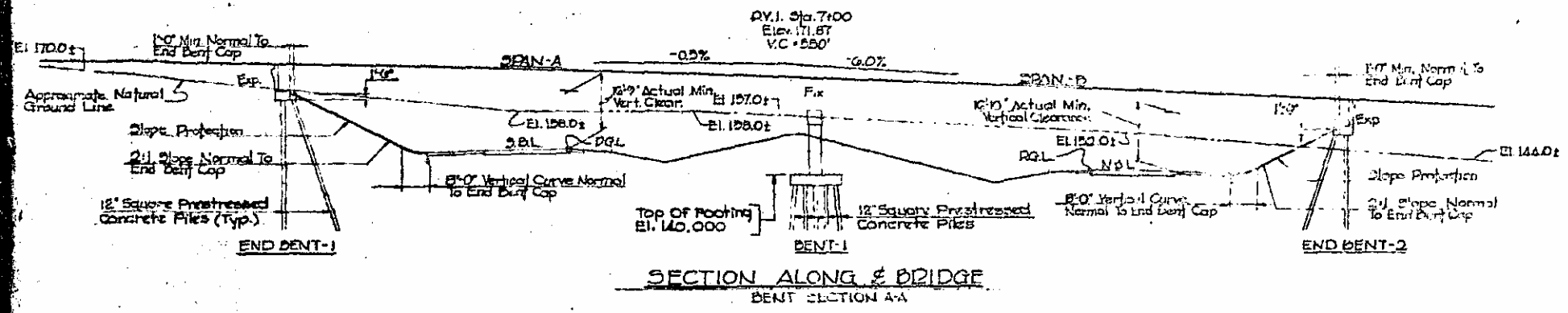
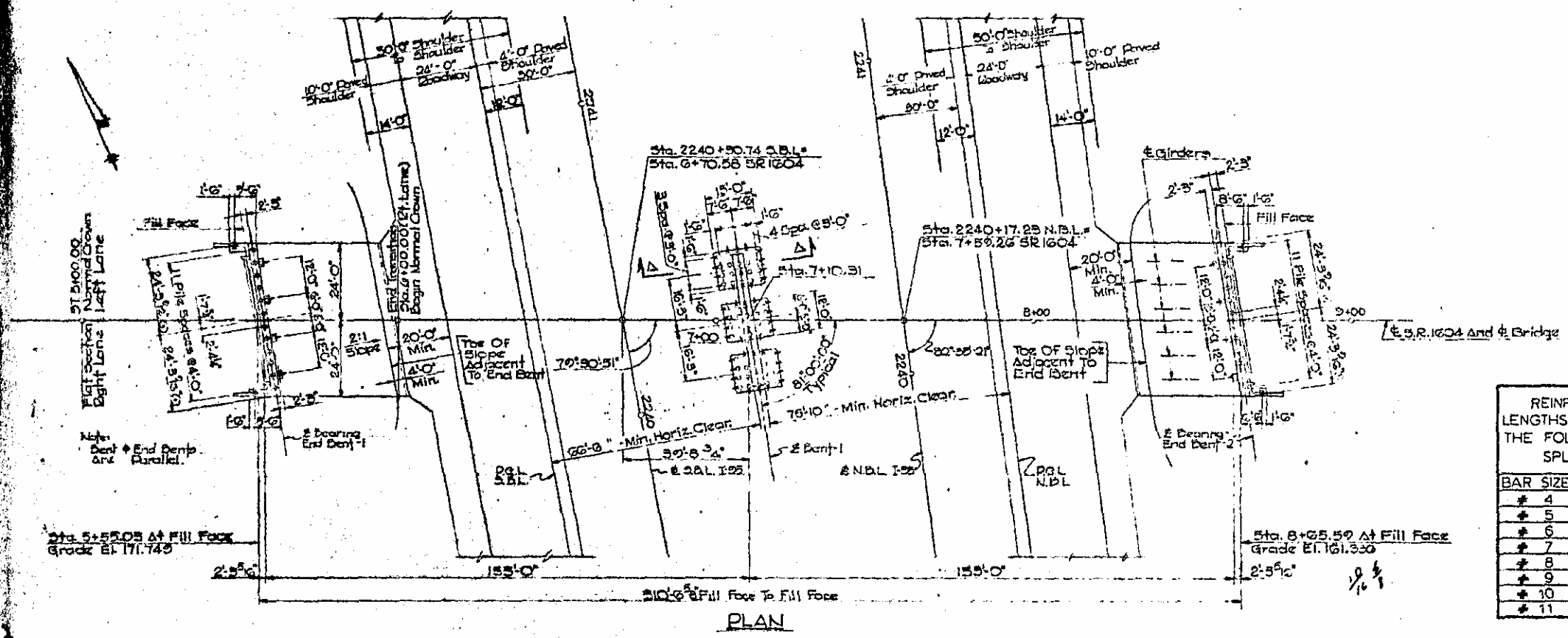


NOTES

ASSUMED LIVE LOAD: HS 15-44
 REFERENCE TO SHEET S-11 For Other Data And General Notes See Sheet S-11
 PILE CAPACITIES: Piles Are Designed For Bearing Capacities Of 30 Tons Per Pile.
 EXCAVATION: No Work Shall Be Started On This Bridge Until After The Roadway Section Has Been Graded. The Roadway Contractor Will Be Required To Remove The Existing Pavement And Scarify The Roadbed To A Minimum Depth Of 2'-0" Within The Area Of End Bent Piles. Piles For End Bent No. 2 Are To Be Driven thru FILL.
 ALL STRUCTURAL STEEL TO BE ASTM A36 GRADE.
 STRUCTURAL STEEL FOR THIS STRUCTURE SHALL BE PAINTED IN ACCORDANCE WITH PAINT SYSTEM 3, SEE SPECIAL PROVISIONS. FOR GALVANIZED HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.

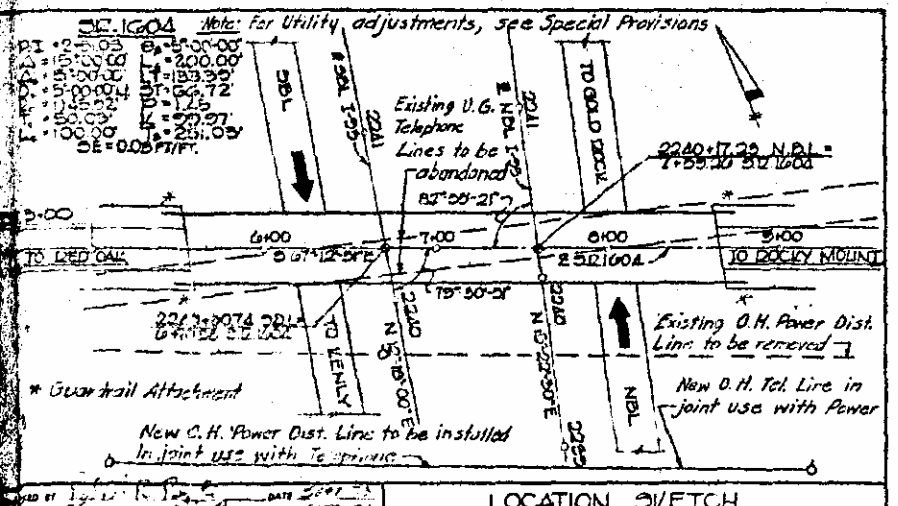


SECTION ALONG & BRIDGE
BENT SECTION A-A



REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

BAR SIZE	SPLICE DISTANCE
# 4	1'-3"
# 5	1'-9"
# 6	2'-0"
# 7	2'-3"
# 8	2'-6"
# 9	2'-9"
# 10	3'-3"
# 11	3'-6"



TOTAL BILL OF MATERIAL

	CLASS AA CONCRETE	CLASS A CONCRETE	REINFORCING STEEL	STRUCTURAL STEEL	12" SQUARE PRESTRESSED CONCRETE PILES	LIQUID OIL CONCRETE PROTECTION	FOUNDATION EXCAVATION	4" SLOPE PROTECTION	1-BAR METAL PAIL	BRIDGE APPROACH SLABS	
	CU YDS	CU YDS	LBS	APPROX LBS	NO	LIN FT	GALLONS	CU YDS	SQ YDS	LIN FT	SQ YD
SUPERSTRUCTURE	379.3		89,206	524,200			31			672.99	
END BENT NO. 1		44.7	7,487		18	930		240			
BENT NO. 1		103.6	22,498		60	1,560	400				
END BENT NO. 2		43.8	7,343		18	780		180			
TOTALS	379.3	192.2	126,538	524,200	96	3,270	31	420	672.99		

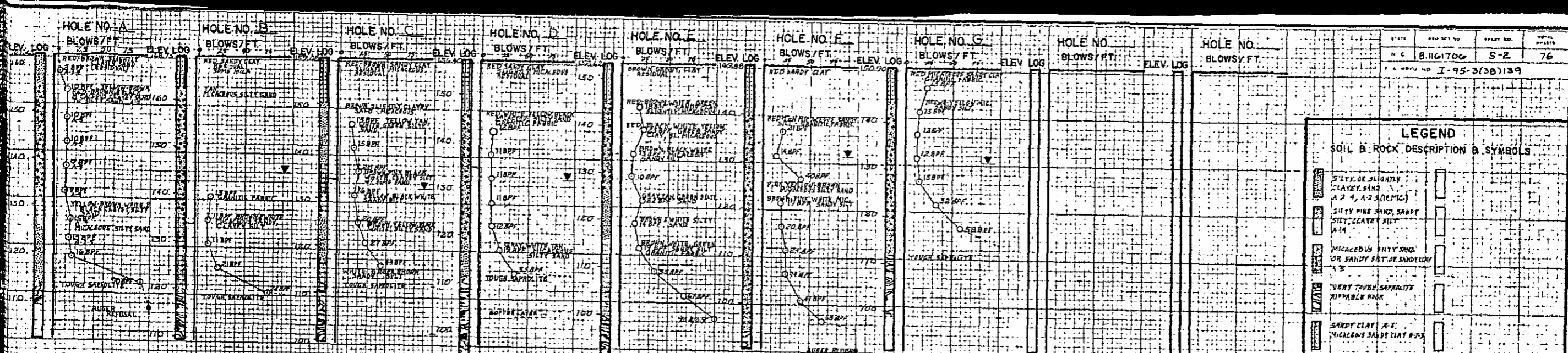
NOTE: Quantities For End Blocks Are Included In End Bents.

PROJECT NO. 8 116/1706
 NASH COUNTY
 STATION: 2240+17.23 N.B.L. = 7+59.26 S.E. 1604

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 RALEIGH, NORTH CAROLINA

STATE OF NORTH CAROLINA
 STATE HIGHWAY COMMISSION
 GENERAL DRAWING FOR BRIDGE
 S. E. 1604 OVER PROJECT 2-95
 BETWEEN N. C. 97 AND OLD ROCK

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			1		
2			2		



LEGEND
 SOIL & ROCK DESCRIPTION & SYMBOLS

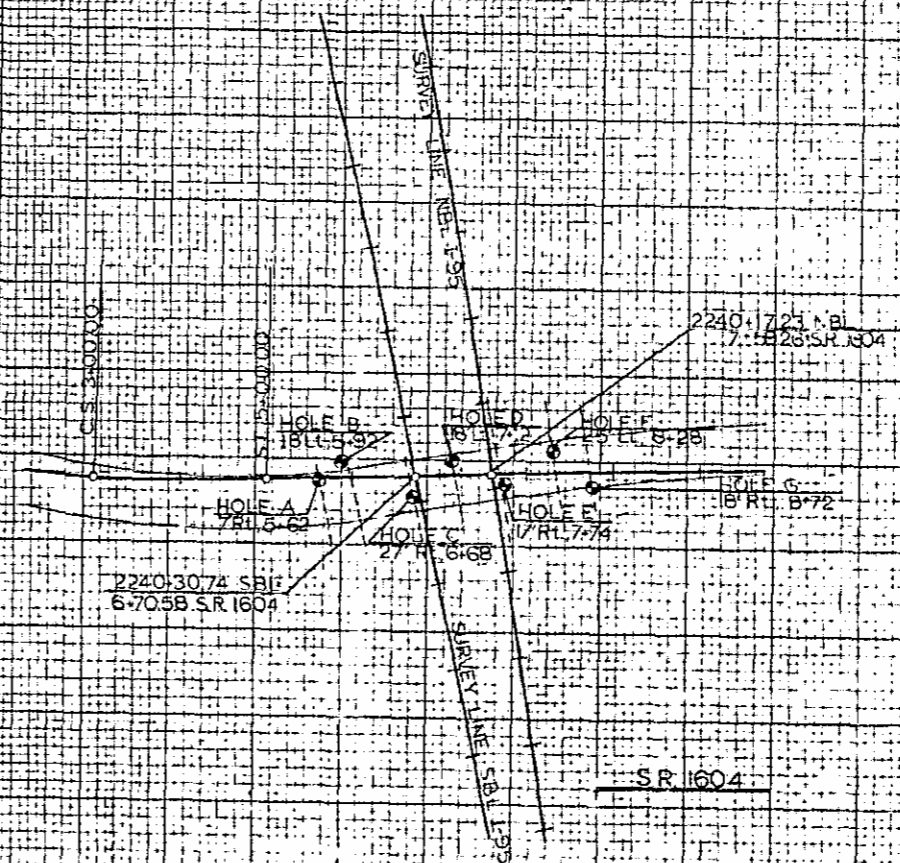
	SILTY OR SLIGHTLY CLAYEY SAND (A-1, A-2, A-2.5 (HEMIC))
	SILTY FINE SAND, SANDY SILT, CLAYEY SILT, ETC.
	MICACEOUS SILTY SAND OR SANDY SILT OR SANDY CLAY
	VERY TOUGH, SEPARATE RIPRAPABLE ROCK
	SANDY CLAY, ETC. MICACEOUS SANDY CLAY, ETC.
	WATER LEVEL IN BORE HOLES

NOTES

THE LOGS SHOWN ON THIS PROFILE ARE TAKEN FROM FIELD SURVEY DATA AND REPRESENT THE BEST INFORMATION AVAILABLE. FIELD PROCEDURES ARE BASED ON A.S.T.M. AND A.A.S.H.O. STANDARDS WITH BEARING CAPACITIES DERIVED FROM STANDARD PENETRATION TEST: 140 LB. HAMMER, 30 IN. FALL, 2 IN. SAMPLER.

B.M. NAIL IN CORNER FENCE POST, 17' RT. 2240+00 NBL
 B.M. ELEV. 148.24

BORE HOLE PLAN



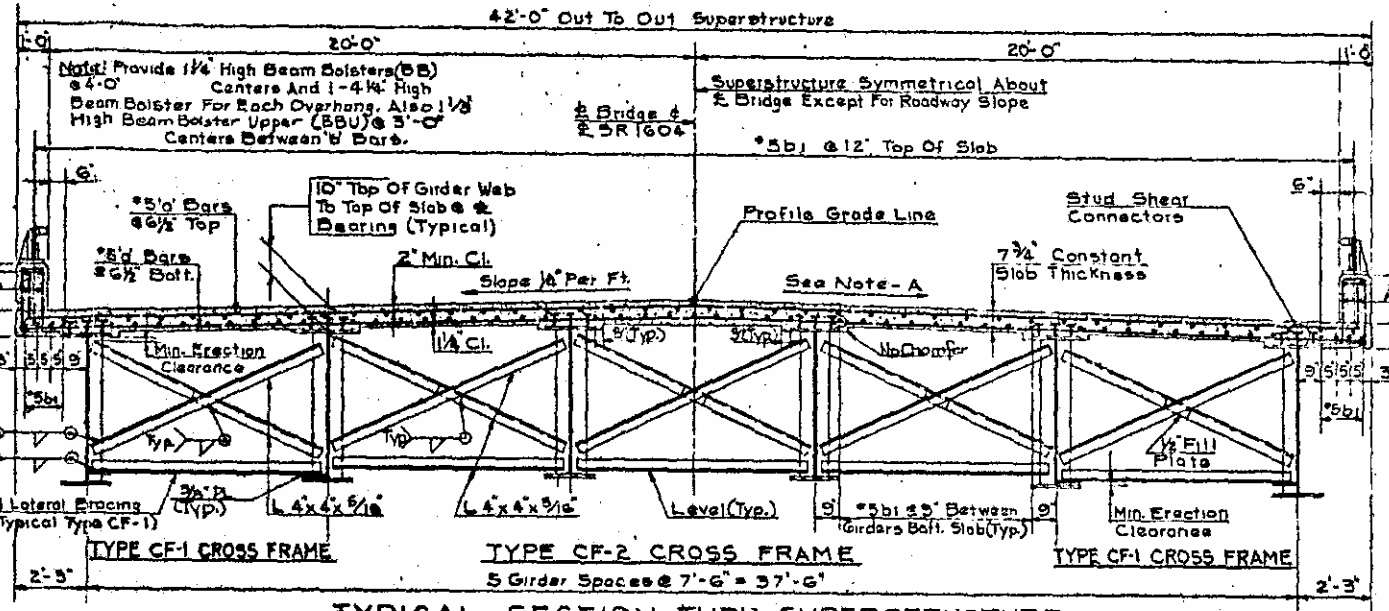
SOIL TEST RESULTS

LINE/STATION	DEPTH	W	L	U	CLAY
HOLE A 29+7.3	A-3 28	NP	27	19	6
HOLE A 29+7.3	A-3 14	NP	29	28	18
HOLE A 12+3	A-3 37	NP	33	27	14
HOLE A 17+18	A-3 13	NP	36	24	13
HOLE A 23+24	A-3 19	NP	38	27	12
HOLE A 26+24	A-3 18	NP	39	27	13
HOLE A 33+34	A-4 36	NP	41	22	12
HOLE A 33+34	A-4 18	NP	37	29	10

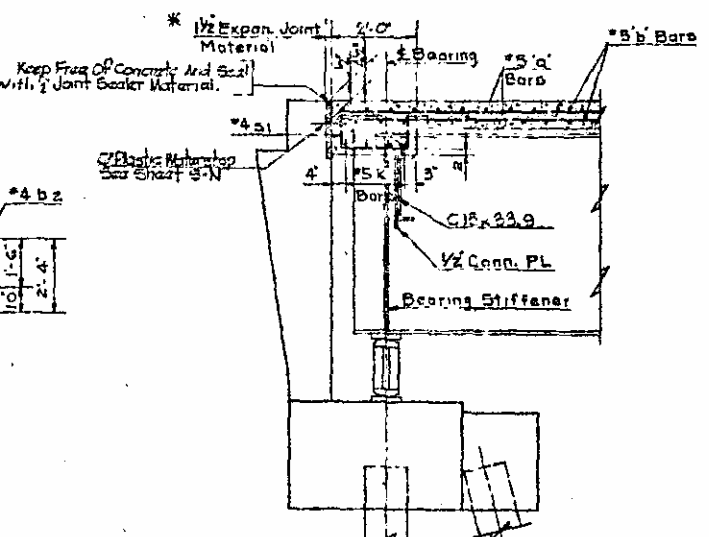
NORTH CAROLINA
 STATE HIGHWAY COMMISSION
 DEPARTMENT OF LOCATIONS & SURVEYS
 GEOLOGICAL DIVISION
 BRIDGE-FOUNDATION SURVEY

PROJECT B.1161706
 COUNTY NASH
 ROUTE I-95
 BRIDGE ON S.R. 1604
 OVER I-95

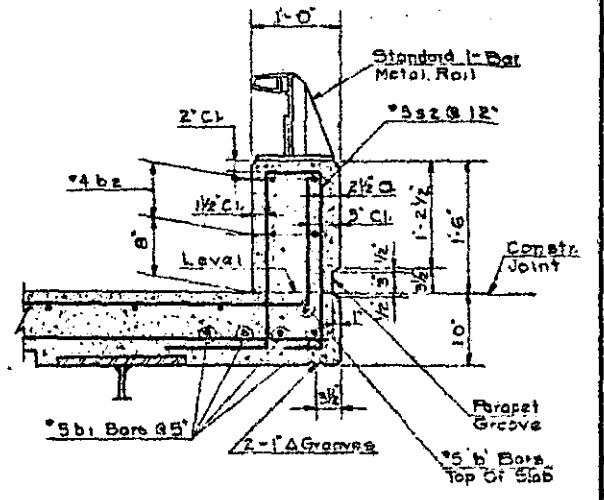
SCALE: HORIZONTAL 1"=100' VERTICAL 1"=10'
 SURVEY BY G.L. Bunch
 ANALYSIS & REPORT BY J.F. Lechetter
 SUBMITTED BY A.C. Dodson
 DRAWN BY (STATE HIGHWAY GEOLOGIST)



TYPICAL SECTION THRU SUPERSTRUCTURE AT INTERMEDIATE CROSS FRAMES



TYPICAL SECTION THRU DIAPHRAGM AT END BENTS

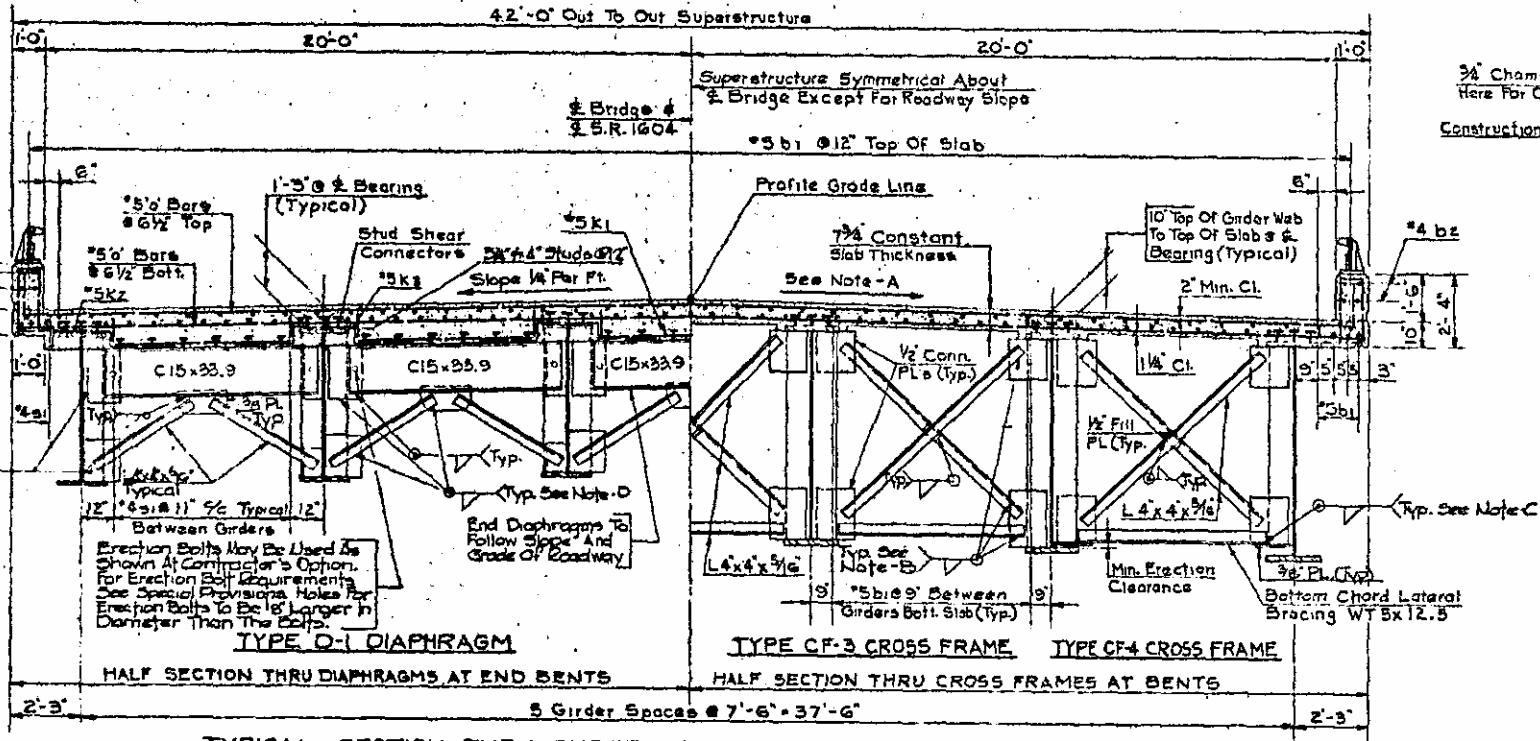


PARAPET AND RAIL DETAIL

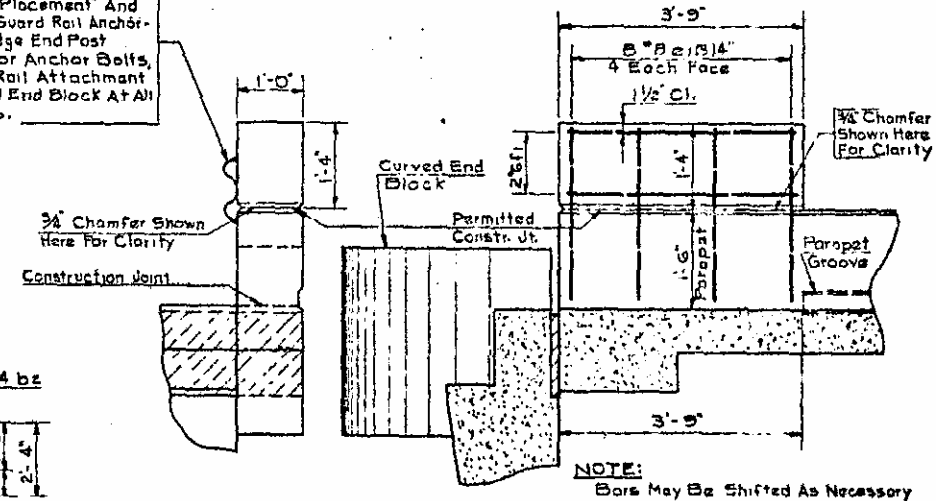
Note - A: Right Lane
 Roadway Slope in Transition From Sta. 5+00 (Flat Center) to Sta. 6+00.
 Roadway Slope 1/8" Per Foot From Sta. 6+00 To End of Bridge.

Note - B: Connections of 4"x4"x1/2" Angles To Conn. Pls. Or Bearing Stiffeners Shall Be Made With A Min. Length Of 15" Of 1/4" Fillet Weld.
Note - C: Connections of WT 5x12.5 Bottom Chord Lateral Bracing To 3/8" Pls. Shall Be Made With A Min. Length Of 10" Of 1/4" Fillet Weld.
Note - D: Connections of 4"x4"x1/2" Angles To Conn. Pls. Or 3/8" Pls. Shall Be Made With A Min. Length Of 17" Of 1/4" Fillet Weld.

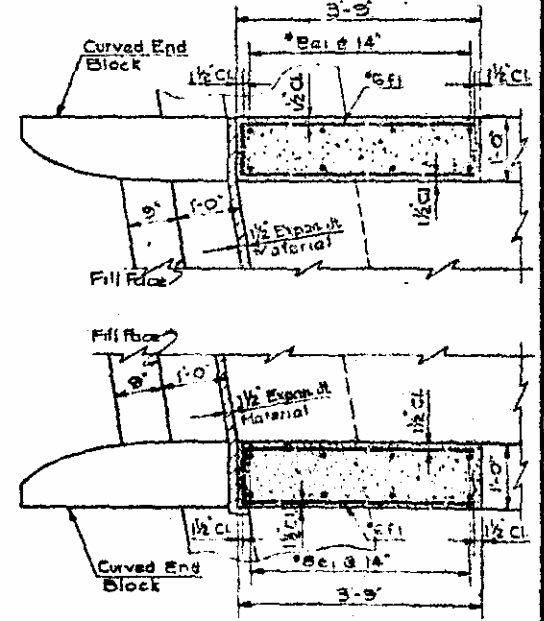
See "Standard Offset Guard Rail Design And Placement" And "Standard Guard Rail Anchorage For Bridge End Post Drawings" For Anchor Bolts, For Guard Rail Attachment And Curved End Block At All End Posts.



TYPICAL SECTION THRU SUPERSTRUCTURE AT SUPPORTS



END POST DETAILS (4 REQUIRED)



PROJECT NO. 8.1161706

NASH COUNTY

STATION: 2290+17.23 N.B.L. 7+59 26 S.R. 1604

* For Expansion Joint Material See Sheet 3-0.

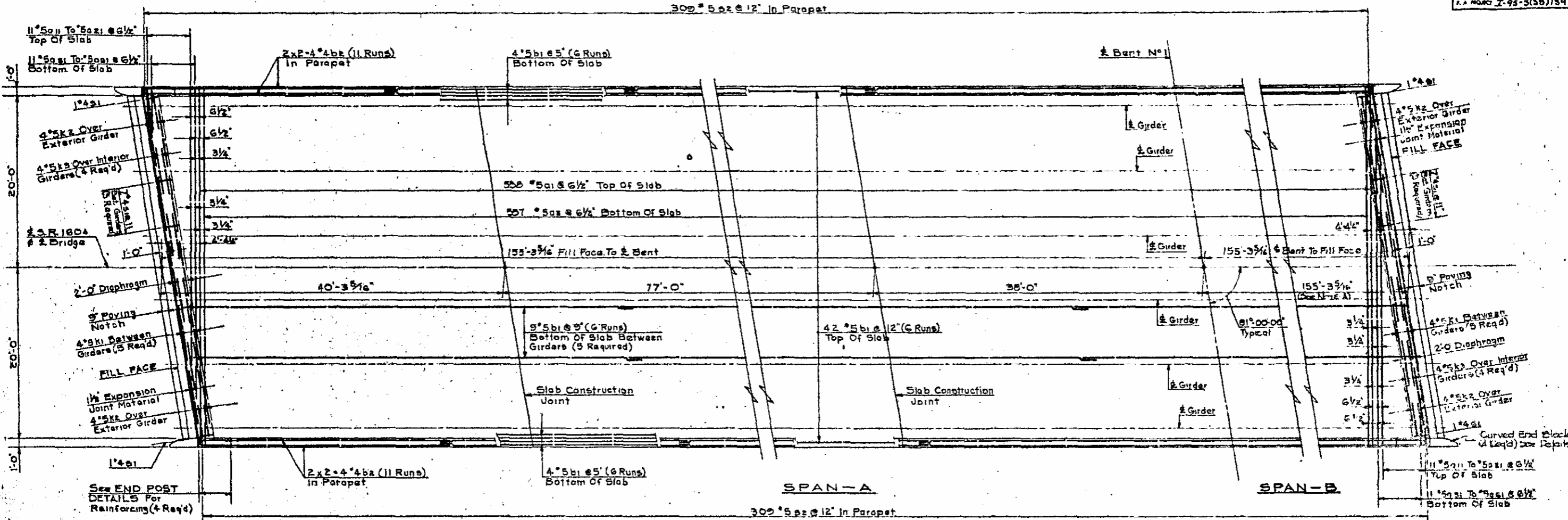
Note: At the contractor's option, but without change in the contract price for structural steel, he may submit shop welded or high strength bolted connection details for approval in lieu of the field welded connection details as shown.

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 CONSULTING ENGINEERS
 RALEIGH, NORTH CAROLINA

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
 S R 1604 UNDERPASS
 SUPERSTRUCTURE
 DETAILS

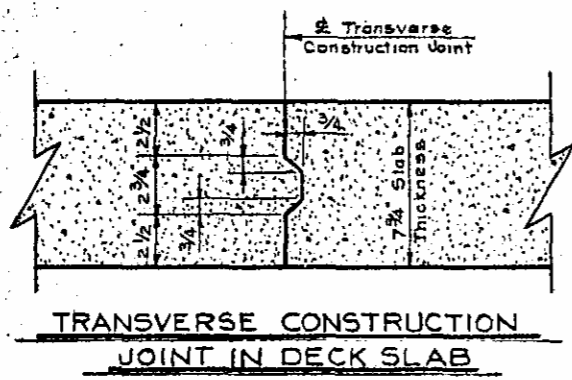
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			2		
3			4		

DATE 5-21-73
 DATE 5-21-73



DECK PLAN

Note: Locations of Slab Construction Joints in SPAN-B Are Symmetrical With SPAN-A About Bent No. 1.



TRANSVERSE CONSTRUCTION JOINT IN DECK SLAB

PROJECT No. 8.1161706
 COUNTY N.C.
 STATION: 2240+17.23 N.B.L.
 7+59.26 S.R. 1604

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
 S R 1604 UNDERPASS
 SUPERSTRUCTURE
 DECK PLAN

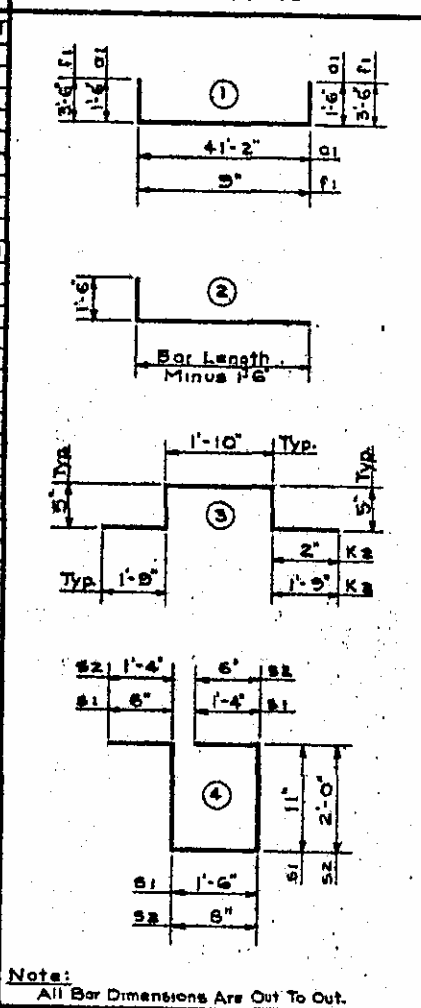
RUMMEL, KLEPPER & KAHL
 CONSULTING ENGINEERS
 RALEIGH, NORTH CAROLINA

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

DATE 2/27/73
 DATE 2/27/73

BILL OF MATERIAL

BAR NO	SIZE	TYPE	LENGTH	WEIGHT
1	556	*5	1 44'-2"	25705
2	527	*5	Str. 41'-6"	24,109
3	2	*5	2 38'-1"	79
4	2	*5	2 34'-5"	72
5	2	*5	2 31'-3"	65
6	2	*5	2 27'-10"	58
7	2	*5	2 24'-5"	51
8	2	*5	2 21'-0"	44
9	2	*5	2 17'-7"	37
10	2	*5	2 14'-2"	30
11	2	*5	2 10'-9"	22
12	2	*5	2 7'-4"	15
13	2	*5	2 3'-11"	8
14	2	*5	Str. 38'-6"	80
15	2	*5	Str. 35'-1"	73
16	2	*5	Str. 31'-8"	66
17	2	*5	Str. 28'-5"	59
18	2	*5	Str. 24'-10"	52
19	2	*5	Str. 21'-5"	45
20	2	*5	Str. 18'-0"	38
21	2	*5	Str. 14'-7"	30
22	2	*5	Str. 10'-9"	22
23	2	*5	Str. 7'-4"	15
24	2	*5	Str. 3'-11"	8
25	570	*5	Str. 52'-10"	31,410
26	85	*4	Str. 29'-2"	1,715
27	52	*8	Str. 2'-7"	221
28	8	*6	1 7'-9"	93
29	40	*5	Str. 5'-9"	240
30	16	*5	3 4'-7"	76
31	32	*5	3 0'-2"	206
32	74	*4	4 5'-6"	272
33	618	*5	4 6'-6"	4,190



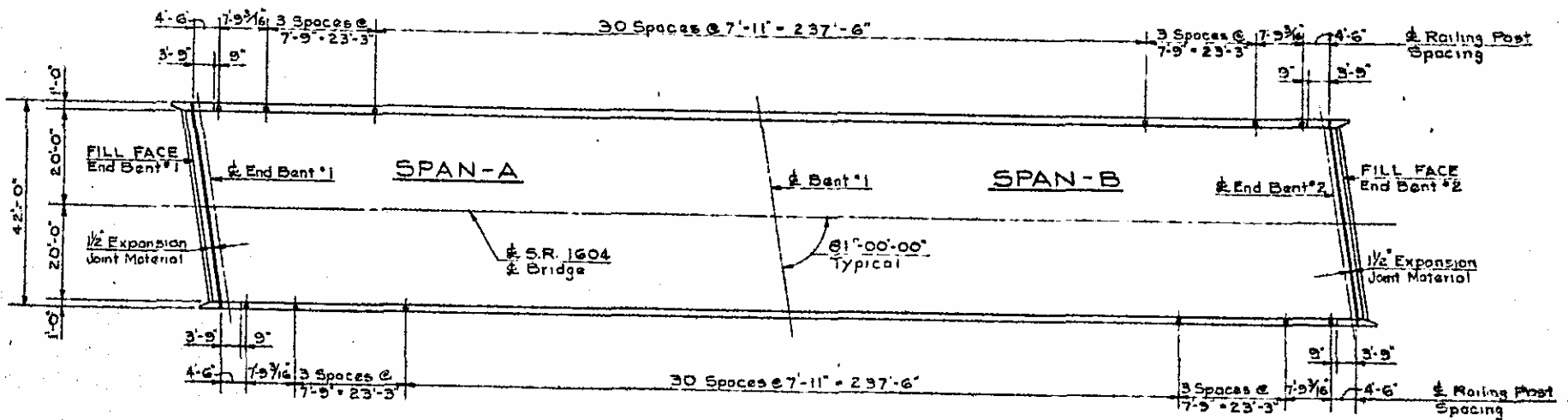
Note: All Bar Dimensions Are Out To Out.

CLASS 'A' CONCRETE BREAKDOWN

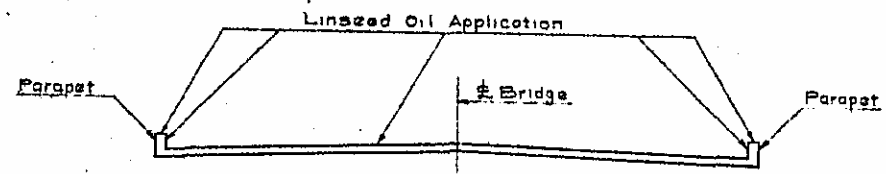
POUR NO 1	45.0	Cu.Yds.
POUR NO 2	45.0	Cu.Yds.
POUR NO 3	85.1	Cu.Yds.
POUR NO 4	85.1	Cu.Yds.
POUR NO 5	84.0	Cu.Yds.
PARAPETS	34.3	Cu.Yds.
END POSTS	0.8	Cu.Yds.
TOTAL CLASS 'A'	379.3	CU YDS

TOTAL REINFORCING - 89,206 LBS.

REV. NO.	DATE	BY	REVISION
4	N.C.	B.1161706	



RAILING POST SPACING
RAILING PAY LENGTH = 602.06 FT.



SKETCH SHOWING LIMIT OF LINSEED OIL APPLICATION

PROJECT NO. 8.1161706

NASH COUNTY

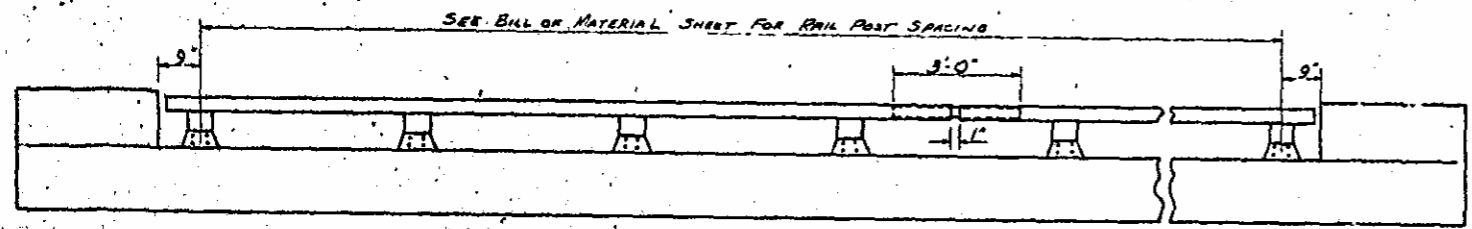
STATION: 2240+17.23, N.B.S.
7+59 26 S.R. 1604

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH
S R 1604 UNDERPASS
SUPERSTRUCTURE
DETAILS

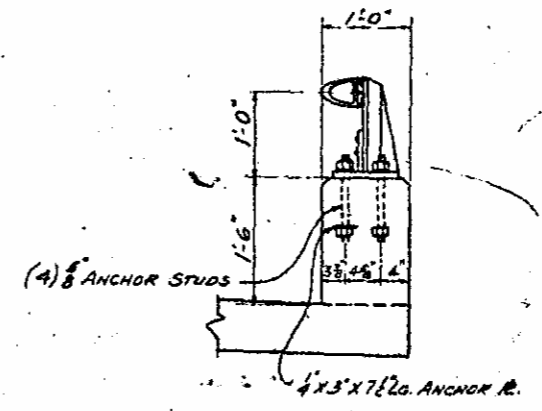
RUMMEL, KLEPPER & KAHL
CONSULTING ENGINEERS
RALEIGH, NORTH CAROLINA

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		

DATE 3/22/73
DATE 3/21/73



ELEVATION



SECTION THRU PARAPET & RAIL

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

ALUMINUM RAILS

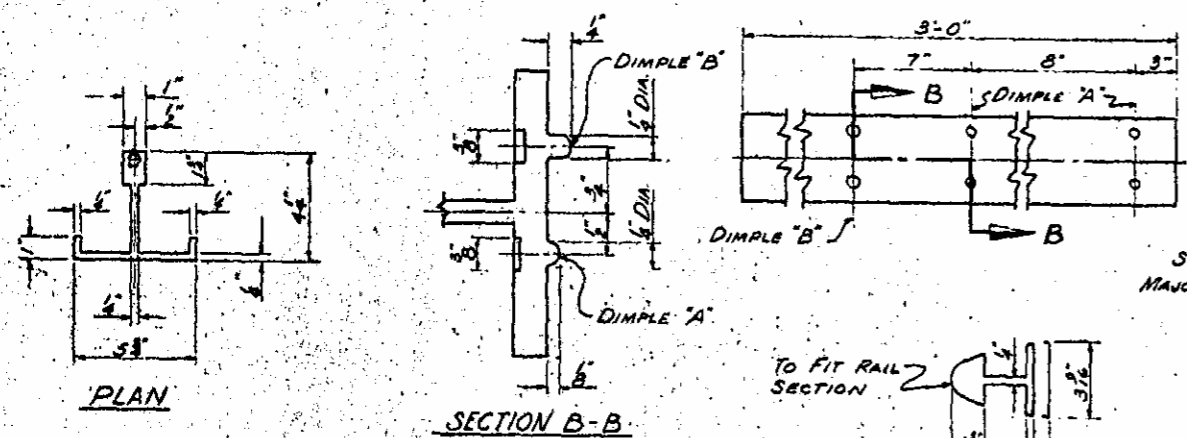
MATERIAL FOR POSTS, BASES & RAILS, EXPANSION BARS, & CLAMP BARS SHALL BE A.S.T.M. B-221 ALLOY COBALT.
 MATERIAL FOR ALUMINUM WASHER SHALL BE A.S.T.M. B-209 ALLOY ALCLAD 2024-T3.
 MATERIAL FOR RIVETS SHALL BE A.S.T.M. B-916 ALLOY COBALT.
 BUTTON HEAD OF CONE POINT COLD DRIVEN AS PER DRAWING.
 MATERIAL FOR ALUMINUM NUTS SHALL BE A.S.T.M. B-211 ALLOY COBALT.
 THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED PAINTING COMPOUND OF APPROVED QUALITY. MATERIAL FOR SHIMS TO BE A.S.T.M. B-209 ALLOY 6061-T6.

GENERAL NOTES

1. RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPACED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.
2. END OF RAIL TO CLEAR FACE OF CONCRETE END POST BY 1 1/2".
3. MATERIAL FOR ANCHOR STUDS SHALL BE TYPE 430 STAINLESS STEEL WITH MINIMUM 70,000 P.S.I. ULTIMATE STRENGTH.
4. STUDS TO BE EMBEDDED 7" IN CONCRETE. NUTS SHALL BE AMERICAN STANDARD FINISHED HEXAGON THREADED CLASS 2B THREAD. ANCHOR PLATES SHALL BE A.S.T.M. A-36 MACHINING SCREWS FOR RAIL ATTACHMENT SHALL BE TYPE 430 STAINLESS STEEL.
5. CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS & POSTS. SAME INSPECTION IS NOT REQUIRED.
6. METAL RAIL POSTS TO BE SET NORMAL TO CURB GRADE.
7. METHOD OF MEASUREMENT FOR METAL RAIL FOR LENGTH OF METAL RAILS TO BE PAID FOR SEE THE 1972 STANDARD SPECIFICATIONS SUB ARTICLE 460-4 (R).
8. CURVED RAIL UMBRELLA WHERE RAIL HAS TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE, THE CONTRACTOR MAY AT HIS OPTION HAVE THE REQUIRED CURVATURE IN THE RAIL FURNISHED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A MANNER ACCEPTABLE TO THE ENGINEER.
9. TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND IDENTIFICATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST.
10. SHIMS TO BE USED AS NECESSARY FOR POST ALIGNMENT. A10 Alloy 6251-T3 MAY BE SUBSTITUTED FOR Alloy 6061-T6 WHERE APPROPRIATE.

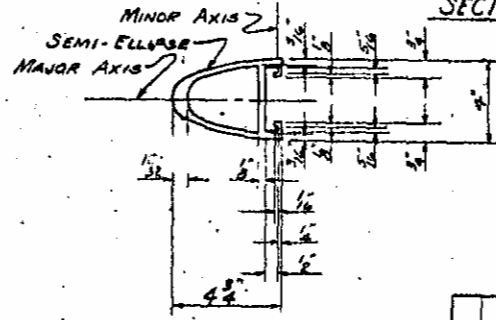
GALVANIZED STEEL RAILS

MATERIALS AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS.
 POSTS, POST BASES, RAILS, BIRDSEASON BARS AND CLAMP BARS: A.S.T.M. A36 GRADE STRUCTURAL STEEL - GALVANIZED TO A.S.T.M. A-123.
 RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF A.S.T.M. A502 FOR GRADE 1 RIVETS.
 NUTS & WASHERS FOR TOP END OF ANCHOR ASSEMBLY FOR STEEL RAIL SHALL BE TYPE 430 STAINLESS STEEL.
 THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH, SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1 OR OF FEDERAL SPECIFICATION TT-D-641.
 SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE C OR D111 FOR GRADE C, AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123.
 CLOSURE BARS: CLOSURE BARS SHALL MEET THE REQUIREMENTS OF ASTM A266 GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM-A123.
 PAY LENGTH: 602.00'

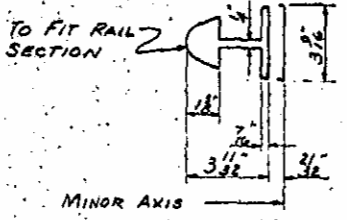


PLAN

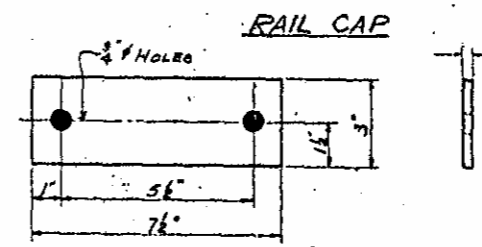
SECTION B-B



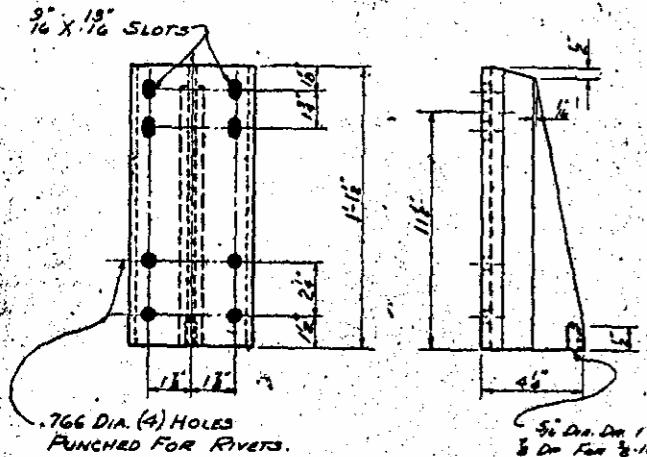
RAIL SECTION



BAR SECTION EXPANSION BAR DETAILS



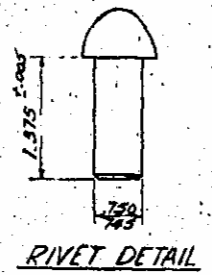
RAIL CAP



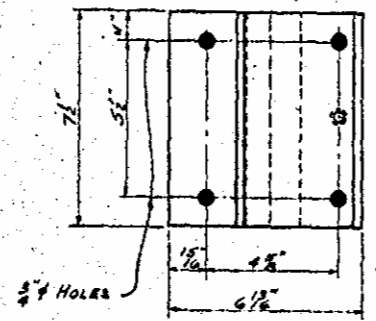
FRONT ELEVATION

SIDE ELEVATION

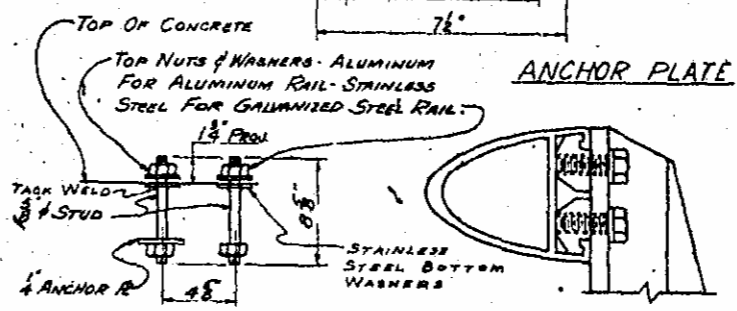
DETAILS OF POST



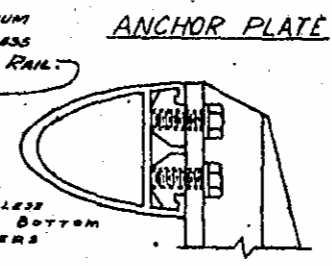
RIVET DETAIL



PLAN

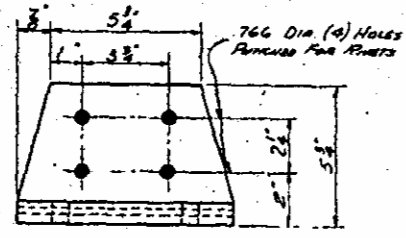


ANCHOR ASSEMBLY

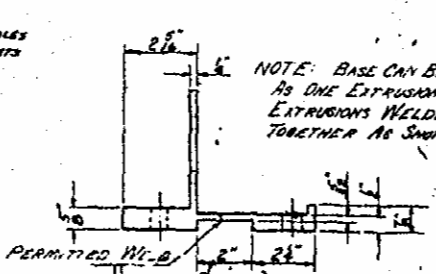


CLAMP & RAIL ASSEMBLY

(FOR OPTIONAL ANCHOR UNIT SEE SHEET 3 OF 3)



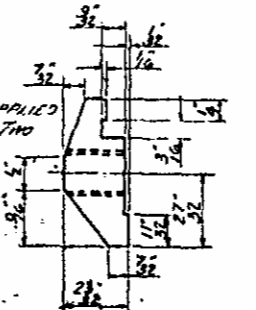
FRONT ELEVATION



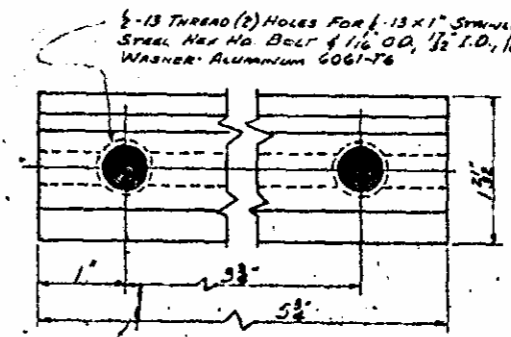
SIDE ELEVATION

POST BASE DETAILS

NOTE: BASE CAN BE SUPPLIED AS ONE EXTRUSION OR TWO EXTRUSIONS WELDED TOGETHER AS SHOWN



CLAMP BAR DETAIL (2 REQUIRED PER POST)



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

STATION: 2240+17.23 N.B.L. 7+59.26 S.R. 1604

STATE OF NORTH CAROLINA
 STATE HIGHWAY COMMISSION
 STANDARD 1 BAR METAL RAIL

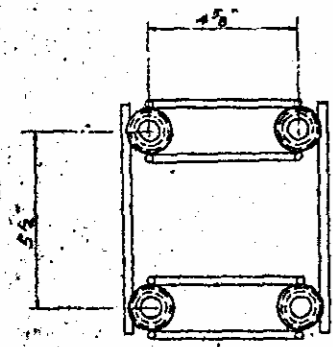
SHEET 1 OF 2

GENERAL NOTES

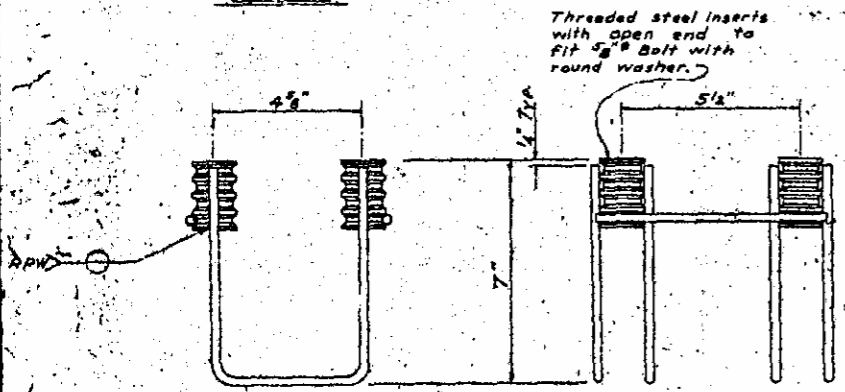
This Preset Anchor Assembly may be used in lieu of the anchorage shown on the Standard Metal Rail Sheet.
 The cost of the Preset Anchor Assembly, with bolts and washers complete in place shall not be included in the price bid for Lin. Ft. Metal Rail. The wire gage and threaded steel inserts to be of sufficient strength to insure load anchoring capacity as specified in the AASHTO Specifications.
 The Preset Anchor Units to be hot dipped galvanized to conform to requirements of ASTM A 23.

Anchor Bolts to be either high tensile steel conforming to A.S.T.M. A 449 and galvanized to conform to A.S.T.M. 153 or stainless steel Type 430 with a minimum 70,000 psi ultimate strength.

Bolts to be tightened one-half turn with the wrench from a finger-tight position.



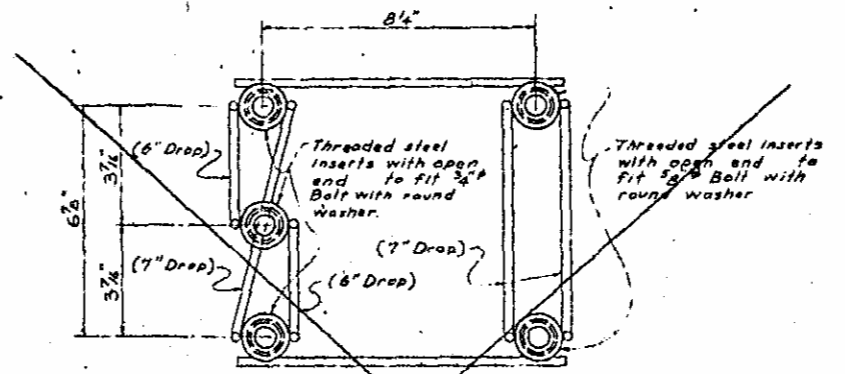
PLAN



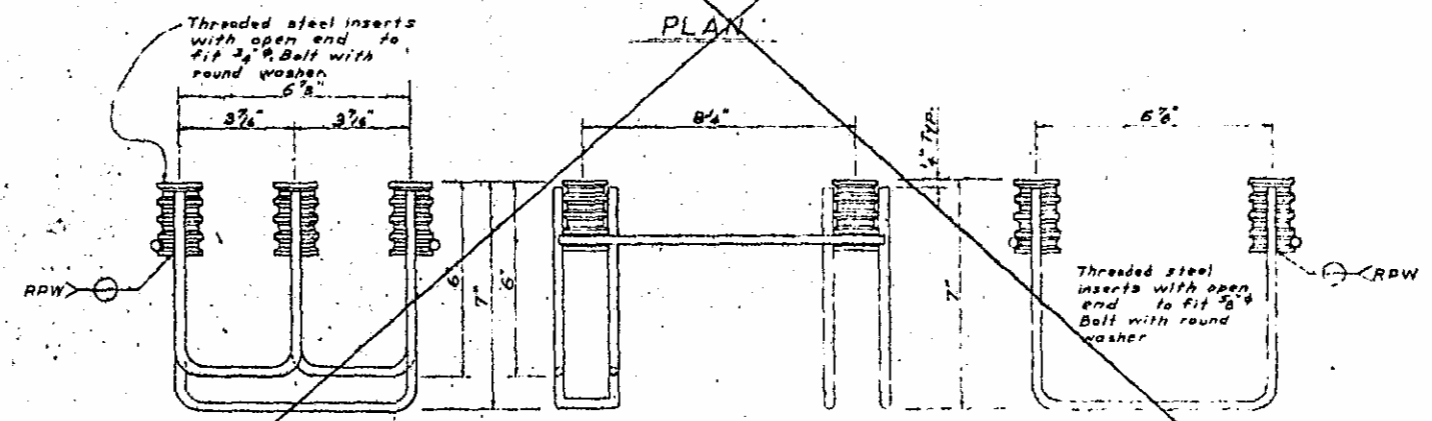
ELEVATION

SIDE VIEW

4-BOLT PRESET ANCHOR FOR 1 BAR METAL RAIL



PLAN

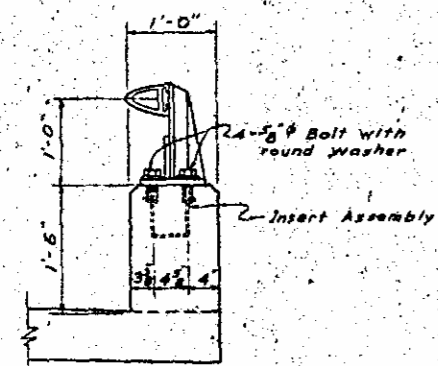


LEFT SIDE VIEW

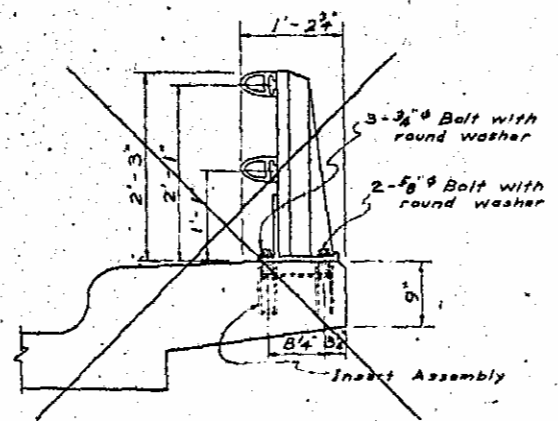
ELEVATION

RIGHT SIDE VIEW

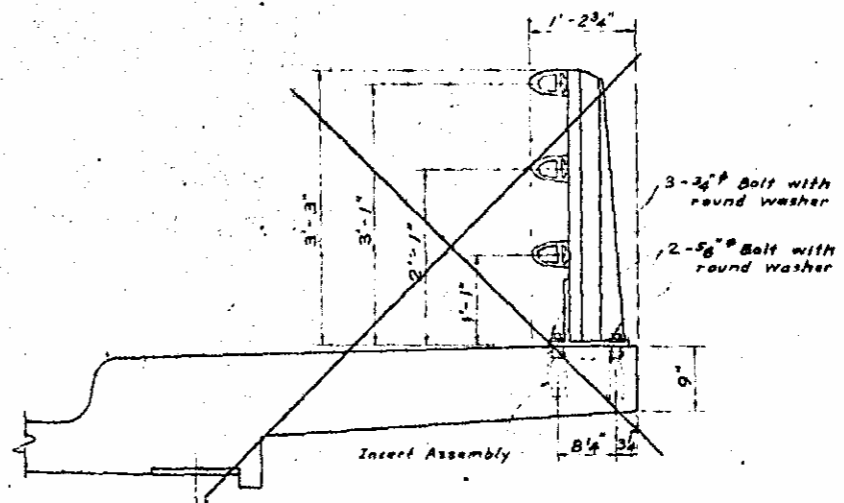
5-BOLT PRESET ANCHOR FOR 2 OR 3 BAR METAL RAIL



SECTION THRU PARAPET & RAIL



SECTION THRU CURB & RAIL



SECTION THRU SIDEWALK & RAIL

Revision NR 1: Revised to change Preset Anchor for 1-Bar Metal Rail, 2-4-71 By J.A.J. ✓ By J.L.S.
 Revision NR 2: Revised to change note concerning tightening of bolts, 3-15-71 By J.A.J. ✓ By J.L.S.
 Revision NR 3: Revised to change weld symbol, 3-19-71 By J.A.J. ✓ By J.L.S.

ASSEMBLED BY	DATE	SPECIAL
CHECKED BY	DATE	STANDARD

PROJECT No. 8 1161700
 NASH CO. I.D.
 STATION: 2240+17.23 N.S.L.
 STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
 RALPH B. HEWITT
 STANDARD METAL RAIL
 OPTIONAL PRESET ANCHOR UNITS
 DECEMBER

NOTES

CAMBERS: Girders shall be fabricated with camber to compensate for the deflection caused by the combined weights of the structural steel and the superimposed dead loads and the vertical curve ordinate. Cambered girder lengths shall be adjusted and bearings are to be placed on the cambered girder so as to be aligned with the anchors after dead load deflection has occurred. Shop Plans shall be prepared accordingly.

FIELD CONNECTIONS: All field connections not welded shall be made with 7/8" ø High Strength Bolts unless otherwise noted.

SHOP SPLICES: All Shop Splices in Flange and Web Plates shall be made prior to welding flange plates to web plates. No splices other than those shown on the plans will be permitted in the flange plates. However, additional shop web splices will be allowed within the areas shown in the details. The location of these splices shall be shown on the shop plans.

WELDING: All welding shall conform to the AWS Welding Code.

STUDS: For description of studs see special provisions.

FIELD SPLICES: All bolts in field spllices are 3/4" ø High Strength Bolts. Spacing of studs on top flange splice plate may be adjusted if necessary to clear bolts. However, the total number of studs required on splice plate shall not be less than that required by using normal spacing.

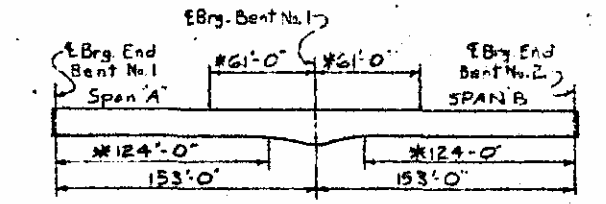
STRUCTURAL STEEL: All structural steel to be ASTM A36.

STRUCTURAL STEEL ERECTION: Erection of structural steel shall be completed for all spans before false work or form work are placed.

EXPANSION JOINT MATERIAL: 1-1/2" Expansion Joint Material at End Bents shall be either Neoprene or Rubber meeting the requirements of the current AASHTO Specifications. Two layers may be used to obtain the required thickness.

ALL BEARING ASSEMBLIES SHALL BE GALVANIZED.

SHIPPING NOTES:
SHIPPING DETAILS FOR BEAMS AND GIRDERS SHALL BE SUBMITTED FOR APPROVAL, INDICATING THE TOP FLANGE LOCATION DURING SHIPMENT, AND IN ALL CASES SHOWING THE WEB VERTICAL. THE METHOD OF SHIPMENT, POSITION ON THE VEHICLE, AND ATTACHMENTS TO THE BEAMS OR GIRDERS OF ANY SHIPPING RESTRAINTS SHALL BE CLEARLY DETAILED.



Charpy V-Notch Tests will be required for top or bottom flange plates which falls within these limits. 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.

PROJECT NO. 8 1181706

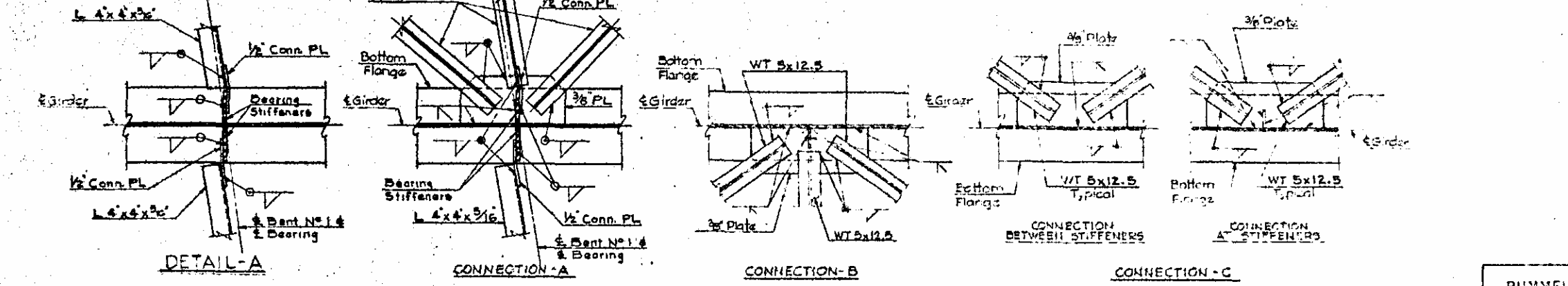
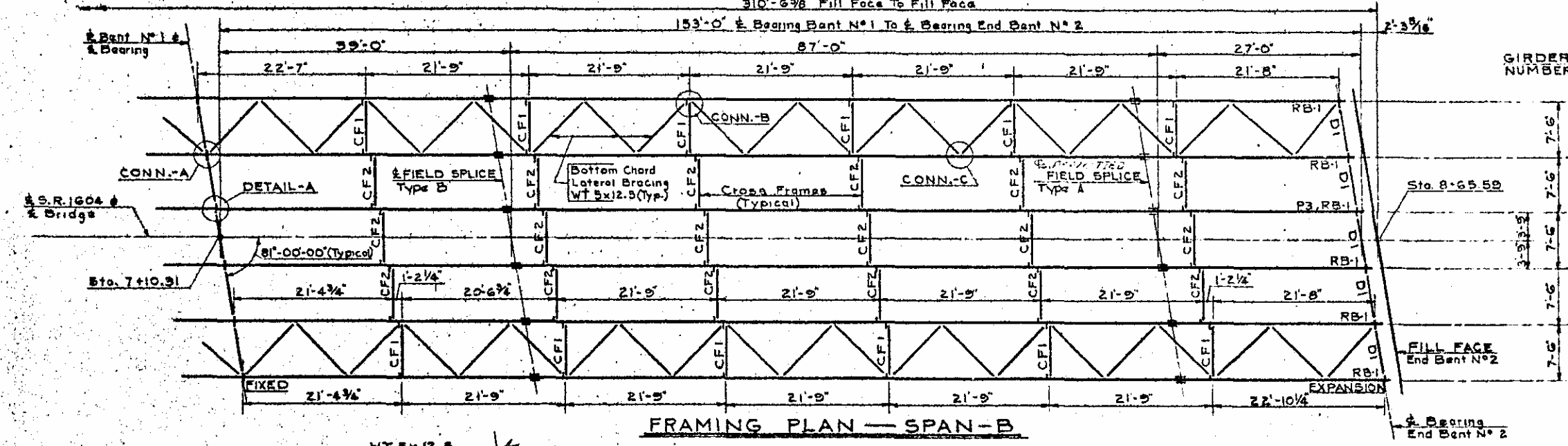
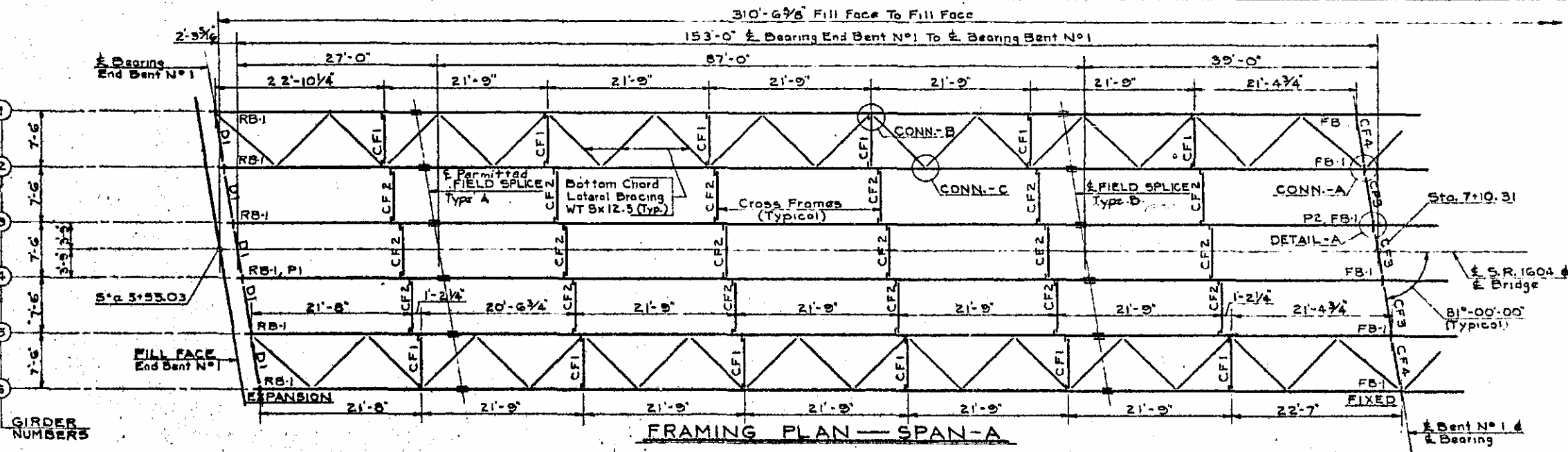
NASH COUNTY

STATION: 2240+17.21 N B L
7+59.26 S R 1604

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION

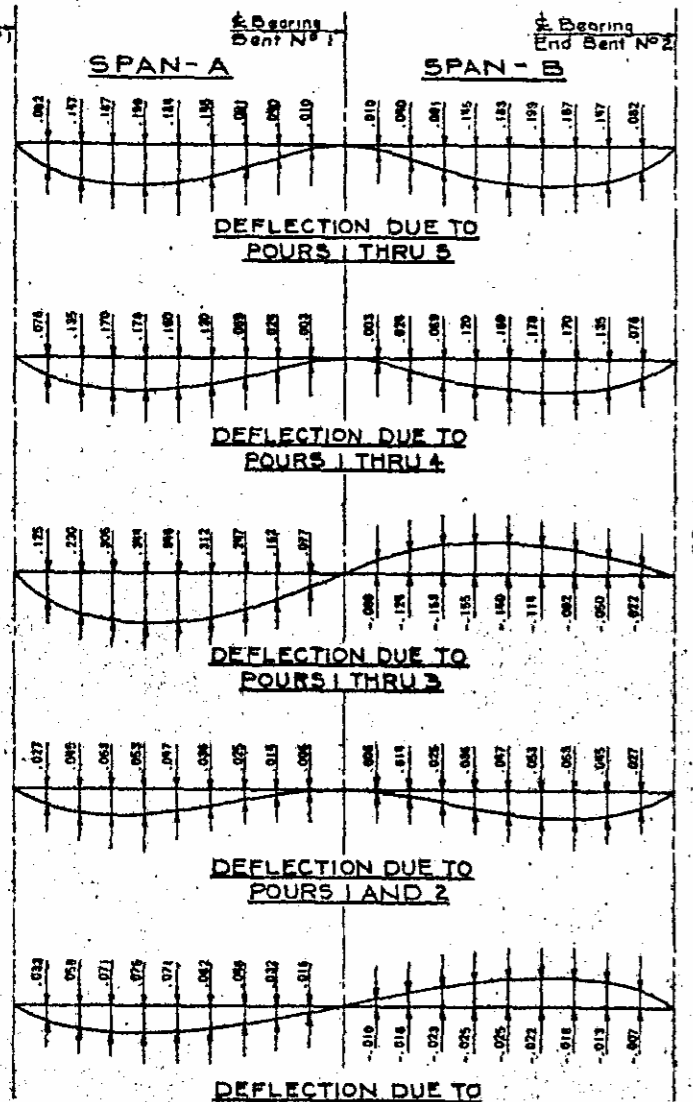
S R 1604 UNDERPASS
SUPERSTRUCTURE
FRAMING PLAN

RUMMEL KLEPPER & KAIL
CONSULTING ENGINEERS

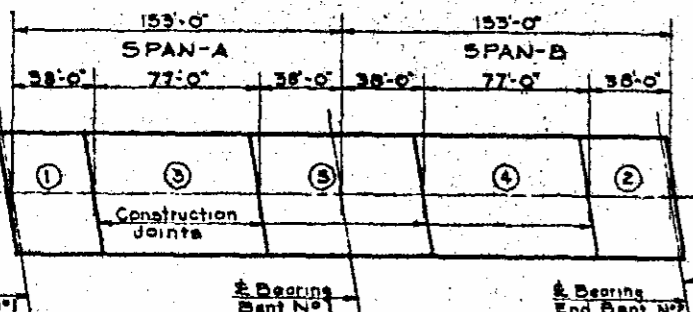


LATERAL BRACING CONNECTION DETAILS

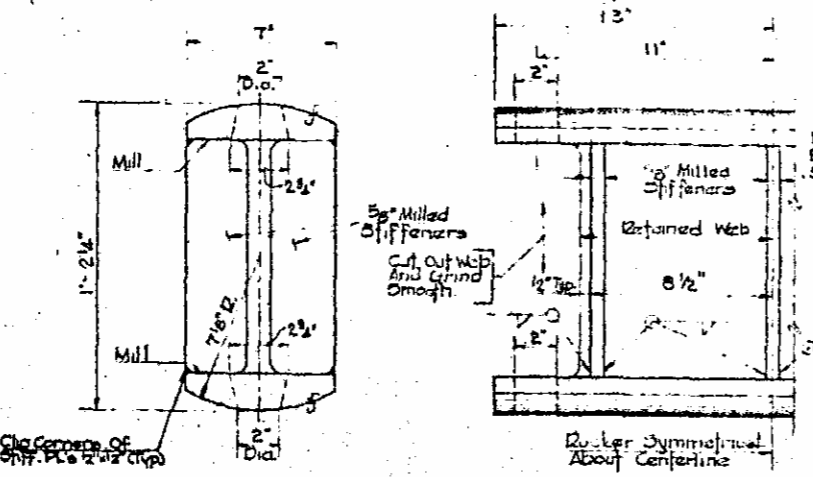
W. G. B...
Sept 75



NOTE: All Deflection Ordinates Are In Feet And Are Given At The Tenth Points Of The Span Between Bearings For Interior Girders Only. Deflections Are For Weight Of Concrete Slab Only.



NOTE: Previously Cast Concrete In A Continuous Unit Shall Attain A Minimum Compressive Strength Of 5,000 p.s.i. Before Additional Concrete Is Placed On The Unit. Parapets In A Continuous Section Shall Not Be Cast Until All Slab Concrete In The Unit Has Been Cast And Has Reached A Minimum Compressive Strength Of 5,000 p.s.i.



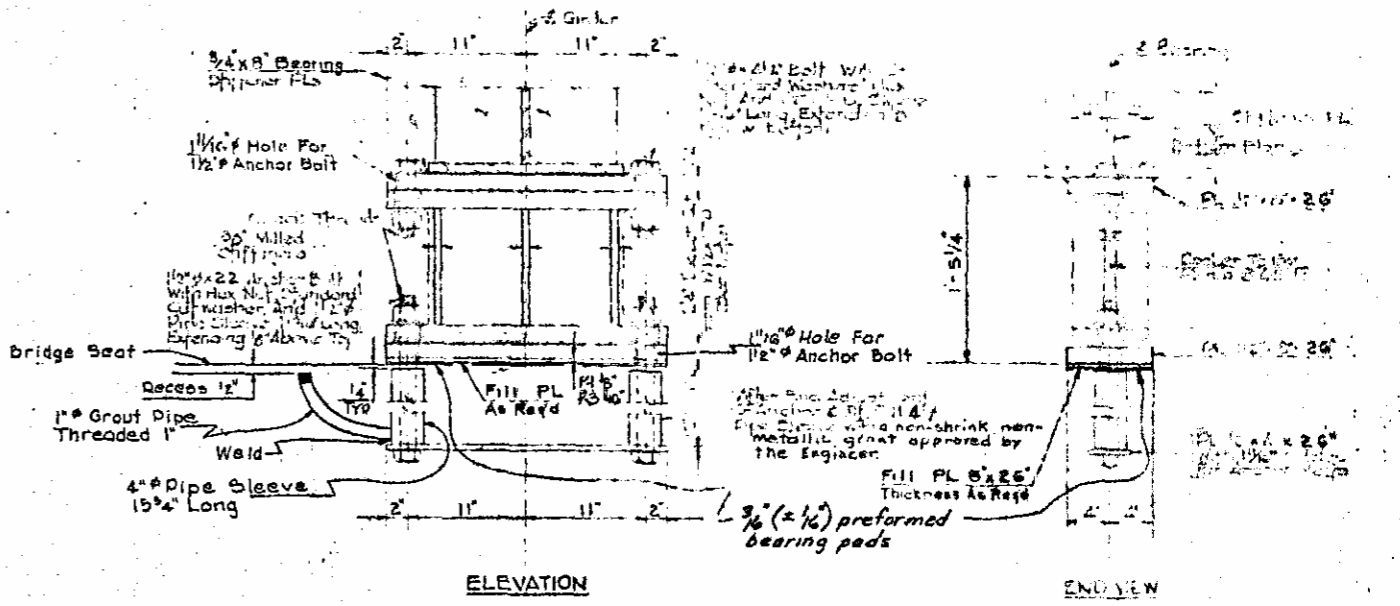
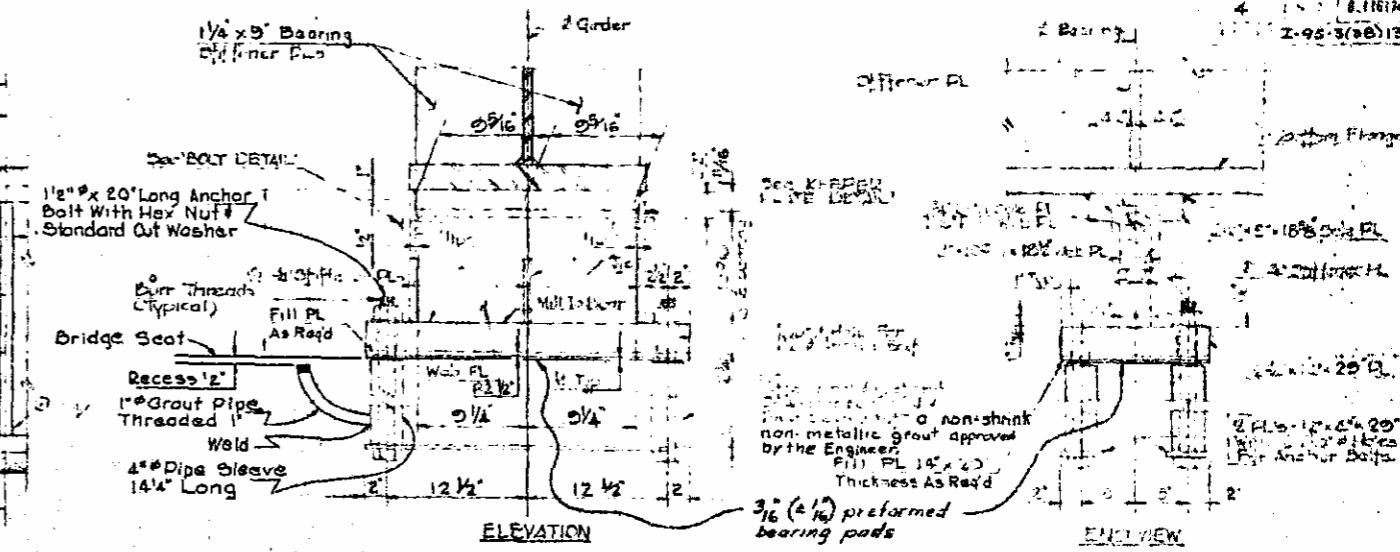
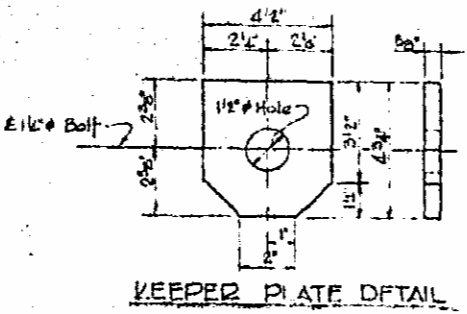
ROCKER DETAIL
The Roller May Be Fabricated From A W12-100 Beam And Plates As Shown, Or Built Up Using Plates The Same Thickness As The Beam Web And Flanges. If Plates Are Used, Ends Of Plates Shall Be Milled To Bear.

*Indicates Rocker Tilted Away From Fixed Bearing.

ROCKER SETTING DATA		
38°F	68°F	98°F
-5/8"	Plumb	+3/8"

BEARING ASSEMBLIES REQUIRED			
MARK	LOCATION	Nº REQ'D	
PB-1	END BENT-1	6	
RB-1	END BENT-2	6	
FB-1	BENT-1	6	
FILL PLATES REQUIRED			
MARK	BRG. ASSY	NO. REQ'D	THICKNESS
P-1	RB-1	1	1/2"
P-2	FB-1	1	1/2"
P-3	RB-1	1	1/2"

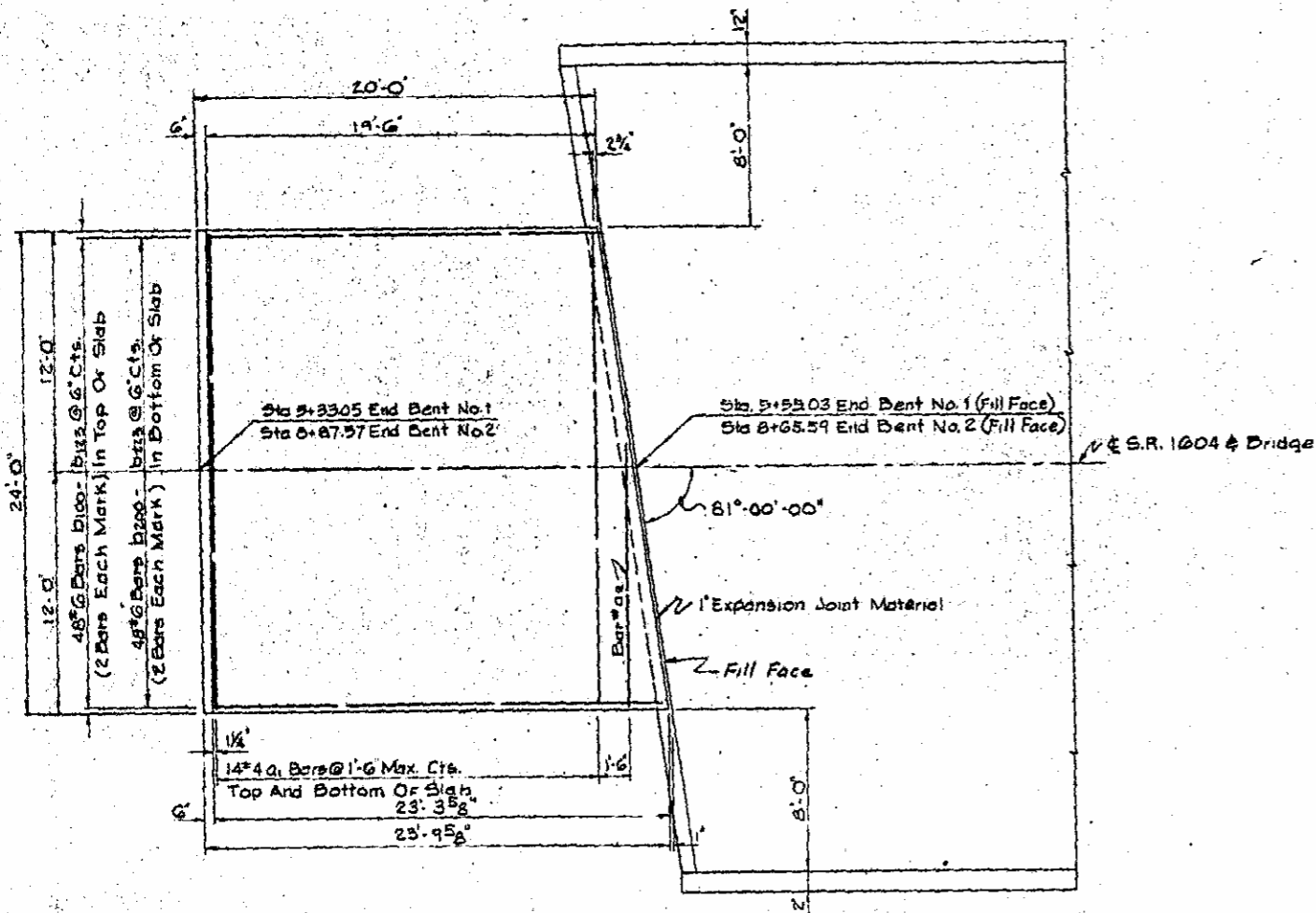
Note: All Bearing Assemblies Shall Be Governed In Accordance With The Specifications.



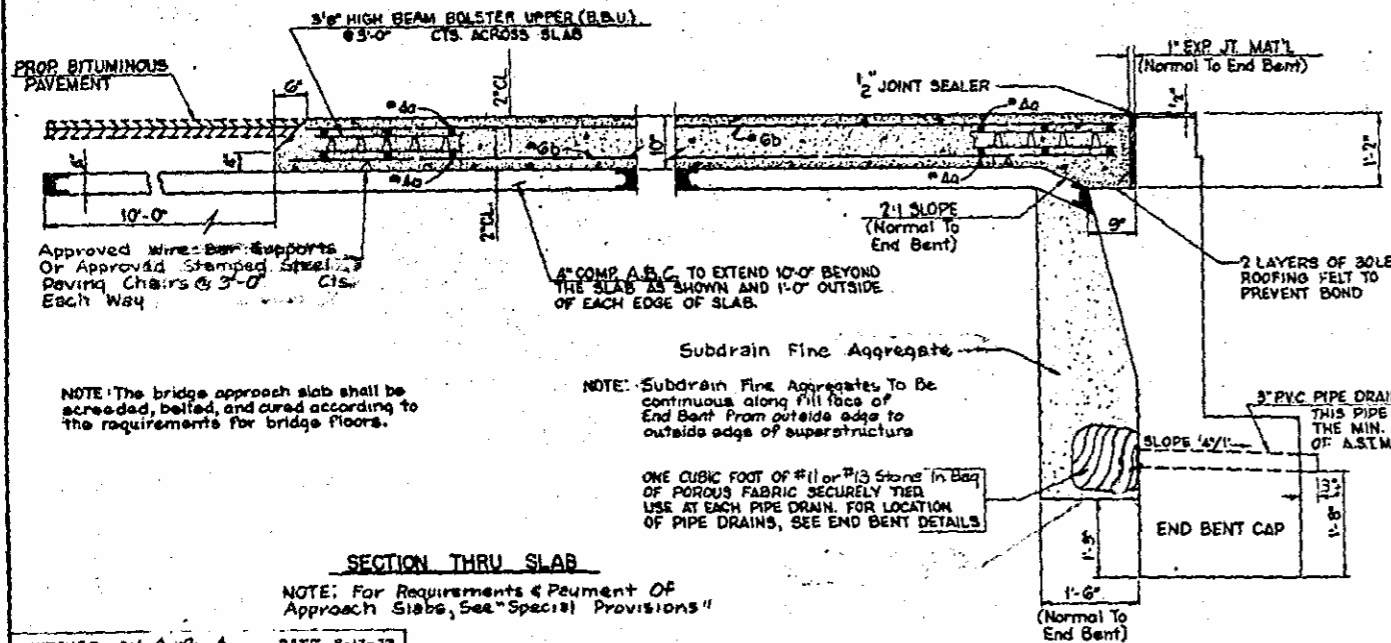
PROJECT No. 8 1161706
NASH COUNTY
STATION: 2240+17.23 N.B.L. +
7+59.26 S.R. 1604

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
S. R. 1604 UNDERPASS
SUPERSTRA 118E
BEARING SIDE DETAILS

RUMBLE STRIPPER & K&L
CONCRETE ENGINEERS
RUMBLE STRIPPER & K&L

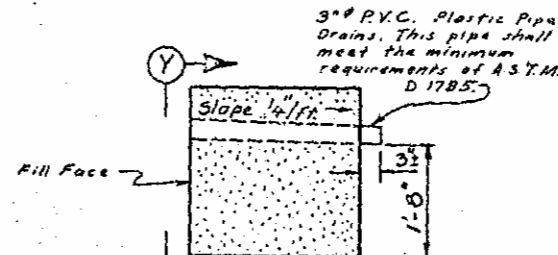


PLAN @ END BENT NO. 1
Approach Slab @ End Bent No. 2 Similar By Rotation



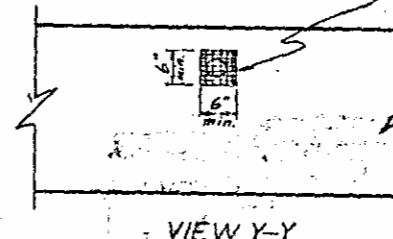
SECTION THRU SLAB
NOTE: For Requirements & Payment Of Approach Slabs, See "Special Provisions"

CHECKED BY A. Mout DATE 7-17-73



SECTION THRU CAP

6" Square aluminum or galvanized steel wire mesh hardware cloth of commercial quality. Anchor firmly to fill face.



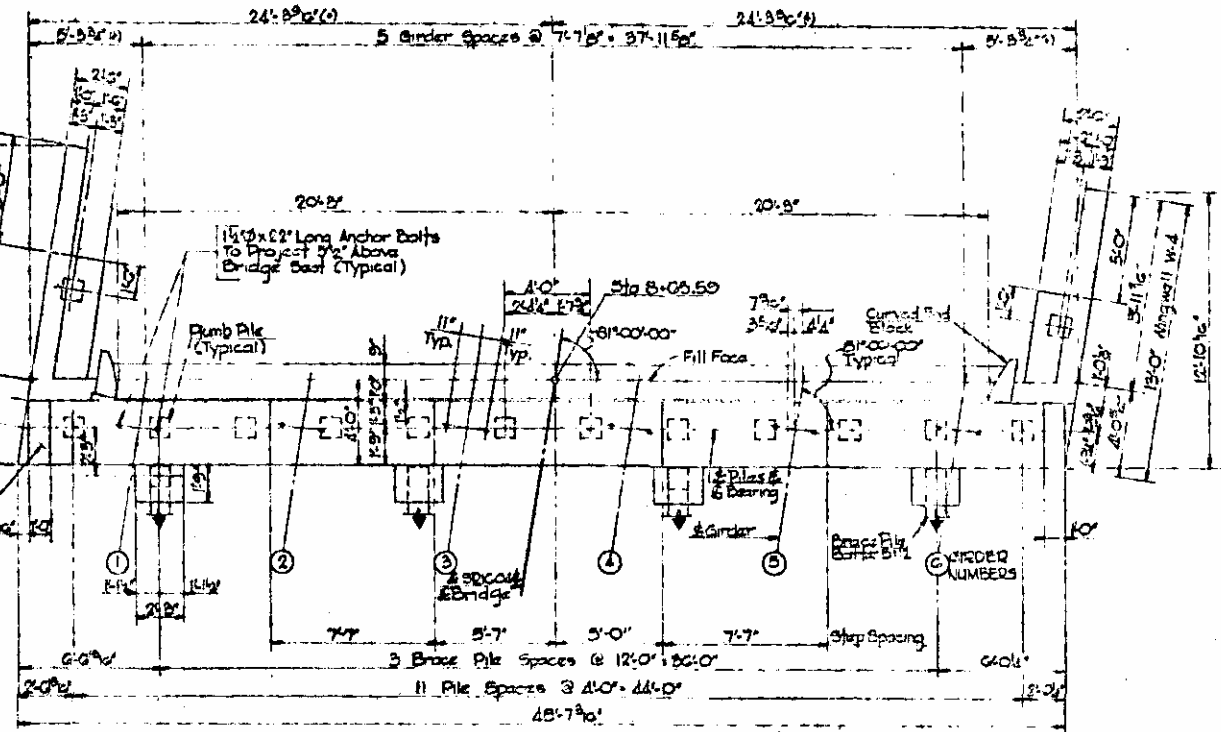
PIPE DRAIN DETAILS

Note: No separate payment will be made for furnishing and installing 3" 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.

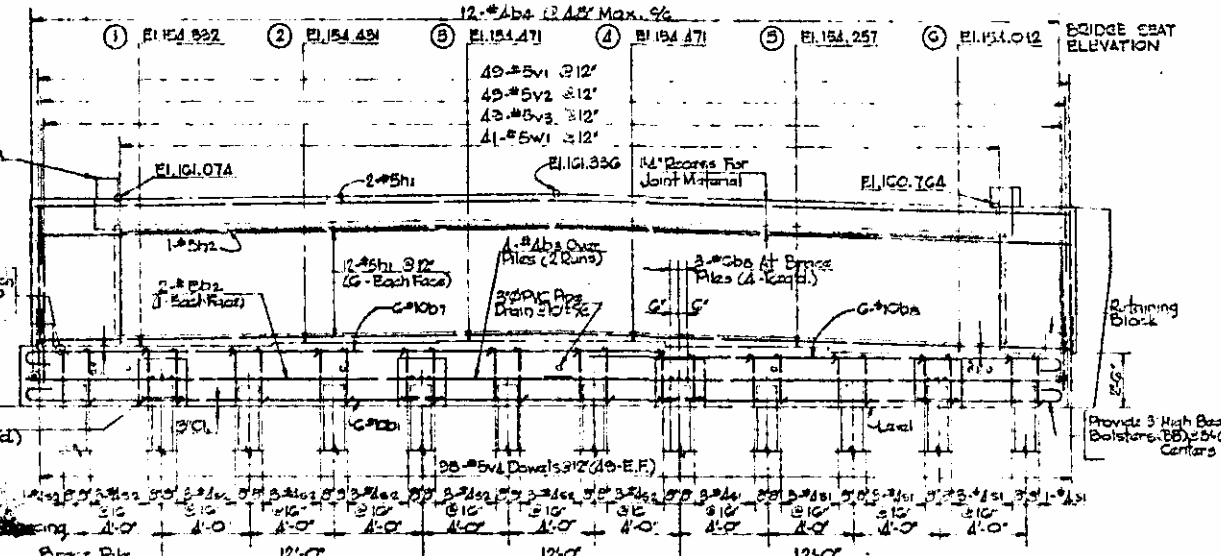
BILL OF MATERIAL											
FOR ONE UNIT - TWO REQUIRED											
BAR NO	NO	SIZE	TYPE	LENGTH	WEIGHT	BAR NO	NO	SIZE	TYPE	LENGTH	WEIGHT
Q1	2	4	Str	23.1	1.3	Q11	2	6	Str	22.6	6.8
Q1	2	4	Str	18.1	1.3	Q11	2	6	Str	22.6	6.8
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Q1	1			19.0	1.3	Q11	2	6	Str	22.6	6.8
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Q1	1			22.8	1.3	Q11	2	6	Str	22.6	6.8
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PROJECT NO. 8-110706
NASH COUNTY
STATION 220+25 N.B.L. 195
7-5126-9, 1604

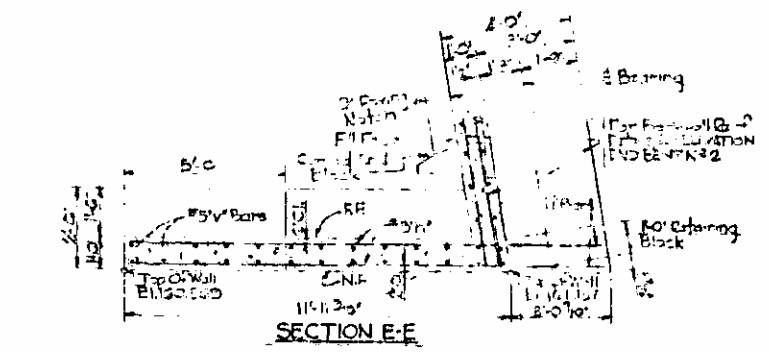
STATE OF NORTH CAROLINA					
STATE HIGHWAY COMMISSION					
BRIDGE APPROACH SLAB					
FOR FLEXIBLE PAVEMENT					
OVERPASS @ S. R. 1604					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			2		
2			3		
TOTAL SHEETS					



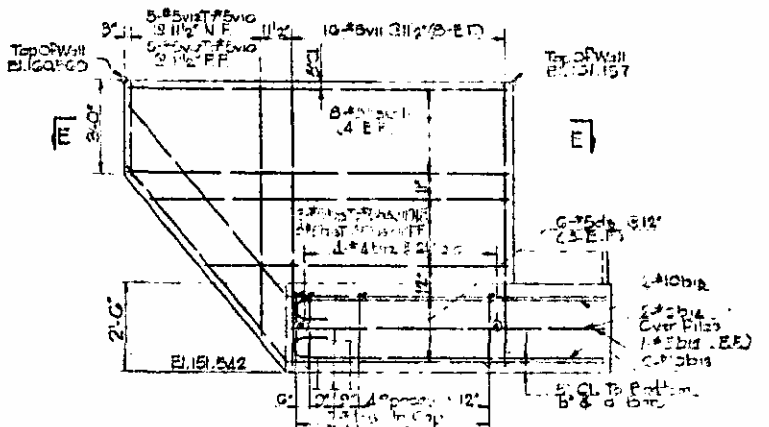
PLAN
END BENT NO. 2



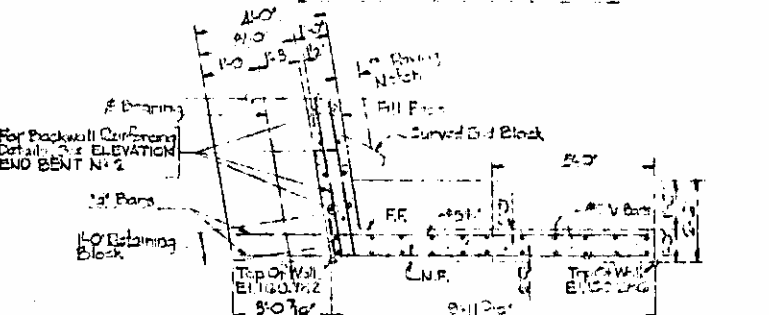
ELEVATION
END BENT NO. 2



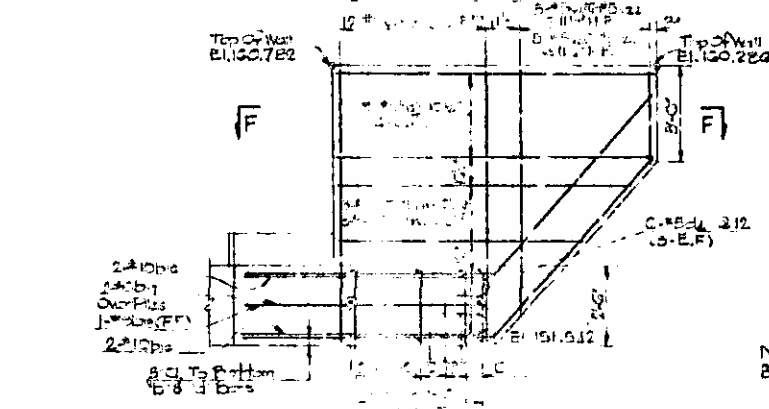
SECTION E-E



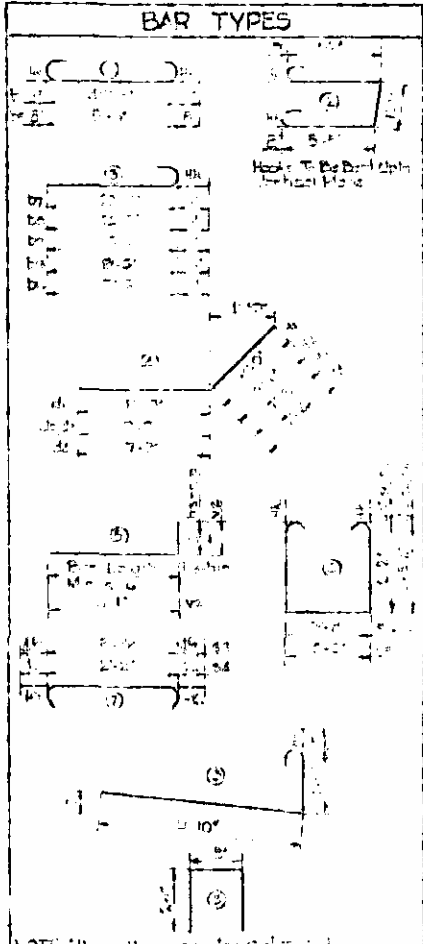
ELEVATION WINDOW WALL W-3



SECTION F-F



ELEVATION WINDOW WALL W-4



BAR TYPES		BILL OF MATERIAL	
BAR	TYPE	QUANTITY	WEIGHT
1	49 #5v1 @ 12"	12	120
2	49 #5v2 @ 12"	12	120
3	49 #5v3 @ 12"	12	120
4	41 #5v1 @ 12"	12	120
5	12 #5h1 @ 12"	12	120
6	12 #5h2 @ 12"	12	120
7	12 #5h3 @ 12"	12	120
8	12 #5h4 @ 12"	12	120
9	12 #5h5 @ 12"	12	120
10	12 #5h6 @ 12"	12	120
11	12 #5h7 @ 12"	12	120
12	12 #5h8 @ 12"	12	120
13	12 #5h9 @ 12"	12	120
14	12 #5h10 @ 12"	12	120
15	12 #5h11 @ 12"	12	120
16	12 #5h12 @ 12"	12	120
17	12 #5h13 @ 12"	12	120
18	12 #5h14 @ 12"	12	120
19	12 #5h15 @ 12"	12	120
20	12 #5h16 @ 12"	12	120
21	12 #5h17 @ 12"	12	120
22	12 #5h18 @ 12"	12	120
23	12 #5h19 @ 12"	12	120
24	12 #5h20 @ 12"	12	120
25	12 #5h21 @ 12"	12	120
26	12 #5h22 @ 12"	12	120
27	12 #5h23 @ 12"	12	120
28	12 #5h24 @ 12"	12	120
29	12 #5h25 @ 12"	12	120
30	12 #5h26 @ 12"	12	120
31	12 #5h27 @ 12"	12	120
32	12 #5h28 @ 12"	12	120
33	12 #5h29 @ 12"	12	120
34	12 #5h30 @ 12"	12	120
35	12 #5h31 @ 12"	12	120
36	12 #5h32 @ 12"	12	120
37	12 #5h33 @ 12"	12	120
38	12 #5h34 @ 12"	12	120
39	12 #5h35 @ 12"	12	120
40	12 #5h36 @ 12"	12	120
41	12 #5h37 @ 12"	12	120
42	12 #5h38 @ 12"	12	120
43	12 #5h39 @ 12"	12	120
44	12 #5h40 @ 12"	12	120
45	12 #5h41 @ 12"	12	120
46	12 #5h42 @ 12"	12	120
47	12 #5h43 @ 12"	12	120
48	12 #5h44 @ 12"	12	120
49	12 #5h45 @ 12"	12	120
50	12 #5h46 @ 12"	12	120
51	12 #5h47 @ 12"	12	120
52	12 #5h48 @ 12"	12	120
53	12 #5h49 @ 12"	12	120
54	12 #5h50 @ 12"	12	120
55	12 #5h51 @ 12"	12	120
56	12 #5h52 @ 12"	12	120
57	12 #5h53 @ 12"	12	120
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64	12 #5h60 @ 12"	12	120
65	12 #5h61 @ 12"	12	120
66	12 #5h62 @ 12"	12	120
67	12 #5h63 @ 12"	12	120
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81	12 #5h77 @ 12"	12	120
82	12 #5h78 @ 12"	12	120
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91	12 #5h87 @ 12"	12	120
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94	12 #5h90 @ 12"	12	120
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96	12 #5h92 @ 12"	12	120
97	12 #5h93 @ 12"	12	120
98	12 #5h94 @ 12"	12	120
99	12 #5h95 @ 12"	12	120
100	12 #5h96 @ 12"	12	120
101	12 #5h97 @ 12"	12	120
102	12 #5h98 @ 12"	12	120
103	12 #5h99 @ 12"	12	120
104	12 #5h100 @ 12"	12	120

PROJECT NO. 8 115170
 COUNTY
 STATION: 77+117.21 to 77+143.14

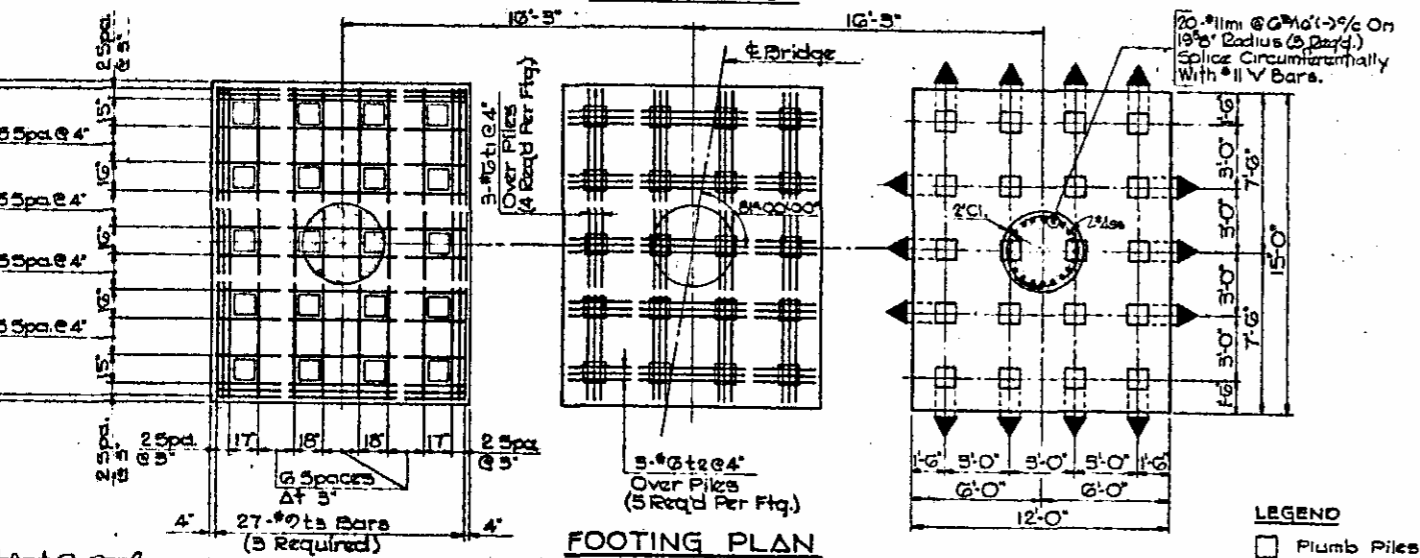
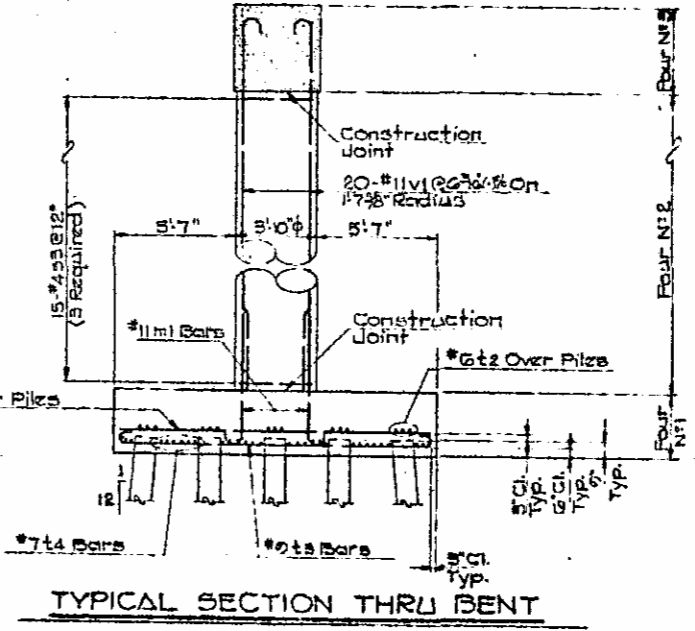
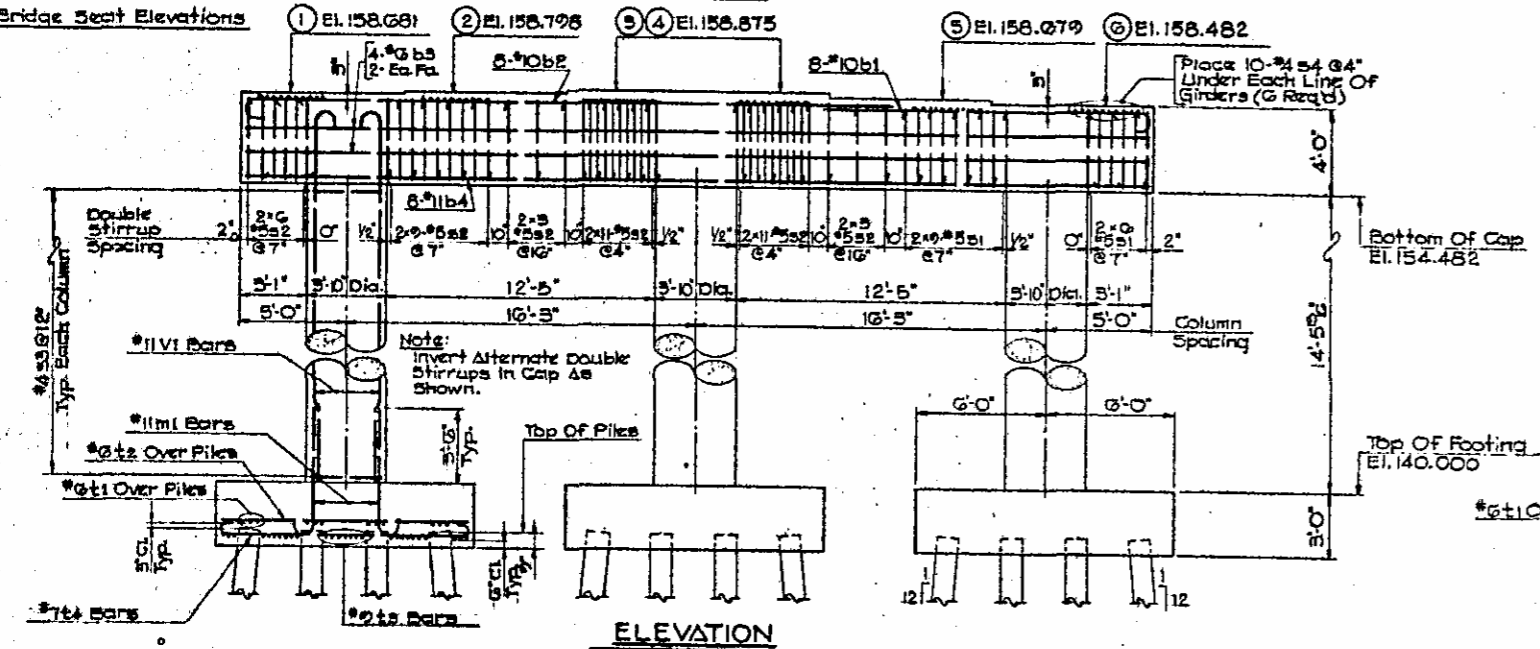
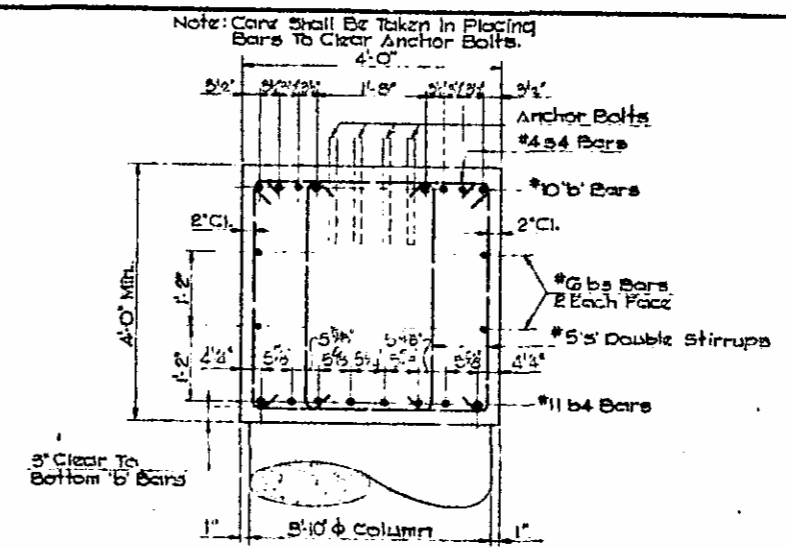
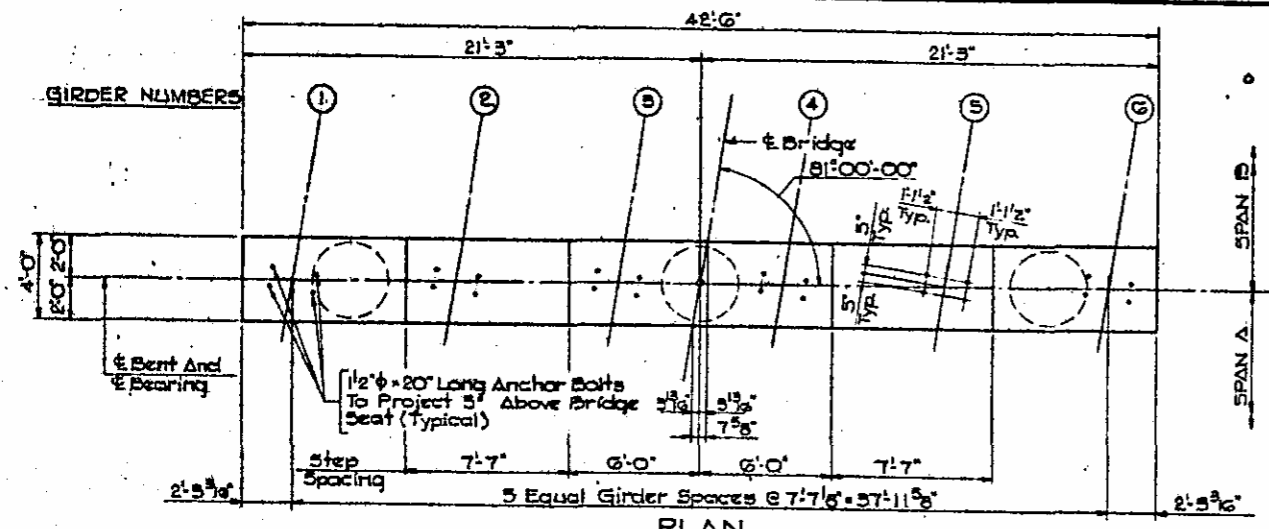
Note: For P.V.L. Plan Drain Details See Bridge Approach Slabs.

STATE OF NORTH CAROLINA
 STATE HIGHWAY COMMISSION
 DIVISION OF HIGHWAYS
 77 1964 UNDERPASS
 DISTRICT 12
 END BENT NO. 2

RUMMEL, KLEPPER & KAHL
 CONSULTING ENGINEERS
 RALEIGH, NORTH CAROLINA

NO.	BY	DATE
1		5-14
2		7-1

NOTE
 1. ALL REINFORCEMENT SHALL BE AS SHOWN ON THESE DRAWINGS.
 2. ALL REINFORCEMENT SHALL BE WELDED TOGETHER AT ALL JOINTS.
 3. ALL REINFORCEMENT SHALL BE PLACED AS SHOWN ON THESE DRAWINGS.



- LEGEND**
- Plumb Piles
 - ◐ Piles Battered 1:12

BAR TYPES		BILL OF MATERIAL				
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		
HK ①						
b1	5	#10	2	10'-1"	554	
b2	2	#10	2	9'-6"	1084	
b3	4	#6	24	42'-2"	859	
b4	3	#11	24	45'-2"	1792	
HK ②						
m1	60	#11	2	7'-2"	2285	
HK ③						
b1	20	#5	5	11'-1"	347	
b2	25	#5	5	11'-8"	1092	
b3	45	#4	5	12'-5"	508	
b4	60	#4	4	2'-5"	177	
HK ④						
b1	35	#3	24	14'-6"	784	
b2	45	#3	24	11'-0"	777	
b3	51	#3	1	13'-6"	454	
b4	90	#7	1	13'-0"	2391	
HK ⑤						
v1	60	#11	2	10'-2"	6110	
Reinforcing Pounds: 22,428						
12" Sq. Reinforced Concrete Piles: 25 - 220						
CLASS A CONCRETE BREAKDOWN						
Struct. Reinforcing	CY	35.5				
Formwork	CY	10.0				
Base Course	CY	28.7				
TOTAL	CY	102.2				
Concrete Displaced By Pile Heads Has Been Deducted.						

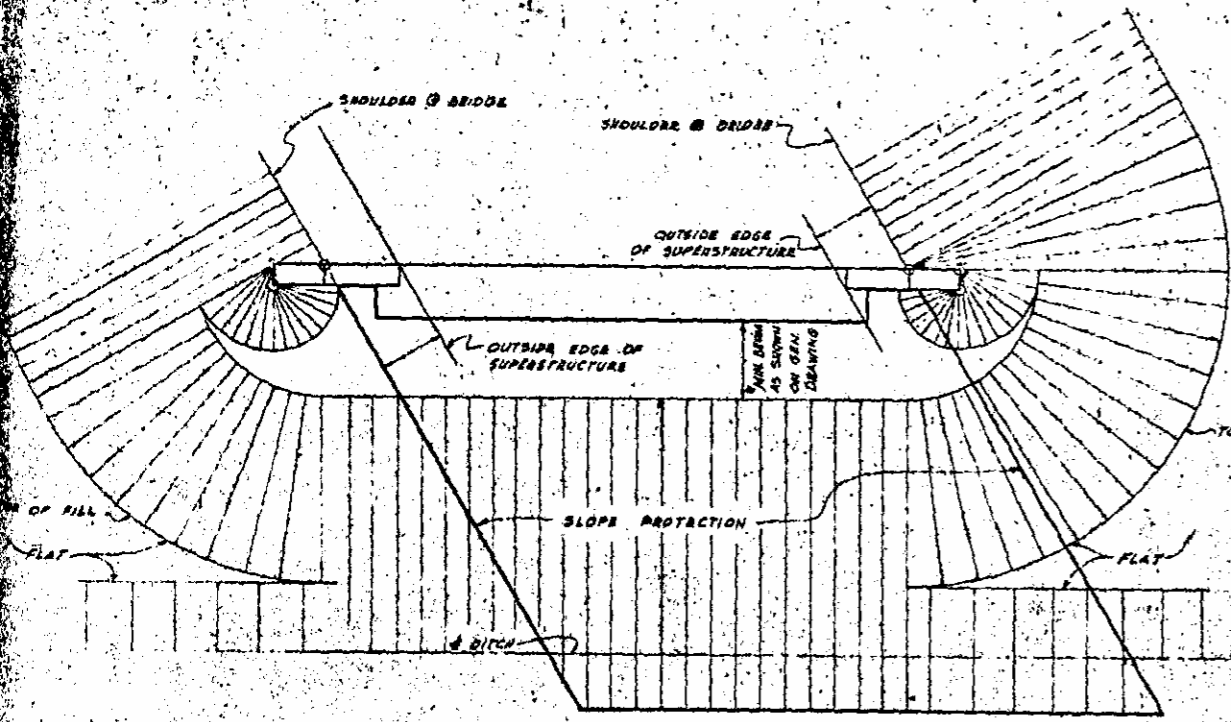
PROJECT NO. 81161706
 NASH COUNTY
 STATION: 2740+17.77 N.A.L.
 7-59 20 SR 1604

STATE OF NORTH CAROLINA
 STATE HIGHWAY COMMISSION
 S R 1604 (ADETPASS)
 SUBSTRUCTURE
 BENT NO. 1

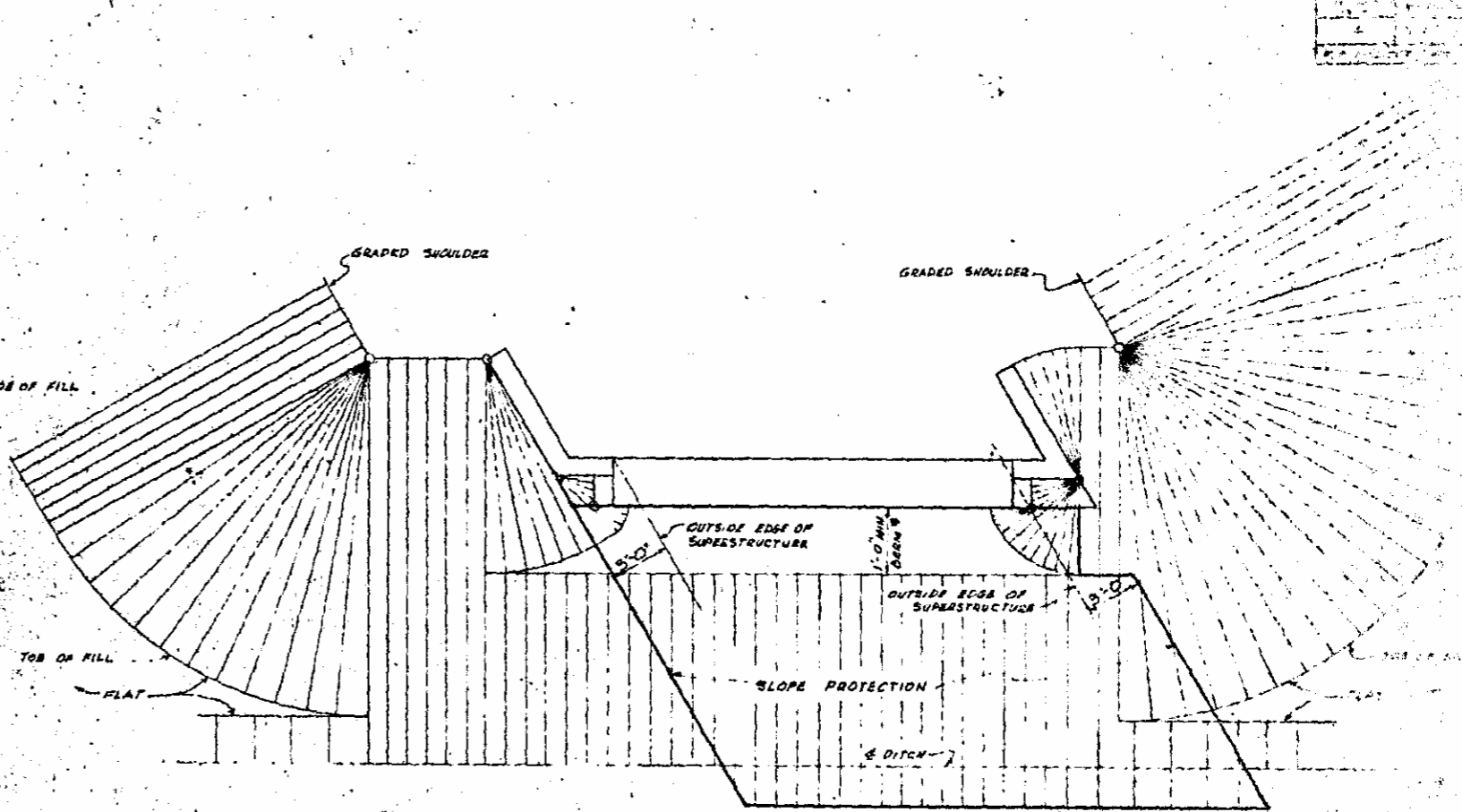
RUMMEL, KLEPPER & KAHL
 CONSULTING ENGINEERS
 RALEIGH, NORTH CAROLINA

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

S-15

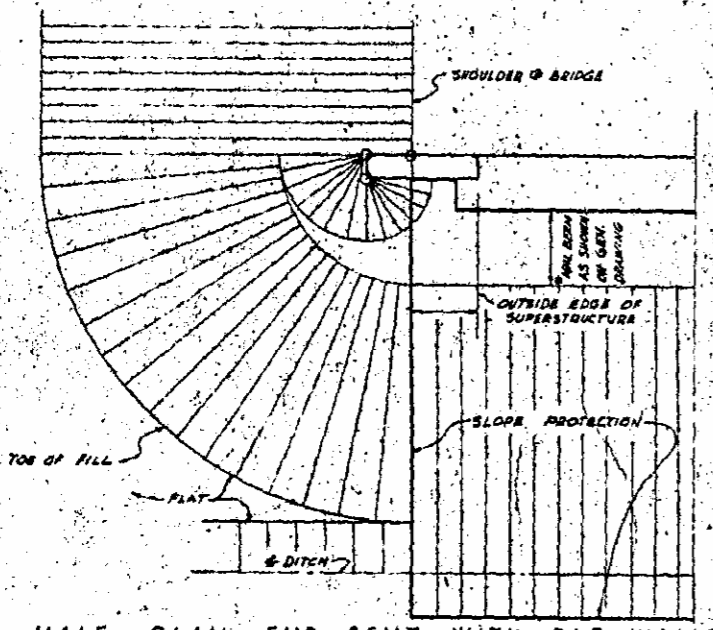


END BENT WITH EAR WALLS - SKEWED



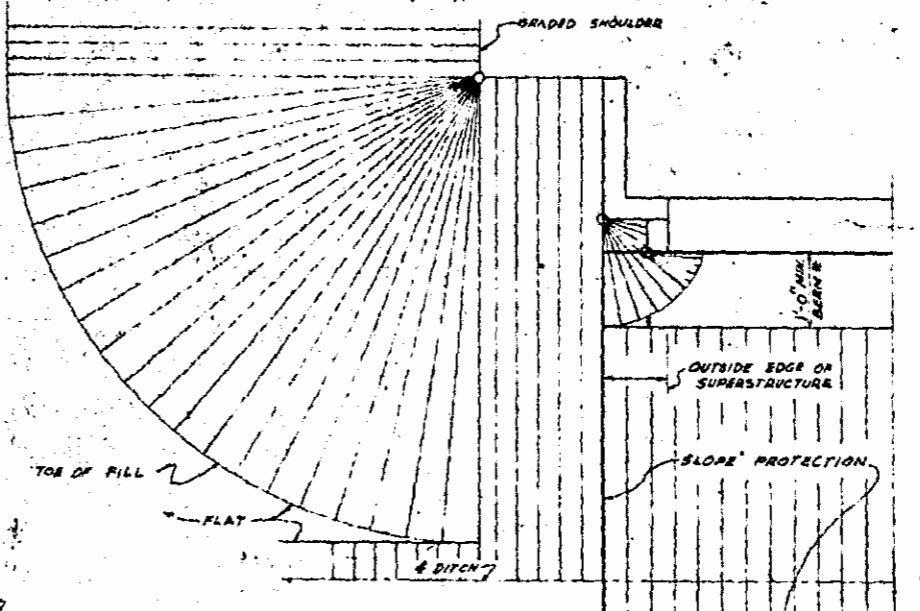
END BENT WITH SWEEP BACK WINGS - SKEWED

* NOTE: VARY BERM WIDTH AS NECESSARY TO FIT DITCH ALIGNMENT



HALF PLAN END BENT WITH EAR WALLS - 90°

NOTE: OTHER SIDE SIMILAR.



HALF PLAN END BENT WITH SWEEP BACK WINGS - 90°

NOTE: OTHER SIDE SIMILAR.

PROJECT NO. _____

WASH. COUNTY

STATION: _____

SHEET 2 OF 2

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
STANDARD
SLOPE PROTECTION
DETAILS

FEBRUARY 1944

DESIGNED BY: _____ DATE: FEB. 23
CHECKED BY: _____ DATE: FEB. 23
DRAWN BY: E.G. ALFORD, JR. DATE: FEB. 24
REVISIONS BY: G.T. PHILLIPS DATE: MARCH 24

Rev. No. 3 To change min. berm from 3'-6" to 1'-0" on End Bents with Swept Back Wings ✓ O.W.R.
REV. NO. 2 TO ELIMINATE 90° CORNER AT TOE OF SLOPE FOR SKEWED BRIDGES. T.G.T.P.
REV. NO. 1 TO TAKE OUT DIMENSIONS FROM OUTSIDE EDGE OF SUPERSTRUCTURE TO OUTSIDE SLOPE PROTECTION LINE

DATE	BY	REVISION

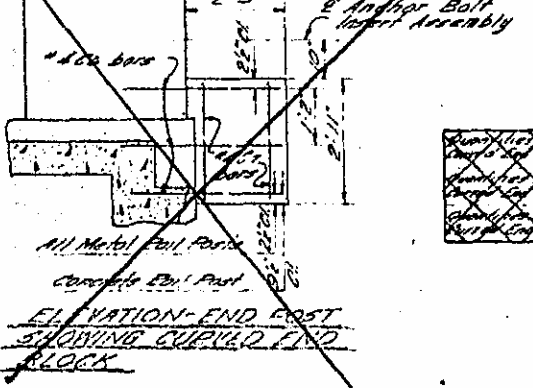
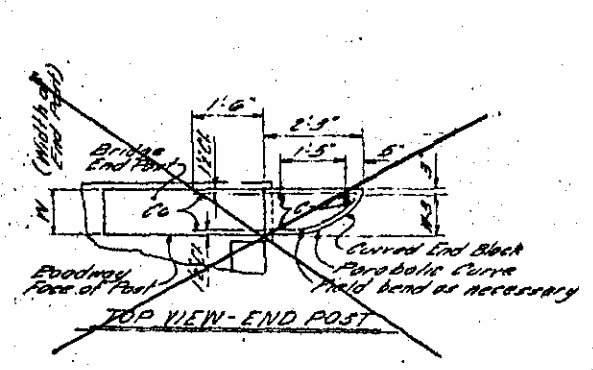
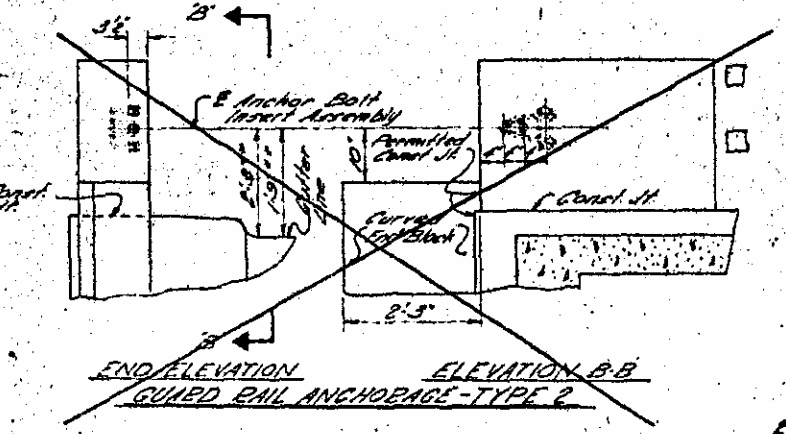
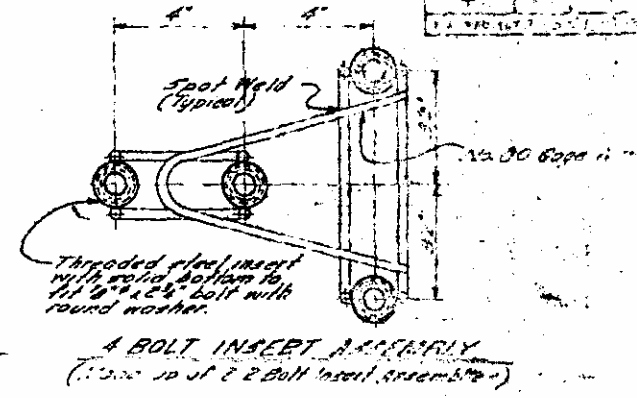
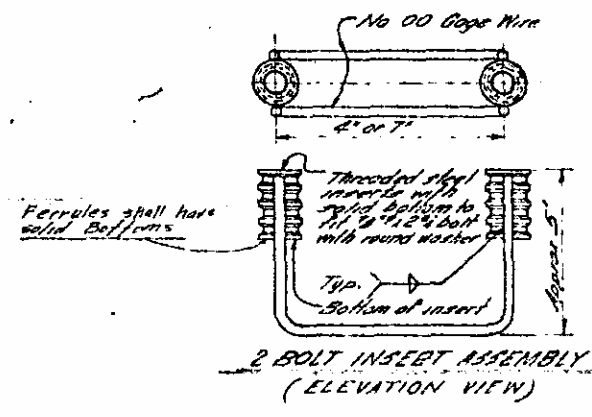
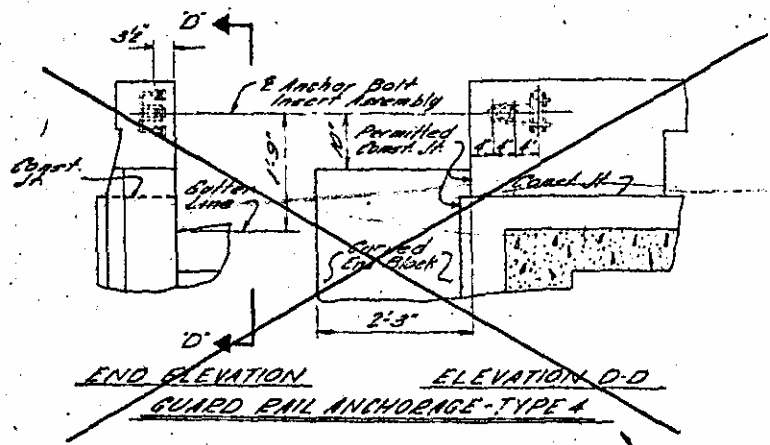
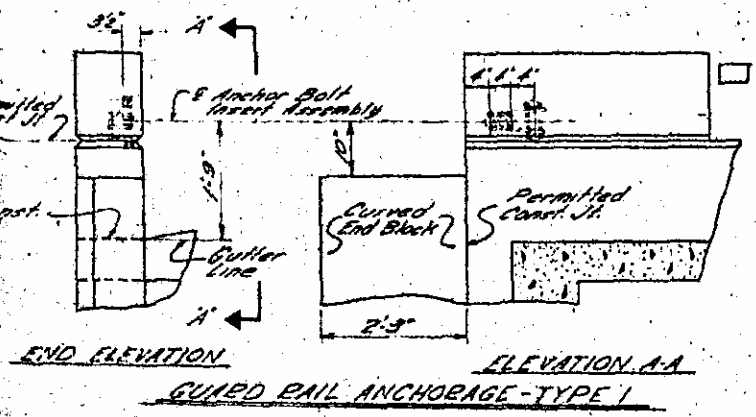
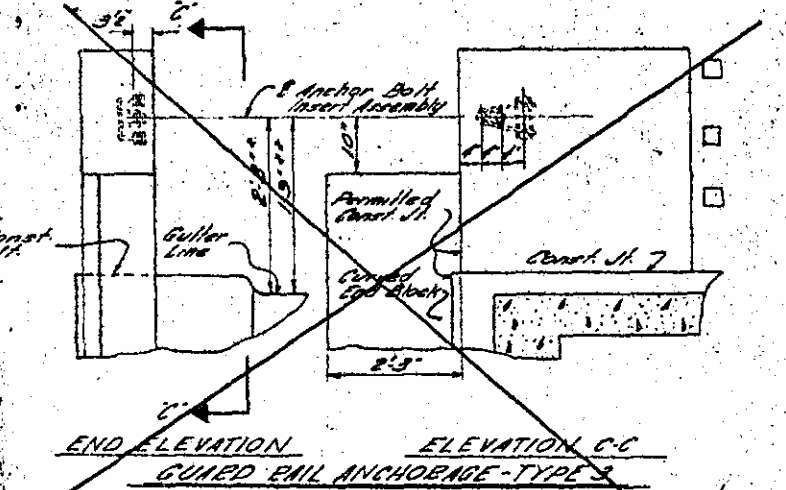
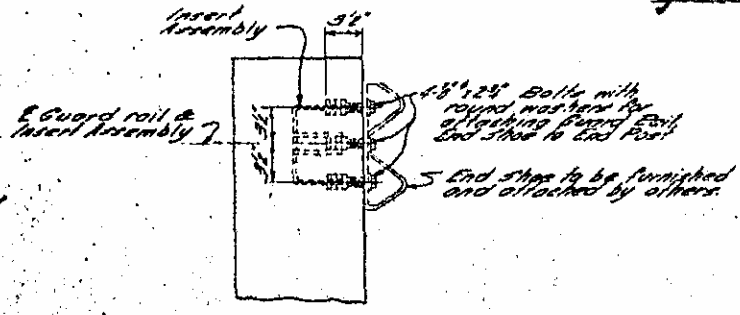


TABLE WITH 4 COLUMNS AND 10 ROWS, CONTAINING MATERIAL SPECIFICATIONS AND QUANTITIES.



NOTE: CURVED END BLOCKS SHOULD BE 3/4" DIA. ONLY AT ENDS WHERE GUARD RAIL IS TO BE ATTACHED.

Note: Curved End Blocks and Guardrail Anchorage are required at all End Posts.

GENERAL NOTES
The cost of the 4 Bolt Insert Assembly, including the cost of the steel insert and 2 bolts with washers complete in place shall be included in the unit contract price for steel of concrete.
The excavation and backfill for curved end block will not be measured or paid for as a separate item. The entire cost of the work shall be included in the unit price bid for steel of concrete.
The anchor unit shall be assembled in the shop. Bolt threads shall be ground as necessary to insure fit.
The 2" dia bolts and washers shall conform to the requirements of AISC and shall be galvanized in accordance with the requirements of AISC.
At the construction site, the contractor shall do the necessary work to insure that a firm fit is obtained between the washers and the steel insert. The contractor shall be responsible for the proper fit of the steel insert in the concrete.
The threaded steel insert shall conform to the requirements of AISC and shall be a minimum length of 12 inches.

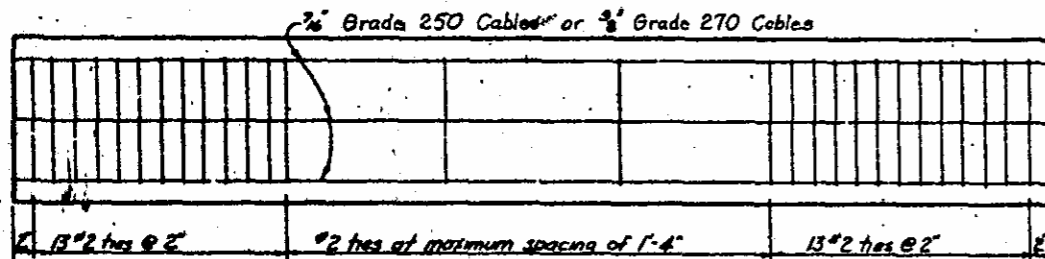
For 6" Curb & Gutter approaching bridge when offset distance from bridge end post to face of curb is over 9".
For no Curb & Gutter and 6" Curb & Gutter approaching bridge when offset distance from bridge end post to face of curb is 9" or less.

PROJECT NO. _____
COUNTY _____
STATION _____

STATE HIGHWAY DEPARTMENT
STANDARD SPECIFICATIONS FOR
CONCRETE AND STEEL
BRIDGE STRUCTURES
SECTION _____
CHAPTER _____
ARTICLE _____

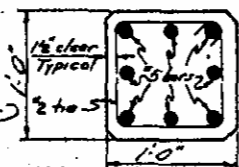
APPROVED BY: _____ DATE: 3-20-73
CHECKED BY: _____ DATE: 3-20-73
DRAWN BY: _____ DATE: 10-70
REVISION: _____

Rev #1 - Changed to change notes concerning Height of Anchor Bolt Insert Assembly Version No 5

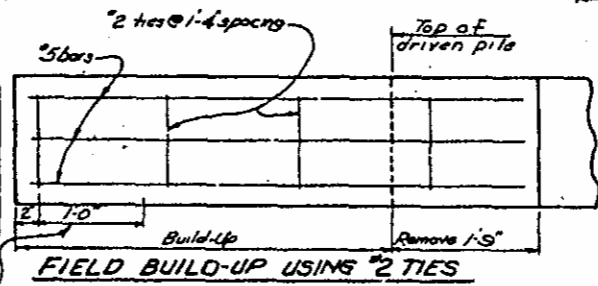


12" PRESTRESSED CONCRETE PILES USING #2 TIES

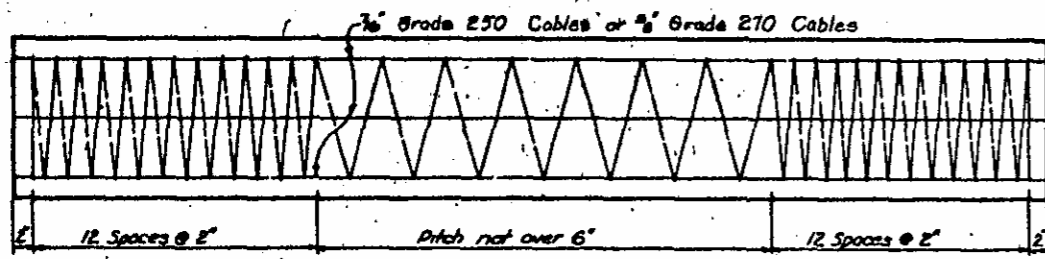
The contractor may use either #2 ties or cold drawn steel wire spiral as shown.



If additional driving is required, 2" spacing shall be used for #2 ties within these limits.

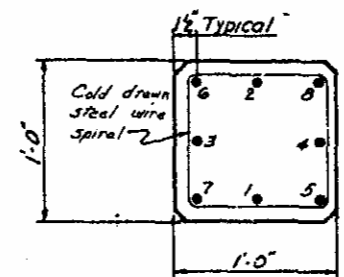


FIELD BUILD-UP USING #2 TIES



12" PRESTRESSED CONCRETE PILES USING COLD DRAWN STEEL WIRE SPIRAL

Build-ups shall be of Class A Concrete with 20% additional cement. No driving of the built-up pile will be permitted until the concrete has reached a compressive strength of 3000 psi and until a period of 7 days has elapsed since casting of the build-up.

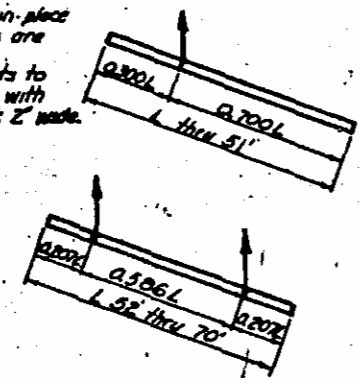


NOTE: All cold drawn steel wire shall be size # W 2.5

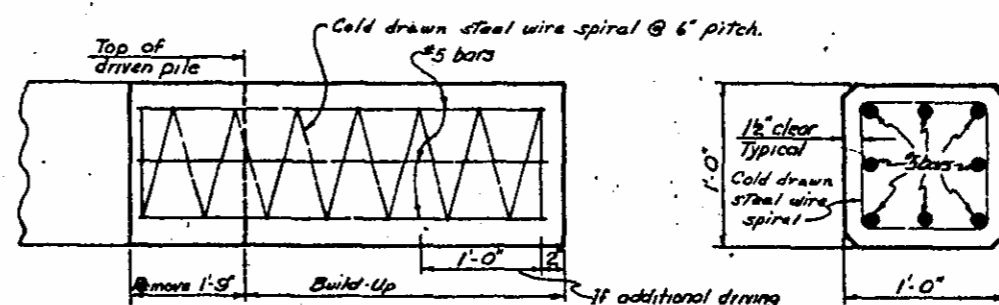
If cable stress is to be relieved by burning, the cables shall be burned in pairs in the order shown above. Not more than 4 cables may be burned at any one section before the same cables are burned at both ends of the bed and between each pair of piles in the bed.

TYPICAL PATTERN FOR BURNING CABLES

Where cast-in-place lifting devices are not used, pick-up points to be indicated with a block mark Z' made.



METHOD OF PICKING UP PILES



FIELD BUILD-UP USING COLD DRAWN STEEL WIRE SPIRAL

If additional driving is required, 2" pitch shall be used for spiral wire within these limits.

12" PRESTRESSED CONCRETE PILES

Design Data:
 Concrete: f'c = 5,000 p.s.i. ; R = 2,000 p.s.i.
 Impact in handling = 50 %
 In driving piles, a method approved by the Engineer shall be used, whereby the head of the pile is not damaged. All prestressing strands shall be 7-wire stress relieved cables in accordance with the Specifications. The contractor may, at his option, use either of the two types of cable listed below; however, all cables in a pile shall be of the same type.

Size	Grade	Area	Ultimate Strength	Approx. Prestressing
3/8"	270	0.035"	23,000 per cable	16,000 per cable
7/16"	270	0.108"	23,000 per cable	18,900 per cable

Devices for lifting the piles from the casting beds shall be approved by the Engineer. Where piles will be exposed to view in the structure, inserts set in the piles to receive threaded eye-bolts or similar approved devices shall be used. Loops of cable cast in the pile will not be permitted.

The use of satisfactory chocks or slings will be permitted where this is practicable without the use of lifting devices cast in the piles. After eye bolts or other attachments have been removed, the openings shall be repaired in a satisfactory manner before delivery to the bridge site in order to obtain a uniform appearance. It will not be necessary to remove loops of cable or other lifting devices in piles for End Bents and foundations which will not be exposed to view.

All corners to be chamfered 3/8".

PROJECT No. 2240-17-24
 NASH COUNTY
 STATION 2240-17-24

STATE OF NORTH CAROLINA STATE HIGHWAY COMMISSION RALEIGH					
STANDARD 12" PRESTRESSED CONCRETE PILES					
MARCH 1956					
REV.	BY	DATE	REV.	BY	DATE
1	BYE	6-20-74			

Rev. #1 - Revised to show grade and to change area of prestressed strands.
 By: JMB 6-26-74

Checked By: SATO	Date: 4-9-75	SPECIAL
Checked By: J. H. ...	Date: 4-10-75	STANDARD