09/08/99

TIP PROJECT: B-3677

CONTRACT: C201969

STRUCTURE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

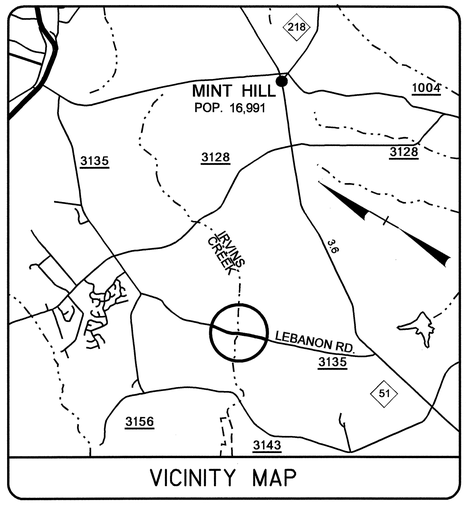
MECKLENBURG COUNTY

LOCATION: BRIDGE NO. 36 OVER IRVINS CREEK ON SR 3135 (LEBANON ROAD)

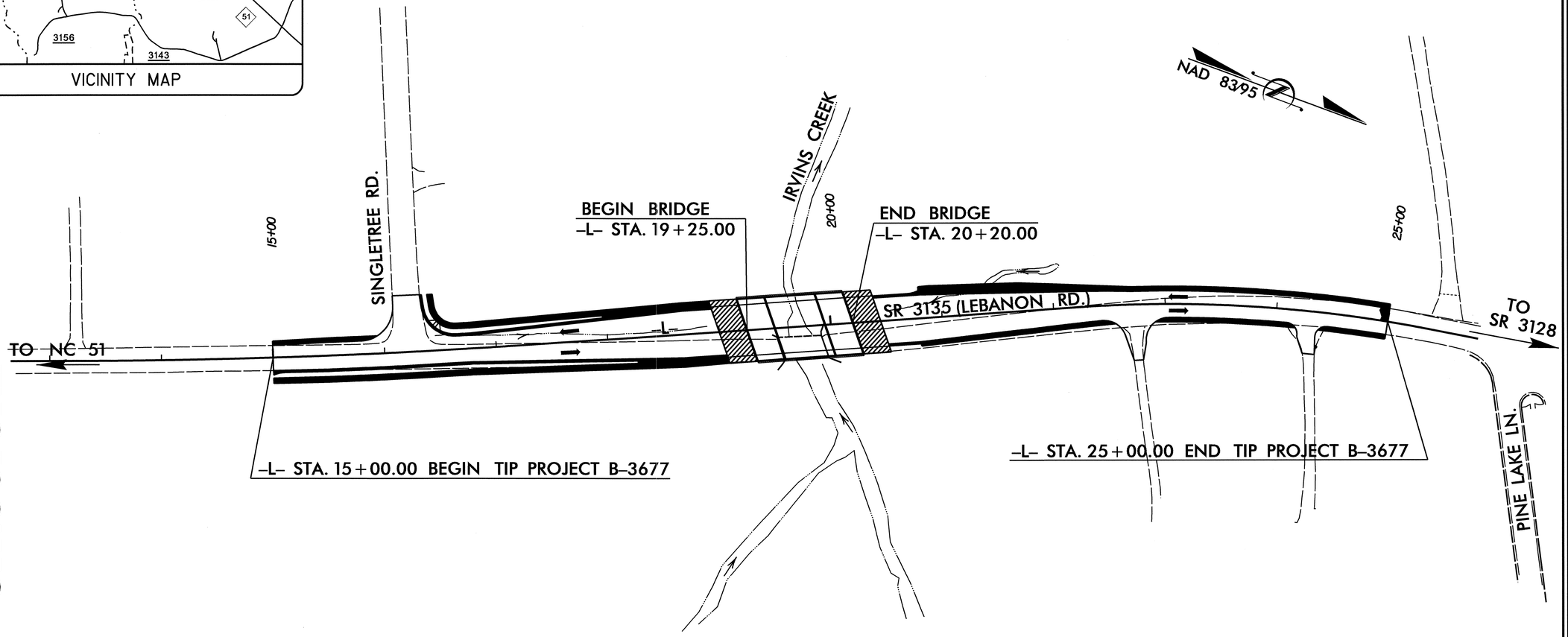
TYPE OF WORK: GRADING, DRAINAGE, PAVING, & STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3677		

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33220.1.1	BRSTP-3135(4)	PE
33220.2.1	BRSTP-3135(4)	R/W, UTILITIES
33220.3.ST1	STM-3135(5)	CONST.



VICINITY MAP



STATE OF NORTH CAROLINA * DEPARTMENT OF TRANSPORTATION *

DESIGN DATA

ADT 2009 = 7,525
ADT 2029 = 13,025
DHV = 11 %
D = 55 %
T = 6 % *
V = 40 MPH

* (TTST 1% + DUAL 5%)

FUNCTIONAL CLASSIFICATION=
URBAN COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3677 = 0.171 MI
LENGTH STRUCTURE TIP PROJECT B-3677 = 0.018 MI

TOTAL LENGTH TIP PROJECT B-3677 = 0.189 MI

PLANS PREPARED FOR:

DIVISION OF HIGHWAYS
1000 Birch Ridge Dr.
Raleigh, NC 27610

2006 STANDARD SPECIFICATIONS

LETTING DATE:
AUGUST 18, 2009

OMAR R. AZIZI, P.E.
PROJECT ENGINEER

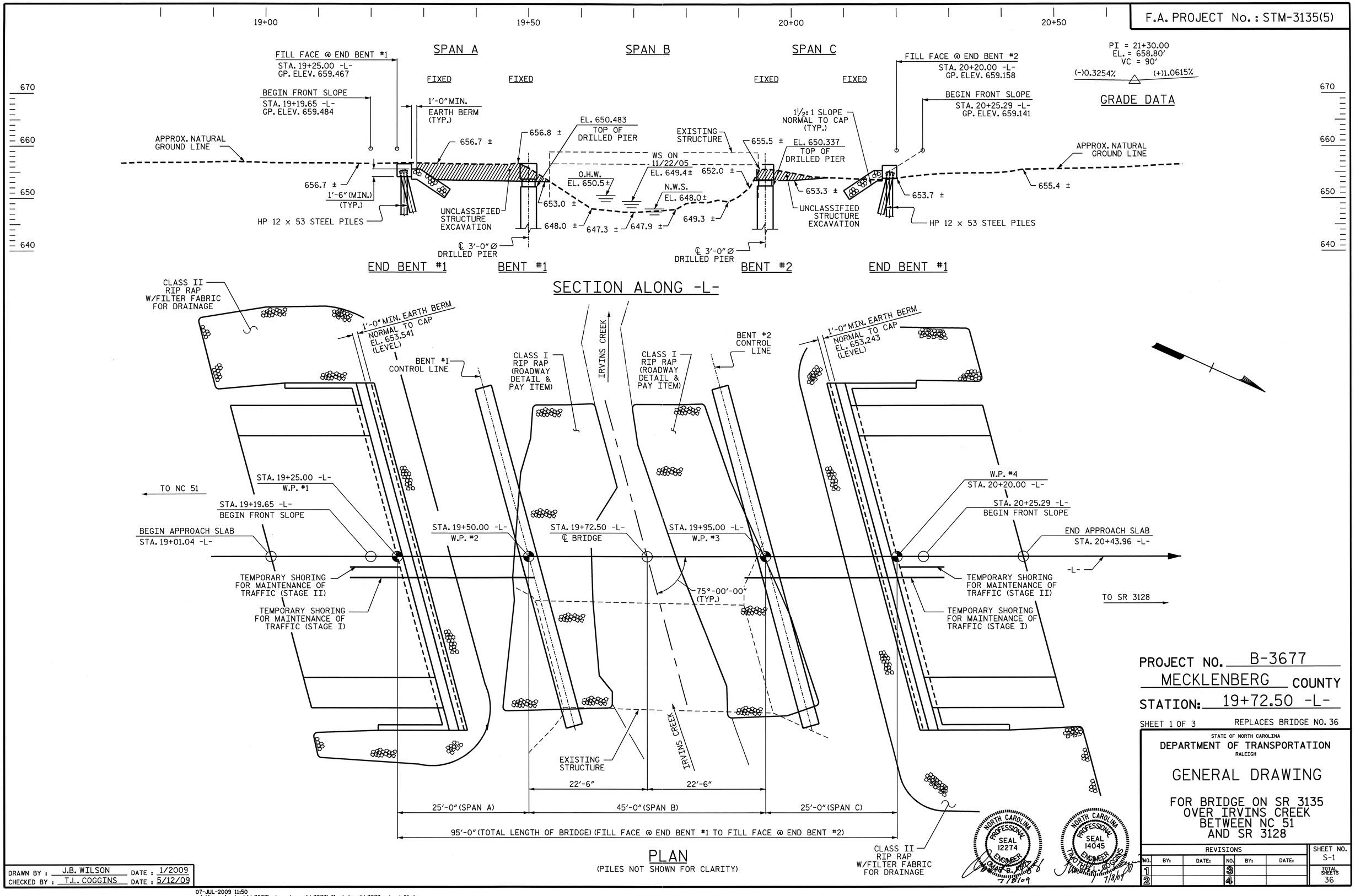
TIMOTHY L. COGGINS, P.E.
PROJECT DESIGN ENGINEER

STRUCTURE DESIGN
1000 BIRCH RIDGE DR.
RALEIGH, NC 27610

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

07-JUL-2009 14:51
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
tverette

F.A. PROJECT No. : STM-3135(5)



SECTION ALONG -L-

PLAN

(PILES NOT SHOWN FOR CLARITY)

CLASS II
RIP RAP
W/FILTER FABRIC
FOR DRAINAGE

NORTH CAROLINA PROFESSIONAL SEAL 12274 ENGINEER OMAR R. KAKA 7/8/09

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS 7/8/09

PROJECT NO. B-3677

MECKLENBERG COUNTY

STATION: 19+72.50 -L-

SHEET 1 OF 3 REPLACES BRIDGE NO. 36

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 3135
OVER IRVINS CREEK
BETWEEN NC 51
AND SR 3128

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

DRAWN BY : J.B. WILSON DATE : 1/2009
CHECKED BY : T.L. COGGINS DATE : 5/12/09

07-JUL-2009 11:50
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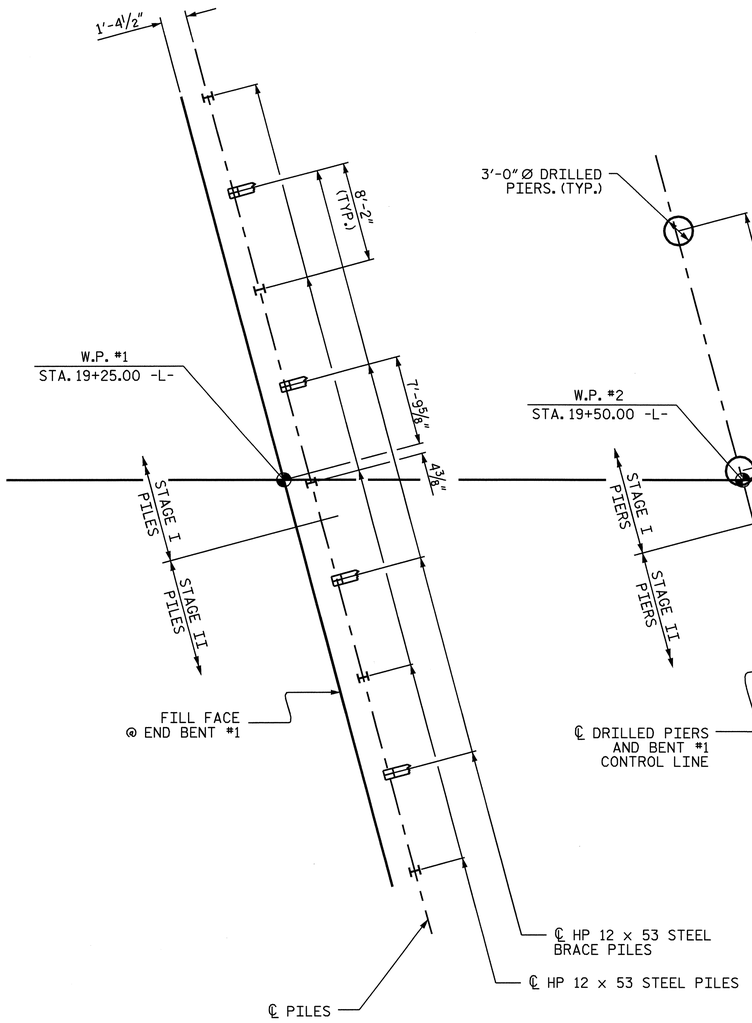
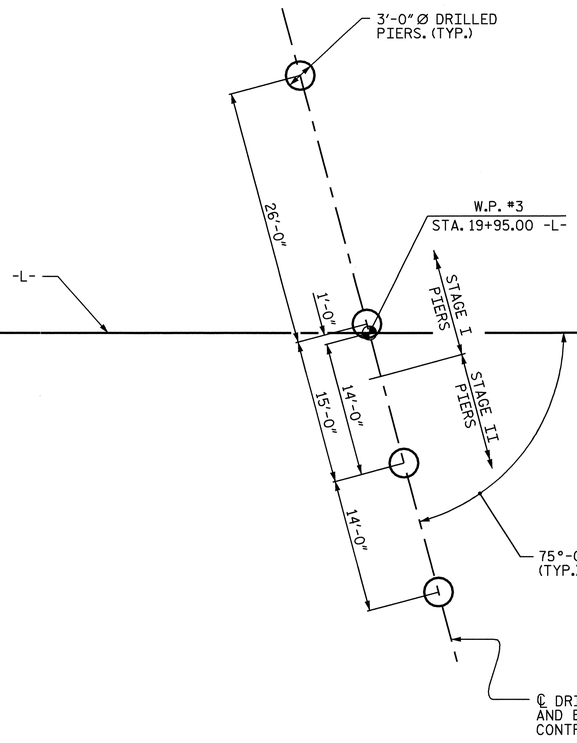
taverette

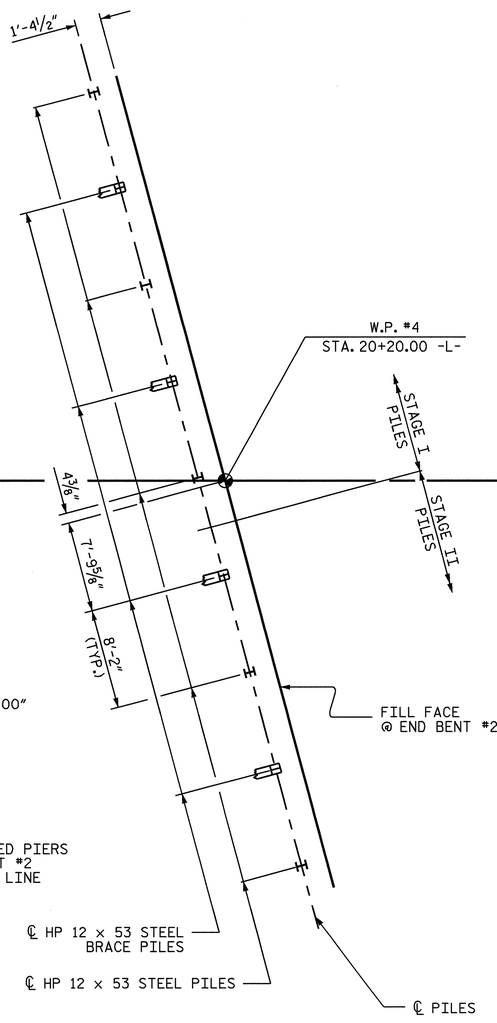


END BENT #1

BENT #1



BENT #2



END BENT #2

FOUNDATION LAYOUT PLAN

BRACE PILES AT END BENTS ARE BATTERED 3:12.

PROJECT NO. B-3677

MECKLENBURG COUNTY

STATION: 19+72.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 3135
OVER IRVINS CREEK
BETWEEN NC 51
AND SR 3128

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

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS
7/8/09

DRAWN BY : J.B. WILSON DATE : 5/7/09
CHECKED BY : T.L. COGGINS DATE : 5/12/09

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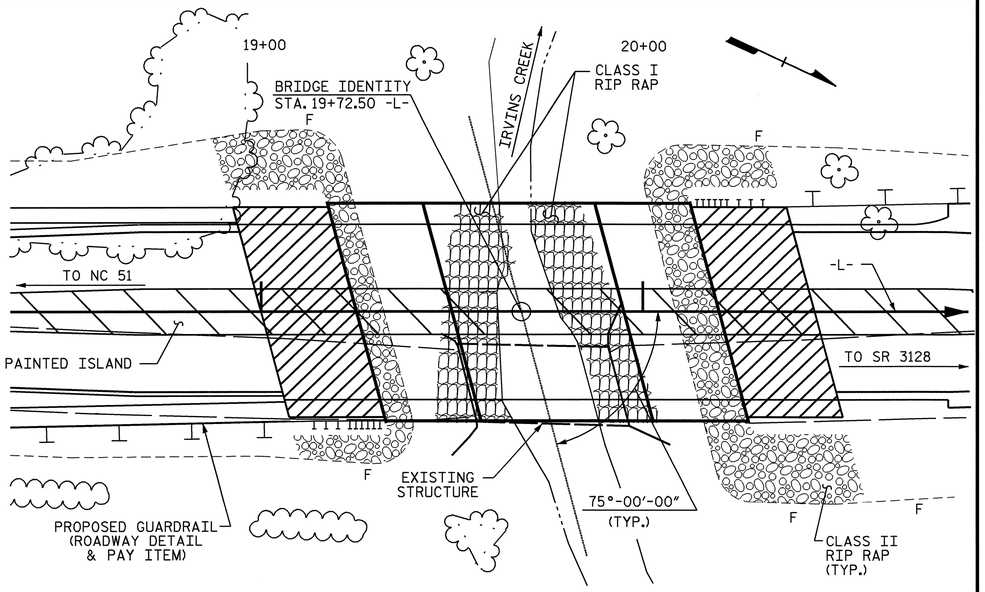
taveretta

BM #2 -BL- STA. 19+32.36, 290.09' LT, RR SPIKE
IN BASE OF 15" HAWTHORNE, EL. 653.306



LOCATION SKETCH

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

HYDRAULIC DATA

DESIGN DISCHARGE	2200 CFS
FREQUENCY OF DESIGN FLOOD	25 YEARS
DESIGN HIGH WATER ELEVATION	658.30
DRAINAGE AREA	5.33 SQ. MI.
BASIC DISCHARGE (Q100)	3100 CFS
BASIC HIGH WATER ELEVATION	659.2

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	3600± CFS
FREQUENCY OF OVERTOPPING FLOOD	100 YRS.+
OVERTOPPING FLOOD ELEVATION	658.90

NOTES

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN 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 @ 40'-7", WITH A TIMBER DECK ON I BEAMS, CLEAR ROADWAY WIDTH OF 19.1 FT, ON A SUBSTRUCTURE CONSISTING OF TIMBER CAPS, POSTS & SILLS, AND TIMBER BULKHEADS, AND LOCATED AT THE PROPOSED BRIDGE 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 CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 40FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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

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

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

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

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

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 19+72.50 -L-.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR PILES, SEE SPECIAL PROVISIONS.

PILES AT END BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 60 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 100 TONS PER PILE.

PILE EXCAVATION IS REQUIRED TO INSTALL PILES AT END BENT NO. 1. EXCAVATE HOLES TO ELEVATION 641.0 FT. AFTER PLACING PILES IN HOLES, DRIVE PILES TO THE REQUIRED DRIVING RESISTANCE.

STEEL PILE POINTS ARE REQUIRED FOR STEEL PILES AT END BENT #1.

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

DRILLED PIERS AT BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 340.0 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30.0 TSF.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO. 1. IF REQUIRED, DO NOT EXTEND CASING BELOW ELEVATION 642.0 FT. WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING.

INSTALL DRILLED PIERS AT BENT NO. 1 THAT EXTEND TO AN ELEVATION NO HIGHER THAN 629.0 FT. AND SATISFY THE REQUIRED END RESISTANCE.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 1 IS ELEVATION 640.0 FT. THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

DRILLED PIERS AT BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 340.0 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30.0 TSF.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO. 2. IF REQUIRED, DO NOT EXTEND CASING BELOW ELEVATION 639.0 FT WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING.

INSTALL DRILLED PIERS AT BENT NO. 2 THAT EXTEND TO AN ELEVATION NO HIGHER THAN 627.0 FT AND SATISFY THE REQUIRED END RESISTANCE.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 2 IS ELEVATION 637.0 FT. THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS.

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

PILES AT END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 60 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 100 TONS PER PILE.

STEEL PILE POINTS ARE REQUIRED FOR STEEL PILES AT END BENT #2

FOR CURING CONCRETE, SEE SPECIAL PROVISIONS.

FOR FORMS FOR CONCRETE BRIDGE DECKS, SEE SPECIAL PROVISIONS.

FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS.

SEE TRAFFIC CONTROL PLANS FOR LOCATION AND PAY LIMITS OF THE UNANCHORED PORTABLE CONCRETE BARRIER RAIL.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	3'-0" DIA. DRILLED PIERS IN SOIL	3'-0" DIA. DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-0" DIA. DRILLED PIER	SID INSPECTION	CROSSHOLE SONIC LOGGING	UNCLASSIFIED STRUCTURE EXCAVATION	CONCRETE WEARING SURFACE	GROOVING BRIDGE FLOORS	CLASS AA CONCRETE	CLASS A CONCRETE
	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	LUMP SUM	SQ.FT.	SQ.FT.	CU. YDS.	CU.YDS.
SUPERSTRUCTURE										4,795	5,983	31.8	
END BENT NO. 1		100	35										23.5
BENT NO. 1				34.00	52.00	33.93							34.5
BENT NO. 2				45.67	48.00	45.35							34.4
END BENT NO. 2													23.5
TOTAL	LUMP SUM	100	35	79.67	100.00	79.38	1	1	LUMP SUM	4,795	5,983	31.8	115.9

	BRIDGE APPROACH SLABS	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	HP 12 X 53 STEEL PILES		STEEL PILE POINTS	TWO BAR METAL RAIL	1'-2"X 3'-8" CONCRETE PARAPET	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	EVAZOTE JOINT SEALS	3'-0"x 1'-9" PRESTRESSED CONC. CORED SLABS	
	LUMP SUM	LBS.	LBS.	LBS.	NO.	LIN. FT.	EACH	LIN. FT.	LIN. FT.	TON	SQ. YD.	LUMP SUM	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE	LUMP SUM		1,324					169.71	185.34			LUMP SUM	LUMP SUM	60	1,848.33
END BENT NO. 1		3,467			9	135	9			154	171				
BENT NO. 1		12,297		1,646											
BENT NO. 2		12,693		1,774											
END BENT NO. 2		3,468			9	135	9			175	195				
TOTAL	LUMP SUM	31,925	1,324	3,420	18	270	18	169.71	185.34	329	366	LUMP SUM	LUMP SUM	60	1,848.33

PROJECT NO. B-3677
MECKLENBURG COUNTY
STATION: 19+72.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 3135
OVER IRVINS CREEK
BETWEEN NC 51
AND SR 3128

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS
7/8/09

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

DRAWN BY : J.B. WILSON DATE : 1/2009
CHECKED BY : T.L. COGGINS DATE : 5/12/09

07-JUL-2009 11:50
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faverette

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE CORED SLAB UNITS

LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING (#)	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE											SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR						MOMENT						
							LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	
DESIGN LOAD RATING		HL-93 (INVENTORY)	N/A	1	1.107	--	1.75	0.277	1.88	B	ER	21.918	0.613	1.11	B	ER	2.192	0.80	0.277	1.49	B	ER	21.918	
		HL-93 (OPERATING)	N/A		1.435	--	1.35	0.277	2.44	B	ER	21.918	0.613	1.43	B	ER	2.192	N/A	--	--	--	--	--	
		HS-20 (INVENTORY)	36.00	2	1.265	45.542	1.80	0.277	2.25	B	ER	21.918	0.613	1.27	B	ER	2.192	1.00	0.277	1.47	B	ER	21.918	
		HS-20 (OPERATING)	36.00		1.687	60.722	1.35	0.277	3.00	B	ER	21.918	0.613	1.69	B	ER	2.192	N/A	--	--	--	ER	--	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.50		2.399	32.386	1.75	0.277	4.38	B	ER	21.918	0.636	2.40	A	ER	1.137	1.00	0.277	2.86	B	ER	21.918	
		NGARBS2	20.00		1.945	38.899	1.75	0.277	3.53	B	ER	17.534	0.636	1.94	A	ER	1.137	1.00	0.277	2.31	B	ER	21.918	
		NAGRIS2	22.00		1.917	42.164	1.75	0.277	3.42	B	ER	17.534	0.636	1.92	A	ER	1.137	1.00	0.277	2.25	B	ER	17.534	
		NCOTTS3	27.25		1.219	33.227	1.75	0.277	2.19	B	ER	21.918	0.636	1.22	A	ER	1.137	1.00	0.277	1.43	B	ER	21.918	
		NAGGRS4	34.93		1.191	41.587	1.75	0.277	1.93	B	ER	21.918	0.636	1.19	A	ER	1.137	1.00	0.277	1.26	B	ER	21.918	
		NS5A	35.55		1.238	44.012	1.75	0.277	1.88	B	ER	21.918	0.636	1.24	A	ER	1.137	1.00	0.277	1.23	B	ER	21.918	
		NS6A	39.95		1.162	46.433	1.75	0.277	1.77	B	ER	21.918	0.613	1.16	B	ER	2.192	1.00	0.277	1.16	B	ER	21.918	
		NS7B	42.00		1.171	49.172	1.75	0.277	1.69	B	ER	21.918	0.613	1.17	B	ER	2.192	1.00	0.277	1.10	B	ER	21.918	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	NAGRIT3	33.00		1.366	45.077	1.75	0.277	2.18	B	ER	21.918	0.613	1.37	B	ER	2.192	1.00	0.277	1.42	B	ER	21.918	
		NT4A	33.08		1.309	43.302	1.75	0.277	2.20	B	ER	21.918	0.613	1.31	B	ER	2.192	1.00	0.277	1.44	B	ER	21.918	
		NT6A	41.60		1.243	51.714	1.75	0.277	1.85	B	ER	21.918	0.636	1.24	A	ER	1.137	1.00	0.277	1.21	B	ER	21.918	
		NT7A	42.00		1.177	49.447	1.75	0.277	1.88	B	ER	21.918	0.613	1.18	B	ER	2.192	1.00	0.277	1.23	B	ER	21.918	
		NT7B	42.00		1.122	47.129	1.75	0.277	1.96	B	ER	21.918	0.613	1.12	B	ER	2.192	1.00	0.277	1.28	B	ER	21.918	
		NAGRIT4	43.00		1.079	46.399	1.75	0.277	1.87	B	ER	21.918	0.613	1.08	B	ER	2.192	1.00	0.277	1.22	B	ER	21.918	
		NAGRIT5A	45.00		1.106	49.750	1.75	0.277	1.74	B	ER	21.918	0.613	1.11	B	ER	2.192	1.00	0.277	1.13	B	ER	21.918	
		NAGRIT5B	45.00	3	1.023	46.016	1.75	0.277	1.70	B	ER	21.918	0.613	1.02	B	ER	2.192	1.00	0.277	1.11	B	ER	21.918	

LOAD FACTORS:

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

LEGAL LOAD RATING FACTORS	YEAR	ADTT	γ_L
	2009	248	N/A
	2029	430	1.75

NOTES:

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

MINIMUM RATING FACTORS FOR LEGAL LOAD RATING ARE BASED ON THE STRENGTH I LIMIT STATE.

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

COMMENTS:

1. SPAN C IDENTICAL TO SPAN A.

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

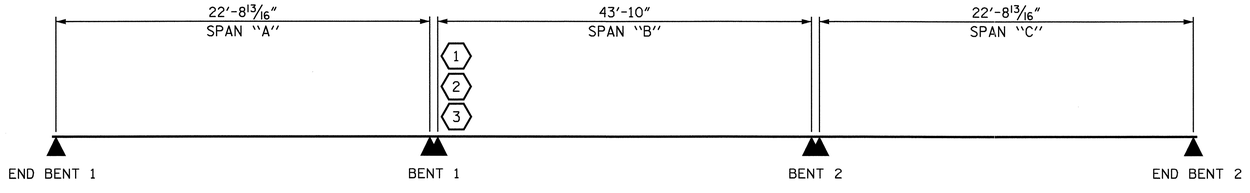
(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

PROJECT NO. B-3677
MECKLENBURG COUNTY
STATION: 19+72.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
LRFR SUMMARY FOR PRESTRESSED CONCRETE CORED SLAB UNITS
(NON-INTERSTATE TRAFFIC)

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS
7/8/09

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

STD. NO. LRFR1

ASSEMBLED BY: M.GUDLAUGSSON DATE : 3/16/09
CHECKED BY : B.N.BARODAWALA DATE : 4/22/09
DRAWN BY : MAA 1/08
CHECKED BY : GM/DI 2/08
REV. 11/12/08R MAA/GM

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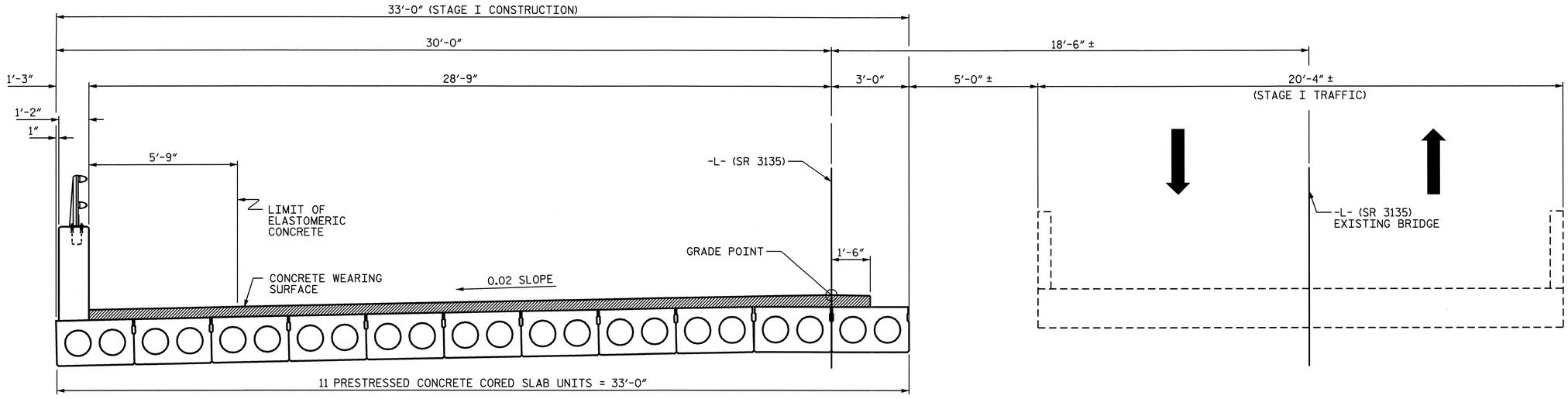
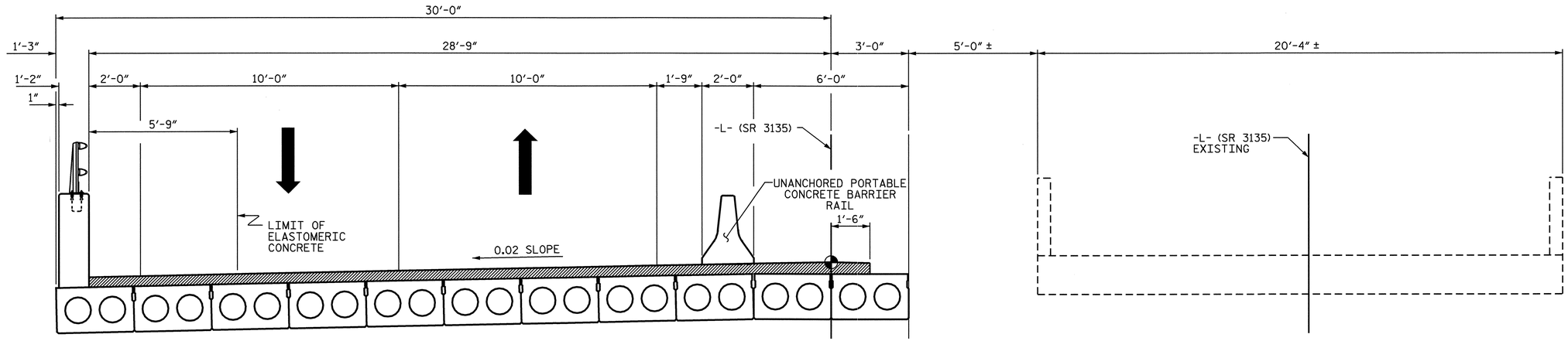
faverette



STAGE I CONSTRUCTION

MAINTAIN TRAFFIC ON EXISTING BRIDGE.
CONSTRUCT LEFT SIDE OF PROPOSED SUBSTRUCTURE, SUPERSTRUCTURE INCLUDING CONCRETE OVERLAY, APPROACH SLAB, AND RIP RAP.



STAGE I CONSTRUCTION

PLACE TEMPORARY UNANCHORED PORTABLE CONCRETE BARRIER AS SHOWN AND TRANSFER TRAFFIC ONTO STAGE I CONSTRUCTION. REMOVE EXISTING BRIDGE.

PROJECT NO. B-3677
MECKLENBURG COUNTY
STATION: 19+72.50-L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONSTRUCTION SEQUENCE

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS
7/8/09

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

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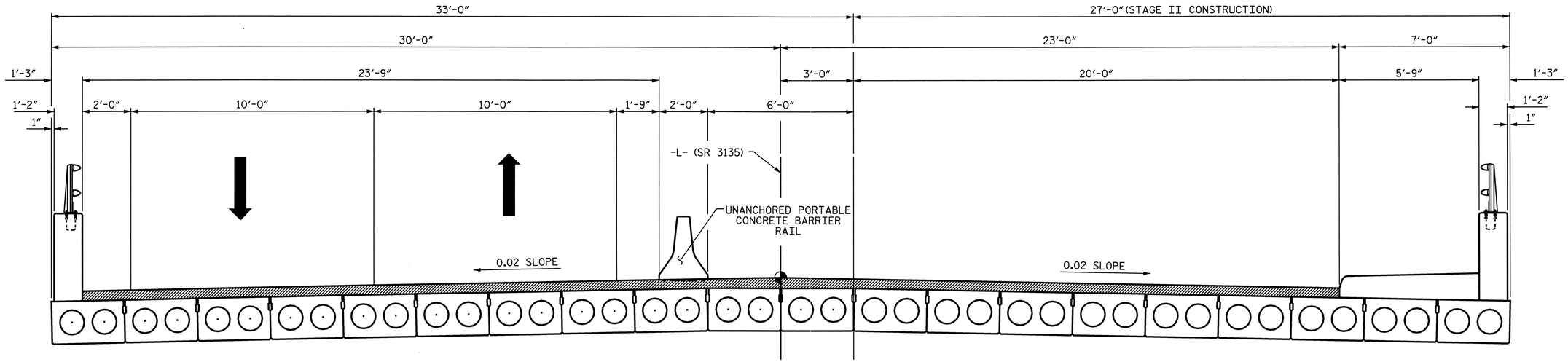
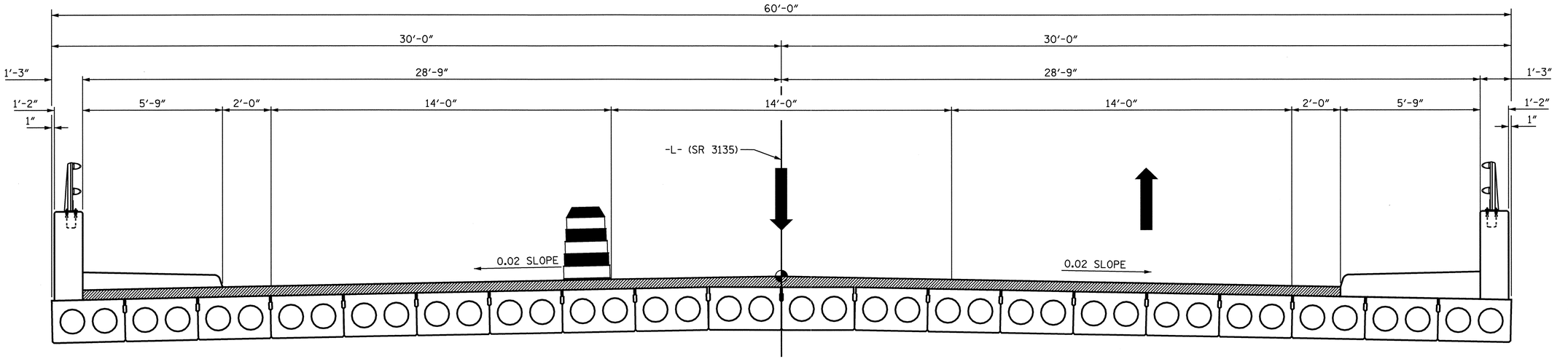
taverette



STAGE II CONSTRUCTION

CONSTRUCT RIGHT SIDE OF PROPOSED SUBSTRUCTURE, SUPERSTRUCTURE INCLUDING CONCRETE OVERLAY, APPROACH SLAB, AND RIP RAP.



STAGE III CONSTRUCTION

PLACE TRAFFIC DRUMS AS SHOWN AND REMOVE TEMPORARY UNANCHORED PORTABLE CONCRETE BARRIER. RELOCATE TRAFFIC AND CONSTRUCT LEFT SIDEWALK.

PROJECT NO. B-3677

MECKLENBURG COUNTY

STATION: 19+72.50-L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONSTRUCTION SEQUENCE

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS
7/8/09

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

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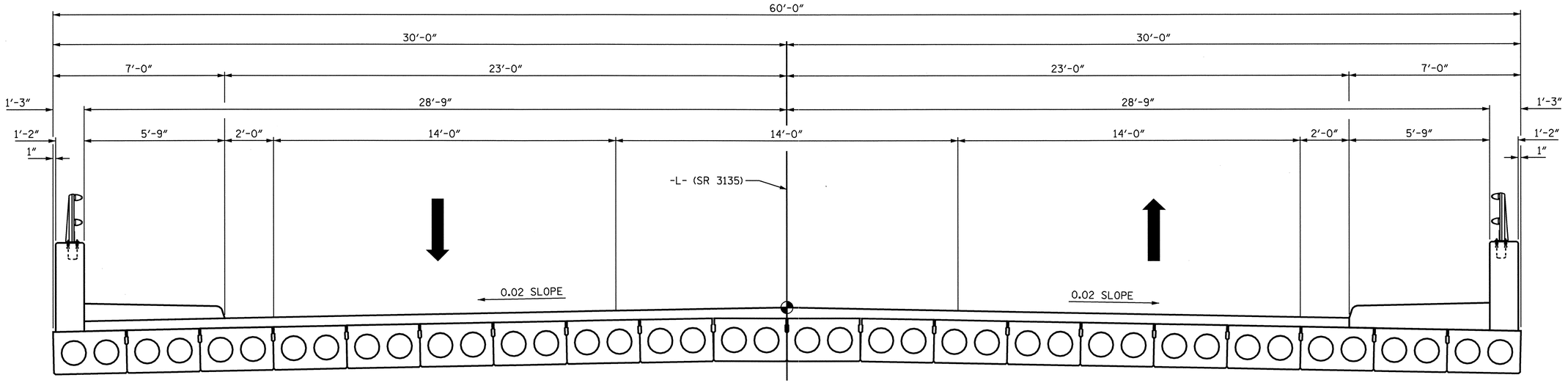

FINAL TYPICAL SECTION

REMOVE TRAFFIC DRUMS AND OPEN STRUCTURE TO TRAFFIC.

PROJECT NO. B-3677

MECKLENBURG COUNTY

STATION: 19+72.50-L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONSTRUCTION SEQUENCE

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

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY R. COGGINS
7/8/09

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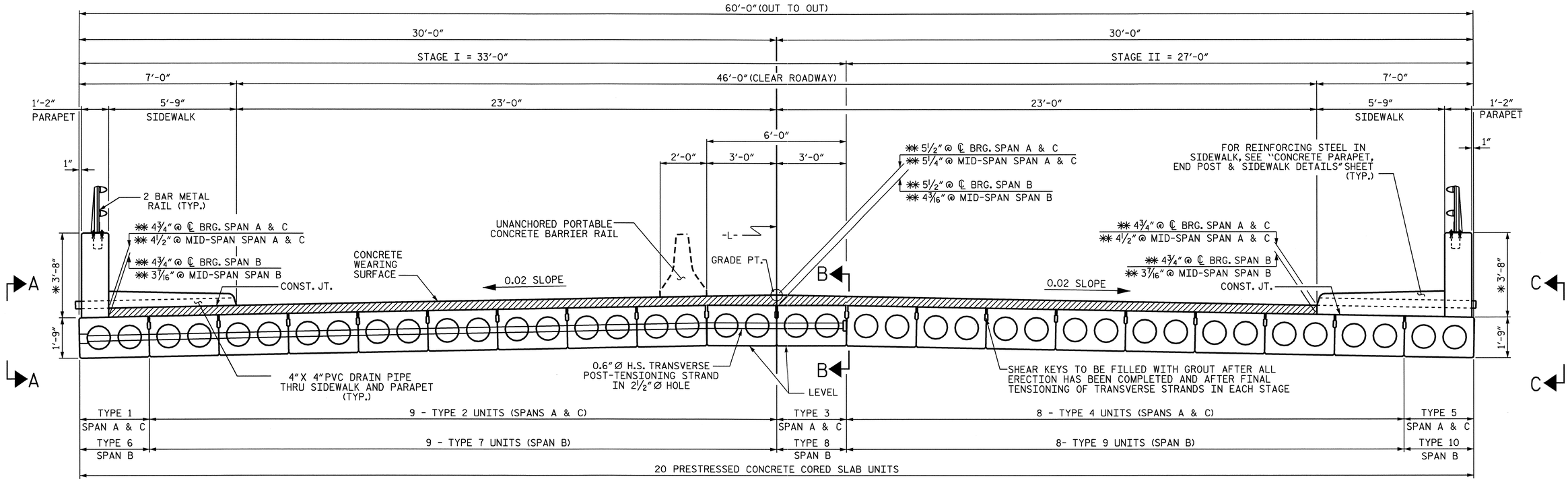


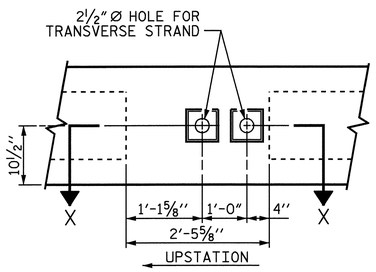
HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

TYPICAL SECTION

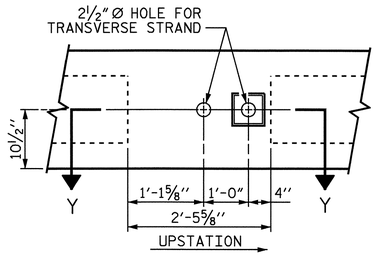
✻ THE MINIMUM HEIGHT OF THE PARAPET IS SHOWN. THE HEIGHT OF THE PARAPET VARIES WHILE THE TOP OF THE PARAPET FOLLOWS THE PROFILE OF THE GUTTERLINE.

✻✻ BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS.

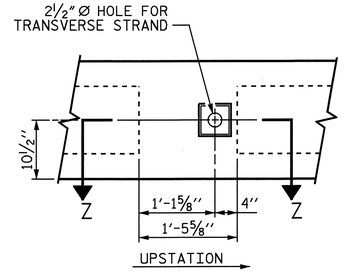
HALF SECTION
THROUGH VOIDS



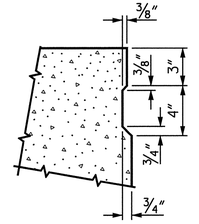
ELEVATION VIEW A-A



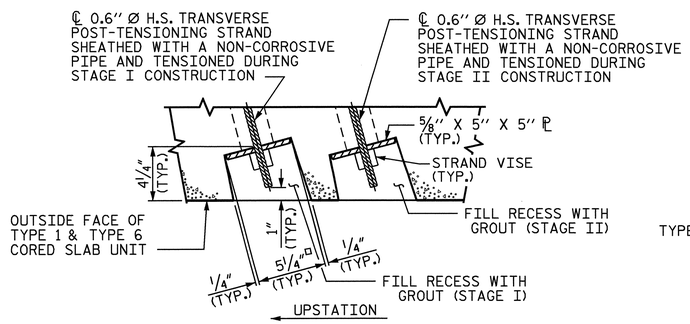
ELEVATION VIEW B-B



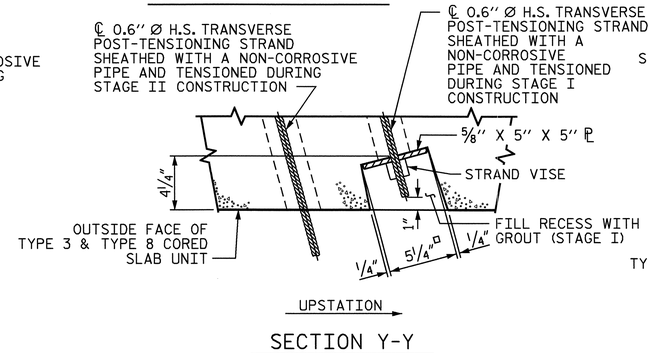
ELEVATION VIEW C-C



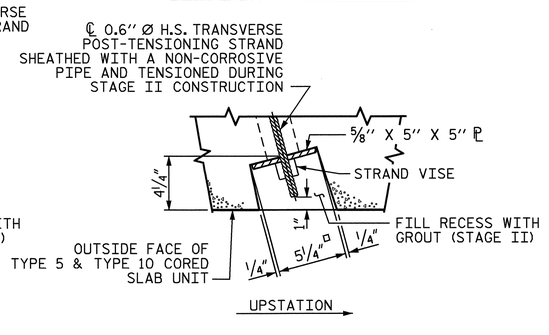
SHEAR KEY DETAIL
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



SECTION X-X



SECTION Y-Y



SECTION Z-Z

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

ASSEMBLED BY : M.GUDLAUGSSON DATE : 3/16/09
CHECKED BY : B.N.BARODAWALA DATE : 4/22/09

DRAWN BY : WJH	4/89	REV. 10/17/00	RWW/LES
CHECKED BY : FCJ	5/89	REV. 7/10/01RR	RWW/LES
		REV. 5/1/06	TLA/GM

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faverette

PROJECT NO. B-3677
MECKLENBURG COUNTY
STATION: 19+72.50 -L-
SHEET 1 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3′-0″ X 1′-9″ PRESTRESSED CONCRETE CORED SLAB UNIT

REVISIONS						SHEET NO.
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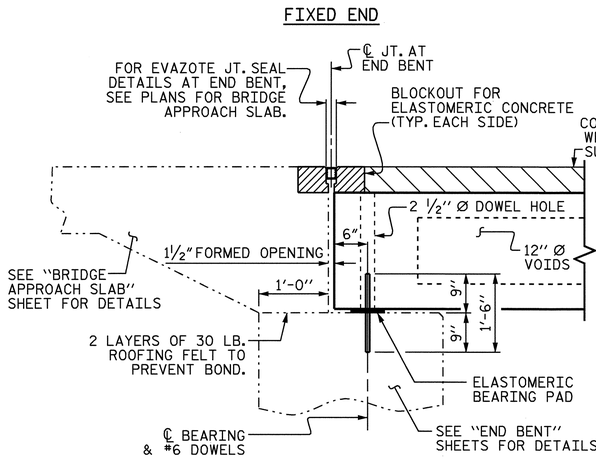
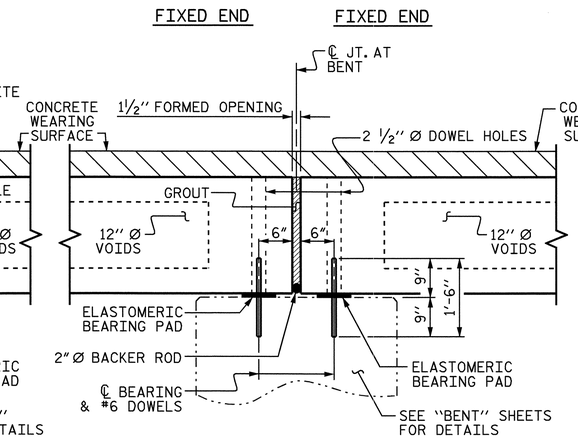
1			3			TOTAL SHEETS
2			4			36

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS
7/8/09

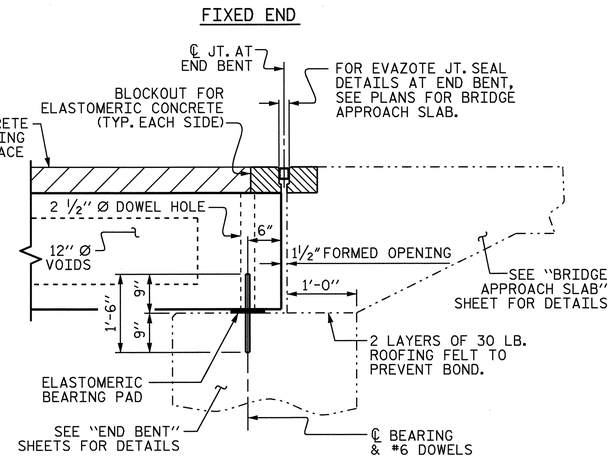
(SHT 5)



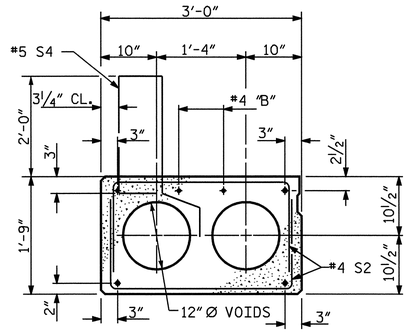
SECTION AT END BENT #1



SECTION AT BENT #1 & BENT #2

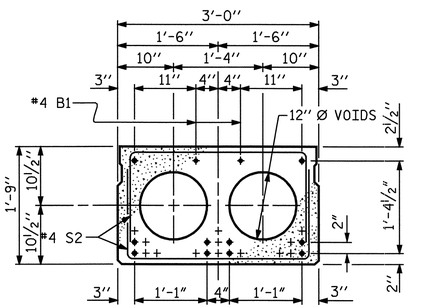


SECTION AT END BENT #2



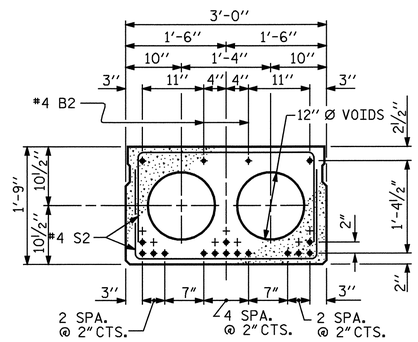
TYPE 1 & TYPE 6 UNITS

(FOR PRESTRESSED STRAND LAYOUT, SEE TYPE 2, TYPE 3 & TYPE 4 UNITS FOR SPAN A & C) (SEE TYPE 7, TYPE 8 & TYPE 9 UNITS FOR SPAN B)



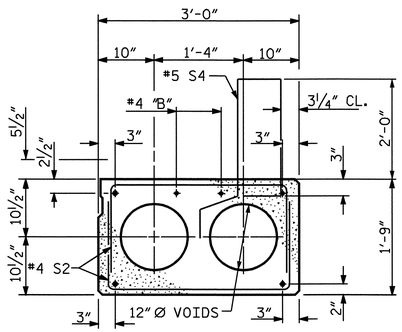
TYPE 2, TYPE 3 & TYPE 4 UNITS SPAN A & C

0.6" Ø LOW RELAXATION STRAND LAYOUT (10 STRANDS)



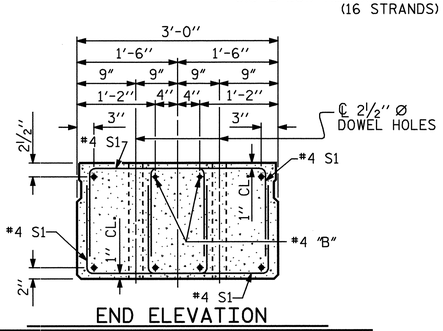
TYPE 7, TYPE 8 & TYPE 9 UNITS SPAN B

0.6" Ø LOW RELAXATION STRAND LAYOUT (16 STRANDS)



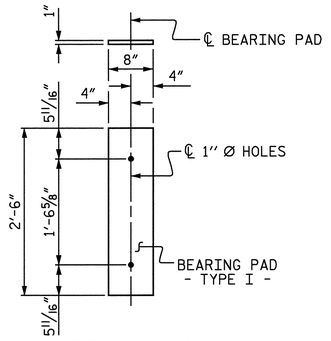
TYPE 5 & TYPE 10 UNITS

(FOR PRESTRESSED STRAND LAYOUT, SEE TYPE 2, TYPE 3 & TYPE 4 UNITS FOR SPAN A & C, SEE TYPE 7, TYPE 8 & TYPE 9 UNITS FOR SPAN B)



END ELEVATION

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



FIXED END

(TYPE I - 120 REQ'D.)

ELASTOMERIC BEARING DETAILS

PROJECT NO. B-3677

MECKLENBURG COUNTY

STATION: 19+72.50 -L-

SHEET 2 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
3'-0" X 1'-9"
PRESTRESSED CONCRETE
CORED SLAB UNIT
DETAILS

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

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS 7/8/09

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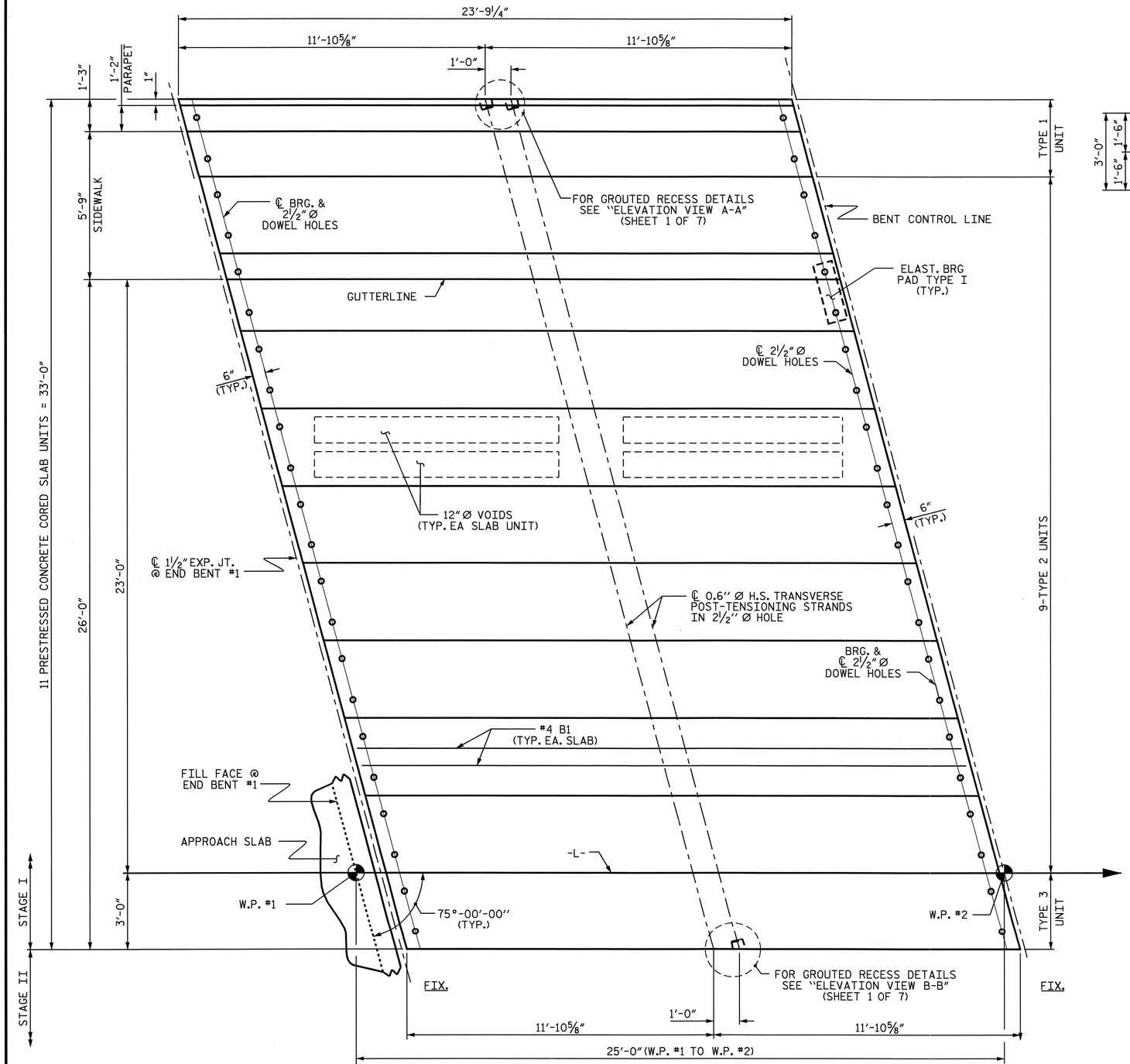
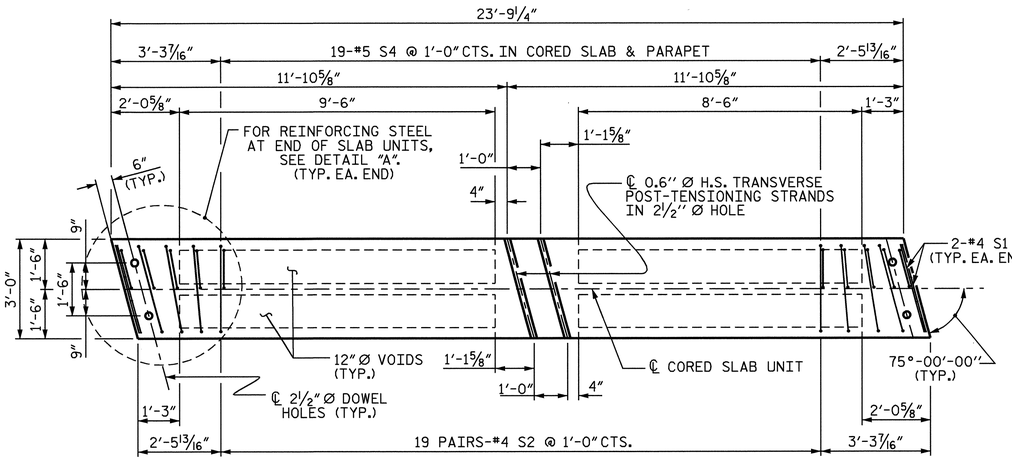


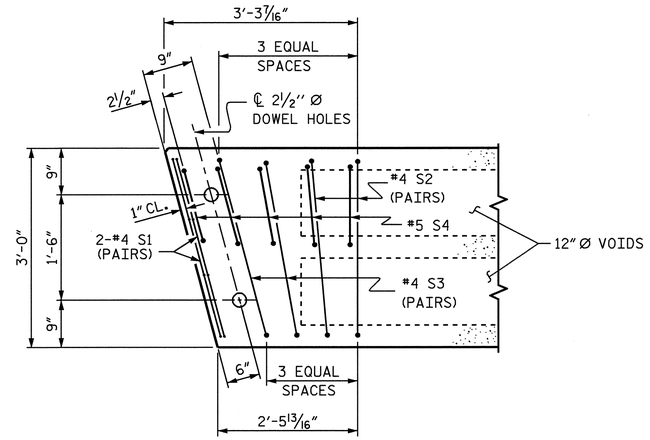
PLAN OF SPAN "A" AND "C" (STAGE I)

SPAN A SHOWN
SPAN C DIMENSIONS SIMILAR



PLAN OF TYPE 1, TYPE 2 & TYPE 3 CORED SLAB UNIT

S4 BAR ONLY IN TYPE 1 CORED SLAB
GROUTED RECESSES NOT SHOWN IN TYPE 1 & TYPE 3 UNITS.
SEE SHEET 1 OF 7 FOR RECESS DETAILS.



DETAIL "A"

PROJECT NO. B-3677
MECKLENBURG COUNTY
STATION: 19+72.50 -L-

SHEET 3 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPAN (STAGE I)

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY W. COGGINS
7/8/09

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

DRAWN BY : M.GUDLAUGSSON DATE : 3/16/09
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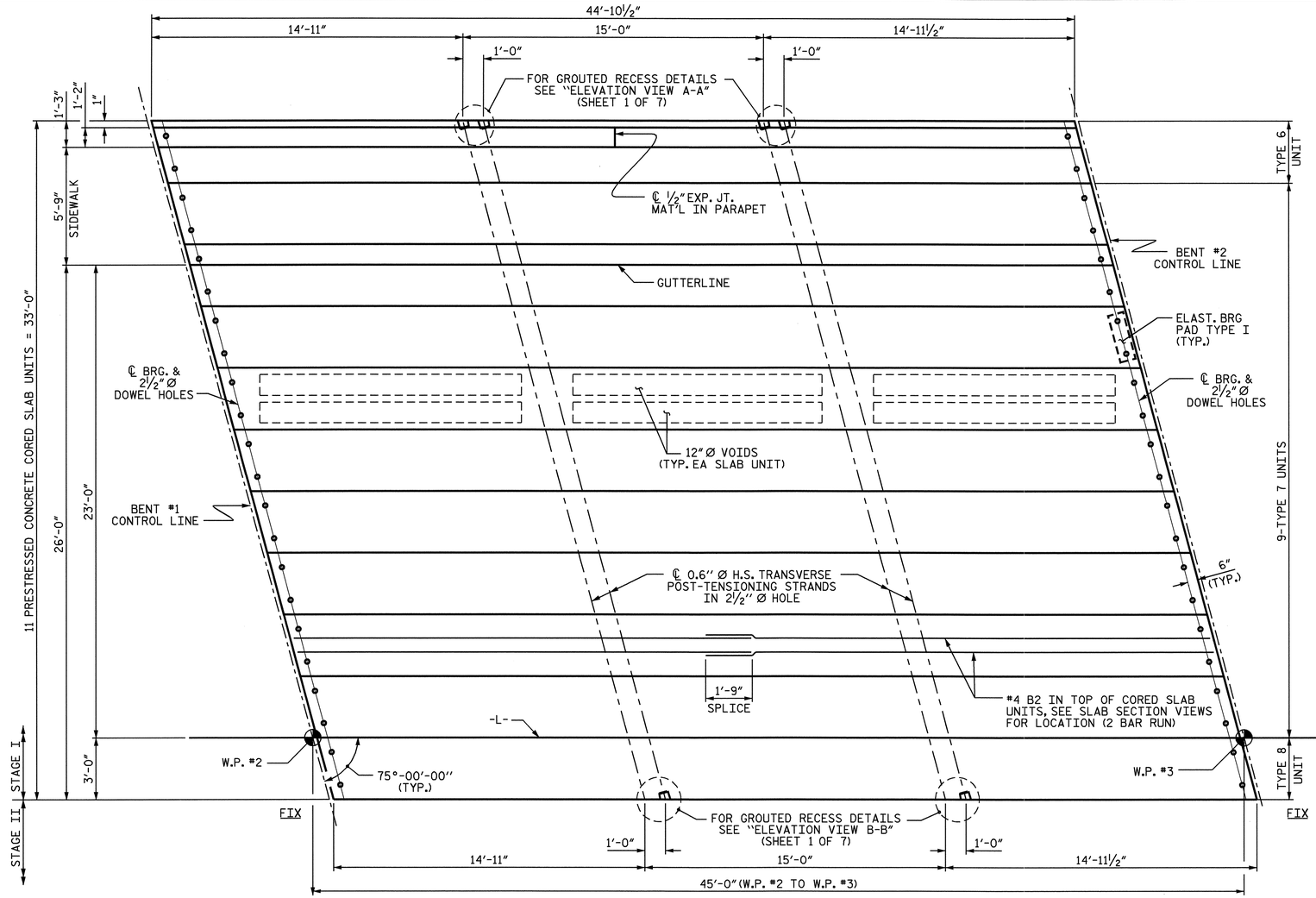
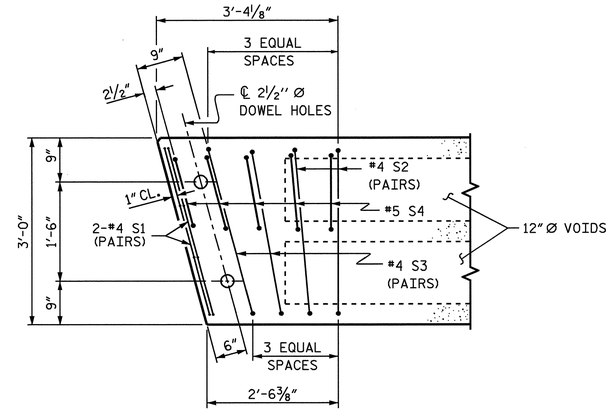
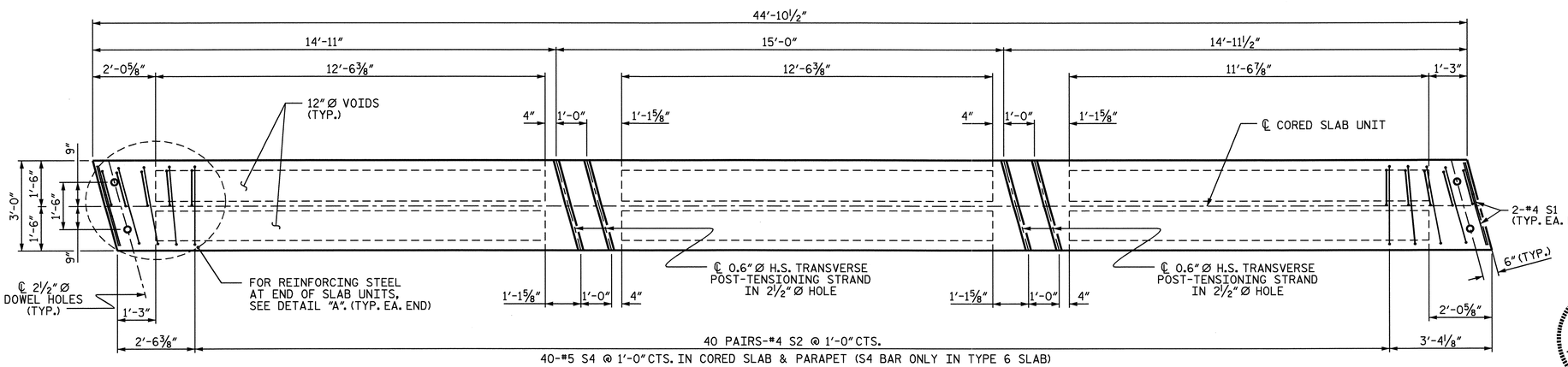


PLAN OF SPAN "B" STAGE I



DETAIL "A"



PLAN OF TYPE 6, TYPE 7 & TYPE 8 CORED SLAB UNIT

GROUTED RECESSES NOT SHOWN IN TYPE 6 & TYPE 8 UNITS.
SEE SHEET 1 OF 7 FOR RECESS DETAILS.

PROJECT NO. B-3677
MECKLENBURG COUNTY
STATION: 19+72.50 -L-
SHEET 4 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN (STAGE I)

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS
7/8/09

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

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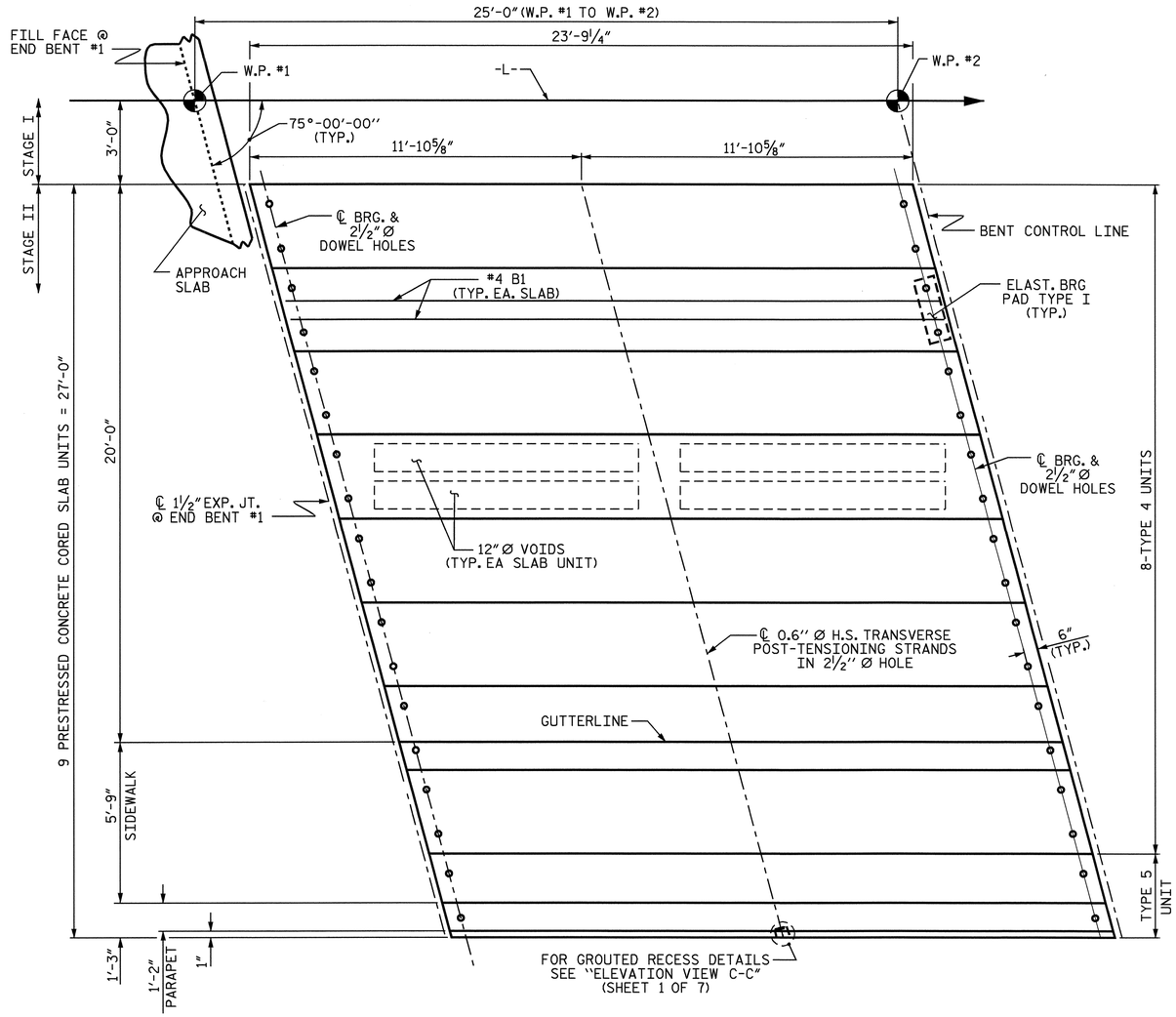
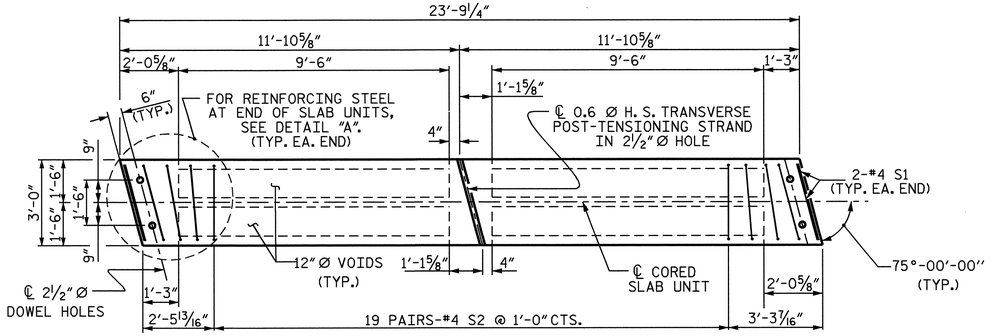
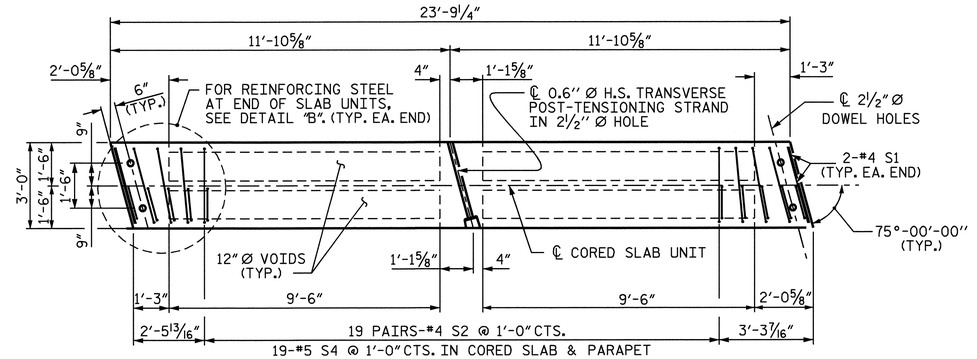


PLAN OF SPAN "A" AND "C" (STAGE II)

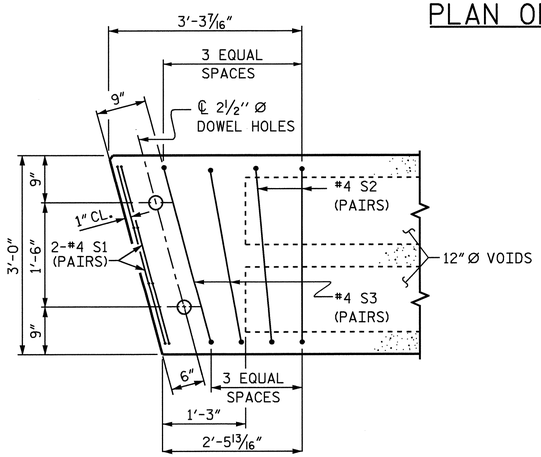
SPAN A SHOWN, SPAN C DIMENSIONS SIMILAR



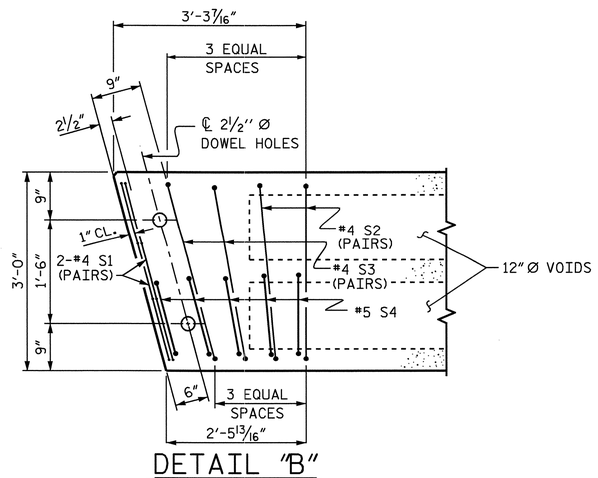
PLAN OF TYPE 4 CORED SLAB UNIT



PLAN OF TYPE 5 CORED SLAB UNIT



DETAIL "A"



DETAIL "B"

DRAWN BY : M.GUDLAUGSSON DATE : 3/16/09
CHECKED BY : B.N.BARODAWALA DATE : 4/22/09

07-JUL-2009 11:47
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PROJECT NO. B-3677
MECKLENBURG COUNTY
STATION: 19+72.50 -L-

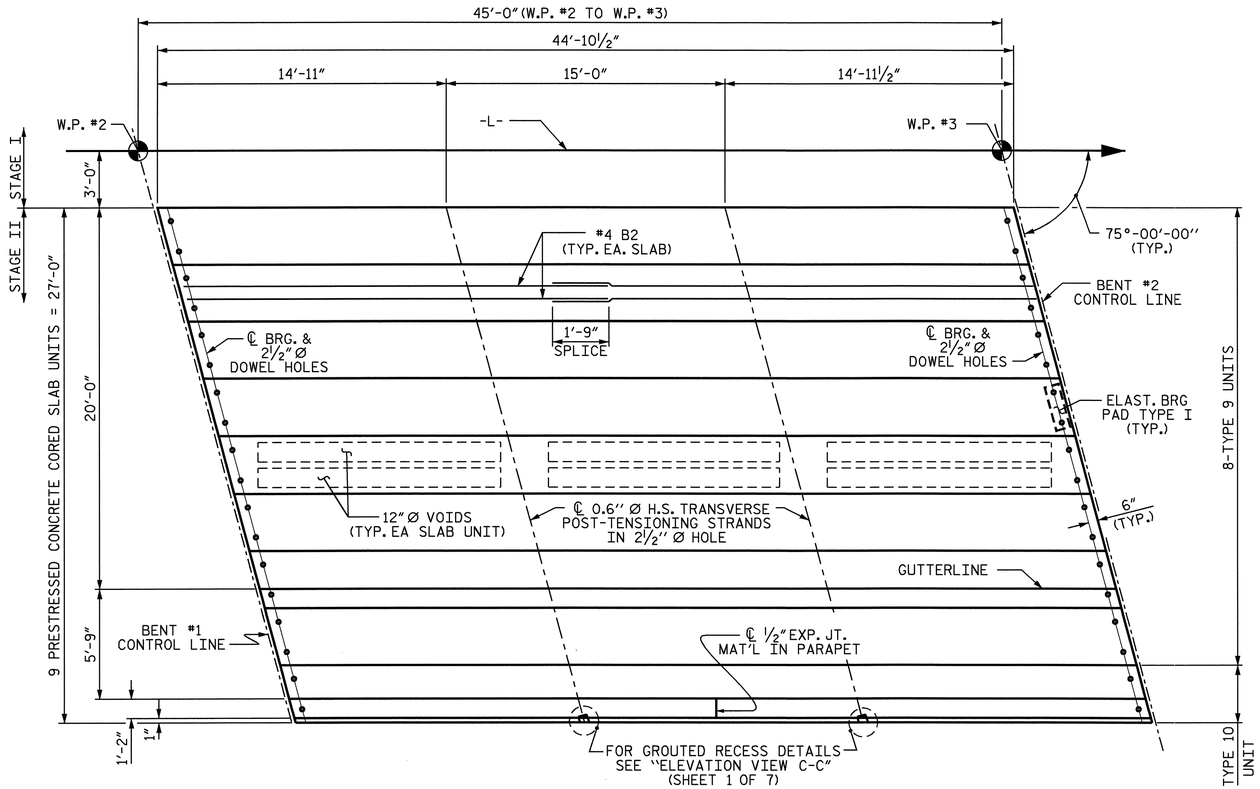
SHEET 5 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

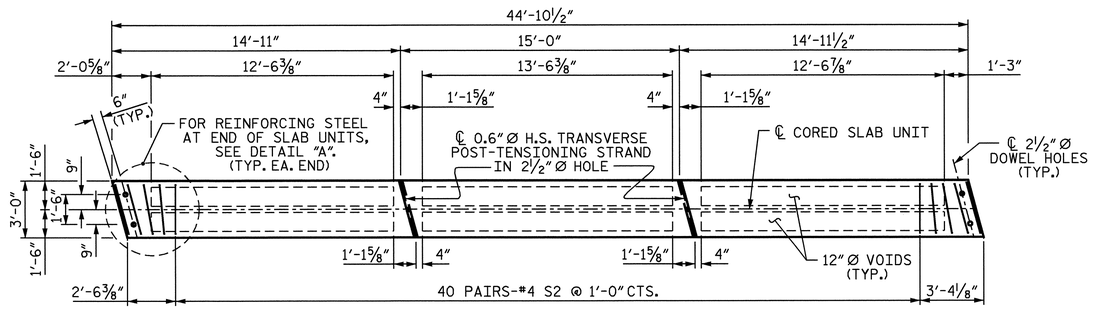
SUPERSTRUCTURE
PLAN OF SPAN (STAGE II)

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY W. COGGINS
7/8/09

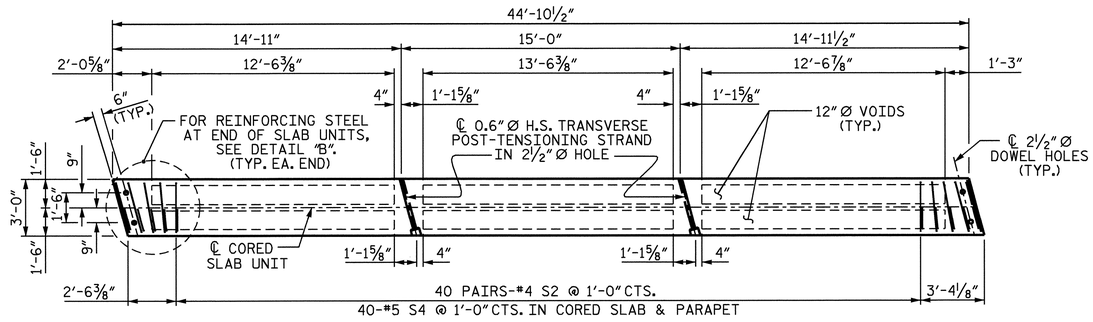
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			36



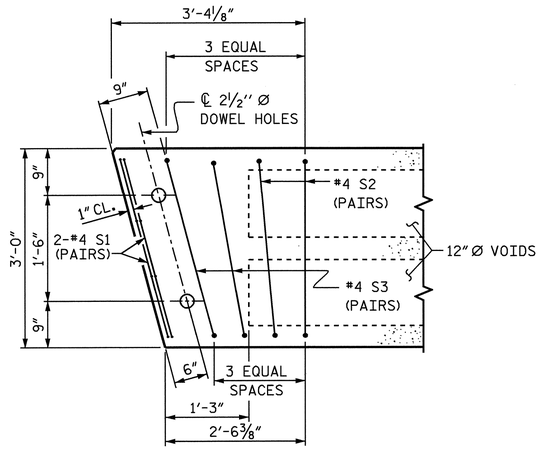
PLAN OF SPAN "B" STAGE II



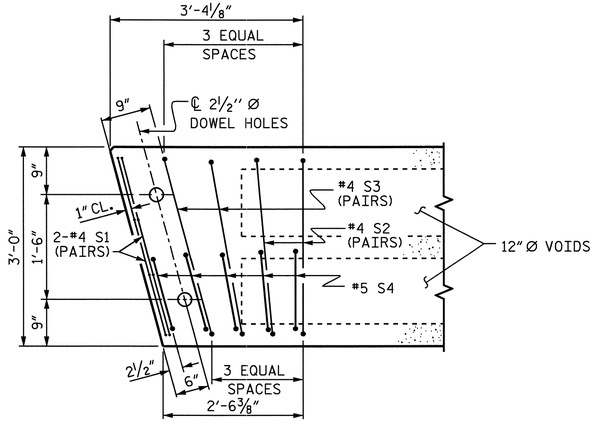
PLAN OF TYPE 9 CORED SLAB UNIT



PLAN OF TYPE 10 CORED SLAB UNIT



DETAIL "A"



DETAIL "B"

PROJECT NO. B-3677
MECKLENBURG COUNTY
STATION: 19+72.50 -L-

SHEET 6 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPAN (STAGE II)

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. EGGGINS
7/8/09

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

DRAWN BY : M.GUDLAUGSSON DATE : 3/16/09
CHECKED BY : B.N.BARODAWALA DATE : 4/22/09

07-JUL-2009 11:47
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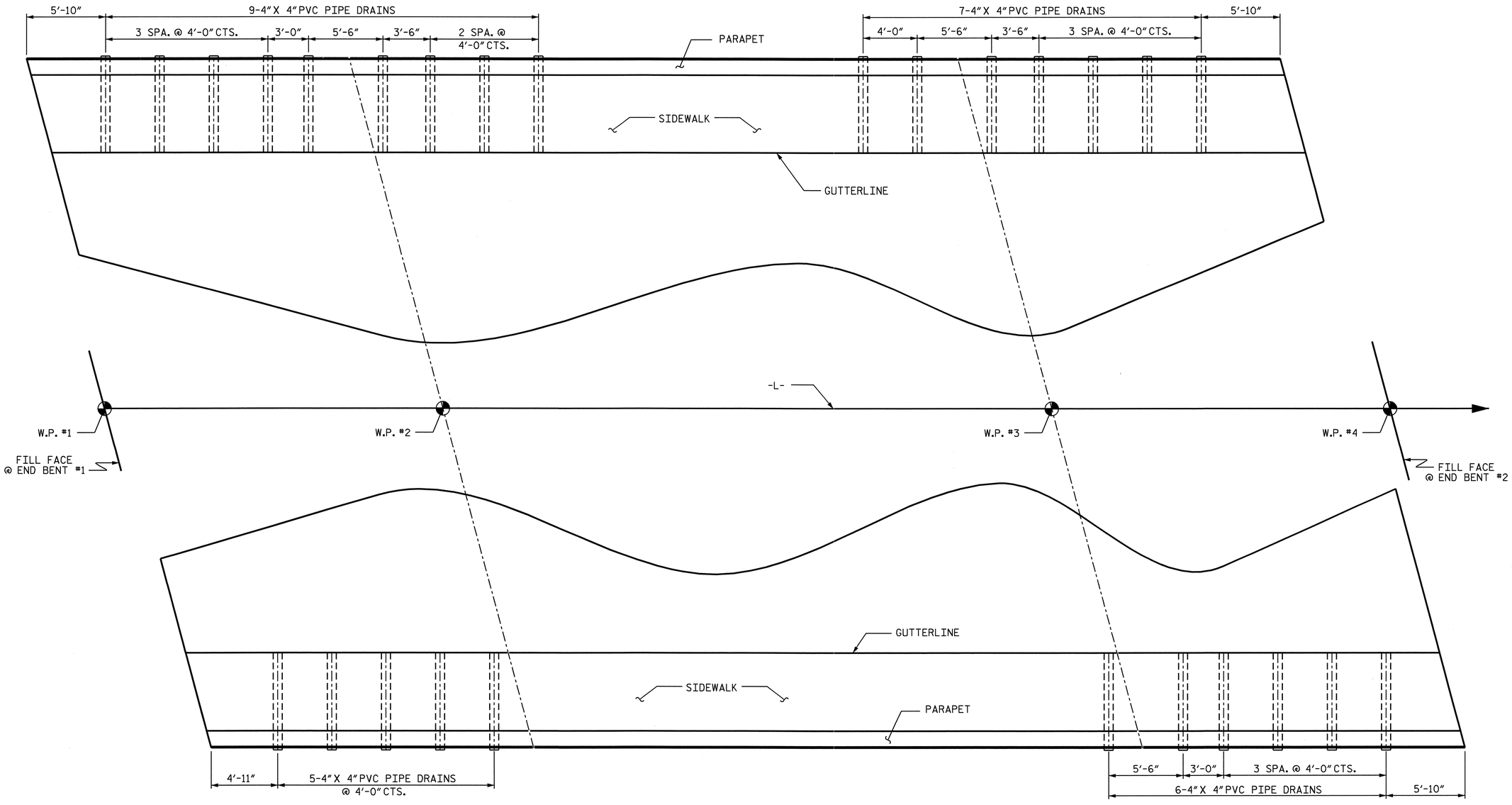

SPAN A SPAN B SPAN C

PLAN

PROJECT NO. B-3677

MECKLENBURG COUNTY

STATION: 19+72.50 -L-

SHEET 7 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK DRAINS DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. GOODSON

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

DRAWN BY : M.GUDLAUGSSON DATE : 3/16/09
CHECKED BY : B.N.BARODAWALA DATE : 4/22/09

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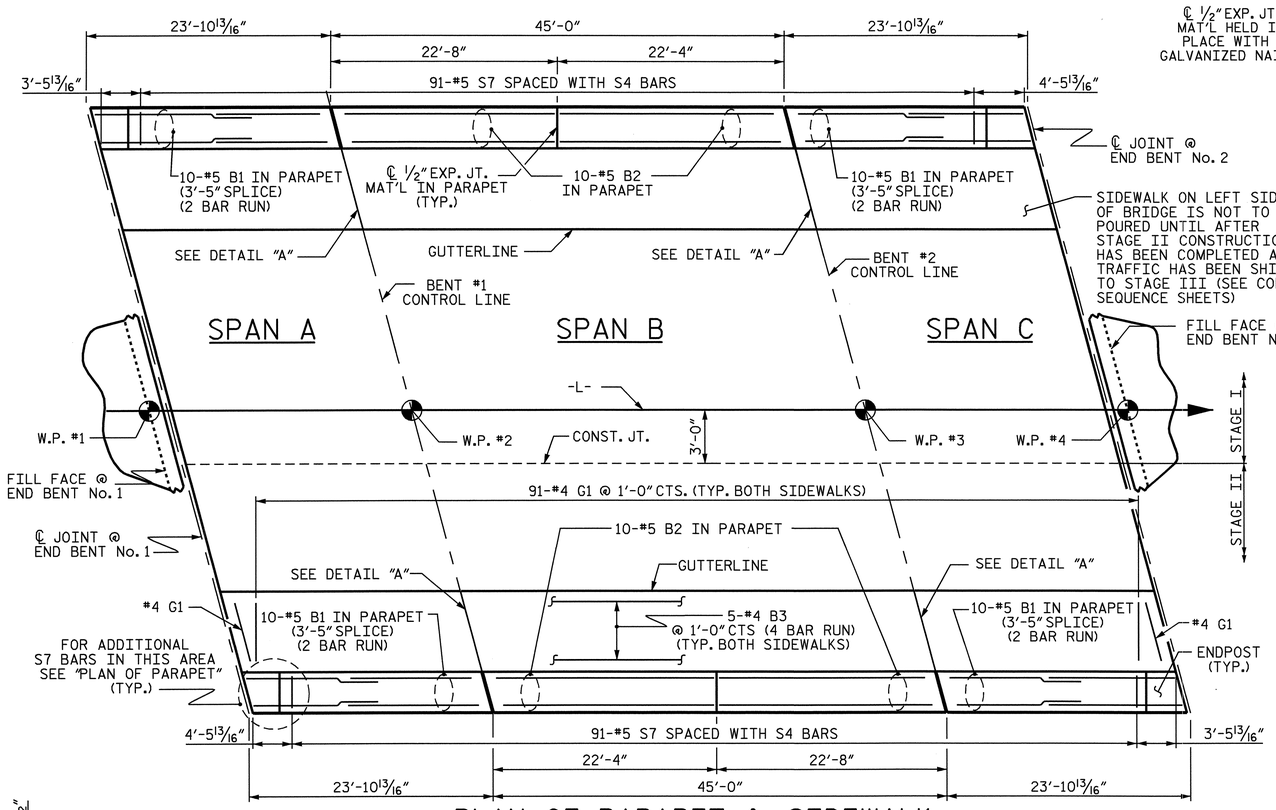
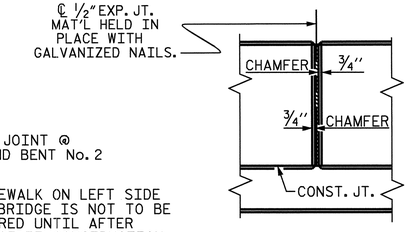
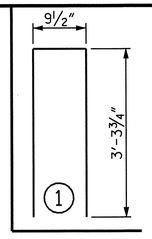
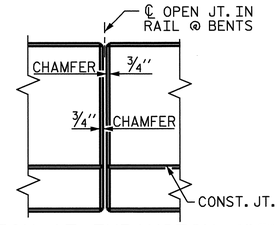


PLAN OF PARAPET & SIDEWALK

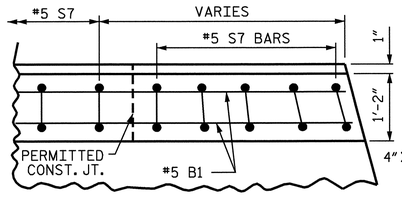






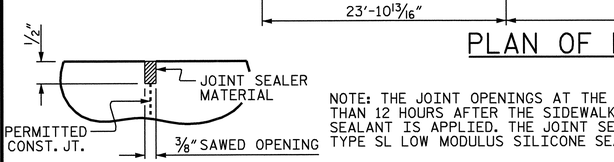
ELEVATION AT EXPANSION JOINTS

PARAPET DETAILS

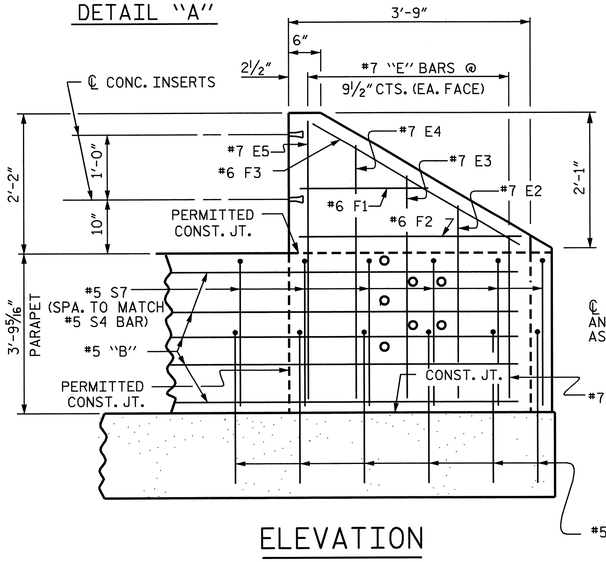


PLAN OF PARAPET

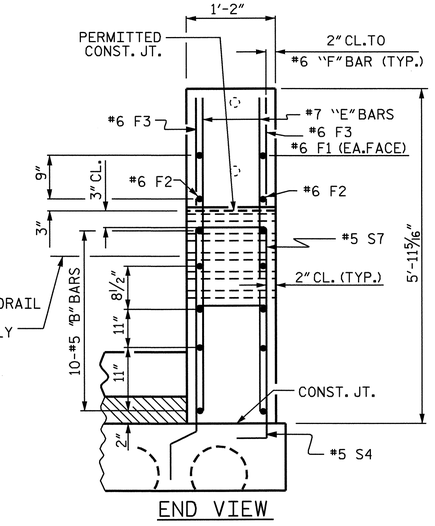
#5 S7 TO MATCH #5 S4, SEE PLAN OF SPAN SHEETS



NOTE: THE JOINT OPENINGS AT THE SIDEWALK BENT CONTROL LINES SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE SIDEWALK IS CAST. THE JOINT SHALL BE CLEAN OF ALL DEBRIS BEFORE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE SL LOW MODULUS SILICONE SEALANT.



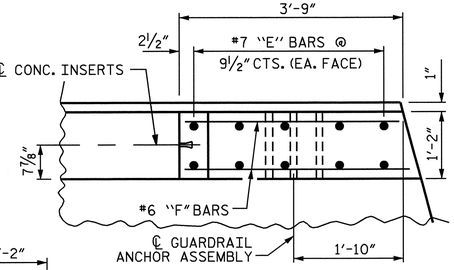
ELEVATION



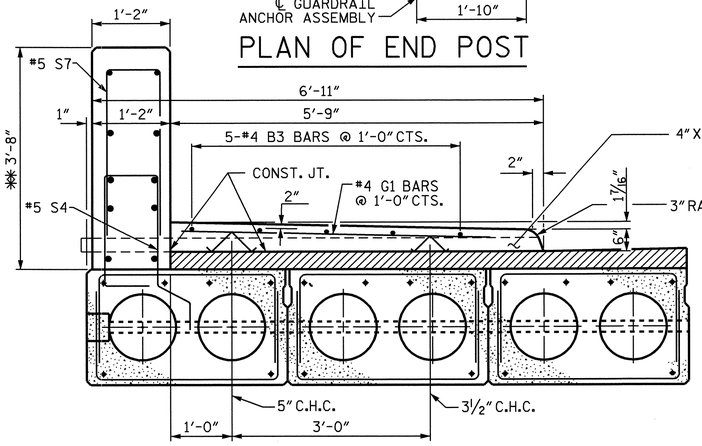
END VIEW

PARAPET AND END POST FOR TWO BAR RAIL

NOTE: FOR CONCRETE INSERT DETAILS, SEE "RAIL POST SPACING AND END OF RAIL DETAILS" SHEET.



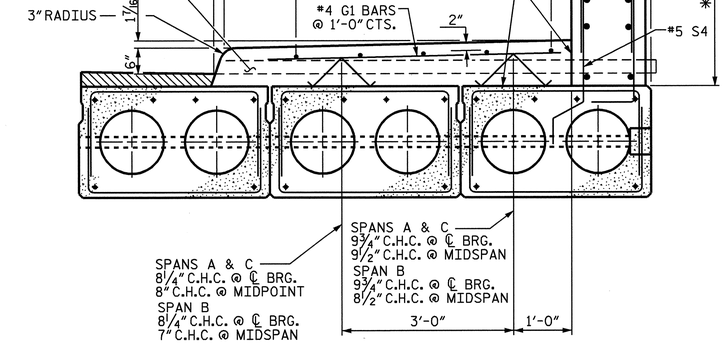
PLAN OF END POST



SECTION THROUGH LEFT SIDEWALK

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

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



SECTION THROUGH RIGHT SIDEWALK

BILL OF MATERIAL - PARAPET AND END POSTS

STAGE I						STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱B1	40	#5	STR	13'-5"	560	✱B1	40	#5	STR	13'-5"	560
✱B2	20	#5	STR	21'-11"	457	✱B2	20	#5	STR	21'-11"	457
✱E1	4	#7	STR	3'-7"	29	✱E1	4	#7	STR	3'-7"	29
✱E2	4	#7	STR	4'-1"	33	✱E2	4	#7	STR	4'-1"	33
✱E3	4	#7	STR	4'-7"	37	✱E3	4	#7	STR	4'-7"	37
✱E4	4	#7	STR	5'-1"	42	✱E4	4	#7	STR	5'-1"	42
✱E5	4	#7	STR	5'-5"	44	✱E5	4	#7	STR	5'-5"	44
✱F1	4	#6	STR	1'-8"	10	✱F1	4	#6	STR	1'-8"	10
✱F2	4	#6	STR	2'-10"	17	✱F2	4	#6	STR	2'-10"	17
✱F3	4	#6	STR	3'-4"	20	✱F3	4	#6	STR	3'-4"	20
✱S7	102	#5	1	7'-5"	789	✱S7	102	#5	1	7'-5"	789
✱EPOXY COATED REINFORCING STEEL				LBS.	2038	✱EPOXY COATED REINFORCING STEEL				LBS.	2038
CLASS AA CONCRETE PARAPET & END POSTS				CU. YDS.	15.1	CLASS AA CONCRETE PARAPET & END POSTS				CU. YDS.	15.1
CONCRETE PARAPET L.F.					92.67	CONCRETE PARAPET L.F.					92.67

BILL OF MATERIAL - SIDEWALK

STAGE I						STAGE II					
✱B3	20	#4	STR	25'-2"	336	✱B3	20	#4	STR	25'-2"	336
✱G1	93	#4	STR	5'-3"	326	✱G1	93	#4	STR	5'-3"	326
✱EPOXY COATED REINFORCING STEEL				LBS.	662	✱EPOXY COATED REINFORCING STEEL				LBS.	662
CLASS AA CONCRETE SIDEWALK				CU. YDS.	12.0	CLASS AA CONCRETE SIDEWALK				CU. YDS.	19.8

PROJECT NO. B-3677

MECKLENBURG COUNTY

STATION: 19+72.50 -L-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE PARAPET, END POST, & SIDEWALK DETAILS

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

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY W. COGGINS

7/8/09

DRAWN BY : M.GUDLAUGSSON DATE : 3/16/09
CHECKED BY : B.N.BARODAWALA DATE : 4/22/09

08-JUL-2009 08:25
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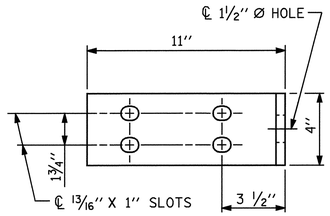
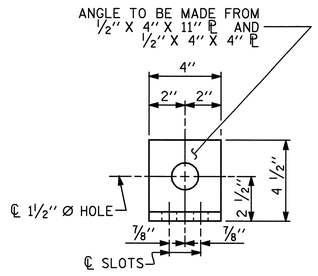
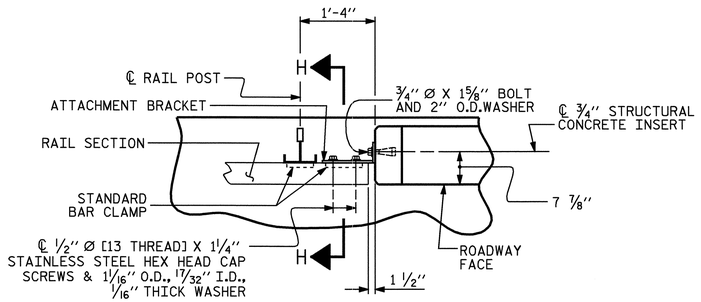


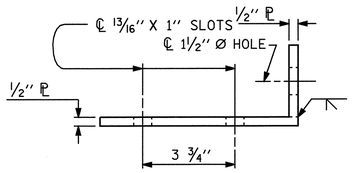
ELEVATION



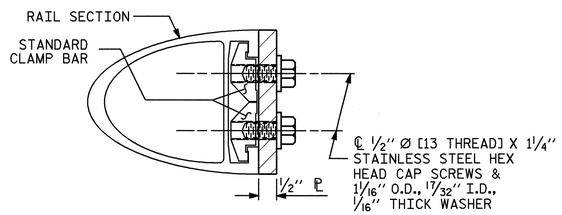
END VIEW (FIXED)



PLAN - RAIL AND END POST

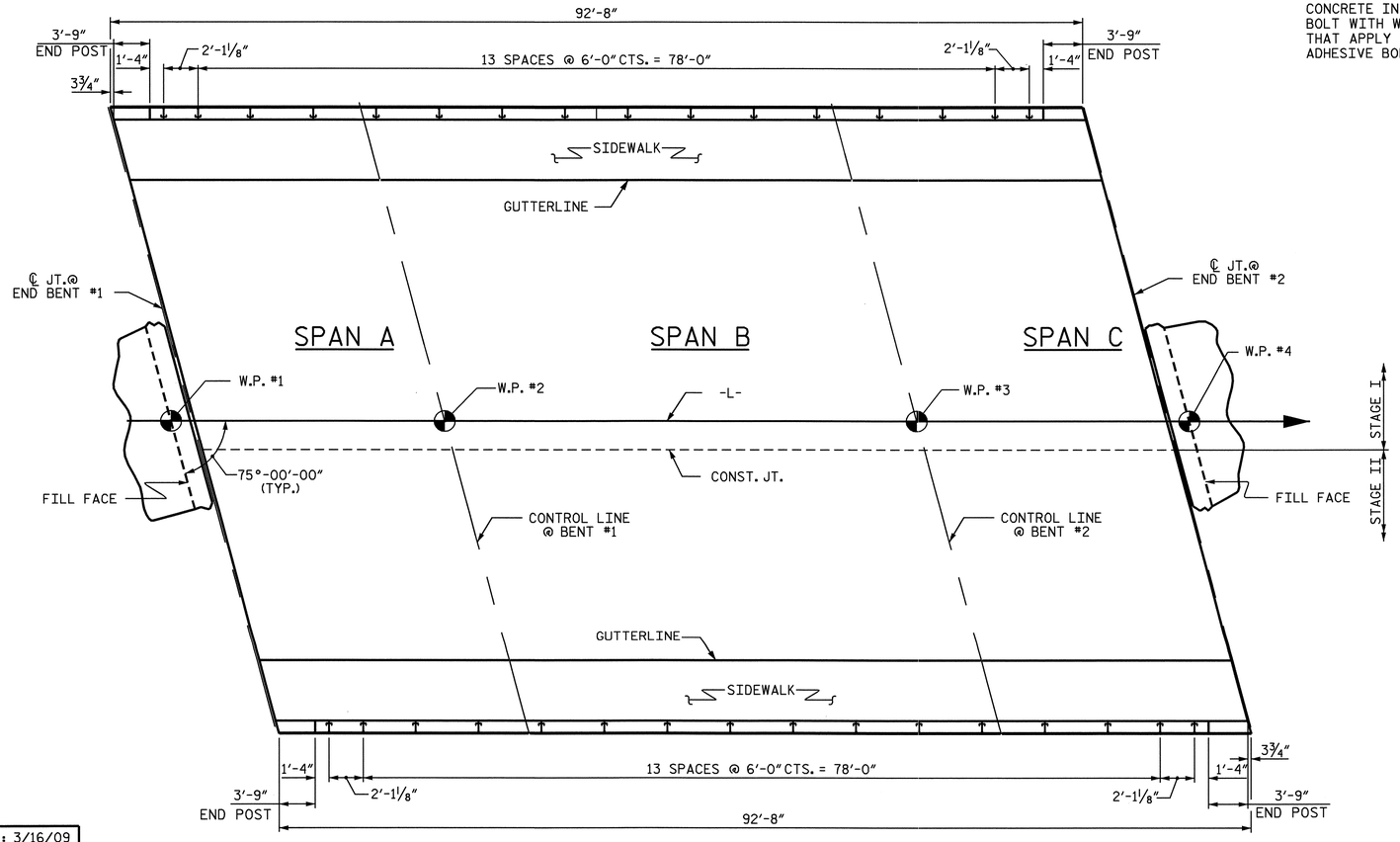


TOP VIEW



SECTION H-H (FIX)

DETAILS FOR ATTACHING METAL RAIL TO END POST



PLAN OF RAIL POST SPACINGS

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 1½″.

B. 1 - ¾″ Ø X 1⅝″ 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 ¾″ Ø X 1⅝″ 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 7/16″ Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

METAL RAIL TO END POST CONNECTION

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

A. ½″ PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.

B. ¾″ STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A ¾″Ø X 1⅝″ BOLT WITH 2″ O.D. WASHER IN PLACE. THE ¾″Ø X 1⅝″ BOLT SHALL HAVE N. C. THREADS.

C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.

D. STANDARD CLAMP BARS (SEE METAL RAIL SHEET).

E. ½″ Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

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

THE ¾″ STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE ¾″ STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE ½″ 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 ¾″ Ø X 1⅝″ BOLT WITH WASHER SHALL BE REPLACED WITH A ¾″Ø X 6½″ BOLT AND 2″ O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE ¾″ Ø X 1⅝″ BOLT SHALL APPLY TO THE ¾″Ø X 6 ½″ BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

PLAN ELEVATION

STRUCTURAL CONCRETE INSERT

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

PROJECT NO. B-3677

MECKLENBURG COUNTY

STATION: 19+72.50 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

RAIL POST SPACINGS AND END OF RAIL DETAILS
FOR TWO BAR METAL RAILS

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

STD. NO. BMR2

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY LA COGGINS 7/8/09

ASSEMBLED BY : M.GUDLAUGSSON	DATE : 3/16/09
CHECKED BY : B.N.BARODAWALA	DATE : 4/22/09
DRAWN BY : FCJ 1/88	REV. 10/17/00 LES/RDR
CHECKED BY : CRK 3/89	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

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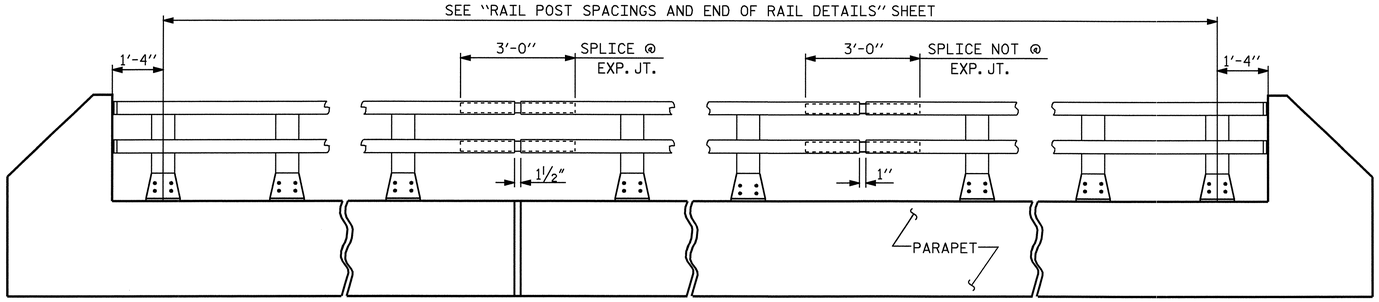
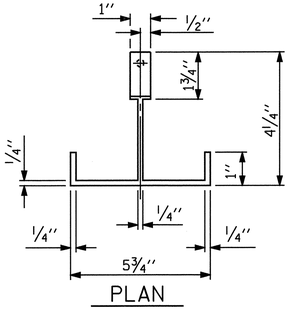
faverette

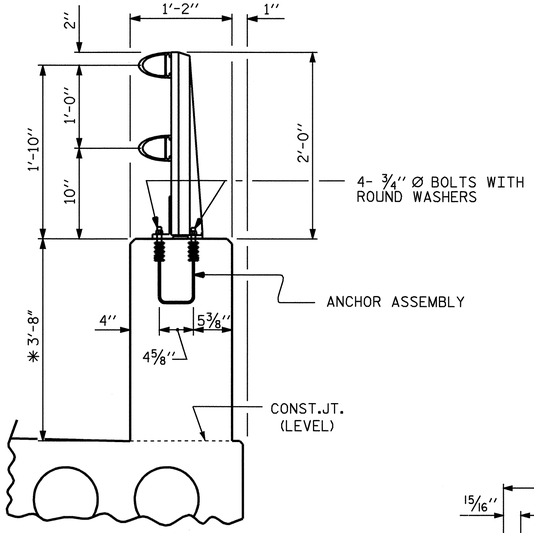


ELEVATION

NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR2.

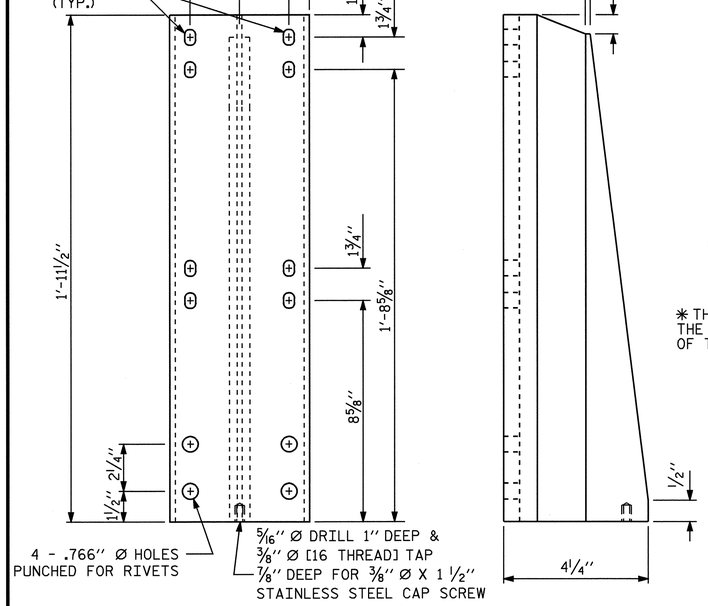


PLAN



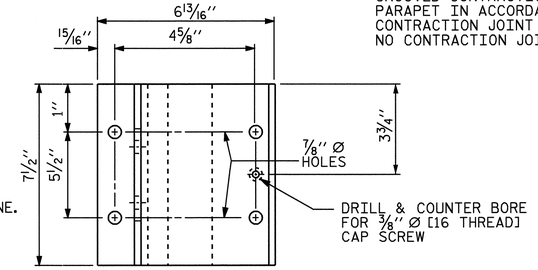
SECTION THRU PARAPET AND RAIL

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

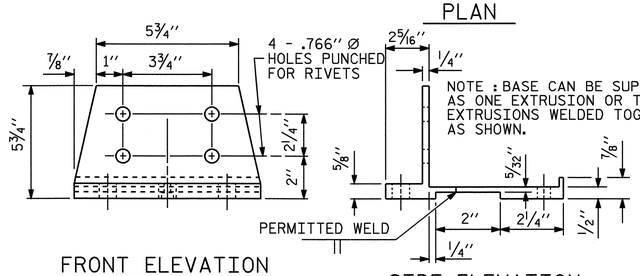


FRONT ELEVATION SIDE ELEVATION

DETAILS OF POST

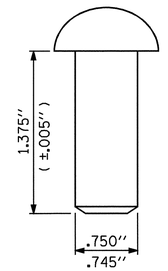


PLAN



FRONT ELEVATION SIDE ELEVATION

POST BASE DETAILS



RIVET DETAIL

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 B-221 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.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS 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 REMAINS 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.

GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT A SPACING OF 8FT. TO 10FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.

PAY LENGTH = 169.71 LIN. FT.

PROJECT NO. B-3677

MECKLENBURG COUNTY

STATION: 19+72.50 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

2 BAR METAL RAIL

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

STD. NO. BMR3

ASSEMBLED BY: M.GUDLAUGSSON	DATE : 3/16/09	
CHECKED BY : B.N.BARODAWALA	DATE : 4/22/09	
DRAWN BY : EEM 6/94	REV. 10/17/00	LES/RDR
CHECKED BY : RGW 6/94	REV. 5/7/03R	RWW/JTE
	REV. 5/1/06	TLA/GM

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS 7/8/09

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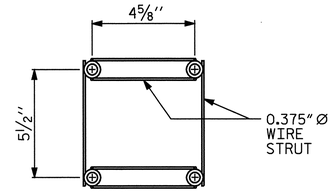
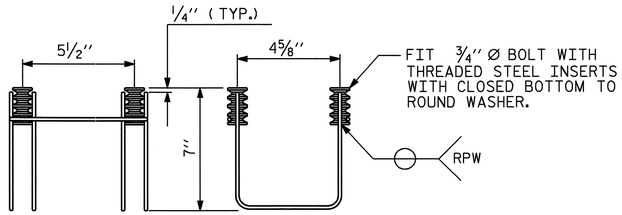
faverette



PLAN



SIDE VIEW ELEVATION

MINIMUM LENGTH OF THREADS IN INSERT (FERRULE): 1¾''

4-BOLT METAL RAIL ANCHOR ASSEMBLY

(32 ASSEMBLIES REQUIRED)

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 ¾'' FERRULES.

B. 4 - ¾'' Ø X 2½'' 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 ¾'' Ø X 2½'' GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16'' Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

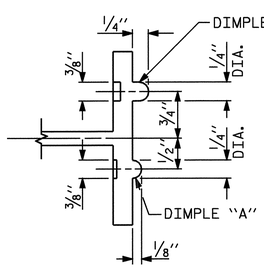
D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.

E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.

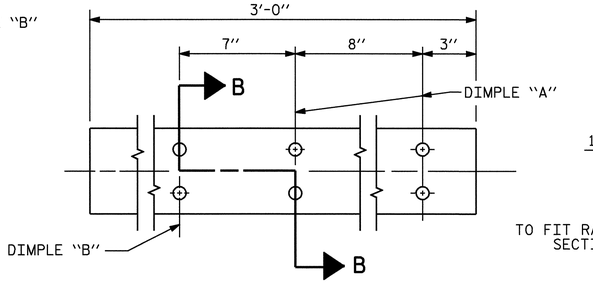
F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE ¾''Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.

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

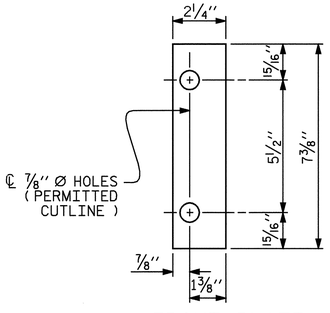


SECTION B - B

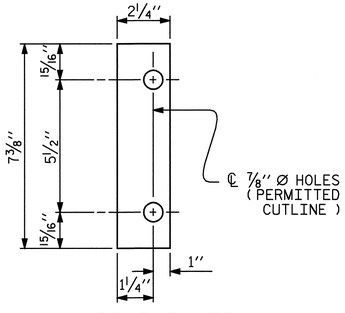


BAR SECTION

EXPANSION BAR DETAILS



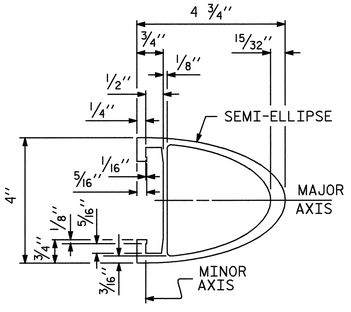
FRONT PLATE



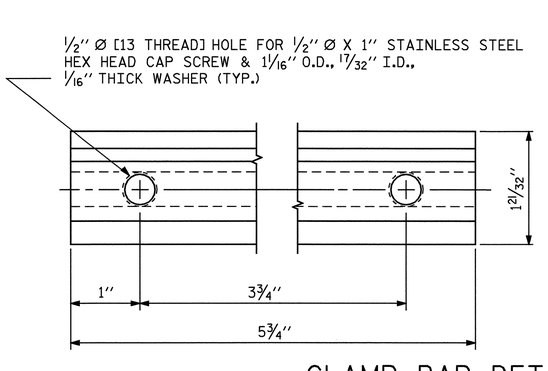
REAR PLATE

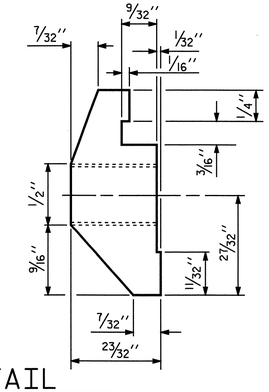
SHIM DETAILS

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



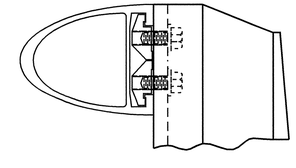
RAIL SECTION



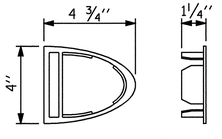


CLAMP BAR DETAIL

(4 REQUIRED PER POST)



CLAMP ASSEMBLY



RAIL CAP

PROJECT NO. B-3677
MECKLENBURG COUNTY
STATION: 19+72.50 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

2 BAR METAL RAIL

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

STD. NO. BMR4

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY LCOGGINS
7/8/09

ASSEMBLED BY : M.GUDLAUGSSON	DATE : 3/16/09		
CHECKED BY : B.N.BARODAWALA	DATE : 4/22/09		
DRAWN BY : EEM 6/94	REV. 2/6/97	EEM/RGW	
CHECKED BY : RGW 6/94	REV. 8/16/99	MAB/LES	
	REV. 5/1/06R	KMM/GM	

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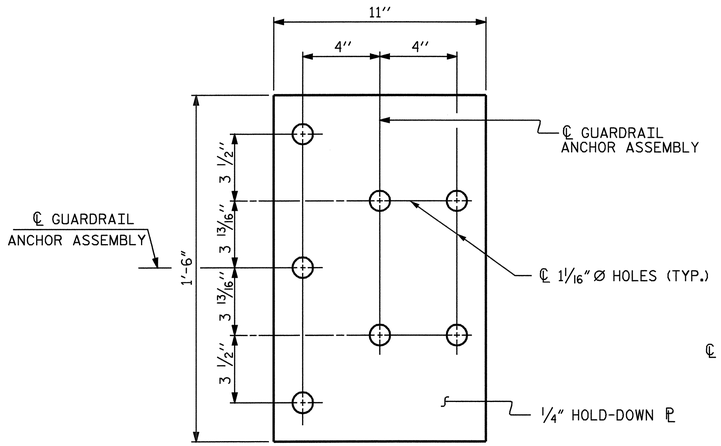
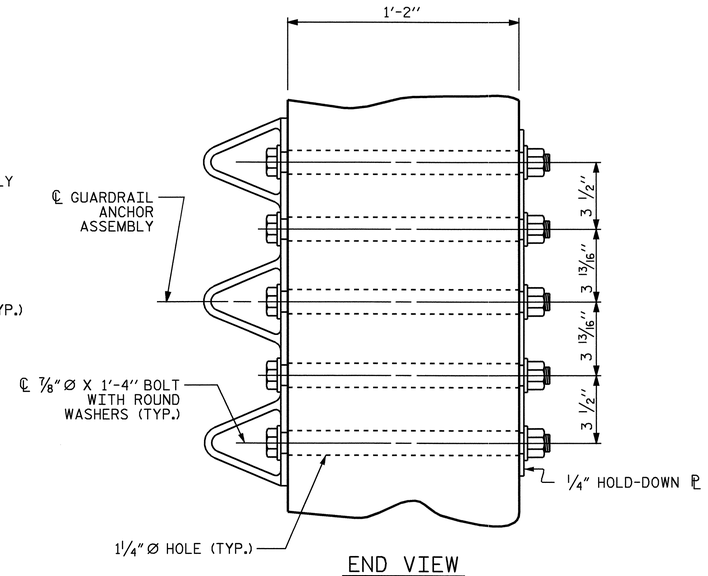


PLAN



END VIEW

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.

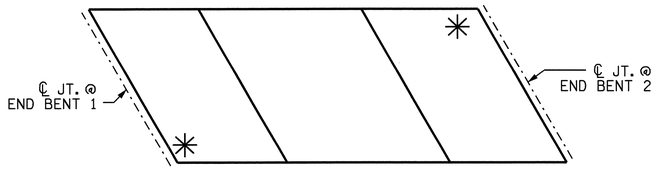
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8'' Ø GALVANIZED BOLTS, NUTS AND WASHERS. 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 POINTED TOOL.

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

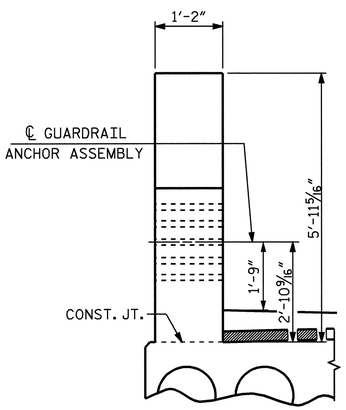
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

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



SKETCH SHOWING POINTS OF ATTACHMENT

✳ LOCATION OF GUARDRAIL ATTACHMENT



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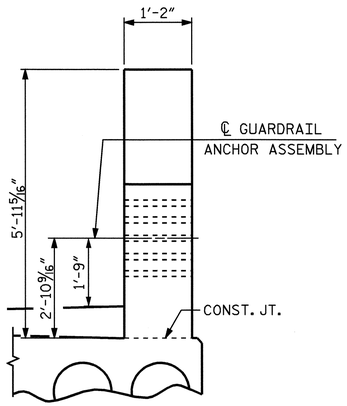
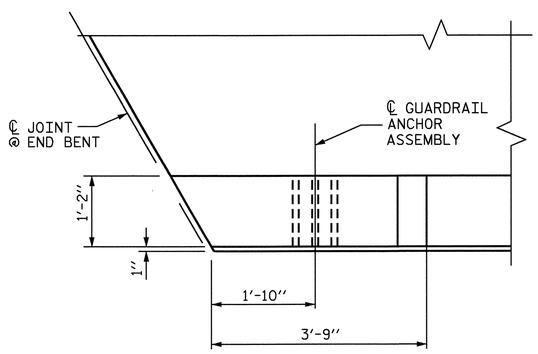


END VIEW



PLAN

LOCATION OF GUARDRAIL ANCHOR AT END POST

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

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS 7/6/09

PROJECT NO. B-3677

MECKLENBURG COUNTY

STATION: 19+72.50 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS

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

STD. NO. BMR8

ASSEMBLED BY : M.GUDLAUGSSON	DATE : 3/16/09	
CHECKED BY : B.N.BARODAWALA	DATE : 4/22/09	
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

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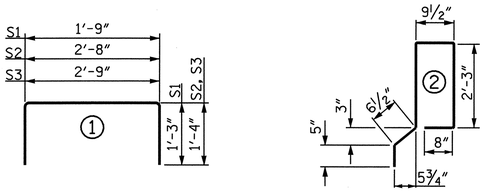
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

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

BILL OF MATERIAL FOR ONE CORED SLAB UNIT

STAGE I SPAN A & SPAN C

BAR	NO.	SIZE	TYPE	TYPE 1 UNIT LENGTH	TYPE 1 UNIT WEIGHT	TYPE 2 UNIT LENGTH	TYPE 2 UNIT WEIGHT	TYPE 3 UNIT LENGTH	TYPE 3 UNIT WEIGHT
B1	2	#4	STR	23'-5"	31	23'-5"	31	23'-5"	31
S1	8	#4	1	4'-3"	23	4'-3"	23	4'-3"	23
S2	42	#4	1	5'-4"	150	5'-4"	150	5'-4"	150
S3	8	#4	1	5'-5"	29	5'-5"	29	5'-5"	29
✳S4	27	#5	2	6'-11"	195	——	——	——	——
REINFORCING STEEL				LBS.	233	LBS.	233	LBS.	233
✳EPOXY COATED REINFORCING STEEL				LBS.	195	LBS.	——	LBS.	——
7500 P.S.I. CONCRETE				CU. YDS.	3.5	CU. YDS.	3.5	CU. YDS.	3.5
0.6"Ø L.R. STRANDS				NO.	10	NO.	10	NO.	10

STAGE I SPAN B

BAR	NO.	SIZE	TYPE	TYPE 6 UNIT LENGTH	TYPE 6 UNIT WEIGHT	TYPE 7 UNIT LENGTH	TYPE 7 UNIT WEIGHT	TYPE 8 UNIT LENGTH	TYPE 8 UNIT WEIGHT
B2	4	#4	STR	23'-2"	62	23'-2"	62	23'-2"	62
S1	8	#4	1	4'-3"	23	4'-3"	23	4'-3"	23
S2	84	#4	1	5'-4"	299	5'-4"	299	5'-4"	299
S3	8	#4	1	5'-5"	29	5'-5"	29	5'-5"	29
✳S4	48	#5	2	6'-11"	346	——	——	——	——
REINFORCING STEEL				LBS.	413	LBS.	413	LBS.	413
✳EPOXY COATED REINFORCING STEEL				LBS.	346	LBS.	——	LBS.	——
7500 P.S.I. CONCRETE				CU. YDS.	6.5	CU. YDS.	6.5	CU. YDS.	6.5
0.6"Ø L.R. STRANDS				NO.	16	NO.	16	NO.	16

STAGE II SPAN A & SPAN C

BAR	NO.	SIZE	TYPE	TYPE 4 UNIT LENGTH	TYPE 4 UNIT WEIGHT	TYPE 5 UNIT LENGTH	TYPE 5 UNIT WEIGHT
B1	2	#4	STR	23'-5"	31	23'-5"	31
S1	8	#4	1	4'-3"	23	4'-3"	23
S2	42	#4	1	5'-4"	150	5'-4"	150
S3	8	#4	1	5'-5"	29	5'-5"	29
✳S4	27	#5	2	——	——	6'-11"	195
REINFORCING STEEL				LBS.	233	LBS.	233
✳EPOXY COATED REINFORCING STEEL				LBS.	——	LBS.	195
7500 P.S.I. CONCRETE				CU. YDS.	3.4	CU. YDS.	3.4
0.6"Ø L.R. STRANDS				NO.	10	NO.	10

STAGE II SPAN B

BAR	NO.	SIZE	TYPE	TYPE 9 UNIT LENGTH	TYPE 9 UNIT WEIGHT	TYPE 10 UNIT LENGTH	TYPE 10 UNIT WEIGHT
B2	4	#4	STR	23'-2"	62	23'-2"	62
S1	8	#4	1	4'-3"	23	4'-3"	23
S2	84	#4	1	5'-4"	299	5'-4"	299
S3	8	#4	1	5'-5"	29	5'-5"	29
✳S4	48	#5	2	——	——	6'-11"	346
REINFORCING STEEL				LBS.	413	LBS.	413
✳EPOXY COATED REINFORCING STEEL				LBS.	——	LBS.	346
7500 P.S.I. CONCRETE				CU. YDS.	6.4	CU. YDS.	6.4
0.6"Ø L.R. STRANDS				NO.	16	NO.	16

GROOVING BRIDGE FLOORS	
APPROACH SLABS	2,053 SQ. FT.
BRIDGE DECK	3,930 SQ. FT.
TOTAL	5,983 SQ. FT.

CORED SLAB UNITS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
STAGE I			
SPAN A & SPAN C TYPE 1 UNIT	2	23'-9¼"	47'-6½"
SPAN A & SPAN C TYPE 2 UNIT	18	23'-9¼"	427'-10½"
SPAN A & SPAN C TYPE 3 UNIT	2	23'-9¼"	47'-6½"
SPAN B TYPE 6 UNIT	1	44'-10½"	44'-10½"
SPAN B TYPE 7 UNIT	9	44'-10½"	403'-10½"
SPAN B TYPE 8 UNIT	1	44'-10½"	44'-10½"
STAGE II			
SPAN A & SPAN C TYPE 4 UNIT	16	23'-9¼"	380'-4"
SPAN A & SPAN C TYPE 5 UNIT	2	23'-9¼"	47'-6½"
SPAN B TYPE 9 UNIT	8	44'-10½"	359'-0"
SPAN B TYPE 10 UNIT	1	44'-10½"	44'-10½"
TOTAL	60	——	1,848'-4"

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"			

DEAD LOAD DEFLECTION AND CAMBER

	SPANS A & C	SPAN B
	0.6"Ø L.R. STRAND	0.6"Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	↑ ¼"	↑ 1 5/16"
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	↓ 0	↓ ¼"
FINAL CAMBER	↑ ¼"	↑ 1 5/16"

** INCLUDES FUTURE WEARING SURFACE

PROJECT NO. B-3677

MECKLENBURG COUNTY

STATION: 19+72.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

BILL OF MATERIAL

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS
7/8/09

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

DRAWN BY : M. GUDLAUGSSON DATE : 3/16/09
CHECKED BY : B.N.BARODAWALA DATE : 4/22/09

07-JUL-2009 11:45
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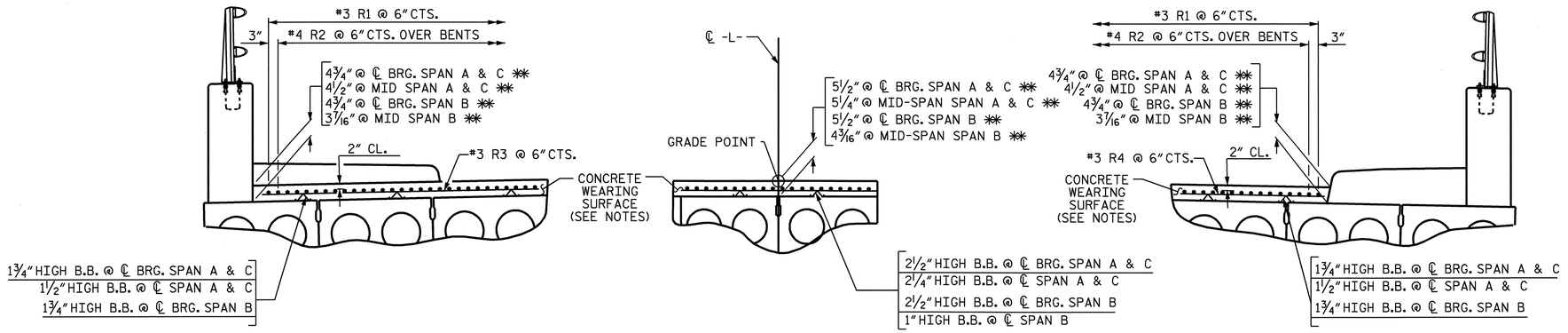
taverette

BILL OF MATERIAL FOR CONCRETE WEARING SURFACE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳R1	412	#3	STR	24′-7″	3,808
✳R2	204	#4	STR	20′-0″	2,725
✳R3	370	#3	STR	17′-8″	2,458
✳R4	185	#3	STR	21′-11″	1,525
✳EPOXY COATED REINFORCING STEEL LBS. 10,516					
STAGE I CONCRETE WEARING SURFACE SQ. FT. 2,803					
STAGE II CONCRETE WEARING SURFACE SQ. FT. 1,992					

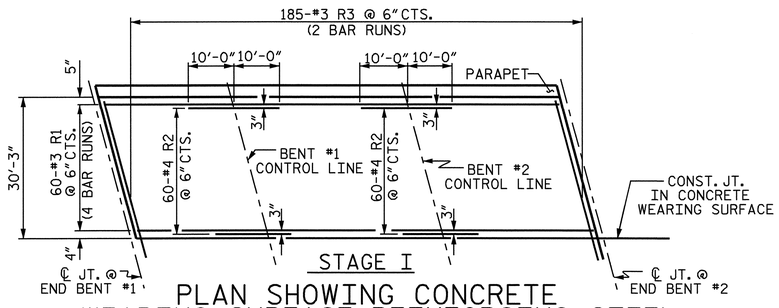
SPLICE LENGTH CHART

BAR SIZE	EPOXY COATED
#3 "R"	2′-0″



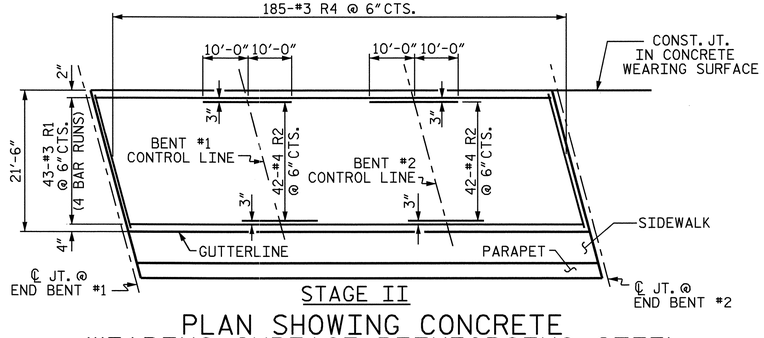
REINFORCING FOR CONCRETE WEARING SURFACE

✳✳ BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS



STAGE I

PLAN SHOWING CONCRETE WEARING SURFACE REINFORCING STEEL



STAGE II

PLAN SHOWING CONCRETE WEARING SURFACE REINFORCING STEEL

NOTES

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

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

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

THE 2½″Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE 2″Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, A POSITIVE HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. THIS SYSTEM SHALL BE DESIGNED TO BE LEFT IN PLACE UNTIL THE CONCRETE HAS REACHED RELEASE STRENGTH. AT LEAST THREE WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 5500 PSI.

ALL REINFORCING STEEL IN PARAPETS, END POSTS, SIDEWALK AND CONCRETE WEARING SURFACE SHALL BE EPOXY COATED.

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, ½″ IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE SIDEWALK IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 FT. TO 10 FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.

GROOVED CONTRACTION JOINTS, ½″ IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 FEET TO 10 FEET BETWEEN EXPASION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.

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

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

WHEN A CONCRETE WEARING SURFACE IS DETAILED ON THE CORED SLAB BRIDGE TYPICAL SECTION, THE TOP SURFACE OF THE CORED SLAB UNITS SHALL HAVE A ⅜″RAKED FINISH.

PLACEMENT OF THE CONCRETE WEARING SURFACE SHALL OCCUR AFTER CASTING THE CONCRETE PARAPET. THE COST OF THE REINFORCING STEEL CAST WITH THE CONCRETE WEARING SURFACE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE WEARING SURFACE. FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

FIELD BEND TRANSVERSE BARS (#3 "R") AS NECESSARY IN CONCRETE WEARING SURFACE.

THE STAGE I 0.6 Ø H.S. TRANSVERSE POST-TENSIONING STRAND SHALL BE TENSIONED PRIOR TO PLACEMENT OF TRAFFIC ON STAGE I.

PAYMENT FOR SIDEWALK SHALL BE INCLUDED IN PAY ITEMS FOR CLASS AA CONCRETE AND EPOXY COATED REINFORCING STEEL.

PROJECT NO. B-3677

MECKLENBURG COUNTY

STATION: 19+72.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

BILL OF MATERIAL

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY W. COGGINS
7/8/09

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

DRAWN BY : M. GUDLAUGSSON DATE : 3/16/09
CHECKED BY : B.N.BARODAWALA DATE : 4/22/09

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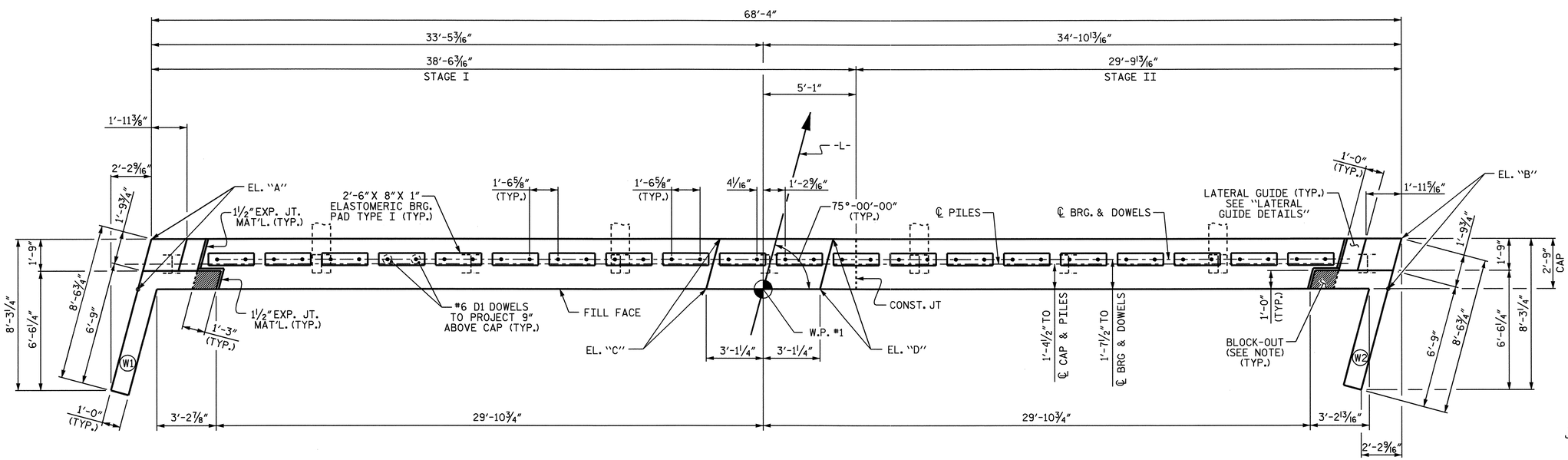
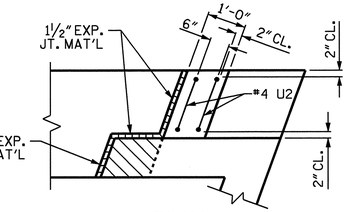
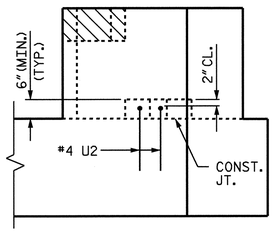


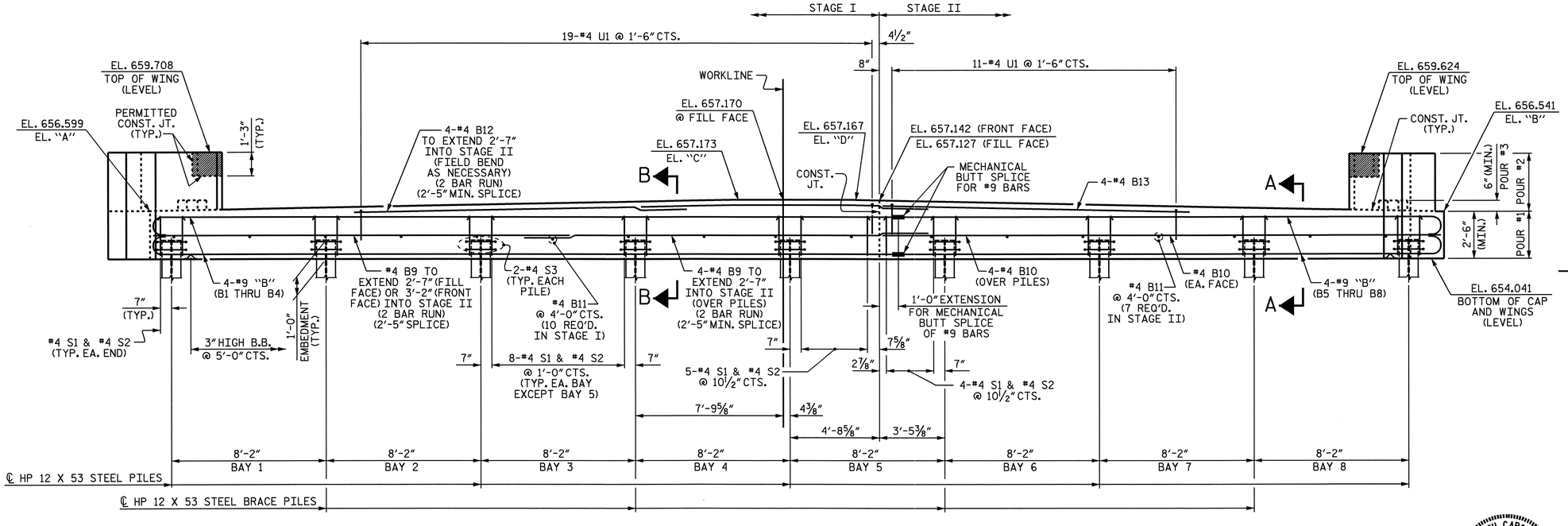
PLAN



PLAN



ELEVATION



ELEVATION

NOTES

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

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

THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER CORED SLAB UNITS ARE IN PLACE.

FOR TEMPORARY DRAINAGE DETAIL, SEE SHEET 3 OF 3.

FOR PILE SPLICE DETAIL, SEE END BENT #2, SHEET 3 OF 3.

LATERAL GUIDE DETAILS

PROJECT NO. B-3677

MECKLENBURG COUNTY

STATION: 19+72.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT #1

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

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY J. COGGINS 7/8/09

DRAWN BY : T.L. AVERETTE DATE : 4-29-09
CHECKED BY : NEIL RUFFIN DATE : 5-7-09

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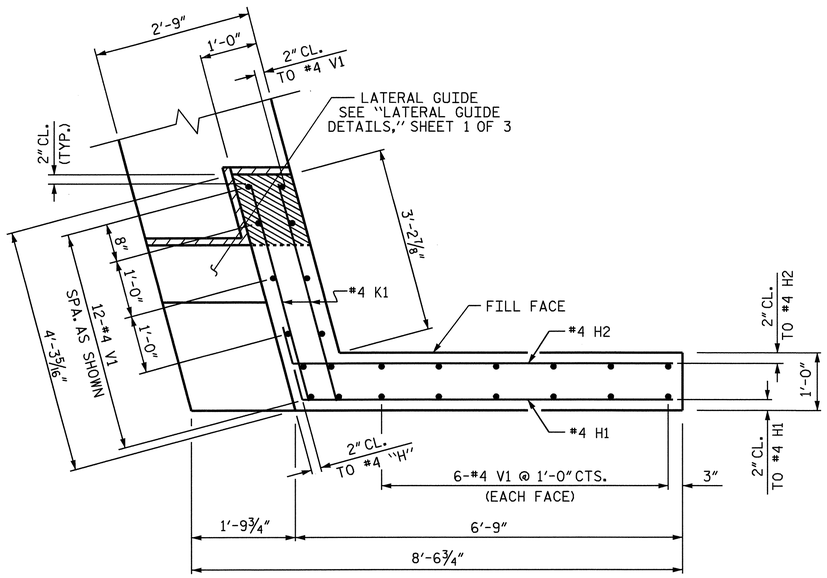
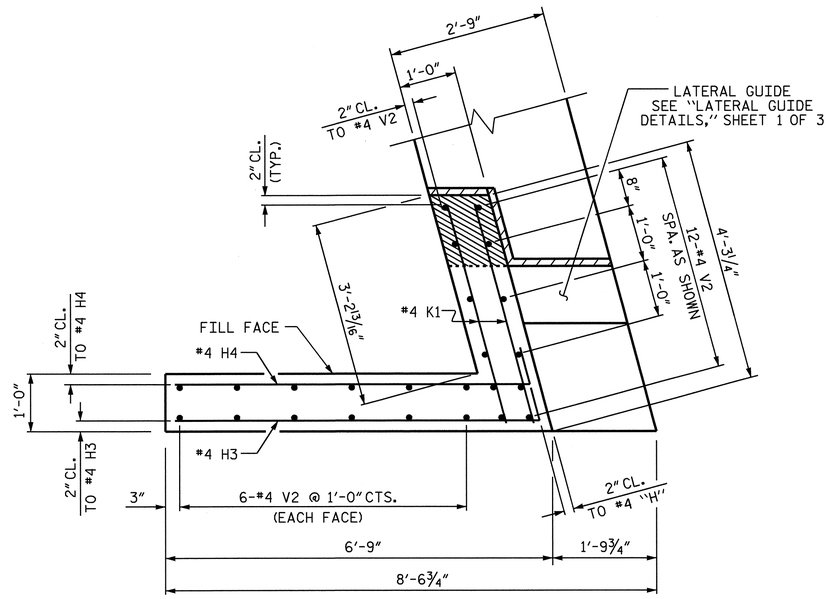
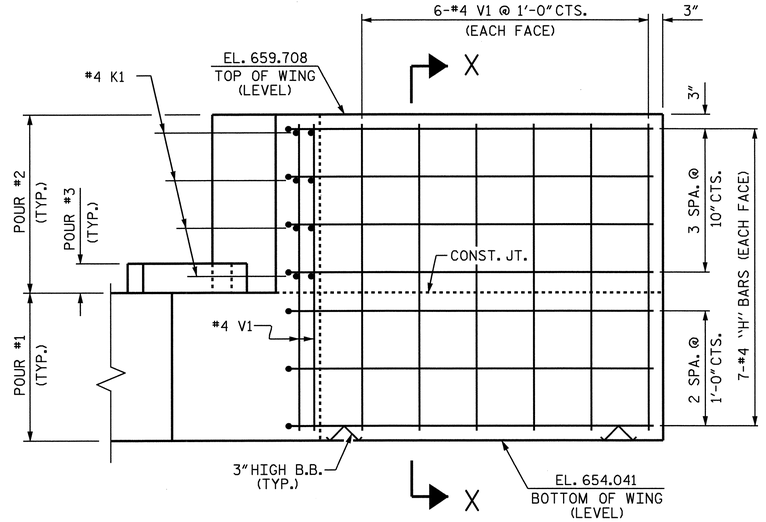


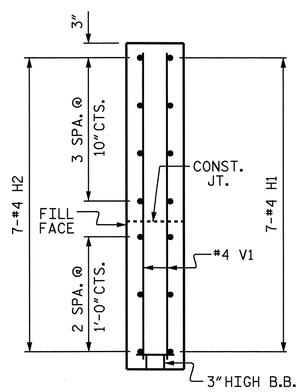
PLAN OF LEFT WING (W1)



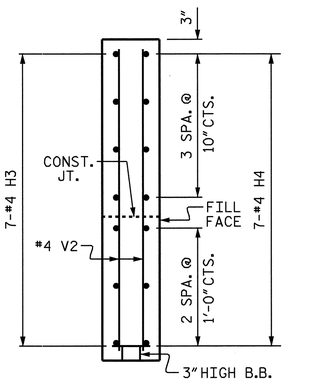
PLAN OF RIGHT WING (W2)



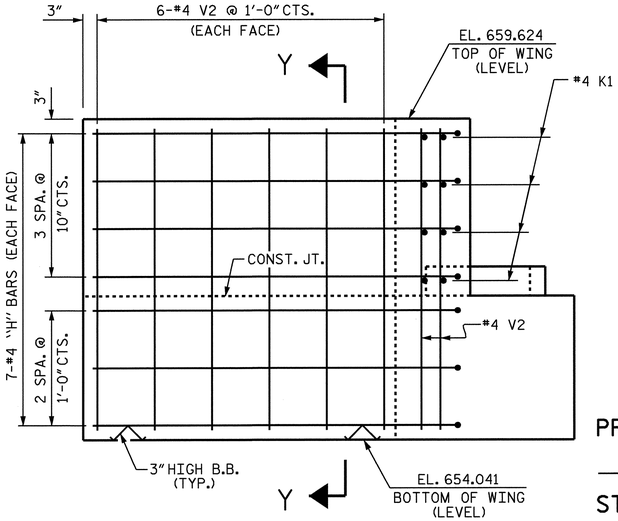
ELEVATION OF LEFT WING (W1)



SECTION X-X



SECTION Y-Y



ELEVATION OF RIGHT WING (W2)

PROJECT NO. B-3677
MECKLENBURG COUNTY
STATION: 19+72.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT #1

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. CODGINS
7/8/09

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

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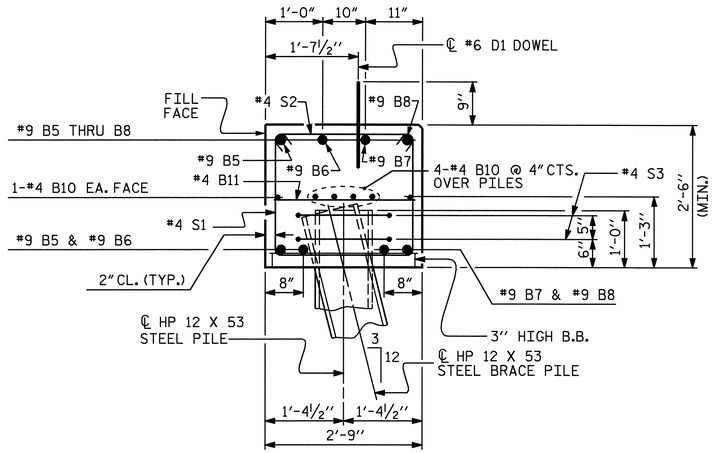
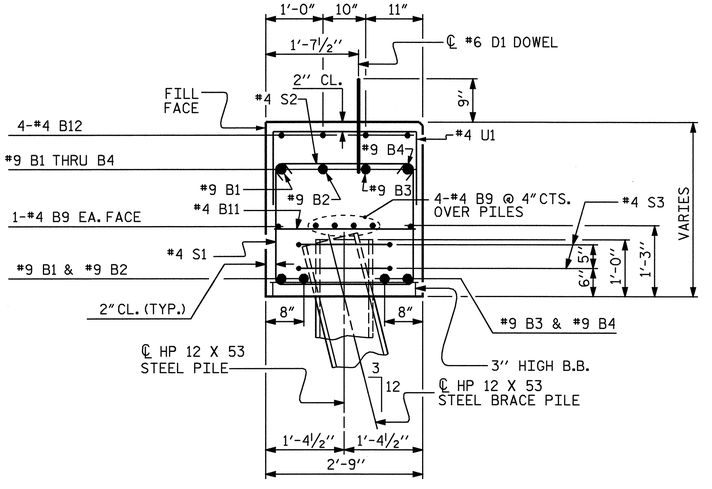
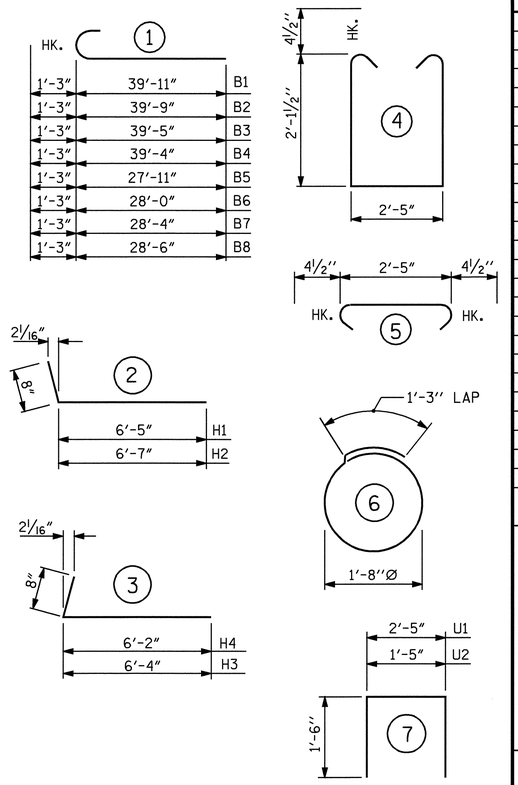


SECTION A-A



SECTION B-B

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL — END BENT #1 (STAGE I)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	#9	1	41'-2"	280
B2	2	#9	1	41'-0"	279
B3	2	#9	1	40'-8"	277
B4	2	#9	1	40'-7"	276
B9	12	#4	STR	22'-0"	176
B11	10	#4	STR	2'-5"	16
B12	8	#4	STR	16'-5"	88
D1	23	#6	STR	1'-6"	52
H1	7	#4	2	7'-1"	33
H2	7	#4	2	7'-3"	34
K1	8	#4	STR	3'-11"	21
S1	38	#4	4	7'-5"	188
S2	38	#4	5	3'-2"	80
S3	10	#4	6	6'-6"	43
U1	19	#4	7	5'-5"	69
U2	2	#4	7	4'-5"	6
V1	24	#4	STR	5'-4"	86

STAGE I REINFORCING STEEL LBS. 2004

STAGE I CLASS "A" CONCRETE BREAKDOWN

POUR #1 CAP & LOWER WING 12.0 CU. YDS.

POUR #2 UPPER WING 1.2 CU. YDS.

POUR #3 LATERAL GUIDES 0.1 CU. YDS.

STAGE I CLASS "A" CONCRETE 13.3 CU. YDS.

HP 12 x 53 STEEL PILES NO. 5 LIN. FT. 75

BILL OF MATERIAL — END BENT #1 (STAGE II)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B5	2	#9	1	29'-2"	198
B6	2	#9	1	29'-3"	199
B7	2	#9	1	29'-7"	201
B8	2	#9	1	29'-9"	202
B10	6	#4	STR	28'-9"	115
B11	7	#4	STR	2'-5"	11
B13	4	#4	STR	16'-3"	43
D1	17	#6	STR	1'-6"	38
H3	7	#4	3	7'-0"	33
H4	7	#4	3	6'-10"	32
K1	8	#4	STR	3'-11"	21
S1	29	#4	4	7'-5"	144
S2	29	#4	5	3'-2"	61
S3	8	#4	6	6'-6"	35
U1	11	#4	7	5'-5"	40
U2	2	#4	7	4'-5"	6
V2	24	#4	STR	5'-3"	84

STAGE II REINFORCING STEEL LBS. 1463

STAGE II CLASS "A" CONCRETE BREAKDOWN

POUR #1 CAP & LOWER WING 9.0 CU. YDS.

POUR #2 UPPER WING 1.1 CU. YDS.

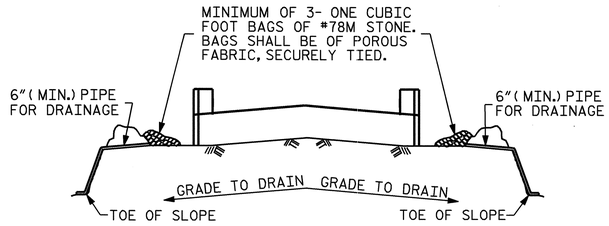
POUR #3 LATERAL GUIDES 0.1 CU. YDS.

STAGE II CLASS "A" CONCRETE 10.2 CU. YDS.

HP 12 x 53 STEEL PILES NO. 4 LIN. FT. 60

TOTAL BILL OF MATERIAL - END BENT #1

TOTAL REINFORCING STEEL	3,467 LBS.	
TOTAL CLASS "A" CONCRETE	23.5 CU. YDS.	
HP 12 X 53 STEEL PILES	NO. 9	135 LIN. FT.
PILE EXCAVATION IN SOIL		100 LIN. FT.
PILE EXCAVATION NOT IN SOIL		35 LIN. FT.
STEEL PILE POINTS	9 EACH	



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

PROJECT NO. B-3677

MECKLENBURG COUNTY

STATION: 19+72.50 -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:	S-24
1			3			TOTAL SHEETS
2			4			36

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NOTES

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

THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER CORED SLAB UNITS ARE IN PLACE.

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

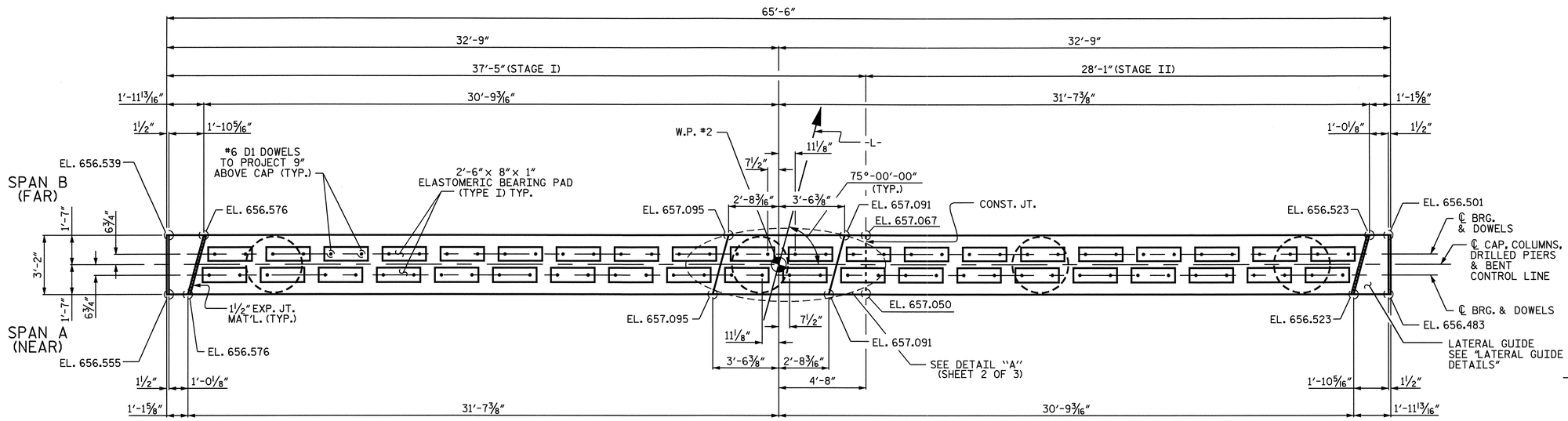
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 1 FOOT OF EXTRA LENGTH.

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

MECHANICAL COUPLERS SHALL BE USED IN CAP TO JOIN THE #11 'B' BARS REINFORCING STEEL IN STAGE I TO #11 'B' BARS REINFORCING STEEL IN STAGE II.

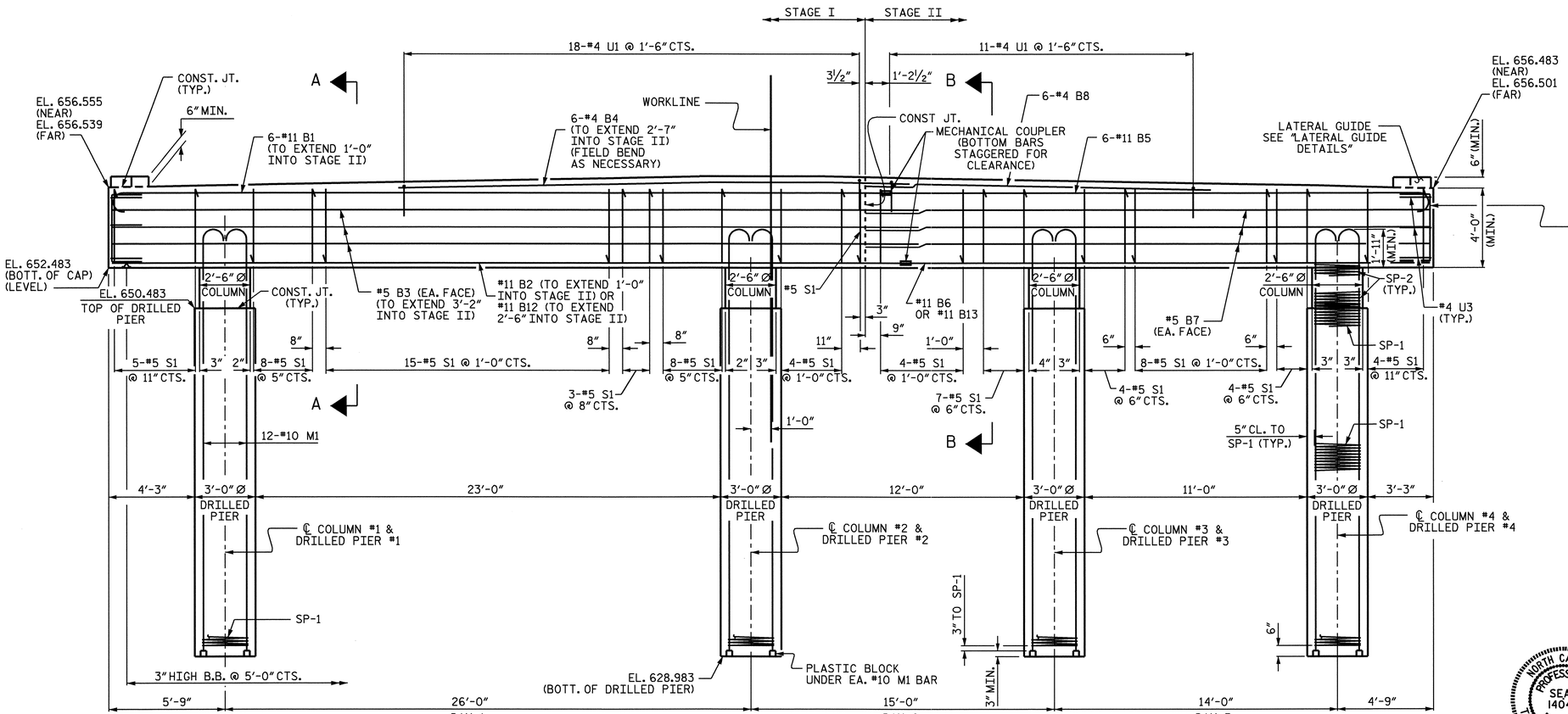
FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIERS WILL NOT BE PERMITTED.



PLAN

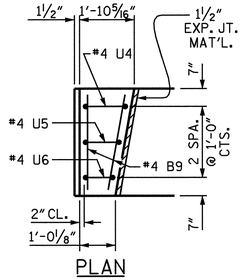
ELEVATIONS SHOWN ARE AT THE TOP OF CAP.

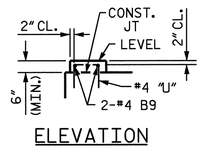


ELEVATION

(ELEVATIONS, REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER)

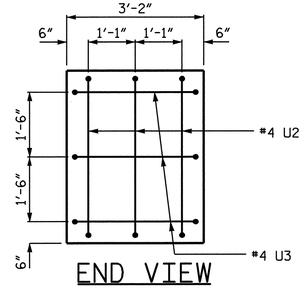
NOTE: INVERT ALTERNATE STIRRUPS





LATERAL GUIDE DETAILS

(TYP. EA. LATERAL GUIDE)



PROJECT NO. B-3677

MECKLENBURG COUNTY

STATION: 19+72.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT #1

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

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS

7/8/09

DRAWN BY : J.B. WILSON DATE : 4/23/09

CHECKED BY : B.N. BARODWALA DATE : 6/10/09

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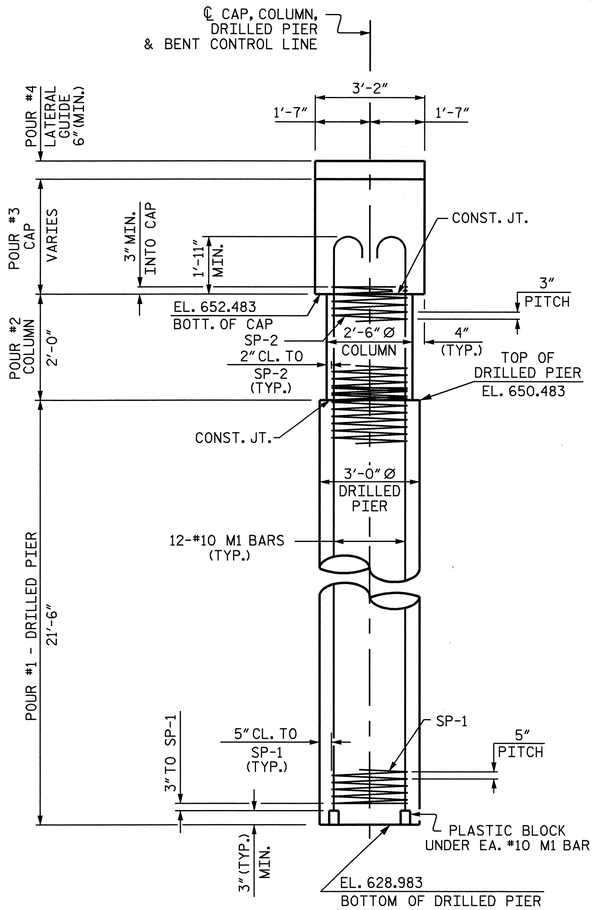
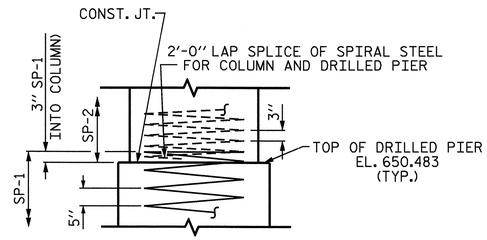
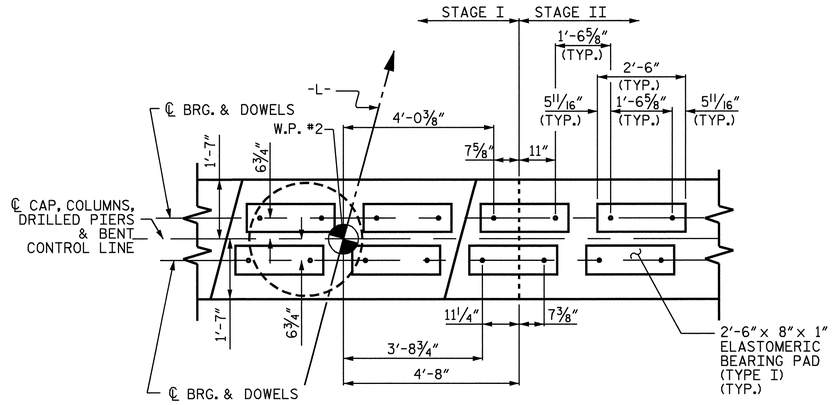


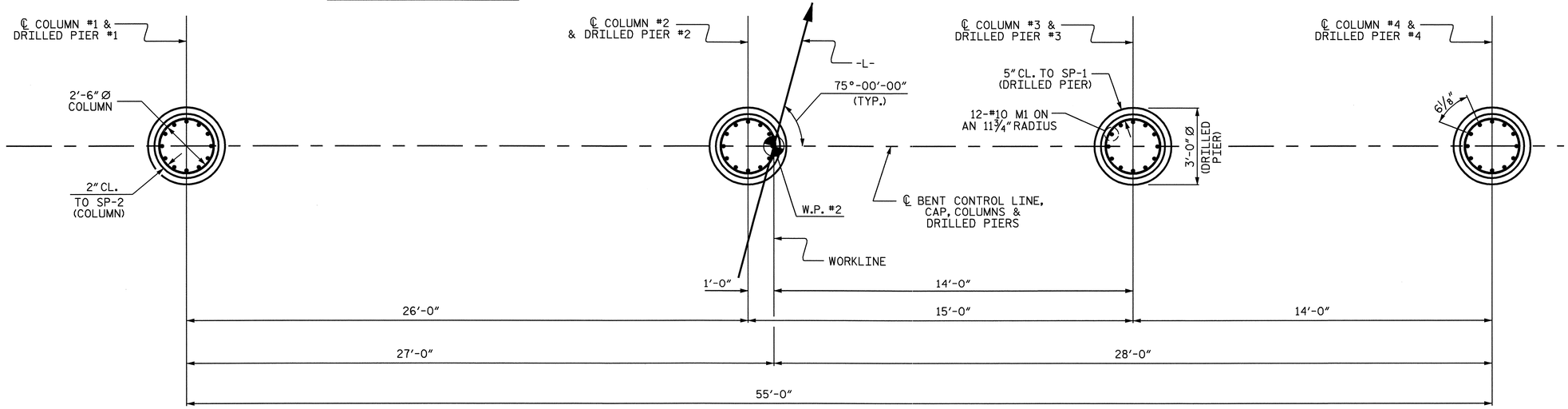
END ELEVATION



CONSTRUCTION JOINT DETAIL



DETAIL A



PLAN OF COLUMNS AND DRILLED PIERS

(REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER)

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS
7/8/09

PROJECT NO. B-3677
MECKLENBURG COUNTY
STATION: 19+72.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT #1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
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2			4			36

DRAWN BY : J.B. WILSON DATE : 4/28/09
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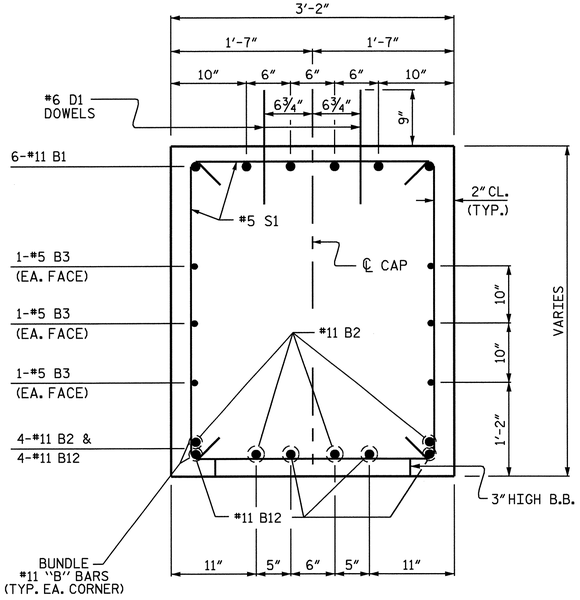
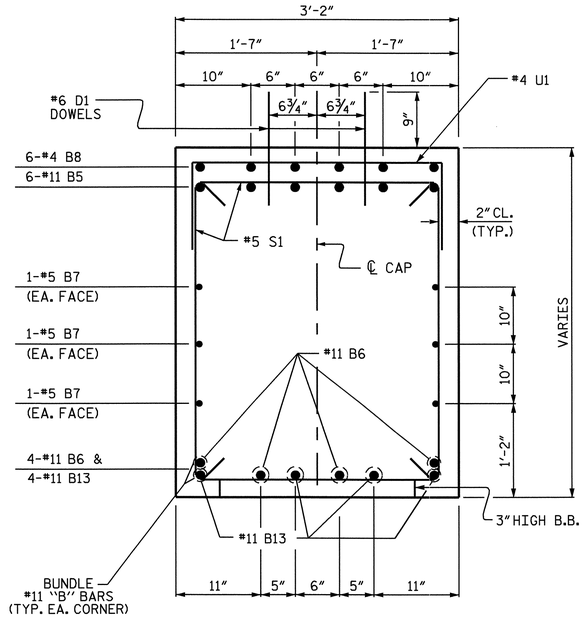
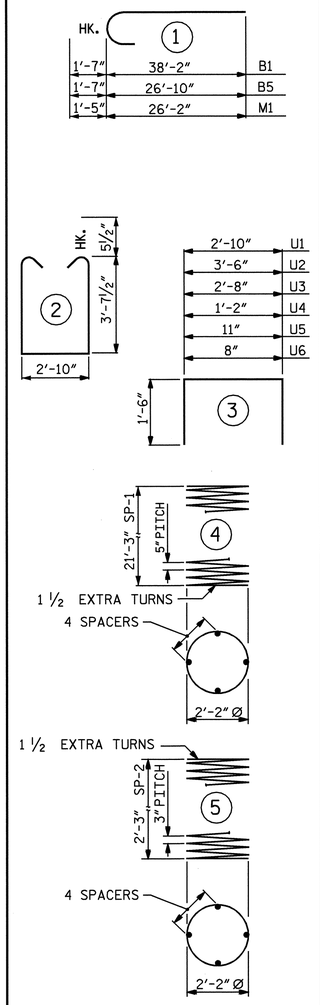


SECTION A-A



SECTION B-B

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL
BENT #1 STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#11	1	39'-9"	1267
B2	4	#11	STR	38'-3"	813
B3	6	#5	STR	40'-5"	253
B4	6	#4	STR	28'-10"	116
B9	2	#4	STR	2'-10"	4
B12	4	#11	STR	39'-9"	845
M1	24	#10	1	27'-7"	2849
S1	44	#5	2	11'-0"	505
U1	18	#4	3	5'-10"	70
U2	3	#4	3	6'-6"	13
U3	3	#4	3	5'-8"	11
U4	1	#4	3	4'-2"	3
U5	1	#4	3	3'-11"	3
U6	1	#4	3	3'-8"	2
REINFORCING STEEL =				6704	LBS
SP-1	2	**	4	349'-6"	729
SP-2	2	*	5	70'-2"	94

SPIRAL COLUMN REINFORCING STEEL = 823 LBS.

CLASS A CONCRETE
POUR #2 (COLUMNS) 0.7 C.Y.
POUR #3 (CAP) 19.0 C.Y.
POUR #4 (LATERAL GUIDE) 0.1 C.Y.
TOTAL 19.8 C.Y.

DRILLED PIER CONCRETE
POUR #1 (DRILLED PIERS) 11.3 C.Y.

BILL OF MATERIAL
BENT #1 STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B5	6	#11	1	28'-5"	906
B6	4	#11	STR	26'-11"	572
B7	6	#5	STR	27'-9"	174
B8	6	#4	STR	16'-9"	67
B9	2	#4	STR	2'-10"	4
B13	4	#11	STR	25'-5"	540
M1	24	#10	1	27'-7"	2849
S1	31	#5	2	11'-0"	356
U1	11	#4	3	5'-10"	43
U2	3	#4	3	6'-6"	13
U3	3	#4	3	5'-8"	11
U4	1	#4	3	4'-2"	3
U5	1	#4	3	3'-11"	3
U6	1	#4	3	3'-8"	2
REINFORCING STEEL =				5543	LBS
SP-1	2	**	4	349'-6"	729
SP-2	2	*	5	70'-2"	94

SPIRAL COLUMN REINFORCING STEEL = 823 LBS.

CLASS A CONCRETE
POUR #2 (COLUMNS) 0.7 C.Y.
POUR #3 (CAP) 13.9 C.Y.
POUR #4 (LATERAL GUIDE) 0.1 C.Y.
TOTAL 14.7 C.Y.

DRILLED PIER CONCRETE
POUR #1 (DRILLED PIERS) 11.3 C.Y.

TOTAL BILL OF MATERIAL - BENT #1

REINFORCING STEEL	12,297	LBS.
SPIRAL COLUMN REINFORCING STEEL	1,646	LBS.
CLASS A CONCRETE	34.5	CU. YDS.
3'-0" Ø DRILLED PIERS IN SOIL FOR BENT #1	34.00	LIN. FT.
3'-0" Ø DRILLED PIERS NOT IN SOIL FOR BENT #1	52.00	LIN. FT.
PERMANENT STEEL CASING FOR 3'-0" DRILLED PIERS FOR BENT #1	33.93	LIN. FT.

* THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR *4 PLAIN OR DEFORMED BAR.

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

PROJECT NO. B-3677
MECKLENBURG COUNTY
STATION: 19+72.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT #1

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS
7/8/09

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

DRAWN BY : J.B. WILSON DATE : 5/05/09
CHECKED BY : T.L. COGGINS DATE : 6/11/09

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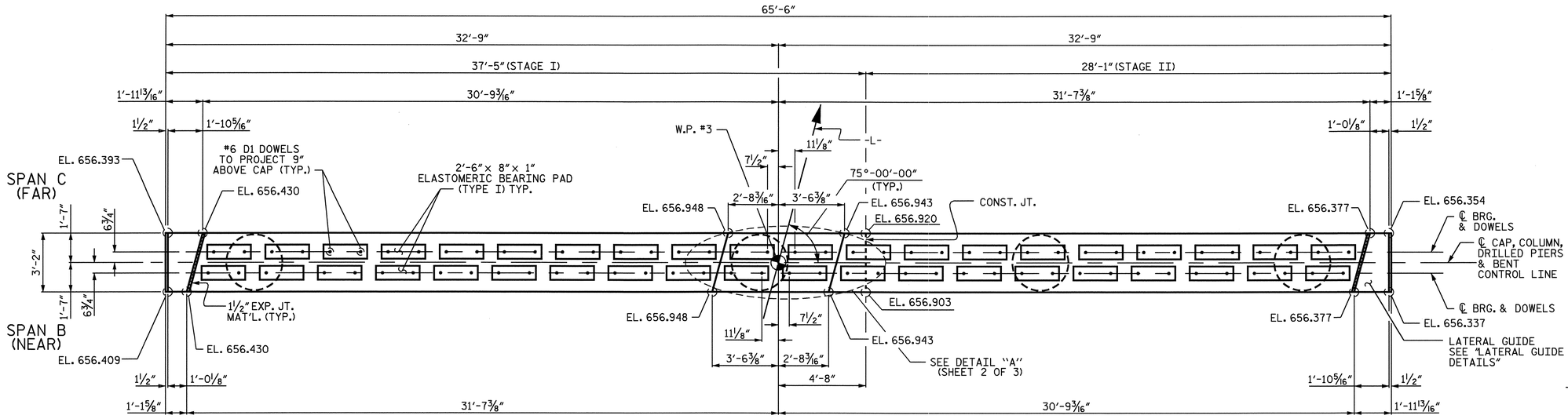
taveratte



PLAN

ELEVATIONS SHOWN ARE AT THE TOP OF CAP.

NOTES

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

THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER CORED SLAB UNITS ARE IN PLACE.

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

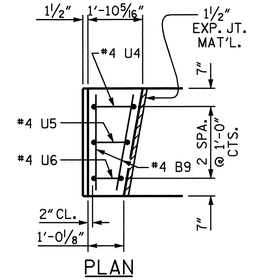
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 1 FOOT OF EXTRA LENGTH.

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

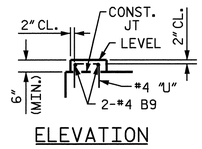
MECHANICAL COUPLERS SHALL BE USED IN CAP TO JOIN THE #11 'B' BARS REINFORCING STEEL IN STAGE I TO #11 'B' BARS REINFORCING STEEL IN STAGE II.

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIERS WILL NOT BE PERMITTED.



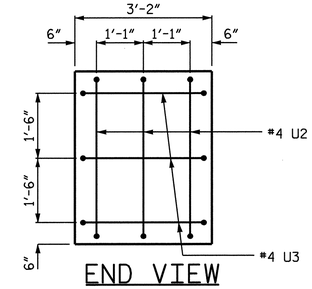
PLAN



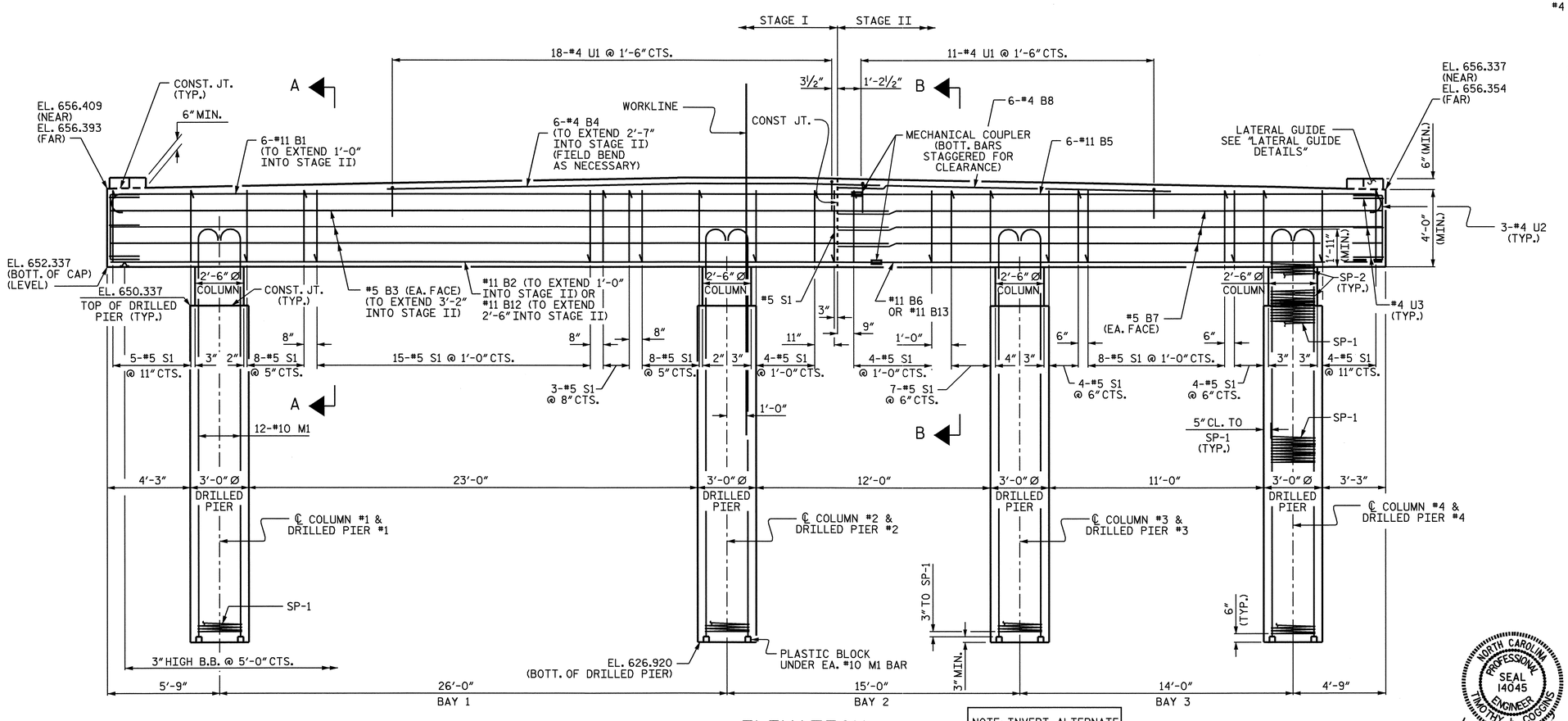
ELEVATION

LATERAL GUIDE DETAILS

(TYP. EA. LATERAL GUIDE)



END VIEW



ELEVATION

(ELEVATIONS, REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER)

NOTE: INVERT ALTERNATE STIRRUPS

PROJECT NO. B-3677

MECKLENBURG COUNTY

STATION: 19+72.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT #2

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

DRAWN BY : J.B. WILSON DATE : 4/23/09
CHECKED BY : B.N. BARODWALA DATE : 6/11/09

07-JUL-2009 11:43
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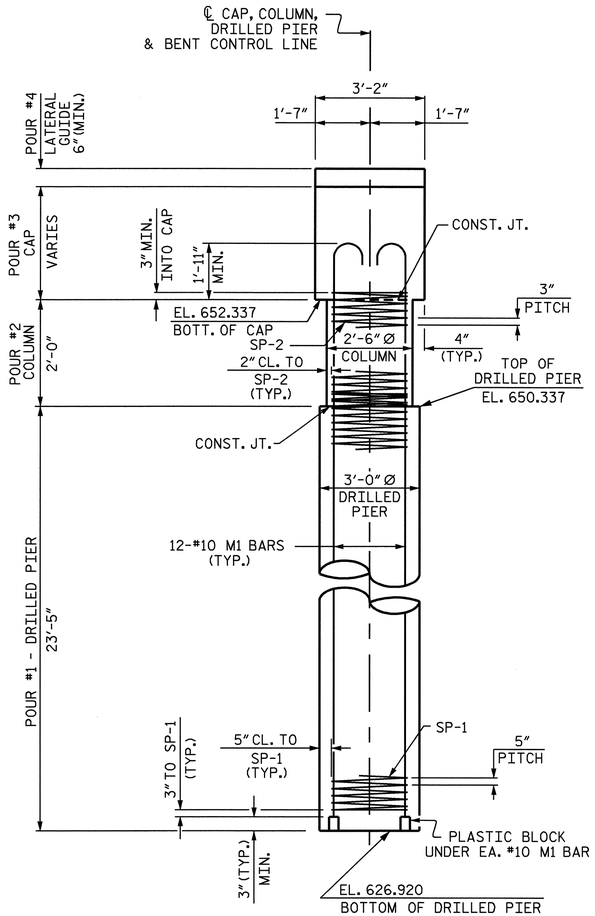
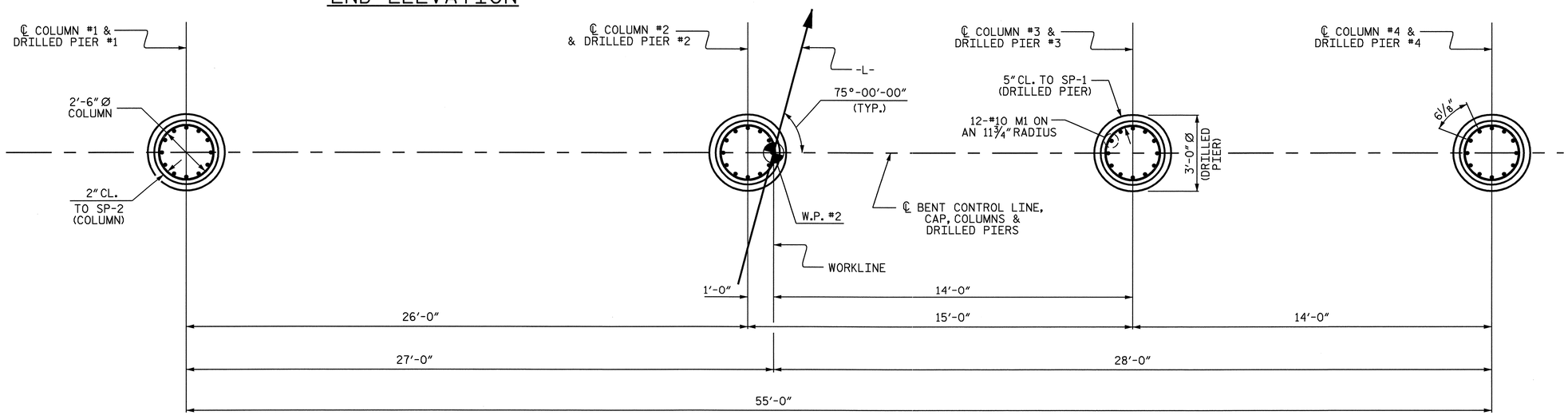
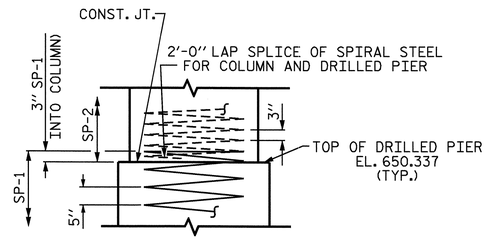


END ELEVATION

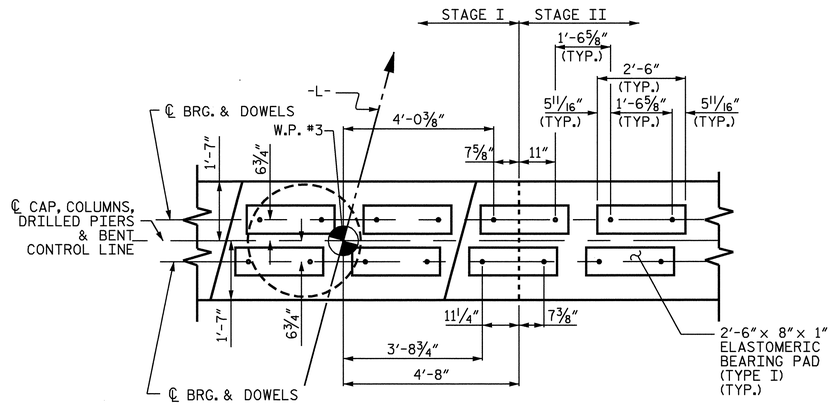


PLANS OF COLUMNS AND DRILLED PIERS

(REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER)



CONSTRUCTION JOINT DETAIL



DETAIL A

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS
7/8/09

PROJECT NO. B-3677

MECKLENBURG COUNTY

STATION: 19+72.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT #2

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

DRAWN BY : J.B. WILSON DATE : 4/28/09
CHECKED BY : B.N. BARODWALA DATE : 6/10/09

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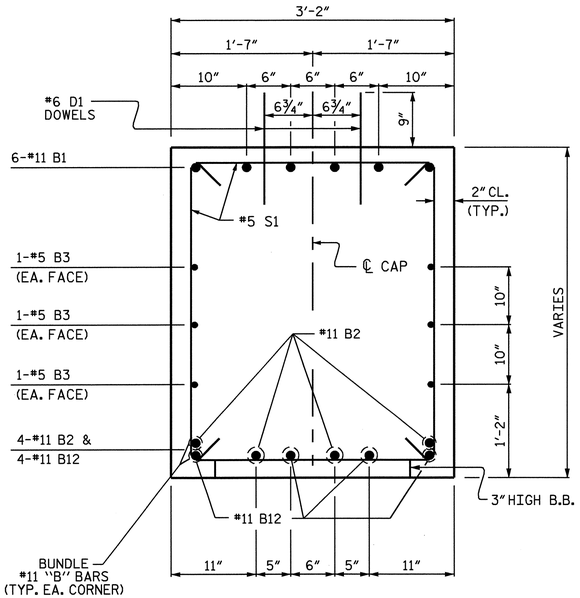
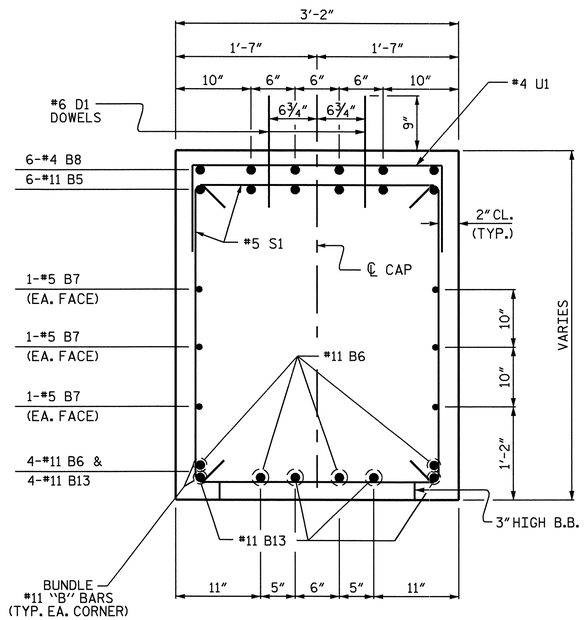
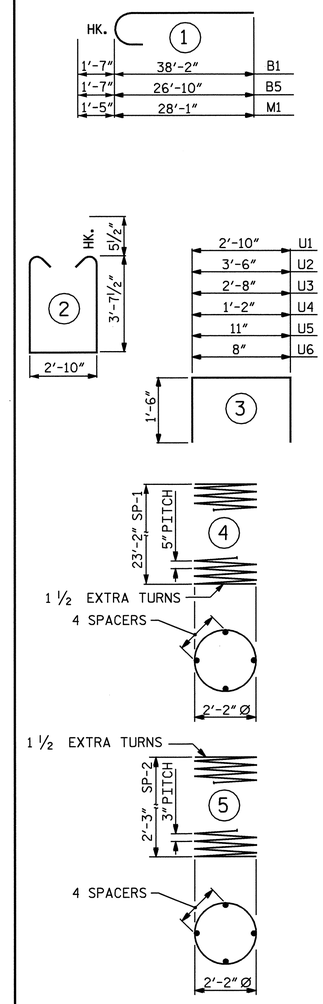


SECTION A-A



SECTION B-B

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL
BENT #2 STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#11	1	39'-9"	1267
B2	4	#11	STR	38'-3"	813
B3	6	#5	STR	40'-5"	253
B4	6	#4	STR	28'-10"	116
B9	2	#4	STR	2'-10"	4
B12	4	#11	STR	39'-9"	845
M1	24	#10	1	29'-6"	3047
S1	44	#5	2	11'-0"	505
U1	18	#4	3	5'-10"	70
U2	3	#4	3	6'-6"	13
U3	3	#4	3	5'-8"	11
U4	1	#4	3	4'-2"	3
U5	1	#4	3	3'-11"	3
U6	1	#4	3	3'-8"	2
REINFORCING STEEL =					6952 LBS
SP-1	2	**	4	380'-1"	793
SP-2	2	*	5	70'-2"	94
SPIRAL COLUMN REINFORCING STEEL					= 887 LBS.

CLASS A CONCRETE BREAKDOWN

POUR #2 (COLUMNS)	0.7 C.Y.
POUR #3 (CAP)	18.9 C.Y.
POUR #4 (LATERAL GUIDE)	0.1 C.Y.
TOTAL	19.7 C.Y.

DRILLED PIER CONCRETE

POUR #1 (DRILLED PIERS) 12.3 C.Y.

BILL OF MATERIAL
BENT #2 STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B5	6	#11	1	28'-5"	906
B6	4	#11	STR	26'-11"	572
B7	6	#5	STR	27'-9"	174
B8	6	#4	STR	16'-9"	67
B9	2	#4	STR	2'-10"	4
B13	4	#11	STR	25'-5"	540
M1	24	#10	1	29'-6"	3047
S1	31	#5	2	11'-0"	356
U1	11	#4	3	5'-10"	43
U2	3	#4	3	6'-6"	13
U3	3	#4	3	5'-8"	11
U4	1	#4	3	4'-2"	3
U5	1	#4	3	3'-11"	3
U6	1	#4	3	3'-8"	2
REINFORCING STEEL =					5741 LBS
SP-1	2	**	4	380'-1"	793
SP-2	2	*	5	70'-2"	94
SPIRAL COLUMN REINFORCING STEEL					= 887 LBS.

CLASS A CONCRETE BREAKDOWN

POUR #2 (COLUMNS)	0.7 C.Y.
POUR #3 (CAP)	13.9 C.Y.
POUR #4 (LATERAL GUIDE)	0.1 C.Y.
TOTAL	14.7 C.Y.

DRILLED PIER CONCRETE

POUR #1 (DRILLED PIERS) 12.3 C.Y.

TOTAL BILL OF MATERIAL - BENT #2

REINFORCING STEEL =	12,693 LBS.
SPIRAL COLUMN REINFORCING STEEL	1,774 LBS.
CLASS A CONCRETE	34.4 CU. YDS.
3'-0" Ø DRILLED PIERS IN SOIL FOR BENT #2	45.67 LIN. FT.
3'-0" Ø DRILLED PIERS NOT IN SOIL FOR BENT #2	48.00 LIN. FT.
PERMANENT STEEL CASING FOR 3'-0" DRILLED PIERS FOR BENT #2	45.35 LIN. FT.

* THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

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

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY W. COGGINS
7/8/09

PROJECT NO. B-3677

MECKLENBURG COUNTY

STATION: 19+72.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT #2

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

DRAWN BY : J.B. WILSON DATE : 5/05/09
CHECKED BY : B.N. BARODWALA DATE : 5/07/09

07-JUL-2009 11:43
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taveratte

NOTES

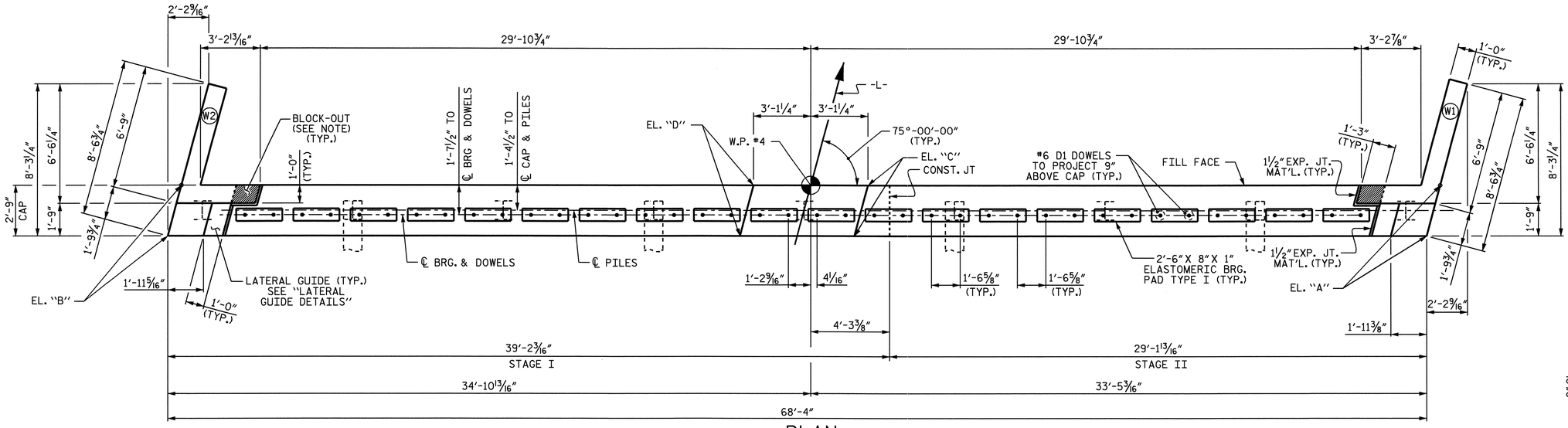
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

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

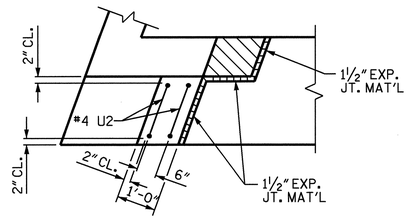
THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER CORED SLAB UNITS ARE IN PLACE.

FOR TEMPORARY DRAINAGE DETAIL, SEE END BENT #1, SHEET 3 OF 3.

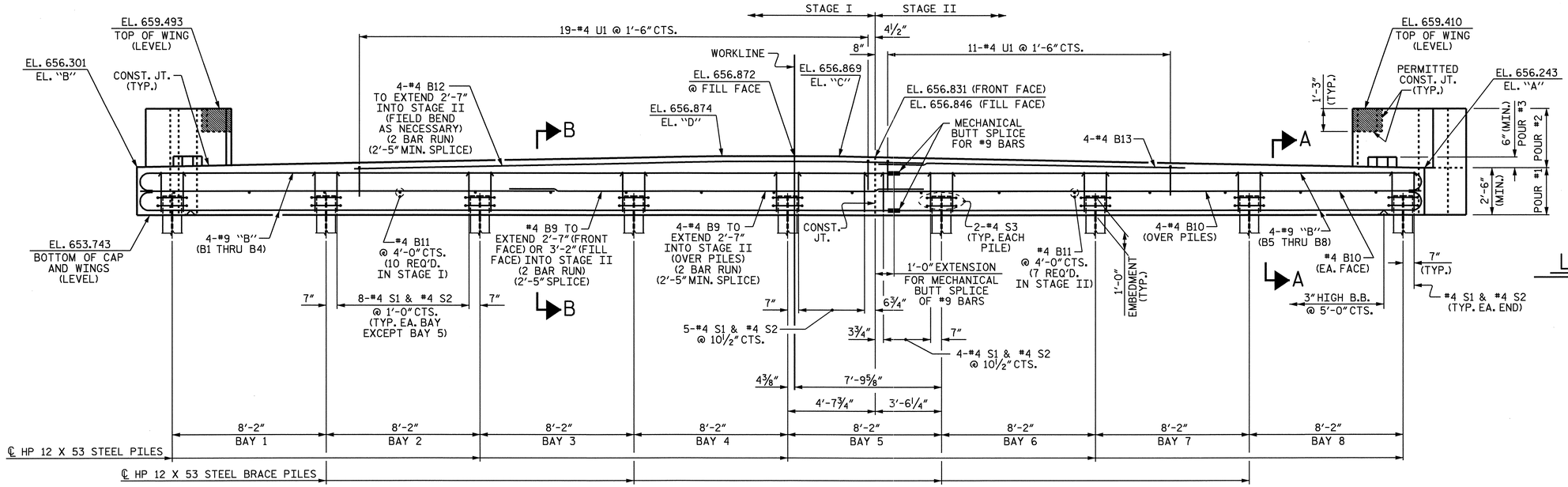
FOR PILE SPLICE DETAIL, SEE SHEET 3 OF 3.



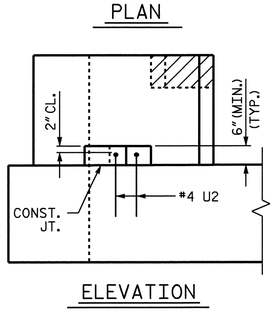
PLAN



PLAN



ELEVATION



ELEVATION

LATERAL GUIDE DETAILS

PROJECT NO. B-3677

MECKLENBURG COUNTY

STATION: 19+72.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT #2

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY W. COGGINS
7/8/09

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

DRAWN BY : T.L. AVERETTE DATE : 5-06-09
CHECKED BY : NEIL RUFFIN DATE : 5-10-09

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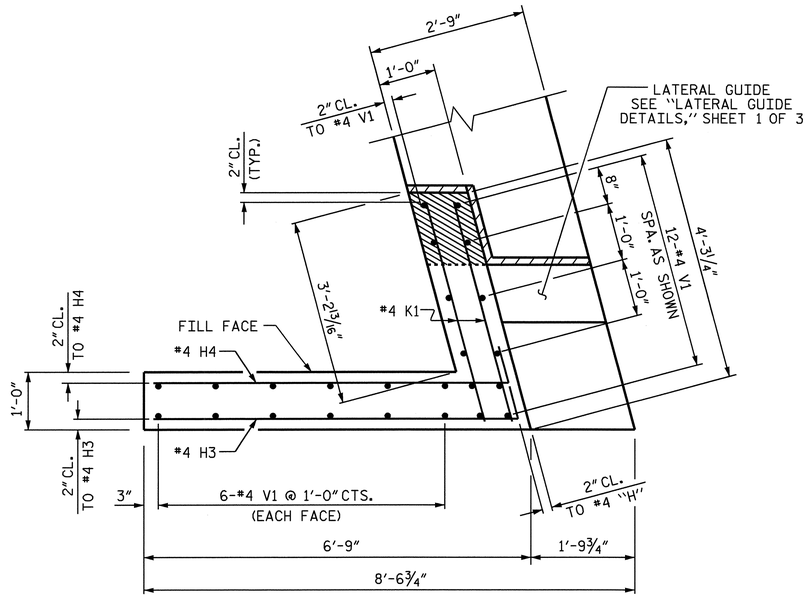
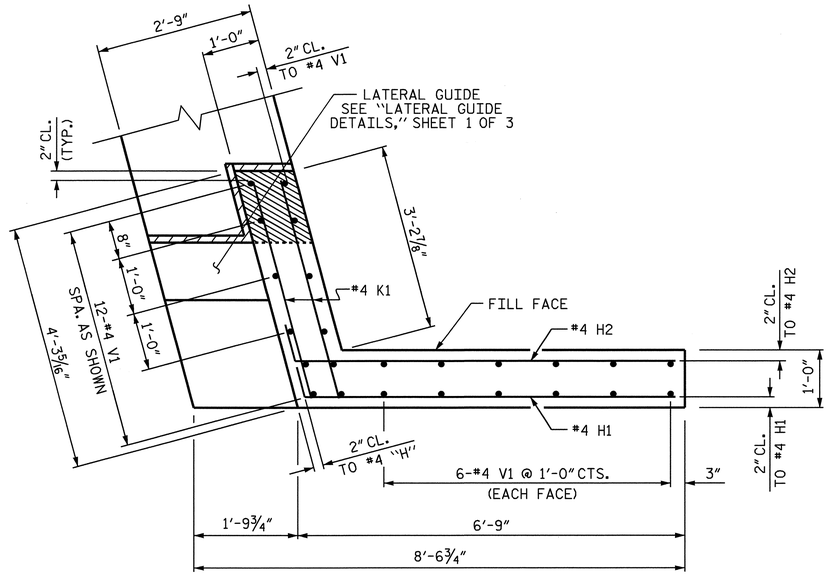
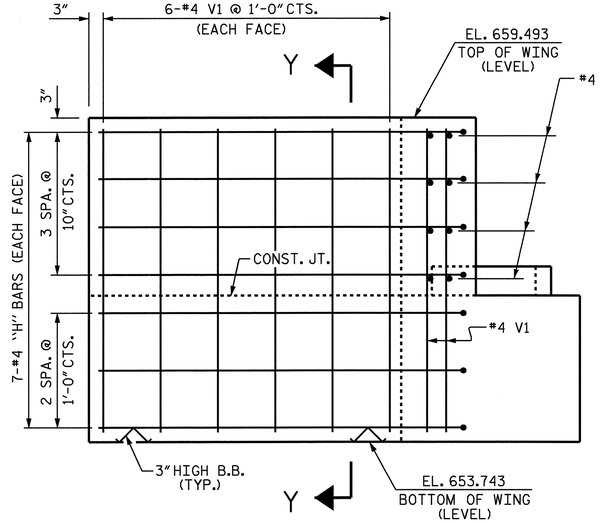


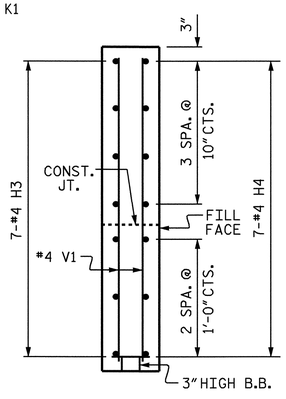
PLAN OF LEFT WING (W2)



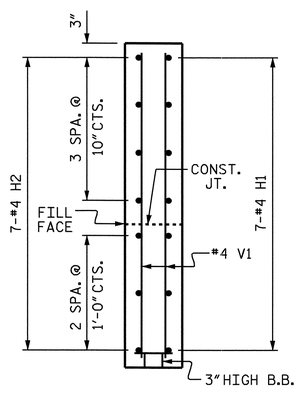
PLAN OF RIGHT WING (W1)



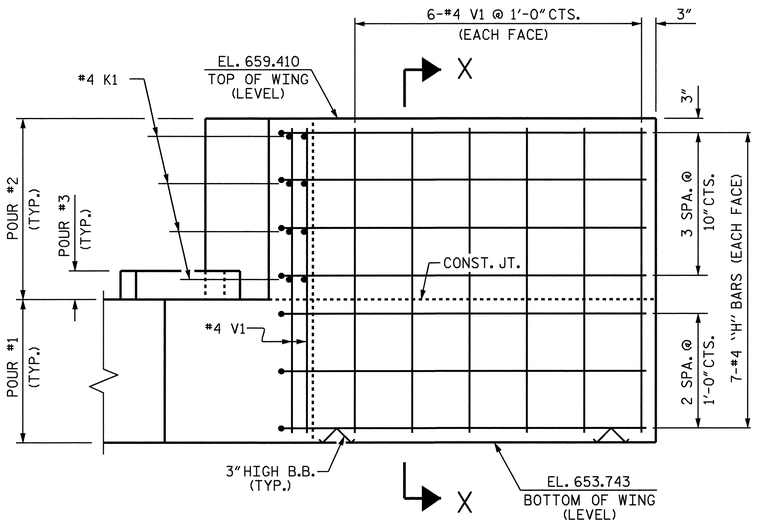
ELEVATION OF LEFT WING (W2)



SECTION Y-Y



SECTION X-X



ELEVATION OF RIGHT WING (W1)

PROJECT NO. B-3677

MECKLENBURG COUNTY

STATION: 19+72.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT #2

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS
7/8/09

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

DRAWN BY : T.L. AVERETTE DATE : 5-04-09
CHECKED BY : NEIL RUFFIN DATE : 5-11-09

07-JUL-2009 11:42
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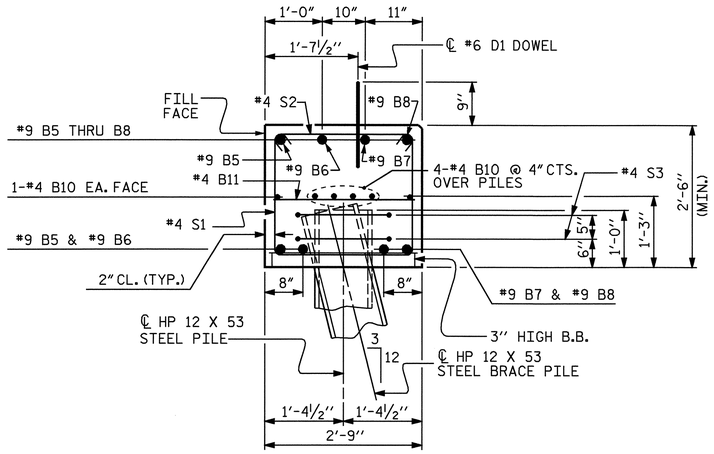
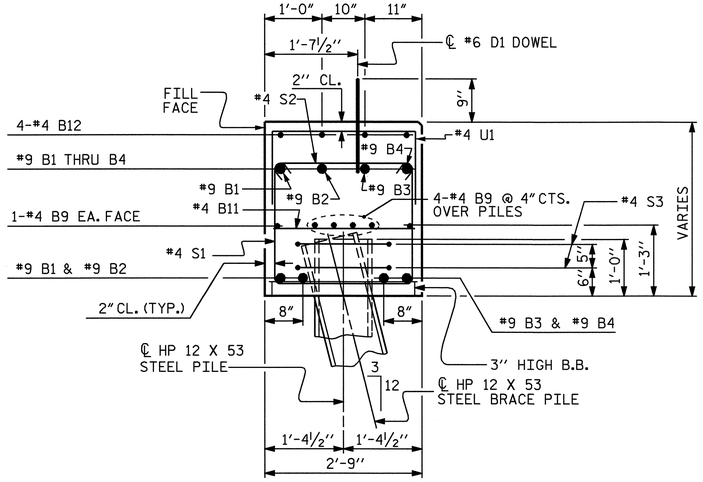
taverette

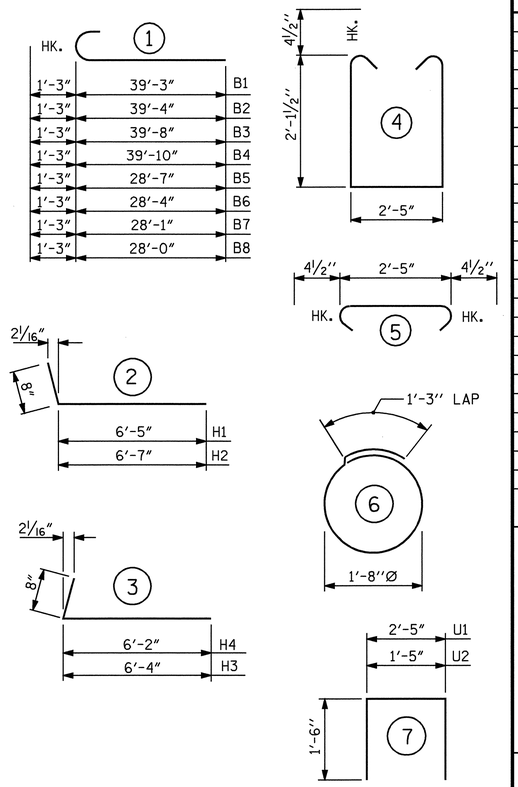


SECTION A-A



SECTION B-B

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL
END BENT #2 (STAGE I)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	#9	1	40'-6"	275
B2	2	#9	1	40'-7"	276
B3	2	#9	1	40'-11"	278
B4	2	#9	1	41'-1"	279
B9	12	#4	STR	22'-0"	176
B11	10	#4	STR	2'-5"	16
B12	8	#4	STR	16'-5"	88
D1	23	#6	STR	1'-6"	52
H3	7	#4	3	7'-0"	33
H4	7	#4	3	6'-10"	32
K1	8	#4	STR	3'-11"	21
S1	38	#4	4	7'-5"	188
S2	38	#4	5	3'-2"	80
S3	10	#4	6	6'-6"	43
U1	19	#4	7	5'-5"	69
U2	2	#4	7	4'-5"	6
V1	24	#4	STR	5'-4"	86

STAGE I REINFORCING STEEL LBS. 1998

STAGE I
CLASS "A" CONCRETE BREAKDOWN

POUR #1 CAP & LOWER WING	12.0	CU. YDS.
POUR #2 UPPER WING	1.1	CU. YDS.
POUR #3 LATERAL GUIDES	0.1	CU. YDS.
STAGE I CLASS "A" CONCRETE	13.2	CU. YDS.

HP 12 x 53 STEEL PILES
NO. 5 LIN. FT. 75

BILL OF MATERIAL
END BENT #2 (STAGE II)

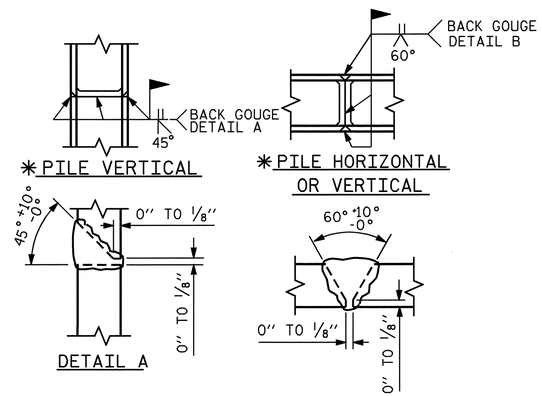
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B5	2	#9	1	29'-10"	203
B6	2	#9	1	29'-7"	201
B7	2	#9	1	29'-4"	199
B8	2	#9	1	29'-3"	199
B10	6	#4	STR	28'-10"	116
B11	7	#4	STR	2'-5"	11
B13	4	#4	STR	16'-3"	43
D1	17	#6	STR	1'-6"	38
H1	7	#4	2	7'-1"	33
H2	7	#4	2	7'-3"	34
K1	8	#4	STR	3'-11"	21
S1	29	#4	4	7'-5"	144
S2	29	#4	5	3'-2"	61
S3	8	#4	6	6'-6"	35
U1	11	#4	7	5'-5"	40
U2	2	#4	7	4'-5"	6
V1	24	#4	STR	5'-4"	86

STAGE II REINFORCING STEEL LBS. 1470

STAGE II
CLASS "A" CONCRETE BREAKDOWN

POUR #1 CAP & LOWER WING	9.0	CU. YDS.
POUR #2 UPPER WING	1.2	CU. YDS.
POUR #3 LATERAL GUIDES	0.1	CU. YDS.
STAGE II CLASS "A" CONCRETE	10.3	CU. YDS.

HP 12 x 53 STEEL PILES
NO. 4 LIN. FT. 60



*POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

TOTAL BILL OF MATERIAL - END BENT #2

TOTAL REINFORCING STEEL	3,468 LBS.	
TOTAL CLASS "A" CONCRETE	23.5 CU. YDS.	
HP 12 X 53 STEEL PILES	NO. 9	135 LIN. FT.
STEEL PILE POINTS	9 EACH	

PROJECT NO. B-3677
MECKLENBURG COUNTY
STATION: 19+72.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT #2

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY LEE COGGINS
7/6/09

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

DRAWN BY : T.L. AVERETTE DATE : 5-05-09
CHECKED BY : NEIL RUFFIN DATE : 5-11-09

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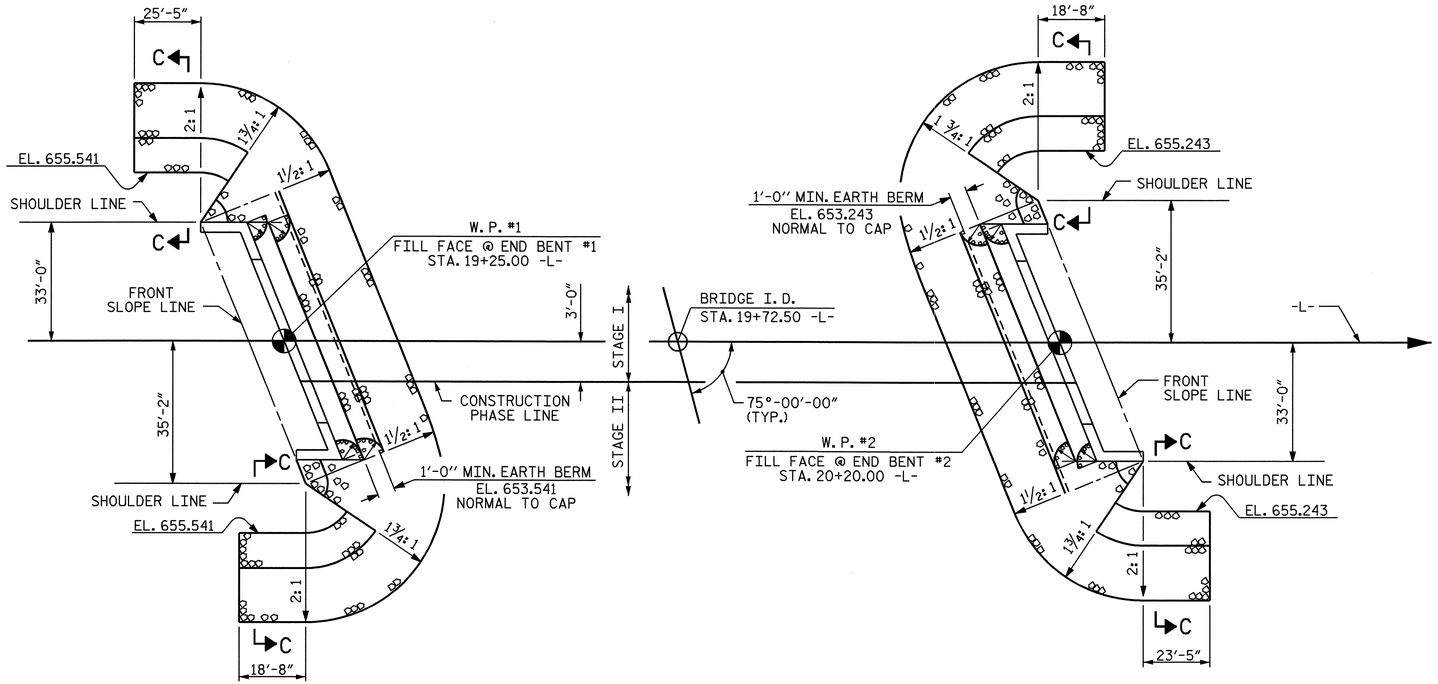
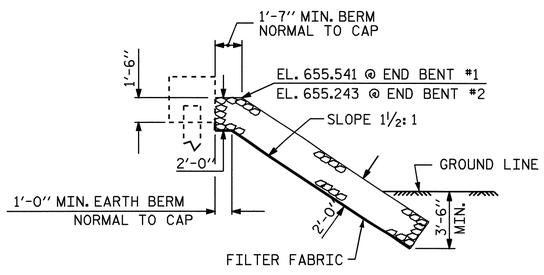


ESTIMATED QUANTITIES STAGE I

BRIDGE @ STA. 19+72.50 -L-	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	67	74
END BENT 2	96	107

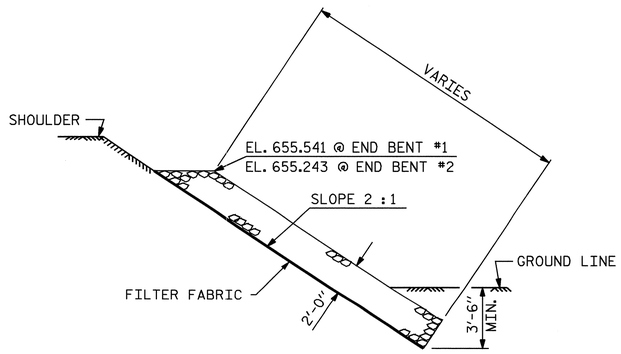
ESTIMATED QUANTITIES STAGE II

BRIDGE @ STA. 19+72.50 -L-	RIP RAP, CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	87	97
END BENT 2	79	88



℄ SECTION

BERM RIP RAPPED



SECTION C-C

PROJECT NO. B-3677

MECKLENBURG COUNTY

STATION: 19+72.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

RIP RAP DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS
7/6/09

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-34
1			3			TOTAL SHEETS
2			4			36

ASSEMBLED BY : M.GUDLAUGSSON	DATE :	03/09
CHECKED BY : B.N. BARODAWALA	DATE :	5/4/09
DRAWN BY : REK 1/84	REV. 8/16/99	RWW/LES
CHECKED BY : RDU 1/84	REV. 10/17/00	RWW/LES
	REV. 5/1/06	TLA/GM

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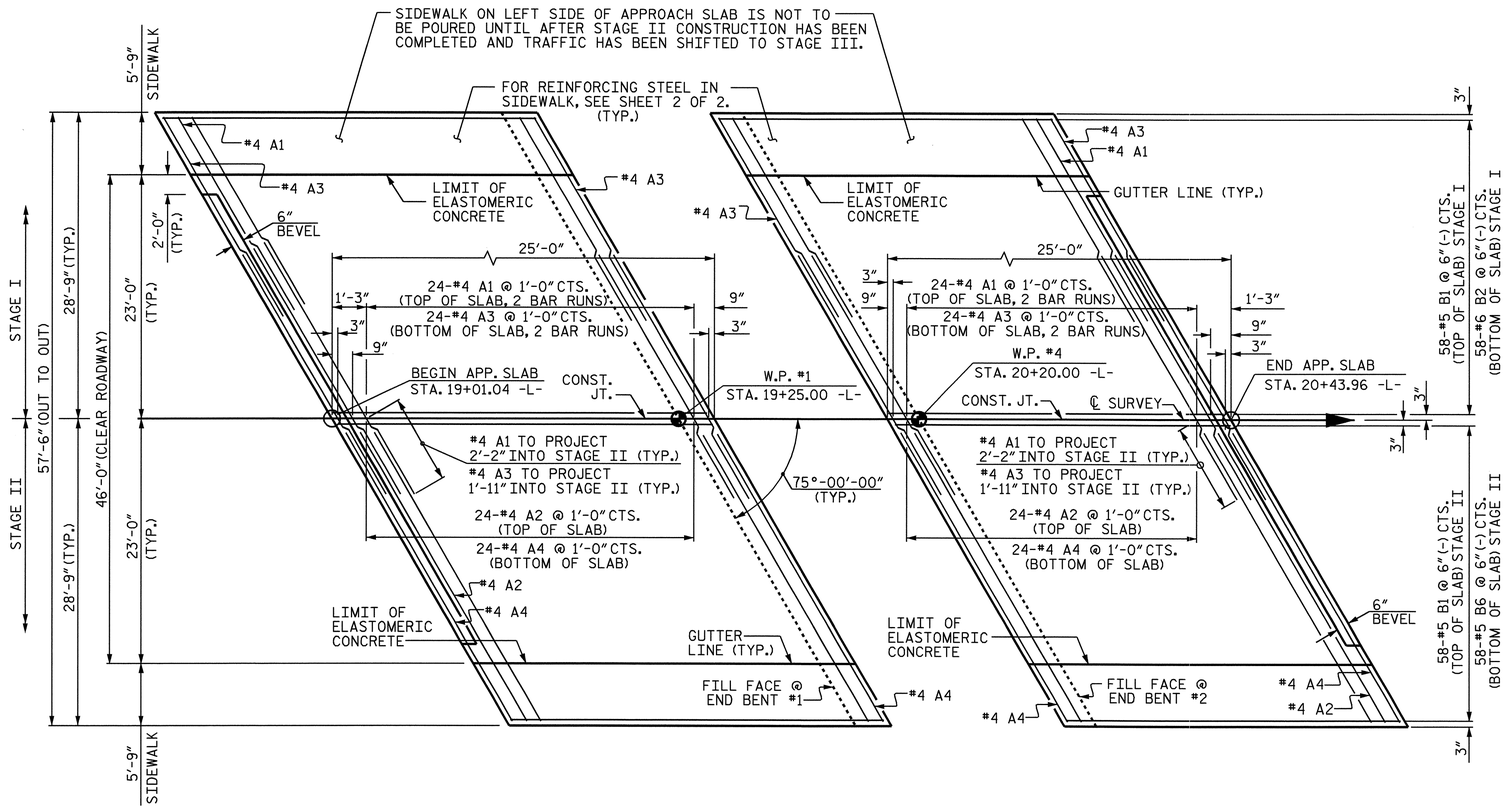
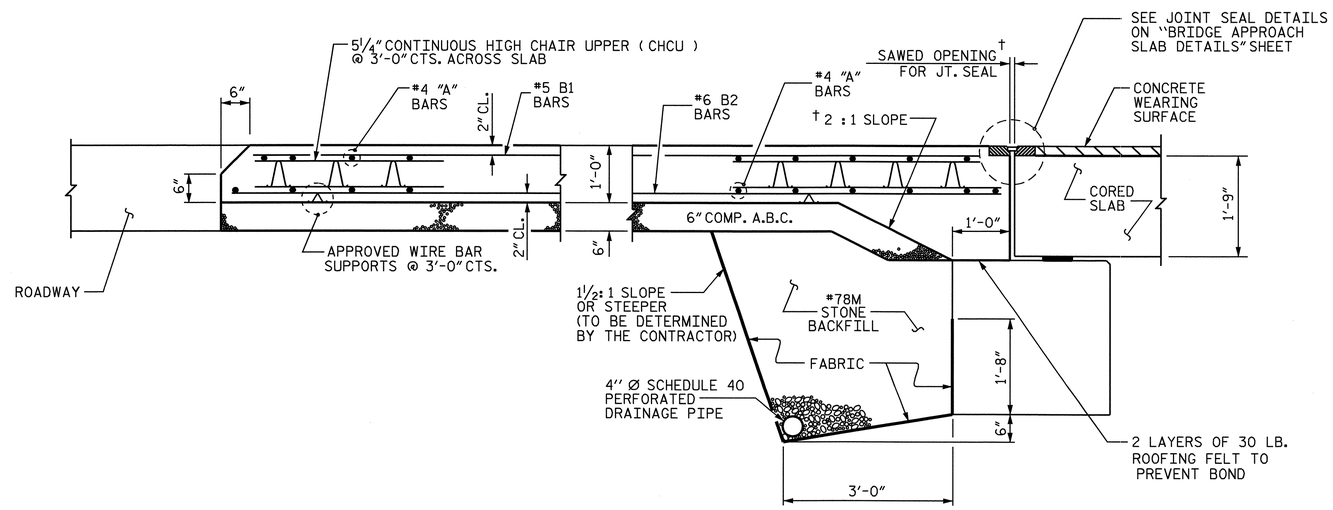
STD. NO. RR1



PLAN @ END BENT #1

PLAN @ END BENT #2

DIMENSIONS AND REINFORCING STEEL SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



† NORMAL TO END BENT

SECTION THRU SLAB

BILL OF MATERIAL (STAGE I) — APPROACH SLAB AT EB #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱A1	50	#4	STR	16'-11"	565
A3	52	#4	STR	16'-8"	579
✱B1	58	#5	STR	23'-7"	1427
B2	58	#6	STR	24'-7"	2142
✱B3	5	#4	STR	24'-7"	82
✱D1	20	#4	STR	1'-0"	13
✱G1	25	#4	STR	5'-4"	89
REINFORCING STEEL				LBS.	2721
✱EPOXY COATED REINFORCING STEEL				LBS.	2176
CLASS AA CONCRETE				C.Y.	32.5

BILL OF MATERIAL (STAGE I) — APPROACH SLAB AT EB #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱A1	50	#4	STR	16'-11"	565
A3	52	#4	STR	16'-8"	579
✱B1	58	#5	STR	23'-7"	1427
B2	58	#6	STR	24'-7"	2142
✱B3	5	#4	STR	24'-7"	82
✱D1	20	#4	STR	1'-0"	13
✱G1	25	#4	STR	5'-4"	89
REINFORCING STEEL				LBS.	2721
✱EPOXY COATED REINFORCING STEEL				LBS.	2176
CLASS AA CONCRETE				C.Y.	32.5

BILL OF MATERIAL (STAGE II) — APPROACH SLAB AT EB #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱A2	25	#4	STR	29'-5"	491
A4	26	#4	STR	29'-5"	511
✱B1	58	#5	STR	23'-7"	1427
B2	58	#6	STR	24'-7"	2142
✱B3	5	#4	STR	24'-7"	82
✱D1	20	#4	STR	1'-0"	13
✱G1	25	#4	STR	5'-4"	89
REINFORCING STEEL				LBS.	2653
✱EPOXY COATED REINFORCING STEEL				LBS.	2102
CLASS AA CONCRETE				C.Y.	32.5

BILL OF MATERIAL (STAGE II) — APPROACH SLAB AT EB #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱A2	25	#4	STR	29'-5"	491
A4	26	#4	STR	29'-5"	511
✱B1	58	#5	STR	23'-7"	1427
B2	58	#6	STR	24'-7"	2142
✱B3	5	#4	STR	24'-7"	82
✱D1	20	#4	STR	1'-0"	13
✱G1	25	#4	STR	5'-4"	89
REINFORCING STEEL				LBS.	2653
✱EPOXY COATED REINFORCING STEEL				LBS.	2102
CLASS AA CONCRETE				C.Y.	32.5

SPLICE CHART

BAR	MIN. SPLICE
#4 A1	2'-0"
#4 A3	1'-9"

NOTES

FOR BRIDGE APPROACH FILL INCLUDING FABRIC, 4" Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

FABRIC SHALL BE TYPE 1 ENGINEERING FABRIC IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

#78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

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

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.

FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 3 7/16".

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

APPROACH SLABS SHALL BE POURED AFTER CONCRETE OVERLAY IS POURED.

THE JOINT SHALL BE SAWED AFTER THE CASTING OF THE PARAPET AND END POST.

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY de COGGINS
7/2/09

PROJECT NO. B-3677

MECKLENBURG COUNTY

STATION: 19+72.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB

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

ASSEMBLED BY : M.D.PISO DATE : 04/08/09
CHECKED BY : T. AVERETTE DATE : 05/13/09

DRAWN BY : FCJ 6/87	REV. 7/10/01	LES/RDR
CHECKED BY : EGA 6/87	REV. 5/1/03R	RWW/JTE
	REV. 5/1/06R	KMM/GM

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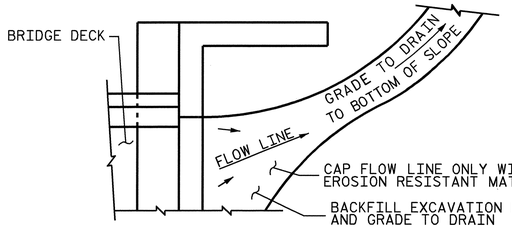
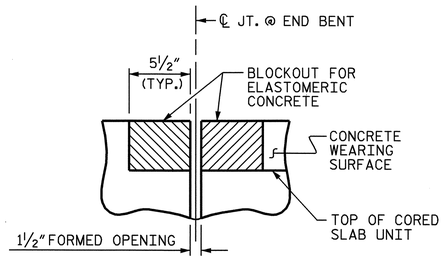


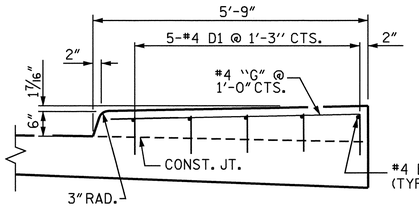
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

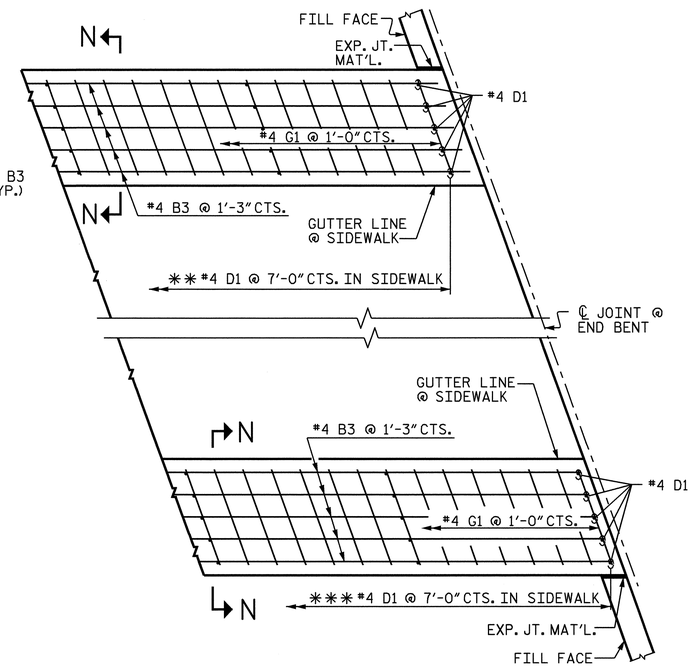


SECTION C-C

EVAZOTE JOINT SEAL
(PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS)



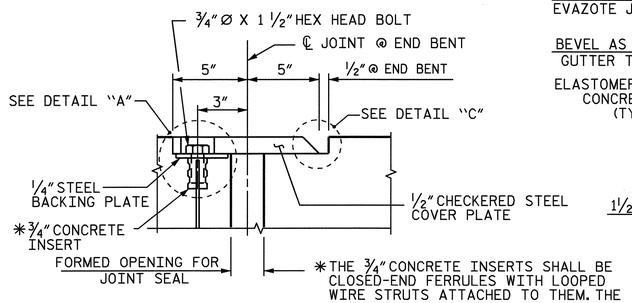
SECTION N-N



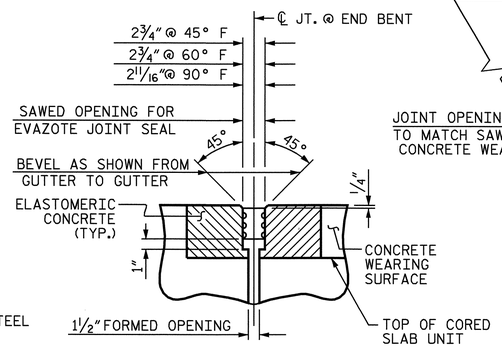
DETAIL OF SIDEWALK ON APPROACH SLAB

** ON LEFT SIDE, ALL HOLES SHALL BE DRILLED AND THE #4 D1 DOWELS GROUTED INTO PLACE AFTER TRAFFIC HAS BEEN SHIFTED TO STAGE III.

*** ON RIGHT SIDE, #4 D1 DOWELS MAY BE PUSHED INTO GREEN CONCRETE AFTER THE SLAB HAS BEEN SCREEDED AND FLOAT FINISHED.

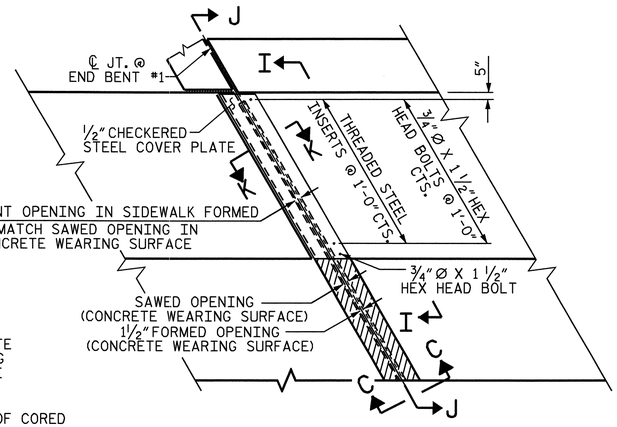


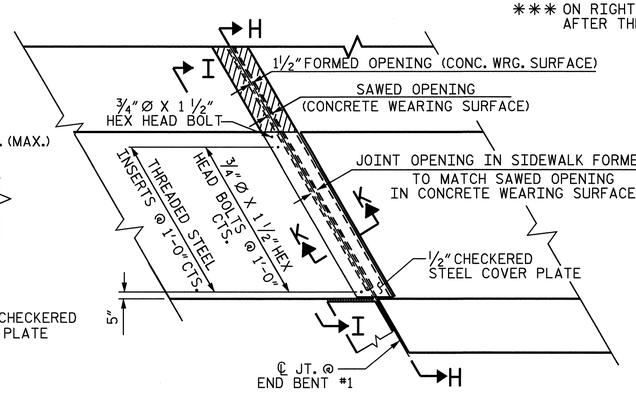
SECTION K-K



SECTION C-C

EVAZOTE JOINT SEAL





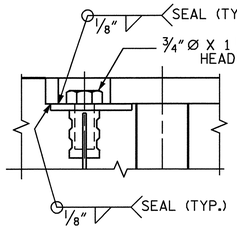
PLAN VIEW OF EVAZOTE JOINT SEAL @ END BENT FOR SIDEWALK

END BENT #1 SHOWN

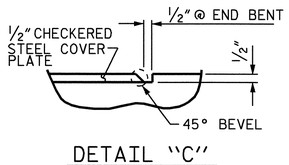
ELASTOMERIC CONCRETE

END BENT NO.	STAGE I ELASTOMERIC CONCRETE * (CU. FT.)	STAGE II ELASTOMERIC CONCRETE * (CU. FT.)
1	8.7	8.7
2	8.7	8.7
TOTAL	17.4	17.4

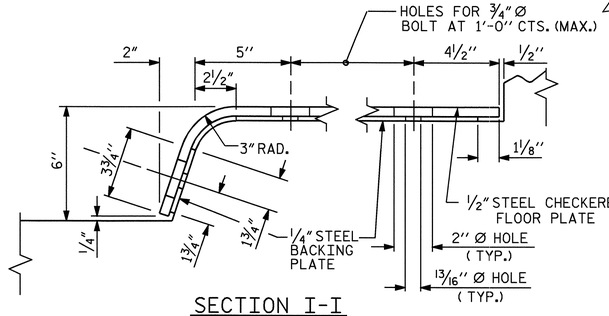
* BASED ON THE MINIMUM BLOCKOUT SHOWN.



DETAIL "A"

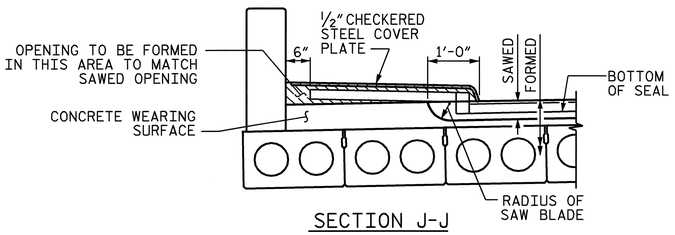


DETAIL "C"

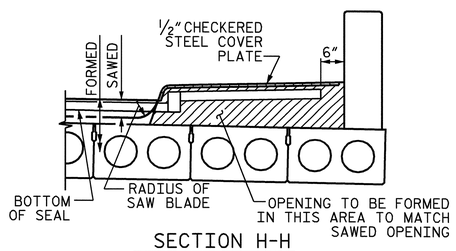


SECTION I-I

INSERTS & BOLTS NOT SHOWN FOR CLARITY



SECTION J-J



SECTION H-H

JOINT SEAL DETAILS @ END BENT

THE STEEL PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 OR APPROVED EQUAL. AFTER FABRICATION, THE PLATES SHALL BE COMMERCIALLY BLAST CLEANED AND COATED WITH A MINIMUM THICKNESS OF 4 MILS (DRY) OF ZINC RICH PAINT IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. AT THE CONTRACTOR'S OPTION, THESE SURFACES MAY BE METALLIZED TO A MINIMUM THICKNESS OF 6 MILS. SEE SPECIAL PROVISIONS FOR THERMAL SPRAYED COATINGS (METALLIZATION).

THE ¾" Ø HEX HEAD BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL.

NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE COVER PLATES. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR EVAZOTE JOINT SEALS.

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY W. COGGINS
7/8/09

PROJECT NO. B-3677
MECKLENBURG COUNTY
STATION: 19+72.50 -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:	S-36
1			3			TOTAL SHEETS
2			4			36

ASSEMBLED BY :	M.D.PISO	DATE :	04/08/09
CHECKED BY :	T. AVERETTE	DATE :	05/13/09
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

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STR. #1

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2006 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

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

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

ENGLISH

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