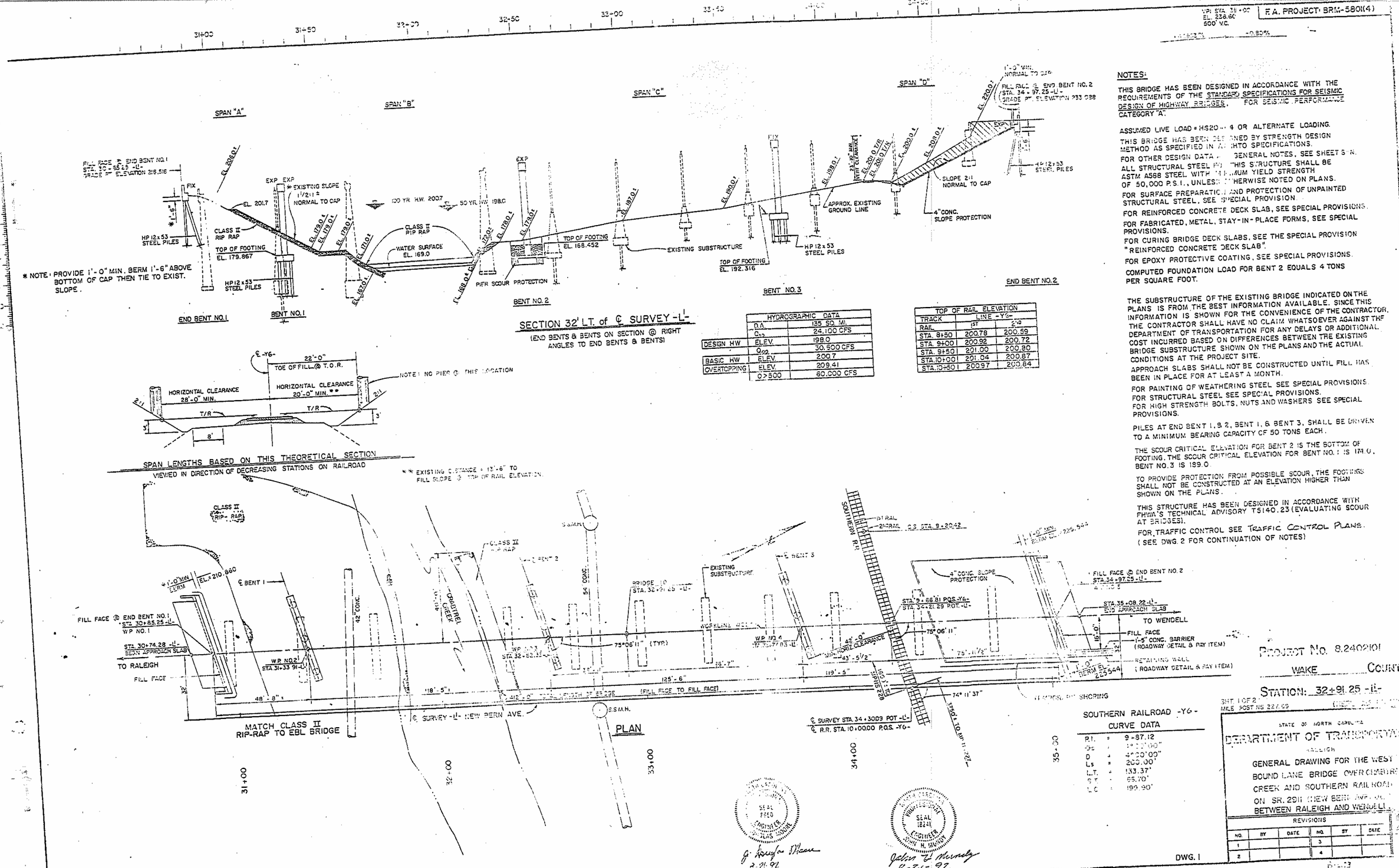
F.A. PROJECT: BRM-5801(4)



HYDROGRAPHIC DATA		
	D.A.	135.50 SQ. MI.
	Q_{25}	24,100 CFS
DESIGN HW	ELEV.	198.0
	Q_{100}	30,500 CFS
BASIC HW	ELEV.	200.7
OVERTOPPING	ELEV.	209.41
	Q>500	60,000 CFS

TOP OF RAIL ELEVATION		
TRACK	LINE -Y6-	
RAIL	1ST	2ND
STA. 8+50	200.78	200.59
STA. 9+00	200.92	200.72
STA. 9+50	201.00	200.80
STA. 10+00	201.04	200.87
STA. 10+50	200.97	200.84

SOUTHERN RAILROAD -Y6- CURVE DATA

P.I.	=	9+87.12
Θ	=	19°30'00"
D	=	4°30'00"
Ls	=	200.00'
L.T.	=	133.37'
S.T.	=	66.70'
L.C.	=	199.90'

NOTES:

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".

ASSUMED LIVE LOAD = HS20-44 OR ALTERNATE LOADING.

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

FOR OTHER DESIGN DATA, SEE GENERAL NOTES, SHEET 5 OF 5.

ALL STRUCTURAL STEEL IN THIS STRUCTURE SHALL BE ASTM A588 STEEL WITH MINIMUM YIELD STRENGTH OF 50,000 P.S.I., UNLESS OTHERWISE NOTED ON PLANS.

FOR SURFACE PREPARATION AND PROTECTION OF UNPAINTED STRUCTURAL STEEL, SEE SPECIAL PROVISION

FOR REINFORCED CONCRETE DECK SLAB, SEE SPECIAL PROVISIONS.

FOR FABRICATED, METAL, STAY-IN-PLACE FORMS, SEE SPECIAL PROVISIONS.

FOR CURING BRIDGE DECK SLABS, SEE THE SPECIAL PROVISION "REINFORCED CONCRETE DECK SLAB".

FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

COMPUTED FOUNDATION LOAD FOR BENT 2 EQUALS 4 TONS PER SQUARE FOOT.

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

APPROACH SLABS SHALL NOT BE CONSTRUCTED UNTIL FILL HAS BEEN IN PLACE FOR AT LEAST A MONTH.

FOR PAINTING OF WEATHERING STEEL SEE SPECIAL PROVISIONS.
FOR STRUCTURAL STEEL SEE SPECIAL PROVISIONS.
FOR HIGH STRENGTH BOLTS, NUTS AND WASHERS SEE SPECIAL PROVISIONS.

PILES AT END BENT 1, & 2, BENT 1, & BENT 3, SHALL BE DRIVEN TO A MINIMUM BEARING CAPACITY OF 50 TONS EACH.

THE SCOUR CRITICAL ELEVATION FOR BENT 2 IS THE BOTTOM OF FOOTING. THE SCOUR CRITICAL ELEVATION FOR BENT NO. 1 IS 179.0, BENT NO. 3 IS 199.0.

TO PROVIDE PROTECTION FROM POSSIBLE SCOUR, THE FOOTINGS SHALL NOT BE CONSTRUCTED AT AN ELEVATION HIGHER THAN SHOWN ON THE PLANS.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH FHWA'S TECHNICAL ADVISORY T5140.23 (EVALUATING SCOUR AT BRIDGES).

FOR TRAFFIC CONTROL SEE TRAFFIC CONTROL PLANS.

(SEE DWG. 2 FOR CONTINUATION OF NOTES)

PROJECT No. 8.2402101

WAKE COUNTY

STATION: 32+91.25 -L-

SHT 1 OF 2
MILE POST NS 227.09

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR THE WEST BOUND LANE BRIDGE OVER CRABTREE CREEK AND SOUTHERN RAILROAD ON SR. 2911 (NEW BERN AVE.) BETWEEN RALEIGH AND WENDELL.

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

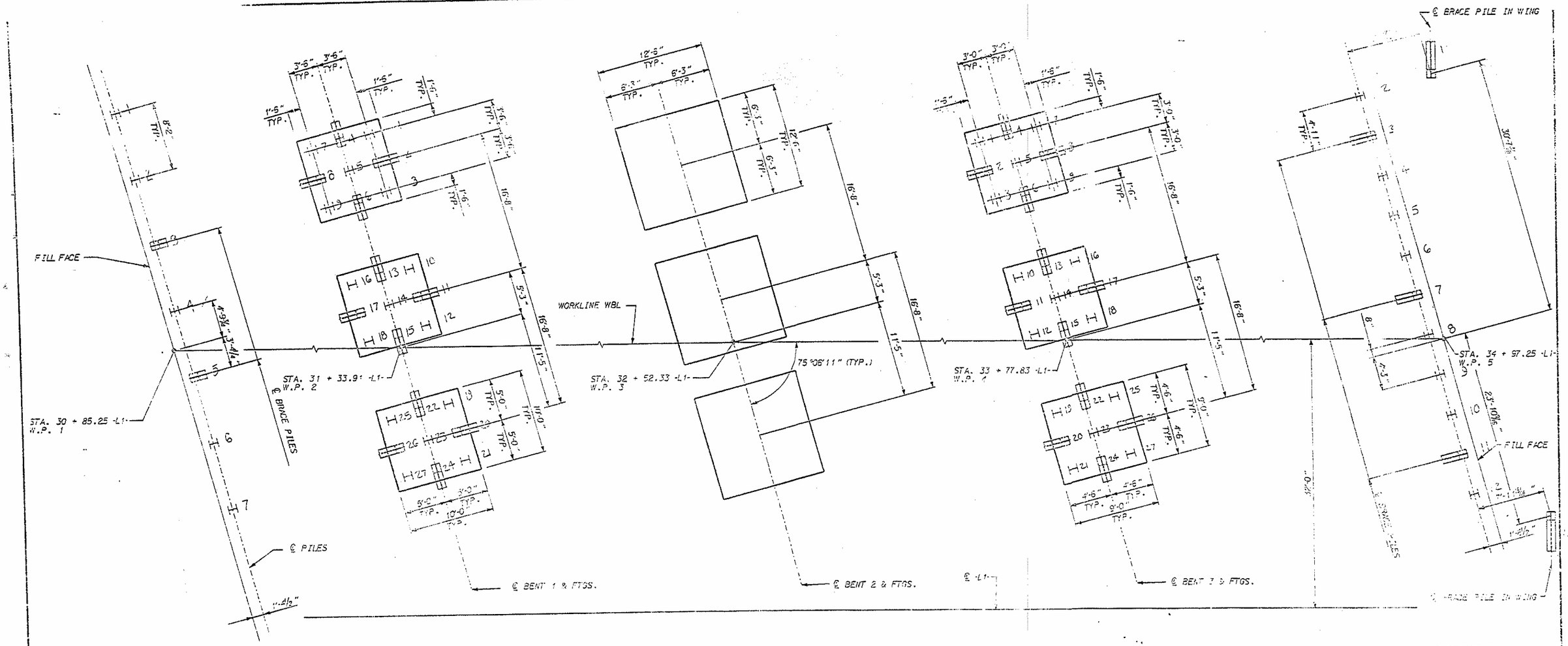
DWG. 1

DRAWN BY SLW DATE MAY 92
CHECKED BY LHM DATE 5-92

FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS RALEIGH, N.C.

SEAL 19819 ENGINEER GEORGE THOMAS HOUGH
8-21-92

SEAL 18241 ENGINEER JOHN H. MUNDY
8-21-92



END BENT 1

END BENT 1
HP 12X53 STEEL PILES

NO	LENGTH
1	51.20
2	51.20
3	55.60
4	45.10
5	50.10
6	52.20
7	49.50

BENT 1

BENT 1
HP 12X53 STEEL PILES

NO	LENGTH	NO	LENGTH
1	17.0	15	18.0
2	20.2	16	20.4
3	20.8	17	12.[illegible]
4	33.0	18	18.2
5	17.8	19	20.6
6	17.5	20	19.8
7	27.0	21	19.2
8	30.4	22	17.5
9	19.0	23	13.0
10	[illegible]	24	[illegible]
11	20.2	25	[illegible]
12	[illegible]	26	[illegible]
13	12.5	27	17.0
14	19.5		

BENT 2

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE
(BENT 2 HAS SPREAD FOOTINGS)
BATTERED PILES ARE BATTERED AT 1½:12 @ BENTS & 3:12 @ END BENTS

BENT 3

BENT 3
HP 12X53 STEEL PILES

NO	LENGTH	NO.	LENGTH
1	8.5	15	13.0
2	8.0	16	10.2
3	9.0	17	11.0
4	9.0	18	11.4
5	9.0	19	11.0
6	9.0	20	13.4
7	[illegible]	21	13.7
8	6.2	22	12.3
9	[illegible]	23	12.0
10	9.5	24	13.5
11	[illegible]	25	11.2
12	11.0	26	12.5
13	10.0	27	13.[illegible]
14	10.0		

END BENT 2

END BENT 2
HP 12X53 STEEL PILES

NO	LENGTH
1	34.4
2	43.[illegible]
3	47.3
4	42.5
5	43.7
6	47.
7	45.0
8	43.7
9	45.8
10	45.
11	47.[illegible]
12	48.3
13	59.[illegible]

PROJECT NO. 8.2402101
WAKE COUNTY
STATION: 32 + 91.25 -L1-
WBL

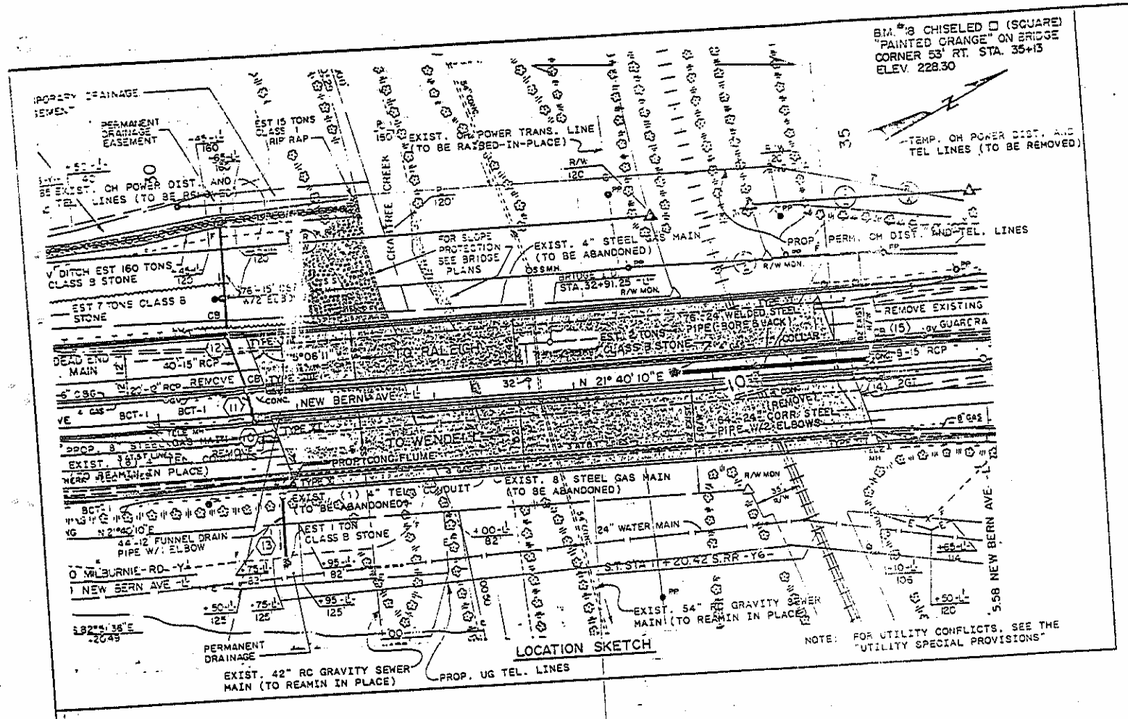
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FOUNDATION LAYOUT
PLAN

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	6-252
						TOTAL SHEETS
						332

DRAWN BY : H. A. LUCAS DATE : 10/1/92
CHECKED BY : W.C. CAUDILL DATE : 10-1-92

16-OCT-1992 10:32
ZMI(S0360182.73.DGN)
HLUCAS



LOCATION SKETCH

NOTE: (CONTINUED FROM DWG. 1)

TEMPORARY SHORING WILL BE REQUIRED IN THE AREAS INDICATED IN THE ELEVATION VIEW. THE CONTRACTOR SHALL SUBMIT FIVE SETS OF DRAWINGS SHOWING DETAILS OF THE TEMPORARY SHORING TO THE ENGINEER. THE ENTIRE COST OF THE TEMPORARY SHORING SHALL BE INCLUDED IN THE UNIT COST BID FOR UNCLASSIFIED STRUCTURE EXCAVATION.

THE EXISTING STRUCTURE CONSISTING OF 10 SPANS VARYING FROM APPROX. 34' TO 65' SIMPLE I-BEAM SPANS, 28'-0" CLEAR ROADWAY WIDTH WITH A REINFORCED CONCRETE DECK ON CONCRETE & STEEL PIERS, AND LOCATED AT SAME LOCATION AS PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FROM 10' LEFT OF CENTERLINE TO 65' LEFT OF CENTERLINE AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE MEASURED & PAID FOR AS UNCLASSIFIED STRUCTURE EXCAVATION.

THE EXISTING PAVEMENT WITHIN THE AREA OF THE END BENT PILES SHALL BE REMOVED AND THE ROADBED SCARIFIED TO A MINIMUM DEPTH OF 2'-0".

FOR FALSEWORK AND FORMS OVER OR ADJACENT TO TRAFFIC, SEE SPECIAL PROVISIONS.

FOR EXCAVATION OF SPREAD FOOTING AT BENT 2, SEE SPECIAL PROVISIONS, "BLASTING ADJACENT TO HIGHWAY STRUCTURES".

FOR SUBSTRUCTURE SCOUR PROTECTION, SEE SPECIAL PROVISIONS.

FOR LUMP SUM FOUNDATION EXCAVATION, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIALS

ITEM	REMOVAL OF EXISTING STRUCTURE	FOUNDATION EXCAVATION	FOUNDATION EXCAVATION FOR BENT 2 AT STATION 32+91.25	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS "A" CONCRETE	BRIDGE APPROACH SLABS AT STATION 32+91.25	REINFORCING STEEL	HP 12X53 STEEL PILES		CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	PLAIN RIP RAP CLASS II (2'-0" THICK)	MODULAR EXPANSION JOINT SEAL	POT BEARINGS	STRUCTURAL STEEL	SPIRAL COLUMN REINFORCING STEEL	PREFORMED COMPRESSION JOINT SEALS
										NO.	LIN. FT.	LIN. FT.								
	LUMP SUM	CU. YDS.	LUMP SUM	CU. YDS.	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.				SQ. YDS.	LUMP SUM	TONS	LUMP SUM	LUMP SUM	APPROX. LBS.	LBS.	LUMP SUM
STRUCTURE					18,476	16,893			3,678		350	831.9			1230			545,600	2145	
SUPERSTRUCTURE							24.6		15,494	27	675								3418	
END BENT 1		22.8					111.9		22,658										1664	
BENT 1			L.S.				142.7		14,676	27	360		344							
BENT 2		82.9					81.4		5,063	13	660									
BENT 3				1,170			34.7													
END BENT 2																				
TOTAL BRIDGE	L.S.	310.9	L.S.	1,170	18,476	16,893	395.3	L.S.	61,569	74	2,045	831.9	344	L.S.	1230	L.S.	L.S.	545,600	7,227	L.S.

PROJECT NO. 8.2400211

WAKE COUNTY

STATION: 32 + 91.25 -L-

SHT. 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR THE WEST BOUND LANE BRIDGE OVER CRABTREE CREEK AND SOUTHERN RAILROAD ON SR. 2911 (NEW BERN AVENUE) BETWEEN RALEIGH AND WENDELL.

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

SHEET NO. S-252
TOTAL SHEETS 332

DWG. 2

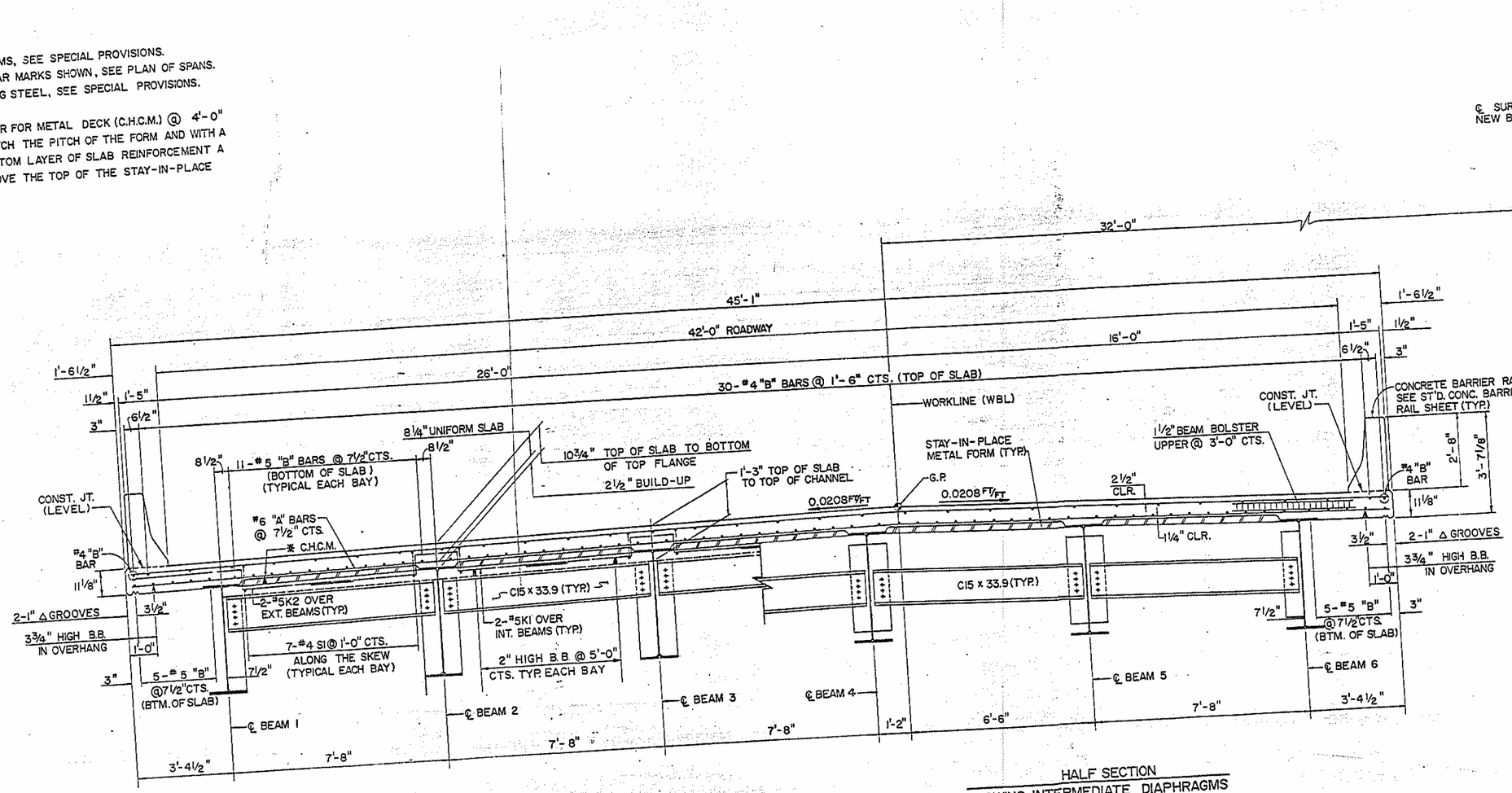
DRAWN BY JAS DATE 6-92
CHECKED BY [illegible] DATE 6-92

FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS RALEIGH, N.C.

NOTES:

1. FOR STAY-IN-PLACE METAL FORMS, SEE SPECIAL PROVISIONS.
2. FOR BARS INDICATED AND NO BAR MARKS SHOWN, SEE PLAN OF SPANS.
3. FOR EPOXY COATED REINFORCING STEEL, SEE SPECIAL PROVISIONS.

* PROVIDE CONTINUOUS HIGH CHAIR FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. 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 1¼" ABOVE THE TOP OF THE STAY-IN-PLACE FORM.



HALF SECTION
SHOWING BENT DIAPHRAMS

HALF SECTION
SHOWING INTERMEDIATE DIAPHRAGMS

TYPICAL SECTION – SPAN "A"

PROJECT NO. 8.2402101
WAKE COUNTY
STATION: 32+91.25 -L-

SHT. 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TYPICAL SECTION – SPAN "A"

MARCH 1992

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-28
1			3			TOTAL SHEETS
2			4			33

DWG. 3

DRAWN BY WET DATE 3-92
CHECKED BY J. Doe DATE 5-92

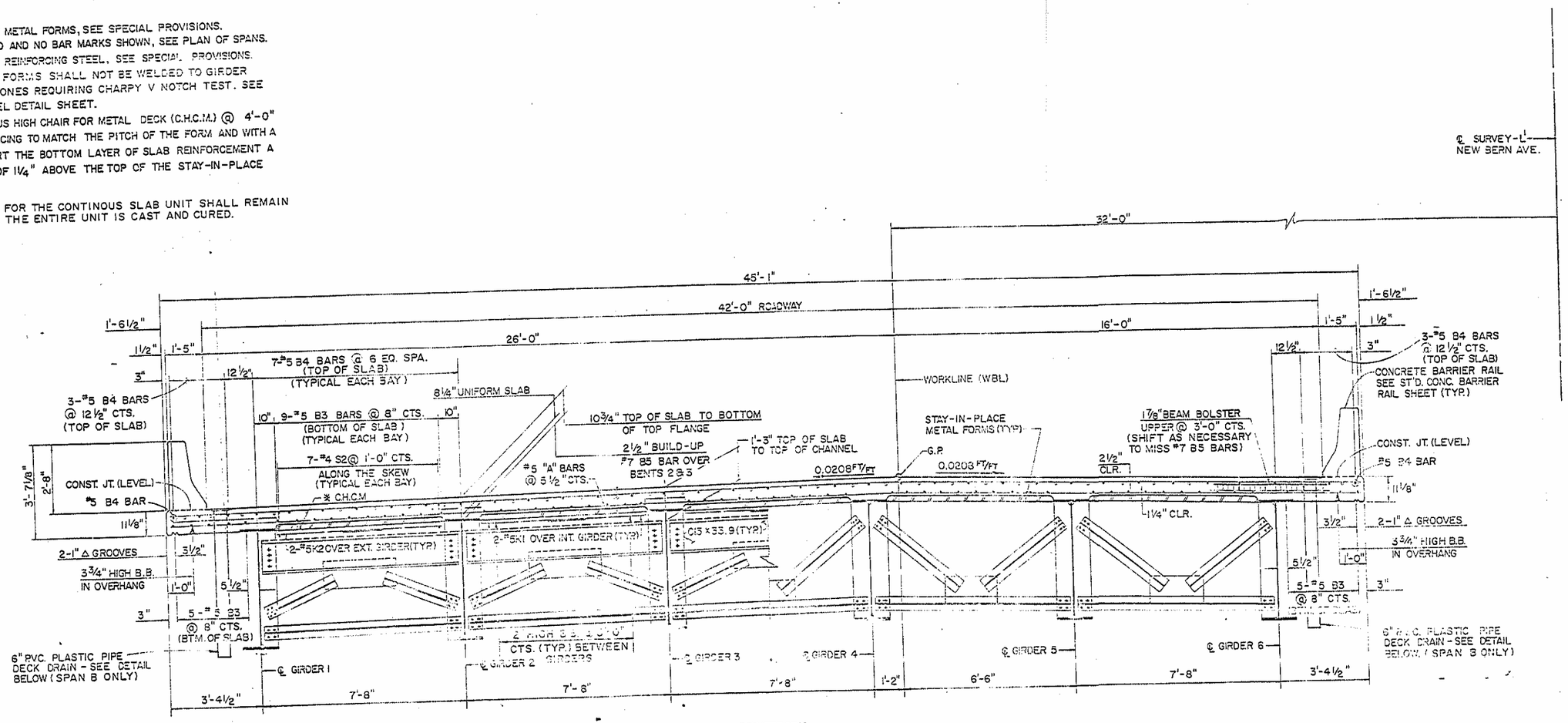
FLORENCE & HUTCHESON INC.
CONSULTING ENGINEERS RALEIGH N.C.

NOTES:

1. FOR STAY-IN-PLACE METAL FORMS, SEE SPECIAL PROVISIONS.
2. FOR BARS INDICATED AND NO BAR MARKS SHOWN, SEE PLAN OF SPANS.
3. FOR EPOXY COATED REINFORCING STEEL, SEE SPECIAL PROVISIONS.
4. FALSEWORK AND FORMS SHALL NOT BE WELDED TO GIRDER FLANGES IN THE ZONES REQUIRING CHARPY V NOTCH TEST. SEE STRUCTURAL STEEL DETAIL SHEET.

* PROVIDE CONTINUOUS HIGH CHAIR FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. 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 1¼" ABOVE THE TOP OF THE STAY-IN-PLACE FORM.

5. ALL FALSEWORK FOR THE CONTINOUS SLAB UNIT SHALL REMAIN IN PLACE UNTIL THE ENTIRE UNIT IS CAST AND CURED.

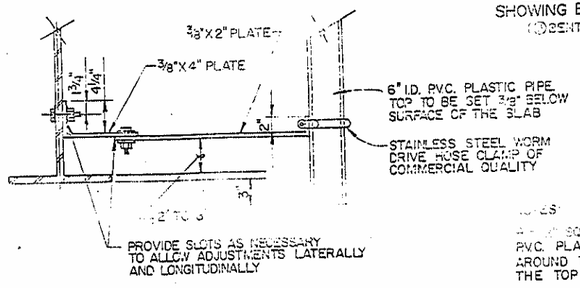


* DENOTES ADDITIONAL REINFORCING (B5 BAR) OVER BENTS 2 & 3

HALF SECTION
SHOWING BENT DIAPHRAGMS
(@ BENT 1 & BENT 2)

HALF SECTION
SHOWING INTERMEDIATE DIAPHRAGMS

TYPICAL SECTION – SPANS "B" thru "D"



DRAIN DETAIL

NOTES:

ATTACH 90 LUGS TO BE WELDED ON THE PVC. PLASTIC PIPE AT EQUAL SPACES AROUND THE PIPE DRAIN, 4" DOWN FROM THE TOP OF PIPE.

COUPLING IN DRAIN PIPE WILL BE PERMITTED AS APPROVED BY THE ENGINEER.

TOP OF FLOOR DRAIN TO BE SET ⅜" BELOW SURFACE OF SLAB.

PVC PLASTIC DECK DRAINS SHALL BE PAINTED WITH AN APPROVED VINYL PAINT.

PROJECT NO. 8.2402101
WAKE COUNTY
STATION: 32 + 91.25 -L-

SHT. 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TYPICAL SECTION – SPANS B-D

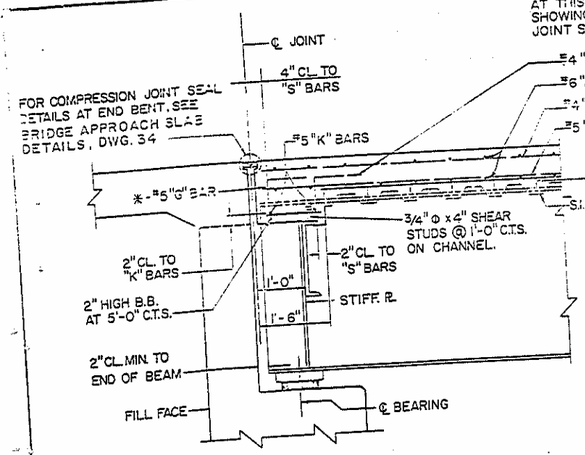
MARCH 1992

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	B-255
1			3			TOTAL SHEETS
2			4			123

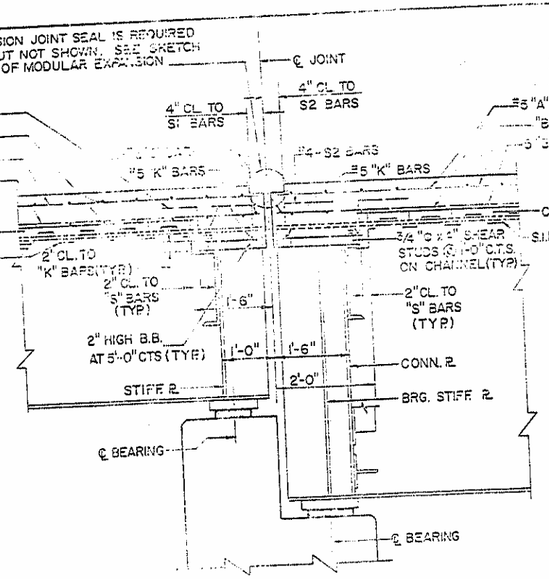
DWG. 4

DRAWN BY WET DATE 5-92
CHECKED BY [illegible] DATE 5-92

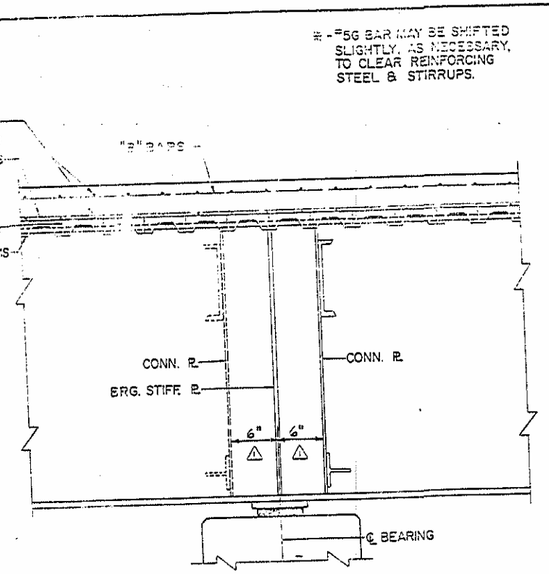
FLORENCE & HUTCHESON INC.
CONSULTING ENGINEERS RALEIGH N.C.



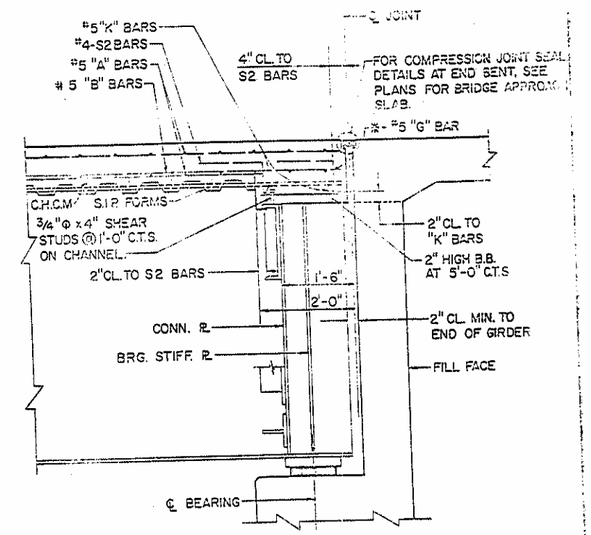
SECTION THRU END BENT DIAPHRAGM
@ END BENT 1



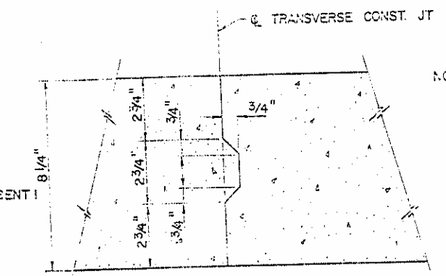
SECTION THRU DIAPHRAGM & CROSSFRAME
@ BENT 1



SECTION THRU DIAPHRAGM & CROSSFRAME
@ BENT 2 & BENT 3

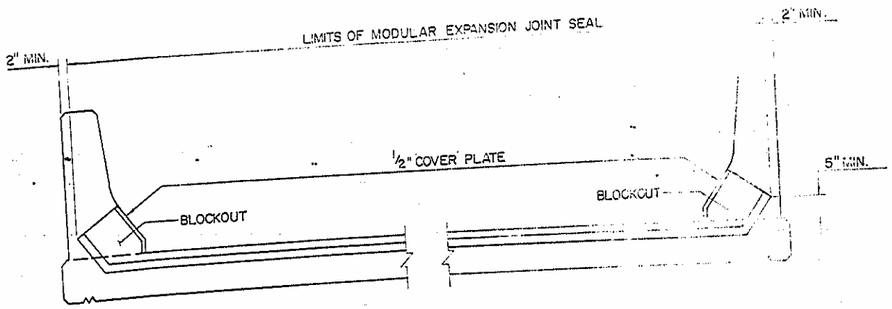


SECTION THRU END BENT DIAPHRAGM
@ END BENT 2

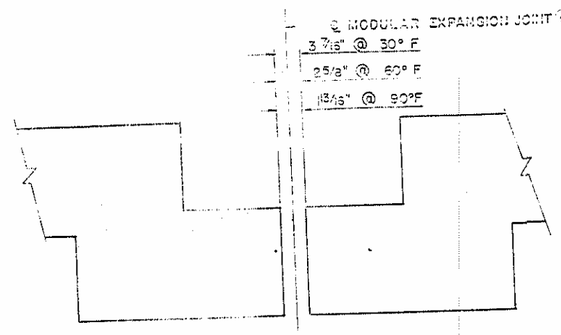


NOTE: REINFORCING STEEL IN SLAB NOT SHOWN. LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT.

TRANSVERSE CONSTRUCTION JOINT
IN DECK SLAB



SKETCH SHOWING LIMITS OF MODULAR
EXPANSION JOINT SEAL - BARRIER RAIL



SECTION THRU SLAB
NORMAL TO JOINT

MODULAR EXPANSION JOINT SEAL DETAILS

NOTES:
1. SEE SPECIAL PROVISIONS FOR MODULAR EXPANSION JOINT SEALS.
2. SET TOP OF MODULAR EXPANSION JOINT SEAL DEVICE A MINIMUM OF 1/4" AND A MAXIMUM OF 1/2" BELOW TOP OF SLAB.
3. THE MODULAR EXPANSION JOINT SEAL AT BENT NO.1 SHALL BE CAPABLE OF HANDLING A TOTAL MOVEMENT, MEASURED PARALLEL TO THE CENTER LINE OF THE ROADWAY, OF 3 3/8" (1 11/16" EXPANSION AND 1 11/16" CONTRACTION FROM A MIDPOINT TEMPERATURE OF 60° FAHRENHEIT.)

PROJECT NO. 6.240201
WAKE COUNTY
STATION: S2-S1.05-1.0

SHT 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TYPICAL SECTION DETAILS

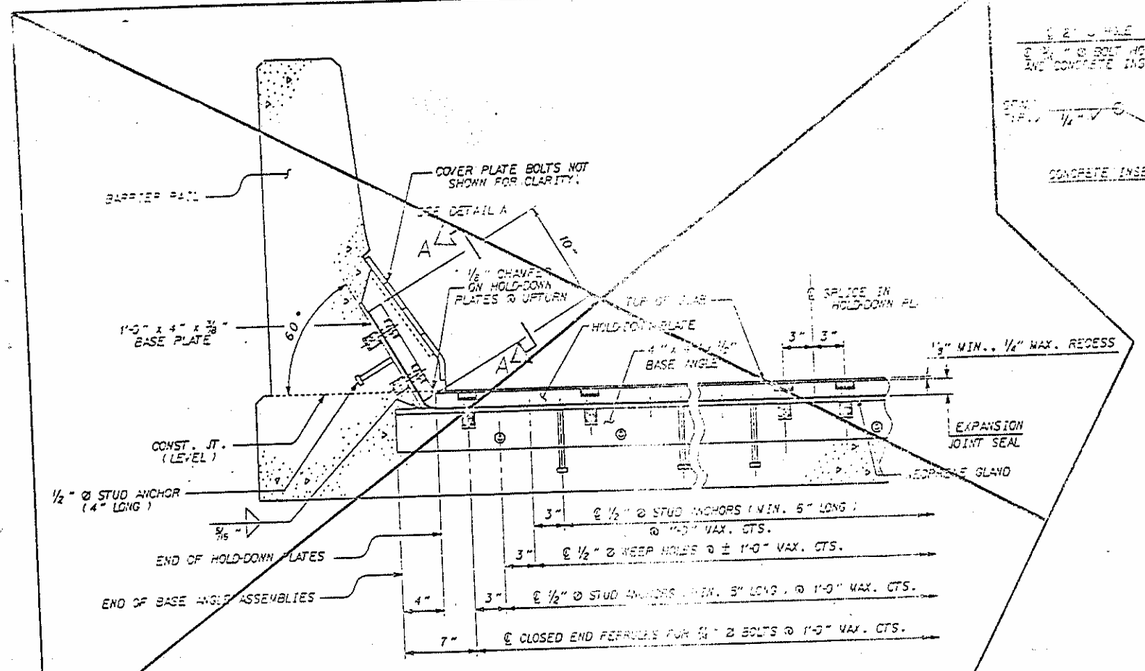
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1	EAP	3-1-93	3		
2			4		

DWG. 5

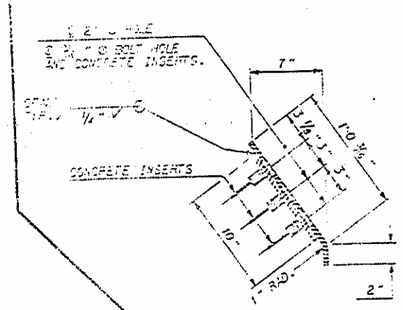
DRAWN BY DAP DATE 5-92
CHECKED BY [illegible] DATE 5-92

FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS RALEIGH, N.C.

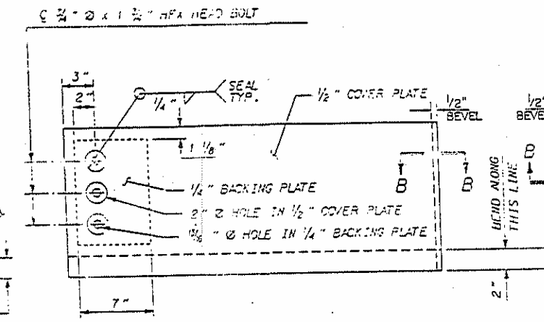
△1 REVISED CONNECTOR PLATE OFFSET @ BENT 2 & BENT 3. BY [illegible] 3-1-93



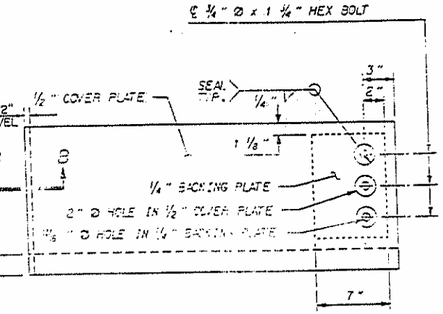
SECTION THRU RAIL NORMAL TO JOINT



END VIEW



TYPE I - ELEVATION VIEW



TYPE II - ELEVATION VIEW

COVER PLATE DETAILS

COVER PLATE NOTES

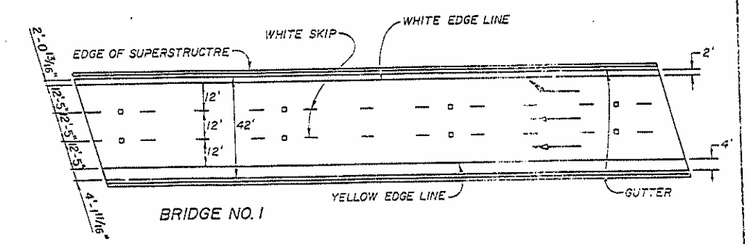
THE STEEL PLATES SHALL CONFORM TO ASTM A36 OR APPROVED EQUAL. AFTER FABRICATION, THE PLATES SHALL BE COATED WITH TWO(2) COATS OF ZINC RICH PAINT IN ACCORDANCE WITH THE SPECIFICATIONS. EACH COAT SHALL HAVE A MINIMUM THICKNESS OF 3 MILS.

THE 3/4" Ø HEX HEAD BOLTS SHALL CONFORM TO TYPE 304 STAINLESS STEEL.

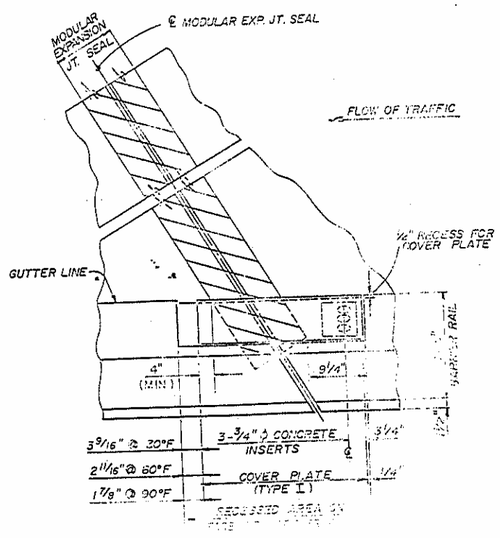
THE 3/4" CONCRETE INSERTS SHALL BE CLOSED-END FERRULES WITH LOOPED WIRE STRUTS ATTACHED TO THEM. THE INSERTS SHALL CONFORM TO ASTM A108, GRADE 12L14 AND SHALL HAVE A TENSILE WORKING LOAD CAPACITY OF 3000 LBS.

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

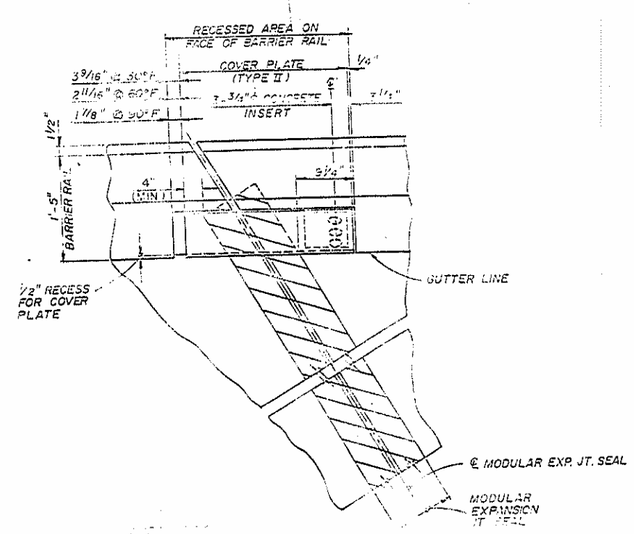
NOTE: DETAILS OF THE COVER PLATE ARE SUBJECT TO CHANGE DEPENDING ON DETAILS OF MODULAR JOINT SEAL FURNISHED.



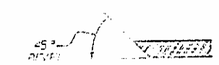
PAVEMENT MARKING ALIGNMENT



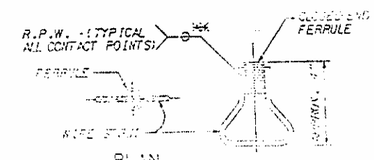
PLAN OF MODULAR EXPANSION JOINT SEAL - RIGHT SIDE



PLAN OF MODULAR EXPANSION JOINT SEAL - LEFT SIDE



SECTION B - B



CONCRETE INSERT

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

DWG.6

NOTE: FOR ADDITIONAL MODULAR EXPANSION JOINT DETAILS, SEE DWG. 5

PROJECT NO. 8.2402101

WAKE COUNTY

STATION: 32+91.25 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

MODULAR EXPANSION JOINT SEAL DETAILS FOR BARRIER RAIL

FEBRUARY 1988

REVISIONS								SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:			5-2-2-7
								TOTAL SHEETS
								332

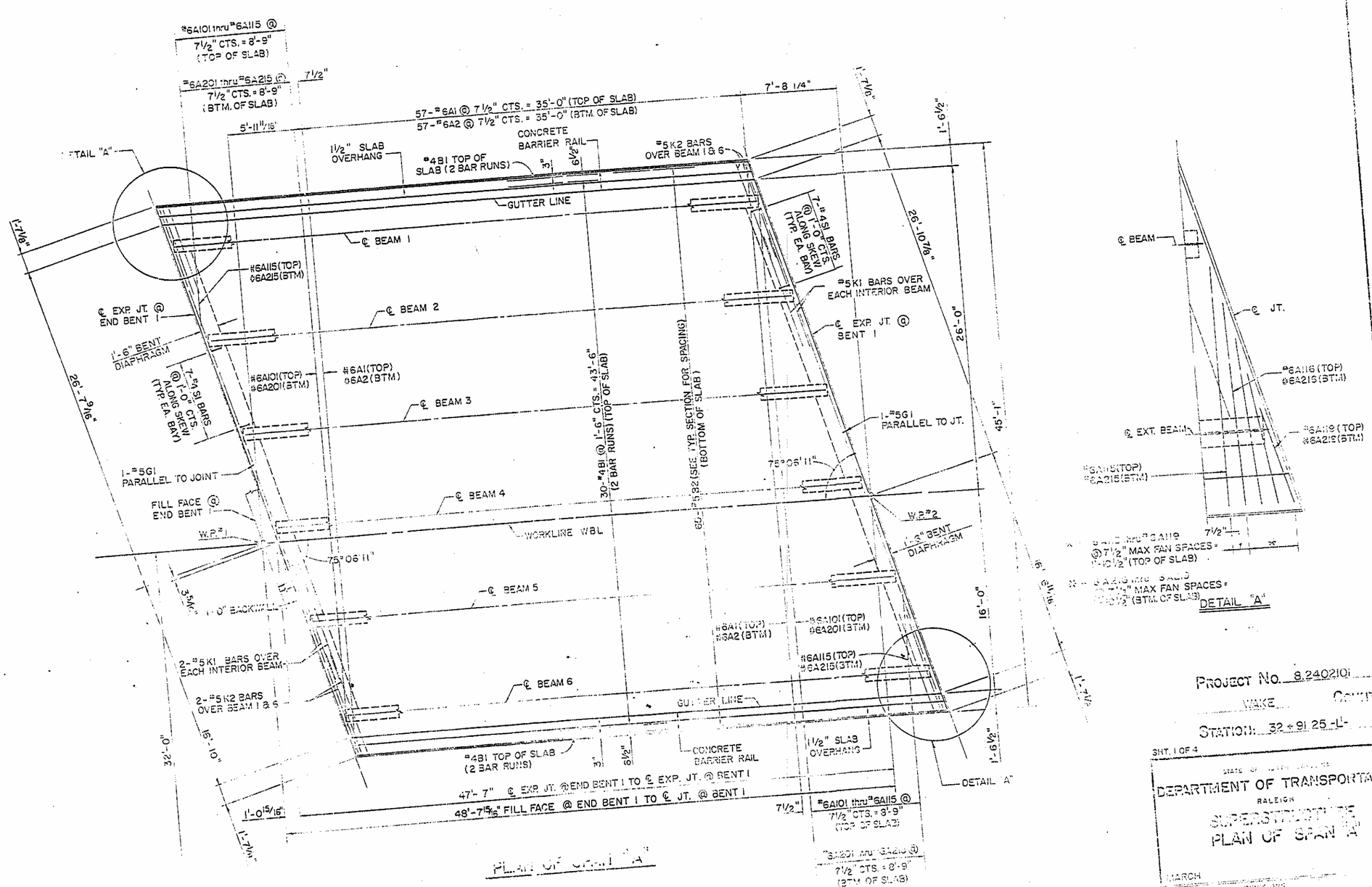
ASSEMBLED BY: DAP DATE: 5-92
CHECKED BY: [illegible] DATE: 5-92
DRAWN BY: ROSS E. KUBENY DATE: 9-8-87
CHECKED BY: ANDY R. KING DATE: 9-8-87

SPECIAL

STANDARD

REVISED BY W.J.H. CHECKED BY C.R.K. 5-1-90
REVISED BY W.J.H. CHECKED BY C.R.K. 5-12-89
RWFD 2-25-88

EJS2



PROJECT NO. 8.2402101

WAKE COUNTY

STATION: 32 + 91.25 -L-

SHT. 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPAN "A"

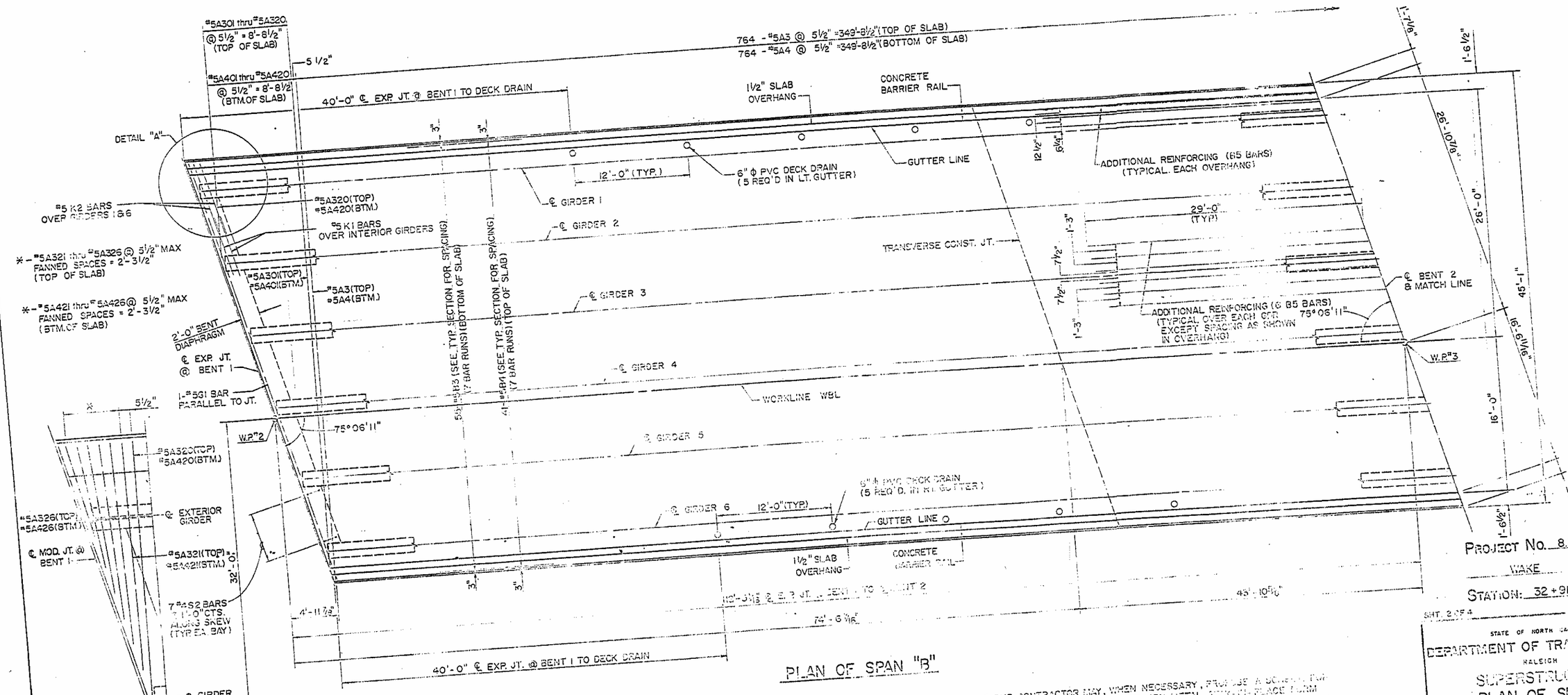
MARCH

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

DWG. 7

DRAWN BY RAP DATE 5-22
CHECKED BY DATE 5-22

FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS RALEIGH, N.C.



PLAN OF SPAN "B"

DETAIL "A"

NOTES:

1. [illegible] BEFORE FALSEWORK OR FORMS ARE PLACED ON THE UNIT.
2. PRESTRESSED CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF [illegible] BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.
3. BARRIER RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.
4. DIRECTION OF CASTING DECK CONCRETE SHALL BE FROM THE FIXED BEARING END TOWARD THE EXPANSION BEARING END OF THE SPAN.
5. THE CONTRACTOR MAY, WHEN NECESSARY, PROPOSE A SCHEME FOR [illegible] BETWEEN METAL STAY-IN-PLACE FORM SUPPORTS OR FORMS AND BEAM, GIRDER STIFFENER OR CONNECTION PLATES. THE PROPOSAL SHALL BE INDICATED, AS APPROPRIATE, ON EITHER THE STEEL WORKING DRAWINGS OR THE STAY-IN-PLACE FORM WORKING DRAWINGS.

DRAWN BY RAP DATE 5-92
CHECKED BY [illegible] DATE 5-92

FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS RALEIGH, N.C.

PROJECT No. 8.2402101
WAKE
STATION: 32+91.26 -L-

SHT. 2 OF 4

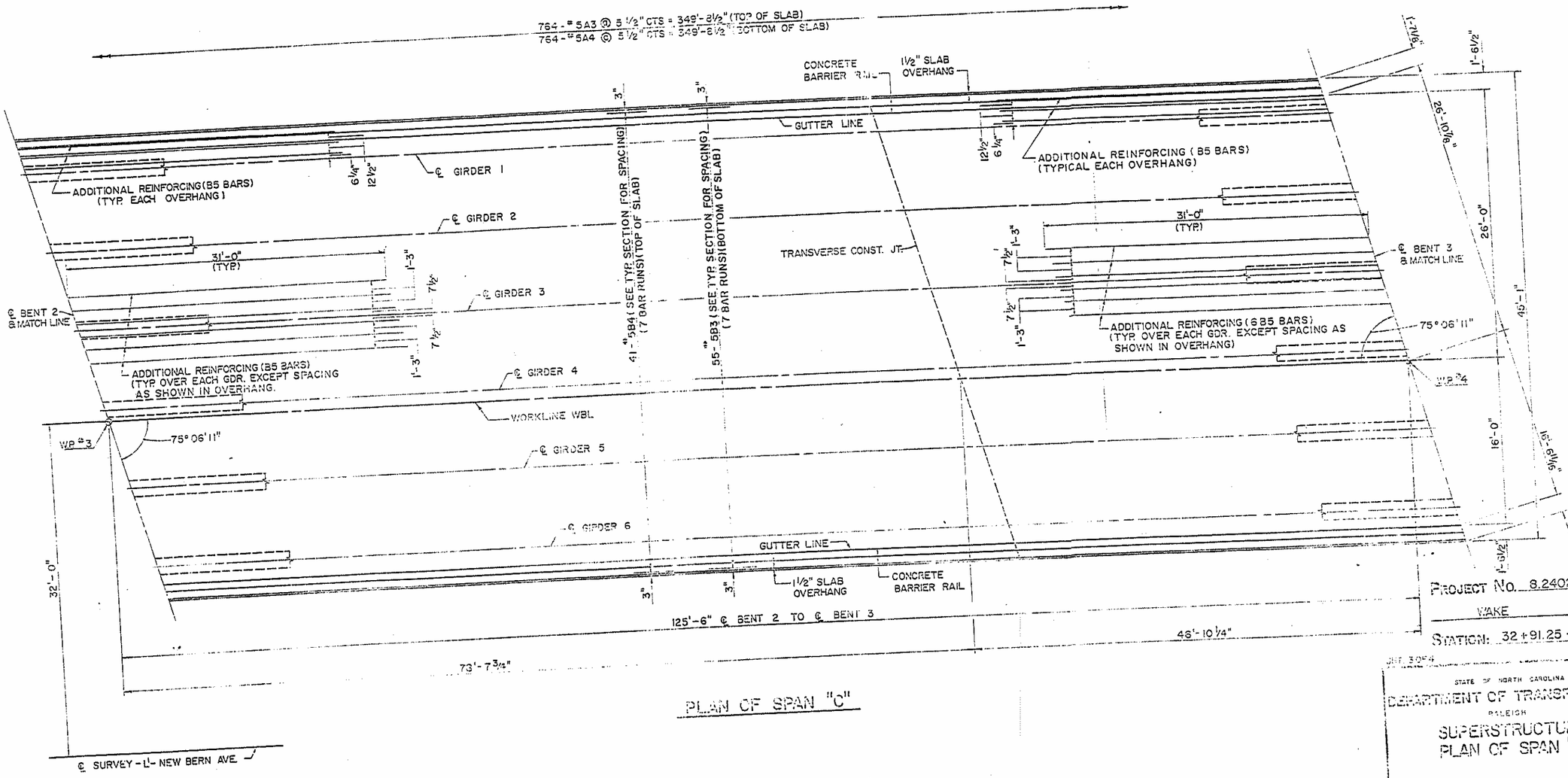
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPAN "B"

MARCH

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

DWG. 8



PLAN OF SPAN "C"

PROJECT NO. 8.2402101
WAKE COUNTY
STATION: 32 + 91.25 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

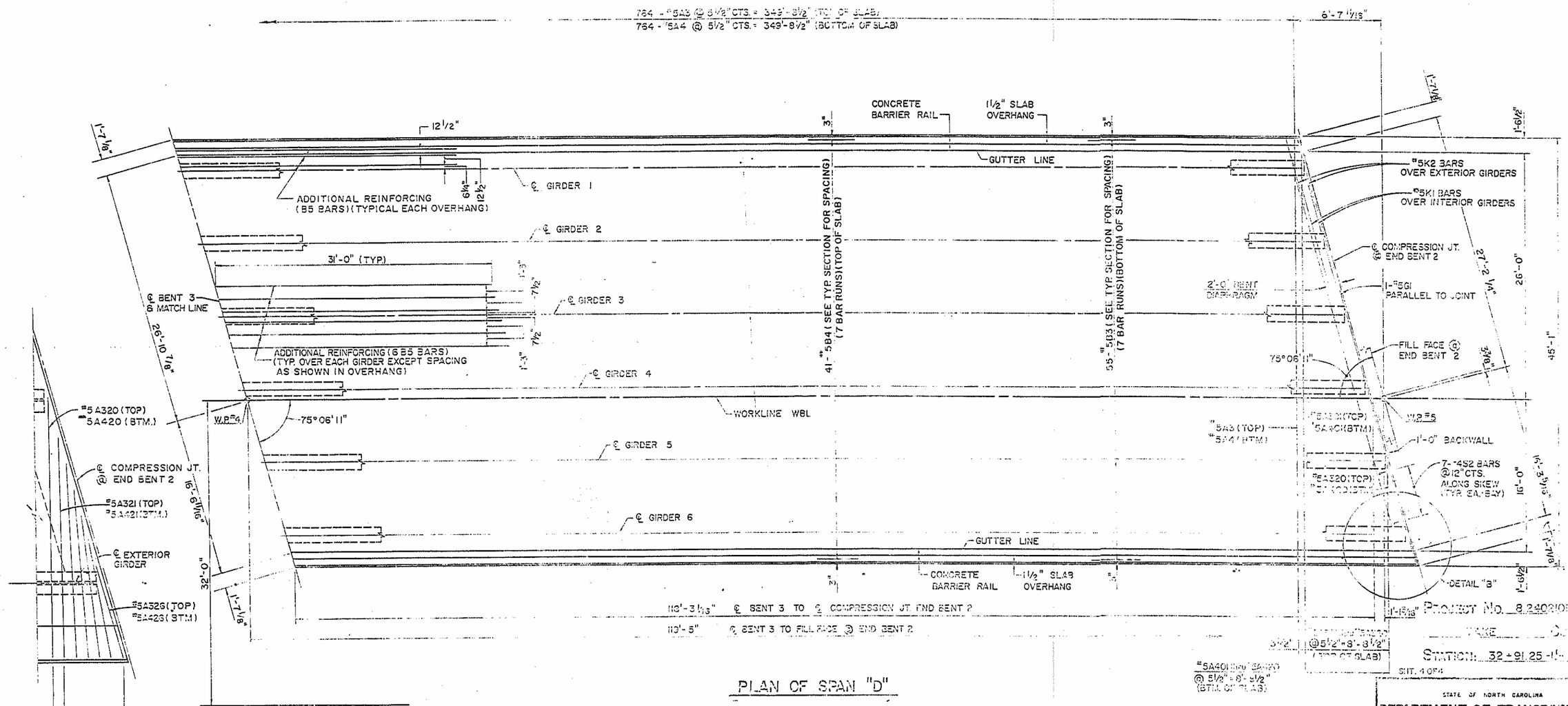
SUPERSTRUCTURE
PLAN OF SPAN "C"

DWG. 9

DRAWN BY DAP DATE 5-92
CHECKED BY DATE 5-92

FLORENCE & HUTCHESON INC.
CONSULTING ENGINEERS RALEIGH N.C.

FOR NOTES, SEE DWG. 8



PLAN OF SPAN "D"

* - #5A321 thru #5A326 @ 5½" MAX.
FANNED SPACES = 2'-5½"
(TOP OF SLAB)

** - #5A421 thru #5A426 @ 5½" MAX.
FANNED SPACES = 2'-5½"
(BTM. OF SLAB)

DETAIL "B"

PROJECT NO. 8.2400101
PAGE COUNTY
STATION: 32+91.25 -L-
SHT. 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPAN "D"

MARCH 1992

REVISIONS							SHEET NO.
NO.	BY	DATE	NO.	BY	DATE		S-201
1			3				TOTAL SHEETS
2			4				222

DWG. 10

DESIGNED
DR. BY WET DATE
CHECKED BY J. Thom DATE 5-92

FLORENCE & HUTCHESON INC.
CONSULTING ENGINEERS RALEIGH N.C.

NOTES

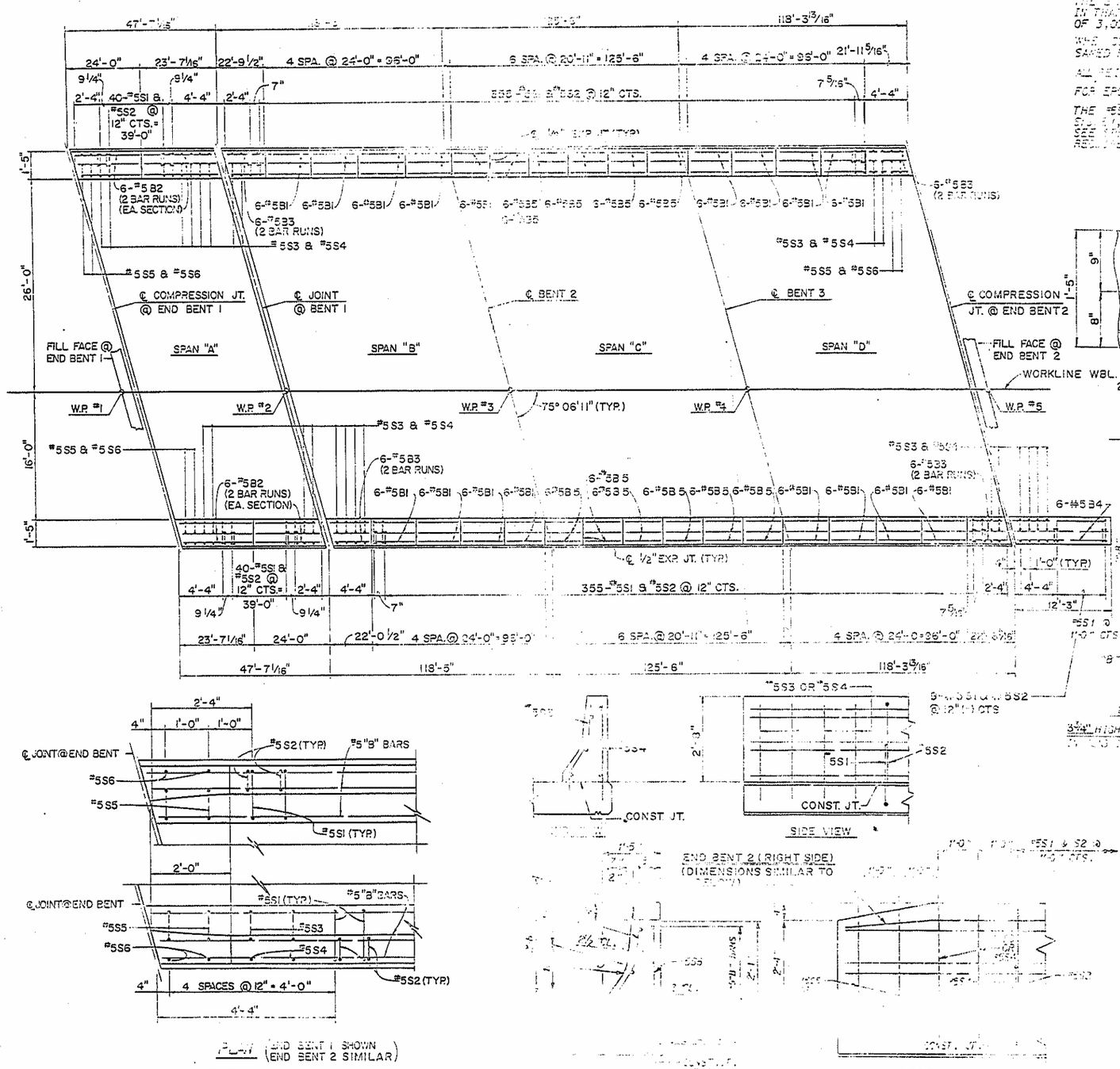
THE SLAB FORM IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

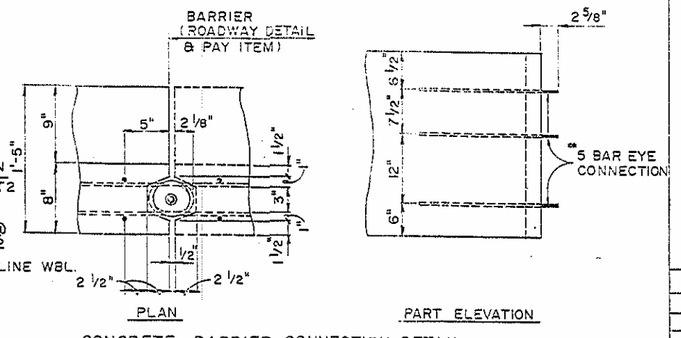
WHEN COMPRESSION JOINT SEAL IS REQUIRED, THE JOINT IN THE DECK SHALL BE SAWED PRIOR TO THE CASTING OF BARRIER RAIL.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

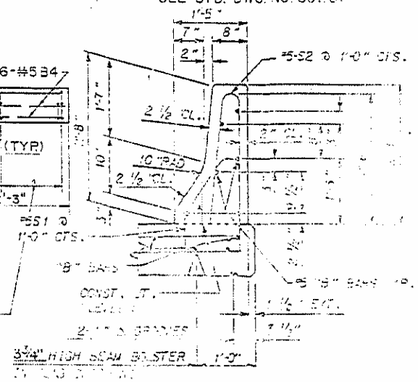
FOR EPOXY COATED REINFORCING STEEL, SEE SPECIAL PROVISIONS.

THE #5S3 THRU #5S6 BARS SHALL BE INSTALLED, USING AN ADHESIVE ANCHORING SYSTEM, AFTER SAWING THE JOINT. FOR ADHESIVELY ANCHORED BOLTS OR DOWELS, SEE SPECIAL PROVISIONS. TESTING FOR THE POWER OF BONDING SYSTEM IS NOT REQUIRED.

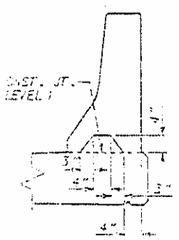




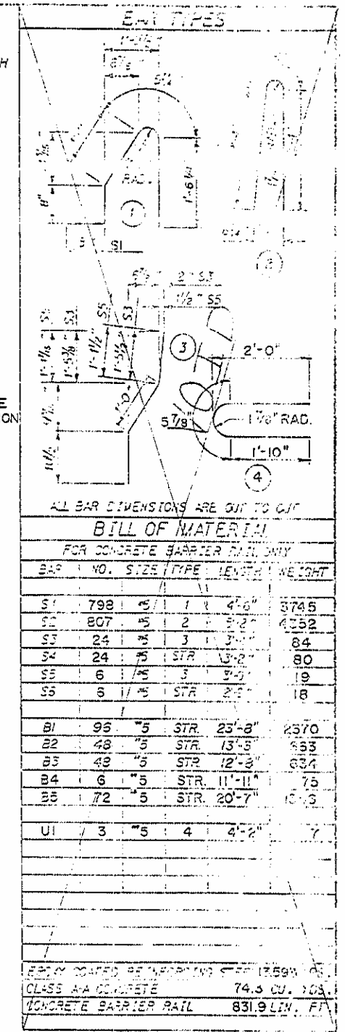
CONCRETE BARRIER CONNECTION DETAIL
SEE STD. DWG. NO. 867.01



SECTION THRU RAIL
ON BRIDGE DECK



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



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL
FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S1	798	#5	1	4'-6"	3745
S2	807	#5	2	5'-2"	4252
S3	24	#5	3	3'-5"	84
S4	24	#5	STR.	3'-2"	80
S5	6	#5	3	3'-2"	19
S6	6	#5	STR.	2'-7"	18
B1	96	#5	STR.	23'-8"	2370
B2	48	#5	STR.	13'-3"	663
B3	48	#5	STR.	12'-3"	614
B4	6	#5	STR.	11'-11"	75
B5	72	#5	STR.	20'-7"	1545
U1	3	#5	4	4'-2"	7

EPOXY COATED REINFORCING STEEL 12.59% OF
CLASS AA CONCRETE 74.3 CU. YDS.
CONCRETE BARRIER RAIL 831.9 LIN. FT.

NOTE: QUANTITIES INCLUDE BARRIER RAIL EXTENSION.

PROJECT NO. 8.2402101
WAKE COUNTY
STATION: 32+91.25 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
STANDARD
CONCRETE
BARRIER RAIL

NUMBER

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

PLAN (END BENT 1 SHOWN (END BENT 2 SIMILAR)

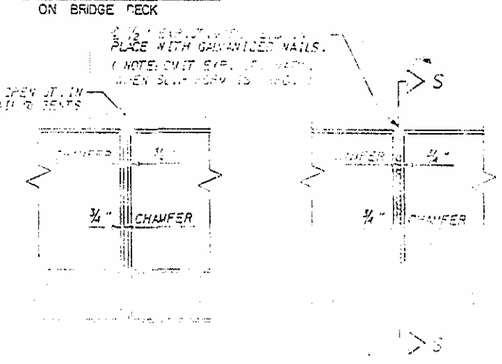
SIDE VIEW

END BENT 2 (RIGHT SIDE) (DIMENSIONS SIMILAR TO

END VIEW

SIDE VIEW

BARRIER RAIL-END OF RAIL DETAILS (EXCEPT END BENT 2 RIGHT SIDE)



ELEVATION AT EXPANSION JOINTS

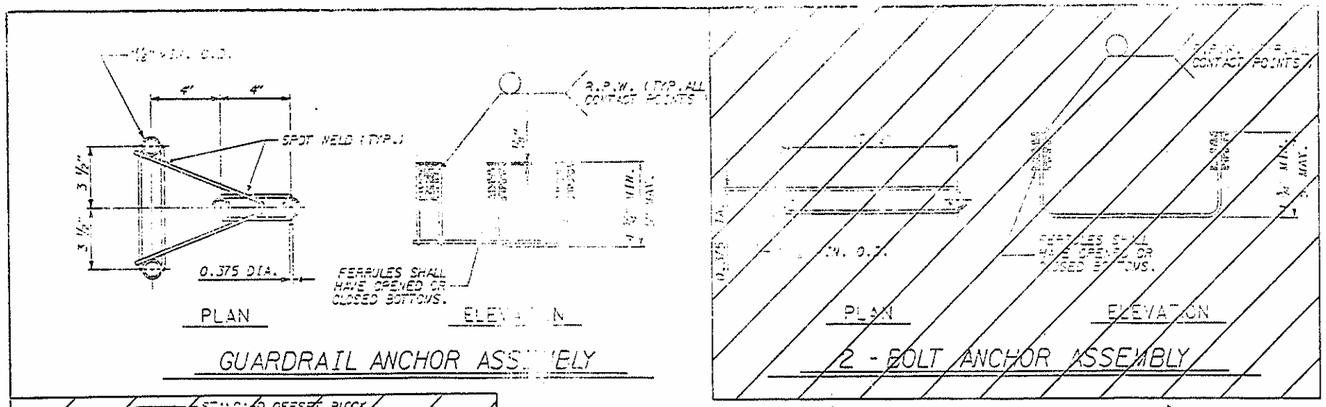
BARRIER RAIL DETAILS

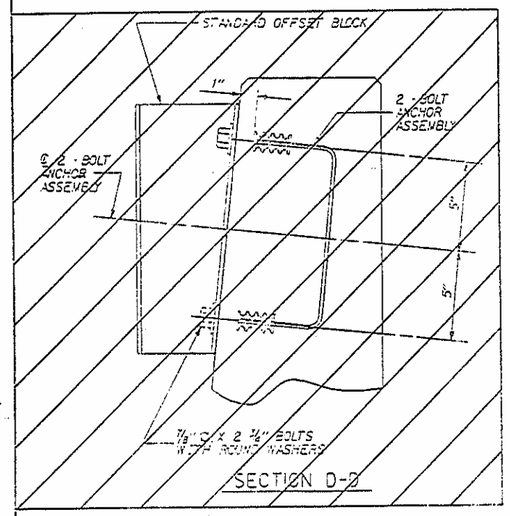
ASSEMBLED BY : DAP	DATE : 5-92	SPECIAL	
CHECKED BY : [illegible]	DATE : [illegible]		
DRAWN BY : R. BISSETTE	DATE : 5/23/87	STANDARD	
CHECKED BY : S.W. DAVIS	DATE : 9/3/87		

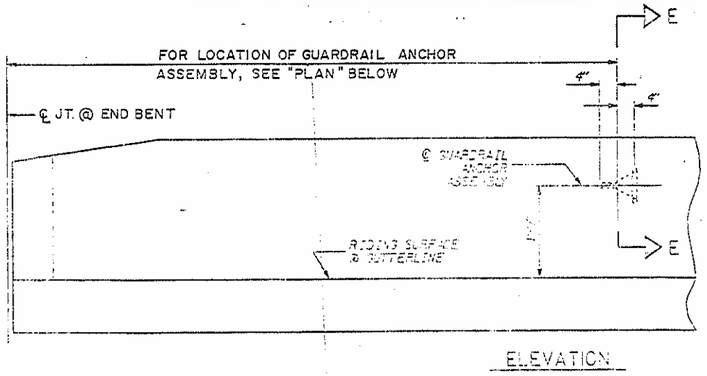
D.VG. 11

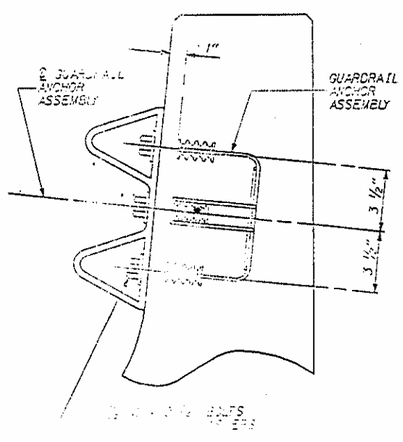
STD. NO. CBRI

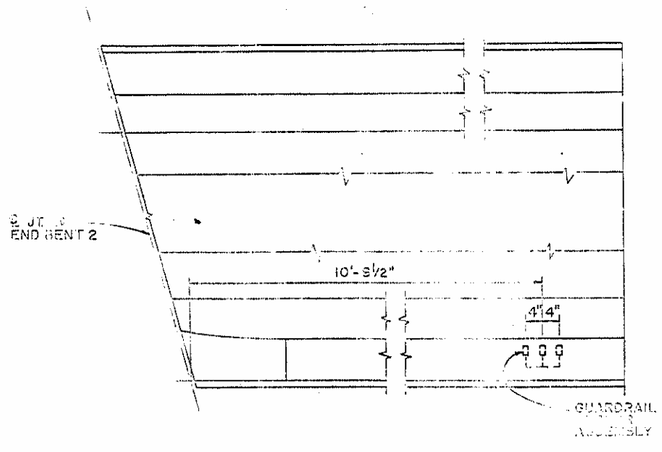
REVISED BY W.J.H. CHECKED BY G.R.P. 10-1-90











LOCATION OF ANCHORS FOR GUARDRAIL AND OFFSET BLOCK

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY ═══════ SHALL CONSIST OF THE FOLLOWING COMPONENTS :

A. FERRULES SHALL BE MADE FROM [illegible] THE REQUIREMENTS OF ASTM A108, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1½".

B. [illegible] 7/8" Ø x 2 ¼" BOLTS WITH WASHERS [illegible] GUARDRAIL ANCHOR ASSEMBLY ═══════ SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS [illegible] BE GALVANIZED. AT CONTRACTORS OPTION, STAINLESS STEEL BOLTS WITH WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø x 2 ¼" GALVANIZED BOLTS AND WASHERS. THEY SHALL MEET OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

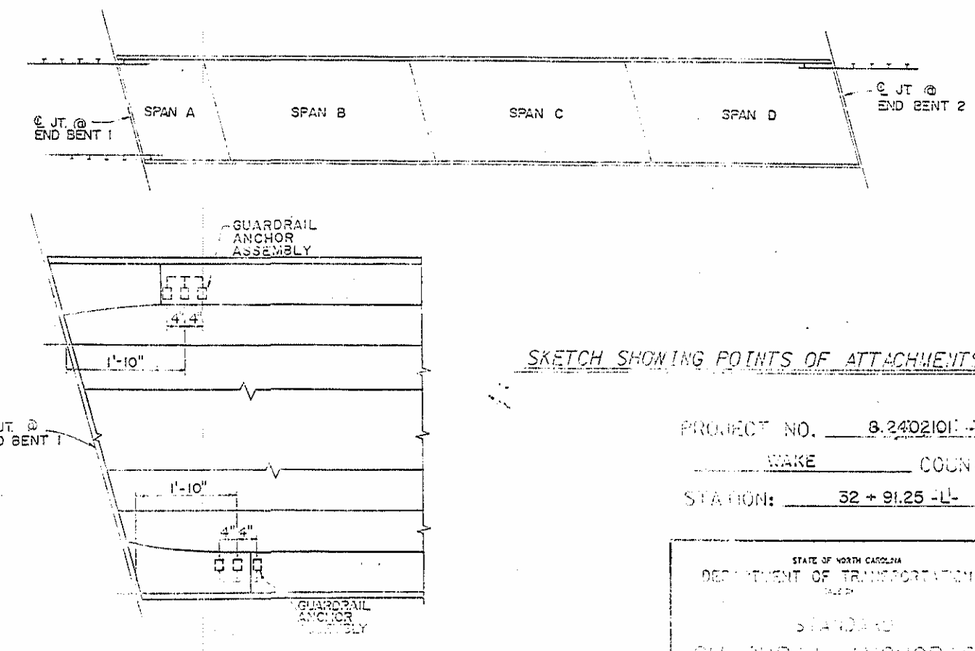
C. WIRE STRUTS SHOWN IN THE ANCHOR ASSEMBLY ARE THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI.

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 ═══════ ARE 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 REQUIRED DESIGN LOAD OF THE 7/8" Ø BOLT IS 12 KIPS. THE ANCHOR BOLTS SHALL BE COATED WITH A DEBONDING AGENT SO THAT THE ANCHOR BOLTS CAN BE EASILY REMOVED IF NECESSARY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT THE DEBONDING AGENT DOES NOT REDUCE THE STRENGTH OF THE ANCHOR SYSTEM. TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



SKETCH SHOWING POINTS OF ATTACHMENTS

PROJECT NO. 8.2402101

WAKE COUNTY

STATION: 32 + 91.25 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
GUARDRAIL ANCHORAGE FOR BARRIER RAIL

FEB. 1993

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

SHEET NO. S-22

DWG. 12

STD. No. GRA1

ASSEMBLED BY : DAP	DATE : 5-92	SPECIAL	
CHECKED BY : [illegible]	DATE : 5-92		
DRAWN BY : MIKE BRITT	DATE : DEC. 1987	STANDARD	
CHECKED BY : [illegible]	DATE : DEC. 1987		

REVISED BY W.J.H. CHECKED BY G.H.P. 10-1-90
REVISION 2/22/93

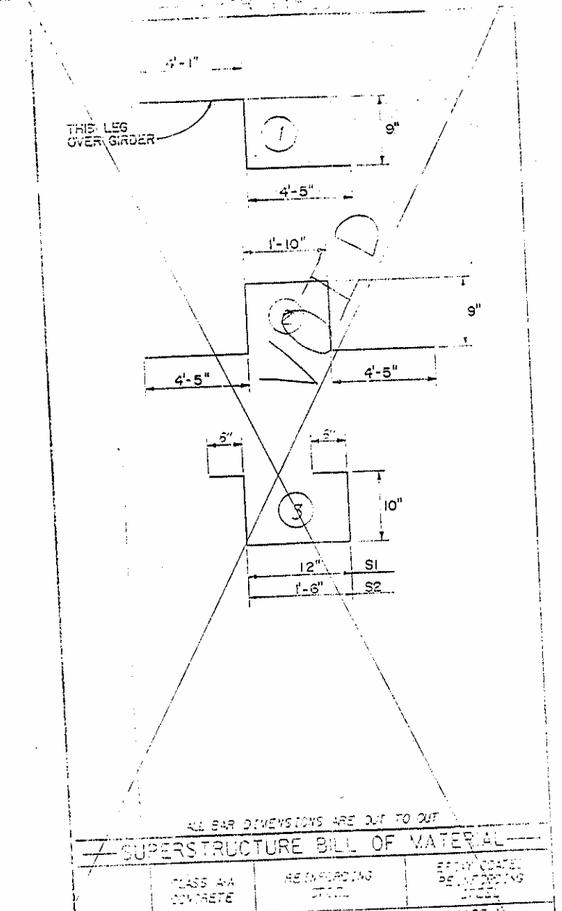
SPAN A

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
○ A1	57	6	STR	44'-9"	3,831
A2	57			44'-9"	3,831
○ A101	2			42'-7"	121
○ A102				40'-3"	114
○ A103				37'-11"	107
○ A104				35'-6"	100
○ A105				33'-2"	93
○ A106				30'-10"	86
○ A107				28'-6"	79
○ A108				26'-2"	71
○ A109				23'-9"	64
○ A110				21'-5"	57
○ A111				19'-1"	50
○ A112				16'-9"	43
○ A113				14'-5"	36
○ A114				12'-0"	29
○ A115				9'-8"	23
○ A116				7'-7"	16
○ A117				5'-3"	14
○ A118				4'-7"	12
○ A119				3'-11"	128
A201				42'-7"	121
A202				40'-3"	114
A203				37'-11"	107
A204				35'-6"	100
A205				33'-2"	93
A206				30'-10"	86
A207				28'-6"	79
A208				26'-2"	71
A209				23'-9"	64
A210				21'-5"	57
A211				19'-1"	50
A212				16'-9"	43
A213				14'-5"	36
A214				12'-0"	29
A215				9'-8"	23
A216				7'-7"	16
A217				5'-3"	14
A218				4'-7"	12
A219	2	6	STR	3'-11"	
○ B1	64	4	STR	24'-8"	1,055
B2	65	5	STR	47'-0"	3,186
○ G1	2	5	STR	46'-3"	96
○ K1	16	5	2	12'-1"	202
○ K2	8	5	1	9'-3"	77
○ S1	70	4	3	3'-8"	171

SPANS B,C,D

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
● A3	764	5	STR	44'-9	35,559
A4	764			44'-9	35,559
○ A301	2			43'-1"	90
○ A302				41'-4"	86
○ A303				39'-8"	83
○ A304				37'-11"	79
○ A305				36'-2"	75
○ A306				34'-5"	72
○ A307				32'-9"	68
○ A308				31'-0"	65
○ A309				29'-3"	61
○ A310				27'-7"	58
○ A311				25'-10"	54
○ A312				24'-1"	50
○ A313				22'-5"	47
○ A314				20'-8"	43
○ A315				18'-11"	39
○ A316				17'-3"	36
○ A317				15'-6"	32
○ A318				13'-9"	29
○ A319				12'-1"	25
○ A320				10'-4"	22
○ A321				8'-9"	18
○ A322				7'-3"	15
○ A323				5'-11"	12
○ A324				4'-5"	9
○ A325				2'-11"	6
○ A326				2'-0"	4
A401				43'-1"	90
A402				41'-4"	86
A403				39'-8"	83
A404				37'-11"	79
A405				36'-2"	75
A406				34'-5"	72
A407				32'-9"	68
A408				31'-0"	65
A409				29'-3"	61
A410				27'-7"	58
A411				25'-10"	54
A412				24'-1"	50
A413				22'-5"	47
A414				20'-8"	43
A415				18'-11"	39
A416				17'-3"	36
A417				15'-6"	32
A418				13'-9"	29
A419				12'-1"	25
A420				10'-4"	22
A421				8'-9"	18
A422				7'-3"	15
A423				5'-11"	12
A424				4'-5"	9
A425				2'-11"	6
A426	2	5	STR	2'-0"	4
B3	385	5	STR	53'-7"	21,517
○ B4	287	5	STR	53'-11"	16,139
○ B5	72	7	STR	60'-0"	8,830
○ G1	2	5	STR	46'-3"	96
○ K1	16	5	2	12'-1"	202
○ K2	8	5	1	9'-3"	77
○ S2	70	4	3	4'-2"	195

SPAN



ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
SPAN A	91.1	3,510	8,372
SPANS B,C,D POUR 1	93.3		
SPANS B,C,D POUR 2	149.7		
SPANS B,C,D POUR 3	203.3		
SPANS B,C,D TOTAL	446.3	58,334	62,378
TOTALS	507.9	66,614	69,051

QUANTITIES FOR PARAPET RAIL ARE NOT INCLUDED

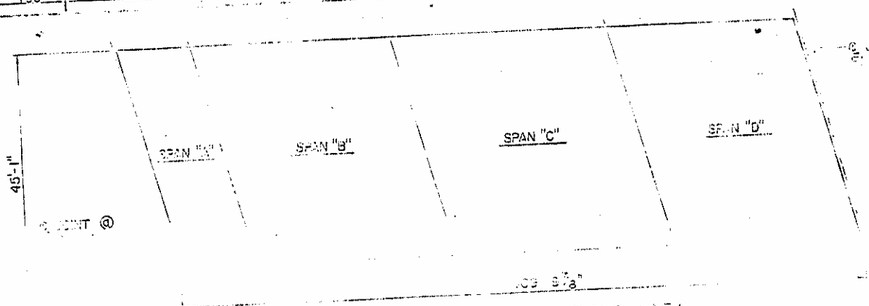
PROJECT NO. 8.2402101

WAKE COUNTY

STATION: 32 + 91.25 -L-

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

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



○ DENOTES EPOXY COATED REINFORCING STEEL. FOR EPOXY COATED REINFORCING STEEL, SEE SPECIAL PROVISIONS.

[illegible]	828
[illegible]	16,864
TOTAL	16,988

LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB
SQ. FT. = 18,476

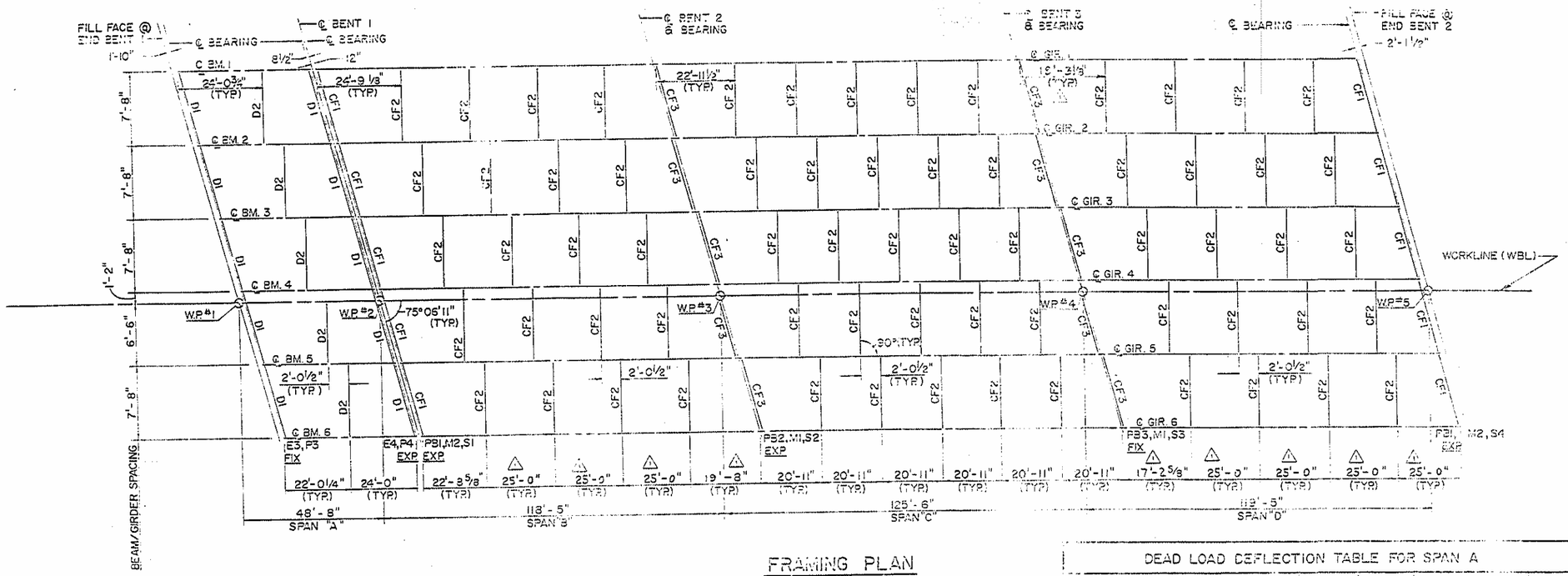
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
SUPERSTRUCTURE BILL OF MATERIAL

DWG. 13

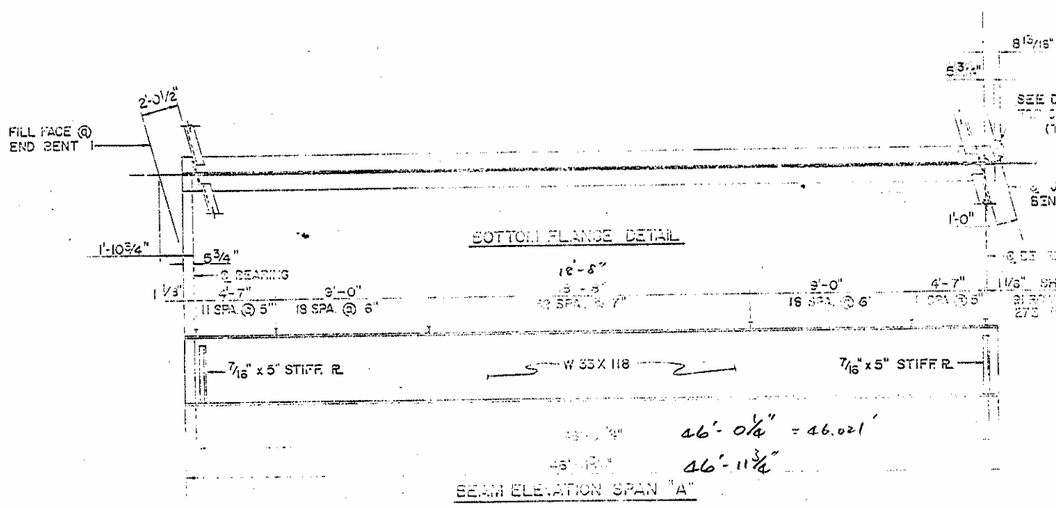
STD. NO. BOM 1

DRAWN BY: DAP	DATE: 5-92	CHECKED BY:	DATE:
REVIEWED BY:	DATE:	REVIEWED BY:	DATE:
DRAWN BY: W. [illegible]	DATE: 5/28/97		
REVIEWED BY: [illegible]	DATE: 5/28/97		

REVISED BY E.L.H.
REDRAWN 10-2-87



FRAMING PLAN



BOTTOM FLANGE DETAIL

BEAM ELEVATION SPAN "A"

DETAIL "A"

DEAD LOAD DEFLECTION TABLE FOR SPAN A	BM 1	BM 2	BM 3	BM 4	BM 5	BM 6
DEFLECTION DUE TO WT. OF STEEL	.006'	.006'	.006	.006'	.006'	.006'
DEFLECTION DUE TO WT. OF SLAB	.044'	.045'	.045'	.045'	.045'	.044'
DEFLECTION DUE TO WT. OF BARRIER RAIL	.003'	.003'	.003'	.003'	.003'	.003'
TOTAL DEAD LOAD DEFLECTION	.053'	.054'	.054'	.054'	.054'	.053'
REQUIRED CAMBER	*					*

* NO SHOP CAMBER REQUIRED, TURN NATURAL MILL CAMBER UP.
DEFLECTIONS ARE SHOWN IN DECIMALS OF A FOOT.
DEFLECTIONS ARE GIVEN AT MIDPOINT OF BEAM.

STRUCTURAL STEEL NOTES

ALL STRUCTURAL STEEL SHALL BE ASTM A709 GR. 50 STEEL WITH A MINIMUM YIELD STRENGTH OF 50,000 PSI UNLESS OTHERWISE NOTED ON THE PLANS.

ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL UNLESS OTHERWISE NOTED.

ALL FIELD CONNECTIONS TO BE 7/8" DIA. HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED.

CHARPY V-NOTCH TEST IS REQUIRED FOR I-BEAMS. SEE SPECIAL PROVISIONS.

CHARPY V-NOTCH TESTS WILL BE REQUIRED FOR TOP OR BOTTOM FLANGE PLATE WHICH FALLS WITHIN THE LIMITS SHOWN IN "GIRDER ELEVATION" ON SHT. 2 OF 4. ALSO, CHARPY V-NOTCH TESTS WILL BE REQUIRED FOR ALL WEB PLATES, WEB SPLICE PLATES AND FLANGE SPLICE PLATES. FOR CHARPY V-NOTCH TESTS, SEE SPECIAL PROVISIONS.

CAMBERED GIRDER LENGTHS SHALL BE ADJUSTED AND BEARINGS ARE TO BE PLACED ON THE CAMBERED BEAM SO AS TO BE ALIGNED WITH THE ANCHORS AFTER THE DEAD LOAD DEFLECTION HAS OCCURRED. SHOP PLANS SHALL BE PREPARED ACCORDINGLY.

FOR SURFACE PREPARATION & PROTECTION OF UNPAINTED STRUCTURAL STEEL, SEE SPECIAL PROVISIONS.

SHOP SPLICES ARE PERMITTED TO LIMIT THE MAXIMUM REQUIRED FLANGE PIECE LENGTHS TO 60 FEET AND WEB PIECE LENGTHS TO 45 FEET. PERMITTED FLANGE AND WEB SHOP SPLICES SHALL NOT BE LOCATED WITHIN 15 FEET OF MAXIMUM DEAD LOAD DEFLECTION, NOR WITHIN 15 FEET OF INTERMEDIATE BEARINGS OF CONTINUOUS UNITS. KEEP 2 FEET MINIMUM BETWEEN WEB AND FLANGE SHOP SPLICES.

STUDS ON GIRDERS MAY BE SHIFTED UP TO 1" IF NECESSARY TO CLEAR FLANGE SPLICE WELD.

END STIFFENERS SHALL BE PLUMB.

STIFFENERS ARE NOT REQUIRED ON THE OUTSIDE OF EXTERIOR BEAMS / GIRDERS.

BEARING STIFFENERS ARE TO BE PLACED NORMAL TO THE WEB OF THE GIRDER AND SHALL BE PLUMB.

△1 REVISED CROSSFRAME SPACING / BY: KGP

DWG. 14

PROJECT No. 8.2402101
WAKE COUNTY
STATION: 32+91.25-L-

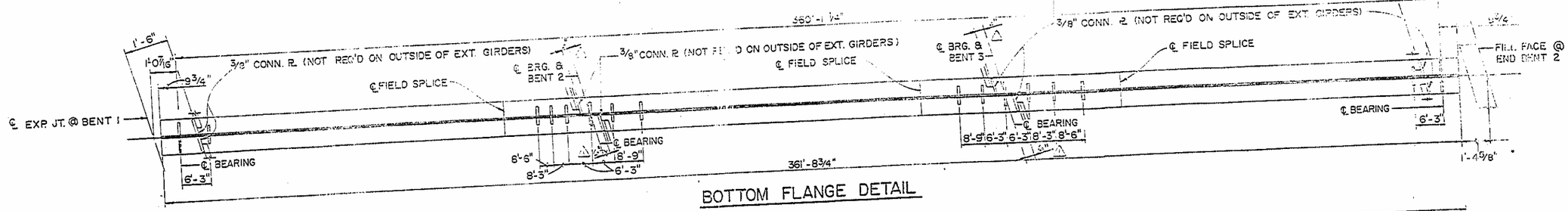
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
STRUCTURAL STEEL PLAN

MARCH 1992

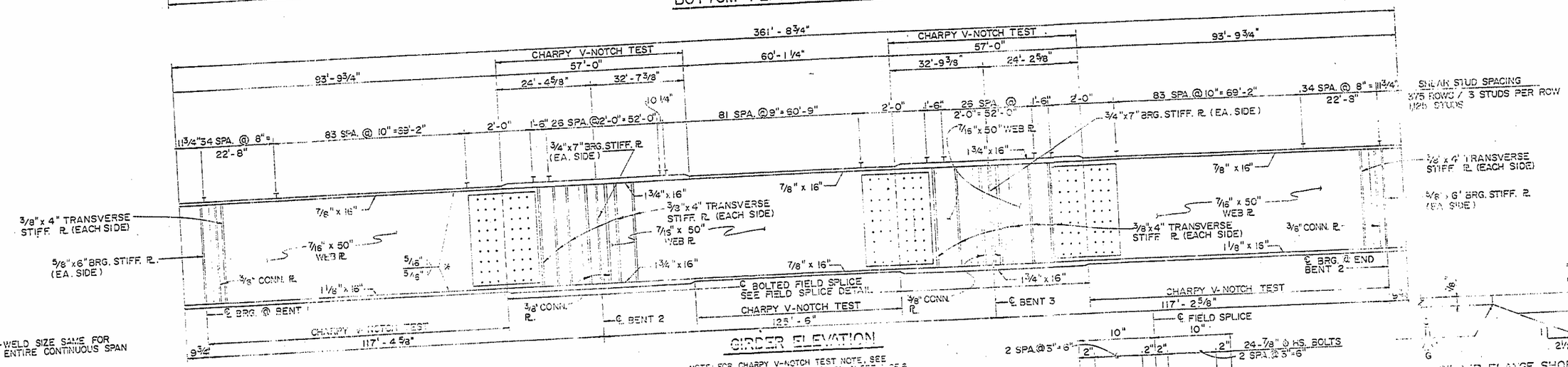
REVISIONS							
NO	BY	DATE	NO	BY	DATE		
△1	L. N. B.	1-20-93	3				TOTAL SHEETS
2			4				

DRAWN BY DAP DATE 5-92
CHECKED BY DATE 5-92

FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS RALEIGH, N.C.

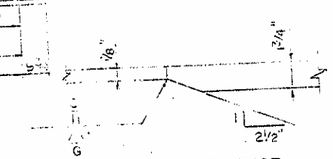


BOTTOM FLANGE DETAIL

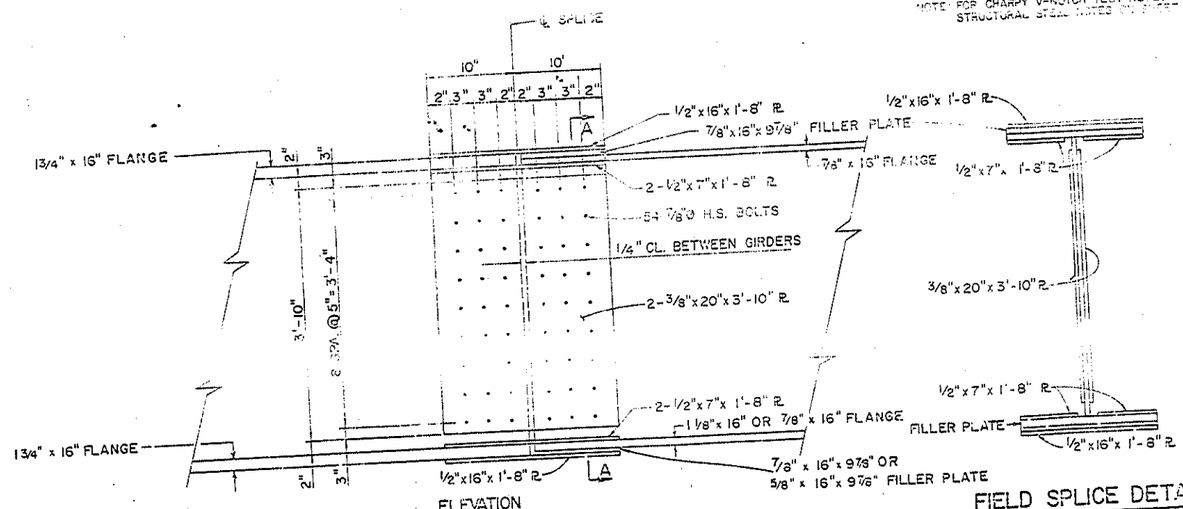


GIRDER ELEVATION

NOTE: FOR CHARPY V-NOTCH TEST NOTE, SEE STRUCTURAL STEEL NOTES

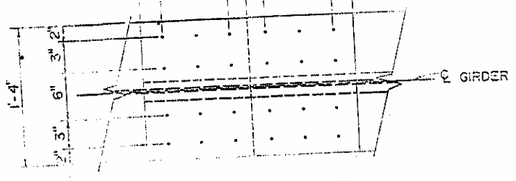


GIRDER FLANGE SHOP SPLICE DETAIL

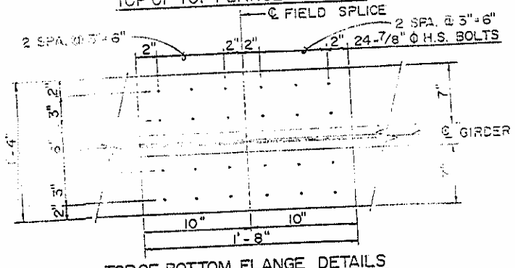


ELEVATION

FIELD SPLICE DETAILS



TOP OF TOP FLANGE DETAILS



TOP OF BOTTOM FLANGE DETAILS

⚠ REVISED CONNECTOR PLATE OFFSET @ BENT 2 & BENT 3 J. 31 1 1.3 3-1-93

DWG. 15

PROJECT NO. 8.2602101
WAKE COUNTY
STATION: 32+91.25 -L-

SHT. 2 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

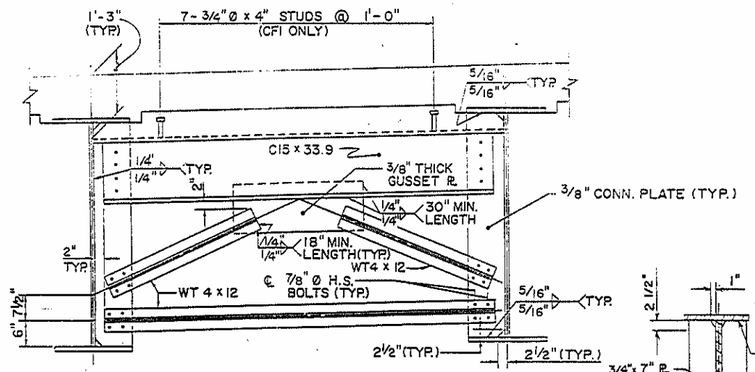
STRUCTURAL STEEL AND FIELD SPLICE DETAILS
SPANS B, C, & D

MARCH

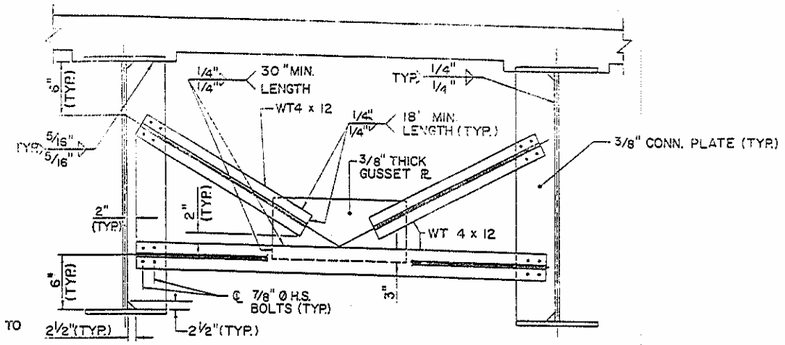
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1	ECP	3-1-93	3		
2			4		

DRAWN BY DAP DATE 5-92
CHECKED BY DATE 5-92

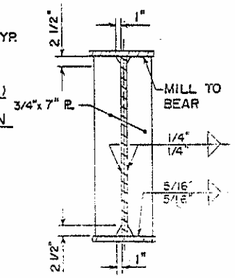
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS RALEIGH, N.C.



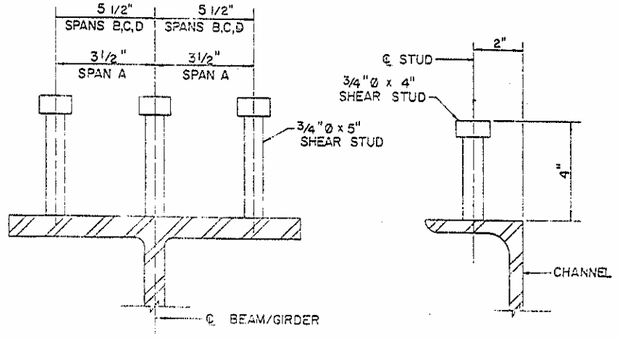
DETAIL OF END BENT & INTERIOR BENT DIAPHRAGM CONNECTION
(CF1 & CF3, SPANS "B" thru "D")



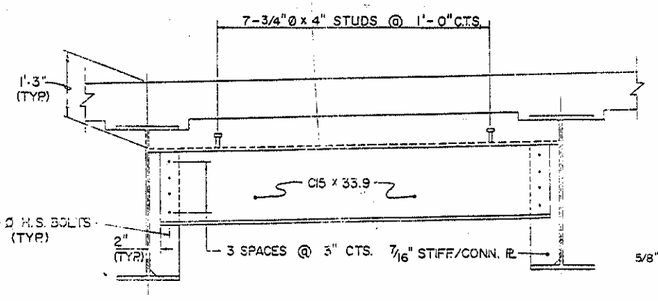
DETAIL OF INTERMEDIATE DIAPHRAGM CONNECTION
(CF2, SPANS "B" thru "D")



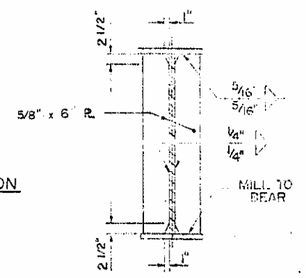
BEARING STIFFENER
(AT BENTS 2 & 3)



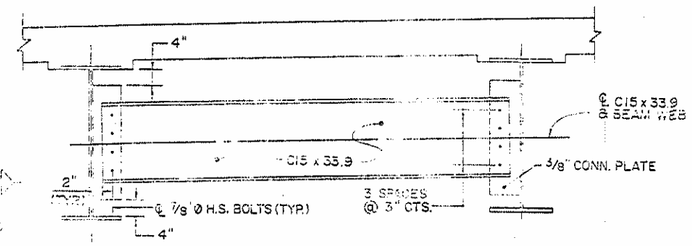
SHEAR STUD DETAILS



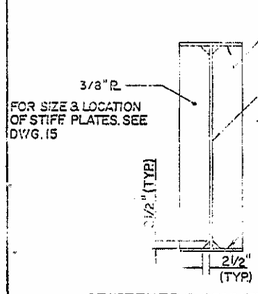
DETAIL OF END BENT & INTERIOR BENT DIAPHRAGM CONNECTION
(D1, SPAN "A")



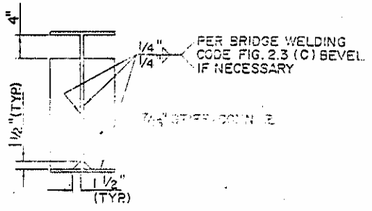
BEARING STIFFENER
(AT BENT 1 AND BENT 4 (TYP.))



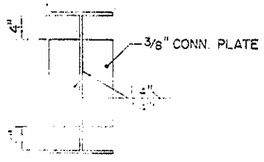
DETAIL OF INTERMEDIATE DIAPHRAGM CONNECTION
(D2, SPAN "A")



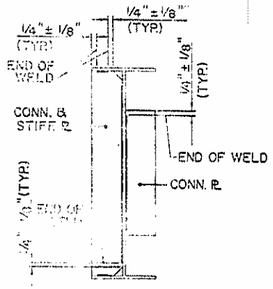
STIFFENER & CONNECTOR PLATE
FOR CF1, CF2, CF3 & TRANSVERSE STIFF.



STIFFENER/CONNECTOR PLATE
BENT & END BENT DIAPHRAGMS (D1)
(SPAN A)

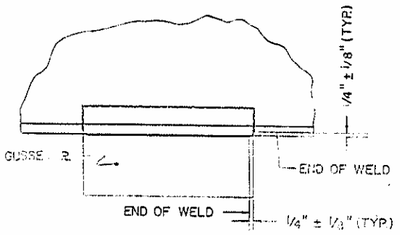


CONNECTOR PLATE
INTERMEDIATE DIAPHRAGMS (D2)

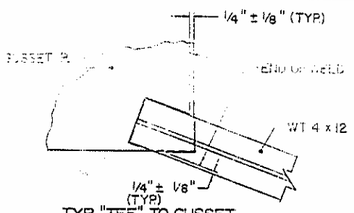


TYPICAL STIFF. OR CONN. PLATE CONNECTIONS

WELD TERMINATION DETAIL



GUSSET PLATE CONNECTION (TYP.)



TYP "TEE" TO GUSSET PLATE CONNECTION

PROJECT NO. 8.2402101
WAKE COUNTY
STATION: 32+91.25 -L-

SHT. 3 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
STRUCTURAL STEEL
DETAILS

MARCH 1992

REVISIONS						
NO.	BY	DATE	NO.	BY	DATE	SHEET NO. 5767
1			3			TOTAL SHEETS 532
2			4			

DRAWN BY DAP DATE 5-92
CHECKED BY DATE 5-92

FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS RALEIGH, N.C.

DWG. 16

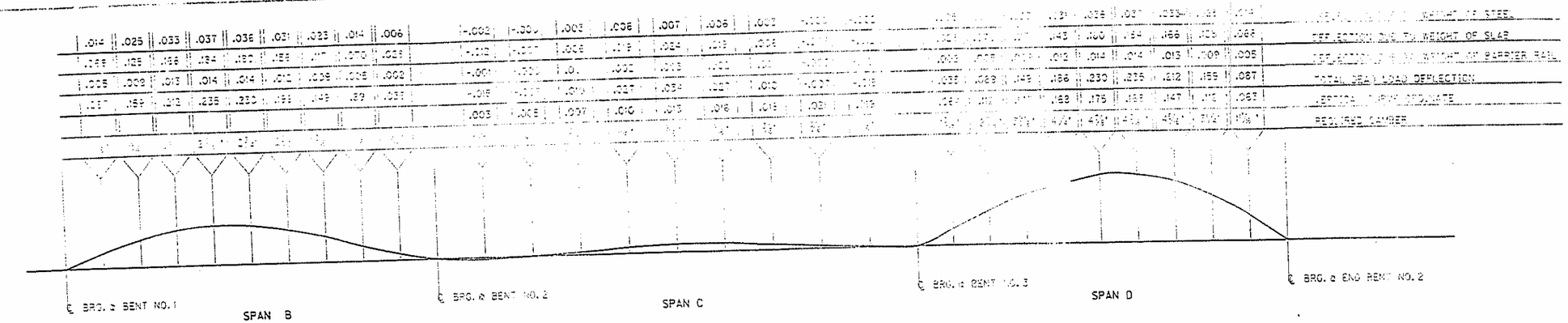
NOTES:

VALUES SHOWN ARE AT TENTH POINTS BETWEEN ℄ OF BEARINGS.

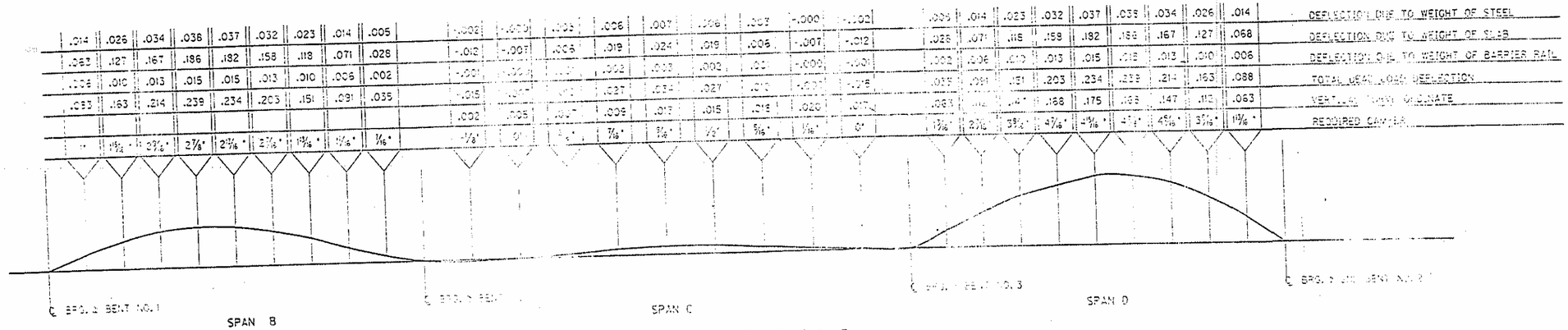
[illegible] ARE [illegible] DECIMALS OF A FOOT.

SLOPE [illegible] THE BEST CAMBER LINE.

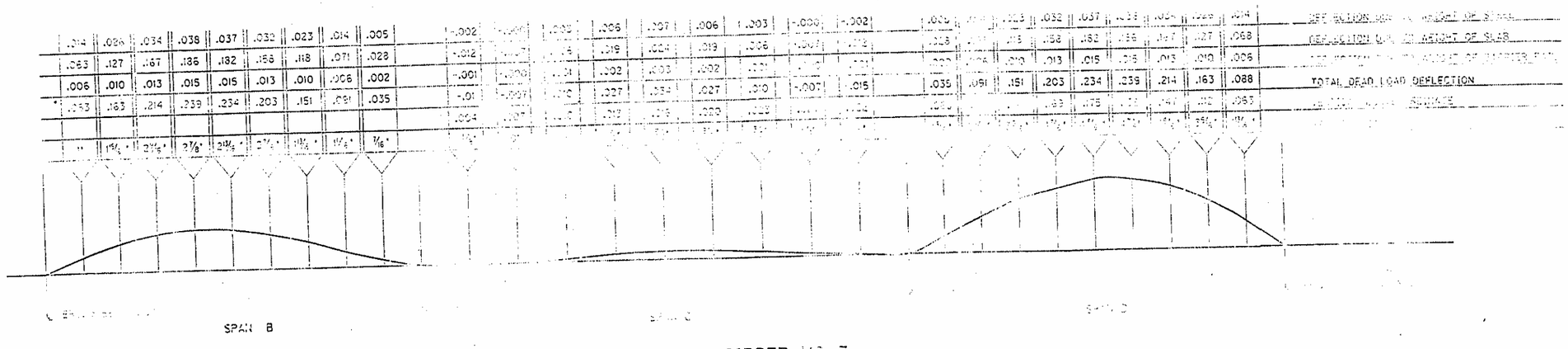
[illegible] UPWARD DEFLECTION OR DOWNWARD CAMBER.



GIRDER NO. 1



GIRDER NO. 2



GIRDER NO. 3

SCHEMATIC CAMBER ORDINATES

DWG. 17

DRAWN BY DAP DATE 7-92
CHECKED BY [illegible] DATE 7-[illegible]

FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS RALEIGH, N.C.

PROJECT NO. [illegible]
WAKE COUNTY
STATION 32+51.25 -L-
SHT. 4 OF 6

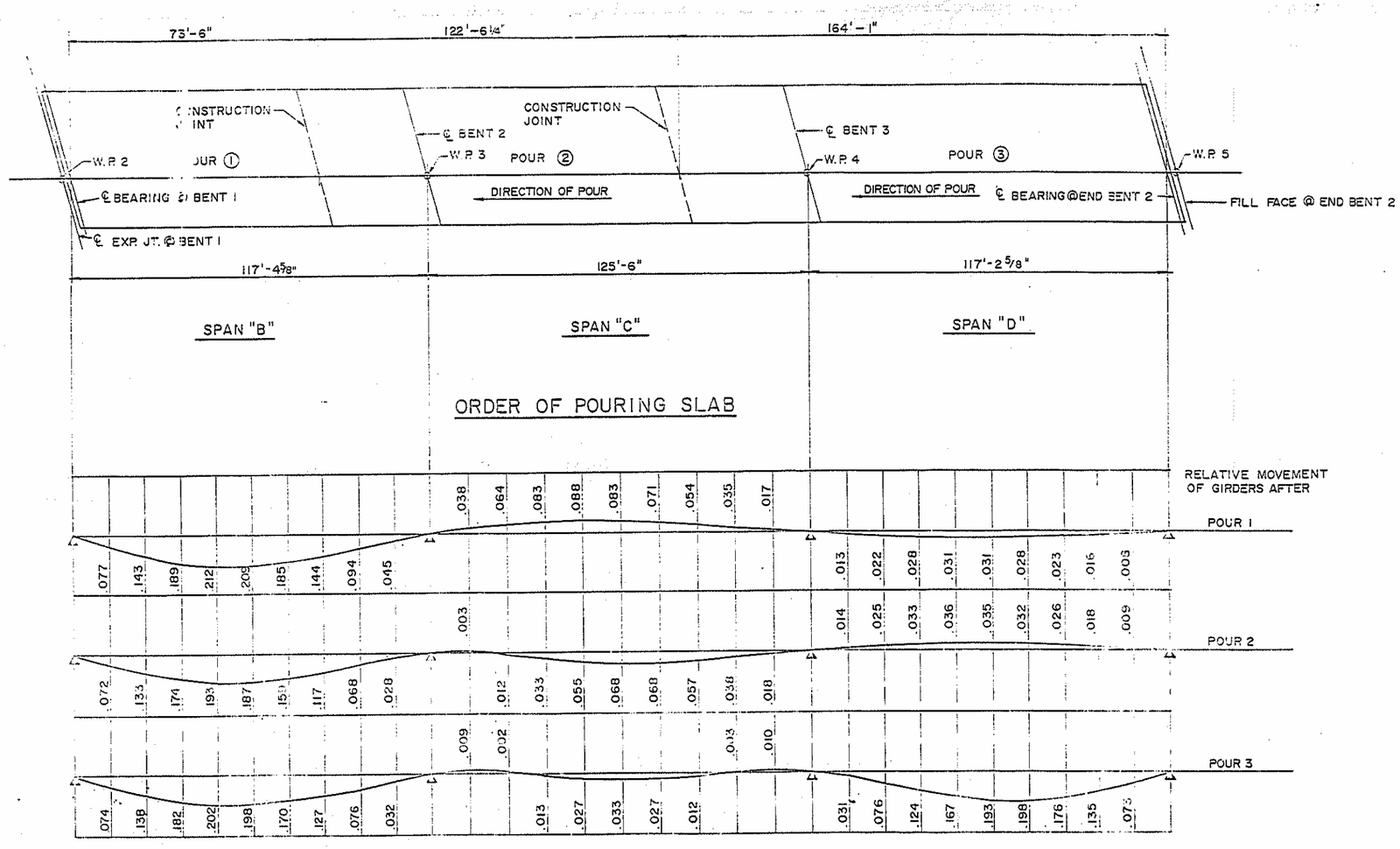
STATE OF NORTH CAROLINA
DEPARTMENT OF [illegible]
SUPERSTRUCTURE
STRUCTURE [illegible]
[illegible] & CAMBER FOR SPANS
B, C, & D
JUNE

REVISIONS

NO.	BY	DATE	NO.	BY	DATE

SHEETS
TOTAL SHEETS 22

| | | |



DEFLECTION OF GIRDERS BY POURS

NOTE: DEFLECTION SHOWN IN DECIMALS OF ONE FOOT. VALUES AT TENTH POINTS BETWEEN BEARINGS. (INTERIOR BEAMS 2-5)

PROJECT NO. 8.2402101

WAKE COUNTY

STATION: 32+91.25 -L-

SHT 6 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

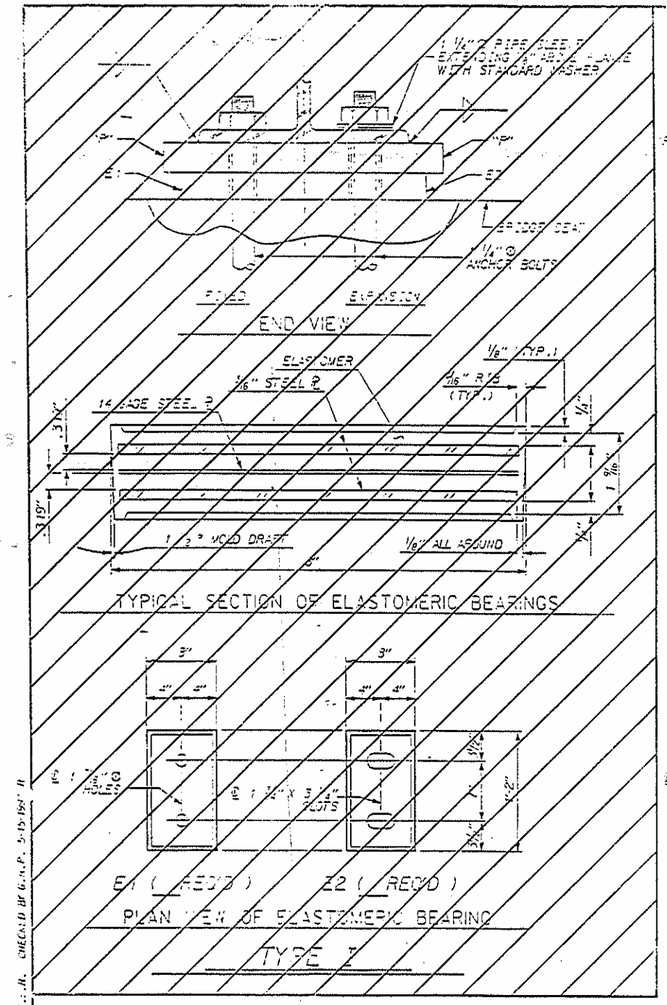
POUR DEFLECTIONS

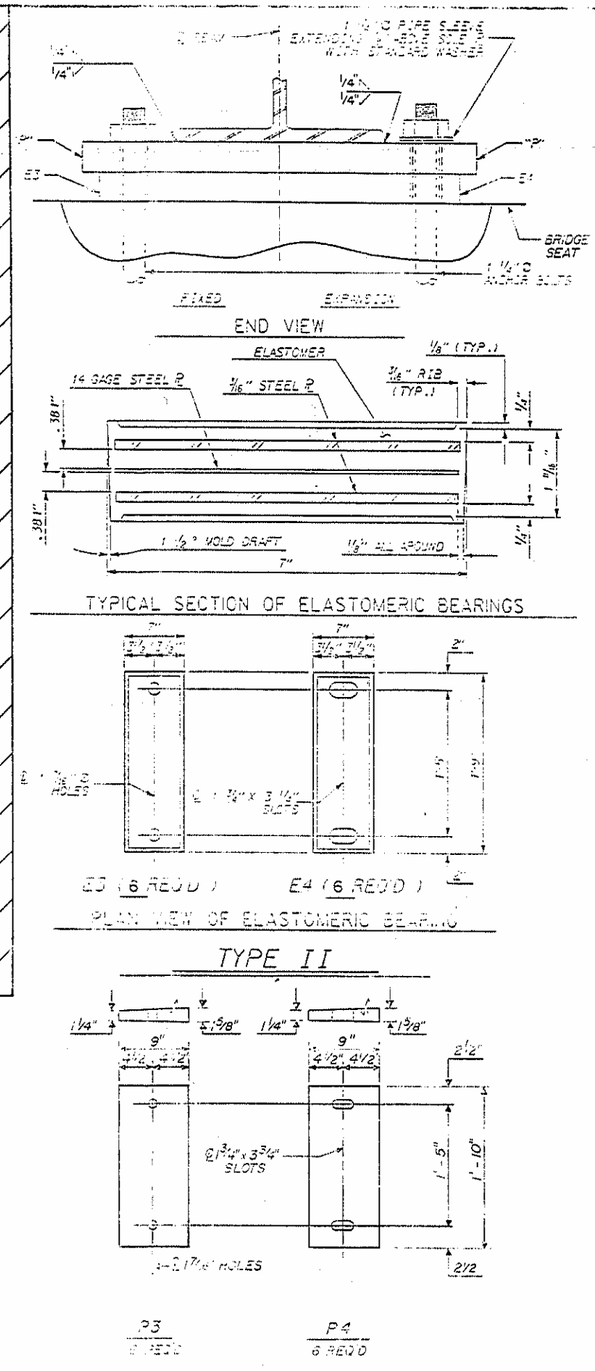
REVISIONS									SHEET NO.
NO.	BY	DATE	NO.	BY	DATE				S-275
1			3						TOTAL SHEETS
2			4						322

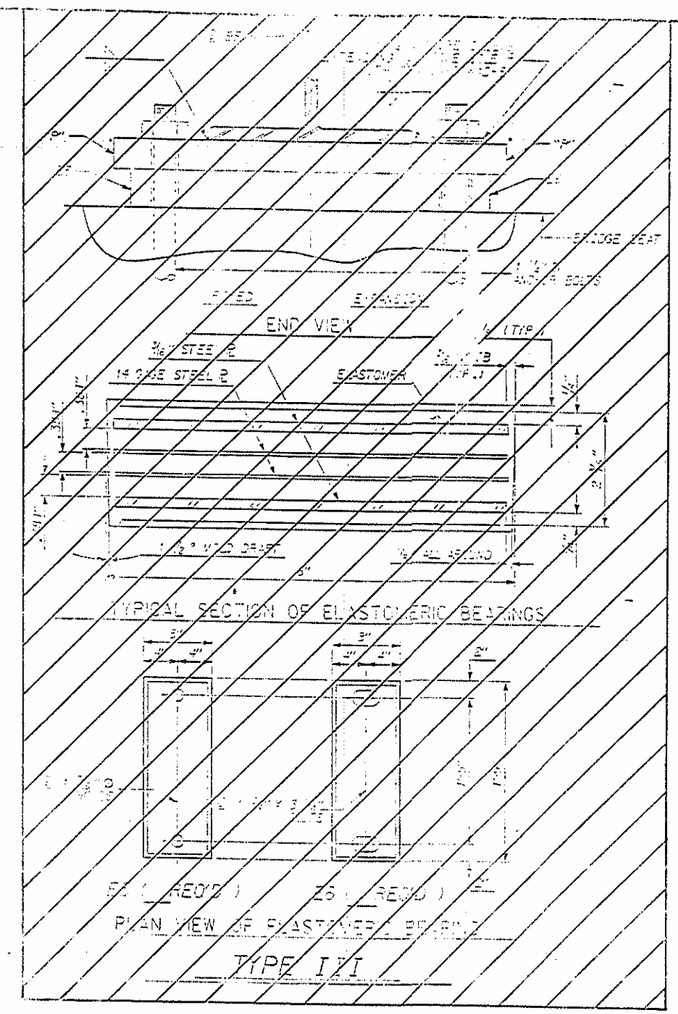
DRAWN BY DAP DATE 5-92
CHECKED BY [illegible] DATE 5-92

FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS RALEIGH, N.C.

DWG. 19







NOTES

FOR ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

AT FIXED POINTS ON SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED PROPERLY TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREADS OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A [illegible] TO PREVENT [illegible].

THE 1 1/4" Ø 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.

THE PAYMENT FOR THE PIPE SLEEVES SHALL BE INCLUDED IN THE GENERAL PAY ITEMS.

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

FOR A.S.T.M. A588 STRUCTURAL STEEL, SOLE PLATE SHALL BE A.S.T.M. A588 AND SHALL NOT BE GALVANIZED. ANCHOR BOLTS AND NUTS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

WHITE LEAD AND TALLOW SHALL NOT BE APPLIED TO THE SURFACE OF THE SOLE PLATE IN CONTACT WITH THE ELASTOMERIC BEARING.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

-LOAD RATINGS-

	MAX. D. L. + L.
TYPE I	[illegible]
TYPE II	91.92 K
TYPE III	[illegible]
TYPE IV	[illegible]

PROJECT NO. 3.2402101

WAKE COUNTY

STATION: 32 + 91.25 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION

STANDARD
ELASTOMERIC BEARING
DETAILS
(STEEL SUPERSTRUCTURE)

FEB. 1988

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-271
						TOTAL SHEETS
						272

DWG. 20

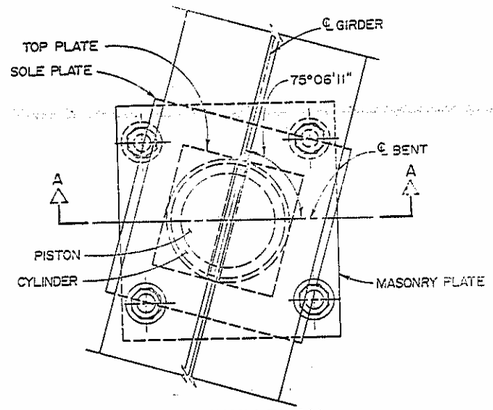
STD. NO. S8

ASSEMBLED BY: DAP DATE: 5-92
CHECKED BY: [illegible] DATE: 5-92
DRAWN BY: [illegible] DATE: NOV. 1987
CHECKED BY: [illegible] DATE: [illegible]

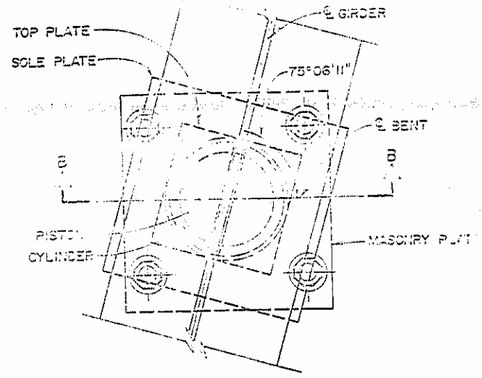
SPECIAL

STANDARD

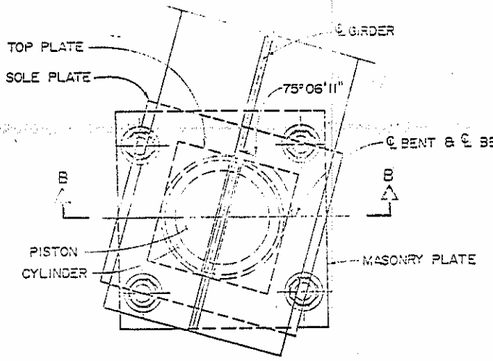
SOLE PLATE DETAILS ("P")



CUT - AWAY PLAN
(BENT 3)



CUT - AWAY PLAN
(BENT 2)



CUT - AWAY PLAN
(BENT 1 & END BENT 2)

NOTES:

1) "FOR POT BEARINGS, SEE SPECIAL PROVISIONS."

2) "BRIDGE SEAT ELEVATIONS ARE BASED ON AN ASSUMED POT BEARING DEPTH AS SHOWN. THE CONTRACTOR SHALL ADJUST THE BRIDGE SEAT ELEVATIONS IF THE POT BEARING DEPTH VARIES FROM THE ASSUMED DEPTH SHOWN. PLANS FOR ANY ADJUSTMENTS SHALL BE APPROVED BEFORE ANY WORK IS BEGUN ON THE BENT."

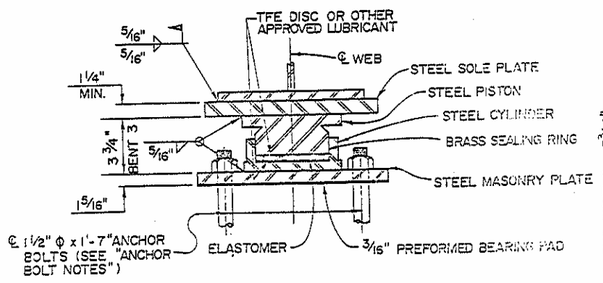
3) "AT ALL POINTS OF SUPPORT IN SPANS B, C & D, NUTS FOR ANCHOR BOLTS SHALL BE TIGHTENED FINGER TIGHT AND GIVEN AN ADDITIONAL 1/4 TURN. THE THREAD OF THE NUT AND BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL."

4) "WHEN WELDING THE SOLE PLATE TO THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE BEARING DOES NOT EXCEED 250° F. TEMPERATURES ABOVE THIS MAY DAMAGE THE TFE OR ELASTOMER."

5) SOLE PLATES SHOULD BE WELDED TO GIRDER FLANGES AND ANCHOR BOLTS SHOULD BE GROUTED BEFORE FALSEWORK IS PLACED.

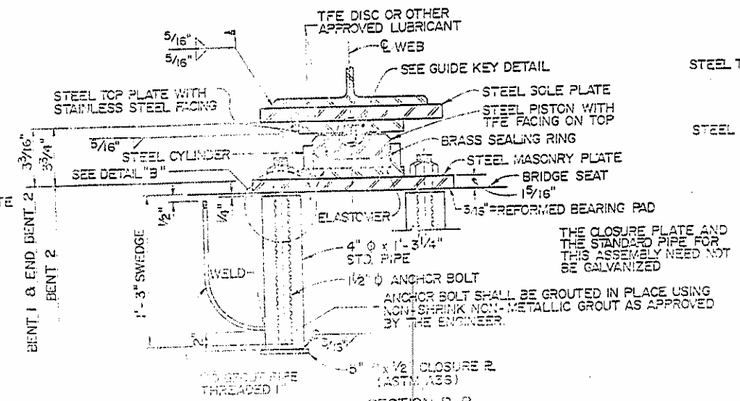
6) "FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS."

7) "ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH & STRAIGHT."



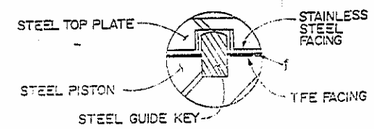
SECTION A-A
FIXED

POT BEARING DETAIL
(BENT 3) PB3 (6 REQUIRED)

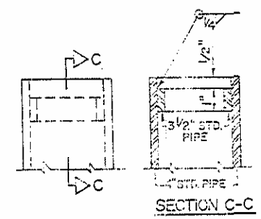


SECTION B-B
EXPANSION

POT BEARING DETAIL
(SPAN "B" BENT 1, BENT 2, END BENT 2)
PB1 (12 REQ'D), PB2 (6 REQ'D)

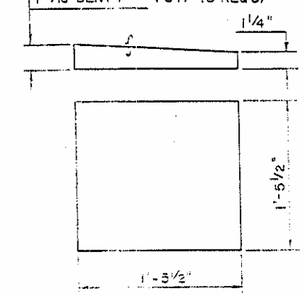


GUIDE KEY DETAIL



SECTION C-C

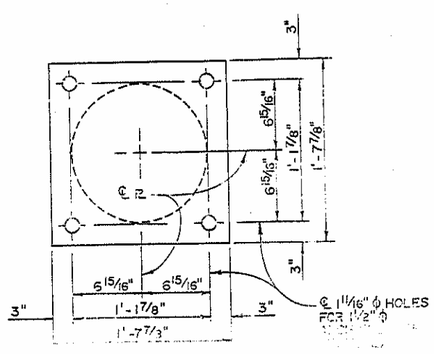
DETAIL "B"
(-) NEGATIVE OFFSET SHOWN



PLAN

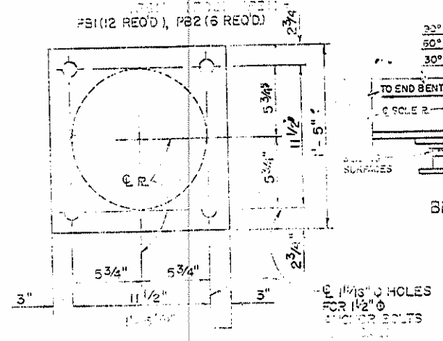
SOLE PLATE DETAILS ("S")

TABLE FOR LOADS AND MOVEMENTS					
BEARING	LOCATION	LOAD IN KIPS			TOTAL MOVEMENT (TYPICAL)
		DEAD	LIVE	TOTAL	
EXP.	BENT 1	68	47	115	2 1/4"
EXP.	BENT 2	198	79	277	1 3/8"
FIX	BENT 3	198	79	277	0
EXP.	END BENT 2	68	47	115	1 1/8"



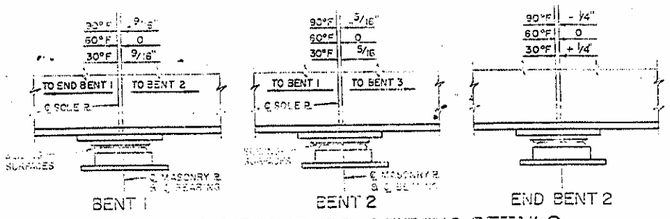
PLAN

MASONRY PLATE DETAIL (M1)
BENT 2 & BENT 3 (12 REQ'D.)



PLAN

MASONRY PLATE DETAIL (M2)
BENT 1 & END BENT 2 (12 REQ'D.)



TEMPERATURE SETTING DETAILS

TABLE FOR PLATE SETTING DATA (EXPANSION POT BEARINGS)				
TEMPERATURE OF SETTING	[illegible]	60° F	90° F	*
BENT 1	5/16"	0	- 9/16"	-1/8"
BENT 2	5/16	0	- 5/16"	0
END BENT 2	- 1/4"	0	+ 1/4"	-1/8"

* CORRECTION FOR END ROTATION DUE TO WEIGHT OF SLAB AND COMPOSITE DEAD LOAD.

PROJECT No. B.2402101
WAKE COUNTY
STATION: 32 + 91.25 -L-

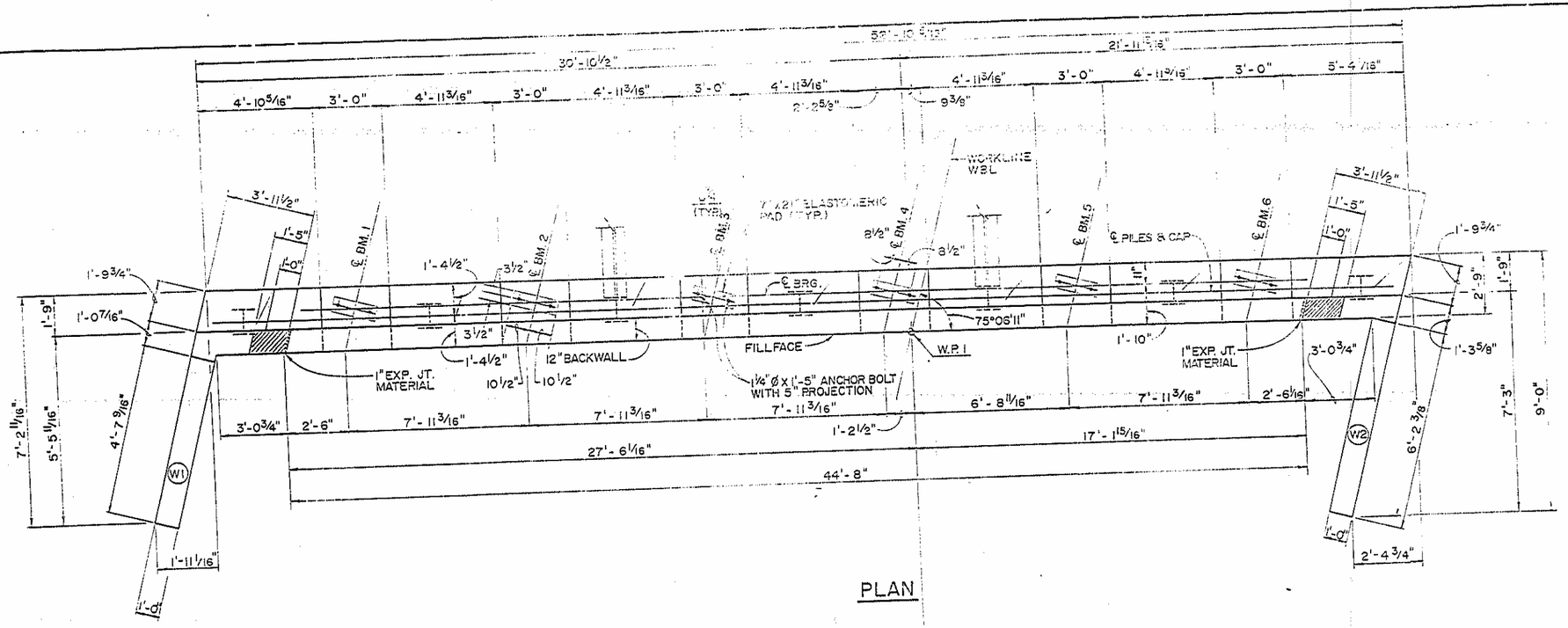
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
POT BEARING
SPANS B, C & D

REVISIONS								SHEET NO.
NO.	BY	DATE	NO.	BY	DATE			S-272
2			3					TOTAL SHEETS 32
			4					

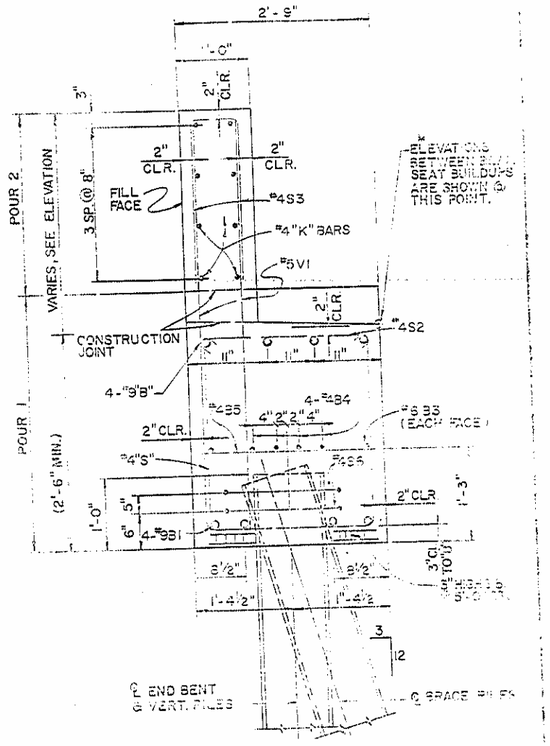
DWG. 21

DRAWN BY DAP DATE 5-92
CHECKED BY [illegible] DATE [illegible]
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS RALEIGH, N.C.

NOTES:
FOR PILE SPLICE DETAILS SEE DWG. 32
FOR TEMPORARY DRAINAGE @ END BENT SEE DWG. 32
FOR WINGWALL BLOCKOUT DETAIL SEE DWG. 32
FOR PIPE DRAIN DETAILS SEE DWG. 32
FOR ADDITIONAL NOTES SEE DWG. 32.

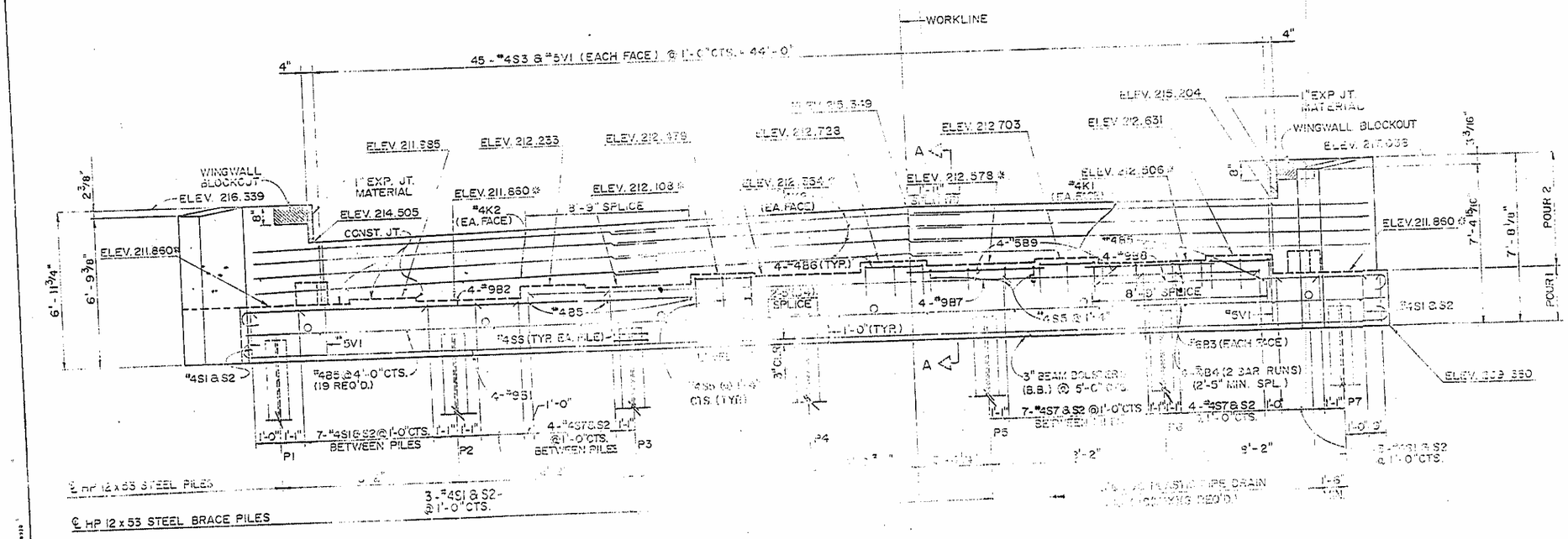


PLAN



SECTION A-A

NOTE:
TOP OF PILE ELEVATION 210.860 TYP. FOR ALL PILES END BENT 1



ELEVATION

PROJECT NO. 2.2507.01
WAKE COUNTY
STATION: 32 + 91.25 - L -

SHT. 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
SUBSTRUCTURE
END BENT 1

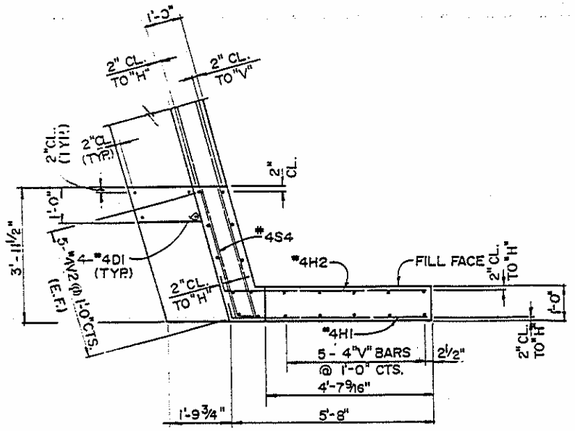
MARCH

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

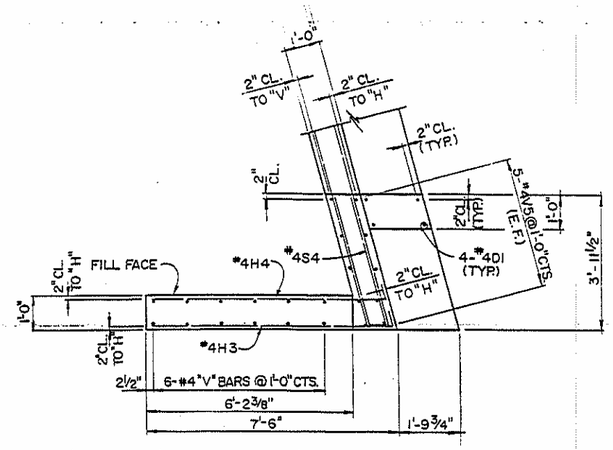
DWG. 22

DRAWN BY SLN DATE MAY 92
CHECKED BY DATE 5-29-92

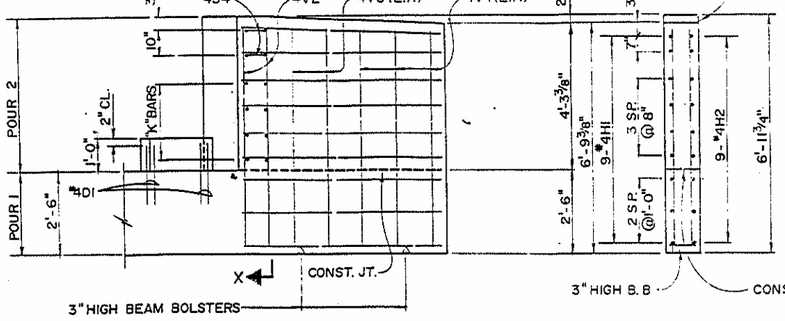
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS RALEIGH, N.C.



PLAN
WINGWALL-W1

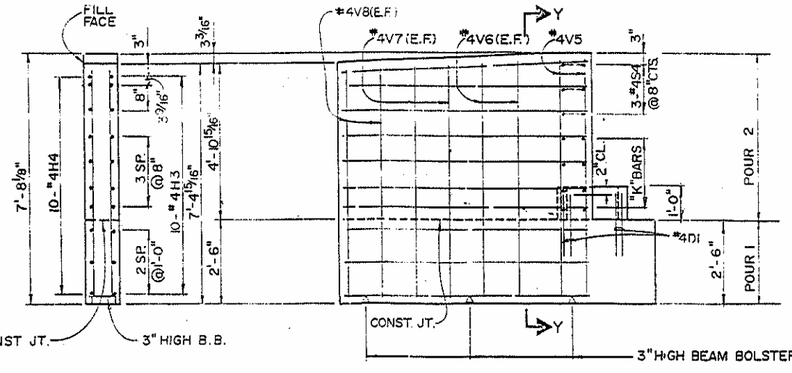


PLAN
WINGWALL-W2



ELEVATION
WINGWALL-W1

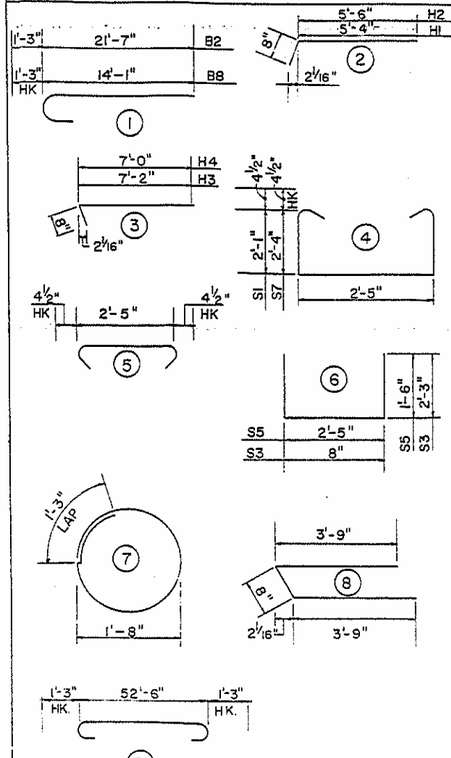
SECTION X-X



SECTION Y-Y

ELEVATION
WINGWALL-W2

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

END BENT 1

BAR	#	SIZE	TYPE	LEN.	WGT
B1	4	9	9	55'-0"	748
B2	4	9	1	22'-10"	311
B3	2	6	STR	52'-6"	158
B4	8	4	STR	27'-5"	147
B5	19	4	STR	2'-5"	31
B6	16	4	STR	2'-8"	29
B7	4	9	STR	34'-5"	46
B8	4	9	1	15'-4"	20
B9	8	5	STR	6'-0"	50
D1	8	4	STR	2'-0"	11
H1	9	4	2	6'-0"	36
H2	9	4	2	6'-2"	37
H3	10	4	3	7'-10"	52
H4	10	4	3	7'-8"	51
K1	8	4	STR	20'-2"	108
K2	16	4	STR	18'-0"	192
S1	16	4	4	7'-4"	78
S2	45	4	5	3'-2"	95
S3	45	4	6	5'-2"	155
S4	5	4	8	8'-2"	27
△ S5	20	4	6	5'-5"	72
S6	14	4	7	6'-6"	61
S7	29	4	4	7'-10"	152
△ V1	90	5	STR	4'-11"	462
V2	10	4	STR	6'-6"	43
V3	4	4	STR	6'-6"	17
V4	6	4	STR	6'-4"	25
V5	10	4	STR	7'-3"	48
V6	4	4	STR	7'-2"	19
V7	4	4	STR	7'-1"	19
V8	4	4	STR	7'-0"	19

TOTAL QUANTITIES FOR END BENT 1

ITEM			TOTAL
REINFORCING STEEL		LBS.	3930 △
CLASS "A" CONCRETE	POUR 1	CU. YDS.	16.8
CLASS "A" CONCRETE	POUR 2	CU. YDS.	7.8
CLASS "A" CONCRETE	TOTAL	CU. YDS.	24.6
HP 12 X 53 STEEL PILES		NO.	7
HP 12 X 53 STEEL PILES		LIN. FT.	350

PROJECT NO. 8.2402101
WAKE COUNTY
STATION: 32+91.25 -L-

SHT. 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1

MAY 1992

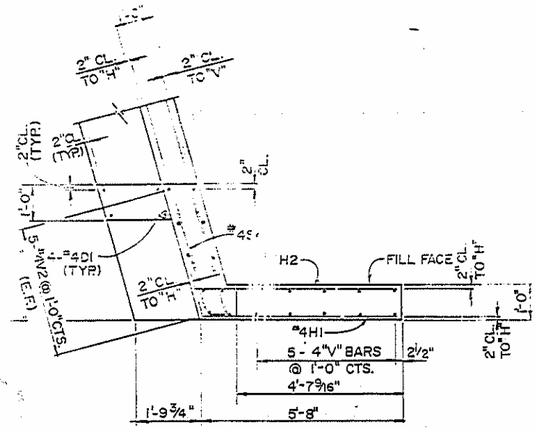
REVISIONS							SHEET NO.
NO.	BY	DATE	NO	BY	DATE		5-274
△	CVC	11-7-94	3				TOTAL SHEETS
2			4				332

DRAWN BY DAP DATE 5-92
CHECKED BY DATE 5-92

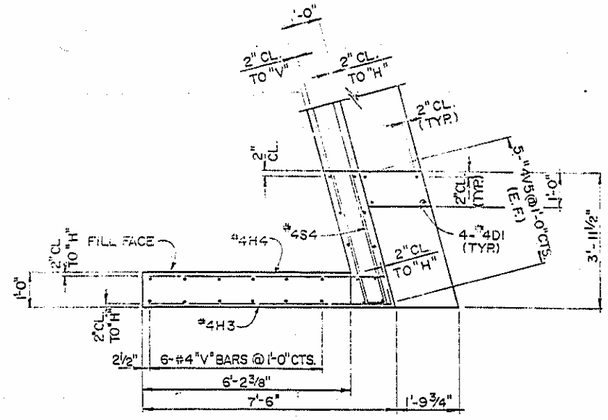
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS RALEIGH, N.C.

△ CHANGE OF QUAN. FOR S5 & V1.

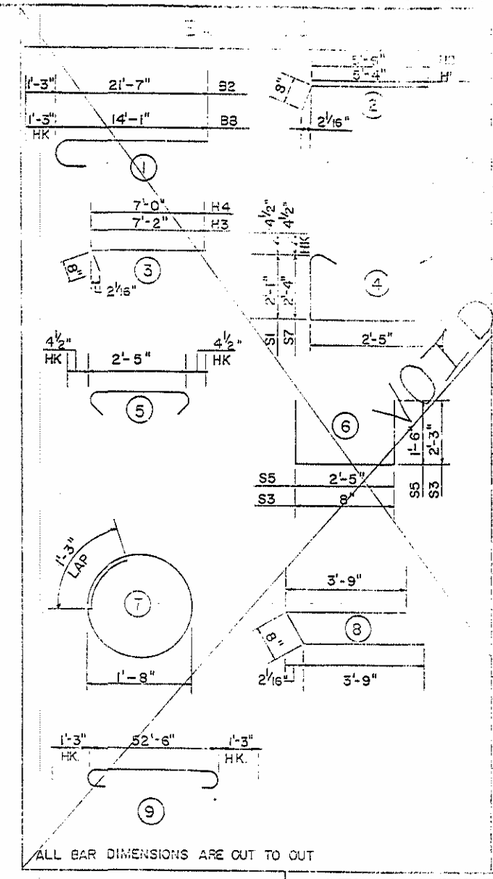
DWG. 23



PLAN
WINGWALL-W1



PLAN
WINGWALL-W2



BILL OF MATERIAL

END BENT 1

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B3	2	6	STR	52'-6"	158
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B6	16	4	STR	2'-8	29
B7	4	9	STR	54'-5"	463
B8	4	9	1	15'-4"	209
B9	8	5	STR	6'-0"	50
D1	8	4	STR	2'-0"	11
H1	9	4	2	6'-0"	36
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V1	45	5	STR	4'-11"	231
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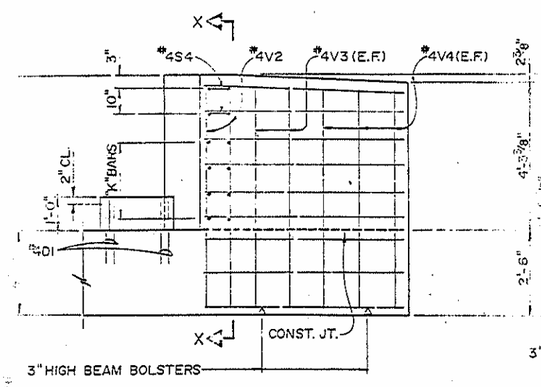
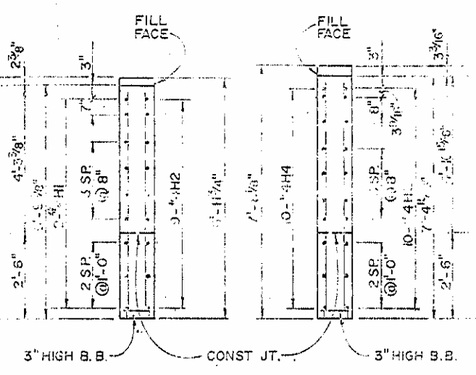
V4	6	4	STR	6'-4"	25
V5	10	4	STR	7'-3"	48
V6	4	4	STR	7'-2"	19
V7	4	4	STR	7'-1"	19
V8	4	4	STR	7'-0"	19

TOTAL QUANTITIES FOR END BENT 1

ITEM			TOTAL
REINFORCING STEEL		LBS.	3678
CLASS "A" CONCRETE	POUR 1	CU. YDS.	16.8
CLASS "A" CONCRETE	POUR 2	CU. YDS.	7.8
CLASS "A" CONCRETE	TOTAL	CU. YDS.	24.6
HP 12 X 53 STEEL PILES		NO.	7
HP 12 X 53 STEEL PILES		LIN. FT.	350

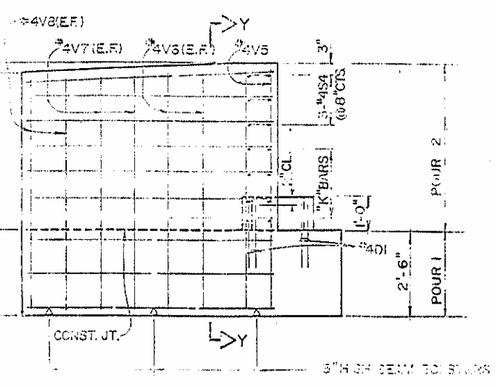


ELEVATION
WINGWALL-W1



SECTION X-X

SECTION Y-Y



ELEVATION
WINGWALL-W2

PROJECT NO. 8.2402101

WAKE COUNTY

STATION: 32+91.25 -L-

SHT 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

FILE OF

SUBSTRUCTURE
END BENT 1

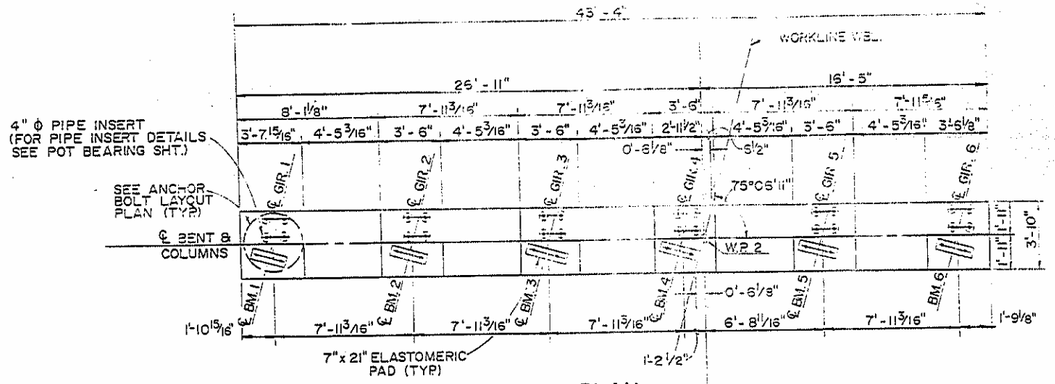
MAY 1992

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

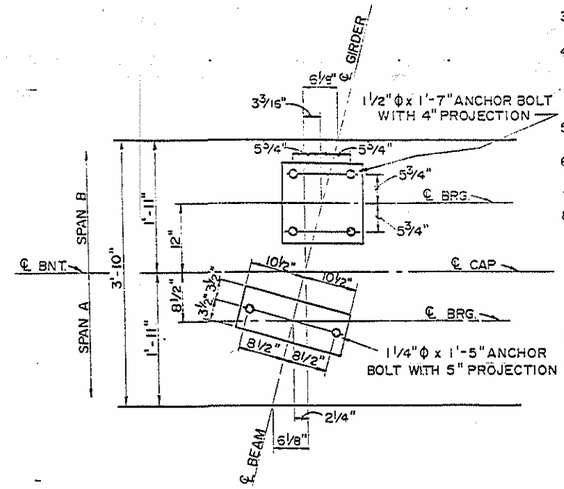
DWG. 23

DAP DATE 5-92
DATE 5-92

FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS RALEIGH, N.C.



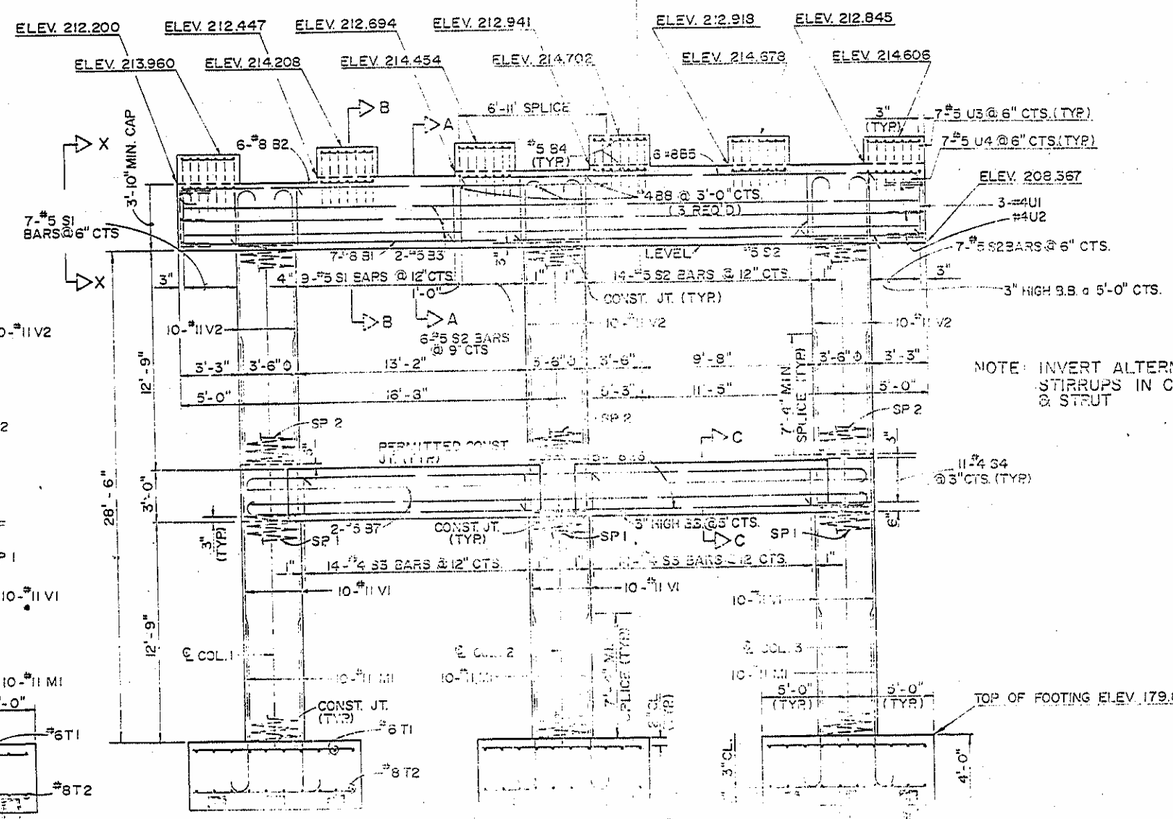
PLAN



ANCHOR BOLT LAYOUT PLAN

NOTES

1. HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
2. FOR SPIRAL COLUMN REINFORCING STEEL, SEE SPECIAL PROVISIONS.
3. FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.
4. 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.
5. STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
6. DO NOT APPLY EPOXY PROTECTIVE COATING UNDER ELASTOMERIC BEARING PADS.
7. FOR PILE SPLICE DETAILS SEE DWG. 32
8. BRIDGE SEAT ELEVATIONS ARE BASED ON AN ASSUMED POT BEARING DEPTH OF 3 9/16". THE CONTRACTOR SHALL ADJUST THE BRIDGE SEAT ELEVATIONS IF THE POT BEARING DEPTH VARIES FROM THE ASSUMED DEPTH OF 3 9/16" PLANS FOR ANY ADJUSTMENTS SHALL BE APPROVED BEFORE ANY WORK IS BEGUN ON THE BENT.
9. COLUMN STEEL MAY BE SHIFTED AS NECESSARY TO CLEAR REINFORCING STEEL.
10. FOR POT BEARING AND BEAM SEAT NOTE, SEE NOTE 2, DWG. 21.

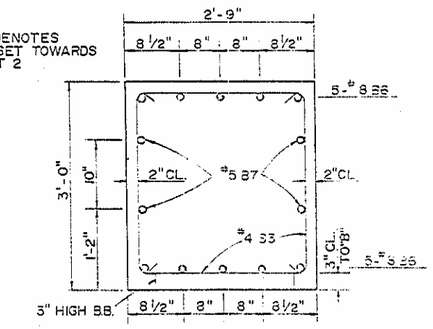


END VIEW

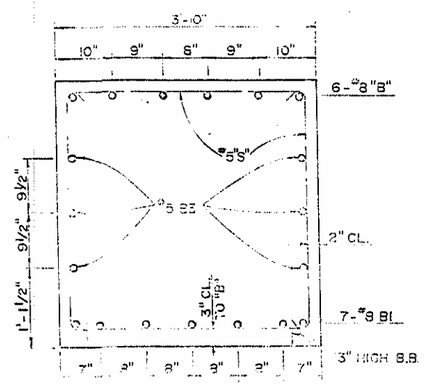
ELEVATION

NOTE: INVERT ALTERNATE STIRRUPS IN CAP @ STRUT

NOTE: (+) DENOTES OFFSET TOWARDS BENT 2



SECTION C-C



SECTION A-A

PROJECT NO. 8.2402101

WAKE COUNTY

STATION: 32+91.25 -L-

SHT. 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
BENT 1

APRIL

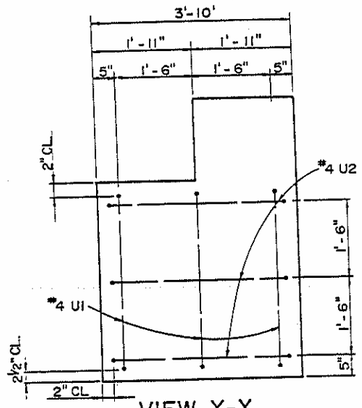
REVISIONS						
NO.	BY	DATE	NO	BY	DATE	
1			3			
2			4			

SHEET NO. 5-275
TOTAL SHEETS 332

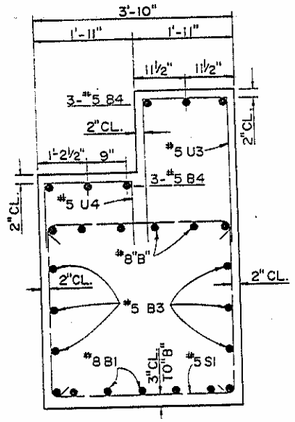
DWG. 24

DRAWN BY DAP DATE 5-92
CHECKED BY [illegible] DATE 5-92

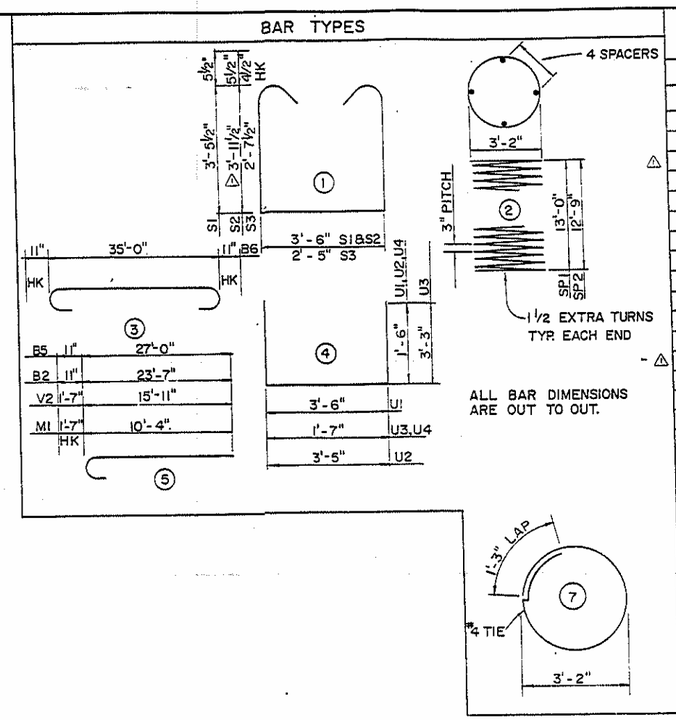
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS RALEIGH, N.C.



VIEW X-X



SECTION B-B



BILL OF MATERIAL

BENT 1

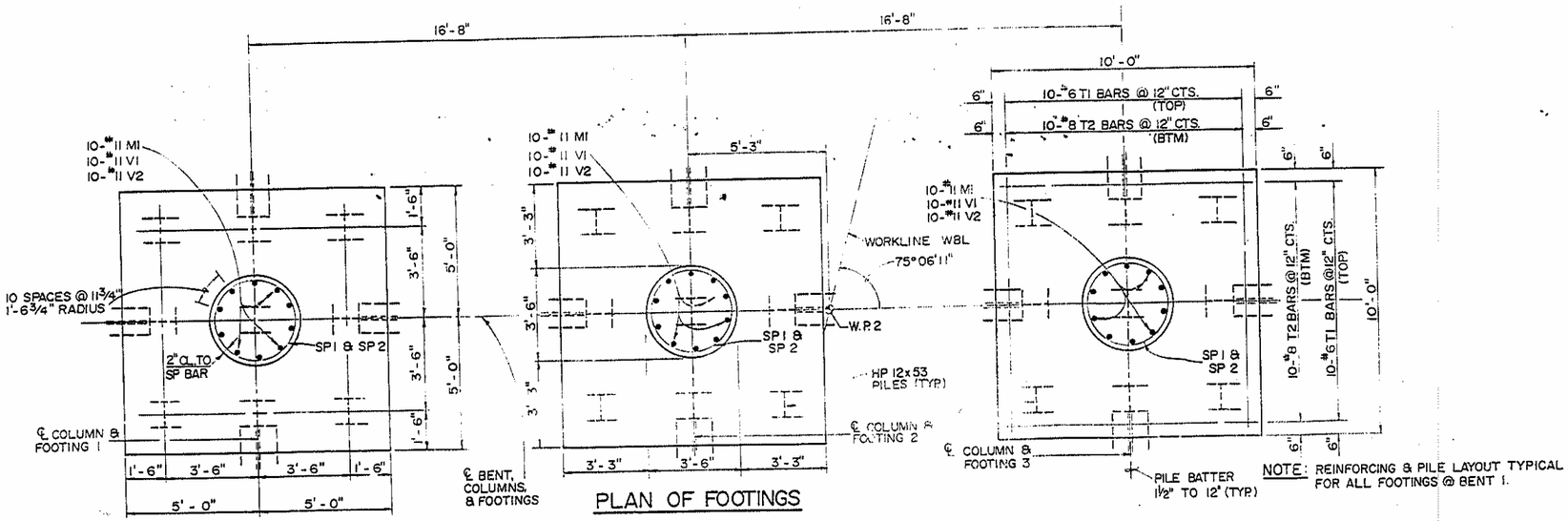
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	7	8	STR.	43'-0"	804
B2	6	8	5	24'-6"	392
B3	6	5	STR.	43'-0"	269
B4	27	5	STR.	3'-2"	89
B5	6	8	5	27'-11"	447
B6	10	8	3	36'-10"	983
B7	4	5	STR.	35'-0"	146
B8	3	4	STR.	3'-6"	7
S1	16	5	1	11'-4"	189
S2	27	5	1	12'-4"	347
S3	28	4	1	8'-5"	157
S4	33	4	7	11'-3"	248
M1	30	11	5	11'-11"	1899
V1	30	11	STR.	23'-5"	3732
V2	30	11	5	17'-6"	2789
SP1	3	—	2	540'-2"	1082
SP2	3	—	2	530'-4"	1063
U1	6	4	4	6'-6"	26
U2	6	4	4	6'-5"	26
U3	42	5	4	8'-1"	354
U4	42	5	4	4'-7"	201
T1	60	6	STR.	9'-6"	856
T2	60	8	STR.	9'-6"	1522

SPIRAL COLUMN REINF. STEEL LBS.	2145
REINFORCING STEEL LBS.	15,483
CLASS "A" CONCRETE CU. YDS.	111.9
FOUNDATION EXCAVATION CU. YDS.	228
HP 12 X 53 STEEL PILES L.F.	675
HP 12 X 53 STEEL PILES NO.	27

DIVISION OF CONCRETE

POUR NUMBER	CUBIC YARDS
1	44.4
2	13.6
3	24.9
4	29.0
TOTAL	111.9 CU. YDS

△ CHANGE OF QUAN. FOR B2 & S2



PLAN OF FOOTINGS

NOTE: REINFORCING & PILE LAYOUT TYPICAL FOR ALL FOOTINGS @ BENT 1.

PROJECT NO. 8.2402101

WAKE COUNTY

STATION: 32 + 91.25 -L-

SHT. 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 1

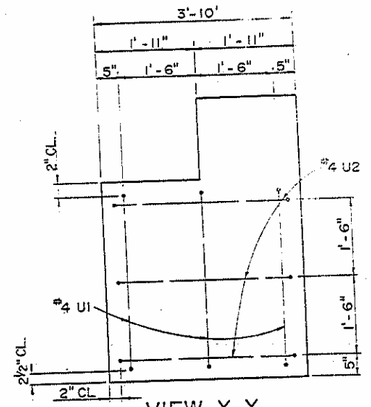
APRIL 1992

REVISIONS							SHEET NO.
NO.	BY	DATE	NO.	BY	DATE		5-276
△	CVC	11-7-94	3				TOTAL SHEETS
2			4				272

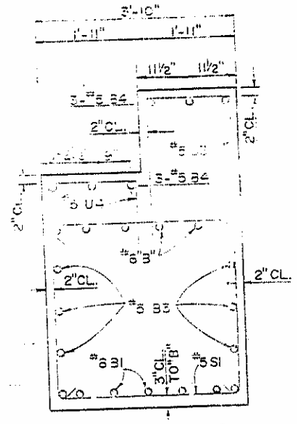
DWG. 25

DRAWN BY DAP DATE 5-92
CHECKED BY J. Thomas DATE 5-92

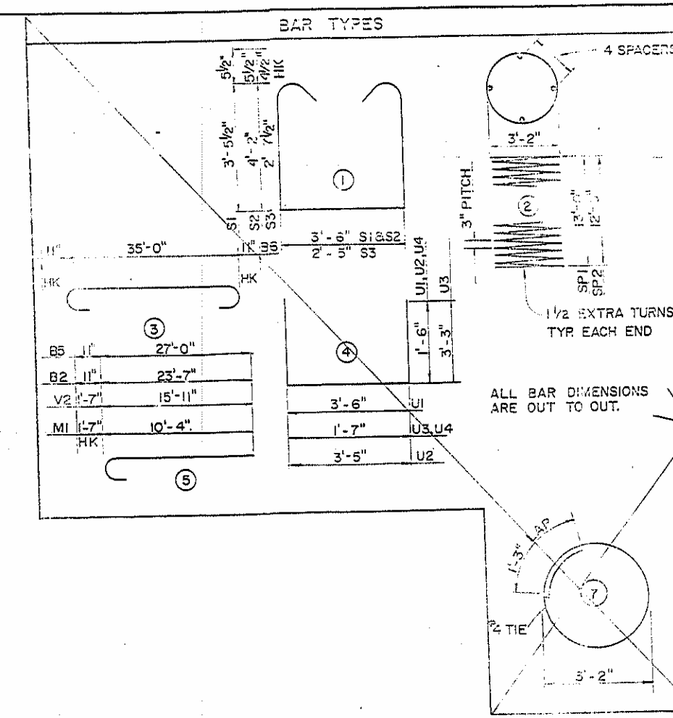
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS RALEIGH, N.C.



VIEW X-X



SECTION B-B



BILL OF MATERIAL

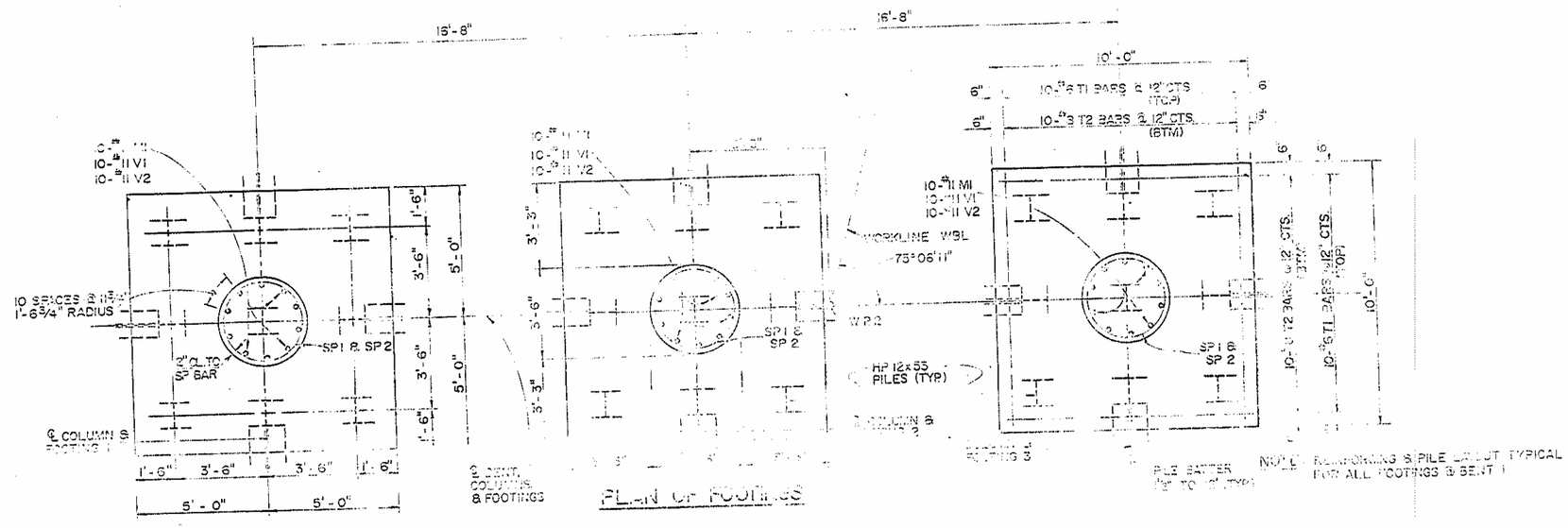
BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	7	8	STR.	43'-0"	504
B2	6	8	5	24'-2"	[illegible]
B3	6	5	STR.	43'-0"	269
B4	27	5	STR.	3'-2"	89
B5	6	8	5	27'-11"	447
B6	10	8	3	33'-10"	[illegible]
B7	4	5	STR.	35'-0"	146
B8	3	4	STR.	3'-6"	7
S1	16	5	1	11'-4"	189
S2	27	5	1	12'-9"	359
S3	28	4	1	8'-5"	157
S4	33	4	7	11'-3"	248
M1	30	11	5	11'-11"	1899
V1	30	11	STR.	23'-5"	3732
V2	30	11	5	17'-6"	2789
SP1	3	—	2	540'-2"	1092
SP2	3	—	2	530'-4"	1053
U1	6	4	4	6'-6"	26
U2	6	4	4	6'-5"	25
U3	42	5	4	8'-1"	354
U4	42	5	4	4'-7"	201
T1	60	6	STR.	9'-6"	858
T2	60	8	STR.	9'-6"	1522

SPIRAL COLUMN REINF. STEEL	LBS.	2145
REINFORCING STEEL	LBS.	15,434
CLASS "A" CONCRETE	CU. YDS.	111.9
FOUNDATION EXCAVATION	CU. YDS.	223
HP 12 X 53 STEEL PILES	L.F.	675
HP 12 X 53 STEEL PILES	NO.	27

DIVISION OF CONCRETE

POUR NUMBER	CUBIC YARDS
1	44.4
2	13.6
3	24.9
4	29.0
TOTAL	111.9 CU. YDS



℄ BENT, COLUMNS, & FOOTINGS

PLAN OF FOOTINGS

PILE BATTER 1" TO 12" (TYP.)

NOTE: REINFORCING & PILE LAYOUT TYPICAL FOR ALL FOOTINGS @ BENT 1

PROJECT NO. 8.2101C2101

WAKE COUNTY

DIVISION 32 - 31.35 - 1

SHT. 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 1

APRIL 1992

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

SHEET NO. S-72 B2
TOTAL SHEETS 27

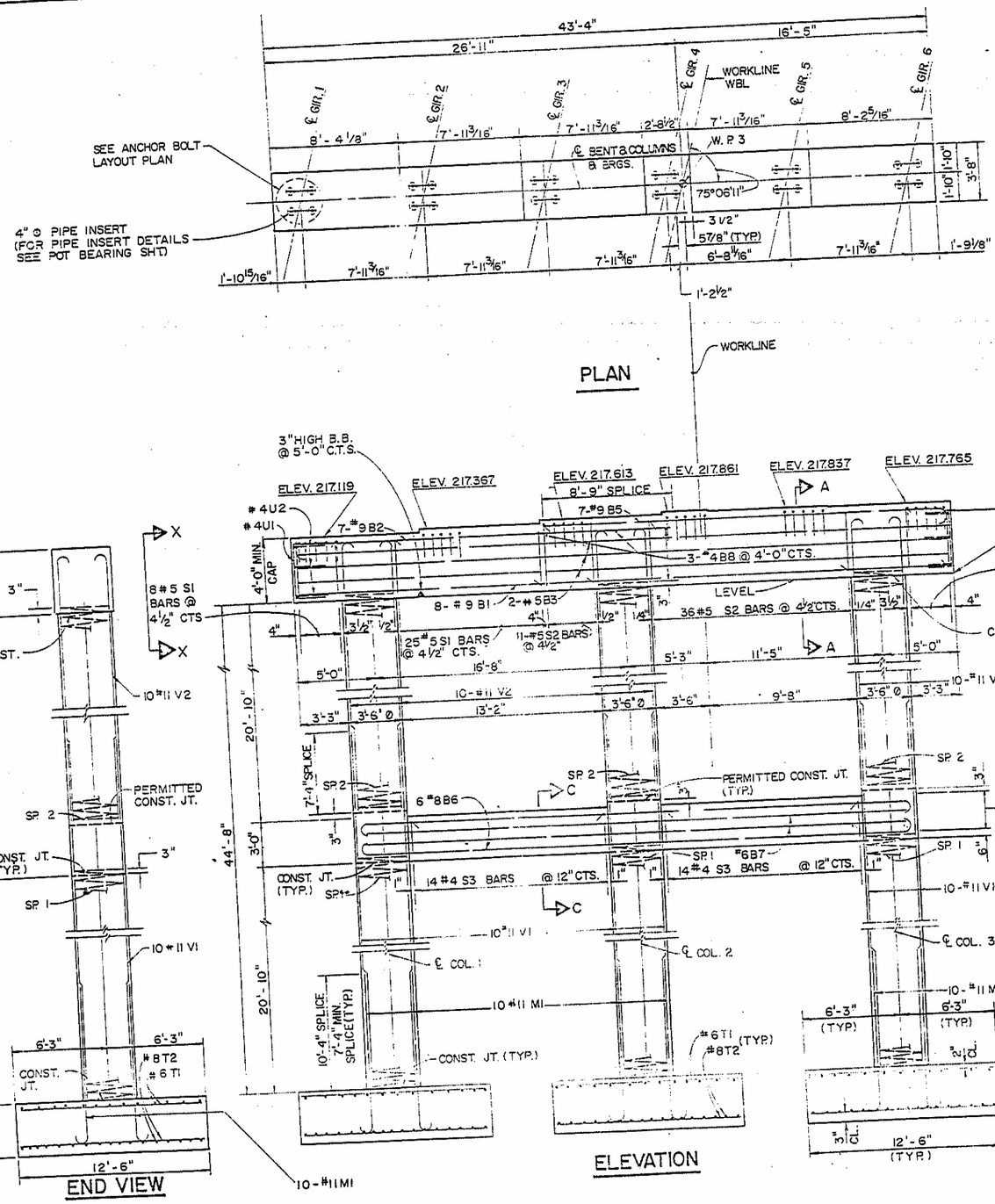
DWG. 25

DRAWN BY DAP DATE 5-92
CHECKED BY [illegible] DATE 5-92

FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS RALEIGH, N.C.

NOTES

1. HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
2. FOR SPIRAL COLUMN REINFORCING STEEL, SEE SPECIAL PROVISIONS.
3. BRIDGE SEAT ELEVATIONS ARE BASED ON AN ASSUMED POT BEARING DEPTH OF 3¾". THE CONTRACTOR SHALL ADJUST THE BRIDGE SEAT ELEVATIONS IF THE POT BEARING DEPTH VARIES FROM THE ASSUMED DEPTH OF 3¾". PLANS FOR ANY ADJUSTMENTS SHALL BE APPROVED BEFORE ANY WORK IS BEGUN ON THE BENT.
4. STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
5. FOR SUBSTRUCTURE SCOUR PROTECTION SEE SPECIAL PROVISIONS.
6. COLUMN STEEL MAY BE SHIFTED AS NECESSARY TO CLEAR REINFORCING STEEL.

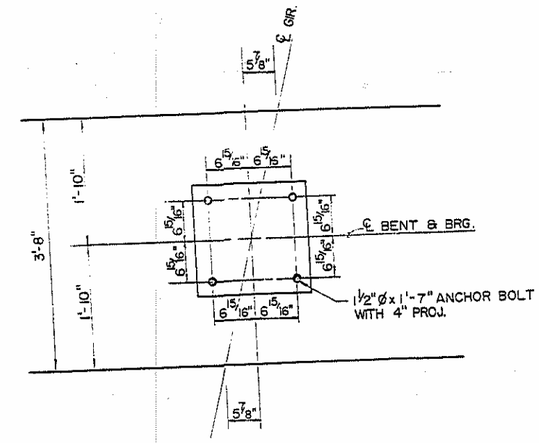


PLAN

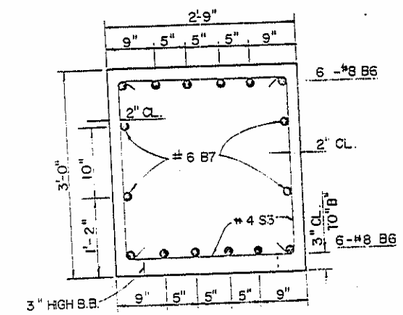
END VIEW

ELEVATION

NOTE: INVERT ALTERNATE STIRRUPS IN CAP & STRUT

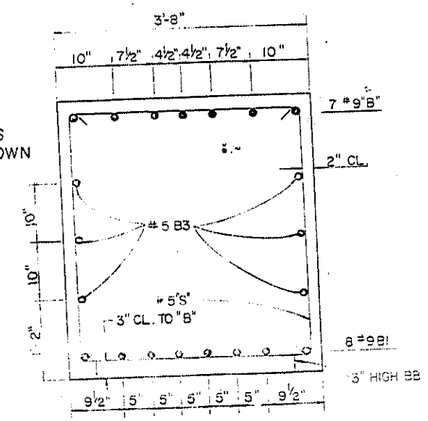


ANCHOR BOLT LAYOUT PLAN



SECTION C-C

NOTE: U3 BARS NOT SHOWN



SECTION A-A

PROJECT NO. 8.2402101

WAKE COUNTY

STATION: 32 + 91.25 -L-

SHT. 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 2

APRIL 1992

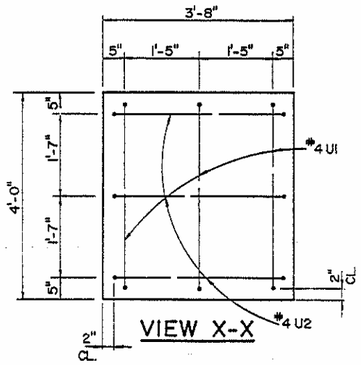
REVISIONS						
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			

SHEET NO. S-27
TOTAL SHEETS 272

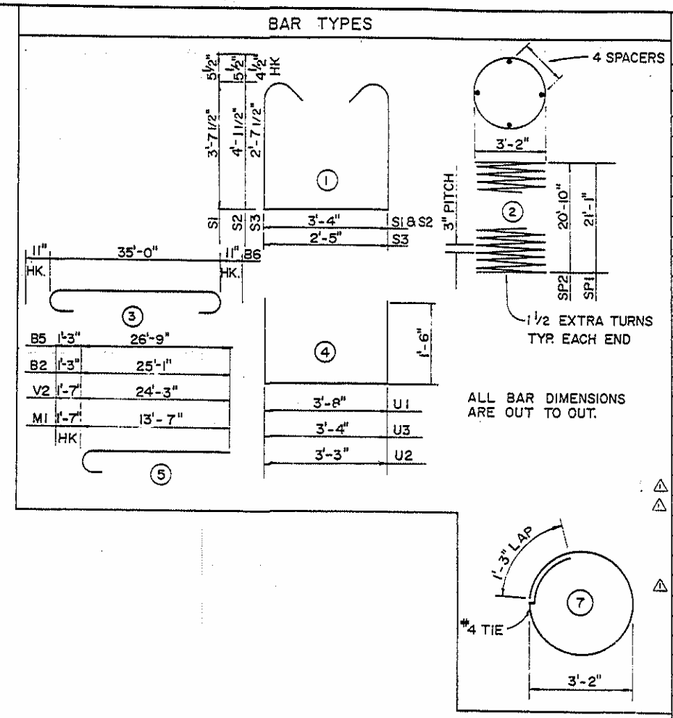
DWG. 26

DRAWN BY ALG DATE 4-92
CHECKED BY [illegible] DATE 5-92

FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS RALEIGH, N.C.



VIEW X-X



BILL OF MATERIAL

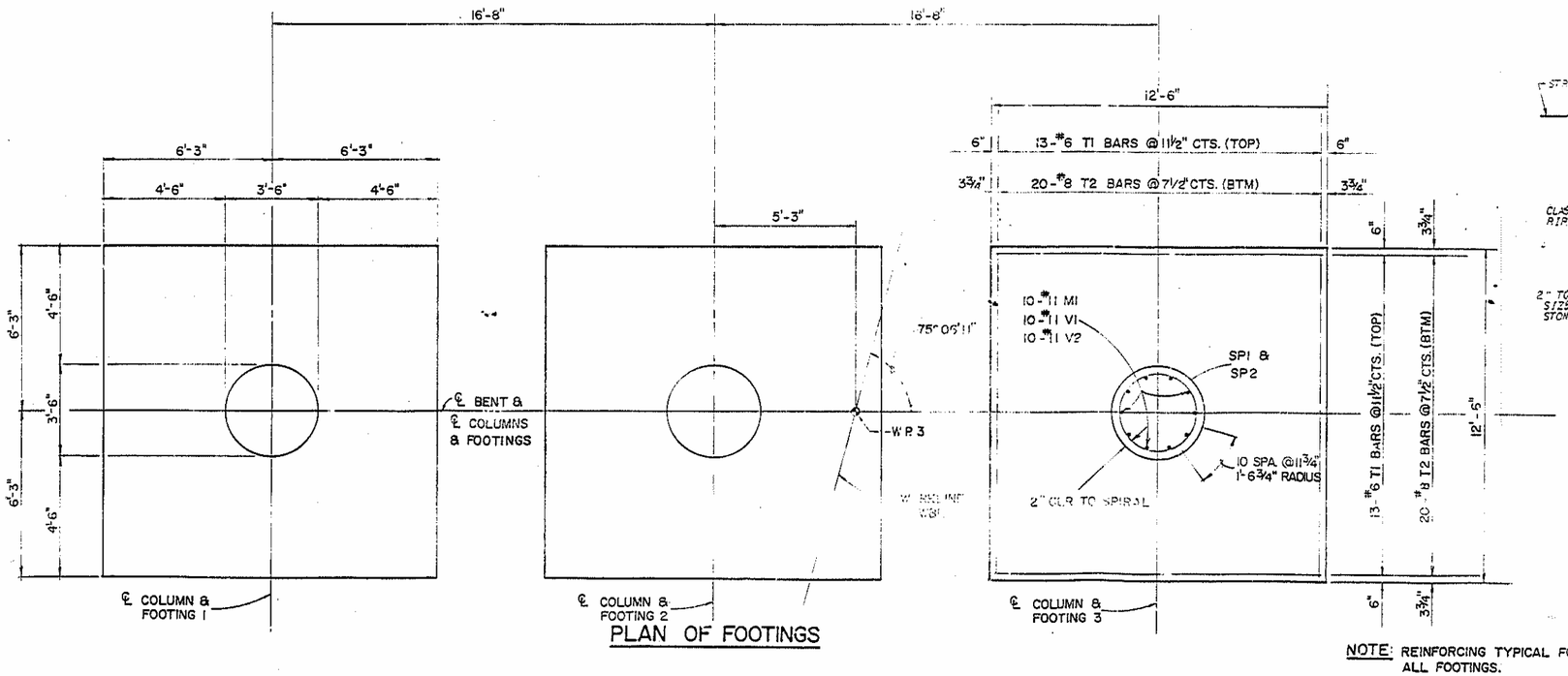
BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	9	STR	43'-0"	1170
B2	7	9	5	26'-4"	627
B3	6	5	STR	43'-0"	269
B5	7	9	5	28'-0"	666
B6	12	8	3	36'-10"	1180
B7	4	6	STR	35'-0"	210
B8	3	4	STR.	3'-4"	7
S1	33	5	1	11'-6"	396
S2	55	5	1	12'-6"	717
S3	28	4	1	8'-5"	157
S4	33	4	7	11'-3"	248
M1	30	11	5	15'-2"	2417
V1	30	11	STR	31'-5"	5008
V2	30	11	5	25'-10"	4118
△ SP1	3	—	2	857'-8"	1719
△ SP2	3	—	2	847'-11"	1699
U1	6	4	4	6'-8"	27
U2	6	4	4	6'-3"	25
△ U3	30	5	4	6'-4"	198
T1	78	6	STR	12' 0"	1406
T2	120	8	STR	12'-0"	3845

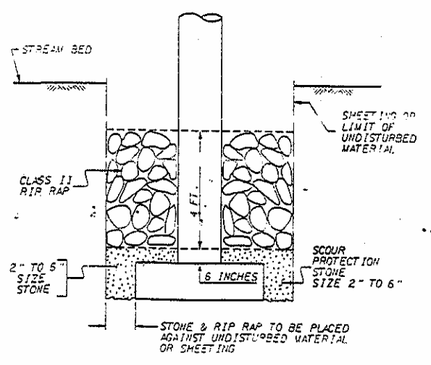
SPIRAL COLUMN REINF. STEEL LBS. 3418
REINFORCING STEEL LBS. 22,691 △
CLASS "A" CONCRETE CU. YDS. 142.7
FOUNDATION EXCAVATION FOR
BENT 2 @ STA. 32+91.25 L.S.

DIVISION OF CONCRETE

POUR NUMBER	CUBIC YARDS
1	60.8
2	22.3
3	33.5
4	26.1
TOTAL	142.7 CU. YDS.



PLAN OF FOOTINGS



PIER SCOUR PROTECTION

NOTE: REINFORCING TYPICAL FOR ALL FOOTINGS.

△ ADDITION OF BAR LENGTH FOR SP1 & SP2
CHANGE OF QUAN. FOR U3

PROJECT NO. 8.2402101
WAKE COUNTY
STATION: 32 + 91.25 -L'-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 2

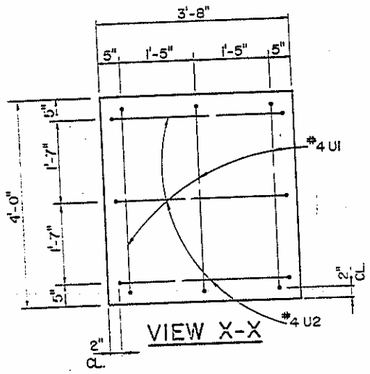
MAY 1992

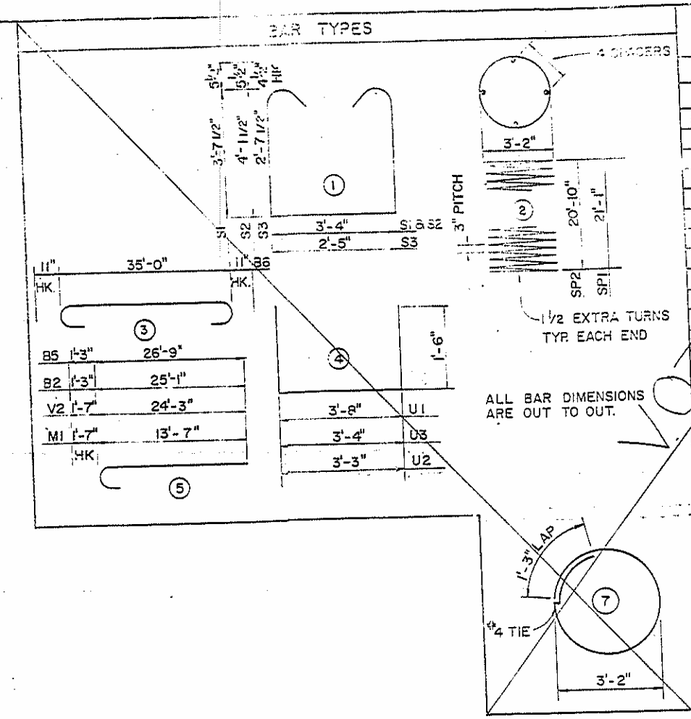
REVISIONS							
NO	BY	DATE	NO	BY	DATE	SHEET NO.	S-27S
△	CVC	11-7-94	3			TOTAL SHEETS	332
			4				

DRAWN BY DAP DATE 5-92
CHECKED BY DATE 5-92

FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS RALEIGH, N.C.

DWG. 27





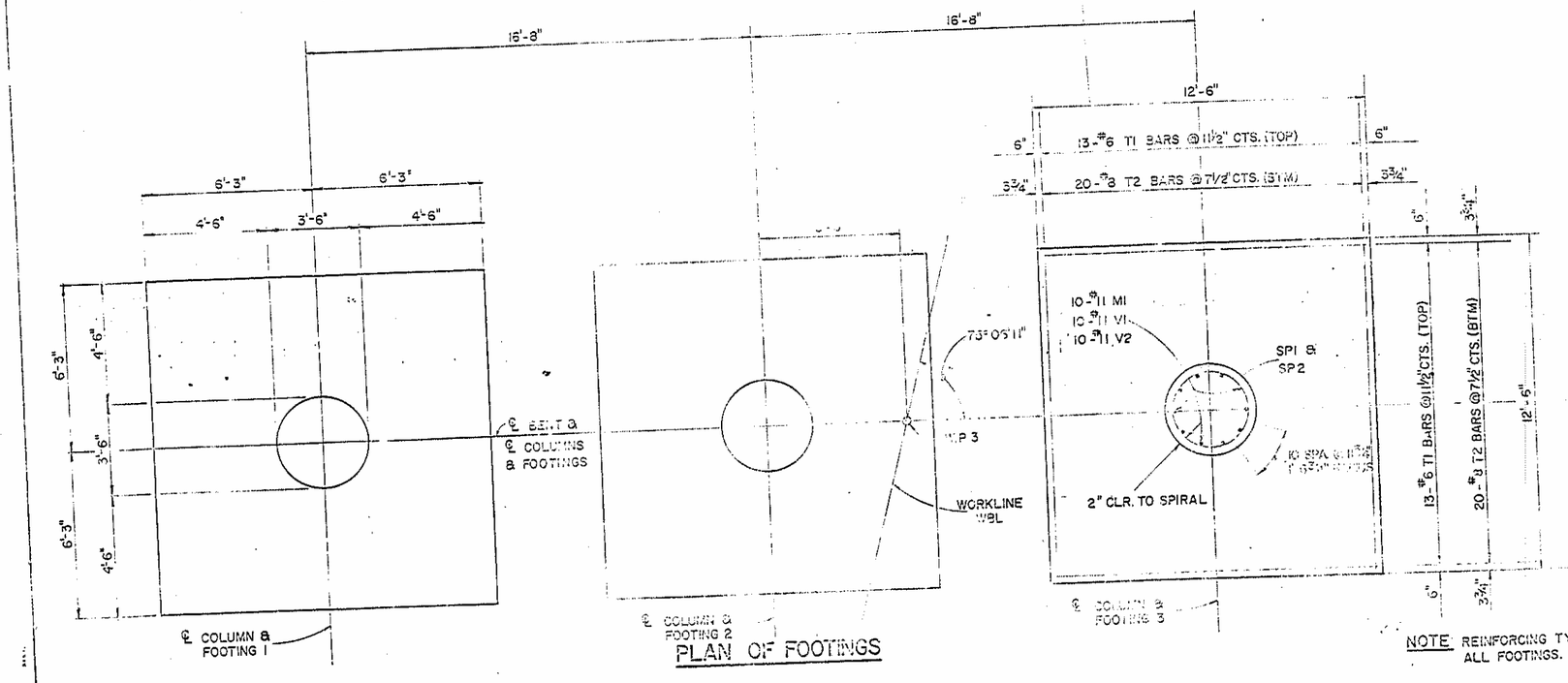
BILL OF MATERIAL

BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WGT.
B1	8	9	STR	43'-0"	1170
S2	7	9	5	23'-4"	827
B3	6	5	STR	43'-0"	233
B5	7	9	5	29'-0"	366
B6	12	8	3	36'-0"	180
B7	4	6	STR	35'-0"	210
B8	3	4	STR	3'-4"	7
S1	33	5	1	11'-6"	396
S2	55	5	1	12'-6"	717
S3	28	4	1	8'-5"	157
S4	33	4	7	11'-3"	248
M1	30	11	5	15'-2"	2417
V1	30	11	STR	31'-5"	5008
V2	30	11	5	25'-10"	4118
SP1	3	—	2		1715
SP2	3	—	2		1699
U1	6	4	4	6'-8"	27
U2	6	4	4	6'-3"	25
U3	25	5	4	6'-4"	165
T1	78	6	STR	12'-0"	1406
T2	120	8	STR	12'-0"	3845

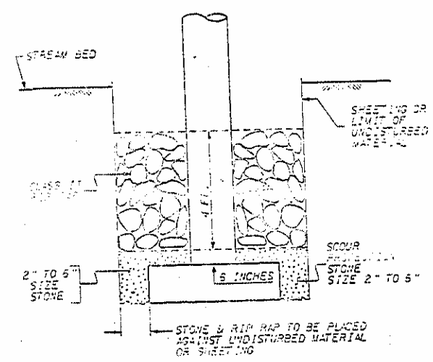
SPIRAL COLUMN REINF. STEEL LBS. 3418
REINFORCING STEEL LBS. 22,358
CLASS "A" CONCRETE CU. YDS. 142.7
FOUNDATION EXCAVATION FOR BENT 2 @ STA. 32+91.25 L.S.

DIVISION OF CONCRETE	
1	60.8
2	22.3
3	33.5
4	26.1
TOTAL	142.7 CU. YDS.



PLAN OF FOOTINGS

NOTE: REINFORCING TYPICAL FOR ALL FOOTINGS.



PIER SCOUR PROTECTION

WAKE CO.

STATION: 32 + 91.25 -L-

SHT. 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
BENT 2

MAY

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

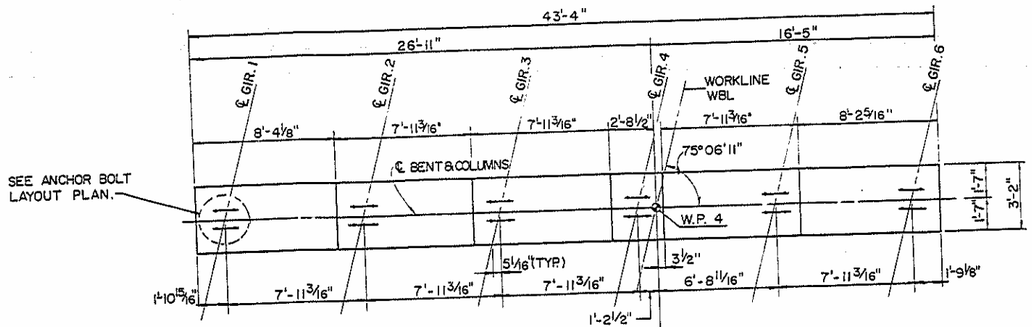
DWG. 27

DRAWN BY DAP DATE 5-92
CHECKED BY J. Kim DATE 5-92

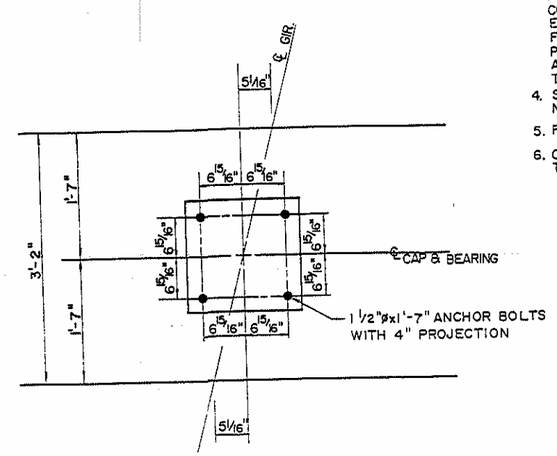
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS RALEIGH, N.C.

NOTES

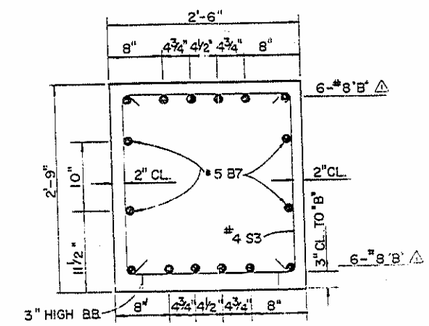
1. HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
2. FOR SPIRAL COLUMN REINFORCING STEEL, SEE SPECIAL PROVISIONS.
3. BRIDGE SEAT ELEVATIONS ARE BASED ON AN ASSUMED POT BEARING DEPTH OF 3¾". THE CONTRACTOR SHALL ADJUST THE BRIDGE SEAT ELEVATIONS IF THE POT BEARING DEPTH VARIES FROM THE ASSUMED DEPTH OF 3¾". PLANS FOR ANY ADJUSTMENTS SHALL BE APPROVED BEFORE ANY WORK IS BEGUN ON THE BENT.
4. STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
5. FOR PILE SPLICE DETAILS SEE DWG. 32
6. COLUMN STEEL MAY BE SHIFTED AS NECESSARY TO CLEAR REINFORCING STEEL.



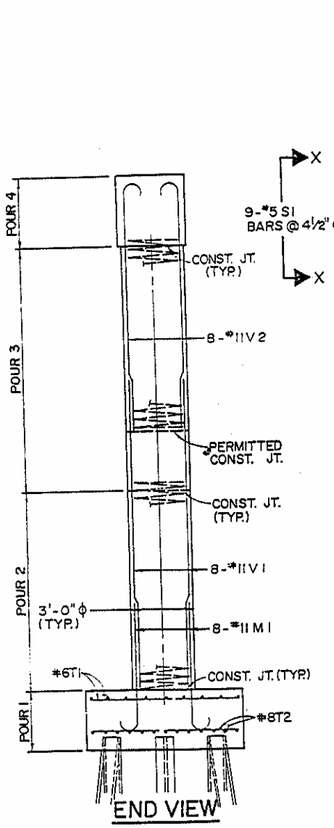
PLAN



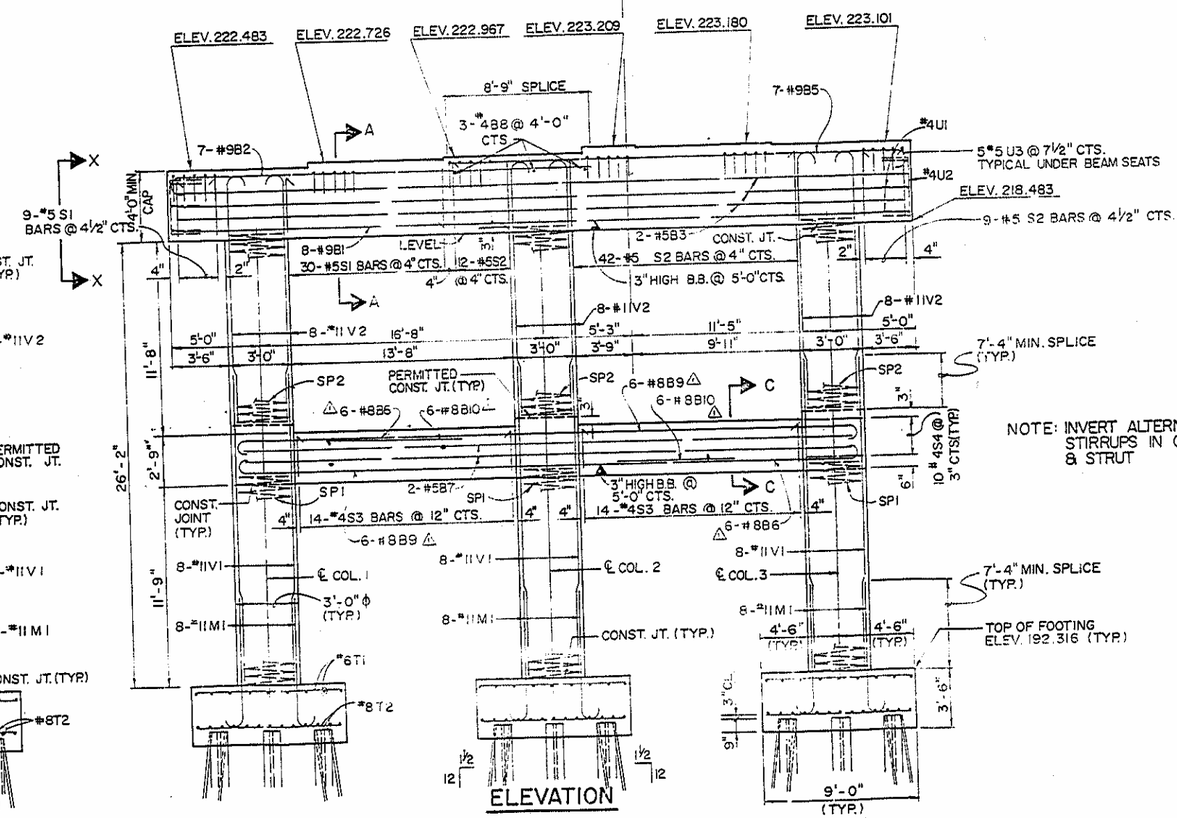
ANCHOR BOLT LAYOUT PLAN



SECTION C-C

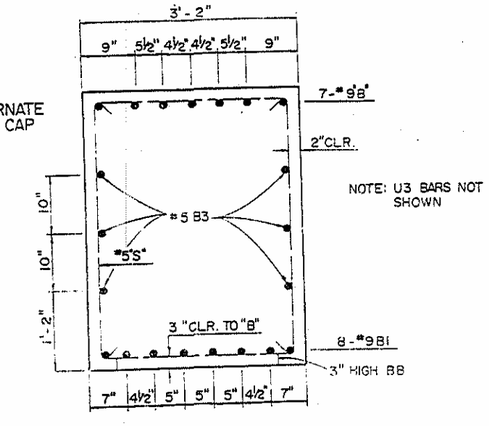


END VIEW



ELEVATION

NOTE: INVERT ALTERNATE STIRRUPS IN CAP & STRUT



SECTION A-A

NOTE: U3 BARS NOT SHOWN

△ REPLACE ORIG. B6 BAR WITH B6 & B9
ADD SPLICE B10

PROJECT No. 8.2402101
WAKE COUNTY
STATION: 32+91.25-L

SHT. 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
BENT 3

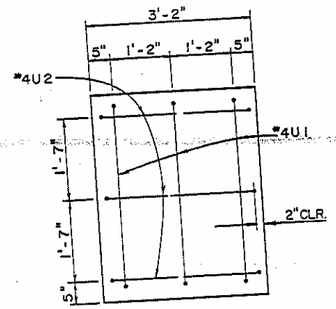
APRIL 1992

REVISIONS						SHEET NO.
NO	BY	DATE	NO.	BY	DATE	S-279
△	CVC	11-7-94	3			TOTAL SHEETS
2			4			332

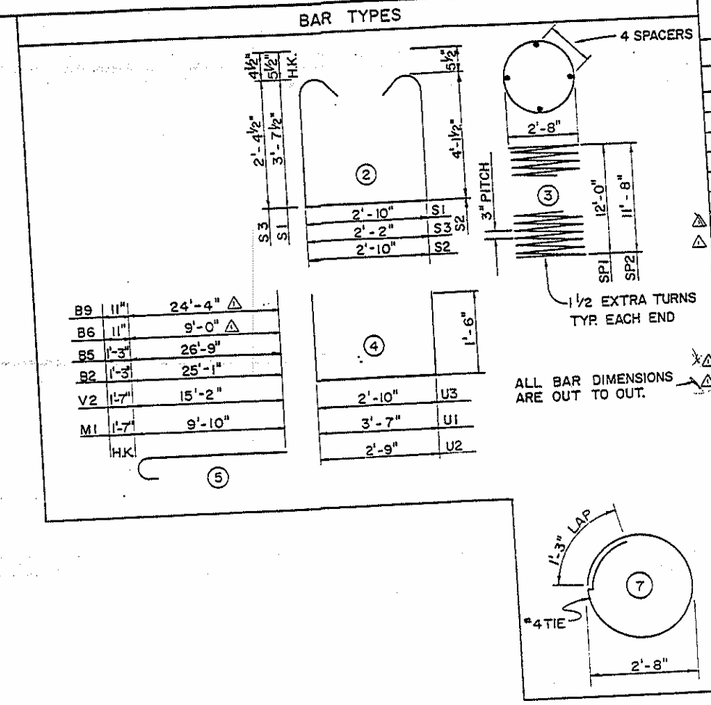
DWG. 28

DRAWN BY SLW DATE APRIL 92
CHECKED BY DATE 5-92

FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS RALEIGH, N.C.



VIEW X-X



BILL OF MATERIAL

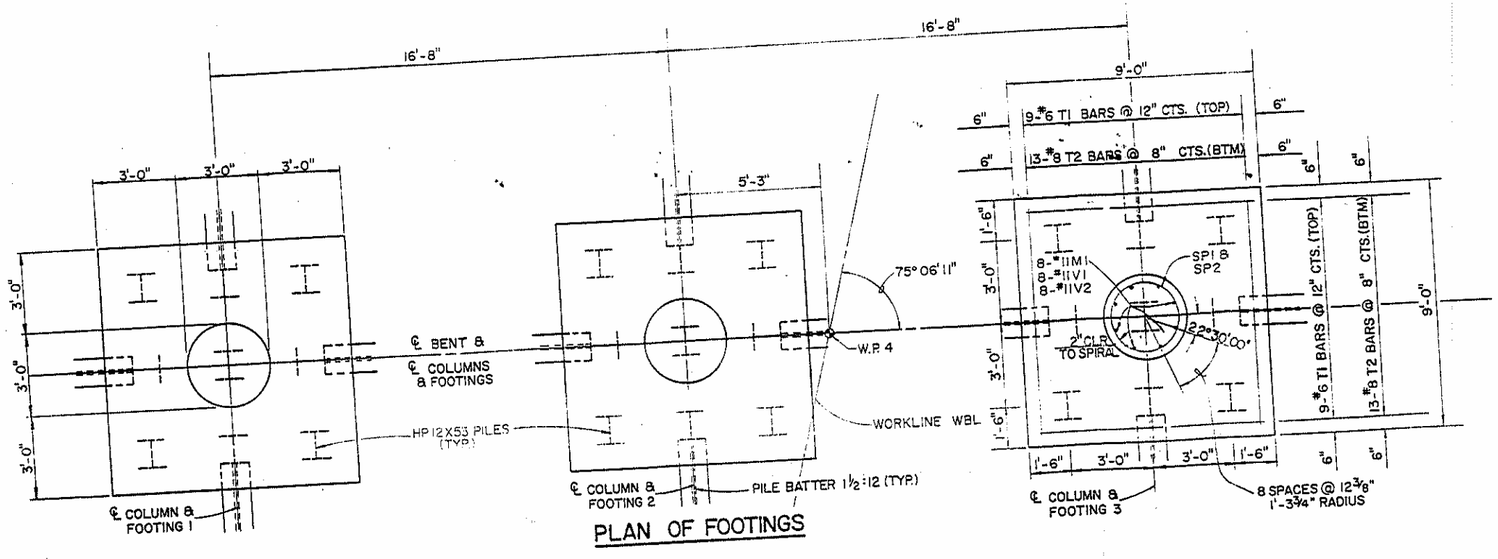
BENT 3

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	9	STR.	43'-0"	1170
B2	7	9	5	26'-4"	627
B3	6	5	STR.	43'-0"	269
B5	7	9	5	28'-0"	666
B6	12	8	5	9'-11"	318
△ B7	4	5	STR.	34'-8"	145
△ B8	3	4	STR.	2'-10"	6
S1	39	5	2	11'-0"	447
S2	63	5	2	12'-0"	789
S3	28	4	2	7'-8"	143
S4	30	4	7	9'-8"	194
B9	12	8	5	25'-3"	809
△ B10	12	8	STR.	15'-2"	486
M1	24	11	5	11'-5"	1456
V1	24	11	STR.	22'-1"	2816
V2	24	11	5	16'-9"	2136
SP1	3	—	3	420'-9"	843
SP2	3	—	3	409'-9"	821
U1	6	4	4	6'-7"	26
U2	6	4	4	5'-9"	23
U3	30	5	4	5'-10"	183
T1	54	6	STR.	8'-6"	689
T2	78	8	STR.	8'-6"	1770

SPIRAL COLUMN REINF. STEEL LBS.	1664
REINFORCING STEEL LBS.	15,168 △
CLASS "A" CONCRETE CU. YDS.	81.4
FOUNDATION EXCAVATION CU. YDS.	82.9
HP 12 X 53 STEEL PILES L.F.	360
HP 12 X 53 STEEL PILES NO.	27

DIVISION OF CONCRETE

POUR NUMBER	CUBIC YARDS
1	31.4
2	9.2
3	18.3
4	22.5
TOTAL	81.4 CU. YDS.



PLAN OF FOOTINGS

NOTE:
REINFORCING & PILE LAYOUT TYPICAL FOR ALL FOOTINGS.

△ CHANGE OF QUAN. FOR B6, B7
ADD B9 & B10

DWG. 29

PROJECT NO. 8.2402101
WAKE COUNTY
STATION: 32 + 91.25 -L-

SHT. 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 3

APRIL 1992

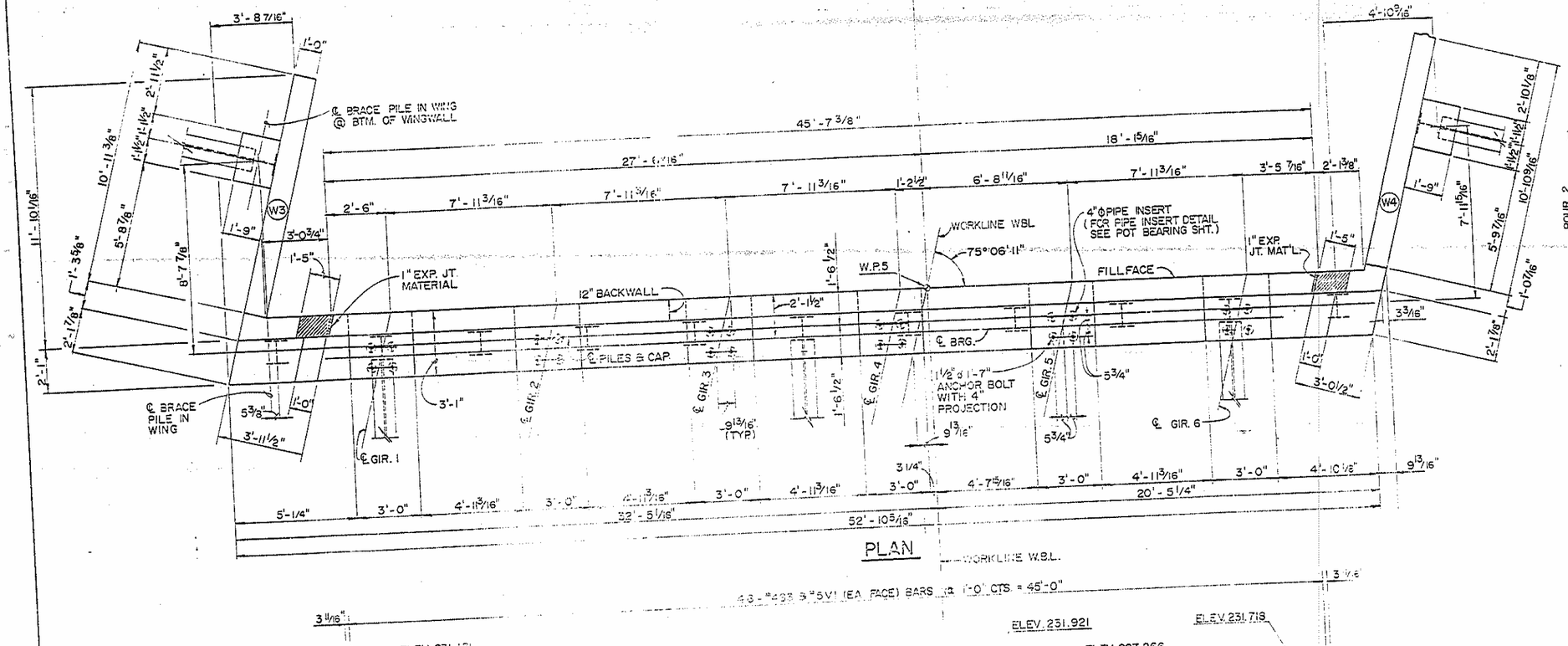
REVISIONS							
NO.	BY	DATE	NO.	BY	DATE	SHEET NO.	
△	CVC	11-7-94	3			S-280	
2			4			TOTAL SHEETS	
						332	

BY DAP DATE 5-92
DATE 5-92

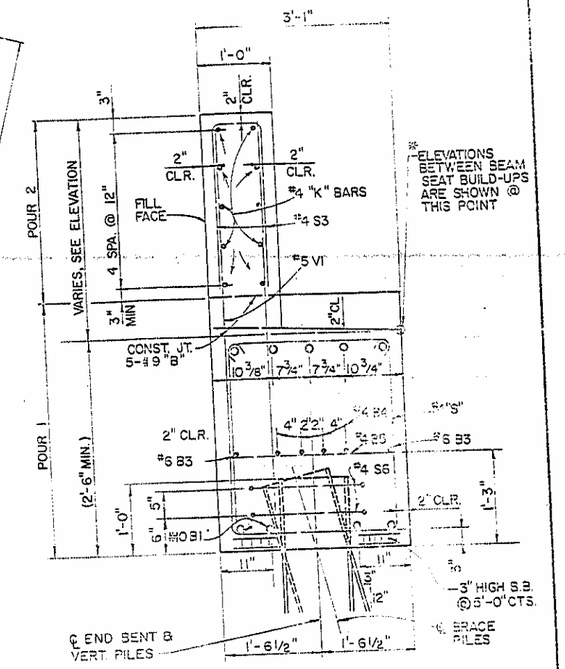
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS RALEIGH, N.C.

NOTE: FOR POT BEARING & BEAM SEAT NOTE, SEE NOTE 2, DWG. 21

4" x 1½" SHEAR KEY SEE WINGWALL DETAILS SHT. 31

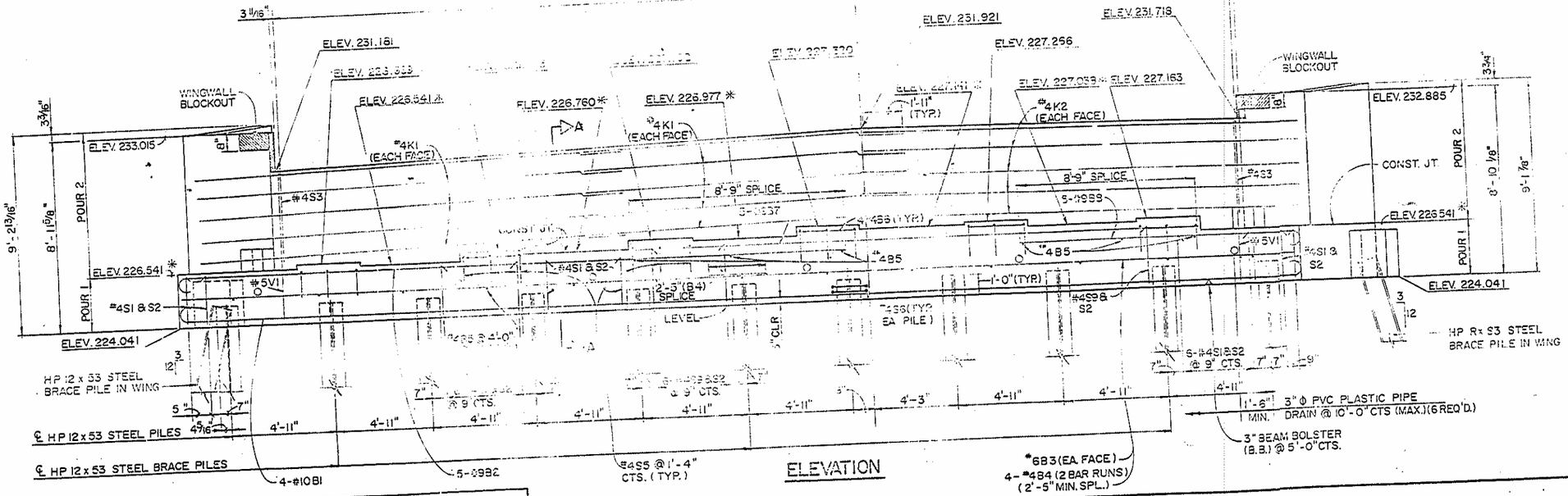


PLAN



SECTION A-A

ELEVATIONS BETWEEN BEAM SEAT BUILD-UPS ARE SHOWN @ THIS POINT



ELEVATION

NOTE:
TOP OF PILE ELEVATION 225.0441 TYP. FOR ALL PILES END BENT 2.

PROJECT NO. 8.2602101
WAKE COUNTY
STATION: 32 + 91.25-L-

SHT. 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2

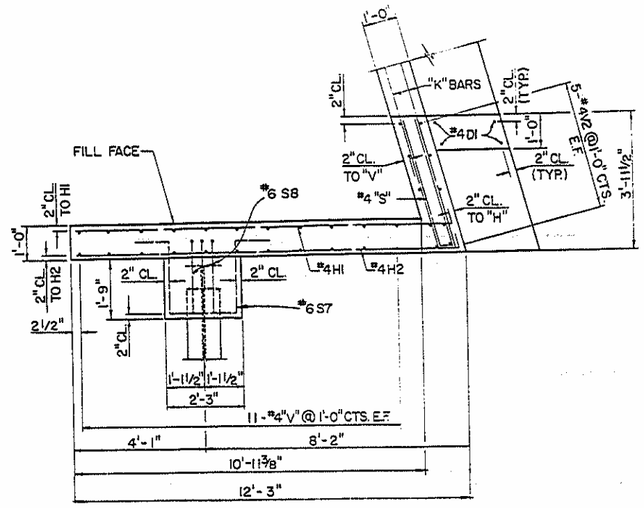
MARCH 1992

REVISIONS								SHEET NO.
NO.	BY	DATE	NO.	BY	DATE			S-331
1			3					TOTAL SHEETS
2			4					332

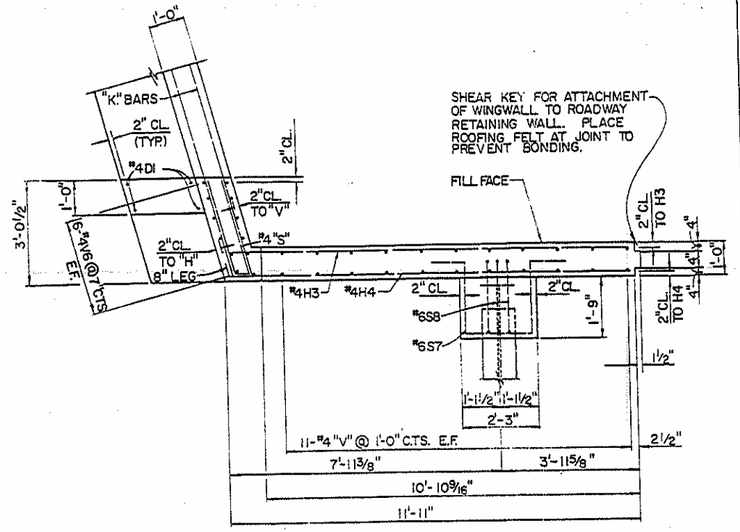
DWG. 30

DRAWN BY SLW DATE MAY 92
CHECKED BY [illegible] DATE 5-92

FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS RALEIGH, N.C.

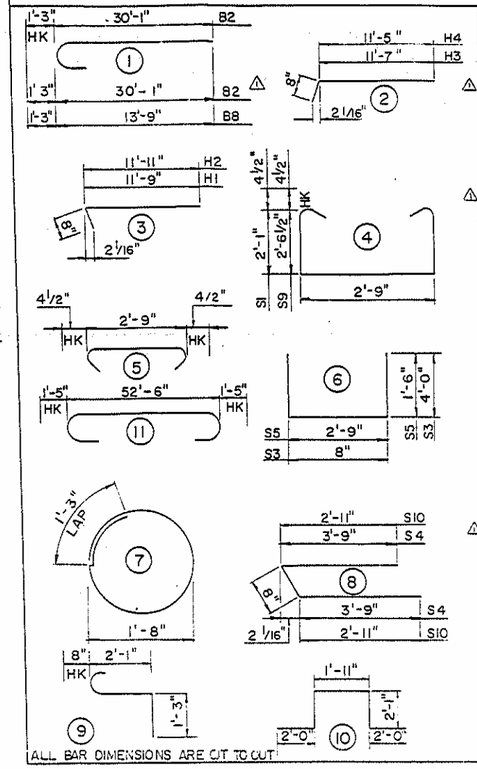


PLAN
WINGWALL- W3



PLAN
WINGWALL- W4

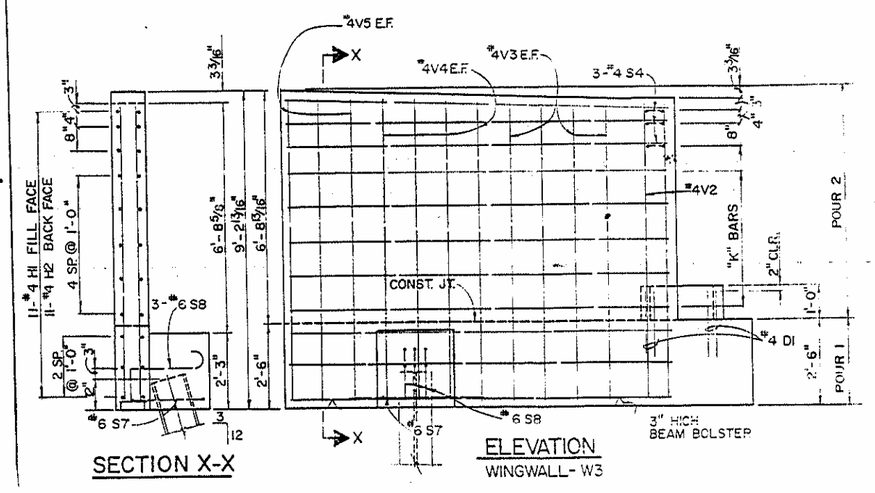
BAR TYPES



BILL OF MATERIAL

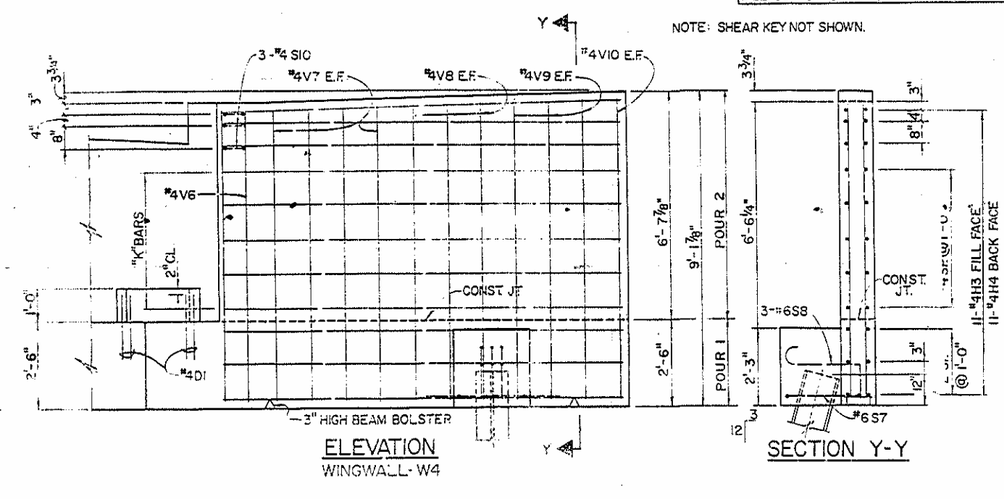
END BENT 2

BAR	NO.	SIZE	TYPE	LEN.	WG
B1	4	10	11	55'-4"	952
B2	5	9	1	31'-4"	533
B3	2	6	STR.	52'-6"	15
B4	8	4	STR.	27'-5"	14
B5	19	4	STR.	2'-9"	35
B6	12	4	STR.	2'-8"	21
B7	5	9	STR.	26'-"	445
B8	5	9	1	15'-0"	255
H1	11	4	3	12'-5"	91
H2	11	4	3	12'-7"	92
S1	34	4	4	7'-8"	17
S2	64	4	5	3'-6"	150
S3	46	4	6	8'-8"	266
S4	3	4	8	8'-2"	10
S5	18	4	6	5'-9"	69
S6	26	4	7	6'-6"	113
S7	2	6	10	10'-1"	3
S8	6	6	9	4'-0"	3
S9	30	4	4	8'-7"	172
S10	3	4	8	6'-6"	13
V1	92	5	STR.	6'-9"	64
V2	10	4	STR.	8'-7"	57
V3	8	4	STR.	8'-8"	47
V4	8	4	STR.	8'-9"	4
V5	6	4	STR.	8'-10"	3
V6	12	4	STR	8'-5"	6
V7	8	4	STR.	8'-6"	4
V8	6	4	STR.	8'-7"	3
V9	6	4	STR.	8'-8"	3
V10	2	4	STR.	8'-9"	1
D1	8	4	STR	2'-0"	1
K1	20	4	STR.	17'-9"	23
K2	10	4	STR	20'-9"	17
H3	11	4	2	12'-3"	90
H4	11	4	2	12'-1"	89



SECTION X-X

ELEVATION
WINGWALL- W3



ELEVATION
WINGWALL- W4

SECTION Y-Y

TOTAL QUANTITIES FOR END BENT 2

ITEM			TOTAL
REINFORCING STEEL		LBS.	5362
CLASS "A" CONCRETE	POUR 1	CU. YDS.	19.9
CLASS "A" CONCRETE	POUR 2	CU. YDS.	14.8
CLASS "A" CONCRETE	TOTAL	CU. YDS.	34.7
HP 12 X 53 STEEL PILES		NO.	13
HP 12 X 53 STEEL PILES		LIN. FT.	660

PROJECT NO. 8.2402101

WAKE COUNTY

STATION: 32+91.25-L-

SHT. 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT 2

MAY 199

REVISIONS						
NO.	BY	DATE	NO.	BY	DATE	SHEET NO. S-22
1 △	CVC	11-7-94	3			TOTAL SHEETS 232
2			4			

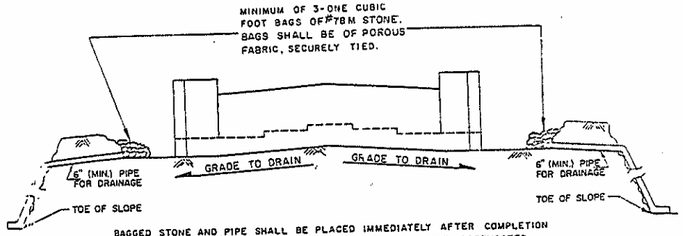
△ CHANGE OF QUAN. FOR B2, B7 & V1
CHANGE BAR TYPE FOR B2 & B7

E.F. INDICATES EACH FACE

DWG. 31

DRAWN BY WET DATE 5-92
CHECKED BY [illegible] DATE 5-93

FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS RALEIGH, N.C.

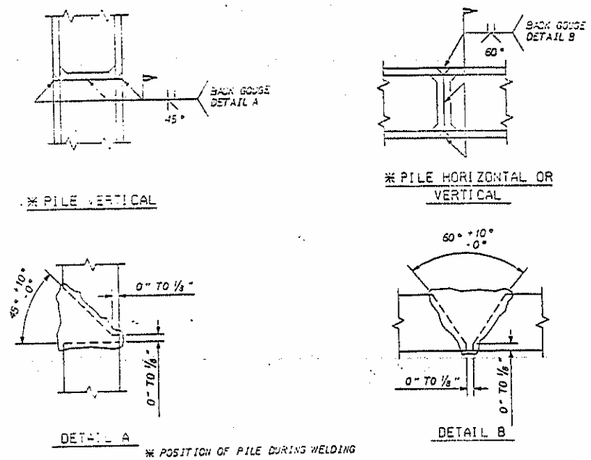


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

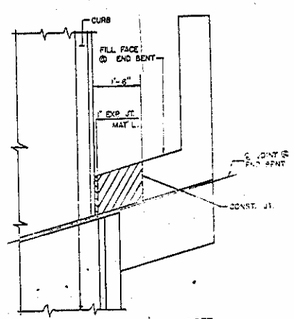
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

TEMPORARY DRAINAGE AT END BENT

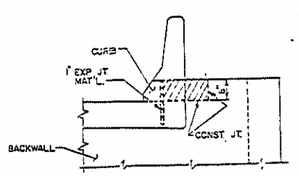


PILE SPLICE DETAILS



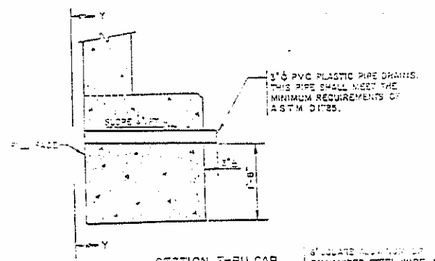
PLAN

NOTE
THE CONCRETE IN THE SHADED AREA OF THE WING SHOULD BE POURED AFTER THE JOINT BETWEEN THE DECK AND APPROACH SLAB HAS BEEN SEALED AND THE BARRIER RAIL IS CAST (IF SLIP FORMING IS USED).

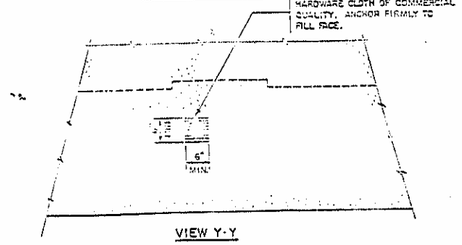


ELEVATION

BLOCKOUT IN WING WALL FOR FITTING COMPRESSION JOINT SEAL



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 BID FOR THE SEVERAL PAY ITEMS.

PIPE DRAIN DETAILS
FOR STRUCTURES WITH APPROACH SLABS

NOTES:

1. PIPE DRAINS MAY BE SHIFTED SLIGHTLY IF NECESSARY TO CLEAR ANCHOR BOLTS AND REINFORCING STEEL.
2. STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
3. THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 1/4" PER FOOT.
4. 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.
5. ELEVATIONS SHOWN FOR THE TOP OF BACKWALL ARE GIVEN AT THE FILL FACE SIDE.
6. FOR EPOXY PROTECTIVE COATINGS, SEE SPECIAL PROVISIONS.
7. BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.
8. DO NOT APPLY EPOXY PROTECTIVE COATING UNDER ELASTOMERIC BEARING @ END BENT 1.
9. BRIDGE SEAT ELEVATIONS ARE BASED ON AN ASSUMED POT BEARING DEPTH OF 3 3/16". THE CONTRACTOR SHALL ADJUST THE BRIDGE SEAT ELEVATIONS IF THE POT BEARING DEPTH VARIES FROM THE ASSUMED DEPTH OF 3 3/16". PLANS FOR ANY ADJUSTMENTS SHALL BE APPROVED BEFORE ANY WORK IS BEGUN ON THE BENT.

PROJECT NO. 8.2402101
WAKE COUNTY
STATION: 32+91.25 -L-

SHT. 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL DETAILS
FOR END BENTS 1 & 2

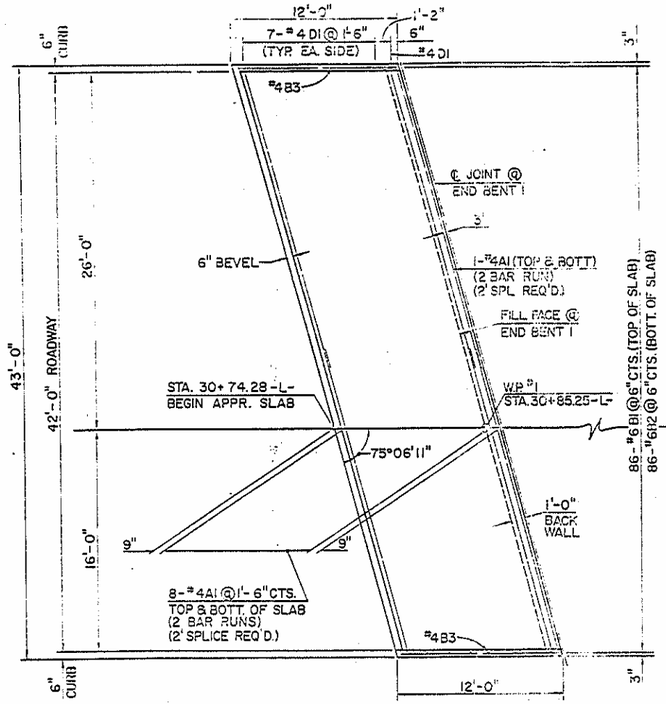
MAY 1992

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-323
1			3			TOTAL SHEETS
2			4			322

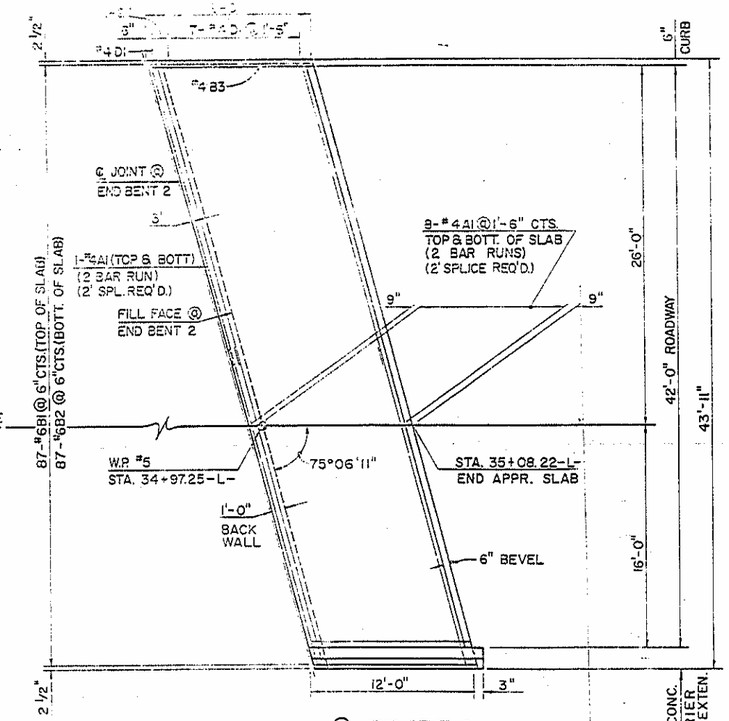
DRAWN BY SLW DATE MAY 92
CHECKED BY [illegible] DATE 5-92

FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS RALEIGH, N.C.

DWG. 32



@ END BENT 1



@ END BENT 2

PLAN

NOTES

FOR PREFORMED COMPRESSION JOINT SEAL, SEE SPECIAL PROVISIONS.

THE PREFORMED COMPRESSION SEAL SHALL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE BID. SEE GENERAL DRAWING.

THE OPENING SHOWN IS BASED ON A NOMINAL UNCOMPRESSED SEAL WIDTH OF 3" FOR END BENT 1 & 4" FOR END BENT 2.

THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE CONCRETE CURB TO THE CONSTRUCTION JOINT AND THE BARRIER RAIL. FOR LOCATION OF CONSTRUCTION JOINT SEE CURB DETAILS.

THE 6" COMP. A.B.C. IS TO EXTEND 10'-0" BEYOND THE SLAB AS SHOWN AND 1'-0" OUTSIDE OF EACH EDGE OF SLAB.

SUBDRAIN FINE AGGREGATE IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL AND END BENT FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

THE CONTRACTOR, AT HIS OPTION, MAY USE 4" BITUMINOUS CONCRETE BASE COURSE, TYPE HB IN LIEU OF 6" A.B.C. ANY ADDITIONAL COST DUE TO THE USE OF THIS OPTION WILL BE PAID FOR BY THE CONTRACTOR.

THE EXPANSION JOINT MATERIAL IS TO BE HELD IN PLACE WITH GALVANIZED NAILS.

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

TEMPORARY DRAINAGE ~~AND TEMPORARY DETAIL AND CURB DRAIN~~ WILL BE PAID FOR UNDER THE LUMP SUM PRICE FOR BRIDGE APPROACH SLAB.

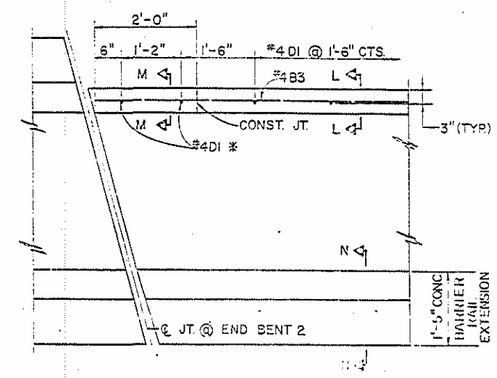
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE.

FOR EPOXY COATED REINFORCING STEEL, SEE SPECIAL PROVISIONS.

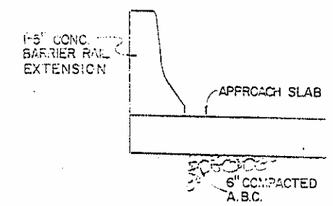
BILL OF MATERIAL

APPROACH SLAB @ END BENT NO. 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	36	4	STR.	23'-1"	555
B1	86	6	STR.	11'-1"	1432
B2	86	6	STR.	11'-1"	1496
B3	2	4	STR.	11'-2"	6
D1	16	4	STR.	0'-10"	10
EPOXY COATED REIN. STEEL ... LBS.					3509
CLASS "AA" CONCRETE ... CU. YDS.					16.2

APPROACH SLAB @ END BENT NO. 2					
A1	36	4	STR.	23'-7"	567
B1	87	6	STR.	11'-1"	1448
B2	87	6	STR.	11'-7"	1514
B3	1	4	STR.	11'-2"	8
D1	8	4	STR.	0'-10"	5
EPOXY COATED REIN. STEEL ... LBS.					3542
CLASS "AA" CONCRETE ... CU. YDS.					16.5



PLAN @ END BENT 2

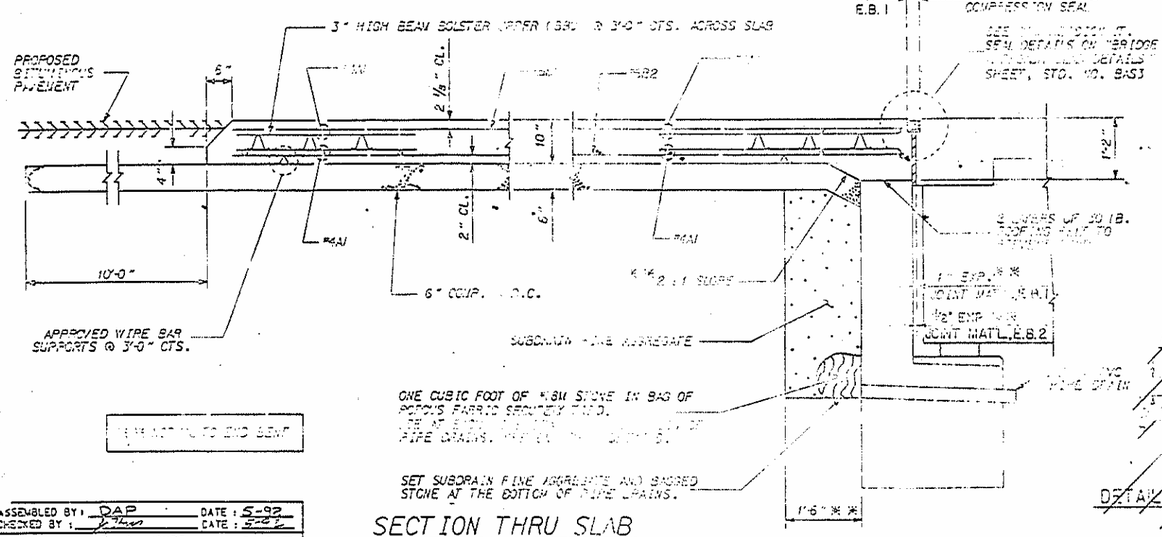


SECTION N-N

PAYMENT FOR BARRIER RAIL EXTENSION IS INCLUDED IN THE PAY ITEM FOR CONC BARRIER RAIL.

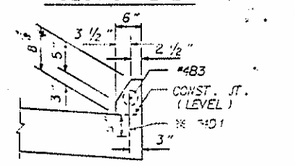
FOR DETAILS OF THE BARRIER RAIL EXTENSION, SEE "STD. CONCRETE BARRIER RAIL" SHEET.

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

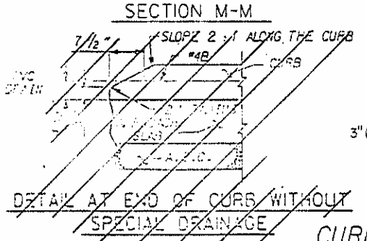


SECTION THRU SLAB

SECTION L-L

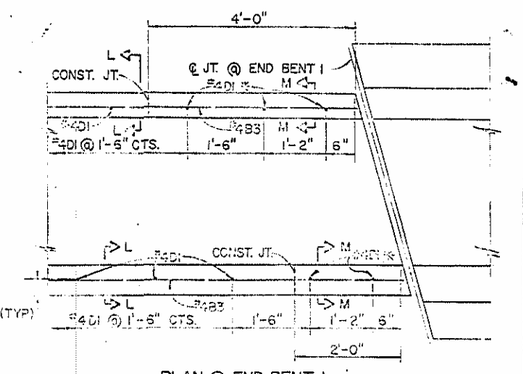


SECTION M-M



DETAIL AT END OF CURB WITHOUT SPECIAL DRAINAGE

CURB DETAILS



PLAN @ END BENT 1

PROJECT NO. 8.2402101

WAKE COUNTY

STATION: 32+91.25 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

FEB. 1988

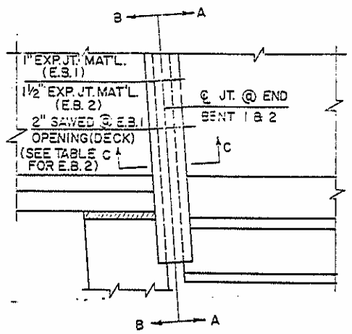
REVISIONS								SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:			5-23
1			3					TOTAL SHEETS
2			4					322

ASSEMBLED BY: DAP DATE: 5-92
CHECKED BY: [illegible] DATE: [illegible]
STD. DRAWN BY: F. C. JONES DATE: 6/10/87
STD. CHECKED BY: F. R. SILEW DATE: 6/25/87

REVISED 10/1/90 by: RAD by: DHH
REVISED 3/1/90 by: WJH by: CHK
REVISED 1/1/... by: FCJ by: DEM
REVISED 2/29/... by: ...

DWG. 33

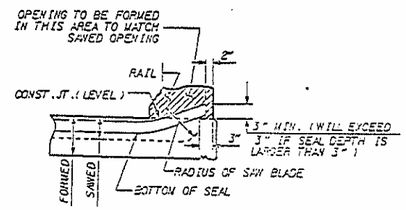
STD. NO. BAC2



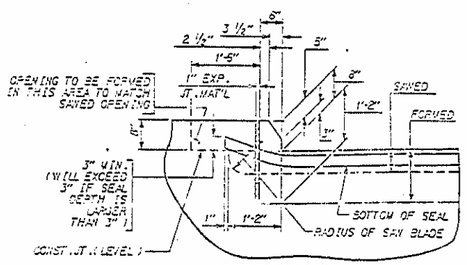
PLAN

JOINT OPENING ※	
TEMP. °F	END BENT 1
30° F	2 1/2"
60° F	2 3/16"
90° F	1 13/16"

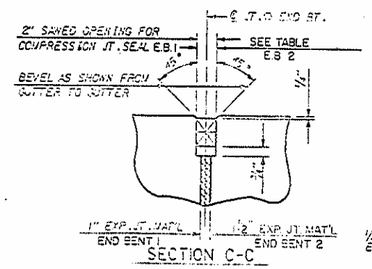
※ DIMENSION MEASURED NORMAL TO JOINT



SECTION A-A

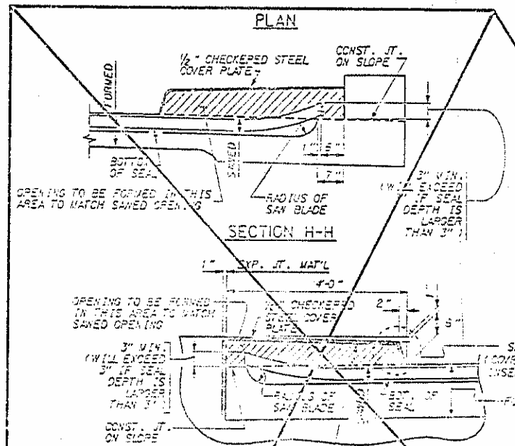


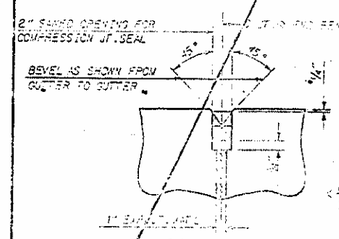
SECTION B-B

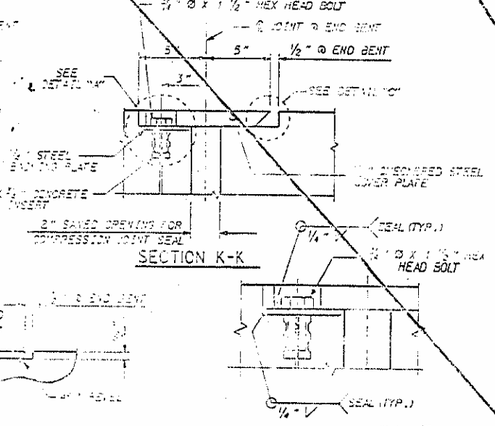


SECTION C-C

COMPRESSION JOINT SEAL DETAILS @ END BENT

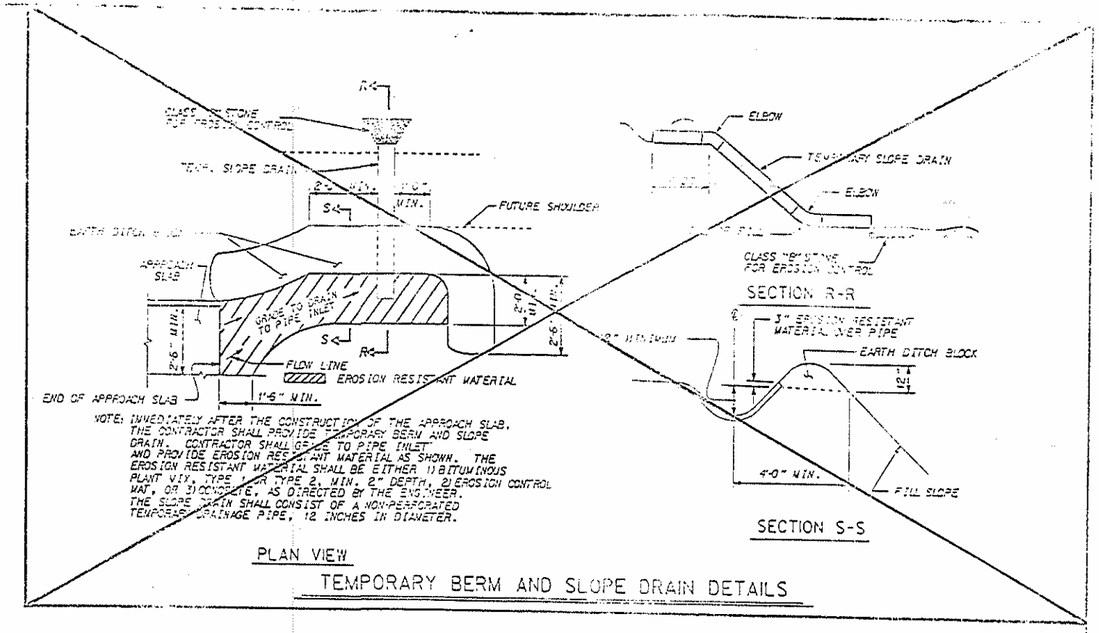




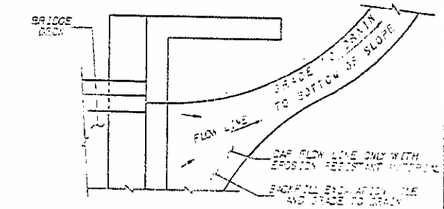


COMPRESSION JOINT SEAL DETAILS @ END BENT

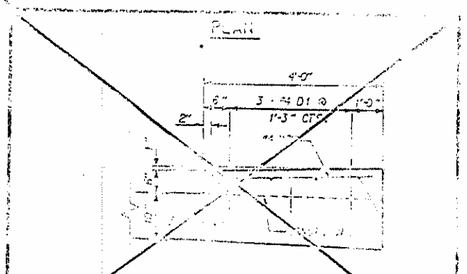
※ THE ¾" CONCRETE INSERTS SHALL BE CLOSED END FERRULES WITH LOCKNUTS AND BOLTS ATTACHED TO THEM. THE INSERTS SHALL CONFORM TO ASTM A108, GRADE 12L14 AND SHALL HAVE ATTACHED WORKING LOAD CAPACITY OF 1500 LBS.



TEMPORARY BERM AND SLOPE DRAIN DETAILS



TEMPORARY DRAINAGE DETAIL



SECTION N-N

SIDEWALK DETAILS

PROJECT NO. 8.2402.01

WAKE COUNTY

STATION: 32+91.25 -L-

SHT. 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
BRIDGE APPROACH
SLAB DETAILS

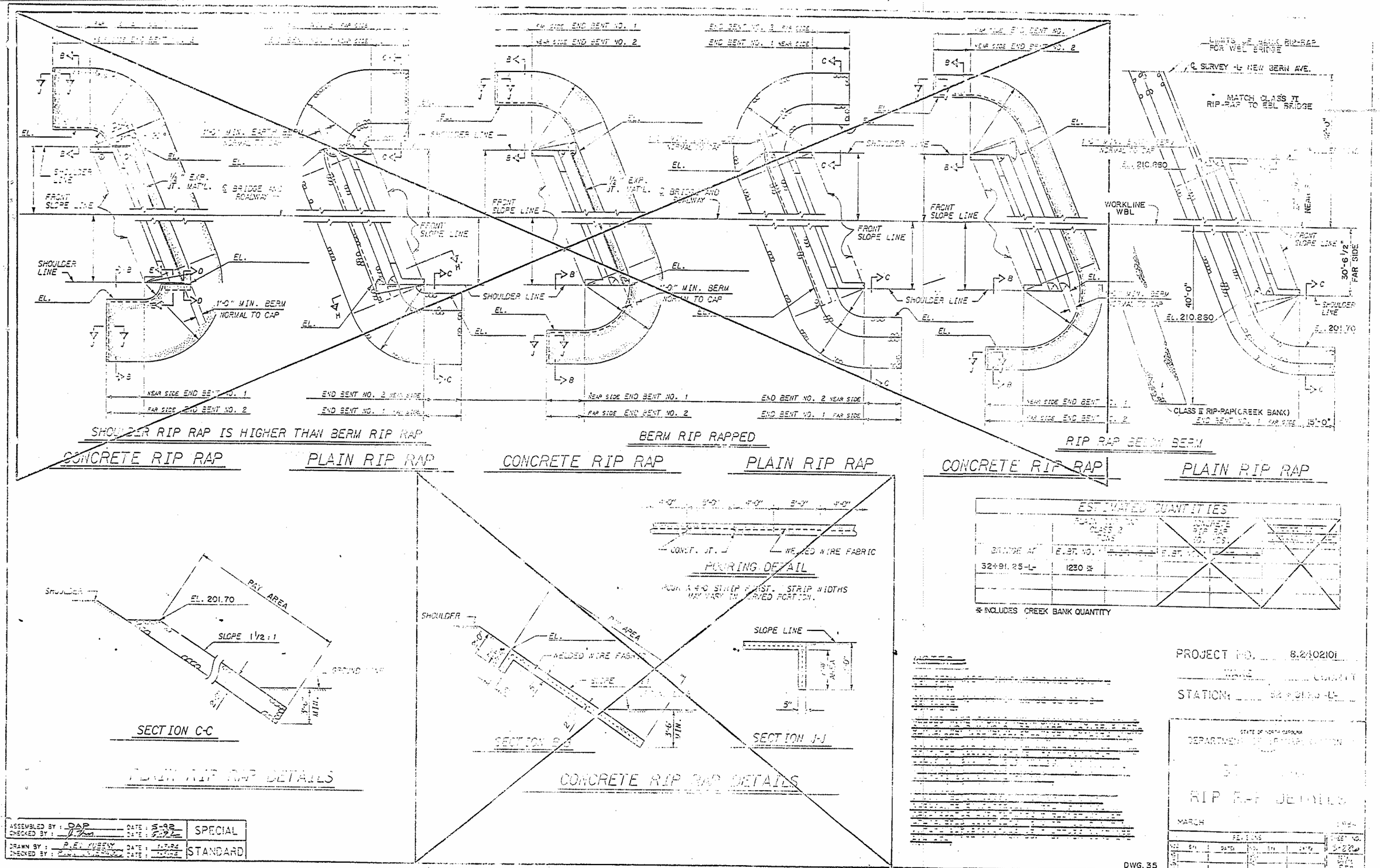
ASSEMBLED BY : DAP	DATE : 5-92	SPECIAL
CHECKED BY :	DATE :	
DRAWN BY : F. C. JONES	DATE : 11/29/88	STANDARD
CHECKED BY : A. R. BISSETTE	DATE : 11/29/88	

REVISED 5/13/91 REVISED 3/1/90 REVISED 12/11/89 REVISED 3/1/89

DWG. 34

REVISIONS						SHEET NO.
1	8-91	2-92	3	8-91	2-92	S-28S
2			4			TOTAL SHEETS 282

STD. NO. S4S3



ESTIMATED QUANTITIES				
	PLAIN RIP RAP CLASS 2 TONS		CONCRETE STRIP BASE CU. YDS.	
BRIDGE AT	E.BT. NO.	E.BT. NO.	E.BT. NO.	
32+91.25-L-	1230 *			

* INCLUDES CREEK BANK QUANTITY

PROJECT NO. 8.2402101

COUNTY

STATION: 32+91.25-L-

ASSEMBLED BY: DAP DATE: 5-92
CHECKED BY: DATE: 5-92
DRAWN BY: P.E. KUSENY DATE: 11-7-94
CHECKED BY: DATE:

SPECIAL

STANDARD

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

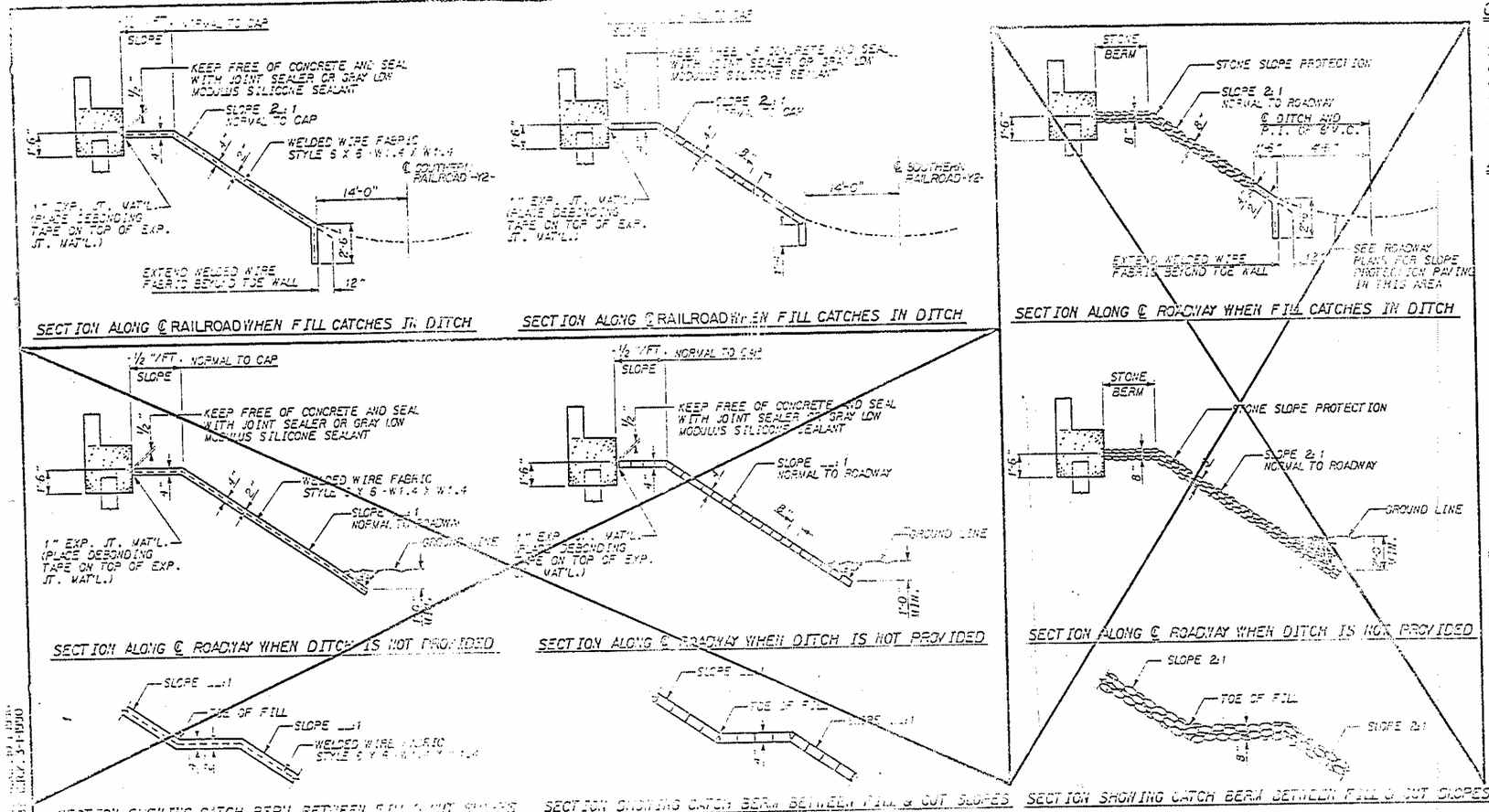
RIP RAP DETAILS

MARCH

REVISIONS

SHEET NO. 5-22

DWG. 35



GENERAL NOTES

FOUR INCH SLOPE PROTECTION SHALL BE PLACED UNDER THE END SPANS OF THE BRIDGE. LIMITS OF THE PROTECTION SHALL BE AS SHOWN IN THE DETAILS. THE CONTRACTOR, AT HIS OPTION, MAY PLACE EITHER TYPE. ALTERNATES "A", "B" OR "C", AS DESCRIBED BELOW. STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. METHOD OF MEASUREMENT AND BASIS OF PAYMENT SHALL BE AS PRESCRIBED IN SECTION 432 OF THE STANDARD SPECIFICATIONS. THE UNIT TYPE OF SLOPE PROTECTION SHALL BE USED UNDER BOTH ENDS OF AN ONE BRIDGE. FOR BERM WIDTH, SEE GENERAL DRAWING.

ALTERNATE "A"

ALTERNATE "A" SHALL CONSIST OF A 4 INCH POURED IN PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE [illegible] SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE STYLE 6 X 6 - W1.4 X W1.4, SO THINGS WILL ADJACENT RUNS OF WELDED WIRE FABRIC SHALL LAP AT LEAST SIX INCHES. SLOPE PROTECTION SHALL BE POURED IN ALTERNATE FOUR FT. AND FIVE FT. STRIPS AS SHOWN IN POURING DETAIL. THE COST OF THE WELDED WIRE FABRIC SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.

ALTERNATE "B"

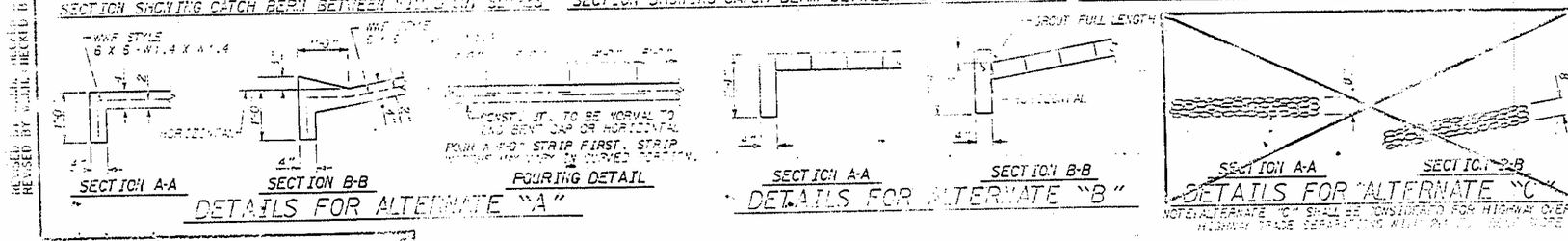
ALTERNATE "B" SHALL CONSIST OF SOLID CONCRETE BLOCKS 4" X 8" X 16" LAID IN HORIZONTAL COURSES SUCH THAT THOSE IN SUCCESSIVE COURSES WILL BREAK JOINTS WITH UNITS IN THE PRECEEDING ONE. BLOCKS SHALL BE LAID WITH THEIR LONG AXIS PARALLEL TO THE END BENT CAP WITH GROUTED JOINTS PREFERABLY ¼" BUT NOT LESS THAN ½" NOR MORE THAN 1 ¼" WIDE BETWEEN SUCCESSIVE COURSES AND END OF BLOCKS. JOINTS SHALL BE GROUTED BY POURING A MIXTURE OF ONE PART PORTLAND CEMENT TO THREE PARTS SAND MIXED WITH SUFFICIENT WATER TO ENABLE THE MIXTURE TO BE POURED THROUGH A SPOUT. THE CONCRETE BLOCKS SHALL BE CAST TO ACCURATE DIMENSIONS, SHALL HAVE UNIFORM SURFACE COLOR AND TEXTURE AND SHALL BE MANUFACTURED OF MATERIALS TO PRODUCE A COMPRESSIVE STRENGTH OF NOT LESS THAN 3,000 PSI. [illegible] BLOCKS SHALL BE USED EXCEPT IN CONSTRUCTING A STRAIGHT LINE ALONG EACH SIDE OF THE PAVING DOWN THE SLOPE. CARE SHALL BE TAKEN TO BREAK THE BLOCKS SO AS TO GIVE A UNIFORM WORKMANLIKE JOINT AND SURFACE.

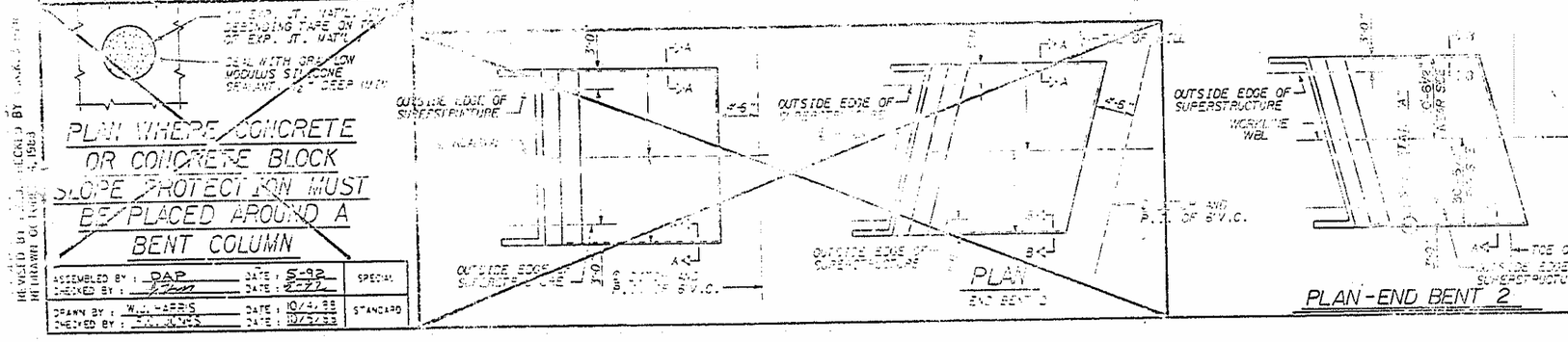
ALTERNATE "C"

ALTERNATE "C" SHALL BE CONSIDERED FOR HIGHWAY OVER HIGHWAY GRADE SEPARATIONS WITH 2:1 END BENT SLOPE IN RURAL, UNPOPULATED AREAS ONLY.

ALTERNATE "C" SHALL CONSIST OF A COMBINATION CONCRETE BLOCKS AND STONE SLOPE PROTECTION. THE CONCRETE [illegible] SHALL CONSIST OF PAVED STRIPS ALONG THE DITCH AS SHOWN IN THE DETAILS. [illegible] LEVELS OF STONE SHALL BE PLACED OVER THE REMAINING AREA SHOWN IN THE [illegible] TO BE COVERED WITH SLOPE PROTECTION. CONCRETE [illegible] OF THE CONCRETE, STONE AND WELDED WIRE FABRIC STYLE 6 X 6 - W1.4 X W1.4, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION. SUBGRADING, STONE TYPE, STONE SIZING, AND REPLACEMENT PROVISION, SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. [illegible] SUBMITTED TO THE ENGINEER FOR APPROVAL WITHIN [illegible] DAYS.

BRIDGE 6 STA. 32+91.25	[illegible] END BENT 2	[illegible] 644	[illegible] 668





ASSEMBLED BY : DAP	DATE : 5-92	SPECIAL	
CHECKED BY : [illegible]	DATE : [illegible]		
DRAWN BY : W.H. HARRIS	DATE : 10/4/88	STANDARD	
CHECKED BY : [illegible]	DATE : 10/25/88		

DWG. 36

PROJECT NO. 8.2402101

WAKE COUNTY

STATION: 32+91.25 -L-

SHEET 1 OF 2

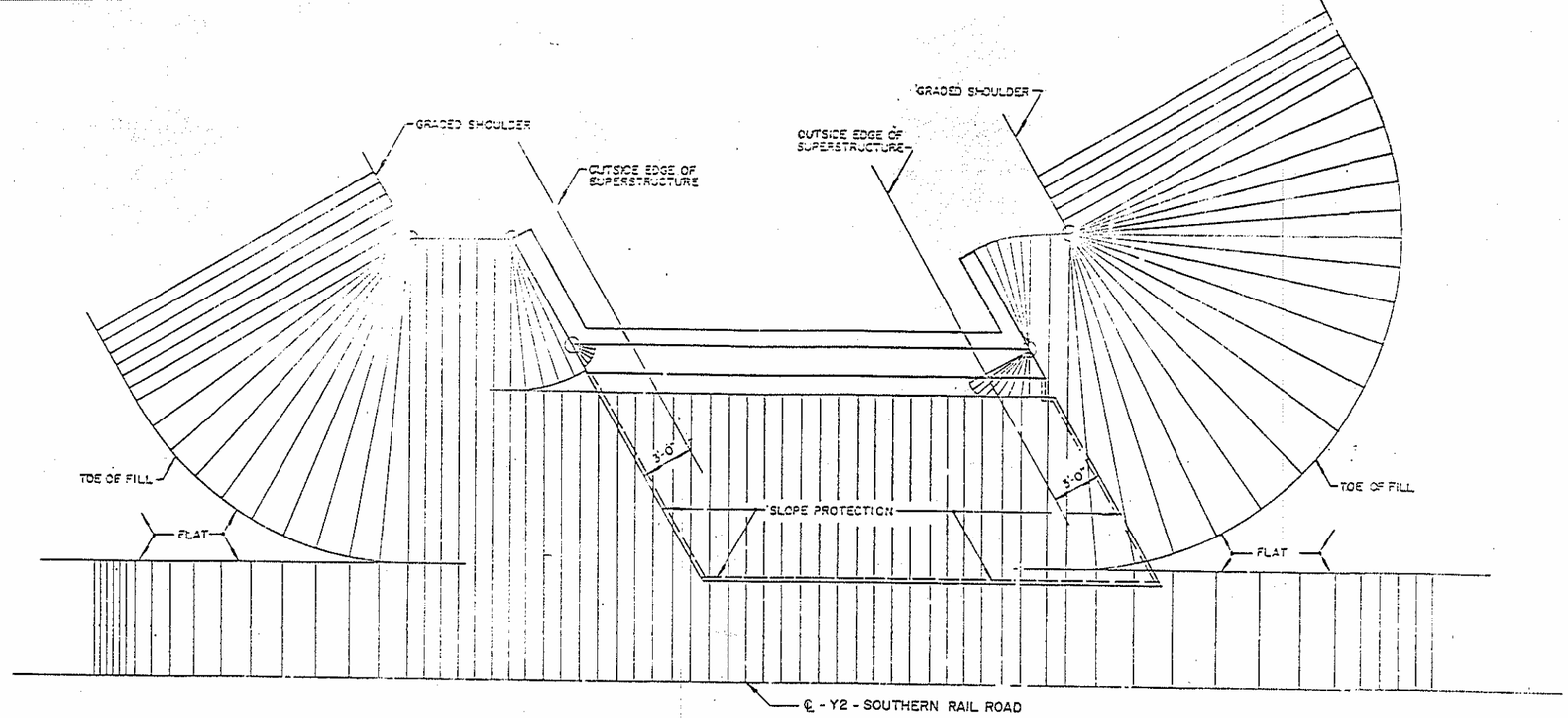
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD SLOPE PROTECTION DETAILS

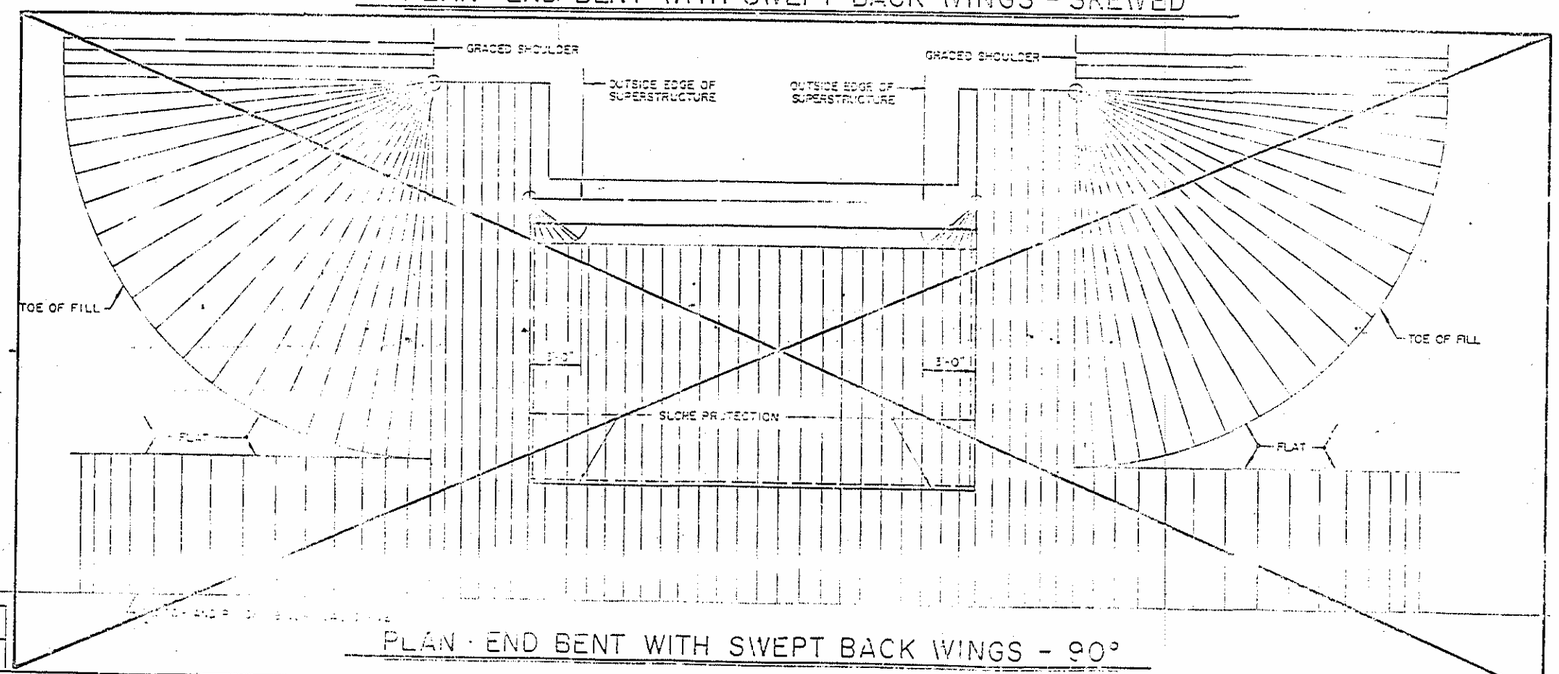
FEBRUARY 1979

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-237
						TOTAL SHEETS 332

STD. NO. S-1



PLAN · END BENT WITH SWEPT BACK WINGS - SKEWED



PLAN · END BENT WITH SWEPT BACK WINGS - 90°

DWG. 37

DAP	DATE 5-92	SPECIAL	
	DATE 5-92		
	DATE	STANDARD	
	DATE		

PROJECT NO. 8.2402101
WAKE COUNTY
STATION 52+91.25 -L-
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STEEL PIPE
SLOPE PROTECTION
DETAILS

PRELIMINARY

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

STD NO SP2