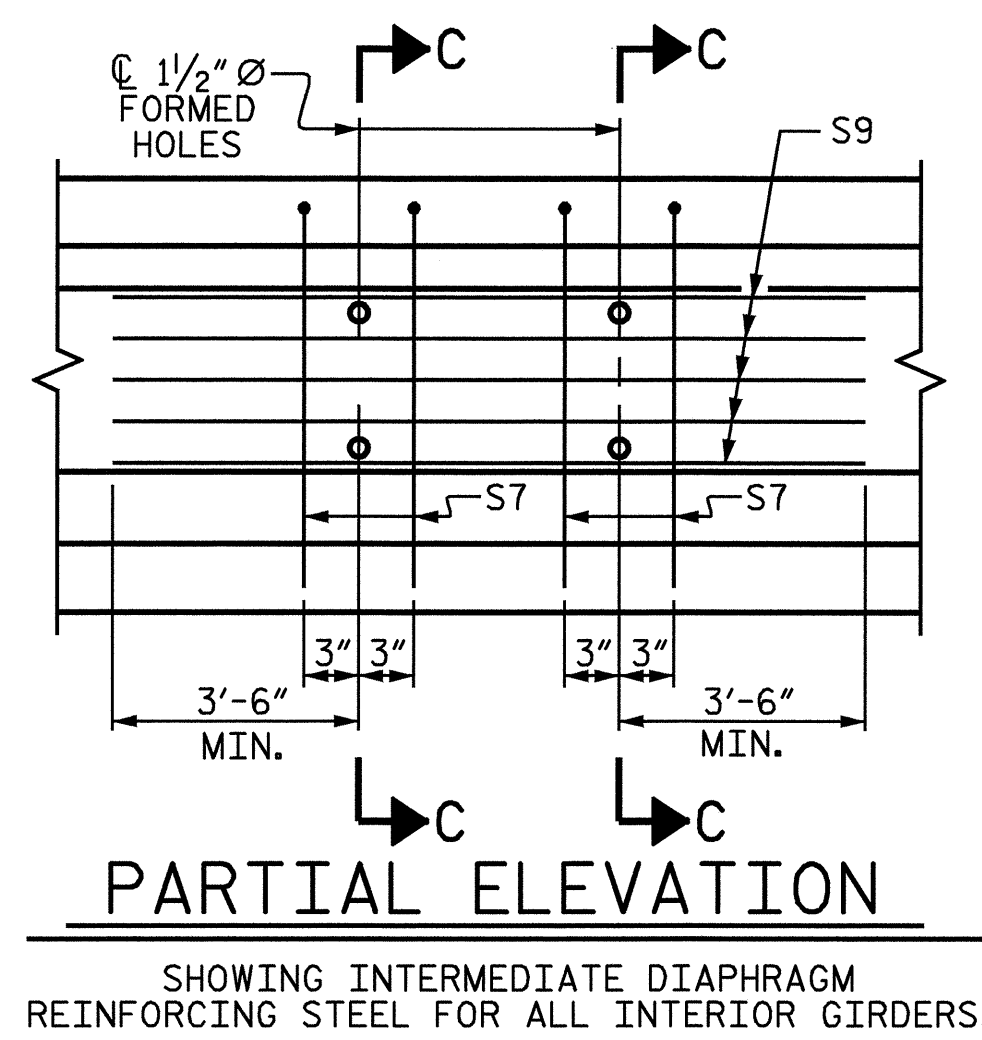
- 4000 PSI FOR SPANS "A" & "C"
- 4000 PSI FOR SPANS "A" & "C" (1/2" Ø STRAND OPTION)
- 5300 PSI FOR SPAN "B"
- 5800 PSI FOR SPAN "B" (STRAIGHT STRAND OPTION)

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

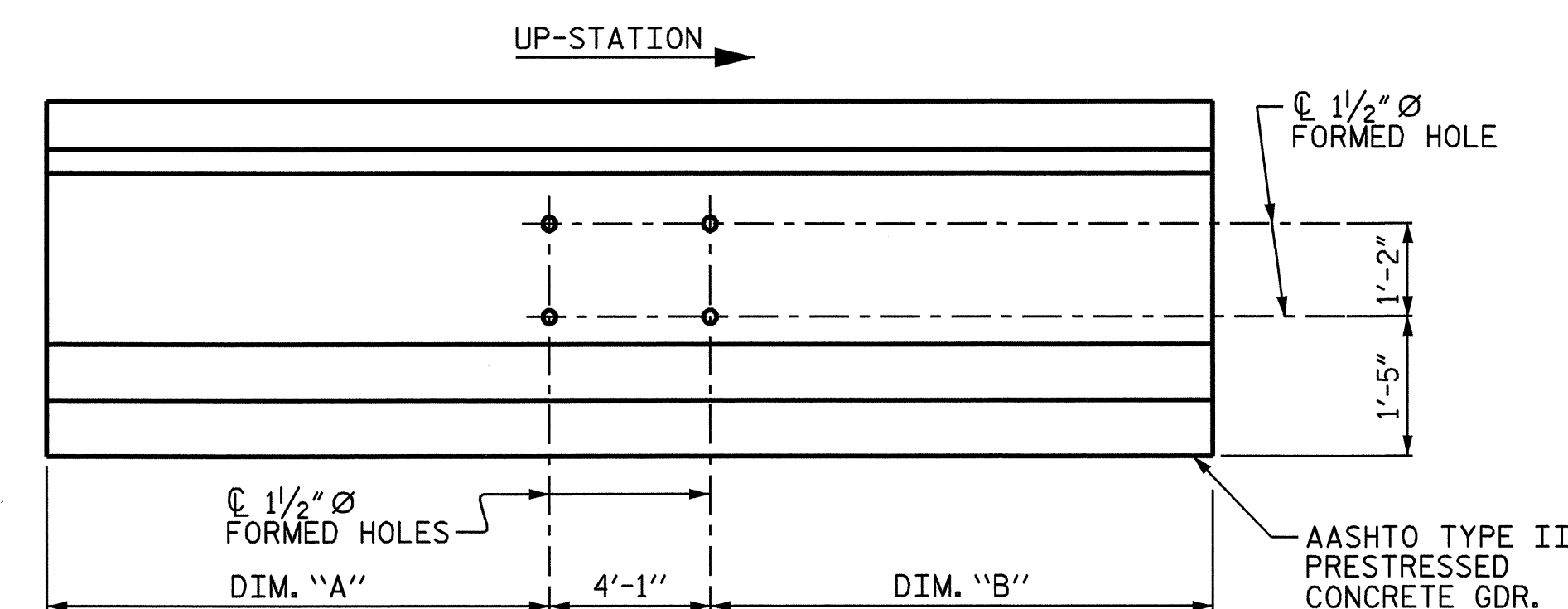
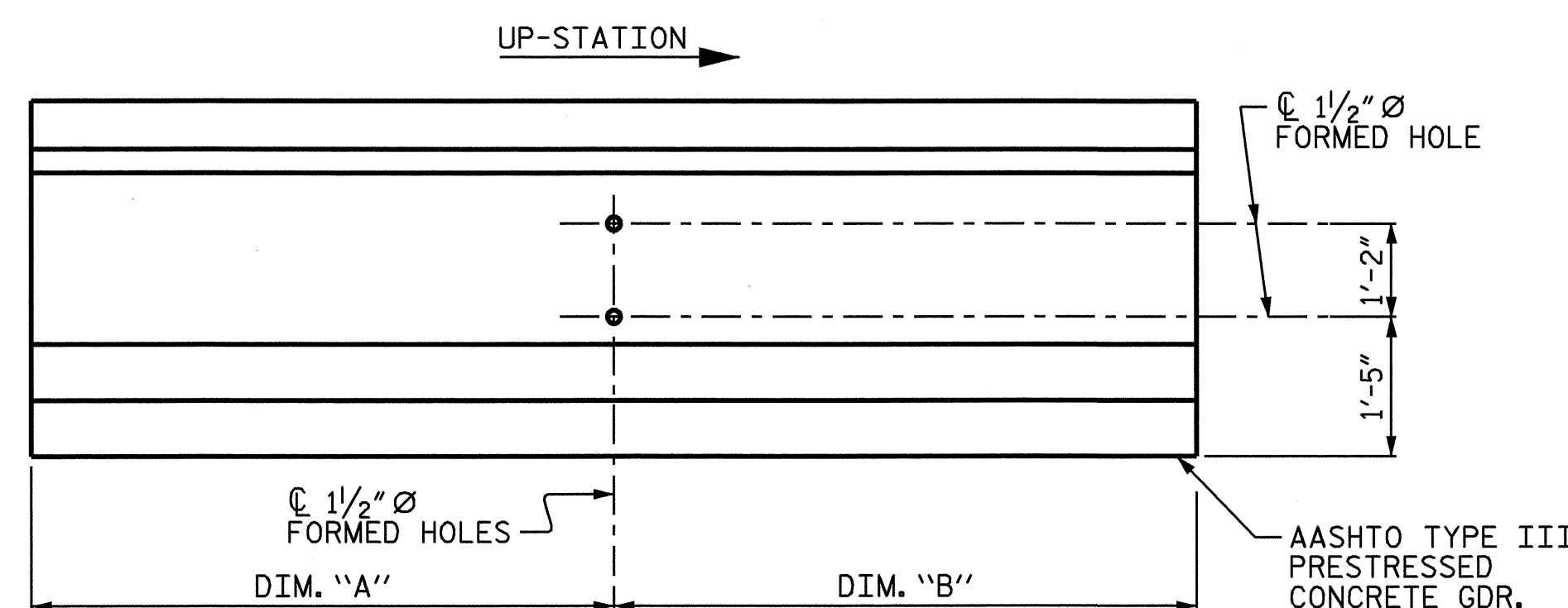
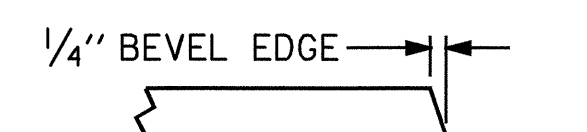
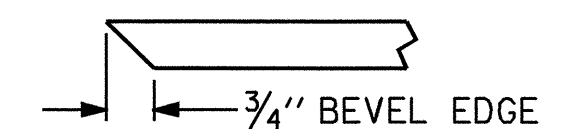
THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

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 1/2" OF THE THEORETICAL LOCATION SHOWN.

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



BOLT HOLE PLACEMENT TABLE						
GIRDER NO.	SPAN "A"		SPAN "B"		SPAN "C"	
	DIM. "A"	DIM. "B"	DIM. "A"	DIM. "B"	DIM. "A"	DIM. "B"
1	21'-10 1/8"	25'-11 1/8"	32'-6 1/2"	36'-7 1/2"	21'-10 1/8"	25'-11 1/8"
2, 3, 4 & 5	21'-10 1/8"	21'-10 1/8"	32'-6 1/2"	32'-6 1/2"	21'-10 1/8"	21'-10 1/8"
6	25'-11 1/8"	21'-10 1/8"	36'-7 1/2"	32'-6 1/2"	25'-11 1/8"	21'-10 1/8"



BOLT HOLE PLACEMENT DETAILS

PROJECT NO. B-3705
WAKE COUNTY
 STATION: 26+50.00 -L-

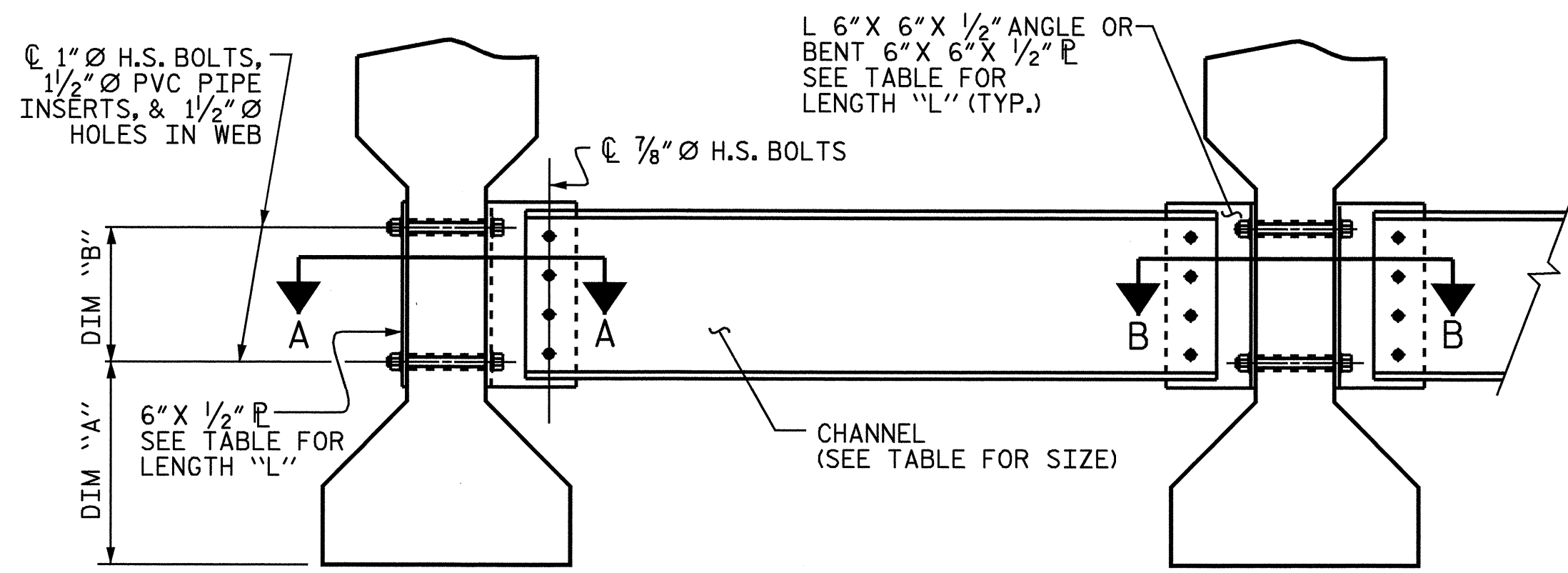
SHEET 5 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 PRESTRESSED CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD
 DETAILS

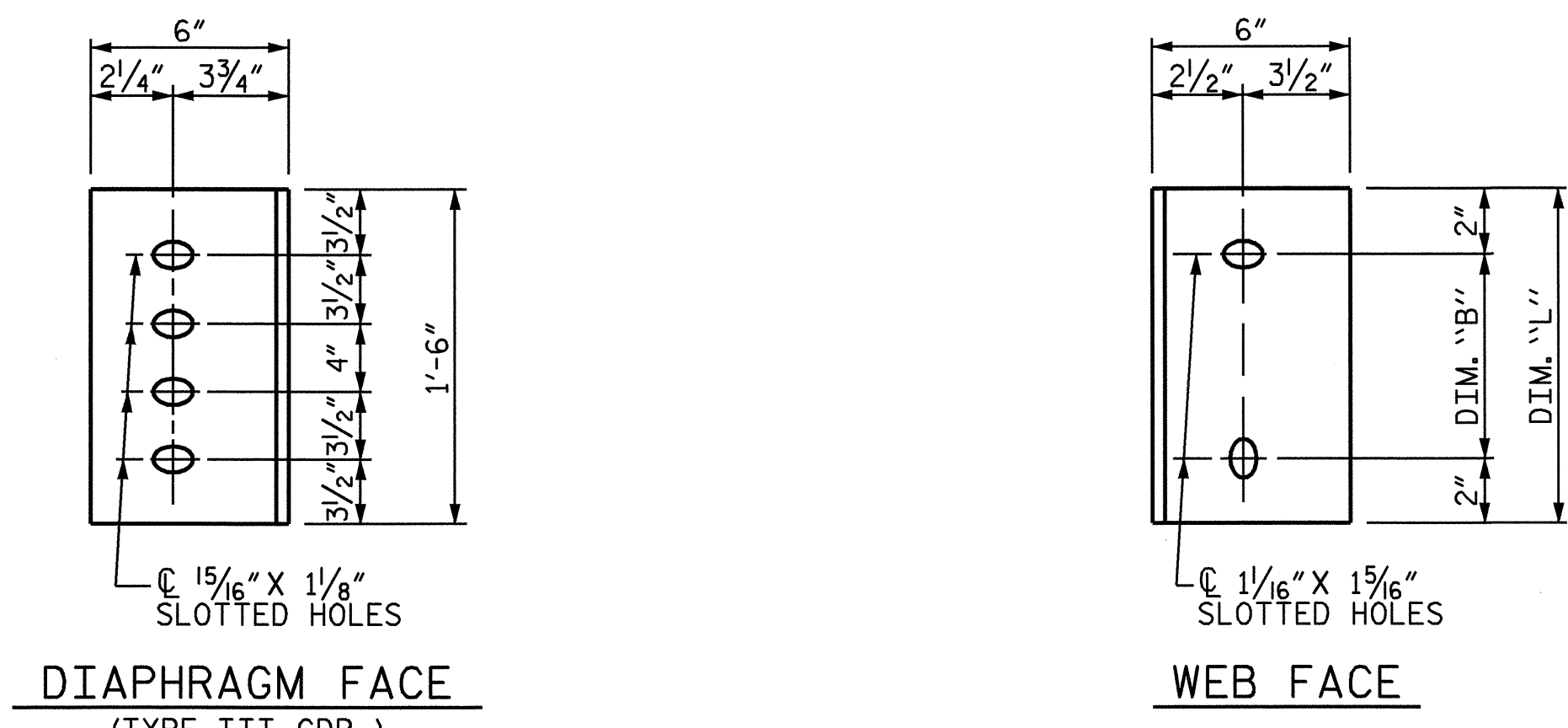
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			42



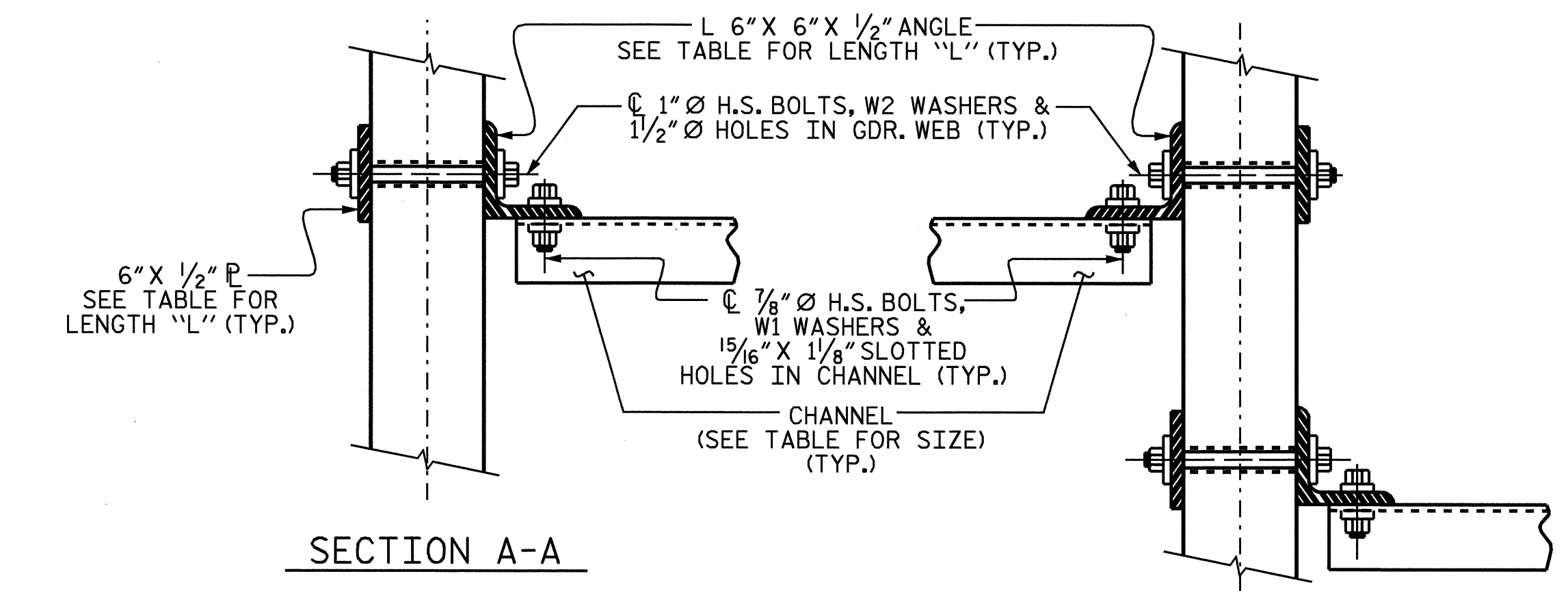
ASSEMBLED BY : A.S. CALLAWAY DATE : 7/26/06
 CHECKED BY : B.L. GREEN DATE : 8/21/06
 DRAWN BY : ELR 11/91 REV. 10/17/00 RWW/LES
 CHECKED BY : GRP 11/91 REV. 7/10/01RR LES/RDR
 REV. 5/1/06 TLA/GM



EXTERIOR GIRDER INTERIOR GIRDER
PART SECTION AT INTERMEDIATE DIAPHRAGM
 (TYPE III GIRDER SHOWN)



CONNECTOR PLATE DETAILS



CONNECTION DETAILS
 (FOR SKEW < 70° OR SKEW > 110°)

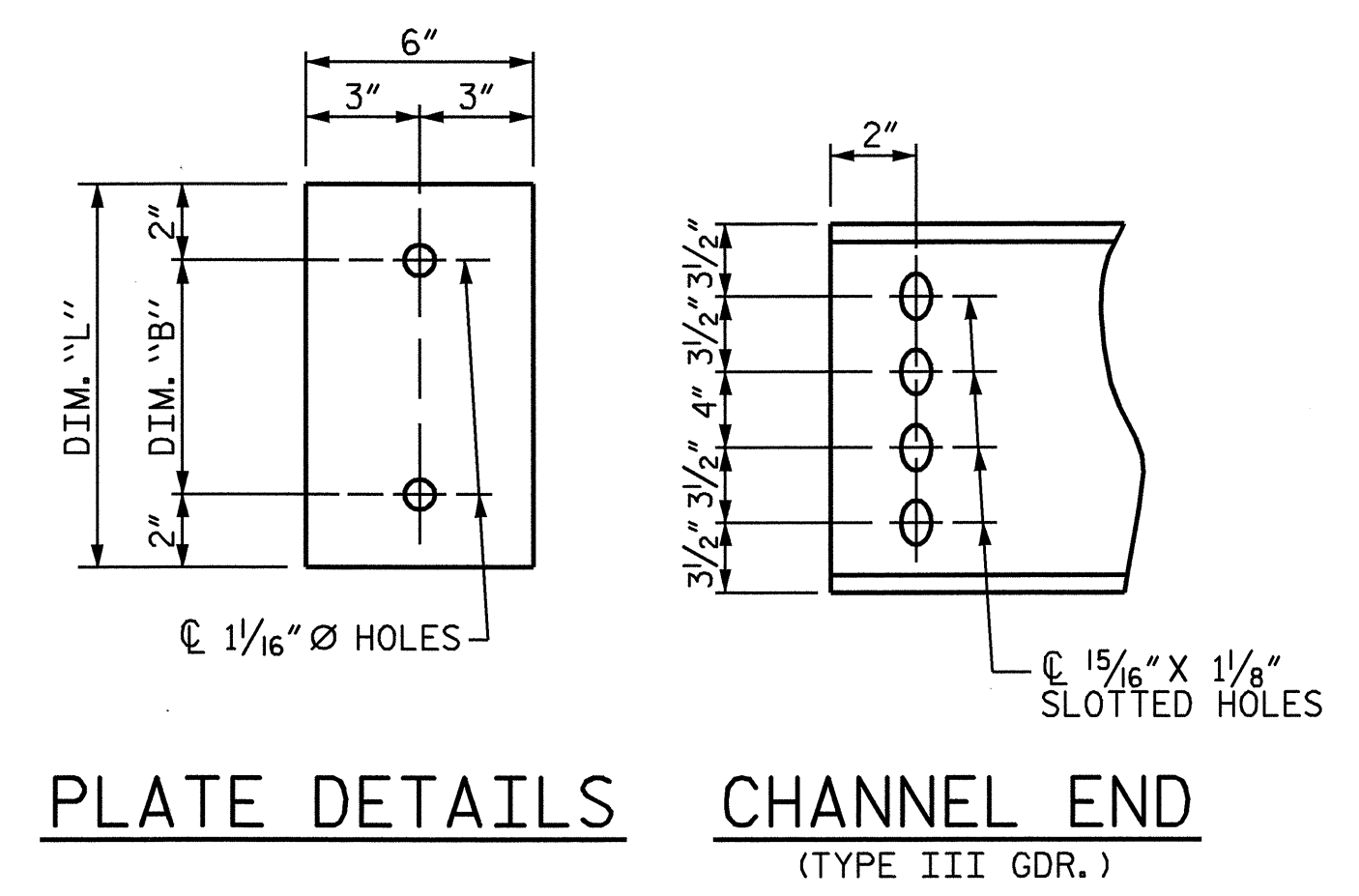


PLATE DETAILS **CHANNEL END**
 (TYPE III GDR.)

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 1/4 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 GIRDER SURFACES IN ACCORDANCE WITH THE THERMAL SPRAYED COATINGS SPECIAL PROVISION 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 1/4" PROJECTION BEYOND THE NUT.

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

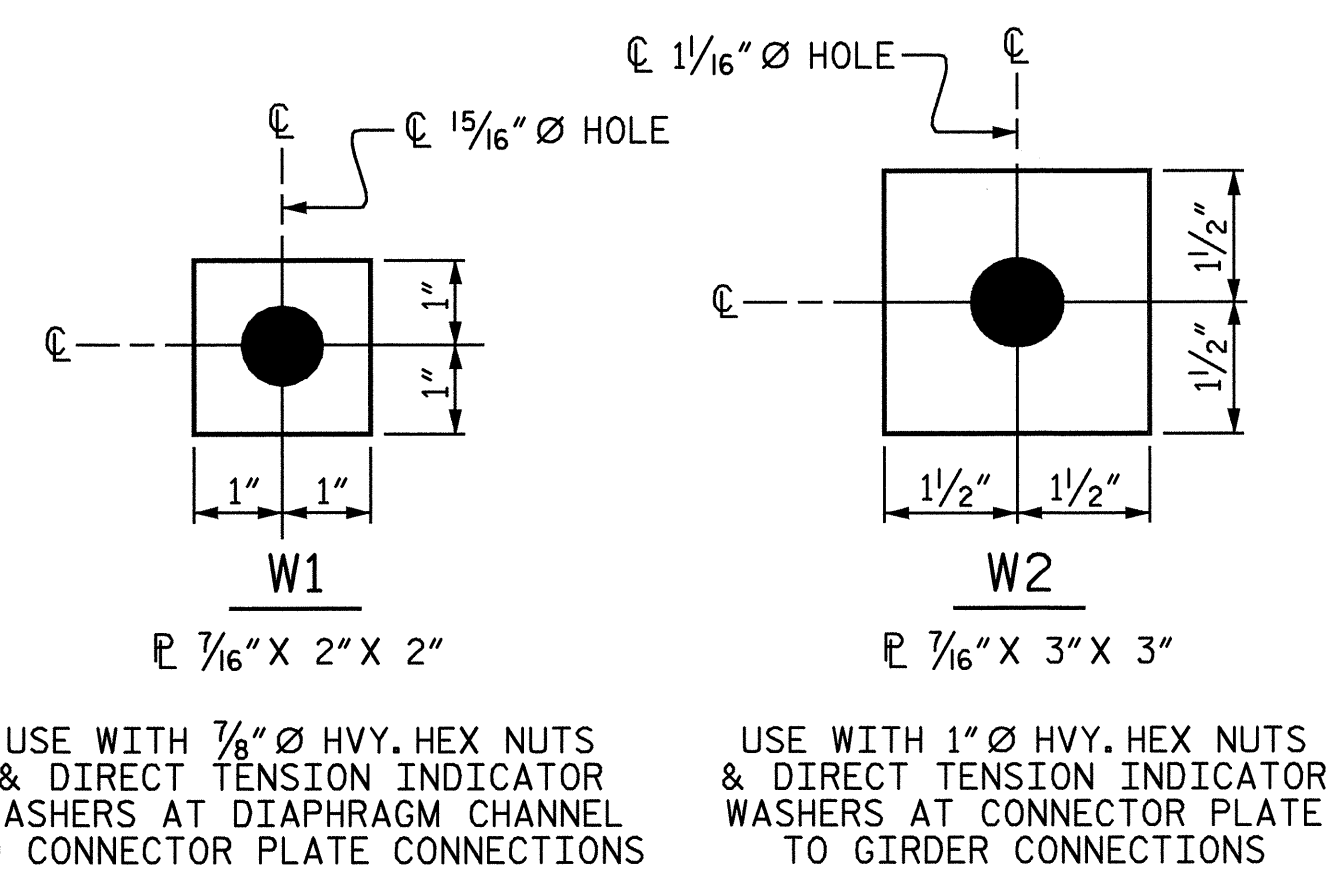
CONTRACTOR SHALL SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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.

TABLE

GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
III	MC 18 x 42.7	1'-5"	1'-2"	1'-6"



USE WITH 7/8" HVY. HEX NUTS & DIRECT TENSION INDICATOR WASHERS AT DIAPHRAGM CHANNEL TO CONNECTOR PLATE CONNECTIONS

USE WITH 1" HVY. HEX NUTS & DIRECT TENSION INDICATOR WASHERS AT CONNECTOR PLATE TO GIRDER CONNECTIONS

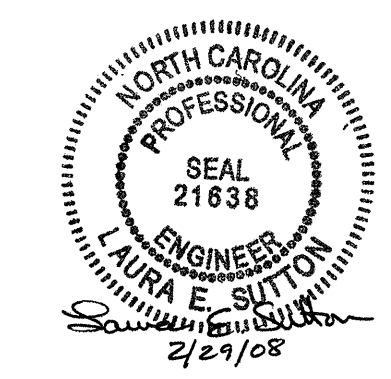
WASHER DETAILS

PROJECT NO. B-3705
WAKE COUNTY
 STATION: 26+50.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 INTERMEDIATE
 STEEL DIAPHRAGMS
 FOR TYPE III
 PRESTRESSED CONCRETE
 GIRDERS

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

S-14
 TOTAL SHEETS
 42



ASSEMBLED BY : A.S. CALLAWAY DATE : 9/20/07
 CHECKED BY : L.E. SUTTON DATE : 10/10/07
 DRAWN BY : TLA 6/05
 CHECKED BY : VC 6/05
 ADDED 10/21/05
 REV. 5/1/06R KMM/GM

NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL. DO NOT BURR AT GIRDER 6 LOCATIONS TO ACCOMMODATE FUTURE WIDENING.

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.

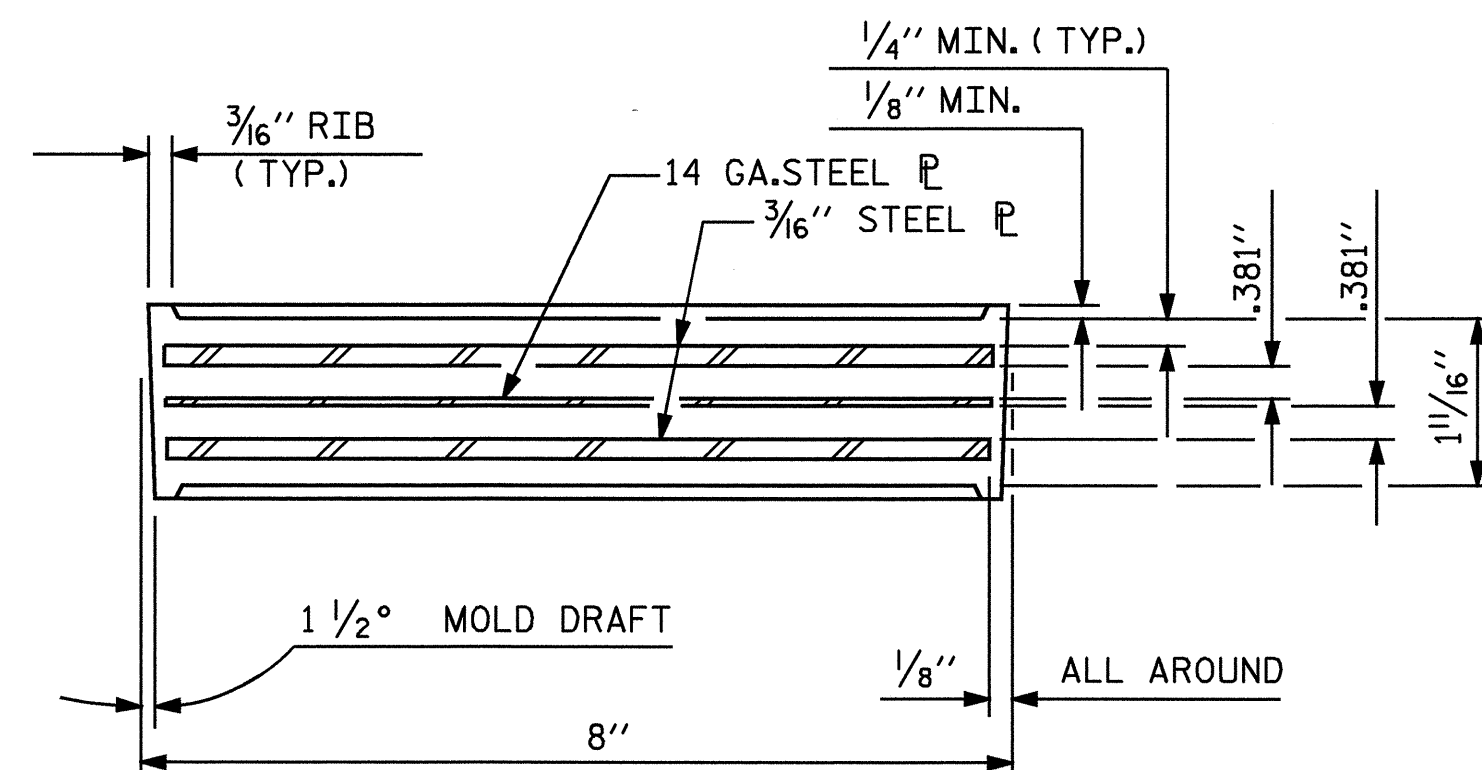
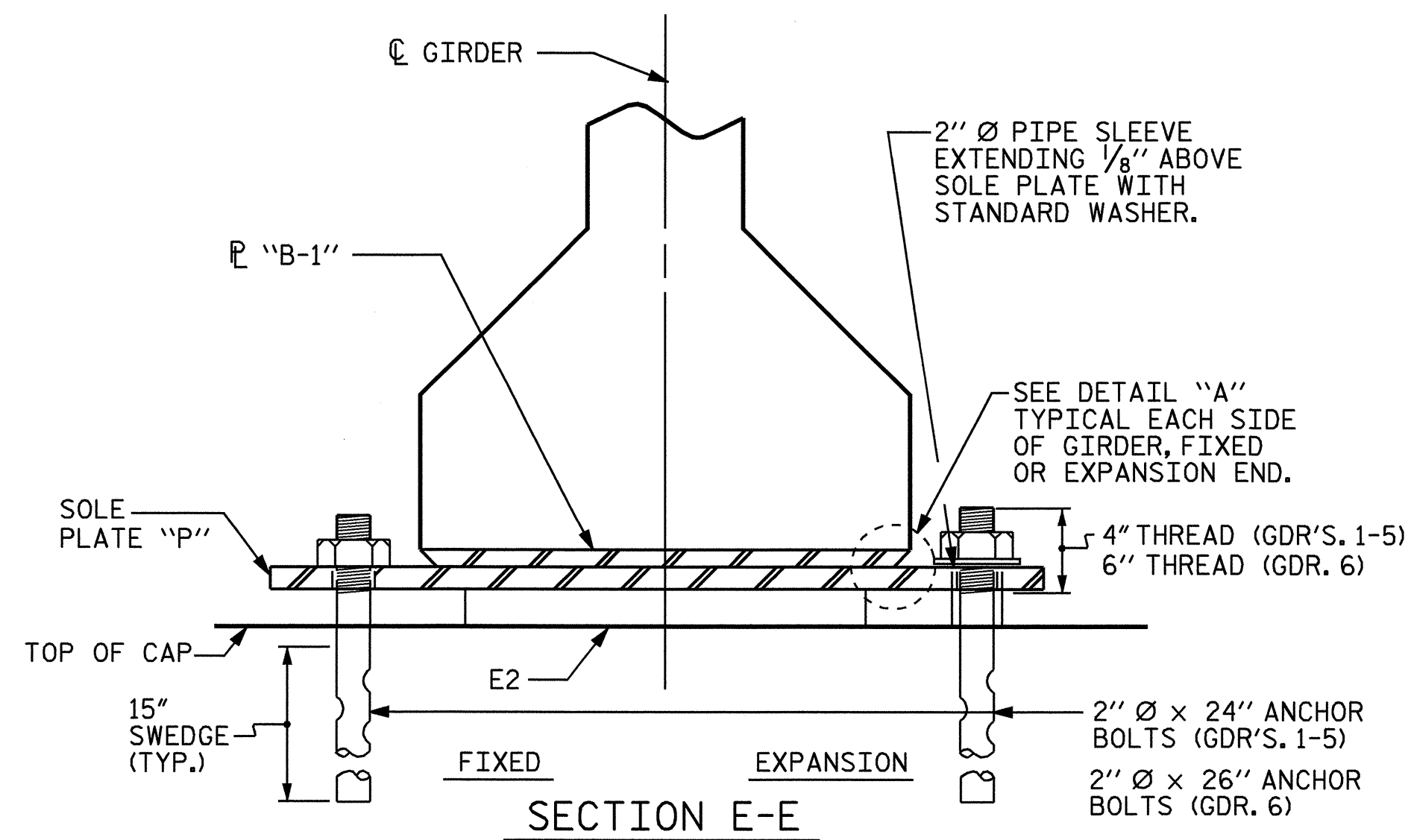
SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

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.

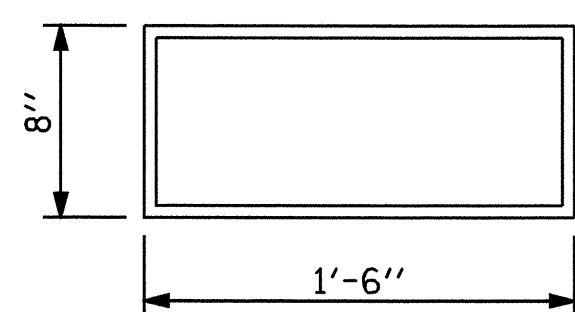
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

— LOAD RATINGS —	
	MAX. D.L. + L.L.
45" PCG -TYPE III	144 K

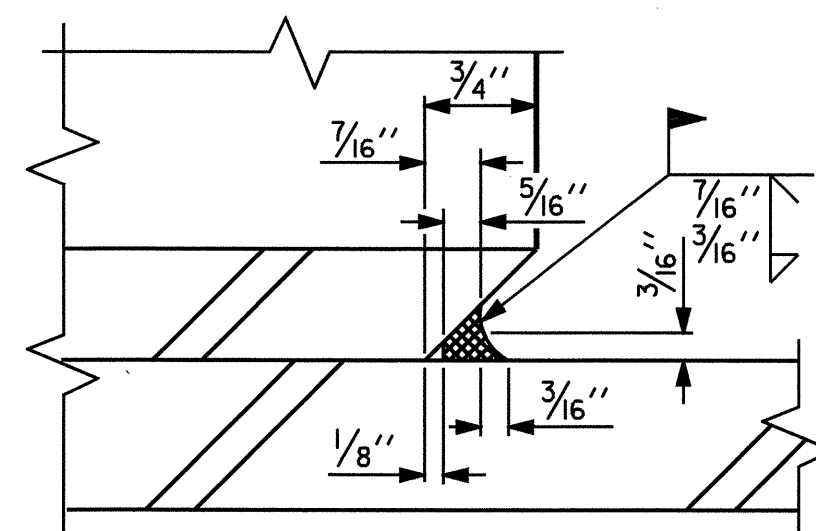


TYPICAL SECTION OF ELASTOMERIC BEARINGS

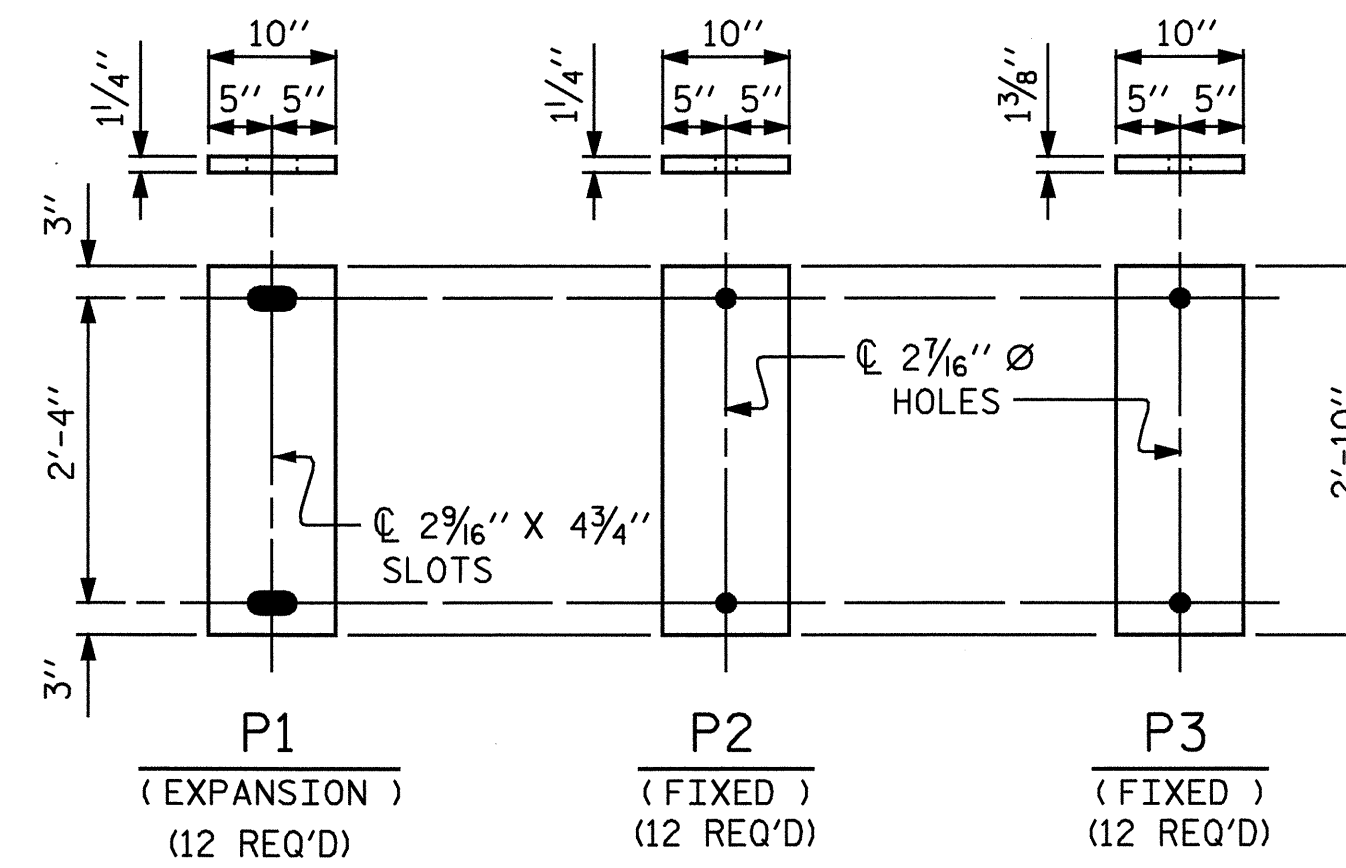


E2 (36 REQ'D.)

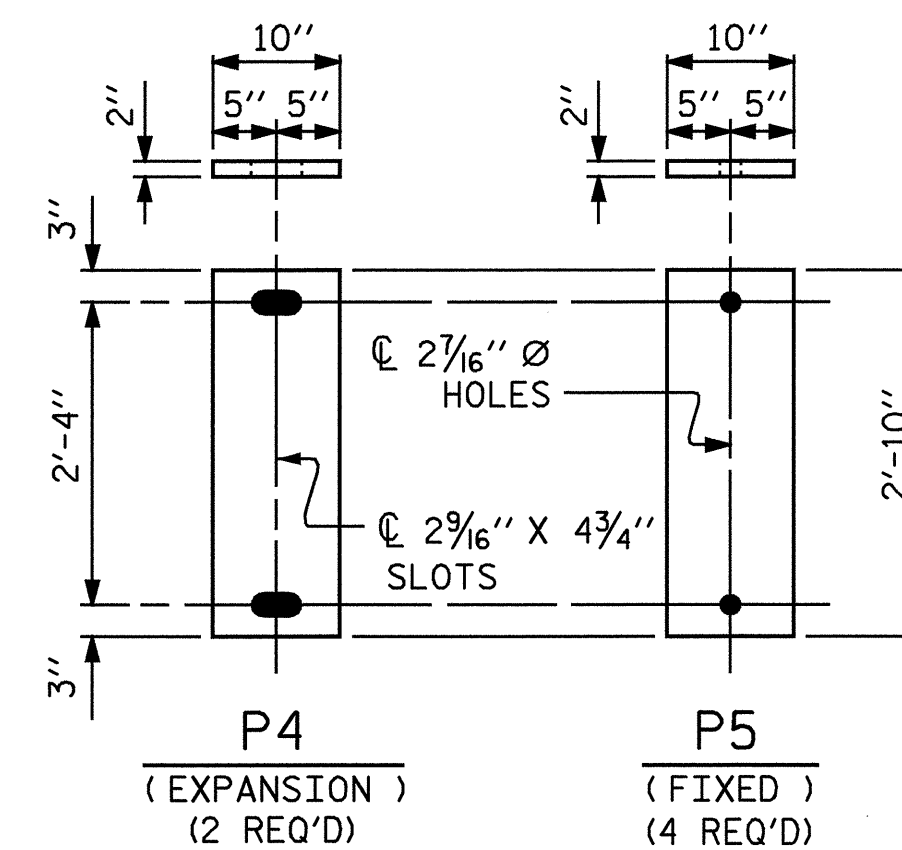
PLAN VIEW OF ELASTOMERIC BEARING TYPE III



DETAIL "A"

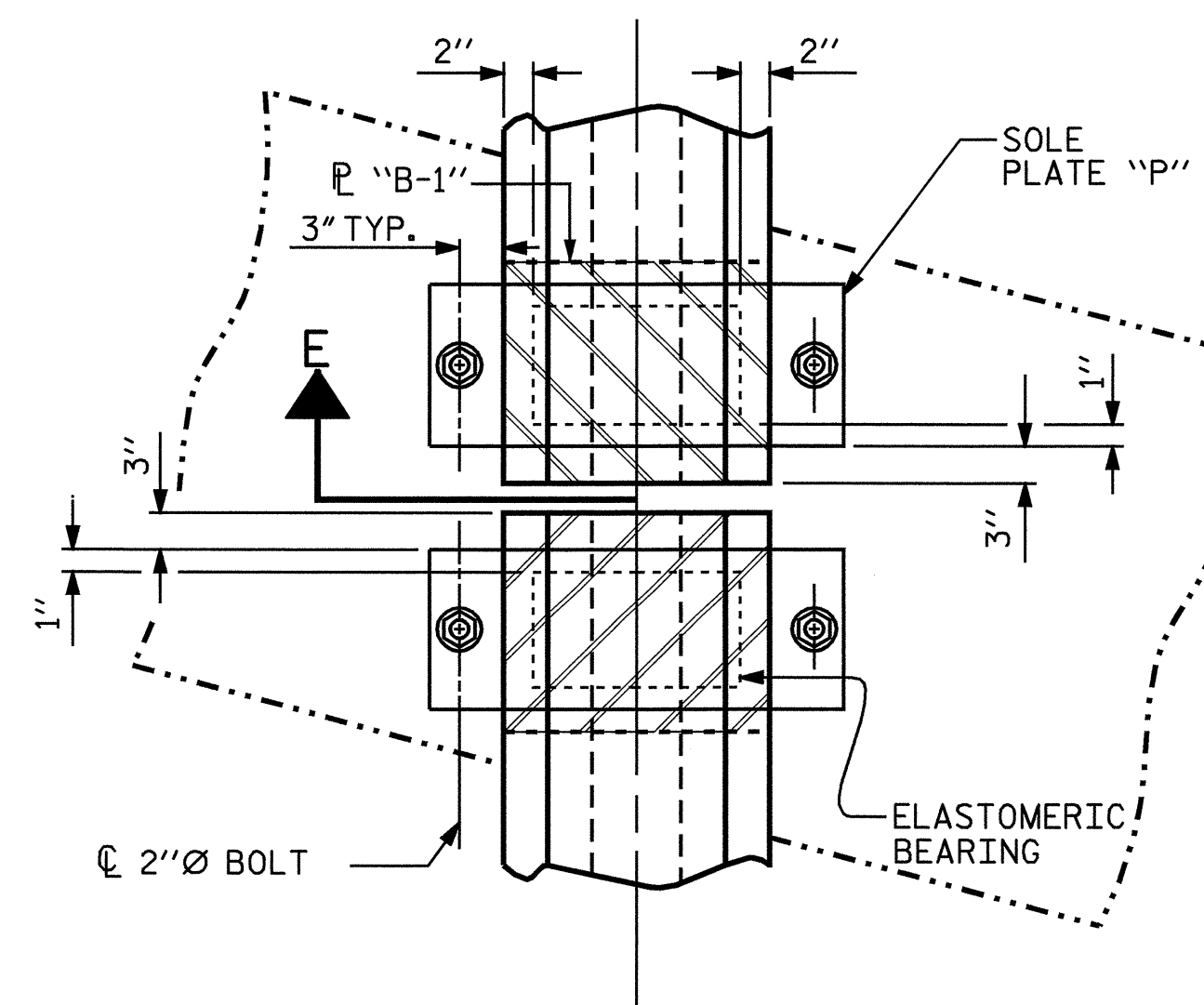


SOLE PLATE DETAILS



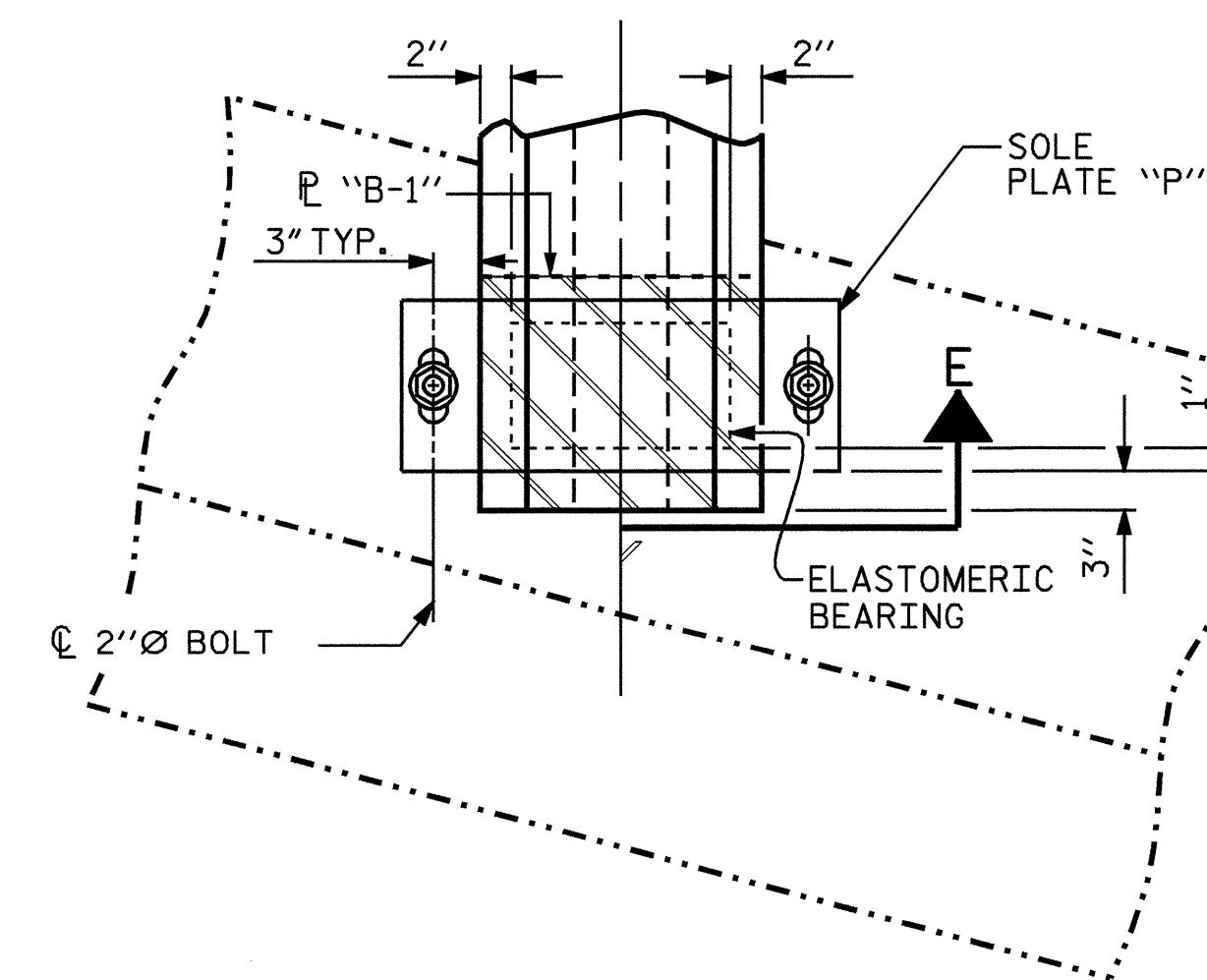
FILL PLATE DETAILS

USE AT GIRDER 6 LOCATIONS ONLY TO ACCOMMODATE FUTURE WIDENING



SECTION @ BENT

(FIXED)



SECTION @ END BENT

(EXPANSION)

ASSEMBLED BY : A.S. CALLAWAY	DATE : 7/19/06
CHECKED BY : B.L. GREEN	DATE : 8/22/06
DRAWN BY : WJH	8/89
CHECKED BY : CRK	8/89
REV. 10/17/00	RWW/LES
REV. 7/10/01	RWW/LES
REV. 5/1/06	TLA/GM

28-FEB-2008 14:02
R:\Structures\scallaway\Microstation\b3705_sd.BG_01.dgn
LSUTTON



PROJECT NO. B-3705
WAKE COUNTY
STATION: 26+50.00 -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-15
1			3			TOTAL SHEETS
2			4			42

STD. NO. EB3

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6"Ø LOW RELAXATION	SPANS "A"& "C"																																
	GIRDER 1											GIRDERS 2, 3, 4, & 5											GIRDER 6										
	TENTH POINTS	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
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.020	0.039	0.053	0.062	0.065	0.062	0.053	0.039	0.020	0	0	0.020	0.039	0.053	0.062	0.065	0.062	0.053	0.039	0.020	0	0	0.020	0.039	0.053	0.062	0.065	0.062	0.053	0.039	0.020	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.006	0.011	0.016	0.018	0.019	0.018	0.016	0.011	0.006	0	0	0.007	0.013	0.017	0.020	0.021	0.020	0.017	0.013	0.007	0	0	0.006	0.012	0.016	0.019	0.020	0.019	0.016	0.012	0.006	0
FINAL CAMBER ↑	0	3/16"	5/16"	7/16"	1/2"	9/16"	1/2"	7/16"	5/16"	3/16"	0	0	3/16"	5/16"	7/16"	1/2"	1/2"	1/2"	7/16"	5/16"	3/16"	0	0	3/16"	5/16"	7/16"	1/2"	9/16"	1/2"	7/16"	5/16"	3/16"	0

0.6"Ø LOW RELAXATION	SPAN "B"																																
	GIRDER 1											GIRDERS 2, 3, 4, & 5											GIRDER 6										
	TENTH POINTS	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
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.081	0.152	0.209	0.244	0.257	0.244	0.209	0.152	0.081	0	0	0.081	0.152	0.209	0.244	0.257	0.244	0.209	0.152	0.081	0	0	0.081	0.152	0.209	0.244	0.257	0.244	0.209	0.152	0.081	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.025	0.048	0.066	0.077	0.081	0.077	0.066	0.048	0.025	0	0	0.028	0.052	0.072	0.084	0.088	0.084	0.072	0.052	0.028	0	0	0.026	0.050	0.069	0.080	0.084	0.080	0.069	0.050	0.026	0
FINAL CAMBER ↑	0	1 1/16"	1 1/4"	1 11/16"	2"	2 1/8"	2"	1 11/16"	1 1/4"	1 1/16"	0	0	5/8"	1 3/16"	1 5/8"	1 5/16"	2"	1 5/16"	1 5/8"	1 3/16"	5/8"	0	0	1 1/16"	1 1/4"	1 11/16"	1 5/16"	2 1/16"	1 5/16"	1 11/16"	1 1/4"	1 1/16"	0

* INCLUDES SLAB, BUILDUPS AND STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

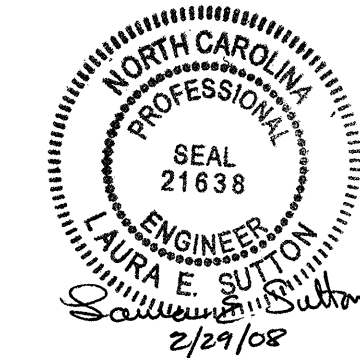
DEAD LOAD DEFLECTION TABLE FOR GIRDERS

1/2"Ø LOW RELAXATION (DRAPED STRAND OPTION)	SPANS "A"& "C"																																
	GIRDER 1											GIRDERS 2, 3, 4, & 5											GIRDER 6										
	TENTH POINTS	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
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.015	0.029	0.040	0.046	0.049	0.046	0.040	0.029	0.015	0	0	0.015	0.029	0.040	0.046	0.049	0.046	0.040	0.029	0.015	0	0	0.015	0.029	0.040	0.046	0.049	0.046	0.040	0.029	0.015	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.006	0.011	0.016	0.018	0.019	0.018	0.016	0.011	0.006	0	0	0.007	0.013	0.017	0.020	0.021	0.020	0.017	0.013	0.007	0	0	0.006	0.012	0.016	0.019	0.020	0.019	0.016	0.012	0.006	0
FINAL CAMBER ↑	0	1/8"	3/16"	5/16"	5/16"	3/8"	5/16"	5/16"	3/16"	1/8"	0	0	1/8"	3/16"	1/4"	5/16"	5/16"	5/16"	1/4"	3/16"	1/8"	0	0	1/8"	3/16"	5/16"	5/16"	3/8"	5/16"	5/16"	3/16"	1/8"	0

0.6"Ø LOW RELAXATION (STRAIGHT STRAND OPTION)	SPAN "B"																																
	GIRDER 1											GIRDERS 2, 3, 4, & 5											GIRDER 6										
	TENTH POINTS	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
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.065	0.123	0.169	0.198	0.208	0.198	0.169	0.123	0.065	0	0	0.065	0.123	0.169	0.198	0.208	0.198	0.169	0.123	0.065	0	0	0.065	0.123	0.169	0.198	0.208	0.198	0.169	0.123	0.065	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.023	0.044	0.061	0.071	0.074	0.071	0.061	0.044	0.023	0	0	0.025	0.048	0.066	0.077	0.081	0.077	0.066	0.048	0.025	0	0	0.024	0.046	0.063	0.074	0.078	0.074	0.063	0.046	0.024	0
FINAL CAMBER ↑	0	1/2"	1 5/16"	1 5/16"	1 1/2"	1 5/8"	1 1/2"	1 5/16"	1 5/16"	1/2"	0	0	1/2"	7/8"	1 1/4"	1 7/16"	1 1/2"	1 7/16"	1 1/4"	7/8"	1/2"	0	0	1/2"	1 5/16"	1 1/4"	1 1/2"	1 5/16"	1 1/2"	1 1/4"	1 5/16"	1/2"	0

* INCLUDES SLAB, BUILDUPS AND STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

PROJECT NO. B-3705
WAKE COUNTY
 STATION: 26+50.00 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 DEAD LOAD DEFLECTIONS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			42

DRAWN BY : A.S. CALLAWAY DATE : 7/27/06
 CHECKED BY : B.L. GREEN DATE : 8/23/06

NOTES

AT THE CONTRACTOR'S OPTION, METAL RAIL MAY BE EITHER ALUMINUM OR GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS FOR THE ALTERNATE MATERIALS; HOWEVER, THE CONTRACTOR WILL BE REQUIRED TO USE THE SAME RAIL MATERIAL ON ALL STRUCTURES ON THE PROJECT FOR WHICH METAL RAIL IS DESIGNATED.

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B221 ALLOY 6061-T6. MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS : AASHTO M270 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO AASHTO M111.

RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPliced AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS. PLACE ONE JOINT SPLICE JUST BEYOND THE 3RD RAIL POST FROM EACH END, TYPICALLY 14' FROM THE END. PLACE OTHER JOINTS AS NEEDED.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR7.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS FOR RAIL ATTACHMENT SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

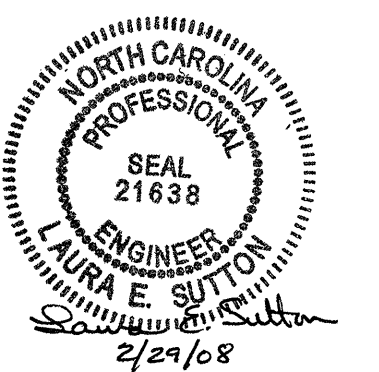
TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAIN VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

PAY LENGTH = 159.49 LIN. FT.



PROJECT NO. B-3705
WAKE COUNTY
 STATION: 26+50.00 -L-

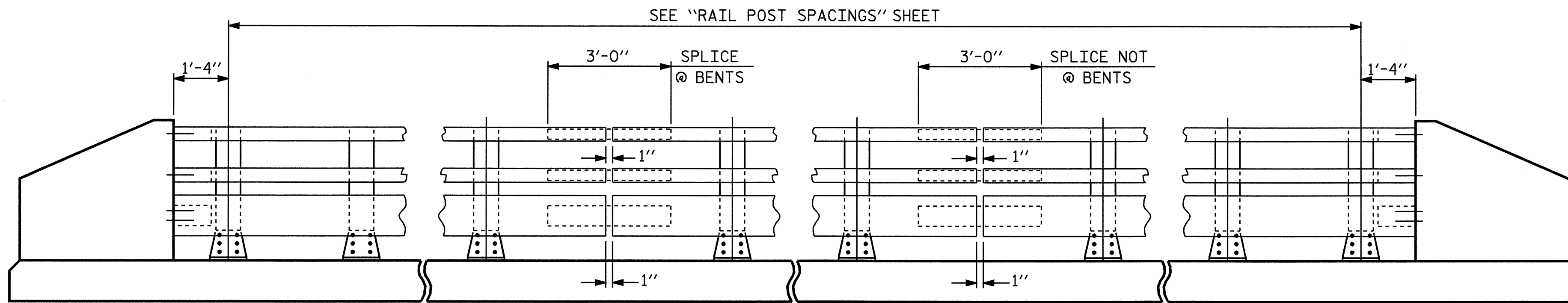
SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD

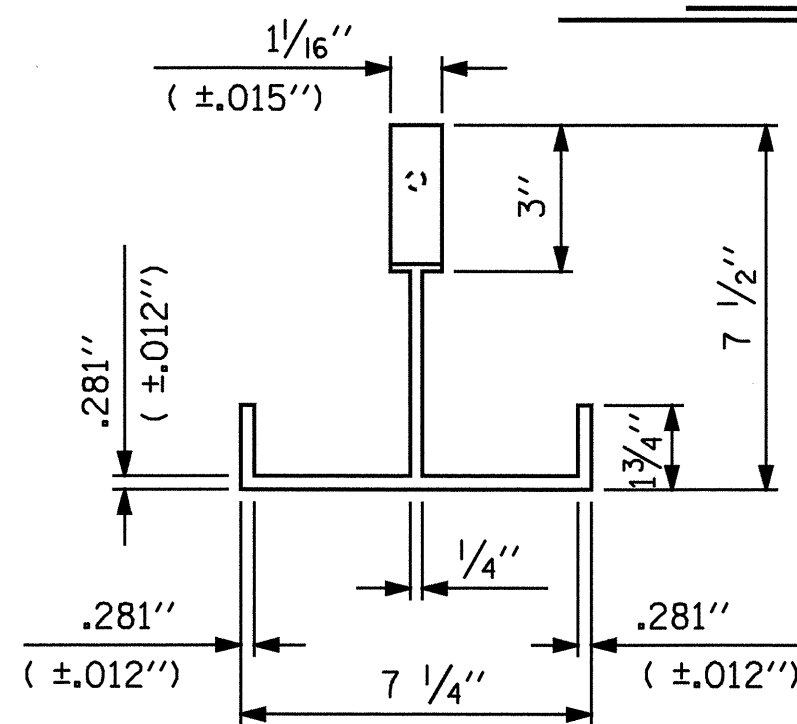
3 BAR METAL RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			42

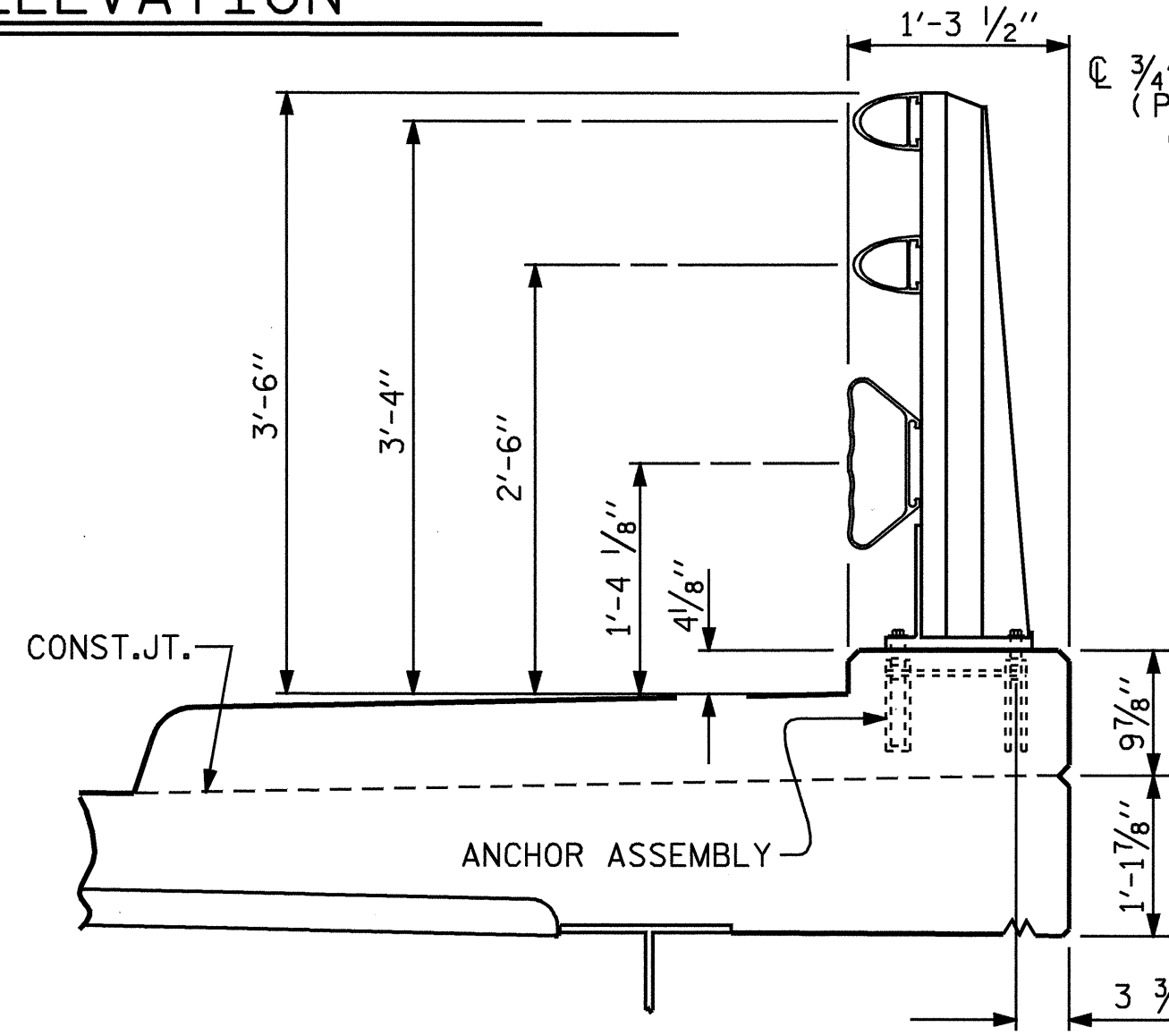


NOTE:
 FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR7.

ELEVATION



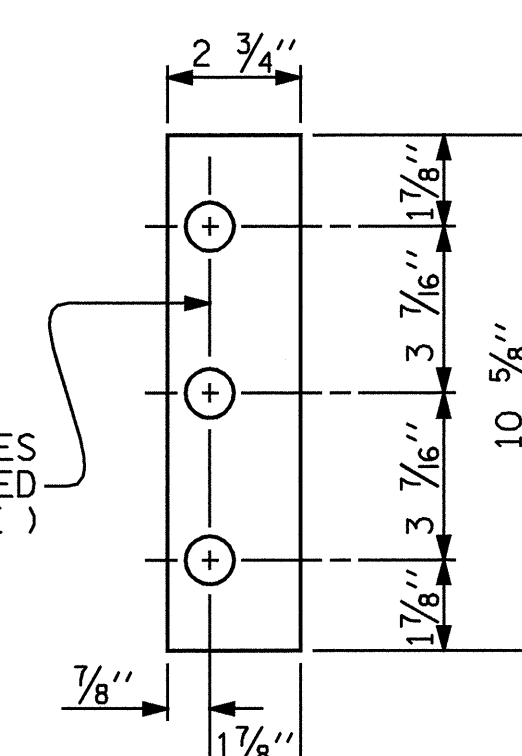
PLAN



SECTION THRU RAIL

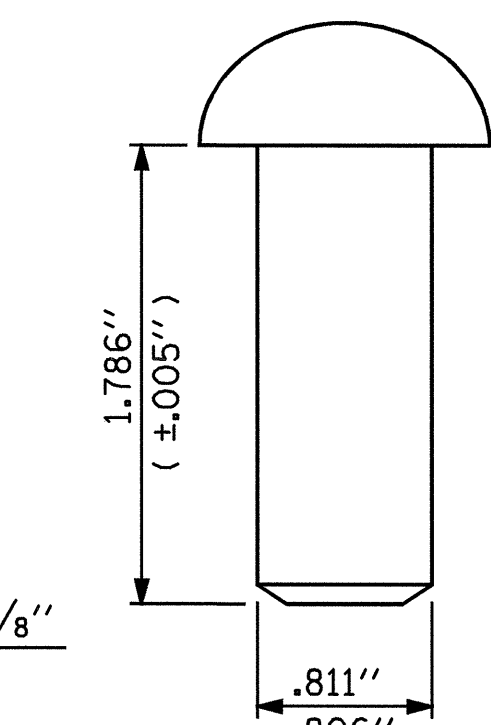
FOR ANCHOR ASSEMBLY, SEE "3 BAR METAL RAIL" STD.No.BMR6

REAR PLATE

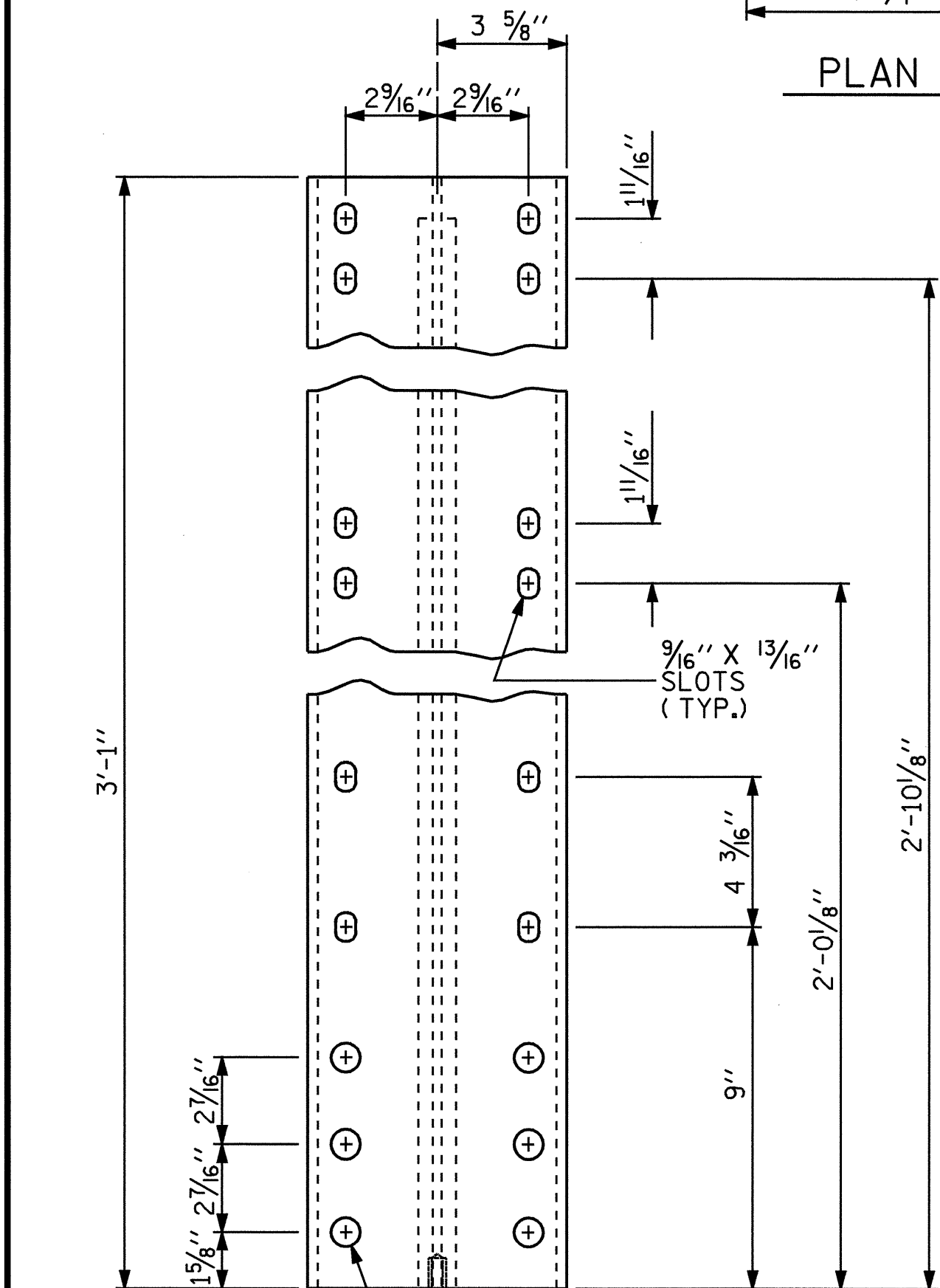


FRONT PLATE SHIM DETAILS

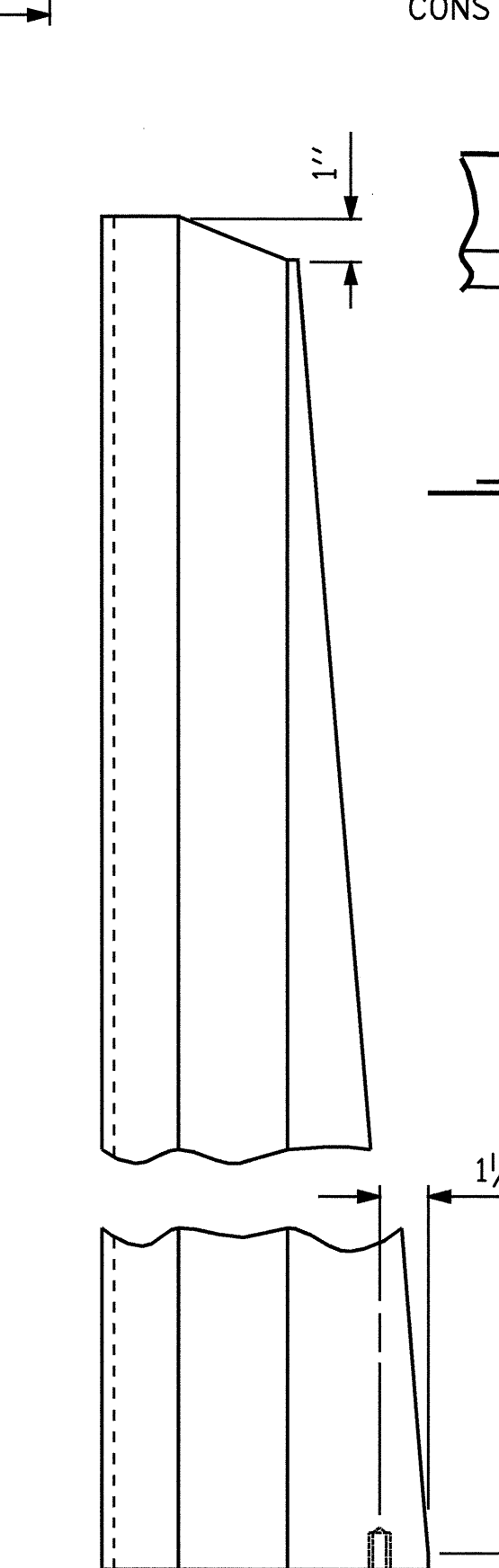
NOTE:
 SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.



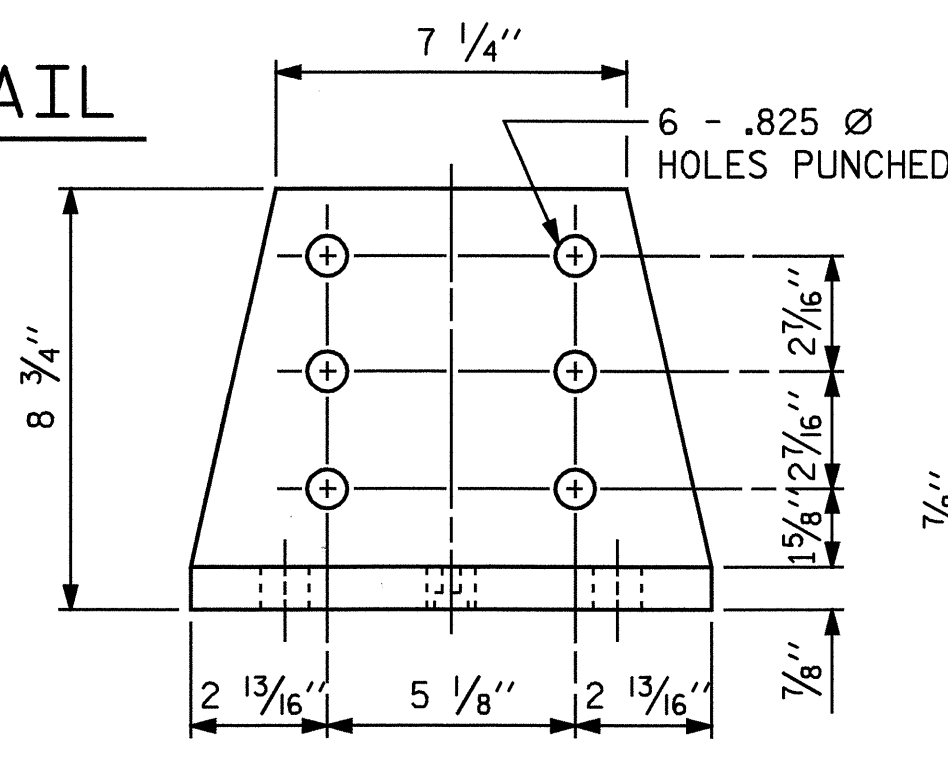
RIVET DETAIL



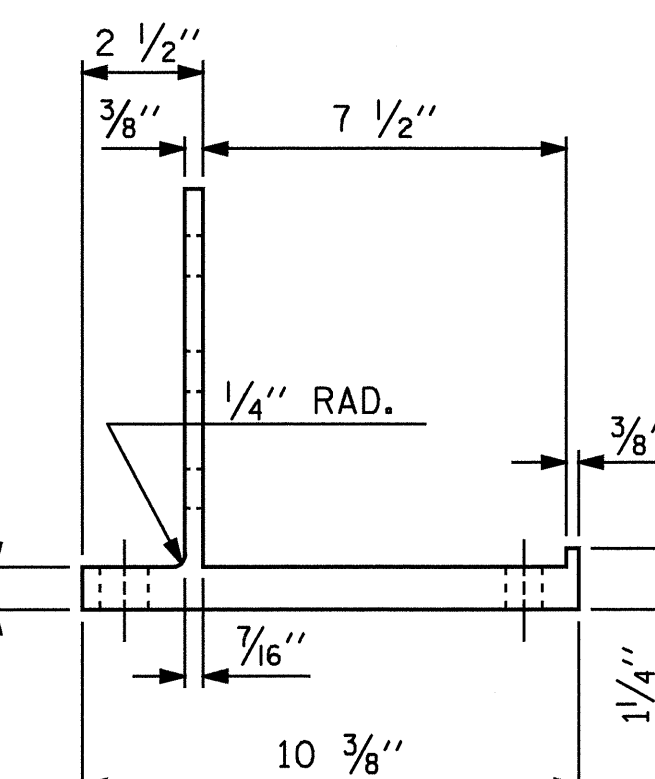
FRONT ELEVATION



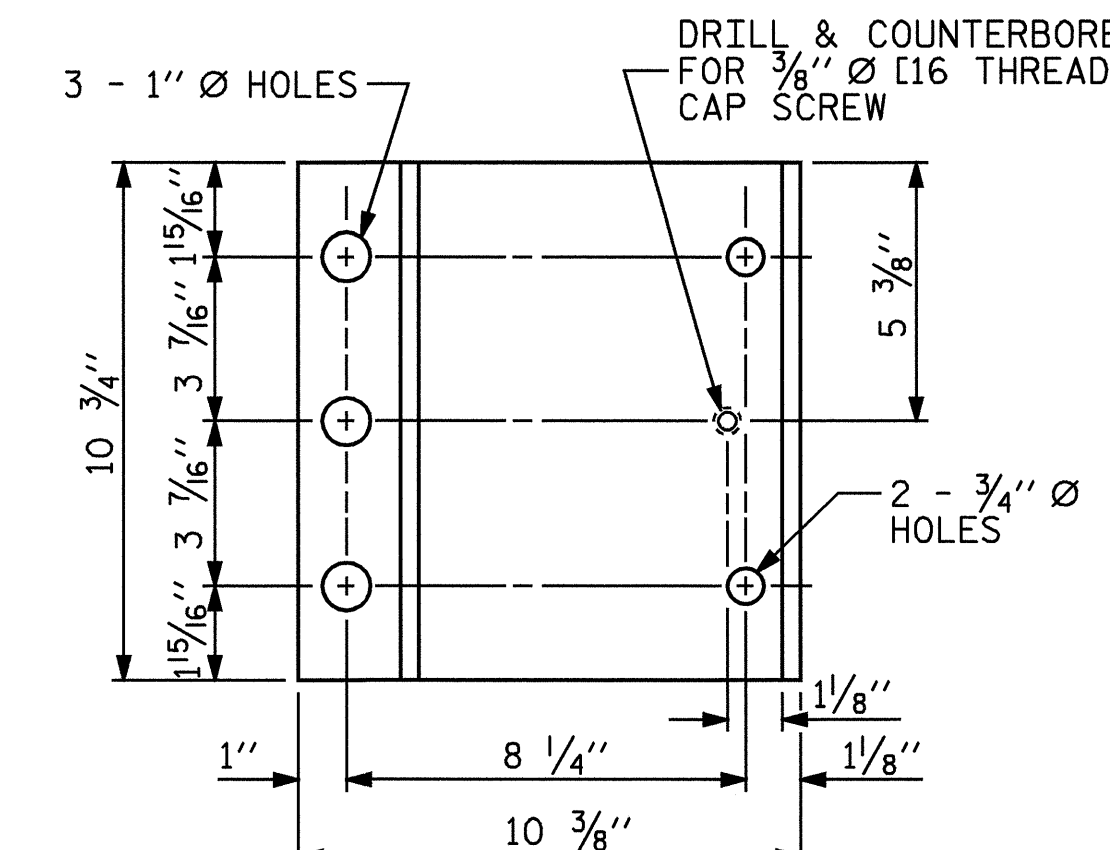
SIDE ELEVATION



FRONT ELEVATION



SIDE ELEVATION



PLAN

6 - .825" Ø HOLES PUNCHED FOR RIVETS
 5/16" Ø DRILL 1" DEEP & 3/8" Ø [16 THREAD] TAP 7/8" DEEP FOR 3/8" Ø X 1 1/2" STAINLESS STEEL CAP SCREW

DETAILS OF POST

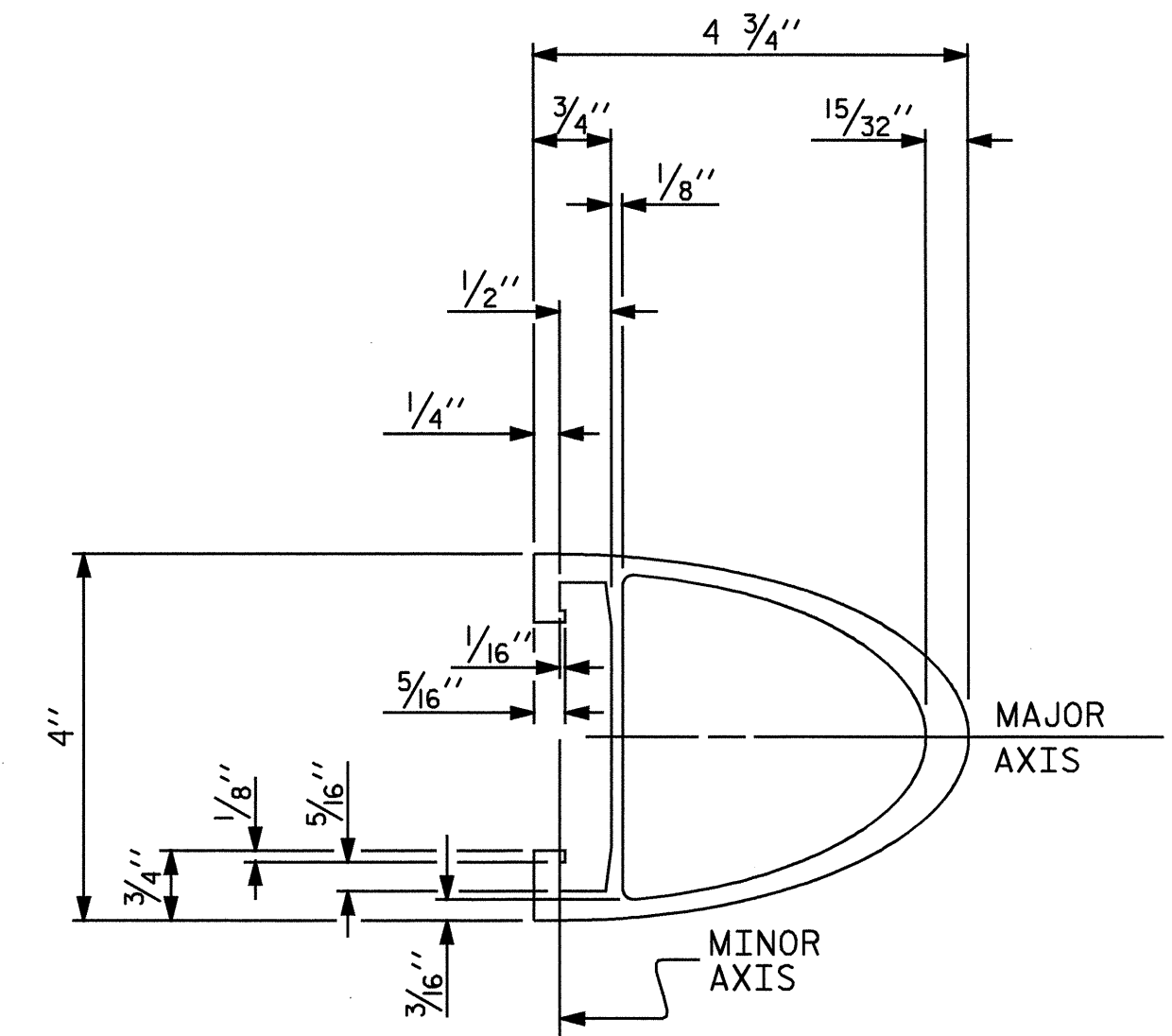
ASSEMBLED BY : A.S. CALLAWAY	DATE : 7/19/06
CHECKED BY : B.L. GREEN	DATE : 8/23/06
DRAWN BY : JMB 1/88	REV. 10/17/00 RWW/LES
CHECKED BY : GGH 1/88	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

NOTES

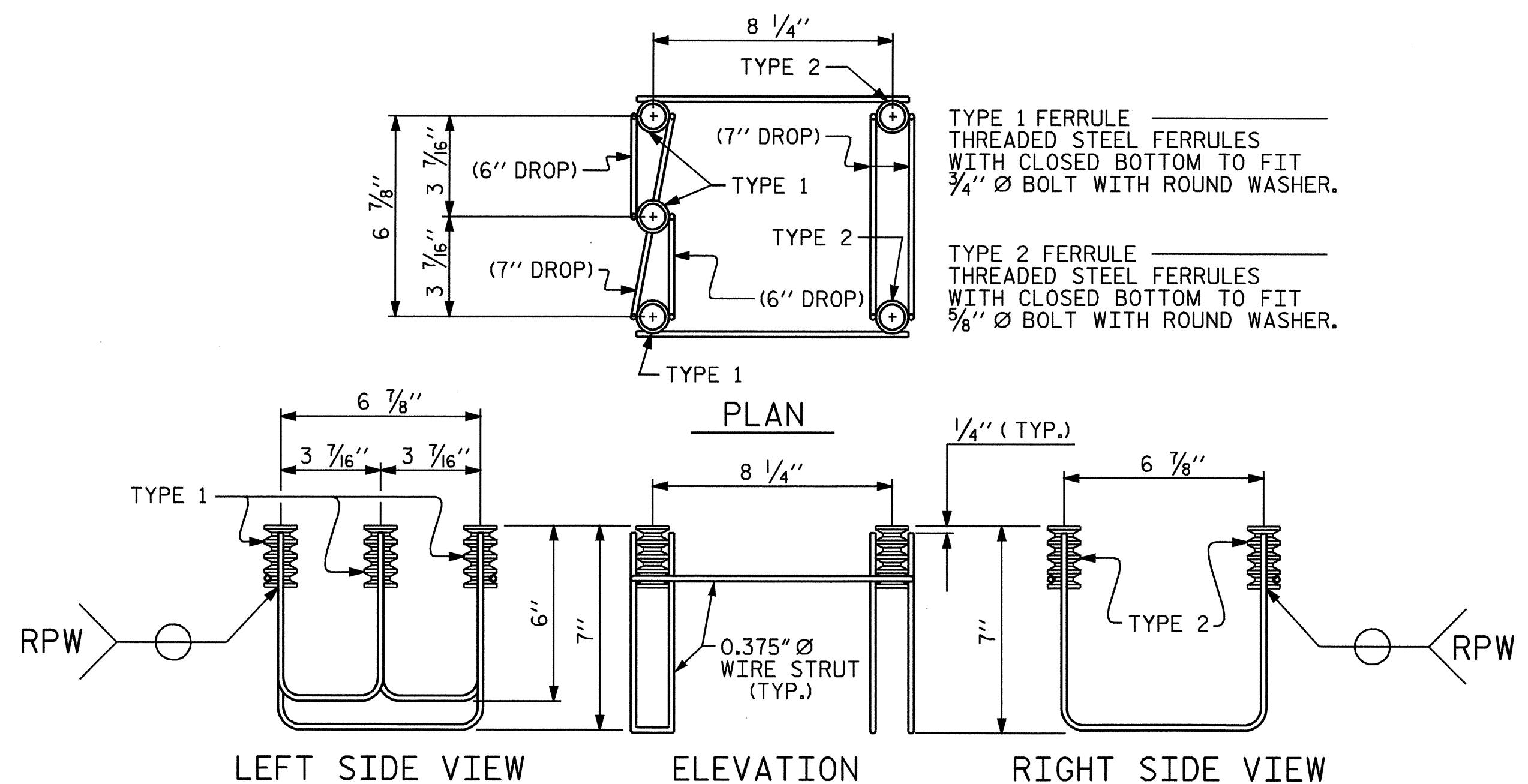
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

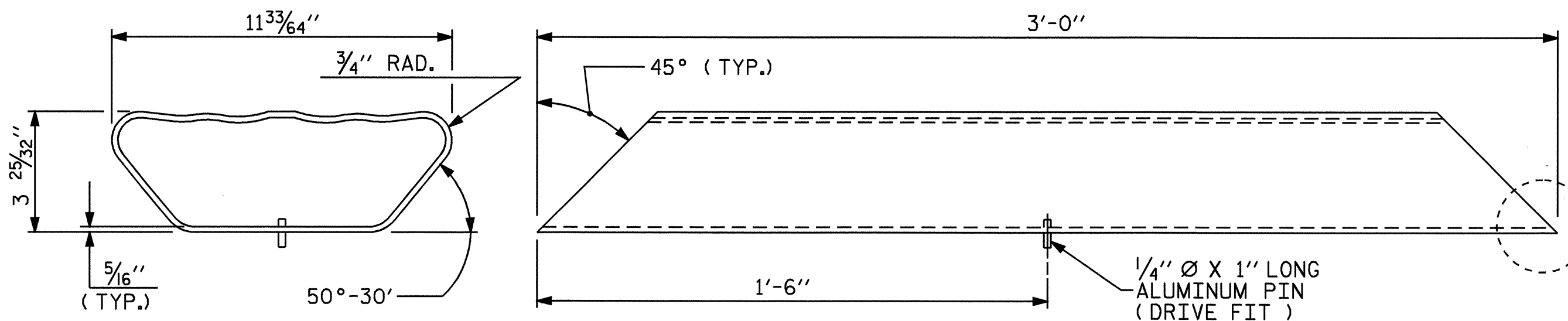
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES AND 1 3/4" FOR 5/8" FERRULES.
- B. 3 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 2 1/2" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
- C. 2 - 5/8" Ø X 2 1/4" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 5/8" Ø X 2 1/4" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
- D. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
- E. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.
- F. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.
- G. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.



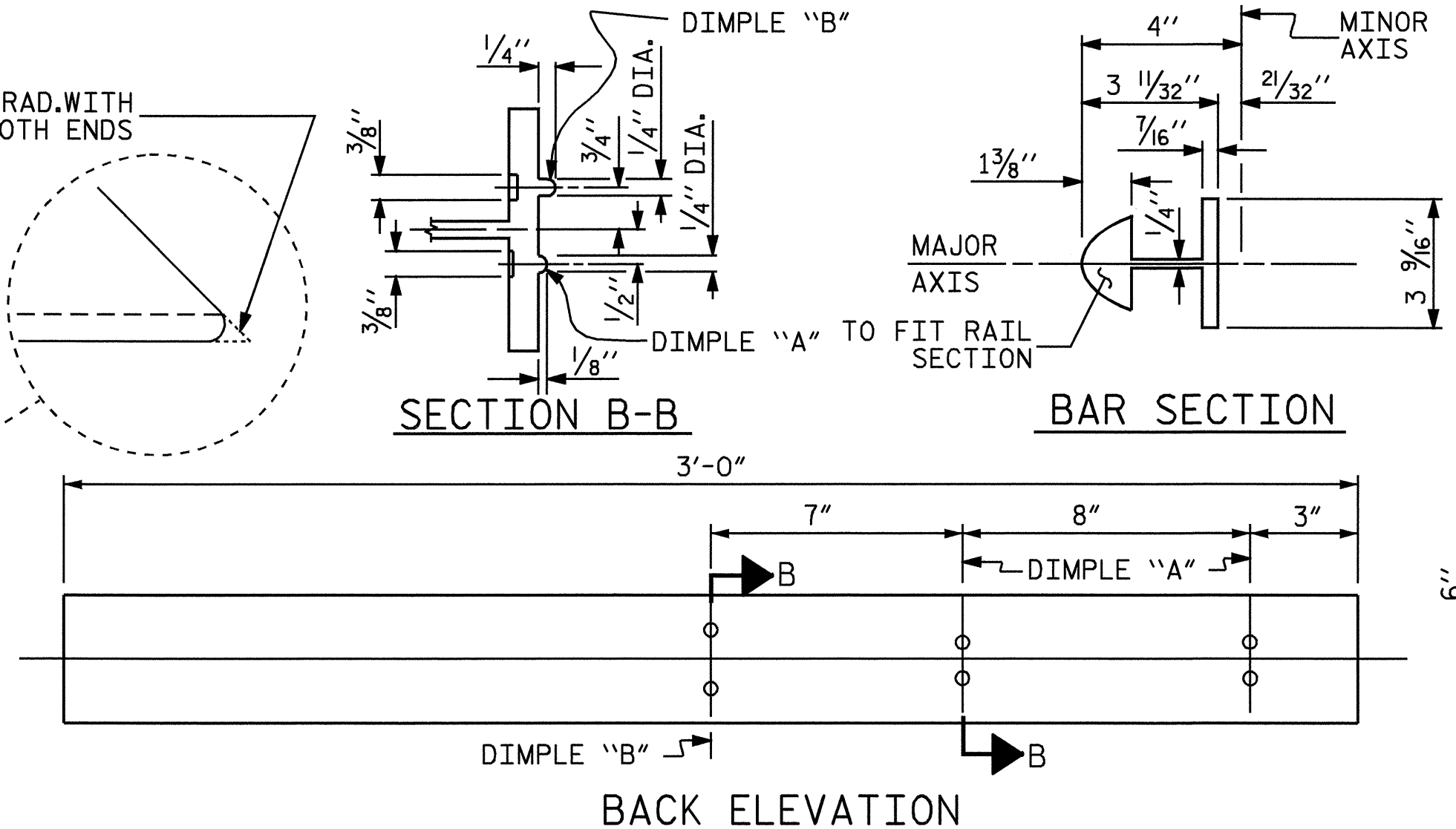
TOP & MIDDLE RAIL SECTION



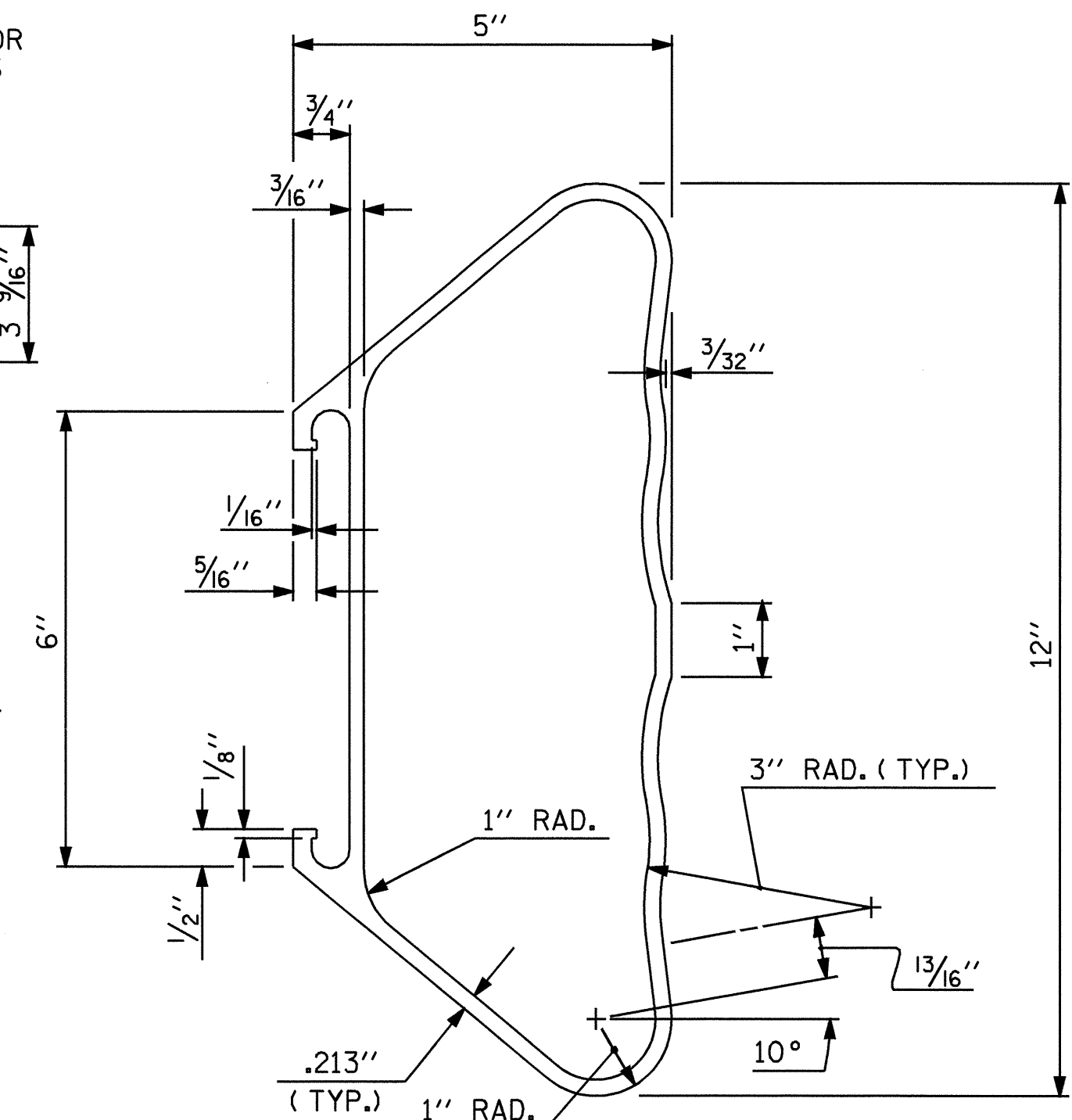
5-BOLT METAL RAIL ANCHOR ASSEMBLY
(28 ASSEMBLIES REQUIRED)



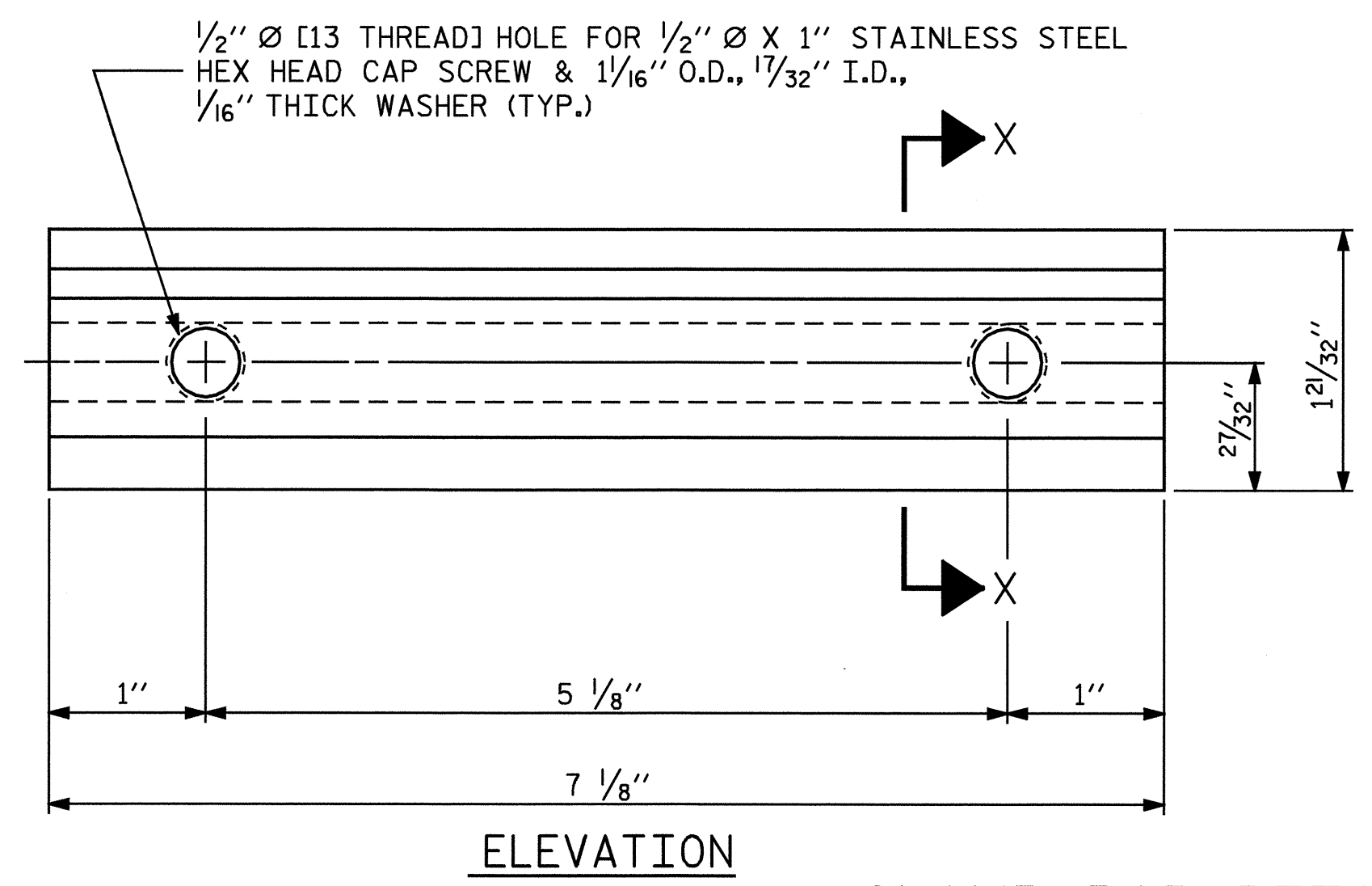
BOTTOM RAIL EXPANSION BAR



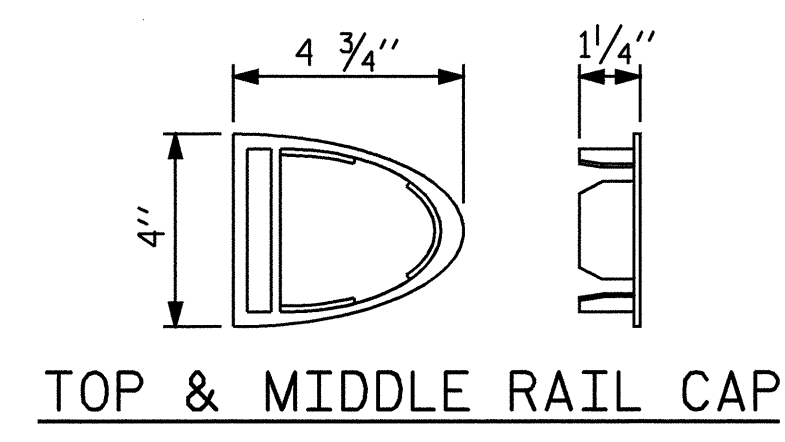
TOP & MIDDLE RAIL EXPANSION BAR



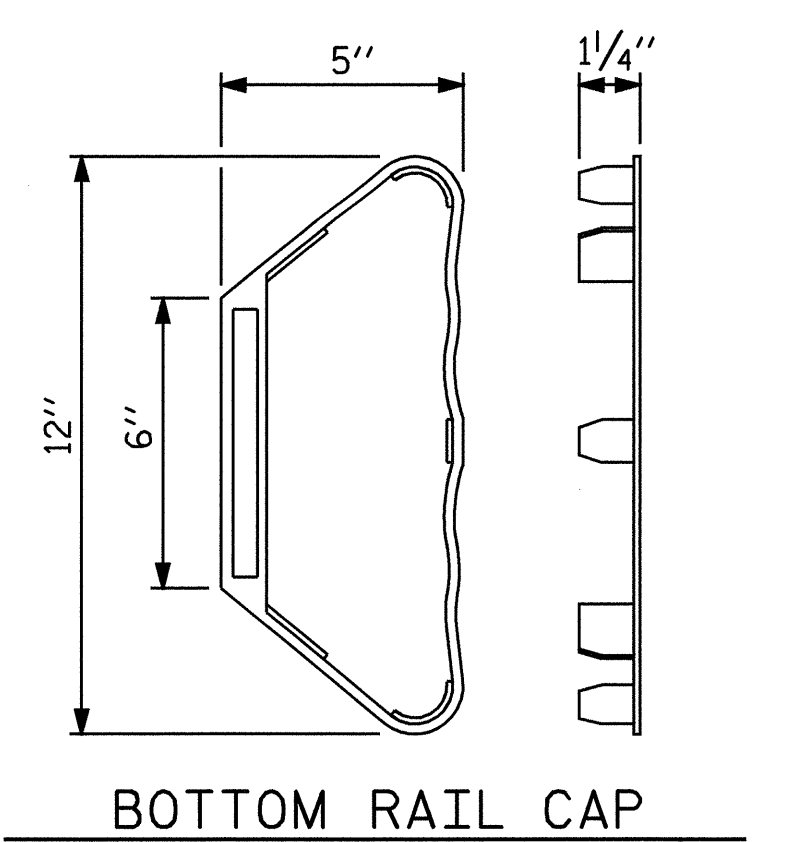
BOTTOM RAIL SECTION



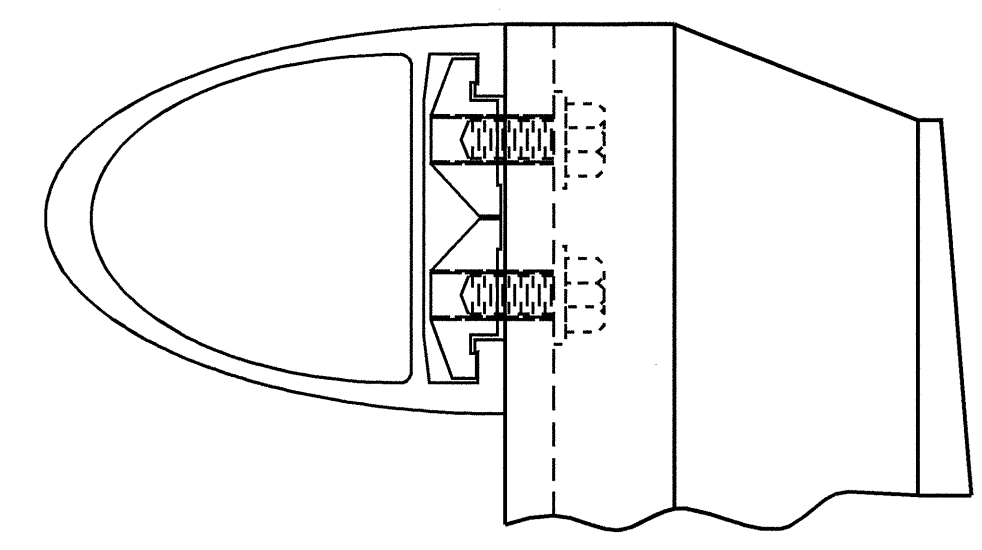
CLAMP BAR DETAIL
(6 REQUIRED PER POST)



TOP & MIDDLE RAIL CAP



BOTTOM RAIL CAP

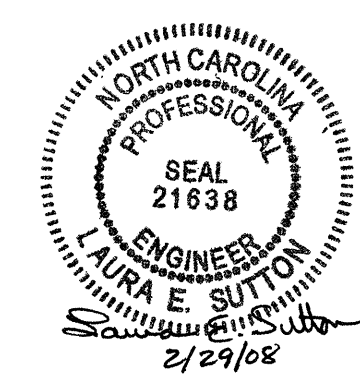


CLAMP ASSEMBLY
TOP RAIL SHOWN
(MIDDLE & BOTTOM RAIL ARE SIMILAR)

PROJECT NO. B-3705
WAKE COUNTY
STATION: 26+50.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD					
3 BAR METAL RAIL					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-18
					TOTAL SHEETS 42



ASSEMBLED BY : A.S. CALLAWAY	DATE : 7/19/06
CHECKED BY : B.L. GREEN	DATE : 8/23/06
DRAWN BY : JMB 1/88	REV. 7/10/01 RWW/LES
CHECKED BY : GGH 1/88	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

NOTES

METAL RAIL TO END POST CONNECTION

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

- A. 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
- B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 5/8" BOLT SHALL HAVE N. C. THREADS.
- C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F. WASHERS FOR RAIL ATTACHMENT SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

D. STANDARD CLAMP BARS (STD. No. BMR6).

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 3 BAR METAL RAIL.

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

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

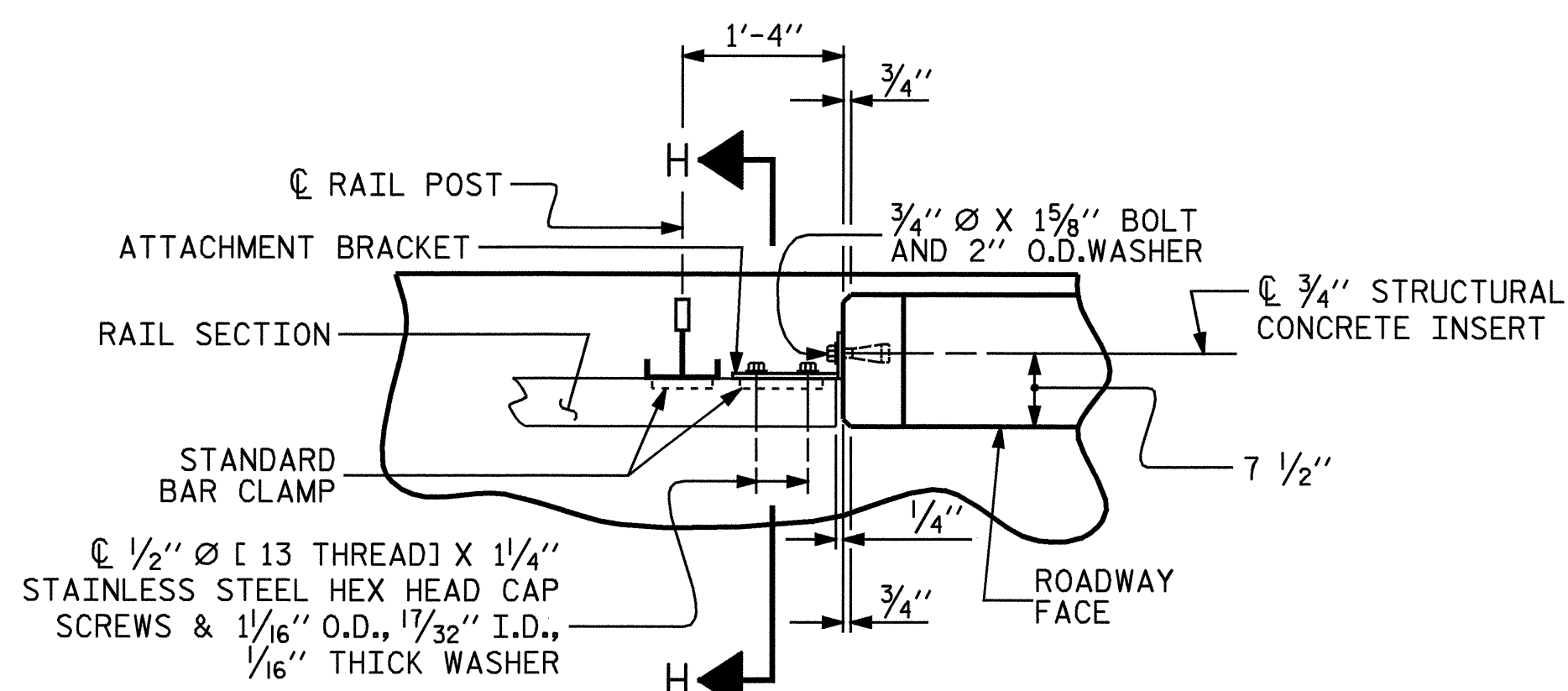
THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 5/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLT. NO FIELD TESTING IS REQUIRED. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.

NOTES

STRUCTURAL CONCRETE INSERT

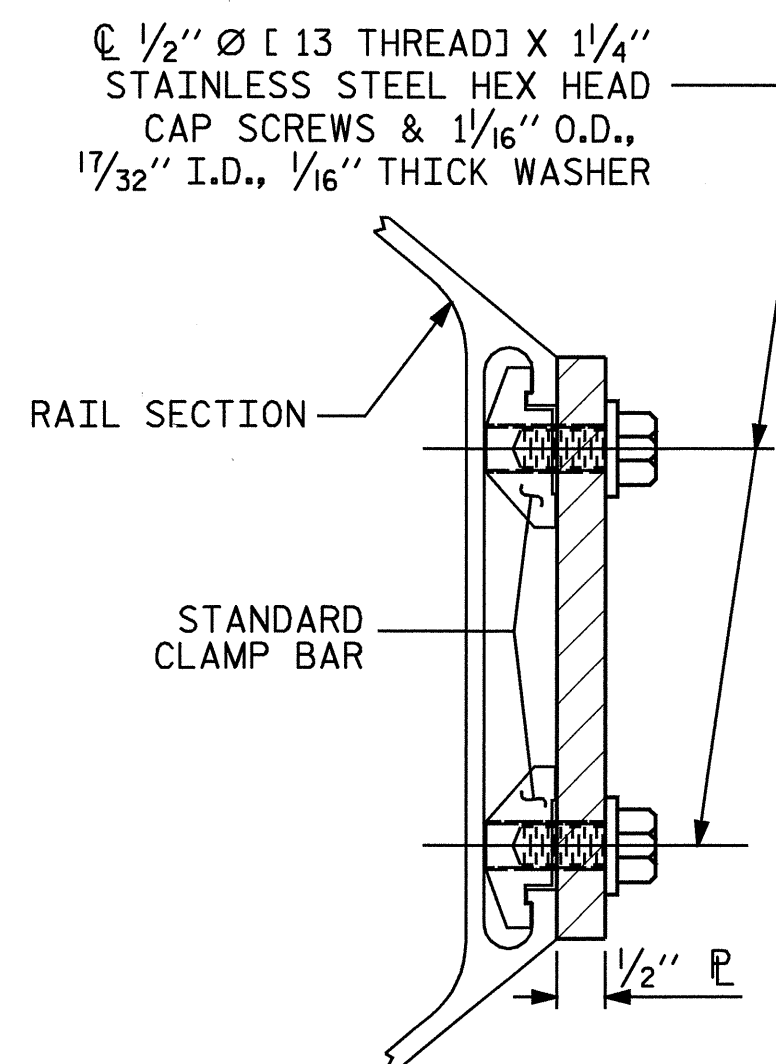
THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 1/2".
- B. 1 - 3/4" Ø X 1 5/8" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 1 5/8" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
- C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.



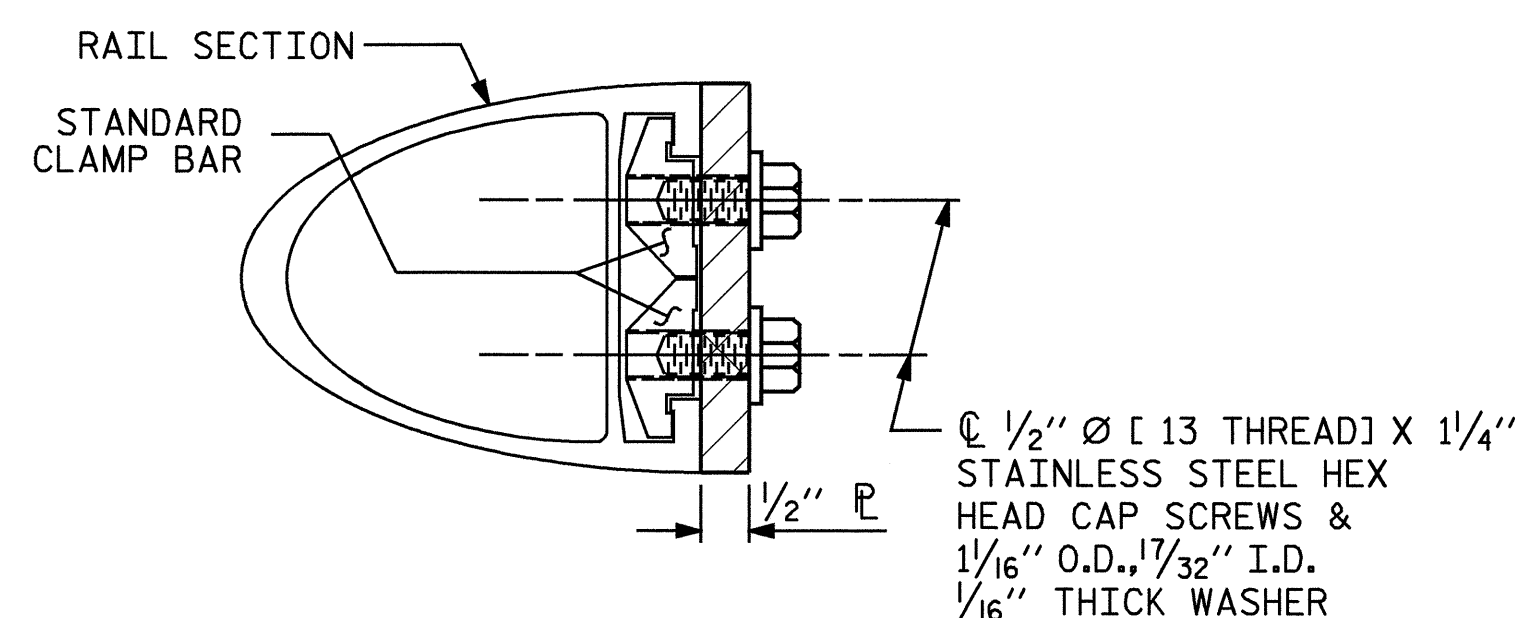
PLAN OF RAIL AND END POST

(STIFFENER ON 1/2" P NOT SHOWN FOR CLARITY)



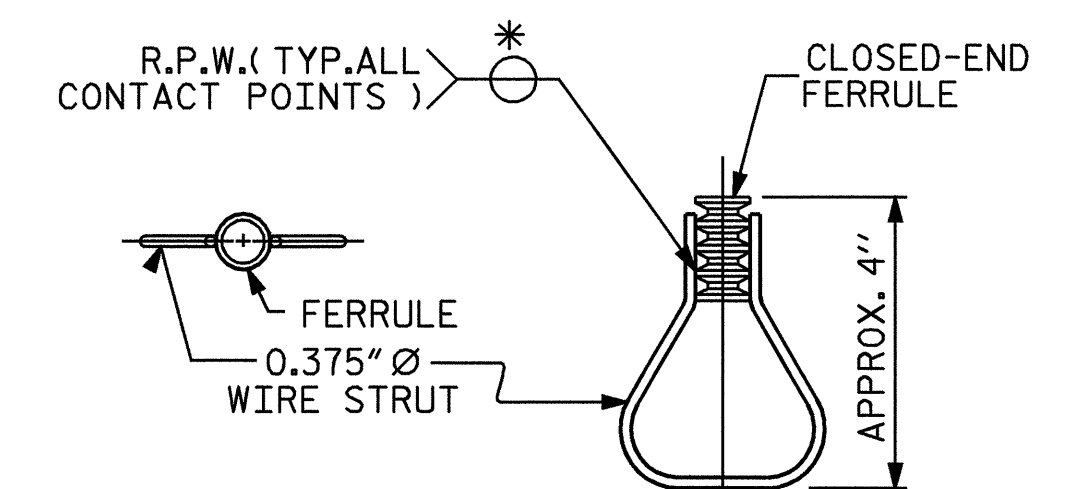
SECTION H-H

(FOR BOTTOM RAIL)



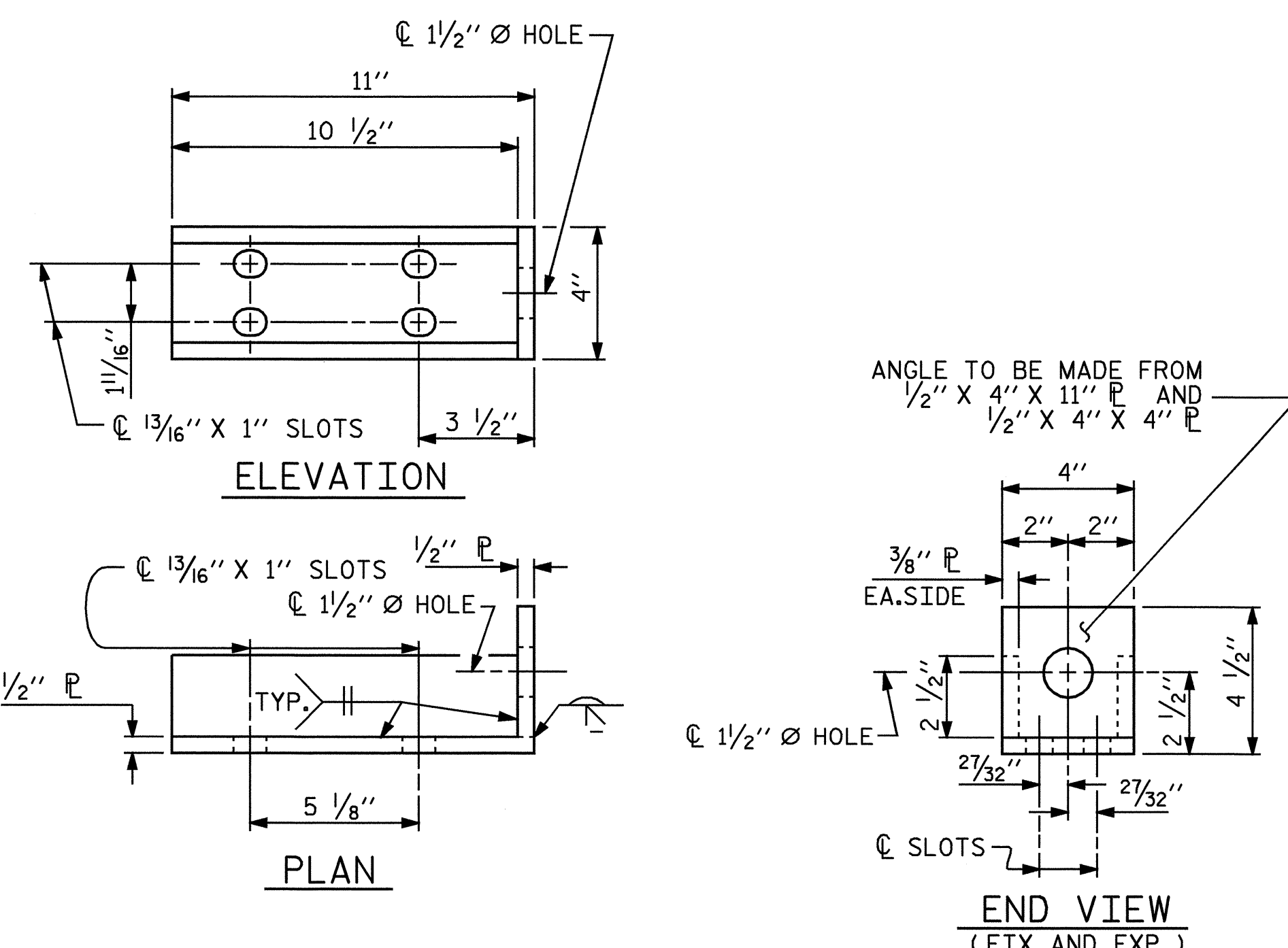
SECTION H-H

(FOR TOP & MIDDLE RAIL)



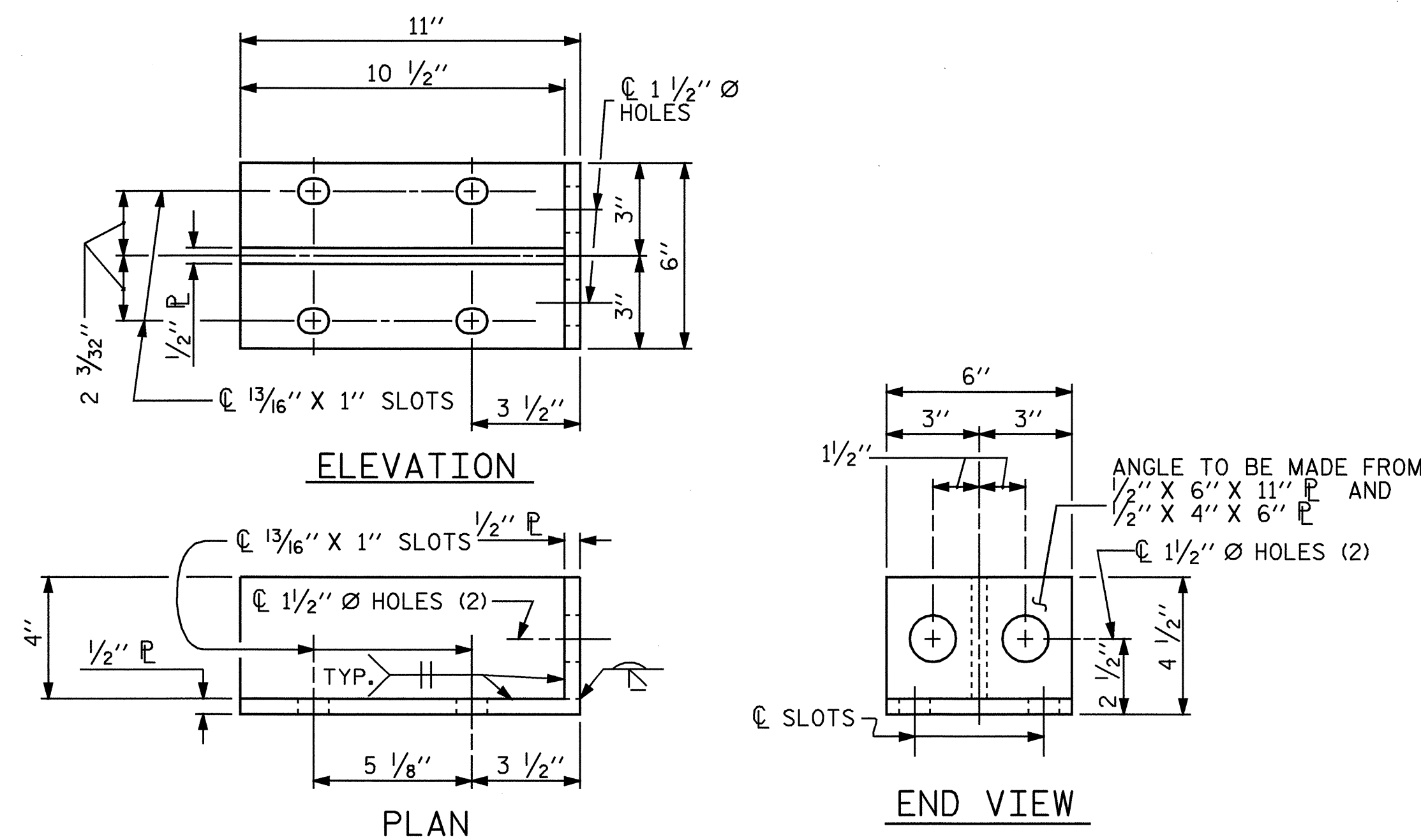
STRUCTURAL CONCRETE INSERT

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



DETAILS FOR ATTACHMENT BRACKET

(TOP & MIDDLE RAIL ONLY)



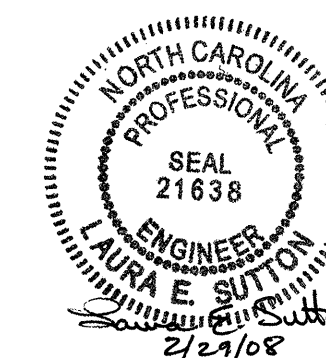
DETAILS FOR ATTACHMENT BRACKET

(BOTTOM RAIL ONLY)

PROJECT NO. B-3705
WAKE COUNTY
STATION: 26+50.00 -L-

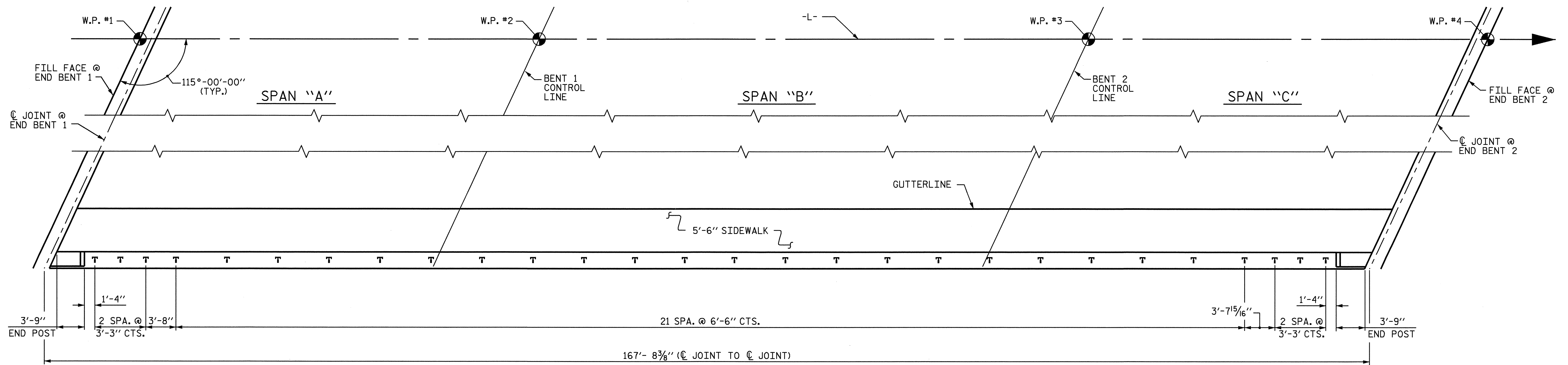
SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3 BAR METAL RAIL



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			42

ASSEMBLED BY : A.S. CALLAWAY	DATE : 7/19/06
CHECKED BY : B.L. GREEN	DATE : 8/23/06
DRAWN BY : JMB 1/88	REV. 7/10/01 RWW/LES
CHECKED BY : GGH 1/88	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM



PLAN OF RAIL POST SPACING

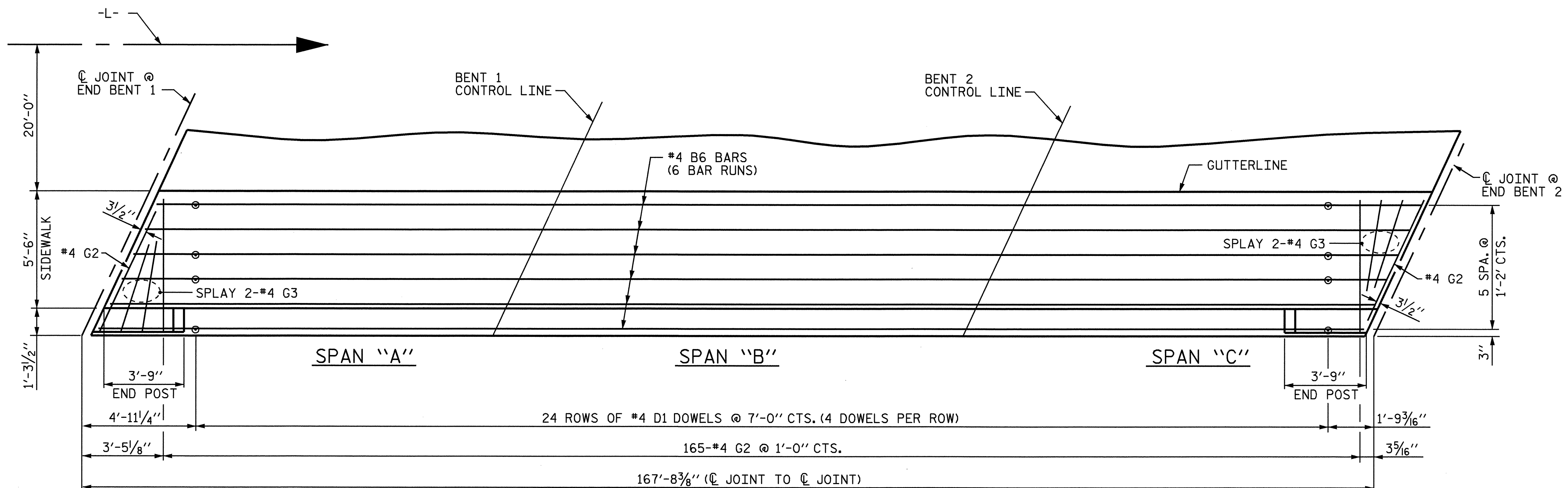
NOTE:
FOR END POST DETAILS AND REINFORCING STEEL,
SEE "SIDEWALK & END POST DETAILS" SHEET.

PROJECT NO. B-3705
WAKE COUNTY
 STATION: 26+50.00 -L-

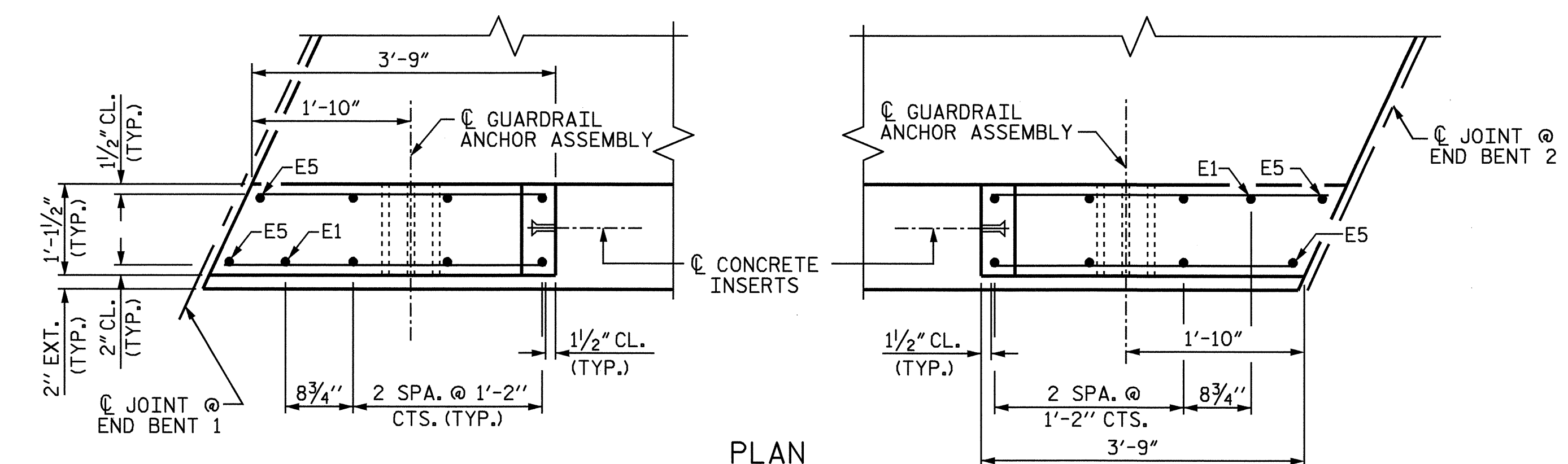
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE RAIL POST SPACING					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-20
					TOTAL SHEETS 42



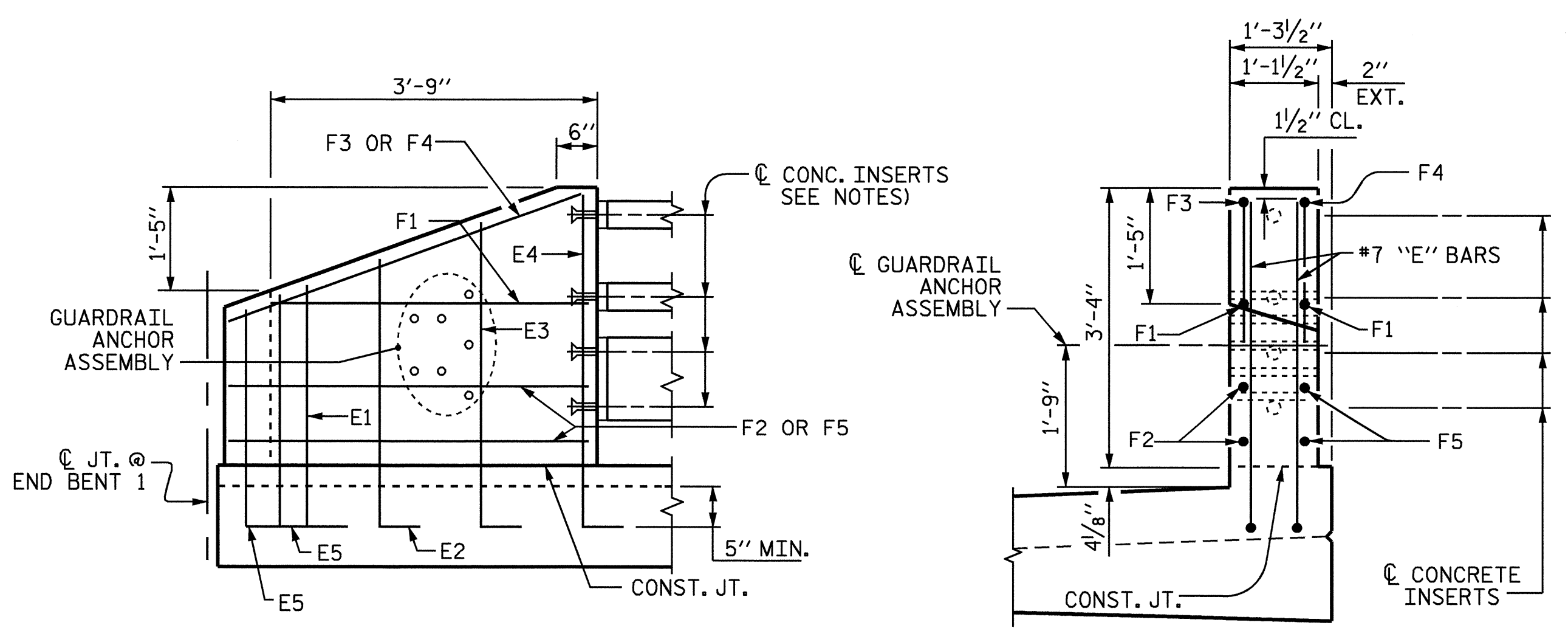
DRAWN BY: A.S. CALLAWAY DATE: 7/20/06
 CHECKED BY: B.L. GREEN DATE: 8/23/06



PLAN OF SIDEWALK



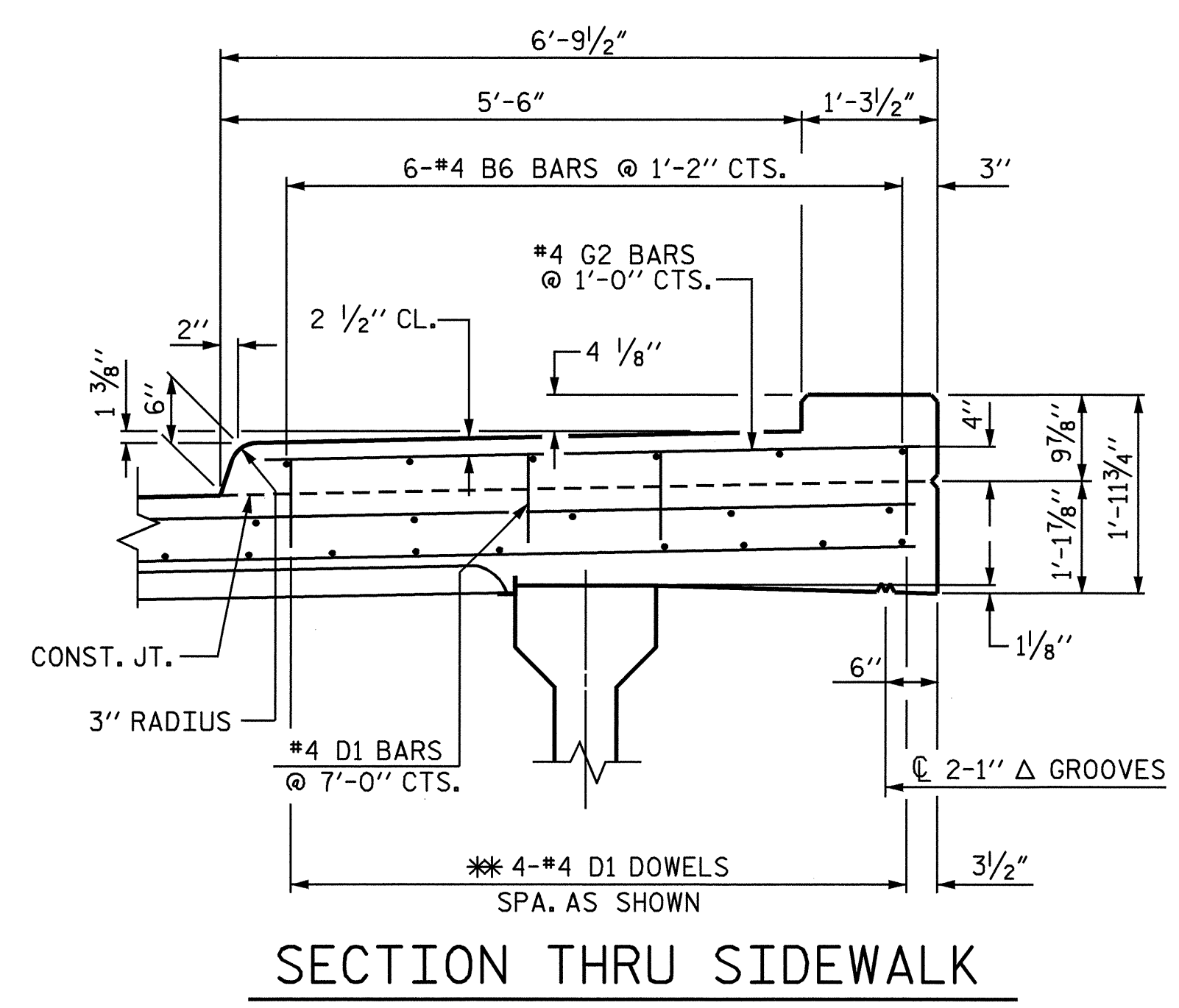
PLAN



ELEVATION

END VIEW

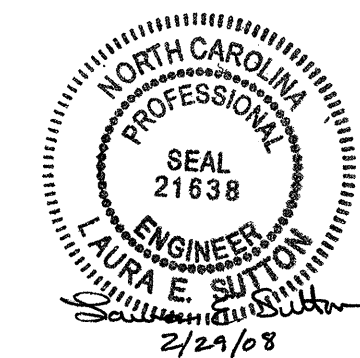
END POST DETAILS



SECTION THRU SIDEWALK

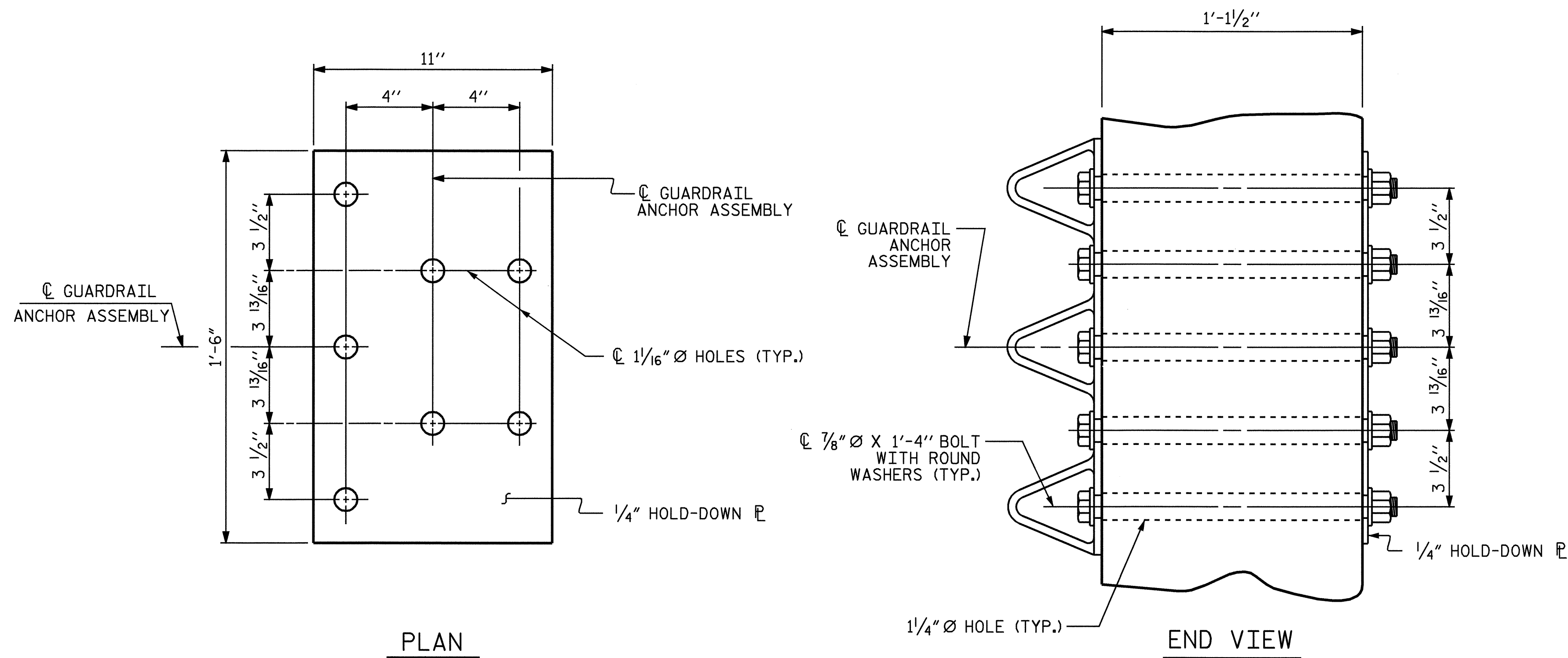
- NOTES:**
- THE JOINT IN THE DECK SHALL BE SAWED PRIOR TO THE CASTING OF THE SIDEWALK.
 - THE SIDEWALK IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.
 - ALL REINFORCING STEEL IN THE SIDEWALK AND END POSTS SHALL BE EPOXY COATED.
 - GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE SIDEWALK IN ACCORDANCE WITH ARTICLE B25-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 FEET TO 10 FEET BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINT WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.
 - FOR SIDEWALK AND END POST QUANTITIES, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.
 - FOR SIDEWALK COVER PLATE DETAILS AT END BENTS, SEE "BRIDGE APPROACH SLAB" SHEETS
 - FOR CONCRETE INSERT DETAILS, SEE "3 BAR METAL RAIL" SHEET 3 OF 3.
 - * THE #4 D1 DOWELS MAY BE PUSHED INTO GREEN CONCRETE AFTER THE SPAN HAS BEEN SCREEDED OFF, EXCEPT AS NOTED.
 - ⊙ THESE DOWELS ARE TO BE PLACED AFTER SAWING OF THE JOINT. THE HOLES SHALL BE DRILLED AND DOWELS GROUTED IN PLACE.

PROJECT NO. B-3705
WAKE COUNTY
 STATION: 26+50.00 -L-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE SIDEWALK & END POST DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-21 TOTAL SHEETS 42

DRAWN BY: A.S. CALLAWAY DATE: 7/27/06
 CHECKED BY: B.L. GREEN DATE: 8/18/06



GUARDRAIL ANCHOR ASSEMBLY DETAILS

NOTES

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

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

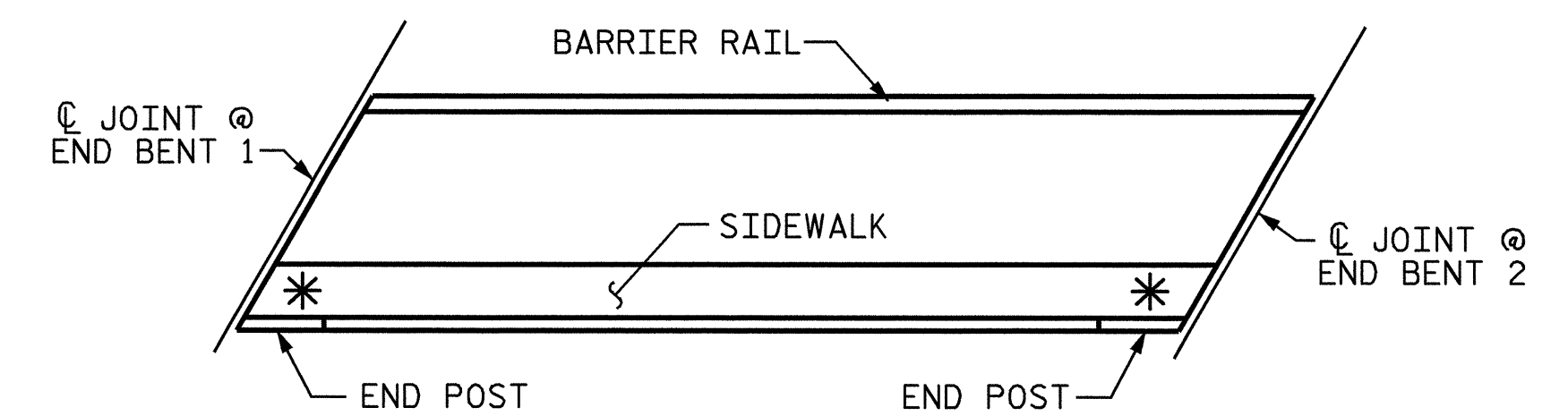
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS.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

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

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

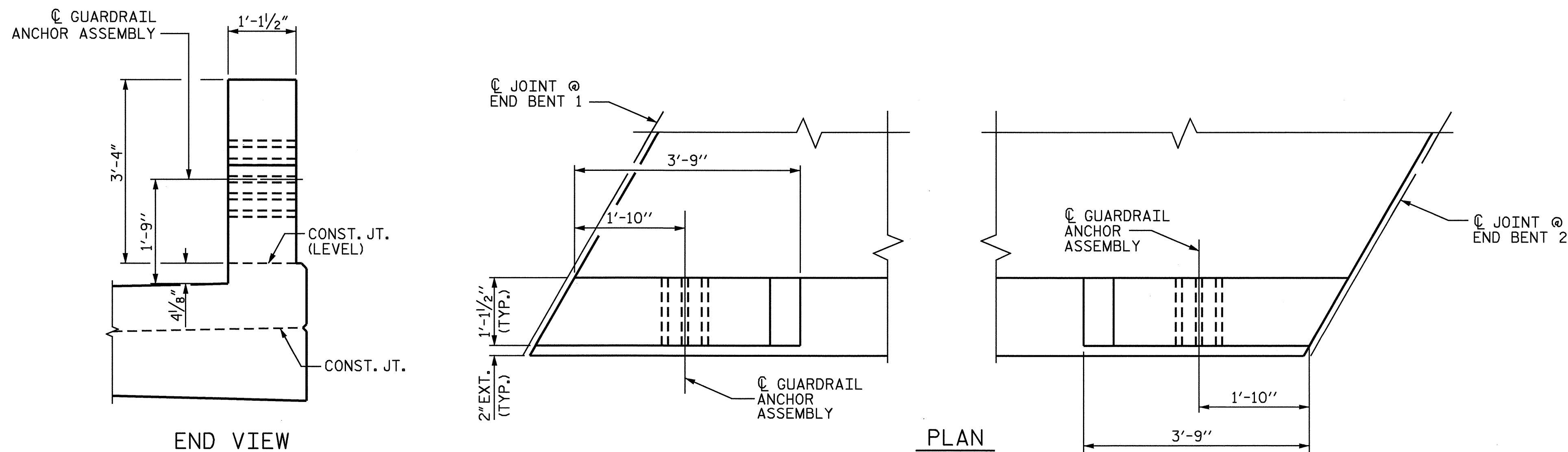
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

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



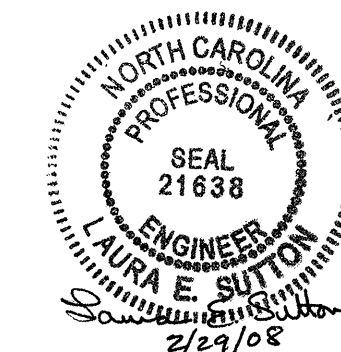
SKETCH SHOWING POINTS OF ATTACHMENT

*LOCATION OF GUARDRAIL ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR AT END POST

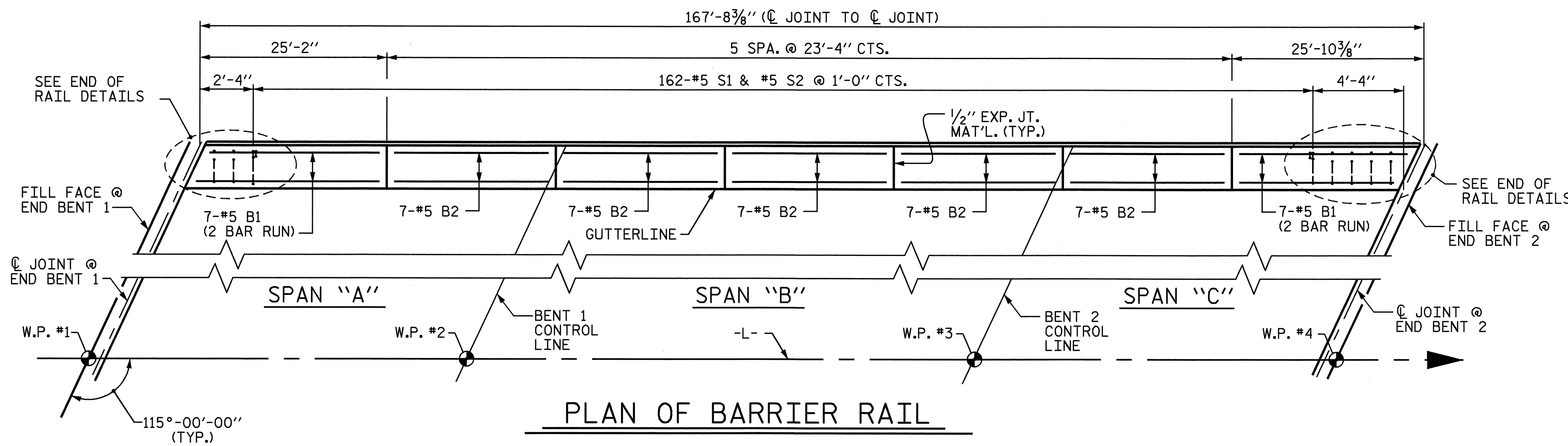
PROJECT NO. B-3705
WAKE COUNTY
 STATION: 26+50.00 -L-



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

ASSEMBLED BY : A.S. CALLAWAY	DATE : 7/19/06
CHECKED BY : B.L. GREEN	DATE : 8/23/06
DRAWN BY : EEM 6/94	REV. 10/17/00 RWW/LES
CHECKED BY : RGW 6/94	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			42



NOTES

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

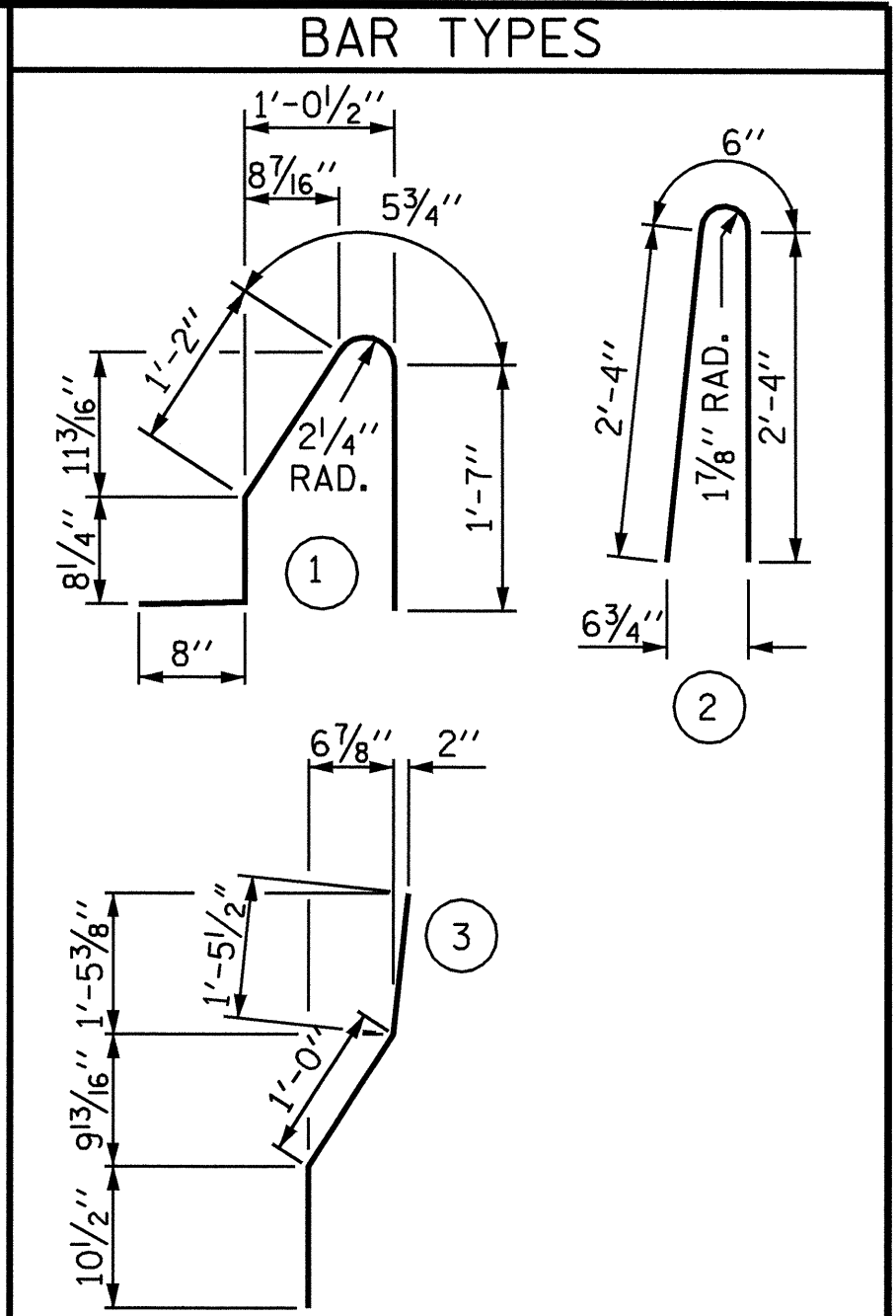
WHEN EVAZOTE JOINT SEAL IS REQUIRED, THE JOINT IN THE DECK SHALL BE SAWED PRIOR TO THE CASTING OF BARRIER RAIL.

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. NO FIELD TESTING IS REQUIRED. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.

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.

THE #5 S1 AND #5 S2 BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MIN. CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL.



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

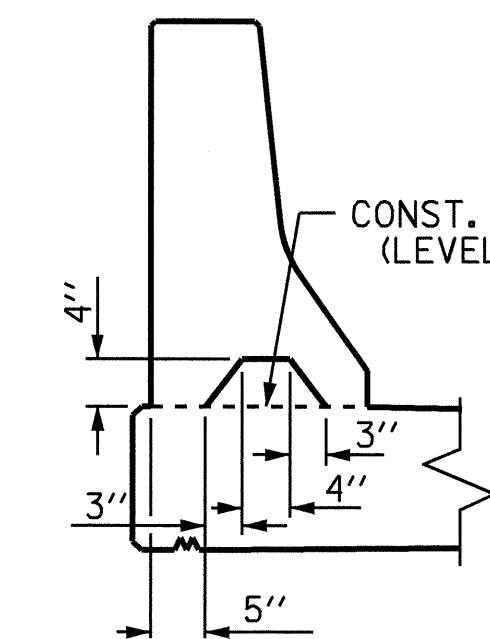
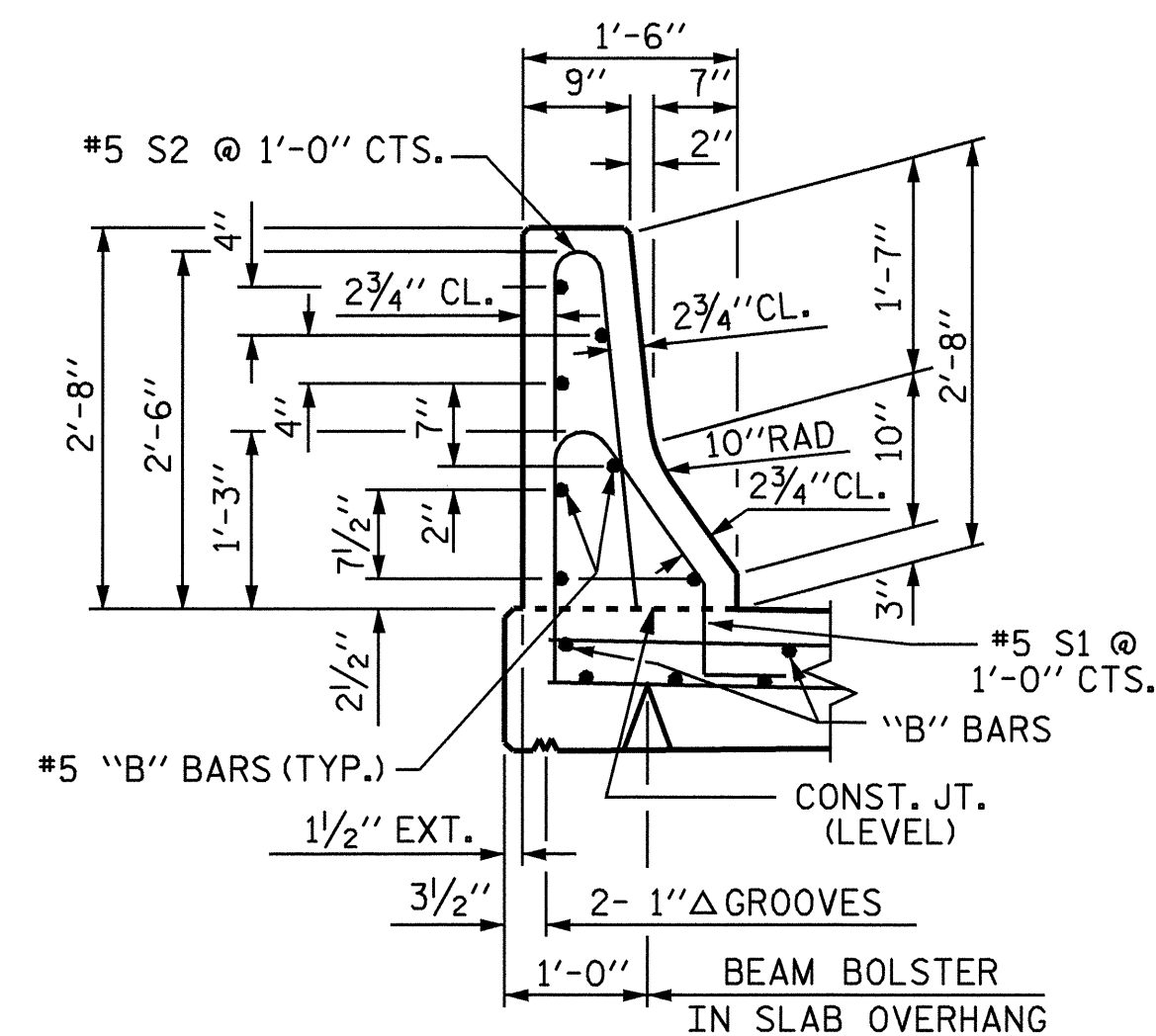
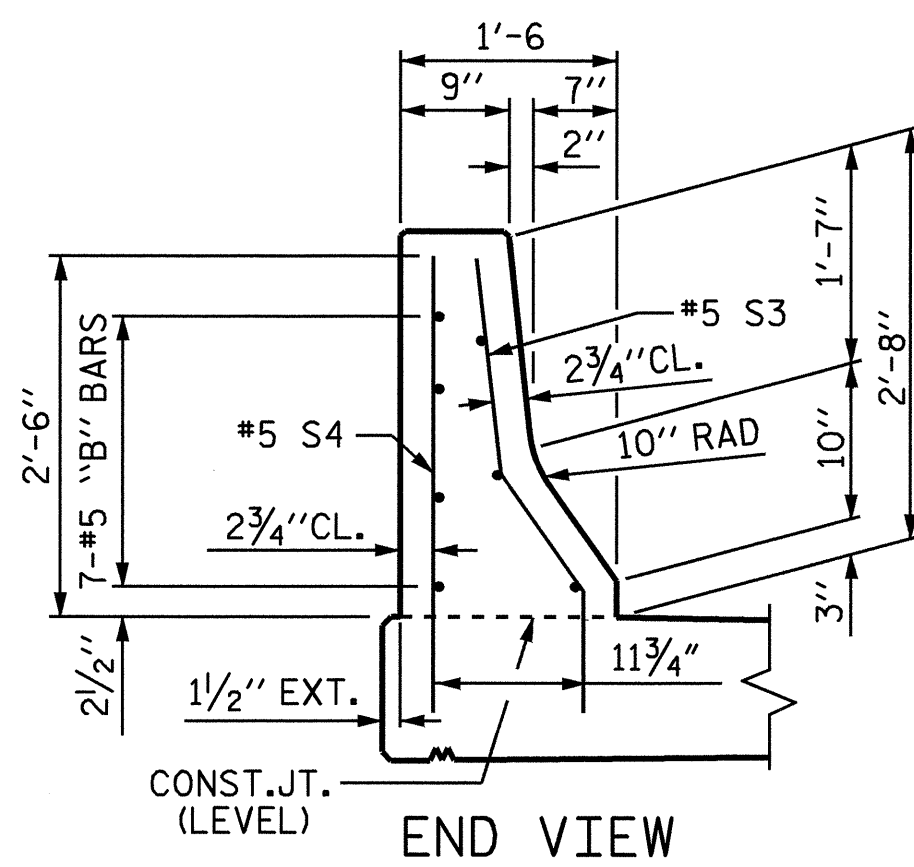
FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*S1	162	#5	1	4'-7"	774
*S2	162	#5	2	5'-2"	873
*S3	6	#5	3	3'-4"	21
*S4	6	#5	STR	3'-2"	20
*B1	28	#5	STR	14'-5"	421
*B2	35	#5	STR	22'-11"	837

*EPOXY COATED REINFORCING STEEL LBS. 2,946

CLASS AA CONCRETE CU. YDS. 16.8

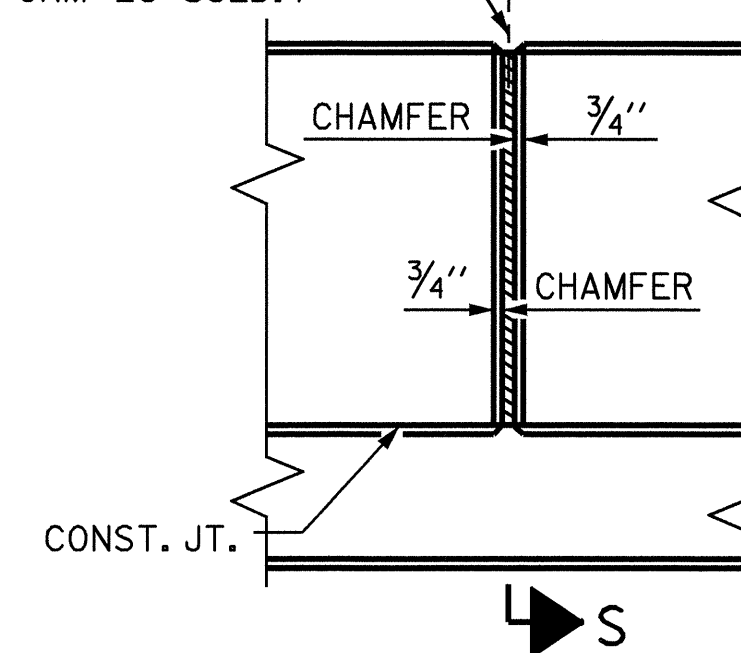
CONCRETE BARRIER RAIL LIN. FT. 167.70



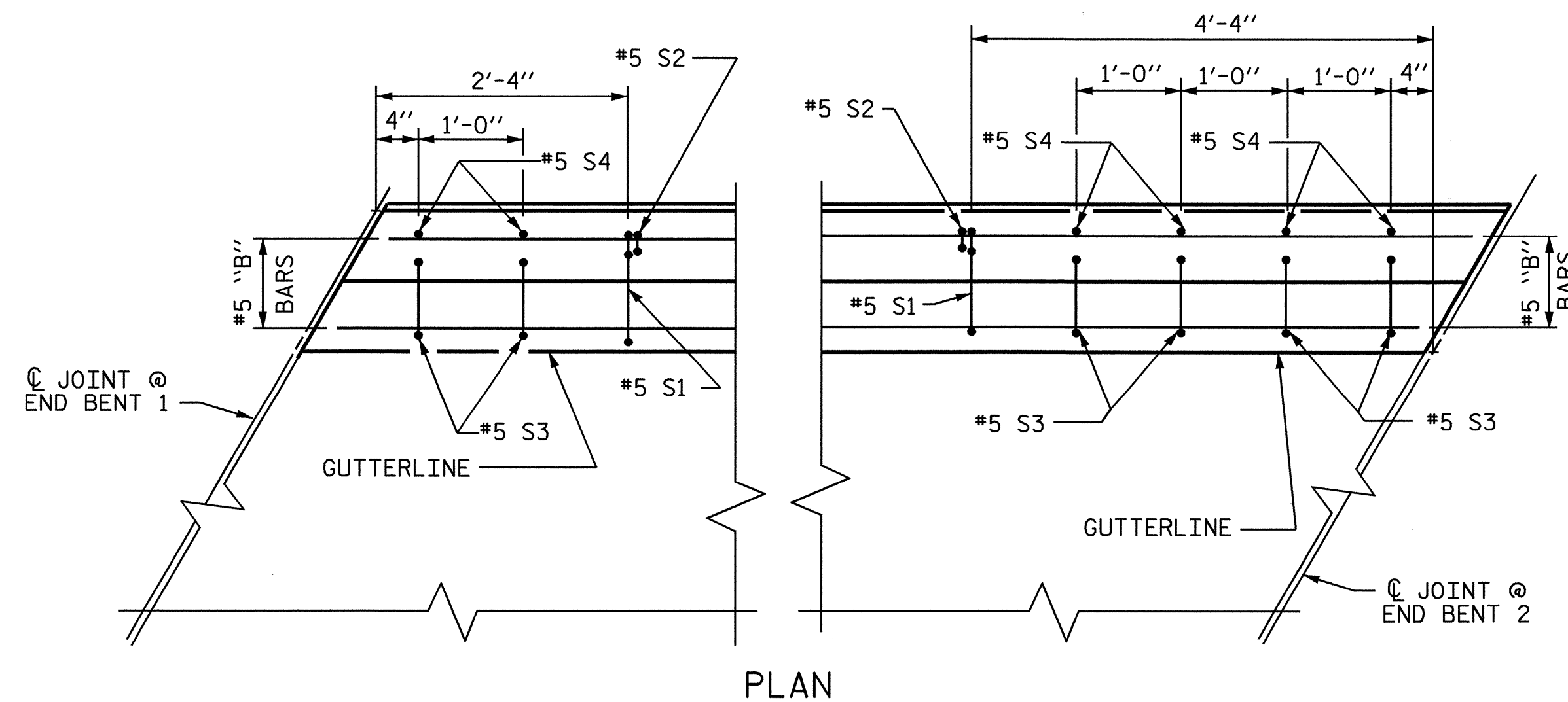
SECTION S-S

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

1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS. (NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED.)



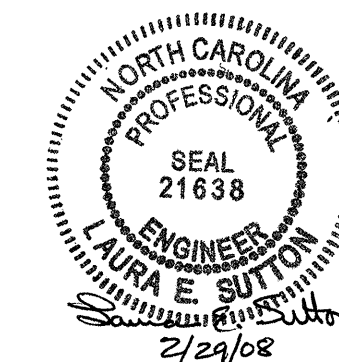
BARRIER RAIL DETAILS



END OF RAIL DETAILS

FOR ADHESIVE ANCHORING AT SAWED JOINTS

ASSEMBLED BY : A.S. CALLAWAY	DATE : 7/21/06
CHECKED BY : B.L. GREEN	DATE : 8/24/06
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

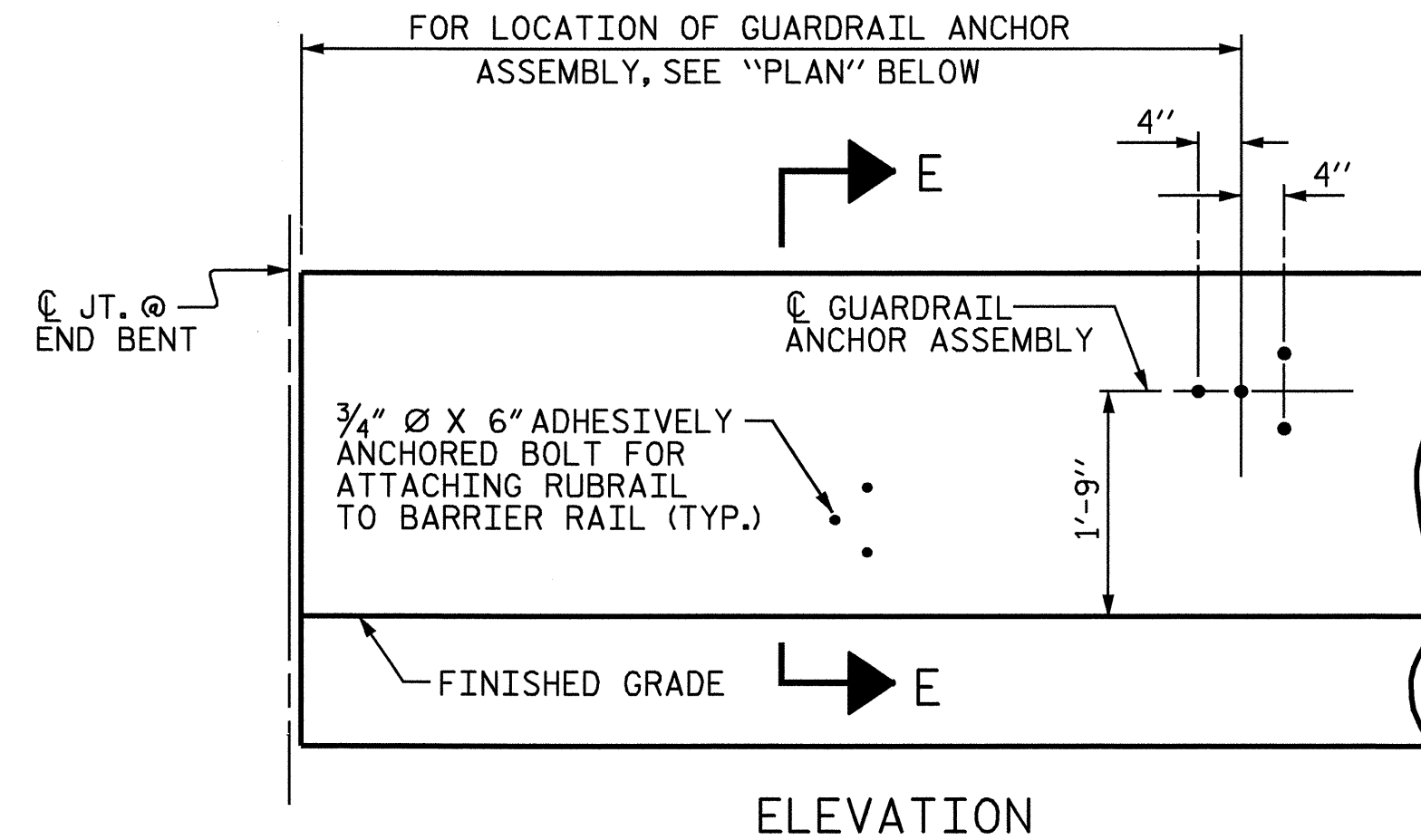
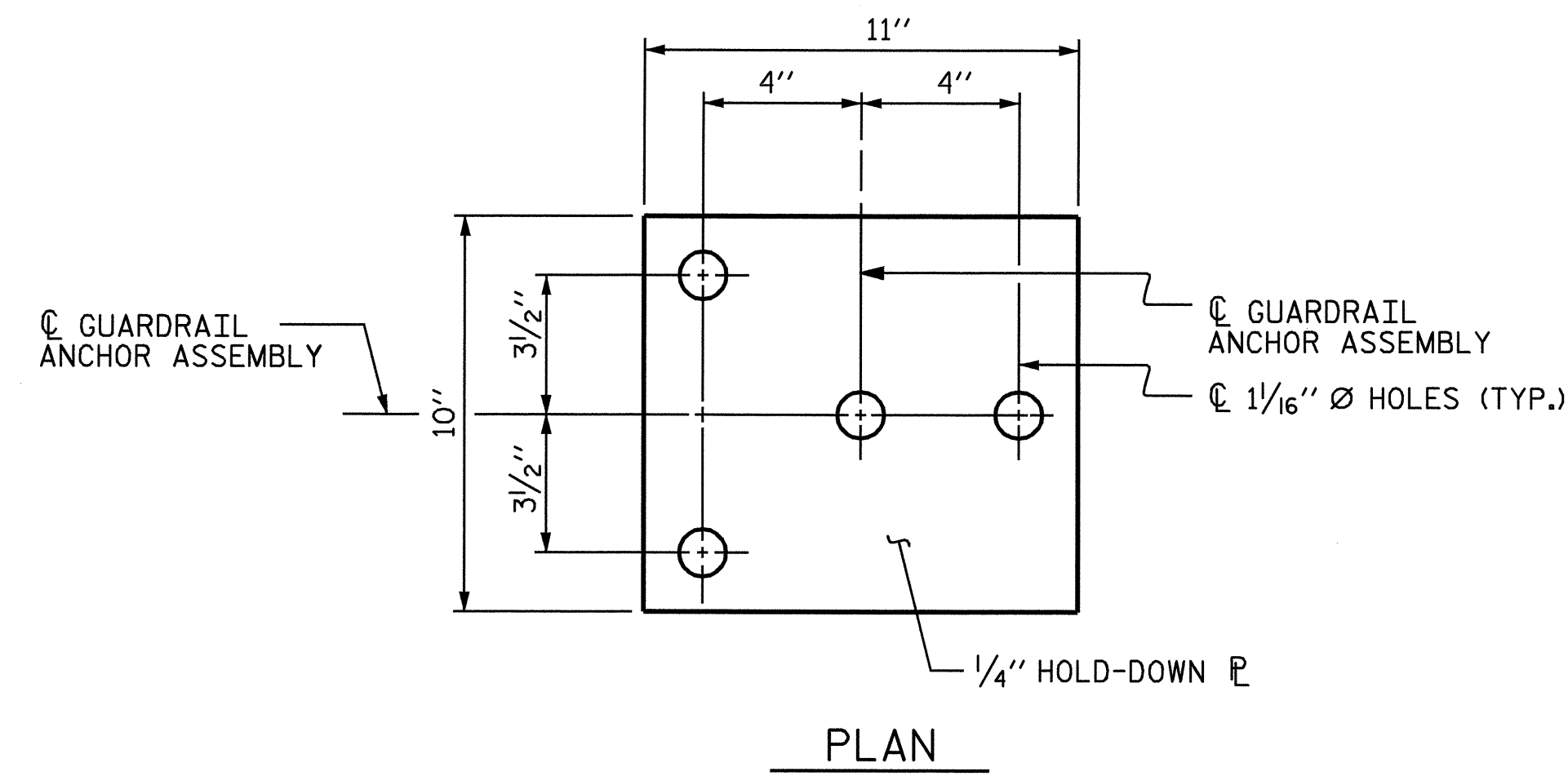


PROJECT NO. B-3705
WAKE COUNTY
 STATION: 26+50.00 -L-

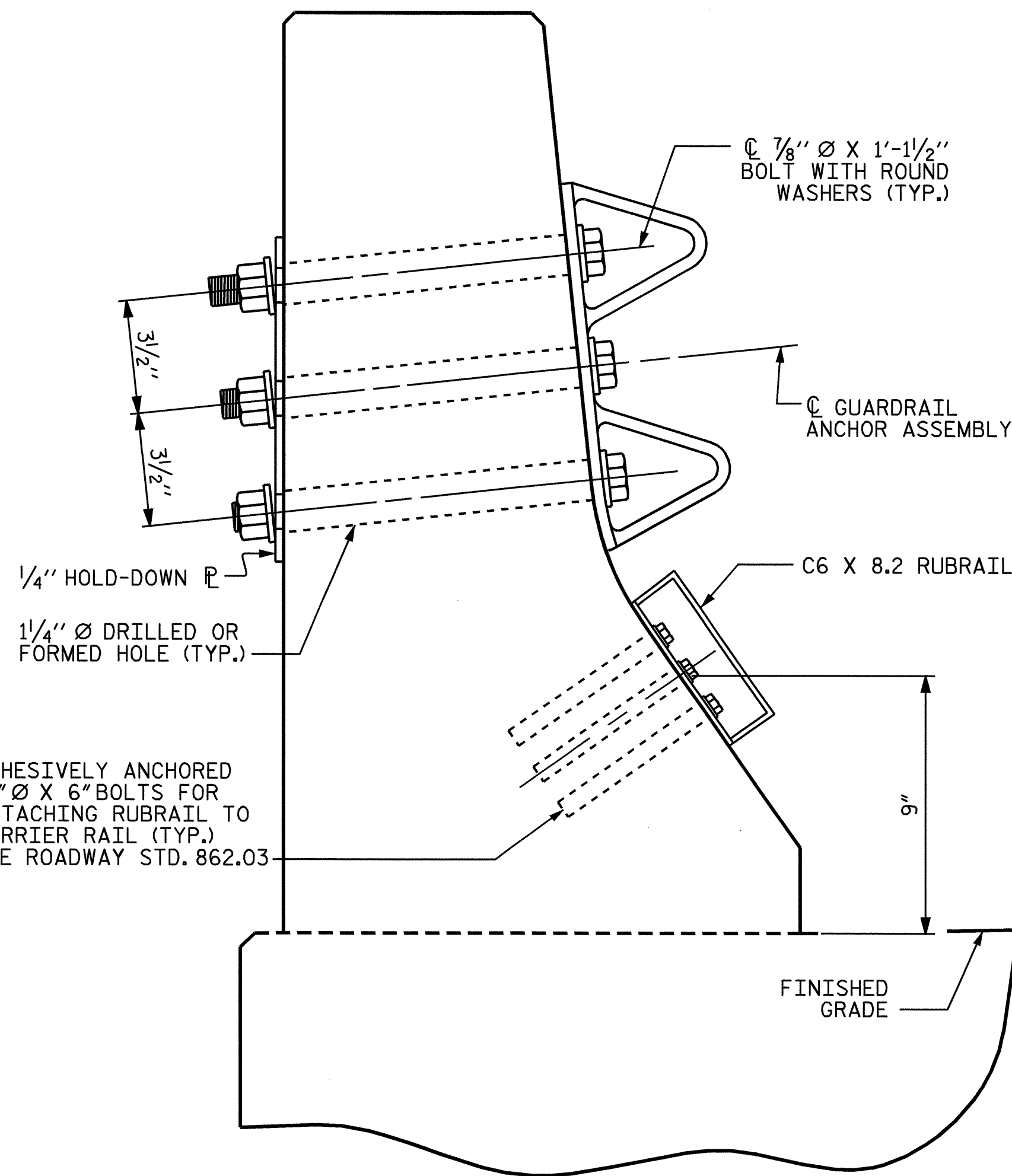
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 CONCRETE
 BARRIER RAIL

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

S-23
 TOTAL SHEETS
 42

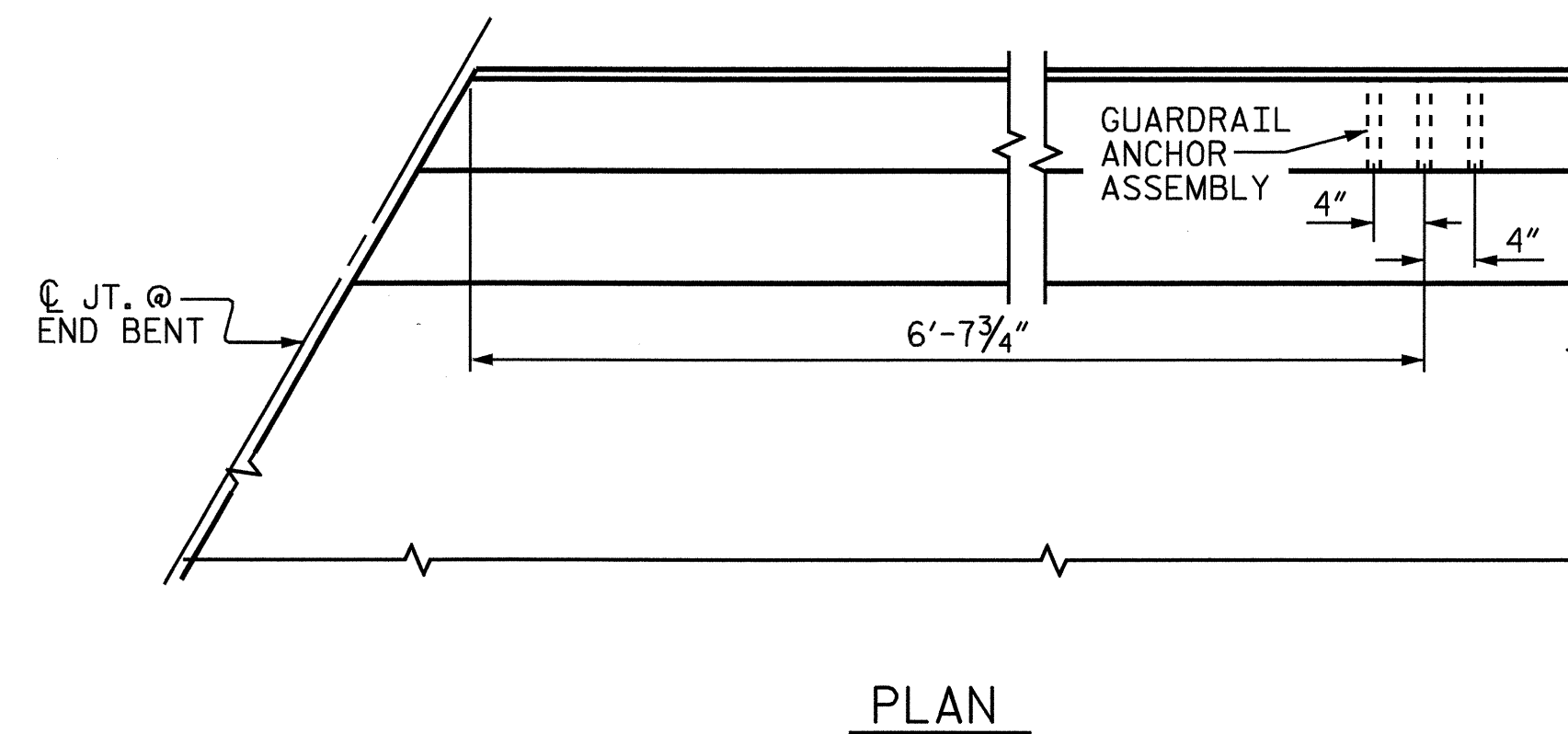


FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03



SECTION E-E

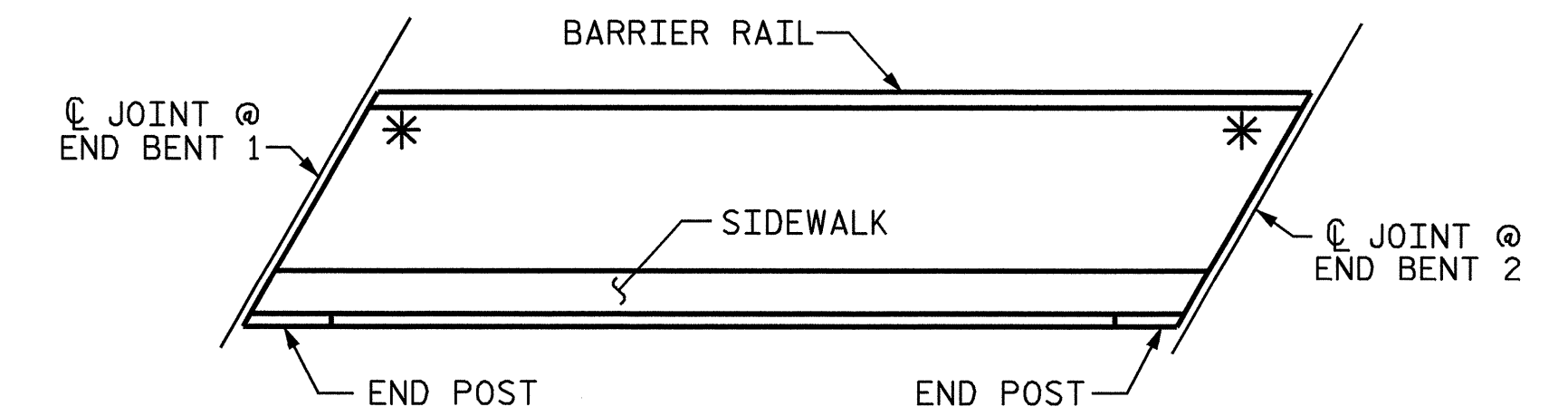
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

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.

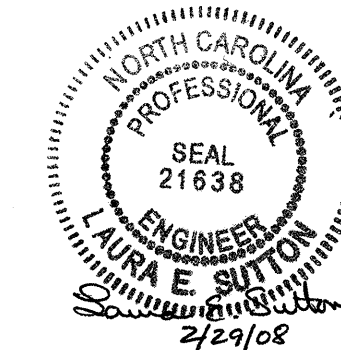
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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.

PROJECT NO. B-3705
WAKE COUNTY
STATION: 26+50.00 -L-

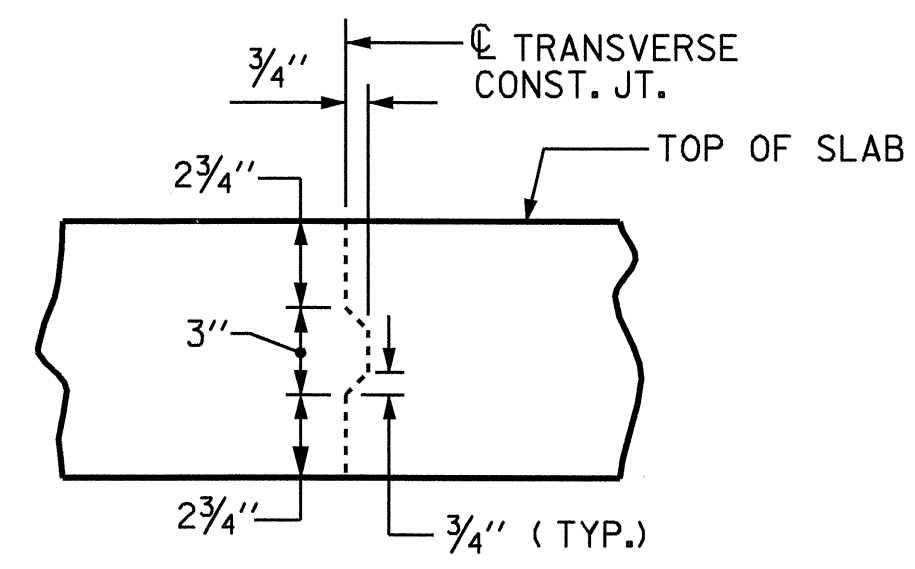
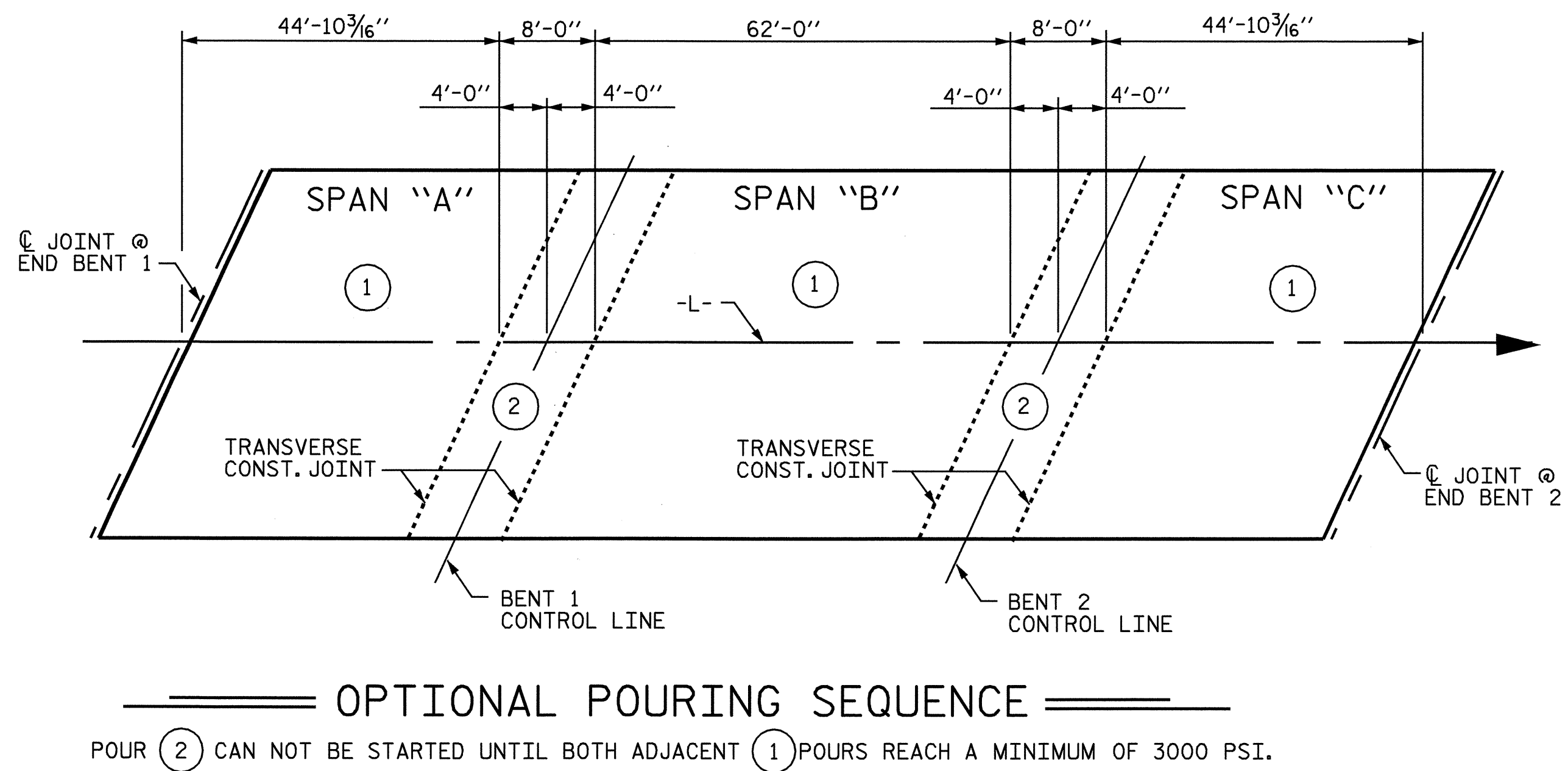
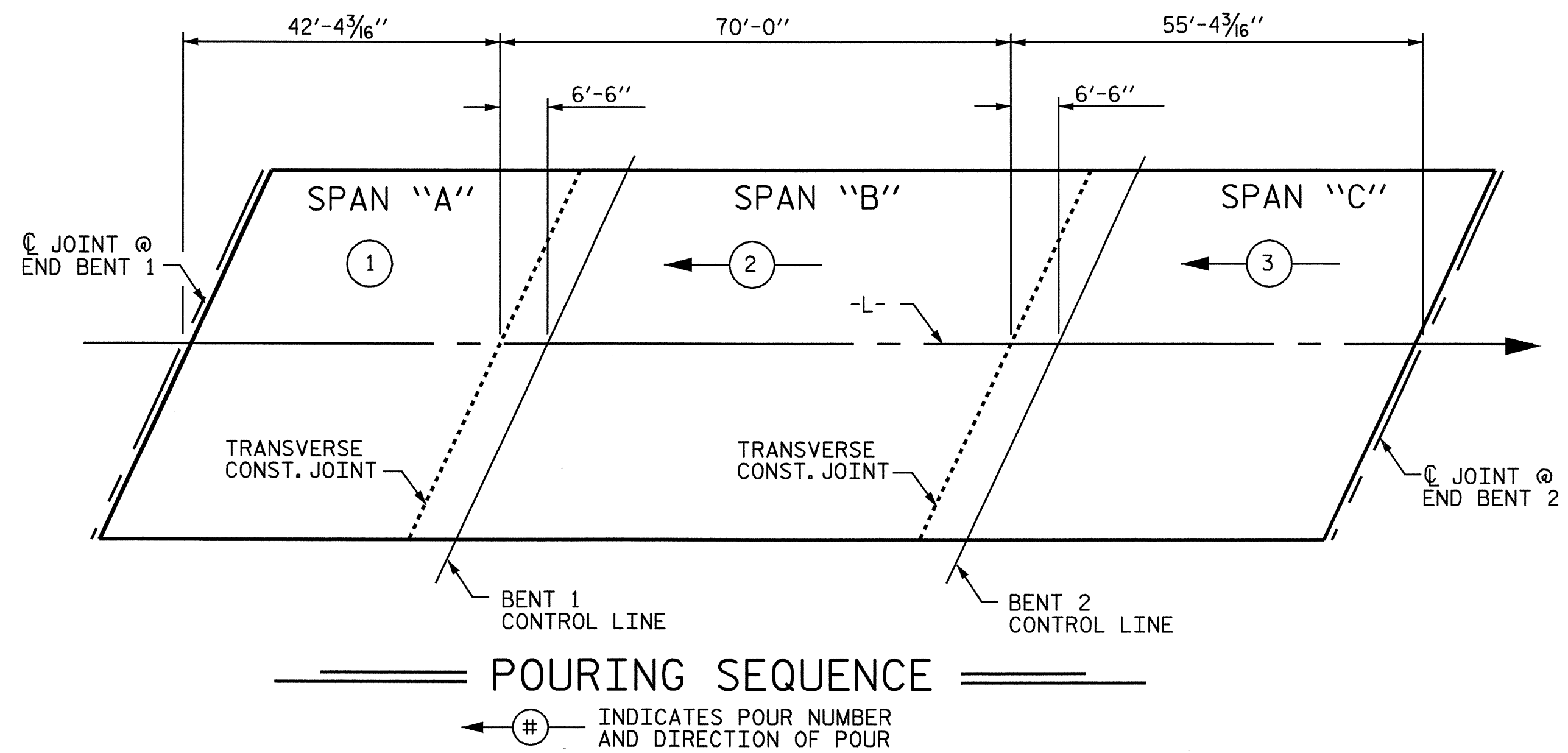
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
GUARDRAIL ANCHORAGE
FOR BARRIER RAIL



ASSEMBLED BY : A.S. CALLAWAY DATE : 7/20/06
CHECKED BY : B.L. GREEN DATE : 8/24/06
DRAWN BY : TLA 5/06
CHECKED BY : GM 5/06

ADDED 5/1/06R KMM/GM

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24	
1			3			TOTAL SHEETS 42	
2			4				

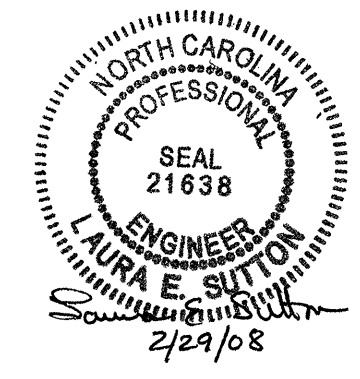


NOTE: REINFORCING STEEL IN SLAB NOT SHOWN. LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THROUGH JOINT.

TRANSVERSE CONSTRUCTION JOINT DETAIL

PROJECT NO. B-3705
WAKE COUNTY
 STATION: 26+50.00 -L-

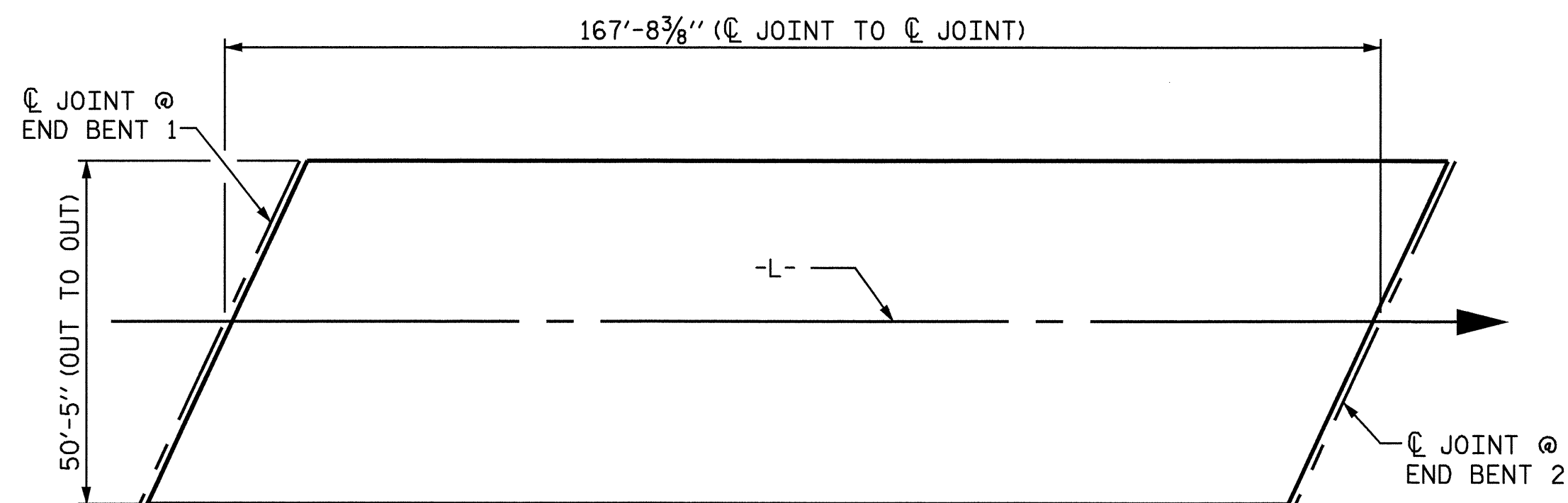
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE POURING SEQUENCE					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-25
					TOTAL SHEETS 42



DRAWN BY: A.S. CALLAWAY DATE: 7/31/06
 CHECKED BY: B.L. GREEN DATE: 8/23/06

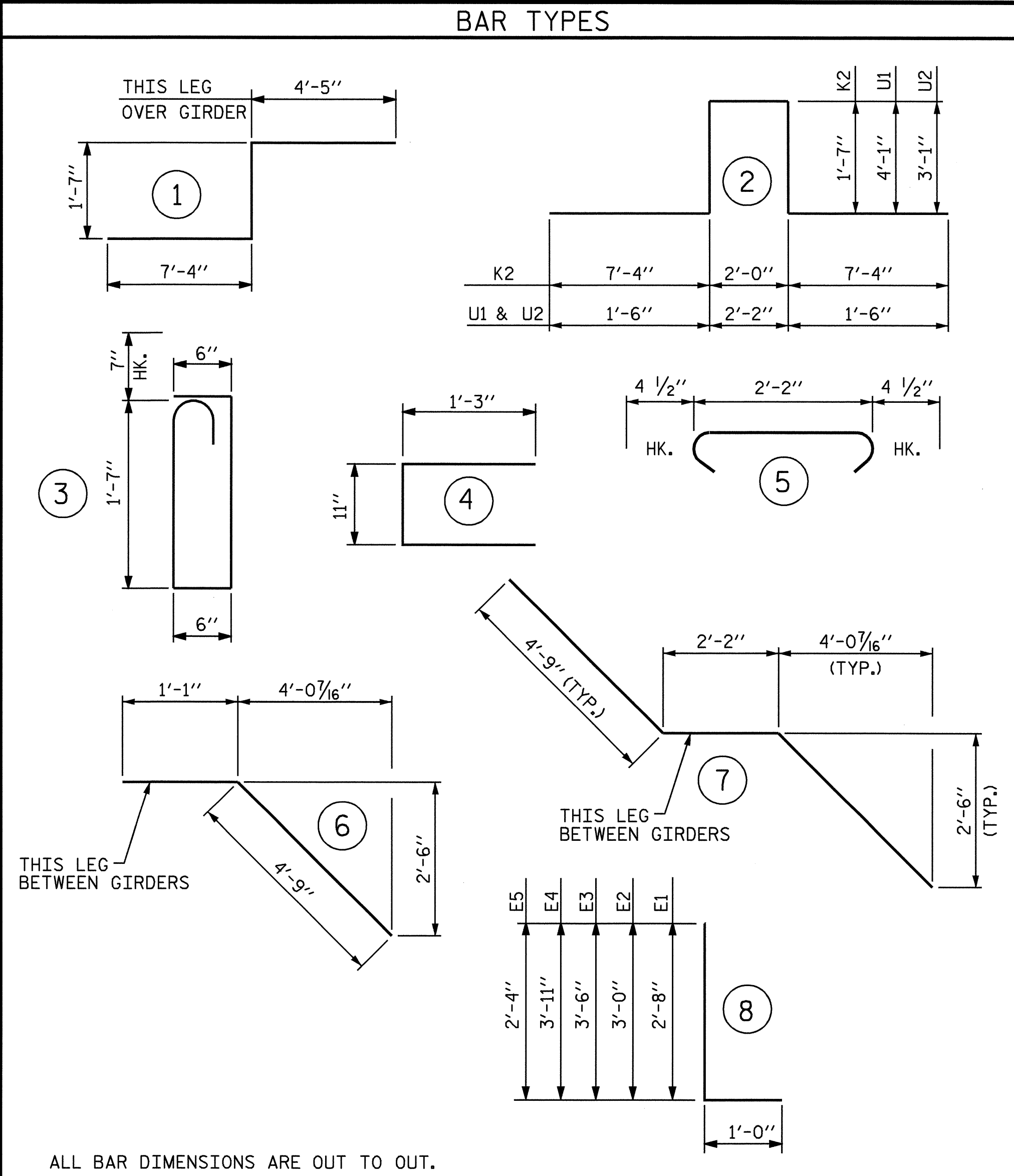
SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

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"			



LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB (SQ. FT. = 8,455)

BILL OF MATERIAL													
SPANS "A", "B", & "C"													
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT		
*A1	266	#5	STR	50'-1"	13895	*B1	136	#4	STR	16'-4"	1484		
A2	266	#5	STR	50'-1"	13895	B2	174	#5	STR	57'-3"	10390		
*A101	4	#5	STR	48'-0"	200	*B3	134	#5	STR	46'-0"	6429		
*A102	4	#5	STR	45'-8"	191	*B4	132	#5	STR	18'-0"	2478		
*A103	4	#5	STR	43'-4"	181	*B5	34	#4	STR	22'-0"	500		
*A104	4	#5	STR	41'-0"	171	*B6	36	#4	STR	29'-7"	711		
*A105	4	#5	STR	38'-8"	161	*D1	96	#4	STR	10"	53		
*A106	4	#5	STR	36'-5"	152								
*A107	4	#5	STR	34'-1"	142	*E1	2	#7	8	3'-8"	15		
*A108	4	#5	STR	31'-9"	132	*E2	4	#7	8	4'-0"	33		
*A109	4	#5	STR	29'-5"	123	*E3	4	#7	8	4'-6"	37		
*A110	4	#5	STR	27'-1"	113	*E4	4	#7	8	4'-11"	40		
*A111	4	#5	STR	24'-9"	103	*E5	4	#7	8	3'-4"	27		
*A112	4	#5	STR	22'-5"	94								
*A113	4	#5	STR	20'-1"	84	*F1	4	#6	STR	3'-4"	20		
*A114	4	#5	STR	17'-10"	74	*F2	4	#6	STR	3'-6"	21		
*A115	4	#5	STR	15'-6"	65	*F3	2	#6	STR	3'-10"	12		
*A116	4	#5	STR	13'-2"	55	*F4	2	#6	STR	4'-3"	13		
*A117	4	#5	STR	10'-10"	45	*F5	4	#6	STR	3'-10"	23		
*A118	4	#5	STR	8'-6"	35								
*A119	4	#5	STR	6'-2"	26	*G1	2	#5	STR	55'-2"	115		
*A120	4	#5	STR	3'-10"	16	*G2	167	#4	STR	6'-3"	697		
						*G3	4	#4	STR	4'-4"	12		
A201	4	#5	STR	48'-0"	200								
A202	4	#5	STR	45'-8"	191	*K1	8	#8	1	13'-4"	285		
A203	4	#5	STR	43'-4"	181	*K2	16	#8	2	19'-10"	847		
A204	4	#5	STR	41'-0"	171	*K3	20	#6	STR	7'-9"	233		
A205	4	#5	STR	38'-8"	161	K4	60	#4	STR	7'-9"	311		
A206	4	#5	STR	36'-5"	152	K5	20	#4	STR	5'-11"	79		
A207	4	#5	STR	34'-1"	142	K6	16	#4	6	5'-10"	62		
A208	4	#5	STR	31'-9"	132	K7	32	#4	7	11'-8"	249		
A209	4	#5	STR	29'-5"	123								
A210	4	#5	STR	27'-1"	113	*S1	70	#5	3	4'-9"	347		
A211	4	#5	STR	24'-9"	103	*S2	70	#4	4	3'-5"	160		
A212	4	#5	STR	22'-5"	94	S3	190	#4	5	2'-11"	370		
A213	4	#5	STR	20'-1"	84								
A214	4	#5	STR	17'-10"	74	U1	50	#4	2	13'-4"	445		
A215	4	#5	STR	15'-6"	65	U2	20	#4	2	11'-4"	151		
A216	4	#5	STR	13'-2"	55								
A217	4	#5	STR	10'-10"	45								
A218	4	#5	STR	8'-6"	35								
A219	4	#5	STR	6'-2"	26								
A220	4	#5	STR	3'-10"	16								
										REINFORCING STEEL		LBS.	28,115
										*EPOXY COATED REINFORCING STEEL		LBS.	30,650



ALL BAR DIMENSIONS ARE OUT TO OUT.

SUPERSTRUCTURE BILL OF MATERIAL			
SPANS "A", "B", & "C"	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
POUR #1	71.3		
POUR #2	128.5		
POUR #3	108.0		
SIDEWALK	23.5	▲	▲
END POSTS	0.9	▲	▲
TOTALS ●	332.2	28,115	30,650

● QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED.
▲ QUANTITIES ARE INCLUDED IN SPAN TOTAL.

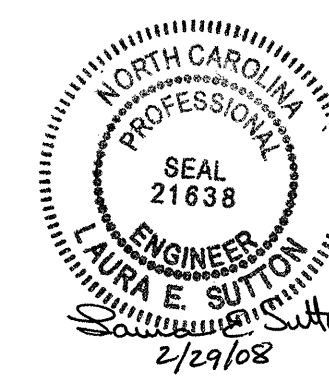
GROOVING BRIDGE FLOORS	
APPROACH SLABS	1,839 SQ.FT.
BRIDGE DECK	6,483 SQ.FT.
TOTAL	8,322 SQ.FT.

PROJECT NO. B-3705
WAKE COUNTY
STATION: 26+50.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
SUPERSTRUCTURE
BILL OF MATERIAL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			42



ASSEMBLED BY: A.S. CALLAWAY DATE: 7/28/06
CHECKED BY: B.L. GREEN DATE: 8/24/06
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

NOTES:

STIRRUPS AND U2 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

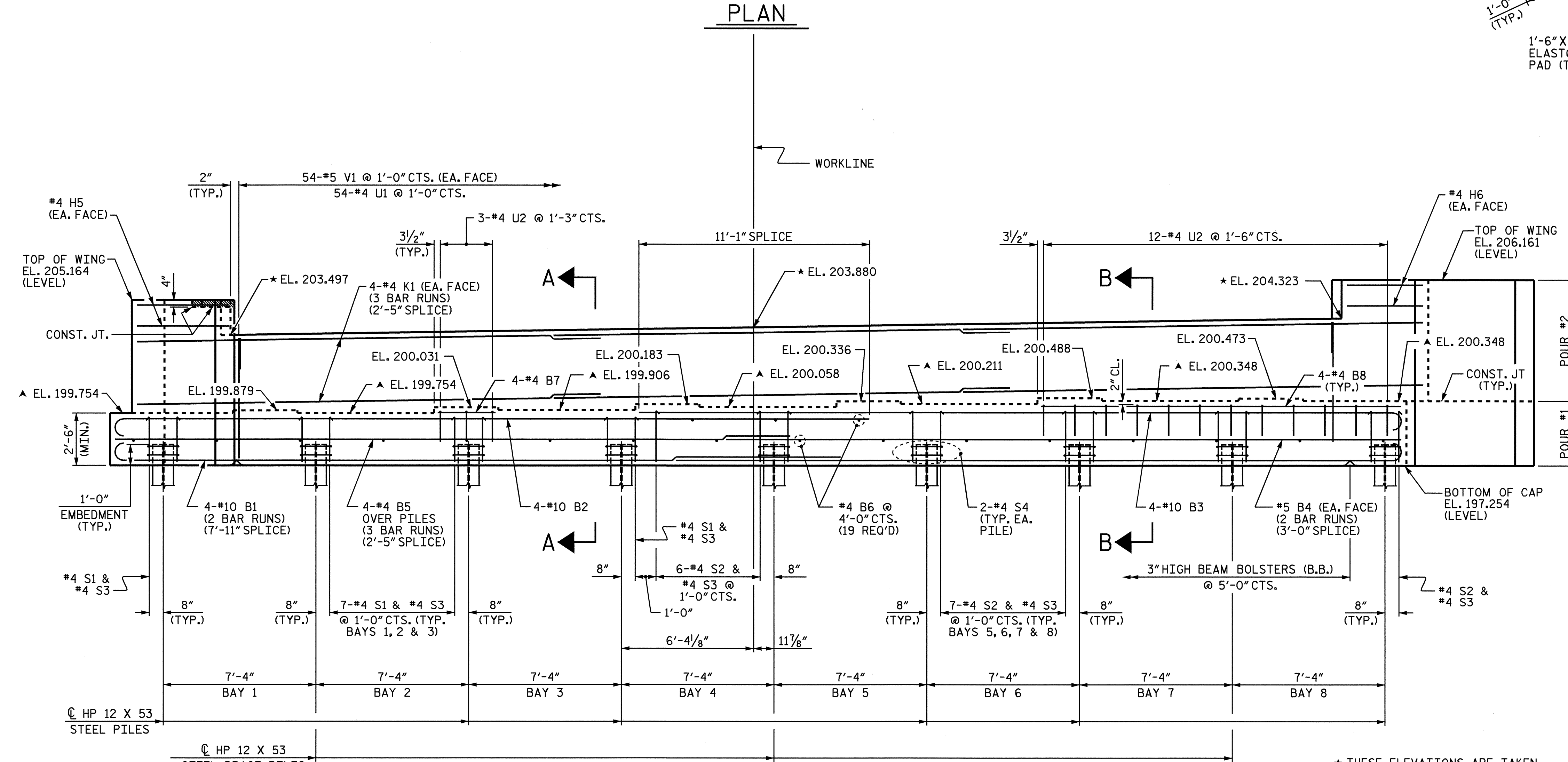
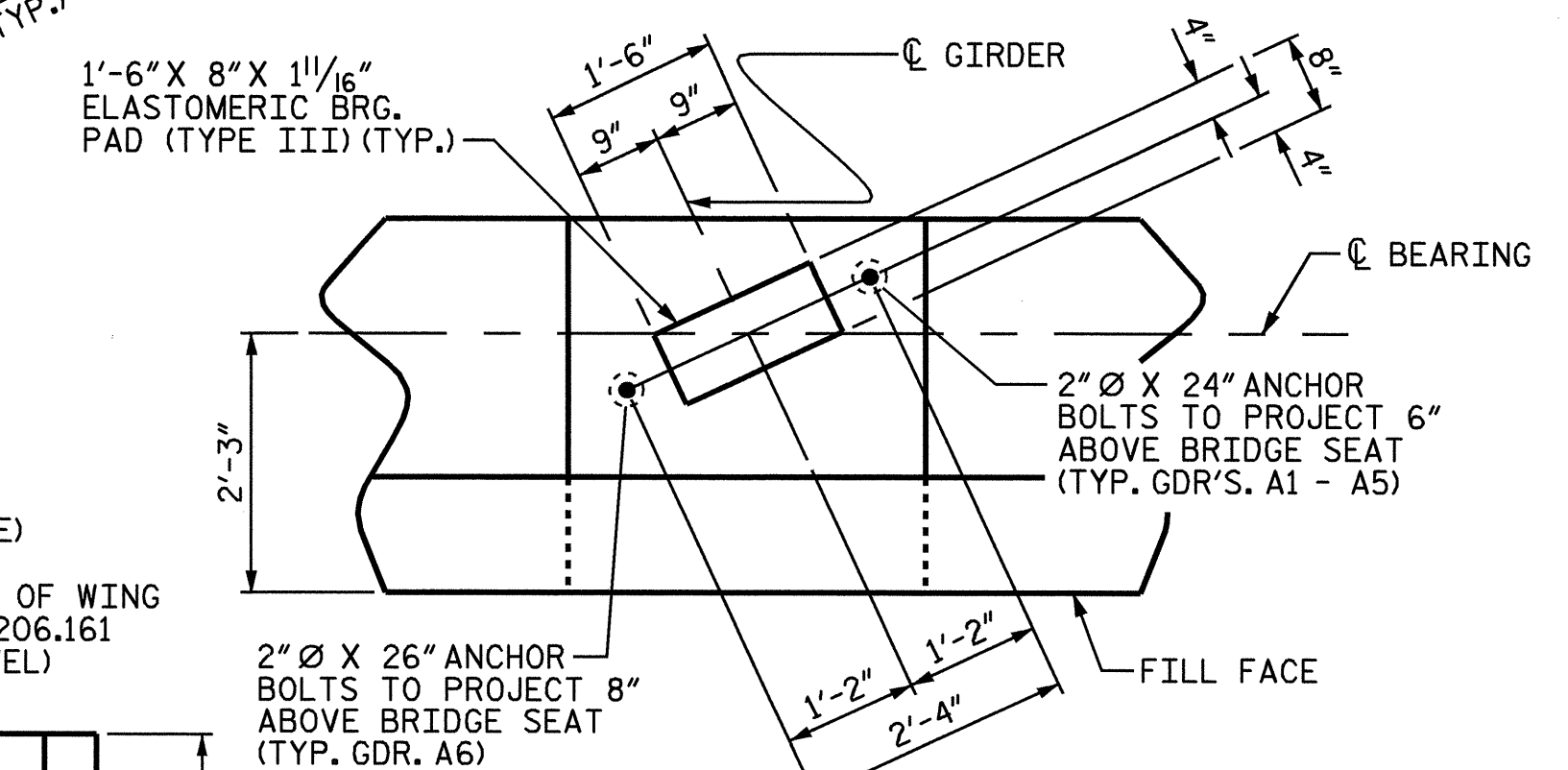
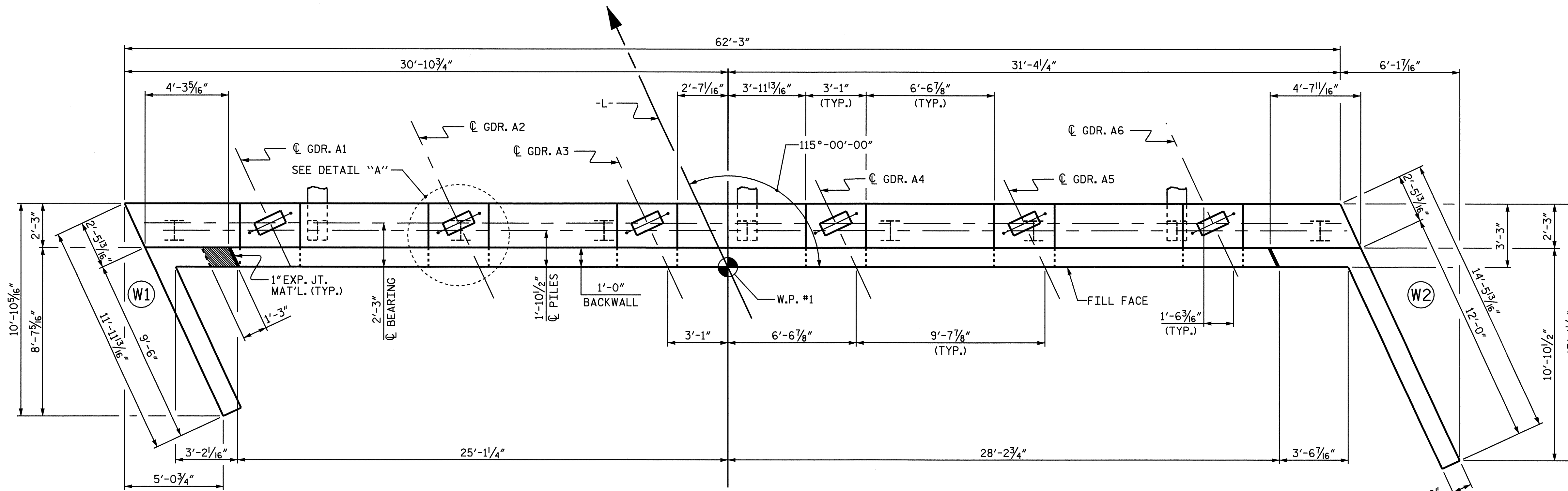
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND THE APPROACH SLAB HAS BEEN SAWED AND THE BARRIER RAIL HAS BEEN CAST IF SLIP FORMING IS USED.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

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

THE #5 V1 BARS IN THE BACKWALL SHALL BE PLACED 2" CLEAR FROM THE TOP OF THE BACKWALL.



* THESE ELEVATIONS ARE TAKEN AT FILL FACE OF THE BACKWALL.
 * FOR LOCATION OF ELEVATIONS BETWEEN BUILD-UPS, SEE SECTION VIEWS ON SHEET 3 OF 3.

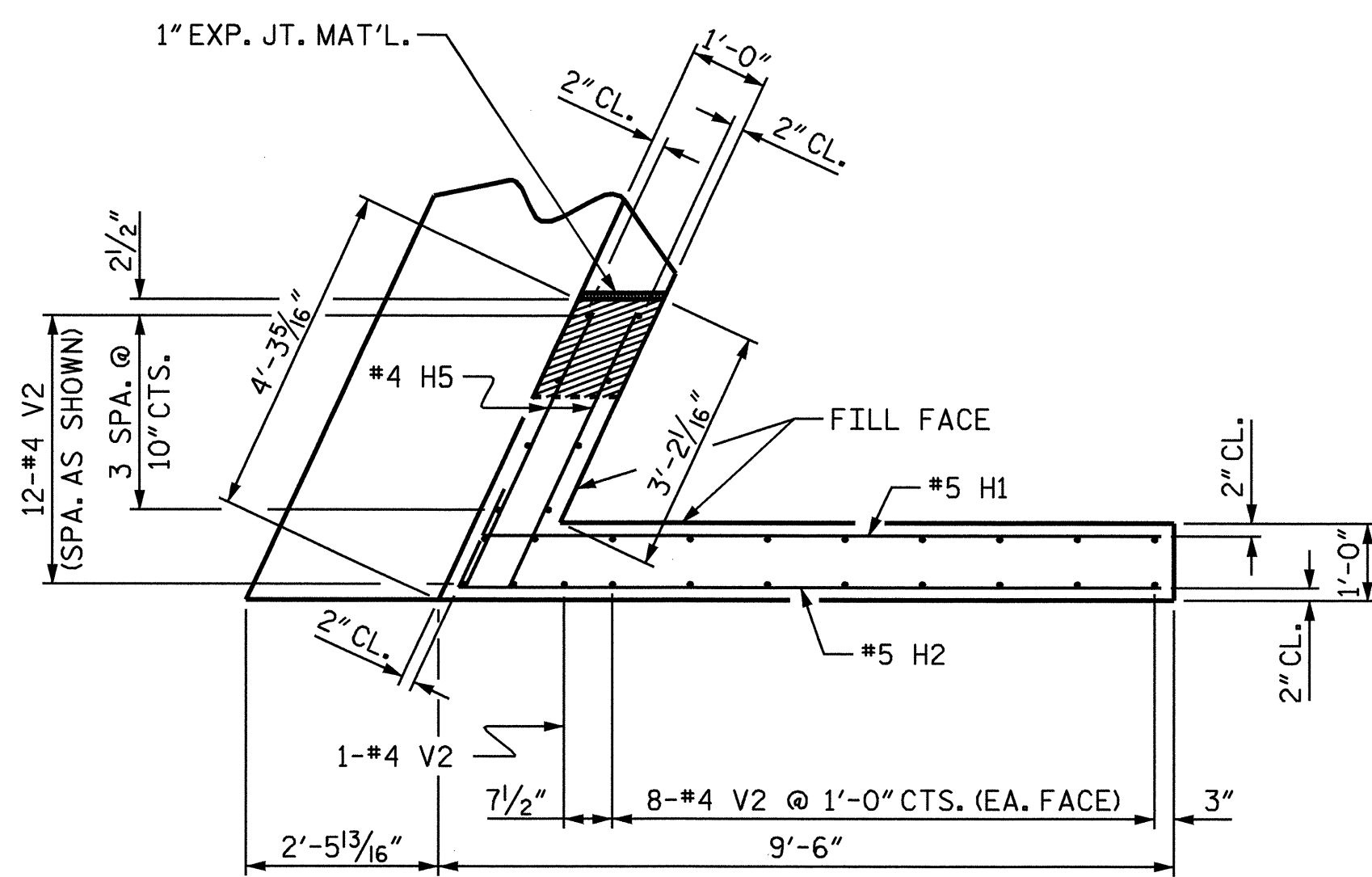


PROJECT NO. B-3705
 WAKE COUNTY
 STATION: 26+50.00 -L-

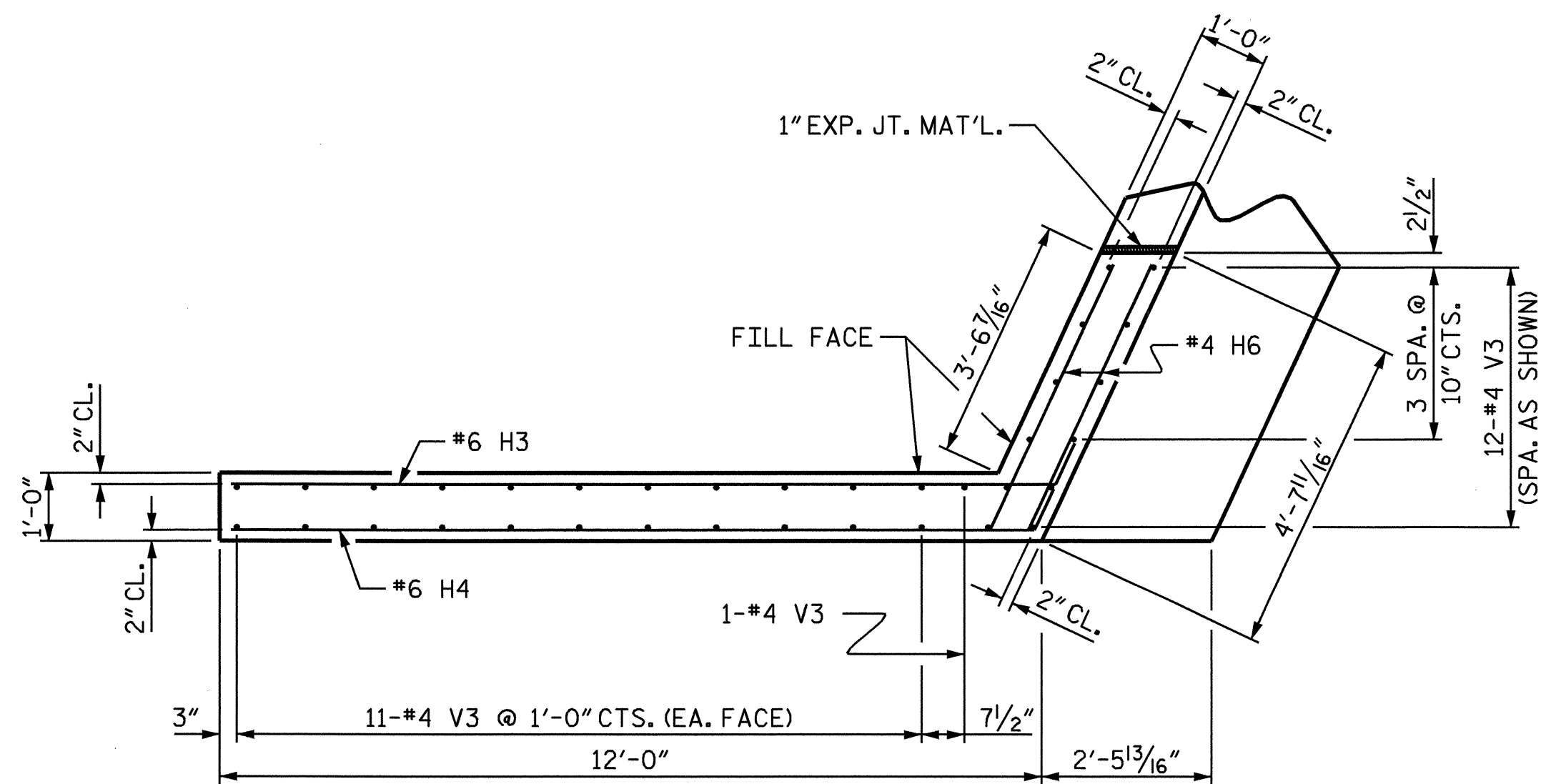
SHEET 1 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 1					
SHEET NO. S-27					
TOTAL SHEETS 42					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

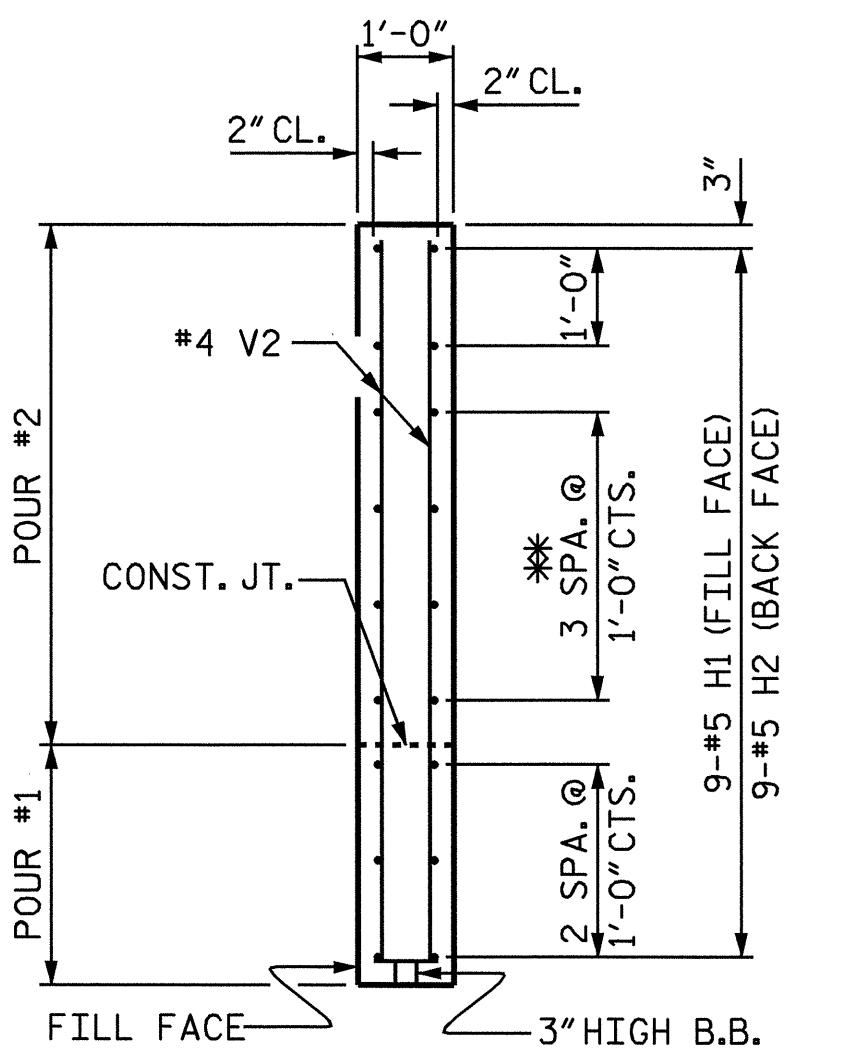
DRAWN BY: E.C. LOCKLEAR DATE: 12-28-06
 CHECKED BY: A.S. CALLAWAY DATE: 12-29-06



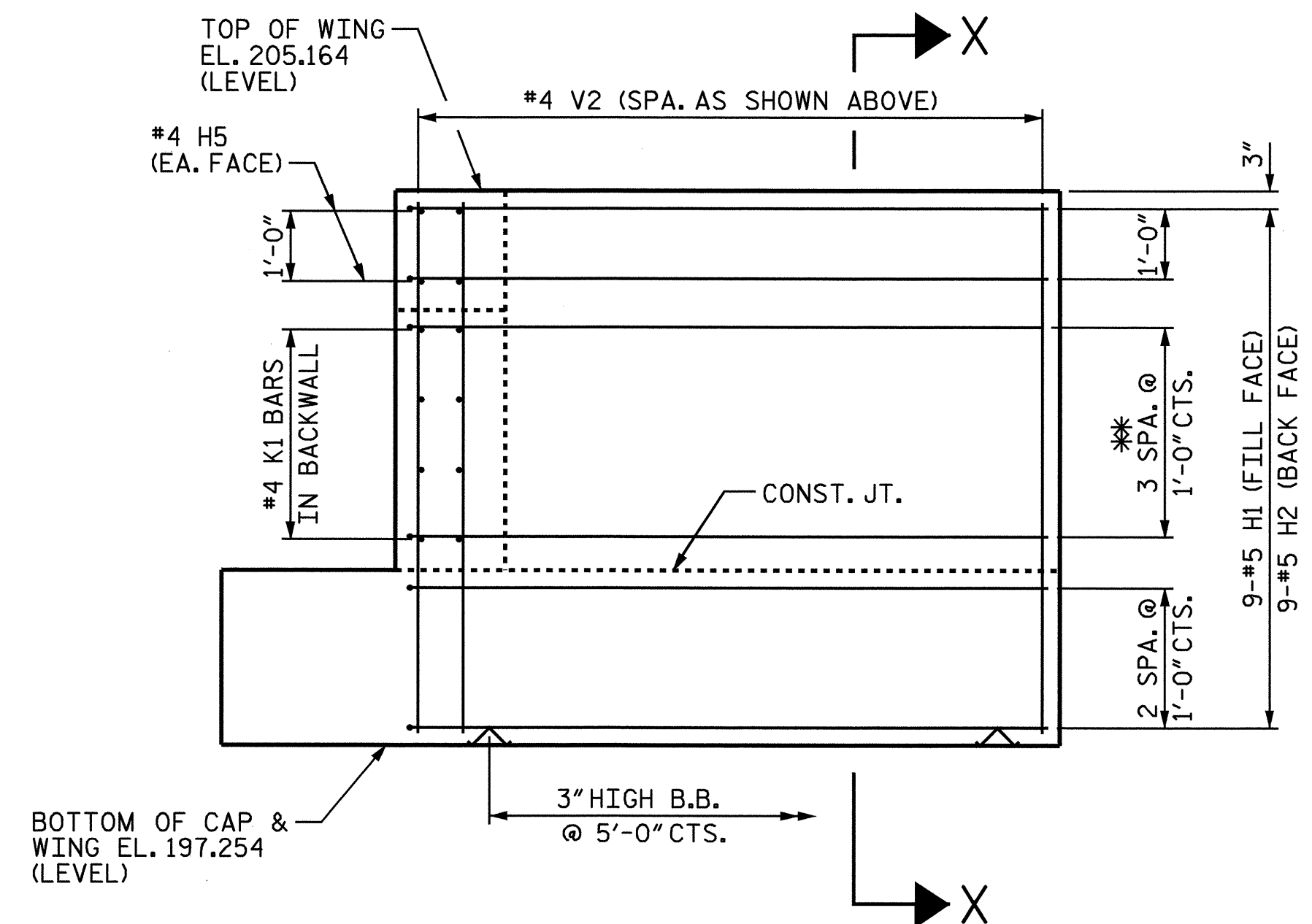
PLAN OF WING (W1)



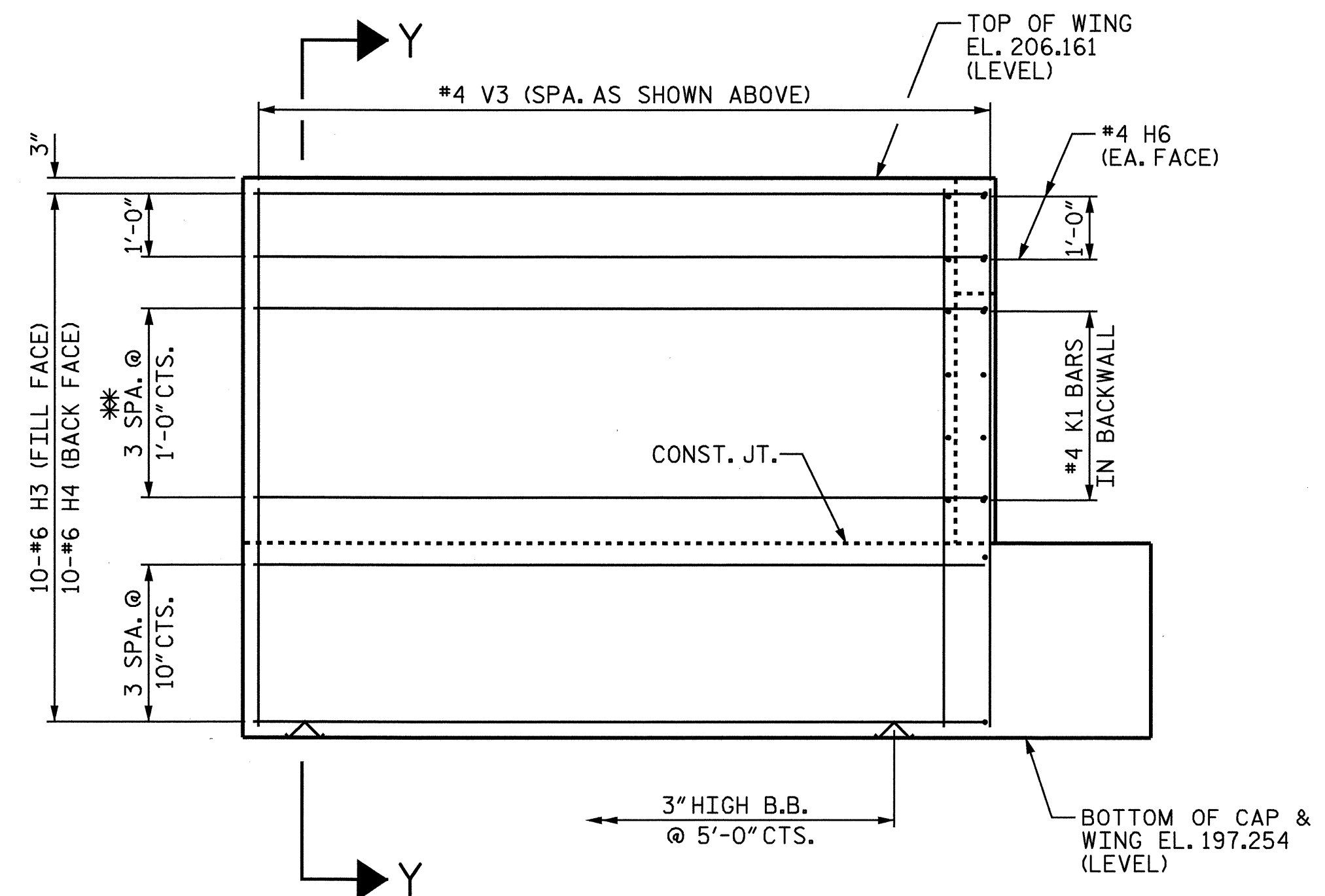
PLAN OF WING (W2)



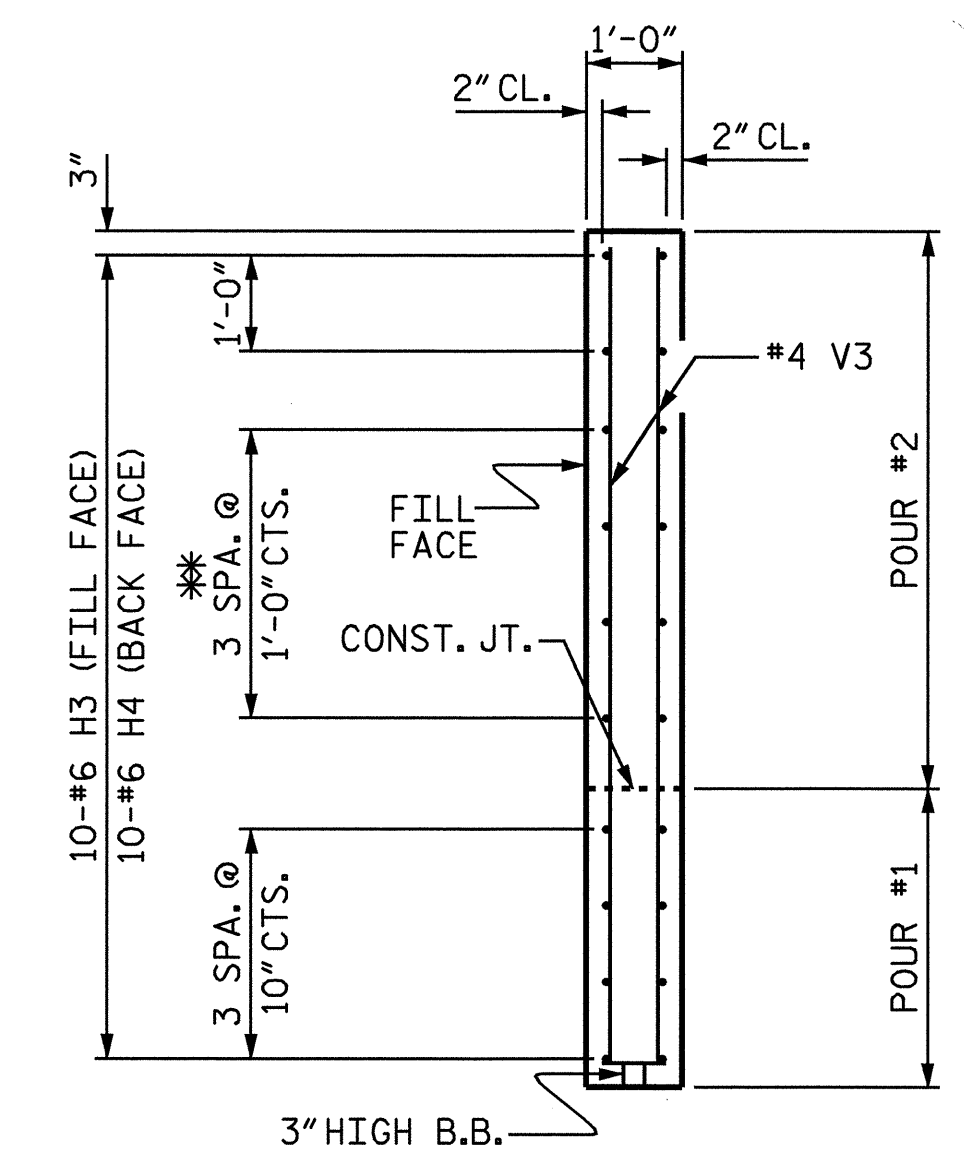
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

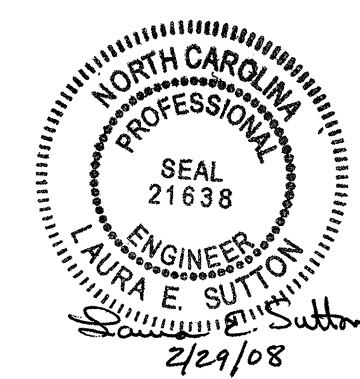


SECTION Y-Y

PROJECT NO. B-3705
 WAKE COUNTY
 STATION: 26+50.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 1

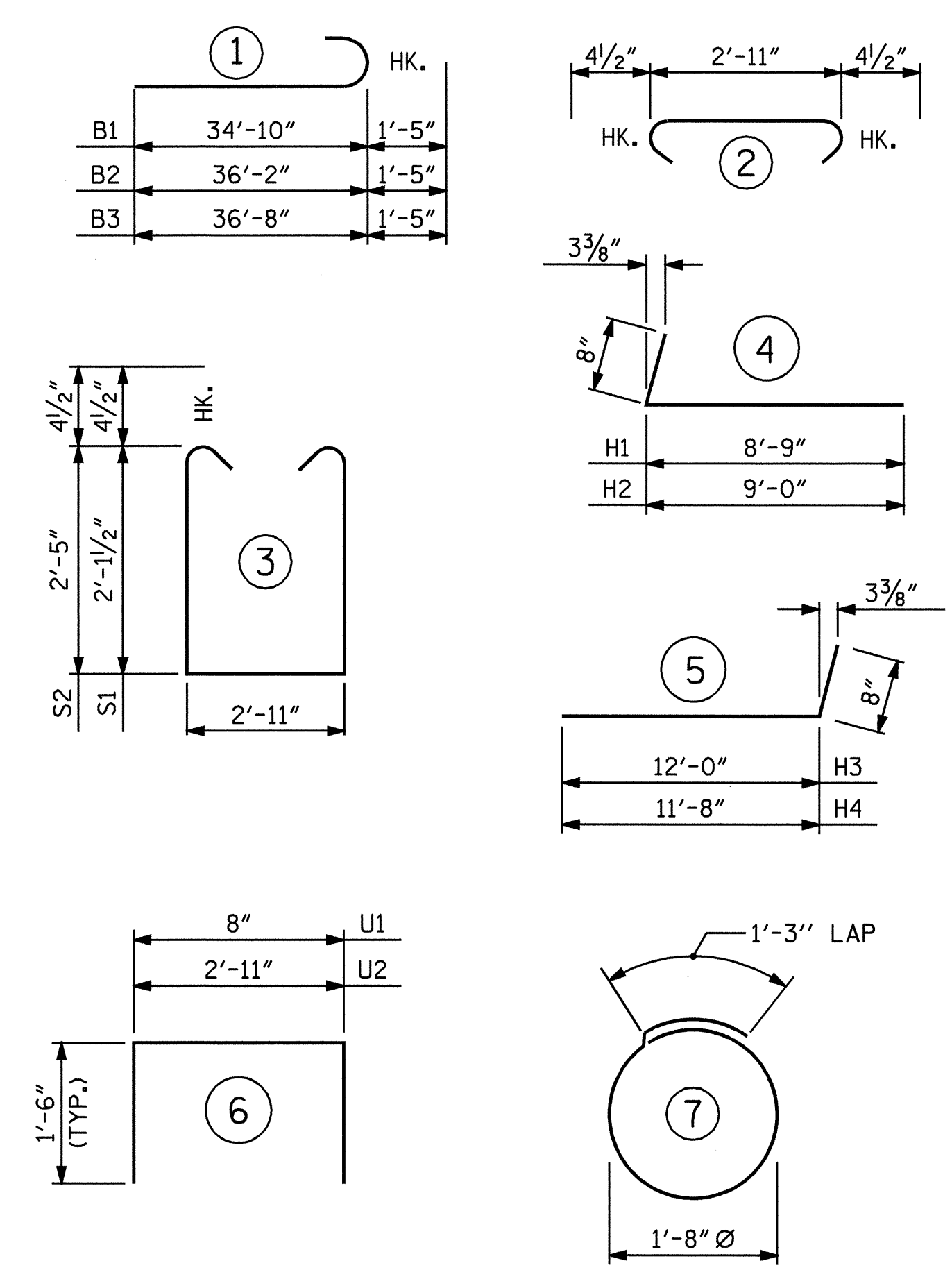


DRAWN BY: E.C. LOCKLEAR DATE: 12-28-06
 CHECKED BY: A.S. CALLAWAY DATE: 12-29-06

24-OCT-2007 16:09
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 LSUTTON

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28	
1			3			TOTAL SHEETS	
2			4			42	

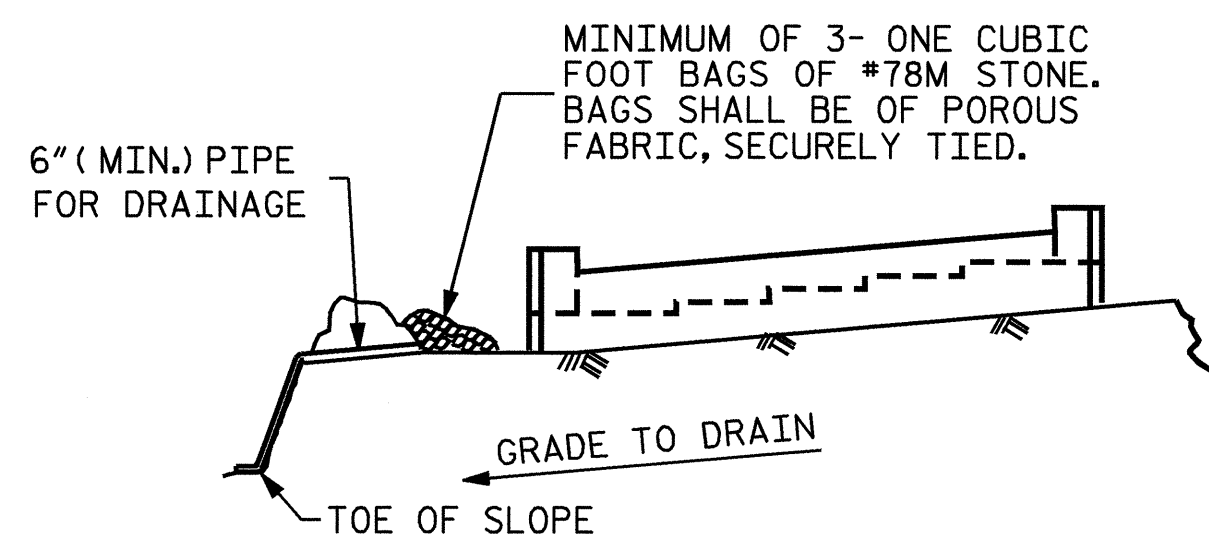
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10	1	36'-3"	1248
B2	4	#10	1	37'-7"	647
B3	4	#10	1	38'-1"	655
B4	4	#5	STR	32'-6"	136
B5	12	#4	STR	22'-3"	178
B6	19	#4	STR	2'-11"	37
B7	4	#4	STR	2'-9"	7
B8	4	#4	STR	17'-5"	47
H1	9	#5	4	9'-5"	88
H2	9	#5	4	9'-8"	91
H3	10	#6	5	12'-8"	190
H4	10	#6	5	12'-4"	185
H5	4	#4	STR	3'-10"	10
H6	4	#4	STR	4'-3"	11
K1	24	#4	STR	22'-3"	357
S1	23	#4	3	7'-11"	122
S2	35	#4	3	8'-6"	199
S3	58	#4	2	3'-8"	142
S4	18	#4	7	6'-6"	78
U1	54	#4	6	3'-8"	132
U2	15	#4	6	5'-11"	59
V1	108	#5	STR	5'-9"	648
V2	29	#4	STR	7'-5"	144
V3	35	#4	STR	8'-5"	197
REINFORCING STEEL				LBS.	5,608
CLASS A CONCRETE BREAKDOWN :					
POUR #1 - CAP & LOWER WINGS				CU. YDS.	23.6
POUR #2 - BACKWALL & UPPER WINGS				CU. YDS.	13.4
TOTAL				CU. YDS.	37.0
HP 12 x 53 STEEL PILES				NO. = 9	LIN. FT. 225

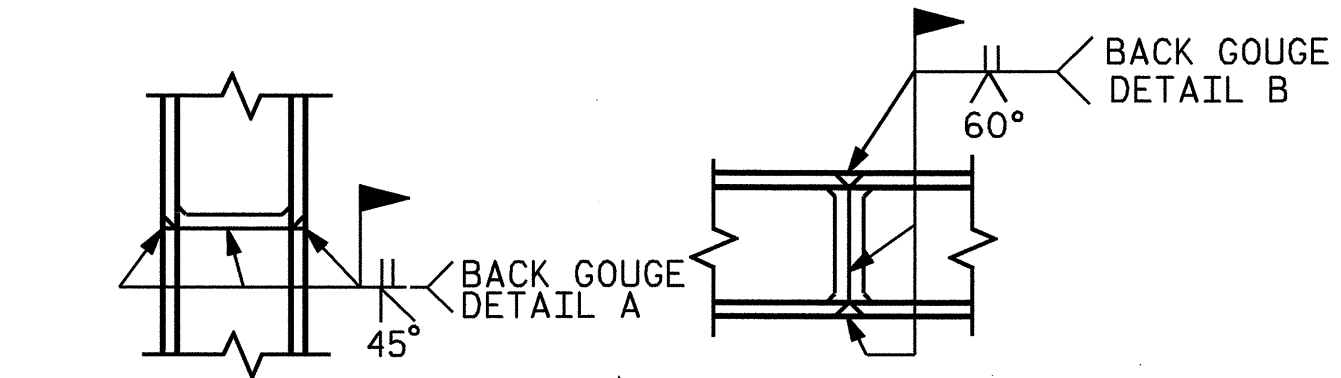


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

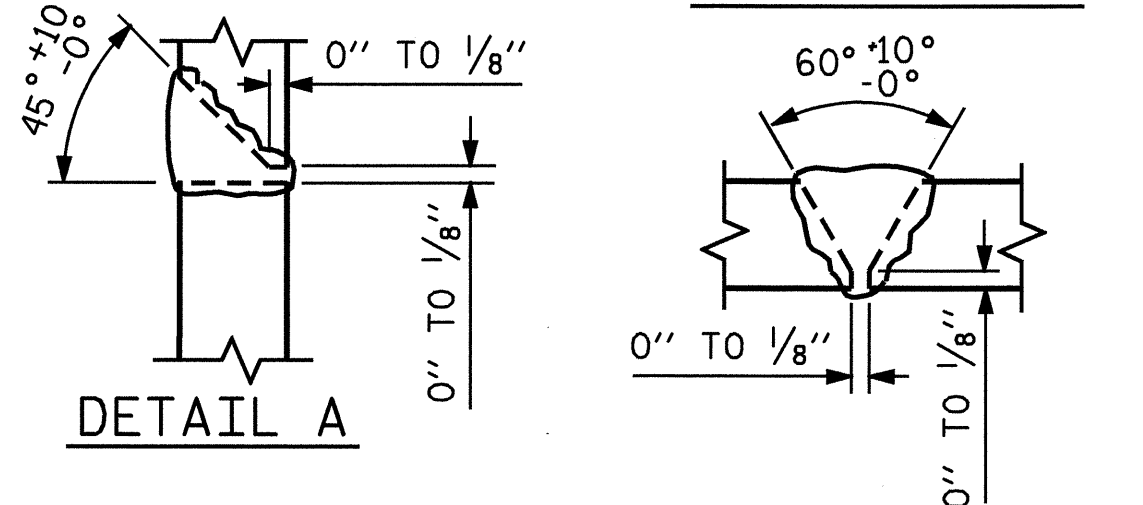
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

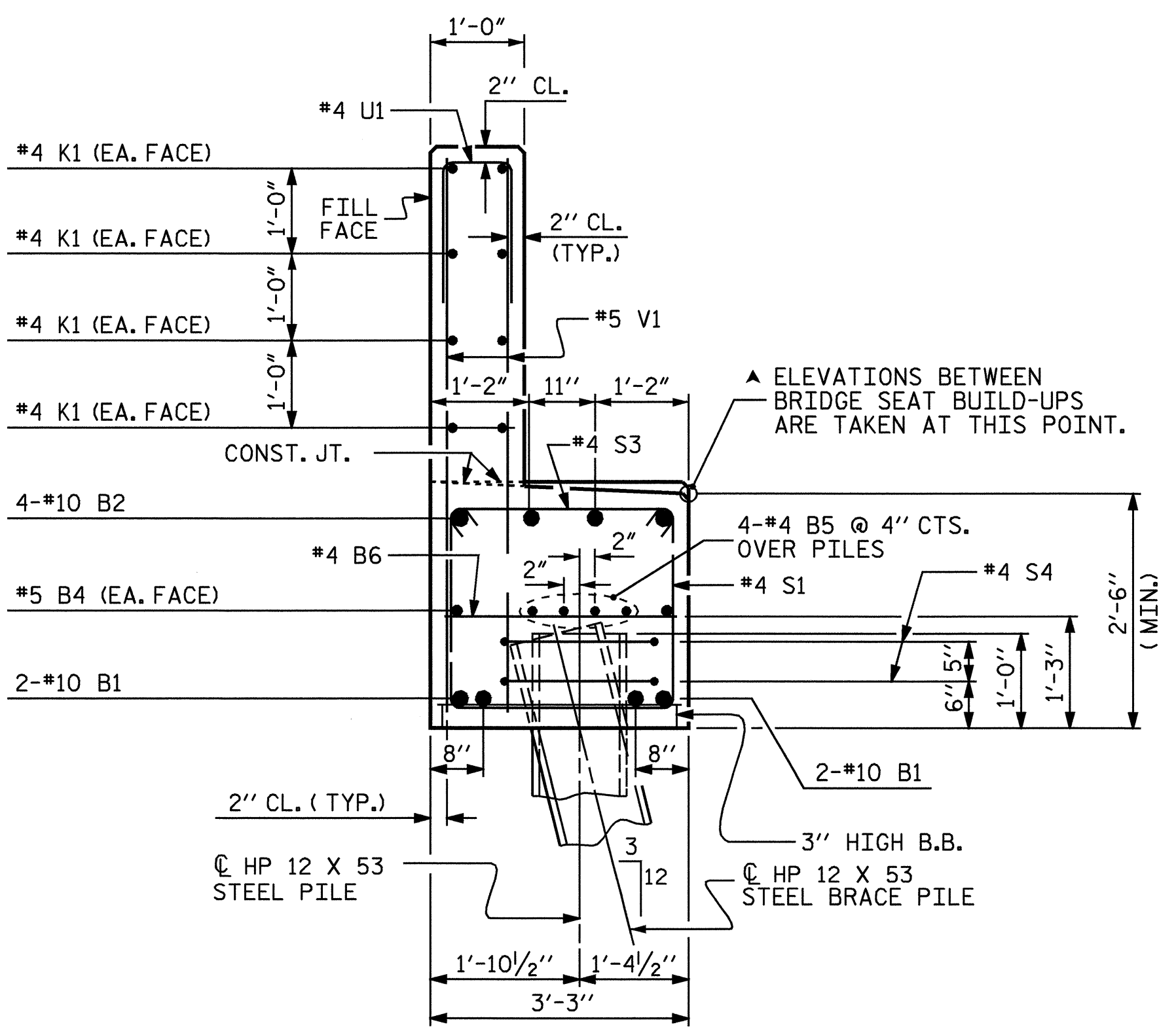


*PILE VERTICAL *PILE HORIZONTAL OR VERTICAL

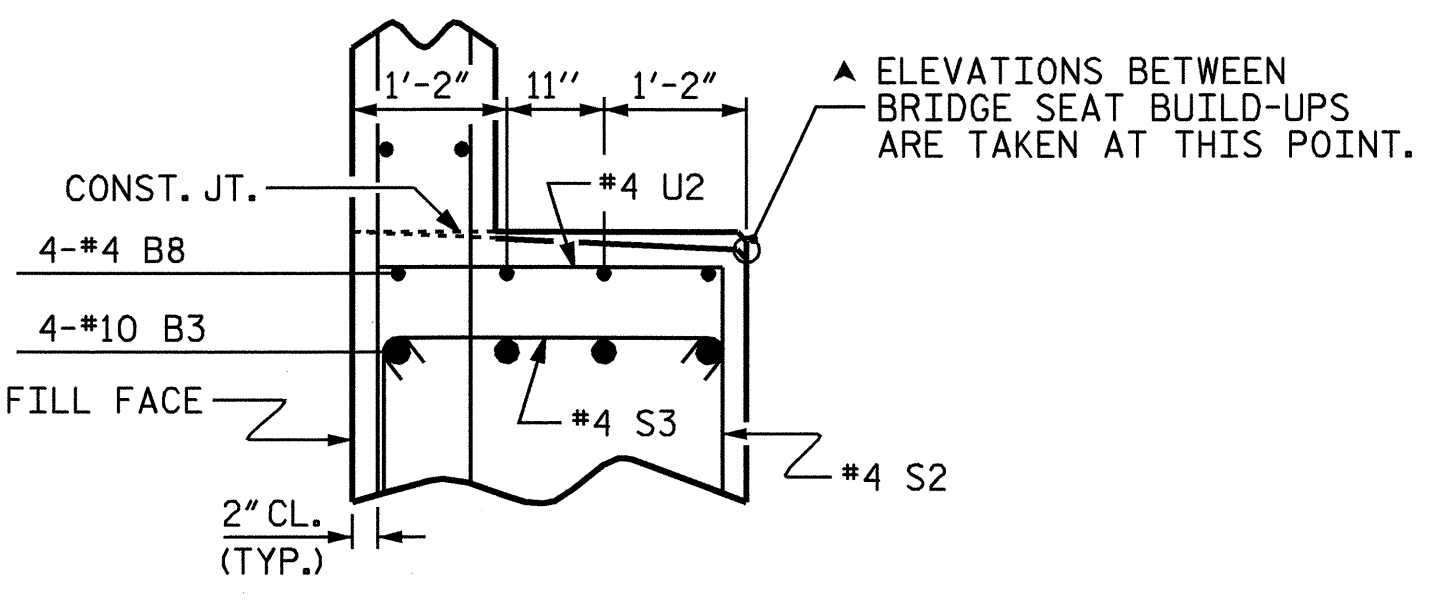


* POSITION OF PILE DURING WELDING. DETAIL B

PILE SPLICE DETAILS



SECTION A-A

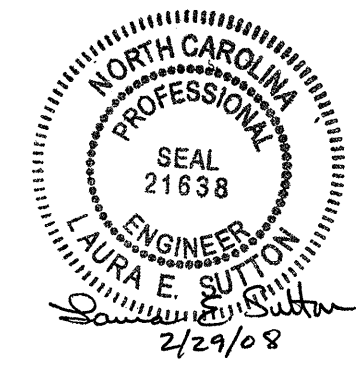


PART SECTION B-B

PROJECT NO. B-3705
 WAKE COUNTY
 STATION: 26+50.00 -L-

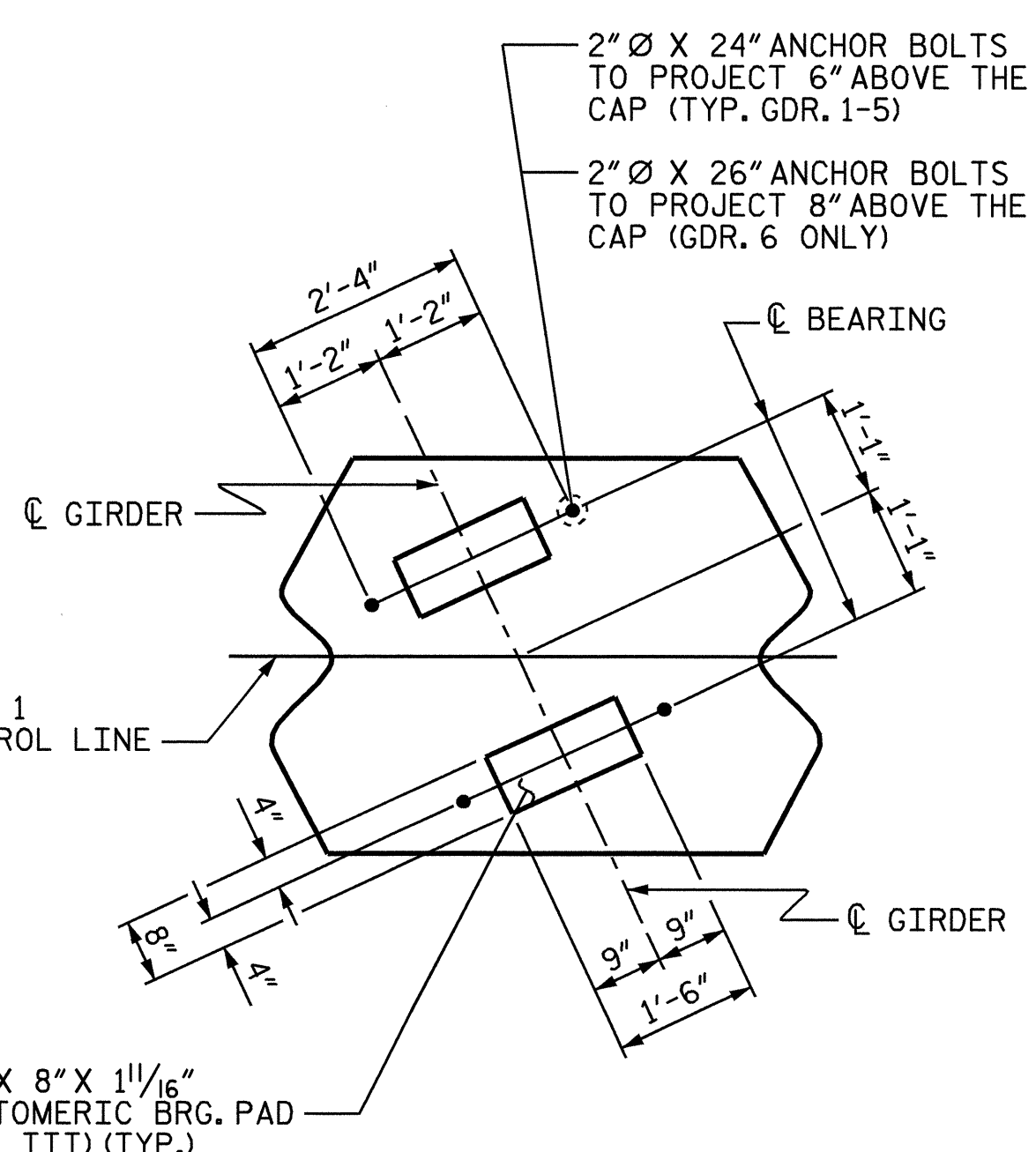
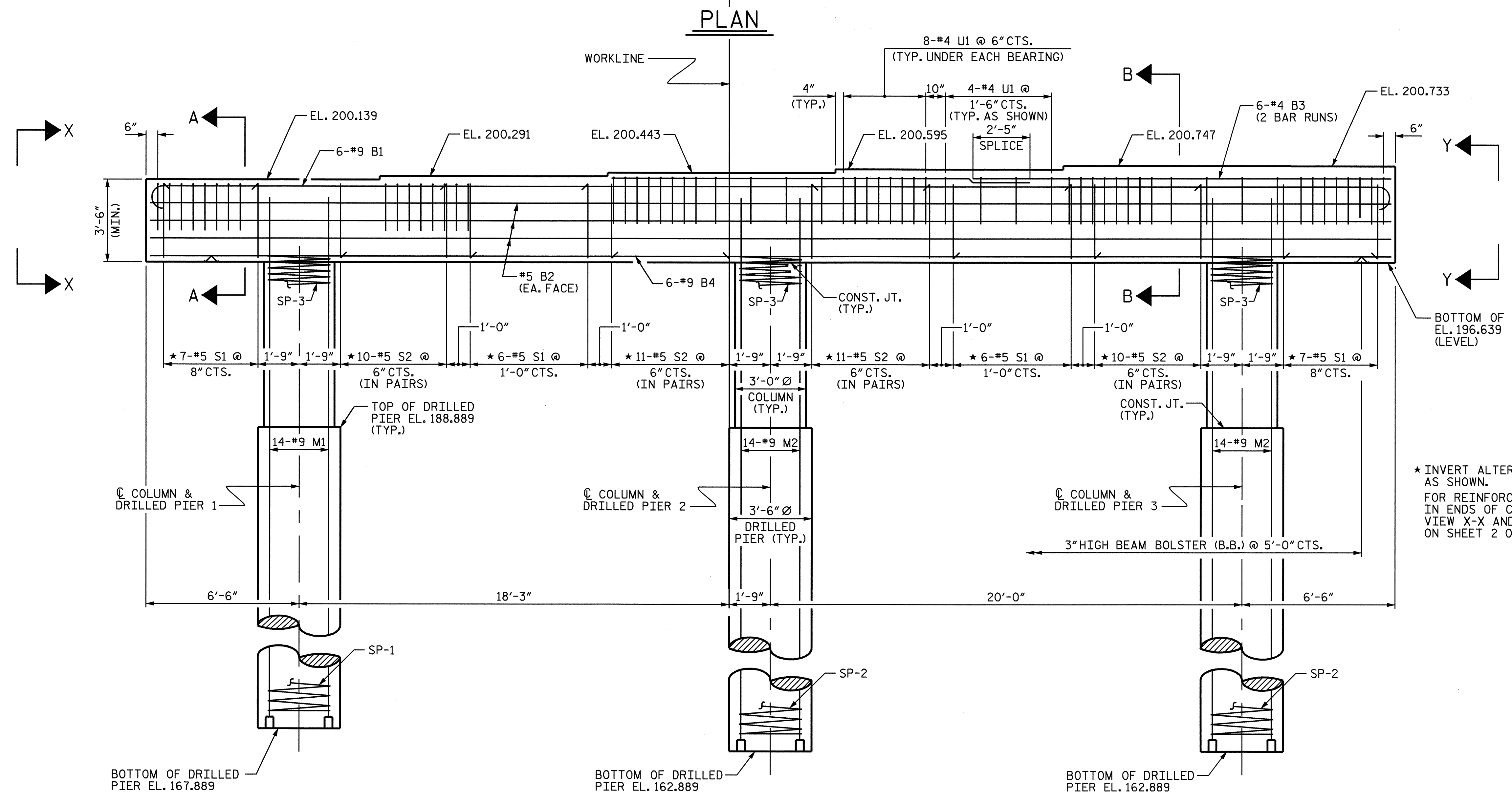
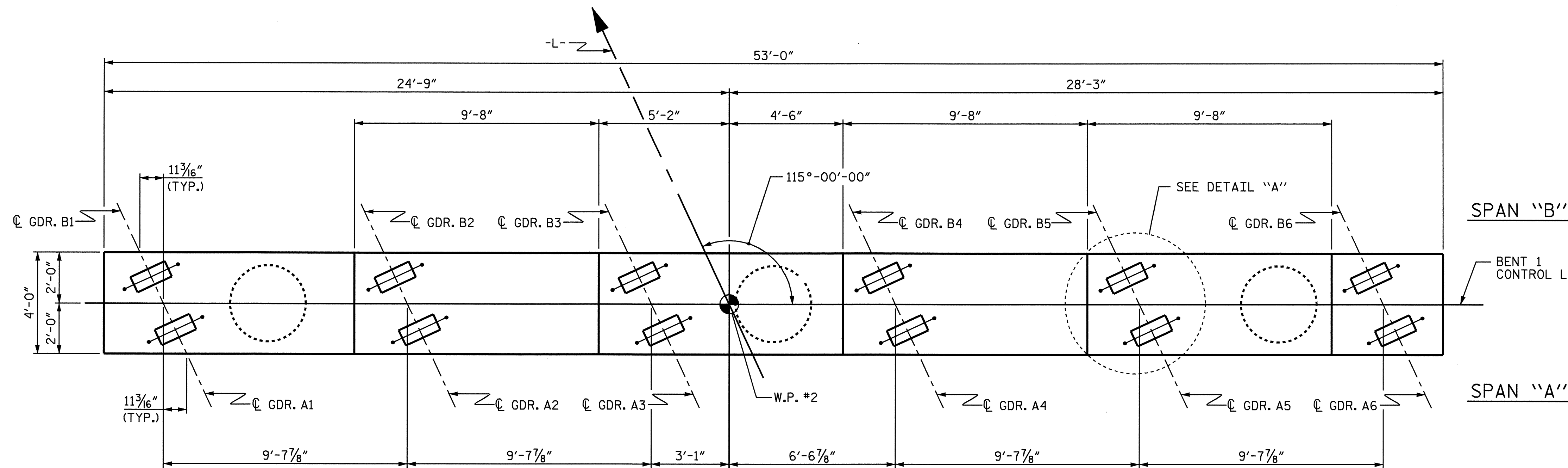
SHEET 3 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 1					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-29
					TOTAL SHEETS 42



DRAWN BY: E.C. LOCKLEAR DATE: 12-28-06
 CHECKED BY: A.S. CALLAWAY DATE: 12-29-06

NOTES:
 STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".
 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'-0" BELOW THE GROUND LINE.
 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.
 FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.
 FOR PERMANENT STEEL CASING, SEE SPECIAL PROVISION FOR DRILLED PIERS.



* INVERT ALTERNATE STIRRUPS AS SHOWN.
 FOR REINFORCING STEEL IN ENDS OF CAP, SEE VIEW X-X AND VIEW Y-Y ON SHEET 2 OF 2.

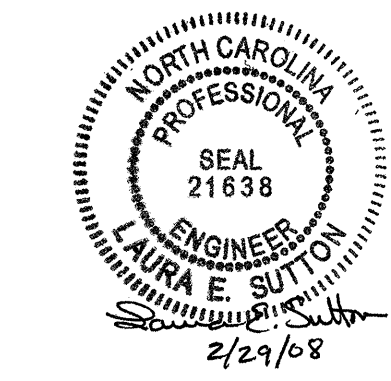
PROJECT NO. B-3705
 WAKE COUNTY
 STATION: 26+50.00 -L-

SHEET 1 OF 2

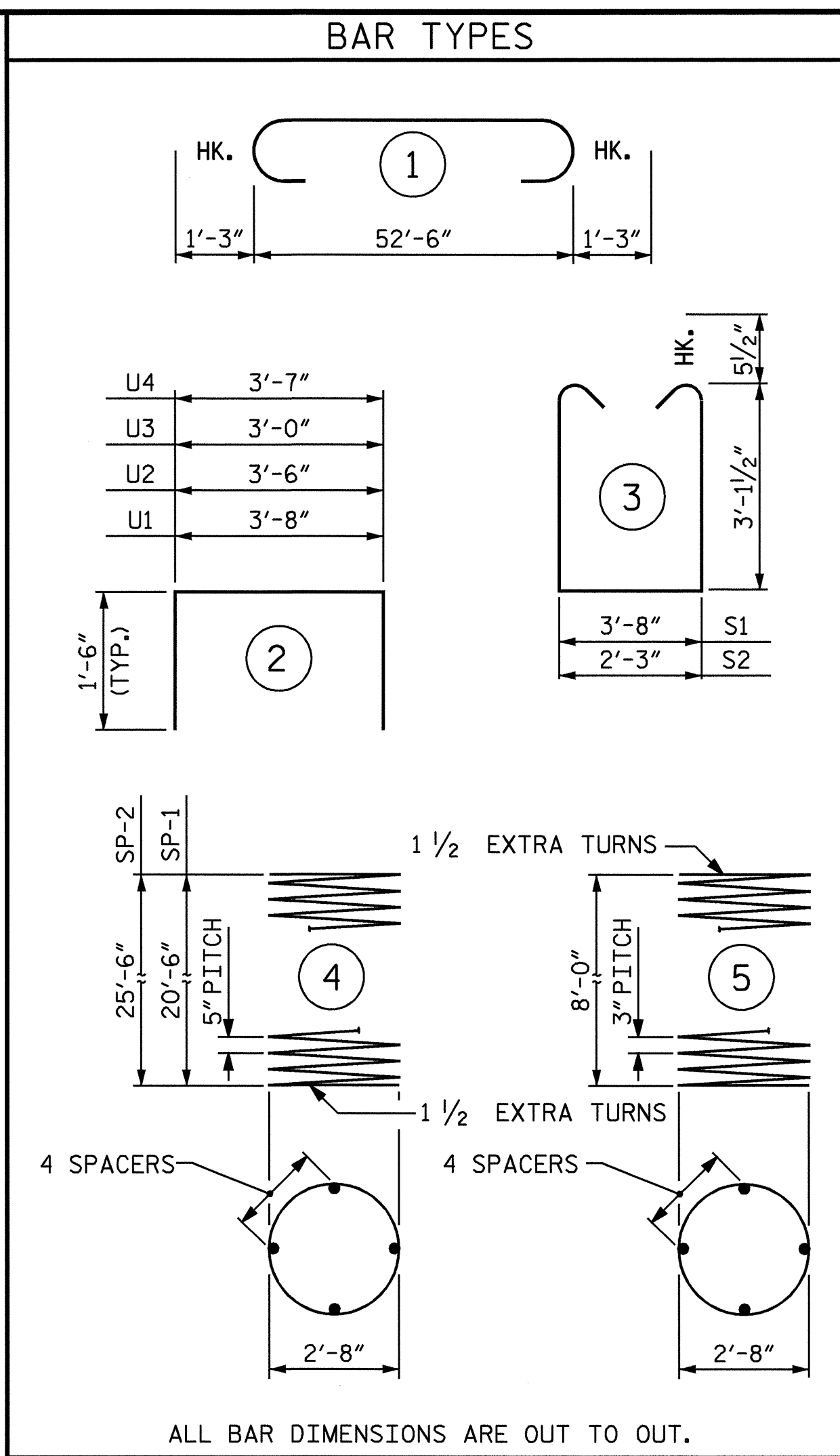
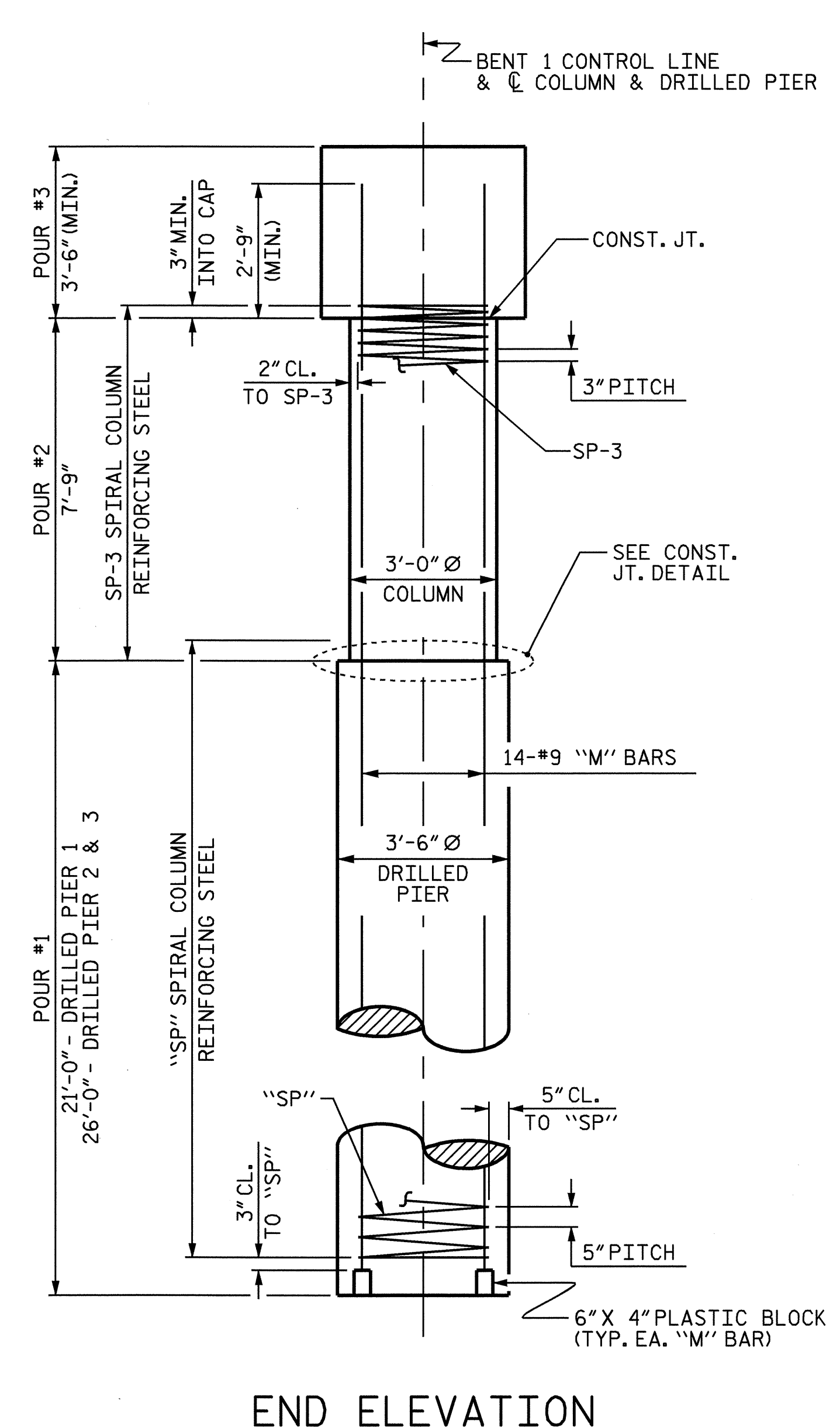
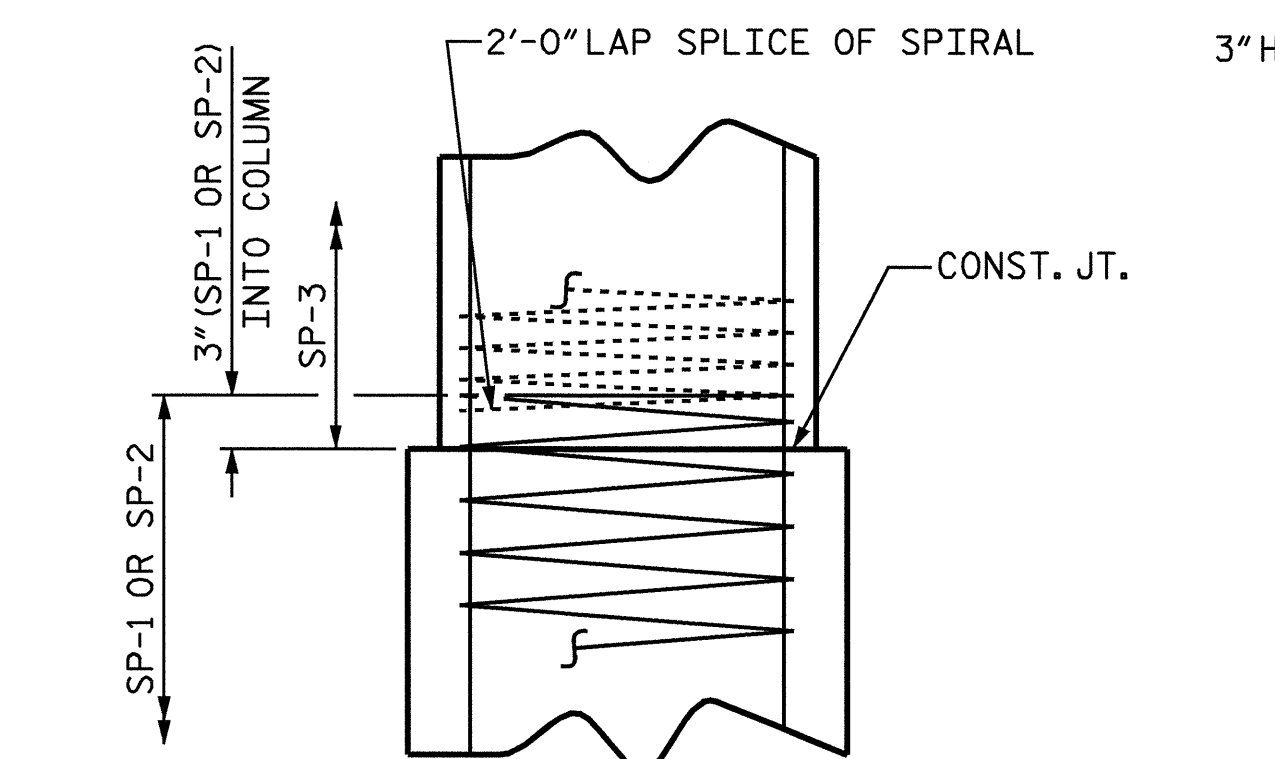
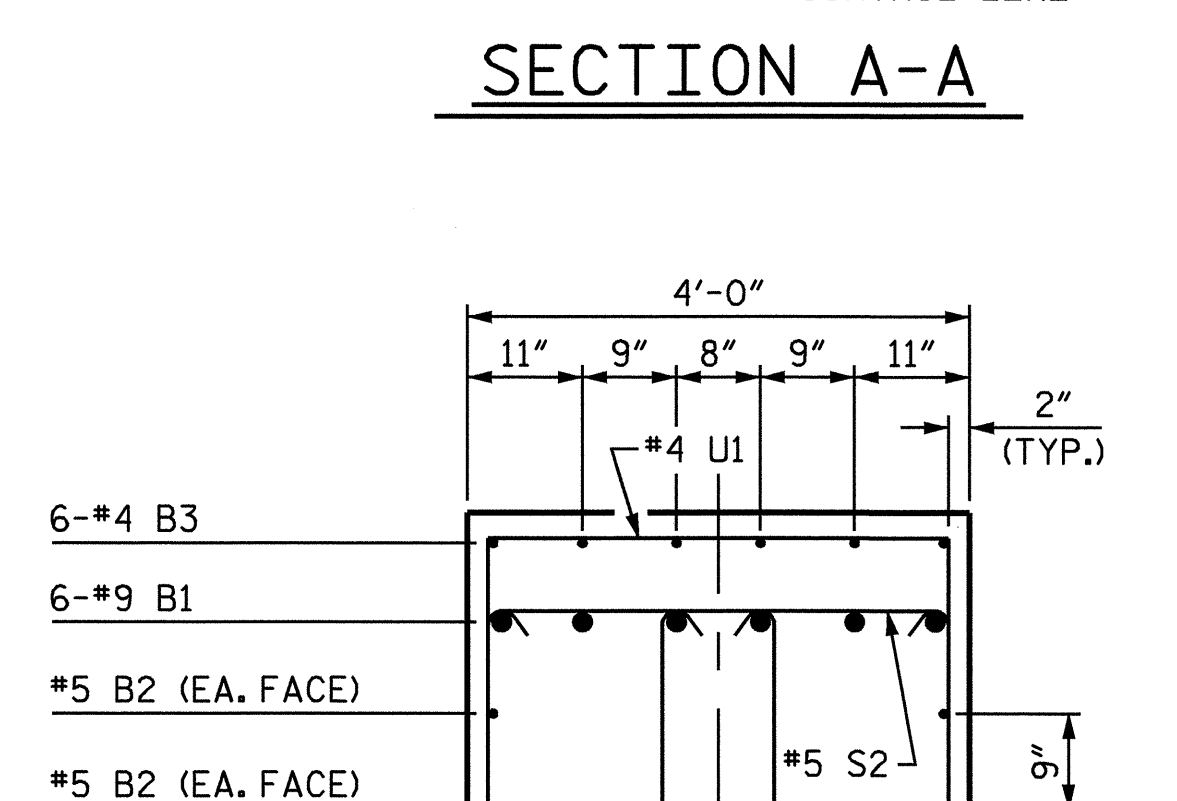
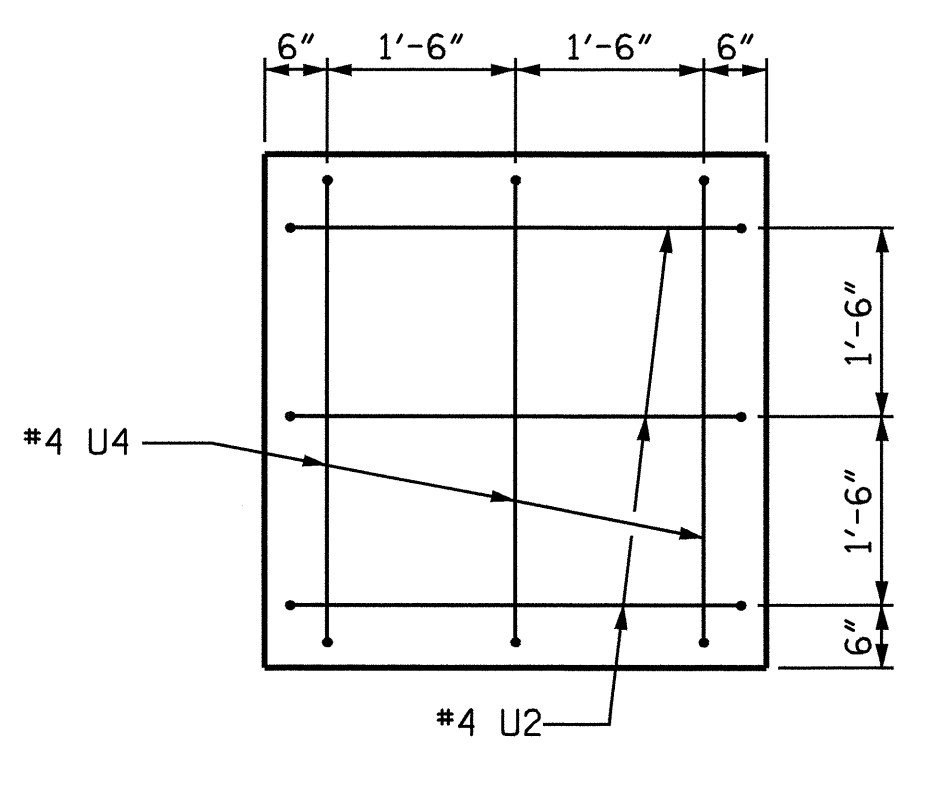
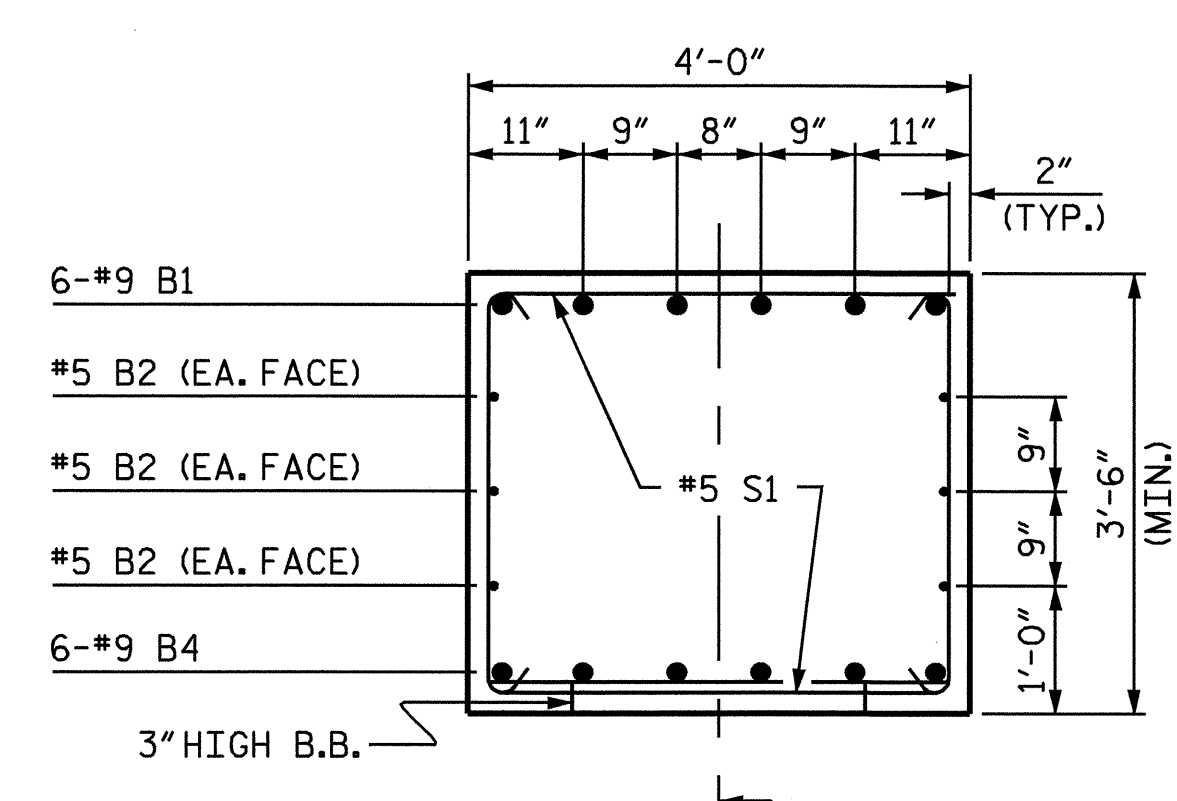
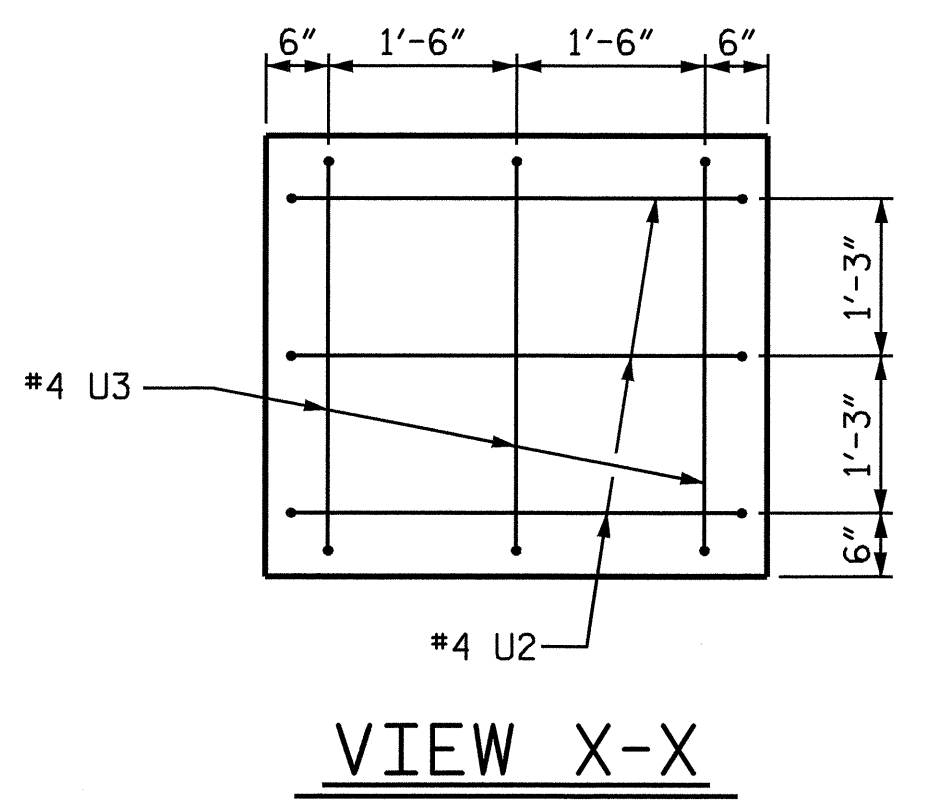
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1			3			TOTAL SHEETS
2			4			42



DRAWN BY: E.C. LOCKLEAR DATE: 1-2-07
 CHECKED BY: A.S. CALLAWAY DATE: 3-21-07



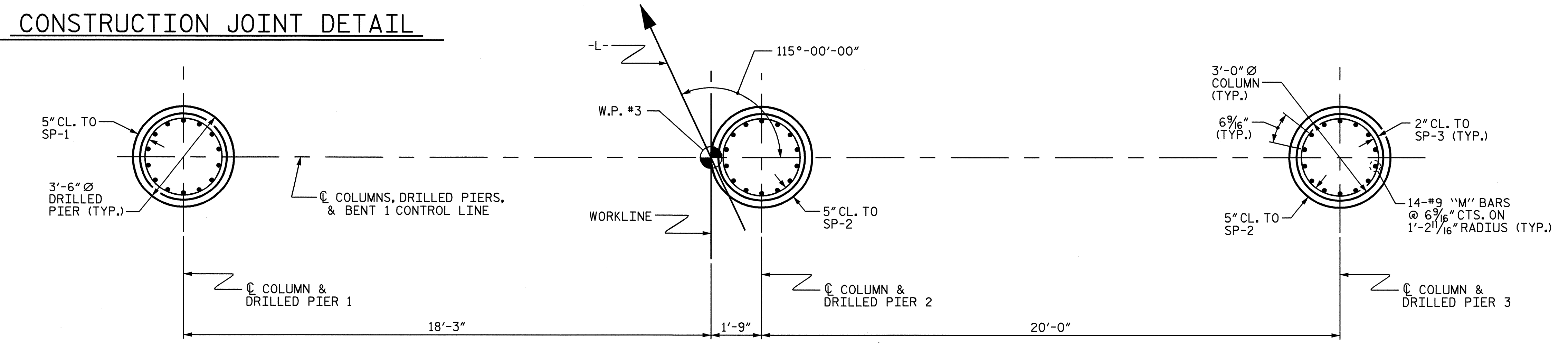
BILL OF MATERIAL					
BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#9		55'-0"	1122
B2	6	#5	STR	52'-8"	330
B3	12	#4	STR	17'-9"	142
B4	6	#9	STR	52'-8"	1074
M1	14	#9	STR	34'-0"	1618
M2	28	#9	STR	39'-0"	3713
S1	26	#5	3	10'-10"	294
S2	84	#5	3	9'-5"	825
U1	60	#4	2	6'-8"	267
U2	6	#4	2	6'-6"	26
U3	3	#4	2	6'-0"	12
U4	3	#4	2	6'-7"	13
REINFORCING STEEL				LBS.	9,436
SP-1	1	*	4	419'-6"	438
SP-2	2	*	4	518'-2"	1081
SP-3	3	**	5	280'-7"	562
SPIRAL COLUMN REINFORCING STEEL				LBS.	2,081
CLASS A CONCRETE					
POUR #2 - COLUMNS				CU. YDS.	6.1
POUR #3 - CAP				CU. YDS.	30.0
TOTAL				CU. YDS.	36.1
DRILLED PIER QUANTITIES:					
DRILLED PIER CONCRETE					
POUR #1 - DRILLED PIERS IN SOIL				CU. YDS.	26.0
3'-6" Ø DRILLED PIERS				LIN. FT.	57.00
3'-6" Ø DRILLED PIERS NOT IN SOIL				LIN. FT.	16.00
PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIERS				LIN. FT.	26.67
SPT TESTING				EACH	3
CSL TUBES				LIN. FT.	322.00

CONSTRUCTION JOINT DETAIL

END ELEVATION

ALL BAR DIMENSIONS ARE OUT TO OUT.

* THE SP-1 & SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.
 ** THE SP-3 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.



PLAN OF COLUMNS & DRILLED PIERS

PROJECT NO. B-3705
 WAKE COUNTY
 STATION: 26+50.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

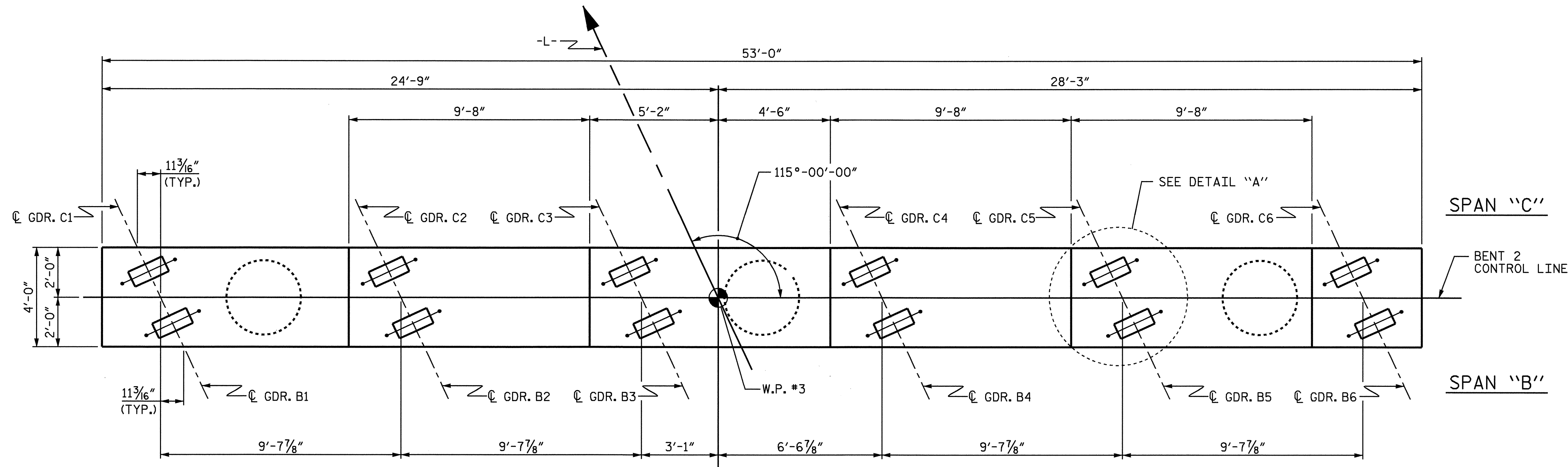
SUBSTRUCTURE
 BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-31
1			3			TOTAL SHEETS
2			4			42

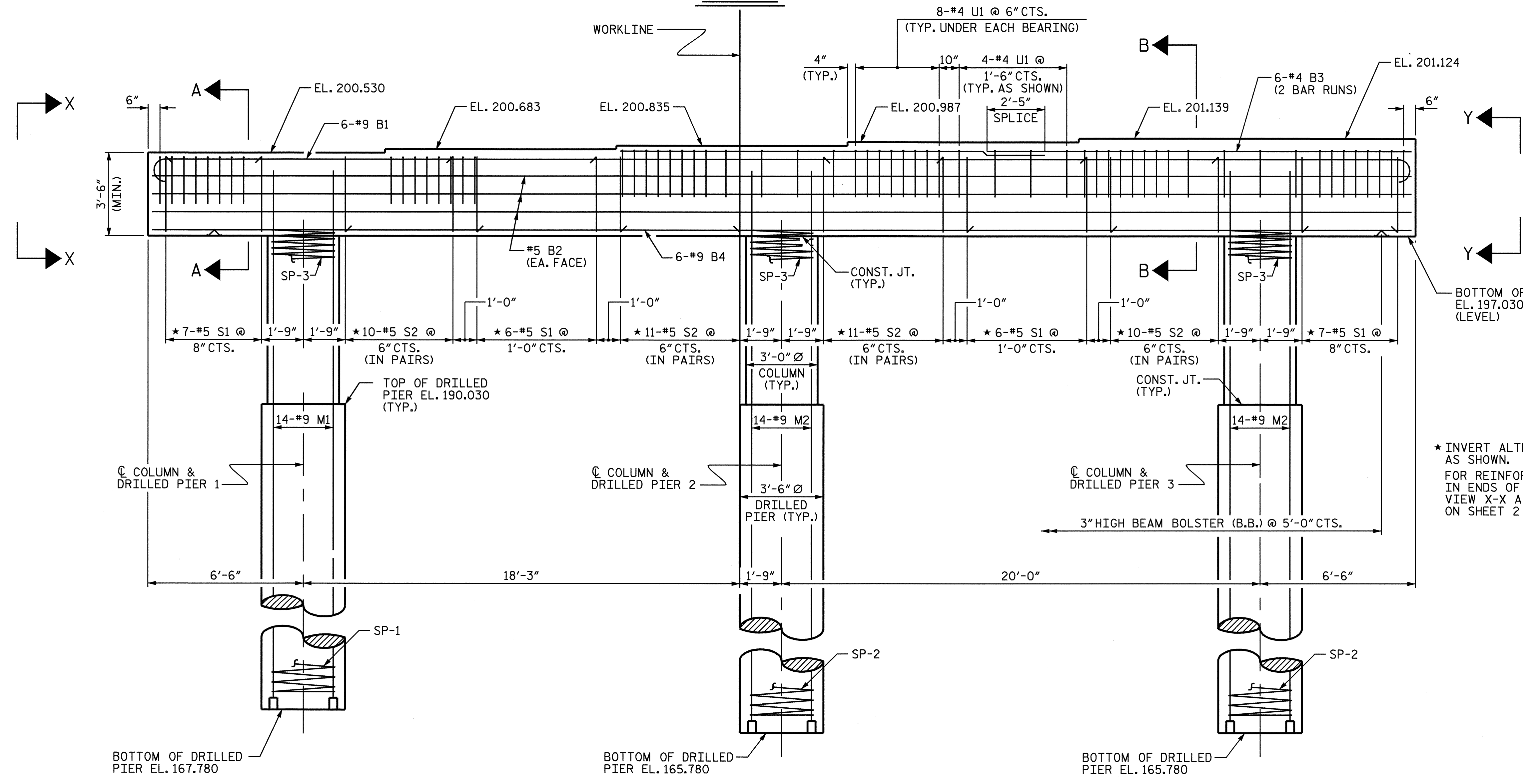
DRAWN BY: E.C. LOCKLEAR DATE: 1-2-07
 CHECKED BY: A.S. CALLAWAY DATE: 3-21-07



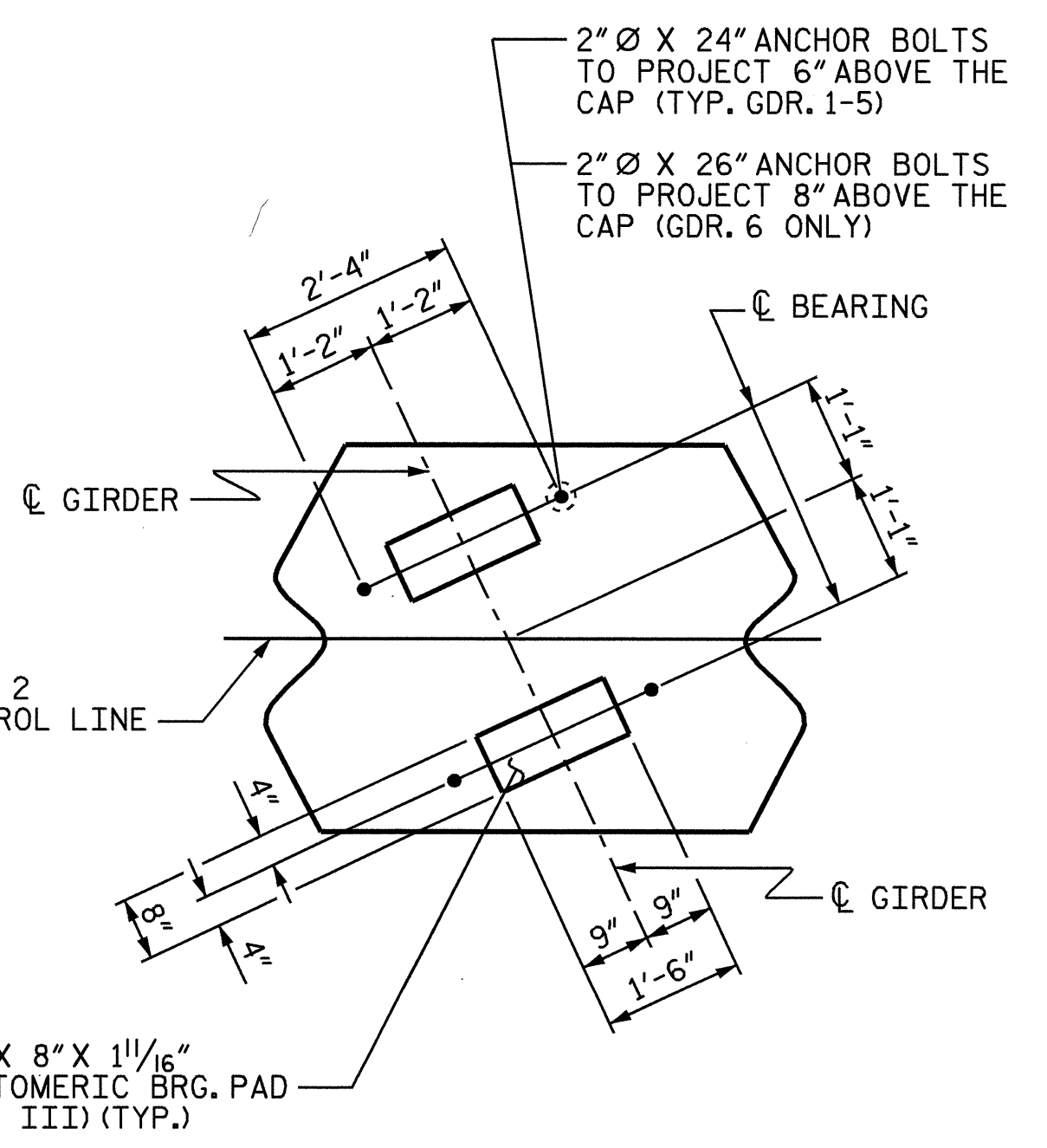
NOTES:
 STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
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 FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.
 FOR PERMANENT STEEL CASING, SEE SPECIAL PROVISION FOR DRILLED PIERS.



PLAN



ELEVATION



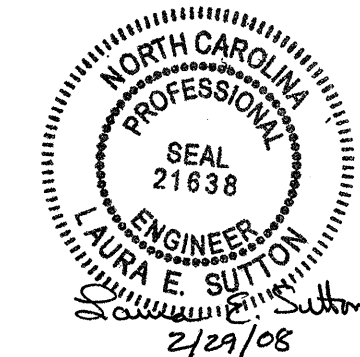
DETAIL "A"
(TYP. EA. GIRDER)

* INVERT ALTERNATE STIRRUPS AS SHOWN.
 FOR REINFORCING STEEL IN ENDS OF CAP, SEE VIEW X-X AND VIEW Y-Y ON SHEET 2 OF 2.

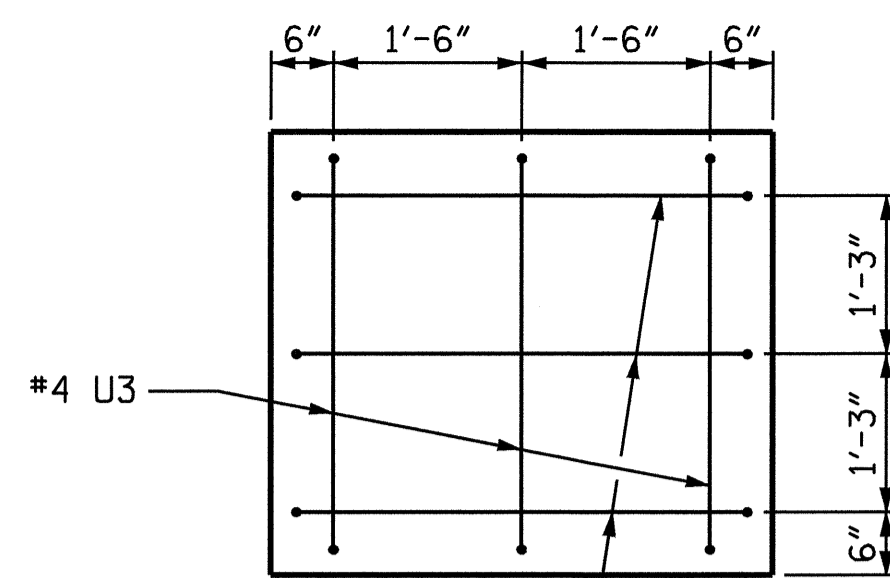
PROJECT NO. B-3705
WAKE COUNTY
 STATION: 26+50.00 -L-

SHEET 1 OF 2

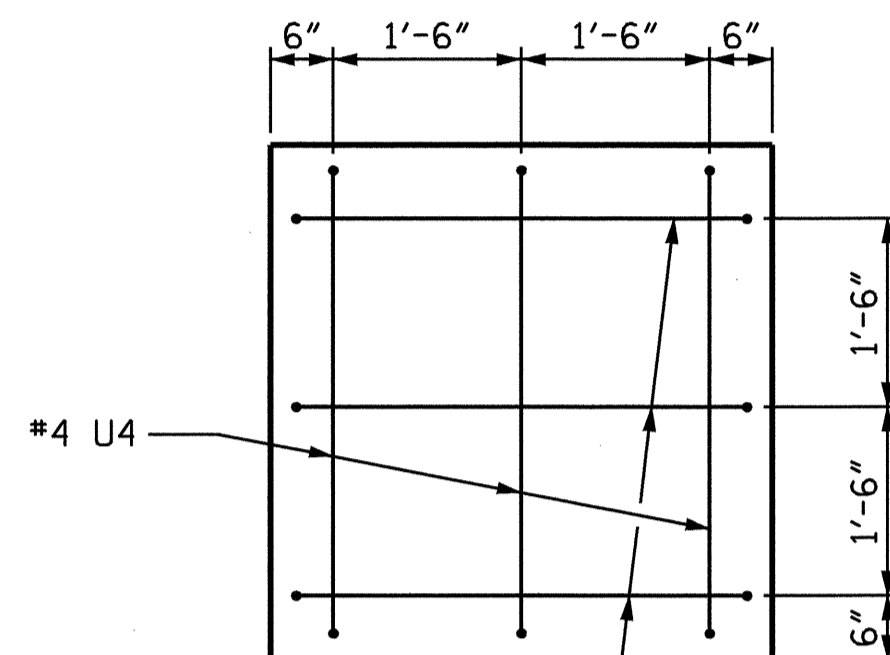
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT 2					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-32
					TOTAL SHEETS 42



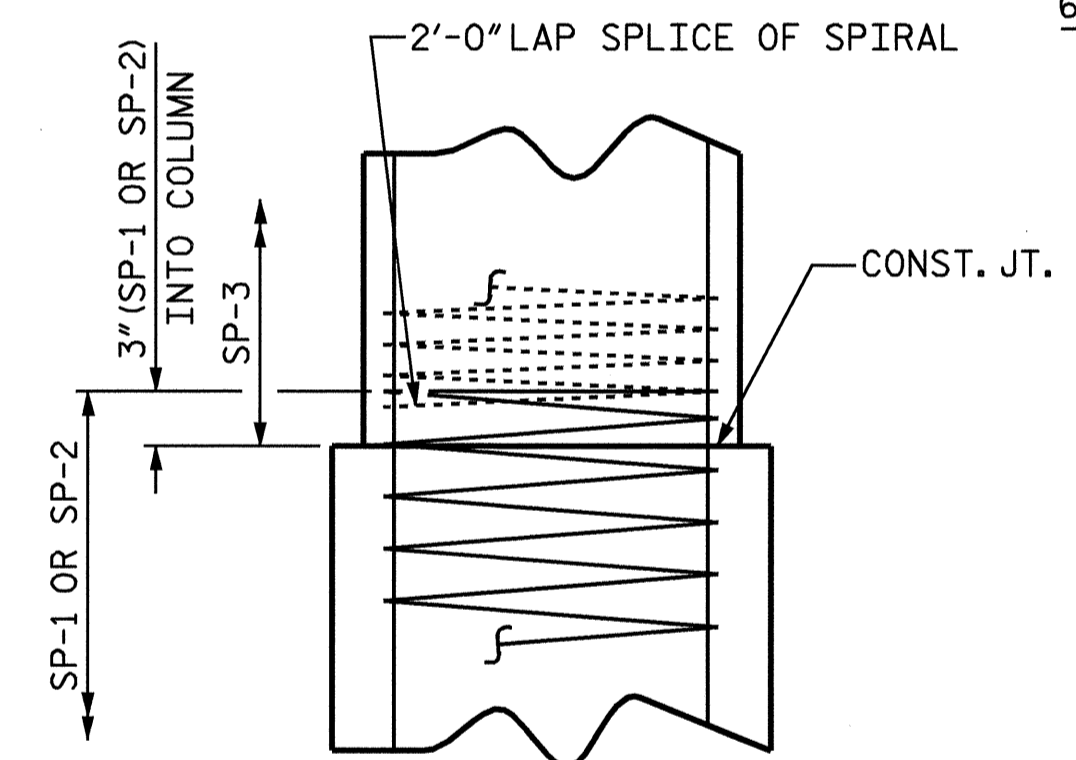
DRAWN BY: E.C. LOCKLEAR DATE: 1-2-07
 CHECKED BY: A.S. CALLAWAY DATE: 3-21-07



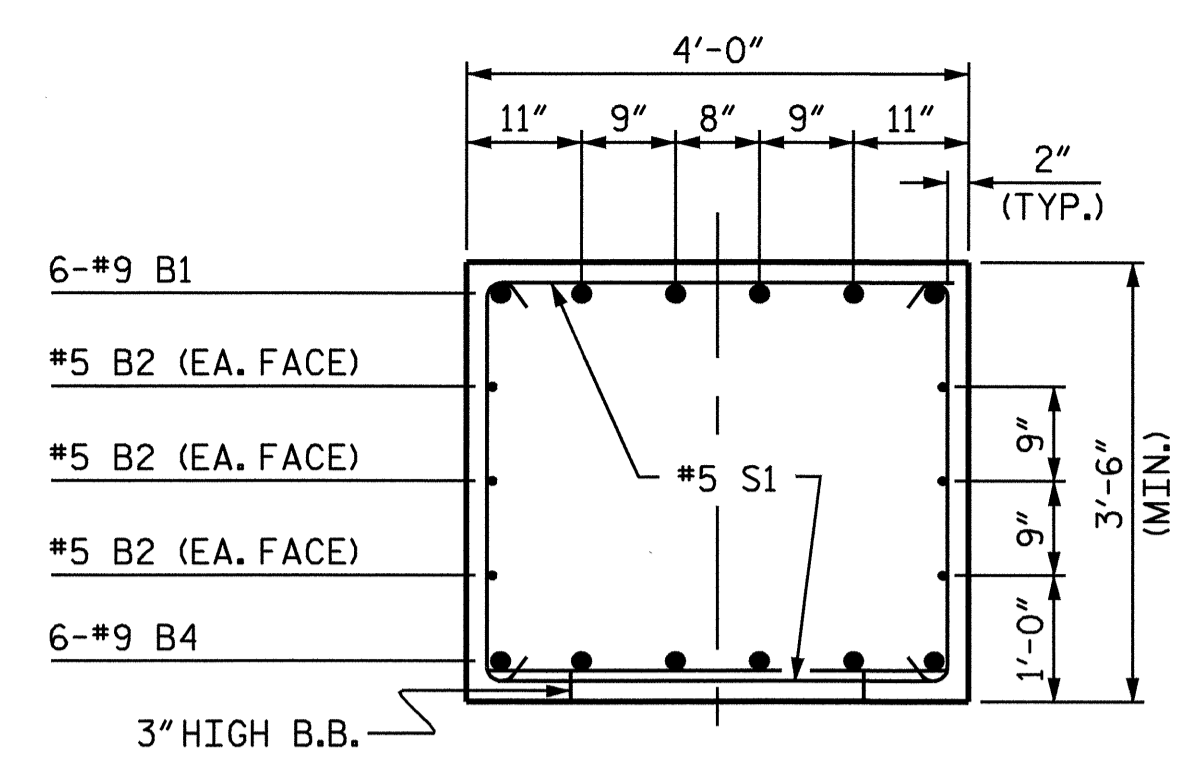
VIEW X-X



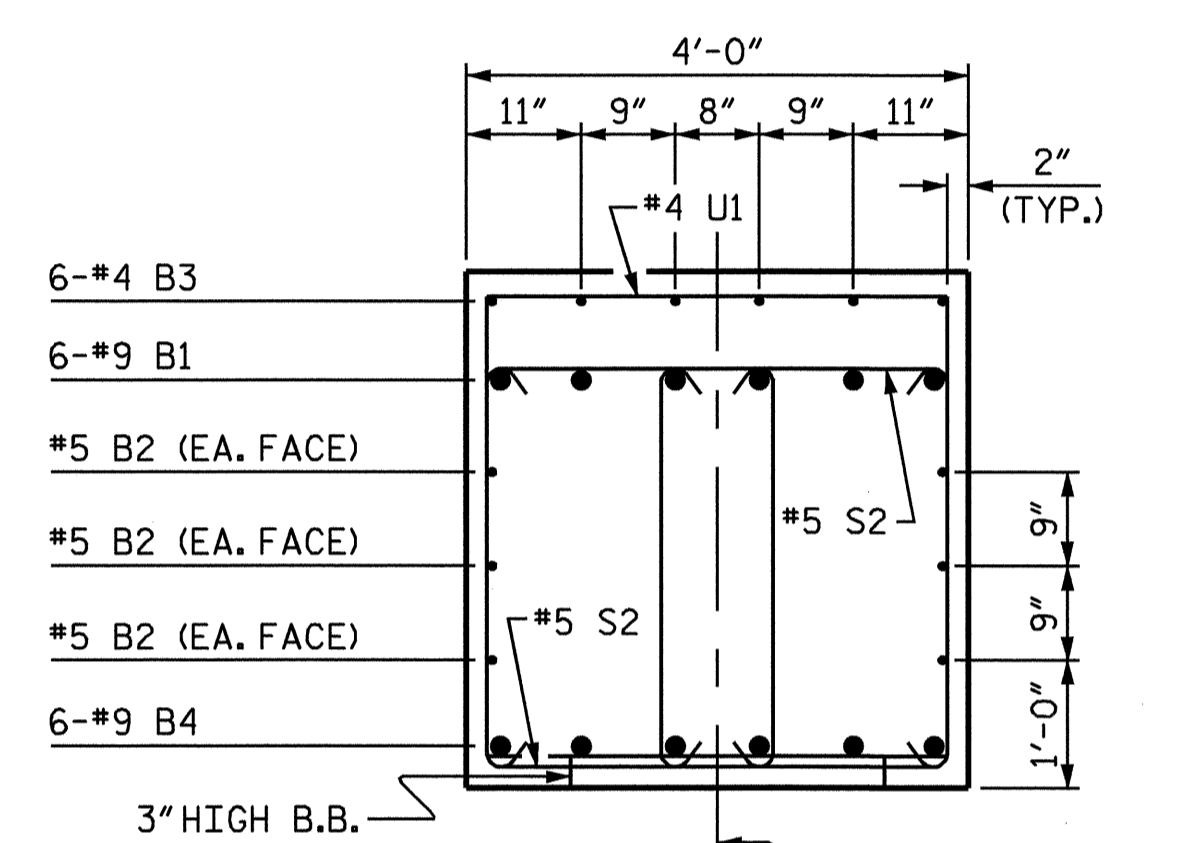
VIEW Y-Y



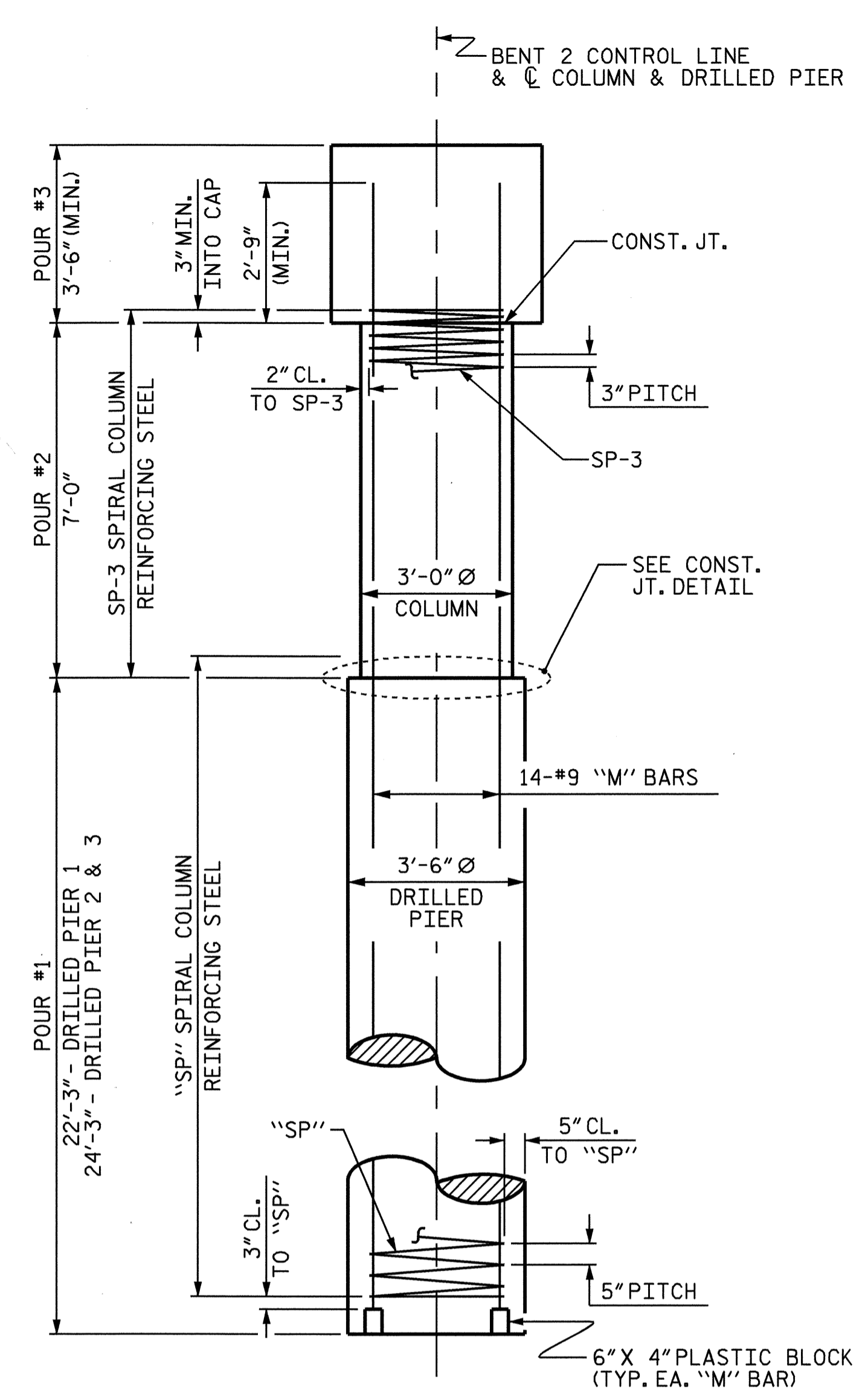
CONSTRUCTION JOINT DETAIL



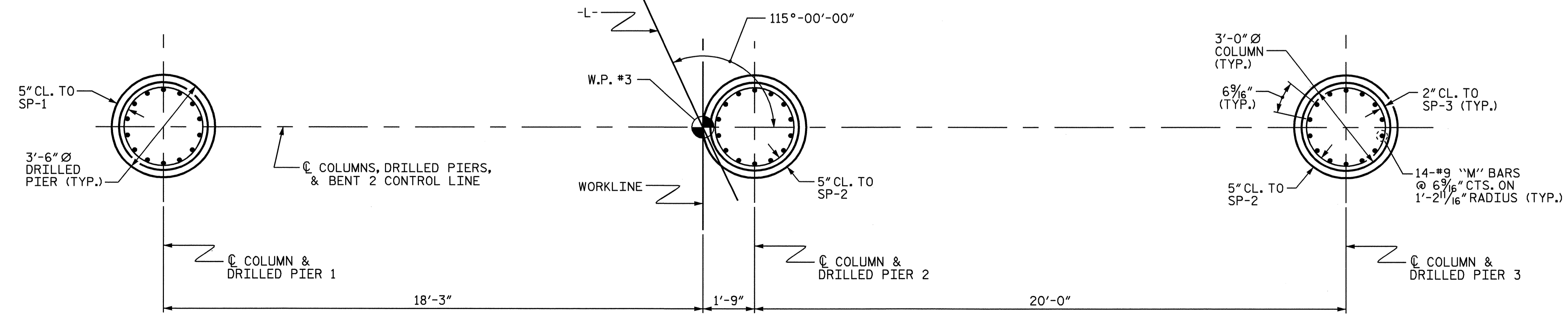
SECTION A-A



SECTION B-B



END ELEVATION

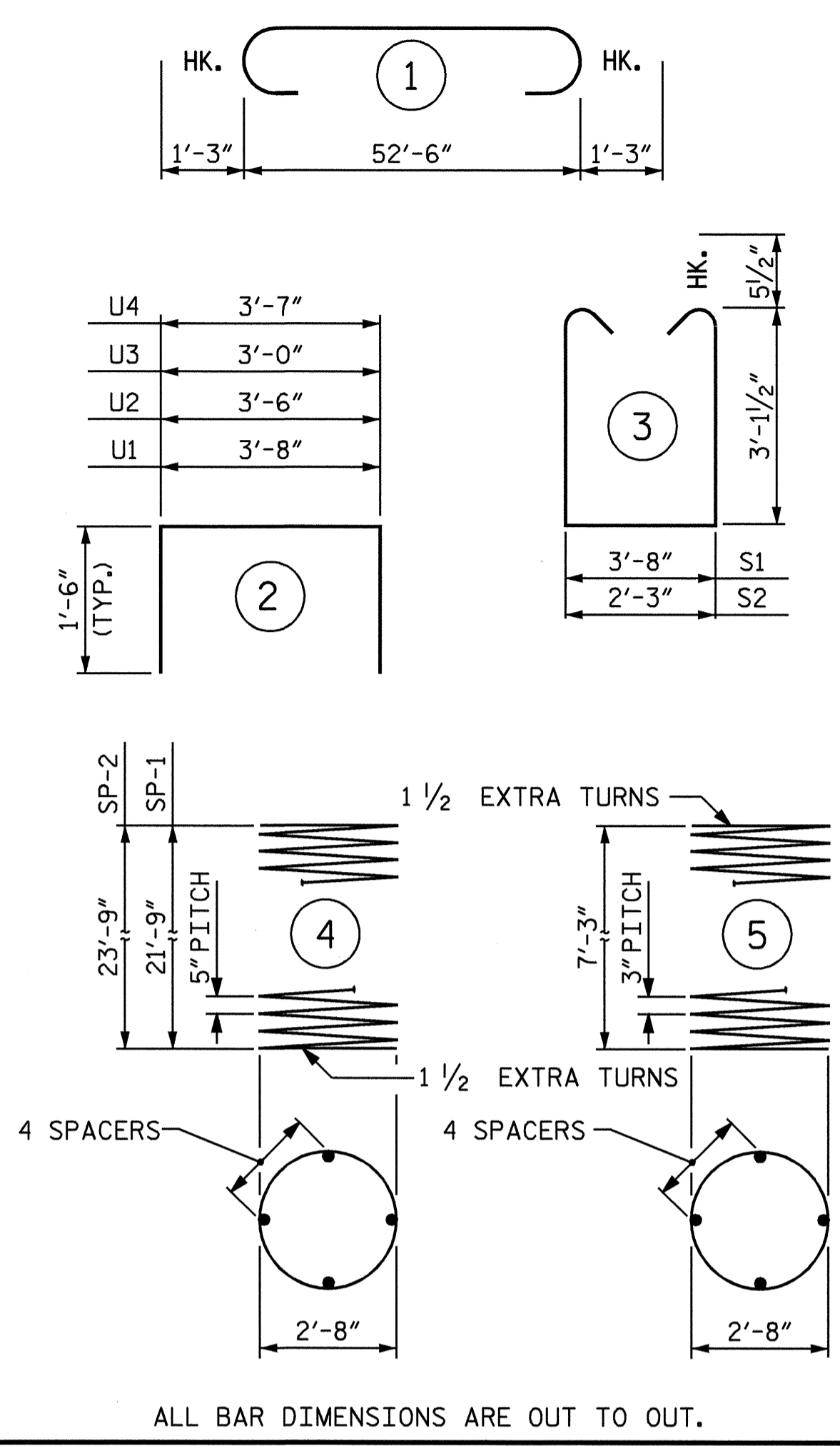


PLAN OF COLUMNS & DRILLED PIERS

DRAWN BY: E.C. LOCKLEAR DATE: 1-2-07
 CHECKED BY: A.S. CALLAWAY DATE: 3-21-07

24-OCT-2007 16:08
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 LSUTTON

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#9	1	55'-0"	1122
B2	6	#5	STR	52'-8"	330
B3	12	#4	STR	17'-9"	142
B4	6	#9	STR	52'-8"	1074
M1	14	#9	STR	34'-6"	1642
M2	28	#9	STR	36'-6"	3475
S1	26	#5	3	10'-10"	294
S2	84	#5	3	9'-5"	825
U1	60	#4	2	6'-8"	267
U2	6	#4	2	6'-6"	26
U3	3	#4	2	6'-0"	12
U4	3	#4	2	6'-7"	13
REINFORCING STEEL				LBS.	9,222
SP-1	1	*	4	444'-2"	463
SP-2	2	*	4	485'-3"	1012
SP-3	3	**	5	255'-10"	513
SPIRAL COLUMN REINFORCING STEEL				LBS.	1,988
CLASS A CONCRETE					
POUR #2 - COLUMNS				CU. YDS.	5.5
POUR #3 - CAP				CU. YDS.	30.0
TOTAL				CU. YDS.	35.5
DRILLED PIER QUANTITIES:					
DRILLED PIER CONCRETE					
POUR #1 - DRILLED PIERS				CU. YDS.	26.0
3'-6" DRILLED PIERS				LIN. FT.	54.75
IN SOIL					
3'-6" DRILLED PIERS				LIN. FT.	16.00
NOT IN SOIL					
PERMANENT STEEL CASING				LIN. FT.	30.09
FOR 3'-6" DRILLED PIERS					
SPT TESTING				EACH	3
CSL TUBES				LIN. FT.	313.00

* THE SP-1 & SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

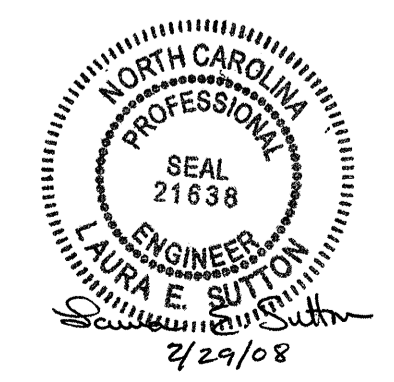
** THE SP-3 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

PROJECT NO. B-3705
 WAKE COUNTY
 STATION: 26+50.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT 2



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-33
1			3			TOTAL SHEETS
2			4			42

NOTES:

STIRRUPS AND U2 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS; SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

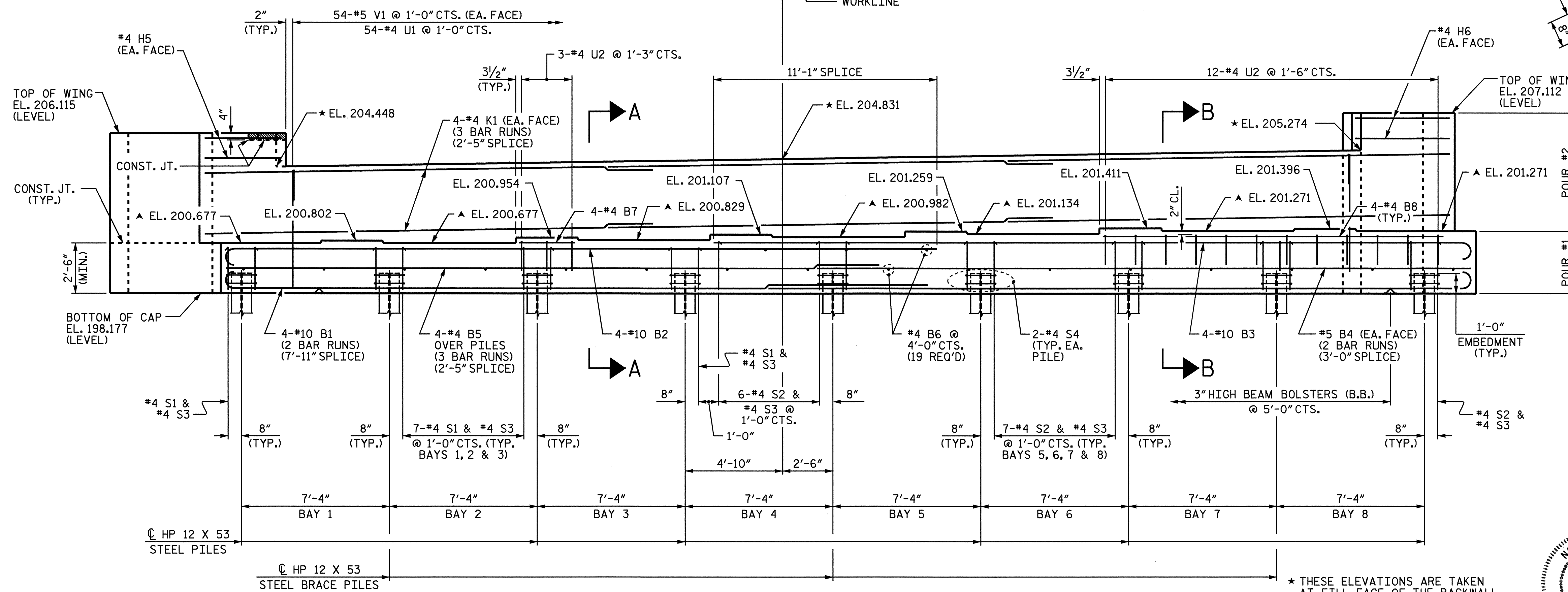
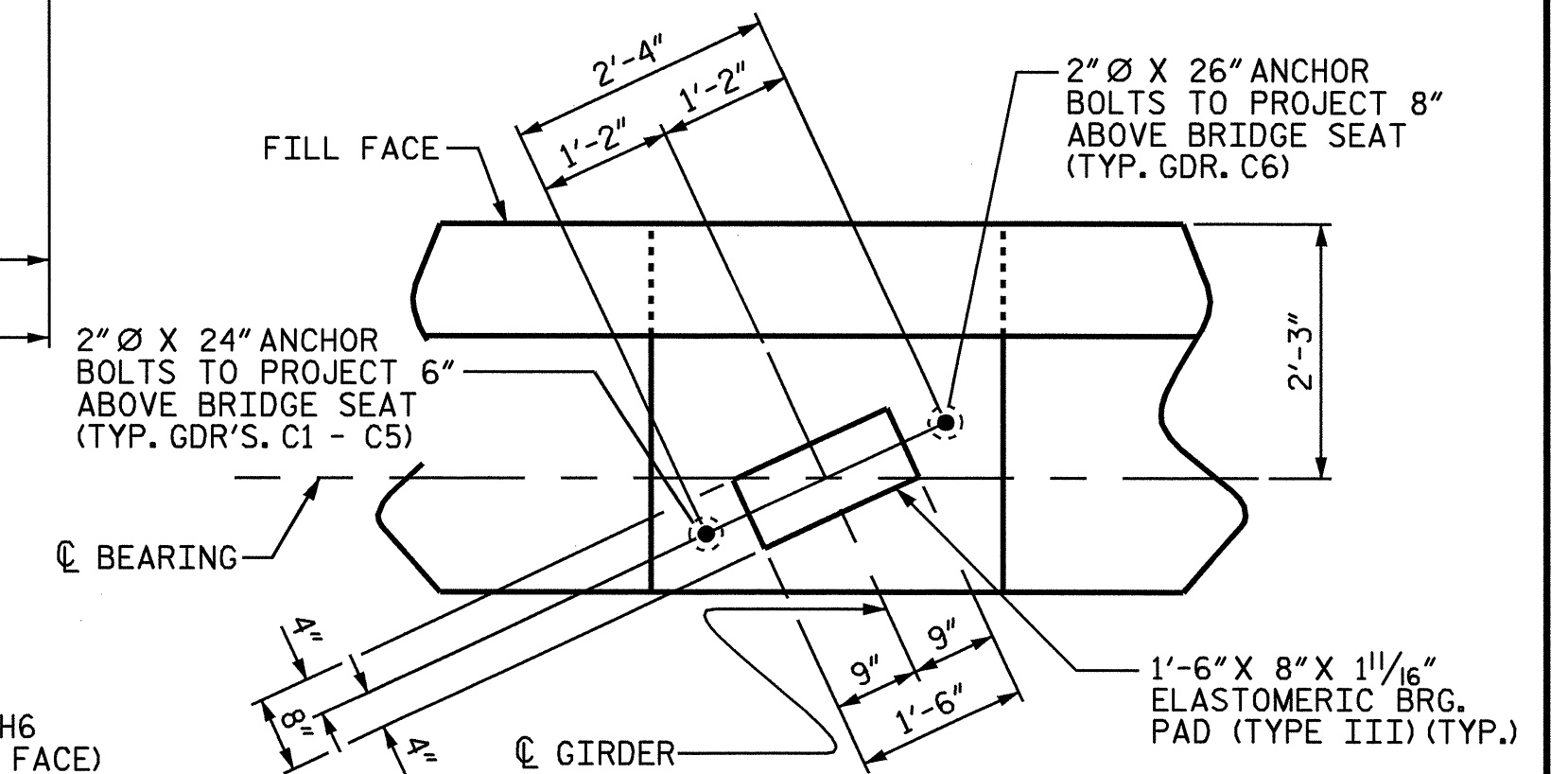
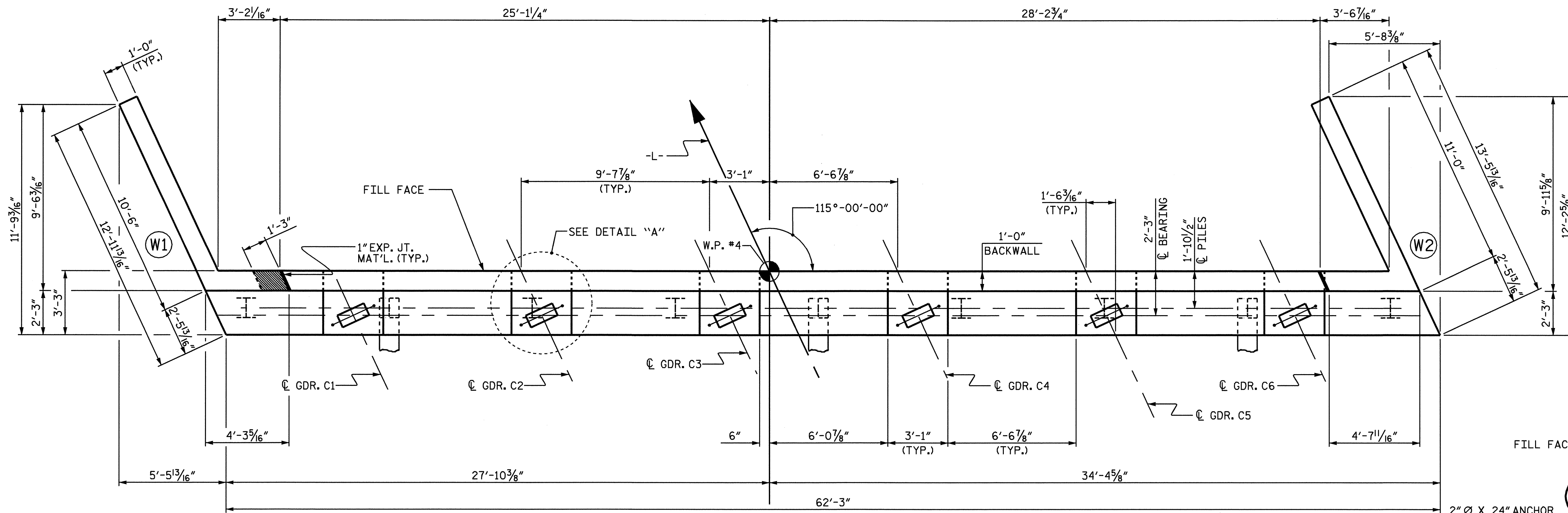
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND THE APPROACH SLAB HAS BEEN SAWED AND THE BARRIER RAIL HAS BEEN CAST IF SLIP FORMING IS USED.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

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

THE #5 V1 BARS IN THE BACKWALL SHALL BE PLACED 2" CLEAR FROM THE TOP OF THE BACKWALL.



ELEVATION

DETAIL 'A'

PROJECT NO. B-3705
WAKE COUNTY
 STATION: 26+50.00 -L-

SHEET 1 OF 3
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 2

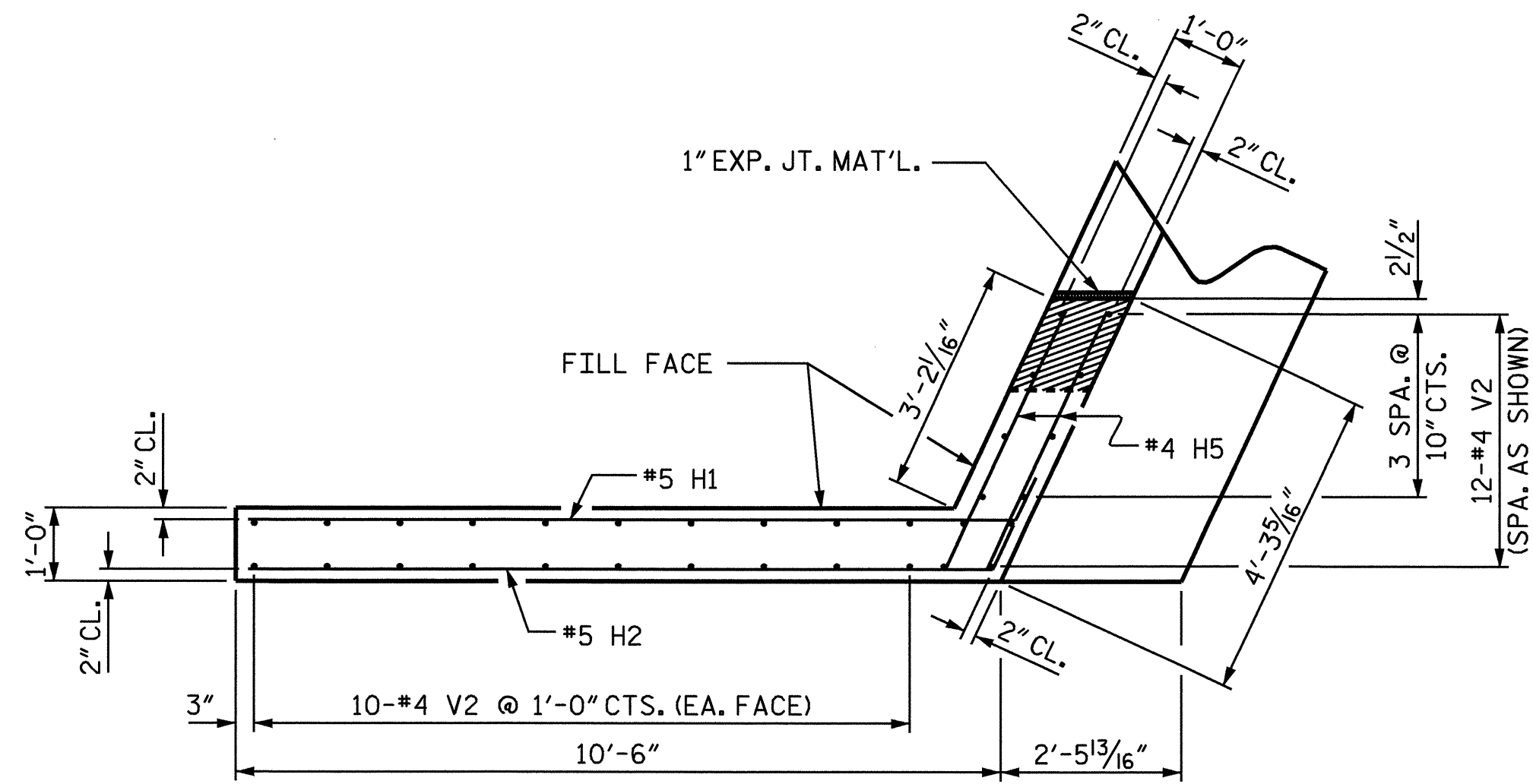
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-34	
1			3			TOTAL SHEETS	
2			4			42	

DRAWN BY: E.C. LOCKLEAR DATE: 12-28-06
 CHECKED BY: A.S. CALLAWAY DATE: 12-29-06

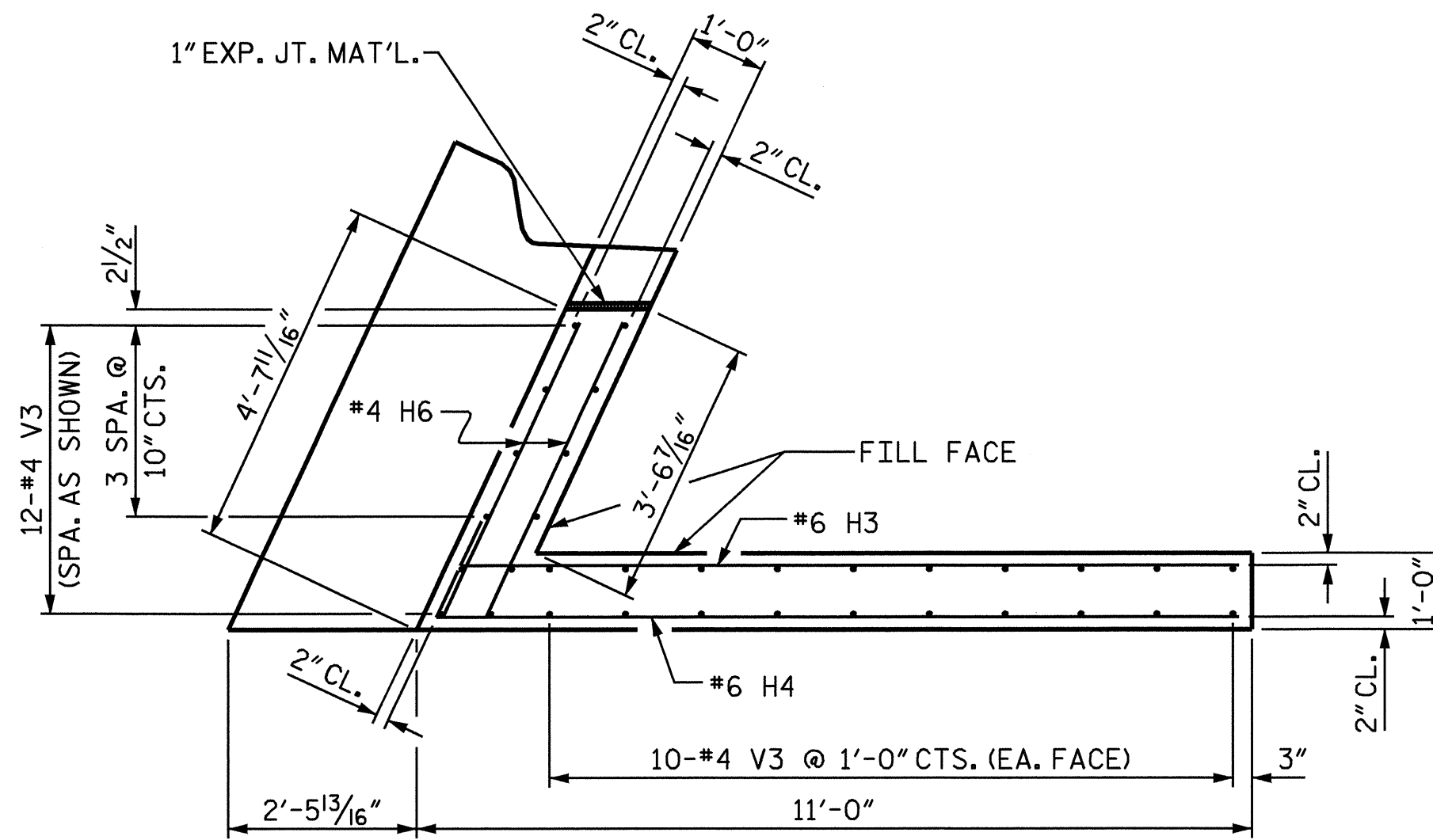
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 R:\Structures\elocklear\Microstation\b3705.sd_e*.01.dgn
 L Sutton

* THESE ELEVATIONS ARE TAKEN AT FILL FACE OF THE BACKWALL.
 * FOR LOCATION OF ELEVATIONS BETWEEN BUILD-UPS, SEE SECTION VIEWS ON SHEET 3 OF 3.

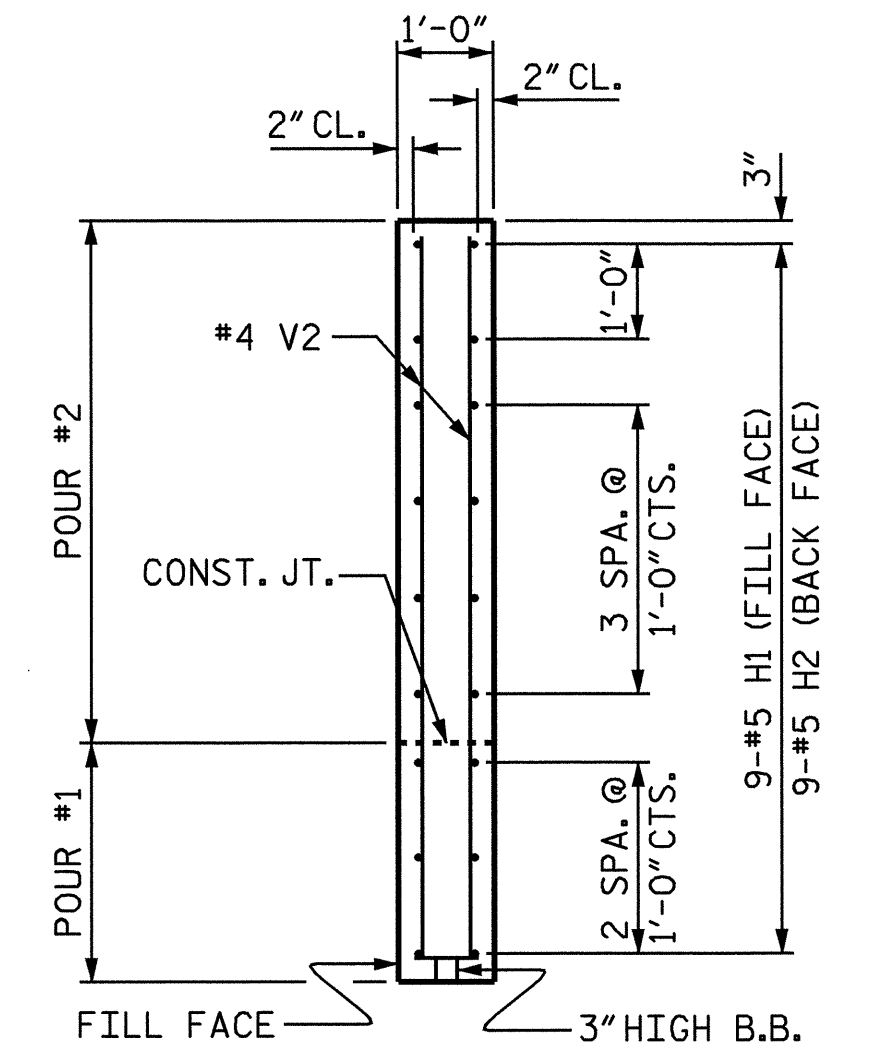




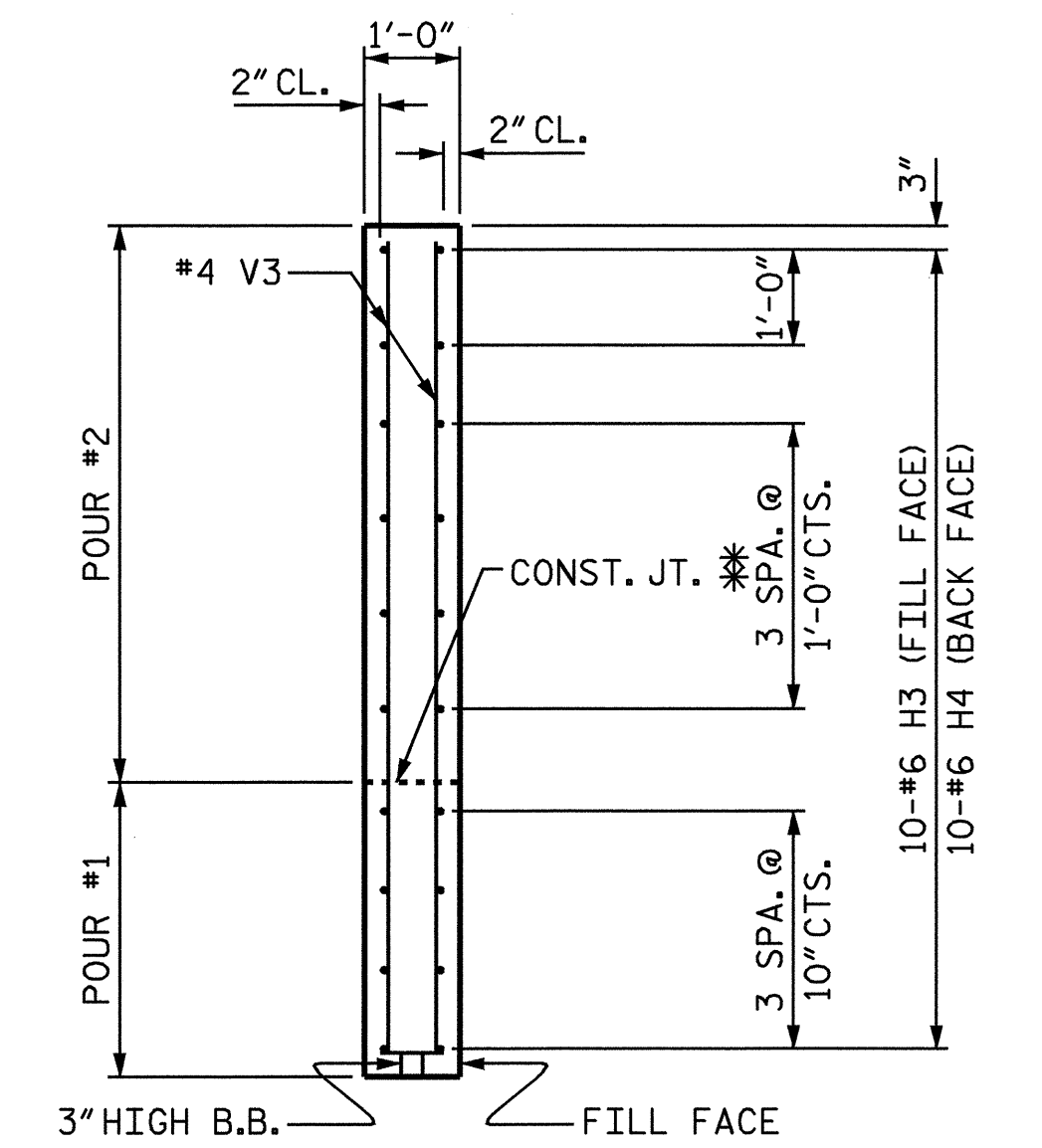
PLAN OF WING (W1)



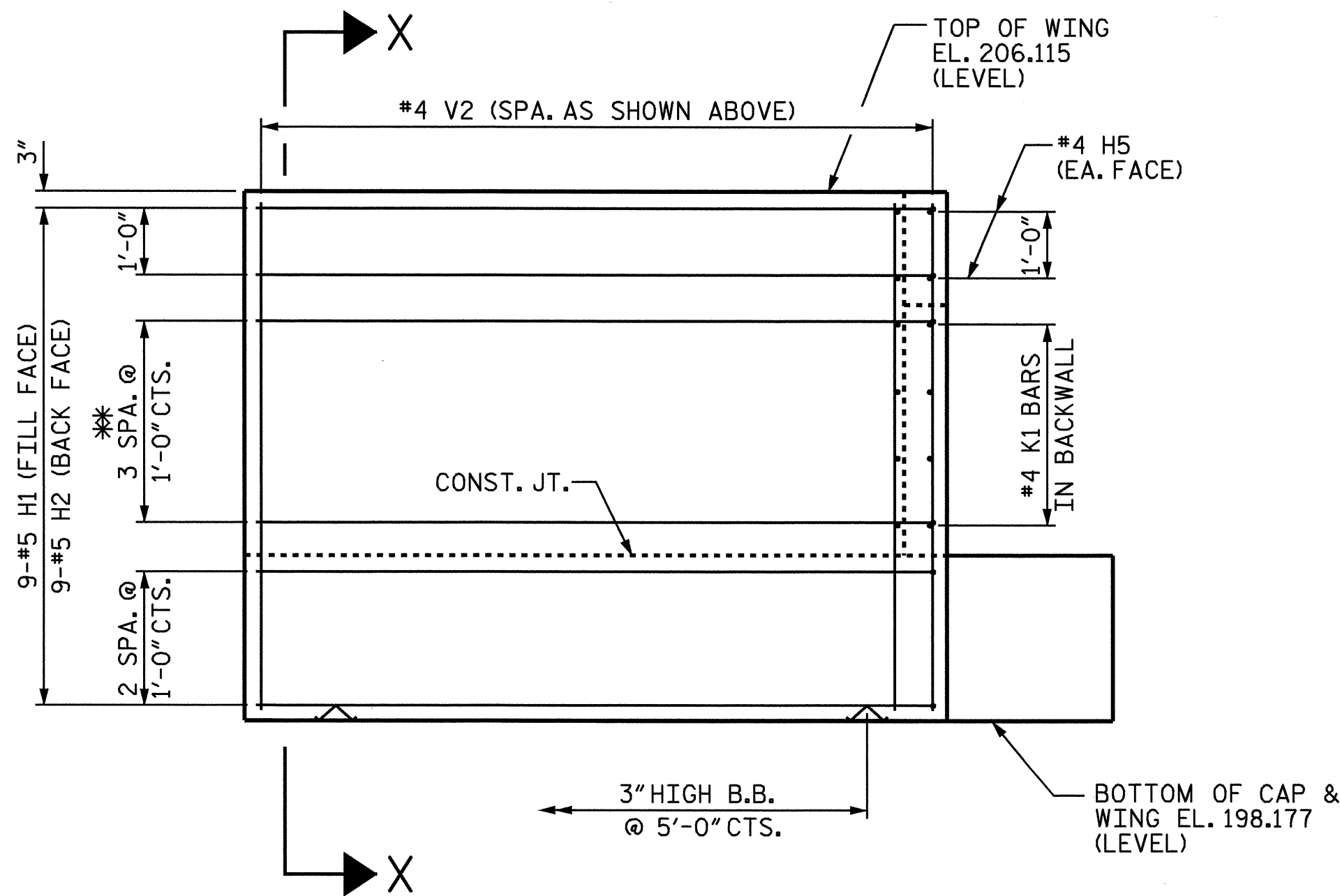
PLAN OF WING (W2)



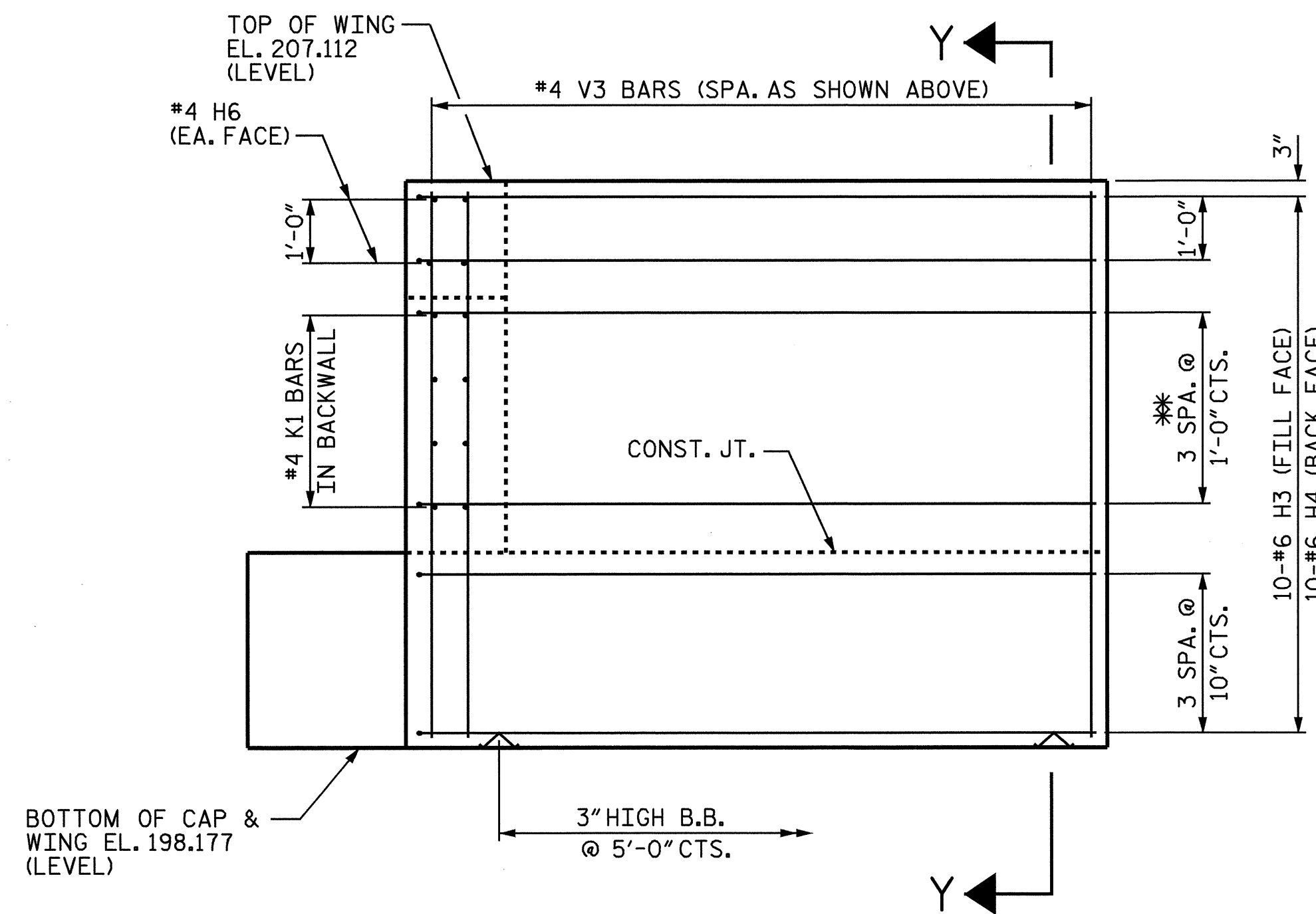
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

** TO MATCH K1 BARS IN BACKWALL

PROJECT NO. B-3705
 WAKE COUNTY
 STATION: 26+50.00 -L-

SHEET 2 OF 3

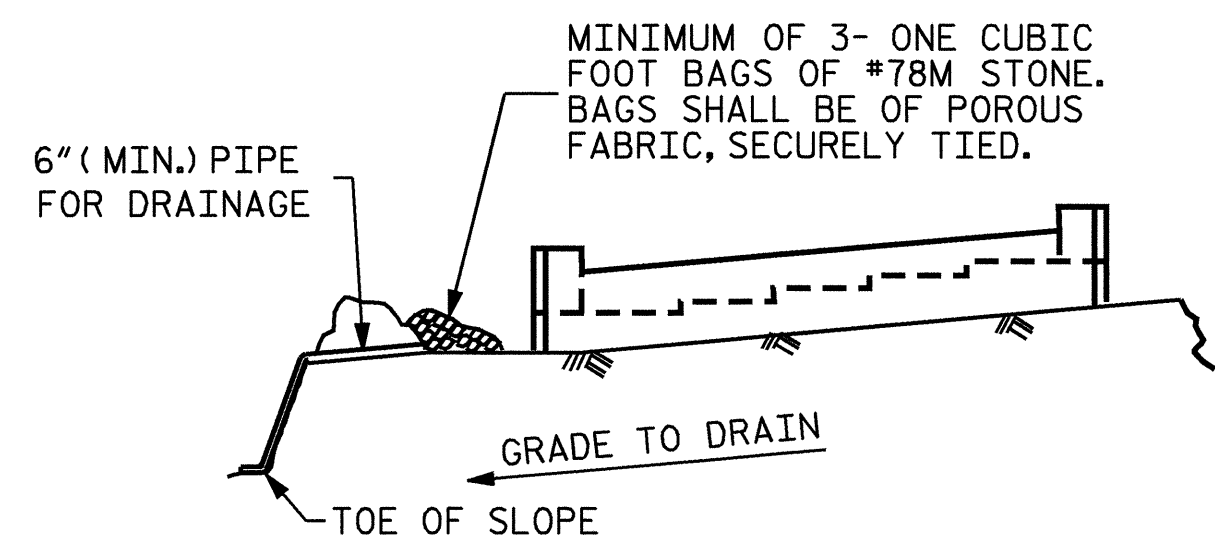
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 2



DRAWN BY: E.C. LOCKLEAR DATE: 12-28-06
 CHECKED BY: A.S. CALLAWAY DATE: 12-29-06

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-35
1			3			TOTAL SHEETS
2			4			42

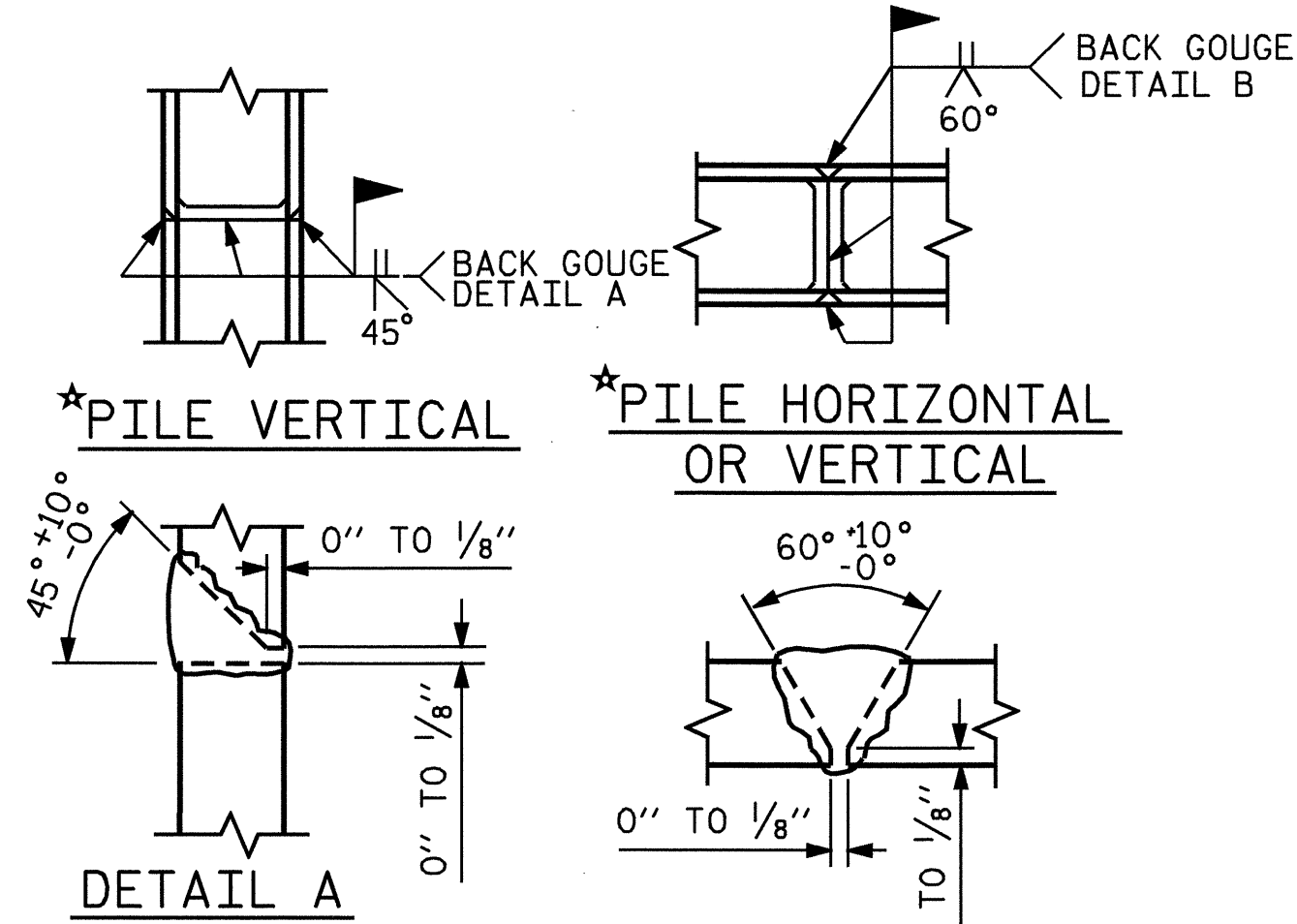


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

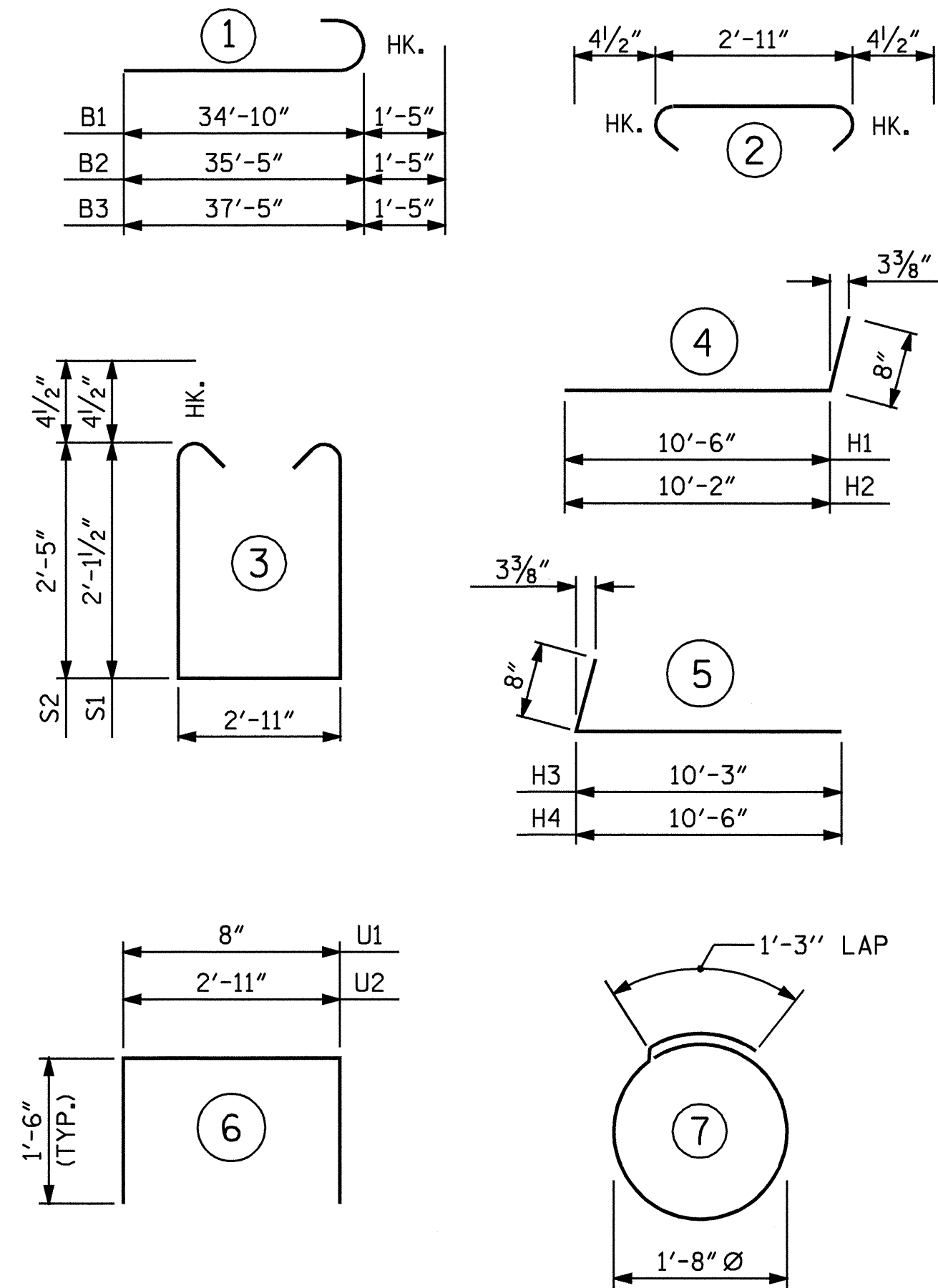
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



* POSITION OF PILE DURING WELDING. PILE SPLICE DETAILS

BAR TYPES

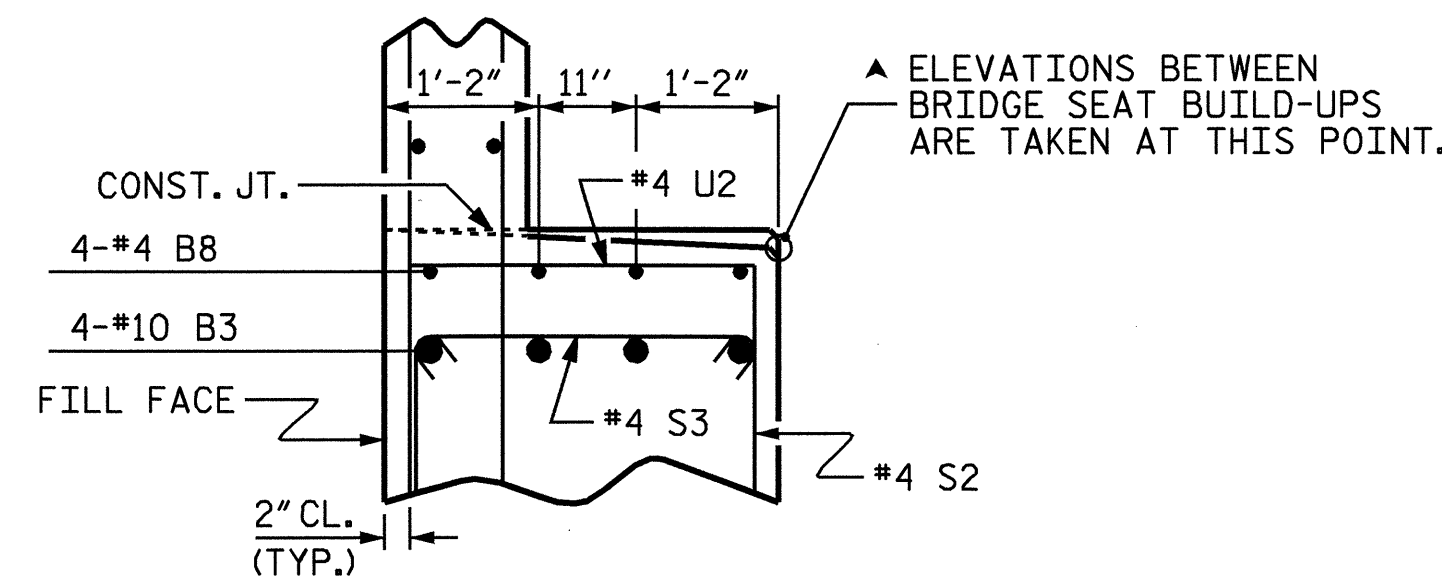
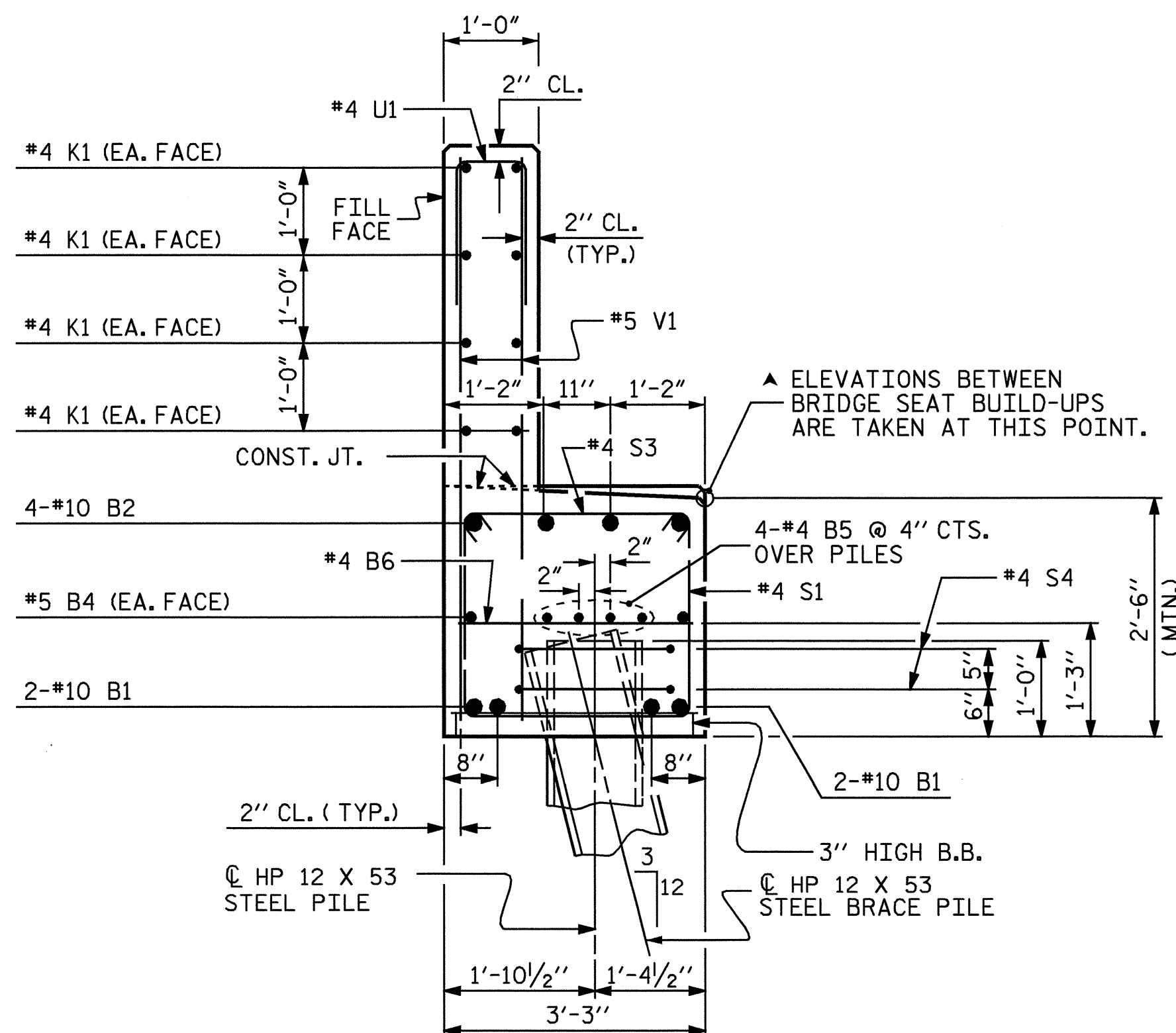


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10	1	36'-3"	1248
B2	4	#10	1	36'-10"	634
B3	4	#10	1	38'-10"	668
B4	4	#5	STR	32'-6"	136
B5	12	#4	STR	22'-3"	178
B6	19	#4	STR	2'-11"	37
B7	4	#4	STR	2'-9"	7
B8	4	#4	STR	16'-10"	45
H1	9	#5	4	11'-2"	105
H2	9	#5	4	10'-10"	102
H3	10	#6	5	10'-11"	164
H4	10	#6	5	11'-2"	168
H5	4	#4	STR	3'-10"	10
H6	4	#4	STR	4'-3"	11
K1	24	#4	STR	22'-3"	357
S1	23	#4	3	7'-11"	122
S2	35	#4	3	8'-6"	199
S3	58	#4	2	3'-8"	142
S4	18	#4	7	6'-6"	78
U1	54	#4	6	3'-8"	132
U2	15	#4	6	5'-11"	59
V1	108	#5	STR	5'-10"	657
V2	32	#4	STR	7'-6"	160
V3	32	#4	STR	8'-6"	182
REINFORCING STEEL				LBS.	5,601
CLASS A CONCRETE BREAKDOWN :					
POUR #1 - CAP & LOWER WINGS				CU. YDS.	23.5
POUR #2 - BACKWALL & UPPER WINGS				CU. YDS.	13.5
TOTAL				CU. YDS.	37.0
HP 12 x 53 STEEL PILES				NO. = 9	LIN. FT. 225

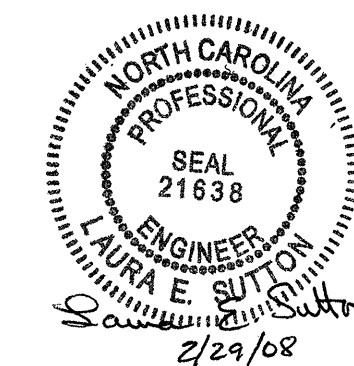


PROJECT NO. B-3705
 WAKE COUNTY
 STATION: 26+50.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

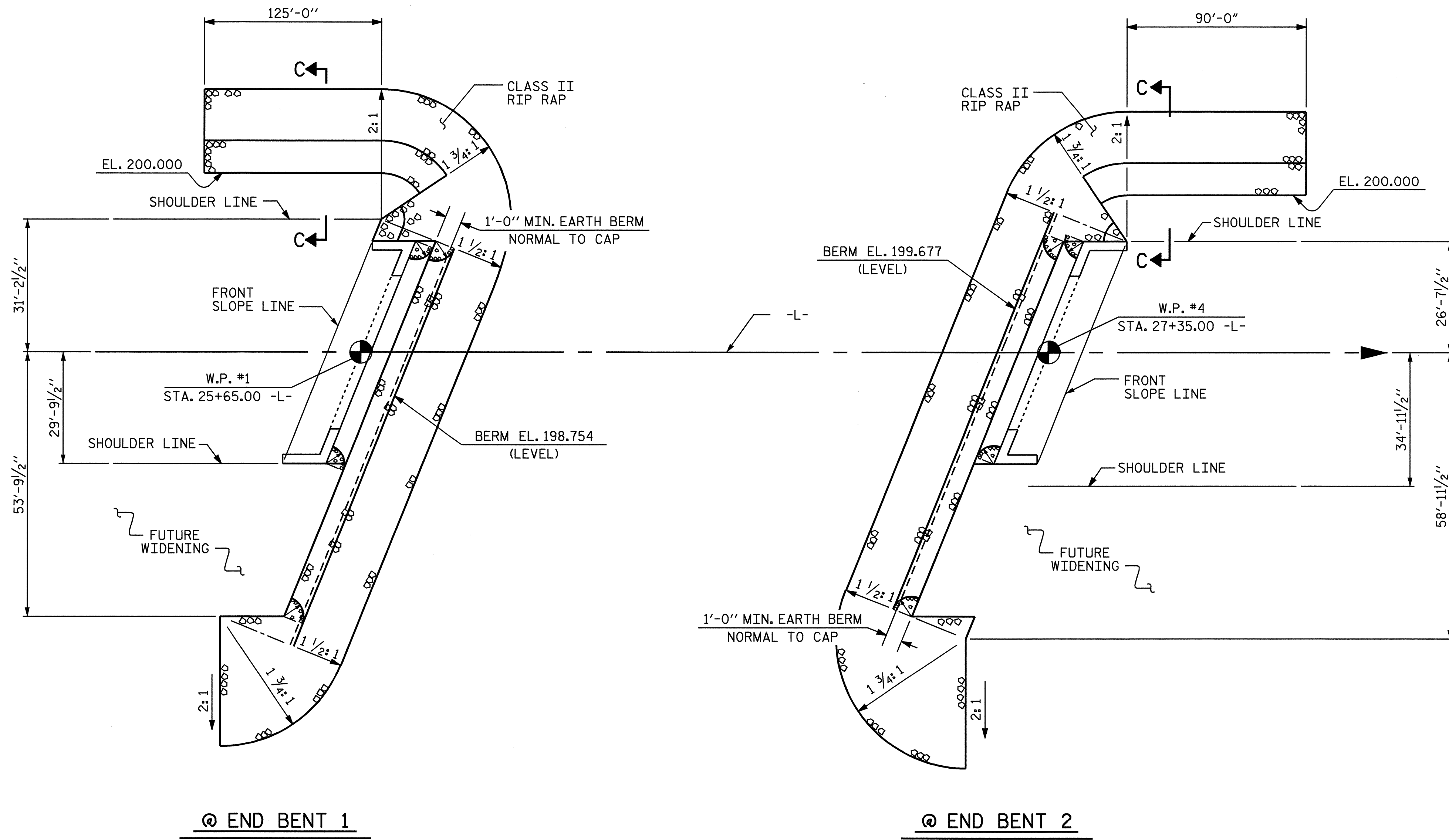
SUBSTRUCTURE END BENT 2



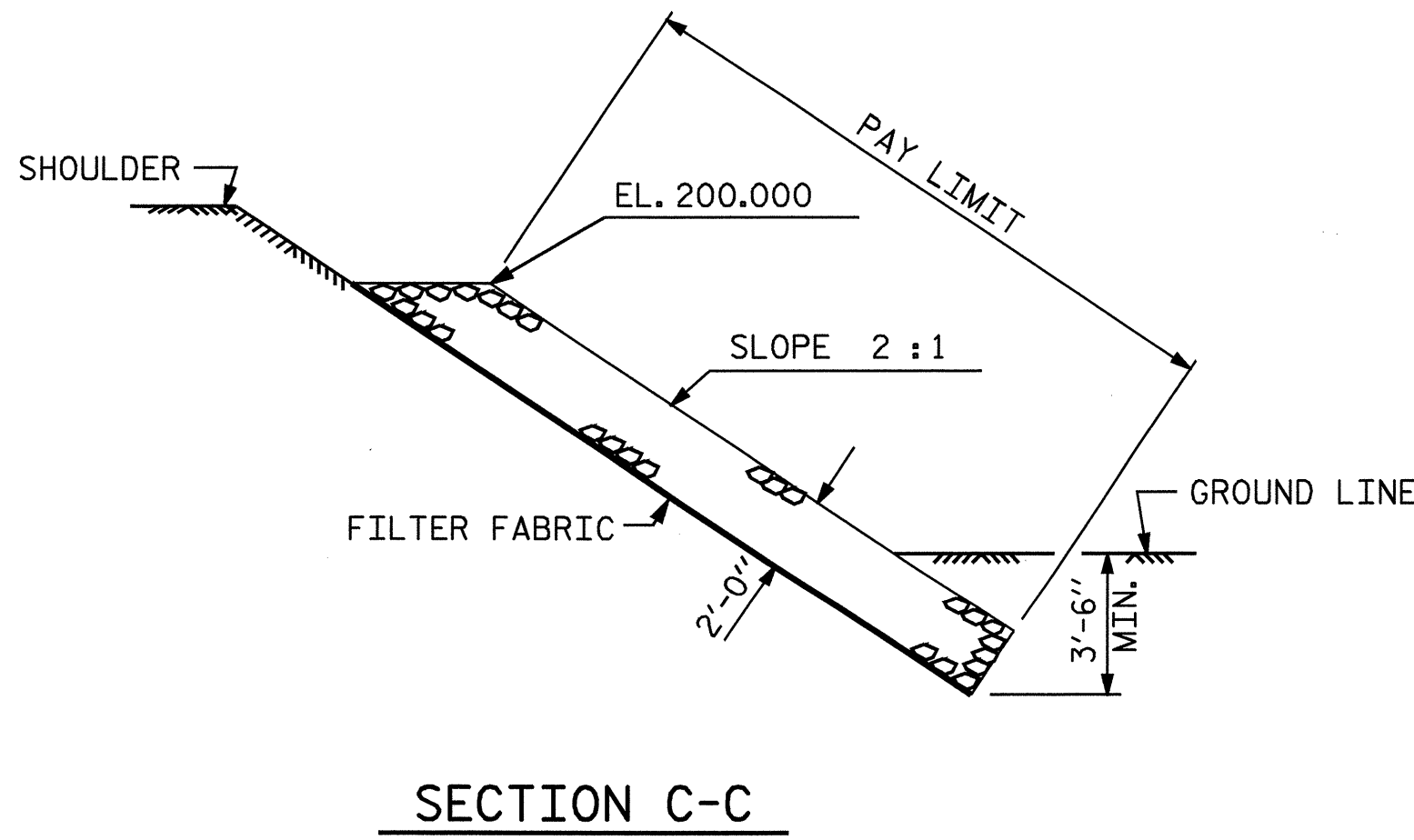
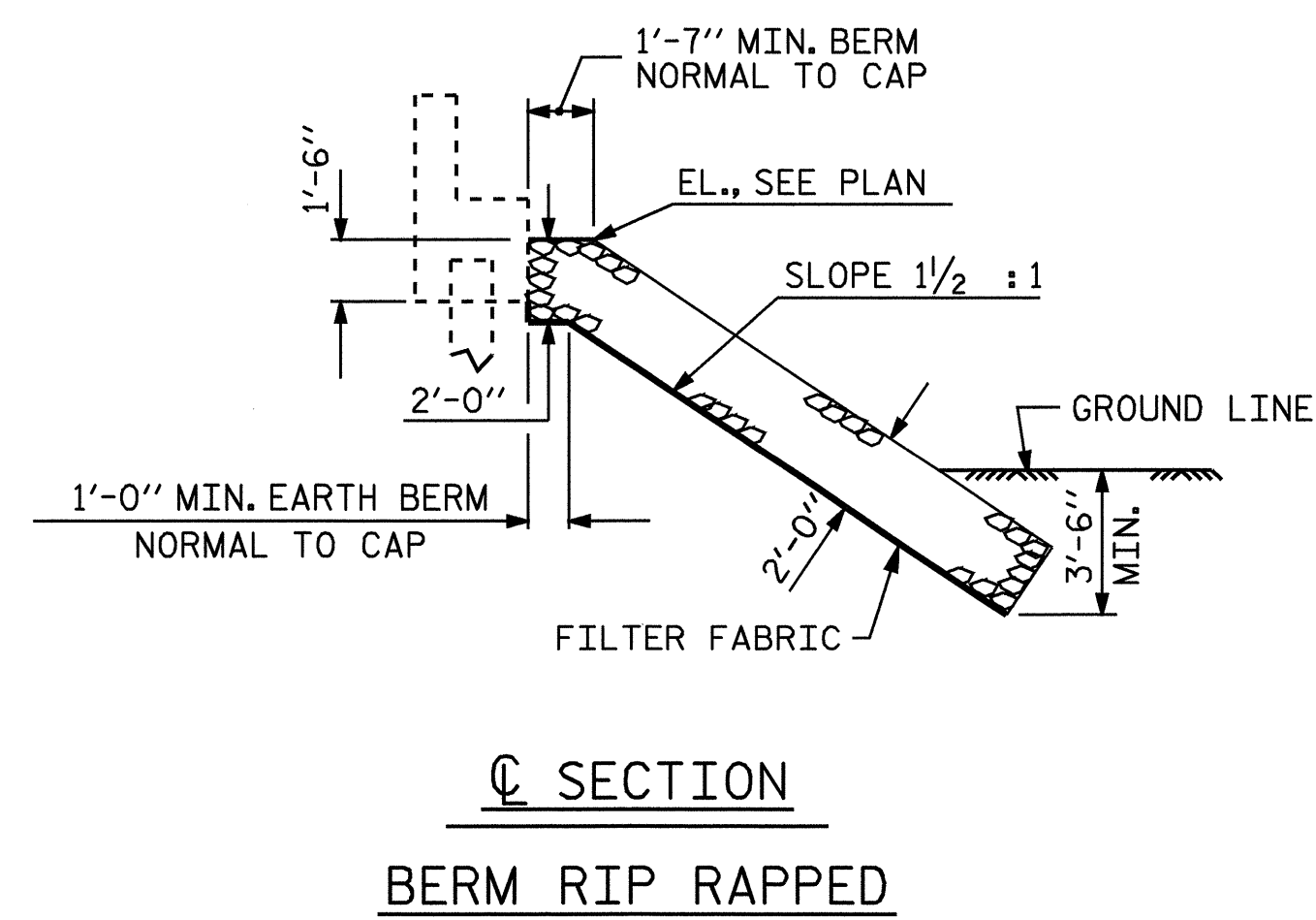
REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-36
2			4			42

DRAWN BY : E.C. LOCKLEAR DATE : 12-28-06
 CHECKED BY : A.S. CALLAWAY DATE : 12-29-06



ESTIMATED QUANTITIES		
BRIDGE @ STA. 26+50.00 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	584	648
END BENT 2	524	582



PROJECT NO. B-3705
WAKE COUNTY
 STATION: 26+50.00 -L-

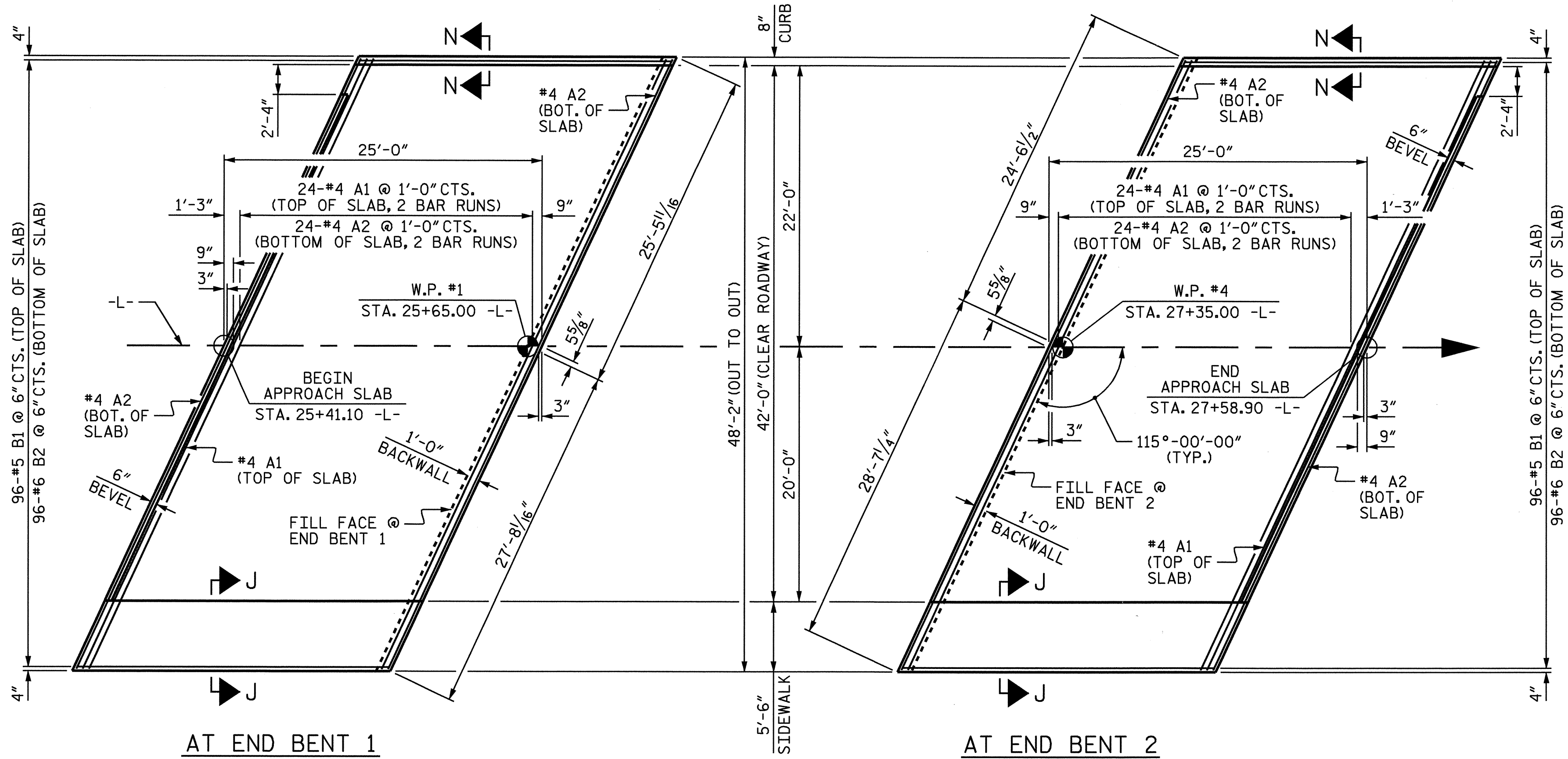
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 = RIP RAP DETAILS =

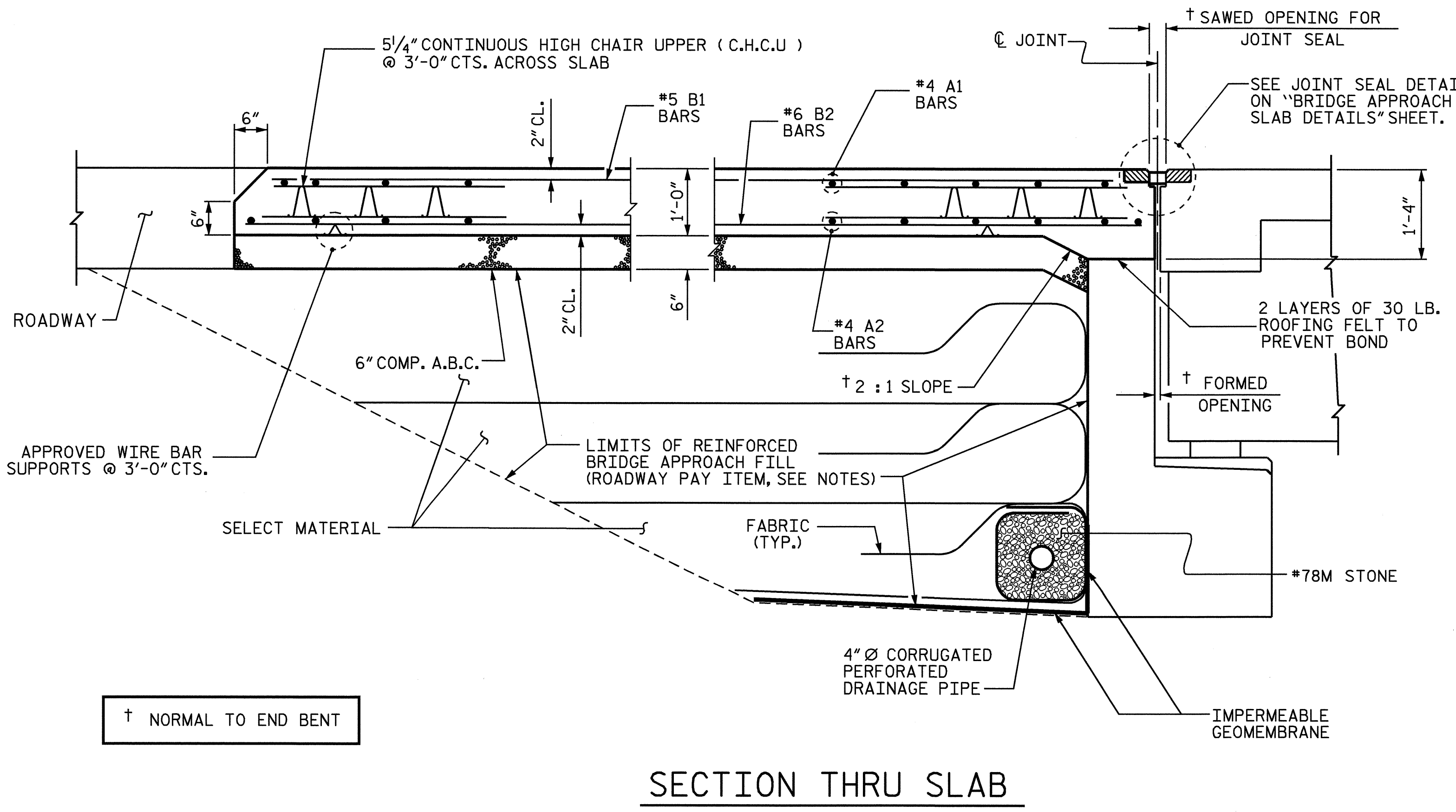
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-37
1			3			TOTAL SHEETS
2			4			42



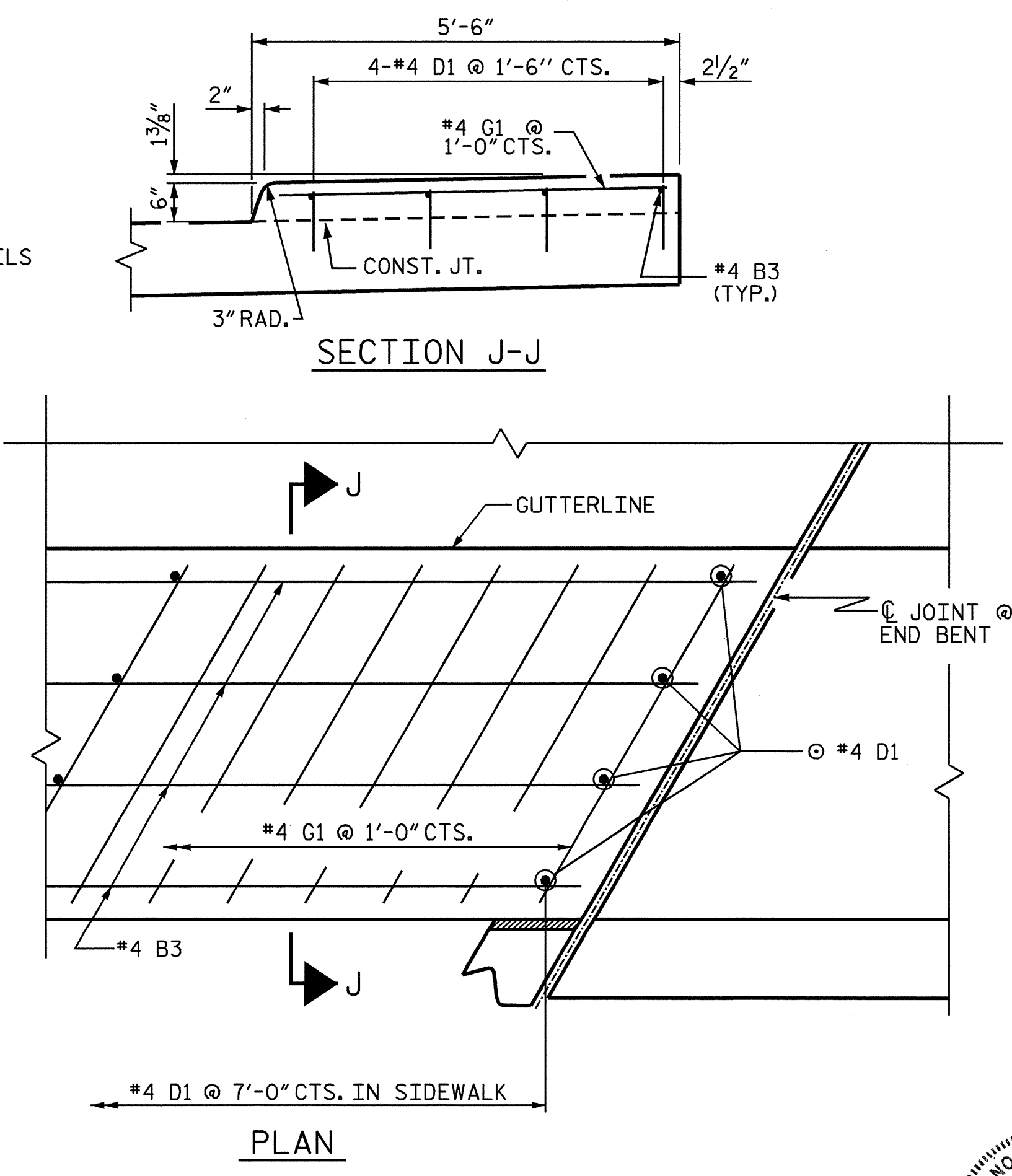
ASSEMBLED BY : E.C.L./A.S.C. DATE : 10/8/07
 CHECKED BY : P.C. BREWER DATE : 10/8/07
 DRAWN BY : FCJ 2/88 REV. 8/16/99 RWW/LES
 CHECKED BY : ARB 8/88 REV. 10/17/00 RWW/LES
 REV. 5/1/06 TLA/GM



PLAN OF APPROACH SLAB



SECTION THRU SLAB



SECTION J-J
SECTION N-N

CURB DETAILS

PLAN
SIDEWALK DETAILS
© THESE DOWELS ARE TO BE PLACED AFTER SAWING OF THE JOINT. THE HOLES SHALL BE DRILLED AND THE DOWELS GROUTED IN PLACE.

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 OF 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.
- THE JOINT SHALL BE SAWS PRIOR TO THE CASTING OF THE BARRIER RAIL, SIDEWALK AND END POSTS.
WITH EVAZOTE JOINT SEAL
FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.
THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 2 1/2".
FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

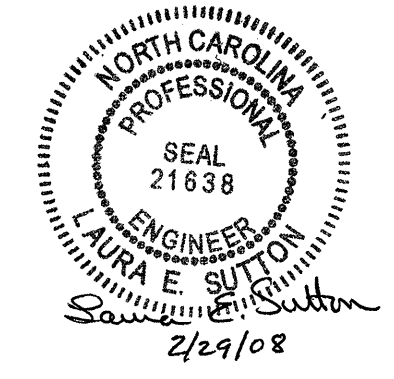
BILL OF MATERIAL

FOR ONE APPROACH SLAB (TWO REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	50	#4	STR	27'-5"	916
A2	52	#4	STR	27'-3"	947
*B1	96	#5	STR	23'-6"	2353
B2	96	#6	STR	24'-7"	3545
*B3	4	#4	STR	24'-7"	66
*D1	16	#4	STR	1'-0"	11
*G1	25	#4	STR	5'-6"	92

REINFORCING STEEL	LBS.	4,492
*EPOXY COATED REINFORCING STEEL	LBS.	3,438
CLASS AA CONCRETE		
POUR #1 - SLAB & CURB	CU. YDS.	45.4
POUR #2 - SIDEWALK	CU. YDS.	2.5
TOTAL	CU. YDS.	47.9

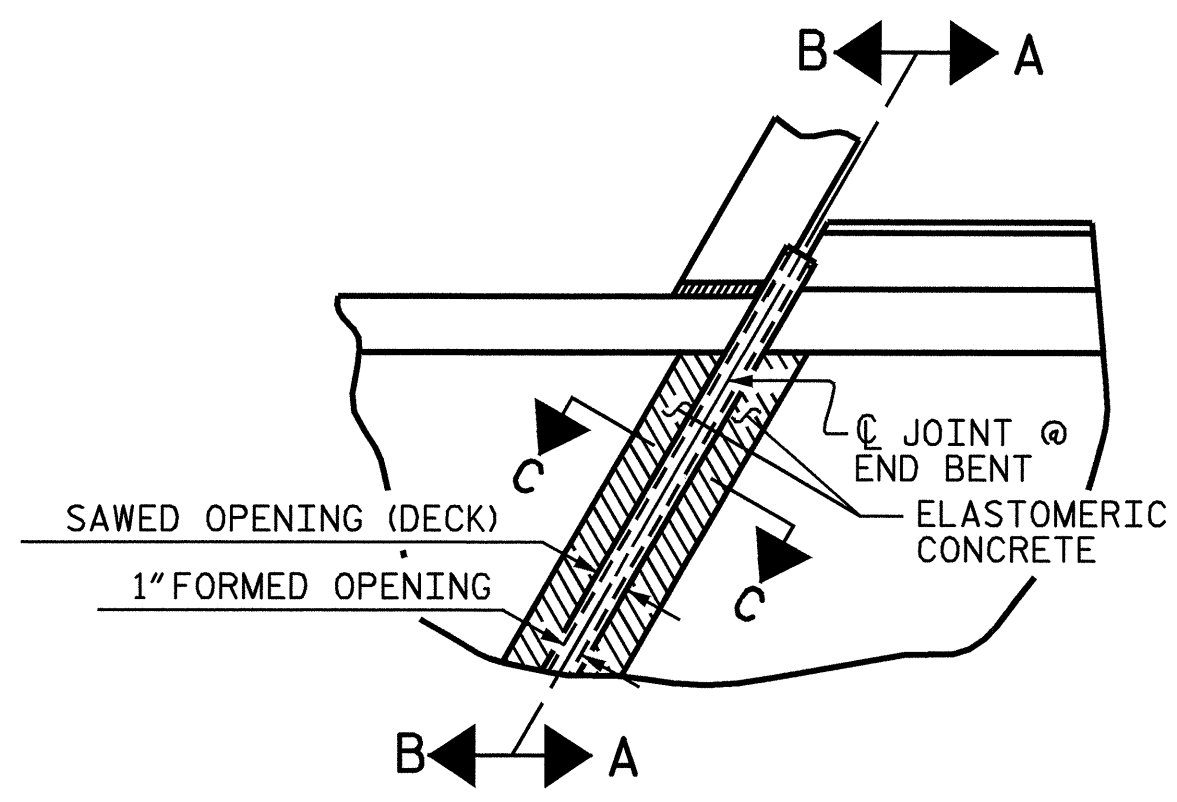
ASSEMBLED BY: E.C. LOCKLEAR DATE: 7-07-06
 CHECKED BY: A.S. CALLAWAY DATE: 8-22-06
 DRAWN BY: EEM 3/95 REV. 7/10/01 LES/RDR
 CHECKED BY: VAP 3/95 REV. 5/7/03R RWW/JTE
 REV. 5/1/06R KMM/GM



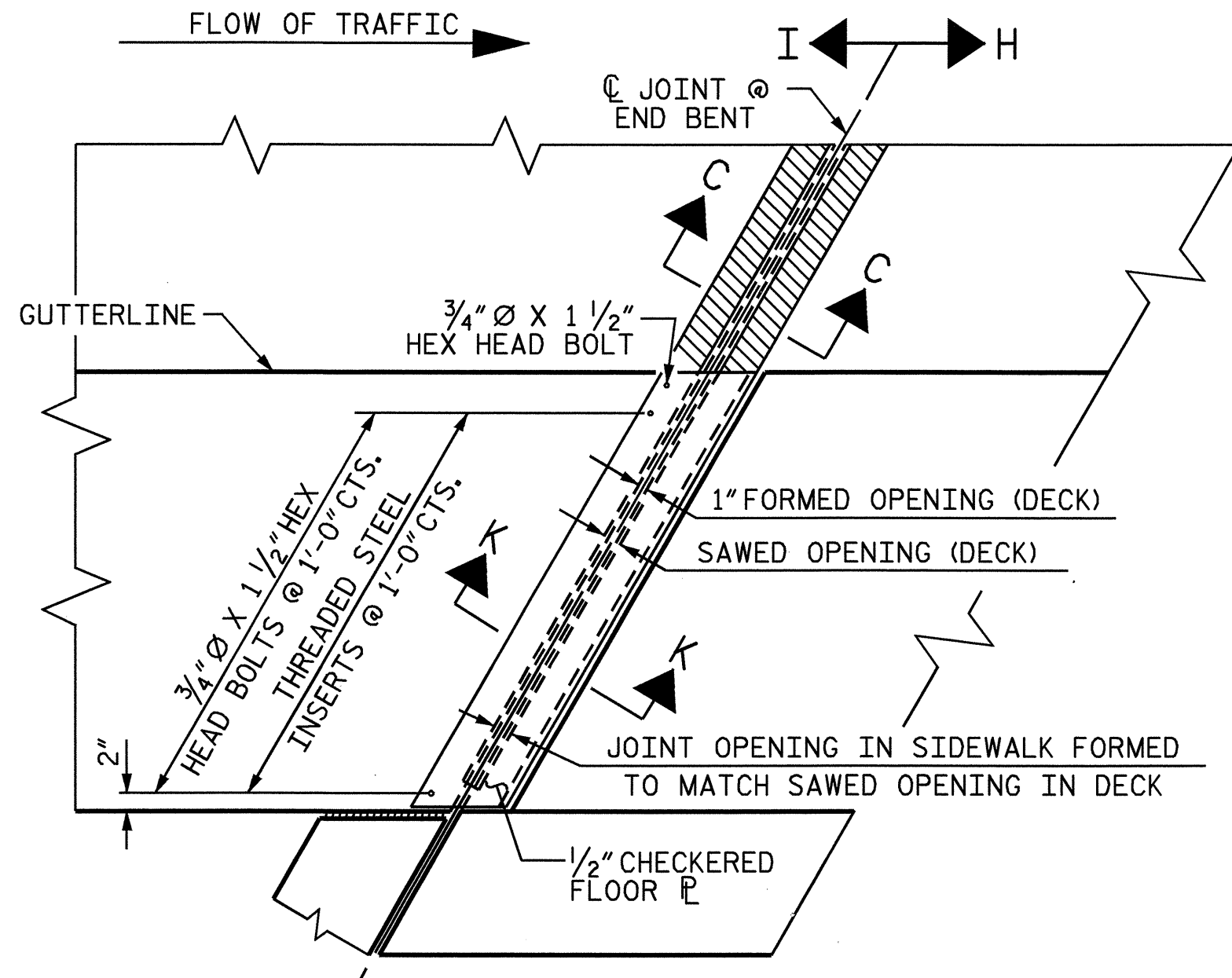
PROJECT NO. B-3705
 WAKE COUNTY
 STATION: 26+50.00 -L-

SHEET 1 OF 2
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH
 SLAB FOR
 FLEXIBLE PAVEMENT

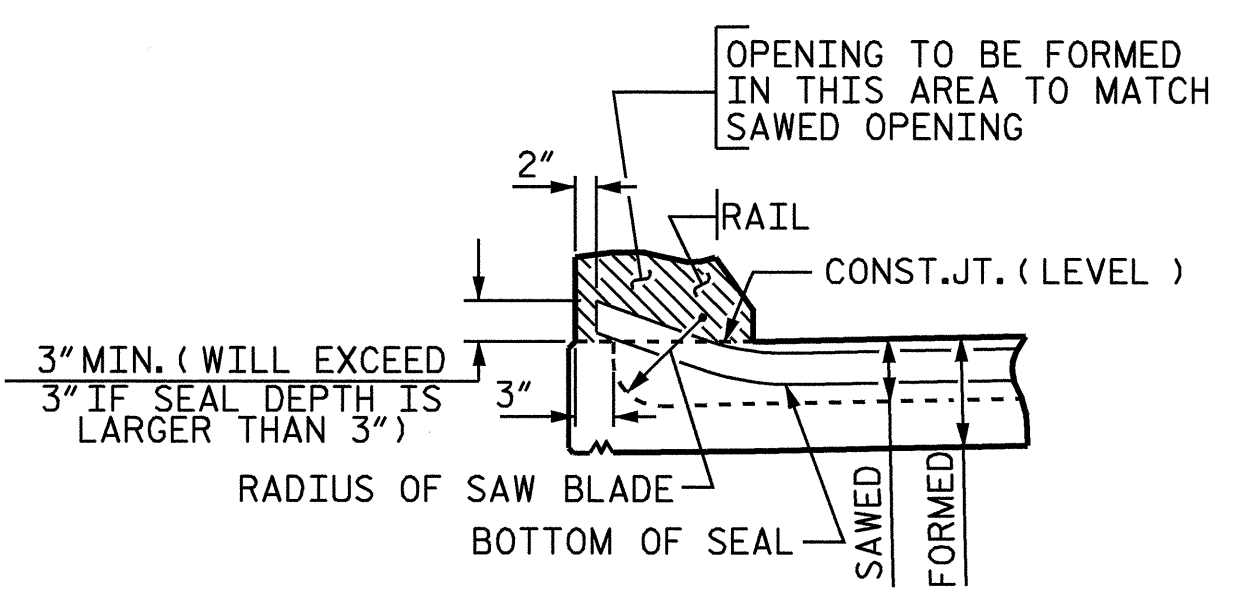
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-38
1			3			TOTAL SHEETS 42
2			4			



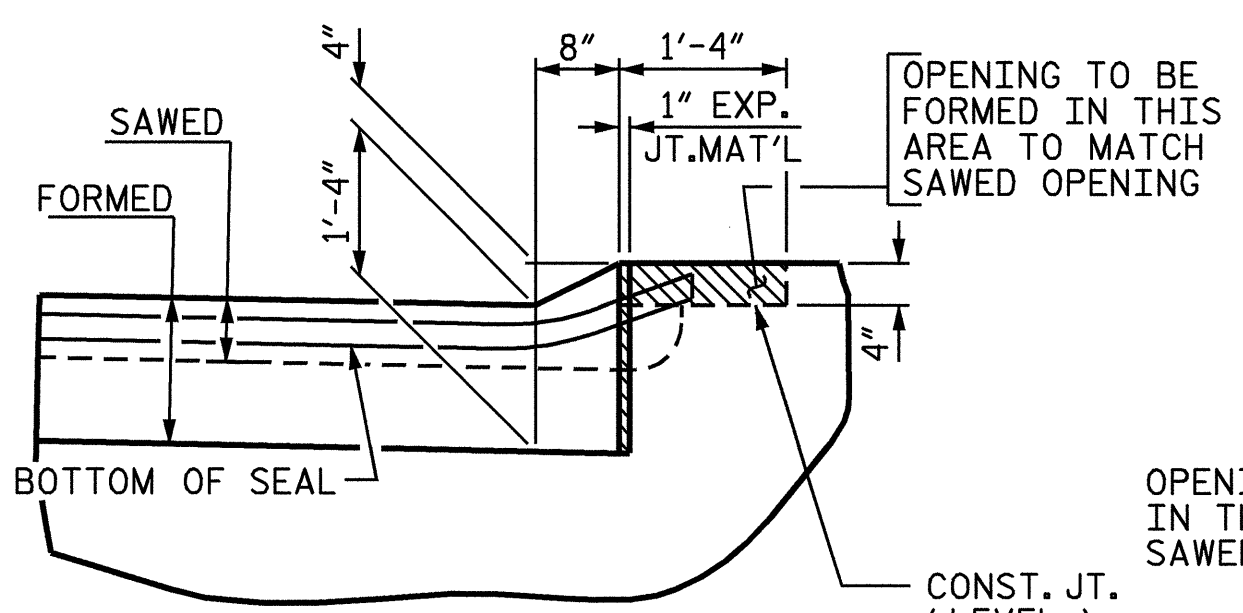
PLAN OF LEFT SIDE
(END BENT 1 SHOWN, END BENT 2 SIMILAR)



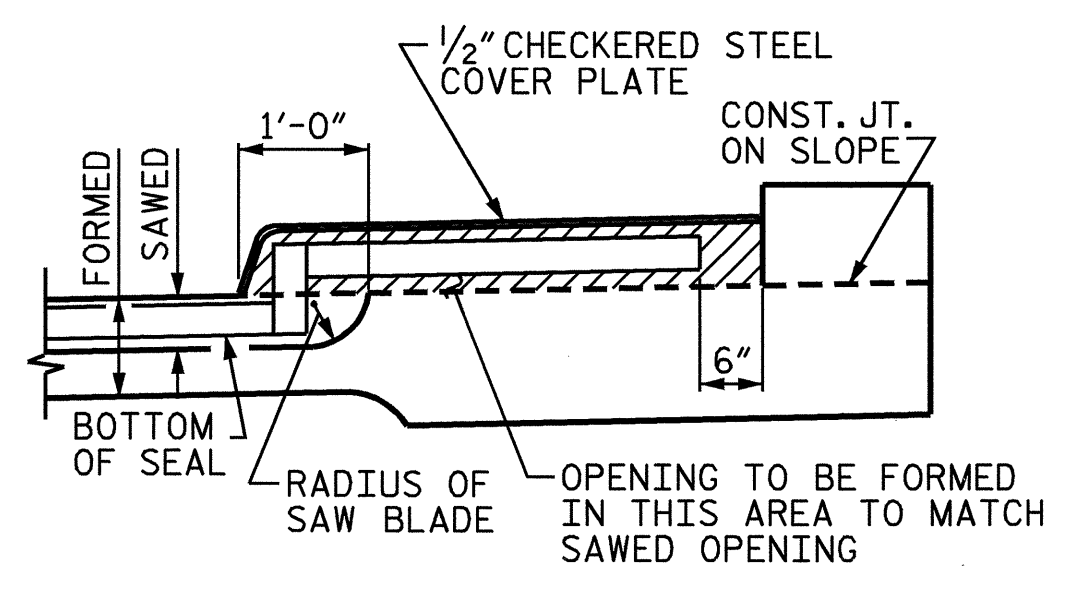
PLAN OF RIGHT SIDE
(END BENT 1 SHOWN, END BENT 2 SIMILAR)



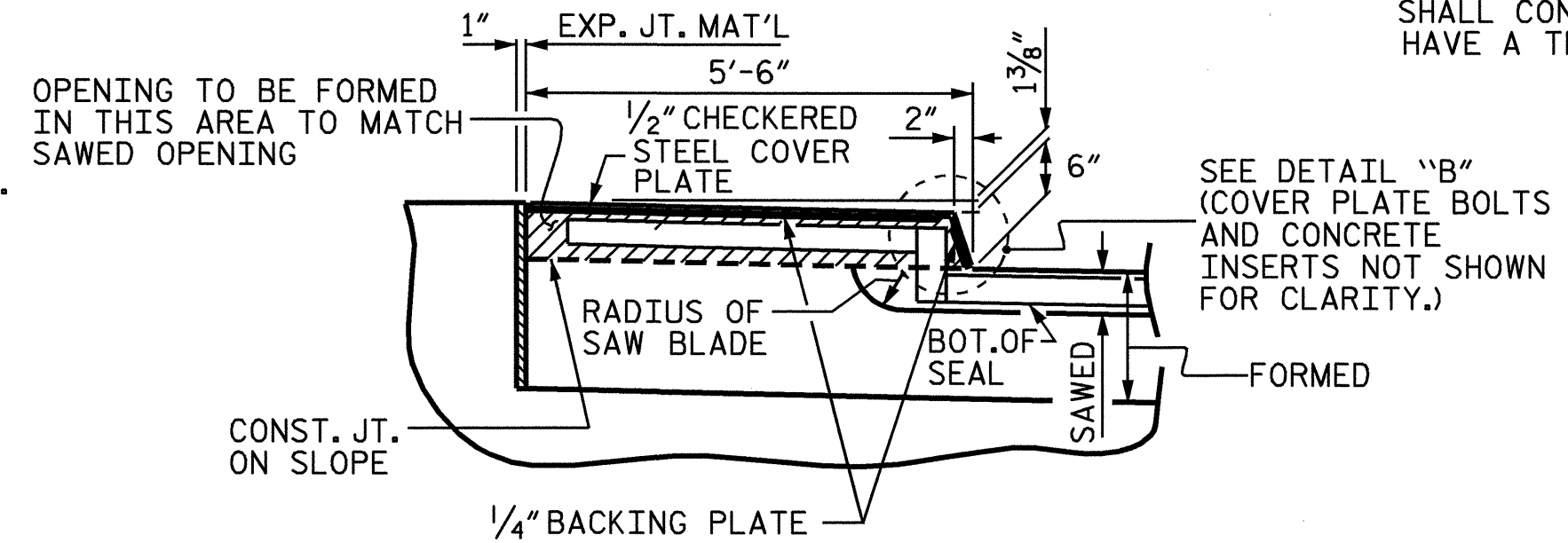
SECTION A-A



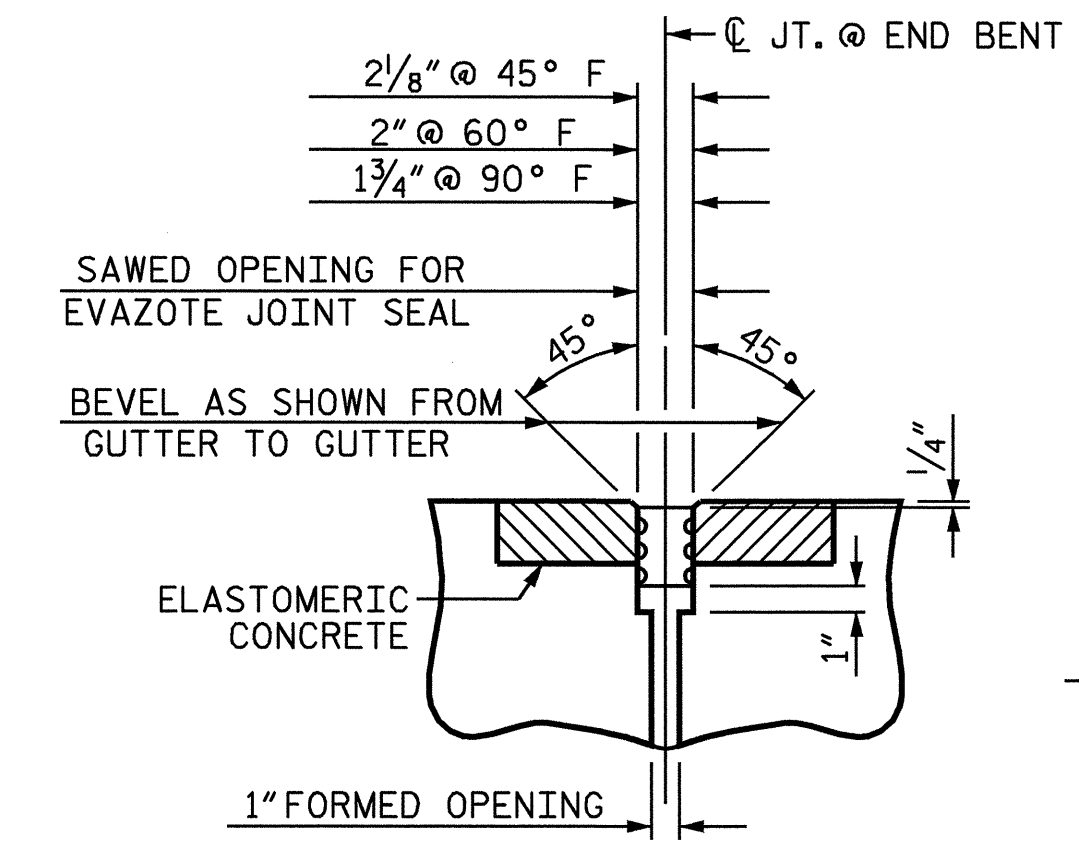
SECTION B-B



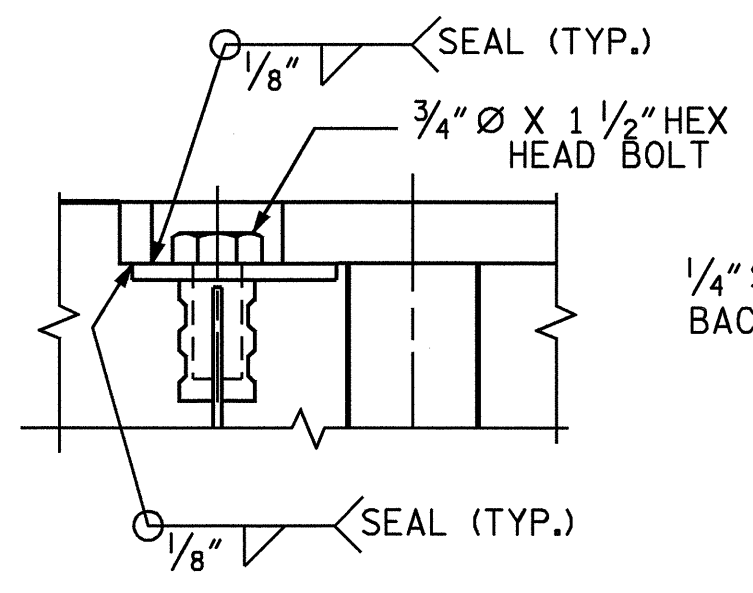
SECTION H-H



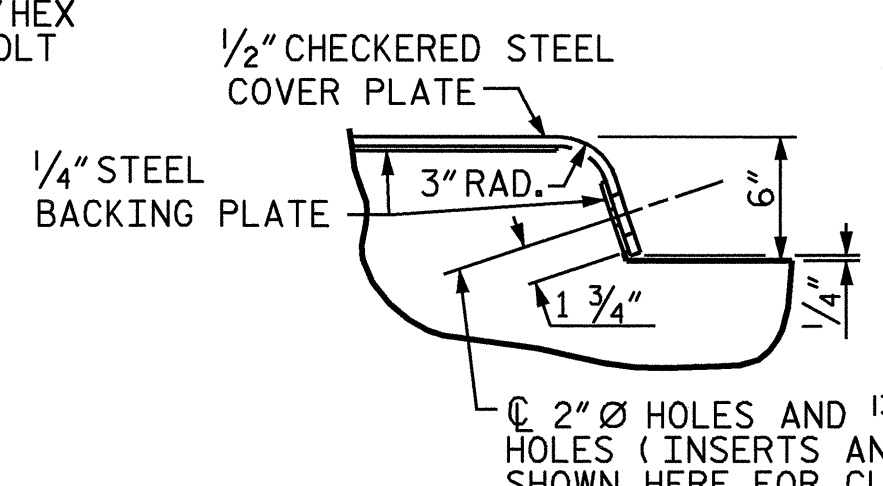
SECTION I-I



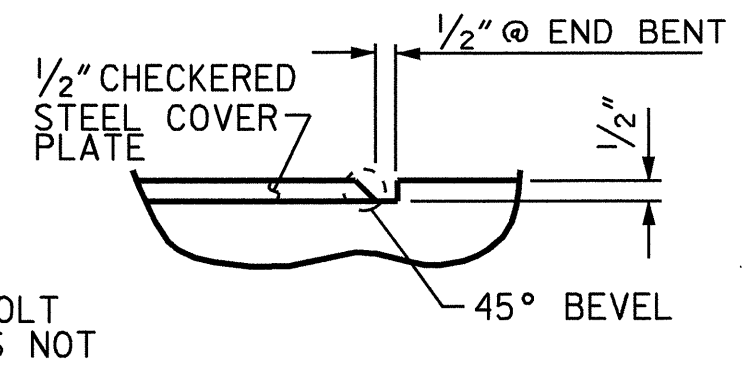
SECTION C-C
EVAZOTE JOINT SEAL



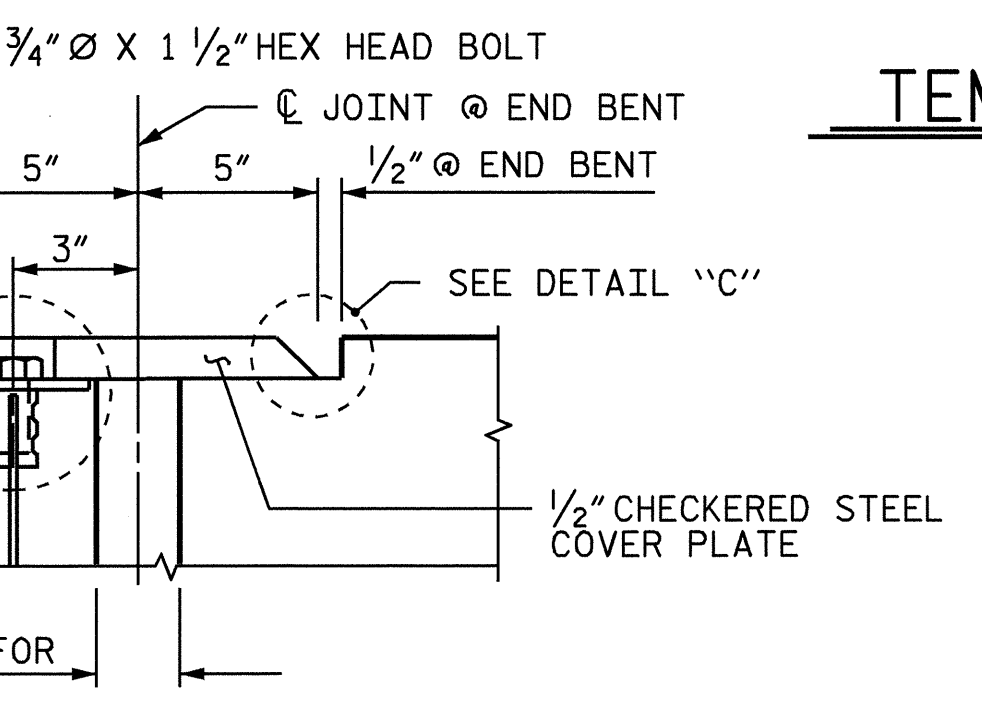
DETAIL "A"



DETAIL "B"

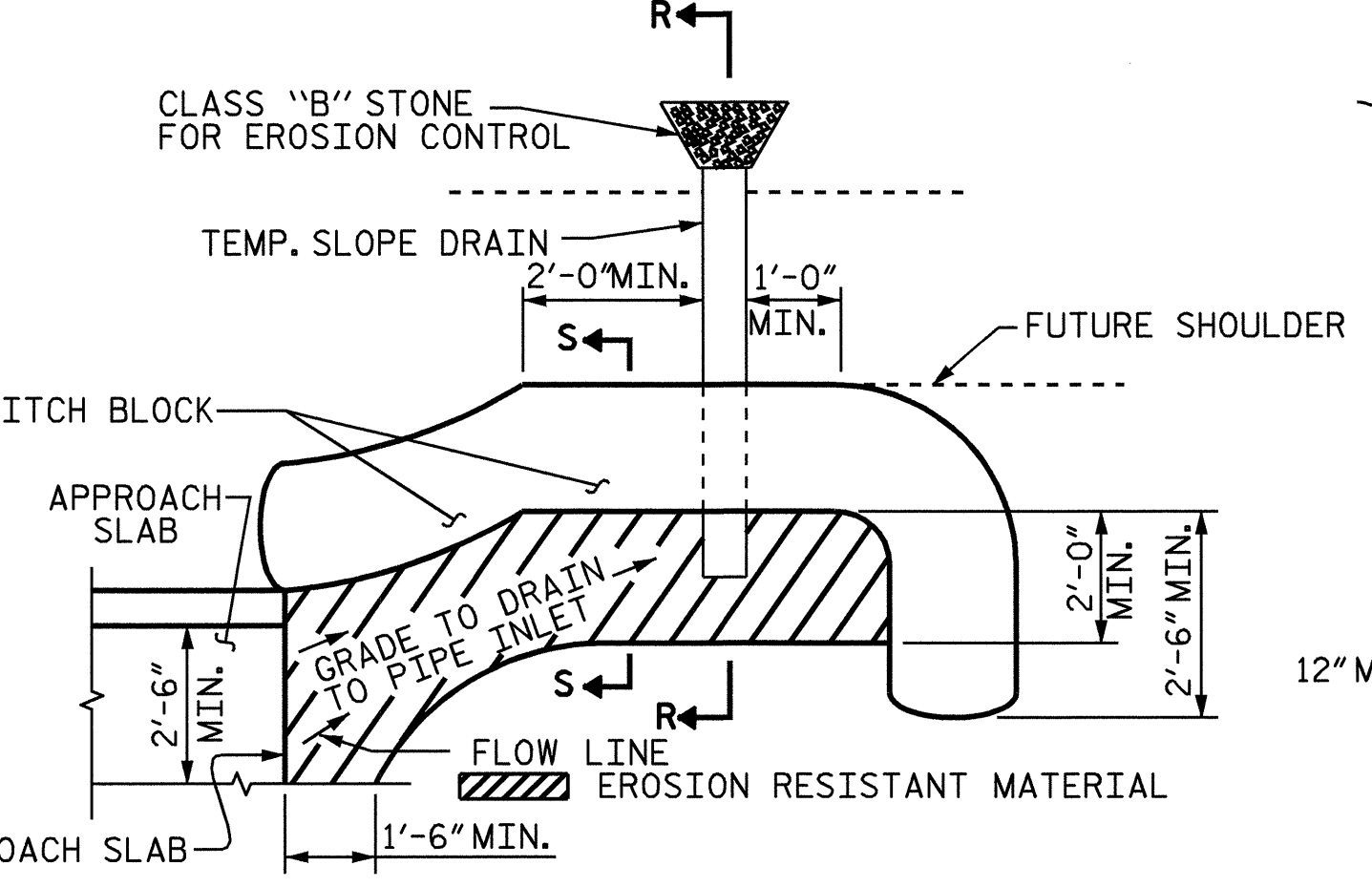


DETAIL "C"



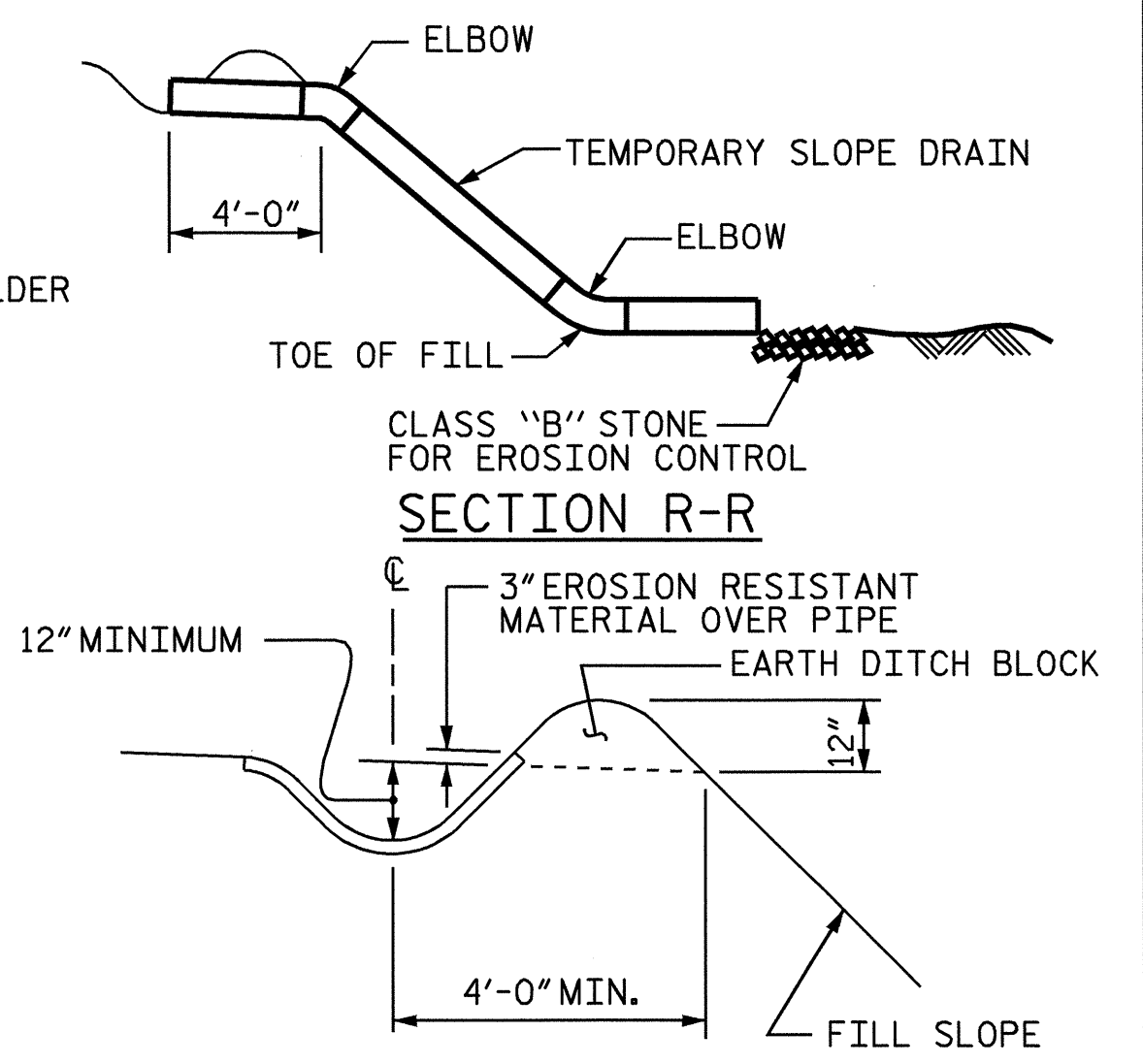
SECTION K-K

▲ THE 3/4" CONCRETE INSERTS SHALL BE CLOSED-END FERRULES WITH LOOPED WIRE STRUTS ATTACHED TO THEM. THE INSERTS SHALL CONFORM TO AASHTO M169, GRADE 12L14 AND SHALL HAVE A TENSILE WORKING LOAD CAPACITY OF 3000 LBS.



PLAN VIEW

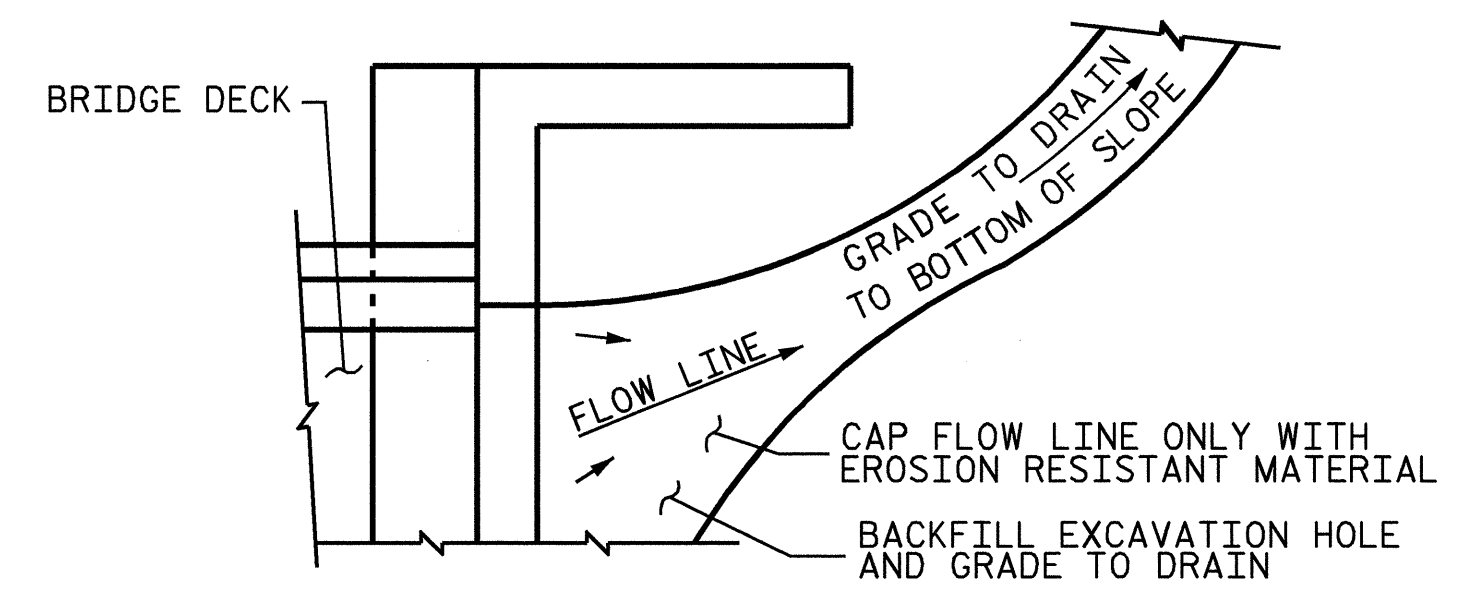
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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



SECTION S-S

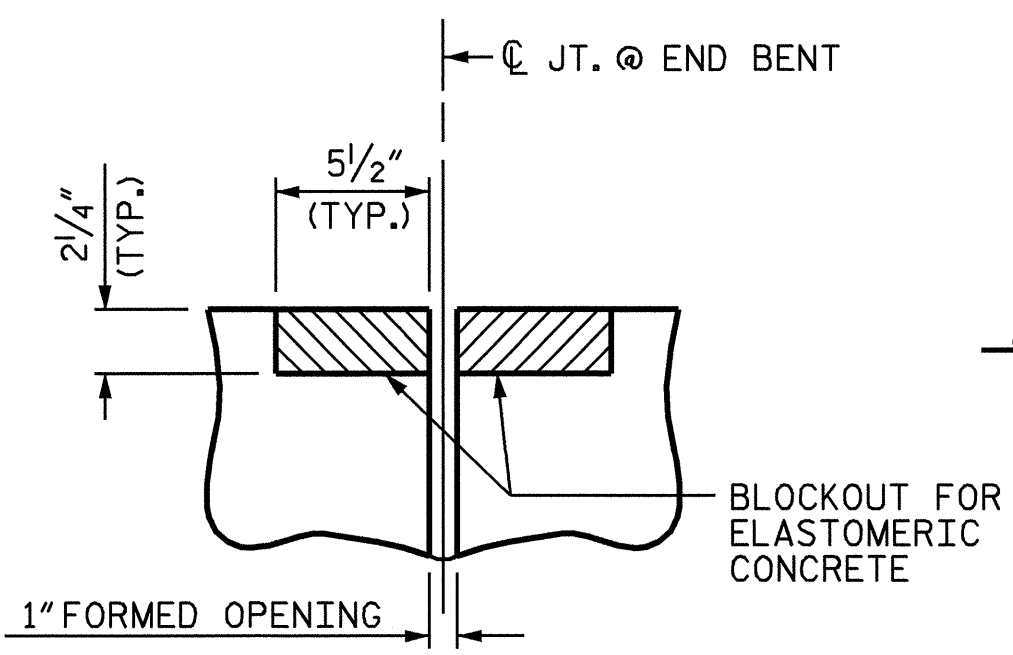
TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

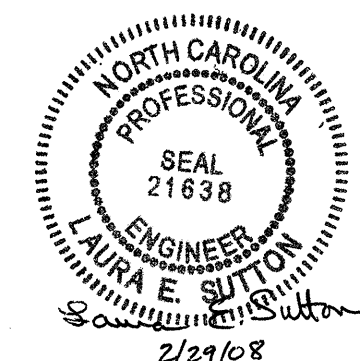
TEMPORARY DRAINAGE DETAIL



SECTION C-C
EVAZOTE JOINT SEAL
(PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS)

ELASTOMERIC CONCRETE	
END BENT	ELASTOMERIC CONCRETE ** (CU. FT.)
1	8.0
2	8.0
TOTAL	16.0

** BASED ON THE MINIMUM BLOCKOUT SHOWN.



PROJECT NO. B-3705
WAKE COUNTY
STATION: 26+50.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD					
BRIDGE APPROACH SLAB DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-39
					TOTAL SHEETS 42

ASSEMBLED BY: E.C. LOCKLEAR DATE: 7-07-06
CHECKED BY: A.S. CALLAWAY DATE: 8-22-06
DRAWN BY: FCJ 11/88 REV. 10/17/00 RWW/LES
CHECKED BY: ARB 11/88 REV. 5/7/03 RWW/JTE
REV. 5/1/06R MAA/KMM

JOINT SEAL DETAILS @ END BENT

OVERHANG BRACKET CALCULATION INSTRUCTIONS

AASHTO SHAPES - TYPES III, IV, V, AND VI

- RECORD KNOWN INFORMATION ON "BRIDGE OVERHANG BRACKET SUMMARY" ON SHEET 2
- CALCULATE THE MAXIMUM SCREED LOAD PER BRACKET (SLPB) WITH AN ESTIMATED $R = 1.5$. $SLPB = R \times W$. ROUND VALUE UP TO NEAREST SLPB VALUE INDICATED ON APPROPRIATE TABLE 1-1, 1-2, 1-3, OR 1-4.
- WITH THE ESTIMATED SLPB, OVERHANG SLAB THICKNESS, K VALUE, AND 45° HANGER SAFE WORKING LOAD (SWL), ENTER THE APPROPRIATE TABLE 1-1, 1-2, 1-3, OR 1-4 (BASED ON OVERHANG DIMENSION) AND DETERMINE THE BRACKET SPACING, S .
- CALCULATE $S/D1$ AND $S/D2$, ROUNDING UP TO NEAREST VALUE IN TABLE 2. ENTER TABLE 2 AND DETERMINE R VALUE.
- CALCULATE REVISED SLPB. ROUND VALUE UP TO NEAREST SLPB VALUE INDICATED ON APPROPRIATE TABLE 1-1, 1-2, 1-3, OR 1-4.
- WITH THE REVISED SLPB, OVERHANG SLAB THICKNESS, K VALUE AND 45° HANGER SAFE WORKING LOAD (SWL), ENTER THE APPROPRIATE TABLE 1-1, 1-2, 1-3 OR 1-4 (BASED ON OVERHANG DIMENSION) AND DETERMINE REVISED BRACKET SPACING, S .
- CONTINUE ITERATIONS OF STEPS 4-6 UNTIL THE REVISED BRACKET SPACING, S , IS THE SAME AS THE PREVIOUS S VALUE.
- CHECK LUMBER JOIST SPACING: WITH BRACKET SPACING VALUE, S , ROUND THIS VALUE UP TO THE NEAREST VALUE OF ALLOWABLE SPAN LENGTH OF JOIST OF TABLE 3. USING THIS VALUE, ALONG WITH THE AVERAGE OVERHANG SLAB THICKNESS AND THE LUMBER JOIST SIZE, DETERMINE JOIST SPACING FROM TABLE 3. IF NECESSARY, ADJUST LUMBER JOIST SIZE AND/OR JOIST SPACING TO MEET ALLOWABLE SPAN LENGTH OF JOIST.
- CONVERSELY, IF THE DESIRED JOIST SPACING IS KNOWN, USE THIS ALONG WITH THE AVERAGE OVERHANG SLAB THICKNESS AND THE LUMBER JOIST SIZE TO DETERMINE IF ALLOWABLE SPAN LENGTH OF JOIST IS GREATER THAN THE BRACKET SPACING, S . IF NECESSARY, ADJUST LUMBER JOIST SIZE TO MEET REQUIREMENTS OF ALLOWABLE SPAN LENGTH OF JOIST AND JOIST SPACING.
- RECORD REMAINING INFORMATION ON "BRIDGE OVERHANG BRACKET SUMMARY" FORM.
- SUBMIT FORM AND CALCULATIONS FOR REVIEW AND APPROVAL.

TABLE 1-1 (FOR USE ON UP TO 2'-0" OVERHANG (L) & 54" HORIZONTAL LEG LENGTH OF THE OVERHANG BRACKET)

AVG. SLAB THICKNESS (in)	BRACKET DIMENSION (in)	SCREED LOAD PER BRACKET									45° HANGER SWL (lbs)
		2500 lbs.	2250 lbs.	2000 lbs.	1750 lbs.	1500 lbs.	1250 lbs.	1000 lbs.	750 lbs.	0 lbs.	
		BRACKET SPACING									
10	30	3'-6"	4'-0"	4'-5"	4'-9"	5'-1"	5'-3"	5'-5"	5'-7"	5'-9"	4000
	40	3'-6"	4'-0"	4'-5"	4'-9"	5'-1"	5'-3"	5'-5"	5'-7"	5'-9"	6000
	50	3'-6"	4'-0"	4'-5"	4'-9"	5'-1"	5'-3"	5'-5"	5'-7"	5'-9"	6000
12	30	3'-2"	3'-7"	4'-1"	4'-7"	5'-0"	5'-2"	5'-4"	5'-7"	6'-5"	4000
	40	3'-2"	3'-7"	4'-1"	4'-7"	5'-0"	5'-2"	5'-4"	5'-7"	6'-5"	6000
	50	3'-2"	3'-7"	4'-1"	4'-7"	5'-0"	5'-2"	5'-4"	5'-7"	6'-5"	6000
14	30	2'-10"	3'-4"	3'-9"	4'-2"	4'-7"	5'-0"	5'-4"	5'-7"	6'-4"	4000
	40	2'-10"	3'-4"	3'-9"	4'-2"	4'-7"	5'-0"	5'-4"	5'-7"	6'-4"	6000
	50	2'-10"	3'-4"	3'-9"	4'-2"	4'-7"	5'-0"	5'-4"	5'-7"	6'-4"	6000
16	30	2'-8"	3'-0"	3'-5"	3'-10"	4'-3"	4'-7"	5'-0"	5'-5"	6'-3"	4000
	40	2'-8"	3'-0"	3'-5"	3'-10"	4'-3"	4'-7"	5'-0"	5'-5"	6'-3"	6000
	50	2'-8"	3'-0"	3'-5"	3'-10"	4'-3"	4'-7"	5'-0"	5'-5"	6'-3"	6000

TABLE 1-2 (FOR USE ON OVER 2'-0" TO 2'-6" OVERHANG (L) & 54" HORIZONTAL LEG LENGTH OF THE OVERHANG BRACKET)

AVG. SLAB THICKNESS (in)	BRACKET DIMENSION (in)	SCREED LOAD PER BRACKET									45° HANGER SWL (lbs)
		2500 lbs.	2250 lbs.	2000 lbs.	1750 lbs.	1500 lbs.	1250 lbs.	1000 lbs.	750 lbs.	0 lbs.	
		BRACKET SPACING									
10	30	3'-1"	3'-6"	4'-0"	4'-5"	4'-11"	5'-3"	5'-5"	5'-7"	6'-7"	4000
	40	3'-1"	3'-6"	4'-0"	4'-5"	4'-11"	5'-3"	5'-5"	5'-7"	6'-7"	6000
	50	3'-1"	3'-6"	4'-0"	4'-5"	4'-11"	5'-3"	5'-5"	5'-7"	6'-7"	6000
12	30	2'-9"	3'-2"	3'-7"	4'-0"	4'-5"	4'-10"	5'-3"	5'-7"	6'-5"	4000
	40	2'-9"	3'-2"	3'-7"	4'-0"	4'-5"	4'-10"	5'-3"	5'-7"	6'-5"	6000
	50	2'-9"	3'-2"	3'-7"	4'-0"	4'-5"	4'-10"	5'-3"	5'-7"	6'-5"	6000
14	30	2'-6"	2'-10"	3'-3"	3'-7"	4'-0"	4'-4"	4'-9"	5'-1"	6'-3"	4000
	40	2'-6"	2'-10"	3'-3"	3'-7"	4'-0"	4'-4"	4'-9"	5'-1"	6'-3"	6000
	50	2'-6"	2'-10"	3'-3"	3'-7"	4'-0"	4'-4"	4'-9"	5'-1"	6'-3"	6000
16	30	2'-3"	2'-7"	2'-11"	3'-4"	3'-8"	4'-0"	4'-4"	4'-8"	5'-8"	4000
	40	2'-3"	2'-7"	2'-11"	3'-4"	3'-8"	4'-0"	4'-4"	4'-8"	5'-8"	6000
	50	2'-3"	2'-7"	2'-11"	3'-4"	3'-8"	4'-0"	4'-4"	4'-8"	5'-8"	6000

TABLE 1-3 (FOR USE ON OVER 2'-6" TO 3'-0" OVERHANG (L) & 54" HORIZONTAL LEG LENGTH OF THE OVERHANG BRACKET)

AVG. SLAB THICKNESS (in)	BRACKET DIMENSION (in)	SCREED LOAD PER BRACKET									45° HANGER SWL (lbs)
		2500 lbs.	2250 lbs.	2000 lbs.	1750 lbs.	1500 lbs.	1250 lbs.	1000 lbs.	750 lbs.	0 lbs.	
		BRACKET SPACING									
10	30					2'-1"	2'-6"	2'-11"	3'-4"	4'-6"	4000
	40					2'-1"	2'-6"	2'-11"	3'-4"	4'-6"	6000
	50	2'-9"	3'-2"	3'-7"	4'-0"	4'-5"	4'-10"	5'-3"	5'-7"	6'-7"	4000
12	30					2'-1"	2'-6"	2'-11"	3'-4"	4'-6"	4000
	40					2'-1"	2'-6"	2'-11"	3'-4"	4'-6"	6000
	50	2'-9"	3'-2"	3'-7"	4'-0"	4'-5"	4'-10"	5'-3"	5'-7"	6'-7"	4000
14	30					3'-11"	4'-3"	4'-8"	5'-0"	6'-1"	4000
	40					2'-2"	2'-7"	2'-11"	3'-4"	4'-0"	4000
	50	2'-5"	2'-10"	3'-2"	3'-6"	3'-11"	4'-3"	4'-8"	5'-0"	6'-1"	6000
16	30					2'-0"	2'-4"	2'-8"	3'-8"	4'-0"	4000
	40					2'-0"	2'-4"	2'-8"	3'-8"	4'-0"	6000
	50	2'-0"	2'-4"	2'-7"	2'-11"	3'-2"	3'-6"	3'-10"	4'-2"	4'-6"	5'-6"

TABLE 1-4 (FOR USE ON OVER 3'-0" TO 3'-6" OVERHANG (L) & 54" HORIZONTAL LEG LENGTH OF THE OVERHANG BRACKET)

AVG. SLAB THICKNESS (in)	BRACKET DIMENSION (in)	SCREED LOAD PER BRACKET									45° HANGER SWL (lbs)
		2500 lbs.	2250 lbs.	2000 lbs.	1750 lbs.	1500 lbs.	1250 lbs.	1000 lbs.	750 lbs.	0 lbs.	
		BRACKET SPACING									
10	30					2'-3"	2'-1"	2'-5"	2'-9"	3'-10"	4000
	40					2'-3"	2'-1"	2'-5"	2'-9"	3'-10"	6000
	50			2'-4"	3'-0"	3'-7"	4'-1"	4'-5"	4'-9"	5'-9"	4000
12	30					2'-1"	2'-8"	3'-4"	3'-11"	5'-2"	4000
	40					2'-1"	2'-8"	3'-4"	3'-11"	5'-2"	6000
	50	2'-4"	2'-8"	3'-0"	3'-4"	3'-8"	4'-1"	4'-5"	4'-9"	5'-9"	4000
14	30					2'-0"	2'-6"	3'-1"	3'-8"	4'-8"	4000
	40					2'-0"	2'-6"	3'-1"	3'-8"	4'-8"	6000
	50			2'-2"	2'-5"	2'-8"	3'-0"	3'-3"	3'-6"	3'-10"	4000
16	30					2'-2"	2'-6"	3'-1"	3'-8"	4'-8"	4000
	40					2'-2"	2'-6"	3'-1"	3'-8"	4'-8"	6000
	50	2'-1"	2'-4"	2'-8"	3'-0"	3'-4"	3'-7"	3'-11"	4'-3"	5'-2"	4000

DEFINITIONS

- SLPB = SCREED LOAD PER BRACKET (R x W)
- R = SCREED LOAD FACTOR, OBTAINED FROM TABLE 2
- W = WHEEL LOAD
- S = BRACKET SPACING
- T = AVERAGE SLAB THICKNESS
- SWL = SAFE WORKING LOAD
- K = DIMENSION DEFINED ON "BRIDGE OVERHANG BRACKET SUMMARY" ON SHEET 2
- L = OVERHANG MEASURED FROM EDGE OF TOP FLANGE TO EDGE OF SUPERSTRUCTURE

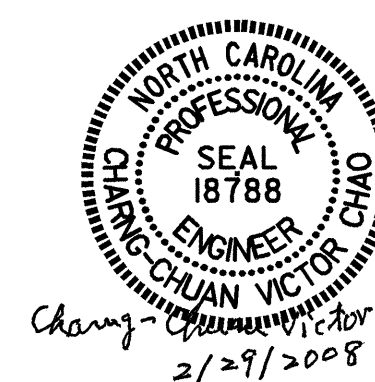
PROJECT NO. B-3705

WAKE COUNTY

STATION: 26+50.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 OVERHANG FALSEWORK
 AASHTO TYPES
 III, IV, V, AND VI



REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	42
1			3			
2			4			

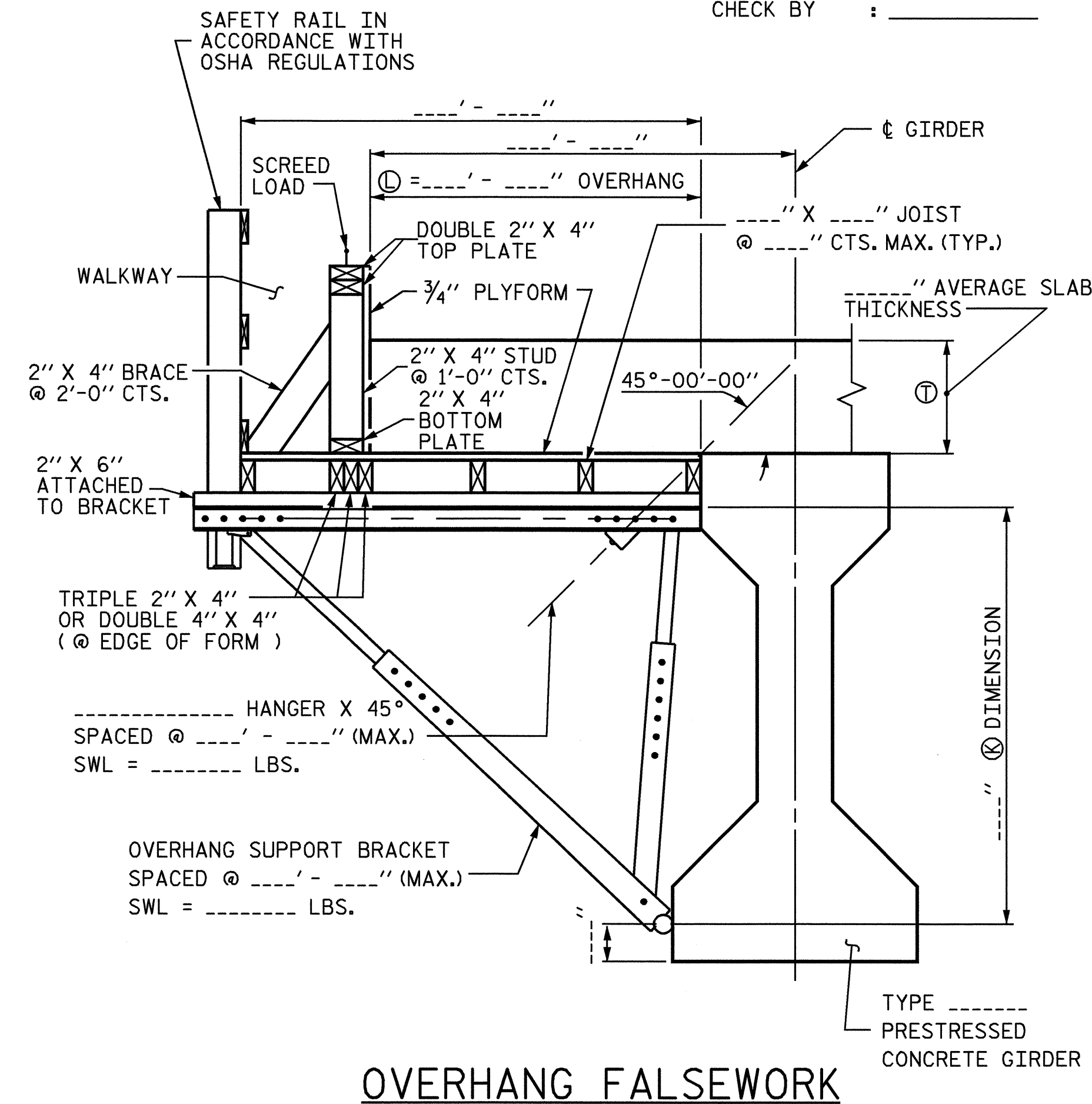
DRAWN BY: R. WRIGHT 06/04
 CHECKED BY: C. V. CHAO 06/04

BRIDGE OVERHANG BRACKET SUMMARY

TOTAL SCREED WEIGHT = _____ LBS.
 NUMBER OF SCREED WHEELS = _____
 SCREED WHEEL LOAD (W) = _____ LBS.
 SCREED LOAD PER BRACKET = _____ LBS.

PROJECT No. : _____
 COUNTY : _____
 STATION : _____
 DESCRIPTION : _____

DATE : _____
 DESIGN BY : _____
 CHECK BY : _____



OVERHANG FALSEWORK

NOTES

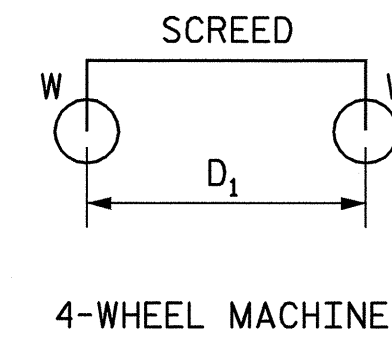
DESIGN INCLUDES CONSTRUCTION LIVE LOAD 20 PSF ON THE AREA SUPPORTED AND 75 PLF AT THE OUTSIDE DECK OF OVERHANGS.

REQUIRED MINIMUM DIAGONAL LEG CAPACITY: 3600 LB WORKING LOAD

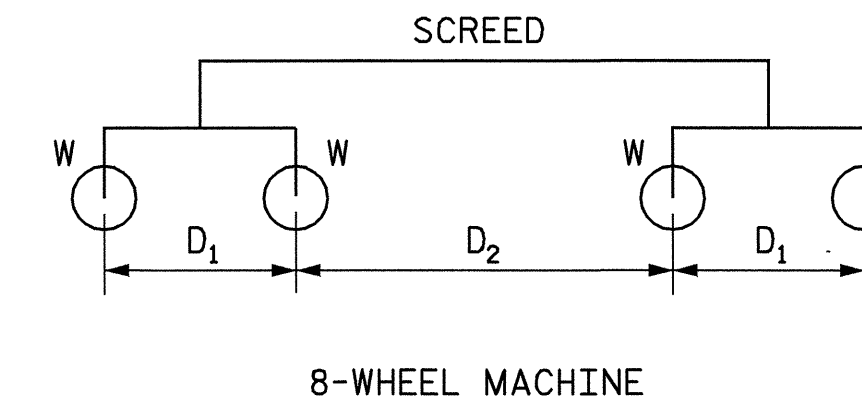
THE CONTRACTOR HAS THE OPTION OF SUBMITTING HIS OWN DESIGN FOR OVERHANG FALSEWORK IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

SUBMITTALS UTILIZING THE INSTRUCTIONS AND PROCEDURES DESCRIBED ON SHEET 1 OF 3 SHALL BE IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF THE SPECIFICATIONS AND SPECIAL PROVISIONS, EXCEPT THAT CALCULATIONS FOR OVERHANG FALSEWORK NEED NOT BE SEALED BY A REGISTERED ENGINEER.

FOR OVERHANG FALSEWORK BRACING DESIGN, SEE SHEET 3 OF 3.



4-WHEEL MACHINE



8-WHEEL MACHINE

TABLE 2: SCREED LOAD FACTOR "R"

4 WHEEL MACHINE	
S/D1	R
<= 1.0	1.00
1.1	1.09
1.2	1.17
1.3	1.23
1.4	1.29
1.5	1.33
1.6	1.38
1.7	1.41
1.8	1.44
1.9	1.47
2.0	1.50
2.2	1.55
2.4	1.58
2.6	1.62
2.8	1.64
3.0	1.67
3.5	1.71
4.0	1.75

		THE SCREED LOAD FACTOR R (FOR 8 WHEEL MACHINE)																	
		S/D ₂																	
		<= 1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.2	2.4	2.6	2.8	3.0	3.5	4.0
S/D ₁	<= 1.0	1.00	1.09	1.17	1.23	1.29	1.33	1.38	1.41	1.44	1.47	1.50	1.55	1.58	1.62	1.64	1.67	1.71	1.75
	1.1	1.09	1.18	1.26	1.32	1.38	1.42	1.47	1.50	1.54	1.56	1.59	1.64	1.67	1.71	1.73	1.76	1.81	1.84
	1.2	1.17	1.26	1.33	1.40	1.45	1.50	1.54	1.58	1.61	1.64	1.67	1.71	1.75	1.78	1.81	1.83	1.88	1.92
	1.3	1.23	1.32	1.40	1.46	1.52	1.56	1.61	1.64	1.68	1.70	1.73	1.78	1.81	1.85	1.87	1.90	1.95	1.98
	1.4	1.29	1.38	1.45	1.52	1.57	1.62	1.66	1.70	1.73	1.76	1.79	1.83	1.87	1.90	1.93	1.95	2.00	2.07
	1.5	1.33	1.42	1.50	1.56	1.62	1.67	1.71	1.75	1.78	1.81	1.83	1.88	1.92	1.95	1.98	2.00	2.10	2.17
	1.6	1.38	1.47	1.54	1.61	1.66	1.71	1.75	1.79	1.82	1.85	1.88	1.92	1.96	1.99	2.04	2.08	2.18	2.25
	1.7	1.41	1.50	1.58	1.64	1.70	1.75	1.79	1.82	1.86	1.89	1.91	1.96	2.00	2.05	2.11	2.16	2.25	2.32
	1.8	1.44	1.54	1.61	1.68	1.73	1.78	1.82	1.86	1.89	1.92	1.94	1.99	2.06	2.12	2.17	2.22	2.32	2.39
	1.9	1.47	1.56	1.64	1.70	1.76	1.81	1.85	1.89	1.92	1.95	1.97	2.04	2.11	2.18	2.23	2.28	2.38	2.45
	2.0	1.50	1.59	1.67	1.73	1.79	1.83	1.88	1.91	1.94	1.97	2.00	2.09	2.17	2.23	2.29	2.33	2.43	2.50
	2.2	1.55	1.64	1.71	1.78	1.83	1.88	1.92	1.96	1.99	2.04	2.09	2.18	2.26	2.32	2.38	2.42	2.52	2.59
	2.4	1.58	1.67	1.75	1.81	1.87	1.92	1.96	2.00	2.06	2.11	2.17	2.26	2.33	2.40	2.45	2.50	2.60	2.67
	2.6	1.62	1.71	1.78	1.85	1.90	1.95	1.99	2.05	2.12	2.18	2.23	2.32	2.40	2.46	2.52	2.56	2.66	2.73
	2.8	1.64	1.73	1.81	1.87	1.93	1.98	2.04	2.11	2.17	2.23	2.29	2.38	2.45	2.52	2.57	2.62	2.71	2.79
	3.0	1.67	1.76	1.83	1.90	1.95	2.00	2.08	2.16	2.22	2.28	2.33	2.42	2.50	2.56	2.62	2.67	2.76	2.83
3.5	1.71	1.81	1.88	1.95	2.00	2.10	2.18	2.25	2.32	2.38	2.43	2.52	2.60	2.66	2.71	2.76	2.86	2.93	
4.0	1.75	1.84	1.92	1.98	2.07	2.17	2.25	2.32	2.39	2.45	2.50	2.59	2.67	2.73	2.79	2.83	2.93	3.00	

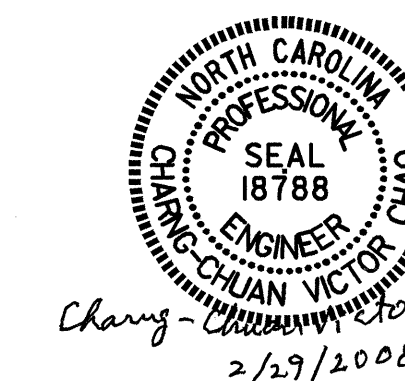
TABLE 3: ALLOWABLE SPAN LENGTH OF JOISTS AND JOIST SPACINGS

AVG. SLAB THICKNESS (IN)	LUMBER JOIST SIZE (IN X IN)	JOIST SPACINGS			
		15 IN	12 IN	10 IN	8 IN
10	2 X 4	---	4' - 6"	4' - 9"	5' - 0"
	4 X 4	5' - 9"	6' - 3"	6' - 6"	6' - 7"
12	2 X 4	---	4' - 3"	4' - 9"	5' - 0"
	4 X 4	5' - 3"	6' - 0"	6' - 3"	6' - 5"
14	2 X 4	---	4' - 0"	4' - 6"	5' - 0"
	4 X 4	---	5' - 6"	6' - 0"	6' - 4"
16	2 X 4	---	4' - 0"	4' - 3"	4' - 9"
	4 X 4	---	5' - 3"	5' - 9"	6' - 3"

PROJECT NO. B-3705
WAKE COUNTY
 STATION: 26+50.00 -L-

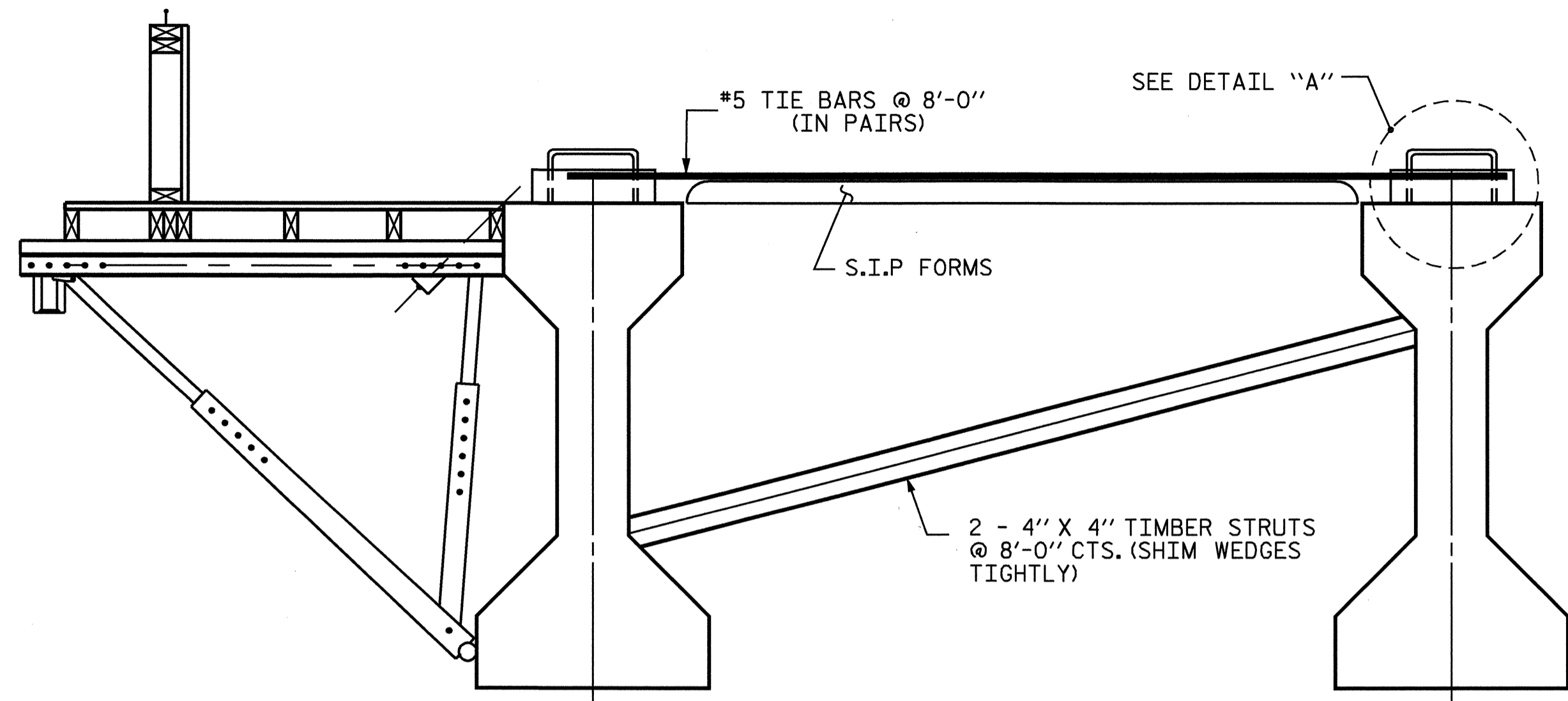
SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
OVERHANG FALSEWORK
 AASHTO TYPES III, IV, V, AND VI



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-41
1			3			TOTAL SHEETS 42
2			4			

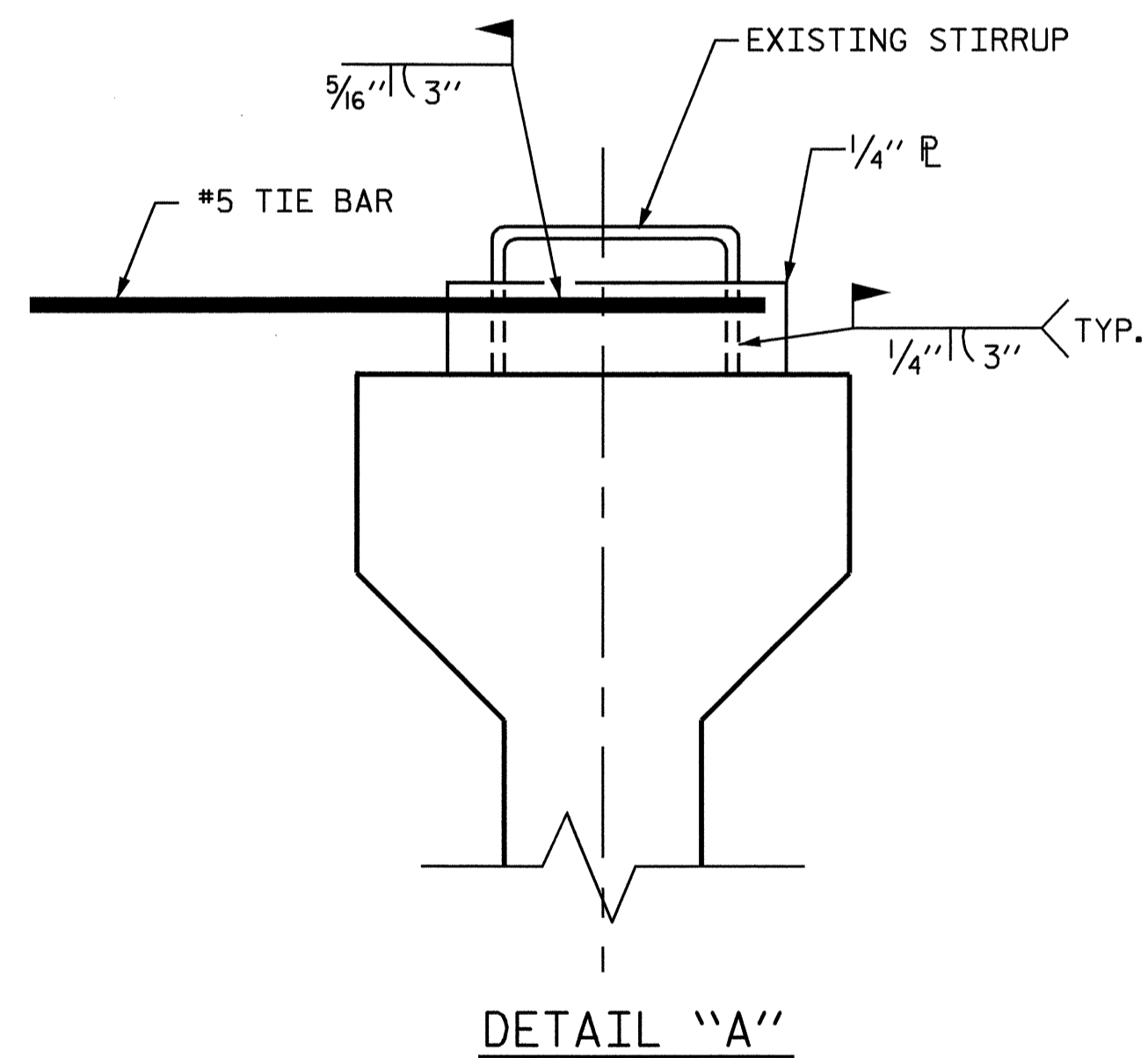
DRAWN BY: R. WRIGHT 06/04
 CHECKED BY: C. V. CHAO 06/04



EXTERIOR GIRDER

INTERIOR GIRDER

DETAIL OF REQUIRED OVERHANG FALSEWORK BRACING SYSTEM



NOTES:

EACH #5 TIE BAR SHALL BE WELDED TO ONE STIRRUP LOOP AS SHOWN IN DETAIL "A". #5 TIE BARS SHALL BE WELDED TO TWO ADJACENT STIRRUPS OF THE EXTERIOR GIRDER AND THE ADJACENT INTERIOR GIRDER BETWEEN PERMANENT DIAPHRAGMS. WELD STEEL PLATES IN BETWEEN THE TIE BARS AND THE STIRRUP LOOP. WELDING TWO TIE BARS TO THE SAME STIRRUP LOOP SHALL NOT BE PERMITTED.

MAXIMUM SPACING BETWEEN THE BRACING (TIE BARS-TIMBER STRUT) IS 8'-0" CTS. #5 TIE BARS SHALL BE LOCATED OVER A TIMBER STRUT.

INSTALL TIE BARS AND TIMBER STRUTS PRIOR TO PLACEMENT OF CONCRETE OR SCREED WEIGHT ONTO THE OVERHANG FALSEWORK.

PROJECT NO. B-3705
WAKE COUNTY
 STATION: 26+50.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 OVERHANG FALSEWORK
 AASHTO TYPES
 III, IV, V, AND VI



Chuan Victor Chao
 2/29/2008

DRAWN BY: R. WRIGHT 06/04
 CHECKED BY: C. V. CHAO 06/04

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-42
1			3			TOTAL SHEETS
2			4			42

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 2002 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; CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP; AND CLASS S SHALL BE USED FOR UNDERWATER FOOTING SEALS.

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 WITH THE EXCEPTION OF #2 BARS WHICH MAY BE FABRICATED FROM COLD DRAWN STEEL WIRE. 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.

PLACEMENT OF BEAM OR GIRDER MEMBERS ON TRUCKS FOR HAULING SHALL BE DONE IN COMPLIANCE WITH LIMITS SHOWN ON SKETCHES PROVIDED TO THE MATERIALS AND TEST UNIT APPROVED BY THE STRUCTURE DESIGN UNIT DATED MAY 8, 1991. THESE SKETCHES PRIMARILY LIMIT THE UNSUPPORTED CANTILEVER LENGTH OF MEMBERS. WHEN THE CONTRACTOR WISHES TO PLACE MEMBERS ON TRUCKS NOT IN ACCORDANCE WITH THESE LIMITS, TO SHIP BY RAIL, TO ATTACH SHIPPING RESTRAINTS TO THE MEMBERS OR TO INVERT MEMBERS, HE SHALL SUBMIT A SKETCH FOR APPROVAL PRIOR TO SHIPPING. SEE ALSO ARTICLE 1072-11.

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

STD. NO. SN