

NOTES :

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 21.0m RIGHT OF CENTERLINE SURVEY - L- AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE MEASURED AND PAID FOR AS UNCLASSIFIED STRUCTURE EXCAVATION.

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

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

ALL ELEVATIONS ARE IN METERS.

ASSUMED LIVE LOAD = MS 18 OR ALTERNATE LOADING.

FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS.

FOR CURING BRIDGE DECK SLABS, SEE THE SPECIAL PROVISION, "REINFORCED CONCRETE DECK SLAB @ STA. 80+30.500-L-".

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS : FOR PROJECTS REQUIRING UP TO 360,000kg OF REINFORCING STEEL, ONE 760mm SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 360,000kg OF REINFORCING STEEL, TWO 760mm 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.

REINFORCED CONCRETE DECK SLAB SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 41.3 MPa AND SHALL CONTAIN CLASS F FLY ASH. FOR REINFORCED CONCRETE DECK SLAB @ STA. 80+30.500-L-. SEE SPECIAL PROVISIONS.

THE CONTRACTOR SHALL PROVIDE DEPARTMENT PERSONNEL WITH ACCESS FOR INSTALLING INSTRUMENTATION AND MONITORING EQUIPMENT. FOR ACCESS FOR INSTRUMENTATION, SEE SPECIAL PROVISIONS.

FOR HIGH STRENGTH PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

PRESTRESSING STRANDS FOR ALL GIRDERS SHALL BE 15.24mm Ø L. R. STRANDS.

FOR ADDITIONAL NOTES, SEE SHEET 3 OF 3.

HYDROGRAPHIC DATA

DESIGN DISCHARGE	= 255 m ³ /s
FREQUENCY OF DESIGN FLOOD	= 50 YRS.
DESIGN HIGH WATER ELEVATION	= 58.51
DRAINAGE AREA	= 2160 Sq. Km.
BASIC DISCHARGE (0100)	= 354 m ³ /s
BASIC HIGH WATER ELEVATION	= 59.25

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 570 ± m ³ /s
OVERTOPPING FLOOD ELEVATION	= 61.71

1021

PROJECT No. R-2425 C
WAKE COUNTY
STATION: 80+30.500 -L-



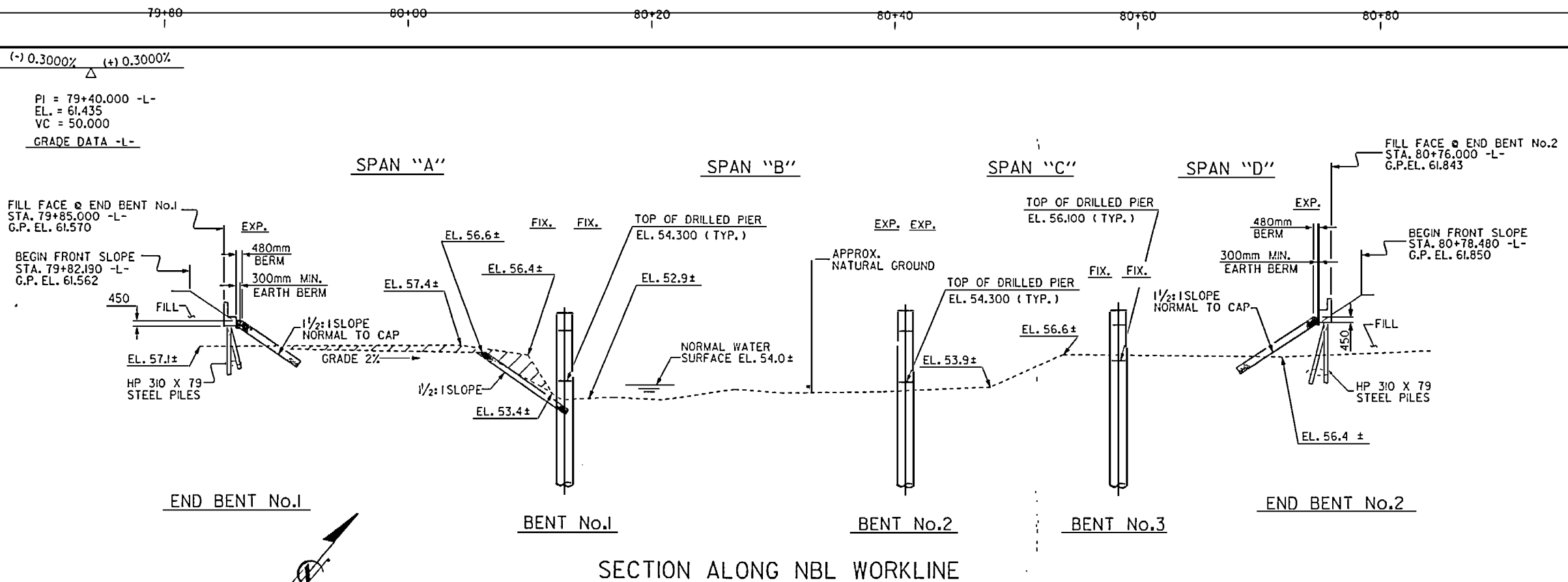
SHEET 10F 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

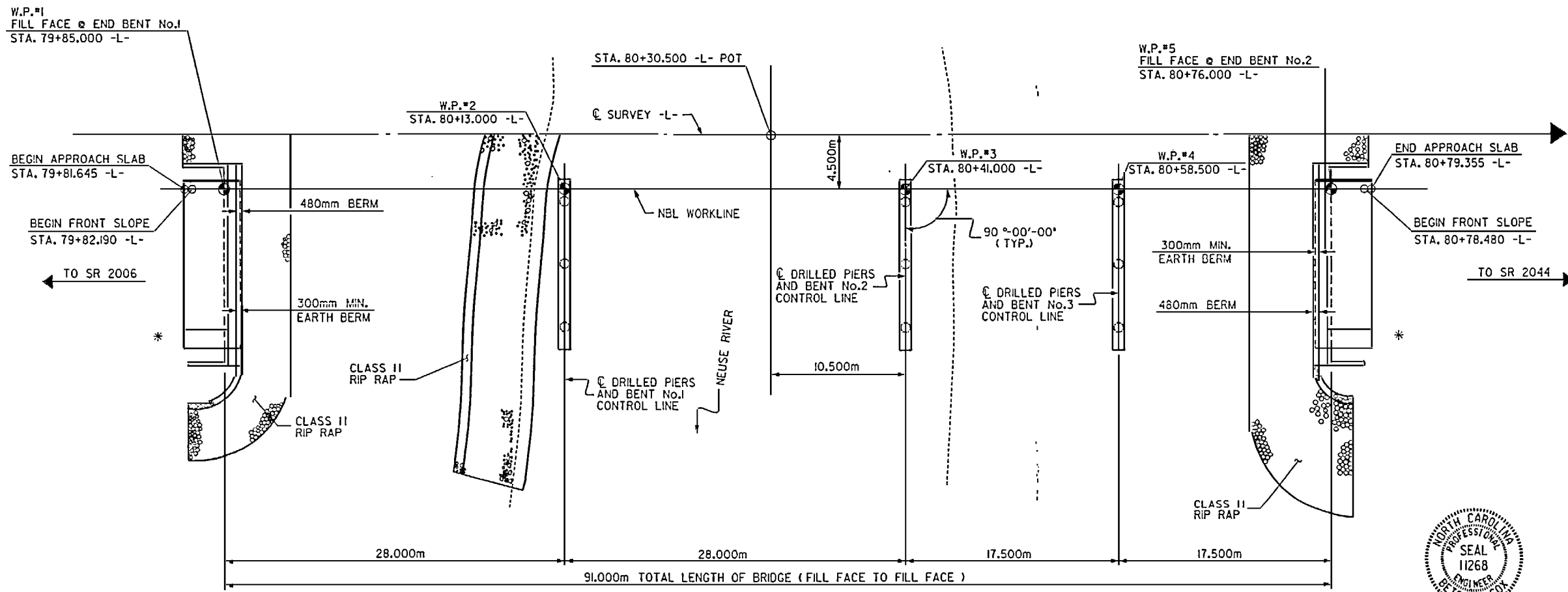
GENERAL DRAWING
(NBL)
BRIDGE OVER NEUSE RIVER ON
US-401 BETWEEN SR 2006 AND
SR 2224

REVISIONS						SHEET No.
No.	BY	DATE	NO.	BY	DATE	5-99
1			1			142
2			2			142

STR. #2



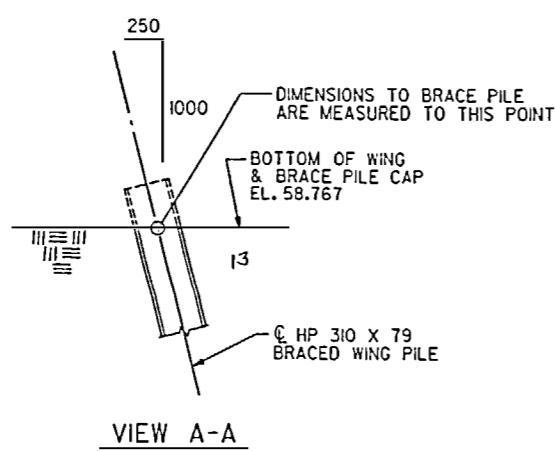
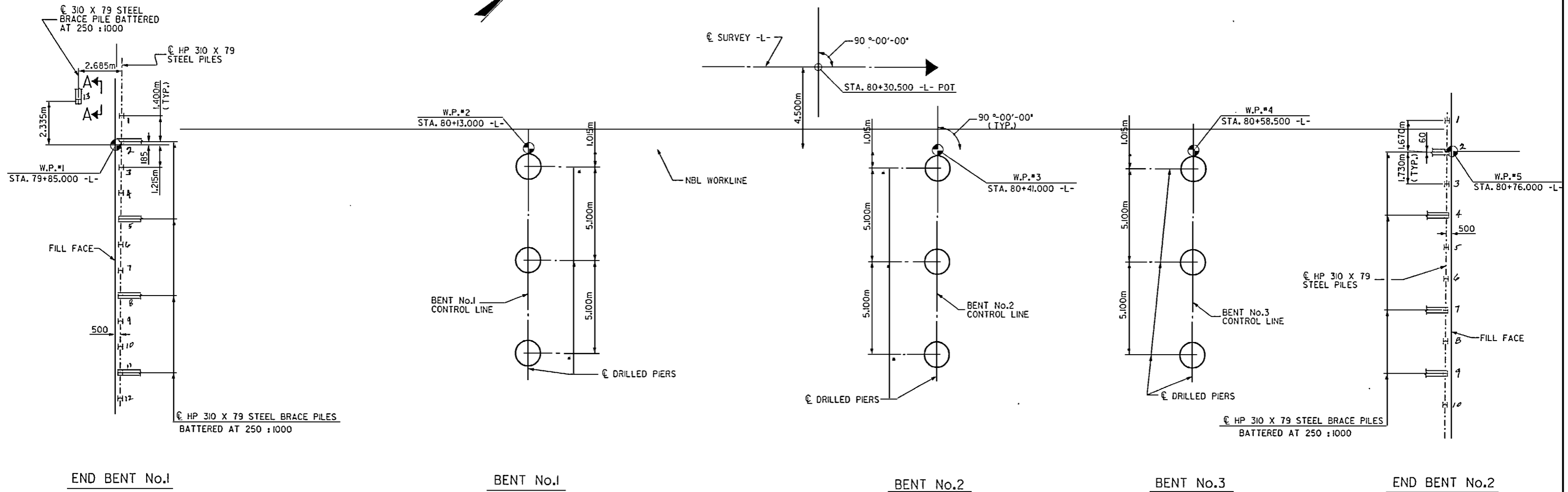
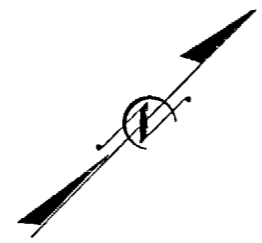
* SPECIAL DRAINAGE REQ'D
(ROADWAY DETAIL AND PAY ITEM)



DRAWN BY : L.A. HUSSEY DATE : 7-8-96
CHECKED BY : J.M. BENT DATE : 6-17-98

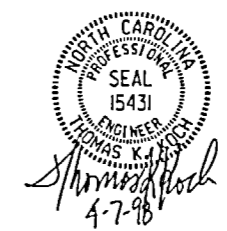
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(PILES NOT SHOWN IN PLAN VIEW)



FOUNDATION LAYOUT
 (DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE)

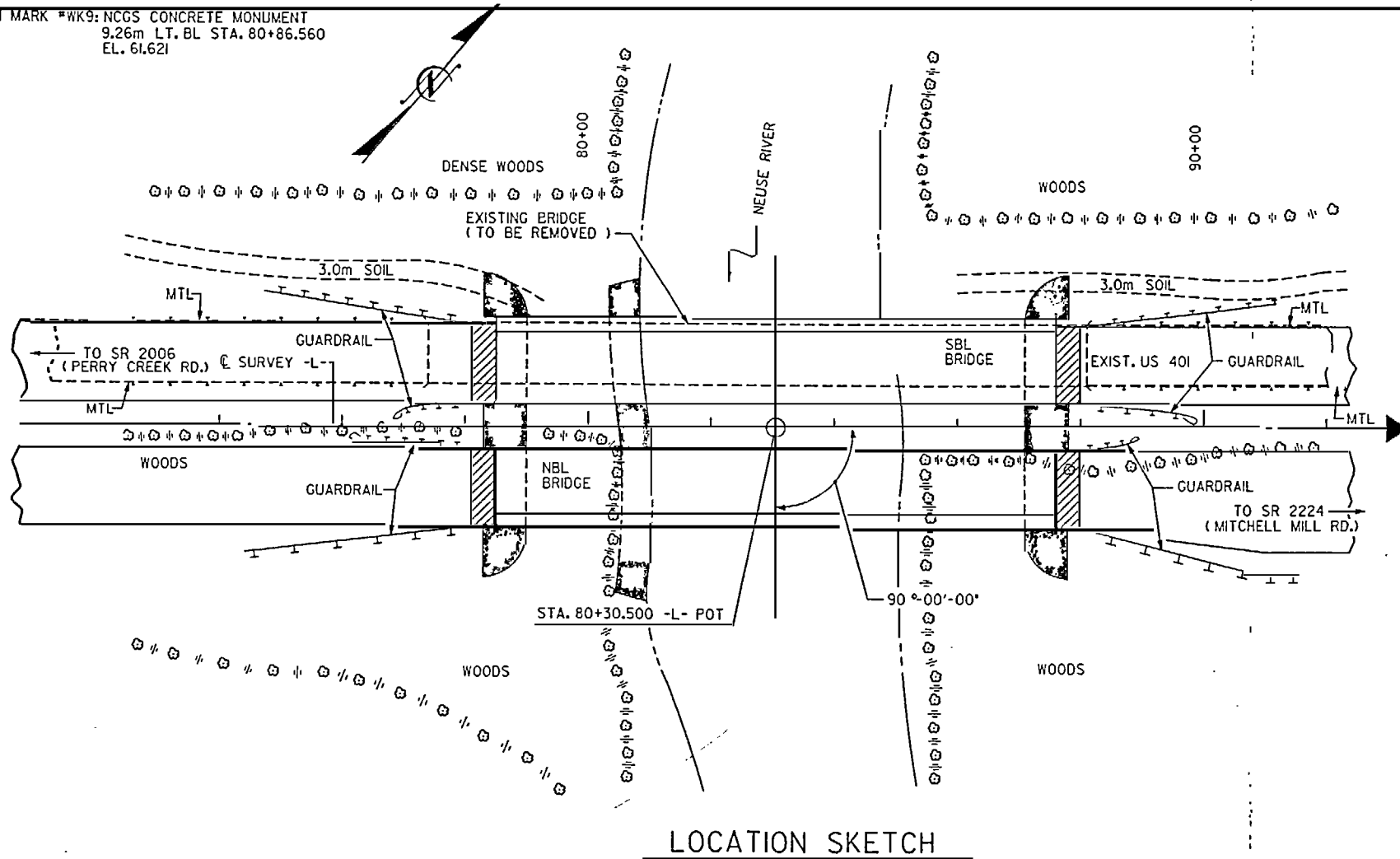
PROJECT NO. R-2425 C
WAKE COUNTY
 STATION: 80+30.500 -L-
 SHEET 2 OF 3



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
GENERAL DRAWING (NBL)					
BRIDGE OVER NEUSE RIVER ON US-401 BETWEEN SR 2006 AND SR 2224					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		
					SHEET NO. 5-100
					TOTAL SHEETS 142

DRAWN BY : L.A. HUSSEY DATE : 6/10/97
 CHECKED BY : J.M. BRYANT DATE : 10-31-97

BENCH MARK #WK9: NCGS CONCRETE MONUMENT
 9.26m LT. BL STA. 80+86.560
 EL. 61.621



LOCATION SKETCH

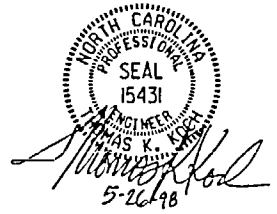
NOTE:
 FOR UTILITY INFORMATION, SEE UTILITY
 PLANS AND SPECIAL PROVISIONS.

NOTES: (CONTINUED FROM SHEET 10F 3)

- FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.
- THE REQUIRED TIP BEARING PRESSURE FOR ALL INTERIOR BENTS IS 1850 kPa.
- THE MINIMUM TIP ELEVATIONS FOR THE INTERIOR BENTS ARE:
 BENT No.1 - 44.500m
 BENT No.2 - 44.000m
 BENT No.3 - 43.000m.
- THE SCOUR CRITICAL ELEVATION FOR ALL INTERIOR BENTS IS 49.000m. THIS ELEVATION IS FOR USE BY MAINTENANCE FORCES TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
- THERE SHALL BE A TWO MONTH WAITING PERIOD BEFORE CONSTRUCTION OF APPROACH SLABS AFTER COMPLETION OF APPROACH EMBANKMENTS.
- 1370mm Ø PERMANENT STEEL CASINGS ARE REQUIRED FOR DRILLED PIERS AT BENTS No.1 & No.2. THE 1370mm Ø PERMANENT CASINGS SHOULD NOT EXTEND BELOW ELEVATIONS 51.0m AND 50.8m RESPECTIVELY.
- PERMANENT STEEL CASINGS ARE NOT REQUIRED FOR DRILLED PIERS AT BENT No.3. FOR PERMANENT STEEL CASINGS, SEE SPECIAL PROVISION FOR 'DRILLED PIERS'.
- PILES FOR END BENTS SHALL BE DRIVEN TO MINIMUM BEARING CAPACITY OF 450 kN EACH.
- FOR PILE DRIVING ACCURACY, SEE SPECIAL PROVISIONS.
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, 'EVALUATING SCOUR AT BRIDGES,' APRIL, 1993.
- FOR EROSION CONTROL REQUIREMENTS FOR THIS STRUCTURE, SEE EROSION CONTROL PLANS.
- FOR PILE INTEGRITY TEST (P.I.T.), SEE SPECIAL PROVISIONS.
- FOR METRIC REINFORCING STEEL FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR METRIC STRUCTURAL STEEL, SEE SPECIAL PROVISIONS.
- FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS.
- FOR FABRICATED METAL STAY-IN-PLACE FORMS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMS OVER OR ADJACENT TO TRAFFIC, SEE SPECIAL PROVISIONS.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET S-NM.
- THE EXISTING STRUCTURE LOCATED AT THE SITE OF THE PROPOSED SOUTH BOUND LANE BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. DURING CONSTRUCTION OF THE NORTH BOUND LANE BRIDGE, SHOULD THE STRUCTURAL INTEGRITY OF THE EXISTING STRUCTURE DETERIORATE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

TOTAL BILL OF MATERIAL

	1370mm Ø DRILLED PIERS NOT IN ROCK	1370mm Ø DRILLED PIERS IN ROCK	1370mm Ø PERMANENT STEEL CASING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB @ STA. 80+30.500 -L-	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS AT STA. 80+30.500 -L-	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	1143mm PRESTRESSED CONCRETE GIRDERS (HIGH STRENGTH)	1372mm PRESTRESSED CONCRETE GIRDERS (HIGH STRENGTH)	HP 310 X 79 STEEL PILES	THREE BAR METAL RAIL	CONCRETE BARRIER RAIL	PLAIN RIP RAP CLASS II (600mm THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	EVAZOTE JOINT SEALS	ELECTRICAL CONDUIT SYSTEM	TEMPORARY ROCK CAUSEWAY			
	METERS	METERS	METERS	CU METERS	SO. METERS	SO. METERS	CU METERS	LUMP SUM	kg	kg	No. METERS	No. METERS	No. METERS	METERS	METERS	METERS	SO. METERS	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM			
SUPERSTRUCTURE					1298.6	998.4		LUMP SUM			12	174.750	12	279.850		88.054	90.364		LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM		
END BENT No.1				378					2605				13	105.5			170	170		LUMP SUM	LUMP SUM	LUMP SUM		
BENT No.1	26.0	3.4	9.9						7587	1961						225	225							
BENT No.2	27.6	3.3	10.5						8229	2034														
BENT No.3	36.0	3.3							8021	2253														
END BENT No.2									2406				10	122.5		230	230							
TOTAL	89.6	10.0	20.4	378	1298.6	998.4	159.3	LUMP SUM	26848	6248	12	174.750	12	279.850	23	228.0	88.054	90.364	625	625	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM

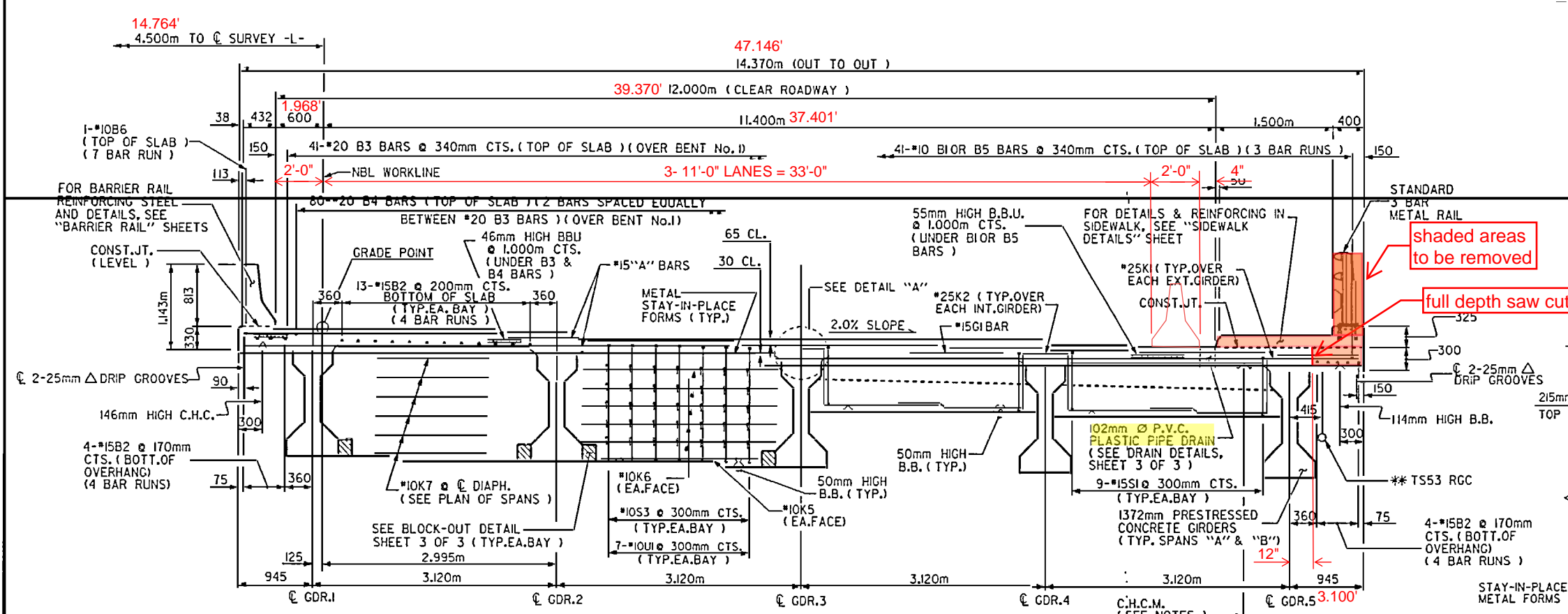


PROJECT No. R-2425 C
WAKE COUNTY
 STATION: 80+30.500 -L-
 SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 (NBL)
 BRIDGE OVER NEUSE RIVER
 ON US-401 BETWEEN
 SR 2006 AND SR 2224

DRAWN BY: I.A. HUSSEY DATE: 6/1/96
 CHECKED BY: F.M. BRIT DATE: 5-26-98

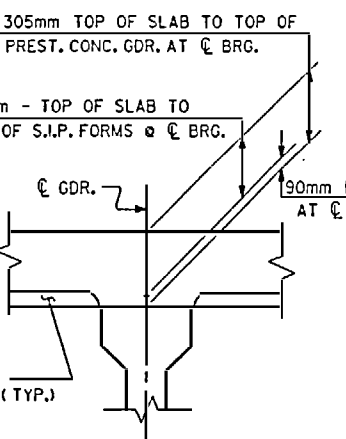
REVISIONS					SHEET No.
No.	By	DATE	No.	DATE	S-101
1			3		TOTAL
2			4		142



HALF TYPICAL SECTION
SHOWING BENT DIAPHRAGM @ BENT No.1
SPANS "A" & "B"

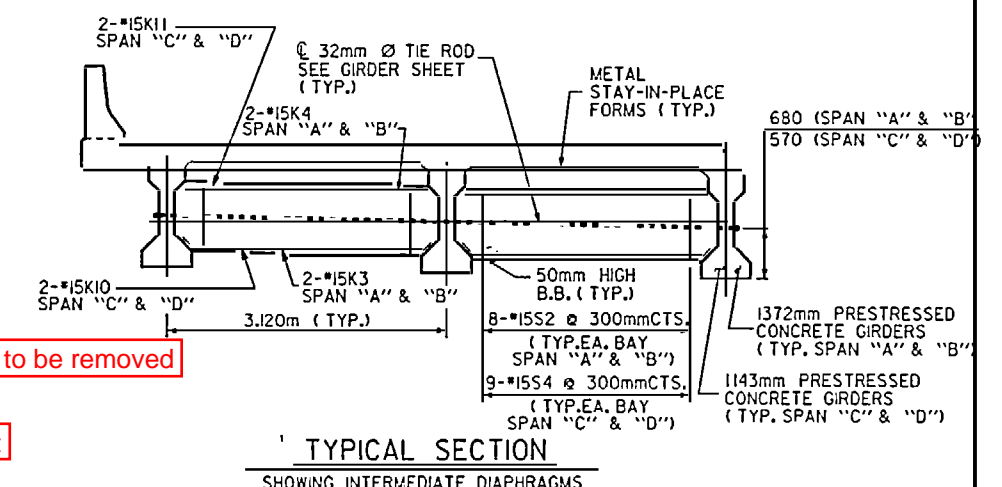
HALF TYPICAL SECTION
SHOWING END BENT DIAPHRAGM @ END BENT No.1
AND BENT DIAPHRAGM @ BENT No.2 (SPAN "B" SIDE)

EXISTING BRIDGE STR DEPTH
305mm (slab+bld-up)
1372mm (gdr)
49mm brg (Unit 1) or 43mm brg (Unit 2)
32 sole plate
Total = 1758mm or 1752mm
5'-9 1/4" Unit 1 or 5'-0" Unit 2



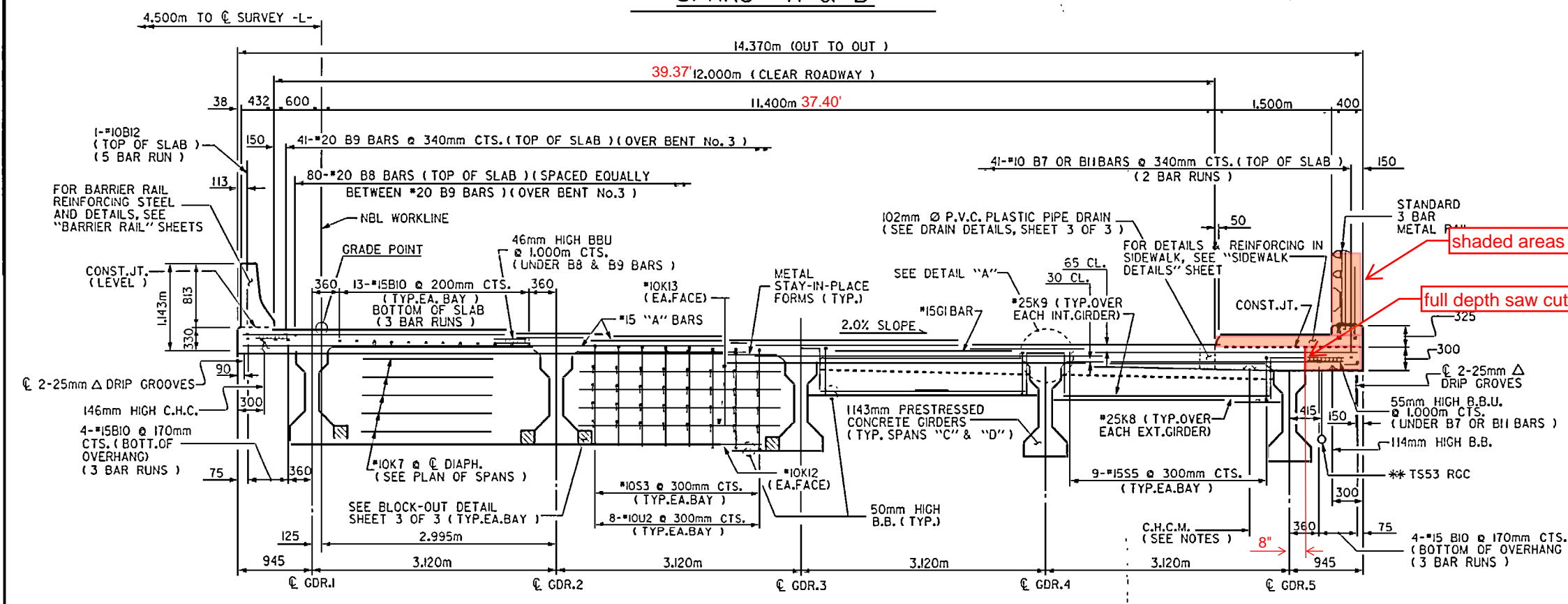
DETAIL "A"

NOTES
REINFORCED CONCRETE DECK SLAB SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 41.3 MPa AND SHALL CONTAIN CLASS F FLY ASH. FOR REINFORCED CONCRETE DECK SLAB @ STA. 80+30.500-L-, SEE SPECIAL PROVISIONS.
THE CONTRACTOR SHALL PROVIDE DEPARTMENT PERSONNEL WITH ACCESS FOR INSTALLING INSTRUMENTATION AND MONITORING EQUIPMENT. FOR ACCESS FOR INSTRUMENTATION, SEE SPECIAL PROVISIONS.
PROVIDE CONTINUOUS HIGH CHAIR FOR METAL DECK (C.H.C.) @ 1.200m CENTERS WITH LEG SPACING TO MATCH THE PITCH OF THE FORM AND WITH A HEIGHT TO SUPPORT THE BOTTOM LAYER OF SLAB REINFORCEMENT A CLEAR DISTANCE OF 30mm ABOVE THE TOP OF THE STAY-IN-PLACE FORM.
FOR FABRICATED METAL STAY-IN-PLACE FORMS, SEE SPECIAL PROVISIONS.
LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY AS NECESSARY TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.
FOR REMOVAL OF FALSEWORK ON BENT DIAPHRAGMS, SEE SPECIAL PROVISION FOR METAL STAY-IN-PLACE FORMS.
PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 28 MPa BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.
BARRIER RAIL AND SIDEWALK IN EACH CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 28 MPa.
THE JOINT IN THE DECK SHALL BE SAVED PRIOR TO THE CASTING OF THE BARRIER RAIL AND SIDEWALK.
TEMPORARY STRUTS SHALL BE PLACED BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE DIAPHRAGMS AND THE NUTS ON THE 32mm DIAMETER TIE RODS SHALL BE FULLY TIGHTENED BEFORE DIAPHRAGMS ARE CAST. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED. THE TIE RODS SHALL BE RETIGHTENED AFTER THE STRUTS HAVE BEEN REMOVED.
CONCRETE IN INTERMEDIATE DIAPHRAGMS MAY BE CLASS A. PAYMENT SHALL BE MADE UNDER THE UNIT CONTRACT PRICE FOR REINFORCED CONCRETE DECK SLAB.
#15GI BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR REINFORCING STEEL AND STIRRUPS.
ALL REINFORCING STEEL IN BARRIER RAIL AND SIDEWALK SHALL BE EPOXY COATED.
FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.
THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL AT BENT No.2 SHALL BE 87mm.
THE CONTRACTOR MAY, AT HIS OPTION, USE A COMPRESSION JOINT SEAL IN LIEU OF THE EVAZOTE JOINT SEAL. SEE SPECIAL PROVISION FOR OPTIONAL PREFORMED COMPRESSION JOINT SEALS.



TYPICAL SECTION
SHOWING INTERMEDIATE DIAPHRAGMS

** NOTE :
FOR ELECTRICAL CONDUIT SYSTEM,
SEE SPECIAL PROVISIONS AND
"ELECTRICAL CONDUIT SYSTEM" SHEETS.



HALF TYPICAL SECTION
SHOWING BENT DIAPHRAGM @ BENT No.3
SPANS "C" & "D"

HALF TYPICAL SECTION
SHOWING END BENT DIAPHRAGM @ END BENT No.2
AND BENT DIAPHRAGM @ BENT No.2 (SPAN "C" SIDE)

DRAWN BY : L.A. HUSSEY DATE : 11/8/96
CHECKED BY : T.M. PRITT DATE : 5-18-98

STATE OF NORTH CAROLINA
PROFESSIONAL SEAL
15431
5-15-98

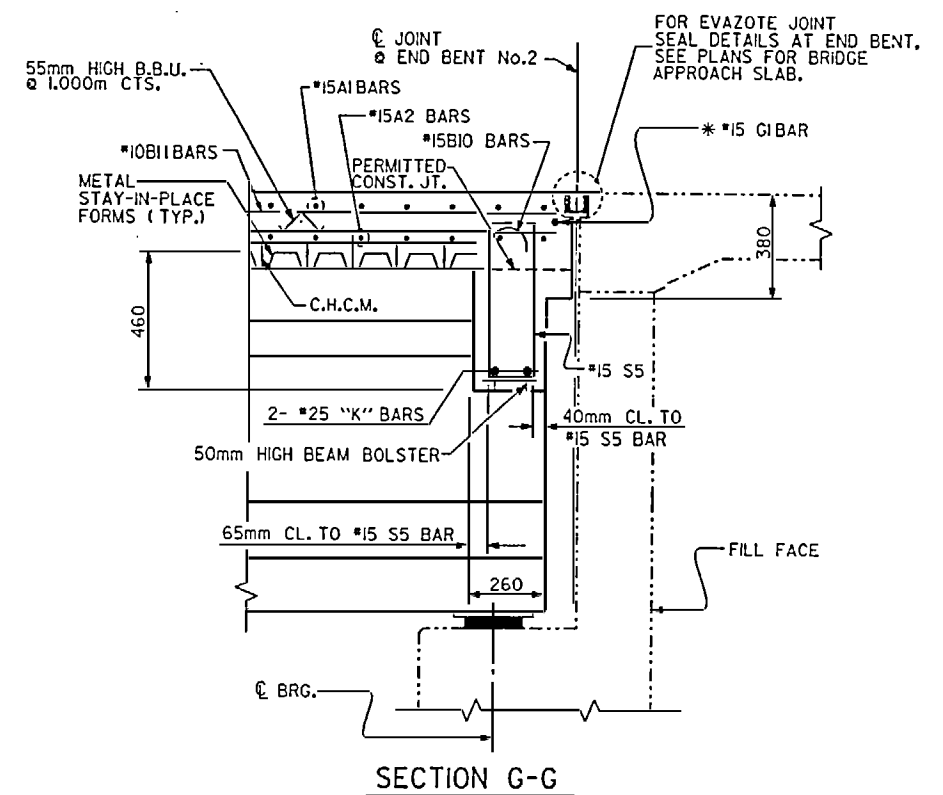
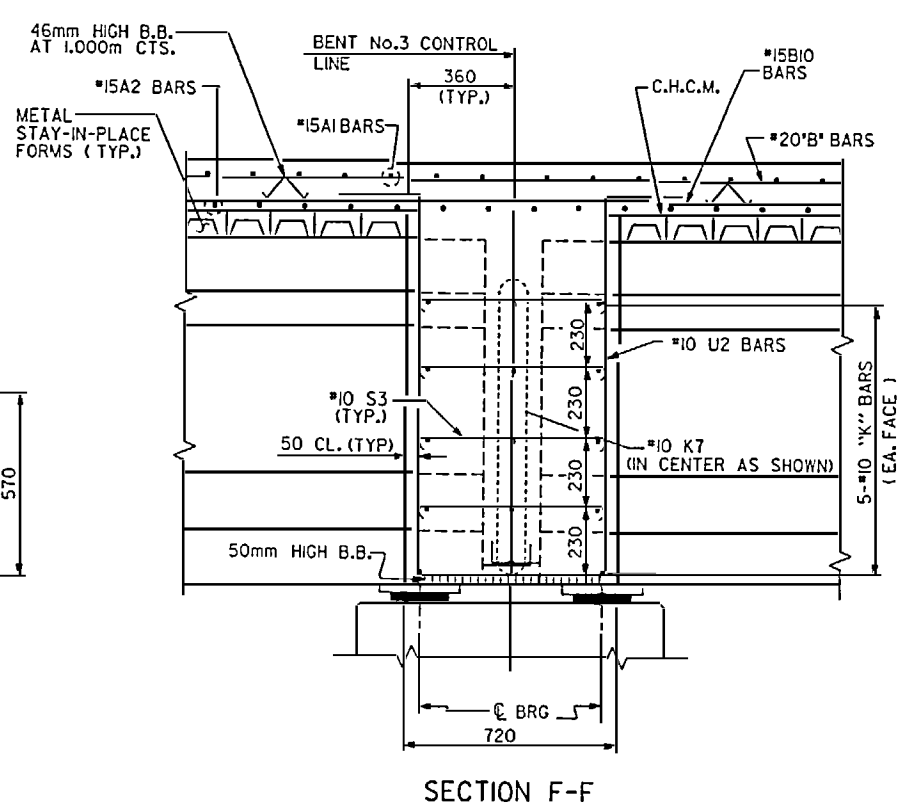
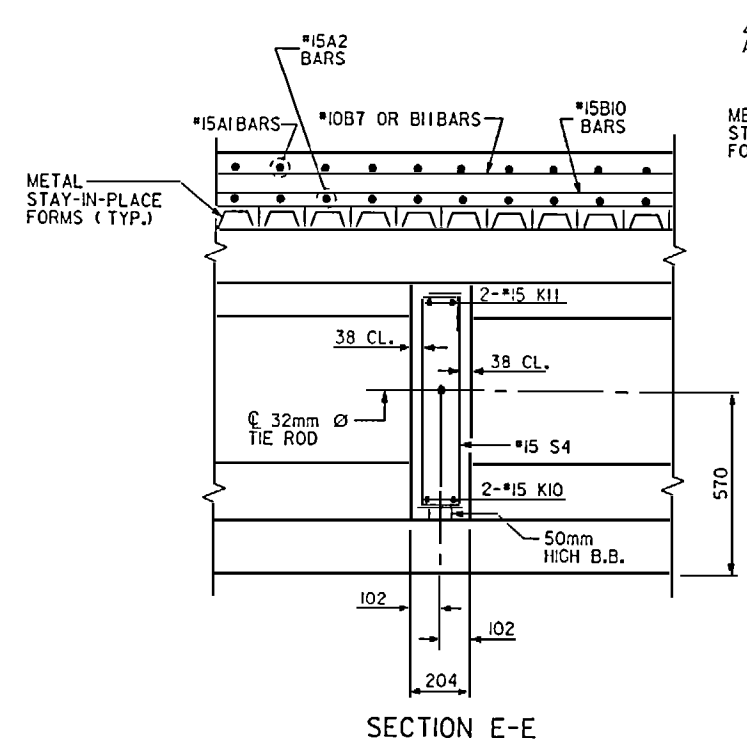
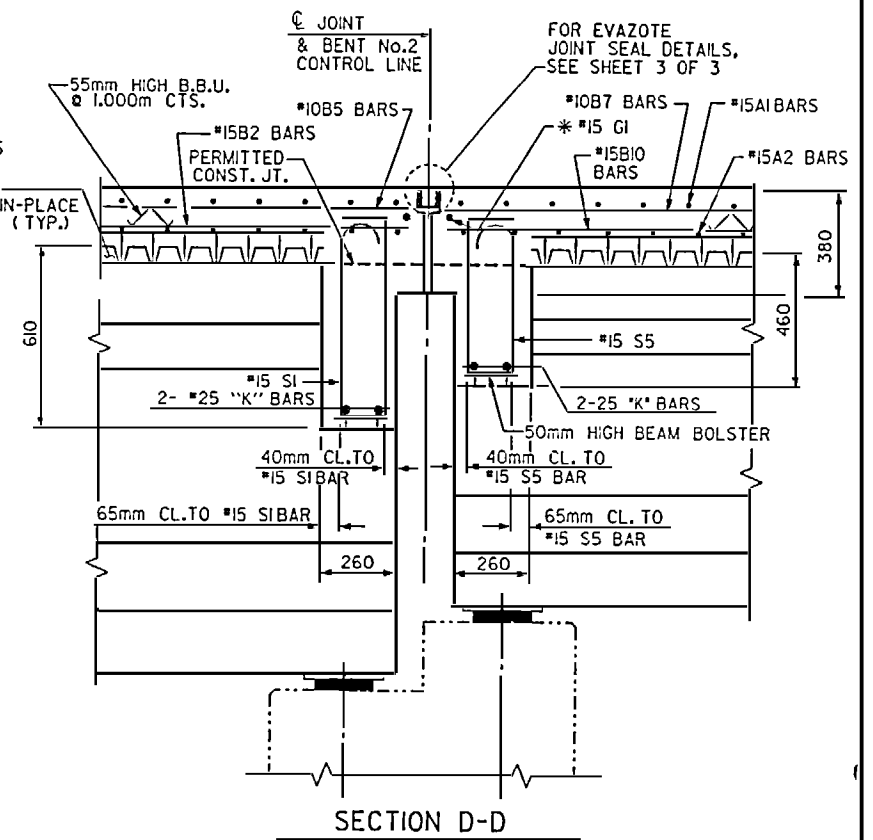
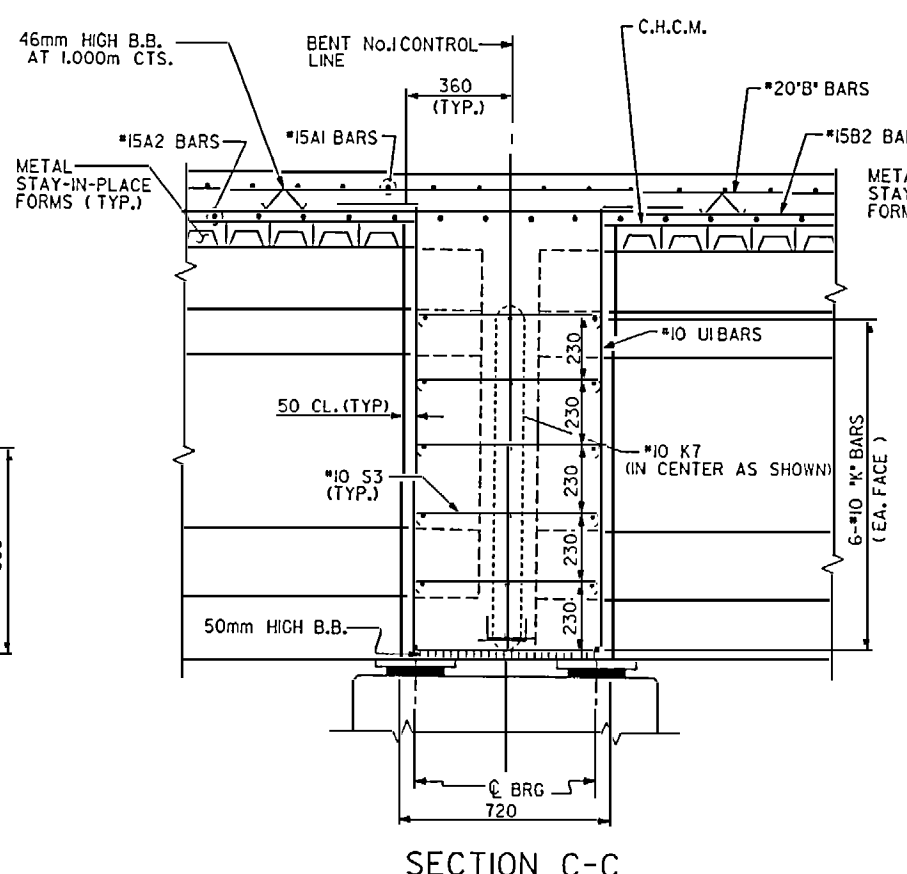
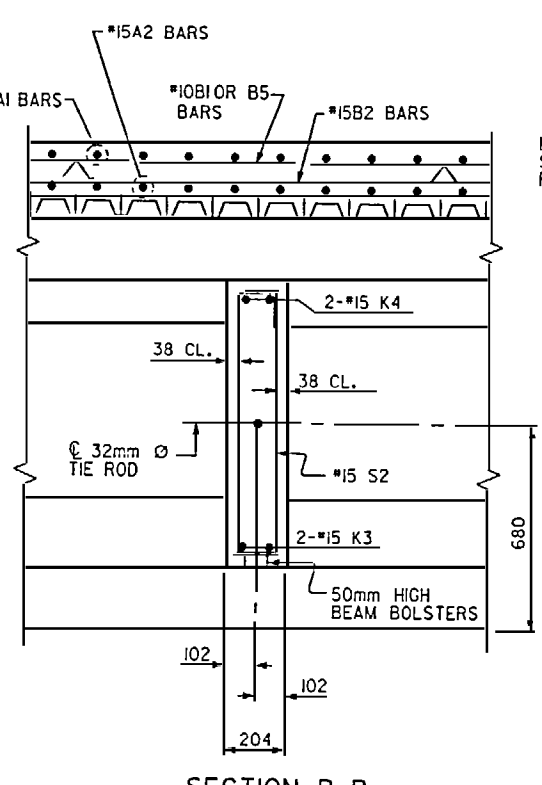
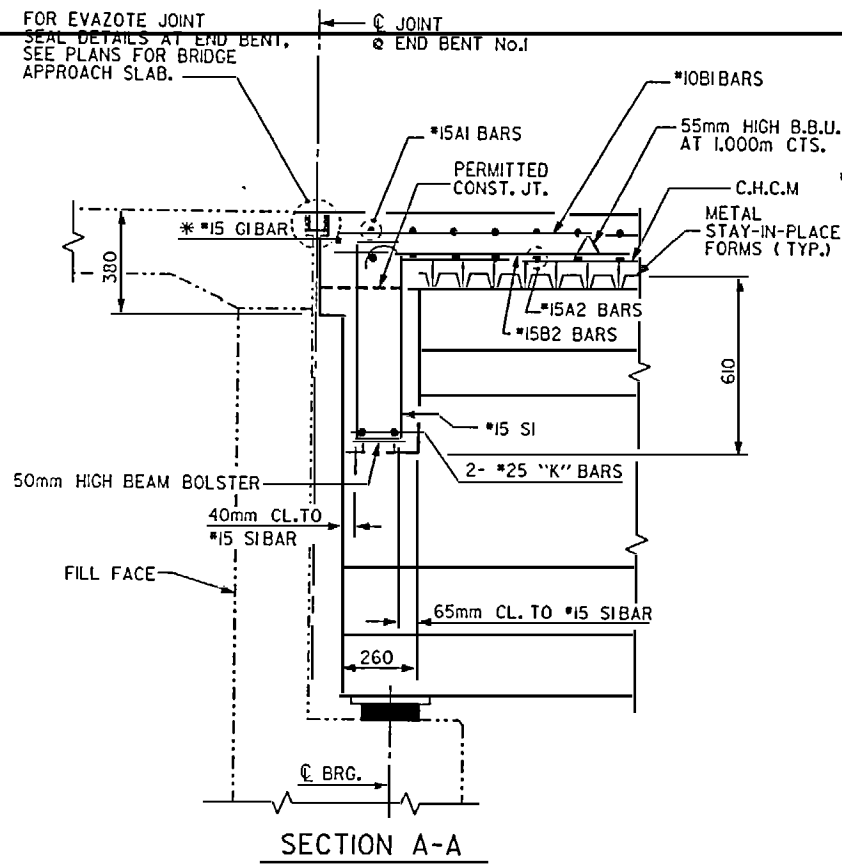
PROJECT NO. R-2425 C
WAKE COUNTY
STATION: 80+30.500 -L-
SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

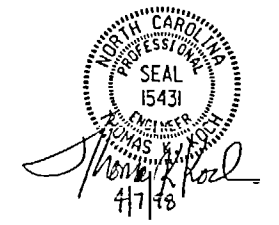
SUPERSTRUCTURE
TYPICAL SECTION
(NBL)

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

SHEET NO. S-102
TOTAL SHEETS 142



NOTES:
 FOR LOCATION OF SECTIONS, SEE "PLAN OF SPAN" SHEETS.
 * #15GIBAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY TO CLEAR REINFORCING STEEL AND STIRRUPS.



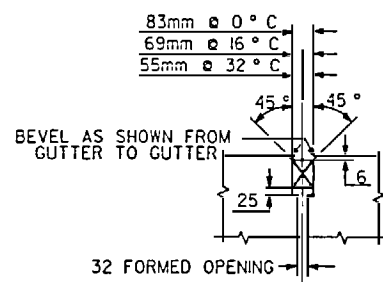
PROJECT NO. R-2425 C
 WAKE COUNTY
 STATION: 80+30.500 -L-
 SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION
 (NBL)

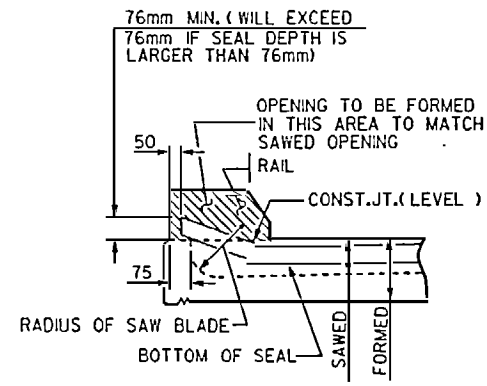
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NO.	BY	DATE	NO.	DATE	
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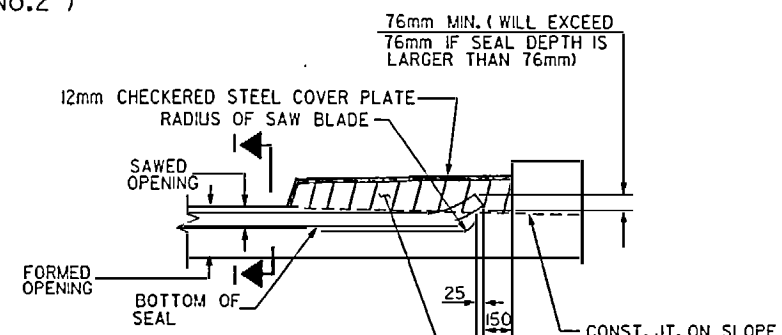
SECTION I-I
OPTIONAL PREFORMED COMPRESSION JOINT SEAL



SECTION H-H

EVAZOTE JOINT SEAL DETAILS FOR BARRIER RAIL

(AT BENT No.2)

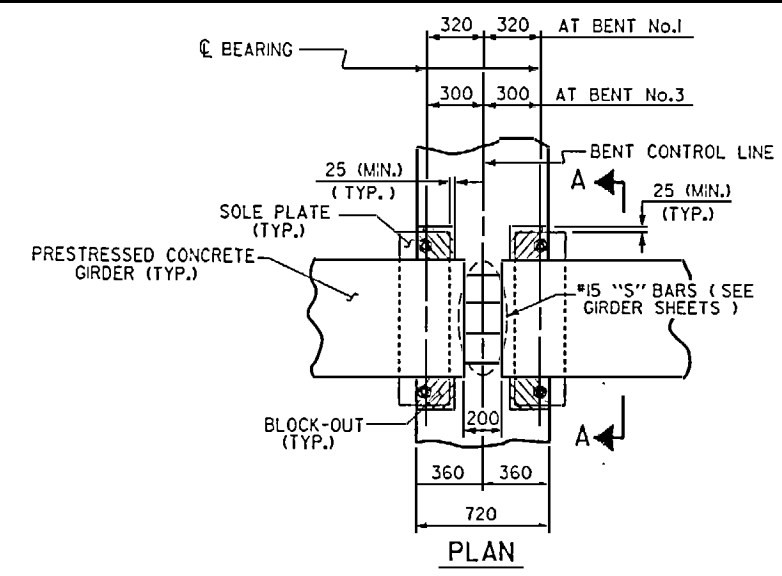


SECTION J-J

NOTE : 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.

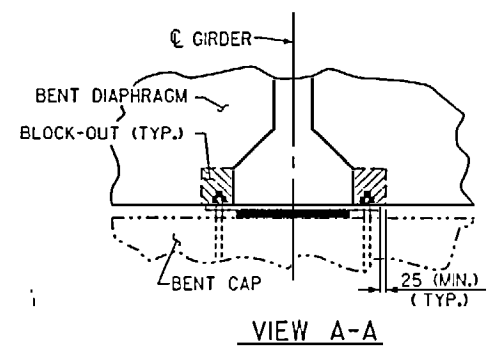
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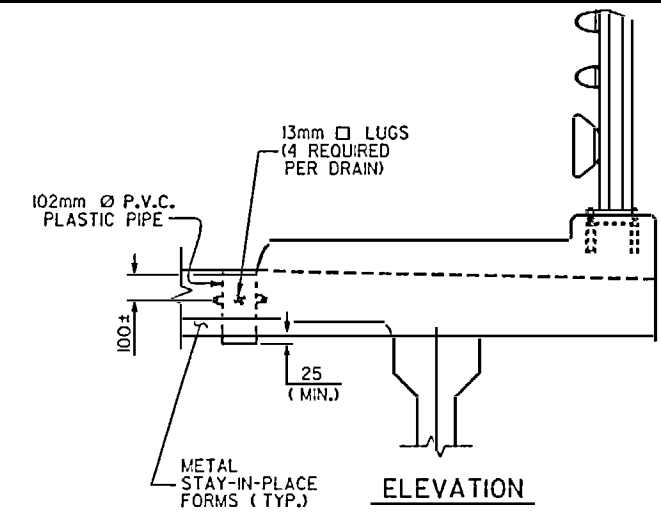


BENT DIAPHRAGM BLOCK-OUT DETAIL

(AT BENT No.1 & No.3)



VIEW A-A

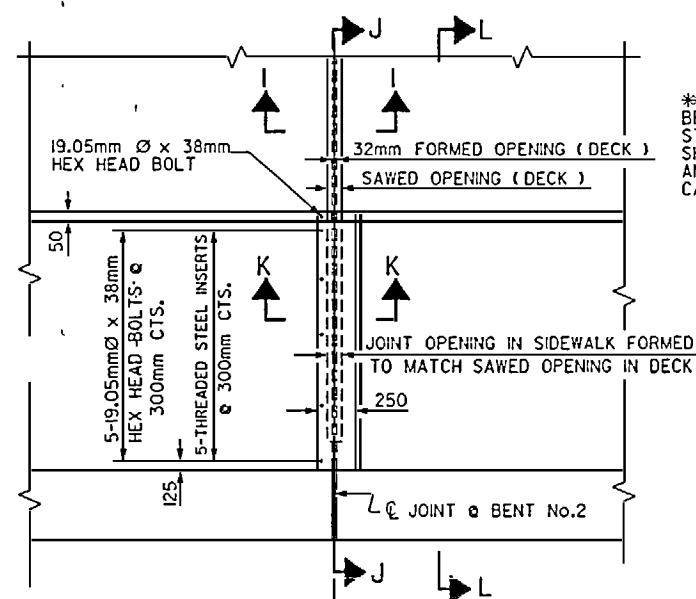


ELEVATION

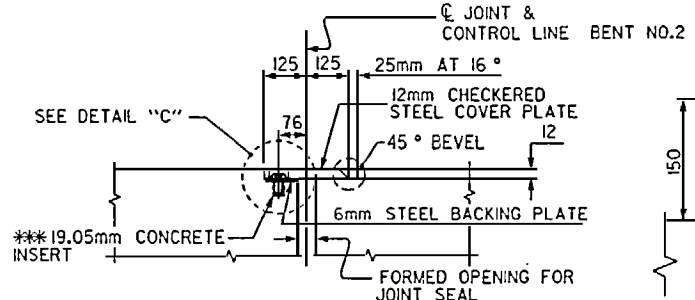
TOP OF FLOOR DRAINS TO SET 10mm BELOW SURFACE OF SLAB.
4 - 13mm LUGS TO BE GLUED TO THE P.V.C. PLASTIC PIPE AT EQUAL SPACES AROUND THE PIPE DRAIN.

DRAIN DETAIL

(30 DRAINS REQ'D)



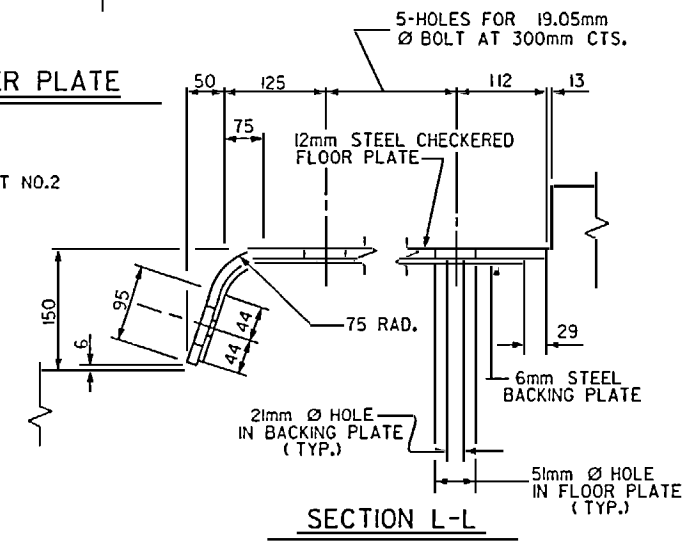
PLAN OF EVAZOTE JOINT SEAL WITH COVER PLATE



SECTION K-K

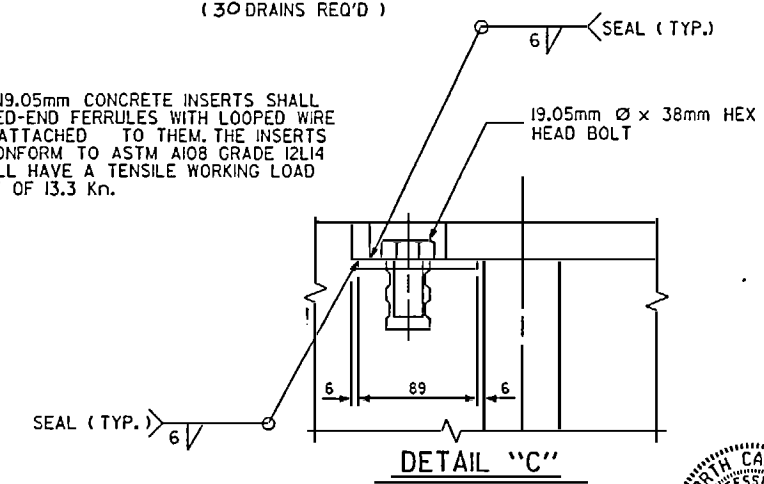
EVAZOTE JOINT SEAL DETAILS FOR SIDEWALK

(AT BENT No.2)

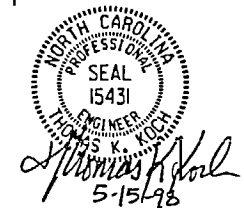


SECTION L-L

*** THE 19.05mm CONCRETE INSERTS SHALL BE CLOSED-END FERRULES WITH LOOPED WIRE STRUTS ATTACHED TO THEM. THE INSERTS SHALL CONFORM TO ASTM A108 GRADE 12L14 AND SHALL HAVE A TENSILE WORKING LOAD CAPACITY OF 13.3 Kn.



DETAIL "C"



PROJECT NO. R-2425 C
WAKE COUNTY
STATION: 80+30.500 -L-
SHEET 3 OF 3

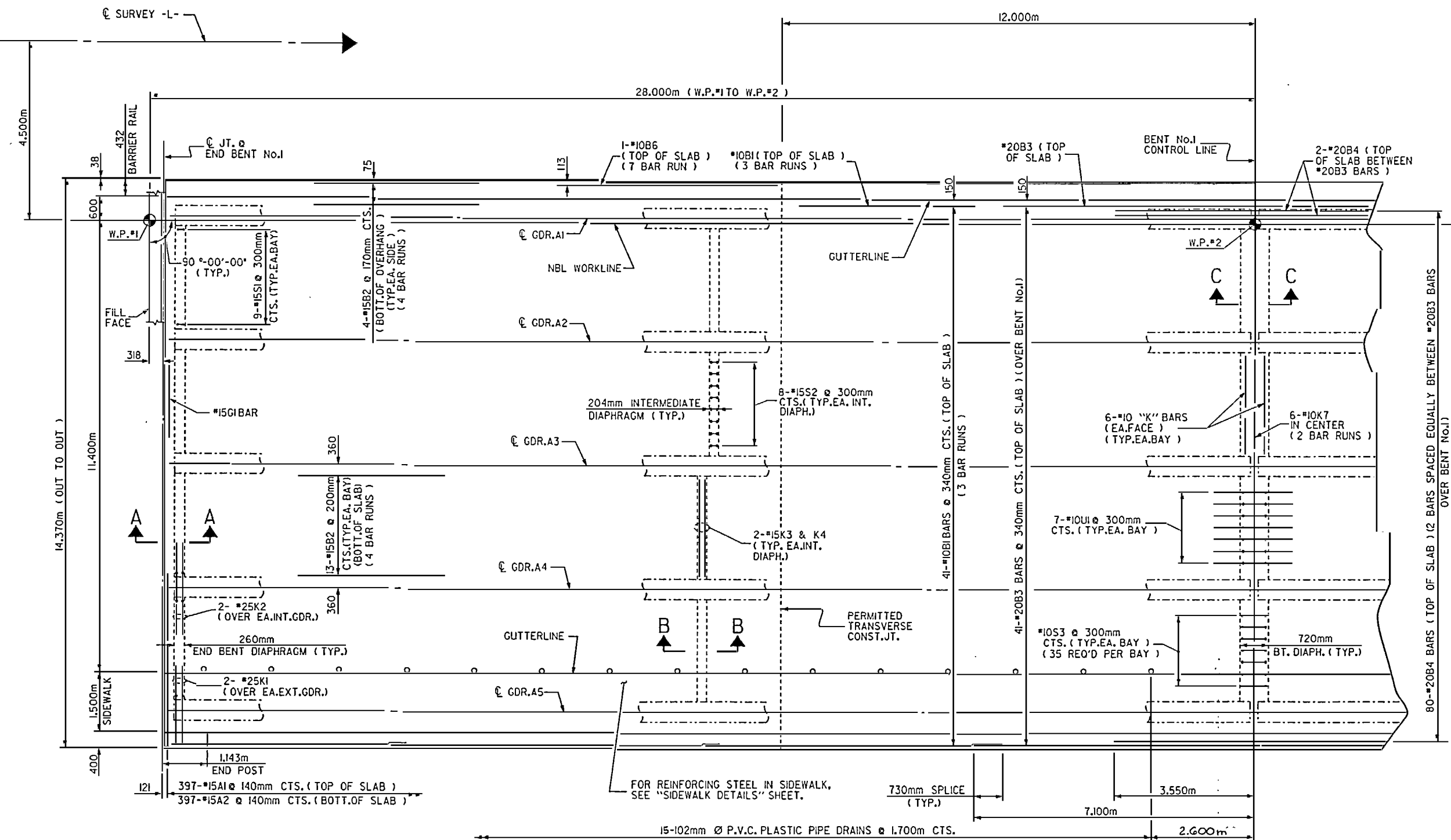
REVISIONS						SHEET NO. S-104
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 142
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NOTES

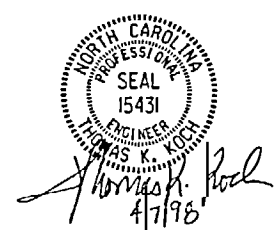
FOR REINFORCING STEEL IN BARRIER RAIL, SEE "CONCRETE BARRIER RAIL" SHEET.

FOR SECTIONS, SEE "TYPICAL SECTIONS", SHEET 2 OF 3.

FOR END POST DETAILS AND REINFORCING STEEL, SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS", SHEET 1 OF 2.



PLAN OF SPAN "A"



PROJECT NO. R-2425 C
 WAKE COUNTY
 STATION: 80+30.500 -L-

SHEET 1 OF 4
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN "A"
 (NBL)

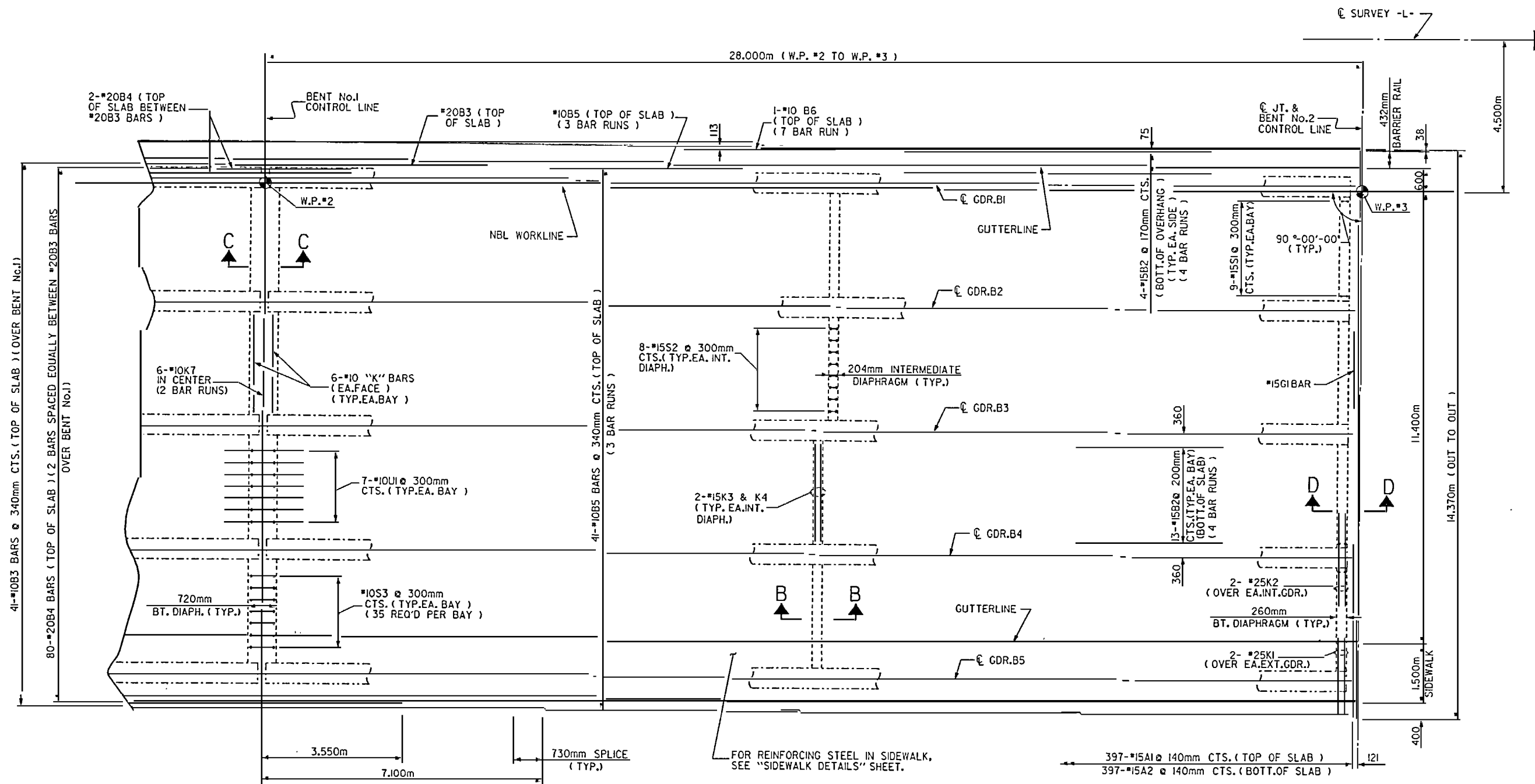
DRAWN BY: L.A. HUSSEY DATE: 11-12-96
 CHECKED BY: J.M. BRITT DATE: 10-28-97

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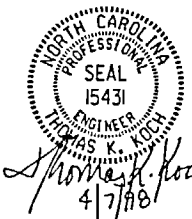
REVISIONS						SHEET NO.	
NO.	BY	DATE	NO.	BY	DATE	5-105	
1			3			TOTAL SHEETS	
2			4			142	

NOTES

FOR REINFORCING STEEL IN BARRIER RAIL, SEE "CONCRETE BARRIER RAIL" SHEET.
FOR SECTIONS, SEE "TYPICAL SECTIONS", SHEET 2 OF 3.



PLAN OF SPAN "B"



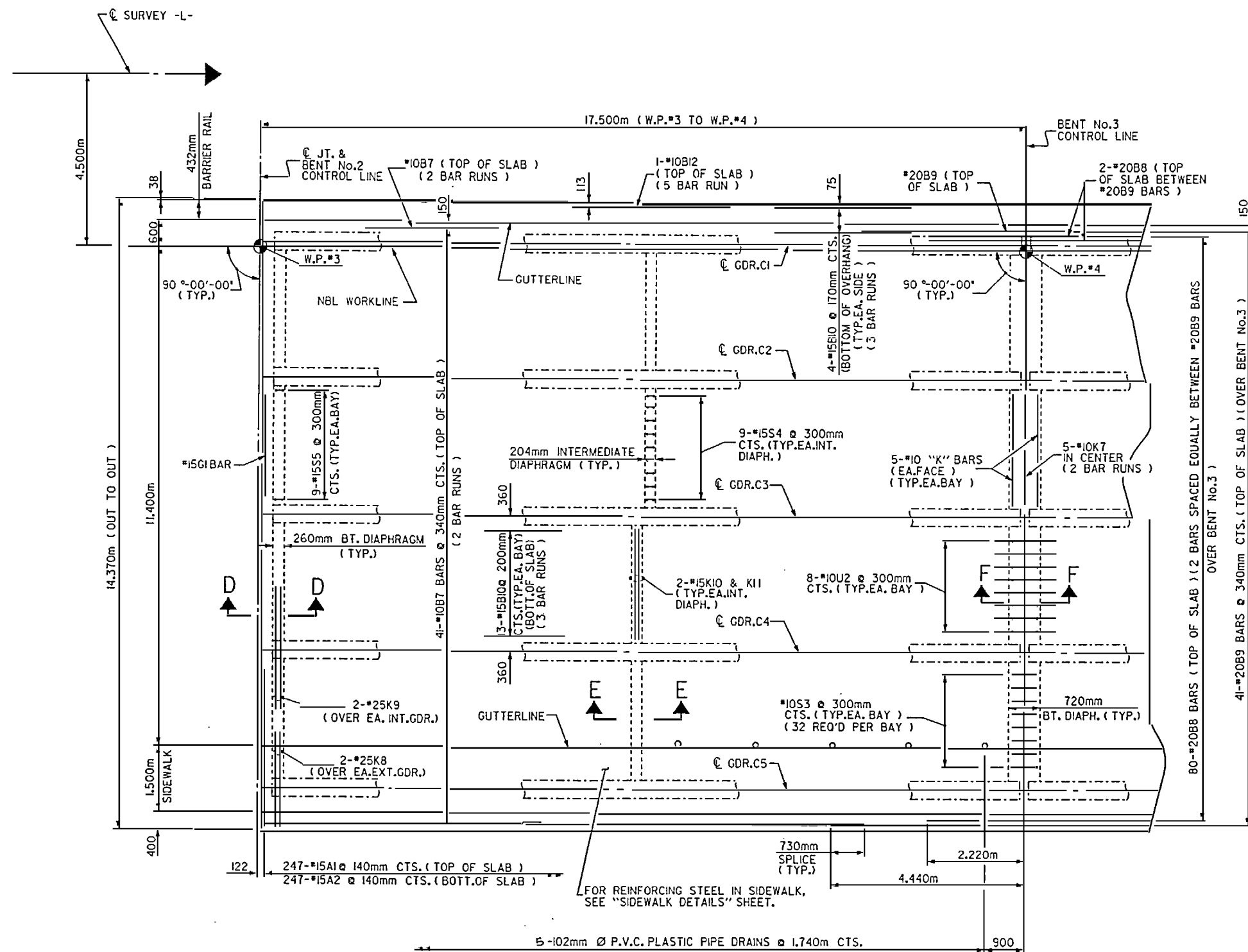
PROJECT NO. R-2425 C
WAKE COUNTY
STATION: 80+30.500 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPAN "B" (NBL)					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		
SHEET NO. 5406					TOTAL SHEETS 142

DRAWN BY : L.A. HUSSEY DATE : 11-12-96
CHECKED BY : T.M. BRIT DATE : 10-28-97

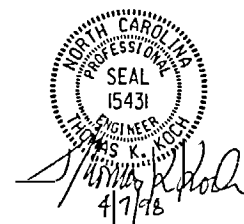
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mbr111



PLAN OF SPAN "C"

NOTES

FOR REINFORCING STEEL IN BARRIER RAIL, SEE "CONCRETE BARRIER RAIL" SHEET.
FOR SECTIONS, SEE "TYPICAL SECTIONS", SHEET 2 OF 3.



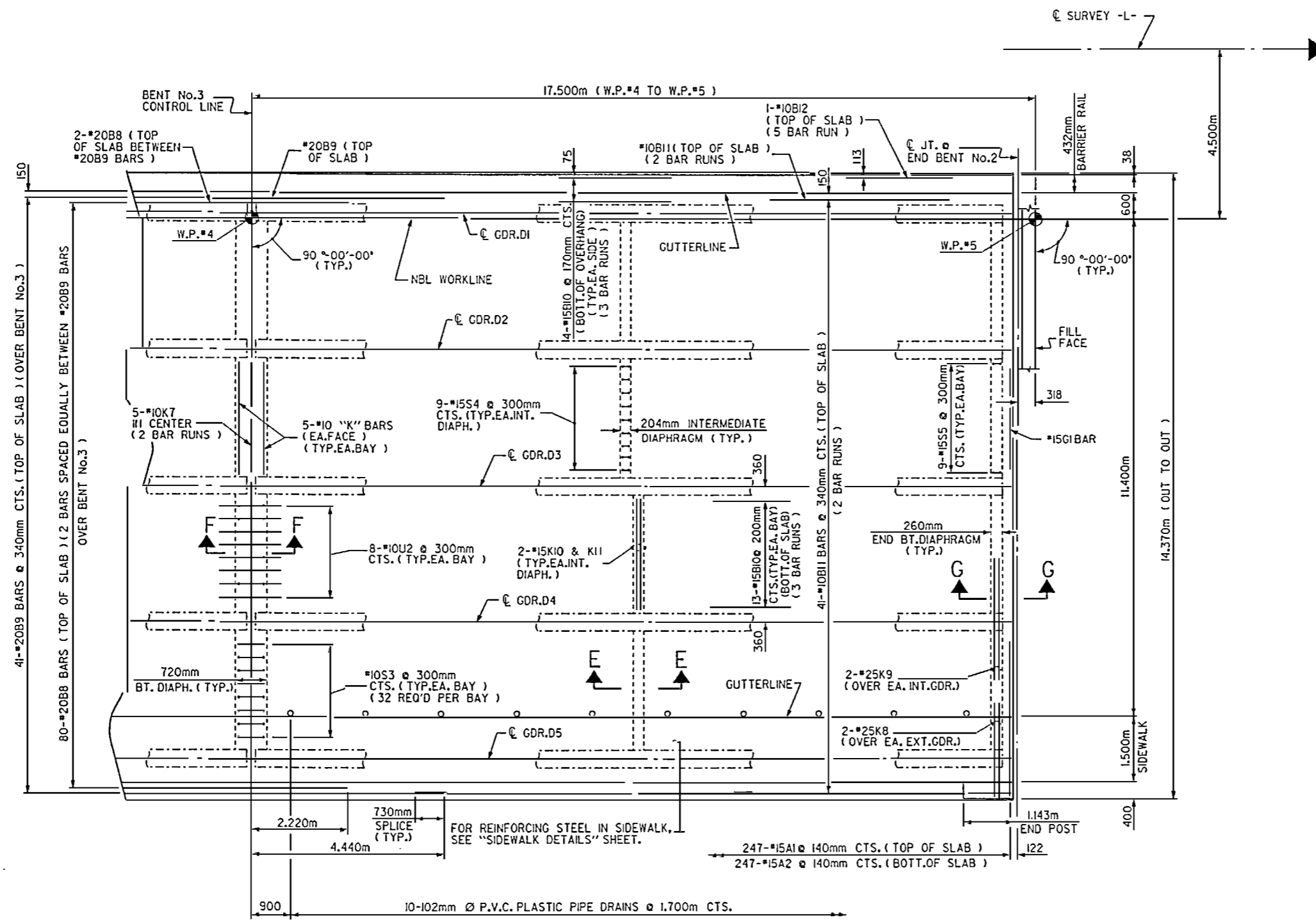
PROJECT NO. R-2425 C
WAKE COUNTY
STATION: 80+30.500 -L-
SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
PLAN OF SPAN "C"
(NBL)

DRAWN BY: L.A. HUSSEY DATE: 11/12/96
CHECKED BY: J.M. BRITT DATE: 10-28-97

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mbritt

REVISIONS						SHEET NO.	
NO.	BY	DATE	NO.	BY	DATE	6-107	
1			3			TOTAL SHEETS	142
2			4				



PLAN OF SPAN "D"

NOTES

FOR REINFORCING STEEL IN BARRIER RAIL, SEE "CONCRETE BARRIER RAIL" SHEET.
 FOR SECTIONS, SEE "TYPICAL SECTIONS", SHEET 2 OF 3.
 FOR END POST DETAILS AND REINFORCING STEEL, SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS", SHEET 1 OF 2.



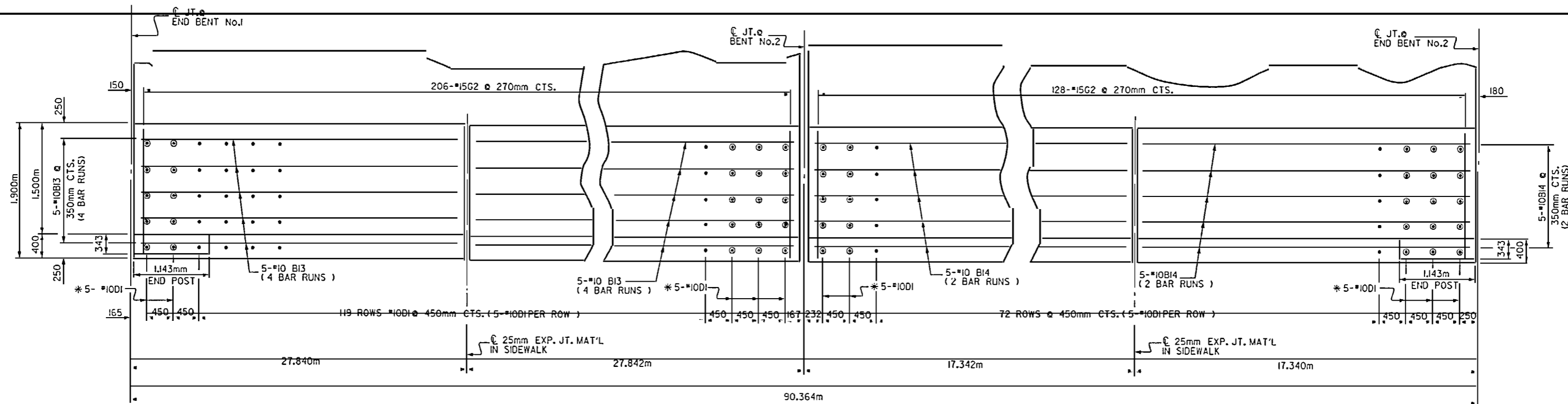
PROJECT NO. R-2425 C
WAKE COUNTY
 STATION: 80+30.500 -L-
 SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN "D"
 (NBL)

REVISIONS						SHEET NO.	
NO.	BY	DATE	NO.	BY	DATE	S-108	
1			3			TOTAL SHEETS	142
2			4				

DRAWN BY: L.A. HUSSEY DATE: 11-12-96
 CHECKED BY: T.M. KITCH DATE: 10-28-97

28-OCT-1997 08:00
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PLAN OF SIDEWALK

NOTES

* THESE DOWELS ARE TO BE PLACED AFTER SAWING OF THE JOINT. THE HOLES SHALL BE DRILLED AND THE DOWELS GROUTED IN PLACE.

THE #10D1 & #15G2 BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 50mm CLEARANCE TO THE 25mm EXPANSION JOINT MATERIAL IN SIDEWALK.

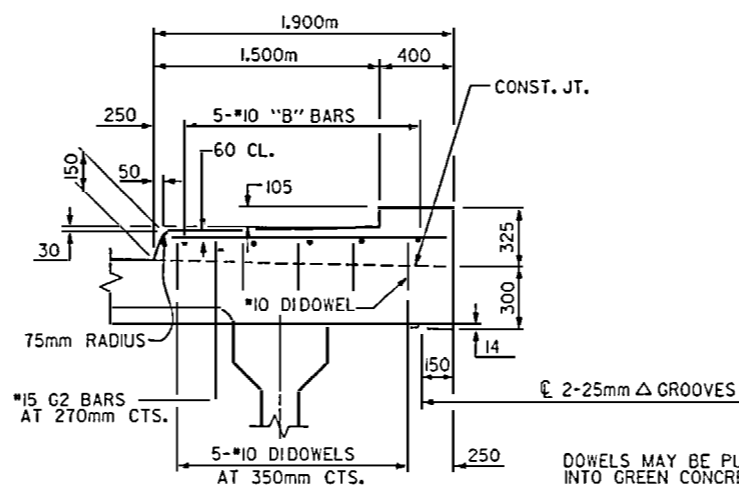
FOR COVER PLATE DETAILS AT BENT No.2, SEE "TYPICAL SECTIONS", SHEET 3 OF 3.

FOR END POST DETAILS AND REINFORCING STEEL SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS", SHEET 1 OF 2.

THE SIDEWALK IN EACH CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 28 MPa.

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

ALL REINFORCING STEEL IN SIDEWALK SHALL BE EPOXY COATED.

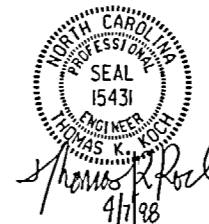


SECTION THRU SIDEWALK

DOWELS MAY BE PUSHED INTO GREEN CONCRETE AFTER SPAN HAS BEEN SCREED OFF (EXCEPT AS NOTED)

PROJECT NO. R-2425 C
WAKE COUNTY
 STATION: 80+30.500 -L-

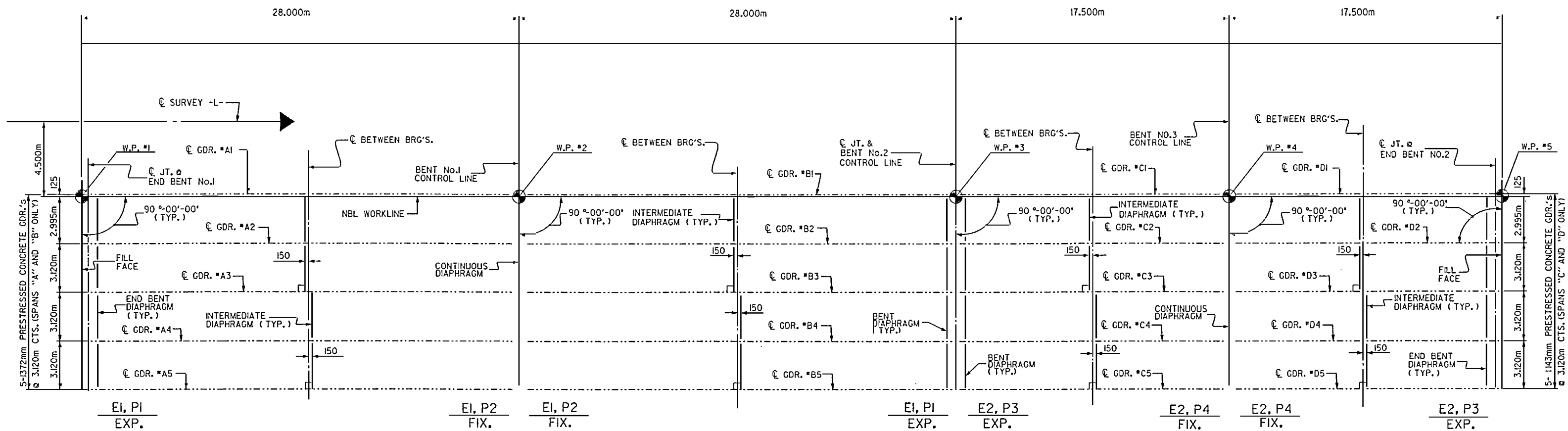
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 SIDEWALK DETAILS
 (NBL)



DRAWN BY : L.A. HUSSEY DATE : 11/25/96
 CHECKED BY : T.M. BRIT DATE : 10-28-97

28-OCT-1997 11:42
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REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1			3			142
2			4			



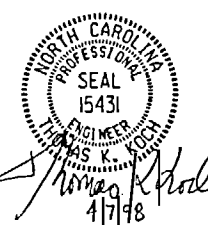
SPAN "A"

SPAN "B"

SPAN "C"

SPAN "D"

GIRDER LAYOUT



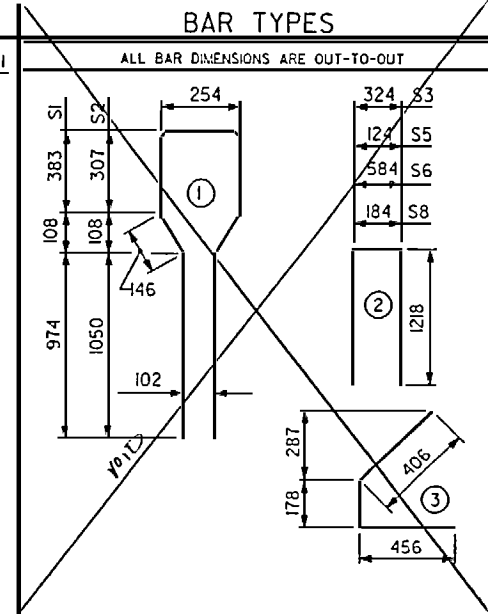
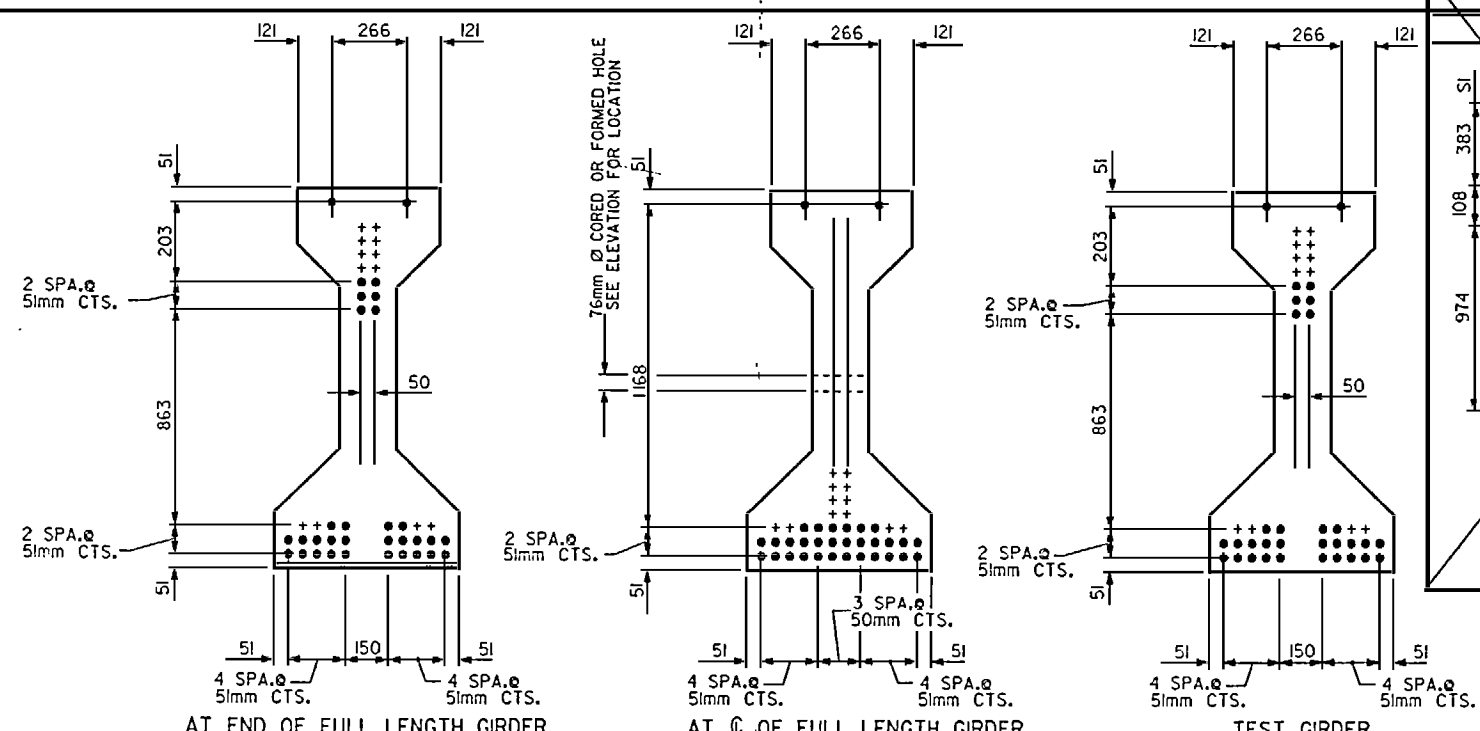
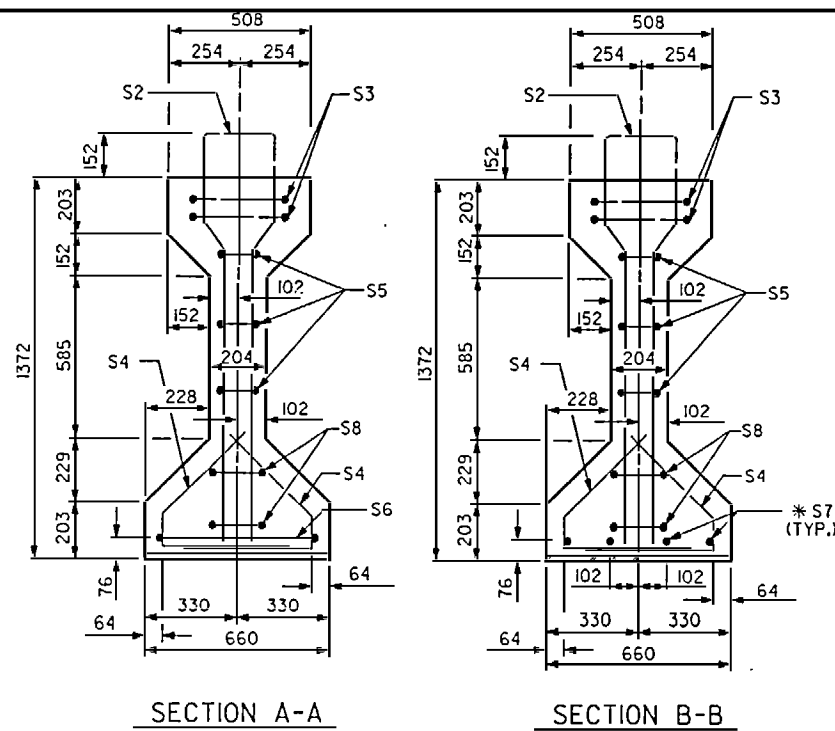
PROJECT NO. R-2425 C
 WAKE COUNTY
 STATION: 80+30.500 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 GIRDER LAYOUT
 (NBL)

DRAWN BY: L.A. HUSSEY DATE: 11-13-96
 CHECKED BY: J.M. BRITT DATE: 10-24-97

28-OCT-1997 09:27
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REVISIONS						SHEET NO. 5-110
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 142
2			4			



AREA (mm ²)	ULTIMATE STRENGTH (KN PER STRAND)	APPLIED PRESTRESS (KN PER STRAND)
140.00	260.7	195.5

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	53	#15	1	3260	271
S2	12	#20	1	3760	92
S3	4	#15	2	3760	17
S4	20	#15	3	1040	33
S5	6	#15	2	2560	24
S6	1	#15	2	3020	5
* S7	4	#15	STR	1600	10
S8	4	#15	2	2620	16

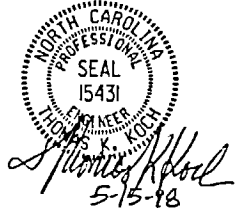
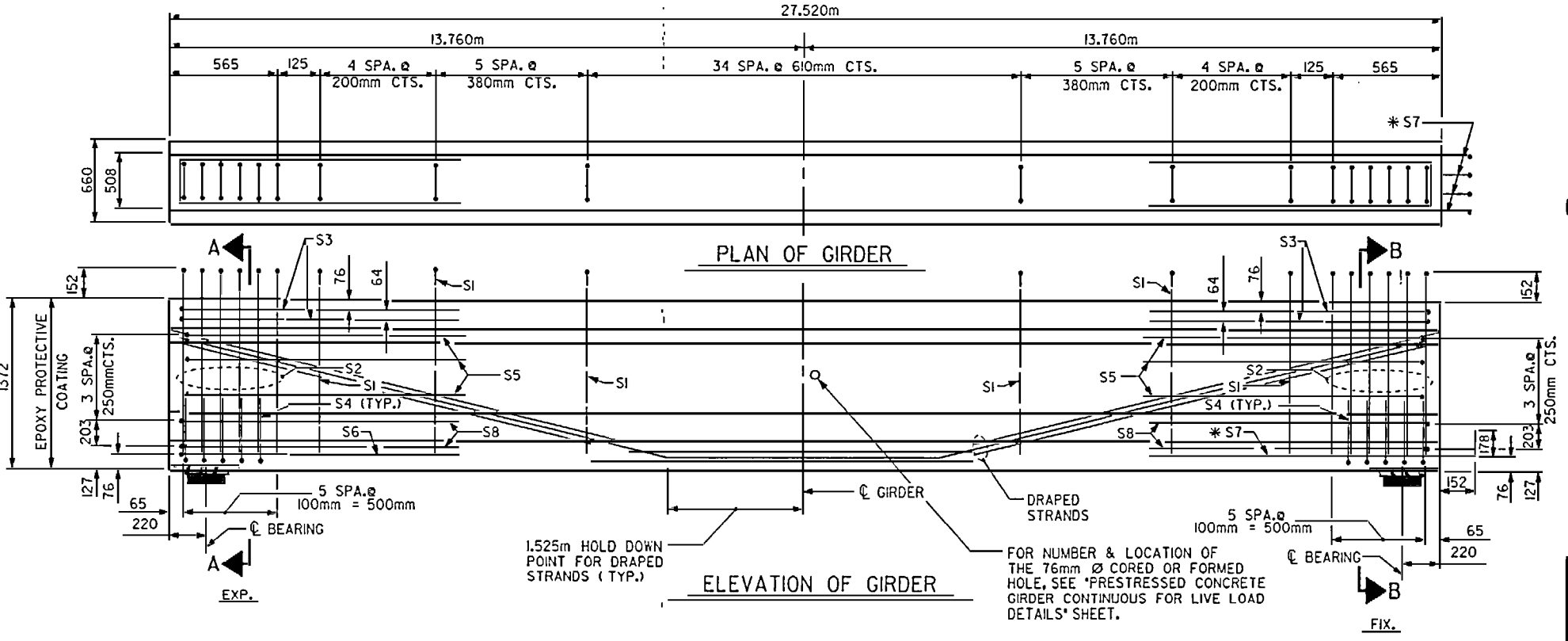
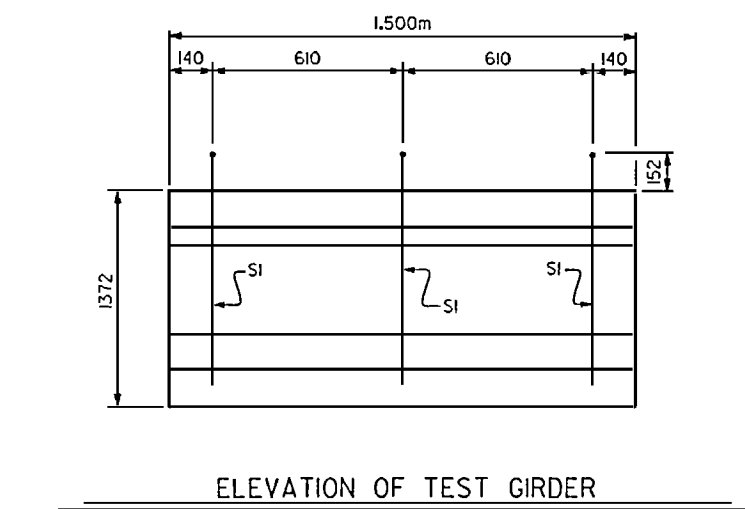
* NOTE: S7 BARS SHALL BE SENT AFTER GIRDER FABRICATION AND BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	3	#15	1	3260	15

FOR ONE GDR.	REINFORCING STEEL (kg)	69 MPa CONCRETE (m ³)	15.24mm Ø L.R. STRANDS (No.)
	468	14.0	32

FOR TEST GDR.	REINFORCING STEEL (kg)	69 MPa CONCRETE (m ³)	15.24mm Ø L.R. STRANDS (No.)
	15	0.8	32

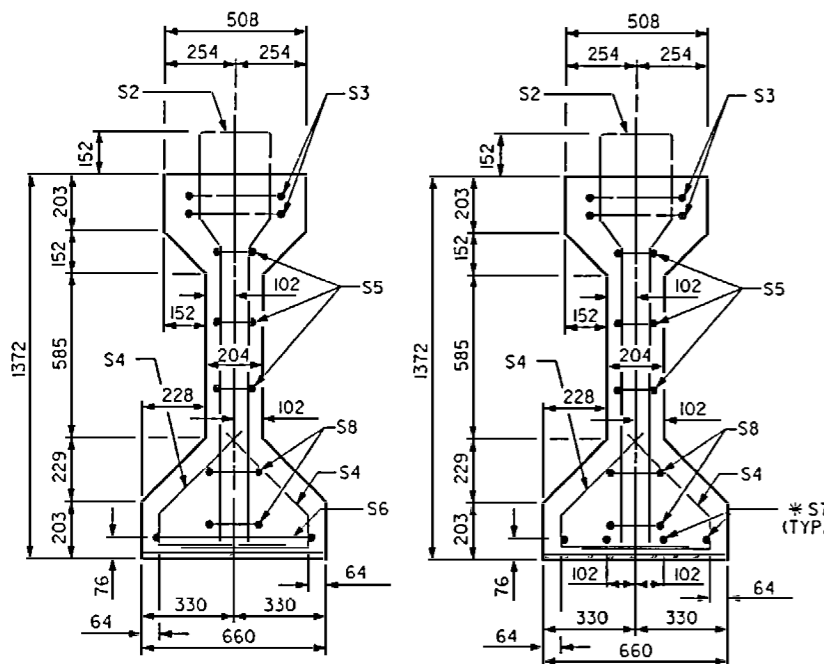
NUMBER	LENGTH	TOTAL LENGTH
5 GIRDERS	27.520m	137.600m
1 TEST GDR.	1.500m	1.500m
TOTAL	---	139.100m



PROJECT NO. R-2425 C
WAKE COUNTY
STATION: 80+30.500 -L-

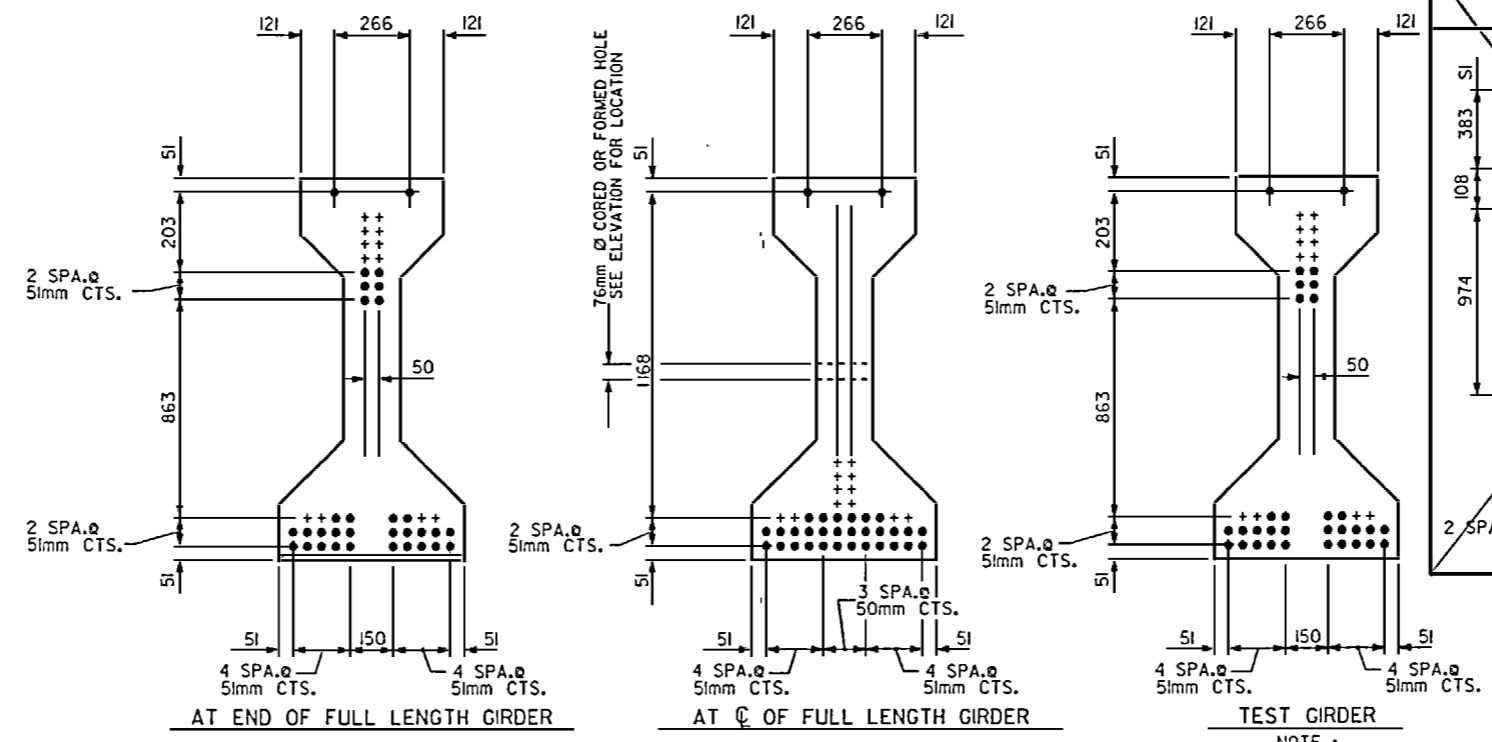
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD AASHTO TYPE IV CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD (SPAN 'A') (NBL)					
REVISIONS					SHEET NO.
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		
					TOTAL SHEETS 42

ASSEMBLED BY: L.A. HUSSEY	DATE: 11/20/96	SPECIAL
CHECKED BY: J.M. B. KITT	DATE: 8-13-98	
DRAWN BY: ED ROSE	DATE: AUG. 1991	STANDARD
CHECKED BY: GREG PERFETTI	DATE: AUG. 1991	

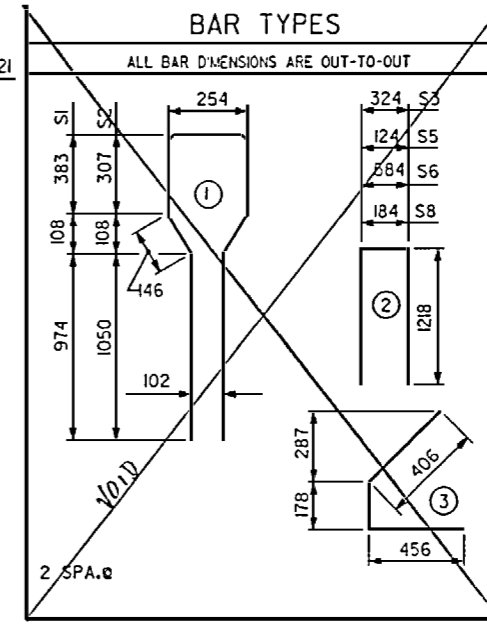


SECTION A-A

SECTION B-B



15.24mm Ø LOW RELAXATION STRAND LAYOUT



BAR TYPES

15.24mm Ø L. R. GRADE 270 STRANDS

AREA (mm ²)	ULTIMATE STRENGTH (KN PER STRAND)	APPLIED PRESTRESS (KN PER STRAND)
140.00	260.7	195.5

REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	37	#15	1	3260	292
S2	12	#20	1	3760	92
S3	4	#15	2	2760	17
S4	20	#15	3	1040	33
S5	6	#15	2	2560	24
S6	1	#15	2	3020	5
*S7	4	#15	STR	1600	10
S8	4	#15	2	2620	16

* NOTE: S7 BARS SHALL BE BENT AFTER GIRDER FABRICATION AND BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

REINFORCING STEEL FOR TEST GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	3	#15	1	3260	15

QUANTITIES FOR ONE GIRDER

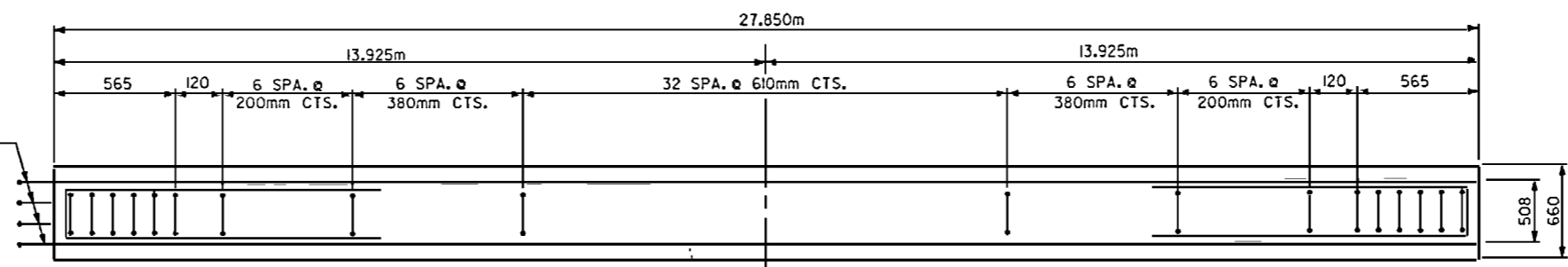
REINFORCING STEEL	69 MPa CONCRETE	15.24mm Ø L.R. STRANDS
kg	m ³	No.
489	14.2	32

QUANTITIES FOR TEST GIRDER

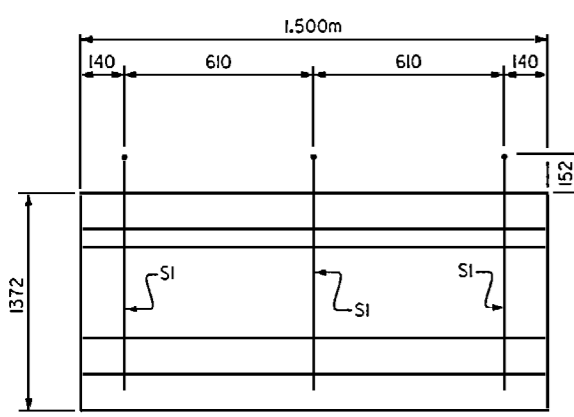
REINFORCING STEEL	69 MPa CONCRETE	15.24mm Ø L.R. STRANDS
kg	m ³	No.
15	0.8	32

GIRDERS REQUIRED

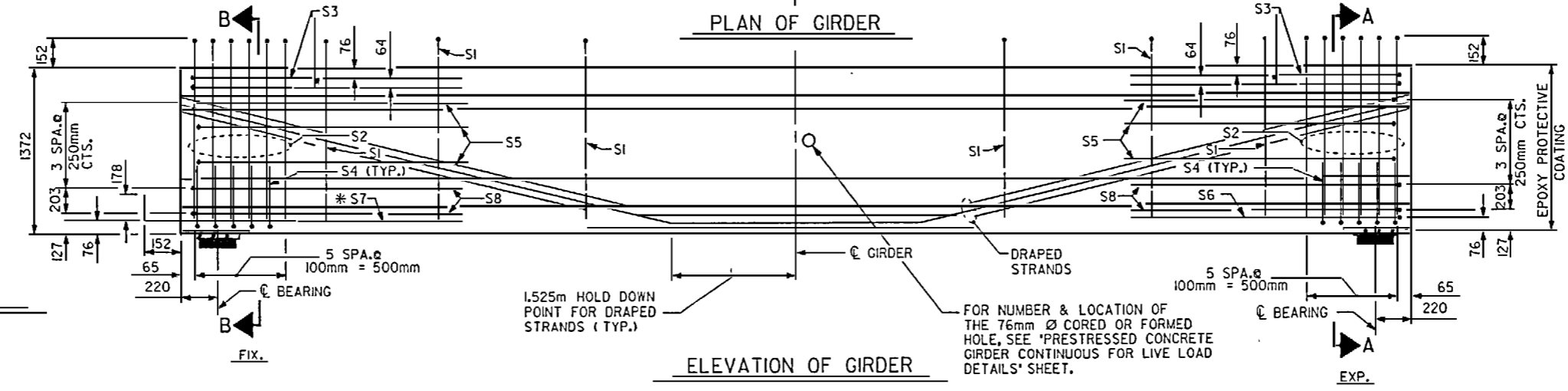
NUMBER	LENGTH	TOTAL LENGTH
5 GIRDERS	27.850m	139.250m
1 TEST GDR.	1.500m	1.500m
TOTAL	---	140.750m



PLAN OF GIRDER



ELEVATION OF TEST GIRDER



ELEVATION OF GIRDER



PROJECT NO. R-2425 C
 WAKE COUNTY
 STATION: 80+30.500 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

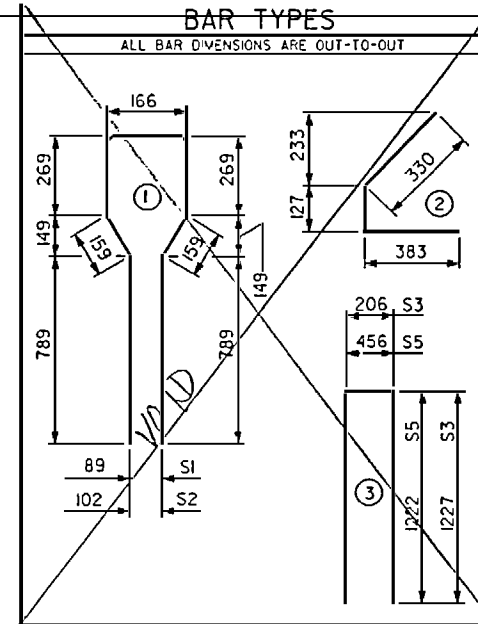
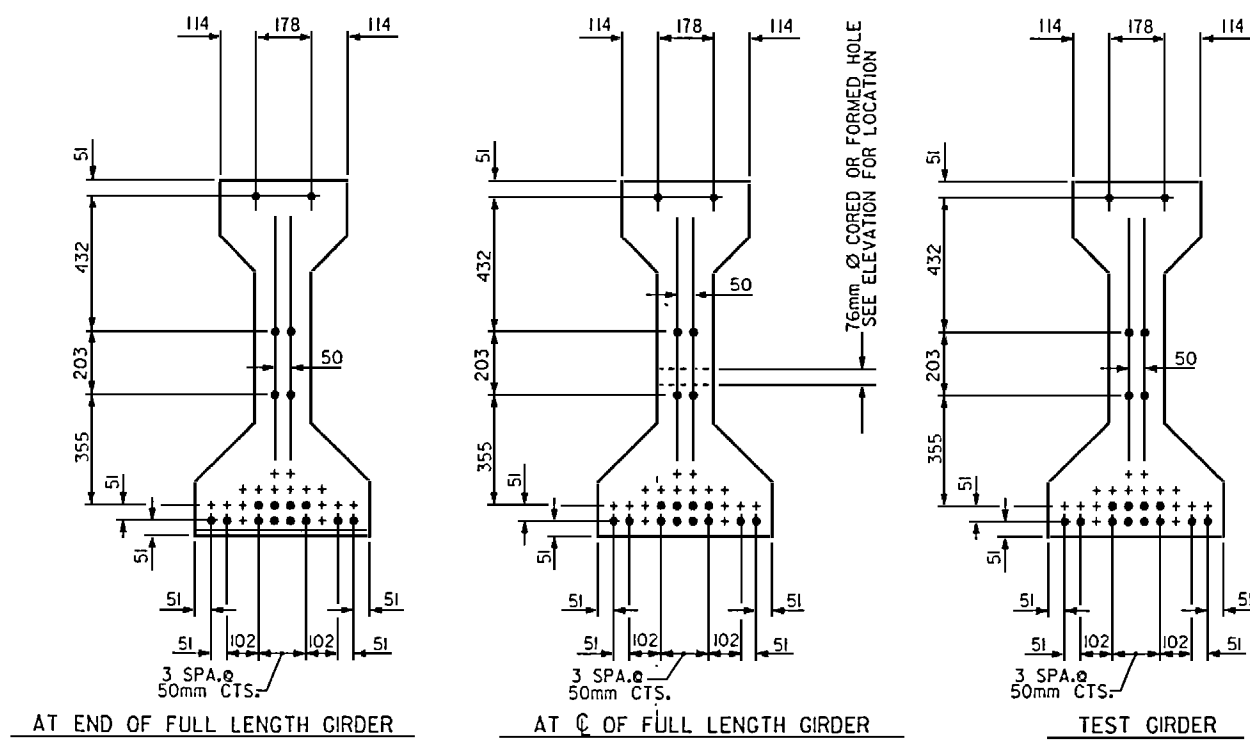
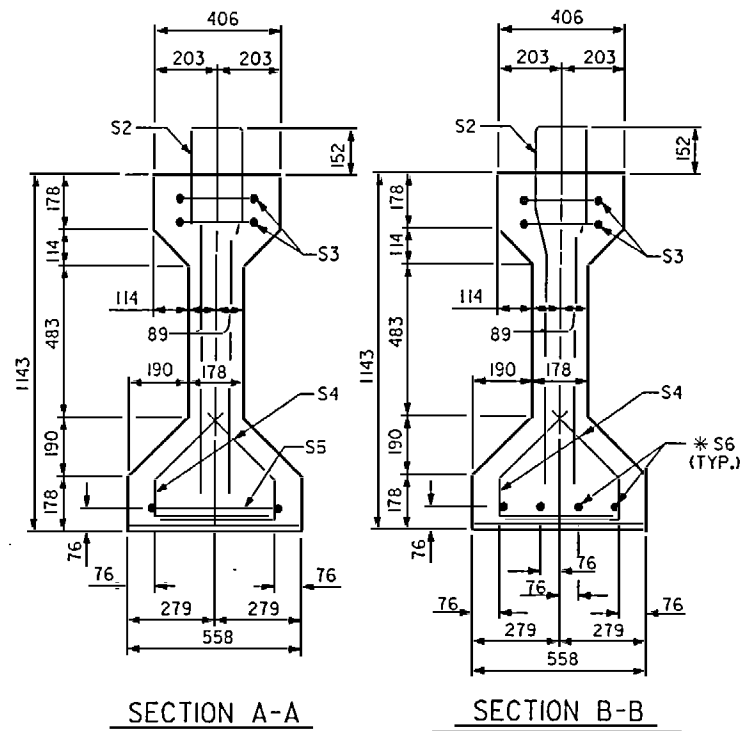
STANDARD
 AASHTO TYPE IV
 CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD
 (SPAN 'B') (NBL)

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	5-112
1			3			TOTAL SHEETS 142
2			4			

STD.No.PCG6M STR.#2

ASSEMBLED BY: L.A. HUSSEY DATE: 11/20/96
 CHECKED BY: J.M. PERI DATE: 5-13-98
 DRAWN BY: ED ROSE DATE: AUG. 1991
 CHECKED BY: GREG PERFETTI DATE: AUG. 1991

SPECIAL
 STANDARD



AREA (mm ²)	ULTIMATE STRENGTH (kN PER STRAND)	APPLIED PRESTRESS (kN PER STRAND)
140.00	260.7	195.5

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	48	#15	1	2600	176
S2	12	#20	1	2600	73
S3	4	#15	3	2660	17
S4	20	#15	2	840	26
S5	1	#15	3	2900	5
*S6	4	#15	STR	1600	10

* NOTE: S6 BARS SHALL BE BENT AFTER GIRDER FABRICATION AND BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

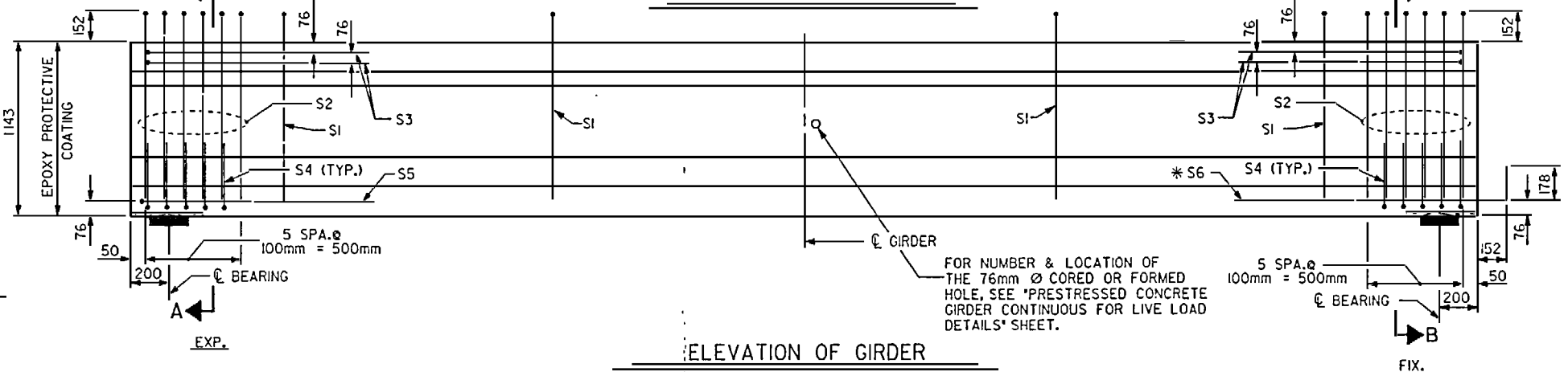
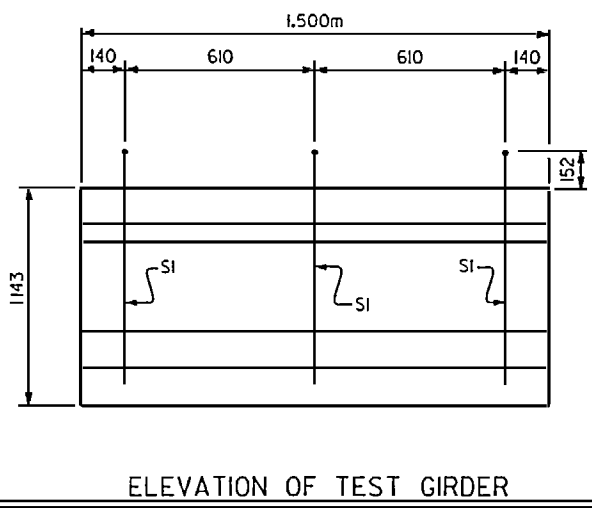
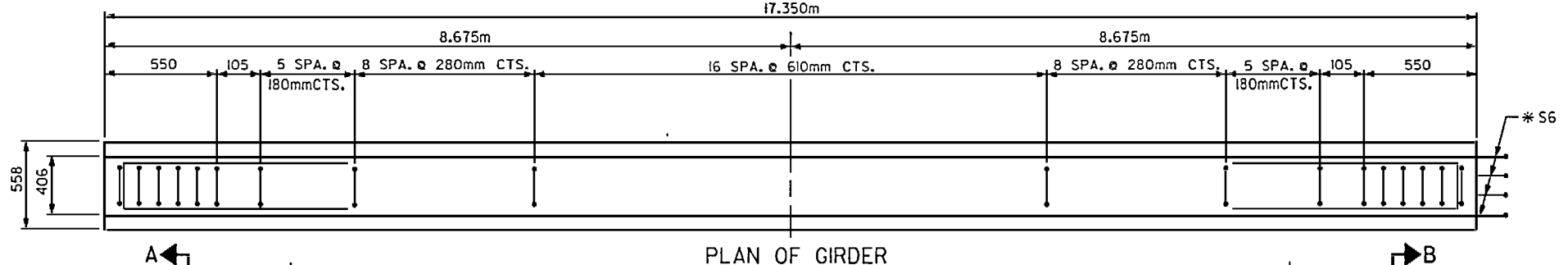
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	3	#15	1	2600	12

REINFORCING STEEL	69 MPa CONCRETE	15.24mm Ø L.R. STRANDS	
kg	m ³	No.	
FOR ONE GDR.	307	6.3	18

REINFORCING STEEL	69 MPa CONCRETE	15.24mm Ø L.R. STRANDS	
kg	m ³	No.	
FOR TEST GDR.	12	0.5	18

NUMBER	LENGTH	TOTAL LENGTH
5 GIRDERS	17.350m	86.750m
1 TEST GDR.	1.500m	1.500m
TOTAL	---	88.250m

15.24mm Ø LOW RELAXATION STRAND LAYOUT

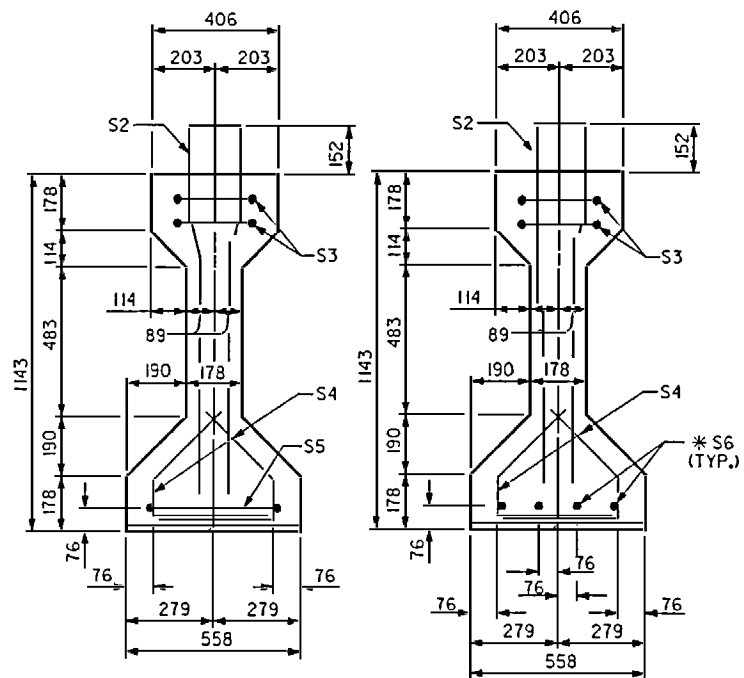


PROJECT NO. R-2425 C
WAKE COUNTY
STATION: 80+30.500 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
AASHTO TYPE III
CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
(SPAN 'C') (NBL)

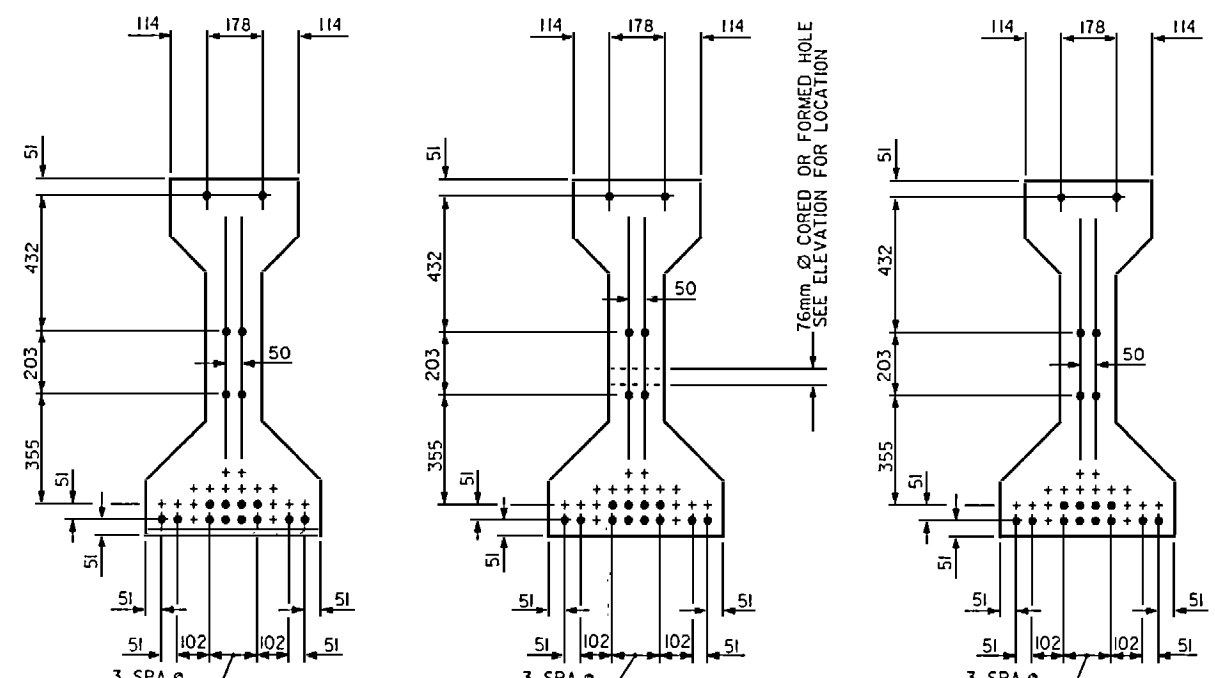
ASSEMBLED BY: L.A. HUSSEY	DATE: 11/20/96	SPECIAL
CHECKED BY: J.M. BERT	DATE: 5-15-98	
DRAWN BY: ED ROSE	DATE: AUG. 1991	STANDARD
CHECKED BY: GREG PERFETTI	DATE: AUG. 1991	

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1			3			142
2			4			142



SECTION A-A

SECTION B-B



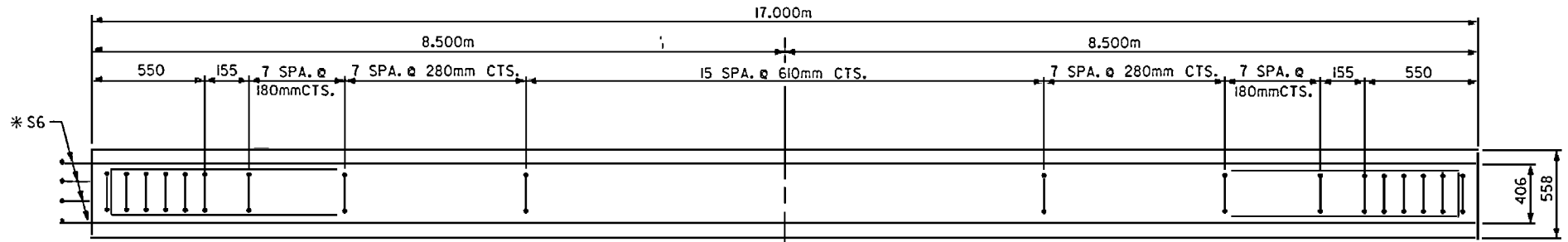
AT END OF FULL LENGTH GIRDER

AT C. OF FULL LENGTH GIRDER

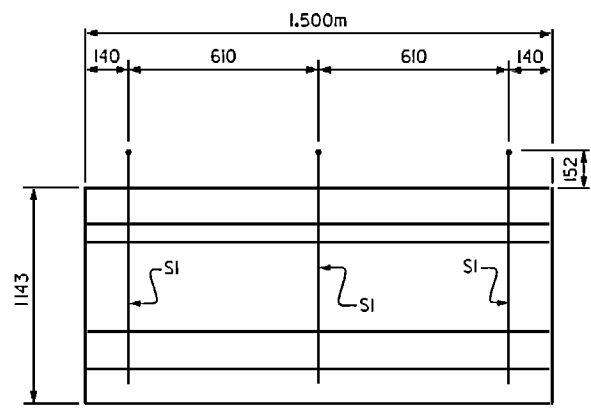
TEST GIRDER

NOTE: ALL STRANDS IN TEST GIRDER ARE STRAIGHT STRANDS

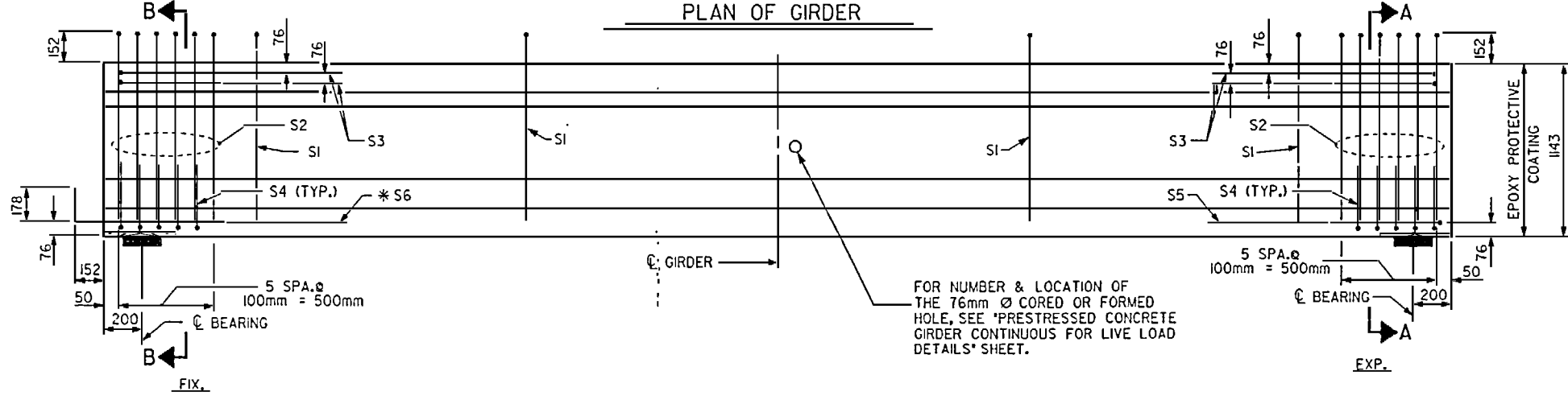
15.24mm Ø LOW RELAXATION STRAND LAYOUT



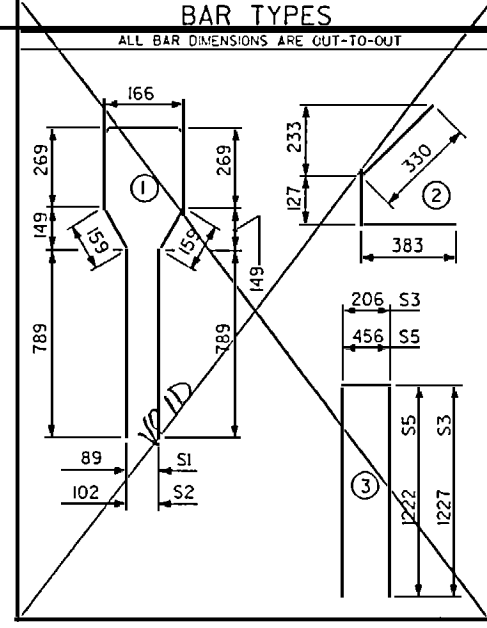
PLAN OF GIRDER



ELEVATION OF TEST GIRDER



ELEVATION OF GIRDER



BAR TYPES

ALL BAR DIMENSIONS ARE CUT-TO-OUT

AREA (mm ²)	ULTIMATE STRENGTH (KN PER STRAND)	APPLIED PRESTRESS (KN PER STRAND)
140.00	260.7	195.5

REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	4	#15	1	2600	180
S2	12	#20	1	2600	73
S3	4	#15	3	2660	17
S4	20	#15	2	840	26
S5	1	#15	3	2900	5
*S6	4	#15	STR	1600	10

REINFORCING STEEL FOR TEST GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	3	#15	1	2600	12

QUANTITIES FOR ONE GIRDER

REINFORCING STEEL	69 MPa CONCRETE	15.24mm Ø L.R. STRANDS	
kg	m ³	No.	
FOR ONE GDR.	311	6.1	13

QUANTITIES FOR TEST GIRDER

REINFORCING STEEL	69 MPa CONCRETE	15.24mm Ø L.R. STRANDS	
kg	m ³	No.	
FOR TEST GDR.	12	0.5	13

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
5 GIRDERS	17.000m	85.000m
1 TEST GDR.	1.500m	1.500m
TOTAL	---	86.500m



PROJECT NO. R-2425 C
 WAKE COUNTY
 STATION: 80+30.500 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 AASHTO TYPE III
 CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD
 (SPAN 'D') (NBL)

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1			3			142
2			4			

ASSEMBLED BY: L.A. HUSSEY DATE: 11/20/96
 CHECKED BY: J.M. P. DATE: 5-13-98
 DRAWN BY: ED ROSE DATE: AUG. 1991
 CHECKED BY: GREG PERFETTI DATE: AUG. 1991

SPECIAL
 STANDARD

REV. 10/1/93 ARB M GPP
 REV. 6/16/95 EEM W RCW

13-MAY-1998 12:50
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STD. No. PCC65M STR.#2

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO ASTM A-416 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

TIE ROD ASSEMBLY SHALL BE AASHTO M270 GRADE 250 STRUCTURAL STEEL.

ALL REINFORCING STEEL SHALL BE GRADE 400.

APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES INDICATED IN ELEVATION VIEW. FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

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

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

DEFORMED ANCHOR STUDS SHALL CONFORM TO ASTM A-496. WELDING PROCEDURE QUALIFICATION TEST FOR DEFORMED ANCHOR STUDS MAY BE REQUIRED.

AT FIXED ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 50mm BEYOND THE GIRDER END. EXPOSED PRESTRESSING STRANDS AT EXPANSION ENDS OF GIRDERS SHALL BE CUT FLUSH WITH GIRDER END.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 48 MPa.

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

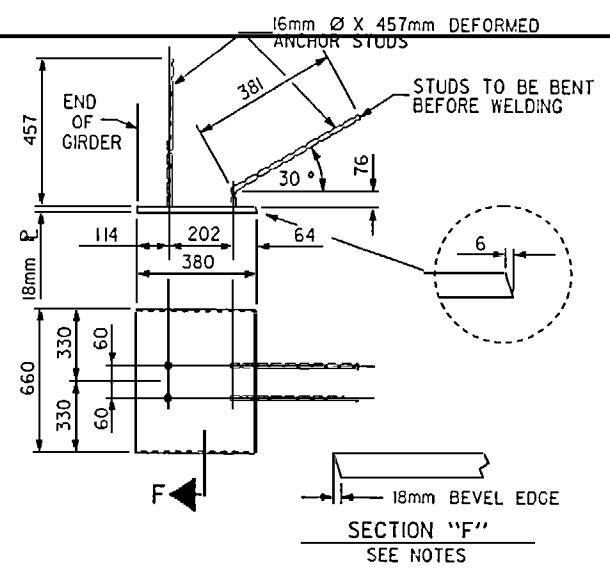
THE TOP SURFACE OF THE GIRDER SHALL BE RAKED TO A DEPTH OF 6mm EXCEPT IN THE AREA BETWEEN THE STIRRUP AND THE EDGE OF THE GIRDER.

WHEN DRAPED STRANDS ARE DETAILED, THE LONGITUDINAL LOCATION OF THE HOLD DOWN DEVICES SHALL BE WITHIN 150mm OF THE LOCATION SHOWN AND THE CENTER OF GRAVITY OF THE GROUP OF DRAPED STRANDS SHALL BE LOCATED WITHIN 13mm OF THE THEORETICAL LOCATION SHOWN.

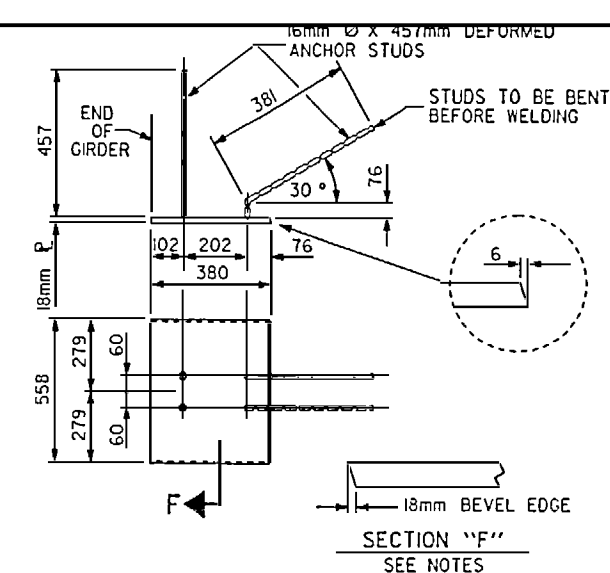
69 MPa CONCRETE IS REQUIRED FOR ALL GIRDERS. FOR HIGH STRENGTH PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

THE INITIAL UPWARD FORCE IN THE STRANDS FOR SPAN 'A' AND SPAN 'B' GIRDERS EXCEEDS 89kN.

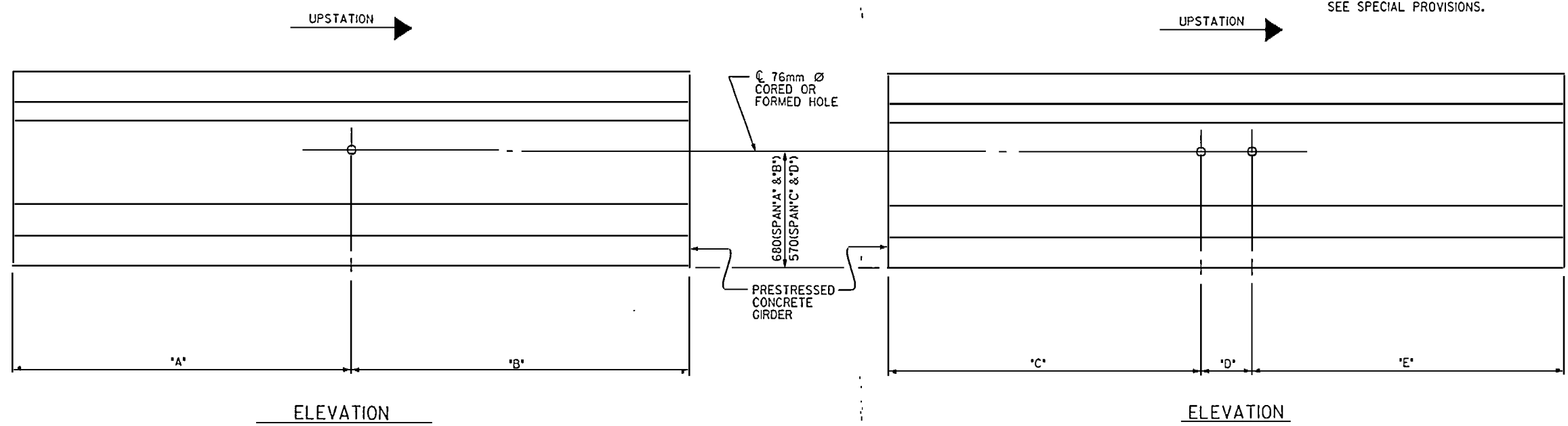
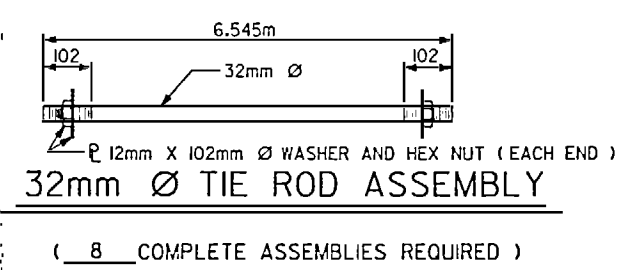
THE CONTRACTOR SHALL PROVIDE DEPARTMENT PERSONNEL WITH ACCESS FOR INSTALLING INSTRUMENTATION AND MONITORING EQUIPMENT. FOR ACCESS FOR INSTRUMENTATION, SEE SPECIAL PROVISIONS.



EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE IV GIRDER
(2 REQ'D PER GIRDER - NOT REQ'D ON TEST GIRDER)



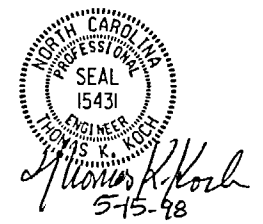
EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE III GIRDER
(2 REQ'D PER GIRDER - NOT REQ'D ON TEST GIRDER)



TIE ROD PLACEMENT DETAILS

TIE ROD PLACEMENT TABLE

SPAN 'A'						SPAN 'B'					SPAN 'C'					SPAN 'D'							
GIRDER	'A'	'B'	'C'	'D'	'E'	GIRDER	'A'	'B'	'C'	'D'	'E'	GIRDER	'A'	'B'	'C'	'D'	'E'	GIRDER	'A'	'B'	'C'	'D'	'E'
GDR.A1	13.610m	13.910m	-	-	-	GDR.B1	13.775m	14.075m	-	-	-	GDR.C1	8.525m	8.825m	-	-	-	GDR.D1	8.350m	8.650m	-	-	-
GDR.A2	13.610m	13.910m	-	-	-	GDR.B2	13.775m	14.075m	-	-	-	GDR.C2	8.525m	8.825m	-	-	-	GDR.D2	8.350m	8.650m	-	-	-
GDR.A3	-	-	13.610m	300mm	13.610m	GDR.B3	-	-	13.775m	300mm	13.775m	GDR.C3	-	-	8.525m	300mm	8.525m	GDR.D3	-	-	8.350m	300mm	8.350m
GDR.A4	13.910m	13.610m	-	-	-	GDR.B4	14.075m	13.775m	-	-	-	GDR.C4	8.825m	8.525m	-	-	-	GDR.D4	8.650m	8.350m	-	-	-
GDR.A5	13.910m	13.610m	-	-	-	GDR.B5	14.075m	13.775m	-	-	-	GDR.C5	8.825m	8.525m	-	-	-	GDR.D5	8.650m	8.350m	-	-	-



PROJECT NO. R-2425 C
WAKE COUNTY
 STATION: 80+30.500 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**PRESTRESSED CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD
 DETAILS**
 (NBL)

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1			3			5-115
2			4			142

DRAWN BY : L.A. HUSSEY DATE : 11/20/96
 CHECKED BY : J.M. BENT DATE : 5-12-98

13-MAY-1998 12:50
 d:\Users\mbriff\2425c\str2\2425c2gl.dgn
 mbriff

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

TENTH POINTS	SPAN "A" & "B" GIRDER #1										SPAN "A" & "B" GIRDERS #2, #3 & #4										SPAN "A" & "B" GIRDER #5												
	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE) ↓	0	0.027	0.051	0.070	0.082	0.086	0.082	0.070	0.051	0.027	0	0	0.027	0.051	0.070	0.082	0.086	0.082	0.070	0.051	0.027	0	0	0.027	0.051	0.070	0.082	0.086	0.082	0.070	0.051	0.027	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.010	0.020	0.027	0.032	0.033	0.032	0.027	0.020	0.010	0	0	0.012	0.024	0.032	0.038	0.040	0.038	0.032	0.024	0.012	0	0	0.011	0.020	0.028	0.032	0.034	0.032	0.028	0.020	0.011	0
FINAL CAMBER ↓	0	17	31	43	50	53	50	43	31	17	0	0	15	27	38	44	46	44	38	27	15	0	0	16	31	42	50	52	50	42	31	16	0

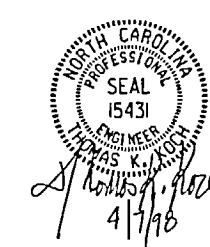
* INCLUDES FUTURE WEARING SURFACE
ALL VALUES ARE SHOWN IN METERS, EXCEPT "FINAL CAMBER" WHICH IS SHOWN IN MILLIMETERS.

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

TENTH POINTS	SPAN "C" & "D" GIRDER #1										SPAN "C" & "D" GIRDERS #2, #3 & #4										SPAN "C" & "D" GIRDER #5												
	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE) ↓	0	0.007	0.014	0.019	0.022	0.024	0.022	0.019	0.014	0.007	0	0	0.007	0.014	0.019	0.022	0.024	0.022	0.019	0.014	0.007	0	0	0.007	0.014	0.019	0.022	0.024	0.022	0.019	0.014	0.007	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.003	0.006	0.008	0.009	0.010	0.009	0.008	0.006	0.003	0	0	0.004	0.007	0.010	0.011	0.012	0.011	0.010	0.007	0.004	0	0	0.003	0.006	0.008	0.010	0.010	0.010	0.008	0.006	0.003	0
FINAL CAMBER ↓	0	4	8	11	13	14	13	11	8	4	0	0	3	7	9	11	12	11	9	7	3	0	0	4	8	11	12	14	12	11	8	4	0

* INCLUDES FUTURE WEARING SURFACE
ALL VALUES ARE SHOWN IN METERS, EXCEPT "FINAL CAMBER" WHICH IS SHOWN IN MILLIMETERS.

PROJECT NO. R-2425 C
WAKE COUNTY
STATION: 80+30.500 -L-



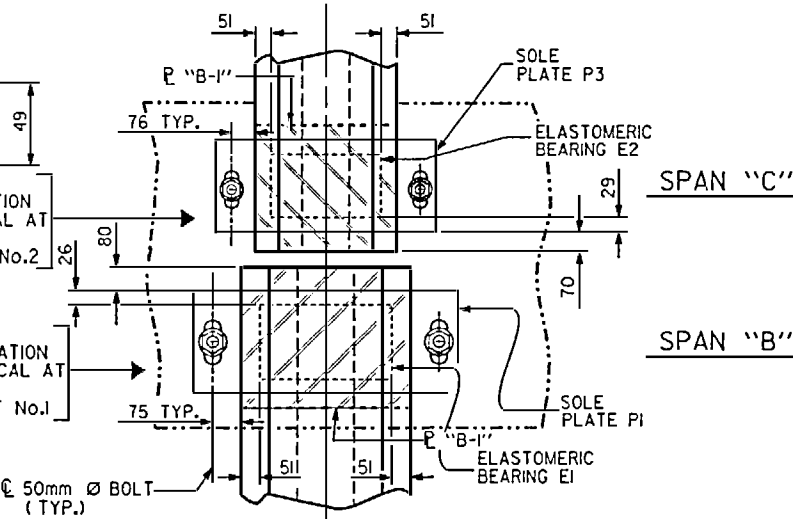
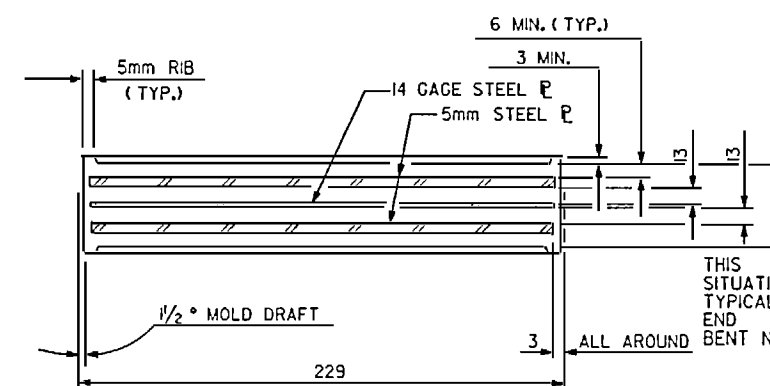
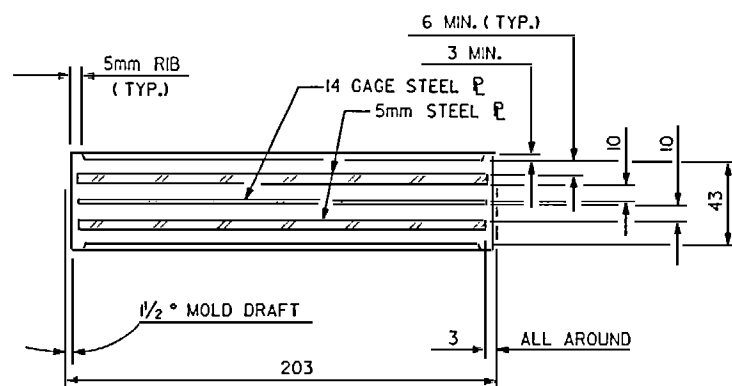
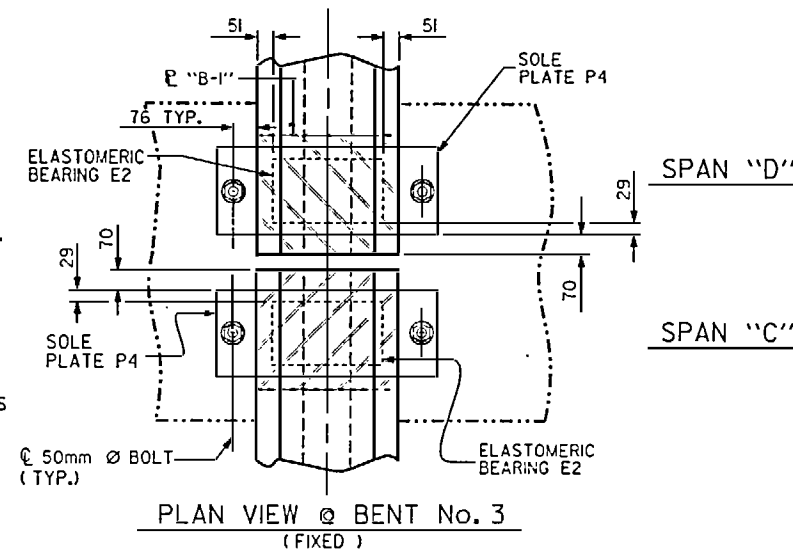
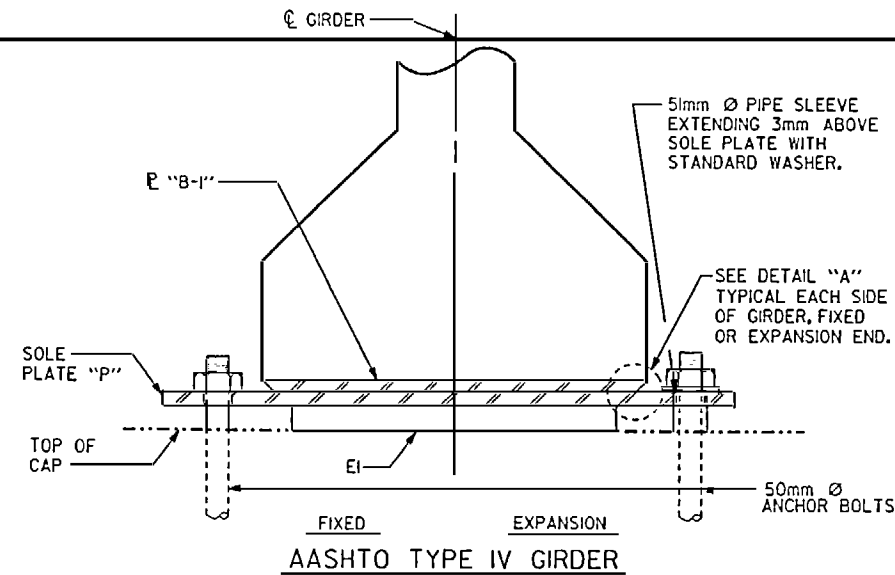
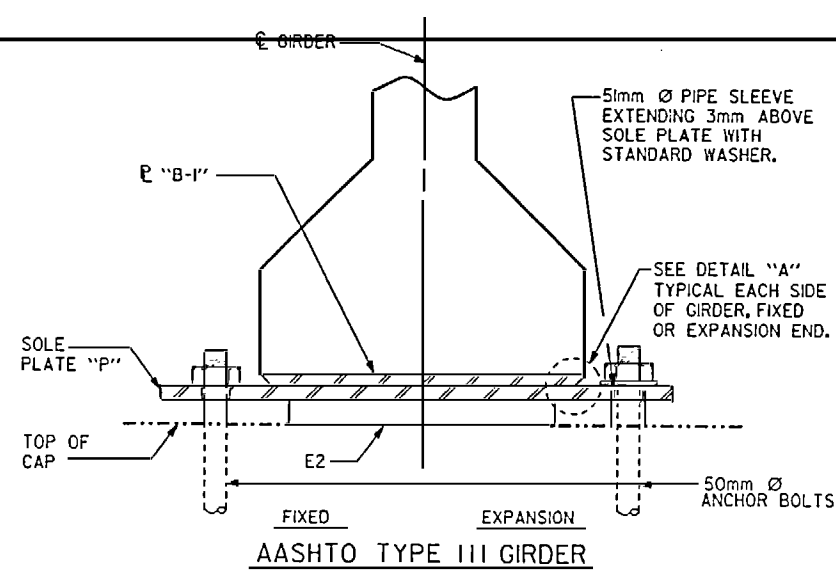
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE					
DEAD LOAD DEFLECTIONS (NBL)					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		
SHEET NO.					8-116
TOTAL SHEETS					142

DRAWN BY : L.A. MUSSEY DATE : 11/25/96
CHECKED BY : S.M. BRIT DATE : 12-28-97

NOTES

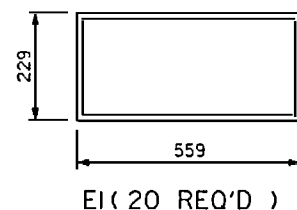
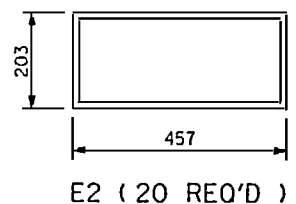
FOR ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.
 AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.
 THE 51mm DIA. PIPE SLEEVE SHALL BE CUT FROM SCHEDULE 40 P.V.C. PLASTIC PIPE. THE P.V.C. PLASTIC PIPE SHALL MEET THE REQUIREMENTS OF A.S.T.M. D1785.
 STEEL SOLE PLATES, BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE SPECIFICATIONS.
 PRIOR TO WELDING, GRIND THE GALVANIZED SURFACE OF THE PORTION OF THE EMBEDDED PLATE AND SOLE PLATE THAT ARE TO BE WELDED. AFTER WELDING, DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED IN ACCORDANCE WITH THE SPECIFICATIONS.
 WHEN WELDING THE SOLE PLATE TO THE EMBEDDED PLATE IN THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 149° C. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.
 SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.
 ALL ELASTOMERIC BEARINGS SHALL BE 60 DUROMETER HARDNESS.

LOAD RATINGS	
	MAX.D.L.+L.L.
1143mm PCG -TYPE III	640 kN
1372mm PCG -TYPE IV	862 kN



TYPICAL SECTION OF ELASTOMERIC BEARINGS

TYPICAL SECTION OF ELASTOMERIC BEARINGS

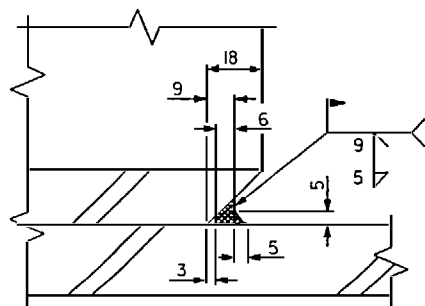


PLAN VIEW OF ELASTOMERIC BEARING

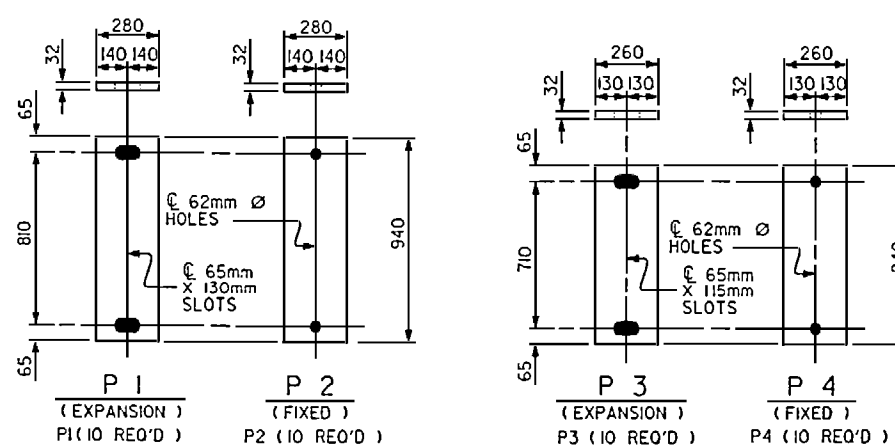
PLAN VIEW OF ELASTOMERIC BEARING

TYPE III
(1143mm PCG)

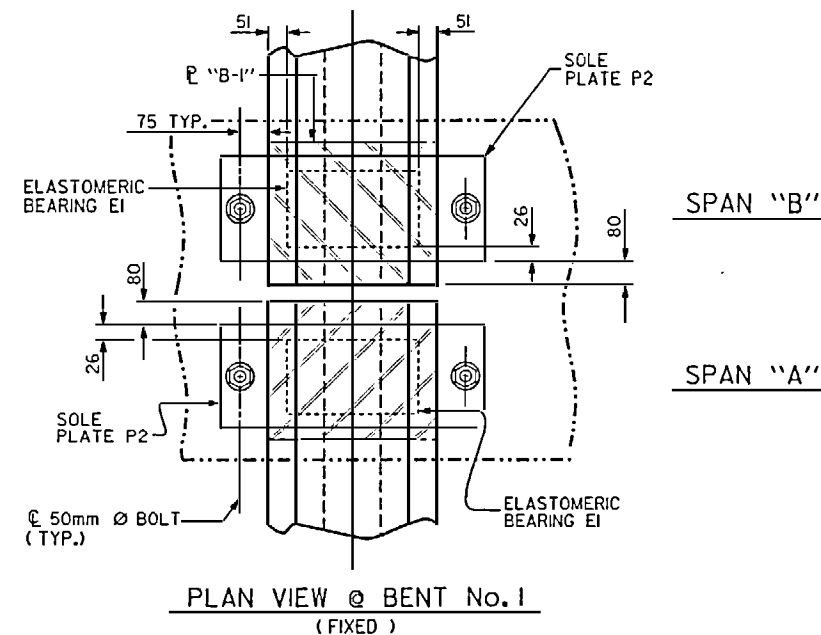
TYPE IV
(1372mm PCG)



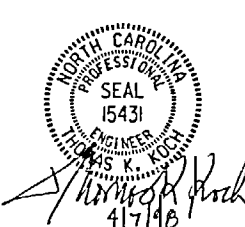
DETAIL "A"



SOLE PLATE DETAILS ("P")



PLAN VIEW @ BENT No. 1
(FIXED)



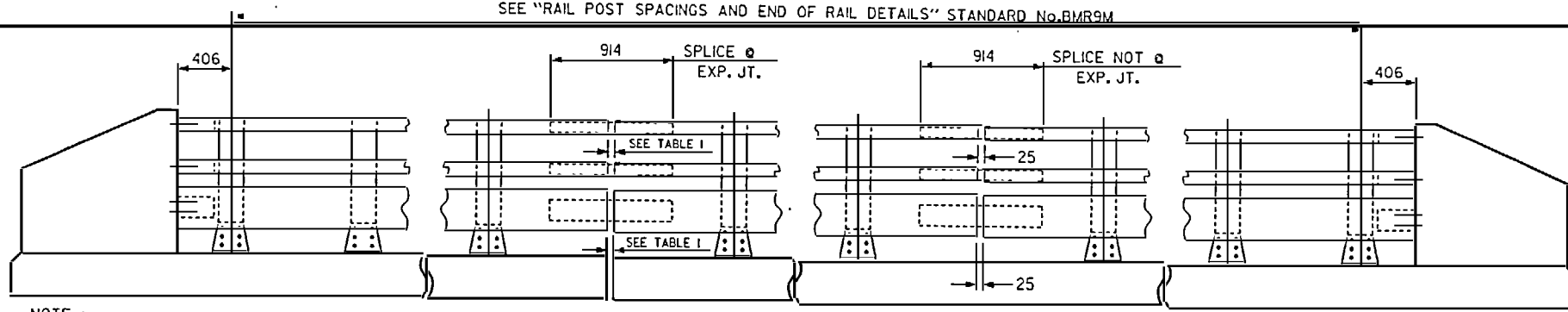
PROJECT NO. R-2425 C
 WAKE COUNTY
 STATION: 80+30.500 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD ELASTOMERIC BEARING DETAILS (NBL)					
REVISIONS					SHEET NO.
NO.	BY	DATE	NO.	DATE	TOTAL SHEETS
1			3		142
2			4		

ASSEMBLED BY: L.A. HUSSEY	DATE: 11-20-96	SPECIAL
CHECKED BY: J.M. PELT	DATE: 10-28-97	
DRAWN BY: W.J. HARRIS	DATE: 8-22-89	STANDARD
CHECKED BY: C.R. KING	DATE: 8-22-89	

SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" STANDARD No.BMR9M

NOTES



NOTE :
FOR ATTACHMENT OF METAL RAIL TO END POST, SEE
"RAIL POST SPACINGS AND END OF RAIL DETAILS"
STD.No.BMR8M

ELEVATION

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 B-316 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 B-209 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 250 GRADE STRUCTURAL STEEL - GALVANIZED TO ASTM A-123.

RIVETS : RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A-502 FOR GRADE I 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 I, OR OF FEDERAL SPECIFICATIONS TT-P-641.

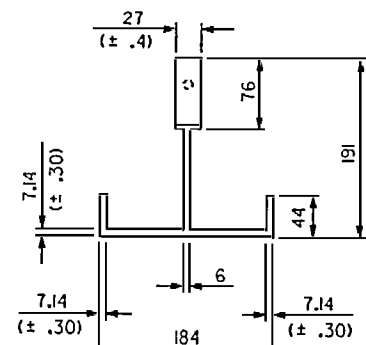
SHIMS : SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A-570M FOR GRADE 230 OR A-611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A-123.

RAIL CAPS : RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A-245 GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A-123.

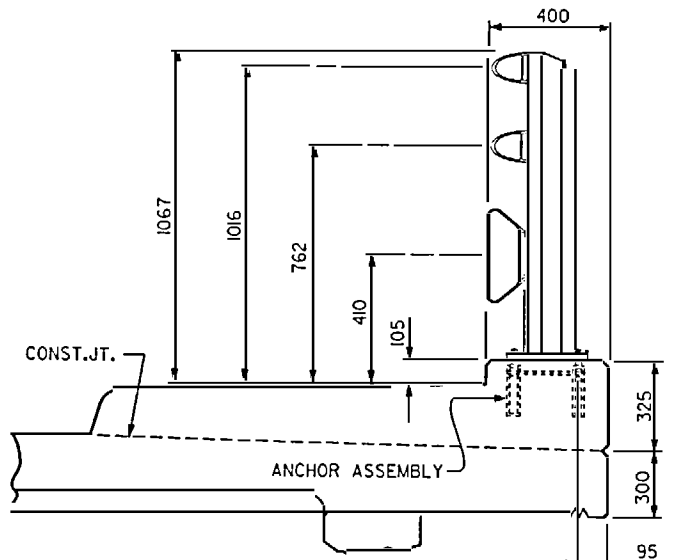
GENERAL NOTES

- RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS. PLACE ONE JOINT SPLICE JUST BEYOND THE 3RD RAIL POST FROM EACH END, GENERALLY APPROXIMATELY 4267mm FROM THE END. PLACE OTHER JOINTS AS NEEDED.
- FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD No.BMR8M.
- CAP SCREWS SHALL BE ASTM F593 TYPE 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 REMAIN VISIBLE AFTER RAIL PLACEMENT.
- SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.
- ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.
- MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

EXP. JT. BENT	RAIL OPENING
BENT No. 2	52mm ϕ 16° C



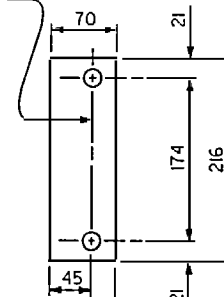
PLAN



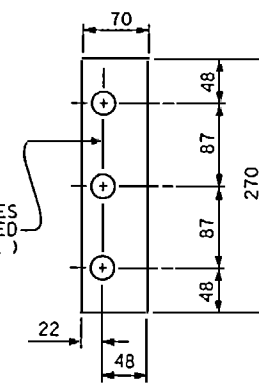
SECTION THRU RAIL

FOR ANCHOR ASSEMBLY, SEE "3 BAR METAL RAIL" STD.No.BMR7M

ϕ 19mm ϕ HOLES (PERMITTED CUTLINE)



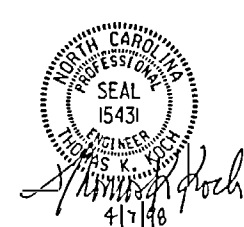
REAR PLATE



FRONT PLATE SHIM DETAILS

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

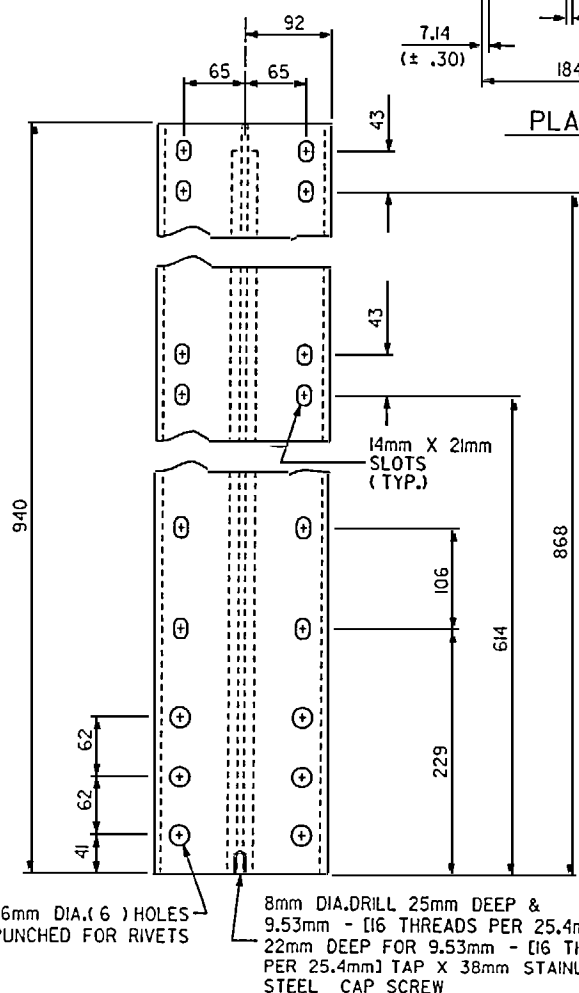
PAY LENGTH = 88.054 METERS



PROJECT NO. R-2425 C
WAKE COUNTY
STATION: 80+30.500 -L-

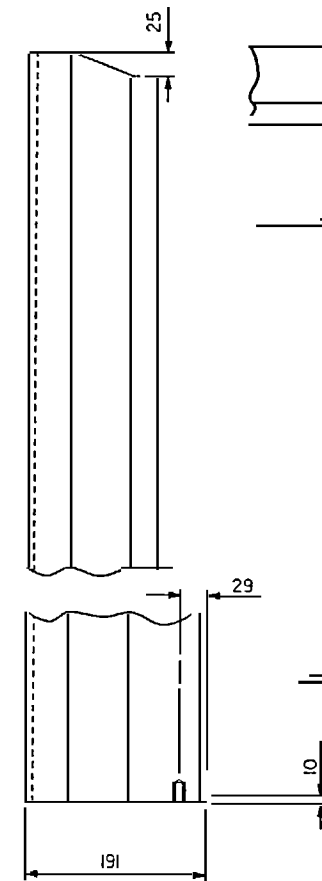
SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD 3 BAR METAL RAIL (NBL)					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		
					SHEET NO. S-118
					TOTAL SHEETS 142

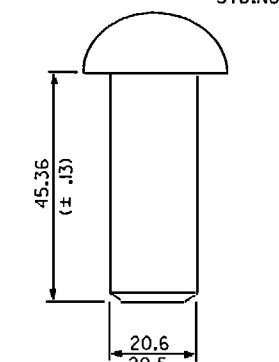


FRONT ELEVATION

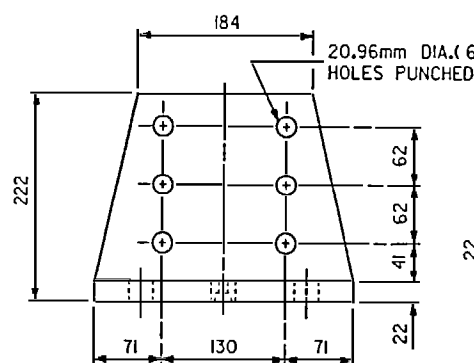
DETAILS OF POST



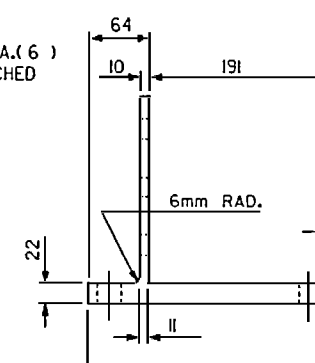
SIDE ELEVATION



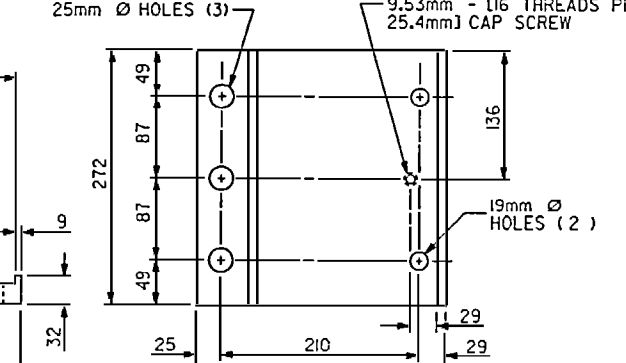
RIVET DETAIL



FRONT ELEVATION



SIDE ELEVATION



PLAN

POST BASE DETAILS

ASSEMBLED BY : L.A. HUSSEY	DATE : 11/26/96	SPECIAL
CHECKED BY : J.M. BRITT	DATE : 10-18-97	
DRAWN BY : MIKE BRITT	DATE : JAN. 1988	STANDARD
CHECKED BY : G.G. HARPER	DATE : JAN. 1988	

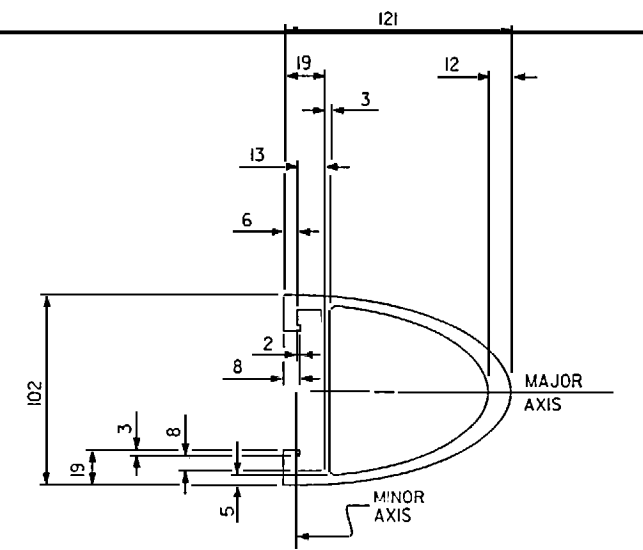
REV. 10/7/93 ELR LG RP
REV. 6/7/94 EEM LG RP
REV. 6/16/95 EEM LG RP
28-OCT-99T 09a25
d:\user\svb\p11\2425a\str2v2425a2m.dgn
mbr11f

NOTES

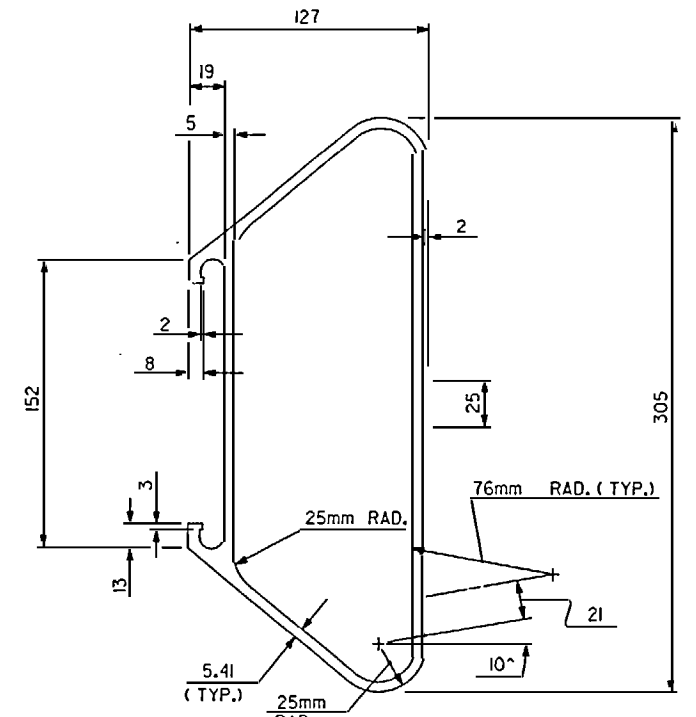
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

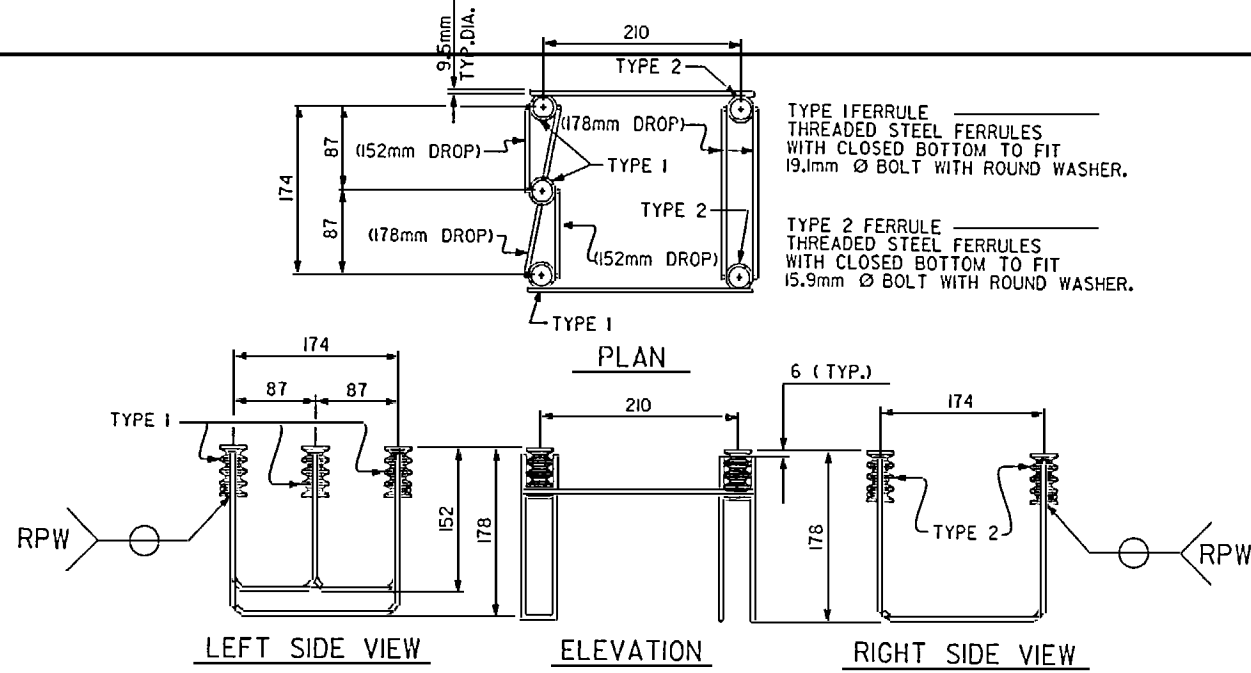
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF ASTM A108, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 51mm FOR 19mm FERRULES AND 45mm FOR 16mm FERRULES.
- B. 3 -19.1mm DIA. X 64mm BOLTS WITH WASHERS, BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTORS OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 19.1mm DIA. X 64mm GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
- C. 2 -15.9mm DIA. X 57mm BOLTS WITH WASHERS, BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTORS OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 15.9mm DIA. X 57mm GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
- D. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 689 MPa.
- E. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF ASTM A-123.
- F. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR METER OF METAL RAIL.
- G. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.



TOP & MIDDLE RAIL SECTION

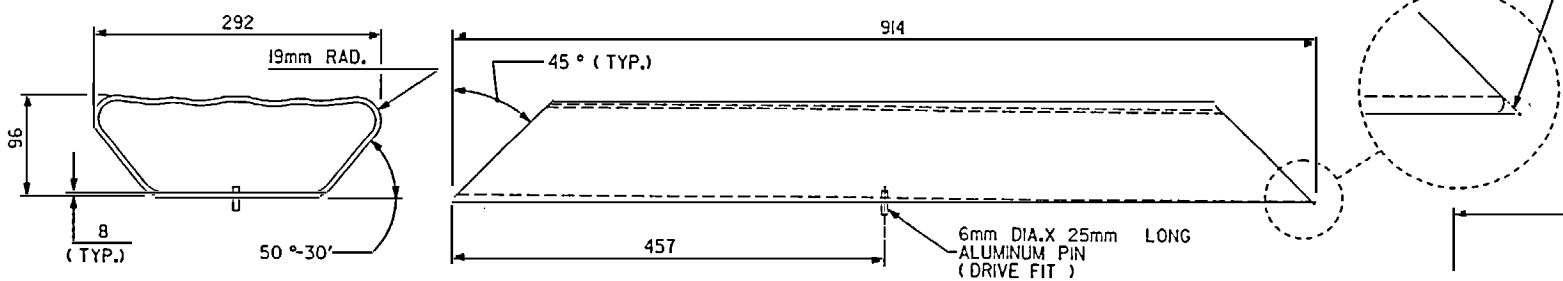


BOTTOM RAIL SECTION

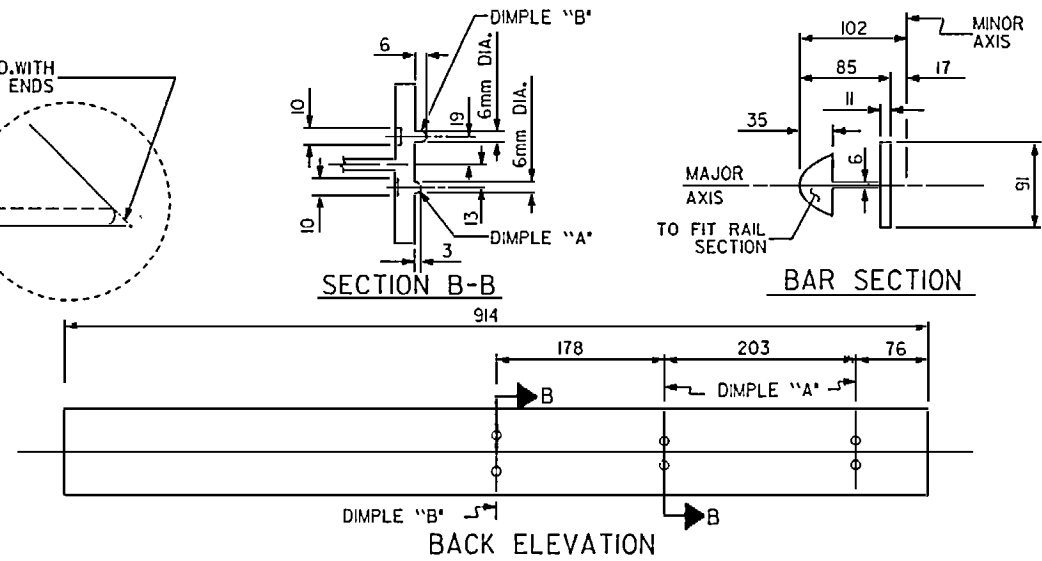


5-BOLT METAL RAIL ANCHOR ASSEMBLY

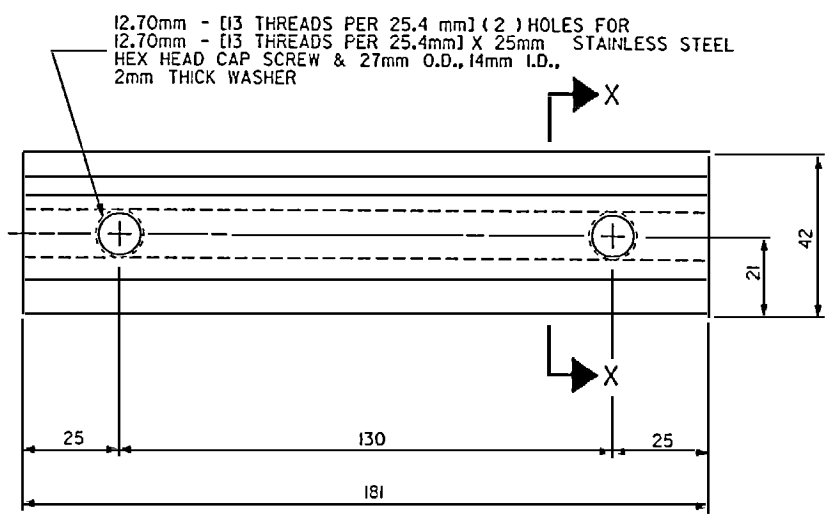
(48 ASSEMBLIES REQUIRED)



BOTTOM RAIL EXPANSION BAR

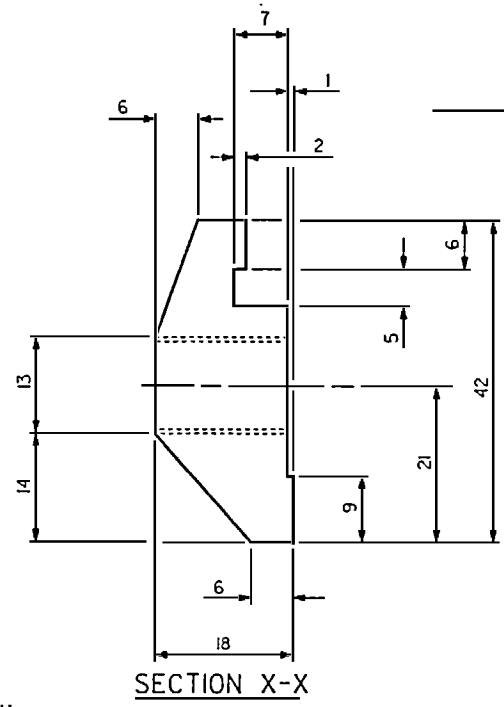


TOP & MIDDLE RAIL EXPANSION BAR

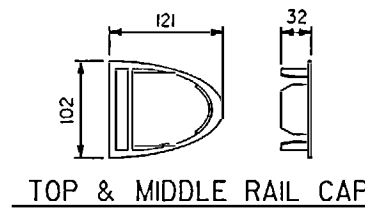


CLAMP BAR DETAIL

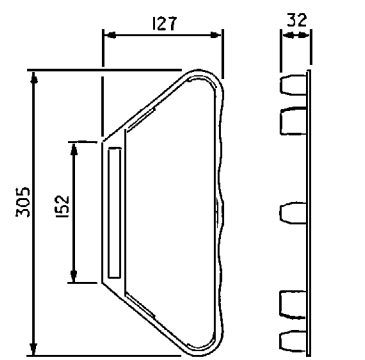
(6 REQUIRED PER POST)



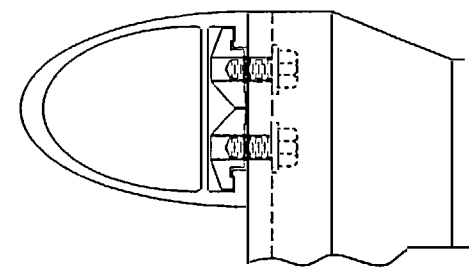
SECTION X-X



TOP & MIDDLE RAIL CAP



BOTTOM RAIL CAP



CLAMP ASSEMBLY

(MIDDLE & BOTTOM RAIL ARE SIMILAR)

PROJECT NO. R-2425 C
WAKE COUNTY
STATION: 80+30.500 -L-

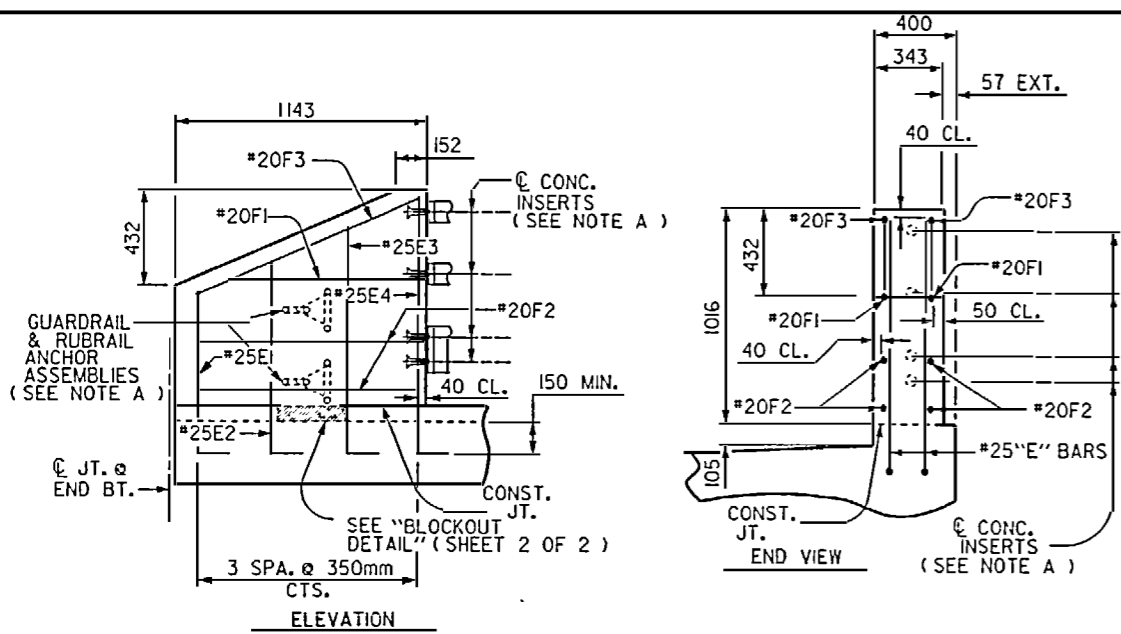
SHEET 2 OF 2

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

SEAL
15431
4/7/98

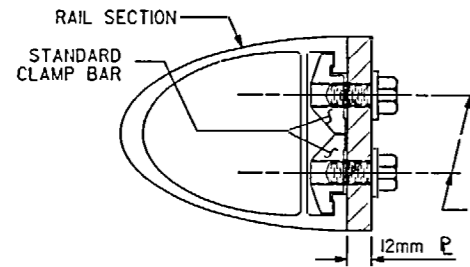
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	5-119
1			3			TOTAL SHEETS
2			4			142

ASSEMBLED BY : L.A. HUSSEY	DATE : 11/26/96	SPECIAL
CHECKED BY : J.M. BRITT	DATE : 10-28-97	
DRAWN BY : MIKE BRITT	DATE : JAN. 1988	STANDARD
CHECKED BY : G.G. HARPER	DATE : JAN. 1988	



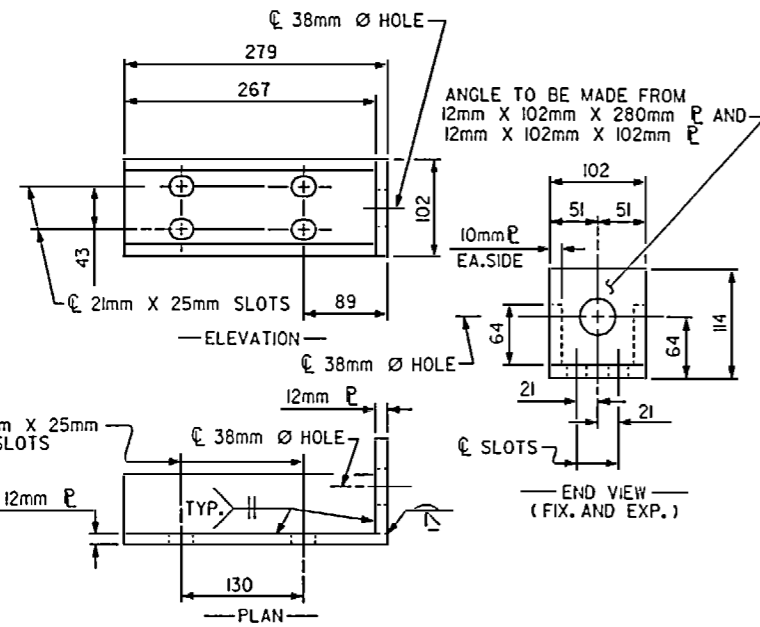
END POST DETAILS

(FOR REINFORCING STEEL, SEE "SUPERSTRUCTURE-BILL OF MATERIAL" SHEET)

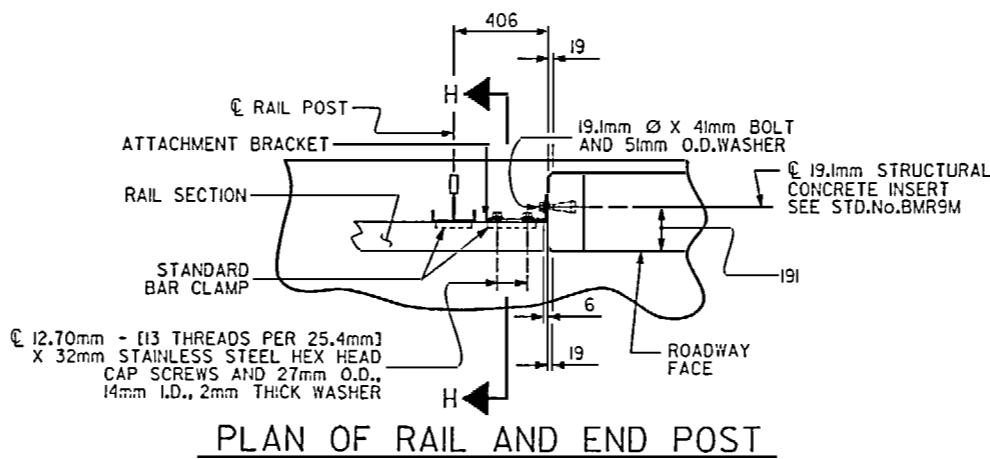


SECTION H-H

(FOR TOP & MIDDLE RAIL)



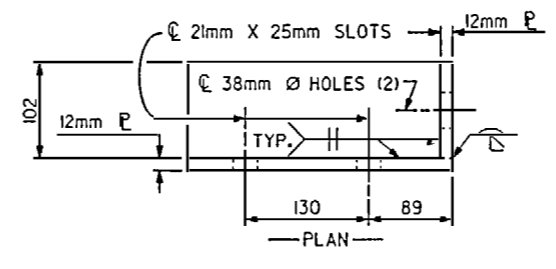
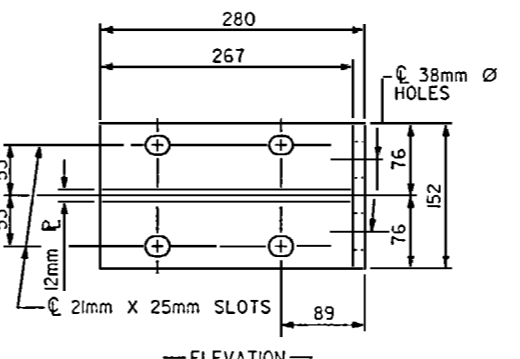
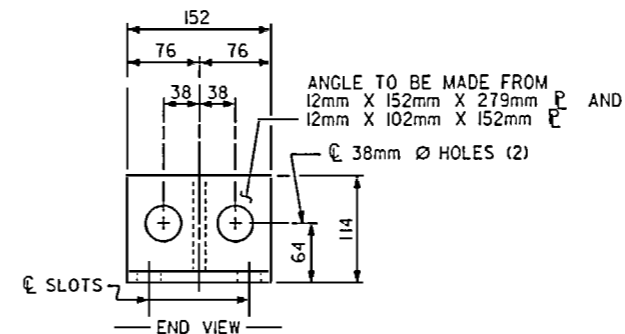
DETAILS FOR ATTACHMENT BRACKET
(TOP & MIDDLE RAIL ONLY)



PLAN OF RAIL AND END POST

(STIFFENER ON 12mm P NOT SHOWN FOR CLARITY)

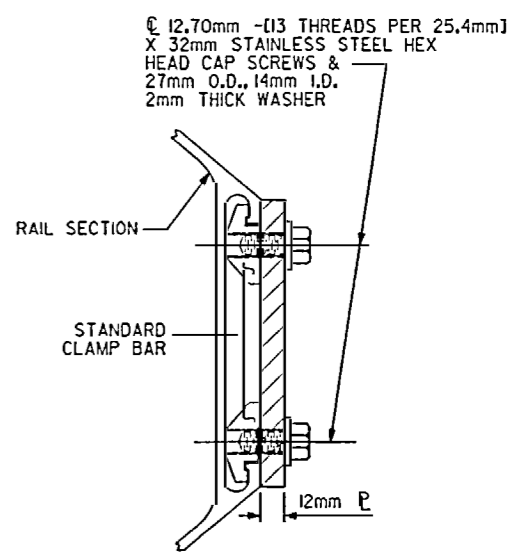
NOTE A:
FOR DETAILS OF CONCRETE INSERTS, GUARDRAIL & RUBRAIL ANCHOR ASSEMBLIES, SEE SHEET 2 OF 2.



DETAILS FOR ATTACHMENT BRACKET
(BOTTOM RAIL ONLY)

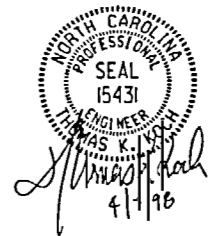
NOTES
METAL RAIL TO END POST CONNECTION

- THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS :
- A. 12mm PLATES SHALL CONFORM TO AASHTO M270 GRADE 250 AND SHALL BE GALVANIZED AFTER FABRICATION.
 - B. 19.1mm STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 21.4 kN THE FERRULES SHALL ENGAGE A 19.1mm DIA. X 41mm BOLT WITH 51mm O.D. WASHER IN PLACE. THE 19.1mm DIA. X 41mm BOLT SHALL HAVE N. C. THREADS.
 - C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 TYPE 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 16 ° C. WASHERS FOR RAIL ATTACHMENT SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.
 - D. STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
- 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 METERS OF 3 BAR METAL RAIL.
- THE 19.1mm STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.
- THE COST OF THE 19.1mm STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 12mm 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 19.1mm DIA. X 41mm BOLT WITH WASHER SHALL BE REPLACED WITH A 19.1mm DIA. X 165mm BOLT AND 51mm O.D. WASHER. ALL SPECIFICATIONS WHICH APPLY TO THE 19.1mm DIA. X 41mm BOLT SHALL APPLY TO THE 19.1mm DIA. X 165mm BOLT SEE SPECIAL PROVISIONS FOR "ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS". THE YIELD LOAD OF THE 19.1mm DIA. BOLT IS 53.4 kN. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



SECTION H-H
(FOR BOTTOM RAIL)

PROJECT NO. R-2425 C
WAKE COUNTY
STATION: 80+30.500 -L-
SHEET 1 OF 2



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
RAIL POST SPACINGS
AND
END OF RAIL DETAILS
(NBL)

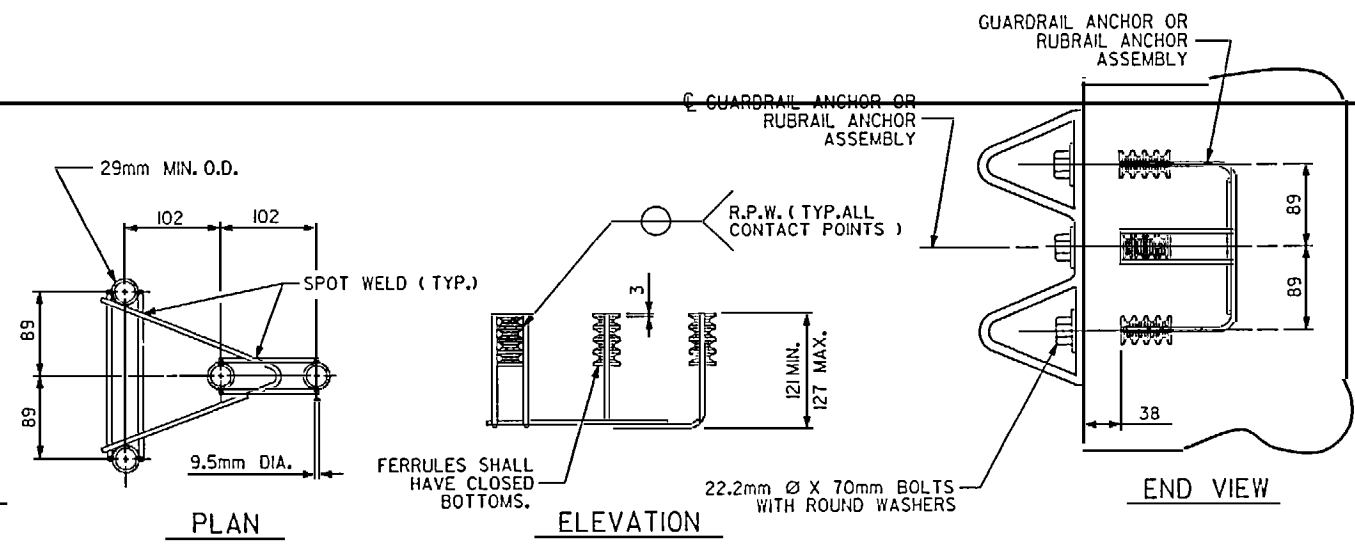
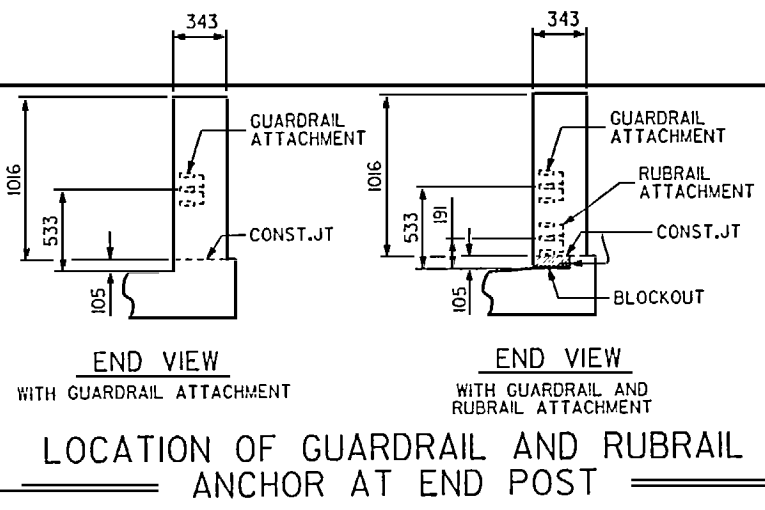
ASSEMBLED BY : L.A. HUSSEY	DATE : 11/26/95	SPECIAL
CHECKED BY : J.M. PRATT	DATE : 10-28-97	
DRAWN BY : MIKE BRITT	DATE : JAN. 1998	STANDARD
CHECKED BY : G.G. HARPER	DATE : JAN. 1998	

REVISIONS			SHEET NO. S-120
NO.	BY:	DATE:	
1	3		
2	4		
TOTAL SHEETS			142

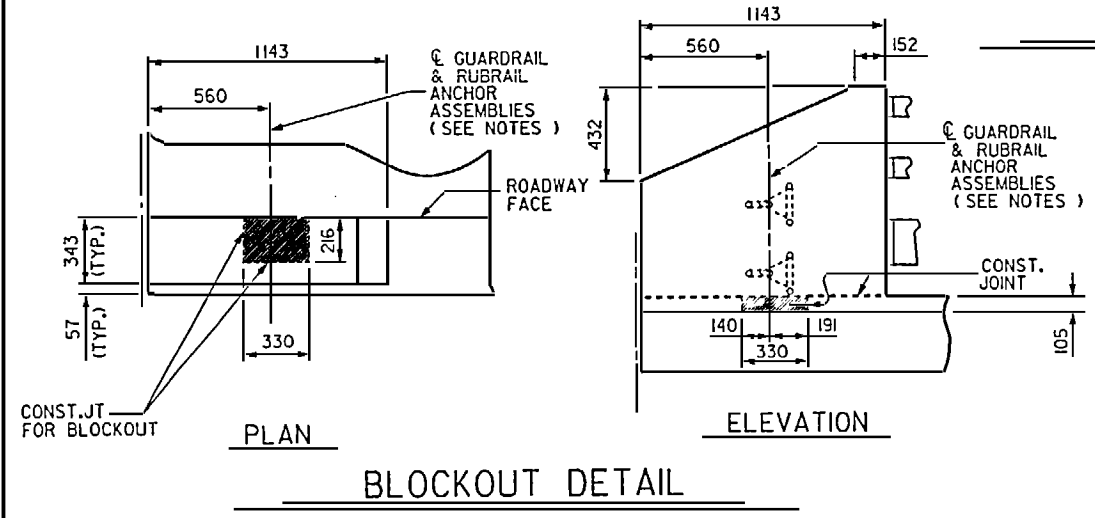
REV. 10/1/93 ELR GRP
REV. 6/1/94 EEM GRP
REV. 6/16/95 EEM GRP

28-OCT-1997 09:12
C:\Users\lhussey\15431\2425\stdr242502mr.dgn
p0111

STD.No.BMR8M STR.#1

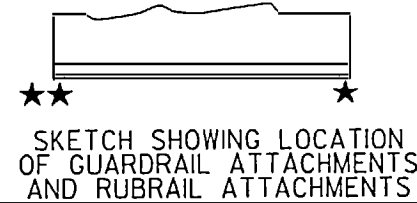


GUARDRAIL ANCHOR ASSEMBLY DETAILS AND RUBRAIL ANCHOR ASSEMBLY DETAILS

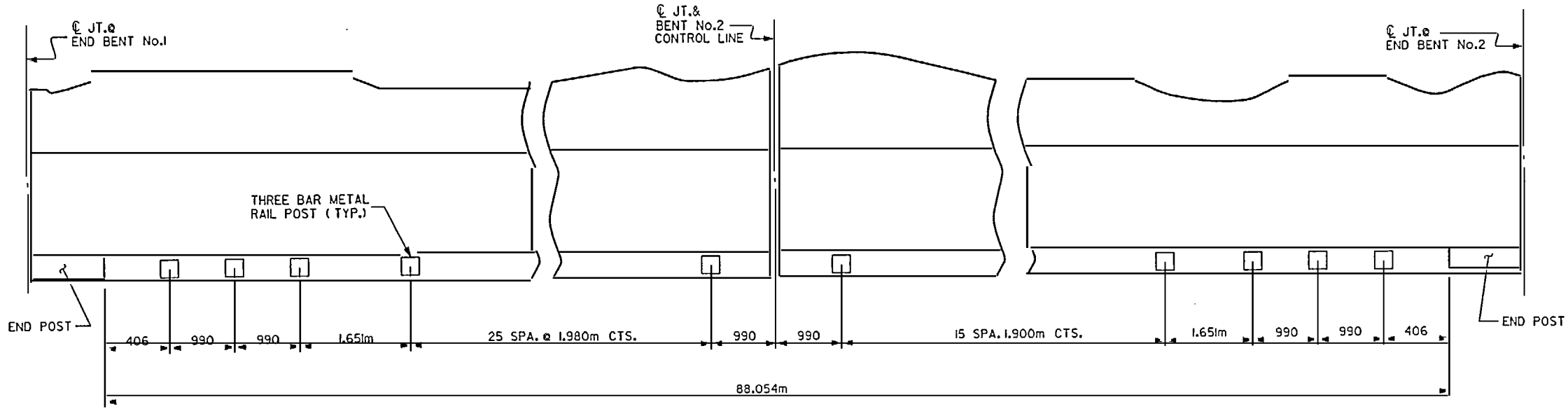


BLOCKOUT DETAIL

NOTE:
THE CONCRETE IN THE SHADED AREA OF THE SIDEWALK PARAPET SHALL BE POURED WITH THE END POST.



★ DENOTES GUARDRAIL ATTACHMENT ONLY REQUIRED.
★★ DENOTES GUARDRAIL & RUBRAIL ATTACHMENTS REQUIRED.



PLAN OF RAIL POST SPACING

NOTES

GUARDRAIL ANCHOR ASSEMBLY AND RUBRAIL ANCHOR ASSEMBLY

THE GUARDRAIL ANCHOR ASSEMBLY AND RUBRAIL ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF ASTM A108, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 38mm.
- 4 - 22.2mm DIA. X 70mm BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTORS OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 22.2mm DIA. X 70mm 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.)
- WIRE STRUTS SHOWN IN THE ANCHOR ASSEMBLY DETAIL ARE THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 689 MPa.

THE GUARDRAIL ANCHOR ASSEMBLY AND RUBRAIL ANCHOR ASSEMBLY WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP. BOLT THREADS MAY BE RECUT AS NECESSARY TO INSURE FIT.

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

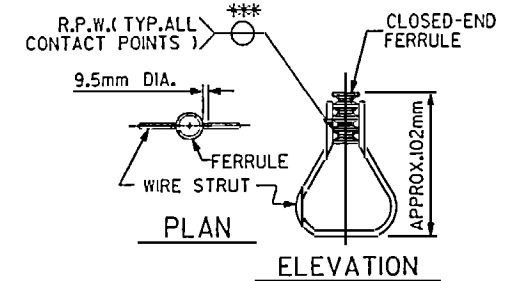
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE GUARDRAIL IS TO BE ATTACHED TO THE END POST, AND THE RUBRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE RUBRAIL IS TO BE ATTACHED TO THE END POST. FOR POINTS OF ATTACHMENT, SEE SKETCH.

NOTES

STRUCTURAL CONCRETE INSERT

THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS

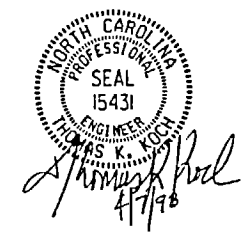
- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF ASTM A108, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 38mm.
- 1 - 19.1mm DIA X 41mm BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTORS OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 19.1mm DIA. X 41mm 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.)
- WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 689 MPa.



STRUCTURAL CONCRETE INSERT

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

PROJECT NO. R-2425 C
WAKE COUNTY
 STATION: 80+30.500 -L-



SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**STANDARD
 RAIL POST SPACINGS
 AND
 END OF RAIL DETAILS
 (NBL)**

ASSEMBLED BY : L.A. HUSSEY	DATE : 11/26/96	SPECIAL
CHECKED BY : J.M. BELT	DATE : 10-28-97	
DRAWN BY : MIKE BRITT	DATE : JAN. 1988	STANDARD
CHECKED BY : G.C. HARPER	DATE : JAN. 1988	

REVISIONS						SHEET NO. 6-121
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 142
2			4			

STD.No. BMR9M STR.#2

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS :

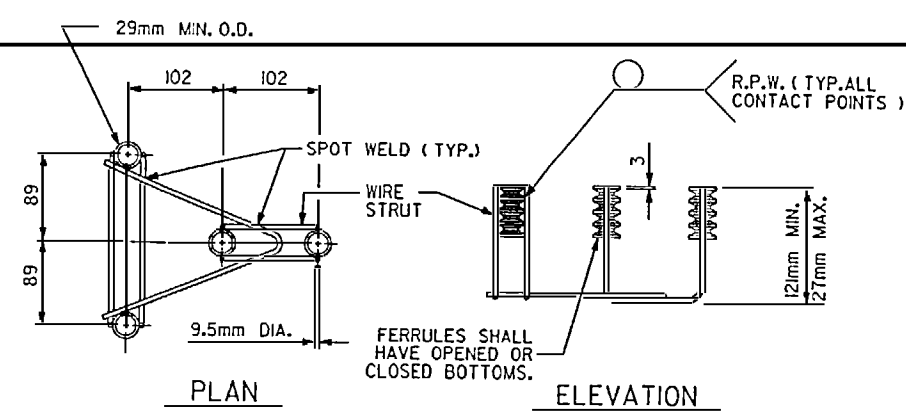
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF ASTM A108, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 38mm.
- B. 4 - 22.2mm DIA. X 70mm BOLTS WITH WASHERS FOR GUARDRAIL ANCHOR ASSEMBLY SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTORS OPTION, STAINLESS STEEL BOLTS WITH WASHERS MAY BE USED AS AN ALTERNATE FOR THE 22.2mm DIA. X 70mm 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 STRUTS SHOWN IN THE ANCHOR ASSEMBLY ARE THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 689 MPa.

THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP. BOLT THREADS MAY BE RECUT AS NECESSARY.

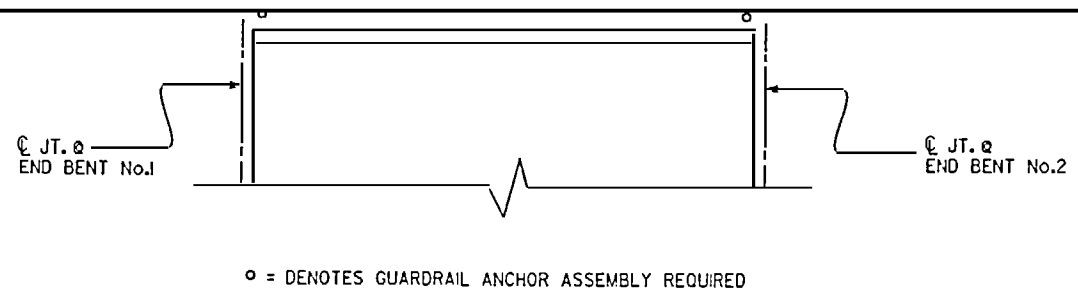
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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.

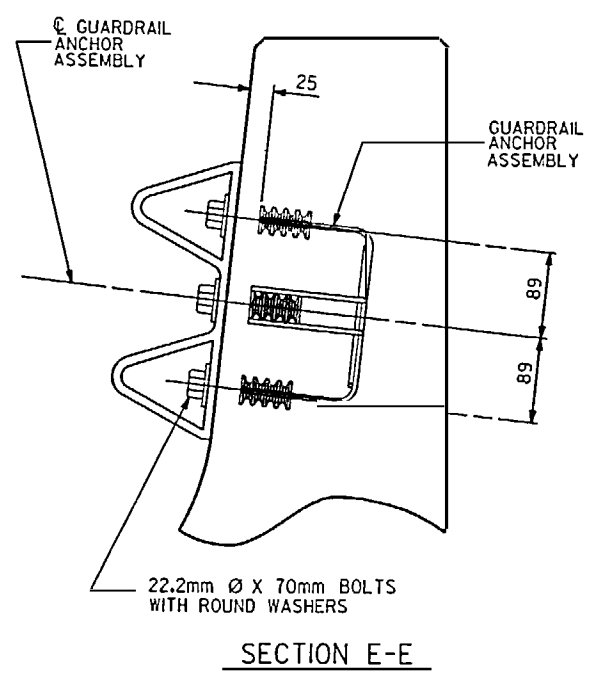
THE CONTRACTOR MAY, AT HIS OPTION, USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF GUARDRAIL ANCHOR ASSEMBLY. SEE SPECIAL PROVISIONS FOR "ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS". THE YIELD LOAD OF THE 22.2mm DIA. BOLT IS 73.8 KN. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



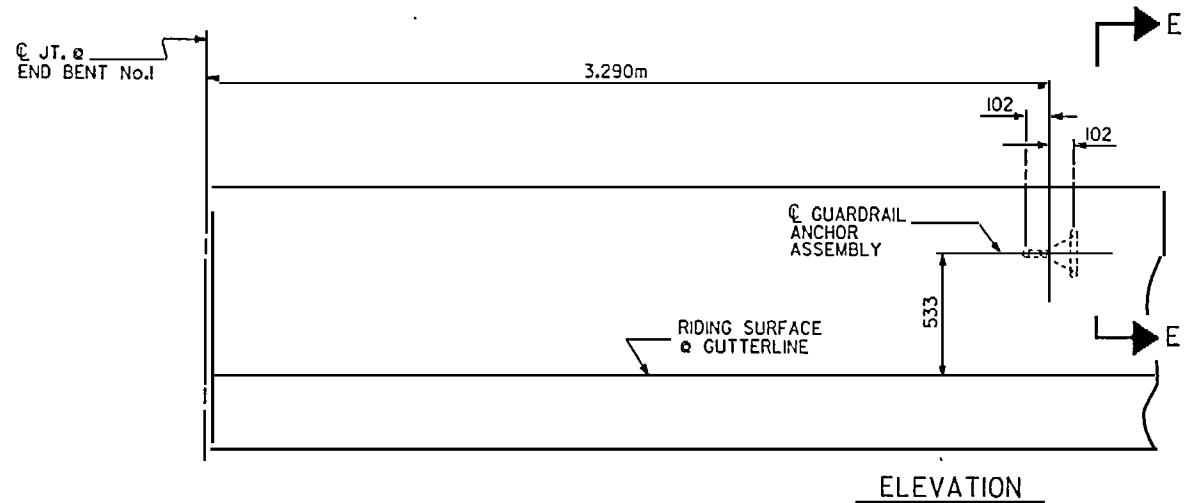
PLAN
ELEVATION
GUARDRAIL ANCHOR ASSEMBLY



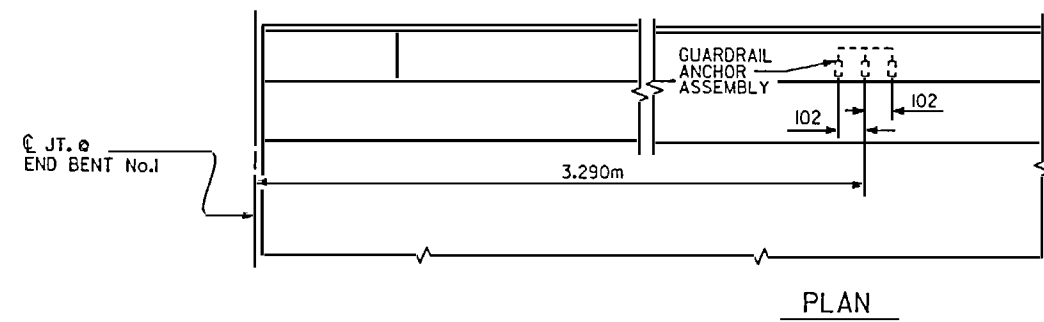
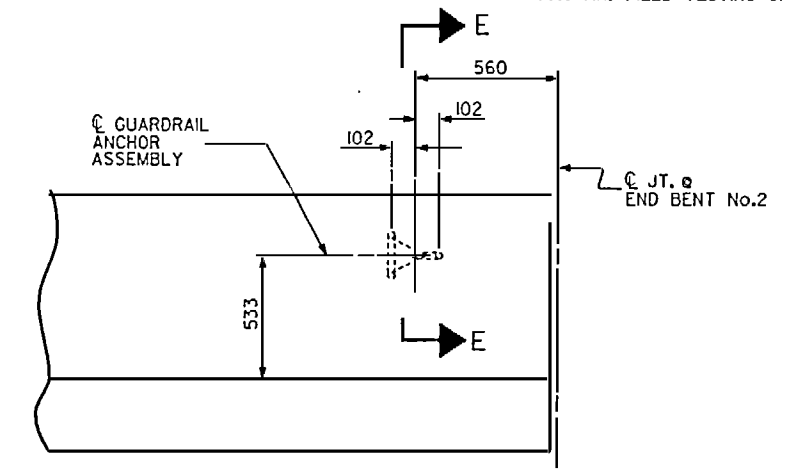
o = DENOTES GUARDRAIL ANCHOR ASSEMBLY REQUIRED
SKETCH SHOWING POINTS OF ATTACHMENTS



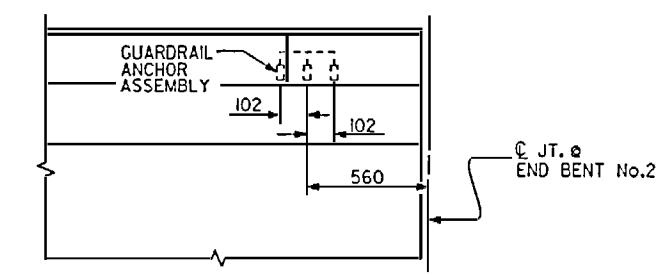
SECTION E-E



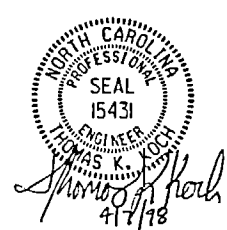
ELEVATION



PLAN



LOCATION OF ANCHORS FOR GUARDRAIL

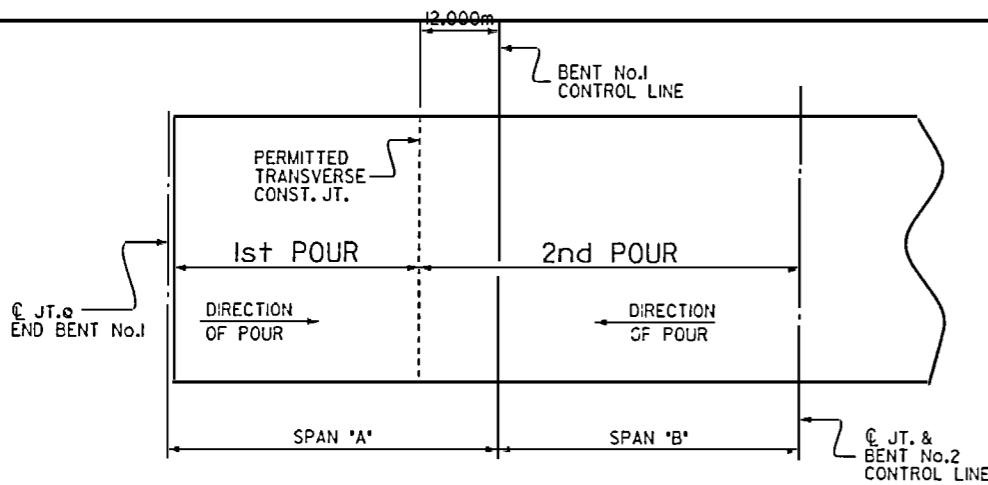


PROJECT NO. R-2425 C
WAKE COUNTY
 STATION: 80+30.500 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD GUARDRAIL ANCHORAGE FOR BARRIER RAIL (NBL)					
REVISIONS					SHEET NO.
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		
					TOTAL SHEETS 142
STD.No. GRAM					STR. #2

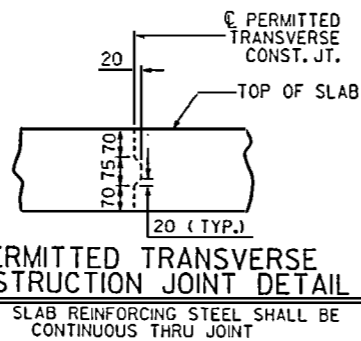
ASSEMBLED BY : L.A. HUSSEY	DATE : 11/26/96	SPECIAL
CHECKED BY : J.M. BRITT	DATE : 10-28-97	
DRAWN BY : MIKE BRITT	DATE : DEC1987	STANDARD
CHECKED BY : RANDY BISSETTE	DATE : DEC1987	

28-OCT-1997 10:52
 d:\users\mbritt\p2425c\tr2v2425c2br.dgn
 mbritt



SPAN "A" & "B" POURING SEQUENCE
(TO BE USED WITH PERMITTED CONST. JT. OPTION)

BAR SIZE	SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS				PARAPET AND BARRIER RAIL
	EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#10	520	450	520	450	720
#15	730	640	730	640	1020
#20	910	790	1190	790	1350
#25	1980	1320	1980	1320	2240

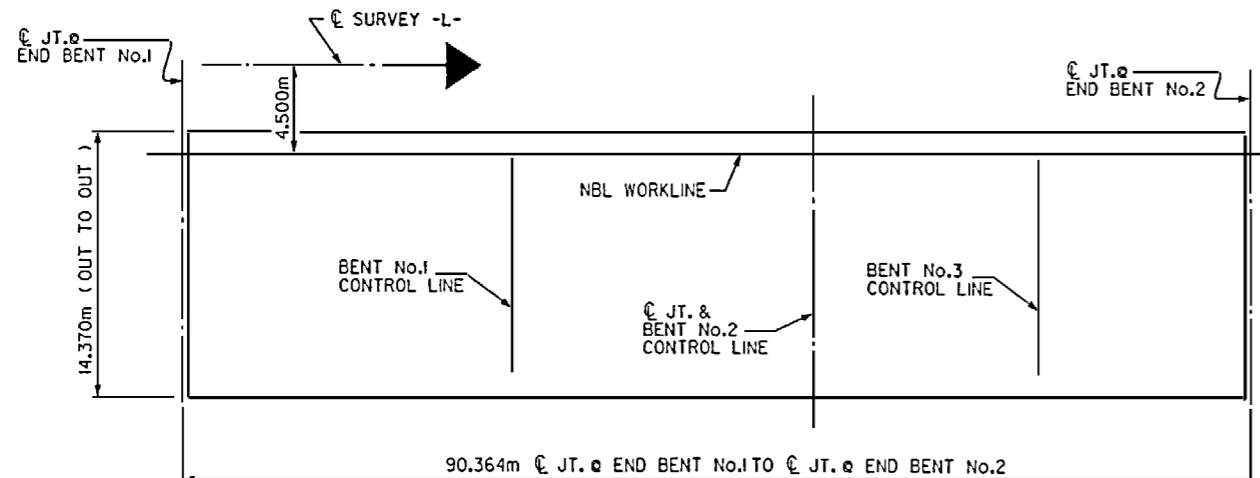
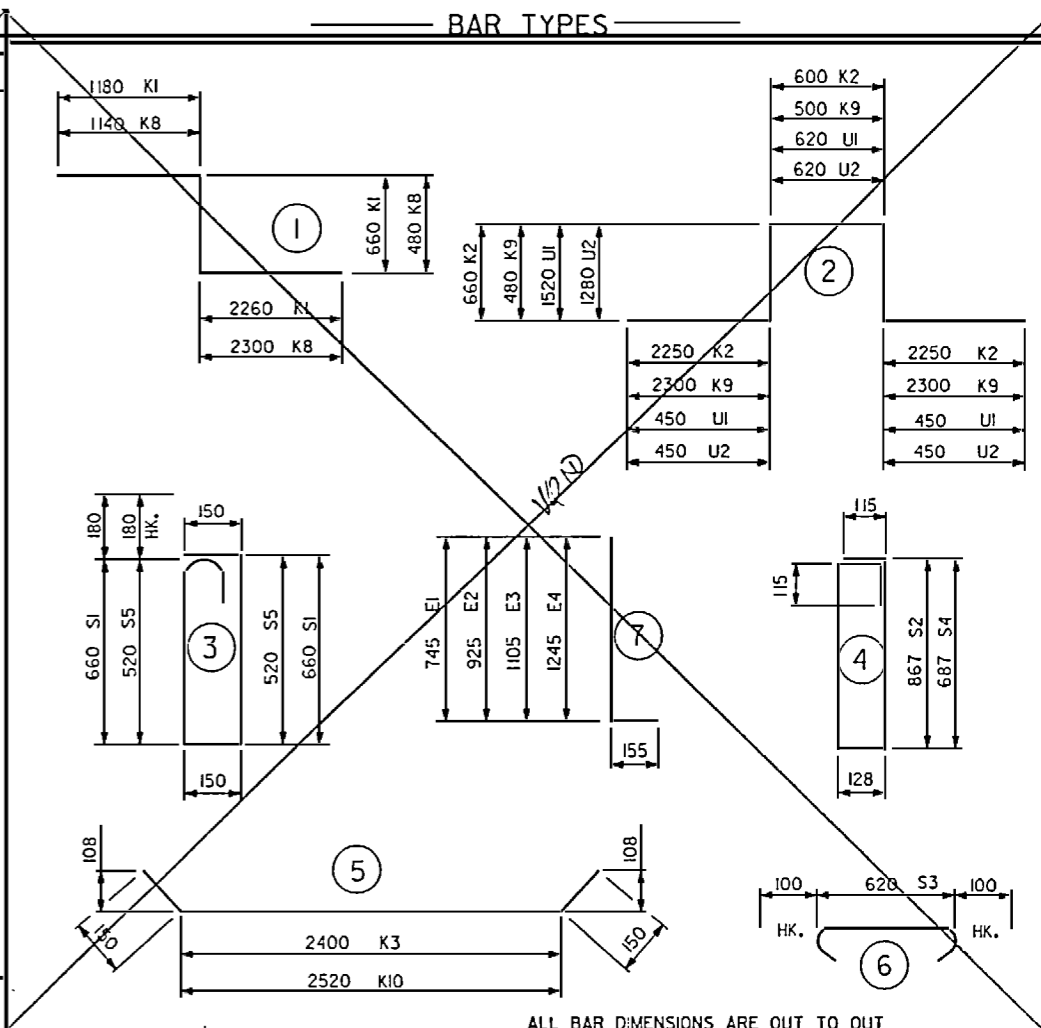


PERMITTED TRANSVERSE CONSTRUCTION JOINT DETAIL

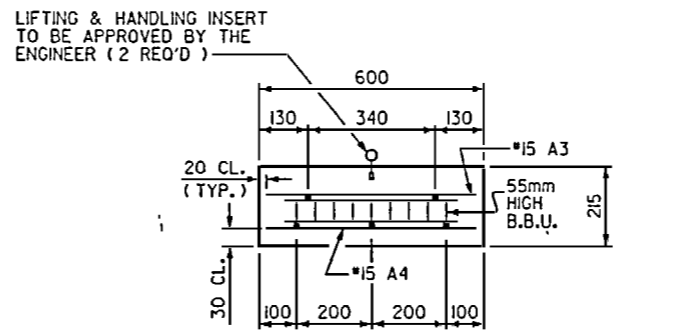
NOTE: SLAB REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT

REINFORCING BAR SCHEDULE

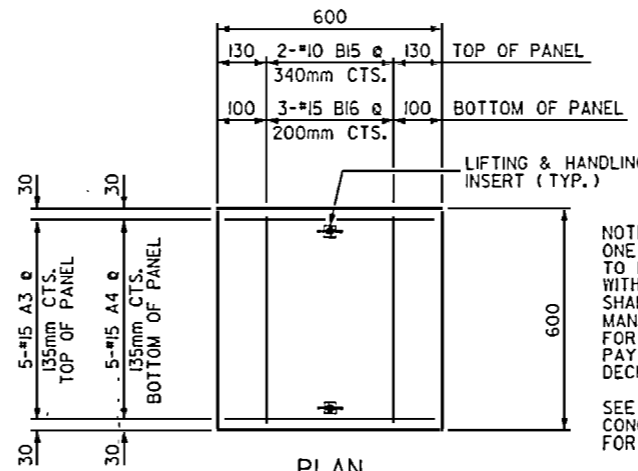
SPAN 'A' & 'B'					SPAN 'C' & 'D'						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	397	15	STR	14260	8888	*A1	247	15	STR	14260	5530
A2	397	15	STR	14260	8888	A2	247	15	STR	14260	5530
*A3	10	15	STR	560	9	*A3	5	15	STR	560	4
A4	10	15	STR	560	9	A4	5	15	STR	560	4
*B1	123	10	STR	7440	718	*B7	82	10	STR	7120	459
B2	240	15	STR	14380	5418	*B8	80	20	STR	4440	836
*B3	41	20	STR	14200	1371	*B9	41	20	STR	8880	857
B4	80	20	STR	7100	1338	*B10	180	15	STR	11940	3374
*B5	123	10	STR	7540	728	*B11	82	10	STR	6960	448
B6	7	10	STR	6380	46	*B12	5	10	STR	7320	29
*B13	4	18	STR	3380	230	*B14	20	10	STR	8860	139
B14	6	15	STR	560	9	*B15	8	15	STR	560	9
*D1	620	10	STR	300	146	*D1	385	10	STR	300	91
E1	2	25	7	900	7	E1	2	25	7	900	7
E2	2	25	7	1080	8	E2	2	25	7	1080	8
E3	2	25	7	1260	10	E3	2	25	7	1260	10
E4	2	25	7	1400	11	E4	2	25	7	1400	11
F1	2	20	STR	700	3	F1	2	20	STR	700	3
F2	4	20	STR	1060	10	F2	4	20	STR	1060	10
F3	2	20	STR	1160	5	F3	2	20	STR	1160	5
G1	2	15	STR	14260	45	G1	2	15	STR	14260	45
G2	206	15	STR	1740	563	G2	128	15	STR	1740	350
K1	8	25	1	4100	128	K7	10	10	STR	6500	51
K2	12	25	2	6420	302	*K8	10	25	1	3920	123
K3	16	15	5	2700	68	*K9	10	25	2	6060	285
K4	16	15	STR	2500	65	K10	16	15	5	2820	71
K5	8	10	STR	2020	13	K11	16	15	STR	2660	67
K6	40	10	STR	2460	77	K12	8	10	STR	2140	13
K7	12	10	STR	6500	61	K13	32	10	STR	2560	64
S1	72	15	3	1800	203	S3	128	10	6	820	82
S2	64	15	4	2220	223	S4	72	15	4	1860	210
S3	140	10	6	820	90	S5	72	15	3	1520	172
U1	28	10	2	4560	100	*U2	32	10	2	4080	102
REINFORCING STEEL					kg. 14,917	REINFORCING STEEL					kg. 9,469
EPOXY COATED REINFORCING STEEL					kg. 14,871	EPOXY COATED REINFORCING STEEL					kg. 9,422
* THESE BARS ARE EPOXY COATED.						* THESE BARS ARE EPOXY COATED.					



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB
(SQ.METER = 1298.6)



ELEVATION



PLAN

TEST PANEL DETAIL

(ONE TEST PANEL REQUIRED FOR EACH DECK POUR)

GROOVING BRIDGE FLOORS	
APPROACH SLABS (NOT REQ'D)	SO.METER
BRIDGE DECK	998.4 SO.METER
TOTAL	998.4 SO.METER

	CLASS AA CONCRETE	41 MPa CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. METER)	(CU. METER)	(Kg)	(kg)
SPAN 'A' & 'B'	-	226.4	14,917	14,871
SIDEWALK	21.8	-	***	***
END POST	0.3	-	***	***
SPAN 'C' & 'D'	-	144.3	9,469	9,422
SIDEWALK	13.6	-	***	***
END POST	0.3	-	***	***
TOTALS **	36.0	370.7	24,386	24,293

** QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED
*** SIDEWALK & END POST REINFORCING STEEL IS INCLUDED IN SPAN TOTALS.

ASSEMBLED BY : L.A. HUSSEY DATE : 11/25/96
CHECKED BY : S.M. BRITT DATE : 6-8-98
DRAWN BY : M. BRITT DATE : 5/28/87
CHECKED BY : J.J. DAVIS DATE : 9/3/87

REV 10/23/93 ELP 14 GRP
REV. 6/1/94 EEM 14 GRP
08-JUN-1998 11:19
C:\USER\SMBRIT\VP2425C\STR\2VP2425C26M.dgn
mbritt

PROFESSIONAL ENGINEER
SEAL 15431
THOMAS K. BUCHHEIT
6/16/98

PROJECT NO. R-2425 C
WAKE COUNTY
STATION: 80+30.500 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
SUPERSTRUCTURE
BILL OF MATERIAL
(NBL)

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

TOTAL SHEETS 142

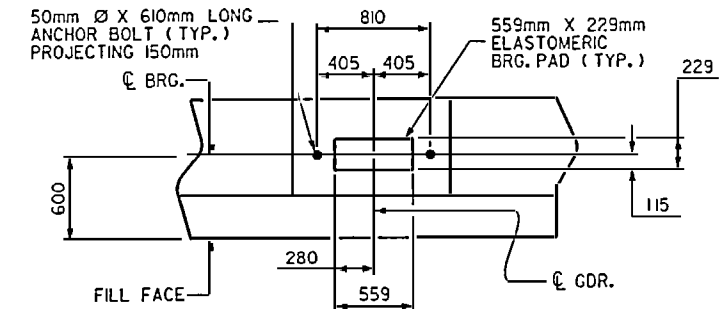
STD. NO. BOM2M

STR.#2

NOTES

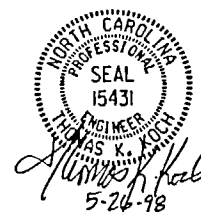
- STIRRUPS & U2 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.
- PIPE DRAINS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR REINFORCING STEEL AND ANCHOR BOLTS.
- BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.
- THE TOP SURFACE AREAS OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
- THE TOP SURFACE OF THE END BENT CAP EXCEPT BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.
- THE CONCRETE IN THE SHADED AREA OF WING W2 SHALL BE POURED AFTER THE JOINT IN THE DECK AND THE APPROACH SLAB HAS BEEN SAWED AND THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

- ▲ THIS ELEVATION TAKEN ON FILL FACE OF BACKWALL.
- * FOR LOCATION OF ELEVATIONS BETWEEN BUILD-UPS, SEE SECTION A-A, SHEET 3 OF 3.
- *15 "V" BARS IN BACKWALL SHALL BE PLACED 50mm CLEAR FROM TOP OF BACKWALL.
- THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 100mm DRAIN PIPE THROUGH THE WINGWALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN WINGWALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.
- REINFORCING STEEL IN BACKWALL MAY BE SHIFTED SLIGHTLY AS REQUIRED TO CLEAR THE TS 103 PVC SLEEVE.



DETAIL "A"
(TYPICAL ALL GDR.'S)

** NOTE :
 FOR ELECTRICAL CONDUIT SYSTEM,
 SEE SPECIAL PROVISIONS AND
 "ELECTRICAL CONDUIT SYSTEM" SHEETS.

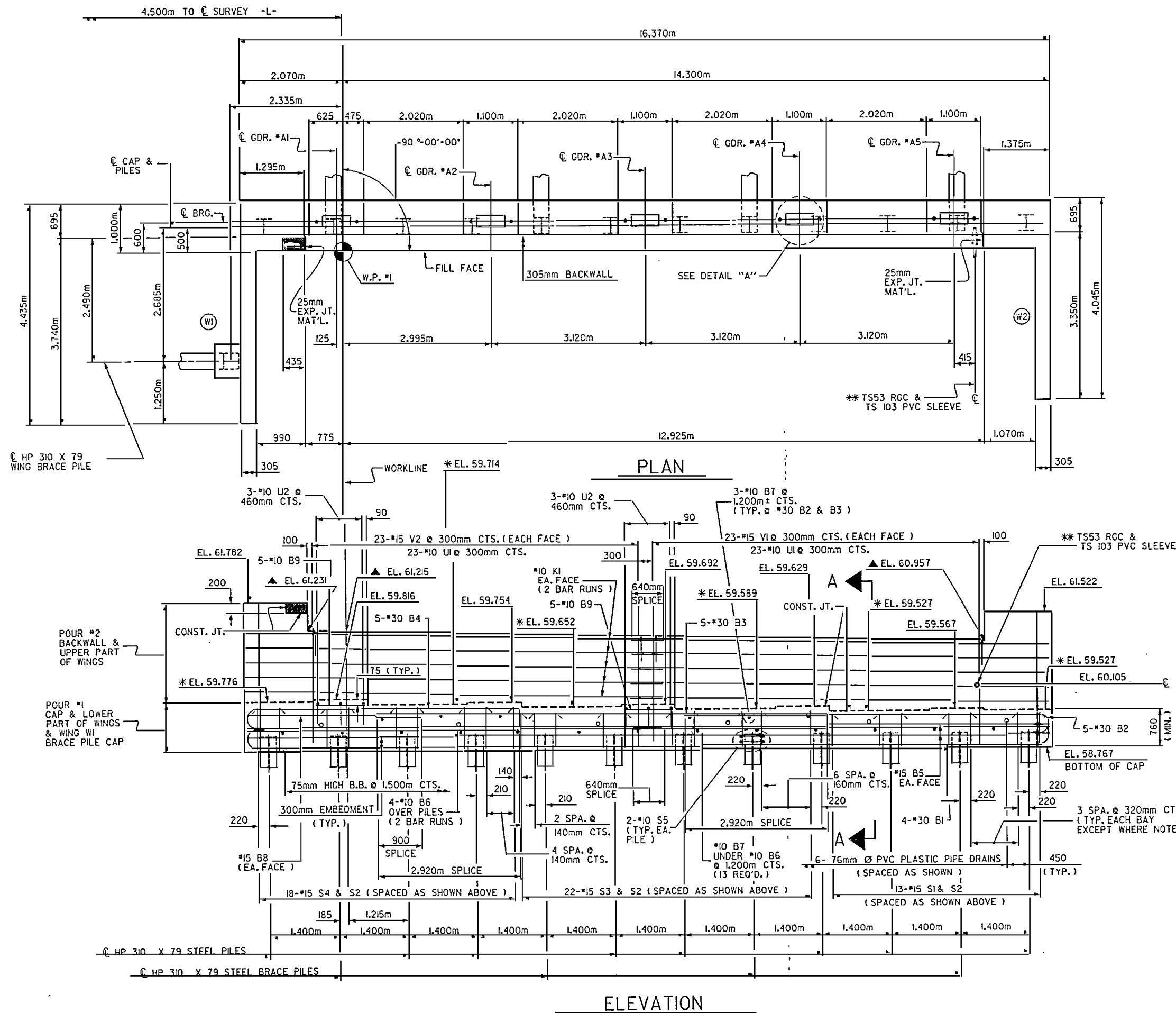


PROJECT NO. R-2425 C
WAKE COUNTY
 STATION: 80+30.500 -L-

SHEET 10F 3

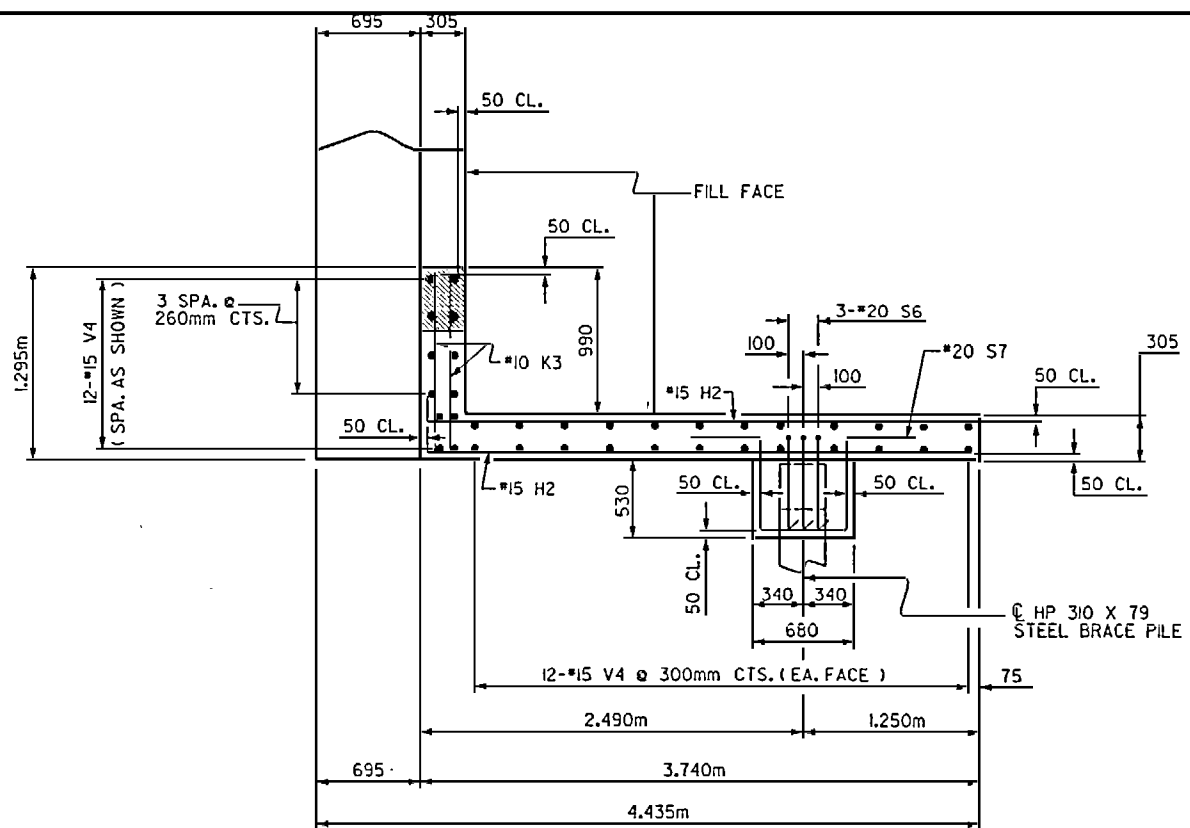
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH				SHEET NO.	
SUBSTRUCTURE				5-125	
END BENT No. 1				TOTAL SHEETS	
(NBL)				142	
REVISIONS					
NO.	BY:	DATE:	BY:	DATE:	
1					
2					

STR. #2

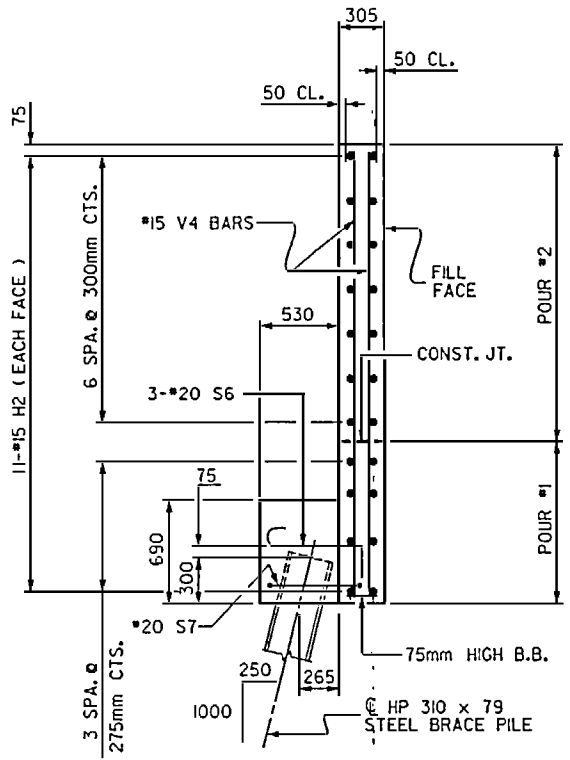


ELEVATION
(BRACE PILE IN WING NOT SHOWN FOR CLARITY)

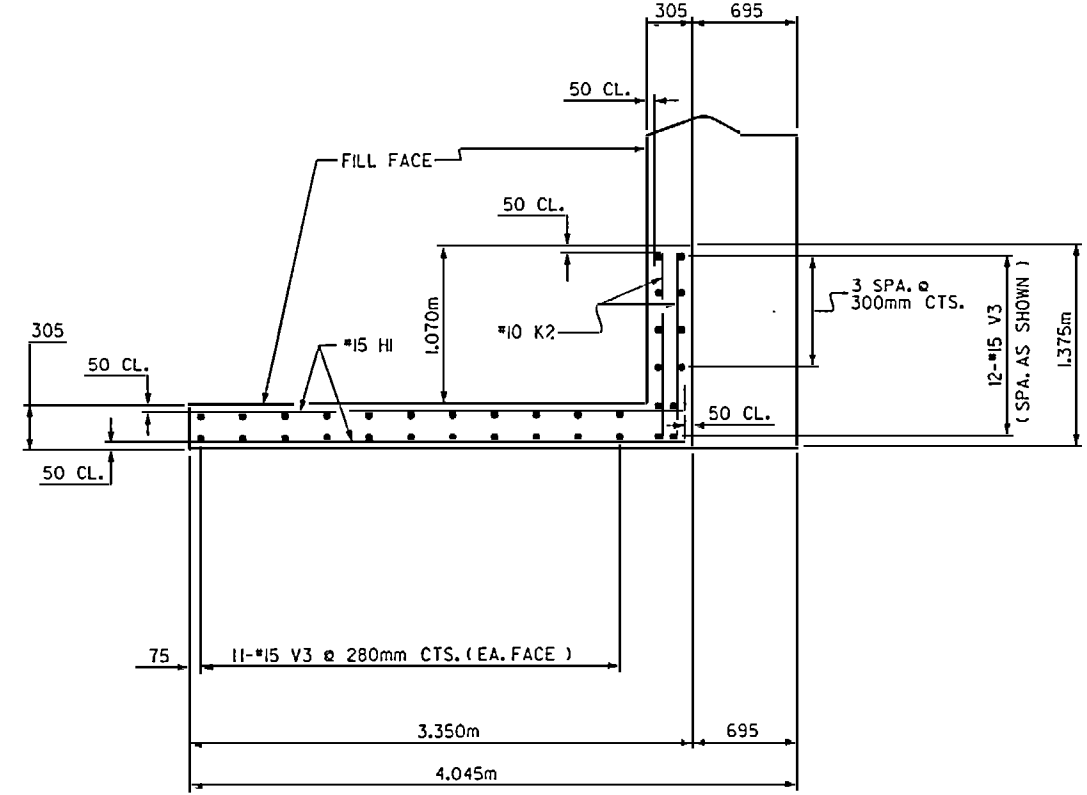
DRAWN BY: L.A. HUSSEY DATE: 4-11-97
 CHECKED BY: J.M. BRITT DATE: 5-26-98



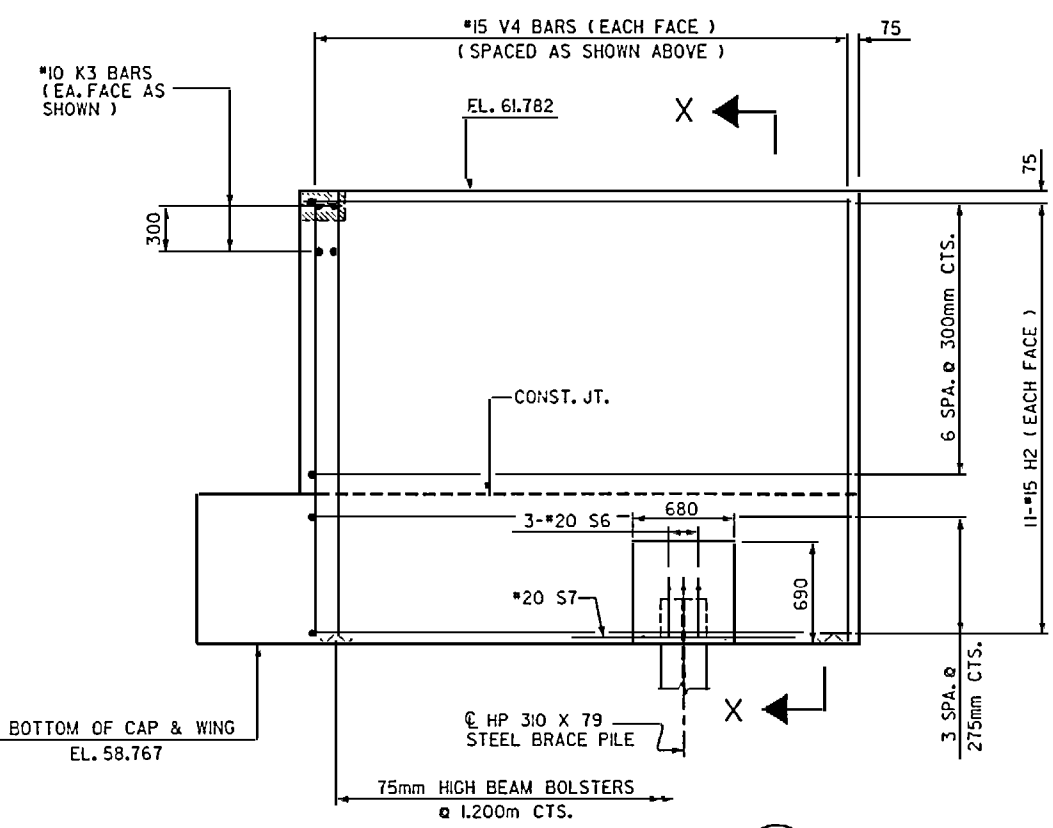
PLAN OF WING (W1)



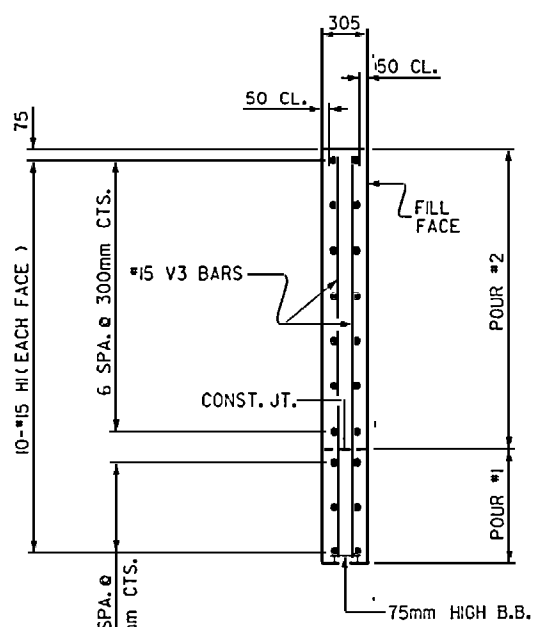
SECTION X-X



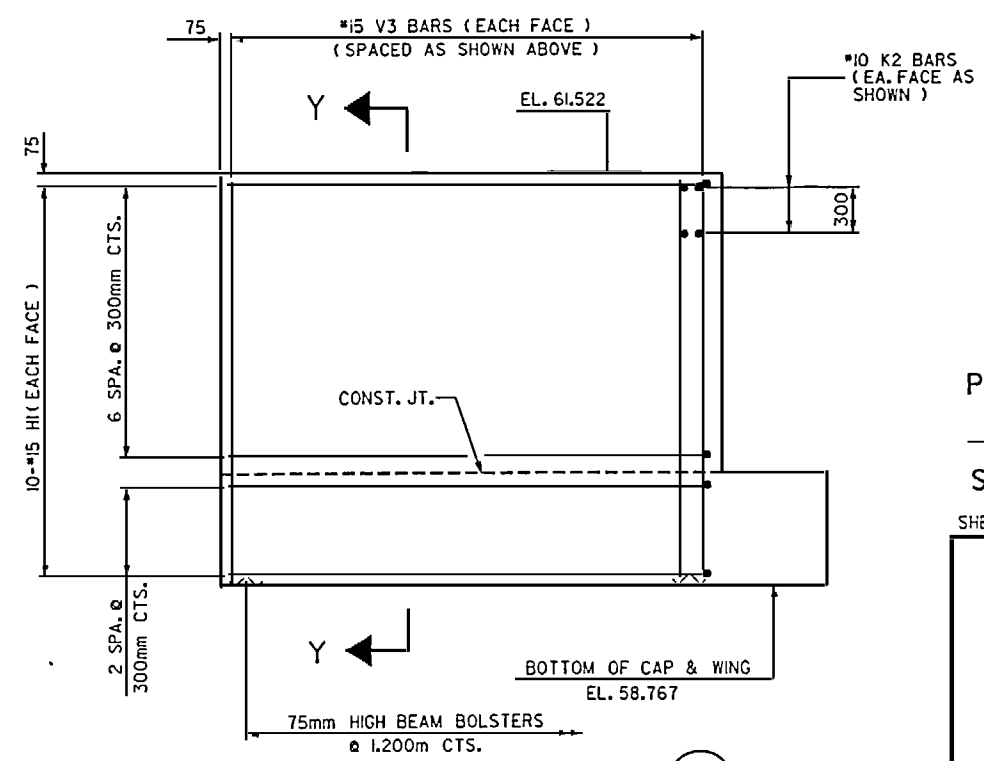
PLAN OF WING (W2)



ELEVATION OF WING (W1)



SECTION Y-Y



ELEVATION OF WING (W2)



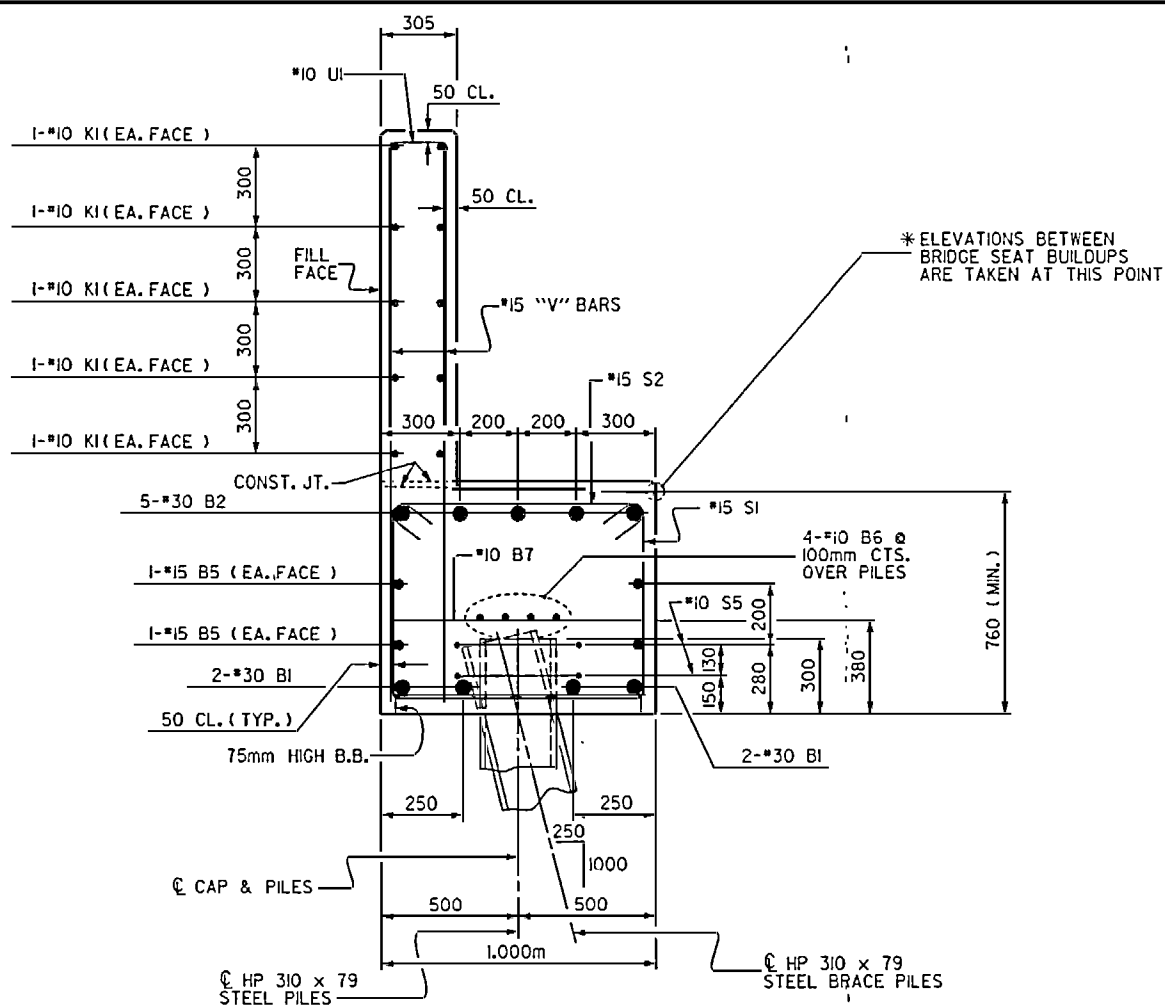
PROJECT NO. R-2425 C
 WAKE COUNTY
 STATION: 80+30.500 -L-

SHEET 2 OF 3

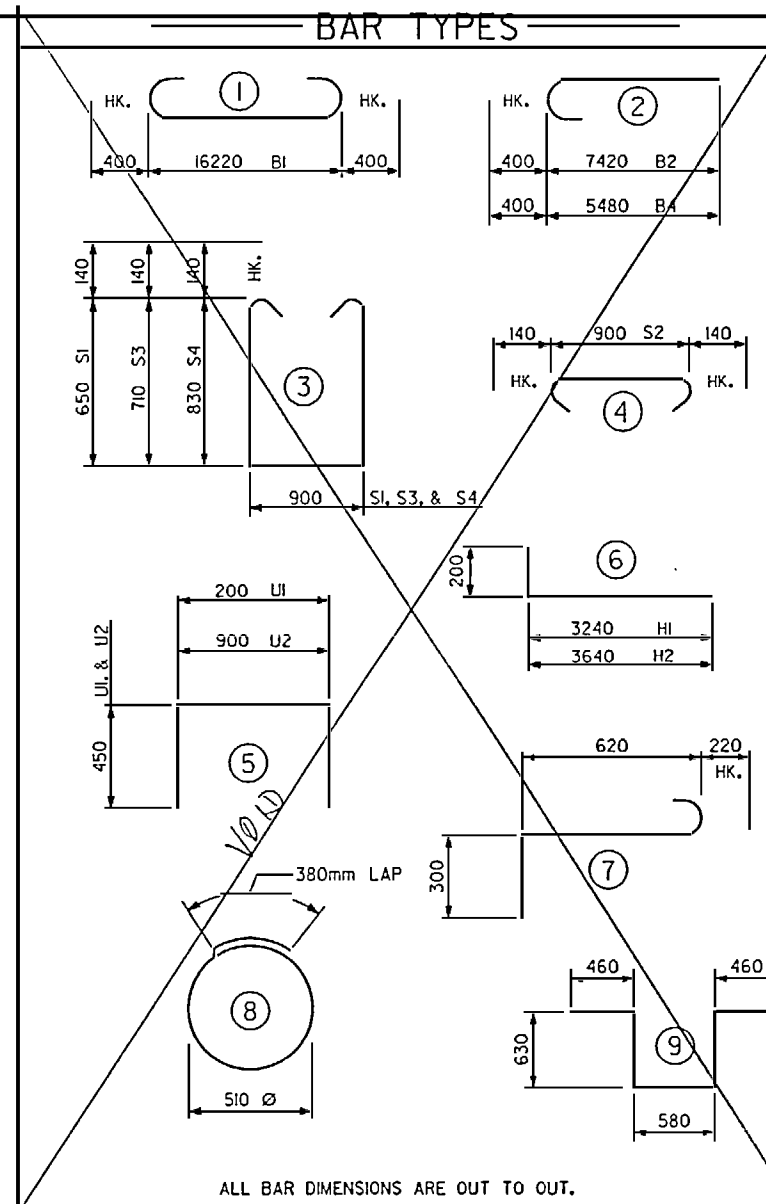
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT No. 1
 (NBL)

DRAWN BY: L.A. HUSSEY DATE: 4-11-97
 CHECKED BY: J.M. BLITZ DATE: 5-20-98

REVISIONS						SHEET NO.	
NO.	BY	DATE	NO.	BY	DATE	5-126	
1			3			TOTAL SHEETS	
2			4			142	



SECTION A-A



BILL OF MATERIAL

END BENT No.1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	30	1	17020	374
B2	5	30	2	7820	215
B3	5	30	STR	9160	252
B4	4	15	2	580	162
B5	4	30	STR	16260	453
B6	8	18	STR	8460	233
B7	9	18	STR	940	26
B8	2	15	STR	3460	95
B9	10	18	STR	1000	28
H1	20	15	6	3440	108
H2	22	15	6	3840	133
K1	20	10	STR	8460	133
K2	4	10	STR	1260	4
K3	4	10	STR	1180	4
S1	13	15	3	2480	51
S2	53	15	4	1180	98
S3	22	15	3	2600	90
S4	18	15	3	2840	80
S5	24	10	8	1980	37
S6	3	20	7	1140	8
S7	1	20	8	2760	6
U1	46	10	5	1100	40
U2	6	10	5	1800	8
V1	46	15	STR	2080	150
V2	46	15	STR	2220	160
V3	34	15	STR	2640	141
V4	36	15	STR	2900	164
REINFORCING STEEL				kg.	2605

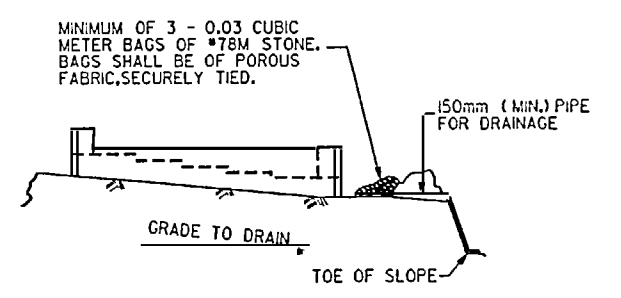
CLASS A CONCRETE BREAKDOWN

POUR #1	16.5 m ³
CAP, LOWER PART OF WINGS, AND WING W2 BRACE PILE CAP	
POUR #2	11.6 m ³
BACKWALL & UPPER PART OF WINGS	
CLASS A CONC. TOTAL	28.1 m ³

HP 310 X 79 STEEL PILES
METERS 106.5 NO. 13

L-279 310x79 Steel Piles As-Built
(SEE INT-5100 FOR LAYOUT)

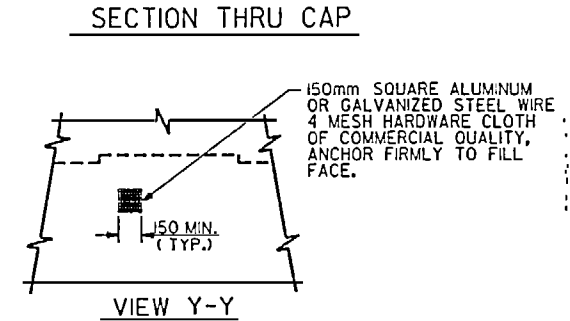
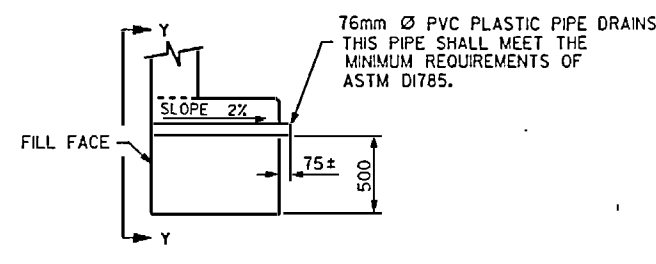
PILE NO.	PAY LENGTH
1	8.64
2	8.94
3	8.10
4	7.99
5	8.70
6	8.49
7	8.72
8	9.27
9	8.91
10	9.83
11	9.45
12	10.25
13	9.13
TOTAL	116.62



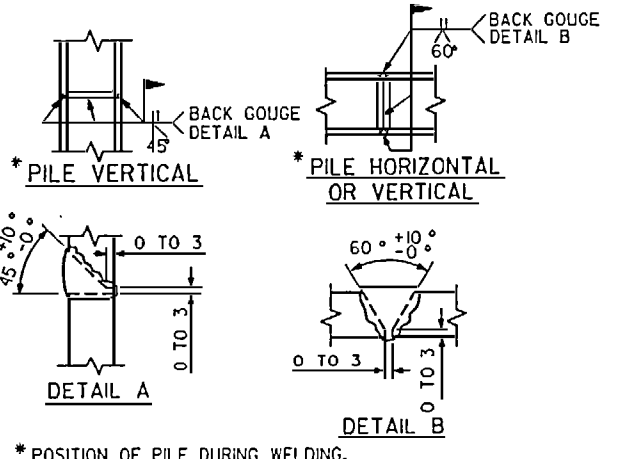
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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 FOR THE SEVERAL PAY ITEMS.



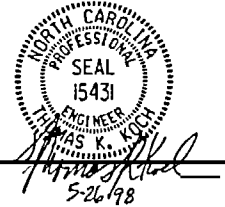
NOTE: NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE PVC PLASTIC PIPE DRAINS, HARDWARE CLOTH AND FASTENERS. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE FOR THE SEVERAL PAY ITEMS.



* POSITION OF PILE DURING WELDING.

PROJECT NO. R-2425 C
WAKE COUNTY
STATION: 80+30.500 -L-
SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT No. 1
(NBL)



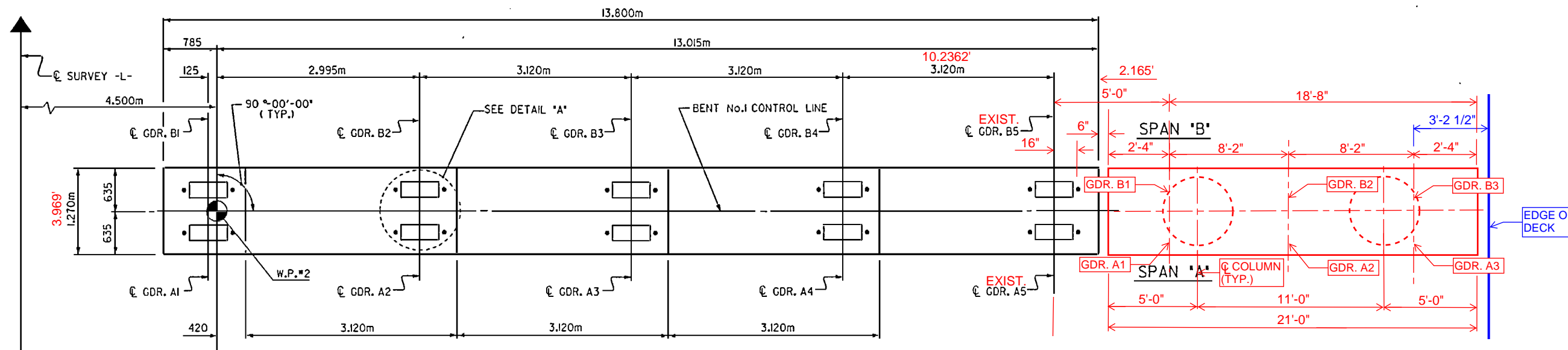
DRAWN BY: L.A. HUSSEY DATE: 4-11-97
CHECKED BY: J.M. BRITT DATE: 5-20-98

NO.	BY	DATE	NO.	DATE	SHEET NO.
1			3		142
2			4		

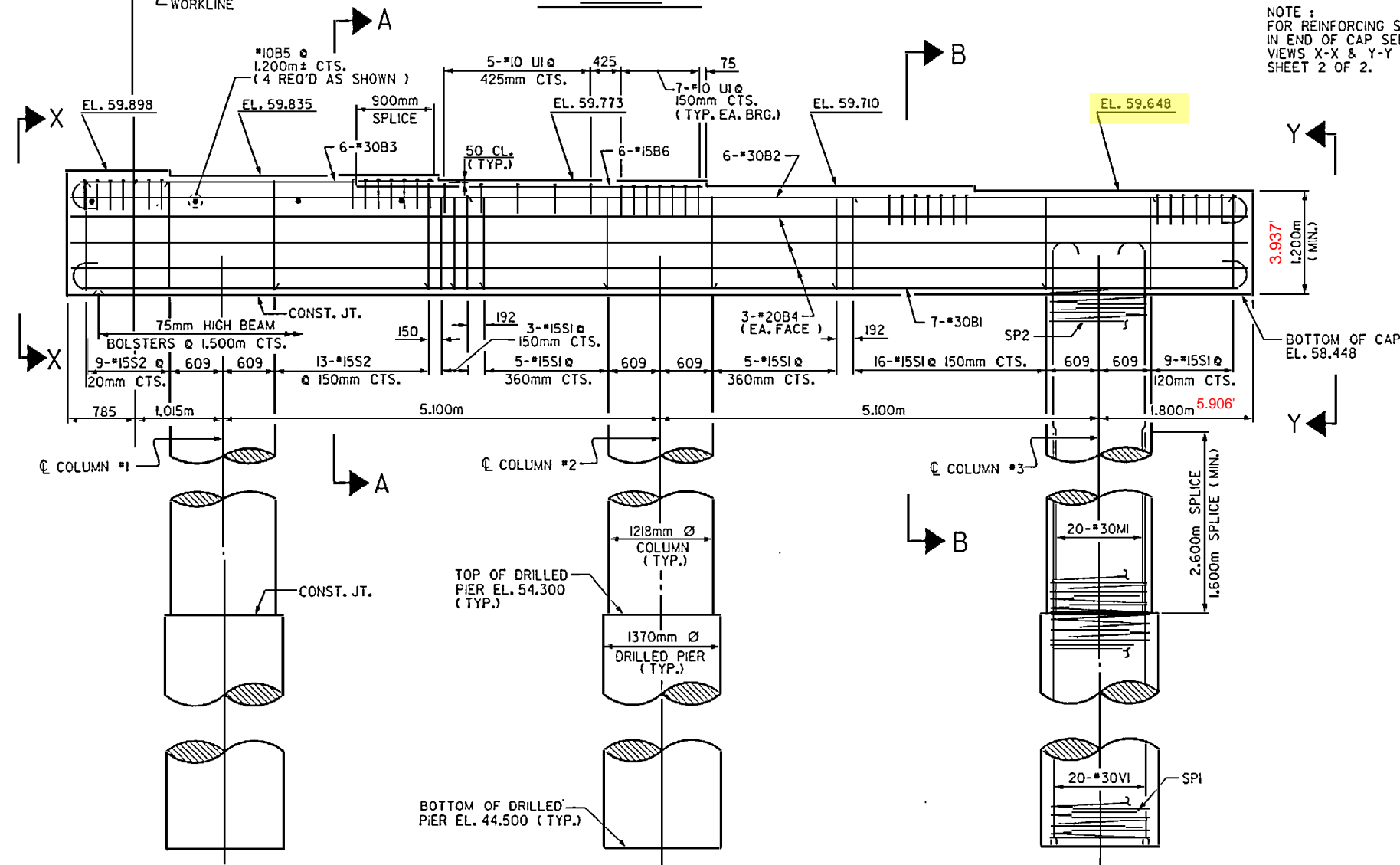
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NOTES

- STIRRUPS AND UI BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- HOOKS ON 'M' BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
- FOR SPIRAL COLUMN REINFORCING STEEL, SEE SPECIAL PROVISIONS.
- FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.
- FOR PILE INTEGRITY TESTING, SEE SPECIAL PROVISIONS.
- ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR REINFORCING STEEL AND SPIRAL COLUMN REINFORCING STEEL.
- STIRRUPS IN CAP ARE TO BE ALTERNATELY INVERTED.
- THE DRILLED PIERS SHALL BE INSTALLED TO THE MINIMUM TIP ELEVATION SHOWN ON THE PLANS AND SHALL HAVE A MINIMUM DIAMETER OF 1.322m IN THE HARD ROCK ZONE. HARD ROCK SHALL BE DEFINED AS MATERIAL THAT CAN NOT BE CUT WITH A ROCK AUGER AND MUST BE EXCAVATED BY CORING, BLASTING, AIR TOOLS, HAND REMOVAL, OR OTHER ACCEPTABLE METHODS.



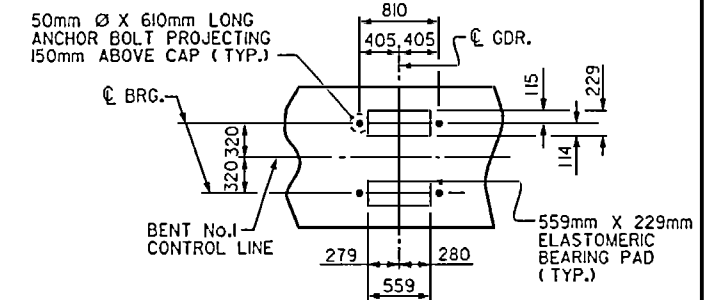
PLAN



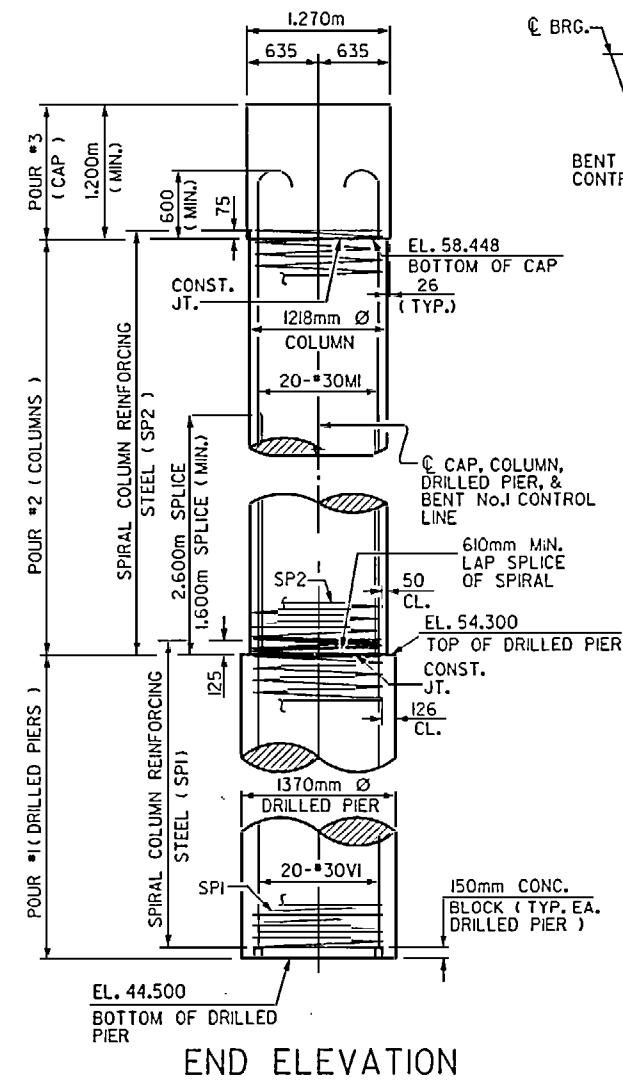
ELEVATION

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

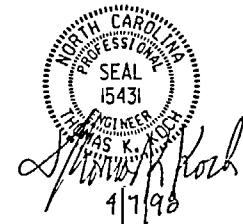
NOTE:
 FOR REINFORCING STEEL
 IN END OF CAP SEE
 VIEWS X-X & Y-Y
 SHEET 2 OF 2.



DETAIL "A"
 (TYP. EA. GDR.)



END ELEVATION



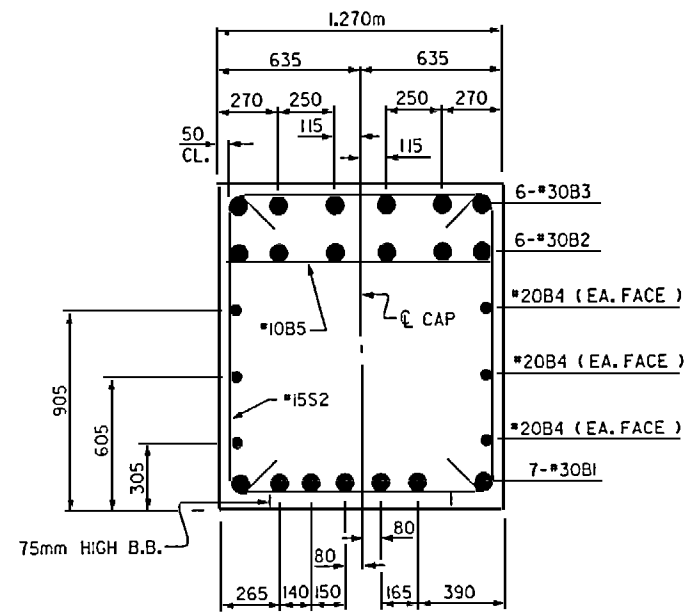
PROJECT NO. R-2425 C
 WAKE COUNTY
 STATION: 80+30.500 -L-

SHEET 1 OF 2

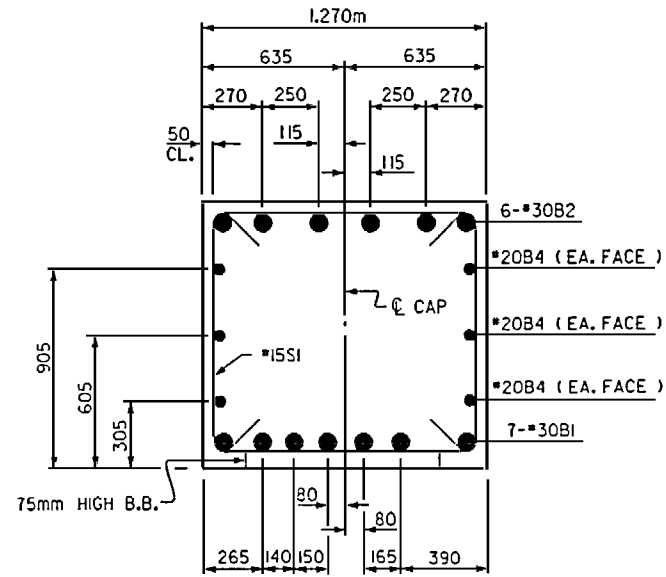
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT No.1
 (NBL)

REVISIONS					SHEET NO.
NO.	BY	DATE	NO.	DATE	5-128
1			3		TOTAL SHEETS
2			4		142

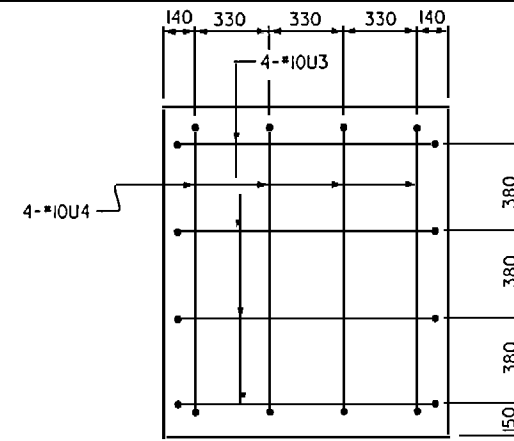
DRAWN BY: M.J. HOGAN DATE: 4/21/97
 CHECKED BY: T.G. PAYNE DATE: 2/11/98



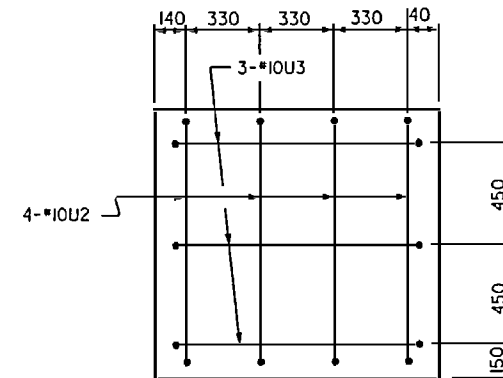
SECTION A-A



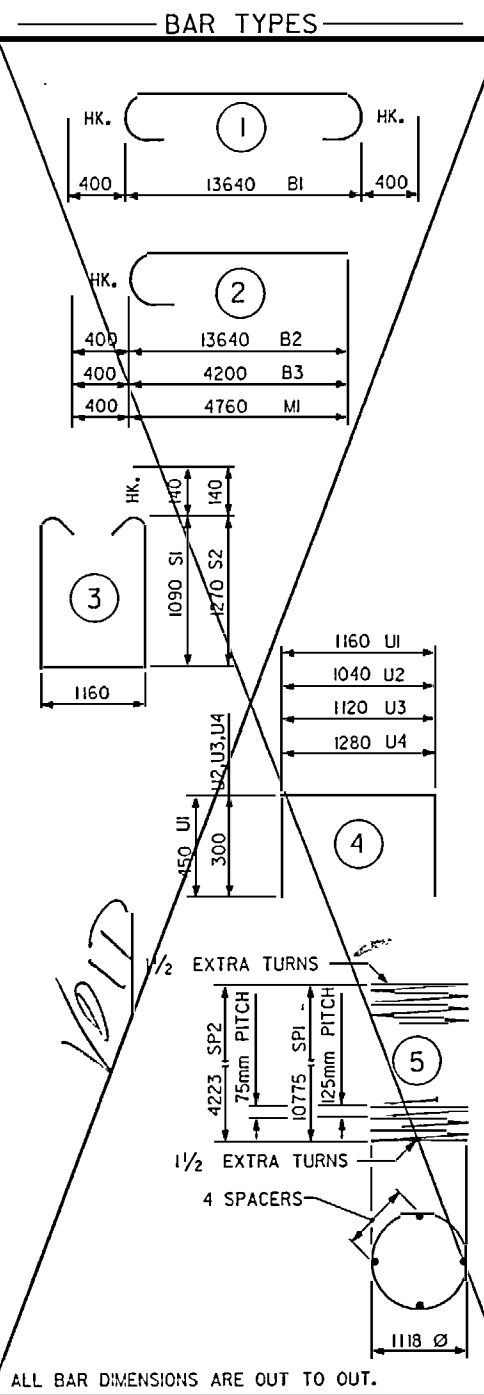
SECTION B-B



VIEW X-X



VIEW Y-Y

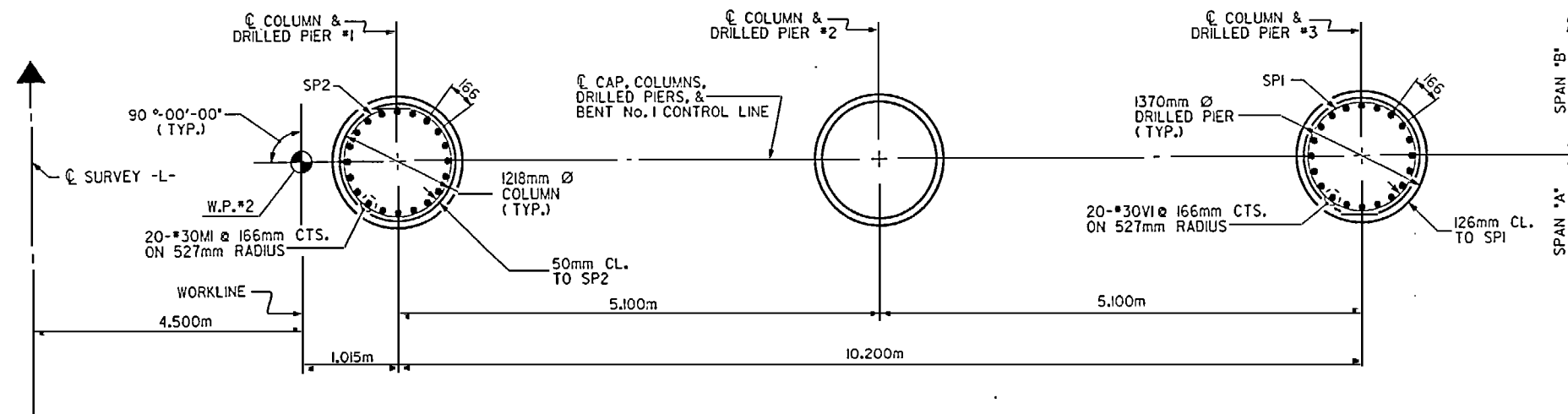


ALL BAR DIMENSIONS ARE OUT TO OUT.

- LE-263 1370mm Ø Drilled Piers NOT in Rock As-Built: 23.1m
- LE-264 1370mm Ø Drilled Piers IN Rock As-Built: 6.4m
- LE-265 1370mm Ø PERMANENT STEEL CASING As-Built

BILL OF MATERIAL					
BENT NO.1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	7	30	1	14440	555
B2	6	30	2	14040	463
B3	6	30	2	4600	152
B4	6	20	STR	13700	194
B5	4	10	STR	1160	4
B6	6	15	STR	4020	38
M1	50	30	2	5160	1701
S1	38	15	3	3620	216
S2	22	15	3	3980	137
U1	40	10	4	2050	65
U2	4	10	4	1640	5
U3	7	10	4	1720	9
U4	4	10	4	1880	6
V1	60	30	STR	2260	4042
REINFORCING STEEL					kg. 7,587
SPIRAL COLUMN REINFORCING STEEL					
SP1	3	-	5	311800	1469
SP2	3	-	5	208720	492
SPIRAL COLUMN REINFORCING STEEL					kg. 1,961
DRILLED PIER CONCRETE					
POUR #1 (DRILLED PIERS)					m ³ 43.3
TOTAL DRILLED PIER CONCRETE					m ³ 43.3
CLASS A CONCRETE BREAKDOWN					
POUR #2 (COLUMNS)					m ³ 14.5
POUR #3 (CAP)					m ³ 22.9
TOTAL CLASS A CONCRETE					m ³ 37.4
1370mm Ø DRILLED PIERS IN ROCK	6.4m				3.4
1370mm Ø DRILLED PIERS NOT IN ROCK					m ² 28.0
1370mm Ø PERMANENT STEEL CASING	10.2m				9.9

NOTE:
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH ONE METER OF EXTRA LENGTH.



PLAN OF COLUMNS & DRILLED PIERS

(REINFORCING STEEL SHOWN IS TYPICAL FOR EACH COLUMN & DRILLED PIER)

PROJECT NO. R-2425 C
WAKE COUNTY
STATION: 80+30.500 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
BENT No.1					
(NBL)					
REVISIONS					SHEET NO.
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		
					5-129
					TOTAL SHEETS
					142

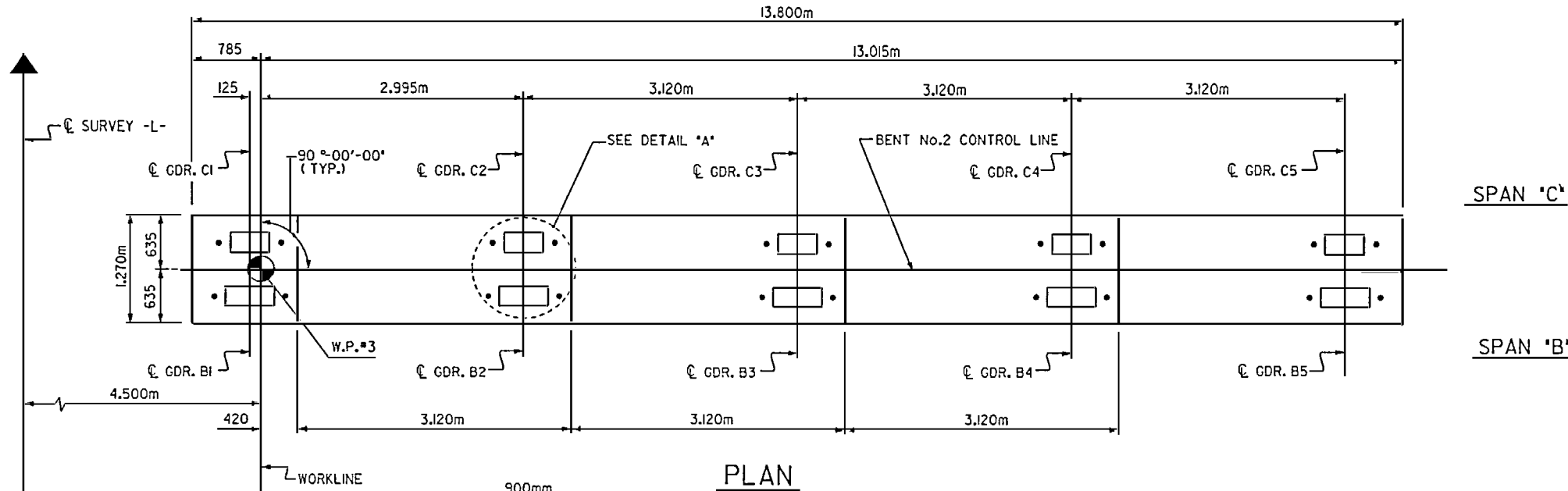
DRAWN BY: M. J. HOGAN DATE: 4/24/97
CHECKED BY: T. C. PAYNE DATE: 4/13/98

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STR.#2

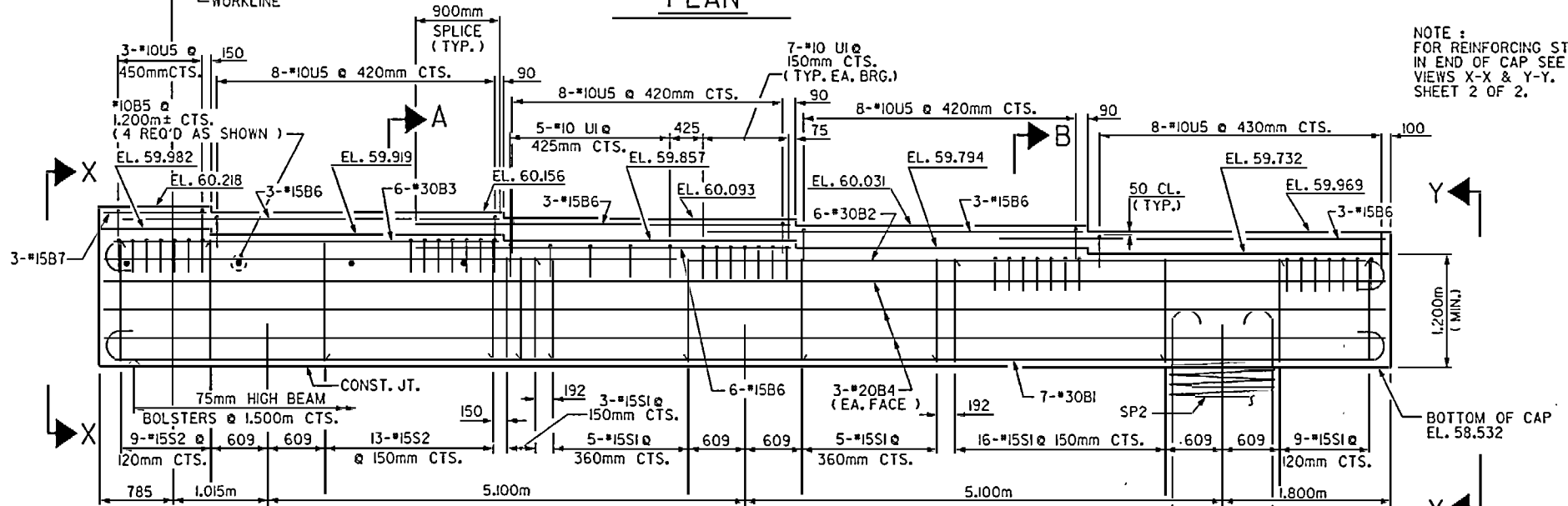
NOTES

- STIRRUPS AND UI BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- HOOKS ON 'M' BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
- FOR SPIRAL COLUMN REINFORCING STEEL, SEE SPECIAL PROVISIONS.
- FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.
- FOR PILE INTEGRITY TESTING, SEE SPECIAL PROVISIONS.
- ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR REINFORCING STEEL AND SPIRAL COLUMN REINFORCING STEEL.
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- THE DRILLED PIERS SHALL BE INSTALLED TO THE MINIMUM TIP ELEVATION SHOWN ON THE PLANS AND SHALL HAVE A MINIMUM DIAMETER OF 1.322m IN THE HARD ROCK ZONE. HARD ROCK SHALL BE DEFINED AS MATERIAL THAT CAN NOT BE CUT WITH A ROCK AUGER AND MUST BE EXCAVATED BY CORING, BLASTING, AIR TOOLS, HAND REMOVAL, OR OTHER ACCEPTABLE METHODS.
- THE TOP SURFACE AREAS OF THE BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
- FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.



SPAN 'C'
 SPAN 'B'

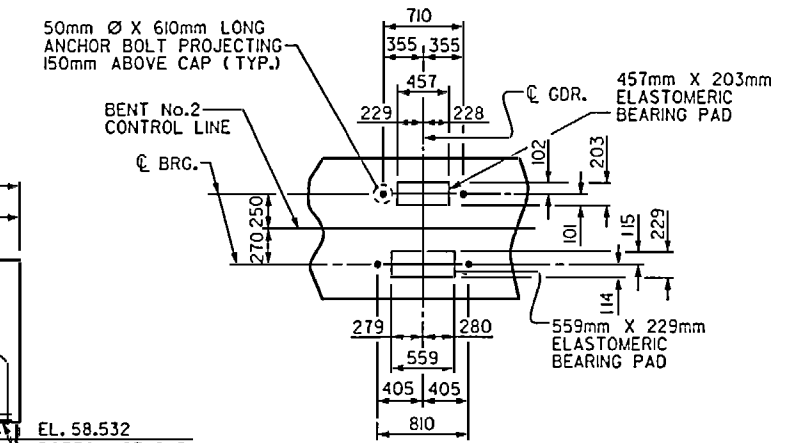
PLAN



ELEVATION

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

NOTE:
 FOR REINFORCING STEEL
 IN END OF CAP SEE
 VIEWS X-X & Y-Y.
 SHEET 2 OF 2.



DETAIL 'A'
 (TYP. EA. GDR.)

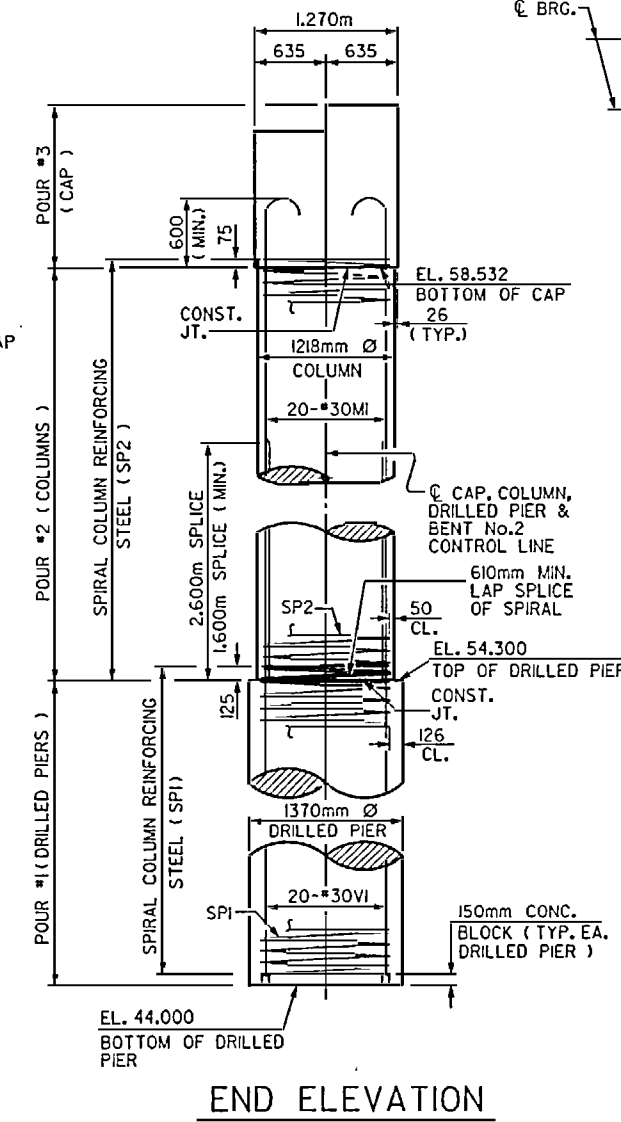


PROJECT NO. R-2425 C
 WAKE COUNTY
 STATION: 80+30.500 -L-

SHEET 1 OF 2

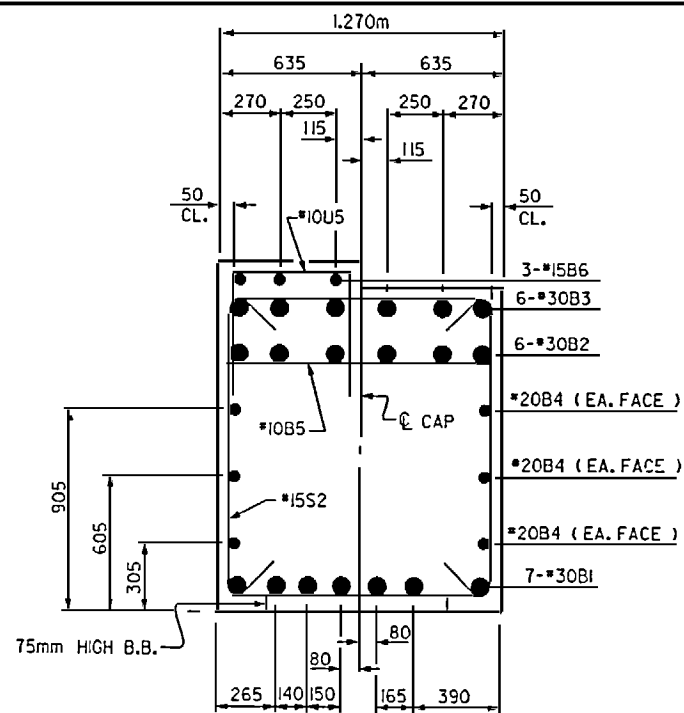
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT No.2 (NBL)					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			2		
2			4		

SHEET NO. 5-130
 TOTAL SHEETS 142

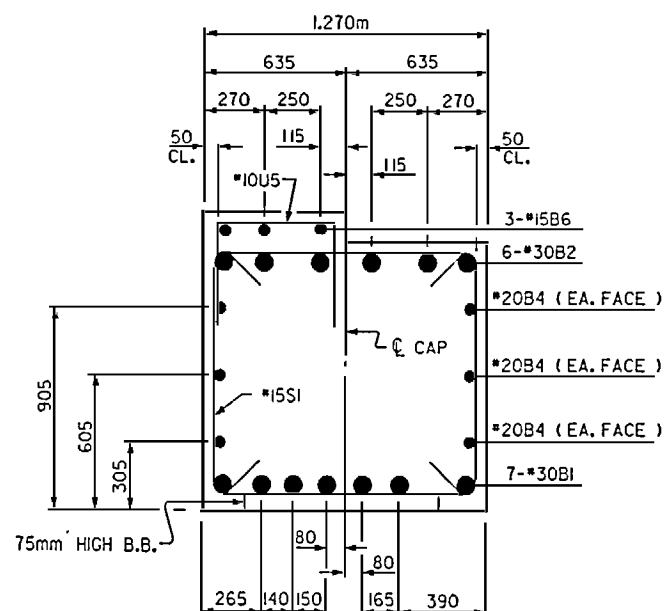


END ELEVATION

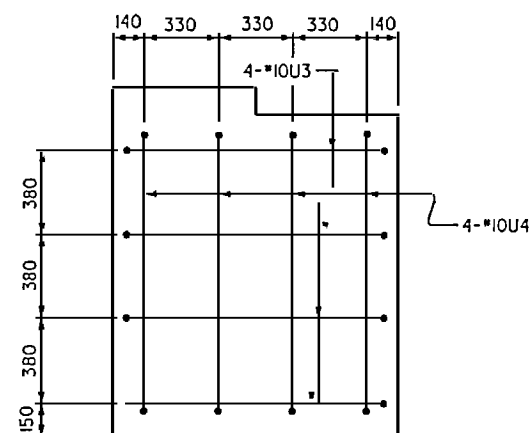
DRAWN BY: M.J. HOGAN DATE: 4/21/97
 CHECKED BY: T.G. PAYNE DATE: 2/11/98



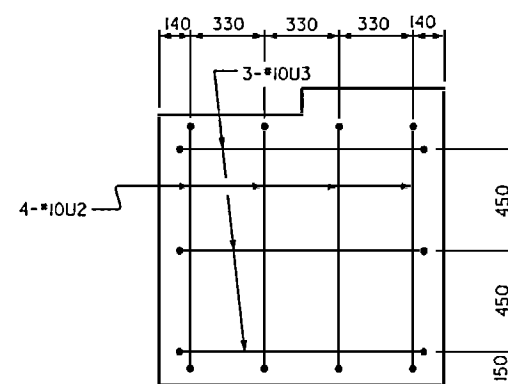
SECTION A-A



SECTION B-B

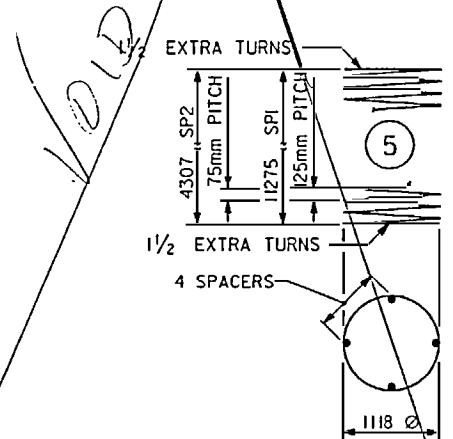


VIEW X-X

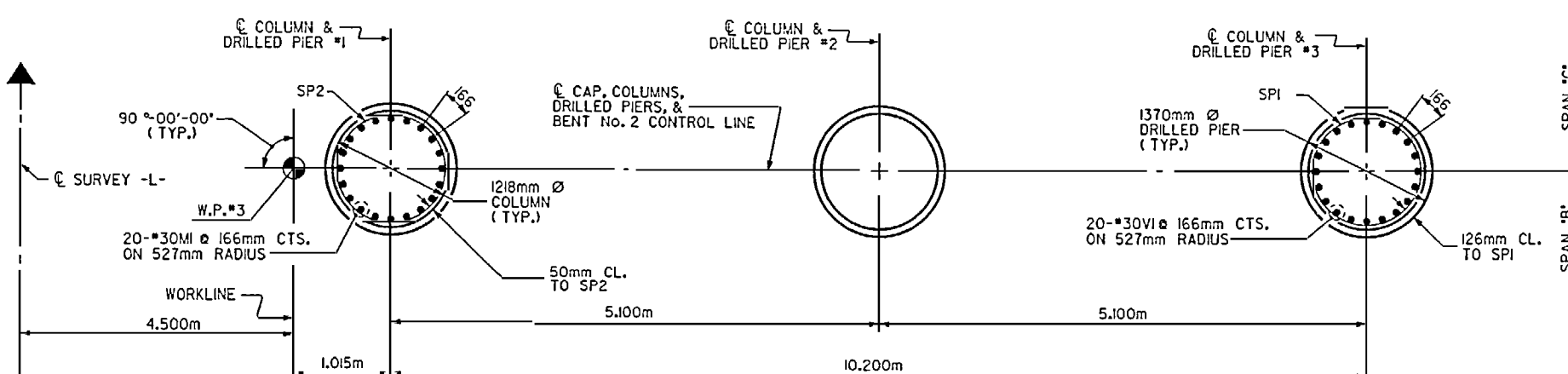


VIEW Y-Y

BAR TYPES		BILL OF MATERIAL	
		BENT NO.2	
HK.	(1)	NO.	SIZE TYPE LENGTH WEIGHT
400	13640 BI	B1	7 30 1 14440 555
400	13640 B2	B2	6 30 2 14040 463
400	4200 B3	B3	6 30 2 4600 152
400	4840 MI	B4	6 20 STR 13700 194
		B5	4 10 STR 1160 4
		B6	18 15 STR 4020 114
		B7	3 15 STR 1060 5
HK.	(2)	M1	60 30 2 5240 1728
400	13640 B2	S1	38 15 3 3620 216
400	4200 B3	S2	22 15 3 3980 137
400	4840 MI	U1	40 10 4 2060 65
		U2	4 10 4 1640 5
		U3	7 10 4 1720 9
		U4	4 10 4 1880 6
		U5	35 10 4 1420 39
		V1	60 30 STR 13760 4537
		REINFORCING STEEL	kg. 8,229
		SPIRAL COLUMN REINFORCING STEEL	
	(3)	SP1	3 - 5 325660 1534
		SP2	3 - 5 212200 500
		SPIRAL COLUMN REINFORCING STEEL kg. 2,034	
		DRILLED PIER CONCRETE	
		POUR #1 (DRILLED PIERS)	m ³ 45.6
		TOTAL DRILLED PIER CONCRETE	m ³ 45.6
		CLASS A CONCRETE BREAKDOWN	
		POUR #2 (COLUMNS)	m ³ 14.8
		POUR #3 (CAP)	m ³ 25.0
		TOTAL CLASS A CONCRETE	m ³ 39.8
		1370mm Ø DRILLED PIERS IN ROCK	6.1m 3.3
		1370mm Ø DRILLED PIERS NOT IN ROCK	m ² 24.76
		1370mm Ø PERMANENT STEEL CASING	9.94m 10.5
		NOTE: THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH ONE METER OF EXTRA LENGTH.	



ALL BAR DIMENSIONS ARE OUT TO OUT.
 LC-263; 1370mm Ø DRILLED PIERS NOT IN ROCK; 24.8m AS-BUILT
 LC-264; 1370mm Ø DRILLED PIERS IN ROCK AS-BUILT; 6.1m
 LC-265; 1370mm Ø PERMANENT STEEL CASING AS-BUILT; 9.94m



PLAN OF COLUMNS & DRILLED PIERS
 (REINFORCING STEEL SHOWN IS TYPICAL FOR EACH COLUMN & DRILLED PIER)

DRAWN BY: M. J. HOGAN DATE: 4/24/97
 CHECKED BY: T. G. PAYNE DATE: 4/31/98

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STATE OF NORTH CAROLINA
 PROFESSIONAL ENGINEER
 SEAL 15431
 THOMAS W. ROACH
 4/7/98

PROJECT NO. R-2425 C
 WAKE COUNTY
 STATION: 80+30.500 -L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALPH					
SUBSTRUCTURE BENT No.2 (NBL)					
REVISIONS					SHEET NO.
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		
					5-131
					142

NOTES

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

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

FOR SPIRAL COLUMN REINFORCING STEEL, SEE SPECIAL PROVISIONS.

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

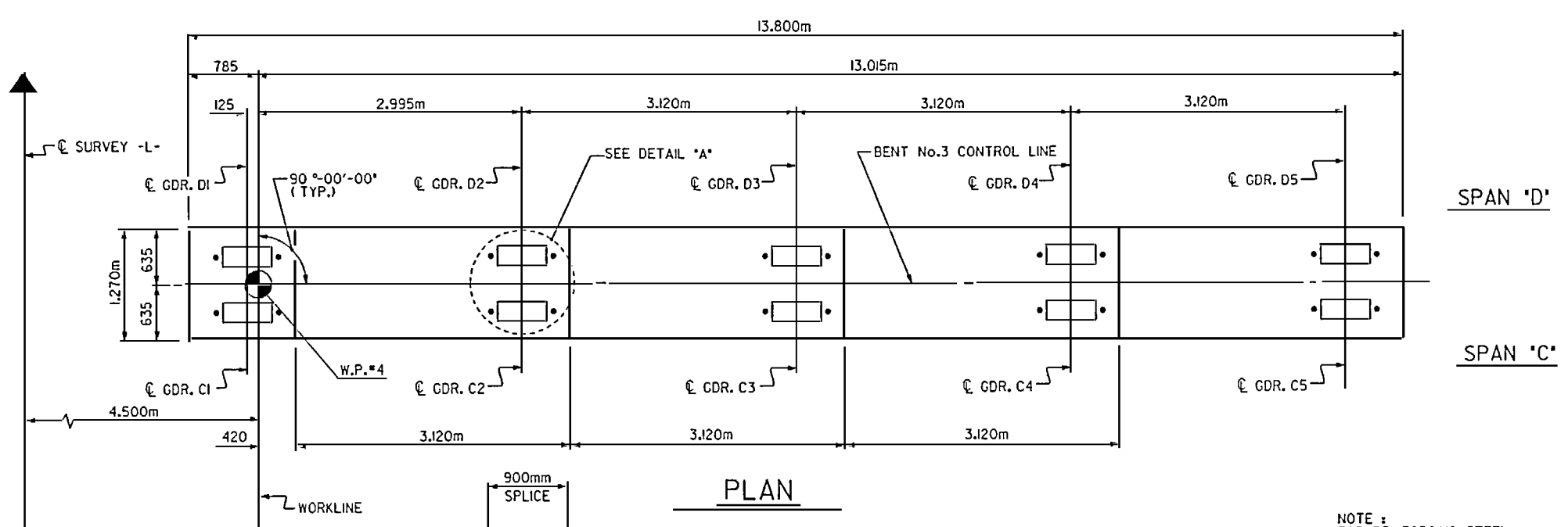
FOR PILE INTEGRITY TESTING, SEE SPECIAL PROVISIONS.

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

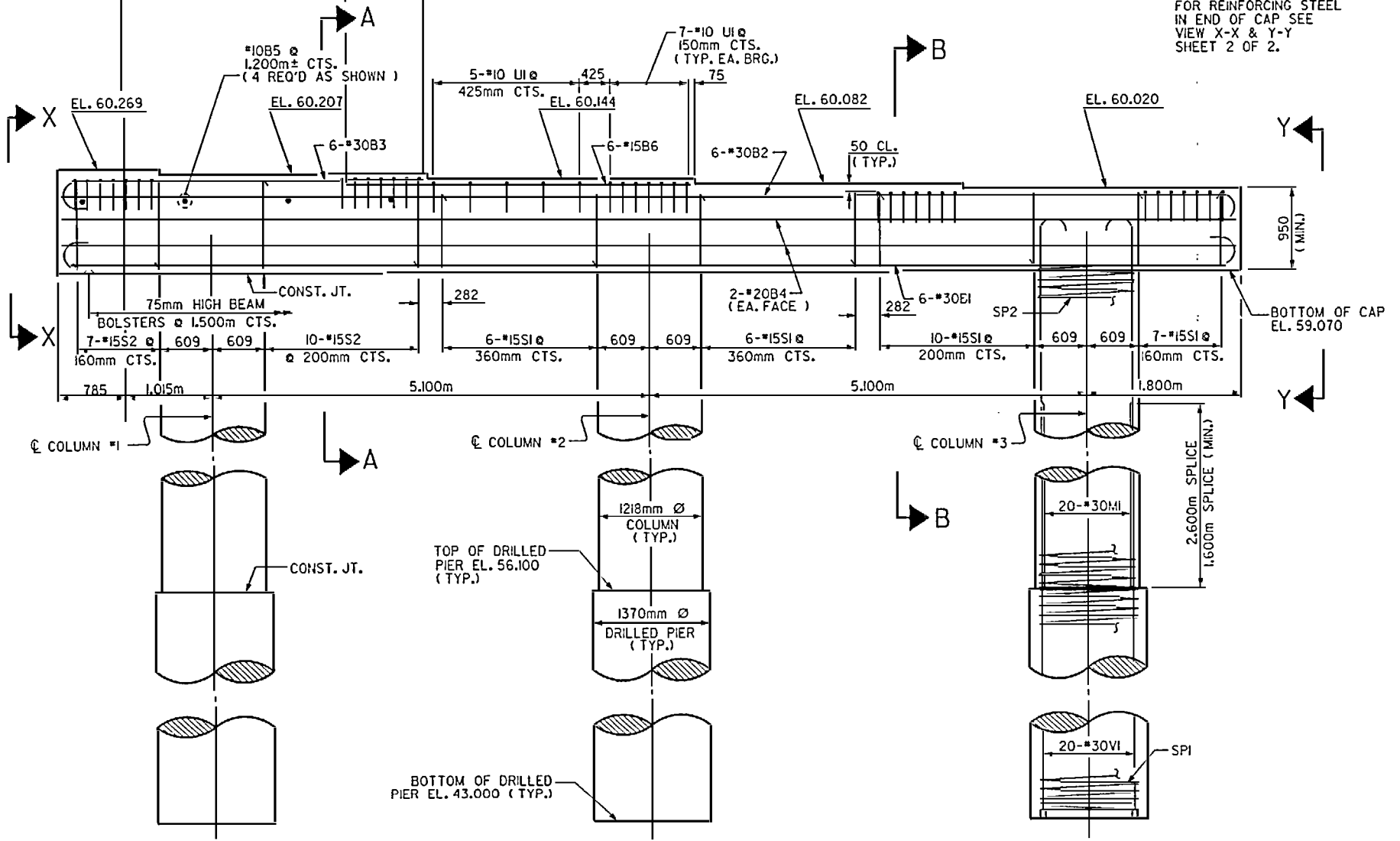
STIRRUPS IN CAP ARE TO BE ALTERNATELY INVERTED.

THE DRILLED PIERS SHALL BE INSTALLED TO THE MINIMUM TIP ELEVATION SHOWN ON THE PLANS AND SHALL HAVE A MINIMUM DIAMETER OF 1.322m IN THE HARD ROCK ZONE. HARD ROCK SHALL BE DEFINED AS MATERIAL THAT CAN NOT BE CUT WITH A ROCK AUGER AND MUST BE EXCAVATED BY CORING, BLASTING, AIR TOOLS, HAND REMOVAL, OR OTHER ACCEPTABLE METHODS.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIER IS BASED ON ASSUMED GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT AS DETAILED IS ABOVE THE ACTUAL GROUND ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 300mm BELOW THE ACTUAL GROUND ELEVATION.

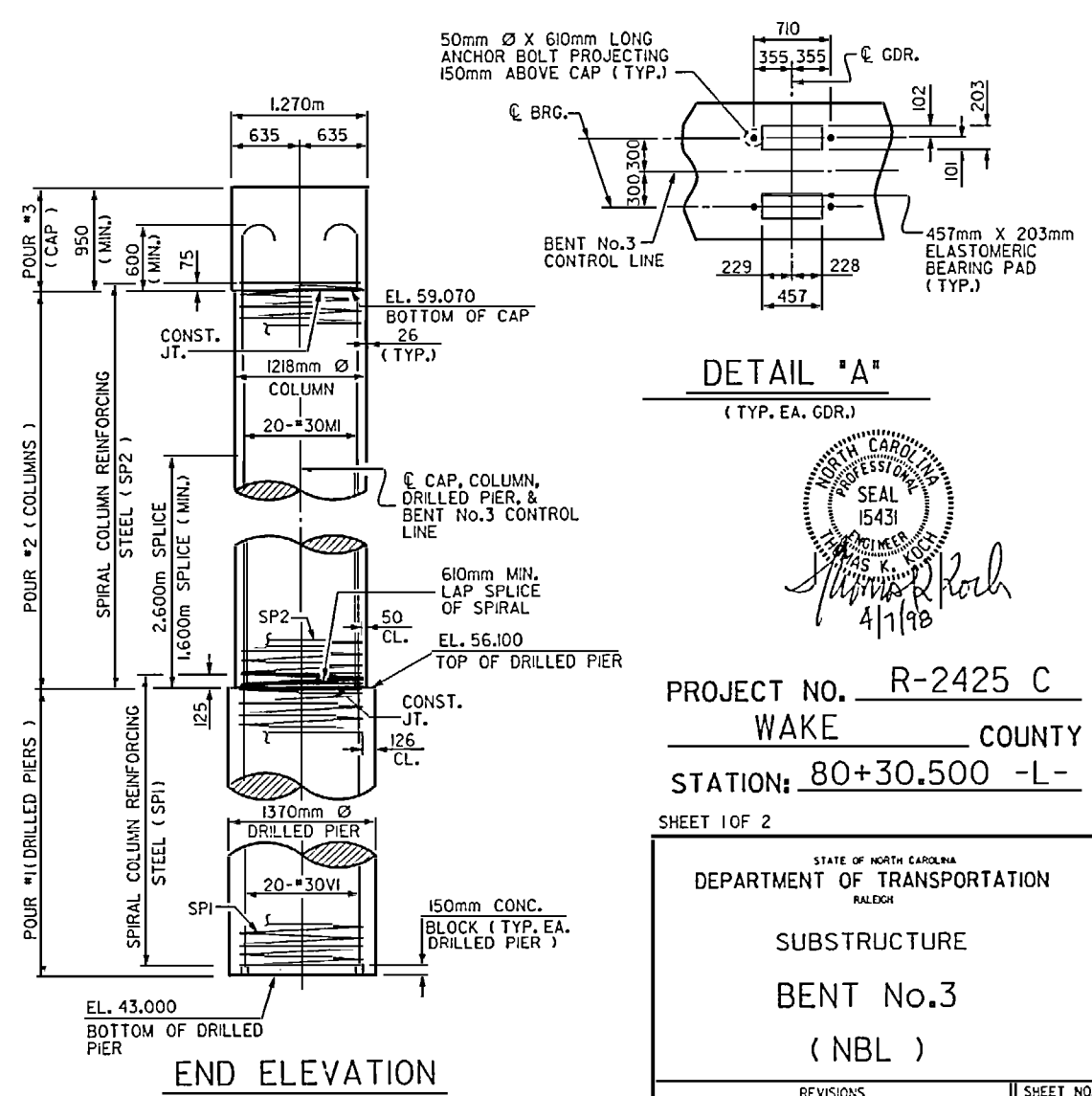


NOTE:
 FOR REINFORCING STEEL IN END OF CAP SEE VIEW X-X & Y-Y SHEET 2 OF 2.



ELEVATION

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



DETAIL 'A'
 (TYP. EA. GDR.)



PROJECT NO. R-2425 C
WAKE COUNTY
 STATION: 80+30.500 -L-

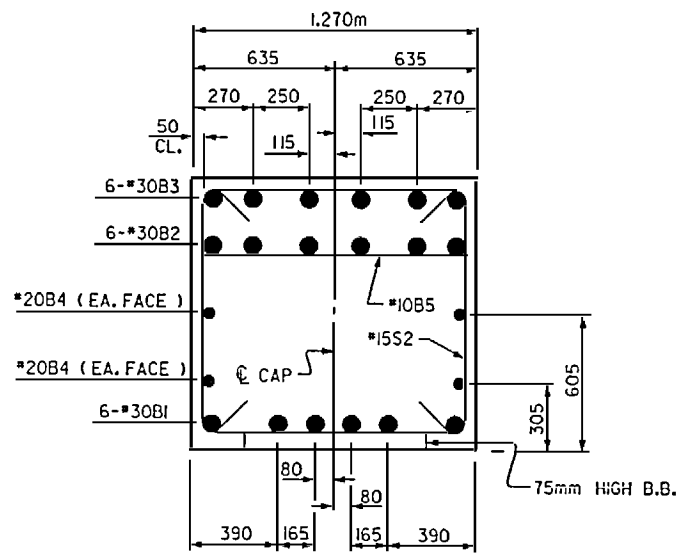
SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

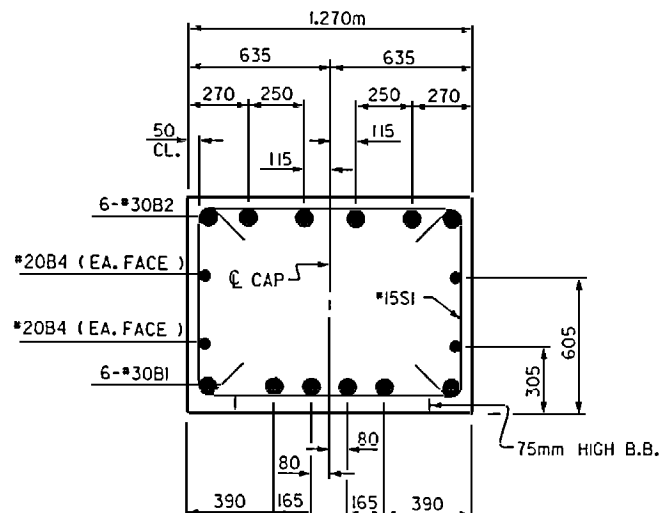
SUBSTRUCTURE
BENT No.3
 (NBL)

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			5-132
2			4			TOTAL SHEETS 142

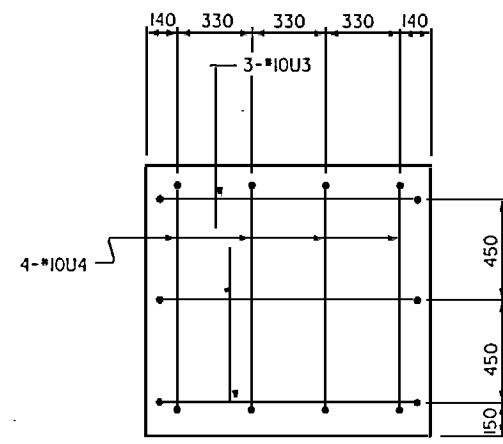
DRAWN BY: M. J. HOGAN DATE: 4/2/97
 CHECKED BY: T. G. PAYNE DATE: 2/4/98



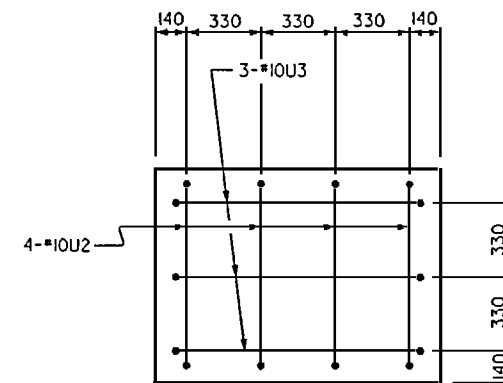
SECTION A-A



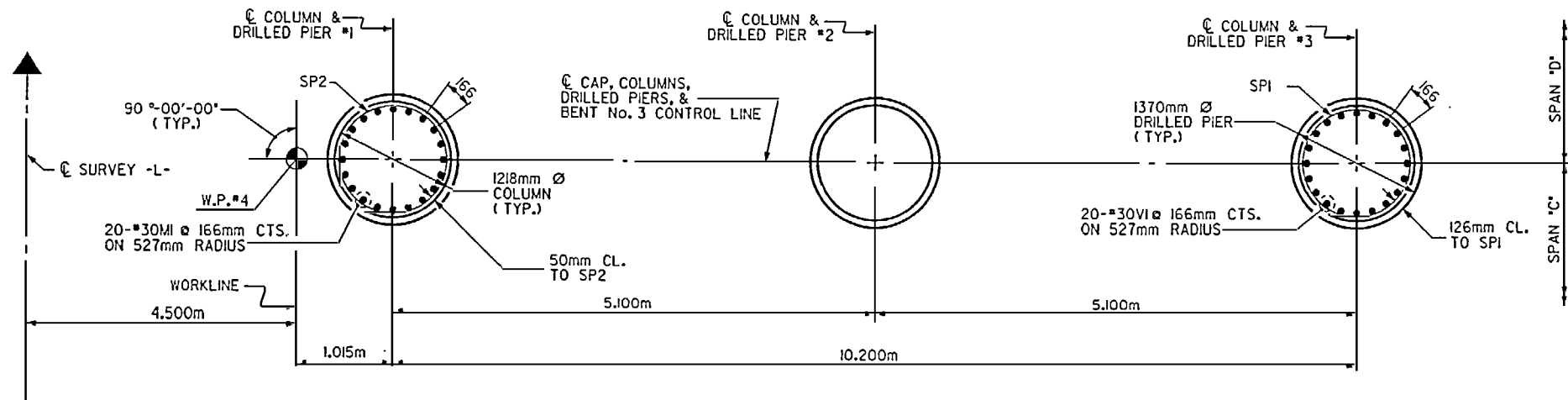
SECTION B-B



VIEW X-X



VIEW Y-Y



PLAN OF COLUMNS & DRILLED PIERS

(REINFORCING STEEL SHOWN IS TYPICAL FOR EACH COLUMN & DRILLED PIER)

DRAWN BY: M. J. HOGAN DATE: 4/24/97
 CHECKED BY: T. G. PAYNE DATE: 7/1/98

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 mbri11

BAR TYPES		BILL OF MATERIAL			
BENT NO.3					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	30	1	14440	476
B2	6	30	2	14040	463
B3	6	30	2	4600	152
B4	4	20	STR	13700	129
B5	4	10	STR	1160	4
B6	6	15	STR	4020	38
M1	60	30	2	3980	1312
S1	29	15	3	3120	142
S2	17	15	3	3480	93
U1	40	10	4	2050	65
U2	4	10	4	1400	4
U3	6	10	4	720	8
U4	4	10	4	1620	5
V1	60	30	STR	15560	5130
REINFORCING STEEL				Kg.	8,021
SPIRAL COLUMN REINFORCING STEEL					
SP1	3	-	5	401860	1893
SP2	3	-	5	153060	360
SPIRAL COLUMN REINFORCING STEEL				Kg.	2,253
DRILLED PIER CONCRETE					
POUR #1 (DRILLED PIERS)				m ³	57.9
TOTAL DRILLED PIER CONCRETE				m ³	57.9
CLASS A CONCRETE BREAKDOWN					
POUR #2 (COLUMNS)				m ³	10.4
POUR #3 (CAP)				m ³	18.5
TOTAL CLASS A CONCRETE				m ³	28.9
1370mm Ø DRILLED PIERS IN ROCK				11.4m	3.0
1770mm Ø DRILLED PIERS NOT IN ROCK				22.1m	36.0

NOTE:
 THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH ONE METER OF EXTRA LENGTH.

ALL BAR DIMENSIONS ARE OUT TO OUT.

10117

EXTRA TURNS
 1/2 EXTRA TURNS
 4 SPACERS

1160 U1
 800 U2
 1120 U3
 1020 U4

1160 U1
 840 U2
 820 U2
 1160 U1
 300 U1
 142 U3, U4

1118 Ø

3045, SP2
 75mm PITCH
 14075, SPI
 125mm PITCH

156

1218mm Ø COLUMN (TYP.)

1370mm Ø DRILLED PIER (TYP.)

126mm CL. TO SPI

20-#30VI @ 166mm CTS. ON 527mm RADIUS

50mm CL. TO SP2

5.100m

5.100m

10.200m

1.015m

4.500m

W.P.#4

20-#30MI @ 166mm CTS. ON 527mm RADIUS

W.P.#4

90°-00'-00" (TYP.)

© SURVEY -L-

© COLUMN & DRILLED PIER #1

© COLUMN & DRILLED PIER #2

© COLUMN & DRILLED PIER #3

© CAP. COLUMNS, DRILLED PIERS, & BENT No. 3 CONTROL LINE

SPAN 'D'

SPAN 'C'

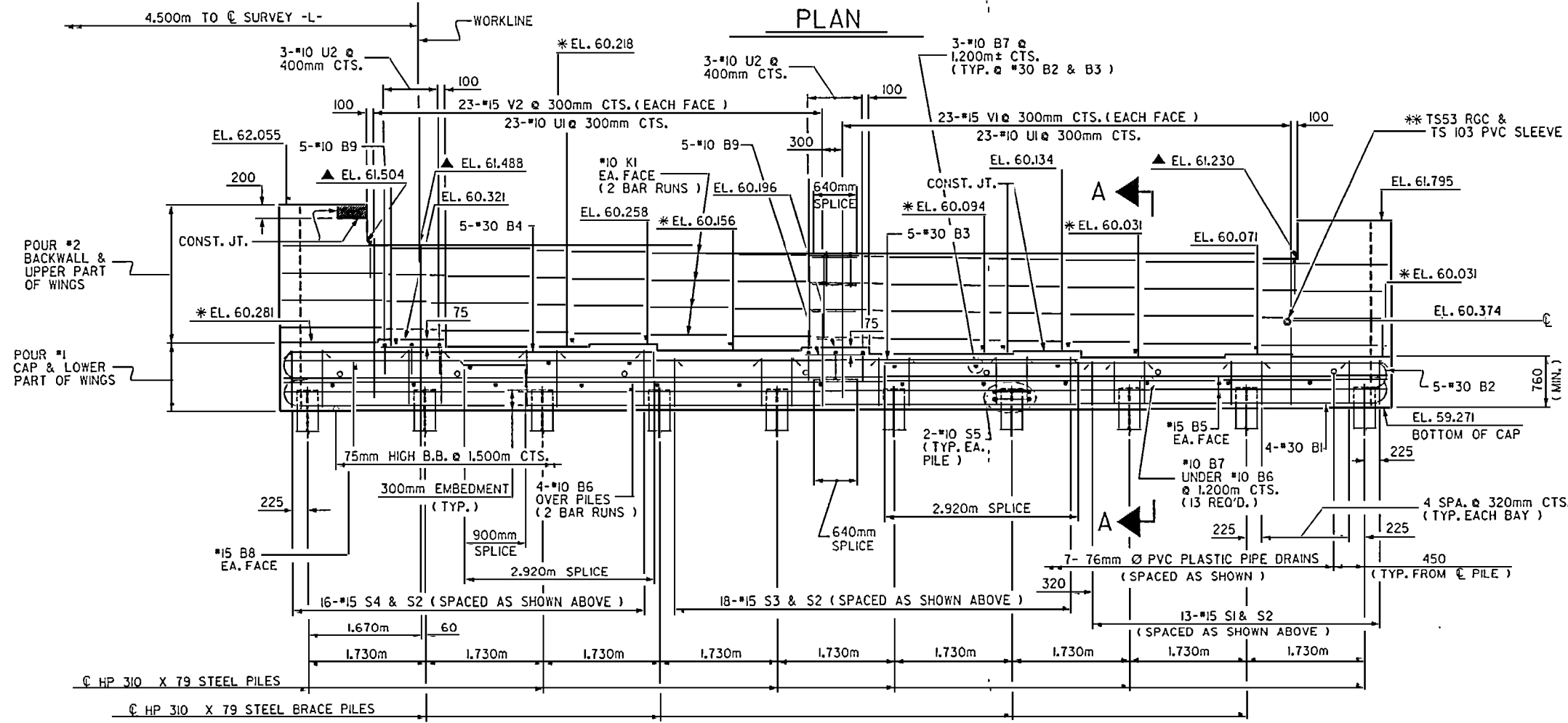
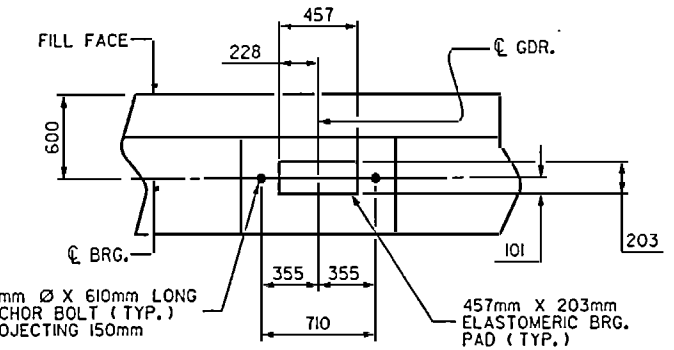
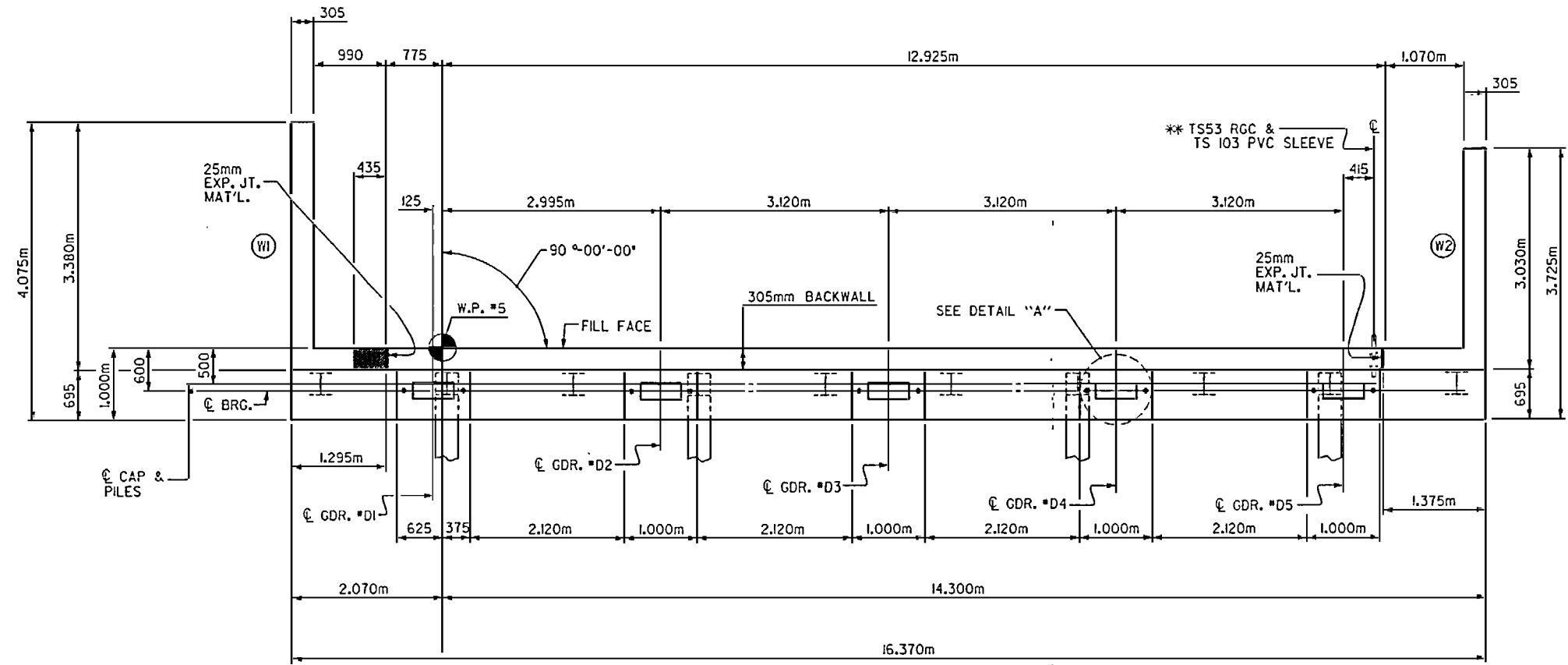
PROJECT NO. R-2425 C
 WAKE COUNTY
 STATION: 80+30.500 -L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
BENT No.3 (NBL)					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO. S-133
 TOTAL SHEETS 142
 STR.#2

NOTES

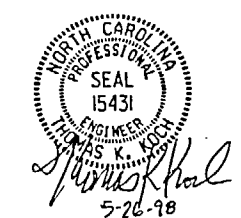
- STIRRUPS & U2 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.
- PIPE DRAINS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR REINFORCING STEEL AND ANCHOR BOLTS.
- BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.
- THE TOP SURFACE AREAS OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
- THE TOP SURFACE OF THE END BENT CAP EXCEPT BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2 % .
- THE CONCRETE IN THE SHADED AREA OF WING W2 SHALL BE POURED AFTER THE JOINT IN THE DECK AND THE APPROACH SLAB HAS BEEN SAWED AND THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.
- ▲ THIS ELEVATION TAKEN ON FILL FACE OF BACKWALL.
- * FOR LOCATION OF ELEVATIONS BETWEEN BUILD-UPS, SEE SECTION A-A, SHEET 3 OF 3.
- *15 "V" BARS IN BACKWALL SHALL BE PLACED 50mm CLEAR FROM TOP OF BACKWALL.
- THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 100mm DRAIN PIPE THROUGH THE WINGWALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN WINGWALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.
- REINFORCING STEEL IN BACKWALL MAY BE SHIFTED SLIGHTLY AS REQUIRED TO CLEAR THE TS 103 PVC SLEEVE.



** NOTE 1
 FOR ELECTRICAL CONDUIT SYSTEM,
 SEE SPECIAL PROVISIONS AND
 "ELECTRICAL CONDUIT SYSTEM" SHEETS.

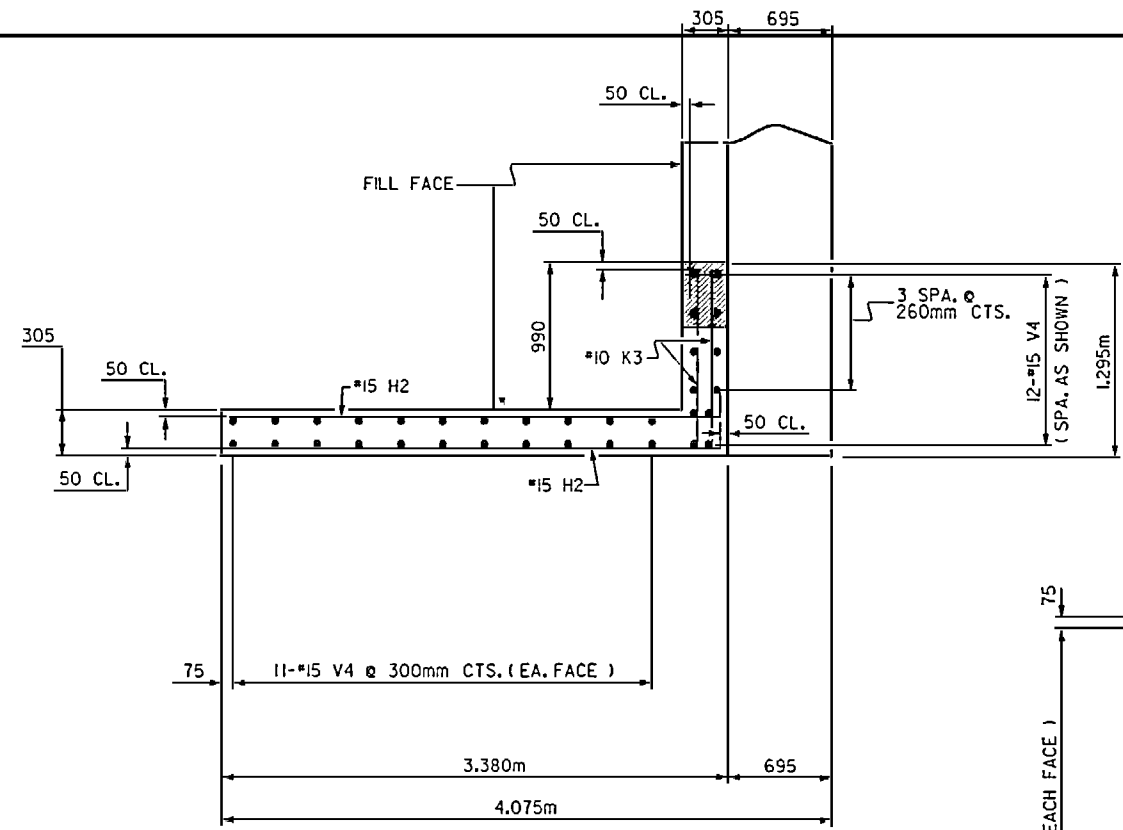
PROJECT NO. R-2425 C
 WAKE COUNTY
 STATION: 80+30.500 -L-
 SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT No. 2
 (NBL)

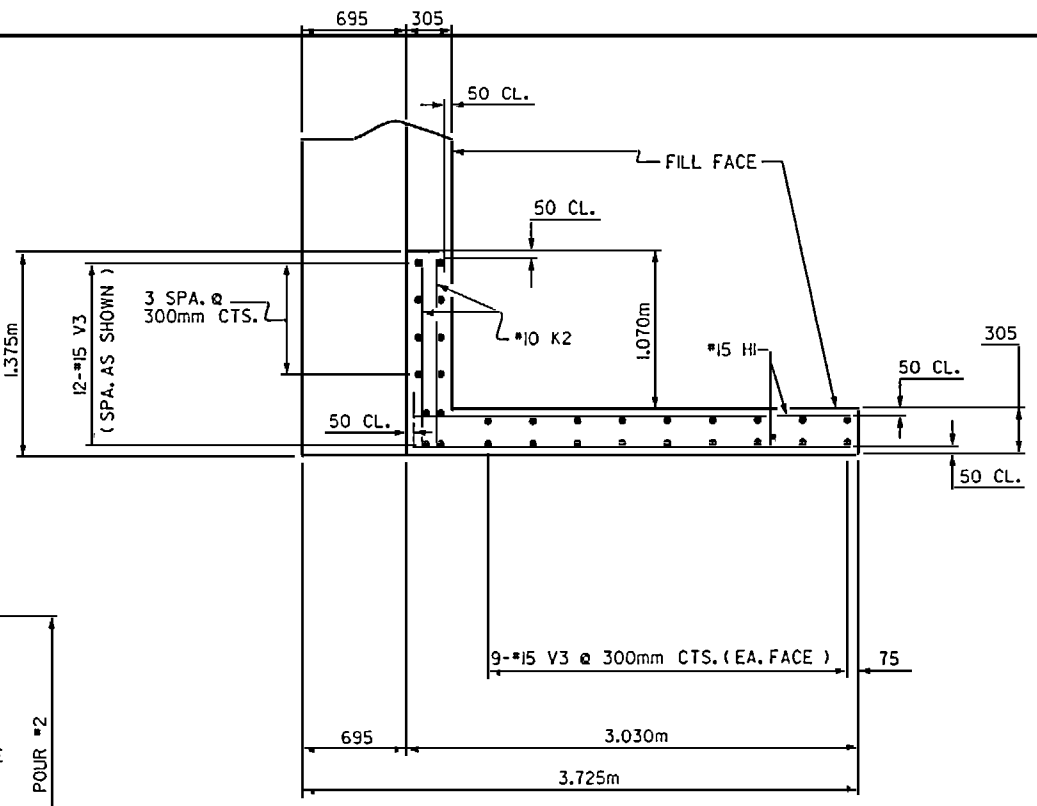


REVISIONS		NO.	BYs	DATEs	SHEET NO.
NO.	DATEs				
1		3			5-134
2		4			142

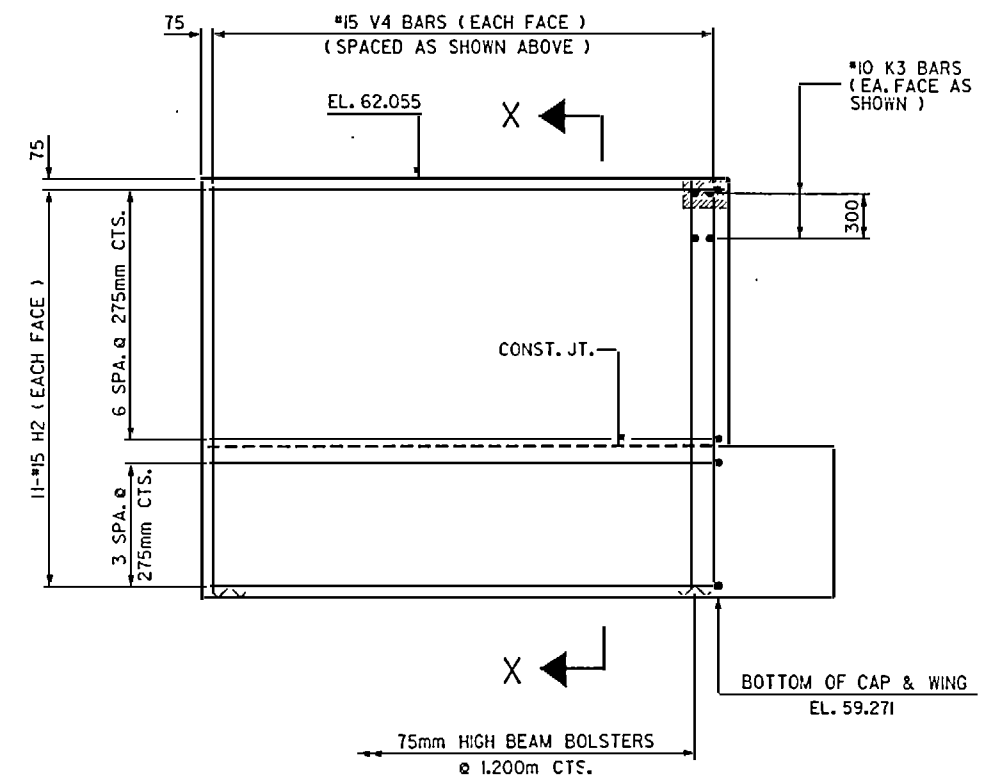
DRAWN BY : L.A. HUSSEY DATE : 4-14-97
 CHECKED BY : J.M. P. KIT DATE : 5-20-98



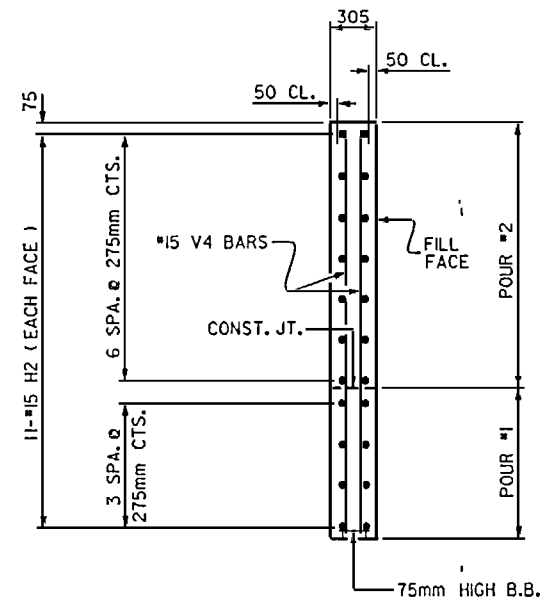
PLAN OF WING (W1)



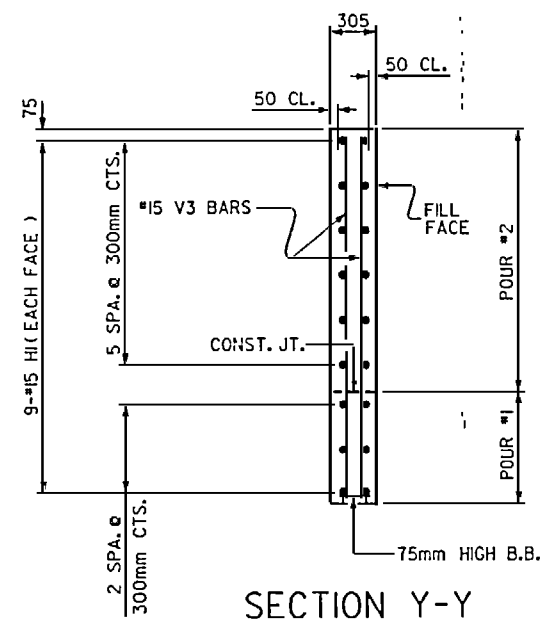
PLAN OF WING (W2)



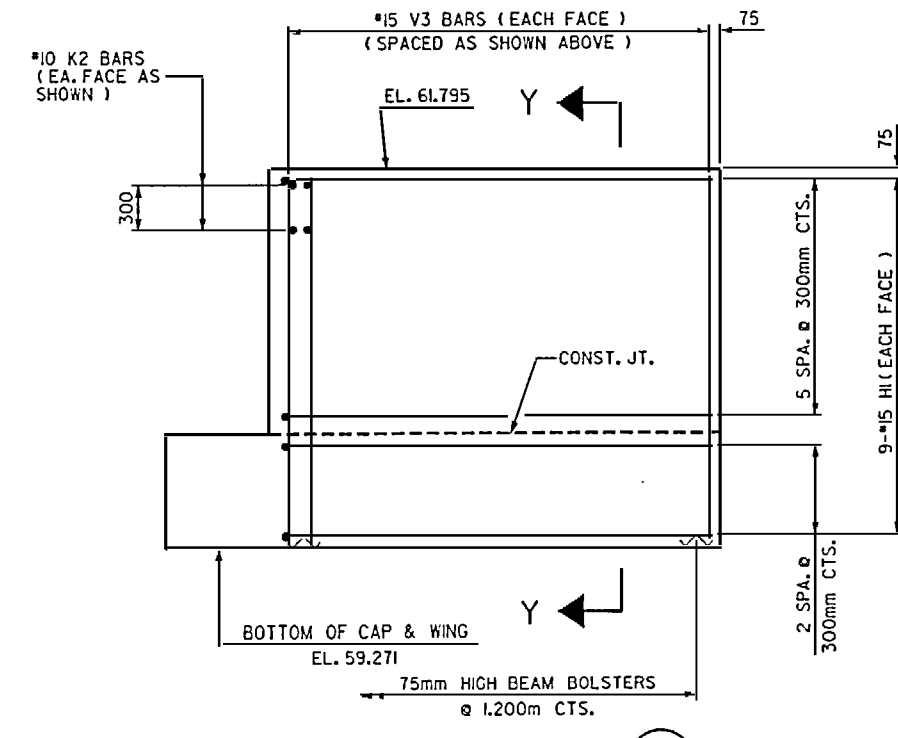
ELEVATION OF WING (W1)



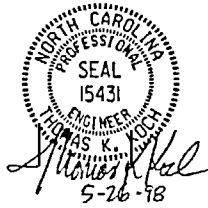
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W2)



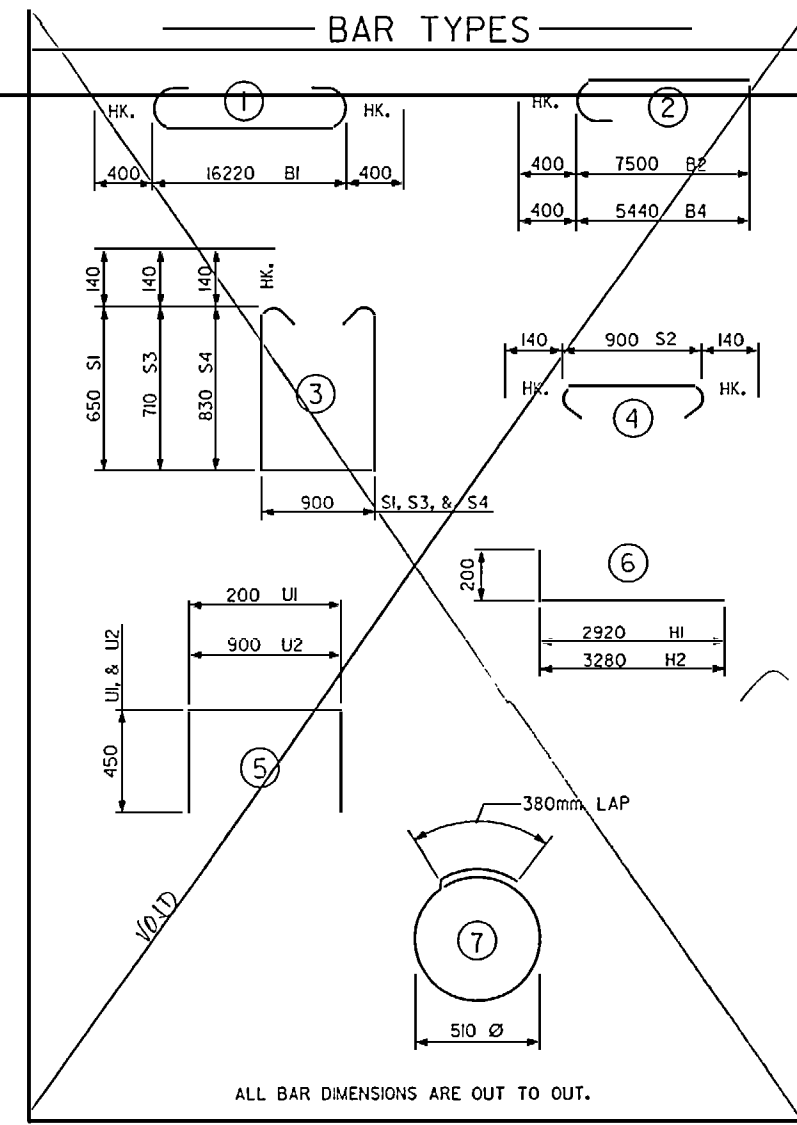
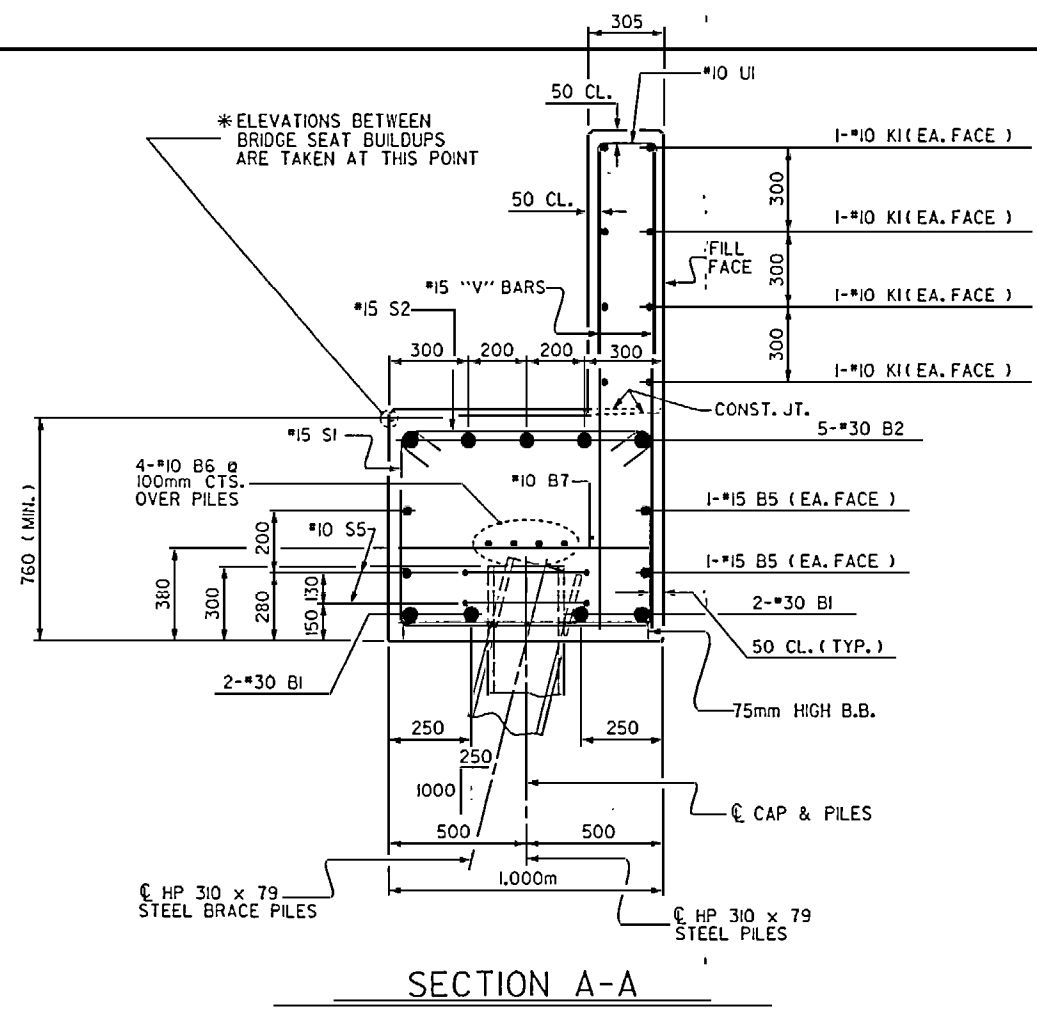
PROJECT NO. R-2425 C
 WAKE COUNTY
 STATION: 80+30.500 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT No. 2
 (NBL)

REVISIONS						SHEET NO.	
NO.	BY	DATE	NO.	BY	DATE	S-135	
1			3			TOTAL	142
2			4				

DRAWN BY: L.A. HUSSEY DATE: 4-14-97
 CHECKED BY: J.M. BELL DATE: 5-20-98



BILL OF MATERIAL

END BENT No.2

BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4 30	1	17020	374
B2	5 30	2	7900	217
B3	5 30	STR	9160	252
B4	5 30	2	5840	160
B5	4 15	STR	16260	102
B6	8 10	STR	8460	53
B7	10 10	STR	920	13
B8	2 15	STR	3440	11
B9	10 10	STR	900	7
H1	18 15	6	3120	88
H2	22 15	6	3480	120
K1	16 10	STR	8460	106
K2	4 10	STR	1260	4
K3	4 10	STR	1180	4
S1	13 15	3	2480	51
S2	47 15	4	1180	87
S3	18 15	3	2600	73
S4	16 15	3	2840	71
S5	20 10	3	1980	31
U1	46 10	5	1100	40
U2	6 10	5	1800	8
V1	46 15	STR	1860	134
V2	46 15	STR	1980	143
V3	30 15	STR	2420	114
V4	34 15	STR	2680	143

REINFORCING STEEL kg. 2,406

CLASS A CONCRETE BREAKDOWN

POUR #1 CAP, LOWER PART OF WINGS 16.0 m³

POUR #2 BACKWALL & UPPER PART OF WINGS 9.7 m³

CLASS A CONC. TOTAL 25.7 m³

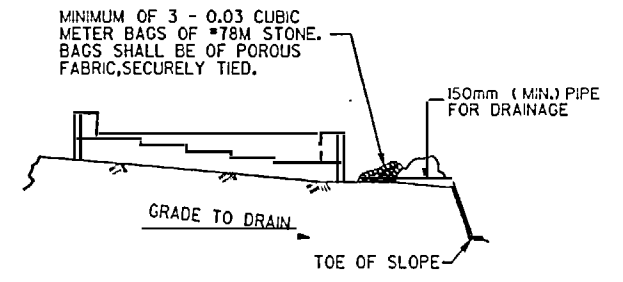
HP 310 X 79 STEEL PILES

METERS 109.97

NO. 10

L2-279 310x79 Steel Piles As-Built

See Sht 5-100 for Layout

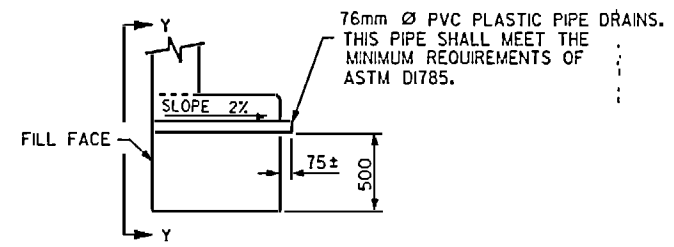


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

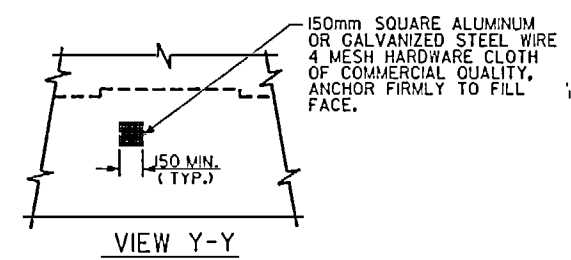
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

TEMPORARY DRAINAGE AT END BENT



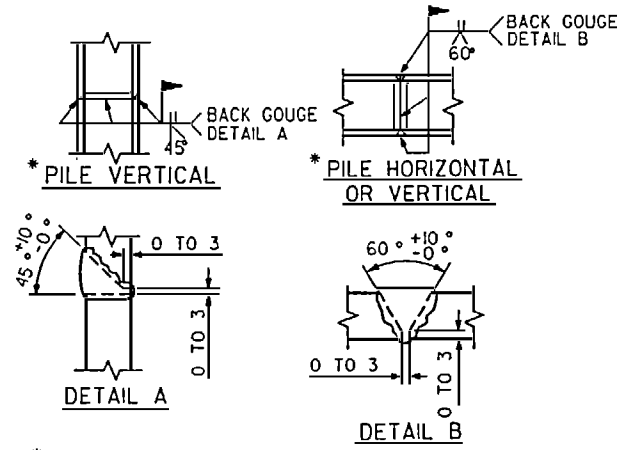
SECTION THRU CAP



VIEW Y-Y

NOTE: NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE PVC PLASTIC PIPE DRAINS, HARDWARE CLOTH AND FASTENERS. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE FOR THE SEVERAL PAY ITEMS.

PIPE DRAIN DETAILS



* POSITION OF PILE DURING WELDING.

PILE SPlice DETAILS

PILE NO. PAY LENGTH

1	12.19m
2	11.50
3	11.45
4	11.49
5	10.84
6	11.30
7	10.30
8	10.23
9	10.33
10	10.31
Total	109.97m

PROJECT NO. R-2425 C
 WAKE COUNTY
 STATION: 80+30.500 -L-
 SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

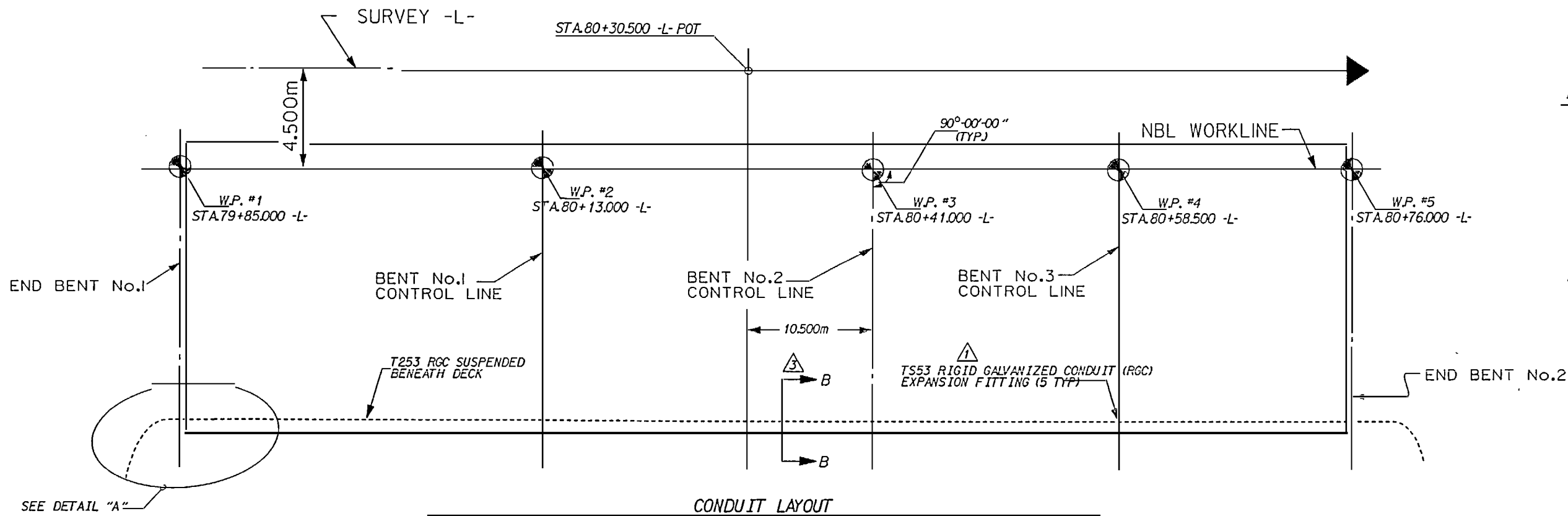
SUBSTRUCTURE
END BENT No. 2
 (NBL)

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1			3			142
2			4			



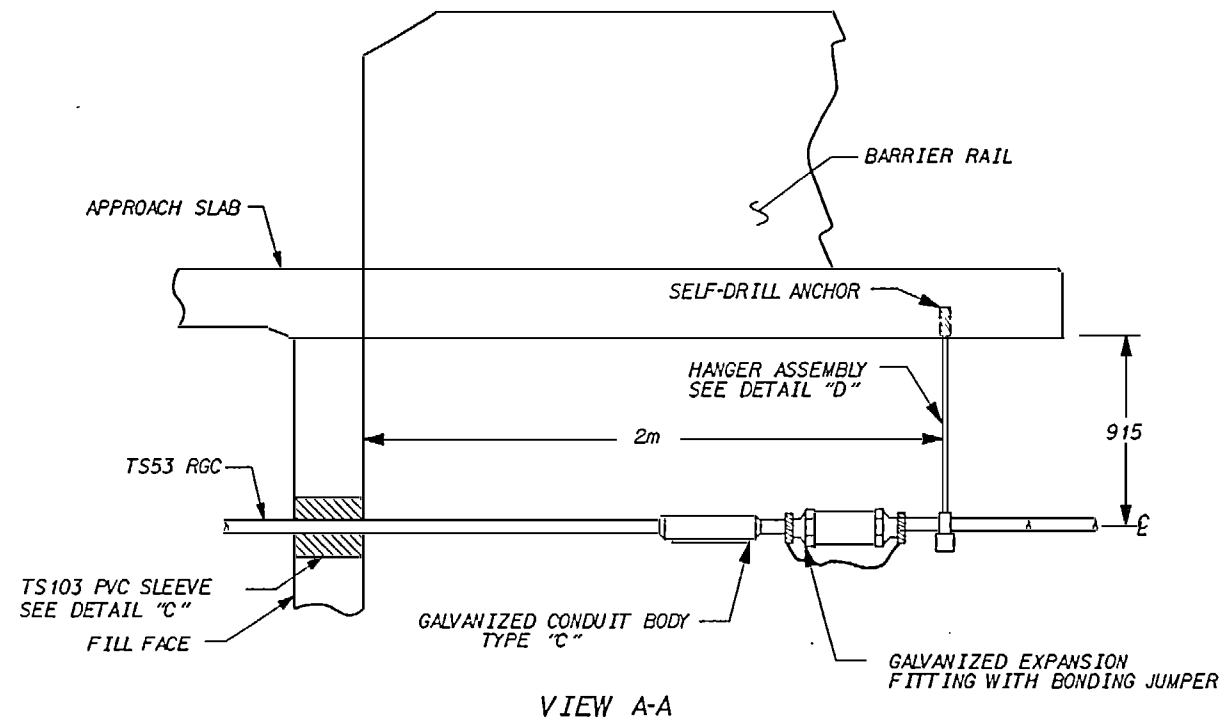
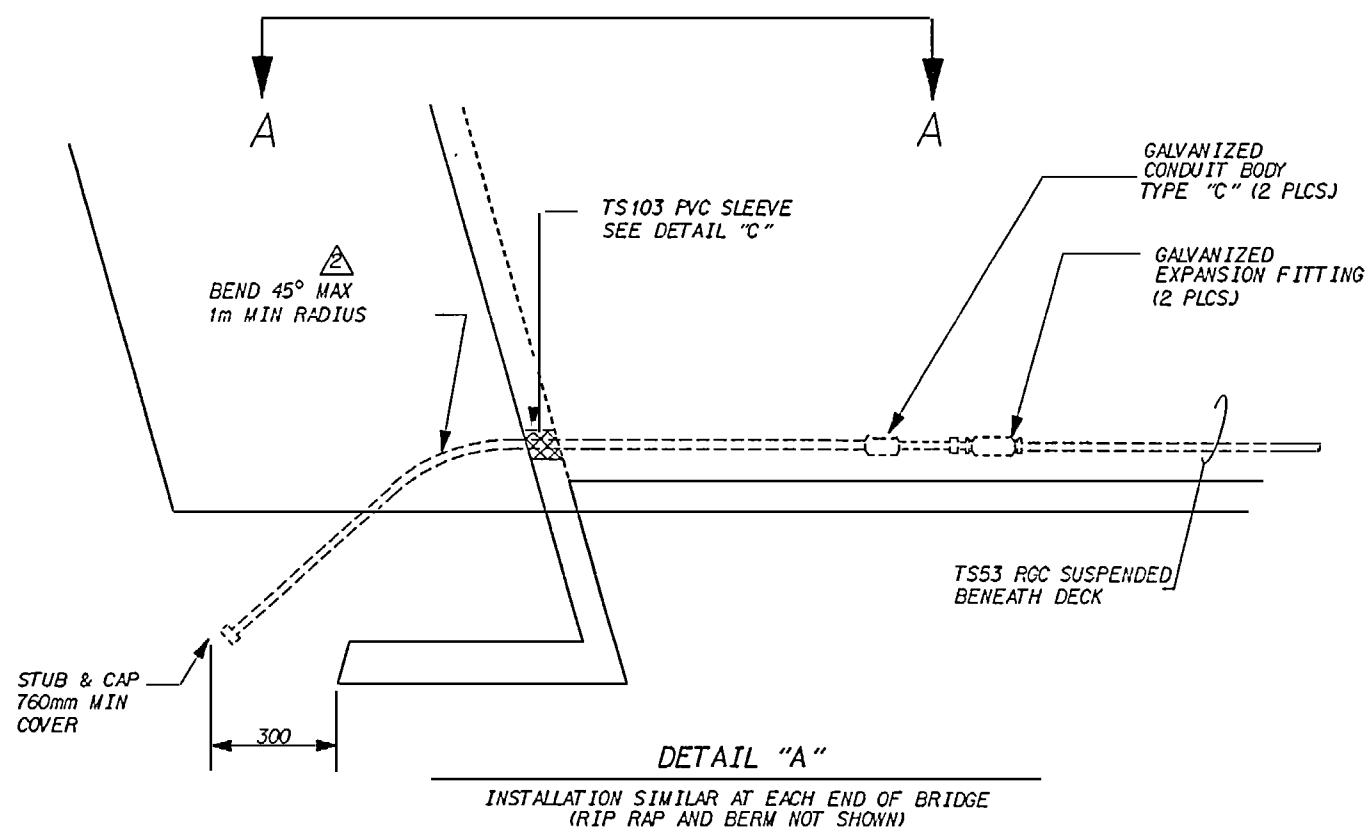
DRAWN BY: L.A. HUSSEY DATE: 4-14-97
 CHECKED BY: J.M. BRITT DATE: 5-20-98

d:\users\lhussey\2425c\str2\2425c2e2.dwg
 mbriff



NOTES

- △ PROVIDE EXPANSION FITTING FOR EACH CONDUIT AT ALL LOCATIONS WHERE CONDUIT CROSSES AN EXPANSION, COMPRESSION OR CONSTRUCTION JOINT. SEE SHEET 2, DETAIL "B".
- △ ROUTE CONDUIT TO AVOID DAMAGE DURING GUARDRAIL INSTALLATION.
- △ SEE SHEET 2, SECTION B-B.
- △ ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.

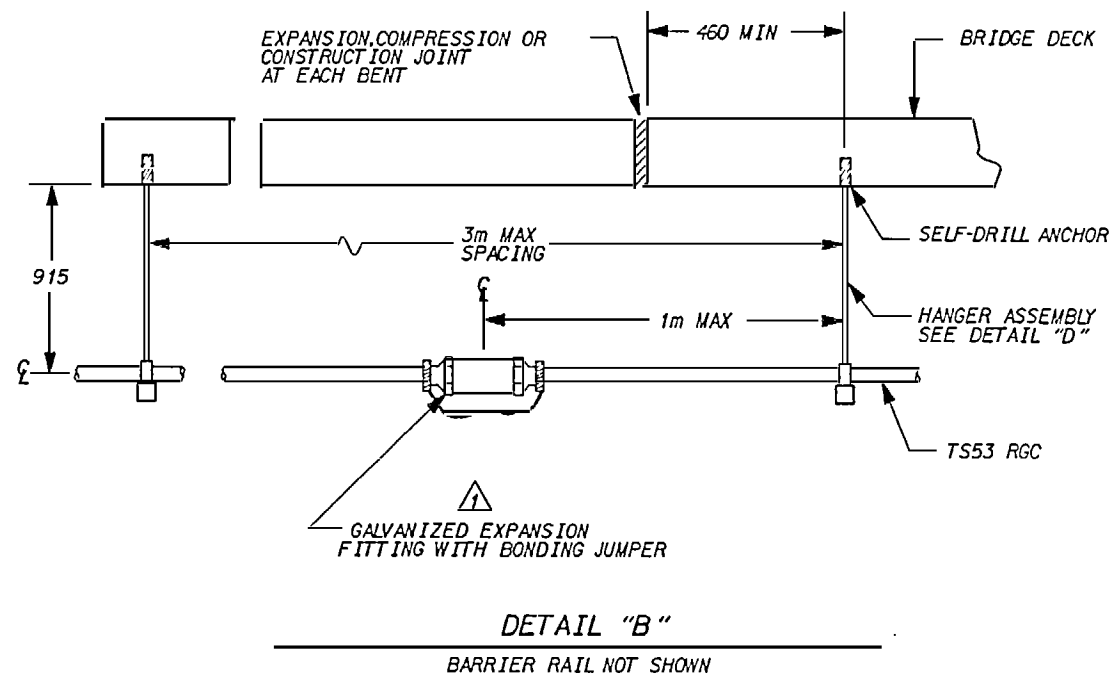


PROJECT NO. R-2425 C
WAKE COUNTY
 STATION: 80+30.500 -L-
 SHEET 1 OF 2

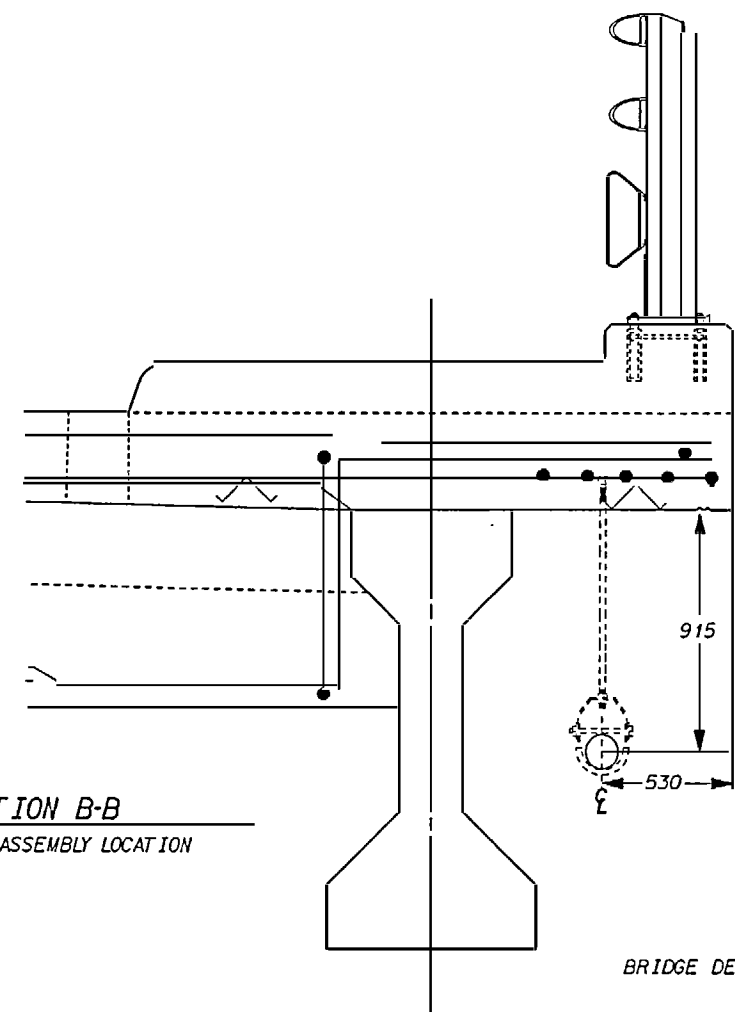
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. 5-137
ELECTRICAL CONDUIT SYSTEM (NBL)						TOTAL SHEETS 142
REVISIONS						NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			

DRAWN BY: C.M. MILDROY DATE: 03-11-98
 CHECKED BY: [Signature] DATE: 3-17-98

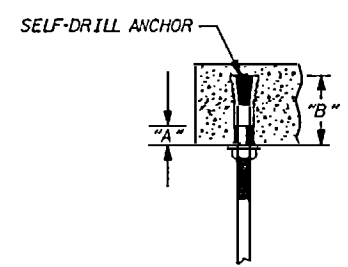
25-MAR-1998 16:23
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 Mj.drow



SECTION B-B
HANGER ASSEMBLY LOCATION



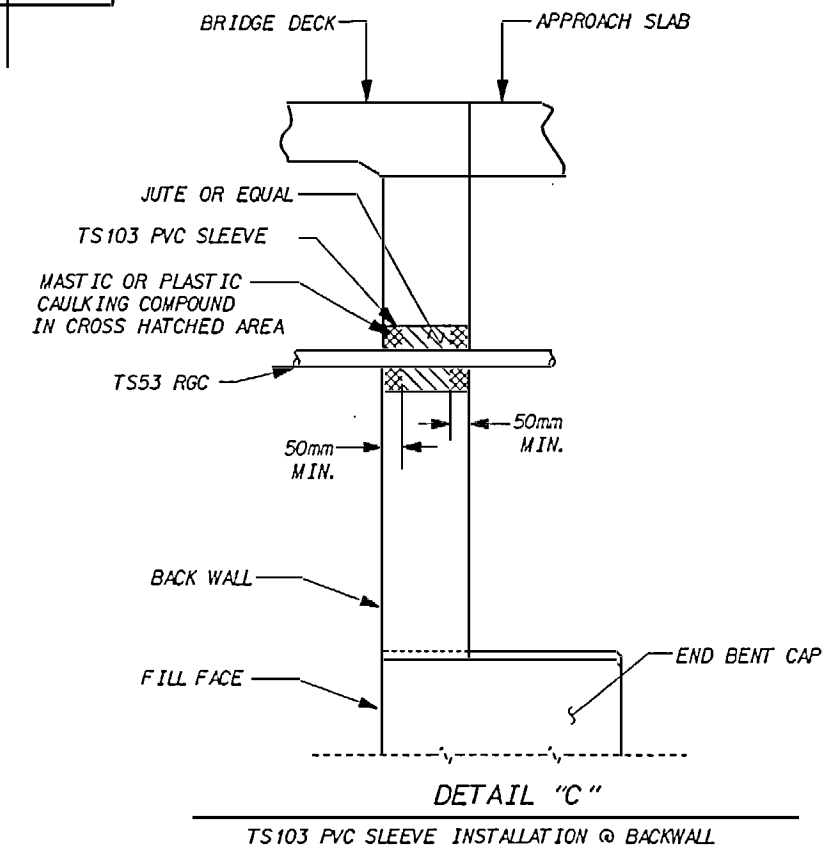
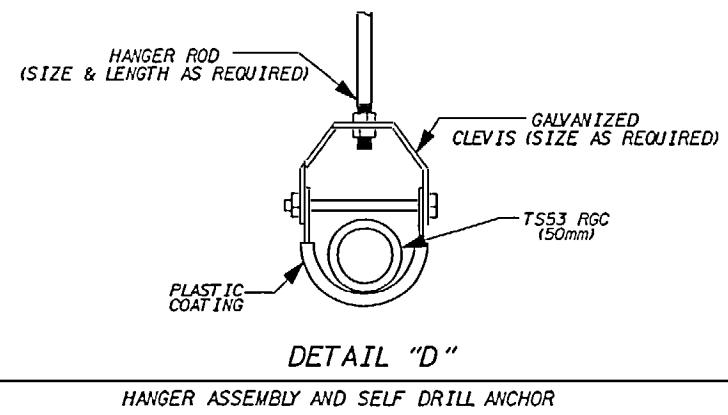
ESTIMATED BILL OF MATERIALS		
QTY	UNIT	DESCRIPTION
100	m	TS53 RIGID GALVANIZED CONDUIT (RGC)
5	EA	GALVANIZED EXPANSION FITTING W/ BONDING JUMPER
2	EA	RGC END CAPS
2	EA	TYPE "C" GALVANIZED CONDUIT BODIES
30	EA	GALV. HANGER ASSEMBLIES W/ GALV. STL RODS
105	m	POLYETHYLENE PULL LINE
30	EA	SELF DRILL ANCHORS
2	EA	TS103 PVC SLEEVE
1	LOT	JUTE
1	LOT	MASTIC



SELF - DRILL ANCHORS			
SIZE mm (Inches)	"A" MIN. mm (Inches)	* "B" TYP. mm (Inches)	PULLOUT FORCE Kg (lbs)
6.350 (1/4)	9.525 (3/8)	27.781 (1 3/32)	1233 (2713)
9.525 (3/8)	14.288 (9/16)	38.894 (1 17/32)	1909 (4200)
12.700 (1/2)	20.638 (13/16)	51.594 (2 1/32)	3341 (7350)
15.875 (5/8)	23.813 (15/16)	62.706 (2 15/32)	4659 (10250)

* PER APPROVED MANUFACTURER'S SPECIFICATIONS

TS53 RGC HANGER ASSEMBLY



SEE PROJECT SPECIAL PROVISIONS TITLED "ELECTRICAL CONDUIT SYSTEM" FOR MATERIALS CONSTRUCTION METHODS AND PAYMENT.

PROJECT NO. R-2425 C
WAKE COUNTY
STATION: 80+30.500 -L-
SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RELEACH					SHEET NO. 5-138
ELECTRICAL CONDUIT SYSTEM (NBL)					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		
					TOTAL SHEETS 142

DRAWN BY: C.D. MULDROW DATE: 02-11-93
CHECKED BY: [Signature] DATE: 3/11/93

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Muldrow

79+80

80+00

80+20

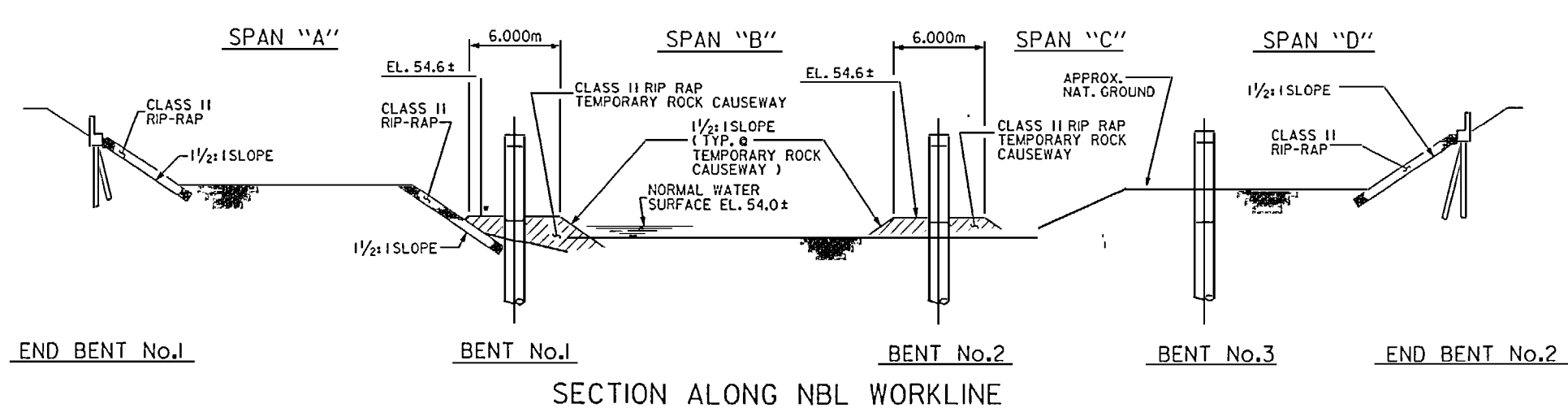
80+40

80+60

80+80

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mbritt

70
65
60
55
50



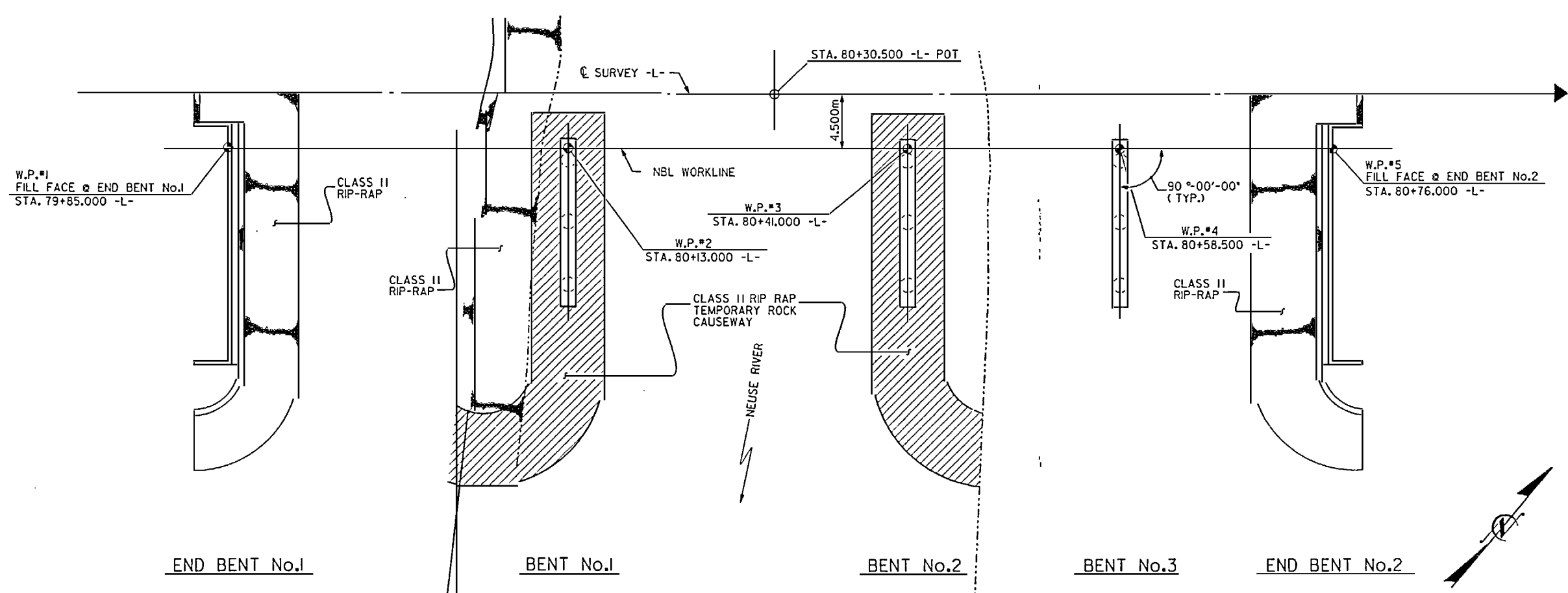
NOTES

THE TEMPORARY ROCK CAUSEWAYS AT BENT No.1 AND BENT No.2 SHALL NOT BE IN PLACE AT THE SAME TIME. THE FIRST TEMPORARY ROCK CAUSEWAY INSTALLED MUST BE COMPLETELY REMOVED PRIOR TO INSTALLING THE SECOND TEMPORARY ROCK CAUSEWAY.

THE COST OF INSTALLING AND REMOVING TEMPORARY ROCK CAUSEWAY IS INCLUDED IN THE LUMP SUM BID PRICE FOR "TEMPORARY ROCK CAUSEWAY".

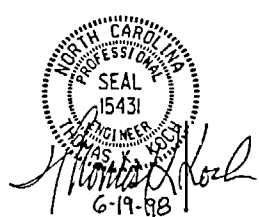
FOR TEMPORARY ROCK CAUSEWAY, SEE SPECIAL PROVISIONS.

SECTION ALONG NBL WORKLINE



PLAN

ESTIMATED QUANTITIES		
CLASS II RIP-RAP FOR TEMPORARY ROCK CAUSEWAY (NBL) (METRIC TONS)		
BENT No.1	BENT No.2	TOTAL
441	327	768



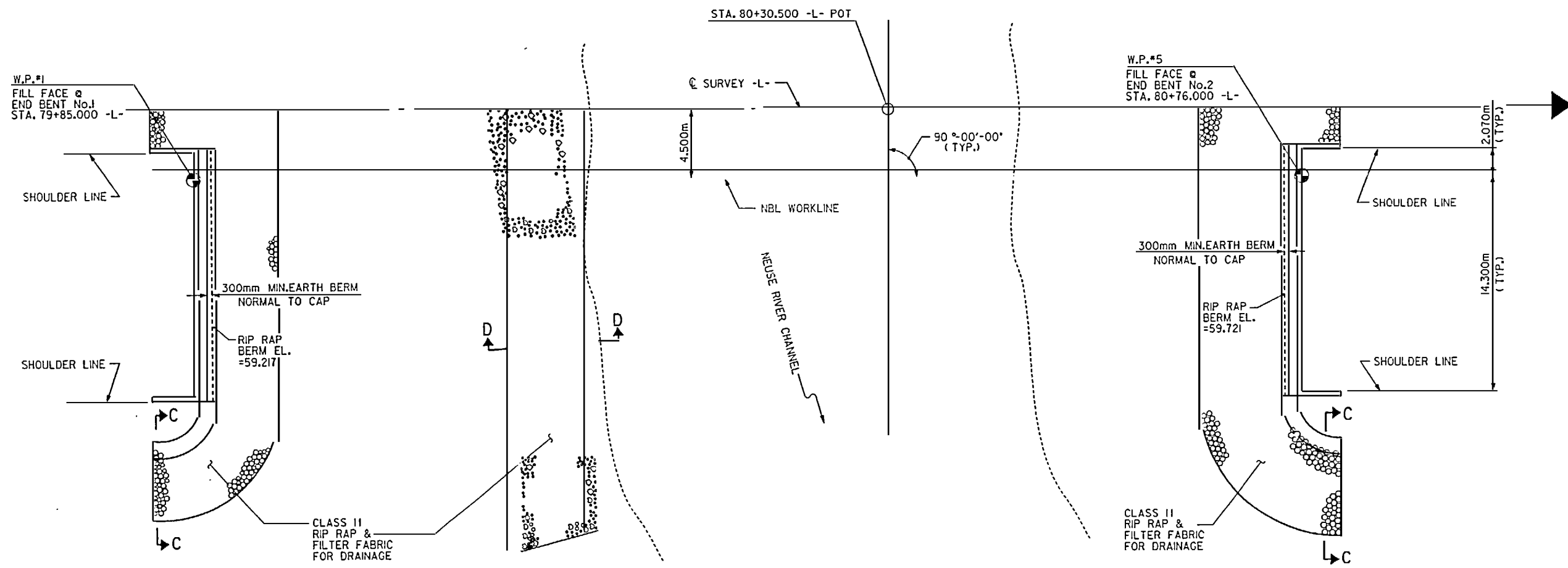
PROJECT No. R-2425 C
WAKE COUNTY
 STATION: 80+30.500 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

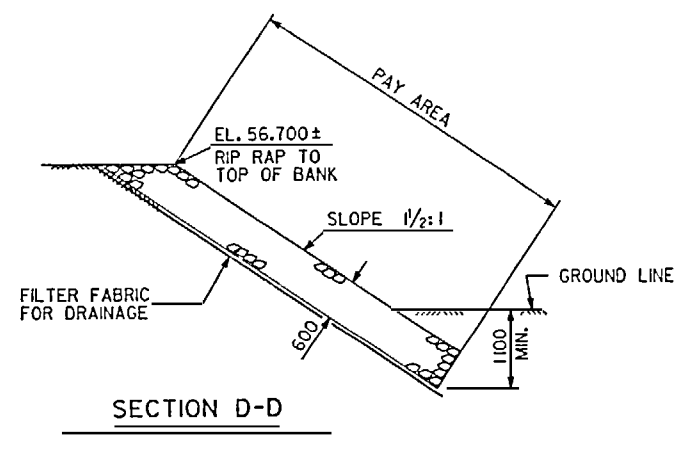
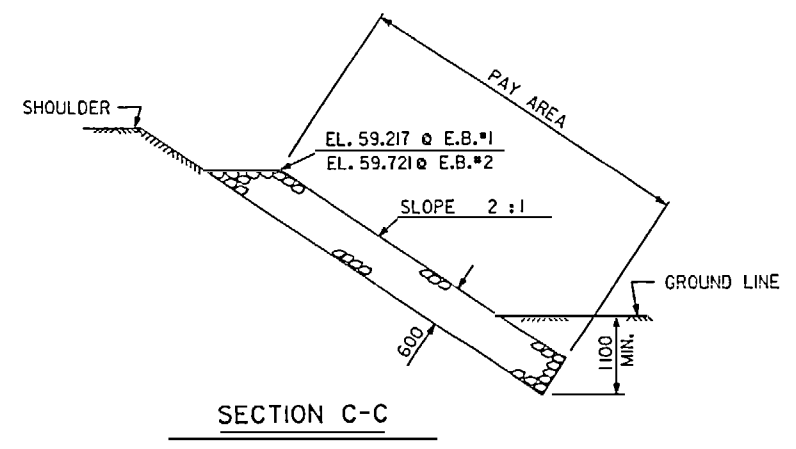
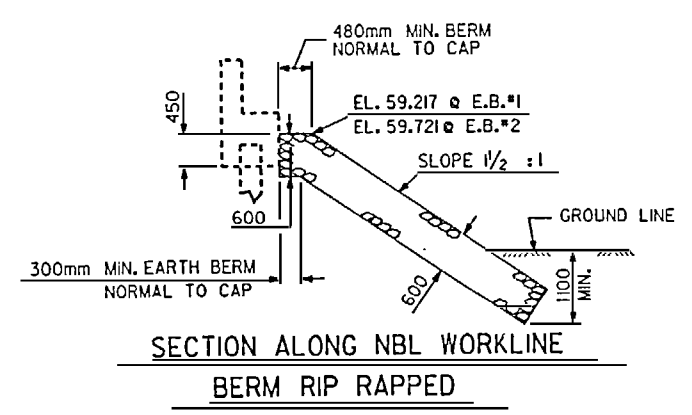
TEMPORARY ROCK CAUSEWAY PLANS (NBL)

DRAWN BY: MIKE BRITT DATE: 3-27-97
 CHECKED BY: [Signature] DATE: 6-19-98

REVISIONS						SHEET No. 3-139
No.	By	Date	No.	By	Date	
1			3			TOTAL SHEETS 142
2			4			



ESTIMATED QUANTITIES			
STA. 80+30.500-L-	PLAIN RIP RAP CLASS 2 METRIC TON		
BRIDGE AT	E. BT. NO. 1	BT. NO. 1	E. BT. NO. 2
NBL WORKLINE	170	225	230
STA. 80+30.500-L-	FILTER FABRIC FOR DRAINAGE SQ. METERS		
BRIDGE AT	E. BT. NO. 1	BT. NO. 1	E. BT. NO. 2
NBL WORKLINE	170	225	230

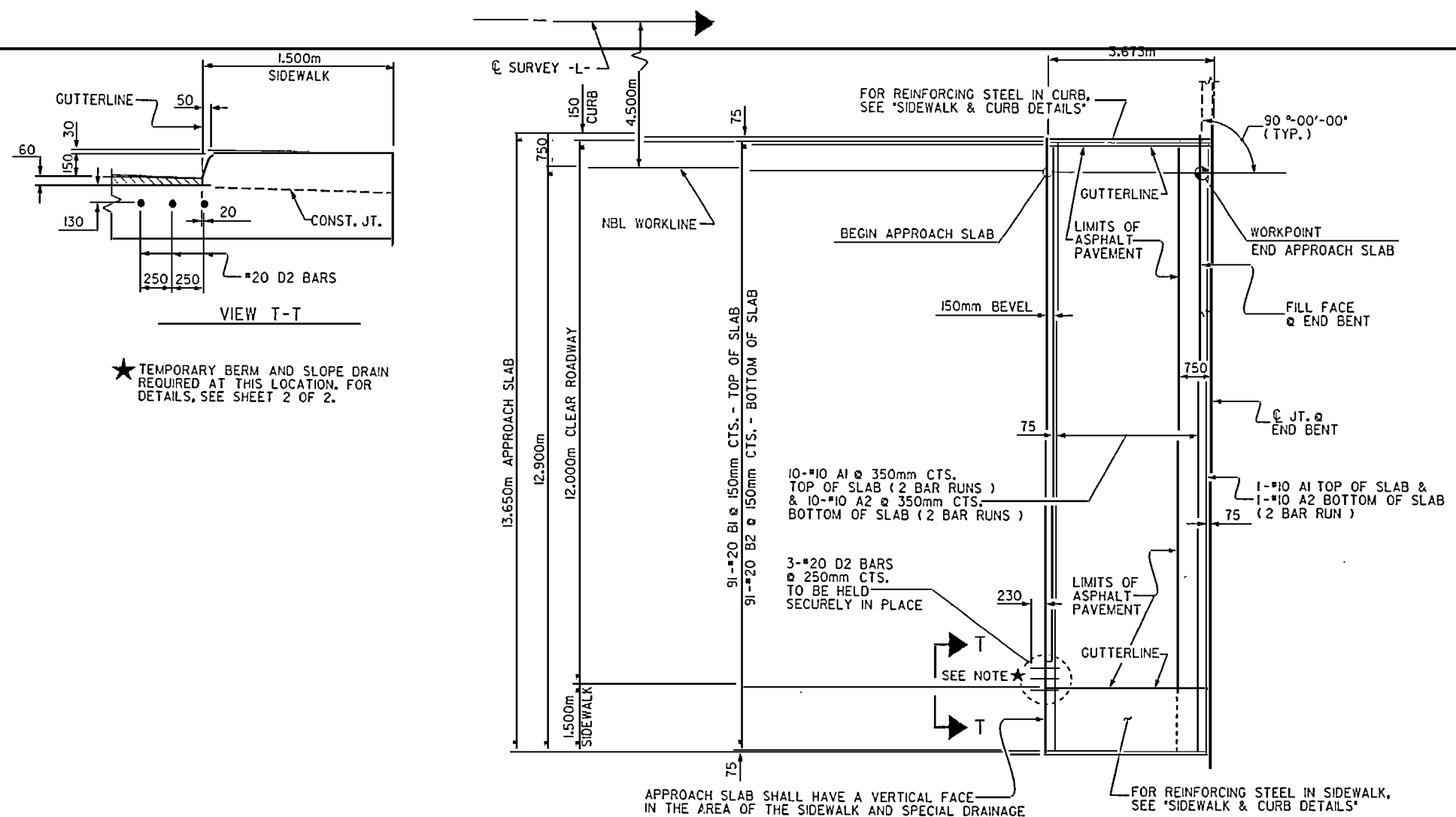


PROJECT NO. R-2425 C
 WAKE COUNTY
 STATION: 80+30.500 -L-

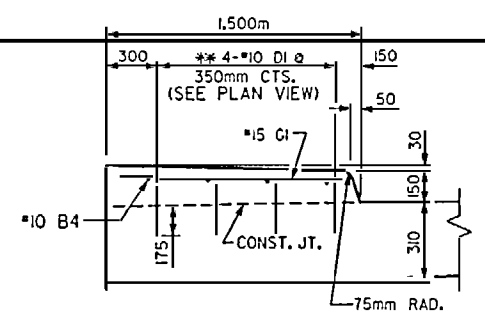
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 RIP RAP DETAILS
 (NBL)

REVISIONS						SHEET NO	
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS	
1			3			142	9-140
2			4				

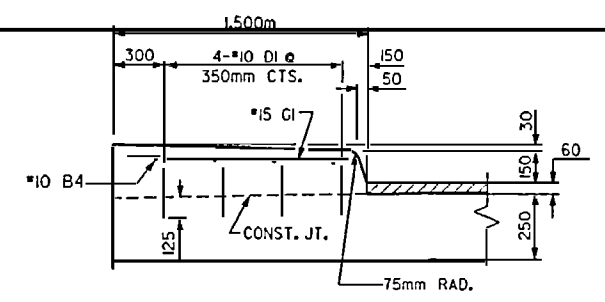
DRAWN BY: M.J. HOGAN DATE: 6/17/96
 CHECKED BY: K.W. WRIGHT DATE: 10/23/97



PLAN OF APPROACH SLAB
(END BENT No. 1 SHOWN - END BENT No. 2 SIMILAR)

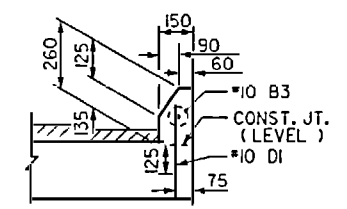


SECTION K-K

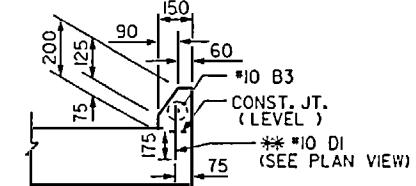


SECTION J-J

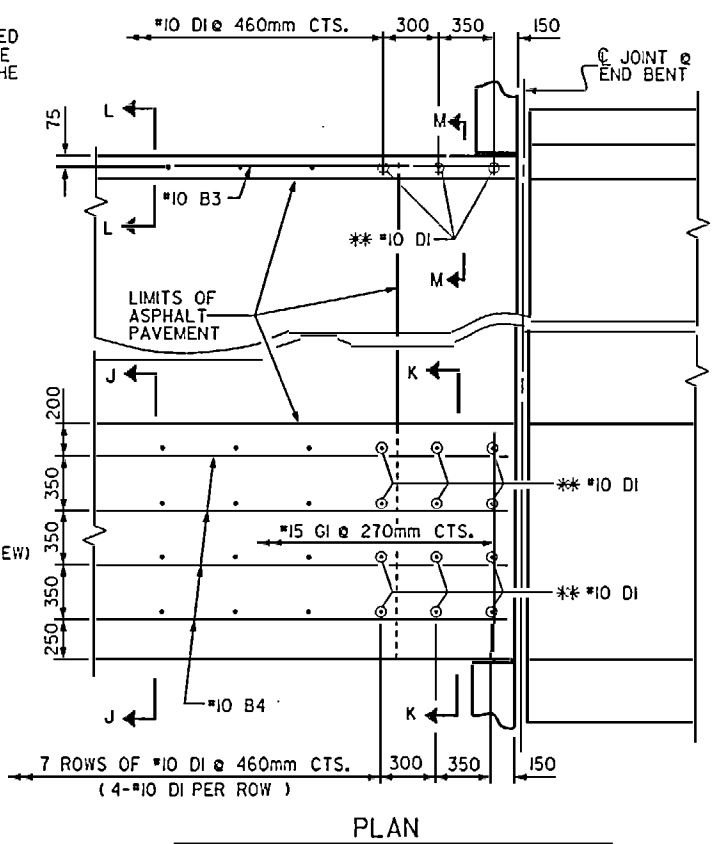
* THESE DOWELS ARE TO BE PLACED AFTER SAWING OF THE JOINT. THE HOLES SHALL BE DRILLED AND THE DOWELS GROUTED IN PLACE.



SECTION L-L

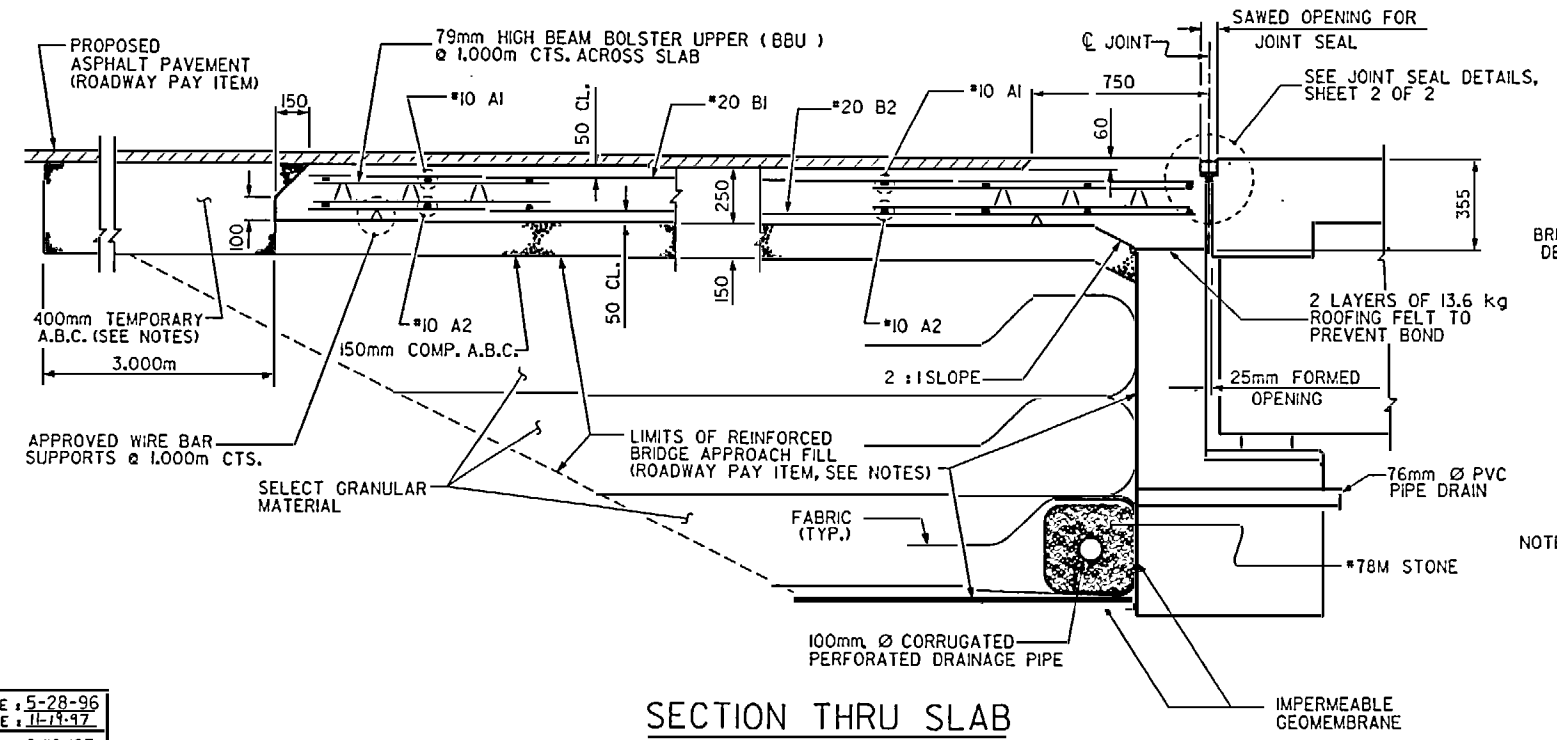


SECTION M-M

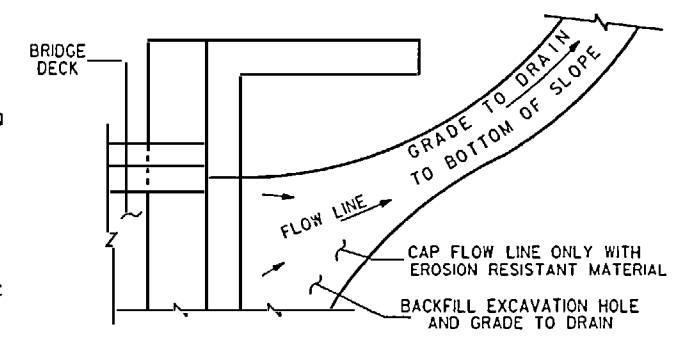


DETAIL AT END OF CURB

SIDEWALK & CURB DETAILS

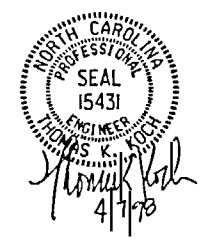


SECTION THRU SLAB



TEMPORARY DRAINAGE DETAIL

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.



PROJECT NO. R-2425 C
WAKE COUNTY
STATION: 80+30.500 -L-

SHEET 1 OF 2
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
BRIDGE APPROACH SLAB
FOR FLEXIBLE PAVEMENT
WITH REINFORCED BRIDGE
APPROACH FILL
(NBL)

REVISIONS				SHEET NO.
NO.	DATE	NO.	DATE	5-141
1		3		TOTAL SHEETS
2		4		142

ASSEMBLED BY: MIKE BRITT DATE: 5-28-96
CHECKED BY: M. J. H. / B. L. L. DATE: 11-19-97
STD. DRAWN BY: F. C. JONES DATE: 6/10/87
STD. CHECKED BY: E. G. ALLEN DATE: 8/25/87

NOTES

PAYMENT FOR OPTIONAL COMPRESSION JOINT SEALS SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR EVAZOTE JOINT SEALS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE COMPRESSION JOINT SEAL SHALL BE 76mm.

THE JOINT SHALL BE SAWS PRIOR TO THE CASTING OF THE CONCRETE CURB, SIDEWALK AND BARRIER RAIL.

APPROACH SLAB GROOVING IS NOT REQUIRED.

DOWELS MAY BE PUSHED INTO GREEN CONCRETE AFTER THE SLAB HAS BEEN SCREEDED AND FLOAT FINISHED EXCEPT AS NOTED ON THE PLANS.

THE 400mm TEMPORARY A.B.C. SHALL EXTEND FROM THE END OF THE APPROACH SLAB TO 3m BEYOND THE SLAB AS SHOWN AND SHALL EXTEND TO EACH EDGE OF THE APPROACH SLAB. THE TEMPORARY A.B.C. MAY BE PLACED IN TWO LIFTS. EACH LIFT SHALL BE COMPACTED BY A MINIMUM OF TWO PASSES OF A VIBRATORY ROLLER.

THE CONTRACTOR MAY, AT HIS OPTION, USE A COMPRESSION JOINT SEAL IN LIEU OF THE EVAZOTE JOINT SEAL. SEE SPECIAL PROVISION FOR OPTIONAL PREFORMED COMPRESSION JOINT SEALS.

TEMPORARY DRAINAGE AND TEMPORARY BERM AND SLOPE DRAINS WILL BE PAID FOR UNDER THE LUMP SUM PRICE FOR BRIDGE APPROACH SLABS.

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

THE AREAS BETWEEN THE WINGWALLS AND THE APPROACH SLABS SHALL BE PAVED, SEE ROADWAY PLANS.

THE 150mm COMP. A.B.C. SHALL EXTEND 300mm OUTSIDE OF EACH EDGE OF THE SLAB.

THE CONTRACTOR MAY, AT HIS OPTION, USE EITHER 100mm TYPE HB ASPHALT CONCRETE BASE COURSE OR 125mm CLASS 'A' CONCRETE IN LIEU OF 150mm A.B.C. IF 125mm CLASS 'A' CONCRETE IS USED, THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 13.6 kg ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE WIDTH OF THE CONCRETE BASE SHALL BE THE SAME WIDTH AS THE APPROACH SLAB. THE APPROACH SLABS SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.

FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

PAYMENT FOR EVAZOTE JOINT SEALS SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR EVAZOTE JOINT SEALS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 71mm.

FOR REINFORCED BRIDGE APPROACH FILL INCLUDING FABRIC, IMPERMEABLE GEOMEMBRANE, 100mm Ø DRAINAGE PIPE, #7.5M STONE, AND SELECT GRANULAR FILL, SEE ROADWAY PLANS.

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.

BILL OF MATERIAL FOR ONE APPROACH SLAB (2 REQUIRED)

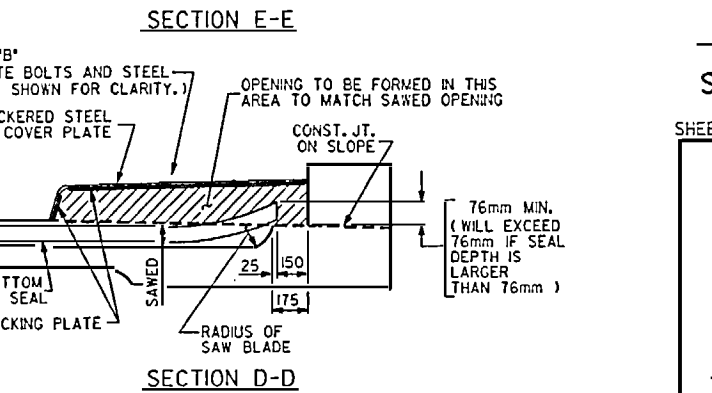
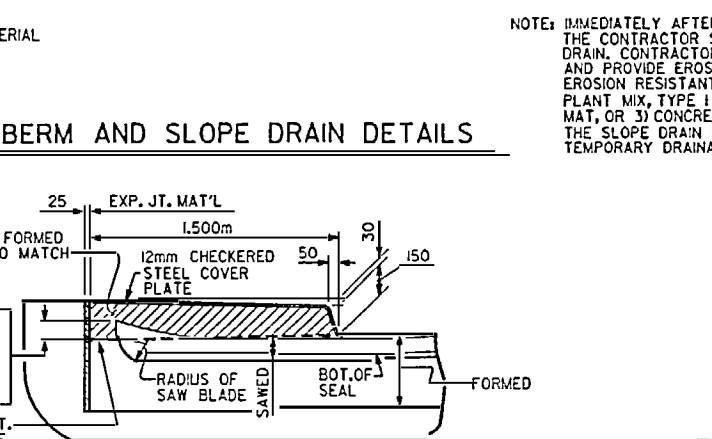
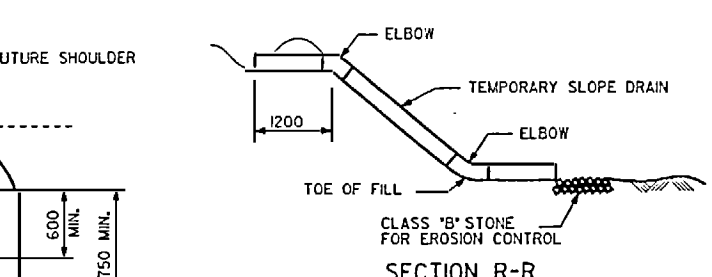
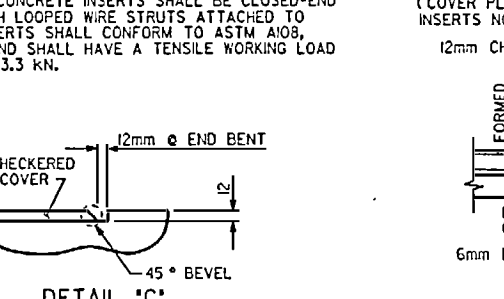
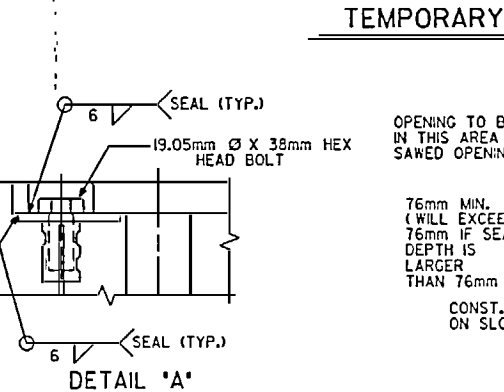
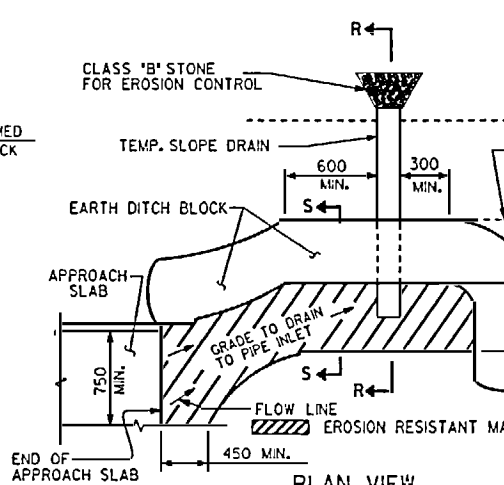
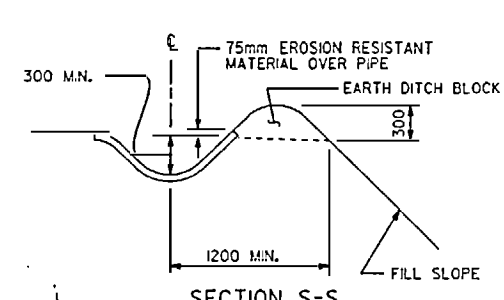
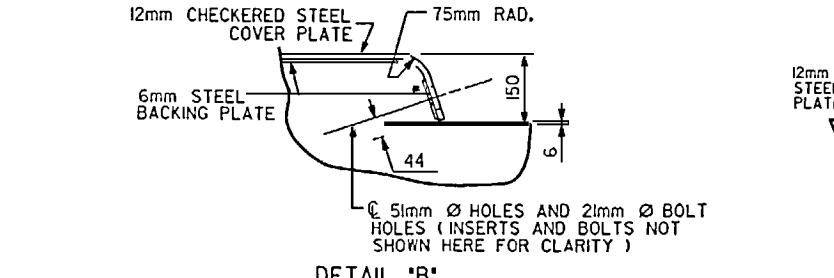
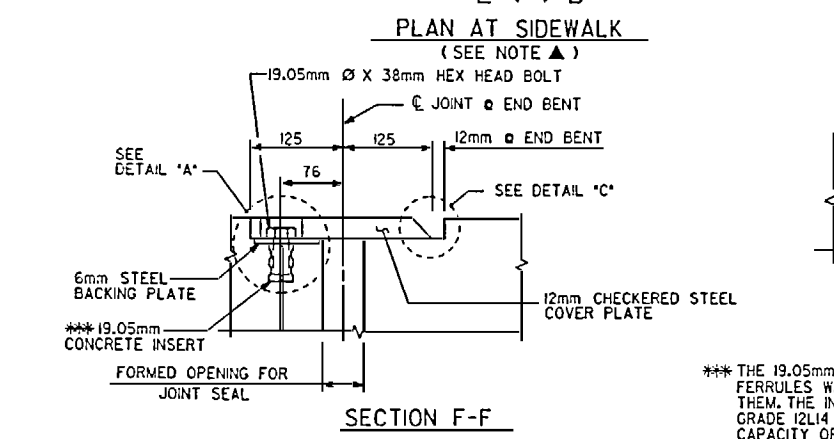
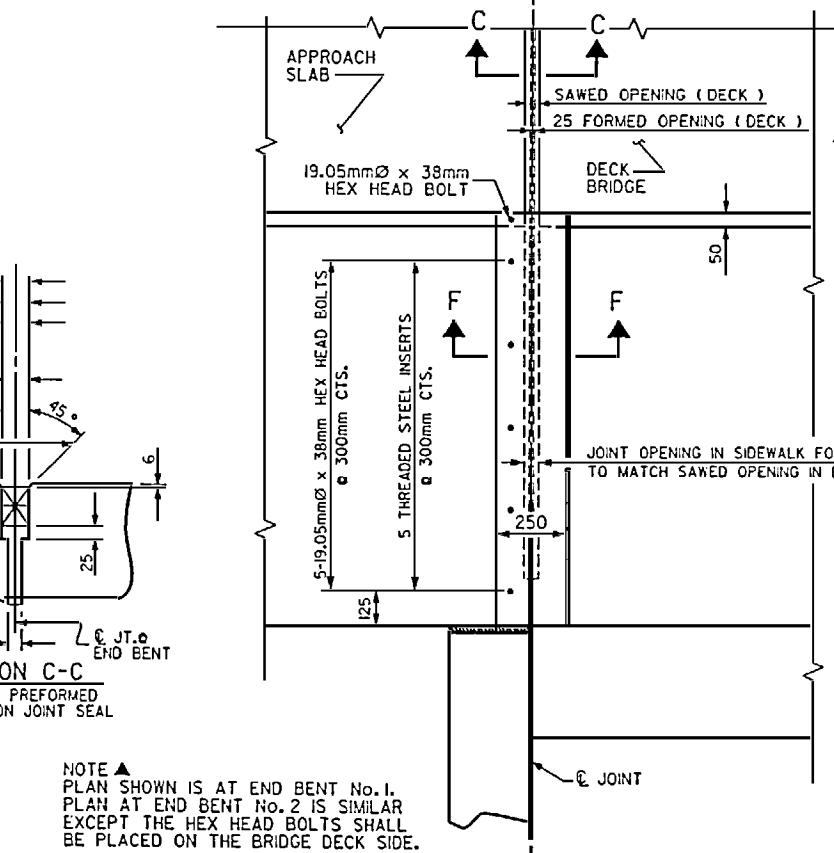
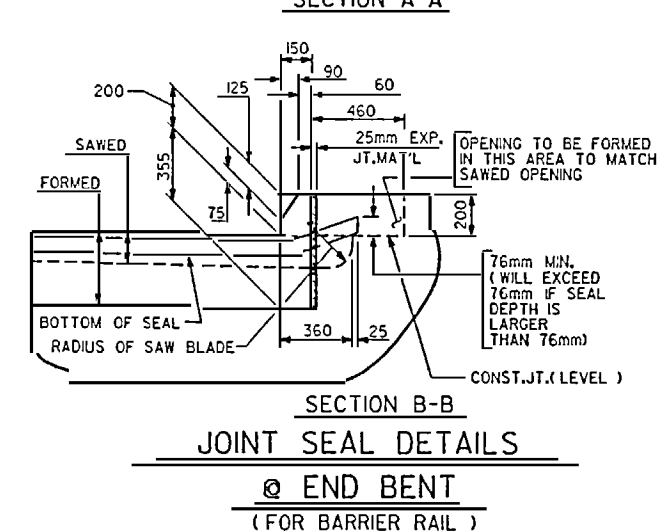
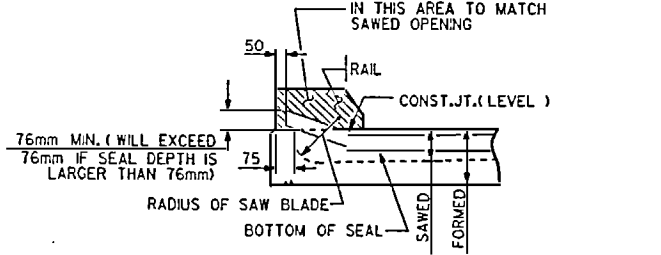
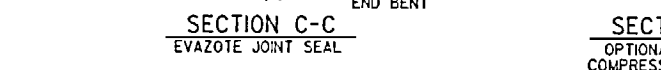
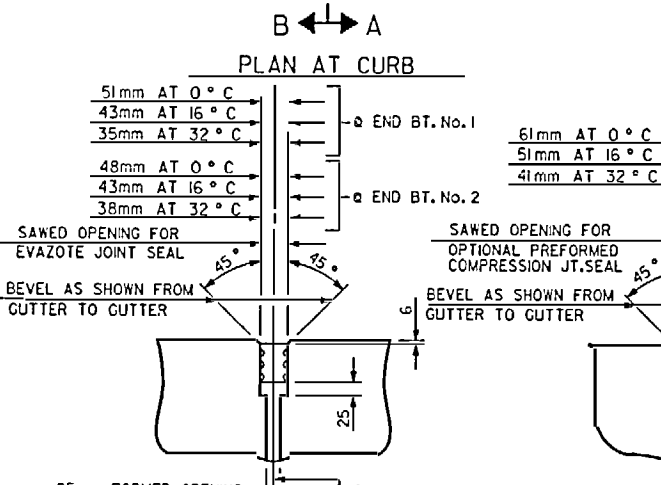
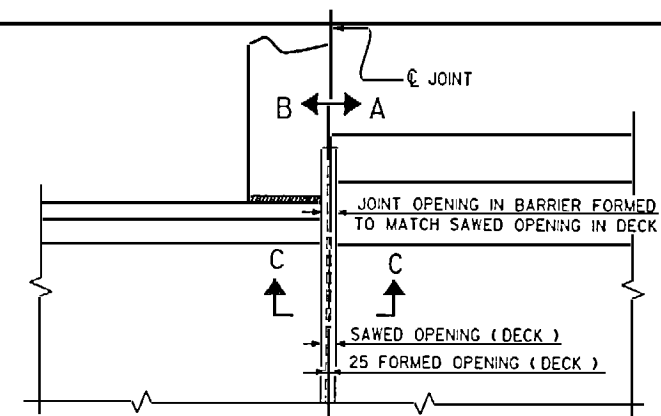
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	22	10	STR.	7040	122
A2	22	10	STR.	7000	121
*B1	91	20	STR.	3400	729
B2	91	20	STR.	3560	763
*B3	1	10	STR.	3420	3
*B4	4	10	STR.	3560	11
*D1	45	10	STR.	300	11
*D2	3	20	STR.	460	3
*G1	14	15	STR.	1340	29

REINFORCING STEEL	884	kg
*EPOXY COATED REINFORCING STEEL	908	kg
CLASS AA CONCRETE	14.6	m ³

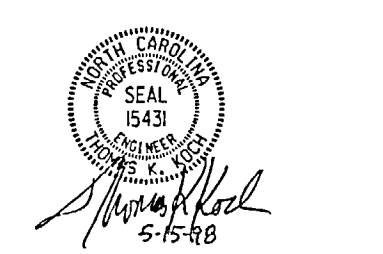
* THESE BARS ARE EPOXY COATED

REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

BAR SIZE	EPOXY COATED	UNCOATED
#10	520	450
#15	730	640
#20	1190	790
#25	1980	1320



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. 50mm 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, 305mm IN DIAMETER.



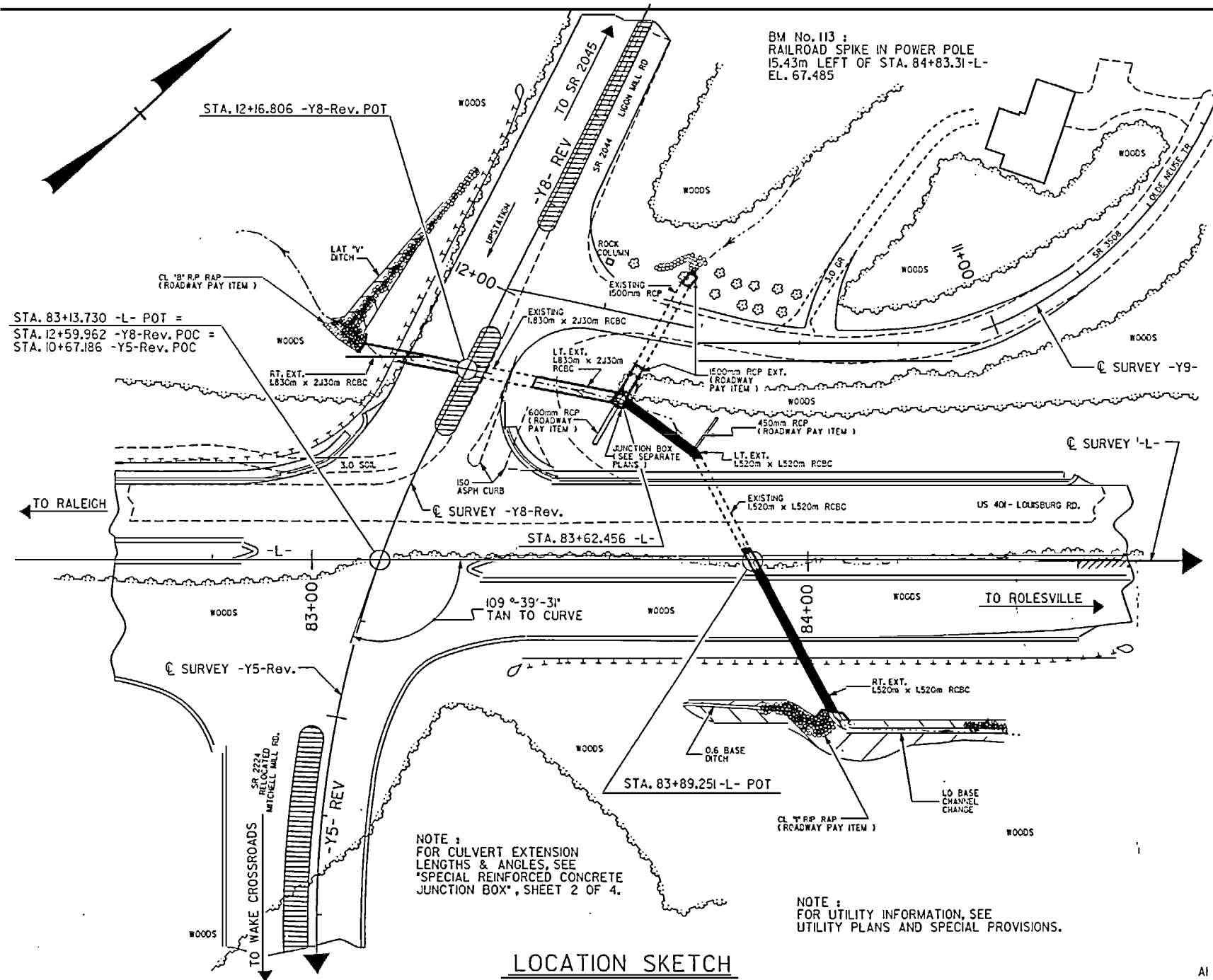
PROJECT NO. R-2425 C
WAKE COUNTY
 STATION: 80+30.500 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA			
DEPARTMENT OF TRANSPORTATION			
RALEIGH			
STANDARD			
BRIDGE APPROACH SLAB			
FOR FLEXIBLE PAVEMENT			
WITH REINFORCED BRIDGE			
APPROACH FILL			
(NBL)			
REVISIONS			SHEET NO.
NO.	DATE	NO.	DATE
1		3	
2		4	
TOTAL SHEETS			142

ASSEMBLED BY: MIKE BRITT	DATE: 5-28-96	SPECIAL
CHECKED BY: R. W. WRIGHT	DATE: 5-13-98	
DRAWN BY: F. C. JONES	DATE: 11/28/88	STANDARD
CHECKED BY: A. R. BISSETTE	DATE: 11/28/88	

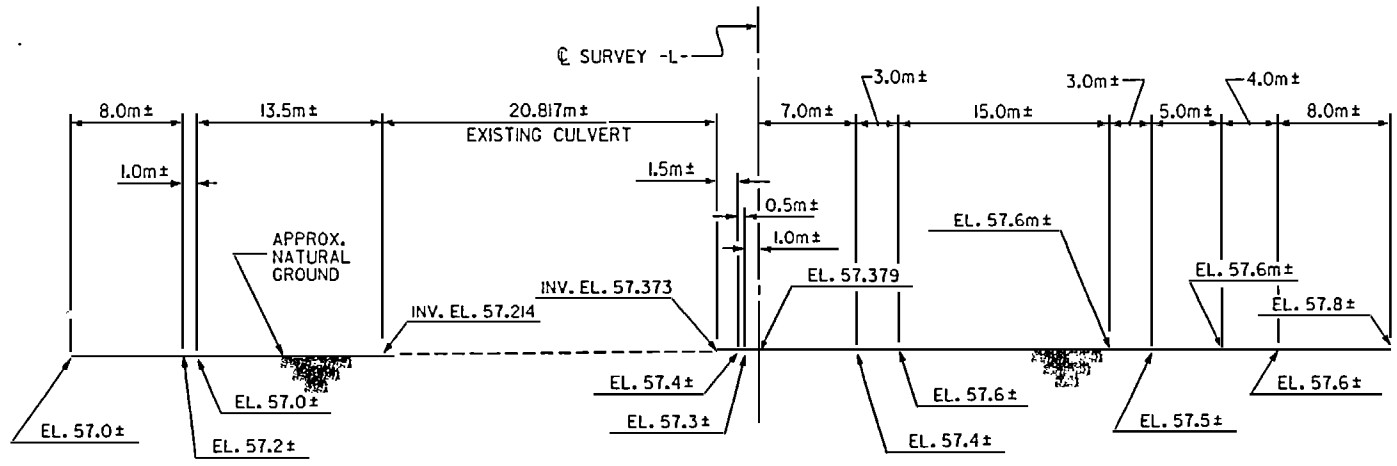
REV. 10/93 CLR 400P
 REV. 6/94 ERM 400P
 REV. 8/98 ERM 400P



NOTE:
FOR CULVERT EXTENSION
LENGTHS & ANGLES, SEE
"SPECIAL REINFORCED CONCRETE
JUNCTION BOX", SHEET 2 OF 4.

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

LOCATION SKETCH



PROFILE ALONG CULVERT

HYDROGRAPHIC DATA

GRADE POINT ELEVATION @ STA. 83+89.251-L-	= 62.495m
BED ELEVATION @ STA. 83+89.251-L-	= 57.379m
DESIGN DISCHARGE	= 6.4 m ³ /s
FREQUENCY OF DESIGN FLOOD	= 50 yrs.
DESIGN HIGH WATER ELEVATION	= 59.37 m
DRAINAGE AREA	= 89 Ha
BASIC DISCHARGE (Q100)	= 7.5 m ³ /s
BASIC HIGH WATER ELEVATION	= 59.79 m
ROADWAY SLOPES	= 2 : 1

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 12.0 m ³ /s
FREQUENCY OF OVERTOPPING FLOOD	= 500 yrs.+
OVERTOPPING FLOOD ELEVATION	= 62.37 m

NOTES

ASSUMED LIVE LOAD -----MS18 OR ALTERNATE LOADING.

DESIGN FILL LEFT EXTENSION----- = 4.010m
DESIGN FILL RIGHT EXTENSION----- = 4.010m

FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.

75mm Ø WEEP HOLES INDICATED TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.

CONCRETE IN CULVERTS TO BE POURED IN THE FOLLOWING ORDER:

1. WING FOOTINGS AND FLOOR SLAB INCLUDING 90mm OF ALL VERTICAL WALLS.
2. THE REMAINING PORTIONS OF THE WALLS AND WINGS FULL HEIGHT FOLLOWED BY ROOF SLAB AND HEADWALLS.

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

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

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

TOTAL STRUCTURE QUANTITIES

CLASS A CONCRETE	
LEFT EXTENSION BARREL @	1.350 m ³ /m = 24.7 m ³
4 EDGE BEAMS @	0.8 m ³
PART 1 RIGHT EXTENSION BARREL @	1.350 m ³ /m = 28.1 m ³
PART 2 RIGHT EXTENSION BARREL @	1.350 m ³ /m = 20.8 m ³
WINGS ETC.	5.0 m ³
TOTAL	79.4 m³
REINFORCING STEEL	
LEFT EXTENSION BARREL	1930 Kg.
RIGHT EXTENSION BARREL	3609 Kg.
WINGS	87 Kg.
TOTAL	5526 Kg.
CULVERT EXCAVATION	LUMP SUM
FOUNDATION COND. MAT'L (LT. & RT. EXTENSIONS)	71 METRIC TONS

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

ALL ELEVATIONS ARE IN METERS.

FOR NOTE REGARDING SETTING OF DOWELS, SEE SHEET S - N.

IN LIEU OF BENDING EXISTING "H" BARS INTO THE EXTERIOR CULVERT EXTENSION WALLS, THE CONTRACTOR MAY CUT OFF THE EXISTING "H" BARS AND GROUP 610mm LONG #20 DOWELS AT A SPACING OF 460mm. NO ADDITIONAL PAYMENT SHALL BE MADE IF THE CONTRACTOR SELECTS THIS OPTION.

AS AN ALTERNATIVE TO GROUTING THE #20 DOWELS, THE CONTRACTOR MAY USE AN ADHESIVE ANCHOR SYSTEM. THE YIELD LOAD OF THE #20 DOWELS IS 5.9kN. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.

FOR REMOVAL OF EXISTING CONCRETE AND BONDING OF NEW CONCRETE TO OLD CONCRETE, SEE STANDARD SPECIFICATIONS FOR "WIDENING EXISTING STRUCTURES."

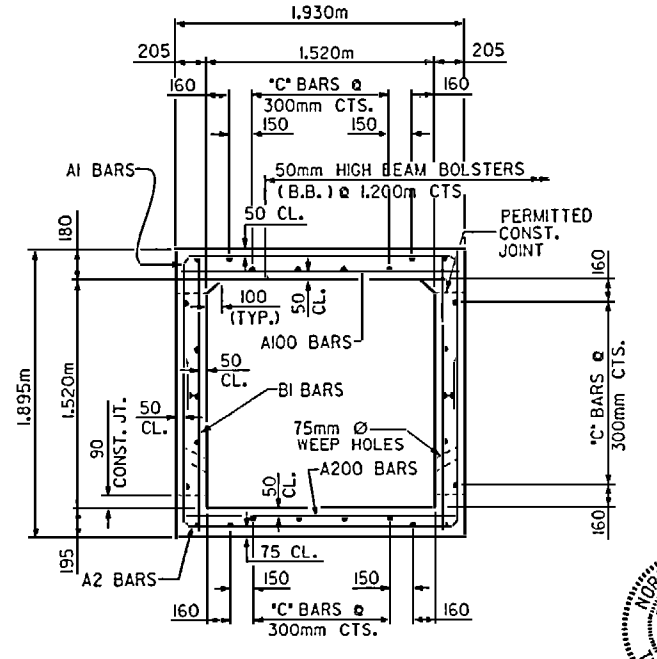
THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 360,000 kg OF REINFORCING STEEL, ONE 760mm SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 360,000 kg OF REINFORCING STEEL, TWO 760mm SAMPLES OF EACH SIZE BAR USED. THE 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.

FOR METRIC REINFORCING STEEL FOR STRUCTURES, SEE SPECIAL PROVISIONS.

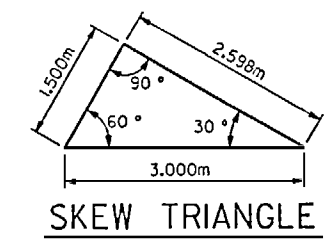
FOR CONSTRUCTION SEQUENCE, SEE EROSION CONTROL PLANS.

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

FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS.



RIGHT ANGLE SECTION OF BARREL
THERE ARE 28 "C" BARS IN SECTION OF BARREL



SKEW TRIANGLE



PROJECT NO. **R-2425 C**
WAKE COUNTY
STATION: **83+89.251-L-**
SHEET 1 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

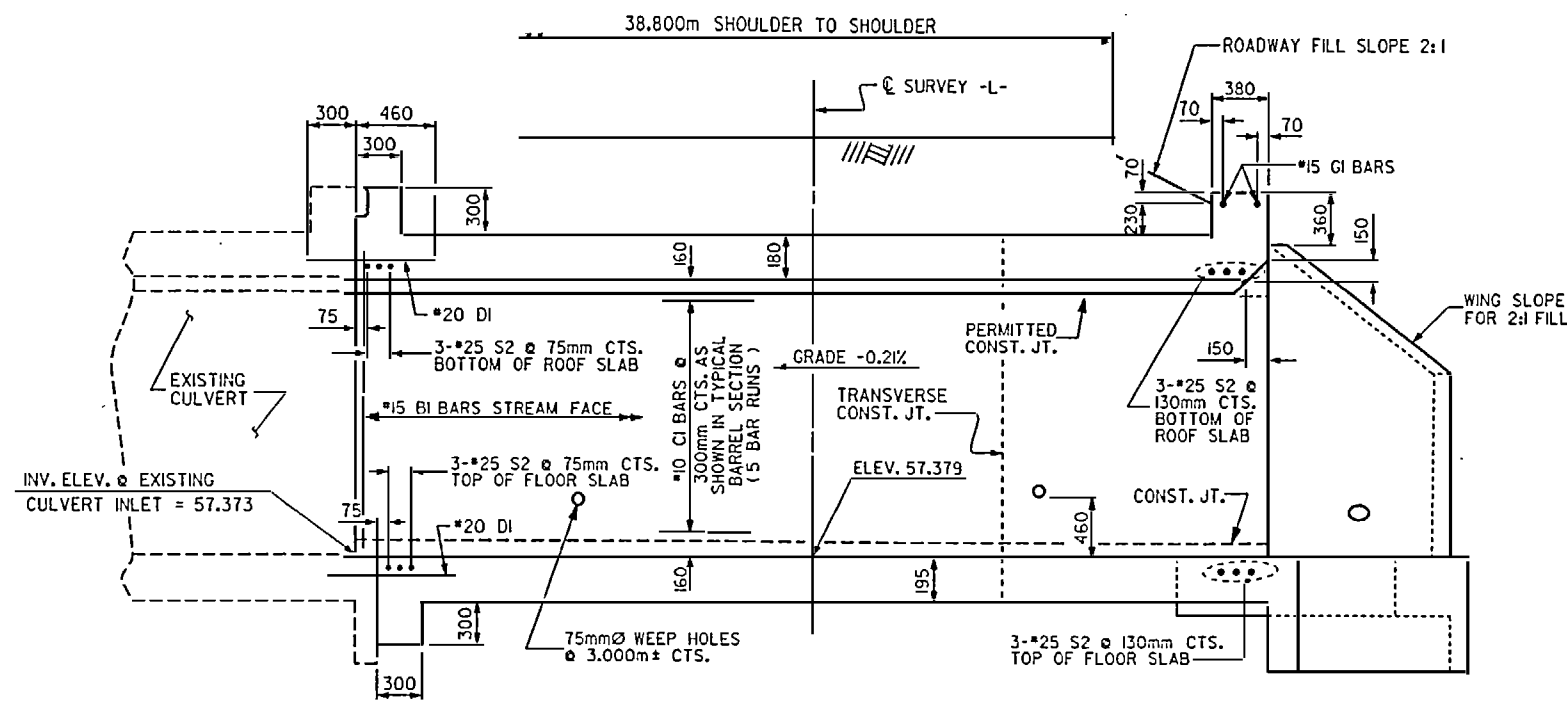
**SINGLE 1.520m x 1.520m
CONCRETE BOX CULVERT
LT. & RT. EXTENSIONS**

DRAWN BY: **MKE BRITT** DATE: **9-19-96**
CHECKED BY: **R.W. Wright** DATE: **5-26-98**

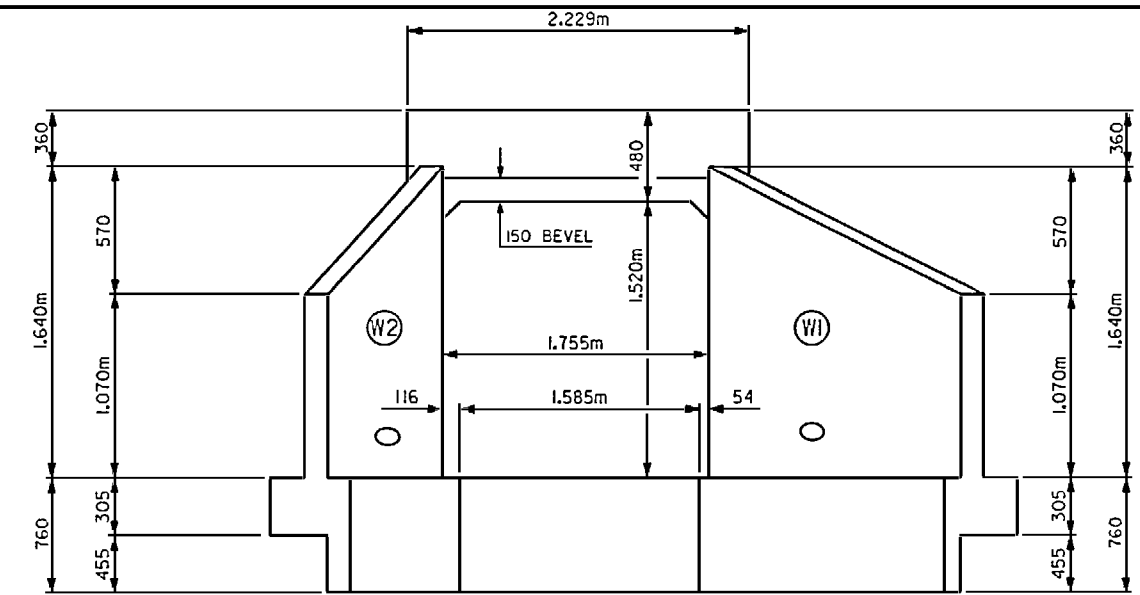
SEAL
15431
ENGINEER
5-26-98

SEAL
11268
ENGINEER
5-26-98

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	C - 1
1			3			TOTAL SHEETS 14
2			4			

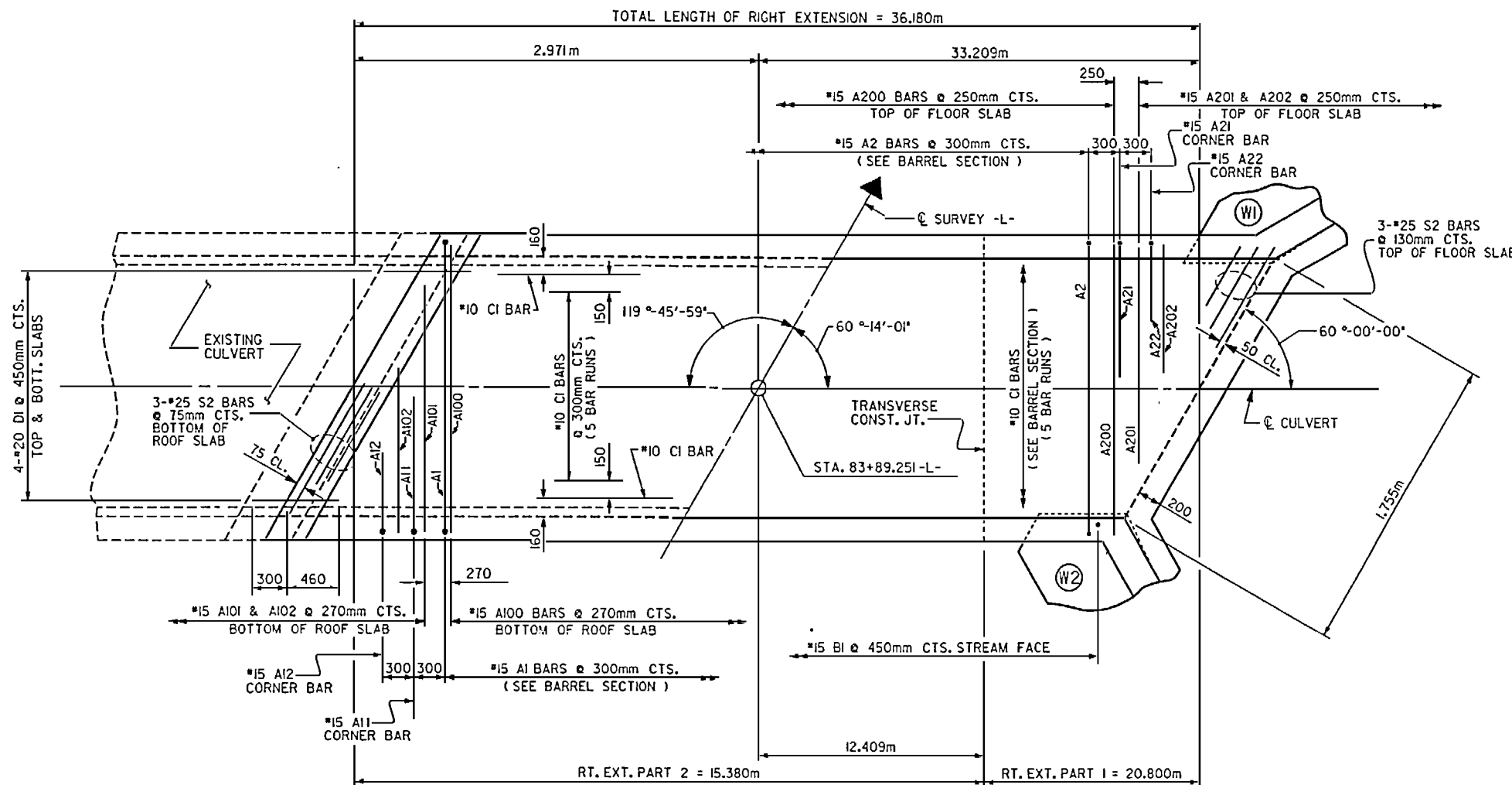


CULVERT SECTION NORMAL TO ROADWAY



END ELEVATION NORMAL TO SKEW

(INLET END)



PART PLAN RT. EXT. - ROOF SLAB

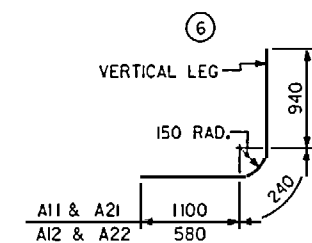
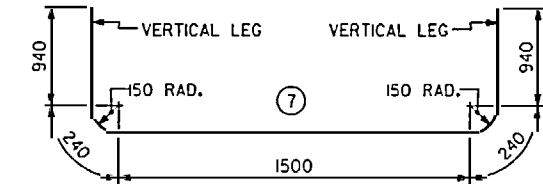
PART PLAN RT. EXT. - FLOOR SLAB

REINFORCING BAR SCHEDULE FOR BARREL (RIGHT EXTENSION)

BAR	NO.	SIZE	TYP	LENGTH	WEIGHT
A100	130	15	STR	1780	363
A101	2	15	STR	1260	4
A102	2	15	STR	820	3
A200	141	15	STR	1780	394
A201	2	15	STR	1320	4
A202	2	15	STR	880	3
A1	117	15	7	3860	709
A11	2	15	6	2280	7
A12	2	15	6	1760	6
A2	117	15	7	3860	709
A21	2	15	6	2280	7
A22	2	15	6	1760	6
B1	162	15	STR	1720	437
C1	140	10	STR	7620	837
D1	8	20	STR	760	14
G1	2	15	STR	2100	7
S2	12	25	STR	2100	99
				TOTAL	3609

***** SPLICE LENGTHS CHART *****

BAR	SIZE	SPLICE LENGTH
B1	15	520
C1	10	500



BAR TYPES

DIMENSIONS ARE OUT TO OUT

PROJECT NO. R-2425 C
WAKE COUNTY
STATION: 83+89.251-L-

SHEET 2 OF 6

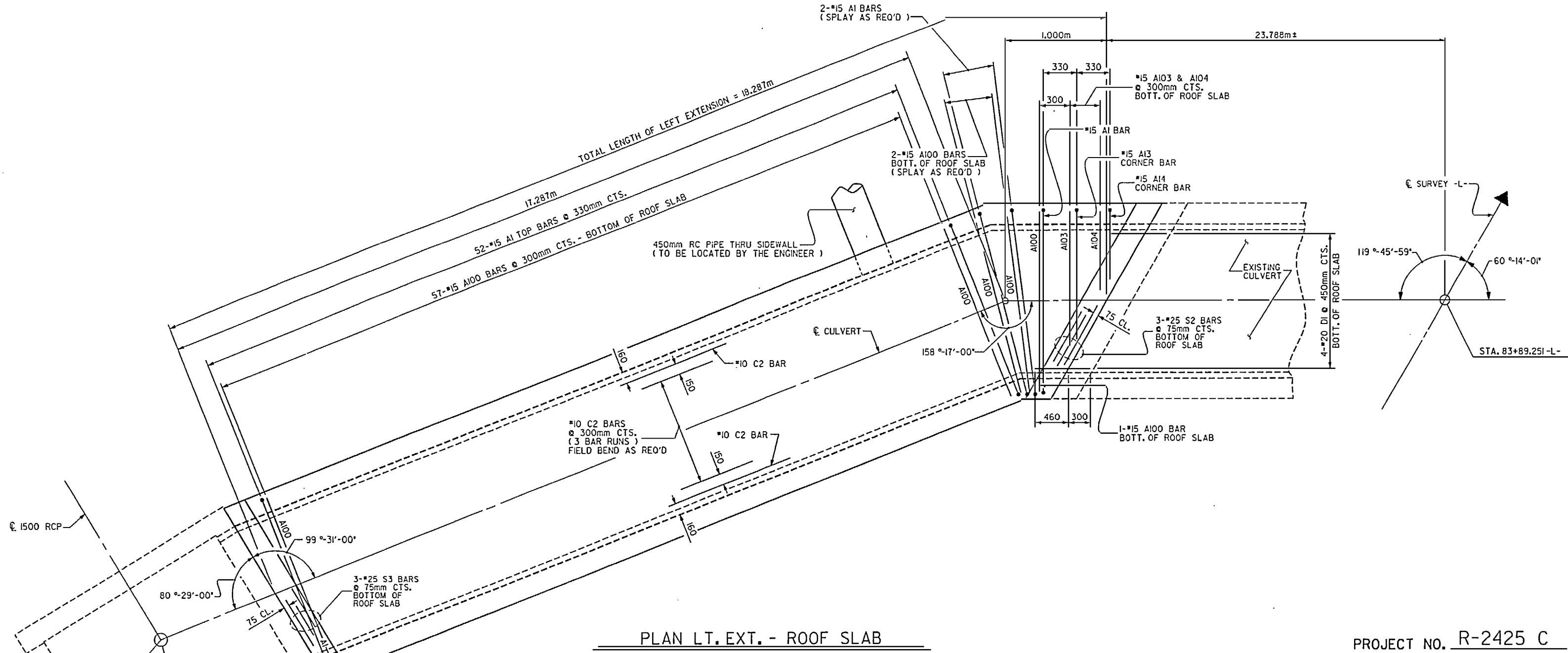
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SINGLE 1.520m x 1.520m
CONCRETE BOX CULVERT
RIGHT EXTENSION

REVISIONS						SHEET NO. C - 2
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 14
2			4			

DRAWN BY: MIKE BRITT DATE: 7-29-96
CHECKED BY: R.L. WRIGHT DATE: 11-7-97





PLAN LT. EXT. - ROOF SLAB

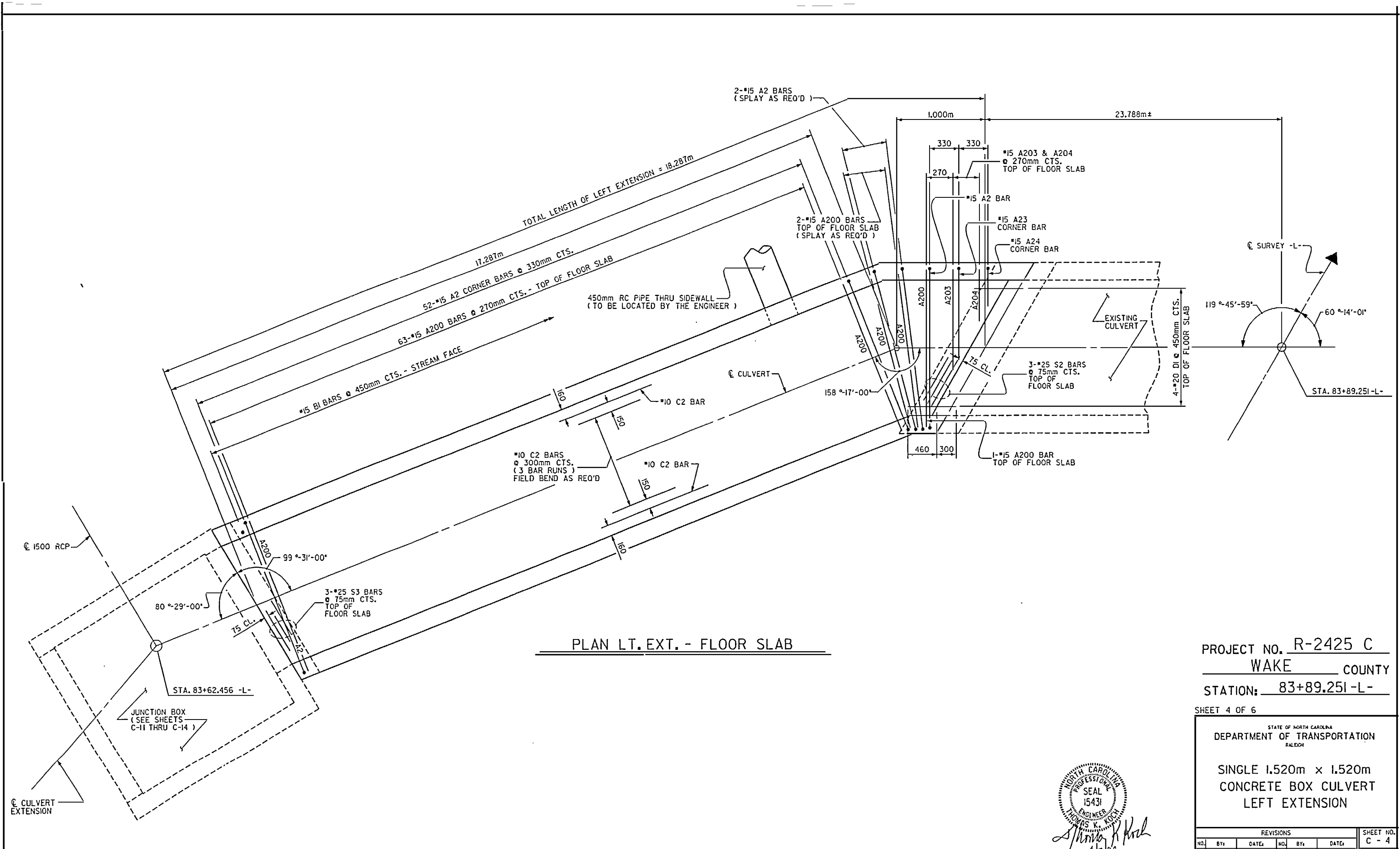
PROJECT NO. R-2425 C
WAKE COUNTY
 STATION: 83+89.251 -L-

SHEET 3 OF 6



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. C - 3
SINGLE 1.520m x 1.520m CONCRETE BOX CULVERT LEFT EXTENSION						TOTAL SHEETS 14
REVISIONS						SHEET NO. C - 3
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 14
2			4			

DRAWN BY: MIKE BRITT DATE: 7-29-96
 CHECKED BY: R.W. WRIGHT DATE: 11-7-97



PLAN LT. EXT. - FLOOR SLAB

PROJECT NO. R-2425 C
WAKE COUNTY
 STATION: 83+89.251-L-

SHEET 4 OF 6

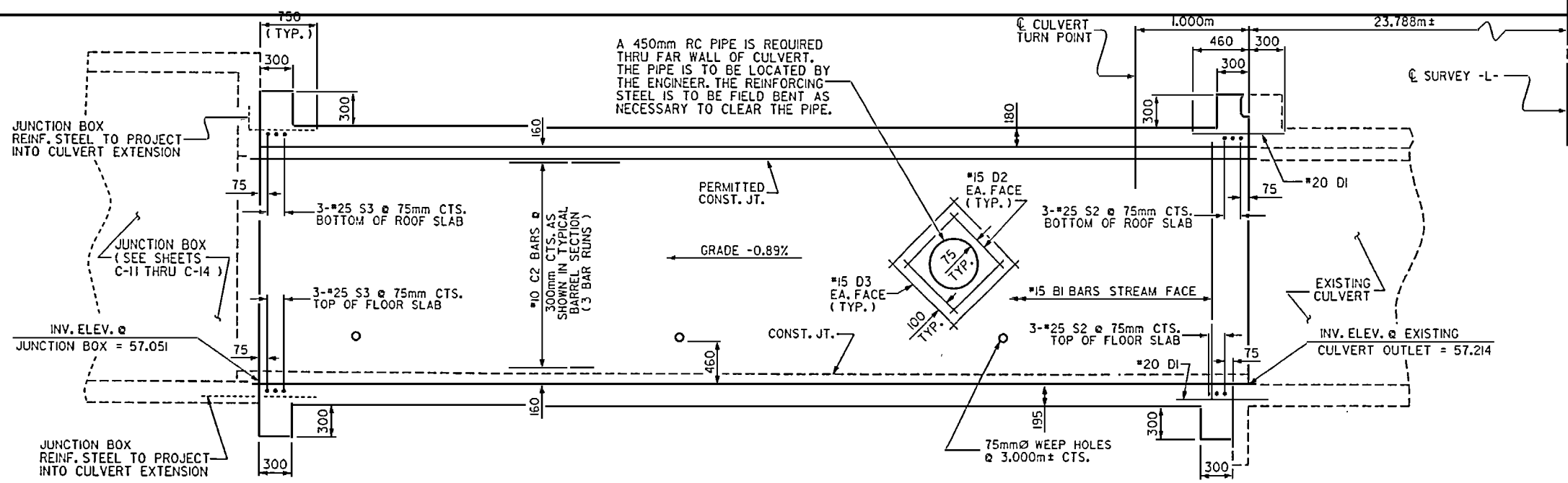
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SINGLE 1.520m x 1.520m
 CONCRETE BOX CULVERT
 LEFT EXTENSION



REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	C - 4
1			3			TOTAL SHEETS
2			4			14

DRAWN BY: MIKE BRITT DATE: 7-29-96
 CHECKED BY: R.W. WRIGHT DATE: 11-7-97



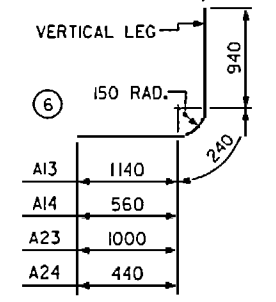
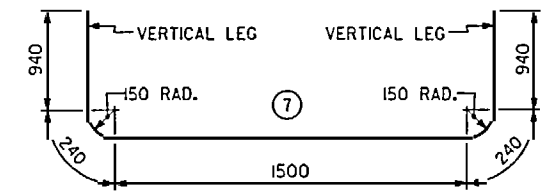
CULVERT SECTION ALONG C LEFT EXTENSION

REINFORCING BAR SCHEDULE FOR BARREL (LEFT EXTENSION)

BAR	NO.	SIZE	TYP	LENGTH	WEIGHT
A100	60	15	STR	1780	168
A103	1	15	STR	1300	2
A104	1	15	STR	780	1
A200	66	15	STR	1780	184
A203	1	15	STR	1200	2
A204	1	15	STR	640	1
A1	55	15	7	3860	333
A13	1	15	6	2320	4
A14	1	15	6	1740	3
A2	55	15	7	3860	333
A23	1	15	6	2180	3
A24	1	15	6	1620	3
B1	82	15	STR	1720	221
C2	84	10	STR	6760	446
D1	8	20	STR	760	14
D2	8	15	STR	700	9
D3	8	15	STR	900	11
S2	6	25	STR	2100	49
S3	6	25	STR	1840	43
TOTAL				1830	

*** SPLICE LENGTHS CHART ***

BAR	SIZE	SPLICE LENGTH
B1	15	520
C2	10	500



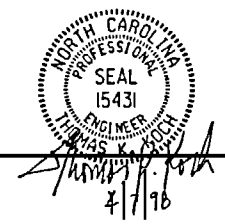
BAR TYPES
DIMENSIONS ARE OUT TO OUT

PROJECT NO. R-2425 C
WAKE COUNTY
STATION: 83+89.251 -L-

SHEET 5 OF 6

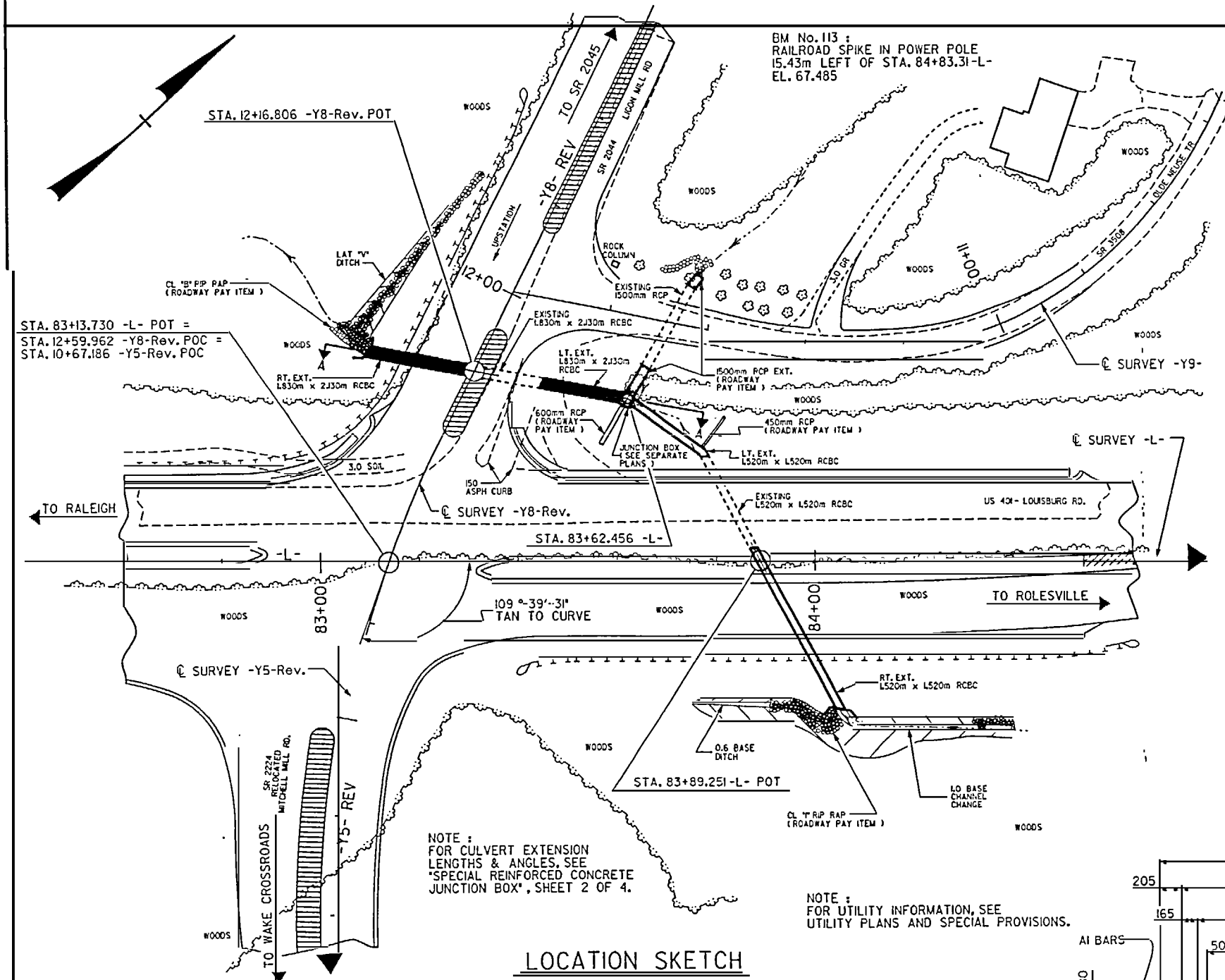
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SINGLE 1.520m x 1.520m
CONCRETE BOX CULVERT
LEFT EXTENSION

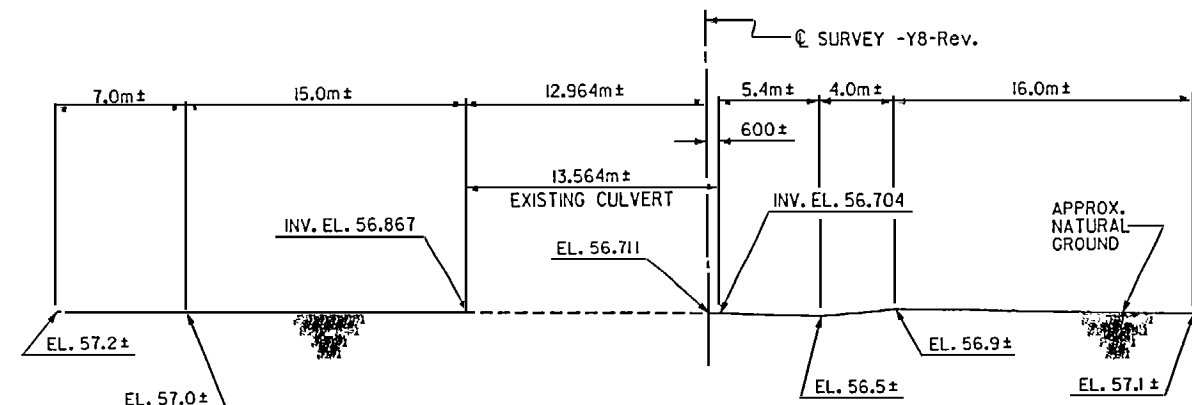


DRAWN BY: MIKE BRITT DATE: 7-30-96
CHECKED BY: R.W. WRIGHT DATE: 11-7-97

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	C - 5
1			3			TOTAL SHEETS
2			4			14



LOCATION SKETCH



PROFILE ALONG CULVERT
(LOOKING UPSTATION ON -Y8-Rev.)

DRAWN BY: MIKE BRITT DATE: 10-10-96
 CHECKED BY: B. J. WRIGHT DATE: 5-24-98

HYDROGRAPHIC DATA

GRADE POINT ELEVATION @ STA. 12+16.806 -Y8-Rev.	= 62.154m
BED ELEVATION @ STA. 12+16.806 -Y8-Rev.	= 56.711m
DESIGN DISCHARGE	= 6.4 m ³ /s
FREQUENCY OF DESIGN FLOOD	= 50 yrs.
DESIGN HIGH WATER ELEVATION	= 59.37 m
DRAINAGE AREA	= 126 sq.Km.
BASIC DISCHARGE (Q100)	= 7.5 m ³ /s
BASIC HIGH WATER ELEVATION	= 59.79 m
ROADWAY SLOPES	= 2 : 1

OVERTOPPING FLOOD DATA

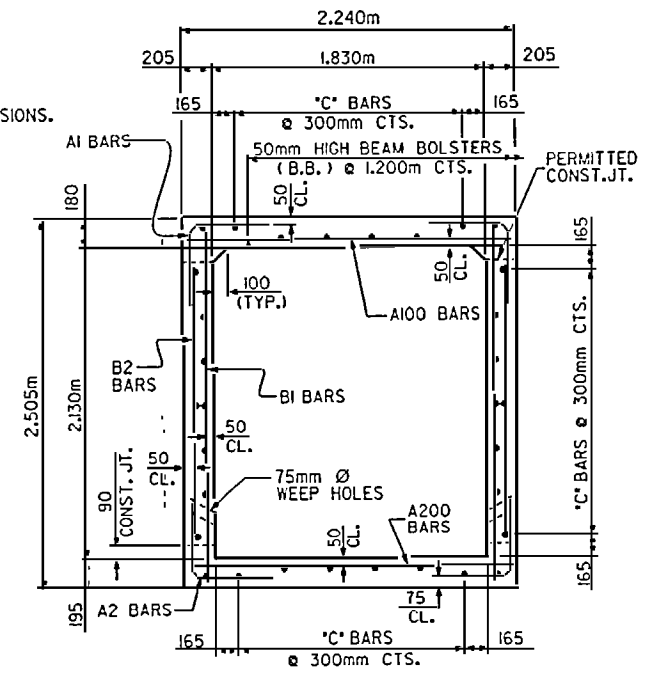
OVERTOPPING DISCHARGE	= 12.0 m ³ /s
FREQUENCY OF OVERTOPPING FLOOD	= 500 yrs.±
OVERTOPPING FLOOD ELEVATION	= 62.37 m

TOTAL STRUCTURE QUANTITIES

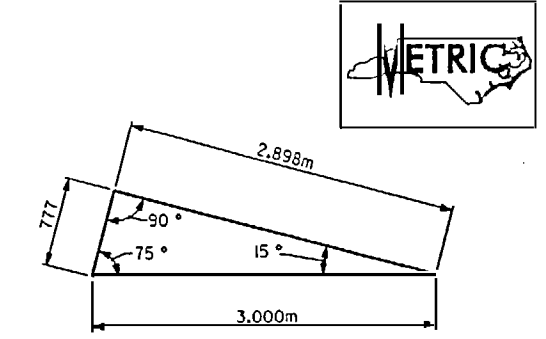
CLASS A CONCRETE		
LEFT EXTENSION BARREL @ 1,700 m ³ /m		29.4 m ³
4 EDGE BEAMS @		0.9 m ³
LEFT EXTENSION BARREL @ 1,700 m ³ /m		35.4 m ³
RIGHT EXTENSION BARREL @ 1,700 m ³ /m		7.2 m ³
WINGS ETC.		10.6 m ³
TOTAL		72.9 m ³
REINFORCING STEEL		
LEFT EXTENSION BARREL @ 1,700 m ³ /m		2379 Kg.
RIGHT EXTENSION BARREL @ 1,700 m ³ /m		2849 Kg.
WINGS		209 Kg.
TOTAL		5437 Kg.
CULVERT EXCAVATION		LUMP SUM
FOUNDATION COND. MAT'L (L.T. & RT. EXTENSIONS)		58 METRIC TONS

NOTES

- ASSUMED LIVE LOAD -----MS18 OR ALTERNATE LOADING.
- DESIGN FILL LEFT EXTENSION----- = 3.150m
- DESIGN FILL RIGHT EXTENSION----- = 3.150m
- FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.
- 75mm Ø WEEP HOLES INDICATED TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.
- CONCRETE IN CULVERTS TO BE POURED IN THE FOLLOWING ORDER:
 1. WING FOOTINGS AND FLOOR SLAB INCLUDING 90mm OF ALL VERTICAL WALLS.
 2. THE REMAINING PORTIONS OF THE WALLS AND WINGS FULL HEIGHT FOLLOWED BY ROOF SLAB AND HEADWALLS.
- THE RESIDENT ENGINEER SHALL CHECK THE LENGTH OF CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.
- DIMENSIONS FOR WING LAYOUT AS WELL AS ADDITIONAL REINFORCING STEEL EMBEDDED IN BARREL ARE SHOWN ON WING SHEET.
- AT THE CONTRACTOR'S OPTION, HE MAY SPLICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACE OF EXTERIOR WALL ABOVE LOWER WALL CONSTRUCTION JOINT. THE SPLICE LENGTH SHALL BE AS PROVIDED IN THE SPLICE LENGTH CHART SHOWN ON THE PLANS. EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY THE CONTRACTOR.
- ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
- ALL ELEVATIONS ARE IN METERS.
- FOR NOTE REGARDING SETTING OF DOWELS, SEE SHEET S - N.
- IN LIEU OF BENDING EXISTING "H" BARS INTO THE EXTERIOR CULVERT EXTENSION WALLS, THE CONTRACTOR MAY CUT OFF THE EXISTING "H" BARS AND GROUT 610mm LONG #20 DOWELS AT A SPACING OF 460mm. NO ADDITIONAL PAYMENT SHALL BE MADE IF THE CONTRACTOR SELECTS THIS OPTION.
- AS AN ALTERNATIVE TO GROUTING THE #20 DOWELS, THE CONTRACTOR MAY USE AN ADHESIVE ANCHOR SYSTEM. THE YIELD LOAD OF THE #20 DOWELS IS 5.9KN. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.
- FOR REMOVAL OF EXISTING CONCRETE AND BONDING OF NEW CONCRETE TO OLD CONCRETE, SEE STANDARD SPECIFICATIONS FOR "WIDENING EXISTING STRUCTURES."
- THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 360,000 kg OF REINFORCING STEEL, ONE 760mm SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 360,000 kg OF REINFORCING STEEL, TWO 760mm 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.
- FOR METRIC REINFORCING STEEL FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR CONSTRUCTION SEQUENCE, SEE EROSION CONTROL PLANS.
- FOR CULVERT DIVERSION CHANNEL DETAILS AND PAY ITEM, SEE EROSION CONTROL PLANS.
- FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS.



RIGHT ANGLE SECTION OF BARREL
THERE ARE 32 #C BARS IN SECTION OF BARREL



SKEW TRIANGLE

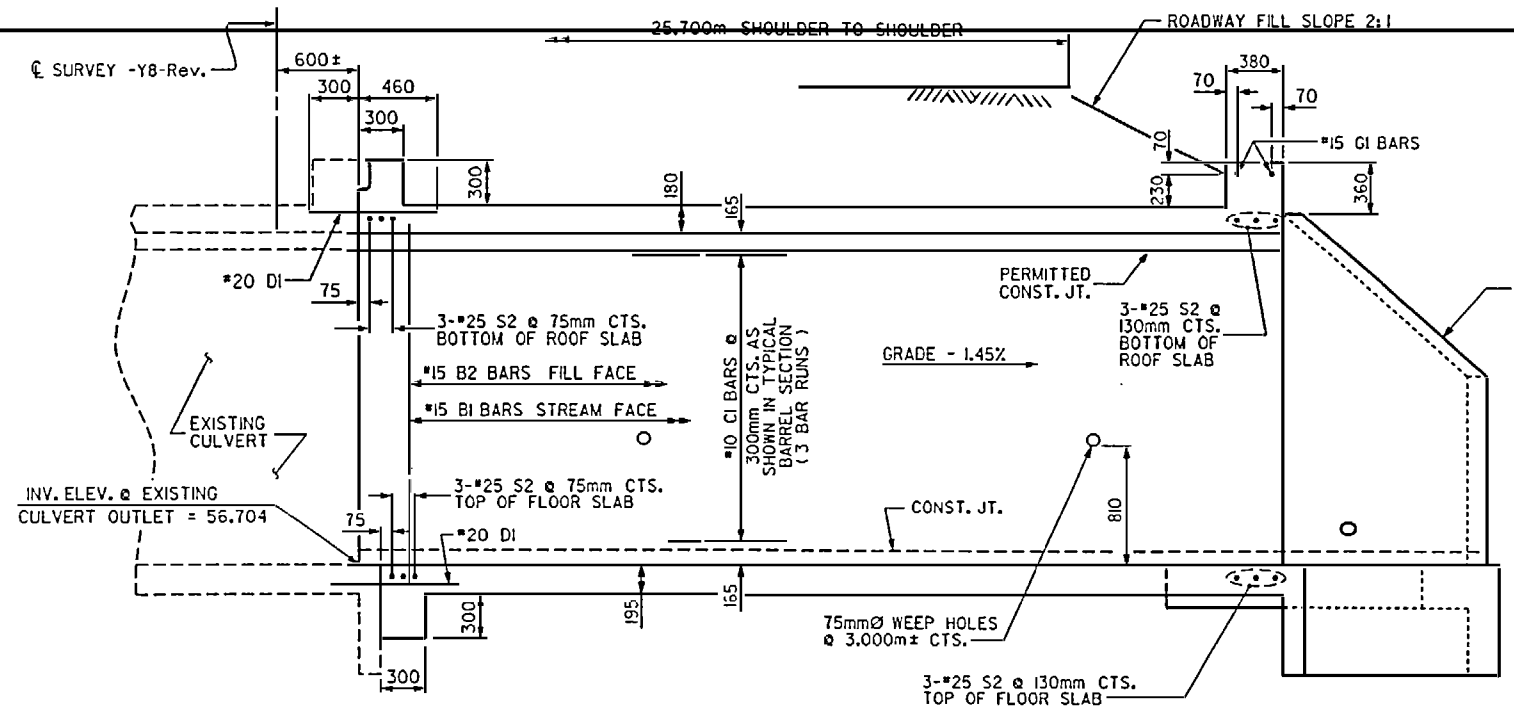
Professional Engineer Seal for Mike Britt, License No. 15431, State of North Carolina. Date: 5-24-98.



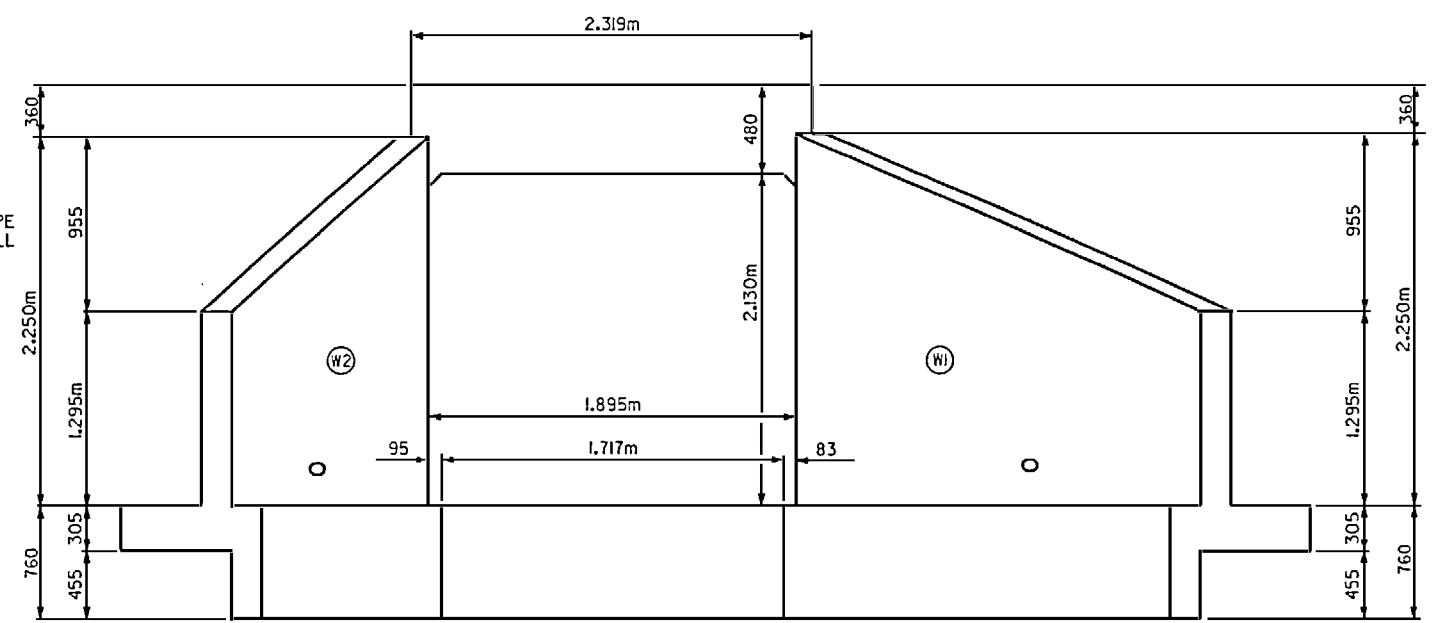
PROJECT NO. R-2425 C
 WAKE COUNTY
 STATION: 12+16.806-Y8-Rev.

SHEET 1 OF 4
 DEPARTMENT OF TRANSPORTATION
 SINGLE 1,830m x 2,130m
 CONCRETE BOX CULVERT
 LT. & RT. EXTENSIONS

REVISIONS				SHEET NO.	
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		
					TOTAL SHEETS 14

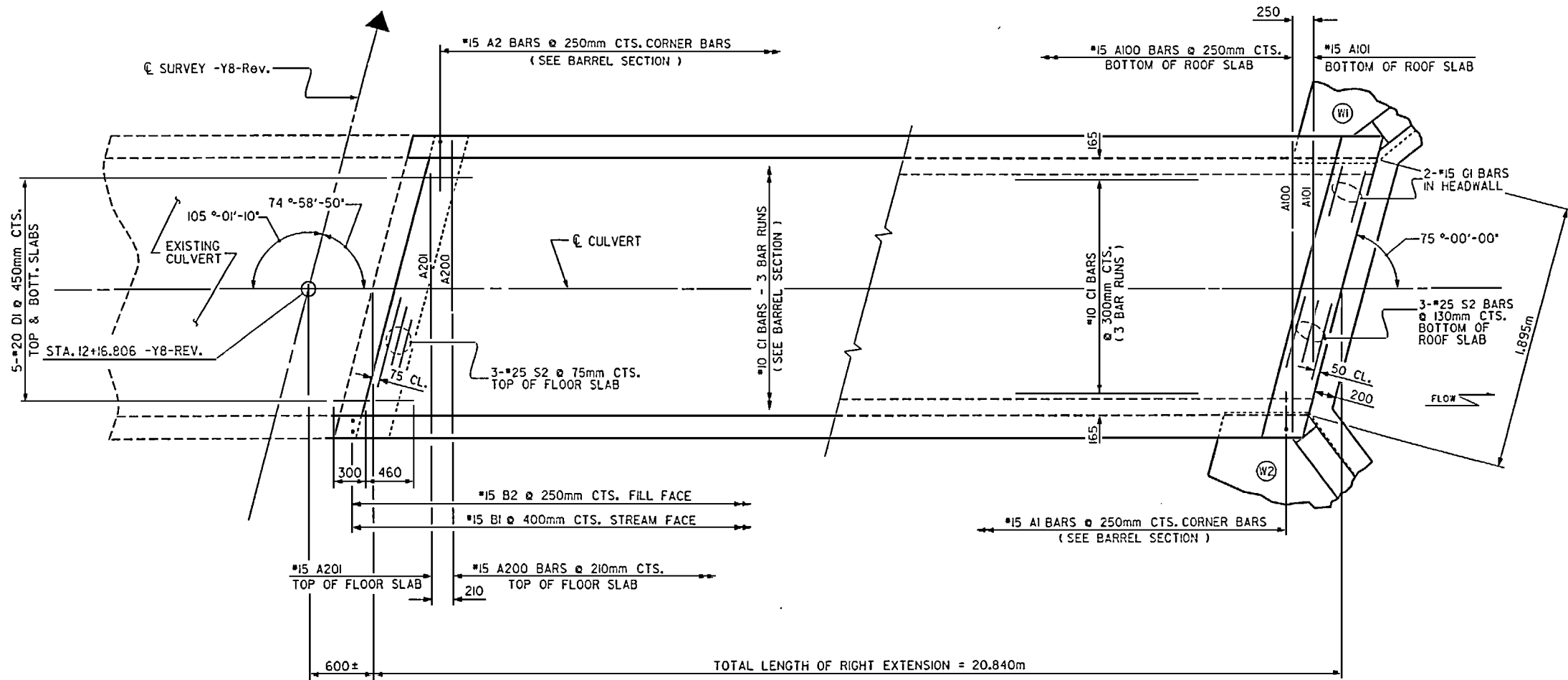


CULVERT SECTION A-A - RIGHT EXTENSION



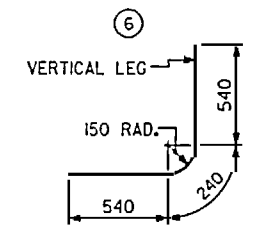
END ELEVATION - NORMAL TO SKEW

(OUTLET END)



PART PLAN RT. EXT. - FLOOR SLAB

PART PLAN RT. EXT. - ROOF SLAB



BAR TYPE

DIMENSIONS ARE OUT TO OUT

***** SPLICE LENGTHS CHART *****

BAR	SIZE	SPLICE LENGTH
B1	15	520
C1	10	500

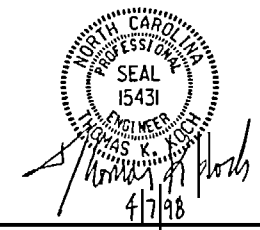
REINFORCING BAR SCHEDULE FOR BARREL (RIGHT EXTENSION)

BAR	NO.	SIZE	TYP	LENGTH	WEIGHT
A100	81	15	STR	2100	267
A101	2	15	STR	1040	3
A200	97	15	STR	2100	320
A201	2	15	STR	1160	4
A1	168	15	6	1320	348
A2	168	15	6	1320	348
B1	104	15	STR	2340	382
B2	168	15	STR	1900	501
C1	96	10	STR	7260	547
D1	10	20	STR	760	18
G1	2	15	STR	2200	7
S2	12	25	STR	2200	104
TOTAL					2849

PROJECT NO. R-2425 C
 WAKE COUNTY
 STATION: 12+16.806-Y8-REV.

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SINGLE 1.830m x 2.130m
 CONCRETE BOX CULVERT
 RIGHT EXTENSION



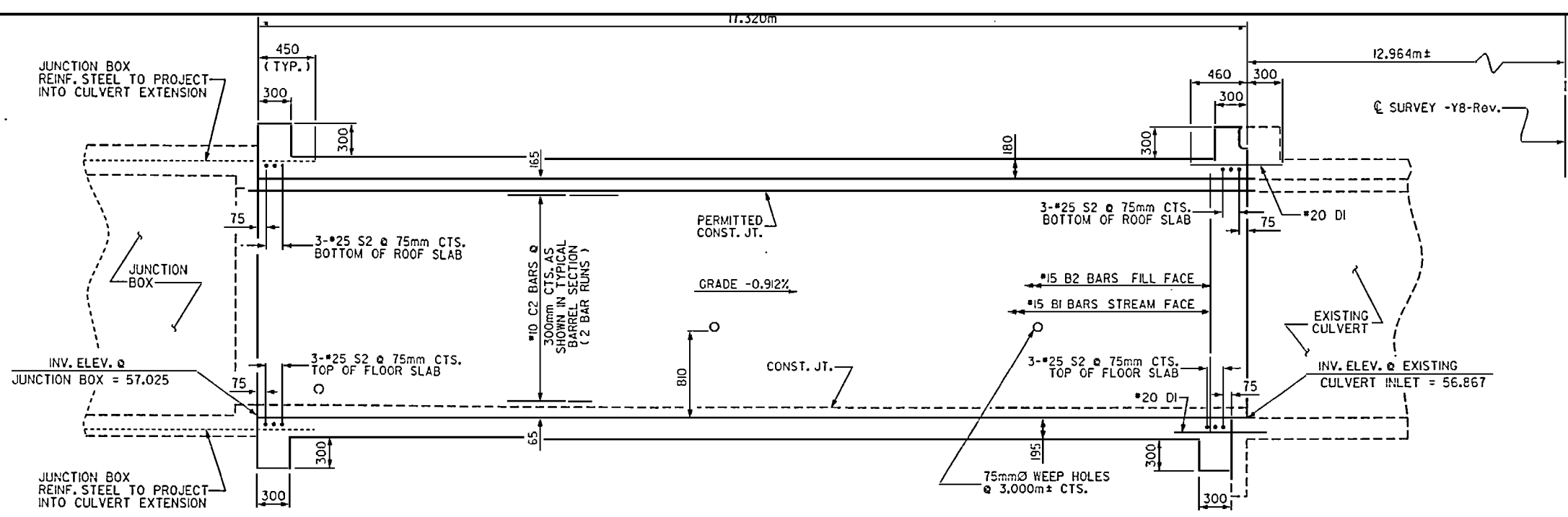
DRAWN BY: MIKE BRITT DATE: 7-22-96
 CHECKED BY: R.L. LIRIGHT DATE: 11-7-97

REVISIONS						SHEET NO. C - 8
NO.	BY	DATE	NO.	BY	DATE	
1			2			TOTAL
2			4			14

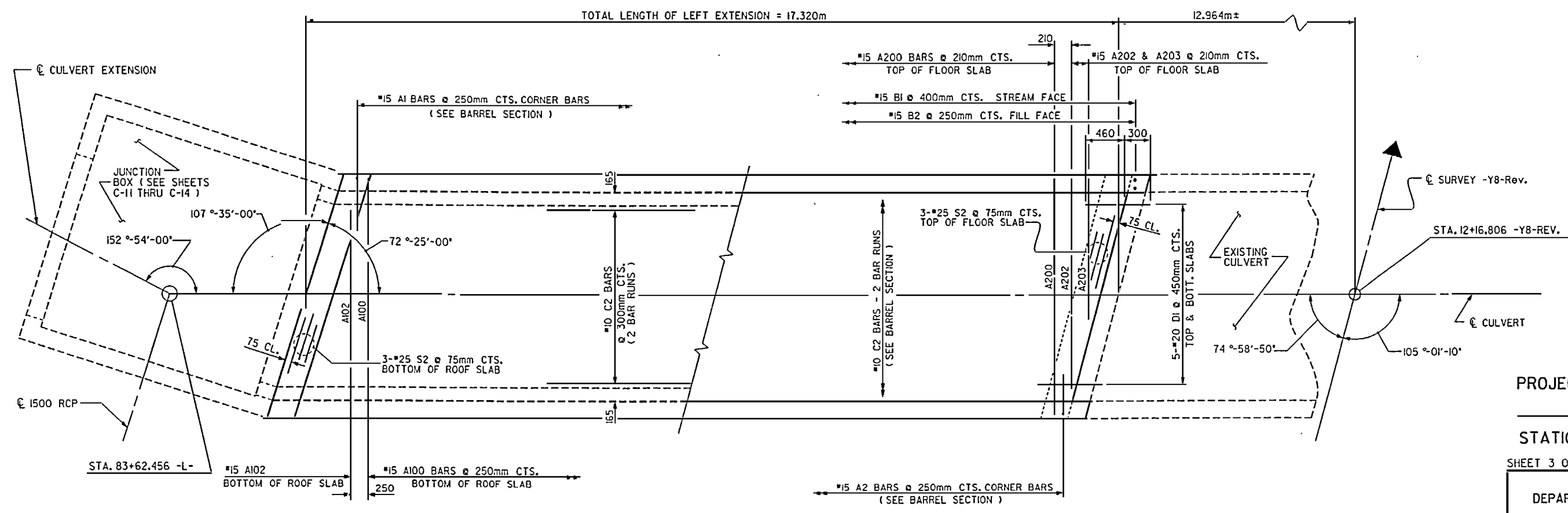
REINFORCING BAR SCHEDULE FOR BARREL (LEFT EXTENSION)

BAR	NO.	SIZE	TYP	LENGTH	WEIGHT
A100	67	15	STR	2100	221
A102	2	15	STR	1220	4
A200	79	15	STR	2100	260
A202	2	15	STR	1340	4
A203	2	15	STR	720	2
A1	140	15	6	1320	290
A2	140	15	6	1320	290
B1	88	15	STR	2340	323
B2	140	15	STR	1900	418
C2	64	10	STR	8860	445
D1	10	20	STR	760	18
S2	12	25	STR	2200	104
TOTAL					2379

BAR	SIZE	SPLICE LENGTH
B1	15	520
C2	10	500

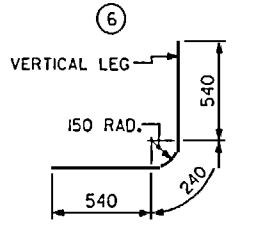


CULVERT SECTION A-A - LEFT EXTENSION



PART PLAN LT. EXT. - ROOF SLAB

PART PLAN LT. EXT. - FLOOR SLAB



BAR TYPE
DIMENSIONS ARE OUT TO OUT

PROJECT NO. R-2425 C
WAKE COUNTY
 STATION: 12+16.806 -Y8-Rev.

SHEET 3 OF 4

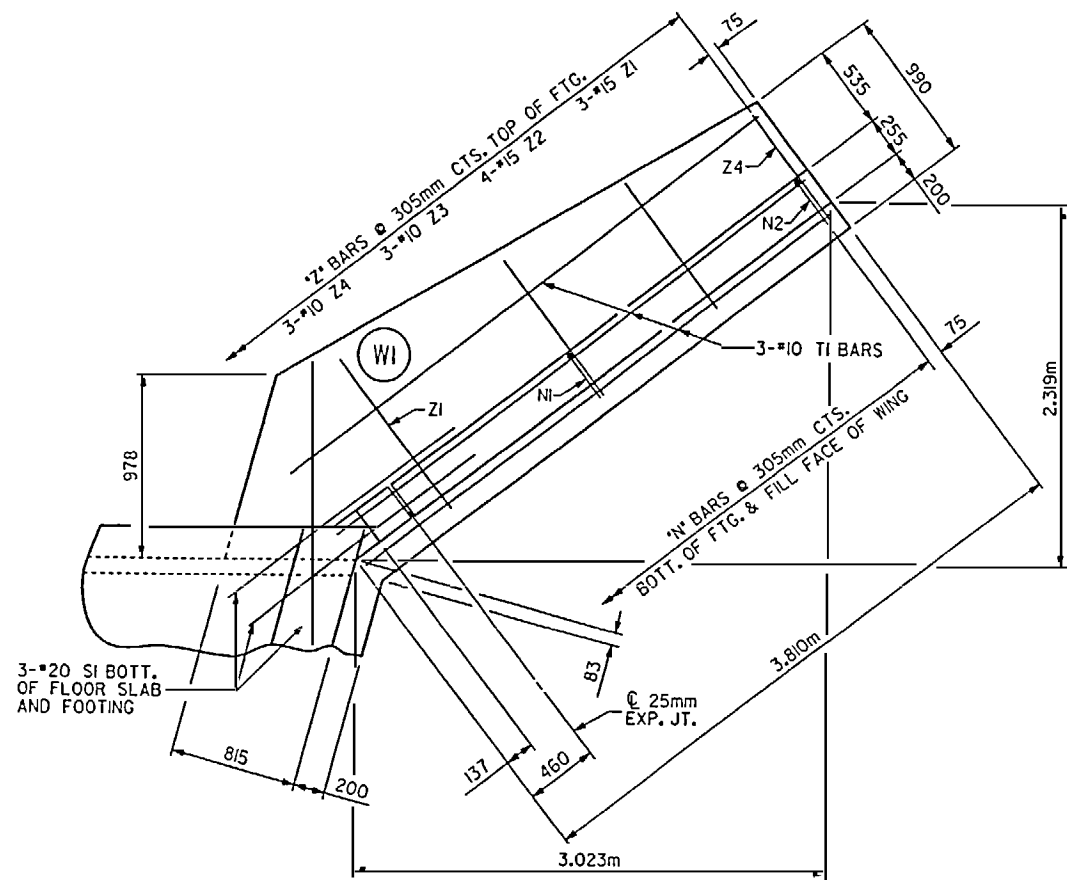
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SINGLE 1.830m x 2.130m
 CONCRETE BOX CULVERT
 LEFT EXTENSION

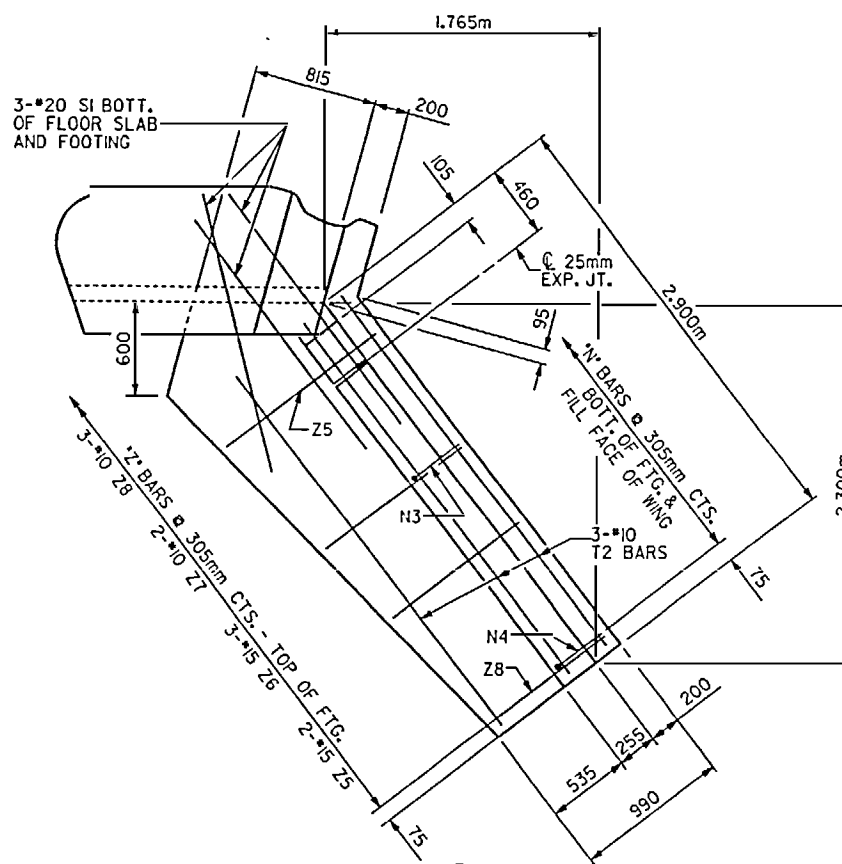
REVISIONS						SHEET NO.	
NO.	BY	DATE	NO.	BY	DATE	C - 9	
1			3			TOTAL SHEETS	14
2			4				



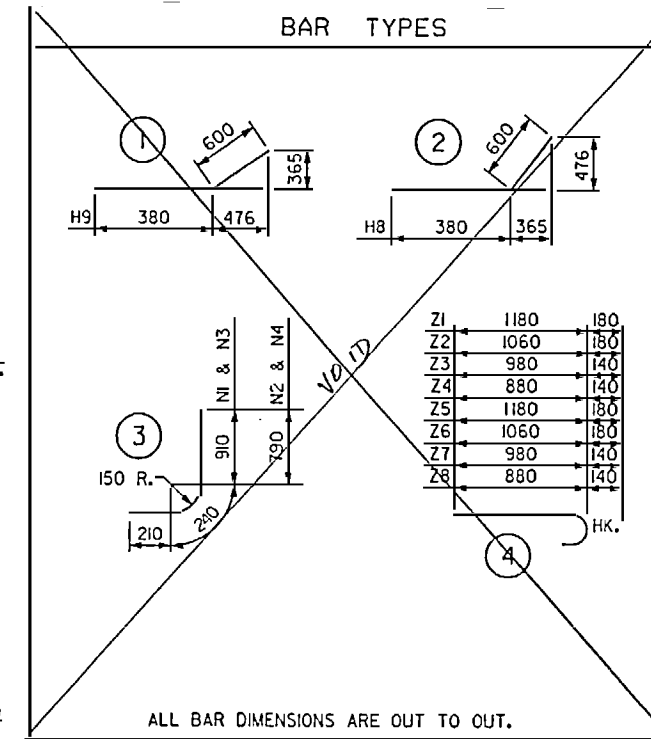
DRAWN BY: MIKE BRITT DATE: 7-23-96
 CHECKED BY: K.W. WRIGHT DATE: 11-7-97



PLAN (W1)



PLAN (W2)



ALL BAR DIMENSIONS ARE OUT TO OUT.

REINFORCING BAR SCHEDULE

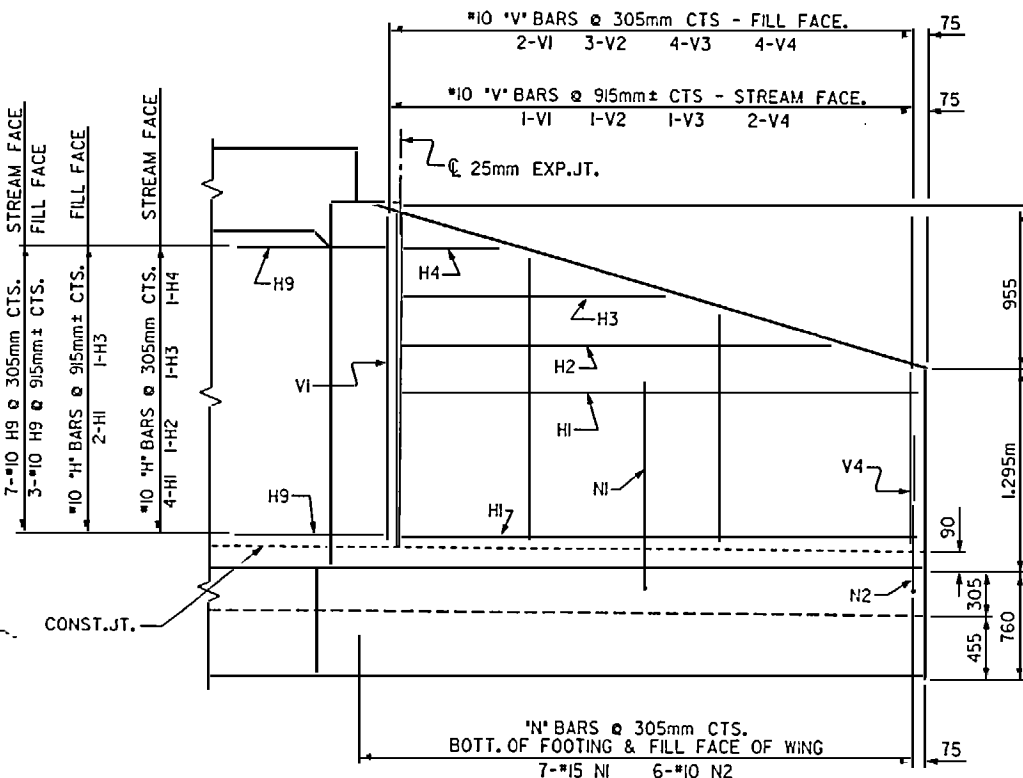
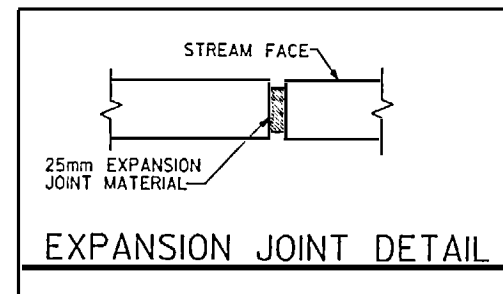
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	6	10	STR	3220	5
H2	1	10	STR	2840	5
H3	2	10	STR	1780	5
H4	1	10	STR	700	1
H5	6	10	STR	2300	11
H6	1	10	STR	2080	5
H7	2	10	STR	1240	5
H8	10	10	2	980	8
H9	8	10	1	980	8
N1	7	15	3	1360	15
N2	8	10	3	1240	6
N3	5	15	3	1360	11
N4	5	10	3	1240	5
S1	6	20	STR	1820	26
T1	3	10	STR	3720	9
T2	3	10	STR	2820	7
V1	6	10	STR	2040	10
V2	4	10	STR	1820	6
V3	5	10	STR	1440	6
V4	5	10	STR	1140	6
V5	3	10	STR	2040	4
V6	3	10	STR	1820	4
V7	4	10	STR	1440	4
V8	4	10	STR	1140	4
Z1	3	15	4	1360	6
Z2	4	15	4	1240	6
Z3	3	10	4	1120	3
Z4	3	10	4	1020	3
Z5	2	15	4	1360	4
Z6	3	15	4	1240	6
Z7	2	10	4	1120	3
Z8	3	10	4	1020	3

REINFORCING STEEL kg 209

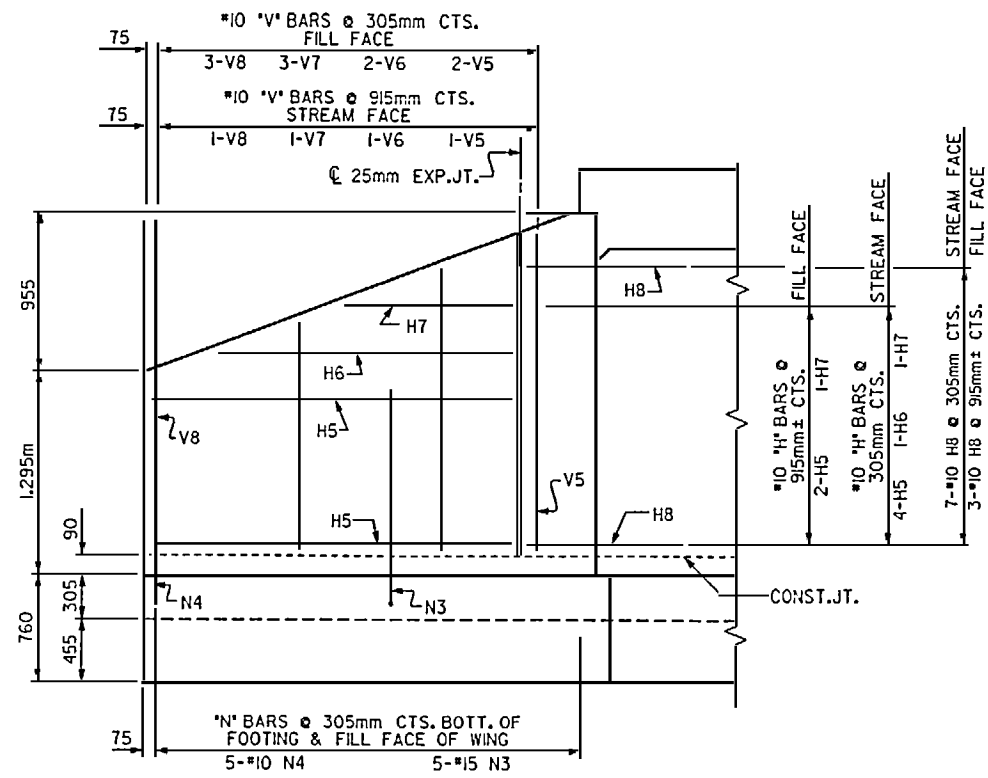
WING QUANTITIES INCLUDED IN TOTAL FOR STRUCTURE

CLASS A CONCRETE	
2 WINGS ONLY AS SHOWN	6.3 m ³
1 HEADWALL, 1 CURTAIN WALL & 2 EDGE BEAMS	0.9 m ³
TOTAL	7.2 m³

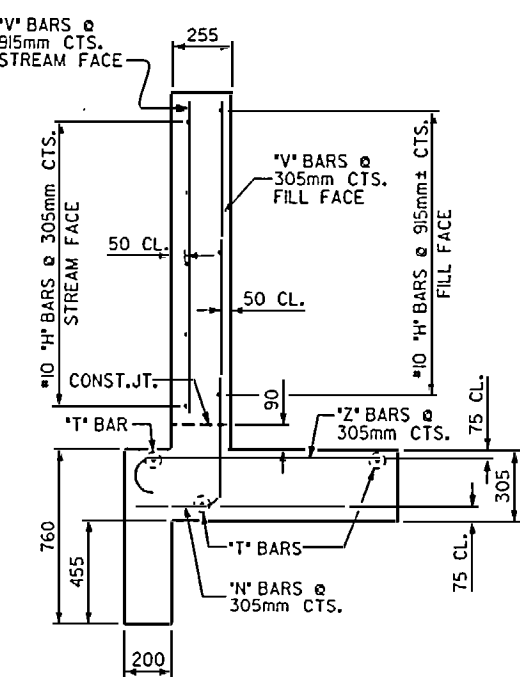
REINFORCING STEEL 209 kg.



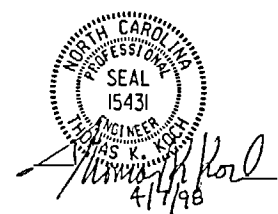
ELEVATION (W1)



ELEVATION (W2)



TYPICAL WING SECTION



PROJECT NO. R-2425 C
WAKE COUNTY
STATION: 12+16.806-Y8-Rev.

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WINGS FOR CONCRETE BOX CULVERT EXTENSION
H=2.130m SLOPE=2:1
75° SKEW

REVISIONS						SHEET NO.	
NO.	BY	DATE	NO.	BY	DATE	C - 10	
1			3			TOTAL SHEETS 14	
2			4				

DRAWN BY: MIKE BRITT DATE: 7-22-96
CHECKED BY: B.W. WRIGHT DATE: 11-7-97

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mbr111

STR.#4

LENGTH OF THE SAMPLE, PLUS A MIN
FOR METRIC REINFORCING STEEL FOR
FOR CULVERT DIVERSION CHANNEL DE
FOR CONSTRUCTION SEQUENCE, SEE E

HYDROGRAF

DESIGN DISCHARGE
FREQUENCY OF DESIGN FL
DESIGN HIGH WATER ELEV
DRAINAGE AREA
BASIC DISCHARGE (0100)
ELEV



REVEY -Y5-REV.

MITCHELL HALL RD.
RELOCATED
SR 2234

5-REV

ST. 83+89.251 - L - POT

RE EXT.
1520m x 1520m RCBC

10 BASE
CHANGE
CHANNEL

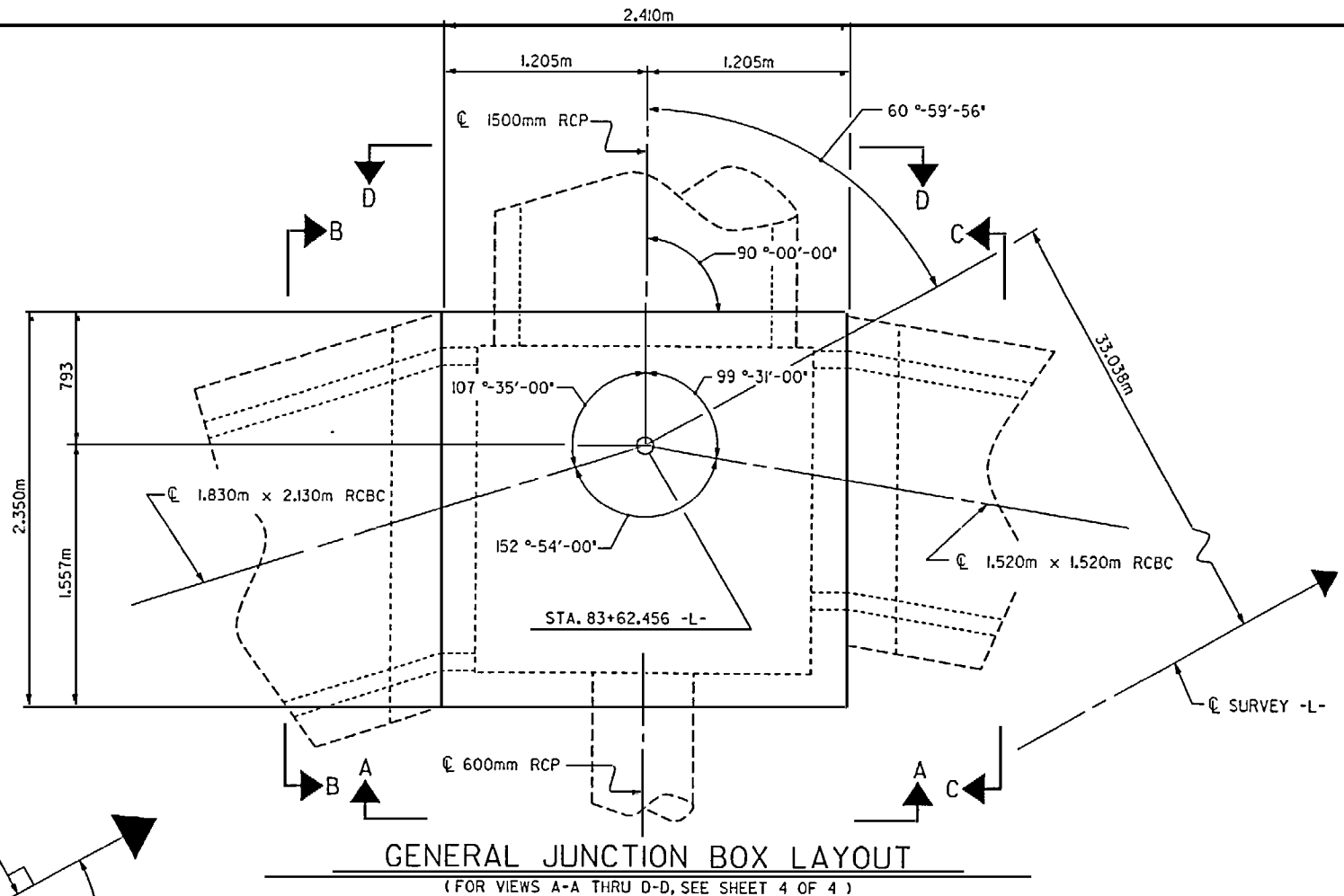
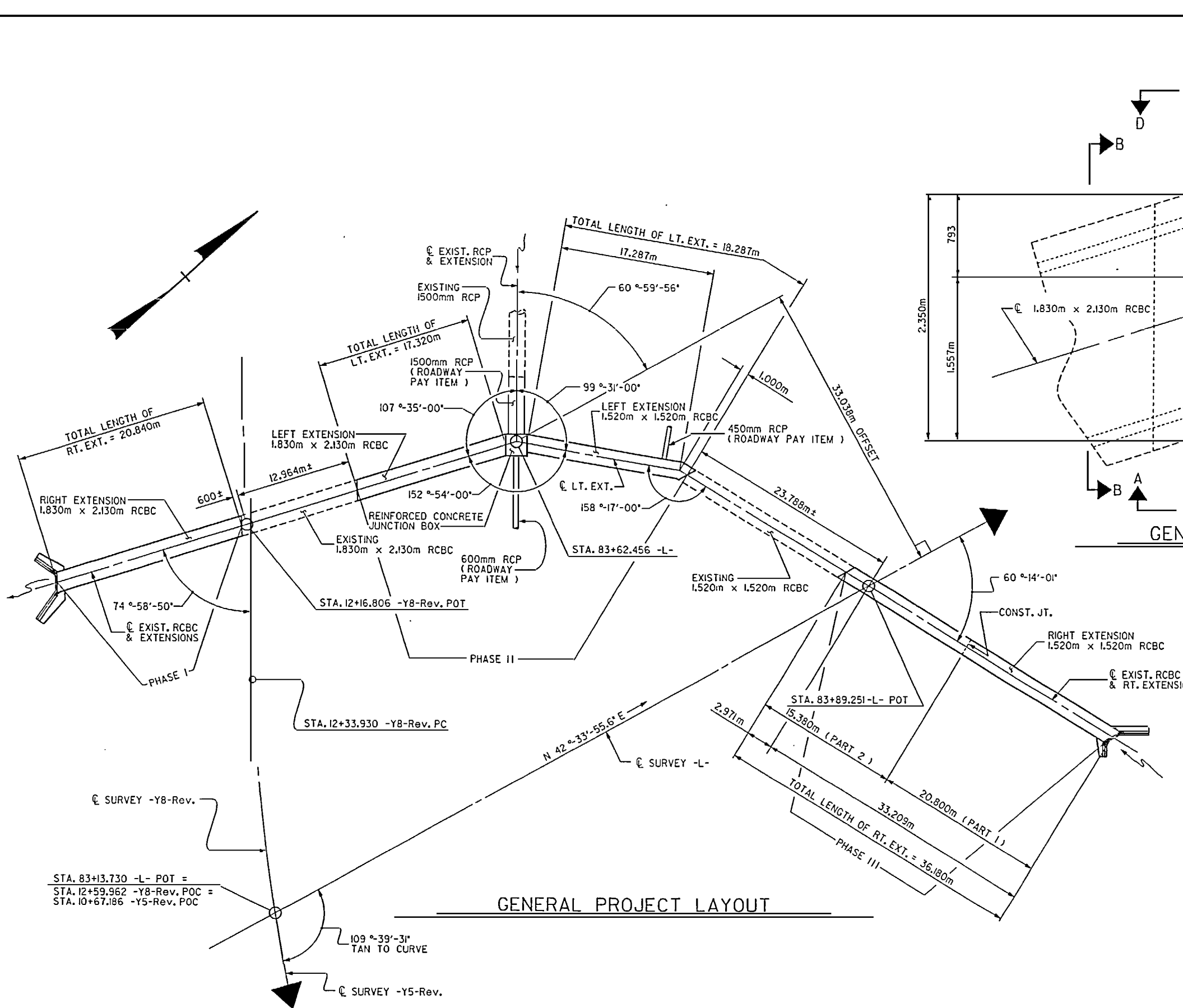
0.6 BASE
DITCH

TO ROLESVILLE

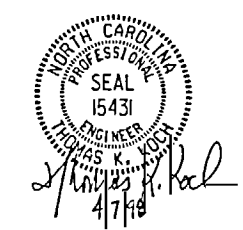
ROADWAY SLOPES

OVERTOPPING

OVERTOPPING DISCHARGE
FREQUENCY OF OVERTOPI
OVERTOPPING FLOOD ELE

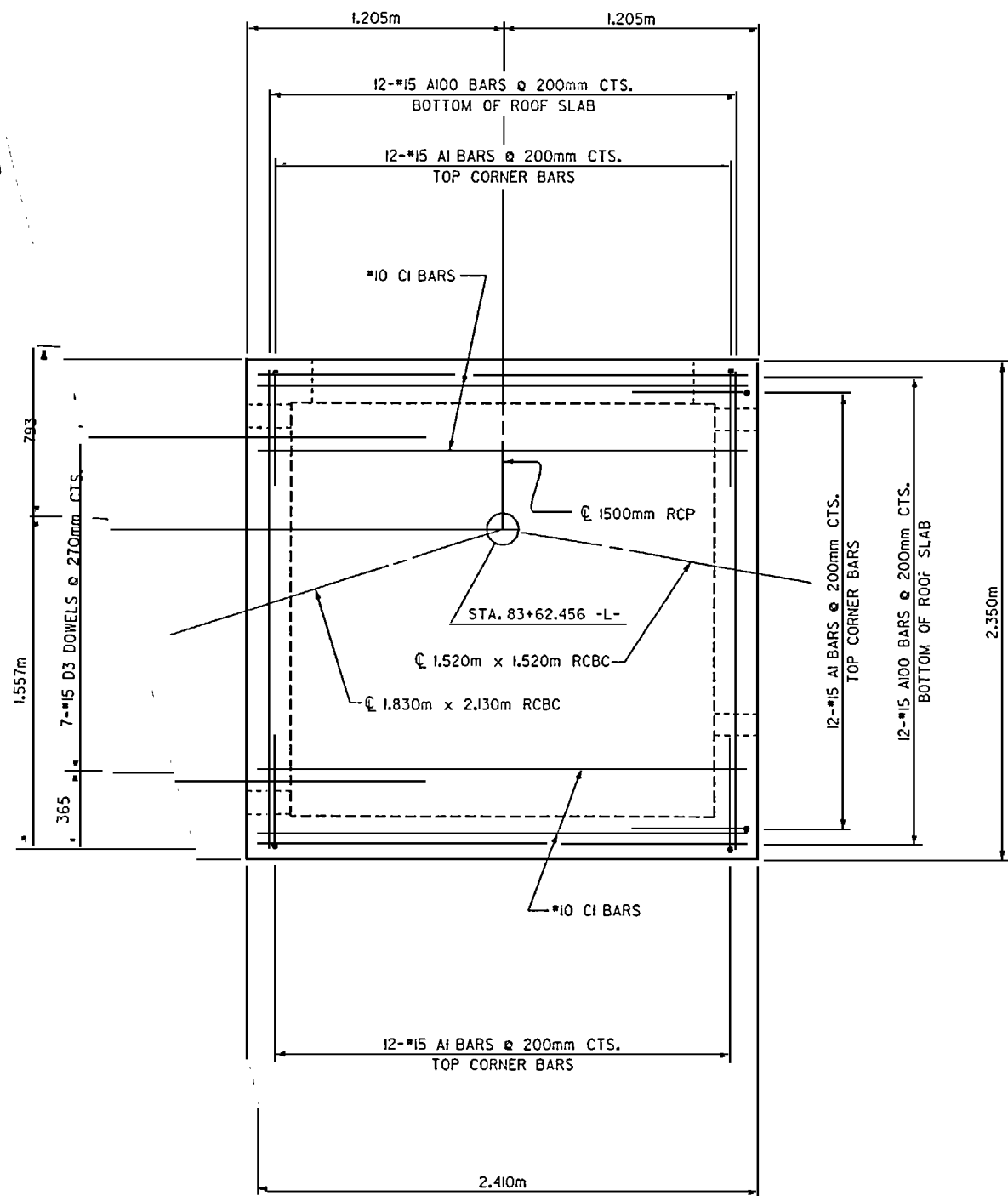


DRAW BY: MIKE BRITT DATE: 8-1-96
 CHECKED BY: A.C.D./K.L.W. DATE: 11-19-97

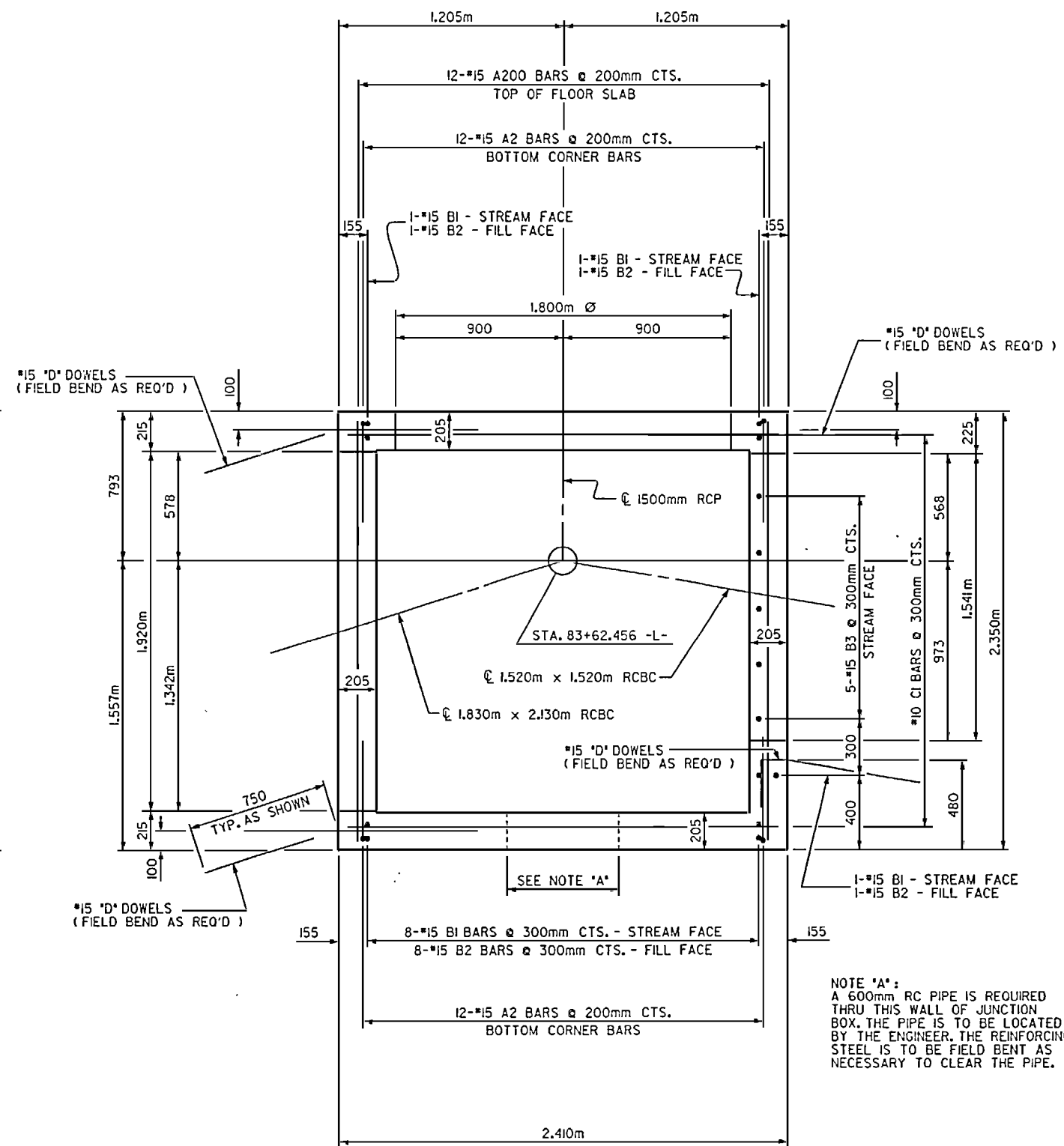


PROJECT NO. R-2425 C
WAKE COUNTY
 STATION: 83+62.456 -L-
 SHEET 2 OF 4

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	C - 12
1			3			TOTAL SHEETS 14
2			4			



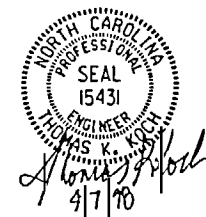
PLAN - ROOF SLAB



PLAN - FLOOR SLAB

NOTE 'A':
A 600mm RC PIPE IS REQUIRED
THRU THIS WALL OF JUNCTION
BOX. THE PIPE IS TO BE LOCATED
BY THE ENGINEER. THE REINFORCING
STEEL IS TO BE FIELD BENT AS
NECESSARY TO CLEAR THE PIPE.

DRAWN BY: MIKE BRITT DATE: 9-18-96
CHECKED BY: A.C. Outlaw DATE: 5-7-97



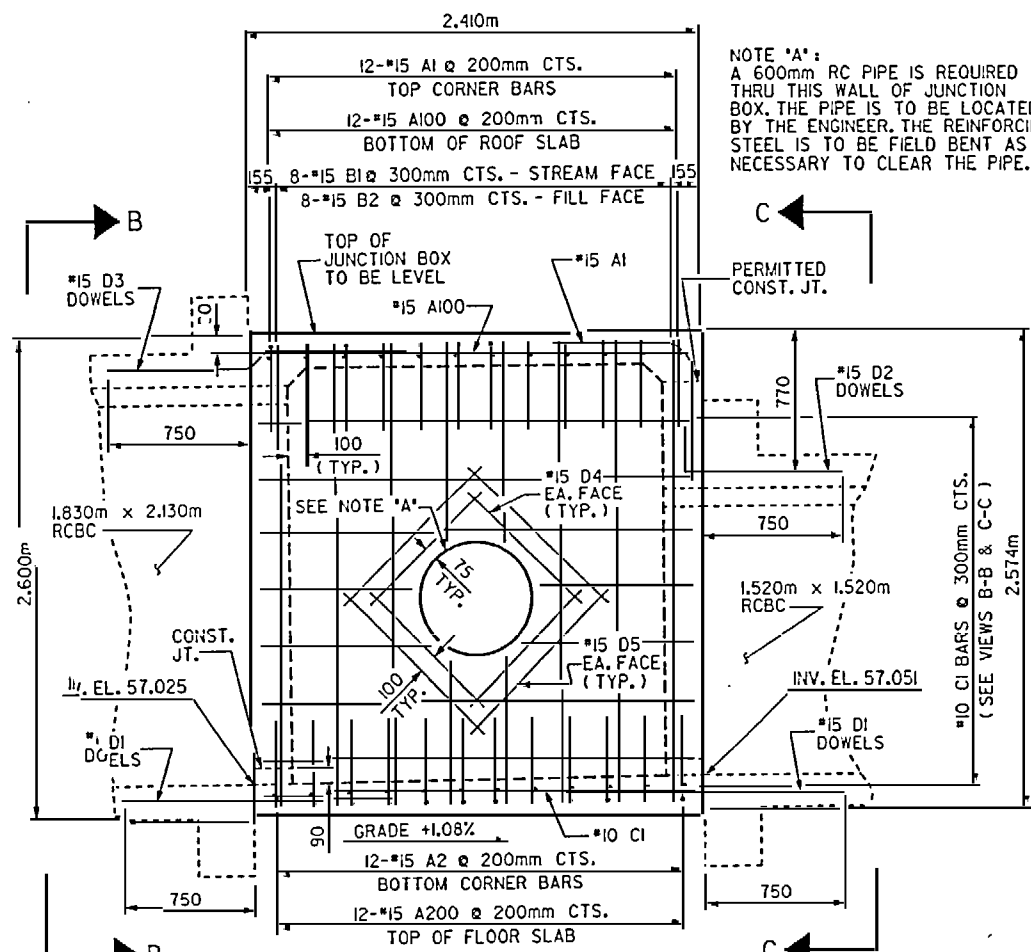
PROJECT NO. R-2425 C
WAKE COUNTY
STATION: 83+62.456 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

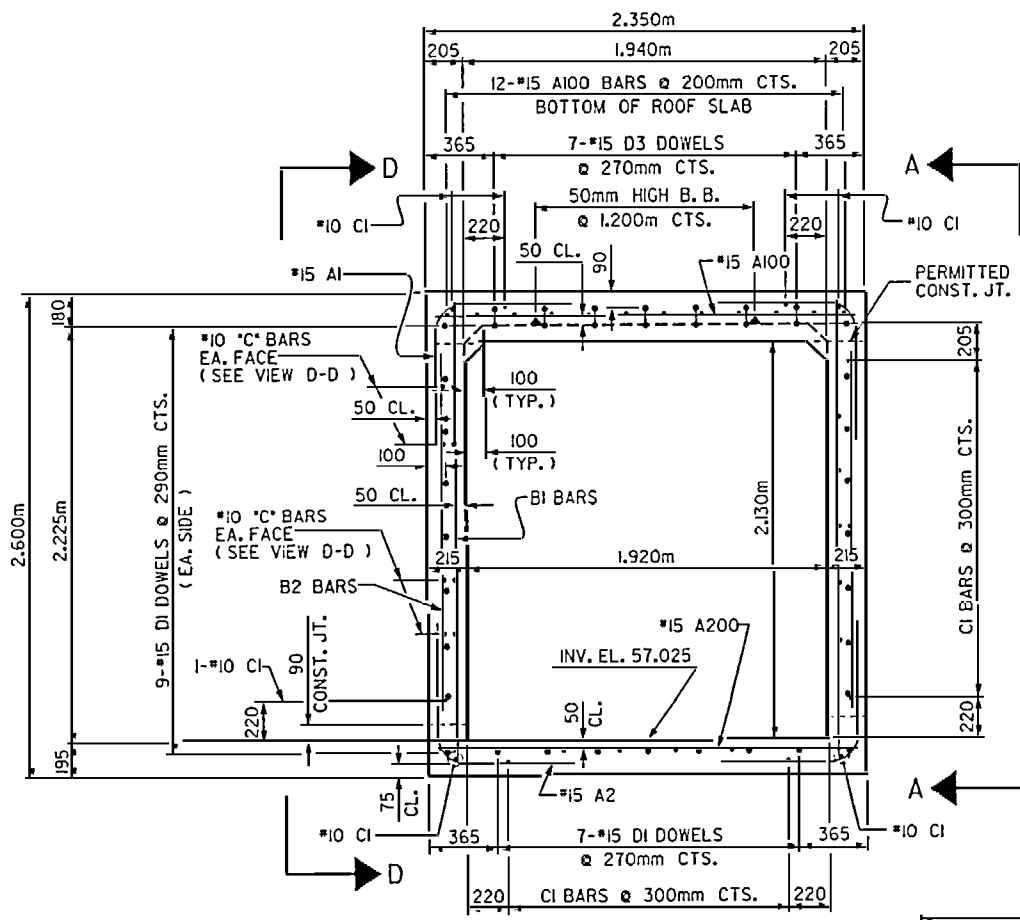
SPECIAL
REINFORCED CONCRETE
JUNCTION BOX

REVISIONS						SHEET NO.	
NO.	BY	DATE	NO.	BY	DATE	C - 13	
1			3			TOTAL SHEETS	14
2			4				

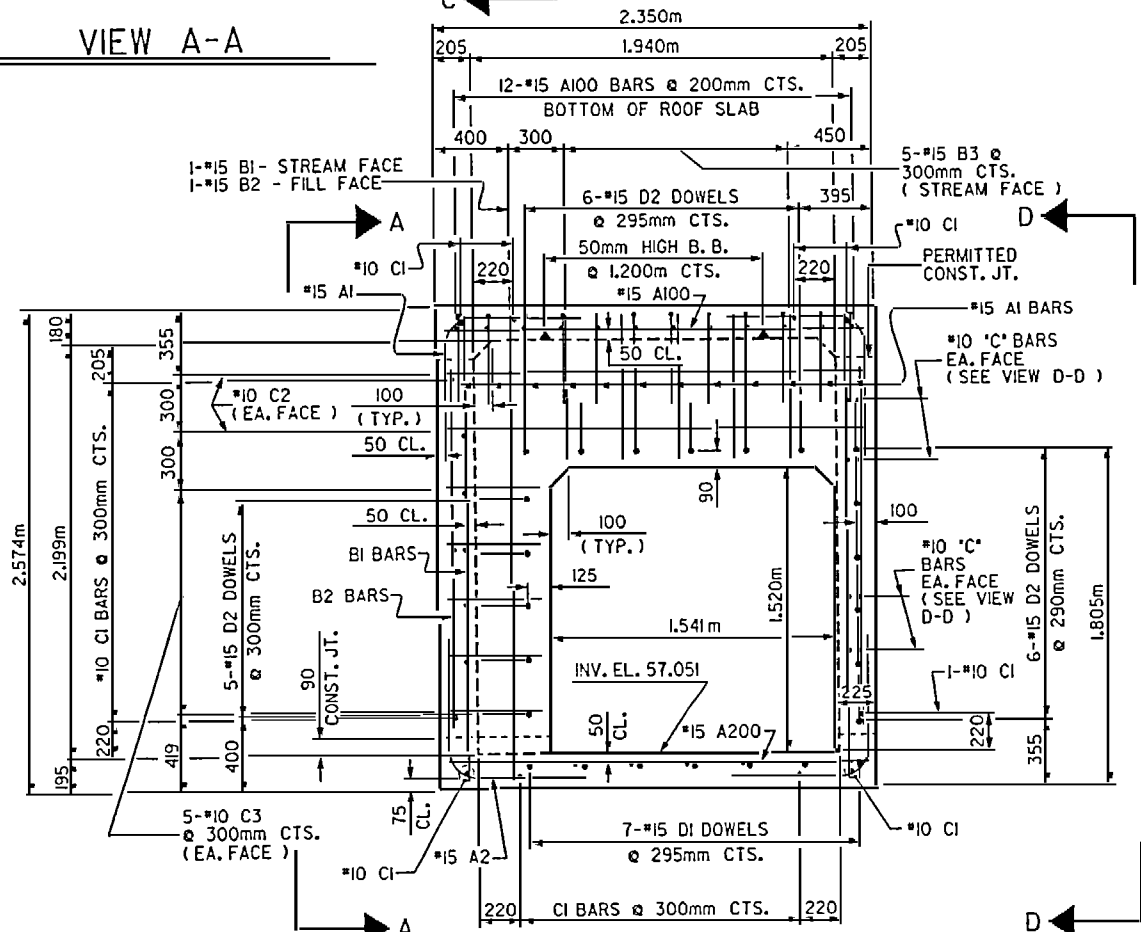


VIEW A-A

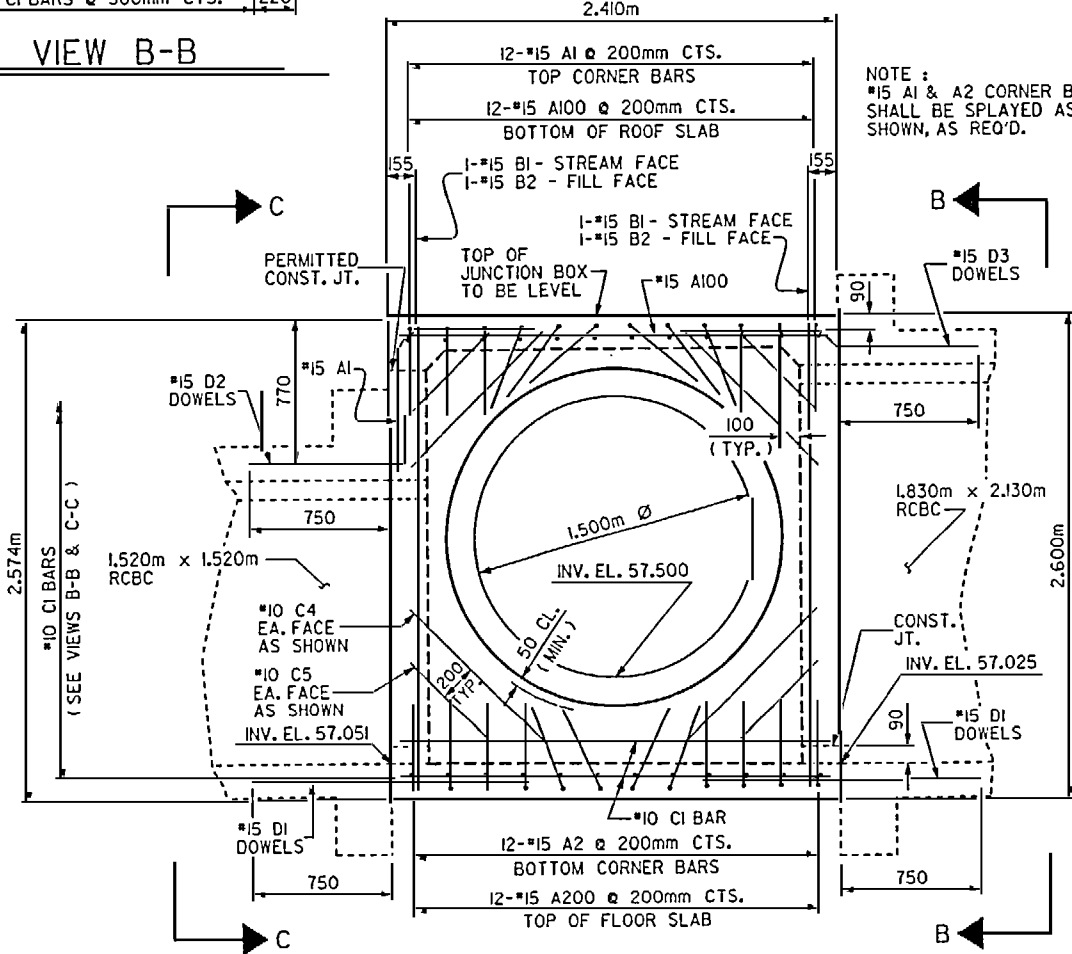
NOTE "A":
A 600mm RC PIPE IS REQUIRED
THRU THIS WALL OF JUNCTION
BOX. THE PIPE IS TO BE LOCATED
BY THE ENGINEER. THE REINFORCING
STEEL IS TO BE FIELD BENT AS
NECESSARY TO CLEAR THE PIPE.



VIEW B-B



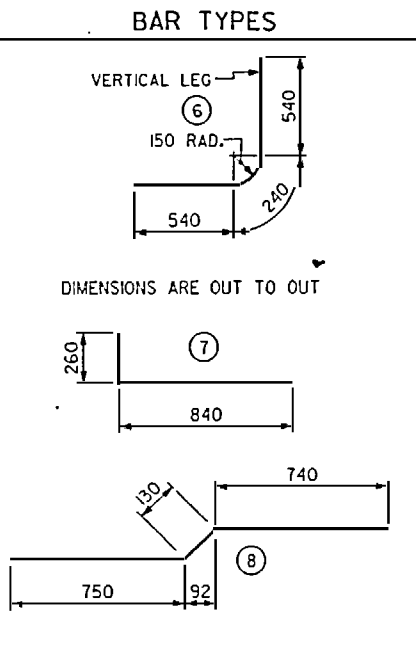
VIEW C-C



VIEW D-D

REINFORCING
BAR SCHEDULE
FOR JUNCTION BOX

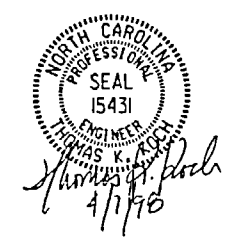
BAR	NO.	SIZE	TYP	LENGTH	WEIGHT
A100	24	15	STR	2240	84
A200	12	15	STR	2240	42
A1	36	15	6	1320	75
A2	24	15	6	1320	50
B1	11	15	STR	2440	42
B2	11	15	STR	1940	34
B3	5	15	STR	760	6
C1	29	10	STR	2300	52
C2	4	10	STR	2240	7
C3	10	10	STR	500	4
C4	8	10	STR	1000	6
C5	8	10	STR	600	4
D1	32	15	STR	1500	75
D2	17	15	7	1100	29
D3	7	15	8	1620	18
D4	8	15	8	840	11
D5	8	15	STR	1040	13
TOTAL					552



***** SPLICE LENGTHS CHART *****

BAR	SIZE	SPLICE LENGTH
B1	15	520

NOTE:
FOR PLAN OF VIEWS, SEE
"GENERAL JUNCTION BOX LAYOUT"
SHEET 2 OF 4.



PROJECT NO. R-2425 C
WAKE COUNTY
STATION: 83+62.456 -L-
SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SPECIAL
REINFORCED CONCRETE
JUNCTION BOX

REVISIONS						SHEET NO.	
NO.	BY	DATE	NO.	BY	DATE	C - 14	
1			3			TOTAL SHEETS 14	
2			4				

DRAWN BY: MIKE BRITT DATE: 9-18-96
CHECKED BY: A.C. Outlaw DATE: 5-7-97

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STR.#5

IMPACT ALLOWANCE	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF	
STRUCTURAL STEEL - AASHTO M270 GRADE 250	-- 140 MPa
- AASHTO M270 GRADE 345W	-- 190 MPa
- AASHTO M270 GRADE 345	-- 190 MPa
REINFORCING STEEL IN TENSION	
GRADE 420	-- 165 MPa
CONCRETE IN COMPRESSION	----- 8.3 MPa
CONCRETE IN SHEAR	----- SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR	
UNTREATED - EXTREME FIBERSTRESS	----- 12 MPa
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	----- 2.6 MPa
EQUIVALENT FLUID PRESSURE OF EARTH	----- 480 kg/m ³
	(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 1995 STANDARD SPECIFICATIONS "FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

CONCRETE:

UNLESS OTHERWISE REQUIRED IN 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 DECKS.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 10mm WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 38mm RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 6mm 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 6mm 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 300mm INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

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.

FIVE SETS OF 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 22.23mm Ø SHEAR STUDS FOR THE 19.05mm Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 22.23mm Ø STUDS FOR 4 - 19.05mm Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 22.23mm Ø STUDS ALONG THE BEAM AS SHOWN FOR 19.05mm Ø STUDS BASED ON THE RATIO OF 3 - 22.23mm Ø STUDS FOR 4 - 19.05mm Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 610mm.

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 8mm IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 50mm OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CODES AND SPECIFICATIONS APPLICABLE TO THE MATERIALS.

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 2mm OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

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

SPECIAL NOTES:

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

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5705 + 12