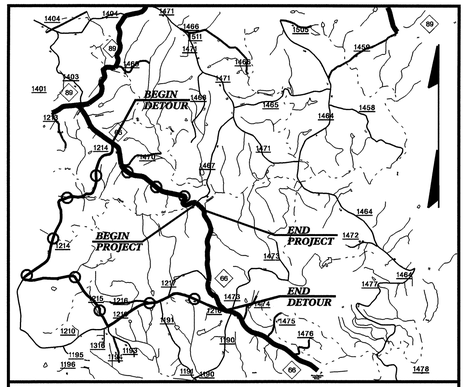
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–4282		

WBS NO.	F. A. PROJ. NO.	DESCRIPTION
33622.1.1	BRSTP–0066(1)	P.E.
33622.2.2	BRSTP–0066(1)	R/W, UTIL
33622.3.2	BRSTP–0066(1)	CONST.

CONTRACT: C201774 TIP PROJECT: B–4282

STRUCTURE



VICINITY MAP
(NOT TO SCALE)
DETOUR ROUTE

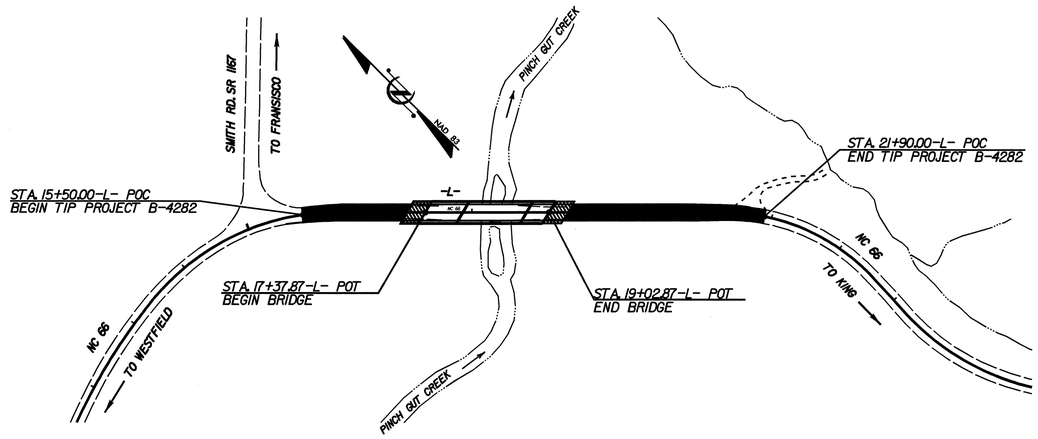
NEAREST SHIPPING POINT IS PILOT MOUNTAIN ON SOUTHERN RAILROAD 11.5 MILES FROM BRIDGE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STOKES COUNTY

LOCATION: BRIDGE NO. 54 OVER PINCH GUT CREEK AND APPROACHES ON NC 66

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



STATE OF NORTH CAROLINA ★ DEPARTMENT OF TRANSPORTATION ★

DESIGN DATA

ADT 2007	=	346
ADT 2027	=	523
DHV	=	12 %
D	=	60 %
T	=	3 % *
V	=	60 MPH

FUNCTION. CLASS. = RURAL COLLECTOR

* (TTST 1% + DUALS 2%)

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B–4282	=	0.090 MI
LENGTH STRUCTURE TIP PROJECT B–4282	=	0.031 MI
TOTAL LENGTH TIP PROJECT B–4282	=	0.121 MI

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

2006 STANDARD SPECIFICATIONS

LETTING DATE:
FEBRUARY 19, 2008

J. M. BAILEY, P.E.
PROJECT ENGINEER

D. A. DAVENPORT, JR., P.E.
PROJECT MANAGER

STRUCTURE DESIGN UNIT
1000 Birch Ridge Drive
Raleigh NC, 27610

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

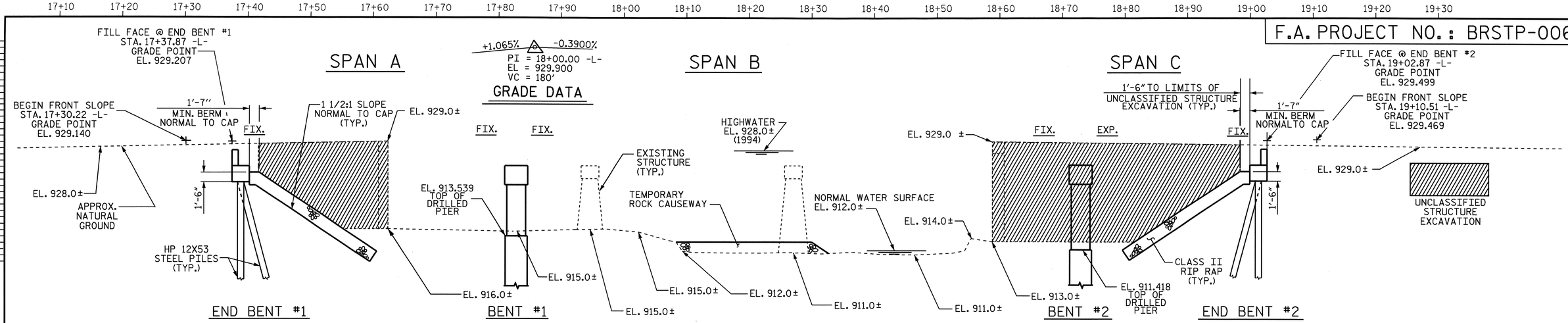
P.E.
STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR *DATE*

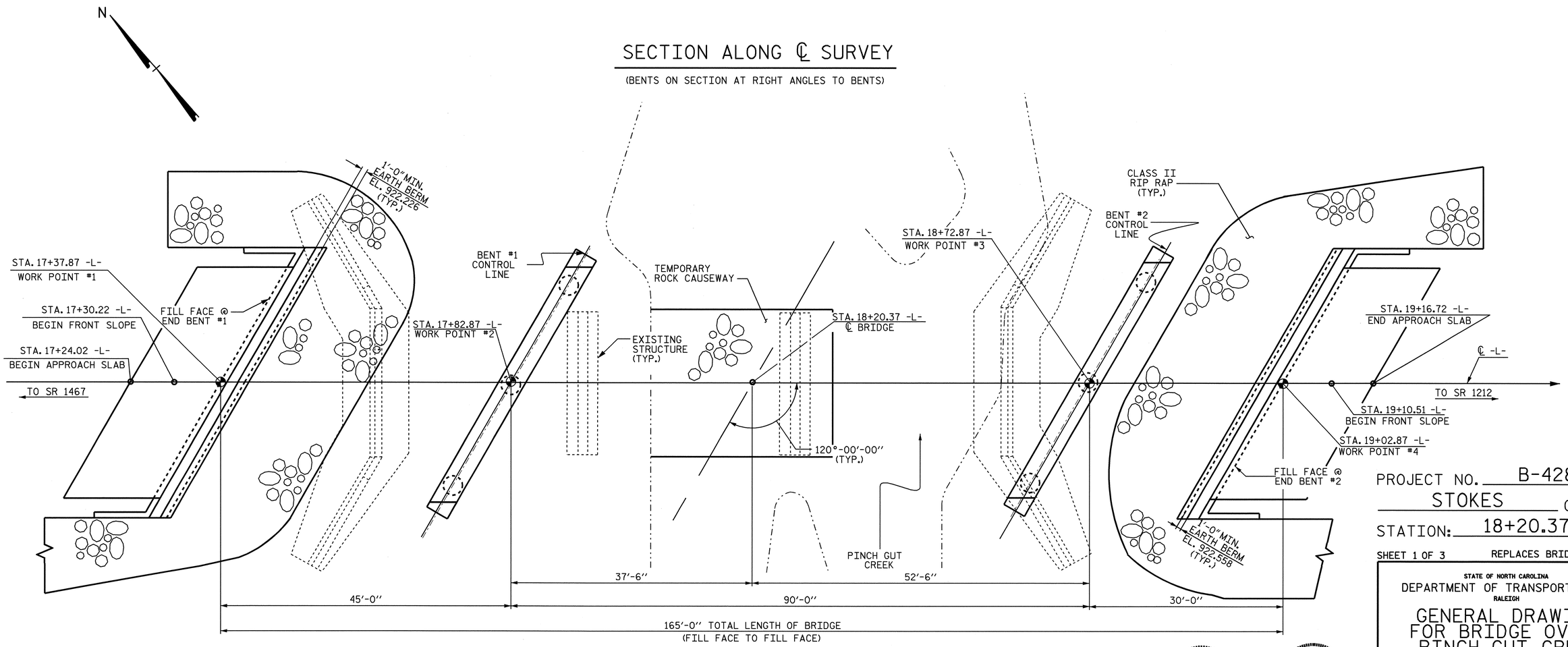
$DATE$ $TIME$ $FILE$

F.A. PROJECT NO.: BRSTP-0066(1)



SECTION ALONG ℄ SURVEY

(BENTS ON SECTION AT RIGHT ANGLES TO BENTS)



PLAN

(PILES NOT SHOWN IN PLAN VIEW)

PROJECT NO. B-4282

STOKES COUNTY

STATION: 18+20.37 -L-

SHEET 1 OF 3 REPLACES BRIDGE #54

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR BRIDGE OVER PINCH GUT CREEK ON NC 66 BETWEEN SR 1467 AND SR 1212

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

DRAWN BY : W.B. HILL DATE : 8/07
CHECKED BY : D. GLADDEN DATE : 11/07

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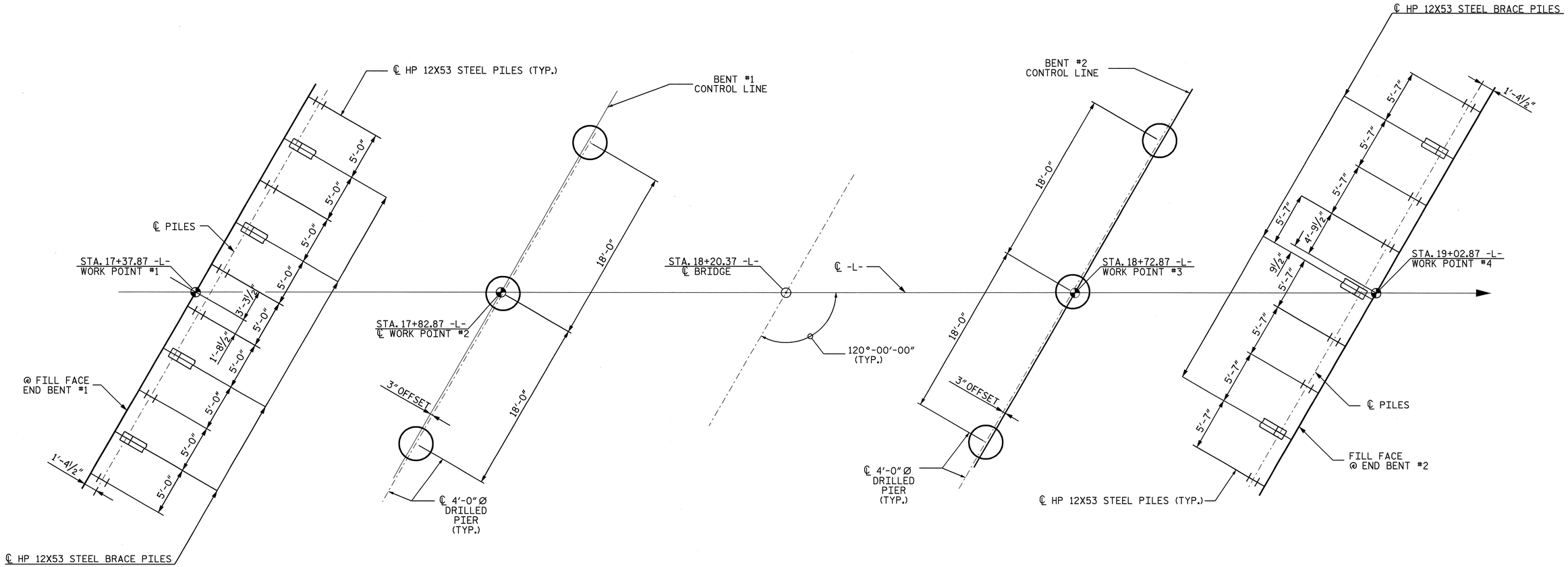
wbhill

NC005



END BENT #1 | BENT #1 | BENT #2 | END BENT #2

FOUNDATION LAYOUT

ALL PILES IN END BENT ARE HP 12 X 53 STEEL PILES.

ALL END BENT BRACE PILES ARE BATTERED AT 3:12.

DIMENSIONS LOCATING PILES AND DRILLED PIERS ARE SHOWN TO THE PILE AND DRILLED PIER CENTERLINE.

CENTERLINE OF CAP, COLUMN AND DRILLED PIER IS OFFSET 3" FROM BENT CONTROL LINE.

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER C. ANDRE DAVENPORT, JR.
1-24-08

PROJECT NO. B-4282

STOKES COUNTY

STATION: 18+20.37 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR BRIDGE OVER PINCH GUT CREEK ON NC 66 BETWEEN SR 1467 AND SR 1212

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

DRAWN BY : W.B. HILL DATE : 8/07
CHECKED BY : D. GLADDEN DATE : 10/07

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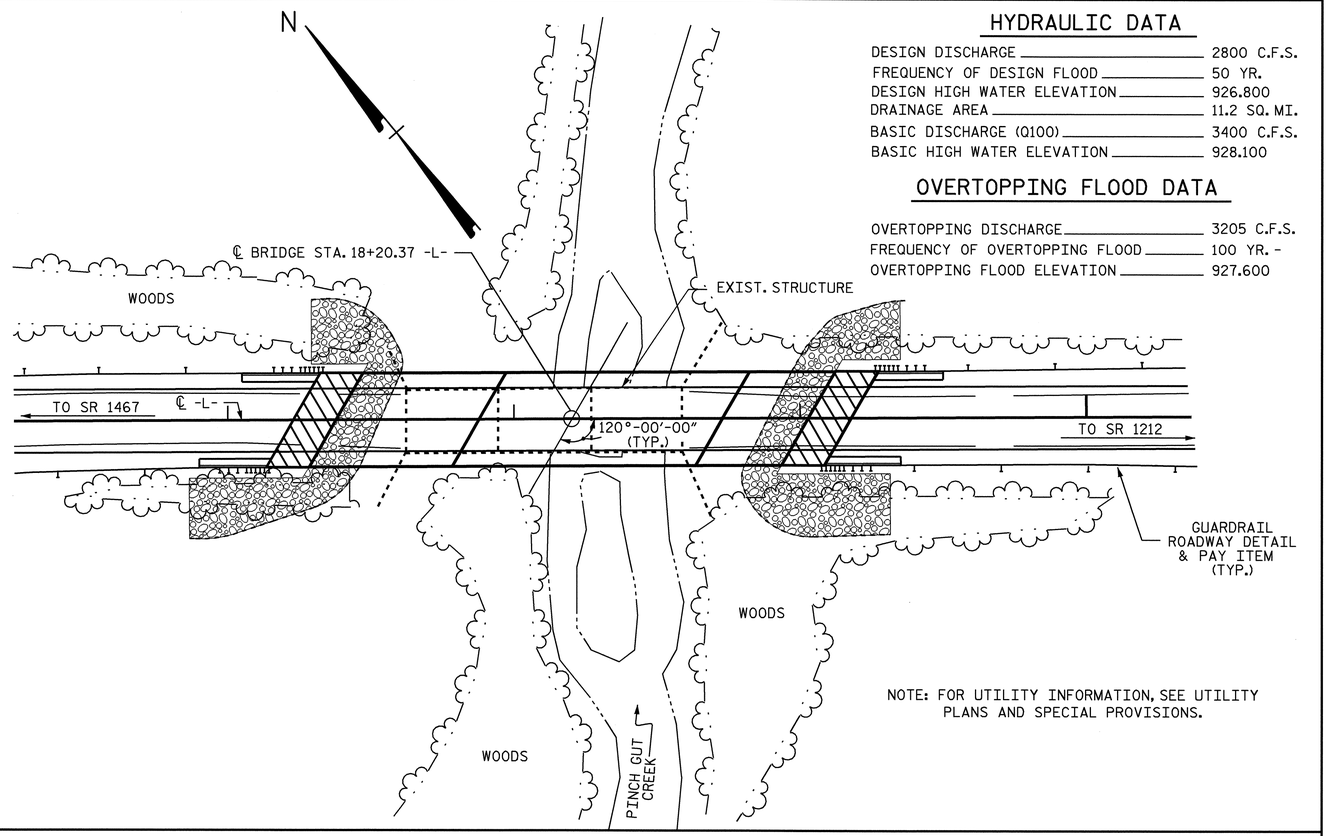
cdavenport

BENCH MARK #1: RAILROAD SPIKE SET IN NORTHERN ROOT OF 15.2" DIAMETER SYCAMORE TREE, 163' LEFT OF STA. 11+46.00 -BL-; EL. 916.620



HYDRAULIC DATA

DESIGN DISCHARGE	2800 C.F.S.
FREQUENCY OF DESIGN FLOOD	50 YR.
DESIGN HIGH WATER ELEVATION	926.800
DRAINAGE AREA	11.2 SQ. MI.
BASIC DISCHARGE (Q100)	3400 C.F.S.
BASIC HIGH WATER ELEVATION	928.100

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	3205 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	100 YR. -
OVERTOPPING FLOOD ELEVATION	927.600

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

LOCATION SKETCH

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.

AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 18+20.37-L-.

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

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

NOTES

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING, EXCEPT THAT THE BOX BEAM UNITS HAVE BEEN DESIGNED FOR HS25.

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

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 ON S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 25 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE PER CUBIC YARD FOR UNCLASSIFIED STRUCTURE EXCAVATION.

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 BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO STANDARD SPECIFICATIONS FOR SEISMIC DESIGN OF HIGHWAY BRIDGES FOR SEISMIC PERFORMANCE CATEGORY A.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

DRILLED PIERS AT BENT NO. 1 ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 35 TSF.

DRILLED PIERS AT BENT NO. 2 ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 35 TSF.

DRILLED PIERS AT BENT NO. 1 ARE DESIGNED FOR AN APPLIED LOAD OF 312 TONS EACH AT THE TOP OF THE COLUMN.

DRILLED PIERS AT BENT NO. 2 ARE DESIGNED FOR AN APPLIED LOAD OF 283 TONS EACH AT THE TOP OF THE COLUMN.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO. 1 AND NO. 2. IF REQUIRED, DO NOT EXTEND CASING BELOW ELEVATION 905.000 WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING. SEE DRILLED PIER SPECIAL PROVISIONS.

THE EXISTING STRUCTURE CONSISTING OF 3 SPANS (1@ 32'-3", 1@ 32'-6", AND 1@ 32'-3") WITH A 3" ASPHALT WEARING SURFACE ON CONCRETE DECK GIRDERS SUPPORTED BY FULL HEIGHT CONCRETE ABUTMENT END BENTS AND CONCRETE ROUND NOSE POST AND WEB INTERIOR BENTS AND LOCATED AT THE PROPOSED SITE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

DRILLED PIERS AT BENT NO. 1 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 876.000(LT), 876.000(CT), AND 880.000(RT) AND SATISFY THE REQUIRED END BEARING CAPACITY.

DRILLED PIERS AT BENT NO. 2 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 883.000(LT), 881.000(CT), AND 880.000(RT) AND SATISFY THE REQUIRED END BEARING CAPACITY.

THE SCOUR CRITICAL ELEVATIONS FOR BENT NO. 1 ARE ELEVATION 882.000(LT), 884.000(CT), AND 885.000(RT). SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE SCOUR CRITICAL ELEVATIONS FOR BENT NO. 2 ARE ELEVATION 888.000(LT), 887.000(CT), 885.000(RT). SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

SPT TESTING IS REQUIRED TO DETERMINE THE END BEARING CAPACITY OF THE DRILLED PIERS AT BENTS NO. 1 AND NO. 2. SEE DRILLED PIERS SPECIAL PROVISION.

FOR DRILLED PIERS, SEE DRILLED PIERS SPECIAL PROVISION.

DRIVE PILES AT END BENT NO. 1 AND NO. 2 TO A REQUIRED BEARING CAPACITY OF 100 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO. THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENTS NO. 1 AND NO. 2 IS 50 TONS PER PILE.

SID INSPECTIONS ARE REQUIRED TO INSPECT THE BOTTOM CLEANLINESS OF THE DRILLED PIERS AT BENT NO. 1 AND NO. 2. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. SEE DRILLED PIERS SPECIAL PROVISIONS.

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

OBSERVE A ONE MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT, END BENT, AND REINFORCED BRIDGE APPROACH FILL, WHEN APPLICABLE, BEFORE BEGINNING APPROACH SLAB CONSTRUCTION AT END BENT NO. 1. AND NO. 2.

THE LEVEL OF REMOVAL OF THE ABUTMENT WALL AT END BENT NO. 2 WILL BE AS DIRECTED BY THE ENGINEER.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE EXISTING ABUTMENT FOOTING IS IN CONFLICT WITH A DRILLED SHAFT AT EXISTING END BENT NO. 2. EXISTING END BENT NO. 1 IS TO BE REMOVED AS PER THE STANDARD SPECIFICATIONS.

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

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

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.

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAMENPORT, JR.
1-7-08

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINT, & REMOVALOF TEMP. ACCESS	REMOVAL OF EXISTING STRUCTURE	4'-0"Ø DRILLED PIERS IN SOIL	4'-0"Ø DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 4'-0"Ø DRILLED PIER	SID INSPECTION	SPT TESTING	CROSSHOLE SONIC LOGGING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	HP 12 X 53 STEEL PILES		CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 3'-3" PRESTRESSED CONCRETE BOXED BEAMS
	LUMP SUM	LUMP SUM	LIN.FT.	LIN.FT.	LIN.FT.	EACH	EACH	EACH	CU. YDS.	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN.FT.	LIN.FT.	TONS	SQ. YDS.	LUMP SUM	LIN.FT.
SUPERSTRUCTURE											LUMP SUM					324.21			LUMP SUM	1945.25
END BENT NO. 1									490	20.6		3,288		10	175		435	485		
BENT NO. 1			89.75	19.00	25.62	3	3	1		34.8		16,592	3,423							
BENT NO. 2			72.50	18.00	19.25	3	3	1		37.2		12,268	3,150							
END BENT NO. 2									1270	20.2		3,180		9	428		515	575		
TOTAL	LUMP SUM	LUMP SUM	162.25	37.00	44.87	6	6	2	1760	112.8	LUMP SUM	35,328	6,573	19	603	324.21	950	1060	LUMP SUM	1945.25

DRAWN BY : W.B. HILL DATE : 7/07
CHECKED BY : D. GLADDEN DATE : 11/07

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PROJECT NO. B-4282
STOKES COUNTY
STATION: 18+20.37 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR BRIDGE OVER PINCH GUT CREEK ON NC 66 BETWEEN SR 1467 AND SR 1212

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

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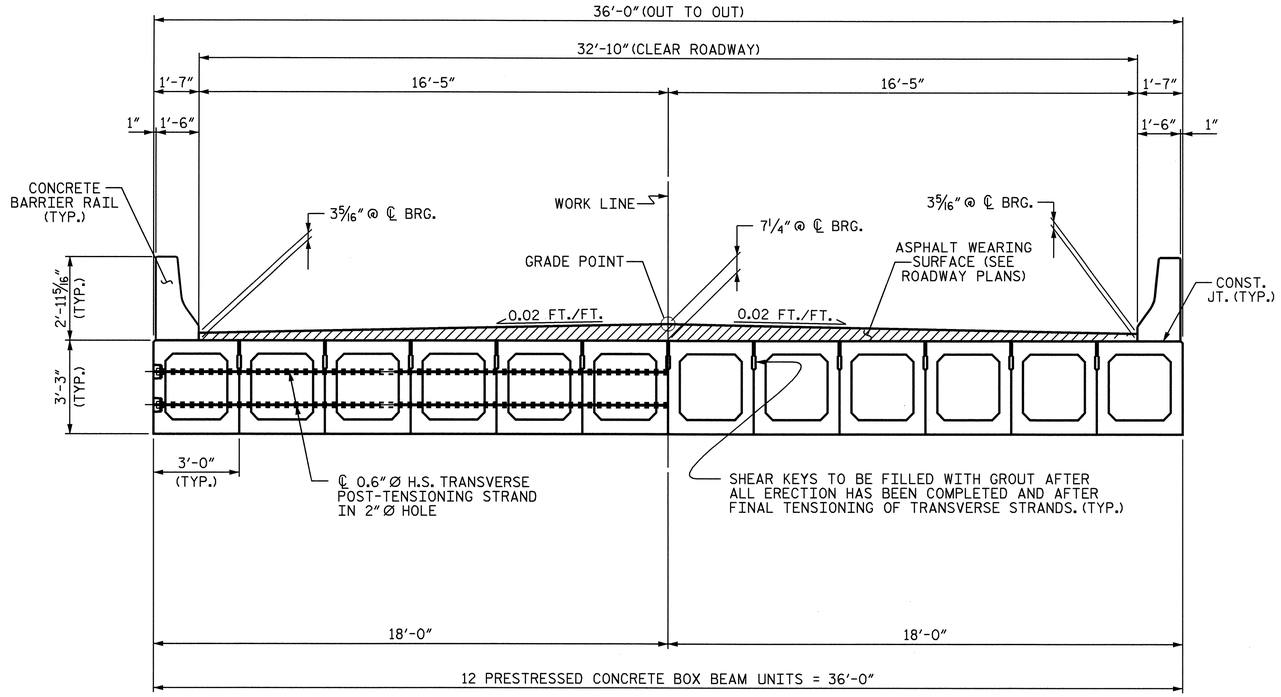
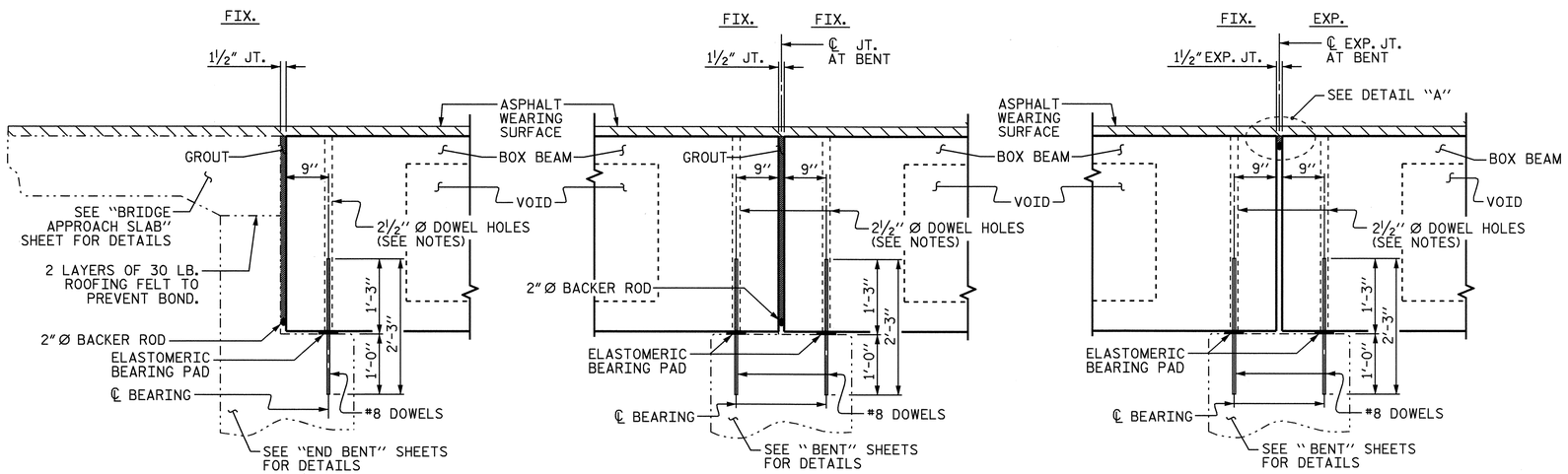


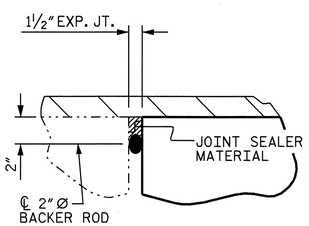
TYPICAL SECTION



SECTION AT END BENT

SECTION AT BENT 1

SECTION AT BENT 2



DETAIL "A"

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 BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.

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

THE 2½″Ø DOWEL HOLES AT FIXED ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH GROUT. THE 2½″Ø DOWEL HOLES AT EXPANSION ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH JOINT SEALER MATERIAL TO 1½″ ABOVE THE TOP OF DOWELS AND THEN FILLED WITH GROUT.

THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE SL LOW MODULUS SILICONE SEALANT. THE 2″Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 PSI FOR SPANS A & C AND NOT LESS THAN 4400 PSI FOR SPAN B.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

VERTICAL GROOVED CONTRACTION JOINTS, ½″ IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A VERTICAL CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.

PROJECT NO. B-4282

STOKES COUNTY

STATION: 18+20.37-L-

SHEET 1 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3′-0″ X 3′-3″ PRESTRESSED CONCRETE BOX BEAM UNIT

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT, JR.
1-7-08

ASSEMBLED BY : H. T. BARBOUR	DATE : 9-19-05		
CHECKED BY : S. P. LAM	DATE : 9-06		
DRAWN BY : TLA 5/05	ADDED 7/11/05		
CHECKED BY : GM 6/05			

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

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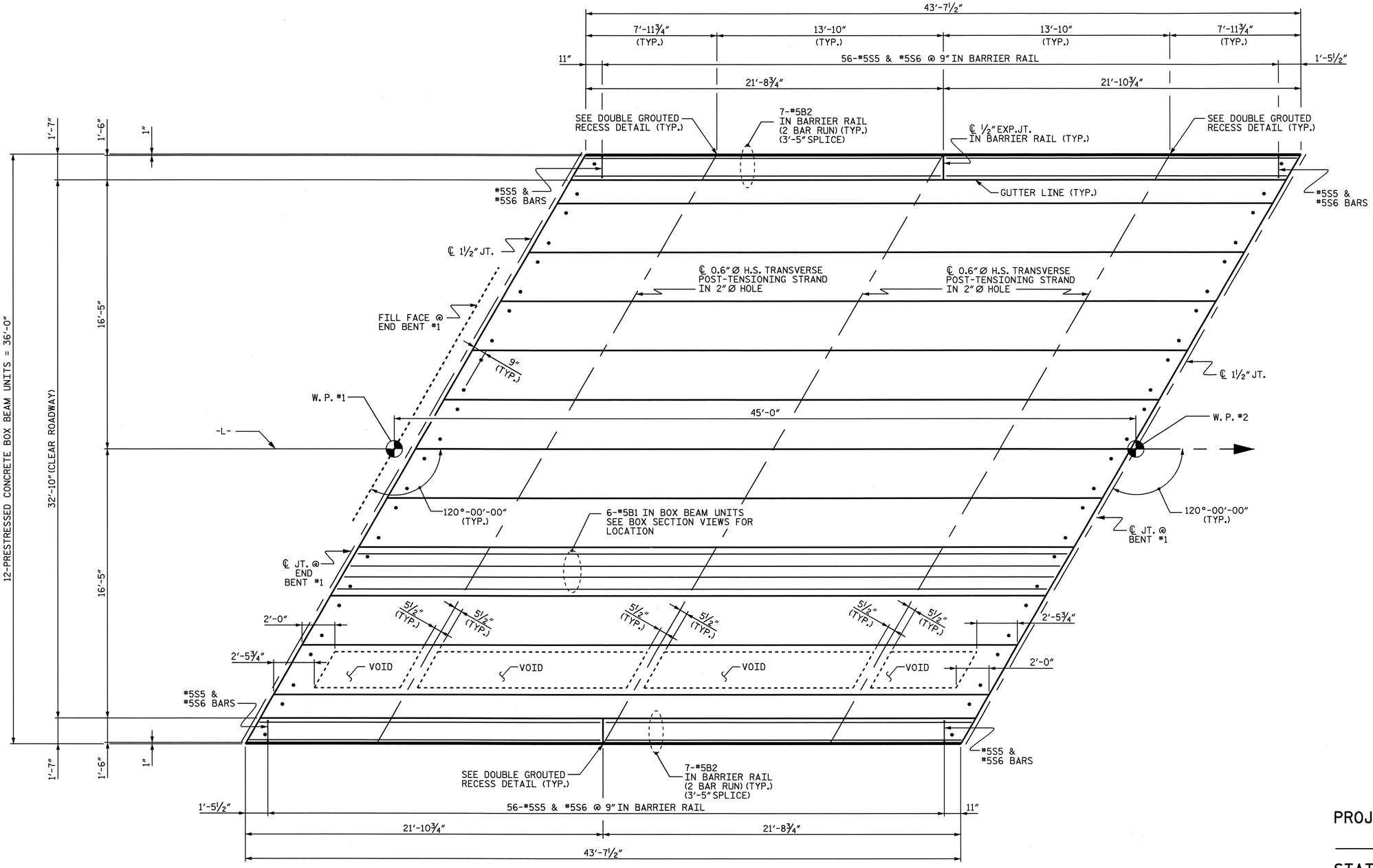
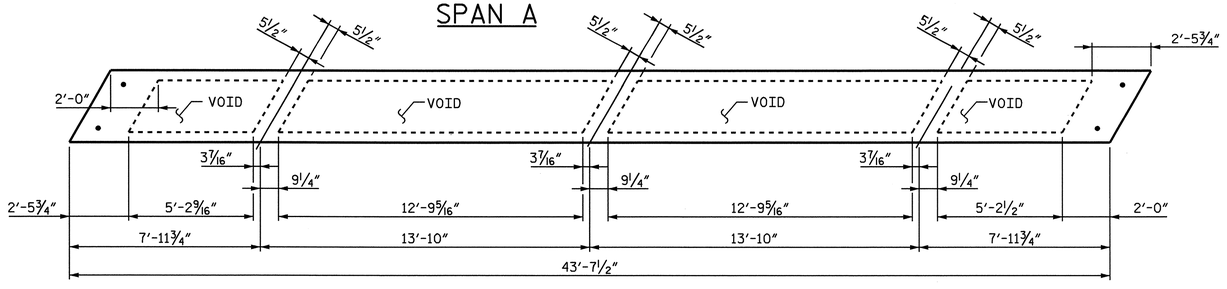


SPAN A



SPAN A VOID DETAIL

DRAWN BY : H. T. BARBOUR DATE : 9-23-05
CHECKED BY : S.P. LAM DATE : 1-06

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PROJECT NO. B-4282
STOKES COUNTY
STATION: 18+20.37-L-

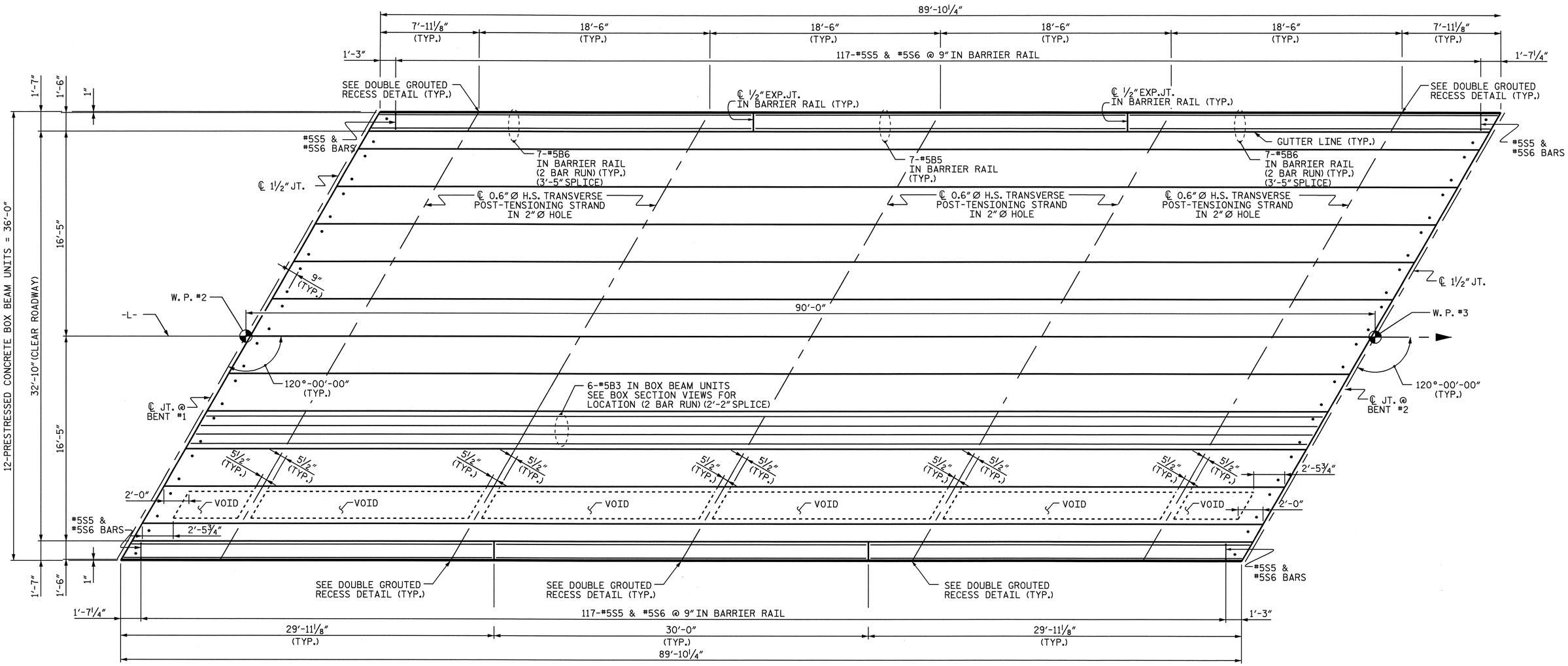
SHEET 2 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

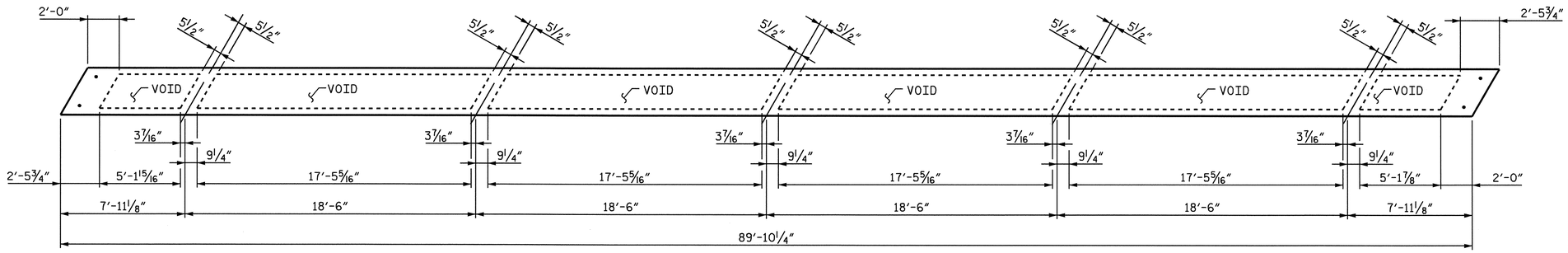
SUPERSTRUCTURE PLAN OF SPAN A

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT, JR
1-10-08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			26



SPAN B



SPAN B VOID DETAIL

PROJECT NO. B-4282

STOKES COUNTY

STATION: 18+20.37-L-

SHEET 3 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE PLAN OF SPAN B

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT, JR.

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			26

DRAWN BY : H. T. BARBOUR DATE : 9-28-05
CHECKED BY : S. P. LAM DATE : 1-06

10-JAN-2008 08:03
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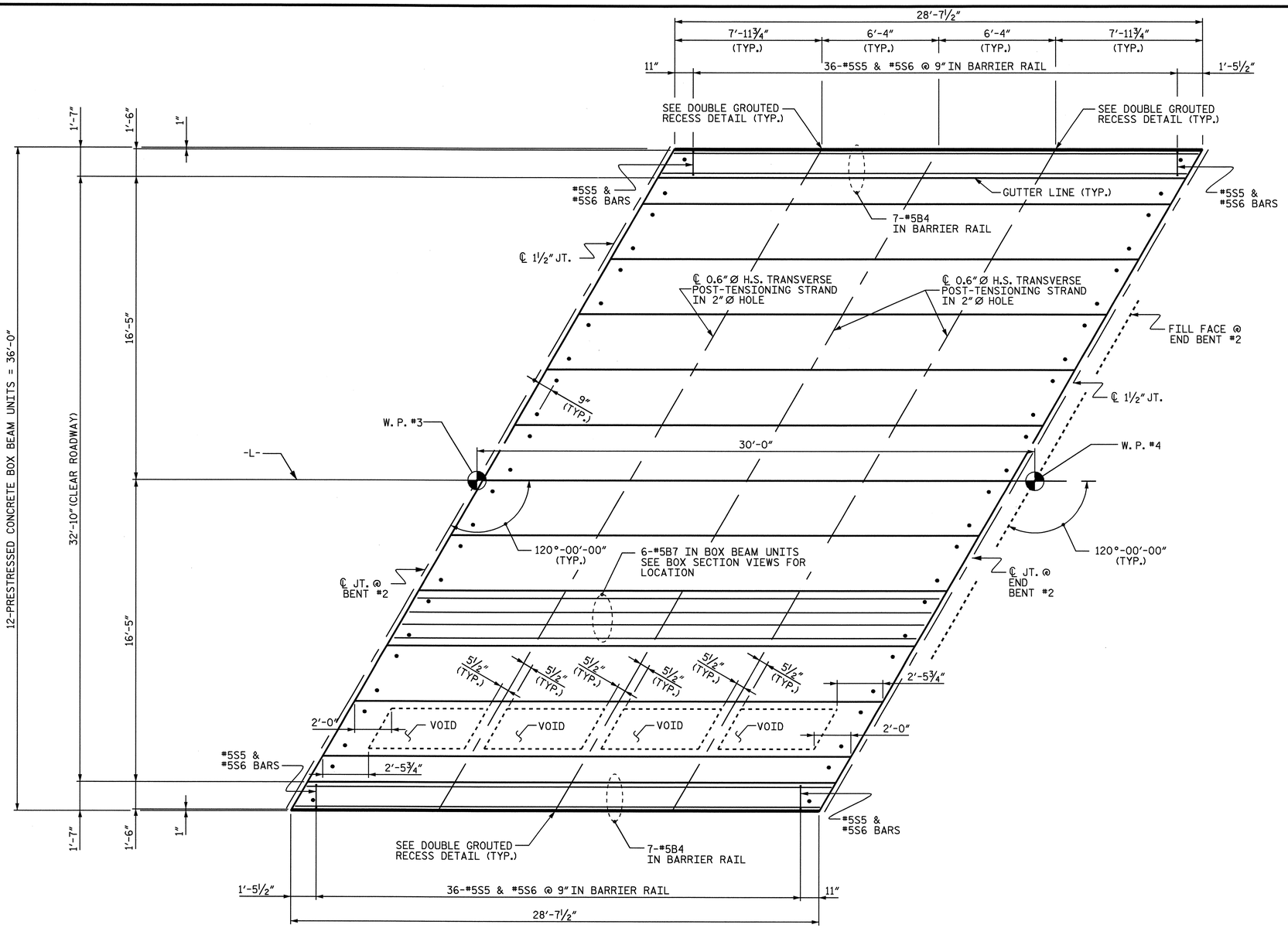
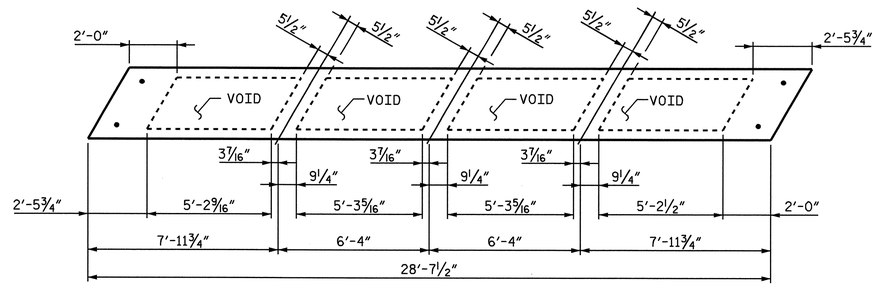


SPAN C



SPAN C VOID DETAIL

PROJECT NO. B-4282

STOKES COUNTY

STATION: 18+20.37-L-

SHEET 4 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE PLAN OF SPAN C

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDRE DAVENPORT, JR.
1-10-08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			26

DRAWN BY : H. T. BARBOUR DATE : 9-23-05
CHECKED BY : S. P. LAM DATE : 1-06

10-JAN-2008 08:04
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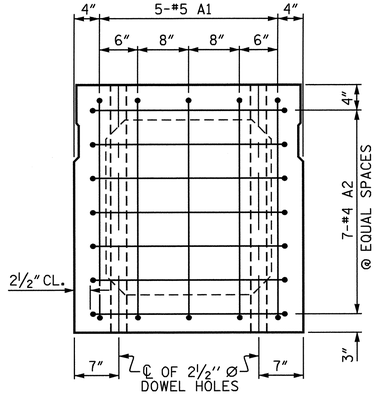
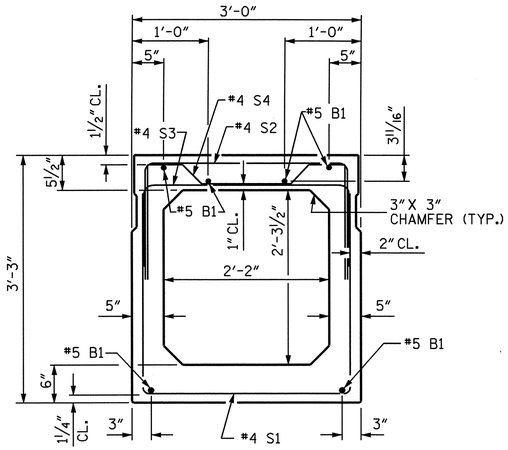
ddavenport



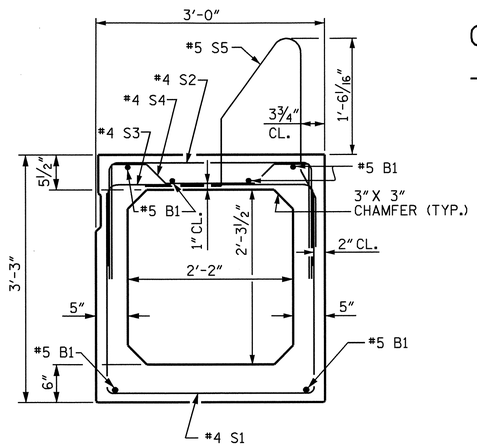
END ELEVATION

SHOWING PLACEMENT OF #5 & #4 "A" BARS AND LOCATION OF DOWEL HOLES. (INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION. STRAND LAYOUT NOT SHOWN.)



INTERIOR BOX BEAM SECTION

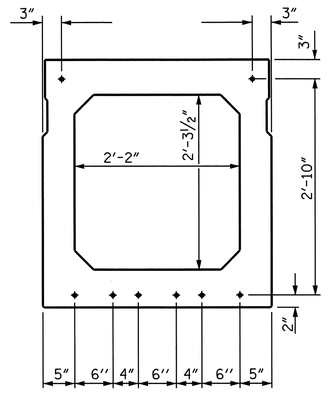
(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

0.6" Ø LOW RELAXATION STRAND LAYOUT



TYPICAL STRAND LOCATION

(8 STRANDS REQUIRED)

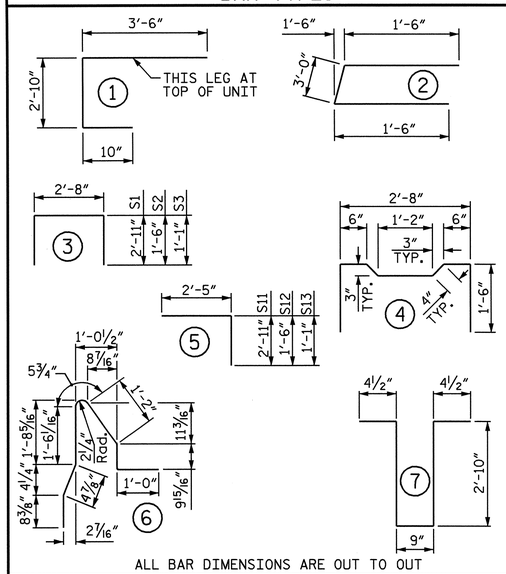
(INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION)

DEBONDING LEGEND

● FULLY BONDED STRANDS

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

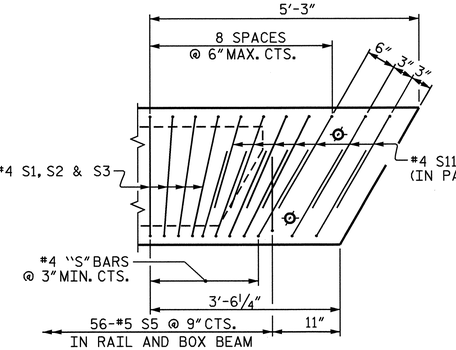
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

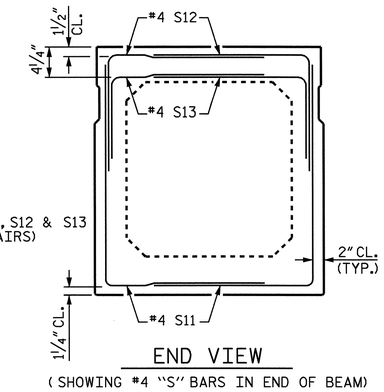
BILL OF MATERIAL FOR ONE BOX BEAM SECTION

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
A1	10	#5	1	7'-2"	75	7'-2"	75
A2	32	#4	2	6'-0"	128	6'-0"	128
B1	6	#5	STR	43'-2"	270	43'-2"	270
K1	9	#4	7	7'-2"	43	7'-2"	43
K2	6	#4	STR	3'-0"	12	3'-0"	12
S1	31	#4	3	8'-6"	176	8'-6"	176
S2	31	#4	3	5'-8"	117	5'-8"	117
S3	53	#4	3	4'-10"	171	4'-10"	171
S4	22	#4	4	5'-10"	86	5'-10"	86
✳ S5	56	#5	6	6'-1"	355	--	--
S11	28	#4	5	5'-4"	100	5'-4"	100
S12	28	#4	5	3'-11"	73	3'-11"	73
S13	28	#4	5	3'-6"	65	3'-6"	65
REINFORCING STEEL					1316 LBS.		1316 LBS.
✳ EPOXY COATED REINF. STEEL					355 LBS.		
5000 P.S.I. CONCRETE					9.2 CU. YDS.		9.1 CU. YDS.
0.6" Ø L.R. STRANDS					No. 8		No. 8



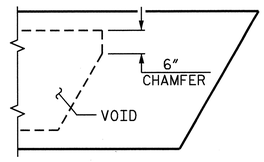
DETAIL "B"

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS. "B" BARS AND "A" BARS NOT SHOWN.



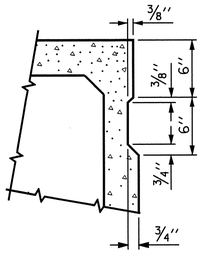
END VIEW

(SHOWING #4 "S" BARS IN END OF BEAM)



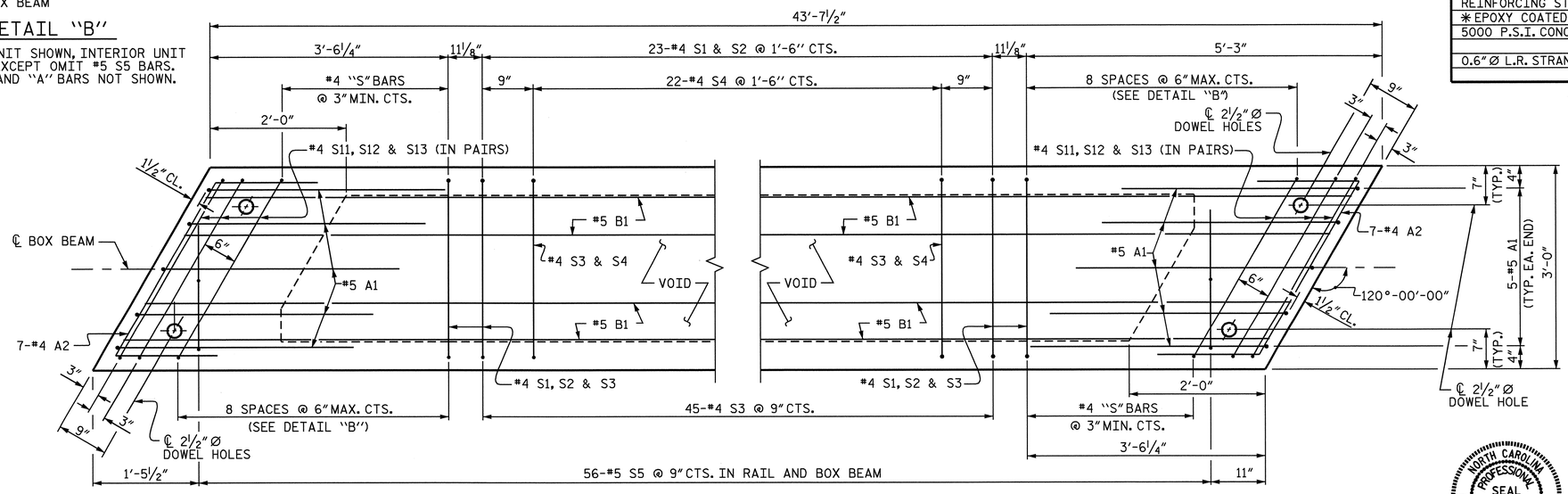
CHAMFER DETAIL

SHOWING 6" VOID CHAMFER



SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR BOX BEAMS.



PLAN OF BOX BEAM

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS.
FOR LOCATION OF DIAPHRAGMS, SEE PLAN OF SPANS.
FOR REINFORCING STEEL IN DIAPHRAGMS, SEE DIAPHRAGM DETAILS.

PROJECT NO. B-4282

STOKES COUNTY

STATION: 18+20.37-L-

SHEET 5 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

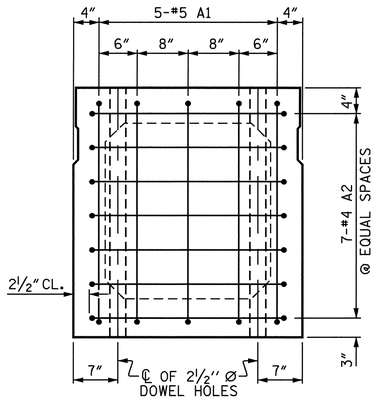
3'-0" X 3'-3" PRESTRESSED CONCRETE BOX BEAM UNIT SPAN "A"

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			26

ASSEMBLED BY : H. T. BARBOUR	DATE : 9-27-05	ADDED 7/11/05	
CHECKED BY : S. P. LAM	DATE : 1-06		
DRAWN BY : TLA 5/05			
CHECKED BY : GM 6/05			

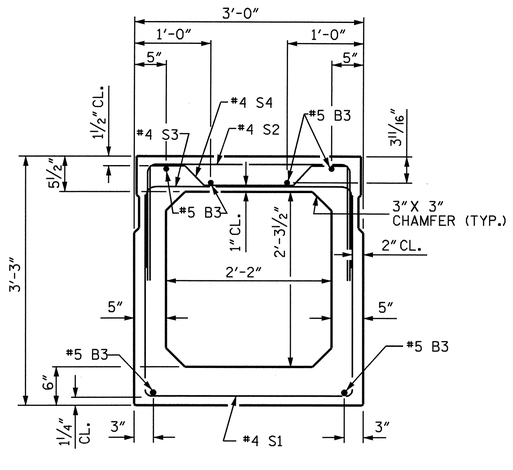
07-JAN-2008 12:19
f:\structures\lfinal\b-4282_sd_ts.dgn
ddavenport

STD. NO. PCBB6



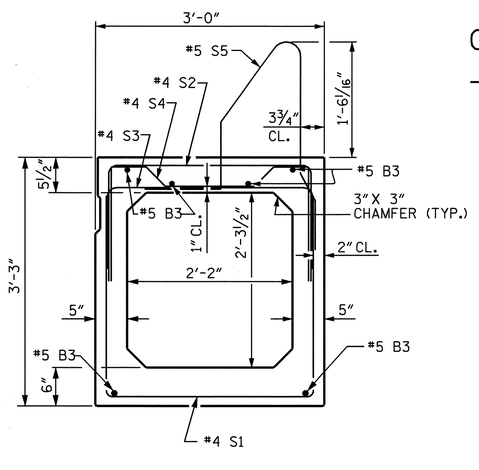
END ELEVATION

SHOWING PLACEMENT OF #5 & #4 "A" BARS AND LOCATION OF DOWEL HOLES. (INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION. STRAND LAYOUT NOT SHOWN.)



INTERIOR BOX BEAM SECTION

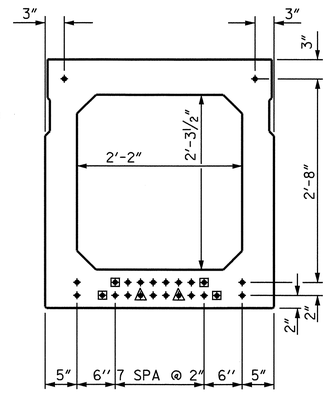
(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

0.6" Ø LOW RELAXATION STRAND LAYOUT



TYPICAL STRAND LOCATION

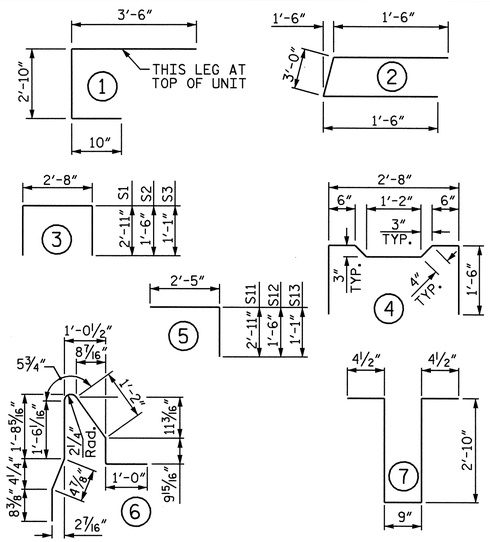
(24 STRANDS REQUIRED)

(INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION)

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ◉ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ◭ STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER

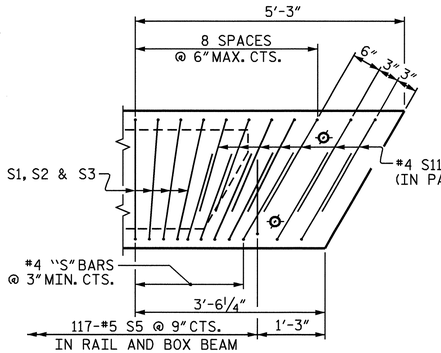
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

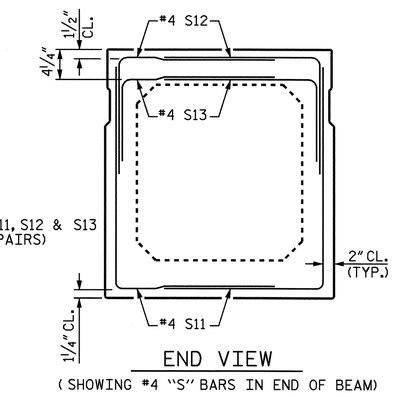
BILL OF MATERIAL FOR ONE BOX BEAM SECTION

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
A1	10	#5	1	7'-2"	75	7'-2"	75
A2	44	#4	2	6'-0"	176	6'-0"	176
B3	12	#5	STR	45'-10"	574	45'-10"	574
K1	15	#4	7	7'-2"	72	7'-2"	72
K2	10	#4	STR	3'-0"	20	3'-0"	20
S1	62	#4	3	8'-6"	352	8'-6"	352
S2	62	#4	3	5'-8"	235	5'-8"	235
S3	115	#4	3	4'-10"	371	4'-10"	371
S4	53	#4	4	5'-10"	207	5'-10"	207
✳ S5	117	#5	6	6'-1"	742	--	--
S11	28	#4	5	5'-4"	100	5'-4"	100
S12	28	#4	5	3'-11"	73	3'-11"	73
S13	28	#4	5	3'-6"	65	3'-6"	65
REINFORCING STEEL					2320 LBS.		2320 LBS.
✳ EPOXY COATED REINF. STEEL					742 LBS.		
5400 P.S.I. CONCRETE					17.9 CU. YDS.		17.7 CU. YDS.
0.6" Ø L.R. STRANDS					No. 24		No. 24



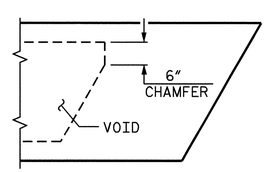
DETAIL "B"

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS. "B" BARS AND "A" BARS NOT SHOWN.



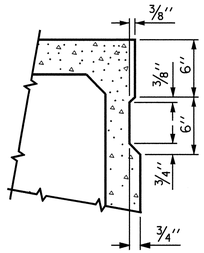
END VIEW

(SHOWING #4 "S" BARS IN END OF BEAM)



CHAMFER DETAIL

SHOWING 6" VOID CHAMFER

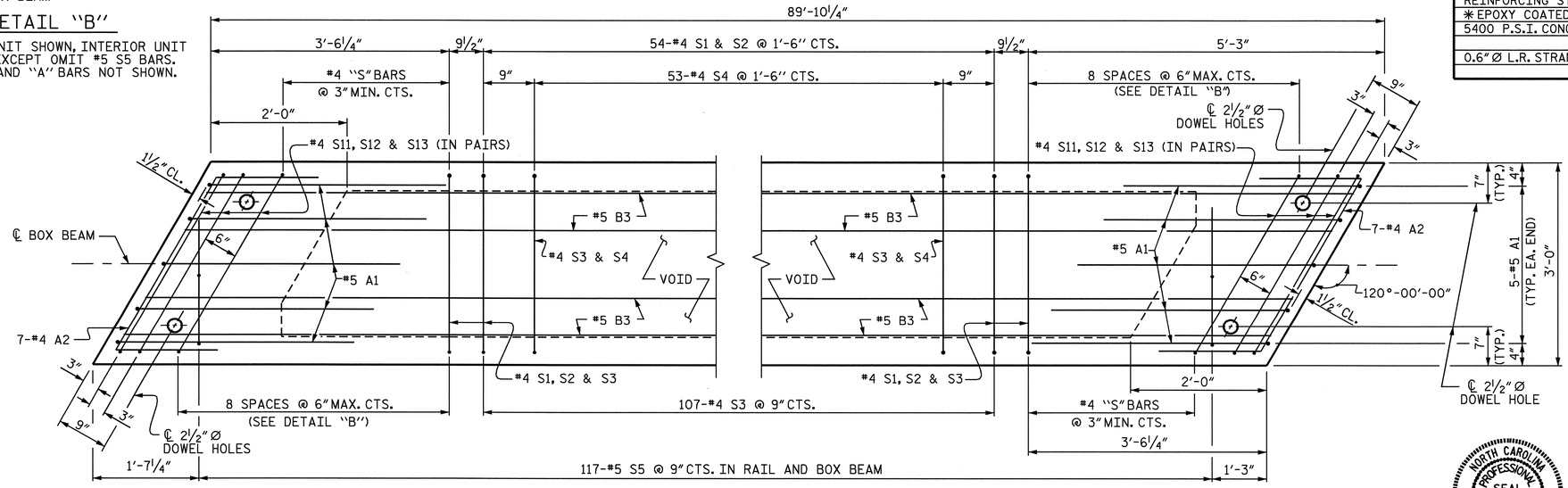


SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR BOX BEAMS.

GRADE 270 STRANDS

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



PLAN OF BOX BEAM

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS.
FOR LOCATION OF DIAPHRAGMS, SEE PLAN OF SPANS.
FOR REINFORCING STEEL IN DIAPHRAGMS, SEE DIAPHRAGM DETAILS.

PROJECT NO. B-4282

STOKES COUNTY

STATION: 18+20.37-L-

SHEET 6 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 3'-3" PRESTRESSED CONCRETE BOX BEAM UNIT SPAN "B"

REVISIONS NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-9
2			4			TOTAL SHEETS 26

ASSEMBLED BY : H. T. BARBOUR	DATE : 9-27-05
CHECKED BY : S. P. LAM	DATE : 2-06
DRAWN BY : TLA 5/05	ADDED 7/11/05
CHECKED BY : GM 6/05	

07-JAN-2008 12:19
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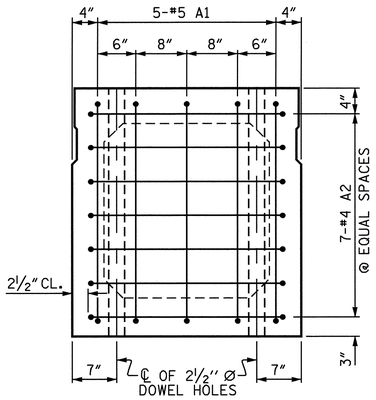
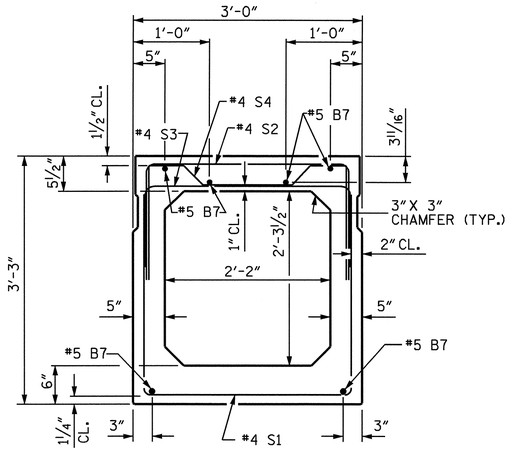
ddavenport

STD. NO. PCBB6



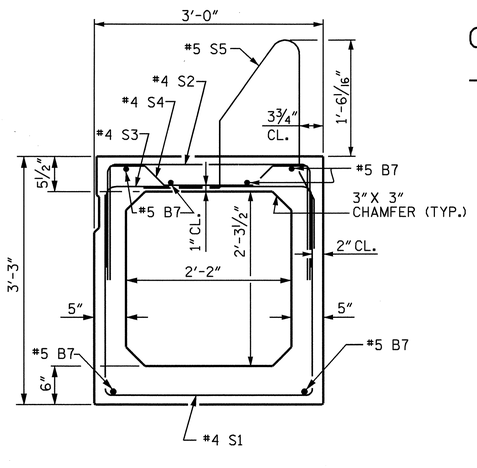
END ELEVATION

SHOWING PLACEMENT OF #5 & #4 "A" BARS AND LOCATION OF DOWEL HOLES.
(INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION. STRAND LAYOUT NOT SHOWN.)



INTERIOR BOX BEAM SECTION

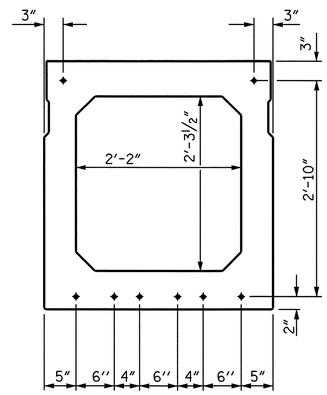
(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

0.6" Ø LOW RELAXATION STRAND LAYOUT



TYPICAL STRAND LOCATION

(8 STRANDS REQUIRED)

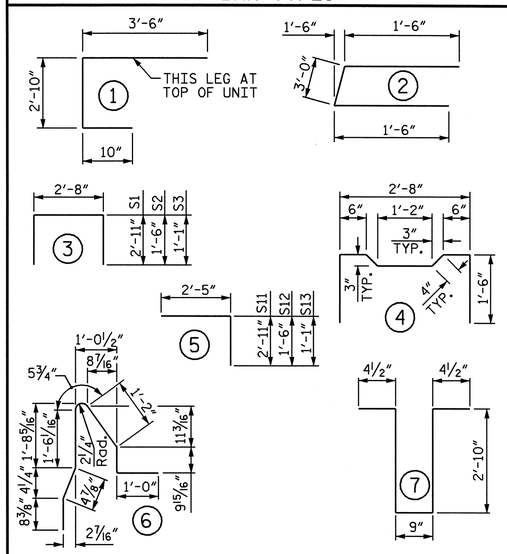
(INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION)

DEBONDING LEGEND

● FULLY BONDED STRANDS

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

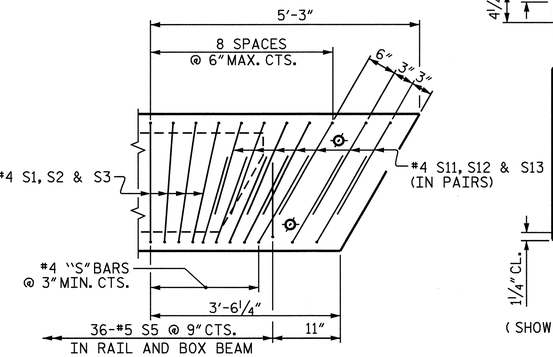
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

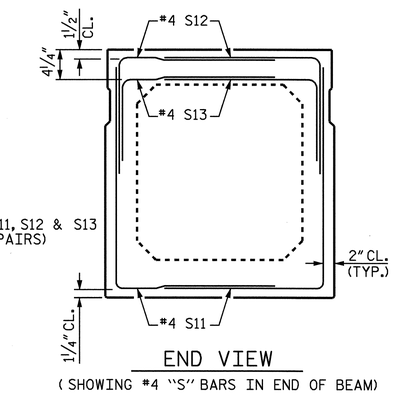
BILL OF MATERIAL FOR ONE BOX BEAM SECTION

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
A1	10	#5	1	7'-2"	75	7'-2"	75
A2	32	#4	2	6'-0"	128	6'-0"	128
B7	6	#5	STR	28'-2"	176	28'-2"	176
K1	9	#4	7	7'-2"	43	7'-2"	43
K2	6	#4	STR	3'-0"	12	3'-0"	12
S1	21	#4	3	8'-6"	119	8'-6"	119
S2	21	#4	3	5'-8"	79	5'-8"	79
S3	33	#4	3	4'-10"	107	4'-10"	107
S4	12	#4	4	5'-10"	47	5'-10"	47
✱ S5	36	#5	6	6'-1"	228	--	--
S11	28	#4	5	5'-4"	100	5'-4"	100
S12	28	#4	5	3'-11"	73	3'-11"	73
S13	28	#4	5	3'-6"	65	3'-6"	65
REINFORCING STEEL					1024 LBS.		1024 LBS.
✱ EPOXY COATED REINF. STEEL					228 LBS.		
5000 P.S.I. CONCRETE					6.5 CU. YDS.		6.4 CU. YDS.
0.6" Ø L.R. STRANDS					No. 8		No. 8



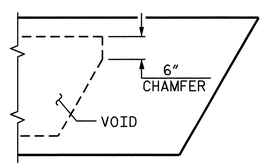
DETAIL "B"

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS. "B" BARS AND "A" BARS NOT SHOWN.



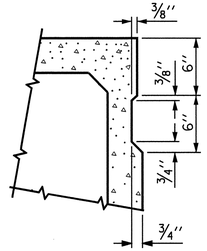
END VIEW

(SHOWING #4 "S" BARS IN END OF BEAM)



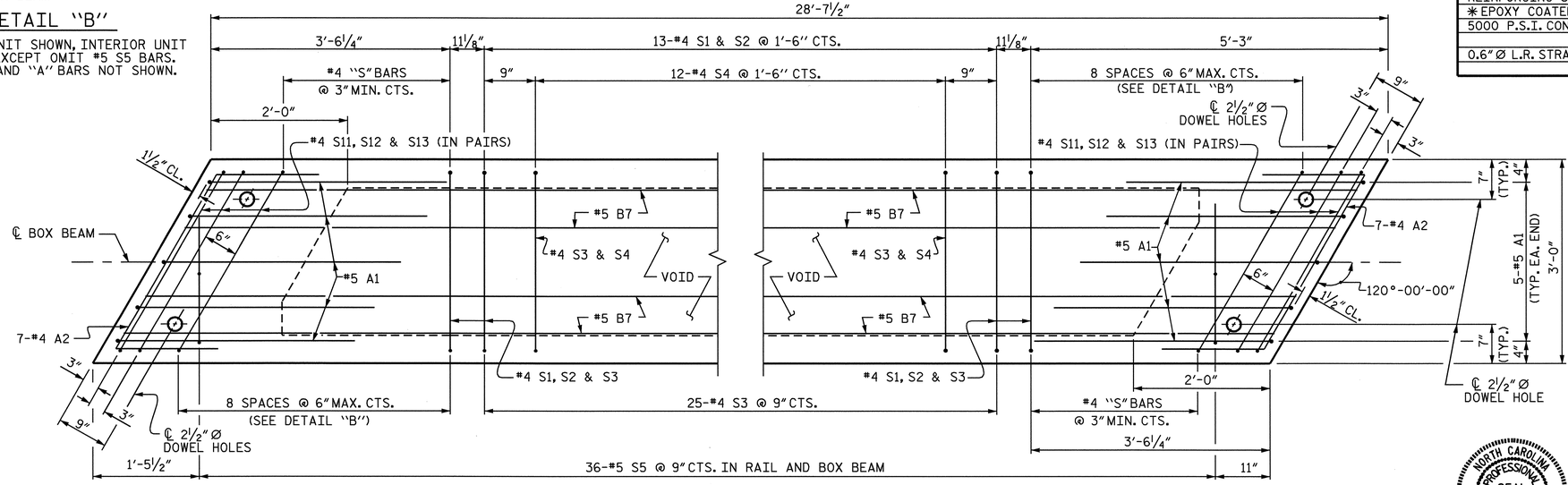
CHAMFER DETAIL

SHOWING 6" VOID CHAMFER



SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR BOX BEAMS.



PLAN OF BOX BEAM

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS.
FOR LOCATION OF DIAPHRAGMS, SEE PLAN OF SPANS.
FOR REINFORCING STEEL IN DIAPHRAGMS, SEE DIAPHRAGM DETAILS.

PROJECT NO. B-4282

STOKES COUNTY

STATION: 18+20.37-L-

SHEET 7 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 3'-3" PRESTRESSED CONCRETE BOX BEAM UNIT SPAN "C"

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT, JR.
1-7-08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			26

ASSEMBLED BY :	H. T. BARBOUR	DATE :	9-26-05
CHECKED BY :	S. P. LAM	DATE :	1-06
DRAWN BY :	TLA 5/05	ADDED	7/11/05
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07-JAN-2008 12:19
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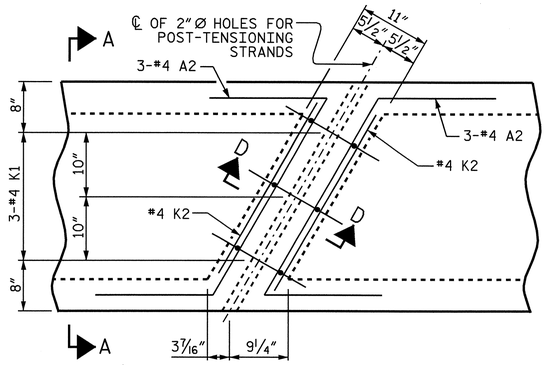
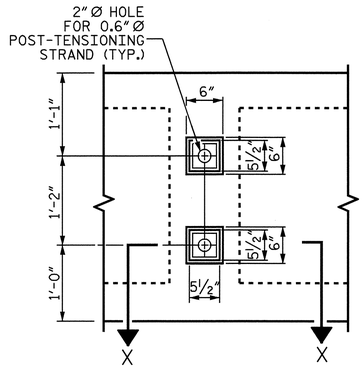
STD. NO. PCBB6

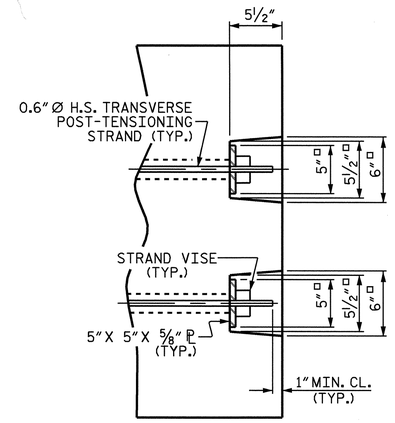


PLAN

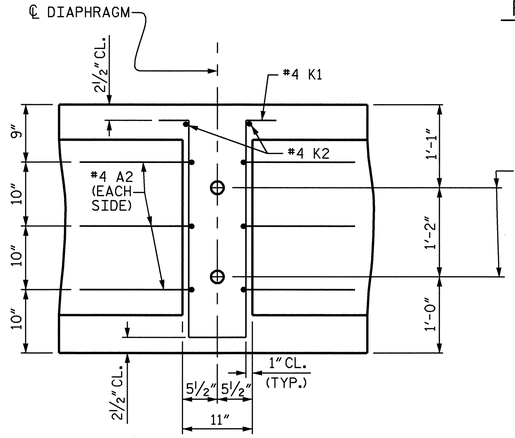


VIEW Y-Y

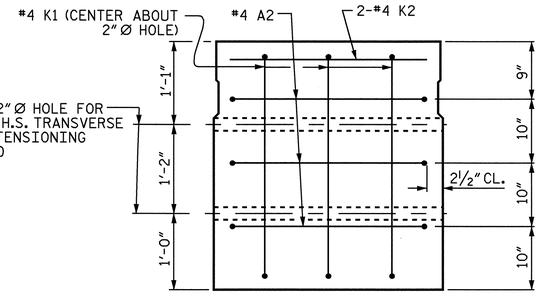
SHOWING ELEVATION VIEW OF GROUTED RECESS



DETAIL "C"

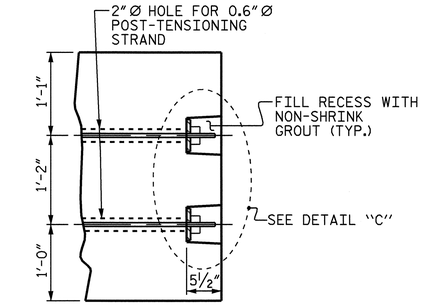


SECTION D-D

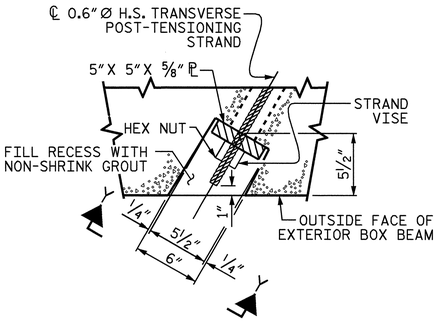


SECTION A-A

VOIDS NOT SHOWN



PART SECTION AT RECESS



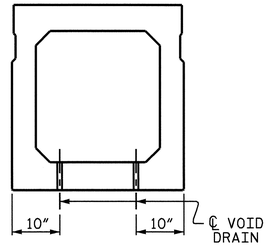
SECTION X-X

SHOWING PLAN VIEW OF GROUTED RECESS

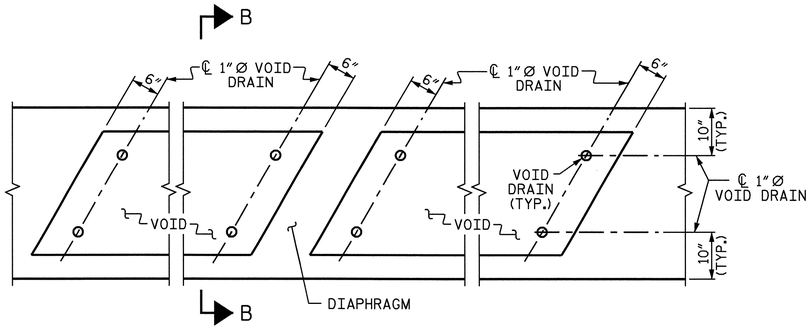
DOUBLE DIAPHRAGM DETAILS FOR 39" BOX BEAM

#4 "S" BARS NOT SHOWN. #4 "S" BARS MAY BE SHIFTED SLIGHTLY TO CLEAR 2" Ø HOLE.

DOUBLE GROUTED RECESS DETAIL AT END OF POST-TENSIONED STRANDS OF EXTERIOR 39" BOX BEAM



SECTION B-B



PART PLAN

VOID DRAIN DETAILS

(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

DEAD LOAD DEFLECTION AND CAMBER			
	3'-0" x 3'-3"		
	0.6"Ø L.R. STRAND		
	SPAN "A"	SPAN "B"	SPAN "C"
CAMBER (BEAM ALONE IN PLACE) ↑	3/16"	3½"	1/8"
✳ DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD ↓	1/16"	¾"	0
FINAL CAMBER ↑	1/8"	2¾"	1/8"

✳ INCLUDES FUTURE WEARING SURFACE

PROJECT NO. B-4282

STOKES COUNTY

STATION: 18+20.37-L-

SHEET 8 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 3'-3" PRESTRESSED CONCRETE BOX BEAM UNIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			26

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDRE DAVENPORT
1-7-08

ASSEMBLED BY : H. T. BARBOUR	DATE : 9-27-05	
CHECKED BY : S. P. LAM	DATE : 1-06	
DRAWN BY : TLA 5/05	ADDED 7/11/05	
CHECKED BY : GM 6/05		

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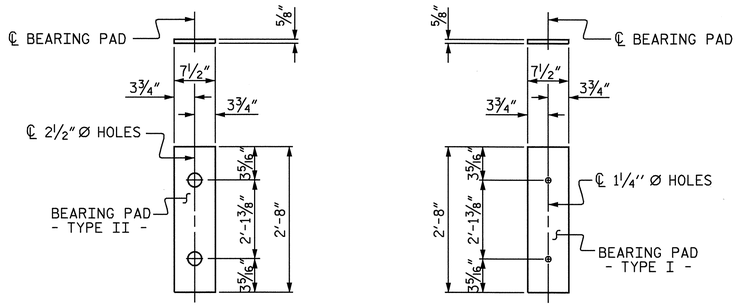
STD. NO. PCBB7



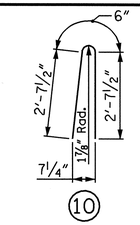
EXPANSION END
(TYPE II - 12 REQ'D)

FIXED END
(TYPE I - 60 REQ'D)

ELASTOMERIC BEARING DETAILS

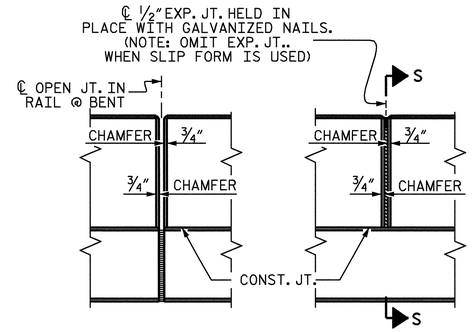
(60 DUROMETER REQUIRED)

BOX BEAM UNITS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
SPAN A	12	43'-7½"	523'-6"
SPAN B	12	89'-10¼"	1078'-3"
SPAN C	12	28'-7½"	343'-6"
TOTAL	36	———	1945'-3"

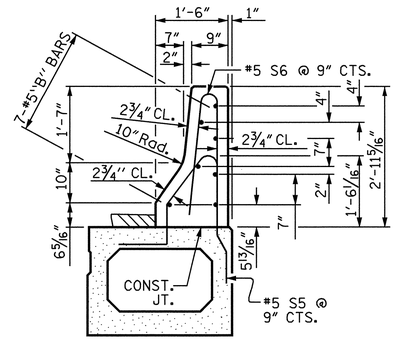


BAR TYPE
BAR DIMENSIONS ARE OUT TO OUT

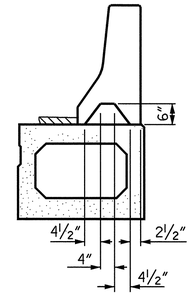
BILL OF MATERIAL FOR CONCRETE BARRIER RAIL									
BAR	BARS PER SPAN				TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	SPAN A	SPAN B	SPAN C						
✳B2	56				56	#5	STR	12'-8"	740
✳B4			14		14	#5	STR	28'-2"	411
✳B5		14			14	#5	STR	29'-7"	432
✳B6		56			56	#5	STR	16'-9"	978
✳S6	112	234	72		418	#5	10	5'-9"	2507
✳EPOXY COATED REINFORCING STEEL LBS. 5068									
CLASS AA CONCRETE CU.YDS. 38.2									
TOTAL LIN. FT. OF CONCRETE BARRIER RAIL 324.21									



ELEVATION AT EXPANSION JOINTS



SECTION THRU RAIL



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

BARRIER RAIL DETAILS

PROJECT NO. B-4282
STOKES COUNTY
STATION: 18+20.37-L-

SHEET 9 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 3'-3" PRESTRESSED CONCRETE BOX BEAM UNIT DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D'ANDRE T. DAVENPORT, JR.
1-10-06

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			26

ASSEMBLED BY : H. T. BARBOUR	DATE : 9-27-05
CHECKED BY : S. P. LAM	DATE : 1-06
DRAWN BY : TLA 5/05	ADDED 7/11/05
CHECKED BY : GM 6/05	

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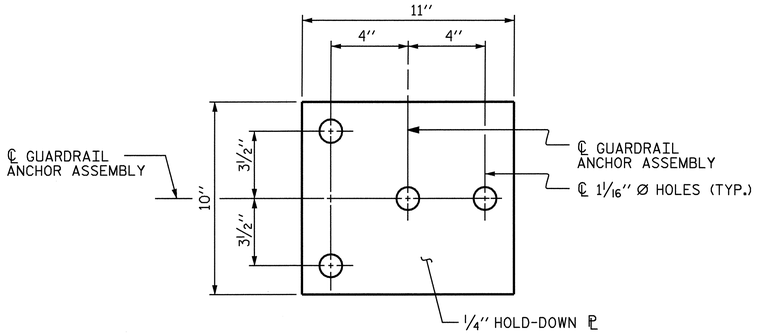
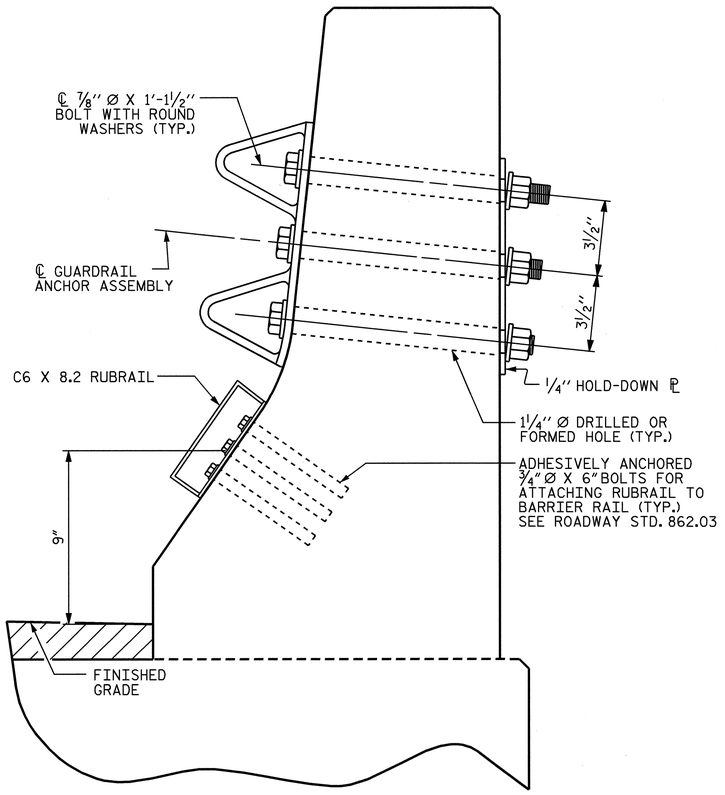
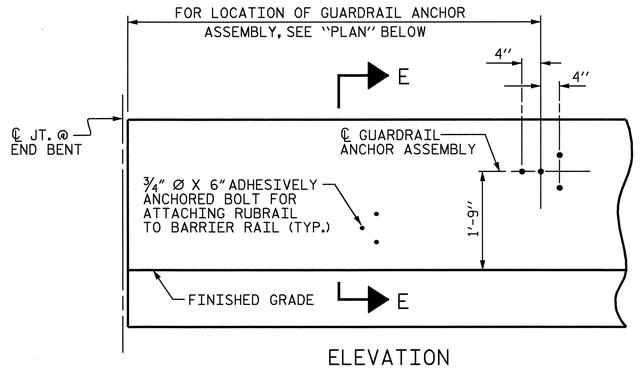


PLAN



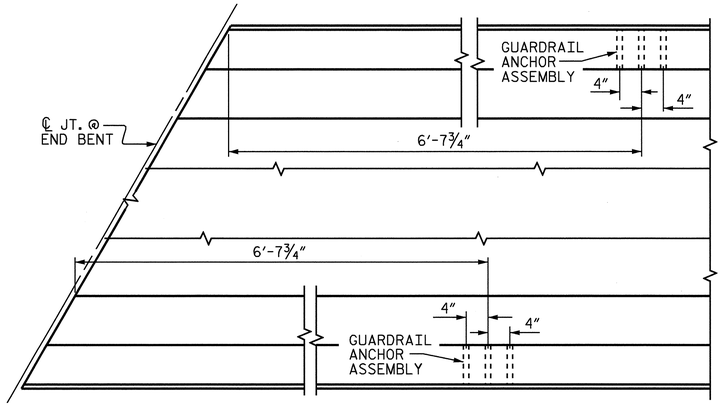
SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



ELEVATION

FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A ¼'' HOLD DOWN PLATE AND 4 - ⅞'' Ø BOLTS WITH NUTS AND WASHERS, RUBRAIL, AND ADHESIVELY ANCHORED BOLTS.

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

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE ⅞'' Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

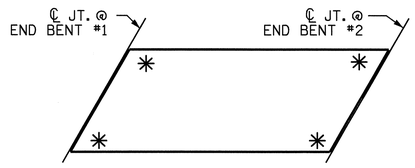
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

THE 1 ¼'' Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE ¾"Ø X 6"BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE ¾"Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.



SKETCH SHOWING POINTS OF ATTACHMENTS

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-4282

STOKES COUNTY

STATION: 18+20.37 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE FOR BARRIER RAIL

ASSEMBLED BY : A. SORSENGINH	DATE : 9/25/07
CHECKED BY : H.T. BARBOUR	DATE : 10/18/07
DRAWN BY : TLA 5/06	ADDED 5/1/06R KMM/GM
CHECKED BY : GM 5/06	

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			26

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT, JR.

1-4-08

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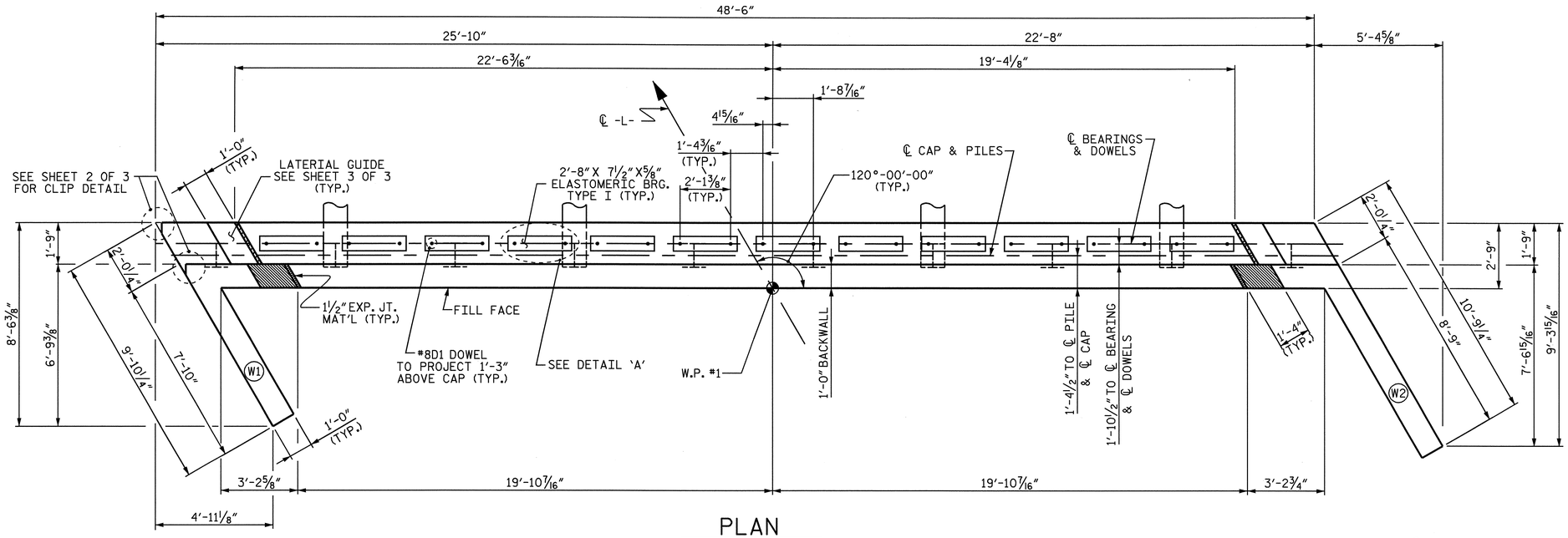
(SHT 2) STD. NO. GRA2



PLAN

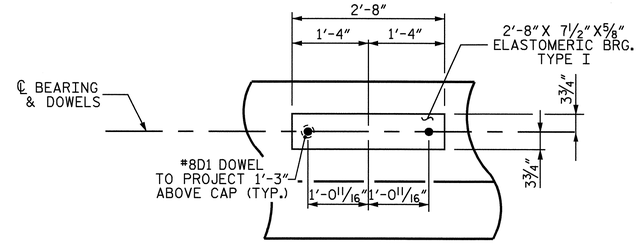
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #8D1 DOWELS.

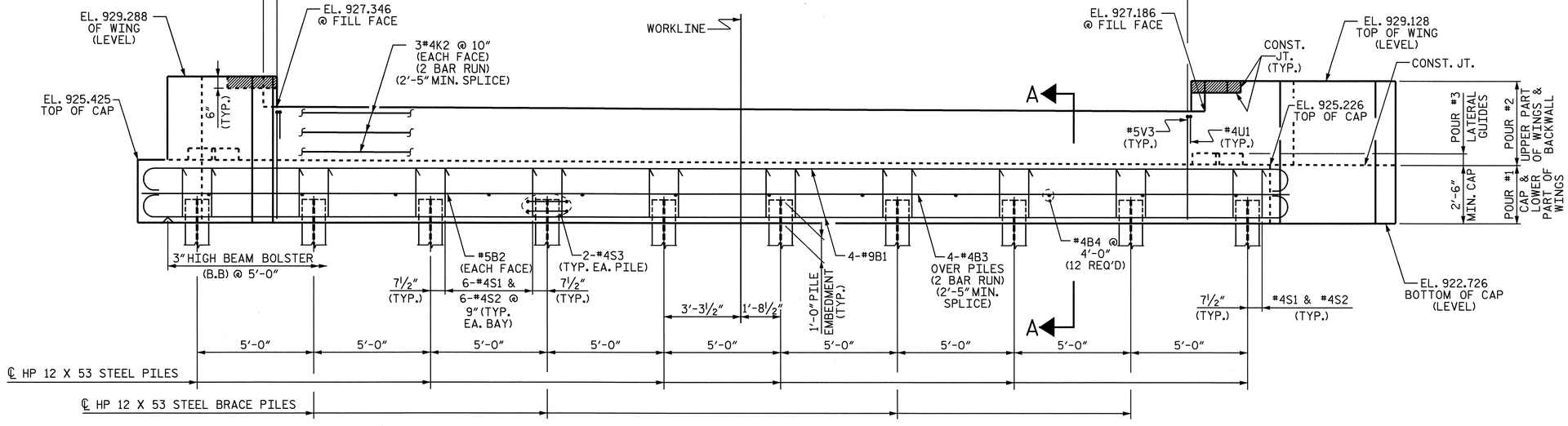
THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER BOX BEAM UNITS ARE IN PLACE.

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

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



DETAIL 'A'



ELEVATION

PROJECT NO. B-4282

STOKES COUNTY

STATION: 18+20.37-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-14
1			3			TOTAL SHEETS
2			4			26

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT, JR.

DRAWN BY : H. T. BARBOUR DATE : 5-01-06
CHECKED BY : C. R. YARBROUGH DATE : 6-22-06

06-JAN-2008 17:56
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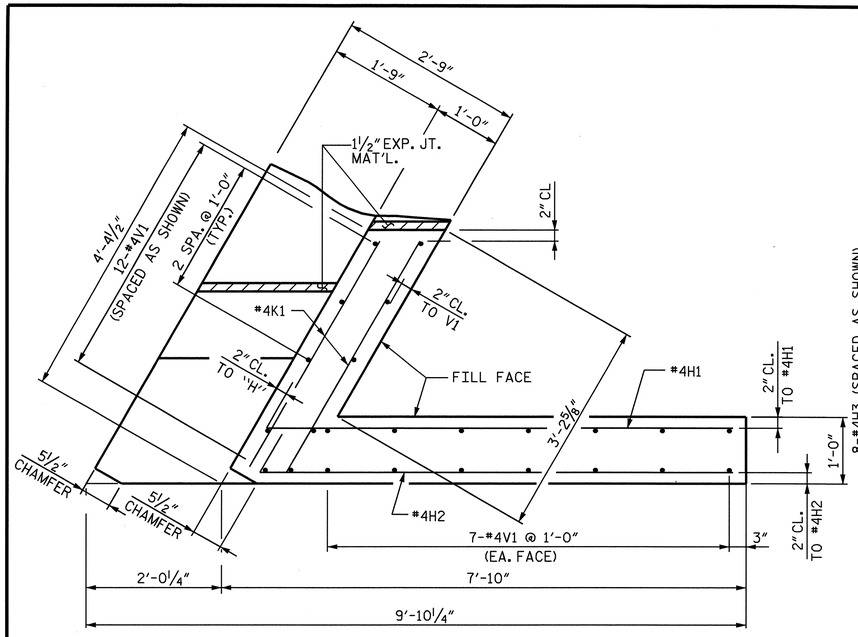
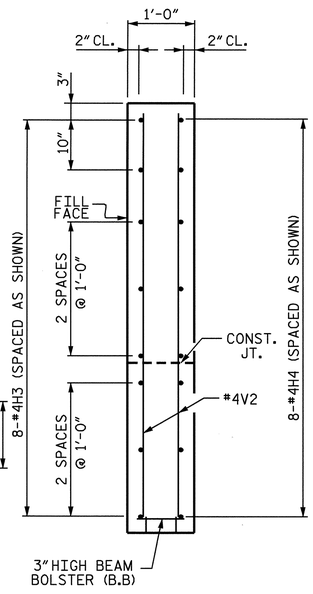
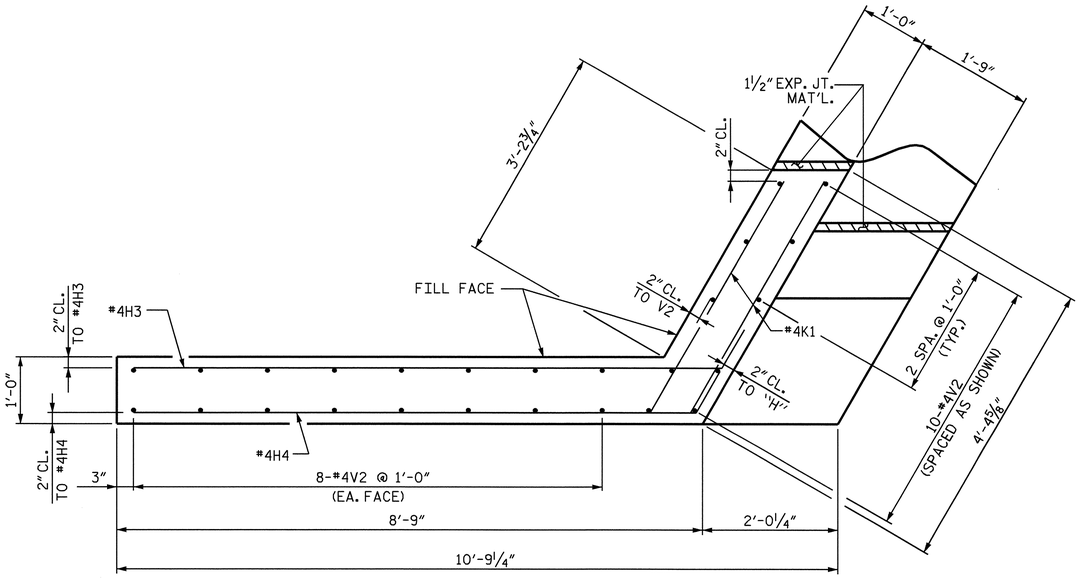
NCDOT



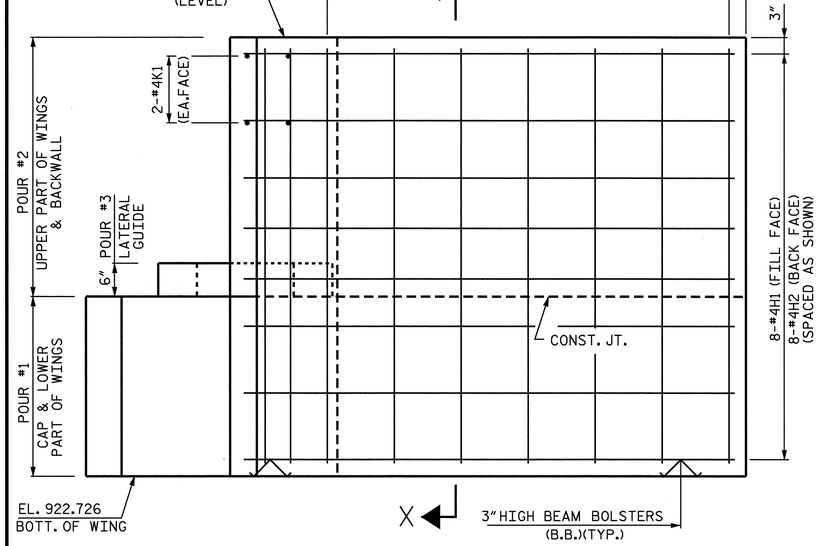
PLAN OF LEFT WING (W1)



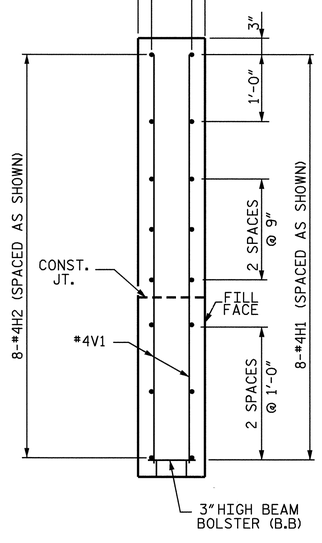
SECTION Y-Y



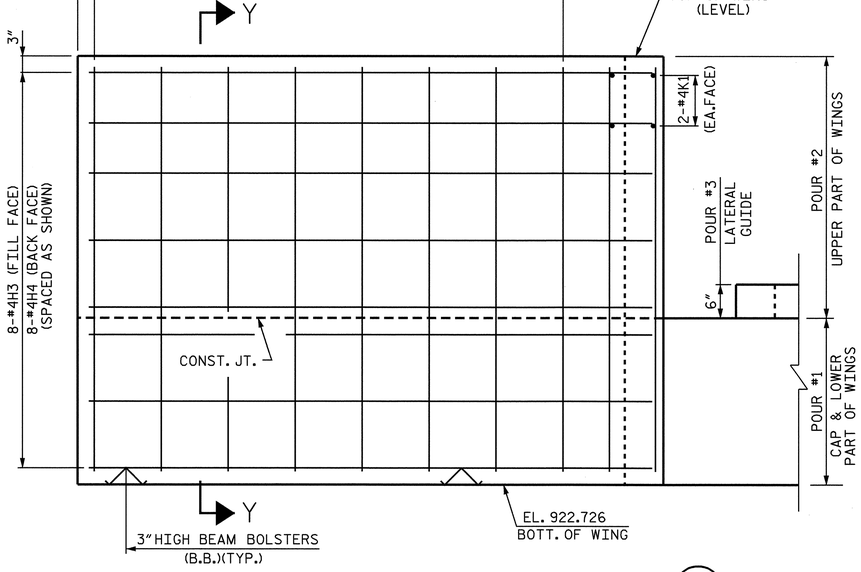
PLAN OF RIGHT WING (W2)



ELEVATION OF LEFT WING (W1)



SECTION X-X



ELEVATION OF RIGHT WING (W2)

PROJECT NO. B-4282

STOKES COUNTY

STATION: 18+20.37-L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT #1

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT, JR.
1-7-08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			26

DRAWN BY : H.T. BARBOUR DATE : 5-02-06
CHECKED BY : C. R. YARBROUGH DATE : 6-22-06

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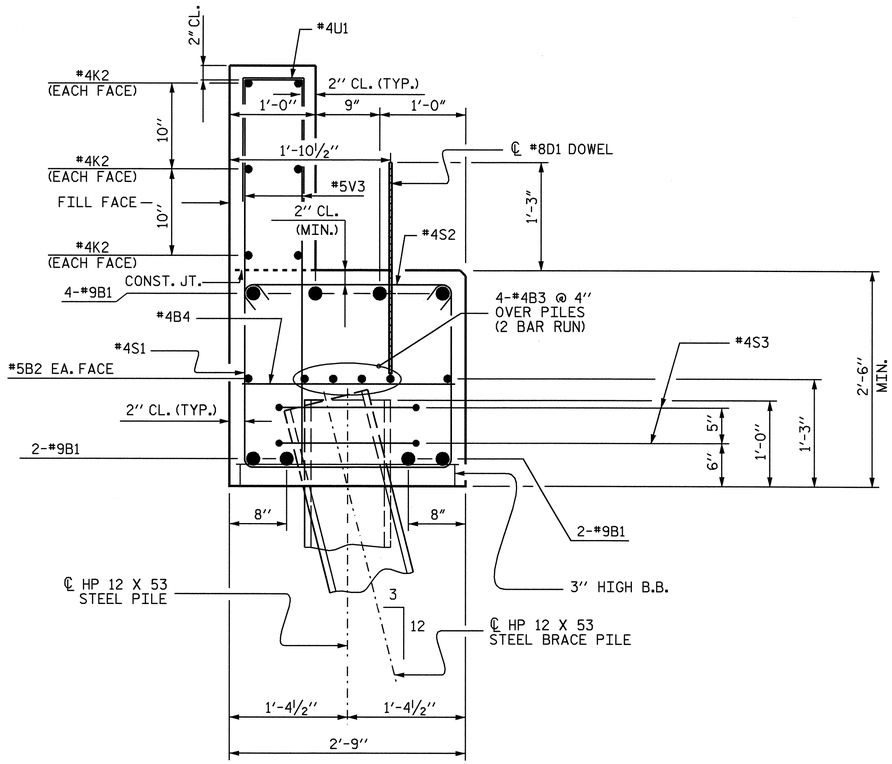
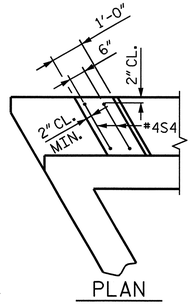
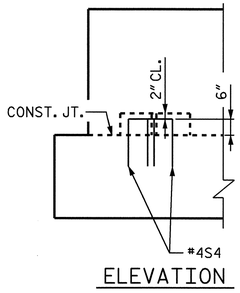


SECTION A-A



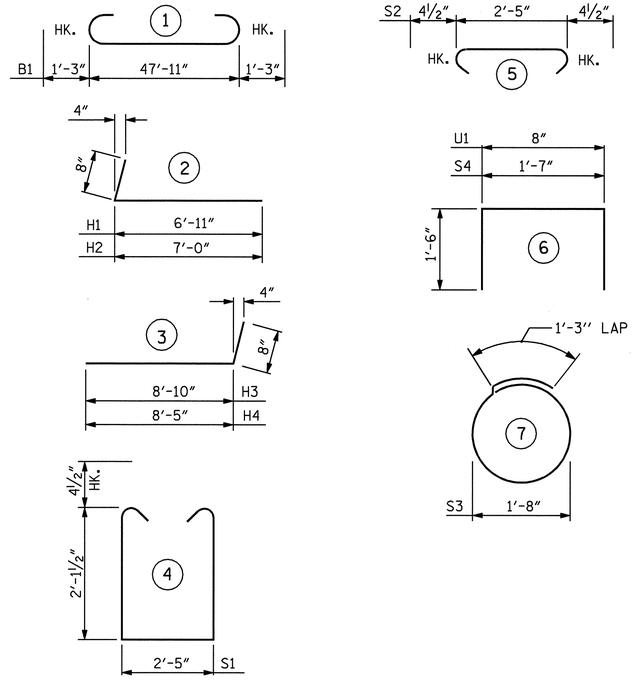
PLAN



ELEVATION

LATERAL GUIDE

BAR TYPES



BILL OF MATERIAL

END BENT #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	50'-5"	1371
B2	2	#5	STR	48'-1"	100
B3	8	#4	STR	25'-4"	135
B4	12	#4	STR	2'-5"	19
D1	24	#8	STR	2'-3"	144
H1	8	#4	2	7'-7"	41
H2	8	#4	2	7'-8"	41
H3	8	#4	3	9'-6"	51
H4	8	#4	3	9'-1"	49
K1	8	#4	STR	3'-9"	20
K2	12	#4	STR	25'-4"	203
S1	56	#4	4	7'-5"	277
S2	56	#4	5	3'-2"	118
S3	20	#4	7	6'-6"	87
S4	4	#4	6	4'-7"	12
U1	38	#4	6	3'-8"	93
V1	24	#4	STR	6'-2"	99
V2	26	#4	STR	6'-0"	104
V3	76	#5	STR	4'-1"	324

REINFORCING STEEL LBS = 3288

CLASS A CONCRETE BREAKDOWN

POUR #1 CAP & LOWER PART OF WINGS
C.Y. 14.2

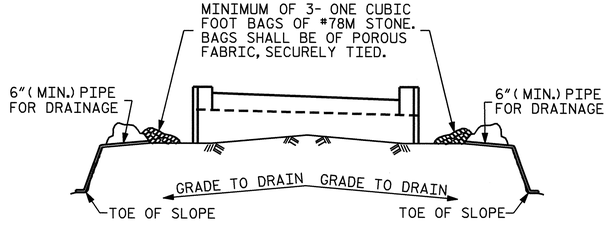
POUR #2 BACKWALL & UPPER PART OF WINGS
C.Y. 6.3

POUR #3 LATERAL GUIDES
C.Y. 0.1

TOTAL CLASS A CONCRETE
C.Y. 20.6

HP 12 X 53 STEEL PILES
NO. 10 LIN FT. = 175

ALL BAR DIMENSIONS ARE OUT TO OUT.

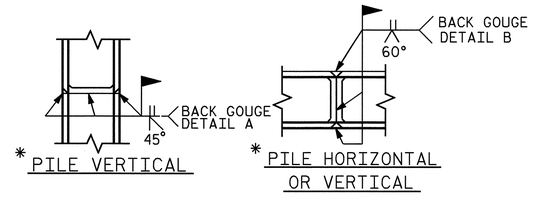


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

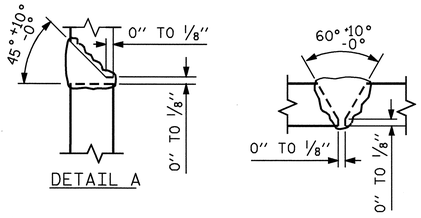
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



* PILE VERTICAL

* PILE HORIZONTAL OR VERTICAL



DETAIL A DETAIL B

* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

PROJECT NO. B-4282

STOKES COUNTY

STATION: 18+20.37-L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT #1

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT JR.
12-19-07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			26

DRAWN BY : H.T. BARBOUR DATE : 5-02-06
CHECKED BY : C. R. YARBROUGH DATE : 6-29-06

19-DEC-2007 11:36
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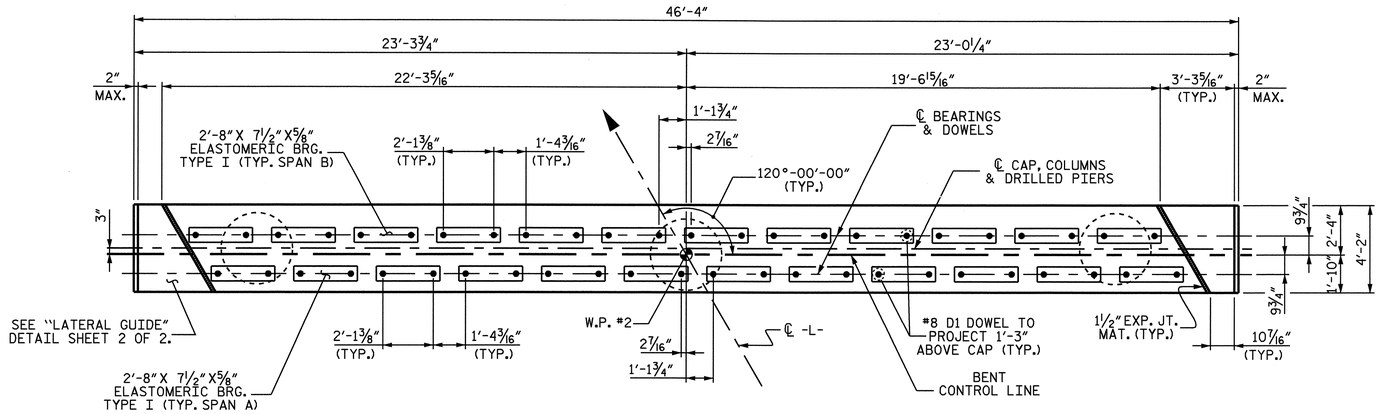
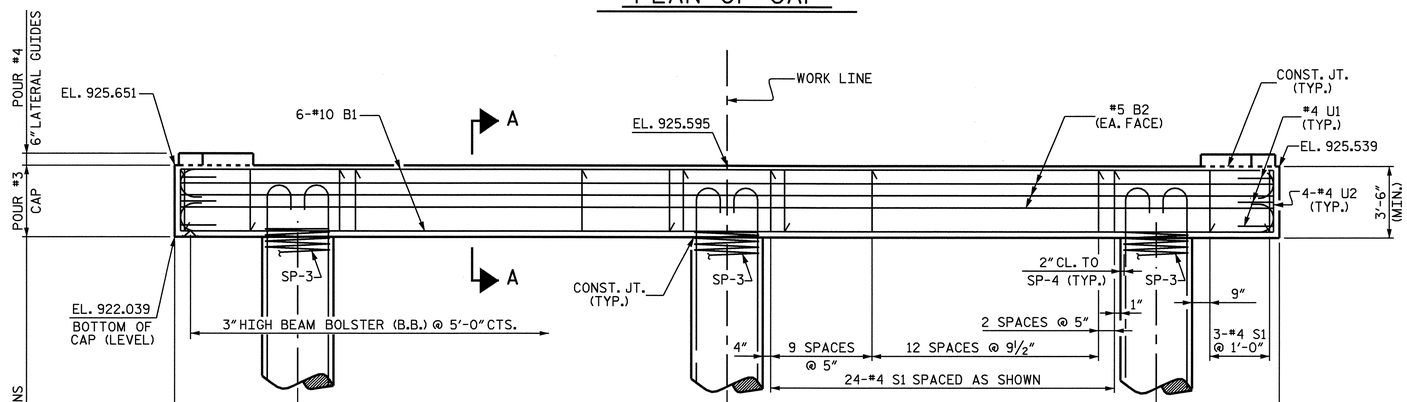
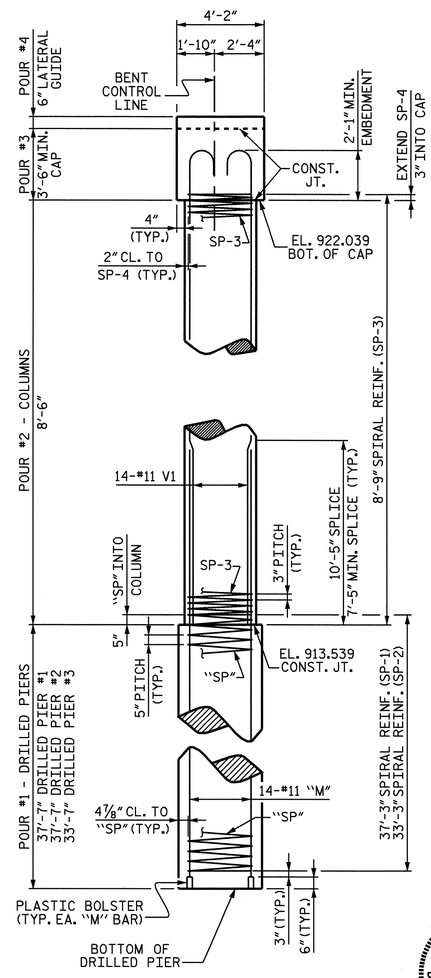


PLAN OF CAP



ELEVATION

ALL COLUMNS ARE IDENTICAL AND ALL DRILLED PIERS ARE SIMILAR



RIGHT END ELEVATION

NOTES

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

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

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

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

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

FOR PERMANENT STEEL CASING, SEE SPECIAL PROVISION FOR DRILLED PIERS.

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE CONTROL LINE IS OFFSET FROM THE CENTERLINE BENT 3".

PROJECT NO. B-4282

STOKES COUNTY

STATION: 18+20.37 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT #1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			26

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT

DRAWN BY : A. SORSENGINH DATE : 8/17/06
CHECKED BY : M.G. SHAIKH DATE : 2/20/07

09-JAN-2008 09:47
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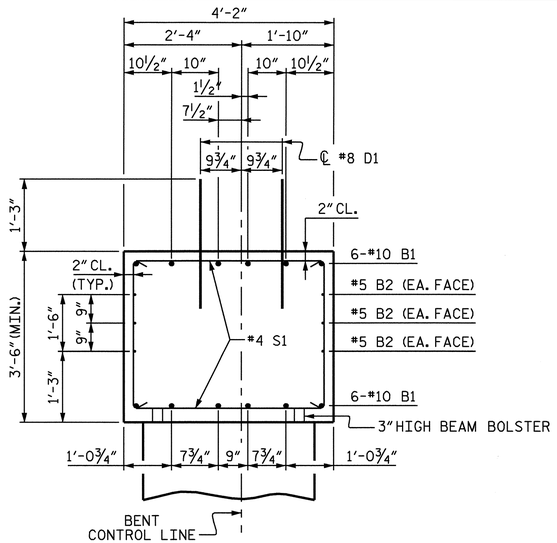
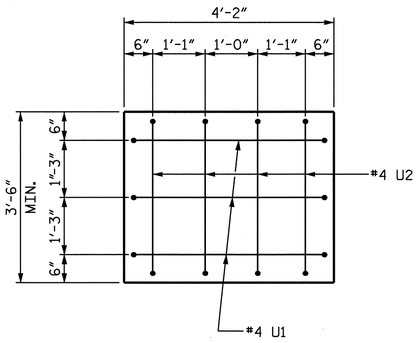


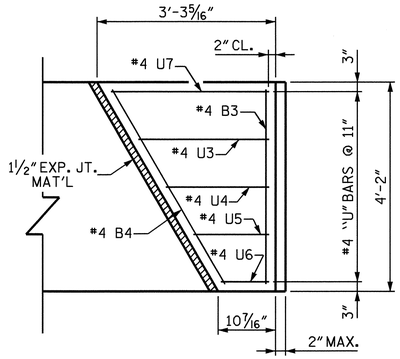
SECTION A-A



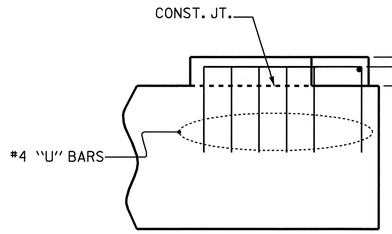
END VIEW OF CAP

2" MIN. CONCRETE COVER FROM END OF CAP REQUIRED FOR ALL #4 "U" BARS.

#4 "U" BARS MAY BE SHIFTED UP TO 2" TO CLEAR "B" BARS.

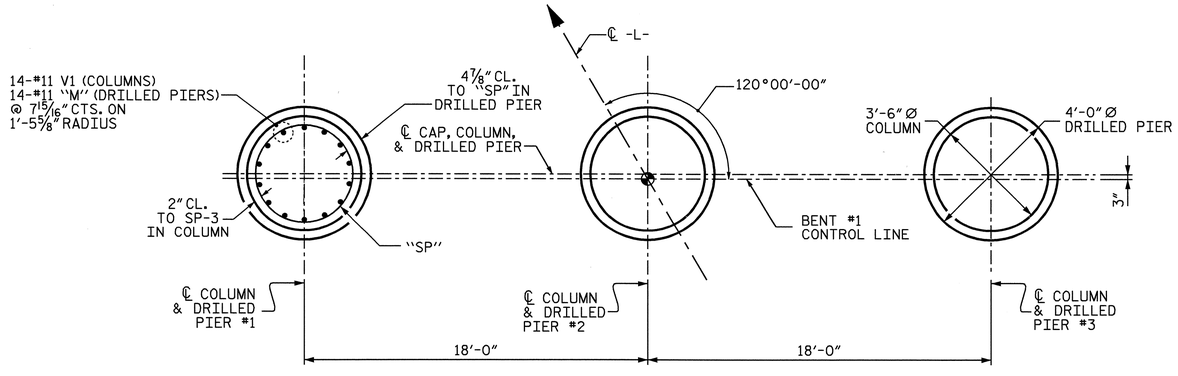


PLAN



ELEVATION

LATERAL GUIDE DETAIL



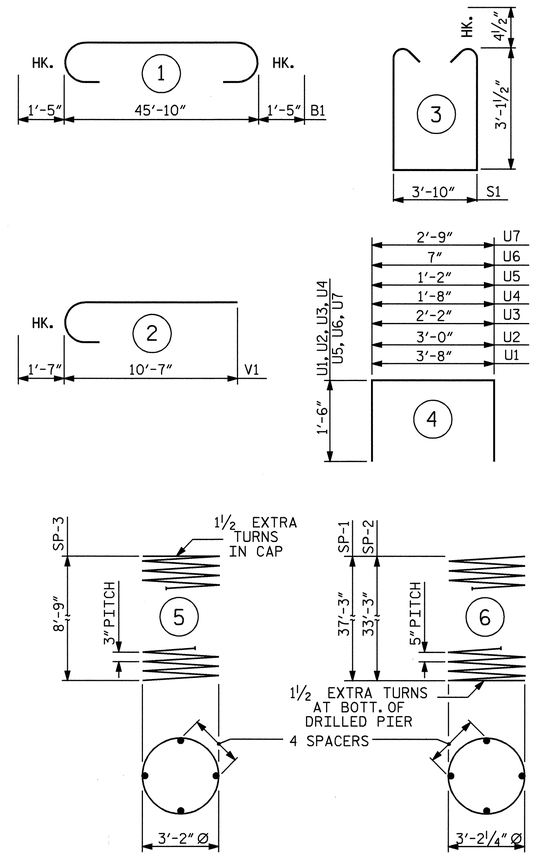
PLAN OF DRILLED PIERS & COLUMNS

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

SPAN B

SPAN A

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

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

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

BILL OF MATERIAL

BENT #1

BAR	NO	SIZE	TYPE	LENGTH	WEIGHT
B1	12	10	1	48'-8"	2513
B2	6	5	STR	46'-0"	288
B3	2	4	STR	3'-10"	5
B4	2	4	STR	4'-5"	6
D1	48	8	STR	2'-3"	288
M1	28	11	STR	47'-6"	7066
M2	14	11	STR	43'-5"	3229
S1	54	4	3	10'-10"	391
U1	6	4	4	6'-8"	27
U2	8	4	4	6'-0"	32
U3	2	4	4	5'-2"	7
U4	2	4	4	4'-8"	6
U5	2	4	4	4'-2"	6
U6	2	4	4	3'-7"	5
U7	2	4	4	5'-9"	8
V1	42	11	2	12'-2"	2715

REINFORCING STEEL LBS. 16,592

SP-1	2	**	6	895'-9"	1869
SP-2	1	**	6	802'-3"	837
SP-3	3	*	5	357'-11"	717

SPIRAL COLUMN REINFORCING STEEL LBS. 3,423

CLASS A CONCRETE BREAKDOWN

POUR #2 (COLUMNS)	9.1 C.Y.
POUR #3 (CAP)	25.4 C.Y.
POUR #4 (LATERAL GUIDES)	0.3 C.Y.
TOTAL	34.8 C.Y.

DRILLED PIERS

DRILLED PIER CONCRETE	
POUR #1 (DRILLED PIERS)	50.6 C.Y.
4'-0" Ø DRILLED PIERS NOT IN SOIL	19.00 LIN. FT.
4'-0" Ø DRILLED PIERS IN SOIL	89.75 LIN. FT.
4'-0" Ø PERMANENT STEEL CASING (IF REQUIRED)	25.62 LIN. FT.
CSL TUBES	465.00 LIN. FT.
SPT TESTING	3 EACH
SID INSPECTION	3 EACH
CROSSHOLE SONIC LOGGING	1 EACH

PROJECT NO. B-4282

STOKES COUNTY

STATION: 18+20.37 -L-

SHEET 2 OF 2

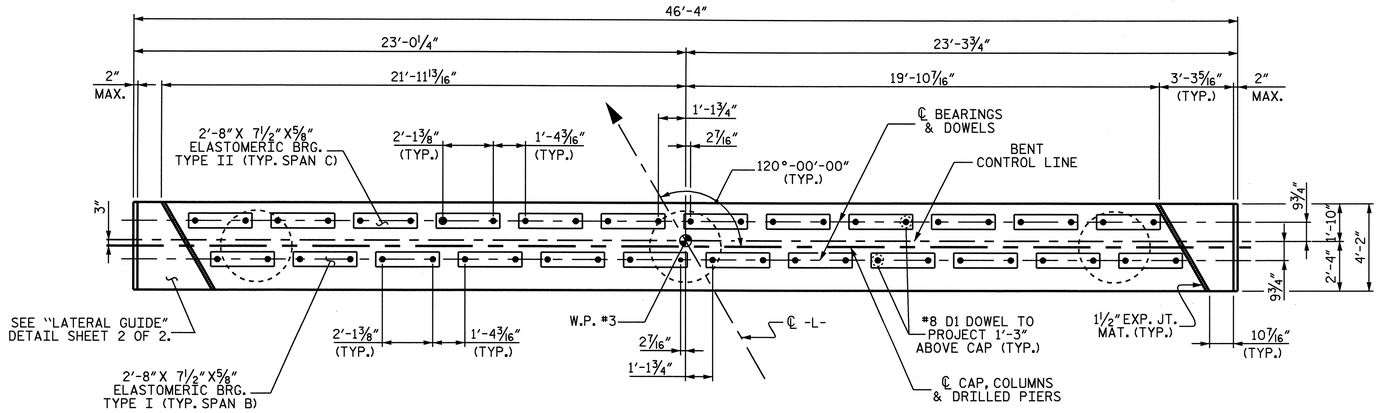
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT #1

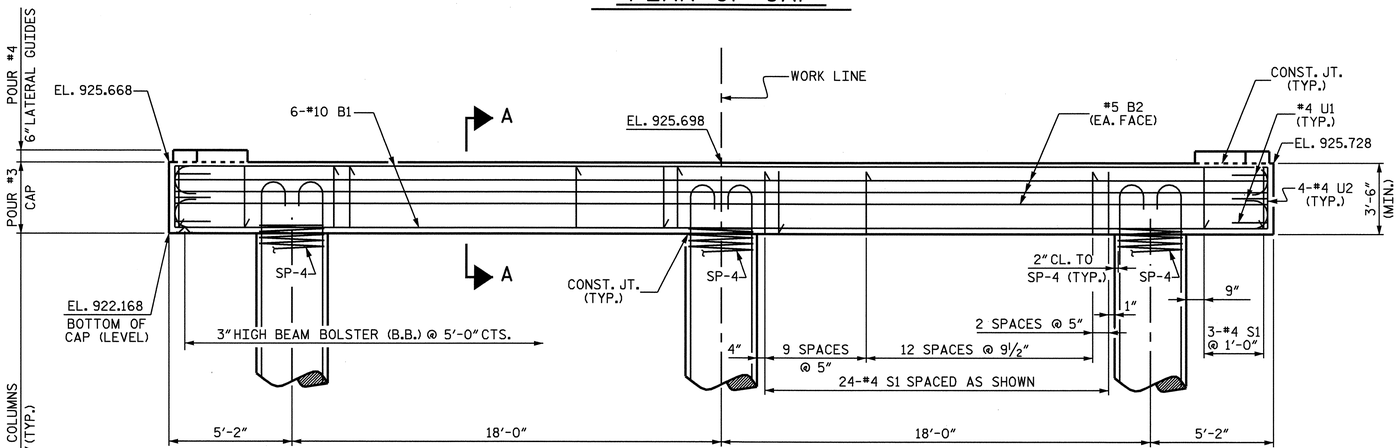
NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER DANIEL DAVENPORT, JR.
1-10-08

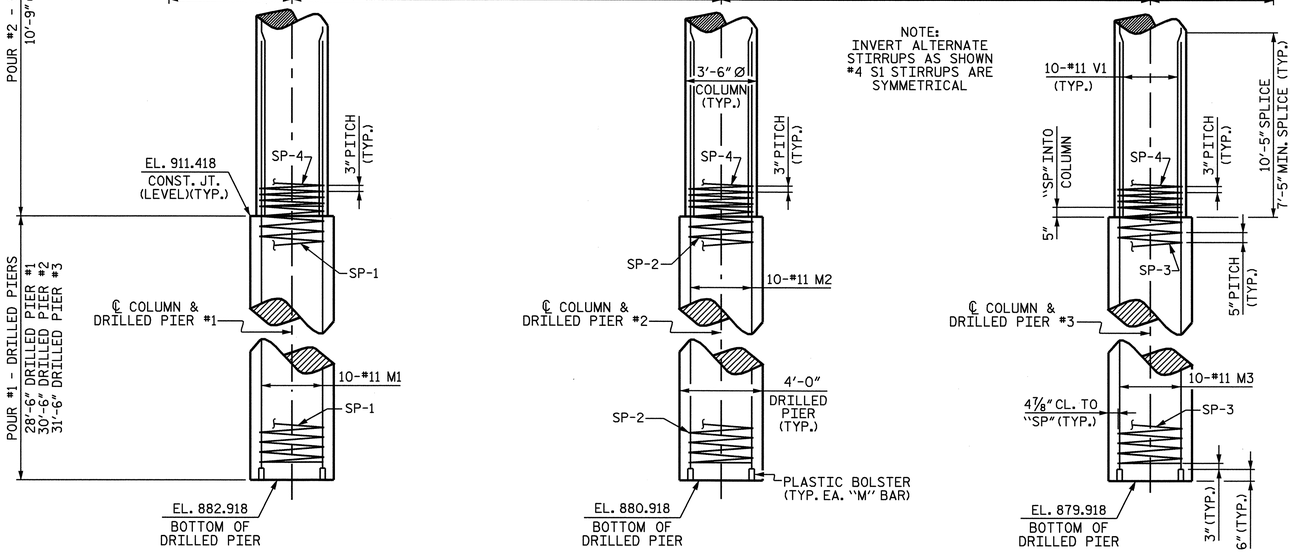
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			26

DRAWN BY : A. SORSENGINH DATE : 8/06
CHECKED BY : M.G. SHAIKH DATE : 2/07



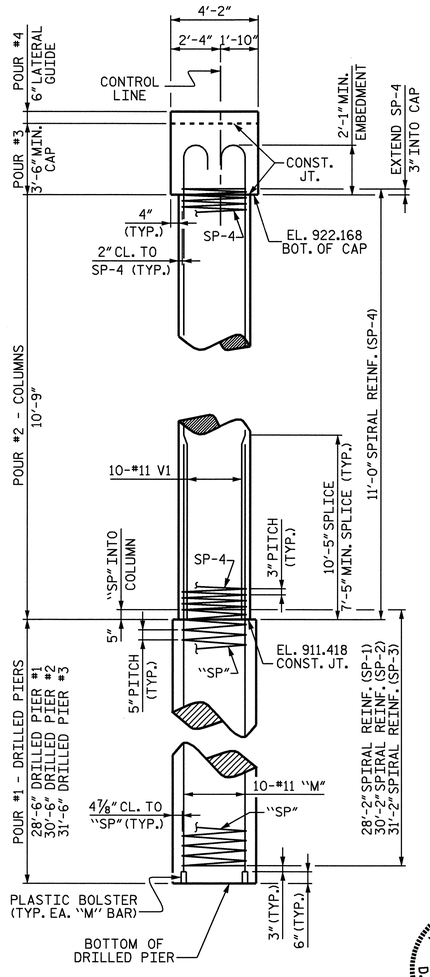
PLAN OF CAP





ELEVATION

ALL COLUMNS ARE IDENTICAL AND ALL DRILLED PIERS ARE SIMILAR



RIGHT END ELEVATION

NOTES

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

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

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

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

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

FOR PERMANENT STEEL CASING, SEE SPECIAL PROVISION FOR DRILLED PIERS.

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE CONTROL LINE IS OFFSET FROM THE CENTERLINE BENT 3".

PROJECT NO. B-4282

STOKES COUNTY

STATION: 18+20.37 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT #2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			26

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT, JR.
1-9-08

DRAWN BY : A. SORSENGINH DATE : 8/17/06
CHECKED BY : M.G. SHAIKH DATE : 2/20/07

08-JAN-2008 19:03
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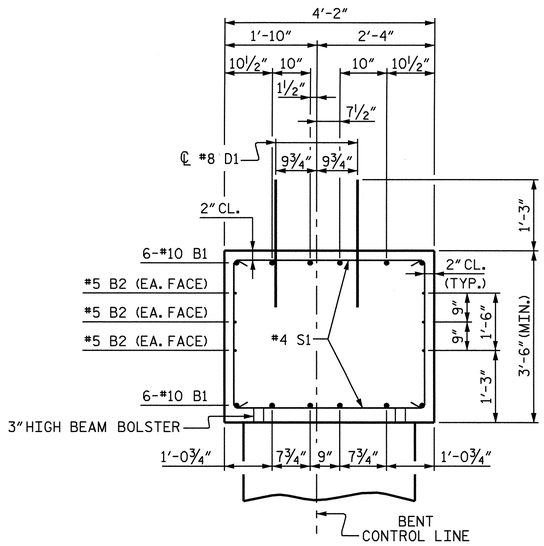
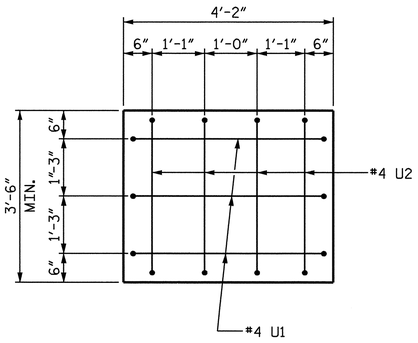


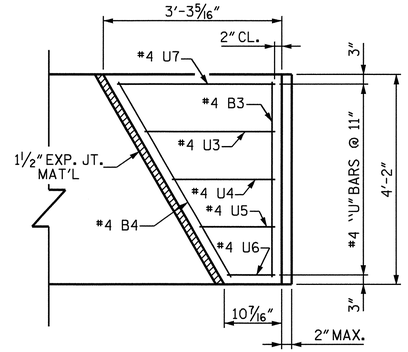
SECTION A-A



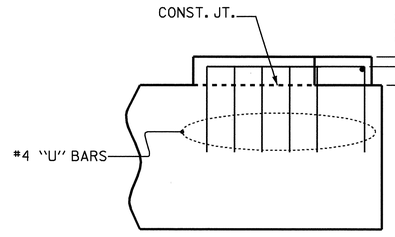
END VIEW OF CAP

2" MIN. CONCRETE COVER FROM END OF CAP REQUIRED FOR ALL #4 "U" BARS.

#4 "U" BARS MAY BE SHIFTED UP TO 2" TO CLEAR "B" BARS.

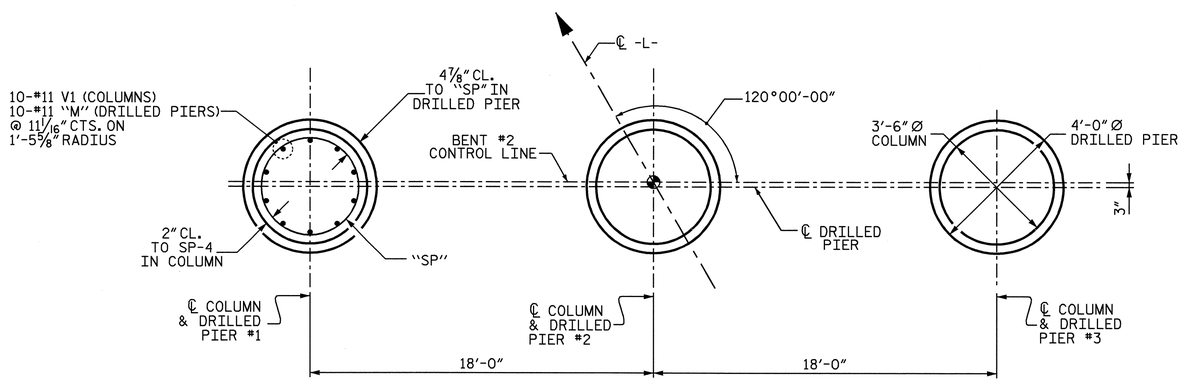


PLAN



ELEVATION

LATERAL GUIDE DETAIL



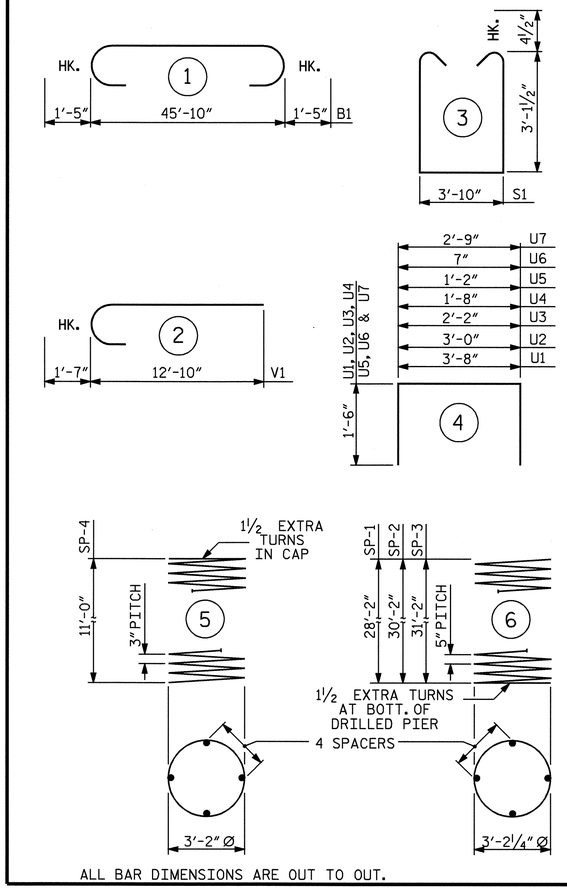
PLAN OF DRILLED PIERS & COLUMNS

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

SPAN C

SPAN B

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

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

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

BILL OF MATERIAL

BENT #2

BAR	NO	SIZE	TYPE	LENGTH	WEIGHT
B1	12	10	1	48'-8"	2513
B2	6	5	STR	46'-0"	288
B3	2	4	STR	3'-10"	5
B4	2	4	STR	4'-5"	6
D1	48	8	STR	2'-3"	288
M1	10	11	STR	38'-5"	2041
M2	10	11	STR	40'-5"	2147
M3	10	11	STR	41'-5"	2200
S1	54	4	3	10'-10"	391
U1	6	4	4	6'-8"	27
U2	8	4	4	6'-0"	32
U3	2	4	4	5'-2"	7
U4	2	4	4	4'-8"	6
U5	2	4	4	4'-2"	6
U6	2	4	4	3'-7"	5
U7	2	4	4	5'-9"	8
V1	30	11	2	14'-5"	2298

REINFORCING STEEL LBS. 12,268

SP-1	1	**	6	681'-8"	711
SP-2	1	**	6	728'-5"	760
SP-3	1	**	6	753'-0"	785
SP-4	3	*	5	446-2"	894

SPIRAL COLUMN REINFORCING STEEL LBS. 3,150

CLASS A CONCRETE BREAKDOWN

POUR #2 (COLUMNS)	11.5 C.Y.
POUR #3 (CAP)	25.4 C.Y.
POUR #4 (LATERAL GUIDES)	0.3 C.Y.
TOTAL	37.2 C.Y.

DRILLED PIERS

DRILLED PIER CONCRETE	
POUR #1 (DRILLED PIERS)	42.1 C.Y.
4'-0" Ø DRILLED PIERS NOT IN SOIL	18.00 LIN. FT.
4'-0" Ø DRILLED PIERS IN SOIL	72.50 LIN. FT.
4'-0" Ø PERMANENT STEEL CASING (IF REQUIRED)	19.25 LIN. FT.
CSL TUBES	392.00 LIN. FT.
SPT TESTING	3 EACH
SID INSPECTION	3 EACH
CROSSHOLE SONIC LOGGING	1 EACH

PROJECT NO. B-4282

STOKES COUNTY

STATION: 18+20.37 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT #2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			26

DRAWN BY : A. SORSENGINH DATE : 8/06
CHECKED BY : M.G. SHAIKH DATE : 2/07

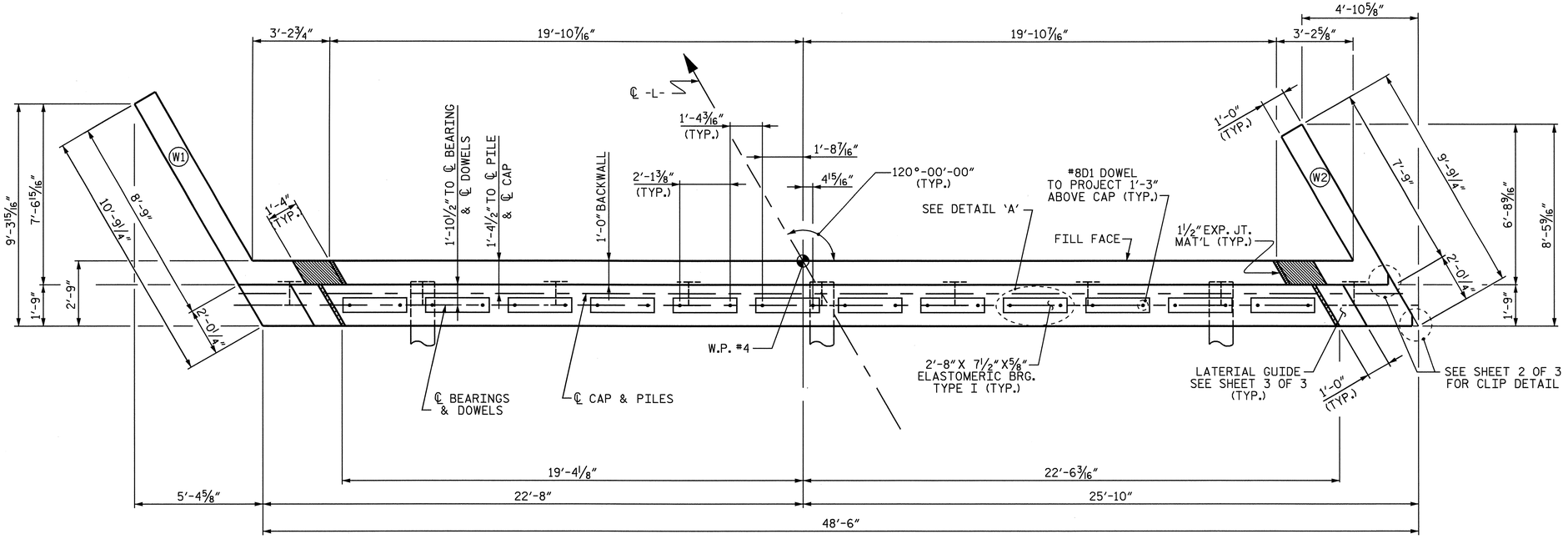
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #8D1 DOWELS.

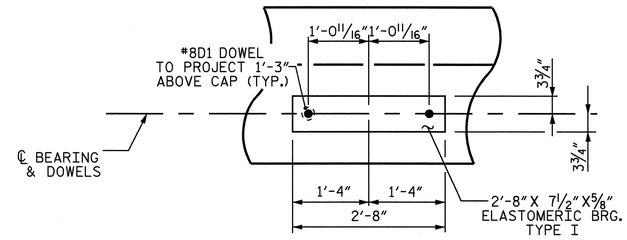
THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER BOX BEAM UNITS ARE IN PLACE.

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

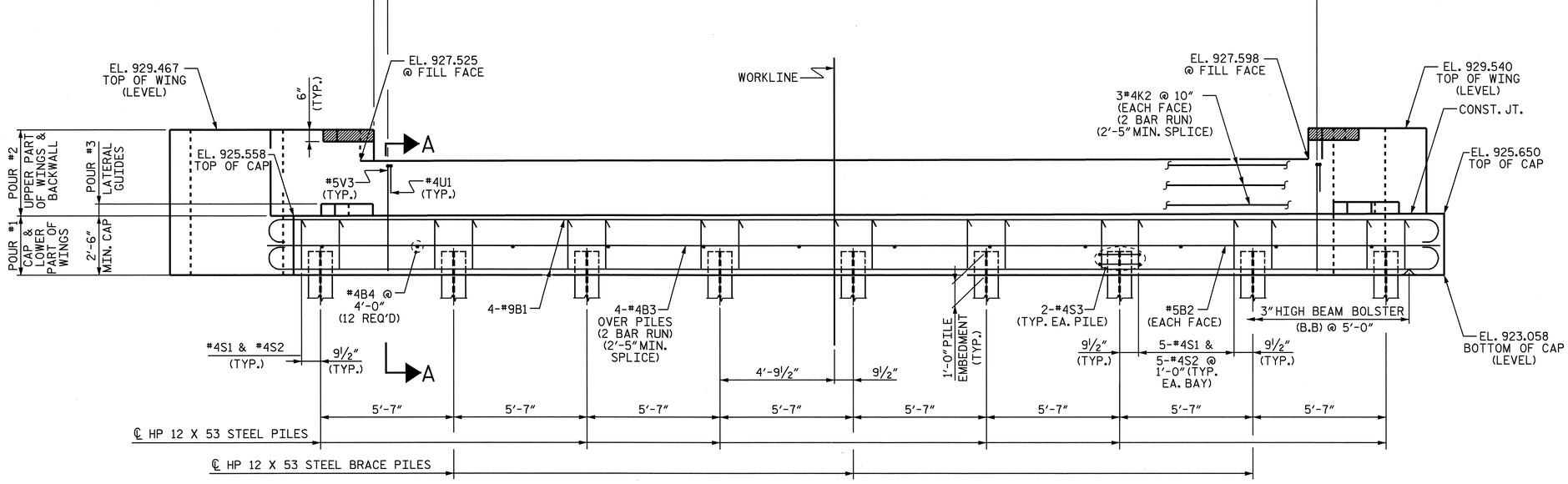
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.



PLAN



DETAIL 'A'



ELEVATION

PROJECT NO. B-4282

STOKES COUNTY

STATION: 18+20.37-L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT #2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			26

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT, JR.

DRAWN BY : H. T. BARBOUR DATE : 5-01-06
CHECKED BY : C. R. YARBROUGH DATE : 6-22-06

06-JAN-2008 17:57
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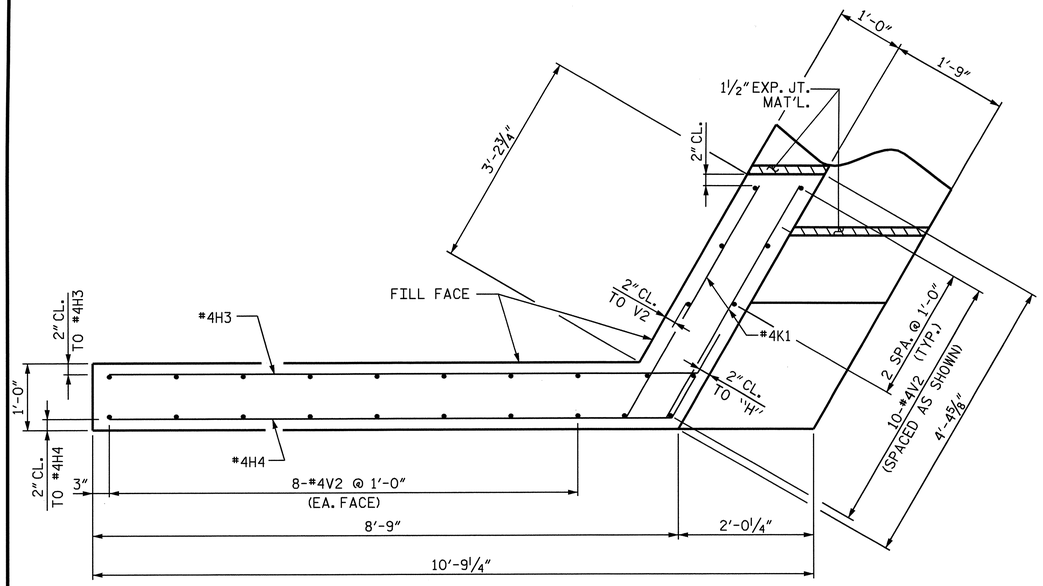
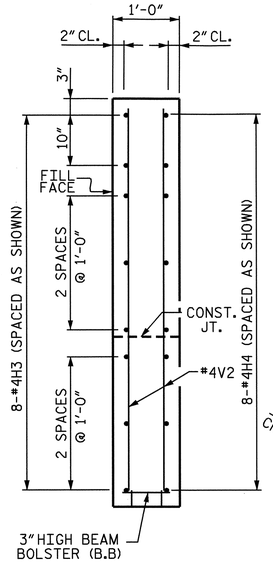
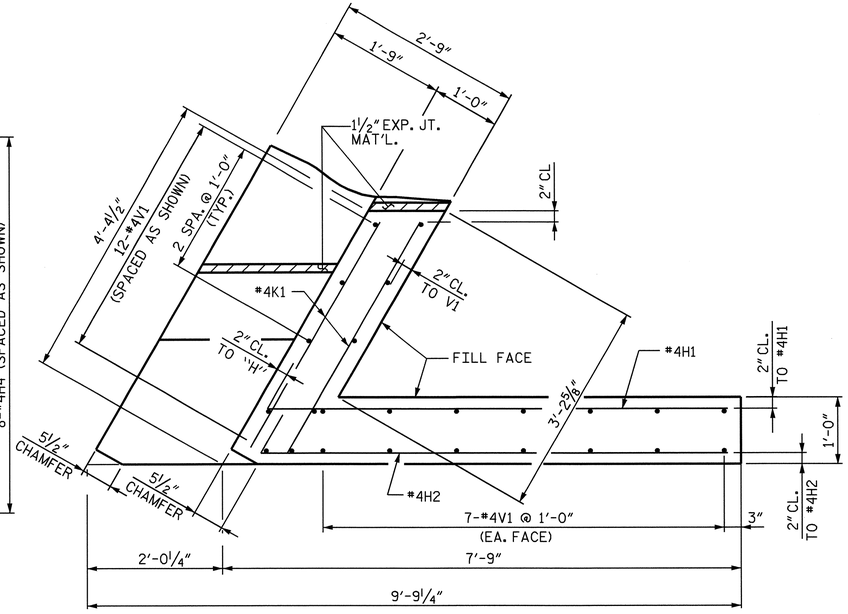


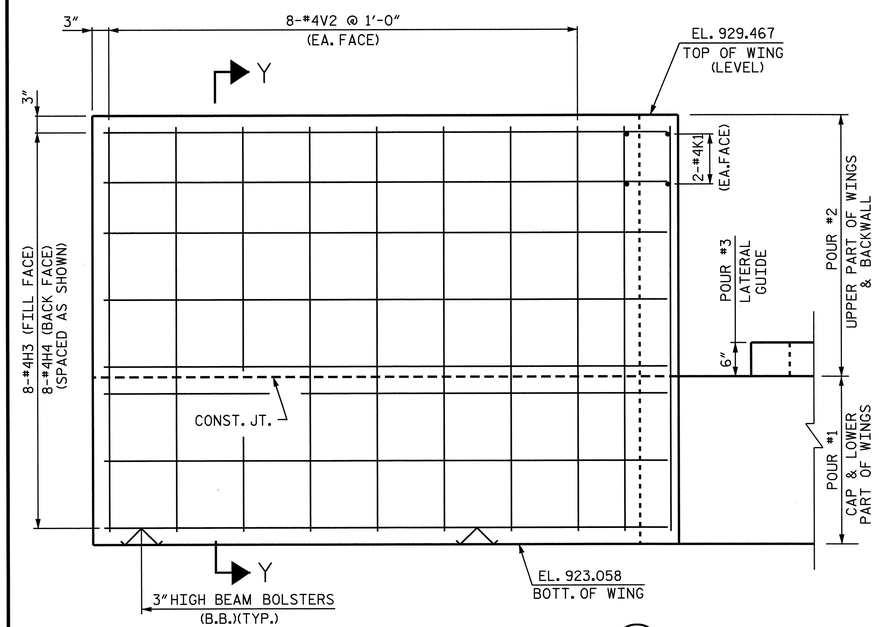
PLAN OF LEFT WING (W1)



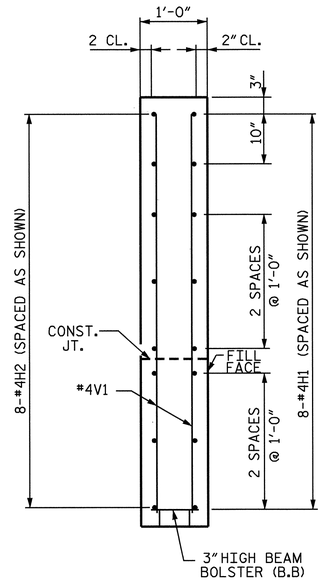
SECTION Y-Y



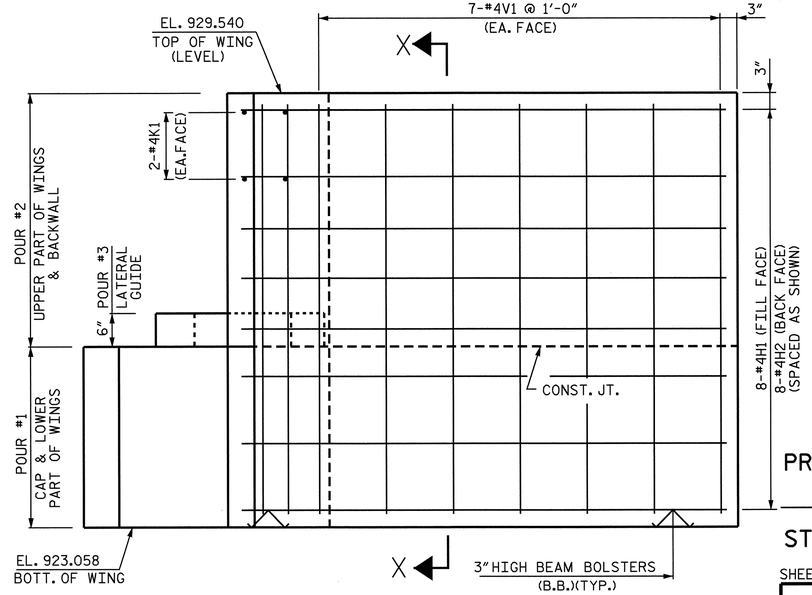
PLAN OF RIGHT WING (W2)



ELEVATION OF LEFT WING (W1)



SECTION X-X



ELEVATION OF RIGHT WING (W2)

PROJECT NO. B-4282

STOKES COUNTY

STATION: 18+20.37-L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT#2

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDRES DAVENPORT, JR.

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			26

DRAWN BY : H.T. BARBOUR DATE : 5-02-06
CHECKED BY : C. R. YARBROUGH DATE : 6-22-06

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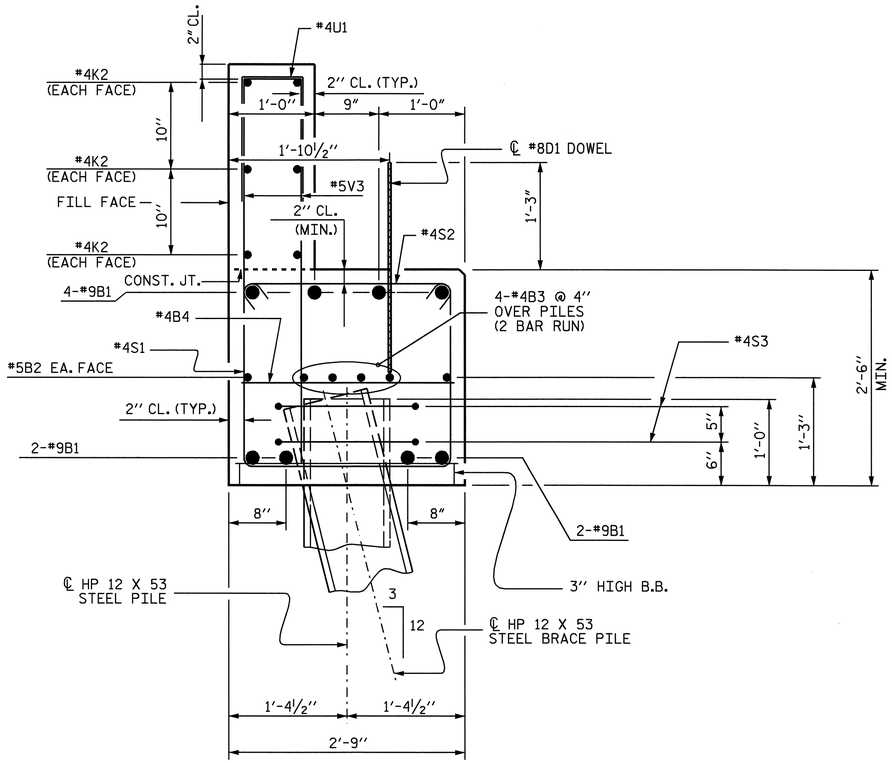
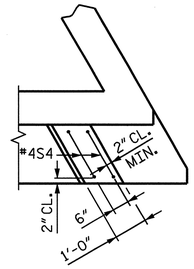
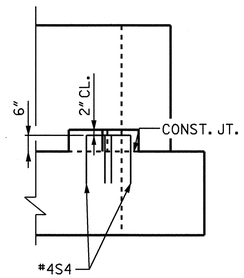


SECTION A-A

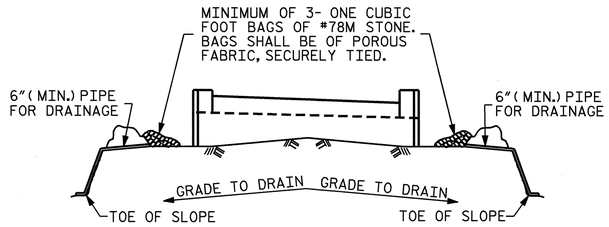


PLAN



ELEVATION

LATERAL GUIDE

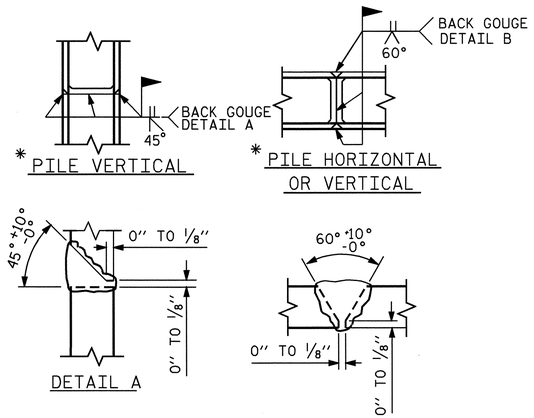


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

TEMPORARY DRAINAGE AT END BENT

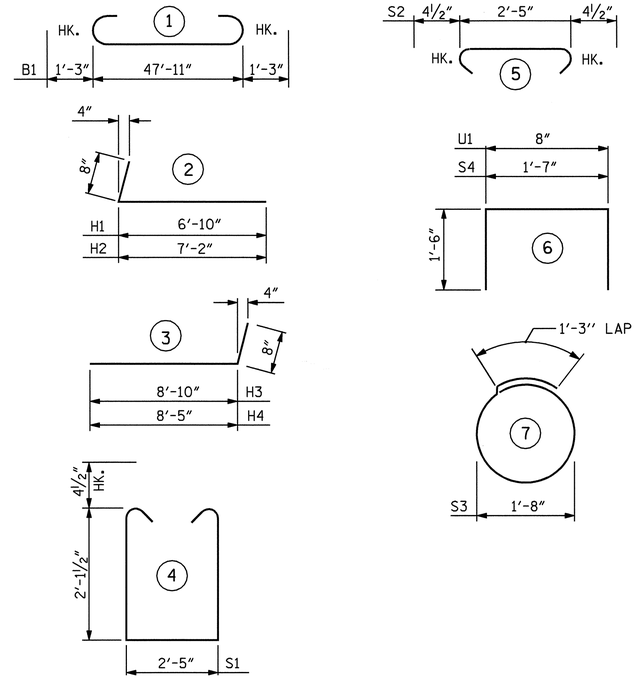


DETAIL B

*POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	50'-5"	1371
B2	2	#5	STR	48'-1"	100
B3	8	#4	STR	25'-4"	135
B4	12	#4	STR	2'-5"	19
D1	24	#8	STR	2'-3"	144
H1	8	#4	2	7'-6"	40
H2	8	#4	2	7'-0"	42
H3	8	#4	3	9'-6"	51
H4	8	#4	3	9'-1"	49
K1	8	#4	STR	3'-9"	20
K2	12	#4	STR	25'-4"	203
S1	42	#4	4	7'-5"	208
S2	42	#4	5	3'-2"	89
S3	18	#4	7	6'-6"	78
S4	4	#4	6	4'-7"	12
U1	38	#4	6	3'-8"	93
V1	24	#4	STR	6'-1"	98
V2	26	#4	STR	6'-0"	104
V3	76	#5	STR	4'-1"	324

REINFORCING STEEL LBS = 3180

CLASS A CONCRETE BREAKDOWN

POUR #1 CAP & LOWER PART OF WINGS
C.Y. 13.9

POUR #2 BACKWALL & UPPER PART OF WINGS
C.Y. 6.2

POUR #3 LATERAL GUIDES
C.Y. 0.1

TOTAL CLASS A CONCRETE
C.Y. 20.2

HP 12 X 53 STEEL PILES
NO. 9 LIN FT. = 428

PROJECT NO. B-4282

STOKES COUNTY

STATION: 18+20.37-L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT #2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			26

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDRE DAVENPORT, JR.
12-19-07

DRAWN BY : H.T. BARBOUR DATE : 5-02-06
CHECKED BY : C. R. YARBROUGH DATE : 6-29-06

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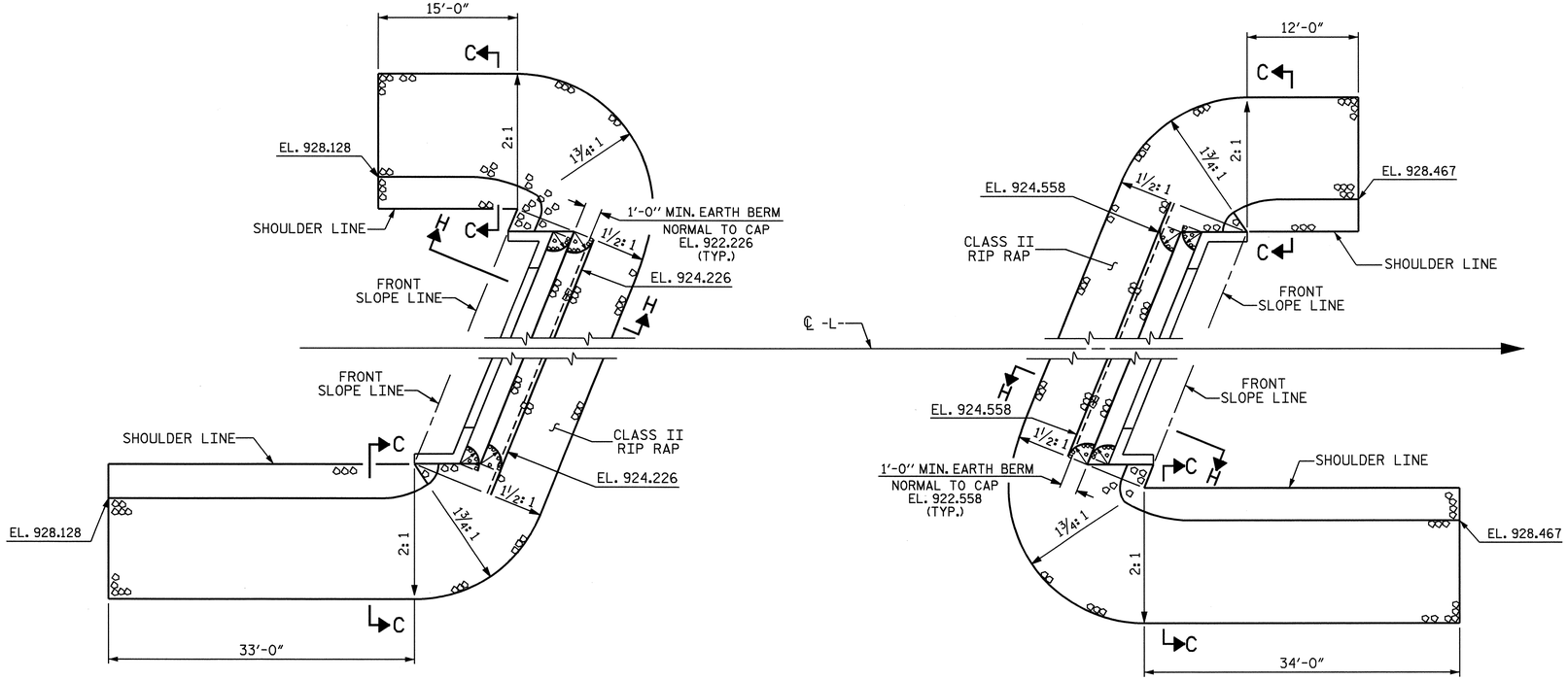
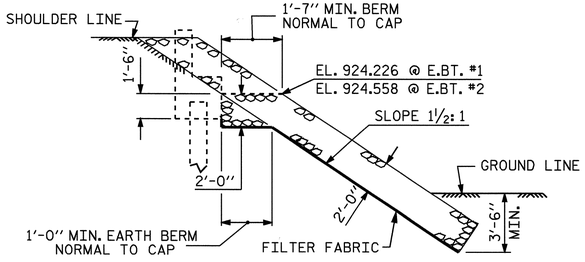


END BENT #1

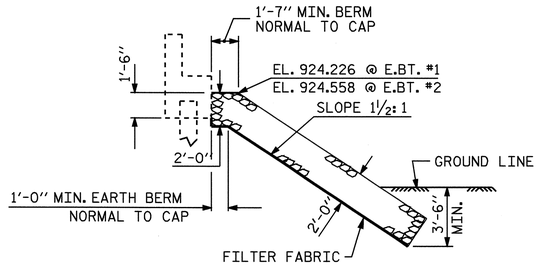
END BENT #2

PLAN

ESTIMATED QUANTITIES		
BRIDGE @ STA. 18+20.37 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	435	485
END BENT 2	515	575
TOTAL	950	1060

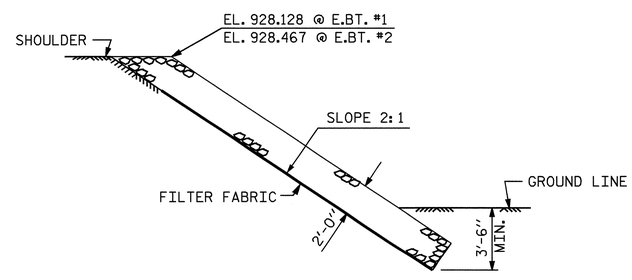


SECTION H-H



℄ SECTION

BERM RIP RAPPED



SECTION C-C

PROJECT NO. B-4282

STOKES COUNTY

STATION: 18+20.37 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDRE DAVENPORT
12-19-07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			26

ASSEMBLED BY : A. SORSENGINH	DATE : 8/21/06	
CHECKED BY : H.T. BARBOUR	DATE : 8/23/06	
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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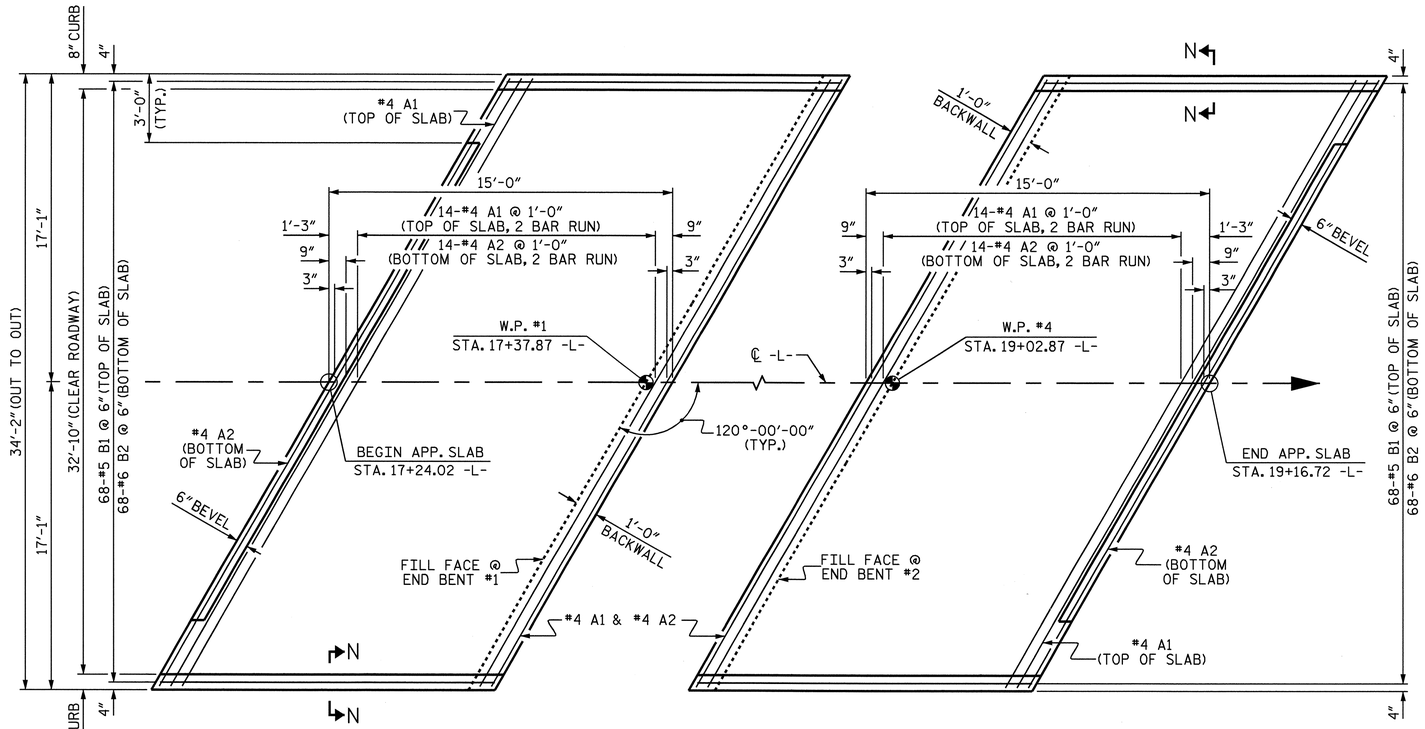
SKEW > 90°

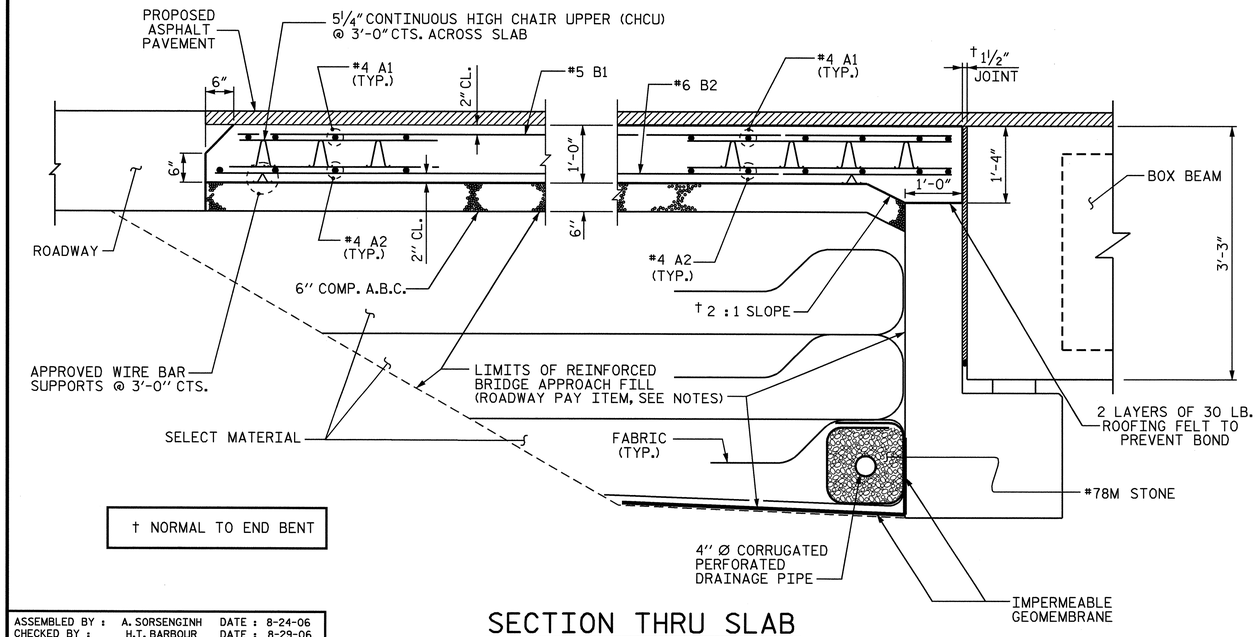
STD. NO. RR3



PLAN @ END BENT #1

PLAN @ END BENT #2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH SLABS



† NORMAL TO END BENT

SECTION THRU SLAB

NOTES

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

FOR REINFORCED BRIDGE APPROACH FILL INCLUDING FABRIC, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78M STONE, AND SELECT MATERIAL, SEE ROADWAY PLANS.

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

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

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

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

THE JOINT AT THE END BENT SHALL BE GROUTED AS SOON AS PRACTICAL AFTER THE CONSTRUCTION OF THE APROACH SLABS.

FOR JOINT DETAILS, SEE "PRESTRESSED CONCRETE BOX BEAM UNIT" SHEETS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

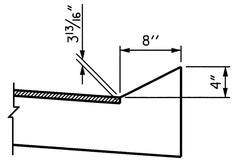
BILL OF MATERIAL

APPROACH SLAB AT END BENT #1

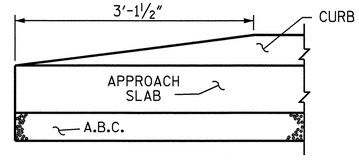
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱A1	32	#4	STR	20'-7"	440
A2	32	#4	STR	20'-5"	436
✱B1	68	#5	STR	14'-1"	999
B2	68	#6	STR	14'-7"	1489
REINFORCING STEEL				LBS.	1925
✱EPOXY COATED REINFORCING STEEL				LBS.	1439
CLASS AA CONCRETE				C.Y.	19.7

APPROACH SLAB AT END BENT #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱A1	32	#4	STR	20'-7"	440
A2	32	#4	STR	20'-5"	436
✱B1	68	#5	STR	14'-1"	999
B2	68	#6	STR	14'-7"	1489
REINFORCING STEEL				LBS.	1925
✱EPOXY COATED REINFORCING STEEL				LBS.	1439
CLASS AA CONCRETE				C.Y.	19.7



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

PROJECT NO. B-4282

STOKES COUNTY

STATION: 18+20.37 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR BOX BEAM WITH FLEXIBLE PAVEMENT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			26

STD. NO. BAS4

NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT

ASSEMBLED BY :	A. SORSENGINH	DATE :	8-24-06
CHECKED BY :	H.T. BARBOUR	DATE :	8-29-06
DRAWN BY : LES 8/01	REV. 5/7/03R		RWW/JTE
CHECKED BY : RDR 8/01	REV. 5/1/06		TLA/GM

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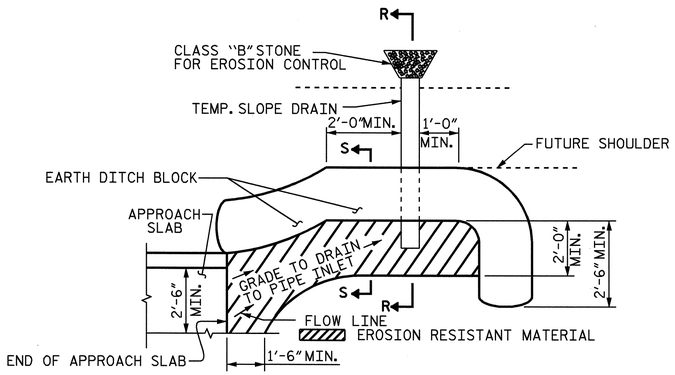
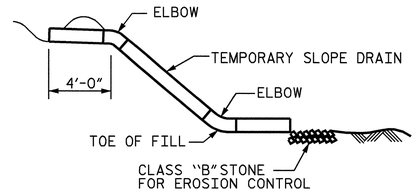
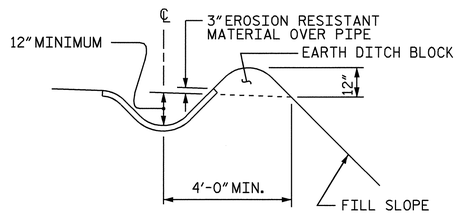


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

PLAN VIEW



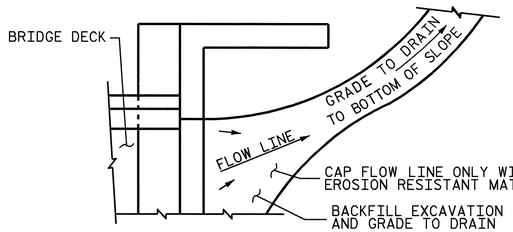
SECTION R-R



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

ASSEMBLED BY :	A. SORSENGINH	DATE :	8-24-06
CHECKED BY :	H.T. BARBOUR	DATE :	8-29-06
DRAWN BY : FCJ	11/88	REV. 10/17/00	RWW/LES
CHECKED BY : ARB	11/88	REV. 5/7/03	RWW/JTE
		REV. 5/1/06	TLA/GM

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NORTH CAROLINA PROFESSIONAL SEAL 10730 ENGINEER D. ANDREW DAVENPORT, JR.
12-19-07

PROJECT NO. B-4282
STOKES COUNTY
STATION: 18+20.37 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB DETAILS

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

STD. NO. BAS10

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2002 STANDARD SPECIFICATIONS "FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED WITH THE EXCEPTION OF #2 BARS WHICH MAY BE FABRICATED FROM COLD DRAWN STEEL WIRE. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

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

STRUCTURAL STEEL:

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

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

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

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

HANDRAILS AND POSTS:

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

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. 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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